

Technical Information

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 mounting patterns.

Features

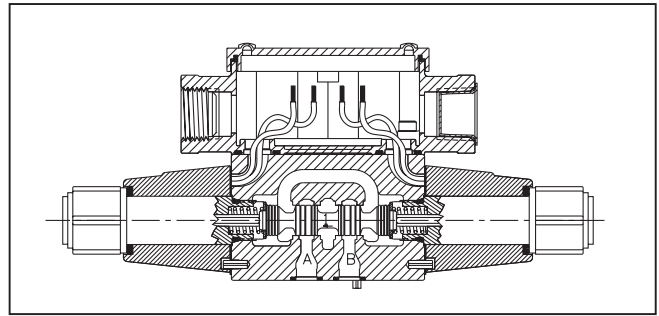
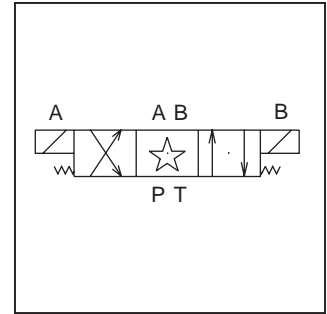
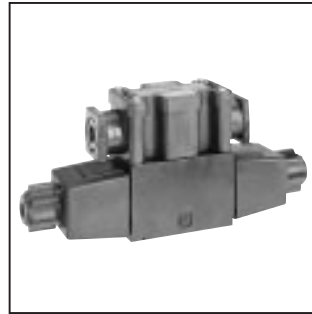
- Mechanically tunable soft shift.
- Proportional spools. 21 spool styles available.
- Repairable override
- DC surge suppression
- Four electrical connection options
- AC & DC lights available (CSA approval for solenoids and lights)
- Internally ground
- Easy access mounting bolts
- Waterproof (NEMA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

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	32	40

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



Specifications

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

Technical Information

Solenoid Ratings**

Insulation	Class F
Allowable Deviation from rated voltage	-10% to +15%
Armature	Wet pin type
CSA file LR60407	

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

D1VW Solenoid Electrical Characteristics†

Solenoid Code	Nominal Volts/Hz	In Rush Amps	Holding Amps	Watts
Y	120/60	2.00	0.49	25
	110/50	2.10	0.58	27
T	240/60	1.00	0.26	25
	220/50	1.05	0.31	27
Q	100/50	2.05	24	24
R	24/60	10.50	2.70	27
A	24/50	8.7	2.65	28
L	6 VDC	—	5.00	30
K	12 VDC	—	2.50	30
J	24 VDC	—	1.25	30
D	120 VDC	—	0.25	30
Z	250 VDC	—	0.12	30

D1VW****F Solenoid Electrical Characteristics†

Solenoid Code	Nominal Volts/Hz	In Rush Amps	Holding Amps	Watts
YF	120/60	1.90	0.42	21
	110/50	2.00	0.50	23
TF	240/60	0.95	0.22	21
	220/50	1.00	0.26	23
LF	6 VDC	—	4.00	24
KF	12 VDC	—	2.00	24
JF	24 VDC	—	1.00	24
DF	120 VDC	—	0.20	24
ZF	250 VDC	—	0.10	24

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

D1VW Soft Shift AC Electrical Characteristics

Solenoid Code	Input Volts/Hz	Coil Voltage	Holding Amps	Watts
Q	100/50	86 VDC	2.87	30
Y	120/60	98 VDC	3.27	30
	110/50			
T	240/60	214 VDC	7.13	30
	220/50			

Explosion Proof Solenoids

Explosion Proof Solenoid Ratings

U.L. (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
M.S.H.A. (EM)	Complies with 30 CFR, Part 18.
CENELEC (ED)	Complies with BASEEFA requirements for BS5501: Parts 1 and 5 Ex'd CENELEC EN50 – D18, Group II B
CSA Hazardous L	Class II, Groups E, F & G

Electrical Characteristics* ED, EM and EU

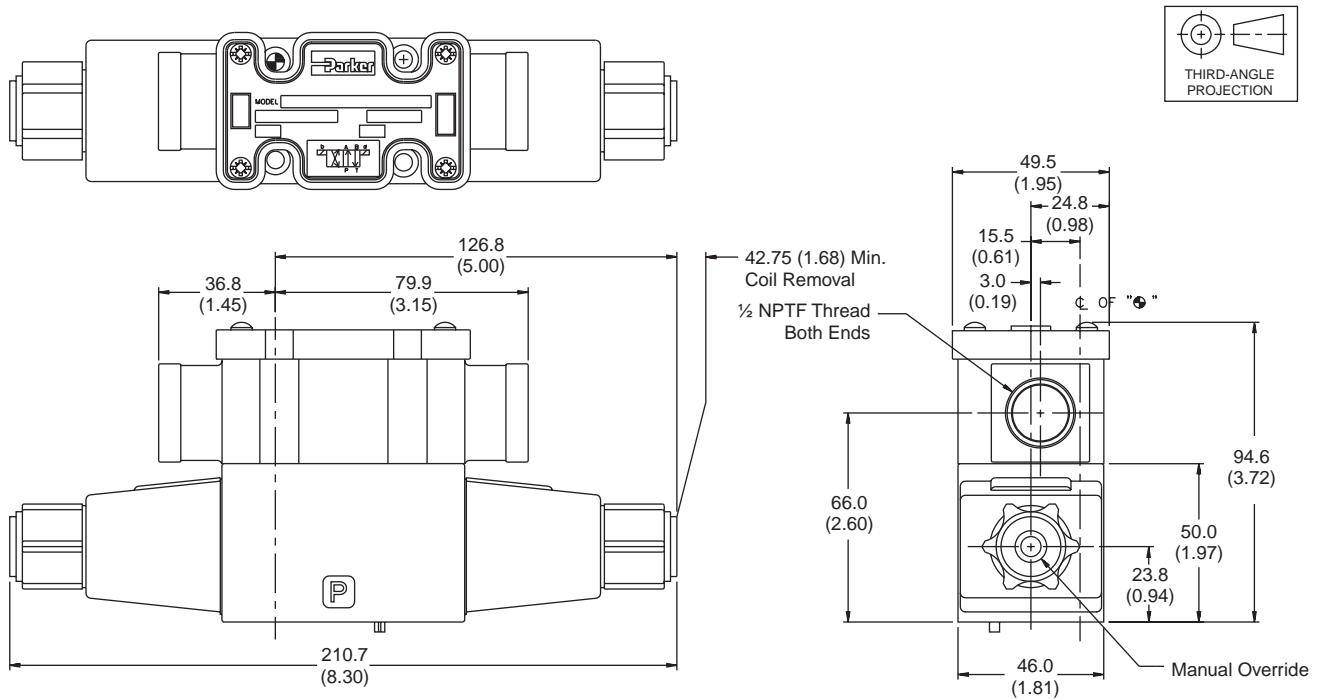
Solenoid Code	Nominal Volts/Hz	In Rush Amps	Holding Amps	Watts
Q	100/60	2.60	0.70	27
Y	120/60	2.20	0.58	27
T	240/60	1.10	0.29	27
R	24/60	11.10	2.90	27
L	6 VDC	—	5.50	33
K	12 VDC	—	2.75	33
J	24 VDC	—	1.38	33
D	120 VDC	—	0.28	33
Z	250 VDC	—	0.13	33

*Dual frequency not available on explosion proof coils.

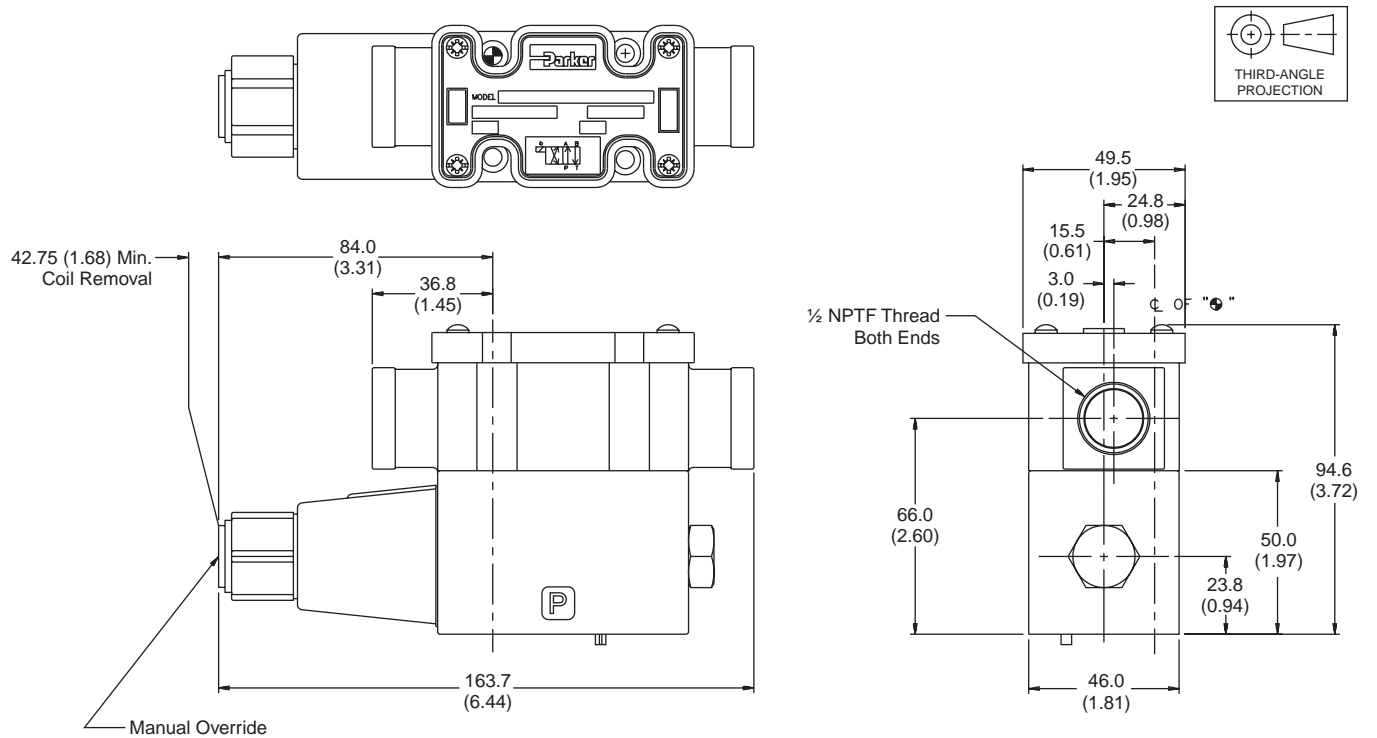
Dimensions

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

Conduit Box, AC Solenoid, Double



Conduit Box, AC Solenoid, Single



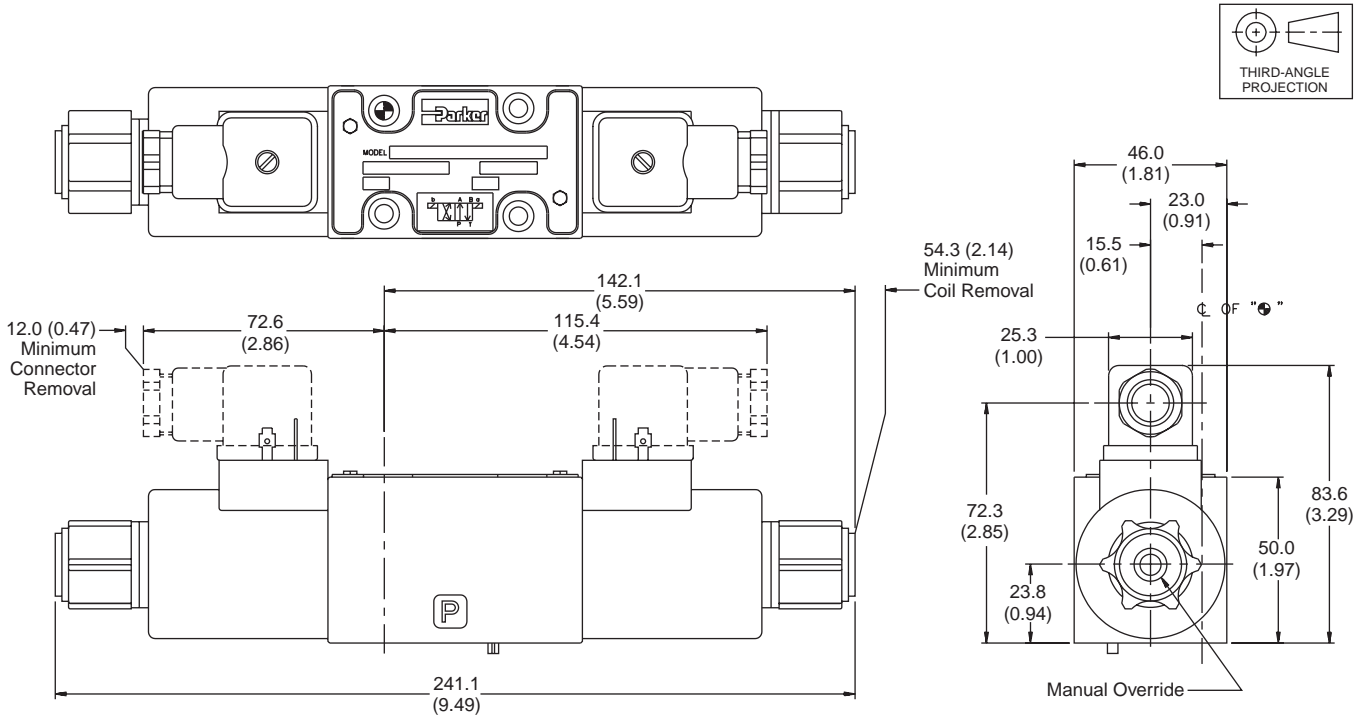
D1V.pm6, sm, hj

Directional Control Valves Series D1VW

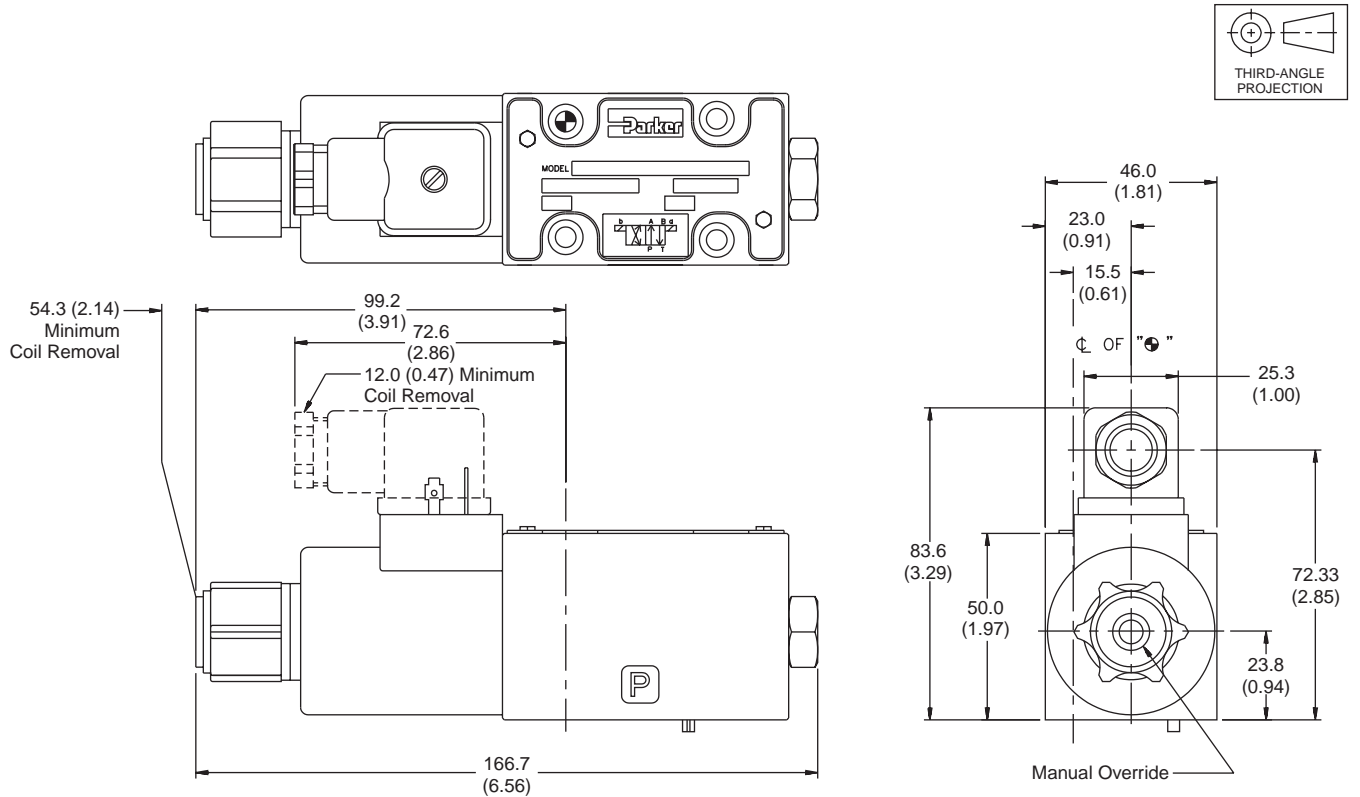
Dimensions

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

Hirschmann, DC Solenoid, Double



Hirschmann, DC Solenoid, Single

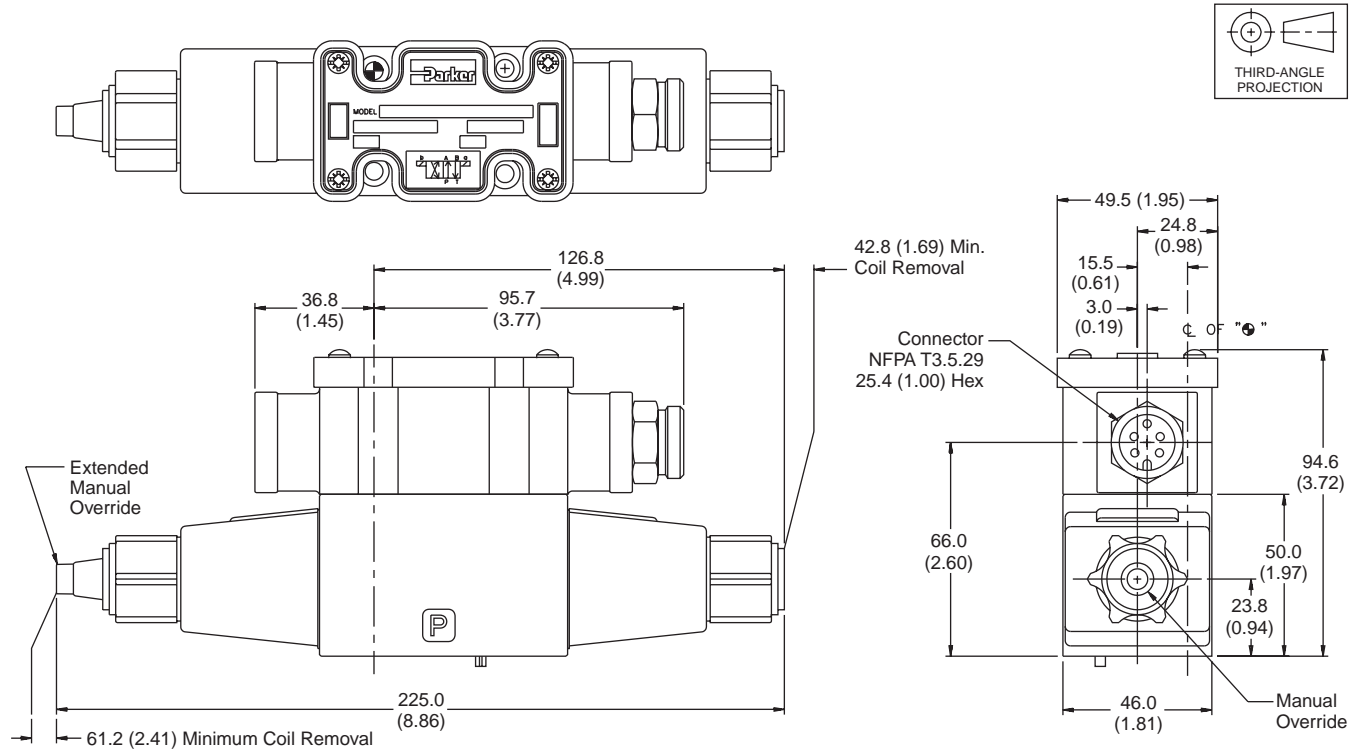


D1V.pm6, sm, hj

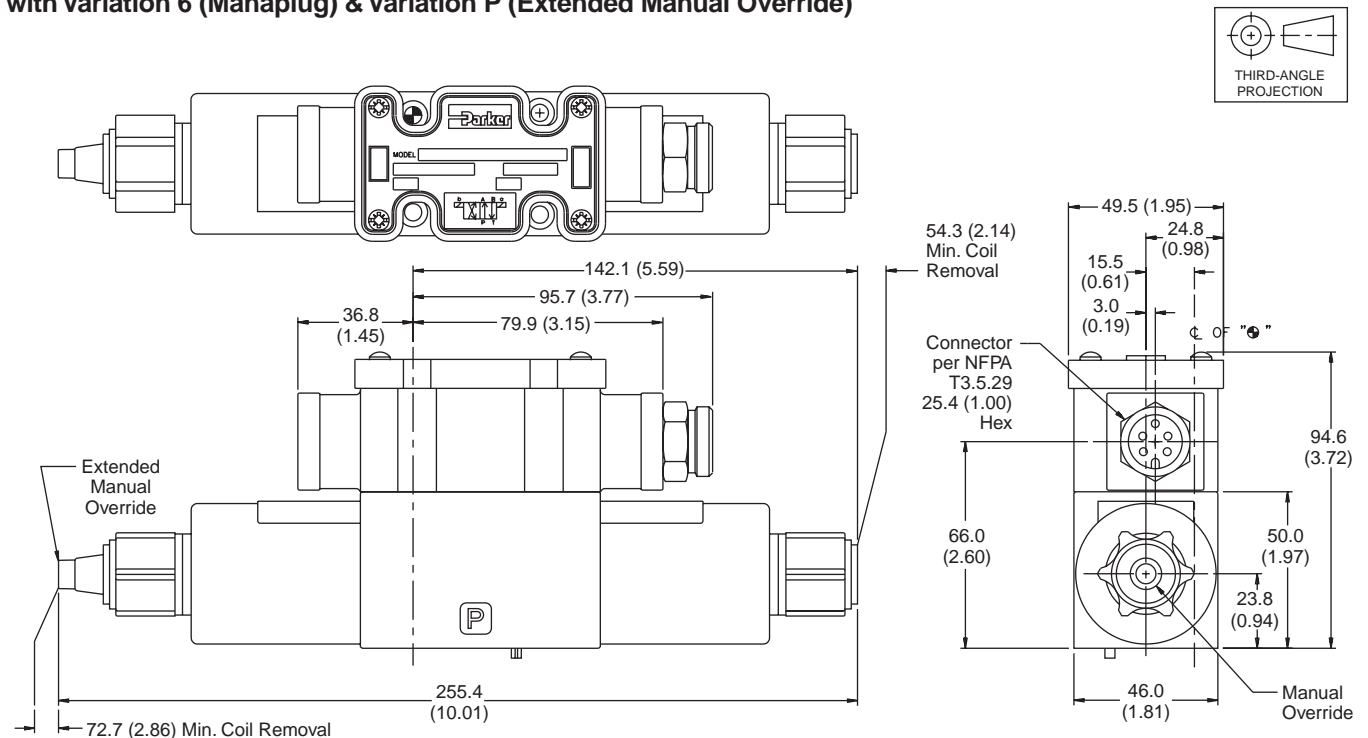
Dimensions

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

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



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

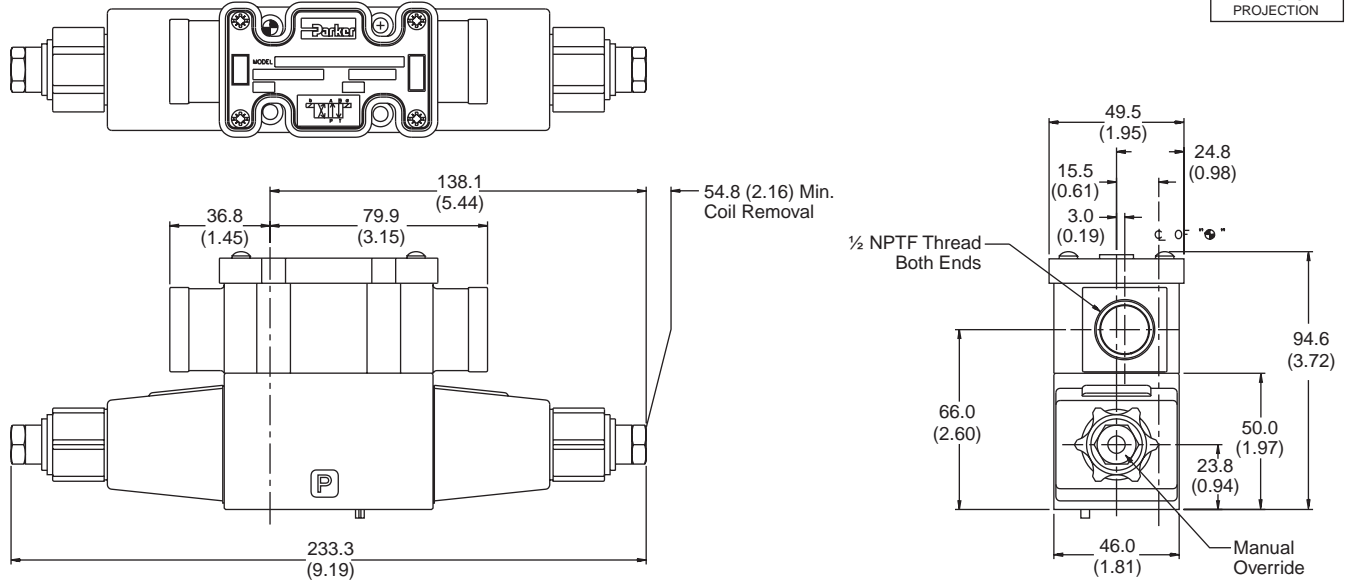
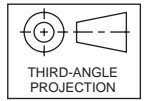


D1V.pm6, sm, hj

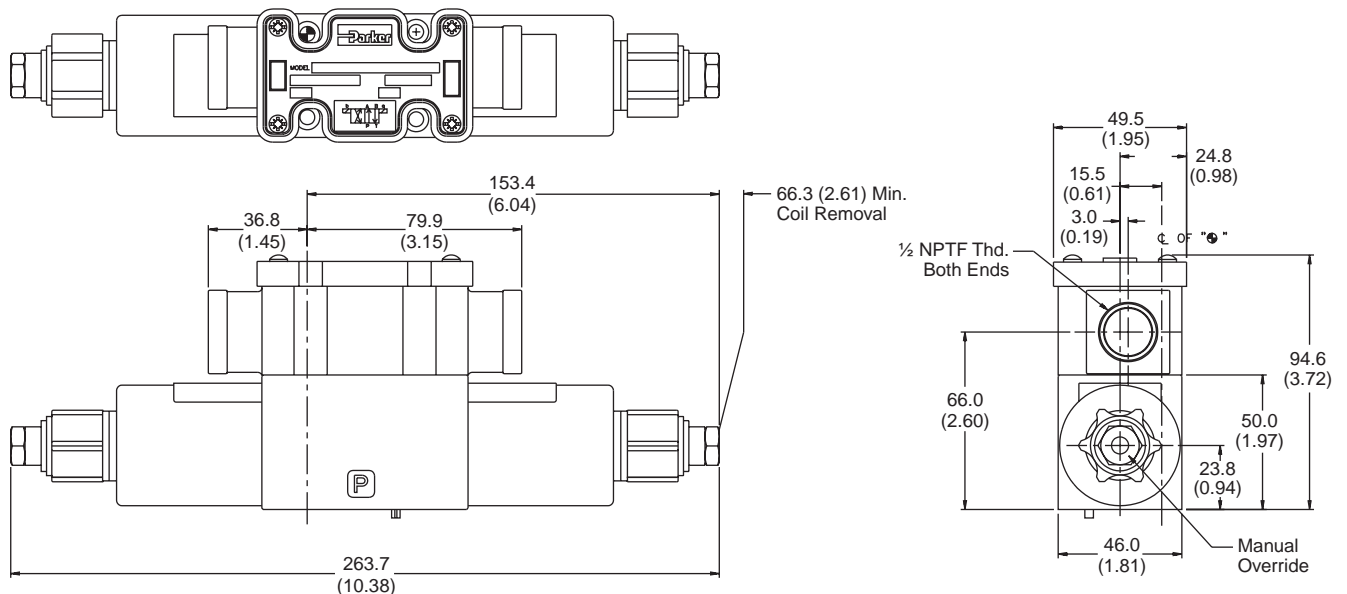
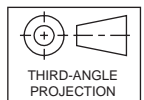
Dimensions

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

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



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



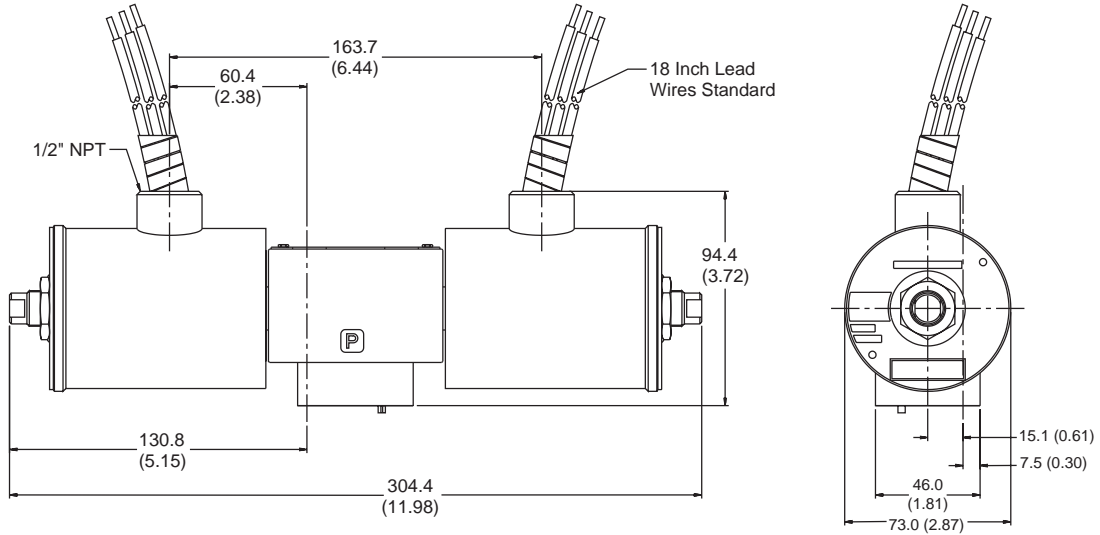
D1V.pm6, sm, hj

Directional Control Valves Series D1VW

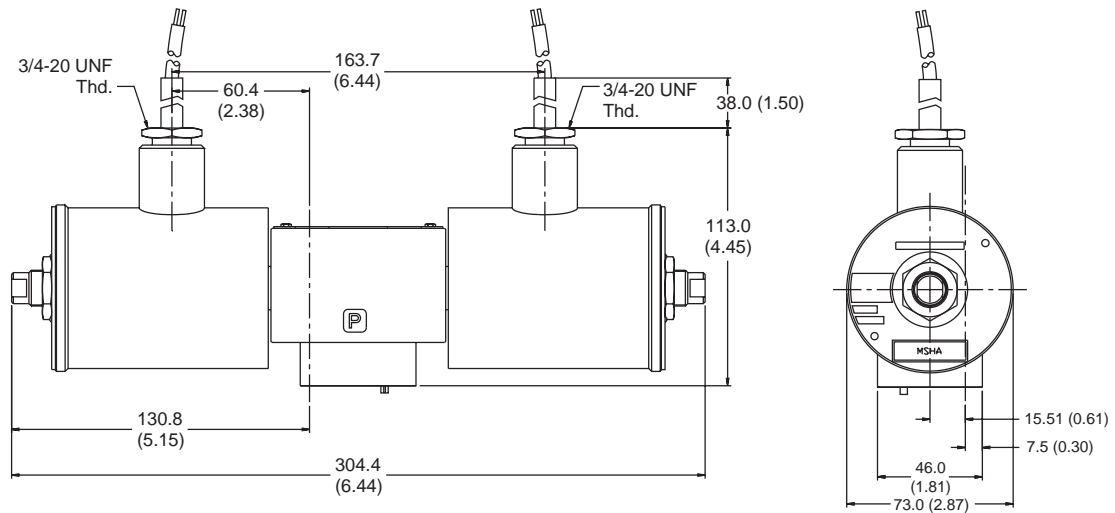
Dimensions

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

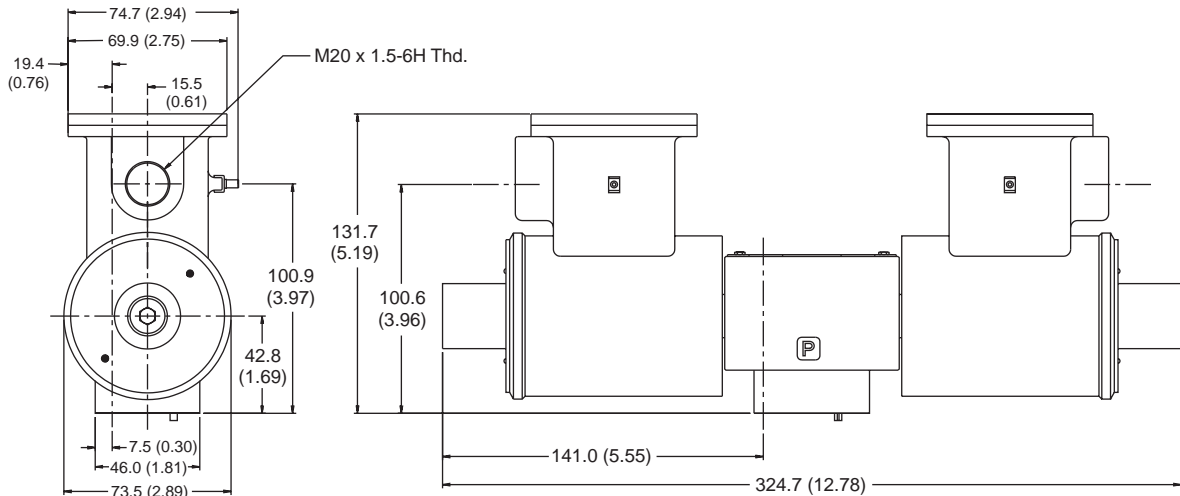
Explosion Proof U.L. & C.S.A., Double



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



Explosion Proof CENELEC, Double

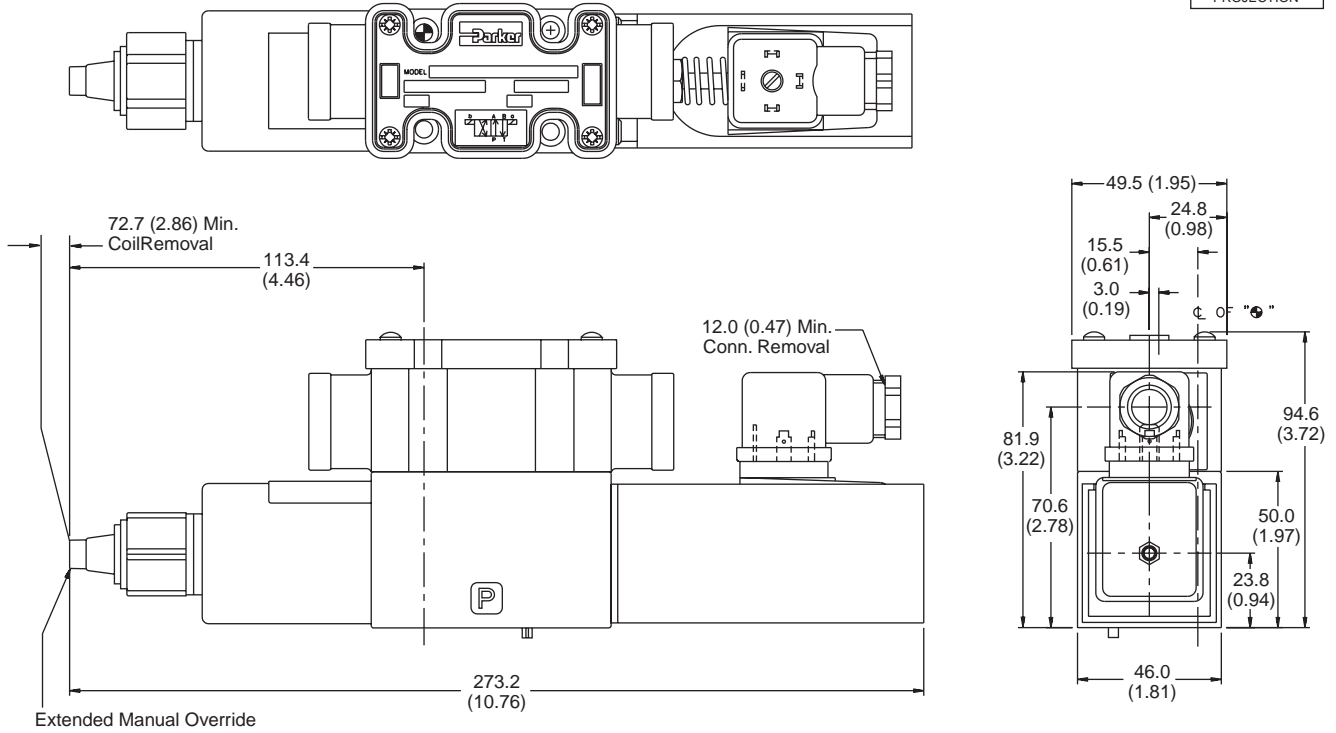
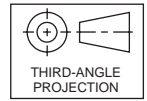


D1V.pm6, sm, hj

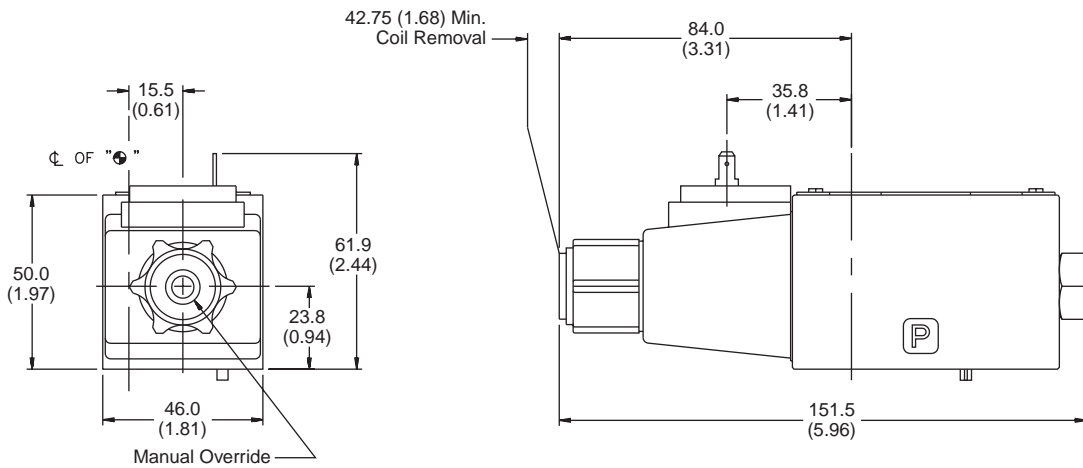
Dimensions

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

Conduit Box, DC Solenoid, Single
with Variation P10 (Monitor Switch) & Variation P (Extended Manual Override)



Spade Lug, AC Solenoid, Single



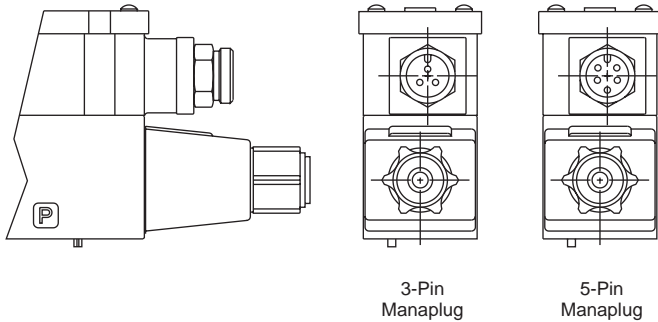
Accessories

Conduit Box
(connection option C)

- Interface – 152.4 cm (6.0 inch) lead wires, 18 awg.
– NEMA 4 rated
– Waterproof

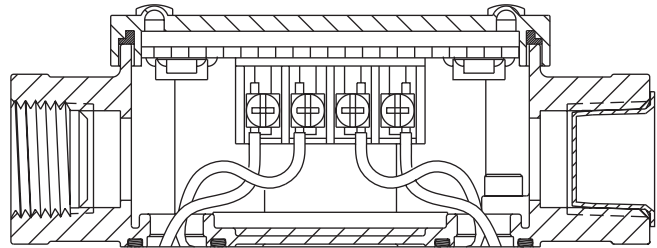
Manaplug
(valve variations 6, 56, 630)

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



Signal Lights
(valve variation 5)

- Interface – LED



Monitor Switch
(valve variation P10)

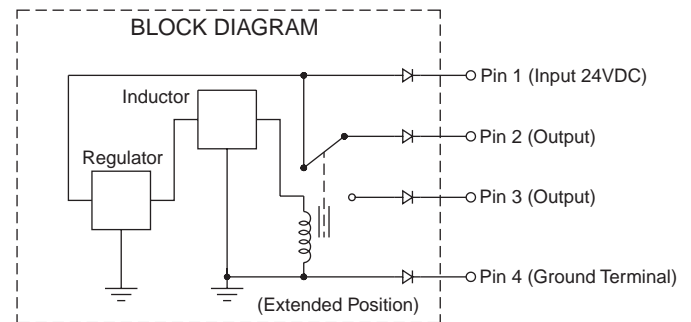
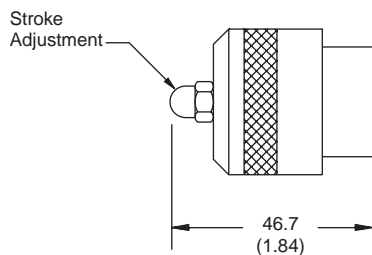
This feature provides for electrical confirmation of the spool shift. This can be used in safety circuits, to assure proper sequencing, etc.

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.

Twist and Lock Manual Override

Available in Push and Push & Lock models



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

Standard Valves

D

Directional Control Valve

1V

Basic Valve

NFPA D03
CETOP 3

W

Actuator

Wet armature solenoid

Spool

Style

Seal

Code	Description
N	Nitrile
V	Fluorocarbon
E	EPR

Solenoid Voltage

Code	Description
A #	24/50 VAC
R #	24/60 VAC
Q #	100/50 VAC
Y	120/60 - 110/50 VAC
T	240/60 - 220/50 VAC
L	6 VDC
K	12 VDC
J	24 VDC
D	120 VDC
Z	250 VDC

High Watt Coil only.

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

* 8, 20 & 26 spool have closed crossover
** 9 & 30 spool 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 offset to center. 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 A and A to T in offset position.	
K	Single solenoid, 2 position. Spring offset to center. A side. 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.
† Only spools 20 & 30.

This condition varies with spool code



NOTE:
Not required when ordering.

Code	Description
C	Conduit Box
E	Explosion Proof
P	Hirschmann w/ Plug
S # †	Dual Spade Lug
W †	Hirschmann w/o Plug
H* # †	Single Spade Lug

† Not available with lights
Not CSA approved
* DC only

Code	Description
Omit	Standard Coil
B	Without Coil
C†	Hazardous Location
V*	Surge Suppression

† Conduit solenoid connection only.
* DC only, not available with solenoid connection H.

Code	Coil	Tube
Omit	High Watt	Low Pressure
H*	High Watt	High Pressure
F	Low Watt	Low Pressure
FH*	Low Watt	High Pressure
D †	Explosion proof CENELEC	
M †	Explosion Proof M.S.H.A.	
U †	Explosion Proof UL/CSA	

* High pressure tube rating
210 Bar (3000 PSI)
† Explosion proof coils are 60Hz @ standard voltage and are high wattage only. Dual frequency rating not available.

Code	Description
Omit	Standard Valve
4*	C.S.A. Approved
5	Signal Lights
6	Manaplug Single Solenoid 3-Pin, Double Solenoid 5-Pin
P10†	Monitor Switch
56	Manaplug with Lights
630	Manaplug Single Solenoid 5-Pin

* Valve is derated with this option. See Technical Data.
† B, H, E, & K style only. Not CSA or CE approved.

Code	Description
Omit	Standard Tube
P*	Extended Manual Override
R*	Repairable Manual Override
T*	Without Manual Override

* Tube variations not available on explosion proof.

Valve Weight:
Single Solenoid 1.36 kg (3.0 lbs)
Double Solenoid 1.6 kg (3.5 lbs)
Standard Bolt Kit:
BK209

Soft Shift Valves

D

Directional Control Valve

1V

Basic Valve

NFPA D03
CETOP 3

W

Actuator

Wet armature solenoid

Spool

Style

Seal

Code	Description
N	Nitrile
V	Fluorocarbon
E	EPR

Solenoid Voltage

Code	Description
Q *	100/50 VAC
Y *	120/60 - 110/50 VAC
T *	240/60 - 220/50 VAC
L	6 VDC
K	12 VDC
J	24 VDC
D	120 VDC
Z	250 VDC

* AC input voltage, not necessarily coil voltage.

Code	Symbol	Code	Symbol
1		11	
2		14	
3		15	
4		16	
5		20*	
6		21	
7		22	
8*, 9**		81	
10		82	

* 8 & 20 spool have closed crossover

** 9 spool has open crossover

Valve Weight:
Single Solenoid 1.36 kg (3.0 lbs)
Double Solenoid 1.6 kg (3.5 lbs)
Standard Bolt Kit:
BK209

Code	Description	
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 offset to center. 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 A and A to T in offset position.	
K	Single solenoid, 2 position. Spring offset to center. A side. 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 spool 20.

This condition varies with spool code

Soft Shift Valves



Solenoid Connection



Solenoid/Tube Combination



Tube Variation



Coil Variation



Soft Shift



Valve Variations



Design Series



X-Numbers

NOTE:
Not Required
When Ordering

Code	Description
C	Conduit Box
P	Hirschmann w/ Plug
S*† #	Dual Spade Lug
W*†	Hirschmann w/o Plug

* DC voltage only
† Not available with lights
Not CSA approved

Code	Description
Omit	Standard Coil
B*	Without Coil
C†	Hazardous Location

* Not available with solenoid connection "P".
† Conduit solenoid connection only.

Code	Coil	Tube
Omit	High Watt	Low Pressure
H*	High Watt	High Pressure
F †	Low Watt	Low Pressure
FH*†	Low Watt	High Pressure

* High pressure tube rating
210 Bar (3000 PSI)
† Not available with AC input.

Code	Description
Omit	Standard Valve
4*	C.S.A. Approved
5	Signal Lights
56	Manaplug with Lights Single Solenoid 3-Pin, Double Solenoid 5-Pin
5630	Manaplug with Lights Single Solenoid 5-Pin

* Valve is derated with this option.
See Technical Data.

Code	Description
Omit	Standard Tube
R	Repairable Manual Override

X-Number	Orifice Size	Voltage	Spool Center Condition *					
			Closed		Open		2-Position	
			Energize	De-Energize	Energize	De-Energize	Energize	De-Energize
XB072	0.020	AC	175 ms	700 ms	600 ms	800 ms	150 ms	200 ms
		DC	200 ms	650 ms	700ms	650 ms	175 ms	225 ms
XB073	0.030	AC	150 ms	400 ms	500 ms	600 ms	100 ms	150 ms
		DC	125 ms	325 ms	550 ms	550 ms	100 ms	100 ms
XB074	0.040	AC	125 ms	300 ms	450 ms	500 ms	100 ms	100 ms
		DC	100 ms	250 ms	500 ms	450 ms	75 ms	60 ms
XB075	0.050	AC	100 ms	250 ms	400 ms	450 ms	50 ms	100 ms
		DC	50 ms	225n ms	400 ms	400 ms	50 ms	40 ms
XB070	No Orifice	AC	75 ms	250 ms	300 ms	350 ms	40 ms	100 ms
		DC	50 ms	200 ms	300 ms	300 ms	40 ms	40 ms

* Step response times were obtained under the following conditions: 100 SSU fluid @ 120°F with the valve operating at nominal pressure and flow. Published response times are nominal and may vary with spool, flow, pressure and temperature.

Orifice Kit:	Part Number 1301661
Orifice Removal Tool:	Part Number 1301651

Ordering Information

Manaplugs – Electrical Plug

E

Electrical

P

Plug

1

Valve Model

D03 Pattern
D1V (1/8")

Basic Configurations

Code	Description
3	3-Pin Plug
5	5-Pin Plug

75

Design Series

(Required when ordering)

Hirschmann – Female Connector

E

Electrical

P

Plug

H

Hirschmann Style

Connector Color

Code	Description
A	Gray (Solenoid A)
B	Black (Solenoid B)

Electrical Cords

E

Electrical

C

Cord

No. of Conductors

Code	Description
Omit	3 Conductors (std)
5	5 Conductors

Electrical Requirements

Code	Description
Omit	6 feet (std)
3	3 feet
12	12 feet

Manual Overrides

OverrideType	AC Solenoid	DC Solenoid
Push	46214205	46214273
Push and Lock	46213384	46214274