

### General Description

The D1VW Series 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

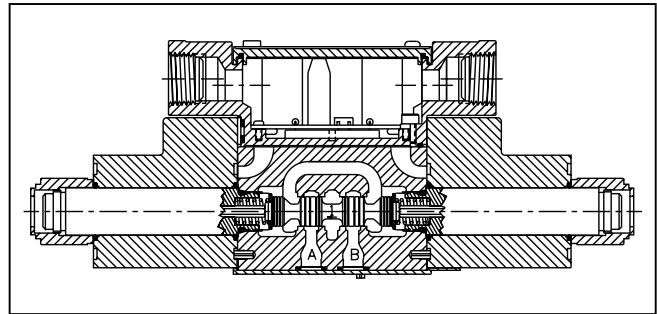
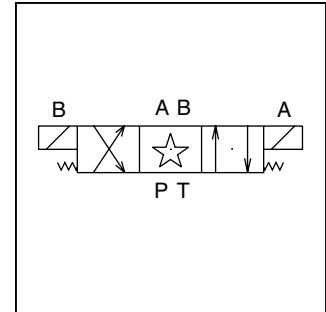
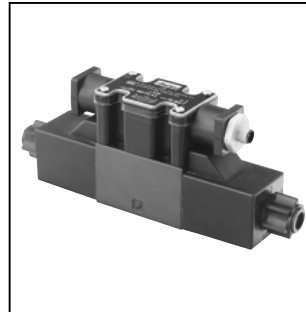
- Mechanically tunable soft shift
- Proportional spools, 21 standard spool styles available
- Repairable override
- DC surge suppression
- Nine electrical connection options
- AC & DC lights available (CSA approval for solenoids and lights)
- Internally ground
- Easy access mounting bolts
- Waterproof (NEMA 4 rated)
- Explosion proof
- CSA approved and U.L. recognized available
- No tools required for coil removal
- AC rectified coils

### Response Time\*



Nominal response time (milliseconds) at 345 Bar (5000 PSI) is 32 L/M (8.5 GPM).

Solenoid Type	Pull-In	Drop-Out
AC	13	20
DC 8 Watt or 10 Watt	61	22
DC 30 Watt	51	21

\* For soft shift, see ordering code X-number.

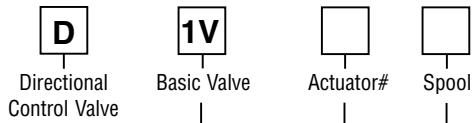


### Specifications

<b>Mounting Pattern</b>	NFPA D03, CETOP 3; NG 6
<b>Mounting Interface</b>	DIN 24340-A6 ISO 4401-AB-03-4-A CETOP R35H 4.2-4-03, NFPA D03
<b>Maximum Pressure</b>	P, A, B 345 Bar (5000 PSI) Standard CSA  276 Bar (4000 PSI) Tank: 103 Bar (1500 PSI) Standard 207 Bar (3000 PSI) Optional with H, FH, G, LG CSA  103 Bar (1500 PSI)

**Standard Valves**

**A**



2MD  
 NFPA D03  
 CETOP 3  
 DIN NG6

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

# 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	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
Q	100/60 VAC
R	24/60 VAC
T	240/60 - 220/50 VAC
U	98 VDC
Y	120/60 - 110/50 VAC
Z	250 VDC

Code	Symbol	Code	Symbol
001		014	
002		015	
003		016	
004		020*	
005		021	
006		022	
007		026*	
008*, 009**		030**	
010		081	
011		082	

Code	Description	Symbol
B*	2 position, spring offset P to A	
C	3 position, spring centered	
D†	2 position, detent, P to A and B to T	
E	2 position, spring centered and P to B	
F	2 position, spring offset P to A and centered	
H*	2 position, spring offset P to B	
K	2 position, spring centered and P to A	
M	2 position, spring offset P to B and centered	

\* 020, 026 and 030 spools only.  
 † 020 and 030 spools only.

\* 008, 020 & 026 spools have closed crossover.  
 \*\* 009 & 030 spool have open crossover.  
 See Universal Spool Chart for other spool options.

2502-A1.p65, dd



**Standard Valves**



□  
Solenoid Connection

□  
Coil Options

□  
Tube Options

□  
Manual Override Options

□  
Electrical Options

□  
Shift Response and Indication

□  
Approvals

□  
Valve Variations

□  
Design Series

NOTE:  
Not required when ordering.

Code	Description
C	Conduit Box
D	Metric Plug (M12X1), DESINA
E	Explosion Proof Plug-In
H†	Single Spade
J**†	Deutsch (DT06-25)
L	Dual Screw Lug
M**†	Metri-Pack (150)
P	DIN with Plug
S	Double Spade
W*	DIN w/o Plug

\* Not available with lights.  
 \*\* See valve variations for others.  
 † DC only.

Code	Description
Omit	Standard Response
S2*	Soft Shift, 0.020" Orifice
S3*	Soft Shift, 0.030" Orifice
S4*	Soft Shift, 0.040" Orifice
S5*	Soft Shift, 0.050" Orifice
S6*	Soft Shift, 0.060" Orifice
SN*	Soft Shift, No Orifice
I7	Monitor Switch Direct Op. End Stroke
I8	Monitor Switch Direct Op. Start Stroke

\* Not available with 8 watt.

Code	Description
Omit	High Watt
D	Explosion Proof, EEXD ATEX
E	Explosion Proof, EEXME ATEX
F**	Low Watt
C†	CSA Hazardous Location
L***	8 Watt
O	Explosion Proof, MSHA
U	Explosion Proof, UL/CSA
X*	No Coils

\* See solenoid voltage code to specify proper tube.  
 \*\* AC only.  
 \*\*\* DC/AC Rectified only.  
 † Applicable to conduit box and plug-in style only.

Code	Description
Omit	No Options
J	Diode Surge Suppressor
B	Rectified Coil

Code	Description
Omit	Standard Valve
4*	C.S.A. Approved
K	UL Recognition

\* Not available with high pressure tube.

Code	Description
Omit	Standard
P	Extended with Boot
T	None
R	Repairable
W	Waterproof Override Protection

Code	Description
5	Signal Lights
6	Manaplug - Brad Harrison Mini
7A	Manaplug - Brad Harrison (12x1) Micro
56	Manaplug (Mini) with Lights
7B	Manaplug (Micro) with Lights (D1 only)
1A	Manaplug (Mini) Single Sol. 5-pin
1B	Manaplug (Micro) Single Sol. 5-pin
1C	Manaplug (Mini) Single Sol. 5-pin, with Lights
1D	Manaplug (Micro) Single Sol. 5-pin, with Lights
4D	Twist & Lock Override (Old 5426)
4E	Push Manual Override (Old x5450)

Code	Description
Omit	Low Pressure, AC only
H	High Pressure, AC only
M	Low Pressure, DC-WI only
G	High Pressure, DC-WI only

**Valve Weight:**

Single Solenoid 1.36 kg (3.0 lbs.)  
 Double Solenoid 1.6 kg (3.5 lbs.)

**Standard Bolt Kit:** BK209

**Metric Bolt Kit:** BKM209

**Solenoid Ratings**

Insulation System	Class F
Allowable Deviation from rated voltage	-10% to +15% for DC and AC rectified coils -5% to +5% for AC Coils
Armature	Wet pin type
CSA File Number	LR60407
Environmental Capability	DC Solenoids are rated at NEMA 4 (IP67) or better when properly wired and installed. Contact HVD for AC coil applications.

**Explosion Proof Solenoid Ratings\***

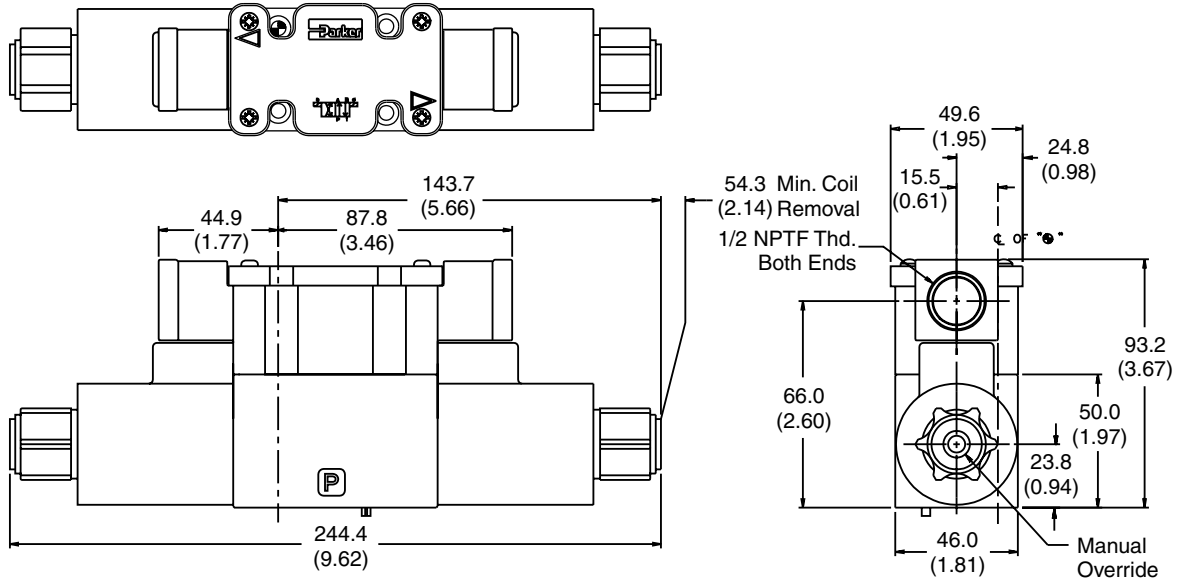
U.L. & CSA (EU)	Class I, Div 1 & 2, Groups C & D Class II, Div 1 & 2, Groups E, F & G As defined by the NEC
M.S.H.A. (EO)	Complies with 30CFR, Part 18
ATEX (ED)	Complies with ATEX requirements for: Exd, Group IIB; EN50014: 1999+ Amds. 1 & 2, EN50018: 2000
CSA Hazardous Location	Class II, Groups E, F & G

\* Allowable Voltage Deviation +/- 10%  
 Note that AC coils are single frequency only.

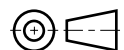
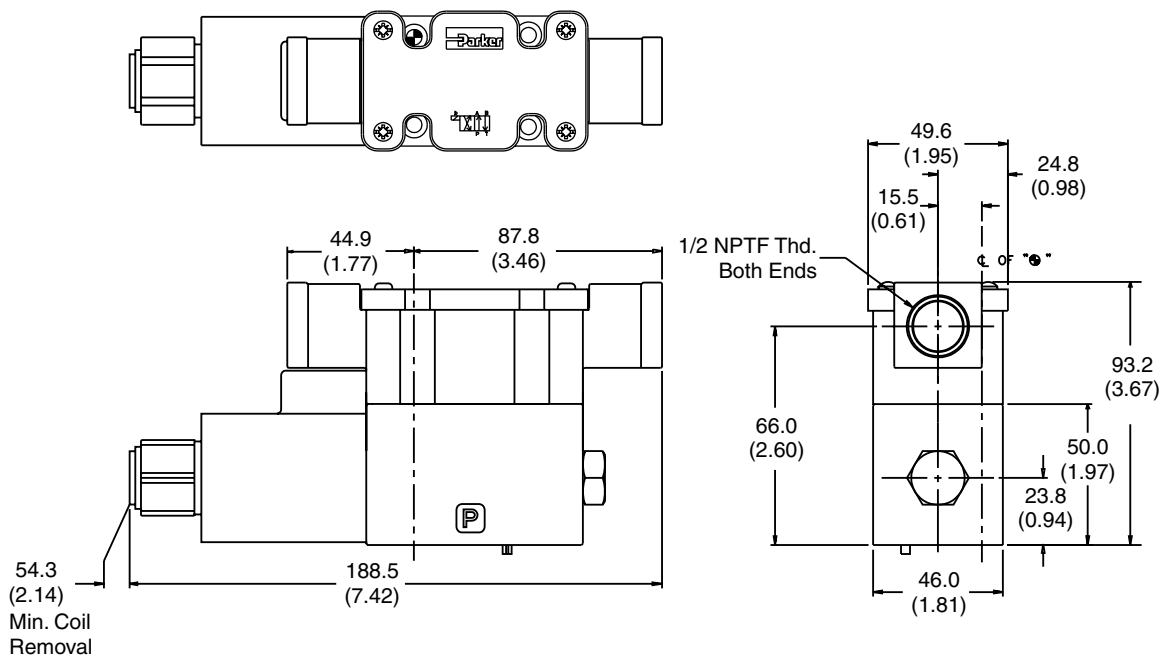
Code		Voltage	In Rush Amps Amperage	In Rush Amps D1VW VA @ 3MM	Holding Amps D1VW	Watts D1VW	Resistance D1VW
Voltage Code	Power Code						
<b>A</b>		24/50 VAC, High Watt	7.00 Amps	168 VA	2.65 Amps	28 W	1.67 ohm(s)
<b>D</b>	<b>L</b>	120 VDC	N/A	N/A	0.09 Amps	10 W	1584.00 ohm(s)
			N/A	N/A	0.26 Amps	30 W	528.00 ohm(s)
<b>E</b>		24/60 VAC, High Watt	6.00 Amps	144 VA	1.85 Amps	20 W	1.67 ohm(s)
		24/50 VAC, High Watt	7.00 Amps	168 VA	2.65 Amps	28 W	1.67 ohm(s)
<b>G</b>	<b>L</b>	198 VDC	N/A	N/A	0.05 Amps	10 W	3920.40 ohm(s)
			N/A	N/A	0.15 Amps	30 W	1306.80 ohm(s)
<b>J</b>	<b>L</b>	24 VDC	N/A	N/A	0.44 Amps	10 W	51.89 ohm(s)
			N/A	N/A	1.32 Amps	30 W	17.27 ohm(s)
<b>K</b>	<b>L</b>	12 VDC	N/A	N/A	0.88 Amps	10 W	12.97 ohm(s)
			N/A	N/A	2.64 Amps	30 W	4.32 ohm(s)
<b>L</b>	<b>L</b>	6 VDC	N/A	N/A	1.67 Amps	10 W	3.59 ohm(s)
			N/A	N/A	5.00 Amps	30 W	1.20 ohm(s)
<b>M</b>	<b>L</b>	9 VDC	N/A	N/A	1.11 Amps	10 W	8.12 ohm(s)
			N/A	N/A	3.35 Amps	30 W	2.67 ohm(s)
<b>P</b>		110/50 VAC			0.38 Amps	19 W	135.00 ohm(s)
<b>R</b>		24/60 VAC, High Watt	8.00 Amps	192 VA	2.70 Amps	27 W	1.40 ohm(s)
	<b>F</b>	24/60 VAC, Low Watt	6.67 Amps	160 VA	2.20 Amps	23 W	1.52 ohm(s)
<b>S</b>	<b>***Specials***</b>	SEE BELOW					
<b>T</b>		240/60 VAC, High Watt	0.77 Amps	185 VA	0.26 Amps	25 W	134.50 ohm(s)
		220/50 VAC, High Watt	0.82 Amps	180 VA	0.31 Amps	27 W	134.50 ohm(s)
	<b>F</b>	240/60 VAC, Low Watt	0.70 Amps	168 VA	0.22 Amps	21 W	145.00 ohm(s)
	<b>F</b>	220/50 VAC, Low Watt	0.75 Amps	165 VA	0.26 Amps	23 W	145.00 ohm(s)
<b>U</b>	<b>L</b>	98 VDC	N/A	N/A	0.10 Amps	10 W	960.00 ohm(s)
<b>X</b>	<b>L</b>	16 VDC	N/A	N/A	0.63 Amps	10 W	25.60 ohm(s)
<b>Y</b>		120/60 VAC, High Watt	1.55 Amps	186 VA	0.49 Amps	25 W	33.70 ohm(s)
		110/50 VAC, High Watt	1.65 Amps	182 VA	0.58 Amps	27 W	33.70 ohm(s)
	<b>F</b>	120/60 VAC, Low Watt	1.40 Amps	168 VA	0.42 Amps	21 W	36.50 ohm(s)
	<b>F</b>	110/50 VAC, Low Watt	1.50 Amps	165 VA	0.50 Amps	23 W	36.50 ohm(s)
	<b>L*B</b>	120/60 VAC, 10 Watt	0.63 Amps	83 VA	0.18 Amps	10 W	75.00 ohm(s)
	<b>L*B</b>	110/50 VAC, 10 Watt	0.73 Amps	79 VA	0.20 Amps	10 W	75.00 ohm(s)
	<b>*H</b>	120/60 VAC, High Pressure	1.40 Amps	168 VA	0.50 Amps	26 W	36.50 ohm(s)
	<b>*H</b>	110/50 VAC, High Pressure	1.48 Amps	163 VA	0.60 Amps	28 W	36.50 ohm(s)
<b>Z</b>	<b>L</b>	250 VDC	N/A	N/A	0.04 Amps	10 W	6875.00 ohm(s)
			N/A	N/A	0.13 Amps	30 W	1889.64 ohm(s)
<b>Specials S</b>	Other voltages/frequencies may be available Contact HVD for more information						
<b>Explosion Proof Solenoids</b>							
<b>R</b>		24/60 VAC	7.63 Amps	183 VA	2.85 Amps	27 W	1.99 ohm(s)
<b>T</b>		240/60 VAC	0.76 Amps	183 VA	0.29 Amps	27 W	1.34 ohm(s)
<b>N</b>		220/50 VAC	0.77 Amps	169 VA	0.31 Amps	27 W	1.38 ohm(s)
<b>Y</b>		120/60 VAC	1.60 Amps	192 VA	0.58 Amps	27 W	33.50 ohm(s)
<b>P</b>		110/50 VAC	1.47 Amps	162 VA	0.57 Amps	27 W	34.70 ohm(s)
<b>Q</b>		100/60 VAC	1.90 Amps	192 VA	0.70 Amps	27 W	38.60 ohm(s)
<b>K</b>		12 VDC	N/A	N/A	2.75 Amps	33 W	4.36 ohm(s)
<b>J</b>		24 VDC	N/A	N/A	1.38 Amps	33 W	17.33 ohm(s)
<b>D</b>		120 VDC	N/A	N/A	0.28 Amps	33 W	420.92 ohm(s)
<b>Z</b>		250 VDC	N/A	N/A	0.13 Amps	33 W	1952.66 ohm(s)

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

**Plug-In Box, Double DC Solenoid**



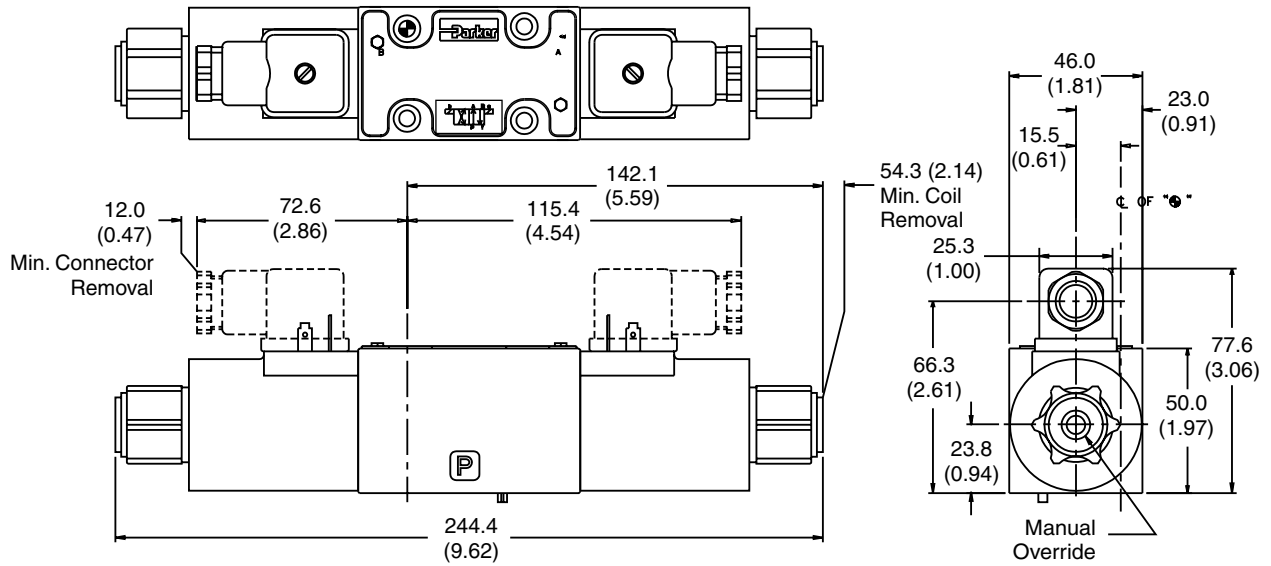
**Plug-In Box, Single DC Solenoid**



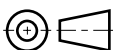
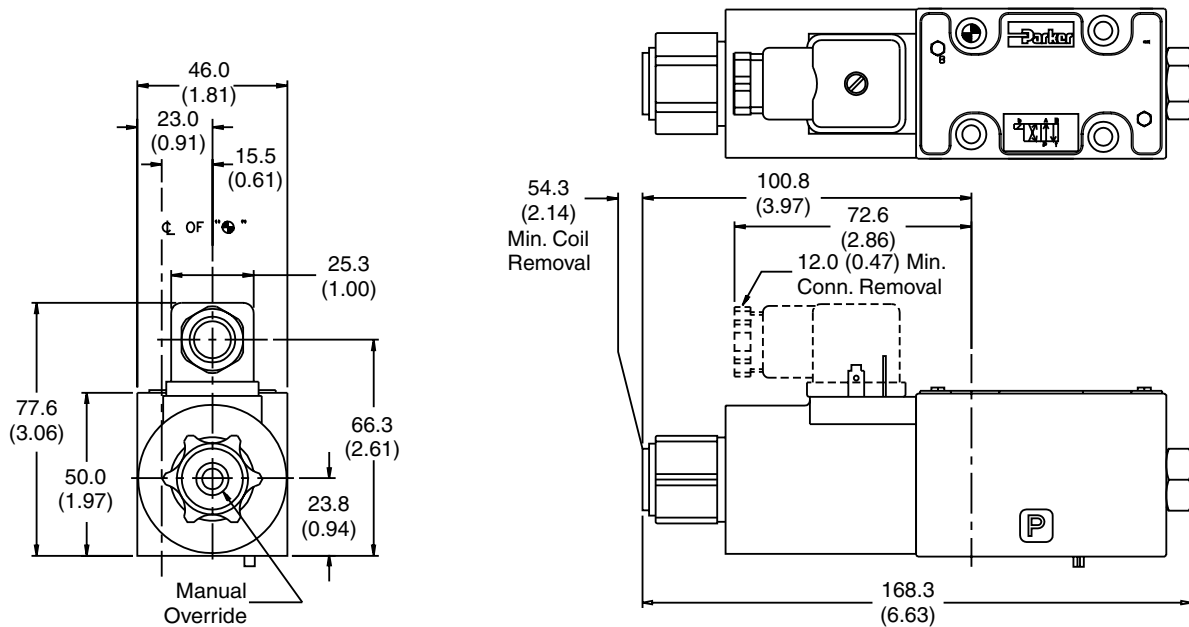
Inch equivalents for millimeter dimensions are shown in (\*\*)

**A**

**Hirschmann, Double DC Solenoid**



**Hirschmann, Single DC Solenoid**

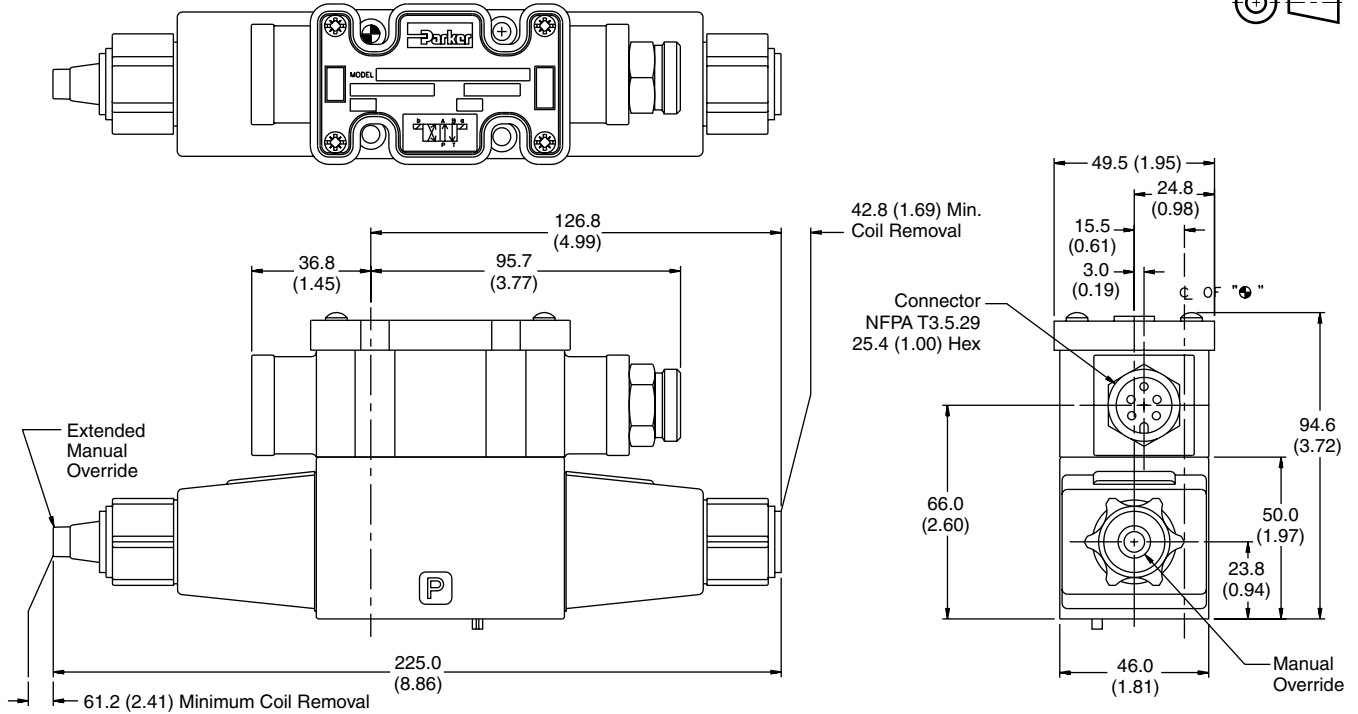
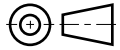




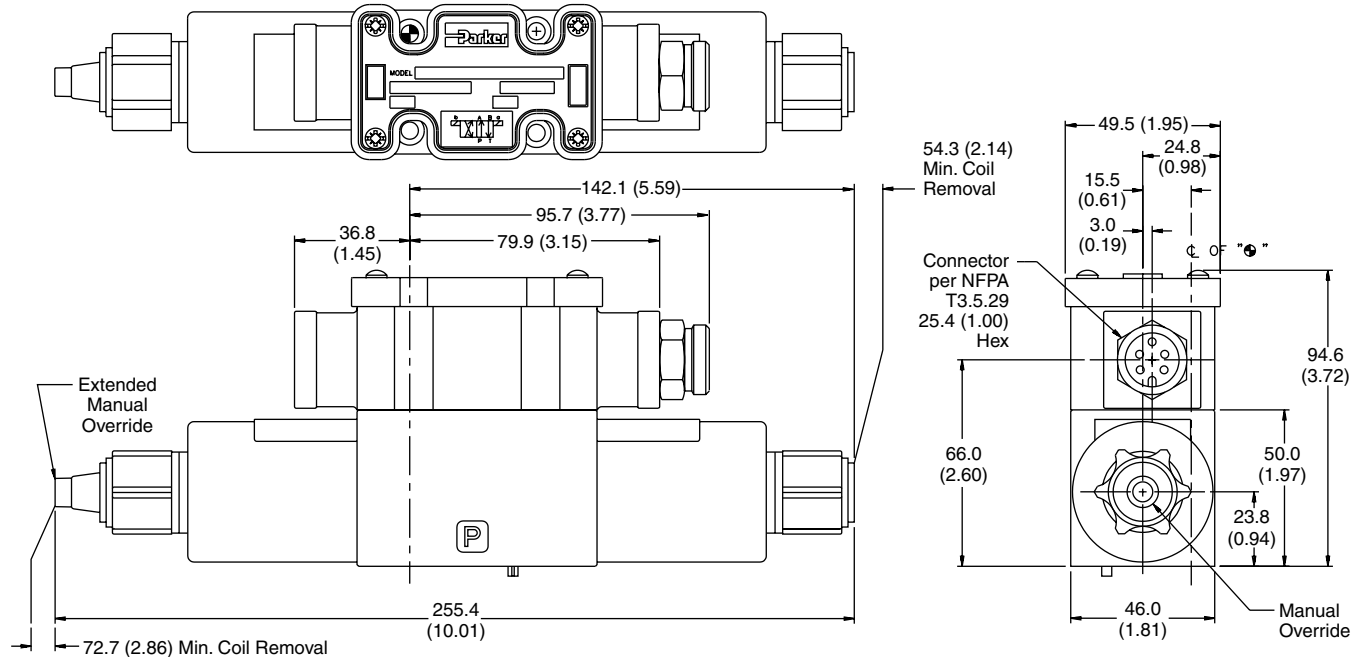
Inch equivalents for millimeter dimensions are shown in (\*\*)

**A**

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



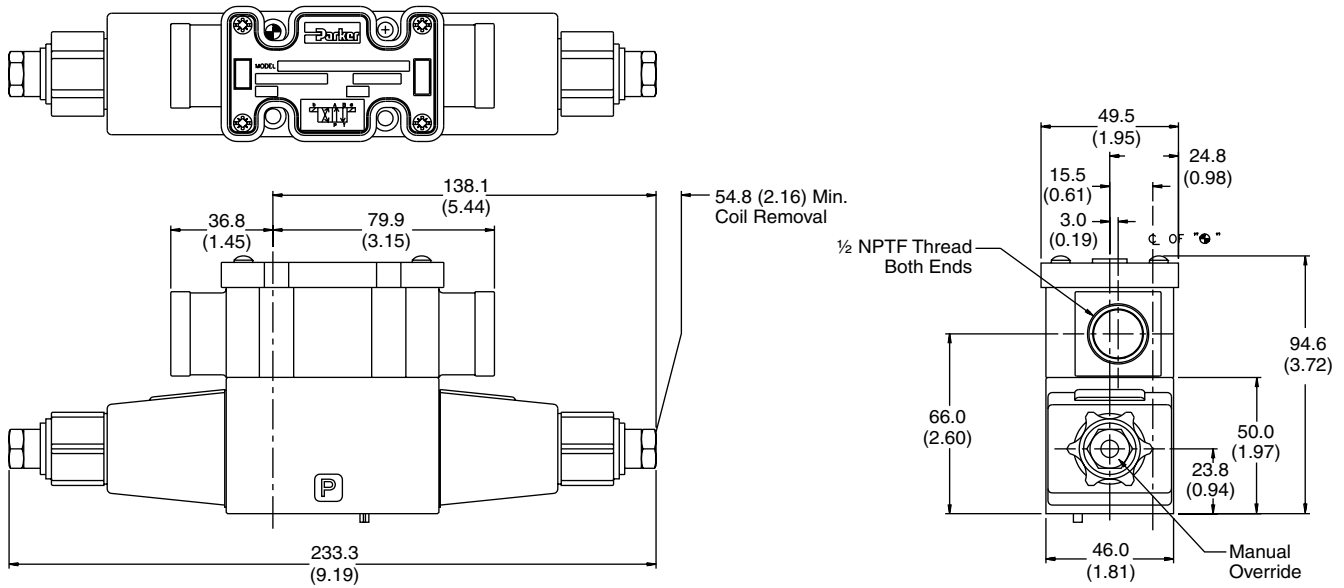
**Conduit Box, Double DC & AC Rectified Solenoids**  
with Variation 6 (Manaplug) & Variation P (Extended Manual Override)



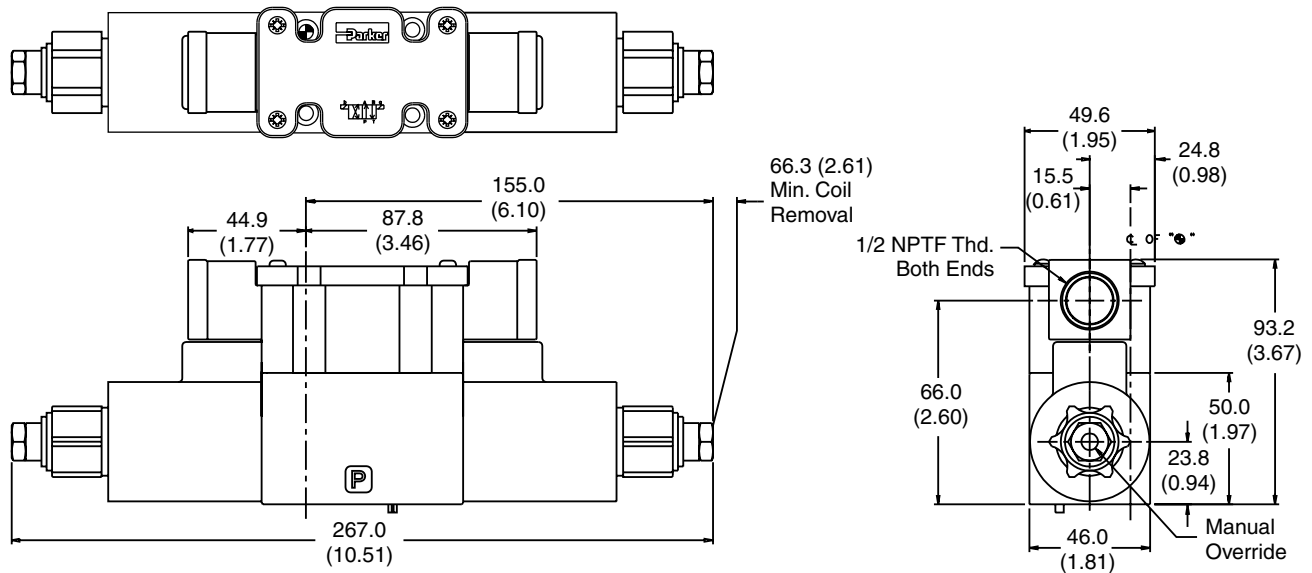


Inch equivalents for millimeter dimensions are shown in (\*\*)

**Conduit Box, Double AC Solenoid  
with Variation R (Reparable Override)**



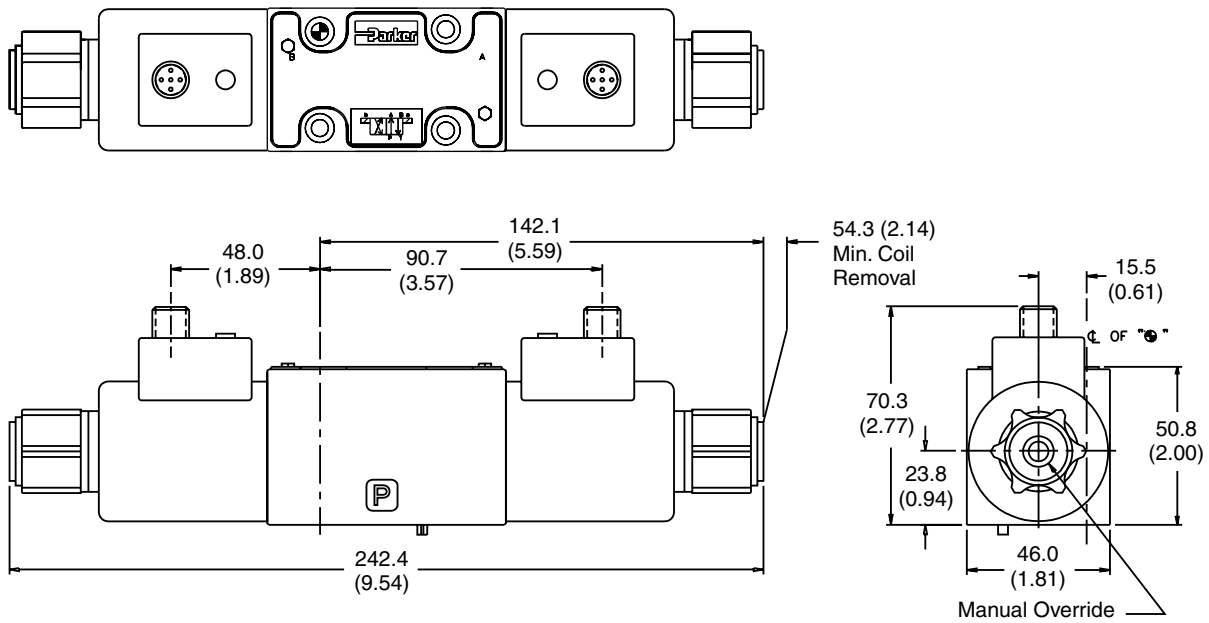
**Conduit Box, Double DC Solenoid  
with Variation R (Reparable Override)**



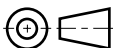
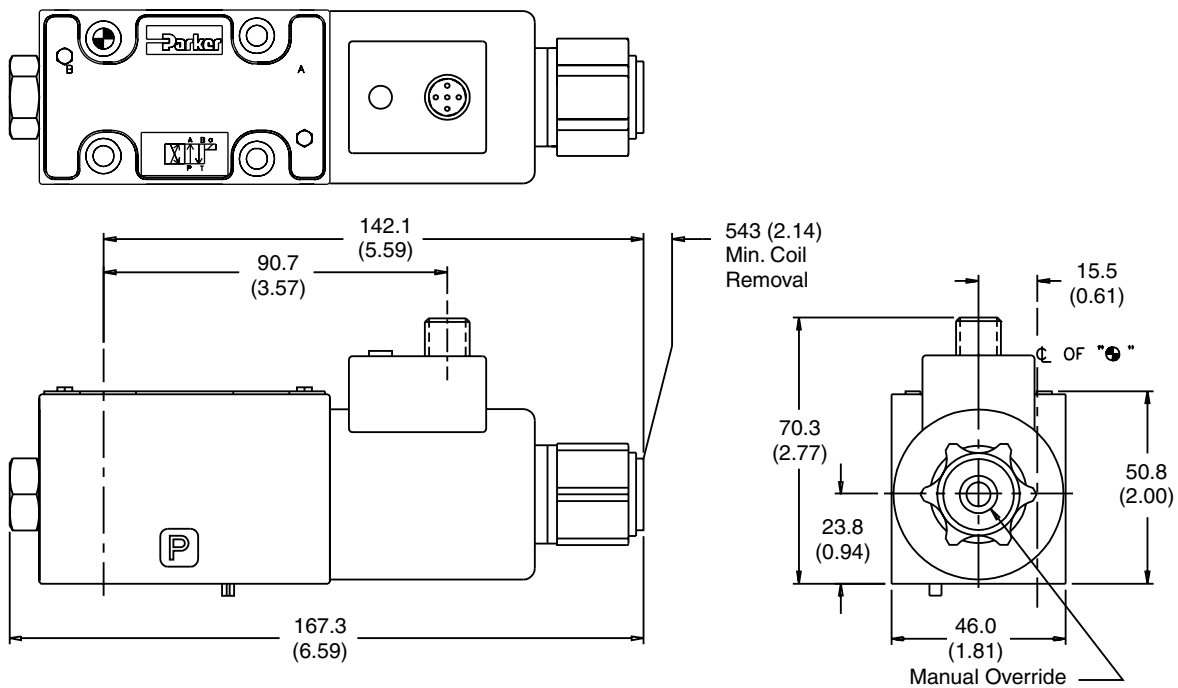
Inch equivalents for millimeter dimensions are shown in (\*\*)

**A**

**DESINA, Double DC Solenoid**

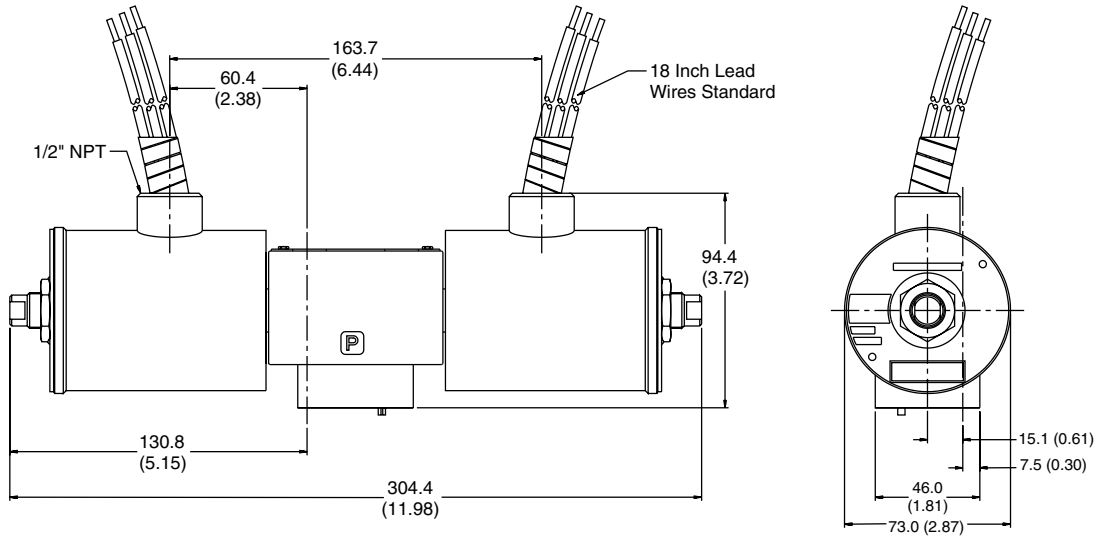


**DESINA, Single DC Solenoid**

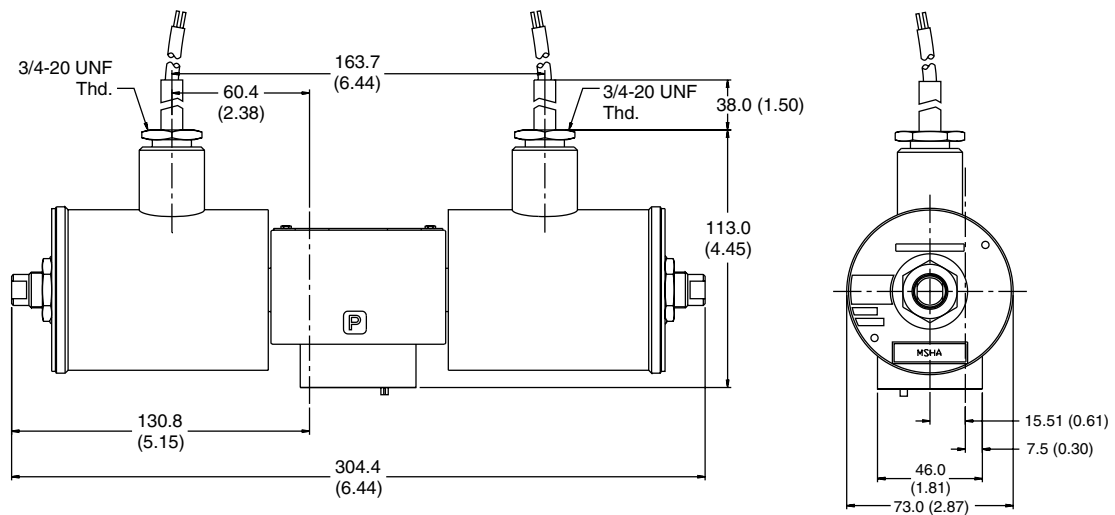


Inch equivalents for millimeter dimensions are shown in (\*\*)

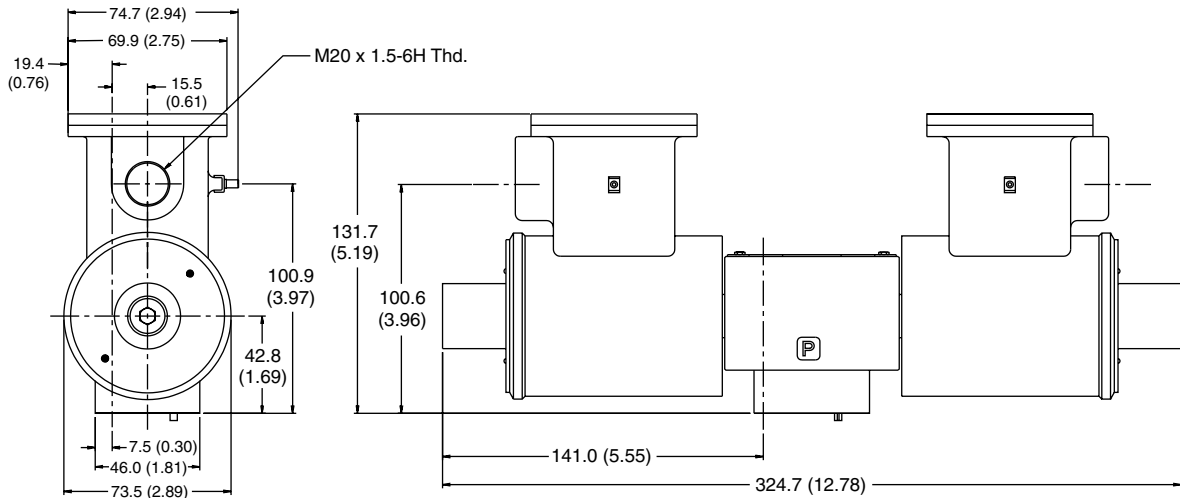
**Explosion Proof U.L. & C.S.A., Double Solenoid**



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



**Explosion Proof ATEX, Double Solenoid**

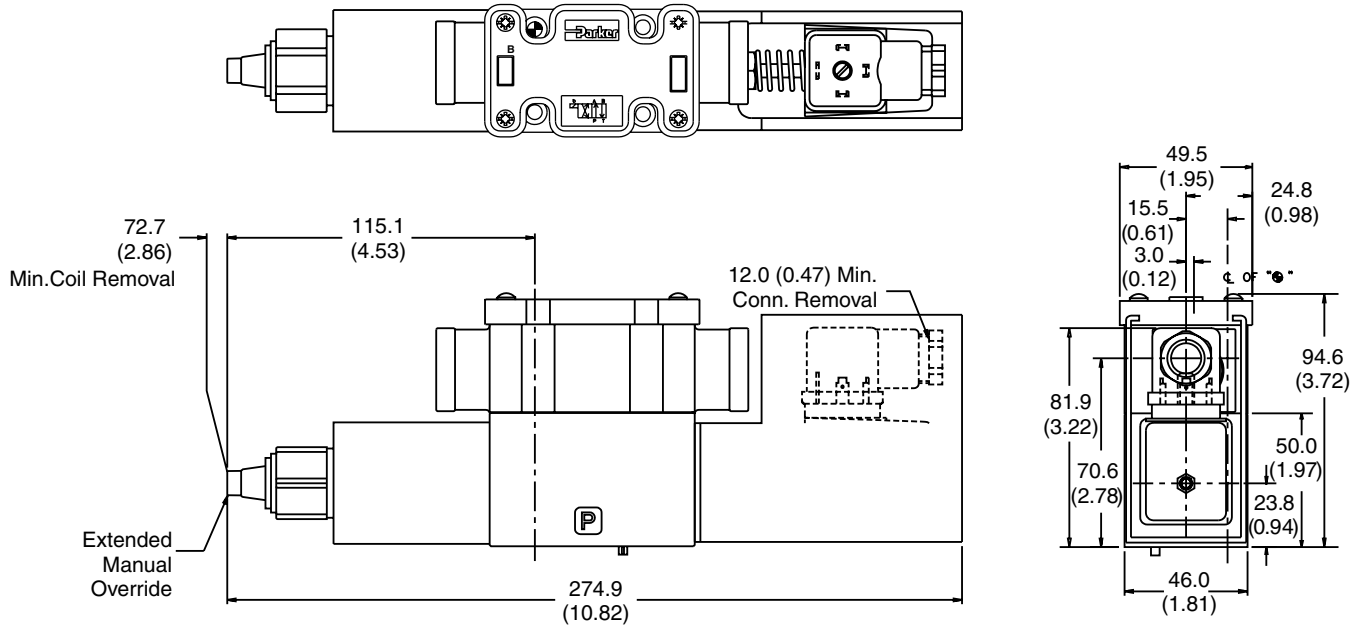
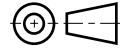


**Dimensions**

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

**A**

**Conduit Box, Single DC Solenoid**  
with Variation I7 (Monitor Switch) & Variation P (Extended Manual Override)

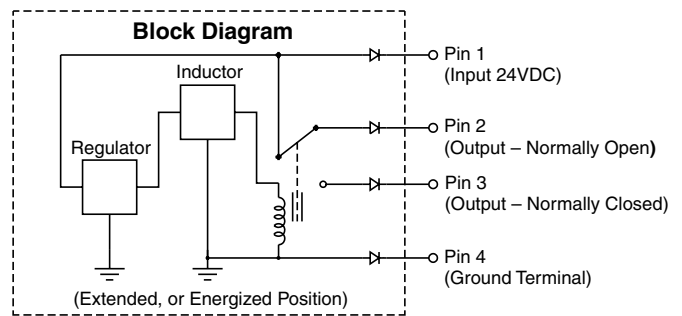


**Monitor Switch**  
(valve variation I7)

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 G & C)**

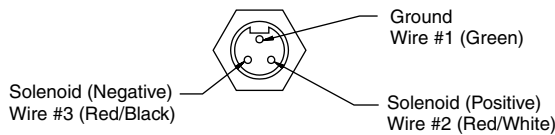
- Interface – 152.4 cm (6.0 inch) lead wires, 18 awg.
- Waterproof

**Plug-In Conduit Box**

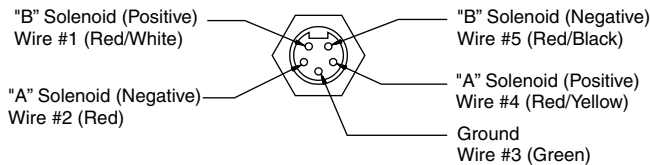
- NEMA 4 rated
- Phoenix connector
- Lights, Manaplug available

**Manaplug  
(valve variations 6, 56, 630)**

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



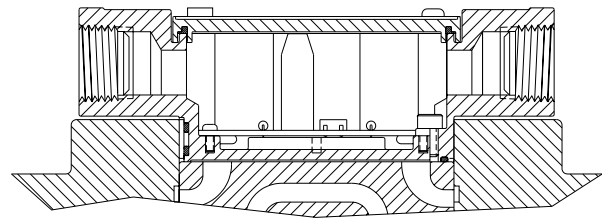
**3-Pin Manaplug (Mini) with Lights**  
Single Solenoid Valves



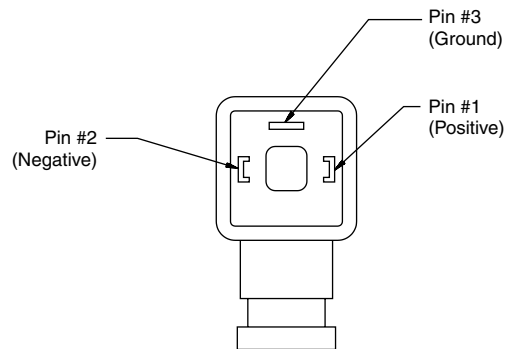
**5-Pin Manaplug (Mini) with Lights**  
Single and Double Solenoid Valves  
("A" and "B" Solenoids Reversed for #8 and #9 Spools)

**Signal Lights  
(valve variation 5)**

- Interface – LED

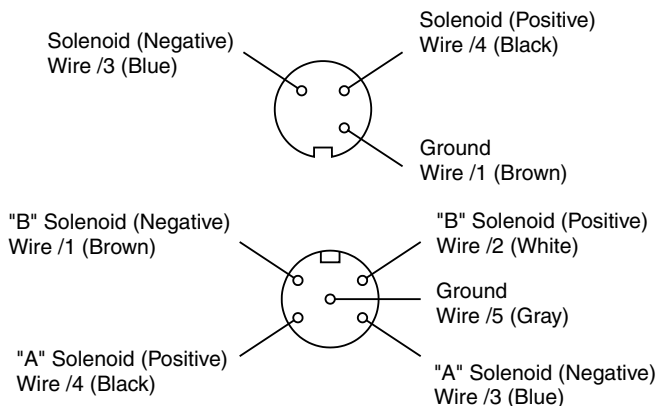


**Hirschmann Plug with Lights  
ISO 4400/DIN 43650 Form "A"**



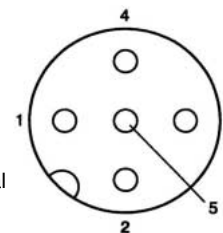
**Face View of Plug**

**Micro Connector  
valve variations 7A, 7B**



**DESINA Connector  
M12 pin assignment  
Standard**

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



DESINA – design  
Pin 1 and 2  
connected

