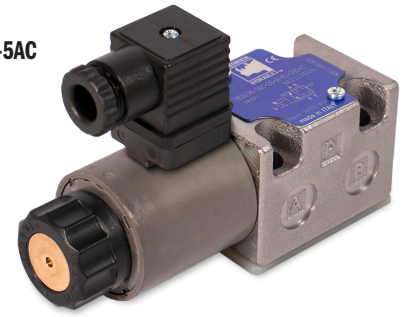
VED03M-5AC



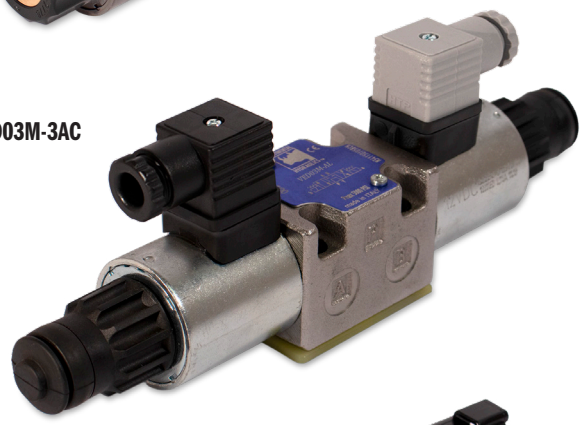
VED03M

Proportional Directional Control Valve

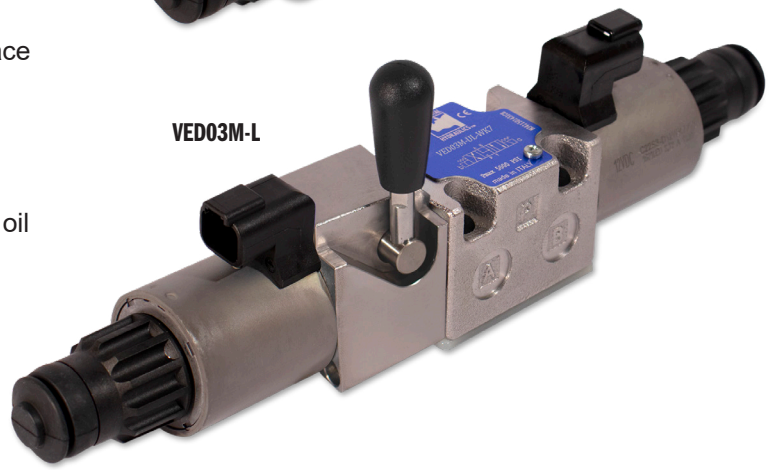
SUBPLATE MOUNTING
ISO 4401-03

P max **5000 PSI** **350 bar**
Q max **10.6 GPM** **40 l/min**

VED03M-3AC



VED03M-L



DESCRIPTION

VED03M direct operated 4-way proportional valves conform to NFPA D03 and ISO 4401 mounting standards.

Ideal for application in washdown and outdoor mobile environments, and are supplied with a zinc-nickel surface treatment suitable to ensure a salt spray resistance up to 600h (test operated according to UNI EN ISO 9227 standards and test evaluation operated according to UNI EN ISO 10289 standards).

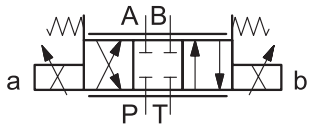
These valves are designed to control the direction and oil flow rate based on the amount of current supplied to the solenoid. In event of a loss in electrical power, the centering springs will return the valve spool to the center position.

Key Features:

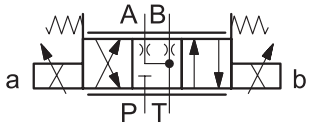
- It is suitable for directional and speed control of hydraulic actuators.
- Valve opening and flow rate can be modulated continuously in proportion to the current supplied to the solenoid.
- The valve can be controlled directly by a current control supply unit or combined with an external electronic card to maximize the valve performances
- Several manual overrides are available.
- 12 Volt or 24 Volt Solenoids – with DIN 43650 or DEUTSCH Connections available.

HYDRAULIC SYMBOLS

VED03M-3AC



VED03M-3FC



PERFORMANCE

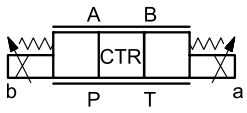
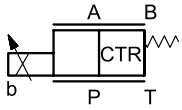
(Obtained with mineral oil with viscosity of 36 cSt at 50°C and electronic control card)

Max operating pressure: P - A - B ports **T port**	PSI (bar)	5000 (350) 2300 (160)
Maximum flow with Δp 10 bar P-T	(l/mi)	1 - 4 - 8 - 16 - 26
Step response	see page 9	
Hysteresis (with PWM 200 Hz)	% Q max	< 6%
Repeatability	% Q max	< ±2%
Electrical characteristics	see page 6	
Ambient temperature range	°F (°C)	-4 / 140 (-20 / +60)
Fluid temperature range	°F (°C)	-4 / 176 (-20 / +80)
Fluid viscosity range	cSt	10 - 400
Fluid contamination degree	according to ISO 4406:1999 class 18/16/13	
Recommended viscosity	cSt	25
Mass: single solenoid valve **double solenoid valve**	lbs (kg)	3.5 (1.6) 4.4 (2.0)

VED03M

IDENTIFICATION CODE:

VED03M - □□ - □ - □ - □ - □□□□ - □ ——— DESIGN LETTER

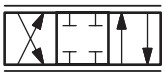
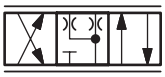
FUNCTION	
3	
	Dual operated 3 position spring centered
5	
	Single operator 2 position spring centered

SEALS	
CODE	**DESCRIPTION**
A	BUNA
G	VITON

NOMINAL CONTROLLED FLOW with ΔP P-T 145 psi	
CODE	**FLOW RATE**
01	1 l/min (0.22 gpm)
04	4 l/min (1.06 gpm)
08	8 l/min (2.1 gpm)
16	16 l/min (4.2gpm)
16/08	Asymmetrical Spool: 16 l/min (4.2 gpm) on P-A 08 l/min (2.1 gpm) on P-B
26	26 l/min (7 gpm)
26/13	Asymmetrical Spool: 26 l/min (7 gpm) on P-A 13 l/min (3.5 gpm) on P-B

MECHANICAL	
CODE	**DESCRIPTION**
OMIT	Manual override built-in with the tube (STD)
R	Single solenoid port end B
U	Manual override boot
S	Override with screw
L	Lever override

VOLTAGE / CONNECTION		
CODE	**DESCRIPTION**	**CONNECTION TYPE**
DC Voltages		
D12WK1	12 VDC	DIN 43650 (Form A) Zinc-Nickel coating
D12WK7	12 VDC	Deutsch DT04-2P Zinc-Nickel coating
D24WK1	24 VDC	DIN 43650 (Form A) Zinc-Nickel coating
D24WK7	24 VDC	Deutsch DT04-2P Zinc-Nickel coating

SPOOLS				
NAME	**SYMBOLS**	**DESCRIPTION**	**APPLICATION**	**FUNCTION MATCHING**
AC		METER IN / METER OUT	MOTION CONTROL	3, 5
FC				

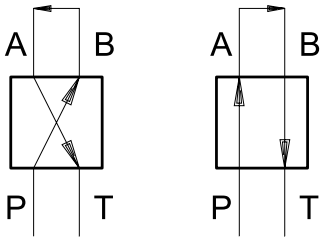
TYPICAL ORDERING CODE:
VED03M-3AC-16-A-D24WK1D-

Please see Connectors Catalog Form #1027453

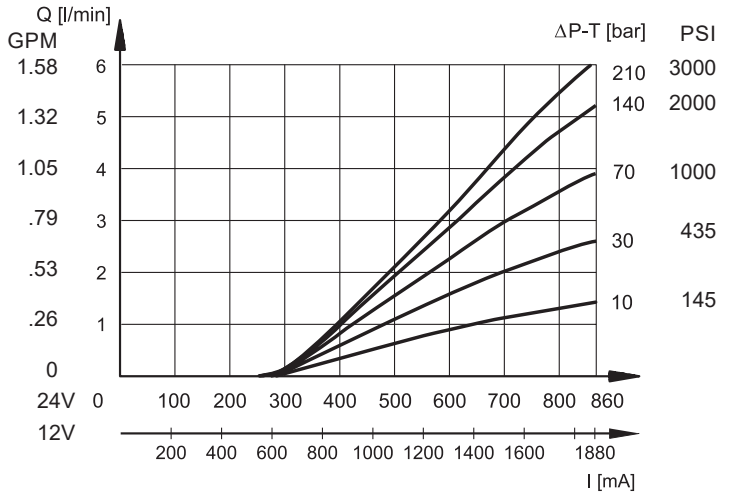
CHARACTERISTIC CURVES

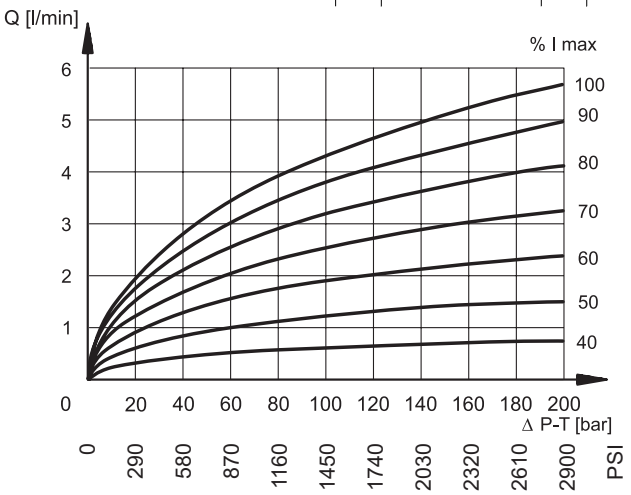
(Obtained with mineral oil with viscosity of 36 cSt at 50°C and electronic control card)

Typical flow rate control curves according to the current supply to solenoid. The reference Δp values are measured between ports P and T on the valve.

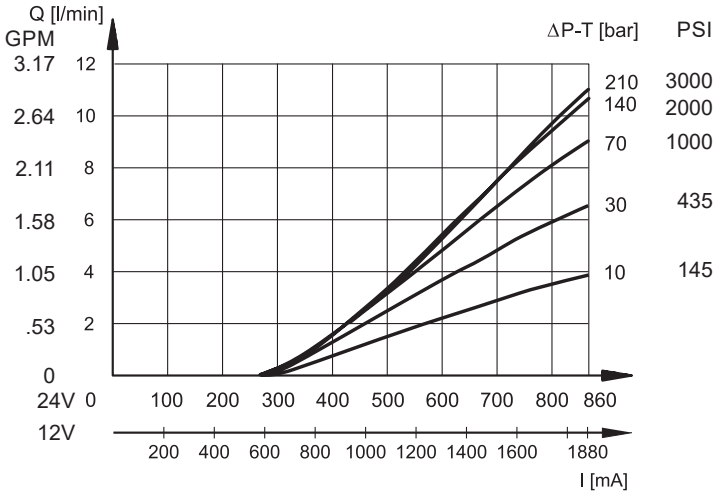


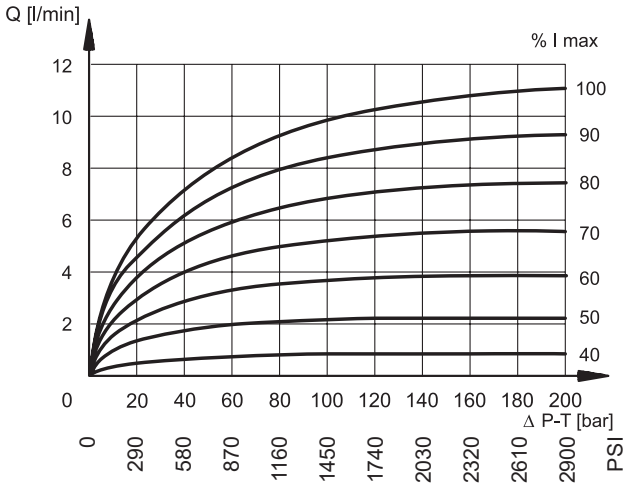
AC/FC - 01



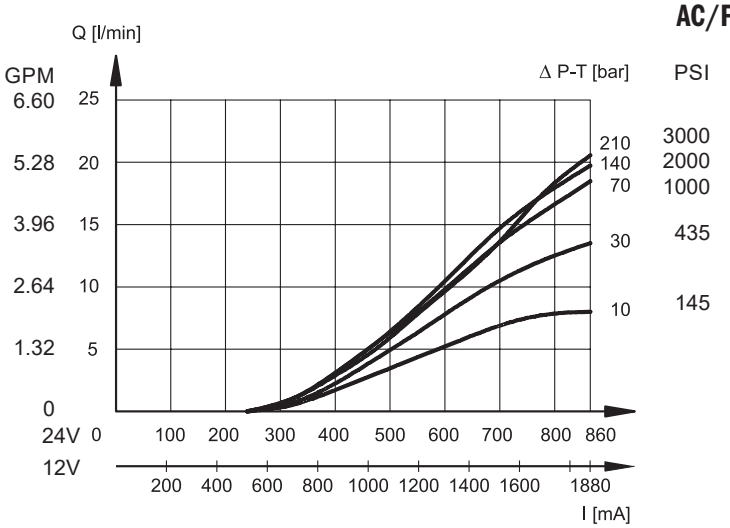


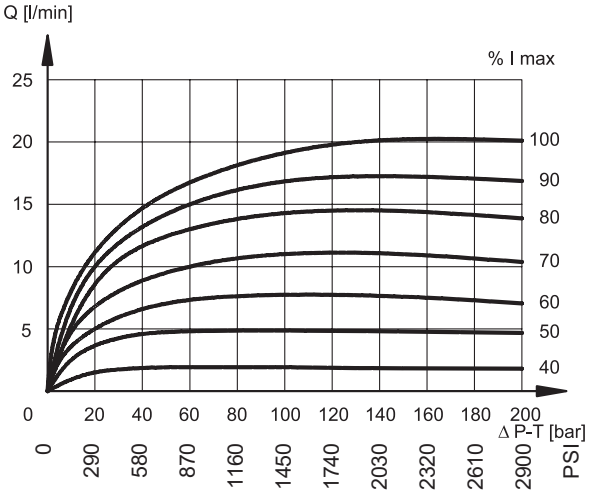
AC/FC - 04





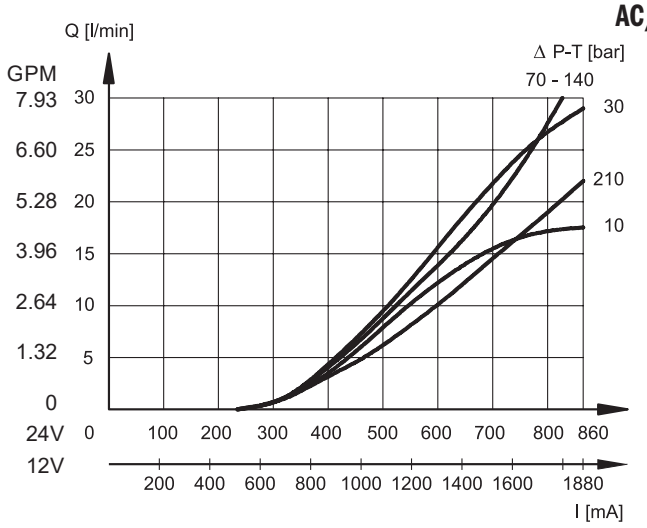
AC/FC - 08

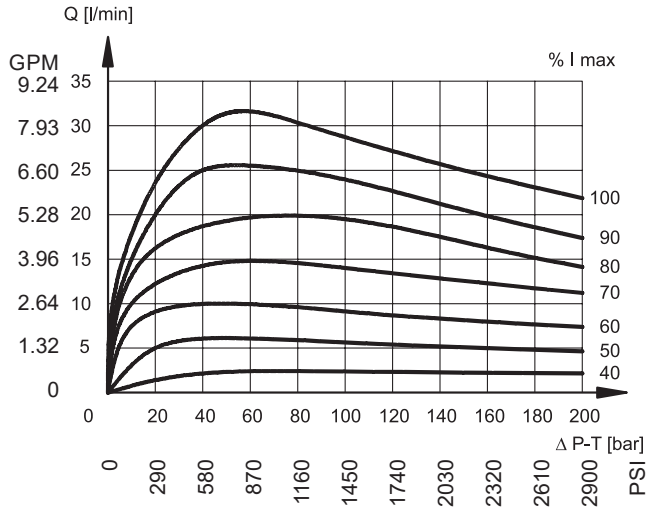




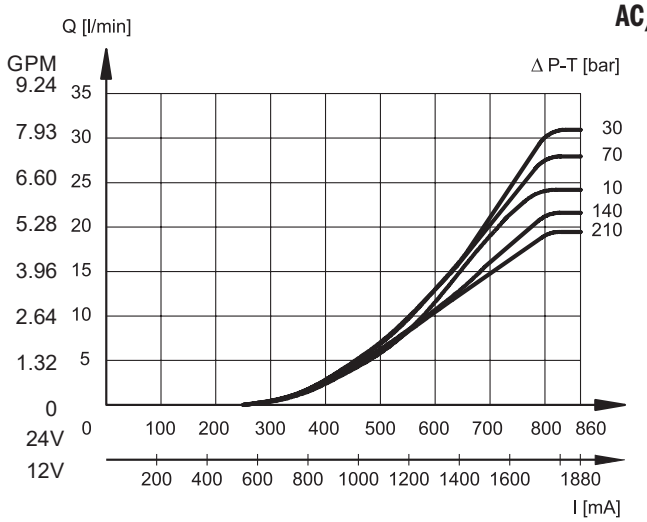
CHARACTERISTIC CURVES

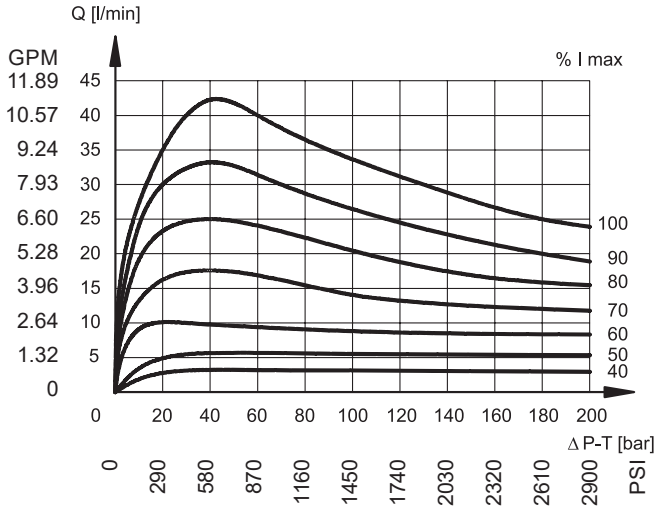
AC/FC - 16





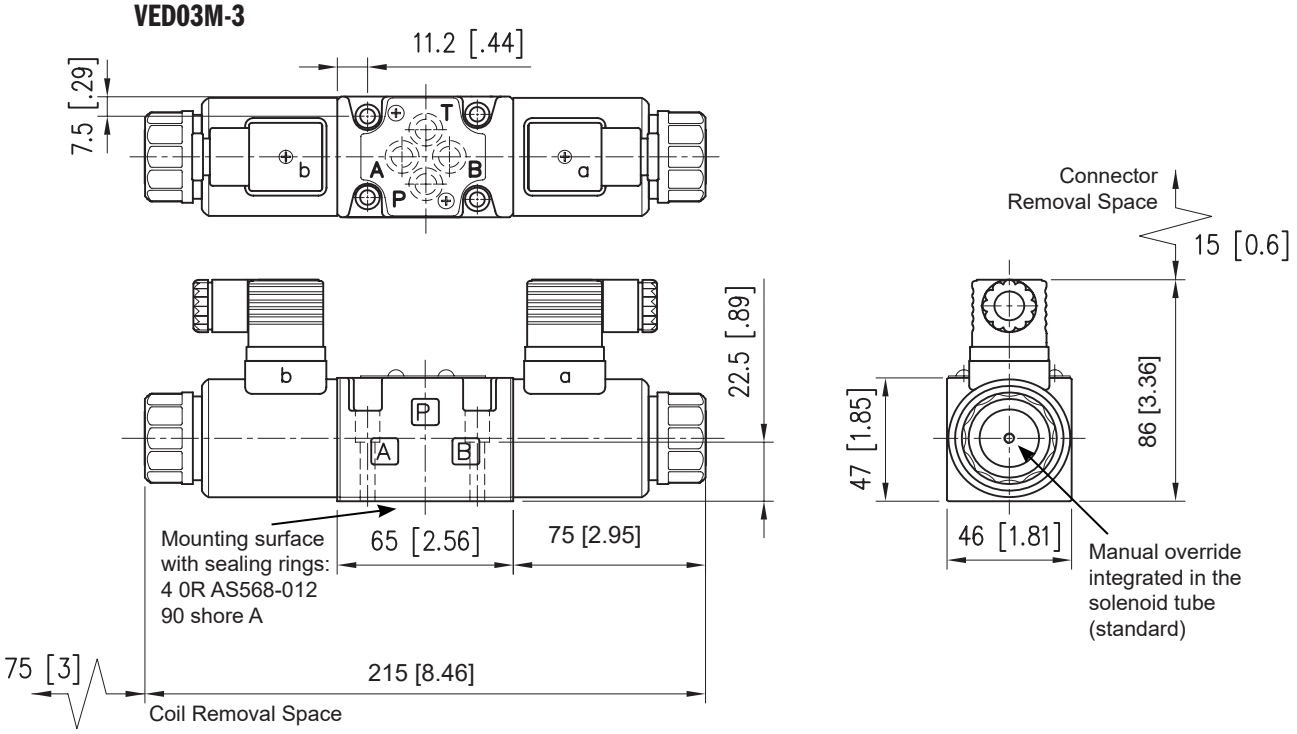
AC/FC - 26



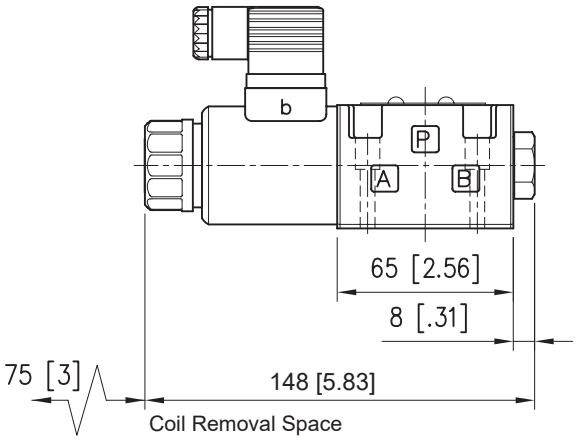


OVERALL AND MOUNTING DIMENSIONS Dimensions inch [mm]

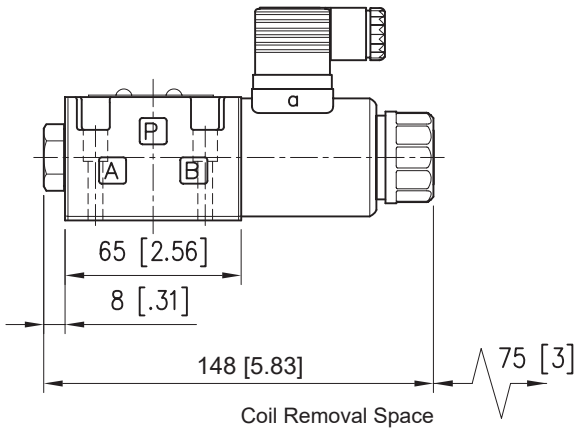
VED03M-3

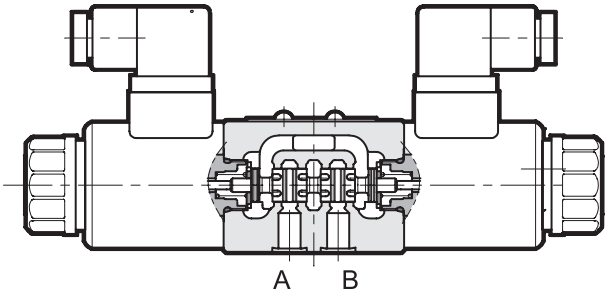


VED03M-5



VED03M-5R





ELECTRICAL CHARACTERISTICS

Proportional solenoid comprises two parts: tube and coil.

The tube, screwed to the valve body, contains the armature which is designed to maintain friction to a minimum thereby reducing hysteresis.

The coil is mounted on the tube and is secured by means of a lock nut. It can be rotated through 360° depending on installation clearances.

NOMINAL VOLTAGE	V DC	12	24
RESISTANCE (at 20°C) K1 coil K7 coil	Ω	3.66 4.4	17.6 18.6
NOMINAL CURRENT	A	1.88	0.86
DUTY CYCLE		100%	
ELECTROMAGNETIC COMPATIBILITY (EMC)	According to 2014/30/EU		
CLASS OF PROTECTION Coil insulation (VDE 0580) Impregnation	Class H Class F		

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	Electric connection protection	Whole valve protection
WK1 EN 175301-803 (ex DIN 43650)	IP66	IP66
WK7 DEUTSCH DT04 male	IP66/IP68/IP69 IP69K*	IP66/IP68/IP69 IP69K*

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

COILS/BODY

Coils feature a zinc-nickel surface treatment.

ELECTRICAL CONNECTIONS

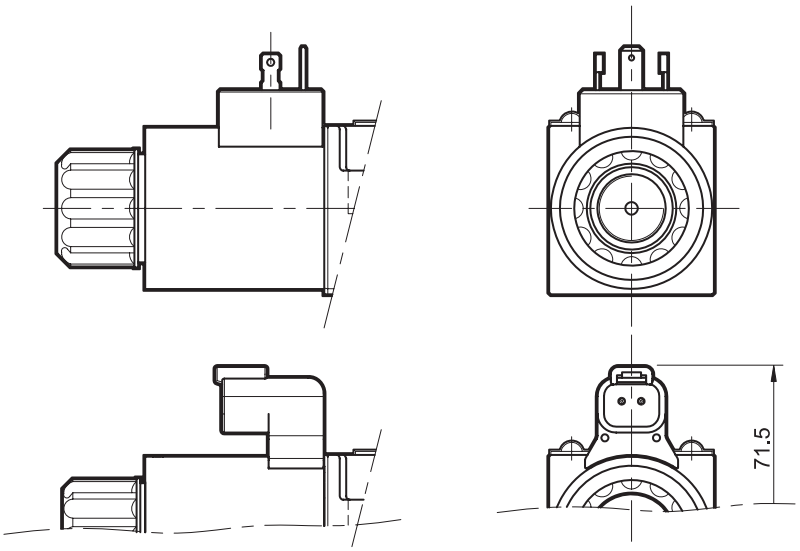
Connectors for K1 connection are always delivered together with the valve.

Connection for EN 175301-803 (ex DIN 43650) connector

code WK1

Connection for DEUTSCH DT06-2S male connector

code WK7



ACCESSORY ELECTRONICS

Some external digital amplifiers are available to be coupled to the valve for better control and to improve the valve performance.

See Continental Hydraulics Control Amplifier Catalog for products to match your requirements.

VEA-3E-A: DIN Connector - Gray
(Part # 165639)

VEA-3F-A: DIN Connector - Black
(Part # 165638)

STEP RESPONSE

(Obtained with mineral oil with viscosity of 36 cSt at 50 °C and electronic control card)

Step response is the time taken for the valve to reach 90% of the set pressure value following a step change of reference signal.

The table shows typical response times tested with spool type AC-16 and Δp = 30 bar P-T.

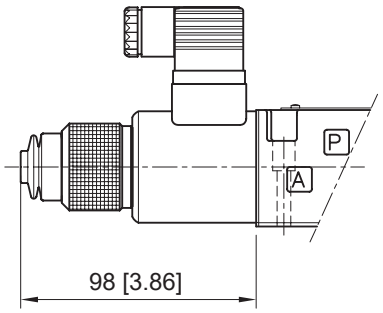
REFERENCE SIGNAL STEP	0 → 100%	100 → 0%
Step response [ms]	50	40

MANUAL OVERRIDE

The standard valve has override pins integrated in the tube.
The operation of this control must be executed with a suitable tool, being careful not to damage the sliding surface.

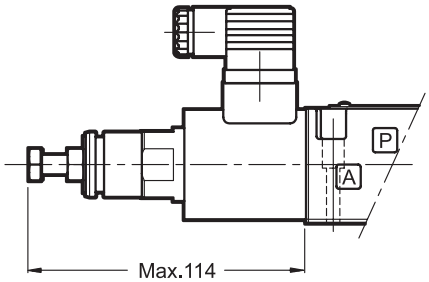
Three other manual overrides are available, using the proper letter in the ordering code.

MANUAL OVERRIDE BOOT PROTECTED (CODE U)



NOTES:
1. This device can be ordered separately with code VMAP-03J-A

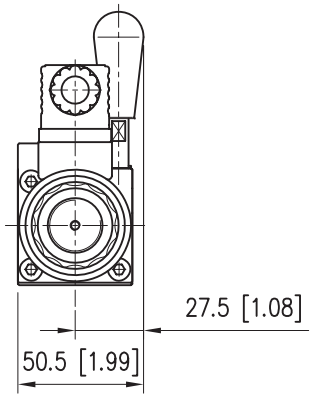
SCREW MANUAL OVERRIDE (CODE S)

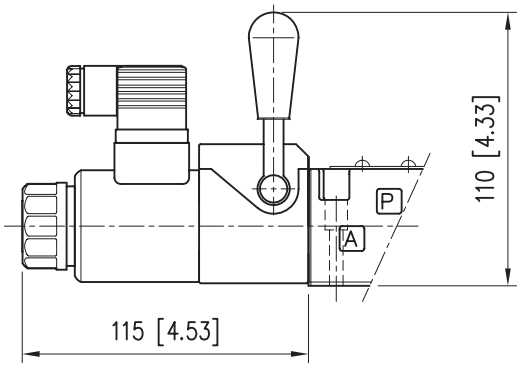


NOTES:
1. With metal ring nut provided with a M4 screw and a blocking locknut to allow continuous mechanical operation.
2. This device can be ordered separately with code VMAP-03S-A

LEVER MANUAL OVERRIDE (CODE L)

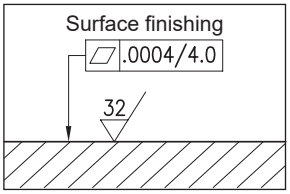
This device can be installed either on single or dual solenoid valves, on port end A only.





VED03M

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
MULTIPIER		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



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. ΔP1 = ΔP (G1/G). See the chart above for other viscosities.

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 V). 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.

SEAL KIT

BUNA SEAL KIT	1013188
VITON SEAL KIT	1013096

BOLT KIT

BD03-125 (Valve Only)	1008406

NOTES:

1. Bolt kit consists of: Qty. 4 10-24NC screws / Qty. 4 #10 Lock washer
2. The recommended torque value for fasteners is: 4 lb.ft (5.4 Nm)

INSTALLATION

VED03M valves can be installed in any position without impairing correct operation.

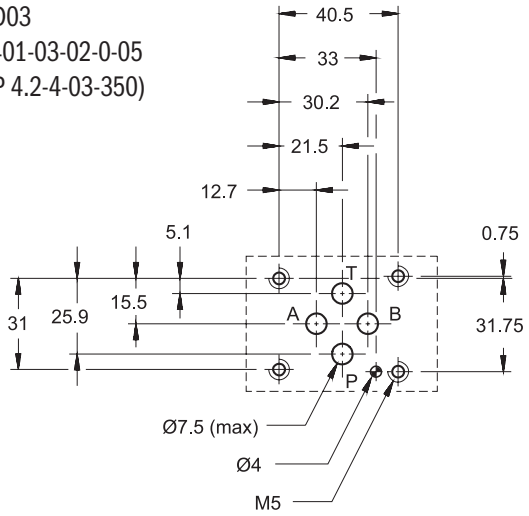
Ensure that there is no air in the hydraulic circuit.

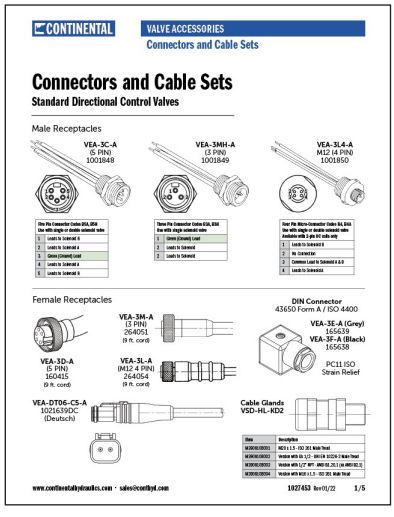
Valves are fixed by means of screws or tie rods on a flat surface with planarity and roughness equal to or better than those indicated in the relative symbols. If minimum values are not observed, fluid can easily leak between the valve and support surface.

MOUNTING SURFACE

Dimensions inch [mm]

NFPA D03
ISO 4401-03-02-0-05
(CETOP 4.2-4-03-350)





Connectors and Cables Sets
Form #1027453

CONTINENTAL HYDRAULICS INC. / HYDRECO INC.

4895 12th Avenue East, Shakopee, Minnesota 55379

952.895.6400 • sales@conthyd.com • **www.continentalhydraulics.com**

704.295.7575 • sales-us@hydreco.com • **www.hydreco.com**