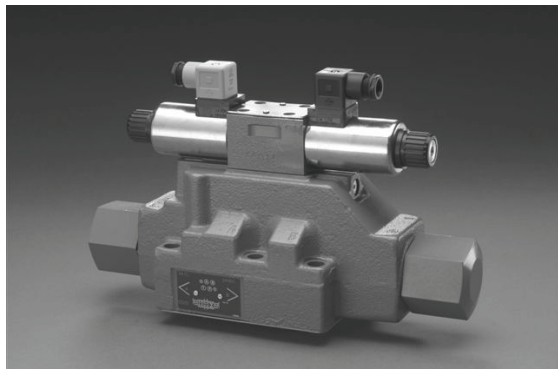




VED08M

Proportional Directional Control Valves

TYPICAL PERFORMANCE SPECIFICATIONS*

MOUNTING SURFACE		NFPA/T3.5.1M R2-M 2002 (D08) ANSI/B93.7M-1986 ISO 4401 SIZE 08	
FLOW CAPACITY @ 145 psi (10 bar) (FULL LOOP)	SEE PAGES 3 & 4 FLOW CURVES	15-80 GPM	58-300 LPM
MAXIMUM OPERATING PRESSURE	P, A, B, X Ports	5000 psi	345 bar
	T Port	3000 psi	207 bar
	Y Port †	10 psi	0.7 bar
MINIMUM PILOT PRESSURE		250 psi	17 bar
TYPICAL STEP RESPONSE TIME ** 90% Spool travel (Nominal)	Power On	120 ms	
	Spring Return	50 ms	
SPOOL STROKE	Center to Offset	0.45 in.	11.43 mm
SPOOL DISPLACEMENT	Offset to Offset	1.1 cu. in.	18 ml
HYSTERESIS	With Dither	< 6%	
THRESHOLD	With Dither	< 6%	
QUIESCENT FLOW	Nominal @ 3000 psi (210 bar)	36 cipm	0.59 lpm
REPEATABILITY	With Dither	< 3%	
DEADBAND		10% nominal of spool travel	
VOLTAGE (Nominal)	Code 12	12 VDC	
	Code 24	24 VDC	
CURRENT (Maximum)	Code 12	2.2 Amp	
	Code 24	1.1 Amp	
WATTAGE (I ² R) @ 76° F. (24° C.) (Continuous)	Code 12	19	
	Code 24	19	
COIL RESISTANCE @68° F. (20° C.)	Code 12	3.8 Ohms	
	Code 24	15.2 Ohms	
DUTY CYCLE		Continuous @ rated operating with 120° F (49° C) fluid and 100° F (38° C) ambient temperature	
WEIGHT	Code 3	36 lbs.	16.3 kg
	Code 5	34 lbs.	15.4 kg

DESCRIPTION

These proportional directional control valves are 4-way, pilot operated, spring centered, sliding spool valves. They can be used to control flow direction and rate. Directional control is achieved by solenoid selection; flow rate is a function of the solenoid current. If electrical power is lost, the valve spool will return to center position.

SPOOL METERING

Combination metering spools (code "C") meter oil into and out of the hydraulic actuator. These spools provide excellent control in most applications. Combination metering spools are highly recommended where deceleration control of a hydraulic motor is required or in velocity feedback applications. Combination metering spools can be used with a pressure-compensated module to provide proportional pressure compensated flow.

Meter-in spools (code "I") meter oil into the actuator. These spools are commonly used in applications where the actuator is always working against a positive (resistive) load. Meter-in spools can also be used with a pressure compensated module.

Meter-out spools (code "O") meter oil out of the actuator. These spools are commonly used in applications with "run away" loads such as over-center loads. Meter-out spools are also used with high ratio cylinders.

It is important to properly size a proportional valve to achieve the best resolution. A common mistake when specifying proportional valves is selecting too high a rated flow. The result may be poor control of the actuator, particularly with respect to velocity and resolution. Ideal valve size is usually one that provides just enough maximum flow capability to achieve the desired velocity. Consult Continental Hydraulics about special metering characteristics: unequal-metering, step metering, other nominal flows and other spool configurations.

Use caution when applying a separate internally-drained pressure control valve between the actuator and the proportional valve. Back pressure created by meter-out or combination metering proportional valves can add to the spring load of the pressure control valve, resulting in a change of the control pressure level.

***NOTE:** Data taken with fluid temperature at 120°F. (49°C.) and viscosity at 100 SUS (20.6 Cs), inlet pressure @ 1000 psi (69 bar) using Continental Hydraulics ECM4 electronic controller.

****NOTE:** Response times are affected by pressure, viscosity and flow rate.

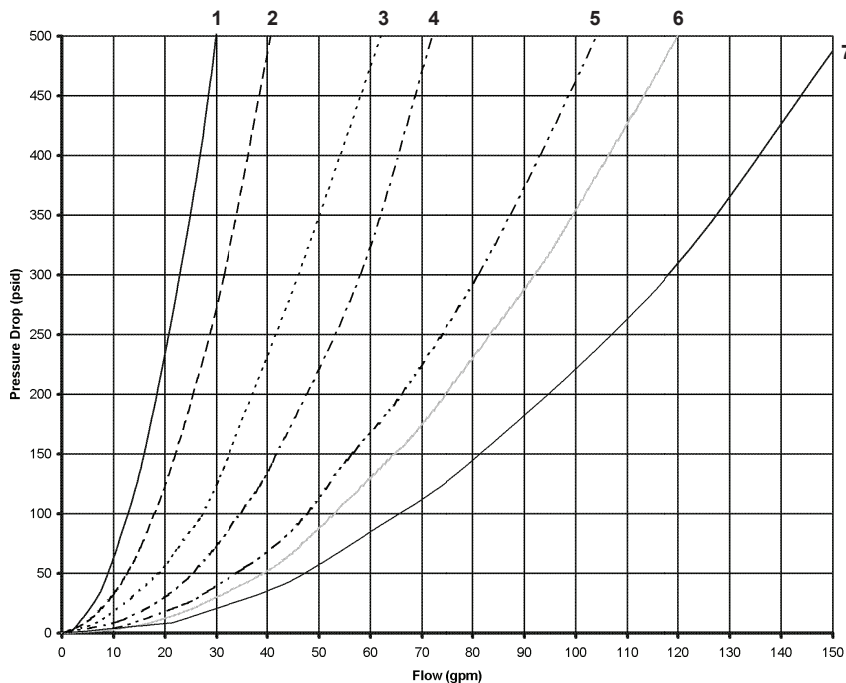
† NOTE: Drain port (Y) must be connected solely to tank below fluid level. Back pressure or fluctuation of pressures in the drain line may reflect on controlled pressure in the pilot valve and thus the flow output of the main valve.

VED08M

PROPORTIONAL DIRECTIONAL CONTROL VALVES

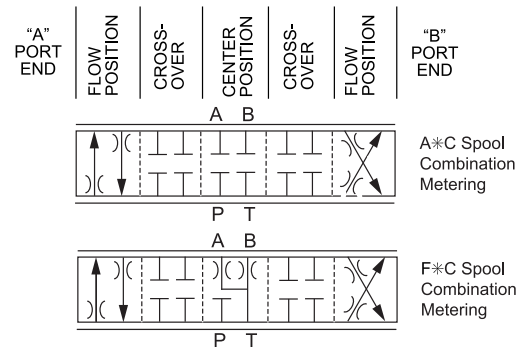
PRESSURE DROP CURVE SPOOLS FULLY SHIFTED

VED08M Typical Pressure Drop Curves-Full Shift
ISO VG32 @ 120 deg F

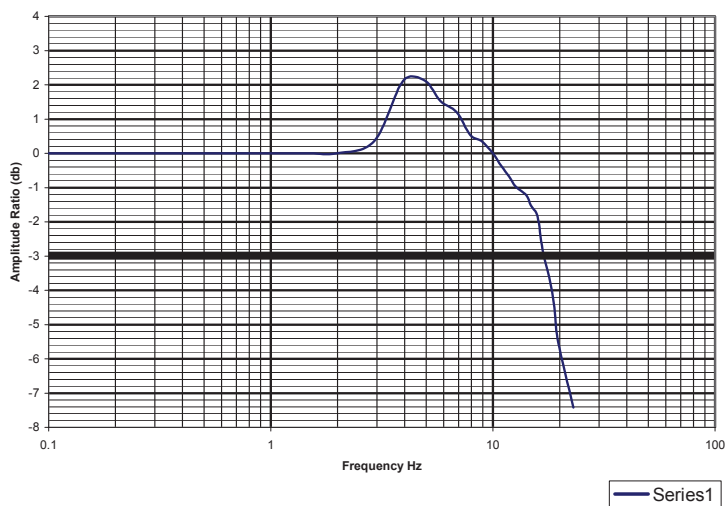


1	AC-58, FC-58, PC-58
2	FI-80
3	AC-120, FC-120, PC-120
4	AI-155, FI-155, AO-155, FO-155
5	AC-210, FC-210, PC-210
6	AI-240, FI-240, AO-240, FO-240
7	AC-300, FC-300

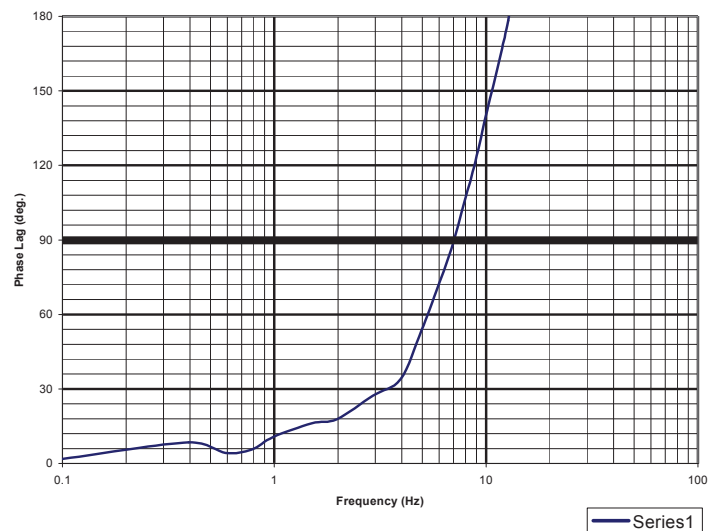
SPOOL CONFIGURATIONS



Frequency Response
Amplitude Ratio dB
VED08M 50% + - 25% 1000PSI



Phase Lag (deg)
VED08M 50% + - 25% 1000PSI



FLOW VS. SIGNAL PRESSURE DROP CURVES

RATED FLOW @ 145 psi ΔP

NOTES:

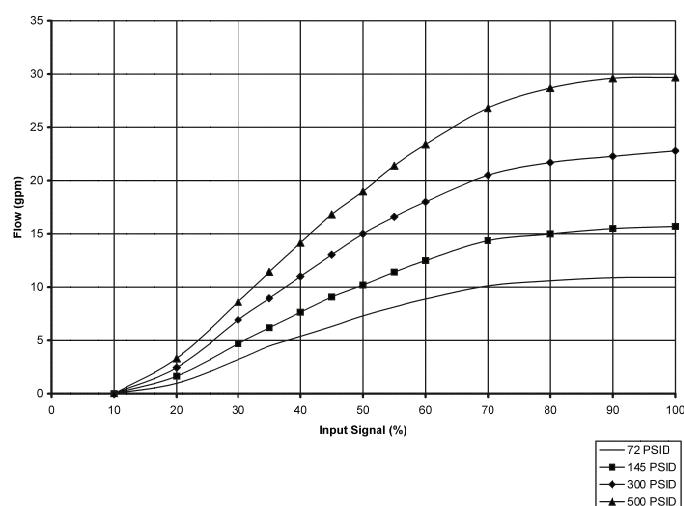
These curves were run at no load flow condition,
ISO VG32 fluid @ 120° F. (49°C).

Pressure drop will change with viscosity.

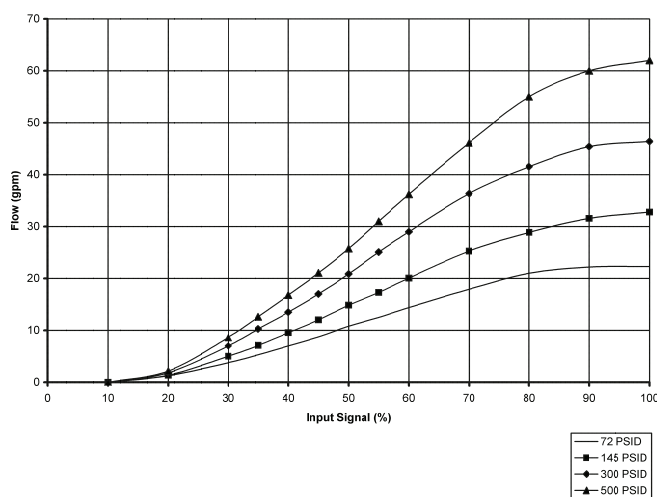
Curves are full flow ΔP .

Conversions: 1 gpm = 3.79 lpm; 1bar = 14.5 psi.

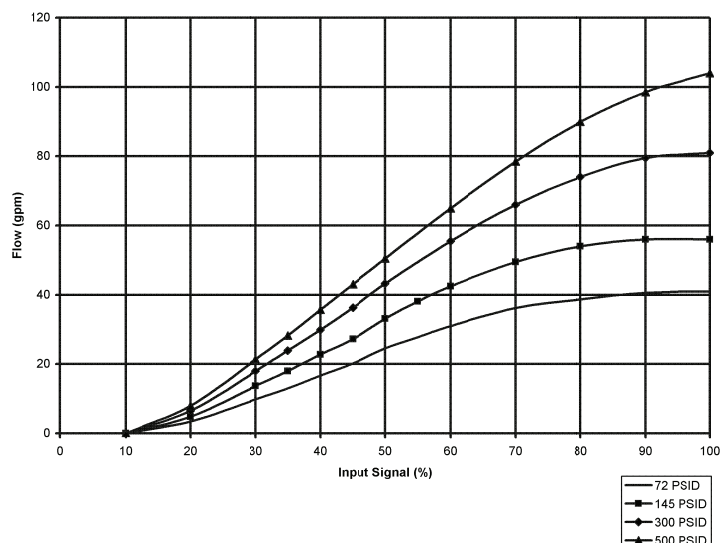
AC-58, FC-58, PC-58 SPOOL (Meter-in, Meter-out) 15 gpm @ 145 psid



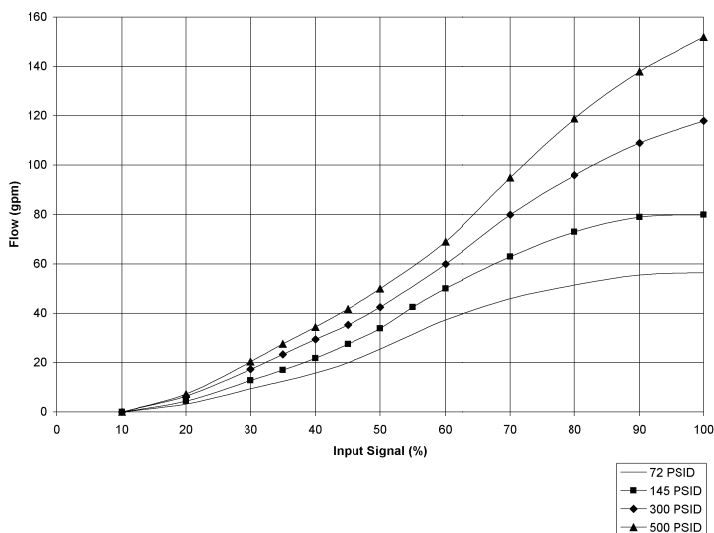
AC-120, FC-120, PC-120 Spool (Meter-in, Meter-out) 32 gpm @ 145 psid



AC-210, FC-210, PC-210 SPOOL (Meter-in, Meter-out) 56 gpm @ 145psid



AC-300, FC-300 SPOOL (Meter-in, Meter-out) 80 gpm @ 145 psid



VED08M

PROPORTIONAL DIRECTIONAL CONTROL VALVES

FLOW VS. SIGNAL PRESSURE DROP CURVES

RATED FLOW @ 145 psi ΔP

NOTES:

These curves were run at no load flow condition,
ISO VG32 fluid @ 120° F. (49°C).

Pressure drop will change with viscosity.

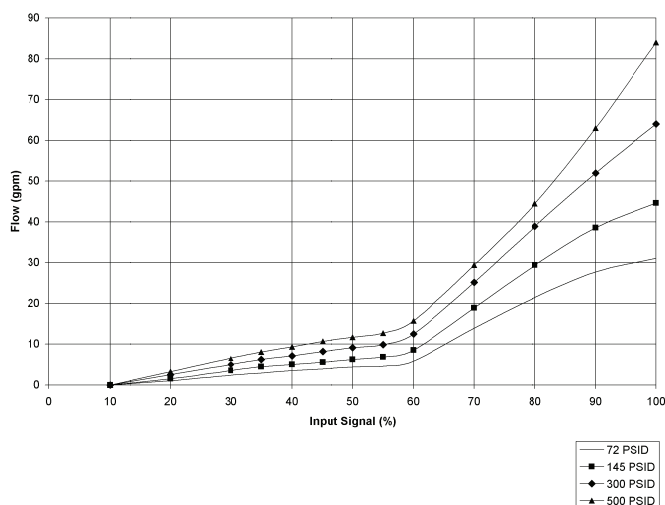
Curves are full flow ΔP .

Conversions: 1 gpm = 3.79 lpm; 1bar = 14.5 psi.

AC-166, FC-166 SPOOL

(Meter-in, Meter-out)

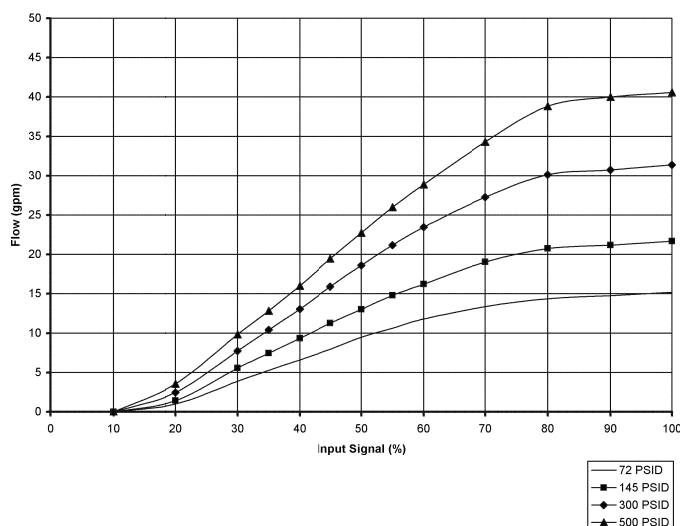
44 gpm @ 145 psid



FI-80 SPOOL

(Meter-in)

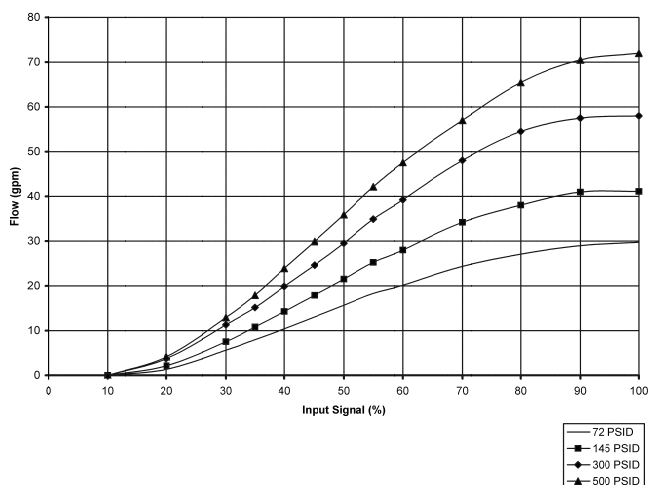
21 gpm @ 145 psid



AI-155, FI-155 SPOOL (Meter-in)

AO-155, FO-155 SPOOL (Meter-out)

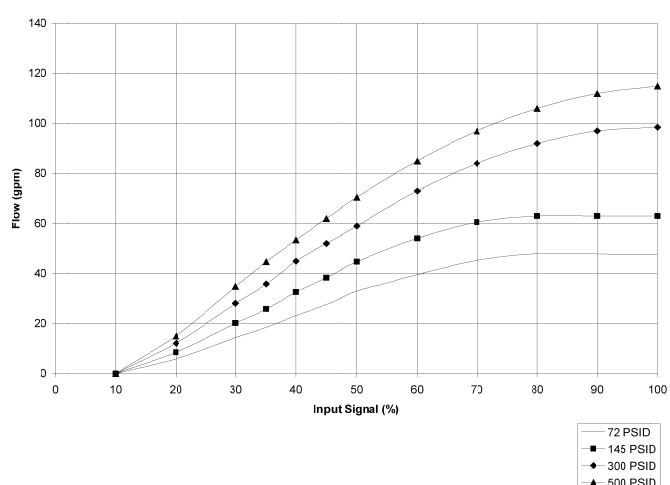
41 gpm @ 145 psid



AI-240, FI-240 SPOOL (Meter-in)

AO-240, FO-240 SPOOL (Meter-out)

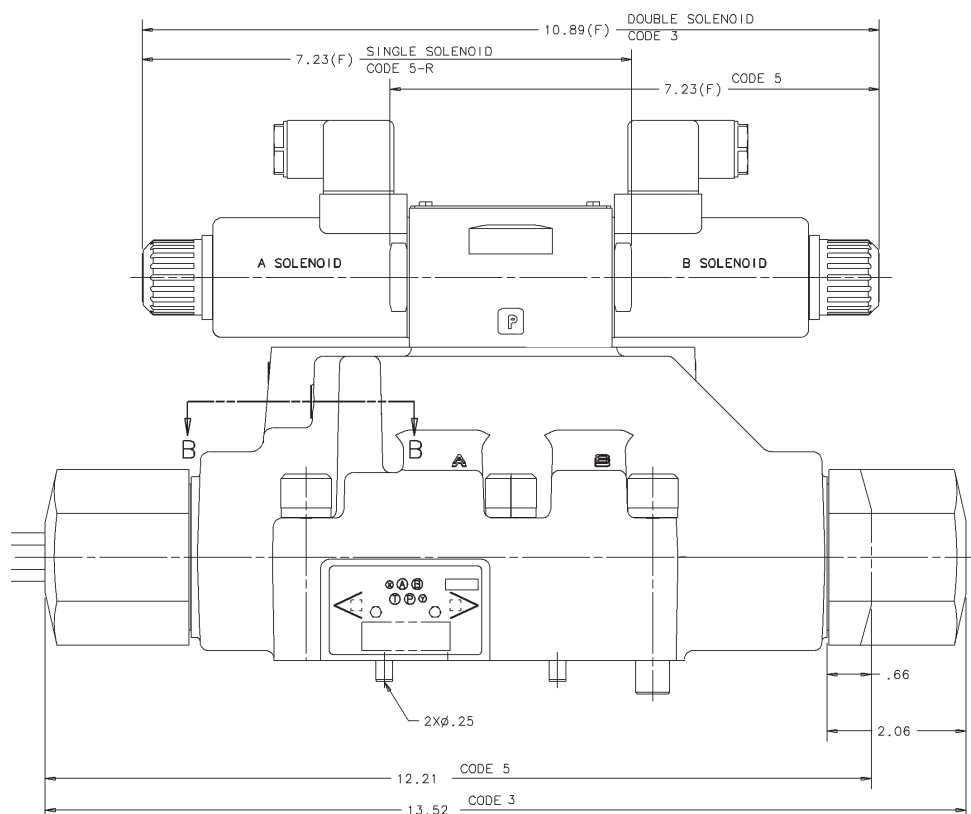
63 gpm @ 145 psid



PROPORTIONAL DIRECTIONAL CONTROL VALVES

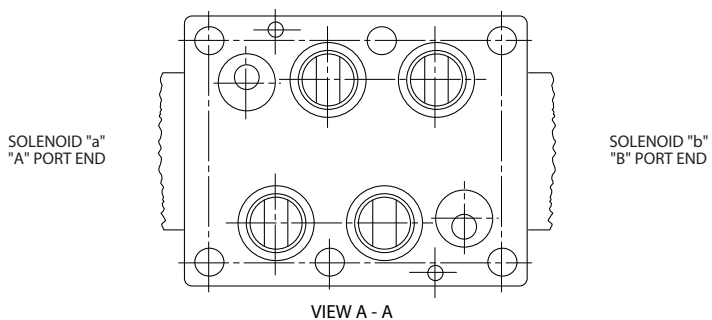
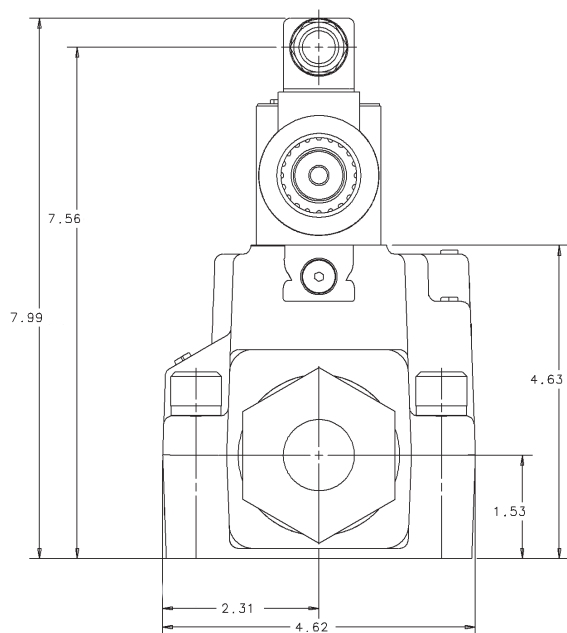
DIMENSIONS

CODE D



Mount to NFPA surface (D08) manifold with six (6) 1/2-13NC x 2-1/2 long socket head cap screws and lockwashers. Bolt kits are available as accessory code BD08-250. Recommended bolt torque is 50 to 60 lbs.-ft. (67.8 to 81.3 NM).

Dimensions shown in: Inches

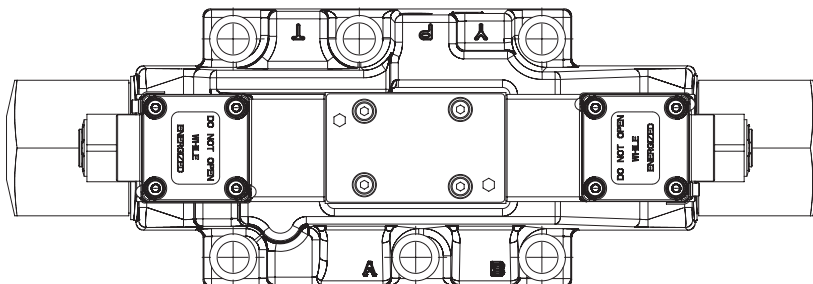


VED08M

PROPORTIONAL DIRECTIONAL CONTROL VALVES

DIMENSIONS

CODE EX Valves



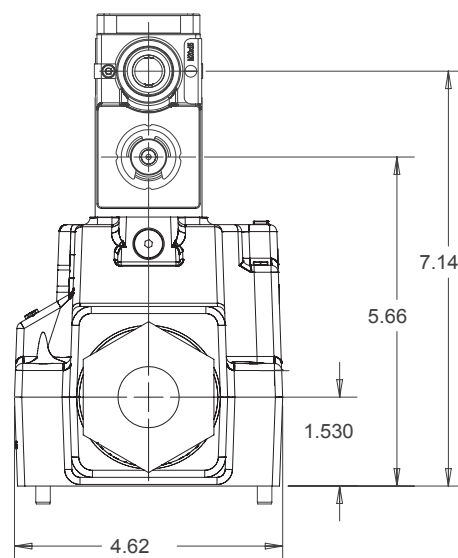
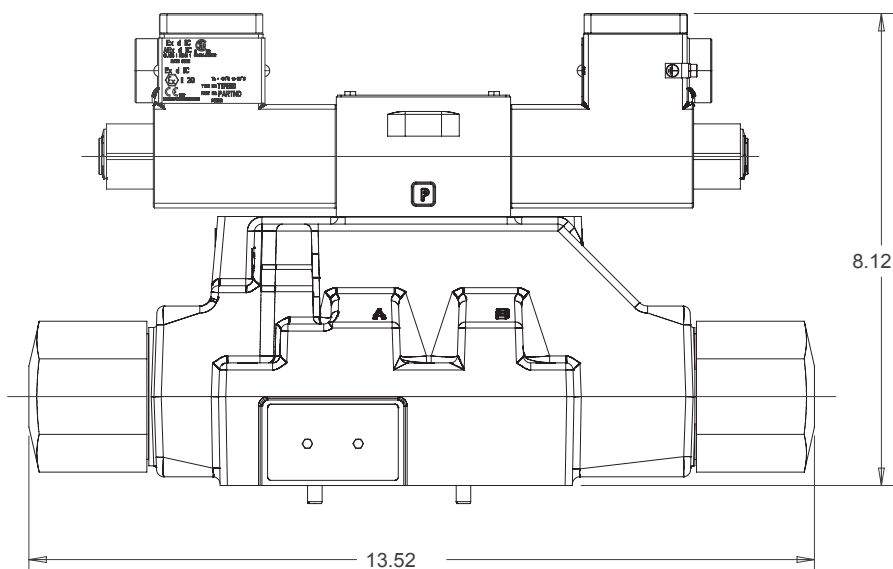
Ex d IIC
AEx d IIC C US
CLASS I ZONE I 08-CSA-193202
DATE CODE

Ex d IIC
II 2G

Ta = -54°C to 60°C

CE 1160
BASEEFA08ATEX004IX

TYPE NO. TYPENO
PART NO. PARTNO
POWER



Dimensions shown in: Inches

SOL CODE	VOLTAGE	MAX. CONTINUOUS CURRENT AMPS	WATTS (IR)	RESISTANCE +/- 5% OHMS	AVERAGE STABILIZED TEMP °C	TEMP CLASS PER AMBIENT TEMP RANGE
12L	12 VDC	2.2	16.4	3.39	127	T4@ -54°C to 50°C
24L	24 VDC	1.1	15.15	12.52	132	T4@ -54°C to 60°C

Spool Position	Inlet Pressure psi (bar)	Step Response Time ms
Centered to 90% spool travel	1000 (70)	122
90% spool travel back to center	1000 (70)	49
30% spool travel to 90% spool travel	1000 (70)	46
90% spool travel back to 30% spool travel	1000 (70)	36
90% spool travel to 90% spool travel	1000 (70)	139

PROPORTIONAL DIRECTIONAL CONTROL VALVES

ORDERING CODE INFORMATION

VED08M — ☐ ☐ — ☐ ☐ ☐ ☐ — ☐ ☐ — ☐ ☐ — A

SELECT ONE SELECT ONE SELECT ONE SELECT ONE SELECT ONE SELECT ONE SELECT ONE SELECT ONE DESIGN LETTER

BASIC VALVE		
CODE	DESCRIPTION	SYMBOL
3	SPRING CENTERED DOUBLE SOLENOID 3 POSITION	
5	SPRING CENTERED SINGLE SOLENOID 2 POSITION (P-B)	

SPOOL	
CODE	SYMBOL
AC-300	
AC-210	
AC-120	
AC-58	
AC-166	METER-IN METER-OUT
AI-240	
AI-155	
	METER-IN
AO-345	
AO-240	
AO-155	
	METER-OUT
FC-300	
FC-210	
FC-120	
FC-58	
FC-166	METER-IN METER-OUT
FI-240	
FI-155	
FI-80	
	METER-IN
FO-240	
FO-155	
	METER-OUT
PC-210	
PC-120	
PC-58	
	METER-IN METER-OUT

SEAL	
CODE	DESCRIPTION
G	VITON

PILOT & DRAIN LOCATION		
CODE	DESCRIPTION	
	PILOT	DRAIN
1	INTL.	EXTL.
2	EXTL.	EXTL.

ELECTRICAL CONNECTION	
CODE	DESCRIPTION
D	DIN 43650 SOLENOID CONN.
EX	HAZARDOUS LOCATION (SEE SPECIFICATION PAGE)

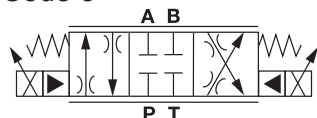
MECHANICAL	
CODE	DESCRIPTION
OMIT	DOUBLE SOL. PILOT VALVE
	SINGLE SOL. PILOT VALVE SOL. ON "B" PORT END OF SLAVE VALVE.
R	SINGLE SOLENOID PILOT VALVE W/O LVDT. PILOT SOL. ON "A" PORT END OF SLAVE VALVE.
WD	WASH DOWN

SOLENOID VOLTAGE	
CODE	VOLTAGE
12	12 VDC
24	24 VDC

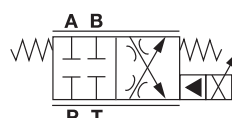
SOLENOID MFG.	
CODE	MFGR.
L	LISK

SCHEMATICS

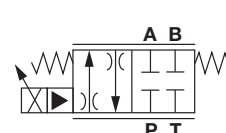
Code 3



Code 5



Code 5-R



TYPICAL ORDERING CODE:

VED08M-3AC-300-GID-24L

Spool Code Conversion (ED08M codes to VED08M codes)

SPOOL CODE CROSS REF

ED08M = VED08M

AC	AC-300
A1C	AC-210
A2C	AC-120
A1I	AI-240
A2I	AI-155
A1O	AO-240
A2O	AO-155
A40C	dual flow gain AC-166

FC	FC-300
F1C	FC-210
F2C	FC-120
F1I	FI-240
F2I	FI-155
F1O	FO-240
F2O	FO-155
F40C	dual flow gain FC-166

VED08M

PROPORTIONAL DIRECTIONAL CONTROL VALVES



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