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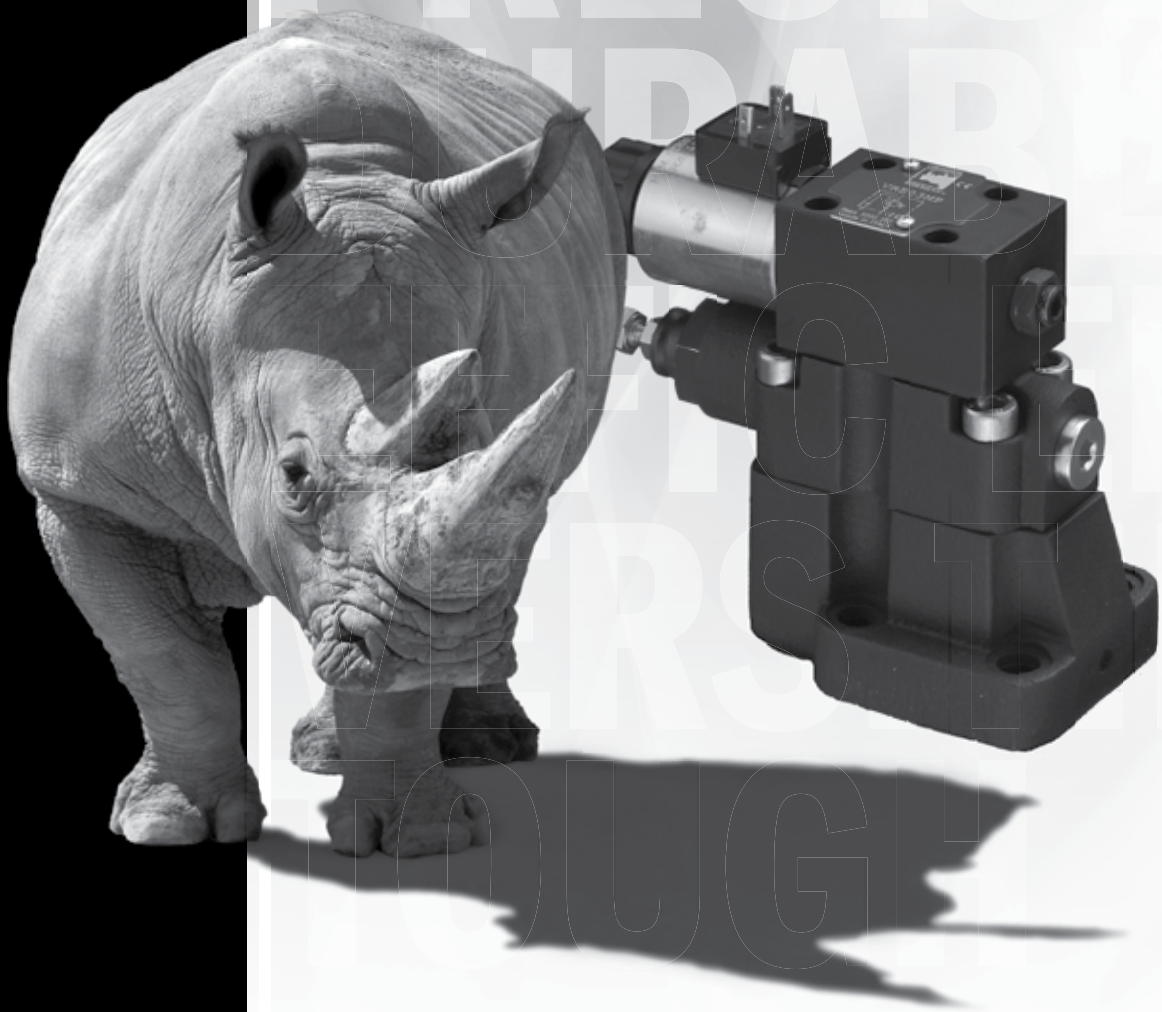
VER*SP

PROPORTIONAL PILOT RELIEF VALVES



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DURABLE

VER*SP
PROPORTIONAL PILOT RELIEF VALVES

DESCRIPTION

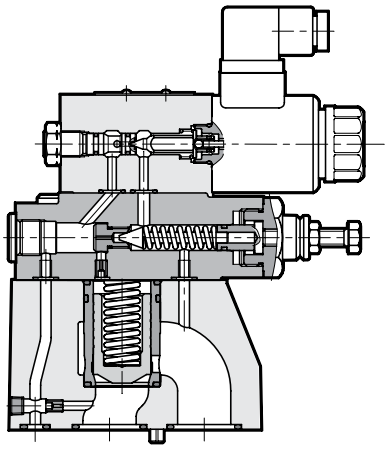
VER*SP valves are Proportional pilot operated pressure relief valves with subplate mounting according to NFPA T3.5.1 R2-2002 and ISO 6264:1998 standards.

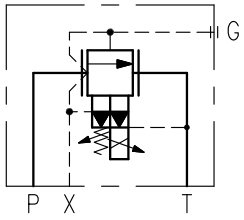
Available in four proportional pressure ranges up to 5000 psi and in three nominal sizes for flow rates up to 132 gpm.

These valves are used to provide remote and variable pressure control in a hydraulic circuit. The pressure setting is directly proportional to the input current to the solenoid.

The valve solenoid can be driven by a variable current power supply or by use of an external Power Amplifier Card designed to maximize the valves performance.

They have a built-in manual relief valve that is factory set to the maximum value of the pressure control range.





TYPICAL PERFORMANCE SPECIFICATIONS

MAXIMUM OPERATING PRESSURE:		5000 psi	350 bar
MAXIMUM FLOW RATE	VER06SP	53 gpm	200 l/min
	VER08SP	105 gpm	400 l/min
	VER10SP	132 gpm	500 l/min
MOUNTING SURFACE	VER06SP	R06 NFPA - ISO 6264-06	
	VER08SP	R08 NFPA - ISO 6264-08	
	VER10SP	R10 NFPA - ISO 6264-10	
MAX WEIGHT	VER06SP	11 lbs	5 kg
	VER08SP	12.8 lbs	5.8 kg
	VER10SP	17.6 lbs	8 kg

STEP RESPONSE WITH Q = 50 l/min	0 ⟶ 100%	120 ms	
	100 ⟶ 0%	90 ms	
HYSTERESIS WITH PWM 200	% of p nom	< 5%	
REPEATABILITY	% of p nom	< ± 1.5%	
POWER SUPPLY		12V DC / 24V DC	
CONNECTION		DIN 43650	DT04-2P
PROTECTION	IEC 60529	IP65	IP69K

NOTE: Step response is the time taken for the valve output to reach 90% of the set pressure value following a step change in the command signal.

IDENTIFICATION CODE

VER ☐ SP - ☐ - ☐ - ☐ ☐ D - ☐ — DESIGN LETTER

SIZE	
06	NFPA R06
08	NFPA R08
10	NFPA R10

PRESSURE CONTROL RANGE	
070	Up to 1000 psi (up to 70 bar)
140	Up to 2000 psi (up to 140 bar)
210	Up to 3000 psi (up to 210 bar)
350	Up to 5000 psi (up to 350 bar)

SEAL	
A	Buna (STD)
G	Viton

CONNECTION	
K1	DIN 43650 (STD)
K7	DT04-2P 'Deutsch'

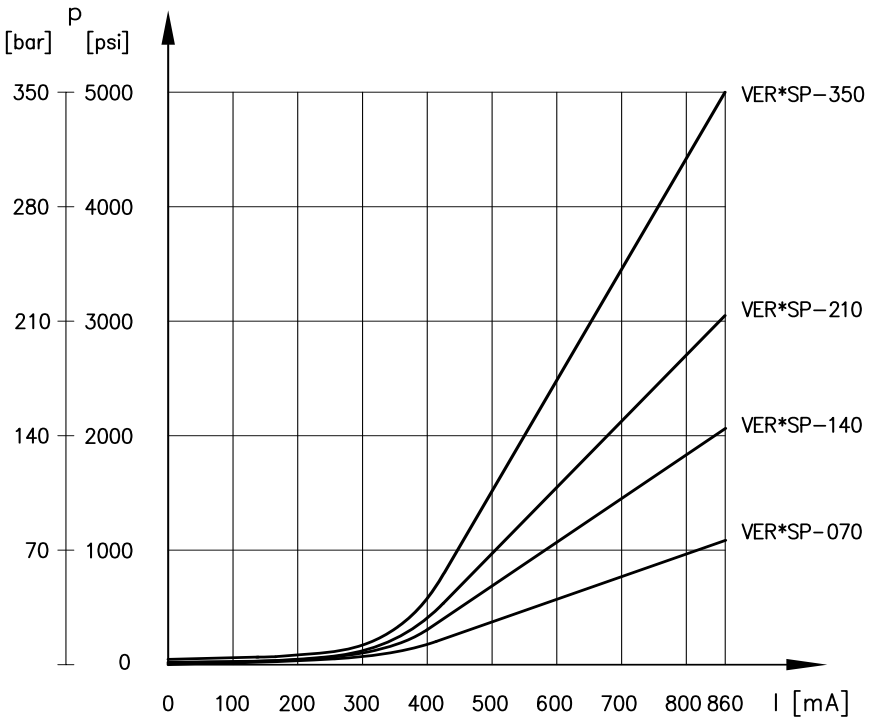
VOLTAGE	
12	12 V DC Solenoid
24	24 V DC Solenoid

TYPICAL ORDERING CODE:
VER06SP-210-A-K112D-A

CHARACTERISTIC CURVES

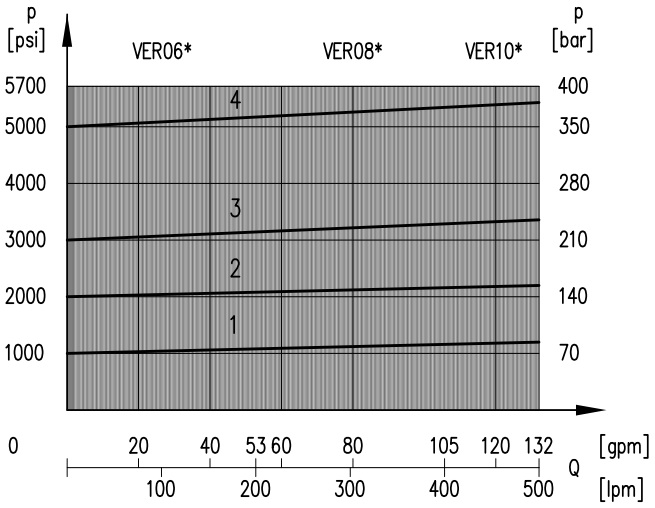
Curves obtained with mineral oil with viscosity of 170 sus (36 cSt) at 122°F (50°C).

PRESSURE GAIN



CHARACTERISTIC CURVES

ADJUSTMENT

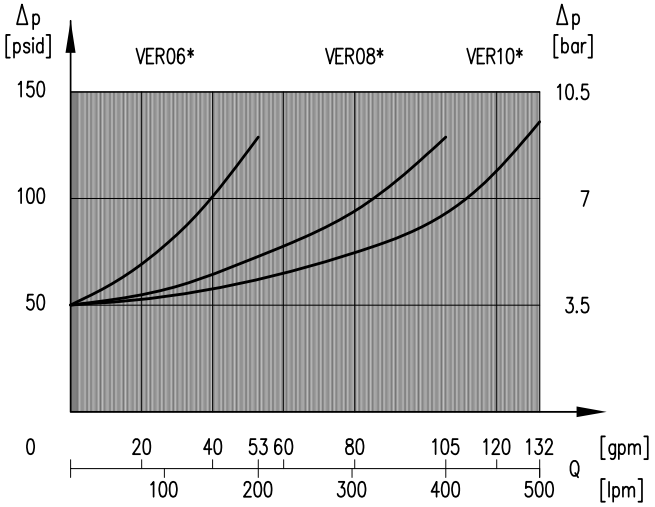


CURVE	PRESSURE RANGE
1	Up to 1000 psi
2	Up to 2000 psi
3	Up to 3000 psi
4	Up to 5000 psi

NOTES:

1. Values obtained with oil viscosity of 170 SUS (36 cSt) at 122°F (50°C).

PRESSURE DROPS



OVERALL AND MOUNTING DIMENSIONS FOR VER*SP

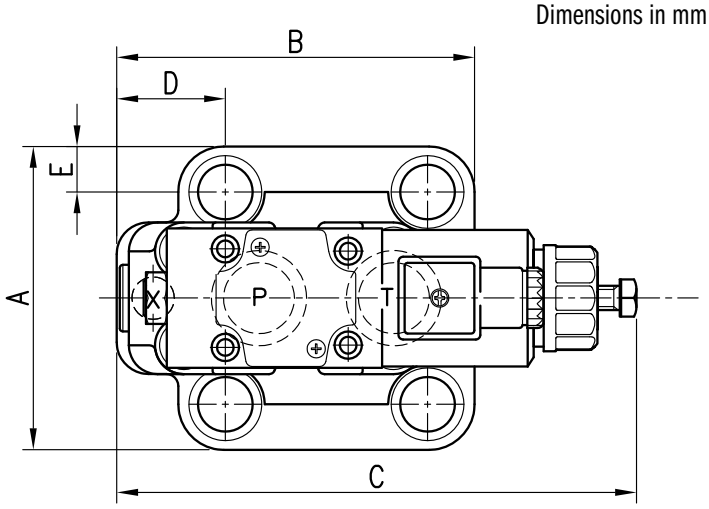
SEALING RINGS:

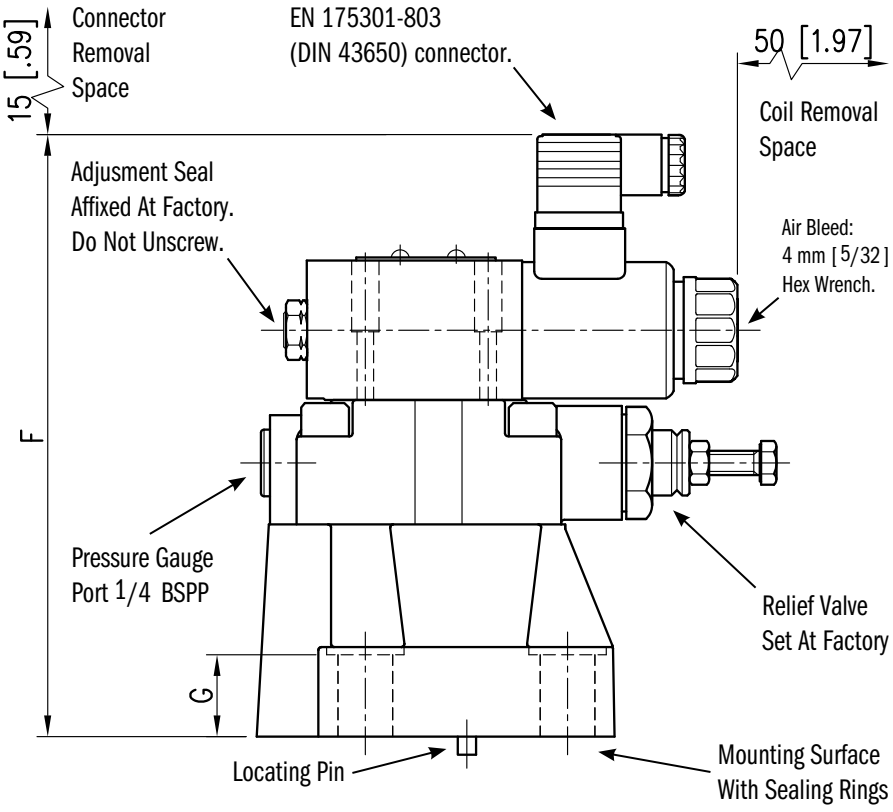
VER06SP
2 O-Ring 17.86mm ID x 2.62mm CS 90 Shore A
1 O-Ring 9.13mm ID x 2.62mm CS 90 Shore A

VER08SP
2 O-Ring AS568-123 90 Shore A
1 O-Ring 9.13mm ID x 2.62mm CS 90 Shore A

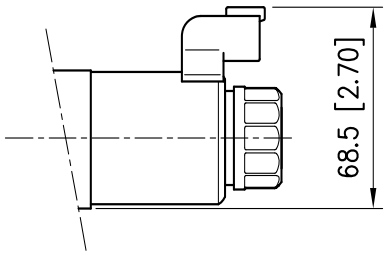
VER10SP
2 O-Ring AS568-220 90 Shore A
1 O-Ring 9.13mm ID x 2.62mm CS 90 Shore A

Dimensions in mm [IN]





K7 CONNECTION



VALVE	DIMENSIONS mm [in]							FASTENING	
	A	B	C	D	E	F	G	n° 4 FASTENERS	TIGHTNG TORQUE
VER06SP	80 [3.15]	80 [3.15]	179 [7.05]	13 [0.51]	13 [0.51]	186 [7.32]	22 [0.87]	M12x40 [½ -13 UNC x 1 ½"]	50.9 lb.ft
VER08SP	100 [3.94]	118 [4.64]	170 [6.69]	36 [1.42]	15 [0.59]	196 [7.72]	27 [1.06]	M16x50 [⅝ -11 UNC x 2"]	125.3 lb.ft
VER10SP	120 [4.72]	152 [5.98]	180 [7.09]	44 [1.73]	19 [0.74]	206 [8.11]	35 [1.38]	M18x60 [¾ -10 UNC x 2.5"]	173.3 lb.ft

ELECTRICAL CHARACTERISTICS FOR VER*SP

The proportional solenoid consists of tube and coil. The coil is mounted on the tube and fastened to it by a ring retainer.

The coils can be mounted rotating-free depending on the installation requirements.

IP DEGREE

The declared IP degree is guaranteed for all valves only if the connector has been wired and mounted correctly on the coil.

The K7 connection meets DIN 40050-9 which extends the IEC 60529 rating system with an IP69K rating for high-pressure, high-temperature and wash-down applications.

NOMINAL VOLTAGE	V DC	12	24
RESISTANCE AT 68° F	K1	3.66 Ω	17.6 Ω
	K7	4.5 Ω	18.7 Ω
CURRENT AT 68° F	K1	1.88 A	0.86 A
	K7	2.72 A	1.29 A
DUTY CYCLE		100%	
ELECTROMAGNETIC COMPATIBILITY (EMC)		European Directive 2004/108/EC	
IP DEGREE IEC 60529	K1	IP 65	
	K7	IP 69K	
CLASS OF PROTECTION FOR INSULATION	Copper Wire	Class H (356 °F)	
	Coil	Class F (311 °F)	

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-3F-A: DIN Connector - Black

MOUNTING SURFACES

All the mounting surfaces refer to ISO 6264:1998 and NFPA T3.5.1 R2-2002 standards.

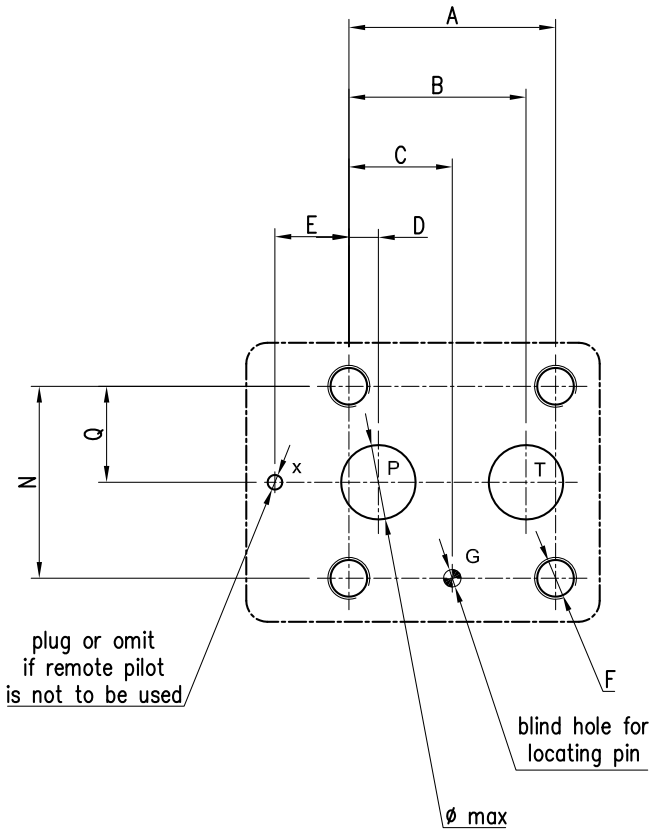
The mounting surface standards recommend metric coarse threads. However, subplates are commercially available with UNC threads. Select a bolt size that matches the threads in the mounting surface.

Dimensional tolerances are ± 0.1 mm (0.004") for bolt and pin location; ± 0.2 mm (0.008") for the other quotes.

The minimum depth of the blind hole G is 8 mm (0.31 in).

PORT FUNCTION:

P = Pressure Inlet
T = Outlet To Reservoir
X = Remote Pilot Control Port



VALVE SIZE	MOUNTING SURFACE		DIMENSIONS mm [in]						
	NFPA	ISO	A	B	C	D	E	N	Q
06	R06	6264-06-09-0-97	53.8 [2.12]	47.5 [1.87]	22.1 [0.87]	22.1 [0.87]	0	53.8 [2.12]	26.9 [1.06]
08	R08	6264-08-13-0-97	66.7 [2.63]	55.6 [2.19]	33.4 [1.31]	11.1 [0.44]	23.8 [0.94]	70 [2.75]	35 [1.38]
10	R10	6264-10-17-0-97	88.9 [3.50]	76.2 [3.00]	44.5 [1.75]	12.7 [.50]	31.8 [1.25]	82.6 [3.25]	41.3 [1.63]

VALVE SIZE	MOUNTING SURFACE		DIMENSIONS mm [in]				
	NFPA	ISO	Øp max	Øt max	Øx	Øg	F
06	R06	6264-06-09-0-97	14.7 [0.58]	14.7 [0.58]	4.8 [0.19]	7.5 [0.295]	M12x40 [½ - 13 UNC x 1 ½"]
08	R08	6264-08-13-0-97	23.4 [0.92]	23.4 [0.92]	6.3 [0.25]	7.5 [0.295]	M16x50 [⅝ - 11 UNC x 2"]
10	R10	6264-10-17-0-97	32 [1.26]	32 [1.26]	6.3 [0.25]	7.5 [0.295]	M18x60 [¾ - 10 UNC x 2.5"]

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 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
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

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 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 18/16/13	

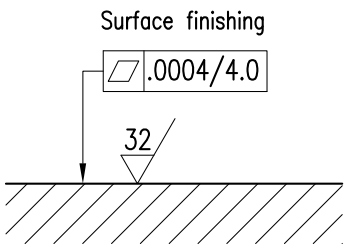
INSTALLATION

We recommend the VER*SP valve be installed either horizontally or vertically with the solenoid downward. The minimum regulated pressure may vary from the graphs shown on page 3 if the valve is installed vertically with the solenoid upwards.

Bleed the air from the hydraulic circuit. Be sure that the solenoid tube is always full of oil. It may be necessary to vent entrapped air from the solenoid tube in certain applications or after a long shutdown period. The air bleed vent is located on the end of the solenoid tube. See page 4 for the location. Be sure to close the air bleed when the process is complete.

Connect the valve T port directly to the tank. Any back pressure from the tank line will add directly to the controlled pressure. **The maximum allowable back pressure in the tank line under operational conditions is 2 bar.**

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 FOR VER*SP

	VER06SP	VER08SP	VER10SP
BUNA SEAL KIT	1013206	1013208	1013210
VITON SEAL KIT	1013207	1013209	1013211

BOLT KITS

VER06SP	BR06-175	1/2-13 UNC x 1 1/2"	1013240
VER08SP	BR08-200	5/8-11 UNC x 2"	1013241
VER10SP	BR10-250	3/4-10 UNC x 2.5"	1013242

NOTES:
Bolt Kits consist of Qty 4 bolts and Qty 4 Lock washers

SUBPLATES

R06 SIZE	AR06SPS12S	Aluminum	SAE-12	1013128AB
	DR06SPS12S	Ductile	SAE-12	1013128AC
PR08 SIZE	AR08SPS16S	Aluminum	SAE-16	1013128AD
	DR08SPS16S	Ductile	SAE-16	1013128AE
PR10 SIZE	AR10SPS24S	Aluminum	SAE-24	1013128AF
	DR10SPS24S	Ductile	SAE-24	1013128AG

NOTES:
1. Max pressure for aluminum subplates: 3000 psi (210 bar)
2. Max pressure for ductile subplates: 5000 psi (350 bar)
3. Always verify subplate port size is proper for the application

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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