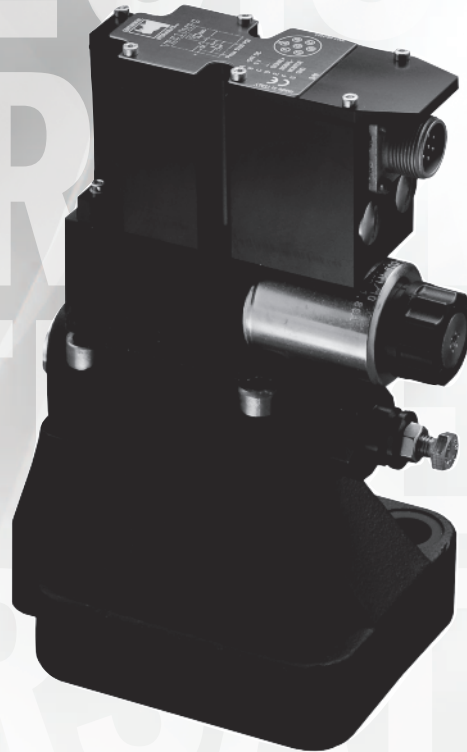




CONTINENTAL HYDRAULICS

VER-SPG

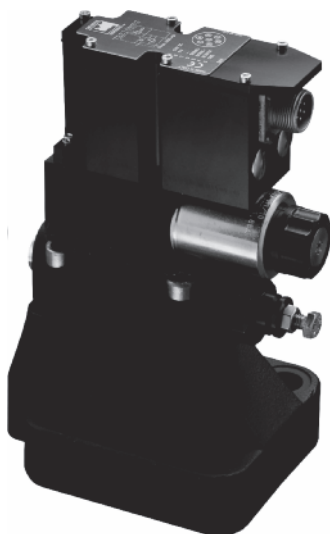
PROPORTIONAL PRESSURE RELIEF VALVES WITH OBE



VER-SPG - PROPORTIONAL PRESSURE RELIEF VALVES WITH OBE

VER-SPG

PROPORTIONAL PRESSURE RELIEF VALVES WITH OBE



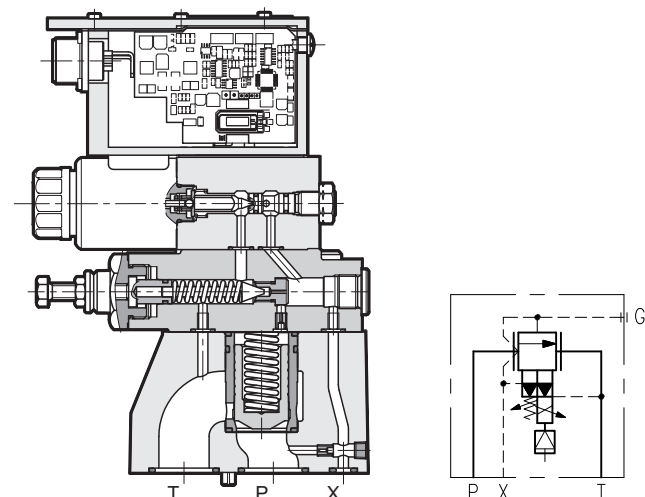
DESCRIPTION

VER*SPG valves are Proportional pilot operated pressure relief valves with On-board Digital amplifier for proportional pressure control and are subplate mounted 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 command input into the On-board Amplifier. In the event of a power failure, the valve will return to low pressure.

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



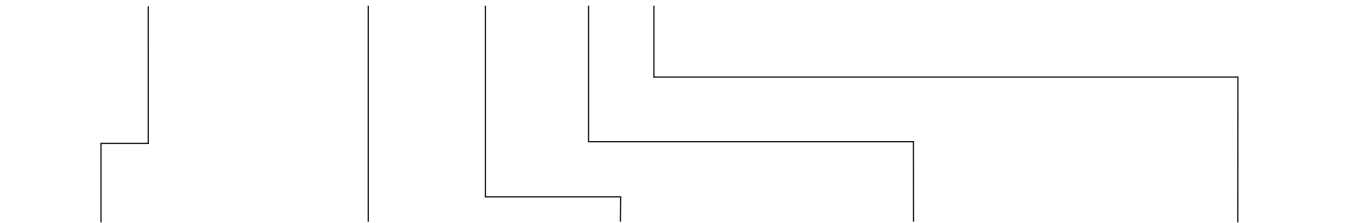
TYPICAL PERFORMANCE SPECIFICATIONS

MAXIMUM OPERATING PRESSURE		5000 psi	350 bar
MAXIMUM FLOW RATE	VER06SPG	53 gpm	200 l/min
	VER08SPG	105 gpm	400 l/min
	VER10SPG	132 gpm	500 l/min
MOUNTING SURFACE	VER06SPG	R06 NFPA - ISO 6264-06	
	VER08SPG	R08 NFPA - ISO 6264-08	
	VER10SPG	R10 NFPA - ISO 6264-10	
WEIGHT	VER06SPG	12 lbs	5.5 kg
	VER08SPG	14 lbs	6.3 kg
	VER10SPG	18.7 lbs	8.5 kg
STEP RESPONSE @ 140 bar	0 → 100%	50 ms	
	100 → 0%	30 ms	
STEP RESPONSE @ 210 bar	0 → 100%	70 ms	
	100 → 0%	40 ms	
HYSTERESIS	% of p max	< 3%	
REPEATABILITY	% of p max	< ± 1%	
POWER SUPPLY		24V DC	
CONNECTION		7 pin DIN 43563 metal	
PROTECTION	IEC 60529	IP 67	

NOTE: Response times obtained with VER08SPG-140 and VER08SPG-210.

IDENTIFICATION CODE

VER **SPG** - - - **D - D** _____ DESIGN LETTER



SIZE	
06	NFPA R06
08	NFPA R08
10	NFPA R10

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

SEAL	
A	Buna (STD)
G	Viton

CONNECTION	
OBW	On board electronics - Internal Enable Monitor signal PIN F to PIN B
OBC	On board electronics - PIN C Enable Monitor signal PIN F to PIN B
OBM	On board electronics - Internal Enable Monitor signal PIN F to PIN C

REFERENCE SIGNAL	
E0	Voltage ± 10 V (STD)
E1	Current 4-20 mA

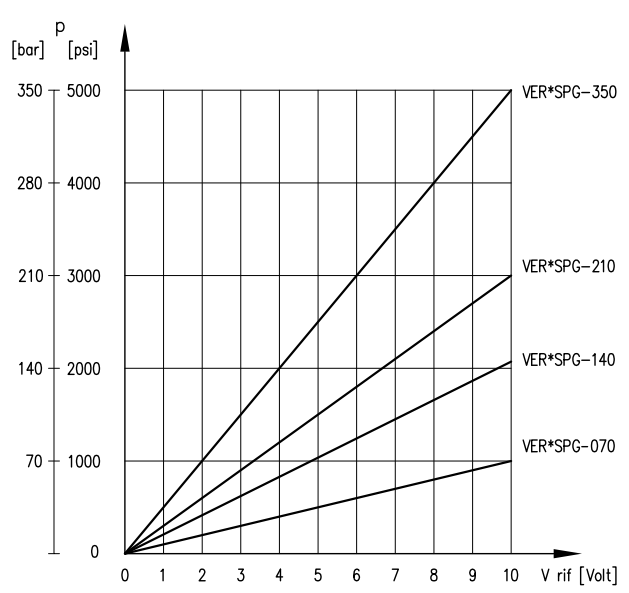
TYPICAL ORDERING CODE:
VER08SPG-210-A-OBWE0D-D

CHARACTERISTIC CURVES

Typical control curves according to the current supplied to the solenoid for all the pressure stages, measured with input flow rate $Q = 2.65 \text{ gpm}$ (10 l/min). The curves are obtained after linearization in factory of the characteristic curves through the digital amplifier. They are measured without any back pressure in T.

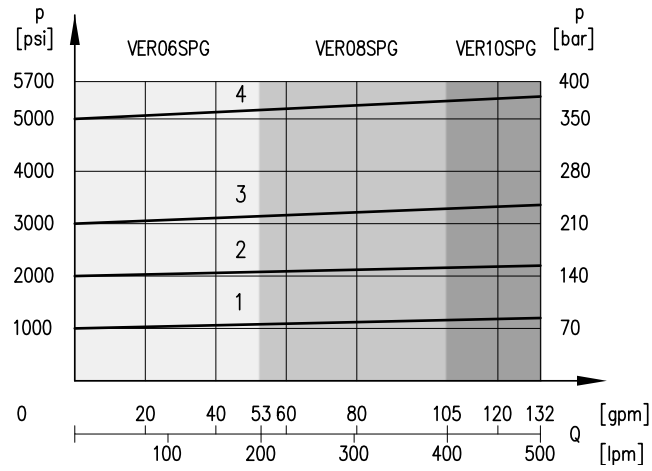
Curves obtained with mineral oil with viscosity of 170 sus (36 cSt) at 122°F (50°C).

PRESSURE GAIN



CHARACTERISTIC CURVES

ADJUSTMENT

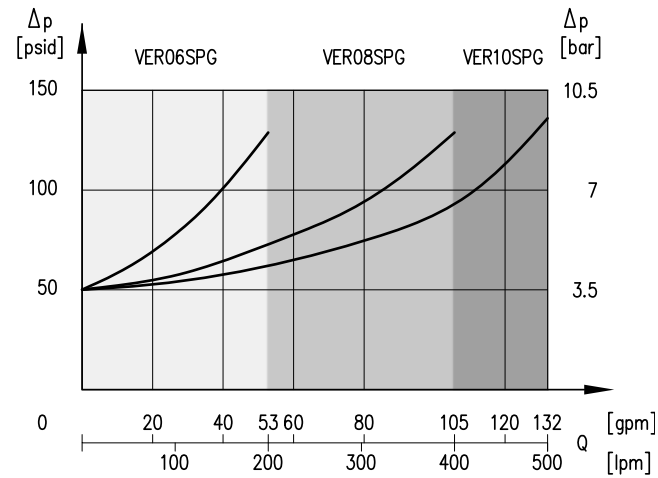


CURVE	PRESSURE RANGE
1	up to 1000 psi (70 bar)
2	up to 2000 psi (140 bar)
3	up to 3000 psi (210 bar)
4	up to 5000 psi (350 bar)

NOTES:

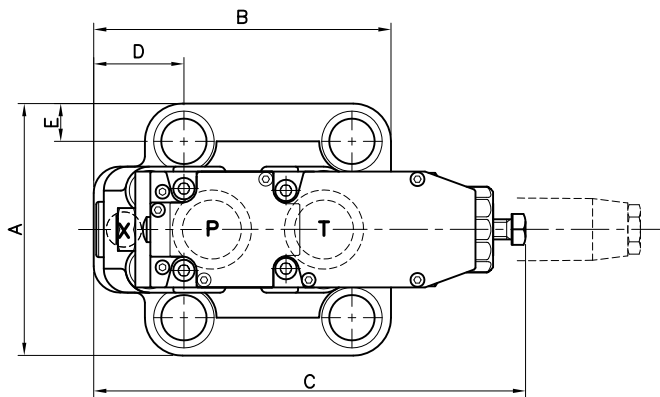
1. Values obtained with oil viscosity of 170 SUS (36 cSt) at 122°F (50°C).

PRESSURE DROPS



OVERALL AND MOUNTING DIMENSIONS

Dimensions in mm [IN]



SEALING RINGS:

VER06SPG

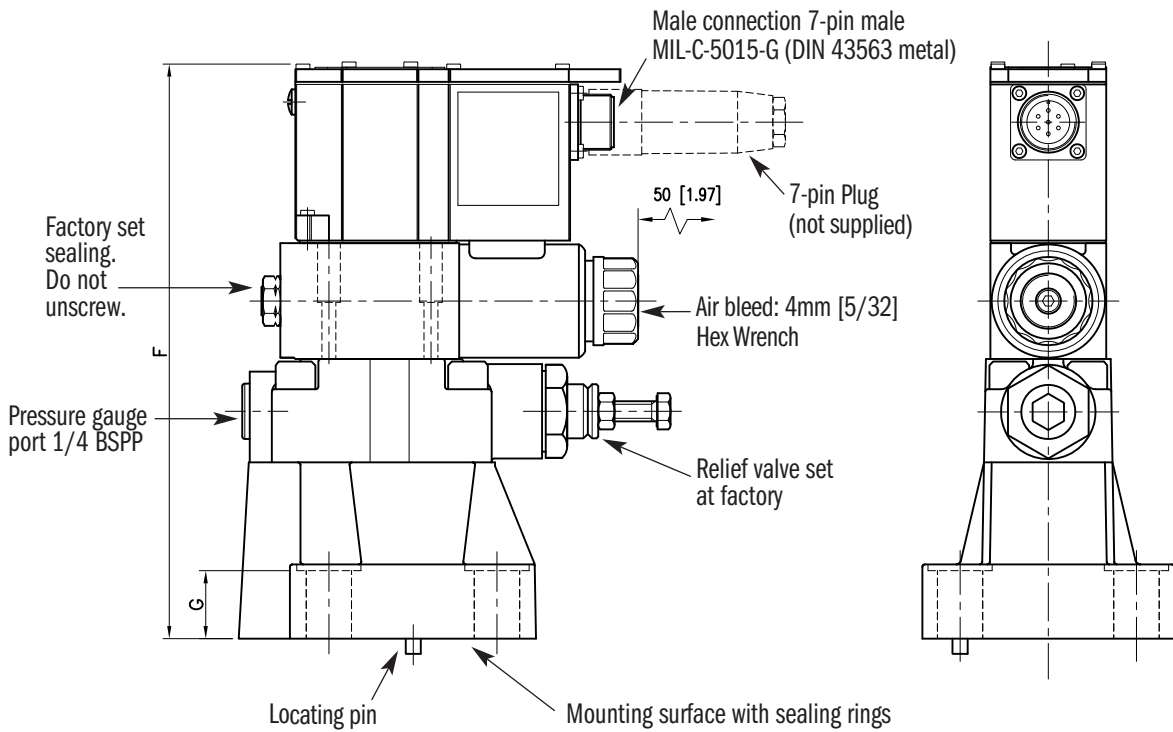
- 2 O-Ring 17.86mm IDx2.62mm CS 90 Shore A
- 1 O-Ring 9.13mm IDx2.62mm CS 90 Shore A

VER08SPG

- 2 O-Ring AS568-123 90 Shore A
- 1 O-Ring 9.13mm IDx2.62mm CS 90 Shore A

VER10SPG

- 2 O-Ring AS568-220 90 Shore A
- 1 O-Ring 9.13mm IDx2.62mm CS 90 Shore A



In order to avoid electromagnetic noises and fulfill the EMC regulations, a 7-pin metal plug according to MIL-C-2015 G should be used instead of the standard plastic 6+PE connector EN 175201-408 (formerly DIN 43563).

VALVE	DIMENSIONS mm [in]							FASTENING	
	A	B	C	D	E	F	G	n. 4 FASTENERS	TIGHTENING TORQUE
VER06SPG	80 [3.15]	80 [3.15]	172 [6.77]	13 [0.51]	13 [0.51]	222 [8.70]	22 [0.87]	M12x40 [1/2-13 UNC x 1 1/2"]	50.9 lb.ft
VER08SPG	100 [3.94]	118 [4.64]	164 [6.46]	36 [1.42]	15 [0.59]	232 [9.13]	27 [1.06]	M16x50 [5/8-11 UNC x 2"]	125.3 lb.ft
VER10SPG	120 [4.72]	152 [5.98]	180 [7.09]	44 [1.73]	19 [0.74]	242 [9.53]	35 [1.38]	M18x60 [3/4-10 UNC x 2,5"]	173.3 lb.ft

ELECTRICAL CHARACTERISTICS

The proportional valve is controlled by a digital amplifier (driver), which incorporates a microprocessor that controls all the valve functions.

THE STANDARD VALVE IS SET AT THE FACTORY WITH:

- UP/DOWN ramp at zero value
- No deadband compensation
- Max valve opening (100% of spool stroke)

It is possible to customize these and others parameters using the optional kit, VEA-PB7 to be ordered separately (see related literature).

THE DIGITAL DRIVER ENABLES THE VALVE TO REACH BETTER PERFORMANCE COMPARED TO THE ANALOG VERSION, AND GIVES:

- Reduced response times
- Optimization and reproducibility of the characteristic curve, optimized in factory for each valve
- Complete interchangeability in case of valve replacement
- Opportunity to set, via software, the functional parameters
- Opportunity to perform a diagnostic program by means of the LIN connection
- High immunity to electromagnetic interference

The electronic card is available with (OBC) or without (OBW/OBM) external enabling signal feature.

POWER SUPPLY		24V DC (19V to 35V, ripple max 3Vpp)
ABSORBED POWER		25 VA
MAX CURRENT		1.88 A
DUTY CYCLE		100%
MAIN CONNECTOR		7-pin MIL-C-5015 G (DIN 43563)
ELECTROMAGNETIC COMPATIBILITY (EMC)	Emissions	IEC EN 61000-6-4
	Immunity	IEC EN 61000-6-2
PROTECTION AGAINST ATMOSPHERIC AGENTS	IEC 60529	IP 67
ELECTRICAL PROTECTION	Overload electronics overheating, cable break, power failure or < 4 mA	

E0 - VOLTAGE

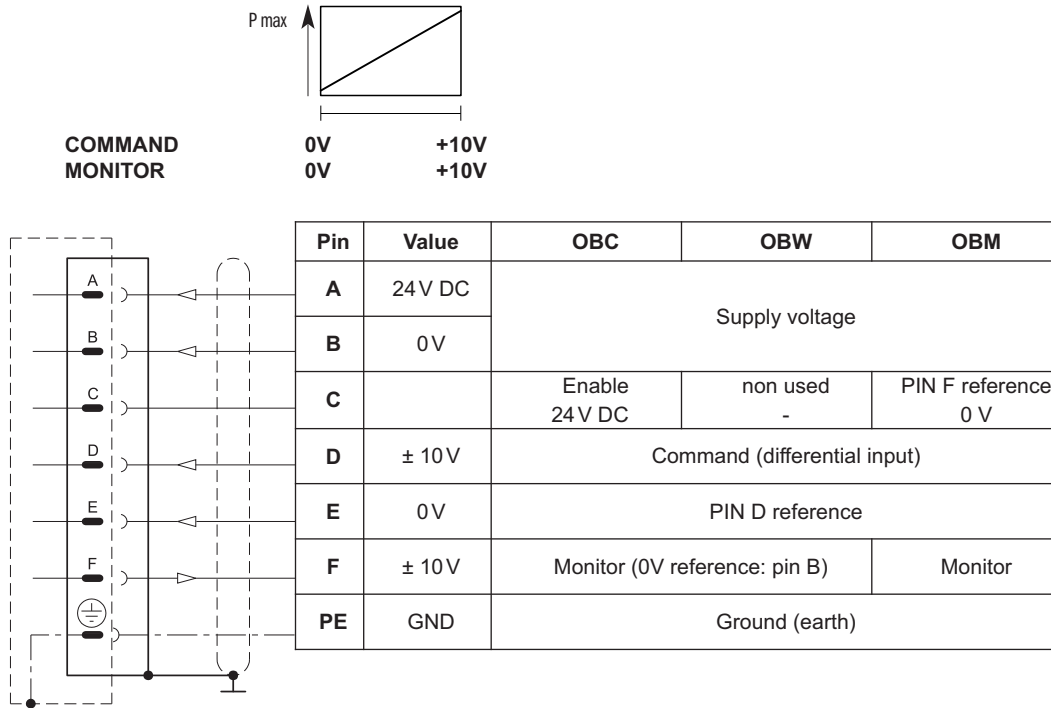
COMMAND SIGNAL (DIFFERENTIAL)		0 - 10 V DC
MONITOR SIGNAL		0 - 10 V DC
IMPEDANCE	Command	> 11 kΩ
	Monitor	> 1 kΩ

E1 - CURRENT

COMMAND SIGNAL (DIFFERENTIAL)		4 - 20 mA
MONITOR SIGNAL		4 - 20 mA
IMPEDANCE	Command	58 Ω
	Monitor	500 Ω

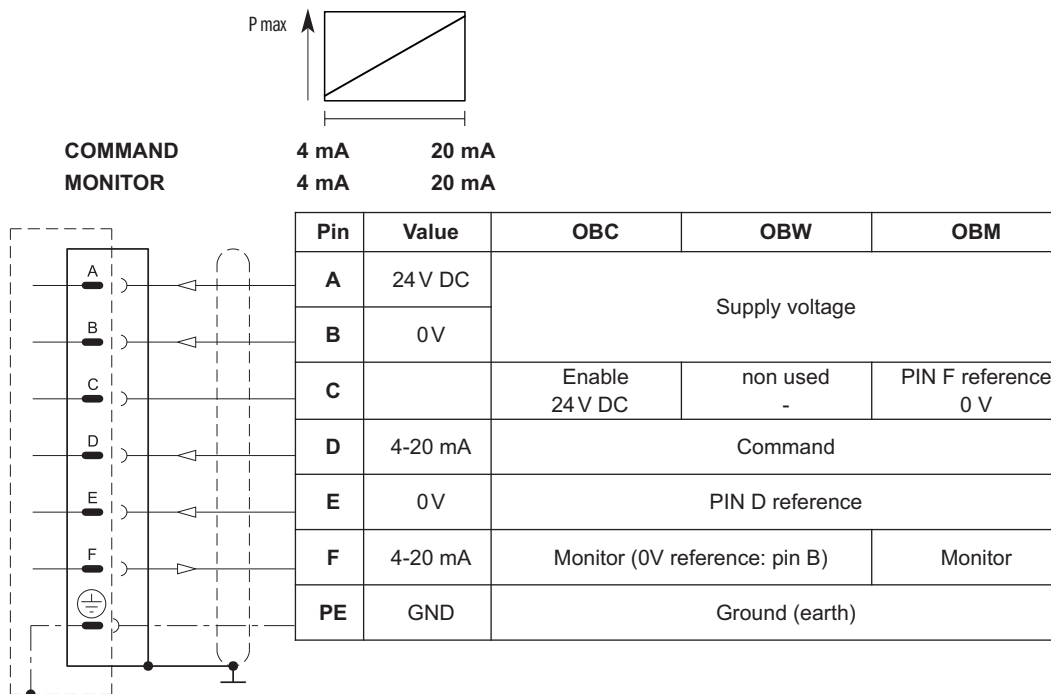
E0 VERSION - VOLTAGE REFERENCE SIGNAL

Reference signal required is 0-10 volt. The monitor signal is 0-10 volt. This signal is available 0.5 sec after card is powered on OBW / OBM.



E1 VERSION - CURRENT REFERENCE SIGNAL

Reference signal required is 4-20 mA. If the current value drops below 4 mA the card shut down until the correct signal has been applied. The monitor signal is 4-20 mA. This signal is available 0.5 sec after card is powered on OBW / OBM.



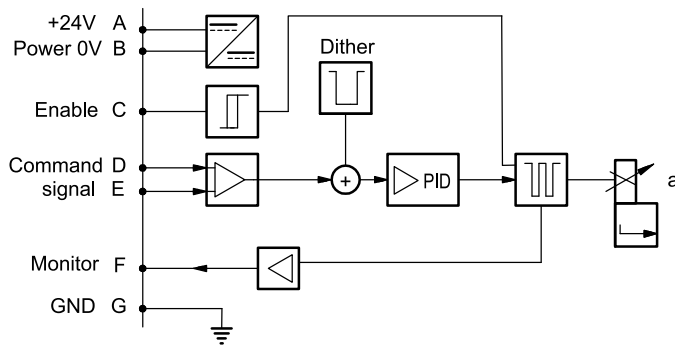
OBC / OBW / OBM VERSIONS

OBC version is programmed for use of an external 24 volt Enable signal applied at Pin C to allow the valve to function. The Monitor signal output is referenced between Pin F and Pin B.

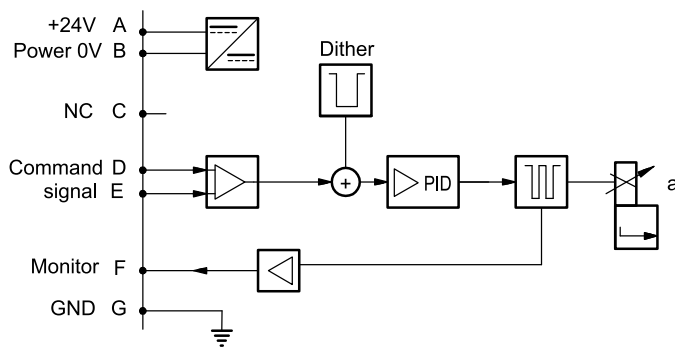
OBW version is programmed for Internal enable, power for enable is taken directly from the power supply. The power to the valve must be turned off to disable the valve. The Monitor signal output is referenced between Pin F and Pin B.

OBM version is programmed for Internal enable, power for enable is taken directly from the power supply. The power to the valve must be turned off to disable the valve. The Monitor signal output is reference between Pin F and Pin C for PIN to PIN interchangeability with other manufacturers.

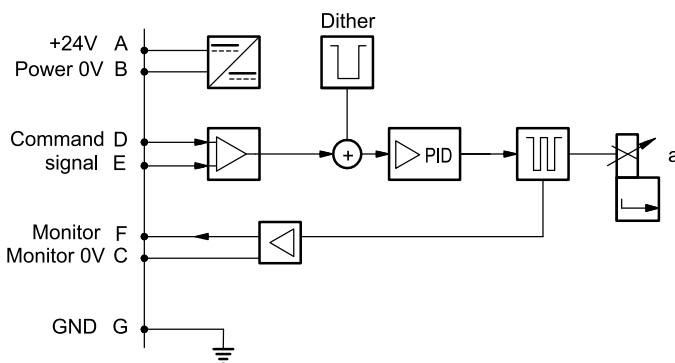
OBC ON-BOARD FUNCTION



OBW ON-BOARD FUNCTION



OBM ON-BOARD FUNCTION



MOUNTING SURFACES

ALL THE MOUNTING SURFACES REFER TO ISO 6264:1998 AND NFPA T3.5.1 R2-2002 STANDARDS.

The mounting surface standards recommends 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.

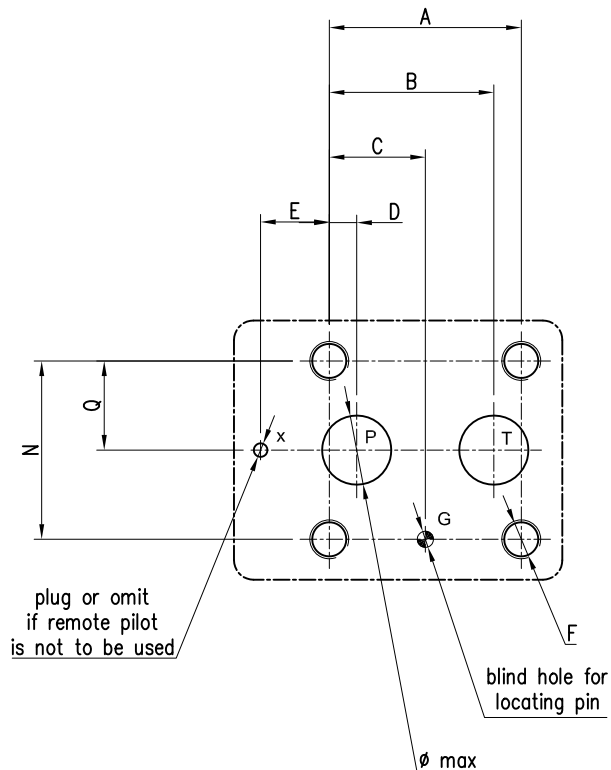
The minimum depth of the blind hole G is 8 mm (0.31 in).

PORT FUNCTION:

P = PRESSURE INLET

T = OUTLET TO RESERVOIR

X = REMOTE PILOT CONTROL PORT



VALVE	MOUNTING SURFACE		DIMENSIONS mm [in]						
	NFPA	ISO	A	B	C	D	E	N	Q
VER06SPG	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]
VER08SPG	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]
VER10SPG	R10	6264-10-17-0-97	88.9 [3.50]	76.2 [3.00]	44.5 [1.75]	12.7 [0.50]	31.8 [1.25]	82.6 [3.25]	41.3 [1.63]

VALVE	MOUNTING SURFACE		DIMENSIONS mm [in]					F
	NFPA	ISO	Øp max	Øt max	Øx	Øg		
VER06SPG	R06	6264-06-09-0-97	14.7 [0.58]	14.7 [0.58]	4.8 [0.19]	7.5 [0.295]	M12x40 [1/2 - 13 UNC x 1 1/2"]	
VER08SPG	R08	6264-08-13-0-97	23.4 [0.92]	23.4 [0.92]	6.3 [0.25]		M16x50 [5/8 - 11 UNC x 2"]	
VER10SPG	R10	6264-10-17-0-97	32 [1.26]	32 [1.26]	6.3 [0.25]		M18x60 [3/4 - 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. $\Delta P_1 = \Delta P (G1/G)$. 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 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	-40 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		

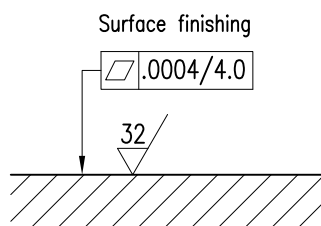
INSTALLATION

We recommend the VER*SPG 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

	VER06SPG	VER08SPG	VER10SPG
Buna Seal Kit	1013206	1013208	1013210
Viton Seal Kit	1013207	1013209	1013211

BOLT KIT

VER06SPG	BR06-175	M12x40 [1/2 - 13 UNC x 1 1/2"]	1013240
VER08SPG	BR08-200	M16x50 [5/8 - 11 UNC x 2"]	1013241
VER10SPG	BR10-250	M18x60 [3/4 - 10 UNC x 2.5"]	1013242

NOTES:

1. Bolt Kit Consists Of Qty. 4 bolts and Qty. 4 Lock washer

SUBPLATES

R06 SIZE	AR06SPS12S	Aluminium	SAE-12	1013128AB
	DR06SPS12S	Ductile		1013128AC
R08 SIZE	AR08SPS16S	Aluminium	SAE-16	1013128AD
	DR08SPS16S	Ductile		1013128AE
R10 SIZE	AR10SPS24S	Aluminium	SAE-24	1013128AF
	DR10SPS24S	Ductile		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

VER-SPG - PROPORTIONAL PRESSURE RELIEF VALVES WITH OBE

POWERFUL
CURATE
OVATIVE
PRECISE
URABLE
EFFICIENT
ERCATTLE

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