

General Description

Series D3W directional control valves are high-performance, 4-chamber, direct operated, wet armature, solenoid controlled, 3 or 4-way valves. They are available in 2 or 3-position and conform to NFPA's D05, CETOP 5 mounting patterns.

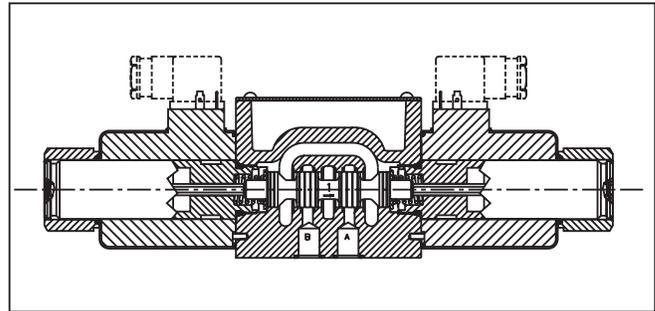
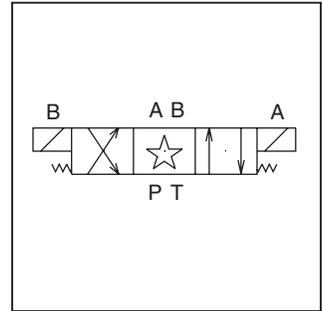
Features

- Worldwide, high flow, low pressure drop design.
- Soft shift available.
- 22 spools available including proportional.
- DC surge suppression available to protect electrical equipment.
- Three electrical connection options.
- AC & DC lights available.
- Easy access mounting bolts.
- Explosion proof availability.
- CSA approved.
- No tools required for coil removal.
- Rectified coils available for high flow AC applications.

Response Time (ms)

Signal to 95% spool stroke measured at 172 Bar (2500 PSI) and 75 LPM (20 GPM)

| Solenoid Type | m sec |
|----------------|-------|
| AC Energize | 21 |
| AC De-energize | 35 |
| DC Energize | 110 |
| DC De-energize | 85 |

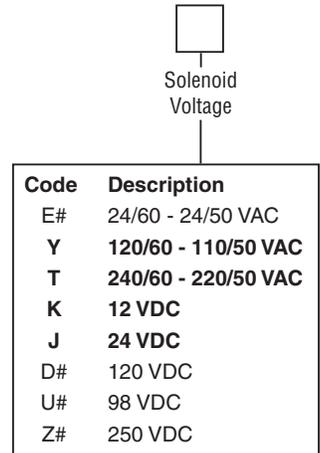
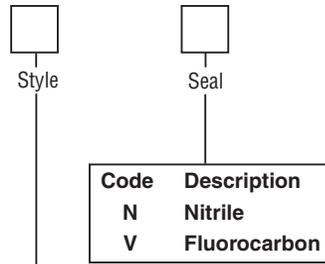
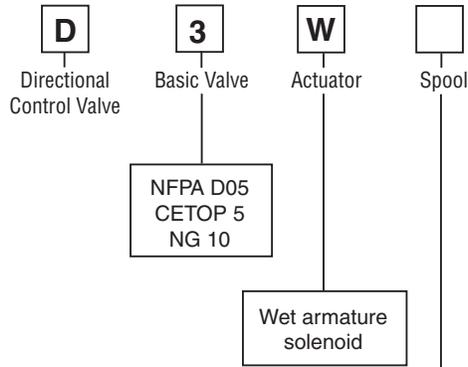


Specifications

| | |
|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interface | NFPA D05, CETOP 5, NG 10 |
| Max. Operating Pressure | P, A, B: 345 Bar (5000 PSI) Standard CSA 207 Bar (3000 PSI) Tank: 103 Bar (1500 PSI) AC Standard 207 Bar (3000 PSI) AC Optional DC/AC Rectified Standard CSA 103 Bar (1500 PSI) |
| CSA File Number | LR060407 |
| Leakage Rates 100 SSU @ 49°C (120°F) | Maximum Allowable: 19.6 cc (0.38 Cu. in.) per Minute/ Land @ 69 Bar (1000 PSI)* 35 cc (2.19 Cu. in.) per Minute/ Land @ 207 Bar (3000 PSI)* |

* #008 and #009 Spools may exceed these rates, consult factory

A



High Watt Coil only.

| Code | Symbol | Code | Symbol |
|------|--------|------|--------|
| 1 | | 14 | |
| 2 | | 15 | |
| 3 | | 16 | |
| 4 | | 20* | |
| 5 | | 21† | |
| 6 | | 22† | |
| 7 | | 26*† | |
| 8* | | 30** | |
| 9** | | 81† | |
| 10† | | †† | |
| 11 | | 82† | |
| 12 | | †† | |

| Code | Description | Symbol |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| B* | Single solenoid, 2 position, spring offset. P to A and B to T in offset position | |
| C | Double solenoid, 3 position, spring centered. | |
| D† | Double solenoid, 2 position, detent | |
| E | Single solenoid, 2 position, spring centered. P to B and A to T when energized. | |
| F** | Single solenoid, 2 position. Spring offset, energized to center position. Spool spacer on A side. P to A and B to T in spring offset position. | |
| H* | Single solenoid, 2 position, spring offset. P to B and A to T in offset position. | |
| K | Single solenoid, 2 position. Spring centered. P to A and B to T when energized. | |
| M** | Single solenoid, 2 position, spring offset, energized to center position. Spool spacer on B side. P to B and A to T in spring offset position. | |

* Only spools 20, 26 & 30.

** High Watt Coil.

† Only spools 20 & 30.

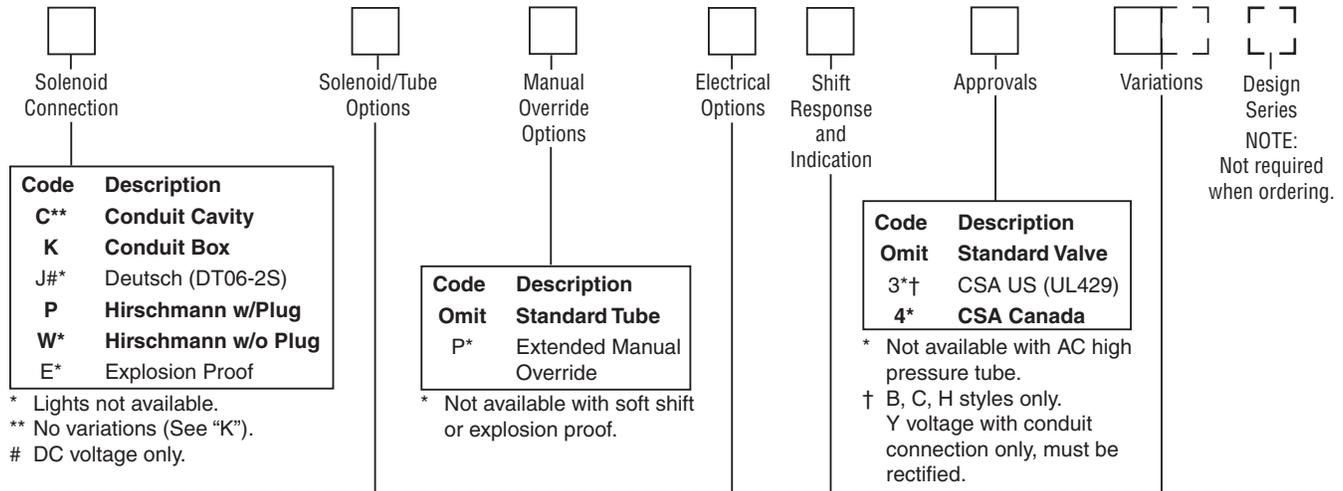
This condition varies with spool code.

- * 8, 20 & 26 spools have closed crossover.
- ** 9 & 30 spools have open crossover.
- † Available only with high-watt rectified AC coils or high-watt DC coils.
- †† Spring centered versions C, E, F, K & M only.

Valve schematic symbols are per NFFPA/ANSI standards, providing flow P to A when energizing solenoid A. Note operators reverse sides for #8 and #9 spools. See installation information for details.

Bold: Designates Tier I products and options.

Non-Bold: Designates Tier II products and options. These products will have longer lead times.



| Options | Coil | Tube Rating | |
|-------------|----------------------------|-----------------------------|---------------------------|
| | | AC | DC/AC Rectified |
| Omit | High Watt | 103.5 Bar (1500 PSI) | 207 Bar (3000 PSI) |
| F# | Low Watt | n/a | 207 Bar (3000 PSI) |
| H | High Watt | 207 Bar (3000 PSI) | n/a |
| D† | Explosion Proof, EEXD ATEX | | |
| U† | Explosion Proof, UL/CSA | | |

* Available only with J, K and Y (Rectified), T (Rectified) voltages.
 # Not available with soft shift or with F and M style valves.
 † Explosion proof coils are 60 Hz at standard voltage; dual rating not available.

Valve Weight:

Single Solenoid:
 AC 4.3 kg (9.5 lbs.)
 DC 5.3 kg (11.6 lbs.)

Double Solenoid:
 AC 5.0 kg (11.0 lbs.)
 DC 7.3 kg (16.0 lbs.)

Seal Kit:
 Nitrile SKD3W
 Fluorocarbon SKD3WV

| Code | Description |
|-------------|----------------------------------------|
| Omit | No Option |
| V# | Varistor Surge Suppressor |
| Z | AC Rectified with MOV Surge Suppressor |

DC voltage only.

| Code | Description |
|-------------|--------------------------------------|
| Omit | Standard Valve |
| S3** | Soft Shift, 0.030" Orifice |
| S4** | Soft Shift, 0.040" Orifice |
| S7** | Soft Shift, 0.070" Orifice |
| I7* | Monitor Switch Direct Op. End Stroke |
| I8* | Monitor Switch |

* Single solenoid models only. Not CE or CSA approved. Spools 8, 9, 81 & 82 not available.
 ** High watt coil only.

Mounting Bolt Kits

| UNC Bolt Kits for use with D3W Directional Control Valves & Sandwich Valves | | | | | |
|-----------------------------------------------------------------------------|-----------|----------------------------------------------------|----------------|-----------------|-----------------|
| | | Number of Sandwich Valves @ 2.00" (50mm) thickness | | | |
| | | 0 | 1 | 2 | 3 |
| D3W | Standard: | BK98 1.62" | BK141 3.50" | BK142 5.50" | BK143 7.50" |
| | Metric: | BKM98 40mm | BKM141 90mm | BKM142 140mm | BKM143 190mm |
| D3W with explosion proof coils | Standard: | BK144 2.37" | BK61 4.25" | BK62 6.25" | BK63 8.25" |
| | Metric: | BKM144 60mm | BKM61 110mm | BKM62 160mm | BKM63 210mm |

NOTE: All bolts are SAE grade 8, 1/4-20 UNC-2A thread, torque to 16 Nm (12 ft-lbs)

| Code | Description |
|-------------|-----------------------------------------------------|
| Omit | Standard Valve |
| 5 | Signal Lights |
| 6 | Manaplug, Brad Harrison Mini |
| 7 | Manaplug, Brad Harrison Micro (M12x1) |
| 56 | Manaplug (Mini) with Lights |
| 57 | Manaplug (Micro) with Lights (M12x1) |
| 1A | Manaplug (Mini) Single Sol. 5-Pin |
| 1B | Manaplug (Micro) Single Sol. 5-Pin (M12x1) |
| 1C | Manaplug (Mini) Single Sol. 5-Pin w/Lights |
| 1D | Manaplug (Micro) Single Sol. 5-Pin w/Lights (M12x1) |
| 1M | Manaplug Opposite Normal |

Bold: Designates Tier I products and options.

Non-Bold: Designates Tier II products and options. These products will have longer lead times.

Solenoid Ratings**

| | |
|----------------------------------------|-------------------------------------------|
| Insulation | Class H |
| Allowable Deviation from rated voltage | DC, AC Rect -10% to +15% AC -5% to +5% |
| Armature | Wet pin type |

** DC Solenoids available with optional molded metal oxide varistor (MOV) for surge suppression.
 Leadwire length 6" from coil face.



D3W**F Solenoid Electrical Characteristics†**

| Solenoid Code | Nominal Volts/Hz | In Rush Amps | Holding Amps | Watts |
|---------------|------------------|--------------|--------------|-------|
| KF | 12 VDC | — | 1.50 | 18 |
| JF | 24 VDC | — | 0.75 | 18 |

† Based on nominal voltage @ 22°C (72°F)

D3W Solenoid Electrical Characteristics†

| Solenoid Code | Nominal Volts/Hz | In Rush VA | Holding VA | Nominal Watts (Ref) |
|---------------|------------------|------------|------------|---------------------|
| Y | 120/60 | 298 | 95 | 32 |
| | 110/50 | 294 | 102 | |
| T | 240/60 | 288 | 96 | 32 |
| | 220/50 | 288 | 101 | |
| E | 24/60 | 290 | 77 | 32 |
| | 24/50 | 381 | 110 | |
| K | 12 VDC | — | 3.00† | 36 |
| J | 24 VDC | — | 1.50† | 36 |
| D | 120 VDC | — | 0.30† | 36 |
| U | 98 VDC | — | 0.37† | 36 |
| Z | 250 VDC | — | 0.14† | 36 |

† DC holding amps.

D3W Rectified AC Solenoid Electrical Characteristics†

| Solenoid Code | Nominal Volts/Hz | In Rush Amps | Holding Amps | Watts |
|---------------|------------------|--------------|--------------|-------|
| Y | 120/60 | — | .37 | 36 |
| | 110/50 | — | .37 | |
| T | 240/60 | — | .18 | 36 |
| | 220/50 | — | .18 | |
| YF | 120/60 110/50 | — | .18 | 18 |
| TF | 240/60 220/50 | — | .09 | 18 |

† Based on nominal voltage @ 22°C (72°F)

Explosion Proof Solenoids

Explosion Proof Solenoid Ratings

| | |
|-----------------------|-------------------------------------------------------------------------------------------------------|
| U.L. /CSA (EU) | Class I, Div. 1 & 2, Groups C & D Class II, Div 1 & 2, Groups E, F & G As defined by the N.E.C. |
| ATEX | Complies with ATEX requirements for: Exd, Group IIB; EN50014: 1999+ Amds 1 & 2, EN50018: 200 |

Electrical Characteristics* ED and EU†

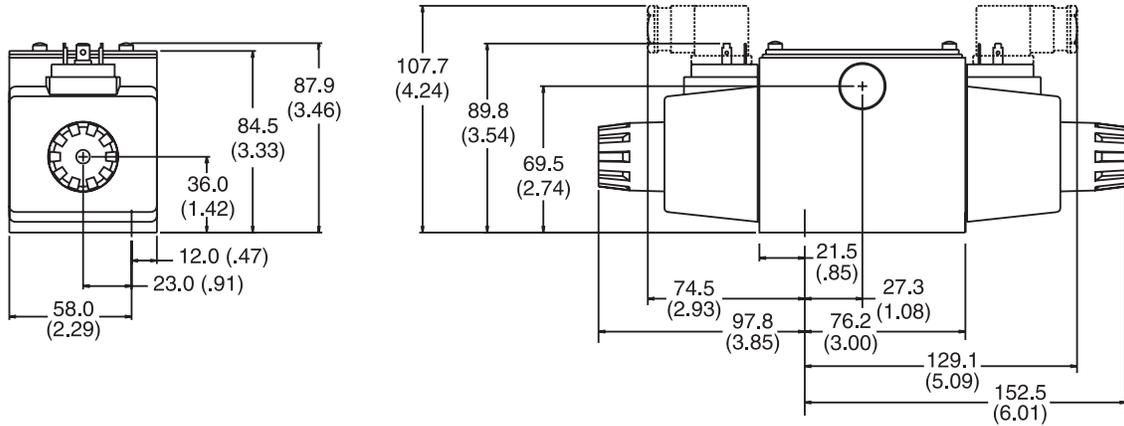
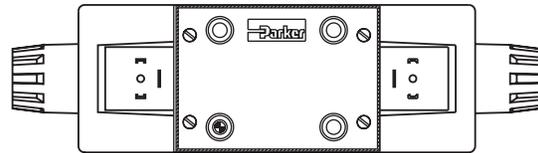
| Solenoid Code | Nominal Volts/Hz | In Rush VA | Holding VA | Nominal Watts (Ref) |
|---------------|------------------|------------|------------|---------------------|
| Y | 120/60 | 266 | 82 | 36 |
| T | 240/60 | 266 | 82 | 36 |
| K | 12 VDC | — | 3.00† | 36 |
| J | 24 VDC | — | 1.50† | 36 |
| D | 120 VDC | — | 0.30† | 36 |

* Dual frequency not available on explosion proof coils.

† DC holding amps.

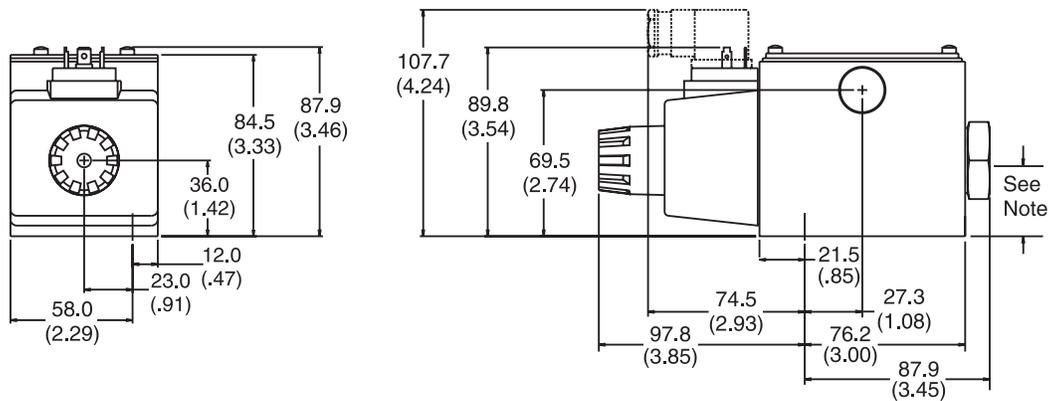
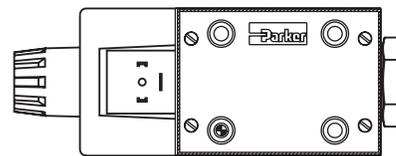
Inch equivalents for millimeter dimensions are shown in (**)

Hirschmann, Double AC Solenoid



Note: 30.0mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

Hirschmann, Single AC Solenoid

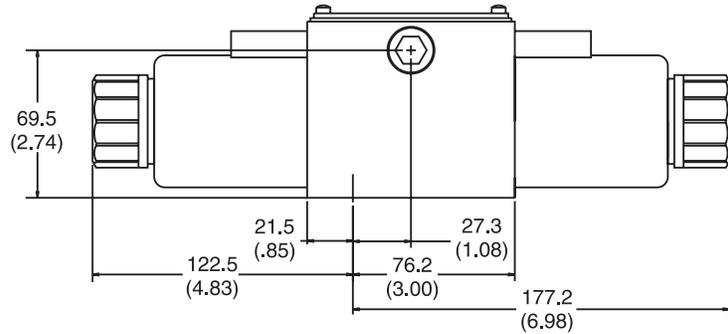
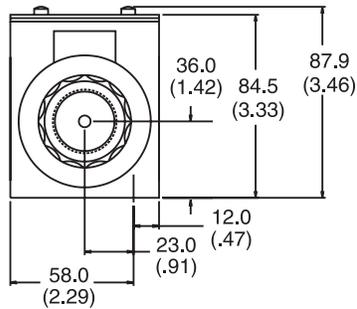
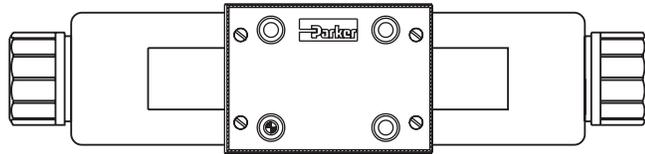


Note: 30.0mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

Inch equivalents for millimeter dimensions are shown in (**)

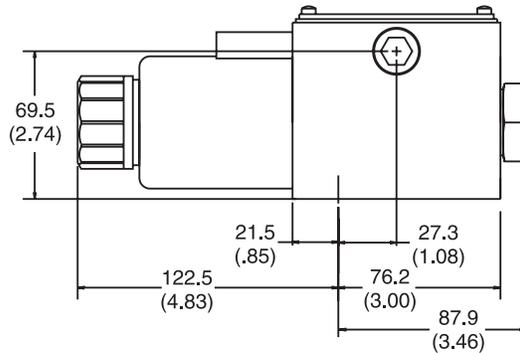
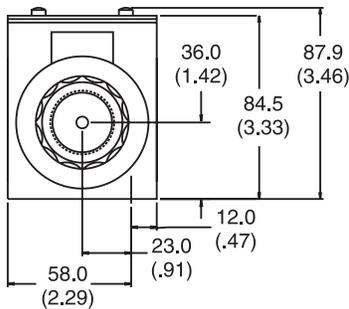
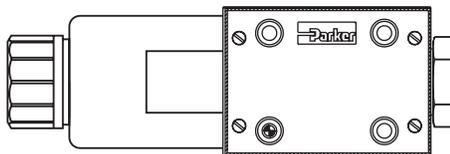
A

Conduit Cavity, Double DC Solenoid



Note: 30.0mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

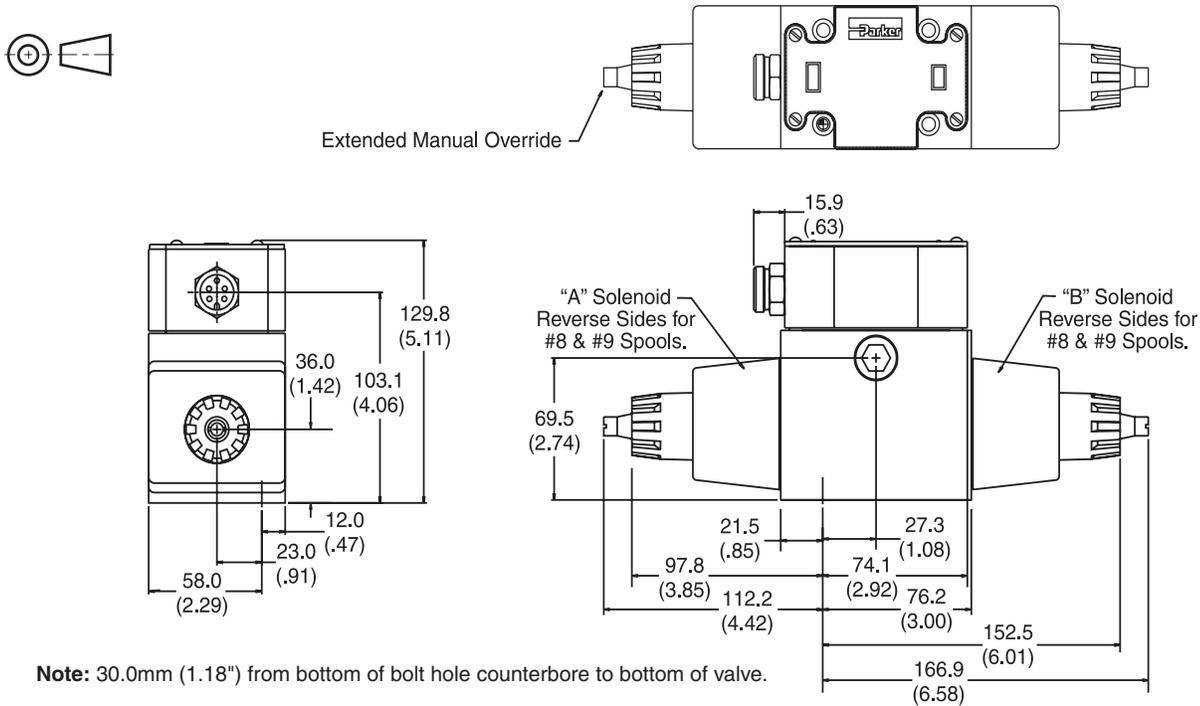
Conduit Cavity, Single DC Solenoid



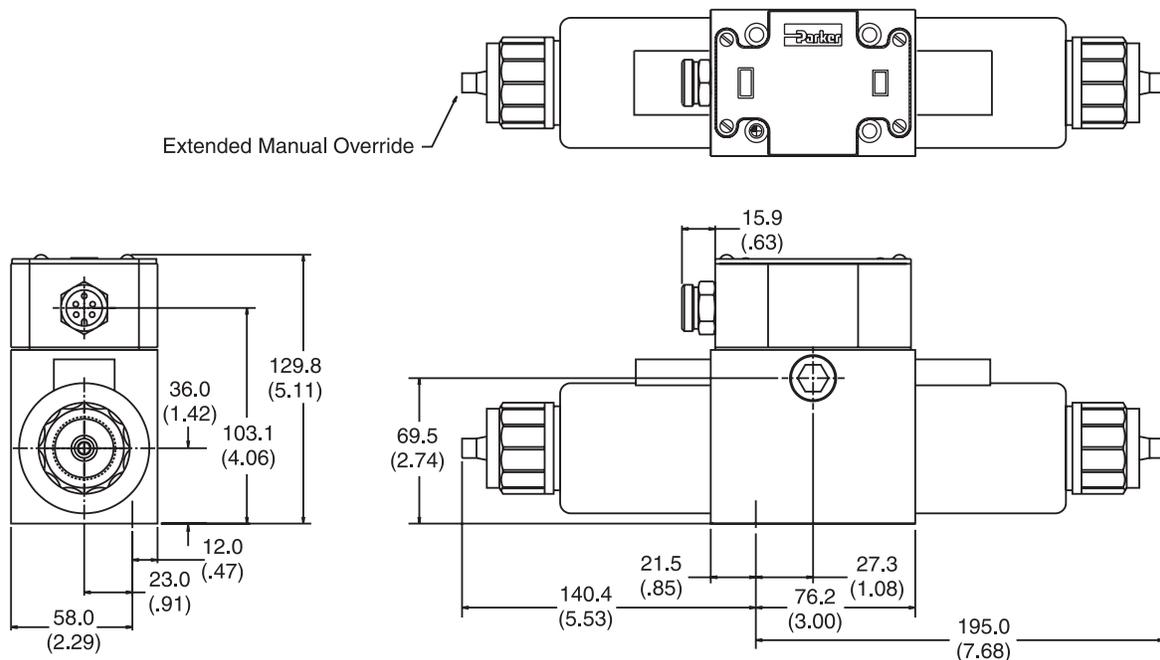
Note: 30.0mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

Inch equivalents for millimeter dimensions are shown in (**)

Conduit Box, Single AC Solenoid with Variation 6 (Manaplug) & Variation P (Extended Manual Override)



Conduit Box, Double DC Solenoid with Variation 6 (Manaplug) & Variation P (Extended Manual Override)



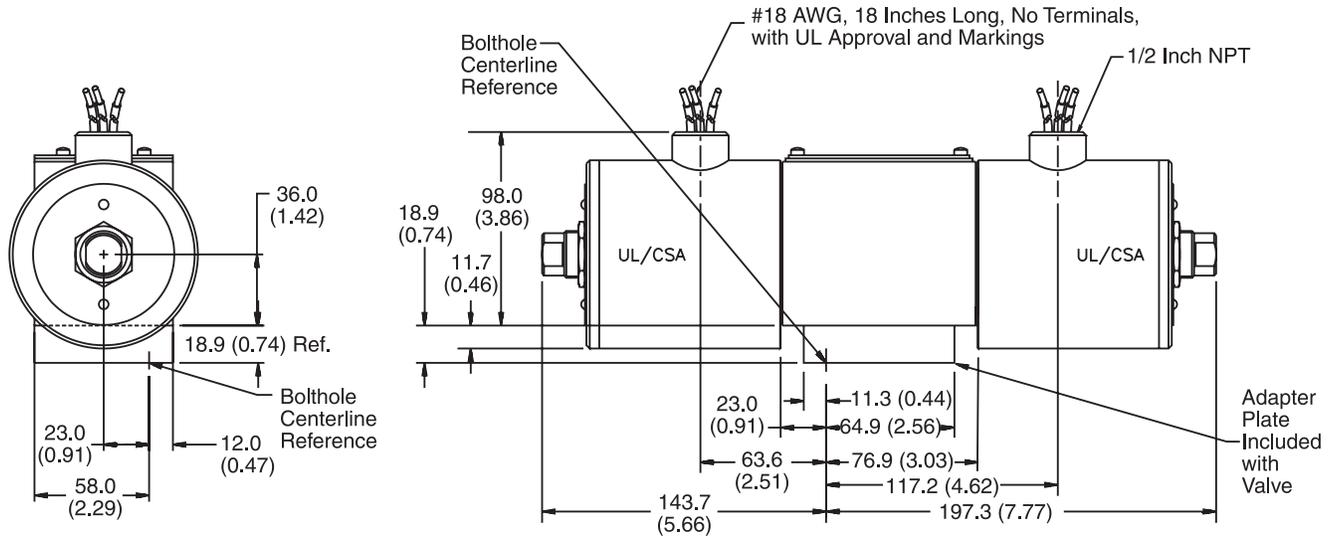
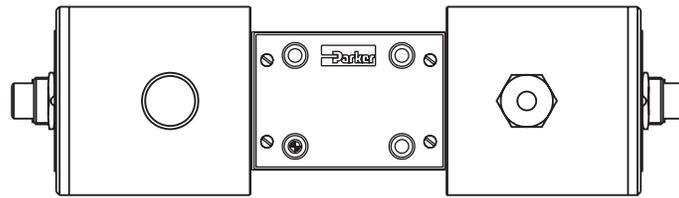
Inch equivalents for millimeter dimensions are shown in (**)

A

Explosion Proof U.L. & CSA, Double Solenoid

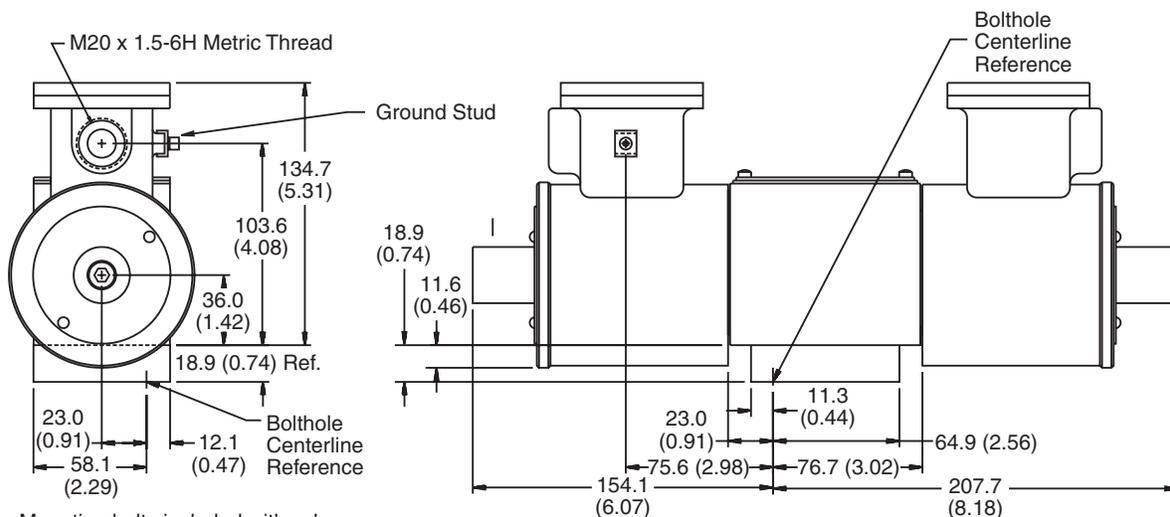
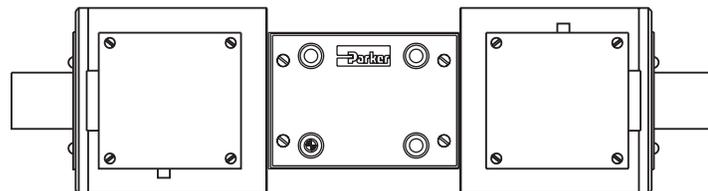


Note:
2 Black Wires
1 Green Wire



Note: Mounting bolts included with valve.

Explosion Proof ATEX, Double Solenoid



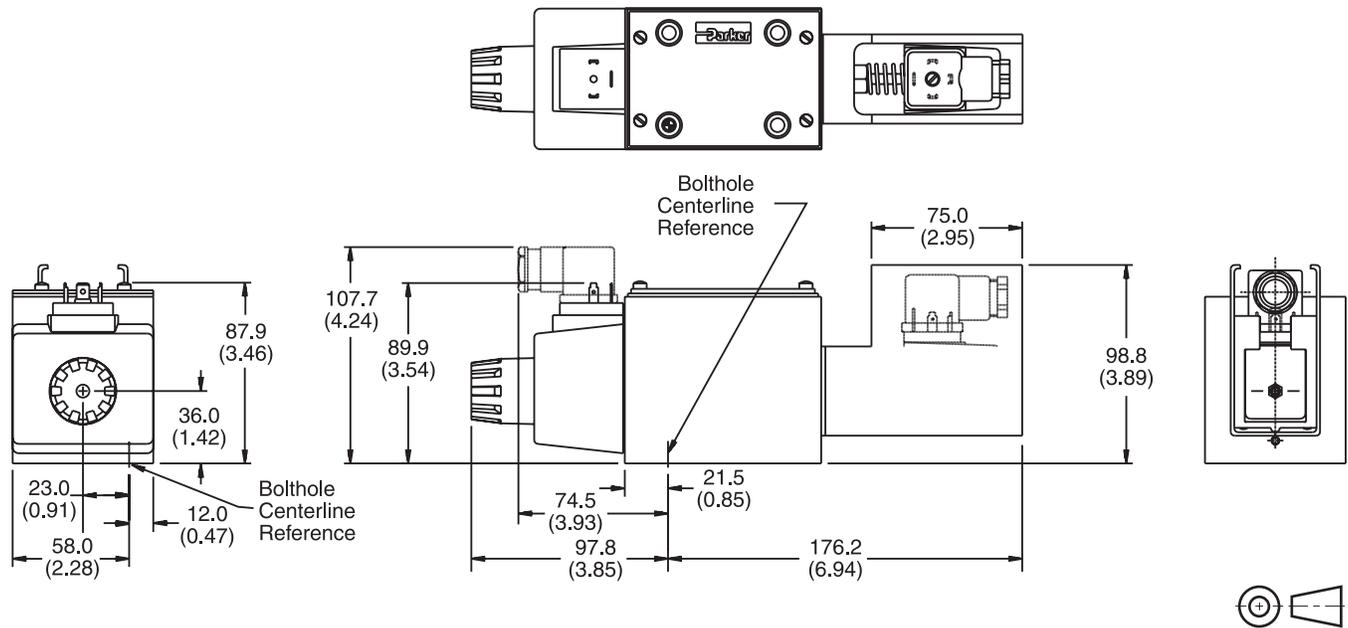
Note: Mounting bolts included with valve.

D3.indd, dd

Inch equivalents for millimeter dimensions are shown in (**)

**Hirschmann, Single AC Solenoid
with Variation I7 (Monitor Switch)**

A



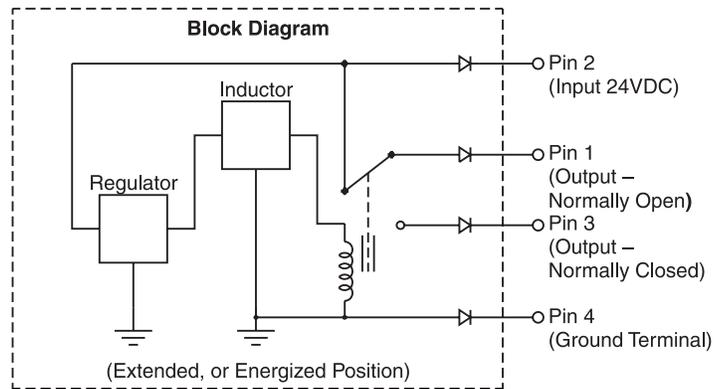
Note: 30.0mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

**Monitor Switch
(Variation I7) End of Stroke**

This feature provides for electrical confirmation of the spool shift. This can be used in safety circuits, to assure proper sequencing, etc.

Switch Data

Inductive switch requiring +18-42 volt input. Outputs "A" and "B" are opposite; one at "0" voltage, the other at input voltage. During switching, "A" and "B" outputs reverse. Provides 0.4A switching current.



For repetitive switch power-up conditions, please consult factory.

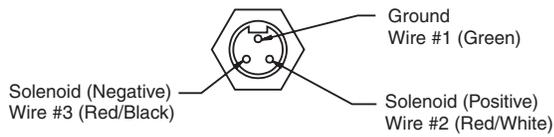
Conduit Box
(connection option K)

A

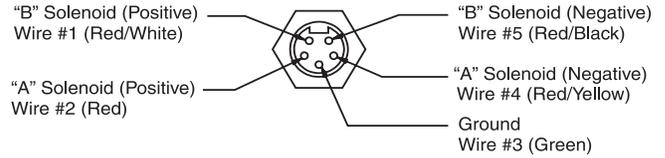
- Interface – 152.4 cm (6.0 inch) lead wires, 18 awg.
 – Meets NEMA 4 and IP65

Manaplug
(valve variations 6, 56, 1A, 1C)

- Interface – Brad Harrison Plug
 – 3-Pin for Single Solenoid
 – 5-Pin for Double Solenoid



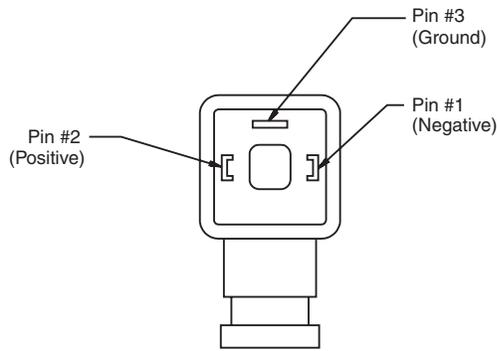
3-Pin Manaplug (Mini) with Lights
 Single Solenoid Valves – Installed Opposite Side of Solenoid



5-Pin Manaplug (Mini) with Lights
 Single Solenoid Valves – Installed Opposite Side of Solenoid
 Double Solenoid Valves – Installed Over "A" Solenoid
 ("A" and "B" Solenoids Reversed for #8 and #9 Spools)

Pins are as seen on valve (male pin connectors)

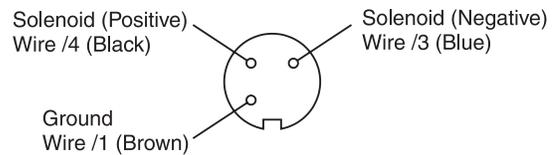
Hirschmann Plug with Lights (P5)



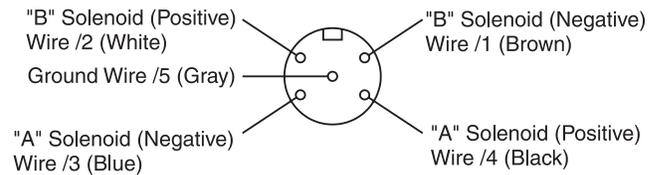
Face View of Plug

Conforms to DIN43650, ISO4400, Form A 3-Pin

Manaplug - Micro Connector
(valve variations 7, 57, 1B, 1D)



3-Pin Manaplug (Micro) with Lights
 Single Solenoid Valves – Installed Opposite Side of Solenoid



5-Pin Manaplug (Micro) with Lights
 Single Solenoid Valves – Installed Opposite Side of Solenoid
 Double Solenoid Valves – Installed Over "A" Solenoid
 ("A" and "B" Solenoids Reversed for #8 and #9 Spools)

Pins are as seen on valve (male pin connectors)