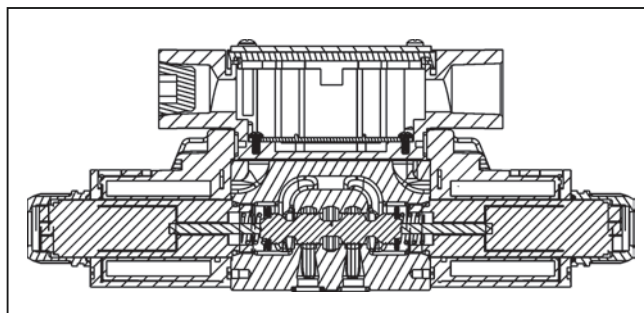
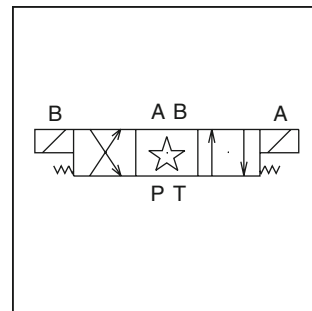
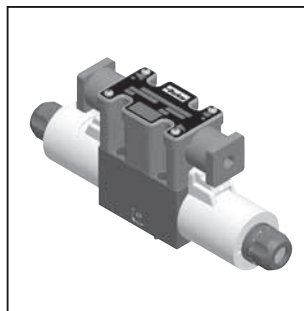


General Description

Series D1VW 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 D03, CETOP 3 mounting patterns.

Features

- Soft shift available.
- 19 standard spool styles available (for other spools – Consult Factory).
- Proportional spools.
- DC surge suppression.
- Eight electrical connection options.
- AC & DC lights available (CSA approval for solenoids and lights).
- Internally ground.
- Easy access mounting bolts.
- Waterproof (meets NEMA 4, up to IP67 on some models).
- Explosion proof.
- CSA approvals.



- U.L. recognized available - Contact the division.
- No tools required for coil removal.
- AC rectified coils.

Specifications

Mounting Pattern	NFPA D03, CETOP 3, NG 6	Leakage Rates*	Maximum Allowable:
Mounting Interface	DIN 24340-A6 ISO 4401-AB-03-4-A CETOP R35H 4.2-4-03, NFPA D03	100 SSU @ 49°C (120°F)	19.7 cc (1.2 Cu. in.) per Minute/Land @ 69 Bar (1000 PSI)*
Maximum Pressure	P, A, B 345 Bar (5000 PSI) Standard 207 Bar (3000 PSI) 10 Watt CSA 276 Bar (3750 PSI) Tank: 103 Bar (1500 PSI) AC only 207 Bar (3000 PSI) DC/AC Rectified Standard 207 Bar (3000 PSI) AC Optional CSA 103 Bar (1500 PSI)	*#008 and #009 Spools may exceed these rates. Consult Factory	73.8 cc (4.5 Cu. in.) per Minute/Land @ 207 Bar (3000 PSI)* Typical: 4.9 cc (0.3 Cu. in.) per Minute/Land @ 69 Bar (1000 PSI)* 26.2 cc (1.6 Cu. in.) per Minute/Land @ 345 Bar (5000 PSI)

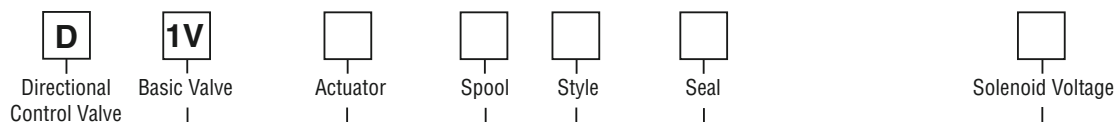
Response Time

Response time (milliseconds) at 345 Bar (5000 PSI) is 32 LPM (8.5 GPM).

Solenoid Type	Pull-In	Drop-Out
AC	13	20
DC 10 Watt	61	22
DC 30 Watt	51	21

	Orifice Size	Spool Center Condition					
		Closed		Open		2-Position	
Soft Shift		Energize	De-Energize	Energize	De-Energize	Energize	De-Energize
S2	0.020	125 ms	920 ms	200 ms	275 ms	51 ms	100 ms
S5	0.050	51 ms	675 ms	50 ms	27 ms	51 ms	21 ms

A



NFPA D03
 CETOP 3
 DIN NG6

Code Description
W* Solenoid,
 Wet Pin,
 Screw-in
HW* Reversed
 Wiring

Code Description
N Nitrile
V Fluorocarbon
E* EPR

* Contact HVD for
 availability.

Code Description
A** 24/50 VAC
D 120 VDC
G 198 VDC
J **24 VDC**
K **12 VDC**
L 6 VDC
N*** 220/50 VAC
P*** 110/50 VAC

Code Description
Q** 100/60 VAC
QD† 100/60 - 100/50 VAC
R 24/60 VAC
T **240/60 - 220/50 VAC**
U 98 VDC
Y **120/60 - 110/50 VAC**
Z 250 VDC

** High Watt only

*** Explosion Proof only.

† Available in DIN only.

* Valve schematic symbols are per NFPA/
 ANSI standards, providing flow P to A when
 energizing solenoid A. Note operators reverse
 sides for #008 and #009 spools. See installation
 information for details. To configure per DIN
 standards (A coil over A port, B coil over B port)
 code valves as D1VHW***.

Code	Symbol	Code	Symbol
001		011	
002		014	
003		015	
004		016	
005		020*	
006		026*	
007		030**	
008*, 009**		081	
010		082	

* 008, 020 & 026 spools have closed crossover.

** 009 & 030 spools have open crossover.

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.	

* 020, 026 and 030 spools only.

† 020 and 030 spools only.

‡ High Watt only.

Bold: Designates Tier I products and options.

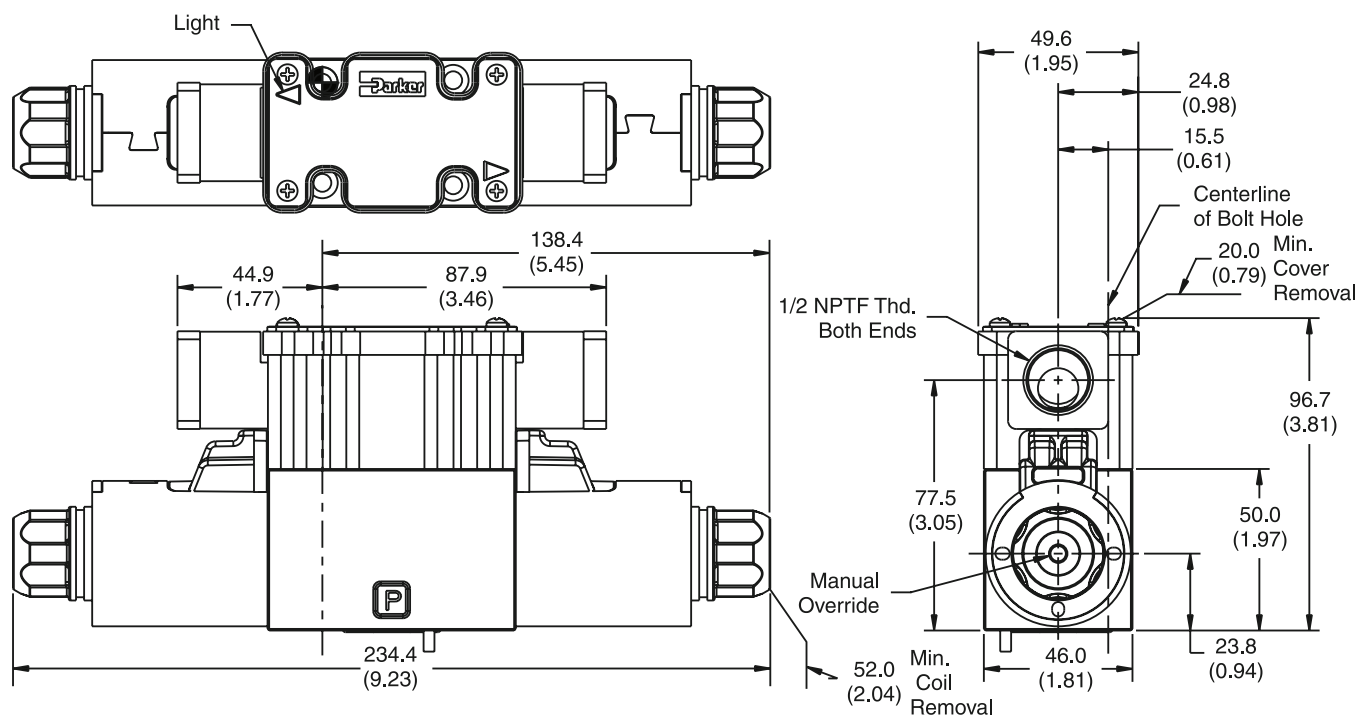
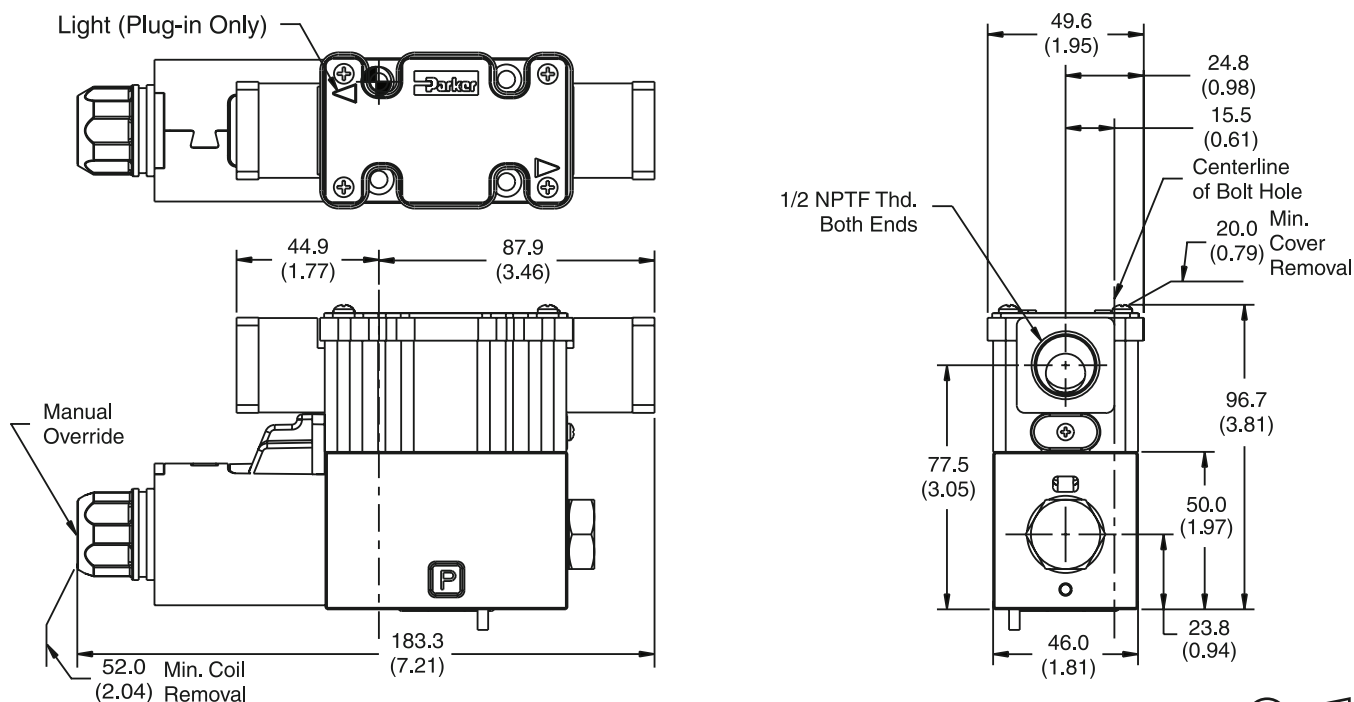
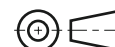
Non-Bold: Designates Tier II products and options. These products will have longer lead times.

Solenoid Connection		Coil Options		Tube Options		Manual Override Options		Electrical Options		Shift Response and Indication		Approvals		Valve Variations		Design Series	
Code	Description																
C*	Leadwire Conduit Box																
D**	Metric Plug (M12X1), DESINA																
E†	Explosion Proof																
G††	Plug-In Conduit Box																
J#	Deutsch (DT06-2S)																
M#	Metri-Pack (150)																
P	DIN with Plug																
S#	Dual Spade																
W†	DIN w/o Plug																
* No variations – See Plug-in.																	
** DC only, lights, diode surge suppressor, not CSA approved.																	
† Not available with lights.																	
†† Required for variations on conduit box style. Must have lights.																	
# DC only, no lights, not CSA approved.																	
Code	Description																
Omit*	High Watt																
D**	Explosion Proof, EEXD ATEX																
E**	Explosion Proof, EEXME ATEX																
F†	Low Watt																
L††	10 Watt																
O**	Explosion Proof, MSHA																
T#	Explosion Proof, Ex d IIC ATEX/CSA																
U**	Explosion Proof, UL/CSA																
* AC ambient temperature must not exceed 60°C (140°F).																	
** 60 Hz only on AC, no options.																	
† AC only.																	
†† DC and AC rectified only.																	
# J, K and Y voltages only. Dual frequency on AC, no options.																	
Code	Description																
Omit	No Options																
J**	Diode Surge Suppressor																
Z†	Rectified Coil																
† DC tube standard.																	
** DC only. DIN coil must have plug with lights.																	
Code	Description																
Omit	Standard																
T*†	No Override																
P*	Extended Manual Override w/Boot																
* Manual override options not available on explosion proof or soft shift.																	
† DC/AC rectified only.																	
Code	Description																
Omit	Standard Pressure																
	103.5 Bar (1500 PSI) AC																
	207 Bar (3000 PSI) DC																
H*	High Pressure, AC only																
	207 Bar (3000 PSI)																
* Not available with CSA.																	
Code	Description																
Omit	No Variations																
5**	Signal Lights																
56*	Manaplug (Mini) with Lights																
7B*	Manaplug (Micro) with Lights																
1C*	Manaplug (Mini) Single Sol. 5-pin, with Lights																
1D*	Manplug (Micro) Single Sol. 5-pin, with Lights																
1M*	Manaplug Opposite of Normal																
4D†	Twist & Lock Override (Old 5426, 33 Ford wiring)																
4E†	Push Manual Override (Old x5450)																
4F	Heavy Duty Detent																
1P	Painted Body																
7Y*	4-pin M12x1 Manaplug, special wiring with lights (Old B755)																
* Plug-in Conduit Box																	
** Plug-in, DIN, or DESINA only																	
† DC/AC Rectified only.																	
Not available with soft shift.																	

Bold: Designates Tier I products and options.

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

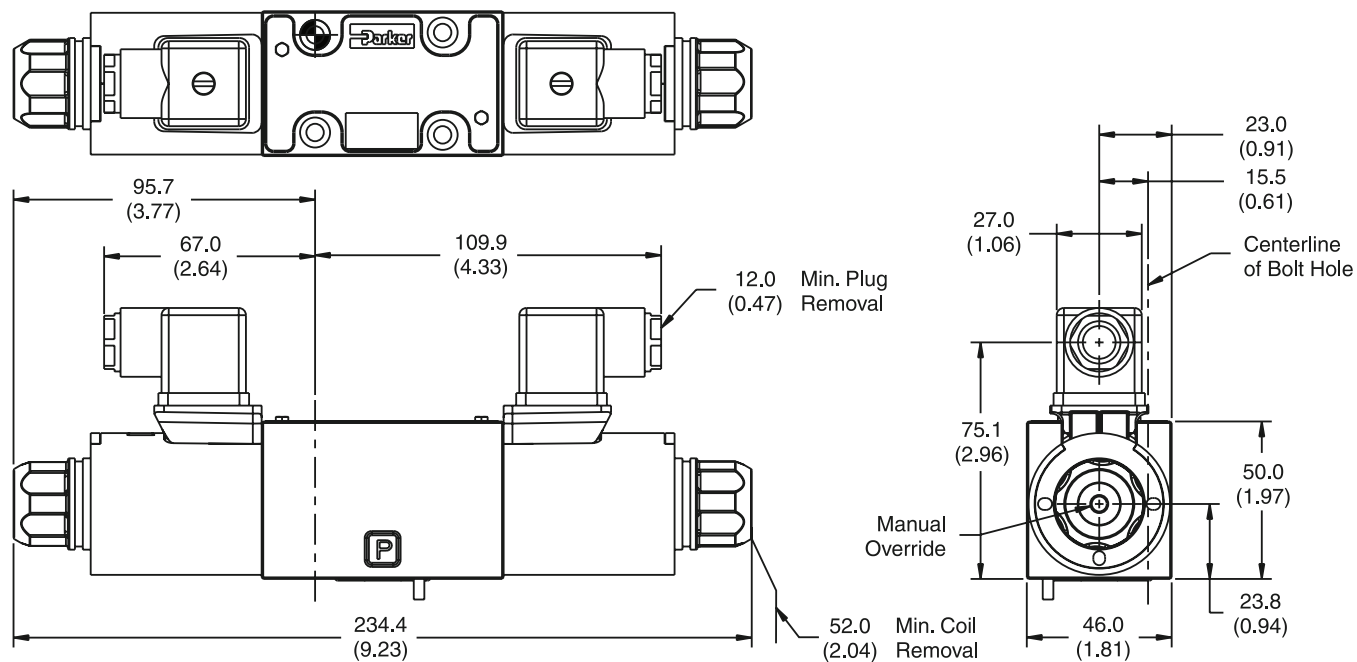
Inch equivalents for millimeter dimensions are shown in (**)

A**DC Plug-In Conduit Box Connector, with Lights, Double Solenoid****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.**DC Plug-In or Leadwire Conduit Box Connector, with or without Lights, Single Solenoid****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

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

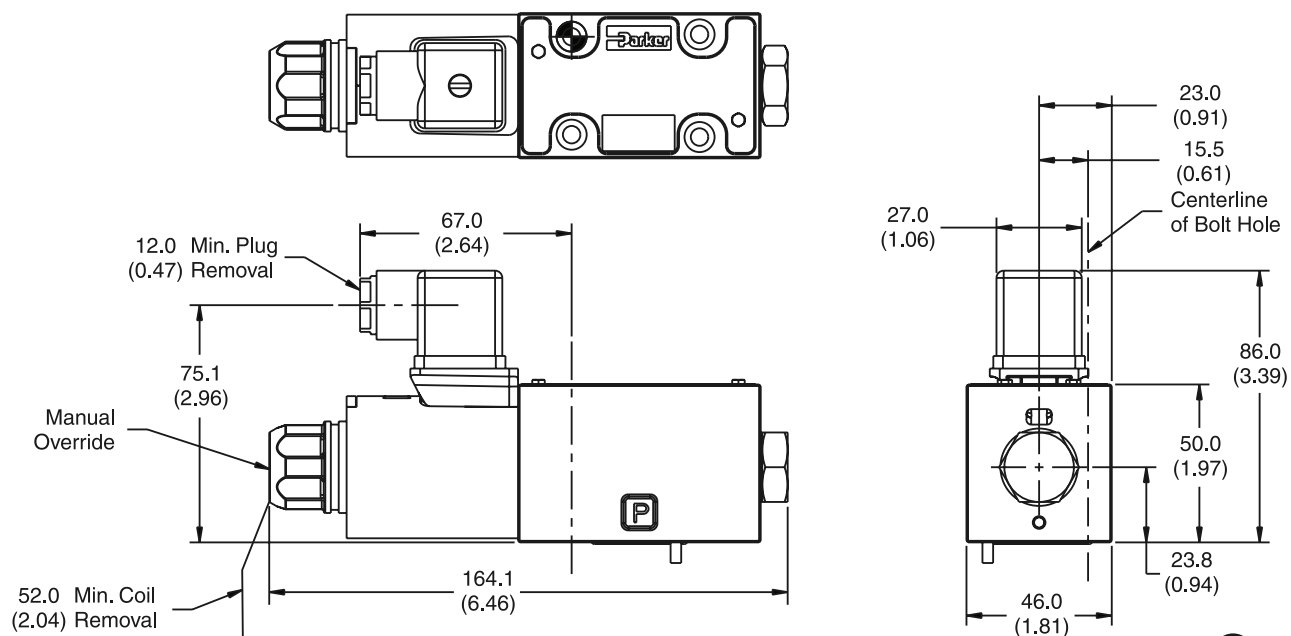
DC DIN with Plug Connector, Double Solenoid “P” Option Shown

A



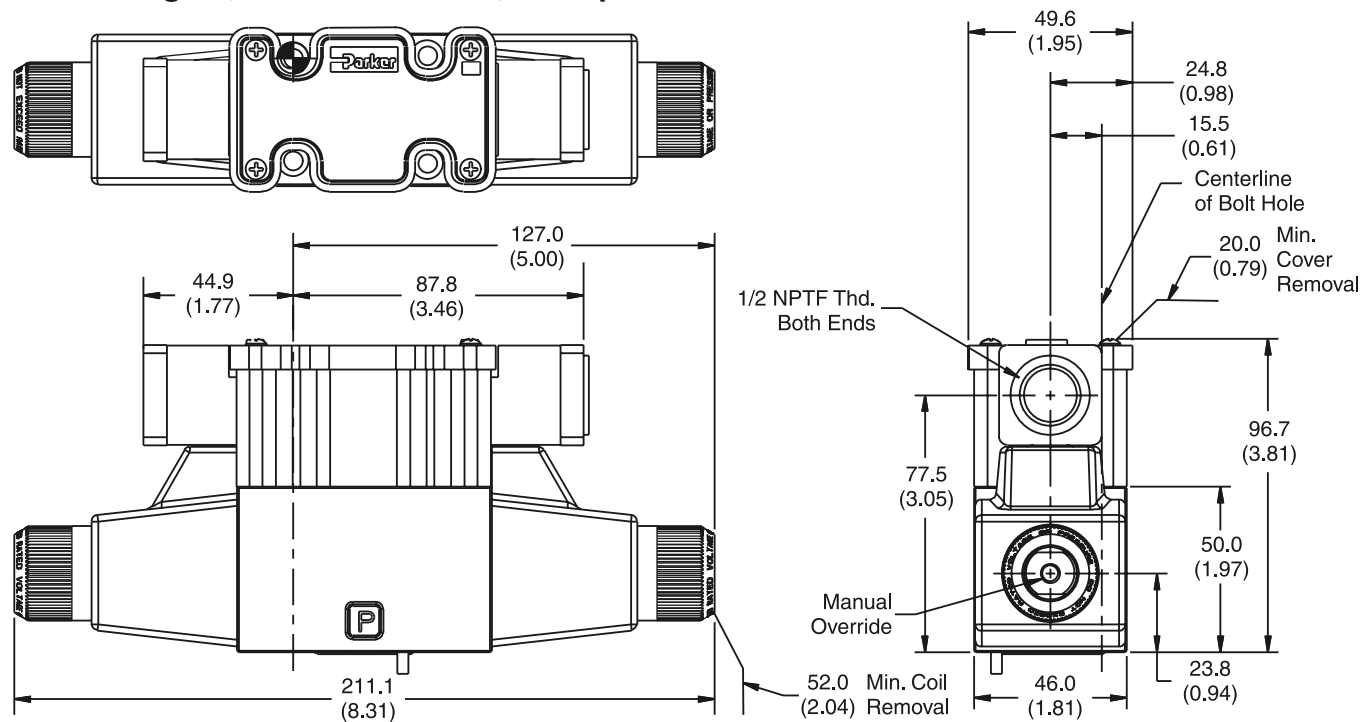
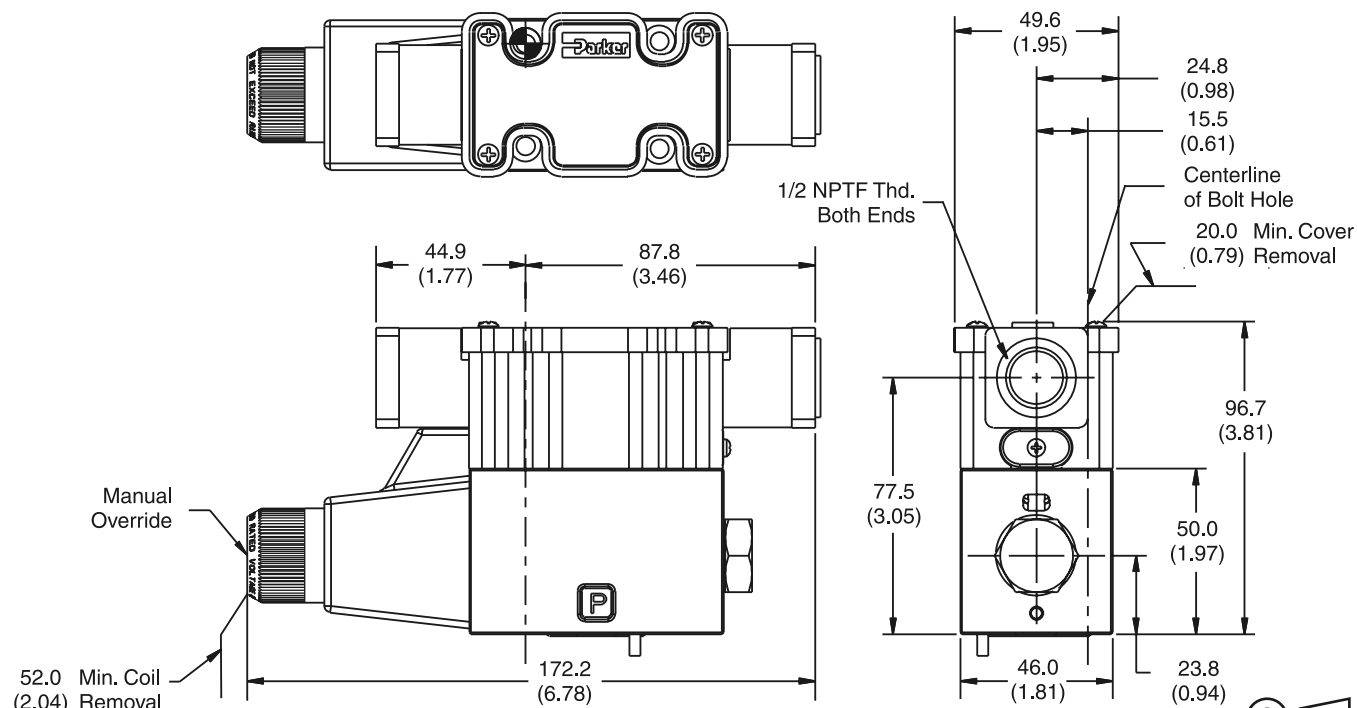
Note: 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

DC DIN Connector, Single Solenoid “P” Option Shown



Note: 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

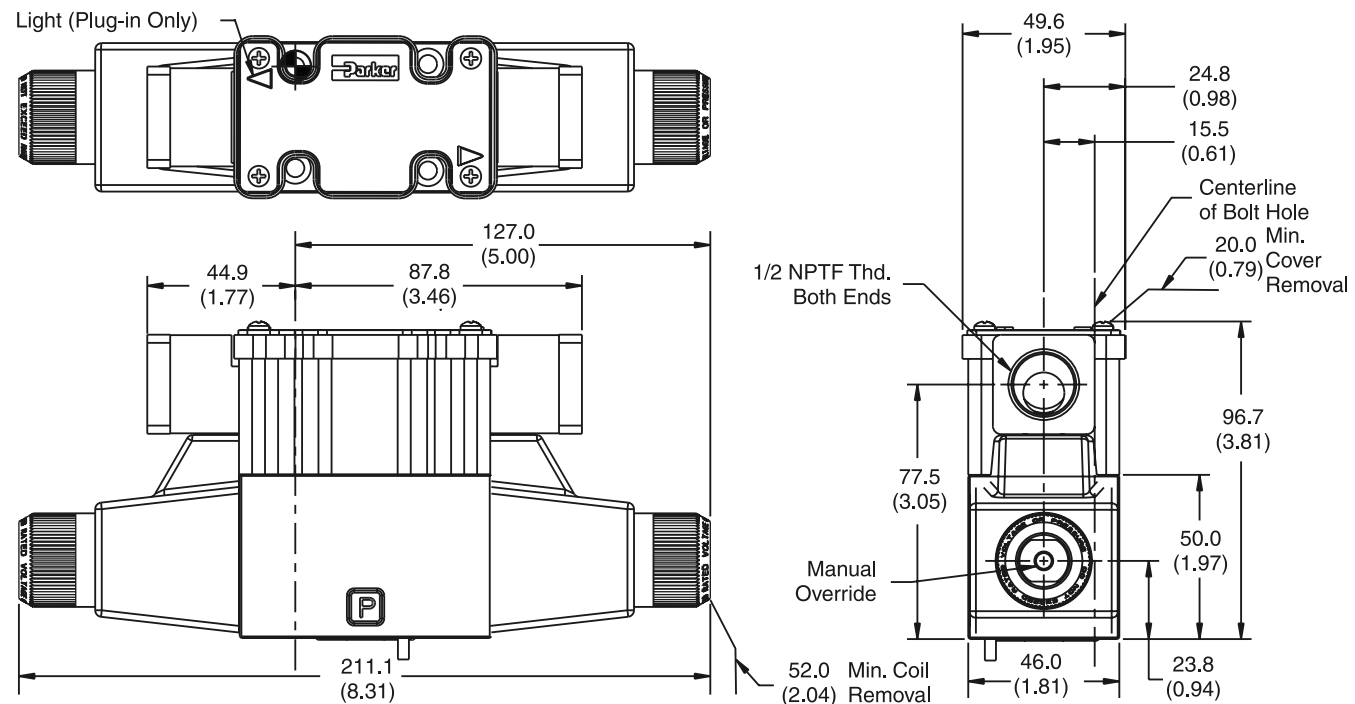
Inch equivalents for millimeter dimensions are shown in (**)

A**AC Leadwire Conduit Box Connector, without Lights, Double Solenoid, "C" Option****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.**AC Leadwire Conduit Box Connector, without Lights, Single Solenoid, "C" Option****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

D1.indd, dd

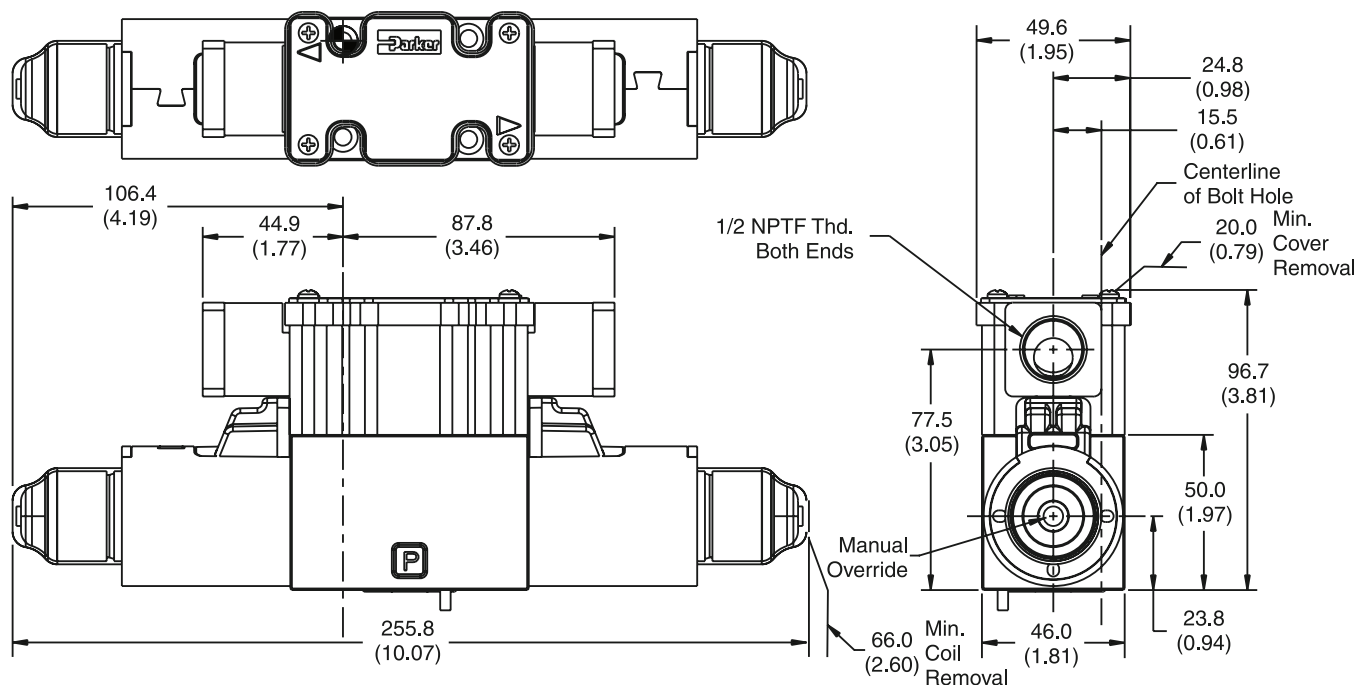
Inch equivalents for millimeter dimensions are shown in (**)

AC Plug-in Conduit Box Connector, with Lights, Double Solenoid, "G" Option



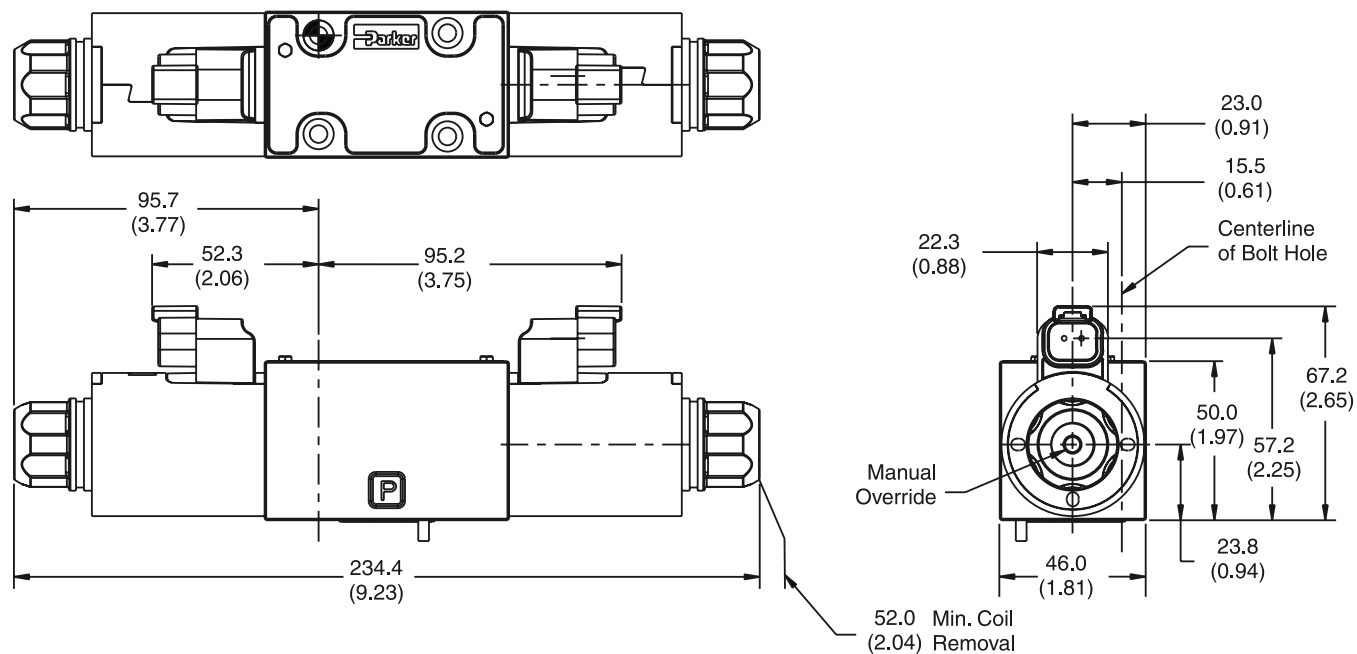
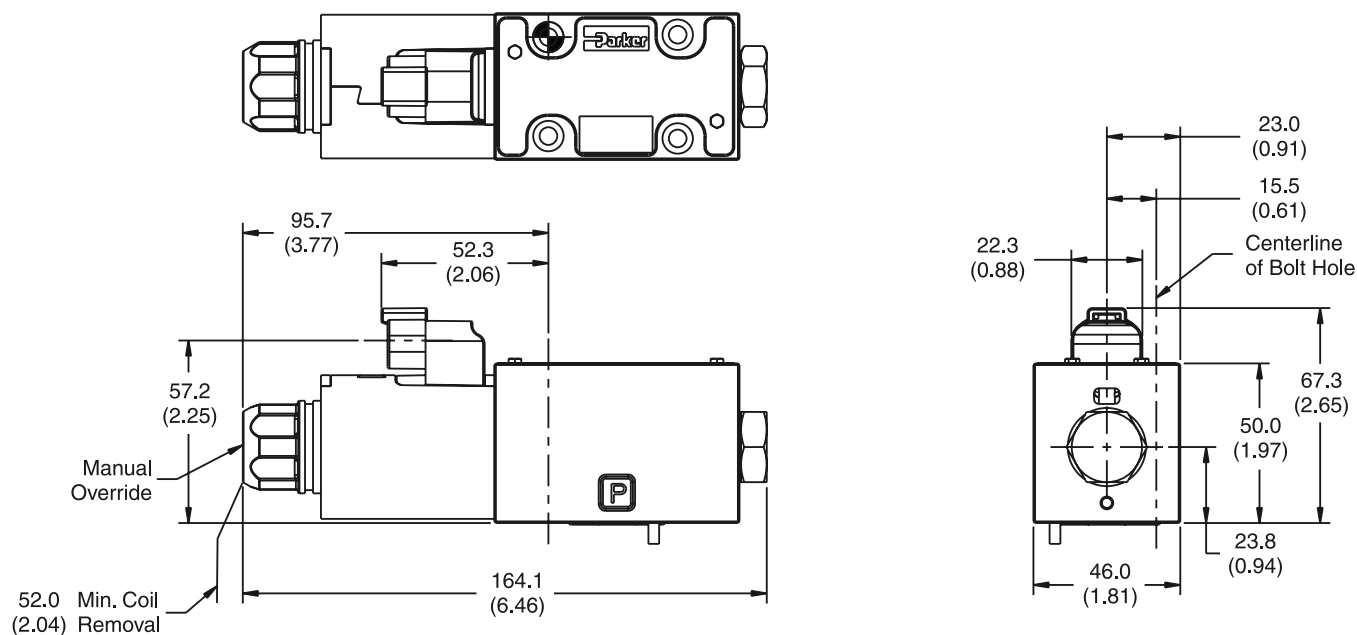
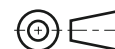
Note: 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

DC Plug-in or Leadwire Conduit Box Connector, with or without Lights and Extended Override Tubes, Double Solenoid

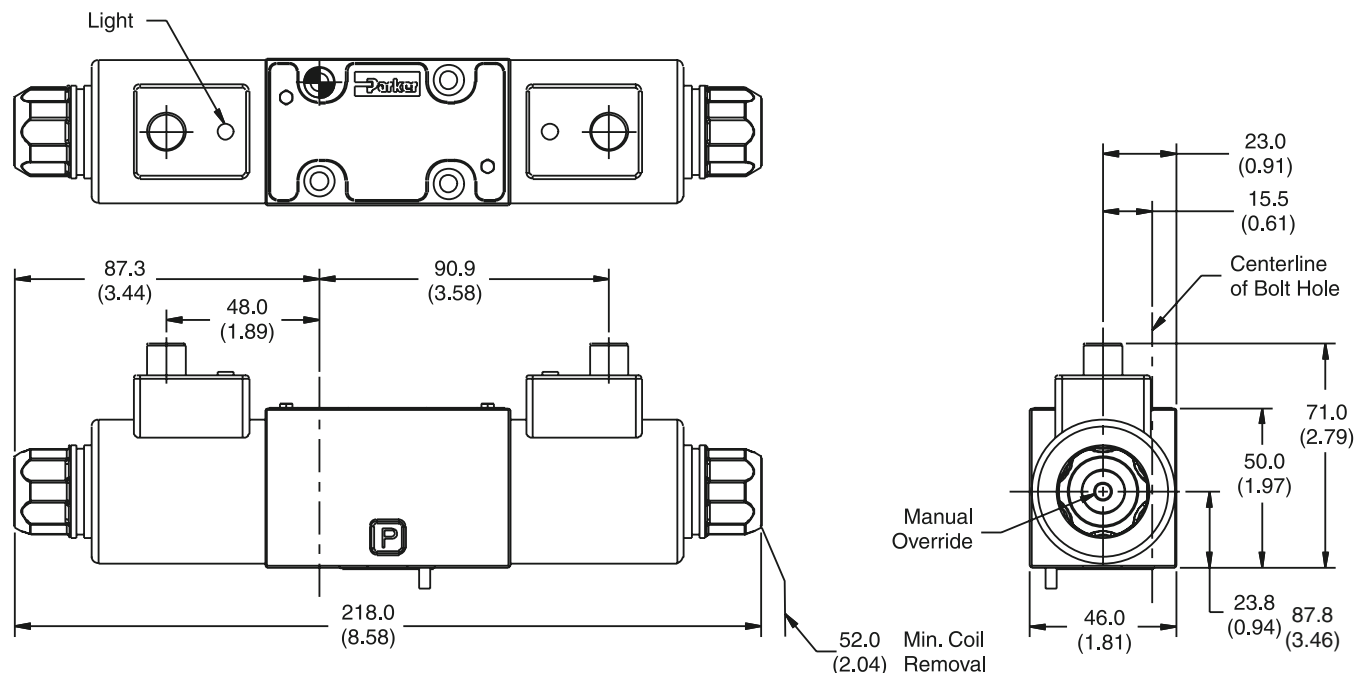
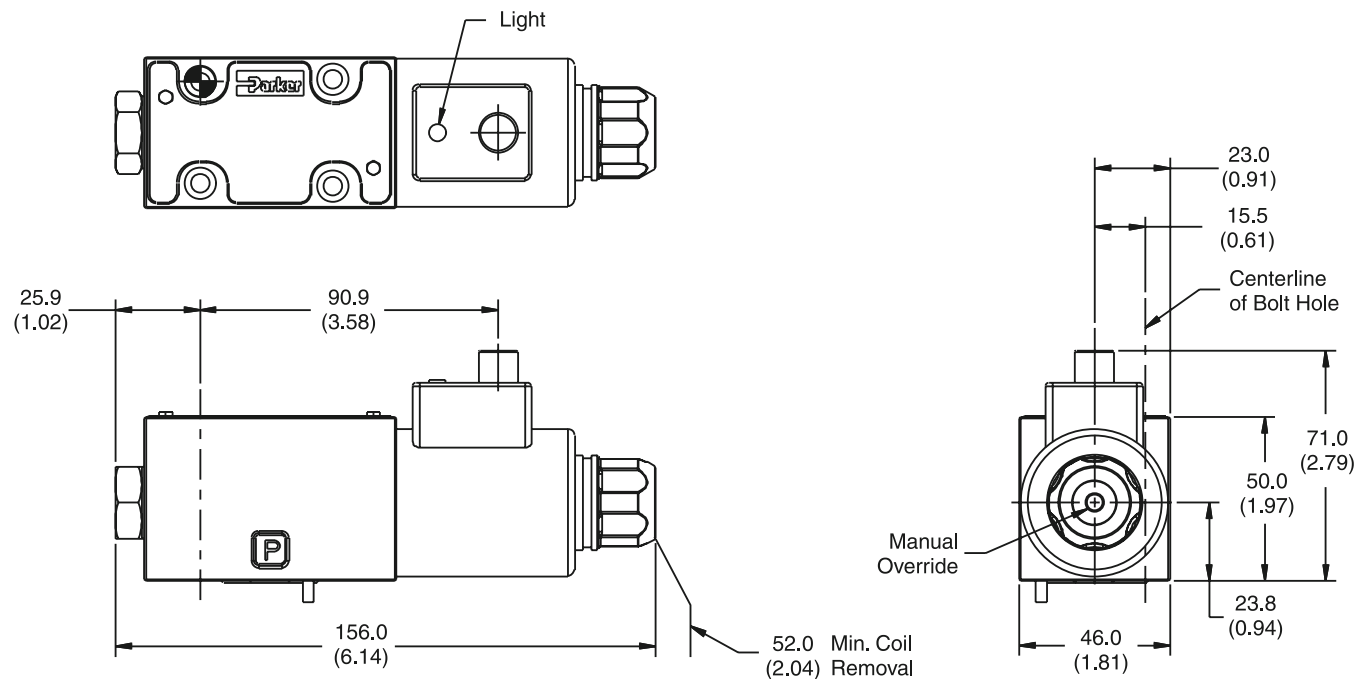
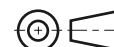


Note: 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

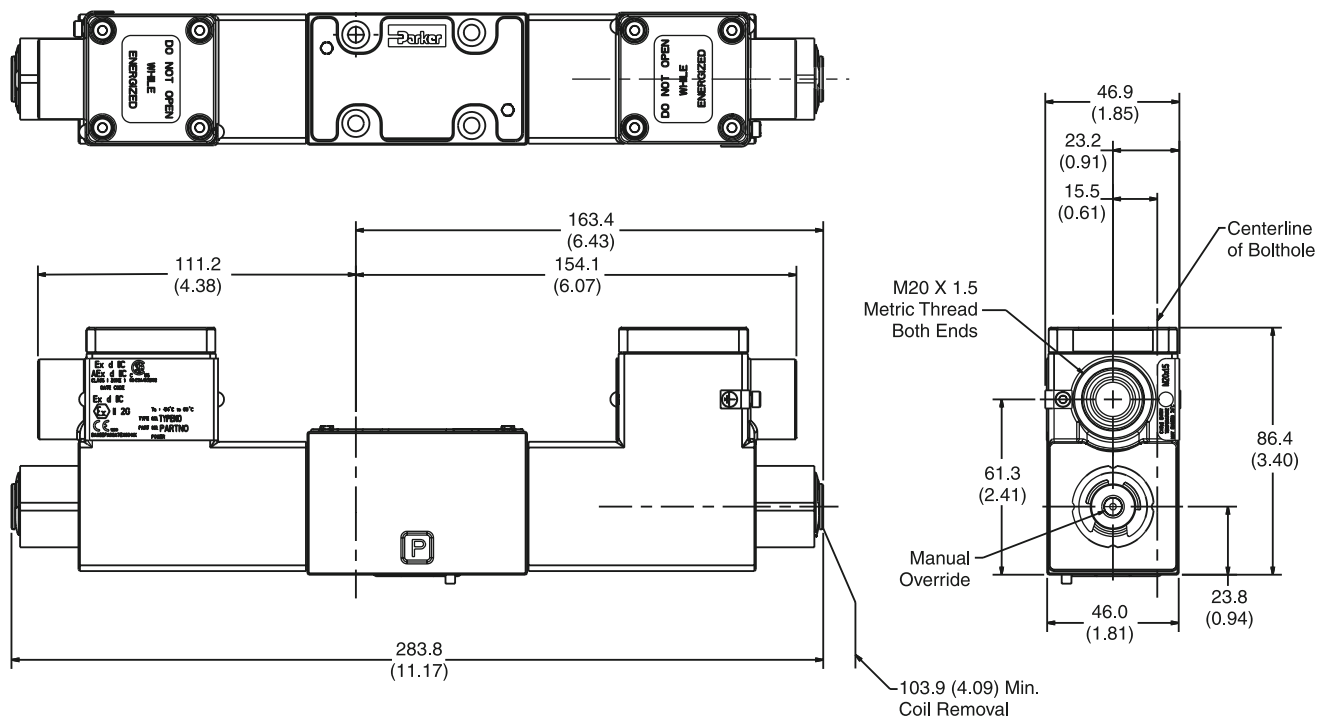
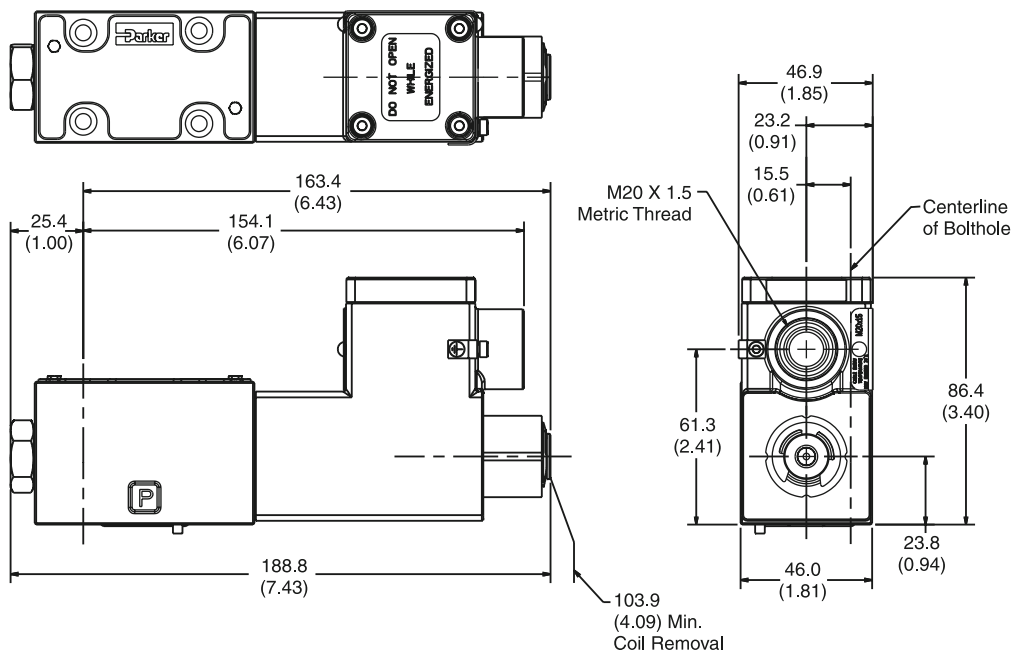
Inch equivalents for millimeter dimensions are shown in (**)

A**DC Deutsch Connector, Double Solenoid****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.**DC Deutsch Connector, Single Solenoid****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

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

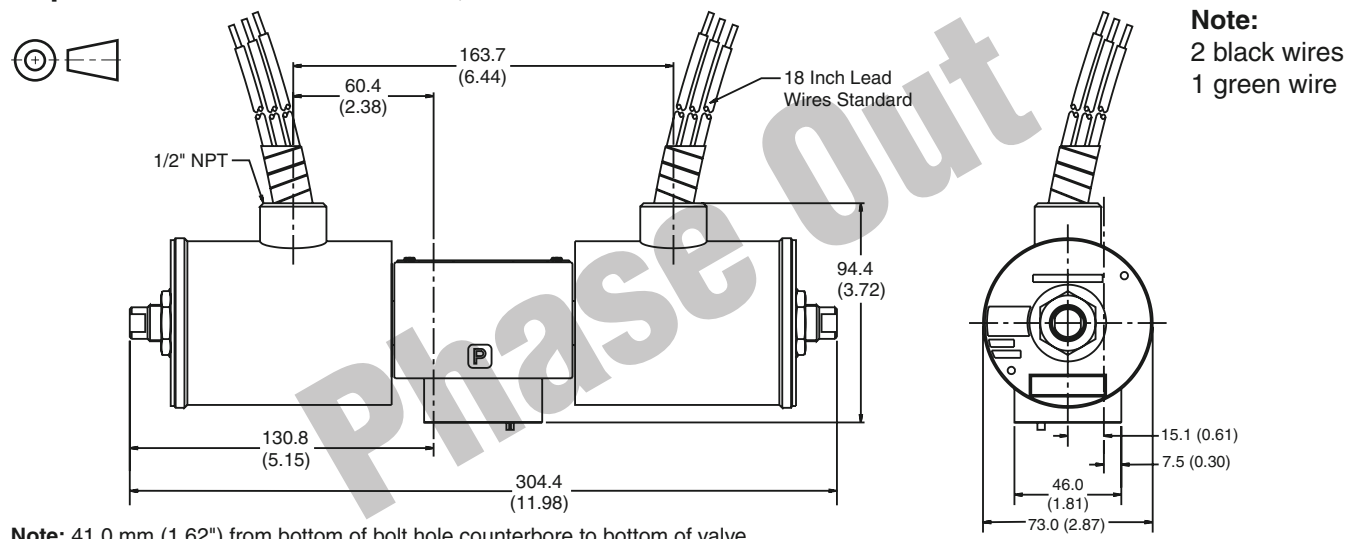
DC Desina Connector, Double Solenoid**A****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.**DC Desina Connector, Single Solenoid****Note:** 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.

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

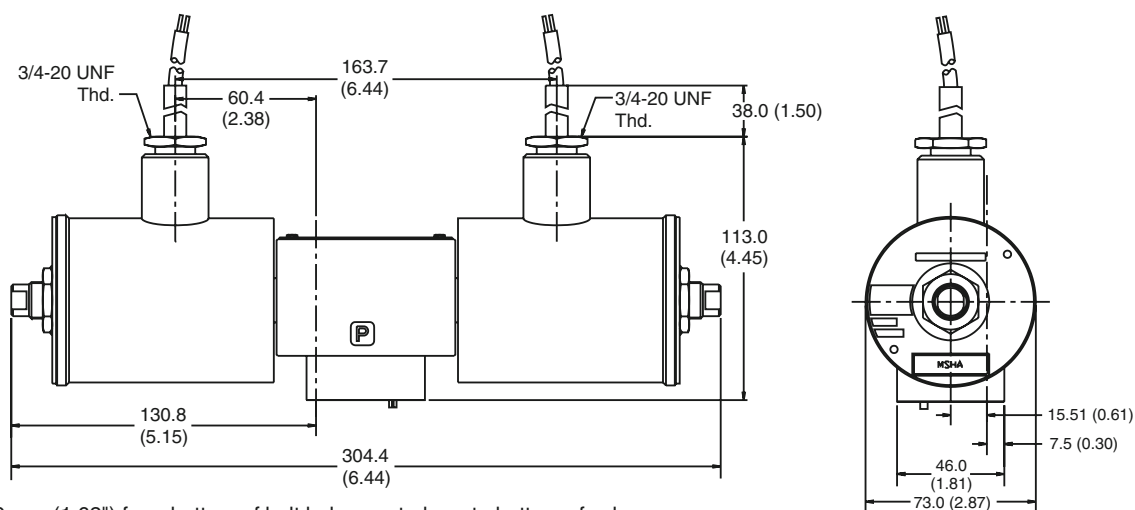
A**Explosion Proof, Ex d IIC ATEX/CSA, Double Solenoid****Explosion Proof, Ex d IIC ATEX/CSA, Single Solenoid**

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

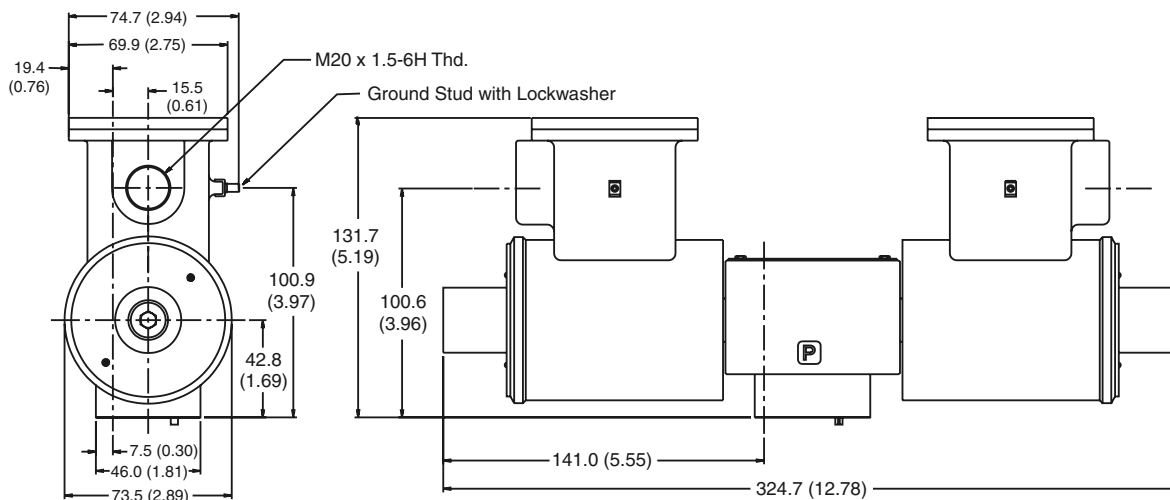
Explosion Proof U.L. & C.S.A., Double Solenoid



Explosion Proof M.S.H.A., Double Solenoid



Explosion Proof, EEXD ATEX, Double Solenoid

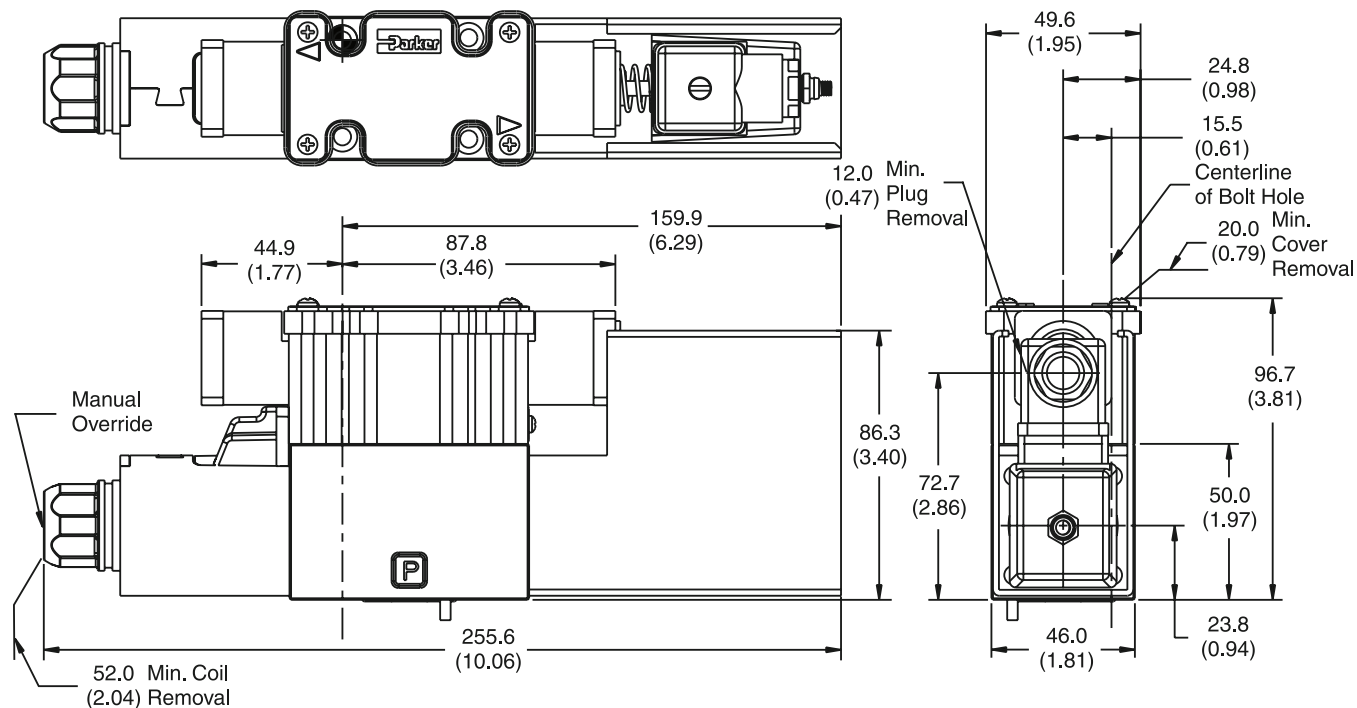


D1.indd, dd

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

A

DC Plug-in or Leadwire Conduit Box with Monitor Switch, with or without Lights, Single Solenoid



Note: 22.0 mm (0.87") from bottom of bolt hole counterbore to bottom of valve.



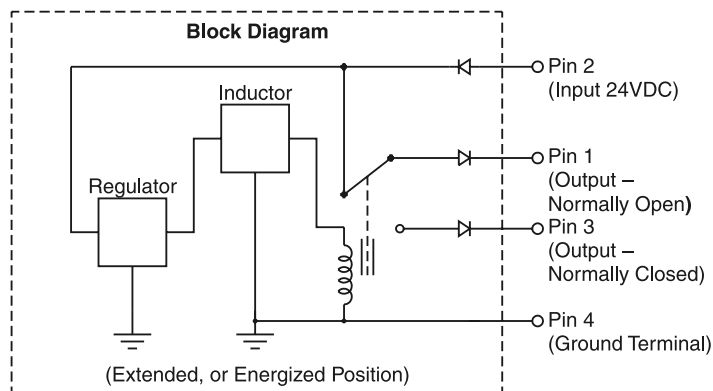
Monitor Switch

(Variation I7 and I8)

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

Switch Data

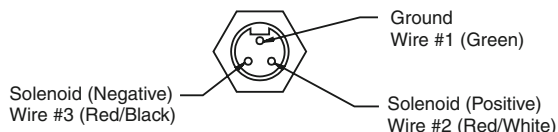
Inductive switch requiring +18-42 volt input. Outputs "A" and "B" are opposite; one at "0" voltage, the other at input voltage. During switching, "A" and "B" outputs reverse. Provides 0.4A switching current.



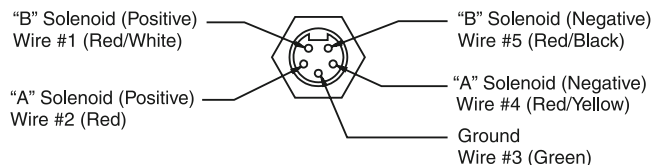
For repetitive switch power-up conditions, please consult factory.

Manaplug (Options 56 & 1C)

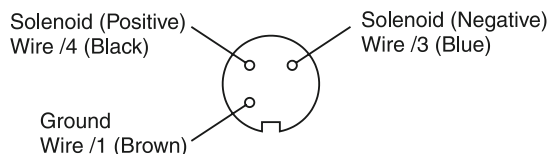
- Interface – Brad Harrison Plug
- 3-Pin for Single Solenoid
 - 5-Pin for Double Solenoid

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

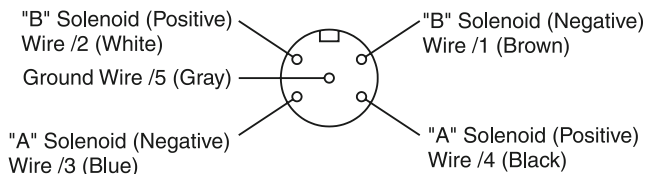
Single Solenoid Valves – Installed Opposite Side of Solenoid

**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)**Micro Connector Options (7B & 1D)****3-Pin Manaplug (Micro) with Lights**

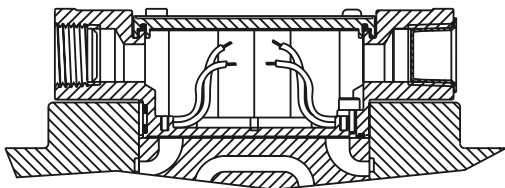
Single Solenoid Valves – Installed Opposite Side of Solenoid

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

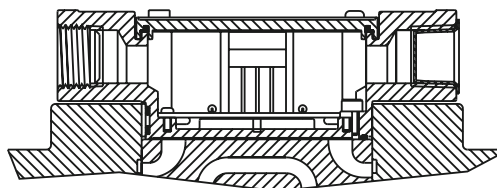
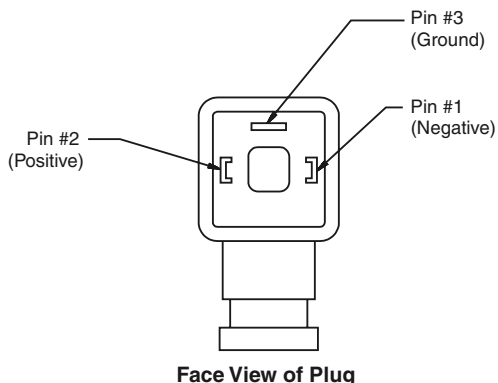
Single Solenoid Valves – Installed Opposite Side of Solenoid

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)****Conduit Box Option C**

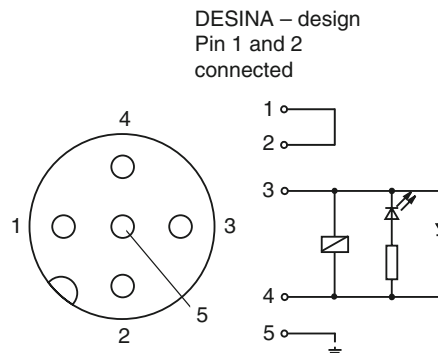
- No Wiring Options Available

**Signal Lights (Option 5) — Plug-in Only**

- LED Interface
- Meets Nema 4/IP67

**Hirschmann Plug with Lights (Option P5)****ISO 4400/DIN 43650 Form "A"****Pins are as seen on valve (male pin connectors)****DESINA Connector (Option D)****M12 pin assignment
Standard**

- 1 = Not used
- 2 = Not used
- 3 = 0V
- 4 = Signal (24 V)
- 5 = Earth Ground



Mounting Bolt Kits

A

Bolt Kits for use with D1V Directional Control Valves, "ET" Explosion Proof & Sandwich Valves (D1V*-91, 82 & 70/75 Design, Solenoid Operated & D1V*-72 Design, Non-Solenoid Operated)

		Number of Sandwich Valves @40mm (1.58") thickness									
		0		1		2		3		4	
Number of Sandwich Valves at 44.5mm (1.75") Thickness	0	BK209	1.25 in.	BK243	2.88 in.	BK225	4.38 in.	BK244	6.00 in.	BK245	7.50 in.
		BKM209	30 mm	BKM243	70 mm	BKM225	110 mm	BKM244	150 mm	BKM245	190 mm
	1	BK246	3.00 in.	BK247	4.62 in.	BK248	6.12 in.	BK249	7.75 in.		
		BKM246	75 mm	BKM247	115 mm	BKM248	155 mm	BKM249	195 mm		
	2	BK250	4.75 in.	BK251	6.38 in.	BK252	7.88 in.				
		BKM250	120 mm	BKM251	160 mm	BKM252	200 mm				
	3	BK253	6.50 in.	BK254	8.12 in.						
		BKM102	170 mm	BKM254	205 mm						
	4	BK103	8.25 in.								
		BKM103	210 mm								

Note: All bolts are SAE Grade 8, 10-24 UNC 2A thread (Metric-M5-0.8)

Torque to 5.6 Nm (50 in-Lb).

Bolt Kits for use with D1V Directional Control Valves with Explosion Proof Coils & Sandwich Valves (D1V*-91, 82 & 70/75 Design) Except "ET" Coil

		Number of Sandwich Valves @40mm (1.58") thickness									
		0		1		2		3		4	
Number of Sandwich Valves at 44.5mm (1.75") Thickness	0	BK50	2.00 in.	BK211	3.63 in.	BK101	5.12 in.	BK102	6.75 in.	BK103	8.25 in.
		BKM50	50 mm	—		BKM101	130 mm	BKM102	170 mm	BKM103	210 mm
	1	BK51	3.75 in.	BK212	5.37 in.	BK105	6.87 in.	BK106	7.75 in.		
		BKM51	95 mm	—		BKM105	180 mm	BKM106	195 mm		
	2	BK52	5.50 in.	BK213	7.13 in.	BK108	8.62 in.				
		BKM52	140 mm	—		BKM108	220 mm				
	3	BK53	7.25 in.	BK214	8.87 in.						
		BKM53	185 mm	—							
	4	BK54	9.00 in.								
		BKM54	230 mm								

Note: All bolts are SAE Grade 8, 10-24 UNC 2A thread (Metric-M5-0.8)

Torque to 5.6 Nm (50 in-Lb).

Sandwich Valve Dimensional Data

All D03 Sandwich valves (starting with 31 Series) including CM2, CPOM2, FM2, PRDM2 and RM2 measure 40mm (1.58") thickness.

For additional technical information about Sandwich valves, refer to the Sandwich Valve Section of this Catalog.

