



CONTINENTAL HYDRAULICS

VSD05M-S

SOLENOID OPERATED DIRECTIONAL ANTI-SHOCK VALVES



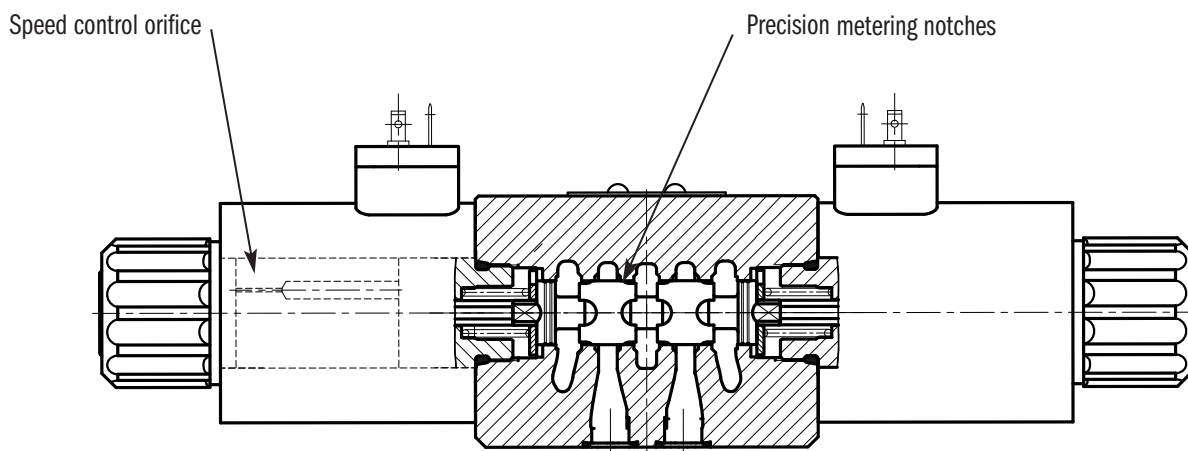
VSD05M-S - SOLENOID OPERATED DIRECTIONAL ANTI-SHOCK VALVES

VSD05M-S

SOLENOID OPERATED DIRECTIONAL ANTI-SHOCK VALVES

FEATURES AND BENEFITS

The Anti-Shock valves are designed to provide smoother opening and closing of the fluid paths as the spool shifts as compared to conventional solenoid valves. Metering notches on the spool assist in controlling the rate of flow change as the spool is shifted. The shift time is controlled through an orifice built into the solenoid core tube limiting the speed that the spool can travel both coming on and off stroke. Anti-Shock valves usage results in minimized hydraulic shock and less downtime.



DESCRIPTION

These valves conform to NFPA D05 and ISO 4401-05 mounting standards. As the valve spool shifts, the spool lands cross-over the valve body ports. This can produce high instantaneous flow rates.

The anti-shock valve provides a slow spool movement; slower than that of a standard directional valve. This results in reduction or elimination of hydraulic system shock produced by the spool movement and high flow rates.

TYPICAL PERFORMANCE SPECIFICATIONS

MAXIMUM OPERATING PRESSURE	P - A - B Ports	4600 psi	320 bar
	T Port	3000 psi	210 bar
FLOW RATE		36 gpm	136 l/min
MOUNTING SURFACE		NFPA D05 ISO 4401-05-04-0-05	
MAXIMUM WEIGHT		10.6 lbs	4.8 kg

RANGE TEMPERATURES	Ambient	- 4 to +130 °F	-20 to +54 °C
	Fluid	- 4 to +180 °F	-20 to +82 °C
FLUID VISCOSITY	Range	60 -1900 SUS	10 - 400 cSt
	Recommended	120 SUS	25 cSt
FLUID CONTAMINATION		ISO 4406:1999 Class 20/18/15	

IDENTIFICATION CODE

VSD05M - - - **S** - - **D** - _____ DESIGN LETTER

SOLENOIDS - See the codes on page 7

FUNCTION	
1	
	Single Solenoid 2 Position Spring Offset
3	
	Dual Solenoid 3 Position Spring Centered
5	
	Single Solenoid 2 Position Spring Centered

SEAL	
A	Buna (STD)
G	Viton

MECHANICAL OMIT IF NOT REQUIRED	
R	Single Solenoid Operator at 'B' Port End
WD	Washdown

SPOOL TYPE
See next page

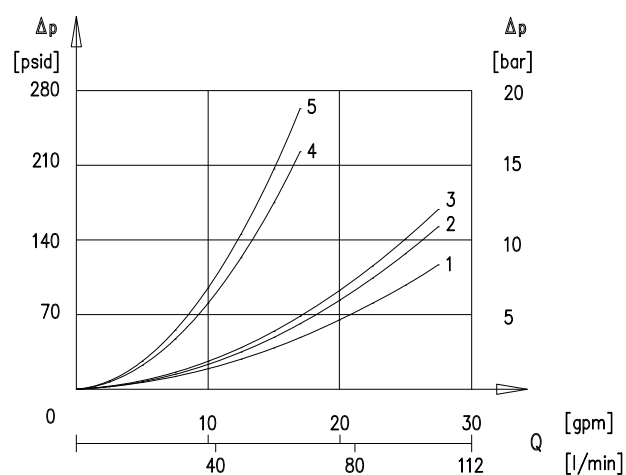
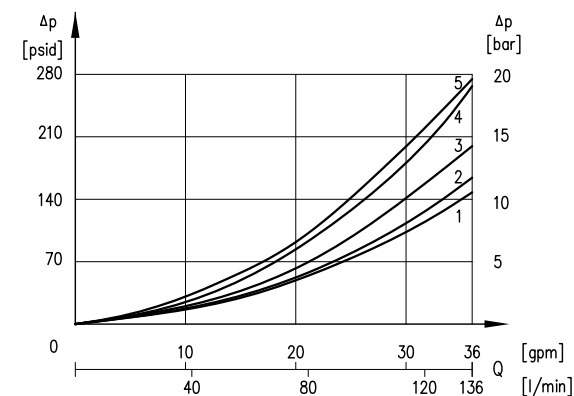
TYPICAL ORDERING CODE:
VSD05M-3A-AS-42D-B
VSD05M-3AC-60-AS-42D-B

SPOOLS					
NAME	SYMBOL	FUNCTION	CENTER POSITION	CROSSOVER	FUNCTION MATCHING
A			All ports blocked	All ports blocked	1
A1			All ports blocked	P→B and A→T restricted or P→A and B→T restricted	3, 5
AC-30			All ports blocked	All ports blocked	3, 5
AC-60			All ports blocked	All ports blocked	3, 5
B			All ports open	All ports open	1, 3, 5
F1			P blocked, A and B restricted to T	P blocked, A and B restricted to T	3, 5
FC-30			P blocked, A and B restricted to T	All ports blocked	3, 5
FC-60			P blocked, A and B restricted to T	All ports blocked	3, 5
L			P→T, A and B blocked	All ports open, restricted	3, 5

These are standard configurations. Contact Continental Hydraulics for special versions.

PRESSURE DROPS $\Delta P-Q$

(OBTAINED WITH VISCOSITY OF 170 SUS - 36 CST AT 122°F - 50°C)

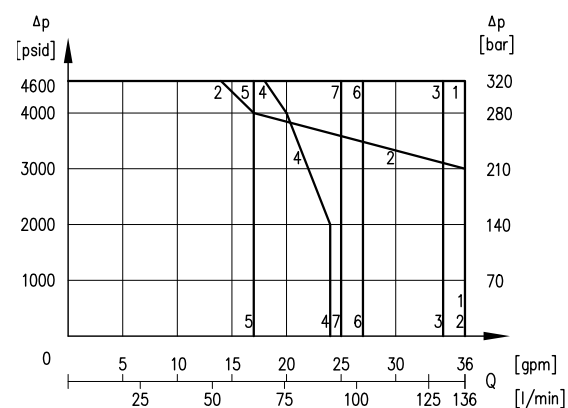


SPOOL	FLOW CURVE NUMBER				
	SHIFTED				CENTER
	P→A	P→B	A→T	B→T	
3A1	2	2	1	1	
B	3	3	1	1	5
1B, 1A	3	3	2	2	
L	1	1	2	2	5
F1	3	3	2	2	

SPOOL	FLOW CURVE NUMBER			
	SHIFTED			
	P→A	P→B	A→T	B→T
AC-30	4	4	5	5
FC-30	4	4	4	4
AC-60	1	1	2	2
FC-60	1	1	3	3

PERFORMANCE CURVE

DC VOLTAGE



CURVE	SPOOL
1	1A, 1B, 1BR, 3A1, 5A1, 3F1, 5F1
2	1AR
3	3B, 5B
4	3L, 5L
5	3AC-30, 5AC-30, 3FC-30, 5FC-30
6	3AC-60, 5AC-60
7	3FC-60, 5FC-60

RESPONSE TIMES

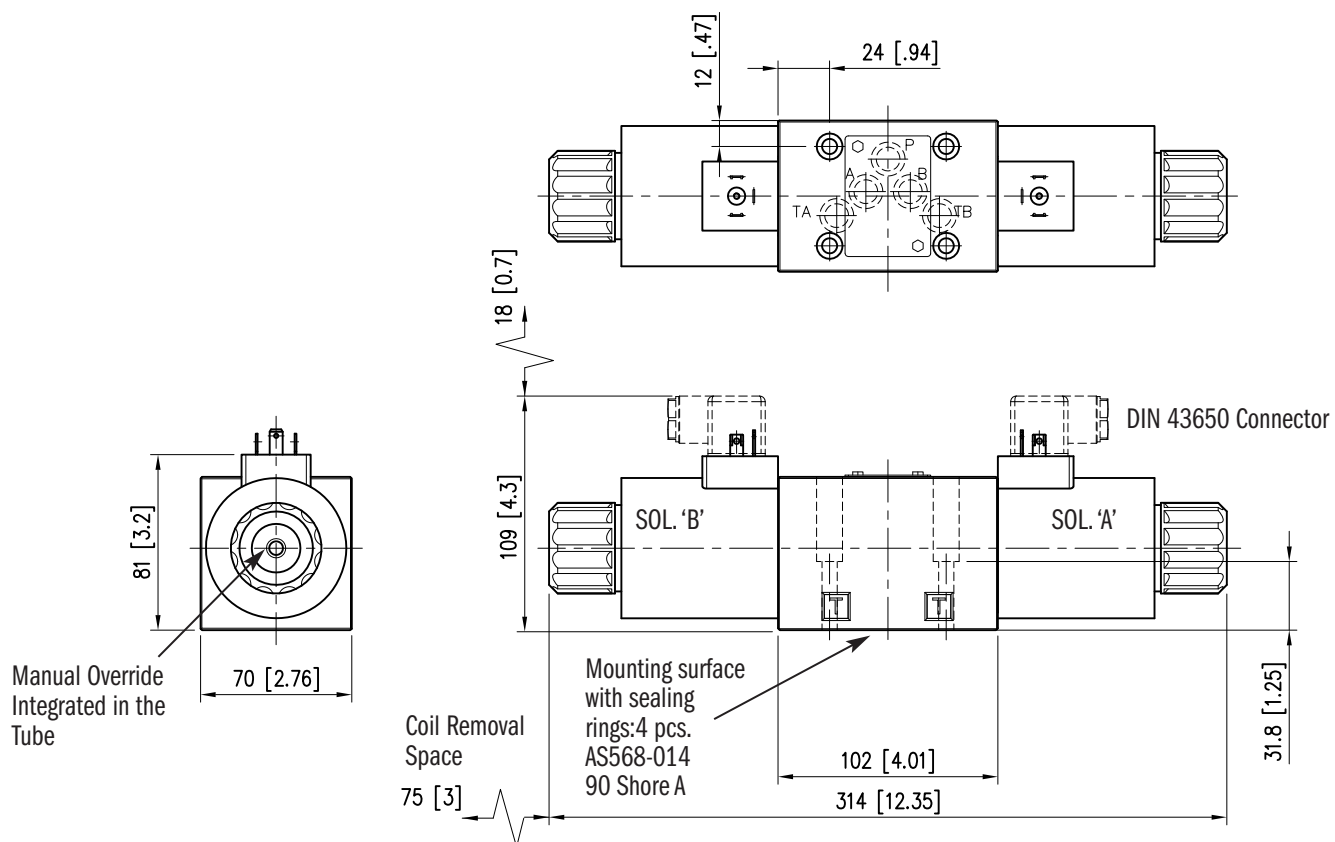
	TIME [ms]	
	ENERGIZING 0→100%	DE-ENERGIZING 100%→0
FUNCTION 1	80 - 120	100 - 200
FUNCTION 3, 5	100 - 200	150 - 250

Timing for spool shift is dependent on oil temperature and viscosity, flow rate and system pressure.

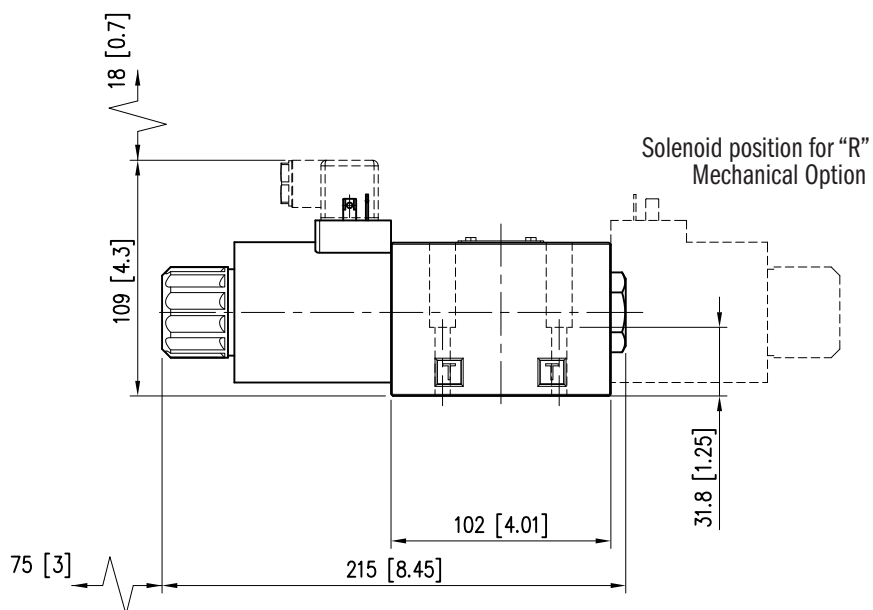
OVERALL AND MOUNTING DIMENSIONS

VSD05M-3*

Dimensions in mm [IN]



VSD05M-1*, 5*



SOLENOIDS

Listed below the types of solenoids available and the numbers to be added in the solenoid box on page 3.

PLUG-IN TERMINAL SOLENOID DIN 43650

This solenoid has three terminal poles. Use bi-polar connectors that meet ISO 4400 / DIN 43650 (EN 175301-803).
Protection against atmospheric agents: IP65.

DEUTSCH DT04 MALE

Protection against atmospheric agents: IP69.
Connectors must be ordered separately.

DIN CONNECTION CODE	DEUTSCH DT04 CONNECTION CODE	VOLTAGE & FREQUENCY [VOLT - HERTZ]	VOLTAGE LIMITS [MIN - MAX]	RESISTANCE ±10% [OHM]	INRUSH CURRENT [A]	HOLDING CURRENT [A]	HOLDING POWER [W]
42	24K7	24 V DC	21 - 26	12	2	2	48
44	not available	12 V DC	10 - 13	3.2	3.75	3.75	45

WASHDOWN OPTION (CODE WD)

The washdown option uses silicone sealant to help seal between the coil and core tube.

APPLICATION DATA

FLUIDS

All pressure drops shown on these data pages are based on 170 SUS fluid viscosity and 0.87 specific gravity. For any other specific gravity (G1) the pressure drop (ΔP) will be approx. $\Delta P_1 = \Delta P (G1/G)$. See the chart for other viscosities.

FLUID VISCOSITIES	Cst	10	14.5	32	36	43	54	65	76	86	108	216	324	400
	SUS	60	75	150	170	200	250	300	350	400	500	1000	1500	1900
MULTIPLIER		0.77	0.81	0.97	1.00	1.04	1.10	1.15	1.20	1.24	1.31	1.56	1.72	1.83

Use mineral oil-based hydraulic fluids HL or HM type, according to ISO 6743-4. For these fluids, use NBR seals. For fluids HFDR type (phosphate esters) use FPM seals (code G). For the use of other kinds of fluid such as HFA, HFB, HFC, please consult our technical department.

Using fluids at temperatures higher than 180 degrees F causes the accelerated degradation of seals as well as the degradation of the fluids physical and chemical properties.

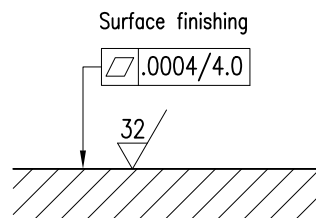
From a safety standpoint, temperatures above 130 degrees F are not recommended.

RANGE TEMPERATURES	Ambient	-4 to +130 °F	-20 to +54 °C
	Fluid	-4 to +180 °F	-20 to +82 °C
FLUID VISCOSITY	Range	60 -1900 SUS	10 - 400 cSt
	Recommended	120 SUS	25 cSt
FLUID CONTAMINATION		ISO 4406:1999 Class 20/18/15	

INSTALLATION

The configurations with centering and return springs can be mounted in any position without impairing correct operation.

Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols. If minimum values are not observed, fluid can easily leak between the valve and support surface.



SEAL KIT

Buna Seal Kit	1015300
Buna Seal Kit	1015301

BOLT KIT

BD05-175	131110
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POWERFUL
PRECISE
DURABLE
EFFICIENT
VERSATILE

ABOUT CONTINENTAL HYDRAULICS

Rugged, durable, high-performance, efficient—the reason Continental Hydraulics' products are used in some of the most challenging applications across the globe. With a commitment to quality customer support and innovative engineering, Continental's pumps, valves, power units, mobile and custom products deliver what the markets demand. Continental has been serving the food production, brick and block, wood products, automotive and machine tool industries since 1962. Learn how our products survive some of the most harsh environments.

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