

**HYDAC** | **INTERNATIONAL**



# Cartridge Valves & Manifolds

Pressure, Directional, Flow Check, Load, Proportional





HYDAC stands for worldwide presence and accessibility to the customer. With more than 6,500 employees, 50 overseas subsidiaries and 500 plus sales and service partners worldwide, we are in close contact with our customers, providing engineering advice, production support, expert installation and superior service. HYDAC has been active in the field of hydraulic and lube filtration for more than 50 years and has become one of the leaders in innovative filtration products in hydraulics and lube oil systems. No matter what the job entails and irrespective of location, we are able to help you find the best solution—we've got you covered.

## HYDAC Products



Our product range extends from cartridge valves to multi-function manifolds. HYDAC is capable of integrating products into manifold solutions for every application.



## HYDAC Quality



HYDAC stands for quality and customer satisfaction. We are certified to ISO 9001:2000 and can supply our products with certification if required. To ensure that our products are as innovative as possible, they are developed, manufactured, and tested by qualified personnel using advanced technology.



## HYDAC Customer Service



Our internal staff and worldwide distribution network take care of the important matter of customer service. HYDAC values high standards, professional ethics, and mutual respect in all transactions with customers, vendors, and employees. We invest in our relationships by providing expertise, quality, dependability, and accessibility to foster growth and a sense of partnership. Our customer service representatives are committed to serving our customers' needs.



### Energy and Environmental Technology

HYDAC products play a key role in providing innovative developments in hydroelectric, heating, wind, and waste power plants. HYDAC has vast expertise in solvent and waste water processing technologies.



### Offshore Shipbuilding and Marine Technology

Maritime technology places special demands on material functionality and reliability. HYDAC filtration products meet these demands due to our high quality and test standards. HYDAC filters have been applied under the toughest conditions from drilling rigs to deep sea applications.



### Mobile Market

The aim of our engineers has always been to reduce volume and weight, resulting in increased product performance. HYDAC provides high performance filters for the mobile market, which can be found on construction, forestry, and agricultural equipment.



### Industrial Engineering

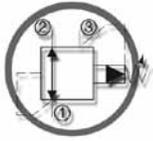
Since we began, HYDAC has been involved in many industrial engineering applications. Our knowledge and expertise of many industries provides for a comprehensive range of filters. HYDAC offers custom filtration solutions for machine tools, plastic injection molding machines, test equipment, presses, and welding robots. Other industrial applications include: steel and heavy industry, power transmissions, and paper mills.



### Process Technology

The core products of HYDAC process technology are electronics, filters, and filtration systems for the industrial and environmental processing industries. HYDAC filtration products are found in chemical, petrochemical, and plastics industries as well as paper and dye production, foundries, steel manufacturing, and power plants.

## Overview of Cartridge Valves



|                             |    |
|-----------------------------|----|
| Introduction                | 2  |
| Pressure Control Valves     | 3  |
| Flow Control Valves         | 3  |
| Check & Load Control Valves | 4  |
| Pressure Sensing Valves     | 4  |
| Solenoid Valves             | 5  |
| Directional Control Valves  | 11 |
| Proportional Valves         | 11 |
| Pumps                       | 11 |
| Integrated Manifolds        | 12 |

## Pressure Control Valves



|                             |    |
|-----------------------------|----|
| Overview                    | 15 |
| Pressure Relief             | 16 |
| Direct Acting               | 16 |
| Pilot Operated              | 22 |
| Pressure Reducing/Relieving | 30 |
| Direct Acting               | 30 |
| Pilot Operated              | 34 |

## Flow Control Valves



|                   |    |
|-------------------|----|
| Overview          | 39 |
| Needle            | 40 |
| Poppet Type       | 40 |
| Free Reverse Flow | 44 |
| Flow Regulator    | 46 |
| Restrictive Type  | 46 |
| Priority Type     | 52 |
| Flow Divider      | 54 |

## Check & Load Control Valves



|                                   |    |
|-----------------------------------|----|
| Overview                          | 59 |
| Check Valves                      | 60 |
| Pilot-to-Open, Poppet Type        | 60 |
| Ball Type                         | 66 |
| Poppet Type                       | 72 |
| Integral Relief                   | 76 |
| Dual Pilot-to-Open, Inline Body   | 80 |
| Single Pilot-to-Open, Inline Body | 84 |
| Counterbalance Valves             | 88 |

## Pressure Sensing Valves



|                               |     |
|-------------------------------|-----|
| Overview                      | 91  |
| Normally Closed, Vent to Open | 92  |
| Normally Open, Vented         | 96  |
| Normally Open                 | 100 |
| Normally Closed               | 104 |

## Solenoid Valves



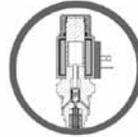
|                                   |     |
|-----------------------------------|-----|
| Overview                          | 108 |
| Poppet Type                       | 110 |
| Unidirectional, 2-position, 2-way | 110 |
| Bi-directional, 2-position, 2-way | 158 |
| 2-position, 3-way                 | 166 |
| Spool Type                        | 168 |
| 2-position, 2-way                 | 168 |
| 2-position, 3-way                 | 180 |
| 2-position, 4-way                 | 198 |
| 3-position, 4-way                 | 230 |

## Directional Control Valves



|                   |     |
|-------------------|-----|
| Overview          | 253 |
| Manually Operated | 254 |

## Proportional Valves



|                             |     |
|-----------------------------|-----|
| Overview                    | 259 |
| Pressure Relief             | 260 |
| Pressure Reducing/Relieving | 268 |
| Direct Acting               | 268 |
| Pilot Operated              | 270 |

## Hand Pumps



|                   |     |
|-------------------|-----|
| Overview          | 275 |
| Manually Operated | 276 |

## Solenoid Coils



|  |     |
|--|-----|
| Features and Benefits                    | 280 |
| Coils for Size 8, 10, 12 & 16 Cartridges | 281 |
| Quick Reference                          | 282 |
| Coil Type 40 Dimensions                  | 286 |
| Coil Type 50 Dimensions                  | 287 |
| Coils for Size 6 Cartridges              | 288 |
| Coil Type 32 Dimensions                  | 289 |

## Line Bodies & Cavities



|                 |     |
|-----------------|-----|
| Overview        | 291 |
| Dimensions      | 294 |
| Cavity Drawings | 296 |

## Manifold Accessories



|                       |     |
|-----------------------|-----|
| Pilot Piston Assembly | 302 |
| Cavity Plugs          | 305 |

## Miscellaneous Parts



|                                 |     |
|---------------------------------|-----|
| Seal Kits                       | 306 |
| Solenoid Valve Replacement Nuts | 307 |
| Adjustment Kits                 | 307 |
| Form Tools                      | 309 |

## Other Products

|                                 |     |
|---------------------------------|-----|
| HYDAC Product Catalogs          | 310 |
| Manifold Quotation Request Form | 311 |

## Complete Systems Solution for All Mobile Applications

HYDAC offers a choice of common UNF and metric cavities cartridge valves (this catalog details UNF products), rated up to 6000 psi to provide a wide variety of hydraulic functions:

### Solenoid Directional Controls

- Poppet Valves, leakfree, rated up to 5000 psi
- Spool valves, high flow, rated up to 5000 psi
- Manual override options on all solenoid valves
- Environmentally rated coils for demanding applications

### Pressure Controls

- Pressure Relief with up to 6000 psi pressure rating
- Pressure Reducing valves with consistent pressure control stability and precision

### Flow Controls

- High accuracy Pressure Compensated flow regulators

### Load Control Valves

- Flow Divider/Combiner valves
- Load Control Valves
- Check valves, rated up to 6000 psi
- Pilot Operated Check valves, rated up to 6000 psi
- Counterbalance Valves, rated up to 5000 psi

### Proportional Control Valves

- Proportional Relief valves, rated up to 5000 psi
- Proportional Pressure Reducing valves, rated up to 5000 psi
- Proportional Flow Regulators

### Standard Line Bodies

Common UNF Cavities in Steel and Aluminum

### Integrated Manifolds

Used in applications where high performance and reliability are important.

HYDAC can satisfy customers' needs for **Complete Cost-Effective System Solutions** by incorporating cartridge valves and other HYDAC hydraulic components, such as Filters, Accumulators, and Accessories into Integrated Manifolds.

#### Common applications include:

- Construction Equipment
- Farm Machinery
- Utility Service Equipment
- Aerial Work Platforms
- Lift Trucks
- Refuse Management Equipment
- Road Maintenance Equipment

HYDAC's 50+ years of Cartridge Valves design and manufacturing experience and Global operations in more than 40+ countries provide excellent support for all your control systems and applications needs.

### Approvals



Viton® is a registered trademark of Dupont.

## Pressure Control Valves

### Pressure Relief

| Symbol | Description                | Model    | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|----------------------------|----------|-----------|-------|----------|-----|--------|--------|
|        |                            |          | gpm       | l/min | psi      | bar |        |        |
|        | Direct Acting, Ball Type   | DB06A-01 | 4         | 15    | 5000     | 350 | FC06-2 | 16     |
|        | Direct Acting, Poppet Type | DB06C-01 | 5         | 19    | 5000     | 350 | FC06-2 | 18     |
|        |                            | DB08A-01 | 10        | 38    | 6000     | 420 | FC08-2 | 20     |
|        | Pilot Operated, Spool Type | DB08P-01 | 16        | 60    | 5000     | 350 | FC08-2 | 22     |
|        |                            | DB10P-01 | 32        | 120   | 6000     | 420 | FC10-2 | 24     |
|        |                            | DB12P-01 | 53        | 200   | 5000     | 350 | FC12-2 | 26     |
|        |                            | DB16P-01 | 79        | 300   | 5000     | 350 | FC16-2 | 28     |

### Pressure Reducing / Relieving

| Symbol | Description                | Model    | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|----------------------------|----------|-----------|-------|----------|-----|--------|--------|
|        |                            |          | gpm       | l/min | psi      | bar |        |        |
|        | Direct Acting, Spool Type  | DR08-01  | 4         | 15    | 6000     | 420 | FC08-3 | 30     |
|        |                            | DR10-01  | 16        | 60    | 6000     | 420 | FC10-3 | 32     |
|        | Pilot Operated, Spool Type | DR08P-01 | 16        | 60    | 5000     | 350 | FC08-3 | 34     |
|        |                            | DR10P-01 | 26        | 100   | 5000     | 420 | FC10-3 | 36     |

## Flow Control Valves

| Symbol | Description  | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|--|-----------|-----------|-------|----------|-----|--------|--------|
|        |  |           | gpm       | l/min | psi      | bar |        |        |
|        | Needle Valve, Poppet Type                              | SD08-01   | 16        | 60    | 6000     | 420 | FC08-2 | 40     |
|        |  | SD10-01   | 42        | 160   | 6000     | 420 | FC08-2 | 42     |
|        | Needle Valve, Free Reverse Flow                        | SDR10A-01 | 42        | 160   | 5000     | 350 | FC10-2 | 44     |
|        | Flow Regulator, Pressure Compensated, Restrictive Type | SR06-01   | 4         | 15    | 5000     | 350 | FC06-2 | 46     |
|        |  | SR08-01   | 8         | 30    | 6000     | 420 | FC08-2 | 48     |
|        |  | SR10-01   | 10        | 38    | 5000     | 350 | FC10-2 | 50     |
|        | Flow Regulator, Pressure Compensated, Priority Type    | SRP08-01  | 8         | 30    | 6000     | 420 | FC08-3 | 52     |
|        | Flow Divider/Combiner, Re-synchronizing                | ST10-01   | 12        | 45    | 5000     | 350 | FC10-4 | 54     |
|        |  | ST16-01   | 39        | 150   | 5000     | 350 | FC16-4 | 56     |

## Check & Load Control Valves

### Check Valves

| Symbol | Description                       | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|-----------------------------------|-----------|-----------|-------|----------|-----|--------|--------|
|        |                                   |           | gpm       | l/min | psi      | bar |        |        |
|        | Pilot-to-Open, Poppet Type        | RP08A-01  | 10        | 38    | 6000     | 420 | FC08-3 | 60     |
|        |                                   | RP10A-01  | 16        | 60    | 6000     | 420 | FC10-3 | 62     |
|        |                                   | RP16A-01  | 40        | 150   | 6000     | 420 | FC16-3 | 64     |
|        | Ball Type                         | RV06A-01  | 4         | 15    | 5000     | 350 | FC06-2 | 66     |
|        |                                   | RV08A-01  | 10        | 38    | 6000     | 420 | FC08-2 | 68     |
|        |                                   | RV10A-01  | 21        | 80    | 6000     | 420 | FC10-2 | 70     |
|        | Poppet Type                       | RV12A-01  | 31        | 120   | 6000     | 420 | FC12-2 | 72     |
|        |                                   | RV16A-01  | 44        | 165   | 6000     | 420 | FC16-2 | 74     |
|        | Integral Relief, Ball Type        | RV06B-01  | 4         | 15    | 5000     | 350 | FC06-3 | 76     |
|        | Integral Relief, Poppet Type      | RV06C-01  | 5         | 19    | 5000     | 350 | FC06-3 | 78     |
|        | Dual Pilot-to-Open, Inline Body   | RVD08A-01 | 10        | 38    | 6000     | 420 | Inline | 80     |
|        |                                   | RVD10A-01 | 21        | 80    | 6000     | 420 | Inline | 82     |
|        | Single Pilot-to-Open, Inline Body | RVS08A-01 | 10        | 38    | 5000     | 350 | Inline | 84     |
|        |                                   | RVS10A-01 | 21        | 80    | 6000     | 420 | Inline | 86     |

### Counterbalance Valves

| Symbol | Description          | Model   | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|----------------------|---------|-----------|-------|----------|-----|--------|--------|
|        |                      |         | gpm       | l/min | psi      | bar |        |        |
|        | Counterbalance Valve | RS08-01 | 10        | 38    | 5000     | 350 | FC08-3 | 88     |

### Pressure Sensing Valves

| Symbol | Description                   | Model     | Flow Rate |       | Pressure |     | Cavity  | Page # |
|--------|-------------------------------|-----------|-----------|-------|----------|-----|---------|--------|
|        |                               |           | gpm       | l/min | psi      | bar |         |        |
|        | Normally Closed, Vent to Open | DW10SA-01 | 40        | 151   | 5000     | 350 | FC10-S3 | 92     |
|        |                               | DW16SA-01 | 75        | 284   | 5000     | 350 | FC16-S3 | 94     |
|        | Normally Open, Vented         | DW10SC-01 | 8         | 30    | 5000     | 350 | FC10-S3 | 96     |
|        |                               | DW16SC-01 | 30        | 114   | 5000     | 350 | FC16-S3 | 98     |
|        | Normally Open                 | DW10V-01  | 8         | 30    | 5000     | 350 | FC10-S3 | 100    |
|        |                               | DW16V-01  | 30        | 114   | 5000     | 350 | FC16-S3 | 102    |
|        | Normally Closed               | DW10Z-01  | 40        | 151   | 5000     | 350 | FC10-S3 | 104    |
|        |                               | DW16Z-01  | 80        | 304   | 5000     | 350 | FC16-S3 | 106    |

# Solenoid Valves

## Poppet Type, Unidirectional, 2-position, 2-way

| Symbol | Description   | Model      | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|---|------------|-----------|-------|----------|-----|--------|--------|
|        |   |            | gpm       | l/min | psi      | bar |        |        |
|        | Normally Open, Pilot Operated   | WS06Y-01   | 3.5       | 13    | 5000     | 350 | FC06-2 | 110    |
|        | Normally Open, Pilot Operated, Manual Override, Push Type                               | WS06Y-01M  |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated   | WS08Y-01   | 10        | 38    | 5000     | 350 | FC08-2 | 112    |
|        | Normally Open, Pilot Operated, Manual Override, Push Type                               | WS08Y-01M  |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated   | WS10Y-01   | 20        | 75    | 5000     | 350 | FC10-2 | 114    |
|        | Normally Open, Pilot Operated, Manual Override, Push Type                               | WS10Y-01M  |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated   | WS12Y-01   | 29        | 110   | 5000     | 350 | FC12-2 | 116    |
|        | Normally Open, Pilot Operated, Manual Override, Push Type                               | WS12Y-01M  |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated   | WS16Y-01   | 40        | 150   | 5000     | 350 | FC16-2 | 118    |
|        | Normally Open, Pilot Operated, Manual Override, Push Type                               | WS16Y-01M  |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated with Screen   | WS08Y-30   | 8         | 30    | 5000     | 350 | FC08-2 | 120    |
|        | Normally Open, Pilot Operated with Screen, Manual Override, Push Type                   | WS08Y-30M  |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated, Free Reverse Flow  | WS08YR-01  | 10        | 38    | 5000     | 350 | FC08-2 | 122    |
|        | Normally Open, Pilot Operated, Free Reverse Flow, Manual Override, Push Type            | WS08YR-01M |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated, Free Reverse Flow  | WS10YR-01  | 20        | 75    | 5000     | 350 | FC10-2 | 124    |
|        | Normally Open, Pilot Operated, Free Reverse Flow, Manual Override, Push Type            | WS10YR-01M |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated, Free Reverse Flow  | WS12YR-01  | 29        | 110   | 5000     | 350 | FC12-2 | 126    |
|        | Normally Open, Pilot Operated, Free Reverse Flow, Manual Override, Push Type            | WS12YR-01M |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated, Free Reverse Flow  | WS16YR-01  | 40        | 150   | 5000     | 350 | FC16-2 | 128    |
|        | Normally Open, Pilot Operated, Free Reverse Flow, Manual Override, Push Type            | WS16YR-01M |           |       |          |     |        |        |
|        | Normally Open, Pilot Operated with Screen Free Reverse Flow                             | WS08YR-30  | 8         | 30    | 5000     | 350 | FC08-2 | 130    |
|        | Normally Open, Pilot Operated with Screen Free Reverse Flow, Manual Override, Push Type | WS08YR-30M |           |       |          |     |        |        |

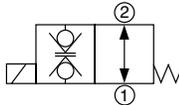
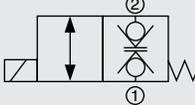
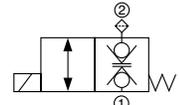
## Solenoid Valves

### Poppet Type, Unidirectional, 2-position, 2-way (cont.)

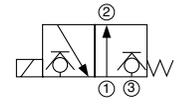
| Symbol | Description   | Model   | Flow Rate  |       | Pressure |      | Cavity | Page # |     |
|--------|---|---|------------|-------|----------|------|--------|--------|-----|
|        |   |   | gpm        | l/min | psi      | bar  |        |        |     |
|        | Normally Closed, Pilot Operated   | WS06Z-01  | 5          | 19    | 5000     | 350  | FC06-2 | 132    |     |
|        | Normally Closed, Pilot Operated, Manual Override, Push Type                                   | WS06Z-01M   |            |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated   | WS08Z-01   | 10    | 38       | 5000 | 350    | FC08-2 | 134 |
|        |   | Normally Closed, Pilot Operated, Manual Override, Screw Type                    | WS08Z-01M  |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated   | WS10Z-01   | 20    | 75       | 5000 | 350    | FC10-2 | 136 |
|        |   | Normally Closed, Pilot Operated, Manual Override, Screw Type                    | WS10Z-01M  |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated   | WS12Z-01   | 29    | 110      | 5000 | 350    | FC12-2 | 138 |
|        |   | Normally Closed, Pilot Operated, Manual Override, Screw Type                    | WS12Z-01M  |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated   | WS16Z-01   | 40    | 150      | 5000 | 350    | FC16-2 | 140 |
|        |   | Normally Closed, Pilot Operated, Manual Override, Screw Type                    | WS16Z-01M  |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated, Manual Override, Pull Type, Spring Return      | WS08Z-01J  | 10    | 38       | 5000 | 350    | FC08-2 | 142 |
|        |   | Normally Closed, Pilot Operated with Screen                                     | WS08Z-30   | 8     | 30       | 5000 | 350    | FC08-2 | 144 |
|        | Normally Closed, Pilot Operated with Screen, Manual Override, Screw Type                      | WS08Z-30M   |            |       |          |      |        |        |     |
|        | Normally Closed, Pilot Operated, Free Reverse Flow  | WS08ZR-01   | 10         | 38    | 5000     | 350  | FC08-2 | 146    |     |
|        | Normally Closed, Pilot Operated, Free Reverse Flow, Manual Override, Screw Type               | WS08ZR-01M  |            |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated, Free Reverse Flow                              | WS10ZR-01  | 20    | 75       | 5000 | 350    | FC10-2 | 148 |
|        |   | Normally Closed, Pilot Operated, Free Reverse Flow, Manual Override, Screw Type | WS10ZR-01M |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated, Free Reverse Flow                              | WS12ZR-01  | 29    | 110      | 5000 | 350    | FC12-2 | 150 |
|        |   | Normally Closed, Pilot Operated, Free Reverse Flow, Manual Override, Screw Type | WS12ZR-01M |       |          |      |        |        |     |
|        |   | Normally Closed, Pilot Operated, Free Reverse Flow                              | WS16ZR-01  | 40    | 150      | 5000 | 350    | FC16-2 | 152 |
|        |   | Normally Closed, Pilot Operated, Free Reverse Flow, Manual Override, Screw Type | WS16ZR-01M |       |          |      |        |        |     |
|        | Normally Closed, Pilot Operated, Free Reverse Flow, Manual Override, Pull Type, Spring Return | WS08ZR-01J  | 10         | 38    | 5000     | 350  | FC08-2 | 154    |     |
|        | Normally Closed, Pilot Operated with Screen, Free Reverse Flow                                | WS08ZR-30   | 8          | 30    | 5000     | 350  | FC08-2 | 156    |     |
|        | Normally Closed, Pilot Operated with Screen, Free Reverse Flow, Manual Override, Screw Type   | WS08ZR-30M  |            |       |          |      |        |        |     |

## Solenoid Valves

### Poppet Type, Bi-directional, 2-position, 2-way

| Symbol  | Description  | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|---|--|-----------|-----------|-------|----------|-----|--------|--------|
|   |  |           | gpm       | l/min | psi      | bar |        |        |
|  | Normally Open, Direct Acting   | WS08V-01  | 5         | 19    | 5000     | 350 | FC08-2 | 158    |
|   | Normally Open, Direct Acting, Manual Override, Push Type               | WS08V-01M |           |       |          |     |        |        |
|  | Normally Closed, Direct Acting   | WS08W-01  | 5         | 19    | 3600     | 250 | FC08-2 | 160    |
|   | Normally Closed, Direct Acting, Manual Override, Push Type             | WS08W-01M |           |       |          |     |        |        |
|   | Normally Closed, Direct Acting   | WS10W-01  | 10.5      | 40    | 5000     | 350 | FC10-2 | 162    |
|   | Normally Closed, Direct Acting, Manual Override, Push Type             | WS10W-01M |           |       |          |     |        |        |
|  | Normally Closed, Direct Acting with Screen                             | WS08W-30  | 5         | 19    | 3600     | 250 | FC08-2 | 164    |
|   | Normally Closed, Direct Acting with Screen, Manual Override, Push Type | WS08W-30M |           |       |          |     |        |        |

### Poppet Type, 2-position, 3-way

| Symbol  | Description  | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|---|--|-----------|-----------|-------|----------|-----|--------|--------|
|   |  |           | gpm       | l/min | psi      | bar |        |        |
|  | Normally Closed, Direct Acting                             | WS08D-51  | 5         | 19    | 4000     | 280 | FC08-3 | 166    |
|   | Normally Closed, Direct Acting, Manual Override, Push Type | WS08D-51M |           |       |          |     |        |        |

## Solenoid Valves

### Spool Type, 2-position, 2-way

| Symbol | Description   | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|---|-----------|-----------|-------|----------|-----|--------|--------|
|        |   |           | gpm       | l/min | psi      | bar |        |        |
|        | Normally Open, Direct Acting                                | WK06V-01  | 4         | 15.2  | 5000     | 350 | FC06-2 | 168    |
|        | Normally Open, Direct Acting, Manual Override Push Type     | WK06V-01M |           |       |          |     |        |        |
|        | Normally Open, Direct Acting                                | WK08V-01  | 5         | 19    | 5000     | 350 | FC08-2 | 170    |
|        | Normally Open, Direct Acting, Manual Override Push Type     | WK08V-01M |           |       |          |     |        |        |
|        | Normally Open, Direct Acting                                | WK10V-01  | 9         | 35    | 5000     | 350 | FC10-2 | 172    |
|        | Normally Open, Direct Acting, Manual Override, Push Type    | WK10V-01M |           |       |          |     |        |        |
|        | Normally Closed, Direct Acting                              | WK06W-01  | 2.5       | 9.5   | 5000     | 350 | FC06-2 | 174    |
|        | Normally Closed, Direct Acting Manual Override, Push Type   | WK06W-01M |           |       |          |     |        |        |
|        | Normally Closed, Direct Acting                              | WK08W-01  | 5         | 19    | 5000     | 350 | FC08-2 | 176    |
|        | Normally Closed, Direct Acting, Manual Override, Screw Type | WK08W-01M |           |       |          |     |        |        |
|        | Normally Closed, Direct Acting                              | WK10W-01  | 9         | 35    | 5000     | 350 | FC10-2 | 178    |
|        | Normally Closed, Direct Acting, Manual Override, Screw Type | WK10W-01M |           |       |          |     |        |        |

### Spool Type, 2-position, 3-way

| Symbol | Description                                | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|--|-----------|-----------|-------|----------|-----|--------|--------|
|        |  |           | gpm       | l/min | psi      | bar |        |        |
|        | Direct Acting                              | WK06C-01  | 4         | 15    | 5000     | 350 | FC06-3 | 180    |
|        | Direct Acting, Manual Override, Push Type  | WK06C-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08C-01  | 5         | 19    | 5000     | 350 | FC08-3 | 182    |
|        | Direct Acting, Manual Override, Push Type  | WK08C-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10C-01  | 8.4       | 32    | 5000     | 350 | FC10-3 | 184    |
|        | Direct Acting, Manual Override, Push Type  | WK10C-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10C-40  | 8.4       | 32    | 5000     | 350 | FC10-3 | 186    |
|        | Direct Acting, Manual Override, Push Type  | WK10C-40M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08D-01  | 5         | 19    | 5000     | 350 | FC08-3 | 188    |
|        | Direct Acting, Manual Override, Push Type  | WK08D-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10D-01  | 8.4       | 32    | 5000     | 350 | FC10-3 | 190    |
|        | Direct Acting, Manual Override, Screw Type | WK10D-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK07L-01  | 2.5       | 10    | 5000     | 350 | FC07-3 | 192    |
|        | Direct Acting, Manual Override, Screw Type | WK07L-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08L-01  | 5         | 19    | 5000     | 350 | FC08-3 | 194    |
|        | Direct Acting, Manual Override, Push Type  | WK08L-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10L-01  | 8.4       | 32    | 5000     | 350 | FC10-3 | 196    |
|        | Direct Acting, Manual Override, Push Type  | WK10L-01M |           |       |          |     |        |        |

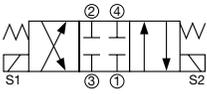
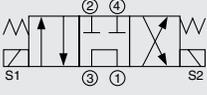
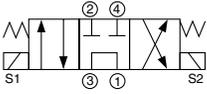
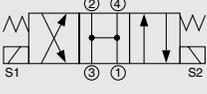
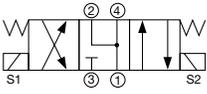
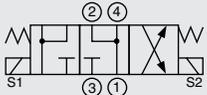
# Solenoid Valves

## Spool Type, 2-position, 4-way

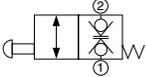
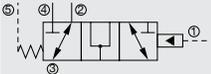
| Symbol | Description                                | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|--------|--|-----------|-----------|-------|----------|-----|--------|--------|
|        |  |           | gpm       | l/min | psi      | bar |        |        |
|        | Direct Acting                              | WK08A-01  | 5         | 19    | 5000     | 350 | FC08-4 | 198    |
|        | Direct Acting, Manual Override, Push Type  | WK08A-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10A-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 200    |
|        | Direct Acting, Manual Override, Push Type  | WK10A-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08K-01  | 4         | 15    | 5000     | 350 | FC08-4 | 202    |
|        | Direct Acting, Manual Override, Push Type  | WK08K-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10K-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 204    |
|        | Direct Acting, Manual Override, Screw Type | WK10K-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10N-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 206    |
|        | Direct Acting, Manual Override, Push Type  | WK10N-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08P-01  | 4         | 15    | 5000     | 350 | FC08-4 | 208    |
|        | Direct Acting, Manual Override, Screw Type | WK08P-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10P-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 210    |
|        | Direct Acting, Manual Override, Screw Type | WK10P-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08R-01  | 5         | 19    | 5000     | 350 | FC08-4 | 212    |
|        | Direct Acting, Manual Override, Push Type  | WK08R-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10R-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 214    |
|        | Direct Acting, Manual Override, Push Type  | WK10R-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08X-01  | 4.5       | 17    | 5000     | 350 | FC08-4 | 216    |
|        | Direct Acting, Manual Override, Screw Type | WK08X-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10X-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 218    |
|        | Direct Acting, Manual Override, Screw Type | WK10X-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK06Y-01  | 2         | 7.6   | 5000     | 350 | FC06-4 | 220    |
|        | Direct Acting, Manual Override, Push Type  | WK06Y-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08Y-01  | 5         | 19    | 5000     | 350 | FC08-4 | 222    |
|        | Direct Acting, Manual Override, Push Type  | WK08Y-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10Y-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 224    |
|        | Direct Acting, Manual Override, Push Type  | WK10Y-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK08Z-01  | 4.5       | 17    | 5000     | 350 | FC08-4 | 226    |
|        | Direct Acting, Manual Override, Push Type  | WK08Z-01M |           |       |          |     |        |        |
|        | Direct Acting                              | WK10Z-01  | 8.4       | 32    | 5000     | 350 | FC10-4 | 228    |
|        | Direct Acting, Manual Override, Screw Type | WK10Z-01M |           |       |          |     |        |        |

## Solenoid Valves

### Spool Type, 3-position, 4-way

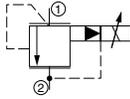
| Symbol   | Description  | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|--|--|-----------|-----------|-------|----------|-----|--------|--------|
|  |  |           | gpm       | l/min | psi      | bar |        |        |
|    | Direct Acting  | WK06E-01  | 3         | 11.4  | 5000     | 350 | FC06-4 | 230    |
|  | Direct Acting, Manual Override                               | WK06E-01M |           |       |          |     |        |        |
|  | Direct Acting  | WK08E-01  | 5         | 19    | 5000     | 350 | FC08-4 | 232    |
|  | Direct Acting, Manual Override, Push/Pull Type, Non-Detented | WK08E-01M |           |       |          |     |        |        |
|  | Direct Acting, Manual Override, Push/Pull Type, Detented     | WK08E-01A |           |       |          |     |        |        |
|  | Direct Acting  | WK10E-01  | 6         | 23    | 5000     | 350 | FC10-4 | 234    |
|  | Direct Acting, Manual Override, Push/Pull Type, Non-Detented | WK10E-01M |           |       |          |     |        |        |
| Direct Acting, Manual Override, Push/Pull Type, Detented                           | WK10E-01A  |           |           |       |          |     |        |        |
|    | Direct Acting  | WK06G-01  | 2         | 7.6   | 5000     | 350 | FC06-4 | 236    |
|  | Direct Acting, Manual Override                               | WK06G-01M |           |       |          |     |        |        |
|   | Direct Acting  | WK10G-01  | 6         | 23    | 5000     | 350 | FC10-4 | 238    |
|  | Direct Acting, Manual Override, Push/Pull Type, Non-Detented | WK10G-01M |           |       |          |     |        |        |
|  | Direct Acting, Manual Override, Push/Pull Type, Detented     | WK10G-01A |           |       |          |     |        |        |
|  | Direct Acting  | WK06H-01  | 2.4       | 9     | 5000     | 350 | FC06-4 | 240    |
|  | Direct Acting, Manual Override                               | WK06H-01M |           |       |          |     |        |        |
|  | Direct Acting  | WK10H-01  | 6         | 23    | 5000     | 350 | FC10-4 | 242    |
|  | Direct Acting, Manual Override, Push/Pull Type, Non-Detented | WK10H-01M |           |       |          |     |        |        |
|  | Direct Acting, Manual Override, Push/Pull Type, Detented     | WK10H-01A |           |       |          |     |        |        |
|  | Direct Acting  | WK06J-01  | 3         | 11.4  | 5000     | 350 | FC06-4 | 244    |
|  | Direct Acting, Manual Override                               | WK06J-01M |           |       |          |     |        |        |
|  | Direct Acting  | WK08J-01  | 5         | 19    | 5000     | 350 | FC08-4 | 246    |
|  | Direct Acting, Manual Override, Push/Pull Type, Non-Detented | WK08J-01M |           |       |          |     |        |        |
|  | Direct Acting, Manual Override, Push/Pull Type, Detented     | WK08J-01A |           |       |          |     |        |        |
|  | Direct Acting  | WK10J-01  | 6         | 23    | 5000     | 350 | FC10-4 | 248    |
|  | Direct Acting, Manual Override, Push/Pull Type, Non-Detented | WK10J-01M |           |       |          |     |        |        |
|  | Direct Acting, Manual Override, Push/Pull Type, Detented     | WK10J-01A |           |       |          |     |        |        |
|  | Direct Acting  | WK10T-01  | 6         | 23    | 5000     | 350 | FC10-4 | 250    |
|  | Direct Acting, Manual Override, Push/Pull Type, Non-Detented | WK10T-01M |           |       |          |     |        |        |
|  | Direct Acting, Manual Override, Push/Pull Type, Detented     | WK10T-01A |           |       |          |     |        |        |

## Directional Control Valves

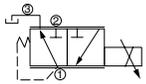
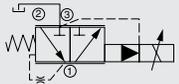
| Symbol  | Description   | Model      | Flow Rate |       | Pressure |     | Cavity  | Page # |
|---|---|------------|-----------|-------|----------|-----|---------|--------|
|   |   |            | gpm       | l/min | psi      | bar |         |        |
|  | Poppet Bi-Directional, Push to Operate, Manually Operated | WS08WM-01  | 5         | 20    | 3600     | 250 | FC08-2  | 254    |
|  | Piloted 3-Way Spool, Hydraulically Operated               | HPM45SE-01 | 70        | 265   | 5000     | 350 | FCM45-5 | 256    |

## Proportional Valves

### Pressure Relief

| Symbol   | Description                | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|--|----------------------------|-----------|-----------|-------|----------|-----|--------|--------|
|  |                            |           | gpm       | l/min | psi      | bar |        |        |
|  | Pilot Operated, Spool Type | PDB08P-01 | 16        | 60    | 5000     | 350 | FC08-2 | 260    |
|  | Pilot Operated, Spool Type | PDB10P-01 | 31        | 120   | 5000     | 350 | FC10-2 | 262    |
|  | Pilot Operated, Spool Type | PDB12P-01 | 53        | 200   | 5000     | 350 | FC12-2 | 264    |
|  | Pilot Operated, Spool Type | PDB16P-01 | 79        | 300   | 5000     | 350 | FC16-2 | 266    |

### Pressure Reducing / Relieving

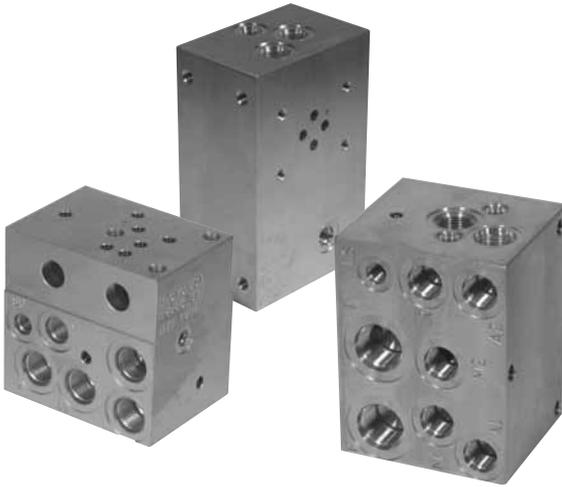
| Symbol  | Description                | Model     | Flow Rate |       | Pressure |     | Cavity | Page # |
|---|----------------------------|-----------|-----------|-------|----------|-----|--------|--------|
|   |                            |           | gpm       | l/min | psi      | bar |        |        |
|  | Direct Acting, Spool Type  | PDR08-01  | 3         | 12    | 5000     | 350 | FC08-3 | 268    |
|  | Pilot Operated, Spool Type | PDR08P-01 | 16        | 60    | 5000     | 350 | FC08-3 | 270    |
|   |                            | PDR10P-01 | 21        | 80    | 5000     | 350 | FC10-3 | 272    |

## Pumps

### Manually Operated

| Symbol  | Description                  | Model   | Displacement per Stroke |     | Output Max Pressure |     | Cavity | Page # |
|---|------------------------------|---------|-------------------------|-----|---------------------|-----|--------|--------|
|   |                              |         | in                      | cm  | psi                 | bar |        |        |
|  | Hand Pump, Free Pivot Handle | MP10-01 | 0.5                     | 8.2 | 3000                | 207 | FC10-2 | 276    |
|   | Hand Pump, Flange Mount      | MP10-02 |                         |     |                     |     |        | 278    |

## ***Integrated Manifolds*** ***Cost Effective Solutions for Mobile and Industrial Applications***



- Simplifies system procurement processing and reduces acquisition costs.
- Consolidates hydraulic control system into compact and neat assembly, saving space and weight
- Aluminum, steel or ductile iron manifold blocks
- 100% function testing
- Reduced installation time and system maintenance
- Minimizes external connections
- Reduces external leakage

### ***Combining multiple cartridge valves and other hydraulic components in Integrated Manifolds offer both mobile and industrial customers' substantial advantages:***

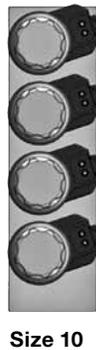
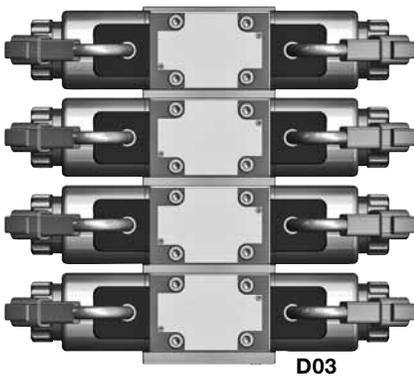
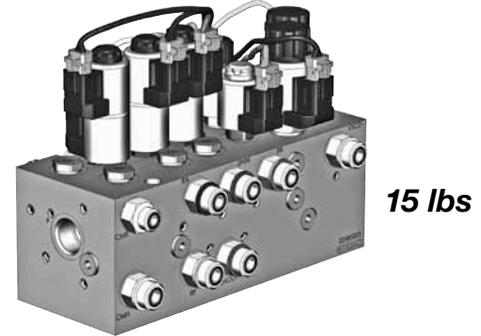
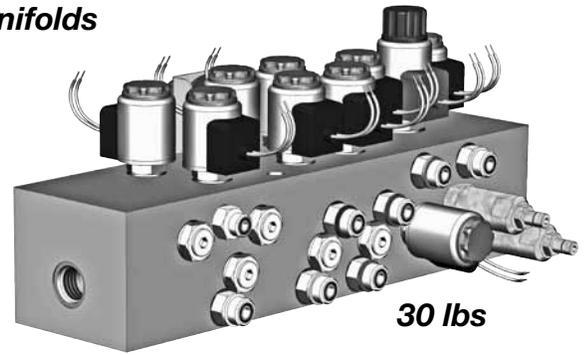
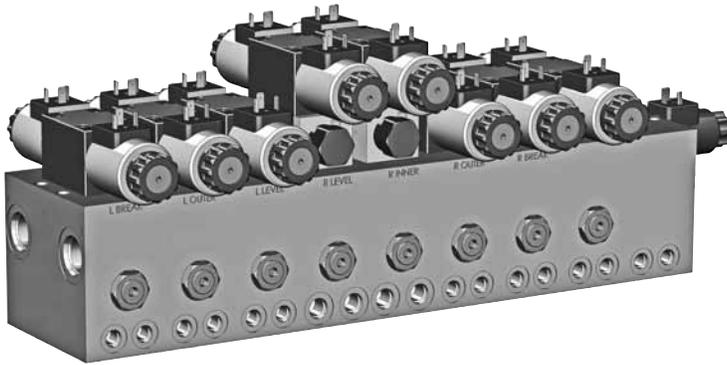


- Incorporating cartridge valves and other HYDAC's hydraulic components into Integrated manifolds provides a single source and simplifies system procurement processing, thus reducing acquisition cost.
- Complete system manifolds provide for compact and neat assembly, saving space and weight. They are designed to meet the performance and installation needs of the specific machine. By eliminating hoses, tubes and fittings necessary when traditional hydraulic valves are used, manifold systems dramatically reduce installation costs and system maintenance.
- Complete control system in a single manifold reduces potential for external leakage to ensure a cleaner and safer application environment.
- All aluminum manifolds are anodized for cleanliness, added surface hardening, and corrosion resistance. Ductile iron or steel manifolds are zinc plated on customer's requirements.



- A customer/product specific assembly drawing is prepared for every manifold.
- Every manifold is hydraulic function tested to a specific test procedure.
- HYDAC will assemble customer specified fittings or other components on request where feasible.

## Size and Weight Saving Alternatives for Integrated Manifolds



| Weight Saving Example |      |
|-----------------------|------|
| Size 06               | 100% |
| Size 08               | 160% |
| Size 10               | 200% |
| D03                   | 400% |

**HYDAC provides support services for manifold makers**

### Application and Design Assistance

- To machine builders
- Local integrated circuit designers

### 2D and 3D Cartridge Valves Library

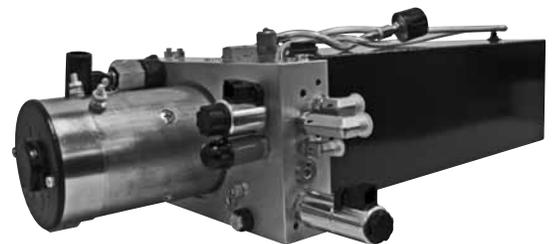
- Library includes cartridges and coils to facilitate manifold design and service documentation.
- DXF and DWG formats available
- CD available on request

### Manifold Accessory Hardware

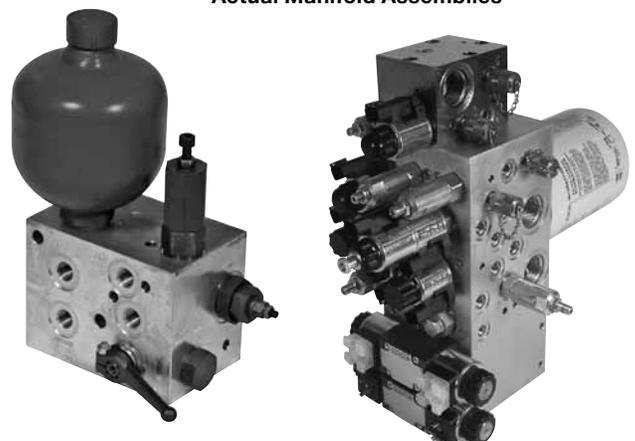
- We provide our customers with a variety of hardware commonly used in custom integrated manifolds, such as SAE plugs, cavity plugs, orifice plugs, pilot pistons.

### Cavity Forming Tools

- Roughing tools are made of high-speed steel
- Finishing tools have carbide tips and are suitable for production of aluminum and steel blocks.



Actual Manifold Assemblies





## Overview

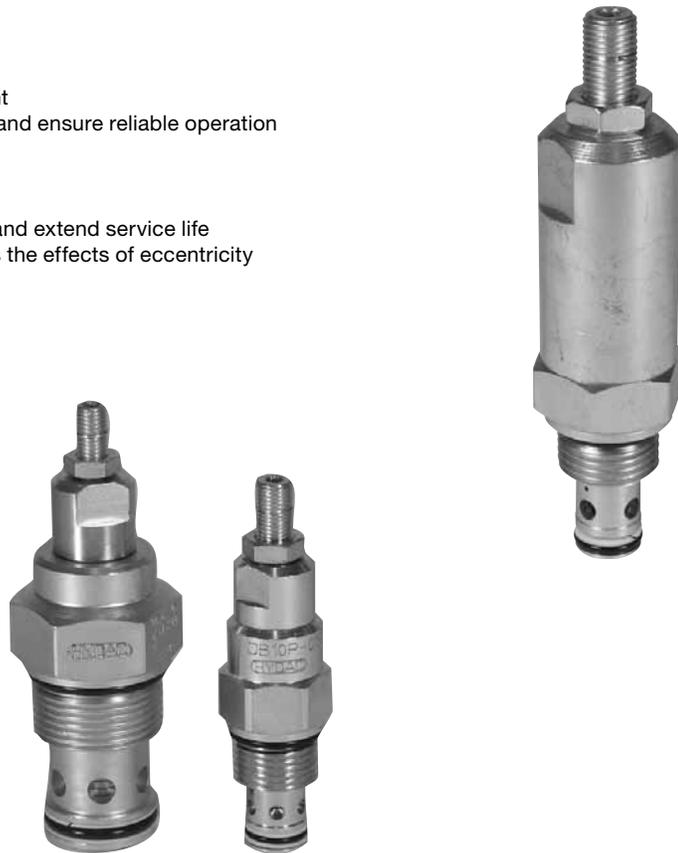
HYDAC offers a wide range of direct acting and pilot operated Relief and Reducing Valves. In general, the direct acting valves are faster in response while pilot operated valves have flatter pressure/flow characteristics.

**HYDAC Relief Valves** are available in direct acting poppet and pilot operated spool types with optional pressure adjustment ranges up to 6000 psi (420 bar). Models are available for flow rates up to 80 gpm (300 l/min).

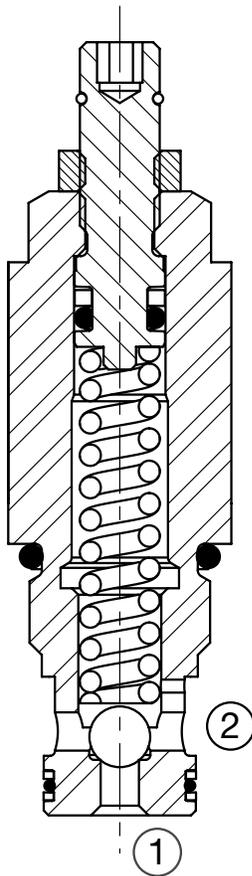
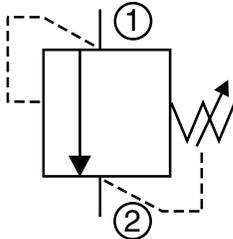
**HYDAC Pressure Reducing Valves** are direct acting and pilot operated spool types with optional pressure adjustment ranges up to 5000 psi (350 bar). They have been designed to maintain a constant secondary regulated pressure regardless of pressure variation in the primary system and have an additional relieving feature for the secondary circuit protection. Models are available for flow rates up to 26 gpm (100 l/min).

## Features

- Adjustable under full pressure
- Stroke limiting device for enhanced safety
- Positive stop to prevent spring from over adjustment
- Screens to protect pilot orifice from contamination and ensure reliable operation
- Variety of adjustment mechanism options
- Fast response with excellent stability
- All external surfaces zinc-plated
- Hardened poppets or spools ensure minimal wear and extend service life
- One piece body maximizes reliability and minimizes the effects of eccentricity
- Industry common cavity-compact size



## DB06A-01 Pressure Relief, Direct Acting, Ball Type Up to 4 gpm (15 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, direct acting, ball type relief valve intended for use as pressure limiting device in hydraulic circuits requiring low internal leakage and fast response.

### Operation

The DB06A blocks flow from 1 to 2 until the predetermined pressure setting is reached at port 1 to lift the spring opposed ball from its seat, allowing flow from port 1 to port 2. Pressure at port 2 is directly additive to valve pressure setting. Flow from port 2 to port 1 is checked.

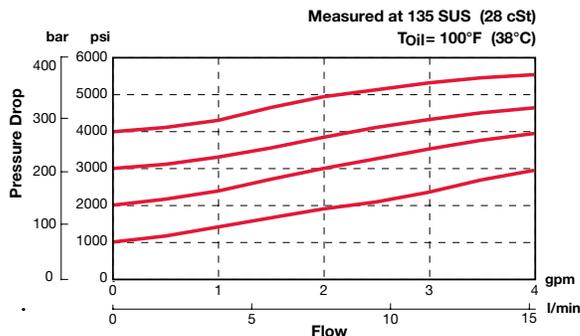
### Features

- Spring ranges up to 5000 psi (350 bar)
- Positive stop prevents spring from over adjustment
- Adjustment screw cannot be backed out of the valve
- Adjustable under full pressure
- Fast response
- All external surfaces zinc-plated
- Hardened ball to ensure minimal wear and extend service life

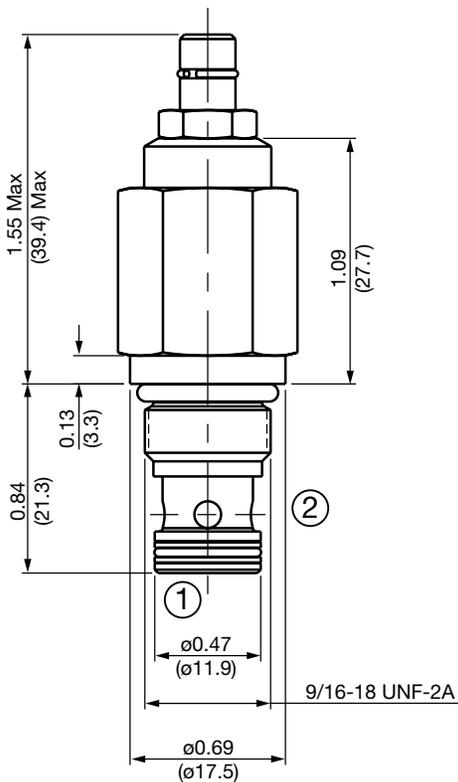
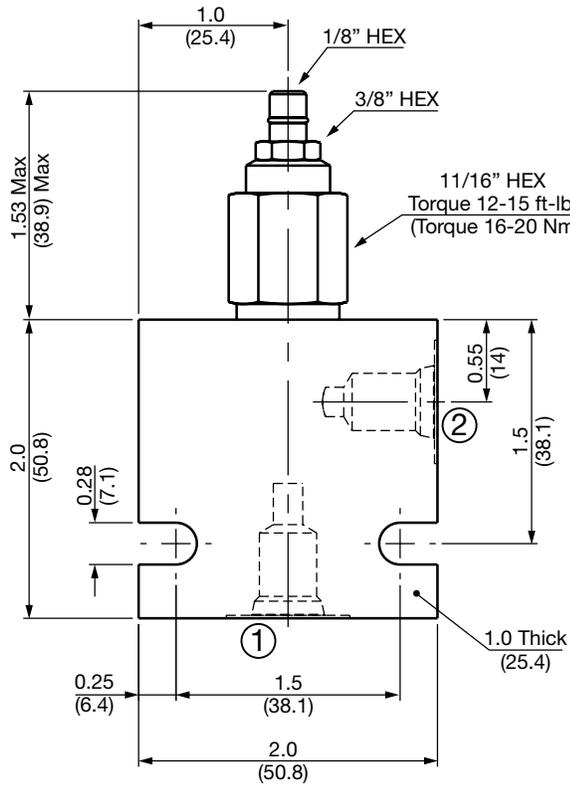
### Specifications

|                            |  |
|----------------------------|--|
| Operating Pressure         | 5000 psi (350 bar)   |
| Maximum Flow Rate          | 4 gpm (15 l/min)   |
| Internal Leakage           | 5 drops/min maximum to 75% of nominal setting  |
| Optional Pressure Ranges   | 0 to 3000 psi (0 to 207 bar)<br>0 to 5000 psi (0 to 350 bar)   |
| Reseat Pressure (Nominal)  | 80% of crack pressure  |
| Fluid Operating Temp Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility        | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                 | 21/19/16 or cleaner per (ISO 4406)   |
| Installation               | No orientation restrictions  |
| Cavity                     | FC06-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools               | Rougher: 02582046<br>Finisher: 02582047  |
| Cartridge Weight           | 0.15 lb (68 g)   |
| Cartridge Material         | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid Thermoplastic Polyester back-up rings. |
| Seal Kits                  | Buna-N P/N: 02610184<br>Viton® P/N: 02610185   |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**DB06A-01-AS4-N-300 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum Body
- SS4 = SAE-4 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 180 = 0 to 1800 psi (0 to 124 bar)
- 300 = 0 to 3000 psi (0 to 207 bar)
- 500 = 0 to 5000 psi (0 to 350 bar)

### Adjustment Options

- V = Allen Head (Hex 1/8")

### Setting

- blank = Set at 50% maximum pressure for the range
- XXX = Desired psi ÷ 10

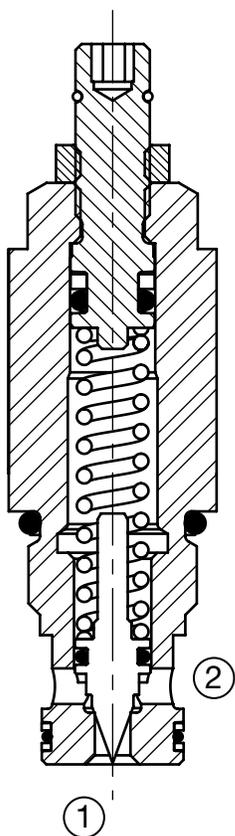
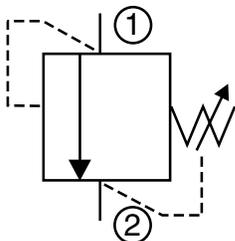
Example: 100 = 1000 psi

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## DB06C-01 Pressure Relief, Direct Acting, Poppet Type Up to 5 gpm (19 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, direct acting, poppet type relief valve intended for use as pressure limiting device in hydraulic circuits requiring low internal leakage and fast response.

### Operation

The DB06C blocks flow from 1 to 2 until the predetermined pressure setting is reached at port 1 to lift the spring opposed poppet from its seat, allowing flow from port 1 to port 2. Pressure at port 2 is directly additive to valve pressure setting. Flow from port 2 to port 1 is checked.

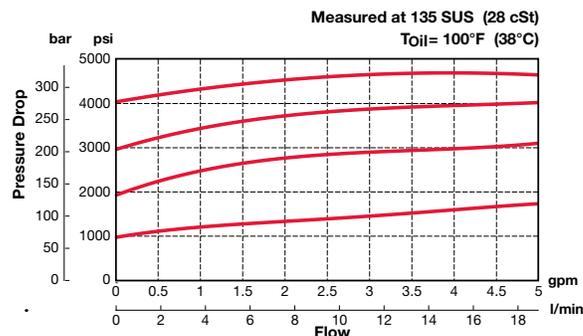
### Features

- Spring ranges up to 5000 psi (350 bar)
- Positive stop prevents spring from over adjustment
- Adjustment screw cannot be backed out of the valve
- Adjustable under full pressure
- Fast response
- All external surfaces zinc-plated
- Hardened poppet to ensure minimal wear and extend service life

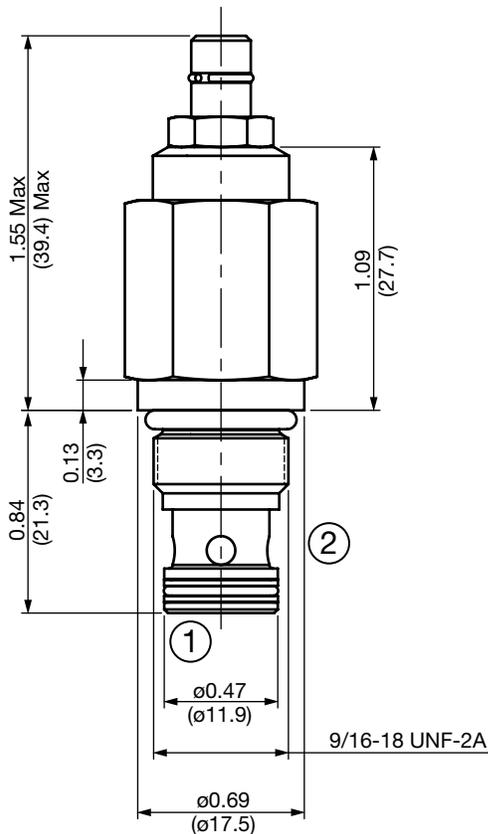
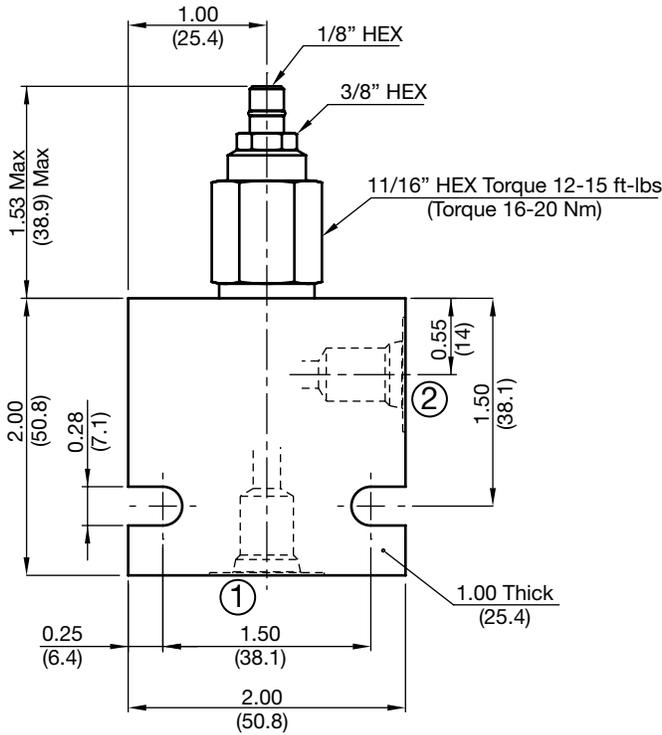
### Specifications

|                            |  |
|----------------------------|--|
| Operating Pressure         | 5000 psi (350 bar)   |
| Maximum Flow Rate          | 5 gpm (19 l/min)   |
| Internal Leakage           | 5 drops/min maximum to 75% of nominal setting  |
| Optional Pressure Ranges   | 0 to 1800 psi (0 to 124 bar)<br>0 to 3000 psi (0 to 207 bar)<br>1500 to 5000 psi (103 to 350 bar)  |
| Reseat Pressure (Nominal)  | 80% of crack pressure  |
| Fluid Operating Temp Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility        | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                 | 21/19/16 or cleaner per (ISO 4406)   |
| Installation               | No orientation restrictions  |
| Cavity                     | FC06-2 (see Line Bodies & Cavities section)  |
| Cavity Tools               | Rougher: 02582046<br>Finisher: 02582047  |
| Cartridge Weight           | 0.15 lb (68 g)   |
| Cartridge Material         | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid Thermoplastic Polyester back-up rings. |
| Seal Kits                  | Buna-N P/N: 02610184<br>Viton® P/N: 02610185   |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**DB06C-01-AS4-N-180 V 100**

Valve Model \_\_\_\_\_

Body & Ports \_\_\_\_\_

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum Body
- SS4 = SAE-4 Ports, steel Body

Seals \_\_\_\_\_

- N = Buna-N
- V = Viton®

Adjustment Range \_\_\_\_\_

- 180 = 0 to 1800 psi (0 to 124 bar)
- 300 = 0 to 3000 psi (0 to 207 bar)
- 500 = 1500 to 5000 psi (103 to 350 bar)

Adjustment Options \_\_\_\_\_

- V = Allen Head (Hex 1/8")

Setting \_\_\_\_\_

- blank = Set at 50% maximum pressure for the range
- XXX = Desired psi ÷ 10

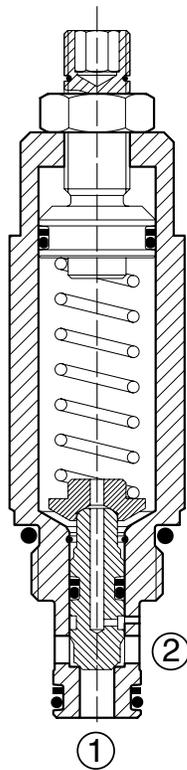
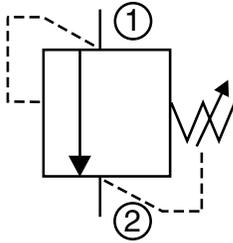
Example: 100 = 1000 psi

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## DB08A-01 Pressure Relief, Direct Acting, Poppet Type 10 gpm (38 l/min) • 6000 psi (420 bar)



### Description

A screw-in cartridge, direct acting, poppet type relief valve intended for use as pressure limiting device in hydraulic circuits which require low internal leakage and fast response to pressure changes.

### Operation

The DB08A blocks flow from port 1 to port 2 until the pressure setting is reached at port 1 to lift the spring opposed poppet from its seat, allowing flow from port 1 to port 2. Pressure at port 2 is directly additive to valve pressure setting. Flow from port 2 to port 1 is checked.

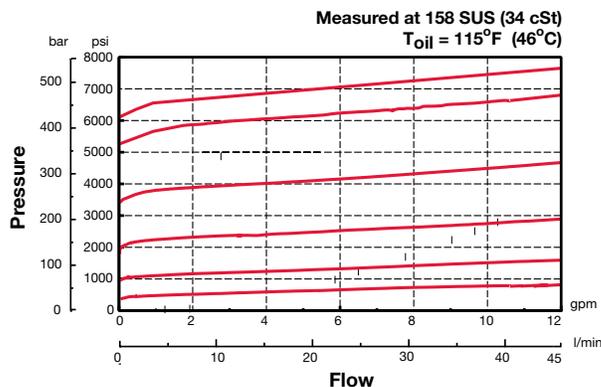
### Features

- Spring ranges up to 6000 psi (420 bar)
- Positive stop prevents spring from over adjustment (*options V,H*)
- Adjustable under full pressure
- Stroke limiting device for enhanced safety
- Fast response
- All external surfaces zinc-plated
- Hardened poppet to ensure minimal wear and extend service life
- One piece body maximizes reliability and minimizes the effects of eccentricity
- Industry common cavity

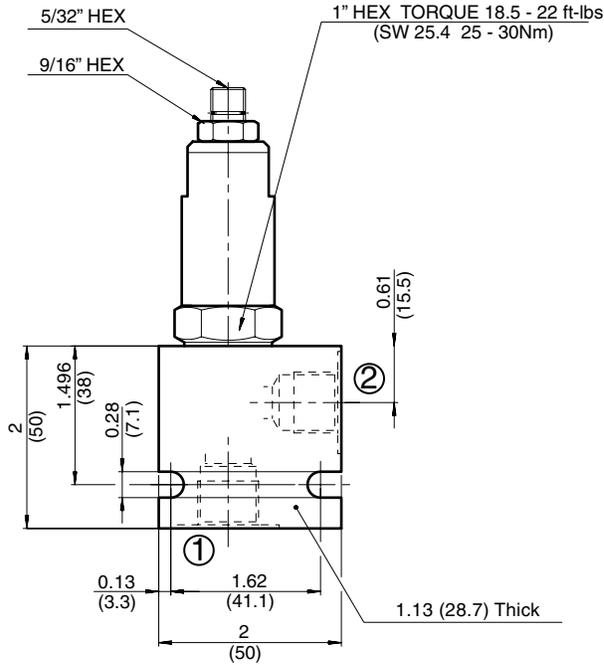
### Specifications

|   |  |
|---|--|
| Operating Pressure  | 6000 psi (420 bar)   |
| Nominal Flow  | 10 gpm (38 l/min)  |
| Internal Leakage  | 5 drops/min. (0.25 cc/min) max. to 80% of nominal setting  |
| Reseat Pressure (Nominal)   | 80% of crack pressure  |
| Optional Pressure Ranges  | 55 to 500 psi (4 to 35 bar)<br>95 to 900 psi (6.5 to 60 bar)<br>200 to 1800 psi (14 to 125 bar)<br>370 to 3300 psi (26 to 230 bar)<br>560 to 5000 psi (39 to 350 bar)<br>670 to 6000 psi (47 to 420 bar) |
| % of Spring Pressure Range Actuated at 1 Revolution ( <i>Adjustment Type V, H</i> ) | 18%  |
| Fluid Operating Temp. Range   | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)   |
| Fluid Compatibility   | Mineral-based or synthetics with lubricating properties  |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration  | 21/19/16 or cleaner (per ISO 4406). Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation  | No orientation restrictions  |
| Cavity  | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools  | Rougher: P/N: 02580090<br>Finisher: P/N: 02580091  |
| Cartridge Weight  | 0.49 Lbs. (0.220 kg)   |
| Cartridge Material  | Steel with hardened work surfaces. Zinc-plated exposed surfaces. Anodized aluminum knobs. ( <i>option H</i> ) Buna N or Viton® o-rings, and PTFE back-up rings.  |
| Seal Kits   | Buna-N P/N: 03033920<br>Viton® P/N: 03051756   |

### Performance



## Dimensions



## Model Code

**DB08A-01-C-N-330 V 300**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 55 to 500 psi (4 to 35 bar)
- 090 = 95 to 900 psi (6.5 to 60 bar)
- 180 = 200 to 1800 psi (14 to 125 bar)
- 330 = 370 to 3300 psi (26 to 230 bar)
- 500 = 560 to 5000 psi (39 to 350 bar)
- 600 = 670 to 6000 psi (47 to 420 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

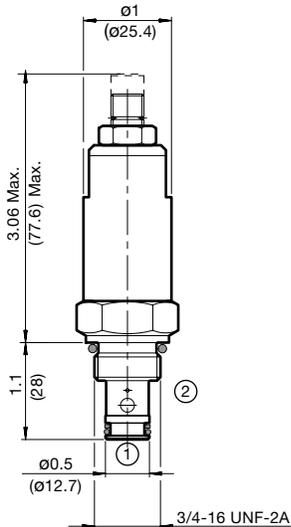
### Setting (optional)

- (omit)* = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

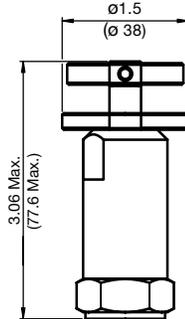
*Example: 300 = 3000 psi*

## Adjustment Options

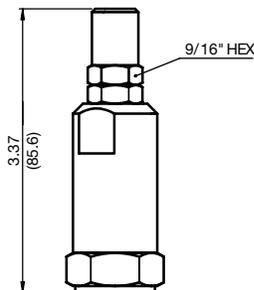
### 'V' - Allen Head (std)



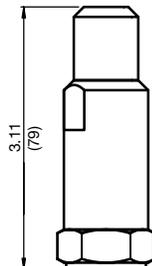
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



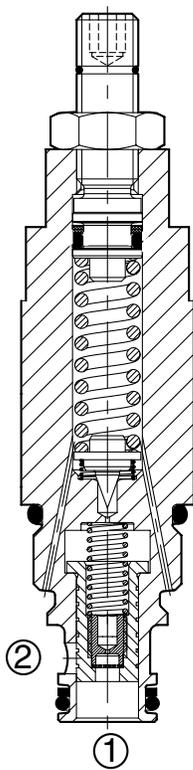
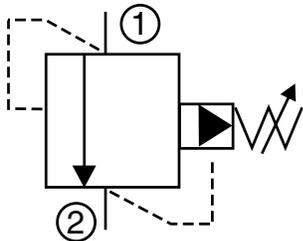
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.00 lb (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DB08P-01 Pressure Relief, Pilot Operated, Spool Type 16 gpm (60 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, pilot operated (two stage), spool type relief valve intended for use as a pressure limiting device in hydraulic circuits requiring fast response and low pressure rise over a wide flow range.

### Operation

The DB08P blocks flow from port 1 to port 2 until the predetermined pressure setting is reached at port 1 to lift the spring opposed pilot poppet off its seat, creating a low flow and a pressure drop across the orifice in the main spool. This allows the main spool to shift, opening port 1 to port 2. Pressure at port 2 is directly additive to valve pressure setting.

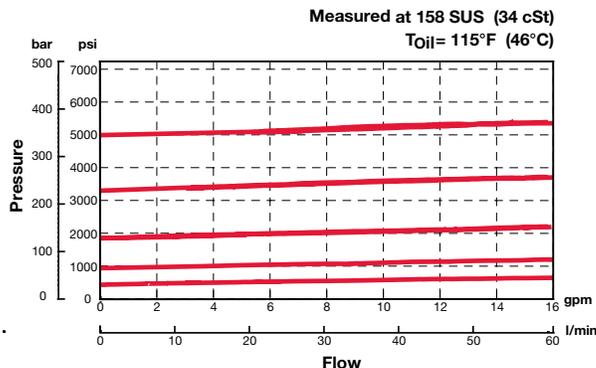
### Features

- Spring ranges up to 5000 psi (350 bar)
- Positive stop prevents spring from over adjustment (*options V,H*)
- Adjustable under full pressure
- One-piece body maximizes reliability & minimizes the effects of eccentricity
- Low pressure rise over flow range
- Screen protected pilot orifice to enhance safety
- Fast response with excellent stability
- All external surfaces zinc-plated
- Hardened spool & pilot poppet to ensure minimal wear & extend service life
- Industry common cavity

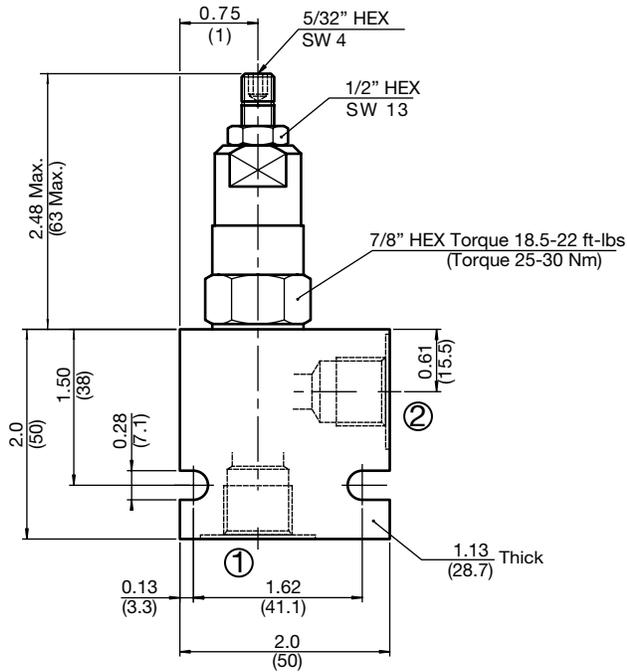
### Specifications

|   |   |
|---|---|
| Operating Pressure  | 5000 psi (350 bar)  |
| Nominal Flow  | 16 gpm (60 l/min)   |
| Internal Leakage  | less than 30.5 cu in/min at 5000 psi<br>(0.5 l/min at 350 bar)  |
| Reseat Pressure (Nominal)   | 90% of crack pressure   |
| Optional Pressure Ranges  | 60 to 500 psi (4 to 35 bar)<br>60 to 900 psi (4 to 60 bar)<br>60 to 1800 psi (4 to 125 bar)<br>60 to 3300 psi (4 to 230 bar)<br>60 to 5000 psi (4 to 350 bar)           |
| % of Spring Pressure Range Actuated at 1 Revolution<br>(Adjustment Type V, H) | 24%   |
| Fluid Operating Temp. Range   | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility   | Mineral-based or synthetics with lubricating properties   |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation  | No orientation restrictions   |
| Cavity  | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools  | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight  | 0.31 Lbs. (0.14 kg)   |
| Cartridge Material  | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. ( <i>option H</i> )<br>Buna N or Viton® o-rings and PTFE back-up rings. |
| Seal Kits   | Buna-N P/N: 03033920<br>Viton® P/N: 03051756  |

### Performance



## Dimensions



## Model Code

**DB08P-01-C-N-330 V 300**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 60 to 500 psi (4 to 35 bar)
- 090 = 60 to 900 psi (4 to 60 bar)
- 180 = 60 to 1800 psi (4 to 125 bar)
- 330 = 60 to 3300 psi (4 to 230 bar)
- 500 = 60 to 5000 psi (4 to 350 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

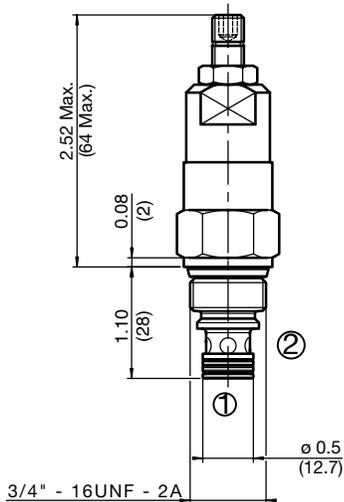
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

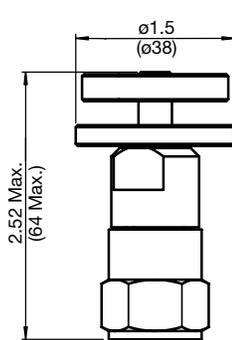
Example: 300 = 3000 psi

## Adjustment Options

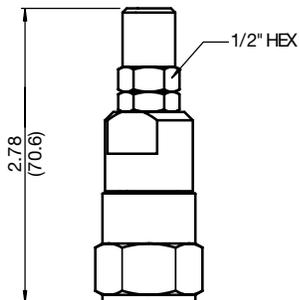
### 'V' - Allen Head (std)



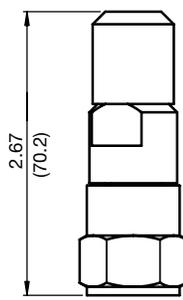
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



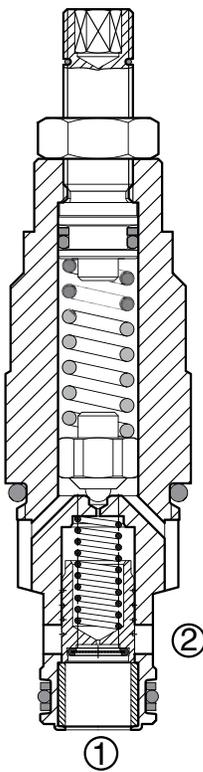
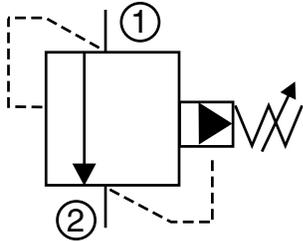
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.00 lb (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DB10P-01 Pressure Relief, Pilot Operated, Spool Type Up to 32 gpm (120 l/min) • 6000 psi (420 bar)



### Description

A screw-in cartridge, pilot operated (two stage), spool type relief valve intended for use as a pressure limiting device in hydraulic circuits requiring fast response and low pressure rise over a wide flow range.

### Operation

The DB10P blocks flow from port 1 to port 2 until the pressure setting is reached at port 1 to lift the pilot poppet creating a pressure drop across the main spool. This allows the main spool to shift, opening port 1 to port 2. Pressure at port 2 is directly additive to valve pressure setting.

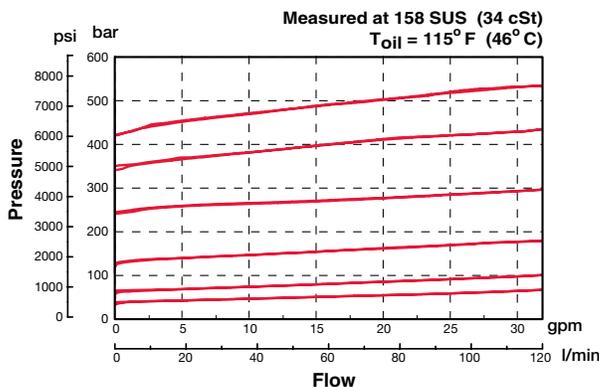
### Features

- Spring ranges up to 6000 psi (420 bar)
- Positive stop prevents spring from over adjustment (options V,H)
- Adjustable under full pressure
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Screen protected control orifice to enhance safety
- Fast response with excellent stability
- All external surfaces zinc-plated
- Hardened spool & pilot poppet to ensure minimal wear & extend service life
- Industry common cavity

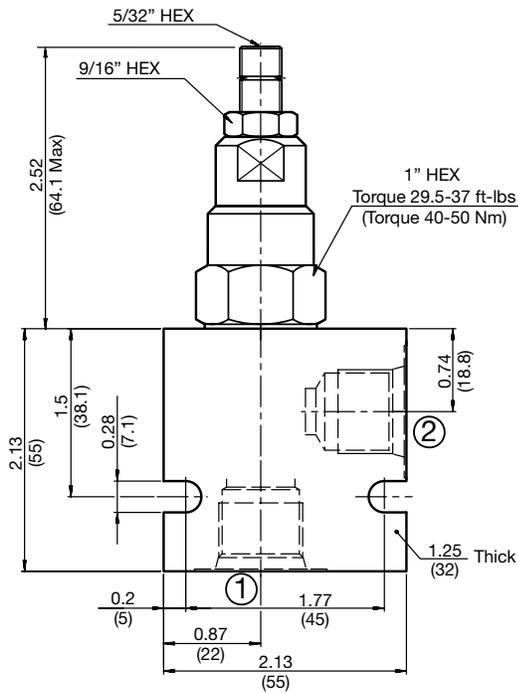
### Specifications

|  |  |
|--|--|
| Operating Pressure   | 6000 psi (420 bar)   |
| Nominal Flow   | 32 gpm (120 l/min)   |
| Internal Leakage   | less than 30.5 cu in/min at 5000 psi<br>(0.5 l/min at 350 bar)   |
| Reseat Pressure (Nominal)  | 90% of crack pressure  |
| Optional Pressure Ranges   | 60 to 500 psi (4 to 35 bar)<br>60 to 900 psi (4 to 60 bar)<br>60 to 1800 psi (4 to 125 bar)<br>60 to 3300 psi (4 to 230 bar)<br>60 to 5000 psi (4 to 350 bar)<br>60 to 6000 psi (4 to 420 bar) |
| % of Spring Pressure Range Actuated at 1 Revolution (Adjustment Type V, H) | 24%  |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)   |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties  |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration   | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .   |
| Installation   | No orientation restrictions  |
| Cavity   | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools   | Rougher: 02580274<br>Finisher: 02580247  |
| Cartridge Weight   | 0.44 Lbs. (0.200 kg)   |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings and PTFE back-up rings.                                 |
| Seal Kits  | Buna-N P/N: 03033872<br>Viton® P/N: 03051757   |

### Performance



## Dimensions



## Model Code

**DB10P-01-C-N-180 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 60 to 500 psi (4 to 35 bar)
- 090 = 60 to 900 psi (4 to 60 bar)
- 180 = 60 to 1800 psi (4 to 125 bar)
- 330 = 60 to 3300 psi (4 to 230 bar)
- 500 = 60 to 5000 psi (4 to 350 bar)
- 600 = 60 to 6000 psi (4 to 420 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

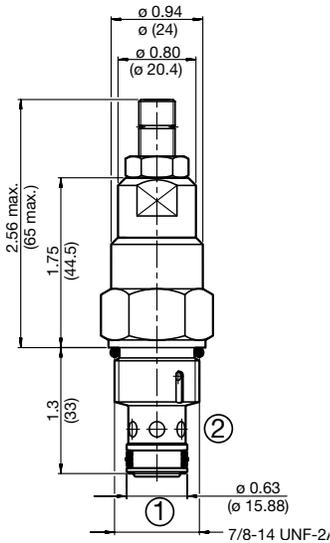
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

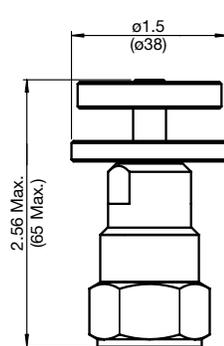
Example: 300 = 3000 psi

## Adjustment Options

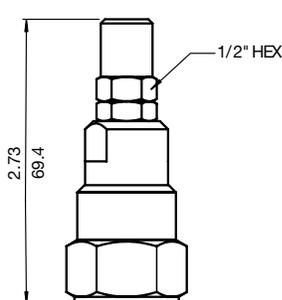
### 'V' - Allen Head (std)



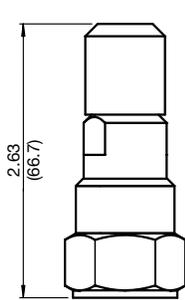
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



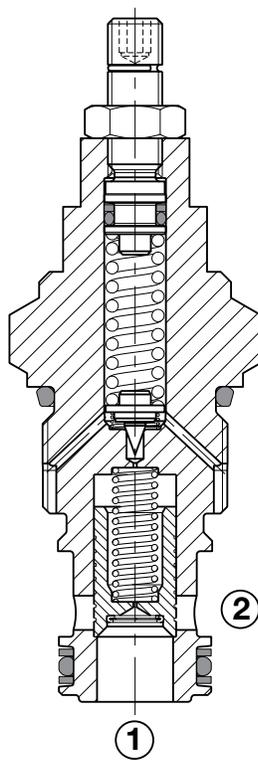
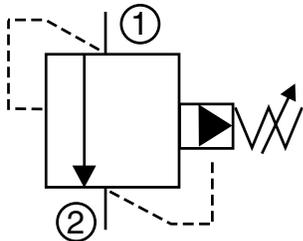
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lb (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lb (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DB12P-01 Pressure Relief, Pilot Operated, Spool Type Up to 53 gpm (200 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, pilot operated (two stage), spool type relief valve intended for use as pressure limiting device in hydraulic circuits requiring fast response and low pressure rise in a wide flow range.

### Operation

The DB12P blocks flow from port 1 to port 2 until the pressure setting is reached at port 1 to lift the pilot poppet, creating a pressure drop across the main spool. This allows the main spool to shift, opening port 1 to port 2. Pressure at port 2 is directly additive to valve pressure setting.

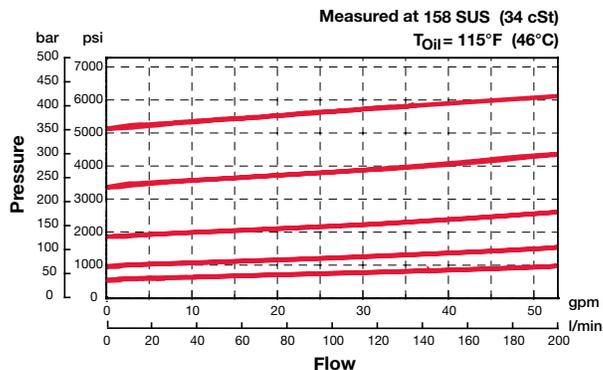
### Features

- Spring ranges up to 5000 psi (350 bar)
- Positive stop prevents spring from over adjustment (options V,H)
- Adjustable under full pressure
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Low pressure drop due to an optimized flow-path
- Screen protected pilot control orifice to enhance safety
- Fast response with excellent stability
- All external surfaces zinc-plated
- Hardened spool & pilot poppet to ensure minimal wear & extend service life
- Industry common cavity

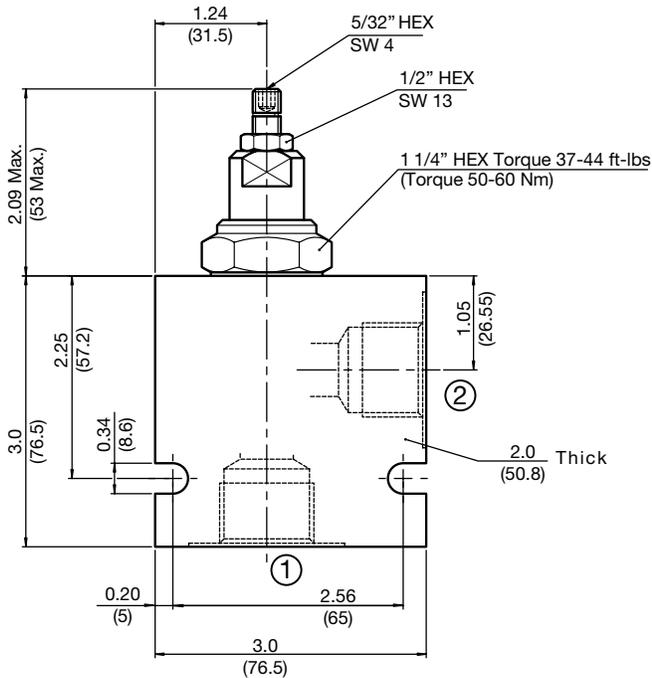
### Specifications

|  |   |
|--|---|
| Operating Pressure   | 5000 psi (350 bar)  |
| Nominal Flow   | 53 gpm (200 l/min)  |
| Internal Leakage   | less than 30.5 cu in/min at 5000 psi<br>(0.5 l/min at 350 bar)  |
| Reseat Pressure (Nominal)  | 90% of crack pressure   |
| Optional Pressure Ranges   | 45 to 500 psi (3 to 35 bar)<br>45 to 900 psi (3 to 60 bar)<br>45 to 1800 psi (3 to 125 bar)<br>60 to 3300 psi (4 to 230 bar)<br>60 to 5000 psi (4 to 350 bar)   |
| % of Spring Pressure Range Actuated at 1 Revolution (Adjustment Type V, H) | 24%   |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration   | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation   | No orientation restrictions   |
| Cavity   | FC12-2 (see Line Bodies & Cavities section)   |
| Cavity Tools   | Rougher: 02580667<br>Finisher: 02580668   |
| Cartridge Weight   | 0.59 Lbs. (0.270 kg)  |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits  | Buna-N FS122-N P/N: 03071298<br>Viton® FS122-V P/N: 03071299  |

### Performance



## Dimensions



## Model Code

**DB12P-01-C-N-180 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS12 = SAE-12 ports, aluminum body
- SS12 = SAE-12 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 45 to 500 psi (3 to 35 bar)
- 090 = 45 to 900 psi (3 to 60 bar)
- 180 = 45 to 1800 psi (3 to 125 bar)
- 330 = 60 to 3300 psi (4 to 230 bar)
- 500 = 60 to 5000 psi (4 to 350 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

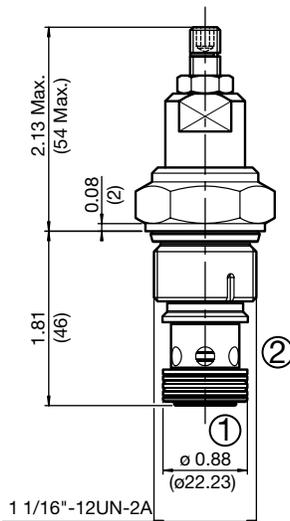
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

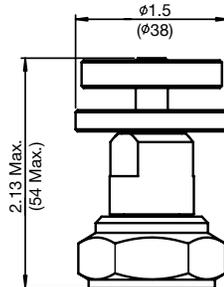
Example: 300 = 3000 psi

## Adjustment Options

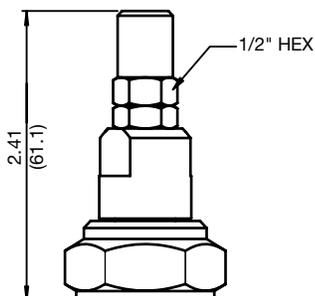
### 'V' - Allen Head (std)



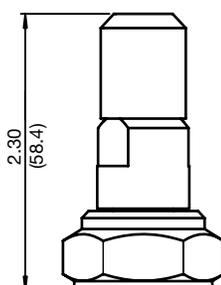
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



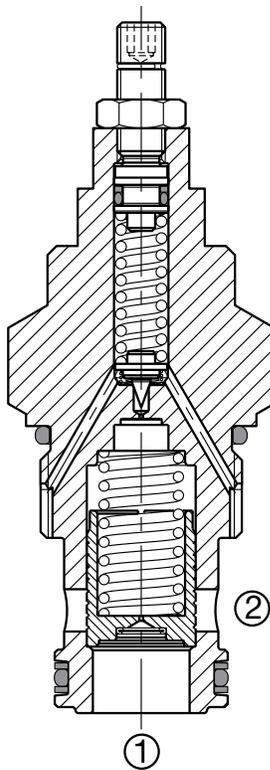
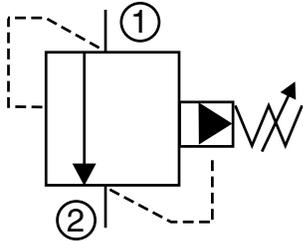
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight            |
|------------|----------|--------------------|--------------------|-------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.39 lb (0.63 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc plated | 6000 psi (420 bar) | 4.16 lb (1.89 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DB16P-01 Pressure Relief, Pilot Operated, Spool Type Up to 79 gpm (300 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, pilot operated (two stage), spool type relief valve intended for use as pressure limiting device in hydraulic circuits requiring fast response and low pressure rise in a wide flow range.

### Operation

The DB16P blocks flow from port 1 to port 2 until the pressure setting is reached at port 1 to lift the pilot poppet creating a pressure drop across the main spool. This allows the main spool to shift, opening port 1 to port 2. Pressure at port 2 is directly additive to valve pressure setting.

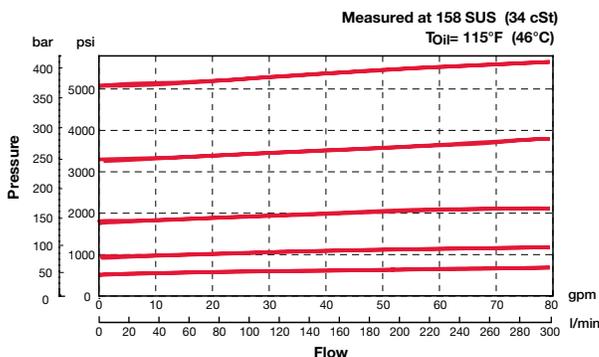
### Features

- Spring ranges up to 5000 psi (350 bar)
- Positive stop prevents spring from over adjustment (options V,H)
- Adjustable under full pressure
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Low pressure drop due to an optimized flow-path
- Screen protected control orifice to enhance safety
- Fast response with excellent stability
- All external surfaces zinc-plated
- Hardened spool & pilot poppet to ensure minimal wear & extend service life
- Industry common cavity

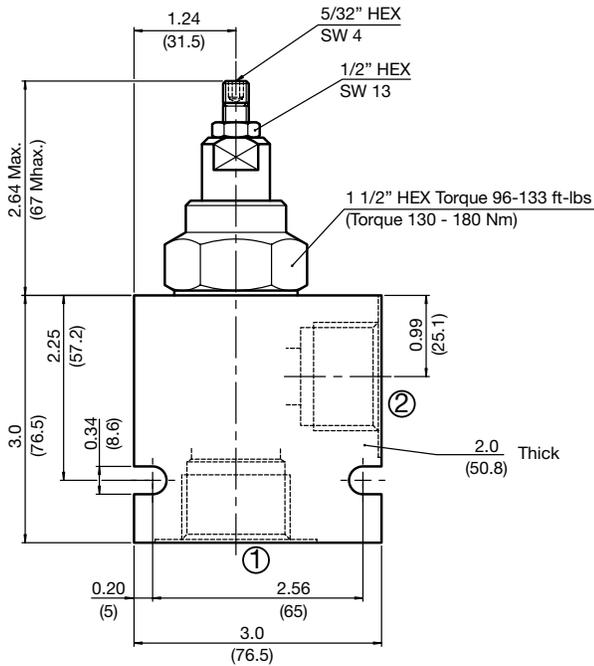
### Specifications

|  |   |
|--|---|
| Operating Pressure   | 5000 psi (350 bar)  |
| Nominal Flow   | 79 gpm (300 l/min)  |
| Internal Leakage   | less than 61 cu in/min at 5000 psi<br>(1 l/min at 350 bar)  |
| Reseat Pressure (Nominal)  | 90% of crack pressure   |
| Optional Pressure Ranges   | 45 to 500 psi (3 to 35 bar)<br>45 to 900 psi (3 to 60 bar)<br>45 to 1800 psi (3 to 125 bar)<br>60 to 3300 psi (4 to 230 bar)<br>60 to 5000 psi (4 to 345 bar)   |
| % of Spring Pressure Range Actuated at 1 Revolution (Adjustment Type V, H) | 24%   |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration   | 21/19/16 or cleaner (per ISO 4406).   |
| Installation   | No orientation restrictions   |
| Cavity   | FC16-2 (see Line Bodies & Cavities section)   |
| Cavity Tools   | Rougher: 02580250<br>Finisher: 02580251   |
| Cartridge Weight   | 1.0 Lbs. (0.465 kg)   |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits  | Buna-N P/N: 03052427<br>Viton® P/N: 03051758  |

### Performance



## Dimensions



## Model Code

**DB16P-01-C-N-180 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 ports, aluminum body
- SS16 = SAE-16 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 45 to 500 psi (3 to 35 bar)
- 090 = 45 to 870 psi (3 to 60 bar)
- 180 = 45 to 1800 psi (3 to 125 bar)
- 330 = 60 to 3300 psi (4 to 230 bar)
- 500 = 60 to 5000 psi (4 to 350 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

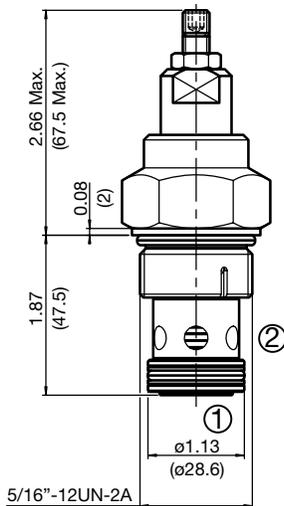
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

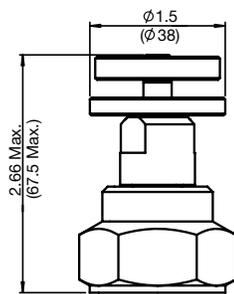
Example: 300 = 3000 psi

## Adjustment Options

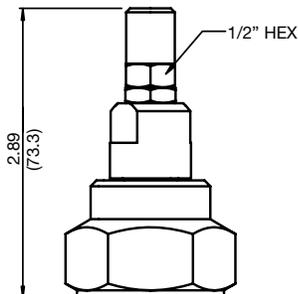
### 'V' - Allen Head (std)



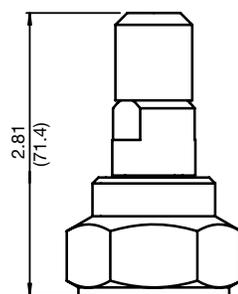
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



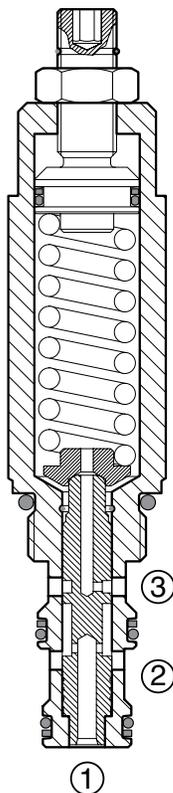
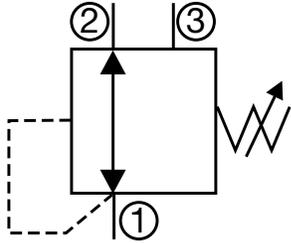
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight            |
|------------|----------|--------------------|--------------------|-------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.20 lb (0.55 kg) |
| FH162-SS16 | 03032655 | Steel, Zinc plated | 6000 psi (420 bar) | 3.56 lb (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DR08-01 Pressure Reducing/Relieving, Direct Acting, Spool Type 4 gpm (15 l/min) • 6000 psi (420 bar)



### Description

A screw-in cartridge, direct acting, spool type, pressure reducing/relieving valve with internal spring chamber drain, intended for use as a pressure regulating device. This valve maintains a constant secondary regulated/ reduced pressure regardless of pressure variations in the primary system. In addition to the reducing function, this valve also provides a relief function from the reduced pressure port to the tank port, if pressure in the secondary circuit exceeds the set pressure.

### Operation

The DR08-01 allows bidirectional flow between port 2 and port 1 with the spring chamber drained through port 3. Once the pressure setting is reached at port 1, the spool shifts to restrict the flow at port 2, thereby regulating pressure at port 1. If pressure at port 1 exceeds the setting of the valve, the spool will shift further and relieve excess pressure through port 3. Any pressure at port 3 is directly additive to valve pressure.

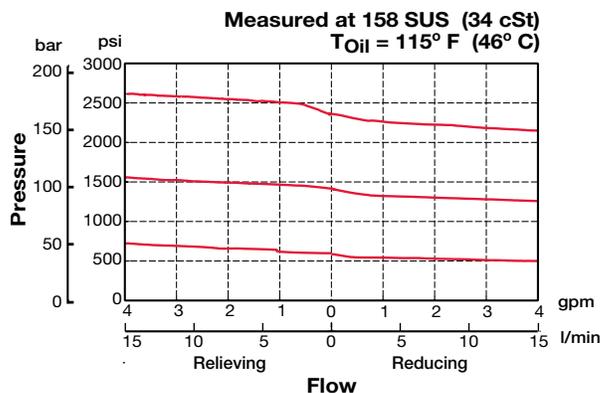
### Features

- Spring ranges up to 3000 psi (210 bar)
- Positive stop prevents spring from over adjustment (*options V,H*)
- Adjustable under full pressure
- Stroke limiting device for enhanced safety
- Fast response
- All external surfaces zinc-plated
- Hardened poppet to ensure minimal wear and extend service life
- Industry common cavity

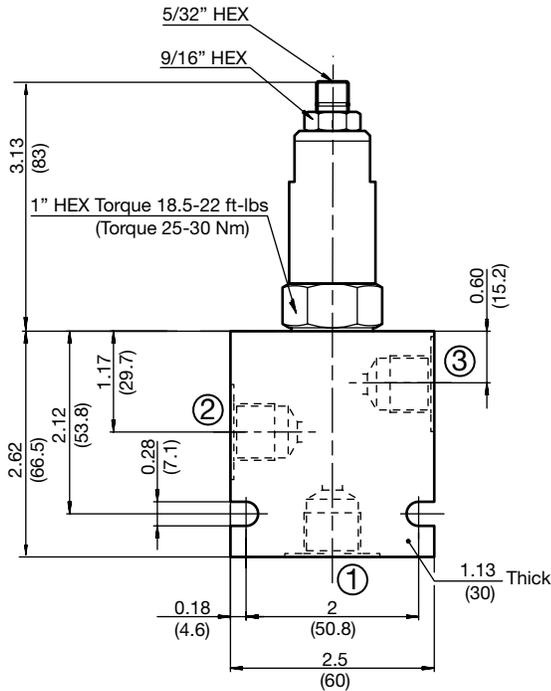
### Specifications

|   |  |
|---|--|
| Operating Pressure  | 6000 psi (420 bar)   |
| Nominal Flow  | 4 gpm (15 l/min)   |
| Optional Pressure Ranges  | 50 to 500 psi (3 to 35 bar)<br>363 to 1200 psi (25 to 83 bar)<br>653 to 2200 psi (45 to 152 bar)<br>1073 to 3000 psi (74 to 210 bar)                                     |
| % of Spring Pressure Range Actuated at 1 Revolution ( <i>Adjustment Type V, H</i> ) | 14%  |
| Fluid Operating Temp. Range   | -4° to 248°F (-20° to +120°C)<br><i>*Consult factory for usage at temp. outside range</i>  |
| Fluid Compatibility   | Mineral-based or synthetics with lubricating properties  |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .   |
| Installation  | No orientation restrictions  |
| Cavity  | FC08-3 ( <i>see Line Bodies &amp; Cavities section</i> )   |
| Cavity Tools  | Rougher: 02580086<br>Finisher: 02580087  |
| Cartridge Weight  | 0.52 Lbs. (0.235 kg)   |
| Cartridge Material  | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. ( <i>option H</i> )<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits   | Buna-N P/N: 03054795<br>Viton® P/N: 02591059   |

### Performance



## Dimensions



## Model Code

**DR08-01-C-N-220 V 200**

### Valve Model

### Body & Ports

- C = No Line Body, cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 50 to 500 psi (3.5 to 35 bar)
- 120 = 363 to 1200 psi (25 to 83 bar)
- 220 = 653 to 2200 psi (45 to 152 bar)
- 300 = 1073 to 3000 psi (74 to 210 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

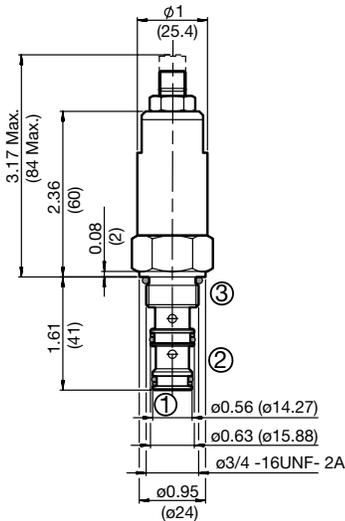
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

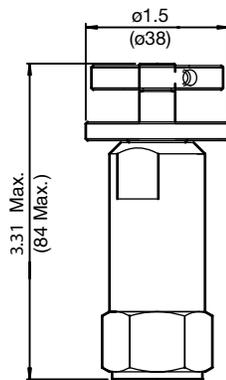
Example: 200 = 2000 psi

## Adjustment Options

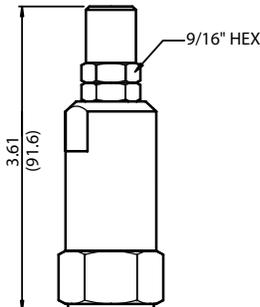
### 'V' - Allen Head (std)



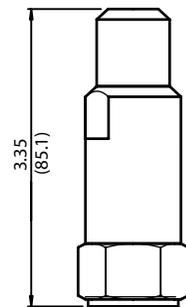
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



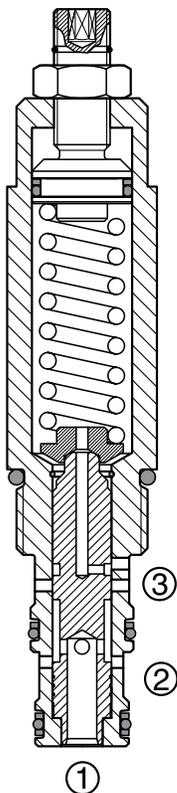
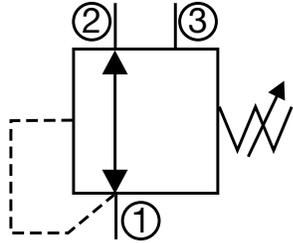
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lb (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, Zinc plated | 6000 psi (420 bar) | 1.70 lb (0.77 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DR10-01 Pressure Reducing/Relieving, Direct Acting, Spool Type Up to 16 gpm (60 l/min) • 6000 psi (420 bar)



### Description

A screw-in cartridge, direct acting, spool type, pressure reducing/relieving valve with internal spring chamber drain, intended for use as a pressure regulating device. This valve maintains a secondary regulated/reduced pressure regardless of pressure variations in the primary system. In addition to the reducing function, this valve also provides a relief function from the reduced pressure port to the tank port, if pressure in the secondary circuit exceeds the set pressure.

### Operation

The DR10-01 allows bidirectional flow between port 2 and port 1 with the spring chamber drained through port 3. Once the pressure setting is reached at port 1, the spool shifts to restrict the flow at port 2, thereby regulating pressure at port 1. If pressure at port 1 exceeds the setting of the valve, the spool will shift further and relieve excess pressure through port 3. Any pressure at port 3 is directly additive to valve pressure setting.

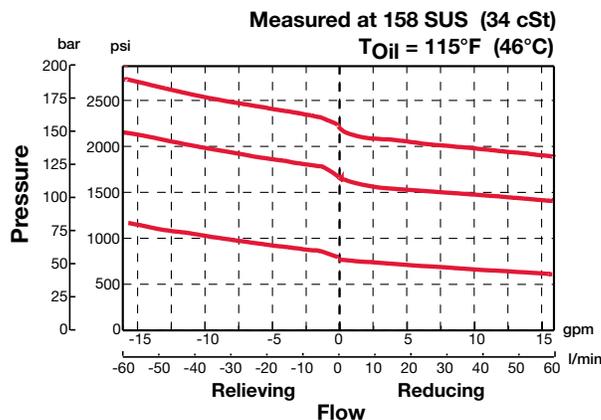
### Features

- Spring ranges up to 1900 psi (131 bar)
- Positive stop prevents spring from over adjustment (options V,H)
- Adjustable under full pressure
- Stroke limiting device for enhanced safety
- Fast response
- All external surfaces zinc-plated
- Hardened poppet to ensure minimal wear and extend service life
- Industry common cavity

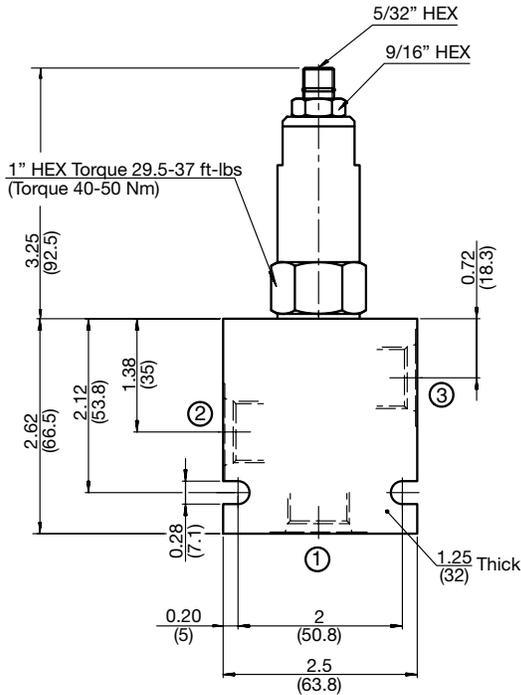
### Specifications

|  |   |
|--|---|
| Operating Pressure   | 6000 psi (420 bar)  |
| Nominal Flow   | 16 gpm (60 l/min)   |
| Optional Pressure Ranges   | 236 to 700 psi (17 to 48 bar)<br>435 to 1400 psi (30 to 96 bar)<br>725 to 1900 psi (50 to 131 bar)  |
| % of Spring Pressure Range Actuated at 1 Revolution (Adjustment Type V, H) | 14%   |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration   | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation   | No orientation restrictions   |
| Cavity   | FC10-3 (see Line Bodies & Cavities section)   |
| Cavity Tools   | Rougher: 02580092<br>Finisher: 02580093   |
| Cartridge Weight   | 0.58 Lbs. (0.262 kg)  |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits  | Buna-N P/N: 03071274<br>Viton® P/N: 03049443  |

### Performance



## Dimensions



## Model Code

**DR10-01-C-N-070 V 050**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-8 ports, aluminum body
- SS6 = SAE-8 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 070 = 246 to 700 psi (17 to 48 bar)
- 140 = 435 to 1400 psi (30 to 96 bar)
- 190 = 725 to 1900 psi (50 to 131 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

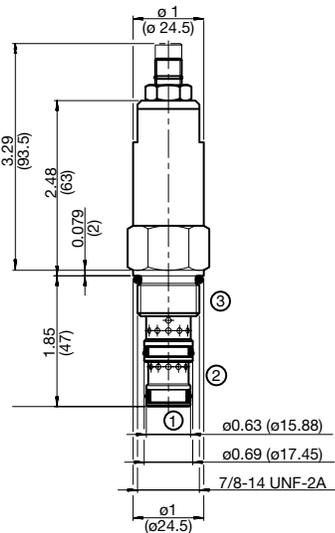
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

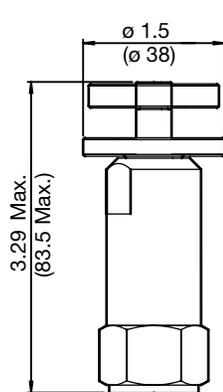
Example: 050 = 500 psi

## Adjustment Options

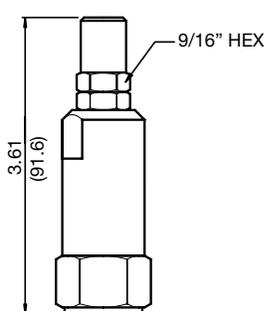
### 'V' - Allen Head (std)



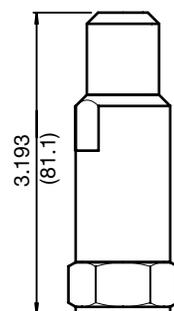
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



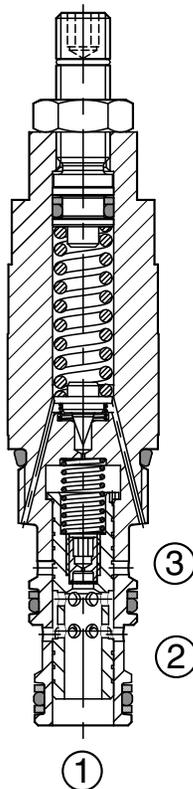
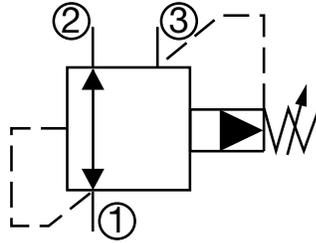
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH103-AS8 | 03038095 | Aluminum, anodized | 3500 psi (245 bar) | 0.60 lb (0.27 kg) |
| FH103-SS8 | 03037704 | Steel, Zinc plated | 6000 psi (420 bar) | 1.74 lb (0.79 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DR08P-01 Pressure Reducing/Relieving, Pilot Operated, Spool Type 16 gpm (60 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, pilot operated, spool type, pressure reducing/relieving valve with internal pilot and internal spring chamber drain, intended for use as a pressure regulating device for secondary circuits. This valve maintains a secondary regulated/reduced pressure regardless of pressure variations in the primary system. In addition to the reducing function, this valve also provides a relief function from the reduced pressure port to the tank port, if pressure in the secondary circuit exceeds the set pressure.

### Operation

The DR08P-01 allows bidirectional flow between port 2 and port 1 with the spring chamber drained through port 3. Once the pressure setting is reached at port 1, the spool shifts to restrict the flow at port 2, thereby regulating pressure at port 1. If pressure at port 1 exceeds the setting of the valve, the spool will shift further and relieve excess pressure through port 3. Any pressure at port 3 is directly additive to valve pressure setting.

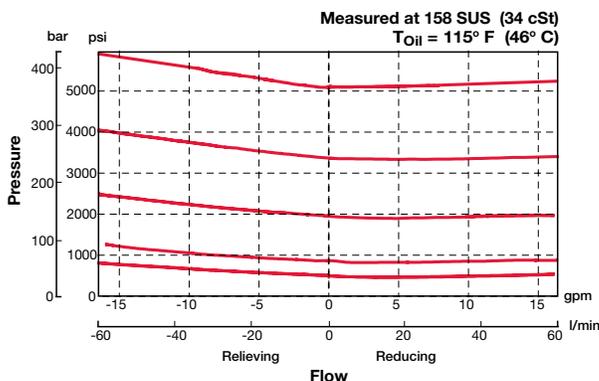
### Features

- Spring ranges up to 5000 psi (350 bar)
- Positive stop prevents spring from over adjustment (options V,H)
- Adjustable under full pressure
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Screen protected control orifice to enhance safety
- Fast response with excellent stability
- All external surfaces zinc-plated
- Hardened spool & pilot poppet to ensure minimal wear & extend service life
- Industry common cavity

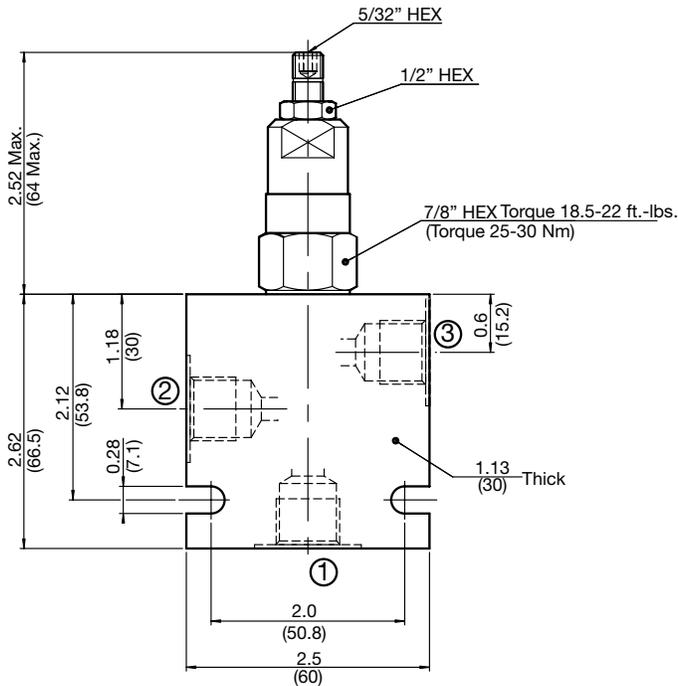
### Specifications

|  |   |
|--|---|
| Operating Pressure   | 5000 psi (350 bar)  |
| Nominal Flow   | 16 gpm (60 l/min)   |
| Optional Pressure Ranges   | 75 to 500 psi (5 to 35 bar)<br>75 to 900 psi (5 to 60 bar)<br>75 to 1800 psi (5 to 125 bar)<br>75 to 3300 psi (5 to 230 bar)<br>75 to 5000 psi (5 to 350 bar)   |
| % of Spring Pressure Range Actuated at 1 Revolution (Adjustment Type V, H) | 24%   |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration   | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation   | No orientation restrictions   |
| Cavity   | FC08-3 (see Line Bodies & Cavities section)   |
| Cavity Tools   | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight   | 0.38 Lbs. (0.170 kg)  |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits  | Buna-N P/N: 03054795<br>Viton® P/N: 02591059  |

### Performance



## Dimensions



## Model Code

**DR08P-01-C-N-180 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 75 to 500 psi (5 to 35 bar)
- 090 = 75 to 900 psi (5 to 60 bar)
- 180 = 75 to 1800 psi (5 to 125 bar)
- 330 = 75 to 3300 psi (5 to 230 bar)
- 500 = 75 to 5000 psi (5 to 350 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

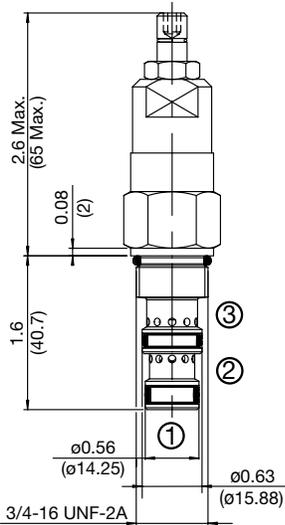
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

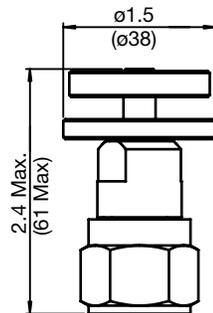
Example: 100 = 1000 psi

## Adjustment Options

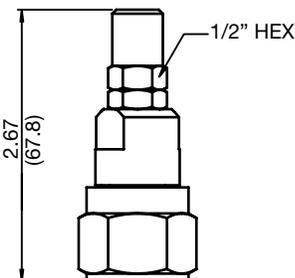
### 'V' - Allen Head (std)



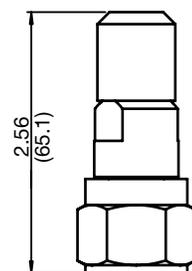
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



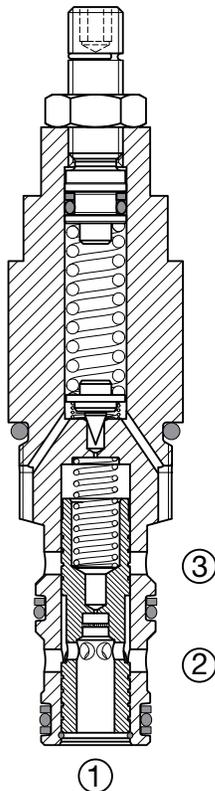
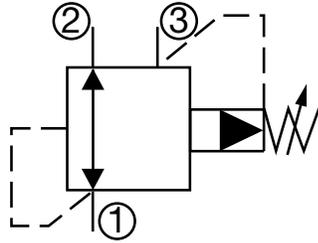
All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lb (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, Zinc plated | 6000 psi (420 bar) | 1.70 lb (0.77 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DR10P-01 Pressure Reducing/Relieving, Pilot Operated, Spool Type Up to 26 gpm (100 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, pilot operated, spool type, pressure reducing/relieving valve with internal pilot and internal spring chamber drain, intended for use as a pressure regulating device for secondary circuits. This valve maintains a secondary regulated/reduced pressure regardless of pressure variations in the primary system. In addition to the reducing function, this valve also provides a relief function from the reduced pressure port to the tank port, if pressure in the secondary circuit exceeds the set pressure.

### Operation

The DR10P-01 allows bidirectional flow between port 2 and port 1 with the spring chamber drained through port 3. Once the pressure setting is reached at port 1, the spool shifts to restrict the flow at port 2, thereby regulating pressure at port 1. If pressure at port 1 exceeds the setting of the valve, the spool will shift further and relieve excess pressure through port 3. Any pressure at port 3 is additive to spring set pressure.

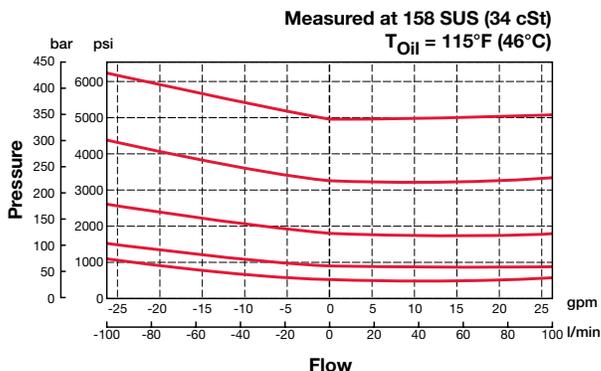
### Features

- Spring ranges up to 5000 psi (350 bar)
- Positive stop prevents spring from over adjustment (options V,H)
- Adjustable under full pressure
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Screen protected control orifice to enhance safety
- Fast response with excellent stability
- All external surfaces zinc-plated
- Hardened spool & pilot poppet to ensure minimal wear & extend service life
- Industry common cavity

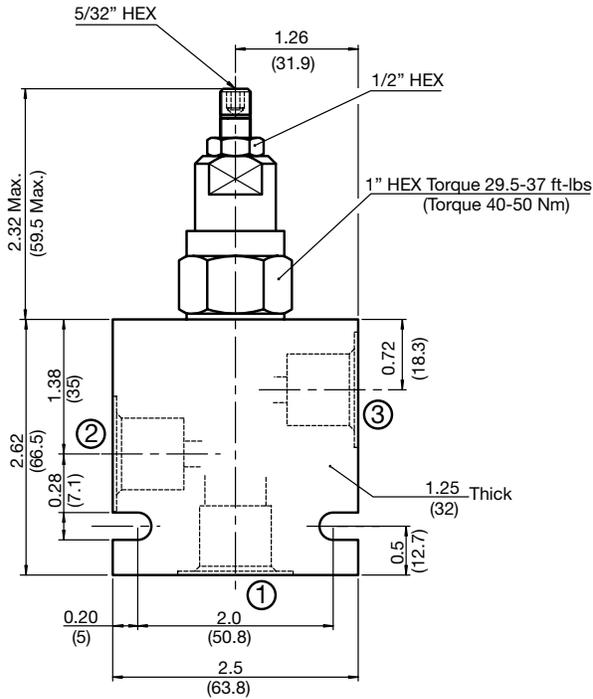
### Specifications

|  |   |
|--|---|
| Operating Pressure   | 5000 psi (350 bar)  |
| Nominal Flow   | 26 gpm (100 l/min)  |
| Optional Pressure Ranges   | 90 to 500 psi (6 to 35 bar)<br>90 to 900 psi (6 to 60 bar)<br>90 to 1800 psi (6 to 125 bar)<br>90 to 3300 psi (6 to 230 bar)<br>90 to 5000 psi (6 to 350 bar)   |
| % of Spring Pressure Range Actuated at 1 Revolution (Adjustment Type V, H) | 24%   |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration   | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation   | No orientation restrictions   |
| Cavity   | FC10-3 (see Line Bodies & Cavities section)   |
| Cavity Tools   | Rougher: 02580092<br>Finisher: 02580093   |
| Cartridge Weight   | 0.44 Lbs. (0.203 kg)  |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits  | Buna-N P/N: 03071274<br>Viton® P/N: 03049443  |

### Performance



## Dimensions



## Model Code

**DR10P-01-C-N-180 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Adjustment Range

- 050 = 90 to 500 psi (6 to 35 bar)
- 090 = 90 to 900 psi (6 to 60 bar)
- 180 = 90 to 1800 psi (6 to 125 bar)
- 330 = 90 to 3300 psi (6 to 230 bar)
- 500 = 90 to 5000 psi (6 to 350 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

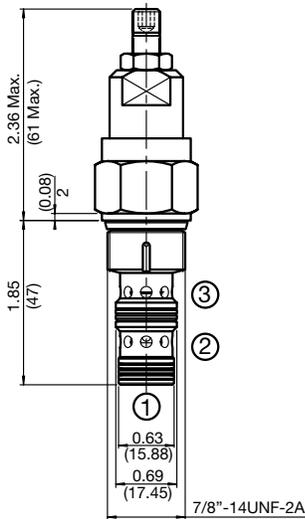
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

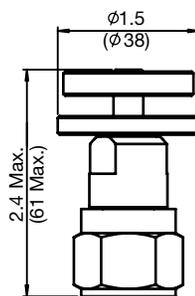
Example: 100 = 1000 psi

## Adjustment Options

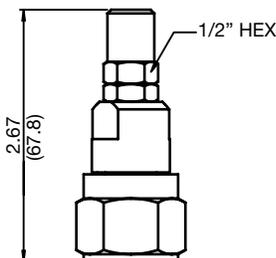
### 'V' - Allen Head (std)



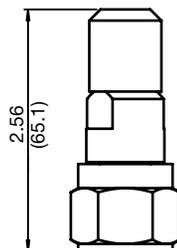
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH103-AS8 | 03038095 | Aluminum, anodized | 3500 psi (245 bar) | 0.60 lb (0.27 kg) |
| FH103-SS8 | 03037704 | Steel, Zinc plated | 6000 psi (420 bar) | 1.74 lb (0.79 kg) |

\*Please refer to Line Bodies & Cavities section for details



## Overview

HYDAC offers a wide range of Flow Control Cartridge Valves:

**Adjustable Flow Controls** with and without free reverse flow check feature positive shut-off, 6000 psi (420 bar) operating pressure, hand knob and protective cap adjustment options. Models are available for flows up to 42 gpm (160 l/min).

**Adjustable, Pressure Compensated Flow Regulators** offer flow maintenance with high accuracy, 5000 psi (350 bar) operating pressure. Models are available for flows up to 10 gpm (38 l/min)

**Adjustable, Priority Type, Pressure Compensated Flow Regulators** offer flow maintenance with high accuracy, 5000 psi (350 bar) operating pressure. Models are available for flows up to 8 gpm (30 l/min).

**Flow Divider/Combiner** cartridges maintain flow per specified flow ratio regardless of system operating pressure conditions. They are rated to 5000 psi (350 bar) operating pressure. Models are available for flows up to 40 gpm (150 l/min). These valves have a special feature of providing synchronizing flow to either port 4 or port 2 when the other is blocked.

## Features

- Variety of adjustment mechanism options
- Zinc-plated external surfaces
- One-piece body to maximize reliability and minimize effect of eccentricity
- Hardened parts to ensure minimal wear and extend service life
- Industry common cavity-compact size



## SD08-01 Needle, Poppet Type Up to 16 gpm (60 l/min) • 6000 psi (420 bar)

### Description

A screw-in cartridge, adjustable variable orifice, hydraulic flow restrictor valve, non-pressure compensated.

### Operation

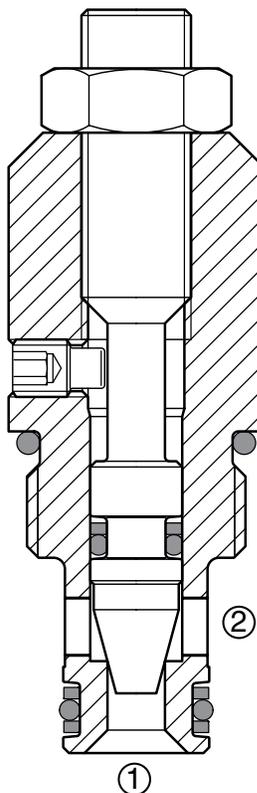
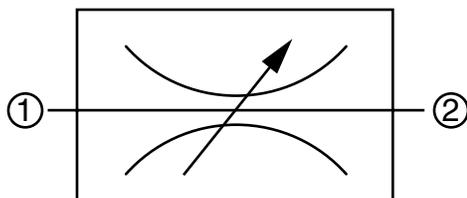
The SD08-01 controls flow in either direction from fully open to leaktight shut-off by turning the adjustment feature clock-wise. Flow is non-pressure compensated.

### Features

- All external surfaces zinc plated
- Adjustment needle cannot be backed out of the valve
- Complete shut-off
- Desired setting may be locked down
- Hardened parts to ensure minimal wear and extend service life
- Aluminum knob option for ease of adjustment
- Industry common cavity

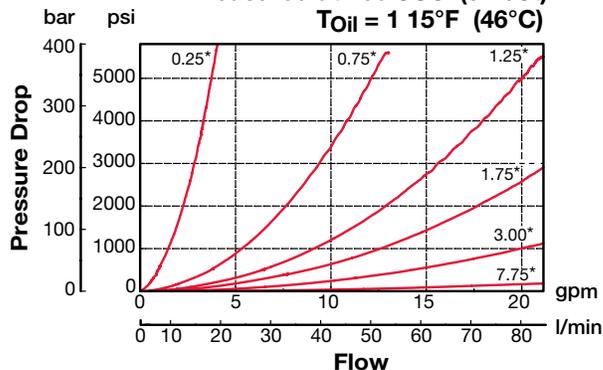
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 6000 psi (420 bar)   |
| Nominal Flow                | 16 gpm (60 l/min)  |
| Adjustment Torque Required  | 1.25 lbf.ft at 3000 psi (1.7Nm at 210 bar)<br>2.21lbf.ft at 5000 psi (3.0 Nm at 350 bar)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>  |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                | Rougher: 02580090<br>Finisher: 02580091  |
| Cartridge Weight            | 0.25 Lbs. (0.112 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. <i>(option H)</i><br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03033920<br>Viton® P/N: 03051756   |



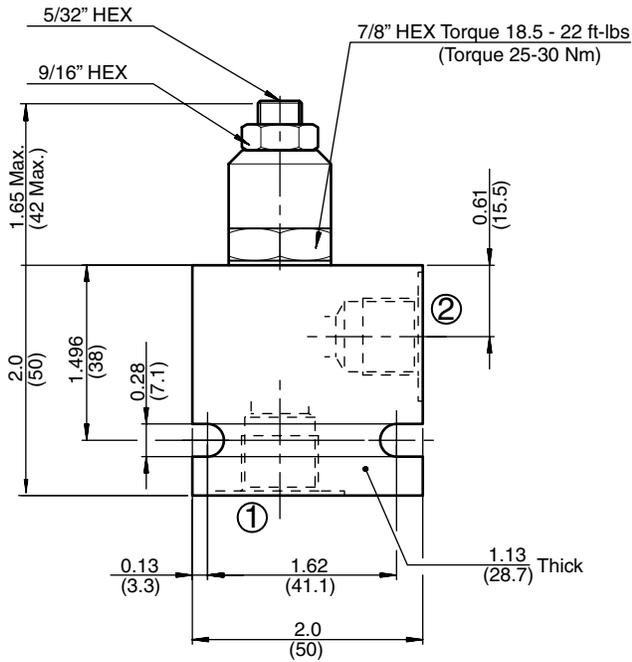
### Performance

Measured at 158 SUS (34 cSt)  
T<sub>oil</sub> = 115°F (46°C)



\* number of 360° turns from closed

## Dimensions



## Model Code

**SD08-01-C-N-V**

### Valve Model

### Body & Ports

- C = No Line Body, cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

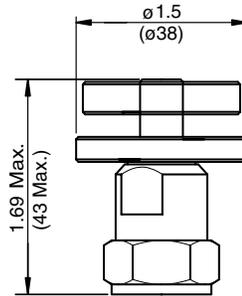
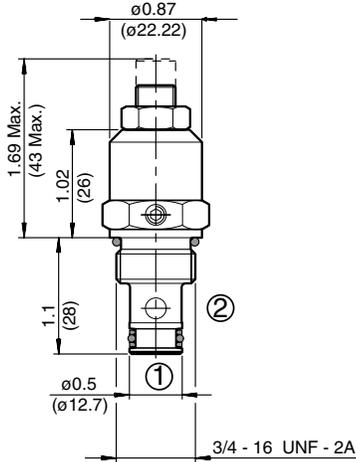
### Adjustment Options

- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

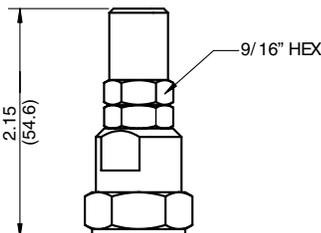
## Adjustment Options

### 'V' - Allen Head (std)

### 'H' - Hand Knob



### 'K' - Protective Cap



All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.00 lb (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

## SD10-01 Needle, Poppet Type Up to 42 gpm (160 l/min) • 6000 psi (420 bar)

### Description

A screw-in cartridge, adjustable variable orifice, hydraulic flow restrictor valve, non-pressure compensated.

### Operation

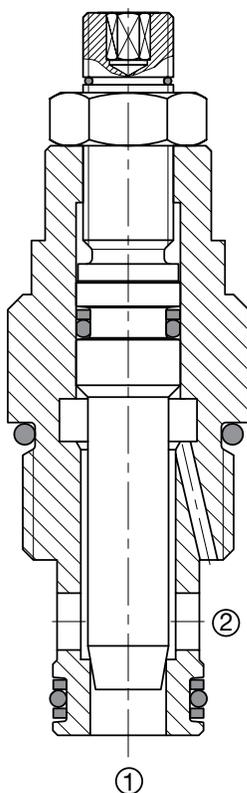
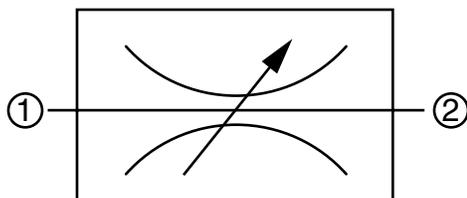
The SD10-01 controls flow in either direction from fully open to leaktight shut-off by turning the adjustment feature clock-wise. Flow is non-pressure compensated.

### Features

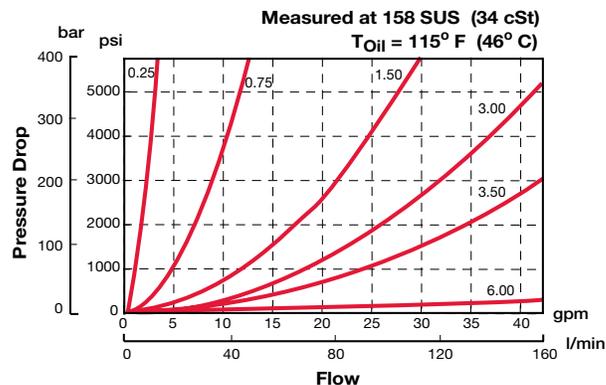
- Adjustment needle cannot be backed out of the valve
- Desired setting may be locked down
- Aluminum knob option for ease of adjustment
- Complete shut-off
- Hardened parts to ensure minimal wear and extend service life
- All external surfaces zinc-plated
- Industry common cavity

### Specifications

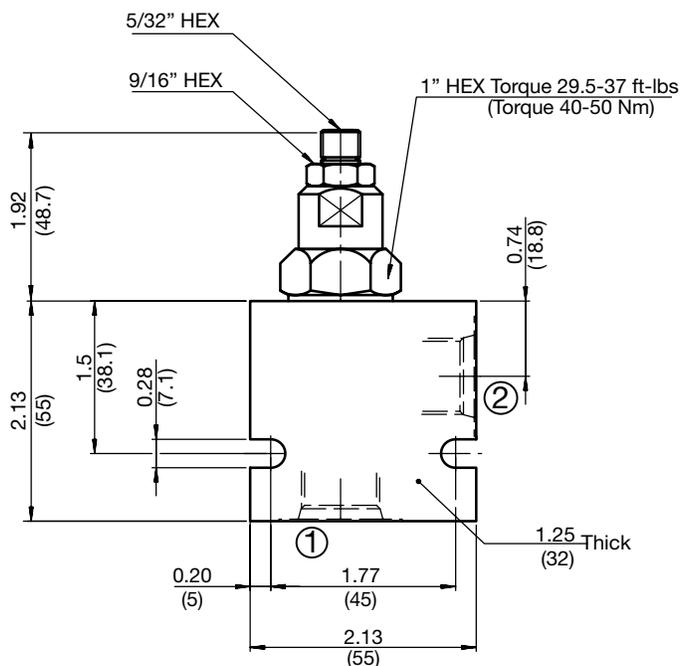
|                             |  |
|-----------------------------|--|
| Operating Pressure          | 6000 psi (420 bar)   |
| Nominal Flow                | 42 gpm (160 l/min)   |
| Adjustment Torque Required  | 1.25 lbf.ft at 3000 psi (1.7 Nm at 210 bar)<br>2.21 lbf.ft at 5000 psi (3.0 Nm at 350 bar)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>  |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                | Rougher: 02580274<br>Finisher: 02580274  |
| Cartridge Weight            | 0.35 Lbs. (0.160 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. <i>(option H)</i><br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03033872<br>Viton® P/N: 03051757   |



### Performance



## Dimensions



## Model Code

**SD10-01-C-N-V**

### Valve Model

### Body & Ports

- C = No Line Body, cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

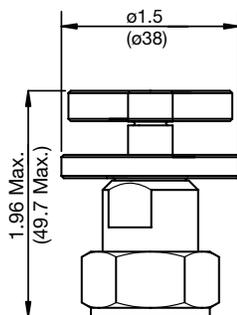
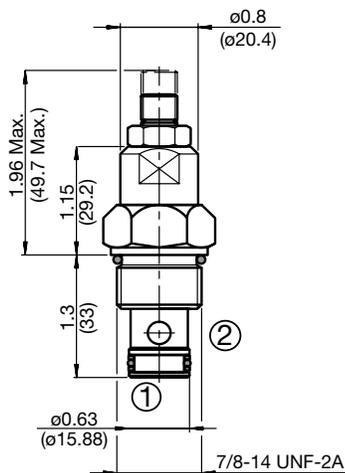
### Adjustment Options

- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

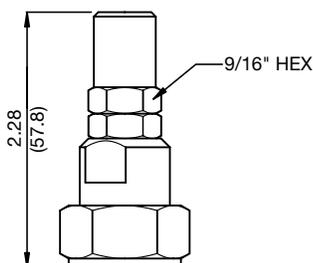
## Adjustment Options

'V' - Allen Head (std)

'H' - Hand Knob



'K' - Protective Cap



All measurements in inches (mm).  
Subject to technical modifications

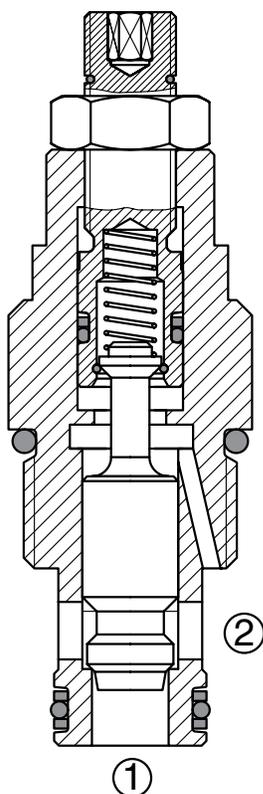
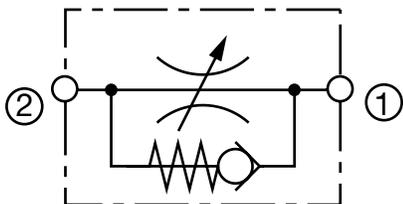
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.00 lb (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

## SDR10A-01 Needle, Free Reverse Flow Up to 42 gpm (160 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, adjustable variable orifice, hydraulic flow restrictor valve with free reverse flow check, non-pressure compensated.

### Operation

The SDR10A-01 controls flow from port 2 to port 1 from fully open to leaktight shut-off by turning the adjustment feature clock-wise. Flow is non-pressure compensated. The flow from port 1 to port 2 is free.

### Features

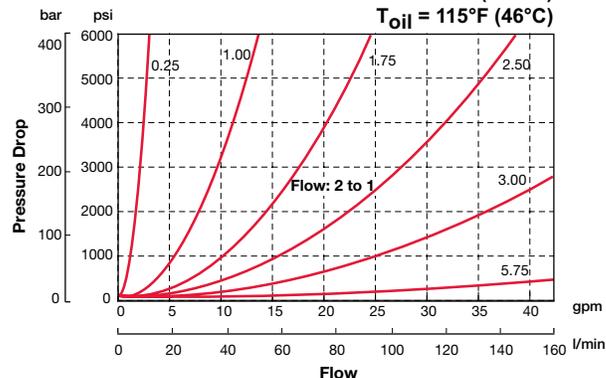
- All external surfaces zinc-plated
- Adjustment needle cannot be backed out of the valve
- Desired setting may be locked down
- Complete shut-off
- Hardened parts to ensure minimal wear and extend service life
- Aluminum knob option for ease of adjustment
- Industry common cavity

### Specifications

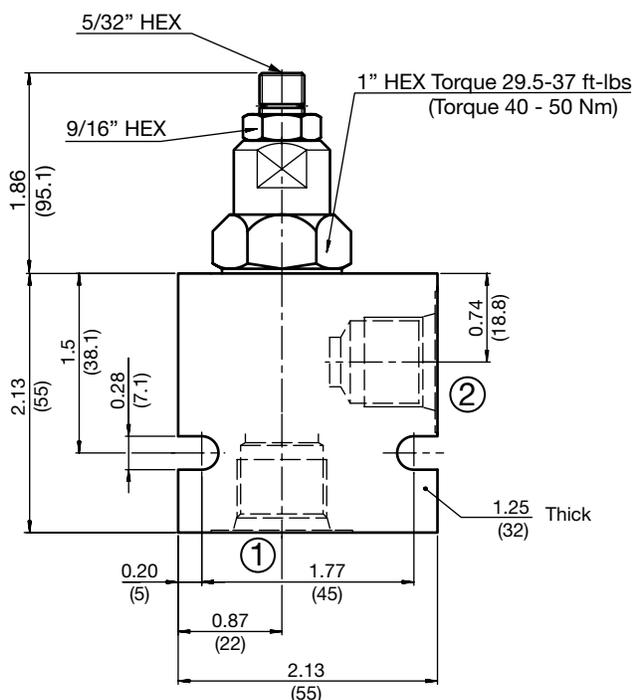
|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 42 gpm (160 l/min)   |
| Adjustment Torque Required  | 1.25 lbf.ft at 3000 psi (1.7 Nm at 210 bar)<br>2.21 lbf.ft at 5000 psi (3.0 Nm at 350 bar)   |
| Bias Spring Setting         | 15 psi (1 bar) Minimum   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>  |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                | Rougher: 02580274<br>Finisher: 02580274  |
| Cartridge Weight            | 0.33 Lbs. (0.150 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. <i>(option H)</i><br>Buna N or Vitor® o-rings, and PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03033872<br>Vitor® P/N: 03051757   |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^{\circ}\text{F} (46^{\circ}\text{C})$

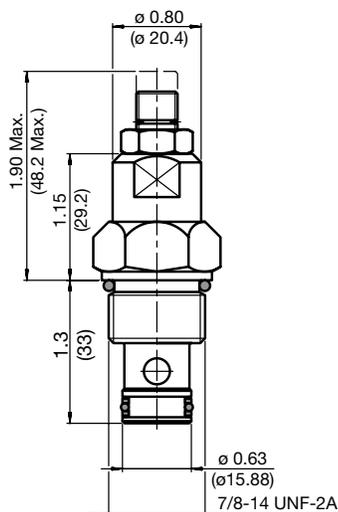


## Dimensions

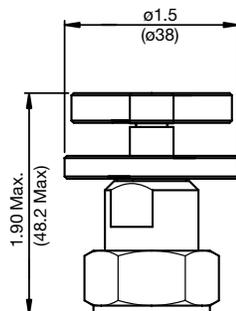


## Adjustment Options

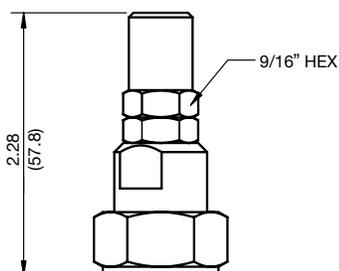
'V' - Allen Head (std)



'H' - Hand Knob



'K' - Protective Cap



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**SDR10A-01-C-N-15-V**

Valve Model

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals

- N = Buna-N
- V = Viton®

Bias Spring

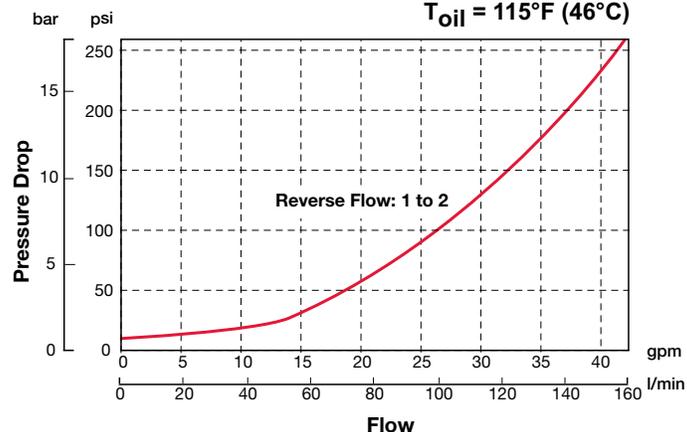
- 15 = 15 psi (1.00 bar)

Adjustment Options

- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

## Performance

Measured at 158 SUS (34 cSt)  
T<sub>oil</sub> = 115°F (46°C)



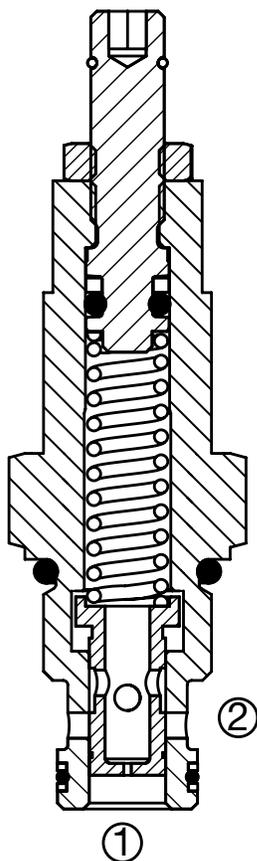
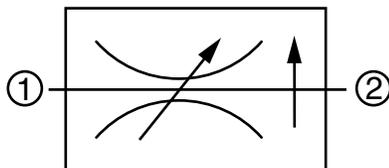
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lb (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lb (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## SR06-01 Flow Regulator, Pressure Compensated, Restrictive Type Up to 4 gpm (15 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, adjustable, pressure compensated, hydraulic flow regulating valve (*restrictive type*).

### Operation

The SR06-01 maintains a constant flow from port 1 to port 2 based on the setting adjustment, regardless of pressure changes downstream of port 2. The flow rate is determined by a fixed control orifice and could be adjusted within a limited range. Reverse flow from port 2 to port 1 is at the value of the fixed control orifice and is non-pressure compensated.

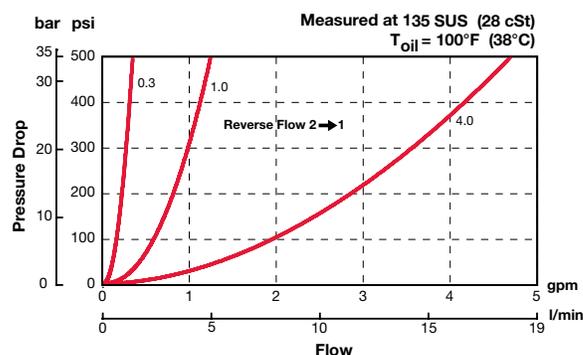
### Features

- Excellent stability throughout flow range
- Desired setting may be locked down
- Adjustment screw cannot be backed out of the valve
- All external surfaces zinc-plated
- Hardened parts to ensure minimal wear and extend service life

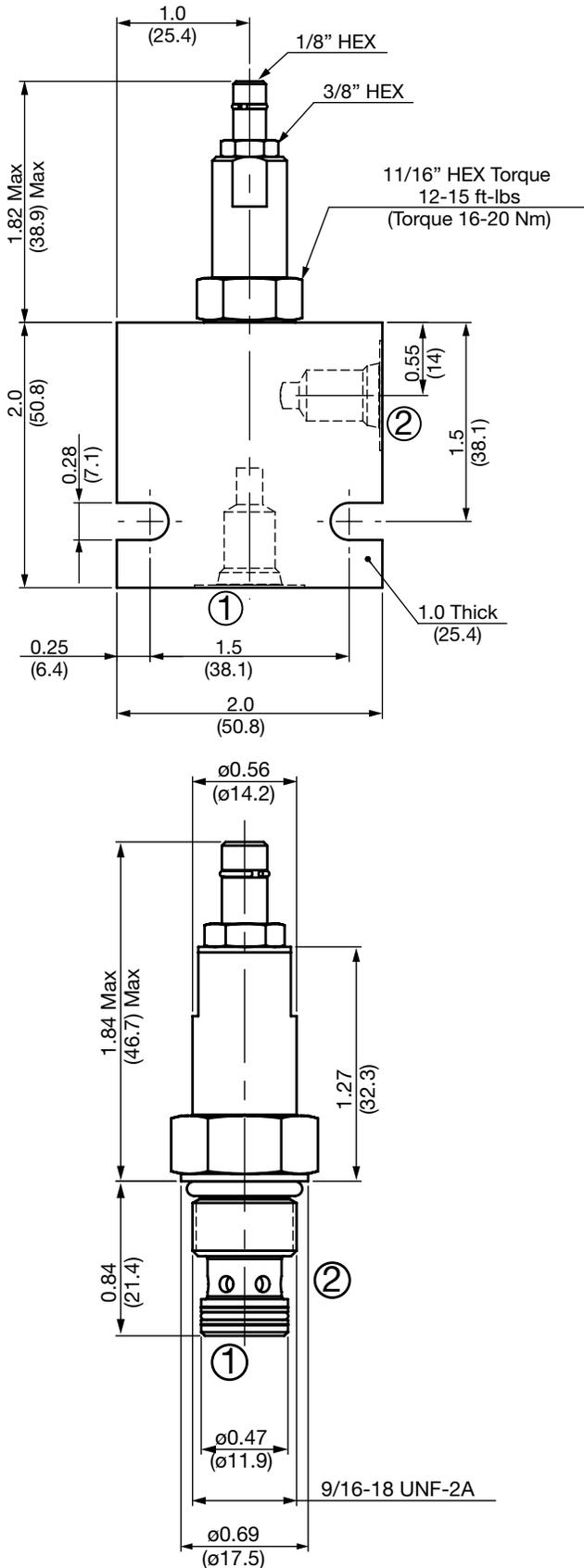
### Specifications

|                                 |  |
|---------------------------------|--|
| Operating Pressure              | 5000 psi (350 bar)   |
| Max. Operating Pressure, Port 2 | 3000 psi (210 bar)   |
| Maximum Flow                    | 4 gpm (15.2 l/min)   |
| Flow Ranges                     | 0.3 = 0.06 - 0.25 gpm (0.23 - 0.95 l/min)<br>1.0 = 0.25 - 1.0 gpm (0.95 - 3.78 l/min)<br>4.0 = 1.0 - 4.0 gpm (3.78 - 15.14 l/min)                |
| Fluid Compatibility             | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                       | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                      | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                    | No orientation restrictions  |
| Cavity                          | FC06-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                    | Rougher: 02582046<br>Finisher: 02582047  |
| Cartridge Weight                | 0.05 lb (23 g)   |
| Cartridge Material              | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                       | Buna-N P/N: 02610184<br>Viton® P/N: 02610185   |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**SR06-01-AS4-N-1.0 V 0.8**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum Body
- SS4 = SAE-4 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Flow Rate

- 0.3 = 0.06 to 0.25 gpm (0.23 to 0.95 l/pm)
- 1.0 = 0.5 to 1.0 gpm (1.9 to 3.78 l/pm)
- 4.0 = 1.0 to 4.0 gpm (3.78 to 15.14 l/pm)

### Adjustment Options

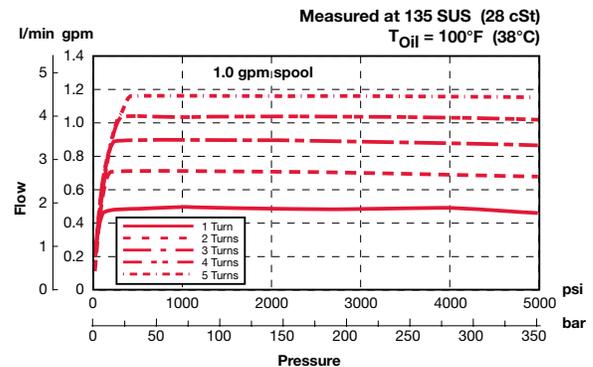
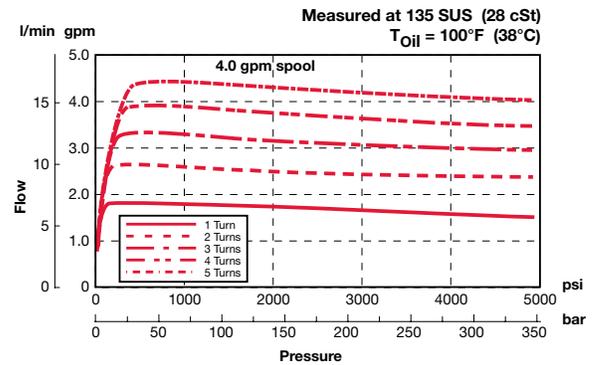
- V = Allen Head (Hex 1/8")

### Setting

- blank = Set at 50% of maximum flow for the range
- xxx = flow rate in gpm

Example: 0.8 = 0.8 gpm

## Performance



## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## SR08-01 Flow Regulator, Pressure Compensated, Restrictive Type Up to 7 gpm (27 l/min) • 6000 psi (420 bar)

### Description

A screw-in cartridge, adjustable, pressure compensated, hydraulic flow regulating valve (restrictive type).

### Operation

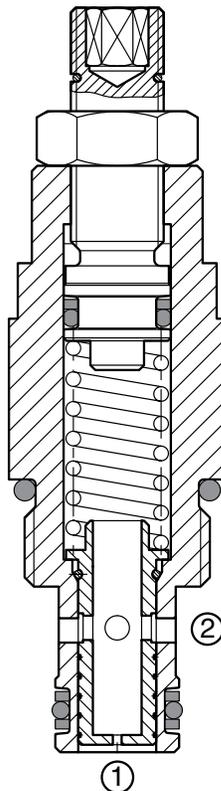
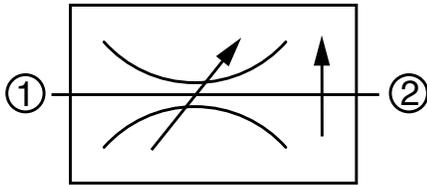
The SR08-01 maintains a constant flow from port 1 to port 2 based on the setting adjustment, regardless of pressure changes downstream of port 2. The flow rate is determined by a fixed control orifice and could be adjusted within a limited range. Reverse flow from port 2 to port 1 is at the value of the fixed control orifice and is non-pressure compensated.

### Features

- All external surfaces zinc plated
- Adjustment screw cannot be backed out of the valve
- Excellent stability throughout flow range
- Reverse flow capability
- Desired setting may be locked down
- Hardened parts to ensure minimal wear and extend service life
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Aluminum knob option for ease of adjustment
- Industry common cavity

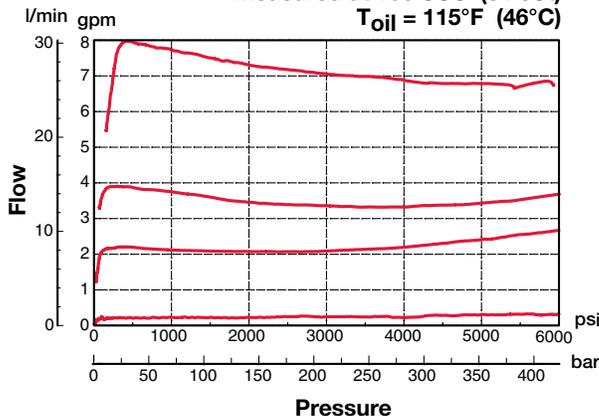
### Specifications

|                                 |   |
|---------------------------------|---|
| Operating Pressure              | 6000 psi (420 bar)  |
| Max. Operating Pressure, Port 2 | 3000 psi (210 bar)  |
| Nominal Flow                    | 7 gpm (27 l/min)  |
| Adjustment Torque Required      | 1.25 lbf.ft at 3000 psi (1.7Nm at 210 bar)<br>2.21lbf.ft at 5000 psi (3.0 Nm at 350 bar)  |
| Flow Ranges                     | 0.25 - 0.40 gpm (0.95 - 1.50 l/min)<br>0.30 - 0.53 gpm (1.15 - 2.00 l/min)<br>0.53 - 0.95 gpm (2.00 - 3.60 l/min)<br>0.87 - 1.66 gpm (3.30 - 6.30 l/min)<br>1.42 - 2.55 gpm (5.40 - 9.70 l/min)<br>2.30 - 4.40 gpm (8.80 - 16.7 l/min)<br>3.70 - 7.10 gpm (14.0 - 27.0 l/min) |
| Fluid Operating Temp. Range     | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility             | Mineral-based or synthetics with lubricating properties   |
| Viscosity                       | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                      | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation                    | No orientation restrictions   |
| Cavity                          | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                    | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                | 0.25 Lbs. (0.112 kg)  |
| Cartridge Material              | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings.   |
| Seal Kits                       | Buna-N P/N: 03033920<br>Viton® P/N: 03051756  |

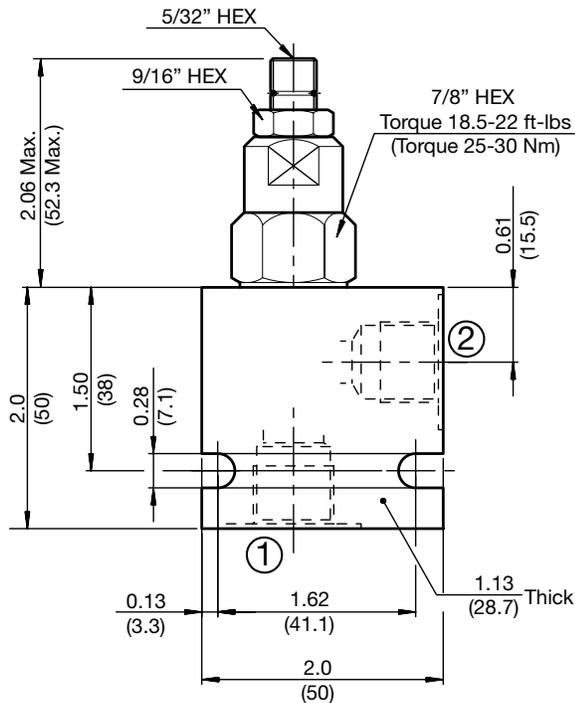


### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^{\circ}\text{F} (46^{\circ}\text{C})$



## Dimensions



## Model Code

SR08-01-C-N-1.0 V 0.8

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Flow Rate

- 0.5 = 0.25 - 0.40 gpm (0.95 - 1.50 l/min)
- 0.6 = 0.30 - 0.53 gpm (1.15 - 2.00 l/min)
- 1.0 = 0.53 - 0.95 gpm (2.00 - 3.60 l/min)
- 1.8 = 0.87 - 1.66 gpm (3.30 - 6.30 l/min)
- 2.8 = 1.42 - 2.55 gpm (5.40 - 9.70 l/min)
- 4.8 = 2.30 - 4.40 gpm (8.80 - 16.7 l/min)
- 7.9 = 3.70 - 7.10 gpm (14.0 - 27.0 l/min)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

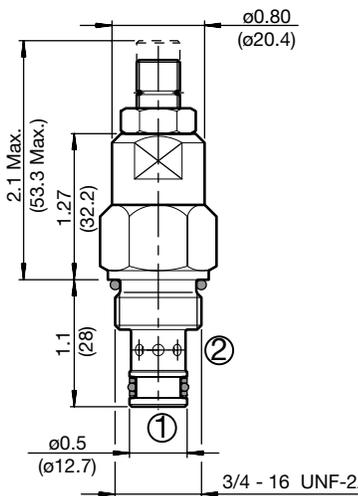
### Setting

- blank = Set at 50% of maximum flow for the range
- xxx = flow rate in gpm

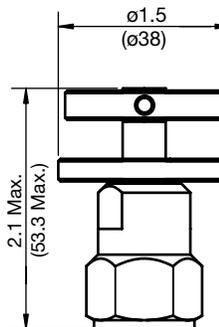
Example: 0.8 = 0.8 psi

## Adjustment Options

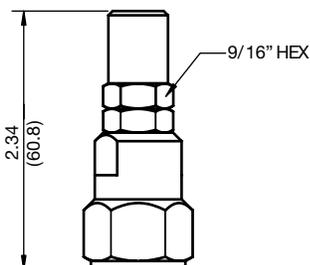
### 'V' - Allen Head (std)



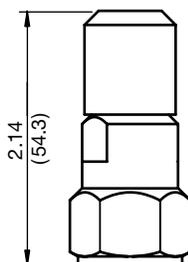
### 'H' - Hand Knob



### 'K' - Protective Cap

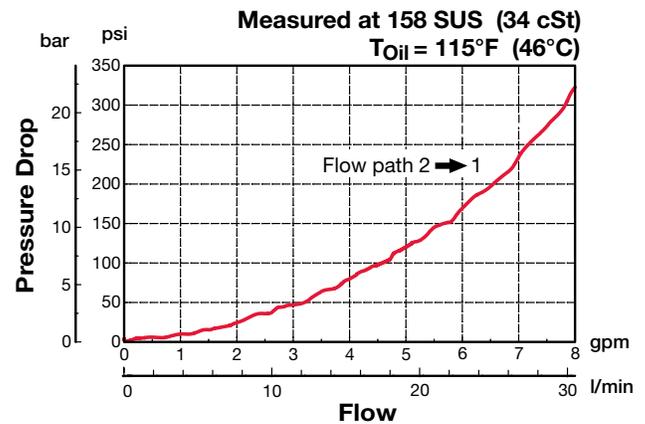


### 'F' - Tamper Proof Cap



All measurements in inches (mm).  
Subject to technical modifications

## Performance



## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.00 lb (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

## SR10-01 Flow Regulator, Pressure Compensated, Restrictive Type Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

### Description

A screw-in cartridge, adjustable, pressure compensated, hydraulic flow regulating valve (restrictive type).

### Operation

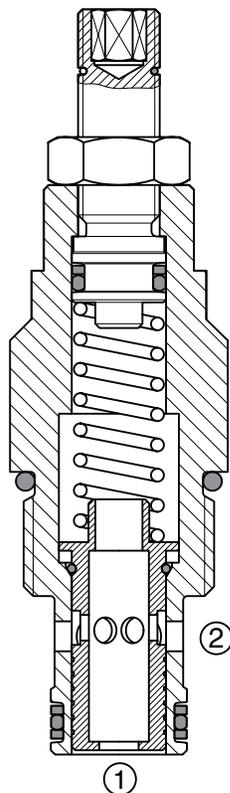
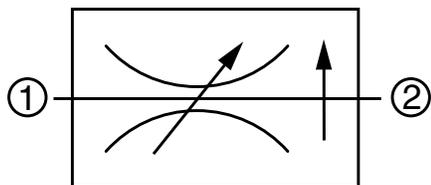
The SR10-01 maintains a constant flow from port 1 to port 2 based on the setting adjustment, regardless of pressure changes downstream of port 2. The flow rate is determined by a fixed control orifice and could be adjusted within a limited range. Reverse flow from port 2 to port 1 is at the value of the fixed control orifice and is non-pressure compensated.

### Features

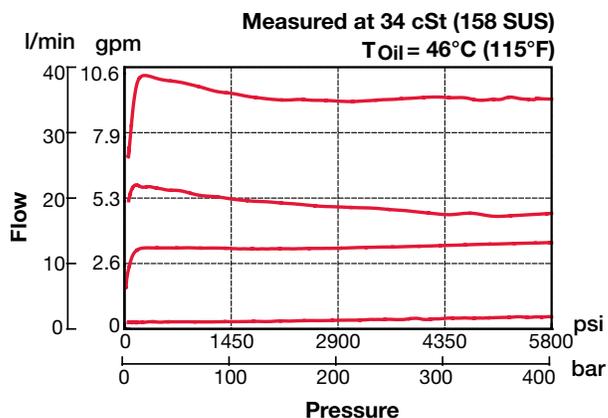
- Excellent stability throughout flow range
- Reverse flow capability
- Desired setting may be locked down
- Adjustment screw cannot be backed out of the valve
- All external surfaces zinc-plated
- Aluminum knob option for ease of adjustment
- Hardened parts to ensure minimal wear and extend service life
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Industry common cavity

### Specifications

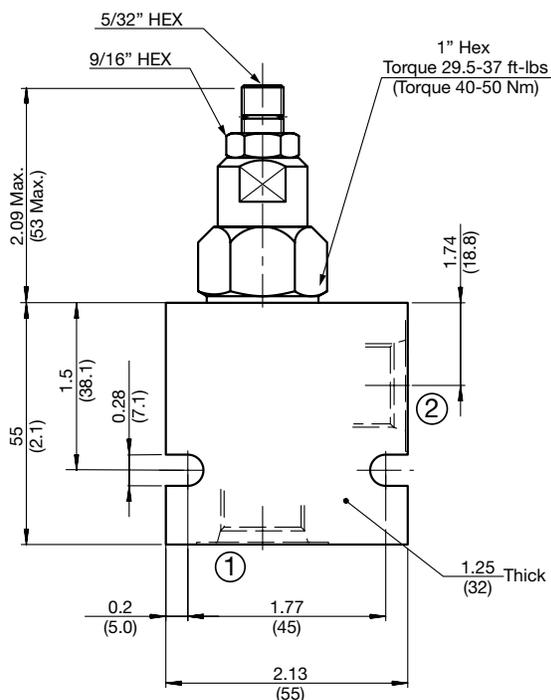
|                                 |  |
|---------------------------------|--|
| Operating Pressure              | 5000 psi (350 bar)   |
| Max. Operating Pressure, Port 2 | 3000 psi (210 bar)   |
| Nominal Flow                    | 10 gpm (38 l/min)  |
| Adjustment Torque Required      | 1.25 lbf.ft at 3000 psi (1.7Nm at 210 bar)<br>2.21lbf.ft at 5000 psi (3.0 Nm at 350 bar)   |
| Flow Ranges and Accuracy        | 1.0 - 3.5 gpm (4 - 13 l/min) ±10%<br>3.5 - 10.0 gpm (13 - 38 l/min) ±10%   |
| Fluid Operating Temp. Range     | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>  |
| Fluid Compatibility             | Mineral-based or synthetics with lubricating properties  |
| Viscosity                       | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                      | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated B10 ≥ 200.  |
| Installation                    | No orientation restrictions  |
| Cavity                          | FC10-2 (see Line Bodies & Cavities section)  |
| Cavity Tools                    | Rougher: 02580274<br>Finisher: 02580247  |
| Cartridge Weight                | 0.35 Lbs. (0.16 kg)  |
| Cartridge Material              | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. <i>(option H)</i><br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits                       | Buna-N P/N: 03033872<br>Viton® P/N: 03051757   |



### Performance



## Dimensions



## Model Code

SR10-01-C-N-3.5 V 1.8

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Flow Rate

- 3.5 = 1.0 to 3.5 gpm (4 to 13 l/min)
- 10.0 = 3.5 to 10.0 gpm (13 to 38 l/min)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
(must specify setting below)
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

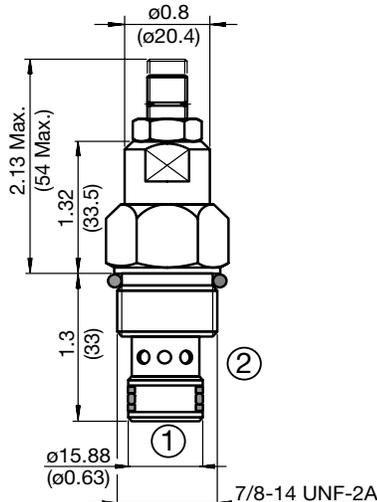
### Setting

- blank = Set at 50% of maximum flow for the range
- xxx = flow rate in gpm

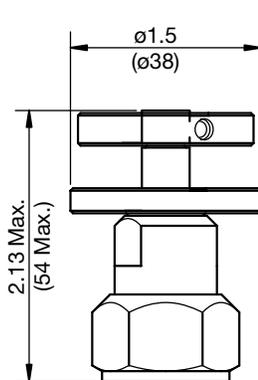
Example: 1.8 = 1.8 psi

## Adjustment Options

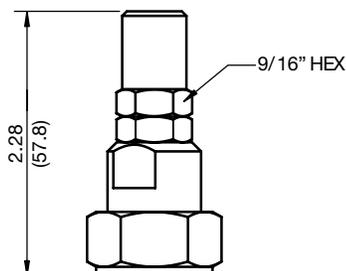
### 'V' - Allen Head (std)



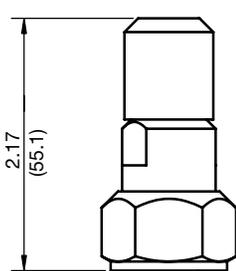
### 'H' - Hand Knob



### 'K' - Protective Cap



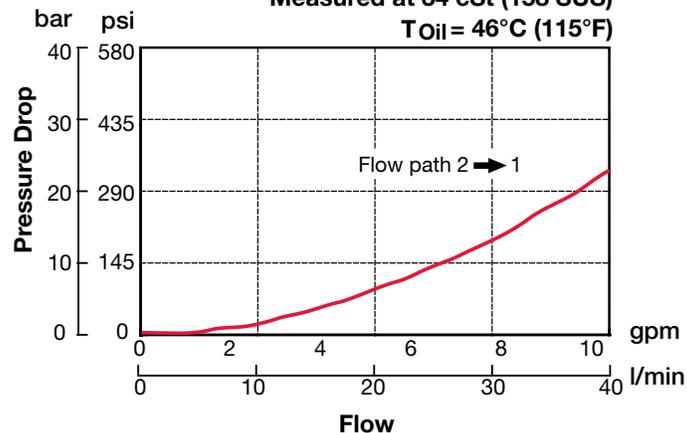
### 'F' - Tamper Proof Cap



All measurements in inches (mm).  
Subject to technical modifications

## Performance

Measured at 34 cSt (158 SUS)  
T<sub>Oil</sub> = 46°C (115°F)

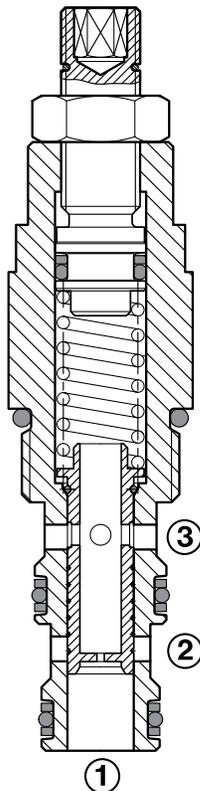
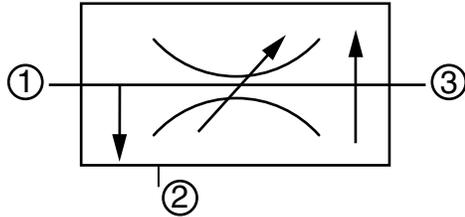


## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lb (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lb (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## SRP08-01 Flow Regulator, Pressure Compensated, Priority Type Up to 8 gpm (30 l/min) • 5000 psi (350 bar)



### Description

A screw-in cartridge, adjustable, pressure compensated, priority type hydraulic flow regulating valve.

### Operation

The SRP08-01 maintains a constant priority flow from port 1 to port 3 based on the setting adjustment, regardless of pressure changes downstream of port 3 or in the bypass line at port 2. The flow rate is determined by a fixed control orifice and could be adjusted within a limited range. Flow in excess of the priority setting is directed to port 2. If the priority flow at port 3 is blocked, the spool will shift, thereby closing off flow to port 2.

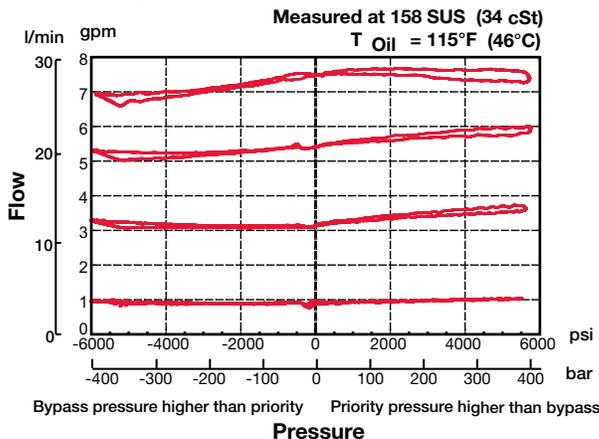
### Features

- Excellent stability throughout flow range
- Reverse flow capability
- Desired setting may be locked down
- Adjustment screw cannot be backed out of the valve
- Bypass port 2 may be fully pressurized
- All external surfaces zinc-plated
- Aluminum knob option for ease of adjustment
- Hardened parts to ensure minimal wear and extend service life
- Industry common cavity

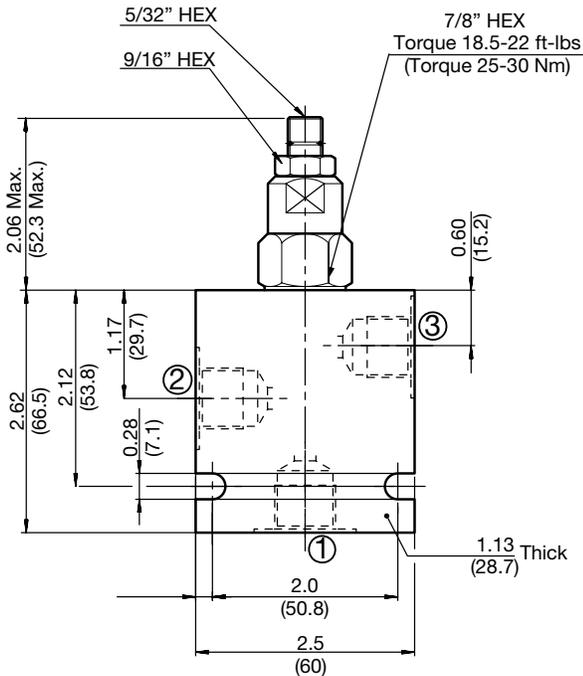
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 8 gpm (30 l/min)   |
| Flow Ranges                 | 0.34 - 0.47 gpm (1.30 - 1.80 l/min)<br>0.42 - 0.66 gpm (1.60 - 2.50 l/min)<br>0.53 - 1.00 gpm (2.00 - 3.70 l/min)<br>0.92 - 1.70 gpm (3.50 - 6.50 l/min)<br>1.60 - 3.30 gpm (6.00 - 12.5 l/min)<br>2.30 - 5.50 gpm (8.80 - 20.8 l/min) |
| Adjustment Torque Required  | 1.25 lbf.ft at 3000 psi (1.7Nm at 210 bar)<br>2.21lbf.ft at 5000 psi (3.0 Nm at 350 bar)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)   |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC08-3 (see Line Bodies & Cavities section)  |
| Cavity Tools                | Rougher: 02580086<br>Finisher: 02580087  |
| Cartridge Weight            | 0.35 Lbs. (0.15 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings.  |
| Seal Kits                   | Buna-N P/N: 03054795<br>Viton® P/N: 02591059   |

### Performance



## Dimensions



## Model Code

SRP08-01-C-N-1.0 V 0.8

### Valve Model

### Body & Ports

- C = No Line Body, cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Flow Rate

- 0.5 = 0.34 - 0.47 gpm (1.30 - 1.80 l/min)
- 0.6 = 0.42 - 0.66 gpm (1.60 - 2.50 l/min)
- 1.0 = 0.53 - 1.00 gpm (2.00 - 3.70 l/min)
- 1.6 = 0.92 - 1.70 gpm (3.50 - 6.50 l/min)
- 3.0 = 1.60 - 3.30 gpm (6.00 - 12.5 l/min)
- 5.5 = 2.30 - 5.50 gpm (8.80 - 20.8 l/min)
- 7.9 = 3.60 - 7.90 gpm (13.5 - 30.0 l/min)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
*(must specify setting below)*
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

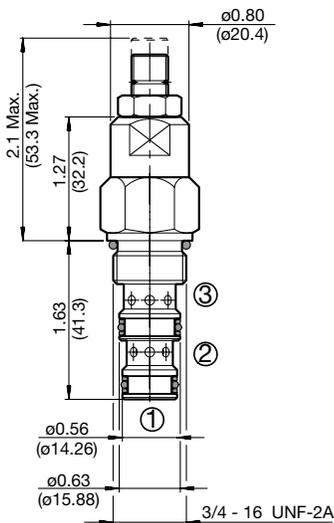
### Setting

- blank = Set at 50% of maximum flow for the range
- xxx = flow rate in gpm

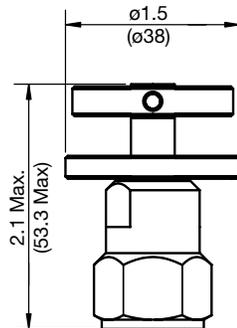
Example: 0.8 = 0.8 psi

## Adjustment Options

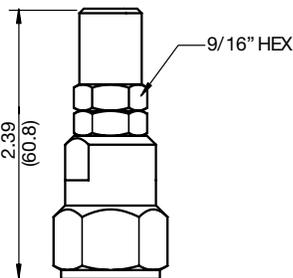
### 'V' - Allen Head (std)



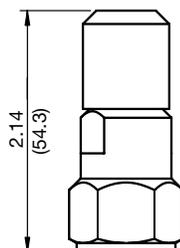
### 'H' - Hand Knob



### 'K' - Protective Cap



### 'F' - Tamper Proof Cap



All measurements in inches (mm).  
Subject to technical modifications

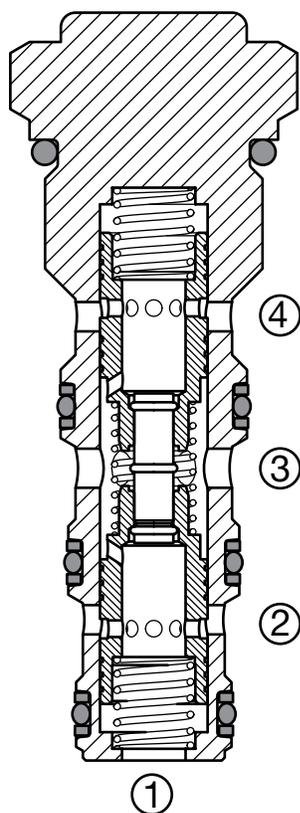
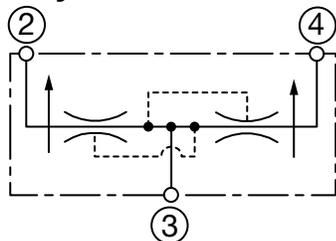
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH083-SS6 | 00560920 | Steel, Zinc plated | 6000 psi (420 bar) | 1.00 lb (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

## ST10-01 Flow Divider/Combiner, Spool Type Up to 12 gpm (45 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, spool type, pressure compensated flow divider/combiner.

### Operation

In the dividing mode, ST10-01 divides the input flow on port 3 between ports 2 and 4, based on the specified ratio, regardless of the operating pressure. In the combining mode, the flow from ports 2 and 4 will be combined into port 3. The division or combining will be maintained even if unequal loads are placed on ports 2 and 4.

The ST10-01 provides synchronizing flow in both combining and dividing modes at bottomed conditions in cylinder applications and at stalled conditions in motor applications. This feature is useful in hydraulic circuits that require cylinders to move at the same time. If one cylinder bottoms out first, the opposite cylinder is provided with a synchronizing flow to allow that cylinder to bottom before both cylinders start moving in the opposite direction.

### Features

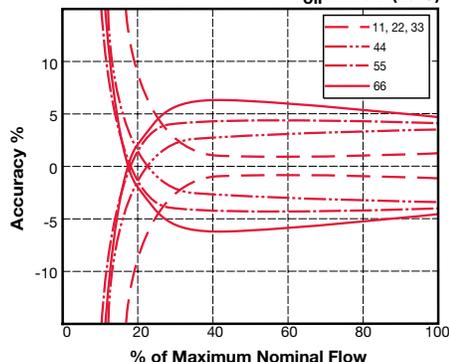
- All external surfaces zinc-plated
- Hardened parts to ensure minimal wear and extend service life
- One piece body maximizes reliability and minimizes the effects of eccentricity
- High accuracy operation
- Wide flow range down to 25% of nominal flow rating
- Low pressure drop
- Provides re-synchronizing flow after completion of the actuator cycle
- Industry common cavity

### Specifications

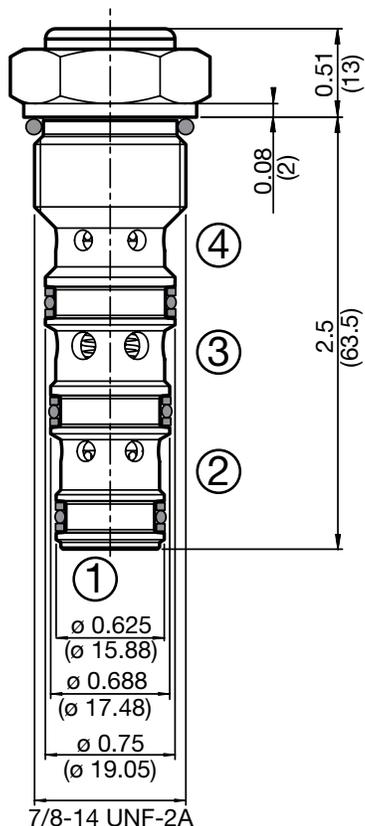
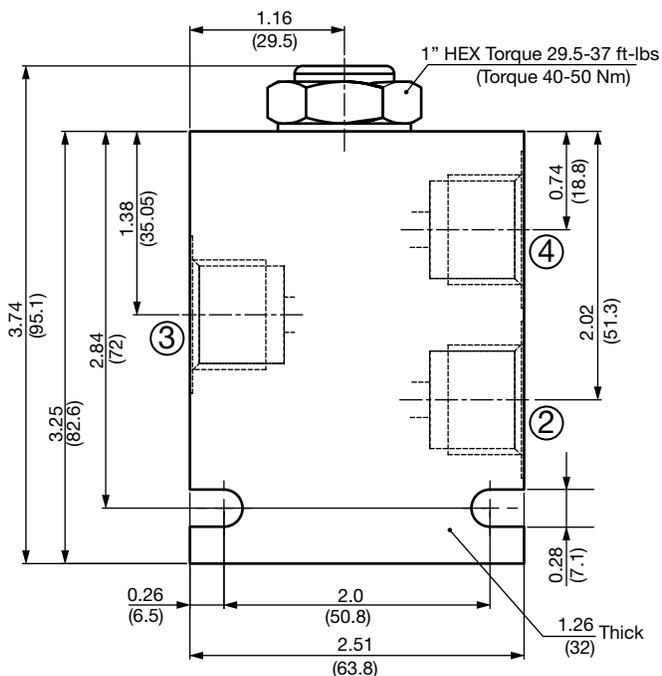
|                             |   |
|-----------------------------|---|
| Operating Pressure          | 5000 psi (350 bar)  |
| Max. Input Flow             | 12 gpm (45 l/min)   |
| Inlet Flow Options          | 2 gpm (7.6 l/min)<br>4 gpm (15.2 l/min)<br>6 gpm (22.8 l/min)<br>8 gpm (30.4 l/min)<br>10 gpm (37.8 l/min)<br>12 gpm (45.6 l/min) |
| Minimum Input Flow          | Not less than 25% of Nominal Input flow   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation                | No orientation restrictions   |
| Cavity                      | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580249<br>Finisher: 02582048   |
| Cartridge Weight            | 0.27 lb (.122 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings.          |
| Seal Kits                   | Buna-N P/N: 03051912<br>Viton® P/N: 03071275  |

### Flow Division Accuracy

Measured at 158 SUS (34 cSt)  
Toil = 115°F (46°C)



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**ST10-01-C-N-22**

### Valve Model

### Body & Ports

- C = No Line Body, cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

### Seals

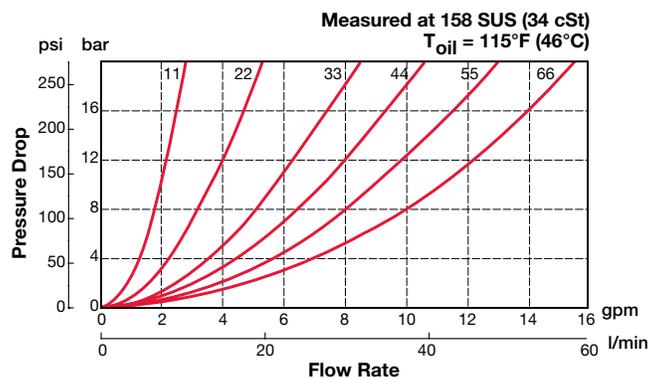
- N = Buna-N
- V = Viton®

### Flow Rate & Range

| Code | Ratio Port 3 (%) | Ratio Port 4 (%) | Max. inlet flow gpm (l/min) | *Synchronization flow rate  |                            |
|------|------------------|------------------|-----------------------------|-----------------------------|----------------------------|
|      |                  |                  |                             | Combining gpm (l/min) 2 - 4 | Dividing gpm (l/min) 2 - 4 |
| 11   | 50               | 50               | 2 (7.6)                     | 0.18 (0.7)                  | 0.18 (0.7)                 |
| 22   | 50               | 50               | 4 (15.2)                    | 0.34 (1.3)                  | 0.30 (1.1)                 |
| 33   | 50               | 50               | 6 (22.8)                    | 0.60 (2.3)                  | 0.55 (2.1)                 |
| 44   | 50               | 50               | 8 (30.4)                    | 0.68 (2.6)                  | 0.74 (2.8)                 |
| 55   | 50               | 50               | 10 (37.8)                   | 0.79 (3.0)                  | 0.89 (3.4)                 |
| 66   | 50               | 50               | 12 (45.6)                   | 1.37 (5.2)                  | 0.82 (3.1)                 |

\*at 100 bar (1450 psi)

## Performance



## Standard Line Bodies\*

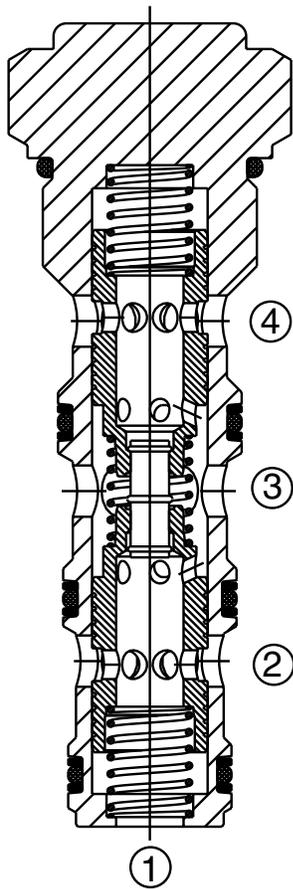
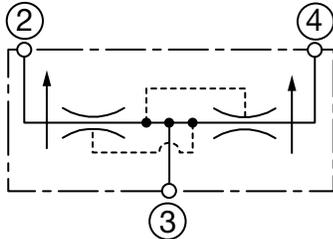
| Code         | Part No  | Material           | Pressure Rating    | Weight             |
|--------------|----------|--------------------|--------------------|--------------------|
| FH1041-AS8** | 02593311 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH1041-SS8** | 02593312 | Steel, Zinc plated | 6000 psi (420 bar) | 1.00 lbs (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

\*\*Standard line body (FH104) port 1 must be plugged when used with ST10.  
Use SAE-8 plug, HYDAC part #02580005

## ST16-01 Flow Divider/Combiner, Spool Type Up to 40 gpm (150 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, spool type, pressure compensated flow divider/combiner.

### Operation

In the dividing mode, ST16-01 divides the input flow on port 3 between ports 2 and 4, based on the specified ratio, regardless of the operating pressure. In the combining mode, the flow from ports 2 and 4 will be combined into port 3. The division or combining will be maintained even if unequal loads are placed on ports 2 and 4.

The ST16-01 provides synchronizing flow in both combining and dividing modes at bottomed conditions in cylinder applications and at stalled conditions in motor applications. This feature is useful in hydraulic circuits that require cylinders to move at the same time. If one cylinder bottoms out first, the opposite cylinder is provided with the synchronizing flow to allow that cylinder to bottom before both cylinders start moving in the opposite direction.

### Features

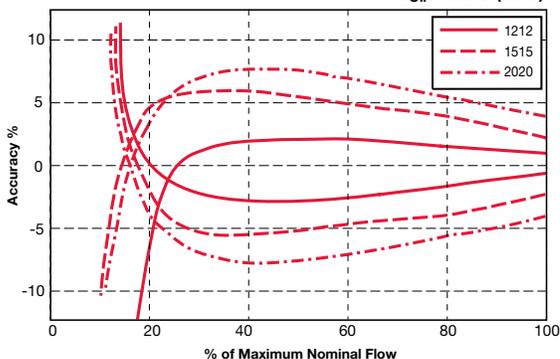
- High accuracy operation
- Low pressure drop
- Wide flow range down to 25% of nominal flow rating
- Provides re-synchronizing flow after completion of the actuator cycle
- All external surfaces zinc-plated
- Hardened parts to ensure minimal wear and extend service life
- One-piece body maximizes reliability and minimizes the effect of eccentricity
- Industry common cavity

### Specifications

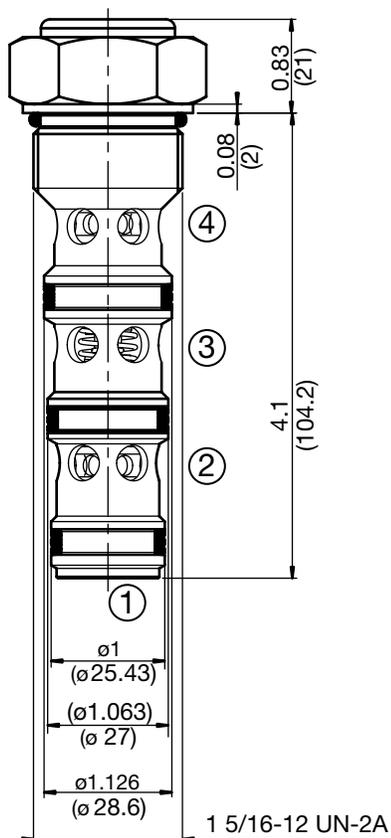
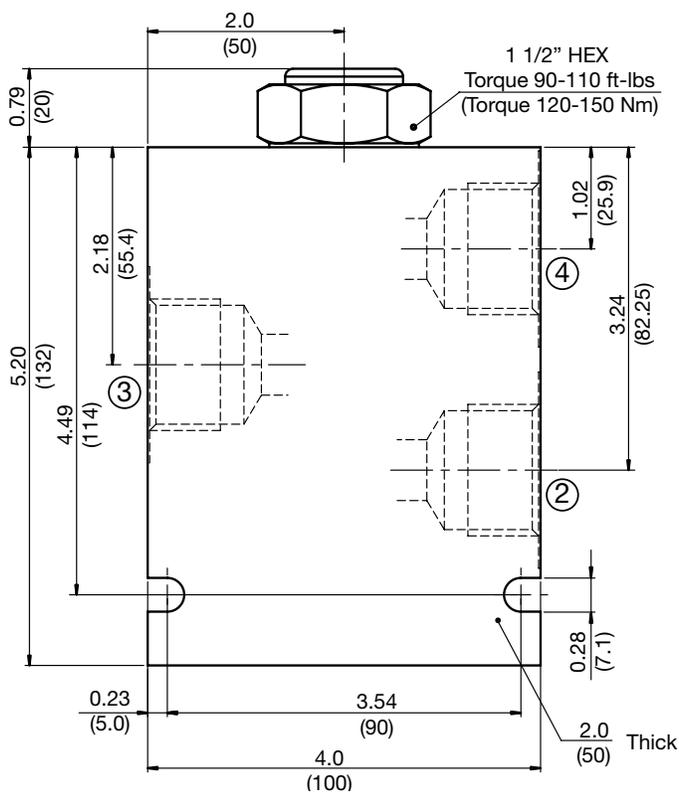
|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Maximum Input Flow          | 40 gpm (150 l/min)   |
| Inlet Flow Options          | 24 gpm (90 l/min)<br>30 gpm (115 l/min)<br>40 gpm (150 l/min)  |
| Minimum Input Flow          | Not less than 25% of Nominal Input flow  |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                     |
| Installation                | No orientation restrictions  |
| Cavity                      | FC16-4 (see Line Bodies & Cavities section)  |
| Cavity Tools                | Rougher: 02580253<br>Finisher: 02580252  |
| Cartridge Weight            | 1.02 lb (.465 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03181644<br>Viton® P/N: 03181675   |

### Flow Division Accuracy

Measured at 158 SUS (34 cSt)  
T<sub>oil</sub> = 115°F (46°C)



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

ST16-01-C-N-2020

### Valve Model

### Body & Ports

- C = No Line Body, cartridge only
- AS16 = SAE-8 ports, aluminum body
- SS16 = SAE-8 ports, steel body

### Seals

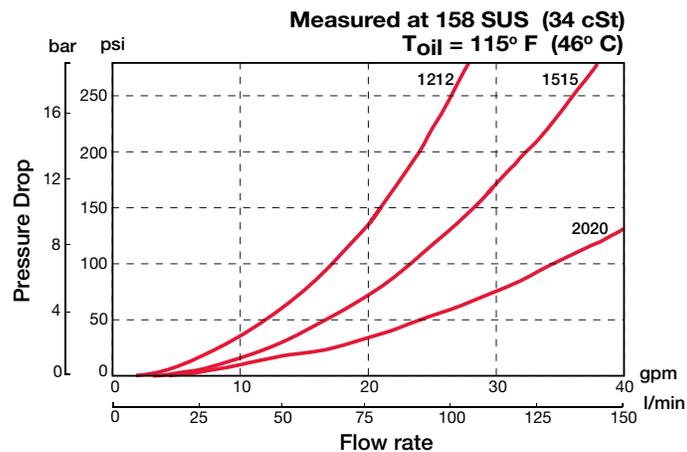
- N = Buna-N
- V = Viton®

### Flow Rate & Range

| Code | Ratio Port 3 (%) | Ratio Port 4 (%) | Max. inlet flow gpm (l/min) | *Synchronization flow rate gpm (l/min) |
|------|------------------|------------------|-----------------------------|--|
| 1212 | 50               | 50               | 24 (90)                     | 1.8 (6.7)                              |
| 1515 | 50               | 50               | 30 (115)                    | 2.2 (8.3)                              |
| 2020 | 50               | 50               | 40 (22.8)                   | 2.6 (9.8)                              |

\*at 100 bar (1450 psi)

## Performance



## Standard Line Bodies\*

| Code          | Part No  | Material           | Pressure Rating    | Weight            |
|---------------|----------|--------------------|--------------------|-------------------|
| FH1641-AS16** | 02593313 | Aluminum, anodized | 3500 psi (245 bar) | 3.00 lb (1.36 kg) |
| FH1641-SS16** | 02593314 | Steel, Zinc plated | 6000 psi (420 bar) | 8.8 lb (4.00 kg)  |

\*Please refer to Line Bodies & Cavities section for details

\*\*Standard line body (FH164) port 1 must be plugged when used with ST16.  
Use SAE-16 plug, HYDAC part #02581224.



## Overview

The HYDAC range of direct and pilot operated check valves provide a broad selection of cartridge and inline products with operating pressure rating of up to 6000 psi (420 bar). All valves have a one piece body design and hardened balls or poppets. This provides an excellent product with reliable seating, 2 drops/minute maximum internal leakage, dirt-tolerance and long life.

**Check Valves** offer optional bias springs and flow capacity up to 44 gpm (165 l/min). Check valve cartridges fit into Industry standard cavities. A wide selection of cracking pressures are available from 5 to 70 psi (0.35 – 5 bar). Thus they could be used not only as a conventional check but also as a low pressure relief valves.

**Pilot Operated Check Valves** are available for flows up to 40 gpm (150 l/min) and pilot ratios 3:1 and 4:1. These valves positively lock a load from port 1 to port 2 until pilot pressure applied to port 3 is sufficient to unseat the valve. This flow path provides for higher flow rating in a given cavity, excellent stability and repeatability. They also fit into the same cavity as HYDAC counterbalance valves. These valves provide a low cost alternative to load control when the dynamics of neither overrunning loads nor load release speed are factors to be considered in the design of the hydraulic circuit. They are used for:

- Position load locking.
- As an alternative to counterbalance valves where neither the overrunning loads or release speed are factors in the application.

**Single Pilot-to-Open Check Valves** and **Dual Pilot-to Open Check Valves** are inline housed, pilot operated, hydraulic check valves for use as a blocking or load holding device for flow rates up to 20 gpm (80 l/min) and 6000 psi (420 bar). They feature:

- Hardened closing element in a check valve to ensure extended service life and 2 drops/min maximum internal leakage
- Multiple bias spring options for back pressure application flexibility
- Optional sealed pilot piston
- Check section serviceable as a cartridge
- All zinc-plated external cartridge surfaces
- Aluminum or steel inline housings

**Counterbalance Valve RS08-01** is a compact cartridge design with operating pressure up to 5000 psi (350 bar) and flow rate up to 10 gpm (38 l/min). These valves are used for

- Precise control of overrunning loads
- Positive load holding in any position
- Protection from pump cavitation
- Thermal expansion relief protection
- Preventing actuators from running ahead of the pump supply

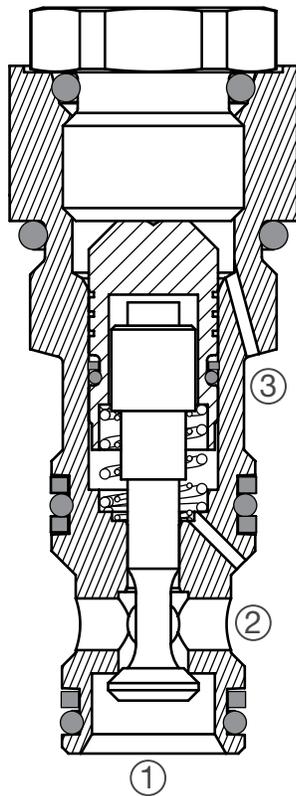
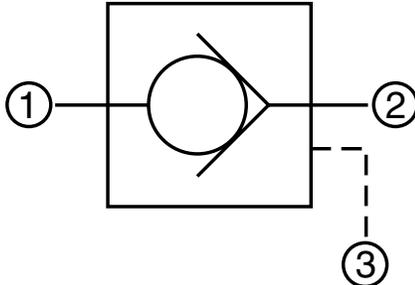
**Counterbalance Valves have:**

- A built in check valve feature allowing free flow in one direction
- A relief feature controlling flow in the other direction
- A pilot signal that overrides the relief setting providing the counterbalance function



## RP08A-01 Check Valve, Pilot-to-Open, Poppet Type Up to 10 gpm (38 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, poppet type pilot operated check valve for use as a blocking or load holding device.

### Operation

The RP08A allows flow from port 2 to port 1, while normally blocking flow from port 1 to port 2. The valve remains closed by bias spring until sufficient pressure is applied at pilot port 3. The cartridge has 3:1 and 4:1 optional pilot ratios, meaning that at least one-third or one-fourth (respectively) of the load pressure held at port 1 is required at port 3 to open the valve. A sealed pilot piston option is available.

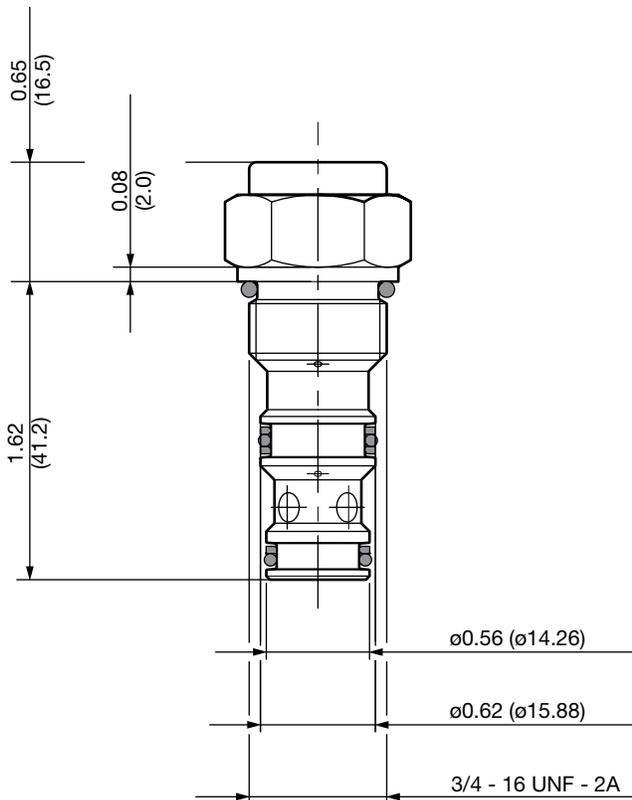
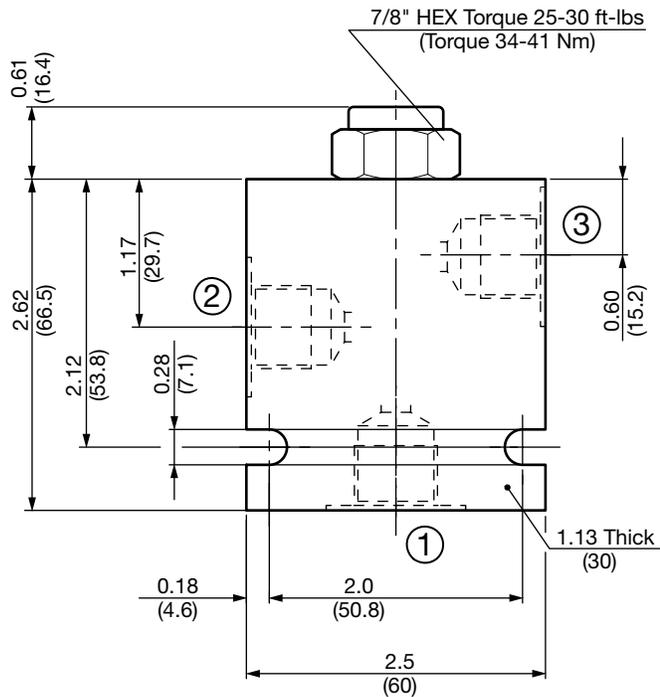
### Features

- Hardened poppet to ensure extended service life and low leakage
- Additional reseating spring for fast and reliable closing
- Optional sealed pilot piston
- Higher flow rating and low pressure drop due to pilot port at 3.
- Same cavity as counterbalance valve RS08.
- All external surfaces zinc-plated or specifically treated
- Industry common cavity

### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 6000 psi (420 bar)  |
| Nominal Flow                | 10 gpm (38 l/min)   |
| Internal Leakage            | 2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)  |
| Pilot Ratio                 | 3:1, 4:1  |
| Standard Check Bias Spring  | 15 psi (1.0 bar)  |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i> |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties                                     |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .        |
| Installation                | No orientation restrictions   |
| Cavity                      | FC08-3 (see <i>Line Bodies &amp; Cavities</i> section)                                      |
| Cavity Tools                | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight            | 0.19 Lbs. (0.09 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings.      |
| Seal Kits                   | Buna-N P/N: 03054795<br>Viton® P/N: 02591059  |

## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

RP08A-01-C-N-15-3

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum Body
- SS6 = SAE-6 Ports, steel Body

### Seals

- N = Buna-N
- NS = Buna-N with Sealed Piston
- V = Viton®
- VS = Viton® with Sealed Piston

### Cracking Pressure

- 15 = 15 psi (1.00 bar)

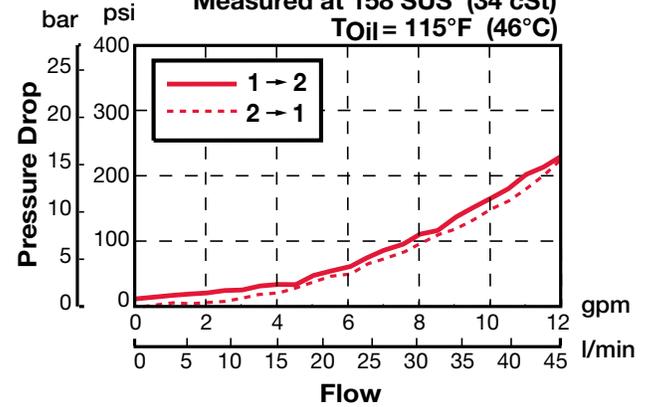
### Pilot Ratio

- 3 = 3:1
- 4 = 4:1

## Performance

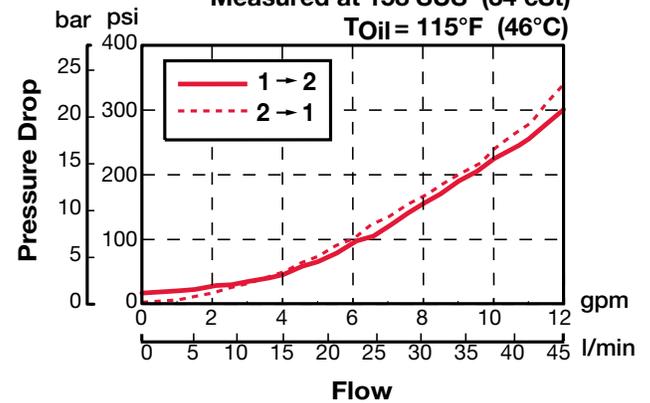
3:1 Pilot Ratio

Measured at 158 SUS (34 cSt)  
TOil = 115°F (46°C)



4:1 Pilot Ratio

Measured at 158 SUS (34 cSt)  
TOil = 115°F (46°C)



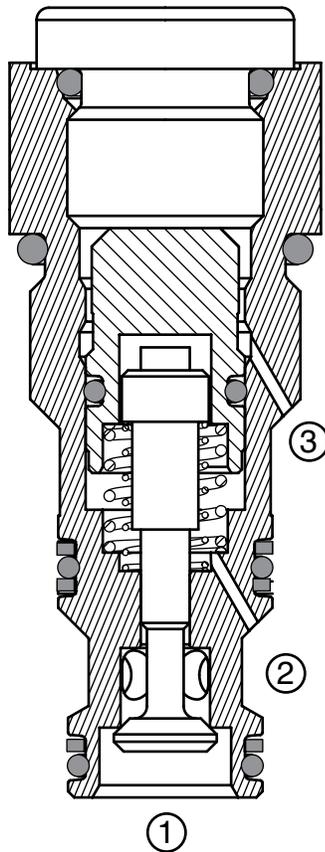
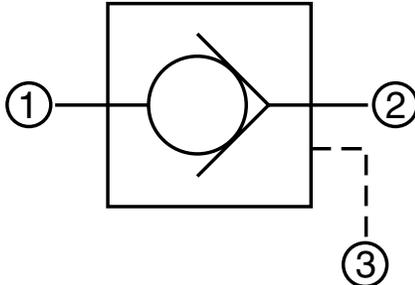
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lb (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, Zinc plated | 6000 psi (420 bar) | 1.70 lb (0.77 kg) |

\*Please refer to Line Bodies & Cavities section for details

## RP10A-01 Check Valve, Pilot-to-Open, Poppet Type Up to 16 gpm (60 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, poppet type pilot operated check valve for use as a blocking or load holding device.

### Operation

The RP10A allows flow from port 2 to port 1, while normally blocking flow from port 1 to port 2. The valve remains closed by bias spring until sufficient pressure is applied at pilot port 3. The cartridge has 3:1 and 4:1 optional pilot ratios, meaning that at least one-third or one-fourth (respectively) of the load pressure held at port 1 is required at port 3 to open the valve. A sealed pilot piston option is available.

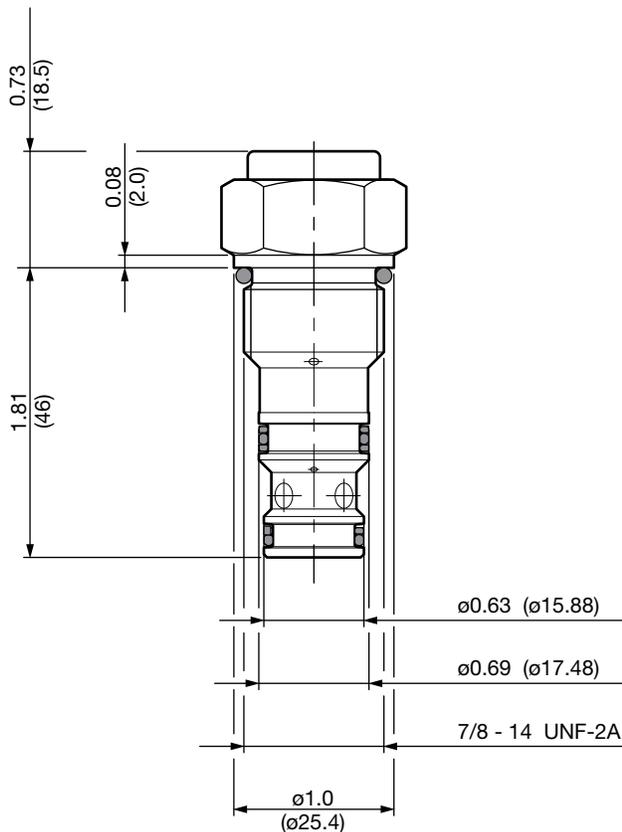
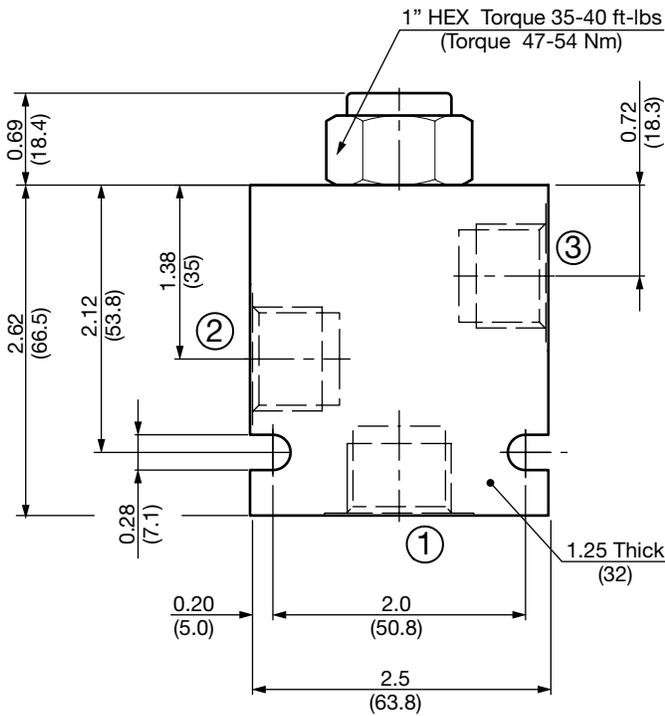
### Features

- Hardened poppet to ensure extended service life and low leakage
- Additional reseating spring for fast and reliable closing
- Optional sealed pilot piston
- Higher flow rating and low pressure drop due to pilot port at 3.
- All external surfaces zinc-plated
- Industry common cavity

### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 6000 psi (420 bar)  |
| Nominal Flow                | 16 gpm (60 l/min)   |
| Internal Leakage            | 2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)  |
| Pilot Ratio                 | 3:1, 4:1  |
| Standard Check Bias Spring  | 15 psi (1.0 bar)  |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                             |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC10-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580092<br>Finisher: 02580093   |
| Cartridge Weight            | 0.31 Lbs.<br>(0.14 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03071274<br>Viton® P/N: 03049443  |

## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

RP10A-01-C-N-15-3

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body

### Seals

- N = Buna-N
- NS = Buna-N with Sealed Piston
- V = Viton®
- VS = Viton® with Sealed Piston

### Cracking Pressure

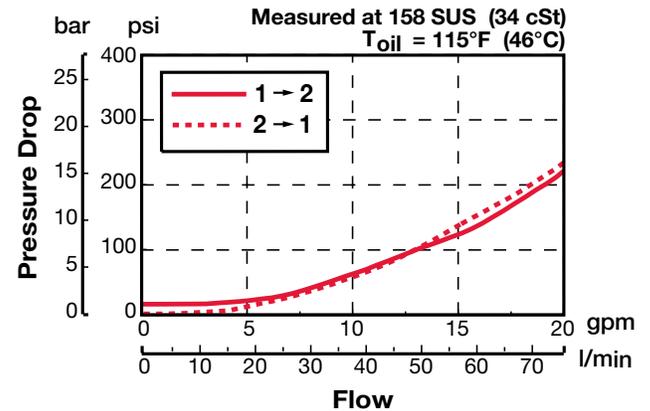
- 15 = 15 psi (1.00 bar)

### Pilot Ratio

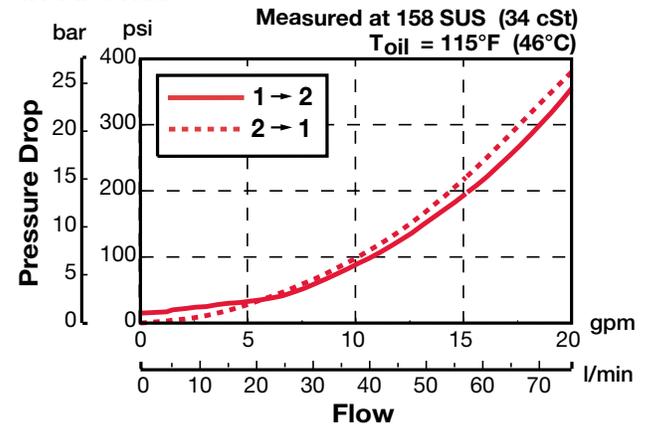
- 3 = 3:1
- 4 = 4:1

## Performance

### 3:1 Pilot Ratio



### 4:1 Pilot Ratio



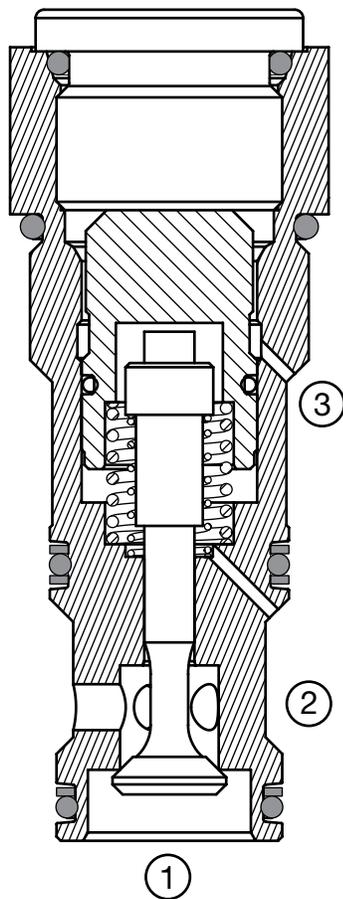
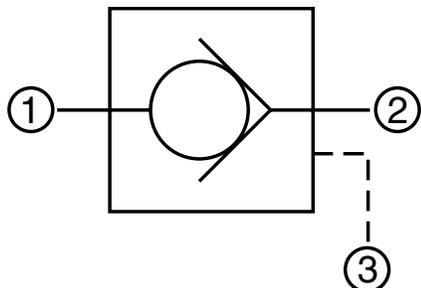
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH103-AS8 | 03038095 | Aluminum, anodized | 3500 psi (245 bar) | 0.60 lb (0.27 kg) |
| FH103-SS8 | 03037704 | Steel, Zinc plated | 6000 psi (420 bar) | 1.74 lb (0.79 kg) |

\*Please refer to Line Bodies & Cavities section for details

## RP16A-01 Check Valve, Pilot-to-Open, Poppet Type Up to 40 gpm (150 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, poppet type pilot operated check valve for use as a blocking or load holding device.

### Operation

The RP16A allows flow from port 2 to port 1, while normally blocking flow from port 1 to port 2. The valve remains closed by bias spring until sufficient pressure is applied at pilot port 3. The cartridge has 3:1 and 4:1 optional pilot ratios, meaning that at least one-third or one-fourth (respectively) of the load pressure held at port 1 is required at port 3 to open the valve.

A sealed pilot piston option is available.

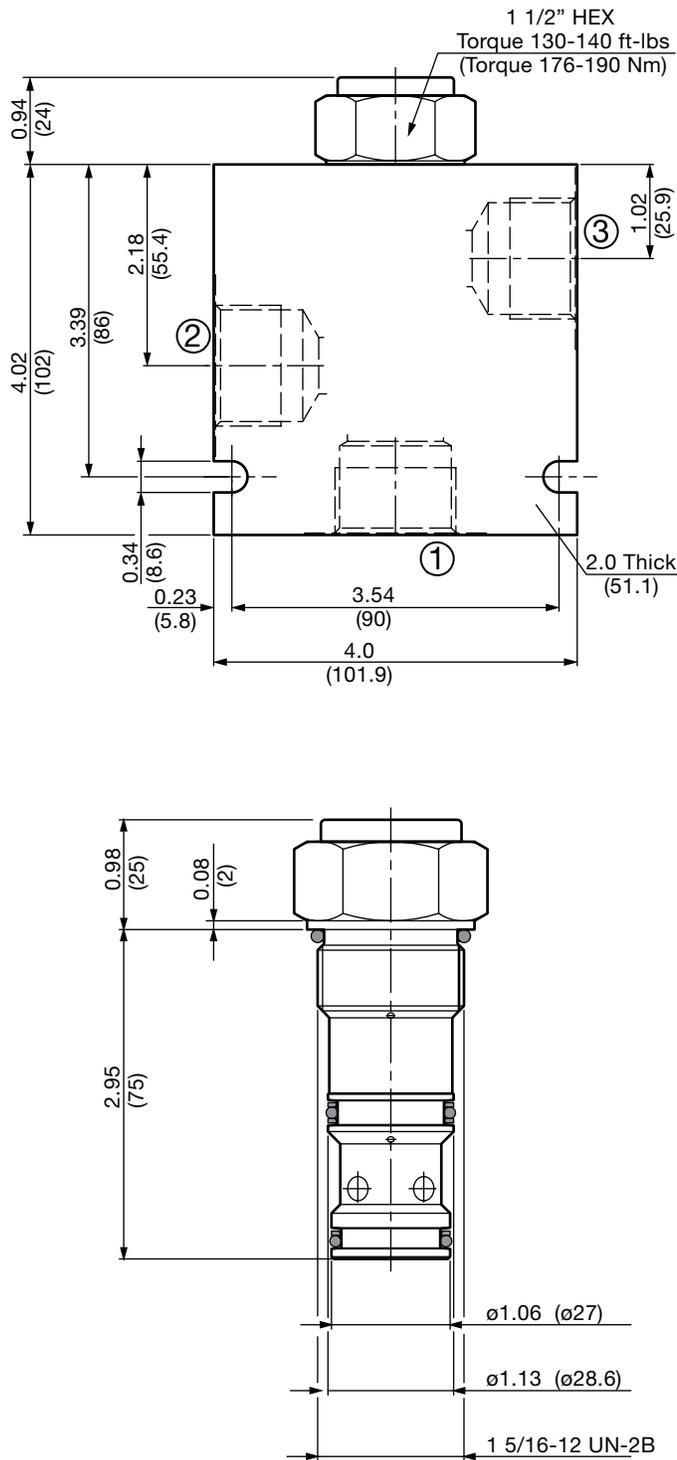
### Features

- Hardened poppet to ensure extended service life and low leakage
- Additional reseating spring for fast and reliable closing
- Optional sealed pilot piston
- Higher flow rating and low pressure drop due to pilot port at 3.
- All external surfaces zinc-plated
- Industry common cavity

### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 6000 psi (420 bar)  |
| Nominal Flow                | 40 gpm (150 l/min)  |
| Internal Leakage            | 2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)  |
| Pilot Ratio                 | 3:1, 4:1  |
| Standard Check Bias Spring  | 15 psi (1.0 bar)  |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)                                    |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC16-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580094<br>Finisher: 02580095   |
| Cartridge Weight            | 1.13 Lbs. (0.51 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03071303<br>Viton® P/N: 03071304  |

## Dimensions



## Model Code

RP16A-01-C-N-15-3

### Valve Model

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum Body
- SS16 = SAE-16 Ports, steel Body

### Seals

- N = Buna-N
- NS = Buna-N with Sealed Piston
- V = Viton®
- VS = Viton® with Sealed Piston

### Cracking Pressure

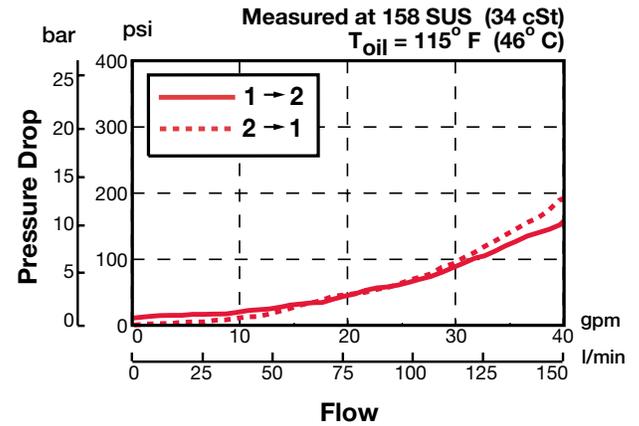
- 15 = 15 psi (1.00 bar)

### Pilot Ratio

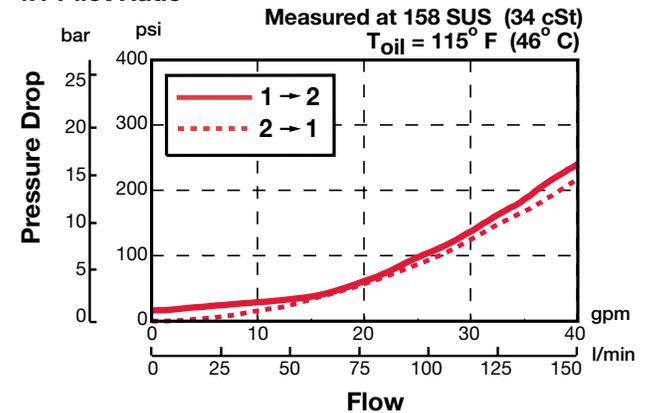
- 3 = 3:1
- 4 = 4:1

## Performance

### 3:1 Pilot Ratio



### 4:1 Pilot Ratio



## Standard Line Bodies\*

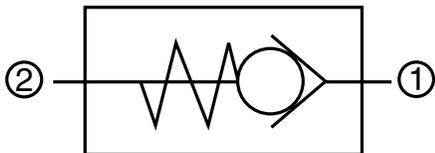
| Code       | Part No  | Material           | Pressure Rating    | Weight            |
|------------|----------|--------------------|--------------------|-------------------|
| FH163-AS16 | 03037210 | Aluminum, anodized | 3500 psi (245 bar) | 2.34 lb (1.06 kg) |
| FH163-SS16 | 03036285 | Steel, Zinc plated | 6000 psi (420 bar) | 6.80 lb (3.09 kg) |

\*Please refer to Line Bodies & Cavities section for details

All measurements in inches (mm).  
Subject to technical modifications

## RV06A-01 Check Valve, Ball Type Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, ball type check valve for use as a blocking or load holding device.

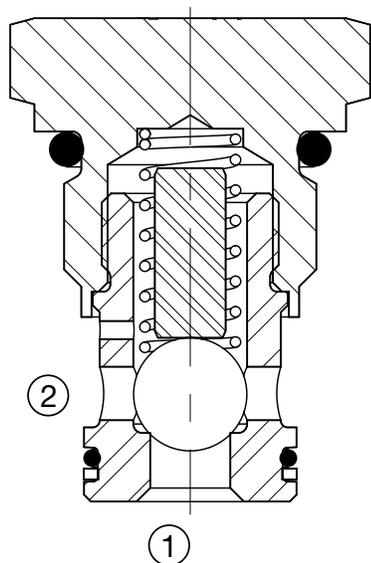
### Operation

The RV06A allows flow from port 1 to port 2, while normally blocking flow in the opposite direction.

The valve remains closed by bias spring until sufficient pressure is applied at port 1 at which time the ball lifts off the seat and allows flow from port 1 to port 2.

### Features

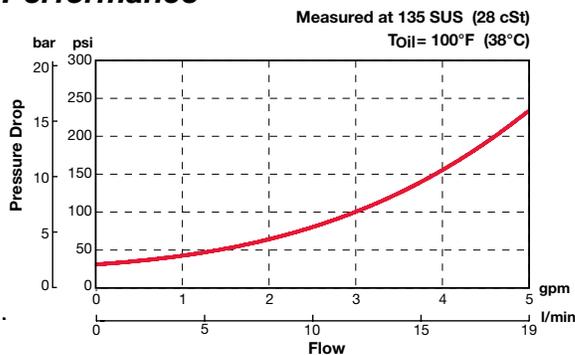
- Hardened closing element to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Fast closing and seating
- All external surfaces zinc-plated



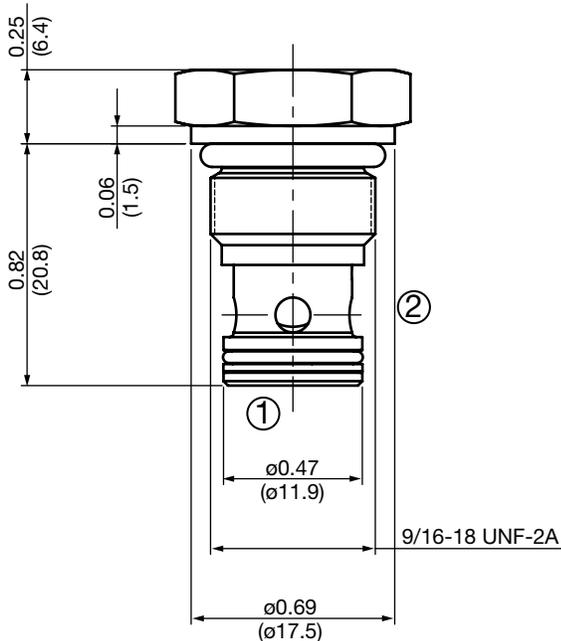
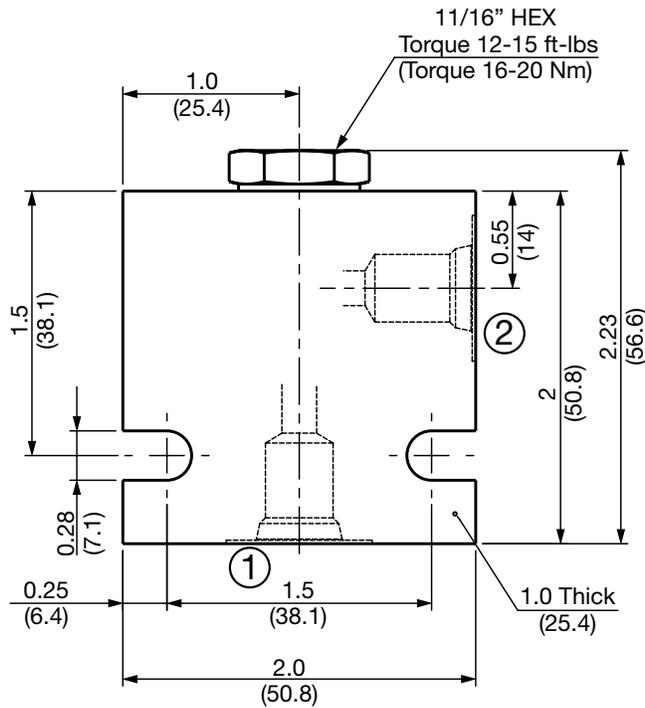
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Maximum Flow Rate           | 5 gpm (19 l/min)   |
| Internal Leakage            | 5 drops/min at 5000 psi (350 bar)  |
| Standard Cracking Pressures | 5 psi (0.35 bar)<br>30 psi (2.1 bar)   |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC06-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                | Rougher: 02582046<br>Finisher: 02582047  |
| Cartridge Weight            | 0.1 lb (45 g)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N P/N: 02610184<br>Viton® P/N: 02610185   |

### Performance



## Dimensions



## Model Code

**RV06A-01-AS4-N-30**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum Body
- SS4 = SAE-4 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Cracking Pressure

- 5 = 5 psi (0.35 bar)
- 30 = 30 psi (2.1 bar)

All measurements in inches (mm).  
Subject to technical modifications

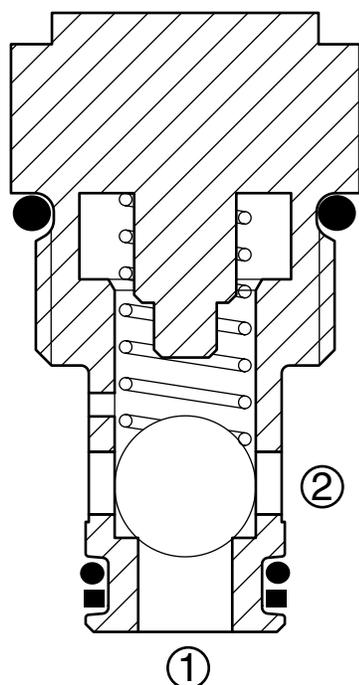
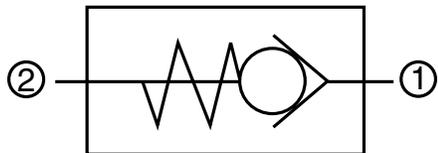
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## RV08A-01 Check Valve, Ball Type Up to 10 gpm (38 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, ball type check valve for use as a blocking or load holding device.

### Operation

The RV08A allows flow from port 1 to port 2, while normally blocking flow in the opposite direction. The valve remains closed by bias spring until sufficient pressure is applied at port 1 at which time the ball lifts off the seat and allows flow from port 1 to port 2.

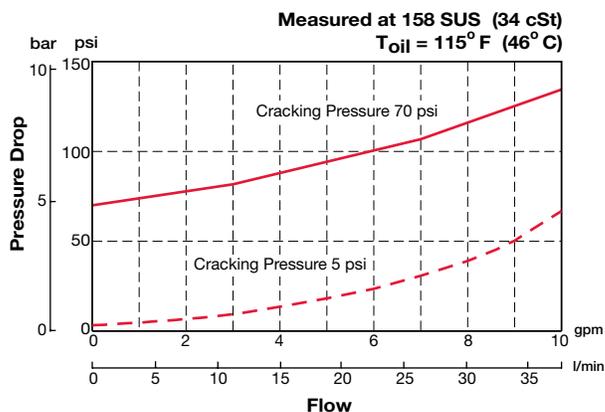
### Features

- Hardened closing element to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Fast closing and seating
- Low pressure drop
- All external surfaces zinc-plated
- Industry common cavity

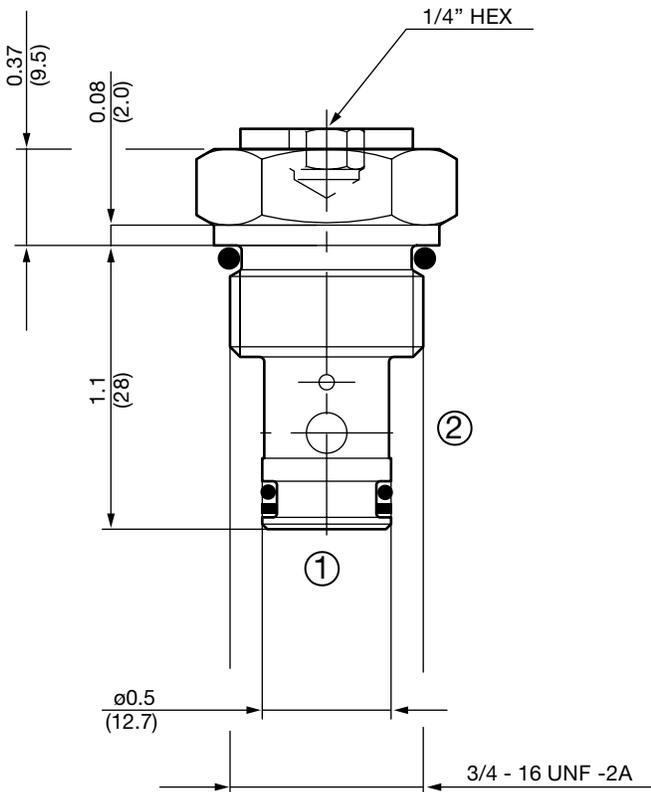
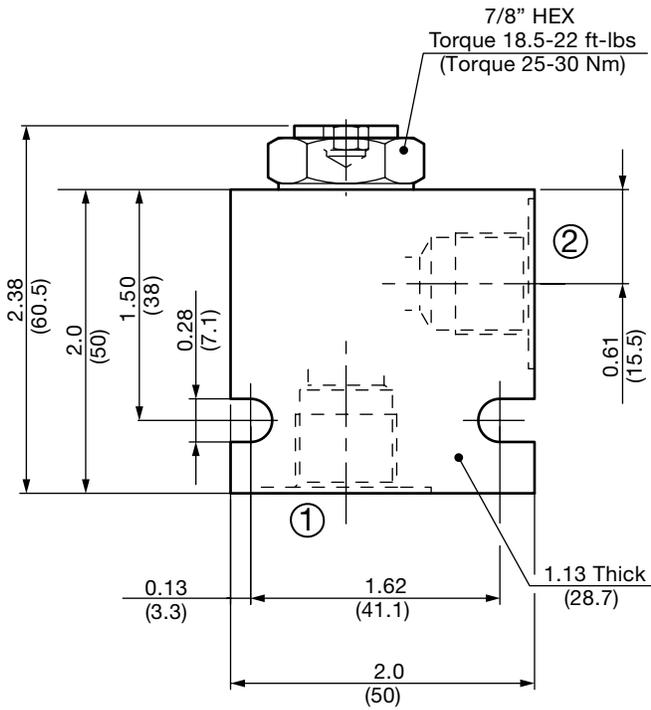
### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 6000 psi (420 bar)  |
| Nominal Flow                | 10 gpm (38 l/min)   |
| Internal Leakage            | >2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)   |
| Standard Cracking Pressures | 5 psi (0.35 bar)<br>15 psi (1.00 bar)<br>30 psi (2.00 bar)<br>70 psi (5.00 bar)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                             |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580090<br>Finisher 02580091  |
| Cartridge Weight            | 0.13 Lbs. (0.06 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03033920<br>Viton® P/N: 03051756  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**RV08A-01-C-N-05**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum Body
- SS6 = SAE-6 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Cracking Pressure

- 05 = 5 psi (0.35 bar)
- 15 = 15 psi (1.00 bar)
- 30 = 30 psi (2.00 bar)
- 70 = 70 psi (5.00 bar)

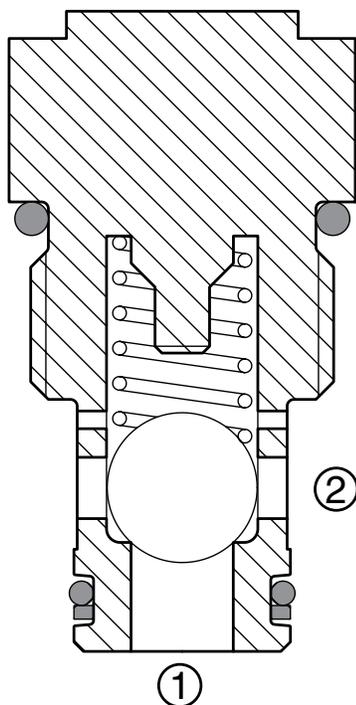
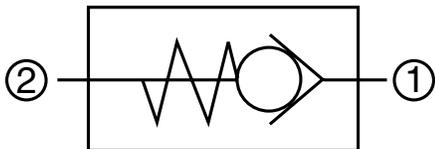
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lb (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## RV10A-01 Check Valve, Ball Type Up to 21 gpm (80 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, ball type check valve for use as a blocking or load holding device.

### Operation

The RV10A allows flow from port 1 to port 2, while normally blocking flow in the opposite direction. The valve remains closed by bias spring until sufficient pressure is applied at port 1 at which time the ball lifts off the seat and allows flow from port 1 to port 2.

### Features

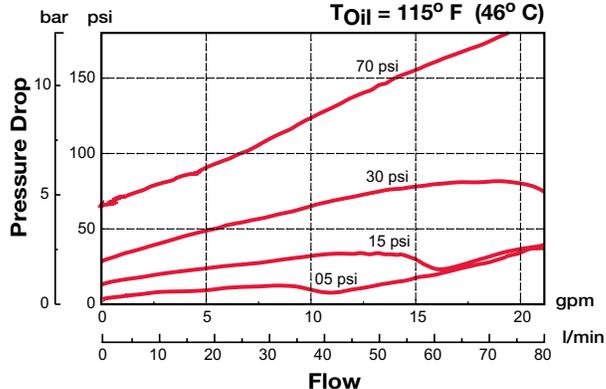
- Hardened closing element to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Fast closing and seating
- Low pressure drop
- All external surfaces zinc-plated
- Industry common cavity

### Specifications

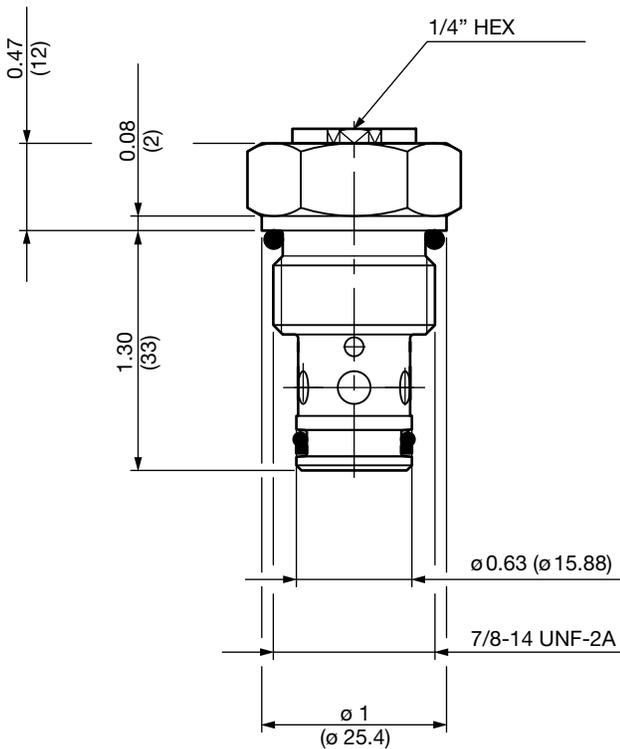
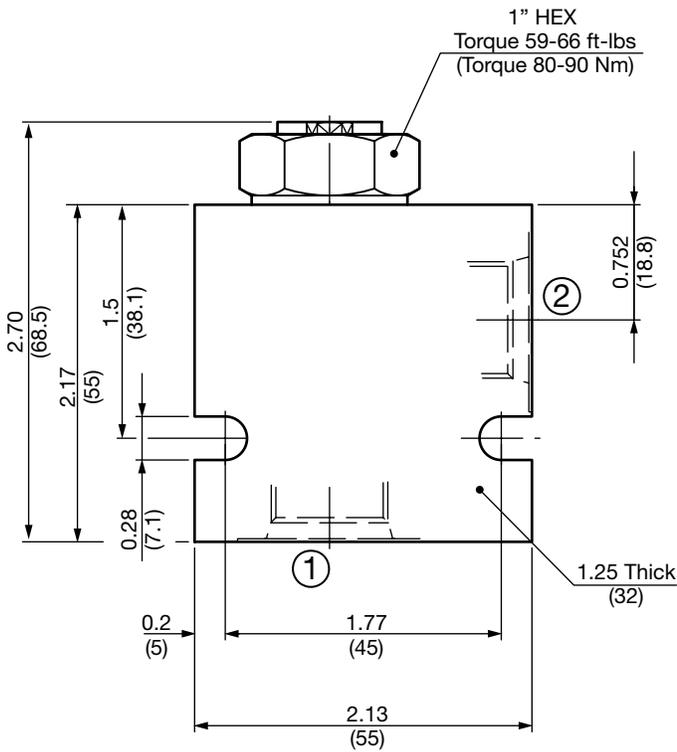
|                             |  |
|-----------------------------|--|
| Operating Pressure          | 6000 psi (420 bar)   |
| Nominal Flow                | 21 gpm (80 l/min)  |
| Internal Leakage            | <2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)  |
| Standard Cracking Pressures | 5 psi (0.35 bar)<br>15 psi (1.00 bar)<br>30 psi (2.00 bar)<br>70 psi (5.00 bar)  |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)   |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                | Rougher: 02580274<br>Finisher: 02580247  |
| Cartridge Weight            | 0.22 Lbs. (0.10 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03033872<br>Viton® P/N: 03051757   |

### Performance

Measured at 158 SUS (34 cSt)  
T<sub>Oil</sub> = 115° F (46° C)



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**RV10A-01-C-N-05**

Valve Model

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body

Seals

- N = Buna-N
- V = Viton®

Cracking Pressure

- 05 = 5 psi (0.35 bar)
- 15 = 15 psi (1.00 bar)
- 30 = 30 psi (2.00 bar)
- 70 = 70 psi (5.00 bar)

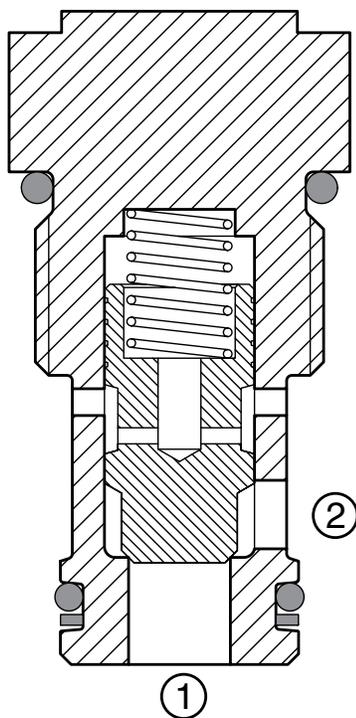
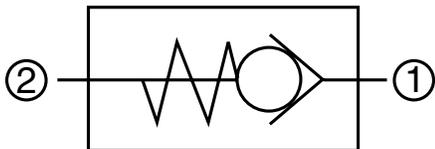
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lb (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lb (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## RV12A-01 Check Valve, Poppet Type Up to 31 gpm (120 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, poppet type check valve for use as a blocking or load holding device.

### Operation

The RV12A allows flow from port 1 to port 2, while normally blocking flow in the opposite direction. The valve remains closed by bias spring until sufficient pressure is applied at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2.

### Features

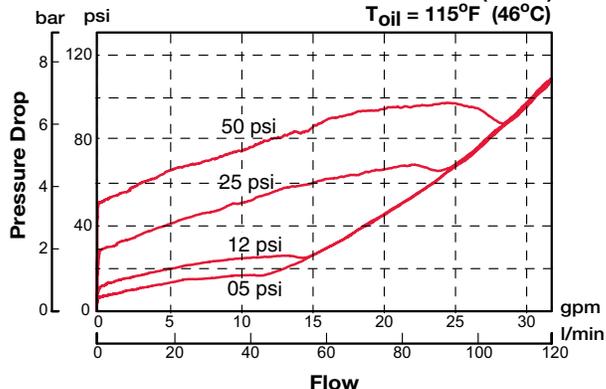
- Hardened closing element to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Fast closing and seating
- Low pressure drop
- Fully guided check
- All external surfaces zinc-plated
- Industry common cavity

### Specifications

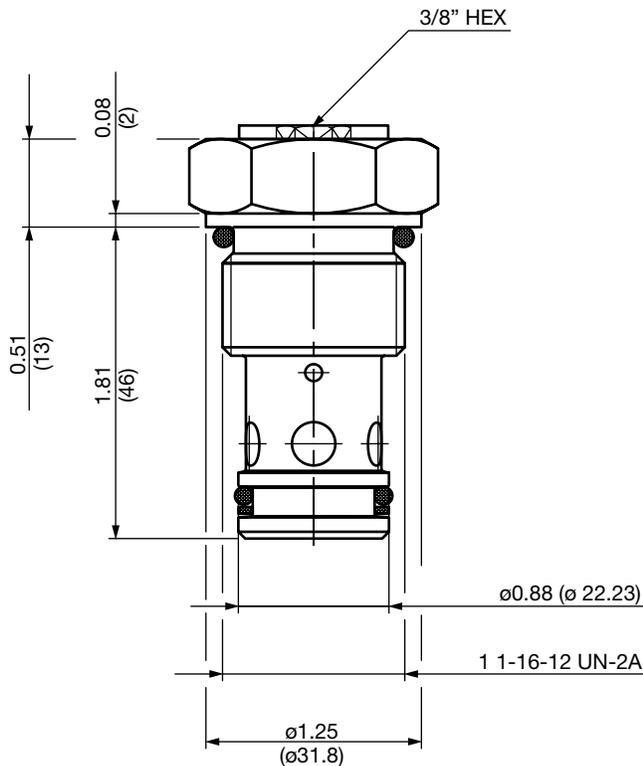
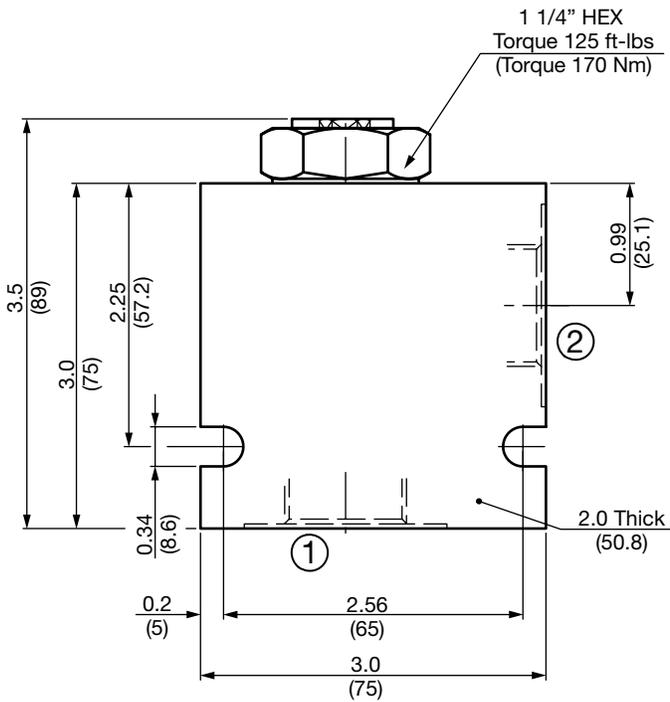
|                             |   |
|-----------------------------|---|
| Operating Pressure          | 6000 psi (420 bar)  |
| Nominal Flow                | 31 gpm (120 l/min)  |
| Internal Leakage            | <2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)   |
| Standard Cracking Pressures | 5 psi (0.35 bar)<br>12 psi (0.80 bar)<br>25 psi (1.70 bar)<br>50 psi (3.40 bar)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                             |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC12-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580667<br>Finisher: 02580668   |
| Cartridge Weight            | 0.44 Lbs. (0.20 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03071298<br>Viton® P/N: 03071299  |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^{\circ}F (46^{\circ}C)$



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**RV12A-01-C-N-05**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS12 = SAE-12 Ports, aluminum Body
- SS12 = SAE-12 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Cracking Pressure

- 05 = 5 psi (0.35 bar)
- 12 = 12 psi (0.80 bar)
- 25 = 25 psi (1.70 bar)
- 50 = 50 psi (3.40 bar)

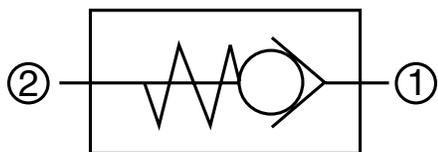
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight            |
|------------|----------|--------------------|--------------------|-------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.20 lb (0.55 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc plated | 6000 psi (420 bar) | 3.56 lb (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

## RV16A-01 Check Valve, Poppet Type Up to 44 gpm (165 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

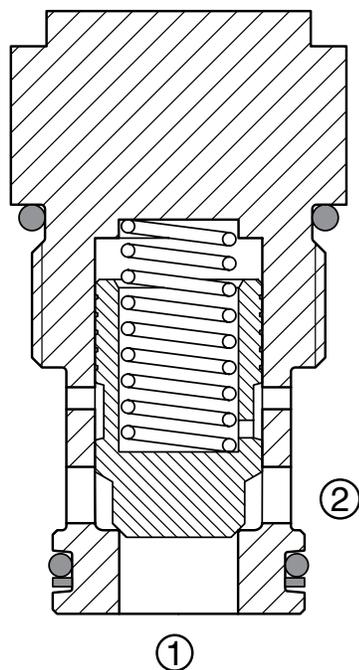
A screw-in cartridge, poppet type check valve for use as a blocking or load holding device.

### Operation

The RV16A allows flow from port 1 to port 2, while normally blocking flow in the opposite direction. The valve remains closed by bias spring until sufficient pressure is applied at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2.

### Features

- Hardened poppet to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Fast closing and seating
- Low pressure drop
- Fully guided check
- All external surfaces zinc-plated
- Industry common cavity

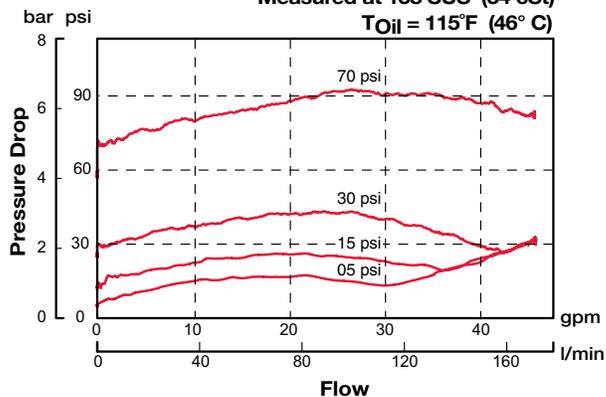


### Specifications

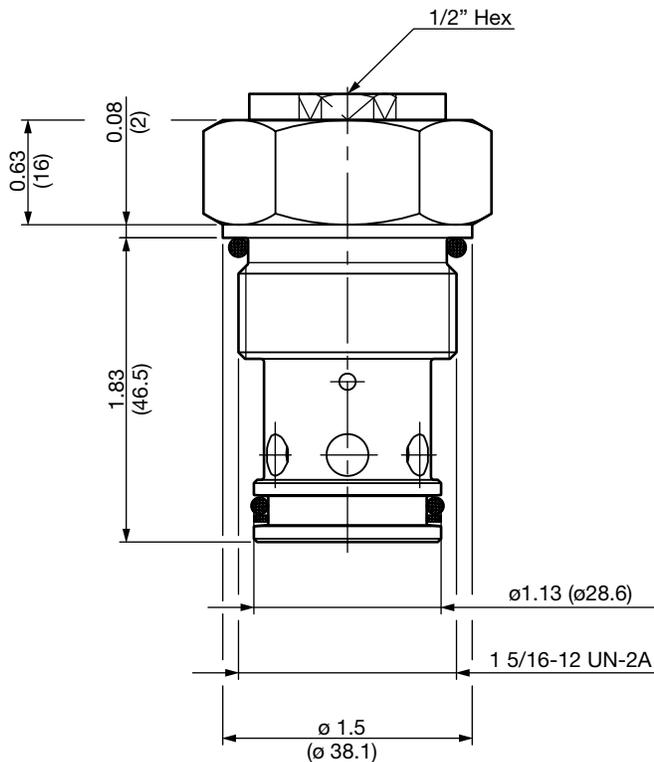
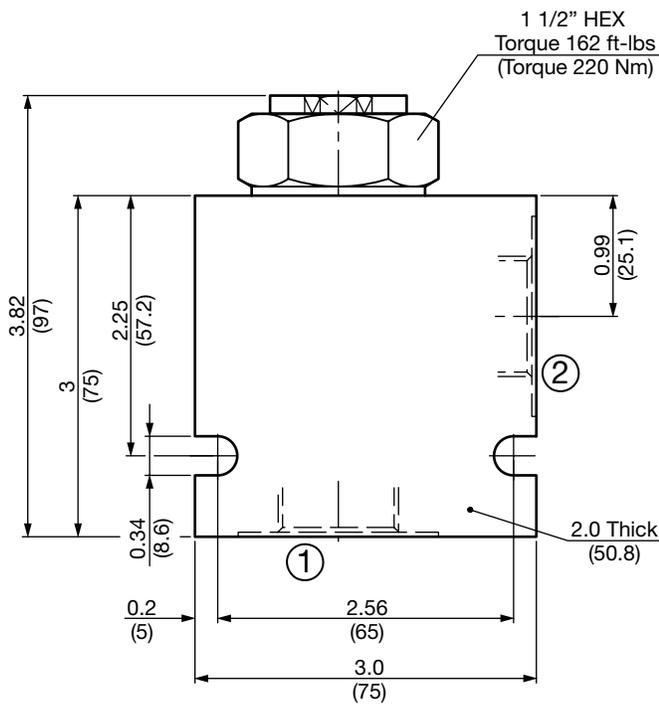
|                             |   |
|-----------------------------|---|
| Operating Pressure          | 6000 psi (420 bar)  |
| Nominal Flow                | 44 gpm (165 l/min)  |
| Internal Leakage            | <2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)   |
| Standard Cracking Pressures | 5 psi (0.35 bar)<br>15 psi (1.00 bar)<br>30 psi (2.00 bar)<br>70 psi (5.00 bar)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                             |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC16-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580250<br>Finisher: 02580251   |
| Cartridge Weight            | 0.76 Lbs. (0.35 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 03052427<br>Viton® P/N: 03051758  |

### Performance

Measured at 158 SUS (34 cSt)  
T<sub>Oil</sub> = 115°F (46° C)



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**RV16A-01-C-N-05**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum Body
- SS16 = SAE-16 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Cracking Pressure

- 05 = 5 psi (0.35 bar)
- 15 = 15 psi (1.00 bar)
- 30 = 30 psi (2.00 bar)
- 70 = 70 psi (5.00 bar)

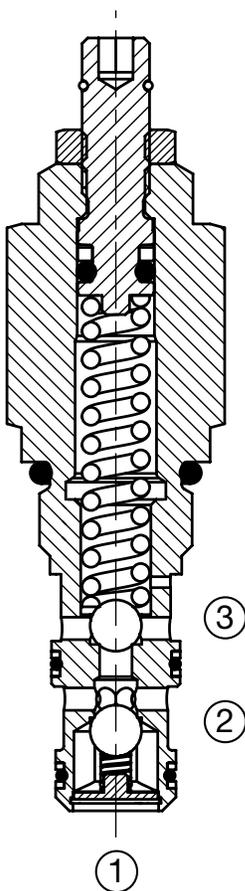
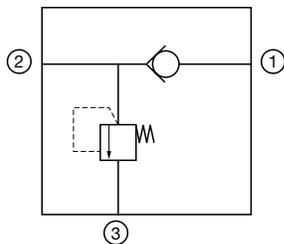
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight            |
|------------|----------|--------------------|--------------------|-------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.20 lb (0.55 kg) |
| FH162-SS16 | 03032655 | Steel, Zinc plated | 6000 psi (420 bar) | 3.56 lb (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

## RV06B-01 Check Valve, Integral Relief, Ball Type Up to 4 gpm (15 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, ball type check valve and direct acting, ball type relief valve combined in a single cartridge intended for use as load holding and pressure limiting device in hydraulic circuits to reduce manifold size.

### Operation

The RV06B allows flow from port 2 to port 1 once the sufficient pressure is applied at port 2 to overcome the bias spring pressure of 5 psi (0.34 bar). It normally blocks flow in the opposite direction.

The relief portion of the valve would remain closed until the predetermined pressure setting is reached at port 2 to lift the spring opposed ball from its seat, allowing flow from port 2 to port 3. Pressure at port 3 is directly additive to relief pressure setting.

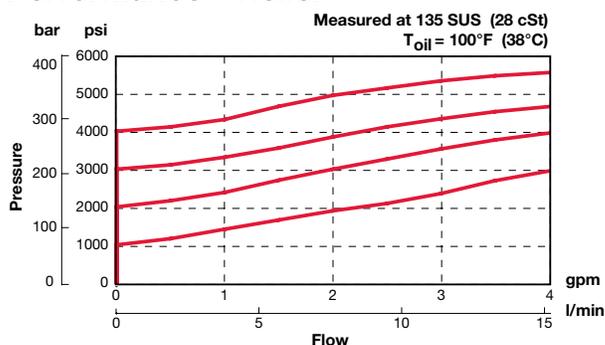
### Features

- Combination of two functions in one cartridge
- Relief setting up to 5000 psi (350 bar)
- Relief setting adjustment screw cannot be backed out of the valve
- Adjustable under full pressure
- Fast closing and seating
- Hardened closing elements to ensure minimal wear and extend service life
- All external surfaces zinc-plated

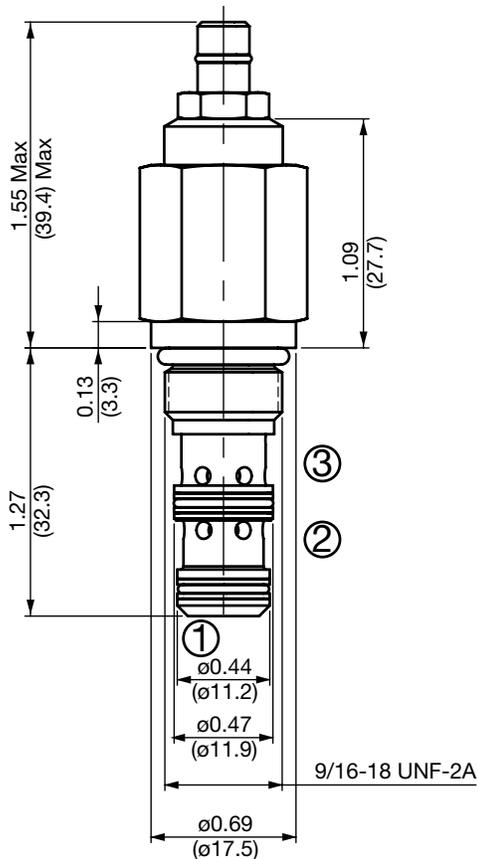
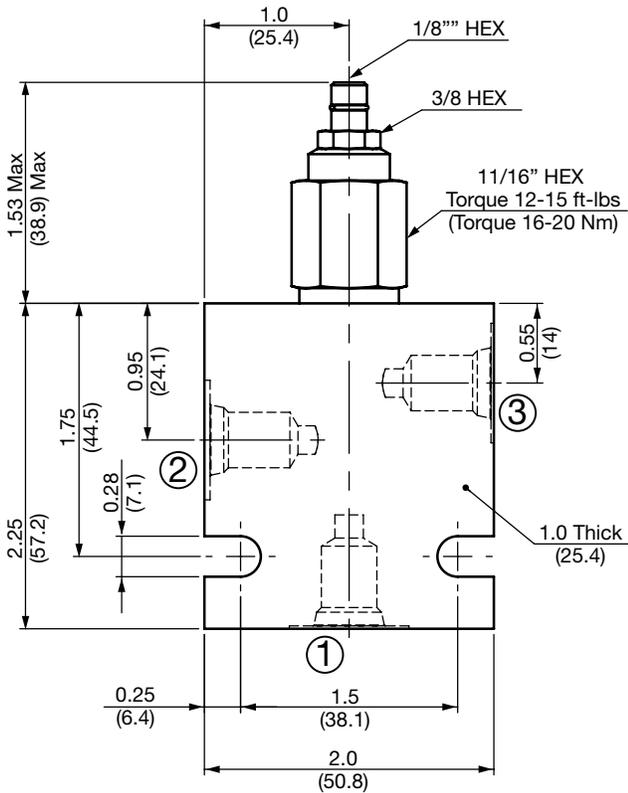
### Specifications

|   |  |
|---|--|
| Operating Pressure                        | 5000 psi (350 bar)   |
| Maximum Flow Rate                         | 4 gpm (15 l/min)   |
| Internal Leakage                          | 5 drops/min maximum to 75% of nominal setting.   |
| Relief Pressure Ranges                    | 0 to 3000 psi (0 to 207 bar)<br>0 to 5000 psi (0 to 350 bar)   |
| Reseat Pressure                           | 80% of crack pressure  |
| Check Valve Bias Spring Cracking Pressure | 5 psi (0.34 bar)   |
| Fluid Operating Temp. Range               | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility                       | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                                 | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                                | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                              | No Orientation Restrictions  |
| Cavity                                    | FC06-3 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                              | Rougher: 02582050<br>Finisher: 02582051  |
| Cartridge Weight                          | 0.06 lb (27 g)   |
| Cartridge Material                        | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid Thermoplastic Polyester back-up rings. |
| Seal Kits                                 | Buna-N P/N: 02610186<br>Viton® P/N: 02610187   |

### Performance – Relief



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**RV06B-01-AS4-N-300 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum Body
- SS4 = SAE-4 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Relief Adjustment Range

- 300 = 0 to 3000 psi (0 to 207 bar)
- 500 = 0 to 5000 psi (0 to 350 bar)

### Relief Adjustment Options

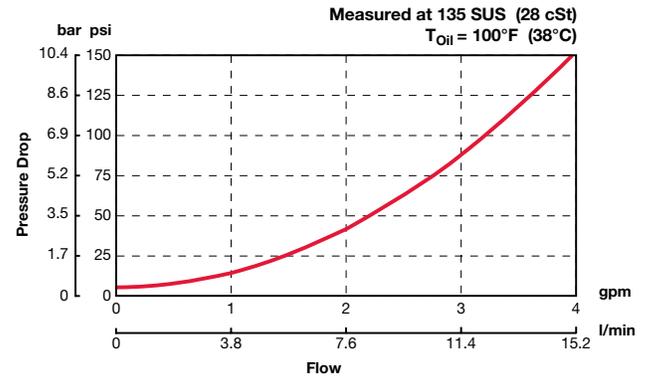
- V = Allen Head (Hex 1/8")

### Setting

- blank = Set at 50% maximum pressure for the range
- XXX = Desired psi ÷ 10

Example: 100 = 1000 psi

## Performance – Check Valve



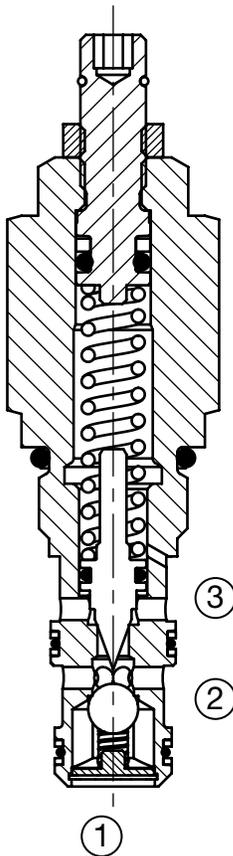
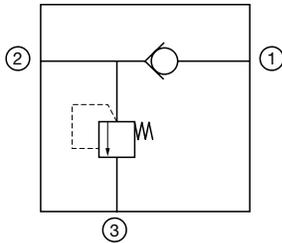
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH063-AS4 | 02600492 | Aluminum, anodized | 3500 psi (245 bar) | 0.36 lbs (0.16 kg) |
| FH063-SS4 | 02600493 | Steel, Zinc plated | 6000 psi (420 bar) | 1.1 lbs (0.50 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## RV06C-01 Check Valve, Integral Relief, Poppet Type Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, ball type check valve and direct acting, poppet type relief valve combined in a single cartridge intended for use as load holding and pressure limiting device in hydraulic circuits to reduce manifold size.

### Operation

The RV06C allows flow from port 2 to port 1 once the sufficient pressure is applied at port 2 to overcome the bias spring pressure of 5 psi (0.34 bar). It normally blocks flow in the opposite direction.

The relief portion of the valve would remain closed until the predetermined pressure setting is reached at port 2 to lift the spring opposed poppet from its seat, allowing flow from port 2 to port 3. Pressure at port 3 is directly additive to relief pressure setting.

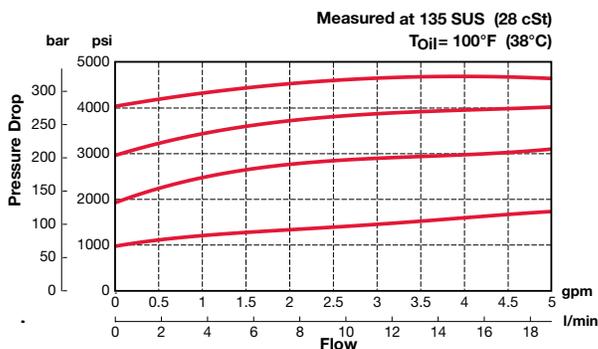
### Features

- Combination of two functions in one cartridge
- Relief setting up to 5000 psi (350 bar)
- Relief setting adjustment screw cannot be backed out of the valve
- Adjustable under full pressure
- Fast closing and seating
- Hardened closing elements to ensure minimal wear and extend service life
- All external surfaces zinc-plated

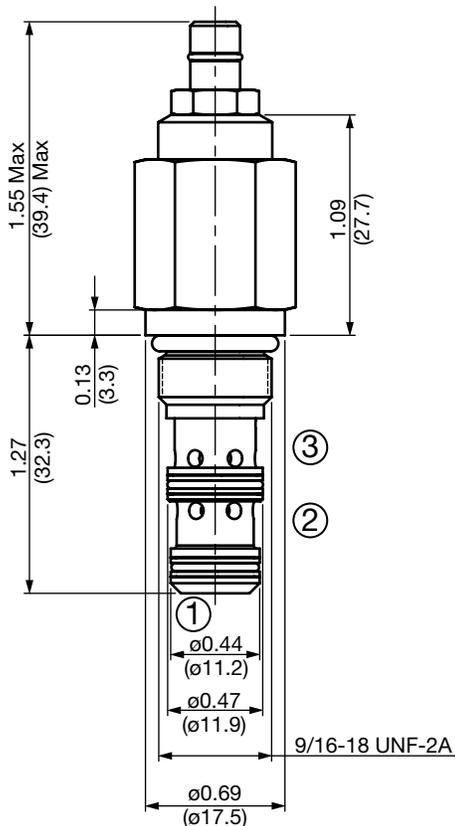
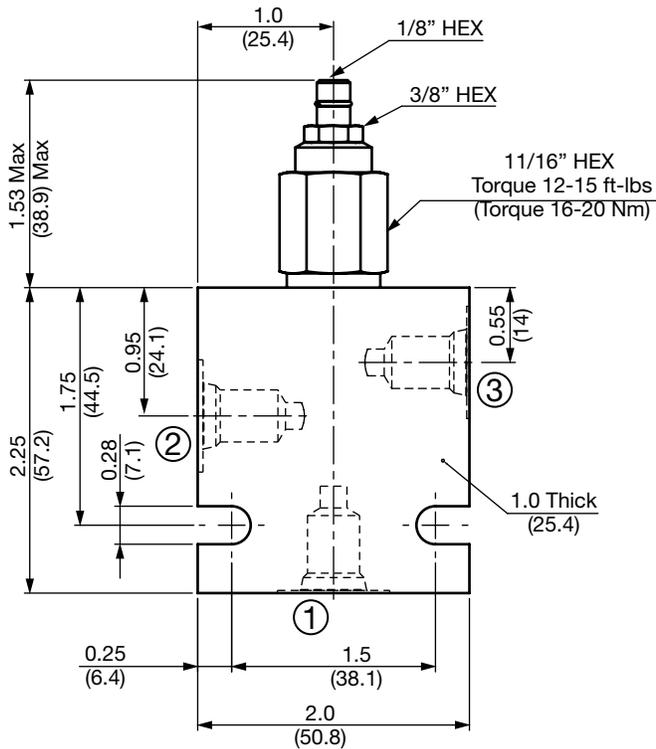
### Specifications

|   |  |
|---|--|
| Operating Pressure                        | 5000 psi (350 bar)   |
| Maximum Flow Rate                         | 5 gpm (19 l/min)   |
| Internal Leakage                          | 5 drops/min maximum to 75% of nominal setting.   |
| Relief Pressure Ranges                    | 0 to 1800 psi (0 to 124 bar)<br>0 to 3000 psi (0 to 207 bar)<br>500 to 5000 psi (35 to 350 bar)  |
| Reseat Pressure                           | 80% of crack pressure  |
| Check Valve Bias Spring Cracking Pressure | 5 psi (0.34 bar)   |
| Fluid Operating Temp. Range               | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility                       | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                                 | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                                | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                              | No orientation restrictions  |
| Cavity                                    | FC06-3 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                              | Rougher: 02582050<br>Finisher: 02582051  |
| Cartridge Weight                          | 0.06 lb (27 g)   |
| Cartridge Material                        | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                                 | Buna-N FS063-N P/N: 02610186<br>Viton® FS063-V P/N: 02610187   |

### Performance – Relief



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**RV06C-01-AS4-N-180 V 100**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum Body
- SS4 = SAE-4 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Relief Adjustment Range

- 180 = 0 to 1800 psi (0 to 124 bar)
- 300 = 0 to 3000 psi (0 to 207 bar)
- 500 = 500 to 5000 psi (35 to 350 bar)

### Relief Adjustment Options

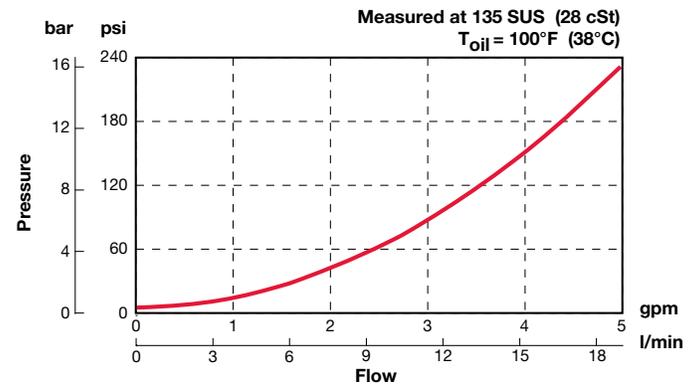
- V = Allen Head (Hex 1/8")

### Setting

- blank = Set at 50% maximum pressure for the range
- XXX = Desired psi ÷ 10

Example: 100 = 1000 psi

## Performance - Check Valve



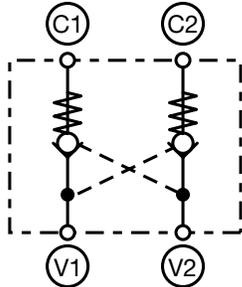
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH063-AS4 | 02600492 | Aluminum, anodized | 3500 psi (245 bar) | 0.36 lbs (0.16 kg) |
| FH063-SS4 | 02600493 | Steel, Zinc plated | 6000 psi (420 bar) | 1.1 lbs (0.50 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## RVD08A-01 Check Valve, Dual Pilot-to-Open, Inline Body Up to 10 gpm (38 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

An inline housed, dual pilot operated, hydraulic check valve for use as a blocking or load holding device. The valve consists of two check valves and a dual pilot piston in an inline body.

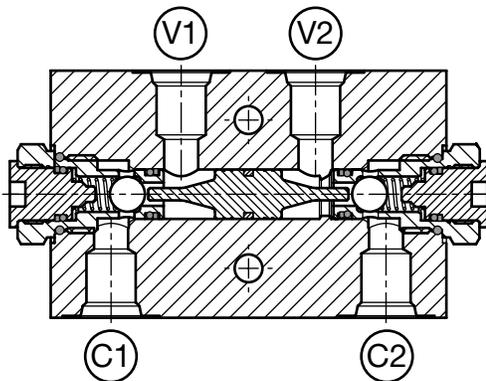
### Operation

The RVD08A allows flow from V ports to C ports, while normally blocking flow in the opposite direction. Flow will be allowed from C to V when pressure is applied at the opposite V port.

The check is spring biased at 30 psi to assure holding in no load conditions. A sealed pilot piston option with check spring bias of 70 psi is available.

### Features

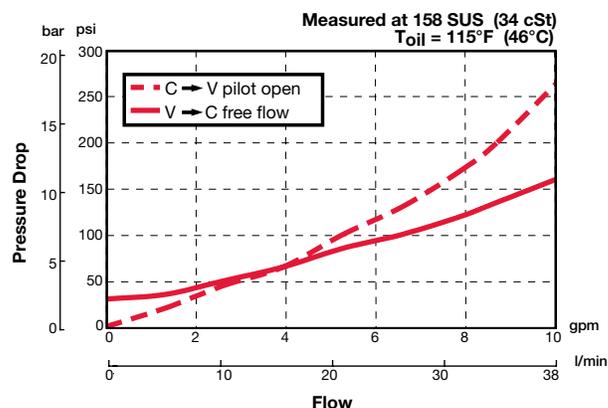
- Hardened closing element in a check valve to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Optional sealed pilot piston
- Check section serviceable as a cartridge
- All external surfaces zinc-plated
- Aluminum and steel inline housing



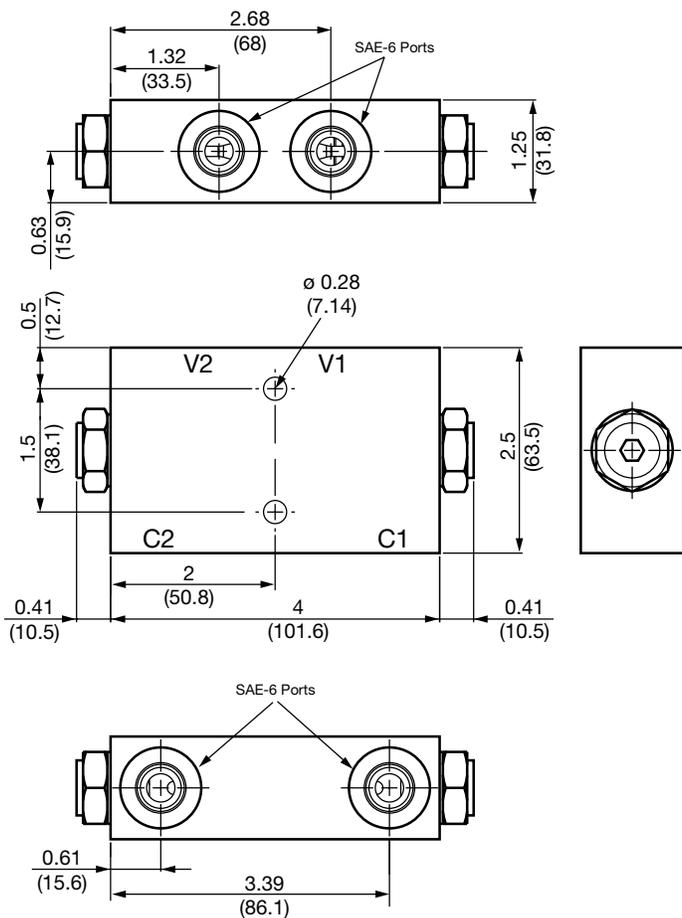
### Specifications

|                                   |   |                       |
|-----------------------------------|---|-----------------------|
| Operating Pressure                | 6000 psi (420 bar) - Steel body<br>3500 psi (245 bar) - Aluminum body   |                       |
| Nominal Flow                      | 10 gpm (38 l/min)   |                       |
| Internal Leakage                  | <2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)   |                       |
| Standard Cracking Pressures       | 30 psi (2.00 bar)<br>70 psi (5.00 bar)  |                       |
| Pilot Ratio                       | 4.5 to 1  |                       |
| Fluid Operating Temp. Range*      | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                             |                       |
| Fluid Compatibility               | Mineral-based or synthetics with lubricating properties   |                       |
| Viscosity                         | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                        | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                      | No orientation restrictions   |                       |
| Cartridge Weight                  | 1.33 Lbs. (0.61 kg) Aluminum<br>3.3 Lbs. (1.5 kg) Steel   |                       |
| Cartridge Material                | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Pilot Piston Material             | Hardened steel  |                       |
| Pilot Piston Service Part Numbers | Standard Piston Assy:   | 02610072              |
|                                   | Sealed Piston Assy (Buna-N):  | 02610071              |
|                                   | Sealed Piston Assy (Viton®):  | 02610070              |
|                                   | Piston Only:  | 02600019              |
| Seal Kits (for RV08A)             | Buna-N  | FS082-N P/N: 03033920 |
|                                   | Viton®  | FS082-V P/N: 03051756 |
| Seal Kits (Pilot Piston)          | Buna-N  | P/N: 02610078         |
|                                   | Viton®  | P/N: 02610079         |
| PTFE wiper ring (for std piston)  | 02600006  |                       |

### Performance



## Dimensions



## Model Code

**RVD08A-01-AS6-N-30**

### Valve Model

### Body & Ports

- AS6 = SAE-6 Ports, aluminum Body
- SS6 = SAE-6 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®
- NS = Buna-N with Sealed Piston (Requires 70 psi spring)
- VS = Viton® with Sealed Piston (Requires 70 psi spring)

### Cracking Pressure

- 30 = 30 psi (2.00 bar)
- 70 = 70 psi (5.00 bar)

## Pilot Piston Assembly

- Standard Options **N, V** = P/N: 02610072
- Sealed **NS** Option = P/N: 02610070
- Sealed **VS** Option = P/N: 02610071

All measurements in inches (mm).  
Subject to technical modifications

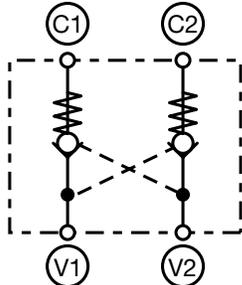
## Standard Line Bodies\*

| Code | Part No  | Material           | Pressure Rating    | Weight            |
|------|----------|--------------------|--------------------|-------------------|
| AS6  | 02600014 | Aluminum, anodized | 3500 psi (245 bar) | 1.02 lb (0.47 kg) |
| SS6  | 02600015 | Steel, Zinc plated | 6000 psi (420 bar) | 3.0 lb (1.36 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## RVD10A-01 Check Valve, Dual Pilot-to-Open, Inline Body Up to 21 gpm (80 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

An inline housed, dual pilot operated, hydraulic check valve for use as a blocking or load holding device. The valve consists of two check valves and a dual pilot piston in an inline body.

### Operation

The RVD10A allows flow from V ports to C ports, while normally blocking flow in the opposite direction. Flow will be allowed from C to V when pressure is applied at the opposite V port.

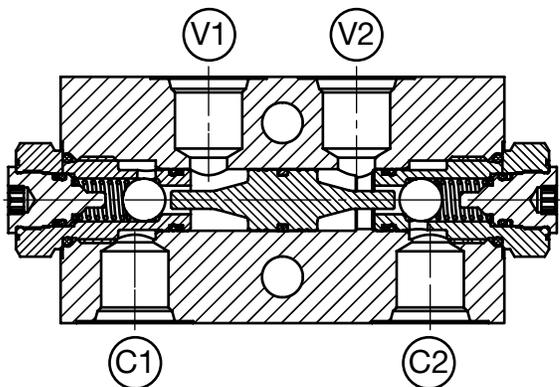
The check is spring biased at 30 psi to assure holding in no load conditions. A sealed pilot piston option with check spring bias of 70 psi is available.

### Features

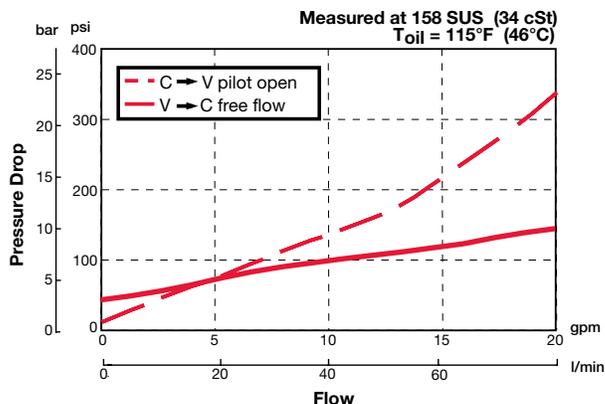
- Hardened closing element in a check valve to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Optional sealed pilot piston
- Check section serviceable as a cartridge
- All external surfaces zinc-plated
- Aluminum and steel inline housing

### Specifications

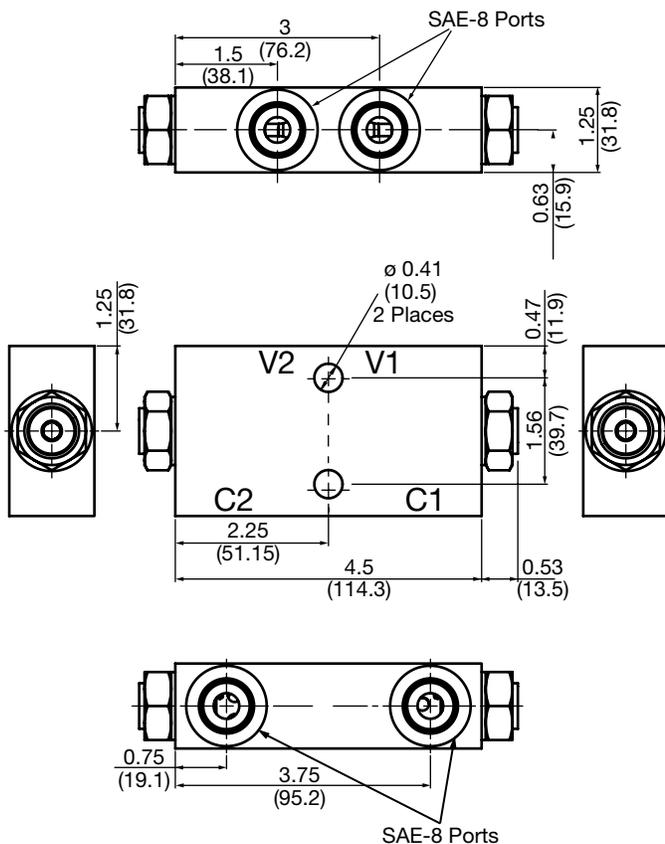
|                                   |   |                       |
|-----------------------------------|---|-----------------------|
| Operating Pressure                | 6000 psi (420 bar) - Steel body<br>3500 psi (245 bar) - Aluminum body   |                       |
| Nominal Flow                      | 21 gpm (80 l/min)   |                       |
| Internal Leakage                  | <2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)   |                       |
| Standard Bias Spring Pressures    | 30 psi (2.00 bar)<br>70 psi (5.00 bar)  |                       |
| Pilot Ratio                       | 4.5 to 1  |                       |
| Fluid Operating Temp. Range       | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                             |                       |
| Fluid Compatibility               | Mineral-based or synthetics with lubricating properties   |                       |
| Viscosity                         | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                        | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                      | No orientation restrictions   |                       |
| Cartridge Weight                  | 1.54 Lbs. (0.7 kg) Aluminum   |                       |
| Cartridge Material                | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Pilot Piston Material             | Hardened Steel  |                       |
| Pilot Piston Service Part Numbers | Standard Piston Assy:   | 02610066              |
|                                   | Sealed Piston Assy (Buna-N):  | 02610064              |
|                                   | Sealed Piston Assy (Viton®):  | 02610065              |
|                                   | Piston Only:  | 02600003              |
| Seal Kits (for RV10A)             | Buna-N  | FS102-N P/N: 03033872 |
|                                   | Viton®  | FS102-V P/N: 03051757 |
| Seal Kits (Pilot Piston)          | Buna-N  | P/N: 02610076         |
|                                   | Viton®  | P/N: 02610077         |
| PTFE wiper ring (for std piston)  | 02600008  |                       |



### Performance



## Dimensions



## Model Code

**RVD10A-01-AS8-N-30**

### Valve Model

### Body & Ports

- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®
- NS = Buna-N with Sealed Piston (Requires 70 psi spring)
- VS = Viton® with Sealed Piston (Requires 70 psi spring)

### Cracking Pressure

- 30 = 30 psi (2.00 bar)
- 70 = 70 psi (5.00 bar)

## Pilot Piston Assembly

- Standard Options **N, V** = P/N: 02610066
- Sealed **NS** Option = P/N: 02610064
- Sealed **VS** Option = P/N: 02610065

All measurements in inches (mm).  
Subject to technical modifications

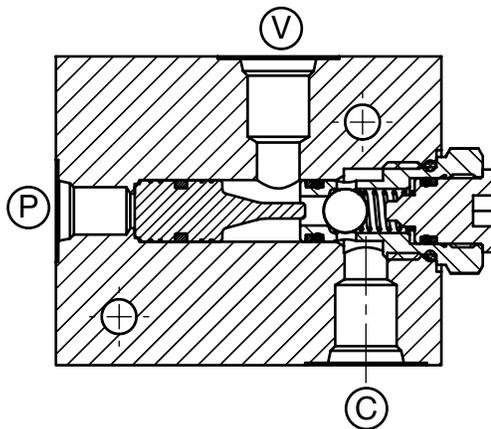
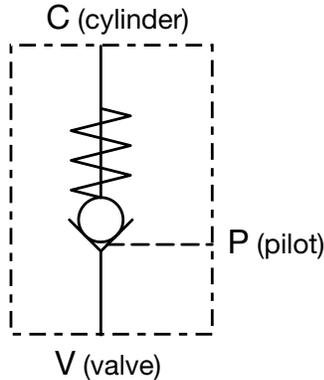
## Standard Line Bodies\*

| Code | Part No  | Material           | Pressure Rating    | Weight            |
|------|----------|--------------------|--------------------|-------------------|
| AS8  | 02600004 | Aluminum, anodized | 3500 psi (245 bar) | 1.03 lb (0.47 kg) |
| SS8  | 02600005 | Steel, Zinc plated | 6000 psi (420 bar) | 3.02 lb (1.37 kg) |

\*Please refer to Line Bodies & Cavities section for details

## RVS08A-01 Check Valve, Single Pilot-to-Open, Inline Body Up to 10 gpm (38 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

An inline housed, pilot operated, hydraulic check valve for use as a blocking or load holding device.

### Operation

The RVS08A allows flow from port V to port C, while normally blocking flow in the opposite direction. Flow will be allowed from C to V when pressure is applied at pilot port P.

The check is spring biased at 30 psi to assure holding in no load conditions. A sealed pilot piston option with check spring bias of 70 psi is available.

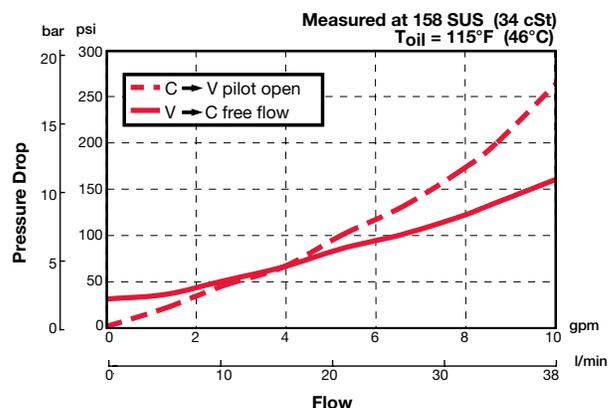
### Features

- Hardened closing element in a check valve to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Optional sealed pilot piston
- Check section serviceable as a cartridge
- All external surfaces zinc-plated
- Aluminum and steel inline housing

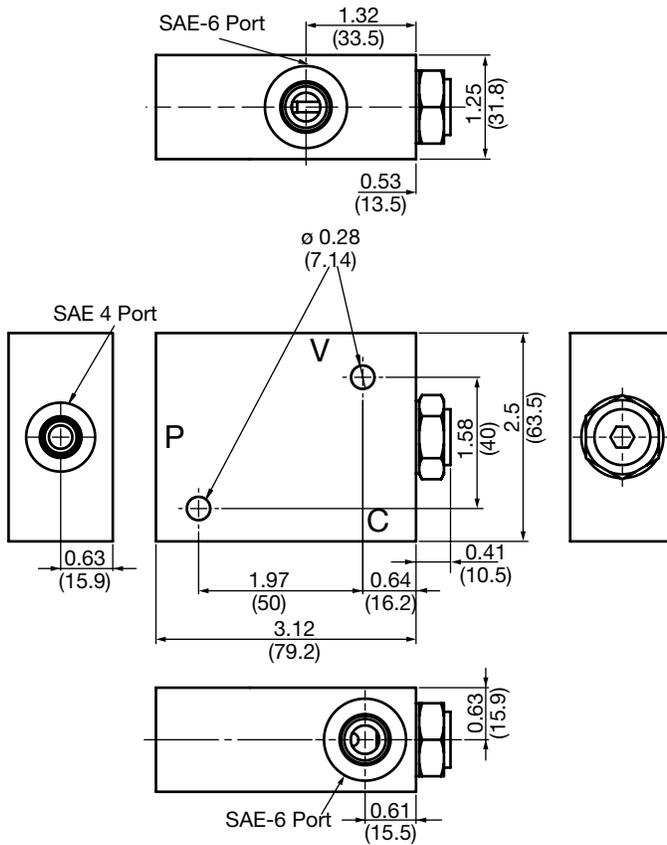
### Specifications

|                                   |   |                       |
|-----------------------------------|---|-----------------------|
| Operating Pressure                | 6000 psi (420 bar) - Steel body<br>3500 psi (245 bar) - Aluminum body   |                       |
| Nominal Flow                      | 10 gpm (38 l/min)   |                       |
| Internal Leakage                  | <2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)   |                       |
| Standard Cracking Pressures       | 30 psi (2.00 bar)<br>70 psi (5.00 bar)  |                       |
| Pilot Ratio                       | 4.5 to 1  |                       |
| Fluid Operating Temp. Range       | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)                                    |                       |
| Fluid Compatibility               | Mineral-based or synthetics with lubricating properties   |                       |
| Viscosity                         | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                        | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                      | No orientation restrictions   |                       |
| Cartridge Weight                  | 1.0 Lbs. (0.45 kg) Aluminum<br>2.6 Lbs. (1.18 kg) Steel   |                       |
| Cartridge Material                | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Pilot Piston Material             | Hardened steel  |                       |
| Pilot Piston Service Part Numbers | Standard Piston Assy:   | 02610069              |
|                                   | Sealed Piston Assy (Buna-N):  | 02610067              |
|                                   | Sealed Piston Assy (Viton®):  | 02610068              |
|                                   | Piston Only:  | 02600016              |
| Seal Kits (for RV08A)             | Buna-N  | FS082-N P/N: 03033920 |
|                                   | Viton®  | FS082-V P/N: 03051756 |
| Seal Kits (Pilot Piston)          | Buna-N  | P/N: 02610078         |
|                                   | Viton®  | P/N: 02610079         |
| PTFE wiper ring (for std piston)  | 02600006  |                       |

### Performance



## Dimensions



## Model Code

**RVS08A-01-AS6-N-30**

### Valve Model

### Body & Ports

- AS6 = SAE-6 Ports, aluminum Body
- SS6 = SAE-6 Ports, steel Body
- (Pilot Port = SAE-4)

### Seals

- N = Buna-N
- V = Viton®
- NS = Buna-N with Sealed Piston (Requires 70 psi spring)
- VS = Viton® with Sealed Piston (Requires 70 psi spring)

### Cracking Pressure

- 30 = 30 psi (2.00 bar)
- 70 = 70 psi (5.00 bar)

## Pilot Piston Assembly

- Standard Options **N, V** = P/N: 02610069
- Sealed **NS** Option = P/N: 02610067
- Sealed **VS** Option = P/N: 02610068

All measurements in inches (mm).  
Subject to technical modifications

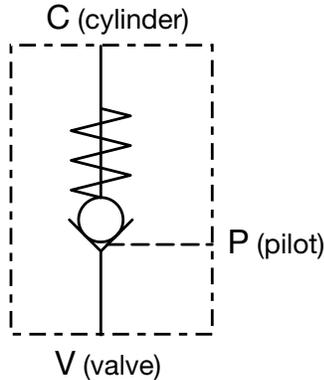
## Standard Line Bodies\*

| Code | Part No  | Material           | Pressure Rating    | Weight            |
|------|----------|--------------------|--------------------|-------------------|
| AS6  | 02600010 | Aluminum, anodized | 3500 psi (245 bar) | 0.83 lb (0.38 kg) |
| SS6  | 02600011 | Steel, Zinc plated | 6000 psi (420 bar) | 2.42 lb (1.1 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## RVS10A-01 Check Valve, Single Pilot-to-Open, Inline Body Up to 21 gpm (80 l/min) • 6000 psi (420 bar)

### Hydraulic Symbol



### Description

An inline housed, pilot operated, hydraulic check valve for use as a blocking or load holding device.

### Operation

The RVS10A allows flow from port V to port C, while normally blocking flow in the opposite direction. Flow will be allowed from C to V when pressure is applied at pilot port P.

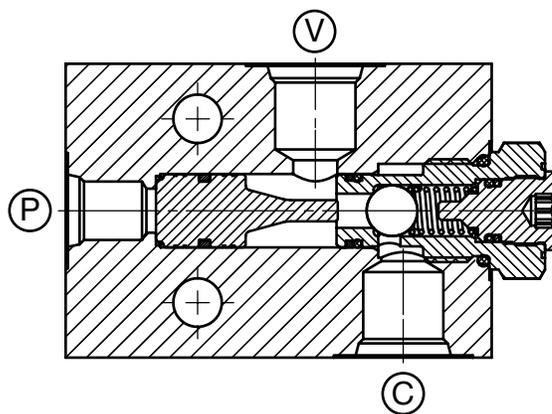
The check is spring biased at 30 psi to assure holding in no load conditions. A sealed pilot piston option with check spring bias of 70 psi is available.

### Features

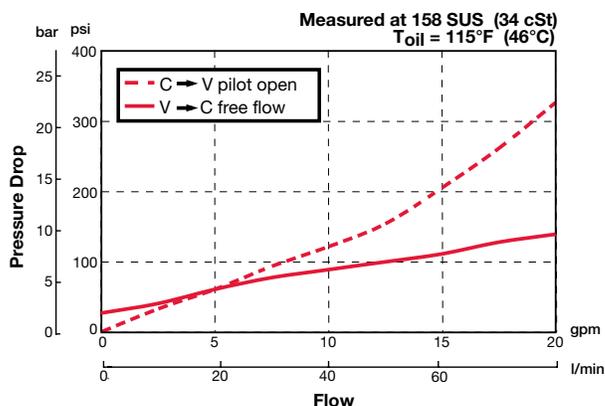
- Hardened closing element in a check valve to ensure extended service life and low leakage
- Multiple bias spring options for back pressure application flexibility
- Optional sealed pilot piston
- Check section serviceable as a cartridge
- All external surfaces zinc-plated
- Aluminum and steel inline housing

### Specifications

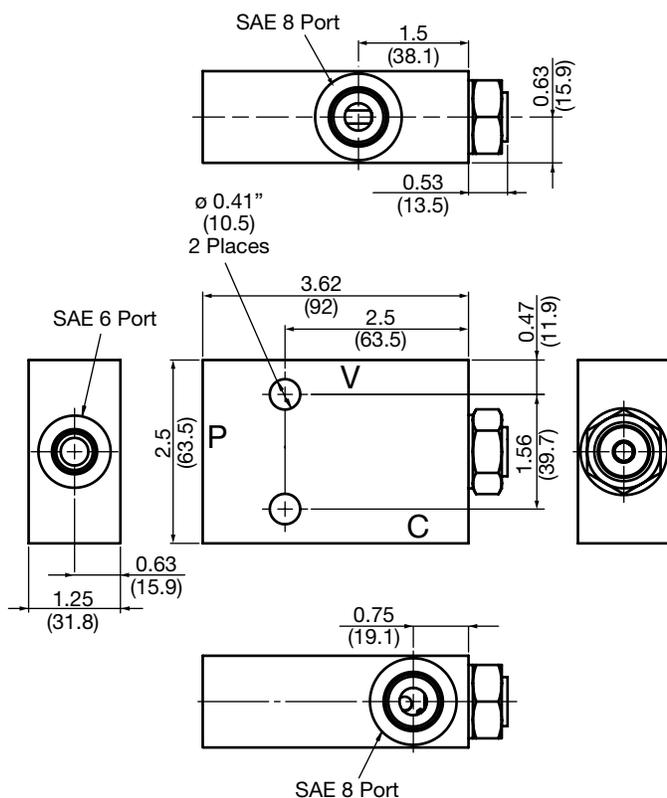
|                                   |   |                       |
|-----------------------------------|---|-----------------------|
| Operating Pressure                | 6000 psi (420 bar) - Steel body<br>3500 psi (245 bar) - Aluminum body   |                       |
| Nominal Flow                      | 21 gpm (80 l/min)   |                       |
| Internal Leakage                  | <2 drops/min. at 6000 psi<br>(0.10 cc/min at 420 bar)   |                       |
| Standard Cracking Pressures       | 30 psi (2.00 bar)<br>70 psi (5.00 bar)  |                       |
| Pilot Ratio                       | 4.5 to 1  |                       |
| Fluid Operating Temp. Range       | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                             |                       |
| Fluid Compatibility               | Mineral-based or synthetics with lubricating properties   |                       |
| Viscosity                         | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                        | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                      | No orientation restrictions   |                       |
| Cartridge Weight                  | 1.17 Lbs. (0.53 kg) Aluminum<br>2.88 Lbs. (1.31 kg) Steel   |                       |
| Cartridge Material                | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Pilot Piston Material             | Hardened steel  |                       |
| Pilot Piston Service Part Numbers | Standard Piston Assy:   | 02610075              |
|                                   | Sealed Piston Assy (Buna-N):  | 02610073              |
|                                   | Sealed Piston Assy (Viton®):  | 02610074              |
|                                   | Piston Only:  | 02600000              |
| Seal Kits (for RV08A)             | Buna-N  | FS082-N P/N: 03033872 |
|                                   | Viton®  | FS082-V P/N: 03051757 |
| Seal Kits (Pilot Piston)          | Buna-N  | P/N: 02610076         |
|                                   | Viton®  | P/N: 02610077         |
| PTFE wiper ring (for std piston)  | 02600028  |                       |



### Performance



## Dimensions



## Model Code

**RVS10A-01-AS8-N-30**

### Valve Model

### Body & Ports

- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body
- (Pilot Port = SAE-6)

### Seals

- N = Buna-N
- V = Viton®
- NS = Buna-N with Sealed Piston (Requires 70 psi spring)
- VS = Viton® with Sealed Piston (Requires 70 psi spring)

### Cracking Pressure

- 30 = 30 psi (2.00 bar)
- 70 = 70 psi (5.00 bar)

## Pilot Piston Assembly

- Standard Options **N, V** = P/N: 02610075
- Sealed **NS** Option = P/N: 02610073
- Sealed **VS** Option = P/N: 02610074

All measurements in inches (mm).  
Subject to technical modifications

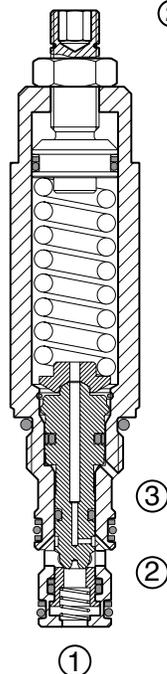
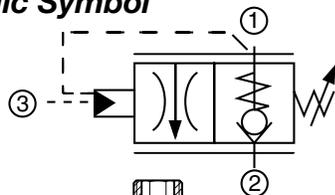
## Standard Line Bodies\*

| Code | Part No  | Material           | Pressure Rating    | Weight            |
|------|----------|--------------------|--------------------|-------------------|
| AS8  | 02600001 | Aluminum, anodized | 3500 psi (245 bar) | 0.88 lb (0.40 kg) |
| SS8  | 02600002 | Steel, Zinc plated | 6000 psi (420 bar) | 2.6 lb (1.18 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## RS08-01 Counterbalance Valve Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, 3-port, externally piloted counterbalance valve for precise control of overrunning loads, with load holding capabilities, thermal relief protection and free reverse flow check features.

### Operation

The RS08 allows free flow from port 2 (inlet) to port 1 (load). Flow from port 1 to port 2 is blocked until either the pressure setting has been reached or sufficient pilot pressure has been applied to port 3 (pilot). The RS08 has optional 3:1 and 4:1 pilot ratios. It will open when pilot pressure = 1/3 (or 1/4) of the difference between the set pressure and the load pressure.

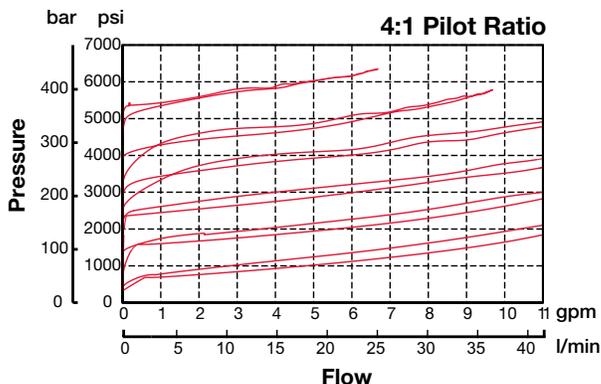
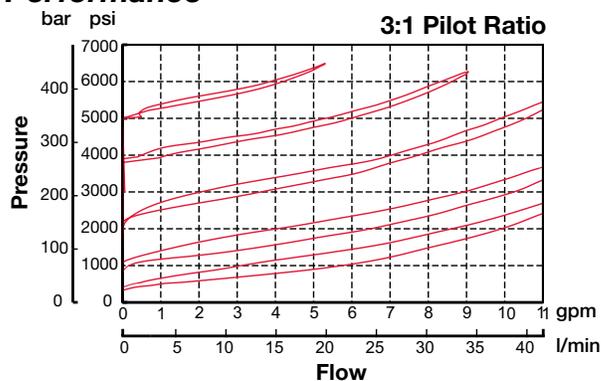
### Features

- Excellent stability through entire flow range
- Adjustable across specified pressure range
- Positive stop prevents spring from over adjustment (options V, H)
- Stroke limiting device for enhanced safety
- Internal seals to minimize leakage
- Same cavity as the RP08A-01 P.O. Check valve.
- Hardened poppet and seat to ensure extended service life and low leakage
- All external surfaces zinc-plated
- Industry common cavity

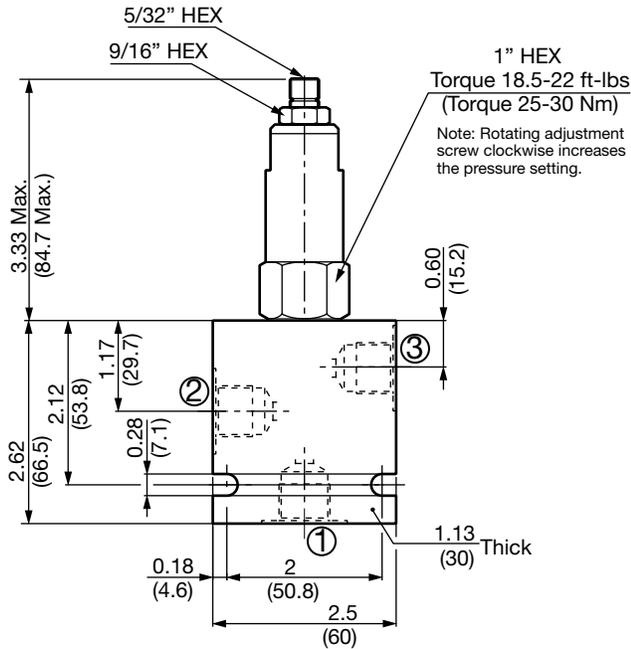
### Specifications

|                               |   |
|-------------------------------|---|
| Operating Pressure            | 5000 psi (350 bar)  |
| Nominal Flow                  | 10 gpm (38 l/min)   |
| Internal Leakage              | 5 drops/min. (0.25 cc/min) max. to 80% of nominal settings  |
| Pilot Ratios                  | 3:1, 4:1  |
| Check Valve Cracking Pressure | 14 psi (1.0 bar)  |
| Fluid Operating Temp. Range   | -4° to 248°F (-20° to +120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>   |
| Fluid Compatibility           | Mineral-based or synthetics with lubricating properties   |
| Viscosity                     | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                    | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .  |
| Installation                  | No orientation restrictions   |
| Cavity                        | FC08-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                  | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight              | 0.58 Lbs. (.266 kg)   |
| Cartridge Material            | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Anodized aluminum knobs. (option H)<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Seal Kits                     | Buna-N P/N: 03054795<br>Viton® P/N: 02591059  |

### Performance



## Dimensions



## Model Code

RS08-01-C-N-3-500 V 300

### Valve Model

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Pilot Ratio

- 3 = 3:1
- 4 = 4:1

### Adjustment Range

- 500 = 700 to 5000 psi (48 to 350 bar)

### Adjustment Options

- F = Factory pre-set, non-adjustable  
(must specify setting below)
- H = Knurled Hand Knob
- K = Allen Head (HEX 5/32") w/ cover cap
- V = Allen Head (HEX 5/32")

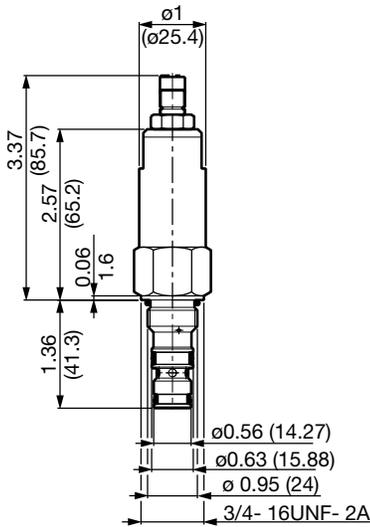
### Setting (optional)

- (omit) = Set at min. pressure for the range
- XXX = Desired psi ÷ 10

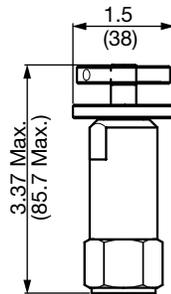
Example: 300 = 3000 psi

## Adjustment Options

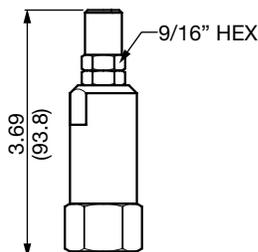
### 'V' - Allen Head (std)



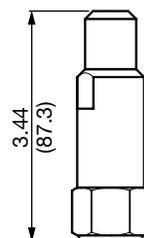
### 'H' - Hand Knob



### 'K' - Protective Cap

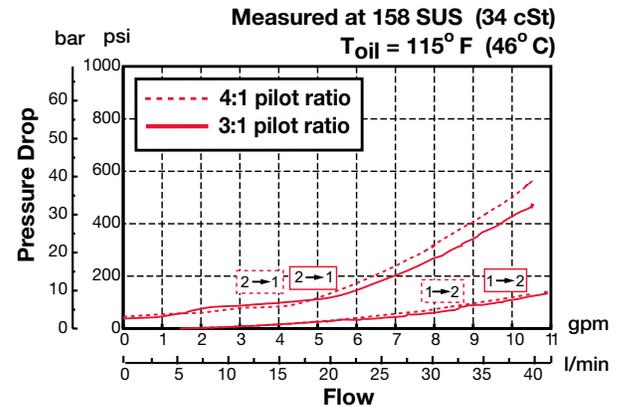


### 'F' - Tamper Proof Cap



All measurements in inches (mm).  
Subject to technical modifications

## Performance



## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lb (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, Zinc plated | 6000 psi (420 bar) | 1.70 lb (0.77 kg) |

\*Please refer to Line Bodies & Cavities section for details



## Overview

HYDAC offers various options of Differential Pressure Sensing Valves for applications up to 5000 psi (350 bar) and up to 80 gpm(300 l/min).

Differential pressure sensing valves can be used for controlling pressure, flow, direction or compensation. They are functional building elements which respond to pressure inputs, providing for switching or modulation of the flow. The choice of circuit arrangements related to the Pressure Sensing valves can simplify the circuit design and minimize the size of the manifold, thus reducing manifold cost.

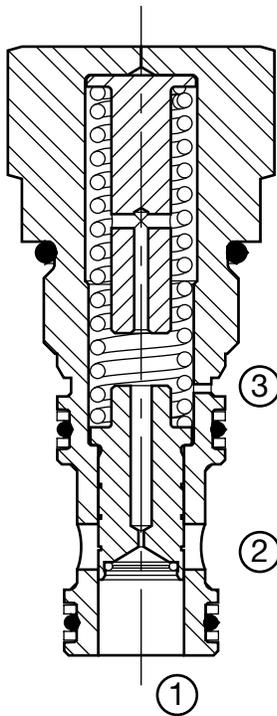
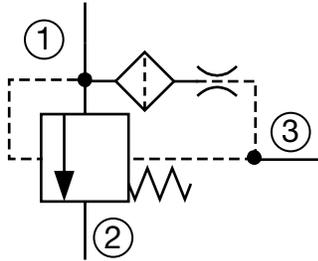
## Features

- Operating pressure up to 5000 psi (350 bar)
- Various spring ranges
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity



## DW10SA-01 Normally Closed, Vent to Open, Spool Type Up to 40 gpm (151 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pressure sensing valve with multifunction potential when used with flow, pressure and directional control devices. It can be used as high flow switching or metering element, main stage for pilot operated relief or sequence valve.

### Operation

Pilot flow through the spool orifice, from port 1 to port 3 creates a pressure drop and allows flow from port 1 to port 2 when the pressure drop exceeds the spring bias pressure. The valve can be remotely controlled at port 3 such as relief or solenoid valve.

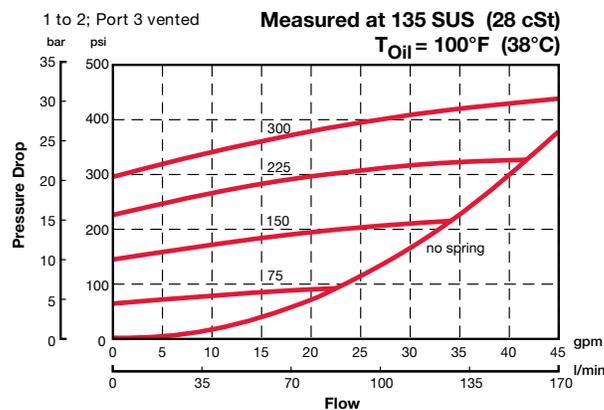
### Features

- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

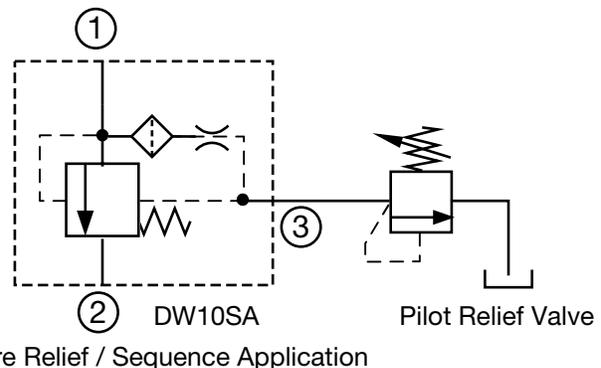
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 40 gpm (151 l/min)   |
| Internal Leakage            | 30.5 cu in/min at 5000 psi (0.5 l/min at 350 bar)  |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-S3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02581794<br>Finisher: 02581795  |
| Cartridge Weight            | 0.35 lb (0.158 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N P/N: 02610278<br>Viton® P/N: 02610279   |
| Vent Flow Rate              | Approximately 0.15 gpm ( 0.57 lpm)   |

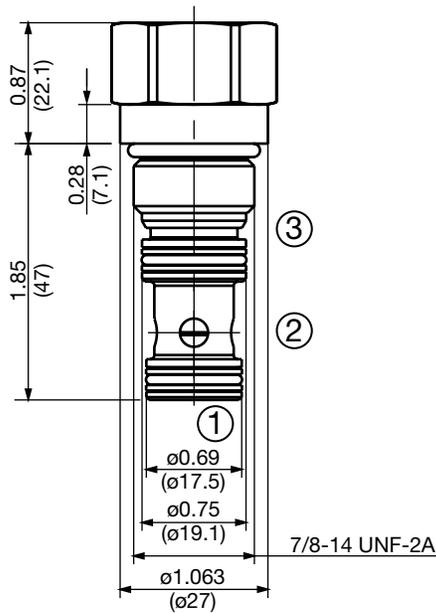
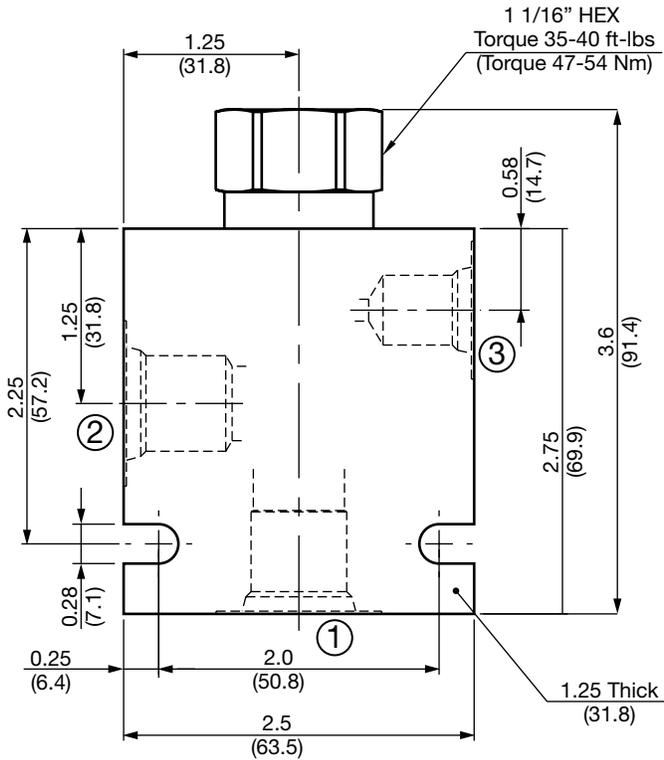
### Performance



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**DW10SA-01-AS8-N-300**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body
- (Pilot Port = SAE-6)

### Seals

- N = Buna-N
- V = Viton®

### Bias Spring

- 75 = 75 psi
- 150 = 150 psi
- 225 = 225 psi
- 300 = 300 psi

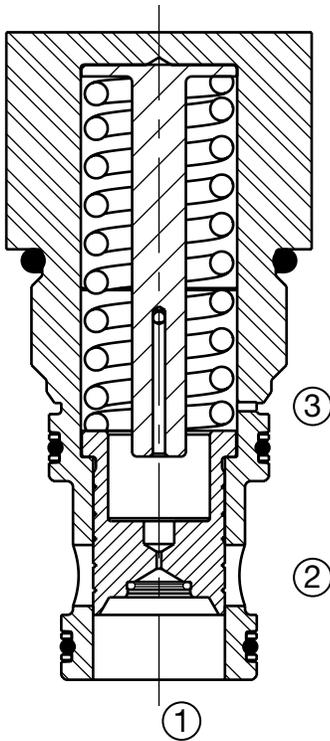
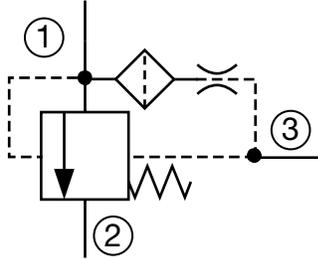
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH10S3-AS8 | 02582076 | Aluminum, anodized | 3500 psi (245 bar) | 0.59 lbs (0.27 kg) |
| FH10S3-SS8 | 02582077 | Steel, zinc plated | 6000 psi (420 bar) | 1.67 lbs (0.76 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DW16SA-01 Normally Closed, Vent to Open, Spool Type Up to 75 gpm (285 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pressure sensing valve with multifunction potential when used with flow, pressure and directional control devices. It can be used as high flow switching or metering element, main stage for pilot operated relief or sequence valve.

### Operation

Pilot flow through the spool orifice, from port 1 to port 3 creates a pressure drop and allows flow from port 1 to port 2 when the pressure drop exceeds the spring bias pressure. The valve can be remotely controlled at port 3 such as relief or solenoid valve.

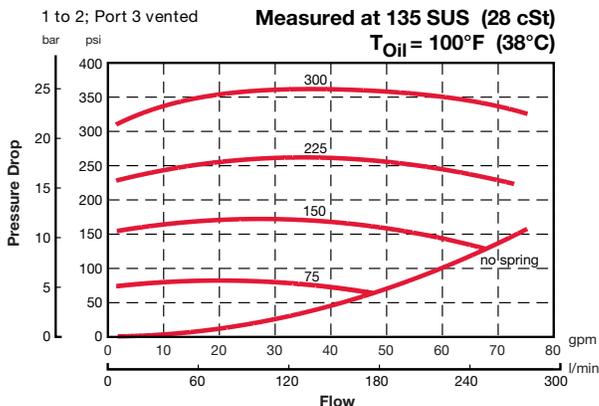
### Features

- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

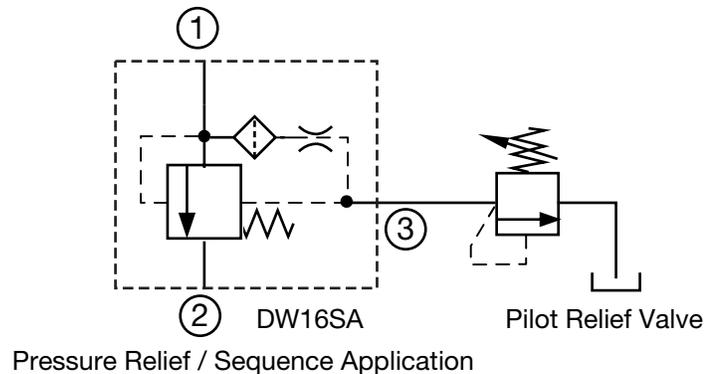
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 75 gpm (284 l/min) at 100 psi (7 bar) ΔP   |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC16-S3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02581797<br>Finisher: 02581798  |
| Cartridge Weight            | 1.0 lb (0.454 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N P/N: FS16S3-N 02610198<br>Viton® P/N: FS16S3-V 02610199   |
| Vent Flow Rate              | Approximately 0.15 gpm (0.57 lpm)  |

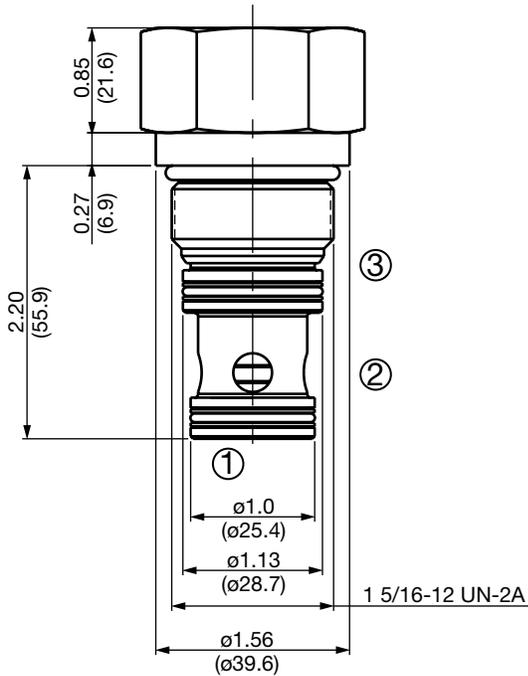
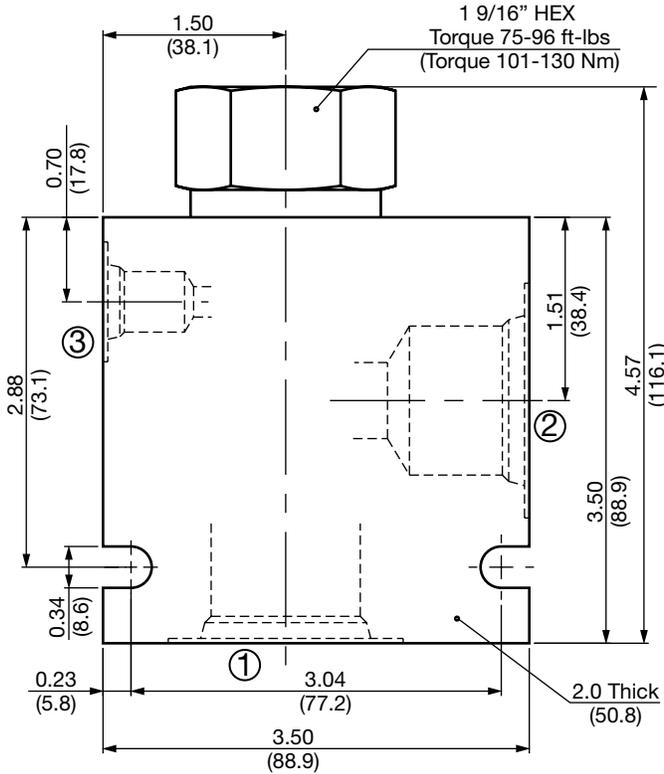
### Performance



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**DW16SA-01-AS16-N-300**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum Body
- SS16 = SAE-16 Ports, steel Body  
(Pilot Port = SAE-6)

### Seals

- N = Buna-N
- V = Viton®

### Bias Spring

- 75 = 75 psi
- 150 = 150 psi
- 225 = 225 psi
- 300 = 300 psi

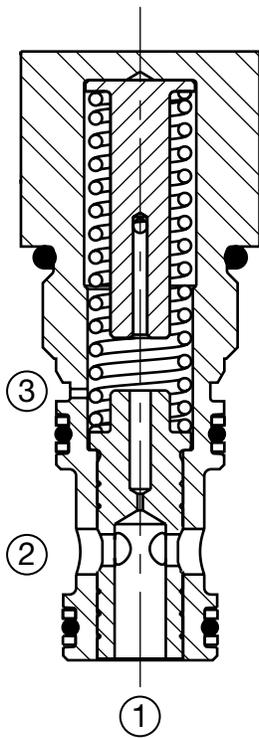
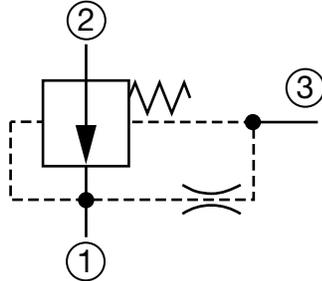
## Standard Line Bodies\*

| Code        | Part No  | Material           | Pressure Rating    | Weight             |
|-------------|----------|--------------------|--------------------|--------------------|
| FH16S3-AS16 | 02582078 | Aluminum, anodized | 3500 psi (245 bar) | 2.34 lbs (1.06 kg) |
| FH16S3-SS16 | 02582079 | Steel, zinc plated | 6000 psi (420 bar) | 6.80 lbs (3.09 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DW10SC-01 Normally Open, Vented, Spool Type Up to 15 gpm (57 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, spring biased, pressure sensing valve.

### Operation

Pilot flow through the spool orifice, from port 1 to port 3, creates a pressure drop and tends to close the spool from port 2 to port 1 when the pressure drop exceeds the spring bias pressure.

The valve can be remotely controlled at port 3 such as a relief or solenoid valve.

### Features

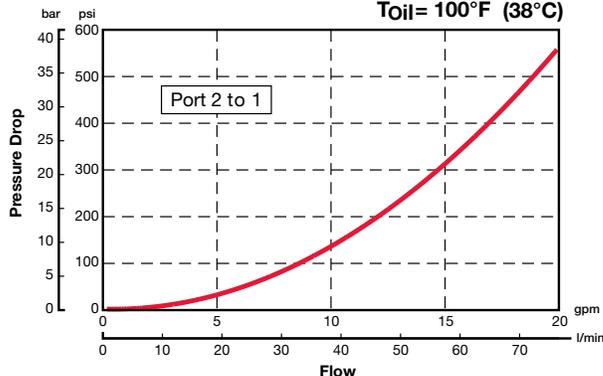
- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

### Specifications

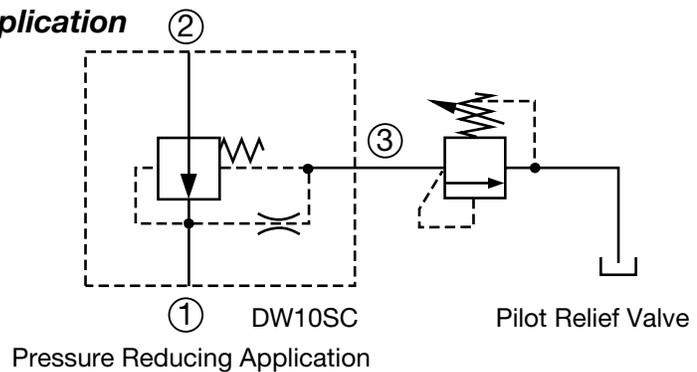
|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 8 gpm (30 l/min) at 100 psi (7 bar) ΔP   |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-S3 (see Line Bodies & Cavities section)   |
| Cavity Tools                | Rougher: 02581794<br>Finisher: 02581795  |
| Cartridge Weight            | 0.35 lb (0.158 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N P/N: 02610278<br>Viton® P/N: 02610279   |
| Vent Flow Rate              | Approximately 0.15 gpm (0.57 lpm)  |

### Performance

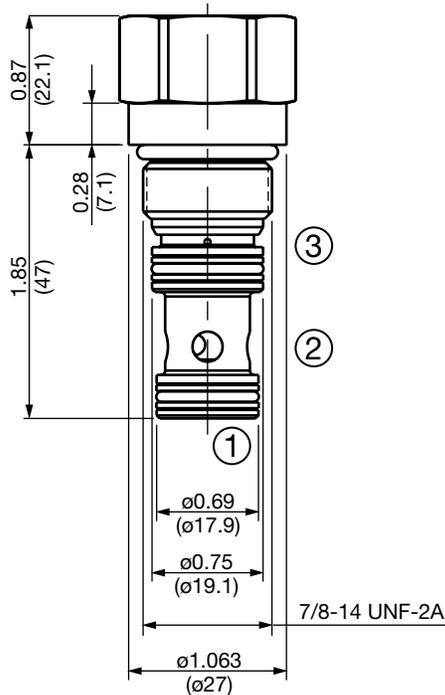
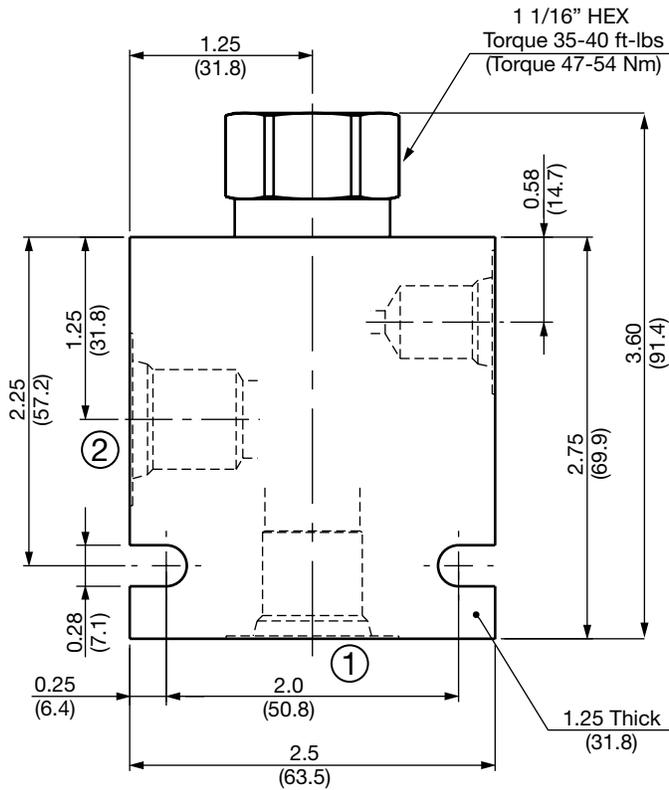
Measured at 135 SUS (28 cSt)  
Toil = 100°F (38°C)



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

DW10SC-01-AS8-N-300

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body
- (Pilot Port = SAE-6)

### Seals

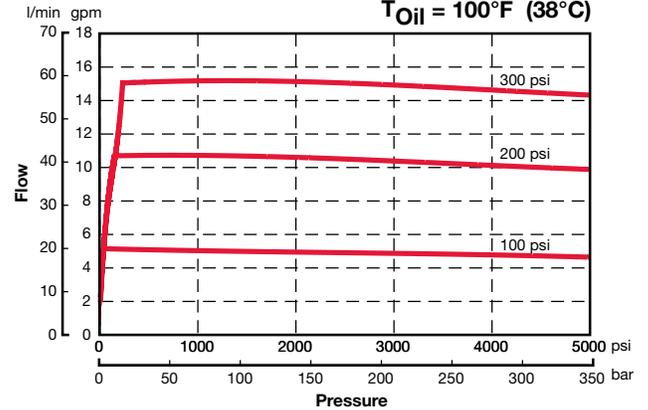
- N = Buna-N
- V = Viton®

### Bias Spring

- 100 = 100 psi
- 200 = 200 psi
- 300 = 300 psi

## Compensation

2 to 1: orifice downstream Measured at 135 SUS (28 cSt)  
T<sub>Oil</sub> = 100°F (38°C)



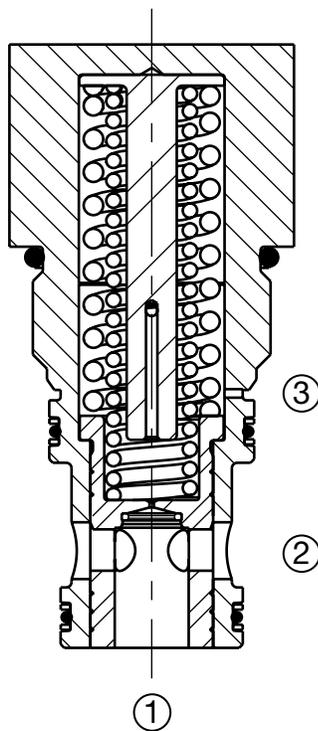
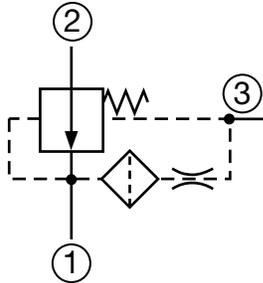
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH10S3-AS8 | 02582076 | Aluminum, anodized | 3500 psi (245 bar) | 0.59 lbs (0.27 kg) |
| FH10S3-SS8 | 02582077 | Steel, zinc plated | 6000 psi (420 bar) | 1.67 lbs (0.76 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DW16SC-01 Normally Open, Vented, Spool Type Up to 30 gpm (114 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, spring biased, pressure sensing valve.

### Operation

Pilot flow through the spool orifice, from port 1 to port 3, creates a pressure drop and tends to close the spool from port 2 to port 1 when the pressure drop exceeds the spring bias pressure.

The valve can be remotely controlled at port 3 such as a relief or solenoid valve.

### Features

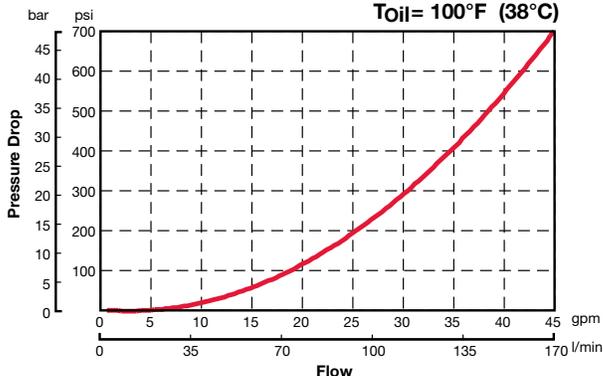
- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

### Specifications

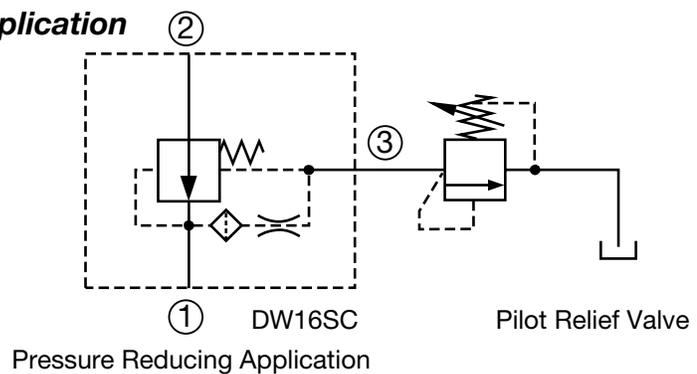
|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 19 gpm (72 l/min) at 100 psi (7 bar) $\Delta P$  |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC16-S3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02581797<br>Finisher: 02581798  |
| Cartridge Weight            | 1.0 lb (0.454 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N FS16S3-N P/N: 02610198<br>Viton® FS16S3-V P/N: 02610199   |
| Vent Flow Rate              | Approximately 0.15 gpm (0.57 lpm)  |

### Performance

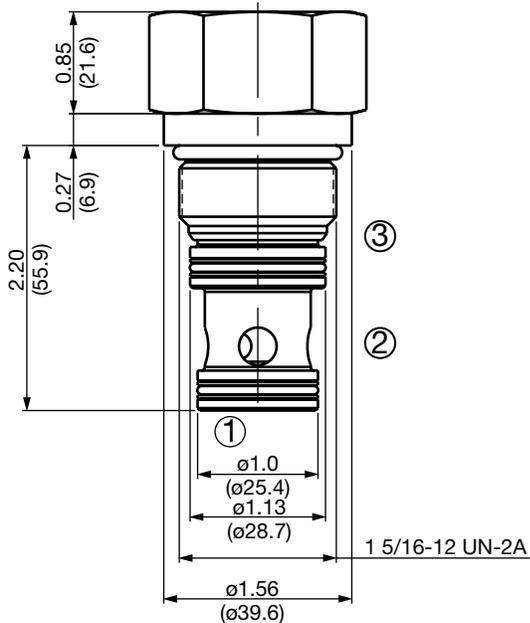
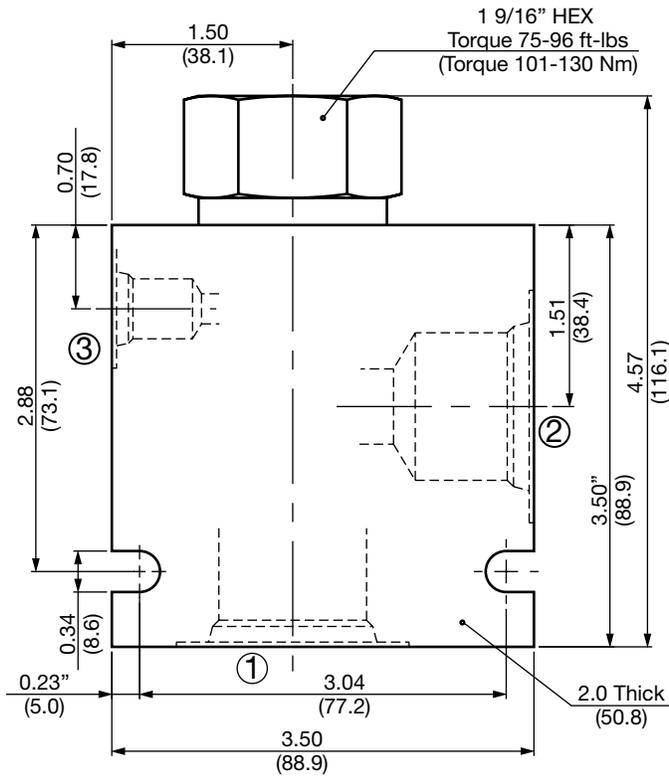
Measured at 135 SUS (28 cSt)  
Toil = 100°F (38°C)



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**DW16SC-01-AS16-N-300**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum Body
- SS16 = SAE-16 Ports, steel Body
- (Pilot Port = SAE-6)

### Seals

- N = Buna-N
- V = Viton®

### Bias Spring

- 100 = 100 psi
- 150 = 150 psi
- 200 = 200 psi
- 300 = 300 psi

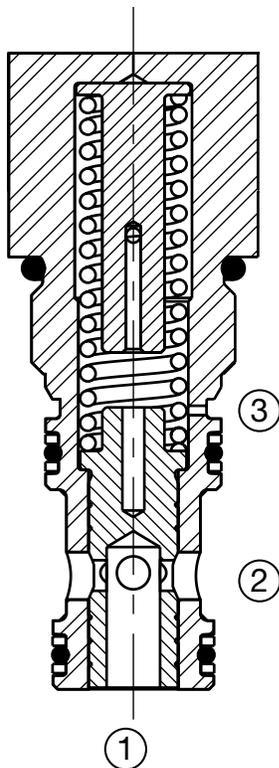
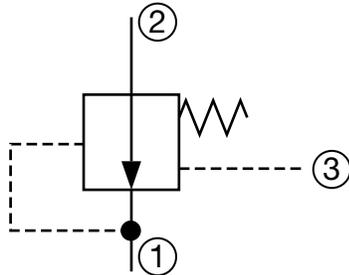
## Standard Line Bodies\*

| Code        | Part No  | Material           | Pressure Rating    | Weight             |
|-------------|----------|--------------------|--------------------|--------------------|
| FH16S3-AS16 | 02582078 | Aluminum, anodized | 3500 psi (245 bar) | 2.34 lbs (1.06 kg) |
| FH16S3-SS16 | 02582079 | Steel, zinc plated | 6000 psi (420 bar) | 6.80 lbs (3.09 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DW10V-01 Normally Open, Spool Type Up to 15 gpm (57 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pressure sensing valve intended for use upstream of a fixed or variable orifice to provide a constant flow rate regardless of load pressure changes.

### Operation

The spool begins to shift when the pressure at port 1 exceeds the combined pressure at port 3 plus the bias spring pressure. It is possible to create a pressure compensated flow control package by connecting port 1 upstream and port 3 downstream of a control orifice.

### Features

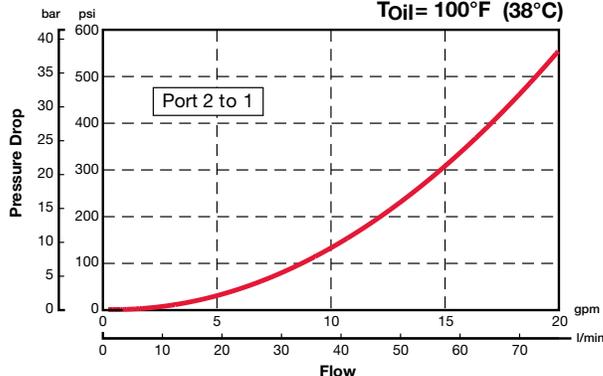
- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

### Specifications

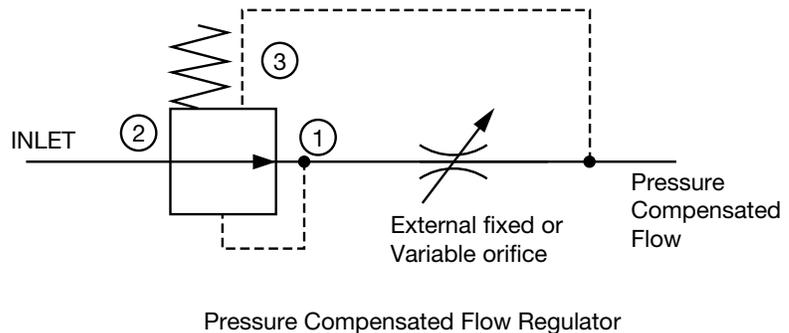
|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 8 gpm (30 l/min) at 100 psi (7 bar) $\Delta P$   |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-S3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02581794<br>Finisher: 02581795  |
| Cartridge Weight            | 0.35 lb (0.158 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N P/N: 02610278<br>Viton® P/N: 02610279   |

### Performance

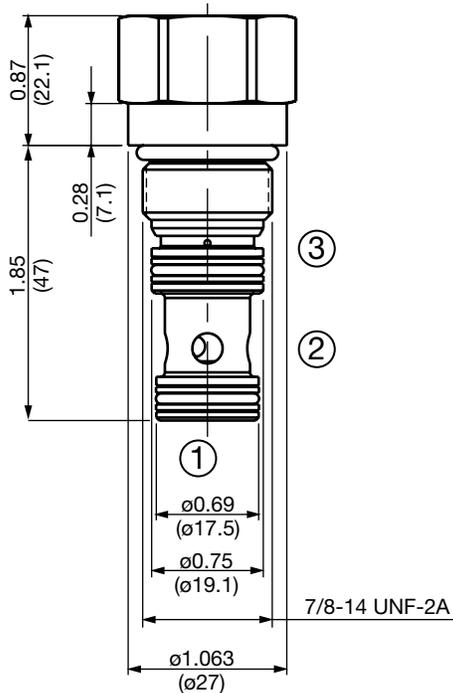
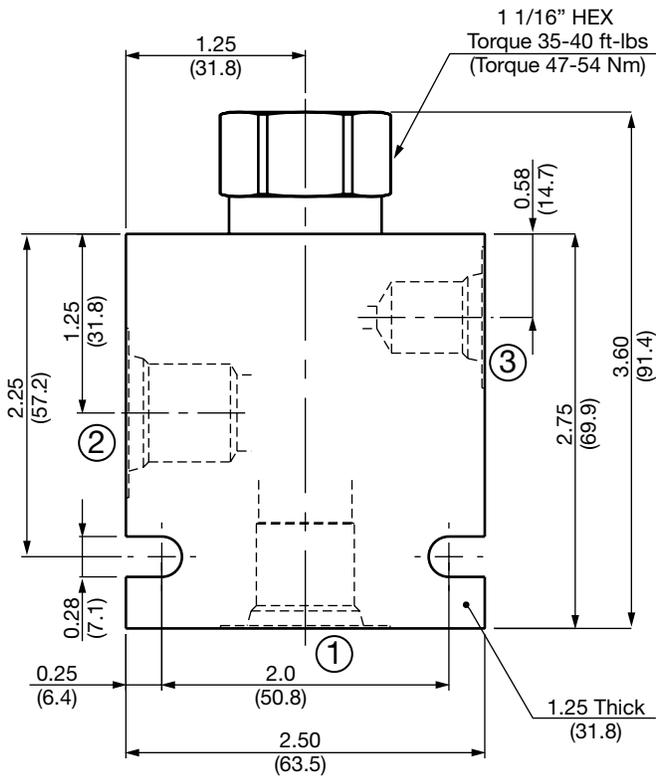
Measured at 135 SUS (28 cSt)  
Toil = 100°F (38°C)



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**DW10V-01-AS8-N-300**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body
- (Pilot Port = SAE-6)

### Seals

- N = Buna-N
- V = Viton®

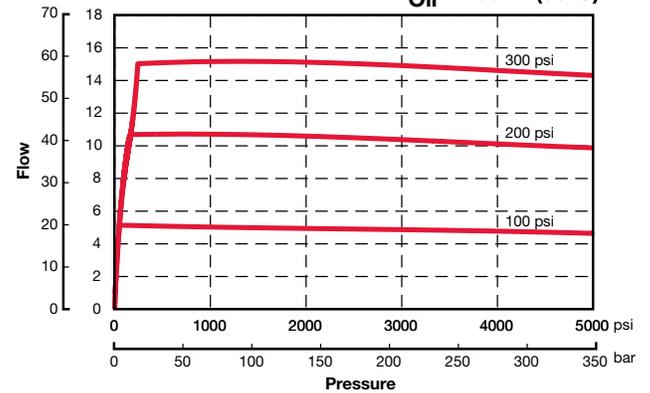
### Bias Spring

- 100 = 100 psi
- 200 = 200 psi
- 300 = 300 psi

## Compensation

2 to 1: orifice downstream  
l/min gpm

Measured at 135 SUS (28 cSt)  
 $T_{oil} = 100^{\circ}F (38^{\circ}C)$



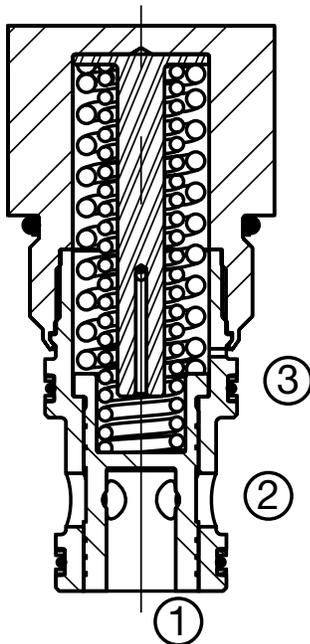
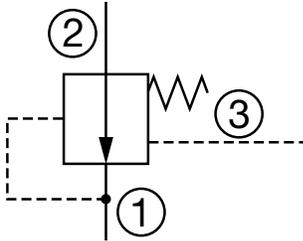
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH10S3-AS8 | 02582076 | Aluminum, anodized | 3500 psi (245 bar) | 0.59 lbs (0.27 kg) |
| FH10S3-SS8 | 02582077 | Steel, zinc plated | 6000 psi (420 bar) | 1.67 lbs (0.76 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DW16V-01 Normally Open, Spool Type Up to 30 gpm (114 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pressure sensing valve intended for use upstream of a fixed or variable orifice to provide a constant flow rate regardless of load pressure changes.

### Operation

The spool begins to shift when the pressure at port 1 exceeds the combined pressure at port 3 plus the bias spring pressure. It is possible to create a pressure compensated flow control package by connecting port 1 upstream and port 3 downstream of a control orifice.

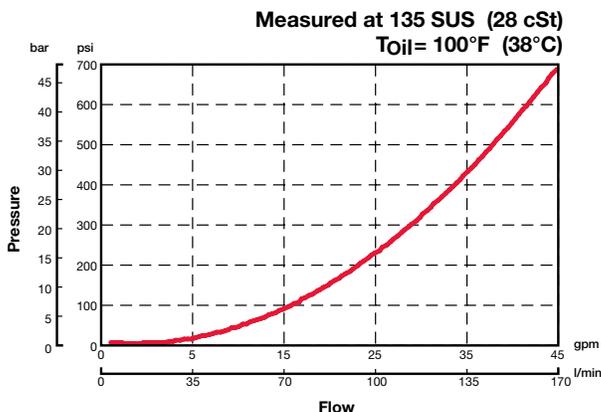
### Features

- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

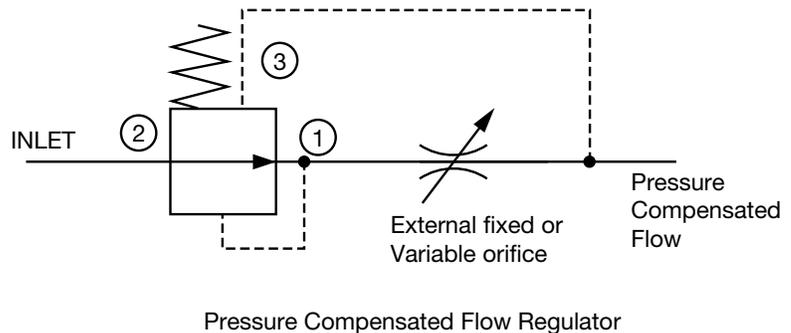
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 19 gpm (72 l/min) at 100 psi (7 bar) $\Delta P$  |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC16-S3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02581797<br>Finisher: 02581798  |
| Cartridge Weight            | 1.0 lb (0.454 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings<br>Solid thermoplastic polyester back-up rings |
| Seal Kits                   | Buna-N P/N: 02610198<br>Viton® P/N: 02610199   |

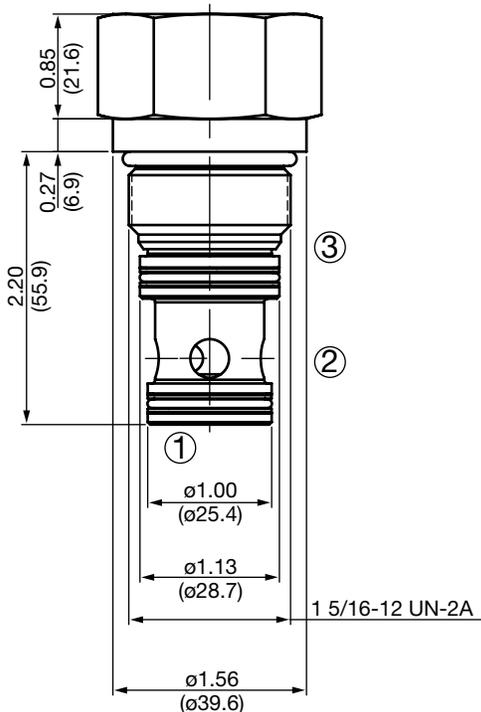
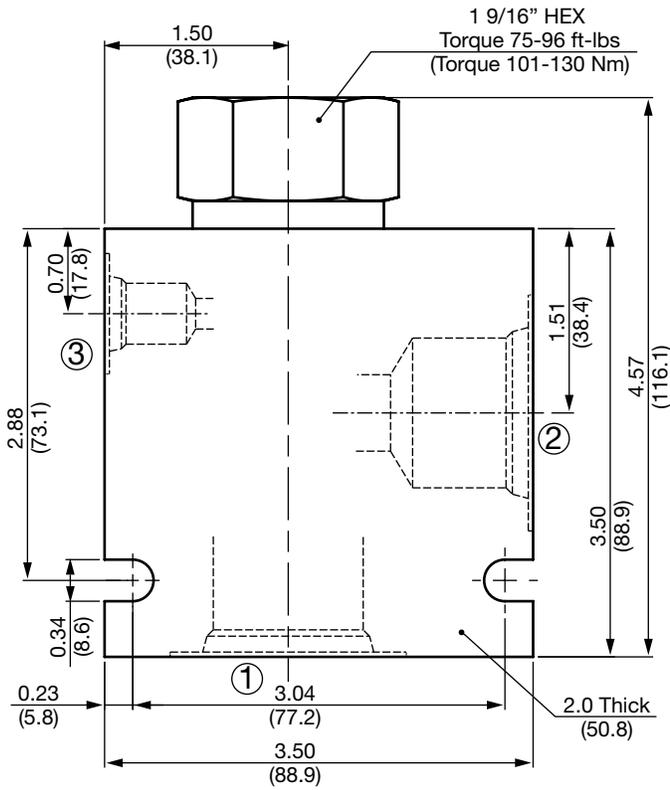
### Performance



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

DW16V-01-AS16-N-300

### Valve Model

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum Body
- SS16 = SAE-16 Ports, steel Body
- (Pilot Port = SAE-6)

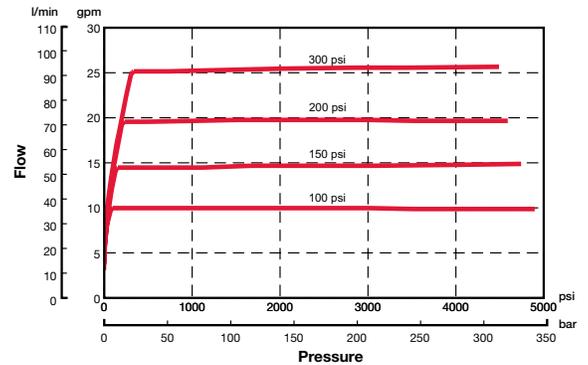
### Seals

- N = Buna-N
- V = Viton®

### Bias Spring

- 100 = 100 psi
- 150 = 150 psi
- 200 = 200 psi
- 300 = 300 psi

## Compensation



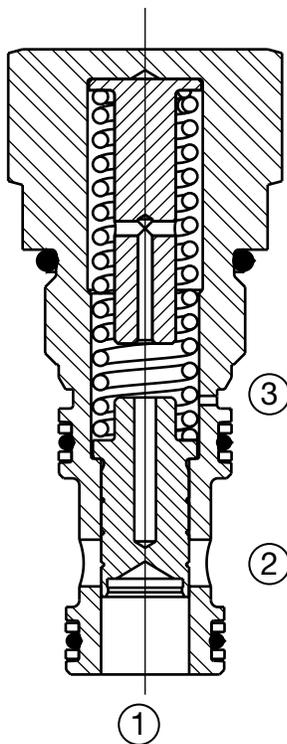
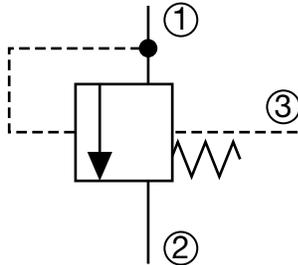
## Standard Line Bodies\*

| Code        | Part No  | Material           | Pressure Rating    | Weight             |
|-------------|----------|--------------------|--------------------|--------------------|
| FH16S3-AS16 | 02582078 | Aluminum, anodized | 3500 psi (245 bar) | 2.34 lb (1.06 kg)  |
| FH16S3-SS16 | 02582079 | Steel, zinc plated | 6000 psi (420 bar) | 6.80 lbs (3.09 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DW10Z-01 Normally Closed, Spool Type Up to 40 gpm (151 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pressure sensing valve with multifunction potential when used with flow, pressure and directional control devices.

### Operation

The spool begins to shift allowing flow from port 1 to port 2 only when pressure at port 1 exceeds the combined pressure at port 3 plus the bias spring pressure setting. With no pressure at port 3, flow will be allowed from port 1 to port 2 once the bias spring force is overcome with pressure at port 1.

It is also possible to create pressure compensation by connecting port 1 upstream and port 3 downstream of a control orifice.

### Features

- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

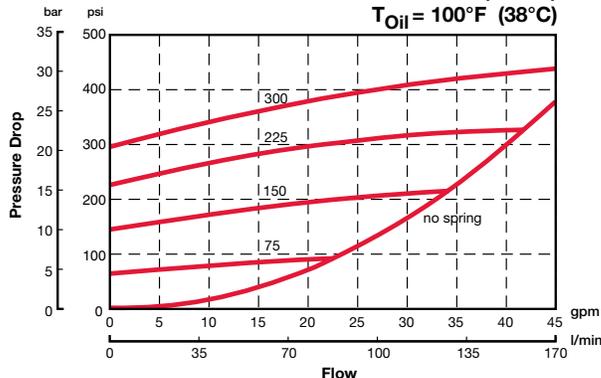
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 40 gpm (151 l/min)   |
| Internal Leakage            | 5 cu in/min at 3000 psi (82cc/min at 207 bar)  |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-S3 (see Line Bodies & Cavities section)   |
| Cavity Tools                | Rougher: 02581794<br>Finisher: 02581795  |
| Cartridge Weight            | 0.35 lb (0.158 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N FS10S3-N P/N: 02610278<br>Viton® FS10S3-V P/N: 02610279   |

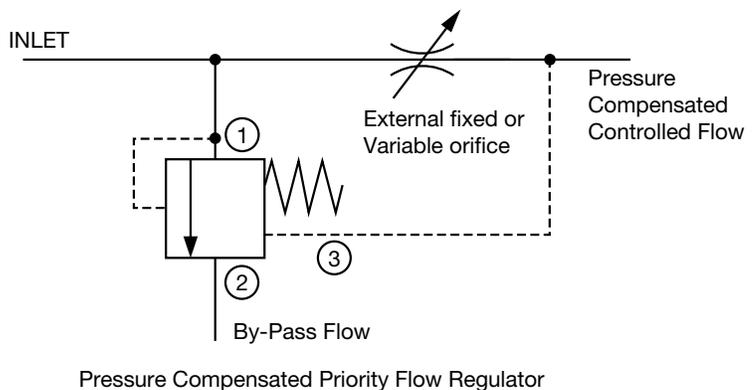
### Performance

1 to 2; Port 3 vented

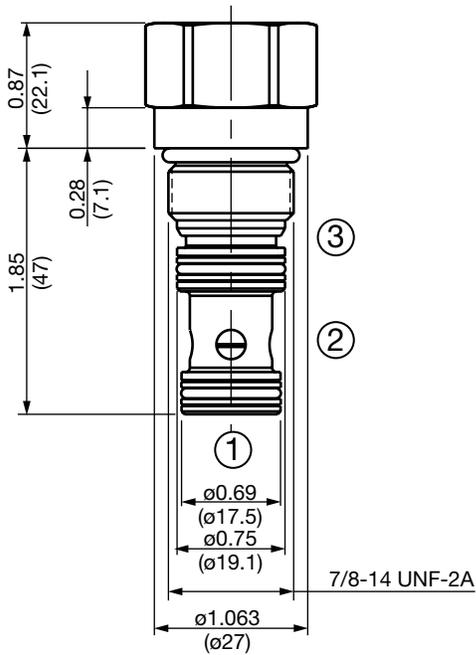
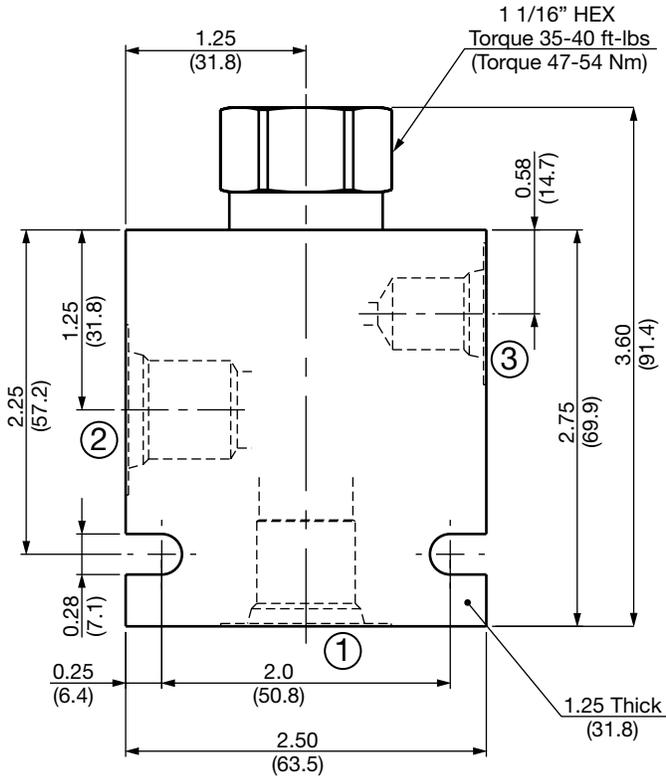
Measured at 135 SUS (28 cSt)  
T<sub>Oil</sub> = 100°F (38°C)



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**DW10Z-01-AS8-N-300**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum Body
- SS8 = SAE-8 Ports, steel Body
- (Pilot Port = SAE-6)

### Seals

- N = Buna-N
- V = Viton®

### Bias Spring

- 75 = 75 psi
- 150 = 150 psi
- 225 = 225 psi
- 300 = 300 psi

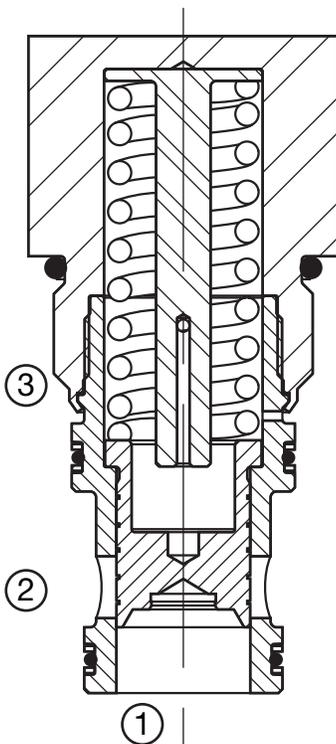
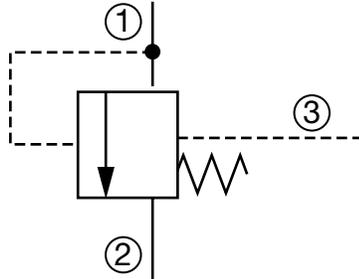
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH10S3-AS8 | 02582076 | Aluminum, anodized | 3500 psi (245 bar) | 0.59 lbs (0.27 kg) |
| FH10S3-SS8 | 02582077 | Steel, zinc plated | 6000 psi (420 bar) | 1.67 lbs (0.76 kg) |

\*Please refer to Line Bodies & Cavities section for details

## DW16Z-01 Normally Closed, Spool Type Up to 75 gpm (284 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pressure sensing valve with multifunction potential when used with flow, pressure and directional control devices.

### Operation

The spool begins to shift allowing flow from port 1 to port 2 only when pressure at port 1 exceeds the combined pressure at port 3 plus the bias spring pressure setting. With no pressure at port 3, flow will be allowed from port 1 to port 2 once the bias spring force is overcome with pressure at port 1.

It is also possible to create pressure compensation by connecting port 1 upstream and port 3 downstream of a control orifice.

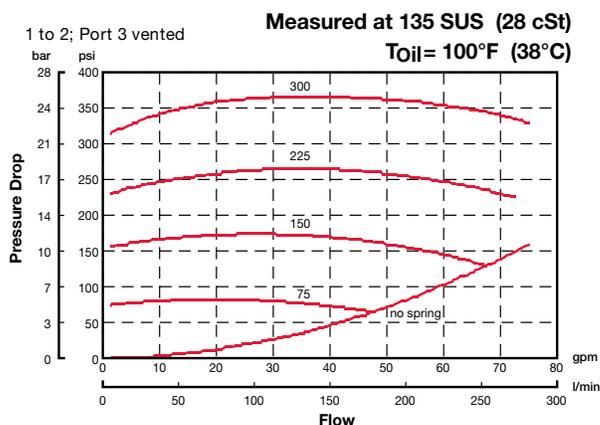
### Features

- Operating pressure up to 5000 psi (350 bar)
- Various bias spring settings up to 300 psi (20.7 bar)
- Quiet, modulated response
- All external surfaces zinc-plated
- Hardened spool and sleeve to ensure minimal wear and extend service life
- Industry common cavity

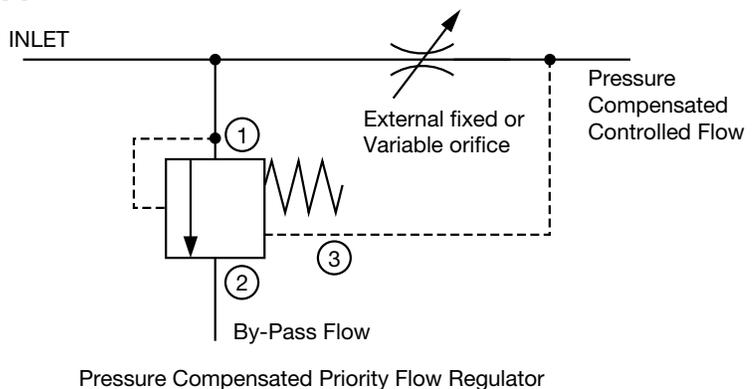
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 5000 psi (350 bar)   |
| Nominal Flow                | 75 gpm (284 l/min)   |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC16-S3 (see Line Bodies & Cavities section)   |
| Cavity Tools                | Rougher: 02581797<br>Finisher: 02581798  |
| Cartridge Weight            | 1.0 lb (0.454 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings<br>Solid thermoplastic polyester back-up rings |
| Seal Kits                   | Buna-N FS16S3-N P/N: 02610198<br>Viton® FS16S3-V P/N: 02610199   |

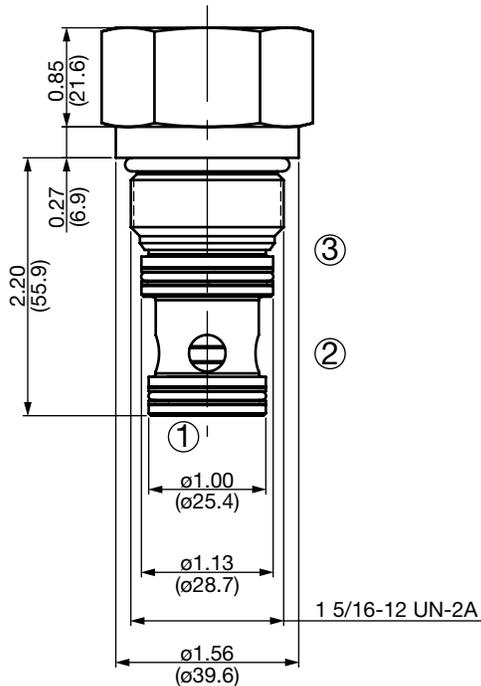
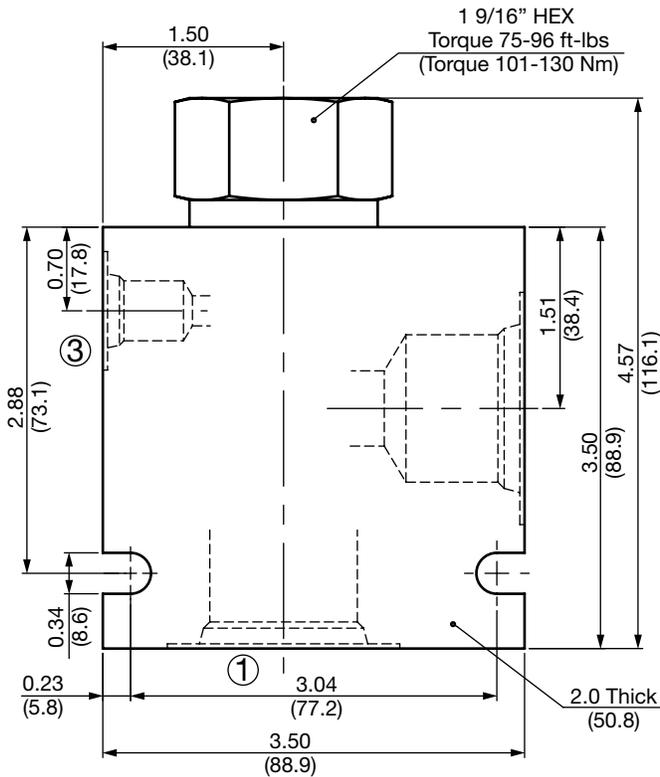
### Performance



### Application



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

DW16Z-01-AS16-N-300

### Valve Model

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum Body
- SS16 = SAE-16 Ports, steel Body
- (Pilot Port = SAE-6)

### Seals

- N = Buna-N
- V = Viton®

### Bias Spring

- 75 = 75 psi
- 150 = 150 psi
- 200 = 200 psi
- 300 = 300 psi

## Standard Line Bodies\*

| Code        | Part No  | Material           | Pressure Rating    | Weight             |
|-------------|----------|--------------------|--------------------|--------------------|
| FH16S3-AS16 | 02582078 | Aluminum, anodized | 3500 psi (245 bar) | 2.34 lb (1.06 kg)  |
| FH16S3-SS16 | 02582079 | Steel, zinc plated | 6000 psi (420 bar) | 6.80 lbs (3.09 kg) |

\*Please refer to Line Bodies & Cavities section for details

## Overview

### Poppet Type Solenoid Valves

Poppet type valves are intended for use as load holding and blocking devices in hydraulic circuits requiring very low internal leakage. HYDAC offers a variety of Poppet type two-way and three-way normally closed or normally open unidirectional or bi-directional load holding and blocking valves. Models are available for flows up to 40 gpm (150 l/min) with pressure ratings up to 5000 psi (350 bar).

All HYDAC poppet valves are tested on an automated test stand measuring internal leakage by monitoring pressure decay, not counting drops per minute. HYDAC Poppet valves therefore provide reliable load holding and assure minimum pressure decay at the actuator.

### Features

- Leaktight design
- Low pressure drop
- Wet armature construction
- Standard Water/Weather resistant coils rated up to IP69K
- Wide voltage range
- Coils are rated for continuous duty operation
- Wide variety of voltages and molded-in connectors
- Cartridges are voltage interchangeable
- Manual overrides available on all models
- Hardened poppet to ensure minimal wear and extend service life
- One piece body design minimizes the effects of eccentricity
- All exposed cartridge surfaces are zinc-plated to resist corrosion
- Industry common cavity-compact size



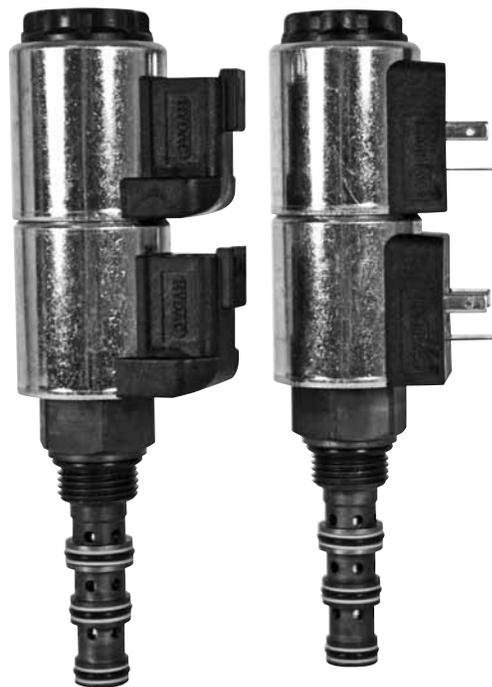
## Spool Type Solenoid Valves

HYDAC Spool Valves are offered with a wide choice of flow paths and position options to satisfy the most demanding system requirements. Models are available for flows up to 9 gpm (35 l/min) with pressure ratings up to 5000 psi (350 bar). These options include:

- 2-way, 2-position normally open and normally closed spool valves
- 3-way, 2-position spool valves
- 4-way, 2-position spool valves
- 4-way, 3-position spool valves

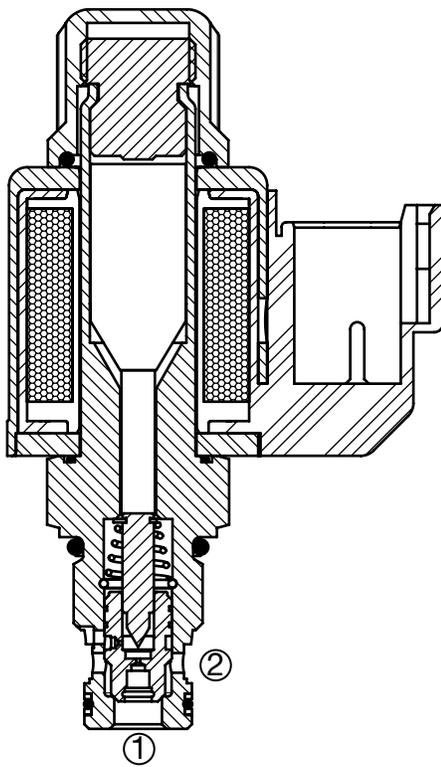
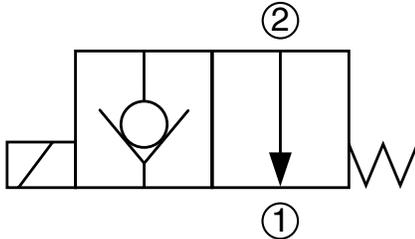
### Features

- Low pressure drop
- Wet armature construction
- Standard Water/Weather resistant coils rated up to IP69K
- Wide voltage range
- Coils are rated for continuous duty operation
- Wide variety of voltages and molded-in connectors
- Cartridges are voltage interchangeable
- Manual overrides available on all models
- Detented manual overrides available on selected models
- Hardened and ground spool to ensure minimal wear and extend service life
- One piece body minimizes the effects of eccentricity
- All exposed cartridge surfaces are resistant corrosion
- Industry common cavity-compact size



## WS06Y-01 Poppet Type, Normally Open, Pilot Operated Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2 way 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

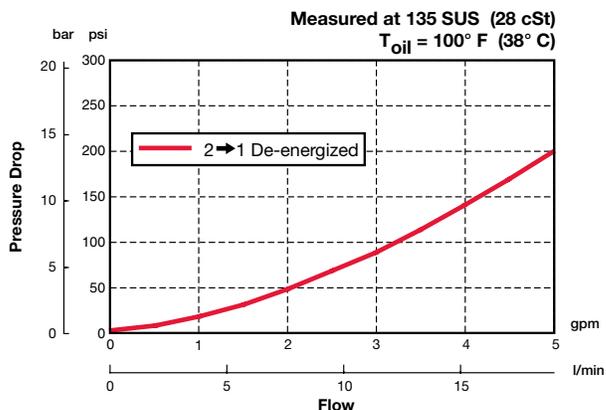
### Operation

When de-energized the WS06Y allows flow from port 2 to port 1, while flow from port 1 to port 2 is severely restricted. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated overcomes solenoid force.

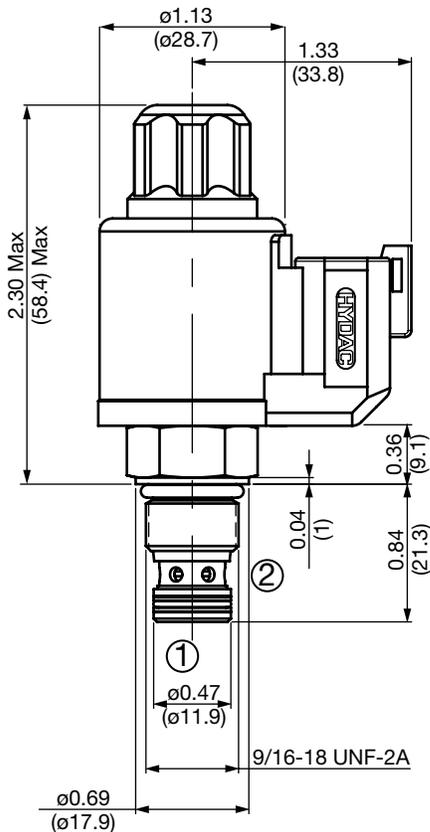
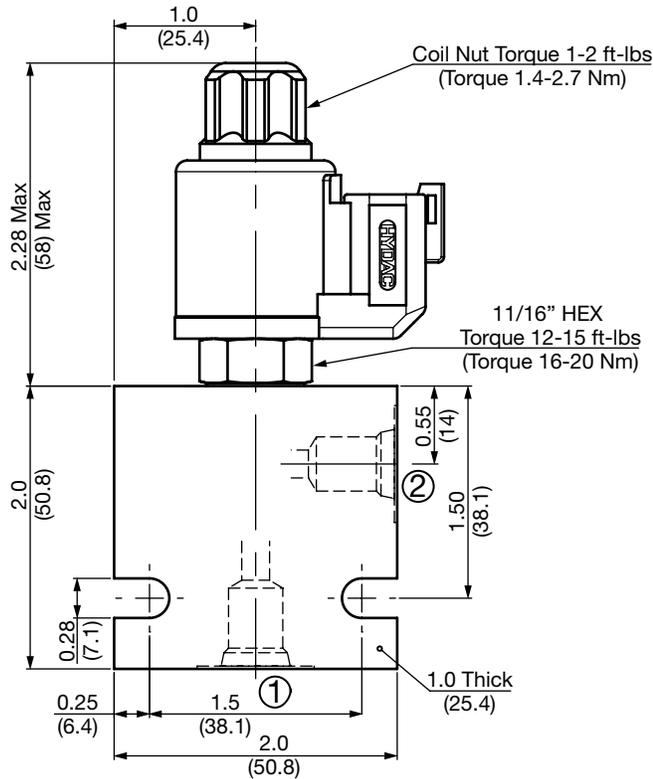
### Specifications

|  |  |
|--|--|
| Operating Pressure                                       | 5000 psi (350 bar)   |
| Nominal Flow   | 3.5 gpm (13.3 l/min)   |
| Internal Leakage   | Leaktight, less than 5 drops/min. at 5000 psi (350 bar)  |
| Fluid Operating Temp. Range                              | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range                                | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating   | Continuous from 85% to 115% of nominal voltage   |
| Current Draw at 68°F (20°C)                              | 984 mA at 12VDC; 492 mA at 24VDC   |
| Minimum Pull-in Current to Operate Valve                 | 70% of nominal amperage  |
| Typical Response Time<br>(Varies with Pressure and Flow) | Energized: 50ms<br>De-Energized: 35ms  |
| Fluid Compatibility                                      | Mineral-Based or Synthetics with lubricating properties.   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration   | 21/19/16 or cleaner per (ISO 4406)   |
| Installation   | No orientation restrictions  |
| Cavity   | FC06-2 (see Line Bodies and Cavities section)  |
| Cavity Tools   | Rougher: 02582046<br>Finisher: 02582047  |
| Cartridge Weight   | 2.7 oz (75 grams)  |
| Coil Weight  | 3.1 oz (88 grams)  |
| Cartridge Material                                       | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material  | Class N, 200°C high temperature magnet wire, steel shell, polyester encapsulation.   |
| Seal Kits  | Buna-N P/N: 02610184<br>Viton® P/N: 02610185   |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WS06Y-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type  
(for availability consult factory)

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum body
- SS4 = SAE-4 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC { 12 = 12 VDC
- 24 = 24 VDC
- AC { 115 = 105 VDC (only available with connector DG)
- 230 = 205 VDC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

### Coil Connector

- DG = EN 175301-803-B (IP65 Rated)\*\*
- DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*
- DN = Deutsch DT04-2P integral molded (IP69K Rated)\*

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570

Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

### Coil Model 32-1329

For other coil connector types consult factory

\*\* Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

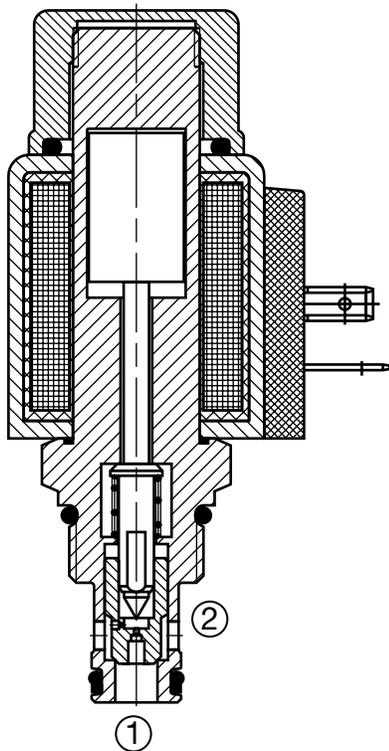
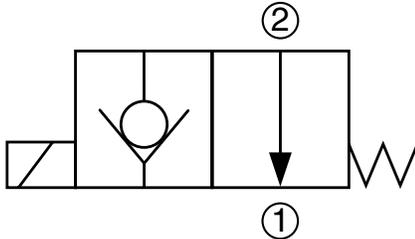
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.33 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, Zinc plated | 6000 psi (420 bar) | 0.97 lbs (0.45 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS08Y-01 Poppet Type, Normally Open, Pilot Operated Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS08Y allows flow from port 2 to port 1, while flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS08YR. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (130 to 290 psi (9 to 20 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

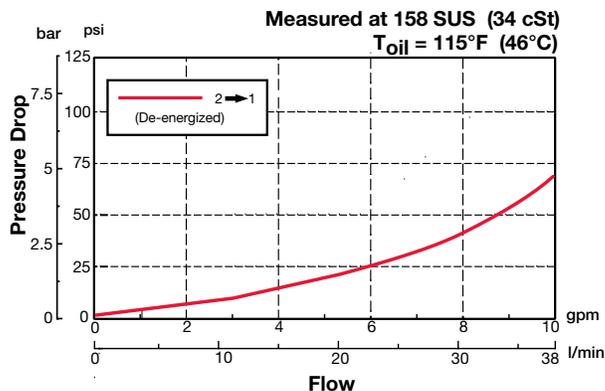
### Features

- Push type manual override button, protected by rubber cap

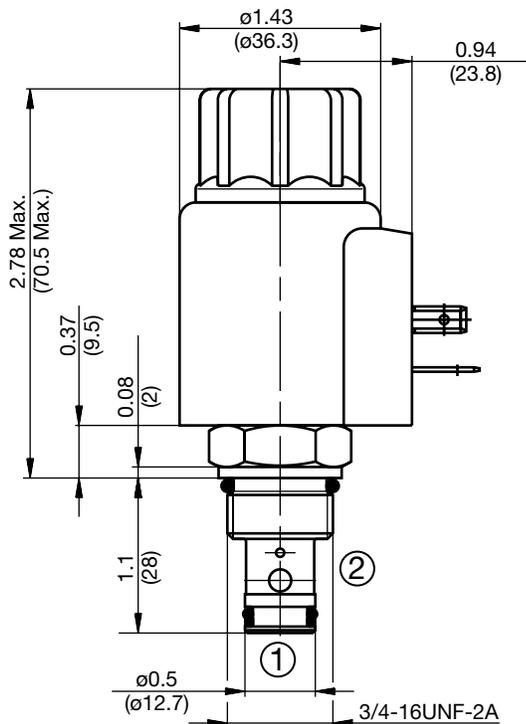
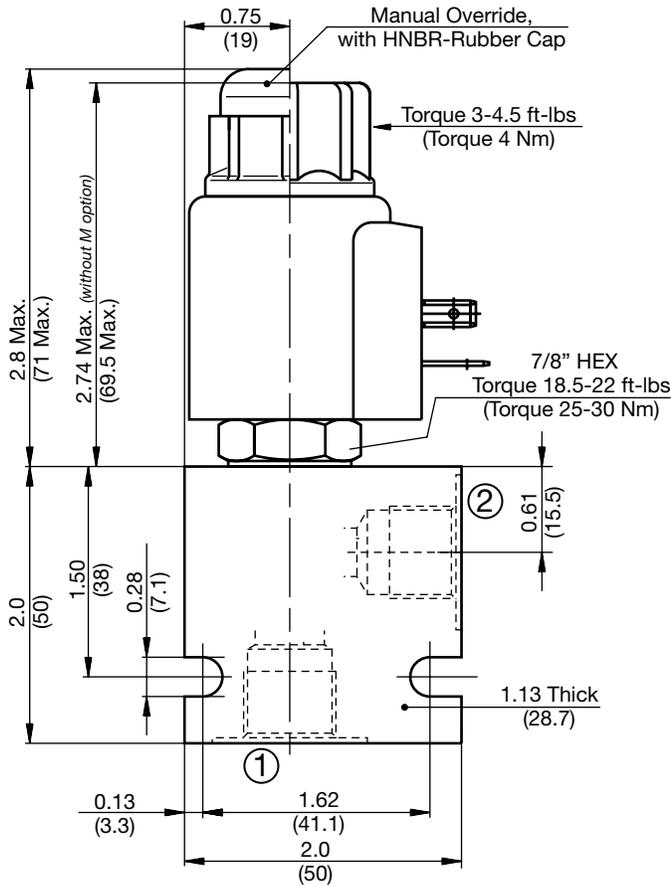
### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |                       |
| Nominal Flow                       | 10 gpm (38 l/min)   |                       |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |                       |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |                       |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |                       |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |                       |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |                       |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |                       |
| Response Time (typical)            | Energized:  | 50ms                  |
|                                    | De-energized:   | 35ms                  |
| Fluid Compatibility                | Mineral-Based or Synthetics with lubricating properties.  |                       |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                         | 21/19/16 or cleaner per (ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                       | No orientation restrictions   |                       |
| Cavity                             | FC08-2 (see <i>Line Bodies and Cavities</i> section)  |                       |
| Cavity Tools                       | Rougher:  | 02580090              |
|                                    | Finisher:   | 02580091              |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |                       |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |                       |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |                       |
| Seal Kits                          | Buna-N  | FS082-N P/N: 03033920 |
|                                    | Viton®  | FS082-V P/N: 03051756 |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08Y-01 M-C-N-24 DS**

|                         |          |
|-------------------------|----------|
| <b>Valve Model</b>      | WS08Y-01 |
| <b>Override Option</b>  | M        |
| <b>Body &amp; Ports</b> | C-N      |
| <b>Seals</b>            | N        |
| <b>Coil Voltage</b>     | 24       |
| <b>Coil Connector</b>   | DS       |

**Manual Override, with HNBR-Rubber Cap**

**Torque 3-4.5 ft-lbs (Torque 4 Nm)**

**7/8" HEX Torque 18.5-22 ft-lbs (Torque 25-30 Nm)**

**0.61 (15.5)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

**0.28 (7.1)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.78 Max. (70.5 Max.)**

**0.37 (9.5)**

**0.08 (2)**

**1.1 (28)**

**1.13 Thick (28.7)**

**1.62 (41.1)**

**0.13 (3.3)**

**2.0 (50)**

**2.74 Max. (69.5 Max.)**

**0.75 (19)**

**0.61 (15.5)**

**1.50 (38)**

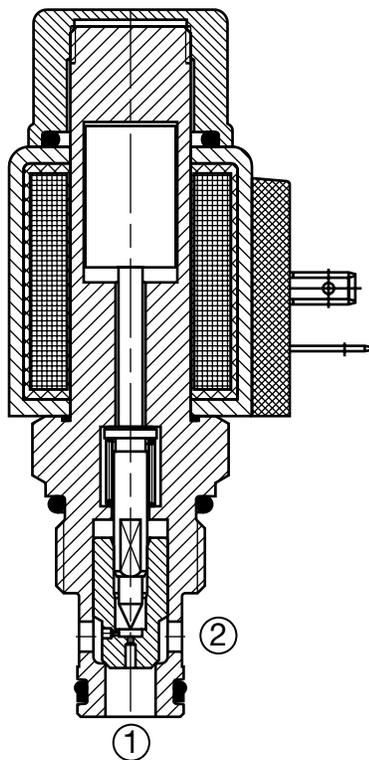
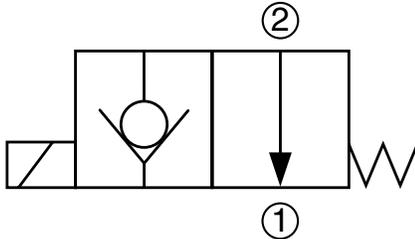
**0.28 (7.1)**

**1.13 Thick (28.7)**

## WS10Y-01

### Poppet Type, Normally Open, Pilot Operated Up to 20 gpm (75 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS10Y allows flow from port 2 to port 1, while flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS10YR. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (36 to 145 psi (2.5 to 10 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

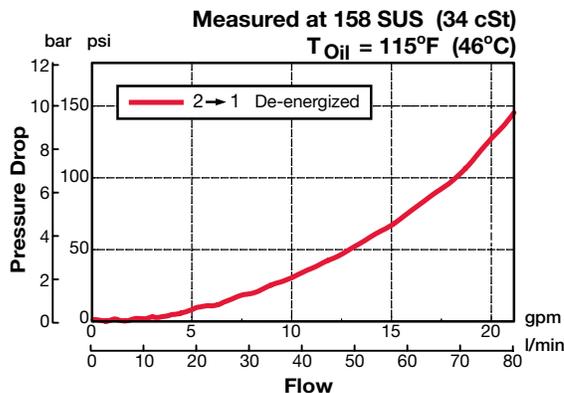
#### Features

- Push type manual override button, protected by rubber cap

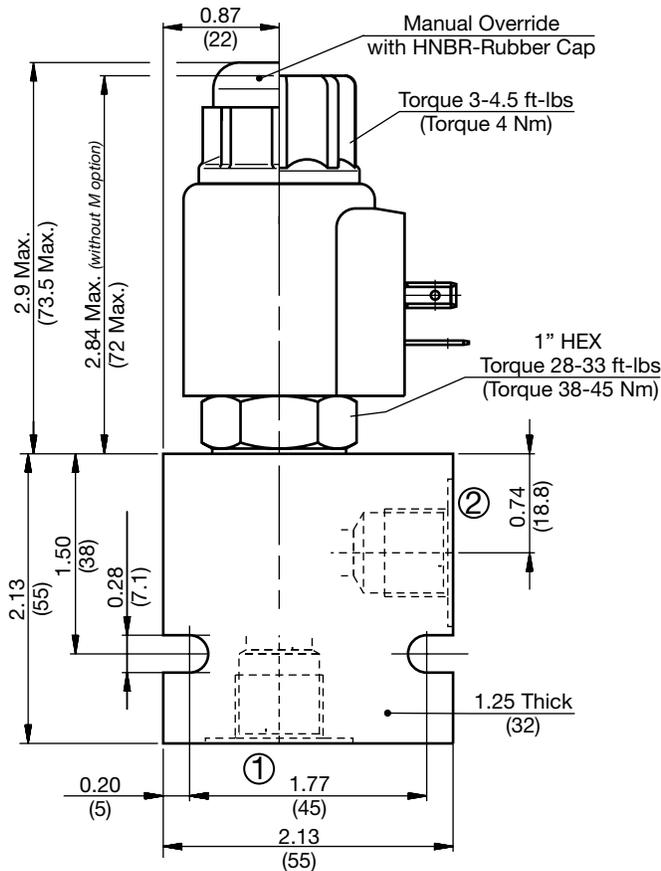
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 20 gpm (75 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 55 ms<br>De-energized 35 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580274<br>Finisher: 02580247   |
| Cartridge Weight                   | 0.40 Lbs. (0.182 kg)  |
| Coil Weight                        | 0.42 Lbs. (0.190 kg)  |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS102-N P/N: 03033872<br>Viton® FS102-V P/N: 03051757  |

#### Performance



## Dimensions



## Model Code

WS10Y-01 M-C-N-24 DS

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- DC 24 = 24 VDC
- DC 36 = 36 VDC
- DC 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- AC 115 = 115 VAC (AC coils internally full wave rectified)
- AC 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DC DS = Dual spade (SAEJ858a)\*
- DC DL = Leadwires (2) - 18" long (46 cm)\*
- DC DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DC DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DC DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

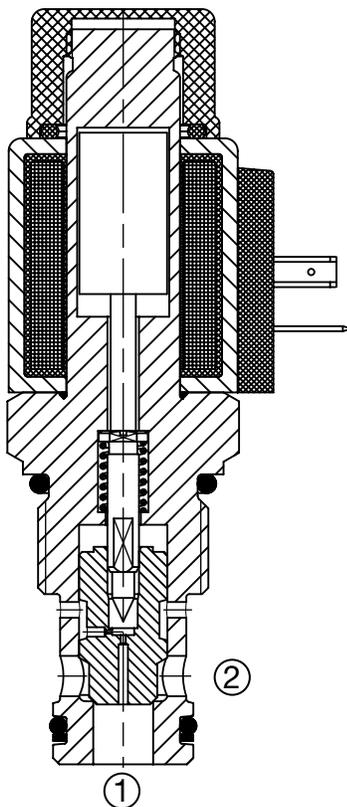
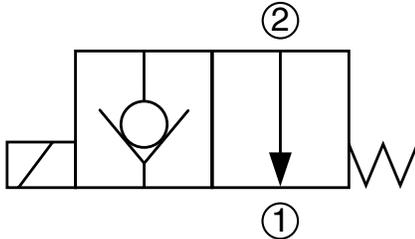
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lbs (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

All measurements in inches (mm).  
Subject to technical modifications

## WS12Y-01 Poppet Type, Normally Open, Pilot Operated Up to 29 gpm (110 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS12Y allows flow from port 2 to port 1, while flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS12YR. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (22 to 94 psi (1.5 to 6.5 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

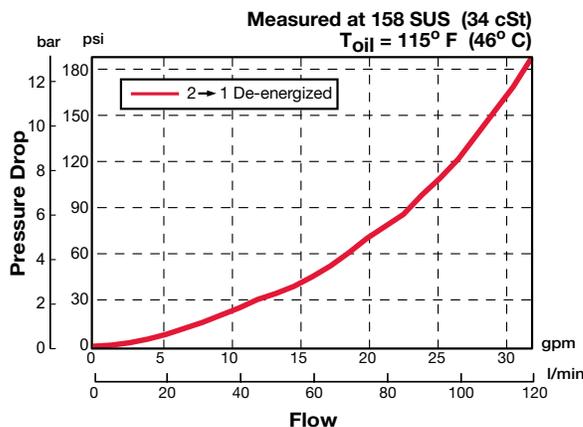
### Features

- Push type manual override button, protected by rubber cap

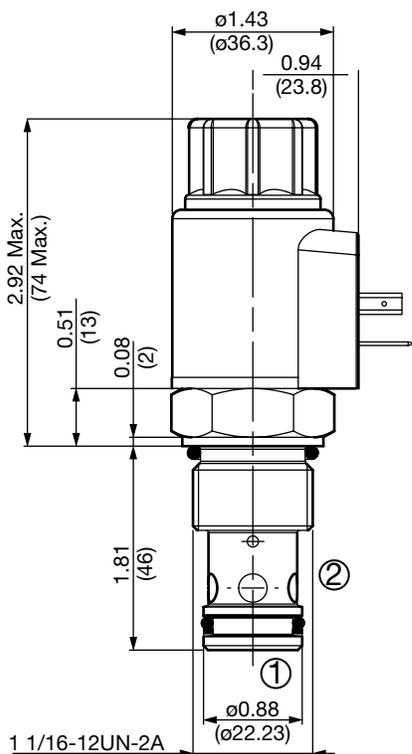
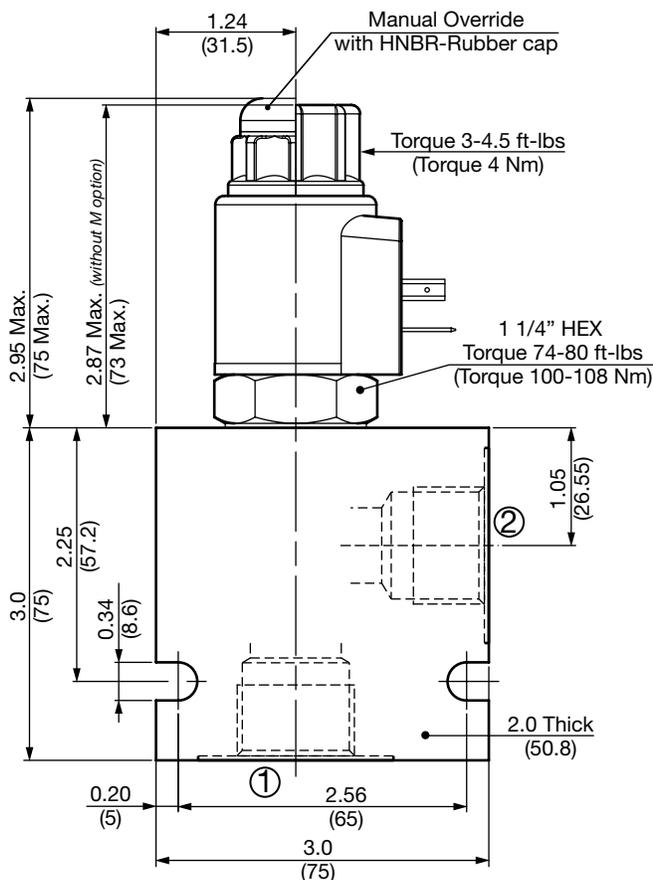
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 29 gpm (110 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 90 ms<br>De-energized 25 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC12-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580667<br>Finisher: 02580668   |
| Cartridge Weight                   | 0.60 Lbs. (0.27 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS122-N P/N: 03071298<br>Viton® FS122-V P/N: 03071299  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS12Y-01 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS12 = SAE-12 Ports, aluminum body
- SS12 = SAE-12 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC
  - 12 = 12 VDC
  - 24 = 24 VDC
  - 36 = 36 VDC
  - 110 = 110 VDC (only available with connector DG)
- AC
  - 24 = 24 VAC
  - 115 = 115 VAC (AC coils internally full wave rectified)
  - 230 = 230 VAC

### Coil connector

- DC
  - DG = EN 175301-803-A
  - DS = Dual spade (SAEJ858a)\*
  - DL = Leadwires (2) - 18" long (46 cm)\*
  - DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
  - DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
  - DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

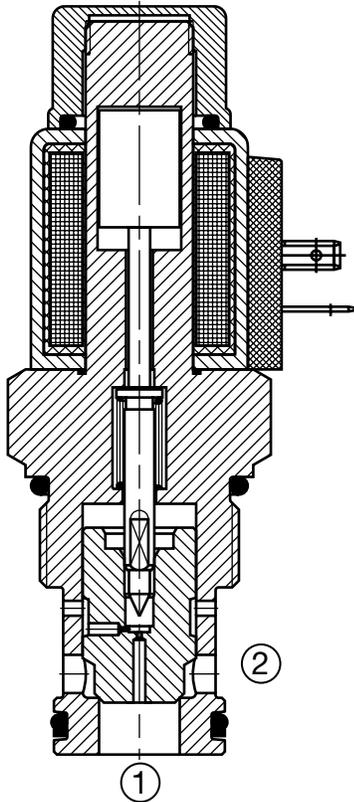
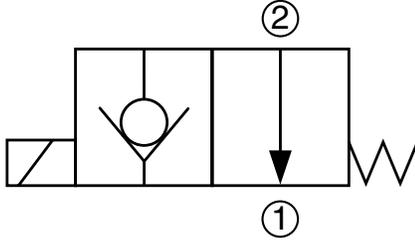
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.39 lbs (0.63 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc plated | 6000 psi (420 bar) | 4.16 lbs (1.89 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS16Y-01 Poppet Type, Normally Open, Pilot Operated Up to 40 gpm (150 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS16Y allows flow from port 2 to port 1, while flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS16YR. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (15 to 45 psi (1 to 3 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

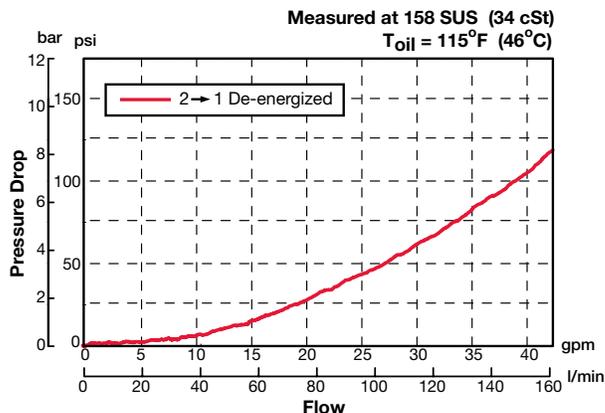
### Features

- Push type manual override button, protected by rubber cap

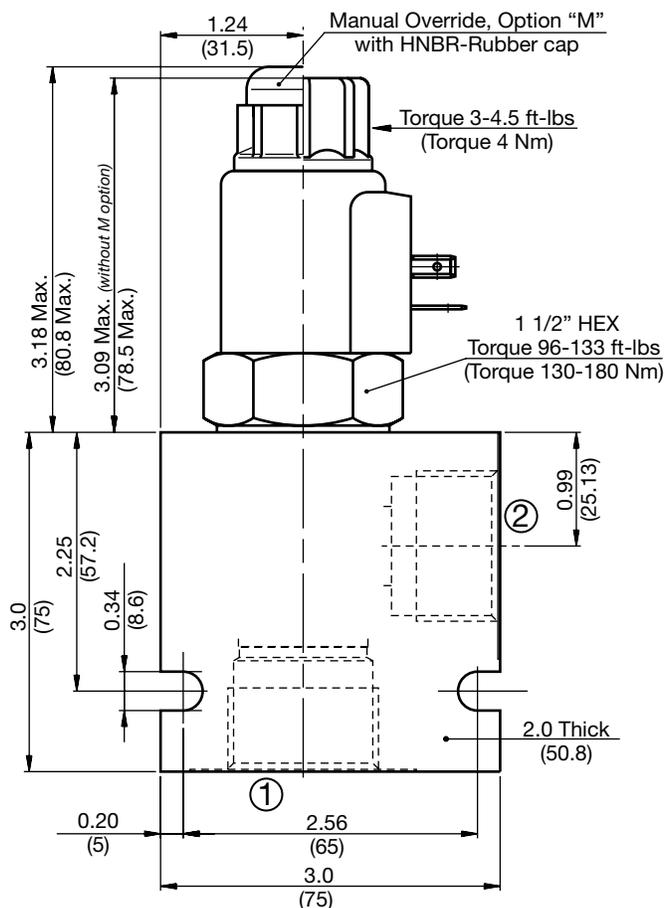
### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |                       |
| Nominal Flow                       | 40 gpm at 4060 psi (150 l/min at 280 bar)<br>26 gpm at 5000 psi (100 l/min at 350 bar)                                  |                       |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi<br>(0.25 cc/min at 350 bar)   |                       |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |                       |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |                       |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |                       |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |                       |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |                       |
| Response Time (typical)            | Energized   | 150 ms                |
|                                    | De-energized  | 35 ms                 |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |                       |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                       | No orientation restrictions   |                       |
| Cavity                             | FC16-2 (see Line Bodies & Cavities section)   |                       |
| Cavity Tools                       | Rougher:  | 02580250              |
|                                    | Finisher:   | 02580251              |
| Cartridge Weight                   | 1.37 Lbs. (0.62 kg)   |                       |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |                       |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |                       |
| Seal Kits                          | Buna-N  | FS162-N P/N: 03052427 |
|                                    | Viton®  | FS162-V P/N: 03051758 |

### Performance

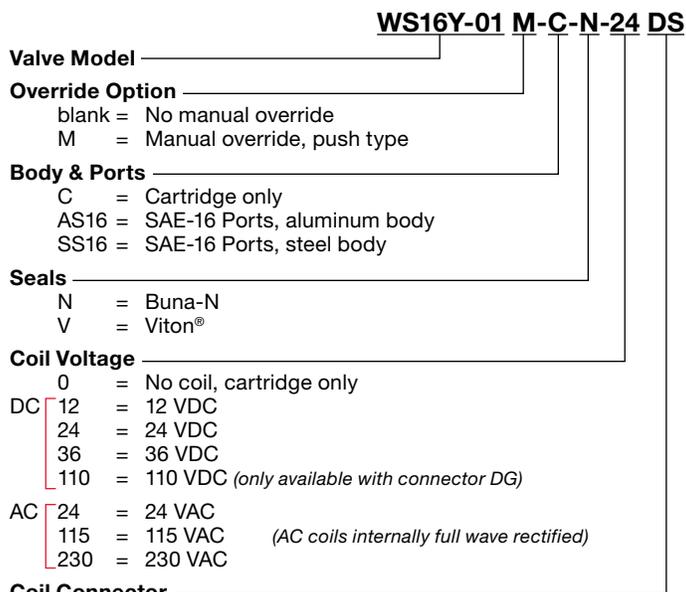


## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code



- Coil Connector**
  - DC DG = EN 175301-803-A
  - DS = Dual spade (SAEJ858a)\*
  - DL = Leadwires (2) - 18" long (46 cm)\*
  - DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
  - DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
  - DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

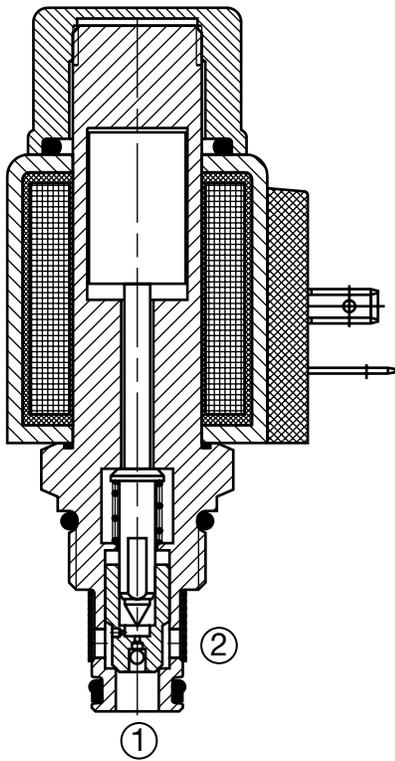
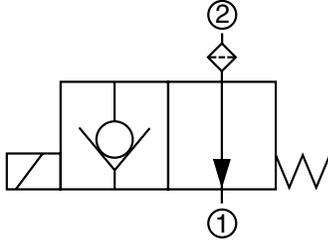
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 lbs (0.55 kg)  |
| FH162-SS16 | 03032655 | Steel, Zinc plated | 6000 psi (420 bar) | 3.56 lbs (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS08Y-30 Poppet Type, Normally Open, Pilot Operated Up to 8 gpm (30 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type, with filter screen on inlet port, intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS08Y allows flow from port 2 to port 1, while flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS08YR. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (130 to 290 psi (9 to 20 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

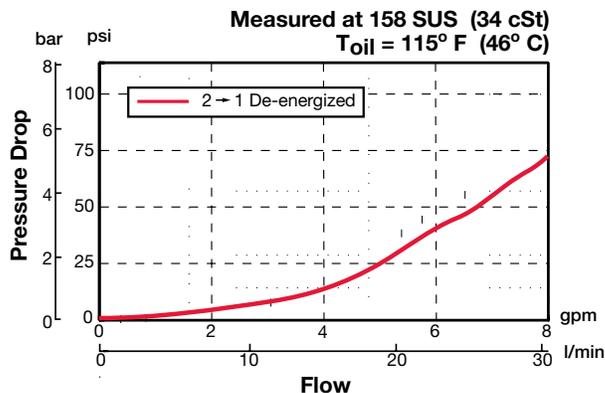
### Features

- Filter screen on the inlet port for protection from contamination getting inside the cartridge
- Push type manual override button, protected by rubber cap

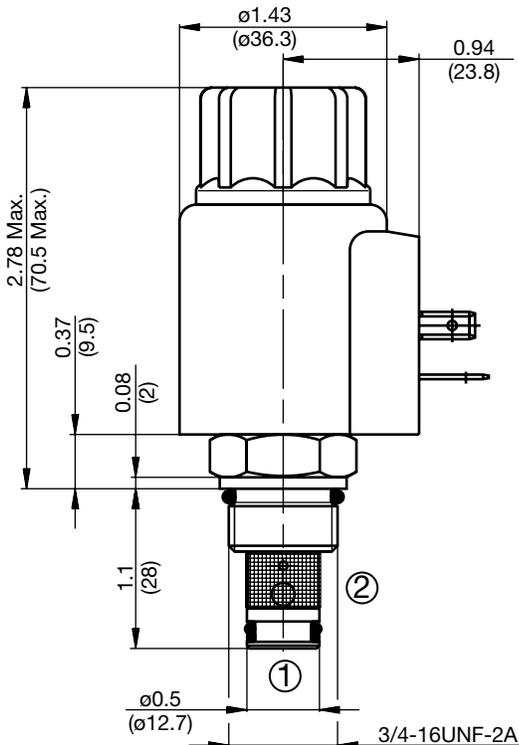
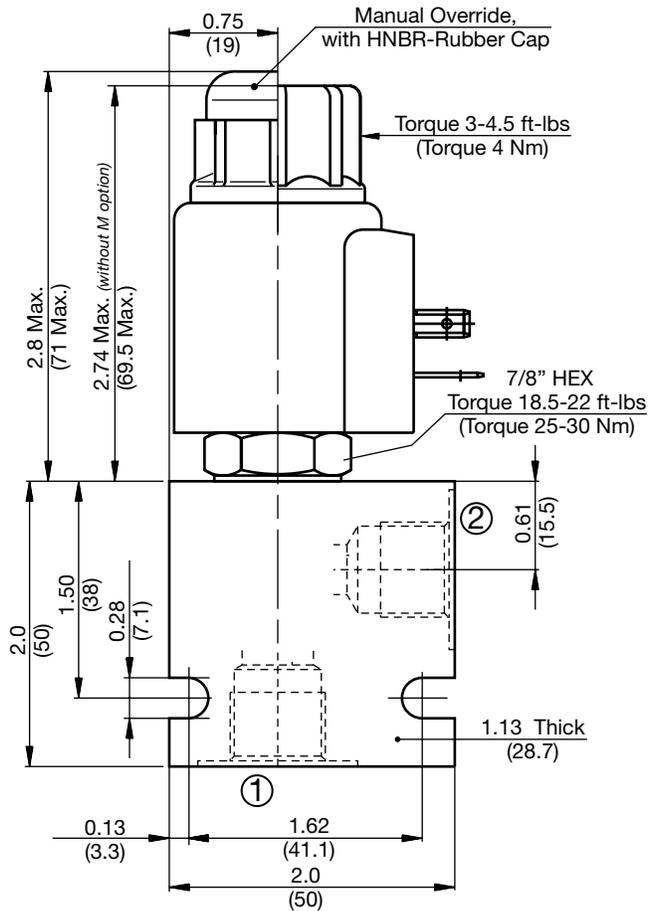
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8 gpm (30 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized: 50ms<br>De-energized: 35ms   |
| Fluid Compatibility                | Mineral-Based or Synthetics with lubricating properties.  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner per (ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Filter screen                      | 300 $\mu$ m mesh  |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see Line Bodies and Cavities section)   |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamide encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03033920<br>Viton® P/N: 03051756  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08Y-30 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

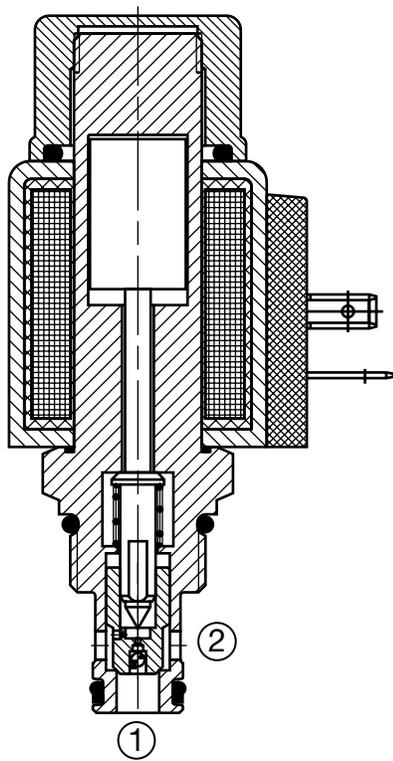
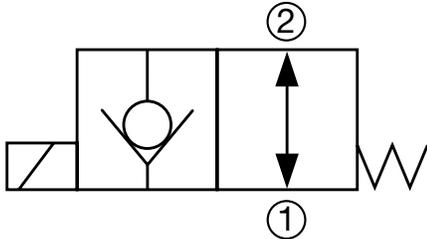
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS08YR-01

### Poppet Type, Normally Open, Pilot Operated, Free Reverse Flow Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS08YR allows flow from port 2 to port 1 and from port 1 to port 2. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (130 to 290 psi (9 to 20 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

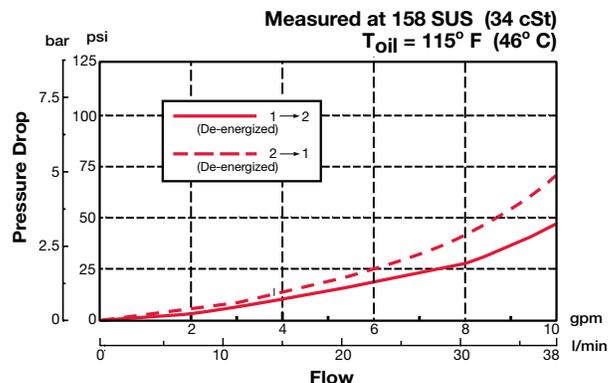
#### Features

- Push type manual override button, protected by rubber cap
- Free reverse flow

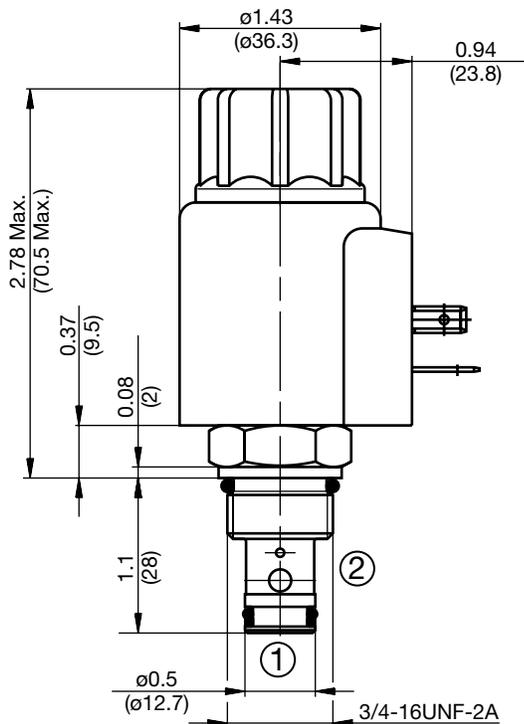
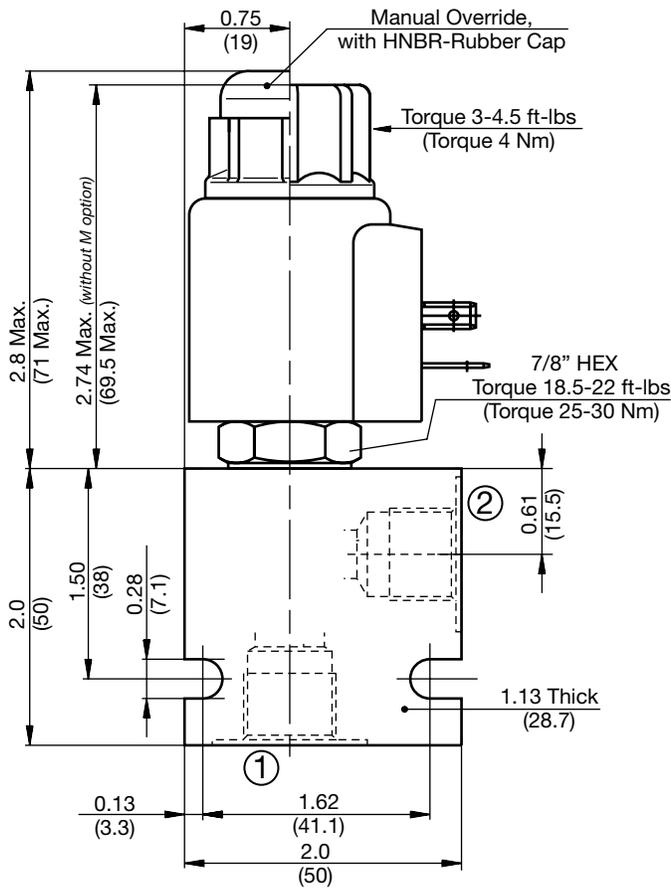
#### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |                       |
| Nominal Flow                       | 10 gpm (38 l/min)   |                       |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |                       |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |                       |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |                       |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |                       |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |                       |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |                       |
| Response Time (typical)            | Energized: 50ms   | De-energized: 35ms    |
| Fluid Compatibility                | Mineral-Based or Synthetics with lubricating properties.  |                       |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                         | 21/19/16 or cleaner per (ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                       | No orientation restrictions   |                       |
| Cavity                             | FC08-2 (see <i>Line Bodies and Cavities</i> section)  |                       |
| Cavity Tools                       | Rougher: 02580090   | Finisher: 02580091    |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |                       |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |                       |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |                       |
| Seal Kits                          | Buna-N  | FS082-N P/N: 03033920 |
|                                    | Viton®  | FS082-V P/N: 03051756 |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08YR-01 M-C-N-24 DS**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, push type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS6 = SAE-6 Ports, aluminum body  
 SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only
- DC** { 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)
- AC** { 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_
- DC** { DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*
- AC** AG = EN 175301-803-A

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

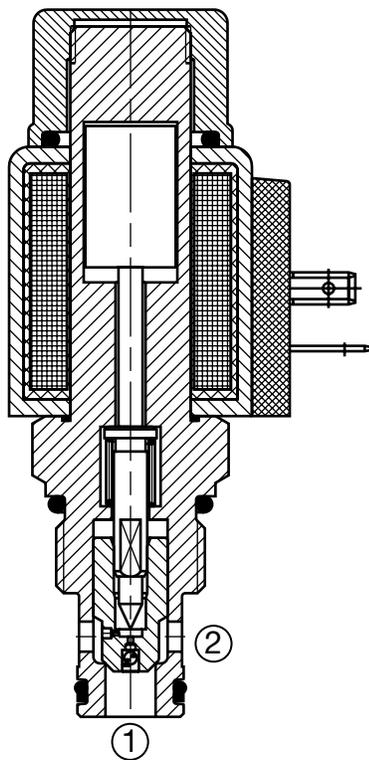
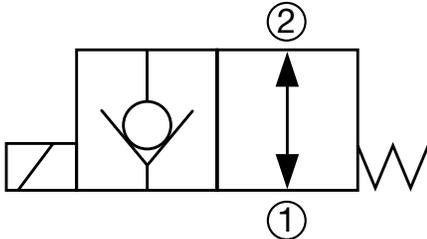
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS10YR-01

### Poppet Type, Normally Open, Pilot Operated, Free Reverse Flow Up to 20 gpm (75 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS10YR allows flow from port 2 to port 1 and from port 1 to port 2. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (130 to 290 psi (9 to 20 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

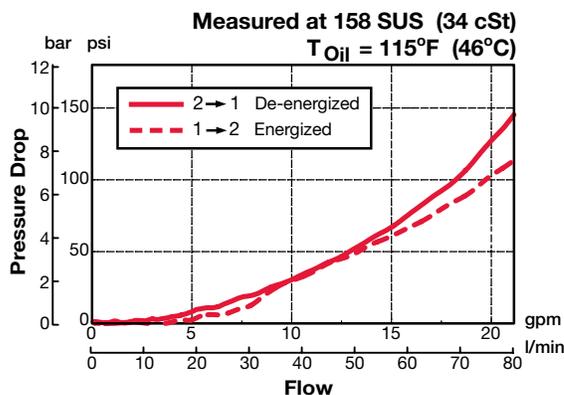
#### Features

- Push type manual override button, protected by rubber cap
- Free reverse flow

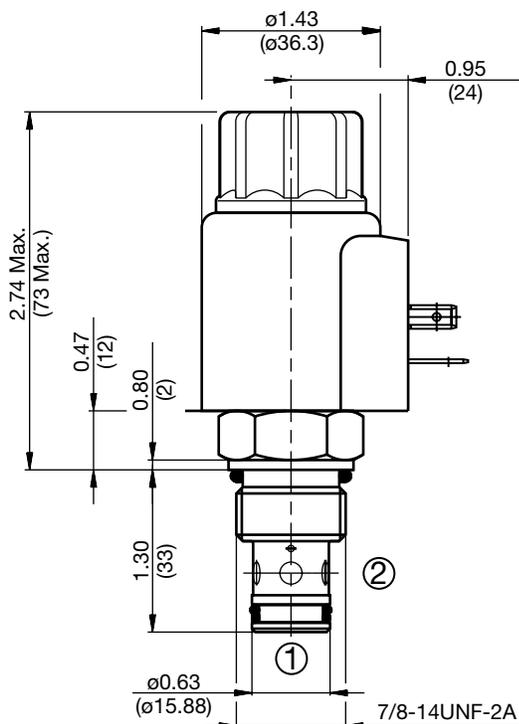
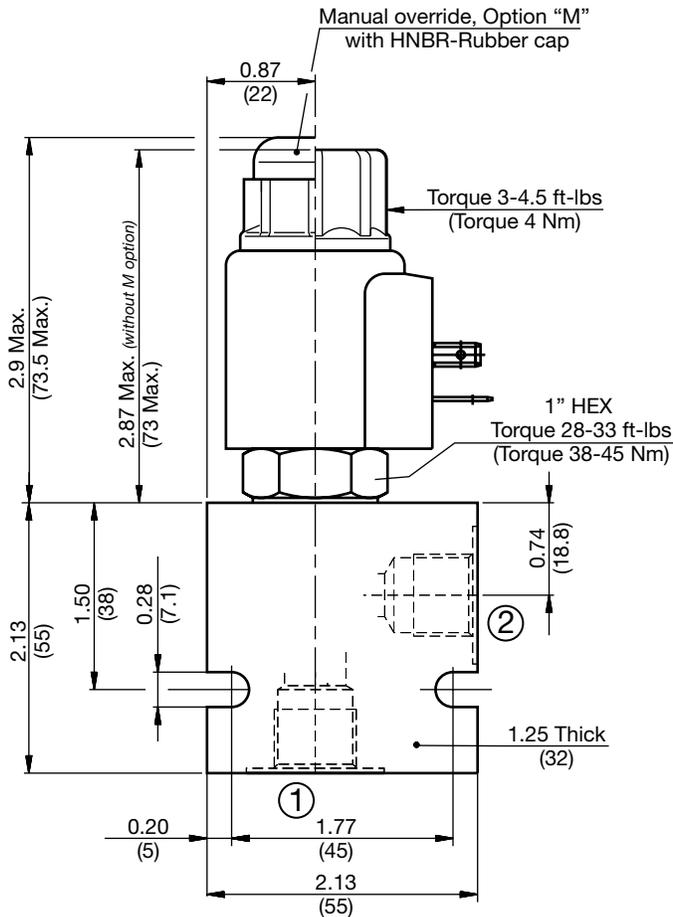
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 20 gpm (75 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 55 ms<br>De-energized 35 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580274<br>Finisher: 02580247   |
| Cartridge Weight                   | 0.40 Lbs. (0.182 kg)  |
| Coil Weight                        | 0.42 Lbs. (0.190 kg)  |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamide encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03033872<br>Viton® P/N: 03051757  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS10YR-01 M-C-N-24 DS**

Valve Model

Override Option

- blank = No manual override
- M = Manual override, push type

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

0 = No coil, cartridge only

- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)

AC

- 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

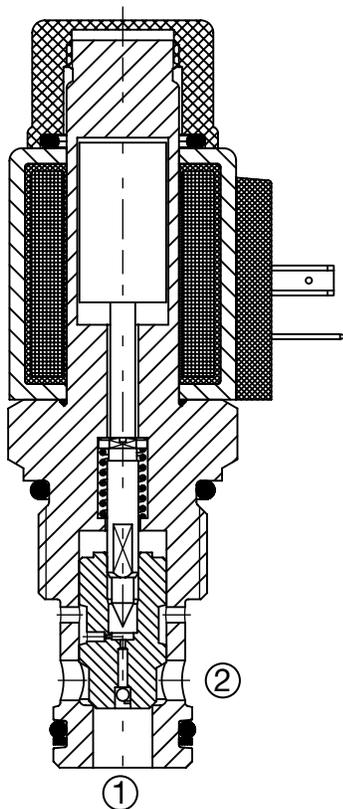
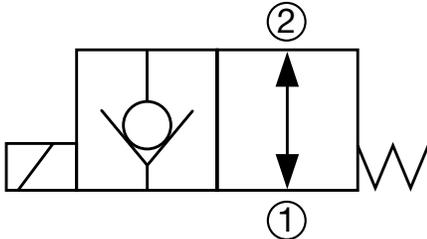
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lbs (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS12YR-01

### Poppet Type, Normally Open, Pilot Operated, Free Reverse Flow Up to 29 gpm (110 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS12YR allows flow from port 2 to port 1 and from port 1 to port 2. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (22 to 94 psi (1.5 to 6.5 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

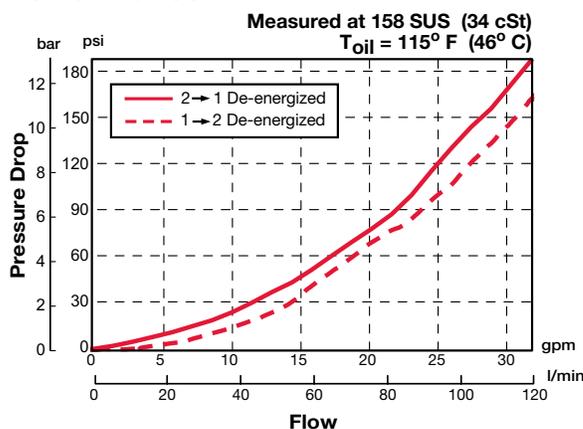
#### Features

- Push type manual override button, protected by rubber cap
- Free reverse flow

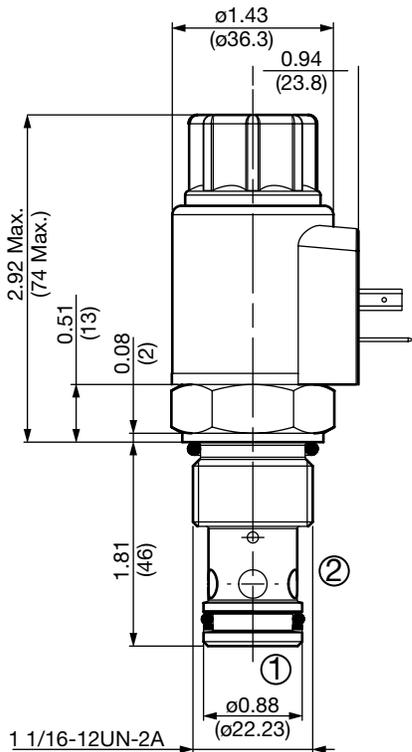
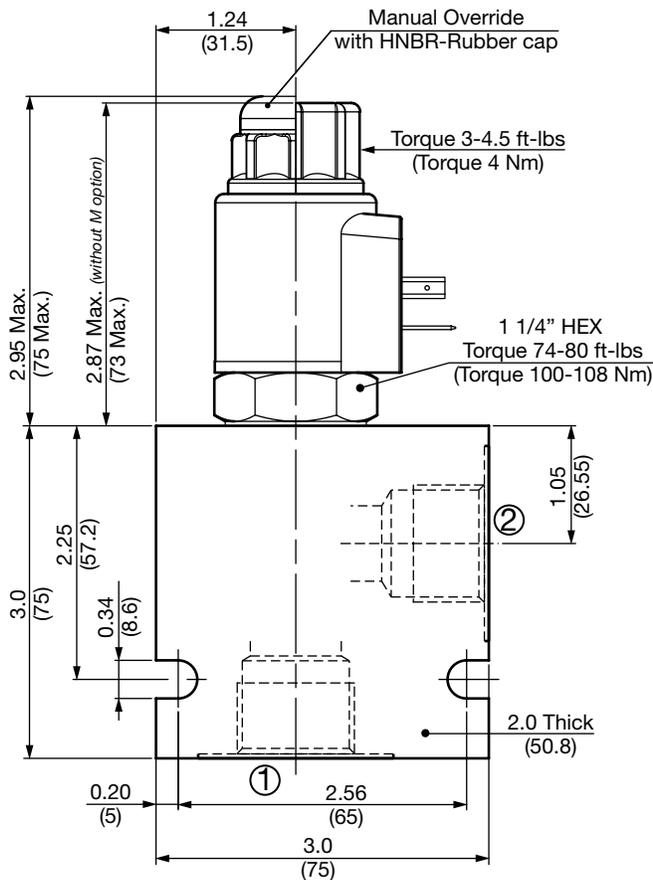
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 29 gpm (110 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 90 ms<br>De-energized 25 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC12-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580667<br>Finisher: 02580668   |
| Cartridge Weight                   | 0.60 Lbs. (0.27 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamide encapsulation.  |
| Seal Kits                          | Buna-N FS122-N P/N: 03071298<br>Viton® FS122-V P/N: 03071299  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS12YR-01 M-C-N-24 DS**

|                         |           |
|-------------------------|-----------|
| <b>Valve Model</b>      | WS12YR-01 |
| <b>Override Option</b>  | M         |
| <b>Body &amp; Ports</b> | C-N       |
| <b>Seals</b>            | N         |
| <b>Coil Voltage</b>     | 24        |

Manual Override with HNBR-Rubber cap  
Torque 3-4.5 ft-lbs (Torque 4 Nm)  
1 1/4" HEX Torque 74-80 ft-lbs (Torque 100-108 Nm)

2.95 Max. (75 Max.)  
2.87 Max. (without M option) (73 Max.)  
1.05 (26.55)  
2.25 (57.2)  
0.34 (8.6)  
3.0 (75)  
0.20 (5)  
2.56 (65)  
3.0 (75)

0 = No coil, cartridge only  
12 = 12 VDC  
24 = 24 VDC  
36 = 36 VDC  
110 = 110 VDC (only available with connector DG)  
24 = 24 VAC  
115 = 115 VAC (AC coils internally full wave rectified)  
230 = 230 VAC

N = Buna-N  
V = Viton®

DG = EN 175301-803-A  
DS = Dual spade (SAEJ858a)\*  
DL = Leadwires (2) - 18" long (46 cm)\*  
DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
DT = Amp Junior Timer™, molded, radial mount\*

AG = EN 175301-803-A

**Coil Model 40-1836**  
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

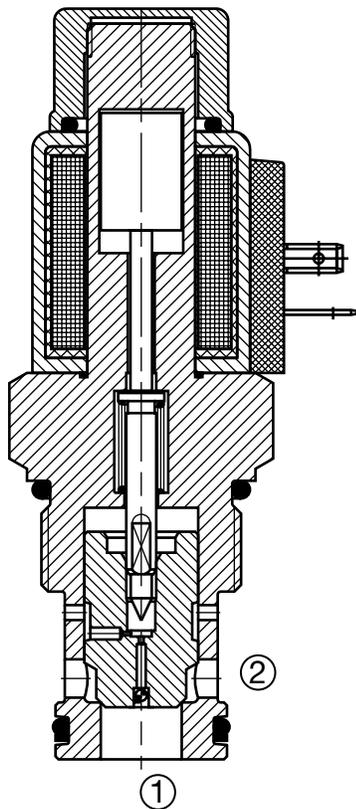
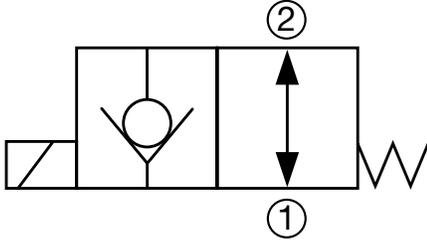
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.39 lbs (0.63 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc plated | 6000 psi (420 bar) | 4.16 lbs (1.89 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS16YR-01

### Poppet Type, Normally Open, Pilot Operated, Free Reverse Flow Up to 40 gpm (150 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS16YR allows flow from port 2 to port 1 and from port 1 to port 2. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (15 to 45 psi (1 to 3 bar)) overcomes solenoid force.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

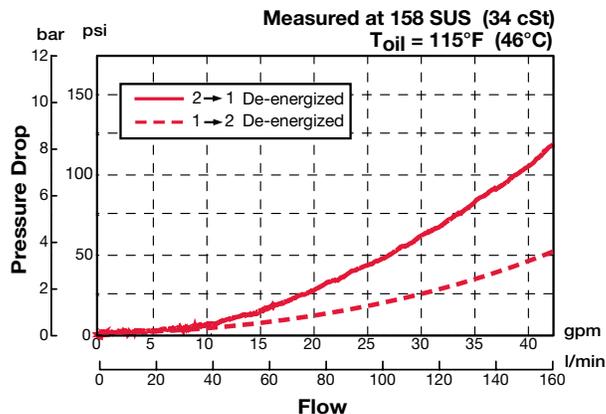
#### Features

- Push type manual override button, protected by rubber cap
- Free reverse flow

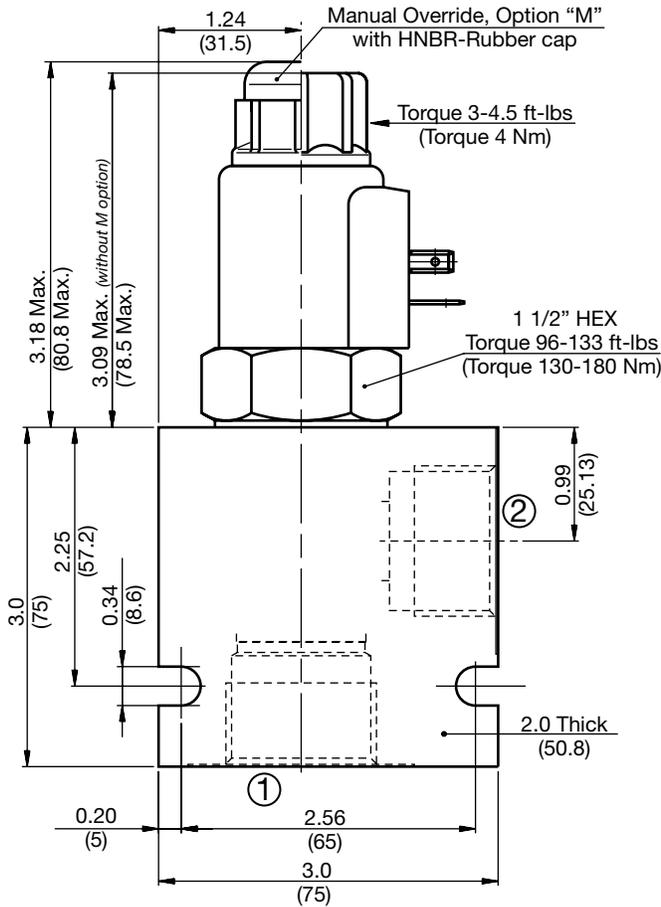
#### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |                       |
| Nominal Flow                       | 40 gpm at 4060 psi (150 l/min at 280 bar)<br>26 gpm at 5000 psi (100 l/min at 350 bar)                                  |                       |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi<br>(0.25 cc/min at 350 bar)   |                       |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |                       |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |                       |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |                       |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |                       |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |                       |
| Response Time (typical)            | Energized   | 150 ms                |
|                                    | De-energized  | 35 ms                 |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |                       |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                       | No orientation restrictions   |                       |
| Cavity                             | FC16-2 (see <i>Line Bodies &amp; Cavities</i> section)  |                       |
| Cavity Tools                       | Rougher:  | 02580250              |
|                                    | Finisher:   | 02580251              |
| Cartridge Weight                   | 1.37 Lbs. (0.62 kg)   |                       |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |                       |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |                       |
| Seal Kits                          | Buna-N  | FS162-N P/N: 03052427 |
|                                    | Viton®  | FS162-V P/N: 03051758 |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS16YR-01 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum body
- SS16 = SAE-16 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

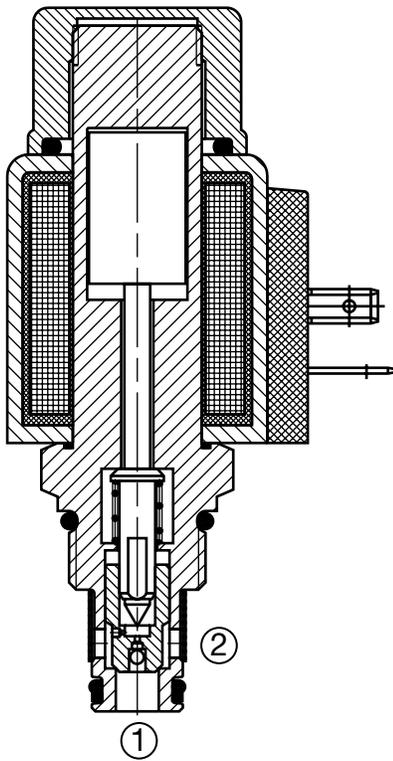
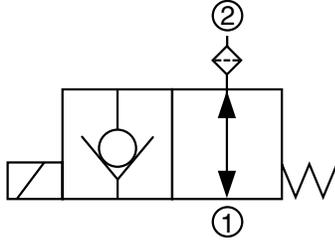
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 lbs (0.55 kg)  |
| FH162-SS16 | 03032655 | Steel, Zinc plated | 6000 psi (420 bar) | 3.56 lbs (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS08YR-30

### Poppet Type, Normally Open, Pilot Operated, Free Reverse Flow Up to 8 gpm (30 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, pilot operated, poppet type, with filter screen on inlet port, intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS08YR allows flow from port 2 to port 1 and from port 1 to port 2. When energized the valve's poppet closes on its seat, blocking flow from port 2 to port 1. Flow from port 1 to port 2 is allowed when hydraulic pressure generated force (130 to 290 psi (9 to 20 bar)) overcomes solenoid force.

Operation of Manual Override Option: To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

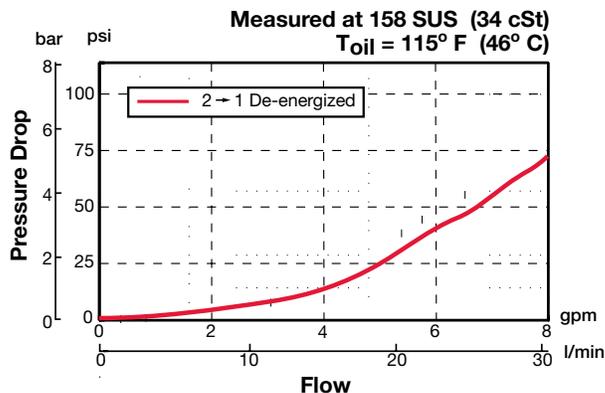
#### Features

- Filter screen on the inlet port for protection from contamination
- Push type manual override button, protected by rubber cap

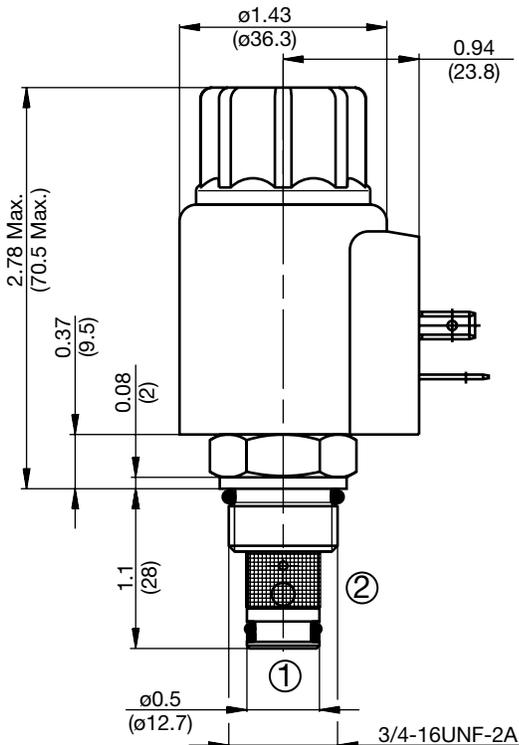
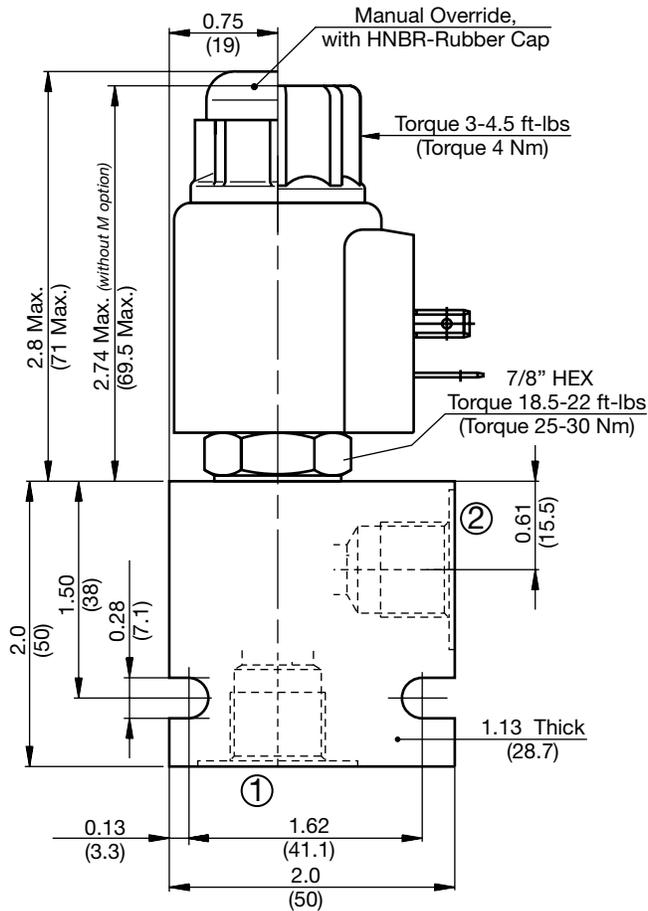
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8 gpm (30 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized: 50ms<br>De-energized: 35ms   |
| Fluid Compatibility                | Mineral-Based or Synthetics with lubricating properties.  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner per (ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Filter screen                      | 300 $\mu$ m mesh  |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see Line Bodies and Cavities section)   |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08YR-30 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

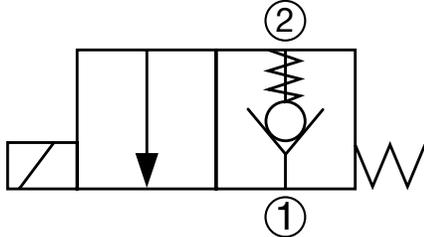
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS06Z-01 Poppet Type, Normally Closed, Pilot Operated Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

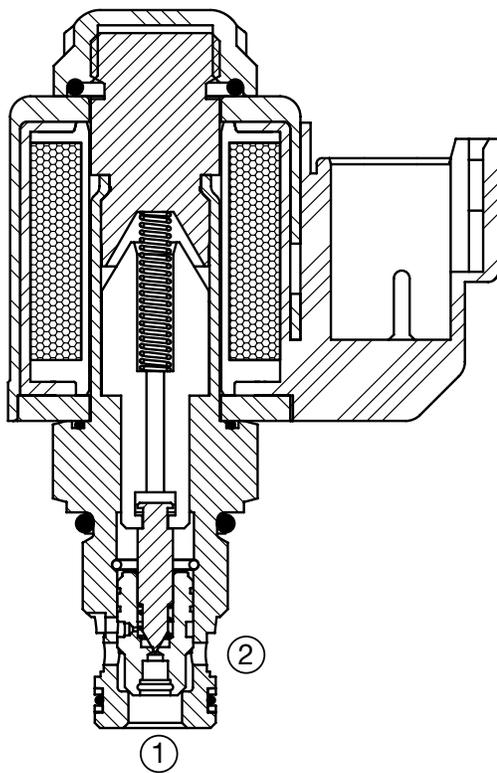
A screw-in cartridge, solenoid operated, 2 way 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

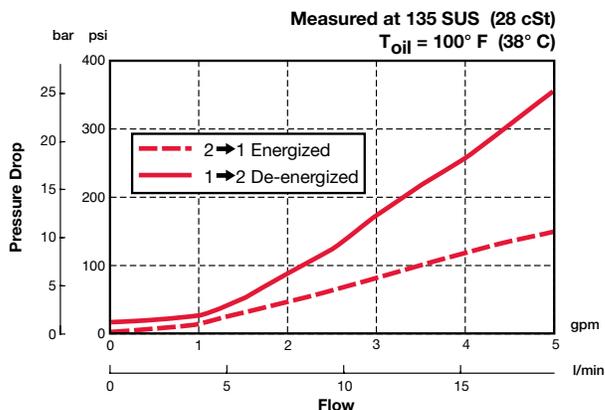
When de-energized the WS06Z blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted.

### Specifications

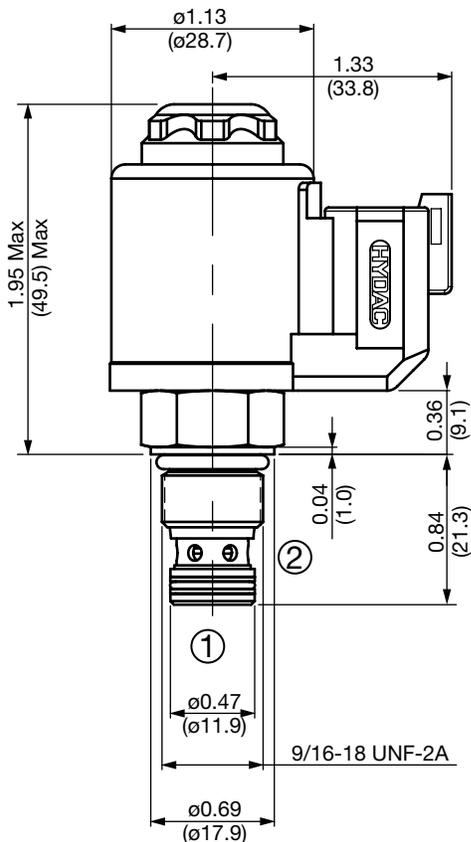
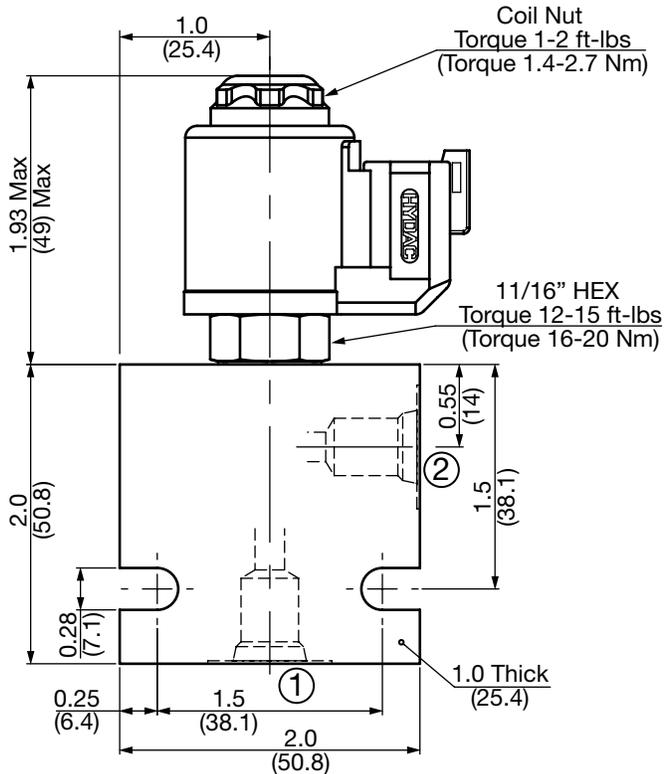
|  |  |                       |
|--|--|-----------------------|
| Operating Pressure                                       | 5000 psi (350 bar)   |                       |
| Nominal Flow   | 3.5 gpm (13.3 l/min)   |                       |
| Internal Leakage   | Leaktight, less than 5 drops/min. at 5000 psi (350 bar)  |                       |
| Fluid Operating Temp Range                               | -20° to 248°F (-29° to 120°C)  |                       |
| Ambient Temperature Range                                | -20° to 140°F (-29° to 60°C)   |                       |
| Coil Duty Rating   | Continuous from 85% to 115% of nominal voltage   |                       |
| Current Draw at 68°F (20°C)                              | 984 mA at 12VDC; 492 mA at 24VDC   |                       |
| Minimum Pull-in Current to Operate Valve                 | 70% of nominal amperage  |                       |
| Typical Response Time<br>(Varies with Pressure and Flow) | Energized:   | 35ms                  |
|  | De-Energized:  | 50ms                  |
| Fluid Compatibility                                      | Mineral-Based or Synthetics with lubricating properties.   |                       |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)  |                       |
| Filtration   | 21/19/16 or cleaner per (ISO 4406)   |                       |
| Installation   | No orientation restrictions  |                       |
| Cavity   | FC06-2 (see <i>Line Bodies &amp; Cavities</i> section)   |                       |
| Cavity Tools   | Rougher:   | 02582046              |
|  | Finisher:  | 02582047              |
| Cartridge Weight   | 2.7 oz (75 grams)  |                       |
| Coil Weight  | 3.1 oz (88 grams)  |                       |
| Cartridge Material                                       | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |                       |
| Coil Material  | Class N, 200°C high temperature magnet wire.<br>steel shell, polyester encapsulation.  |                       |
| Seal Kits  | Buna-N   | FS062-N P/N: 02610184 |
|  | Viton®   | FS062-V P/N: 02610185 |



### Performance

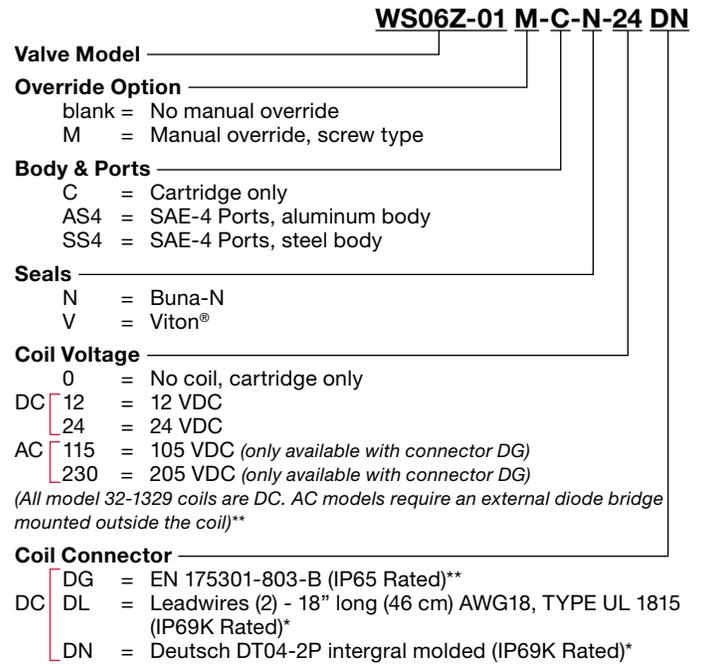


## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code



(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

**Coil Connector**

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570  
Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

### Coil Model 32-1329

For other coil connector types consult factory

\*\* Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

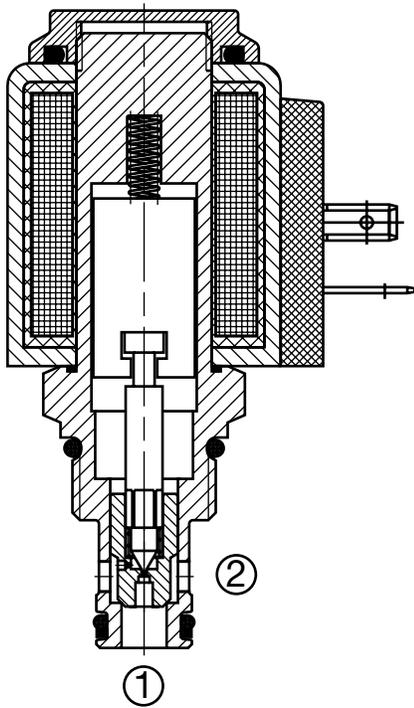
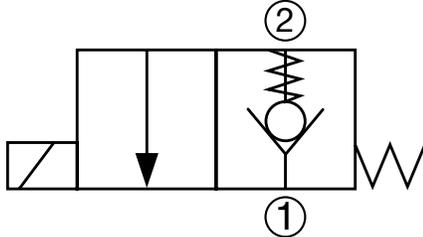
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.33 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, Zinc plated | 6000 psi (420 bar) | 0.97 lbs (0.44 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS08Z-01 Poppet Type, Normally Closed, Pilot Operated Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS08Z blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS08ZR.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

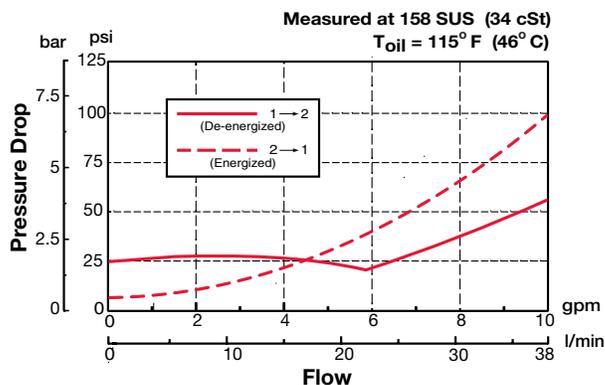
### Features

- Screw type manual override option

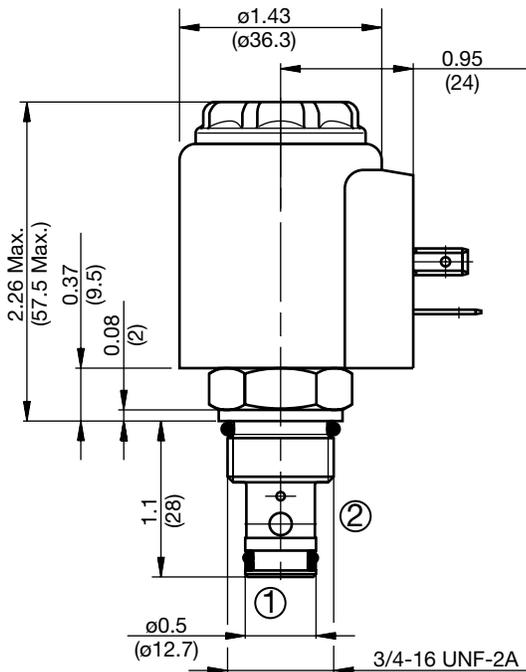
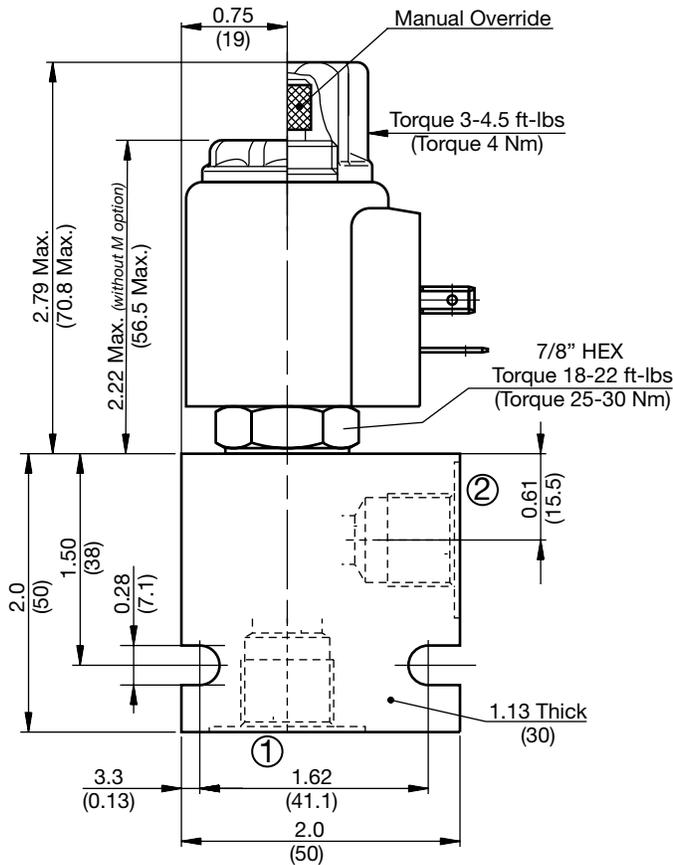
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 10 gpm (38 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08Z-01 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

0 = No coil, cartridge only

- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)

### AC

- 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

DC DG = EN 175301-803-A

- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

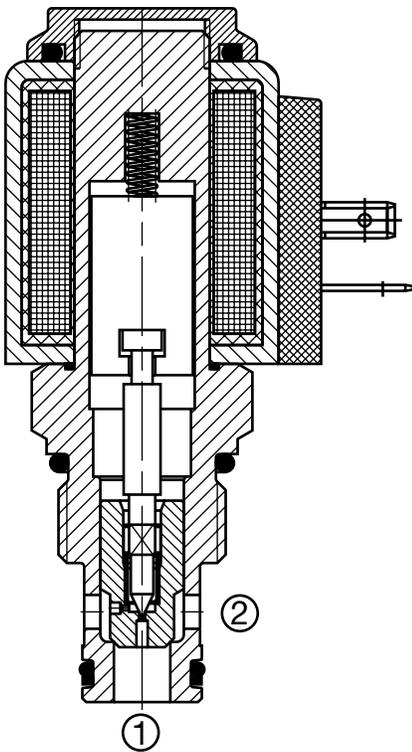
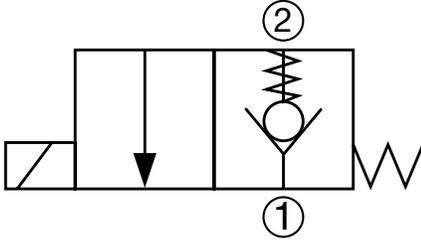
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS10Z-01 Poppet Type, Normally Closed, Pilot Operated 20 gpm (75 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS10Z blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS10ZR.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

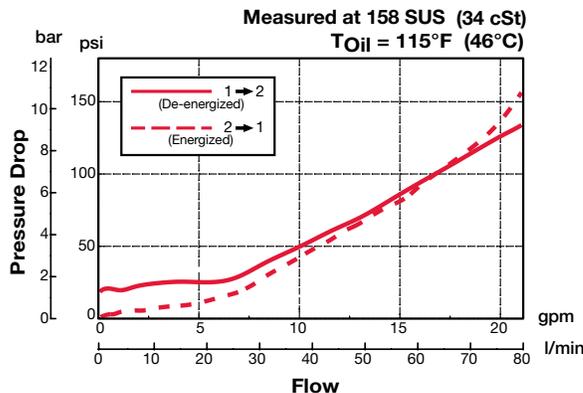
### Features

- Screw type manual override option

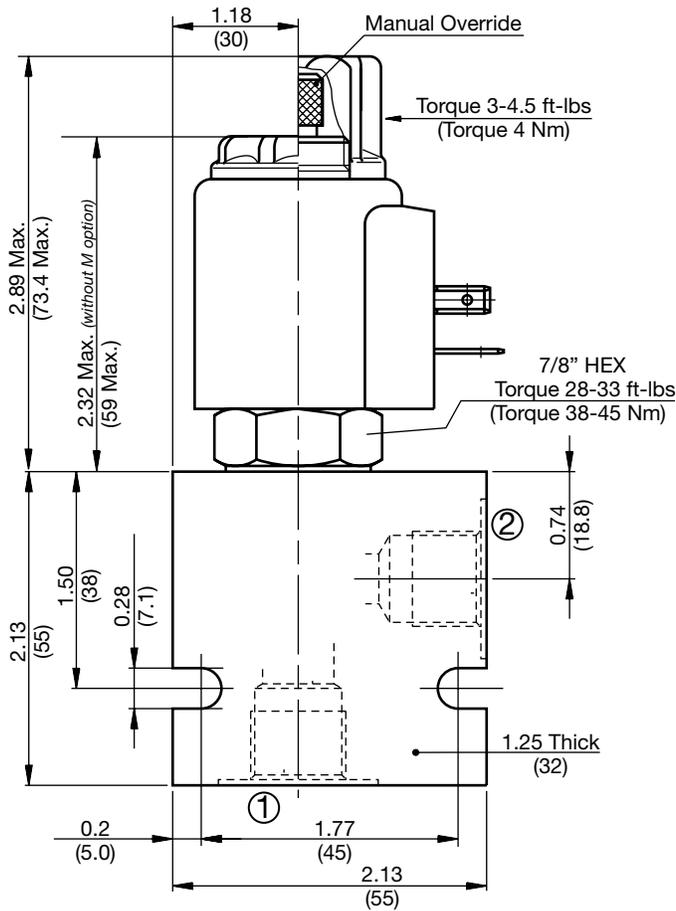
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 20 gpm (75 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 30 ms<br>De-energized 60 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580274<br>Finisher: 02580247   |
| Cartridge Weight                   | 0.40 Lbs. (0.182 kg)  |
| Coil Weight                        | 0.42 Lbs. (0.190 kg)  |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS102-N P/N: 03033872<br>Viton® FS102-V P/N: 03051757  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS10Z-01 M-C-N-24 DS**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, screw type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS8 = SAE-8 Ports, aluminum body  
 SS8 = SAE-8 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only
- DC** [ 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)
- AC** [ 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_
- DC** [ DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*
- AC** AG = EN 175301-803-A

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

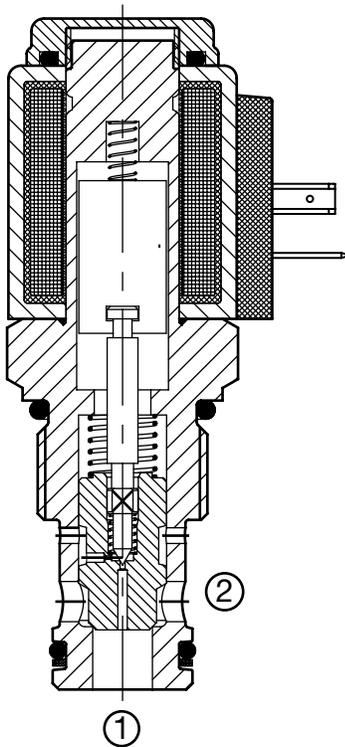
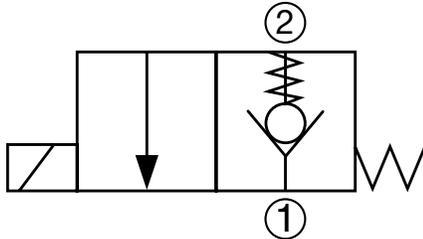
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lbs (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS12Z-01 Poppet Type, Normally Closed, Pilot Operated Up to 29 gpm (110 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS12Z blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS12ZR.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

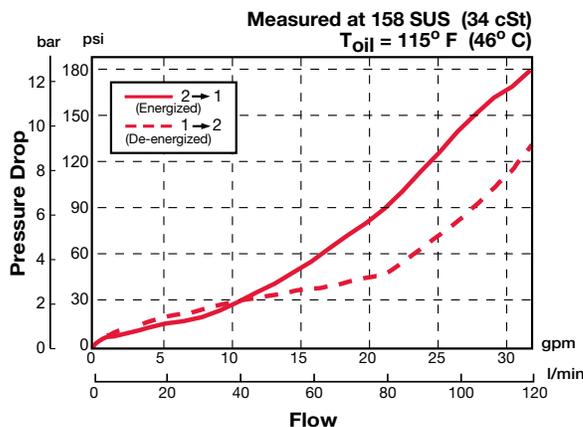
### Features

- Screw type manual override option

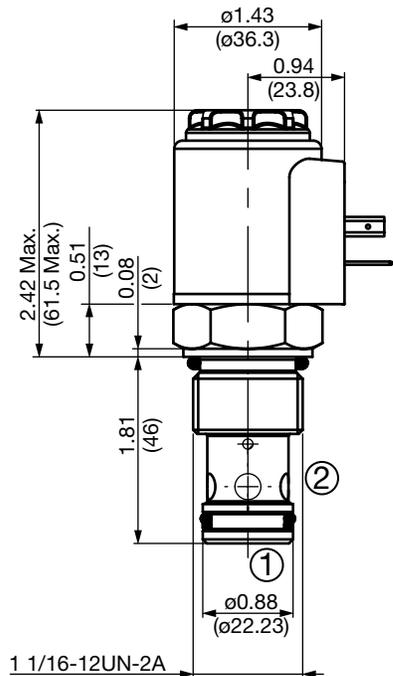
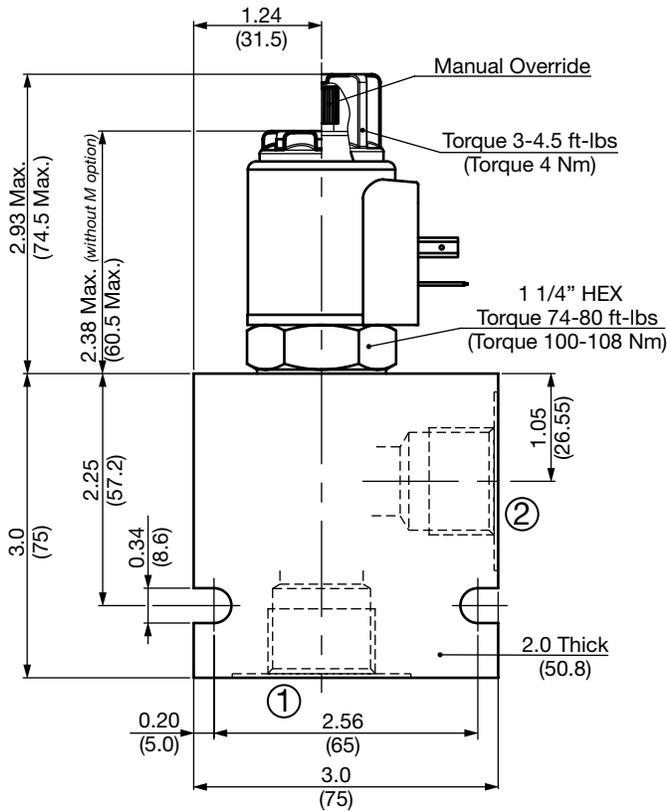
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 29 gpm (110 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 30 ms<br>De-energized 70 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC12-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580667<br>Finisher: 02580668   |
| Cartridge Weight                   | 0.60 Lbs. (0.27 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS122-N P/N: 03071298<br>Viton® FS122-V P/N: 03071299  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS12Z-01 M-C-N-24 DN**

Valve Model

Override Option

- blank = No manual override
- M = Manual override, screw type

Body & Ports

- C = Cartridge only
- AS12 = SAE-12 Ports, aluminum body
- SS12 = SAE-12 Ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC
  - 12 = 12 VDC
  - 24 = 24 VDC
  - 36 = 36 VDC
  - 110 = 110 VDC (only available with connector DG)
- AC
  - 24 = 24 VAC
  - 115 = 115 VAC (AC coils internally full wave rectified)
  - 230 = 230 VAC

Coil connector

- DC
  - DG = EN 175301-803-A
  - DS = Dual spade (SAEJ858a)\*
  - DL = Leadwires (2) - 18" long (46 cm)\*
  - DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
  - DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
  - DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

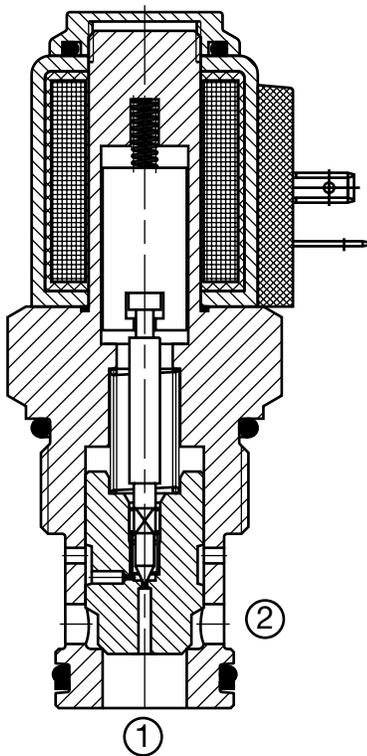
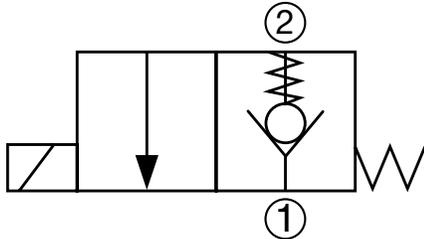
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.39 lbs (0.63 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc plated | 6000 psi (420 bar) | 4.16 lbs (1.89 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS16Z-01 Poppet Type, Normally Closed, Pilot Operated Up to 40 gpm (150 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS16Z blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS16ZR.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

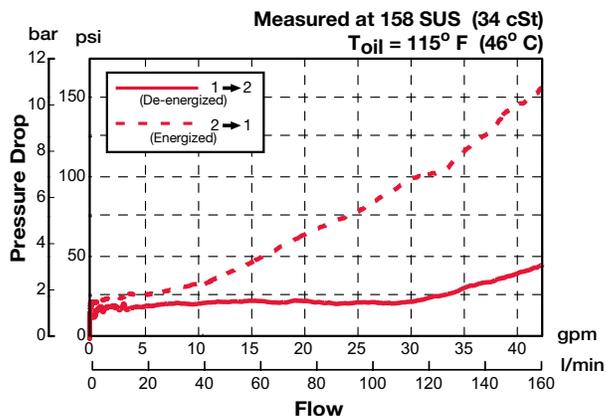
### Features

- Screw type manual override option

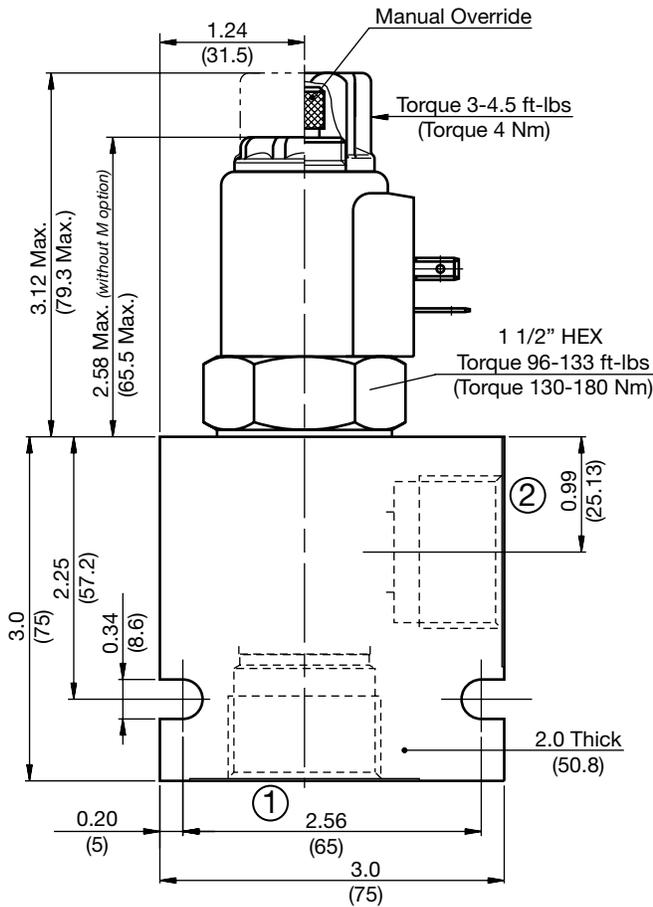
### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |                       |
| Nominal Flow                       | 40 gpm at 4060 psi (150 l/min at 280 bar)<br>26 gpm at 5000 psi (100 l/min at 350 bar)                                  |                       |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |                       |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |                       |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |                       |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |                       |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |                       |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |                       |
| Response Time (typical)            | Energized   | 30 ms                 |
|                                    | De-energized  | 70 ms                 |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |                       |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                       | No orientation restrictions   |                       |
| Cavity                             | FC16-2 (see Line Bodies & Cavities section)   |                       |
| Cavity Tools                       | Rougher:  | 02580250              |
|                                    | Finisher:   | 02580251              |
| Cartridge Weight                   | 1.37 Lbs. (0.62 kg)   |                       |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |                       |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |                       |
| Seal Kits                          | Buna-N  | FS162-N P/N: 03052427 |
|                                    | Viton®  | FS162-V P/N: 03051758 |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS16Z-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum body
- SS16 = SAE-16 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

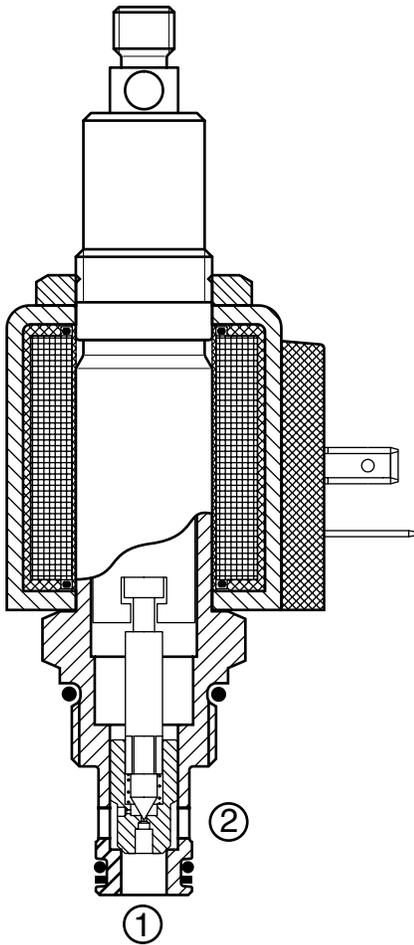
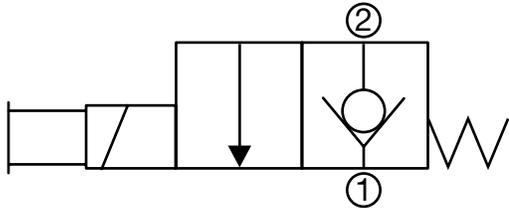
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 lbs (0.55 kg)  |
| FH162-SS16 | 03032655 | Steel, Zinc plated | 6000 psi (420 bar) | 3.56 lbs (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

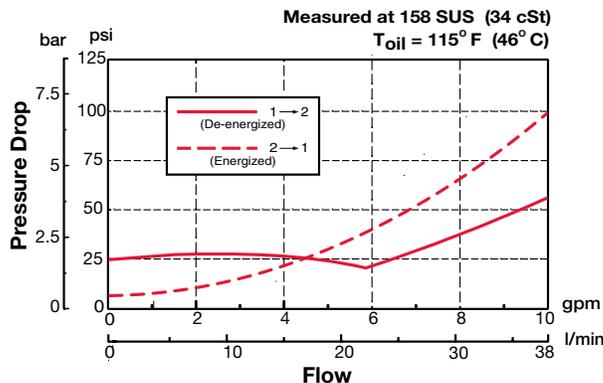
## WS08Z-01J

### Poppet Type, Normally Closed, Pilot Operated Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Performance



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type with pull type, spring return manual override, intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS08Z-01J blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS08ZR-01J.

**Operation of Manual Override Option:** To manually override pull and hold the override stem. This override is not detented. The override stem has a male thread M8X1.25 and hole for a cable attachment. If a cable is used, the internal spring may not provide enough force to overcome internal cable friction. An external means of returning the cable must be provided by the user. The manual override option is intended for emergency use, not for continuous duty operation.

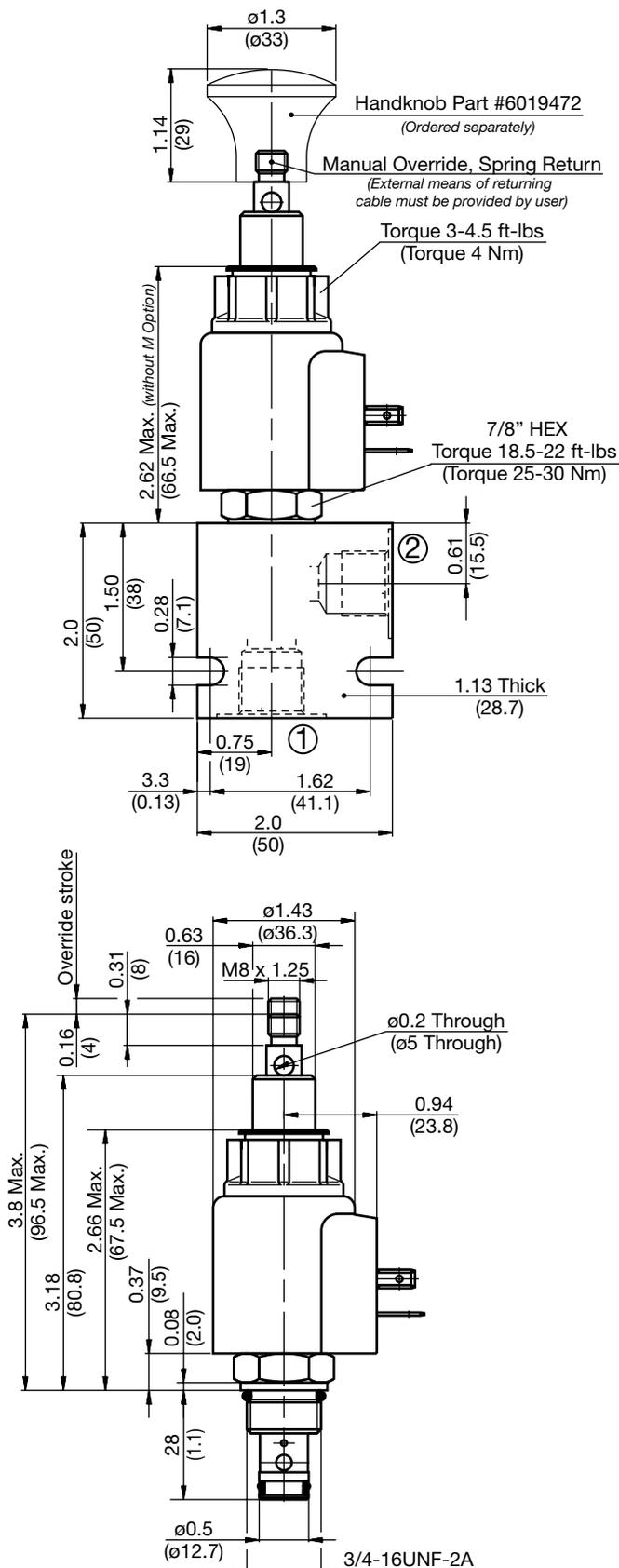
#### Features

- Rugged manual override design with thread and hole for a handle or cable attachment

#### Specifications

|                                    |   |          |               |
|------------------------------------|---|----------|---------------|
| Operating Pressure                 | 5000 psi (350 bar)  |          |               |
| Nominal Flow                       | 10 gpm (38 l/min)   |          |               |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |          |               |
| Manual Override Pull Force         | 38 - 40.5 bs (150 - 180 N)<br>Max. permissible pull force   |          |               |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |          |               |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |          |               |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |          |               |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |          |               |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |          |               |
| Response Time (typical)            | Energized   | 35 ms    |               |
|                                    | De-energized  | 50 ms    |               |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |          |               |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |          |               |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |          |               |
| Installation                       | No orientation restrictions   |          |               |
| Cavity                             | FC08-2 (see Line Bodies & Cavities section)   |          |               |
| Cavity Tools                       | Rougher:  | 02580090 |               |
|                                    | Finisher:   | 02580091 |               |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |          |               |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |          |               |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |          |               |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |          |               |
| Seal Kits                          | Buna-N  | FS082-N  | P/N: 03033920 |
|                                    | Viton®  | FS082-V  | P/N: 03051756 |

## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08Z-01 J-C-N-24 DS**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
J = Manual override, pull type, spring return
- Body & Ports** \_\_\_\_\_  
C = Cartridge only  
AS6 = SAE-6 Ports, aluminum body  
SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
N = Buna-N  
V = Viton®
- Coil Voltage** \_\_\_\_\_  
0 = No coil, cartridge only  
DC 12 = 12 VDC  
24 = 24 VDC  
36 = 36 VDC  
110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC  
115 = 115 VAC (AC coils internally full wave rectified)  
230 = 230 VAC
- Coil Connector** \_\_\_\_\_  
DC DG = EN 175301-803-A  
DS = Dual spade (SAEJ858a)\*  
DL = Leadwires (2) - 18" long (46 cm)\*  
DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

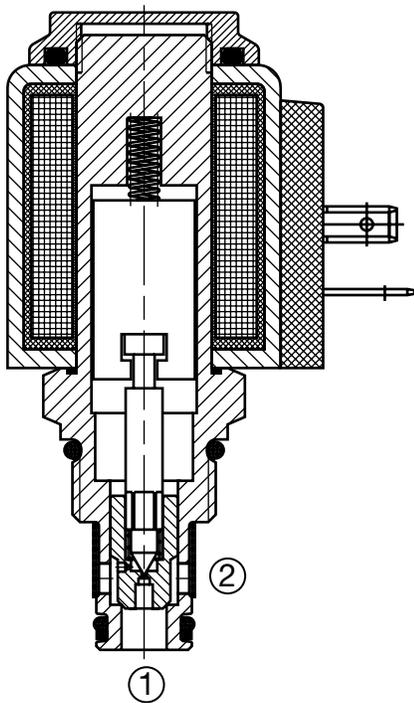
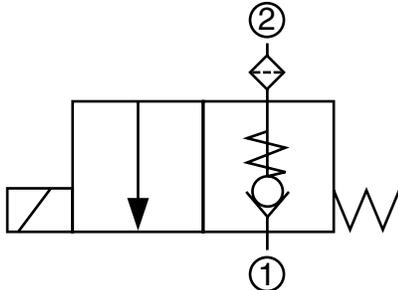
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS08Z-30 Poppet Type, Normally Closed, Pilot Operated Up to 8 gpm (30 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type, with a filter screen on the inlet port, intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS08Z-30 blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted. If this flow path is required see model WS08ZR.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

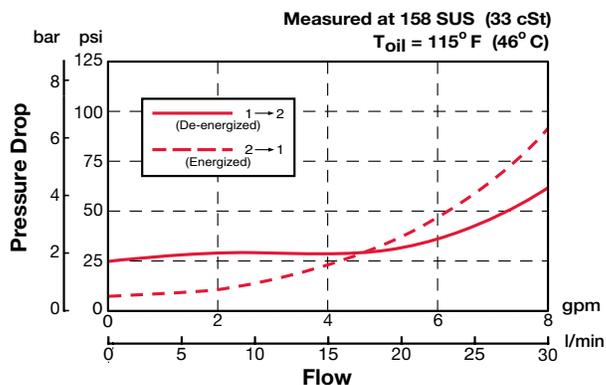
### Features

- Filter screen on the inlet port for protection from contamination
- Screw type manual override option

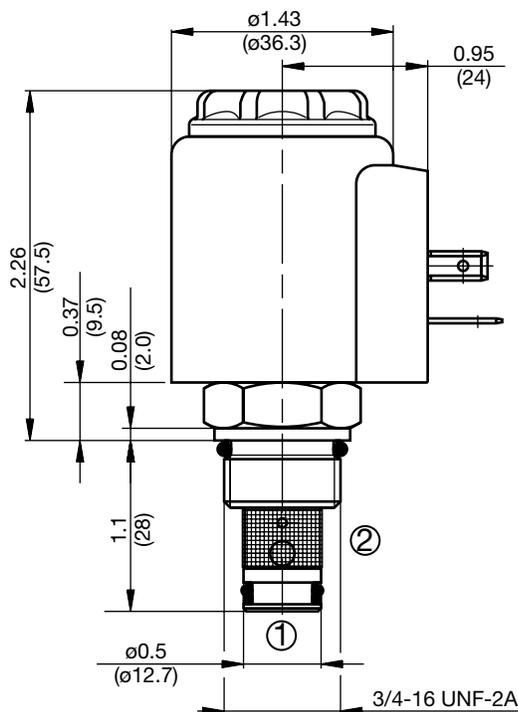
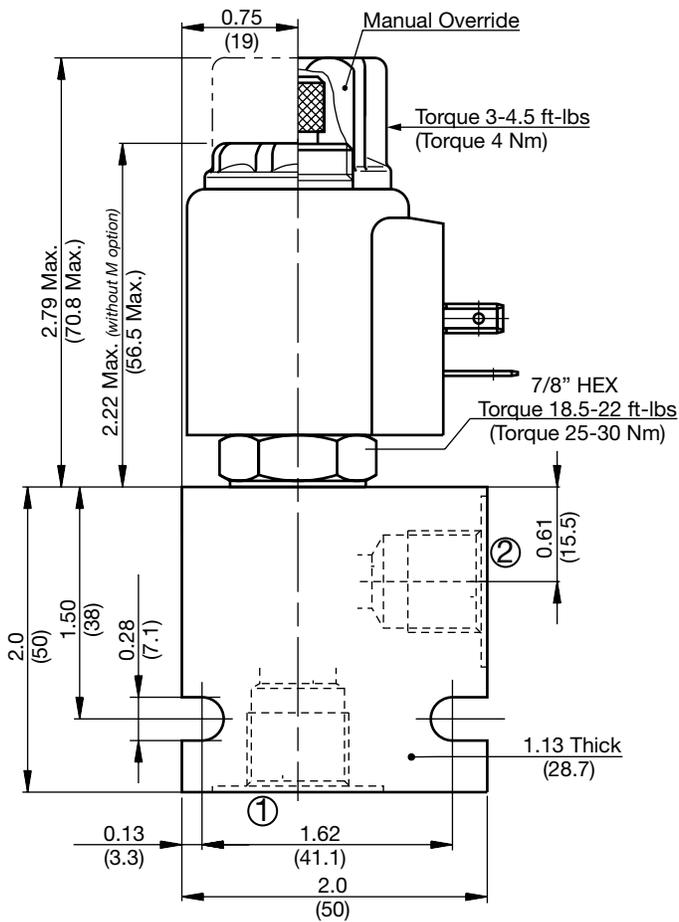
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8 gpm (30 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to +60°C)  |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Filter screen                      | 300 $\mu$ m mesh  |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08Z-30 M-C-N-24 DS**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, screw type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS6 = SAE-6 Ports, aluminum body  
 SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only
- DC** { 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)
- AC** { 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_
- DC** { DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*
- AC** AG = EN 175301-803-A

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

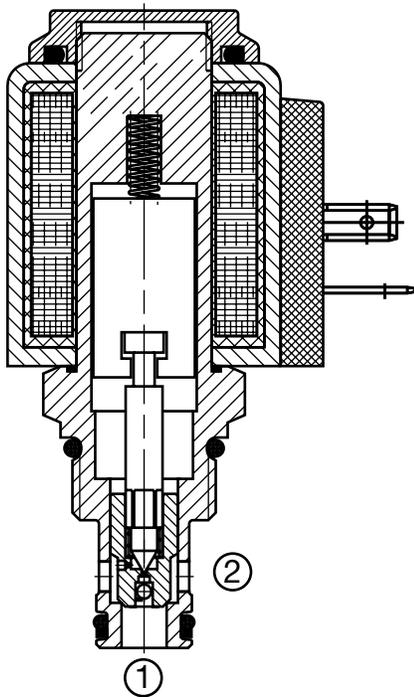
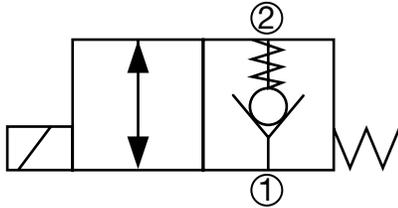
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS08ZR-01

### Poppet Type, Normally Closed, Pilot Operated, Free Reverse Flow Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type with filter screen on inlet port, intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS08ZR blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts allowing bi-directional flow between port 1 and port 2.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

#### Features

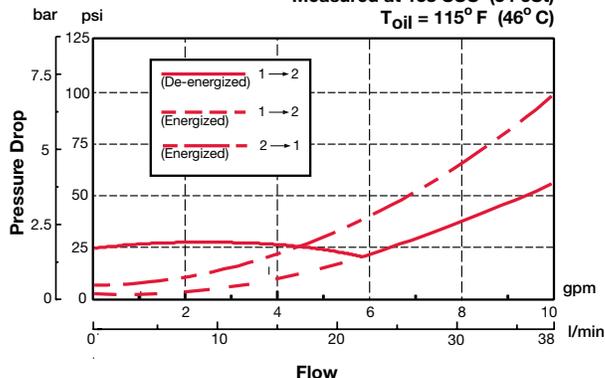
- Screw type manual override option
- Free reverse flow

#### Specifications

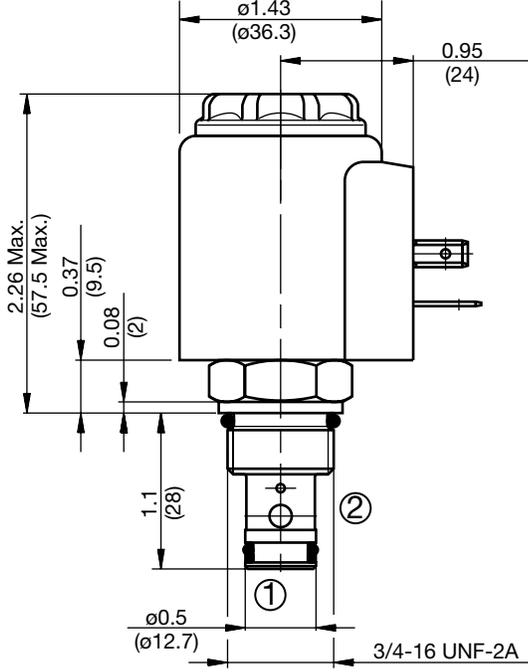
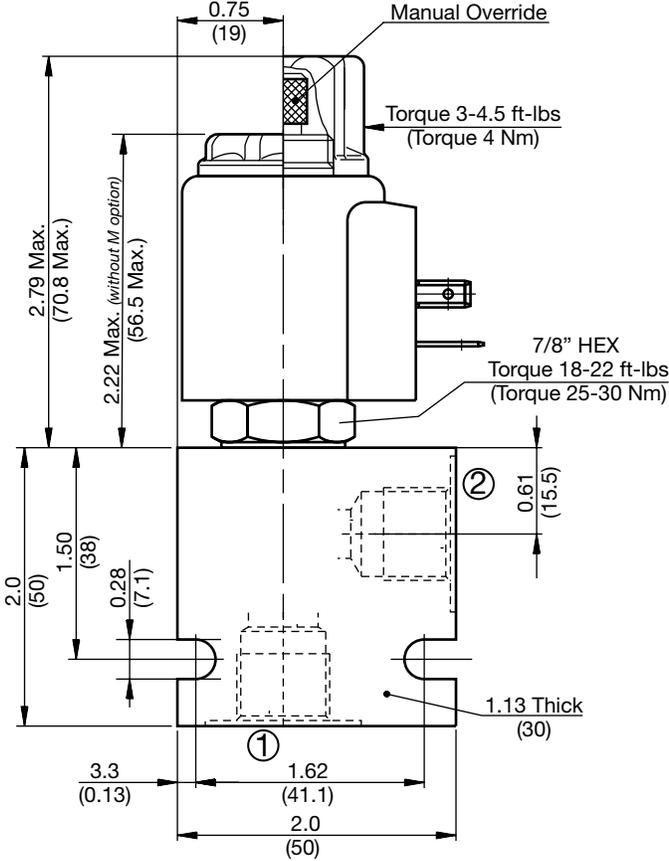
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 10 gpm (38 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

#### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^\circ F (46^\circ C)$



### Dimensions



All measurements in inches (mm).  
Subject to technical modifications

### Model Code

**WS08ZR-01 M-C-N-24 DN**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_
  - blank = No manual override
  - M = Manual override, screw type
- Body & Ports** \_\_\_\_\_
  - C = Cartridge only
  - AS6 = SAE-6 Ports, aluminum body
  - SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_
  - N = Buna-N
  - V = Viton®
- Coil Voltage** \_\_\_\_\_
  - 0 = No coil, cartridge only
  - DC
    - 12 = 12 VDC
    - 24 = 24 VDC
    - 36 = 36 VDC
    - 110 = 110 VDC (only available with connector DG)
  - AC
    - 24 = 24 VAC
    - 115 = 115 VAC (AC coils internally full wave rectified)
    - 230 = 230 VAC
- Coil Connector** \_\_\_\_\_
  - DC
    - DG = EN 175301-803-A
    - DS = Dual spade (SAEJ858a)\*
    - DL = Leadwires (2) - 18" long (46 cm)\*
    - DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
    - DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
    - DT = Amp Junior Timer™, molded, radial mount\*
  - AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory  
\*Coils with internal diode are available, consult factory.

### Standard Line Bodies\*

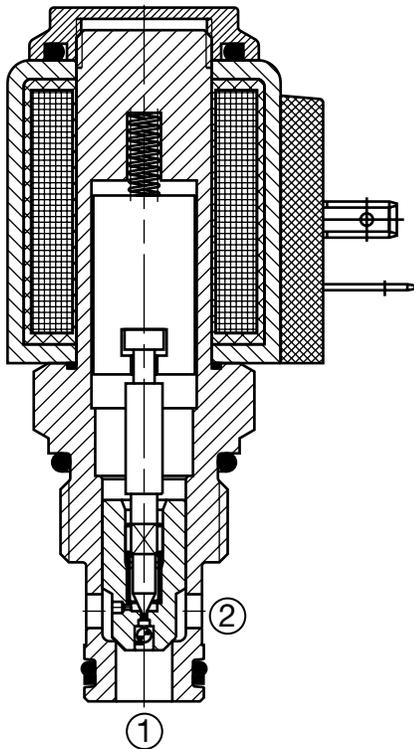
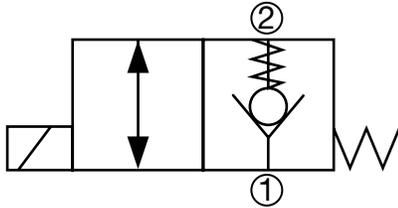
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS10ZR-01

### Poppet Type, Normally Closed, Pilot Operated, Free Reverse Flow Up to 20 gpm (75 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS10ZR blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts allowing bi-directional flow between port 1 and port 2.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

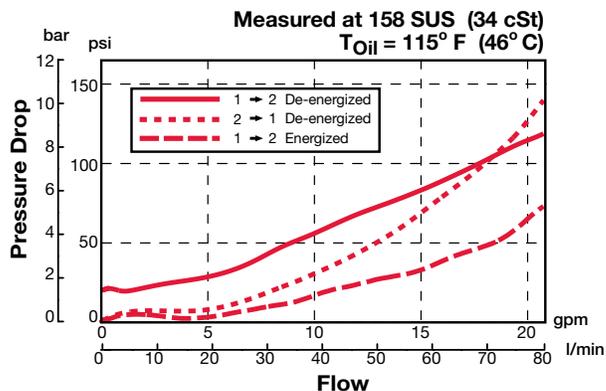
#### Features

- Screw type manual override option
- Free reverse flow

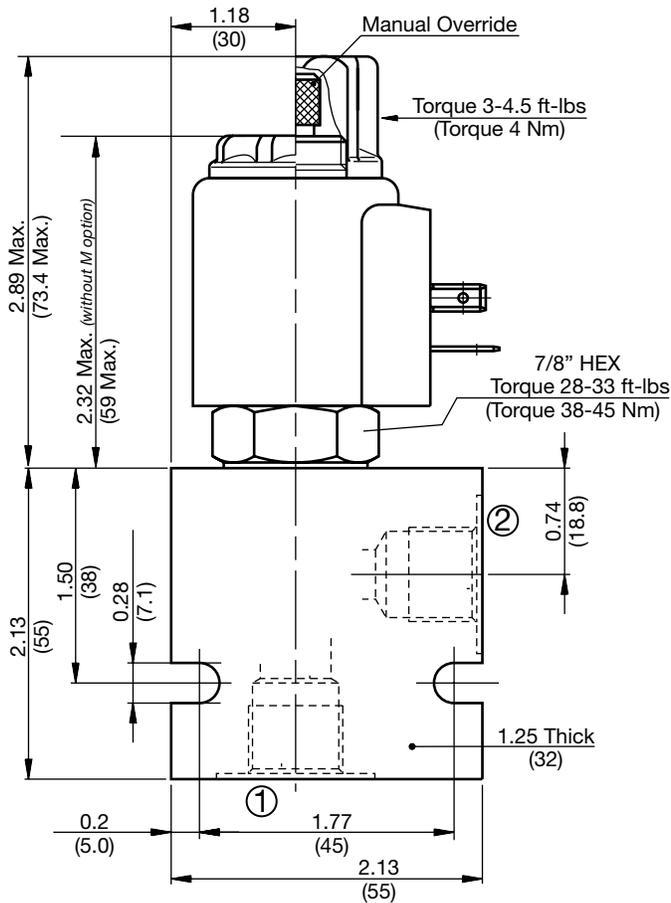
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 20 gpm (75 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 60 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580274<br>Finisher: 02580247   |
| Cartridge Weight                   | 0.40 Lbs. (0.18 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N P/N: 03033872<br>Viton® P/N: 03051757  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS10ZR-01 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

0 = No coil, cartridge only

- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)

### AC

- 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

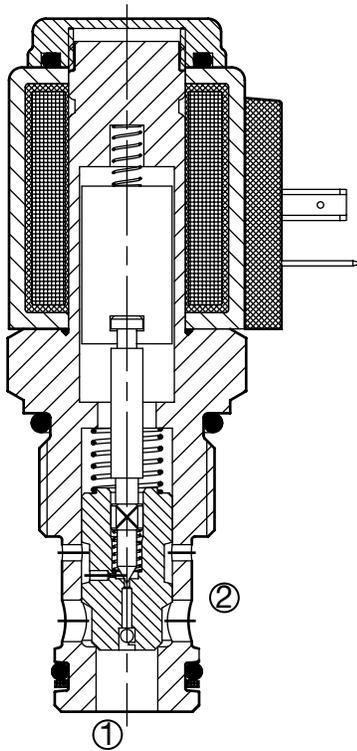
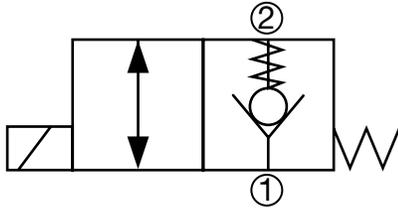
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS6 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lbs (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS12ZR-01

### Poppet Type, Normally Closed, Pilot Operated, Free Reverse Flow Up to 29 gpm (110 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS12ZR blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts, allowing bi-directional flow between port 1 and port 2.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

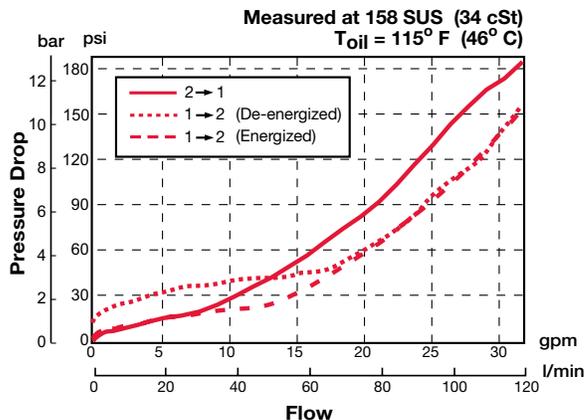
#### Features

- Screw type manual override option
- Free reverse flow

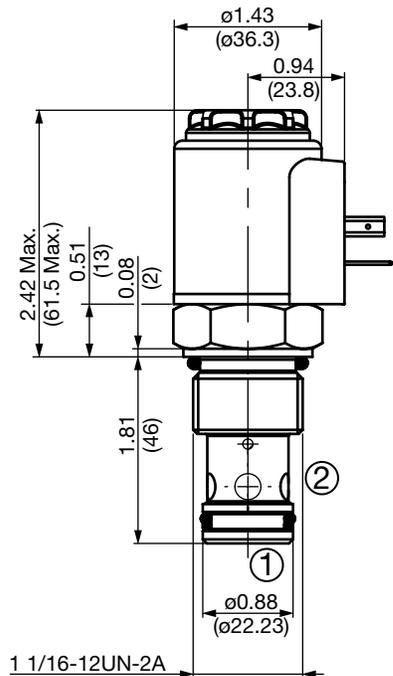
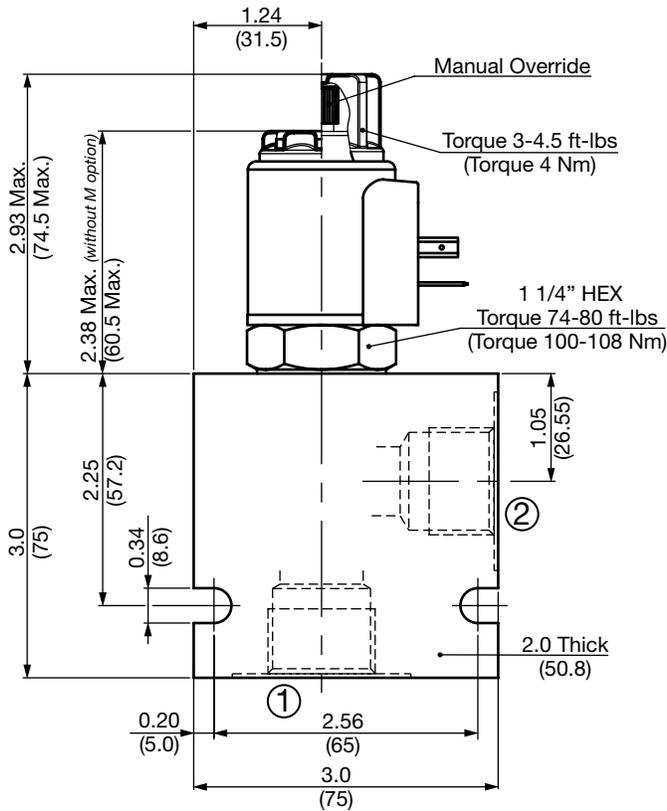
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 29 gpm (110 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 70 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC12-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580667<br>Finisher: 02580668   |
| Cartridge Weight                   | 0.60 Lbs. (0.27 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS122-N P/N: 03071298<br>Viton® FS122-V P/N: 03071299  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS12ZR-01 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS12 = SAE-12 Ports, aluminum body
- SS12 = SAE-12 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

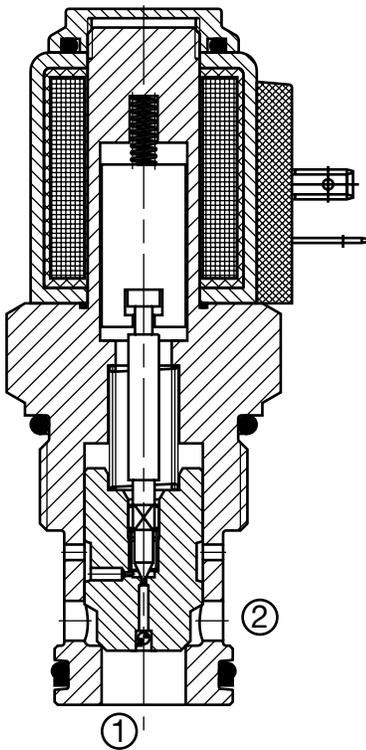
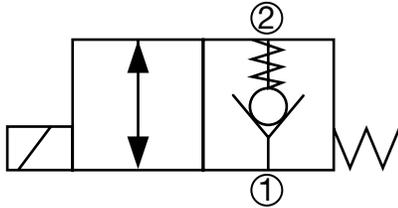
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.39 lbs (0.63 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc plated | 6000 psi (420 bar) | 4.16 lbs (1.89 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS16ZR-01

### Poppet Type, Normally Closed, Pilot Operated, Free Reverse Flow Up to 40 gpm (150 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS16ZR blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts, allowing bi-directional flow between port 1 and port 2.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

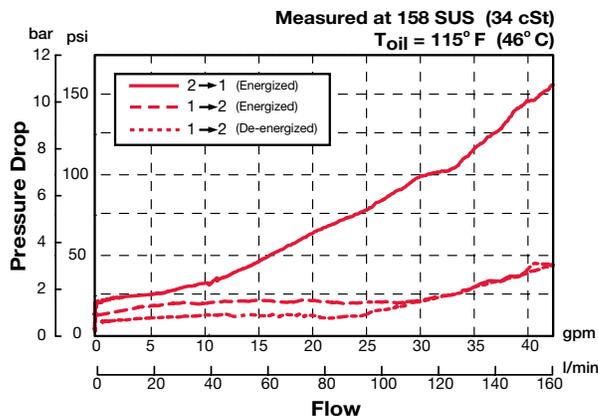
#### Features

- Screw type manual override option
- Free reverse flow

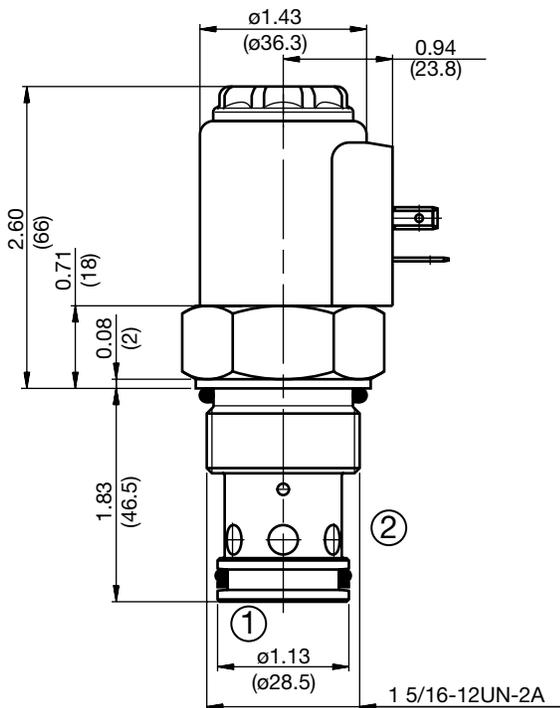
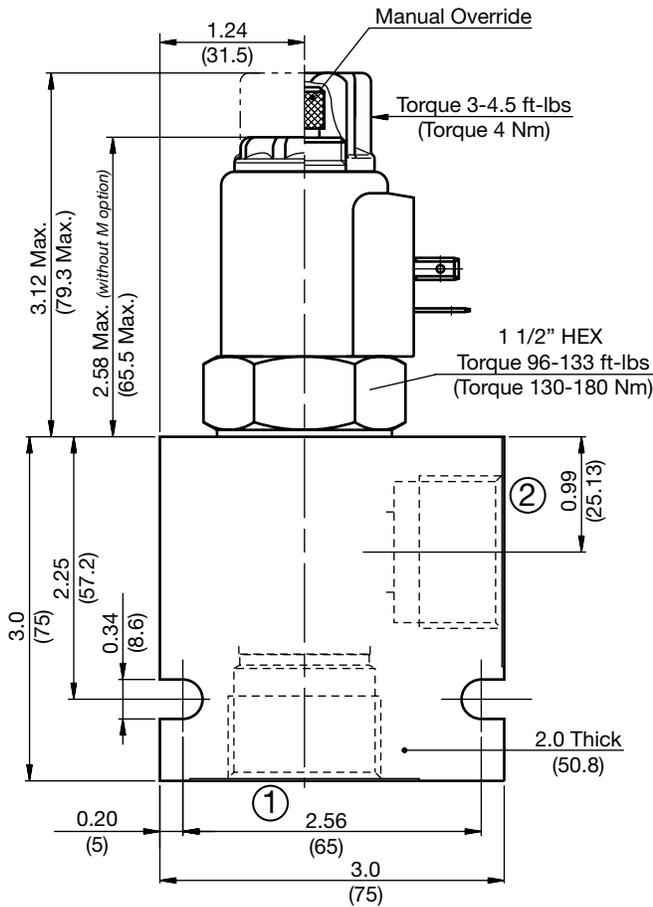
#### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |                       |
| Nominal Flow                       | 40 gpm at 4060 psi (150 l/min at 280 bar)<br>26 gpm at 5000 psi (100 l/min at 350 bar)                                  |                       |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi<br>(0.25 cc/min at 350 bar)   |                       |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |                       |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |                       |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |                       |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |                       |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |                       |
| Response Time (typical)            | Energized   | 35 ms                 |
|                                    | De-energized  | 70 ms                 |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |                       |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |                       |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |                       |
| Installation                       | No orientation restrictions   |                       |
| Cavity                             | FC16-2 (see <i>Line Bodies &amp; Cavities</i> section)  |                       |
| Cavity Tools                       | Rougher:  | 02580250              |
|                                    | Finisher:   | 02580251              |
| Cartridge Weight                   | 1.37 Lbs. (0.62 kg)   |                       |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |                       |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |                       |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |                       |
| Seal Kits                          | Buna-N  | FS162-N P/N: 03052427 |
|                                    | Viton®  | FS162-V P/N: 03051758 |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS16ZR-01 M-C-N-24-DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS16 = SAE-16 Ports, aluminum body
- SS16 = SAE-16 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

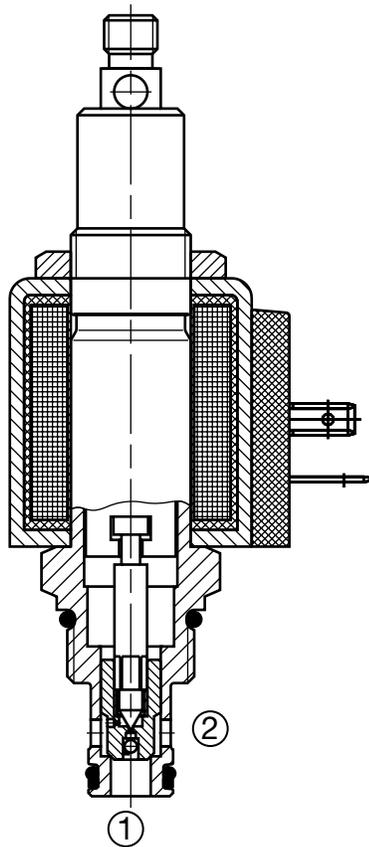
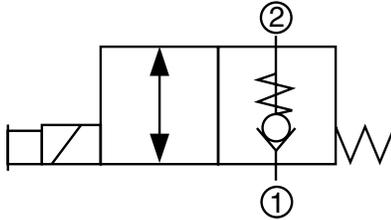
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 lbs (0.55 kg)  |
| FH162-SS16 | 03032655 | Steel, Zinc plated | 6000 psi (420 bar) | 3.56 lbs (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS08ZR-01J

### Poppet Type, Normally Closed, Pilot Operated, Free Reverse Flow Up to 10 gpm (38 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type with pull type, spring return manual override, intended for use as a uni-directional blocking or load holding device in

#### Operation

When de-energized the WS08ZR-01J blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts, allowing bi-directional flow between port 1 and port 2.

**Operation of Manual Override Option:** To manually override pull and hold the override stem. This override is not detented. The override stem has a male thread M8X1.25 and hole for a cable attachment. If a cable is used, the internal spring may not provide enough force to overcome internal cable friction. An external means of returning the cable must be provided by the user. The manual override option is intended for emergency use, not for continuous duty operation.

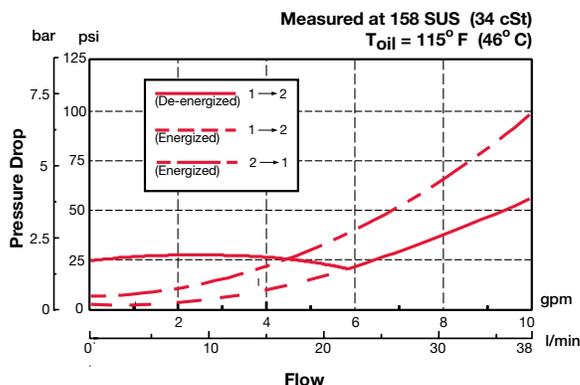
#### Features

- Rugged manual override design with thread and hole for a handle or cable attachment.

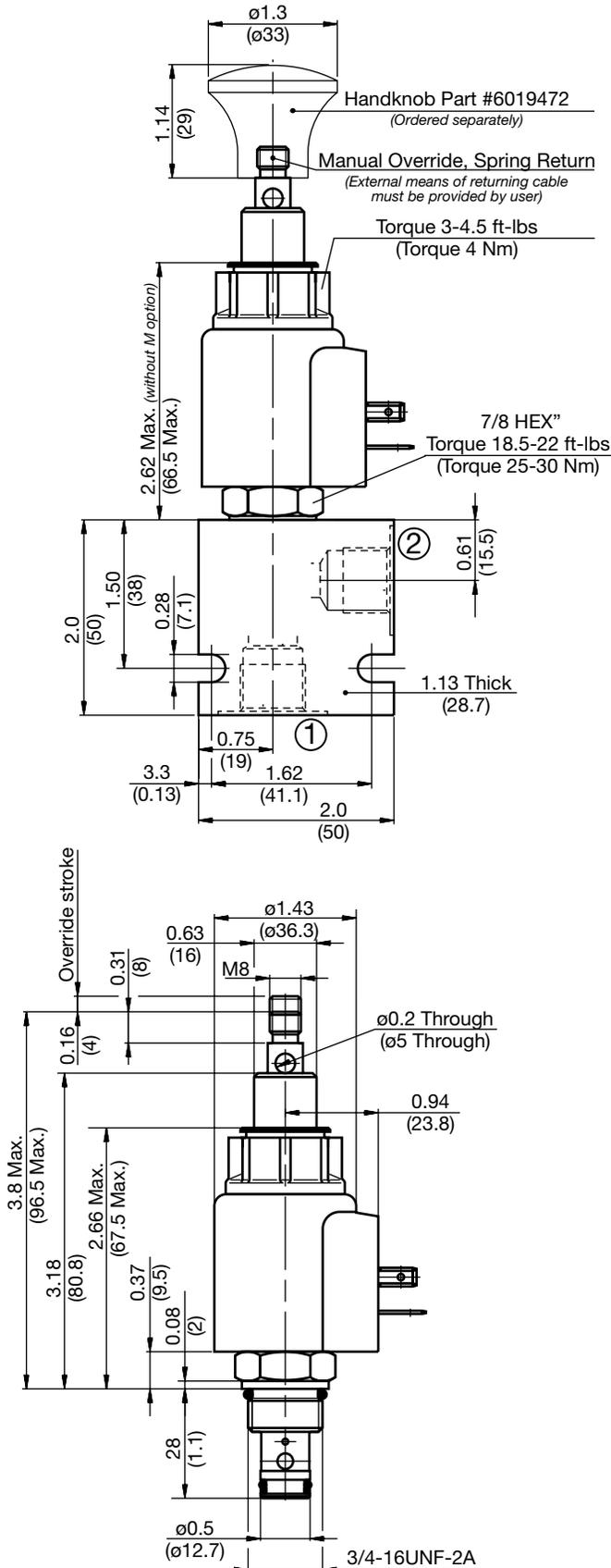
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 10 gpm (38 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Manual Override Pull Force         | 38 - 40.5 bs (150 - 180 N)<br>Max. permissible pull force   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WS08ZR-01 J-C-N-24 DN

Valve Model

Override Option

J = Manual override, pull type, spring return

Body & Ports

C = Cartridge only  
AS6 = SAE-6 Ports, aluminum body  
SS6 = SAE-6 Ports, steel body

Seals

N = Buna-N  
V = Viton®

Coil Voltage

0 = No coil, cartridge only

DC 12 = 12 VDC

24 = 24 VDC

36 = 36 VDC

110 = 110 VDC (only available with connector DG)

AC 24 = 24 VAC

115 = 115 VAC (AC coils internally full wave rectified)

230 = 230 VAC

Coil Connector

DC DG = EN 175301-803-A

DS = Dual spade (SAEJ858a)\*

DL = Leadwires (2) - 18" long (46 cm)\*

DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*

DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*

DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

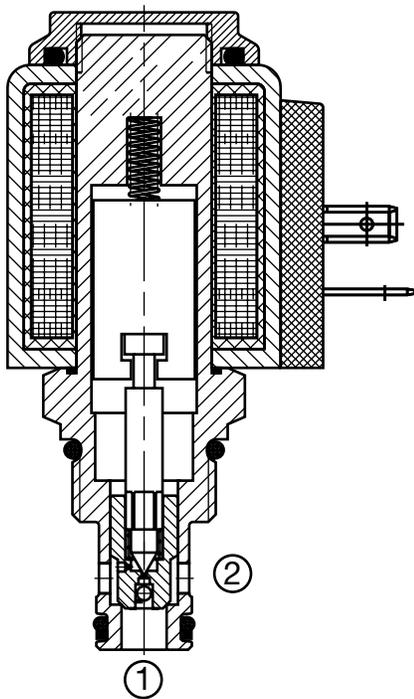
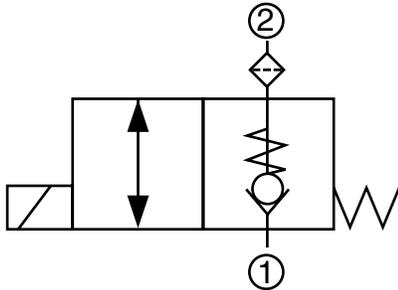
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS08ZR-30

### Poppet Type, Normally Closed, Pilot Operated, Free Reverse Flow Up to 8 gpm (38 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, pilot operated, poppet type, with filter screen on inlet port, intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS08ZR blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts allowing bi-directional flow between port 1 and port 2.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

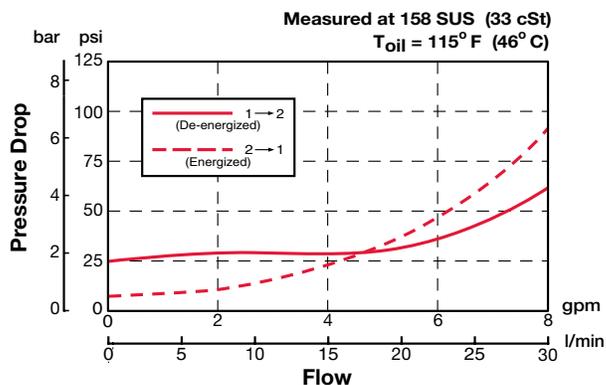
#### Features

- Filter screen on the inlet port for protection from contamination
- Screw type manual override option
- Free reverse flow

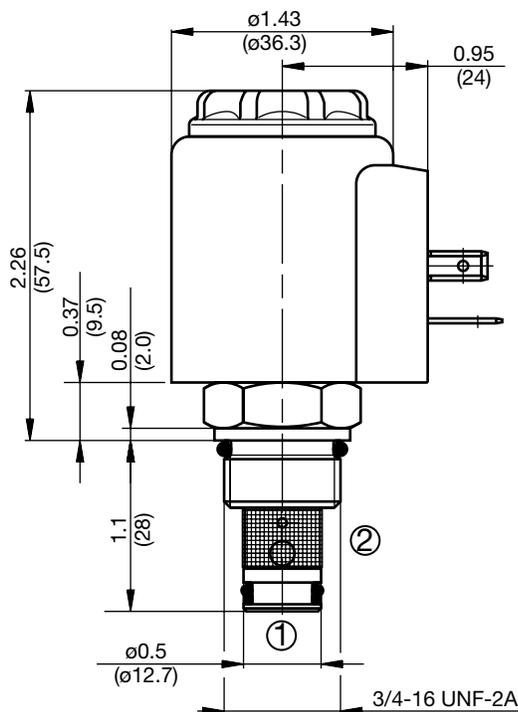
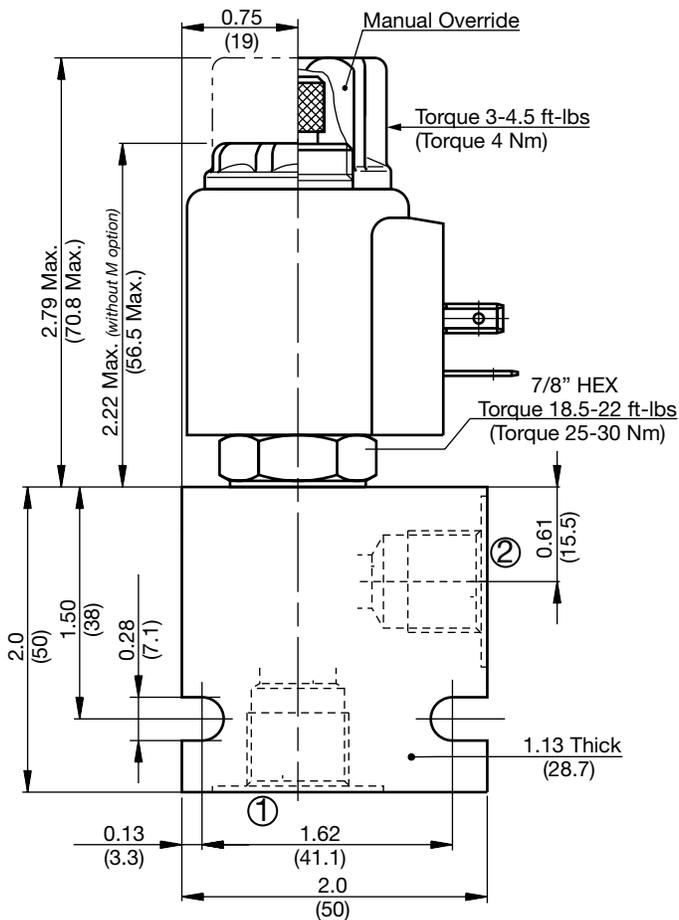
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8 gpm (30 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to +60°C)  |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Filter screen                      | 300 $\mu$ m mesh  |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08ZR-30 M-C-N-24 DS**

Valve Model \_\_\_\_\_

Override Option \_\_\_\_\_

- blank = No manual override
- M = Manual override, screw type

Body & Ports \_\_\_\_\_

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

Seals \_\_\_\_\_

- N = Buna-N
- V = Viton®

Coil Voltage \_\_\_\_\_

0 = No coil, cartridge only

DC 12 = 12 VDC

24 = 24 VDC

36 = 36 VDC

110 = 110 VDC (only available with connector DG)

AC 24 = 24 VAC

115 = 115 VAC (AC coils internally full wave rectified)

230 = 230 VAC

Coil Connector \_\_\_\_\_

DC DG = EN 175301-803-A

DS = Dual spade (SAEJ858a)\*

DL = Leadwires (2) - 18" long (46 cm)\*

DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*

DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*

DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

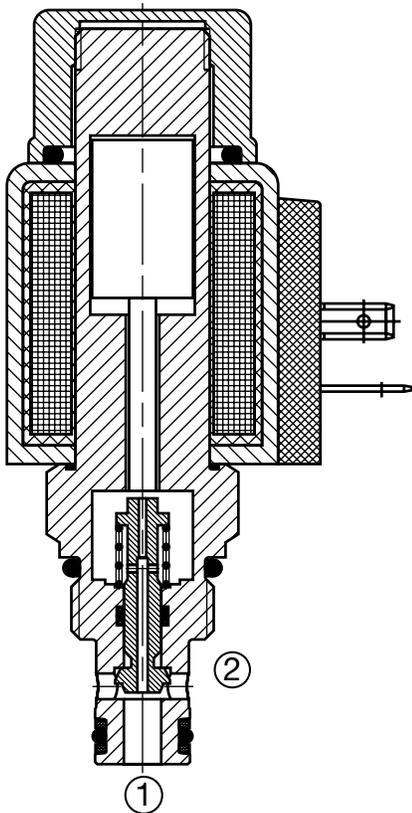
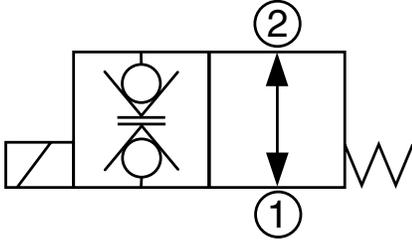
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS08V-01 Poppet Type, Bi-directional, Normally Open, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2-position, normally open, direct acting, poppet type, intended for use as a bi-directional load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS08V allows flow in both directions. When energized the poppet closes and blocks the flow from port 2 to port 1 and from port 1 to port 2.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

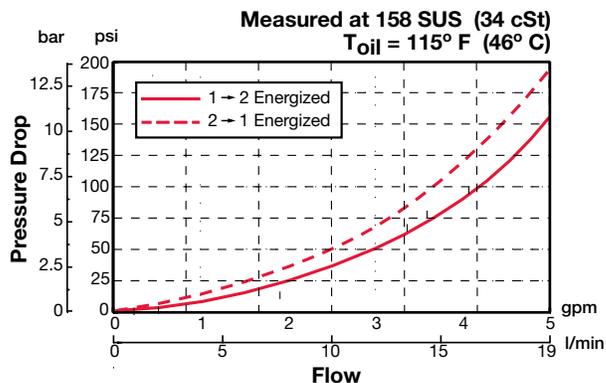
### Features

- Push type manual override button, protected by rubber cap

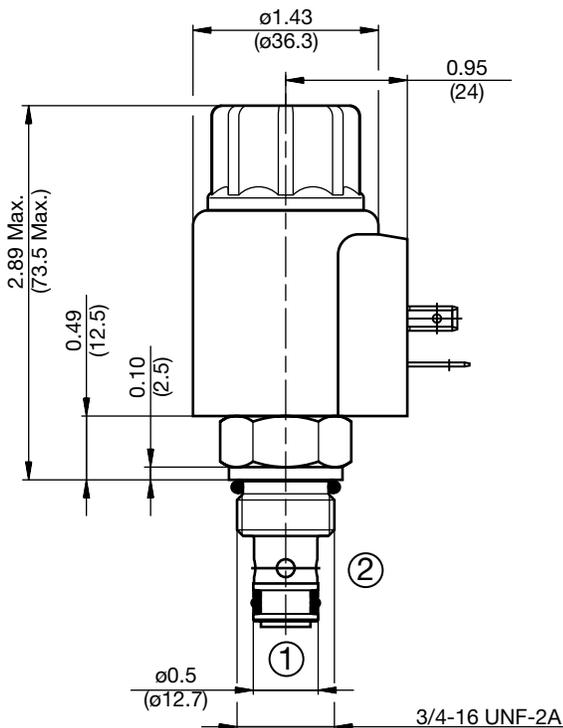
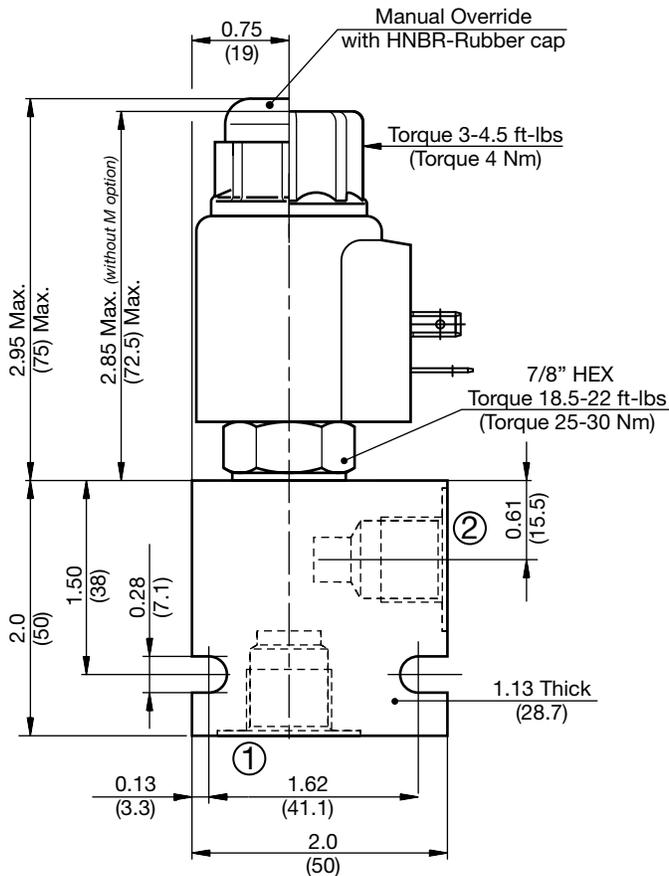
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | Leaktight, less than 2 drops/min. at 3600 psi (0.10 cc/min at 250 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08V-01 M-C-N-24 DS**

|                         |       |          |                            |   |                 |  |    |
|-------------------------|-------|----------|----------------------------|---|-----------------|--|----|
| <b>Valve Model</b>      | _____ | WS08V-01 | M                          | C   | N               | 24   | DS |
| <b>Override Option</b>  | _____ | blank    | M                          |   |                 |  |    |
|                         |       | blank =  | No manual override         |   |                 |  |    |
|                         |       | M =      | Manual override, push type |   |                 |  |    |
| <b>Body &amp; Ports</b> | _____ | C        | =                          | Cartridge only                                    |                 |  |    |
|                         |       | AS6      | =                          | SAE-6 Ports, aluminum body                        |                 |  |    |
|                         |       | SS6      | =                          | SAE-6 Ports, steel body                           |                 |  |    |
| <b>Seals</b>            | _____ | N        | =                          | Buna-N  |                 |  |    |
|                         |       | V        | =                          | Viton®  |                 |  |    |
| <b>Coil Voltage</b>     | _____ | 0        | =                          | No coil, cartridge only                           |                 |  |    |
| <b>DC</b>               | _____ | 12       | =                          | 12 VDC  |                 |  |    |
|                         |       | 24       | =                          | 24 VDC  |                 |  |    |
|                         |       | 36       | =                          | 36 VDC  |                 |  |    |
|                         |       | 110      | =                          | 110 VDC (only available with connector DG)        |                 |  |    |
| <b>AC</b>               | _____ | 24       | =                          | 24 VAC  |                 |  |    |
|                         |       | 115      | =                          | 115 VAC (AC coils internally full wave rectified) |                 |  |    |
|                         |       | 230      | =                          | 230 VAC   |                 |  |    |
| <b>Coil Connector</b>   | _____ | DC       | _____                      | DG  | =               | EN 175301-803-A                                |    |
|                         |       |          |                            | DS  | =               | Dual spade (SAEJ858a)*                         |    |
|                         |       |          |                            | DL  | =               | Leadwires (2) - 18" long (46 cm)*              |    |
|                         |       |          |                            | DW  | =               | WeatherPak™ on leadwires - 9.5" long (24 cm)*  |    |
|                         |       |          |                            | DN  | =               | Deutsch™ DT04-2P, molded, axial (IP69K Rated)* |    |
|                         |       |          |                            | DT  | =               | Amp Junior Timer™, molded, radial mount*       |    |
|                         |       | AC       | AG                         | =   | EN 175301-803-A |  |    |

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

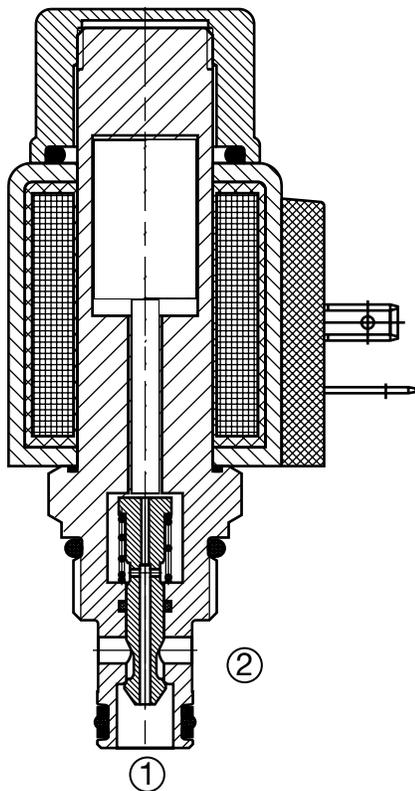
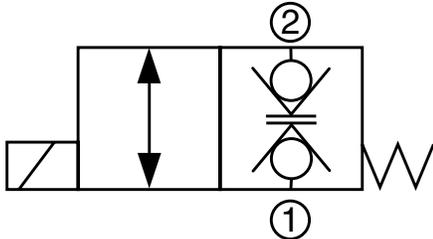
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS08W-01

### Poppet Type, Bi-directional, Normally Closed, Direct Acting Up to 5 gpm (19 l/min) • 3600 psi (250 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, direct acting, poppet type, intended for use as a bi-directional load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS08W blocks flow, leakfree, in both directions. When energized the poppet lifts and opens the flow from port 2 to port 1 and from port 1 to port 2.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

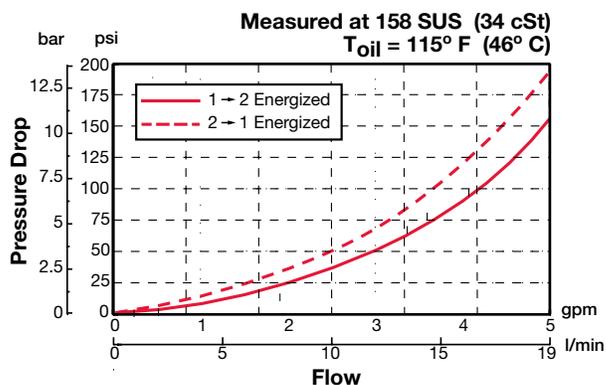
#### Features

- One piece cartridge body design to maximize reliability
- Push type manual override button, protected by rubber cap

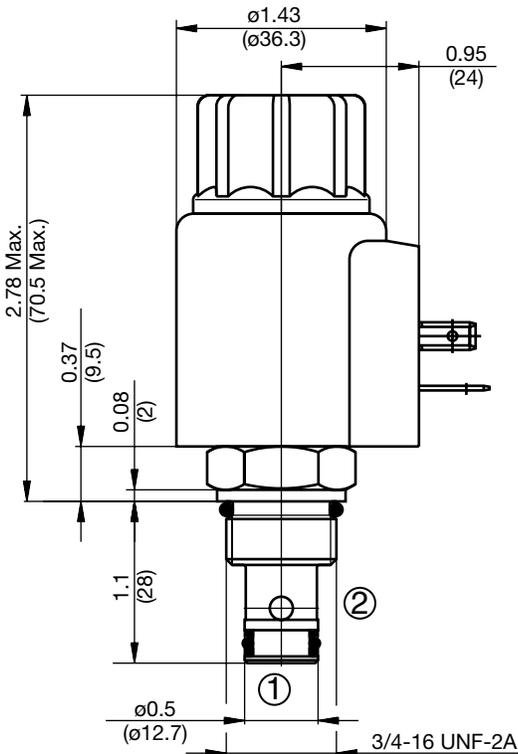
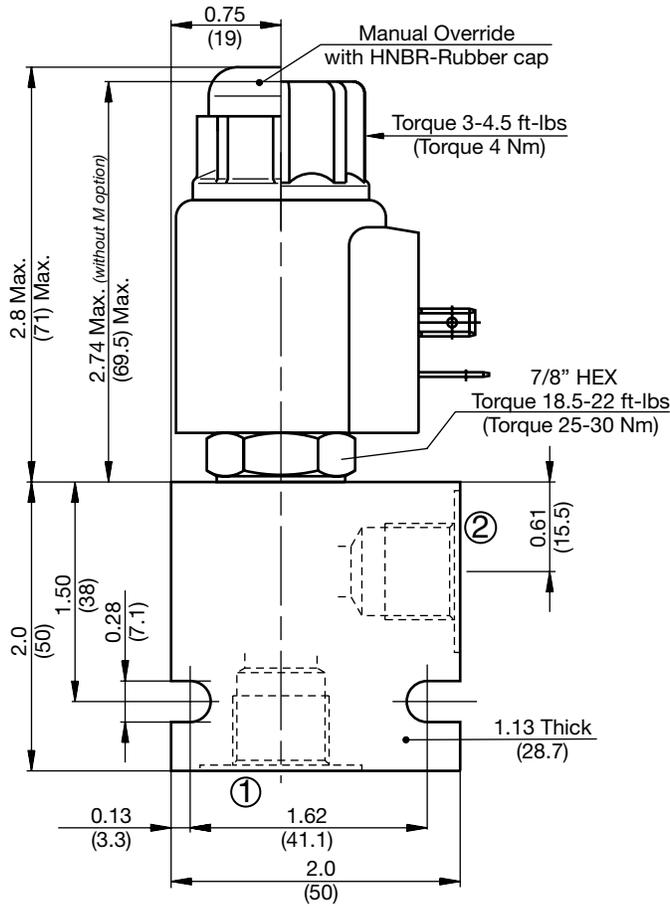
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 3600 psi (250 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | Leaktight, less than 2 drops/min. at 3600 psi (0.10 cc/min at 250 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08W-01 M-C-N-24 DS**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

0 = No coil, cartridge only

- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)

### AC

- 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

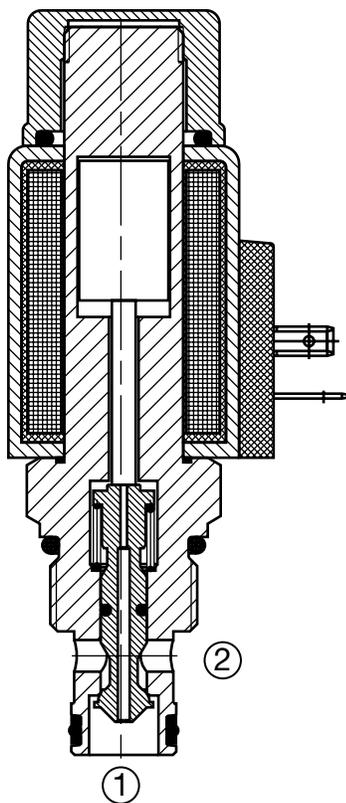
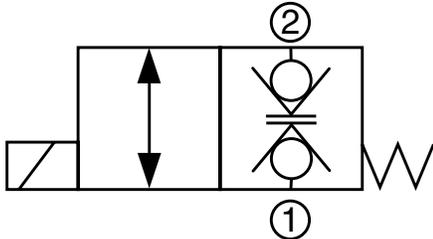
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS10W-01

### Poppet Type, Bi-directional, Normally Closed, Direct Acting Up to 10.5 gpm (40 l/min) • 5000 psi (350 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, direct acting, poppet type, intended for use as a bi-directional load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS10W blocks flow, leakfree, in both directions. When energized the poppet lifts and opens the flow from port 2 to port 1 and from port 1 to port 2.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

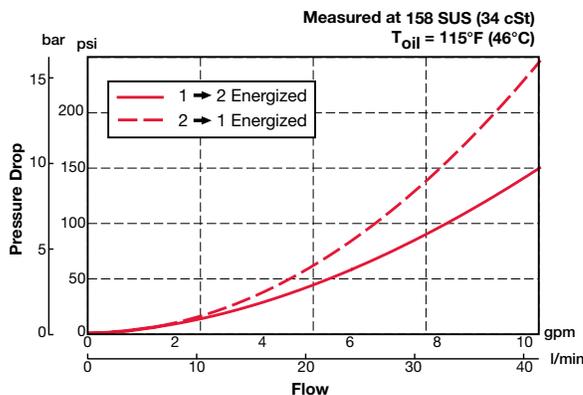
#### Features

- One piece cartridge body design to maximize reliability
- Push type manual override button, protected by rubber cap

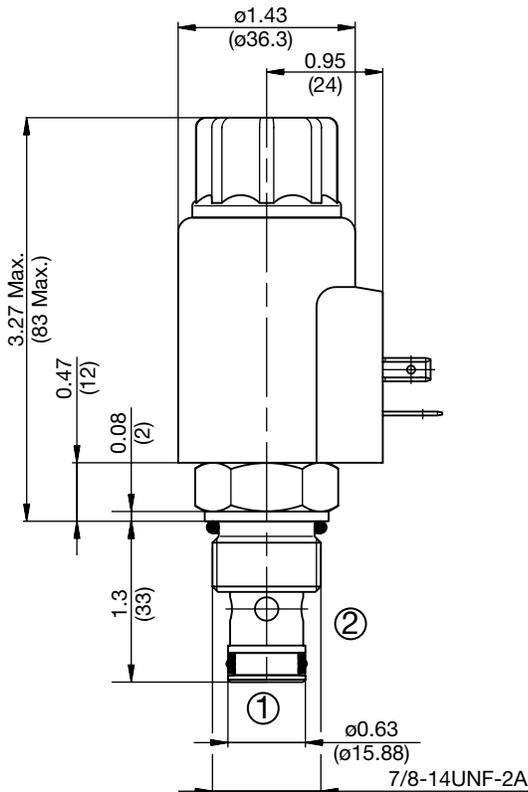
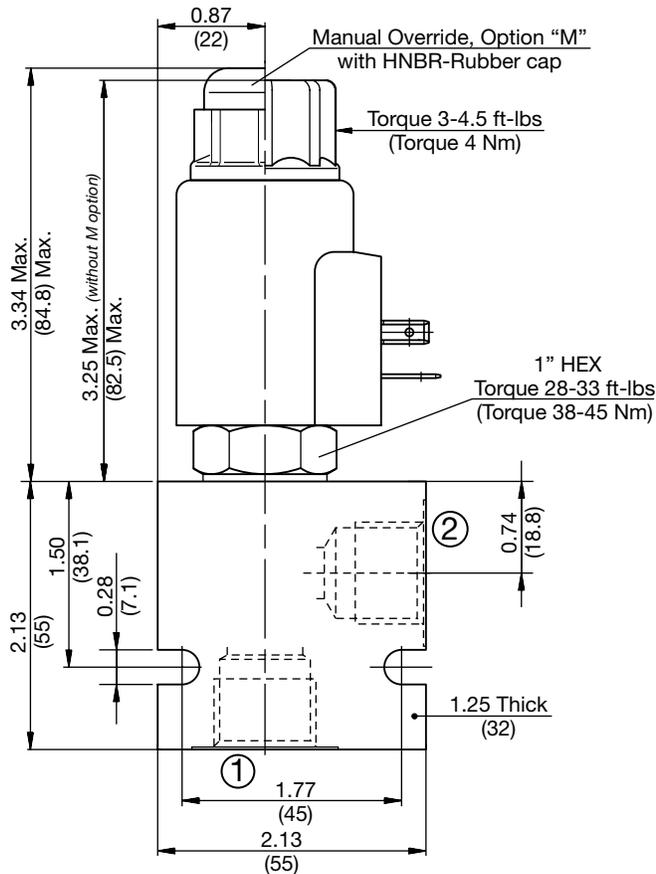
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 10.5 gpm (40 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580274<br>Finisher: 02580247   |
| Cartridge Weight                   | 0.40 Lbs. (0.18 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS102-N P/N: 03033872<br>Viton® FS102-V P/N: 03051757  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WS10W-01 M-C-N-24 DS

|                         |          |
|-------------------------|----------|
| <b>Valve Model</b>      | WS10W-01 |
| <b>Override Option</b>  | M        |
| <b>Body &amp; Ports</b> | C-N      |
| <b>Seals</b>            | V        |
| <b>Coil Voltage</b>     | 24       |
| <b>Coil Connector</b>   | DS       |

blank = No manual override  
M = Manual override, push type  
C = Cartridge only  
AS8 = SAE-8 Ports, aluminum body  
SS8 = SAE-8 Ports, steel body  
N = Buna-N  
V = Viton®  
0 = No coil, cartridge only  
DC 12 = 12 VDC  
24 = 24 VDC  
36 = 36 VDC  
110 = 110 VDC (only available with connector DG)  
AC 24 = 24 VAC  
115 = 115 VAC (AC coils internally full wave rectified)  
230 = 230 VAC  
DC DG = EN 175301-803-A  
DS = Dual spade (SAEJ858a)\*  
DL = Leadwires (2) - 18" long (46 cm)\*  
DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
DT = Amp Junior Timer™, molded, radial mount\*  
AC AG = EN 175301-803-A

## Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Standard Line Bodies\*

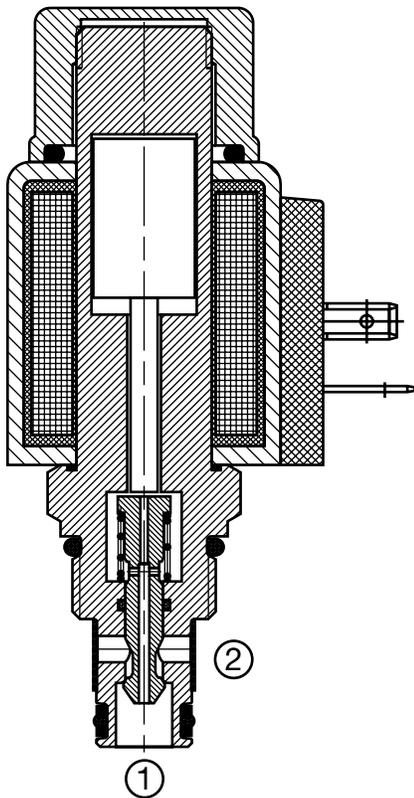
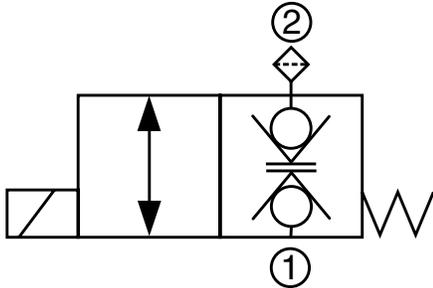
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lbs (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WS08W-30

### Poppet Type, Bi-directional, Normally Closed, Direct Acting Up to 5 gpm (19 l/min) • 3600 psi (250 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, direct acting, poppet type, with filter screen on port 2, intended for use as a bi-directional load holding device in hydraulic circuits requiring low internal leakage.

#### Operation

When de-energized the WS08W blocks flow, leakfree, in both directions. When energized the poppet lifts and opens the flow from port 2 to port 1 and from port 1 to port 2.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

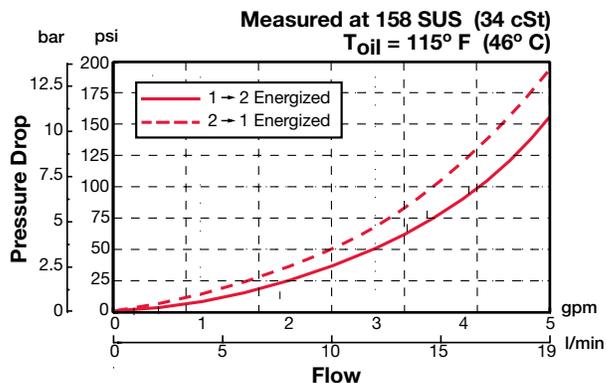
#### Features

- Filter screen on port 2 for protection from contamination getting inside the cartridge
- One piece cartridge body design to maximize reliability
- Push type manual override button, protected by rubber cap

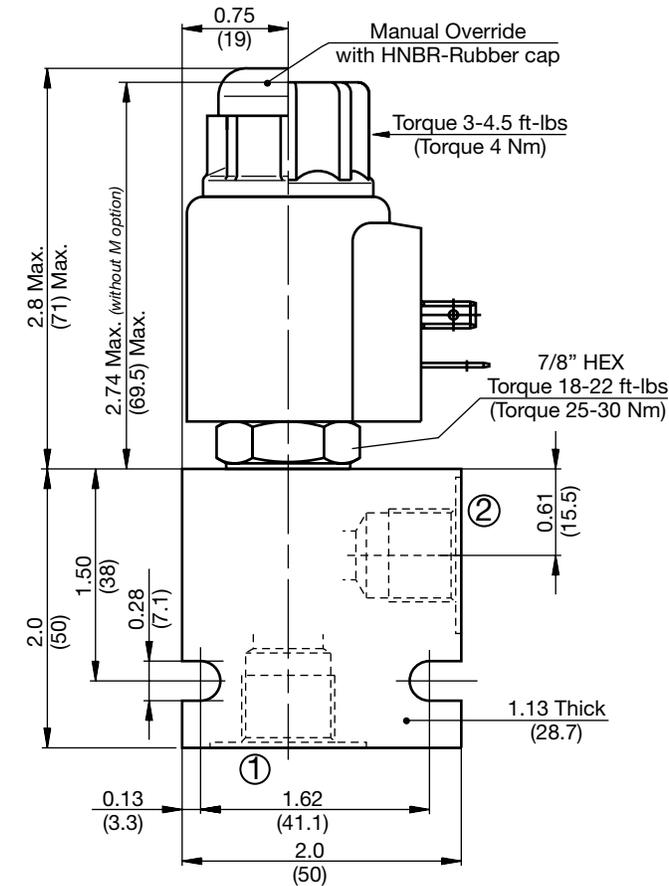
#### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 3600 psi (250 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | Leaktight, less than 2 drops/min. at 3600 psi (0.10 cc/min at 250 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to +60°C)  |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 50 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Filter screen                      | 300 $\mu$ m mesh  |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.31 Lbs. (0.14 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

#### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WS08W-30 M-C-N-24 DS**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, push type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS6 = SAE-6 Ports, aluminum body  
 SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only
- DC** [ 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)
- AC** [ 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_  
**DC** [ DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*
- AC** AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

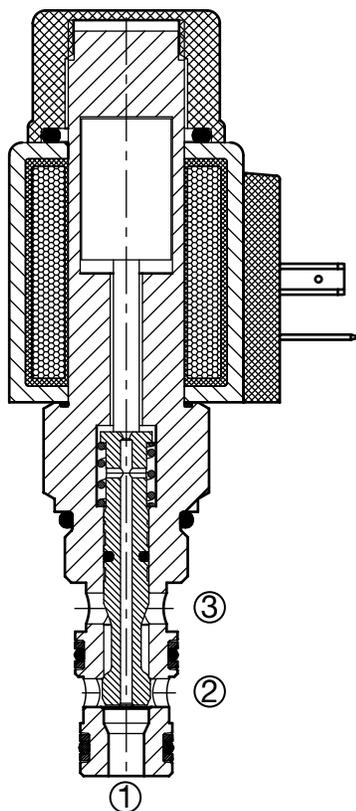
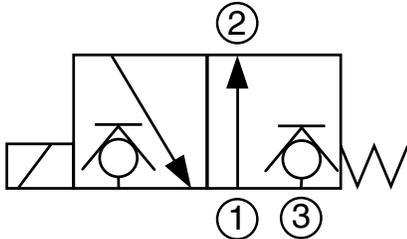
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WS08D-51 Poppet Type, Normally Closed, Direct Acting Up to 5 gpm (19 l/min) • 4000 psi (280 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, normally closed, direct acting, poppet type, intended for use as a directional control and load holding device in hydraulic circuits requiring low internal leakage.

### Operation

When de-energized the WS08W-51 blocks flow, leakfree at port 3 and allows flow from port 1 to port 2. When energized, flow is blocked at port 1 and allowed from port 2 to port 3.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

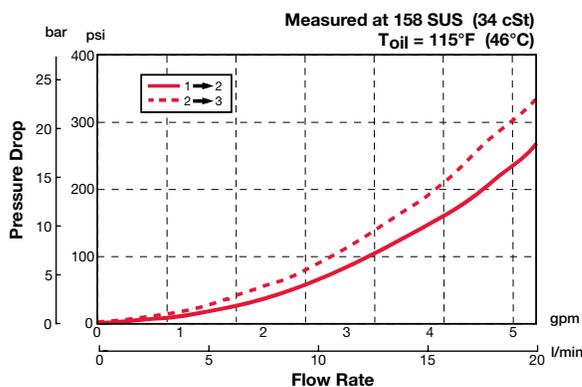
### Features

- Push type manual override button, protected by rubber cap

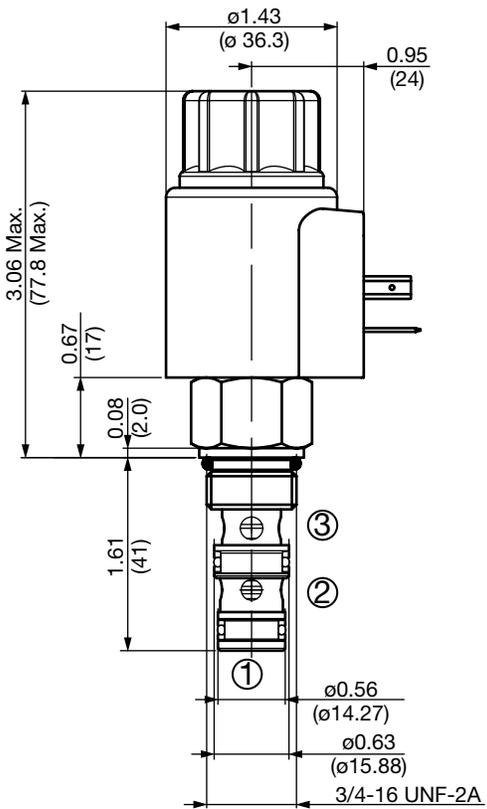
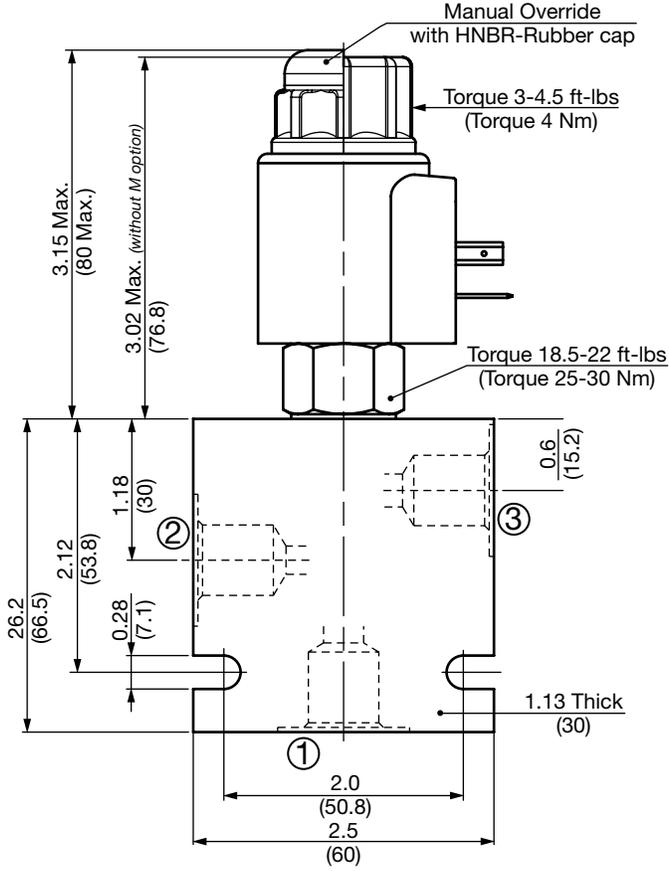
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 4000 psi (280 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 4000 psi (0.25 cc/min at 280 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Response Time (typical)            | Energized 35 ms<br>De-energized 45 ms   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight                   | 0.87 Lbs. (0.39 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N FS083-N P/N: 03054795<br>Viton® FS082-V P/N: 02591059  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

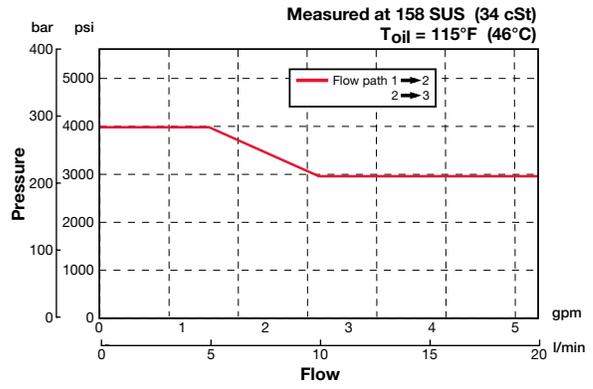
**WS08D-51 M-C-N-24 DS**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, push type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS6 = SAE-6 Ports, aluminum body  
 SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only  
**DC** 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)  
**AC** 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_  
**DC** DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*  
**AC** AG = EN 175301-803-A

**Coil Model** 40-1836  
 For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



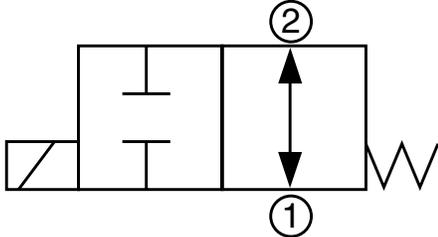
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lbs (0.15 kg) |
| FH082-SS6 | 00560920 | Steel, Zinc plated | 6000 psi (420 bar) | 1.7 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details  
 Note: Orifice plug not permitted at port 1

## WK06V-01 Spool Type, Normally Open, Direct Acting Up to 4 gpm (15.2 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, direct acting, spool type, intended for use as a bi-directional flow blocking valve.

### Operation

When de-energized the WK06V allows bi-directional flow. When energized the spool shifts and blocks flow in both directions.

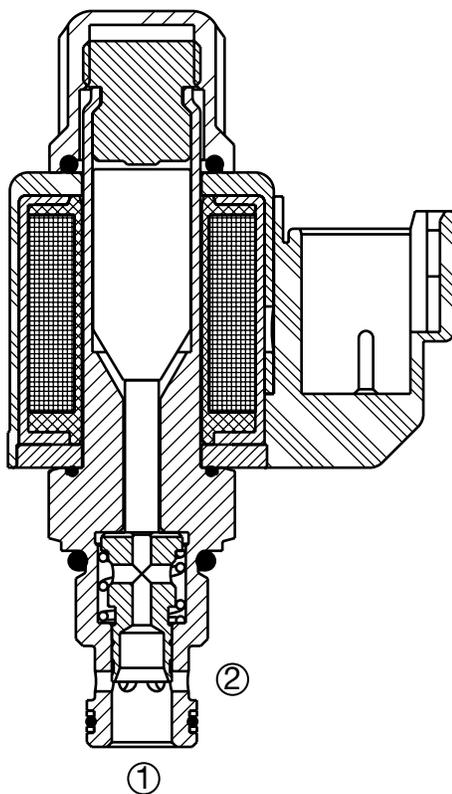
**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

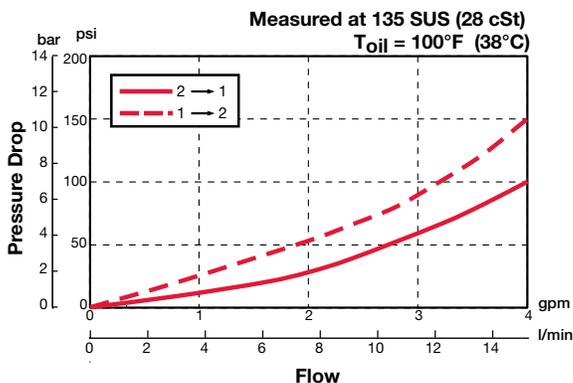
- Push type manual override button, protected by rubber cap

### Specifications

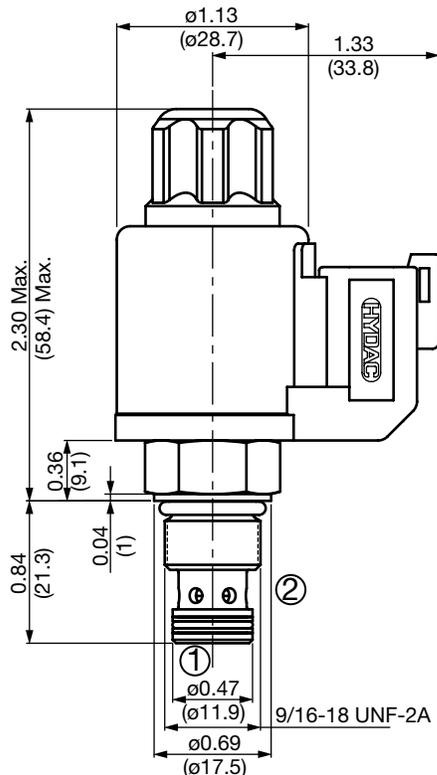
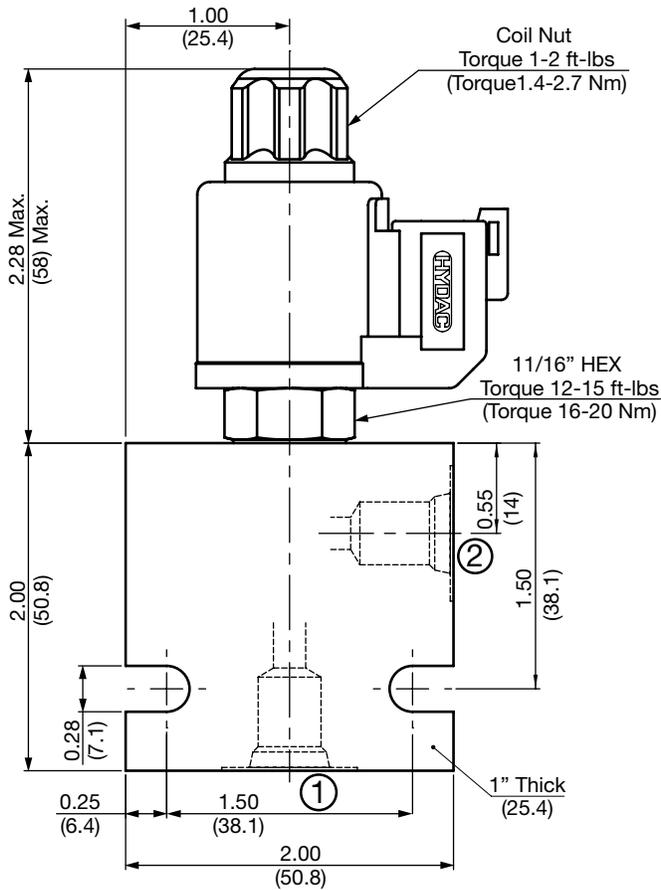
|   |  |
|---|--|
| Operating Pressure  | 5000 psi (350 bar)   |
| Nominal Flow  | See Operating Limits   |
| Internal Leakage  | 5.5 cu in/min at 3600 psi and 135 SUS<br>(90cc/min at 248 bar at 28cSt)  |
| Fluid Operating Temp. Range                                     | -20° to 248°F (-29° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>  |
| Ambient Temperature Range                                       | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating  | Continuous from 85% to 115%<br>of nominal voltage  |
| Current Draw @ 68°F (20°C)                                      | 984 mA at 12VDC; 492 mA at 24VDC   |
| Min. Pull-in Current to Operate Valve                           | 80% of nominal amperage  |
| Typical Response Time<br><i>(Varies with Pressure and Flow)</i> | Energized 50ms<br>De-energized 35ms  |
| Fluid Compatibility   | Mineral-based or synthetics with<br>lubricating properties   |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation  | No orientation restrictions  |
| Cavity  | FC06-2 <i>(see Line Bodies &amp; Cavities section)</i>   |
| Cavity Tools  | Rougher: 02582046<br>Finisher: 02582047  |
| Cartridge Weight  | 0.17 lb (0.08 kg)  |
| Coil Weight   | 0.19 lb (0.09 kg)  |
| Cartridge Material  | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material   | Class N, 200°C high temperature magnet wire,<br>steel shell, polyester encapsulation.  |
| Seal Kits   | Buna-N FS062-N P/N: 02610184<br>Viton® FS062-V P/N: 02610185   |



### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK06V-01 M-C-N-24 DN

Valve Model

Override Option

- blank = No manual override
- M = Manual override, push type

Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum body
- SS4 = SAE-4 Ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only

- DC 12 = 12 VDC
- 24 = 24 VDC

- AC 115 = 105 VAC (only available with connector DG)
- 230 = 205 VAC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

Coil Connector

- DC DG = DIN 43650 Form B (IP65 Rated)\*\*
- DL = Leadwires (2)18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*
- DN = Deutsch DT04-2P intergral molded (IP69K Rated)\*

Use mating plug DIN 43650 form B without diode bridge for DC voltages P/N 02600570

Use mating plug DIN 43650 form B w/diode bridge for AC voltages P/N 02600582

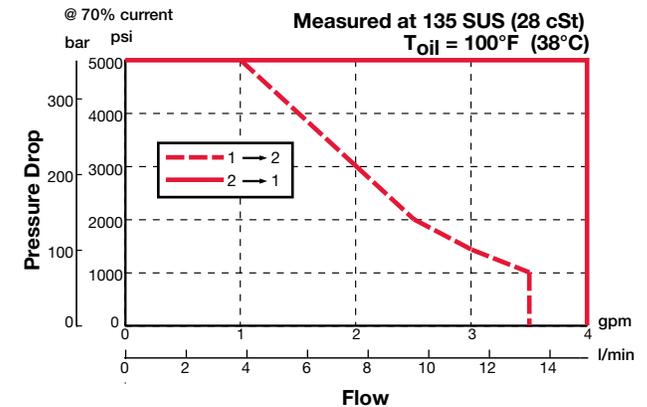
Coil Model 32-1329

For other coil connector types consult factory

\*\*Mating Plugs sold separately

\*Coils with internal Transient Suppression diode are available, consult factory.

## Operating Limits



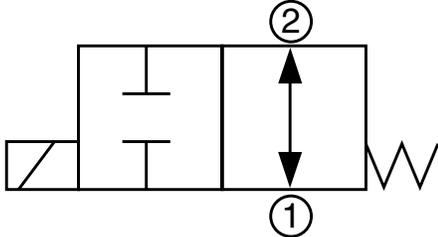
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WK08V-01 Spool Type, Normally Open, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, direct acting, spool type, intended for use as a bi-directional flow blocking valve.

### Operation

When de-energized the WK08V allows bi-directional flow. When energized the spool shifts and blocks flow in both directions.

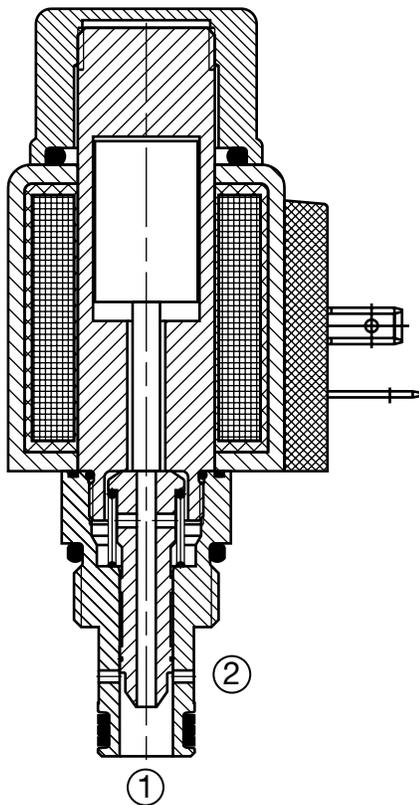
**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

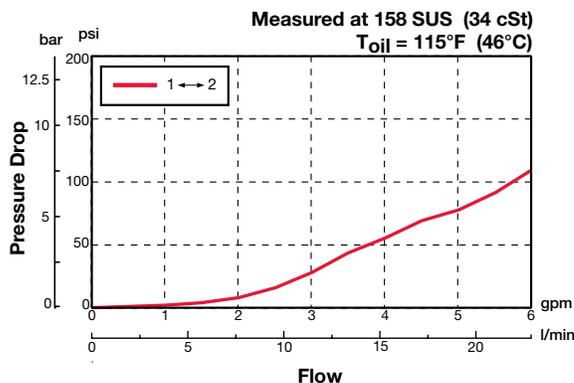
- Push type manual override button, protected by rubber cap

### Specifications

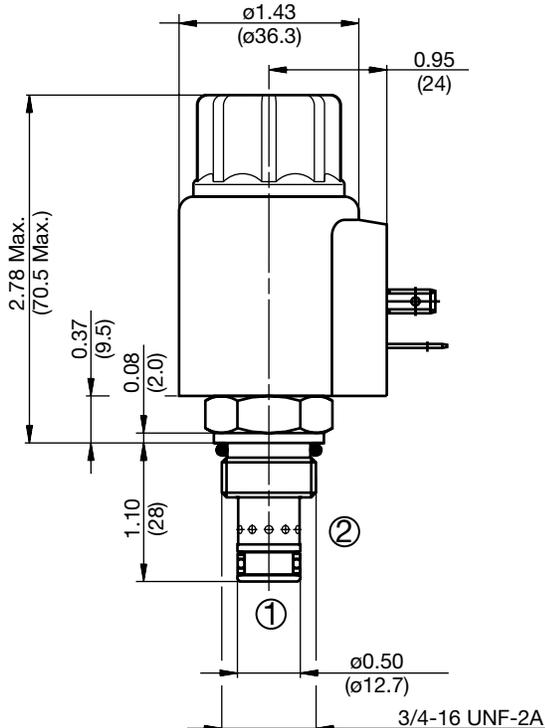
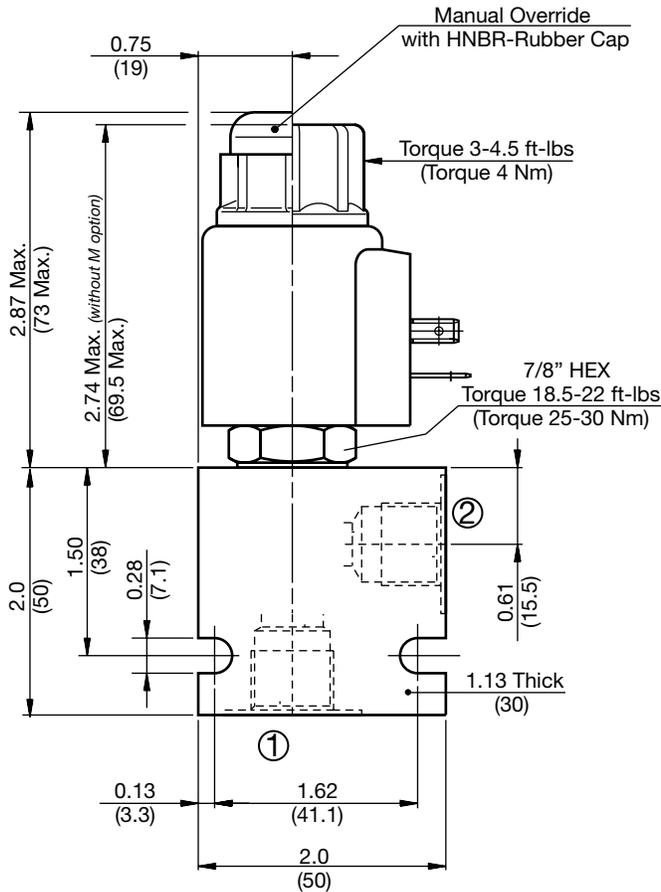
|                                    |   |          |               |
|------------------------------------|---|----------|---------------|
| Operating Pressure                 | 5000 psi (350 bar)  |          |               |
| Nominal Flow                       | 5 gpm (19 l/min)  |          |               |
| Internal Leakage                   | 5.5 cu in/min. at 3000 psi and 158 SUS<br>(90 cc/min at 210 bar and 34 cSt)   |          |               |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |          |               |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |          |               |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |          |               |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |          |               |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |          |               |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |          |               |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |          |               |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |          |               |
| Installation                       | No orientation restrictions   |          |               |
| Cavity                             | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)  |          |               |
| Cavity Tools                       | Rougher:  | 02580090 |               |
|                                    | Finisher:   | 02580091 |               |
| Cartridge Weight                   | 0.38 Lbs. (0.17 kg)   |          |               |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |          |               |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |          |               |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |          |               |
| Seal Kits                          | Buna-N  | FS082-N  | P/N: 03033920 |
|                                    | Viton®  | FS082-V  | P/N: 03051756 |



### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08V-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

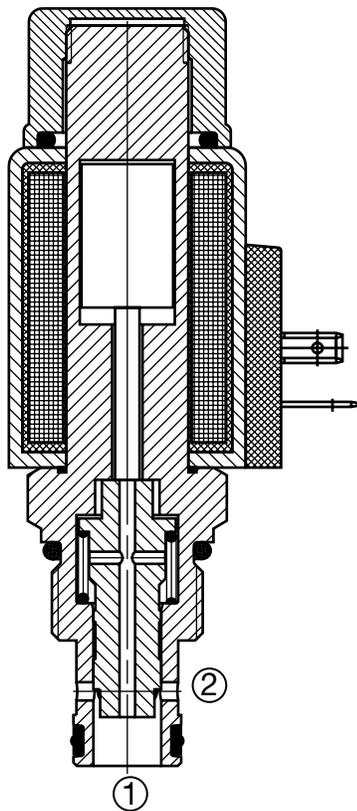
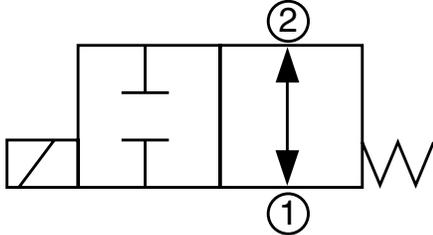
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WK10V-01 Spool Type, Normally Open, Direct Acting Up to 9 gpm (35 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally open, direct acting, spool type, intended for use as a bi-directional flow blocking valve.

### Operation

When de-energized the WK10V allows bi-directional flow. When energized the spool shifts and blocks flow in both directions.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

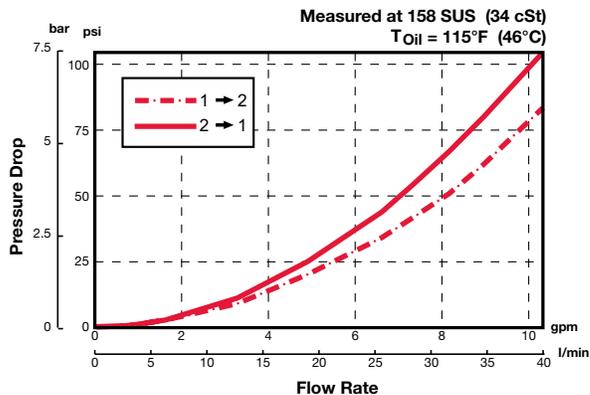
### Features

- Push type manual override button, protected by rubber cap

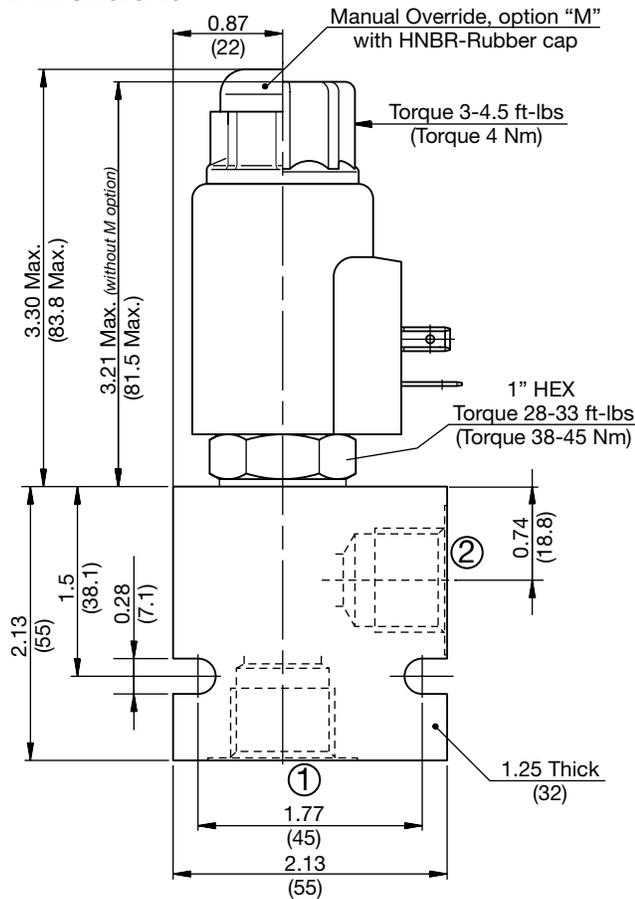
### Specifications

|                                    |   |          |               |
|------------------------------------|---|----------|---------------|
| Operating Pressure                 | 5000 psi (350 bar)  |          |               |
| Nominal Flow                       | 9 gpm (35 l/min)  |          |               |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS<br>(120 cc/min at 250 bar and 34 cSt)  |          |               |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |          |               |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |          |               |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |          |               |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |          |               |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |          |               |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |          |               |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |          |               |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |          |               |
| Installation                       | No orientation restrictions   |          |               |
| Cavity                             | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)  |          |               |
| Cavity Tools                       | Rougher:  | 02580274 |               |
|                                    | Finisher:   | 02580247 |               |
| Cartridge Weight                   | 0.48 Lbs. (0.22 kg)   |          |               |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |          |               |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |          |               |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |          |               |
| Seal Kits                          | Buna-N  | FS102-N  | P/N: 03033872 |
|                                    | Viton®  | FS102-V  | P/N: 03051757 |

### Performance

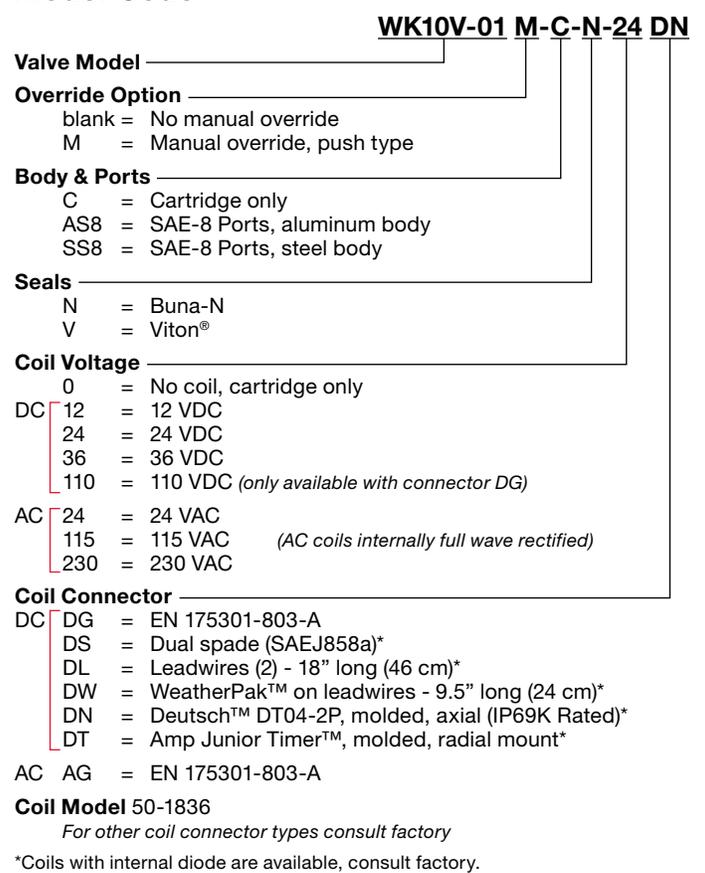


## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code



\*Coils with internal diode are available, consult factory.

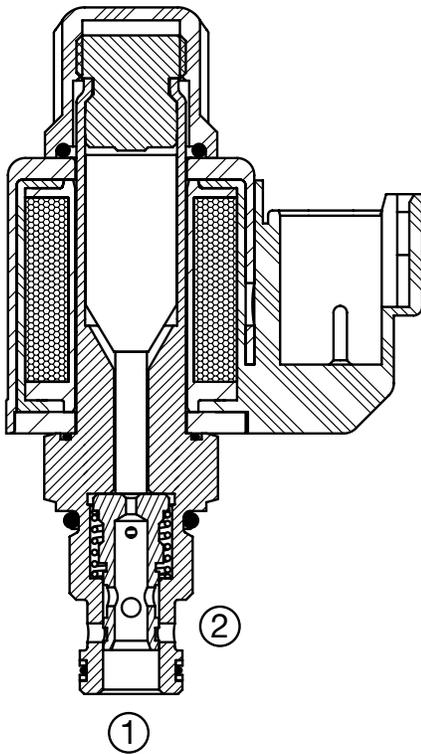
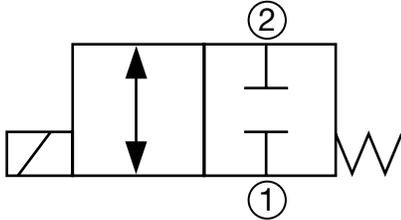
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lbs (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK06W-01 Spool Type, Normally Closed, Direct Acting Up to 2.5 gpm (9.5 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, direct acting, spool type valve.

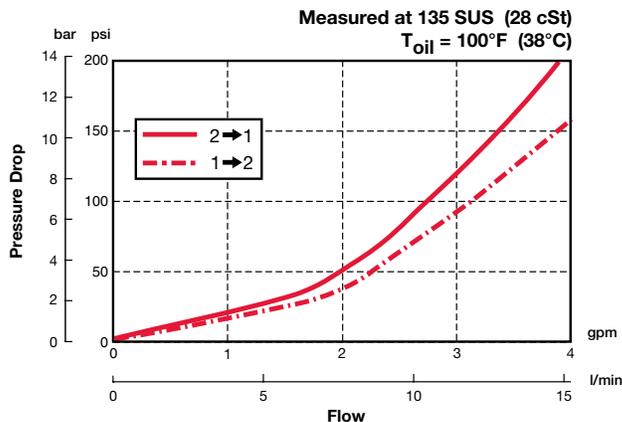
### Operation

When de-energized the WK06W blocks flow in both directions. When energized the spool shifts and opens the bidirectional flow path.

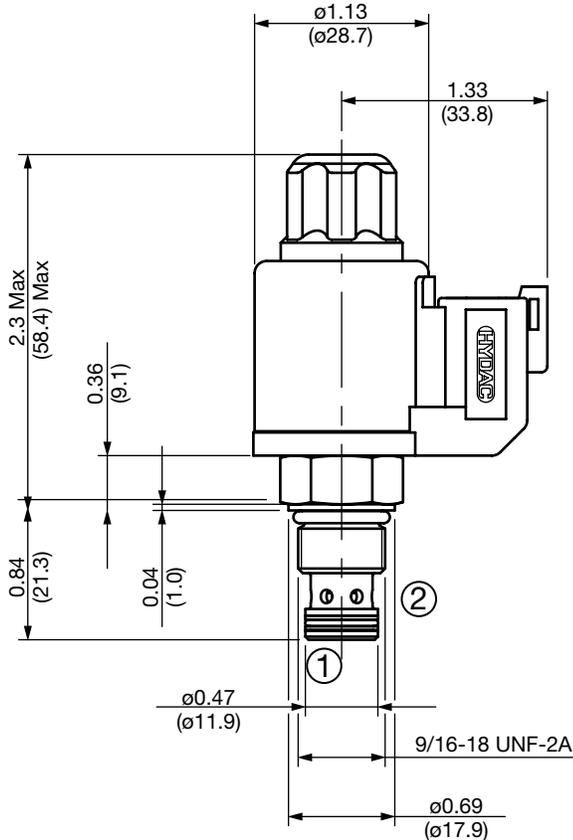
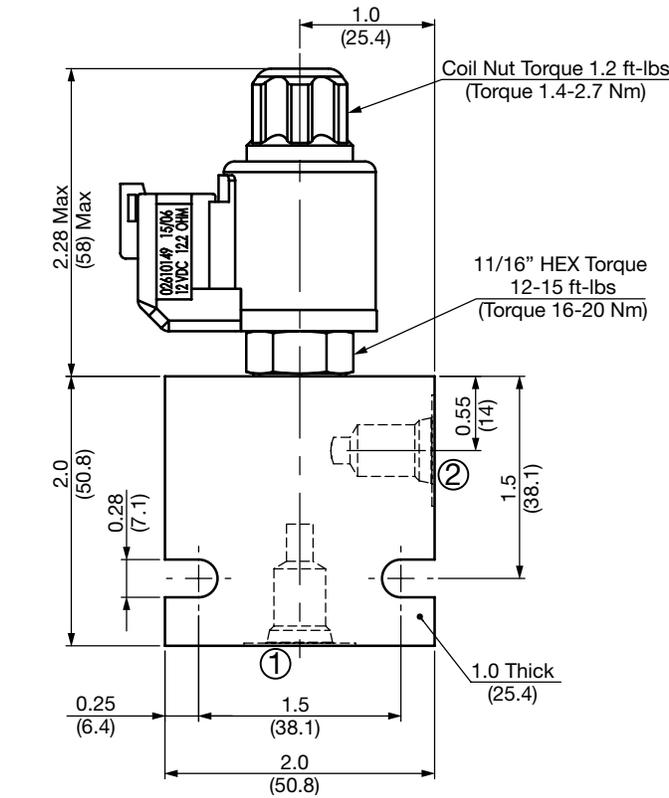
### Specifications

|                                       |  |
|---------------------------------------|--|
| Operating Pressure                    | 5000 psi (350 bar)   |
| Nominal Flow                          | 2.5 gpm (9.5 l/min)  |
| Internal Leakage                      | 5.5 cu in/min. at 3000 psi and 135 SUS<br>(90 cc/min at 207 bar and 28 cSt)  |
| Fluid Operating Temp. Range           | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range             | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating                      | Continuous from 85% to 115%<br>of nominal voltage  |
| Current Draw at 68°F (20°C)           | 984 mA at 12VDC; 492 mA at 24VDC   |
| Min. Pull-in Current to Operate Valve | 70% of nominal amperage  |
| Fluid Compatibility                   | Mineral-Based or Synthetics<br>with lubricating properties   |
| Viscosity                             | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                            | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                          | No orientation restrictions  |
| Cavity                                | FC06-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                          | Rougher: 02582046<br>Finisher: 02582047  |
| Cartridge Weight                      | 2.7 oz (75 grams)  |
| Coil Weight                           | 3.1 oz (88 grams)  |
| Cartridge Material                    | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material                         | Class N, 200°C high temperature magnet wire,<br>steel shell, polyester encapsulation   |
| Seal Kits                             | Buna-N P/N: 02610184<br>Viton® P/N: 02610185   |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK06W-01 M-C-N-24-DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type  
(for availability consult factory)

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum body
- SS4 = SAE-4 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC [ 12 = 12 VDC  
24 = 24 VDC
- AC [ 115 = 105 VDC (only available with connector DG)  
230 = 205 VDC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

### Coil Connector

- DG = EN 175301-803-B (IP65 Rated)\*\*
- DC [ DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*  
DN = Deutsch DT04-2P intergral molded (IP69K Rated)\*

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570

Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

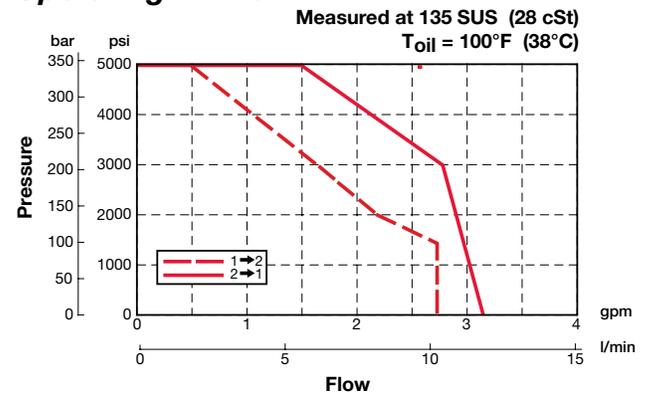
### Coil Model 32-1329

For other coil connector types consult factory

\*\* Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

## Operating Limits



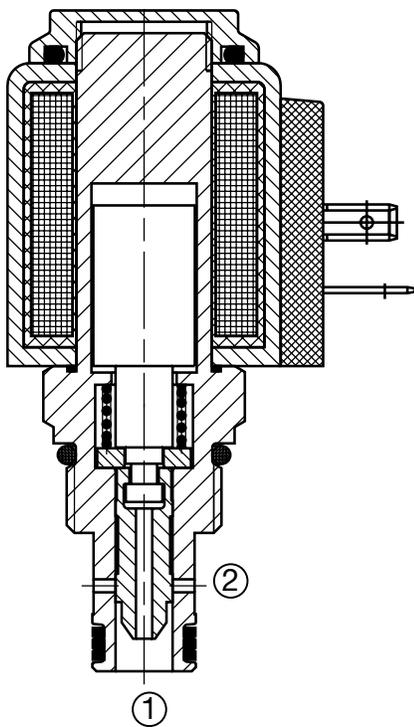
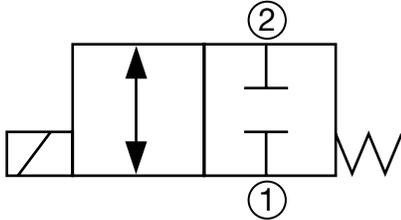
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH062-AS4 | 02600491 | Aluminum, anodized | 3500 psi (245 bar) | 0.33 lbs (0.15 kg) |
| FH062-SS4 | 02600490 | Steel, Zinc plated | 6000 psi (420 bar) | 0.97 lbs (0.44 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08W-01 Spool Type, Normally Closed, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, direct acting, spool type, intended for use as a bi-directional flow blocking valve.

### Operation

When de-energized the WK08W blocks flow in both directions. When energized the spool shifts and opens the bidirectional flow path.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

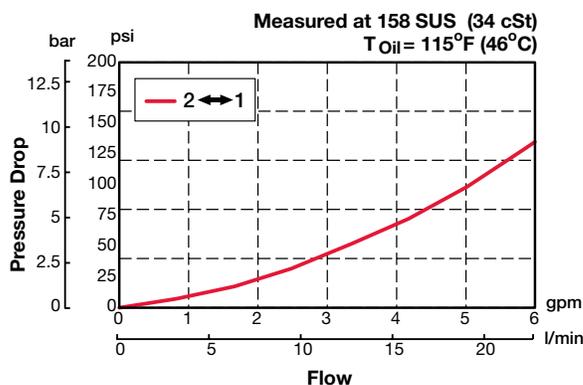
### Features

- Screw type manual override option

### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | 5.5 cu in/min. at 3000 psi and 158 SUS<br>(90 cc/min at 210 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight                   | 0.38 Lbs. (0.17 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

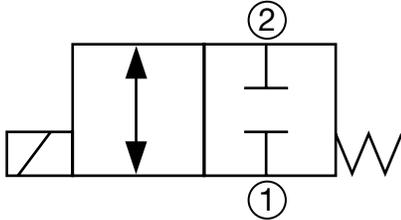
### Performance





## WK10W-01 Spool Type, Normally Closed, Direct Acting Up to 9 gpm (35 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 2-way, 2 position, normally closed, direct acting, spool type, intended for use as a bi-directional flow blocking valve.

### Operation

When de-energized the WK10W blocks flow in both directions. When energized the spool shifts and opens the bidirectional flow path.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

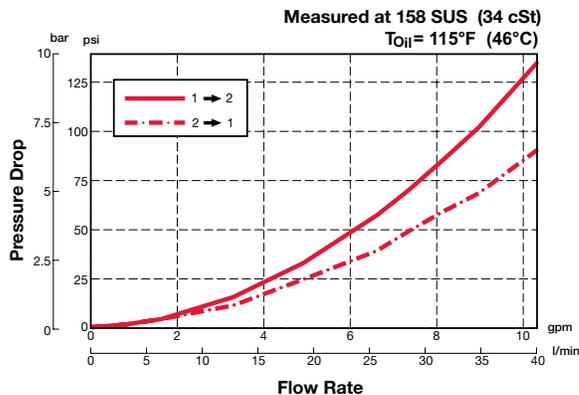
### Features

- Screw type manual override option

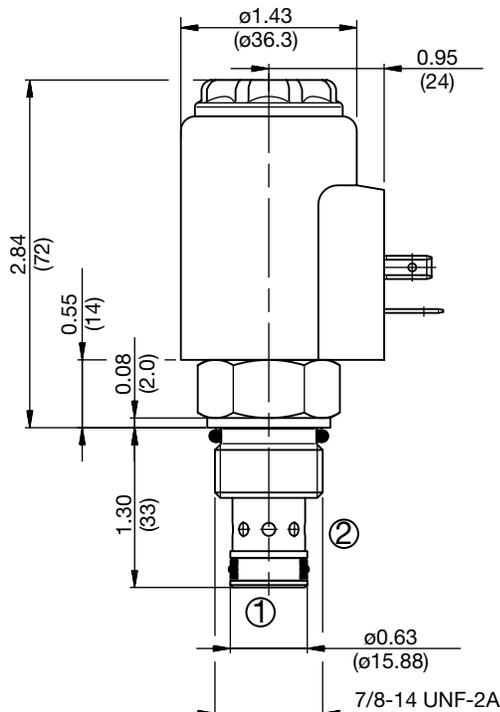
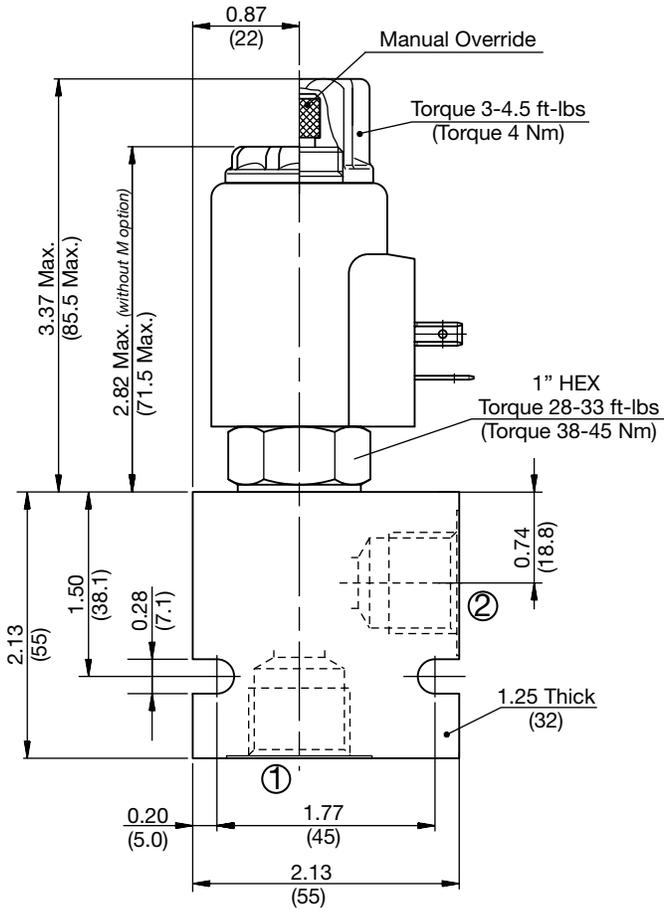
### Specifications

|                                    |   |          |               |
|------------------------------------|---|----------|---------------|
| Operating Pressure                 | 5000 psi (350 bar)  |          |               |
| Nominal Flow                       | 9 gpm (35 l/min)  |          |               |
| Internal Leakage                   | 7.3 cu in/min. at 5000 psi and 158 SUS (120 cc/min at 350 bar and 34 cSt)   |          |               |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |          |               |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |          |               |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |          |               |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |          |               |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |          |               |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |          |               |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |          |               |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |          |               |
| Installation                       | No orientation restrictions   |          |               |
| Cavity                             | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)  |          |               |
| Cavity Tools                       | Rougher:  | 02580274 |               |
|                                    | Finisher:   | 02580247 |               |
| Cartridge Weight                   | 0.48 Lbs. (0.22 kg)   |          |               |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |          |               |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |          |               |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |          |               |
| Seal Kits                          | Buna-N  | FS102-N  | P/N: 03033872 |
|                                    | Viton®  | FS102-V  | P/N: 03051757 |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK10W-01 M-C-N-24 DN

Valve Model

Override Option

- blank = No manual override
- M = Manual override, screw type

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

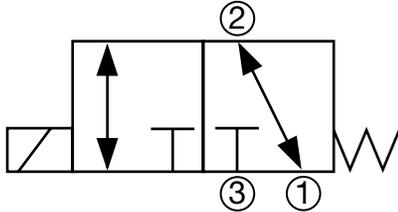
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc plated | 6000 psi (420 bar) | 1.16 lbs (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK06C-01 Spool Type, Direct Acting Up to 4 gpm (15 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

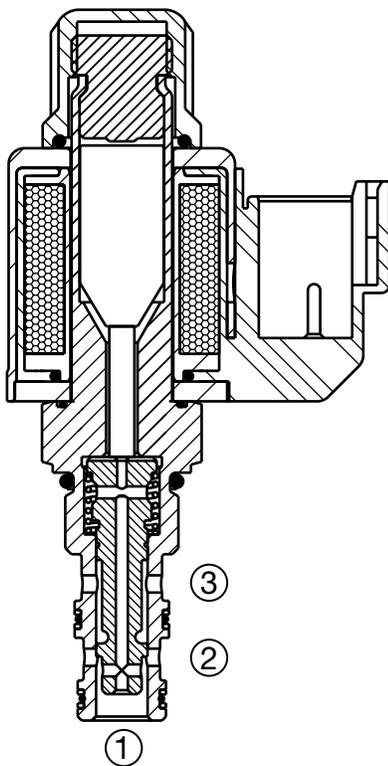
A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK06C allows flow from port 2 to port 1 bi-directionally, while blocking flow at port 3. When energized the spool shifts and opens flow from port 2 to port 3 bi-directionally, while blocking flow at port 1.

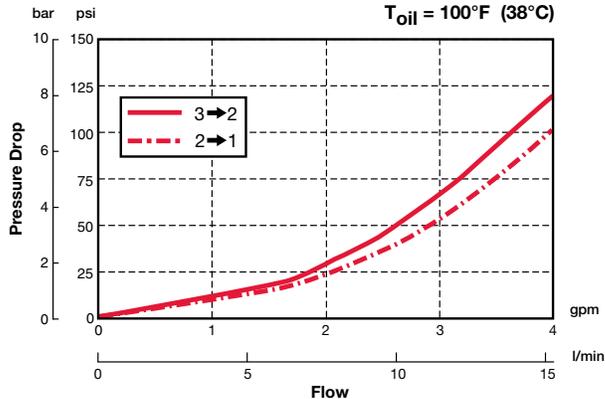
### Specifications

|  |  |
|--|--|
| Operating Pressure                                       | 5000 psi (350 bar)   |
| Nominal Flow   | 4 gpm (15 l/min)   |
| Internal Leakage   | 5.5 cu in/min. at 3000 psi and 135 SUS<br>(90 cc/min at 207 bar and 28 cSt)  |
| Fluid Operating Temp. Range                              | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range                                | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating   | Continuous from 85% to 115%<br>of nominal voltage  |
| Current Draw at 68°F (20°C)                              | 984 mA at 12VDC; 492 mA at 24VDC   |
| Minimum Pull-in Current<br>to Operate Valve              | 70% of nominal amperage  |
| Typical Response Time<br>(Varies with Pressure and Flow) | On: 30 to 60 ms<br>Off: 20 to 40 ms  |
| Fluid Compatibility                                      | Mineral-Based or Synthetics with<br>lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration   | 21/19/16 or cleaner per (ISO 4406)   |
| Installation   | No orientation restrictions  |
| Cavity   | FC06-3 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools   | Rougher: 02582050<br>Finisher: 02582051  |
| Cartridge Weight   | 3.0 oz (85 grams)  |
| Coil Weight  | 3.1 oz (88 grams)  |
| Cartridge Material                                       | Steel with hardened work surfaces.<br>Zinc plated solenoid tube surface.<br>Buna N or Viton® o-rings<br>Solid thermoplastic polyester back-up rings. |
| Coil Material  | Class N, 200°C high temperature magnet wire,<br>steel shell, polyester encapsulation   |
| Seal Kits  | Buna-N P/N: 02610186<br>Viton® P/N: 02610187   |

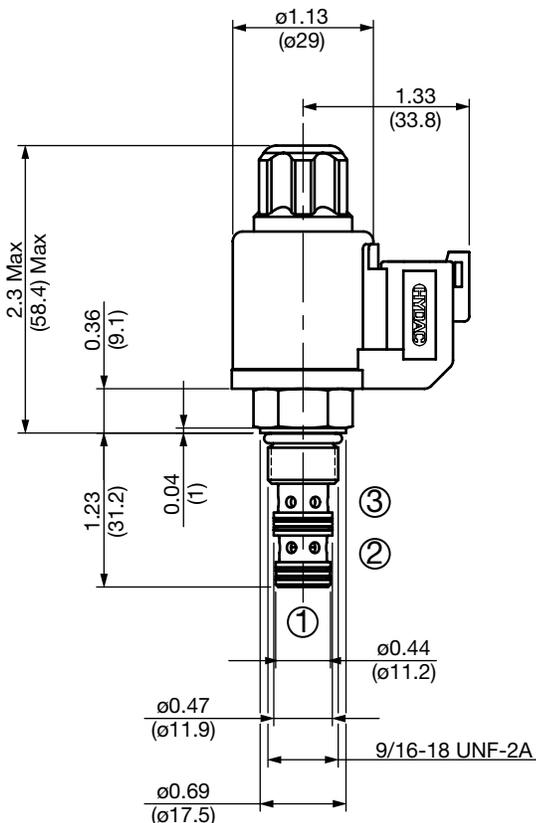
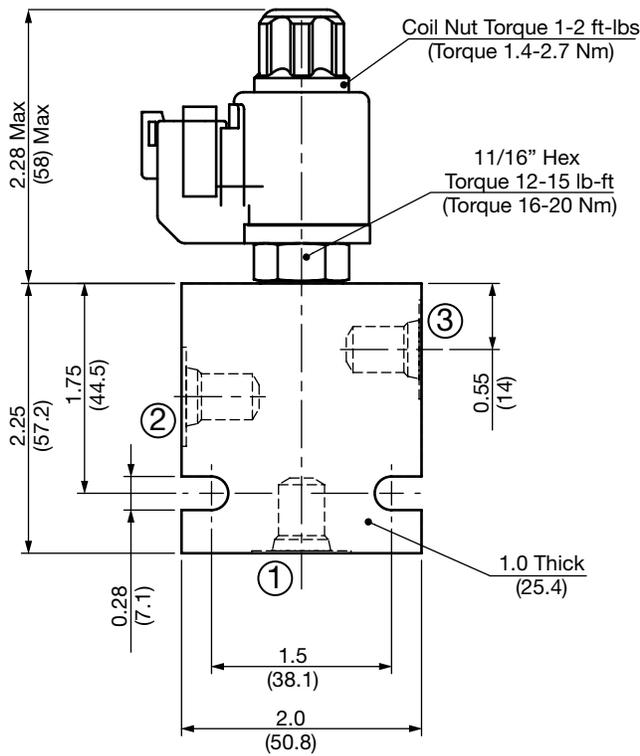


### Performance

Measured at 135 SUS (28 cSt)  
T<sub>oil</sub> = 100°F (38°C)



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK06C-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type  
(for availability consult factory)

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum body
- SS4 = SAE-4 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- AC 115 = 105 VDC (only available with connector DG)
- 230 = 205 VDC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

### Coil Connector

- DG = EN 175301-803-B (IP65 Rated)\*\*
- DC DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*
- DN = Deutsch DT04-2P integral molded (IP69K Rated)\*

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570

Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

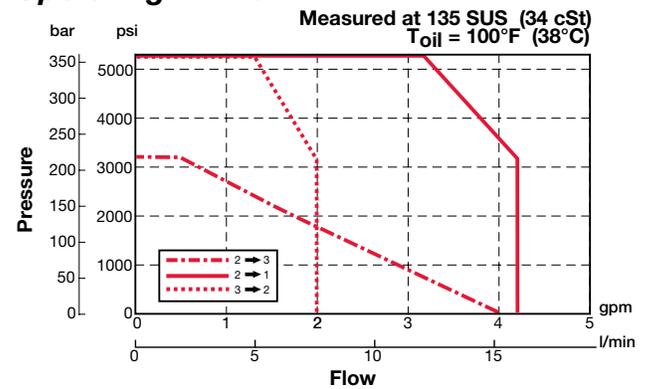
### Coil Model 32-1329

For other coil connector types consult factory

\*\*Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

## Operating Limits



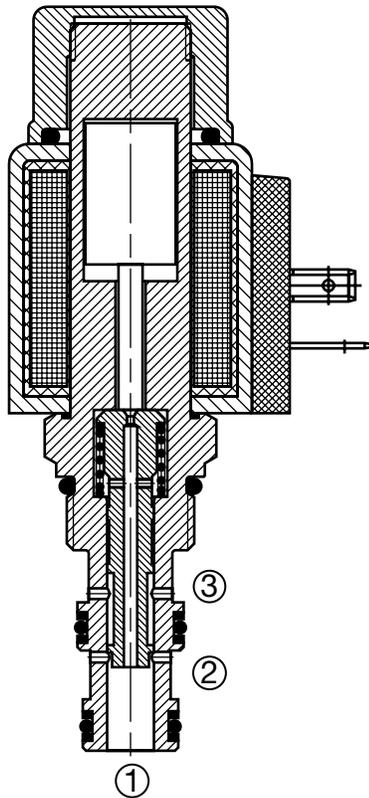
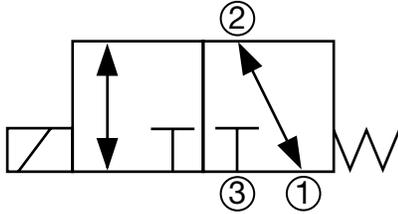
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH063-AS4 | 02600492 | Aluminum, anodized | 3500 psi (245 bar) | 0.37 lbs (0.17 kg) |
| FH063-SS4 | 02600493 | Steel, zinc plated | 6000 psi (420 bar) | 1.07 lbs (0.43 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08C-01 Spool Type, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08C allows flow from port 2 to port 1 bi-directionally, while blocking flow at port 3. When energized the spool shifts and opens flow from port 2 to port 3 bi-directionally, while blocking flow at port 1.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

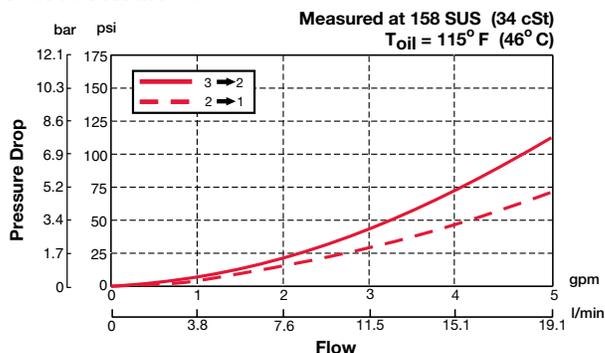
### Features

- Push type manual override button, protected by rubber cap

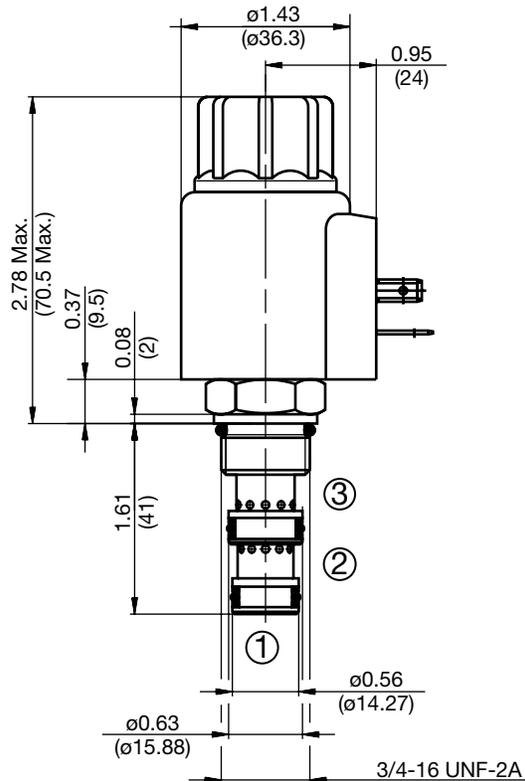
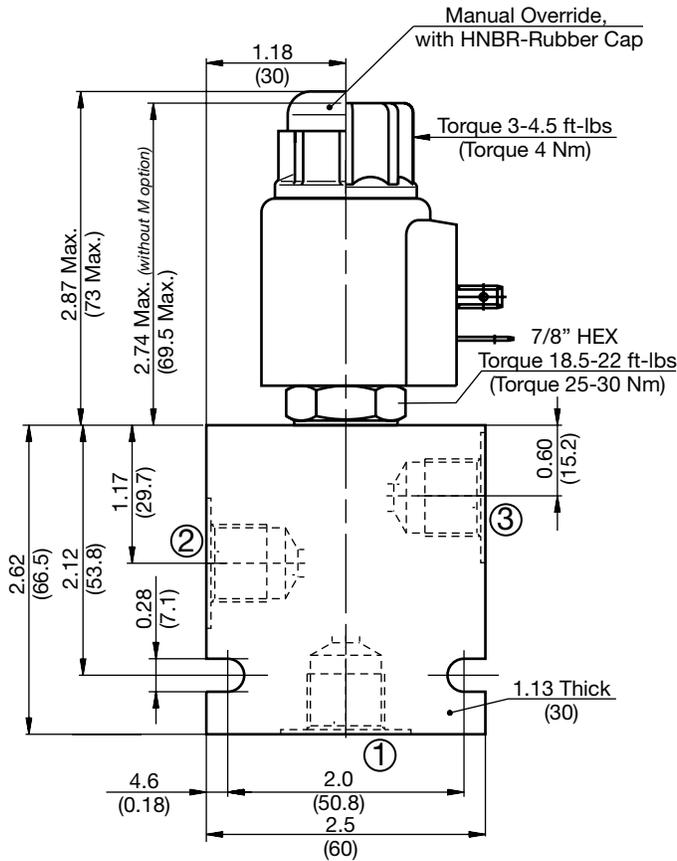
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS<br>(90 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight                   | 0.40 Lbs. (0.18 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03054795<br>Viton® P/N: 02591059  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08C-01 M-C-N-24 DN**

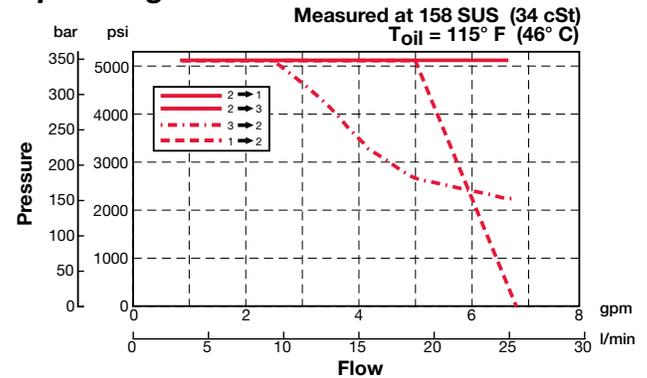
- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, push type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS6 = SAE-6 Ports, aluminum body  
 SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only  
 DC 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)  
 AC 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_  
 DC DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*  
 AC AG = EN 175301-803-A

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



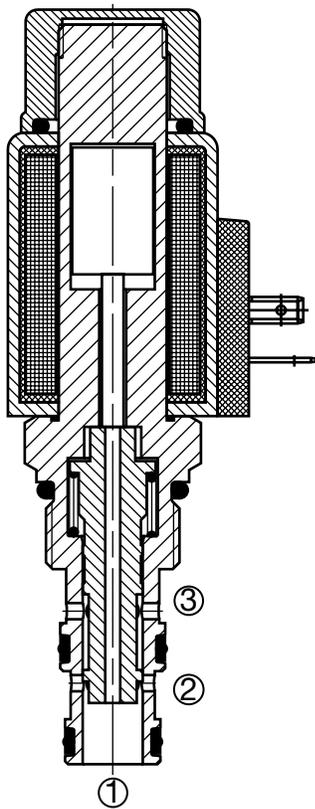
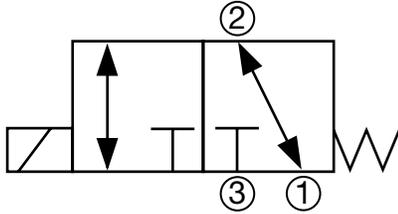
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lbs (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, zinc plated | 6000 psi (420 bar) | 1.7 lbs (0.77 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WK10C-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10C allows flow from port 2 to port 1 bi-directionally, while blocking flow at port 3. When energized the spool shifts and opens flow from port 2 to port 3 bi-directionally, while blocking flow at port 1.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

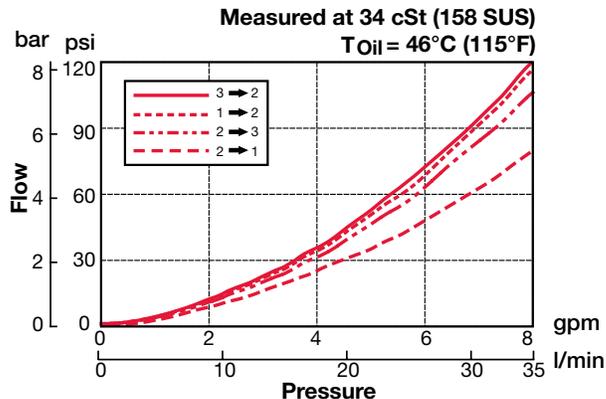
### Features

- Push type manual override button, protected by rubber cap

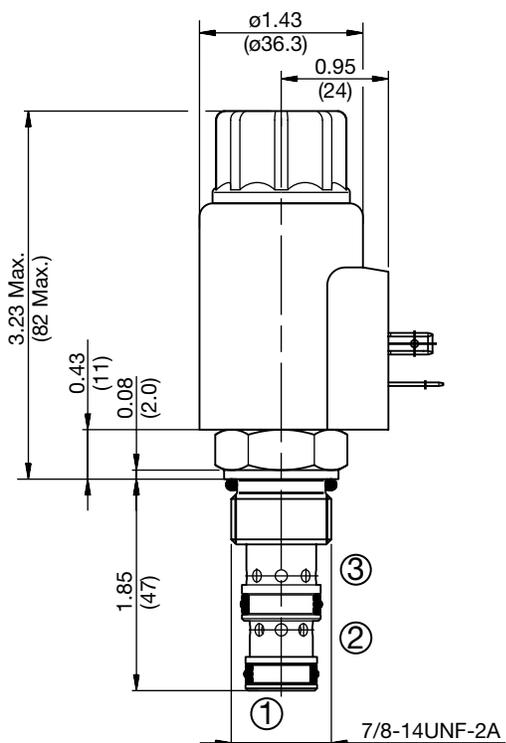
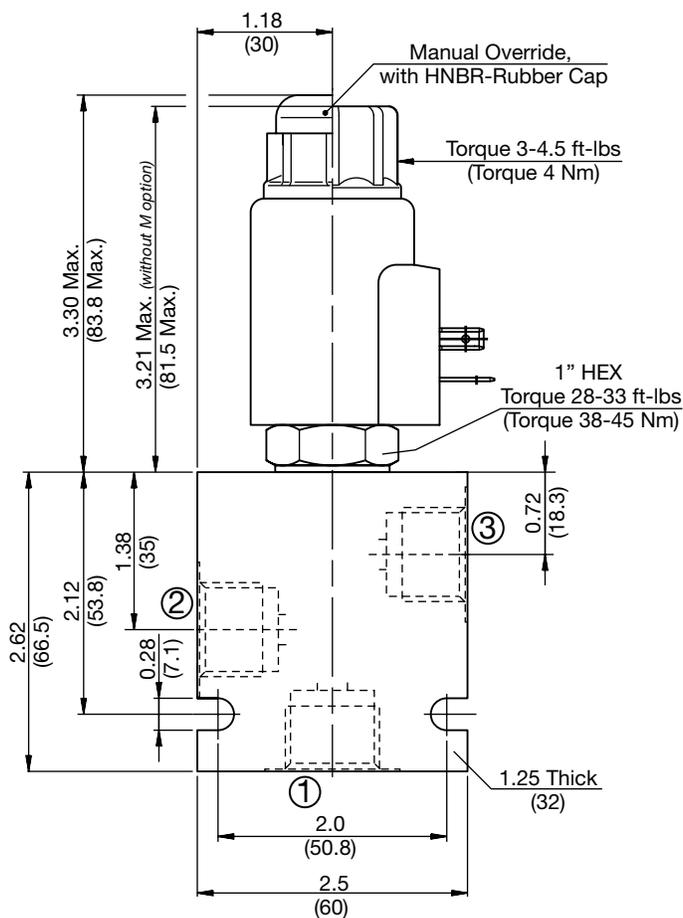
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm (32 l/min)  |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS<br>(120 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-3 <i>(see Line Bodies &amp; Cavities section)</i>  |
| Cavity Tools                       | Rougher: 02580092<br>Finisher: 02580093   |
| Cartridge Weight                   | 0.52 Lbs. (0.24 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03071274<br>Viton® P/N: 03049443  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK10C-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

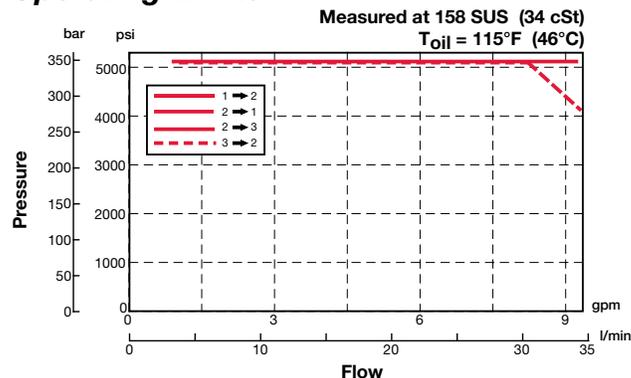
- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



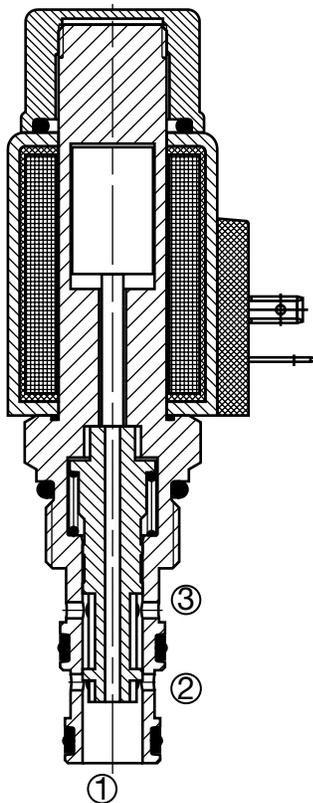
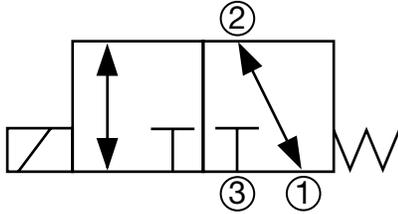
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH103-AS8 | 03038095 | Aluminum, anodized | 3500 psi (245 bar) | 0.60 lbs (0.27 kg) |
| FH103-SS8 | 03037704 | Steel, zinc plated | 6000 psi (420 bar) | 1.74 lbs (0.79 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10C-40 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve, optimized for low pressure drop applications.

### Operation

When de-energized the WK10C allows flow from port 2 to port 1 bi-directionally, while blocking flow at port 3. When energized the spool shifts and opens flow from port 2 to port 3 bi-directionally, while blocking flow at port 1.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

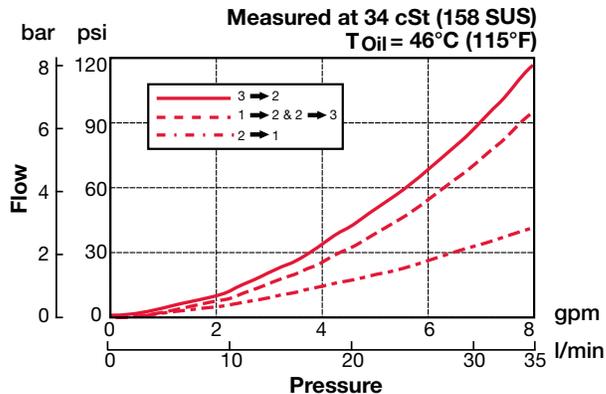
### Features

- Push type manual override button, protected by rubber cap

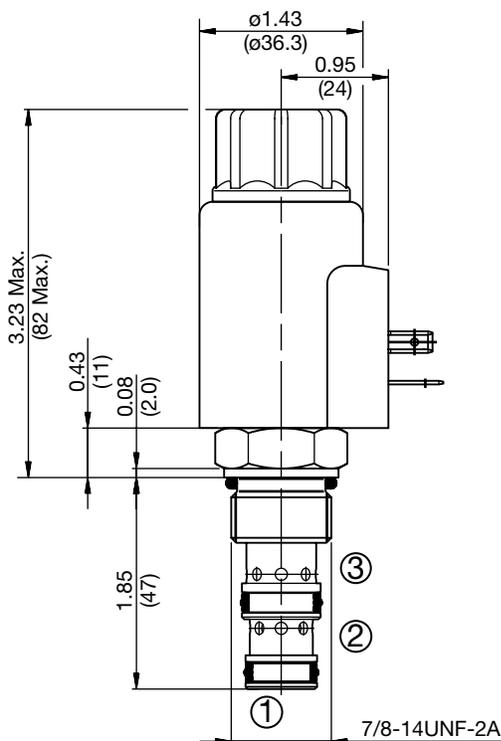
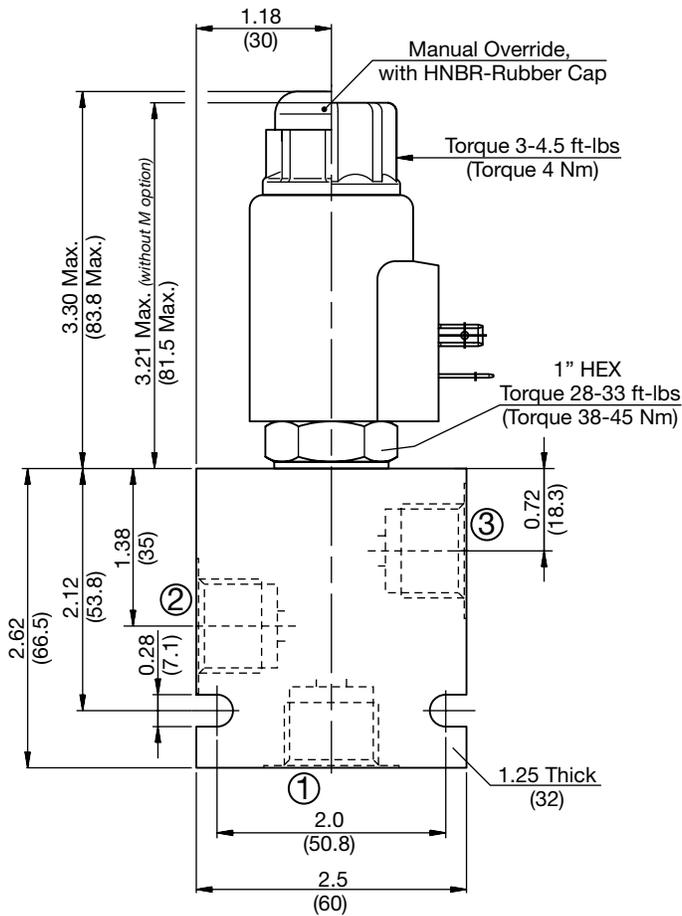
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm (32 l/min)  |
| Internal Leakage                   | 18 cu in./min. at 3600 psi and 158 SUS<br>(250 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580092<br>Finisher: 02580093   |
| Cartridge Weight                   | 0.52 Lbs. (0.24 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03071274<br>Viton® P/N: 03049443  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10C-40 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only

### DC

- 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)

### AC

- 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

### DC

- DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

### AC

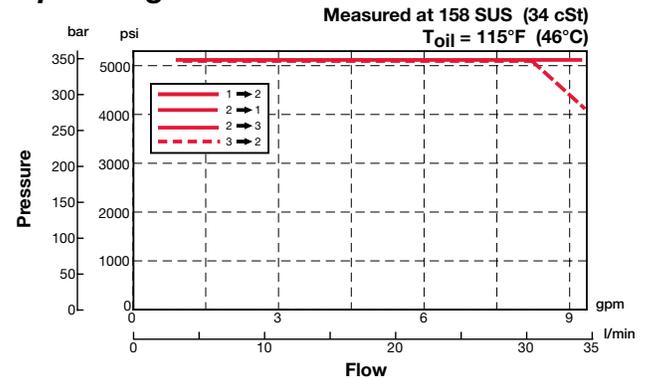
- AG = EN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



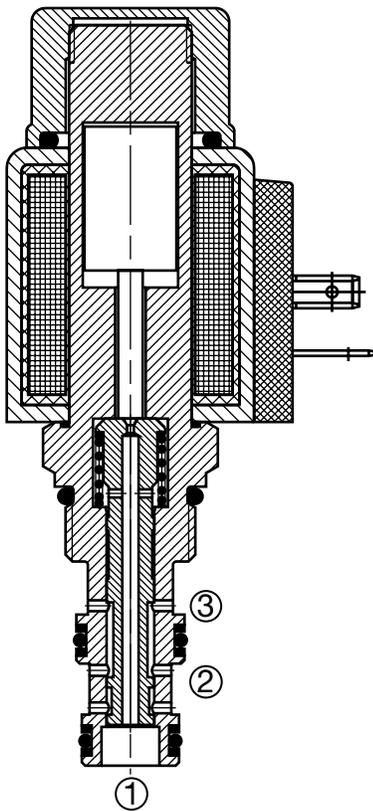
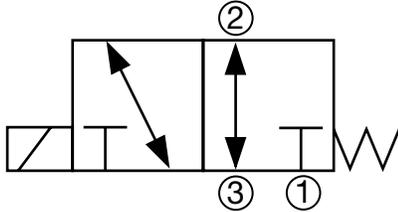
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH103-AS8 | 03038095 | Aluminum, anodized | 3500 psi (245 bar) | 0.60 lbs (0.27 kg) |
| FH103-SS8 | 03037704 | Steel, zinc plated | 6000 psi (420 bar) | 1.74 lbs (0.79 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08D-01 Spool Type, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08D allows flow from port 3 to port 2 bi-directionally, while blocking flow at port 1. When energized the spool shifts and opens flow from port 2 to port 1 bi-directionally, while blocking flow at port 3.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

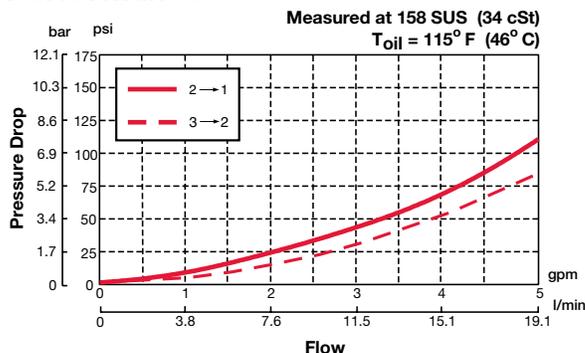
### Features

- Push type manual override button, protected by rubber cap

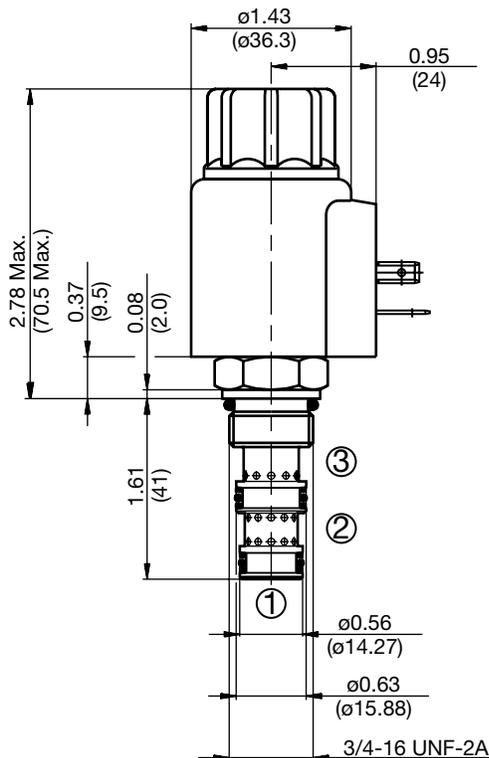
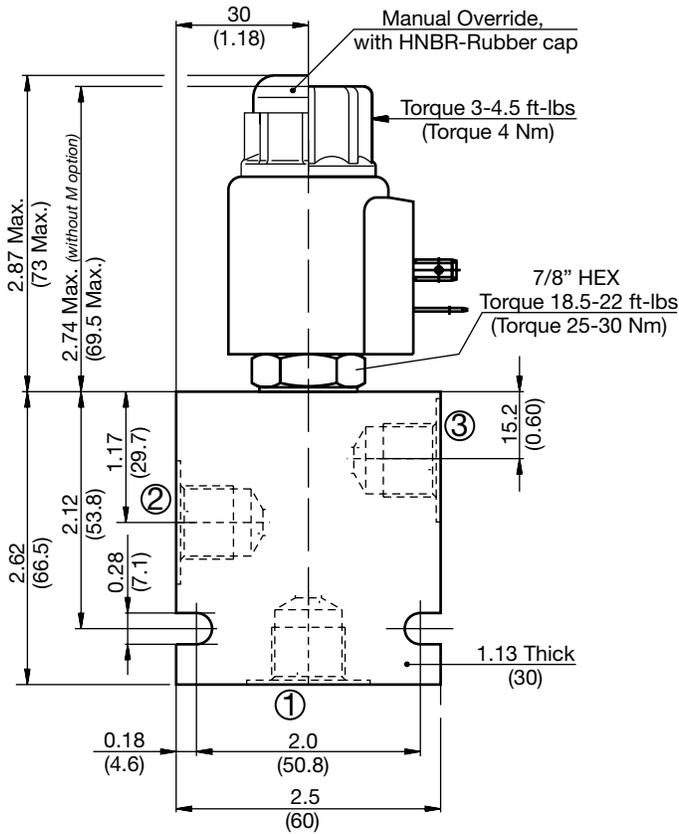
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS<br>(90 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight                   | 0.40 Lbs. (0.18 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03054795<br>Viton® P/N: 02591059  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08D-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

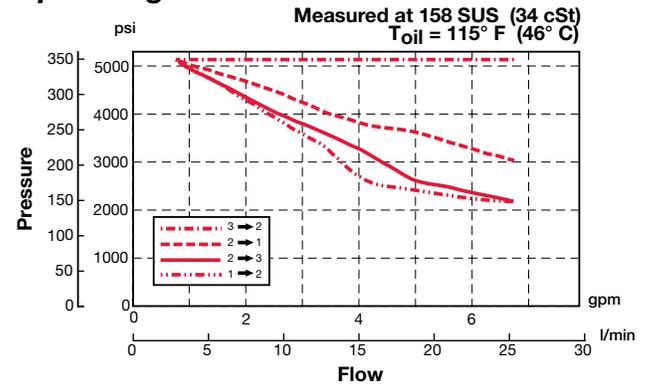
- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



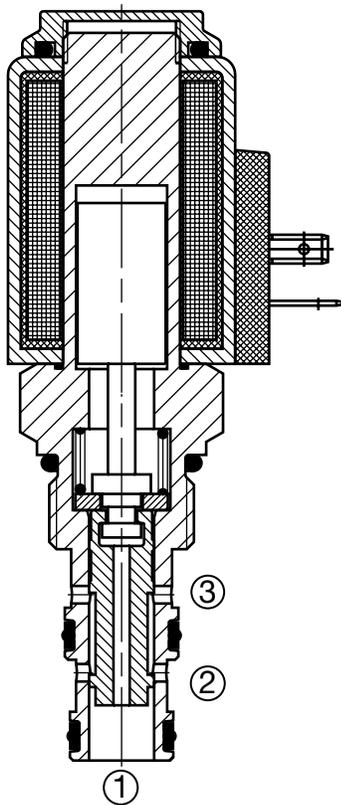
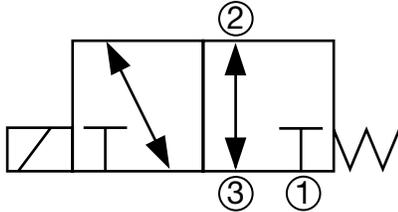
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lbs (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, zinc plated | 6000 psi (420 bar) | 1.7 lbs (0.77 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WK10D-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10D allows flow from port 2 to port 3 bi-directionally, while blocking flow at port 1. When energized the spool shifts and opens flow from port 2 to port 1 bi-directionally, while blocking flow at port 3.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

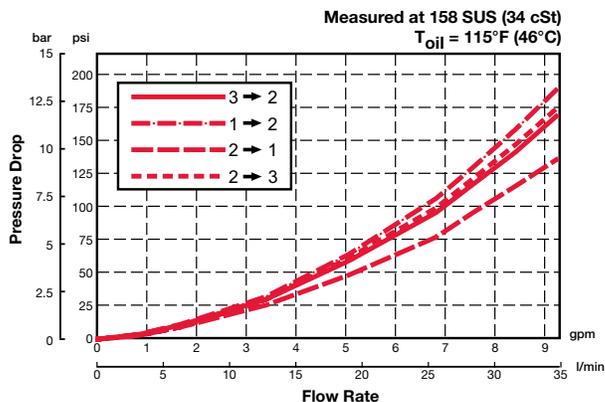
### Features

- Screw type manual override option

### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm (32 l/min)  |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS<br>(120 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580092<br>Finisher: 02580093   |
| Cartridge Weight                   | 0.52 Lbs. (0.24 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS103-N P/N: 03071274<br>Viton® FS103-V P/N: 03049443  |

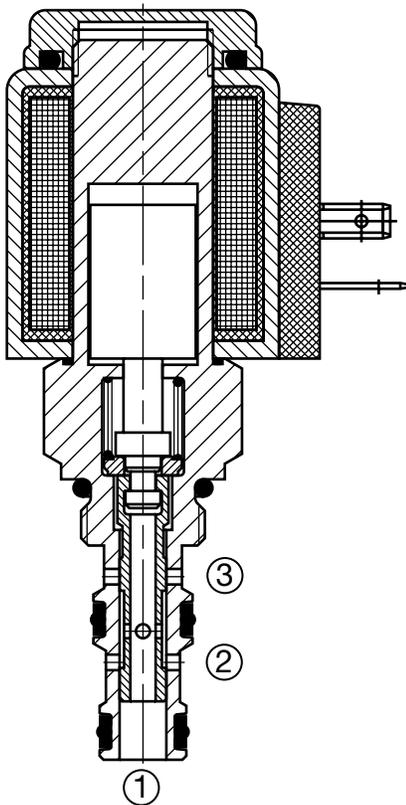
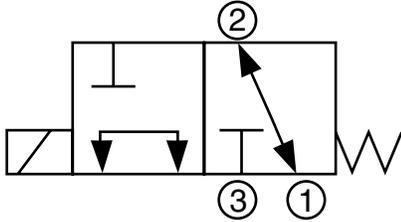
### Performance





## WK07L-01 Spool Type, Direct Acting Up to 2.5 gpm (10 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK07L allows flow from port 2 to port 1 bi-directionally, while blocking flow at port 3. When energized the spool shifts and opens flow from port 1 to port 3 bi-directionally, while blocking flow at port 2.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

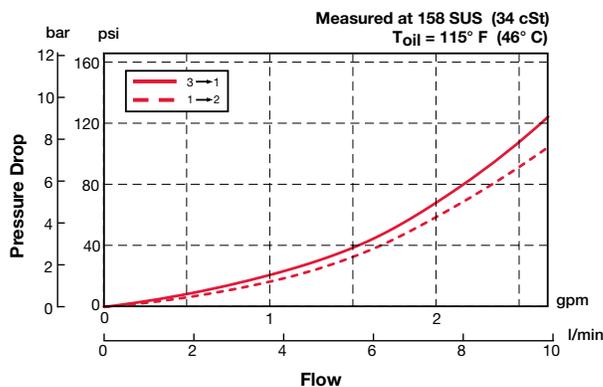
### Features

- One piece cartridge body design to maximize reliability
- Screw type manual override option

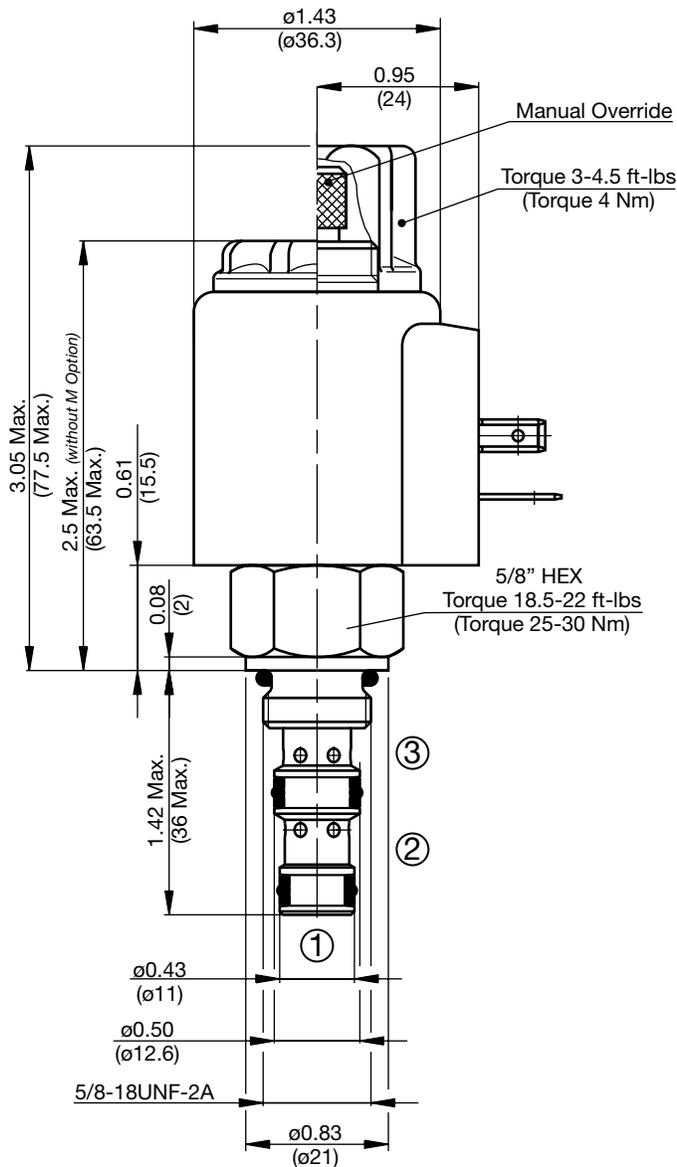
### Specifications

|                                    |   |         |                      |
|------------------------------------|---|---------|----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |         |                      |
| Nominal Flow                       | 2.5 gpm at 5000 psi (10 l/min at 350 bar)   |         |                      |
| Internal Leakage                   | 4.3 cu in/min. at 3000 psi and 158 SUS<br>(70 cc/min at 280 bar and 34 cSt)   |         |                      |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |         |                      |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |         |                      |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |         |                      |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |         |                      |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |         |                      |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |         |                      |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |         |                      |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |         |                      |
| Installation                       | No orientation restrictions   |         |                      |
| Cavity                             | FC07-3 <i>(contact HYDAC for information)</i>   |         |                      |
| Cavity Tools                       | Rougher:  | N/A     |                      |
|                                    | Finisher:   | N/A     |                      |
| Cartridge Weight                   | 0.33 Lbs. (0.15 kg)   |         |                      |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |         |                      |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |         |                      |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |         |                      |
| Seal Kits                          | Buna-N  | FS073-N | P/N: Consult factory |
|                                    | Viton®  | FS073-V | P/N: Consult factory |

### Performance



## Dimensions



## Model Code

**WK07L-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC
  - 12 = 12 VDC
  - 24 = 24 VDC
  - 36 = 36 VDC
  - 110 = 110 VDC (only available with connector DG)
- AC
  - 24 = 24 VAC
  - 115 = 115 VAC (AC coils internally full wave rectified)
  - 230 = 230 VAC

### Coil Connector

- DC
  - DG = EN 175301-803-A
  - DS = Dual spade (SAEJ858a)\*
  - DL = Leadwires (2) - 18" long (46 cm)\*
  - DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
  - DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
  - DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

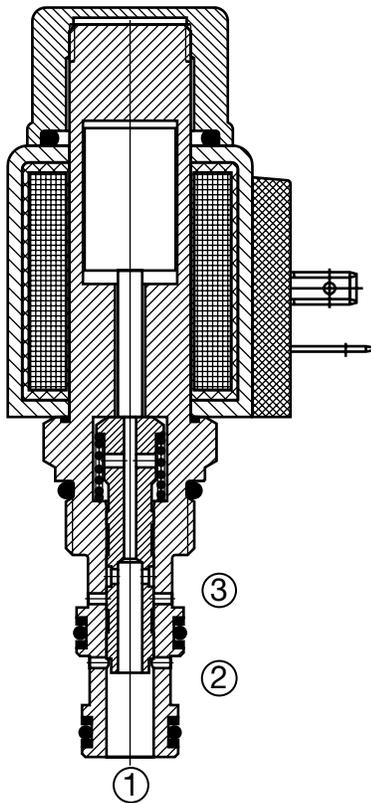
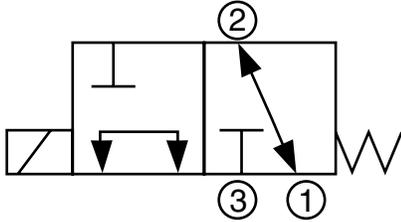
### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## WK08L-01 Spool Type, Direct Acting Up to 4.5 gpm (17 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08L allows flow from port 2 to port 1 bi-directionally, while blocking flow at port 3. When energized the spool shifts and opens flow from port 1 to port 3 bi-directionally, while blocking flow at port 2.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

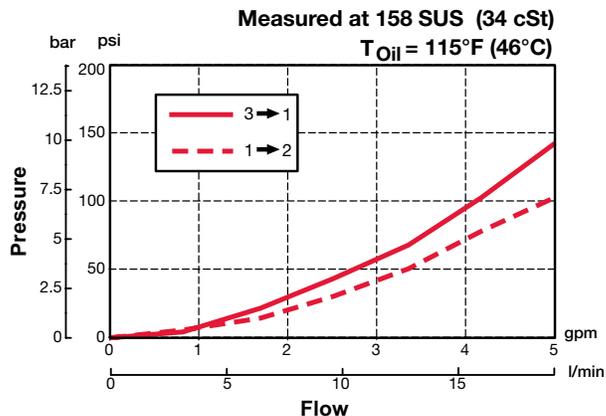
### Features

- Push type manual override button, protected by rubber cap

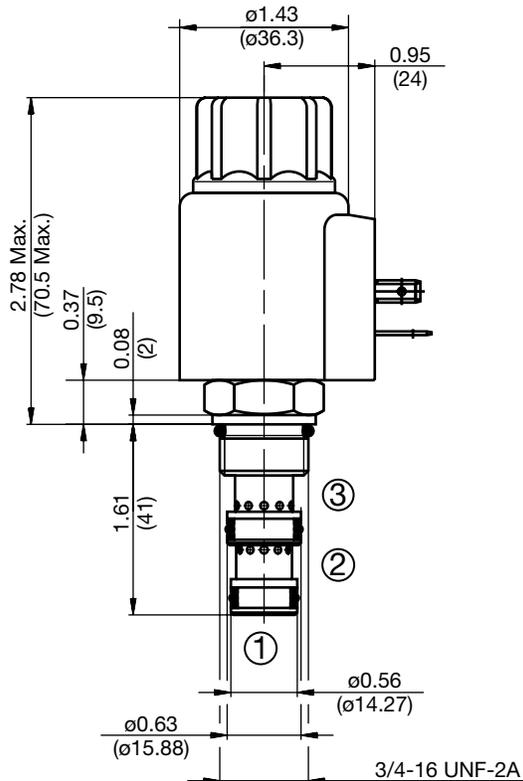
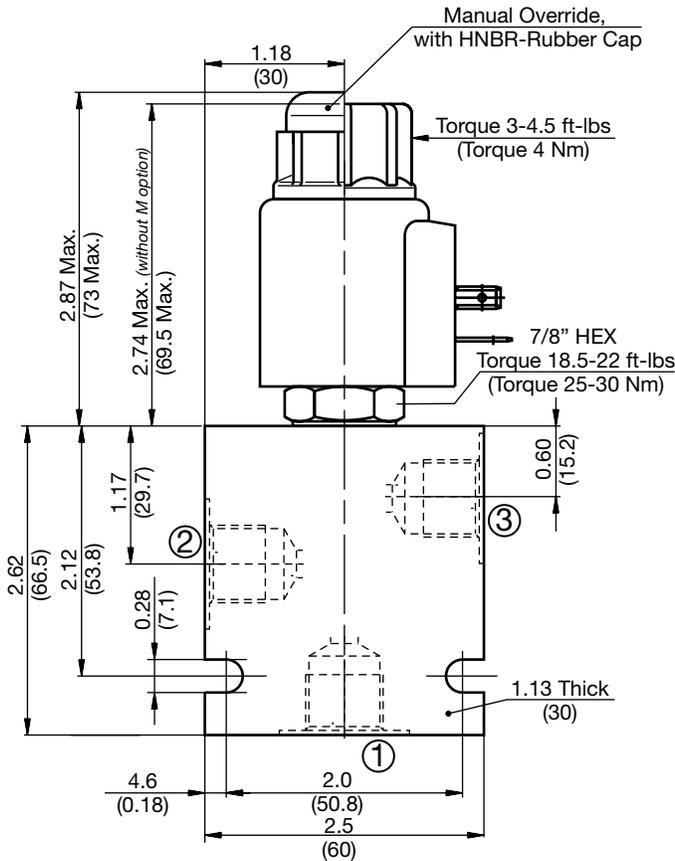
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 4.5 gpm (17 l/min)  |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS<br>(90 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight                   | 0.40 Lbs. (0.18 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03054795<br>Viton® P/N: 02591059  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08L-01 M-C-N-24 DN**

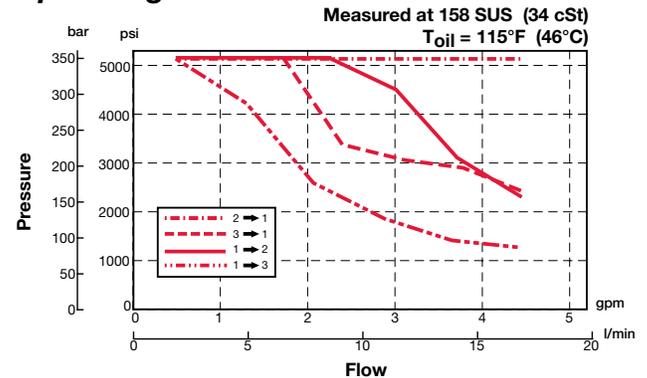
- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, push type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS6 = SAE-6 Ports, aluminum body  
 SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only  
 DC 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)  
 AC 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_  
 DC DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*  
 AC AG = EN 175301-803-A

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



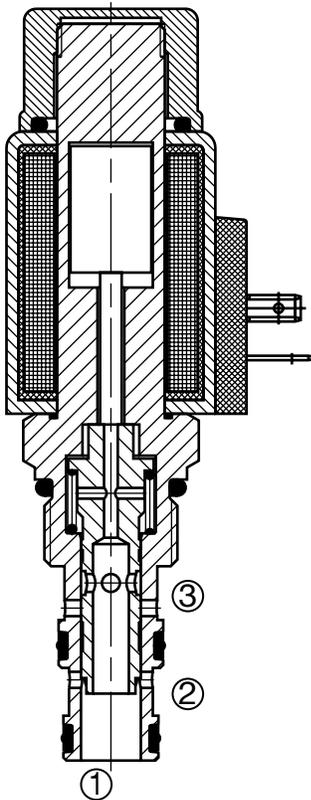
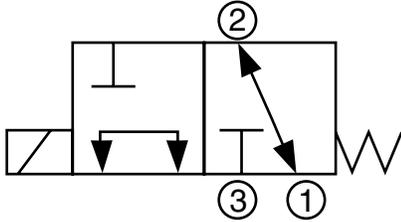
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lbs (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, zinc plated | 6000 psi (420 bar) | 1.7 lbs (0.77 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## WK10L-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 3-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10L allows flow from port 2 to port 1 bi-directionally, while blocking flow at port 3. When energized the spool shifts and opens flow from port 1 to port 3 bi-directionally, while blocking flow at port 2.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

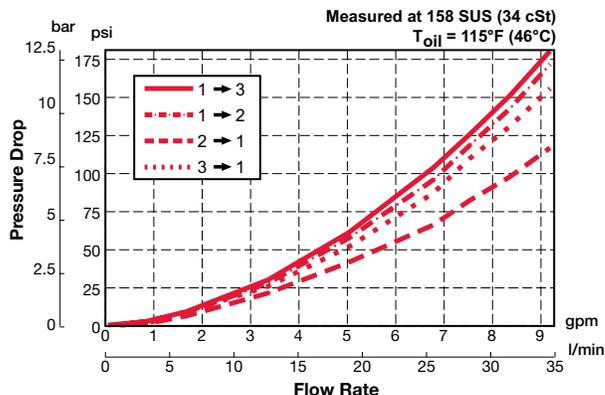
### Features

- One piece cartridge body design to maximize reliability
- Push type manual override button, protected by rubber cap

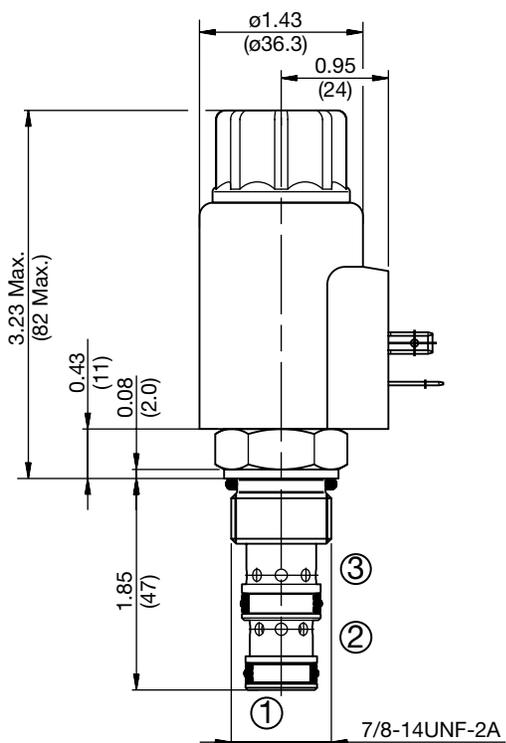
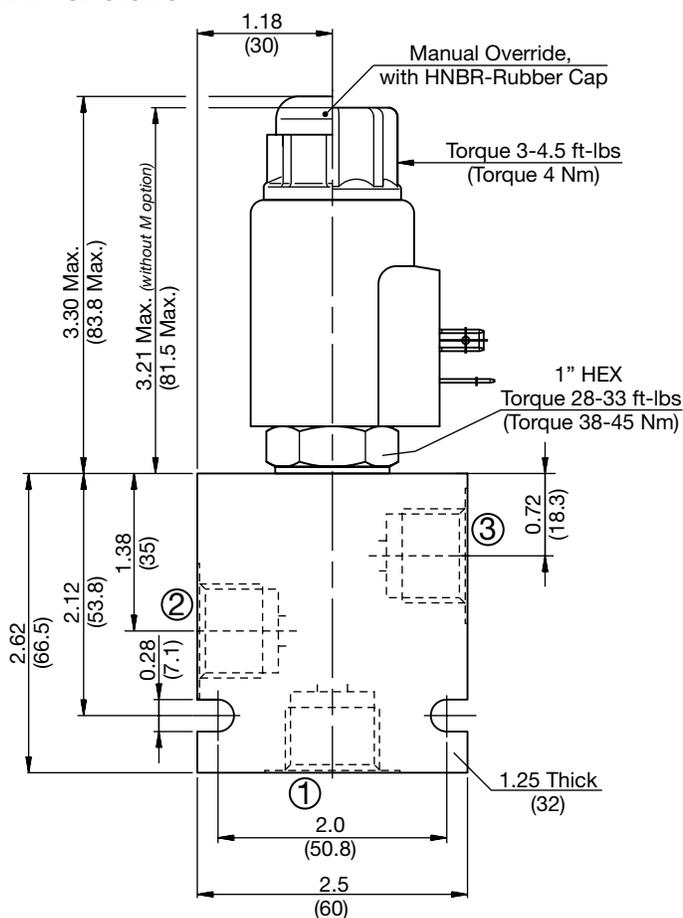
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm (32 l/min)  |
| Internal Leakage                   | 6 cu in/min. at 3600 psi and 158 SUS<br>(100 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580092<br>Finisher: 02580093   |
| Cartridge Weight                   | 0.52 Lbs. (0.24 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS103-N P/N: 03071274<br>Viton® FS103-V P/N: 03049443  |

### Performance

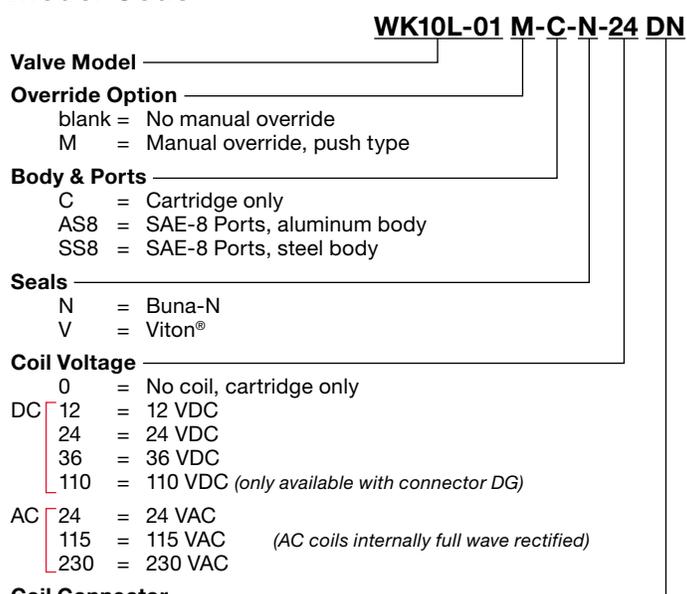


## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

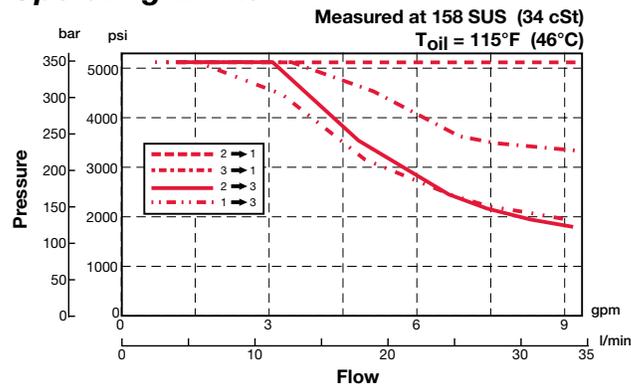


## Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



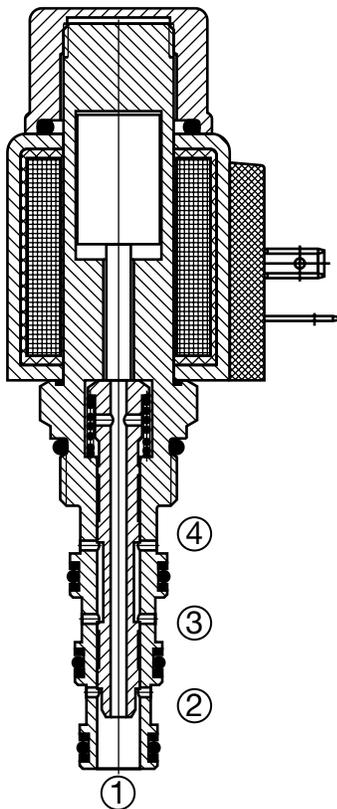
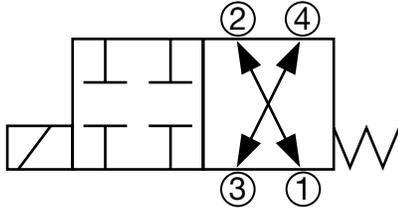
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH103-AS8 | 03038095 | Aluminum, anodized | 3500 psi (245 bar) | 0.60 lbs (0.27 kg) |
| FH103-SS8 | 03037704 | Steel, zinc plated | 6000 psi (420 bar) | 1.74 lbs (0.79 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08A-01 Spool Type, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08A allows flow from port 2 to port 1 bi-directionally and port 3 to port 4 bi-directionally. When energized the spool shifts and blocks all ports.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

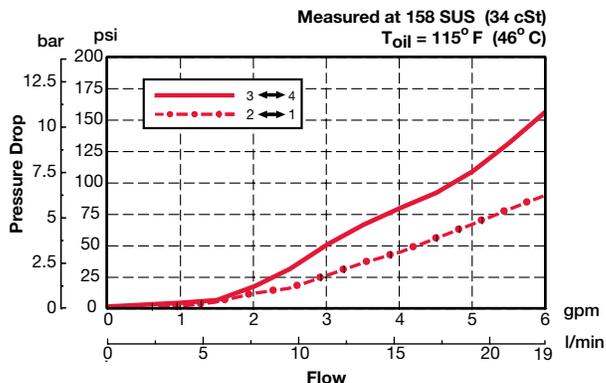
### Features

- Push type manual override button, protected by rubber cap

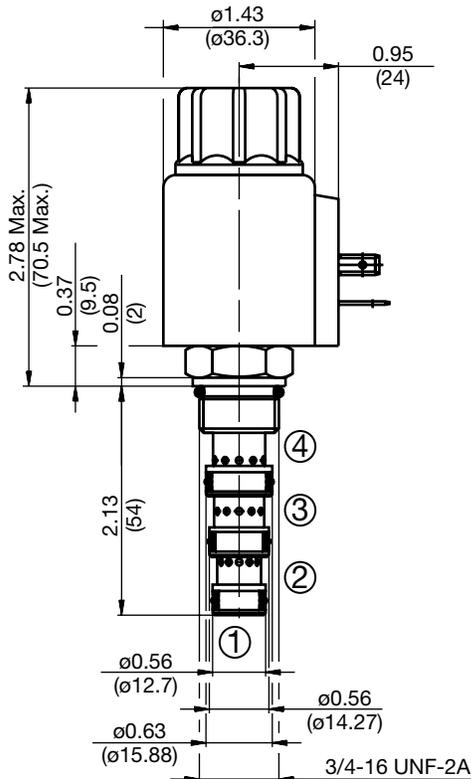
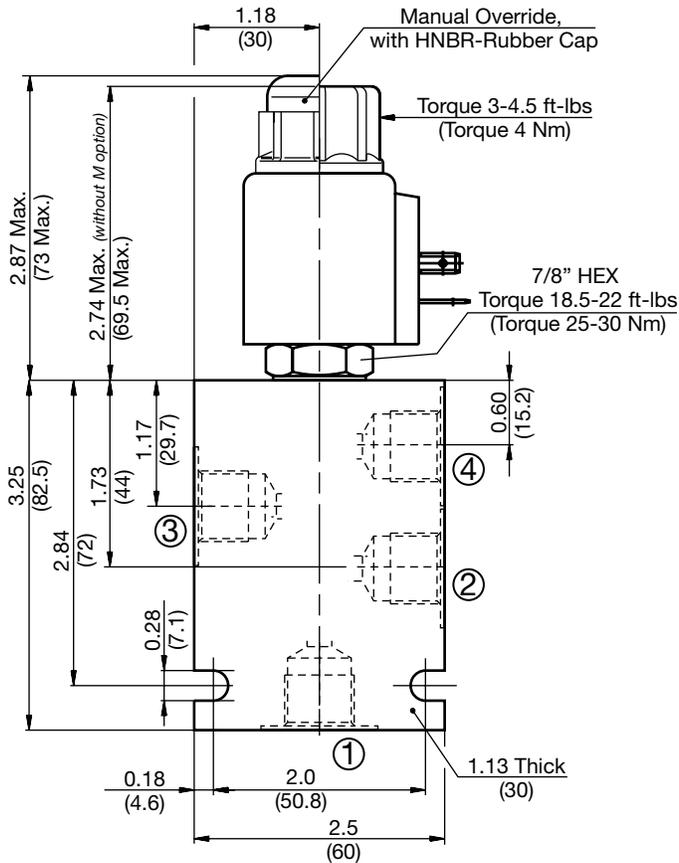
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm at 3600 psi (19 l/min at 250 bar)<br>2 gpm at 5000 psi (7.6 l/min at 350 bar)                                     |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS<br>(90 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight                   | 0.42 Lbs. (0.19 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS084-N P/N: 03071272<br>Viton® FS084-V P/N: 03071273  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08A-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

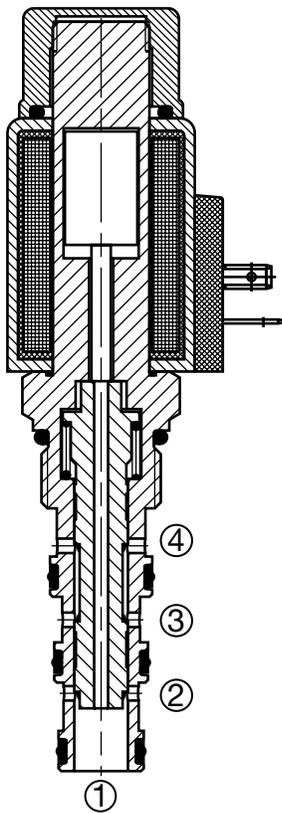
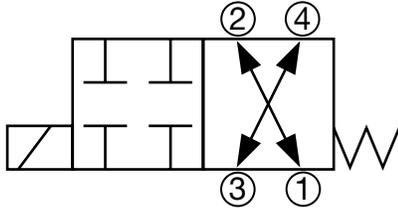
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10A-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10A allows flow from port 3 to port 4 bi-directionally and port 2 to port 1 bi-directionally. When energized the spool shifts and blocks flow at all ports.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

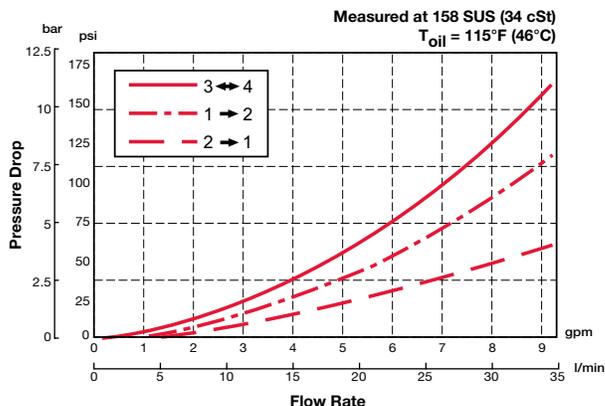
### Features

- Push type manual override button, protected by rubber cap

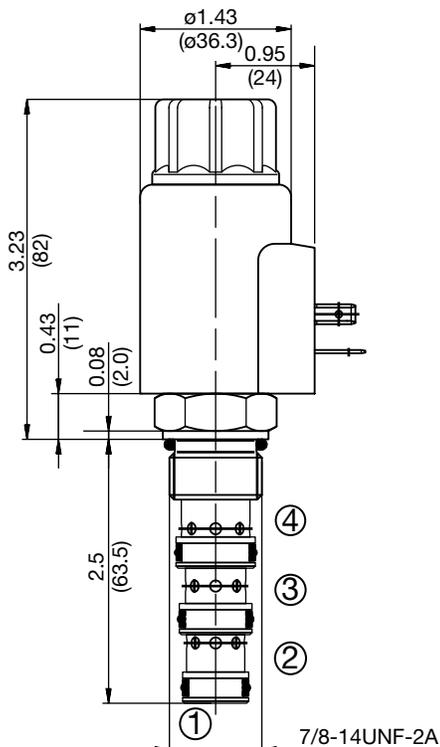
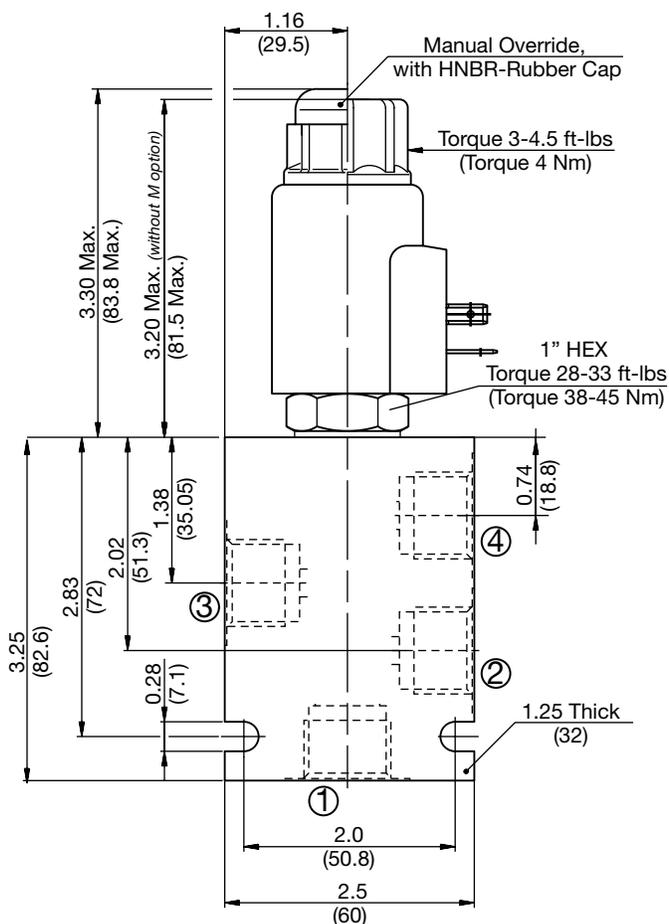
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS (120 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.55 Lbs. (0.25 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03051912<br>Viton® P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10A-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

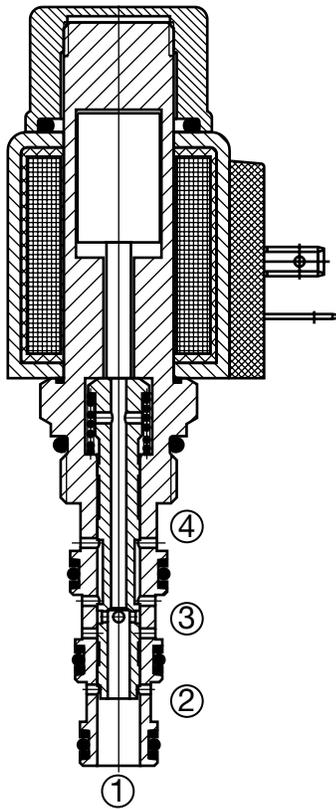
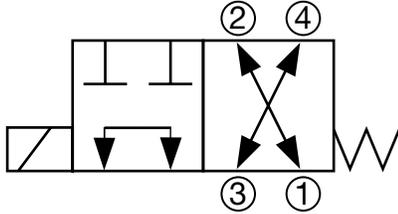
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08K-01 Spool Type, Direct Acting Up to 4 gpm (15 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08K allows flow from port 2 to port 1 bi-directionally and port 3 to port 4 bi-directionally. When energized the spool shifts and allows flow from port 1 to port 3 bi-directionally, ports 2 and 4 are blocked.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

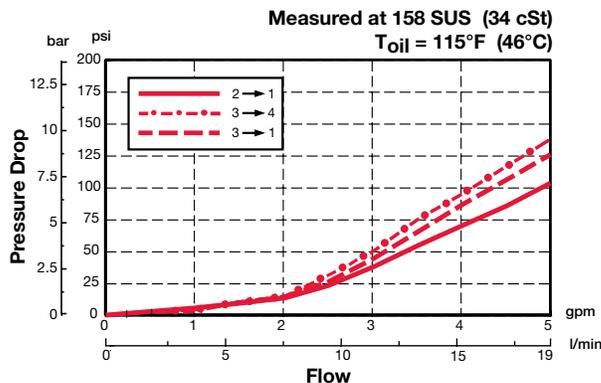
### Features

- Push type manual override button, protected by rubber cap

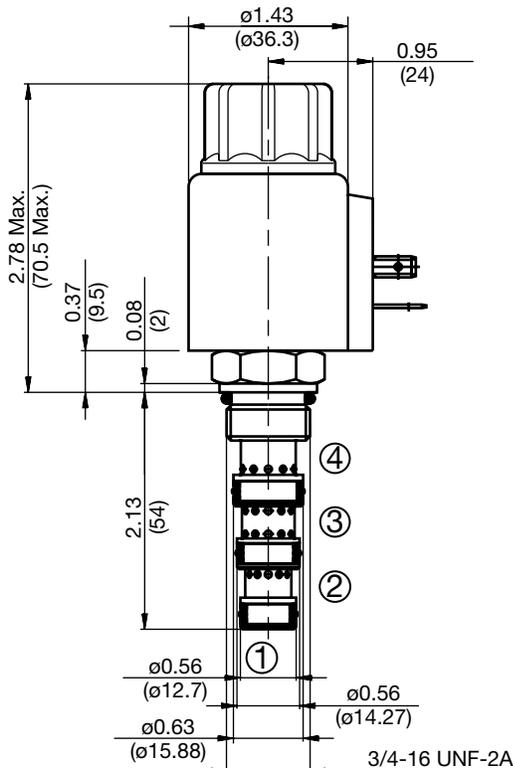
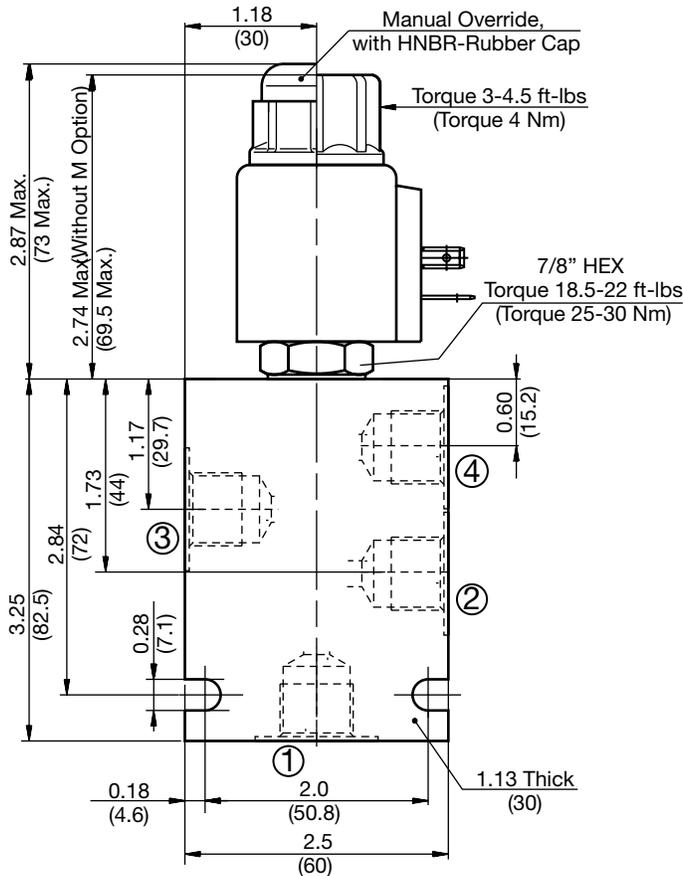
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 4 gpm at 3600 psi (15 l/min at 250 bar)<br>2 gpm at 5000 psi (7.6 l/min at 350 bar)                                     |
| Internal Leakage                   | 5 cu in/min. at 3600 psi and 158 SUS<br>(82 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight                   | 0.42 Lbs. (0.19 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03071272<br>Viton® P/N: 03071273  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08K-01 M-C-N-24 DN**

Valve Model

Override Option

- blank = No manual override
- M = Manual override, push type

Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

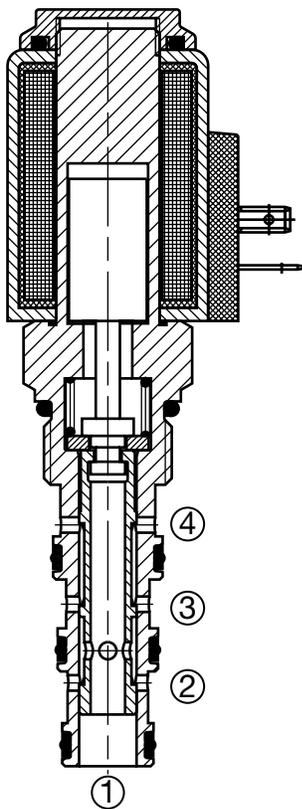
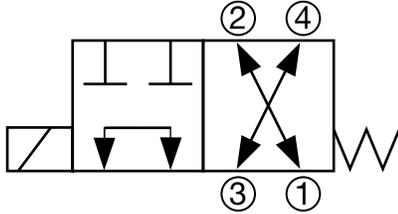
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10K-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10K allows flow from port 1 to port 2 bi-directionally and from port 3 to port 4 bi-directionally. When energized the spool shifts and allows flow from port 1 to port 3 bi-directionally, ports 2 and 4 are blocked.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

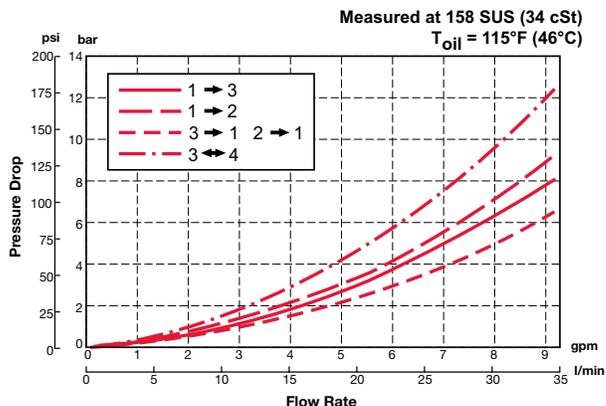
### Features

- Screw type manual override

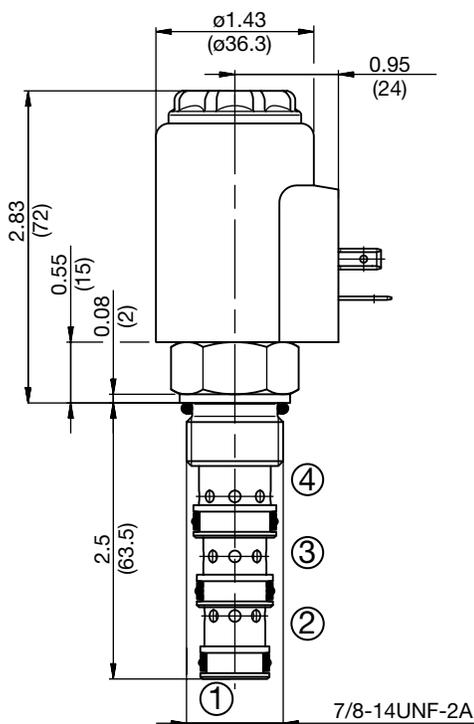
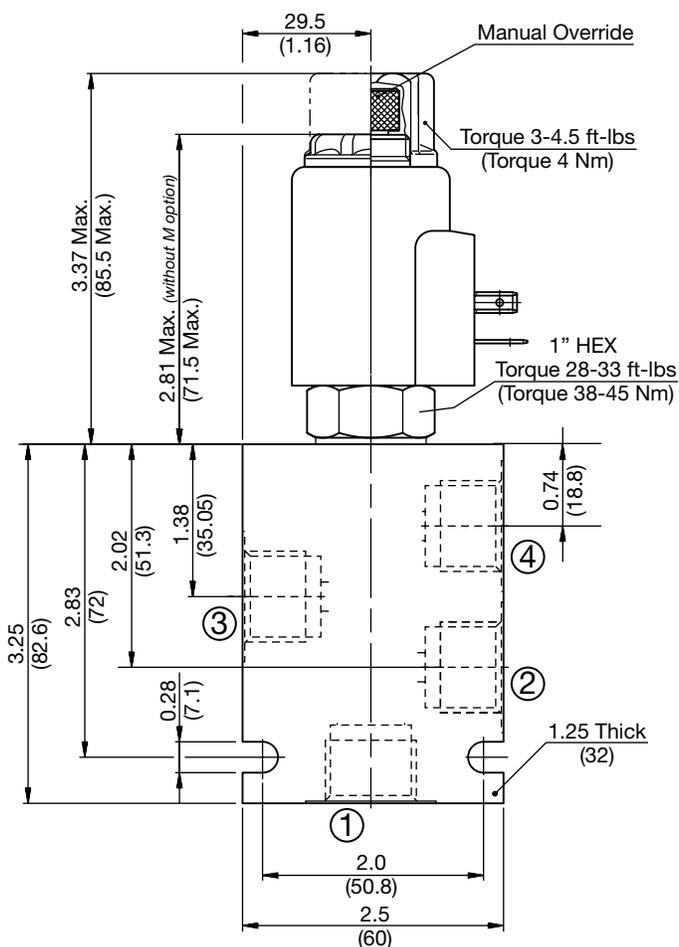
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS<br>(120 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.55 Lbs. (0.25 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10K-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

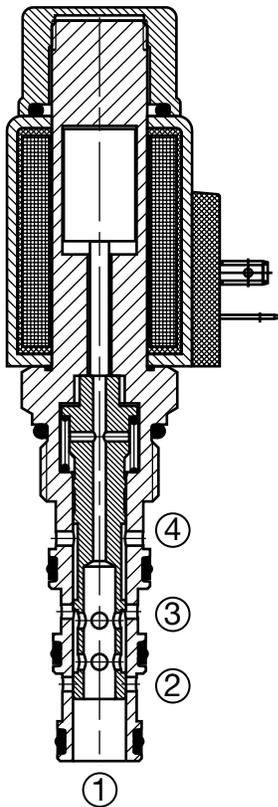
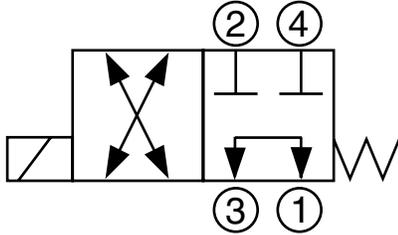
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10N-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10N allows flow from port 1 to port 3 bi-directionally, ports 2 and 4 are blocked. When energized the spool shifts and allows flow from port 1 to port 2 bi-directionally and from port 3 to port 4 bi-directionally.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

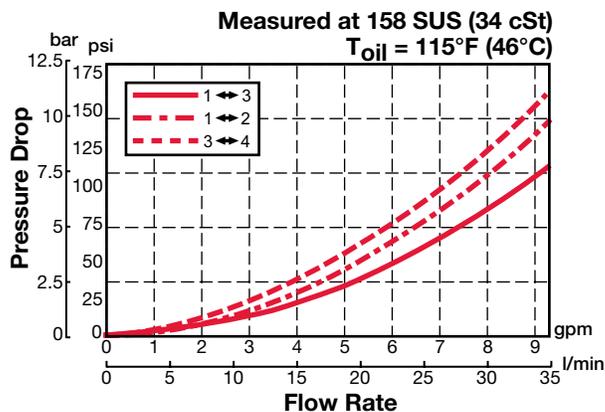
### Features

- Push type manual override button, protected by rubber cap

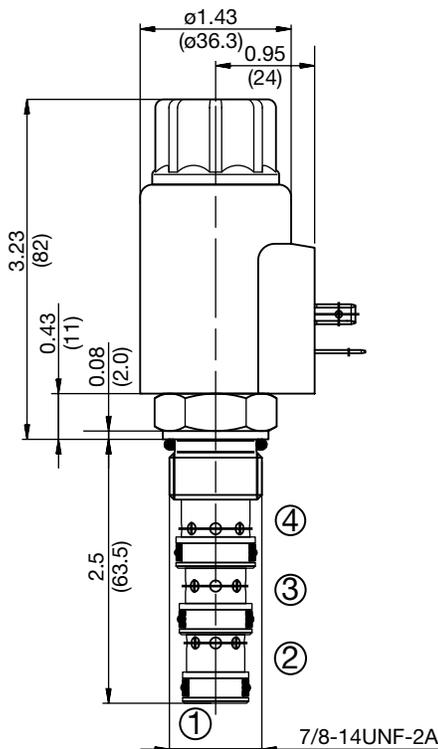
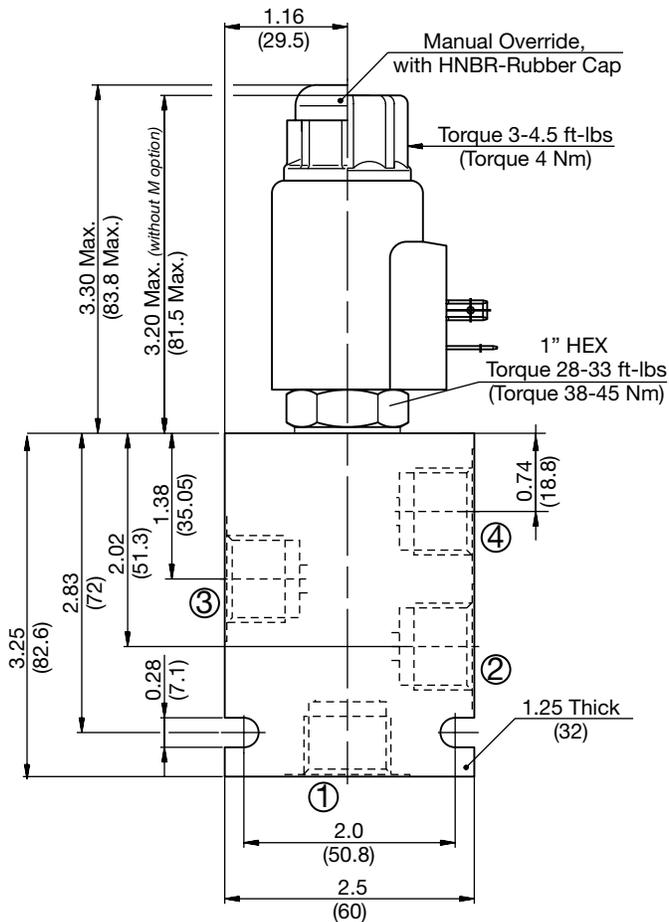
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS (120 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.55 Lbs. (0.25 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03051912<br>Viton® P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10N-01 M-C-N-24 DN**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, push type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS8 = SAE-8 Ports, aluminum body  
 SS8 = SAE-8 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only  
 DC 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)  
 AC 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_  
 DC DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*  
 AC AG = EN 175301-803-A

## Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

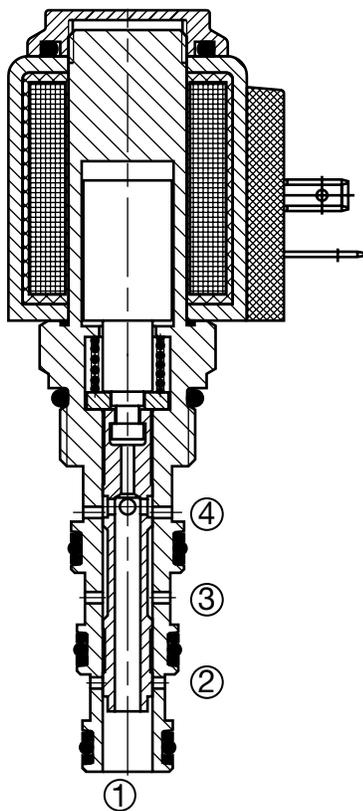
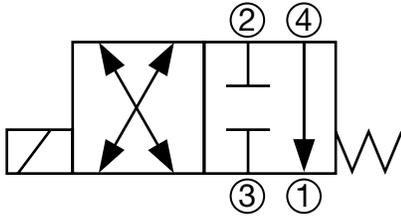
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, Zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08P-01 Spool Type, Direct Acting Up to 4 gpm (15 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08P blocks flow at ports 2 and 3, flow is allowed from port 1 to port 4 bi-directionally. When energized the spool shifts and allows flow from port 1 to port 2 bi-directionally and from port 3 to port 4 bi-directionally.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

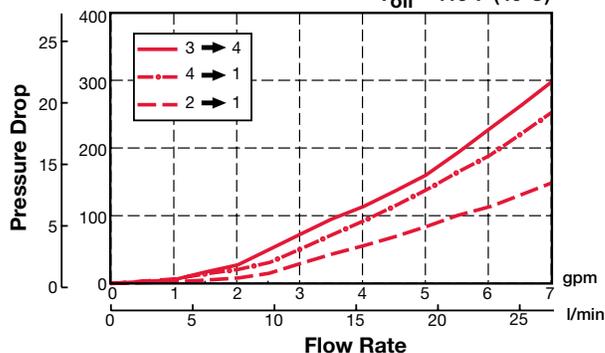
- Screw type manual override

### Specifications

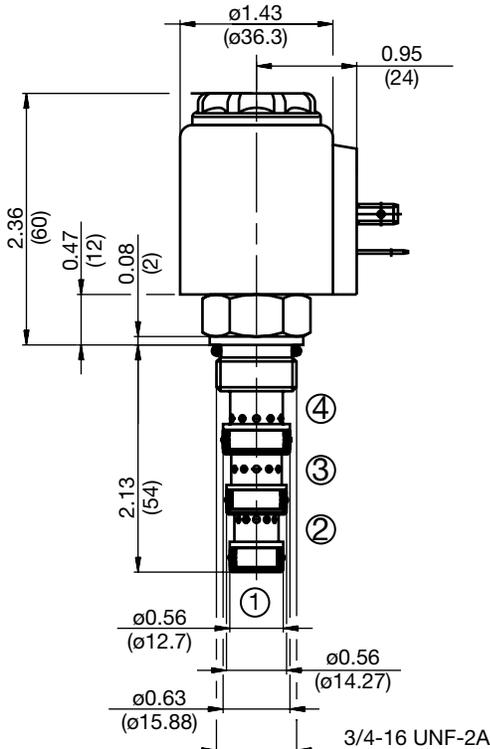
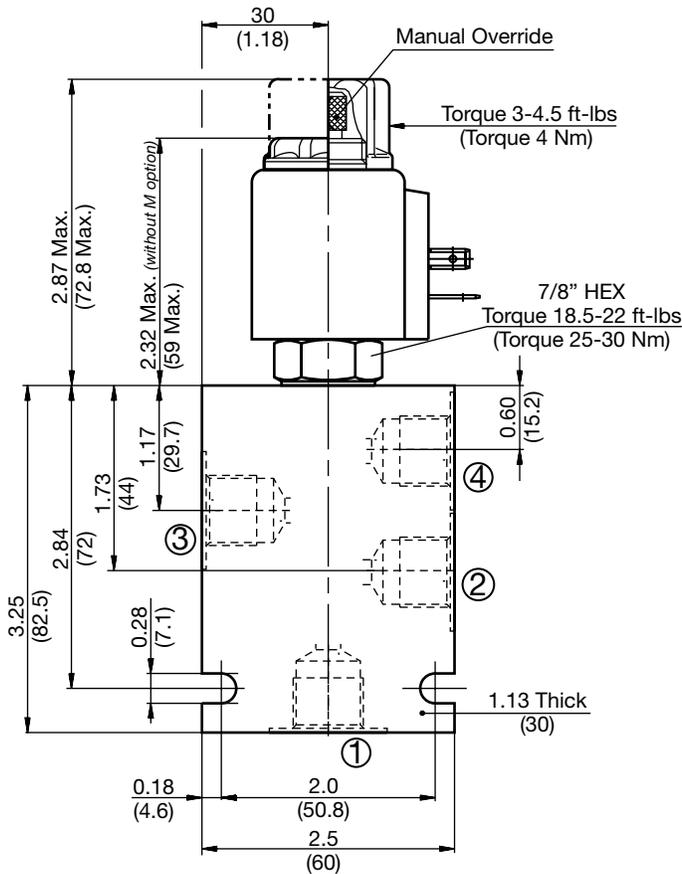
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 4 gpm at 3600 psi (15 l/min at 250 bar)<br>2 gpm at 5000 psi (7.6 l/min at 350 bar)                                     |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS<br>(90 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115%<br>of nominal voltage   |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with<br>lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight                   | 0.42 Lbs. (0.19 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS084-N P/N: 03071272<br>Viton® FS084-V P/N: 03071273  |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^{\circ}\text{F} (46^{\circ}\text{C})$



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08P-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- DC 24 = 24 VDC
- DC 36 = 36 VDC
- DC 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- AC 115 = 115 VAC (AC coils internally full wave rectified)
- AC 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DC DS = Dual spade (SAEJ858a)\*
- DC DL = Leadwires (2) - 18" long (46 cm)\*
- DC DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DC DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DC DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

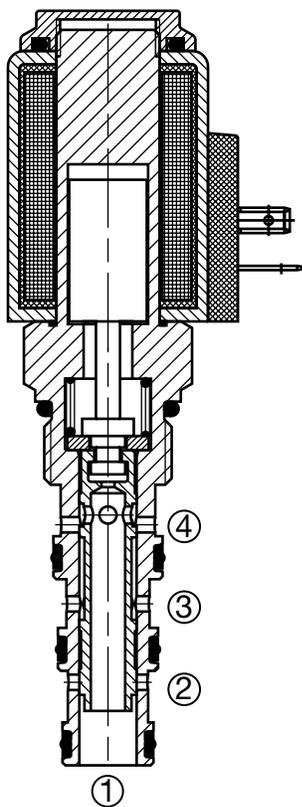
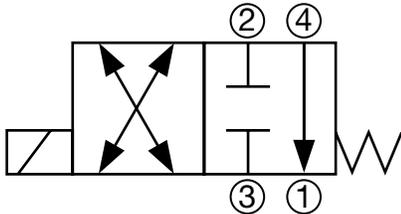
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10P-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10P blocks flow at ports 2 and 3, flow is allowed from port 1 to port 4 bi-directionally. When energized the spool shifts and allows flow from port 1 to port 2 bi-directionally and from port 3 to port 4 bi-directionally.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

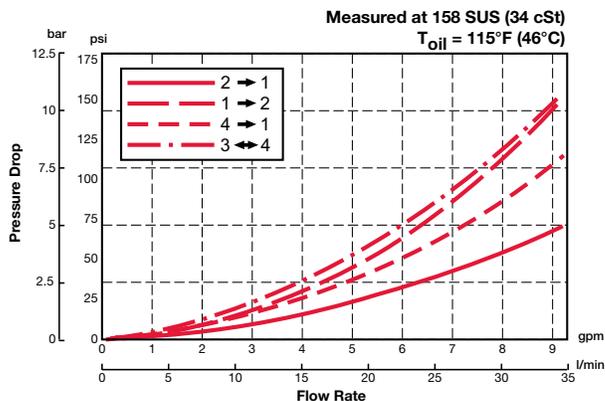
### Features

- Screw type manual override

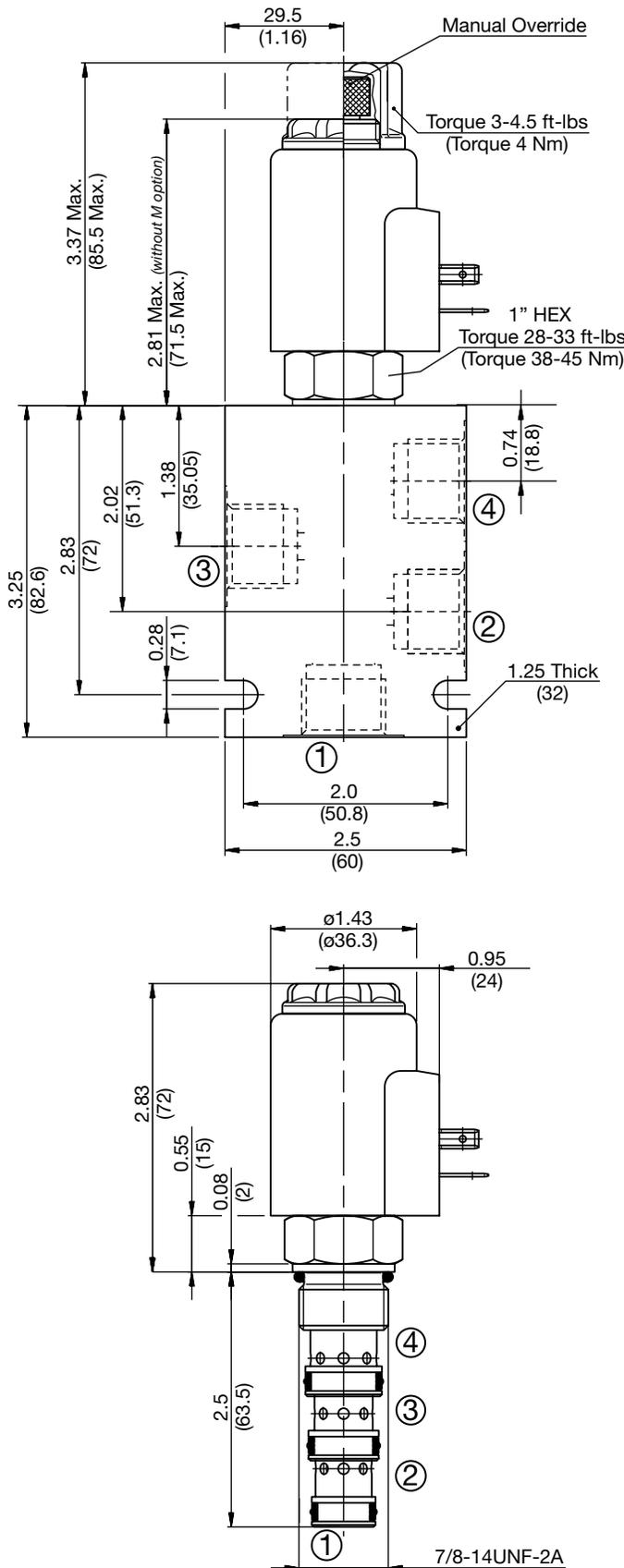
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS<br>(120 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.55 Lbs. (0.25 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10P-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

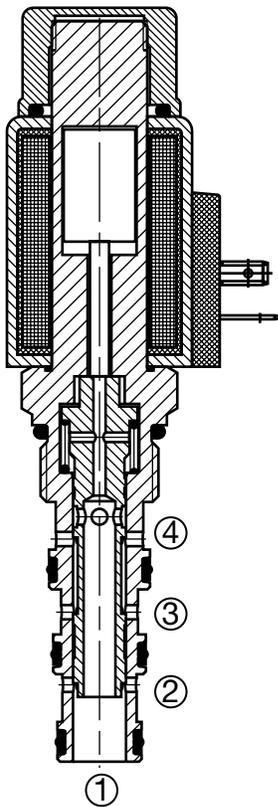
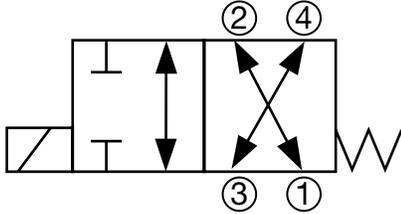
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08R-01 Spool Type, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08R allows flow from port 2 to port 1 bi-directionally and port 3 to port 4 bi-directionally. When energized the spool shifts and allows bi-directional flow from port 1 to port 4, ports 2 and 3 are blocked.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

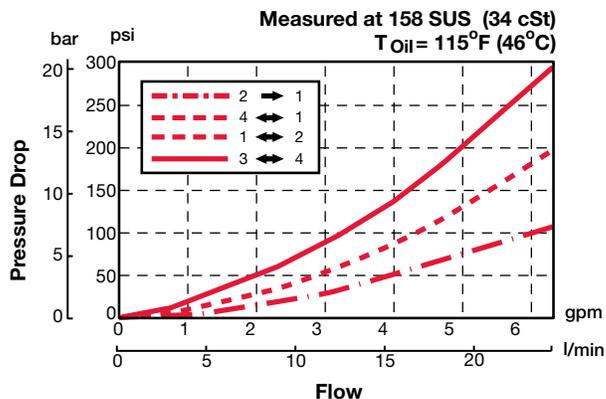
### Features

- Push type manual override button, protected by rubber cap

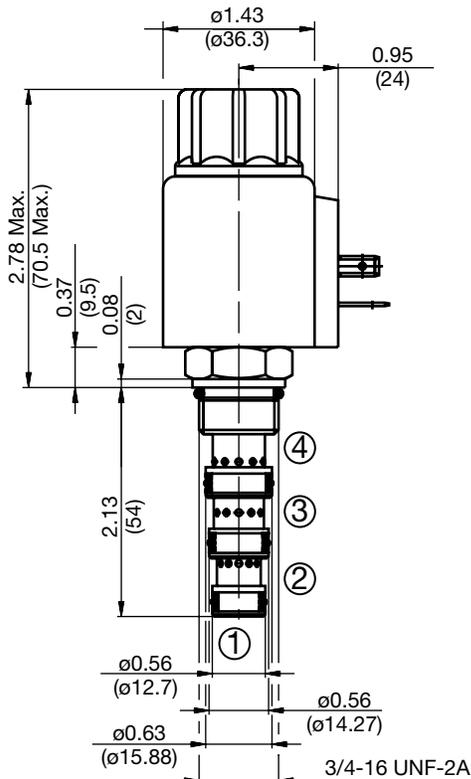
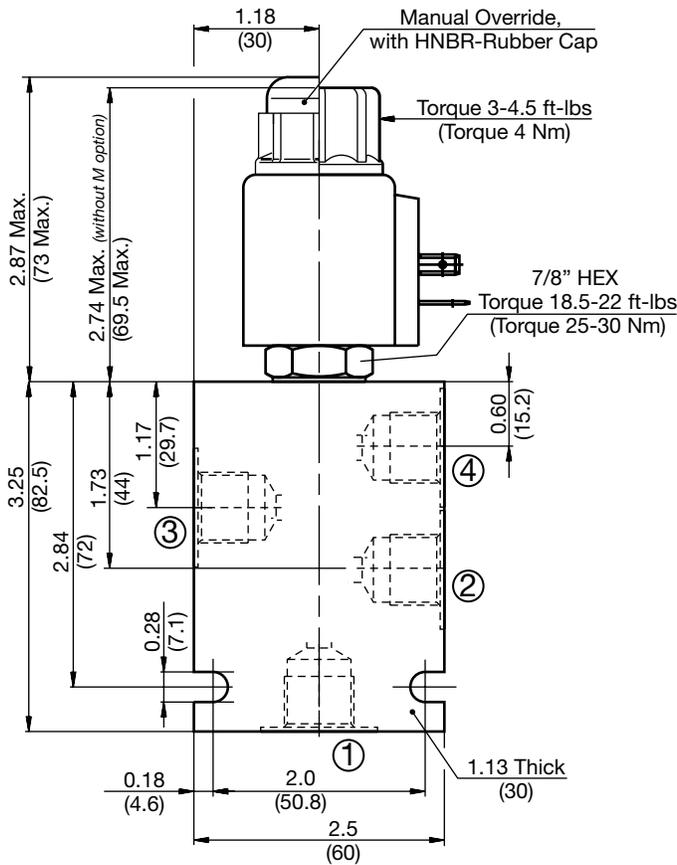
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm at 3600 psi (19 l/min at 250 bar)   |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS (90 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight                   | 0.42 Lbs. (0.19 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits                          | Buna-N P/N: 03071272<br>Viton® P/N: 03071273  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK08R-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

0 = No coil, cartridge only

- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)

### AC

- 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

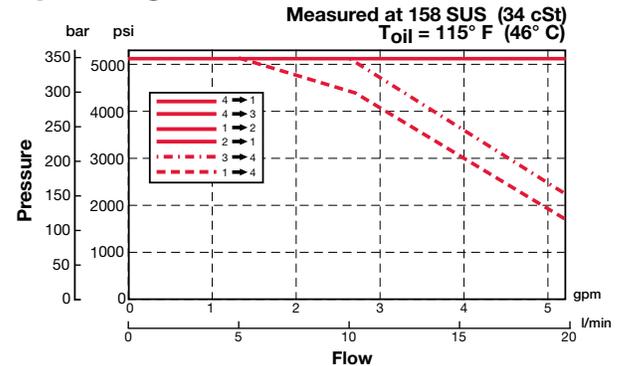
AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



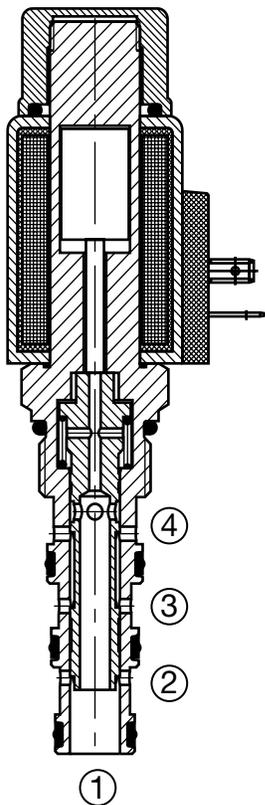
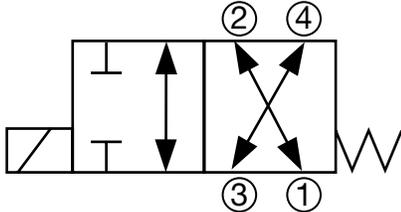
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10R-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10R allows flow from port 3 to port 4 bi-directionally and port 2 to port 1 bi-directionally. When energized the spool shifts and blocks flow at ports 2 and 3, allowing the flow from port 1 to port 4 bi-directionally.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation

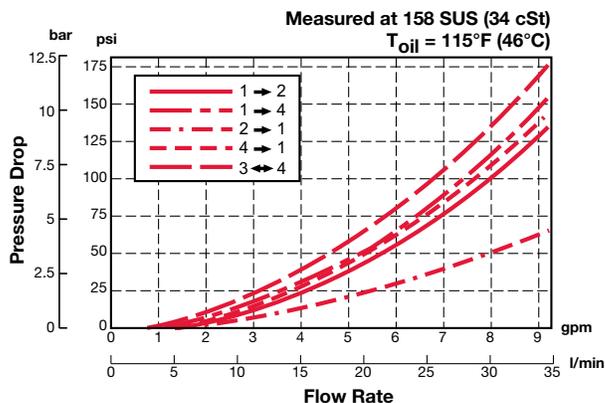
### Features

- Push type manual override button, protected by rubber cap

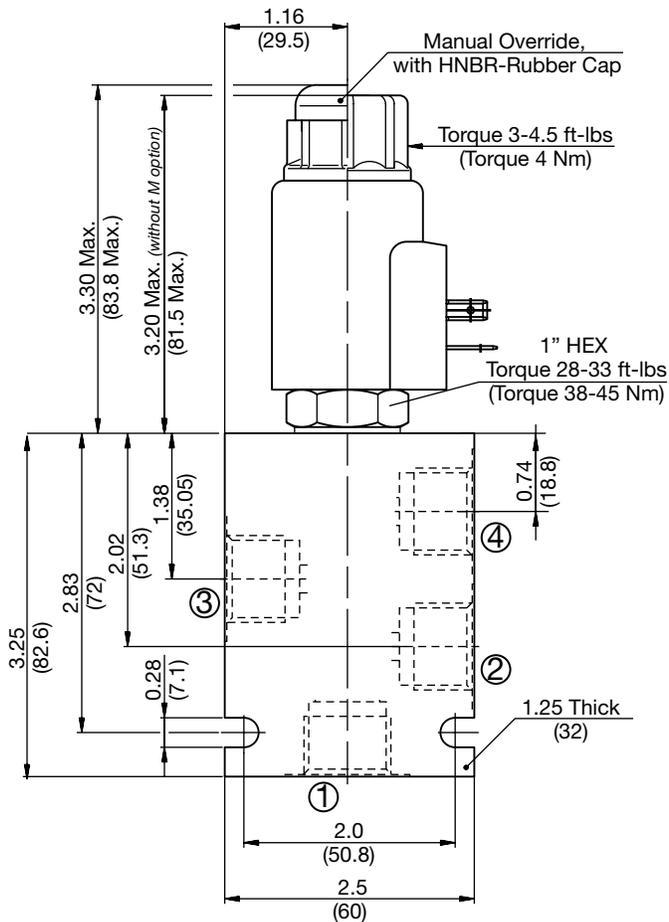
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 6 cu in/min. at 3600 psi and 158 SUS (100 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.55 Lbs. (0.25 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03051912<br>Viton® P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10R-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC
  - 12 = 12 VDC
  - 24 = 24 VDC
  - 36 = 36 VDC
  - 110 = 110 VDC (only available with connector DG)
- AC
  - 24 = 24 VAC
  - 115 = 115 VAC (AC coils internally full wave rectified)
  - 230 = 230 VAC

### Coil Connector

- DC
  - DG = EN 175301-803-A
  - DS = Dual spade (SAEJ858a)\*
  - DL = Leadwires (2) - 18" long (46 cm)\*
  - DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
  - DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
  - DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

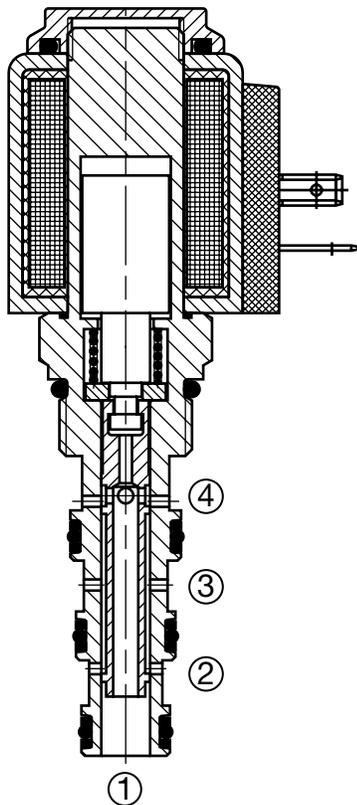
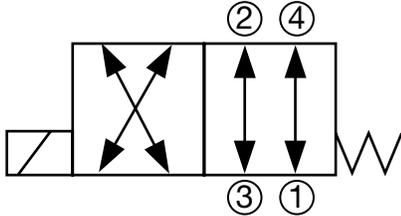
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08X-01 Spool Type, Direct Acting Up to 4.5 gpm (17 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08X allows flow from port 2 to port 3 bi-directionally and port 1 to port 4 bi-directionally. When energized the spool shifts and allows flow from port 3 to port 4 bi-directionally and from port 2 to port 1 bi-directionally.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

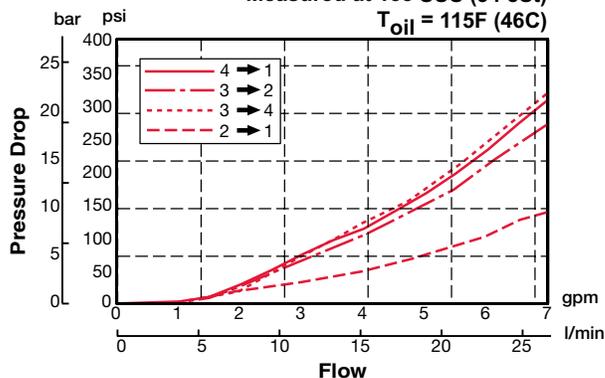
- Screw type manual override

### Specifications

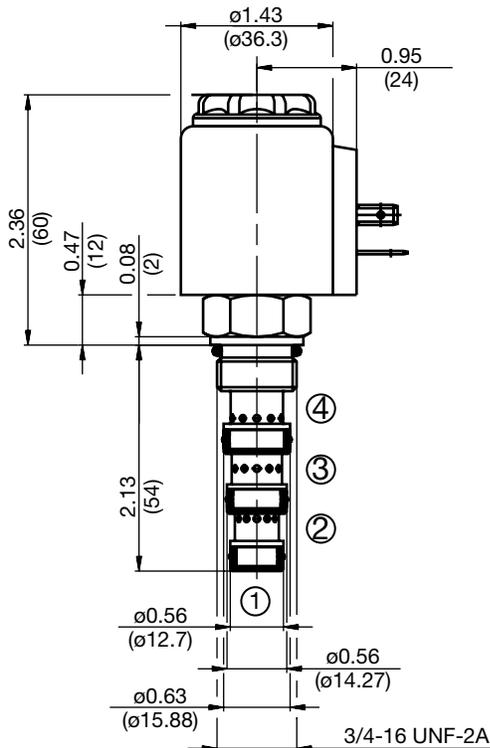
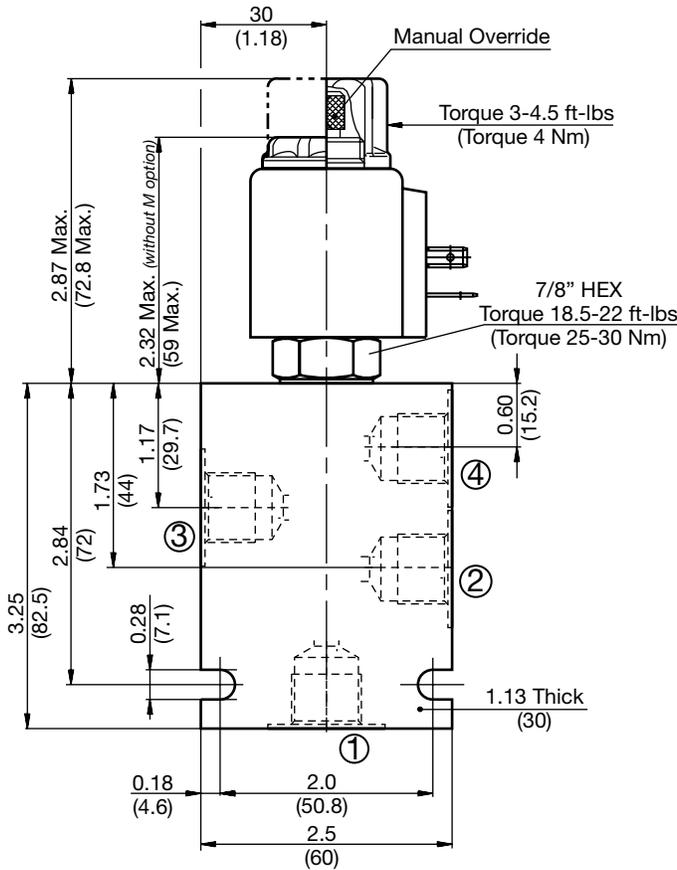
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 4.5 gpm at 3600 psi (17 l/min at 250 bar)   |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS (90 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight                   | 0.42 Lbs. (0.19 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS084-N P/N: 03071272<br>Viton® FS084-V P/N: 03071273  |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115F (46C)$



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08X-01 M-C-N-24 DN**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
 blank = No manual override  
 M = Manual override, screw type
- Body & Ports** \_\_\_\_\_  
 C = Cartridge only  
 AS6 = SAE-6 Ports, aluminum body  
 SS6 = SAE-6 Ports, steel body
- Seals** \_\_\_\_\_  
 N = Buna-N  
 V = Viton®
- Coil Voltage** \_\_\_\_\_  
 0 = No coil, cartridge only  
 DC 12 = 12 VDC  
 24 = 24 VDC  
 36 = 36 VDC  
 110 = 110 VDC (only available with connector DG)  
 AC 24 = 24 VAC  
 115 = 115 VAC (AC coils internally full wave rectified)  
 230 = 230 VAC
- Coil Connector** \_\_\_\_\_  
 DC DG = EN 175301-803-A  
 DS = Dual spade (SAEJ858a)\*  
 DL = Leadwires (2) - 18" long (46 cm)\*  
 DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*  
 DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*  
 DT = Amp Junior Timer™, molded, radial mount\*  
 AC AG = EN 175301-803-A

## Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

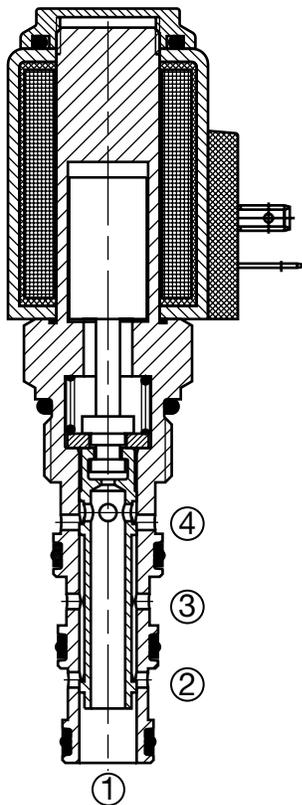
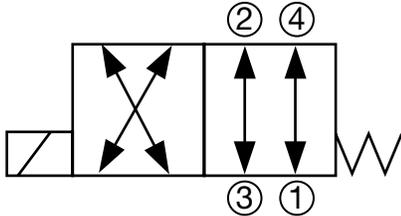
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10X-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10X allows flow from port 2 to port 3 bi-directionally and port 1 to port 4 bi-directionally. When energized the spool shifts and allows flow from port 3 to port 4 bi-directionally and from port 2 to port 1 bi-directionally.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

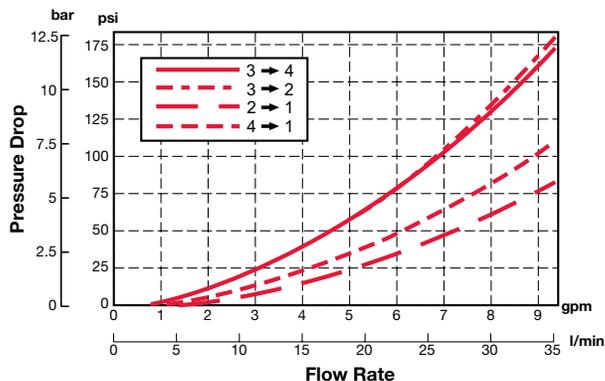
- Screw type manual override

### Specifications

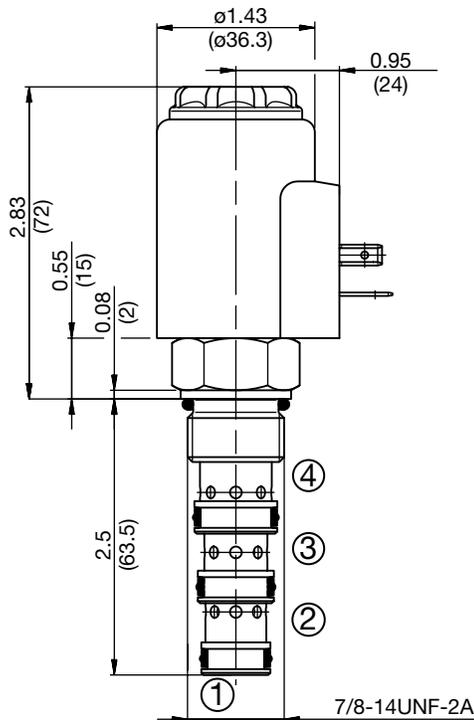
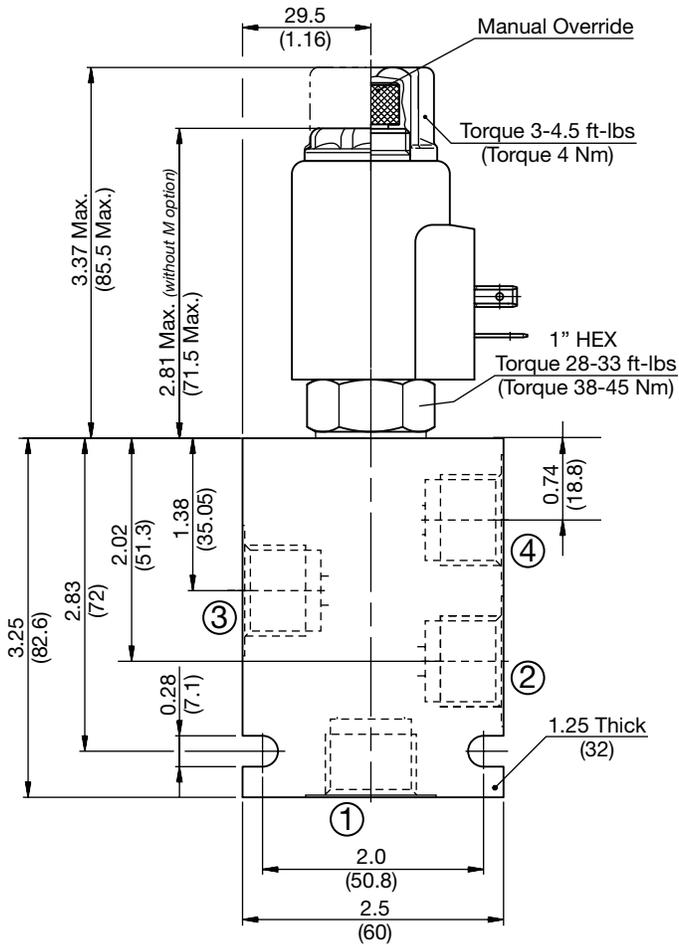
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 6 cu in/min. at 3600 psi and 158 SUS (100 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.55 Lbs. (0.25 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^{\circ}\text{F} (46^{\circ}\text{C})$



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10X-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

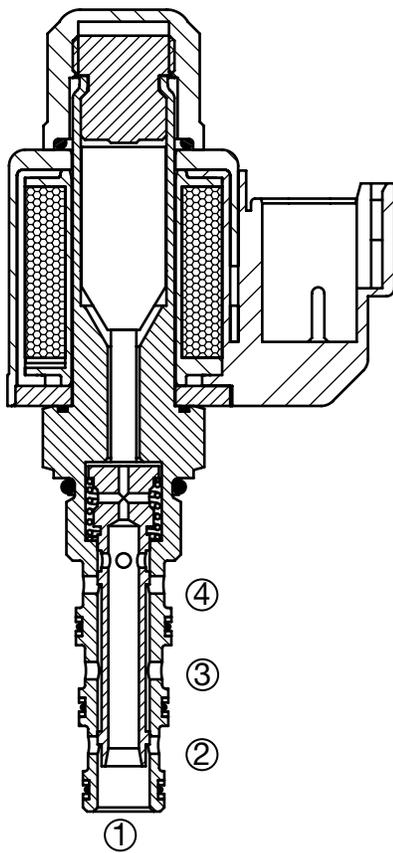
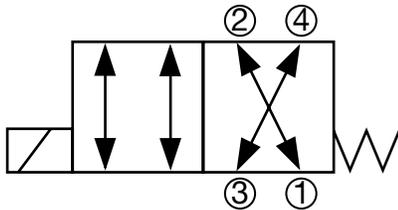
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK06Y-01 Spool Type, Direct Acting Up to 2 gpm (7.6 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4 way 2 position, direct acting, spool type valve.

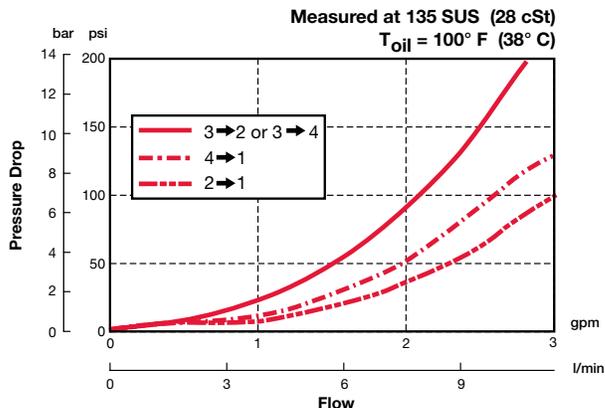
### Operation

When de-energized the WK06Y allows flow from port 2 to port 1 bi-directionally and port 3 to port 4 bi-directionally. When energized the spool shifts and opens flow from port 2 to port 3 bi-directionally and from port 4 to port 1

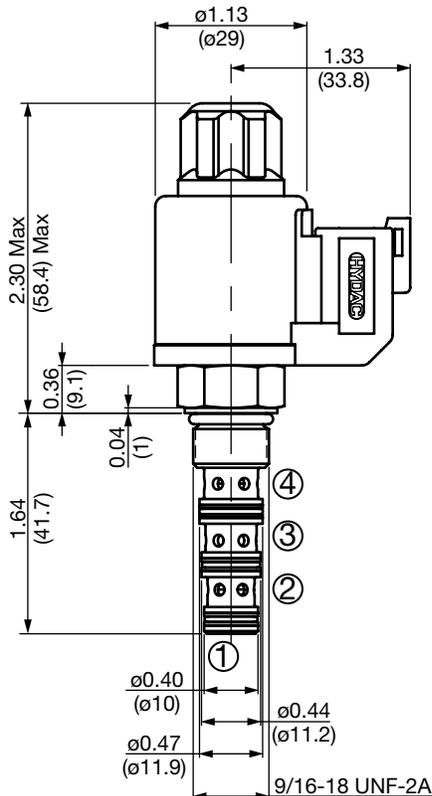
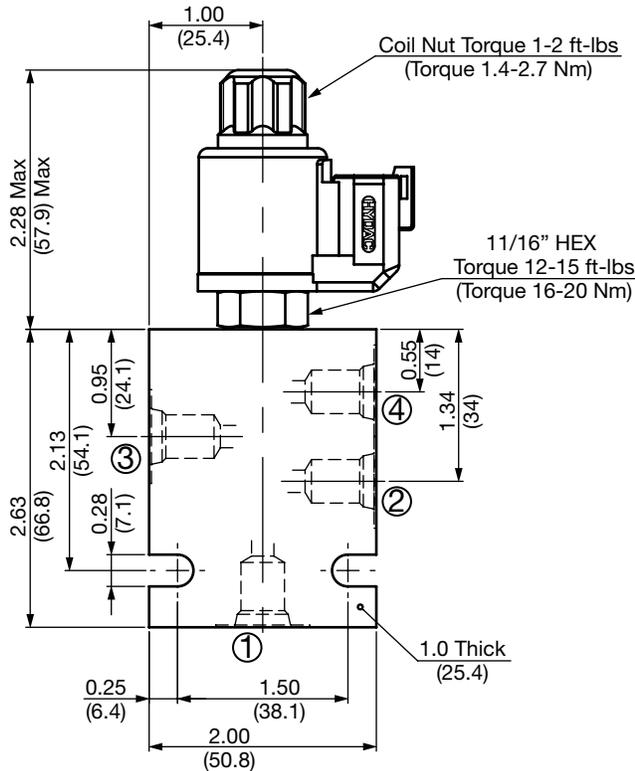
### Specifications

|  |  |
|--|--|
| Operating Pressure                                       | 5000 psi (350 bar)   |
| Nominal Flow   | 2 gpm (7.6 l/min)  |
| Nominal Pressure   | Up to 5000 psi. (350 bar), 3000 psi (207 bar) max on tank (port 1)   |
| Internal Leakage   | 6.0 cu in/min. at 3000 psi and 135 SUS (100 cc/min at 207 bar and 38 cSt)  |
| Fluid Operating Temp. Range                              | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range                                | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating   | Continuous from 85% to 115% of nominal voltage   |
| Current Draw at 68°F (20°C)                              | 984 mA at 12VDC; 492 mA at 24VDC   |
| Min. Pull-in Current to Operate Valve                    | 70% of nominal amperage  |
| Typical Response Time<br>(Varies with Pressure and Flow) | On: 30 to 60 ms<br>Off: 20 to 40 ms  |
| Fluid Compatibility                                      | Mineral-Based or Synthetics with lubricating properties.   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration   | 21/19/16 or cleaner per (ISO 4406)   |
| Installation   | No orientation restrictions  |
| Cavity   | FC06-4 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools   | Rougher: 02582057<br>Finisher: 02582058  |
| Cartridge Weight   | 3.6 oz (102 grams)   |
| Coil Weight  | 3.1 oz (88 grams)  |
| Cartridge Material                                       | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material  | Class N, 200°C high temperature magnet wire, steel shell, polyester encapsulation.   |
| Seal Kits  | Buna-N P/N: 02610188<br>Viton® P/N: 02610189   |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK06Y-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type  
(for availability consult factory)

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum body
- SS4 = SAE-4 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- DC 24 = 24 VDC
- AC 115 = 105 VDC (only available with connector DG)
- AC 230 = 205 VDC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

### Coil Connector

- DG = EN 175301-803-B (IP65 Rated)\*\*
- DC DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*
- DN = Deutsch DT04-2P integral molded (IP69K Rated)\*

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570

Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

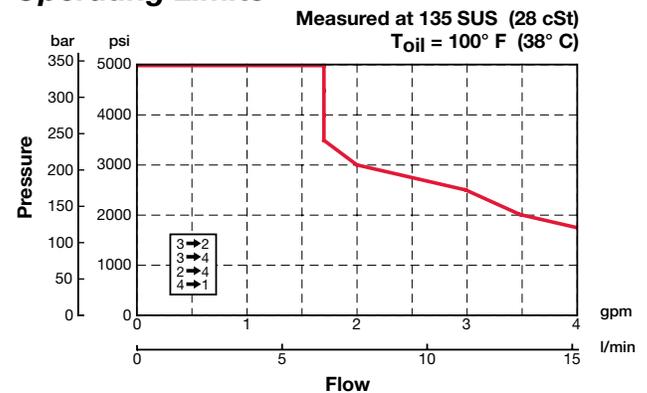
### Coil Model 32-1329

For other coil connector types consult factory

\*\* Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

## Operating Limits



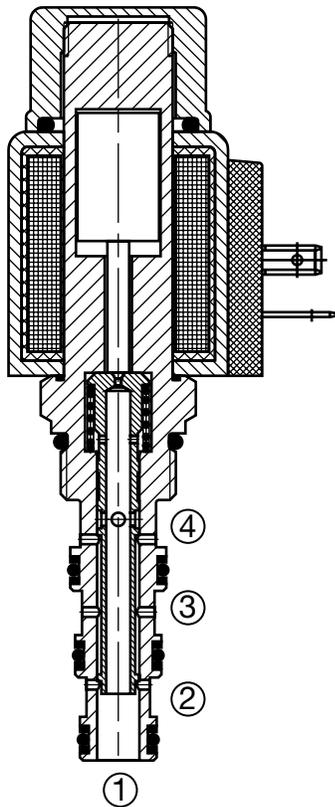
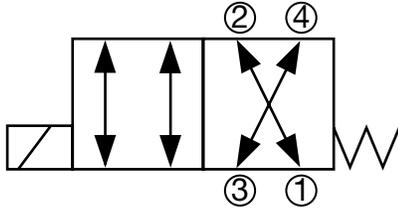
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH064-AS4 | 02600462 | Aluminum, anodized | 3500 psi (245 bar) | 0.43 lbs (0.20 kg) |
| FH064-SS4 | 02600461 | Steel, zinc plated | 6000 psi (420 bar) | 1.25 lbs (0.57 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08Y-01 Spool Type, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08Y allows flow from port 2 to port 1 bi-directionally and port 3 to port 4 bi-directionally. When energized the spool shifts and opens flow from port 2 to port 3 bi-directionally and from port 4 to port 1.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

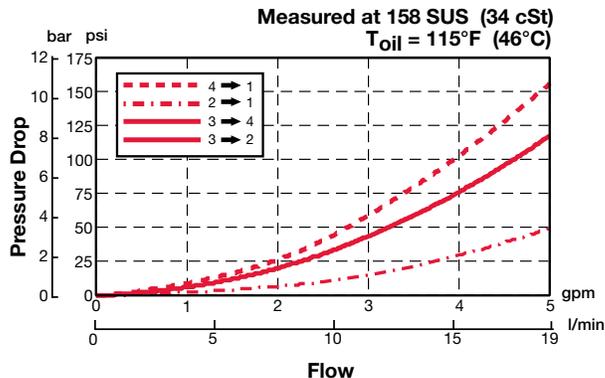
### Features

- Push type manual override button, protected by rubber cap

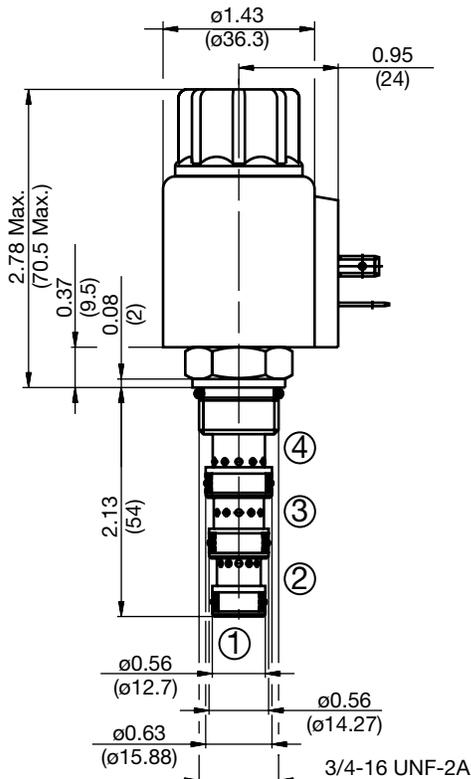
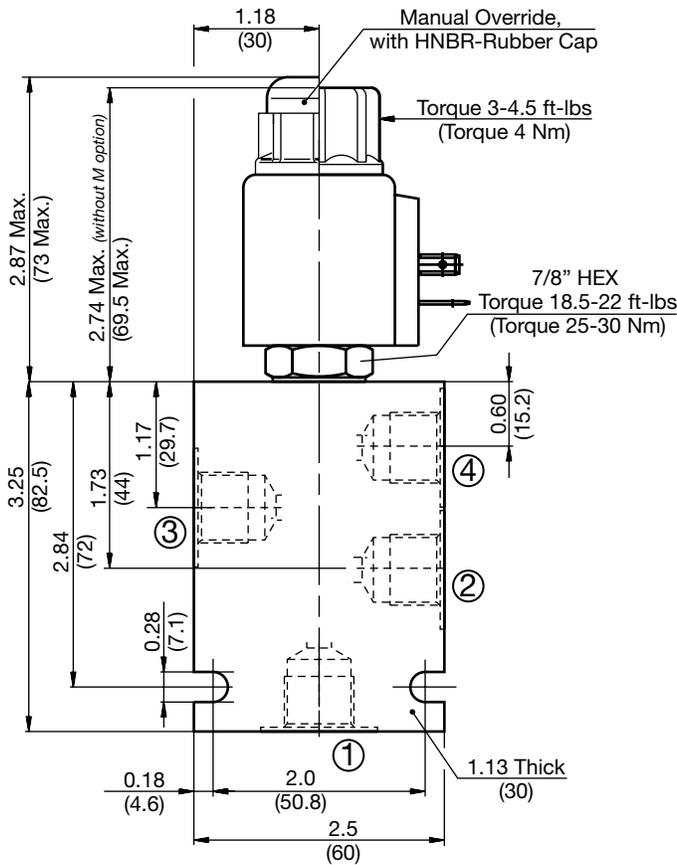
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm at 3600 psi (19 l/min at 250 bar)   |
| Internal Leakage                   | 5 cu in/min. at 3600 psi and 158 SUS (82 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-4 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight                   | 0.42 Lbs. (0.19 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03071272<br>Viton® P/N: 03071273  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08Y-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

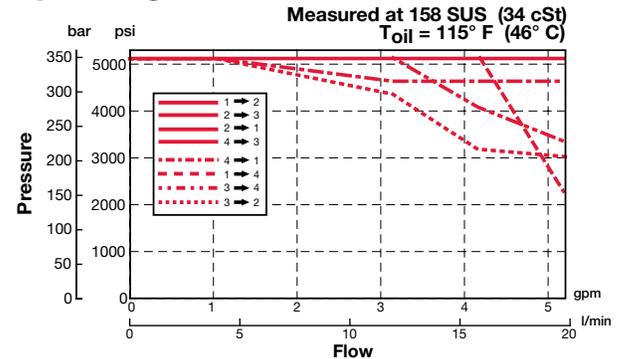
- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Operating Limits



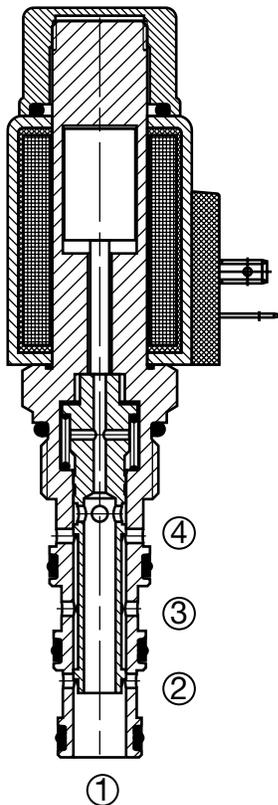
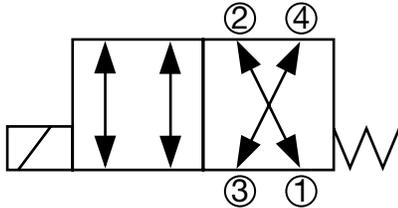
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10Y-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10Y allows flow from port 2 to port 1 bi-directionally and port 3 to port 4 bi-directionally. When energized the spool shifts and opens flow from port 2 to port 3 bi-directionally and from port 4 to port 1.

**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

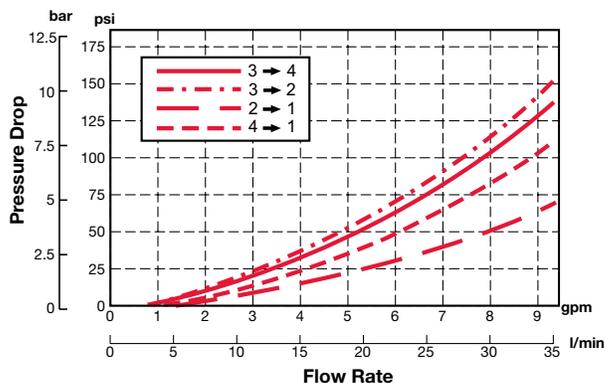
- Push type manual override button, protected by rubber cap

### Specifications

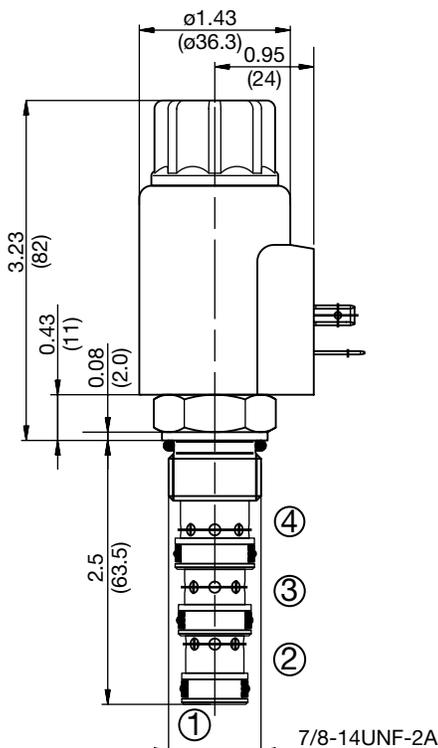
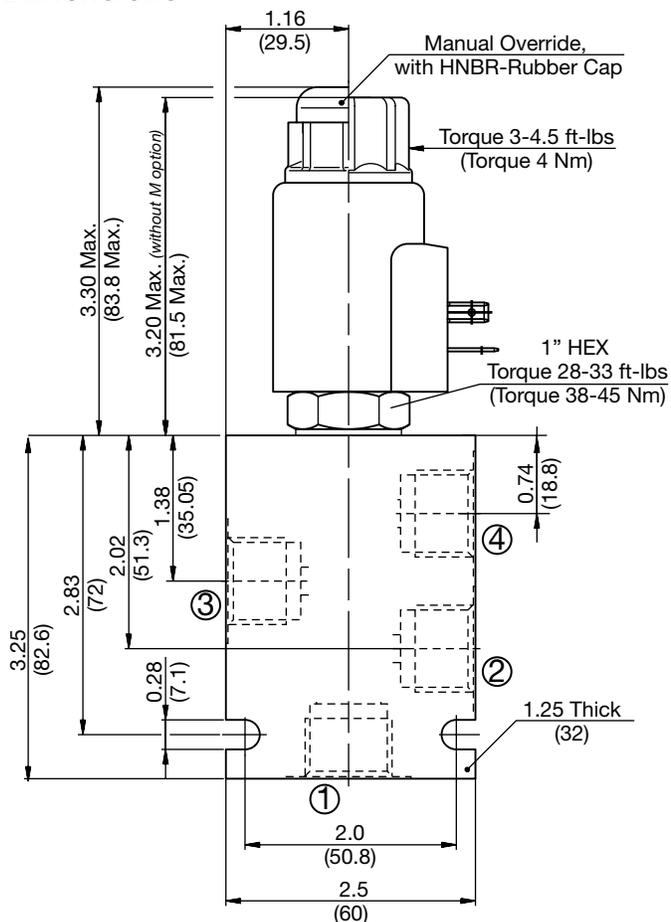
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 7.3 cu in/min. at 3600 psi and 158 SUS (120 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 2.22 A at 12VDC; 1.13 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.55 Lbs. (0.25 kg)   |
| Coil Weight                        | 0.51 Lbs. (0.23 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N P/N: 03051912<br>Viton® P/N: 03071275  |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^{\circ}F (46^{\circ}C)$



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK10Y-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = DIN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

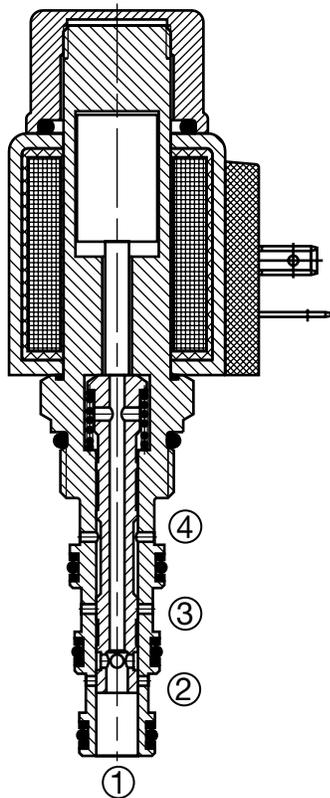
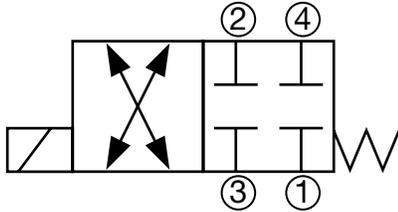
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08Z-01 Spool Type, Direct Acting Up to 4.5 gpm (17 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK08Z blocks flow at all ports. When energized the spool shifts and allows flow from port 1 to port 2 bi-directionally and from port 3 to port 4 bi-directionally.

Operation of Manual Override Option: To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

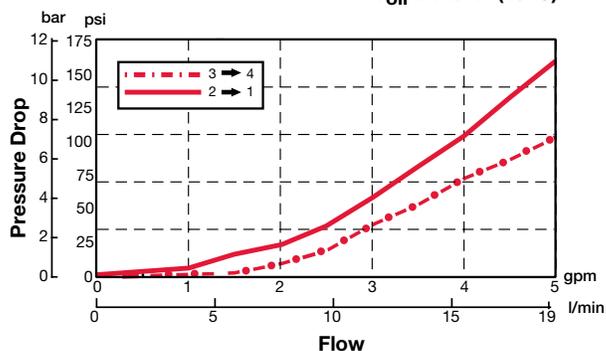
- Push type manual override button, protected by rubber cap

### Specifications

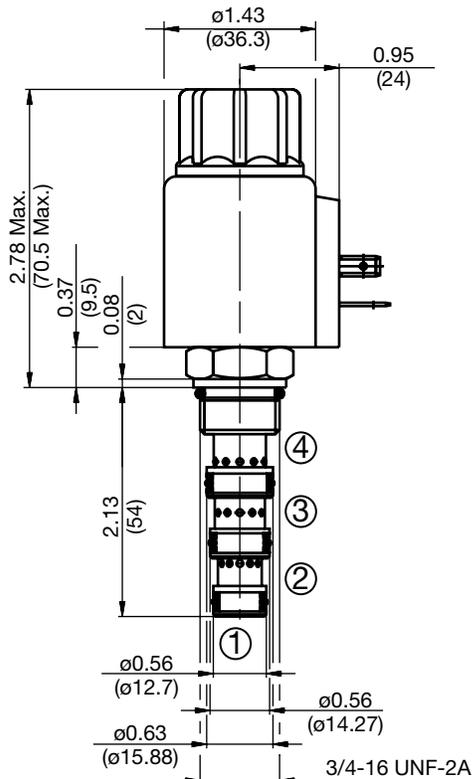
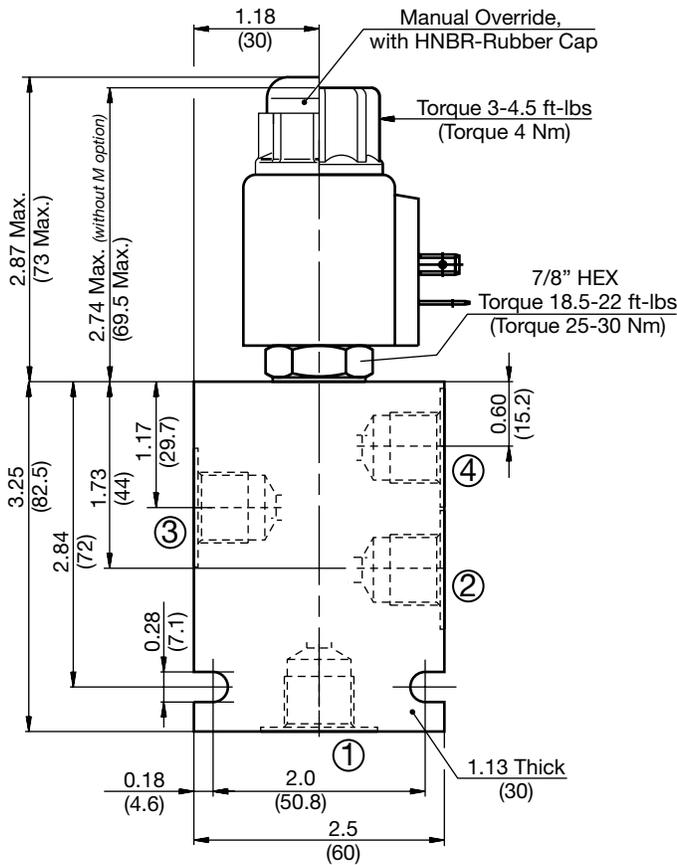
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 4.5 gpm at 3600 psi (17 l/min at 250 bar)<br>2 gpm at 5000 psi (7.6 l/min at 350 bar)                                   |
| Internal Leakage                   | 5.5 cu in/min. at 3600 psi and 158 SUS<br>(90 cc/min at 250 bar and 34 cSt)   |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight                   | 0.42 Lbs. (0.19 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS084-N P/N: 03071272<br>Viton® FS084-V P/N: 03071273  |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^\circ F (46^\circ C)$



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08Z-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, push type

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 Ports, aluminum body
- SS6 = SAE-6 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 40-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

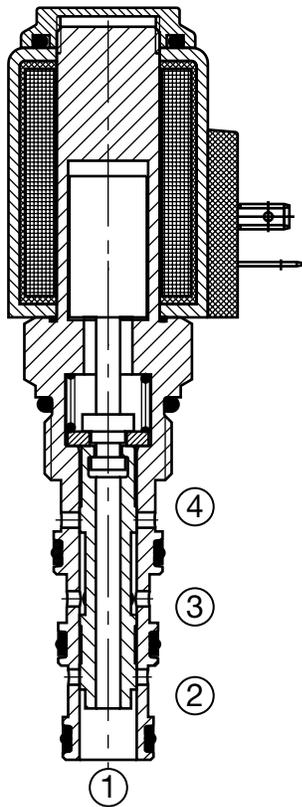
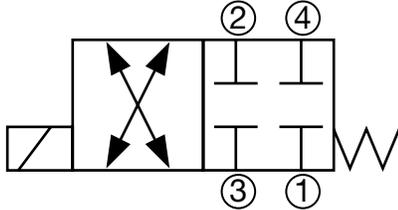
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10Z-01 Spool Type, Direct Acting Up to 8.4 gpm (32 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 2 position, direct acting, spool type valve.

### Operation

When de-energized the WK10Z blocks flow at all ports. When energized the spool shifts and allows flow from port 1 to port 2 bi-directionally and from port 3 to port 4 bi-directionally.

**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

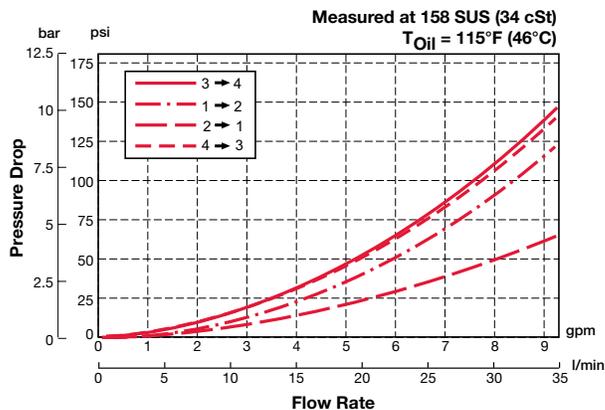
### Features

- Screw type manual override

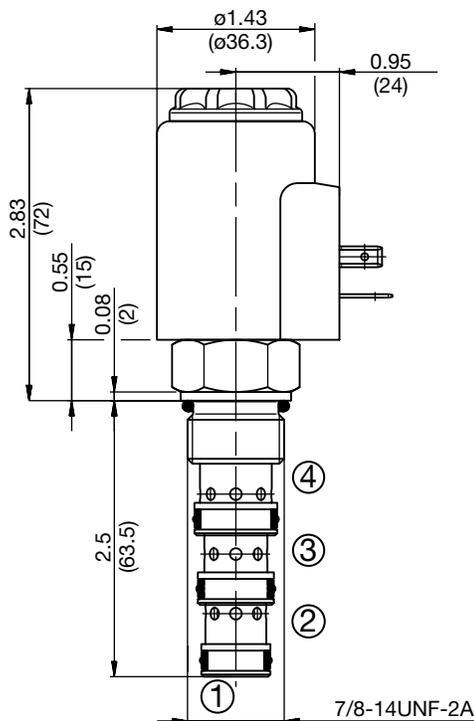
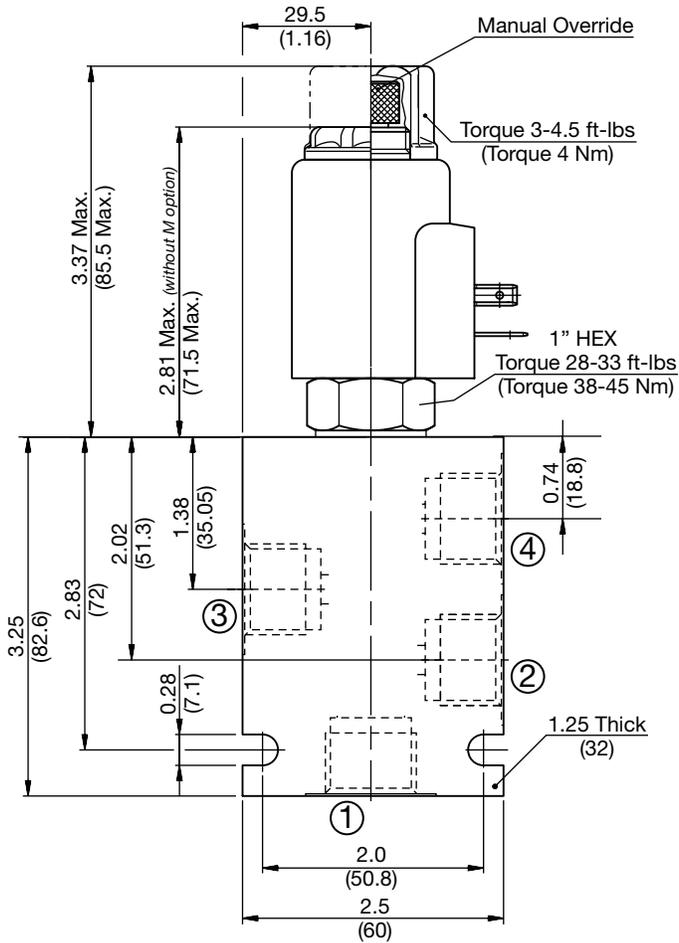
### Specifications

|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 8.4 gpm at 5000 psi (32 l/min at 350 bar)   |
| Internal Leakage                   | 6 cu in/min. at 3600 psi and 158 SUS<br>(100 cc/min at 250 bar and 34 cSt)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating                   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw @ 68°F (20°C)         | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Min. Pull-in Voltage @ 68°F (20°C) | 90% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties   |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                         | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                       | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight                   | 0.64 Lbs. (0.29 kg)   |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material                      | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                          | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10Z-01 M-C-N-24 DN**

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, screw type

### Body & Ports

- C = Cartridge only
- AS8 = SAE-8 Ports, aluminum body
- SS8 = SAE-8 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC (AC coils internally full wave rectified)
- 230 = 230 VAC

### Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

### Coil Model 50-1836

For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

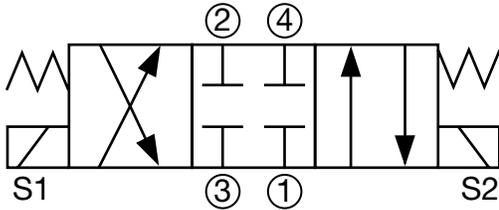
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lbs (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lbs (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK06E-01 Spool Type, Direct Acting Up to 3 gpm (11.4 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

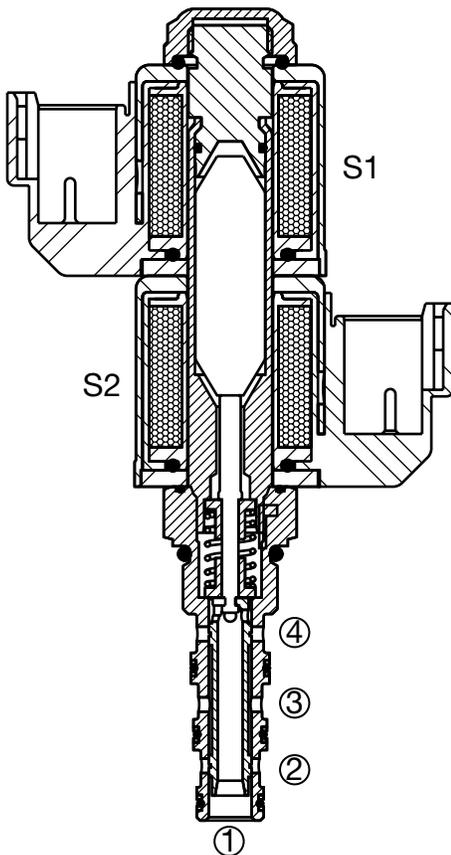
A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

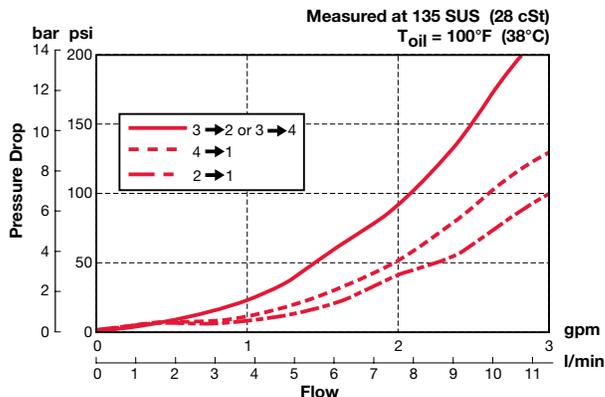
When de-energized the WK06E blocks flow at all ports. When coil S1 is energized the spool shifts and allows flow from port 2 to port 1 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

### Specifications

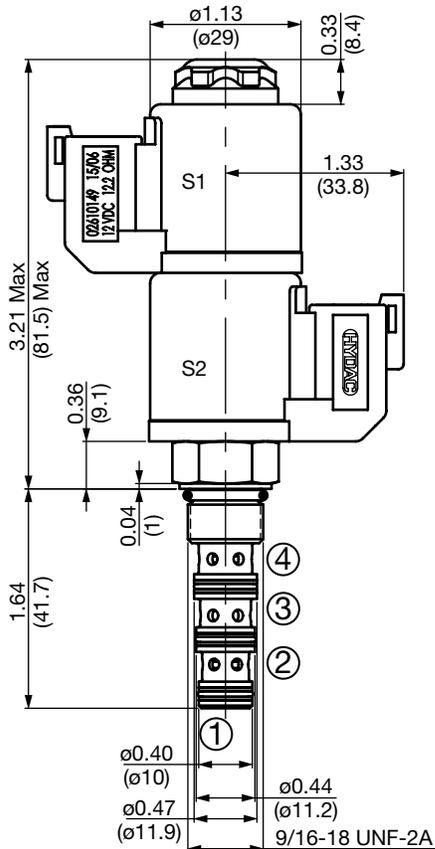
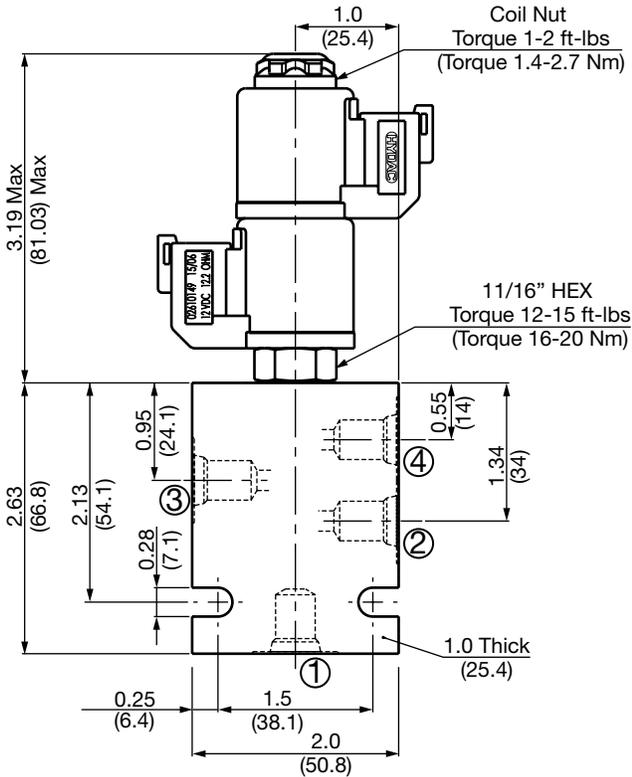
|                                       |  |
|---------------------------------------|--|
| Operating Pressure                    | 5000 psi (350 bar), 3000 psi (210 bar) Max Port 1  |
| Nominal Flow                          | See Operating Limits   |
| Internal Leakage                      | 14.0 cu in/min. at 3000 psi and 135 SUS (230 cc/min at 207 bar and 28 cSt)   |
| Fluid Operating Temp. Range           | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range             | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating                      | Continuous from 85% to 115% of nominal voltage   |
| Current Draw at 68°F (20°C)           | 984 mA at 12VDC; 492 mA at 24VDC   |
| Min. Pull-in Current to Operate Valve | 70% of nominal amperage  |
| Fluid Compatibility                   | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                             | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                            | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                          | No orientation restrictions  |
| Cavity                                | FC06-4 (see Line Bodies & Cavities section)  |
| Cavity Tools                          | Rougher: 02582057<br>Finisher: 02582058  |
| Cartridge Weight                      | 3.6 oz (102 grams)   |
| Coil Weight                           | 3.1 oz (88 grams) each (2 required)  |
| Cartridge Material                    | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material                         | Class N, 200°C high temperature magnet wire, steel shell, polyester encapsulation.   |
| Seal Kits                             | Buna-N P/N: 02610188<br>Viton® P/N: 02610189   |



### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK06E-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, not detented
- A = Manual override, detented

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum Body
- SS4 = SAE-4 Ports, steel Body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- AC 115 = 105 VDC (only available with connector DG)
- 230 = 205 VDC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

### Coil Connector

- DG = EN 175301-803-B (IP65 Rated)\*\*
- DC DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*
- DN = Deutsch DT04-2P intergral molded (IP69K Rated)\*

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570

Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

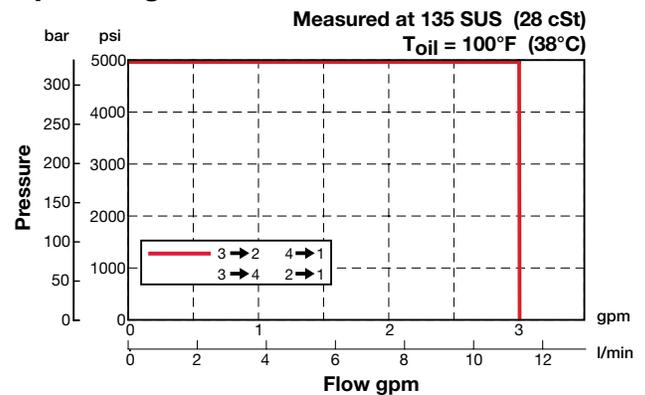
### Coil Model 32-1329

For other coil connector types consult factory

\*\* Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

## Operating Limits

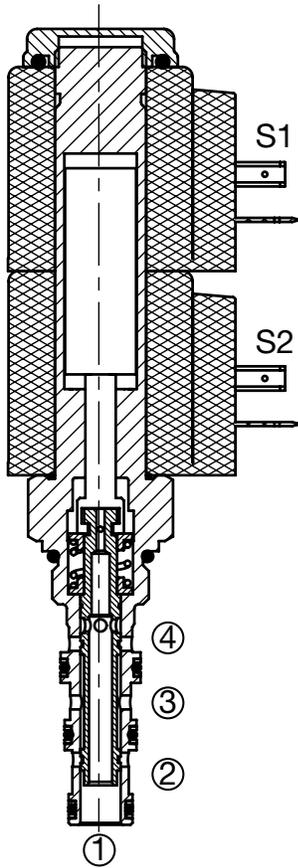


## Standard Line Bodies\*

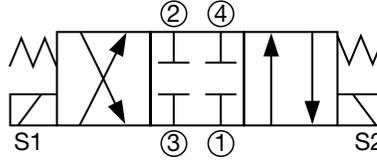
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH064-AS4 | 02600462 | Aluminum, anodized | 3500 psi (245 bar) | 0.41 lbs (0.19 kg) |
| FH064-SS4 | 02600461 | Steel, zinc plated | 6000 psi (420 bar) | 1.22 lbs (0.55 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08E-01 Spool Type, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)



### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

When de-energized the WK08E blocks flow at all ports. When coil S1 is energized the spool shifts and allows flow from port 1 to port 2 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

**Operation of Manual Override Option:** To override, twist knurled screw and push or pull to shift spool.

Detented version - twist again after pushing/pulling to hold position.

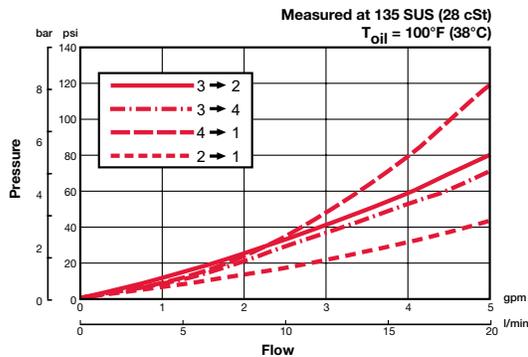
### Features

- Push/pull type manual override button, detented manual override option.
- High flow capacity

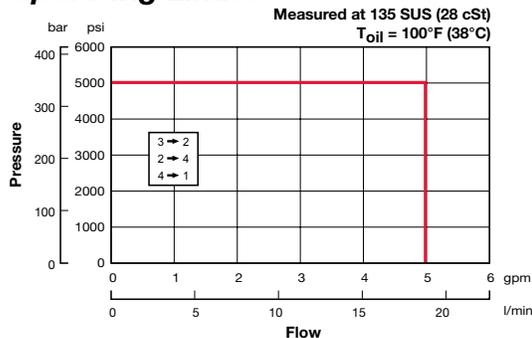
### Specifications

|  |  |
|--|--|
| Operating Pressure                                       | 5000 psi (350 bar)   |
| Nominal Flow   | 5 gpm at 3000 psi (20 l/min@ 210 bar)  |
| Internal Leakage   | 10 cu in/min. at 3000 psi and 158 SUS (160 cc/min at 210 bar and 34 cSt)   |
| Fluid Operating Temp Range                               | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range                                | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating   | Continuous from 85% to 115% of nominal voltage   |
| Current Draw at 68°F (20°C)                              | 1.5 A at 12VDC; 0.8 A at 24VDC   |
| Minimum Pull-in Current                                  | 75% of nominal amperage  |
| Typical Response Time<br>(Varies with Pressure and Flow) | On: 30 to 60 ms<br>Off: 20 to 40 ms  |
| Fluid Compatibility                                      | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration   | 21/19/16 or cleaner per (ISO 4406)   |
| Installation   | No orientation restrictions  |
| Cavity   | FC08-4 (see Line Bodies & Cavities section)  |
| Cavity Tools   | Rougher: 02580088<br>Finisher: 02580089  |
| Cartridge Weight   | 0.6 lbs (0.27 kg)  |
| Coil Weight  | 2 x 0.42 lbs (2 x 0.19 kg)   |
| Cartridge Material                                       | Steel with hardened work surfaces.<br>Zinc plated solenoid tube surface.<br>Buna N or Viton® o-rings<br>Solid thermoplastic polyester back-up rings. |
| Coil Material  | Class N high temperature magnet wire, steel shell, polyamid encapsulation.   |
| Seal Kits  | Buna-N FS084-N P/N: 03071272<br>Viton® FS084-V P/N: 03071273   |

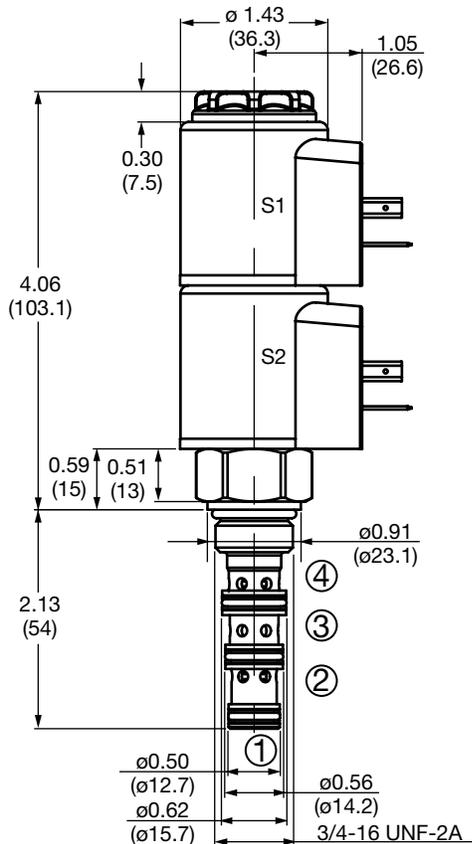
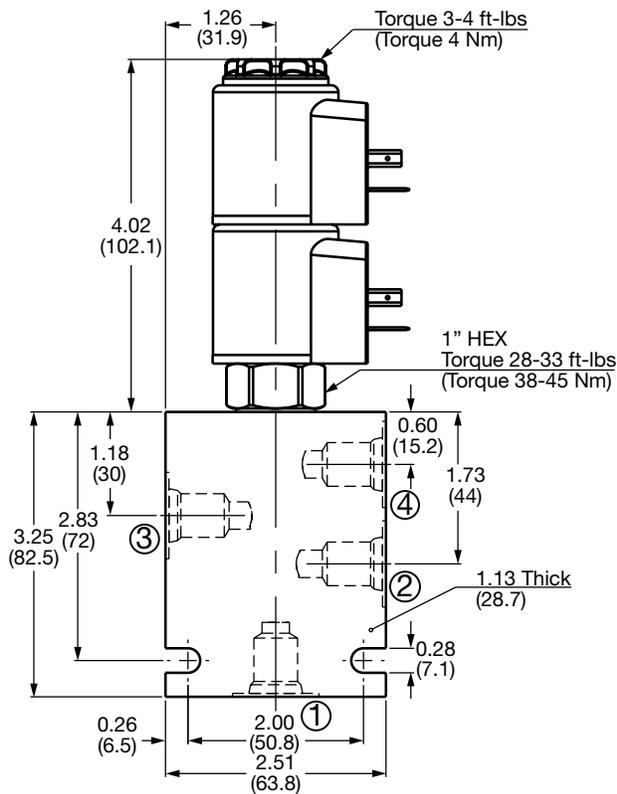
### Performance



### Operating Limits



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK08E-01-M-C-N-24 DN**

Valve Model

Override Option

- (omit) = No manual override
- M = Push/pull type, not detented
- A = Push/pull type, detented

Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

Coil Model 40-1836, 2 per assembly

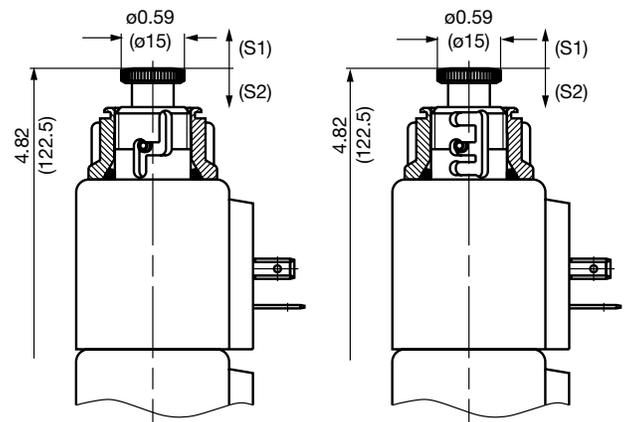
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Manual Override Options

Option M - Non Detented

Option A - Detented



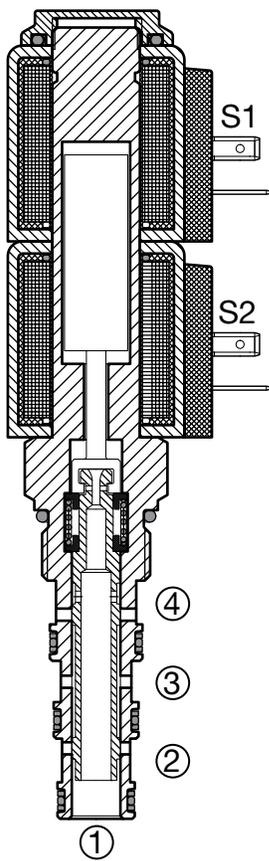
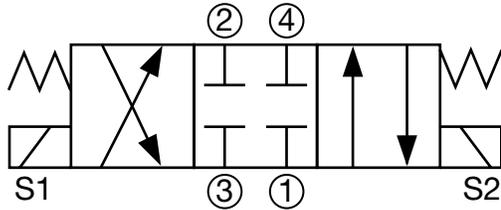
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lb (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lb (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10E-01 Spool Type, Direct Acting Up to 6 gpm (23 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

When de-energized the WK10E blocks flow at all ports. When coil S1 is energized the spool shifts and allows flow from port 1 to port 2 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

**Operation of Manual Override Option:** To override, twist knurled screw and push or pull to shift spool.

Detented version - twist again after pushing/pulling to hold position.

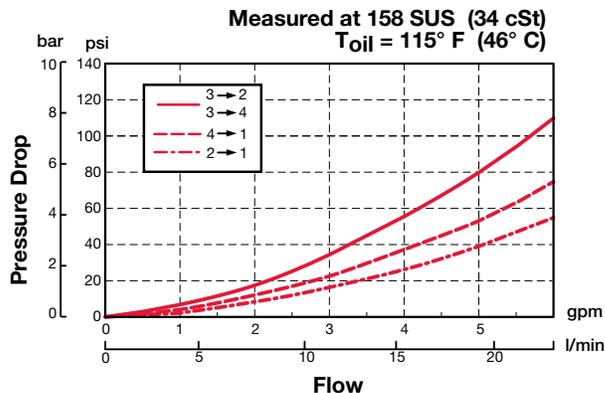
### Features

- Push/pull type manual override button, detented manual override option.

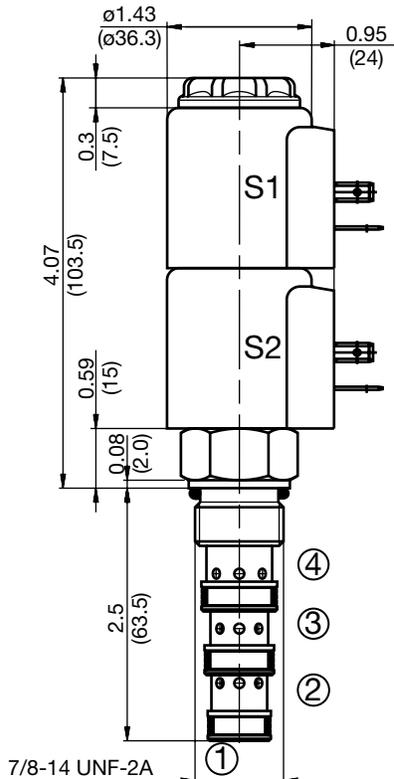
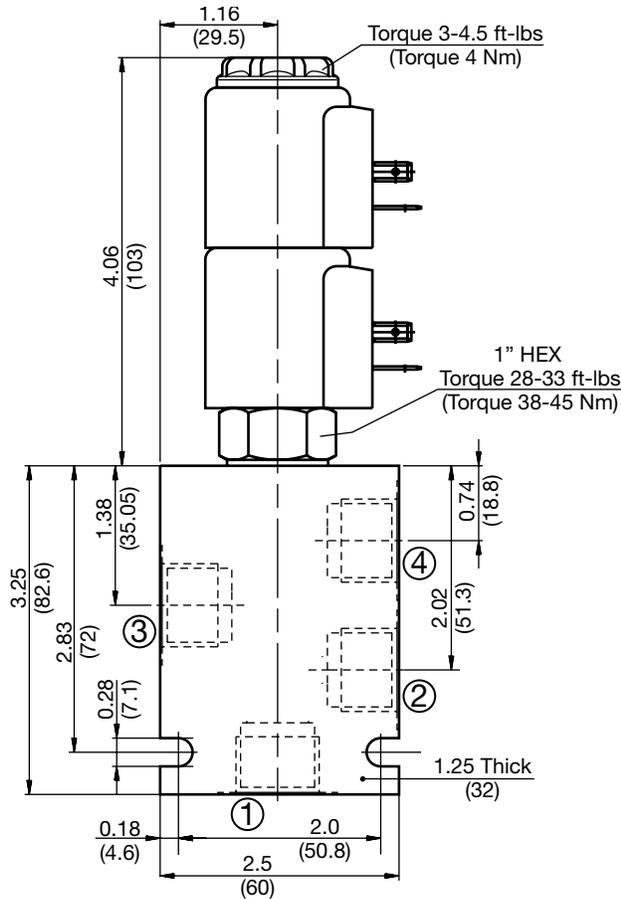
### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 5000 psi (350 bar)  |
| Nominal Flow                | 6 gpm at 3000 psi (23 l/min at 210 bar)<br><i>Consult factory for flow rating above 3000 psi (210 bar)</i>              |
| Internal Leakage            | 10 cu in/min. at 3000 psi and 158 SUS<br>(160 cc/min at 210 bar and 34 cSt)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range   | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating            | Continuous from 85% to 115% of nominal voltage  |
| Current Draw at 68°F (20°C) | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Minimum Pull-in Current     | 90% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight            | 0.64 lbs (0.29 kg)  |
| Coil Weight                 | 0.42 lbs (0.19 kg) - 2 coils required   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material               | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                   | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10E-01-M-C-N-24 DN**

Valve Model

Override Option

- (omit) = No manual override
- M = Push/pull type, not detented
- A = Push/pull type, detented

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

Coil Model 40-1836, 2 per assembly

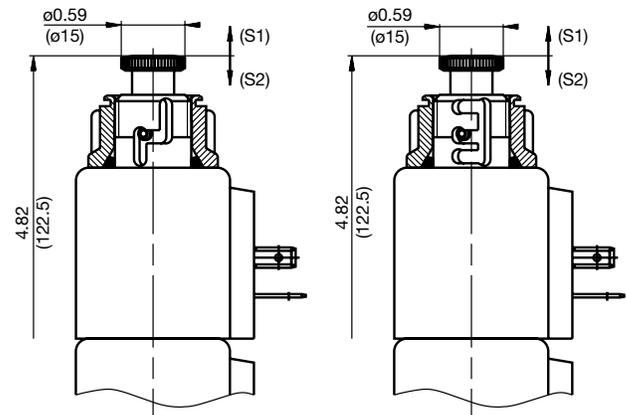
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Manual Override Options

Option M - Non Detented

Option A - Detented



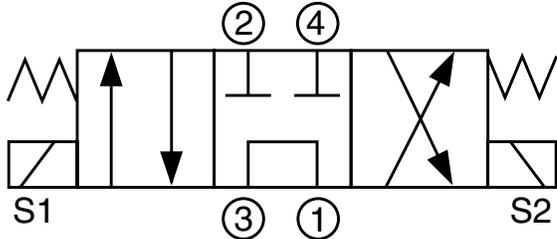
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lb (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lb (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK06G-01 Spool Type, Direct Acting Up to 2 gpm (7.6 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

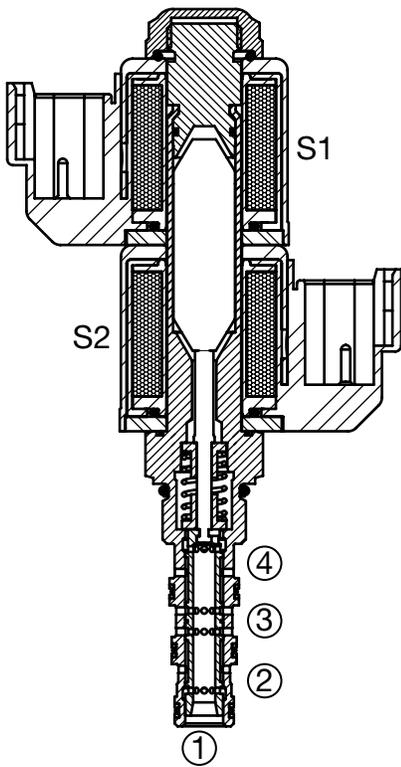
A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

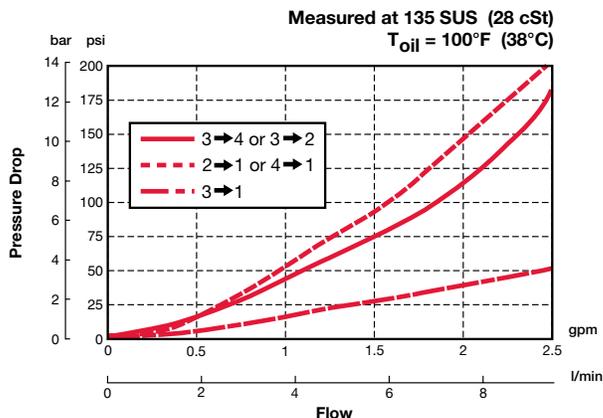
When de-energized the WK06G allows flow from port 3 to port 1, while blocking flow at ports 2 and 4. When coil S1 is energized the spool shifts and allows flow from port 3 to port 2 and from port 4 to port 1. When coil S2 is energized the spool shifts and allows flow from port 3 to port 4 and from port 2 to port 1.

### Specifications

|                                       |  |
|---------------------------------------|--|
| Operating Pressure                    | 5000 psi (350 bar), 3000 psi (210 bar) Max Port 1  |
| Nominal Flow                          | See Operating Limits   |
| Internal Leakage                      | 11.6 cu in/min. at 3000 psi and 135 SUS (190 cc/min at 207 bar and 28 cSt)   |
| Fluid Operating Temp Range            | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range             | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating                      | Continuous from 85% to 115% of nominal voltage   |
| Current Draw at 68°F (20°C)           | 984 mA at 12VDC; 492 mA at 24VDC   |
| Min. Pull-in Current to Operate Valve | 70% of nominal amperage  |
| Fluid Compatibility                   | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                             | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                            | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                          | No orientation restrictions  |
| Cavity                                | FC06-4 (see Line Bodies & Cavities section)  |
| Cavity Tools                          | Rougher: 02582057<br>Finisher: 02582058  |
| Cartridge Weight                      | 3.6 oz (102 grams)   |
| Coil Weight                           | 3.1 oz (88 grams) each (2 required)  |
| Cartridge Material                    | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material                         | Class N, 200°C high temperature magnet wire, steel shell, polyester encapsulation.   |
| Seal Kits                             | Buna-N P/N: 02610188<br>Viton® P/N: 02610189   |



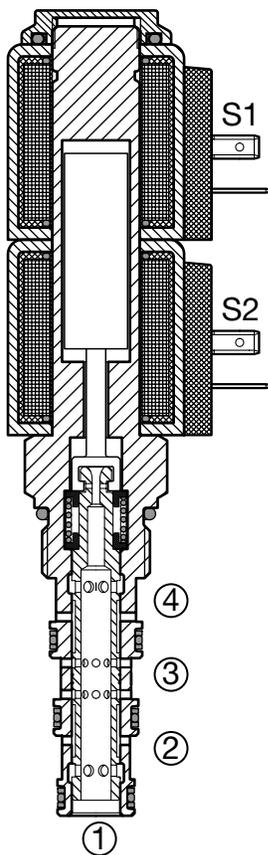
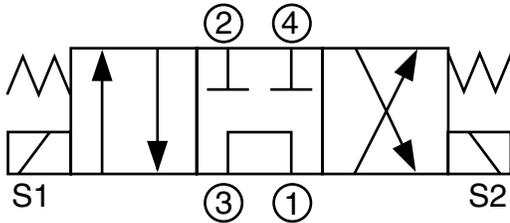
### Performance





## WK10G-01 Spool Type, Direct Acting Up to 6 gpm (23 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

When de-energized the WK10G allows flow from port 3 to port 1, while blocking flow at ports 2 and 4. When coil S1 is energized the spool shifts and allows flow from port 3 to port 2 and from port 4 to port 1. When coil S2 is energized the spool shifts and allows flow from port 3 to port 4 and from port 2 to port 1.

**Operation of Manual Override Option:** To override, twist knurled screw and push or pull to shift spool.

Detented version - twist again after pushing/pulling to hold position.

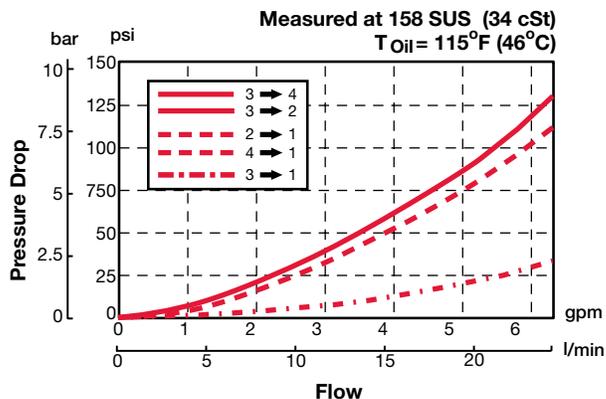
### Features

- Push/pull type manual override button, detented manual override option.

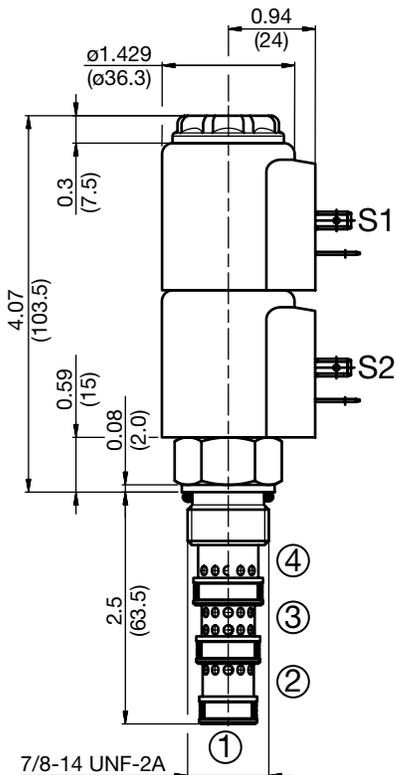
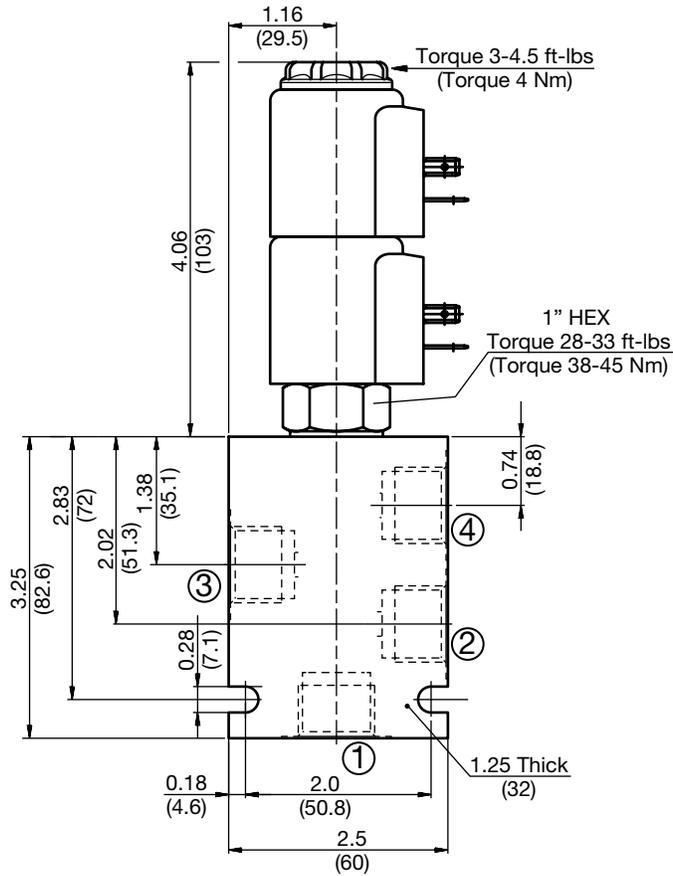
### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 5000 psi (350 bar)  |
| Nominal Flow                | 6 gpm at 3000 psi (23 l/min at 210 bar)<br><i>Consult factory for flow rating above 3000 psi (210 bar)</i>              |
| Internal Leakage            | 10 cu in/min. at 3000 psi and 158 SUS<br>(160 cc/min at 210 bar and 34 cSt)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range   | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating            | Continuous from 85% to 115% of nominal voltage  |
| Current Draw at 68°F (20°C) | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Minimum Pull-in Current     | 90% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight            | 0.64 lbs (0.29 kg)  |
| Coil Weight                 | 0.42 lbs (0.19 kg) - 2 coils required   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material               | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                   | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10G-01-M-C-N-24 DN**

Valve Model

Override Option

- (omit) = No manual override
- M = Push/pull type, not detented
- A = Push/pull type, detented

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

Coil Model

40-1836, 2 per assembly

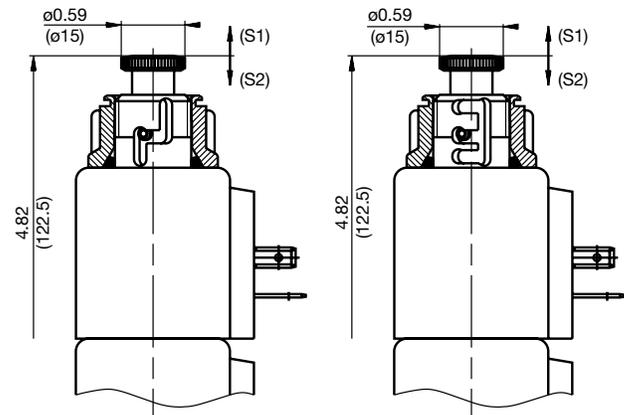
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Manual Override Options

Option M - Non Detented

Option A - Detented



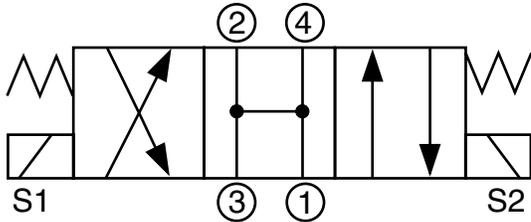
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lb (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lb (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK06H-01 Spool Type, Direct Acting Up to 2.4 gpm (9 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

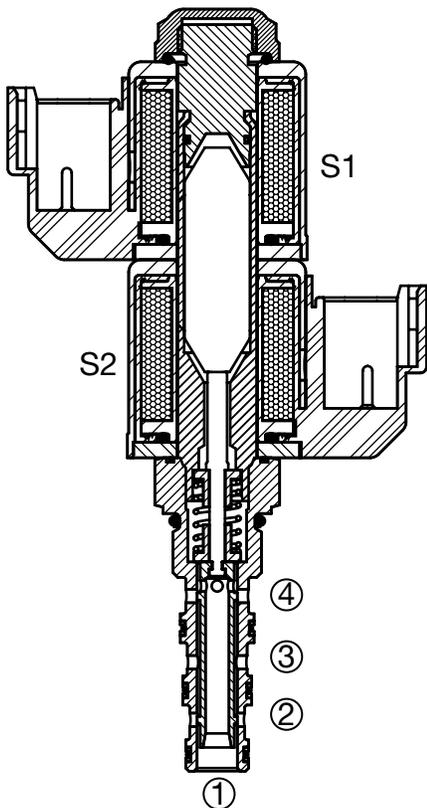
A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

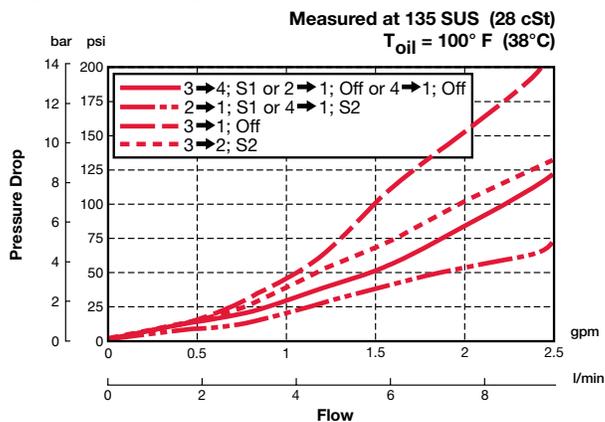
When de-energized the WK06H allows flow to all ports. When coil S1 is energized the spool shifts and allows flow from port 2 to port 1 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

### Specifications

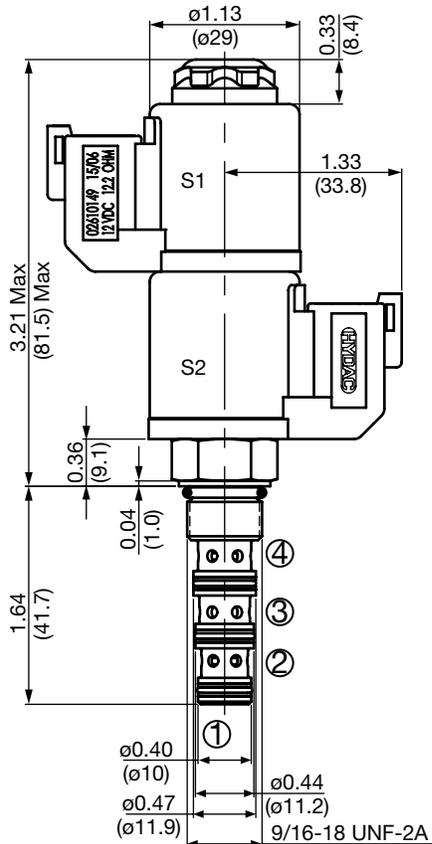
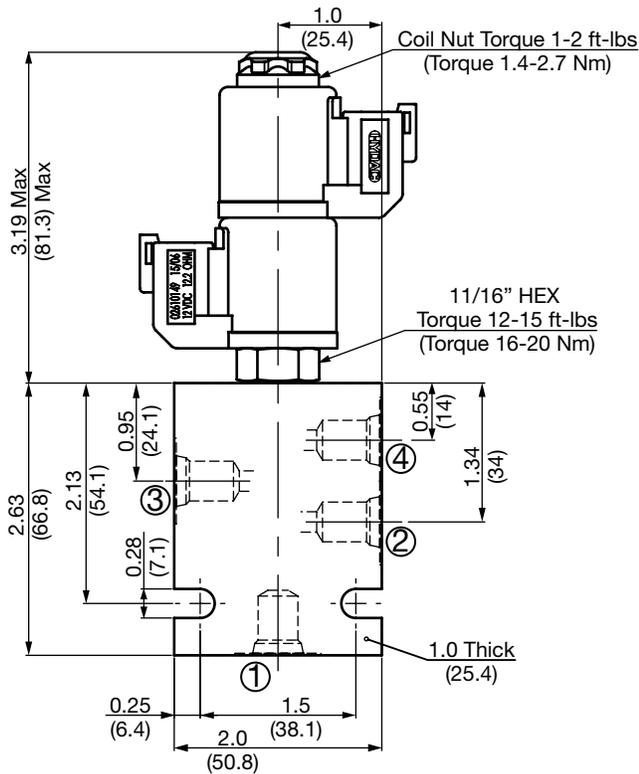
|                                       |  |
|---------------------------------------|--|
| Operating Pressure                    | 5000 psi (350 bar), 3000 psi (210 bar) Max Port 1  |
| Nominal Flow                          | See Operating Limits   |
| Internal Leakage                      | 6.0 cu in/min. at 3000 psi and 135 SUS (100 cc/min at 207 bar and 28 cSt)  |
| Fluid Operating Temp Range            | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature Range             | -20° to 140°F (-29° to 60°C)   |
| Coil Duty Rating                      | Continuous from 85% to 115% of nominal voltage   |
| Current Draw at 68°F (20°C)           | 984 mA at 12VDC; 492 mA at 24VDC   |
| Min. Pull-in Current to Operate Valve | 70% of nominal amperage  |
| Fluid Compatibility                   | Mineral-Based or Synthetics with lubricating properties  |
| Viscosity                             | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                            | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                          | No orientation restrictions  |
| Cavity                                | FC06-4 (see Line Bodies & Cavities section)  |
| Cavity Tools                          | Rougher: 02582057<br>Finisher: 02582058  |
| Cartridge Weight                      | 3.6 oz (102 grams)   |
| Coil Weight                           | 3.1 oz (88 grams) each (2 required)  |
| Cartridge Material                    | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material                         | Class N, 200°C high temperature magnet wire, steel shell, polyester encapsulation.   |
| Seal Kits                             | Buna-N P/N: 02610188<br>Viton® P/N: 02610189   |



### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK06H-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, not detented
- A = Manual override, detented

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum body
- SS4 = SAE-4 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- AC 115 = 105 VDC (only available with connector DG)
- 230 = 205 VDC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

### Coil Connector

- DG = EN 175301-803-B (IP65 Rated)\*\*
- DC DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*
- DN = Deutsch DT04-2P intergral molded (IP69K Rated)\*

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570

Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

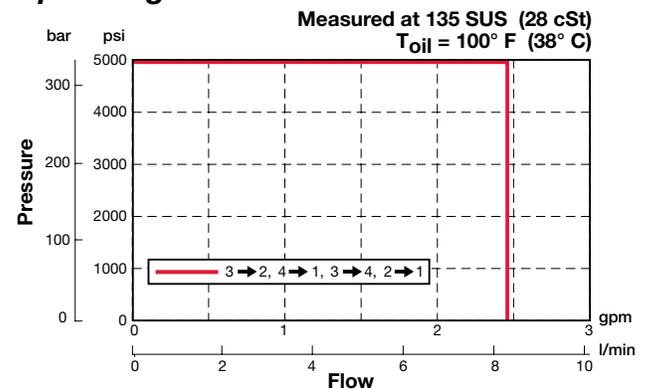
### Coil Model 32-1329

For other coil connector types consult factory

\*\* Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

## Operating Limits



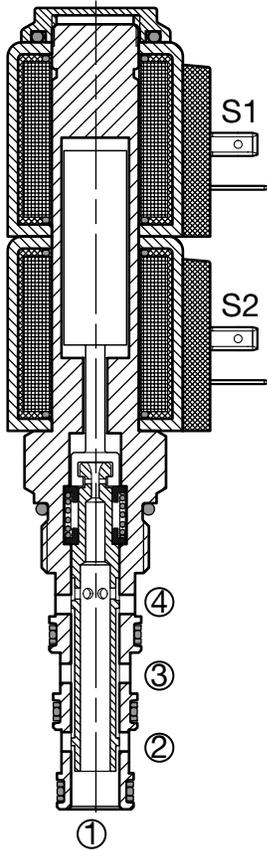
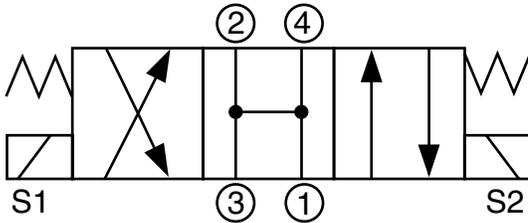
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH064-AS4 | 02600462 | Aluminum, anodized | 3500 psi (245 bar) | 0.41 lbs (0.19 kg) |
| FH064-SS4 | 02600461 | Steel, zinc plated | 6000 psi (420 bar) | 1.22 lbs (0.55 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10H-01 Spool Type, Direct Acting Up to 6 gpm (23 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

When de-energized the WK10H allows flow to all ports. When coil S1 is energized the spool shifts and allows flow from port 1 to port 2 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

**Operation of Manual Override Option:** To override, twist knurled screw and push or pull to shift spool.

Detented version - twist again after pushing/pulling to hold position.

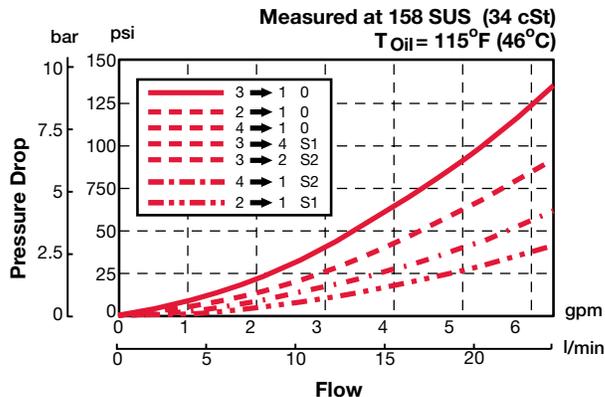
### Features

- Push/pull type manual override button, detented manual override option.

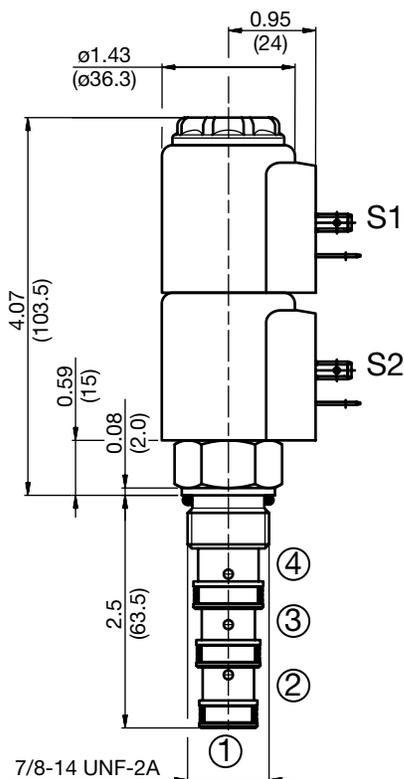
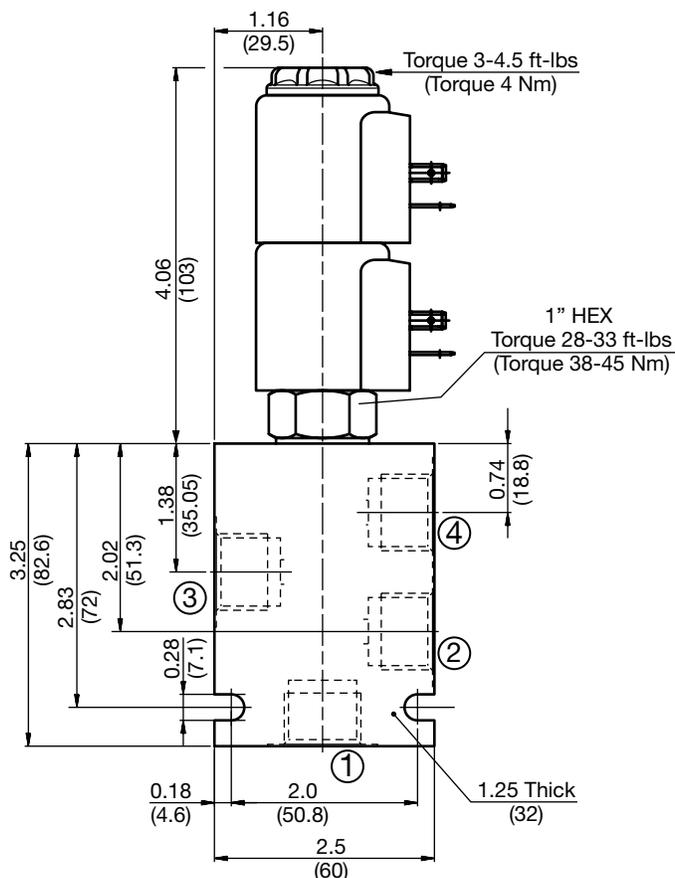
### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 5000 psi (350 bar)  |
| Nominal Flow                | 6 gpm at 3000 psi (23 l/min at 210 bar)<br><i>Consult factory for flow rating above 3000 psi (210 bar)</i>              |
| Internal Leakage            | 10 cu in/min. at 3000 psi and 158 SUS<br>(160 cc/min at 210 bar and 34 cSt)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range   | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating            | Continuous from 85% to 115% of nominal voltage  |
| Current Draw at 68°F (20°C) | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Minimum Pull-in Current     | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight            | 0.64 lbs (0.29 kg)  |
| Coil Weight                 | 0.42 lbs (0.19 kg) - 2 coils required   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material               | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                   | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10H-01-M-C-N-24 DN**

Valve Model

Override Option

- (omit) = No manual override
- M = Push/pull type, not detented
- A = Push/pull type, detented

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*
- AC AG = EN 175301-803-A

Coil Model

40-1836, 2 per assembly

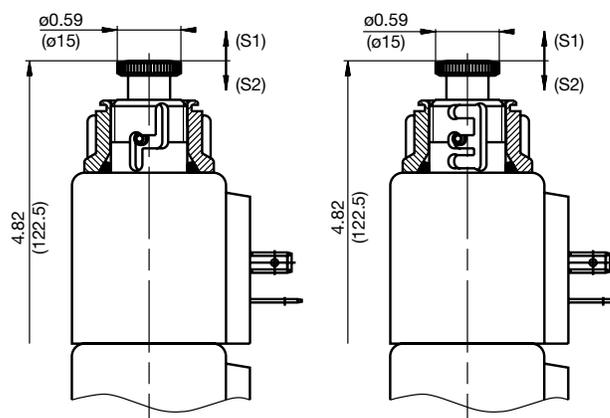
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Manual Override Options

Option M - Non Detented

Option A - Detented



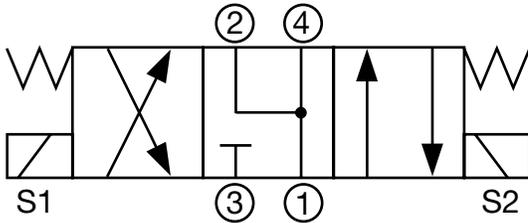
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lb (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lb (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK06J-01 Spool Type, Direct Acting Up to 3 gpm (11.4 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

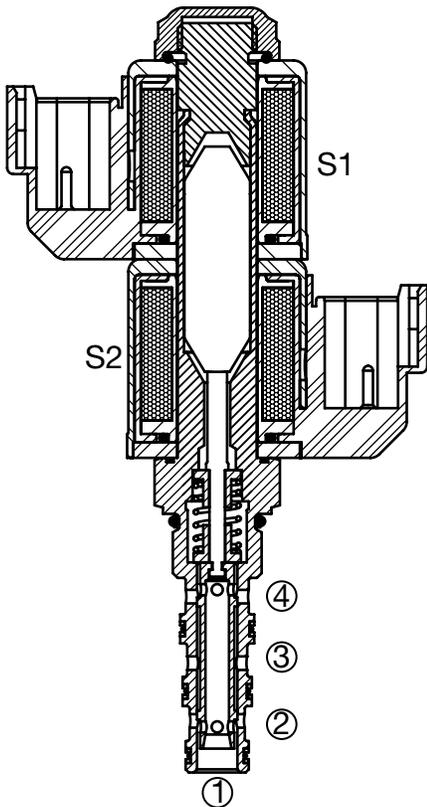
A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

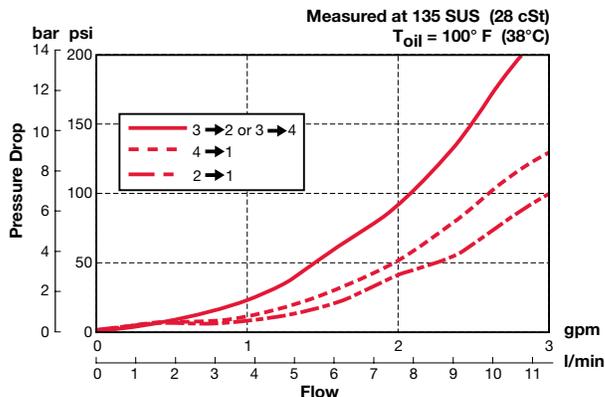
When de-energized the WK06J allows flow from cylinder ports 2 and 4 to port 1, port 3 is blocked. When coil S1 is energized the spool shifts and allows flow from port 2 to port 1 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

### Specifications

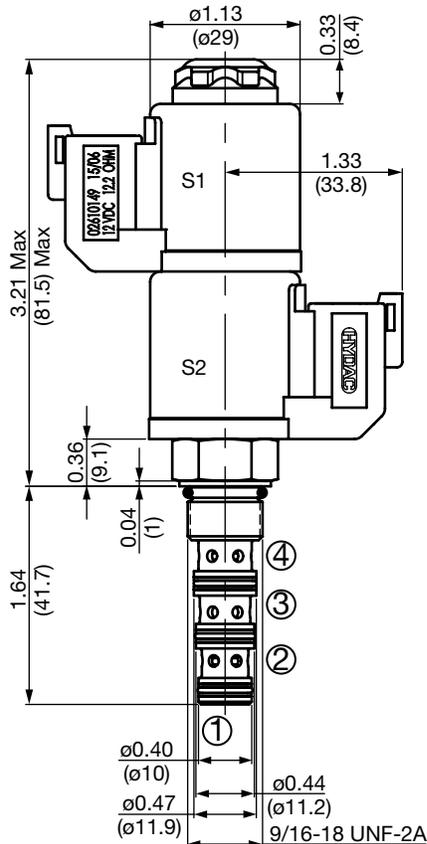
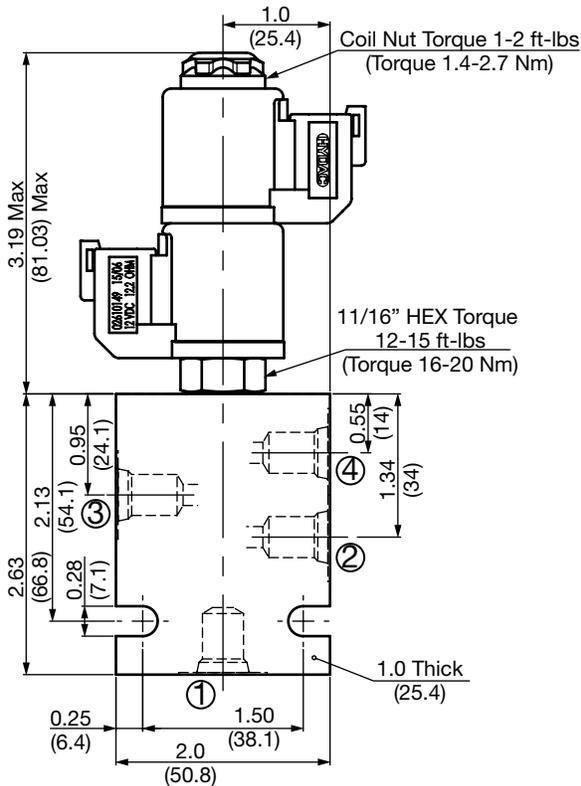
|                                       |  |         |               |
|---------------------------------------|--|---------|---------------|
| Operating Pressure                    | 5000 psi (350 bar), 3000 psi (210 bar) Max Port 1  |         |               |
| Nominal Flow                          | See Operating Limits   |         |               |
| Internal Leakage                      | 11.6 cu in/min. at 3000 psi and 158 SUS (190 cc/min at 250 bar and 34 cSt)   |         |               |
| Fluid Operating Temp. Range           | -20° to 248°F (-29° to 120° C)   |         |               |
| Ambient Temperature Range             | -20° to +140°F (-29° to +60°C)   |         |               |
| Coil Duty Rating                      | Continuous from 85% to 115% of nominal voltage   |         |               |
| Current Draw at 68°F (20°C)           | 984 mA at 12VDC; 492 mA at 24VDC   |         |               |
| Min. Pull-in Current to Operate Valve | 70% of nominal amperage  |         |               |
| Fluid Compatibility                   | Mineral-Based or Synthetics with lubricating properties  |         |               |
| Viscosity                             | 50 to 2000 SUS (7.4 to 420 cSt)  |         |               |
| Filtration                            | 21/19/16 or cleaner per (ISO 4406)   |         |               |
| Installation                          | No orientation restrictions  |         |               |
| Cavity                                | FC06-4 (see <i>Line Bodies &amp; Cavities</i> section)   |         |               |
| Cavity Tools                          | Rougher: 02582057<br>Finisher: 02582058  |         |               |
| Cartridge Weight                      | 3.6 oz (102 grams)   |         |               |
| Coil Weight                           | 3.1 oz (88 grams) each (2 required)  |         |               |
| Cartridge Material                    | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |         |               |
| Coil Material                         | Class N, 200°C high temperature magnet wire, steel shell, polyester encapsulation.   |         |               |
| Seal Kits                             | Buna-N   | FS064-N | P/N: 02610188 |
|                                       | Viton®   | FS064-V | P/N: 02610189 |



### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK06J-01 M-C-N-24 DN

### Valve Model

### Override Option

- blank = No manual override
- M = Manual override, not detented
- A = Manual override, detented

### Body & Ports

- C = Cartridge only
- AS4 = SAE-4 Ports, aluminum body
- SS4 = SAE-4 Ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- AC 115 = 105 VDC (only available with connector DG)
- 230 = 205 VDC (only available with connector DG)

(All model 32-1329 coils are DC. AC models require an external diode bridge mounted outside the coil)\*\*

### Coil Connector

- DG = EN 175301-803-B (IP65 Rated)\*\*
- DC DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*
- DN = Deutsch DT04-2P intergral molded (IP69K Rated)\*

Use mating plug EN 175301-803-B without diode bridge for DC voltages P/N 02600570

Use mating plug EN 175301-803-B w/diode bridge for AC voltages P/N 02600582

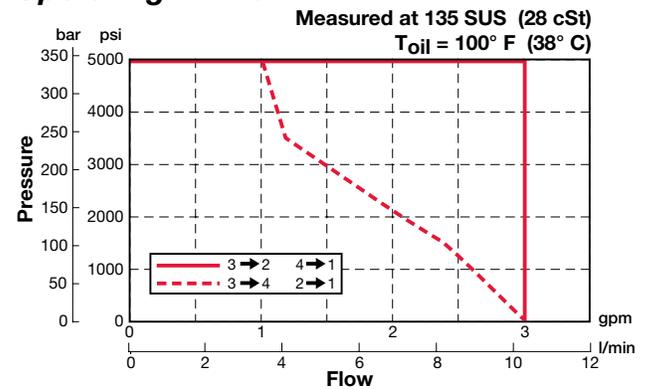
### Coil Model 32-1329

For other coil connector types consult factory

\*\* Mating Plugs sold separately

\*Coils with internal transient suppression diode are available, consult factory.

## Operating Limits

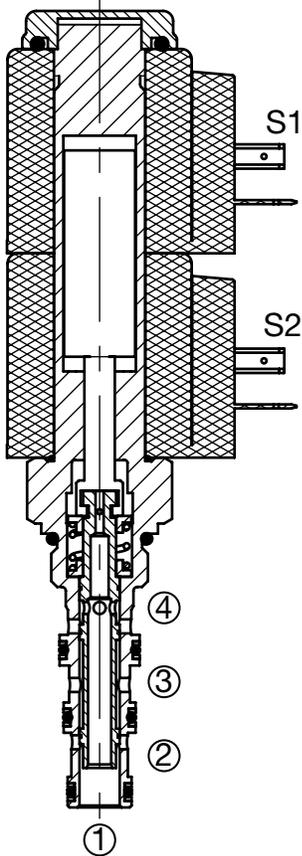


## Standard Line Bodies\*

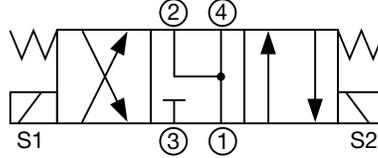
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH064-AS4 | 02600462 | Aluminum, anodized | 3500 psi (245 bar) | 0.41 lbs (0.19 kg) |
| FH064-SS4 | 02600461 | Steel, zinc plated | 6000 psi (420 bar) | 1.22 lbs (0.55 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK08J-01 Spool Type, Direct Acting Up to 5 gpm (19 l/min) • 5000 psi (350 bar)



### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

When de-energized the WK08J allows flow from cylinder ports 2 and 4 to port 1, port 3 is blocked. When coil S1 is energized the spool shifts and allows flow from port 2 to port 1 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

**Operation of Manual Override Option:** To override, twist knurled screw and push or pull to shift spool.

Detented version - twist again after pushing/pulling to hold position.

### Features

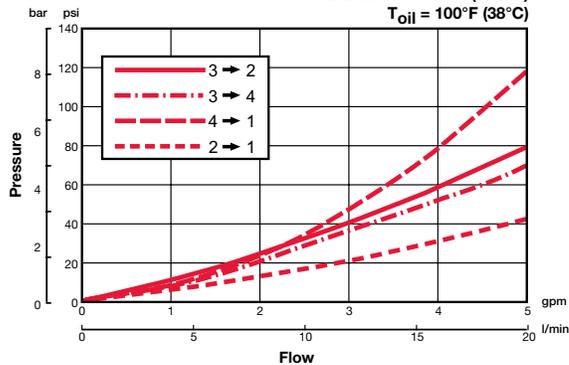
- Push/pull type manual override button, detented manual override option.
- High flow capacity

### Specifications

|  |   |
|--|---|
| Operating Pressure                                       | 5000 psi (350 bar)  |
| Nominal Flow   | 5 gpm at 3000 psi (20 l/min@ 210 bar)   |
| Internal Leakage   | 10 cu in/min. at 3000 psi and 158 SUS (160 cc/min at 210 bar and 34 cSt)  |
| Fluid Operating Temp Range                               | -20° to 248°F (-29° to 120°C)   |
| Ambient Temperature Range                                | -20° to 140°F (-29° to 60°C)  |
| Coil Duty Rating   | Continuous from 85% to 115% of nominal voltage  |
| Current Draw at 68°F (20°C)                              | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Minimum Pull-in Current                                  | 75% of nominal amperage   |
| Typical Response Time<br>(Varies with Pressure and Flow) | On: 30 to 60 ms<br>Off: 20 to 40 ms   |
| Fluid Compatibility                                      | Mineral-Based or Synthetics with lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration   | 21/19/16 or cleaner per (ISO 4406)  |
| Installation   | No orientation restrictions   |
| Cavity   | FC08-4 (see Line Bodies & Cavities section)   |
| Cavity Tools   | Rougher: 02580088<br>Finisher: 02580089   |
| Cartridge Weight   | 0.6 lbs (0.27 kg)   |
| Coil Weight  | 2 x 0.42 lbs (2 x 0.19 kg)  |
| Cartridge Material                                       | Steel with hardened work surfaces.<br>Zinc plated solenoid tube surface.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Coil Material  | Class N high temperature magnet wire, steel shell, polyamid encapsulation.  |
| Seal Kits  | Buna-N FS084-N P/N: 03071272<br>Viton® FS084-V P/N: 03071273  |

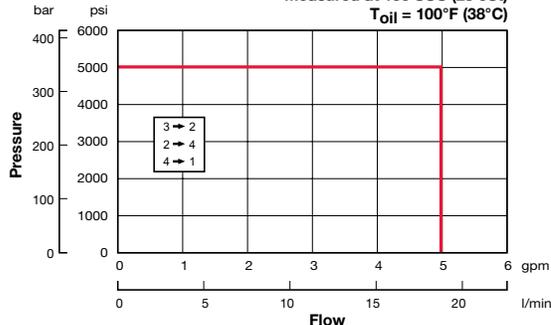
### Performance

Measured at 135 SUS (28 cSt)  
Toil = 100°F (38°C)

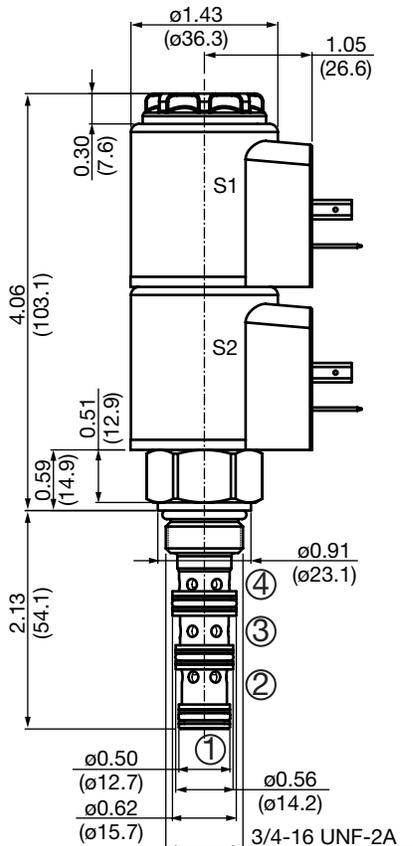
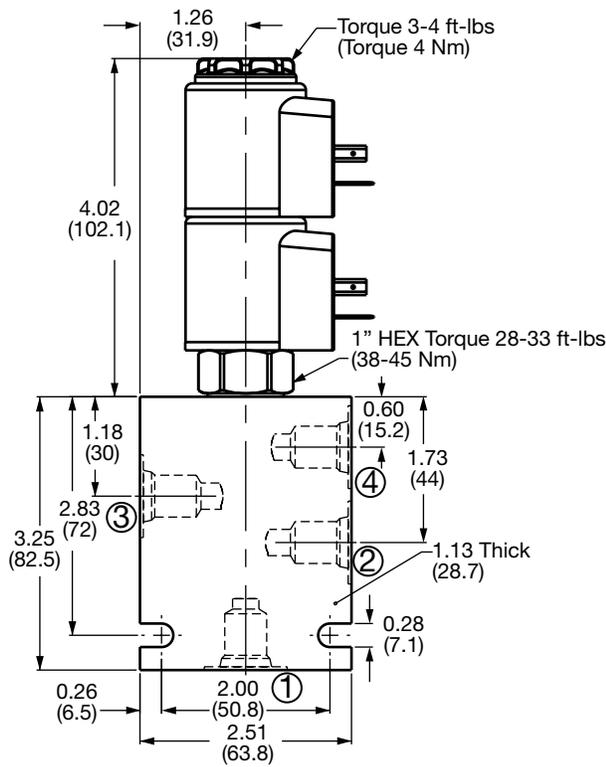


### Operating Limits

Measured at 135 SUS (28 cSt)  
Toil = 100°F (38°C)



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

WK08J-01-M-C-N-24 DN

Valve Model

Override Option

- (omit) = No manual override
- M = Push/pull type, not detented
- A = Push/pull type, detented

Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

Seals

- N = Buna-N
- V = Viton®

Coil Voltage

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)

AC

- 24 = 24 VAC
- 115 = 115 VAC
- 230 = 230 VAC

Coil Connector

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

Coil Model 40-1836, 2 per assembly

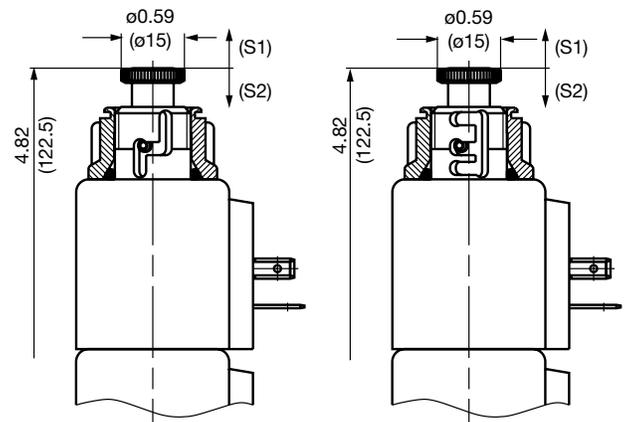
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory

## Manual Override Options

Option M - Non Detented

Option A - Detented



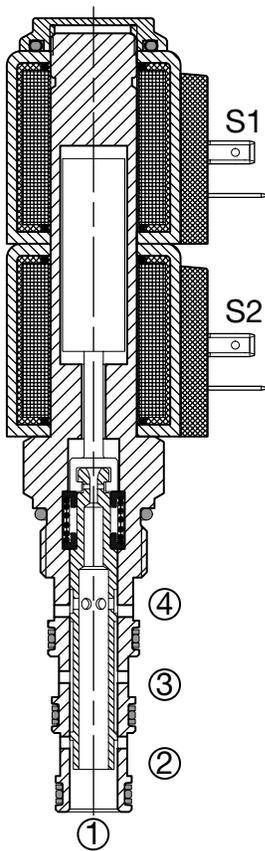
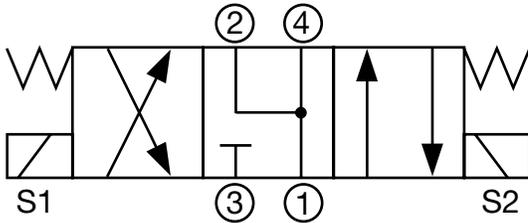
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH084-AS6 | 03011404 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lb (0.33 kg) |
| FH084-SS6 | 00563381 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lb (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10J-01 Spool Type, Direct Acting Up to 6 gpm (23 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

When de-energized the WK10J allows flow from cylinder ports 2 and 4 to port 1, port 3 is blocked. When coil S1 is energized the spool shifts and allows flow from port 1 to port 2 and from port 3 to port 4. When coil S2 is energized the spool shifts and allows flow from port 4 to port 1 and from port 3 to port 2.

**Operation of Manual Override Option:** To override, twist knurled screw and push or pull to shift spool.

Detented version - twist again after pushing/pulling to hold position.

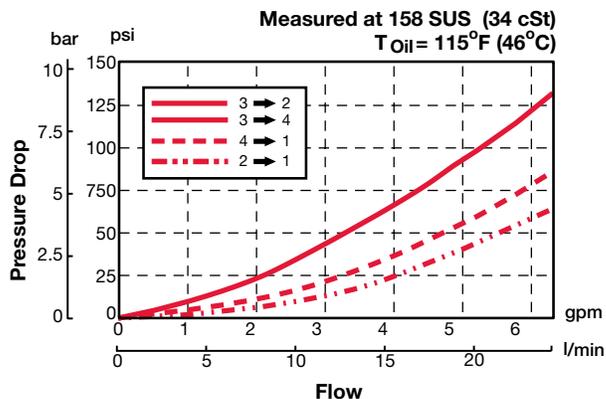
### Features

- Push/pull type manual override button, detented manual override option.

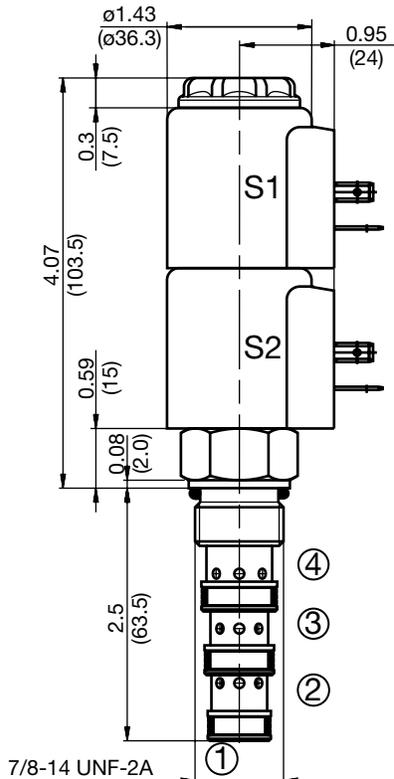
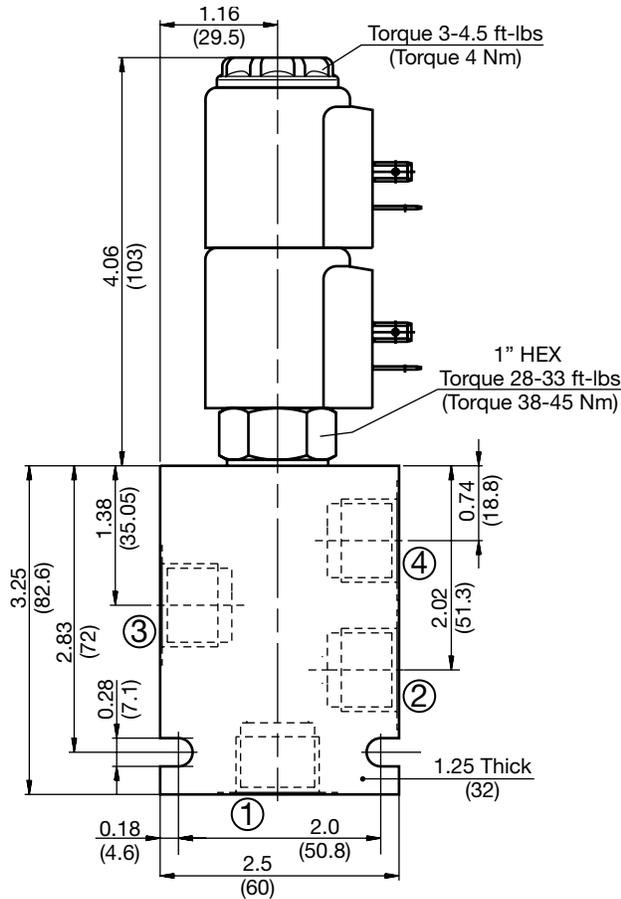
### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 5000 psi (350 bar)  |
| Nominal Flow                | 6 gpm at 3000 psi (23 l/min at 210 bar)<br><i>Consult factory for flow rating above 3000 psi (210 bar)</i>              |
| Internal Leakage            | 10 cu in/min. at 3000 psi and 158 SUS<br>(160 cc/min at 210 bar and 34 cSt)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range   | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating            | Continuous from 85% to 115% of nominal voltage  |
| Current Draw at 68°F (20°C) | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Minimum Pull-in Current     | 90% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight            | 0.64 lbs (0.29 kg)  |
| Coil Weight                 | 0.42 lbs (0.19 kg) - 2 coils required   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material               | Class H high temperature magnetwire,<br>steel shell, polyamid encapsulation.  |
| Seal Kits                   | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10J-01-M-C-N-24 DN**

Valve Model \_\_\_\_\_

Override Option \_\_\_\_\_

- (omit) = No manual override
- M = Push/pull type, not detented
- A = Push/pull type, detented

Body & Ports \_\_\_\_\_

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals \_\_\_\_\_

- N = Buna-N
- V = Viton®

Coil Voltage \_\_\_\_\_

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC
- 230 = 230 VAC

Coil Connector \_\_\_\_\_

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

Coil Model 40-1836, 2 per assembly

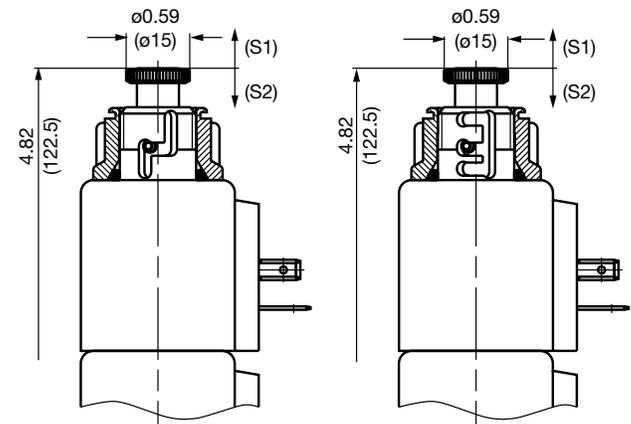
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Manual Override Options

Option M - Non Detented

Option A - Detented



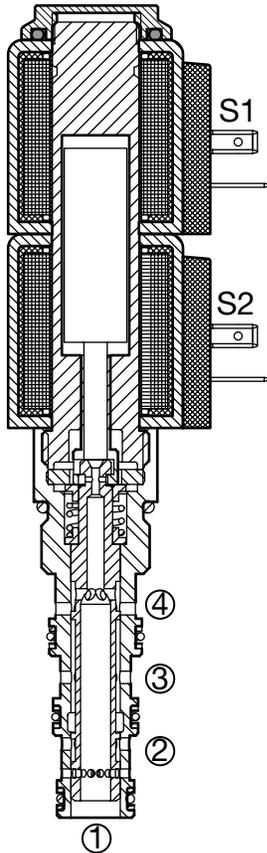
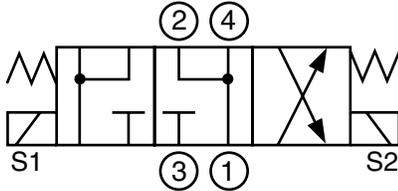
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lb (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lb (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details

## WK10T-01 Spool Type, Direct Acting Up to 6 gpm (23 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, solenoid operated, 4-way, 3 position, direct acting, spool type valve.

### Operation

When de-energized the WK10T allows flow from cylinder ports 2 and 4 to port 1, port 3 is blocked. When coil S1 is energized the spool shifts and allows flow from port 3 to port 2 and port 4. When coil S2 is energized the spool shifts and allows flow from port 3 to port 4 and from port 2 to port 1.

**Operation of Manual Override Option:** To override, twist knurled screw and push or pull to shift spool.

Detented version - twist again after pushing/pulling to hold position.

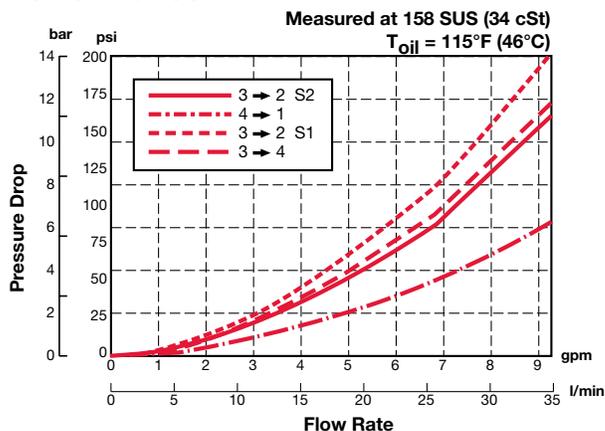
### Features

- Push/pull type manual override button, detented manual override option.

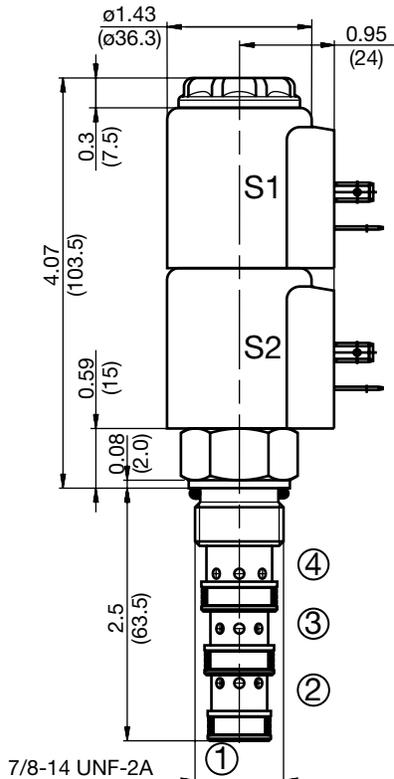
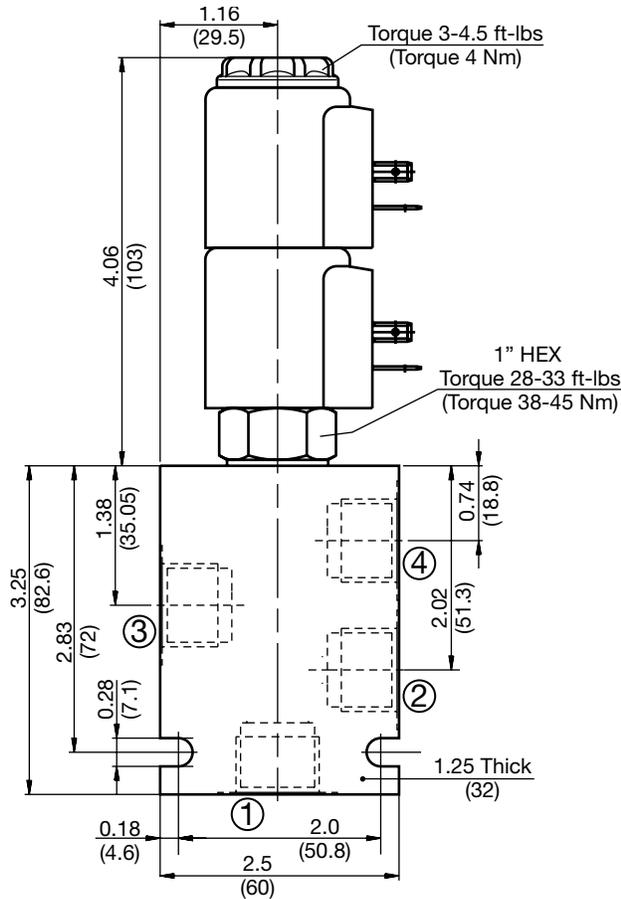
### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 5000 psi (350 bar)  |
| Nominal Flow                | 6 gpm at 3000 psi (23 l/min at 210 bar)<br><i>Consult factory for flow rating above 3000 psi (210 bar)</i>              |
| Internal Leakage            | 10 cu in/min. at 3000 psi and 158 SUS<br>(160 cc/min at 210 bar and 34 cSt)   |
| Fluid Operating Temp. Range | -4° to 248°F (-20° to 120°C)<br><i>(Consult factory for usage at temp. outside range.)</i>                              |
| Ambient Temperature Range   | -4° to 140°F (-20° to 60°C)   |
| Coil Duty Rating            | Continuous from 85% to 115% of nominal voltage  |
| Current Draw at 68°F (20°C) | 1.5 A at 12VDC; 0.8 A at 24VDC  |
| Minimum Pull-in Current     | 85% of nominal @ 5000 psi (350 bar)   |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties   |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_{10} \geq 200$ .                                    |
| Installation                | No orientation restrictions   |
| Cavity                      | FC10-4 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools                | Rougher: 02580248<br>Finisher: 02580249   |
| Cartridge Weight            | 0.64 lbs (0.29 kg)  |
| Coil Weight                 | 0.42 lbs (0.19 kg) - 2 coils required   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Coil Material               | Class N high temperature magnet wire,<br>steel shell, polyamid encapsulation.   |
| Seal Kits                   | Buna-N FS104-N P/N: 03051912<br>Viton® FS104-V P/N: 03071275  |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**WK10T-01-M-C-N-24 DN**

Valve Model \_\_\_\_\_

Override Option \_\_\_\_\_

- (omit) = No manual override
- M = Push/pull type, not detented
- A = Push/pull type, detented

Body & Ports \_\_\_\_\_

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals \_\_\_\_\_

- N = Buna-N
- V = Viton®

Coil Voltage \_\_\_\_\_

- 0 = No coil, cartridge only
- DC 12 = 12 VDC
- 24 = 24 VDC
- 36 = 36 VDC
- 110 = 110 VDC (only available with connector DG)
- AC 24 = 24 VAC
- 115 = 115 VAC
- 230 = 230 VAC

Coil Connector \_\_\_\_\_

- DC DG = EN 175301-803-A
- DS = Dual spade (SAEJ858a)\*
- DL = Leadwires (2) - 18" long (46 cm)\*
- DW = WeatherPak™ on leadwires - 9.5" long (24 cm)\*
- DN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)\*
- DT = Amp Junior Timer™, molded, radial mount\*

AC AG = EN 175301-803-A

Coil Model 40-1836, 2 per assembly

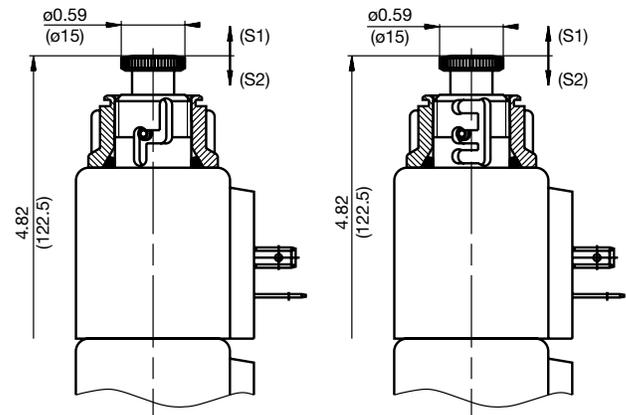
For other coil connector types consult factory

\*Coils with internal diode are available, consult factory.

## Manual Override Options

Option M - Non Detented

Option A - Detented



## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH104-AS8 | 03038110 | Aluminum, anodized | 3500 psi (245 bar) | 0.72 lb (0.33 kg) |
| FH104-SS8 | 03037868 | Steel, zinc plated | 6000 psi (420 bar) | 2.12 lb (0.96 kg) |

\*Please refer to Line Bodies & Cavities section for details



## Overview

HYDAC offers several functions of the Directional Control Cartridges.

- **HYDAC Manually** operated 2 position, 2- way normally closed, spring return, directional valve features poppet design. It offers bi-directional load holding and low internal leakage. Models are available for flows up to 5 gpm (20 lpm) with pressure rating up to 3600 psi (250 bar)
- **HYDAC Piloted** 3-way hydraulically operated spool type directional valve used for functions requiring remote pilot actuation. Models are available for flow rates up to 70 gpm (265 lpm) with pressure rating up to 5000 psi (350 bar).

## Features

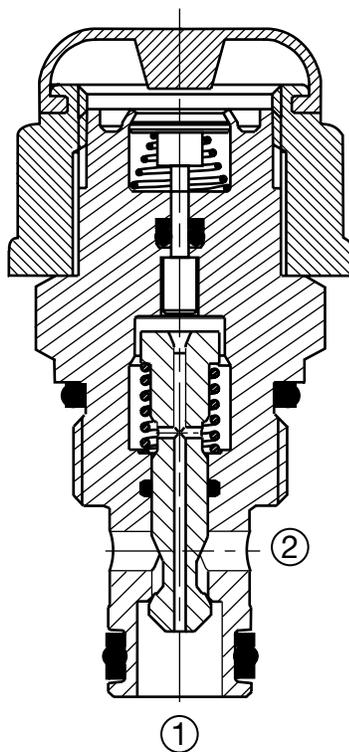
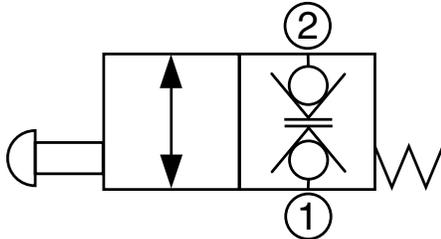
- Hardened spool or poppet to ensure extended service life.
- All external surfaces zinc-plated



## WS08WM-01

### Poppet Bi-directional, Push to Operate, Manually Operated Up to 5 gpm (20 l/min) • 3600 psi (250 bar)

#### Hydraulic Symbol



#### Description

A screw-in cartridge, manually operated, 2-way, 2 position, normally closed, direct acting, poppet type, intended for use as a bi-directional load holding device in hydraulic circuits requiring manual operation and low internal leakage.

#### Operation

The WS08WM-01 blocks flow, leakfree, in both directions until an operator pushes the button against the bias spring and opens the flow path between port 2 to port 1 bi-directionally. The flow path will be open as long as the plastic button is pushed down.

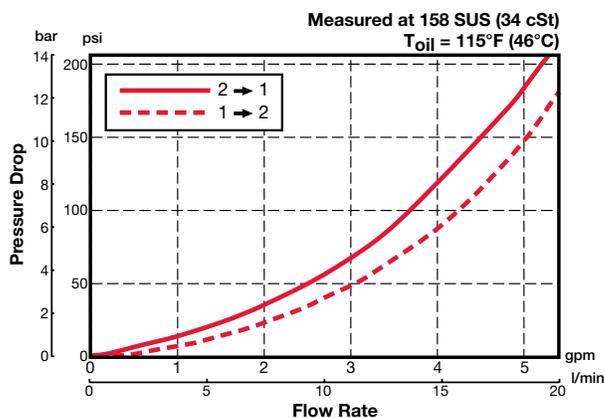
#### Features

- Both ports could be fully pressurized
- Easy to operate manually
- Spring return
- Push type manual override button, protected by rubber cap

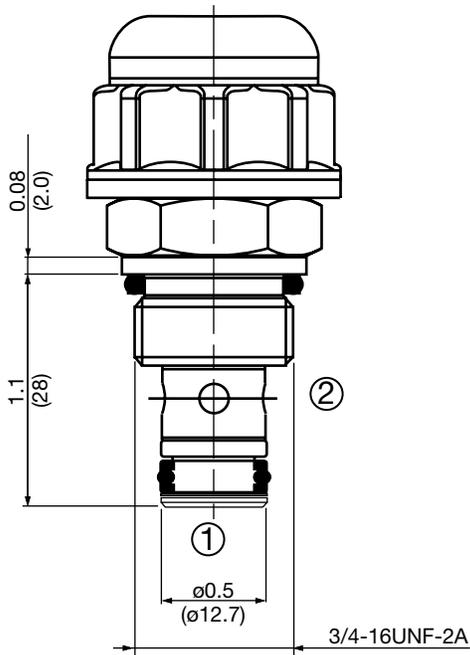
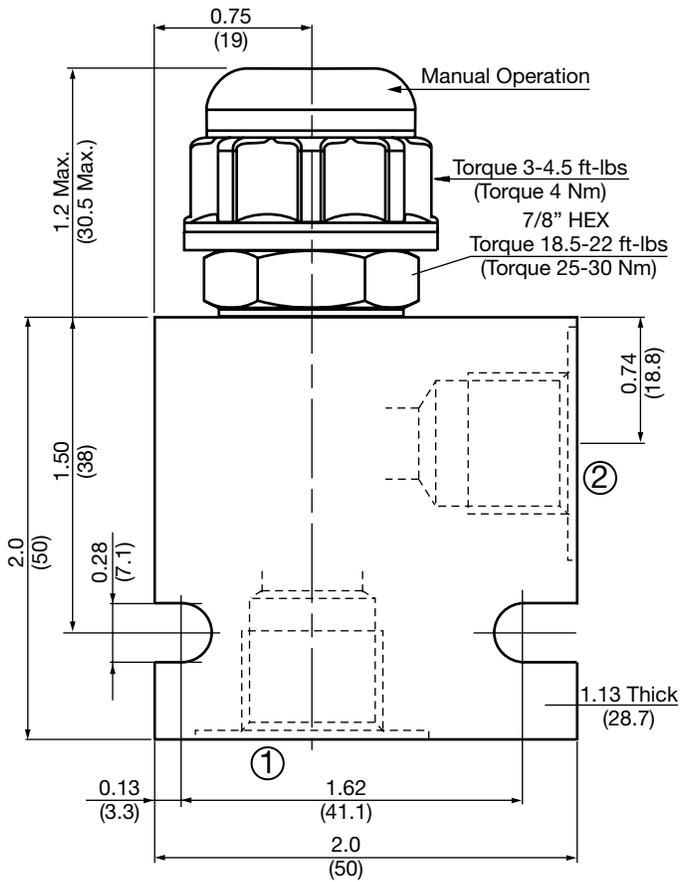
#### Specifications

|                            |   |
|----------------------------|---|
| Operating Pressure         | 3600 psi (250 bar)  |
| Nominal Flow               | 5 gpm (20 l/min)  |
| Internal Leakage           | Leaktight, less than 5 drops/min. at 3600 psi (0.25 cc/min at 250 bar)  |
| Required Push Force        | 9 to 15 Lbs (40 to 70 N) depending on operating pressure  |
| Fluid Operating Temp Range | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                     |
| Ambient Temperature Range  | -4° to 140°F (-20° to 60°C)   |
| Fluid Compatibility        | Mineral-Based or synthetics with lubricating properties.  |
| Viscosity                  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                 | 21/19/16 or cleaner per (ISO 4406)<br>Use with filter rated $\beta_{10} \geq 200$                                       |
| Installation               | No orientation restrictions   |
| Cavity                     | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools               | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight           | 0.19 lbs (0.09 kg)  |
| Cartridge Material         | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                  | Buna-N FS082-N P/N: 03033920<br>Viton® FS082-V P/N: 03051756  |

#### Performance



## Dimensions



All measurements in inches (mm).  
\*Subject to technical modifications

## Model Code

**WS08WM-01-C-N**

Valve Model \_\_\_\_\_

Body & Ports \_\_\_\_\_

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum Body
- SS6 = SAE-6 ports, steel Body

Seals \_\_\_\_\_

- N = Buna-N
- V = Viton®

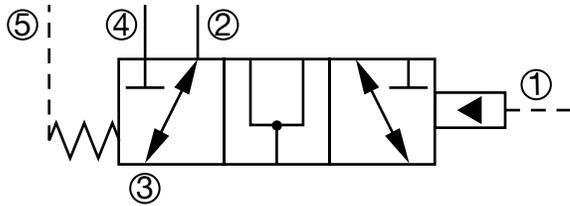
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, zinc plated | 6000 psi (420 bar) | 1.0 lbs (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## HPM45SE-01 Piloted 3-Way Spool, Hydraulically Operated 70 gpm (265 lpm) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge valve, spool type, hydraulically pilot operated directional valve for three way functions requiring remote pilot actuation.

### Operation

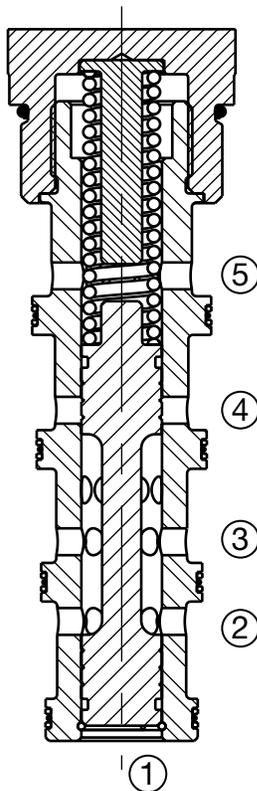
When pilot pressure is applied to port 1, the spool begins to shift redirecting the flow from port 3 to port 2 to port 3 to port 4. Pressure at port 5 is additive to the spring bias.

### Features

- Hardened spool and body to ensure extended service life and low leakage
- All external surfaces zinc-plated

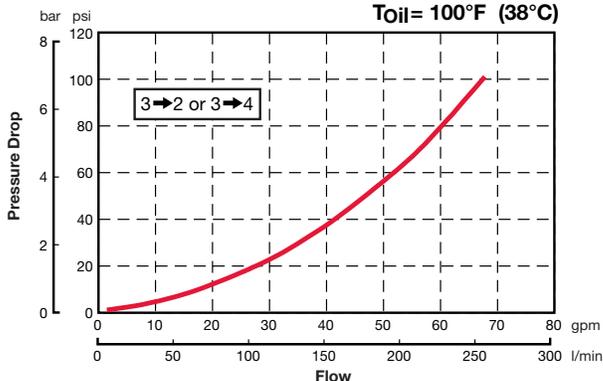
### Specifications

|                             |   |
|-----------------------------|---|
| Operating Pressure          | 5000 psi (350 bar)  |
| Nominal Flow                | 70 gpm (265 l/min) at 100 psi (7 bar) $\Delta P$  |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)   |
| Ambient Temperature Range   | -20° to 248°F (-29° to 120°C)   |
| Fluid Compatibility         | Mineral-Based or synthetics with lubricating properties.  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)  |
| Installation                | No orientation restrictions   |
| Cavity                      | FCM45-5 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                | Rougher: 02582020<br>Finisher: 02582021   |
| Cartridge Weight            | 2.31 lbs (1.05 kg)  |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>PTFE back-up rings. |
| Seal Kits                   | Buna-N P/N: 02610313<br>Viton® P/N: 02610314  |

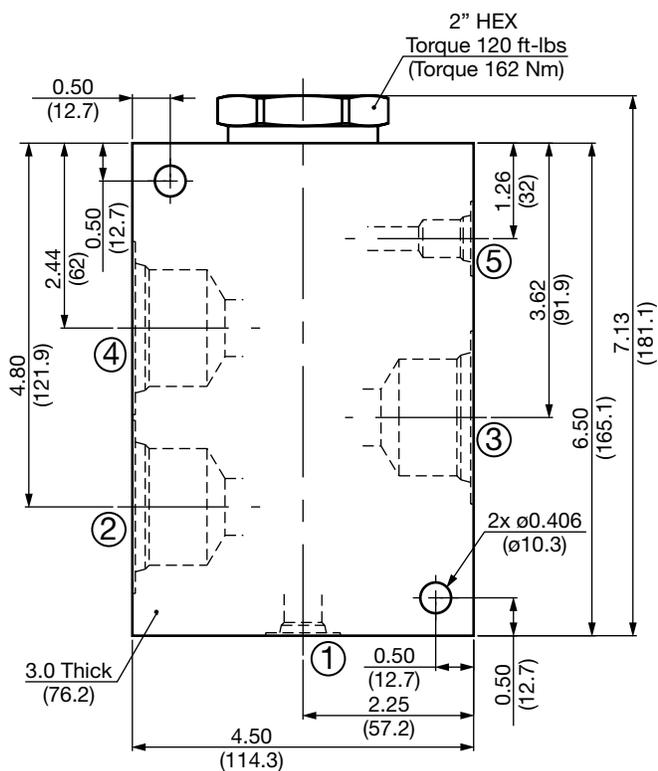


### Performance

Measured at 135 SUS (28 cSt)  
Toil = 100°F (38°C)



## Dimensions



## Model Code

**HPM45SE-01-SS20-N-150**

### Valve Model

### Body & Ports

- C = Cartridge only
- AS20 = SAE-20 Ports, Aluminum Body
- SS20 = SAE-20 Ports, Steel Body
- (Ports 1 & 5 = SAE-6)

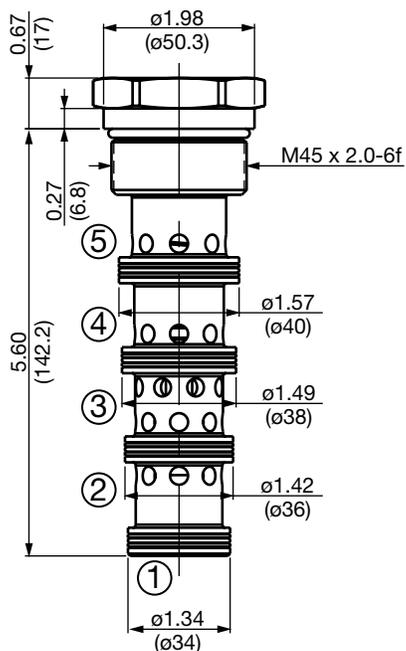
### Seals

- N = Buna-N
- V = Viton®

### Bias Spring\*

- 150 = 150 psi

\*Consult factory for alternative bias springs.



All measurements in inches (mm).  
\*Subject to technical modifications

## Standard Line Bodies\*

| Code        | Part No  | Material           | Pressure Rating    | Weight              |
|-------------|----------|--------------------|--------------------|---------------------|
| FHM455-AS20 | 02600747 | Aluminum, anodized | 3500 psi (245 bar) | 5.88 lbs (2.66 kg)  |
| FHM455-SS20 | 02600563 | Steel, zinc plated | 5000 psi (350 bar) | 17.13 lbs (7.77 kg) |

\*Please refer to Line Bodies & Cavities section for details



## Overview

HYDAC offers a wide range of **Electrically Operated Proportional Pressure Relief Valves and Pressure Reducing/Relieving Valves**. These proportional valves vary the output pressure in response to a variable electric input.

HYDAC electrically controlled, pilot operated proportional pressure relief valves are available with pressure ranges up to 5000 psi (350 bar). Models are available for flow rates up to 79 gpm (300 lpm).

HYDAC electrically controlled, direct acting and pilot operated proportional pressure reducing/relieving valves are available with pressure ranges from 200 psi (14 bar) up to 5000 psi (350 bar). Models are available for flow rates up to 16 gpm (60 lpm). Pressure control valves can be used to regulate the pressure applied to hydraulic actuators.

Electric current controls with PWM are recommended to be used for **HYDAC Proportional Valves**.

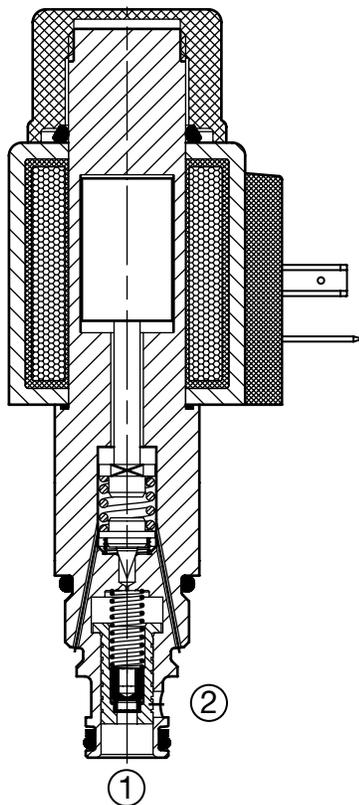
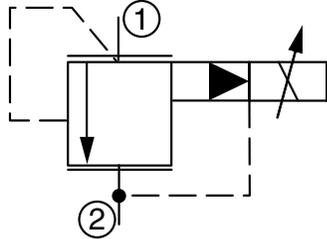
## Features

- Wet armature construction
- Hardened operating parts to ensure minimal wear and extend service life
- One piece cartridge body design to maximize reliability
- Screen on pilot orifice to enhance safety
- Excellent stability throughout flow range
- Proportional water/weather resistant coils rated up to IP69K
- Continuous duty rated coils
- Optional coil voltages and molded-in connectors
- Air bleed screws
- All exposed cartridge surfaces zinc-plated to resist corrosion
- Industry common cavity
- Compact size
- Wide voltage range
- Cartridges are voltage interchangeable
- Low pressure drop



## PDB08P-01 Pressure Relief, Pilot Operated, Spool Type 16 gpm (60 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pilot operated, spool type, pressure relief valve, intended for use as a pressure limiting device. This valve can be infinitely adjusted across a specified range using a variable electric input. Pressure output is proportional to DC current input.

### Operation

The PDB08P-01 blocks flow from port 1 to port 2 until sufficient pressure is reached at port 1 to open the pilot stage by offsetting the electrically induced solenoid force. The pilot stage opens and allows flow from the back of the main piston to port 2. The resulting pressure imbalance causes the main spool to move against the return spring and allows flow from port 1 to port 2.

Electrical current increase will increase the relief pressure setting. With no current applied to the solenoid, the valve will relieve at approximately 75 psi.

### Features

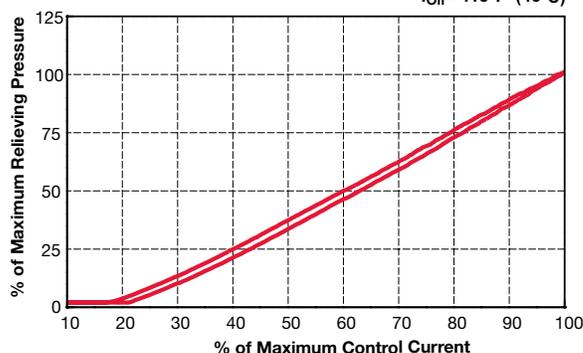
- Excellent stability throughout flow range
- 12 and 24 volt proportional waterproof coils
- Screen on pilot orifice to enhance safety
- Manual override option

### Specifications

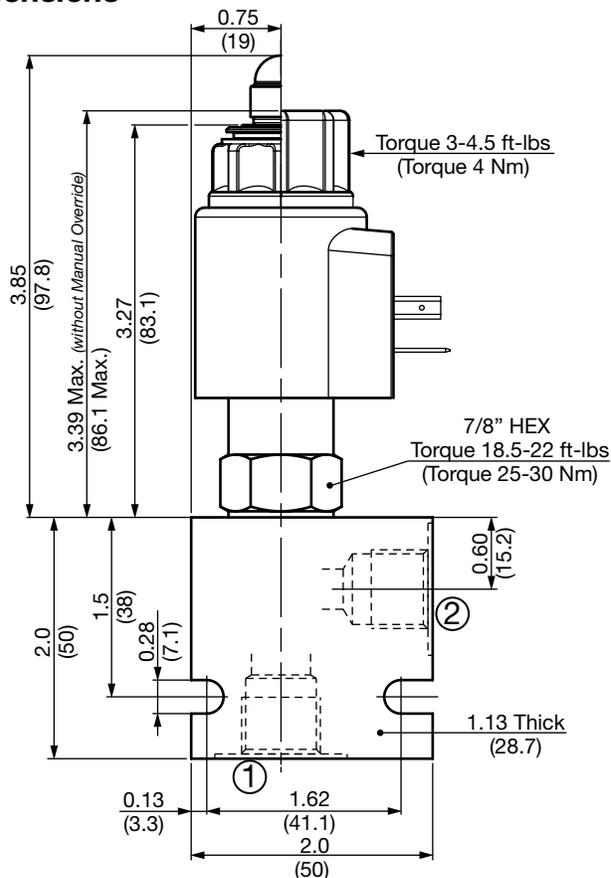
|   |   |
|---|---|
| Operating Pressure  | 5000 psi (350 bar) max at port 2  |
| Nominal Flow  | 16 gpm (60 l/min)   |
| Maximum Pilot Flow  | 3.75 cu in/min. (0.5 l/min)   |
| Relieving Pressure Ranges<br>(0 to maximum control current) | 75 to 870 psi (5 to 60 bar)<br>75 to 3300 psi (5 to 230 bar)<br>75 to 5000 psi (5 to 350 bar)                               |
| Maximum Control Current                                     | 2.1 amps for 12VDC coil (2.2 Ohms)<br>1.05 amps for 24VDC coil (8.8 Ohms)   |
| Dither Frequency  | 160 to 250 Hz   |
| Hysteresis With Dither                                      | 2-4% of maximum control current   |
| Typical Step Response Time                                  | ON: approx 50 ms, OFF: approx. 30 ms  |
| Repeatability   | <= 1.5% of maximum pressure range   |
| Reversal Span   | <= 2% of maximum  |
| Response Sensitivity  | <= 1% of maximum control current  |
| Ambient Temperature Range                                   | -4° to 140°F (-20° to 60°C)   |
| Fluid Operating Temp. Range                                 | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)   |
| Fluid Compatibility   | Mineral-based or synthetics with lubricating properties   |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration  | 18/16/13 or cleaner (per ISO 4406)<br>Use with filter rated $\beta_3 \geq 200$ .  |
| Installation  | No orientation restrictions   |
| Cavity  | FC08-2 (see Line Bodies & Cavities section)   |
| Cavity Tools  | Rougher: 02580090<br>Finisher: 02580091   |
| Cartridge Weight  | 0.44 Lbs. (0.20 kg)   |
| Coil Weight   | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material  | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and<br>PTFE back-up rings. |
| Coil Material   | Class N high temperature magnet wire<br>steel shell, polyamid encapsulation   |
| Seal Kits   | Buna-N P/N: 03033920<br>Viton® P/N: 03031756  |

### Performance

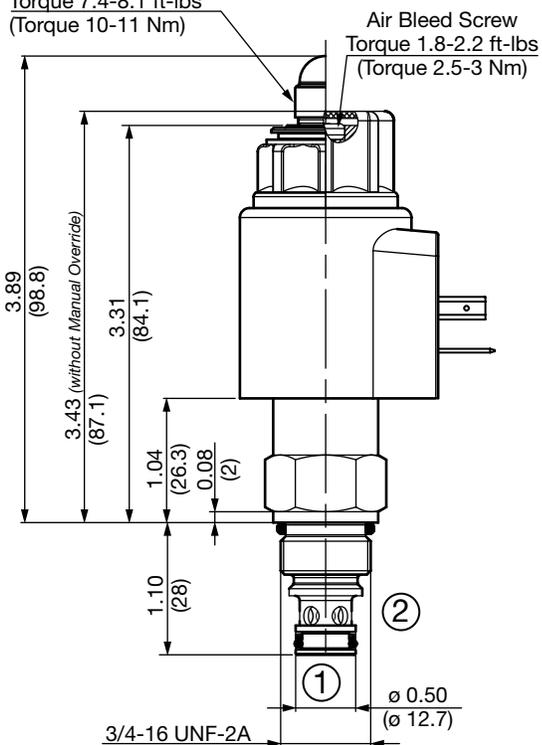
Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^\circ\text{F} (46^\circ\text{C})$



## Dimensions



**Manual Override**  
(Emergency pressure adjustment)  
Torque 7.4-8.1 ft-lbs  
(Torque 10-11 Nm)



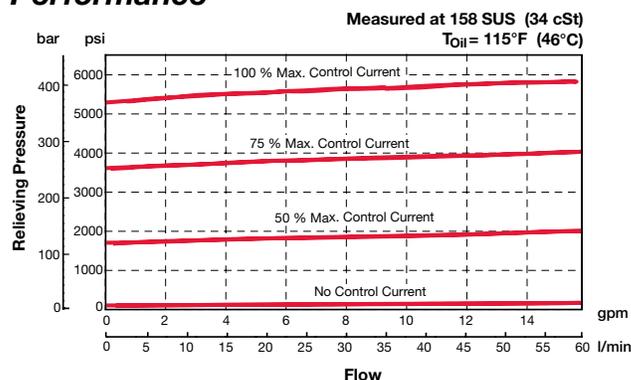
All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**PDB08P-01-M-C-N-330-24 PG 8.8**

|   |           |
|---|-----------|
| <b>Valve Model</b>                                    | _____     |
| <b>Override Options</b>                               | _____     |
| (omit) = No manual override                           |           |
| M = Manual override                                   |           |
| <b>Body &amp; Ports</b>                               | _____     |
| C = Cartridge only                                    |           |
| AS6 = SAE-6 ports, aluminum body                      |           |
| SS6 = SAE-6 ports, steel body                         |           |
| <b>Seals</b>  | _____     |
| N = Buna-N  |           |
| V = Viton®  |           |
| <b>Pressure Range</b>                                 | _____     |
| 87 = 75 to 870 psi (5 to 60 bar)                      |           |
| 330 = 75 to 3300 psi (5 to 230 bar)                   |           |
| 500 = 75 to 5000 psi (5 to 350 bar)                   |           |
| <b>Coil Voltage</b>                                   | _____     |
| 0 = No coil, cartridge only                           |           |
| 12 = 12 VDC   |           |
| 24 = 24 VDC   |           |
| <b>Coil Connector</b>                                 | _____     |
| PG = EN 175301-803-A                                  |           |
| PL = Leadwires (2) - 18" long (46 cm)                 |           |
| PN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)    |           |
| PT = Amp Junior Timer™, molded, radial mount          |           |
| <b>Coil Resistance</b>                                | _____     |
| 2.2 = 2.2 Ohms (12 VDC)                               |           |
| 8.8 = 8.8 Ohms (24 VDC)                               |           |
| <b>Coil Model</b>                                     | P-40-1836 |
| <i>For other coil connector types consult factory</i> |           |

## Performance



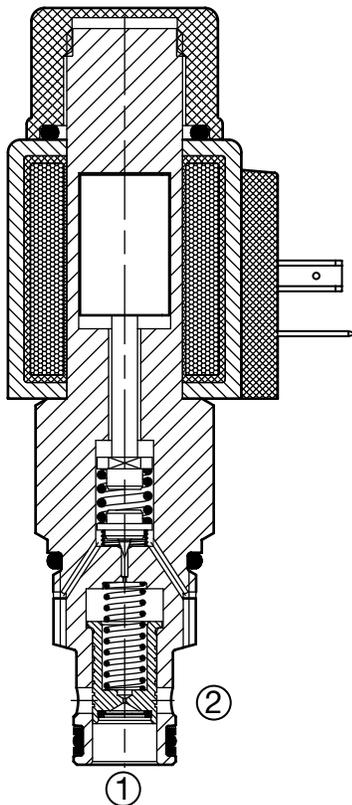
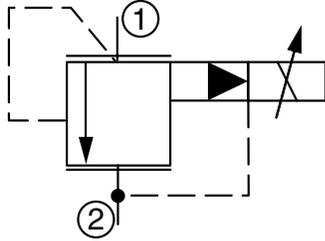
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lb (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, zinc plated | 6000 psi (420 bar) | 1.0 lb (0.45 kg)  |

\*Please refer to Line Bodies & Cavities section for details

## PDB10P-01 Pressure Relief, Pilot Operated, Spool Type 31 gpm (120 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pilot operated, spool type, pressure relief valve, intended for use as a pressure limiting device. This valve can be infinitely adjusted across a specified range using a variable electric input. Pressure output is proportional to DC current input.

### Operation

The PDB10P-01 blocks flow from port 1 to port 2 until sufficient pressure is reached at port 1 to open the pilot stage by offsetting the electrically induced solenoid force. The pilot stage opens and allows flow from the back of the main piston to port 2. The resulting pressure imbalance causes the main spool to move against the return spring and allows flow from port 1 to port 2.

Electrical current increase will increase the relief pressure setting. With no current applied to the solenoid, the valve will relieve at approximately 75 psi.

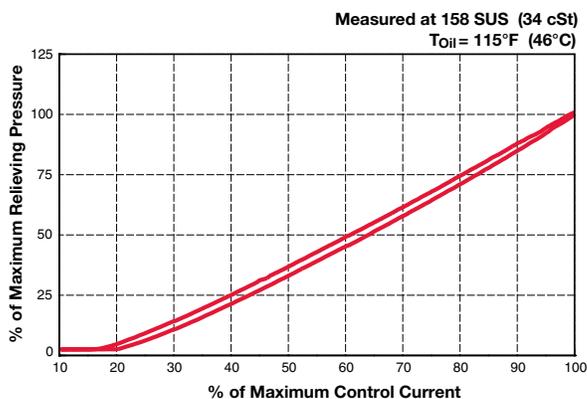
### Features

- Excellent stability throughout flow range
- 12 and 24 volt proportional waterproof coils
- Screen on pilot orifice to enhance safety
- Manual override option

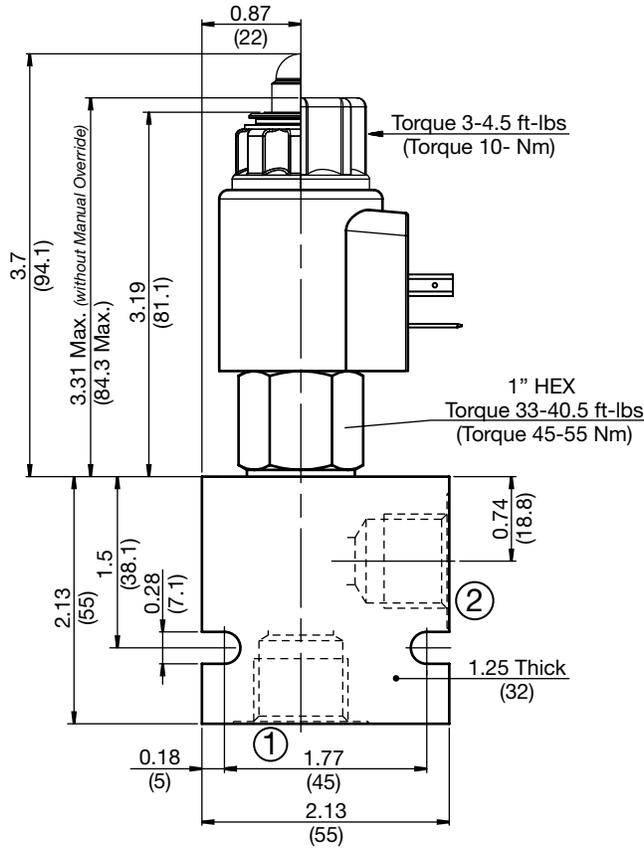
### Specifications

|   |  |
|---|--|
| Operating Pressure  | 5000 psi (350 bar) max at port 2   |
| Nominal Flow  | 31 gpm (120 l/min)   |
| Maximum Pilot Flow  | 3.75 cu in/min. (0.5 l/min)  |
| Relieving Pressure Ranges<br>(0 to maximum control current) | 75 to 870 psi (5 to 60 bar)<br>75 to 3300 psi (5 to 230 bar)<br>75 to 5000 psi (5 to 350 bar)                            |
| Maximum Control Current                                     | 2.1 amps for 12VDC coil (2.2 Ohms)<br>1.05 amps for 24VDC coil (8.8 Ohms)  |
| Dither Frequency  | 160 to 250 Hz  |
| Hysteresis With Dither                                      | 2-4% of maximum control current  |
| Typical Step Response Time                                  | ON: approx 50 ms, OFF: approx. 30 ms   |
| Repeatability   | <= 1.5% of maximum pressure range  |
| Reversal Span   | <= 2% of maximum   |
| Response Sensitivity  | <= 1% of maximum control current   |
| Ambient Temperature Range                                   | -4° to 140°F (-20° to 60°C)  |
| Fluid Operating Temp. Range                                 | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                      |
| Fluid Compatibility   | Mineral-based or synthetics with lubricating properties  |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration  | 18/16/13 or cleaner (per ISO 4406)<br>Use with filter rated $\beta_3 \geq 200$ .   |
| Installation  | No orientation restrictions  |
| Cavity  | FC10-2 (see Line Bodies & Cavities section)  |
| Cavity Tools  | Rougher: 02580274<br>Finisher: 02580247  |
| Cartridge Weight  | 0.57 Lbs. (0.26 kg)  |
| Coil Weight   | 0.42 Lbs. (0.19 kg)  |
| Cartridge Material  | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Coil Material   | Class N high temperature magnet wire<br>steel shell, polyamid encapsulation  |
| Seal Kits   | Buna-N P/N: 03033872<br>Viton® P/N: 03051757   |

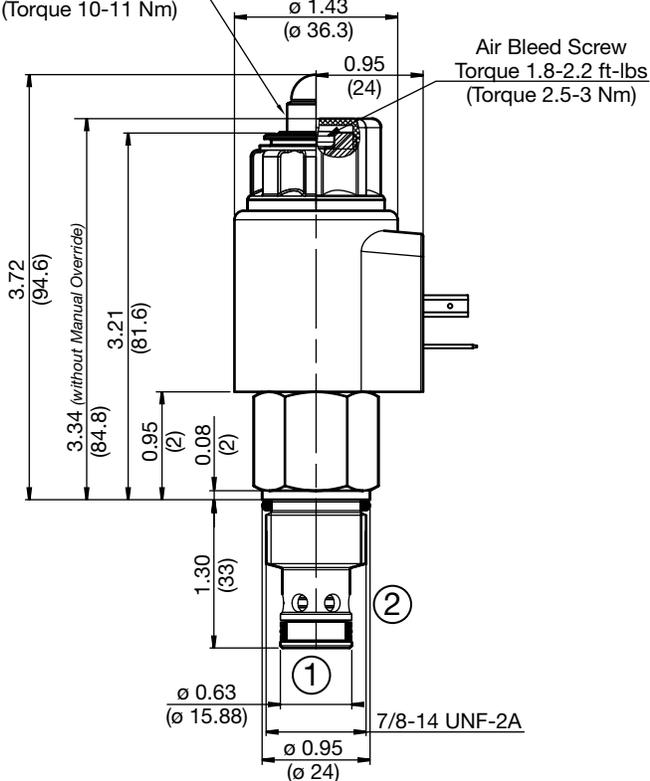
### Performance



## Dimensions



**Manual Override**  
(Emergency pressure adjustment)  
Torque 7.4-8.1 ft-lbs  
(Torque 10-11 Nm)



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**PDB10P-01-M-C-N-330-24 PG 8.8**

Valve Model

Override Options

- (omit) = No manual override
- M = Manual override

Body & Ports

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals

- N = Buna-N
- V = Viton®

Pressure Range

- 87 = 75 to 870 psi (5 to 60 bar)
- 330 = 75 to 3300 psi (5 to 230 bar)
- 500 = 75 to 5000 psi (5 to 350 bar)

Coil Voltage

- 0 = No coil, cartridge only
- 12 = 12 VDC
- 24 = 24 VDC

Coil Connector

- PG = EN 175301-803-A
- PL = Leadwires (2) - 18" long (46 cm)
- PN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)
- PT = Amp Junior Timer™, molded, radial mount

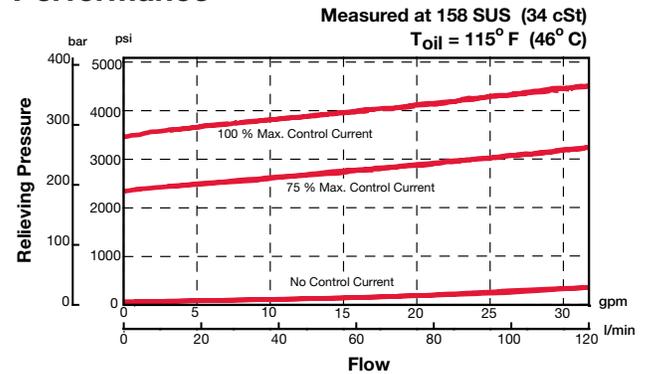
Coil Resistance

- 2.2 = 2.2 Ohms (12 VDC)
- 8.8 = 8.8 Ohms (24 VDC)

Coil Model P-40-1836

For other coil connector types consult factory

## Performance



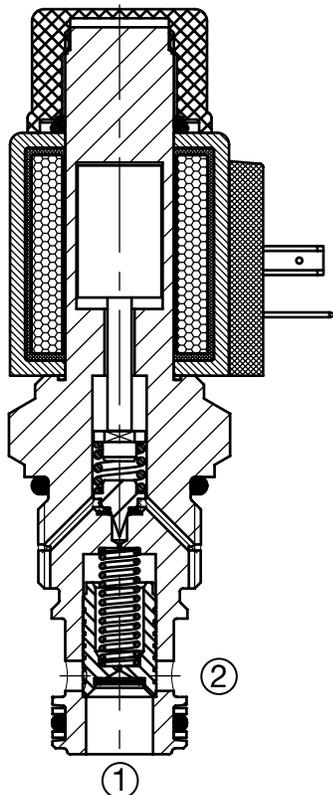
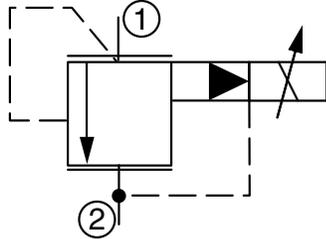
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lb (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, zinc plated | 6000 psi (420 bar) | 1.16 lb (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## PDB12P-01 Pressure Relief, Pilot Operated, Spool Type 53 gpm (200 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pilot operated, spool type, pressure relief valve, intended for use as a pressure limiting device. This valve can be infinitely adjusted across a specified range using a variable electric input. Pressure output is proportional to DC current input.

### Operation

The PDB12P-01 blocks flow from port 1 to port 2 until sufficient pressure is reached at port 1 to open the pilot stage by offsetting the electrically induced solenoid force. The pilot stage opens and allows flow from the back of the main piston to port 2. The resulting pressure imbalance causes the main spool to move against the return spring and allows flow from port 1 to port 2.

Electrical current increase will increase the relief pressure setting. With no current applied to the solenoid, the valve will relieve at approximately 25 psi.

### Features

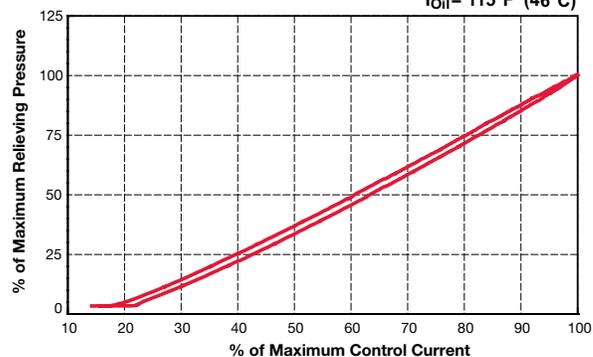
- Excellent stability throughout flow range
- 12 and 24 volt proportional waterproof coils
- Screen on pilot orifice to enhance safety
- Manual override option

### Specifications

|   |  |
|---|--|
| Operating Pressure  | 5000 psi (350 bar) max at port 2   |
| Nominal Flow  | 53 gpm (200 l/min)   |
| Maximum Pilot Flow  | 3.75 cu in/min. (0.5 l/min)  |
| Relieving Pressure Ranges<br>(0 to maximum control current) | 75 to 870 psi (5 to 60 bar)<br>75 to 3300 psi (5 to 230 bar)<br>75 to 5000 psi (5 to 350 bar)                            |
| Maximum Control Current                                     | 2.1 amps for 12VDC coil (2.2 Ohms)<br>1.05 amps for 24VDC coil (8.8 Ohms)  |
| Dither Frequency  | 160 to 250 Hz  |
| Hysteresis With Dither                                      | 2-4% of maximum control current  |
| Typical Step Response Time                                  | ON: approx 50 ms, OFF: approx. 30 ms   |
| Repeatability   | <= 1.5% of maximum pressure range  |
| Reversal Span   | <= 2% of maximum   |
| Response Sensitivity  | <= 1% of maximum control current   |
| Ambient Temperature Range                                   | -4° to 140°F (-20° to 60°C)  |
| Fluid Operating Temp. Range                                 | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                      |
| Fluid Compatibility   | Mineral-based or synthetics with lubricating properties  |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration  | 18/16/13 or cleaner (per ISO 4406)<br>Use with filter rated $\beta_3 \geq 200$ .   |
| Installation  | No orientation restrictions  |
| Cavity  | FC12-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools  | Rougher: 02580668<br>Finisher: 02580667  |
| Cartridge Weight  | 0.70 Lbs. (0.32 kg)  |
| Coil Weight   | 0.42 Lbs. (0.19 kg)  |
| Cartridge Material  | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Coil Material   | Class H high temperature magnetwire<br>steel shell, polyamid encapsulation   |
| Seal Kits   | Buna-N FS122-N P/N: 03071298<br>Viton® FS122-V P/N: 03071299   |

### Performance

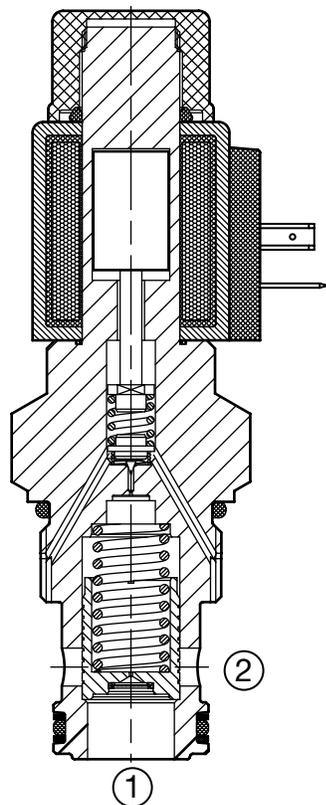
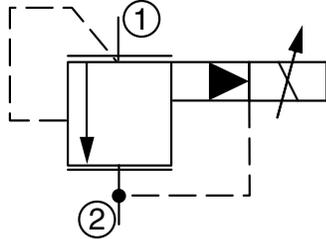
Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^\circ\text{F}$  (46°C)





## PDB16P-01 Pressure Relief, Pilot Operated, Spool Type 79 gpm (300 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pilot operated, spool type, pressure relief valve, intended for use as a pressure limiting device. This valve can be infinitely adjusted across a specified range using a variable electric input. Pressure output is proportional to DC current input.

### Operation

The PDB16P-01 blocks flow from port 1 to port 2 until sufficient pressure is reached at port 1 to open the pilot stage by offsetting the electrically induced solenoid force. The pilot stage opens and allows flow from the back of the main piston to port 2. The resulting pressure imbalance causes the main spool to move against the return spring and allows flow from port 1 to port 2.

Electrical current increase will increase the relief pressure setting. With no current applied to the solenoid, the valve will relieve at approximately 90 psi.

### Features

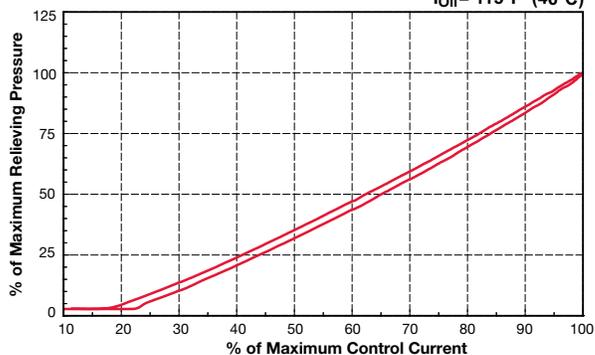
- Excellent stability throughout flow range
- 12 and 24 volt proportional waterproof coils
- Screen on pilot orifice to enhance safety
- Manual override option

### Specifications

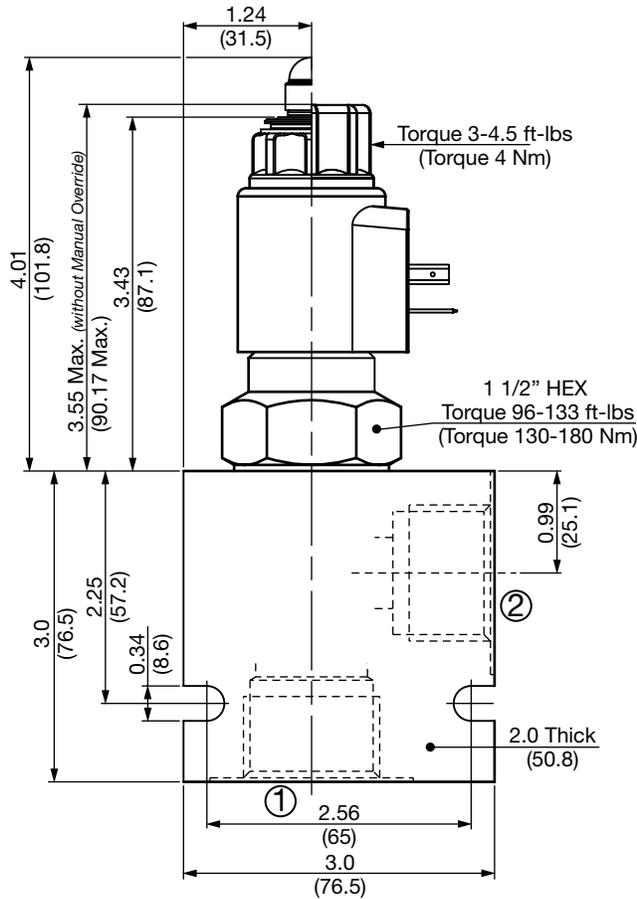
|   |  |
|---|--|
| Operating Pressure  | 5000 psi (350 bar) max at port 2   |
| Nominal Flow  | 79 gpm (300 l/min)   |
| Maximum Pilot Flow  | 3.75 cu in/min. (0.5 l/min)  |
| Relieving Pressure Ranges<br>(0 to maximum control current) | 90 to 870 psi (6 to 60 bar)<br>90 to 3300 psi (6 to 230 bar)<br>90 to 5000 psi (6 to 350 bar)                            |
| Maximum Control Current                                     | 2.1 amps for 12VDC coil (2.2 Ohms)<br>1.05 amps for 24VDC coil (8.8 Ohms)  |
| Dither Frequency  | 160 to 250 Hz  |
| Hysteresis With Dither                                      | 2-4% of maximum control current  |
| Typical Step Response Time                                  | ON: approx 50 ms, OFF: approx. 30 ms   |
| Repeatability   | <= 1.5% of maximum pressure range  |
| Reversal Span   | <= 2% of maximum   |
| Response Sensitivity  | <= 1% of maximum control current   |
| Ambient Temperature Range                                   | -4° to 140°F (-20° to 60°C)  |
| Fluid Operating Temp. Range                                 | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)                                      |
| Fluid Compatibility   | Mineral-based or synthetics with lubricating properties  |
| Viscosity   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration  | 18/16/13 or cleaner (per ISO 4406)<br>Use with filter rated $\beta_3 \geq 200$ .   |
| Installation  | No orientation restrictions  |
| Cavity  | FC16-2 (see Line Bodies & Cavities section)  |
| Cavity Tools  | Rougher: 02580251<br>Finisher: 02580250  |
| Cartridge Weight  | 1.23 Lbs. (0.56 kg)  |
| Coil Weight   | 0.51 Lbs. (0.23 kg)  |
| Cartridge Material  | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings. |
| Coil Material   | Class N high temperature magnet wire<br>steel shell, polyamid encapsulation  |
| Seal Kits   | Buna-N P/N: 03052427<br>Viton® P/N: 03051758   |

### Performance

Measured at 158 SUS (34 cSt)  
 $T_{oil} = 115^\circ\text{F} (46^\circ\text{C})$

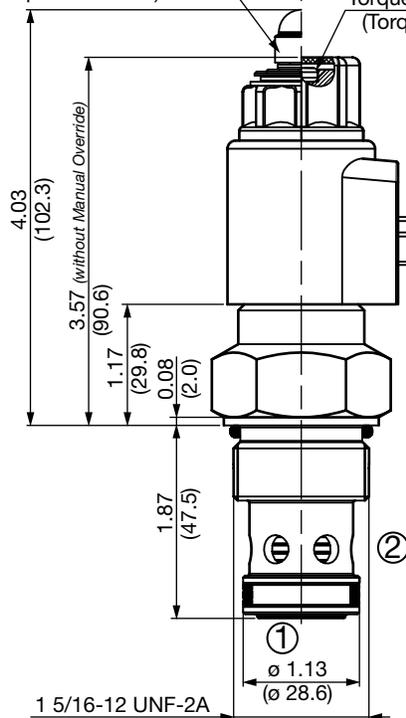


## Dimensions



**Manual Override**  
(Emergency pressure adjustment)  
Torque 7.4-8.1 ft-lbs  
(Torque 10-11 Nm)

**Air Bleed Screw**  
Torque 1.8-2.2 ft-lbs  
(Torque 2.5-3 Nm)



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**PDB16P-01-M-C-N-330-24 PG 8.8**

**Valve Model**

**Override Options**

- (omit) = No manual override
- M = Manual override

**Body & Ports**

- C = Cartridge only
- AS16 = SAE-16 ports, aluminum body
- SS16 = SAE-16 ports, steel body

**Seals**

- N = Buna-N
- V = Viton®

**Pressure Range**

- 87 = 90 to 870 psi (6 to 60 bar)
- 330 = 90 to 3300 psi (6 to 230 bar)
- 500 = 90 to 5000 psi (6 to 350 bar)

**Coil Voltage**

- 0 = No coil, cartridge only
- 12 = 12 VDC
- 24 = 24 VDC

**Coil Connector**

- PG = EN 175301-803-A
- PL = Leadwires (2) - 18" long (46 cm)
- PN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)
- PT = Amp Junior Timer™, molded, radial mount

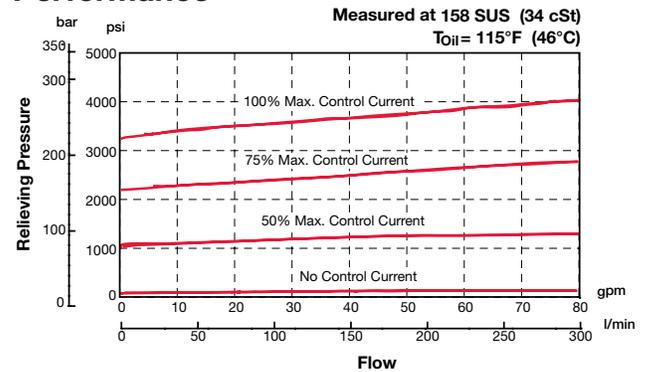
**Coil Resistance**

- 2.2 = 2.2 Ohms (12 VDC)
- 8.8 = 8.8 Ohms (24 VDC)

**Coil Model** P-40-1836

For other coil connector types consult factory

## Performance



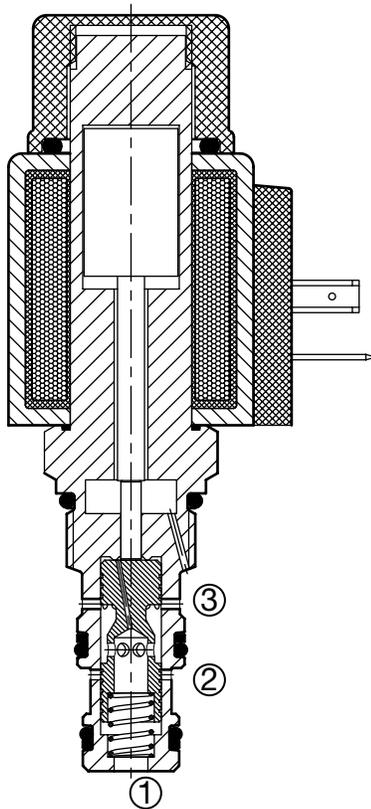
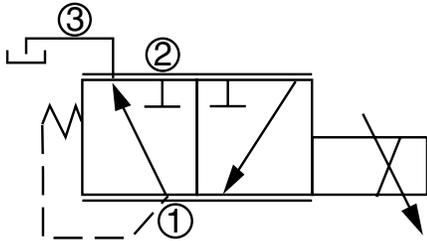
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight            |
|------------|----------|--------------------|--------------------|-------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 lb (0.55 kg)  |
| FH162-SS16 | 03032655 | Steel, zinc plated | 6000 psi (420 bar) | 3.56 lb (1.62 kg) |

\*Please refer to Line Bodies & Cavities section for details

## PDR08-01 Pressure Reducing/Relieving Direct Acting, Spool Type 3 gpm (12 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, direct acting, spool type, pressure reducing/relieving valve, intended for use as a pressure control device, which can proportionally control the reduced pressure across the specified range using variable electrical input signal. Reduced pressure output is proportional to DC current input. This valve maintains a constant reduced pressure regardless of pressure variations in the primary system. In addition to the reducing function, this valve also provides a relief function from the reduced pressure port to the tank port if pressure in the secondary circuit exceeds the set pressure.

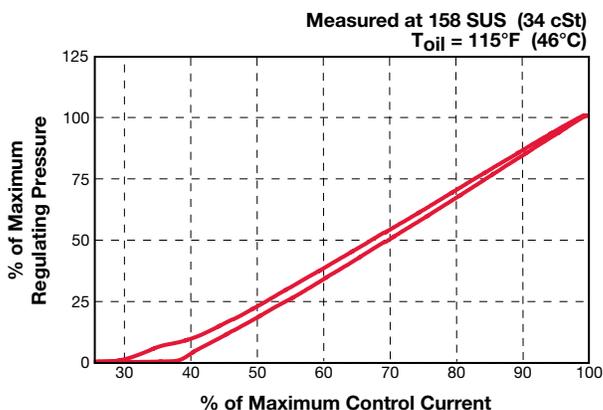
### Operation

When de-energized the PDR08-01 allows flow from port 1 (*reduced pressure port*) to port 3 (*tank*). Port 2 (*inlet*) is blocked. When current signal is applied, the solenoid armature moves the control spool and sets the control (*reduced*) pressure at port 1. Increasing the current applied will increase the reduced pressure proportionally. Port 3 is vented to tank. Back pressure on port 3 is directly additive to the pressure setting.

### Specifications

|  |   |
|--|---|
| Operating Pressure   | 5000 psi (350 bar) max at port 2  |
| Nominal Flow   | 3 gpm (12 l/min)  |
| Flow Path  | De-energized: Free flow, 1 to 3<br>Energized: Reduced, 2 to 1; Relieving, 1 to 3  |
| Internal Leakage   | 3.75 cu in/min. at 5000 psi and 158 SUS<br>(55 cc/min at 350 bar and 34 cSt)  |
| Reducing/Relieving Pressure Ranges<br>(0 to maximum control current) | 0 to 200 psi (0 to 14 bar)<br>0 to 300 psi (0 to 20 bar)<br>0 to 500 psi (0 to 35 bar)<br>0 to 700 psi (0 to 48 bar)<br>0 to 1100 psi (0 to 75 bar)<br>0 to 2000 psi (0 to 138 bar) |
| Maximum Control Current  | 2.1 amps for 12VDC coil (2.2 Ohms)<br>1.05 amps for 24VDC coil (8.8 Ohms)   |
| Dither Frequency   | 160 to 250 Hz   |
| Hysteresis With Dither   | 2-4% of maximum control current   |
| Typical Step Response Time   | ON: approx 40 ms, OFF: approx. 30 ms  |
| Repeatability  | <= 2% of maximum pressure range   |
| Reversal Span  | <= 2% of maximum  |
| Response Sensitivity   | <= 1% of maximum control current  |
| Ambient Temperature Range  | -4° to 140°F (-20° to +60°C)  |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties   |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)   |
| Filtration   | 21/19/16 or cleaner (per ISO 4406).<br>Use with filter rated $\beta_3 \geq 200$ .   |
| Installation   | No orientation restrictions   |
| Cavity   | FC08-3 (see <i>Line Bodies &amp; Cavities</i> section)  |
| Cavity Tools   | Rougher: 02580086<br>Finisher: 02580087   |
| Cartridge Weight   | 0.38 Lbs. (0.17 kg)   |
| Coil Weight  | 0.42 Lbs. (0.19 kg)   |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings.  |
| Coil Material  | Class N high temperature magnet wire steel shell, polyamid encapsulation  |
| Seal Kits  | Buna-N P/N: 03054795<br>Viton® P/N: 02591059  |

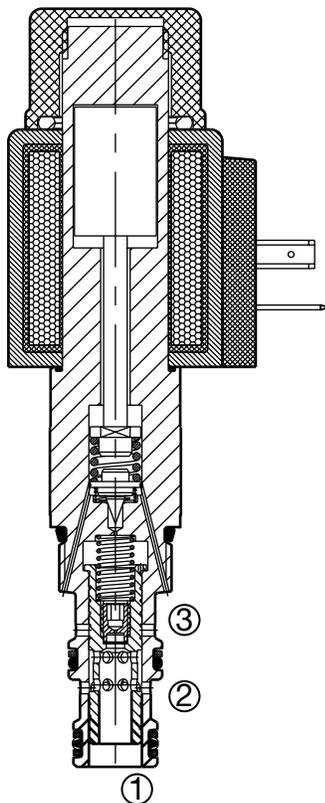
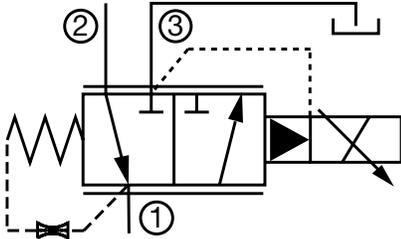
### Performance





## PDR08P-01 Pressure Reducing/Relieving Pilot Operated, Spool Type 16 gpm (60 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pilot operated, spool type, pressure reducing/relieving valve, intended for use as a pressure control device, which can proportionally control the reduced pressure across the specified range using a variable electrical input signal. Reduced pressure output is proportional to DC current input. This valve maintains a constant reduced pressure regardless of pressure variations in the primary system. In addition to the reducing function, this valve also provides a relief function from the reduced pressure port to the tank port, if pressure in the secondary circuit exceeds the set pressure.

### Operation

The PDR08P-01 allows flow from port 2 to port 1 until sufficient pressure is reached at port 1 to open the pilot section by offsetting the electrically induced solenoid force. Increasing electrical current will increase the control (reduced) pressure at port 1. Any pressure on port 3 is additive to the pressure setting. With no current applied to the solenoid, the valve will maintain pressure at approximately 75 psi, regardless of the pressure at port 2.

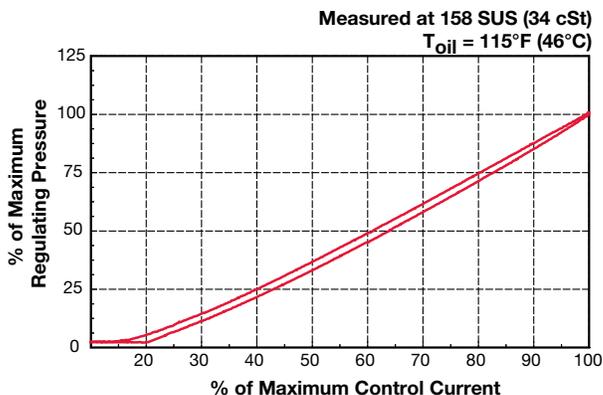
### Features

- Screen on pilot orifice to enhance safety
- 12 and 24 volt proportional waterproof coils
- Manual override option

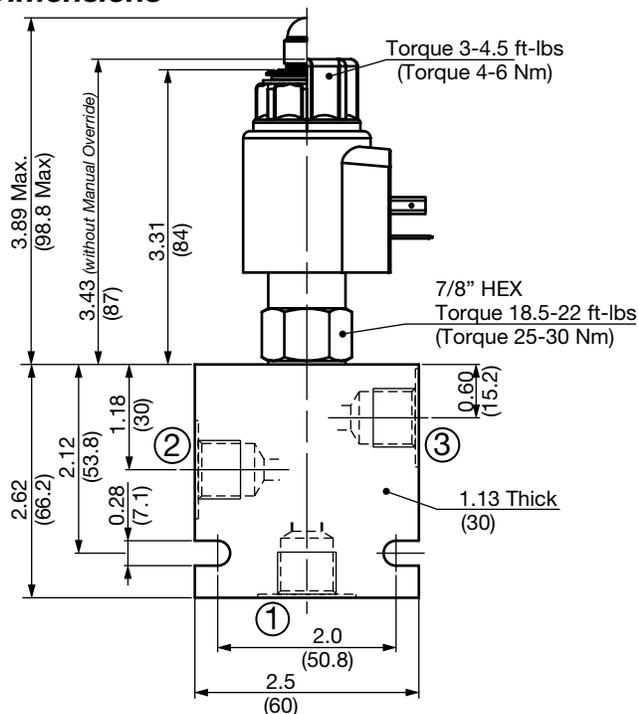
### Specifications

|                                    |  |
|------------------------------------|--|
| Operating Pressure                 | 5000 psi (350 bar) max at port 2   |
| Nominal Flow                       | 16 gpm (60 l/min)  |
| Flow Path                          | De-energized: 1 to 2 & 2 to 1<br>Energized: 2 to 1; Relieving: 1 to 3  |
| Maximum Pilot Flow                 | 3.75 cu in/min. at 5000 psi<br>(0.5 l/min at 350 bar)  |
| Reducing/Relieving Pressure Ranges | 75 to 870 psi (5 to 60 bar)<br>75 to 3300 psi (5 to 230 bar)<br>(0 to maximum control current) 75 to 5500 psi (5 to 350 bar) |
| Maximum Control Current            | 2.1 amps for 12VDC coil (2.2 Ohms)<br>1.05 amps for 24VDC coil (8.8 Ohms)  |
| Dither Frequency                   | 160 to 250 Hz  |
| Hysteresis With Dither             | 2-4% of maximum control current  |
| Typical Step Response Time         | ON: approx 60 ms, OFF: approx. 40 ms   |
| Repeatability                      | <= 1.5% of maximum pressure range  |
| Reversal Span                      | <= 2% of maximum   |
| Response Sensitivity               | <= 1% of maximum control current   |
| Ambient Temperature Range          | -4° to 140°F (-20° to 60°C)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(Consult factory for usage at temp. outside range.)  |
| Fluid Compatibility                | Mineral-based or synthetics with lubricating properties  |
| Viscosity                          | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                         | 18/16/13 or cleaner (per ISO 4406)<br>Use with filter rated $\beta_3 \geq 200$ .   |
| Installation                       | No orientation restrictions  |
| Cavity                             | FC08-3 (see Line Bodies & Cavities section)  |
| Cavity Tools                       | Rougher: 02580086<br>Finisher: 02580087  |
| Cartridge Weight                   | 0.57 Lbs. (0.26 kg)  |
| Coil Weight                        | 0.42 Lbs. (0.19 kg)  |
| Cartridge Material                 | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings.     |
| Coil Material                      | Class N high temperature magnet wire<br>steel shell, polyamid encapsulation  |
| Seal Kits                          | Buna-N P/N: 03054795<br>Viton® P/N: 02591059   |

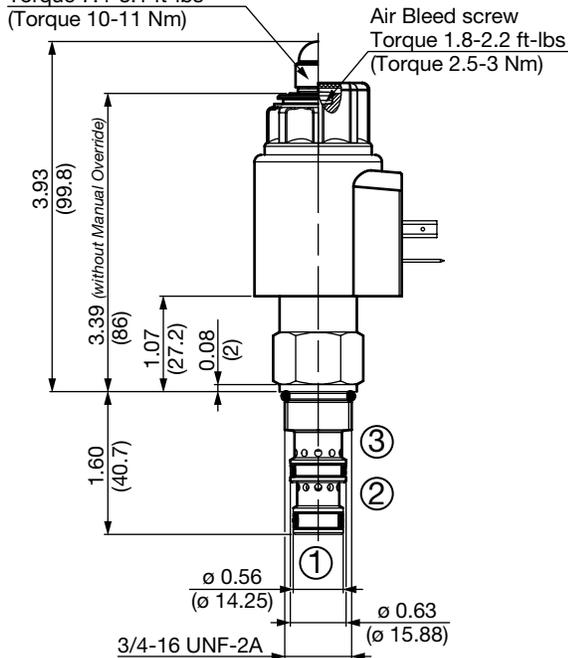
### Performance



## Dimensions



Manual Override  
(Emergency pressure adjustment)  
Torque 7.4-8.1 ft-lbs  
(Torque 10-11 Nm)



All measurements in inches (mm).  
Subject to technical modifications

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH083-AS6 | 03011424 | Aluminum, anodized | 3500 psi (245 bar) | 0.58 lb (0.26 kg) |
| FH083-SS6 | 00560920 | Steel, zinc plated | 6000 psi (420 bar) | 1.70 lb (0.77 kg) |

\*Please refer to Line Bodies & Cavities section for details

## Model Code

**PDR08P-01-M-C-N-330-24 PG 8.8**

### Valve Model

### Override Options

- (omit) = No manual override
- M = Manual override

### Body & Ports

- C = Cartridge only
- AS6 = SAE-6 ports, aluminum body
- SS6 = SAE-6 ports, steel body

### Seals

- N = Buna-N
- V = Viton®

### Pressure Range

- 87 = 75 to 870 psi (5 to 60 bar)
- 330 = 75 to 3300 psi (5 to 230 bar)
- 500 = 75 to 5000 psi (5 to 350 bar)

### Coil Voltage

- 0 = No coil, cartridge only
- 12 = 12 VDC
- 24 = 24 VDC

### Coil Connector

- PG = EN 175301-803-A
- PL = Leadwires (2) - 18" long (46 cm)
- PN = Deutsch™ DT04-2P, molded, axial (IP69K Rated)
- PT = Amp Junior Timer™, molded, radial mount

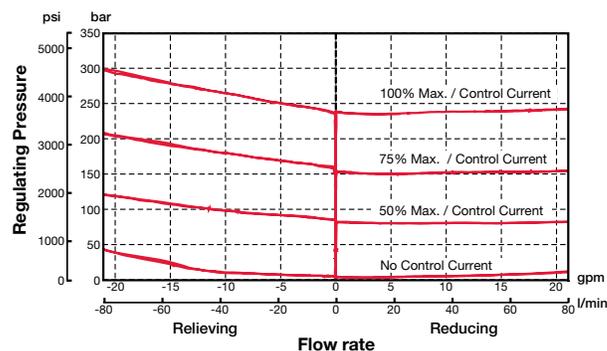
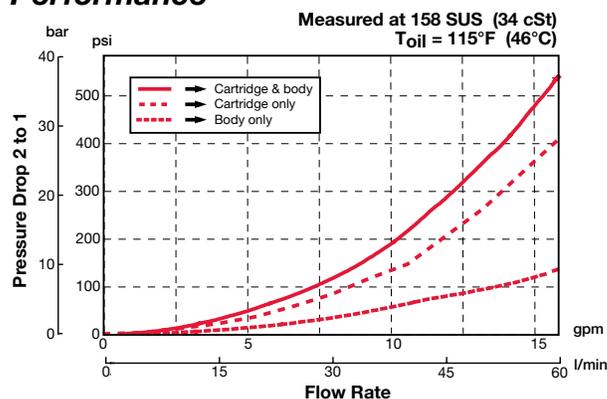
### Coil Resistance

- 2.2 = 2.2 Ohms (12 VDC)
- 8.8 = 8.8 Ohms (24 VDC)

### Coil Model

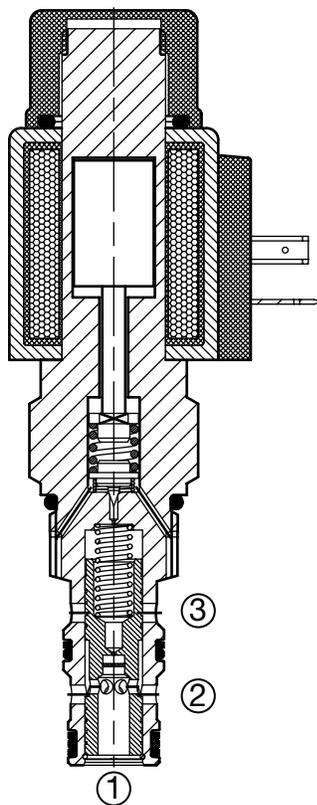
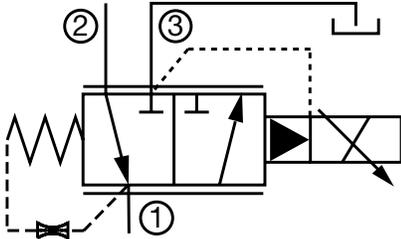
P-40-1836  
For other coil connector types consult factory

## Performance



## PDR10P-01 Pressure Reducing/Relieving, Pilot Operated, Spool Type 21 gpm (80 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, pilot operated, spool type, pressure relieving/reducing valve, intended for use as a pressure control device, which can proportionally control the reduced pressure across the specified range using a variable electrical input signal. Reduced pressure output is proportional to DC current input. This valve maintains a constant reduced pressure regardless of pressure variations in the primary system. In addition to the reducing function, this valve also provides a relief function from the reduced pressure port to the tank port, if pressure in the secondary circuit exceeds the set pressure.

### Operation

The PDR10P-01 allows flow from port 2 to port 1 until sufficient pressure is reached at port 1 to open the pilot section by offsetting the electrically induced solenoid force. Increasing electrical current will increase the control (reduced) pressure at port 1. Any pressure on port 3 is additive to the pressure setting. With no current applied to the solenoid, the valve will maintain pressure at approximately 90 psi, regardless of the pressure at port 2.

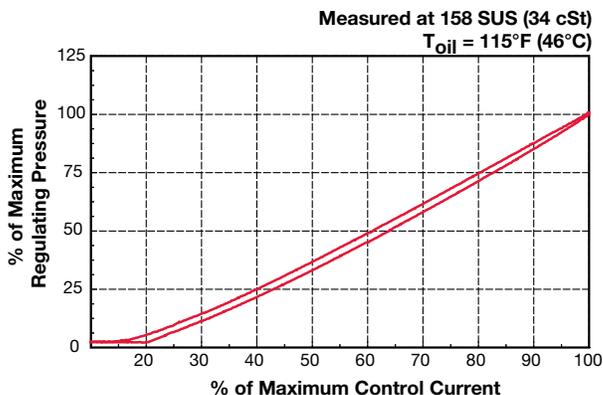
### Features

- Screen on pilot orifice to enhance safety
- 12 and 24 volt proportional waterproof coils
- Manual override option

### Specifications

|  |  |
|--|--|
| Operating Pressure   | 5000 psi (350 bar) max at port 2   |
| Nominal Flow   | 21 gpm (80 l/min)  |
| Flow Path  | De-energized: 1 to 2 & 2 to 1<br>Energized: 2 to 1; Relieving: 1 to 3  |
| Maximum Pilot Flow   | 3.75 cu in/min. at 5000 psi<br>(0.5 l/min at 350 bar)  |
| Reducing/Relieving Pressure Ranges<br>(0 to maximum control current) | 90 to 870 psi (6 to 60 bar)<br>90 to 2600 psi (6 to 180 bar)<br>90 to 3300 psi (6 to 230 bar)<br>90 to 5000 psi (6 to 350 bar) |
| Maximum Control Current  | 2.1 amps for 12VDC coil (2.2 Ohms)<br>1.05 amps for 24VDC coil (8.8 Ohms)  |
| Dither Frequency   | 160 to 250 Hz  |
| Hysteresis With Dither   | 2-4% of maximum control current  |
| Typical Step Response Time   | ON: approx 60 ms, OFF: approx. 40 ms   |
| Repeatability  | <= 1.5% of maximum pressure range  |
| Reversal Span  | <= 2% of maximum   |
| Response Sensitivity   | <= 1% of maximum control current   |
| Ambient Temperature Range  | -4° to 140°F (-20° to +60°C)   |
| Fluid Operating Temp. Range  | -4° to 248°F (-20° to +120°C)<br>(Consult factory for usage at temp. outside range.)   |
| Fluid Compatibility  | Mineral-based or synthetics with lubricating properties  |
| Viscosity  | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration   | 18/16/13 or cleaner (per ISO 4406)<br>Use with filter rated $\beta_3 \geq 200$ .   |
| Installation   | No orientation restrictions  |
| Cavity   | FC10-3 (see Line Bodies & Cavities section)  |
| Cavity Tools   | Rougher: 02580092<br>Finisher: 02580093  |
| Cartridge Weight   | 0.57 Lbs. (0.26 kg)  |
| Coil Weight  | 0.51 Lbs. (0.23 kg)  |
| Cartridge Material   | Steel with hardened work surfaces.<br>Zinc-plated exposed surfaces.<br>Buna N or Viton® o-rings, and PTFE back-up rings.       |
| Coil Material  | Class N high temperature magnet wire steel shell, polyamid encapsulation   |
| Seal Kits  | Buna-N P/N: 03071274<br>Viton® P/N: 03049443   |

### Performance







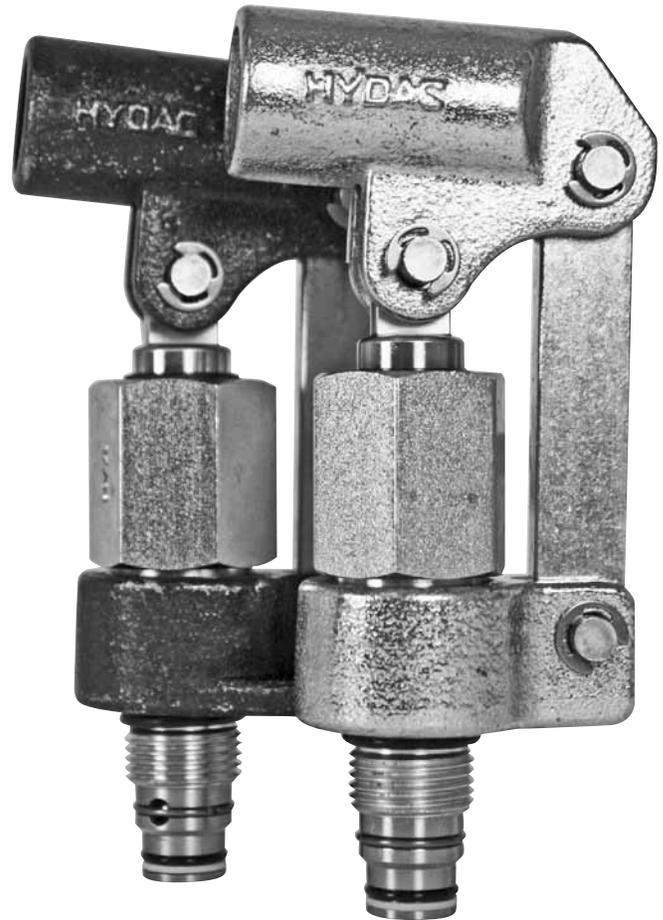
## Overview

HYDAC offers two types of the Hand Pump valves.

- MP10-01 screw in cartridge valve, push type
- MP10-02 screw in cartridge valve, push type with the collar to bolt mount to the block for orientation

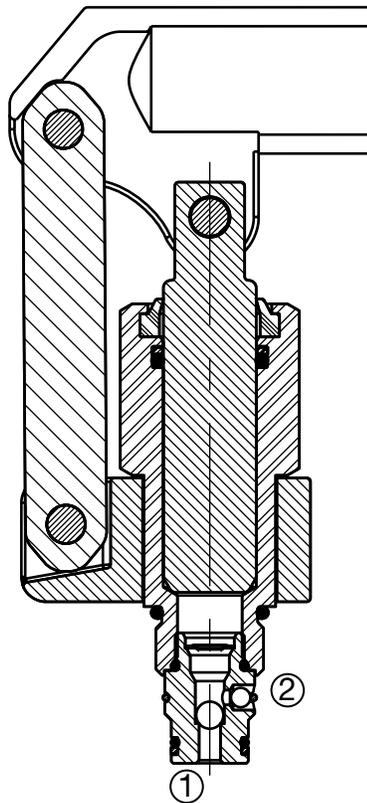
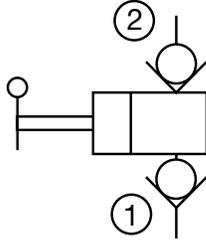
## Features

- Built in suction and outlet checks provide for compact device in one cavity
- Heavy duty construction
- Handle rotates 360 deg
- All external cartridge surfaces zinc plated to resist corrosion
- Industry common cavity



## MP10-01 Push Type 3000 psi (207 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, push type hand pump with two built-in check valves

### Operation

The MP10-01 provides hydraulic flow up to 0.45 cu. in. (7.5 cc) per stroke, at 3000 psi (207 bar). Internal suction and outlet checks provide a compact device. See performance Chart for handle torque requirements.

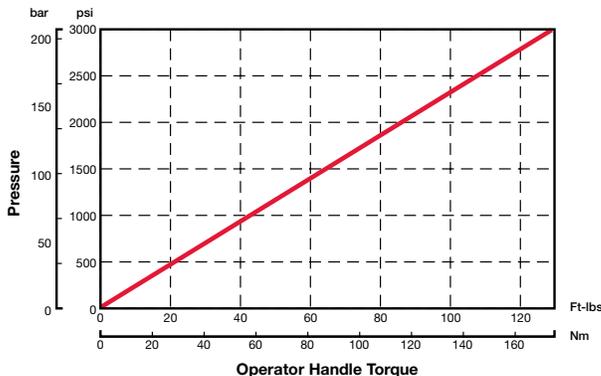
### Features

- Hardened parts for long life
- Heavy duty construction
- Handle rotates 350°
- Push linkage standard
- All external surfaces zinc-plated
- Industry common cavity
- Handle socket sized for 1/2" (0.840 O.D.) pipe
- Arc angle 45°

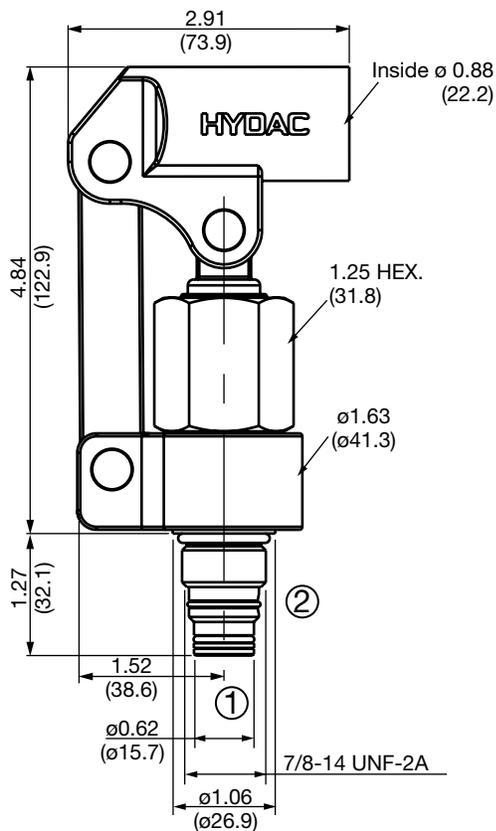
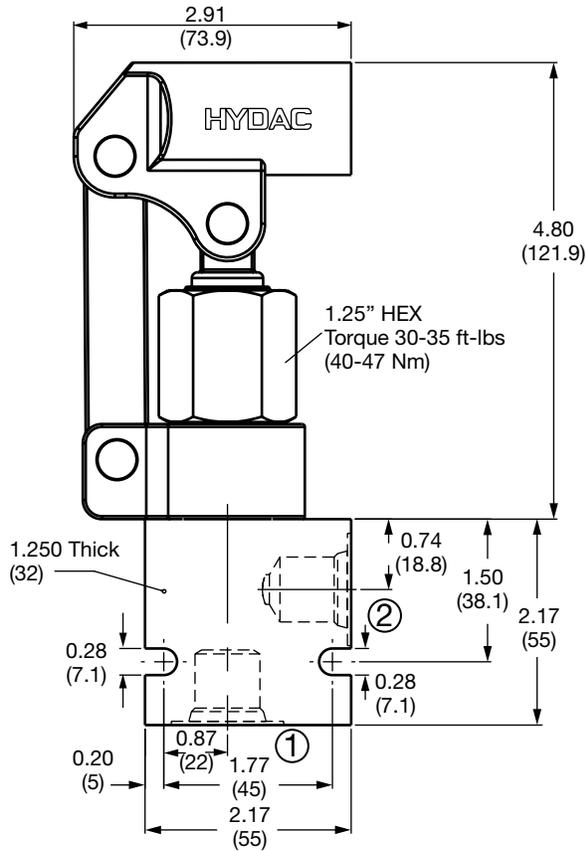
### Specifications

|                             |  |         |               |
|-----------------------------|--|---------|---------------|
| Operating Pressure          | 3000 psi (207 bar)   |         |               |
| Nominal Flow per 45° Stroke | 0.46 cubic inches (7.5cc)  |         |               |
| Leakage                     | 5 drops per minute ( <i>Outlet Check</i> )   |         |               |
| Suction Pressure            | 11 in. Hg (5.4 psi) less than atmospheric pressure   |         |               |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |         |               |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |         |               |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |         |               |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |         |               |
| Installation                | No orientation restrictions  |         |               |
| Cavity                      | FC10-2 ( <i>see Line Bodies &amp; Cavities section</i> )   |         |               |
| Cavity Tools                | Rougher: 02580274<br>Finisher: 02580247  |         |               |
| Cartridge Weight            | 1.75 lbs (0.80 kg)   |         |               |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |         |               |
| Seal Kits                   | Buna-N   | FS102-N | P/N: 03033872 |
|                             | Viton®   | FS102-V | P/N: 03051757 |

### Performance



## Dimensions



All measurements in inches (mm).  
Subject to technical modifications

## Model Code

**MP10-01-AS8-N**

Valve Model \_\_\_\_\_

Body & Ports \_\_\_\_\_

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals \_\_\_\_\_

- N = Buna-N
- V = Viton™

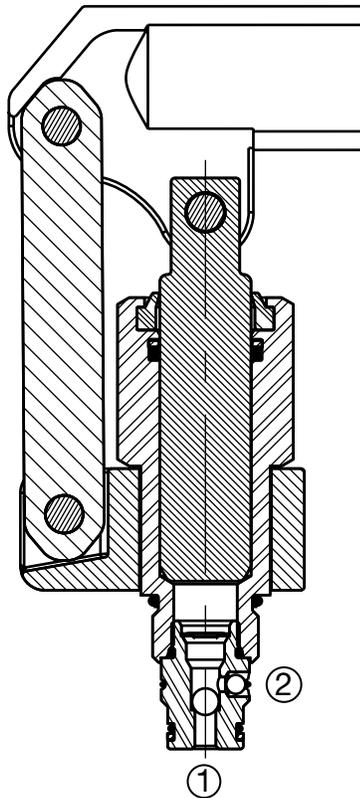
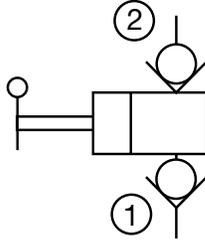
## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lb (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, zinc plated | 6000 psi (420 bar) | 1.16 lb (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## MP10-02 Push Type 3000 psi (207 bar)

### Hydraulic Symbol



### Description

A screw-in cartridge, push type hand pump with two built-in check valves

### Operation

The MP10-02 provides hydraulic flow up to 0.45 cu. in. (7.5 cc) per stroke, at 3000 psi (207 bar). Internal suction and outlet checks provide a compact device. See performance Chart for handle torque requirements.

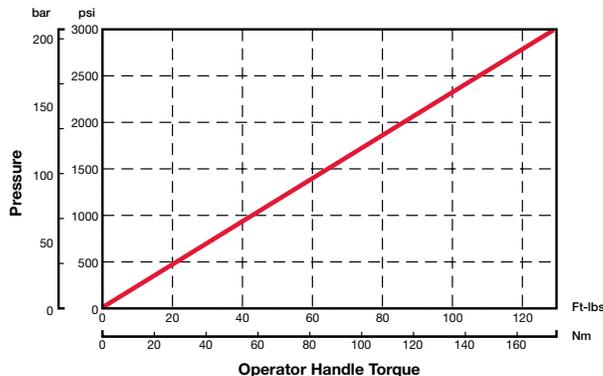
### Features

- Hardened parts for long life
- Heavy duty construction
- Handle rotates 360° and can be fixed
- Push linkage standard
- Optional collar to bolt mount to the block for orientation
- All external surfaces zinc-plated
- Industry common cavity
- Arc angle 45°
- Handle socket sized for 1/2" (0.840 O.D.) pipe

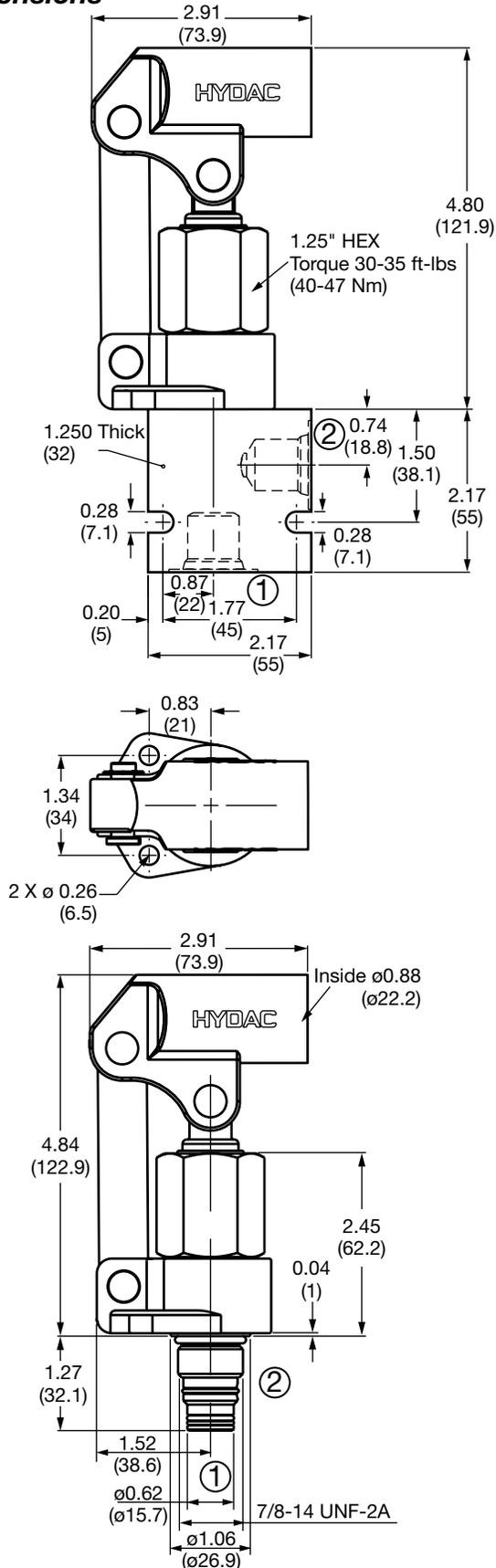
### Specifications

|                             |  |
|-----------------------------|--|
| Operating Pressure          | 3000 psi (207 bar)   |
| Nominal Flow per 45° Stroke | 0.46 cubic inches (7.5cc)  |
| Leakage                     | 5 drops per minute ( <i>Outlet Check</i> )   |
| Suction Pressure            | 11 in. Hg (5.4 psi) less than atmospheric pressure   |
| Fluid Operating Temp. Range | -20° to 248°F (-29° to 120°C)  |
| Fluid Compatibility         | Mineral-based or synthetics with lubricating properties  |
| Viscosity                   | 50 to 2000 SUS (7.4 to 420 cSt)  |
| Filtration                  | 21/19/16 or cleaner per (ISO 4406)   |
| Installation                | No orientation restrictions  |
| Cavity                      | FC10-2 (see <i>Line Bodies &amp; Cavities</i> section)   |
| Cavity Tools                | Rougher: 02580274<br>Finisher: 02580247  |
| Cartridge Weight            | 1.80 lbs (0.82 kg)   |
| Cartridge Material          | Steel with hardened work surfaces.<br>Zinc plated exposed surfaces.<br>Buna N or Viton® o-rings.<br>Solid thermoplastic polyester back-up rings. |
| Seal Kits                   | Buna-N FS102-N P/N: 03033872<br>Viton® FS102-V P/N: 03051757   |

### Performance



## Dimensions



All measurements in inches (mm).  
\*Subject to technical modifications

## Model Code

**MP10-02-AS8-N**

Valve Model \_\_\_\_\_

Body & Ports \_\_\_\_\_

- C = Cartridge only
- AS8 = SAE-8 ports, aluminum body
- SS8 = SAE-8 ports, steel body

Seals \_\_\_\_\_

- N = Buna-N
- V = Viton™

## Standard Line Bodies\*

| Code      | Part No  | Material           | Pressure Rating    | Weight            |
|-----------|----------|--------------------|--------------------|-------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lb (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, zinc plated | 6000 psi (420 bar) | 1.16 lb (0.53 kg) |

\*Please refer to Line Bodies & Cavities section for details

## Solenoid Coils



### Features and Benefits

#### Maximum Power - Minimum Space

Perfectly layered wound coil packs more copper into smaller space. Perfect winding eliminates crossed wires and the potential for short-circuits. More copper windings ensure maximum solenoid force per current input.

#### Continuous High Temperature Operation

All HYDAC coils use high quality 'Class N' wire to ensure that coils can be continuously operated in extreme high temperatures and over-voltage without failure.

#### Resistance to Thermal Shock

HYDAC coils have passed what are commonly referred to as 'thermal shock dunk tests'. This involves heating the coil to an extreme temperature for a period of time, then immersing in very cold salt water. The cycle is repeated and coil operation checked for signs of degradation.

#### All Weather Resistant

Encapsulated and internally sealed, the rugged steel shell construction prevents ingress of water. HYDAC coils have passed numerous 'salt-spray tests'. No external sealing or waterproofing kits are needed.

#### IP Rated

HYDAC coils are rated from IP65 to IP69K. The quality of connector selected determines the IP rating. Deutsch DT04-2P achieves IP69K, while a DIN 43650 interface achieves IP65.

#### Physically Robust

Thick steel shell protects coil from physical damage. Zinc plating protects the shell from corrosion.

#### Coils are DC wound

All HYDAC coils are DC wound. AC designated coils from size 8, 10, 12, and 16 valves are internally full wave rectified. This results in a more reliable coil since inrush cycles are eliminated. There is no 'buzz' or 'hum' normally associated with 'true AC' coils. AC coils can operate on 50-60Hz supply. DC and AC coils are fully interchangeable. Coils for size 6 cartridges do not have built-in rectifiers and require external rectifications of the AC signals.

#### Suppression Diodes

DC coils are available with an internal, bi-directional, transient voltage suppression diode. This can help protect the end users control circuit from induction voltages. Using a bi-directional diode means the coil is not polarity sensitive.

#### Symmetric Coil Construction

HYDAC coils can be installed face up or face down on the valve with no reduction in performance.

**Note: UL 583 listed coils available. Consult factory.**



## Solenoid Coils - Size 8, 10, 12 & 16 Cartridges Valves

### Coil Materials

Class N high temperature magnetwire (200°C). Zinc plated steel shell. Polyamide encapsulation, black.

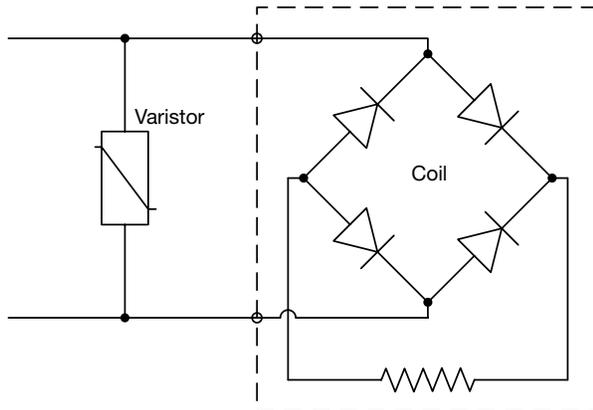
### Coil Information

- Special voltages and terminations are available for OEM applications; consult factory
- AC service coils are internally rectified and can be used in 50 Hz or 60 Hz power lines. The rectifiers used in these coils may require protection from high voltage surges in some electrical circuits containing highly inductive or capacitive components. These include certain types of motors, solenoids, relays and transformers.
- AC voltage transient surges over 600 volts may require a voltage surge suppressor (MOV varistor) to be placed in parallel to the coil, as shown on the surge suppressor circuit diagram below.

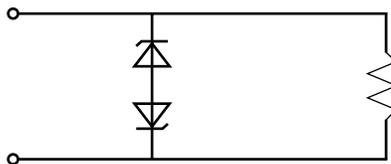
| Voltage | Suggested Varistor Part No.* | Joule Rating |
|---------|------------------------------|--------------|
| 115     | 150LA10A                     | 45           |
| 230     | 250LA40A                     | 130          |

\*Available from electronics supplier

### AC Voltage Diode Bridge Rectification Circuit Diagram

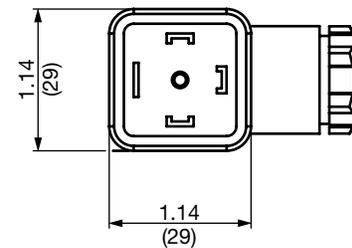
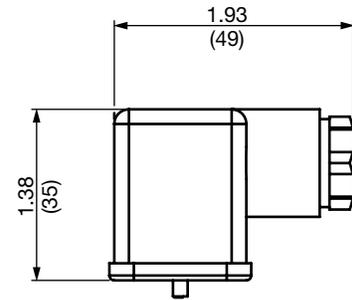


### DC Coils Transient Voltage Suppressor Bi-directional Diode (optional) Diagram



- Bi-directional suppression diode protects coil winding from induction voltages

### Coil Accessories: DIN Plug



EN 175301-803-A

Part Number: 00394287

All measurements in inches (mm).

## Quick Reference Coils suitable for Valve Models

### Coils Type 40-1836 and 50-1836

#### Poppet Valves

| COIL 40-1836 | COIL 50-1836 |
|--------------|--------------|
| WS08Z-01     | WS10W-01     |
| WS08Z-01J    |              |
| WS08Z-30     |              |
| WS08ZR-01    |              |
| WS08ZR-01J   |              |
| WS08ZR-30    |              |
| WS081Z-01    |              |
| WS081ZR-01   |              |
| WS10Z-01     |              |
| WS10ZR-01    |              |
| WS12Z-01     |              |
| WS12ZR-01    |              |
| WS16Z-01     |              |
| WS16ZR-01    |              |
| WS08Y-01     |              |
| WS08Y-30     |              |
| WS08YR-01    |              |
| WS08YR-30    |              |
| WS081Y-01    |              |
| WS081YR-01   |              |
| WS10Y-01     |              |
| WS10YR-01    |              |
| WS12Y-01     |              |
| WS12YR-01    |              |
| WS16Y-01     |              |
| WS16YR-01    |              |
| WS08W-01     |              |
| WS08W-30     |              |
| WS08D-51     |              |
| WS08V-01     |              |

#### Spool Valves

| COIL 40-1836 | COIL 50-1836 |
|--------------|--------------|
| WK08W-01     | WK10W-01     |
| WK081W-01    | WK10V-01     |
| WK08V-01     | WK10L-01     |
| WK081V-01    | WK10C-01     |
| WK07L-01     | WK10D-01     |
| WK08L-01     | WK10Y-01     |
| WK08C-01     | WK10X-01     |
| WK08D-01     | WK10A-01     |
| WK08Y-01     | WK10Z-01     |
| WK08X-01     | WK10K-01     |
| WK08A-01     | WK10N-01     |
| WK08Z-01     | WK10P-01     |
| WK08K-01     | WK10R-01     |
| WK08P-01     |              |
| WK08R-01     |              |
| WK08E-01     |              |
| WK08J-01     |              |
| WK10E-01     |              |
| WK10G-01     |              |
| WK10H-01     |              |
| WK10J-01     |              |
| WK10T-01     |              |

### Coils Type P40-1836 and P50-1836

#### Proportional Valves

| COIL P40-1836 | COIL P50-1836 |
|---------------|---------------|
| PDR08-01      | PDR08-11      |
| PDR08P-01     | PDR08-20      |
| PDR10P-01     | PDR08-50      |
| PDB08P-01     |               |
| PDB10P-01     |               |
| PDB12P-01     |               |
| PDB16P-01     |               |

## Type 40-1836 (40 mm height) Rating & Specifications

### Solenoid Coils Ratings

|   |   |
|---|---|
| Duty rating                                     | Continuous from 85% to 115% of nominal voltage      |
| Max Coil Temperature                            | 320°F (160°C)                                       |
| Power Rating                                    | 18 watts @ nominal voltage                          |
| Encapsulant                                     | Polyamide, black                                    |
| Magnet Wire                                     | U.L. class H, 353°F (180°C)                         |
| Coil Shell                                      | Steel, Zinc plated                                  |
| Transient Voltage Suppressor Diode for DC coils | Bi-directional, maximum clamping voltage - 68 volts |

### Solenoid Coils Winding Specifications

| Nominal Voltage (V) | Resistance at 20°C (Ω) | Nominal Current (A) |
|---------------------|------------------------|---------------------|
| 10 VDC              | 5.4                    | 1.85                |
| 12 VDC              | 8                      | 1.5                 |
| 24 VDC              | 30                     | 0.8                 |
| 36 VDC              | 65                     | 0.55                |
| 48 VDC              | 116                    | 0.41                |
| 110 VAC             | 607                    | 0.18                |
| 24 VAC              | 24.8                   | 0.85                |
| 115 VAC             | 500                    | 0.2                 |
| 230 VAC             | 2137                   | 0.096               |

### Connectors & Part Numbers (Commonly used)

| Voltage | Connector Type |              |             |                |           |                |
|---------|----------------|--------------|-------------|----------------|-----------|----------------|
|         | DIN G          | Dual Spade S | Leadwires L | Weather Pack W | Deutsch N | Amp Jr Timer T |
| 10VDC   | 3003128        | 3013042      | 3003135     | 3003131        | 3012601   | 3008291        |
| 12VDC   | 3000489        | 3000973*     | 3002244*    | 3003124*       | 3012600*  | 3008275*       |
| 24VDC   | 3000249        | 3000247*     | 3003119*    | 3003088*       | 3012599*  | 3008279*       |
| 36VDC   | 3003151        | 3003043*     | 3003140*    | 3003144*       | 3012602*  | 3008283*       |
| 48VDC   | 3003155        | 3013044*     | 3003149*    | 3003147*       | 3012603*  | 3008287*       |
| 110VDC  | 3003142        |              |             |                |           |                |
| 24VAC   | 3003122        |              |             |                |           |                |
| 115VAC  | 3003156        |              |             |                |           |                |
| 230VAC  | 3002594        |              |             |                |           |                |

\*Diode version available, contact your HYDAC representative.  
For other voltages and connectors contact your HYDAC representative.

## Type 50-1836 (50 mm height) Rating & Specifications

### Solenoid Coils Ratings

|   |   |
|---|---|
| Duty rating                                     | Continuous from 85% to 115% of nominal voltage      |
| Max Coil Temperature                            | 320°F (160°C)                                       |
| Power Rating                                    | 27 watts @ nominal voltage                          |
| Encapsulant                                     | Polyamide, black                                    |
| Magnet Wire                                     | U.L. class H, 353°F (180°C)                         |
| Coil Shell                                      | Steel, Zinc plated                                  |
| Transient Voltage Suppressor Diode for DC coils | Bi-directional, maximum clamping voltage - 68 volts |

### Solenoid Coils Winding Specifications

| Nominal Voltage (V) | Resistance at 20°C (Ω) | Nominal Current (A) |
|---------------------|------------------------|---------------------|
| 10 VDC              | 3.7                    | 2.7                 |
| 12 VDC              | 5.4                    | 2.22                |
| 24 VDC              | 21.2                   | 1.13                |
| 36 VDC              | 48                     | 0.75                |
| 48 VDC              | 86                     | 0.56                |
| 110 VAC             | 440                    | 0.25                |
| 24 VAC              | 18                     | 1.33                |
| 115 VAC             | 363                    | 0.3                 |
| 230 VAC             | 1680                   | 0.14                |

### Connectors & Part Numbers (Commonly used)

| Voltage | Connector Type |              |             |                |           |                |
|---------|----------------|--------------|-------------|----------------|-----------|----------------|
|         | DIN G          | Dual Spade S | Leadwires L | Weather Pack W | Deutsch N | Amp Jr Timer T |
| 10VDC   | 3091543        | 3091594      | 3003135     | 3091646        | 3091664*  | 3091640        |
| 12VDC   | 915151         | 3002163*     | 3002244     | 3013032*       | 3091665*  | 3001033*       |
| 24VDC   | 915142         | 3002151*     | 3003119     | 3091658*       | 3091667*  | 3001503*       |
| 36VDC   | 3091590        | 3091629      | 3003140     | 3091661        | 3091669*  | 3091642        |
| 48VDC   | 3091591        | 3091631      | 3003149     | 3091662        | 3091670*  | 3001507        |
| 110VDC  | 3091592        |              |             |                |           |                |
| 24VDC   | 3091593        |              |             |                |           |                |
| 115VAC  | 3019735        |              |             |                |           |                |
| 230VAC  | 3019736        |              |             |                |           |                |

\*Diode version available, contact your HYDAC representative.  
For other voltages and connectors contact your HYDAC representative.

## Type P40-1836 & P50-1836 Rating & Specifications

### Proportional Coils Ratings

|                      |                             |
|----------------------|-----------------------------|
| Duty rating          | Continuous                  |
| Max Coil Temperature | 320°F (160°C)               |
| Encapsulant          | Polyamide, black            |
| Magnet Wire          | U.L. class H, 353°F (180°C) |
| Coil Shell           | Steel, Zinc plated          |

### Proportional Coils Winding Specifications

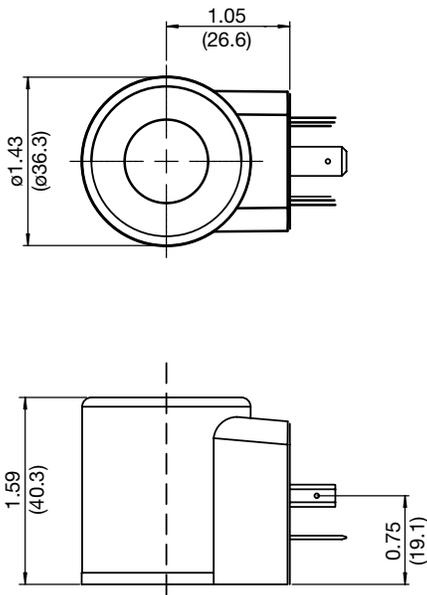
| Nominal Voltage (V) | Resistance at 20°C (Ω) | Nominal Current (A) |
|---------------------|------------------------|---------------------|
| 12 VDC Type 40      | 2.20                   | 2.1                 |
| 24 VDC Type 40      | 8.80                   | 1.05                |
| 12 VDC Type 50      | 4.10                   | 1.75                |
| 24 VDC Type 50      | 18.00                  | 0.85                |

### Connectors & Part Numbers (Commonly used)

| Voltage/Type  | Connector Type |             |           |                |
|---------------|----------------|-------------|-----------|----------------|
|               | DIN G          | Leadwires L | Deutsch N | Amp Jr Timer T |
| 12VDC TYPE 40 | 3109230        | 3109947     | 3110056   | 3162388        |
| 24VDC TYPE 40 | 3109229        | 3110048     | 3110057   | 3162390        |
| 12VDC TYPE 50 | 3179976        | 3179980     | 3179990   | 3120939        |
| 24VDC TYPE 50 | 3179953        | 3179985     | 3179991   | 3120938        |

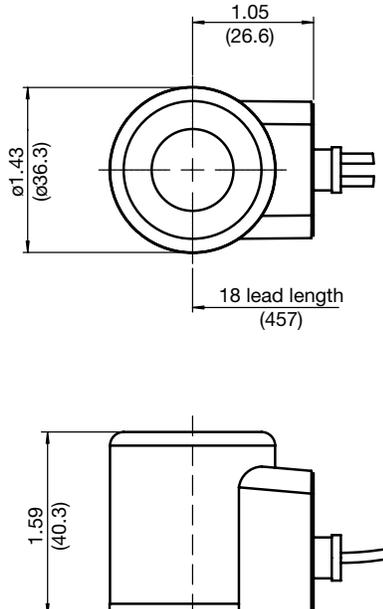
## Coil Type 40 Dimensions

**AG-DG-40-1836**  
**PG-40-1836**



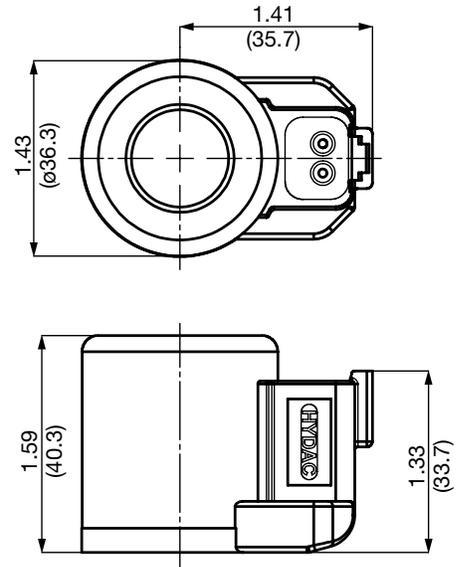
Din 175301

**DL-40-1836**  
**PL-40-1836**



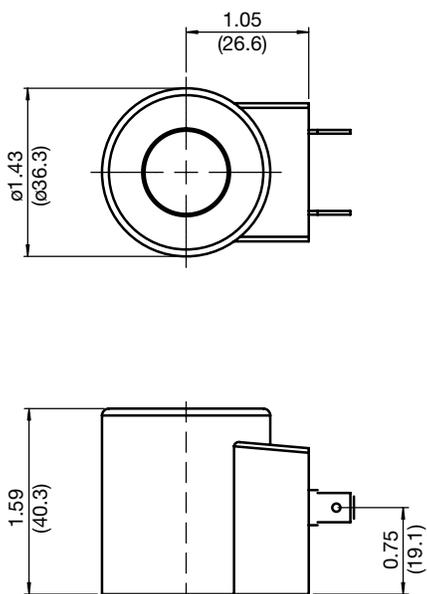
Dual Leads

**DN-40-1836**  
**PN-40-1836**



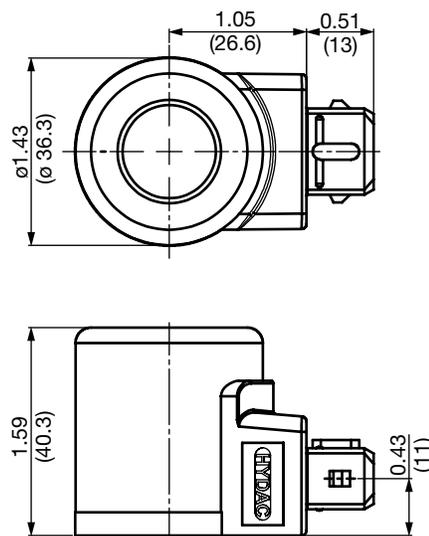
Deutsch™ DT04-2p

**DS-40-1836**



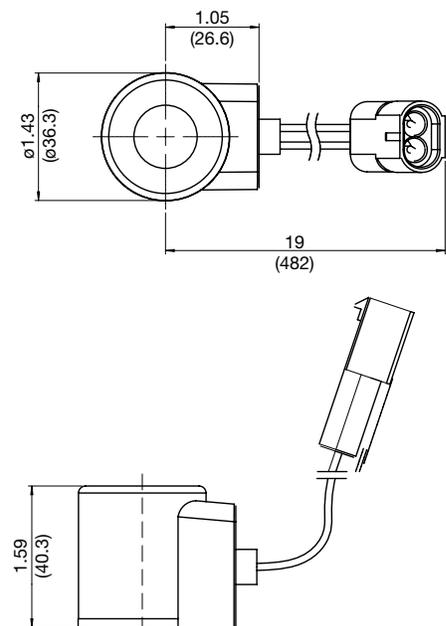
Dual 1/4" Spades

**DT-40-1836**  
**PT-40-1836**



Amp Jr. Timer™

**DW-40-1836**

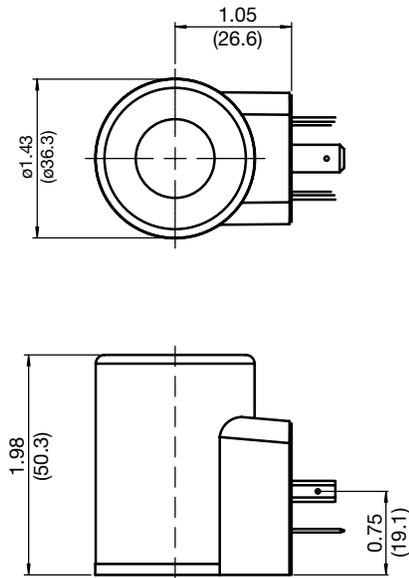


WeatherPak™ 12010973

All measurements in inches (mm).

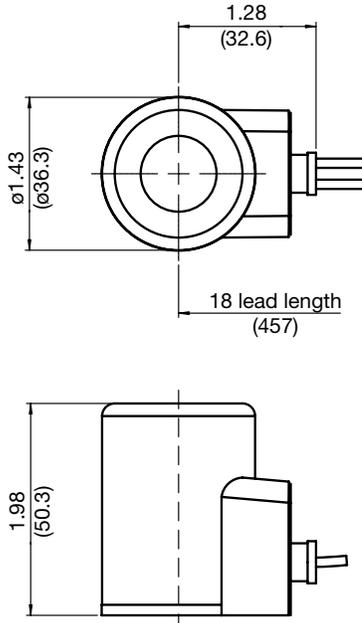
## Coil Type 50 Dimensions

**AG-DG-50-1836**  
**PG-50-1836**



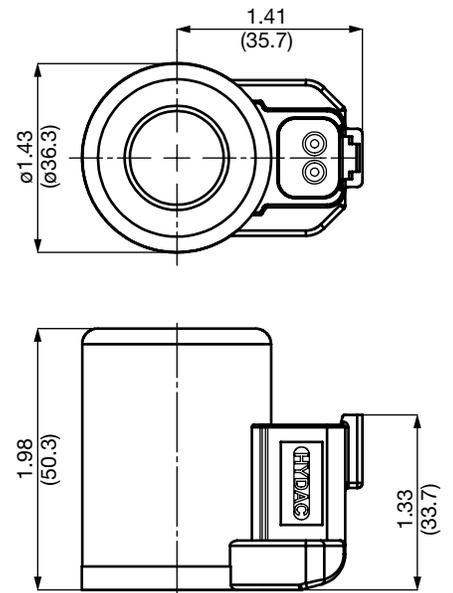
Din 175301

**DL-50-1836**  
**PL-50-1836**



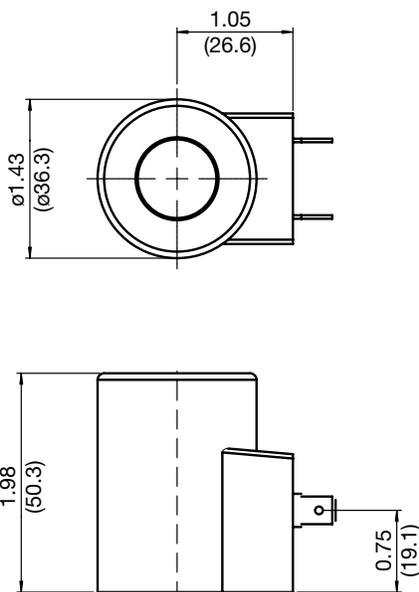
Dual Leads

**DN-50-1836**  
**PN-50-1836**



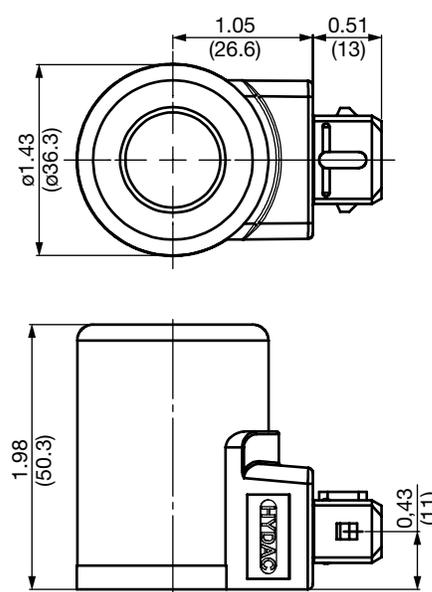
Deutsch™ DT04-2p

**DS-50-1836**



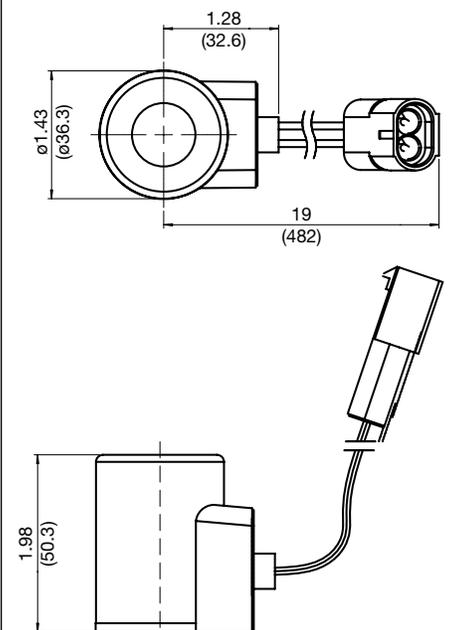
Dual 1/4" Spades

**DT-50-1836**  
**PT-50-1836**



Amp Jr. Timer™

**DW-50-1836**



WeatherPak™ 12010973

All measurements in inches (mm).

## Solenoid Coils - Size 6 Cartridges Valves

### Type 32-1329 (32 mm height) Rating & Specifications

#### Solenoid Coils Ratings

|  |  |
|--|--|
| Duty rating                                      | Continuous from 85% to 115% of nominal voltage     |
| Max Coil Temperature                             | 320°F (160°C)                                      |
| Power Rating                                     | 12 Watts @ Nominal Voltage                         |
| Encapsulant                                      | Thermoplastic, Black                               |
| Magnet Wire                                      | U.L. Class N, 392°F (200°C)                        |
| Coil Shell                                       | Steel, Zinc plated                                 |
| Transient Voltage Suppressor Diode for DC coils* | Bi-directional, maximum clamping voltage- 68 volts |

#### Solenoid Coils Winding Specifications

| Nominal Voltage (V) | Resistance at 20°C (Ω) | Nominal Current (A) |
|---------------------|------------------------|---------------------|
| 12 VDC              | 12.2                   | 0.98                |
| 24 VDC              | 48.7                   | 0.49                |
| 105 VDC             | 980                    | 0.11                |
| 205 VDC             | 3700                   | 0.06                |

#### Connectors & Part Numbers (Commonly used)

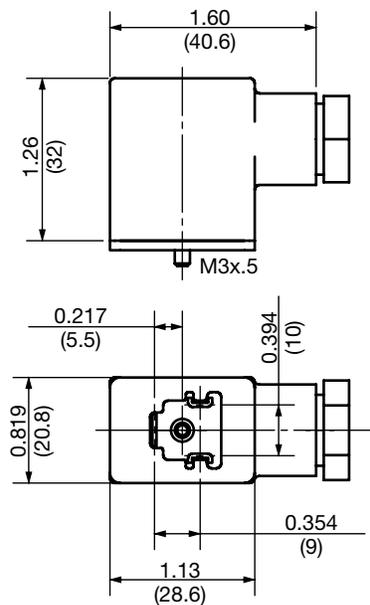
| Nominal Voltage (V) | Connector Type                |               |                 |               |
|---------------------|-------------------------------|---------------|-----------------|---------------|
|                     | DIN DG                        | Leadwires DL  | Weather-Pack DW | Deutsch DN    |
| 12 VDC              | 02610160*                     | 02610151*     | 02610287*       | 02610149*     |
| 24 VDC              | 02610161*                     | 02610162*     | 02610288*       | 02610150*     |
| 105 VDC             | 02610156                      | Not Available | Not Available   | Not Available |
| 205 VDC             | 02610159                      | Not Available | Not Available   | Not Available |
| 120 VAC             | Coil 02610156 & Plug 02600582 |               |                 |               |
| 230 VAC             | Coil 02610159 & Plug 02600582 |               |                 |               |

\*Diode version available, contact your HYDAC representative.

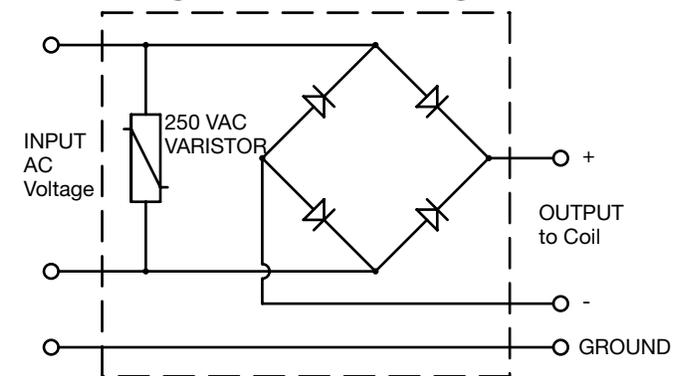
For other voltages and connectors contact your HYDAC representative  
All coil for DC coils; for AC voltage use rectifier plugs.

**Note: UL 583 listed coils available. Consult factory.**

#### Coil Accessories: DIN Plugs



#### Circuit Diagram: Rectifier Plug



Part Number: 02600582

Type: EN 175301-803-B

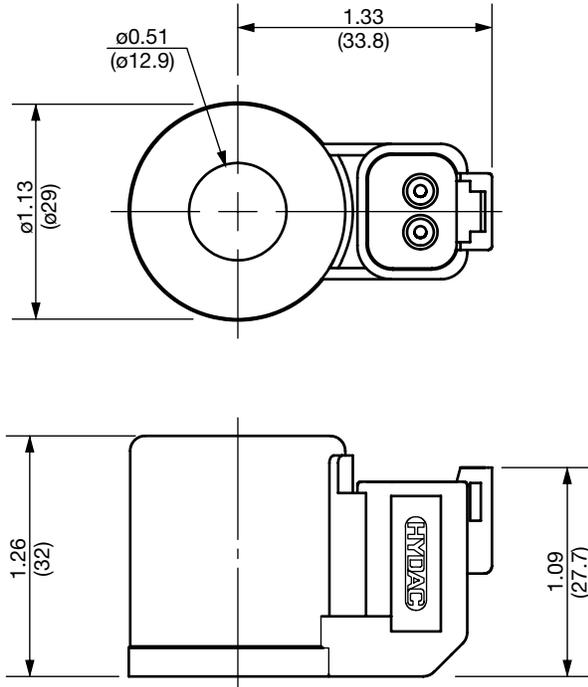
**Part Number:** 02600570 - without diode bridge; use with DC Coils

**Part Number:** 02600582 - with diode bridge; use for applying AC input to DC coils

All measurements in inches (mm).

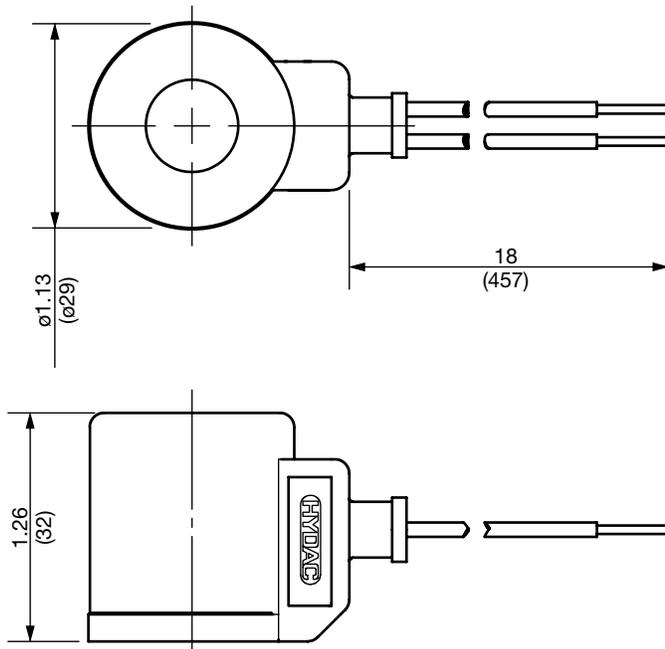
## Coil Type 32 Dimensions

### DN-32-1329



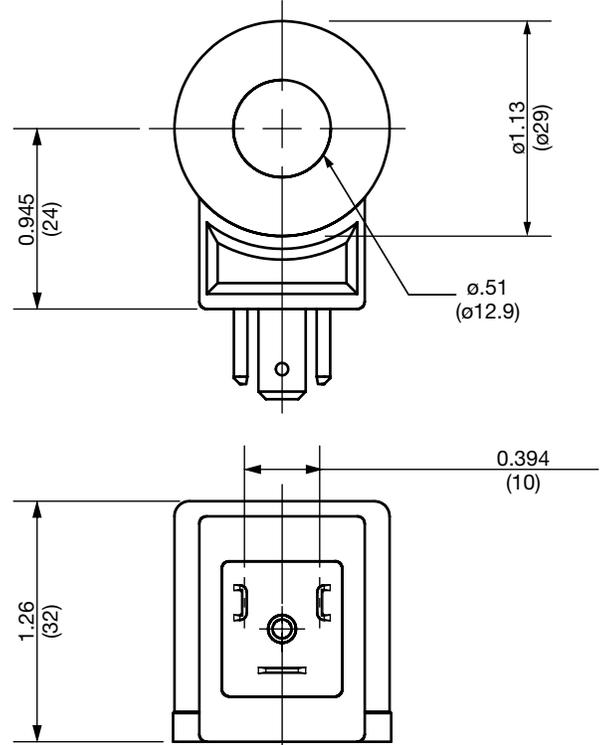
Deutsch™ DT04-2p

### DL-32-1329



Dual Leads

### DG-32-1329



DIN 43650 Form B

All measurements in inches (mm).



## Overview

### Description

As important as the performance of the valve itself is the proper installation of the cartridge into a correctly made manifold or body. HYDAC's full range of cartridge valves can be used in custom manifold applications, or for in-line installation via our selection of cartridge line bodies. These next few pages provide the detail required for designers, machine shops or users to create successful HYDAC cartridge valve installations. Whether using form tools to make a custom manifold, or quickly plumbing a valve and line body assembly, the HYDAC cartridge cavity system enables versatile and reliable valve applications. Performance and dimensional information for a specific valve can be found on individual cartridge data sheets.

### Cavities

Cavity drawings are provided as a tool for HYDAC customers who desire to produce their own custom manifolds. Manufacturing to the drawings enclosed ensures correct cavity fit and proper cartridge function at maximum performance limits.

### Line Bodies

HYDAC line bodies provide a cost effective method for compact, easy installation of any HYDAC cartridge. Using authentic HYDAC bodies - with each cavity and port machined to our own exacting standards - ensures safe, high-performance function of cartridge valves plumbed "in-line."

Standard line bodies are available for each cavity size in both clear anodized aluminum (3500 psi max. pressure) or clear zinc-plated steel (6000 psi max. pressure) are offered with SAE O-ring boss ports. When ordering alternate port configurations, please contact the factory for pricing and availability information.



## Model Code

FH 082 - A S 6

|                  |   |   |  |  |  |
|------------------|---|---|--|--|--|
| <b>SERIES</b>    |   |   |  |  |  |
| FH               | = | Line Body                                       |  |  |  |
| <b>CAVITY</b>    |   |   |  |  |  |
| 062              | = | FC06-2  |  |  |  |
| 063              | = | FC06-3  |  |  |  |
| 064              | = | FC06-4  |  |  |  |
| 082              | = | FC08-2  |  |  |  |
| 083              | = | FC08-3  |  |  |  |
| 084              | = | FC08-4  |  |  |  |
| 102              | = | FC10-2  |  |  |  |
| 103              | = | FC10-3  |  |  |  |
| 10S3             | = | FC10-S3   |  |  |  |
| 104              | = | FC10-4  |  |  |  |
| 122              | = | FC12-2  |  |  |  |
| 123              | = | FC12-3  |  |  |  |
| 124              | = | FC12-4  |  |  |  |
| 162              | = | FC16-2  |  |  |  |
| 163              | = | FC16-3  |  |  |  |
| 16S3             | = | FC16-S3   |  |  |  |
| 164              | = | FC16-4  |  |  |  |
| M455             | = | FCM45-5   |  |  |  |
| <b>MATERIAL</b>  |   |   |  |  |  |
| A                | = | Anodized Aluminum                               |  |  |  |
| S                | = | Zinc Plated Steel                               |  |  |  |
| <b>THREAD</b>    |   |   |  |  |  |
| N                | = | NPT   |  |  |  |
| S                | = | SAE   |  |  |  |
| B                | = | BSPP  |  |  |  |
| <b>PORT SIZE</b> |   |   |  |  |  |
| 2                | = | 1/4" NPT  |  |  |  |
| 4                | = | SAE-4 (7/16-20 UNF) (standard for size 06 only) |  |  |  |
| 2                | = | BSPP G1/4                                       |  |  |  |
| 3                | = | 3/8" NPT  |  |  |  |
| 6                | = | SAE-6 (9/16-18 UNF) (standard for size 08 only) |  |  |  |
| 3                | = | BSPP G3/8                                       |  |  |  |
| 4                | = | 1/2" NPT  |  |  |  |
| 8                | = | SAE-8 (3/4-16 UNF) (standard for size 10 only)  |  |  |  |
| 4                | = | BSPP G1/2                                       |  |  |  |
| 6                | = | 3/4" NPT  |  |  |  |
| 12               | = | SAE-12 (1-1/16-12) (standard for size 12 only)  |  |  |  |
| 6                | = | BSPP G3/4                                       |  |  |  |
| 8                | = | 1" NPT  |  |  |  |
| 16               | = | SAE-16 (1-5/16-12) (standard for size 16 only)  |  |  |  |
| 8                | = | BSPP G1   |  |  |  |
| *                | = | Special   |  |  |  |

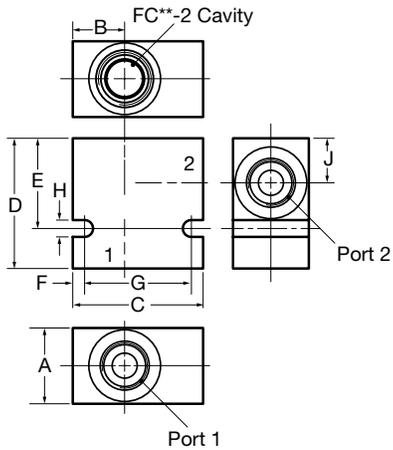
Model Codes Containing RED are non-standard items - Minimum quantities may apply. Contact HYDAC for information and availability

## Line Bodies

| Code        | Part Number | Material                 | Ports Size | Pressure Rating    | Weight              |
|-------------|-------------|--------------------------|------------|--------------------|---------------------|
| FH062-AS4   | 02600491    | Aluminum, clear anodized | SAE-4      | 3500 psi (245 bar) | 0.33 lbs (0.15 kg)  |
| FH062-SS4   | 02600490    | Steel, zinc plated       | SAE-4      | 6000 psi (420 bar) | 0.97 lbs (0.44 kg)  |
| FH063-AS4   | 02600492    | Aluminum, clear anodized | SAE-4      | 3500 psi (245 bar) | 0.37 lbs (0.17 kg)  |
| FH063-SS4   | 02600493    | Steel, zinc plated       | SAE-4      | 6000 psi (420 bar) | 1.07 lbs (0.49 kg)  |
| FH064-AS4   | 02600462    | Aluminum, clear anodized | SAE-4      | 3500 psi (245 bar) | 0.43 lbs (0.20 kg)  |
| FH064-SS4   | 02600461    | Steel, zinc plated       | SAE-4      | 6000 psi (420 bar) | 1.25 lbs (0.57 kg)  |
| FH082-AS6   | 03011409    | Aluminum, clear anodized | SAE-6      | 3500 psi (245 bar) | 0.34 lbs (0.15 kg)  |
| FH082-SS6   | 00560917    | Steel, zinc plated       | SAE-6      | 6000 psi (420 bar) | 1.00 lbs (0.45 kg)  |
| FH083-AS6   | 03011424    | Aluminum, clear anodized | SAE-6      | 3500 psi (245 bar) | 0.58 lbs (0.26 kg)  |
| FH083-SS6   | 00560920    | Steel, zinc plated       | SAE-6      | 6000 psi (420 bar) | 1.70 lbs (0.77 kg)  |
| FH084-AS6   | 03011404    | Aluminum, clear anodized | SAE-6      | 3500 psi (245 bar) | 0.72 lbs (0.33 kg)  |
| FH084-SS6   | 00563381    | Steel, zinc plated       | SAE-6      | 6000 psi (420 bar) | 2.10 lbs (0.95 kg)  |
| FH102-AS8   | 03037778    | Aluminum, clear anodized | SAE-8      | 3500 psi (245 bar) | 0.40 lbs (0.18 kg)  |
| FH102-SS8   | 03037612    | Steel, zinc plated       | SAE-8      | 6000 psi (420 bar) | 1.16 lbs (0.53 kg)  |
| FH103-AS8   | 03038095    | Aluminum, clear anodized | SAE-8      | 3500 psi (245 bar) | 0.60 lbs (0.27 kg)  |
| FH103-SS8   | 03037704    | Steel, zinc plated       | SAE-8      | 6000 psi (420 bar) | 1.74 lbs (0.79 kg)  |
| FH10S3-AS8  | 02582076    | Aluminum, clear anodized | SAE-8      | 3500 psi (245 bar) | 0.60 lbs (0.27 kg)  |
| FH10S3-SS8  | 02582077    | Steel, zinc plated       | SAE-8      | 6000 psi (420 bar) | 1.74 lbs (0.79 kg)  |
| FH104-AS8   | 03038110    | Aluminum, clear anodized | SAE-8      | 3500 psi (245 bar) | 0.72 lbs (0.33 kg)  |
| FH104-SS8   | 03037868    | Steel, zinc plated       | SAE-8      | 6000 psi (420 bar) | 2.12 lbs (0.96 kg)  |
| FH122-AS12  | 03053845    | Aluminum, clear anodized | SAE-12     | 3500 psi (245 bar) | 1.39 lbs (0.63 kg)  |
| FH122-SS12  | 03053772    | Steel, zinc plated       | SAE-12     | 6000 psi (420 bar) | 4.16 lbs (1.89 kg)  |
| FH162-AS16  | 03037195    | Aluminum, clear anodized | SAE-16     | 3500 psi (245 bar) | 1.20 lbs (0.55 kg)  |
| FH162-SS16  | 03032655    | Steel, zinc plated       | SAE-16     | 6000 psi (420 bar) | 3.56 lbs (1.62 kg)  |
| FH163-AS16  | 03037210    | Aluminum, clear anodized | SAE-16     | 3500 psi (245 bar) | 2.34 lbs (1.06 kg)  |
| FH163-SS16  | 03036285    | Steel, zinc plated       | SAE-16     | 6000 psi (420 bar) | 6.80 lbs (3.09 kg)  |
| FH16S3-AS16 | 02582078    | Aluminum, clear anodized | SAE-16     | 3500 psi (245 bar) | 2.34 lbs (1.06 kg)  |
| FH16S3-SS16 | 02582079    | Steel, zinc plated       | SAE-16     | 6000 psi (420 bar) | 6.80 lbs (3.09 kg)  |
| FH164-AS16  | 03037214    | Aluminum, clear anodized | SAE-16     | 3500 psi (245 bar) | 3.00 lbs (1.36 kg)  |
| FH164-SS16  | 03035672    | Steel, zinc plated       | SAE-16     | 6000 psi (420 bar) | 8.8 lbs (4.00 kg)   |
| FHM455-AS20 | 02600747    | Aluminum, clear anodized | SAE-20     | 3500 psi (245 bar) | 5.88 lbs (2.66 kg)  |
| FHM455-SS20 | 02600563    | Steel, zinc plated       | SAE-20     | 5000 psi (350 bar) | 17.13 lbs (7.77 kg) |

## Dimensions

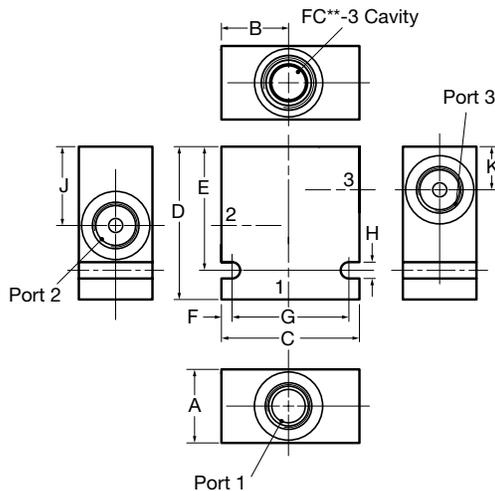
### 2-way Line Body



|   | FH06-2      | FH08-2      | FH10-2      | FH12-2       | FH16-2        |
|---|-------------|-------------|-------------|--------------|---------------|
| A | 1.0 (25.4)  | 1.13 (30)*  | 1.25 (32)*  | 2 (50)*      | 2 (50)*       |
| B | 1.0 (25.4)  | 0.748 (19)  | 0.866 (22)  | 1.24 (31.5)  | 1.24 (31.5)   |
| C | 2.0 (50.8)  | 2.17 (55)*  | 2.19 (55)*  | 3 (75)*      | 3 (75)*       |
| D | 2.0 (50.8)  | 2.17 (55)*  | 2.13 (55)*  | 3 (75)*      | 3 (75)*       |
| E | 1.5 (38.1)  | 1.5 (38)    | 1.5 (38)    | 2.252 (57.2) | 2.252 (57.2)  |
| F | 0.25 (6.4)  | 0.13 (3.3)  | 0.2 (5)     | 0.197 (5)    | 0.197 (5)     |
| G | 1.5 (38.1)  | 1.62 (41.1) | 1.75 (45)   | 2.559 (65)   | 2.559 (65)    |
| H | 0.28 (7.1)  | 0.28 (7.1)  | 0.28 (7.1)  | 0.339 (8.6)  | 0.339 (8.6)   |
| J | 0.55 (14.0) | 0.61 (15.5) | 0.74 (18.8) | 0.989 (25.1) | 0.989 (25.13) |

dimensions are in inches (mm)

### 3-way Line Body



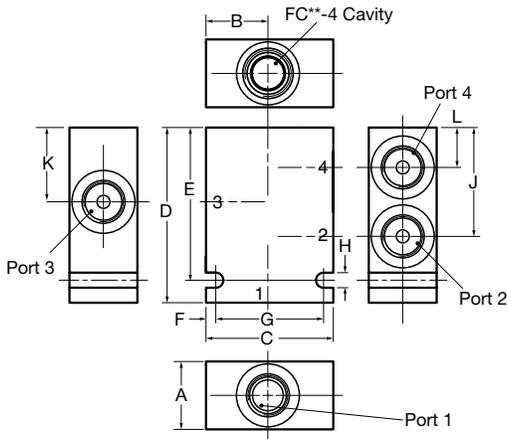
|   | FH06-3      | FH08-3      | FH10-3      | FH10-S3       | FH12-3       |
|---|-------------|-------------|-------------|---------------|--------------|
| A | 1.0 (25.4)  | 1.13 (30)*  | 1.25 (32)*  | 1.25 (30)     | 2.0 (50)*    |
| B | 1.0 (25.4)  | 1.25 (30)   | 1.16 (29.5) | 1.25 (30)     | 2.0 (50)     |
| C | 2.0 (50.8)  | 2.5 (60)*   | 2.5 (60)*   | 2.50 (60)     | 4 (100)*     |
| D | 2.25 (57.2) | 2.62 (66.5) | 2.62 (66.5) | 2.75 (69.9)   | 4.02 (102)   |
| E | 1.75 (44.5) | 2.12 (53.8) | 2.12 (53.8) | 2.25 (57.2)   | 3.39 (86)    |
| F | 0.25 (6.4)  | 0.18 (4.6)  | 0.197 (5)   | 0.25 (6.4)    | 0.197 (5)    |
| G | 1.5 (38.1)  | 2 (50.8)    | 2 (50.8)    | 2.00 (50.8)   | 3.54 (90)    |
| H | 0.28 (7.1)  | 0.28 (7.1)  | 0.28 (7.1)  | 0.282 (7.16)  | 0.34 (8.6)   |
| J | 0.95 (24.1) | 1.17 (29.7) | 1.38 (35)   | 1.248 (31.70) | 2.14 (54.4)  |
| K | 0.55 (14.0) | 0.60 (15.2) | 0.72 (18.3) | 0.582 (14.78) | 1.17 (29.75) |

|   | FH16-S3       | FH16-3      |
|---|---------------|-------------|
| A | 2.00 (50.8)   | 2 (50)*     |
| B | 2.00 (50.8)   | 2.5 (50.8)  |
| C | 3.50 (88.9)   | 4 (100)*    |
| D | 3.50 (88.9)   | 4.02 (102)  |
| E | 2.875 (73.03) | 3.39 (86)   |
| F | 0.23 (5.8)    | 0.197 (5)   |
| G | 3.04 (77.22)  | 3.54 (90)   |
| H | 0.34 (8.6)    | 0.34 (8.6)  |
| J | 1.506 (38.25) | 2.18 (55.4) |
| K | 0.695 (17.65) | 1.02 (25.9) |

dimensions are in inches (mm)

\*Note: Dimensions determined by manufacturing location (USA or Europe)

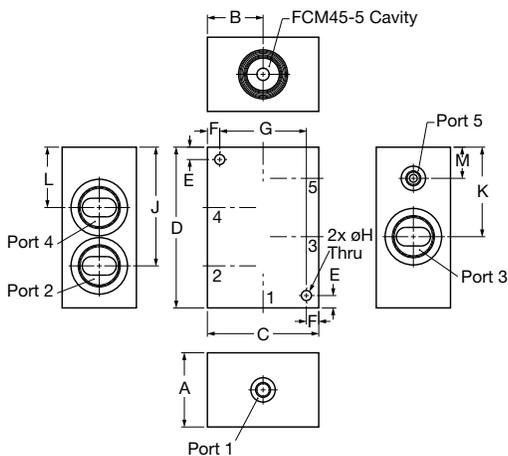
## 4-way Line Body



|   | FH06-4      | FH08-4       | FH10-4       | FH12-4       | FH16-4       |
|---|-------------|--------------|--------------|--------------|--------------|
| A | 1.0 (25.4)  | 1.13 (30)*   | 1.25 (32)*   | 2.0 (50)*    | 2.0 (50)*    |
| B | 1.0 (25.4)  | 1.25 (31.75) | 1.16 (29.5)  | 2.0 (50)*    | 2.0 (50)*    |
| C | 2.0 (50.8)  | 2.5 (60)*    | 2.5 (60)*    | 4 (100)*     | 4 (100)*     |
| D | 2.63 (66.8) | 3.25 (82.5)  | 3.25 (82.6)  | 5.2 (132)    | 5.2 (132)    |
| E | 2.13 (54.1) | 2.83 (72)    | 2.83 (72)    | 4.49 (114)   | 4.49 (114)   |
| F | 0.25 (6.4)  | .18 (4.6)    | .18 (4.6)    | .197 (5)     | .197 (5)     |
| G | 1.5 (38.1)  | 2 (50.8)     | 2 (50.8)     | 3.54 (90)    | 3.54 (90)    |
| H | 0.28 (7.1)  | .28 (7.1)    | .28 (7.1)    | .34 (8.6)    | .34 (8.6)    |
| J | 1.34 (34.0) | 1.73 (44)    | 2.02 (51.3)  | 3.1 (78.8)   | 3.24 (82.25) |
| K | 0.95 (24.1) | 1.17 (29.7)  | 1.38 (35.05) | 2.14 (54.4)  | 2.18 (55.4)  |
| L | 0.55 (14.0) | .60 (15.2)   | .74 (18.8)   | 1.17 (29.75) | 1.02 (25.9)  |

dimensions are in inches (mm)

## 5-way Line Body

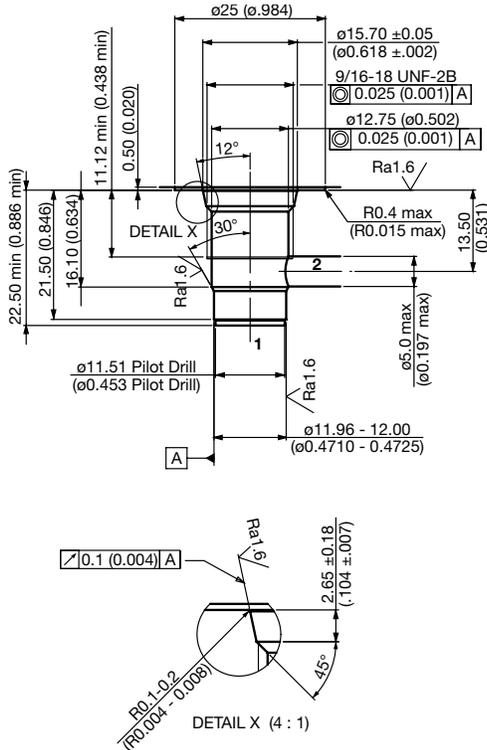


|   | FHM45-5      |
|---|--------------|
| A | 1.5 (38.1)   |
| B | 2.25 (57.2)  |
| C | 4.5 (114.5)  |
| D | 6.5 (165.1)  |
| E | 0.5 (12.7)   |
| F | 0.5 (12.7)   |
| G | 3.5 (88.9)   |
| H | 0.406 (10.3) |
| J | 4.8 (121.9)  |
| K | 3.62 (91.9)  |
| L | 2.44 (61.9)  |
| M | 1.26 (32)    |

dimensions are in inches (mm)

\*Note: Dimensions determined by manufacturing location (USA or Europe)

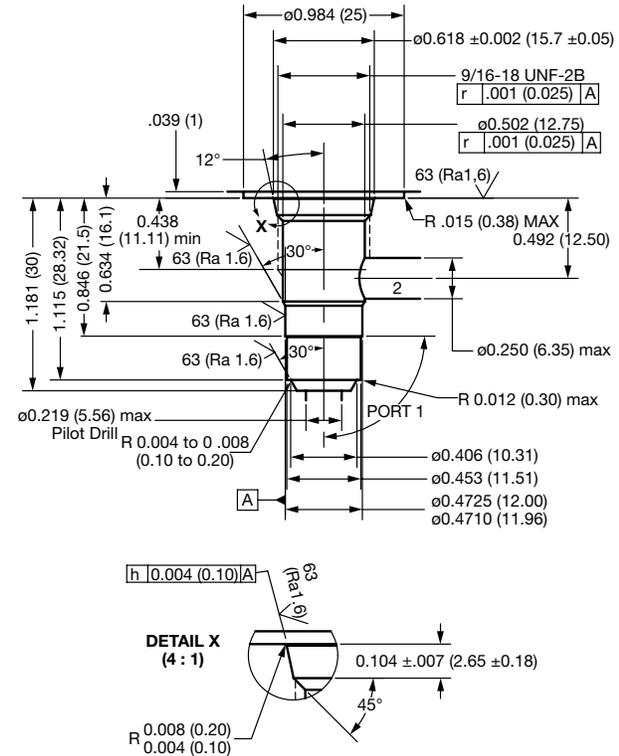
## 2-way Cavities Size 6: FC06-2



**02582031**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02582046  
**Finisher:** 02582047

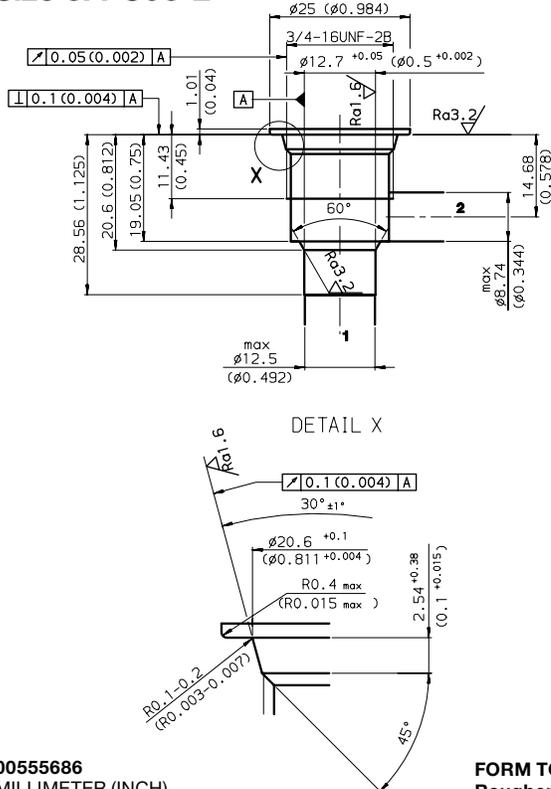
## Size 6: FC06-S



**02587218**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02587284  
**Finisher:** 02587285

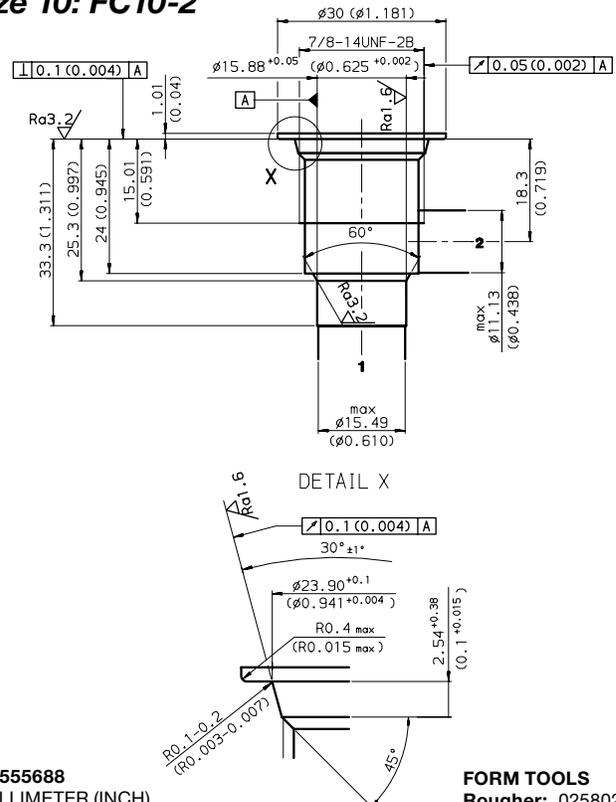
## Size 8: FC08-2



**00555686**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02580090  
**Finisher:** 02580091

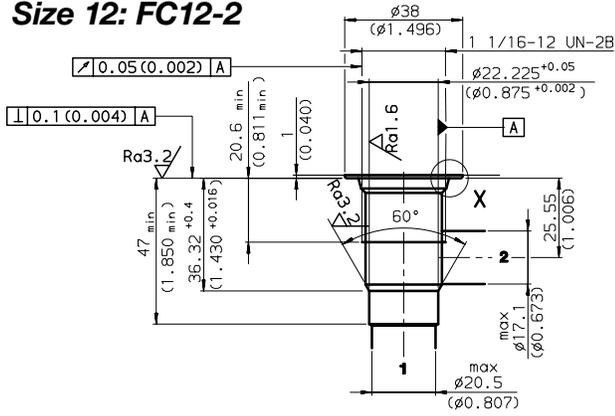
## Size 10: FC10-2



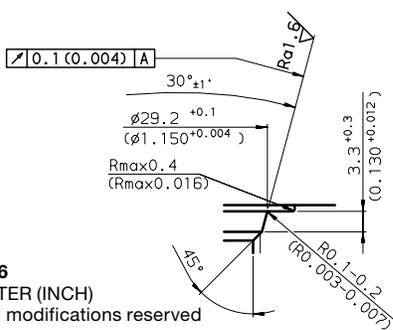
**00555688**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02580274  
**Finisher:** 02580247

## Size 12: FC12-2



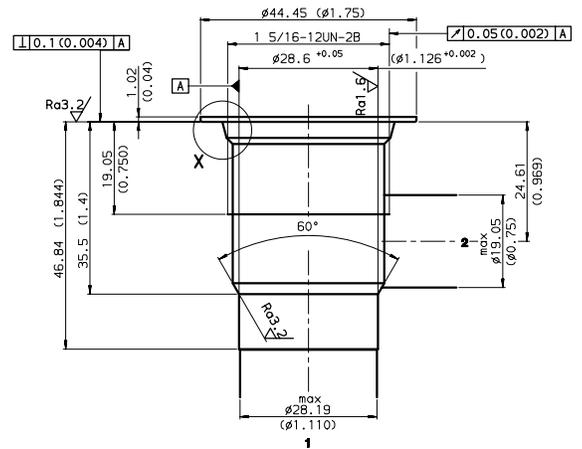
DETAIL X



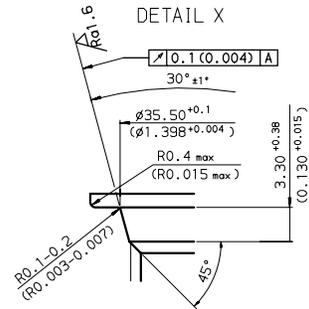
**03046486**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
Rougher: 02580668  
Finisher: 02580667

## Size 16: FC16-2



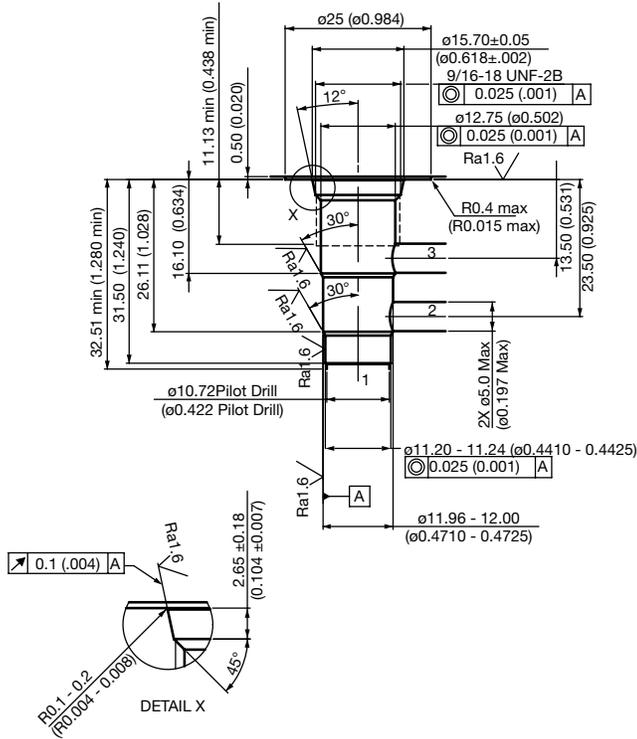
DETAIL X



**00555690**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
Rougher: 02580250  
Finisher: 02582075

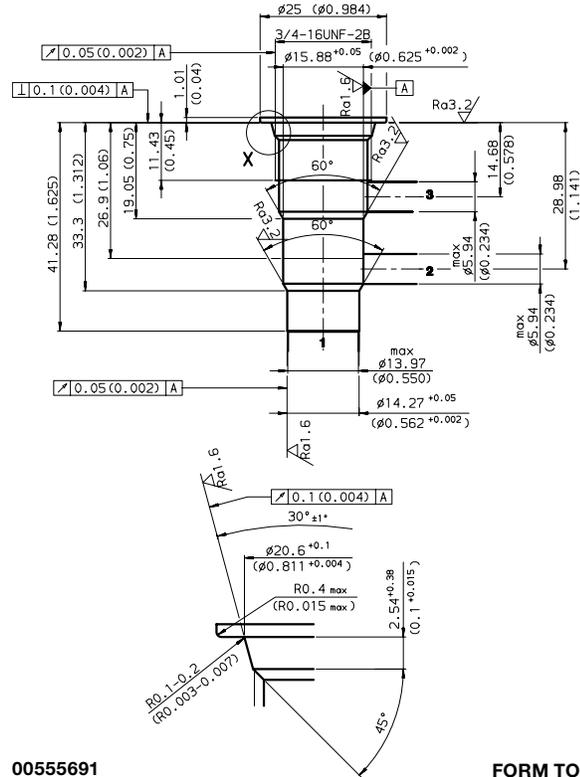
## 3-way Cavities Size 6: FC06-3



**02582045**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02582050  
**Finisher:** 02582051

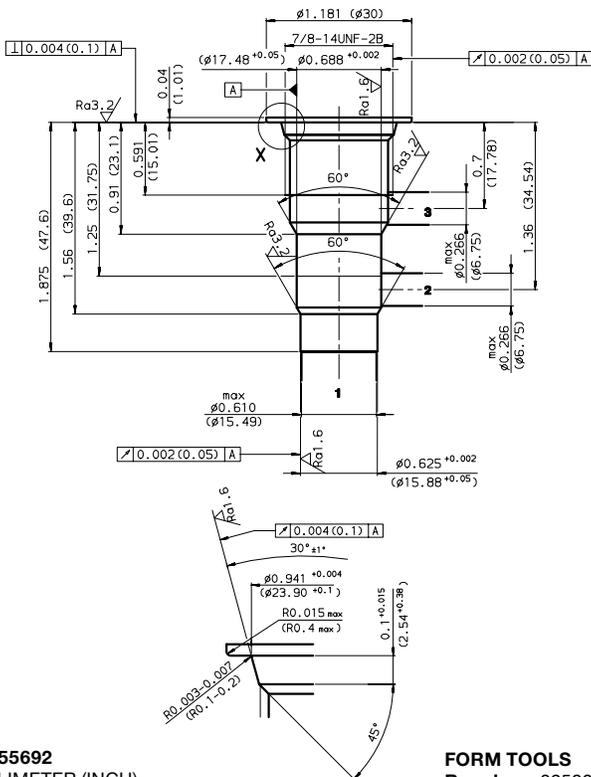
## Size 8: FC08-3



**00555691**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02580086  
**Finisher:** 02580087

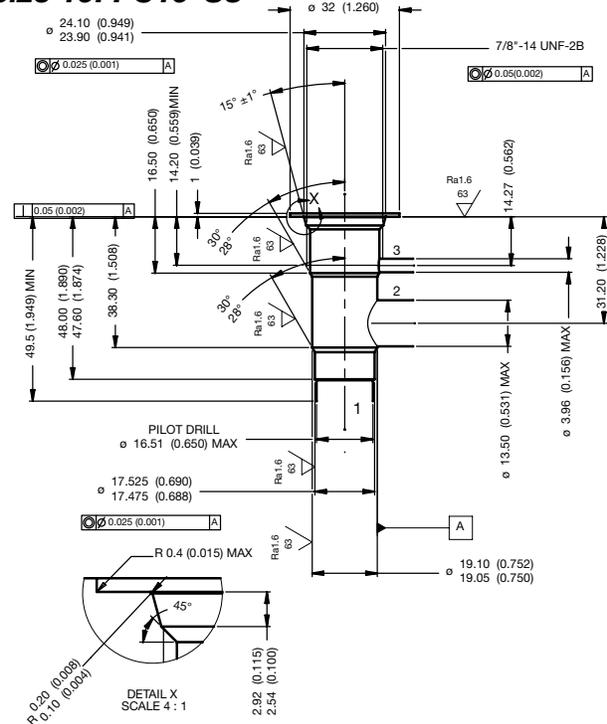
## Size 10: FC10-3



**00555692**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02580092  
**Finisher:** 02580093

## Size 10: FC10-S3



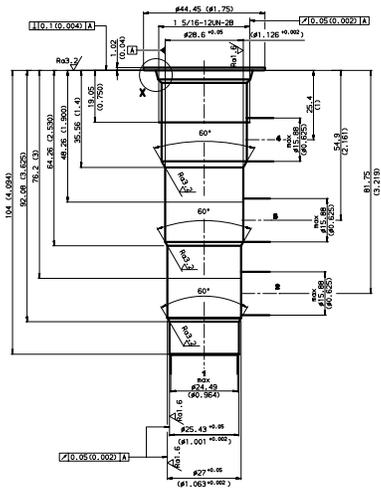
**02581793**  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
**Rougher:** 02581794  
**Finisher:** 02581795





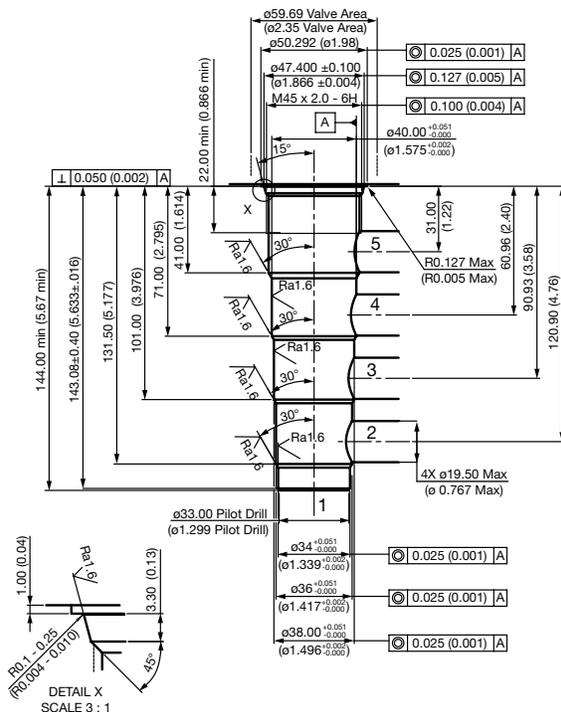
## Size 16: FC16-4



00562367  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
Rougher: 02580252  
Finisher: 02580253

## 5-way Cavities Size M45: FCM45-5



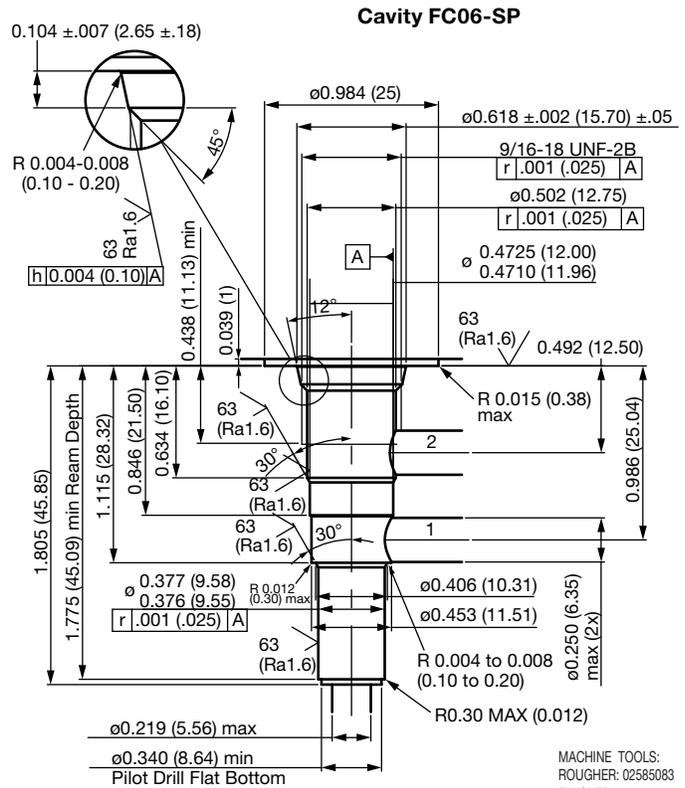
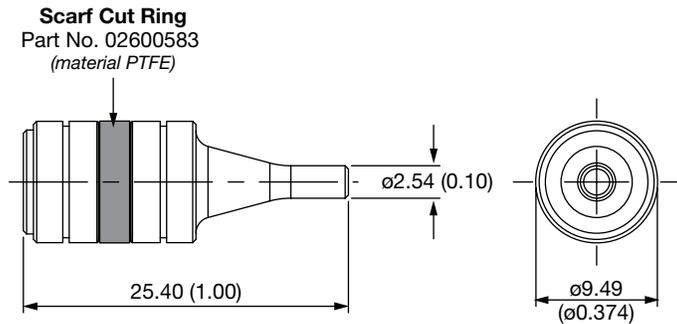
02582019  
MILLIMETER (INCH)  
Technical modifications reserved

**FORM TOOLS**  
Rougher: 02582020  
Finisher: 02582021

## Size 06 Single Pilot Piston Assembly

**Required Housing Bore**  
 $\phi 9.53$  (0.375mm)

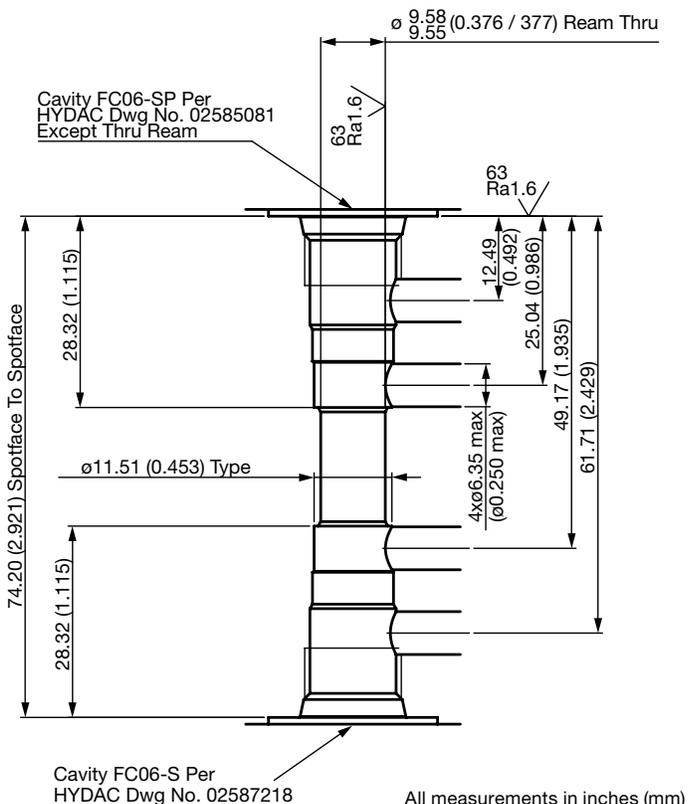
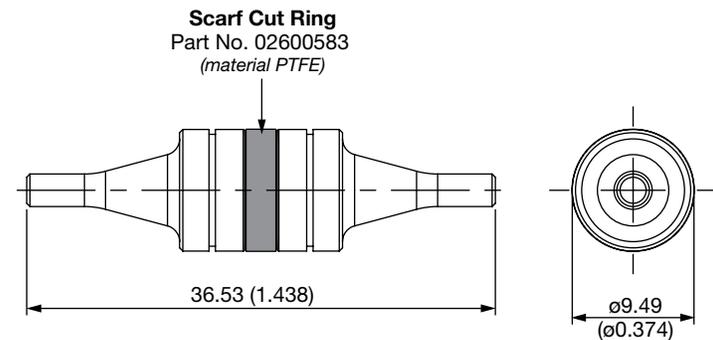
**Standard Piston with Scarf Cut Ring**  
 02610216



## Size 06 Dual Pilot Piston Assembly

**Required Housing Bore**  
 $\phi 9.53$  (0.375mm)

**Standard Piston with Scarf Cut Ring**  
 02610217



Sealed pistons should not be used with check valves that have <30 psi crack pressure.

## Size 08 Single Pilot Piston Assembly

For use on RVS08A-01 Single Pilot Operated Check Valve Assembly

Cavity FC08-SP

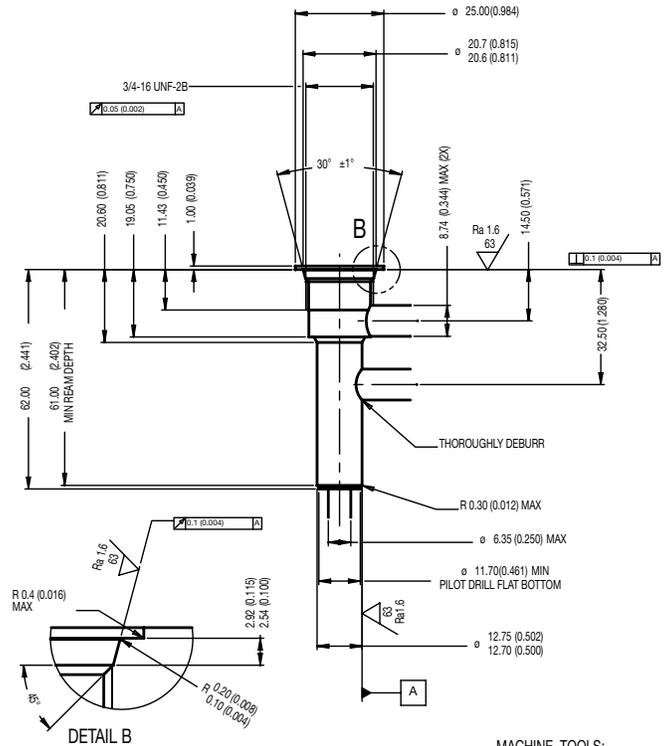
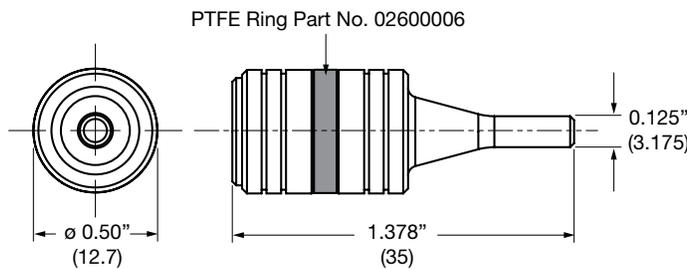
**Required Housing Bore**  
0.50" (12.7mm)

**With Buna-N Seals**  
02610067

**With Viton® Seals**  
02610068

**With PTFE Ring (standard)**  
02610069

Note: Sealed models have a central O-ring.



MACHINE TOOLS:  
ROUGHER: 02581744  
FINISHER: 02581745

## Size 08 Dual Pilot Piston Assembly

For use on RVS08A-01 Dual Pilot Operated Check Valve Assembly

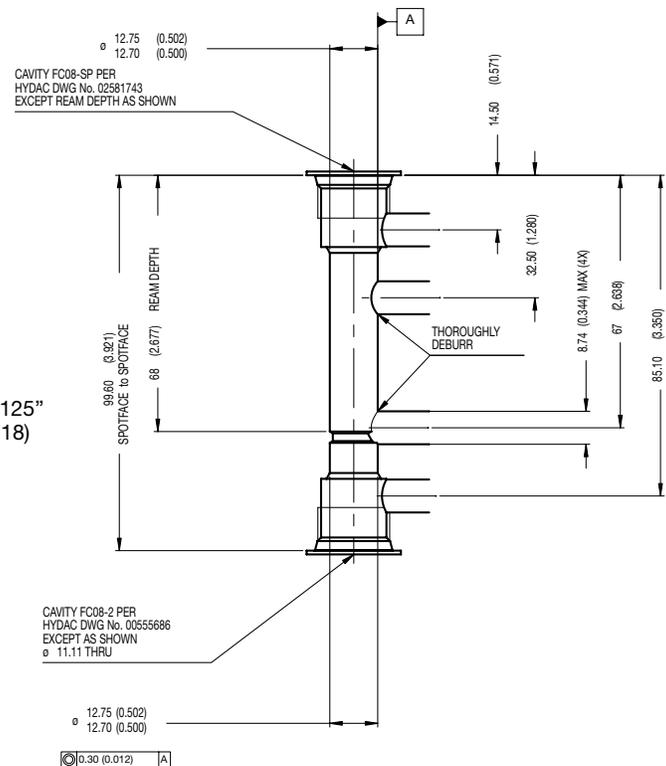
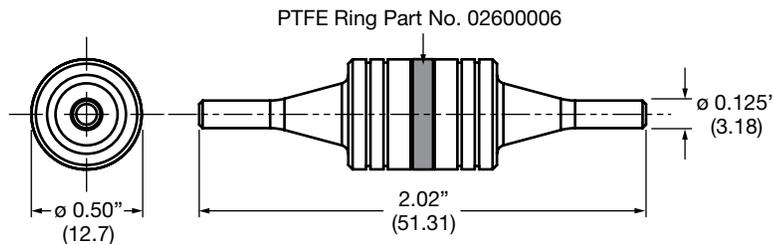
**Required Housing Bore**  
0.50" (12.7mm)

**With Buna-N Seals**  
02610070

**With Viton® Seals**  
02610071

**With PTFE Ring (standard)**  
02610072

Note: Sealed models have a central O-ring.



Sealed pistons should not be used with check valves that have <30 psi crack pressure.

All measurements in inches (mm)

## Size 10 Single Pilot Piston Assembly

For use on RVS10A-01 Single Pilot Operated Check Valve Assembly

Cavity FC10-SP

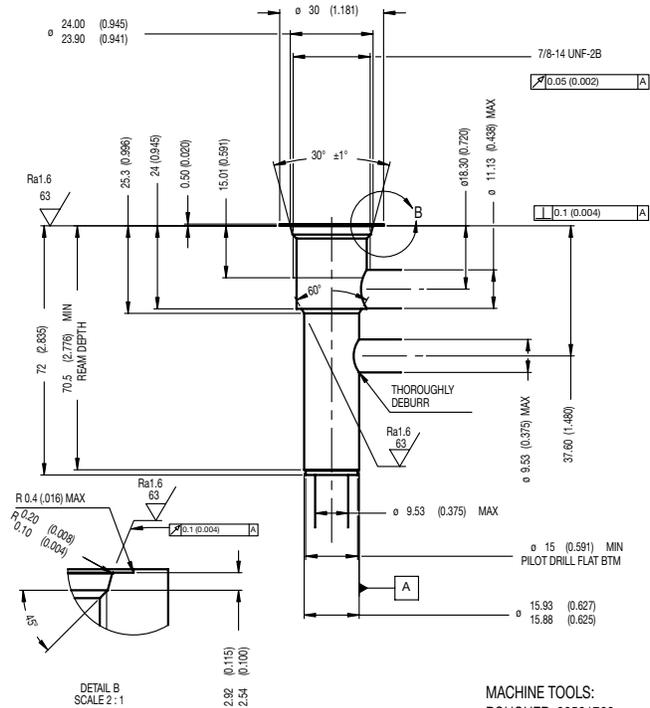
Required Housing Bore  
0.625" (15.88mm)

With Buna-N Seals  
02610073

With Viton® Seals  
02610074

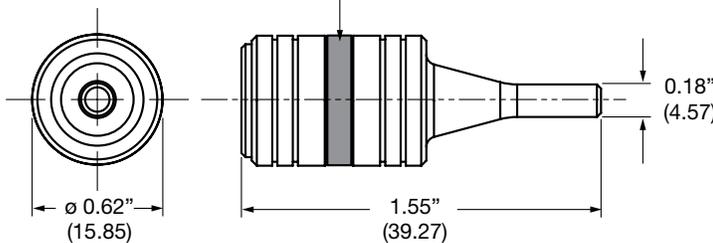
With PTFE Ring (standard)  
02610075

Note: Sealed models have a central O-ring.



MACHINE TOOLS:  
ROUGHER: 02581762  
FINISHER: 02581770

PTFE Ring Part No. 02600008



## Size 10 Dual Pilot Piston Assembly

For use on RVS10A-01 Dual Pilot Operated Check Valve Assembly

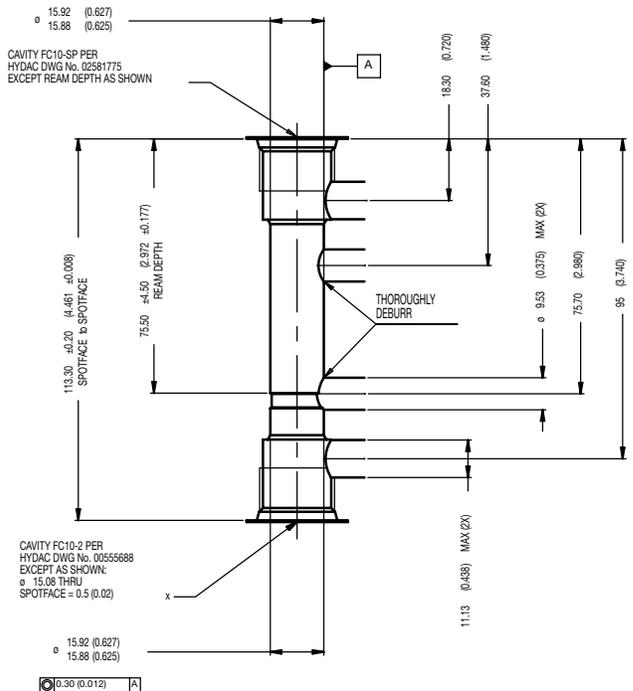
Required Housing Bore  
0.625" (15.88mm)

With Buna-N Seals  
02610064

With Viton® Seals  
02610065

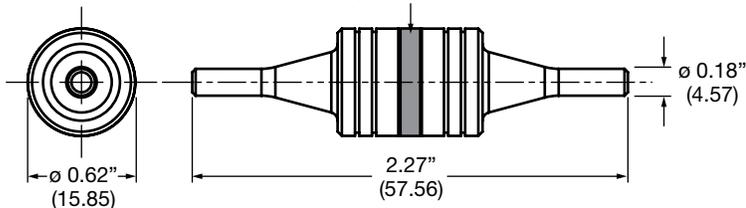
With PTFE Ring (standard)  
02610066

Note: Sealed models have a central O-ring.



CAVITY FC10-2 PER  
HYDAC DWG No. 0055688  
EXCEPT AS SHOWN:  
• 15.08 THRU  
SPOTFACE = 0.5 (0.02)

PTFE Ring Part No. 02600008



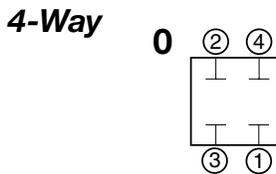
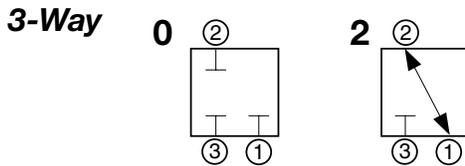
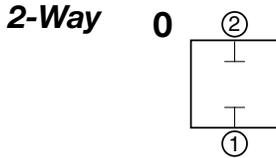
Sealed pistons should not be used with check valves that have <30 psi crack pressure.

All measurements in inches (mm)

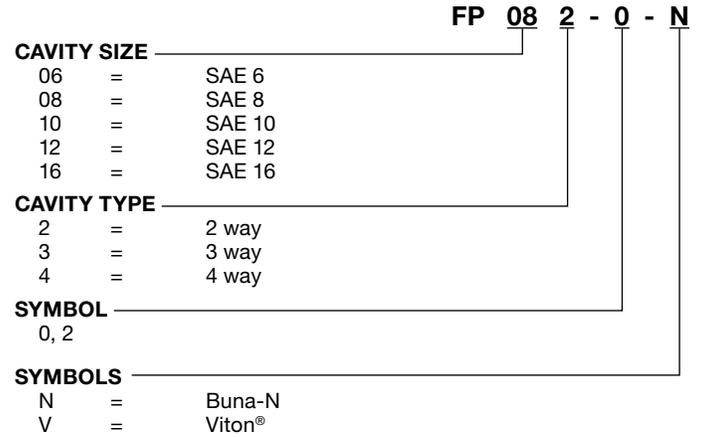
## Cavity Plugs

Material: Steel, Zinc-plated

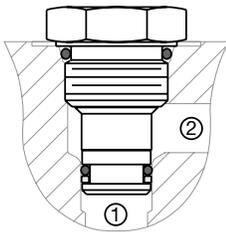
### Hydraulic Symbol



### Model Code

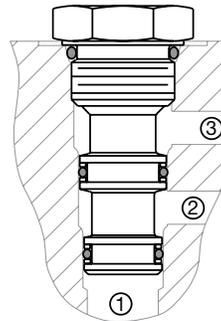


### 2-Way Cavity



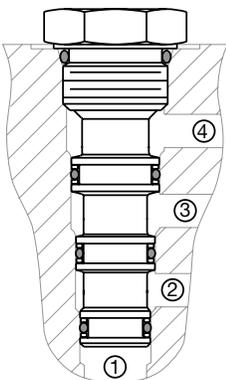
| Part Number | Model Code |
|-------------|------------|
| 02610219    | FP062-0-N  |
| 02610241    | FP062-0-V  |
| 03012753    | FP082-0-N  |
| 03012707    | FP082-0-V  |
| 03014157    | FP102-0-N  |
| 30314161    | FP102-0-V  |
| 03064028    | FP122-0-N  |
| 03064017    | FP122-0-V  |
| 03056431    | FP162-0-N  |
| 03056432    | FP162-0-V  |

### 3-Way Cavity



| Part Number | Model Code |
|-------------|------------|
| 02610220    | FP063-0-N  |
| 02610248    | FP063-0-V  |
| 03012754    | FP083-0-N  |
| 03012734    | FP083-0-V  |
| 03022548    | FP083-2-N  |
| 03022549    | FP083-2-V  |
| 03014158    | FP103-0-N  |
| 03014173    | FP103-0-V  |
| 31584884    | FP103-2-N  |
| 02610315    | FP103-2-V  |
| 03082862    | FP123-0-N  |
| 03081863    | FP123-0-V  |
| 02610316    | FP123-2-N  |
| 02610317    | FP123-2-V  |
| 03056433    | FP163-0-N  |
| 03056434    | FP163-0-V  |
| 02610318    | FP163-2-N  |
| 02610319    | FP163-2-V  |

### 4-Way Cavity



| Part Number | Model Code |
|-------------|------------|
| 02610221    | FP064-0-N  |
| 02610249    | FP064-0-V  |
| 03012756    | FP084-0-N  |
| 03012712    | FP084-0-V  |
| 03014159    | FP104-0-N  |
| 03014174    | FP104-0-V  |
| 03082863    | FP124-0-N  |
| 03088932    | FP124-0-V  |
| 03082864    | FP164-0-N  |
| 03088931    | FP164-0-V  |

## Seal Kits

### O-Ring / Backup Ring

Includes all External, Wetted O-Rings & Back-up Rings

| Cavity Size | Type  | Seal Kit Buna-N |          | Seal Kit Viton |          |
|-------------|-------|-----------------|----------|----------------|----------|
|             |       | Model Code      | Part No. | Model Code     | Part No. |
| 06          | 2-way | FS062-N         | 02610184 | FS062-V        | 02610185 |
|             | 3-way | FS063-N         | 02610186 | FS063-V        | 02610187 |
|             | 4-way | FS064-N         | 02610188 | FS064-V        | 02610189 |
| 08          | 2-way | FS082-N         | 03033920 | FS082-V        | 03051756 |
|             | 3-way | FS083-N         | 03054795 | FS083-V        | 02591059 |
|             | 4-way | FS084-N         | 03071272 | FS084-V        | 03071273 |
| 10          | 2-way | FS102-N         | 03033872 | FS102-V        | 03051757 |
|             | 3-way | FS103-N         | 03071274 | FS103-V        | 03049443 |
|             |       | FS10S3-N        | 02610278 | FS10S3-V       | 02610279 |
|             | 4-way | FS104-N         | 03051912 | FS104-V        | 03071275 |
| 12          | 2-way | FS122-N         | 03071298 | FS122-V        | 03071299 |
| 16          | 2-way | FS162-N         | 03052427 | FS162-V        | 03051758 |
|             | 3-way | FS163-N         | 03071303 | FS163-V        | 03071304 |
|             |       | FS16S3-N        | 02610198 | FS16S3-V       | 02610199 |
|             | 4-way | FS164-N         | 03181644 | FS164-V        | 03181675 |
| M45         | 5-way | FSM455-N        | 02610313 | FSM455-V       | 02610314 |

## Solenoid Valve Replacement Nuts

### Coil Nut Kits For Size 6 (parts shipped loose in bags)

| Model Code  | Part Number |
|---|-------------|
| COIL NUT KIT <i>(Plastic Nut &amp; O-Ring)</i><br>Used on push/pull type valves without manual override:<br>WK06E, WK06G, WK06H, WK06J, WK06Z | 02610299    |
| COIL NUT KIT <i>(Plastic Nut &amp; O-Ring)</i><br>Used on push type valves without manual override:<br>WK06C, WK06W, WK06Y, WS06Y             | 02610300    |

## Solenoid Valve Replacement Nuts

### Coil Nut Kits For Sizes 8, 10, 12 & 16 (parts shipped loose in bags)

| Model Code  | Part Number |
|---|-------------|
| COIL NUT KIT <i>(Plastic Nut &amp; O-Ring)</i><br>Used on push type valves without manual override:<br>WS_W, WS_V, WS_Y, WS_YR, WK_A, WK_C, WK08D, WK08K, WK08L, WK10L, WK_N, WK_R, WK_Y, WK_V, WK08Z           | 02593441    |
| COIL NUT KIT <i>(Plastic Nut Rubber Cap &amp; O-Ring)</i><br>Used on push type valves with manual override:<br>WS_W, WS_V, WS_Y, WS_YR, WK_A, WK_C, WK08D, WK08K, WK08L, WK10L, WK_N, WK_R, WK_Y, WK_V, WK08Z   | 02590791    |
| COIL NUT KIT <i>(Plastic Nut &amp; O-Ring)</i><br>Used on push/pull type valves without manual override:<br>WS_Z, WK10E, WK10G, WK10H, WK10J, WK10T, WK07L, WK10D, WK10K, WK_P, WK_X, WK10Z, WK_W, WK08E, WK08J | 02593026    |
| COIL NUT KIT <i>(Plastic Nut &amp; O-Ring)</i><br>Used on push/pull type valves with manual override:<br>WS_Z, WK10E, WK10G, WK10H, WK10J, WK10T, WK07L, WK10D, WK10K, WK_P, WK_X, WK10Z, WK_W, WK08E, WK08J    | 02590809    |

## Pressure, Flow Control and Counterbalance Valve Adjustment Kits

### Direct Acting Pressure Control, Flow Control, and Counterbalance Valves

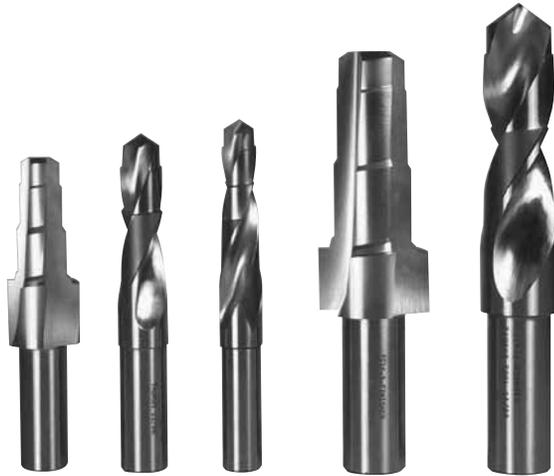
| Model Code  | Part Number |
|---|-------------|
| H-adjust kit, hand knob adjustment kit<br>to convert standard option V, screw adjust valve, to option H, hand-knob model.                           | 02591592    |
| F-adjust kit, fixed/tamper resistant adjustment kit<br>to convert standard option V, screw adjust valve, to option F, fixed/tamper-resistant model. | 02591593    |
| K-adjust kit, covered adjustment kit<br>to convert standard option V, screw adjust valve, to option K, fixed/covered nut model.                     | 03056129    |

### Pilot Operated Pressure Control Valves

| Model Code   | Part Number |
|--|-------------|
| H-adjust kit, hand knob adjustment, pilot valve kit<br>to convert standard option V, screw adjust valve, to option H, hand-knob model.                           | 02592932    |
| F-adjust kit, fixed/tamper resistant adjustment, pilot valve kit<br>to convert standard option V, screw adjust valve, to option F, fixed/tamper-resistant model. | 02593440    |
| K-adjust kit, covered adjustment, pilot valve kit<br>to convert standard option V, screw adjust valve, to option K, fixed/covered nut model.                     | 03149319    |



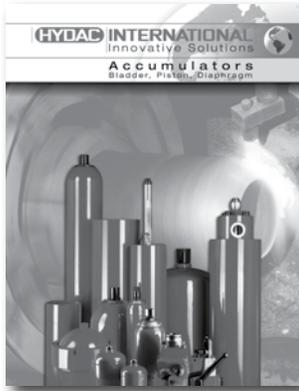
## Overview



## Description

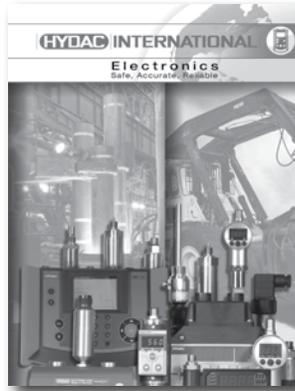
Cavity form tools, necessary for correctly manufacturing HYDAC cavities, are available for purchase. Each cavity has a separate roughing and finishing tool. Roughing tools are made of high-speed steel (HSS). Finishing tools are made of carbide. They are suitable for machining in both aluminum and steel material.

| Cavity  | Rougher Part No. High Speed Steel (HSS) | Shank $\phi$ inch | Finisher Part No. Carbide | Shank $\phi$ inch |
|---------|---|-------------------|---------------------------|-------------------|
| FC06-2  | 02582046                                | 0.500             | 02582047                  | 0.500             |
| FC06-3  | 02582050                                | 0.750             | 02582051                  | 0.750             |
| FC06-4  | 02582057                                | 0.750             | 02582058                  | 0.750             |
| FC08-2  | 02580090                                | 0.625             | 02580091                  | 0.750             |
| FC08-3  | 02580086                                | 0.625             | 02580087                  | 0.750             |
| FC08-4  | 02580088                                | 0.625             | 02580089                  | 0.750             |
| FC10-2  | 02580274                                | 0.750             | 02580247                  | 0.750             |
| FC10-3  | 02580092                                | 0.750             | 02580093                  | 0.750             |
| FC10-S3 | 02581794                                | 0.750             | 02581795                  | 0.750             |
| FC10-4  | 02580248                                | 0.750             | 02580249                  | 0.750             |
| FC12-2  | 02580668                                | 1.000             | 02580667                  | 1.000             |
| FC12-3  | 02582074                                | 1.000             | 02582075                  | 1.000             |
| FC16-2  | 02580250                                | 1.000             | 02580251                  | 1.000             |
| FC16-3  | 02580094                                | 1.000             | 02580095                  | 1.000             |
| FC16-S3 | 02581797                                | 1.000             | 02581798                  | 1.000             |
| FC16-4  | 02580252                                | 1.000             | 02580253                  | 1.000             |
| FCM45-5 | 02582020                                | 1.000             | 02582021                  | 1.000             |



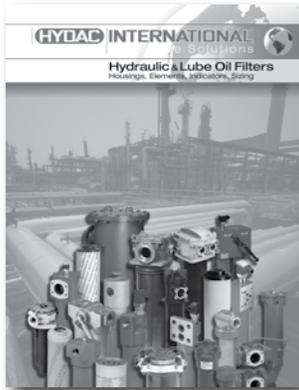
## Accumulators

- Bladder Accumulators
- Diaphragm Accumulators
- Piston Accumulators
- Nitrogen Bottles
- Pulsation Dampeners
- Thermal Fuse Caps
- Safety & Shut-off Blocks
- Charging & Gauging Units
- Permanent Gauging Blocks
- Mounting Components
- Sizing Information
- Spare Parts, Seal Kits & Tools



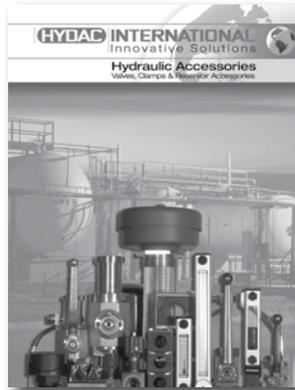
## Electronics

- Pressure Transducers
- Special Environment Transducers
- Pressure Switches
- Display Units
- Temperature Transducers
- Temperature Switches
- Level Sensors
- Flow Sensors
- Diagnostic Equipment
- Adapters
- Connectors
- Mounting Kits
- Demonstration Kits



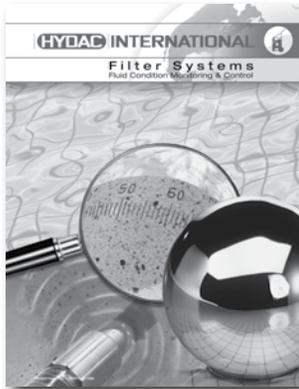
## Hydraulic & Lube Oil Filters

- Inline Filters
- Inline Duplex Filters
- In-Tank Filters
- In-Tank Inline Duplex Filters
- In-Tank Return Line Filters
- In-Tank Suction Filters
- Inside Tank Filters
- Manifold Mount Filters
- Modular Stacking Filters
- Manifold Cartridge Filters
- Low, Med. & High Press. Filters
- Filter Elements
- Clogging Indicators



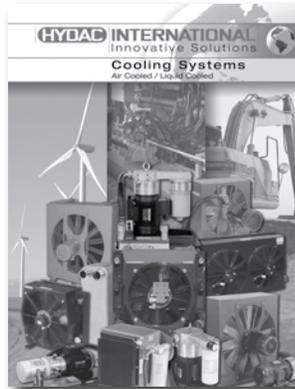
## Hydraulic Accessories

- Valves**
  - High & Low Press. Ball Valves
  - Flow Control Valves
  - Hose Break Valves
  - Metric Cartridge Valves
- Clamps**
  - DIN 3015 Clamps
  - Standard Clamps
  - Custom Solutions
- Accessories**
  - Breathers & Filler Breathers
  - Fluid Level Indicators
  - Suction Strainers
  - Gauge Isolators
  - TestPoints



## Filter Systems

- Contamination Monitors
- Water Sensors
- Offline Filtration
- Water & Solid Removal
- Portable Particle Counters
- Portable Data Recorder
- Portable Filters
  - Hand-held
  - Wheeled Carts
  - Mobile Fluid Cleaner



## Cooling Systems

- Air Cooled Oil Coolers
- Air Cooling Systems for Water Glycol
- Air Cooled Oil Coolers for Mobile Applications
- Pump/Filter/Cooler Units
- Heat Exchangers
- Accessories
  - Adjustable Temperature Switches
  - Thermostatic Bypasses
  - Integrated Bypasses
  - Compatible Filters
  - Compatible Clogging Indicators



## Mobile Hydraulics

- Sectional & Monoblock Configurations
- Manual, Hydraulic Pilot, Electro Hydraulic, Pneumatic Actuators
- Nominal flow - 14 to 42 gpm
- Maximum Pressure 5000 psi
- Special configurations to help you control fixed or variable displacement pumps
- Custom solutions in a single all-inclusive package
- Special adapted spool configurations according to your needs



## Process Filtration

The AutoFit® RF3 is an automatic self-cleaning filtration system designed for continuous maintenance free filtration of water.

- 20 - 31,000 gpm flow rates
- 2" - 36" ANSI flange sizes
- 25 - 3000 micron ratings
- 25 to 150 psi operating pressures
- ASME Code certification
- Electric, Pneumatic, or Electro-pneumatic power source





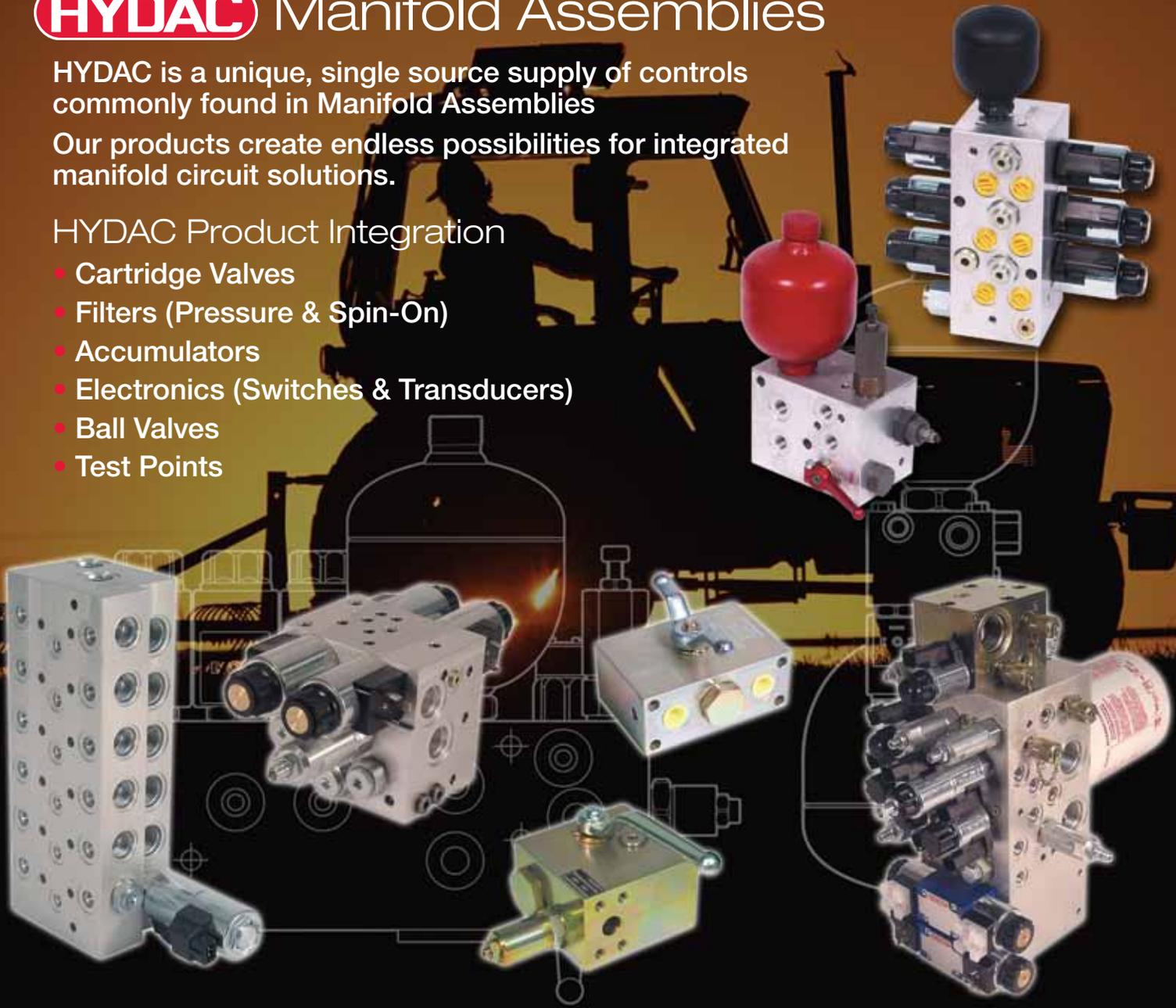
# HYDAC Manifold Assemblies

HYDAC is a unique, single source supply of controls commonly found in Manifold Assemblies

Our products create endless possibilities for integrated manifold circuit solutions.

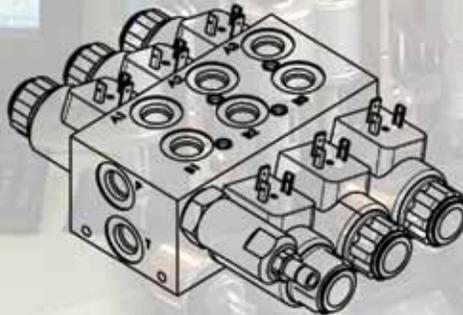
## HYDAC Product Integration

- Cartridge Valves
- Filters (Pressure & Spin-On)
- Accumulators
- Electronics (Switches & Transducers)
- Ball Valves
- Test Points



HYDAC Hydraulic Division provides its partners with customer focused

- Manifold Design
- Valve Engineering Expertise
- Circuit Design Assistance
- Application Troubleshooting





# INTERNATIONAL

## INNOVATIVE FLUID POWER

Global Head Office  
HYDAC INTERNATIONAL  
GMBH

Industriegebiet  
D – 66280 Sulzbach/Saar  
Germany

Tel.: +49 6897 509-01

Fax: +49 6897 509-577

Internet: [www.hydac.com](http://www.hydac.com)  
Email: [info@hydac.com](mailto:info@hydac.com)

**Accessories**

**Accumulators**

**Clamps**

**Compact Hydraulics**

**Cooling Systems**

**Cylinders**

**Electronics**

**Filters**

**Filter Systems**

**Mobile Directional Control  
Valves**

**Mobile Systems**

**Process Filters**

**Valves**

### HYDAC USA

[www.HYDACusa.com](http://www.HYDACusa.com)

#### HYDAC TECHNOLOGY CORPORATION

Accessories Division,  
Filter Division,  
Electronic Division

2260 City Line Road  
Bethlehem, PA 18017

**+1.610.266.0100**

#### HYDAC TECHNOLOGY CORPORATION

Hydraulic Division - Compact Hydraulics

450 Windy Point Drive  
Glendale Heights, IL 60139

**+1.630.545.0800**

#### HYDAC TECHNOLOGY CORPORATION

Cooling System Division

445 Windy Point Drive  
Glendale Heights, IL 60139

**+1.630.545.0800**

#### HYDAC CORPORATION

HYDAC TECHNOLOGY CORPORATION

Mobile Hydraulic Division  
Sales Office

1660 Enterprise Parkway • Suite E  
Wooster, OH 44691

**+1.610.266.0100 x1902**

#### HYDAC CORPORATION

HYDAC TECHNOLOGY CORPORATION

Sales Office

12606 NE 95th Street  
Building VC, Suite 100  
Vancouver WA 98682

**+1.360.882.0977**

### HYDAC Canada

[www.HYDAC.ca](http://www.HYDAC.ca)

#### HYDAC CORPORATION

14 Federal Road  
Welland, Ontario, Canada L3B 3P2

**+1.905.714.9322**

#### HYDAC CORPORATION

Sales Office

Montreal, Québec, Canada J2M 1K9

**+1.877.539.3388**

### HYDAC Mexico

[www.HYDACmex.com](http://www.HYDACmex.com)

#### HYDAC INTERNATIONAL SA DE CV

Av. Industria No. 102 Nave V  
Los Reyes Ixtacala Tlalnepantla De Baz  
Edo. de Mexico, Mexico 54090

**+52.5.55565.8511**

#### HYDAC CORPORATION

Accumulator Division

2204 Avenue C  
Bethlehem, PA 18017

**+1.610.266.0100**

#### HYDRO POWER

HYDAC Cylinders LLC

540 Carson Road N  
Birmingham, AL 35217

**+1.205.520.1220**

#### HYDAC TECHNOLOGY CORPORATION

Cooling System Division

3539 Denver Drive  
Denver, NC 28037

**+1.610.266.0100 x1805**

#### HYDAC CORPORATION

HYDAC TECHNOLOGY CORPORATION

Sales Office

1718 Fry Road • Suite 100  
Houston, TX 77084

**+1.281.579.8100**

#### HYDAC CORPORATION

HYDAC TECHNOLOGY CORPORATION

Sales Office

9836-B Northcross Center Court  
Huntersville, NC 28078

**+1.610.266.0100 x1803**

#### HYDAC CORPORATION

Sales Office

101 - 18207 114 AVE W  
Edmonton, Alberta, Canada T5S 2P6

**+1.780.484.4228**

