

# VSD08M/VPD08M

## Pilot Operated Directional Valve

**SUBPLATE MOUNTING**  
**ISO 4401-08**

**P max 5000 PSI 350 bar**  
**Q max 160 GPM 600 l/min**

### ► DESCRIPTION:

The VSD08M and VPD08M pilot operated directional control valves are available with either electric solenoid or hydraulic actuation of the main spool.

Operation: The valves are available in both 2 or 3 position and various spool flow patterns.

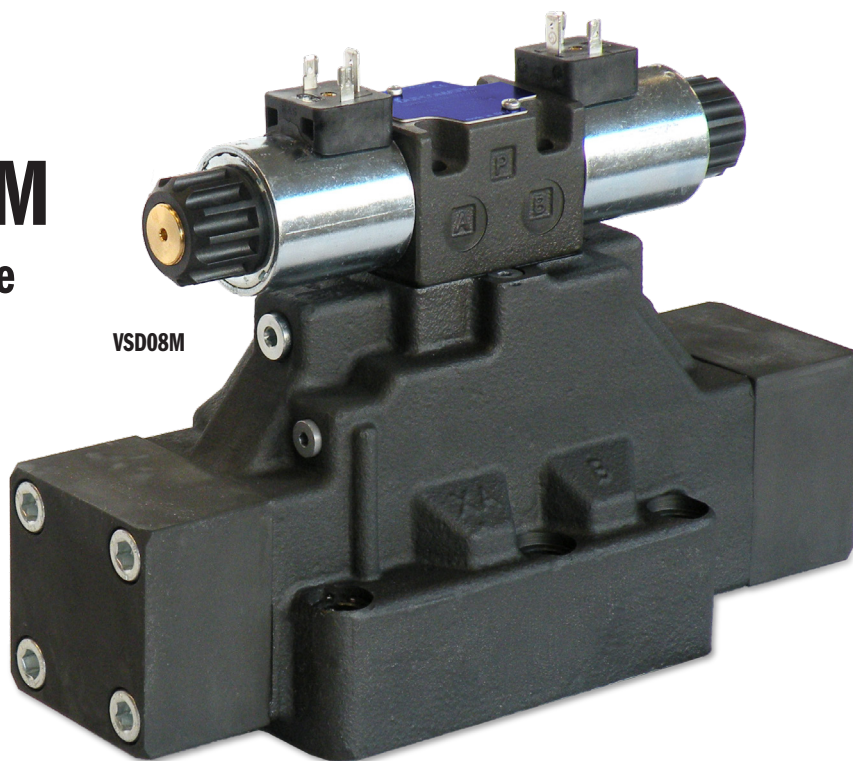
On VSD08M valves, the configuration for internal or external pilot/drains can be easily changed in the field. Also available to improve consistent cycling of the valve are pilot pressure reducing, pilot chocks, and main stage stroke adjustments.

### ► PERFORMANCE:

(Obtained with mineral oil with viscosity of 36 cSt at 50°C)

			VSD08M
Max Operating Pressure:	P - A - B ports	PSI (bar)	5000 (350)
	T port (external drainage)	PSI (bar)	3600 (250)
	T port (internal drainage)	PSI (bar)	AC Box 3000 (210) AC DIN 2300 (160) DC 3000 (210)
Maximum flowrate from port P to A - B - T		GPM (l/min)	160 (600)
Ambient temperature range		°F (°C)	-4 / 122 (-20 / +50)
Fluid temperature range		°F (°C)	-4 / 175 (-20 / +80)
Fluid viscosity range		cSt	10 - 400
Fluid contamination degree		according to ISO 4406:1999 class 20/18/15	
Recommended viscosity		cSt	25
Mass: Dual Solenoid Single Solenoid VPD08M		lbs (kg)	32 (14.5)
			29 (13)
			28 (12.5)

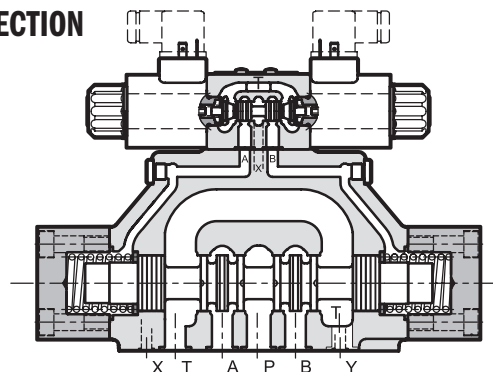
VSD08M



### ► FEATURES:

- The VSD08M are 4-ports directional valves, pilot operated, with mounting surface according to ISO 4401-08 standards
- VPD08M are the hydraulic actuated versions.
- A high pressure version (H) is available, consult factory.
- Valves are available with different spool types (see page 5), with some options for the opening control.
- They are available also with zinc-nickel surface treatments, that ensure a salt spray resistance up to 600 hours.

### CROSS SECTION



### ► IDENTIFICATION CODE:

# VSD08M

- [ ] - [ ] [ ] [ ] [ ] [ ] -

CONTINUED  
ON NEXT PAGE...

Solenoid  
Operated

#### BASIC VALVE FUNCTIONS / SPOOL CODES

see page 5

#### SEAL

CODE	DESCRIPTION
<b>A</b>	Buna
<b>G</b>	Viton

#### PILOT / DRAIN

CODE	DESCRIPTION
<b>1</b>	Internal Pilot External Drain
<b>2</b>	External Pilot External Drain
<b>3</b>	Internal Pilot Internal Drain
<b>4</b>	External Pilot Internal Drain

#### MECHANICAL OPTIONS (OMIT IF NOT REQUIRED)

CODE	DESCRIPTION
<b>R</b>	REV. Build Solenoid A Supplied
<b>JJ</b>	Main Stage Spool Stroke Adjustment (On A and B Port Ends)
<b>JA</b>	Main Stage Spool Stroke Adjustment (On A Port End Only)
<b>JB</b>	Main Stage Spool Stroke Adjustment (On B Port End Only)
<b>KK</b>	Adjustable Pilot Chokes
<b>P*</b>	Pilot Throttle Insert P Port (available 0.6mm to 3.5mm)
<b>A*</b>	Pilot Throttle Insert A Port (available 0.6mm to 3.5mm)
<b>B*</b>	Pilot Throttle Insert B Port (available 0.6mm to 3.5mm)
<b>WD**</b>	Washdown

\* Pilot Valve Port Inserts available  
sizes see Page 9

\*\* WD code only for Valve  
enhancements with Terminal  
Box options.

#### INTERNAL PILOT OPTIONS AVAILABLE ONLY WITH PILOT/DRAIN 1 AND 3 (OMIT IF NOT REQUIRED)

CODE	DESCRIPTION
<b>Z</b>	Pilot Pressure Reducer
<b>C70</b>	Check Valve On 'P' Port Cracking Pressure: 70 Psi (5 Bar). Available For D07 and D08 Sizes Only.

#### PILOT VALVE OVERRIDE OPTIONS

Only available with DIN or Deutsch Connections  
(Select 1)

CODE	DESCRIPTION
<b>OMIT</b>	No options
<b>H</b>	Lever Override (DC only)
<b>LL</b>	Long Lever Override (DC Only)
<b>U</b>	Manual Override Boot
<b>CP</b>	Push Knob (DC only)
<b>CK1</b>	Turn Knob (DC only)
<b>CPK</b>	Mechanical Detent (DC only)
<b>CK2</b>	Push and Twist (DC only)

For applications requiring a higher IP rating,  
one of the above codes will be required.  
(See pages 16 for more details)

#### TYPICAL ORDERING CODE:

**Box: VSD08M-3A-G1B-60L**

**DIN: VSD08M-1A-G2-D24WK1**

IDENTIFICATION CODE - for the hydraulic operated valves is on page #

Please see Connectors Catalog  
Form #1027453

### ► IDENTIFICATION CODE:

CONTINUED  
FROM LAST PAGE.



DESIGN LETTER

Select 1

PILOT VALVES REQUIRING TERMINAL BOX CONNECTIONS <i>Reference Page 13-14</i>		
CODE	VOLTAGE	CONNECTION TYPE
<b>B-60L</b>	120 - 60hz 110 - 50hz	Connection Box with terminal post and lights
<b>B-61L</b>	240 - 60hz 220 - 50hz	
<b>B-68L</b> (Low Force)	120 - 60hz 110 - 50hz	
<b>B-70L</b>	24 V DC	
<b>B-75L</b>	12 V DC	
<b>B3H-60L</b>	120 - 60hz 110 - 50hz	Single Solenoid Box with 3 PIN MALE MINI RECEPTACLE CONNECTOR ON "B" PORT END
<b>B3H-61L</b>	240 - 60hz 220 - 50hz	
<b>B3H-68L</b> (Low Force)	120 - 60hz 110 - 50hz	
<b>B3H-70L</b>	24 V DC	
<b>B3H-75L</b>	12 V DC	
<b>B3A-60L</b>	120 - 60hz 110 - 50hz	Single Solenoid Box with 3 PIN MALE MINI RECEPTACLE CONNECTOR ON "A" PORT END
<b>B3A-61L</b>	240 - 60hz 220 - 50hz	
<b>B3A-68L</b> (Low Force)	120 - 60hz 110 - 50hz	
<b>B3A-70L</b>	24 V DC	
<b>B3A-75L</b>	12 V DC	
<b>B4-70L</b>	24 V DC	Box with 4 PIN MALE MICRO RECEPTACLE CONNECTOR ON "B" PORT END
<b>B4-75L</b>	12 V DC	Box with 4 PIN MALE MICRO RECEPTACLE CONNECTOR ON "A" PORT END
<b>B4A-70L</b>	24 V DC	
<b>B4A-75L</b>	12 V DC	Box with 4 PIN MALE MICRO RECEPTACLE CONNECTOR ON "B" PORT END
<b>BD4-70L</b>	24 V DC	
<b>BD4-75L</b>	12 V DC	Box with 4 PIN MALE MICRO RECEPTACLE CONNECTOR ON "A" PORT END
<b>BD4A-70L</b>	24 V DC	
<b>BD4A-75L</b>	12 V DC	Box with 5 PIN MALE MINI RECEPTACLE CONNECTOR ON "B" PORT END
<b>B5H-60L</b>	120 - 60hz 110 - 50hz	
<b>B5H-61L</b>	240 - 60hz 220 - 50hz	
<b>B5H-68L</b> (Low Force)	120 - 60hz 110 - 50hz	
<b>B5H-70L</b>	24 V DC	
<b>B5H-75L</b>	12 V DC	Box with 5 PIN MALE MINI RECEPTACLE CONNECTOR ON "A" PORT END
<b>B5A-60L</b>	120 - 60hz 110 - 50hz	
<b>B5A-61L</b>	240 - 60hz 220 - 50hz	
<b>B5A-68L</b> (Low Force)	120 - 60hz 110 - 50hz	
<b>B5A-70L</b>	24 V DC	
<b>B5A-75L</b>	12 V DC	

DIN / DEUTSCH CONNECTION <i>Reference Page 14-15</i>		
CODE	VOLTAGE	CONNECTION TYPE
DC Voltages		
<b>D12WK1</b>	12 VDC	DIN 43650 (Form A) Zinc-Nickel coating
<b>D12WK7</b>	12 VDC	Deutsch DT04-2P Zinc-Nickel coating
<b>D12WK7D</b>	12 VDC	Deutsch DT04-2P Bi-Directional Diode Zinc-Nickel coating
<b>D14K1</b>	14 VDC	DIN 43650 (Form A)
<b>D24WK1</b>	24 VDC	DIN 43650 (Form A) Zinc-Nickel coating
<b>D24WK7</b>	24 VDC	Deutsch DT04-2P Zinc-Nickel coating
<b>D24WK7D</b>	24 VDC	Deutsch DT04-2P Bi-Directional Diode Zinc-Nickel coating
<b>D28K1</b>	28 VDC	DIN 43650 (Form A)
<b>D48K1</b>	48 VDC	DIN 43650 (Form A)
<b>D110K1</b>	110 VDC	DIN 43650 (Form A)
<b>D125K1</b>	125 VDC	DIN 43650 (Form A)
<b>D220K1</b>	220 VDC	DIN 43650 (Form A)
AC Voltages		
<b>A24K1</b>	24 VAC	DIN 43650 (Form A)
<b>A48K1</b>	48 VAC	DIN 43650 (Form A)
<b>A110K1</b>	110-50Hz 120-60Hz	DIN 43650 (Form A)
<b>A230K1</b>	230-50Hz 240-60Hz	DIN 43650 (Form A)

► **IDENTIFICATION CODE: (Hydraulic Piloted through X and Y Ports)**

**VPD08M** -  -   **2** -  — DESIGN LETTER

Hydraulic  
Operated

BASIC VALVE FUNCTIONS / SPOOL CODES
see page 5

SEAL	
CODE	DESCRIPTION
<b>A</b>	Buna
<b>G</b>	Viton

MECHANICAL OPTIONS (OMIT IF NOT REQUIRED)	
CODE	DESCRIPTION
<b>R</b>	REV. Build Solenoid A Supplied
<b>JJ</b>	Main Stage Spool Stroke Adjustment (On A and B Port Ends)
<b>JA</b>	Main Stage Spool Stroke Adjustment (On A Port End Only)
<b>JB</b>	Main Stage Spool Stroke Adjustment (On B Port End Only)
<b>KK</b>	Adjustable Pilot Chokes
<b>P*</b>	Pilot Throttle Insert P Port (available 0.6mm to 3.5mm)
<b>A*</b>	Pilot Throttle Insert A Port (available 0.6mm to 3.5mm)
<b>B*</b>	Pilot Throttle Insert B Port (available 0.6mm to 3.5mm)

HYDRAULIC ACTUATION	
CODE	DESCRIPTION
<b>2</b>	X Port Is Actuator B Y Port Is Actuator A

\* Pilot Valve Port Inserts available  
sizes see Page 9

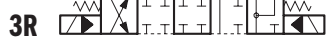
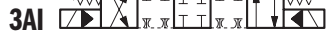
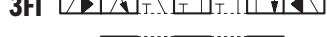
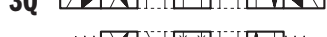
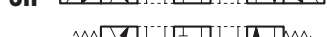
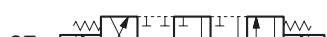
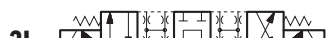
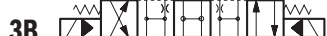
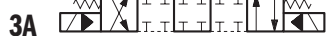
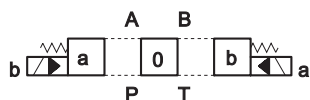
TYPICAL ORDERING CODE:  
**VPD08M-3A-A2-A**

**IDENTIFICATION CODE** - for the hydraulic operated valves is on page #

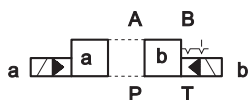
Please see Connectors Catalog  
Form #1027453

### ► FUNCTIONS/SPOOL CODES:

2 solenoids  
3 positions with spring centering



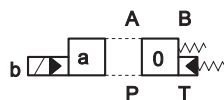
2 solenoids  
2 positions with mechanical retention



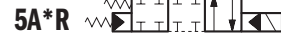
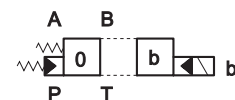
\* NOT Available for VPD08M

**\*NOTE: 2A and 2B valve main stages are spring centered when no pilot pressure is present. Consult factory for other options.**

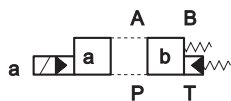
1 solenoid side A  
2 positions (central + external)  
with spring centering



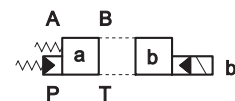
1 solenoid side B  
2 positions (central + external)  
with spring centering



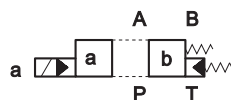
1 solenoid side A  
2 external positions  
with return spring



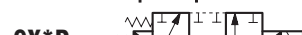
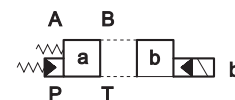
1 solenoid side B  
2 external positions  
with return spring



Three-way valve - 1 solenoid - 2 external positions, return spring



\* NOT Available for VPD08M



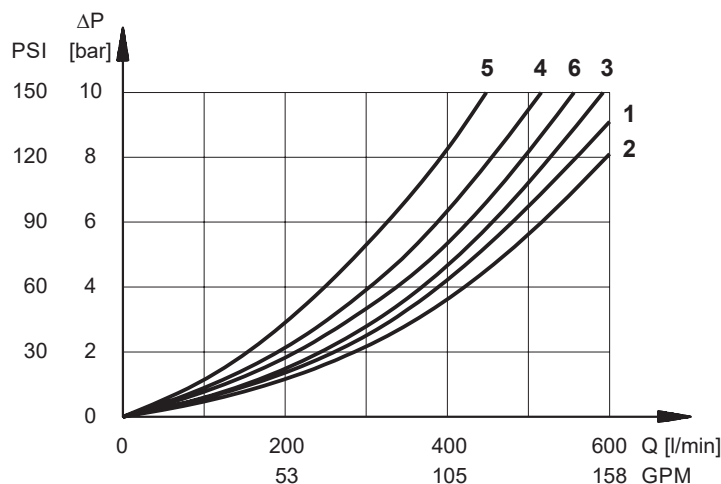
\* NOT Available for VPD08M

Besides the diagrams shown, which are the most frequently used, other special versions are available: consult our technical department for their identification, feasibility and operating limits.

### ► PERFORMANCE DATA:

#### PRESSURE DROPS $\Delta p$ -Q

(obtained with viscosity 36 cSt at 50 °C)



ACTUATED POSITION

SPOOL TYPE	FLOW DIRECTION			
	P → A	P → B	A → T	B → T
	CURVES ON GRAPH			
3A, 5A	1	1	2	3
3B, 5B	2	2	1	2
3F, 5F	1	1	1	2
3L, 5L	6	6	3	4
3E	1	1	2	2
3H	6	6	3	4
3Q	6	6	4	3
3FI	1	1	2	3
3G	2	2	2	3
3K	1	1	1	3
3AI	1	1	2	3
3R	1	1	2	
3V	1	1		3
1A	1	1	2	2
1B	1	1	1	1
2A	1	1	2	3

NORMAL POSITION

SPOOL TYPE	FLOW DIRECTION				
	P → A	P → B	A → T	B → T	P → T
	CURVES ON GRAPH				
3B, 5B					6 ○
3F, 5F			4 ●	4 ◆	
3L, 5L					5
3E				4	
3H					5 ◆
3Q					5 ●
3G	4 ●	4 ◆			
3K			3		
1A	1			3	

○ A-B closed    ● B closed    ◆ A closed

#### OPERATING LIMITS

The values have been obtained with mineral oil, viscosity 36 cSt at 50 °C, and filtration ISO 4406:1999 class 18/16/13.

MAXIMUM FLOW RATES GPM/LPM		
	at 3000 psi (210 bar)	at 5000 psi (350 bar)
3L, 3H, 3Q	132 GPM (500 LPM)	118 GPM (450 LPM)
All the other spools	158 GPM (600 LPM)	132 GPM (500 LPM)

## ► PERFORMANCE DATA:

### SWITCH TIMES

The values indicated refer to a solenoid valve working with piloting pressure of 100 bar, with mineral oil at a temperature of 50 °C, at viscosity of 36 cSt and with P→A / B→T connections.

The energizing and de-energizing times are obtained at the pressure variation which occurs on the lines.

TIMES (± 10%) [ms]	ENERGIZED		DE-ENERGIZED	
	2 Pos	3 Pos	2 Pos	3 Pos
AC solenoid	70	40	70	40
DC solenoid	100	70	80	50

### PERFORMANCE CHARACTERISTICS

PRESSURES	VSD08M	VPD08M
Max pressure in P, A, B ports	5000 psi (350 Bar)	5000 psi (350 Bar)
Max pressure in T line with external drain	3600 psi (250 Bar)	3600 psi (250 Bar)
Max pressure in T line with internal drain	3000 psi (210 Bar) (DC) 2300 psi (160 Bar) (AC)	-
Max pressure in Y line with external drain	3000 psi (210 Bar) (DC) 2300 psi (160 Bar) (AC)	-
Minimum pilot supply pressure (Note 1)	75-175 psi (5-12 Bar) Note 1	75-175 psi (5-12 Bar) Note 1
Maximum pilot supply pressure (Note 2)	3000 psi (210 Bar) Note 2	3000 psi (210 Bar) Note 2

NOTE 1: The minimum piloting pressure can be the lower range value at low flows rates, but with higher flow rates the higher value is needed.

NOTE 2: If the working pressure is higher than these rated limits, then provide an external pilot line with p<sub>max</sub> within the rated limits and purchase the valve with code 2 or 4 type pilot supply.

For VSD08M valves, if the external pilot line is not possible, you must opt for the version with Z type pilot supply (see page 8), providing max 5000 psi (350 bar) at inlet pressure P.

### ► OPTIONS:

#### PILOT AND DRAIN

Valves with electro-hydraulic actuation (VSD08M) are available with both pilot supply and drain internal or external type. The version with external drain allows a higher back pressure on the return line.

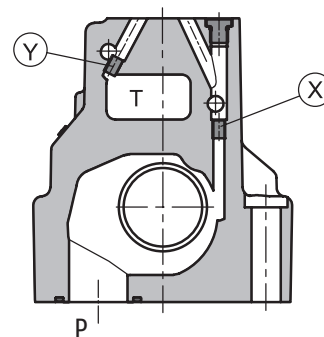
The valves with hydraulic actuation (VSD08M) are available with both pilot supply and pilot return external only.

NOTE: The pilot supply and drainage configuration must be chosen when ordering.

Subsequent modification is only permitted by authorized experienced operators or at the factory.

TYPE OF VALVE		PLUG ASSEMBLY	
		X	Y
1	Internal pilot and external drain	No	Yes
2	External pilot and external drain	Yes	Yes
3	Internal pilot and internal drain	No	No
4	External pilot and internal drain	Yes	No

Dimensions mm [in]



X: plug M6x8 for external pilot

Y: plug M6x8 for external drain

#### C70 OPTION PILOT SUPPLY:

##### INTERNAL PILOT SUPPLY WITH BACK PRESSURE VALVE IN P PORT

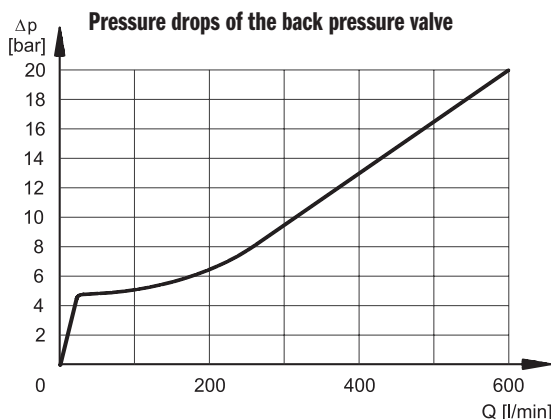
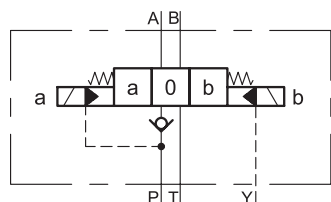
VSD08M valves are available with incorporated back pressure valve in the P port.

This is in order to reach the minimum pilot supply pressure at normal position in valves in which the inlet port (P) and the return port (T) are connected.

The pressure differential of the back pressure valve is to be added to that of the main valve, showed at page 6.

The cracking pressure is approx 85 psi (6 bar) at 15 l/min.

NOTE: The back pressure valve doesn't assure the seal so it has not be intended as a check valve.

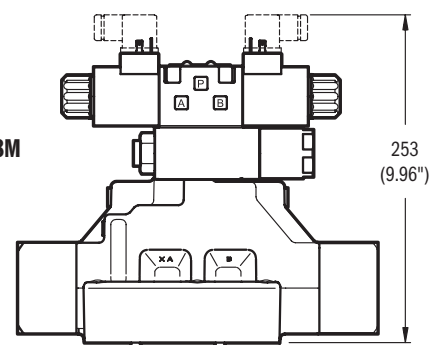


#### Z TYPE PILOT SUPPLY:

##### INTERNAL PILOT SUPPLY WITH PRESSURE REDUCING VALVE

The Z type pilot supply consists of an arrangement with internal pilot and 30 bar supply pressure to the pilot stage by means of a fixed adjustment pressure reducing valve placed between the main stage and the pilot valve.

VSD08M





### ► OPTIONS:

Dimensions mm [in]

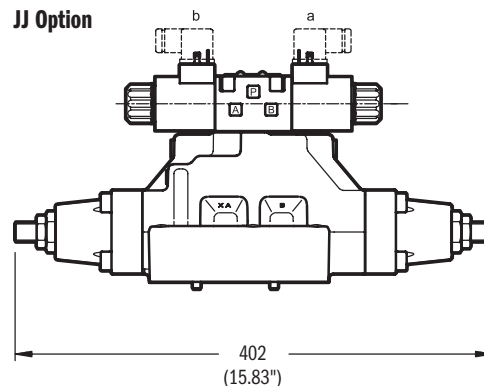
#### CONTROL OF THE MAIN SPOOL STROKE:

Stroke control for the main spool is possible by means of special side covers so as to vary the maximum clearance opening.

This solution allows control of the flow rate from the pump to the actuator and from the actuator to the outlet, obtaining a double adjustable control on the actuator.

Add the letter JA, JB or JJ in the identification code to order this version (see page 2).

JJ Option

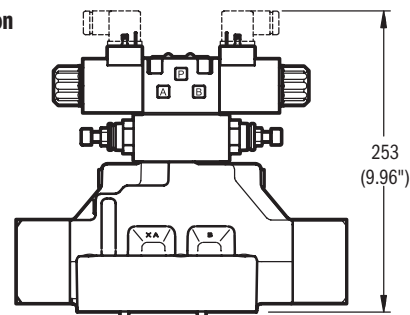


#### CONTROL OF THE MAIN SPOOL SHIFTING SPEED:

By placing a double flow control valve (F03MSV type) between the pilot solenoid valve and the main stage, the pilot supply flow can be adjusted and therefore the changeover smoothness can be varied.

Add the letter KK in the identification code to order this version (see page 2).

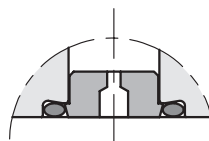
KK Option



### PORT RESTRICTIONS

Port restrictor plugs can be ordered separately.

Port Throttle Insert Options (Select as required)			
Port Code			
Throttle Orifice Size	P PORT OF PILOT VALVE	A PORT OF PILOT VALVE	B PORT OF PILOT VALVE
0.8 mm	P0.8	A0.8	B0.8
1.0 mm	P1.0	A1.0	B1.0
1.2 mm	P1.2	A1.2	B1.2
1.5 mm	P1.5	A1.5	B1.5

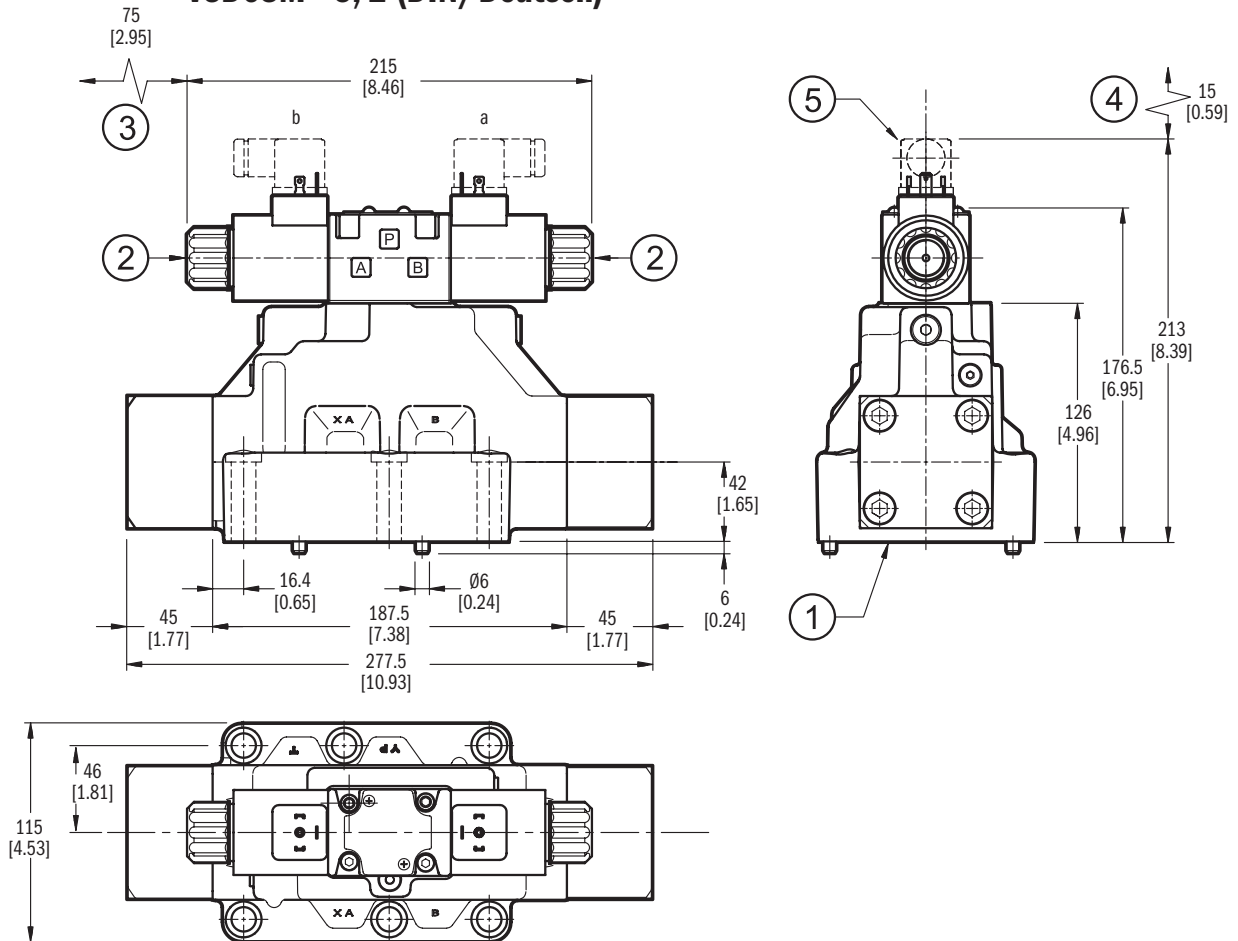


► **INSTALLATION DATA:**

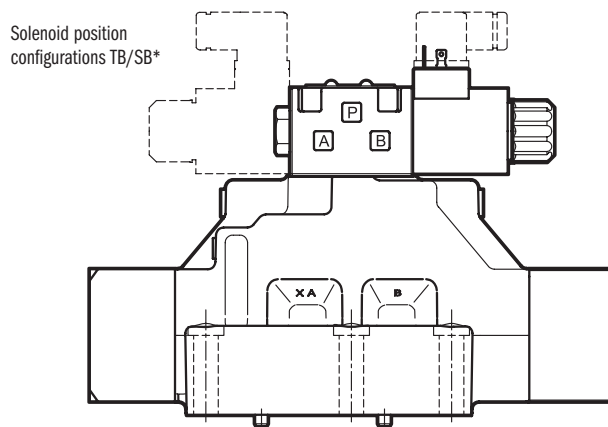
**OVERALL AND MOUNTING DIMENSIONS**

Dimensions mm [in]

**VSD08M - 3, 2 (DIN/Deutsch)**



**VSD08M**



Fastening: 6 bolts 1/2 - 13 UNC x 2 1/2 Grade 8 or stronger  
Tightening torque: 50 to 70 lbf-ft (69 to 96 Nm)

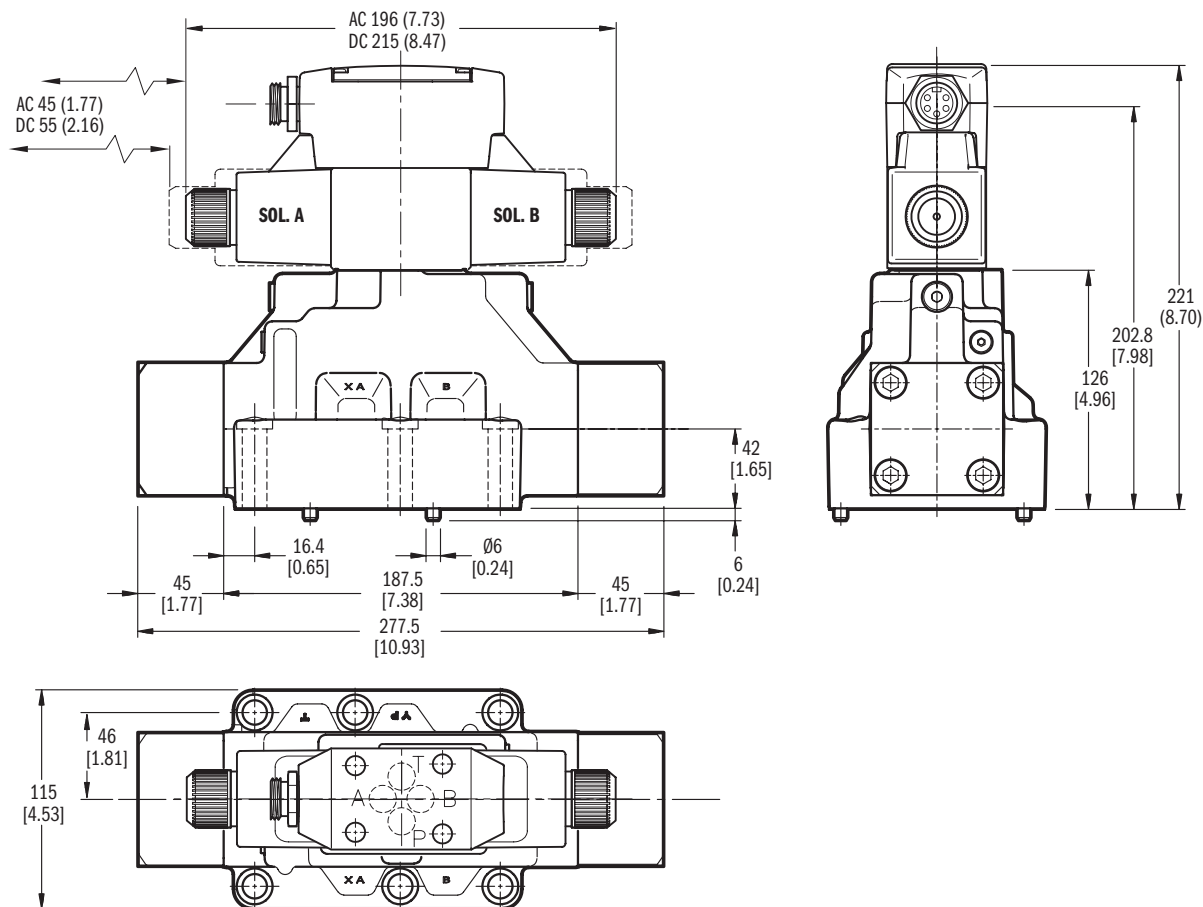
1	Sealing rings: 4 O-ring AS568 -215 90 shore A 2 O-ring AS568 -210 90 shore A
2	Manual override
3	Coil removal space
4	Connector removal space
5	Electric connector to be ordered separately

► **INSTALLATION DATA:**

**OVERALL AND MOUNTING DIMENSIONS**

Dimensions mm [in]

**VSD08M**



Fastening: 6 bolts 1/2 - 13 UNC x 2 1/2 Grade 8 or stronger

Tightening torque: 50 to 70 lbf-ft (69 to 96 Nm)

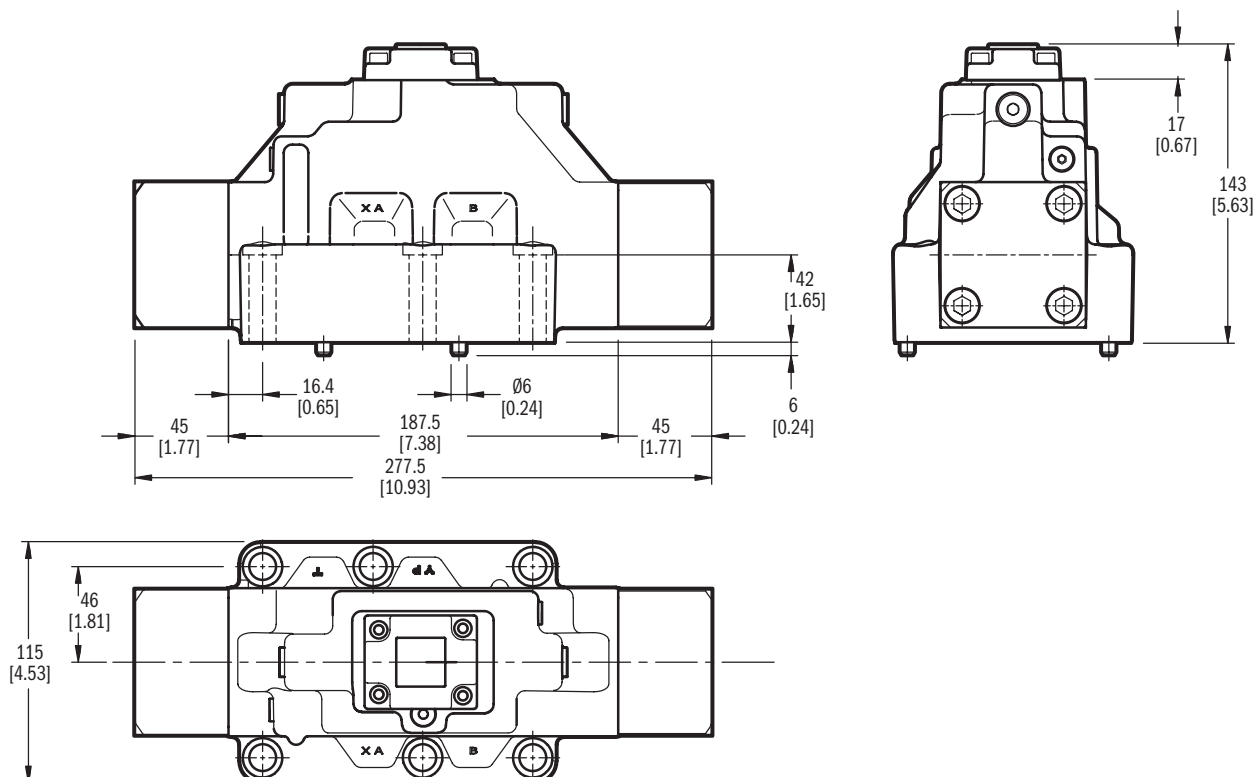
Sealing rings: 4 O-ring AS568 -215 90 shore A  
2 O-ring AS568 -210 90 shore A

► **INSTALLATION DATA:**

Dimensions mm [in]

**OVERALL AND MOUNTING DIMENSIONS**

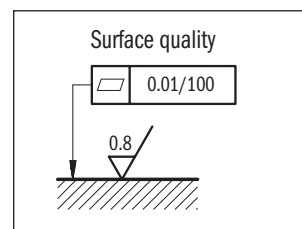
**VPD08M**



**INSTALLATION**

Configurations with centring and recall springs can be mounted in any position; code 2 valves - without springs and with mechanical detent - must be mounted with the longitudinal axis horizontal.

Valve fastening takes place by means of screws or tie rods, laying the valve on a lapped surface, with values of planarity and smoothness that are equal to or better than those indicated in the drawing. If the minimum values of planarity or smoothness are not met, fluid leakages between valve and mounting surface can easily occur.



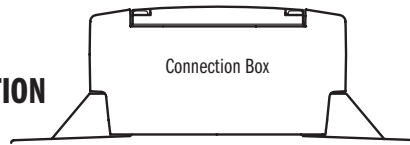
Fastening: 6 bolts 1/2 - 13 UNC x 2 1/2 Grade 8 or stronger

Tightening torque: 50 to 70 lbf-ft (69 to 96 Nm)

Sealing rings: 4 O-ring AS568 -215 90 shore A  
2 O-ring AS568 -210 90 shore A

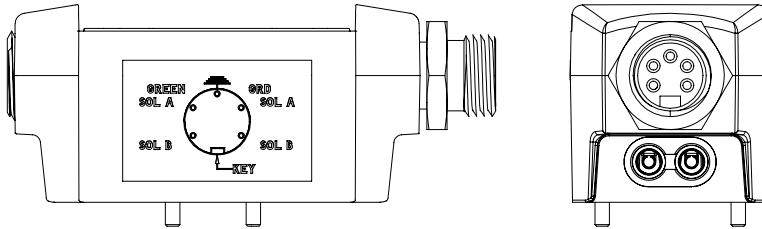
NOTE: Fastening screws of class A 10.9 are prescribed for the DS\*8H valves for high pressure.

### ► ELECTRICAL OPTIONS: PILOT VALVE - TERMINAL BOX CONNECTION



Standard with terminals,  
solenoid indicator lights.

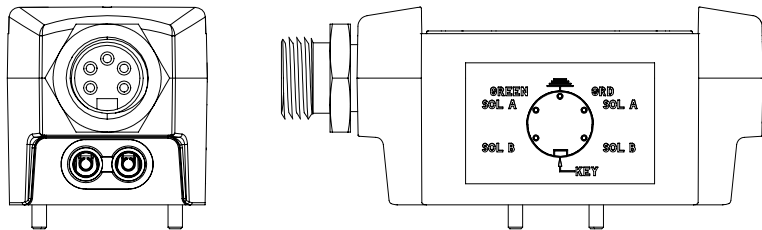
**CODE:  
B5H**



#### 5 PIN RECEPTACLE

Male mini receptacles conform to  
NFPA/T3.5.29 R1 - 2007 used with  
single or double solenoid valve.  
26 mm [1"] Wrench

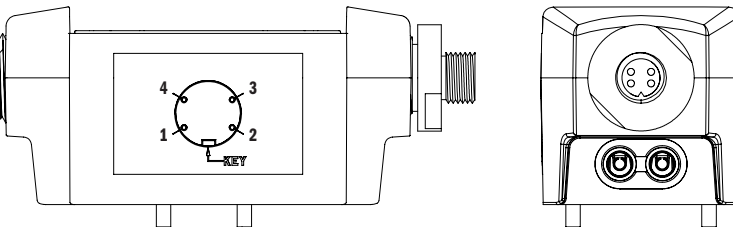
**B5A**



1	Lead to Solenoid B
2	Lead to Solenoid A
3	Ground Lead (Green)
4	Lead to Solenoid A
5	Lead to Solenoid B

#### (4 PIN CONNECTION OPTION FOR DC VOLTAGE COILS ONLY)

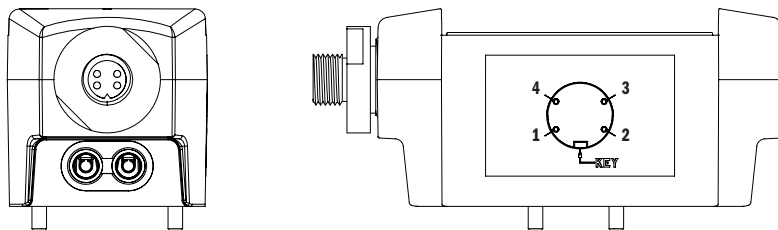
**B4/BD4**



#### 4 PIN RECEPTACLE

Male micro receptacles (M12x1  
thread) used with DC valve only.  
23 mm [7/8"] Wrench

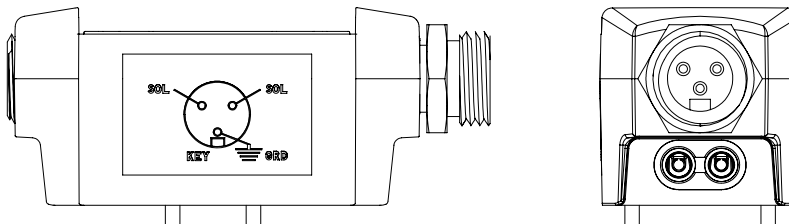
**B4A/BD4A**



4A & 4		
1	Brown	Lead to Solenoid A
2	White	No Connection
3	Blue	Common Lead to Sol. A & B
4	Black	Lead to Solenoid B

D4A & D4		
1	Brown	No connection
2	White	Lead to Solenoid A
3	Blue	Common Lead to Sol. A & B
4	Black	Lead to Solenoid B

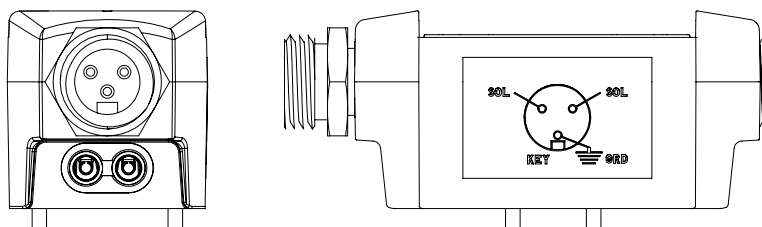
**B3H**



#### 3 PIN RECEPTACLE

Male mini receptacles conform to  
NFPA/T3.5.29 R1 - 2007 used with  
single solenoid valve.  
26 mm [1"] Wrench

**B3A**



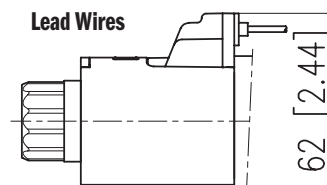
1	Ground Lead (Green)
2	Lead to Solenoid
3	Lead to Solenoid

## ► ELECTRICAL:

Dimensions mm [in]

### PILOT VALVE - CONNECTION BOX SOLENOIDS

This is a two pin solenoid which connects to the circuit board.  
Wiring is done on the terminal strip inside the box.



BOX CONNECTION CODE	VOLTAGE & FREQ. [VOLT - HERTZ]	VOLTAGE LIMITS [MIN - MAX]	RESISTANCE ±10% [OHM]	INRUSH CURRENT [A]	HOLDING CURRENT [A]	HOLDING POWER [W]	REPLACEMENT
60	120 - 60 110 - 50	108 - 126 99 - 116	35.7	1.35 1.41	0.46 0.53	22 23	1012953AD
61	240 - 60 120 - 50	216 - 252 198 - 231	146.4	0.61 0.71	0.23 0.26	22 23	1012953AC
68	120 - 60 110 - 50	108 - 132 99 - 121	75.8	0.72 0.74	0.22 0.24	10 10	1012953AB
70	24 V DC	21 - 26	19.2	1.25	1.25	30	1012957AC
75	12 V	10 - 13	4.8	2.5	2.5	30	1012957AB

### WASHDOWN OPTION (CODE WD)

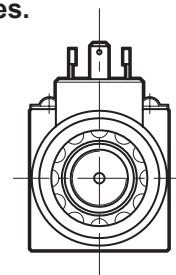
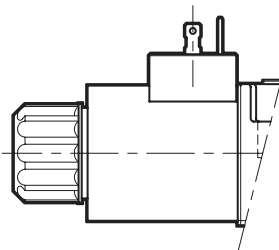
The wash-down option with the electrical box is designed for an IP65 rating. This option uses a special cover without the mounting bolt access holes and uses silicone sealant to help seal between the coil and core tube.

The DIN, Deutsch and lead wire coils versions of the wash-down option uses silicone sealant to help seal between the coil and core tube.

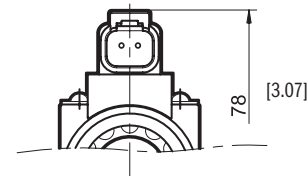
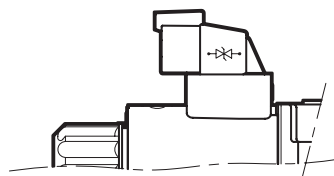
### PILOT VALVE - CONNECTIONS: DIN / DEUTSCH

See Connectors and Cable Sets Catalog (1027453) for all available connection styles.

Connection for EN 175301-803  
(ex DIN 43650) connector  
code WK1 (DC voltage version only)



Connection for  
DEUTSCH DT06-2S male connector  
code WK7  
code WK7D (with diode)



### ELECTRICAL CONNECTORS

Solenoid operated valves are delivered without connectors.  
Connectors type EN 175301-803 (ex DIN 43650) for K1 connections  
can be ordered separately. See: Connectors and Cables sets catalog.

## ► ELECTRICAL: PILOT VALVE

### Protection from atmospheric agents IEC 60529

The IP protection degree is guaranteed only with both valve and connectors of an equivalent IP degree, correctly connected and installed.

Electric Connection Code	Electric Connection Protection	Whole Valve Protection
<b>K1</b>	IP65	IP65
<b>WK1</b>	IP66	IP66
<b>WK7</b>	IP66/IP68/IP69 IP69K*	IP66/IP68/IP69 IP69K*
<b>WK7D</b>	IP66/IP68/IP69 IP69K*	IP66/IP68/IP69 IP69K*

(\*) The IP69K protection degree is not taken in account in IEC 60529 but is included in ISO 20653.

### Current and absorbed power for DC solenoid valves

The coils WK feature a zinc-nickel surface treatment.

The WK7D coil includes a bi-directional diode for protection from voltage peaks during switching. During the switching the diode significantly reduces the energy released by the winding, but limiting the voltage to 31.4 V in the D12 coil and to 58.9 V in the D24 coil.

Using connectors type "D" (VEA-6FR) with embedded bridge rectifier it is possible to feed DC coils (starting from 48V voltage) with alternating current (50 or 60 Hz), considering a reduction of the operating limits (see page 6).

Code	Nominal Voltage [V]	Resistance at 20 °C [Ω]	Current Consumption [A]	Power Consumption [W]	Replacement Coil Code
<b>D12WK1</b>	12	4.4	2.72	32.7	M3984000001
<b>D12WK7</b>	12	4.4	2.72	32.7	M3984000101
<b>D12WK7D</b>	12	4.4	2.72	32.7	M3984000111
<b>D14K1</b>	14	7.2	1.93	27	M1903086
<b>D24WK1</b>	24	18.6	1.29	31	M3984000002
<b>D24WK7</b>	24	18.6	1.29	31	M3984000102
<b>D24WK7D</b>	24	18.6	1.29	31	M3984000112
<b>D28K1</b>	28	26	1.11	31	M1903082
<b>D48K1</b>	48	78.6	0.61	29.5	M1903083
<b>D110K1</b>	110	423	0.26	28.2	M1903464
<b>D125K1</b>	125	550	0.23	28.6	M1903467
<b>D220K1</b>	220	1692	0.13	28.2	M1903465

### Current and absorbed power for AC solenoid valve

The table shows current and power consumption values at inrush and at holding, for AC coils.

**Coils for alternating current (values ± 5%).**

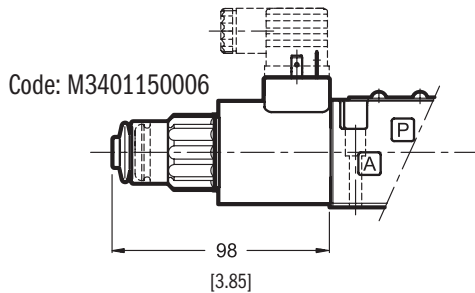
Suffix	Nominal voltage [V]	Freq. [Hz]	Resistance at 20 °C [Ω]	Current consumption at inrush [A]	Current consumption at holding [A]	Power consumption at inrush [VA]	Power consumption at holding [VA]	Coil code [K1]
A24K1	24	50	1,69	5,81	1,32	139	32	M1902830
A48K1	48		6,02	3,78	0,86	182	41	M1902831
A110K1	110V-50Hz 120V-60Hz	50/60	33	1,76	0,40	194	44	M1902832
				1,54	0,35	185	42	
A230K1	230V-50Hz 240V-60Hz		135	0,92	0,21	213	48	M1902833
				0,79	0,18	190	43	

## ► MANUAL OVERRIDES: PILOT VALVE

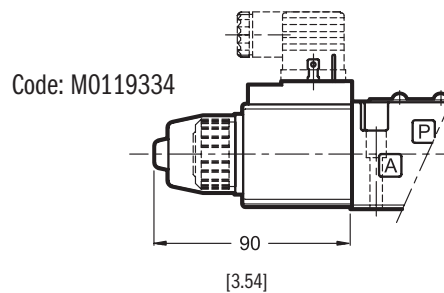
Dimensions mm [in]

**Manual override, boot protected**

**U - Version for DC solenoid valve**

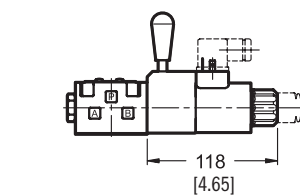
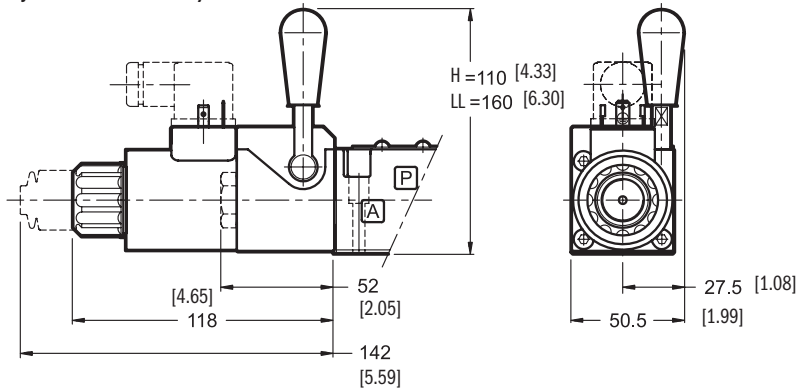


**U - Version for AC solenoid valve**



**H Lever manual override**

(only for DC solenoid valve)

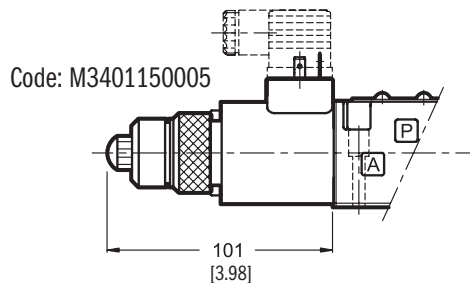


NOTES: the CH device is located on the A side of the valve, with the exception of the valves type VS6M-\*R.

Not available on function code 6 valves.

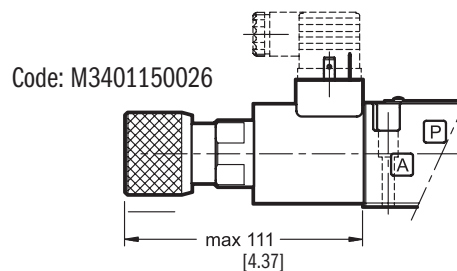
**CP Push manual override**

(only for DC solenoid valve)



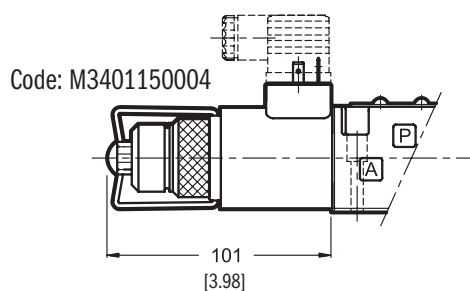
**CK1 knob manual override, turning**

(only for DC solenoid valve)



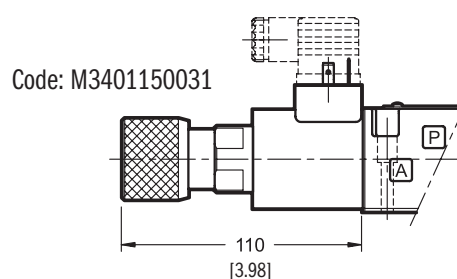
**CPK Push manual override with mechanical retention**

(only for DC solenoid valve)



**CK2 and twist manual override**

(only for DC solenoid valve)



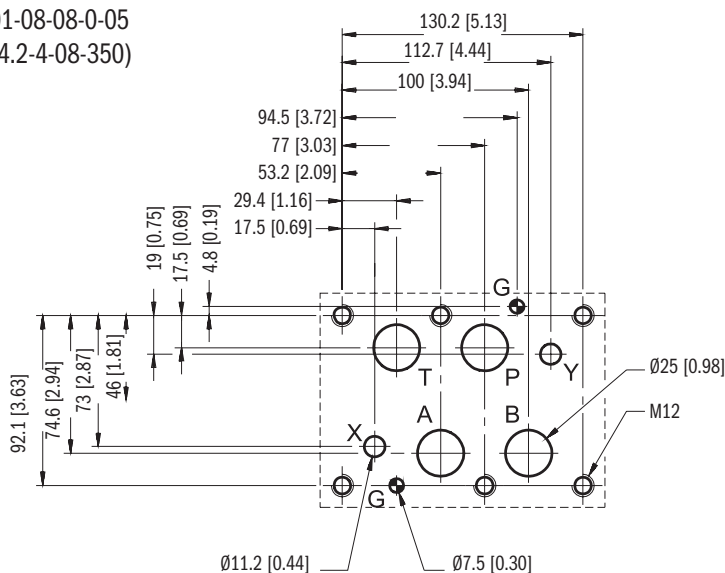


### ► MOUNTING:

Dimensions inch [mm]

#### MOUNTING SURFACE

ISO 4401-08-08-0-05  
(CETOP 4.2-4-08-350)



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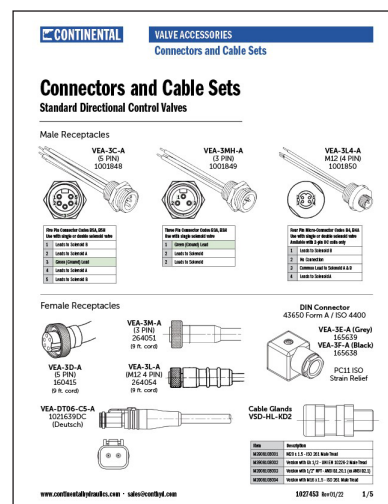
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**Connectors and Cable Sets**  
Form #1027453

1013800 Rev 2/24

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