

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.

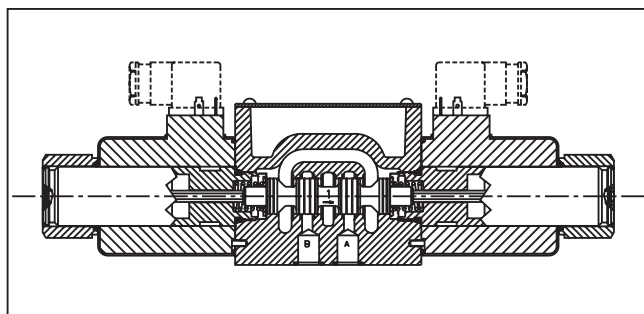
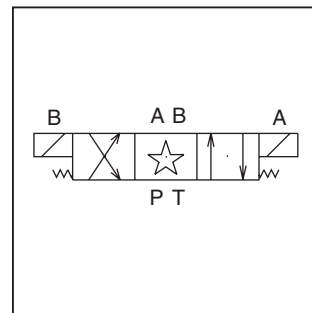
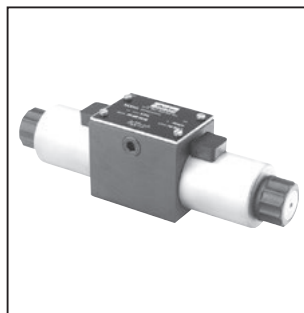
Features

- 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

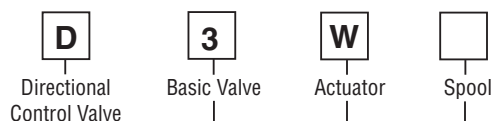
Interface	NFPA D05, CETOP 5, NG 10
Max. Operating Pressure	P, A, B: 345 Bar (5000 PSI) Standard CSA 207 Bar (3000 PSI) Tank: 103 Bar (1500 PSI) AC Standard 207 Bar (3000 PSI) AC Optional DC/AC Rectified Standard CSA 103 Bar (1500 PSI)
CSA File Number	LR060407
Leakage Rates 100 SSU @ 49°C (120°F)	Maximum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

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.

D3W without Position Control

A



NFPA D05
 CETOP 5
 NG 10

Wet armature
 solenoid

Style

Seal

Code	Description
N	Nitrile
V	Fluorocarbon

Solenoid Voltage

Code	Description
D#	120 VDC
J	24 VDC
K	12 VDC
T	240/60 - 220/50 VAC
Y	120/60 - 110/50 VAC

Conduit and Hirschmann only. High Watt only.

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

- * 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.

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 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.


Solenoid Connection


Solenoid/Tube Options


Manual Override Options


Electrical Options


Shift Response


Approvals


Variations


Design Series

Code	Description
C**	Conduit Cavity
K	Conduit Box
J†*	Deutsch (DT06-2S)
P	Hirschmann w/Plug
W*	Hirschmann w/o Plug
E*	Explosion Proof

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

Code	Description
Omit	Standard Tube
P*	Extended Manual Override

* Manual override options not available on explosion proof or soft shift. Not available with high pressure AC tube "H".

Code	Description
Omit	Standard
4*	CSA Approved

* Consult Factory for available options.

Code	Description
Omit	Standard Valve
S3*	Soft Shift, 0.030" Orifice
S4*	Soft Shift, 0.040" Orifice

* High watt coil only. Not compatible with D Style.

Code	Description
Omit	Standard Valve
4B	Monitor Switch and Protective Cover
5	Signal Lights
6	Manaplug, Brad Harrison Mini
56	Manaplug (Mini) with Lights
57	Manaplug (Micro) with Lights (M12x1)
1C	Manaplug (Mini) Single Sol. 5-Pin w/Lights
1M	Manaplug Opposite Normal
1P	Painted Body
2P	Complete Painted Valve, 1 mil thick, spec. (Check factory for availability)

Code	Description
Omit	No Option
V#	Varistor Surge Suppressor
Z^x	AC Rectified with MOV Surge Suppressor

24 VDC voltage only with Leadwire C & K options. High and low watt available.
^x 240 VAC Hirschmann only, high-watt only. Not available with Explosion Proof. Y voltage available with leadwire, High and Low watt. Y voltage, DIN and 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***†	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)

Bold: Designates Tier I products and options.

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

Valve Weight:

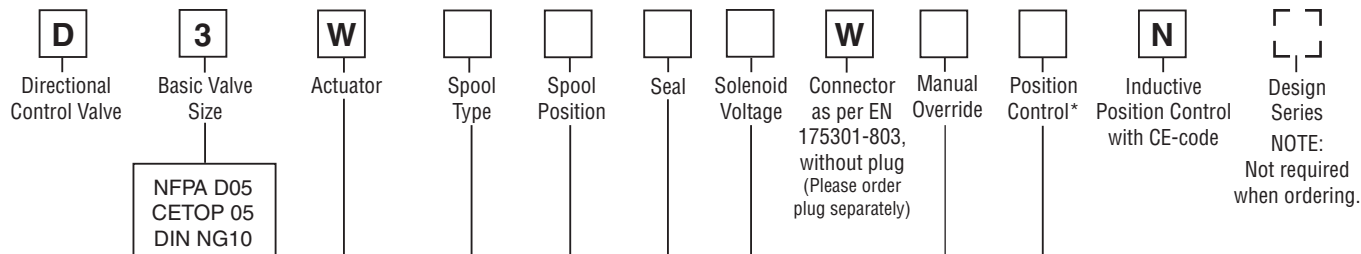
Single Solenoid:	
AC	4.3 kg (9.5 lbs.)
DC	5.3 kg (11.6 lbs.)
Double Solenoid:	
AC	5.0 kg (11.0 lbs.)
DC	7.3 kg (16.0 lbs.)

Seal Kit:

Nitrile	SKD3W
Fluorocarbon	SKD3WV

D3W with Position Control, Single Solenoid Valve

A



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

* Only available for spools K & M.
 ** Only available for spools E & F only.

Code	Description	Symbol
3 Position Spools		
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.	
2 Position Spools		
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
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)
I5**	Start position monitored side B	
I1	End position monitored side A	K, M, H (Solenoid on b-side)
I4**	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.

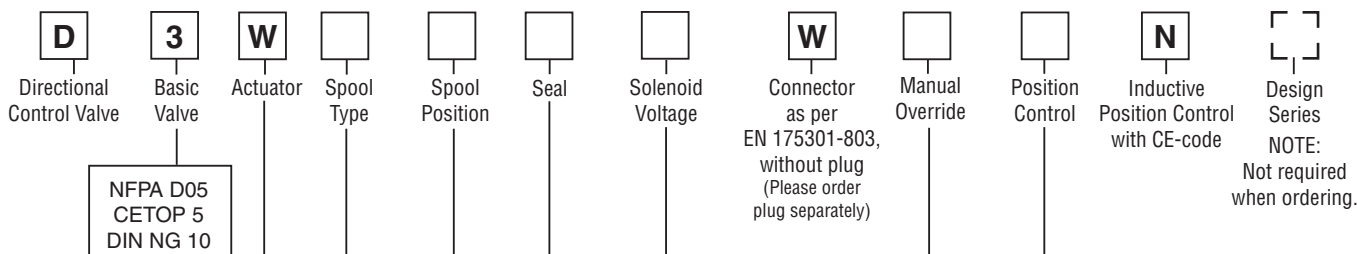
Code	Description
Omit	Manual Override (Standard)
T*	Without Manual Override

* 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.

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



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	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	Symbol
3 Position Spools	
001	
002	
004	
2 Position Spools	
020*	
026*	

* Only available for end position control code I3.

Code	Description	Symbol
3 Position Spools		
C	3 positions. Spring offset in position 0. Operated in position a or b.	
2 Position Spools		
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.)

Solenoid Ratings**

A

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

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†

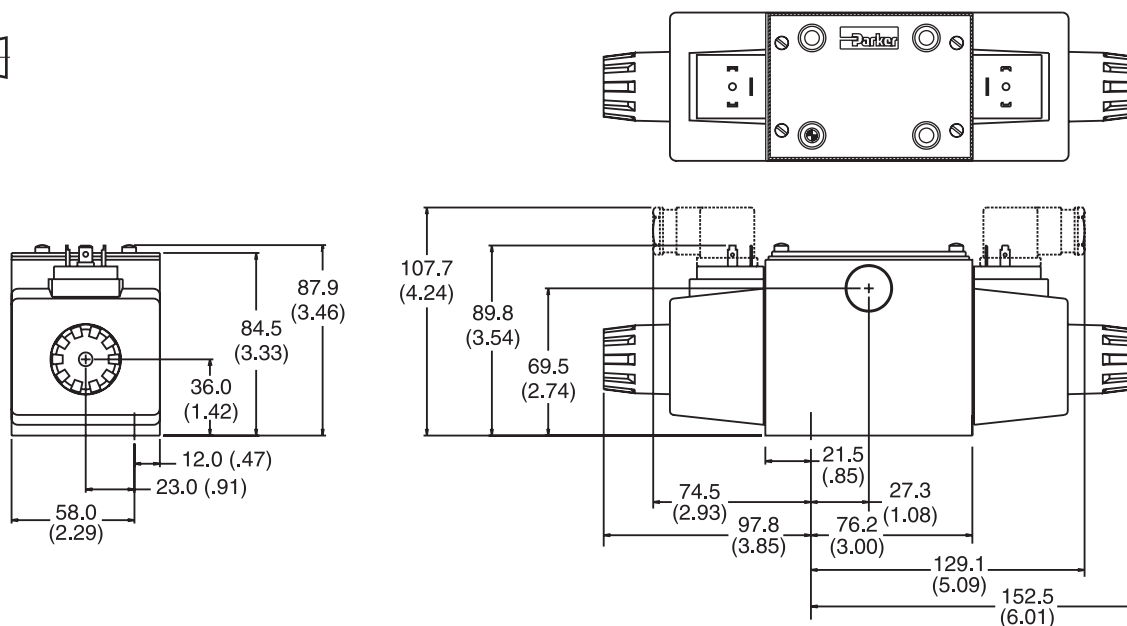
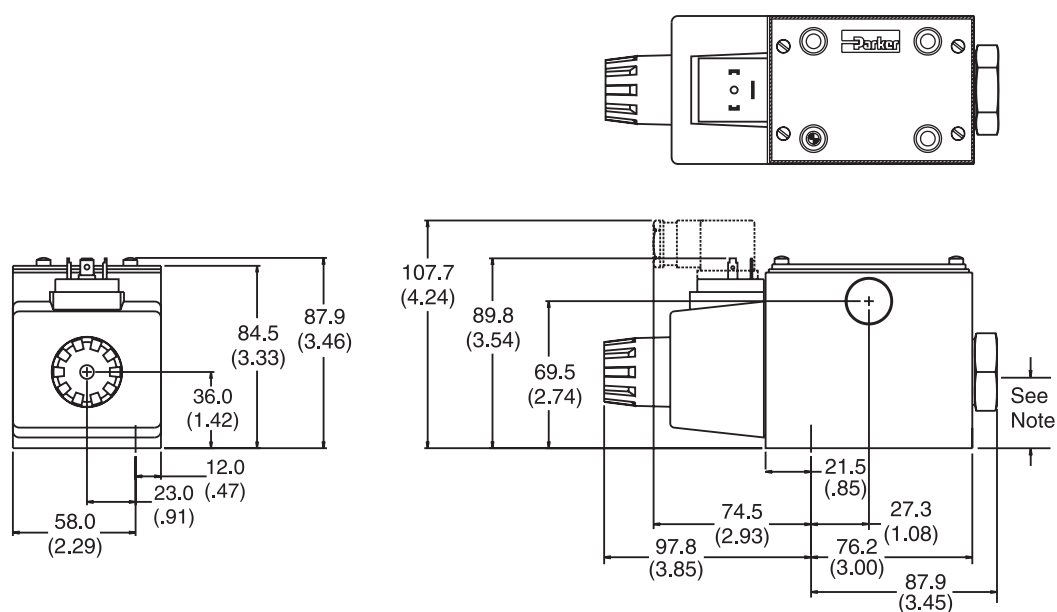
Solenoid Code	Nominal Volts/Hz	In Rush VA	Holding VA	Nominal Watts (Ref)
Y	120/60	266	82	36
J	24 VDC	—	1.50†	36
D	120 VDC	—	0.30†	36

* Dual frequency not available on explosion proof coils.

† DC holding amps.

Dimensions**Directional Control Valves
Series D3W**

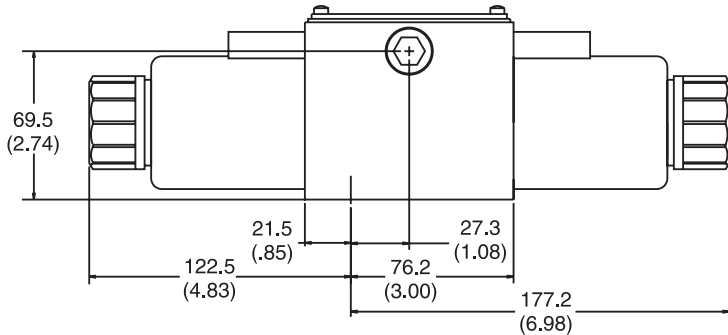
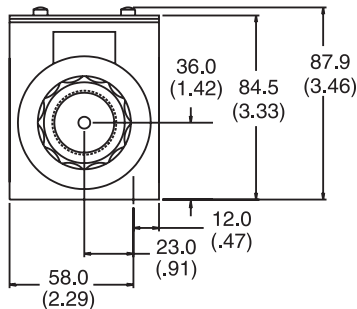
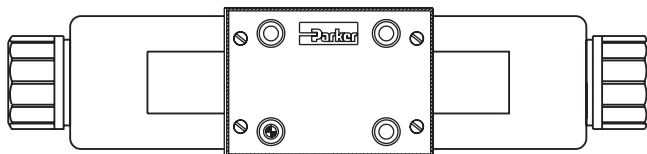
Inch equivalents for millimeter dimensions are shown in (**)

Hirschmann, Double AC Solenoid**A****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.

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

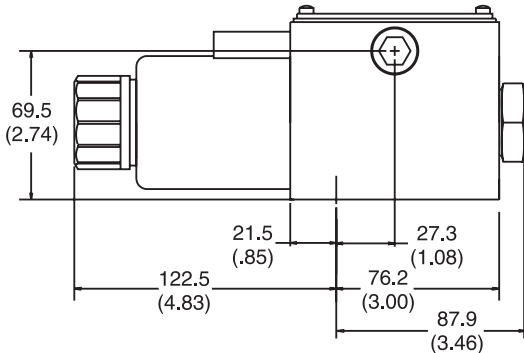
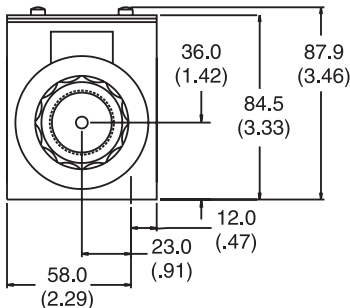
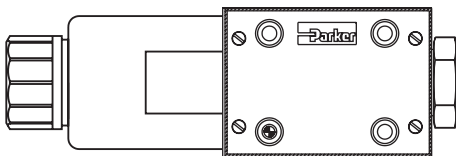
A

Conduit Cavity, Double DC Solenoid



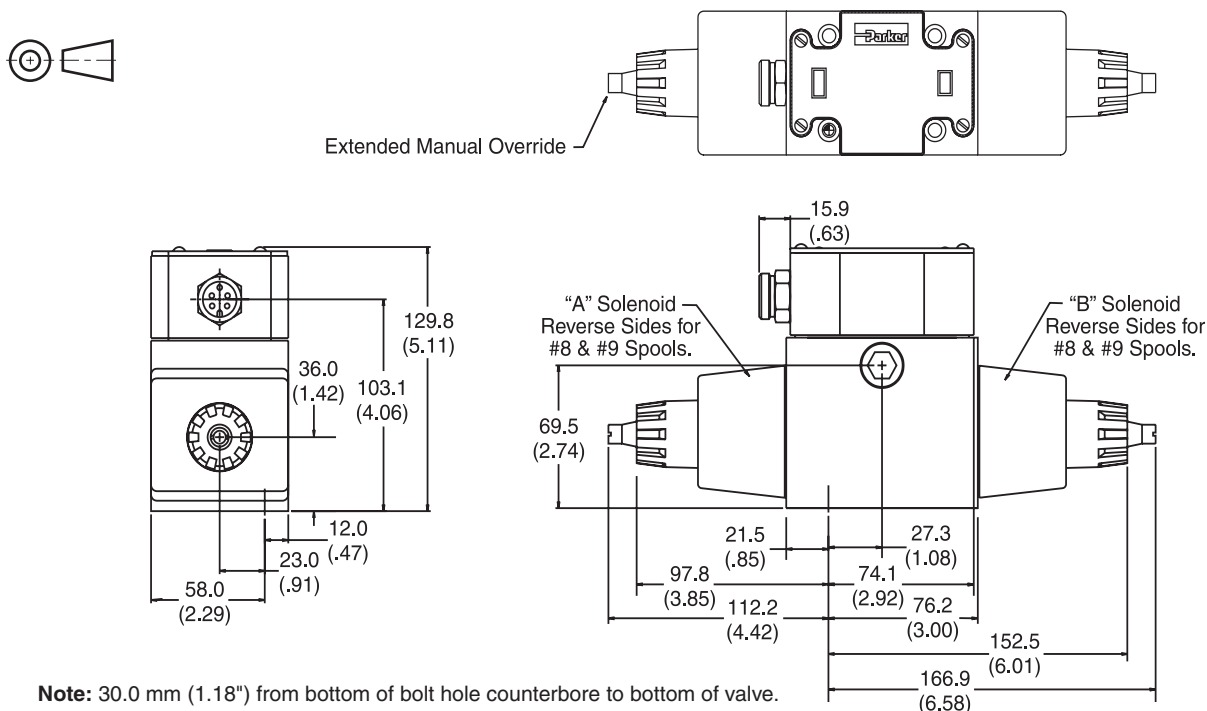
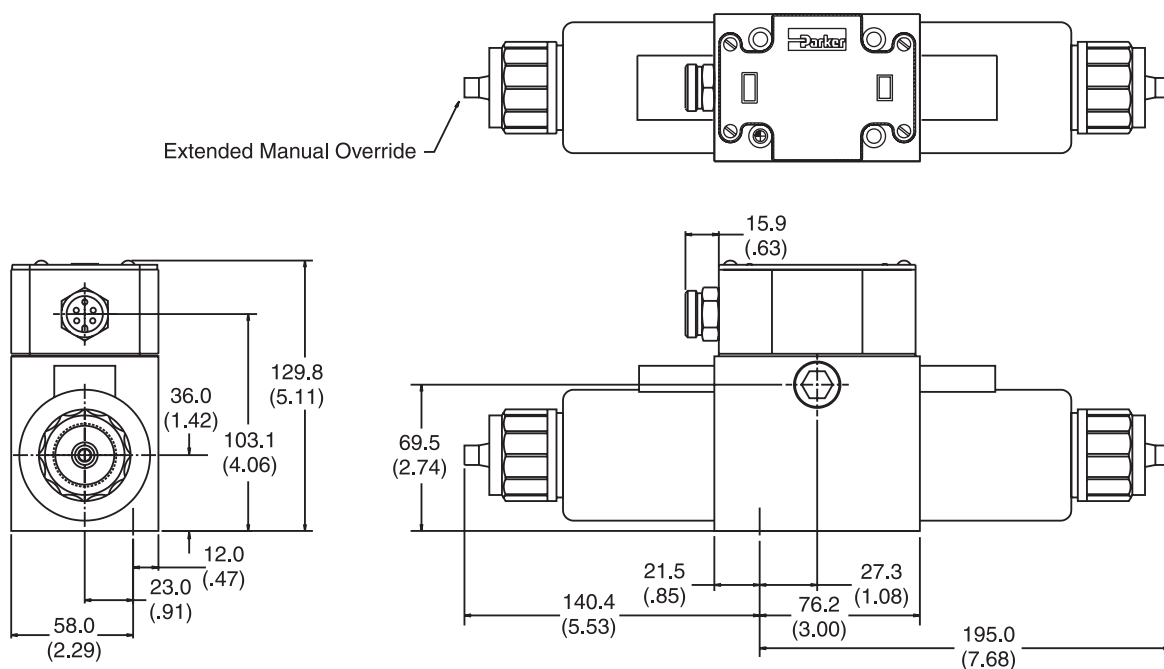
Note: 30.0 mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

Conduit Cavity, Single DC Solenoid



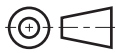
Note: 30.0 mm (1.18") from bottom of bolt hole counterbore to bottom of valve.

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

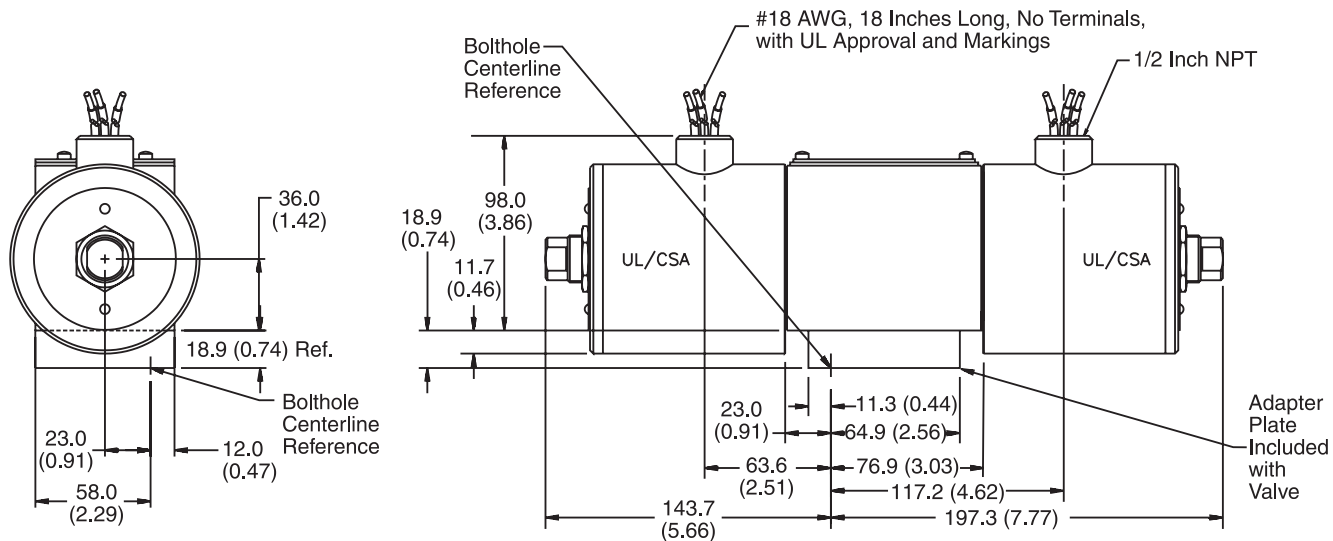
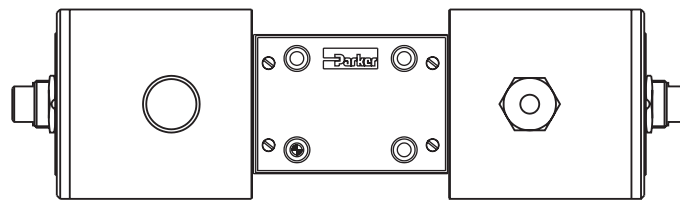
Conduit Box, Single AC Solenoid
with Variation 6 (Manaplug) & Variation P (Extended Manual Override)**A****Conduit Box, Double DC Solenoid**
with Variation 6 (Manaplug) & Variation P (Extended Manual Override)

Dimensions**Directional Control Valves****Series D3W**

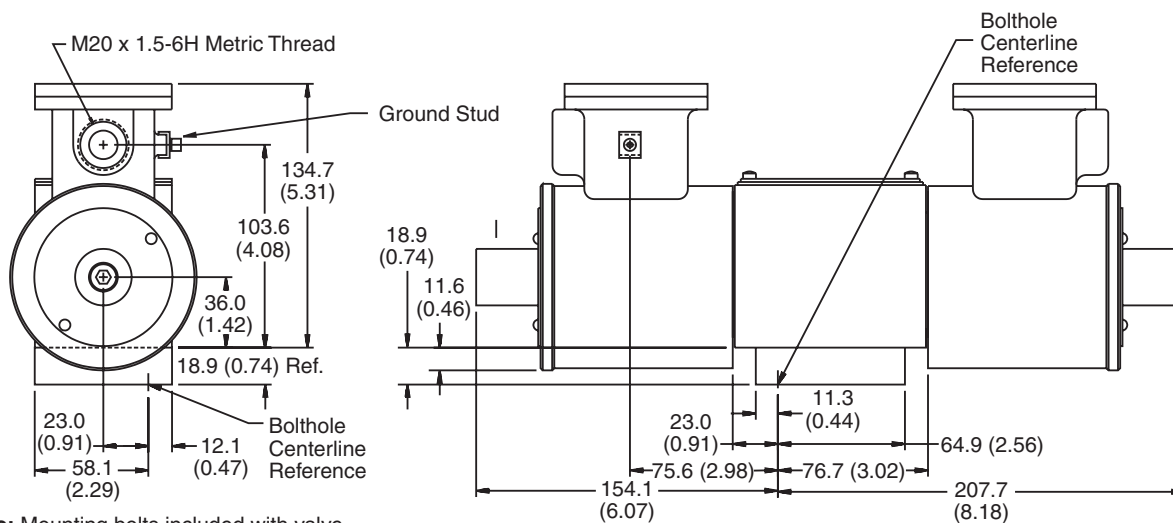
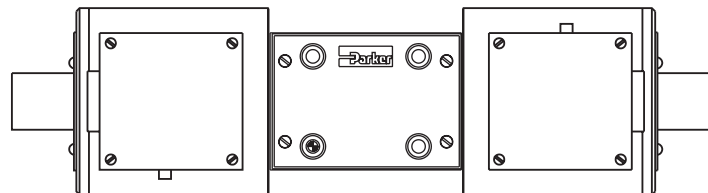
Inch equivalents for millimeter dimensions are shown in (**)

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

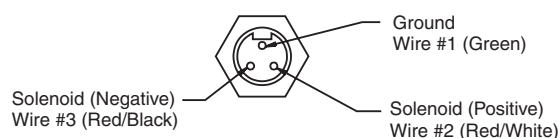
Note: Mounting bolts included with valve.

Conduit Box**(connection option K)**

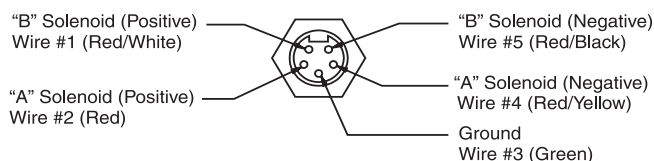
- Interface – 152.4 cm (6.0 inch) lead wires, 18 awg.
– Meets NEMA 4 and IP65

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

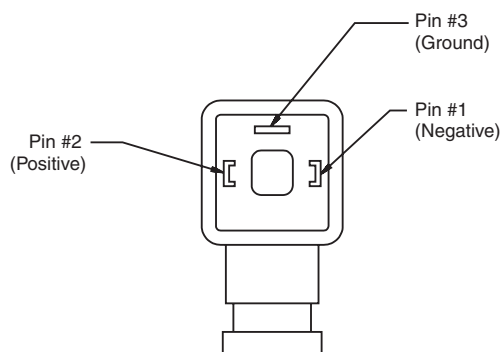
- Interface – Brad Harrison Plug
– 3-Pin for Single Solenoid
– 5-Pin for Double Solenoid

**3-Pin Manaplug (Mini) with Lights**

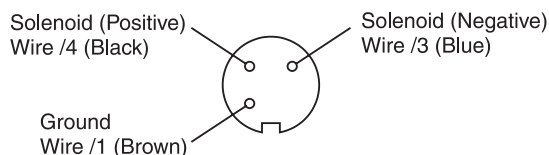
Single Solenoid Valves – Installed Opposite Side of Solenoid

**5-Pin Manaplug (Mini) with Lights**

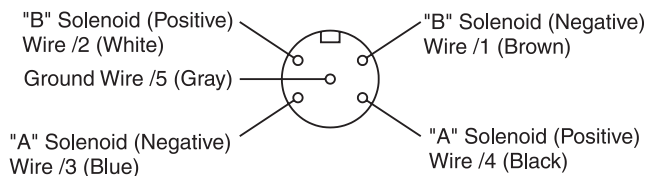
Single Solenoid Valves – Installed Opposite Side of Solenoid
Double Solenoid Valves – Installed Over "A" Solenoid
("A" and "B" Solenoids Reversed for #8 and #9 Spools)

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)

A

This image shows a full page of blank graph paper. The grid consists of thin, light gray horizontal and vertical lines that intersect to form a uniform pattern of small squares across the entire surface. There are no margins, text, or other markings on the paper.