

## 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.

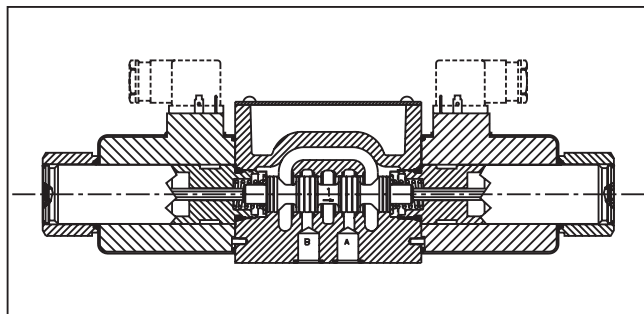
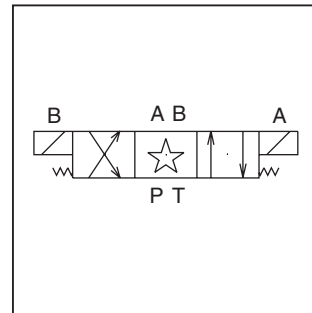
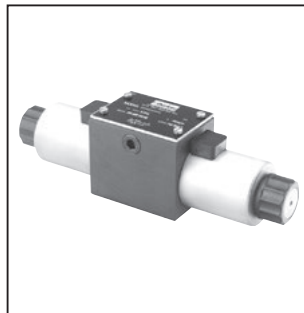
## Features

- Worldwide, high flow, low pressure drop design.
- Soft shift available.
- 16 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

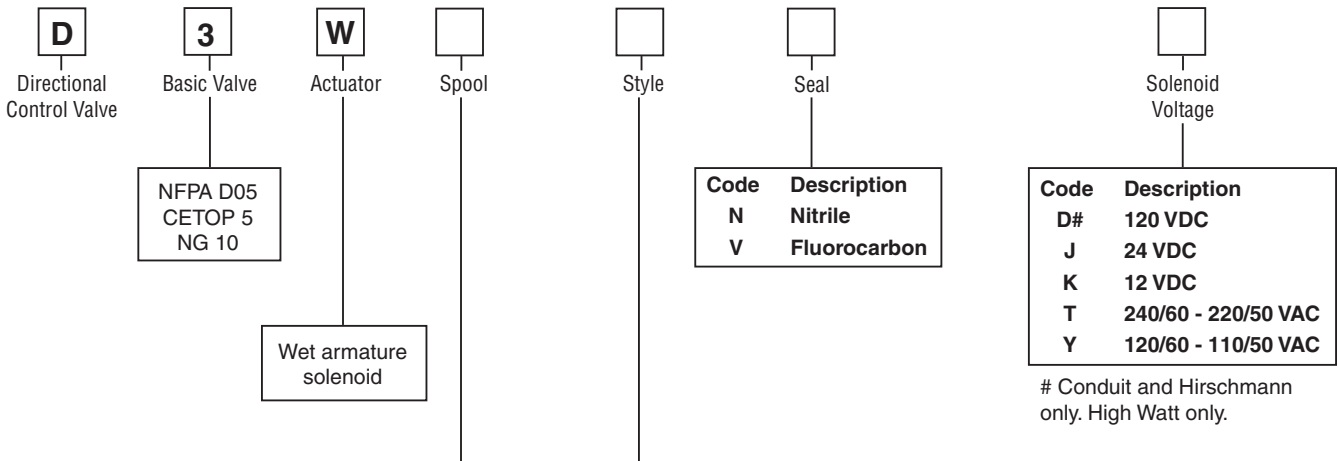
<b>Interface</b>	NFPA D05, CETOP 5, NG 10
<b>Max. Operating Pressure</b>	P, A, B: 345 Bar (5000 PSI) Standard CSA  207 Bar (3000 PSI)  Tank: 103 Bar (1500 PSI) AC Standard 207 Bar (3000 PSI) AC Optional DC/AC Rectified Standard CSA  103 Bar (1500 PSI)
<b>CSA File Number</b>	LR060407
<b>Leakage Rates 100 SSU @ 49°C (120°F)</b>	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

**WARNING:** This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**D3W without Position Control**

**A**



Code	Symbol	Code	Symbol
001		015	
002		016	
003		020*	
004		026*†	
005		030**	
006		081†	
008*, 009**		082†	
011			

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.	

\* 008, 020, & 026 spools have closed crossover.  
 \*\* 009 & 030 spool have open crossover.  
 † Available only with high-watt rectified AC coils or high-watt DC coils.  
 †† Styles C, E, F, K & M only. Not available with explosion proof coils.

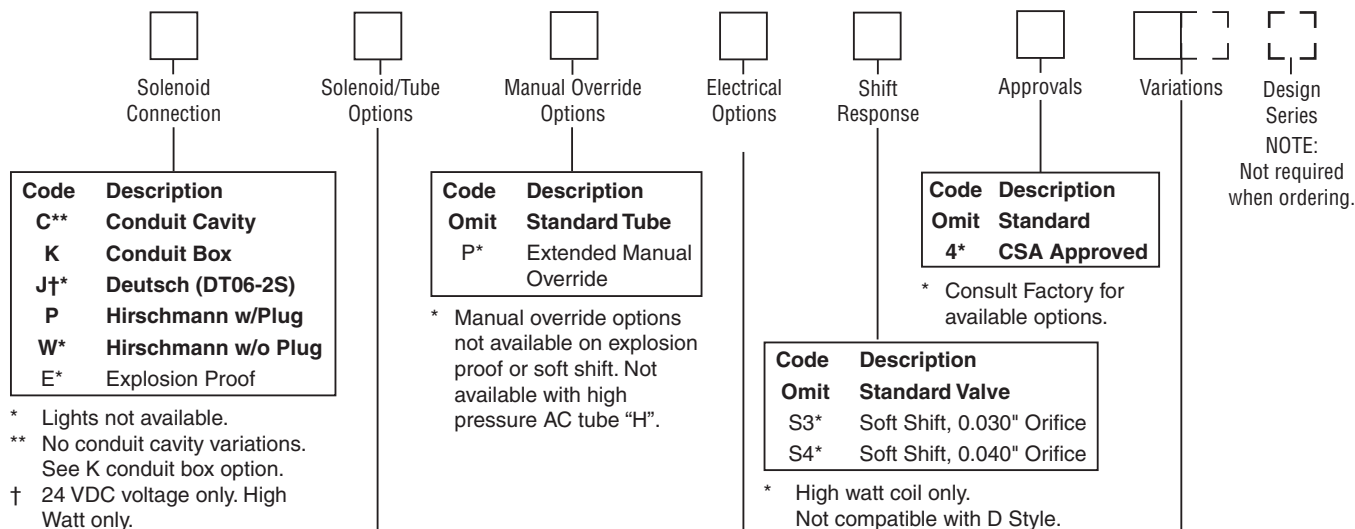
\* Only spools 020 & 030.  
 \*\* High Watt only.  
 † Only spools 020 & 030.

This condition varies with spool code.

Valve schematic symbols are per NFPA/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.**



\* Lights not available.  
 \*\* No conduit cavity variations. See K conduit box option.  
 † 24 VDC voltage only. High Watt only.

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**X†	Explosion Proof, UL/CSA		

\* Availability varies based on Solenoid Voltage:  
 Available with J Hirschmann style only. Available with J and Y (Rectified) & T (Rectified) Leadwire style only.  
 # Not available with soft shift or with F and M style valves.  
 ‡ DED only DC available.  
 \*\* YEU only AC available.  
 X DEU & JEU only DC available.  
 † Explosion proof coils are 60 Hz only.

**Mounting Bolt Kits**

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

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

**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:**

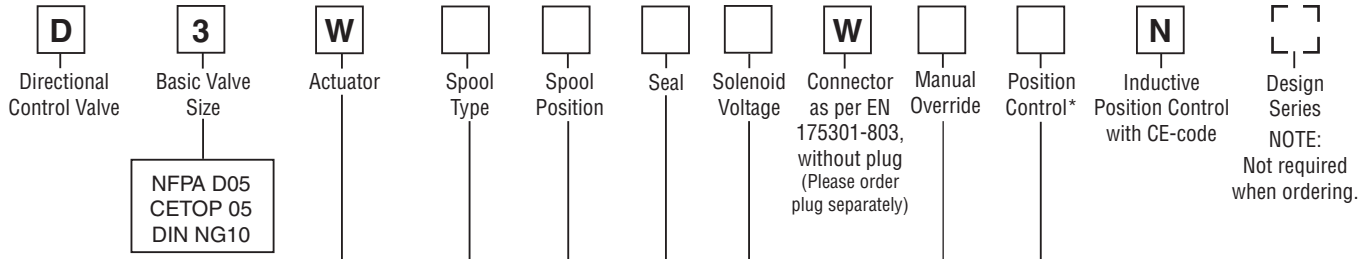
Nitrile SKD3W  
 Fluorocarbon SKD3WV

**Bold: Designates Tier I products and options.**

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

**D3W with Position Control, Single Solenoid Valve**

**A**



NFPA D05  
 CETOP 05  
 DIN NG10

Wet pin solenoid

Code	Description
K	12 VDC
J	24 VDC
U*	98 VDC
G*	205 VDC

\* To be used in combination with rectifier plugs at 120 VAC / 230 VAC power supply.

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Position Control	Spool Position
I2	End position monitored side B	E, F, B (Solenoid on a-side)
15**	Start position monitored side B	
I1	End position monitored side A	K, M, H (Solenoid on b-side)
14**	Start position monitored side A	

\* Please order female connector M12x1 separately (see accessories, female connector M12x1 (order no.: 5004109)).  
 \*\* For hydraulic presses according to the safety regulations EN 693, solenoid option T (without manual override) and accessories I4 or I5 (start position monitored) are required.

Code	Symbol
<b>3 Position Spools</b>	
001	
002	
003*	
004	
005**	
015**	
016*	
021*	
022**	
<b>2 Position Spools</b>	
020	
026	
030	

Code	Description	Symbol
<b>3 Position Spools</b>		
E	2 positions. Spring offset in position 0. Operated in position a.	
F	2 positions. Spring offset in position b. Operated in position 0.	
K	2 positions. Spring offset in position 0. Operated in position b.	
M	2 positions. Spring offset in position a. Operated in position 0.	
<b>2 Position Spools</b>		
B	2 positions. Spring offset in position b. Operated in position a.	
H	2 positions. Spring offset in position a. Operated in position b.	

Code	Description
Omit	Manual Override (Standard)
T*	Without Manual Override

\* For hydraulic presses according to the safety regulations EN 69 3, solenoid option T (without manual override) and accessories I4 or I5 (start position monitored) are required.

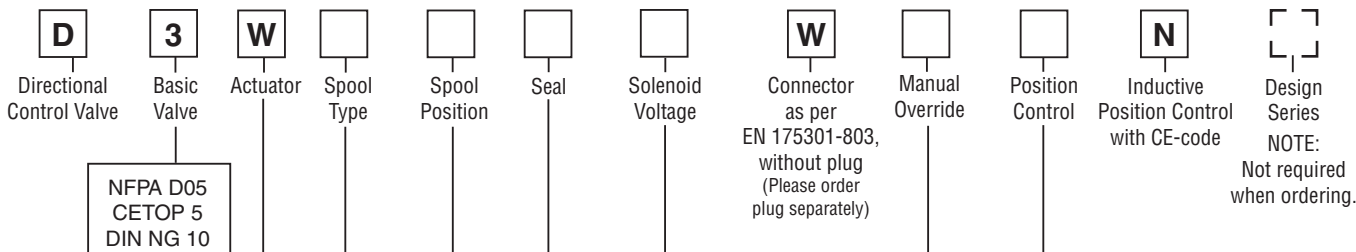
\* Only available for spools K & M.

\*\* Only available for spools E & F only.

**Standard Bolt Kit:** BK98  
**Metric Bolt Kit:** BKM98  
**Seal Kit:**  
 Nitrile SKD3W  
 Fluorocarbon SKD3WV

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

**D3W with Position Control, Double Solenoid Valve**



NFPA D05  
 CETOP 5  
 DIN NG 10

Wet pin  
 solenoid

Code	Description
K	12 VDC
J	24 VDC
U*	98 VDC
G*	205 VDC

\* To be used in combination with rectifier plugs at 120 VAC and 230 VAC power supply.

Code	Description	Spool Position
I3	End positions	C, D
I6*	Start positions	

\* For hydraulic presses according to the safety regulations EN 693, solenoid option T (without manual override) and accessory I6 (start positions) is required.

Code	Symbol
<b>3 Position Spools</b>	
001	
002	
004	
<b>2 Position Spools</b>	
020*	
026*	

\* Only available for end position control code I3.

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Description
Omit	Manual Override (Standard)
T*	Without Manual Override

\* For hydraulic presses according to the safety regulations EN 693, solenoid option T (without manual override) and accessory I6 (start positions) is required.

Code	Description	Symbol
<b>3 Position Spools</b>		
C	3 positions. Spring offset in position 0. Operated in position a or b.	
<b>2 Position Spools</b>		
D	2 positions. Spring offset in position a. Operated in position b.	

**Standard Bolt Kit:** BK98  
**Metric Bolt Kit:** BKM98  
**Seal Kit:**  
 Nitrile SKD3W  
 Fluorocarbon SKD3WV

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



**A**

**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	120/60 110/50	298 294	95 102	32
T	240/60 220/50	288 288	96 101	32
K	12 VDC	–	3.00†	36
J	24 VDC	–	1.50†	36
D	120 VDC	–	0.30†	36

† DC holding amps.

**D3W Rectified AC Solenoid Electrical Characteristics†**

Solenoid Code	Nominal Volts/Hz	In Rush Amps	Holding Amps	Watts
Y	120/60 110/50	–	.37	36
T	240/60 220/50	–	.18	36
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**

<b>U.L. /CSA (EU)</b>	Class I, Div. 1 & 2, Groups C & D Class II, Div 1 & 2, Groups E, F & G As defined by the N.E.C.
<b>ATEX</b>	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
J	24 VDC	–	1.50†	36
D	120 VDC	–	0.30†	36

\* Dual frequency not available on explosion proof coils.

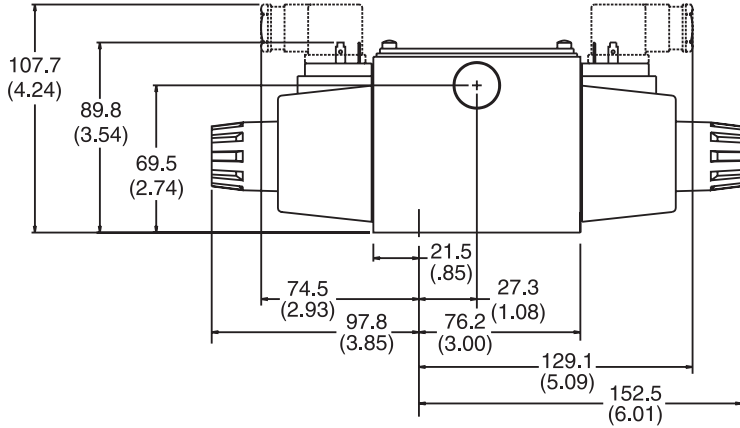
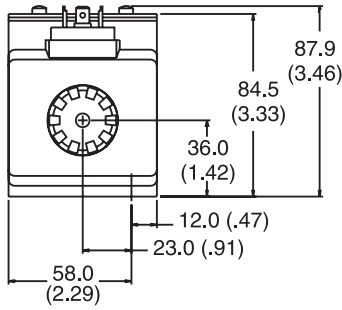
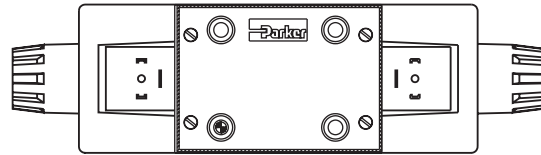
† DC holding amps.

**Dimensions**

**Directional Control Valves  
Series D3W**

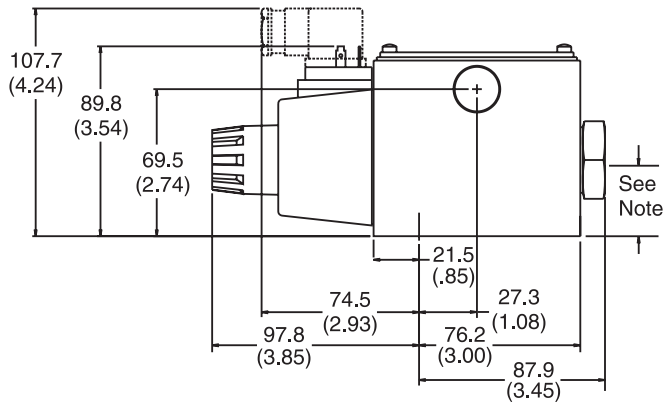
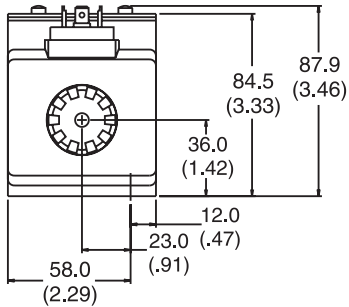
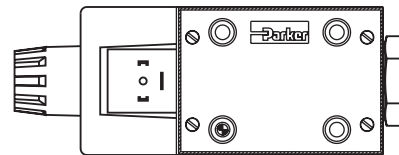
Inch equivalents for millimeter dimensions are shown in (\*\*)

**Hirschmann, Double AC Solenoid**



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

**Hirschmann, Single AC Solenoid**



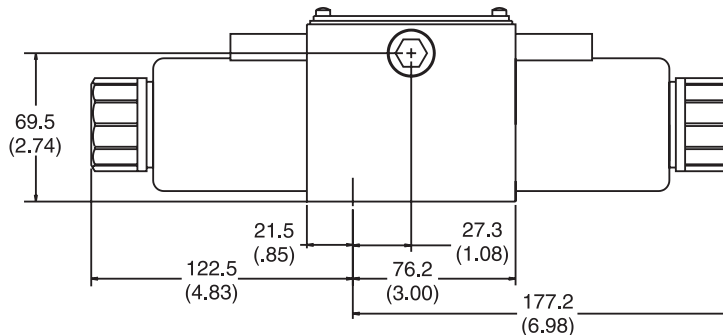
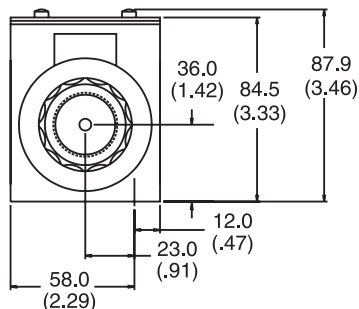
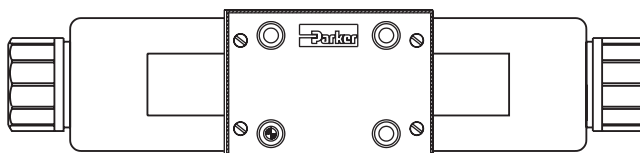
**Note:** 30.0 mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

**Dimensions**

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

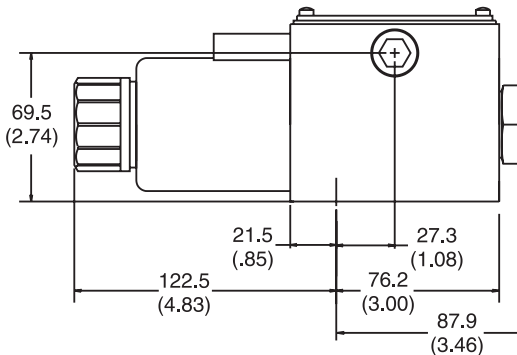
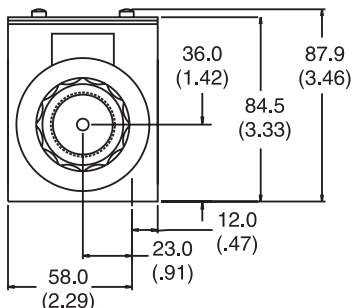
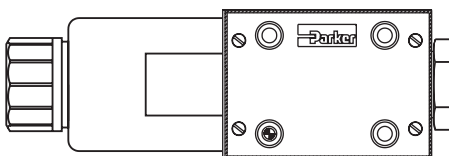
**A**

**Conduit Cavity, Double DC Solenoid**



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

**Conduit Cavity, Single DC Solenoid**



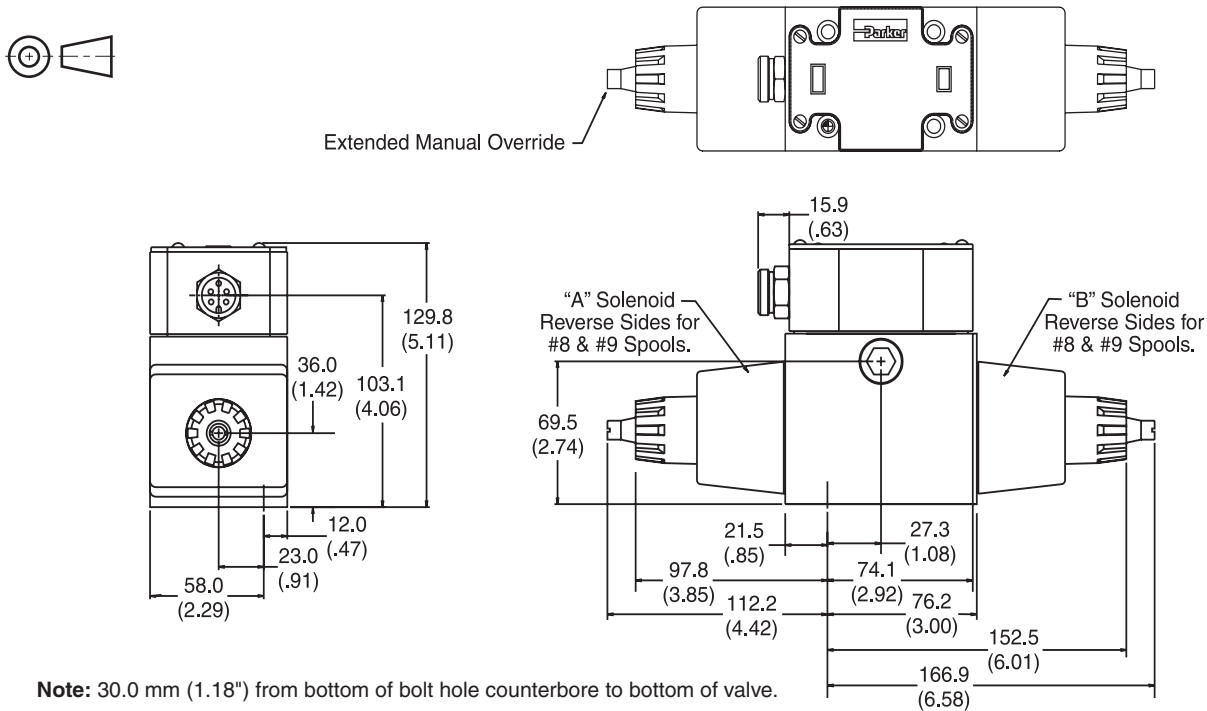
**Note:** 30.0 mm (1.18") from bottom of bolt hole counterbore to bottom of valve.



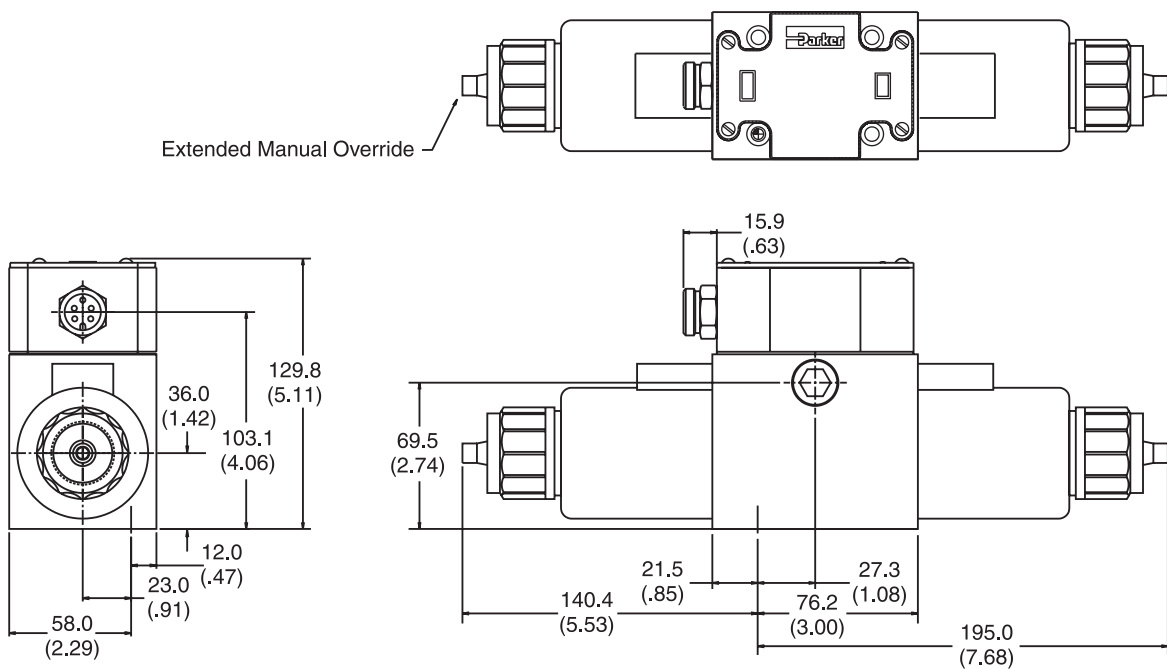
**Dimensions**

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)**



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

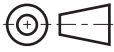
**Dimensions**

**Directional Control Valves  
Series D3W**

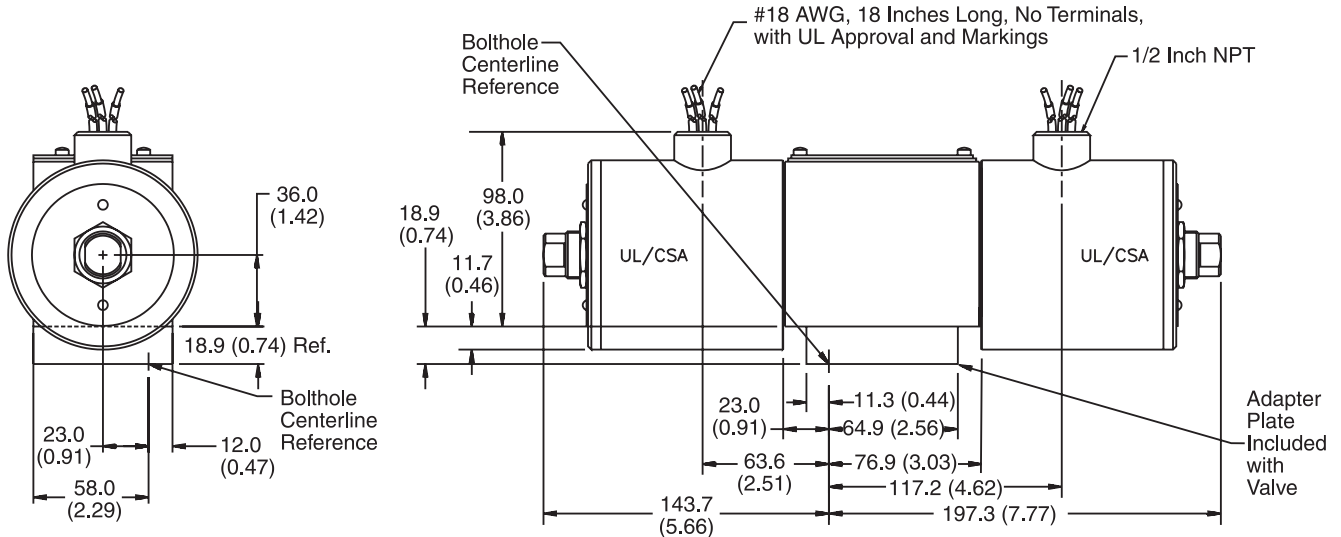
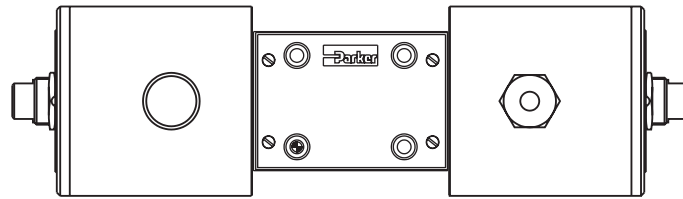
Inch equivalents for millimeter dimensions are shown in (\*\*)

**A**

**Explosion Proof U.L. & CSA, Double Solenoid**

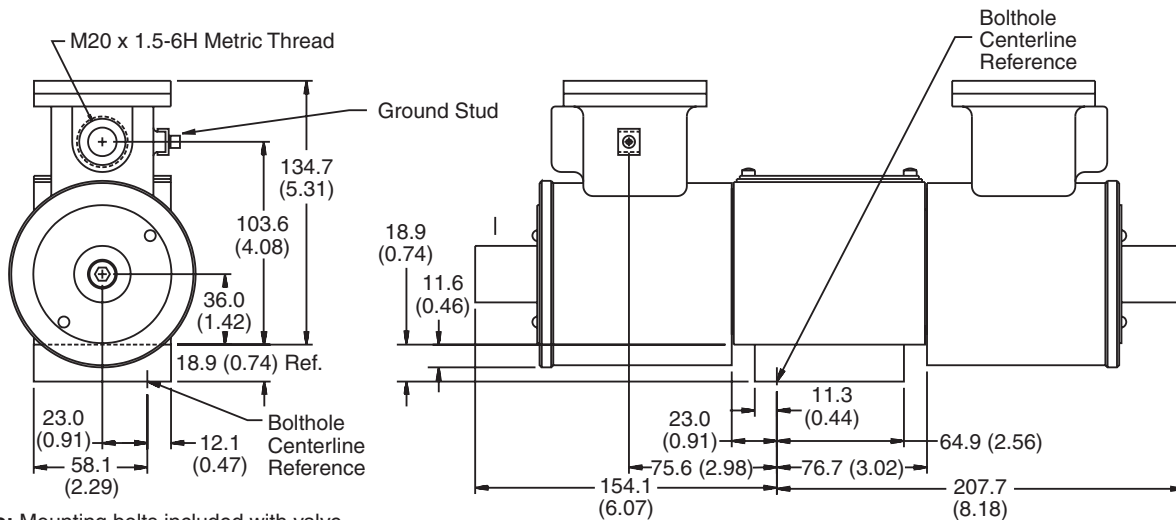
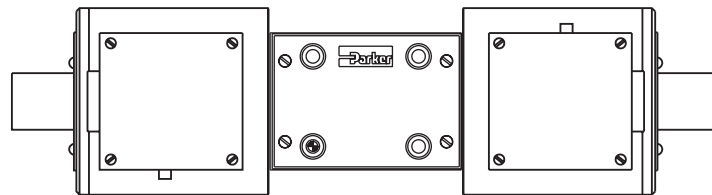


Note:  
2 Black Wires  
1 Green Wire



Note: Mounting bolts included with valve.

**Explosion Proof ATEX, Double Solenoid**



Note: Mounting bolts included with valve.

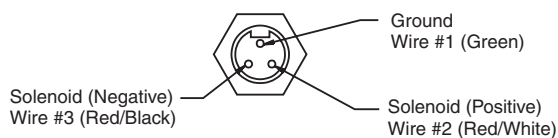


**Conduit Box**  
**(connection option K)**

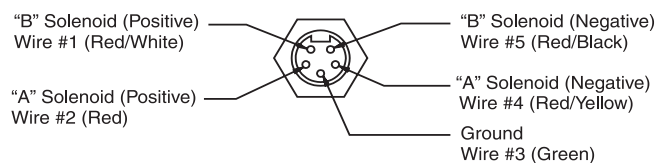
- Interface – 152.4 cm (6.0 inch) lead wires, 18 awg.
- Meets NEMA 4 and IP65

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

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



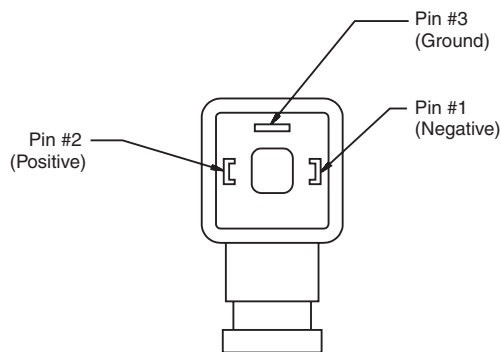
**3-Pin Manaplug (Mini) with Lights**  
 Single Solenoid Valves – Installed Opposite Side of Solenoid



**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)**

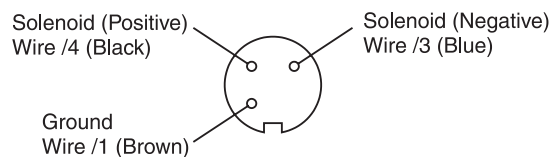
**Hirschmann Plug with Lights (P5)**



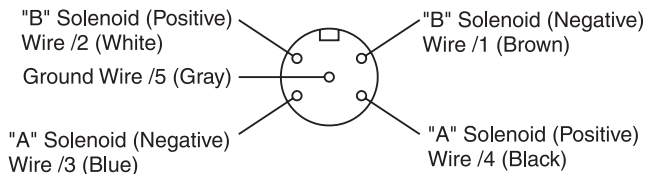
**Face View of Plug**

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)**

**Notes**

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**A**

