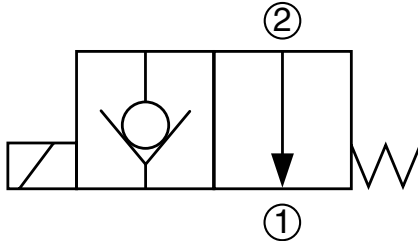


## WS06Y-01 Poppet Type, Normally Open, Pilot Operated Up to 5 gpm (19 l/min) • 5000 psi (350 bar)

### Hydraulic Symbol



### Description

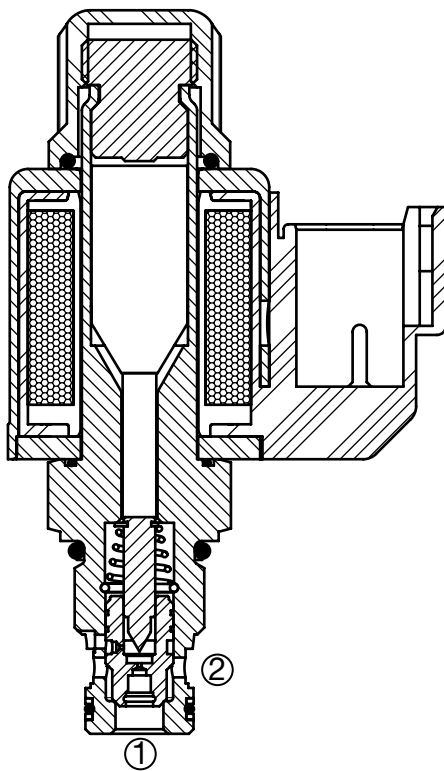
A screw-in cartridge, solenoid operated, 2 way 2 position, normally open, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

### 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.

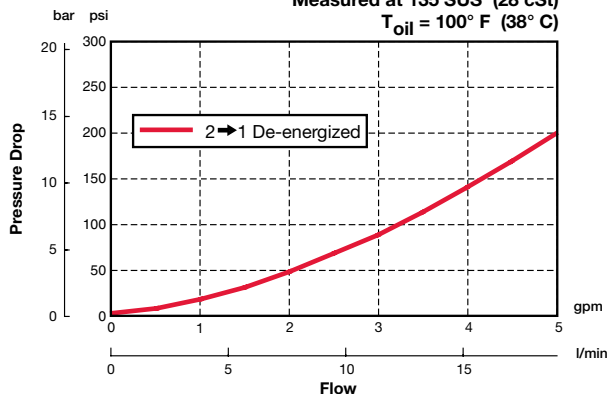
### Specifications

|  |  |
|--|--|
| 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   |

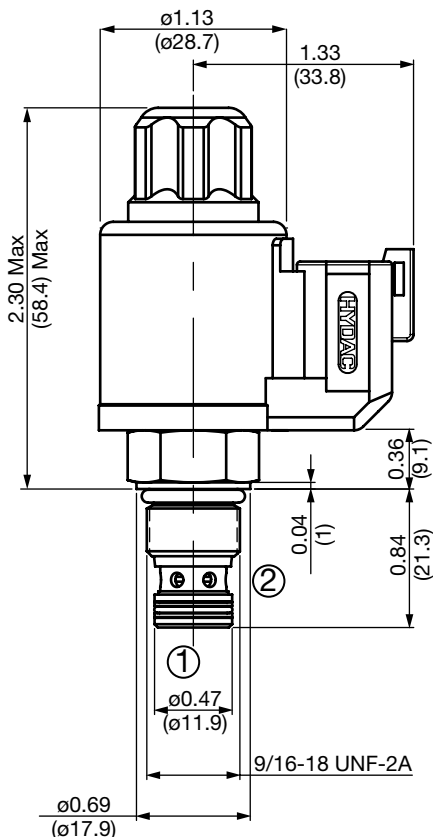
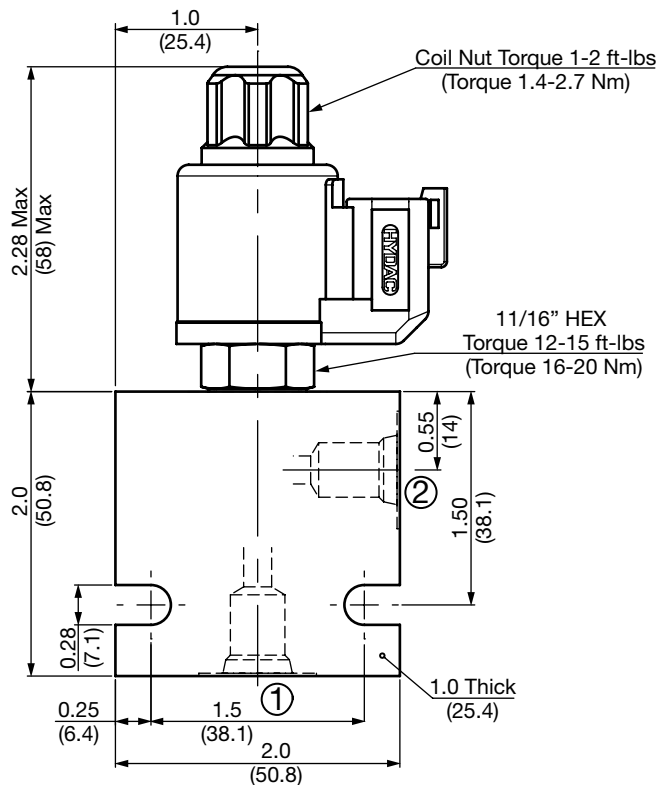


### Performance

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

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.

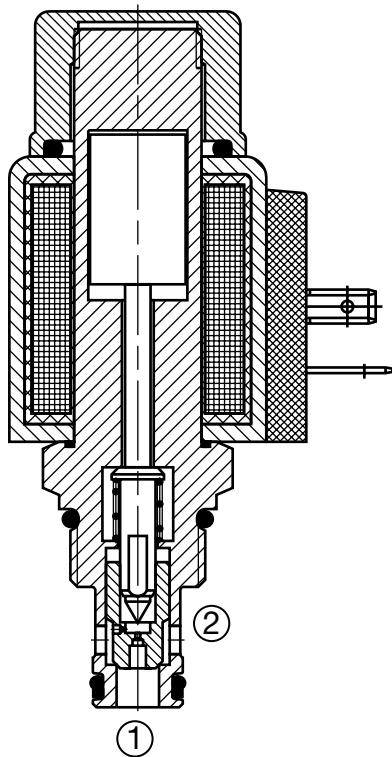
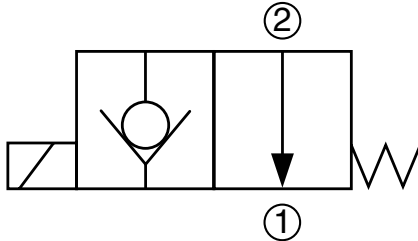
## Standard Line Bodies\*

| 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.

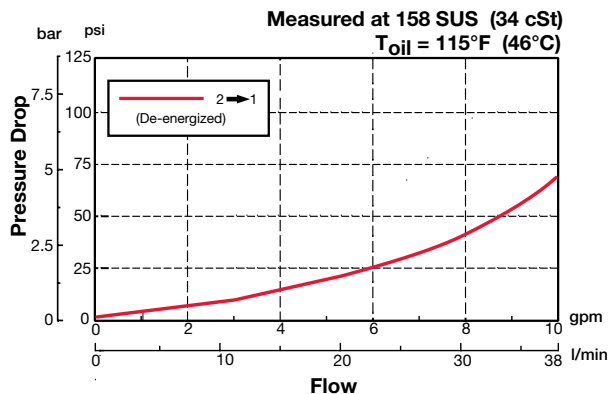
### Features

- 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 |

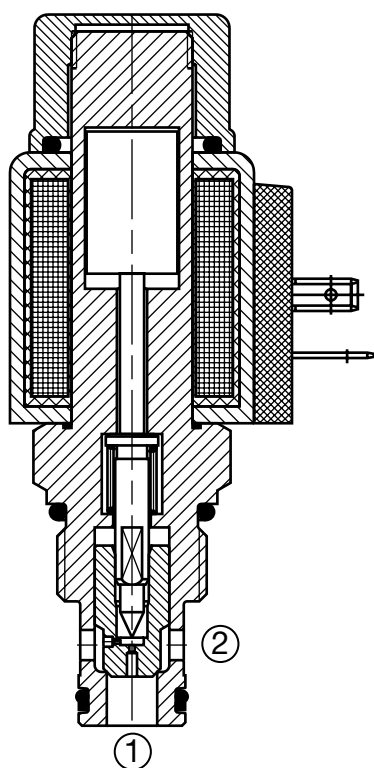
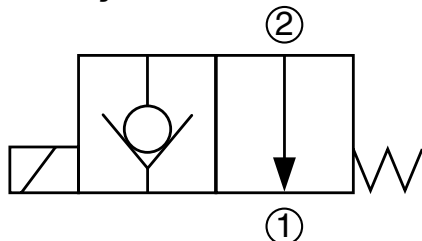
### Performance





## 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.

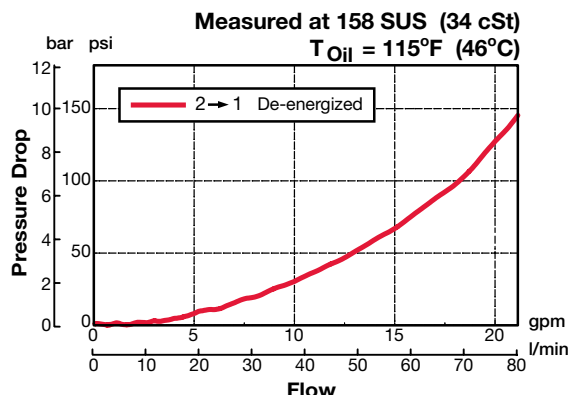
### Features

- Push type manual override button, protected by rubber cap

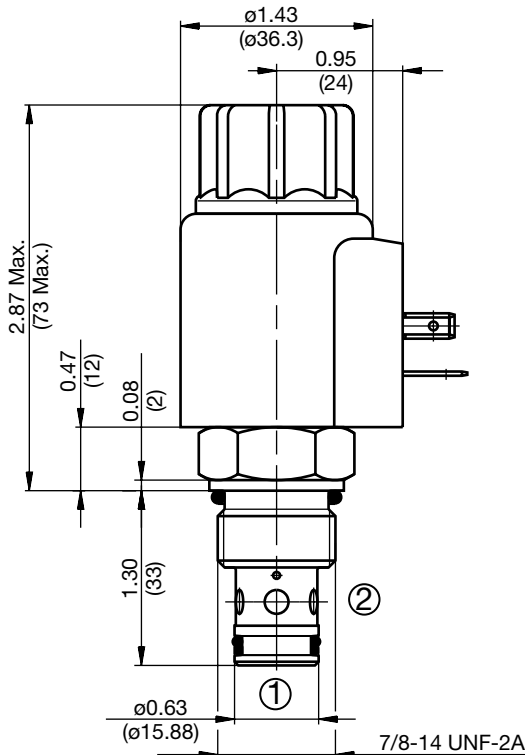
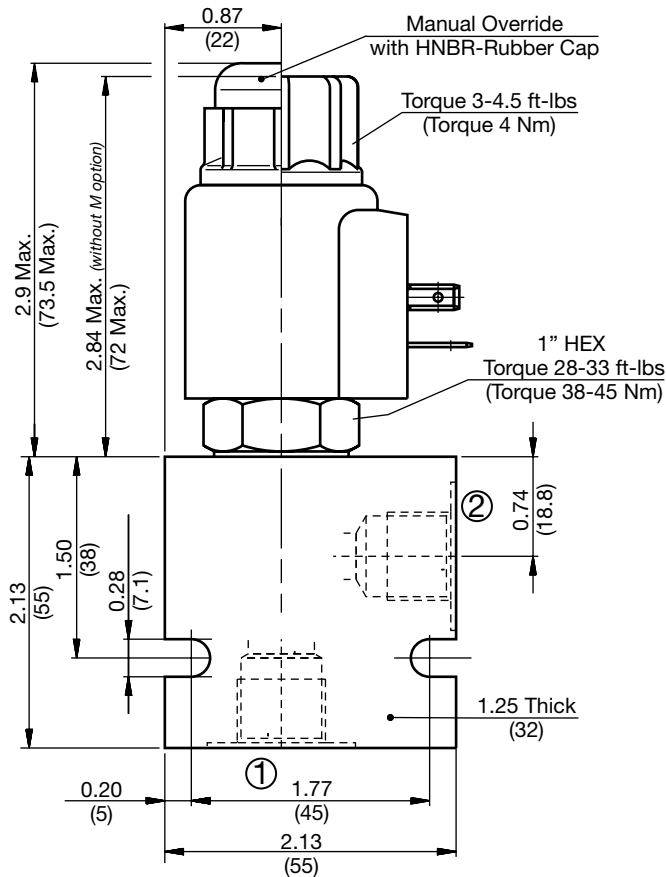
### Specifications

|                                    |   |
|------------------------------------|---|
| 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



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

## 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  
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.

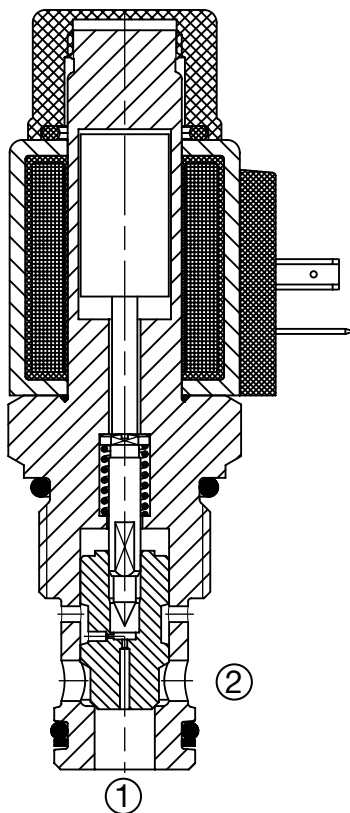
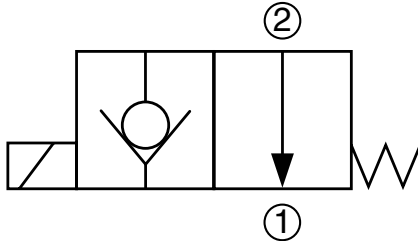
## Standard Line Bodies\*

| 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

## 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.

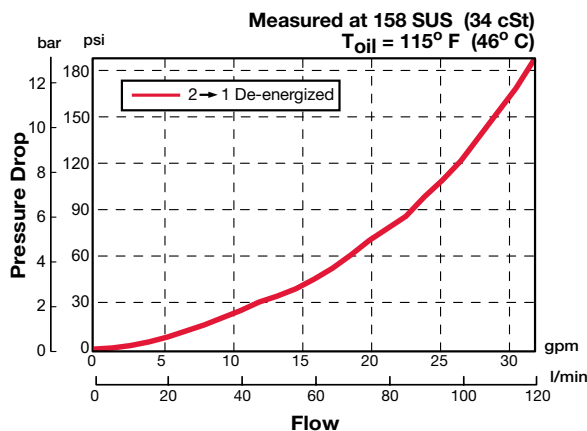
### Features

- Push type manual override button, protected by rubber cap

### Specifications

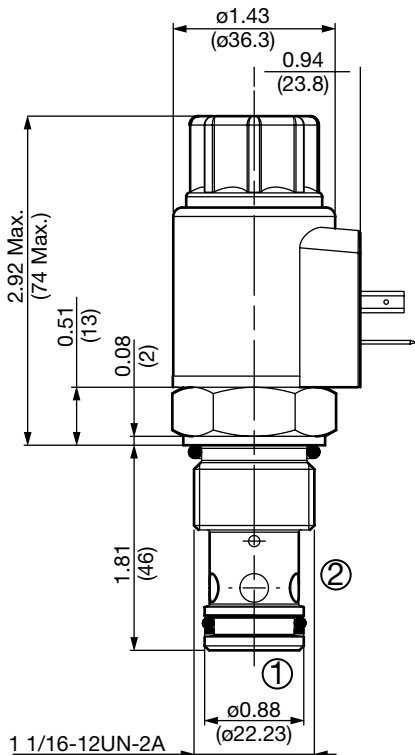
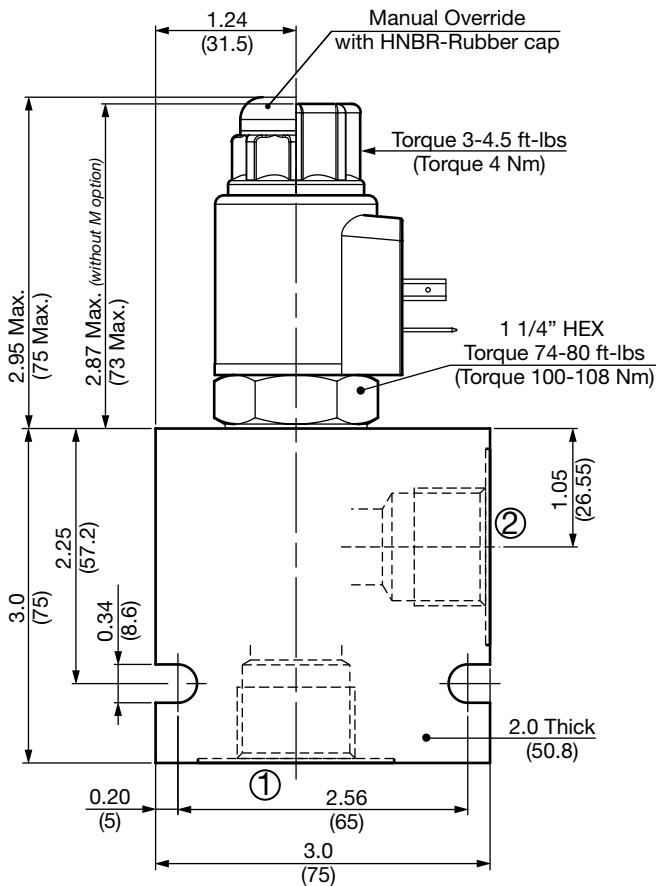
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 29 gpm (110 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><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 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 <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

**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\*

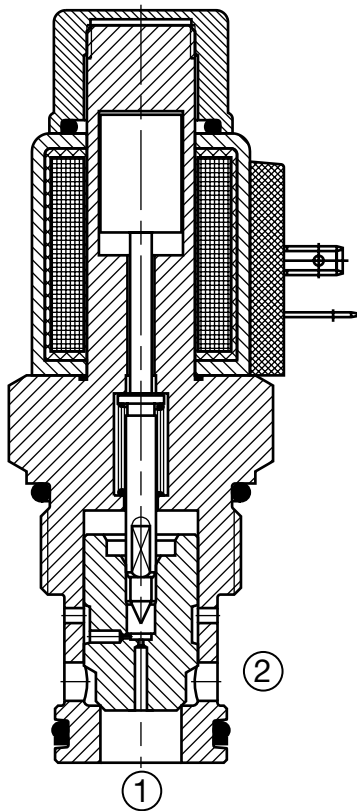
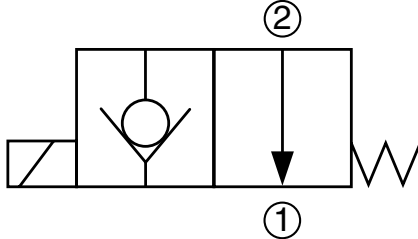
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.39 lbs (0.63 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc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

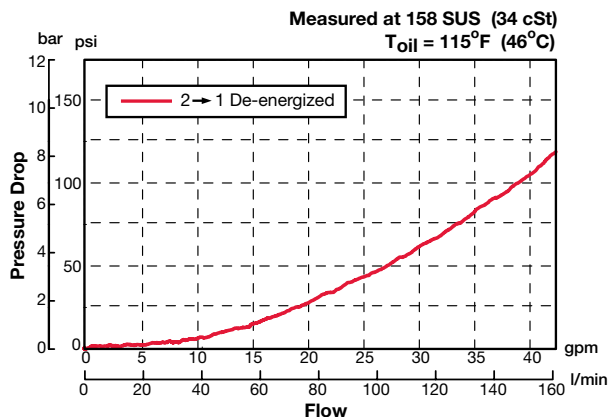
### Features

- Push type manual override button, protected by rubber cap

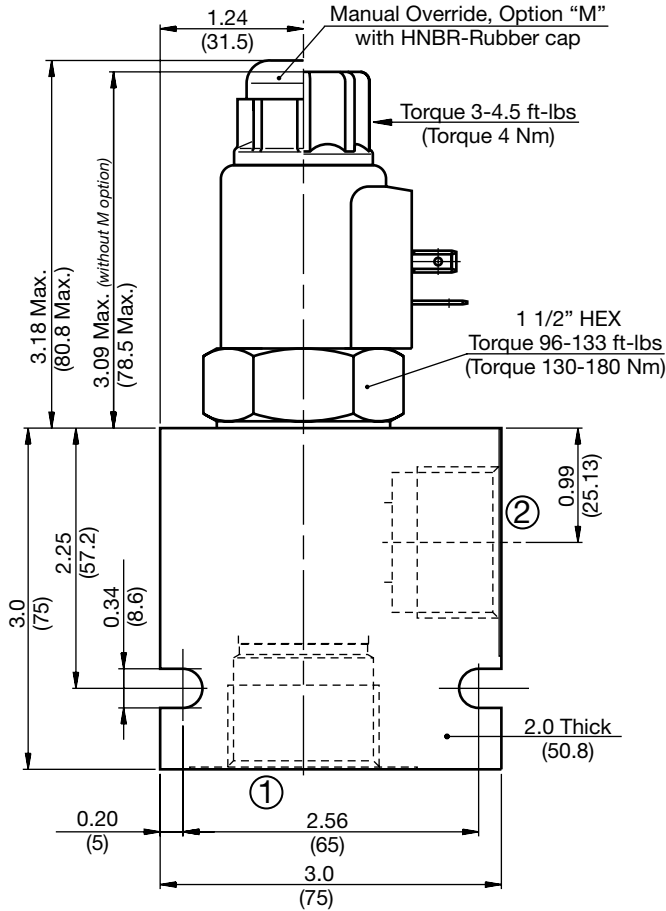
### Specifications

|                                    |   |
|------------------------------------|---|
| 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 (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 150 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                             | FC16-2 (see Line Bodies & Cavities section)   |
| Cavity Tools                       | Rougher: 02580250<br>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<br>Viton® FS162-V P/N: 03051758  |

### Performance



## Dimensions



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

## Model Code

**WS16Y-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.

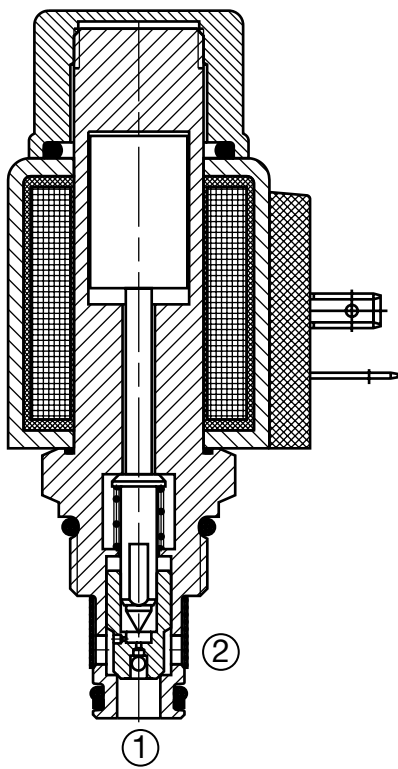
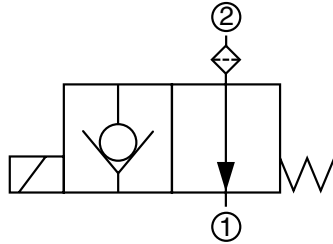
## Standard Line Bodies\*

| 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

## 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.

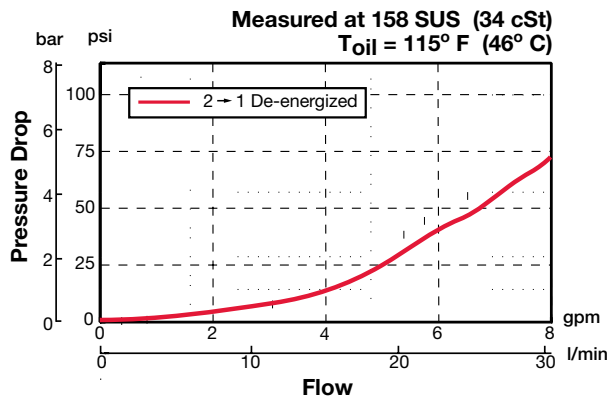
### Features

- 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

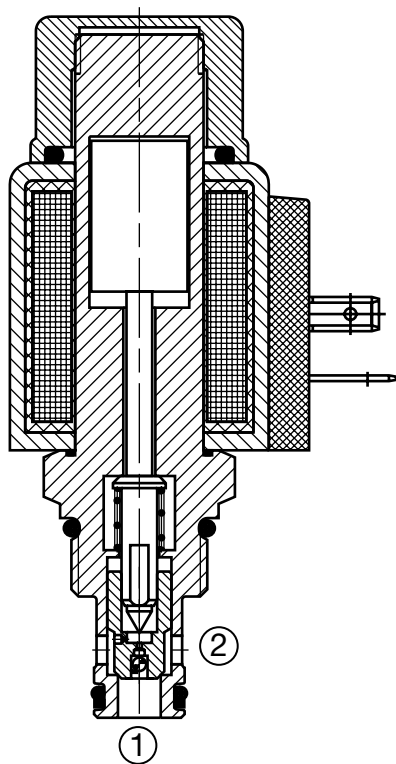
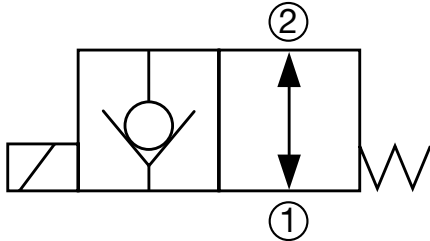




## WS08YR-01

### 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.

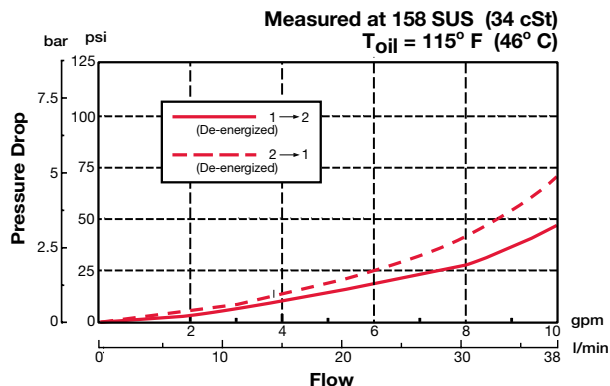
#### Features

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

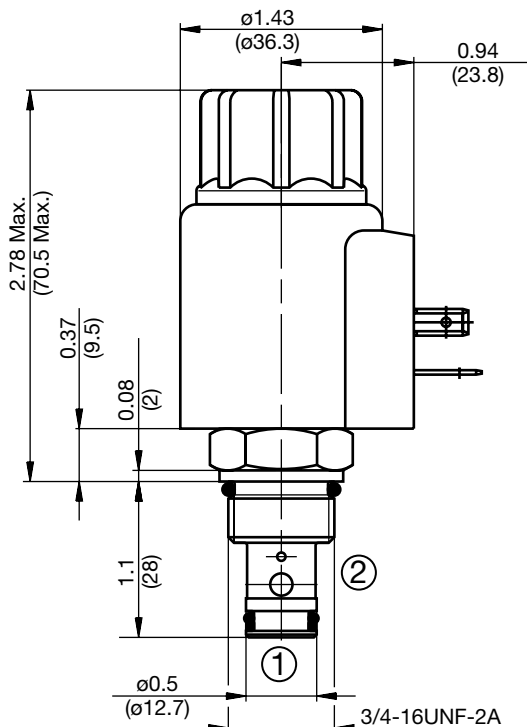
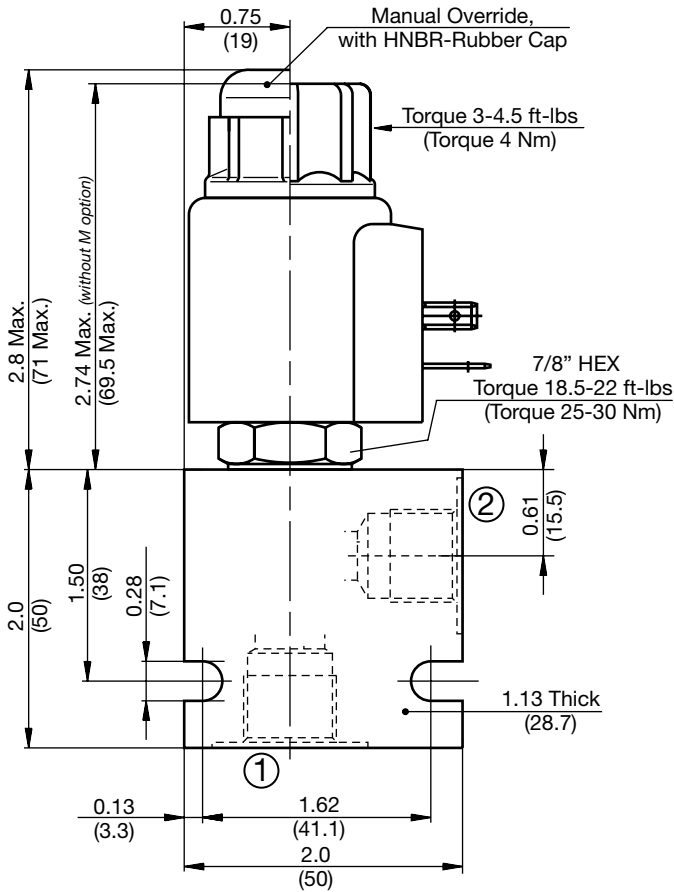
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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<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 $\beta_{10} \geq 200$ .                                    |
| Installation                       | No orientation restrictions   |
| Cavity                             | FC08-2 (see <i>Line Bodies and 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

**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\*

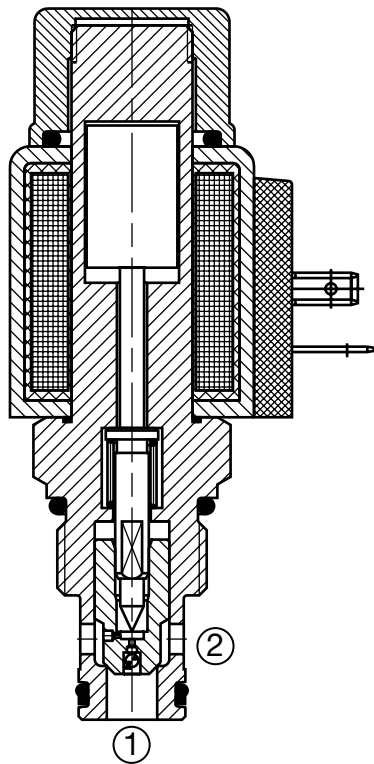
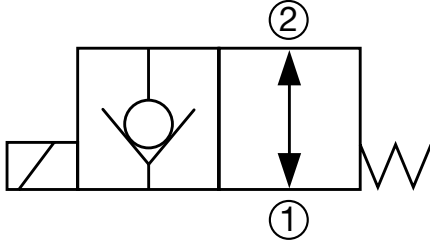
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc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

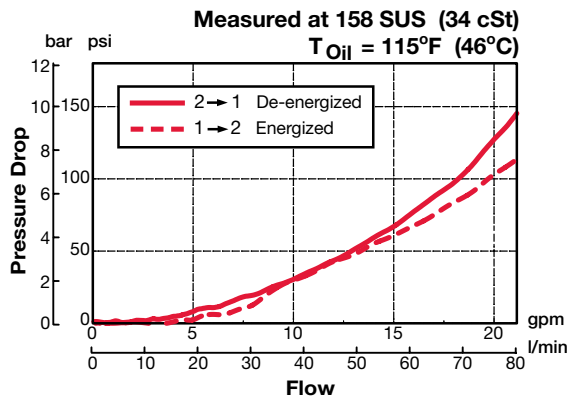
#### Features

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

#### Specifications

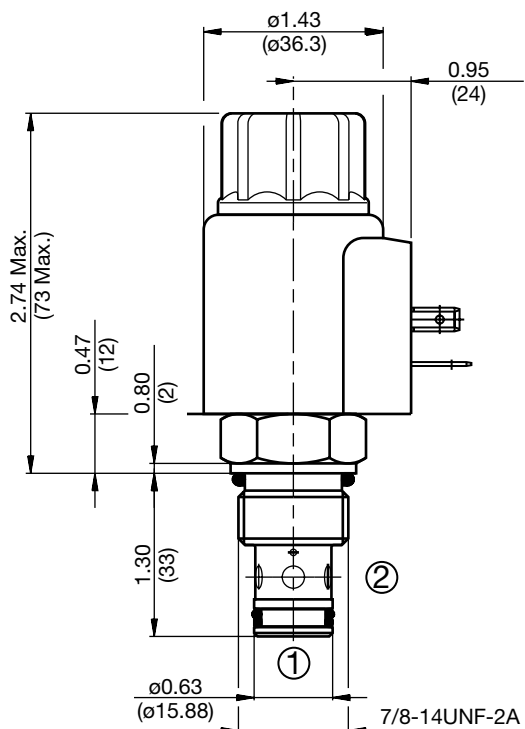
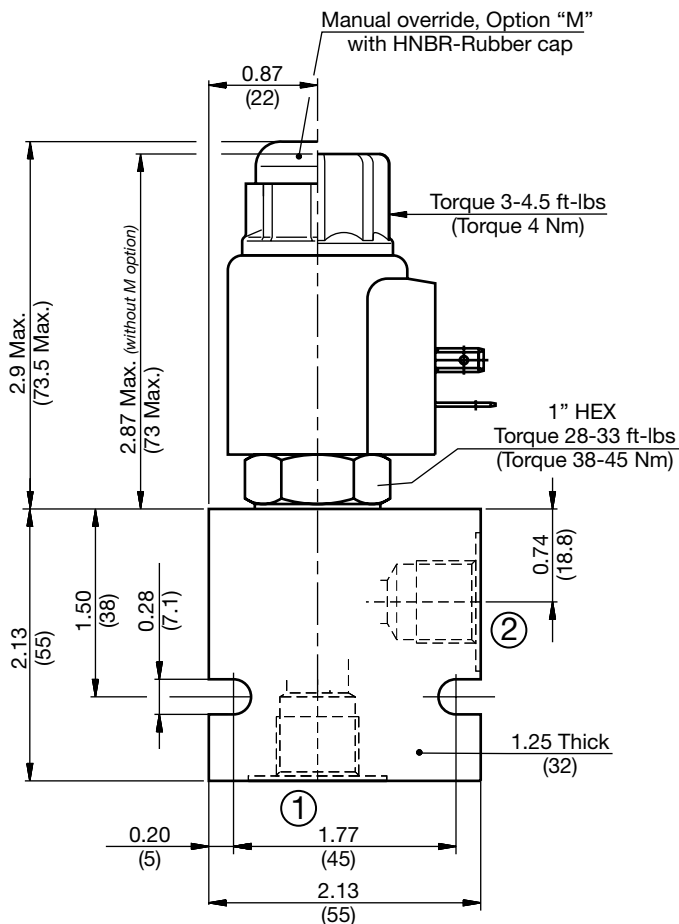
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 20 gpm (75 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(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 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 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, 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

**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\*

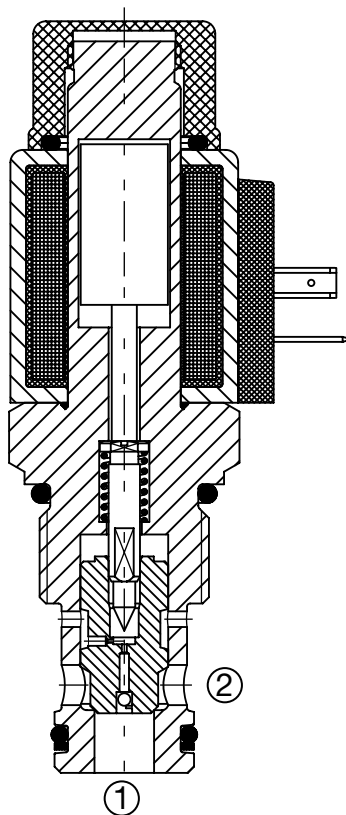
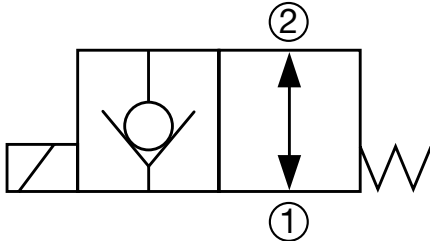
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc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

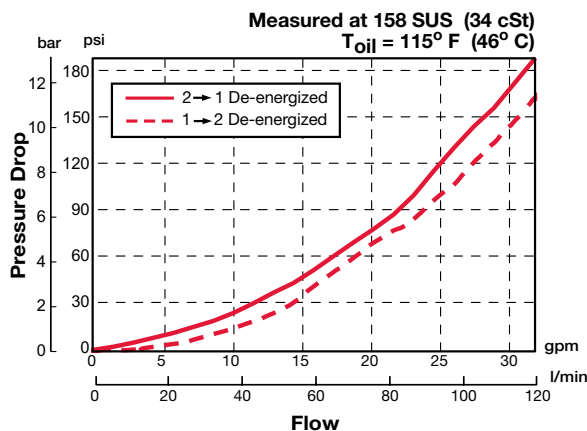
#### Features

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

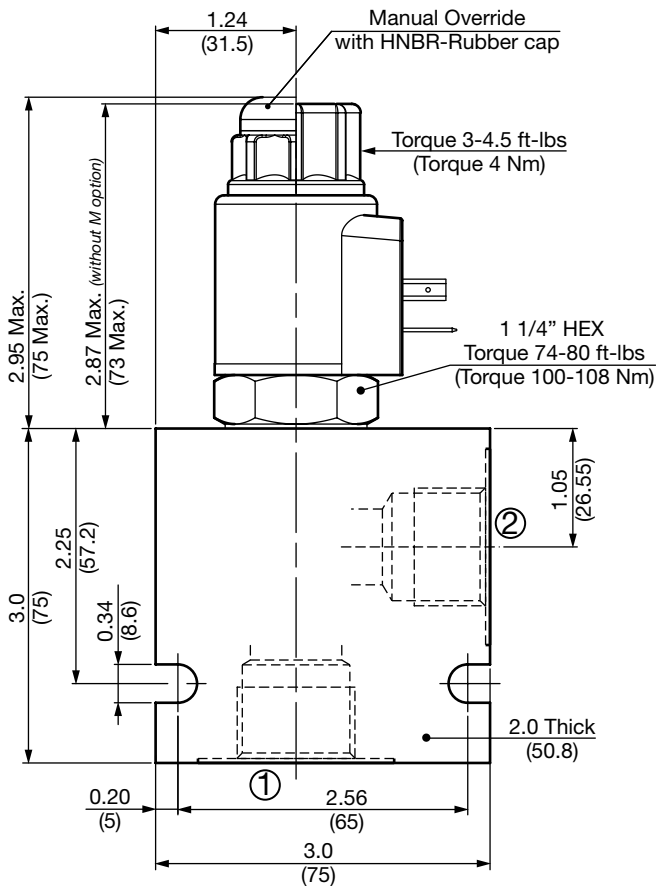
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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><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 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 <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, steel shell, polyamide encapsulation.   |
| Seal Kits                          | Buna-N FS122-N P/N: 03071298<br>Viton® FS122-V P/N: 03071299  |

#### Performance



## Dimensions



## Model Code

**WS12YR-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) |

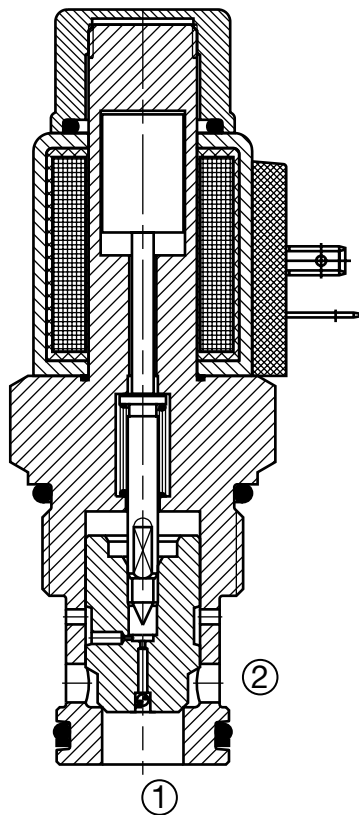
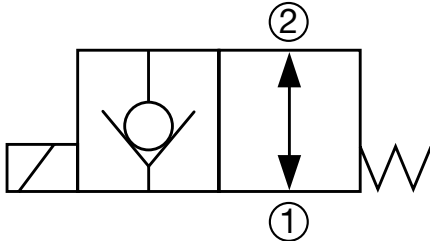
\*Please refer to Line Bodies & Cavities section for details

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

## 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.

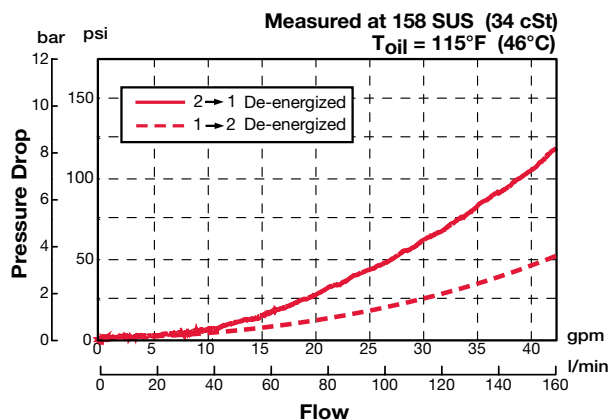
#### Features

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

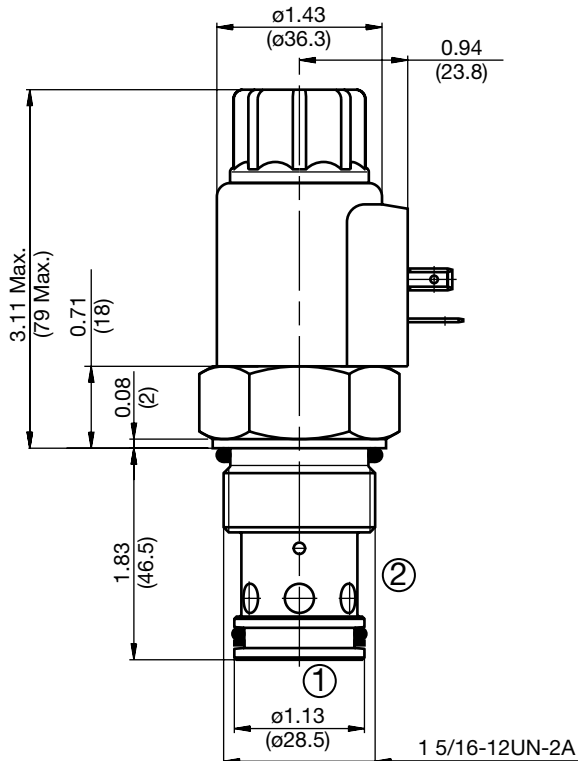
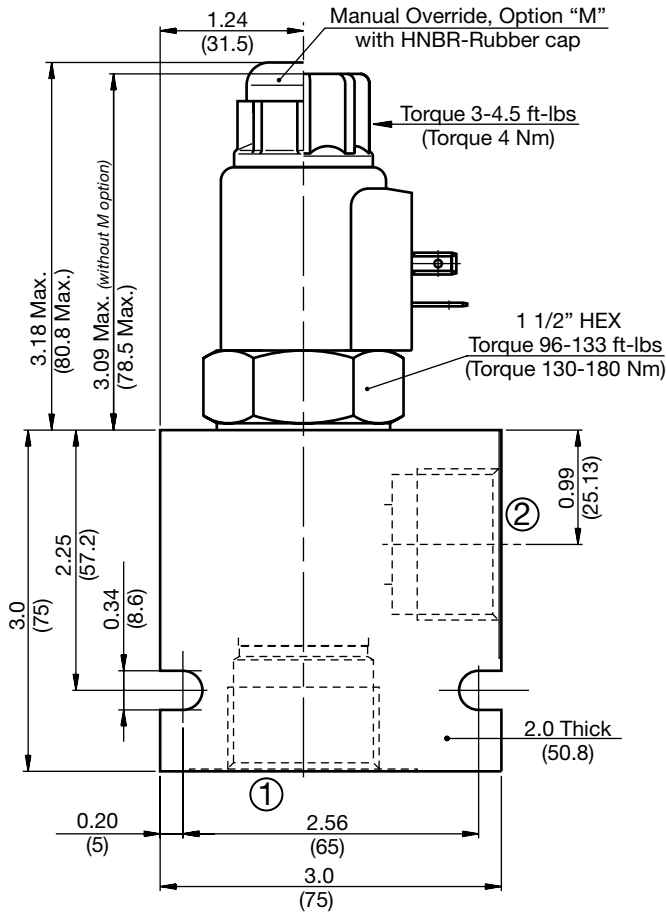
#### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| 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 (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   | 150 ms                |
|                                    | 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                             | 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\*

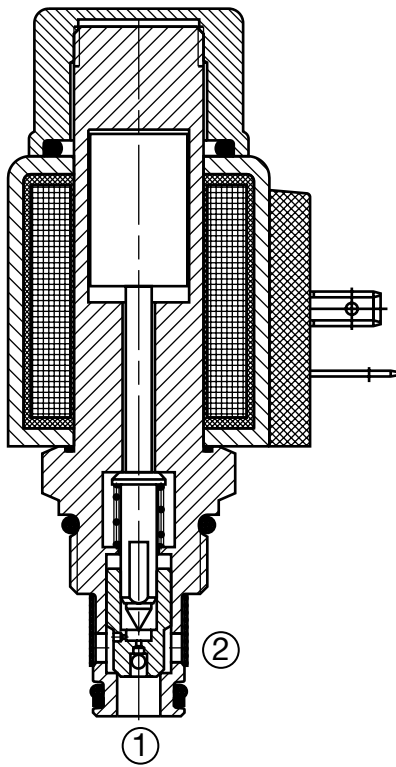
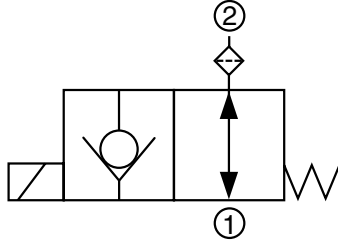
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 lbs (0.55 kg)  |
| FH162-SS16 | 03032655 | Steel, Zinc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

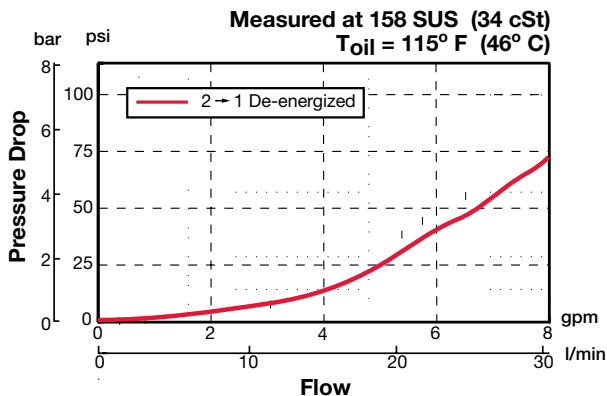
#### Features

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

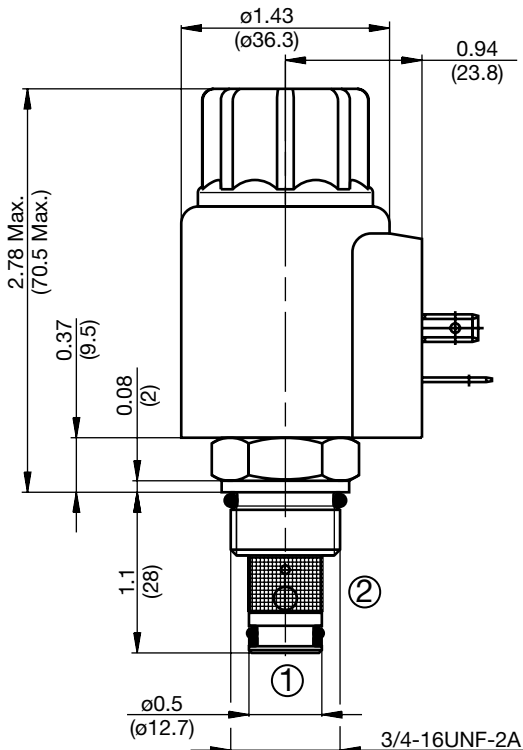
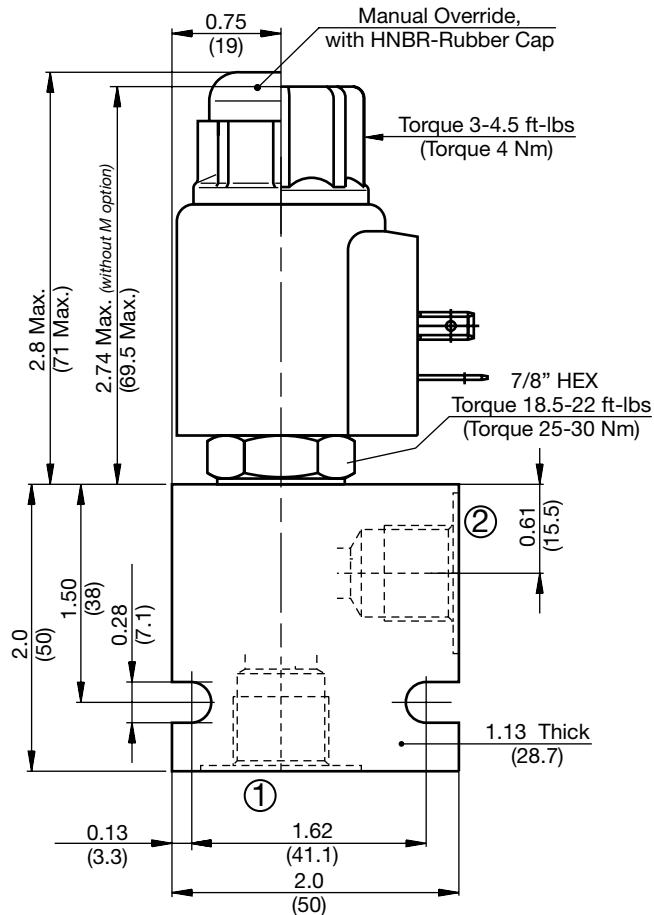
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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\*

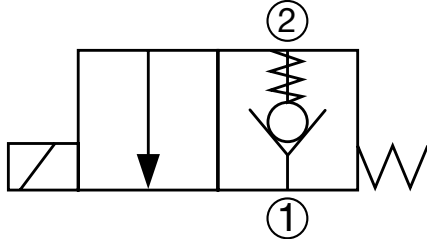
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc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

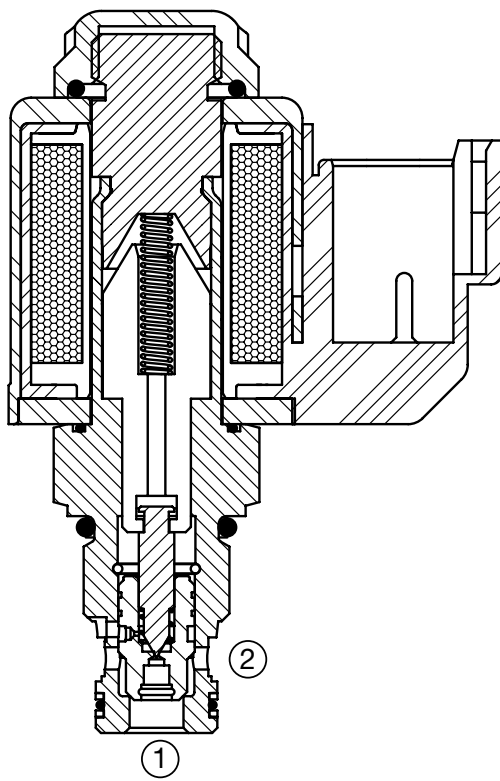
A screw-in cartridge, solenoid operated, 2 way 2 position, normally closed, pilot operated, poppet type intended for use as a uni-directional blocking or load holding device in hydraulic circuits requiring low internal leakage.

**Operation**

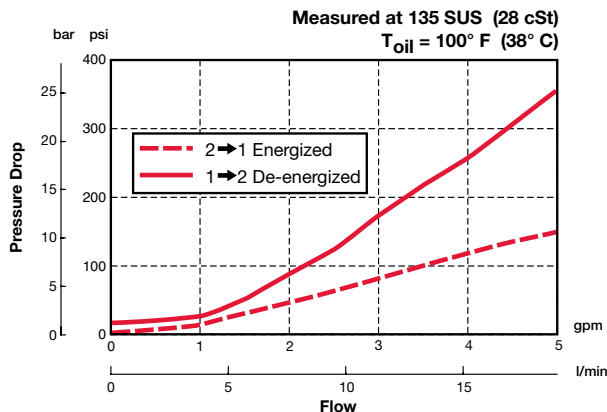
When de-energized the WS06Z blocks flow from port 2 to port 1, while allowing flow from port 1 to port 2. When energized the poppet lifts and opens the flow from port 2 to port 1, while the flow from port 1 to port 2 is severely restricted.

**Specifications**

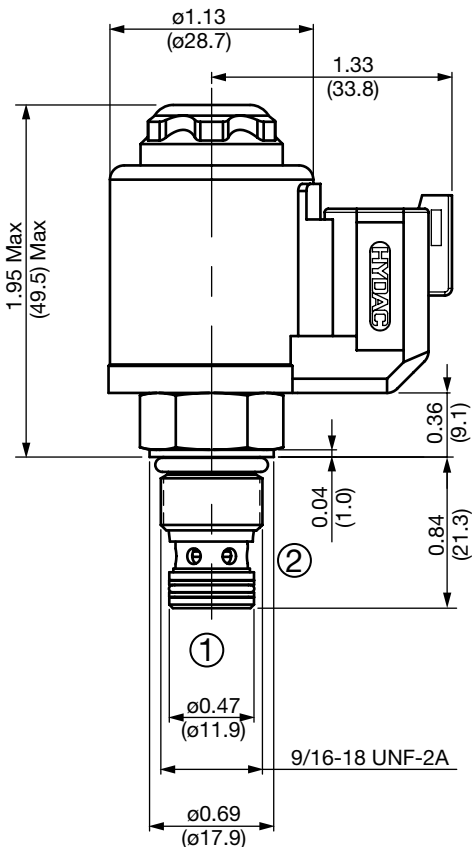
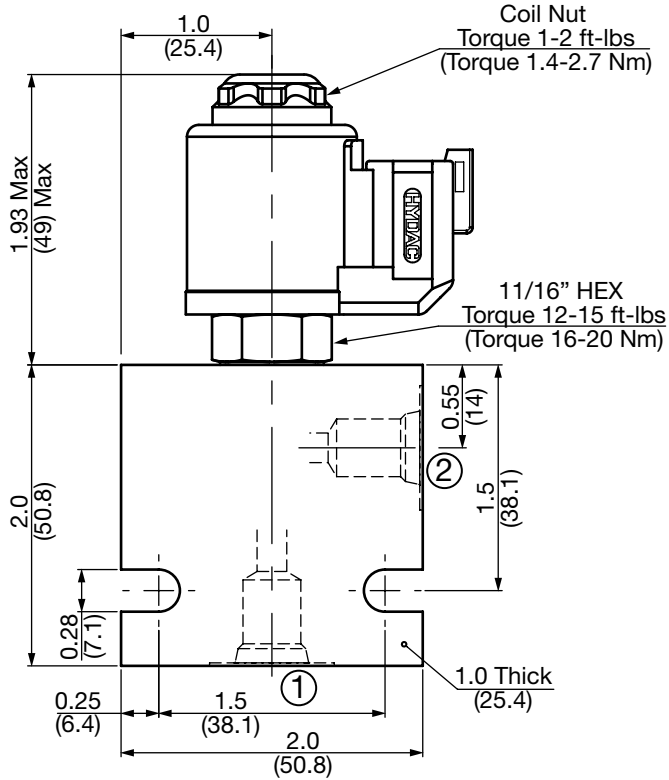
|   |  |
|---|--|
| Operating Pressure  | 5000 psi (350 bar)   |
| Nominal Flow  | 3.5 gpm (13.3 l/min)   |
| Internal Leakage  | Leaktight, less than 5 drops/min. at 5000 psi (350 bar)  |
| Fluid Operating Temp Range                                      | -20° to 248°F (-29° to 120°C)  |
| Ambient Temperature 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><i>(Varies with Pressure and Flow)</i> | Energized: 35ms<br>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<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 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

**WS06Z-01 M-C-N-24 DN**

- Valve Model** \_\_\_\_\_
- Override Option** \_\_\_\_\_  
blank = No manual override  
M = Manual override, screw 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 VDC (only available with connector DG)  
230 = 205 VDC (only available with connector DG)
- Coil Connector** \_\_\_\_\_  
DC [ DG = EN 175301-803-B (IP65 Rated)\*\*  
DL = Leadwires (2) - 18" long (46 cm) AWG18, TYPE UL 1815 (IP69K Rated)\*  
DN = Deutsch DT04-2P intergral molded (IP69K Rated)\*

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

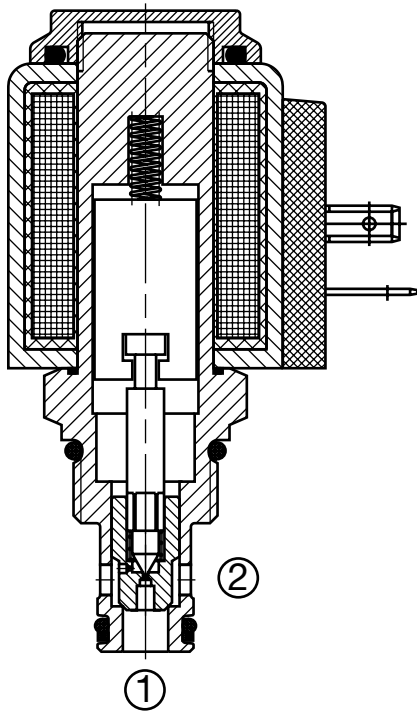
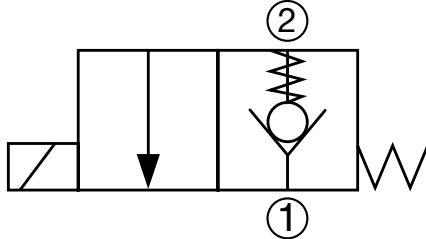
\*Please refer to Line Bodies & Cavities section for details

# 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.

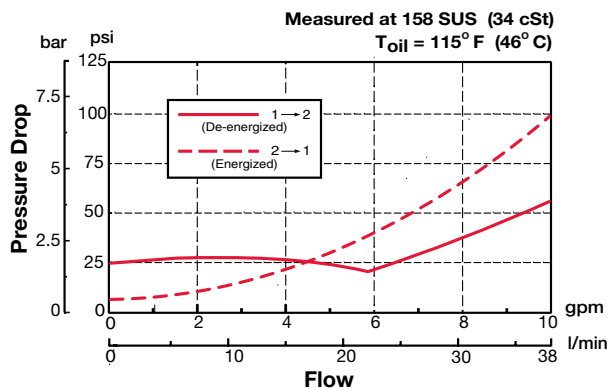
#### Features

- Screw type manual override option

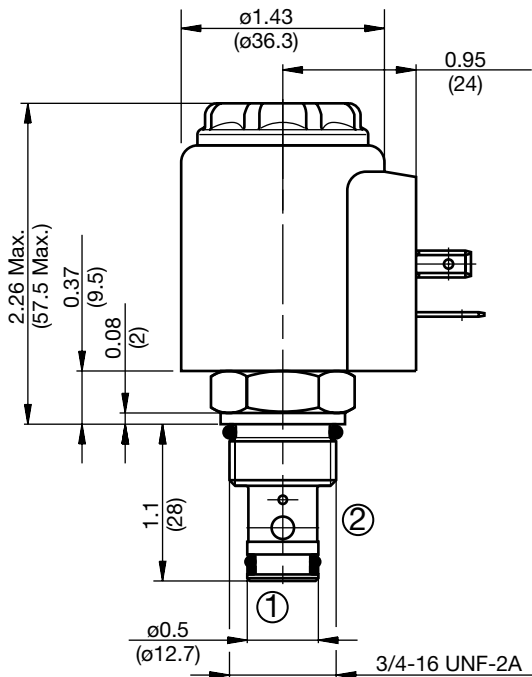
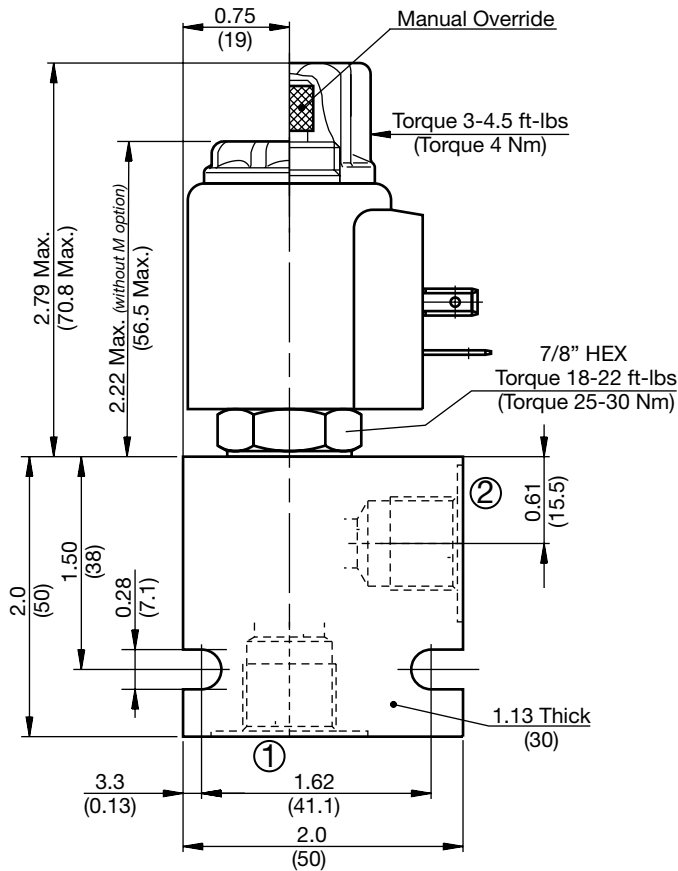
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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)  |

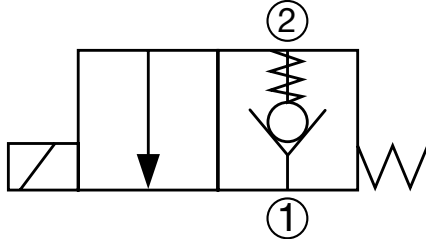
\*Please refer to Line Bodies & Cavities section for details

# 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.

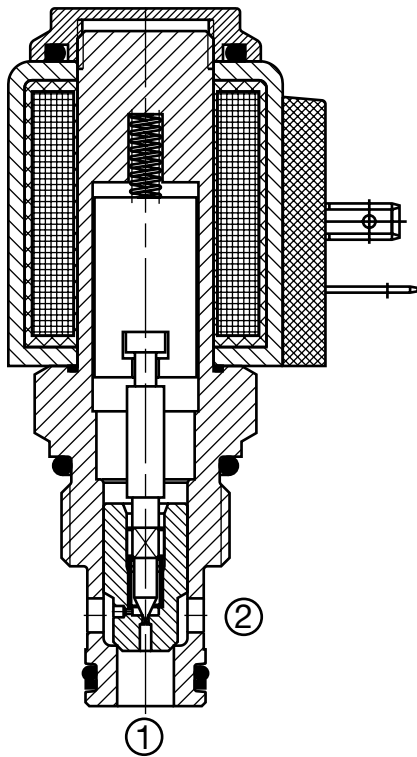
**Operation of Manual Override Option:** To override, remove the coil nut, turn the override knurled knob counterclockwise until it stops. The override will remain activated until the knob is turned clockwise to original position. The manual override option is intended for emergency use, not for continuous duty operation.

### Features

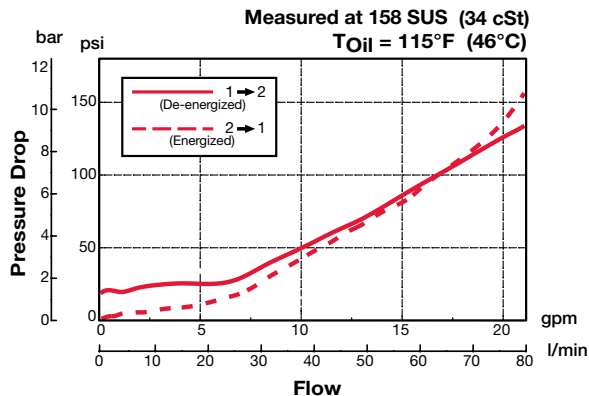
- Screw type manual override option

### Specifications

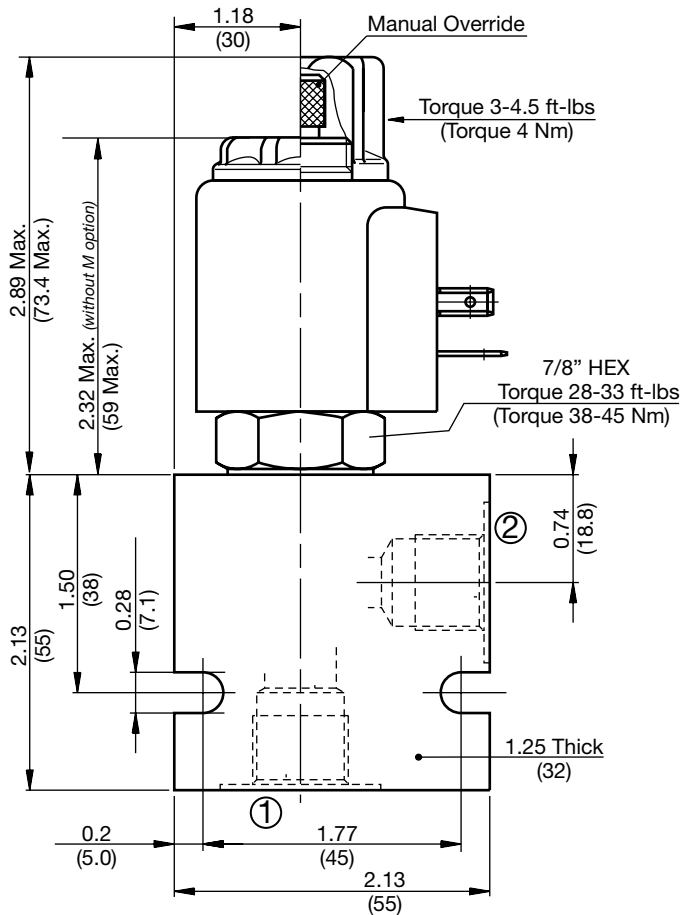
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 20 gpm (75 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><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 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 <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, 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.

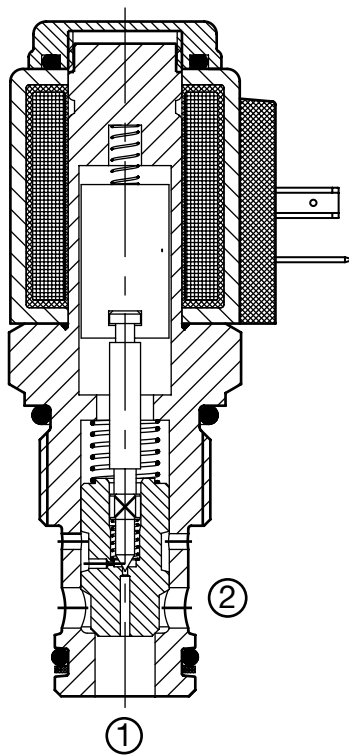
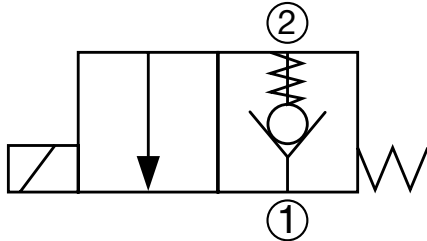
## Standard Line Bodies\*

| 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.

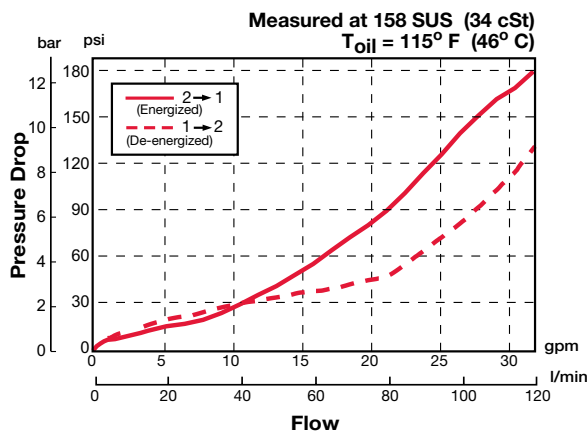
### Features

- Screw type manual override option

### Specifications

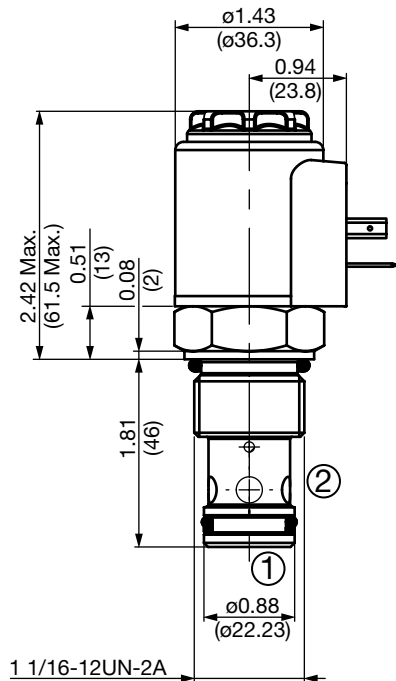
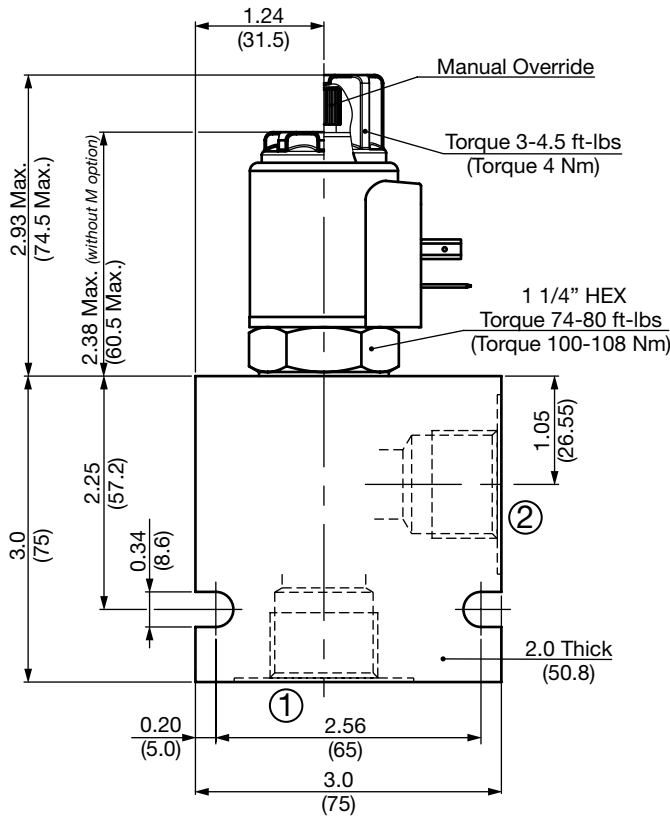
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 29 gpm (110 l/min)  |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min at 350 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br>(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 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

**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.

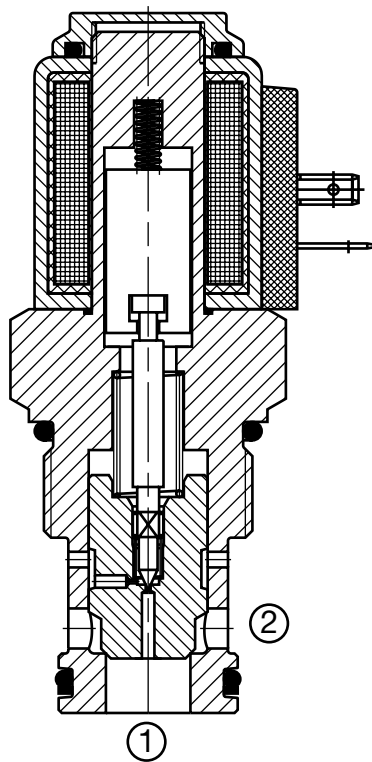
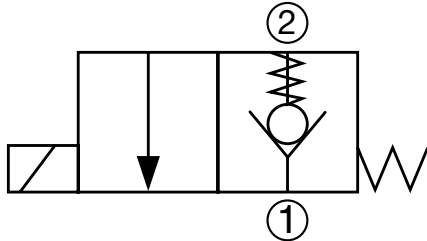
## Standard Line Bodies\*

| 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.

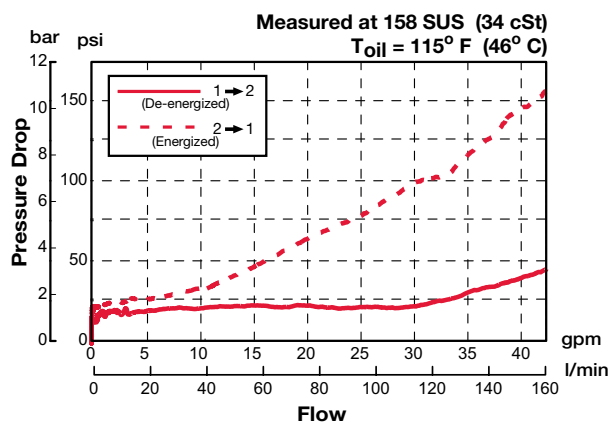
### Features

- Screw type manual override option

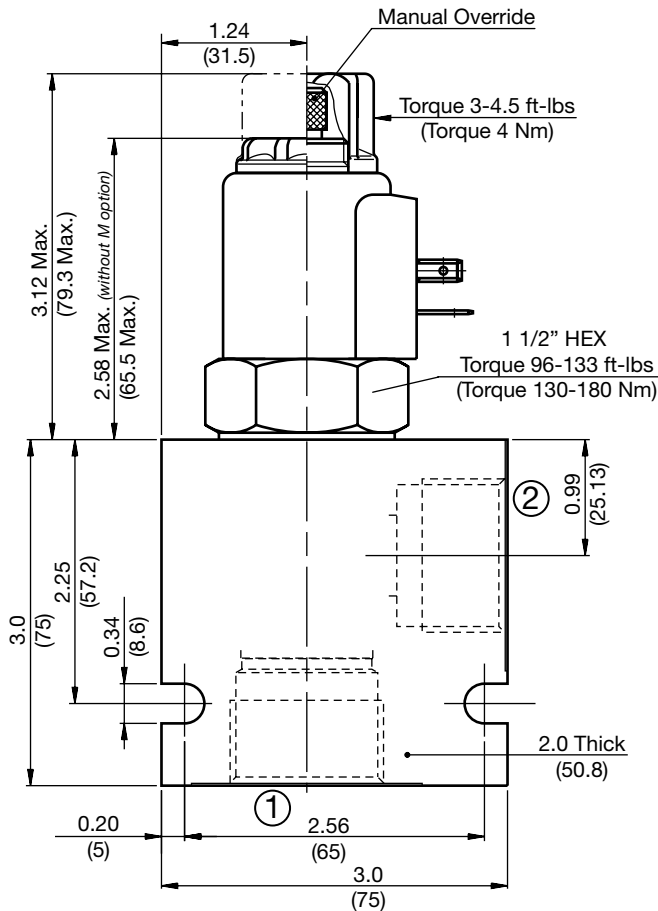
### Specifications

|                                    |   |                       |
|------------------------------------|---|-----------------------|
| 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



## 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.

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

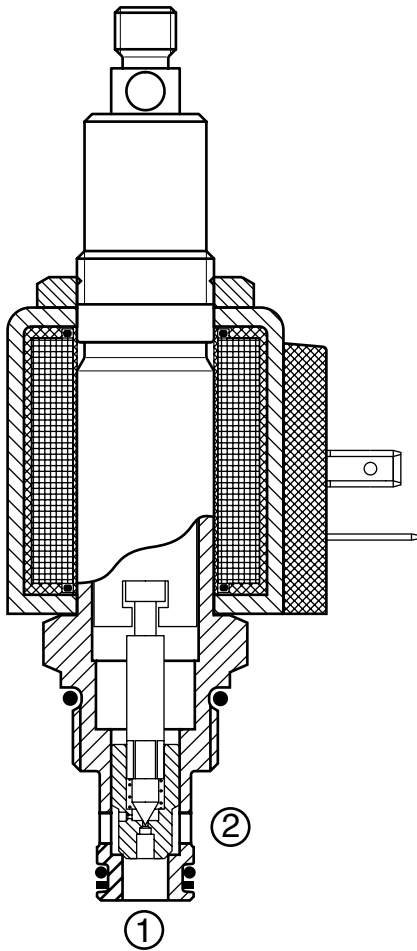
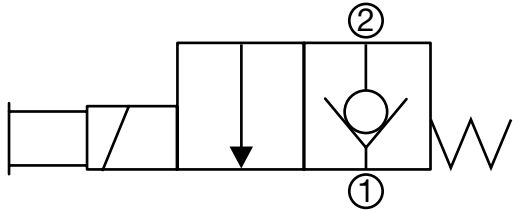
## Standard Line Bodies\*

| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 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**



**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.

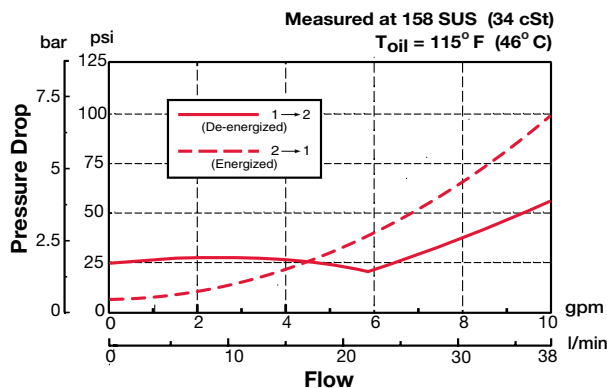
**Features**

- Rugged manual override design with thread and hole for a handle or cable attachment

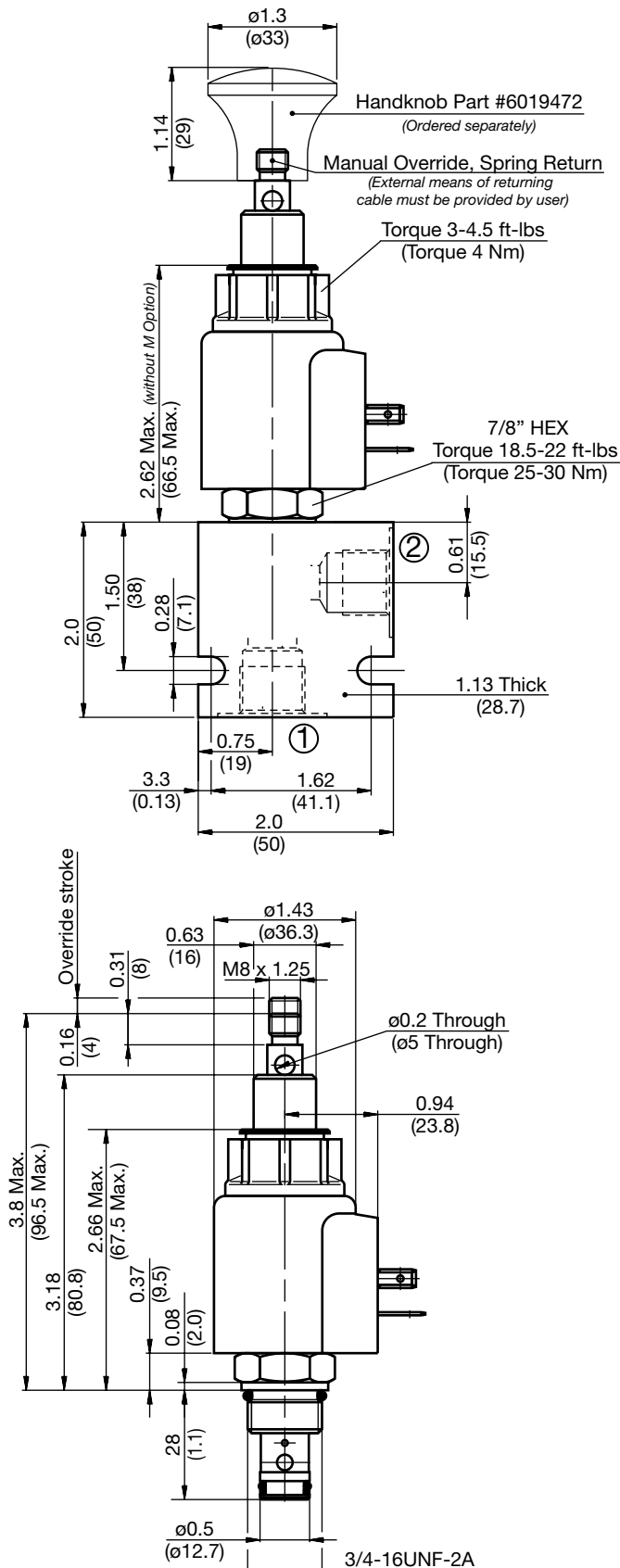
**Specifications**

|                                    |   |
|------------------------------------|---|
| 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<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

**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.

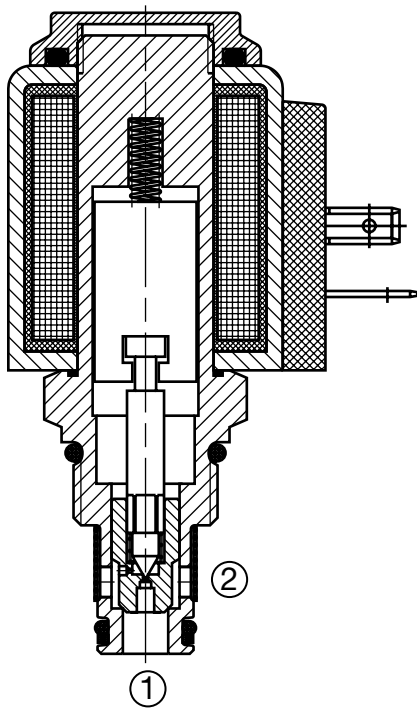
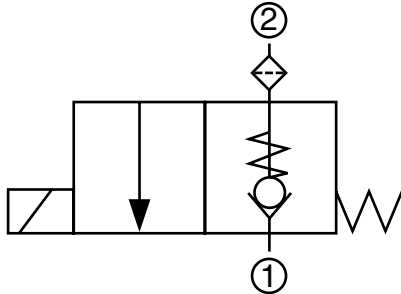
## Standard Line Bodies\*

| 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.

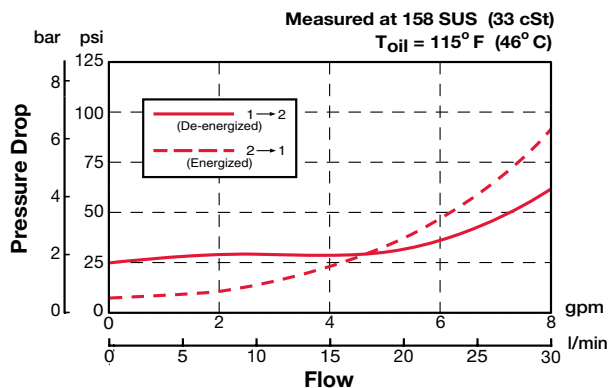
### Features

- Filter screen on the inlet port for protection from contamination
- Screw type manual override option

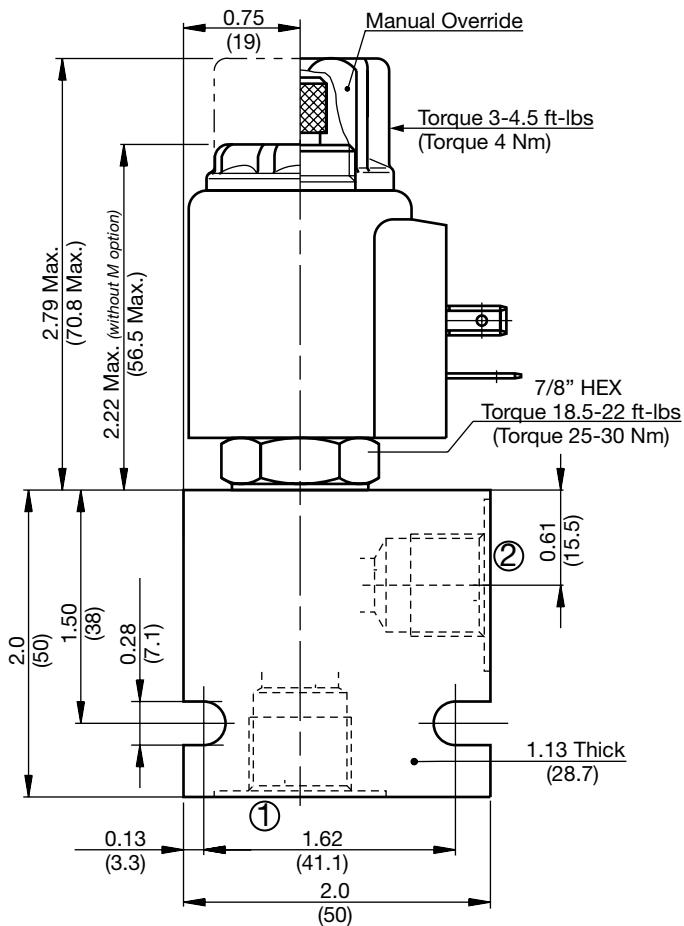
### Specifications

|                                    |   |
|------------------------------------|---|
| 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



## 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

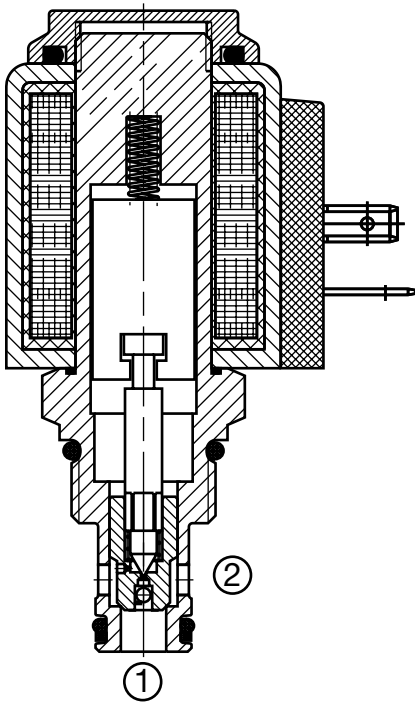
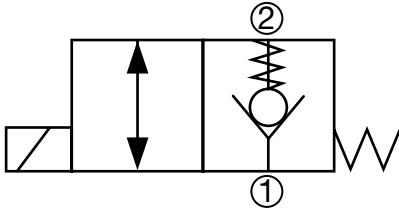
All measurements in inches (mm).  
Subject to technical modifications



## 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

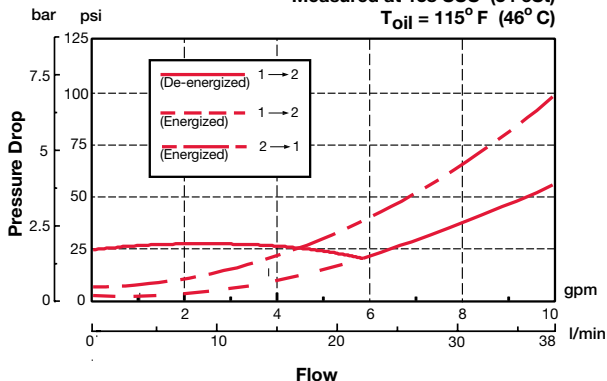
- Screw type manual override option
- Free reverse flow

#### Specifications

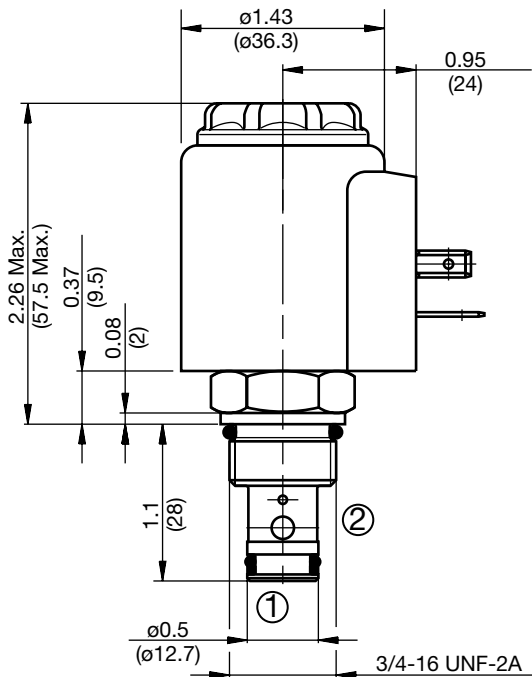
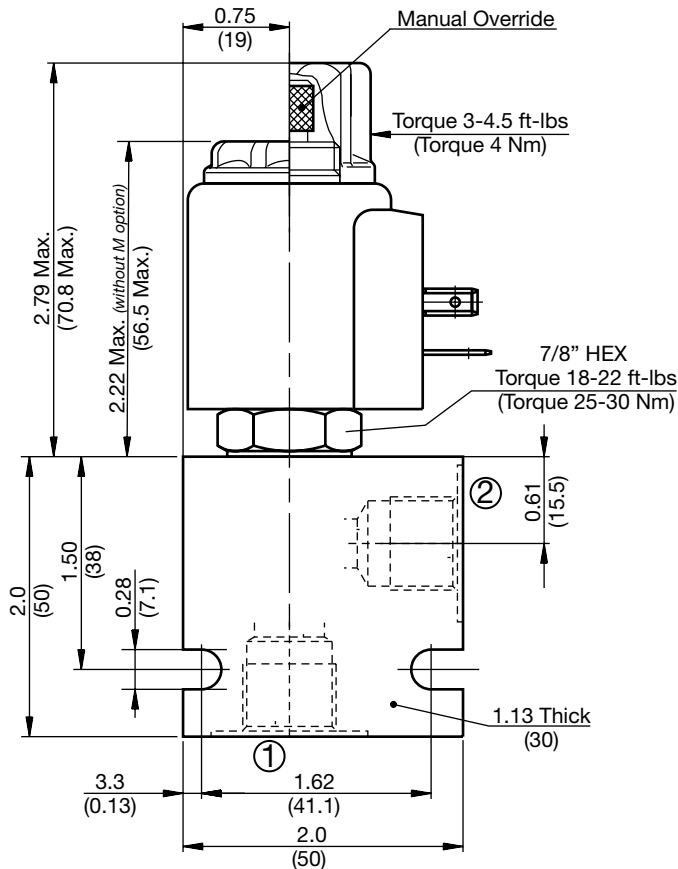
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 10 gpm (38 l/min)   |
| Internal Leakage                   | Leaktight, less than 5 drops/min. at 5000 psi (0.25 cc/min 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<sub>oil</sub> = 115° F (46° 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\*

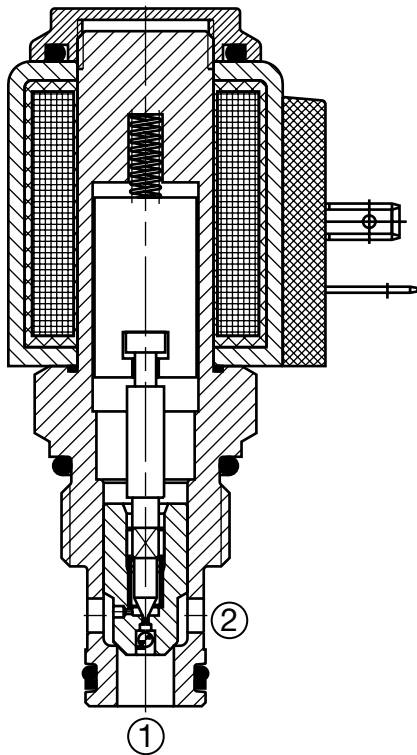
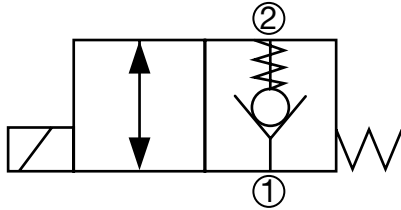
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc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

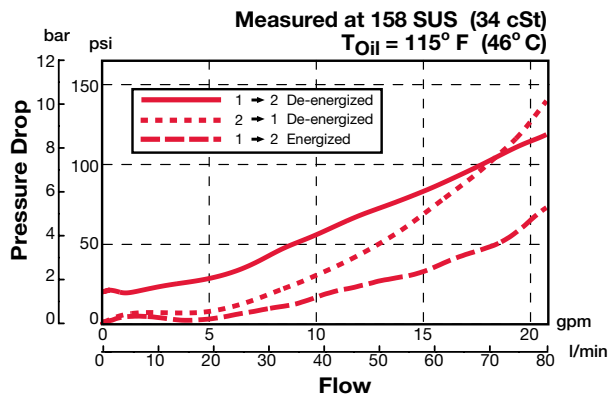
#### Features

- Screw type manual override option
- Free reverse flow

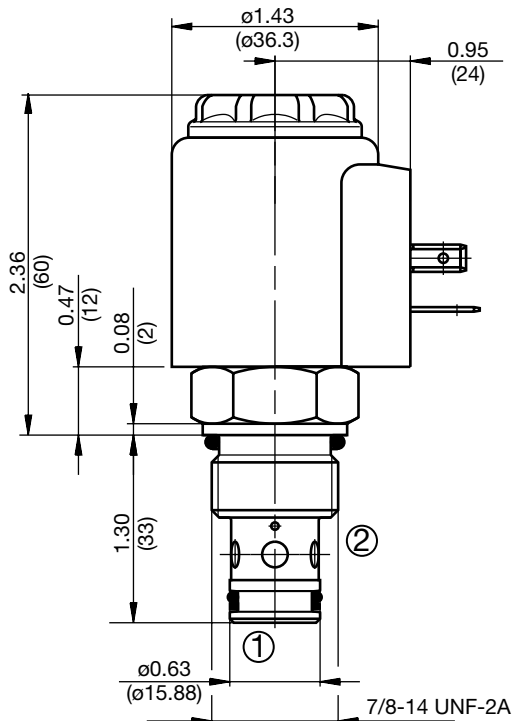
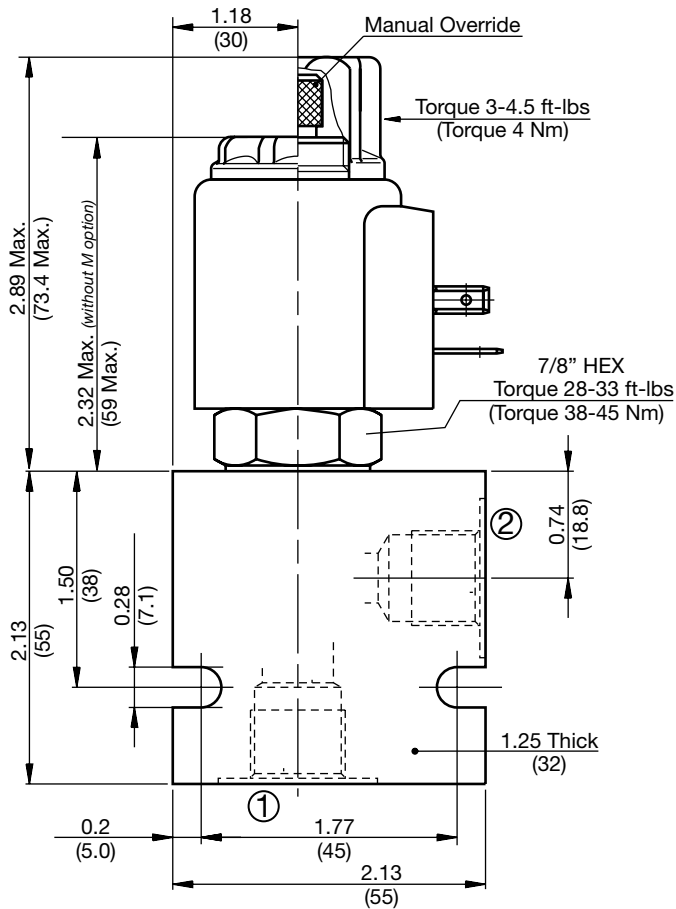
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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><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 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 <i>Line Bodies &amp; Cavities</i> 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\*

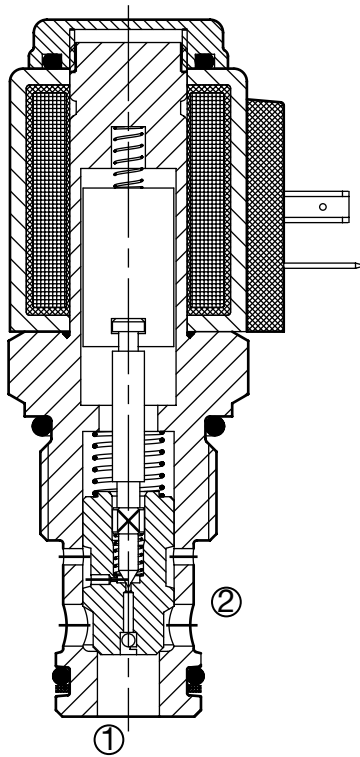
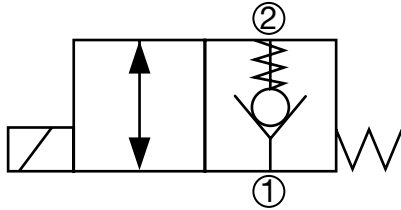
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS6 | 03037612 | Steel, Zinc 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.

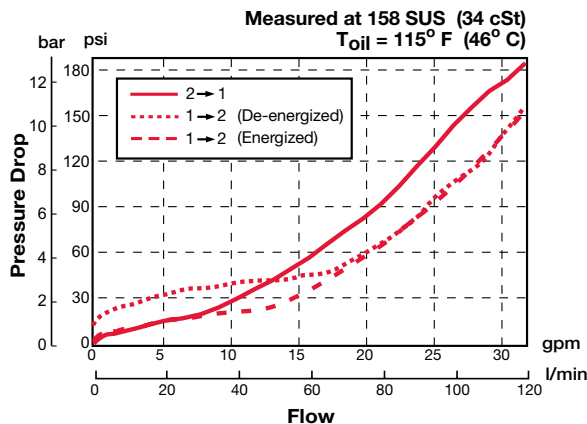
#### Features

- Screw type manual override option
- Free reverse flow

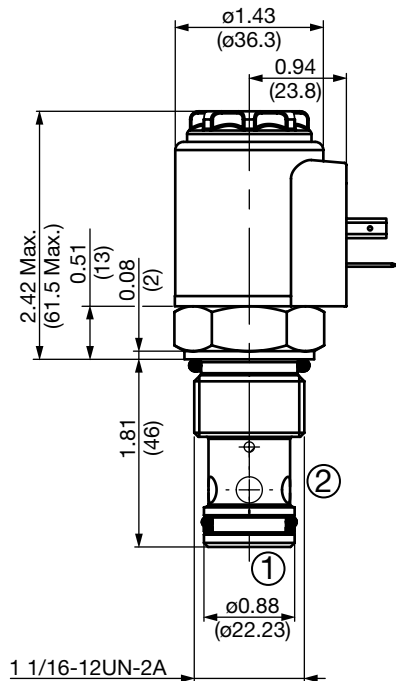
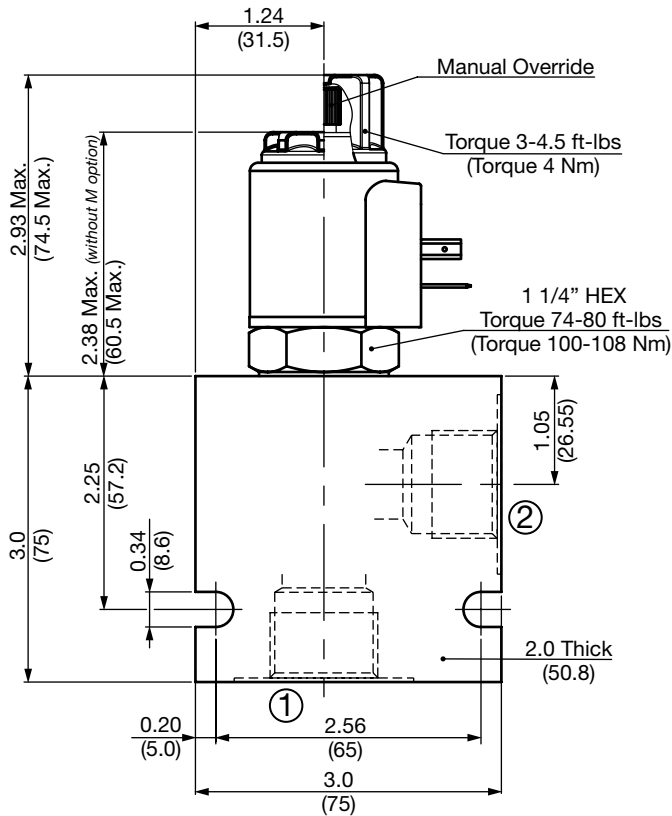
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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><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 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, 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\*

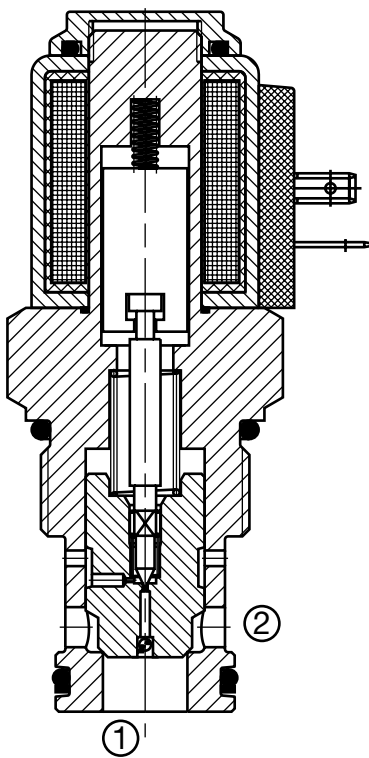
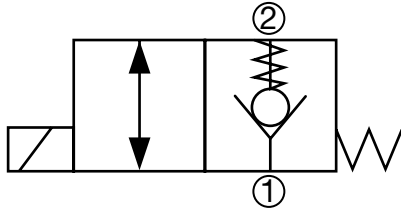
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH122-AS12 | 03053845 | Aluminum, anodized | 3500 psi (245 bar) | 1.39 lbs (0.63 kg) |
| FH122-SS12 | 03053772 | Steel, Zinc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

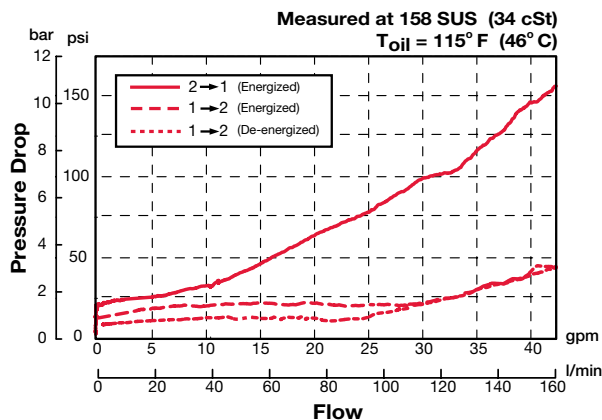
### Features

- Screw type manual override option
- Free reverse flow

### Specifications

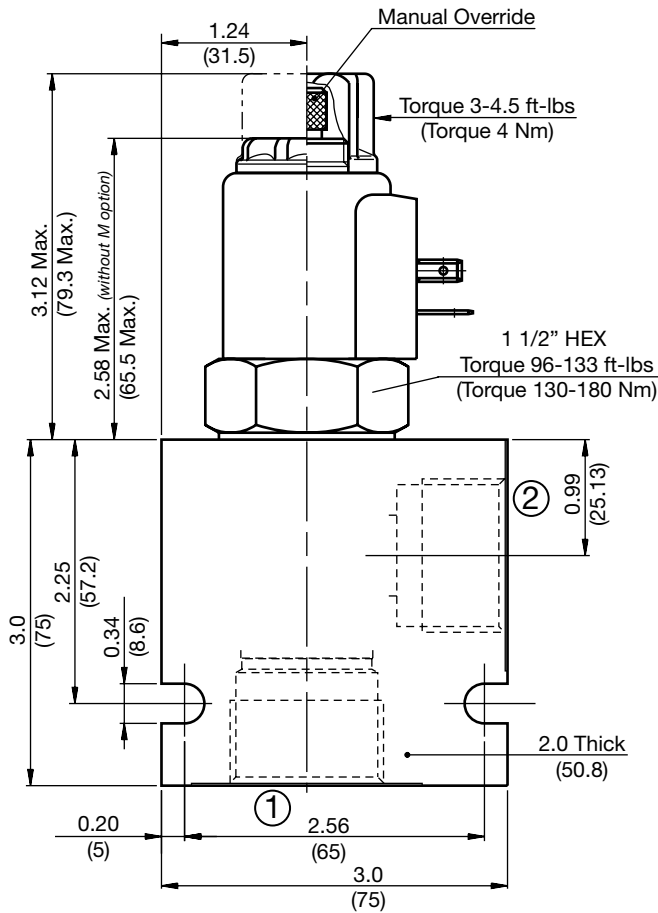
|                                    |   |                       |
|------------------------------------|---|-----------------------|
| Operating Pressure                 | 5000 psi (350 bar)  |                       |
| Nominal Flow                       | 40 gpm at 4060 psi (150 l/min at 280 bar)<br>26 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\*

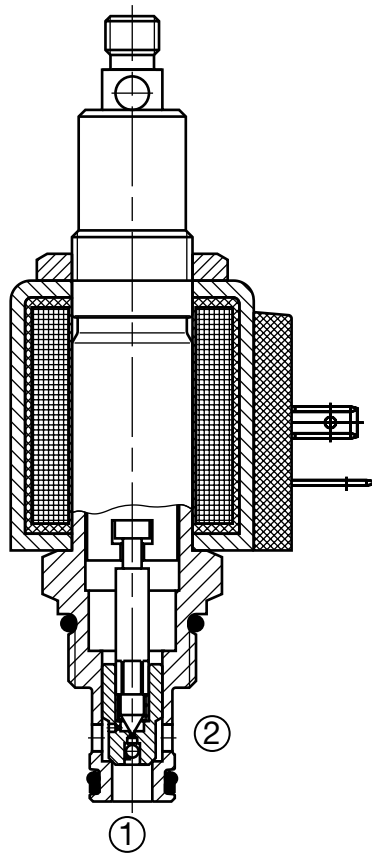
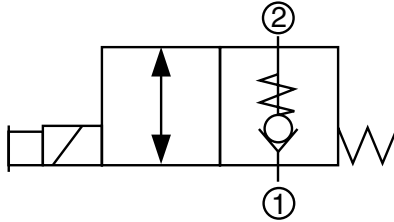
| Code       | Part No  | Material           | Pressure Rating    | Weight             |
|------------|----------|--------------------|--------------------|--------------------|
| FH162-AS16 | 03037195 | Aluminum, anodized | 3500 psi (245 bar) | 1.2 lbs (0.55 kg)  |
| FH162-SS16 | 03032655 | Steel, Zinc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

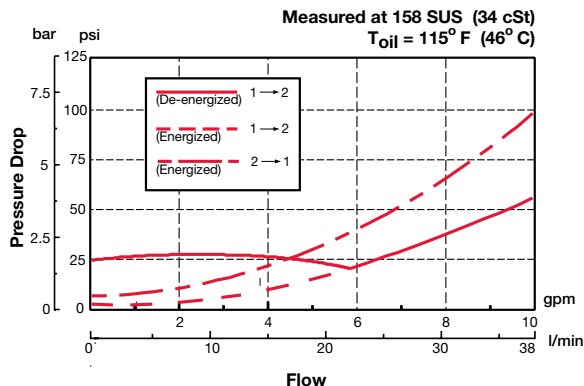
#### Features

- Rugged manual override design with thread and hole for a handle or cable attachment.

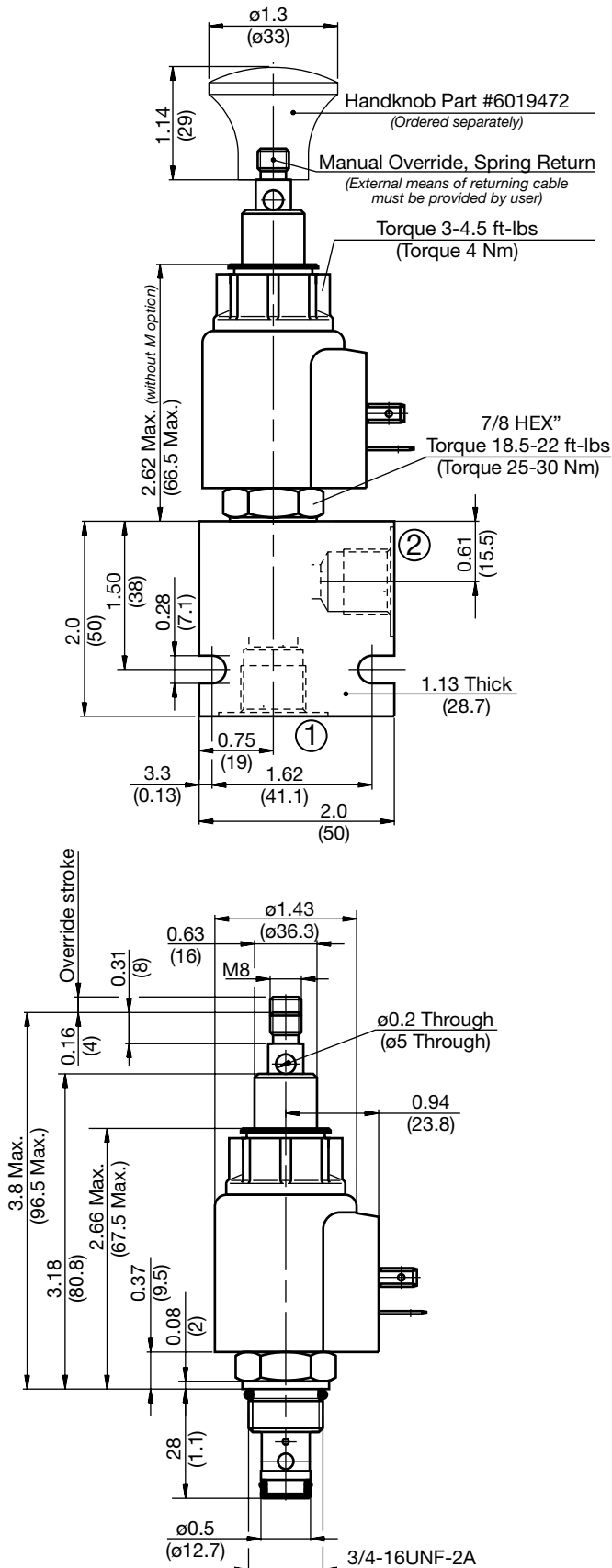
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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\*

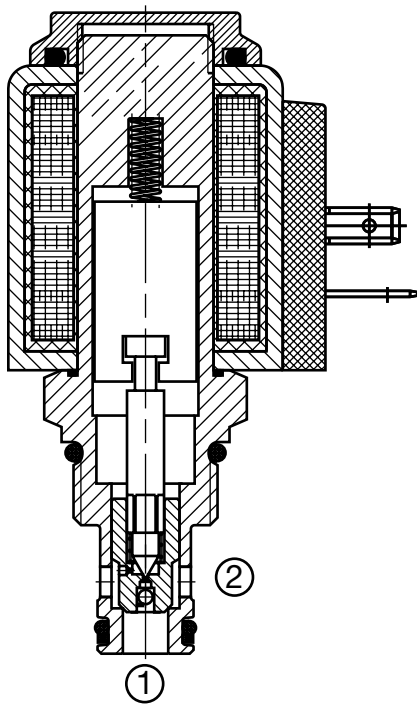
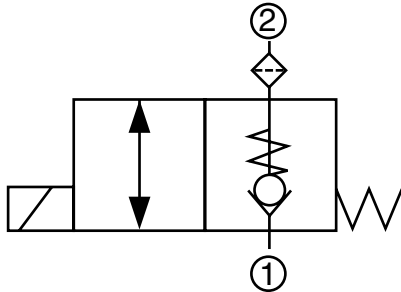
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc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

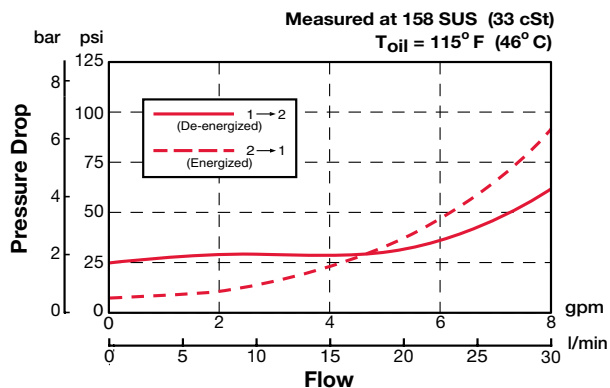
#### Features

- Filter screen on the inlet port for protection from contamination
- Screw type manual override option
- Free reverse flow

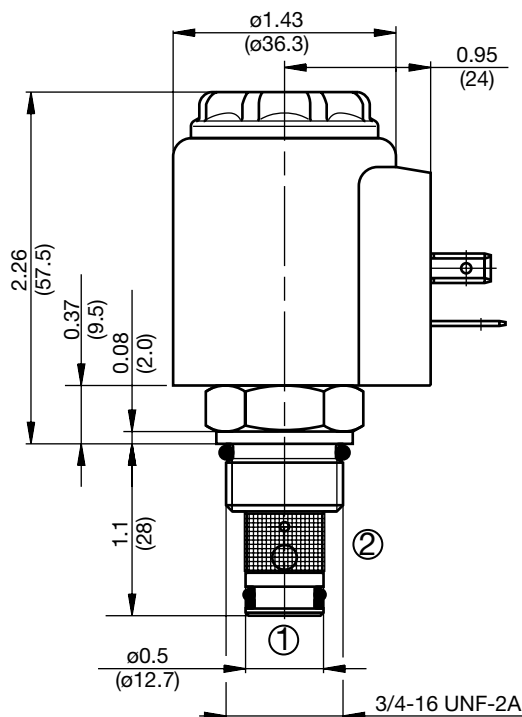
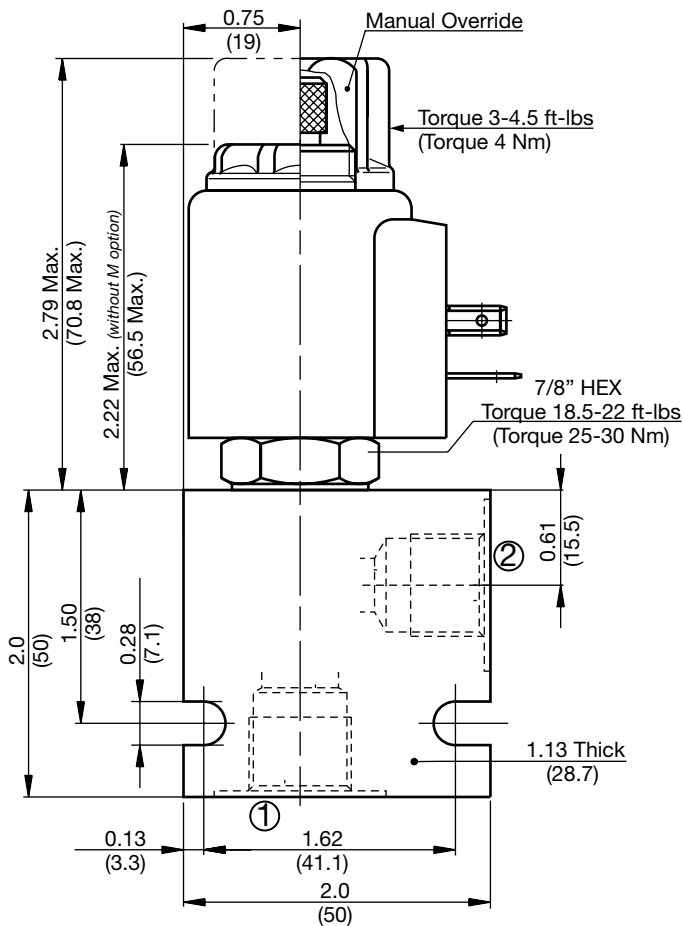
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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><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 $\beta_{10} \geq 200$ .                                    |
| Filter screen                      | 300 $\mu$ m mesh  |
| 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

**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.

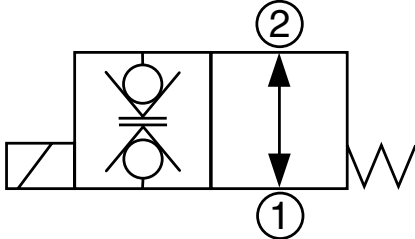
## Standard Line Bodies\*

| 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.

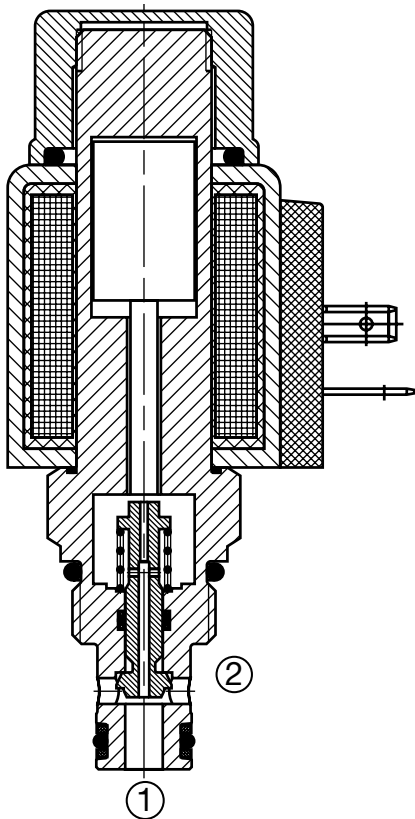
**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

**Features**

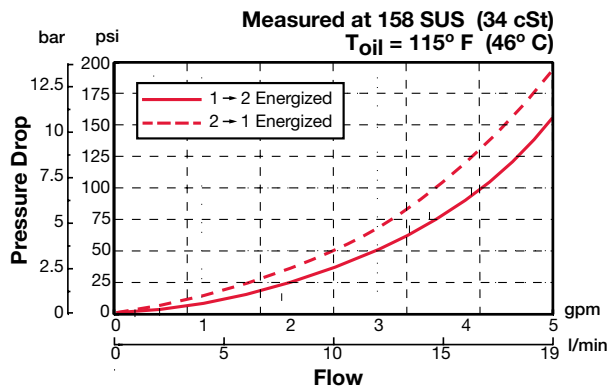
- Push type manual override button, protected by rubber cap

**Specifications**

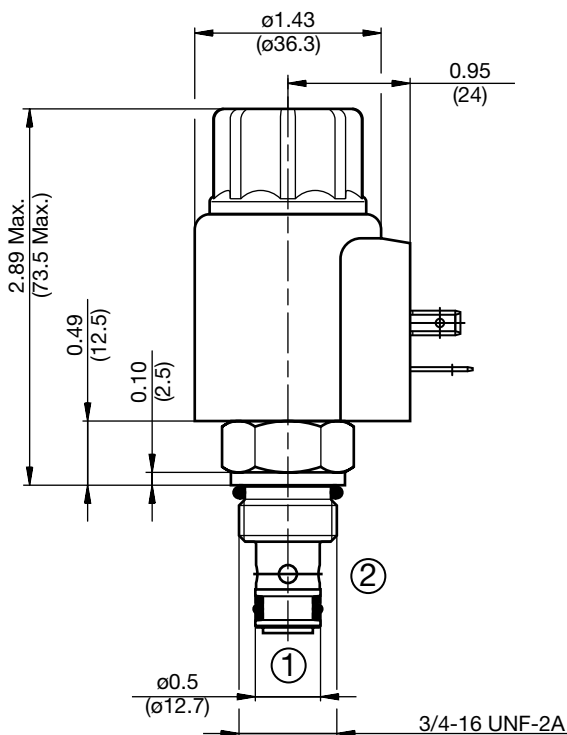
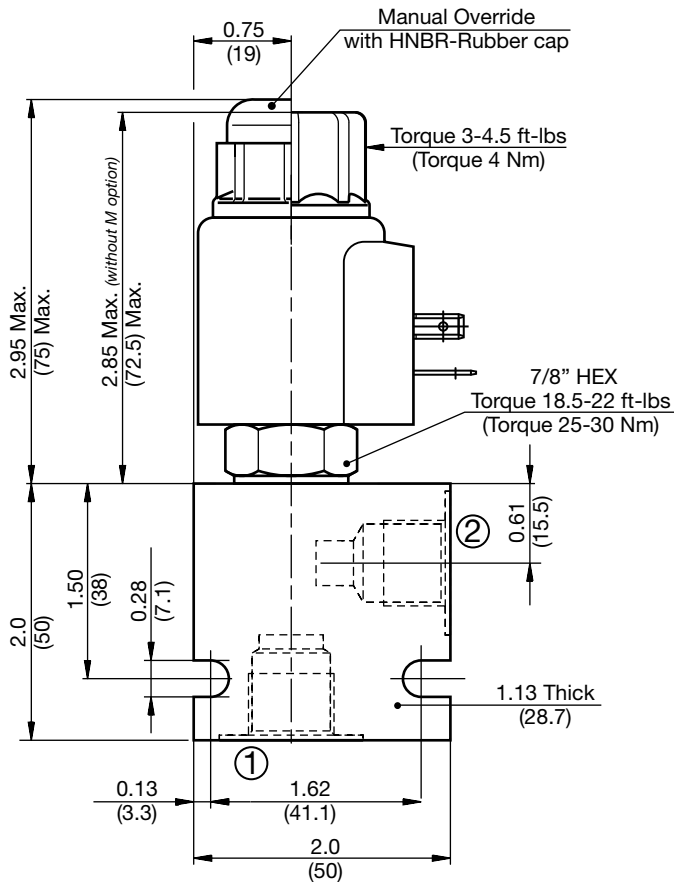
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 5000 psi (350 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | Leaktight, less than 2 drops/min. at 3600 psi (0.10 cc/min 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). 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**

- 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)  |

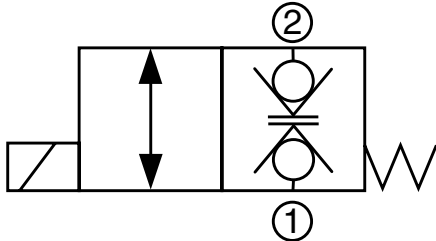
\*Please refer to Line Bodies & Cavities section for details



## 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.

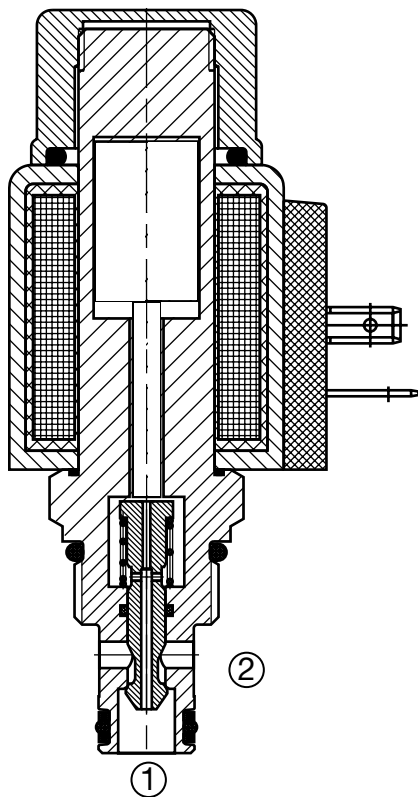
**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

#### Features

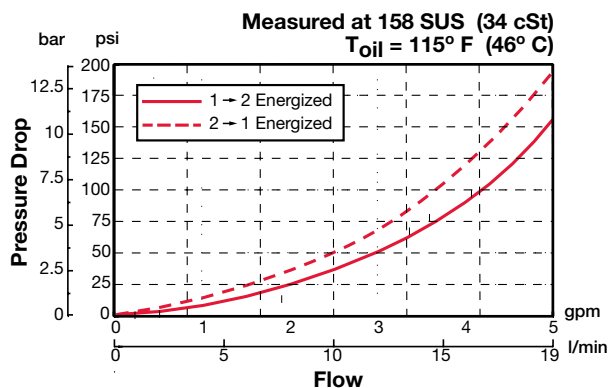
- One piece cartridge body design to maximize reliability
- Push type manual override button, protected by rubber cap

#### Specifications

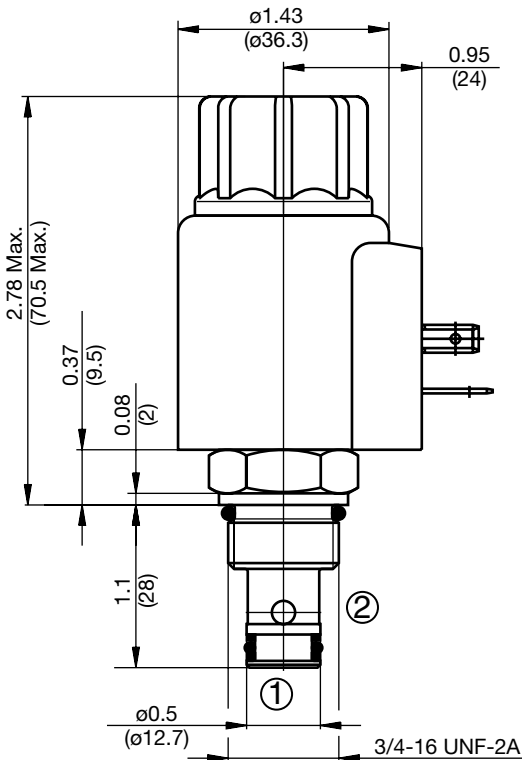
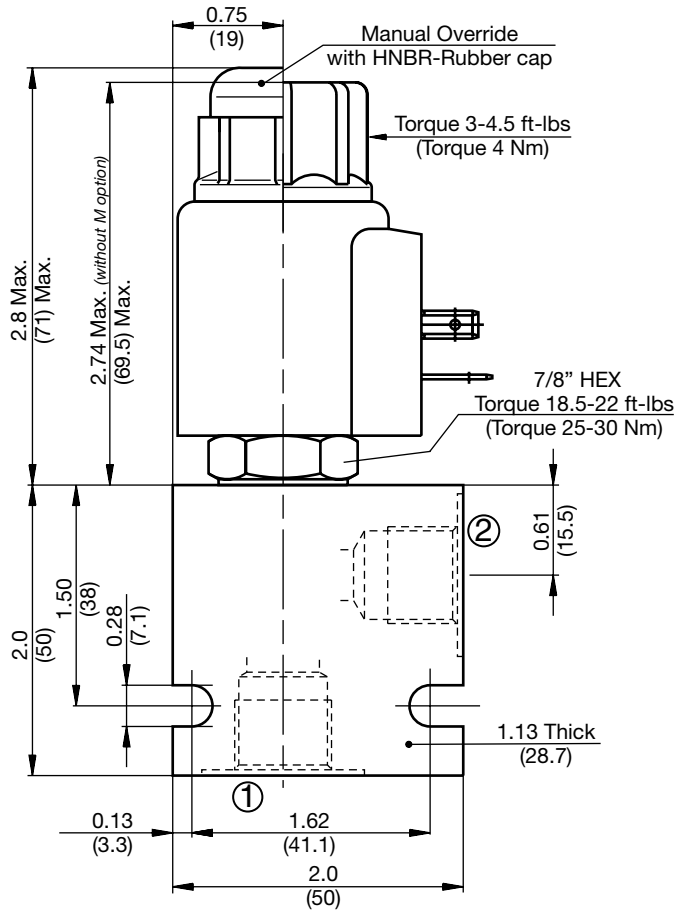
|                                    |   |
|------------------------------------|---|
| Operating Pressure                 | 3600 psi (250 bar)  |
| Nominal Flow                       | 5 gpm (19 l/min)  |
| Internal Leakage                   | Leaktight, less than 2 drops/min. at 3600 psi (0.10 cc/min at 250 bar)  |
| Fluid Operating Temp. Range        | -4° to 248°F (-20° to 120°C)<br><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

**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\*

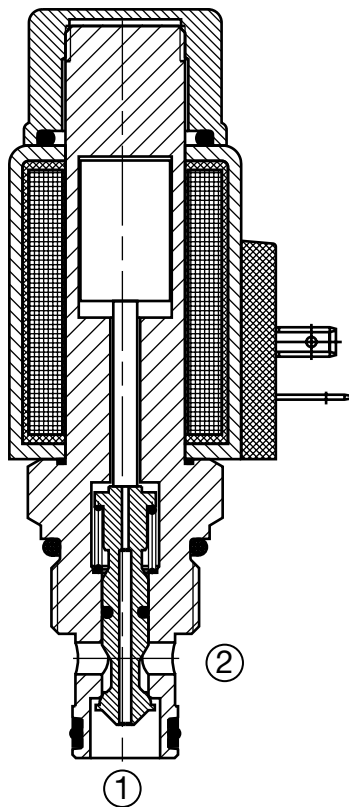
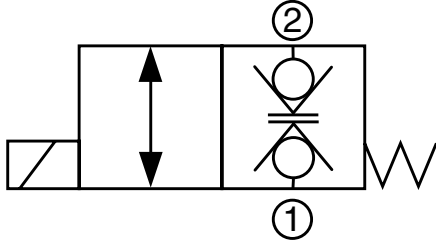
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH082-AS6 | 03011409 | Aluminum, anodized | 3500 psi (245 bar) | 0.34 lbs (0.15 kg) |
| FH082-SS6 | 00560917 | Steel, Zinc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

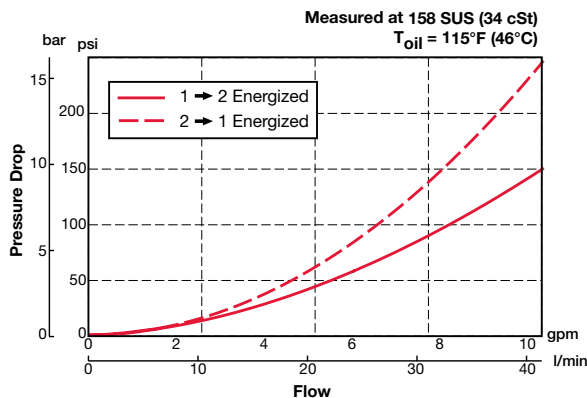
#### Features

- One piece cartridge body design to maximize reliability
- Push type manual override button, protected by rubber cap

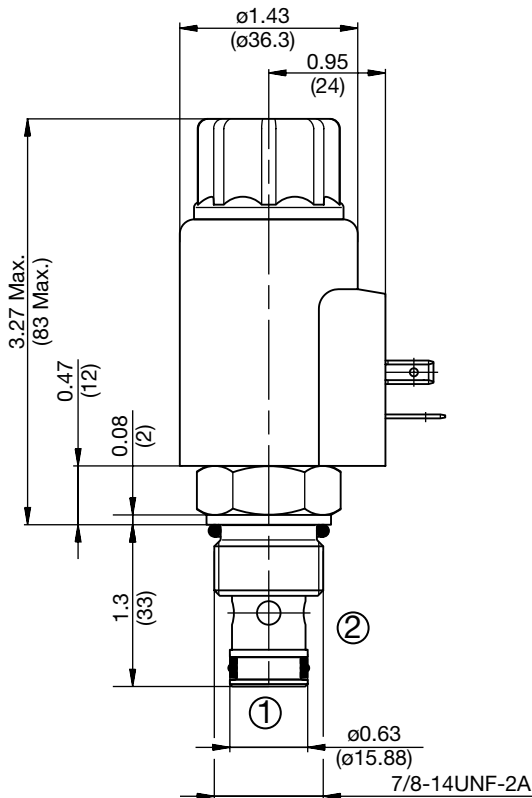
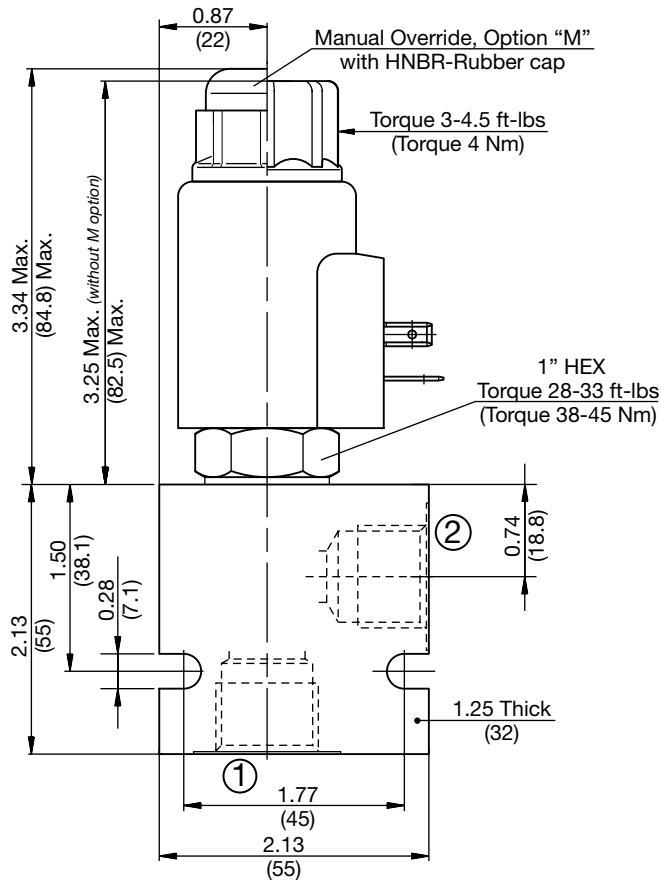
#### Specifications

|                                    |   |
|------------------------------------|---|
| 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, 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**

- 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\*

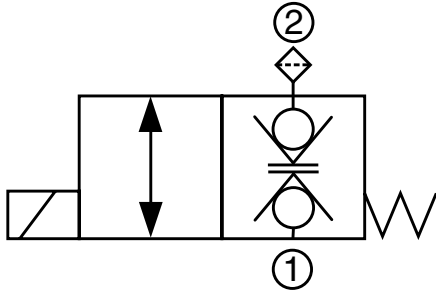
| Code      | Part No  | Material           | Pressure Rating    | Weight             |
|-----------|----------|--------------------|--------------------|--------------------|
| FH102-AS8 | 03037778 | Aluminum, anodized | 3500 psi (245 bar) | 0.40 lbs (0.18 kg) |
| FH102-SS8 | 03037612 | Steel, Zinc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

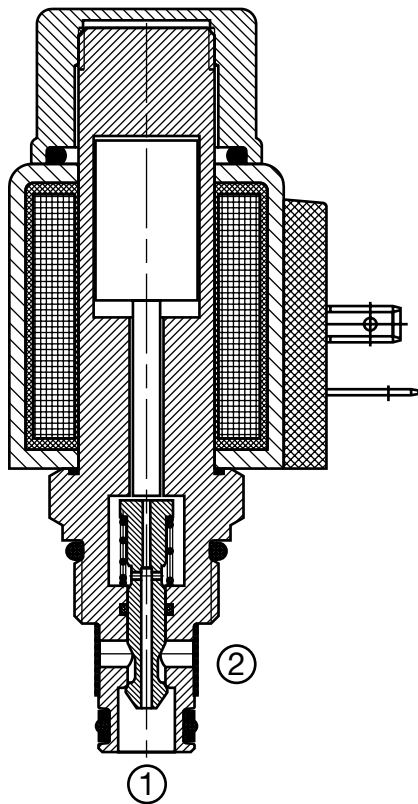
**Operation of Manual Override Option:** To override, push and hold the override button. The override is not detented. The manual override option is intended for emergency use, not for continuous duty operation.

#### 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

