



# VALVES



Precision engineered control valves for critical sub-sea and top side applications

- Relief Valves
- Check Valves
- Manual Valves
- Filters
- Directional Valves
- Solenoid Valves
- Manifolds
- Excess Flow Valves

T: +44 (0)1202 896322 F: +44 (0)1202 896718  
E: [salesadmin@bisvalves.co.uk](mailto:salesadmin@bisvalves.co.uk) W: [www.bisvalves.co.uk](http://www.bisvalves.co.uk)

Units 17-23, Kingfisher Park, Three Cross Road, West Moors,  
Wimborne, Dorset, BH21 6US United Kingdom



## **COMPANY PROFILE**

- Established for over 30 years situated on the south coast of England in the United Kingdom.
- Suppliers of "Pressure Control Equipment" for liquids and gases.
- Full design and manufacturing facilities using modern CAD and CNC equipment.
- Qualification Testing to meet customer requirements.
- Full "prototype / design" support service available to meet specific customer requirements.
- Overseas agency representation in many countries worldwide.
- Approved to the ISO9001:2000 Quality Management System.
- Approved to the European ATEX Directive 94/9/EC.
- Approved to the European Pressure Equipment Directive (PED) 97/23/EC.

## **PRODUCT INFORMATION**

- Manufacturer's and suppliers of a wide range of standard and non-standard equipment, including Directional Control Valves, Safety & Relief Valves, Check Valves, Filters .....
- All equipment available with either NPT or BSP connections / porting. High Pressure Thread & Cone ( Autoclave/Butech type) porting available on request.
- Certificate(s) of Conformity & Test Certificate(s) supplied as standard.
- Special 'O' ring seal compounds available by request.
- Special Products available by request.

## **CUSTOMER SUPPORT / SERVICES**

- Suppliers to the Oil and Gas Industry, Chemical & Process Industry & Commercial Industry.
- Extensive customer client base.
- Full "after-sales" technical support service.
- Reliable "spare parts service" and "in-house" repair facility.

## CATALOGUE INTRODUCTION

This catalogue represents the full standard range of BiS Valves products. Each page illustrates the equipment complete with full technical specification. Certain types of valves have the option of being fitted with more than one type of actuator. In these instances the valve body is specified on one page and the actuator illustrated separately in **SECTION 12 ACTUATORS**. Illustrations with both valve body and actuator assembled are available upon request.

Should any of our standard products not match your specific requirements, BiS Valves is able to offer its full "Custom-Build" service incorporating both design and development. Please contact our Technical Department with your details.

**BiS Valves reserves the right to modify any part of the design of its products without prior notice. Dimensions shown on drawings in this catalogue are given as guidance only. For assembly / installation details of any piece of equipment where dimensions are considered critical it is recommended to contact our Technical Department for the latest details.**

## ORDERING PROCEDURE

BiS Valves manufactures the majority of its products in AISI 316 / 1.4404 Stainless Steel. The standard product material can be found under the general heading at the top of each page complete with options available.

**WHEN ORDERING A CODE IS NOT REQUIRED FOR STANDARD MATERIAL.**

Non-Standard materials are treated as an option with its own Ordering Code.

Ordering information required for **ALL** standard equipment throughout the catalogue is shown in the typical example below:-

TECHNICAL SPECIFICATION			Ordering Example
Material Option (non-std)	A = Alum. Body (HE30) C = En1 A/220M07 Mild Steel (E.N.P.)		—
Valve Type:	3B25		3B25
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper) M = Manifold		N
Actuator Options	Low Press. Pilot:	Types: H3 ( 44 to 300 psi )	H3
	High Press. Pilot:	Types: H0 ( 400 to 3,500 psi ), H1 ( 1,400 to 10,000 psi )	
	Mechanical:	Types: C0, C1, L, DL	
Max. Working Press: Liquid/Gas	10,000 psi		10K

Select the relevant ordering codes shown in "bold" type from within the table to suit your own Technical Specification. This is illustrated in the column marked "Ordering Example".

Example: Valve **MODEL NUMBER** selected is a **3B25 N H3 \*\* 10K**

- Directional Control Valve (AISI 316) Type "3B25" (1/4" ports) \_\_\_\_\_
- NPT Ports \_\_\_\_\_
- Piston Hydraulic Actuator Type "H3" \_\_\_\_\_
- Ordering Code for "**non-standard**" options entered here. \_\_\_\_\_  
(consult factory for relevant information if required)
- Maximum Working Pressure of 10,000psi \_\_\_\_\_

**For Spares Kits add "RK" (Repair Kit) or "SK" (Seal Kit) after the Valve Model Number.**

Additional technical information relevant to the equipment but not covered by ordering options is tabulated below the "**bold**" outlined area on each catalogue page.

## TECHNICAL DATA

- Dimensions on drawings/diagrams are stated in **INCHES**
- Pressures are stated in **psi.** (pounds/sq.in)
- Weights are stated in **kg.** (kilogrammes)
- All equipment is manufactured externally in **AISI 316 / 1.4404 Stainless Steel** unless otherwise stated.
- All seals used are **Fluorocarbon (Viton)** unless otherwise stated. (other materials available upon request).
- All equipment is supplied with either **BSP (Parallel)** or **NPT (Taper)** threads.
- Proof Testing is carried out at **1.5 times** above the **MAXIMUM WORKING PRESSURE.**
- Working Temperature Ranges are stated assuming optimum fluid compatibility to the elastomer and seal back up materials. Working temperature ranges should be confirmed for individual applications.

## TECHNICAL FORMULA

- **INCHES** to **MILLIMETRES** multiply by..... 25.4
- **KILOGRAMMES** to **POUNDS** multiply by..... 2.2
- **POUNDS/SQ.IN (psi)** to **BAR** divide by..... 14.5
- **US galls/min** to **IMPERIAL galls/min** multiply by..... 0.83
- **US galls/min** to **Litres/min** multiply by..... 3.79
- **SCFH (Standard Cubic Ft/Hr)** to **Nm<sup>3</sup>/Hr (Normal Cubic Metres/Hour)** multiply by ..... 0.028  
Coefficient of Flow (CV) see below for details

## FLOW FORMULA

### For LIQUID:

$$\text{Flow, U.S. gal/min} \quad V = C_V \frac{\sqrt{P_1 - P_2}}{\sqrt{S_{GF}}}$$

### For GAS:

$$Q = 42.2 C_V \frac{\sqrt{(P_1 - P_2) \times (P_1 + P_2)}}{\sqrt{S_G}}$$

$$Q = 42.2 C_V \frac{0.87 \times P_1}{\sqrt{S_G}}$$

for  $P_2 < 0.5 P_1$

Specific Gravity ( $S_{GF}$ )  
Typical Liquids @ 68°F referred to water.

Hydraulic Oil..... 0.875  
HW540 \*..... 1.055  
Water ..... 1.000

\* Water Glycol

Specific Gravity ( $S_G$ )  
Typical Gases @ 68°F referred to air.

Acetylene..... 0.897  
Air..... 1.000  
Hydrogen..... 0.0695  
Methane..... 0.553  
Oxygen..... 1.103

## FORMULA NOMENCLATURE

**V** = Flow, U.S. gallons per minute (GPM)  
**Q** = Flow, standard cu.ft. per hr. (SCFH)  
**P<sub>1</sub>** = Inlet Pressure, psia (14.7 + psig)  
**P<sub>2</sub>** = Outlet Pressure, psia (14.7 + psig)

**S<sub>GF</sub>** = Liquid Specific Gravity (water = 1.0)  
**S<sub>G</sub>** = Gas Specific Gravity (air = 1.0)  
**C<sub>V</sub>** = Valve Coefficient of Flow, full open.

**Gas Flow Calculation:** This method is only approximate and should only be used for rough calculations, the error increases the lower P<sub>2</sub> is relative to P<sub>1</sub>.  
If accurate pressure drop figures are required consult factory.

# PRODUCT INDEX

**SECTION 1: SOLENOID VALVES**

**SECTION 2: STOP & METERING VALVES**

**SECTION 3: 3 PORT DIRECTIONAL CONTROL VALVES**

**SECTION 4: 4 PORT DIRECTIONAL CONTROL VALVES**

**SECTION 5: CHECK & SHUTTLE VALVES**

*BIS Valves offer an extensive range of check and shuttle valves.  
To obtain data sheets for the full range of check and shuttle valves,  
download the check and shuttle valve catalogue from [www.bisvalves.co.uk](http://www.bisvalves.co.uk).*

**SECTION 6: PILOT OPERATED CHECK VALVES**

**SECTION 7: RELIEF VALVES**

**SECTION 8: EXCESS FLOW VALVES**

**SECTION 9: FILTERS**

**SECTION 10: PRESSURE SENSING VALVES**

**SECTION 11: PUMPS**

**SECTION 12: ACTUATOR & SOLENOID THRUSTERS**



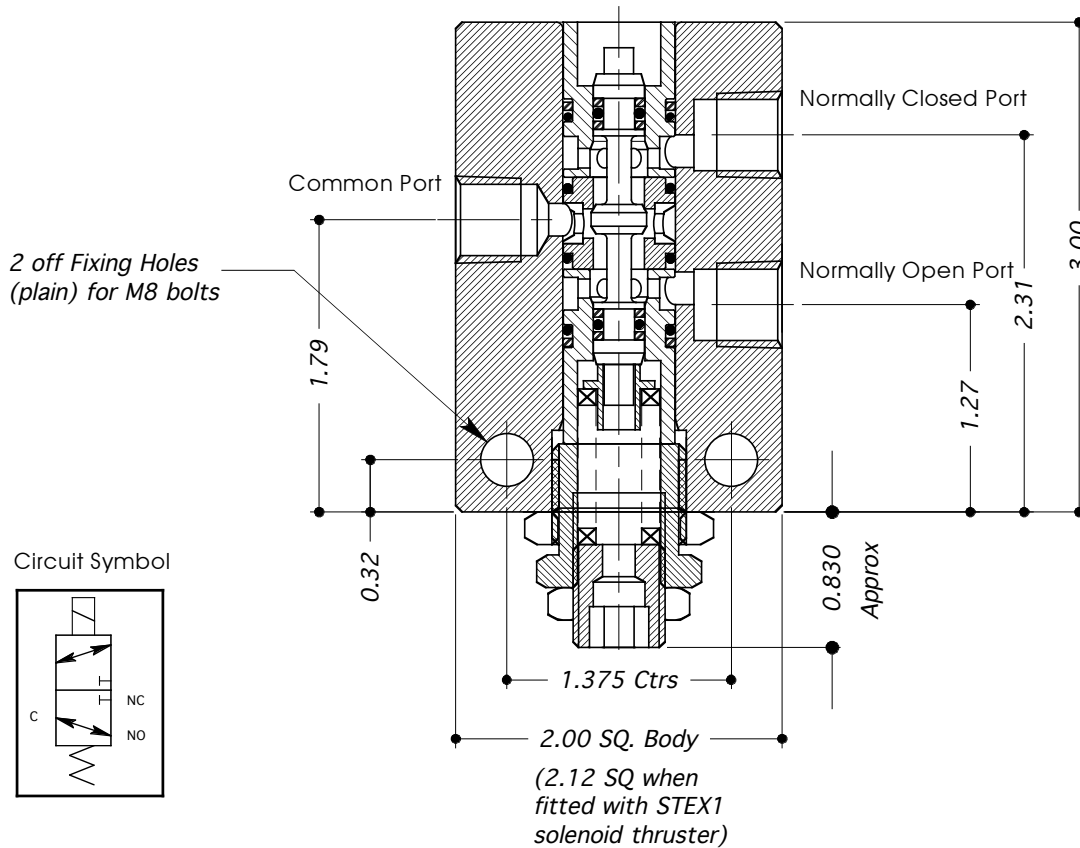
## **SECTION 1: SOLENOID VALVES**

1/4" 316 St.St. 2/3, MWP: 6,000 psi Liquid / 3,500 psi Gas, soft seated Type: 2/3DS25 .....	<b>1:1</b>
3/8" 316 St.St. 2/3, MWP: 6,000 psi Liquid / 3,500 psi Gas, soft seated Type: 2/3DS37 .....	<b>1:2</b>
1/4" 316 St.St. 2/3, MWP: 10,000 psi Liquid, hard seated Type: 2/3DS20/25 .....	<b>1:3</b>
1/8" 316 St.St. 2/3, MWP: 10,000 psi Liquid, hard seated, sub-sea use Type: CS20 .....	<b>1:4</b>
INDIRECT SOLENOID VALVE Type: 2 Posn/3 Ported or 2 Posn/4 Ported .....	<b>Consult Factory</b>

# DIRECT SOLENOID VALVE TYPE: 2/3DS25



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH SOLENOID OPTIONS.
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- SOLENOID ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.

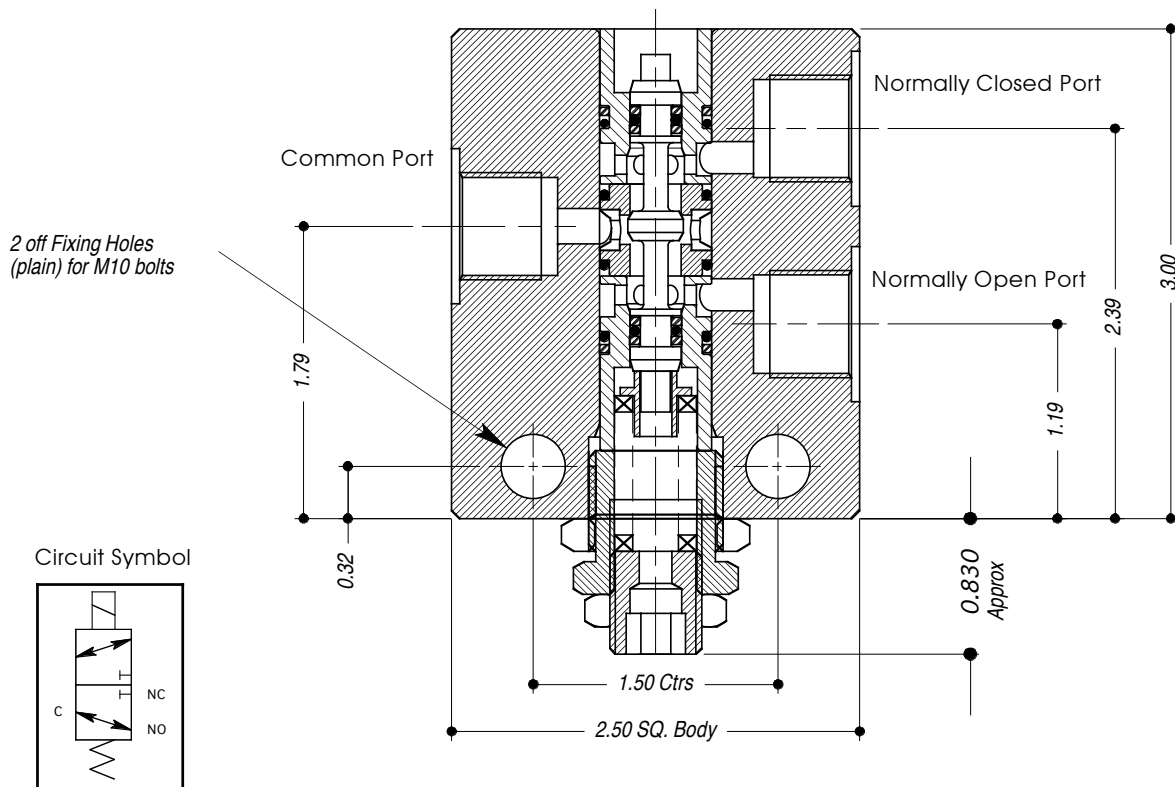


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>2/3DS25</b>	<b>2/3DS25</b>
Porting / Connection Options:	<b>P = BSP (Parallel) N = NPT (Taper) M = Manifold</b>	<b>N</b>
Soft Seated Valve:	<b>G</b>	<b>G</b>
Solenoid Thruster Options:	<b>HC= (DIN connector) KC= (Kopex fitting) STEX1= (EExd)</b>	<b>KC</b>
Max. Working Press: Liquid/Gas	<b>6K psi / 3,5K psi</b>	<b>6K</b>
Voltage Rating:	Check Voltage Rating availability in Section 12 (example given *)	<b>24V D.C. *</b>
Port Size:	1/4"	
Valve Seat Mat'l: Liquid/Gas	Peek	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.26	
Dry Weight: (kg)	1.75	
Working Temp Range:	fitted with HC, KC	-10°C to +80°C
	fitted with STEX1	T5 = -10°C to +40°C T4 = -10°C to +60°C

# DIRECT SOLENOID VALVE TYPE: 2/3DS37



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH SOLENOID OPTIONS.
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- SOLENOID ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



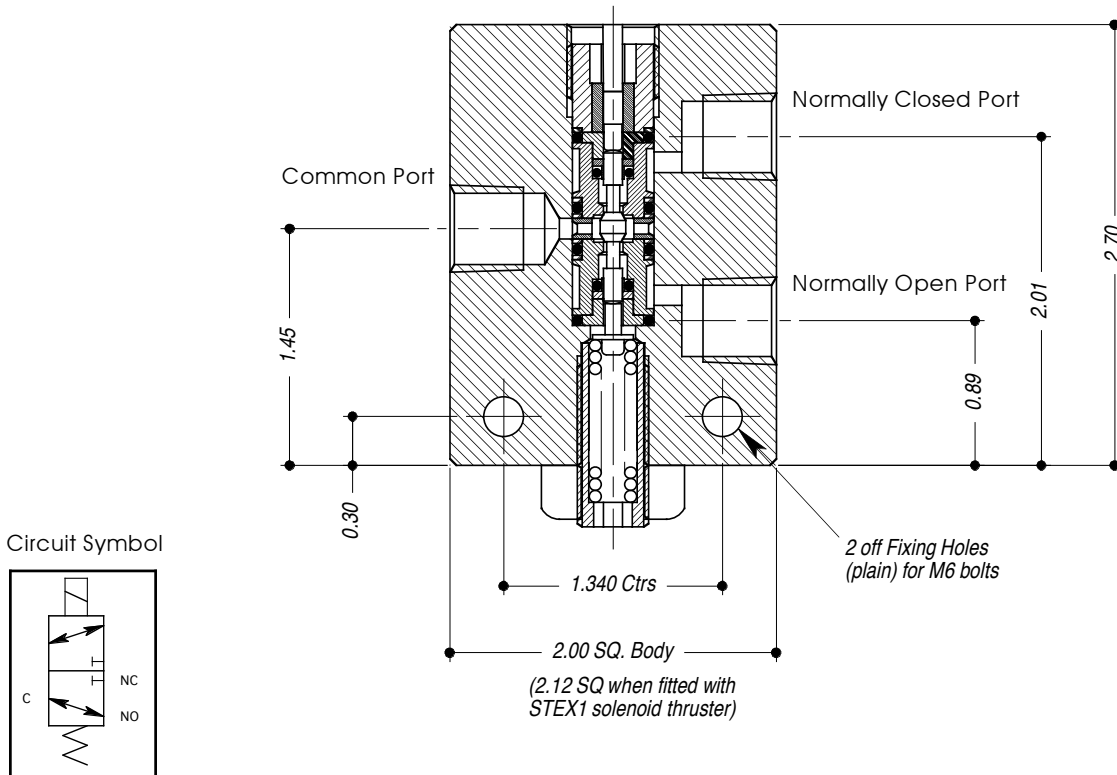
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	2/3DS37	2/3DS37
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)	P
Soft Seated Valve:	G	G
Solenoid Thruster Options:	HC= (DIN connector) KC= (Kopex fitting) STEX1= (EExd)	KC
Max. Working Press: Liquid/Gas	6K psi / 3,5K psi	6K
Voltage Rating:	Check Voltage Rating availability in Section 12 (example given *)	24V D.C. *
Port Size:	3/8"	
Valve Seat Mat'l: Liquid/Gas	Peek	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.26	
Dry Weight: (kg)	2.00	
Working Temp Range:	fitted with HC, KC	-10°C to +80°C
	fitted with STEX1	T5 = -10°C to +40°C T4 = -10°C to +60°C



# DIRECT SOLENOID VALVE TYPE: 2/3DS20/25



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH SOLENOID OPTIONS.
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- SOLENOID ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.

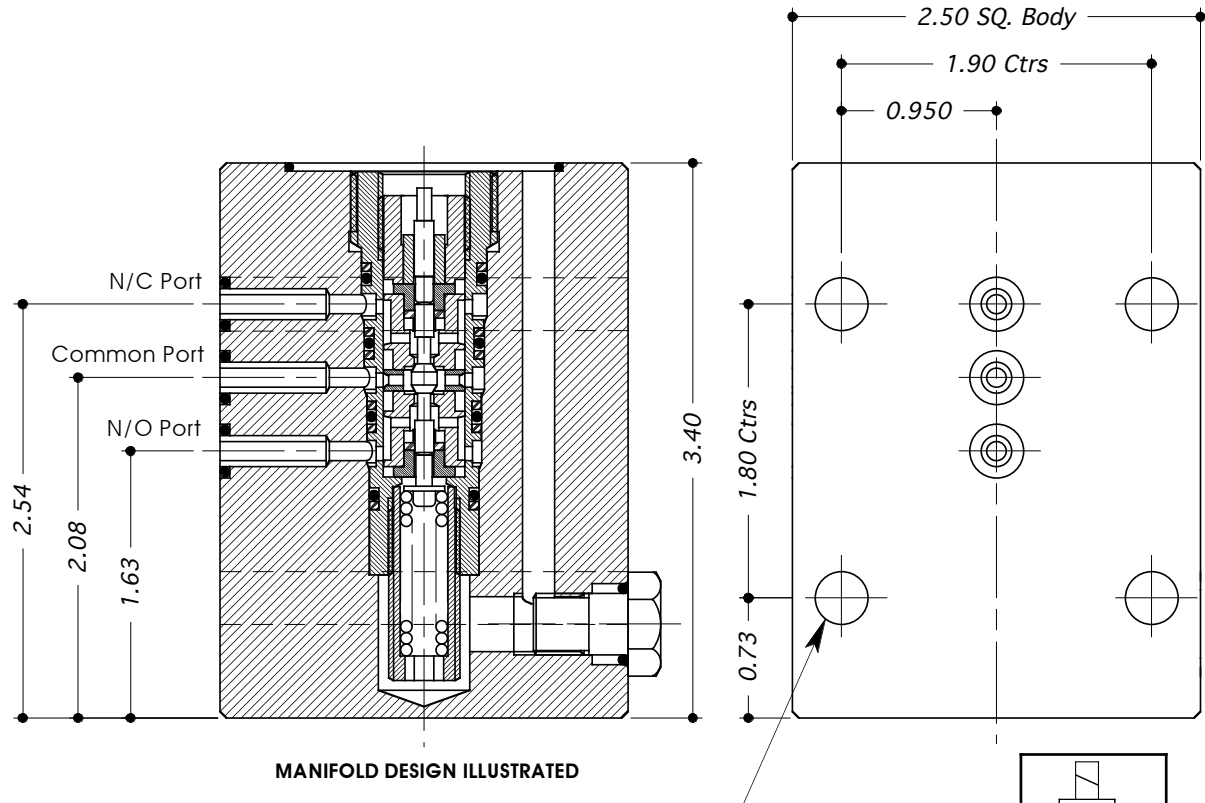


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	2/3DS20/25	2/3DS20/25
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)    M = Manifold	N
Solenoid Thruster Options:	HC= (DIN connector)    KC= (Kopex fitting)    STEX1= (EExd)	KC
Max. Working Press: Liquid	10,000 psi	10K
Voltage Rating:	Check Voltage Rating availability in Section 12 (example given *)	24V D.C. *
Port Size:	1/4"	
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.1	
Dry Weight: (kg)	1.75	
Working Temp Range:	fitted with HC, KC	-10°C to +80°C
	fitted with STEX1	T5 = -10°C to +40°C    T4 = -10°C to +60°C

# CARTRIDGE SOLENOID VALVE TYPE: CS20



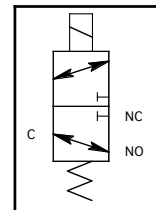
- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE FOR SUB-SEA APPLICATION.
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- SOLENOID ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



N/C = Normally Closed Port  
 N/O = Normally Open Port

4 off Fixing Holes  
 (plain) for M8 bolts

Circuit  
 Symbol



This Model can be supplied as a "non-standard" fitted  
 with either 1/4" or 3/8" (BSP or NPT threaded ports).  
 Ask for ordering details.

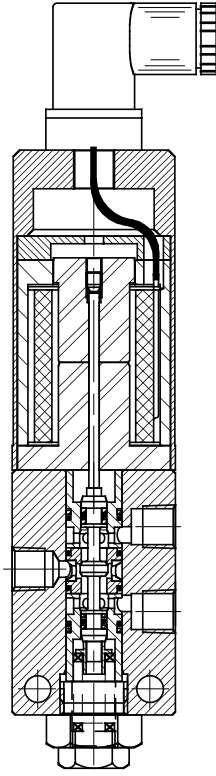
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	CS20	CS20
Porting / Connection Options:	M = Manifold	M
Solenoid Thruster Options:	SW = Sub-Sea	SW
Max. Working Press: Liquid	10,000 psi	10K
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.1	
Dry Weight: (kg)	2.0	
Working Temperature Range:	-10°C to +70°C	

# EXAMPLES OF SOLENOID ASSEMBLIES FITTED WITH SOLENOID THRUSTERS

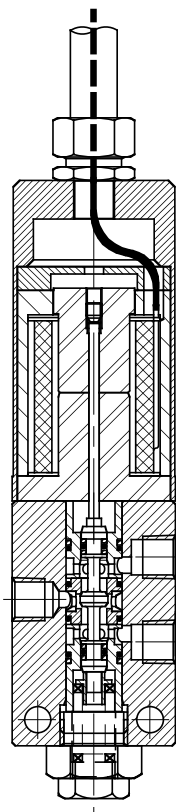
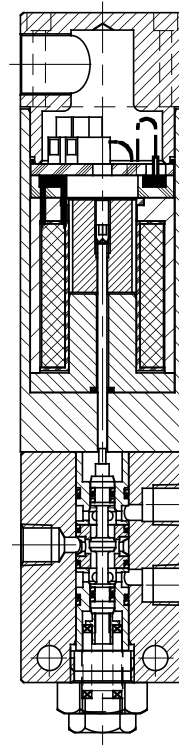


Valves Ltd

Model Type: 2/3DS25-HC (3.5K)



Model Type: 2/3DS25-STEX1A (6K)



Model Type: 2/3DS25-KC (3.5K)



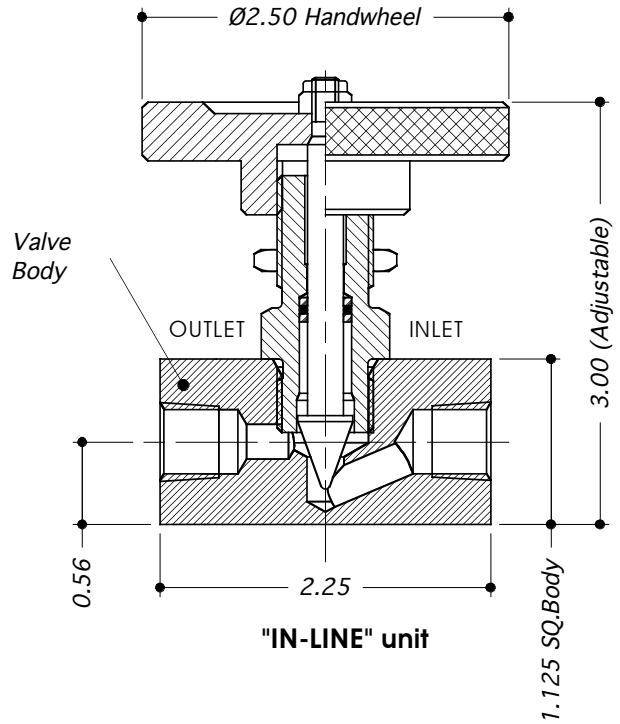
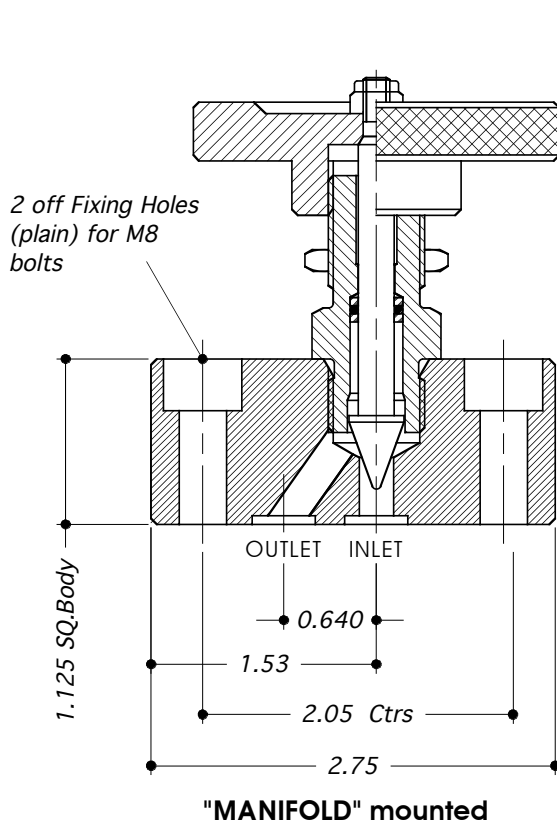
## SECTION 2: STOP & METERING VALVES

1/4" / 3/8" 316 St.St. Stop Valve, MWP: 10,000 psi Liquid / 6,000 psi Gas Types: BNV25, BNV25/37 .....	2:1
1/2" / 3/4" 316 St.St. Stop Valve, MWP: 10,000 psi Liquid / 6,000 psi Gas Types: BNV50, BNV50/75 .....	2:2
1/4" / 3/8" 316 St.St. Fine Flow Metering Valve, MWP: 8,000 psi Liquid / 4,000 psi Gas Types: MF25, MF37 .....	2:3
1/2" - 1" 316 St. St. Fine Flow Metering Valve, MWP: 8,000 psi Liquid / 4,000 psi Gas Types: MF50, MF75, MF100 .....	2:4
1/4" / 3/8" 316 St.St. Reverse Check Metering Valve, MWP: 8,000 psi Liquid / 4,000 psi Gas Types: CMF25, CMF37 .....	2:5
1/2" - 1" 316 St.St. Reverse Check Metering Valve, MWP: 6,000 psi Liquid / 4,000 psi Gas Types: CMF50, CMF75, CMF100 .....	2:6
1/4" / 3/8" / 1/2" 316 St.St. Reverse Check Metering Valve, MWP: 8,000 psi Liquid Types: IMC25, IMC37, IMC50 .....	2:7
1/2" / 3/8" 316 St.St. Pressure Compensated Flow Regulator, MWP: 10,000 psi Liquid Types: PCFR50/37, PCFR50 .....	2:8

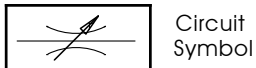
# STOP & METERING VALVE TYPES: BNV25, BNV25/37



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- RECOMMENDED HOLE PANEL DIAMETER Ø0.70"
- ALL DIMENSIONS IN INCHES



"Cartridge Unit"  
With the Body removed this unit can be assembled into customers own manifold.  
Ordering Example: BNV25C

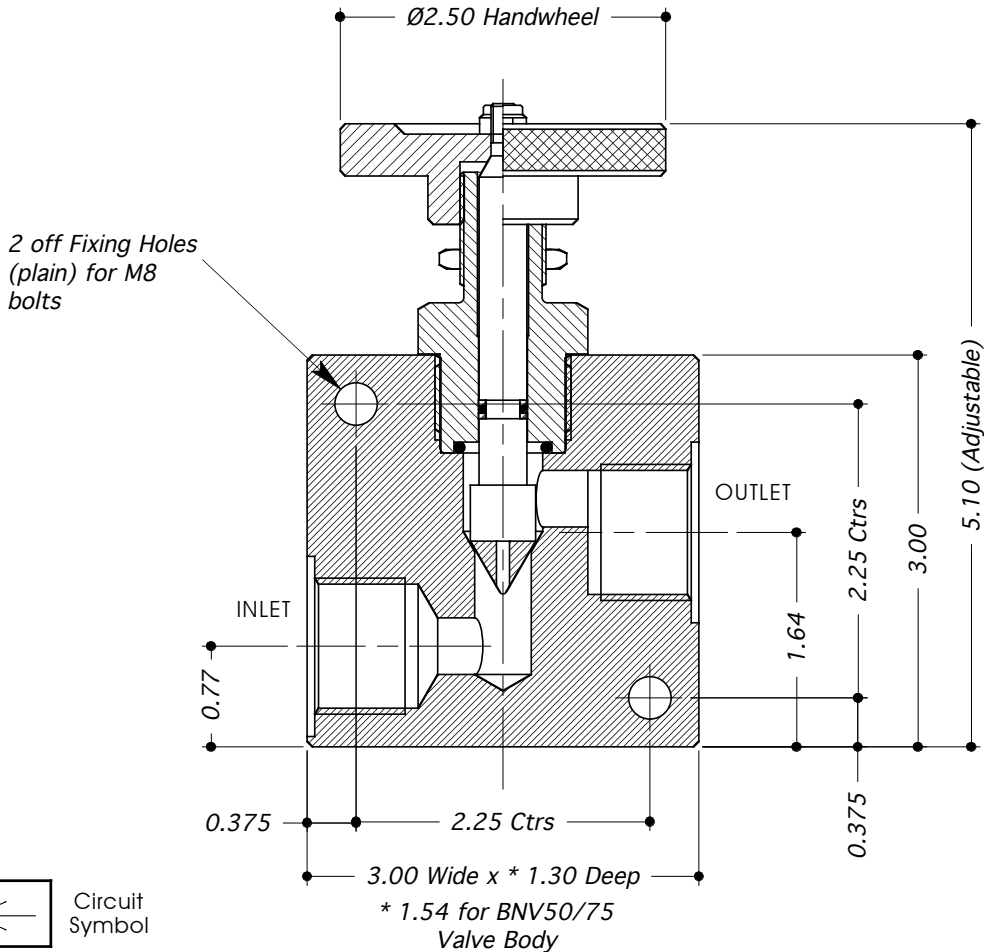


TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>BNV25</b>	<b>BNV25/37</b>	<b>BNV25</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>M</b> = Manifold <b>C</b> = Cartridge		<b>N</b>
Soft Seated Valve:	<b>G</b>		—
Max. Working Press: Liquid	<b>10,000 psi</b> (Hard Seat)		<b>10K</b>
Max. Working Press: Liquid/Gas	<b>6,000 psi</b> (Soft Seat)		
Port Size:	1/4"	3/8"	
Valve Seat Mat'l: Hard Seat	Stainless Steel - 17-4/1.4542		
Valve Seat Mat'l: Soft Seat	Torlon		
Seal Material:	Viton (other materials available by request)		
CV Value:	0.52	0.52	
Dry Weight: (kg)	0.75	0.75	
Working Temperature Range:	-10°C to +120°C		

# STOP & METERING VALVE TYPES: BNV50, BNV50/75



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES



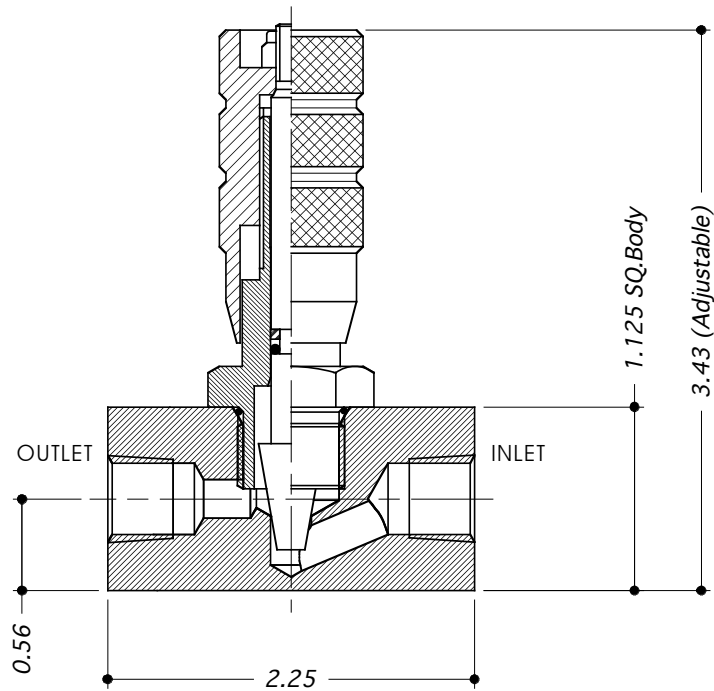
Circuit Symbol

TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>BNV50</b>	<b>BNV50/75</b>	<b>BNV50</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>C</b> = Cartridge		<b>P</b>
Soft Seated Valve:	<b>G</b>		—
Max.Working.Press: Liquid	<b>10,000 psi</b> (Hard Seat)		<b>6K</b>
Max.Working.Press: Liquid/Gas	<b>6,000 psi</b> (Soft Seat)		
Port Size:	1/2"	3/4"	
Valve Seat Mat'l: Hard Seat	Stainless Steel - 431/1.4057		
Valve Seat Mat'l: Soft Seat	Torlon		
Seal Material:	Viton (other materials available by request)		
CV Value:	2.1	2.1	
Dry Weight: (kg)	1.75	1.75	
Working Temperature Range:	-10°C to +120°C		

# FINE FLOW METERING VALVE TYPES: MF25, MF37



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- THE "MF" SERIES IS NOT SUITABLE FOR "SCREW-DOWN" STOP VALVE USE WITH GAS.
- ALL DIMENSIONS IN INCHES.



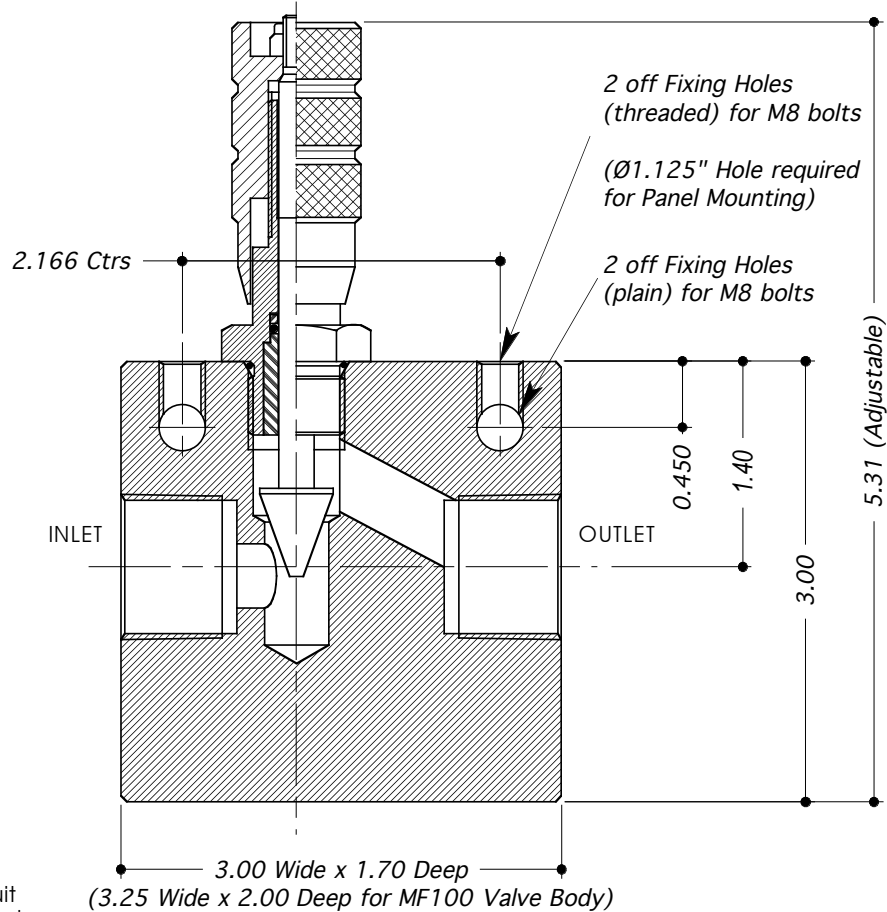
Circuit Symbol

TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	MF25	MF37	MF25
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)		N
Max. Working Pressure - Liquid	8,000 psi		8K
Max. Working Pressure - Gas	4,000 psi		
Port Size:	1/4"	3/8"	
Valve Seat Material:	Stainless Steel - 431/1.4057		
Seal Material:	Viton (other materials available by request)		
CV Value:	0.64	0.70	
Dry Weight: (kg)	1.0	1.0	
Working Temperature Range:	-10°C to +120°C		

# FINE FLOW METERING VALVE TYPES: MF50, MF75, MF100



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- THE "MF" SERIES IS NOT SUITABLE FOR "SCREW-DOWN" STOP VALVE USE WITH GAS.
- ALL DIMENSIONS IN INCHES.



Circuit Symbol

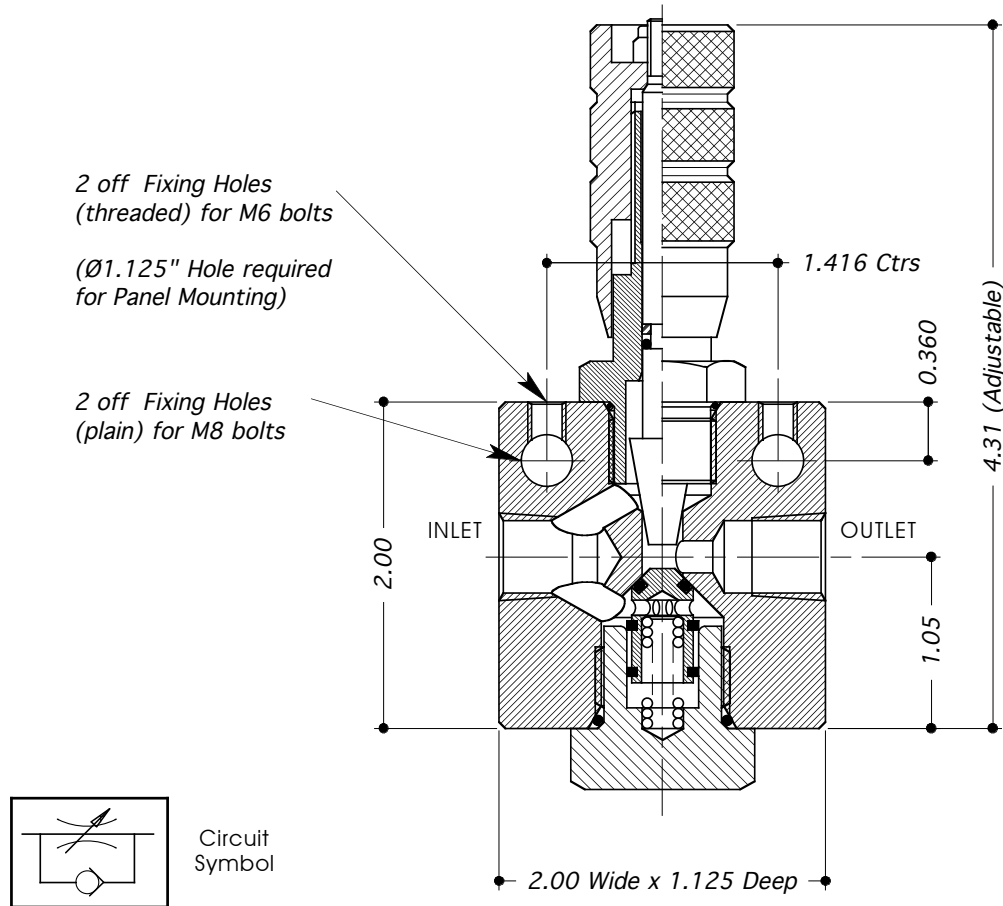
TECHNICAL SPECIFICATION				ORDERING EXAMPLE
Valve Type:	MF50	MF75	MF100	MF50
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)			N
Max. Working Pressure - Liquid	8,000 psi			8K
Max. Working Pressure - Gas	4,000 psi			
Port Size:	1/2"	3/4"	1.00"	
Valve Seat Material:	Stainless Steel - 17-4/1.4542			
Seal Material:	Viton (other materials available by request)			
CV Value:	1.4	2.5	2.5	
Dry Weight: (kg)	1.8	1.8	1.8	
Working Temperature Range:	-10°C to +120°C			



# FINE FLOW METERING VALVE TYPES: **CMF25, CMF37**



- **STAINLESS STEEL (316 / 1.4404)**
- **SUITABLE FOR LIQUID OR GAS USE.**
- **THE "CMF" SERIES IS NOT SUITABLE FOR "SCREW-DOWN" STOP VALVE USE WITH GAS.**
- **ALL DIMENSIONS IN INCHES.**

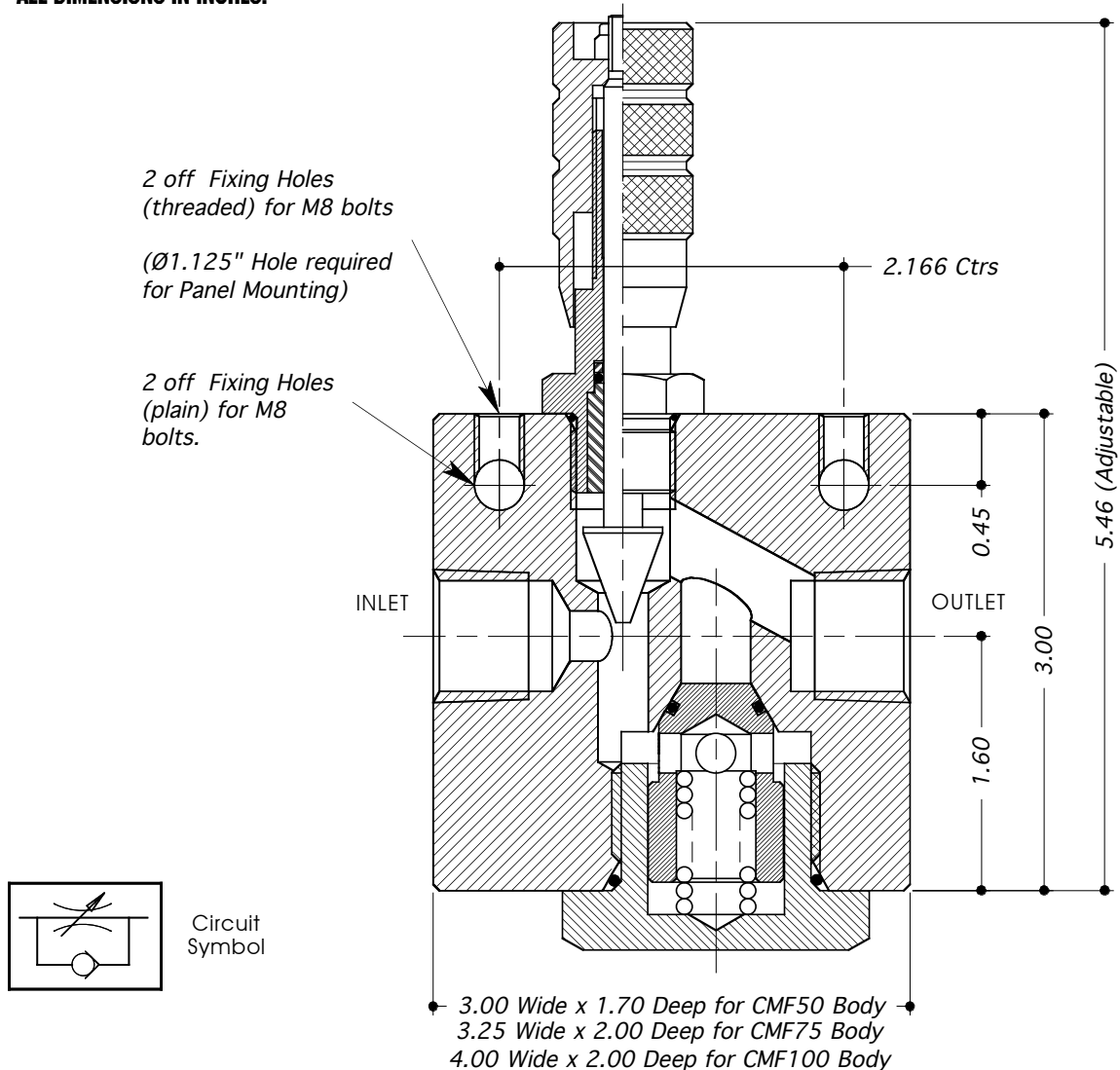


TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>CMF25</b>	<b>CMF37</b>	<b>CMF25</b>
Porting / Connection Options:	<b>P = BSP (Parallel)</b>	<b>N = NPT (Taper)</b>	<b>N</b>
Max. Working Pressure: Liquid	<b>8,000 psi</b>		<b>8K</b>
Max. Working Pressure: Gas	<b>4,000 psi</b>		
Port Size:	1/4"	3/8"	
Valve Seat Material:	Stainless Steel - 431/1.4057		
Seal Material:	Viton (other materials available by request)		
CV Value:	0.56	0.62	
Dry Weight: (kg)	1.0	1.0	
Working Temperature Range:	-10°C to +120°C		

# FINE FLOW METERING VALVE TYPES: CMF50, CMF75, CMF100



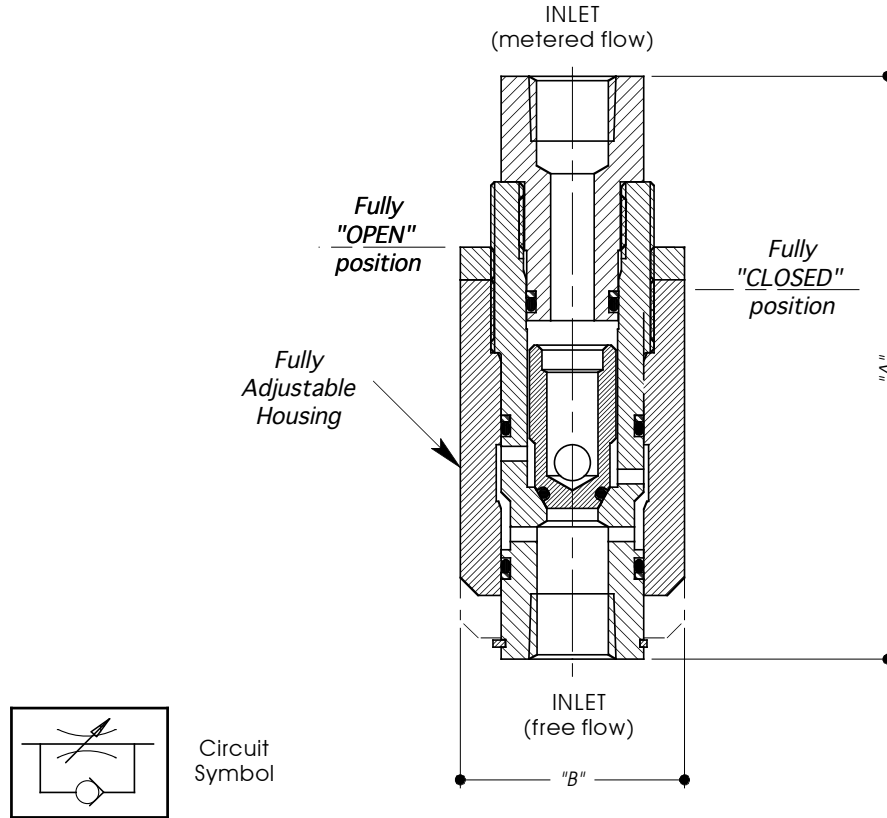
- STAINLESS STEEL (17-4 / 1.4542)
- SUITABLE FOR LIQUID OR GAS USE.
- THE "CMF" SERIES IS NOT SUITABLE FOR "SCREW-DOWN" STOP VALVE USE WITH GAS.
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION				ORDERING EXAMPLE
Valve Type:	CMF50	CMF75	CMF100	CMF50
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)			N
Max. Working Pressure: Liquid	6,000 psi			6K
Max. Working Pressure: Gas	3,000 psi			
Port Size:	1/2"	3/4"	1.0"	
Valve Seat Material:	Stainless Steel - 17-4/1.4542			
Seal Material:	Viton (other materials available by request)			
CV Value:	1.40	2.5	2.5	
Dry Weight: (kg)	2.0	2.0	2.0	
Working Temperature Range:	-10°C to +120°C			

# METERING VALVE TYPES: IMC25, IMC37, IMC50

- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- ALL DIMENSIONS IN INCHES.



The valve can be supplied to suit many types of flow metering characteristics "tailor-made" to suit your individual requirements. Contact our Technical Department for details.

TECHNICAL SPECIFICATION				ORDERING EXAMPLE
Valve Type:	IMC25	IMC37	IMC50	IMC25
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)			N
Max. Working Pressure: Liquid	8,000 psi			8K
Port Size:	1/4"	3/8"	1/2"	
Valve Seat Material:	Stainless Steel - 316/1.4404			
Seal Material:	Viton (other materials available by request)			
Dimension (ins) - Length "A"	3.57"	3.95"	5.30"	
Dimension (ins) - Diameter "B"	Ø1.37"	Ø1.73"	Ø2.25"	
CV Value: (MAX)	0.55	0.72	1.2	
Dry Weight: (kg)	0.44	0.73	1.25	
Working Temperature Range:	-10°C to +120°C			

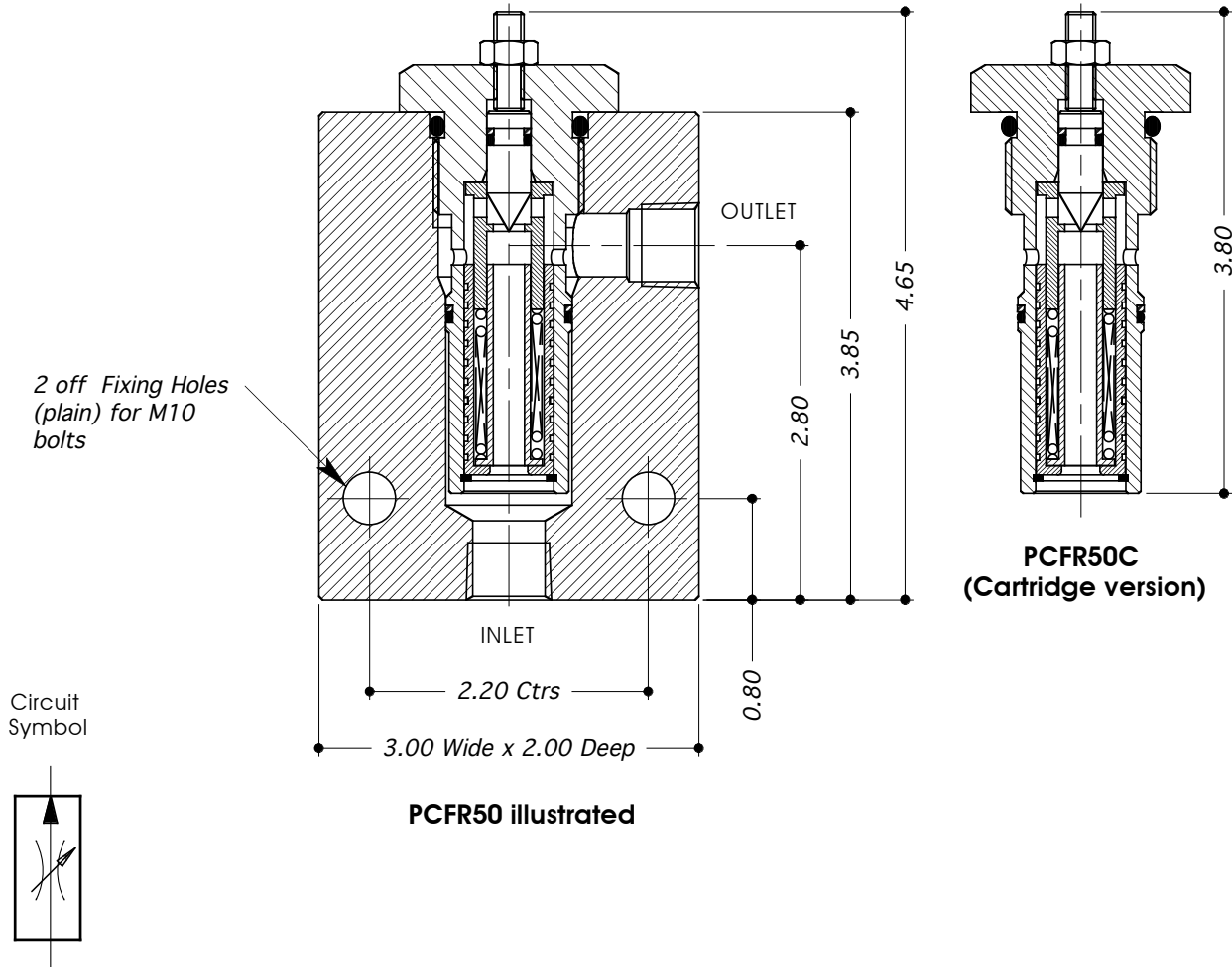
# PRESSURE COMPENSATED FLOW REGULATOR

TYPES: **PCFR50/37, PCFR50**



Valves Ltd

- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- ALL DIMENSIONS IN INCHES



TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	PCFR50/37	PCFR50	PCFR50
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper) C = Cartridge		P
Flow Metering:	5 - 45 L/Min (Standard) ("LF" Low Flow = 2 - 15 L/Min)		—
Max. Working Press: Liquid	10,000 psi		10K
Port Size:	3/8"	1/2"	
Materials (Internal):	Stainless Steel - 316/1.4404 & 440C		
Seal Material:	Viton (other materials available by request)		
Max Diff. Press (DP) psi	6,000 psi		
Dry Weight: (kg)	3.0		
Working Temperature Range:	-10°C to +120°C		



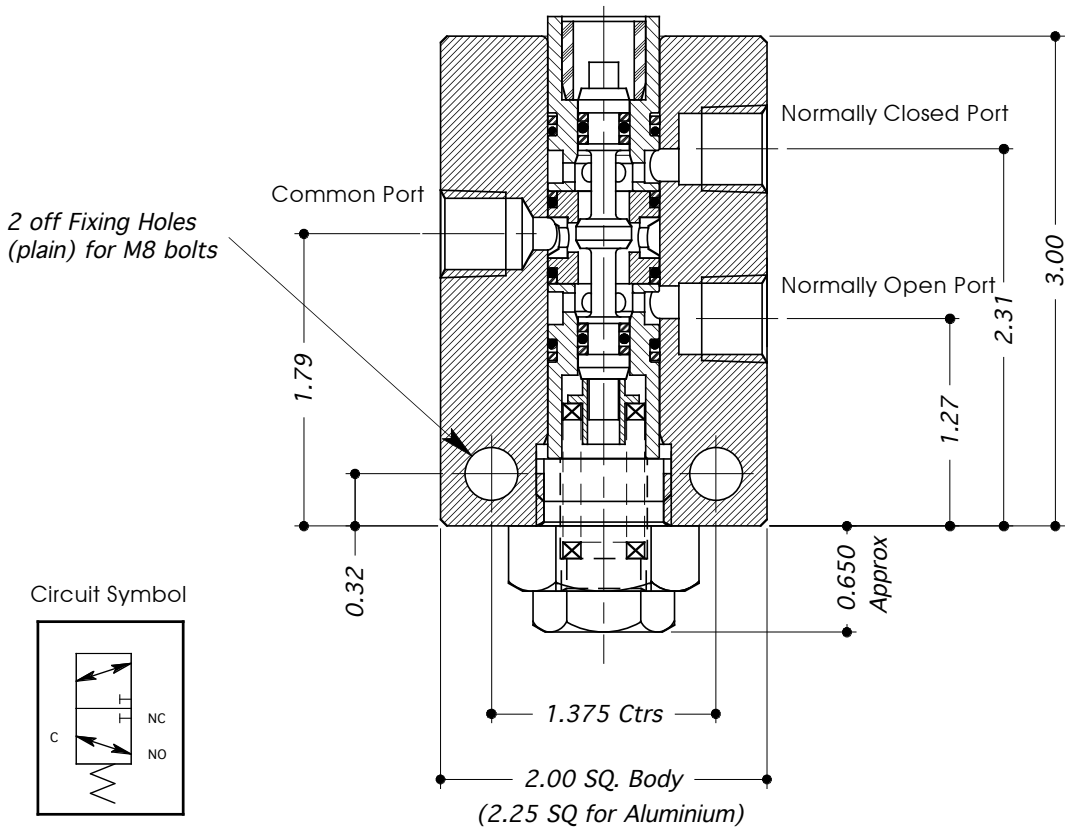
### **SECTION 3: 3 PORTED DIRECTIONAL CONTROL VALVES**

1/4" 316 St.St. 2/3, MWP:10,000 psi Liquid, hard seated, spring return Type: 3B25 .....	<b>3:1</b>
1/4" 316 St.St. 2/3, MWP: 6,000 psi Liquid / 3,500 psi Gas, soft seated, spring return Type: 3B25-G .....	<b>3:2</b>
3/8" Mild or St.St. 2/3, MWP:10,000 psi Liquid, hard seated, spring return Type: 3B37 .....	<b>3:3</b>
3/8" Mild or St.St. 2/3, MWP: 6,000 psi Liquid / 3,500 psi Gas, soft seated, spring return. Type: 3B37-G ..	<b>3:4</b>
1/2" 316 St.St. 2/3, MWP: 10,000 psi Liquid, hard seated, spring return Type: 3B50 .....	<b>3:5</b>
1/2" 316 St.St. 2/3, MWP: 6,000 psi Liquid / 3,500 psi Gas, soft seated, spring return Type: 3B50-G .....	<b>3:6</b>
1" 316 St.St. 2/3, MWP: 3,500 psi Liquid/Gas Type: 3BHF100 .....	<b>3:7</b>
1" 316 St.St. 2/3, MWP: 10,000 psi Liquid Type: 3BLF100 .....	<b>Consult Factory</b>

# DIRECTIONAL CONTROL VALVE TYPE: 3B25



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTIONS: MILD STEEL - ENP (EN1A / 220M07), ALUM. ALLOY (HE30)
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.

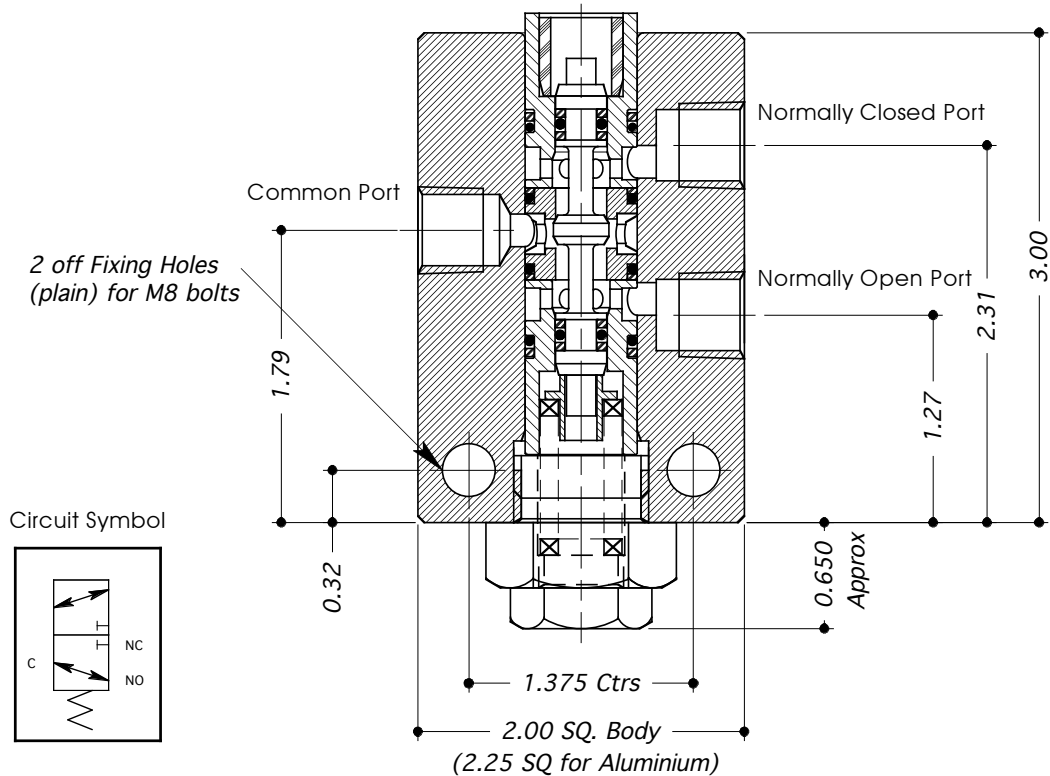


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>A</b> = Alum. Body (HE30) <b>C</b> = En1A/220M07 Mild Steel (E.N.P.)	—
Valve Type:	<b>3B25</b>	<b>3B25</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>M</b> = Manifold	<b>N</b>
Actuator Options	Low Press. Pilot: Types: <b>H3</b> ( 44 to 300 psi )	<b>H3</b>
	High Press. Pilot: Types: <b>H0</b> ( 400 to 3,500 psi ), <b>H1</b> ( 1,400 to 10,000 psi )	
	Mechanical: Types: <b>C0, C1, L, DL</b>	
Max. Working Press: Liquid	<b>10,000 psi</b>	<b>10K</b>
Port Size:	1/4"	
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	1.75	
Working Temperature Range:	-10°C to +120°C	

# DIRECTIONAL CONTROL VALVE TYPE: 3B25-G



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTIONS: MILD STEEL - ENP (EN1A / 220M07), ALUM. ALLOY (HE30)
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.

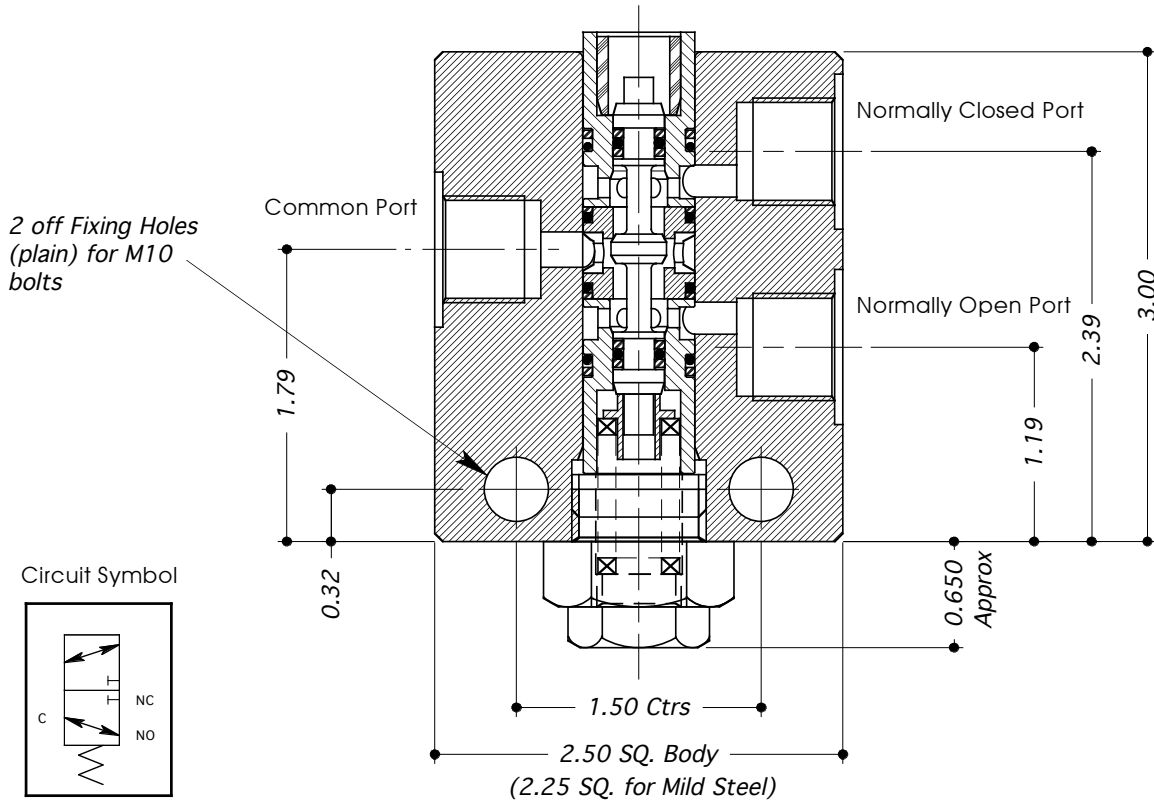


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>A</b> = Alum .Body (HE30) <b>C</b> = En1A/220M07 Mild Steel (E.N.P.)	—
Valve Type:	<b>3B25</b>	<b>3B25</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>M</b> = Manifold	<b>N</b>
Actuator Options	Low Press. Pilot: Types: <b>H3</b> ( 44 to 115 psi )	<b>H3</b>
	High Press. Pilot: Types: <b>H0</b> ( 400 to 1,200 psi ), <b>H1</b> ( 1,400 to 4,000 psi )	
	Mechanical: Types: <b>C0, C1, L, DL</b>	
Soft Seated Valve:	<b>G</b>	<b>G</b>
Max. Working Press: Liquid/Gas	<b>6,000 psi / 3,500 psi</b>	<b>6K</b>
Port Size:	1/4"	
Valve Seat Mat'l: Liquid/Gas	Torlon	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	1.75	
Working Temperature Range:	-10°C to +80°C	

# DIRECTIONAL CONTROL VALVE TYPE: 3B37



- 2 POSN / 3 PORTED MILD STEEL - ENP (EN1A / 220M07) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTIONS: STAINLESS STEEL (316 / 1.4404), ALUM. ALLOY (HE30)
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



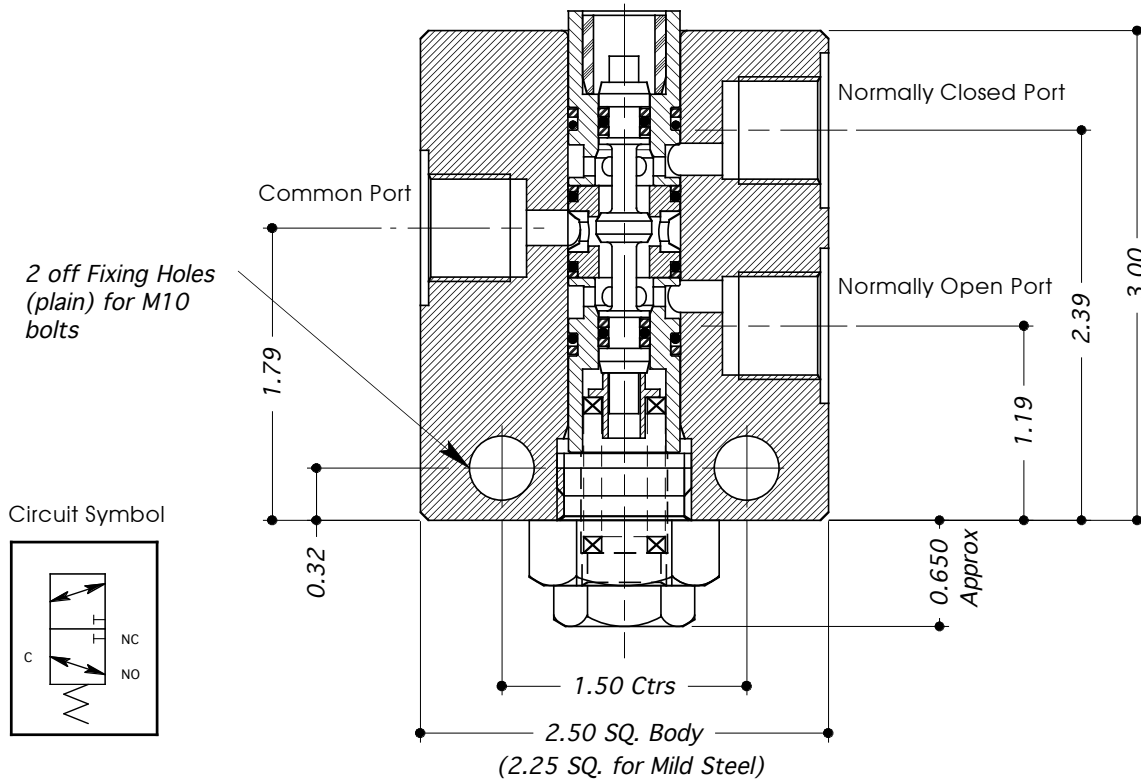
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>A</b> = Alum. Body (HE30) <b>S</b> = Stainless Steel (316/1.4404)	—
Valve Type:	<b>3B37</b>	<b>3B37</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>P</b>
Actuator Options	Low Press. Pilot: Types: <b>H3</b> ( 44 to 300 psi )	<b>H3</b>
	High Press. Pilot: Types: <b>H0</b> ( 400 to 3,500 psi ), <b>H1</b> ( 1,400 to 10,000 psi )	
	Mechanical: Types: <b>C0, C1, L, DL</b>	
Max. Working Press: Liquid	<b>10,000 psi</b>	<b>10K</b>
Port Size:	3/8"	
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	2.0	
Working Temperature Range:	-10°C to +120°C	



# DIRECTIONAL CONTROL VALVE TYPE: 3B37-G



- 2 POSN / 3 PORTED MILD STEEL - ENP (EN1 / 220M07) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTIONS: STAINLESS STEEL (316 / 1.4404), ALUM. ALLOY (HE30)
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.

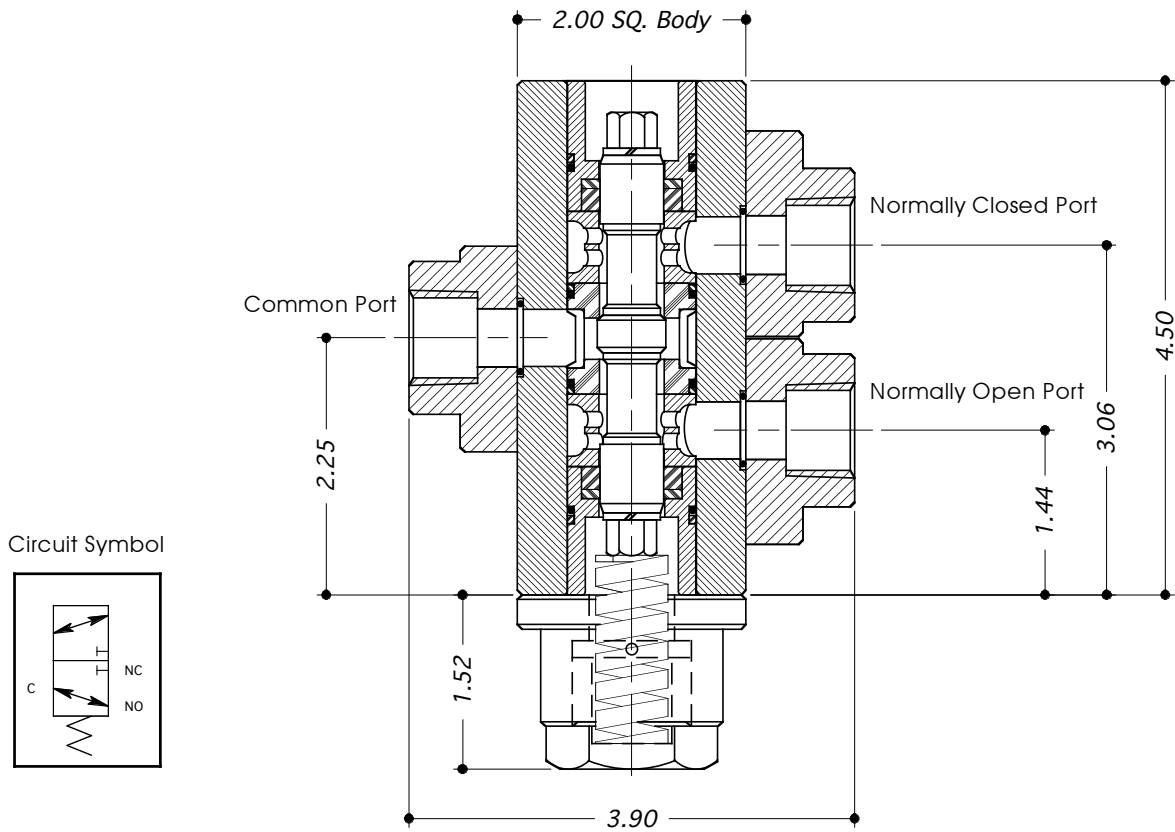


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>A</b> = Alum .Body (HE30) <b>S</b> = Stainless Steel (316/1.4404)	—
Valve Type:	<b>3B37</b>	<b>3B37</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>P</b>
Actuator Options	Low Press. Pilot: Types: <b>H3</b> ( 44 to 115 psi )	<b>H3</b>
	High Press. Pilot: Types: <b>H0</b> ( 400 to 1,200 psi ), <b>H1</b> ( 1,400 to 4,000 psi )	
	Mechanical: Types: <b>C0, C1, L, DL</b>	
Soft Seated Valve:	<b>G</b>	<b>G</b>
Max. Working Press: Liquid/Gas	<b>6,000 psi / 3,500 psi</b>	<b>6K</b>
Port Size:	3/8"	
Valve Seat Mat'l: Liquid/Gas	Torlon	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	2.0	
Working Temperature Range:	-10°C to +80°C	

# DIRECTIONAL CONTROL VALVE TYPE: 3B50



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTIONS: MILD STEEL - ENP (EN1A / 220M07), ALUM. ALLOY (HE30)
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



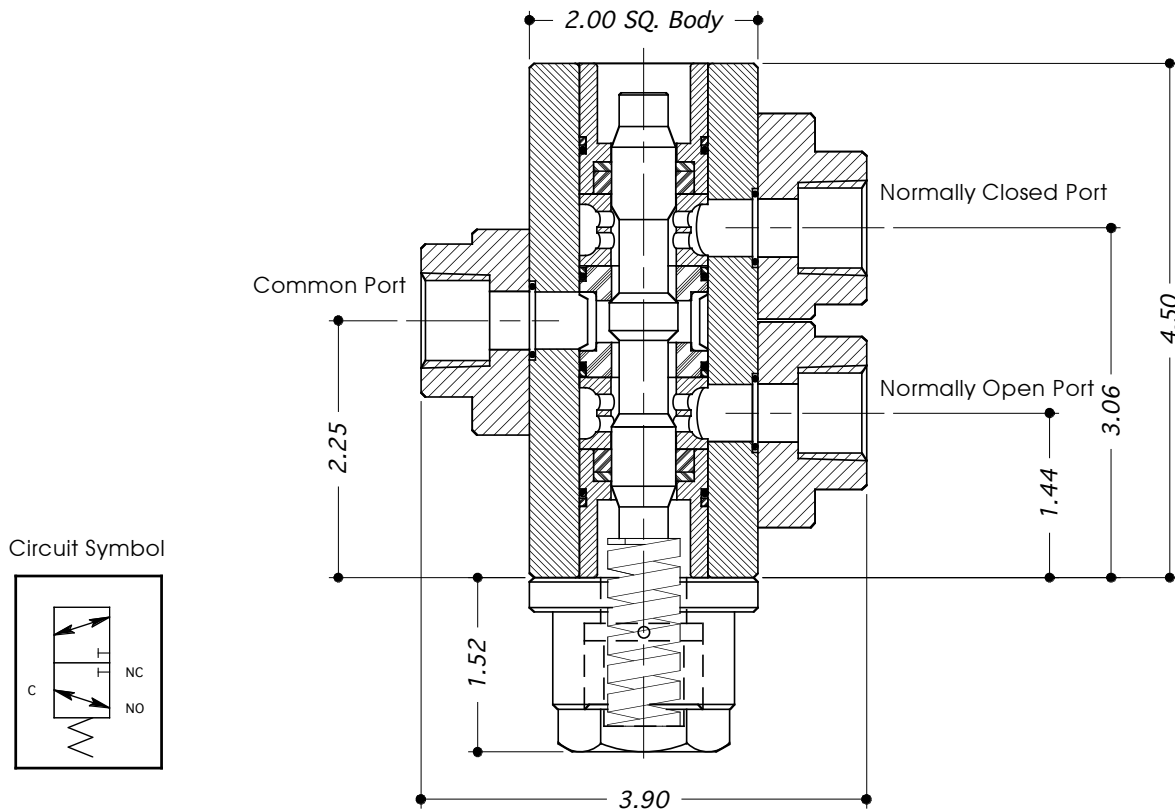
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>A</b> = Alum. Body (HE30) <b>C</b> = En1A/220M07 Mild Steel (E.N.P.)	—
Valve Type:	<b>3B50</b>	<b>3B50</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>M</b> = Manifold	<b>N</b>
Actuator Options	Low Press. Pilot: Types: <b>A2</b> ( 60 to 125 psi ), <b>H3</b> ( 85 to 300 psi )	<b>A2</b>
	High Press. Pilot: Types: <b>H0</b> ( 1,000 to 3,500 psi ), <b>H1</b> ( 3,000 to 10,000 psi )	
	Mechanical: Types: <b>C0, C1, L, DL</b>	
Max. Working Press: Liquid	<b>10,000 psi</b>	<b>10K</b>
Port Size:	1/2"	
Valve Seat Mat'l: Liquid	Stainless Steel - 316/1.4404	
Seal Material:	Viton (other materials available by request)	
CV Value:	1.59	
Dry Weight: (kg)	4.5	
Working Temperature Range:	-10°C to +120°C	

NOTE:- The 3B50 valve is also available with 3/4" ports (NPT & BSP) **Ordering Example: 3B50/75.**

# DIRECTIONAL CONTROL VALVE TYPE: 3B50-G



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTIONS: MILD STEEL - ENP (EN1A / 220M07), ALUM. ALLOY (HE30)
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



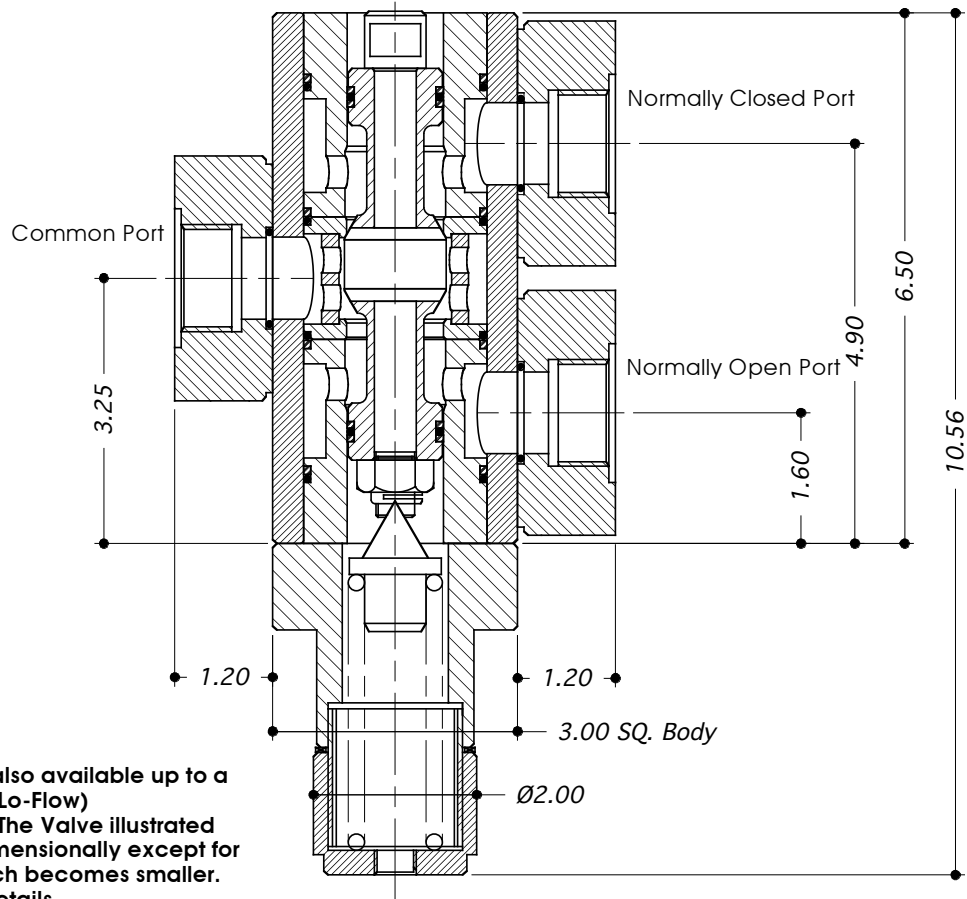
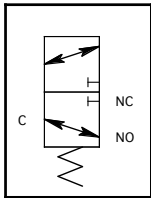
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>A</b> = Alum .Body (HE30) <b>C</b> = En1A/220M07 Mild Steel (E.N.P.)	—
Valve Type:	<b>3B50</b>	<b>3B50</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>M</b> = Manifold	<b>N</b>
Actuator Options	Low Press. Pilot: Types: <b>A2</b> ( 50 to 116 psi ), <b>H3</b> ( 60 to 210 psi )	<b>H3</b>
	High Press. Pilot: Types: <b>H0</b> ( 1,000 to 3,500 psi ), <b>H1</b> ( 3,000 to 7,500 psi )	
	Mechanical: Types: <b>C0, C1, L, DL</b>	
Soft Seated Valve:	<b>G</b>	<b>G</b>
Max.Working Press: Liquid/Gas	<b>6,000 psi / 3,500 psi</b>	<b>6K</b>
Port Size:	1/2"	
Valve Seat Mat'l: Liquid/Gas	Torlon	
Seal Material:	Viton (other materials available by request)	
CV Value:	1.75	
Dry Weight: (kg)	4.5	
Working Temperature Range:	-10°C to +80°C	

# DIRECTIONAL CONTROL VALVE TYPE: 3BHF100 (HI-FLOW)



- 2 POSN / 3 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTION: MILD STEEL - ENP (EN1A / 220M07)
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- ACTUATION TYPE - SEE SECTION 12.
- ALL DIMENSIONS IN INCHES.

Circuit Symbol



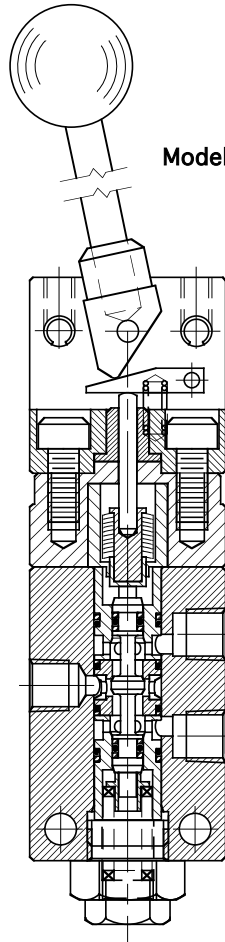
Note:- This Valve is also available up to a Max W.P. of 10K psi (Lo-Flow) Type: "3BLF100-A1". The Valve illustrated remains the same dimensionally except for the internal bore which becomes smaller. Contact factory for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	C = En1A/220M07 Mild Steel (E.N.P.)	—
Valve Type:	<b>3BHF100</b>	<b>3BHF100</b>
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)	<b>P</b>
Actuator Options	Low Press. Pilot: Types: <b>A2</b> ( 80 to 150 psi )	<b>A2</b>
	High Press. Pilot: Types: <b>H0</b> ( 800 to 1,600 psi ) <b>H1</b> ( 1,700 to 3,000 psi )	
	Mechanical: Types: <b>L, DL</b>	
Max. Working Press: Liquid/Gas	<b>3,500 psi</b>	<b>3.5K</b>
Port Size:	1.0"	
Valve Seat Mat'l: Liquid/Gas	Delrin	
Seal Material:	Viton (other materials available by request)	
CV Value:	10	
Dry Weight: (kg)	11.0	
Working Temperature Range:	-10°C to +80°C	

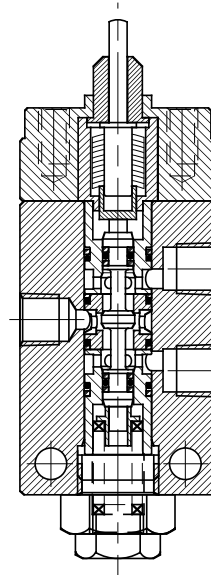
Typical examples of 3  
Ported Directional  
Control Valves fitted  
with Actuators.



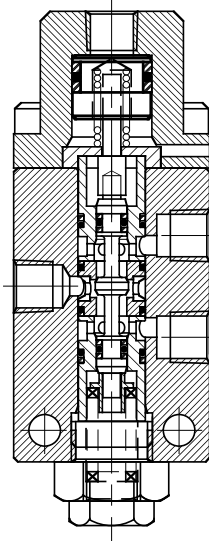
Valves Ltd



Model Type: 3B25-L (10K)



Model Type: 3B25-C1 (10K)



Model Type: 3B25-HO (10K)



## **SECTION 4: 4 PORTED CONTROL VALVES**

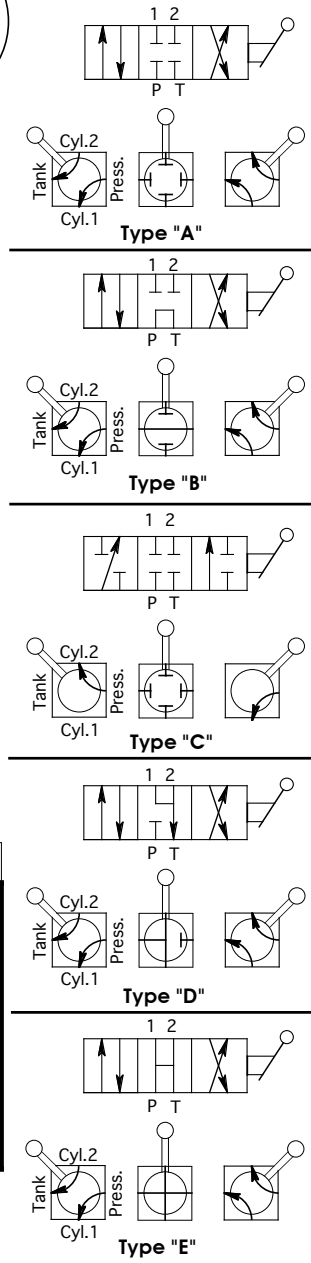
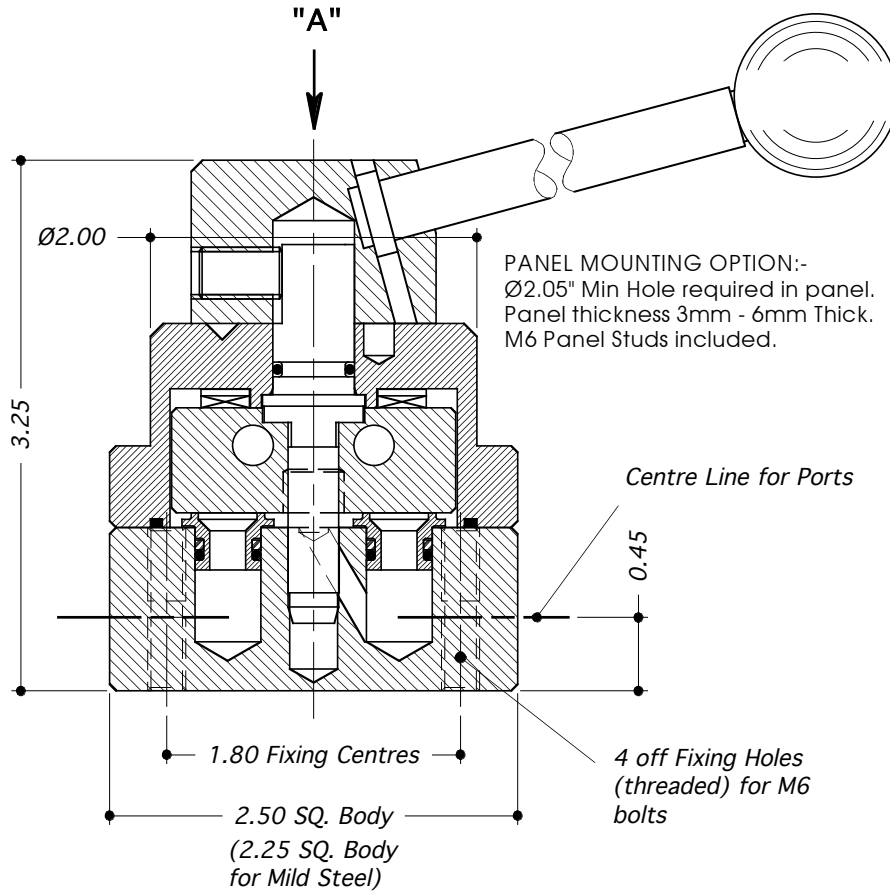
1/4" 316 St.St. 3/4 Rotary Control Valve, Lever Operated, MWP: 10,000 psi Liquid Type: 4R25 .....	<b>4:1</b>
3/8" 316 St.St. 3/4 Rotary Control Valve, Lever Operated, MWP: 6,000 psi Liquid Type: 4R37 .....	<b>4:2</b>
3/8" 316 St.St. 2/4 Directional Control Valve, Air Operated, MWP: 10,000 psi Liquid Type: 6B37-A3 .....	<b>4:3</b>
3/8" 316 St.St. 2/4 Directional Control Valve, Air Operated, MWP: 6,000 psi Liquid / 3,500 psi Gas Type: 6B37-A3-G .....	<b>4:4</b>
3/8" 316 St.St. 2/4 Directional Control Valve, Hydraulically Operated, MWP: 10,000 psi Liquid Type: 6B37-H .....	<b>4:5</b>
3/8" 316 St.St. 2/4 Directional Control Valve, Hydraulically Operated, MWP: 6,000 psi Liquid / 3,500 psi Gas Type: 6B37-H-G .....	<b>4:6</b>

# ROTARY CONTROL VALVE TYPE: 4R25



- 4 PORTED LEVER OPERATED STAINLESS STEEL (316 / 1.4404) VALVE. (SOME CARBON STEEL INTERNAL PARTS)
- BODY MATERIAL OPTION: MILD STEEL - ENP (EN1A / 220M07)
- SUITABLE FOR LIQUID USE.
- SPECIFY "FLOW PATTERN TYPE" WHEN ORDERING.
- ALL "FLOW DIAGRAMS" ARE VIEWED ON ARROW "A".
- ALL DIMENSIONS IN INCHES.

Handle Length 5.0" Approx.  
Handle Travel: - 90°



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>C</b> = Mild Steel (Electro-Nickel Plated)	—
Valve Type:	<b>4R25</b>	<b>4R25</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>M</b> = Manifold *	<b>N</b>
Flow Pattern:	<b>A, B, C, D, E</b> (see flow diagrams)	<b>A</b>
Valve Options:	<b>PM</b> = Panel Mounted	—
Max. Working Pressure: Liquid	<b>10,000 psi</b> (1,450 psi MAX on Tank Port)	<b>10K</b>
Port Size:	1/4"	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.67	
Dry Weight: (kg)	1.75	
Working Temperature Range:	-10°C to +100°C	

**Technical Specification Notes:-**

\* For the "MANIFOLD" version, "Flow Pattern" diagrams for the 4R37 valve model apply. See Page 4 : 2 for details.

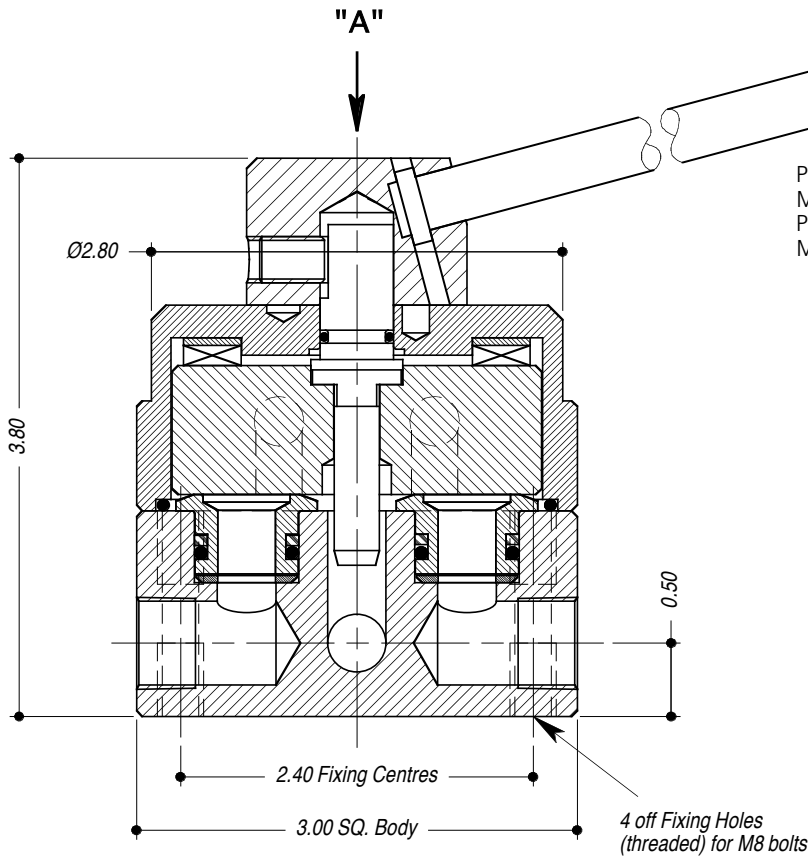
The "Flow Pattern" diagrams are viewed on arrow "A"

# ROTARY CONTROL VALVE TYPE: 4R37

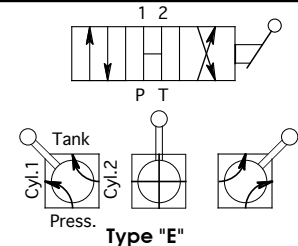
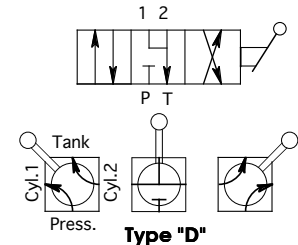
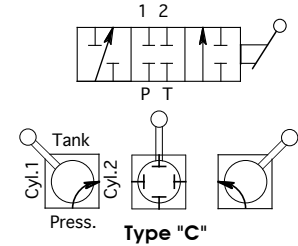
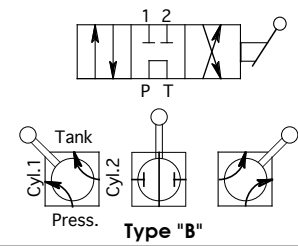
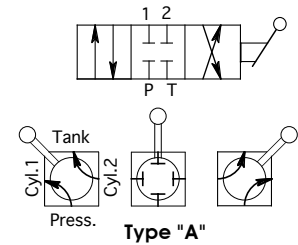


- 4 PORTED LEVER OPERATED STAINLESS STEEL (316 / 1.4404) VALVE. (SOME CARBON STEEL INTERNAL PARTS)
- SUITABLE FOR LIQUID USE.
- SPECIFY "FLOW PATTERN TYPE" WHEN ORDERING.
- ALL "FLOW DIAGRAMS" ARE VIEWED ON ARROW "A".
- ALL DIMENSIONS IN INCHES.

Handle Length 5.0" Approx.  
Handle travel:- 90°



PANEL MOUNTING OPTION:- Ø2.85"  
Min Hole required in panel.  
Panel thickness 3mm - 6mm Thick.  
M8 Panel Studs included.



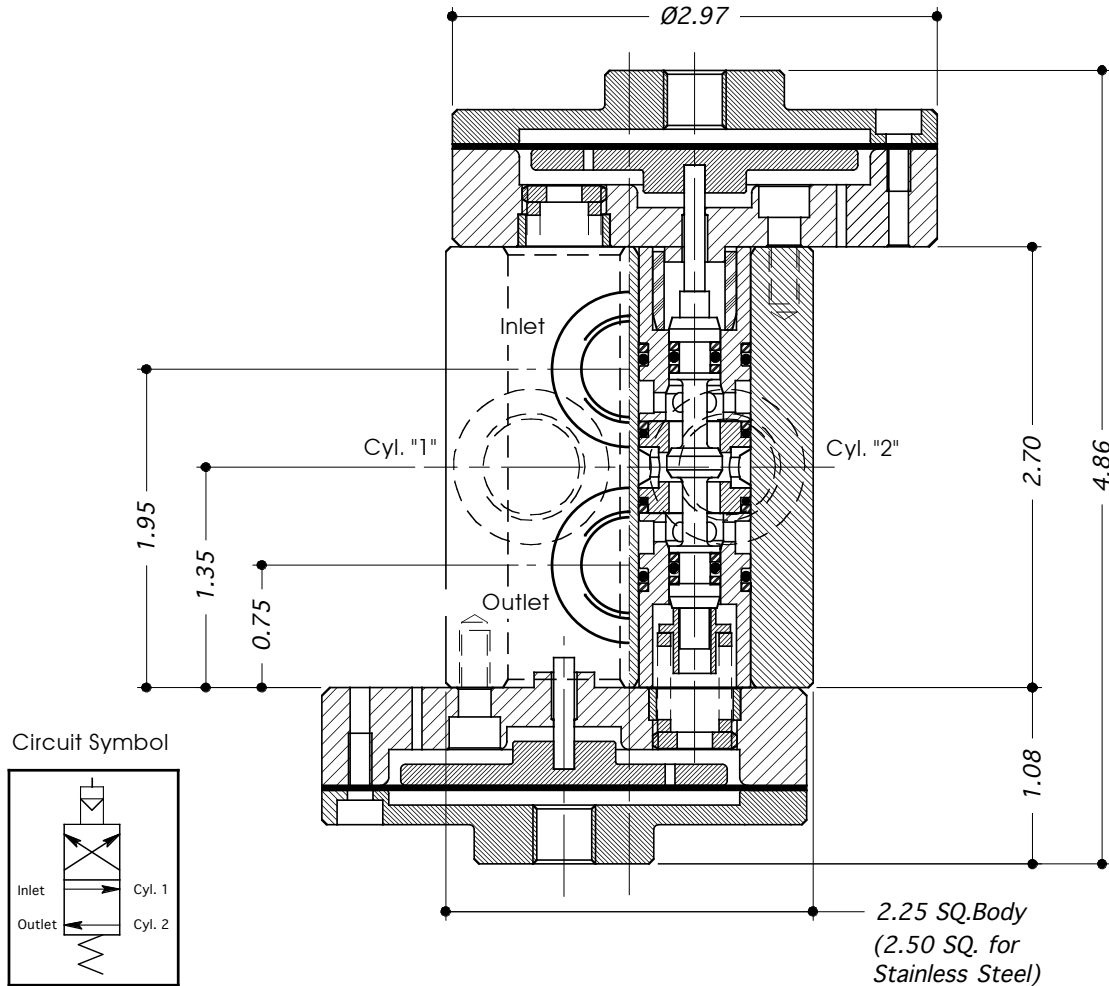
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>4R37</b>	<b>4R37</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>M</b> = Manifold	<b>N</b>
Flow Pattern:	<b>A, B, C, D, E</b> (see flow diagrams)	<b>A</b>
Valve Options:	<b>PM</b> = Panel Mounted	—
Max. Working Pressure: Liquid	<b>6,000 psi</b> (1,450 psi MAX on Tank Port)	<b>6K</b>
Port Size:	3/8"	
Seal Material:	Viton (other materials available by request)	
CV Value:	1.37	
Dry Weight: (kg)	2.0	
Working Temperature Range:	-10°C to +100°C	



# DIRECTIONAL CONTROL VALVE TYPE: 6B37-A3



- 2 POSN / 4 PORTED MILD STEEL - ENP (EN1A / 220M07) VALVE WITH ACTUATOR TYPE "A3" FITTED.
- BODY MATERIAL OPTION: STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- SEE SECTION 12 FOR DETAILS OF TYPE "A3" ACTUATOR.
- ALL DIMENSIONS IN INCHES.



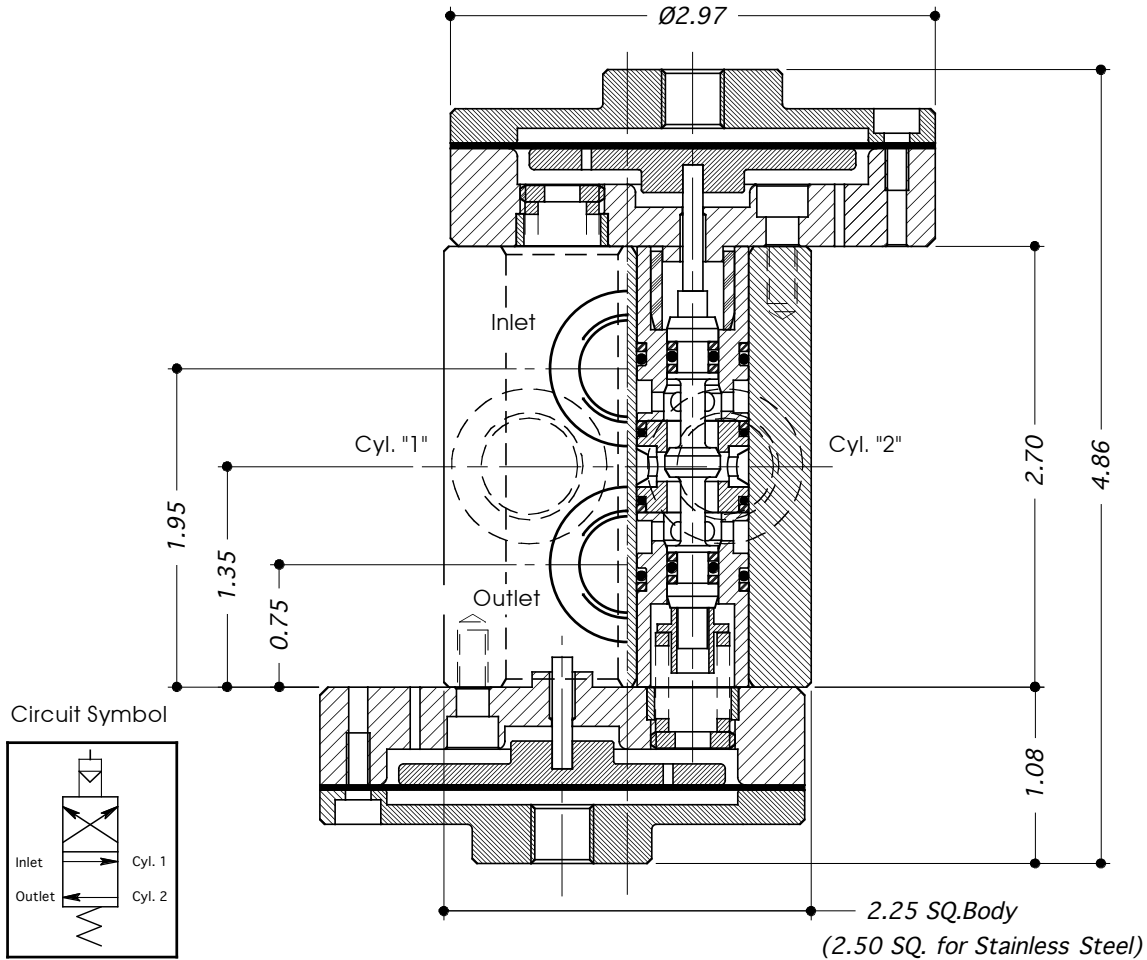
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	S = Stainless Steel (316/1.4404)	—
Valve Type:	<b>6B37-A3</b>	<b>6B37-A3</b>
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)	<b>N</b>
Max. Working Press: Liquid	<b>10,000 psi</b>	<b>10K</b>
Port Size:	3/8"	
Actuator:	Type: A3 (60 to 150 psi)	
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	5.5	
Working Temperature Range:	-10°C to +100°C	

**NOTE:** Both Actuators are pressurised simultaneously for valve operation.

# DIRECTIONAL CONTROL VALVE TYPE: 6B37-A3-G



- 2 POSN / 4 PORTED MILD STEEL - ENP (EN1A / 1.4404) VALVE WITH ACTUATOR TYPE "A3" FITTED.
- BODY MATERIAL OPTION: STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- SEE SECTION 12 FOR DETAILS OF TYPE "A3" ACTUATOR.
- ALL DIMENSIONS IN INCHES.



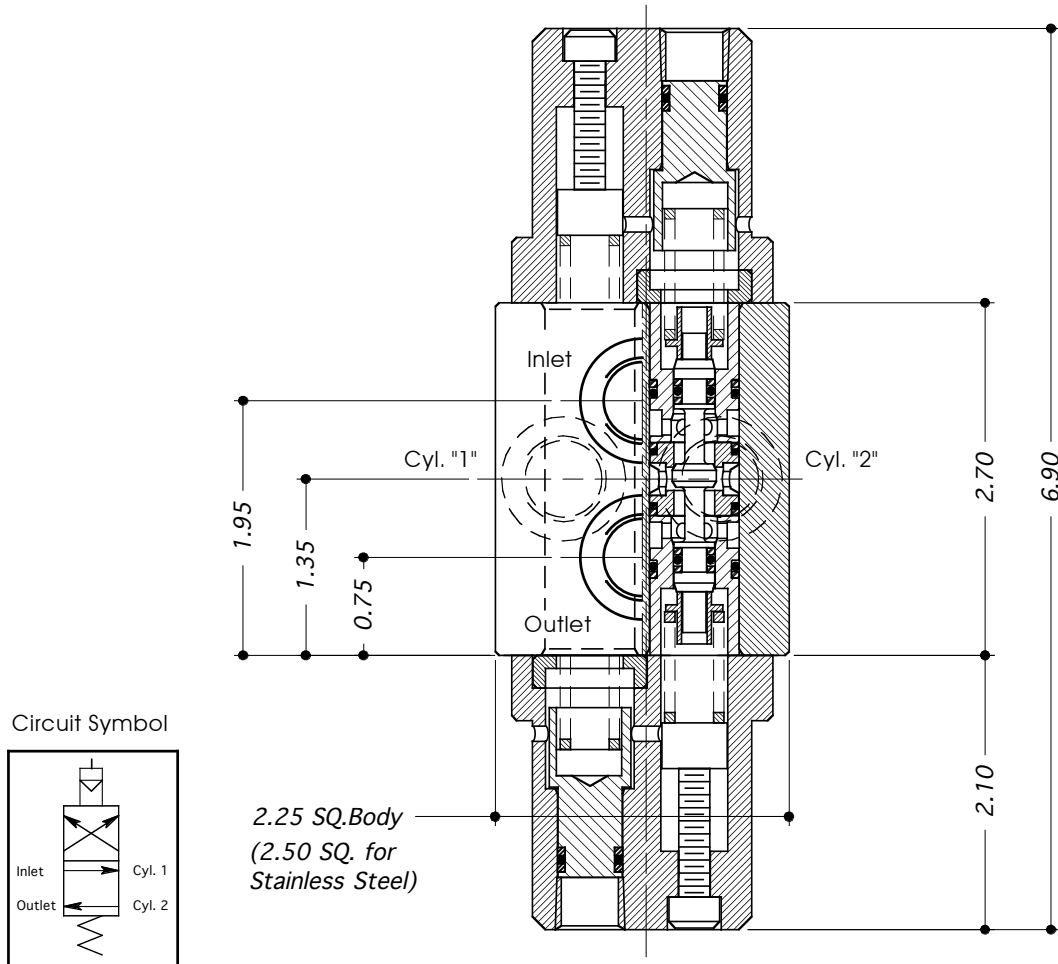
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	S = Stainless Steel (316/1.4404)	—
Valve Type:	<b>6B37-A3-G</b>	<b>6B37-A3-G</b>
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)	<b>N</b>
Max. Working Press: Liquid/Gas	<b>6,000 psi / 3,500 psi</b>	<b>6K</b>
Port Size:	3/8"	
Actuator:	Type: A3 (60 to 150 psi)	
Soft Seated Valve:	G	
Valve Seat Mat'l: Liquid/Gas	Torlon	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	5.5	
Working Temperature Range:	-10°C to +80°C	

**NOTE:** Both Actuators are pressurised simultaneously for valve operation.

# DIRECTIONAL CONTROL VALVE TYPE: 6B37-H



- 2 POSN / 4 PORTED MILD STEEL - ENP (EN1A / 220M07) VALVE WITH ACTUATOR TYPE "H" FITTED.
- BODY MATERIAL OPTION: STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- ALL DIMENSIONS IN INCHES.



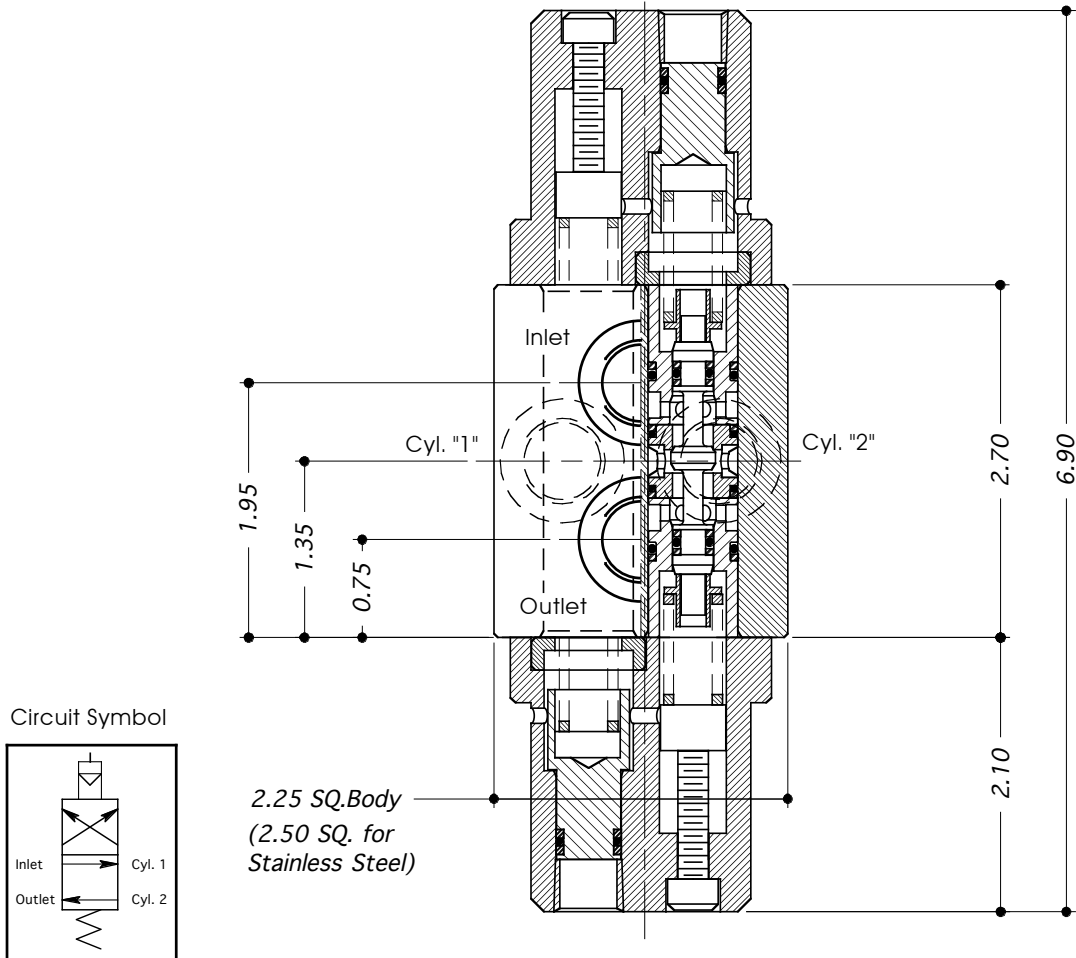
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	S = Stainless Steel (316/1.4404)	—
Valve Type:	<b>6B37-H</b>	<b>6B37-H</b>
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)	<b>N</b>
Max. Working Press: Liquid	<b>10,000 psi</b>	<b>10K</b>
Port Size:	3/8"	
Actuator:	Type: H (1,000 to 9,000 psi)	
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	4.0	
Working Temperature Range:	-10°C to +120°C	

**NOTE:** Both Actuators are pressurised simultaneously for valve operation.

# DIRECTIONAL CONTROL VALVE TYPE: 6B37-H-G



- 2 POSN / 4 PORTED MILD STEEL - ENP (EN1A / 220M07) VALVE WITH ACTUATOR TYPE "H" FITTED.
- BODY MATERIAL OPTION: STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "SOFT" SEATS.
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	S = Stainless Steel (316/1.4404)	—
Valve Type:	<b>6B37-H-G</b>	<b>6B37-H-G</b>
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)	<b>N</b>
Max. Working Press: Liquid/Gas	<b>6,000 psi / 3,500 psi</b>	<b>6K</b>
Port Size:	3/8"	
Actuator:	Type: H (1,000 to 3,100 psi)	
Soft Seated Valve:	G	
Valve Seat Mat'l: Liquid/Gas	Torlon	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.44	
Dry Weight: (kg)	4.0	
Working Temperature Range:	-10°C to +80°C	

**NOTE:** Both Actuators are pressurised simultaneously for valve operation.



Valves Ltd

## SECTION 5: CHECK & SHUTTLE VALVES

BIS Valves offer an extensive range of check and shuttle valves.

To obtain data sheets for the full range of check and shuttle valves, download the check and shuttle valve catalogue from [www.bisvalves.co.uk](http://www.bisvalves.co.uk).

### Selection guide for check valves

	Page	Suitable for liquids	Suitable for gases	1/4" – 3/8" BSP / NPT ports	1/2" – 1" BSP/NPT ports	> 1" BSP/ NPT ports	Medium pressure ports	Cartridge installation	Manifold mount installation	Venting check valve	Thermal relief function
C25	4	✓	✓	✓							
C37	5	✓	✓	✓							
C50	6	✓	✓		✓						
C75	7	✓	✓		✓						
C100	8	✓	✓		✓						
C125	9	✓	✓			✓					
C150	10	✓	✓			✓					
NR25 (12K)	11	✓	✓	✓			✓				
NR25 (20K)	12	✓	✓				✓				
NR37	13	✓	✓	✓							
NR50 (12K)	14	✓	✓		✓		✓				
NR50 (20K)	15	✓	✓				✓				
NR50M	16	✓	✓						✓		
NR75	17	✓	✓		✓						
NR100	18	✓	✓		✓						
NR200	19	✓	✓			✓					
CC25	20	✓	✓					✓			
CC37	21	✓	✓					✓			
CC50	22	✓	✓					✓			
CC75	23	✓	✓					✓			
CC100	24	✓	✓					✓			
CV25	25	✓	✓	✓						✓	
YV25	26	✓		✓							✓

**Important** – This is a guide to selecting products that may be suitable. The valve data sheet and application notes must be thoroughly reviewed prior to final selection. Please contact us if the options you require are not shown

### Selection guide for shuttle valves

	Page	Suitable for liquids	Suitable for gases	1/4" – 3/8" ports	1/2" – 1" ports	Cartridge installation
SV25	27	✓		✓		
SV25C	28	✓				✓
SV50	29	✓	✓		✓	

**Important** – This is a guide to selecting products that may be suitable. The valve data sheet and application notes must be thoroughly reviewed prior to final selection. Please contact us if the options you require are not shown



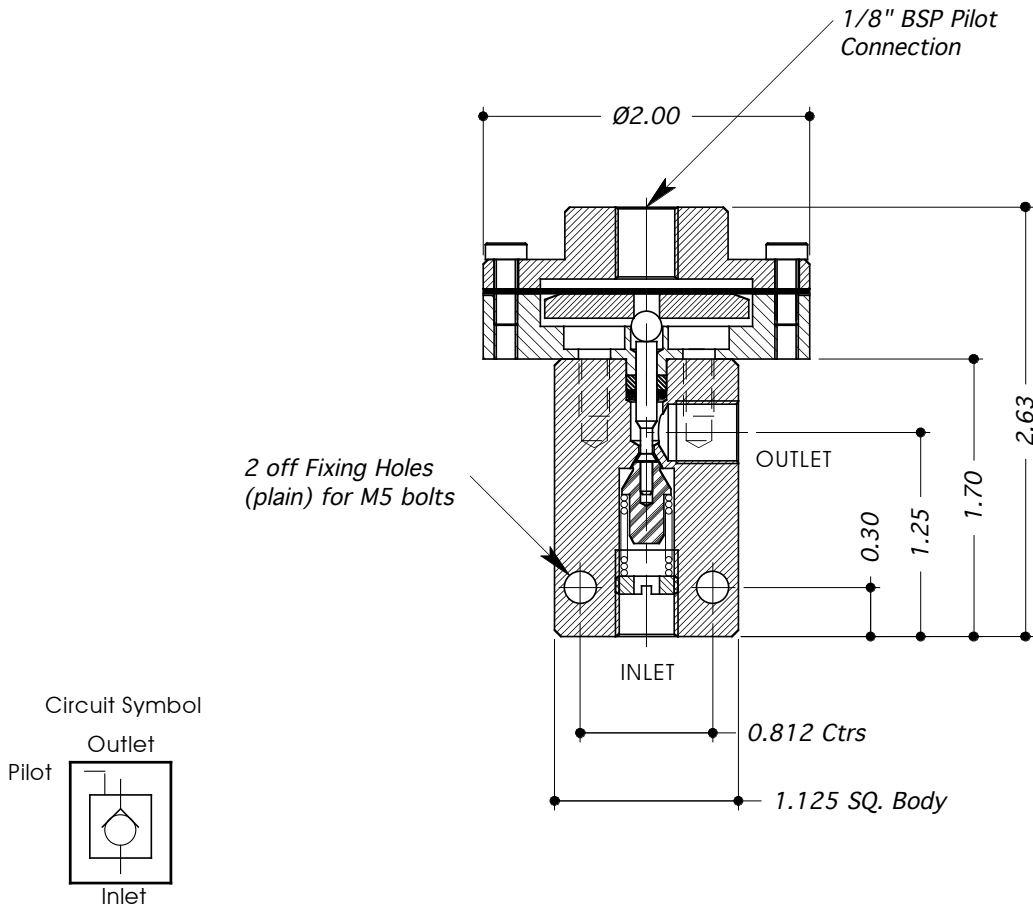
## **SECTION 6: PILOT OPERATED CHECK VALVES**

1/8" 316 St.St. Midget Pilot Operated Check Valve, MWP: 4,000 psi Liquid/Gas Type: SVA12 .....	<b>6:1</b>
3/8" 316 St.St. Pilot Operated Check Valve, MWP: 20,000 psi Liquid / 5,000 psi Gas Type: V1-37 .....	<b>6:2</b>
1/8" 316 St.St. Stop Valve, Air Operated, MWP: 20,000 psi Liquid Type: B1-12 .....	<b>6:3</b>
1/2" 316 St.St. Stop Valve, MWP: 20,000 psi Liquid Type: M1-50 .....	<b>6:4</b>
1/2" Mild Steel Unloader Valve, MWP: 3,000 psi Liquid Type: UL75/50 .....	<b>6:5</b>
3/4" Mild Steel Unloader Valve, MWP: Up to 5,500 psi Liquid Type: UL75 .....	<b>6:6</b>
1/2" / 3/4" 316 St.St. Pilot Operated Check Valve, MWP: 12,000 psi Liquid Types: MS75/50, MS75 .....	<b>6:7</b>
1/2" 316 St.St. Double Pilot Operated Check Valve, MWP: 6,000 psi Liquid Types: 2XPC50/37, 2XPC50 .....	<b>6:8</b>
1/8" 316 St.St. Midget Lever Operated Check Valve, MWP: 2,000 psi Liquid/Gas Type: SVT12 .....	<b>6:9</b>

# MIDGET PILOT OPERATED CHECK VALVE TYPE: SVA12



- VALVE BODY - STAINLESS STEEL (316 / 1.4404)
- ACTUATOR BODY - STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES.

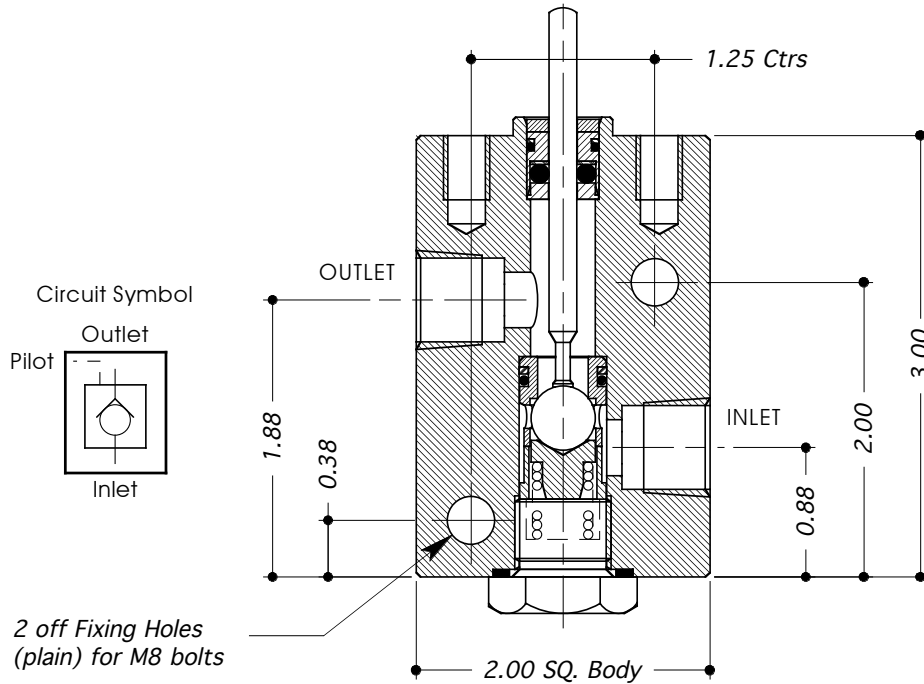


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	SVA12	SVA12
Porting / Connection Options:	P = BSP (Parallel)	P
Max. Working Press: Liquid/Gas	4,000 psi	4K
Pilot Ratio:	40 : 1	
Diaphragm Material:	Neoprene	
Maximum Pilot Pressure:	100 psi	
Port Size: (Valve Body)	1/8"	
Valve Seat Mat'l: Liquid/Gas	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.15	
Dry Weight: (kg)	1.2	
Working Temperature Range:	-10°C to +120°C	

# PILOT OPERATED CHECK VALVE TYPE: V1-37



- 2 POSN / 2 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH ACTUATOR OPTIONS.
- SUITABLE FOR LIQUID OR GAS USE.
- FITTED WITH "HARD" OR "SOFT" SEATS.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



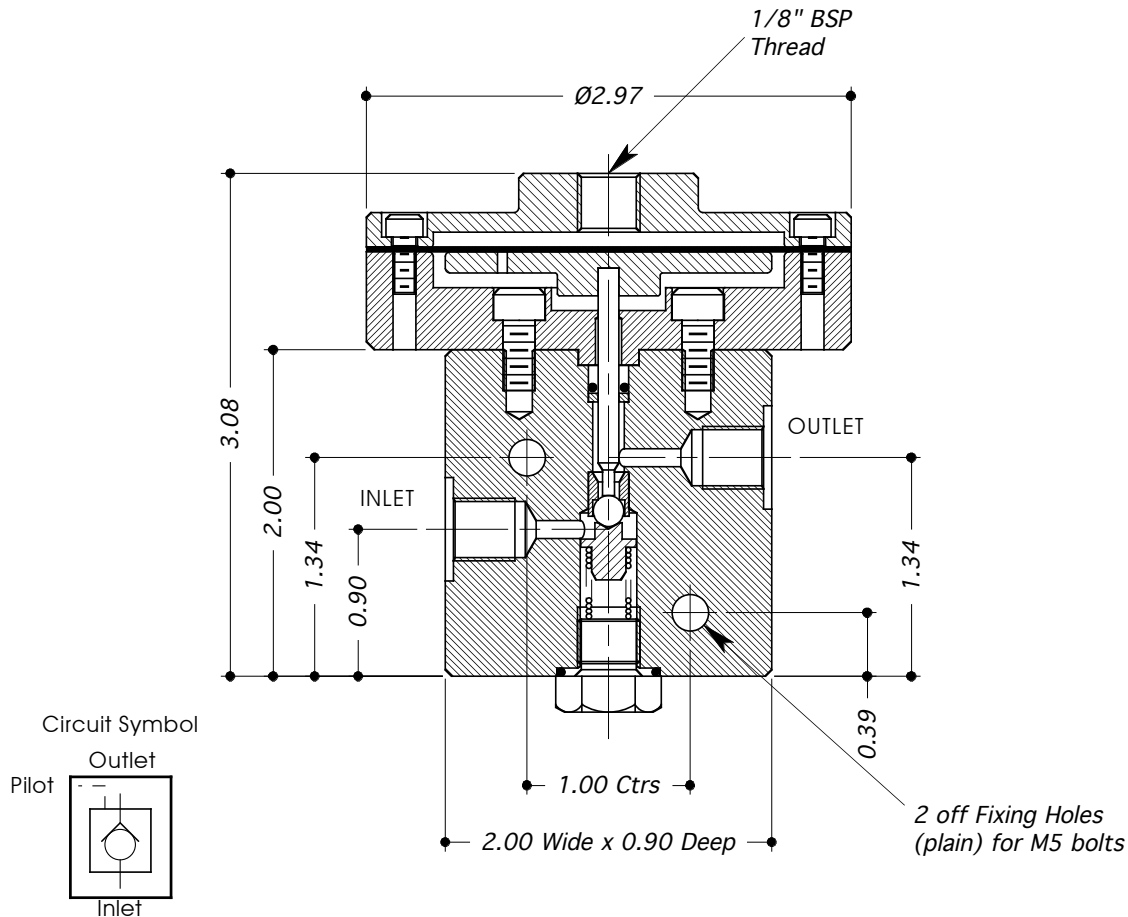
TECHNICAL SPECIFICATION					ORDERING EXAMPLE
Valve Type:	<b>V1-37</b>				<b>V1-37</b>
Porting / Connection Options:	<b>P = BSP (Parallel) N = NPT (Taper) M = Manifold</b>				<b>N</b>
Actuator Options	Low Press. Pilot:	Types: <b>H3</b> (500 psi Max)			<b>H3</b>
	High Press. Pilot:	Types: <b>H0</b> (10K psi Max), <b>H1</b> (10K psi Max), <b>H3</b> (500 psi Max)			
	Mechanical:	Types: <b>L, DL</b>			
Soft Seated Valve: Gas	Torlon - <b>G</b>				<b>G</b>
Hard Seated Valve: Liquid		Stainless Steel - 431/1.4057 (no ordering code required)			
Max. Working Press: Gas	<b>5,000 psi</b>				<b>5K</b>
Max. Working Press: Liquid		<b>5,000 psi</b>	<b>10,000 psi</b>	<b>20,000 psi</b>	
Pilot Ratio:	Act.Type: H0	10.6 : 1	4.7 : 1	10.6 : 1	18.8 : 1
	Act.Type: H1	3.1 : 1	1.4 : 1	3.1 : 1	5.4 : 1
	Act.Type: H3	110 : 1	49 : 1	110 : 1	196 : 1
Port Size:	3/8"				
Seal Material:	Viton (other materials available by request)				
CV Value:	0.75	0.99	0.75	0.28	
Dry Weight: (kg)	1.75				
Working Temperature Range:	-10°C to +120°C				



# STOP VALVE TYPE: B1-12



- 2 POSN / 2 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH AIR ACTUATOR (TYPE "A4")
- SUITABLE FOR LIQUID USE.
- FITTED WITH "HARD" SEATS.
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>B1-12 *</b>	<b>B1-12</b>
Porting / Connection Options:	<b>P = BSP (Parallel)</b>	<b>P</b>
Max. Working Press: Liquid	<b>20,000 psi</b>	<b>20K</b>
Actuator Specification:	A4 (150 psi Max)	
Pilot Ratio:	250:1	
Port Size:	1/8"	
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.15	
Dry Weight: (kg)	2.5	
Working Temperature Range:	-10°C to +120°C	

**Technical Specification Notes:-**

\* This valve can be supplied fitted with a Manual Lever (non-standard).

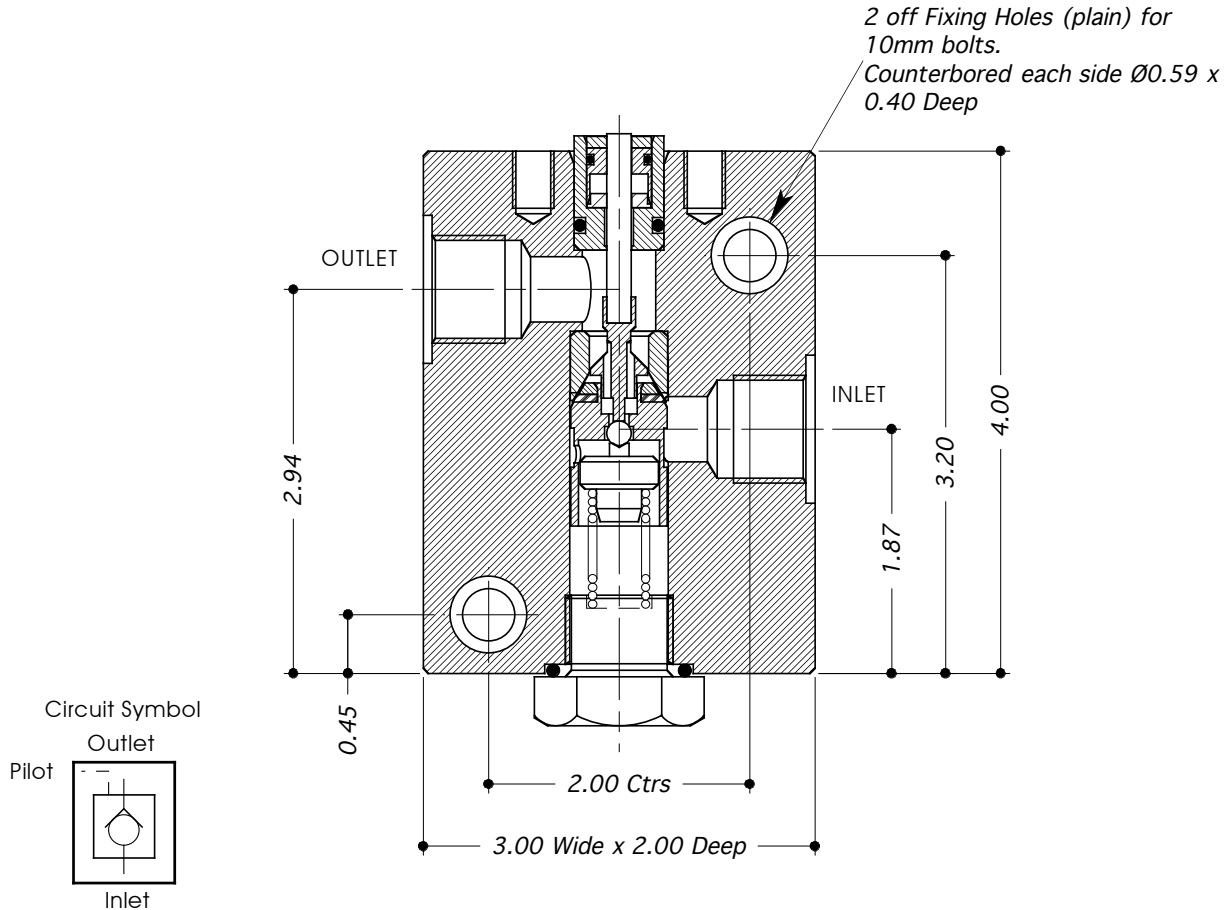
**Ordering Example: B1-12L.** (details by request)

# STOP VALVE TYPE: M1-50



Valves Ltd

- 2 POSN / 2 PORTED MILD STEEL - ENP (EN1A / 220M07) VALVE WITH ACTUATOR OPTIONS.
- SUITABLE FOR LIQUID USE.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



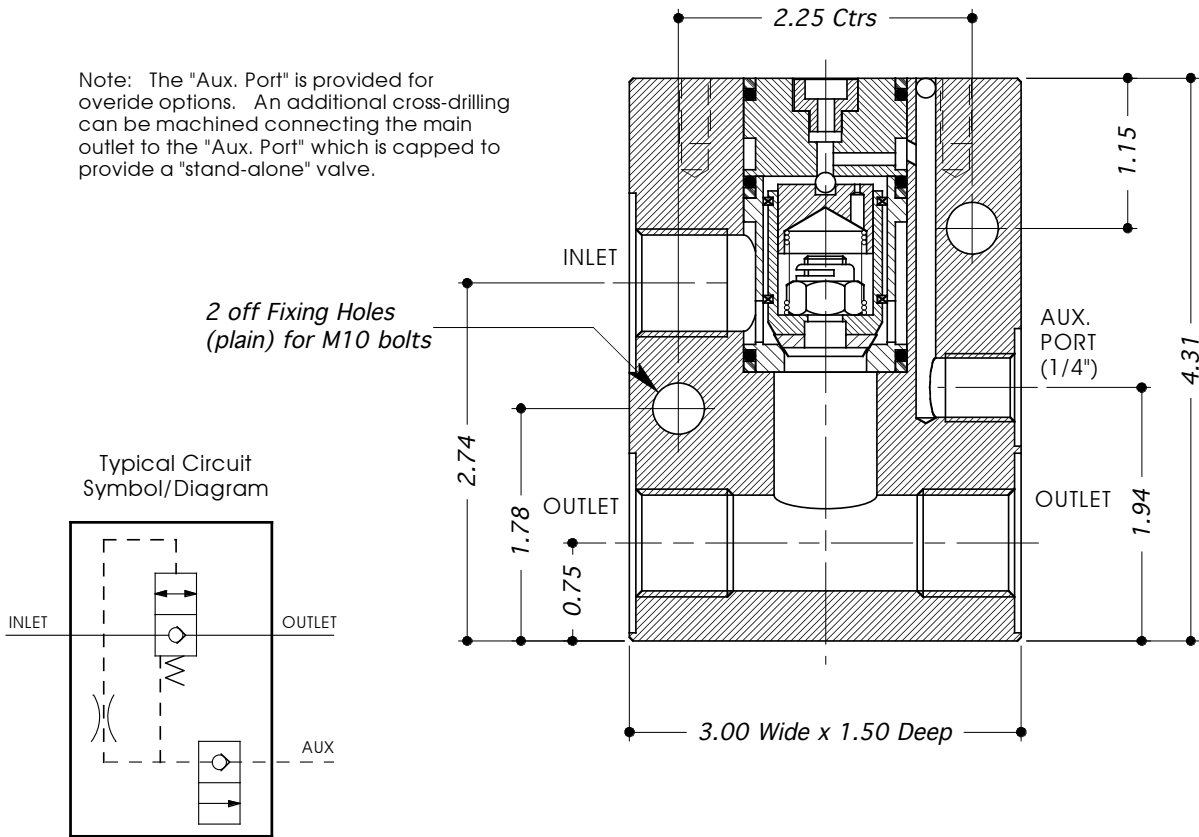
TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>M1-50</b>		<b>M1-50</b>
Porting / Connection Options:	<b>P = BSP (Parallel)</b>		<b>P</b>
Actuator Options	Low Press. Pilot:	Types: <b>H3</b> (125 psi MAX)	<b>H3</b>
	High Press. Pilot:	Types: <b>H0</b> (10,000 psi MAX), <b>H1</b> (10,000 psi MAX)	
	Mechanical:	Types: <b>L, DL</b>	
Max. Working Press: Liquid	<b>20,000 psi</b>		<b>20K</b>
Pilot Ratio:	Act.Type: H3	420 : 1	
	Act.Type: H0	42 : 1	
	Act.Type: H1	12.3 : 1	
Port Size:	1/2"		
Valve Seat Mat'l: Liquid	Stainless Steel - 431/1.4057		
Seal Material:	Viton (other materials available by request)		
CV Value:	1.72		
Dry Weight: (kg)	2.5		
Working Temperature Range:	-10°C to +80°C		

# UNLOADER VALVE TYPE: UL75/50



- 2 POSN / 3 PORTED MILD STEEL - ENP (EN1A / 220M07) VALVE WITH ACTUATOR OPTIONS.
- BODY MATERIAL OPTION: STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- ALL DIMENSIONS IN INCHES.

Note: The "Aux. Port" is provided for override options. An additional cross-drilling can be machined connecting the main outlet to the "Aux. Port" which is capped to provide a "stand-alone" valve.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>S</b> = Stainless Steel (AISI 316/1.4404)	<b>S</b>
Valve Type:	<b>UL75/50</b>	<b>UL75/50</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>P</b>
Actuator Options	Low Press. Pilot: Type: <b>A4</b> = (150 psi Max)    Pilot Ratio: 270 : 1	<b>L</b>
	Mechanical: * Types: <b>L</b> = Lever, <b>PB</b> = Push Button, <b>R</b> = Remote Operation	
Max. Working Press: Liquid	<b>3,000 psi</b>	<b>3K</b>
Port Size:	1/2"	
Valve Seat Mat'l: Liquid	Stainless Steel - 316/1.4404	
Seal Material:	Viton (other materials available by request)	
CV Value:	1.98	
Dry Weight: (kg)	2.5	
Working Temperature Range:	-10°C to +80°C	

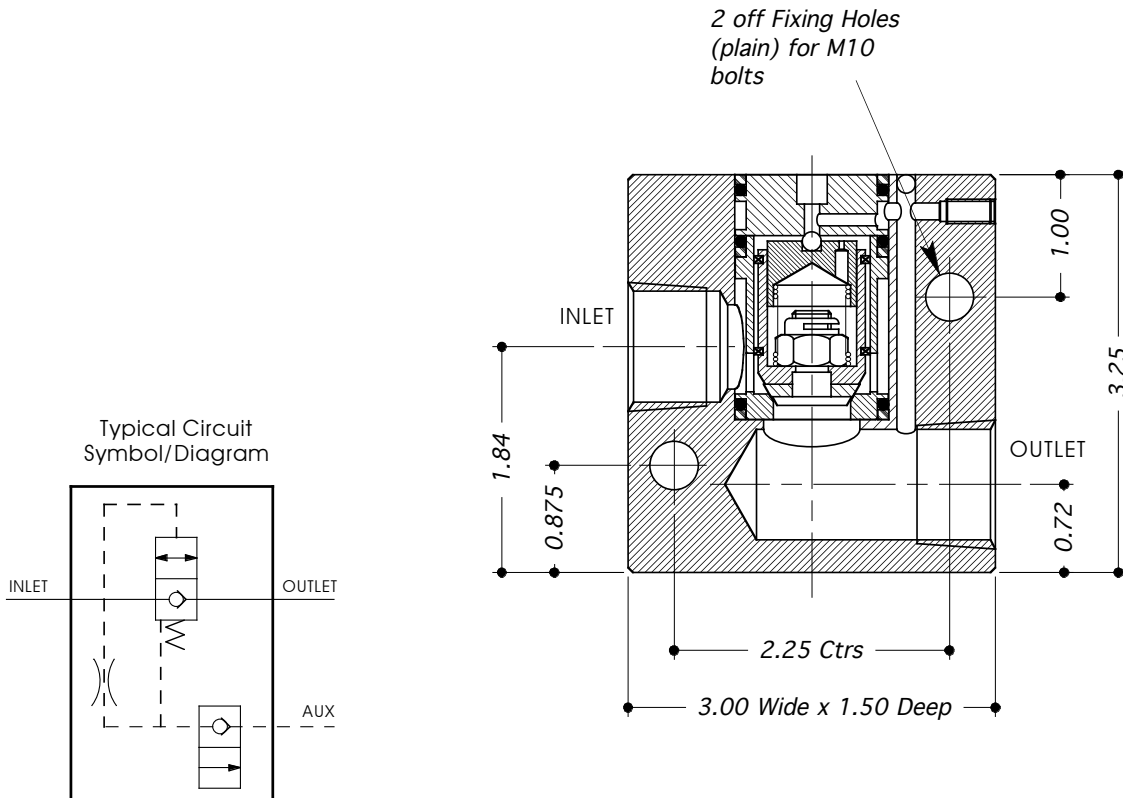
**Technical Specification Notes:-**

\* Mechanical Actuators are "specials" only associated with the **UL75/50** valve. Technical Data Sheets for individual valve/actuator assemblies are available upon request.

# UNLOADER VALVE TYPE: UL75



- 2 POSN / 2 PORTED MILD STEEL - ENP (EN1A / 220M07) VALVE WITH ACTUATOR OPTIONS.
- SUITABLE FOR LIQUID USE.
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Material Option (non-std)	<b>A</b> = Aluminium Alloy (HE30) <b>S</b> = Stainless Steel (AISI 316/1.4404)	—
Valve Type:	<b>UL75</b>	<b>UL75</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>N</b>
Actuator Options	Low Press. Pilot: Type: <b>A4</b> (150 psi Max) Pilot Ratio: 270 : 1	<b>L</b>
	Mechanical: * Types: <b>L</b> = Lever, <b>PB</b> = Push Button, <b>R</b> = Remote Operation	
Max. Working Press: Liquid	<b>4,500 psi</b> (HE30 valve) <b>5,500 psi</b> (AISI 316 valve) <b>3,000 psi</b> (EN1A valve)	<b>4.5K</b>
Port Size:	3/4"	
Valve Seat Mat'l: Liquid	Stainless Steel - 316/1.4404	
Seal Material:	Viton (other materials available by request)	
CV Value:	1.98	
Dry Weight: (kg)	1.0	
Working Temperature Range:	-10°C to +80°C	

**Technical Specification Notes:-**

\* Mechanical Actuators are "specials" only associated with the **UL75** valve.

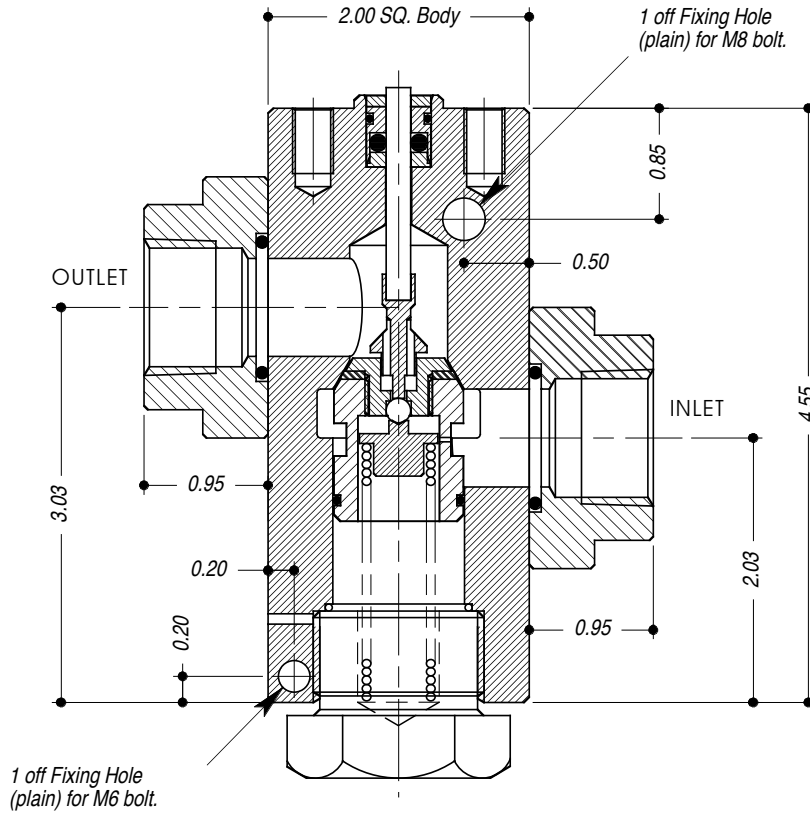
Technical Data Sheets for individual valve/actuator assemblies are available upon request.

# PILOT OPERATED CHECK VALVE TYPES: MS75, MS75/50



Valves Ltd

- 2 POSN / 2 PORTED STAINLESS STEEL (316 / 1.4404) VALVE WITH ACTUATOR OPTIONS.
- SUITABLE FOR LIQUID USE.
- ACTUATION TYPE - SEE SECTION 12 FOR DETAILS.
- ALL DIMENSIONS IN INCHES.



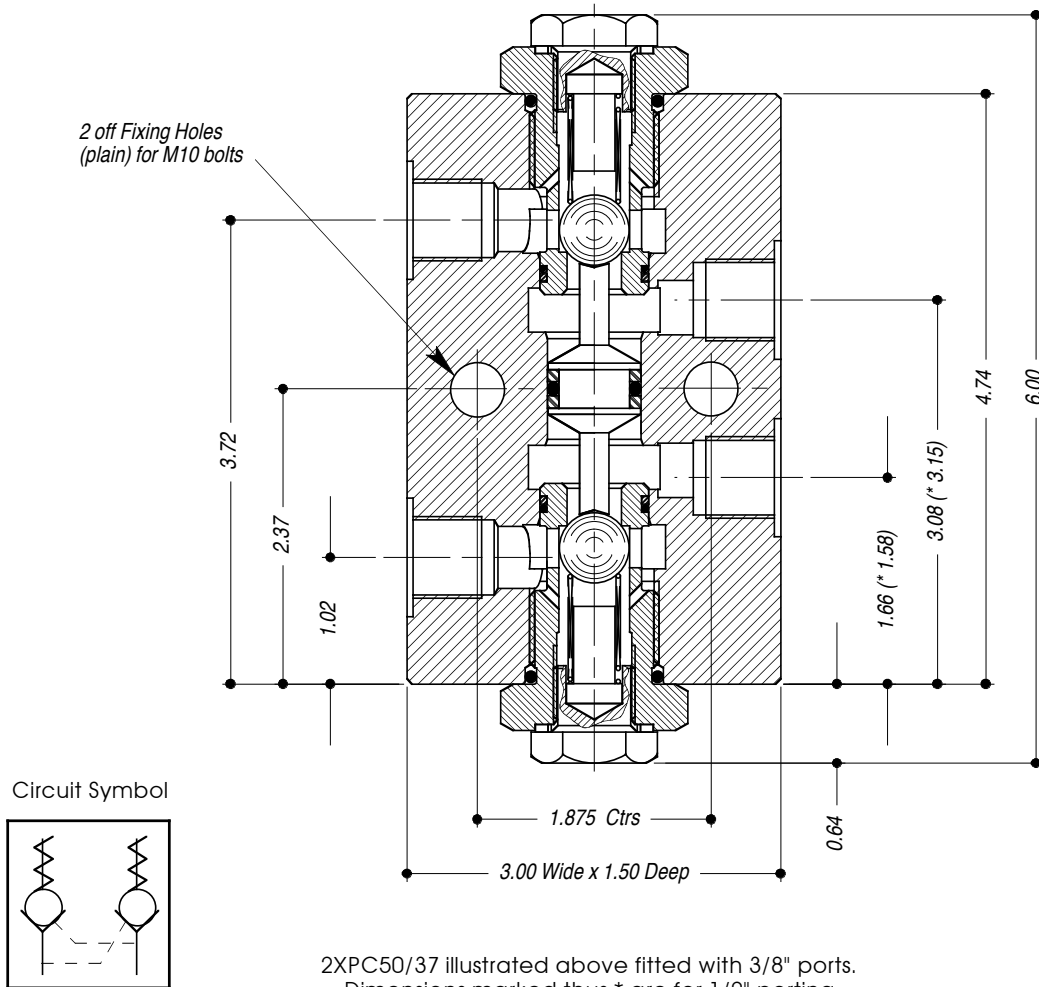
TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>MS75/50</b>		<b>MS75</b>
Porting / Connection Options:	<b>P = BSP (Parallel) N = NPT (Taper)</b>		<b>N</b>
Actuator Options	Low Press. Pilot:	Types: <b>H3</b> (60 - 150 psi Max)	<b>H0</b>
	High Press. Pilot:	Types: <b>H0</b> (10,000 psi Max ), <b>H1</b> (10,000 psi Max )	
	Mechanical:	Types: <b>L, DL</b>	
Max. Working Press: Liquid	<b>12,000 psi</b>		<b>12K</b>
Pilot Ratio:	Act.Type: H3	400 : 1	400 : 1
	Act.Type: H0	33 : 1	33 : 1
	Act.Type: H1	9.6 : 1	9.6 : 1
Port Size:	1/2"	3/4"	
Valve Seat Mat'l: Liquid	Stainless Steel - 316/1.4404		
Seal Material:	Viton (other materials available by request)		
CV Value:	3.7	3.7	
Dry Weight: (kg)	4.0		
Working Temperature Range:	-10°C to +80°C		

# DOUBLE PILOT OPERATED CHECK VALVE

TYPES: **2XPC50/37, 2XPC50**



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- ALL DIMENSIONS IN INCHES.



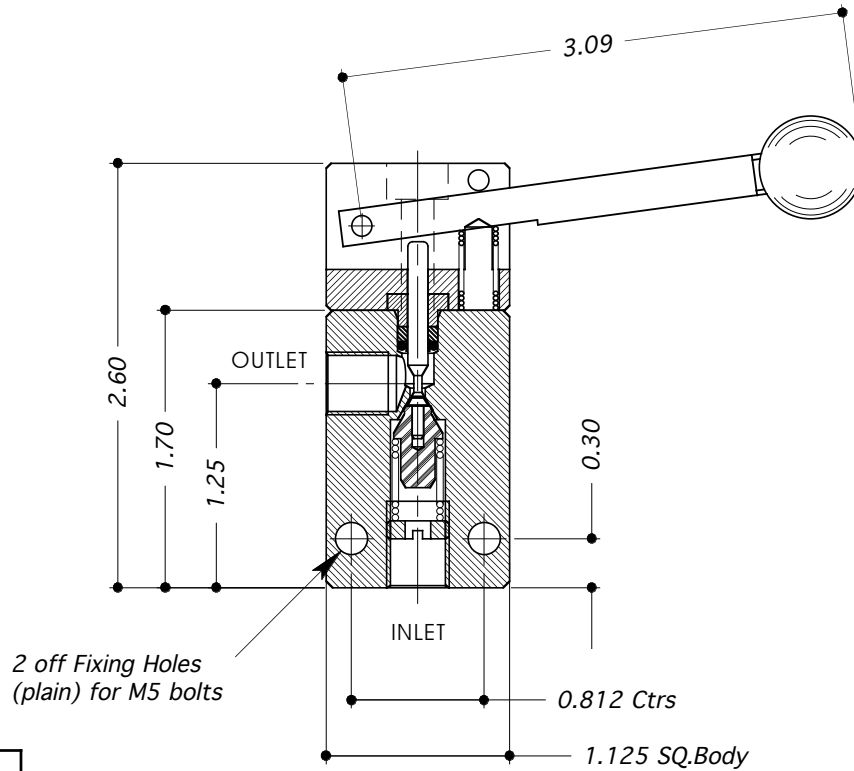
2XPC50/37 illustrated above fitted with 3/8" ports.  
Dimensions marked thus \* are for 1/2" porting

TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>2XPC50/37</b>	<b>2XPC50</b>	<b>2XPC50</b>
Porting / Connection Options:	<b>C5</b> = CETOP5 <b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)		<b>P</b>
Max. Working Press: Liquid	<b>6,000 psi</b>		<b>6K</b>
Pilot Ratio:	2.9 : 1		
Port Size:	3/8"	1/2"	
Valve Seat Mat'l: Liquid	Stainless Steel - 316/1.4404		
Seal Material:	Viton (other materials available by request)		
CV Value:	1.9		
Dry Weight: (kg)	2.77		
Working Temperature Range:	-10°C to +120°C		

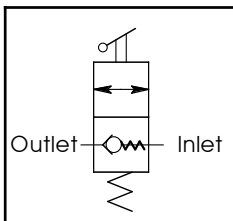
# MIDGET LEVER OPERATED CHECK VALVE TYPE: SVT12



- VALVE BODY - STAINLESS STEEL (316 / 1.4404)
- LEVER ACTUATOR BODY - STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES.



Circuit Symbol

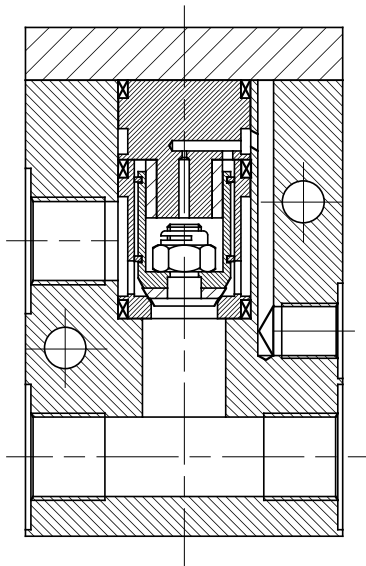


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	SVT12	SVT12
Porting / Connection Options:	P = BSP (Parallel)	P
Max. Working Press: Liquid/Gas	2,000 psi	2K
Port Size: (Valve Body)	1/8"	
Valve Seat Mat'l: Liquid/Gas	Stainless Steel - 431/1.4057	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.15	
Dry Weight: (kg)	1.2	
Working Temperature Range:	-10°C to +120°C	

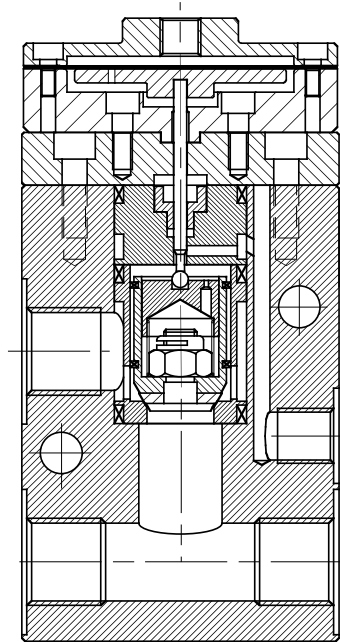
**TYPICAL EXAMPLES OF UNLOADER VALVES  
TYPE "UL75/50" FITTED WITH ACTUATORS**



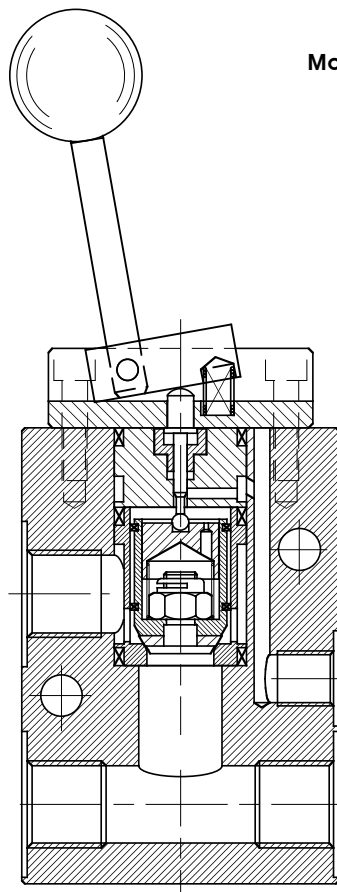
Valves Ltd



**Model Type: UL75/50-R**



**Model Type: UL75/50-A4**



**Model Type: UL75/50-L**





## **SECTION 7: RELIEF VALVES**

### **COMPLIANT WITH THE PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC.**

1/4" to 1" 316 St.St. Safety Relief Valve (L.P.), Setting Range: 10 to 600 psi Liquid/Gas Types: S25, S37, S50, S75, S100. ....	<b>7:1</b>
1/4" 316 St.St. Safety Relief Valve (L.P.), Setting Range: 10 to 280 psi Liquid/Gas Type: SM25UF-RG .....	<b>7:2</b>
1/4" to 1" 316 St.St. Safety Relief Valve (L.P.), Setting Range: 10 to 600 psi Liquid/Gas Types: TS25, TS37, TS50, TS75, TS100 .....	<b>7:3</b>
1/4" 316 St.St. Cartridge Relief Valve (L.P.) Setting Range: 10 to 145 psi Liquid/Gas Type: TS25C .....	<b>7:4</b>
1/4" 316 St.St. Relief Valve (H.P.), Setting Range: 400 to 2,000 psi Liquid Type: HS25 .....	<b>7:5</b>
1/4" 316 St.St. Relief Valve (H.P.), Setting Range: 400 to 2,000 psi Liquid Type: HTS25 .....	<b>7:6</b>
1/4" / 3/8" 316 St.St. Relief Valve (H.P.), Setting Range: 400 to 15,000 psi Liquid Types: RL25, RL37 .....	<b>7:7</b>
1/4" / 3/8" 316 St.St. Relief Valve (H.P.), Setting Range: 1,000 to 6,000 psi Liquid/Gas Types: RL25-G, RL37-G .....	<b>7:8</b>
1/4" 316 St.St. Cartridge Relief Valve (H.P.), Setting Range: 400 to 15,000 psi Liquid Type: RL25C .....	<b>7:9</b>
1/4" 316 St.St. Relief Valve, Manifold Mounted (H.P.), Setting Range: 400 to 15,000 psi Liquid Type: RL25M .....	<b>7:10</b>
1/2" 316 St.St. Relief Valve (H.P.), Setting Range: 200 to 15,000 psi Liquid Type: RL50 .....	<b>7:11</b>
1/2" 316 St.St. Relief Valve (H.P.), Setting Range: 1,000 to 6,000 psi Liquid/Gas Type: RL50-G .....	<b>7:12</b>
1/2" 316 St.St. Relief Valve, Manifold Mounted (H.P.), Setting Range: 400 to 15,000 psi Liquid Type: RL50M .....	<b>7:13</b>
3/4" 316 St.St. Relief Valve (H.P.), Setting Range: 200 to 15,000 psi Liquid Type: RL75 .....	<b>7:14</b>
3/4" 316 St.St. Relief Valve (H.P.) Setting Range: 1,000 to 6,000 psi Liquid Type: RL75-G .....	<b>7:15</b>
3/4" 316 St.St. Cartridge Relief Valve (H.P.), Setting Range: 200 to 15,000 psi Liquid Type: PRV75C .....	<b>7:16</b>
1" 316 St.St. Relief Valve (H.P.), Setting Range: 700 to 3,000 psi Liquid Type: RL100 .....	<b>7:17</b>
1" 316 St.St. Relief Valve (H.P.), Setting Range: 700 to 3,000 psi Liquid/Gas Type: RL100-G .....	<b>7:18</b>

# SAFETY RELIEF VALVE (L.P.)

## TYPES: **S25, S37, S50, S75, S100**

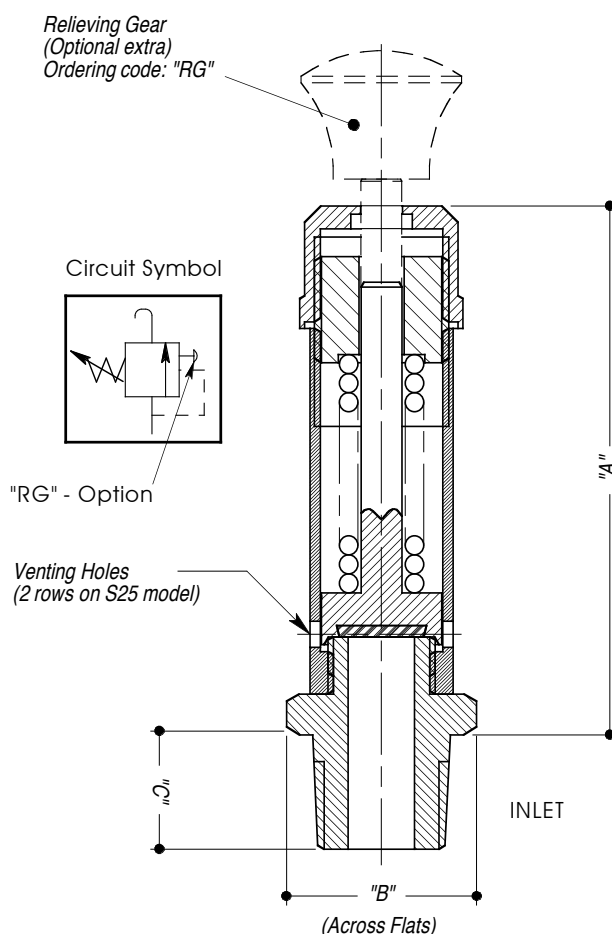


- **PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.**
- **STAINLESS STEEL (316 / 1.4404)**
- **MATERIAL OPTION: BRASS.**
- **SUITABLE FOR LIQUID OR GAS USE.**
- **VENTING TO ATMOSPHERE.**
- **ALL DIMENSIONS IN INCHES.**

- It is NOT recommended to operate this valve below 10 psi. (0.7 Bar).
- Stated pressure is maximum setting. Lower settings are available by using a range of different springs. Please confirm when ordering.
- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 3\%$  of "set pressure".
- Re-seating within 7.5% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.

SAFETY RELIEF VALVE SPRING RANGE TABLE	
Valve Type: S25, BS25	0 - <b>2B</b> , 2 - <b>10B</b> , 8 - <b>15B</b> , 13 - <b>26B</b> , 23 - <b>40B</b> (B = Bar)
Valve Type: S37, BS37	0.7 - <b>2B</b> , 2 - <b>7B</b> , 6 - <b>12B</b> , 11 - <b>25B</b> , 20 - <b>40B</b> (B = Bar)
Valve Type: S50, BS50	0.7 - <b>2B</b> , 2 - <b>7B</b> , 6 - <b>12B</b> , 11 - <b>25B</b> , 20 - <b>40B</b> (B = Bar)
Valve Type: S75, BS75	0.7 - <b>2B</b> , 2 - <b>7B</b> , 6 - <b>12B</b> , 11 - <b>25B</b> , 20 - <b>40B</b> (B = Bar)
Valve Type: S100	0.7 - <b>10B</b> , 8 - <b>18B</b> (B = Bar)

Select the Spring Range from the above table and add the number in '**BOLD**' text (e.g. **12B**) to the end of the Model Code.

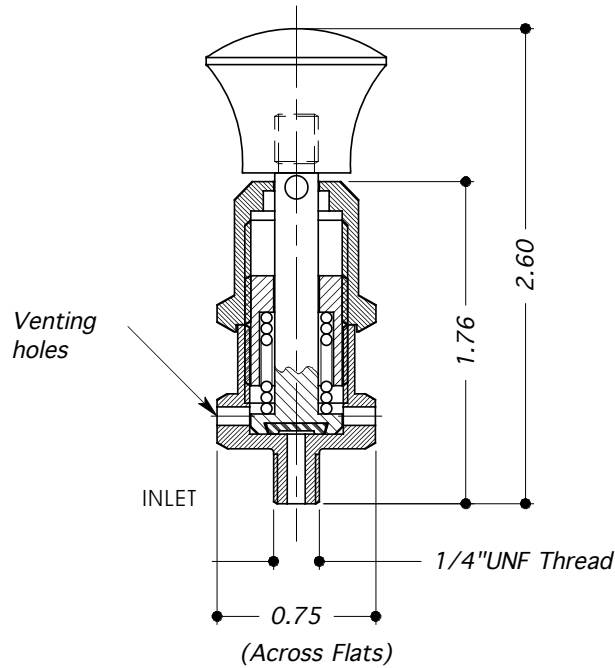


TECHNICAL SPECIFICATION						ORDERING EXAMPLE	
Material Option (non-std)	B = Brass					N/A	—
Valve Type:	<b>S25</b>	<b>S37</b>	<b>S50</b>	<b>S75</b>	<b>S100</b>	<b>S25</b>	
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)					<b>N</b>	
Valve Options:	RG = Relieving Gear					<b>RG</b>	
Pressure/Spring Options:	See table above					<b>10B</b>	
Max. Working Press: Liquid/Gas	580 psi				260 psi		
Orifice Size:	Ø5mm	Ø9.8mm	Ø9.8mm	Ø9.8mm	Ø20.8mm		
Port Size:	1/4"	3/8"	1/2"	3/4"	1.0"		
Valve Seat Material:	Stainless Steel - 316/1.4404						
Seal Material:	Viton (other materials available by request)						
Dry Weight: (kg)	0.2	0.25	0.3	0.35	1.0		
Working Temperature Range:	-10°C to +160°C						
Dimension (ins)	Length "A"	2.50"	3.30"	3.30"	3.30"	4.95"	
	"B" A/Flats	0.750"	1.01"	1.01"	1.30"	1.86"	
	Length "C"	0.50"	0.60"	0.60"	0.75"	1.00"	

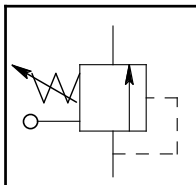
# SAFETY RELIEF VALVE (L.P.) TYPE: SM25UF-RG



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- VENTING TO ATMOSPHERE.
- ALL DIMENSIONS IN INCHES.



Circuit Symbol



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	SM25UF-RG	SM25UF-RG
Porting / Connection Options:	UNF = Unified Fine Thread (no ordering code req'd)	—
Pressure/Spring Options:	0.7 - 5B, 5 - 19B (B = Bar)	19B
Max. Working Press: Liquid/Gas	280 psi	
Orifice Size:	Ø2.5mm	
Connection Size:	1/4"	
Valve Seat Material:	Stainless Steel - 316/1.4404	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	0.1	
Working Temperature Range:	-10°C to +160°C	

# SAFETY RELIEF VALVE (L.P.)

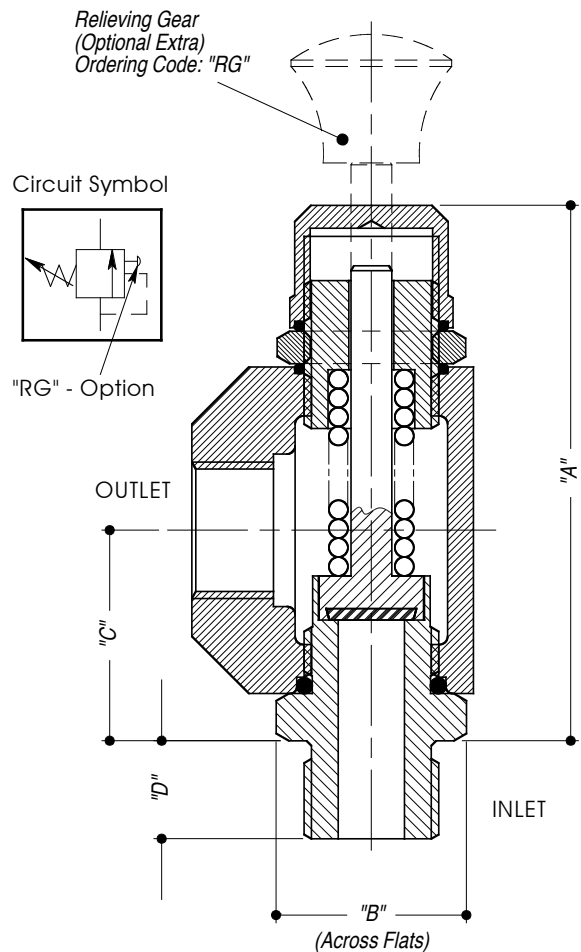
TYPES: **TS25, TS37, TS50, TS75, TS100**



- **PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.**
- **STAINLESS STEEL (316 / 1.4404)**
- **SUITABLE FOR LIQUID OR GAS USE.**
- **ALL DIMENSIONS IN INCHES.**
- It is NOT recommended to operate this valve below 10 psi. (0.7 Bar).
- Stated pressure is maximum setting. Lower settings are available by using a range of different springs. Please confirm when ordering.
- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 3\%$  of "set pressure".
- Re-seating within 7.5% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Maximum Outlet pressure 145 psi. (10 bar). Note: Back pressure is additive to the Inlet setting pressure.

SAFETY RELIEF VALVE SPRING RANGE TABLE	
Valve Type: TS25	0.7 - <b>2B</b> , 2 - <b>10B</b> , 8 - <b>15B</b> , 13 - <b>26B</b> , 23 - <b>40B</b> (B = Bar)
Valve Type: TS37	0.7 - <b>2B</b> , 2 - <b>7B</b> , 6 - <b>12B</b> , 11 - <b>25B</b> , 20 - <b>40B</b> (B = Bar)
Valve Type: TS50	0.7 - <b>2B</b> , 2 - <b>7B</b> , 6 - <b>12B</b> , 11 - <b>25B</b> , 20 - <b>40B</b> (B = Bar)
Valve Type: TS75	0.7 - <b>2B</b> , 2 - <b>7B</b> , 6 - <b>12B</b> , 11 - <b>25B</b> , 20 - <b>40B</b> (B = Bar)
Valve Type: TS100	0.7 - <b>10B</b> , 8 - <b>18B</b> , 18 - <b>28B</b> (B = Bar)

Select the Spring Range from the above table and add the number in '**BOLD**' text (e.g. **12B**) to the end of the Model Code.



TECHNICAL SPECIFICATION						ORDERING EXAMPLE
Valve Type:	<b>TS25</b>	* <b>TS37</b>	<b>TS50</b>	<b>TS75</b>	<b>TS100</b>	<b>TS25</b>
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)					<b>N</b>
Valve Options:	RG = Relieving Gear					—
Pressure/Spring Options:	See table above					<b>10B</b>
Max. Working Press: Liquid/Gas	580 psi				400 psi	
Orifice Size:	Ø5mm	Ø9.8mm	Ø9.8mm	Ø9.8mm	Ø20.8mm	
Port Size:	1/4"	3/8"	1/2"	3/4"	1.0"	
Valve Seat Material:	Stainless Steel - 316/1.4404					
Seal Material:	Viton (other materials available by request)					
Dry Weight: (kg)	0.2	0.25	0.3	0.35	2.0	
Working Temperature Range:	-10°C to +120°C					
Dimension (ins)	Length "A"	2.50"	3.30"	3.30"	3.30"	4.95"
	"B" A/Flats	0.750"	1.01"	1.01"	1.30"	1.86"
	Length "C"	0.730"	1.43"	1.39"	1.44"	1.85"
	Length "D"	0.450"	0.60"	0.70"	0.75"	0.81"

**Technical Specification Notes:-**

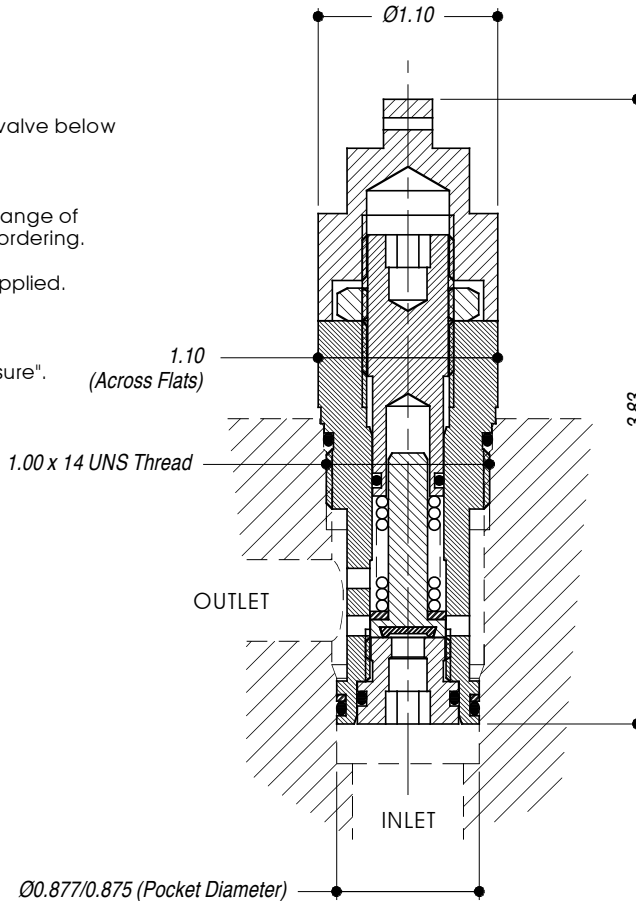
\* The **TS37** valve is fitted with a 1/2" Female Outlet and 3/8" Male Inlet Port as standard.

# CARTRIDGE RELIEF VALVE (L.P.) TYPE: TS25C

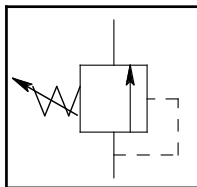


- **PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.**
- **STAINLESS STEEL (316 / 1.4404)**
- **SUITABLE FOR LIQUID OR GAS USE.**
- **FOR USE IN SUITABLE CAVITY HOUSING.** (details on request)
- **ALL DIMENSIONS IN INCHES.**

- It is NOT recommended to operate this valve below 10 psi. (0.7 Bar).
- Stated pressure is maximum setting. Lower settings are available by using a range of different springs. Please confirm when ordering.
- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 3\%$  of "set pressure".
- Re-seating within 7.5% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 145 psi. (10 Bar).



Circuit Symbol

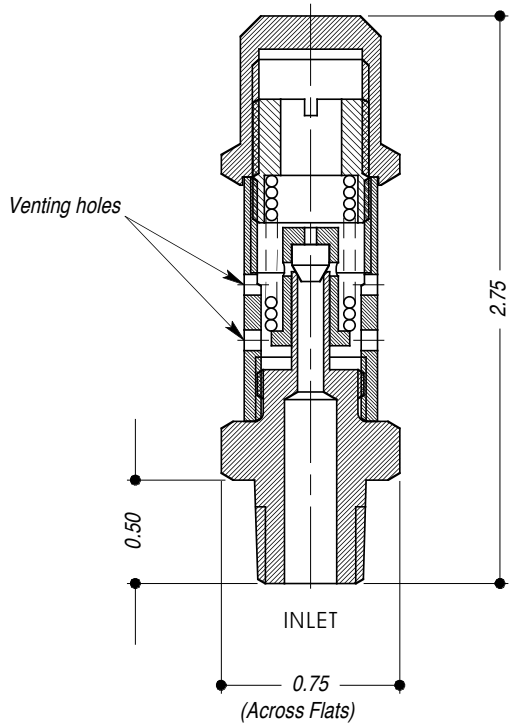


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>TS25C</b>	<b>TS25C</b>
Pressure/Spring Options:	0.7 - <b>2B</b> , 2 - <b>10B</b> (B = Bar)	<b>10B</b>
Max. Working Press: Liquid/Gas:	580 psi	
Valve Seat Material:	Stainless Steel - 316/1.4404	
Seal Material:	Viton (other materials available by request)	
Dry Weight (kg)	0.4	
Working Temperature Range:	-10°C to +100°C	

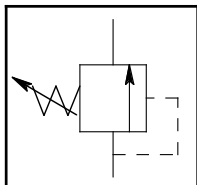
# RELIEF VALVE (H.P.) TYPE: HS25



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- VENTING TO ATMOSPHERE
- ALL DIMENSIONS IN INCHES.



Circuit Symbol



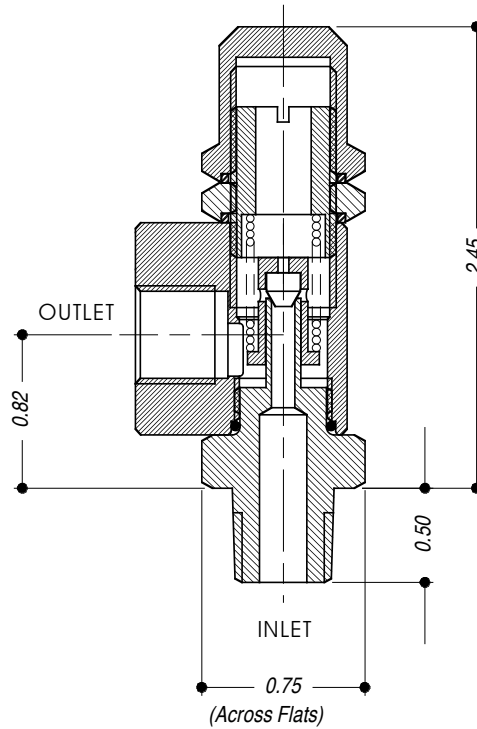
Spring range available: 400 - 2,000 psi

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>HS25</b>	<b>HS25</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>N</b>
Valve Options:	<b>PM</b> = Pressure Maintaining (fitted with ball seal)	—
Max. Working Press: Liquid	2,000 psi	
Orifice Size:	Ø3.2mm	
Port Size:	1/4"	
Valve Seat Mat'l: Liquid	Stainless Steel - 316/1.4404	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	0.22	
Working Temperature Range:	-10°C to +120°C	

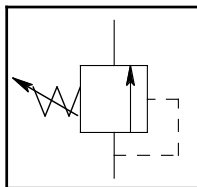
# RELIEF VALVE (H.P.) TYPE: HTS25



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES.



Circuit Symbol



Spring range available: 400 - 2,000 psi

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>HTS25</b>	<b>HTS25</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>N</b>
Valve Option:	<b>PM</b> = Pressure Maintaining (fitted with ball seal)	—
Valve Option:	<b>EH</b> = External Adjustment	—
Max. Working Press: Liquid	2,000 psi	
Orifice Size:	Ø3.2mm	
Port Size:	1/4"	
Valve Seat Mat'l: Liquid	Stainless Steel - 316/1.4404	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	0.22	
Working Temperature Range:	-10°C to +120°C	

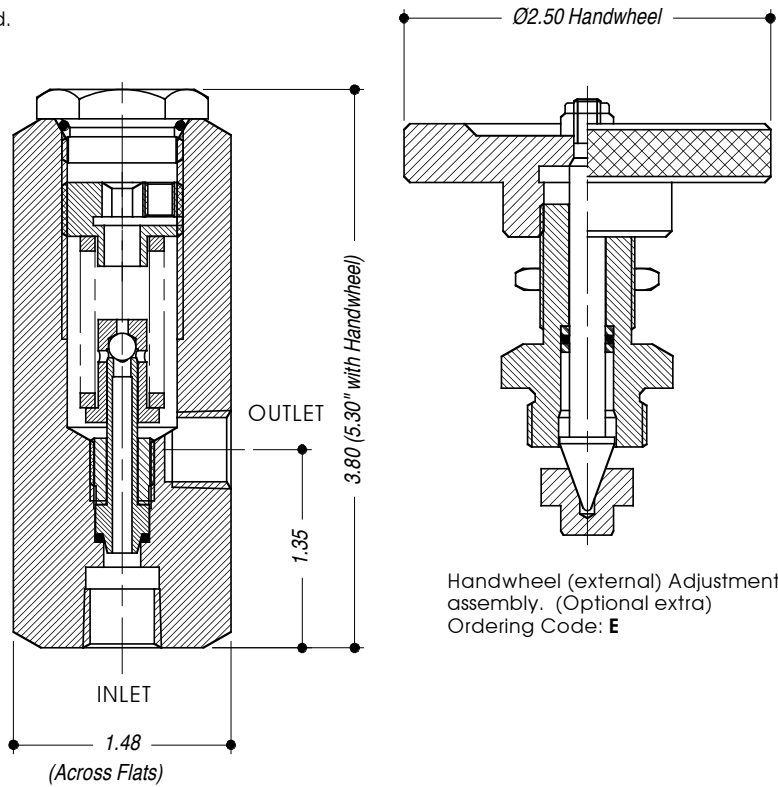
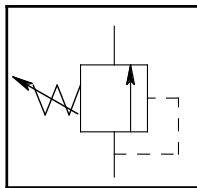
# RELIEF VALVE (H.P.) TYPES: RL25, RL37



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- ALL DIMENSIONS IN INCHES.

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).
- Mounting details for the **RL25-E** only.  
Hole panel dia:  $\varnothing 0.75"$   
Panel thickness: 0.125" to 0.250"

Circuit Symbol



Handwheel (external) Adjustment assembly. (Optional extra)  
Ordering Code: E

TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>RL25</b>	<b>RL37</b>	<b>RL25</b>
Porting / Connection Options: (*AE" threads fitted only to the INLET port)	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>44AE</b> (1/4" O.D. Tube) <b>56AE</b> (3/8" O.D. Tube) <b>81AE</b> (9/16" O.D. Tube)		<b>N</b>
Autoclave Outlet Port Options:	<b>25N</b> (1/4" NPT)	<b>37N</b> (3/8" NPT)	—
Valve Options:	<b>E</b> = Handwheel (external) Adjustment		—
Working Media: (std)	Oil / Water Glycol Duty (no ordering code req'd)		—
Working Media: (options)	<b>WD</b> = Water Duty <b>SWD</b> = Sea Water Duty		—
Press. Range:	<b>0.4K - 1.6K psi, 1K - 4K psi, 3K - 9K psi, 8K - 15K psi Max W.P.</b>		<b>9K</b>
Orifice Size:	$\varnothing 0.125"$		
Port Size:	1/4"	3/8"	
Valve Seat Mat'l: (standard)	Stainless Steel - 440C (liquid use)		
Valve Seat Mat'l: (options)	1.4542 St.Steel - Water Duty	Inconel - Sea Water Duty	
Seal Material:	Viton (other materials available by request)		
Dry Weight: (kg)	1.2	1.2	
Working Temperature Range:	-10°C to +120°C		
Flow Rate:	Contact factory for details		

**Technical Specification Notes:-**

\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.



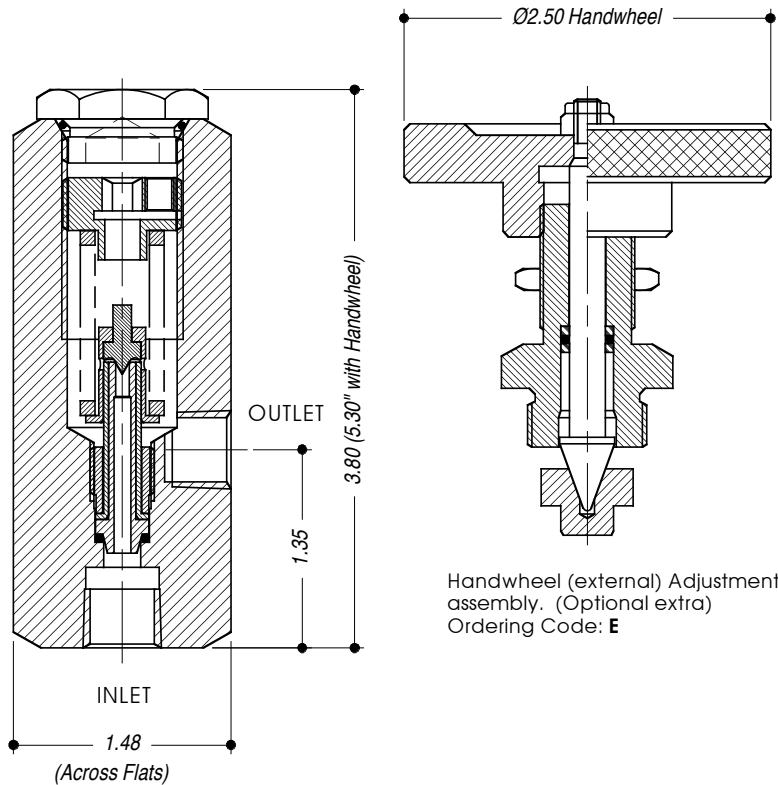
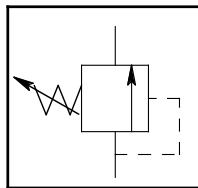
# RELIEF VALVE (H.P.) TYPES: RL25-G, RL37-G



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES.

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).
- Mounting details for the **RL25-E** only. Hole panel dia:  $\varnothing 0.75"$  Panel thickness: 0.125" to 0.250"

Circuit Symbol



Handwheel (external) Adjustment assembly. (Optional extra) Ordering Code: E

TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Valve Type:	<b>RL25</b>	<b>RL37</b>	<b>RL25</b>
Porting / Connection Options: (*AE" threads fitted only to the INLET port)	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>44AE</b> (1/4" O.D. Tube) <b>56AE</b> (3/8" O.D. Tube) <b>81AE</b> (9/16" O.D. Tube)		<b>N</b>
Autoclave Outlet Port Options:	<b>25N</b> (1/4" NPT)	<b>37N</b> (3/8" NPT)	—
Valve Options:	<b>E</b> = Handwheel (external) Adjustment		—
Soft Seated Valve:	<b>G</b>		<b>G</b>
Press. Range:	<b>1K - 6K psi Max W.P</b>		<b>6K</b>
Orifice Size:	$\varnothing 0.093"$		
Port Size:	1/4"	3/8"	
Valve Seat Material:	Torlon		
Seal Material:	Viton (other materials available by request)		
Dry Weight: (kg)	1.2	1.2	
Working Temperature Range:	-10°C to +80°C		
Flow Rate:	Contact factory for details		

**Technical Specification Notes:-**

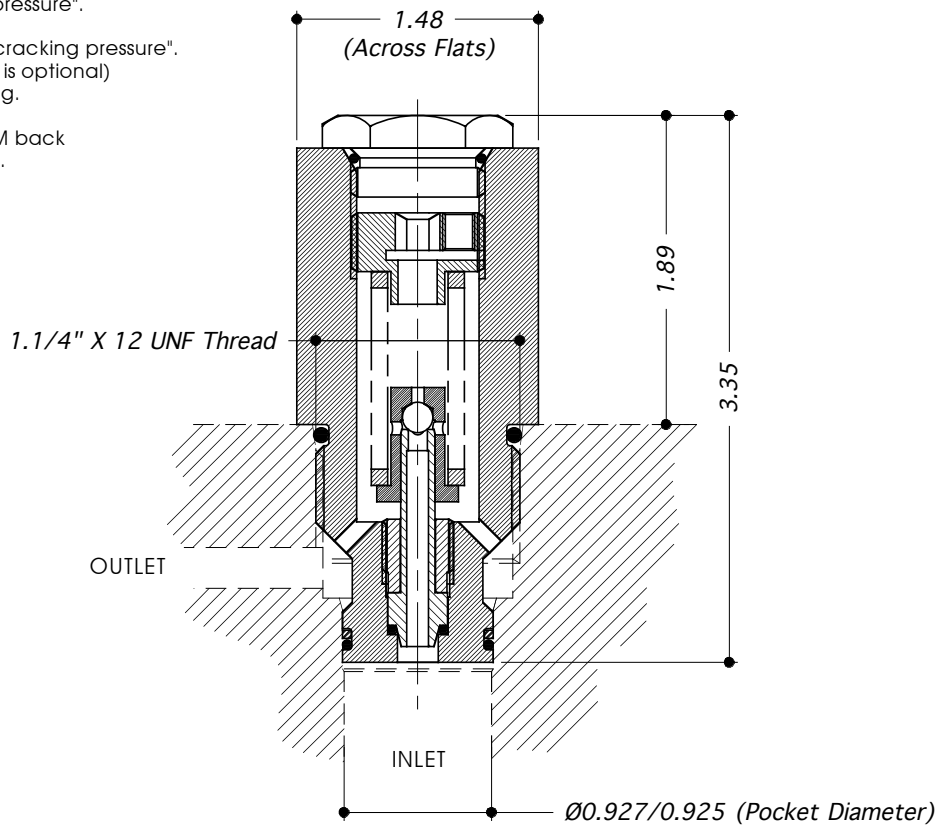
\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.

# CARTRIDGE RELIEF VALVE (H.P.) TYPE: RL25C

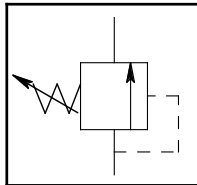


- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- FOR USE IN SUITABLE CAVITY HOUSING. (details on request)
- ALL DIMENSIONS IN INCHES.

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).



Circuit Symbol



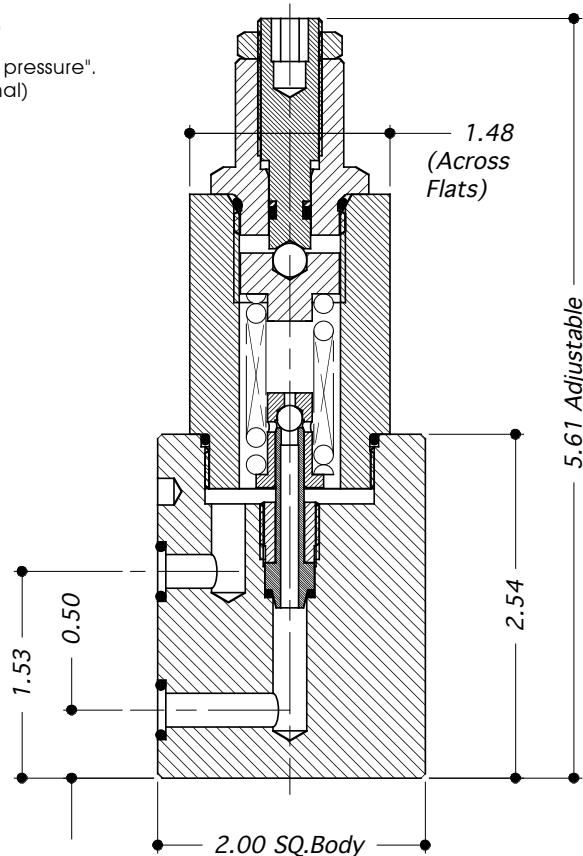
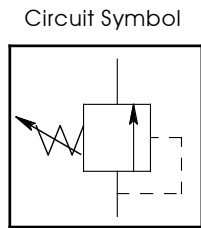
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	RL25C	RL25C
Working Media: (standard)	Oil / Water Glycol Duty (no ordering code req'd)	—
Working Media: (options)	WD = Water Duty      SWD = Sea Water Duty	—
Press. Range:	0.4K - 1.6K psi, 1K - 4K psi, 3K - 9K psi, 8K - 15K psi Max W.P.	9K
Orifice Size:	$\varnothing 0.125$ "	
Valve Seat Mat'l: (standard)	Stainless Steel - 440C (liquid use)	
Valve Seat Mat'l: (options)	1.4542 St.Steel - Water Duty      Inconel - Sea Water Duty	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	0.7	
Working Temperature Range:	-10°C to +80°C	
Flow Rate:	Contact factory for details	

# RELIEF VALVE (H.P.) TYPE: RL25M



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- MANIFOLD MOUNTED.
- ALL DIMENSIONS IN INCHES.

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure".  
(Pre-set cracking pressure is optional)  
State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>RL25M</b>	<b>RL25M</b>
Working Media: (standard)	Oil / Water Glycol Duty (no ordering code req'd)	—
Working Media: (options)	<b>WD</b> = Water Duty <b>SWD</b> = Sea Water Duty	—
Press. Range:	<b>0.4K - 1.6K psi, 1K - 4K psi, 3K - 9K psi, 8K - 15K psi Max W.P.</b>	<b>9K</b>
Orifice Size:	$\varnothing 0.125"$	
Port Size:	Manifold mounted	
Valve Seat Mat'l: (standard)	Stainless Steel - 440C (liquid use)	
Valve Seat Mat'l: (options)	1.4542 St.Steel - Water Duty      Inconel - Sea Water Duty	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	1.8	
Working Temperature Range:	-10°C to +80°C	
Flow Rate:	Contact factory for details	

# RELIEF VALVE (H.P.) TYPE: RL50

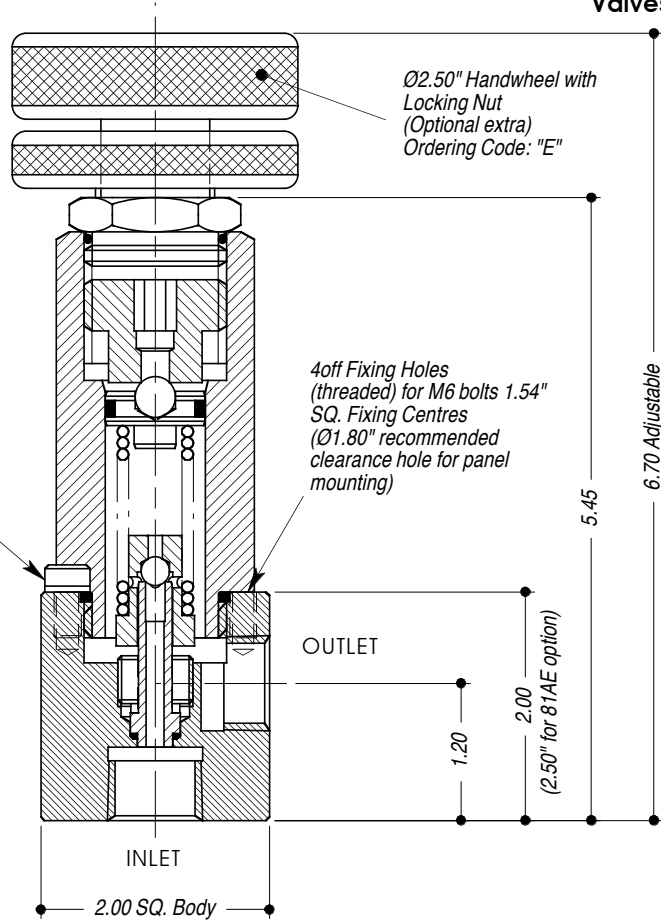


Valves Ltd

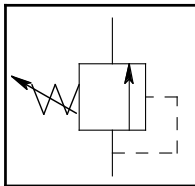
- **PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.**
- **STAINLESS STEEL (316 / 1.4404)**
- **SUITABLE FOR LIQUID USE.**
- **ALL DIMENSIONS IN INCHES**

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).

Locking Screw and Washer  
(can be removed when mounting valve to a panel)



Circuit Symbol



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>RL50</b>	
Porting / Connection Options: (*AE" threads fitted only to the INLET port)	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>56AE</b> (3/8" O.D. Tube) <b>81AE</b> (9/16" O.D. Tube)	<b>N</b>
Autoclave Outlet Port Options:	<b>50N</b> (1/2" NPT)	—
Valve Options:	<b>E</b> = Handwheel (external) Adjustment	—
Working Media: (standard)	Oil / Water Glycol Duty (no ordering code req'd)	—
Working Media: (options)	<b>WD</b> = Water Duty <b>SWD</b> = Sea Water Duty	—
Press. Range:	<b>200 - 1.6K psi, 1 - 5K psi</b> <b>4K - 15K psi Max W.P.</b>	<b>5K</b>
Orifice Size:	Ø6.0mm	Ø4.1mm
Port Size:	1/2"	
Valve Seat Mat'l: (standard)	Stainless Steel - 440C (liquid use)	
Valve Seat Mat'l: (options)	1.4542 St.Steel - Water Duty    Inconel - Sea Water Duty	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	1.75	
Working Temperature Range:	-10°C to +120°C	
Flow Rate:	Contact factory for details	

**Technical Specification Notes:-**

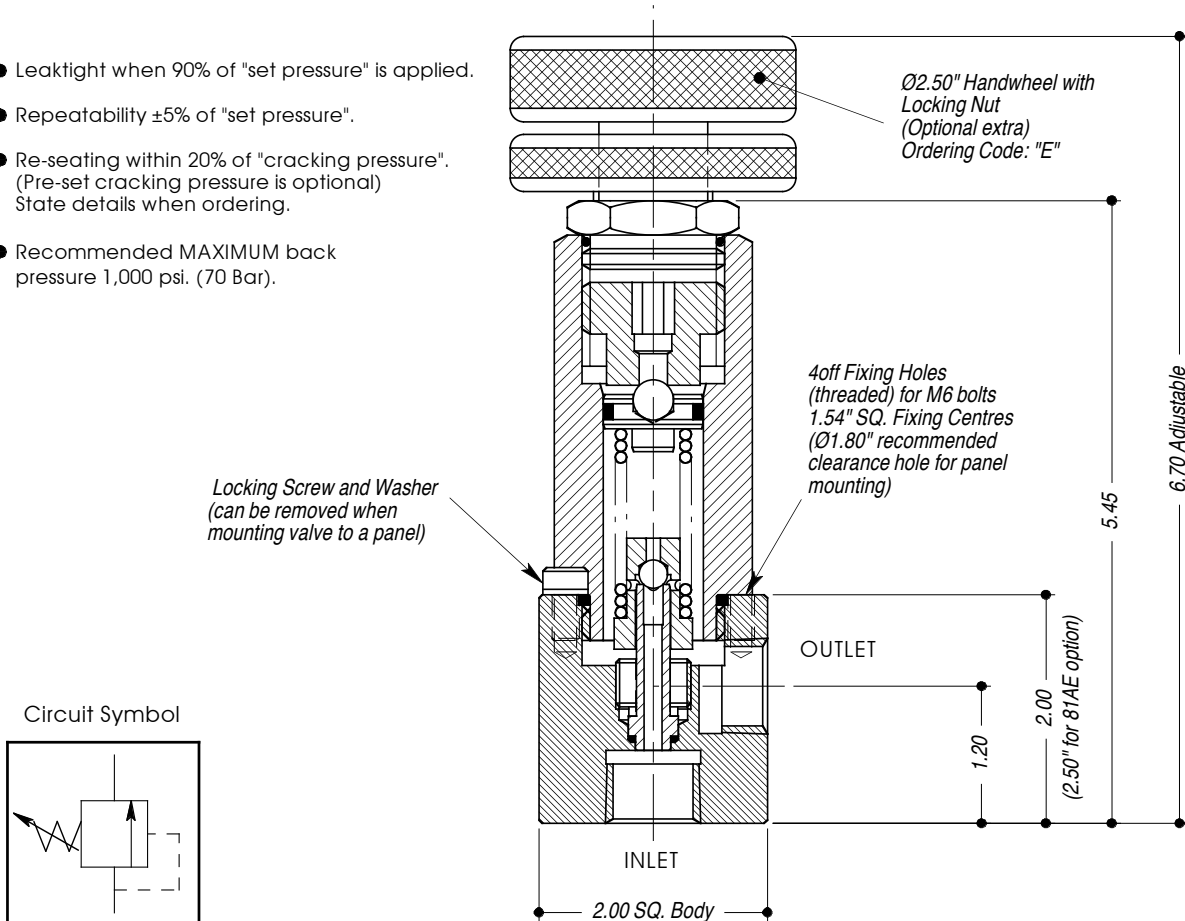
\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.

# RELIEF VALVE (H.P.) TYPE: RL50-G

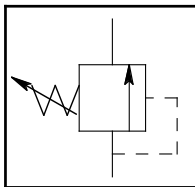


- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID AND GAS USE.
- ALL DIMENSIONS IN INCHES

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).



Circuit Symbol



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>RL50</b>	<b>RL50</b>
Porting / Connection Options: (*AE" threads fitted only to the INLET port)	<b>P = BSP (Parallel) N = NPT (Taper)</b> <b>56AE (3/8" O.D. Tube) 81AE (9/16" O.D. Tube)</b>	<b>N</b>
Autoclave Outlet Port Options:	<b>50N (1/2" NPT)</b>	---
Valve Options:	<b>E = Handwheel (external) Adjustment</b>	---
Soft Seated Valve:	<b>G</b>	<b>G</b>
Press. Range:	<b>200 - 1.6K psi 1 - 6K psi Max W.P.</b>	<b>6K</b>
Orifice Size:	Ø3.8mm	
Port Size:	1/2"	
Valve Seat Material:	Torlon	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	1.75	
Working Temperature Range:	-10°C to +80°C	
Flow Rate:	Contact factory for details	

**Technical Specification Notes:-**

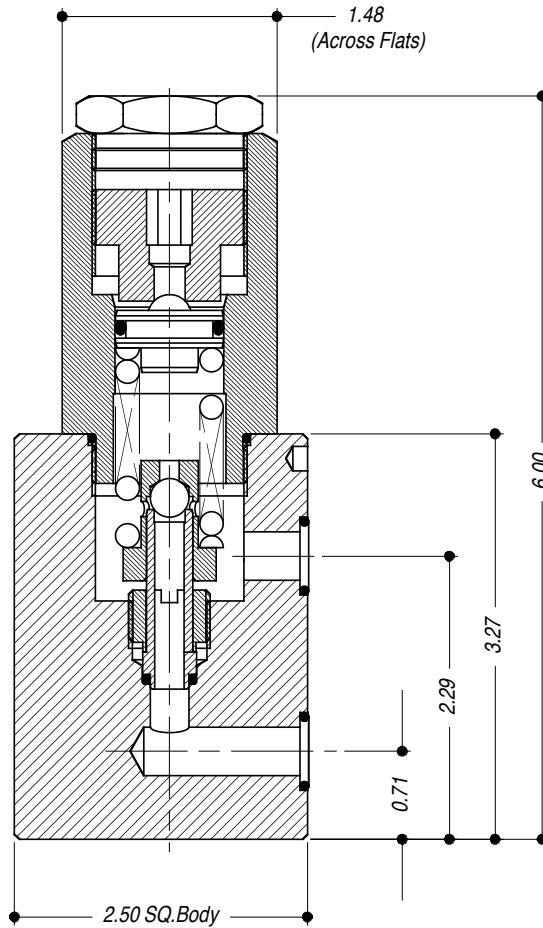
\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.

# RELIEF VALVE (H.P.) TYPE: RL50M

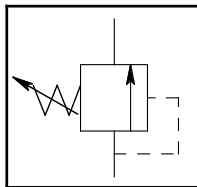


- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- MANIFOLD MOUNTED.
- ALL DIMENSIONS IN INCHES.

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure".  
(Pre-set cracking pressure is optional)  
State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).



Circuit Symbol



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>RL50M</b>	<b>RL50M</b>
Working Media: (standard)	Oil / Water Glycol Duty (no ordering code req'd)	—
Working Media: (options)	<b>WD</b> = Water Duty <b>SWD</b> = Sea Water Duty	—
Press. Range:	<b>200 - 1.6K psi, 1 - 5K psi</b> <b>4K - 15K psi Max W.P.</b>	<b>5K</b>
Orifice Size:	$\varnothing 6.0\text{mm}$ $\varnothing 4.1\text{mm}$	
Port Size:	Manifold mounted	
Valve Seat Mat'l: (standard)	Stainless Steel - 440C (liquid use)	
Valve Seat Mat'l: (options)	1.4542 St.Steel - Water Duty      Inconel - Sea Water Duty	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	2.0	
Working Temperature Range:	-10°C to +80°C	
Flow Rate:	Contact factory for details	

# RELIEF VALVE (H.P.) TYPE: RL75



Valves Ltd

- **PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.**
- **STAINLESS STEEL (316 / 1.4404)**
- **SUITABLE FOR LIQUID USE.**
- **ALL DIMENSIONS IN INCHES**

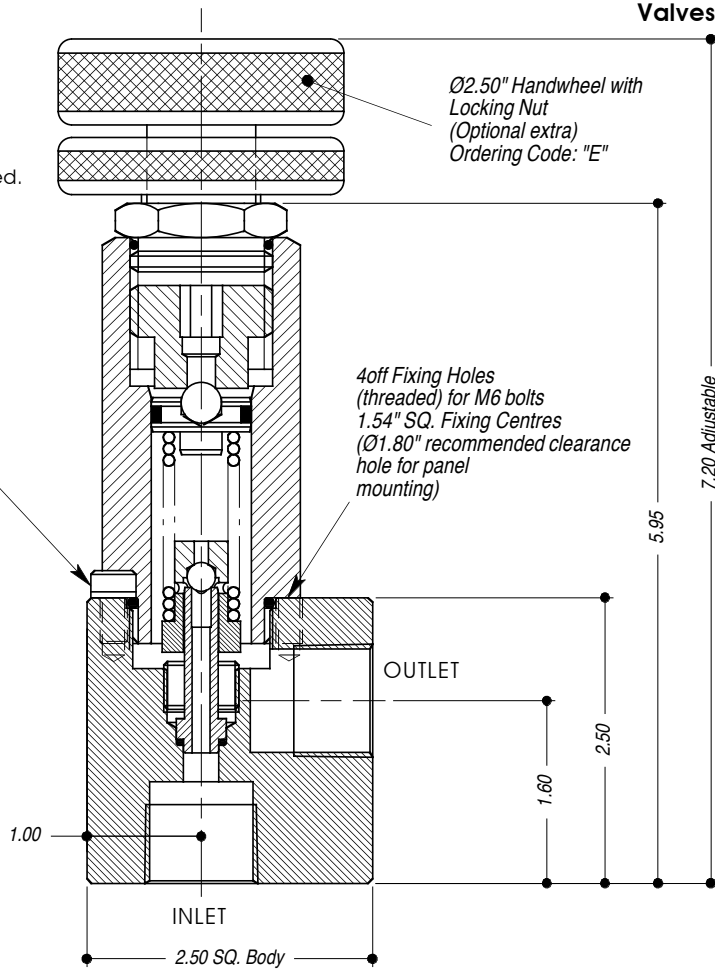
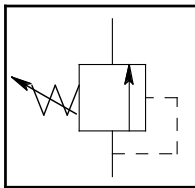
- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).

Locking Screw and Washer  
(can be removed when mounting valve to a panel)

$\varnothing 2.50$ " Handwheel with Locking Nut  
(Optional extra)  
Ordering Code: "E"

4 off Fixing Holes  
(threaded) for M6 bolts  
1.54" SQ. Fixing Centres  
( $\varnothing 1.80$ " recommended clearance hole for panel mounting)

Circuit Symbol



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>RL75</b>	<b>RL75</b>
Porting / Connection Options: (*AE" threads fitted only to the INLET port)	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>103AE</b> (3/4" O.D. Tube)	<b>N</b>
Autoclave Outlet Port Options:	<b>75N</b> (3/4" NPT)	---
Valve Options:	<b>E</b> = Handwheel (external) Adjustment	---
Working Media: (standard)	Oil / Water Glycol Duty (no ordering code req'd)	---
Working Media: (options)	<b>WD</b> = Water Duty <b>SWD</b> = Sea Water Duty	---
Press. Range:	<b>200 - 1.6K psi, 1 - 5K psi</b> <b>4K - 15K psi Max W.P.</b>	<b>5K</b>
Orifice Size:	$\varnothing 6.0\text{mm}$ $\varnothing 4.1\text{mm}$	
Port Size:	3/4"	
Valve Seat Mat'l: (standard)	Stainless Steel - 440C (liquid use)	
Valve Seat Mat'l: (options)	1.4542 St.Steel - Water Duty    Inconel - Sea Water Duty	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	2.00	
Working Temperature Range:	-10°C to +120°C	
Flow Rate:	Contact factory for details	

**Technical Specification Notes:-**

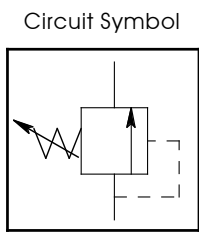
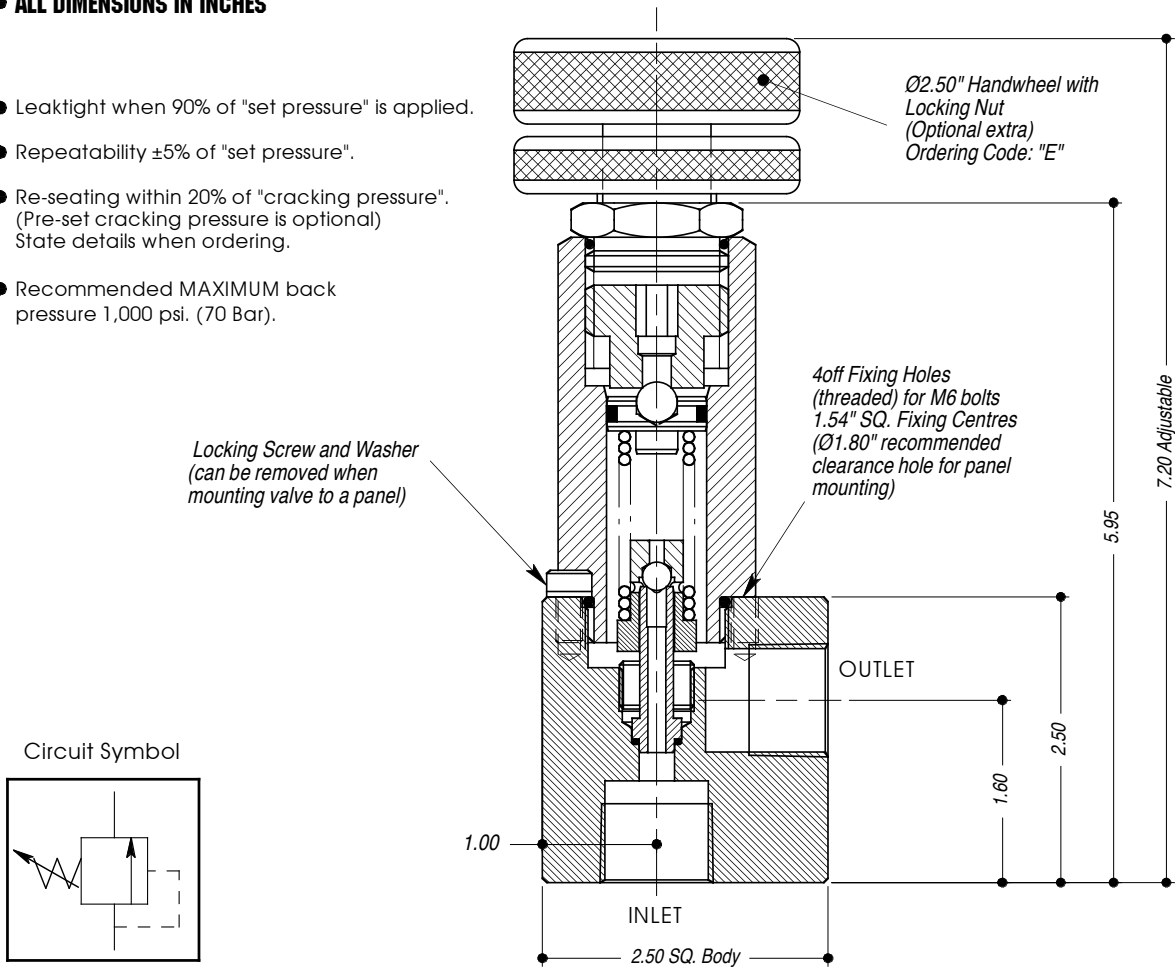
\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.

# RELIEF VALVE (H.P.) TYPE: RL75-G



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID AND GAS USE.
- ALL DIMENSIONS IN INCHES

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure". (Pre-set cracking pressure is optional) State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>RL75</b>	<b>RL75</b>
Porting / Connection Options: (*AE" threads fitted only to the INLET port)	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper) <b>103AE</b> (3/4" O.D. Tube)	<b>N</b>
Autoclave Outlet Port Options:	<b>75N</b> (3/4" NPT)	—
Valve Options:	<b>E</b> = Handwheel (external) Adjustment	—
Soft Seated Valve:	<b>G</b>	<b>G</b>
Press. Range:	<b>1 - 6K psi Max W.P.</b>	<b>6K</b>
Orifice Size:	Ø3.8mm	
Port Size:	3/4"	
Valve Seat Material:	Torlon	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	2.0	
Working Temperature Range:	-10°C to +80°C	
Flow Rate:	Contact factory for details	

**Technical Specification Notes:-**

\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.

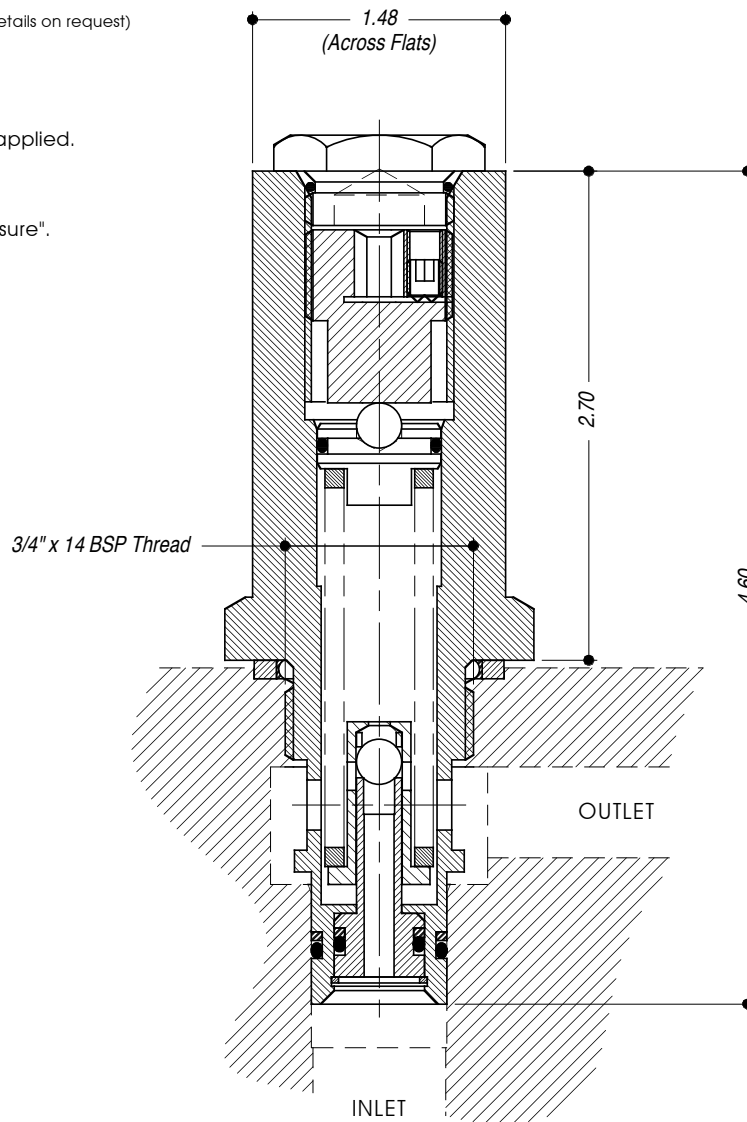


# CARTRIDGE RELIEF VALVE (H.P.) TYPE: PRV75C

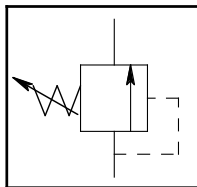


- **PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.**
- **STAINLESS STEEL (316 / 1.4404)**
- **SUITABLE FOR LIQUID USE.**
- **FOR USE IN SUITABLE CAVITY HOUSING.** (details on request)
- **ALL DIMENSIONS IN INCHES.**

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure".  
(Pre-set cracking pressure is optional)  
State details when ordering.
- Recommended **MAXIMUM** back pressure 1,000 psi. (70 Bar).



Circuit Symbol



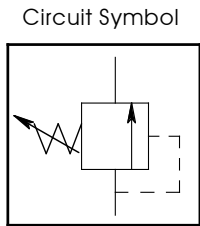
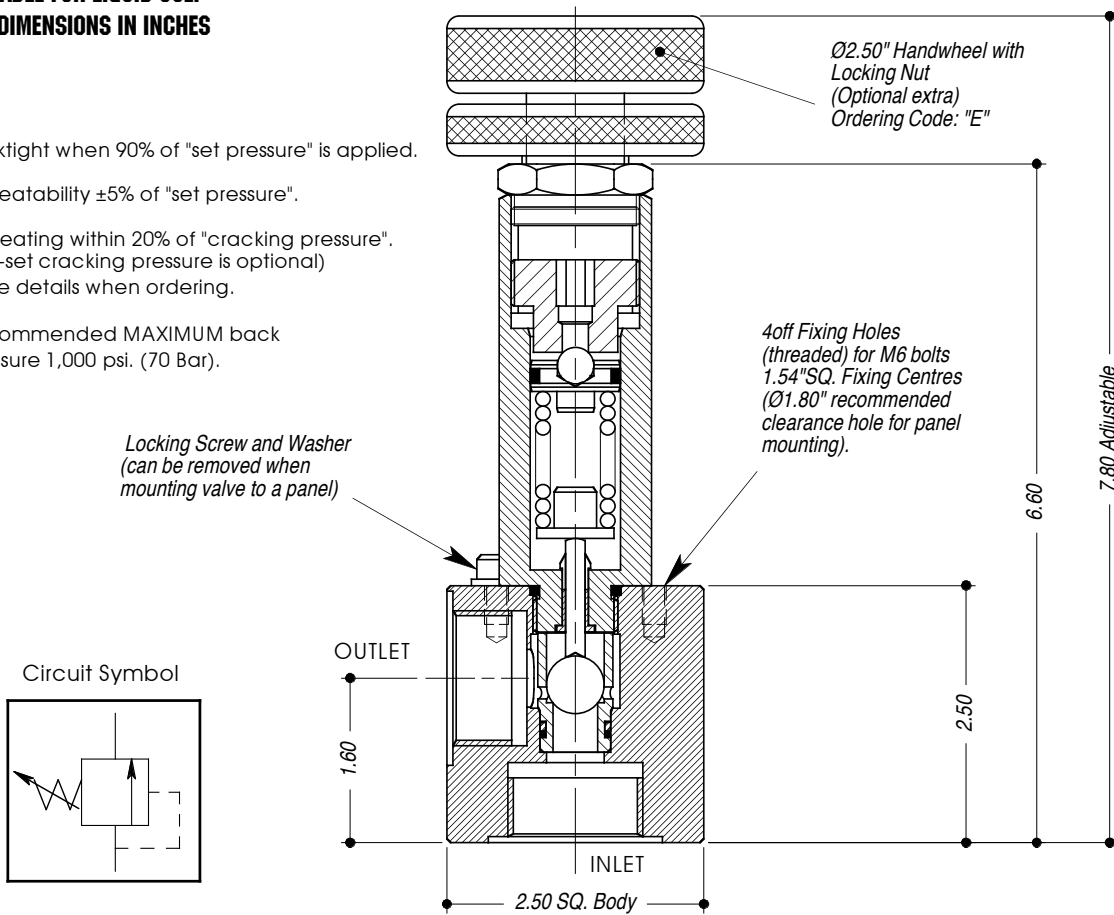
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	PRV75C	PRV75C
Working Media: (standard)	Oil / Water Glycol Duty (no ordering code req'd)	—
Press. Range:	1K - 3K psi      2.5 - 6K Max W.P.	3K
Orifice Size:	Ø4.1mm	
Valve Seat Mat'l: (standard)	Silver Steel KEA108 (liquid use)	
Seal Material:	Nitrile (other materials available by request)	
Dry Weight: (kg)	0.6	
Working Temperature Range:	-30°C to +105°C	
Flow Rate:	Contact factory for details	

# RELIEF VALVE (H.P.) TYPE: RL100



- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- ALL DIMENSIONS IN INCHES

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure".  
(Pre-set cracking pressure is optional)  
State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	RL100	RL100
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)	N
Valve Options:	E = Handwheel (external) Adjustment	—
Working Media: (standard)	Oil / Water Glycol Duty (no ordering code req'd)	—
Press. Range:	0.4K - 1K psi, 0.7K - 3K psi Max W.P.	3K
Orifice Size:	Ø0.437"	
Port Size:	1.0"	
Valve Seat Mat'l: (standard)	Stainless Steel - 440C (liquid use)	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	2.75	
Working Temperature Range:	-10°C to +120°C	
Flow Rate:	Contact factory for details	

**Technical Specification Notes:-**

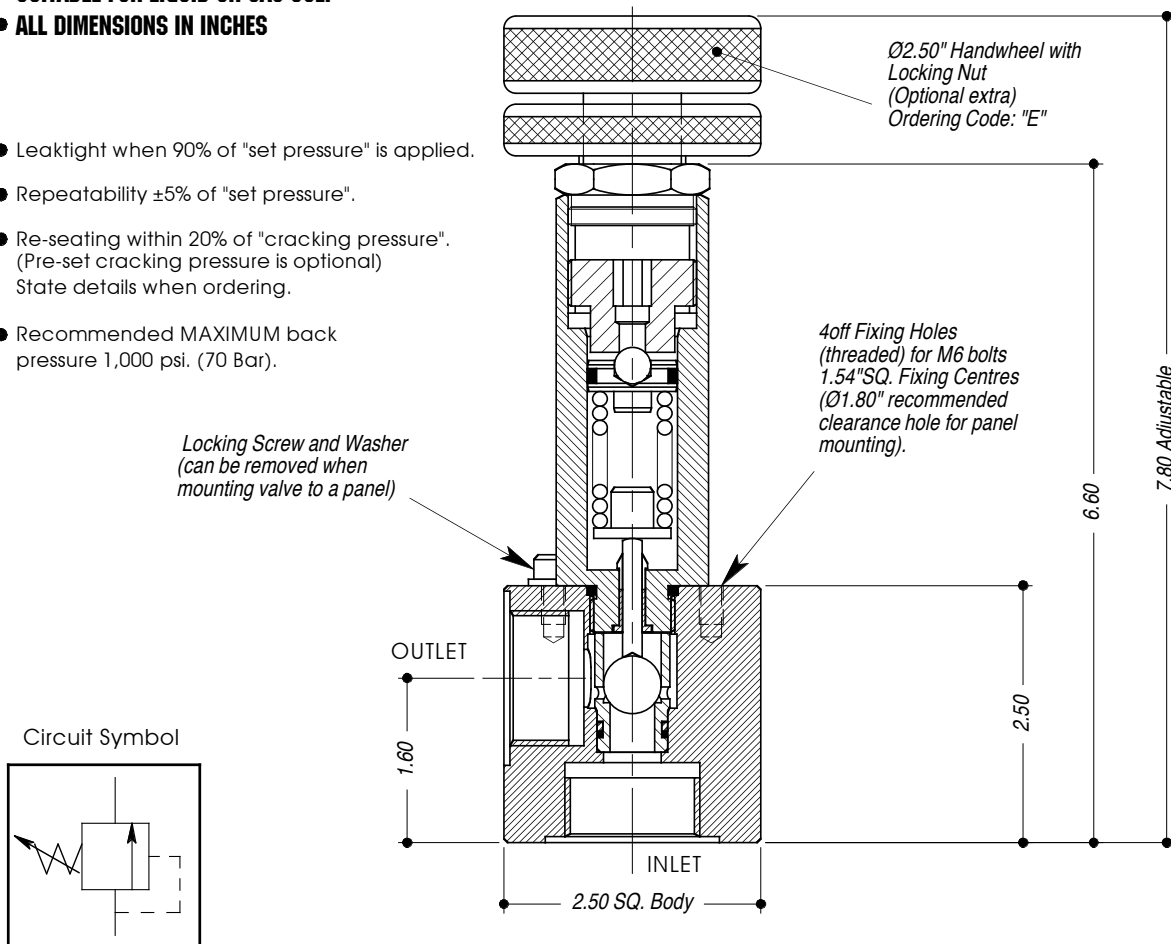
\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.

# RELIEF VALVE (H.P.) TYPE: RL100-G

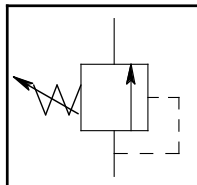


- PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC APPROVED.
- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES

- Leaktight when 90% of "set pressure" is applied.
- Repeatability  $\pm 5\%$  of "set pressure".
- Re-seating within 20% of "cracking pressure".  
(Pre-set cracking pressure is optional)  
State details when ordering.
- Recommended MAXIMUM back pressure 1,000 psi. (70 Bar).



Circuit Symbol



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>RL100</b>	<b>RL100</b>
Porting / Connection Options:	<b>P = BSP (Parallel) N = NPT (Taper)</b>	<b>N</b>
Valve Options:	<b>E = Handwheel (external) Adjustment</b>	—
Soft Seated Valve:	<b>G</b>	<b>G</b>
Press. Range:	<b>0.4K - 1K psi, 0.7K - 3K psi Max W.P.</b>	<b>3K</b>
Orifice Size:	Ø0.437"	
Port Size:	1.0"	
Valve Seat Material:	Torlon	
Seal Material:	Viton (other materials available by request)	
Dry Weight: (kg)	2.75	
Working Temperature Range:	-10°C to +80°C	
Flow Rate:	Contact factory for details	

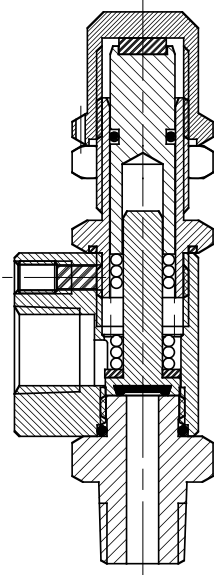
**Technical Specification Notes:-**

\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.

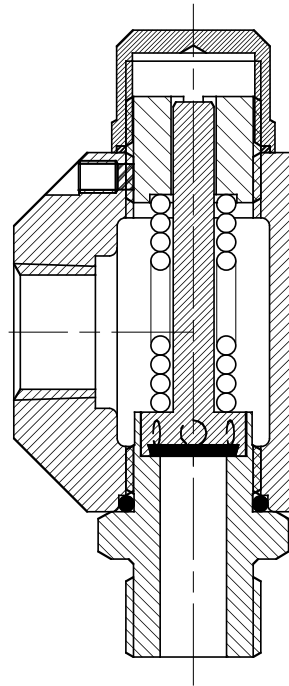
# TYPICAL EXAMPLES OF LOW PRESSURE RELIEF VALVES



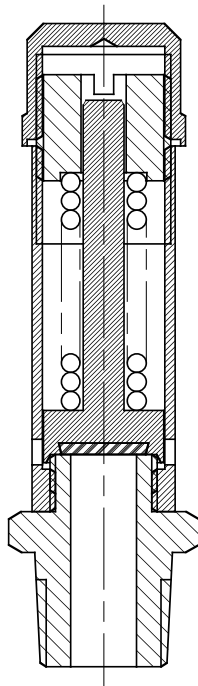
Valves Ltd



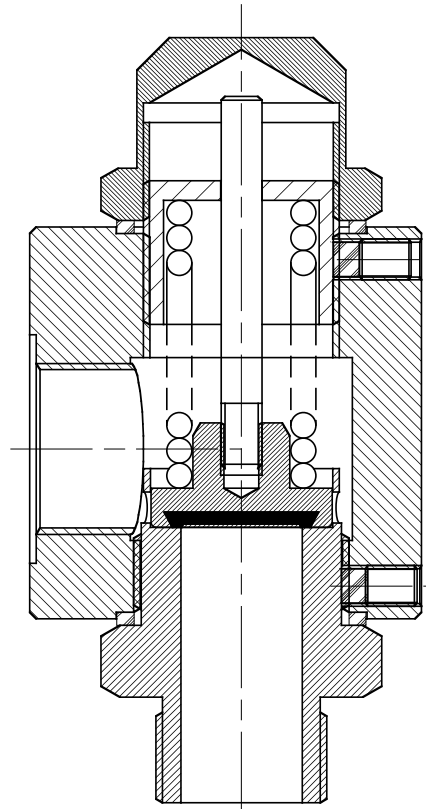
Model Type: TS25-EH (600psi)



Model Type: TS50 (600psi)



Model Type: S50 (600psi)

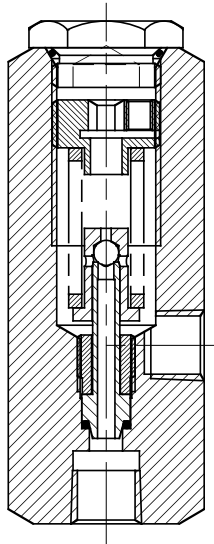


Model Type: TS100 (260psi)

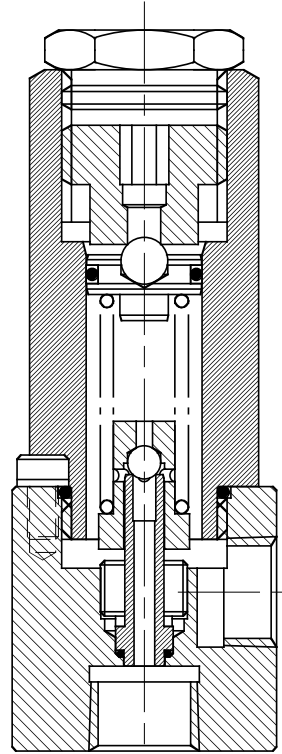
# TYPICAL EXAMPLES OF HIGH PRESSURE RELIEF VALVES



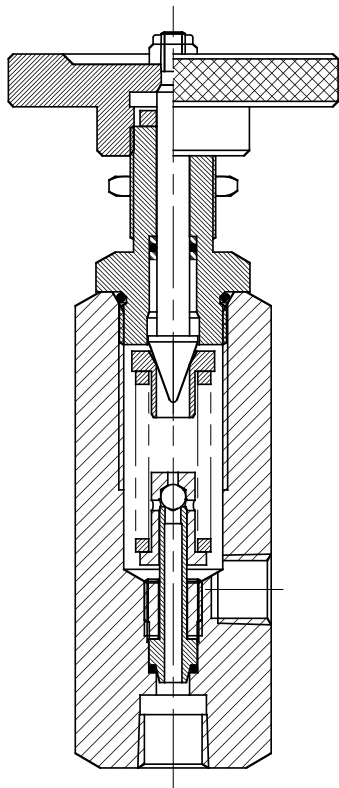
Valves Ltd



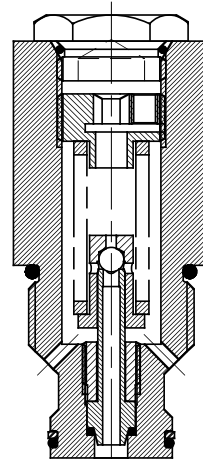
Model Type: RL25 (15K)



Model Type: RL50 (15K)



Model Type: RL25-E (15K)



Model Type: RL25C (15K)



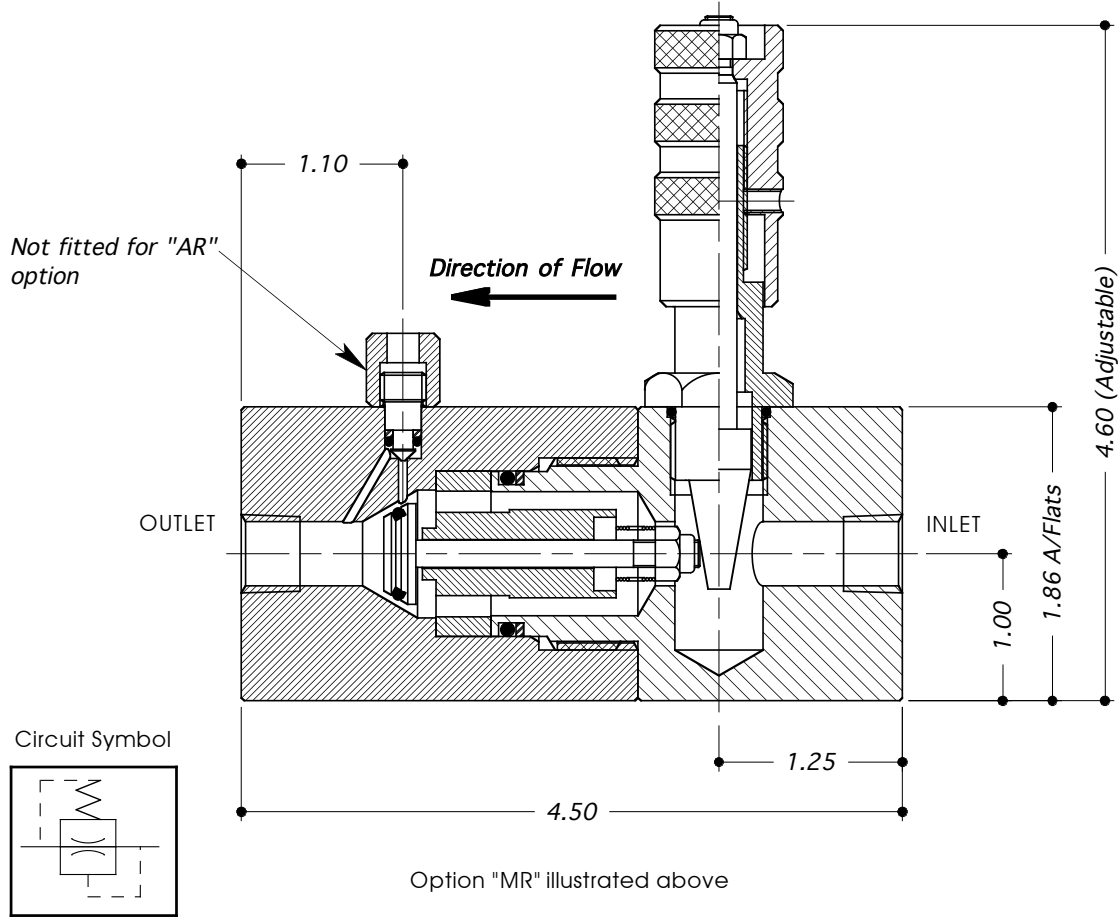
## **SECTION 8: EXCESS FLOW VALVES**

1/4" / 3/8" 316 St.St. Excess Flow Valve, MWP: 6,000 psi Liquid / 4,000 psi Gas Types: ER25, ER37 .....	<b>8:1</b>
1/4" to 1-1/2" 316 St.St. Excess Flow Valve, MWP: 6,000 psi Liquid / 4,000 psi Gas Types: R25, R37, R50, R75, R100, R150 ..	<b>8:2</b>

# EXCESS FLOW VALVE TYPES: ER25, ER37



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES



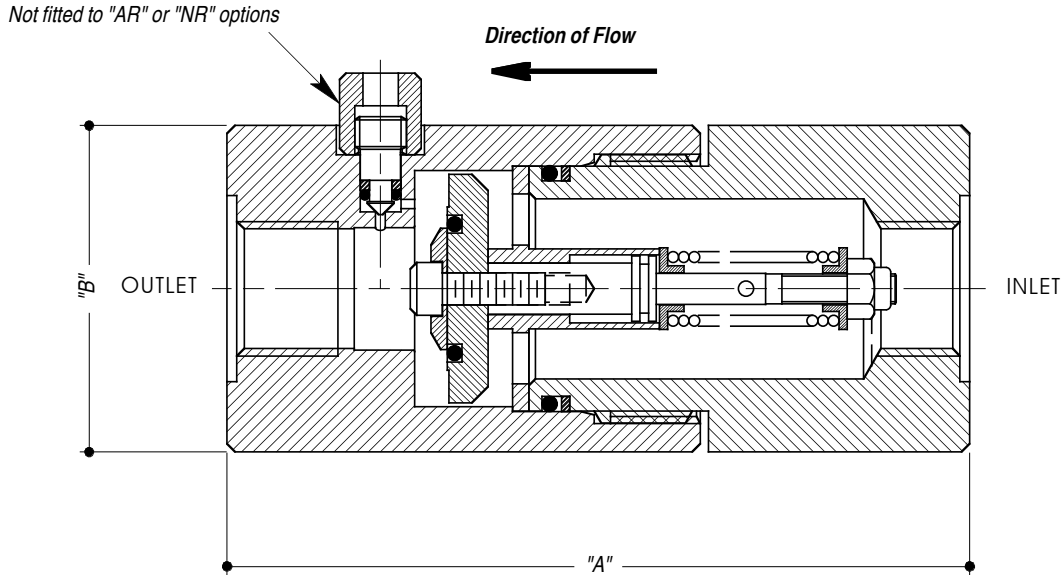
TECHNICAL SPECIFICATION			ORDERING EXAMPLE	
Valve Type:	ER25	ER37	ER25	
Porting / Connection Options:	P = BSP (Parallel)	N = NPT (Taper)	N	
Valve Type Options:	MR = Manual Re-set	AR = Auto Re-set	NR = Non Re-set	MR
Max. Working Pressure - Liquid	6,000 psi		6K	
Max. Working Pressure - Gas	4,000 psi			
Port Size:	1/4"	3/8"		
Valve Seat Mat'l: Liquid/Gas	Stainless Steel - 316/1.4404			
Seal Material:	Viton (other materials available by request)			
Dry Weight: (kg)	1.75			
Working Temperature Range:	-10°C to +110°C			
Closing DP: (Typically)	0.1 to 1 Bar			
Leak Rate:	Zero			
Flow Rate: Liquid	up to 18 litres/min			
Flow Rate: Gas	500 Nm <sup>3</sup> /hour @ 4,000 psi			

# EXCESS FLOW VALVE

TYPES: **R25, R37, R50, R75, R100, R150**



- **STAINLESS STEEL (316 / 1.4404)**
- **SUITABLE FOR LIQUID OR GAS USE.**
- **ALL DIMENSIONS IN INCHES.**



Option "MR" illustrated above

TECHNICAL SPECIFICATION							ORDERING EXAMPLE
Valve Type:	R25	R37	R50	R75	R100	R150	R25
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)						P
Valve Type Options:	MR = Manual Re-set AR = Auto Re-set NR = Non Re-set						MR
Flow Rate: Water (l/min)	2 - 10	2 - 10	5 - 40	5 - 40	10 - 79	2 - 190	LF *
Flow Rate: Air @ 276 Barg (Nm <sup>3</sup> /hr)	60 - 280	60 - 280	145 - 1140	145 - 1140	280 - 2260	280 - 5420	
Flow Rate: Water (l/min)	—	8 - 22	—	37 - 90	25 - 123	32 - 316	HF *
Flow Rate: Air @ 276 Barg (Nm <sup>3</sup> /hr)	—	229 - 630	—	1058 - 2250	710 - 3450	914 - 9000	
Max. Working Pressure - Liquid	6,000 psi						6K
Max. Working Pressure - Gas	4,000 psi						
Port Size:	1/4"	3/8"	1/2"	3/4"	1.00"	1.50"	
Valve Seat Mat'l: Liquid/Gas	Stainless Steel - 316/1.4404						
Seal Material:	Viton (other materials available by request)						
Dry Weight: (kg)	1.3	1.3	1.5	1.5	1.8	1.8	
Working Temperature Range:	-10°C to +120°C						
Closing DP: (Typically)	0.5 to 1 Bar						
Leak Rate:	Zero						
Dimension (ins) - Length "A"	3.50"	3.50"	4.60"	4.60"	7.82"	7.82"	
Dimension (ins) - Length "B"	1.50"A/F	1.50"A/F	Ø2.0"	Ø2.0"	Ø3.0"	Ø3.0"	

**Technical Specification Notes:-**

\* Other materials available (Monel, Inconel, Hastelloy) subject to PED approval.





## SECTION 9: FILTERS

1/4" to 2" 316 St.St. "In-Line" Filter, MWP: Up to 12,000 psi Liquid / 10,000 psi Gas Types: F25, F37, F50, F75, F100, F125, F150, F200	9:1
1/4" / 3/8" 316 St.St. Easy Replacement "In-Line" Filter, MWP: 8,000 psi Liquid / 4,000 psi Gas Types: EF25, EF37	9:2
1/2" 316 St.St. Easy Replacement "In-Line" Filter, MWP: 8,000 psi Liquid / 4,000 psi Gas Type: EF50	9:3
1/2" 316 St.St. Easy Replacement "In-Line" Filter with DP Indicator, MWP: 8,000 psi Liquid, 4,000 psi Gas Type: EF50-DP	9:4
3/4" / 1" 316 St.St. Easy Replacement "In-Line" Filter, MWP: 8,000 psi Liquid / 4,000 psi Gas Types: EF100, EF100/75	9:5
1/2" 316 St.St. Simplex Filter, MWP: 6,000 psi Liquid Type: SF50	9:6
1/2" 316 St.St. Duplex Filter, MWP: 6,000 psi Liquid Type: DF50	9:7/9:8

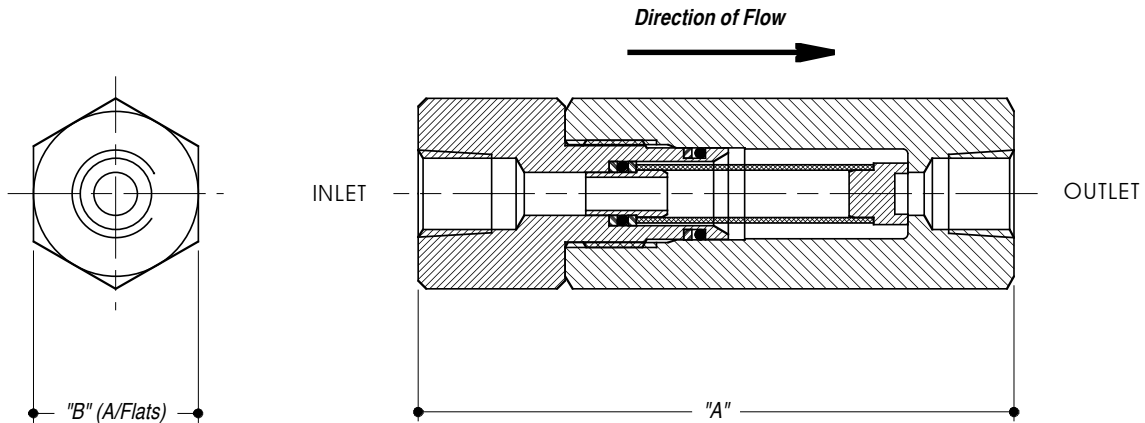
# "IN-LINE" FILTER

TYPES: **F25, F37, F50, F75, F100, F125, F150, F200**



Valves Ltd

- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES.

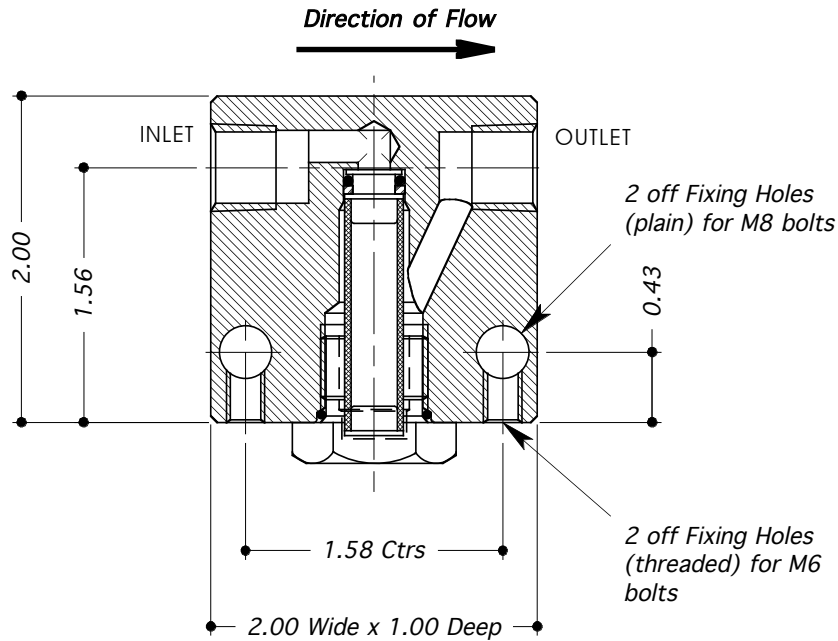


TECHNICAL SPECIFICATION									ORDERING EXAMPLE
Filter Type:	F25	F37	F50	F75	F100	F125	F150	F200	F25
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)								N
Micron Rating:	2.5, 5, 10, 20, 50, 100, 200 M (Microns)								2.5 M
Max. Working Pressure - Liquid	12Kpsi				9Kpsi	6Kpsi			12K
Max. Working Pressure - Gas	10Kpsi	6Kpsi	10Kpsi	6Kpsi	4Kpsi	3Kpsi			
Port Size:	1/4"	3/8"	1/2"	3/4"	1.0"	1.1/4"	1.1/2"	2.0"	
Seal Material:	Viton (other materials available by request)								
Dry Weight (kg)	0.35	0.30	1.0	0.8	1.4	4.5	4.3	4.1	
Working Temperature Range:	-10°C to +120°C								
Filter Area (sq.ins)	1.3	1.3	4.5	4.5	6.5	15.5	15.5	15.5	
Filter Element Material:	Stainless Steel (316/1.4404) Rigid Mesh								
Max Diff. Press (DP) Bar (element)	20	20	10	10	10	10	10	10	
Dimension (ins) - Length "A"	3.50"	3.50"	4.50"	4.50"	5.50"	7.80"	7.80"	7.80"	
Dimension (ins) - "B" (A/Flats)	1.01"	1.01"	1.48"	1.48"	1.86"	Ø3.0"	Ø3.0"	Ø3.0"	

# "IN-LINE" FILTER TYPES: EF25, EF37



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- EASY REPLACEMENT FILTERS.
- ALL DIMENSIONS IN INCHES.

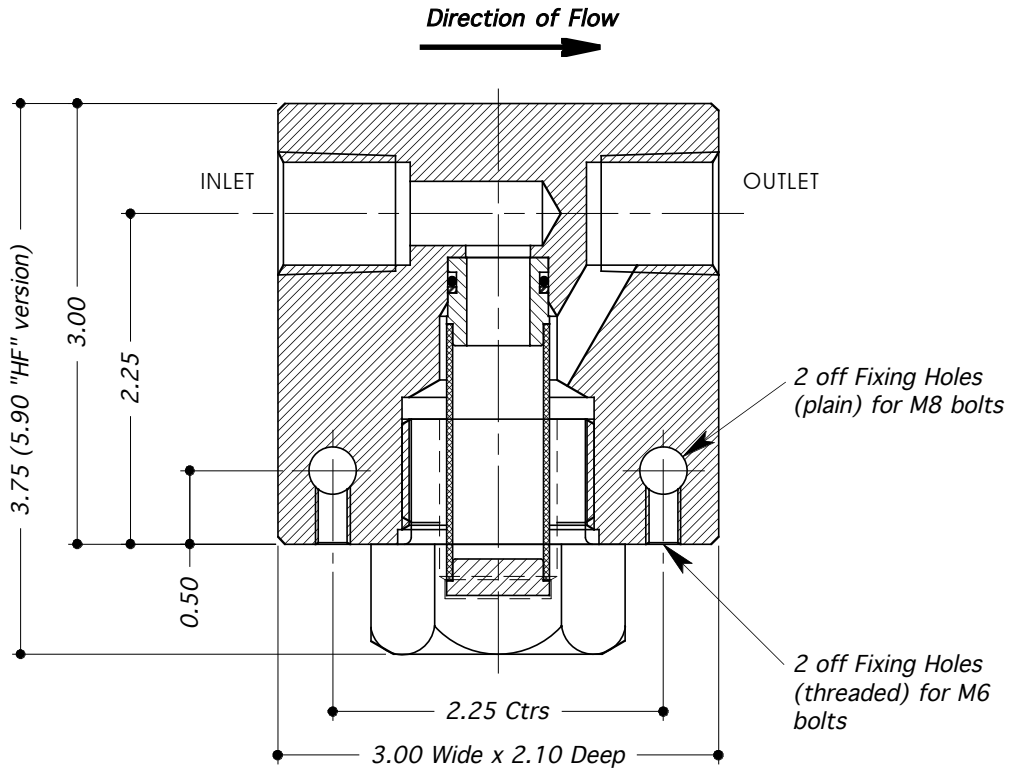


TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Filter Type:	EF25	EF37	EF25
Porting / Connection Options:	P = BSP (Parallel)	N = NPT (Taper)	N
Micron Rating:	2.5, 5, 10, 20, 50, 100, 200 M (Microns)		2.5 M
Max. Working Pressure - Liquid	8,000 psi		8K
Max. Working Pressure - Gas	4,000 psi		
Port Size:	1/4"	3/8"	
Seal Material:	Viton (other materials available by request)		
Dry Weight (kg)	0.5		
Working Temperature Range:	-10°C to +120°C		
Filter Area (sq.ins)	1.3		
Filter Element Material:	Stainless Steel (316/1.4404) Rigid Mesh		
Max Diff. Press (DP) Bar (element)	20		

# "IN-LINE" FILTER TYPE: EF50



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- EASY REPLACEMENT FILTER.
- ALL DIMENSIONS IN INCHES.

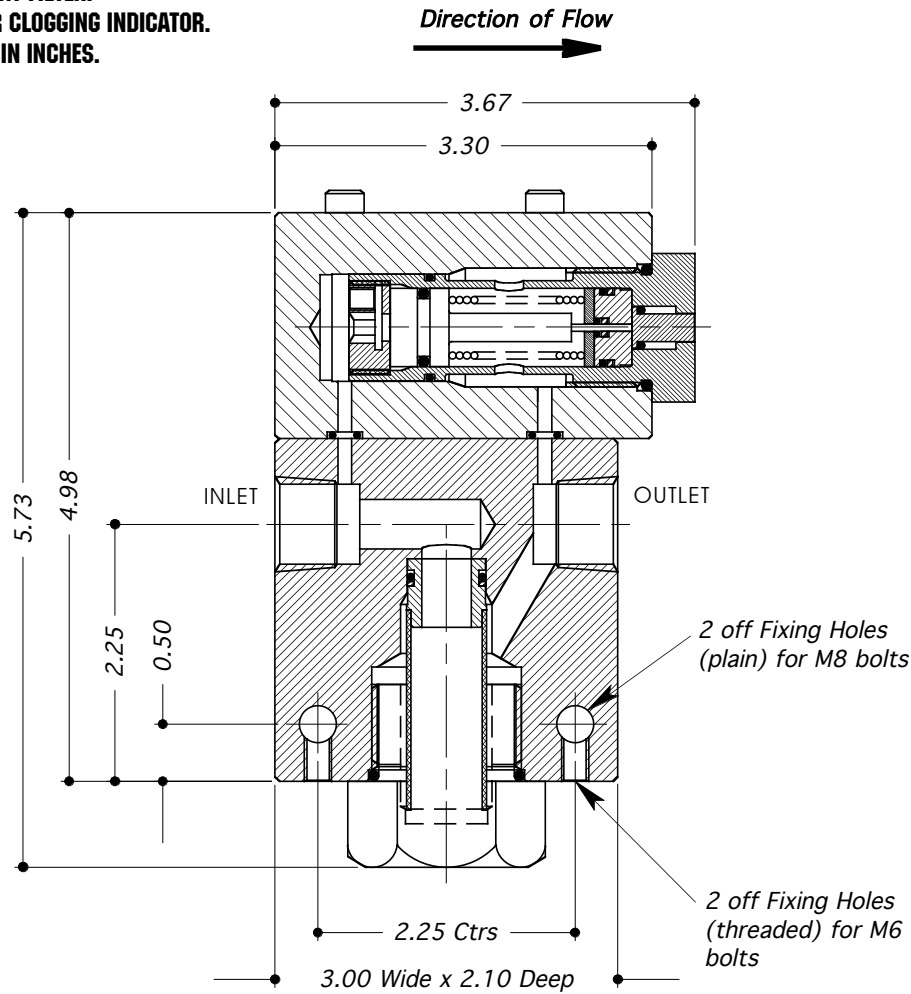


<b>TECHNICAL SPECIFICATION</b>		<b>ORDERING EXAMPLE</b>
Filter Type:	<b>EF50</b>	<b>EF50</b>
Porting / Connection Options:	<b>P = BSP (Parallel)    N = NPT (Taper)</b>	<b>N</b>
Micron Rating:	<b>2.5, 5, 10, 20, 50, 100, 200 M (Microns)</b>	<b>2.5 M</b>
High Flow (extended filter element)	<b>HF</b>	—
Max. Working Pressure - Liquid	<b>8,000 psi</b>	<b>8K</b>
Max. Working Pressure - Gas	<b>4,000 psi</b>	
Port Size:	1/2"	
Seal Material:	Viton (other materials available by request)	
Dry Weight (kg)	2.5	
Working Temperature Range:	-10°C to +120°C	
Filter Area (sq.ins)	4.5	
Filter Element Material:	Stainless Steel (316/1.4404) Rigid Mesh	
Max Diff. Press (DP) Bar (element)	10	

# "IN-LINE" FILTER TYPE: EF50-DP WITH DIFFERENTIAL PRESSURE (DP) INDICATOR



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- EASY REPLACEMENT FILTER.
- "POP-OUT" FILTER CLOGGING INDICATOR.
- ALL DIMENSIONS IN INCHES.

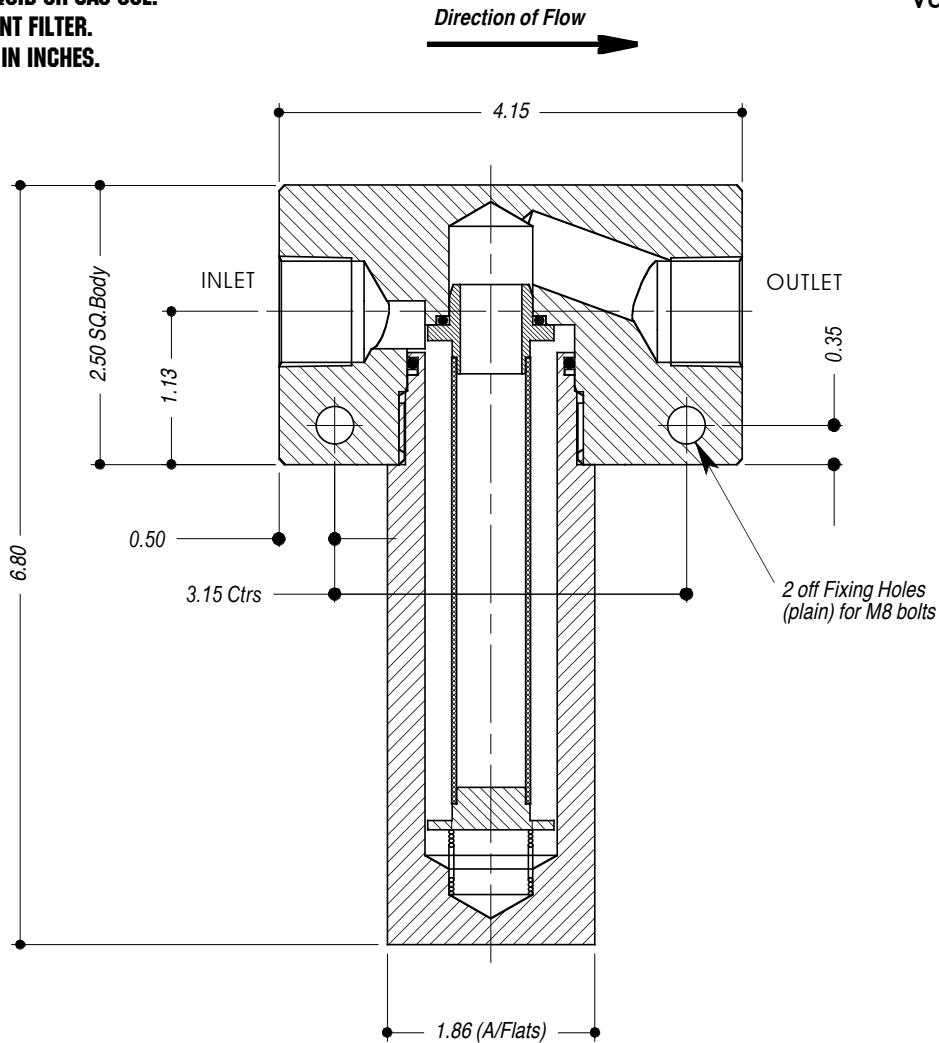


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Filter Type:	EF50	EF50
Porting / Connection Options:	P = BSP (Parallel)    N = NPT (Taper)	N
Micron Rating:	2.5, 5, 10, 20, 50, 100, 200 M (Microns)	2.5 M
Max Diff. Press (DP) Bar (element)	7	DP7
Max. Working Pressure - Liquid	8,000 psi	8K
Max. Working Pressure - Gas	4,000 psi	
Port Size:	1/2"	
Seal Material:	Viton (other materials available by request)	
Dry Weight (kg)	2.5	
Working Temperature Range:	-10°C to +120°C	
Filter Area (sq.ins)	4.5	
Filter Element Material:	Stainless Steel (316/1.4404) Rigid Mesh	

# "IN-LINE" FILTER TYPE: EF100, EF100/75



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- EASY REPLACEMENT FILTER.
- ALL DIMENSIONS IN INCHES.



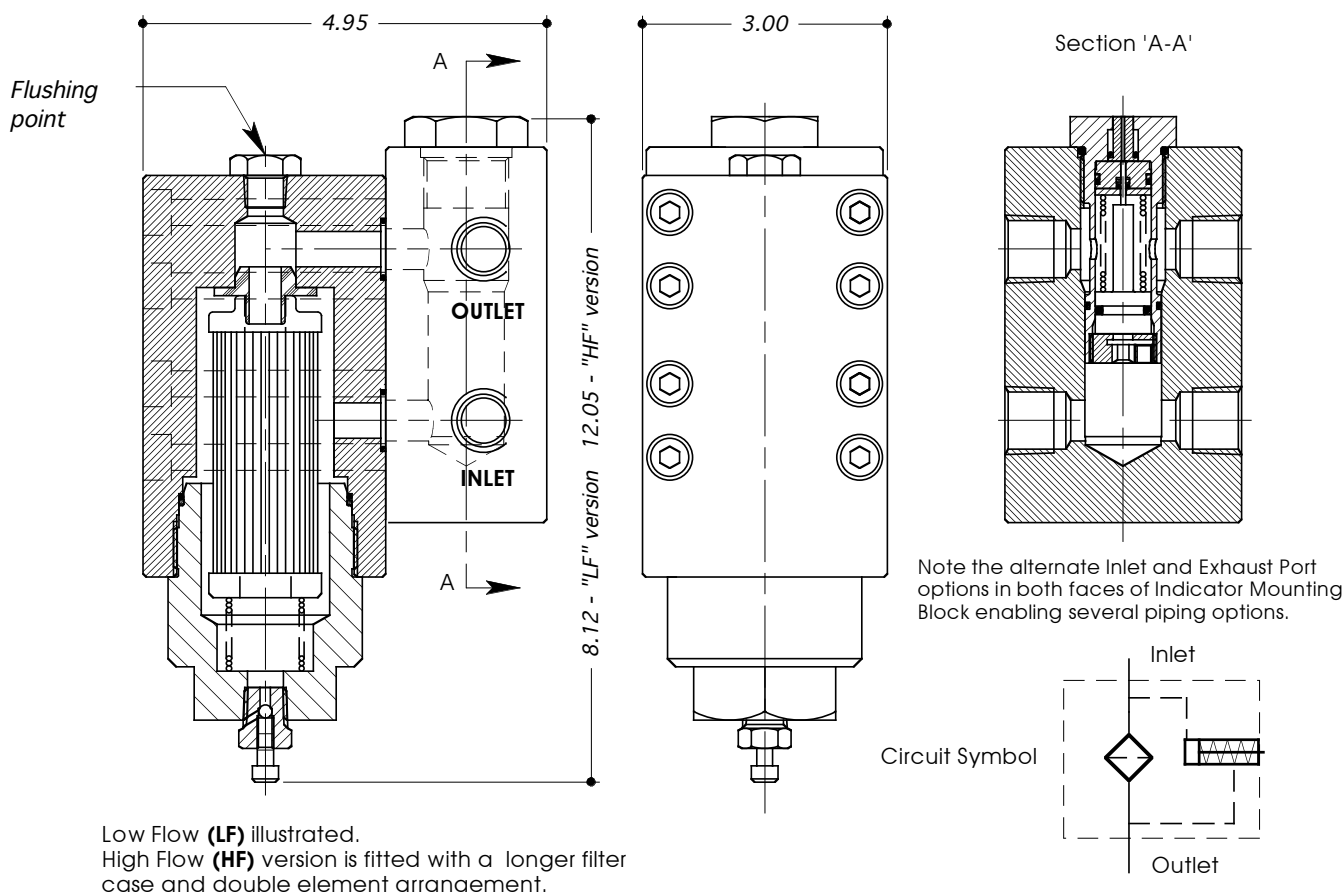
TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Filter Type:	EF100	EF100/75	EF100
Porting / Connection Options:	P = BSP (Parallel)	N = NPT (Taper)	P
Micron Rating:	2.5, 5, 10, 20, 50, 100, 200 M (Microns)		2.5 M
Max. Working Pressure - Liquid	8,000 psi		8K
Max. Working Pressure - Gas	4,000 psi		
Port Size:	1.0"	3/4"	
Seal Material:	Viton (other materials available by request)		
Dry Weight (kg)	5.5		
Working Temperature Range:	-10°C to +120°C		
Filter Area (sq.ins)	7.4		
Filter Element Material:	Stainless Steel (316/1.4404) Rigid Mesh		
Max Diff. Press (DP) Bar (element)	10		

# SIMPLEX FILTER TYPE: SF50



Valves Ltd

- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- "POP-OUT" FILTER CLOGGING INDICATOR.
- ALL DIMENSIONS IN INCHES.



Low Flow (LF) illustrated.  
High Flow (HF) version is fitted with a longer filter case and double element arrangement.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Filter Type:	SF50	SF50
Porting / Connection Options:	P = BSP (Parallel) N = NPT (Taper)	N
Micron Rating:	3, 5, 10, 20, 50 M (Micron)	20M
Indicator Type:	"DP" = Visual 'pop-out' "BP" = Visual 'pop-out' with by-pass	DP
Differential Press (DP) Bar:	3, 5 or 7	7
Flow Rate:	30 L/Min (Standard) ("HF" High Flow = 50 L/Min)	—
Max. Working Pressure: (Liquid)	6,000 psi	6K
Port Size:	1/2"	
Cv Value: ( See Note )	3.02	
Dry Weight: (kg)	8.6	
Seal Material:	Viton (other materials available by request)	
Working Temperature Range:	-10°C to +110°C	

**Cv Value Note:** The figures quoted are for the basic assembly without elements fitted. For total loss including elements forward details of Specific Gravity, Viscosity and Flow Rate to our Technical Department.

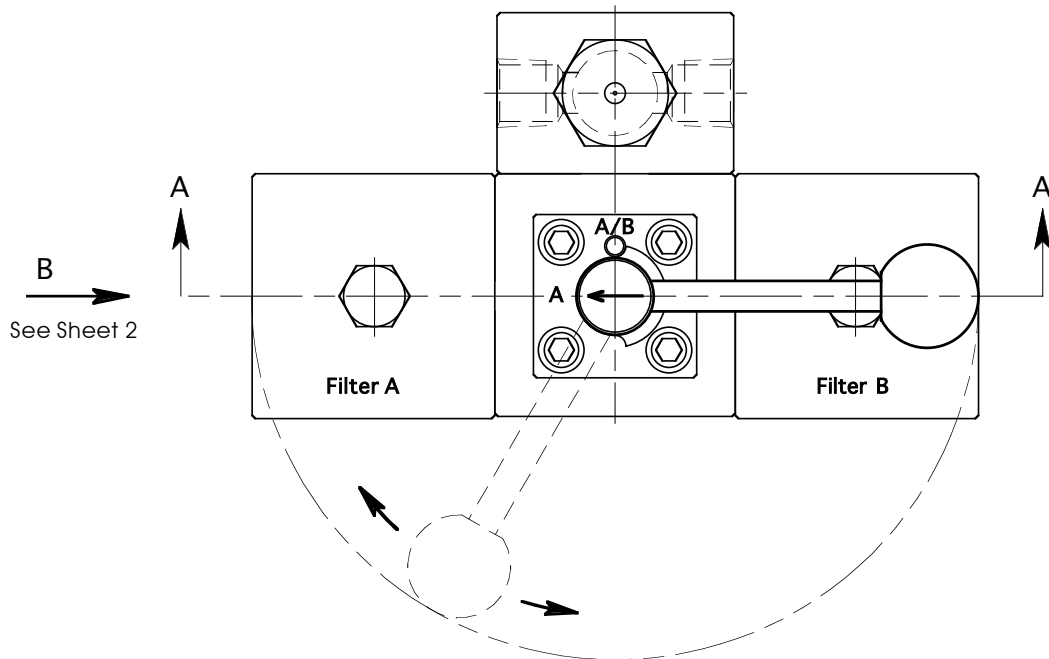
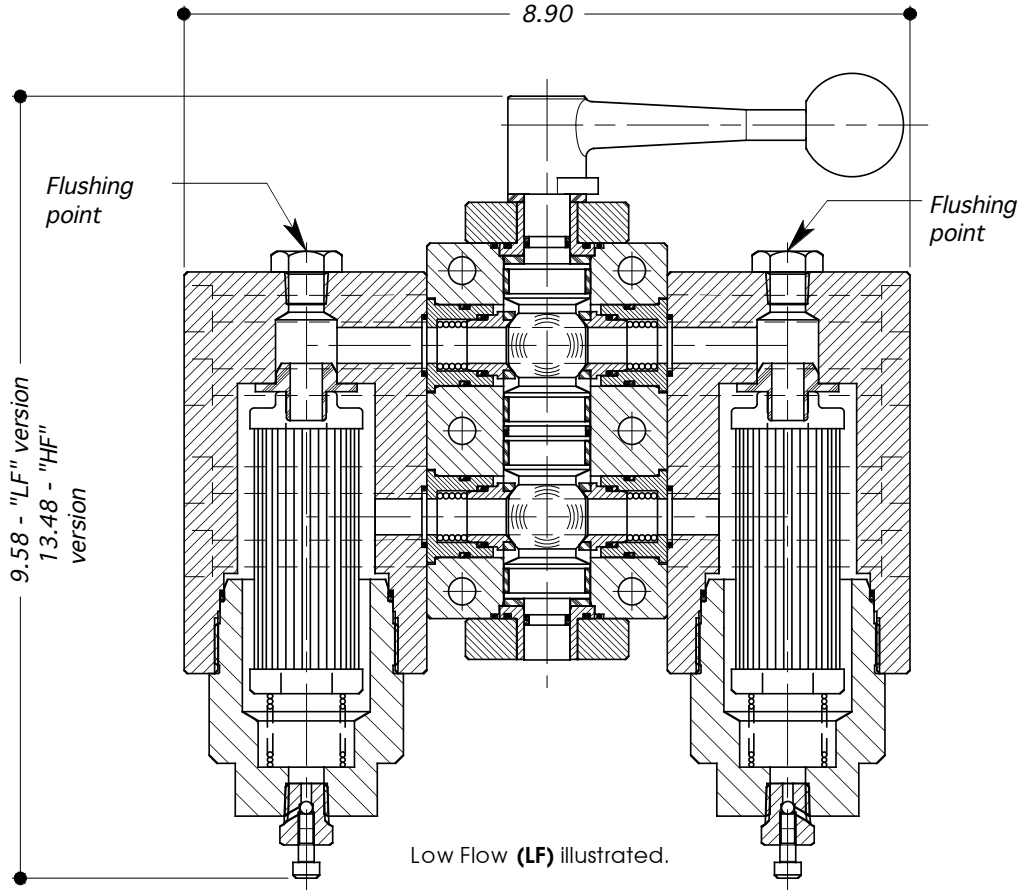
# DUPLEX FILTER TYPE: DF50

Sheet 1 of 2



Valves Ltd

- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- "POP-OUT" FILTER CLOGGING INDICATOR.
- ALL DIMENSIONS IN INCHES.

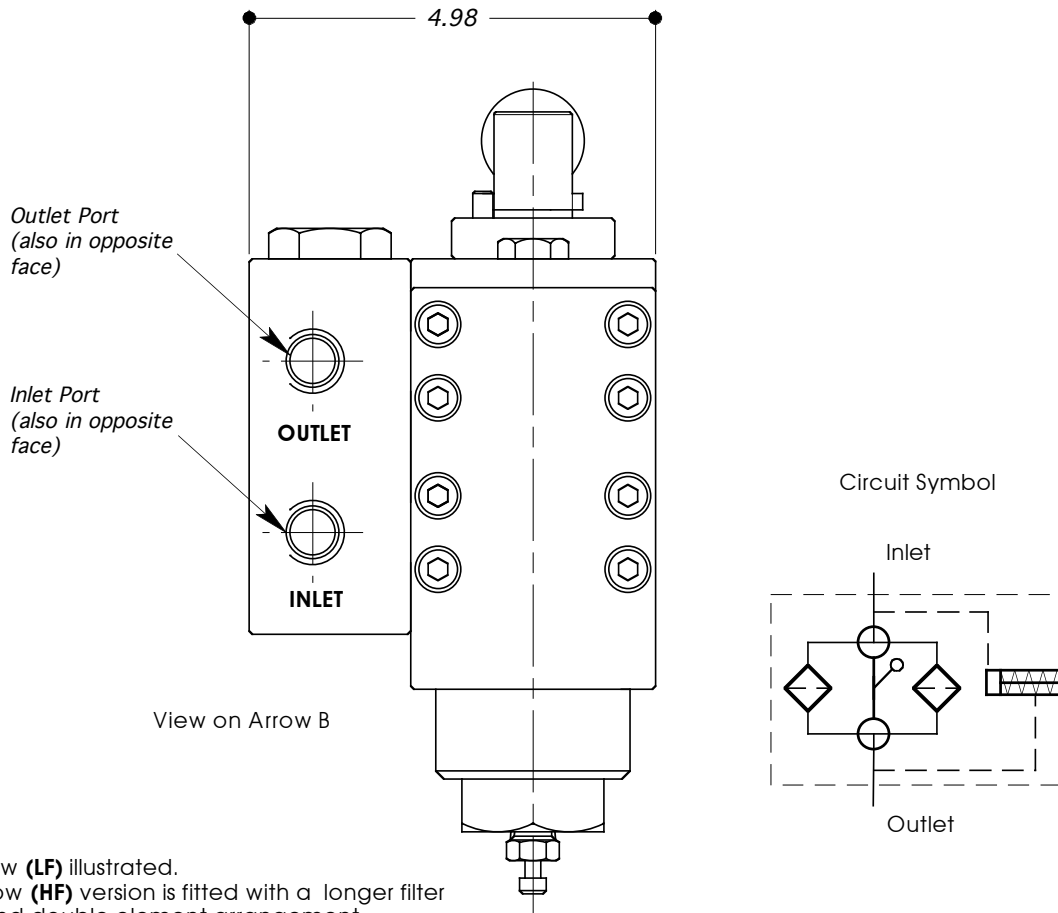




# DUPLEX FILTER TYPE: DF50 Sheet 2 of 2



- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID USE.
- "POP-OUT" FILTER CLOGGING INDICATOR.
- ALL DIMENSIONS IN INCHES.



Low Flow (LF) illustrated.  
High Flow (HF) version is fitted with a longer filter case and double element arrangement.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Filter Type:	<b>DF50</b>	<b>DF50</b>
Porting / Connection Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>N</b>
Micron Rating:	<b>3, 5, 10, 20, 50M</b> (Microns)	<b>20M</b>
Indicator Type:	<b>"DP"</b> = Visual 'pop-out' <b>"BP"</b> = Visual 'pop-out' with by-pass	<b>DP</b>
Differential Press (DP) Bar:	<b>3, 5 or 7</b>	<b>7</b>
Flow Rate:	30 L/Min ( <b>Standard</b> )    ( <b>"HF"</b> High Flow = 50 L/Min)	—
Max. Working Pressure: (Liquid)	<b>6,000 psi</b>	<b>6K</b>
Port Size:	1/2"	
Cv Value: ( See Note )	2.37 / 2.97	
Dry Weight (kg)	20	
Seal Material:	Viton (other materials available by request)	
Working Temperature Range:	-10°C to +110°C	

**Cv Value Note:** The figures quoted are for the basic assembly without elements fitted. The first figure for single filter selected and second figure for both filters selected. For total loss including elements forward details of Specific Gravity, Viscosity and Flow Rate to our Technical Department.



## **SECTION 10: PRESSURE SENSING VALVES**

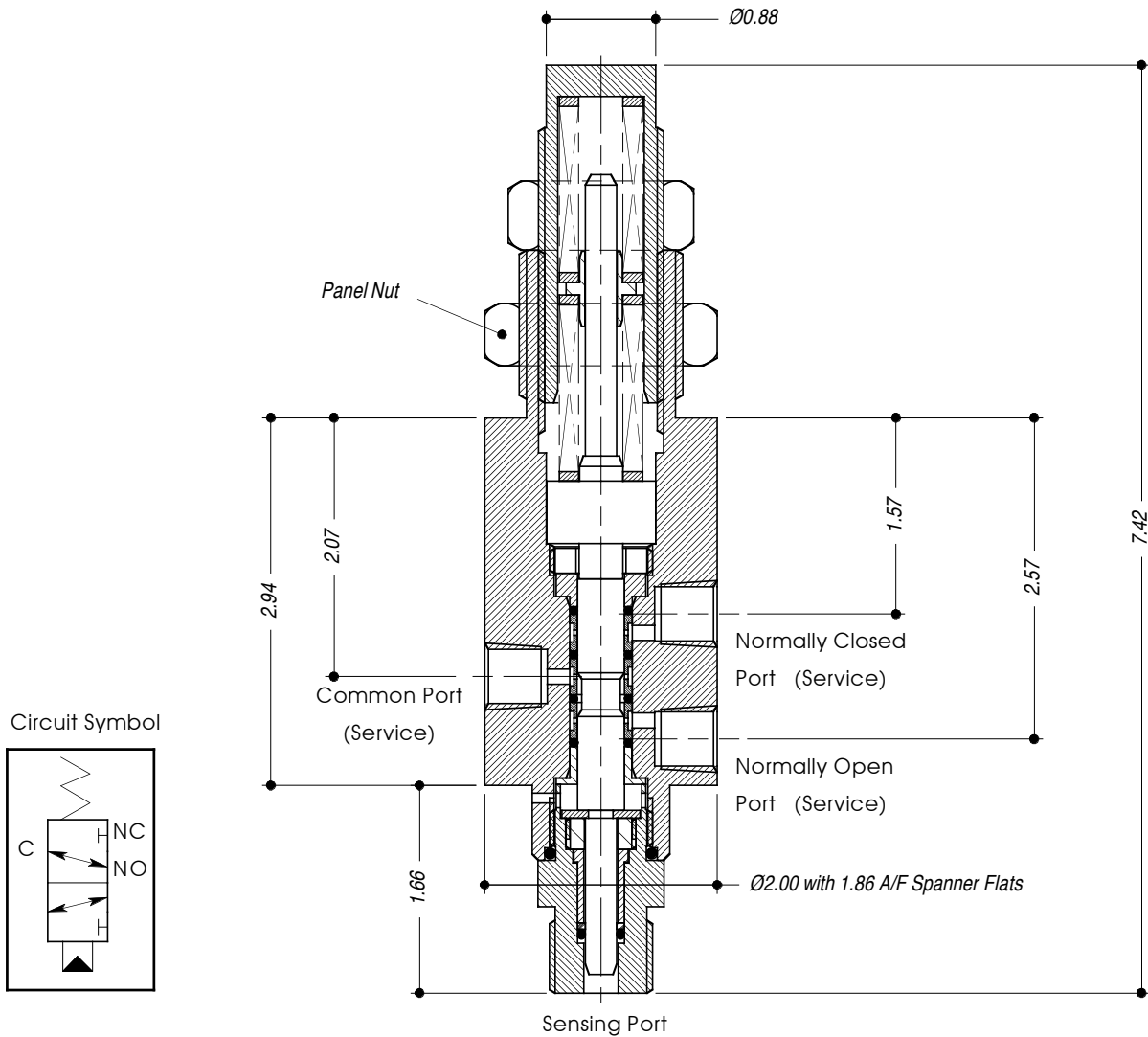
1/4" 316 St.St. Sensing Valve, MWP: 6,000 psi sensed, 225 psi control (Types: 3SV25/37, 3SV25/50) ..... **10:1**

# SENSING VALVE TYPES: 3SV25/37, 3SV25/50



Valves Ltd

- STAINLESS STEEL (316 / 1.4404)
- SUITABLE FOR LIQUID OR GAS USE.
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Valve Type:	<b>3SV25/37</b> <b>3SV25/50</b>	<b>3SV25/37</b>
Porting / Connections Options:	<b>P</b> = BSP (Parallel) <b>N</b> = NPT (Taper)	<b>N</b>
Sensing Pressure Range:	<b>0.1K - 1K psi, 0.9K - 3K psi, 2.8K - 6K psi</b>	<b>3K</b>
Max. Control Press: Liquid/Gas	<b>225 psi</b>	
Sensing Port Connections:	3/8"                                      1/2"	
Service Ports: (3 off)	1/4" NPT only	
Seal Material:	Viton (other materials available by request)	
CV Value:	0.15 (Max)	
Dry Weight: (kg)	2.5	
Working Temperature Range:	-10°C to +120°C	

**IMPORTANT:** This valve is **NOT** to be used as a "safety device" (pressure limiting) as defined in the Pressure Equipment Directive 97/23/EC. When the control function of this unit is being used to limit pressure within a system, safety devices such as "safety relief" or "relief" valves must be fitted. **(See Section 7 for details).**



## **SECTION 11: PUMPS**

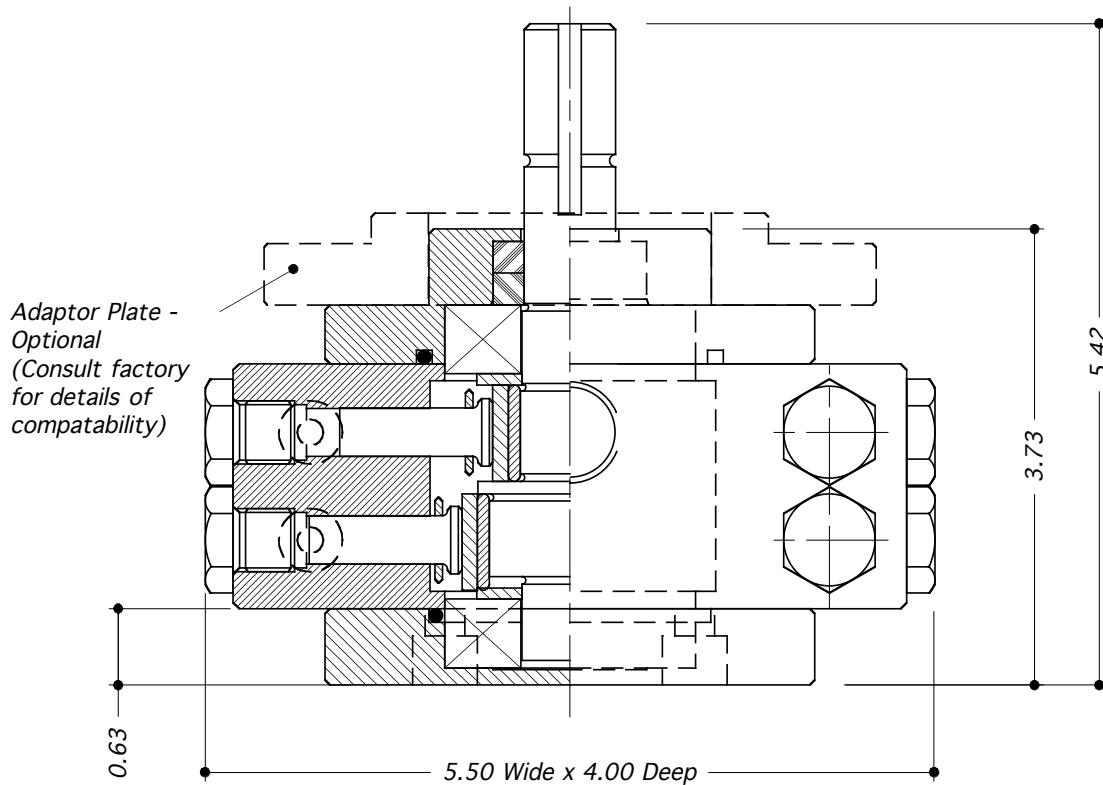
1/4" Mild Steel H.P. Radial Piston Pump, MWP: 12,000 psi Types: 260PR, 520PR ..... 11:1

# H.P. RADIAL PISTON PUMP TYPES: 260PR & 520PR



Valves Ltd

- MILD STEEL (EN1A / 220M07)
- SUITABLE FOR MINERAL OIL USE.
- ALL DIMENSIONS IN INCHES.



**Note:** This unit can be used with certain water glycol fluids. Consult factory for details.

TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Material Option (non-std)	Not Applicable		—
Pump Type:	260PR	520PR	520PR
Max. Working Pressure:	12,000 psi		12K
Connections:	Suction: 1/2" BSP	Discharge: 1/4" BSP	
Delivery	Off Load	0.35 Galls/min	0.68 Galls/min
Rate:	On Load	0.20 Galls/min	0.48 Galls/min
Power	Off Load	0.90 kW	1.00 kW
Consumption:	On Load	2.90 kW	5.20 kW
Pump - r.p.m.	1440		
Working Fluid Viscosity Range:	10 - 250 cSt.		
Suction: ( Lift )	12" Water Gauge		
Dry Weight: (kg)	9.0		
Working Temperature Range:	-10°C to +60°C (Oil)	-10°C to +40°C (other fluids)	
External Construction:	Mild Steel (En1A / 220M07)		

**Note:** Delivery and Power consumption vary linearly with output pressure. Hence, Flow and Power consumption may be determined by linear interpolation between stated "off-load" and "on-load" (12,000 psi) figures.

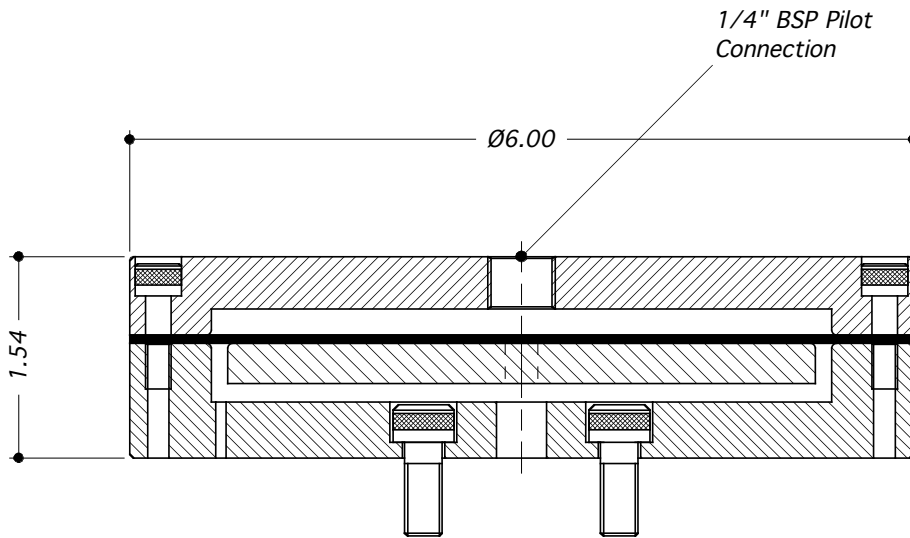
## **SECTION 12: ACTUATORS & SOLENOID THRUSTERS**

316 St.St. Diaphragm Type Air Actuator, MWP: 150 psi Type: A1 .....	<b>12:1</b>
316 St.St. Diaphragm Type Air Actuator, MWP: 150 psi Type: A2 .....	<b>12:2</b>
316 St.St. Diaphragm Type Air Actuator, MWP: 150 psi Type: A3 .....	<b>12:3</b>
316 St.St. Diaphragm Type Air Actuator, MWP: 150 psi Type: A4 .....	<b>12:4</b>
316 St.St. Piston Type Hydraulic Actuator, MWP: 10,000 psi Type: H0 .....	<b>12:5</b>
316 St.St. Piston Type Hydraulic Actuator, MWP: 10,000 psi Type: H1 .....	<b>12:6</b>
316 St.St. Piston Type Hydraulic or Air Actuator, MWP: 500 psi Type: H3 .....	<b>12:7</b>
316 St.St. Manual Lever Actuator Type: L & DL .....	<b>12:8</b>
316 St.St. Cam Roller Actuator Type: C0 .....	<b>12:9</b>
316 St.St. Cam Pin Actuator Type: C1 .....	<b>12:10</b>
Hazardous Area (Atex Approved) Solenoid Thruster Type: STEX1 .....	<b>12:11</b>
316 St.St. Solenoid Thruster for Sub-sea Use Type: SW .....	<b>12:12</b>
316 St.St. Solenoid Thruster Type: HC .....	<b>12:13</b>
316 St.St. Solenoid Thruster Type: KC .....	<b>12:14</b>

# DIAPHRAGM AIR ACTUATOR TYPE: A1



- LOW PRESSURE OPERATION
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



**Technical Specification Note:-**

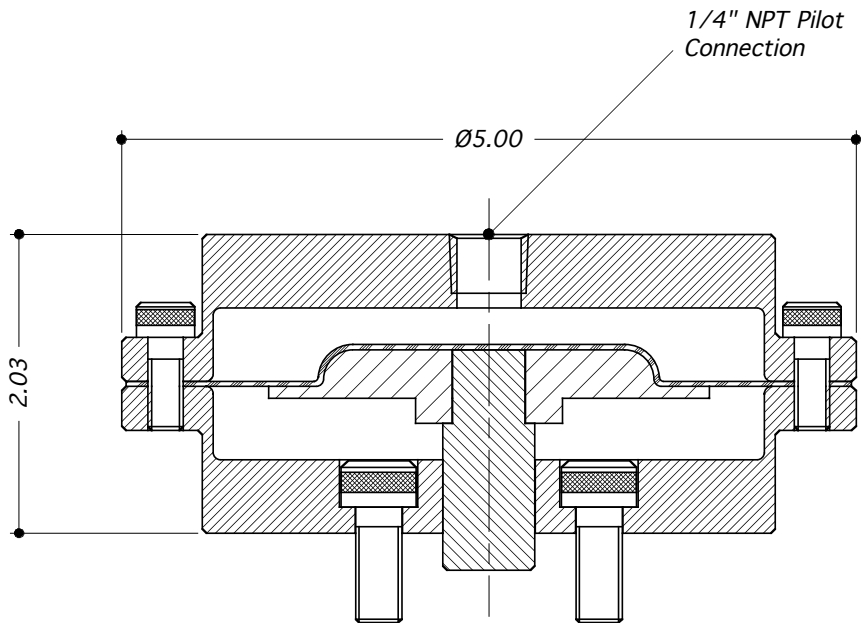
\* The Maximum Pilot Pressure is for the above Actuator design only. Different applications may limit the Maximum Pilot Pressure due to the design of the Valve Body being used. Check with the individual Valve Body technical specification sheets for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	A1	A1
Pilot Port Size:	1/4"	
Thread Form: (Pilot supply)	BSP (Parallel)	
Maximum Pilot Pressure: *	150 psi	
Diaphragm Material:	Neoprene	
Dry Weight (kg)	1.3	
Working Temperature Range:	-10°C to +100°C	

# DIAPHRAGM AIR ACTUATOR TYPE: A2



- LOW PRESSURE OPERATION.
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



**Technical Specification Note:-**

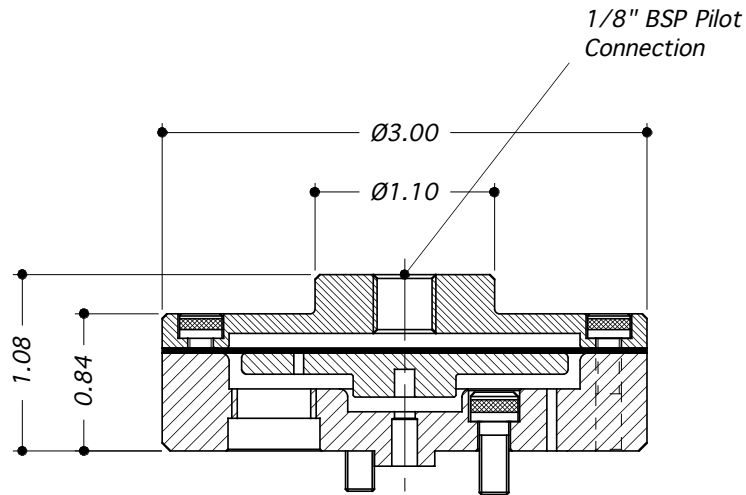
\* The Maximum Pilot Pressure is for the above Actuator design only. Different applications may limit the Maximum Pilot Pressure due to the design of the Valve Body being used. Check with the individual Valve Body technical specification sheets for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	A2	A2
Pilot Port Size:	1/4"	
Thread Form: (Pilot supply)	NPT (Taper)	
Maximum Pilot Pressure: *	150 psi	
Diaphragm Material:	Nitrile (with Nylon fabric reinforcement)	
Dry Weight (kg)	0.5	
Working Temperature Range:	-10°C to +100°C	



# DIAPHRAGM AIR ACTUATOR TYPE: A3

- LOW PRESSURE OPERATION
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



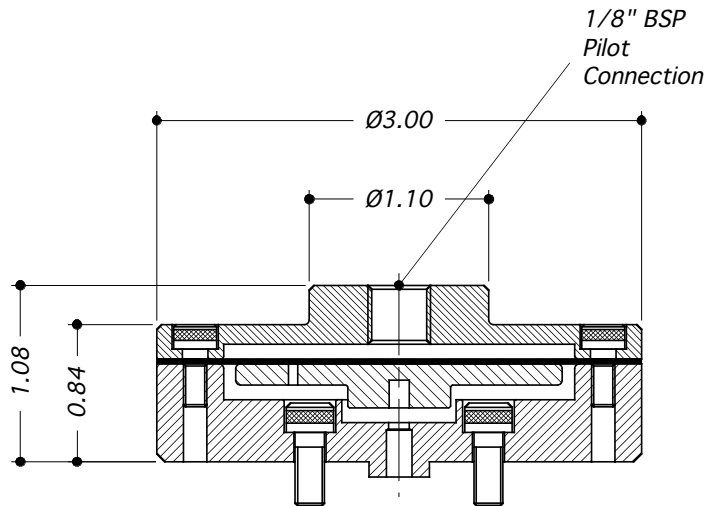
**Technical Specification Note:-**

\* The Maximum Pilot Pressure is for the above Actuator design only. Different applications may limit the Maximum Pilot Pressure due to the design of the Valve Body being used. Check with the individual Valve Body technical specification sheets for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	A3	A3
Pilot Port Size:	1/8"	
Thread Form: (Pilot supply)	BSP (Parallel)	
Maximum Pilot Pressure: *	150 psi	
Diaphragm Material:	Nitrile (with Nylon fabric reinforcement)	
Dry Weight (kg)	1.3	
Working Temperature Range:	-10°C to +100°C	

# DIAPHRAGM AIR ACTUATOR TYPE: A4

- LOW PRESSURE OPERATION
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



**Technical Specification Note:-**

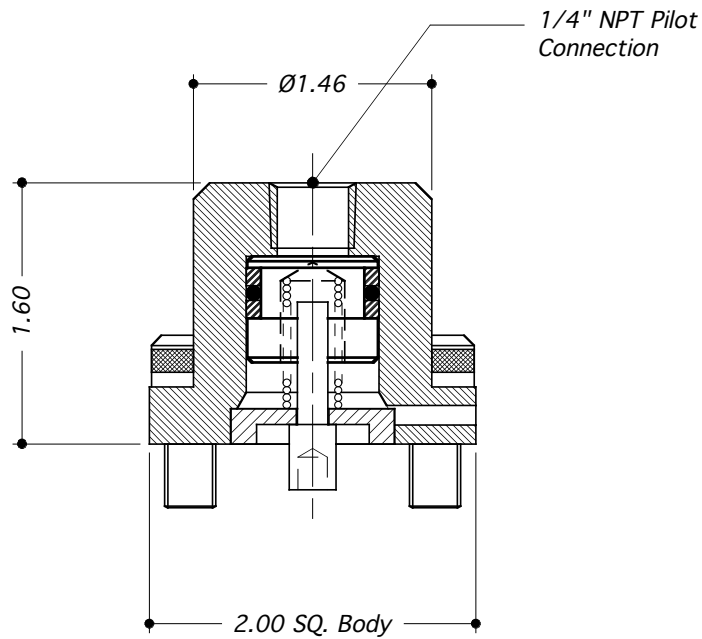
\* The Maximum Pilot Pressure is for the above Actuator design only. Different applications may limit the Maximum Pilot Pressure due to the design of the Valve Body being used. Check with the individual Valve Body technical specification sheets for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	A4	A4
Pilot Port Size:	1/8"	
Thread Form: (Pilot supply)	BSP (Parallel)	
Maximum Pilot Pressure: *	150 psi	
Diaphragm Material:	Nitrile (with Nylon fabric reinforcement)	
Dry Weight (kg)	1.3	
Working Temperature Range:	-10°C to +100°C	

# PISTON HYDRAULIC ACTUATOR TYPE: HO



- HIGH PRESSURE OPERATION.
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



**Technical Specification Note:-**

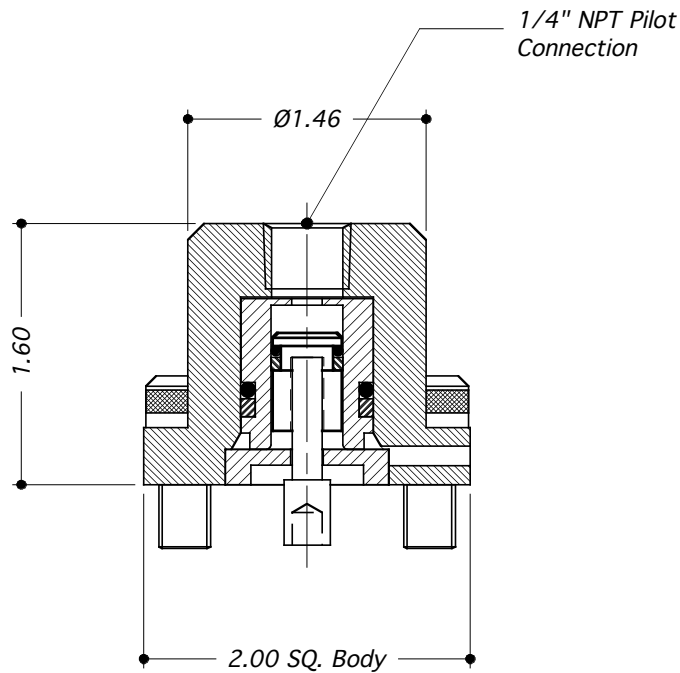
\* The Maximum Pilot Pressure is for the above Actuator design only. Different applications may limit the Maximum Pilot Pressure due to the design of the Valve Body being used. Check with the individual Valve Body technical specification sheets for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	HO	HO
Pilot Port Size:	1/4"	
Thread Form: (Pilot supply)	NPT (Taper)	
Maximum Pilot Pressure: *	10,000 psi	
Seal Material:	Viton	
Dry Weight (kg)	0.5	
Working Temperature Range:	-10°C to +120°C	

# PISTON HYDRAULIC ACTUATOR TYPE: H1



- HIGH PRESSURE OPERATION
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



**Technical Specification Note:-**

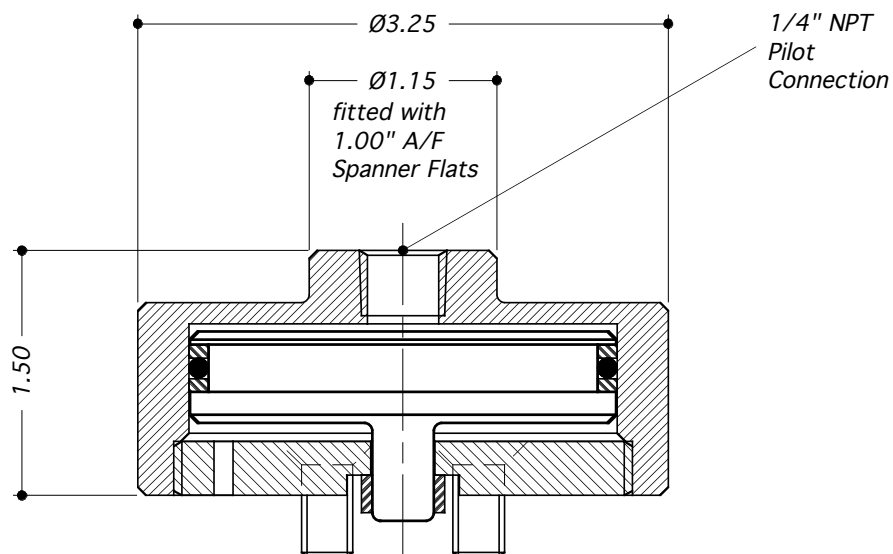
\* The Maximum Pilot Pressure is for the above Actuator design only. Different applications may limit the Maximum Pilot Pressure due to the design of the Valve Body being used. Check with the individual Valve Body technical specification sheets for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	H1	H1
Pilot Port Size:	1/4"	
Thread Form: (Pilot supply)	NPT (Taper)	
Maximum Pilot Pressure: *	10,000 psi	
Seal Material:	Viton	
Dry Weight (kg)	0.5	
Working Temperature Range:	-10°C to +120°C	

# PISTON HYDRAULIC ACTUATOR TYPE: H3



- HIGH PRESSURE OPERATION.
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



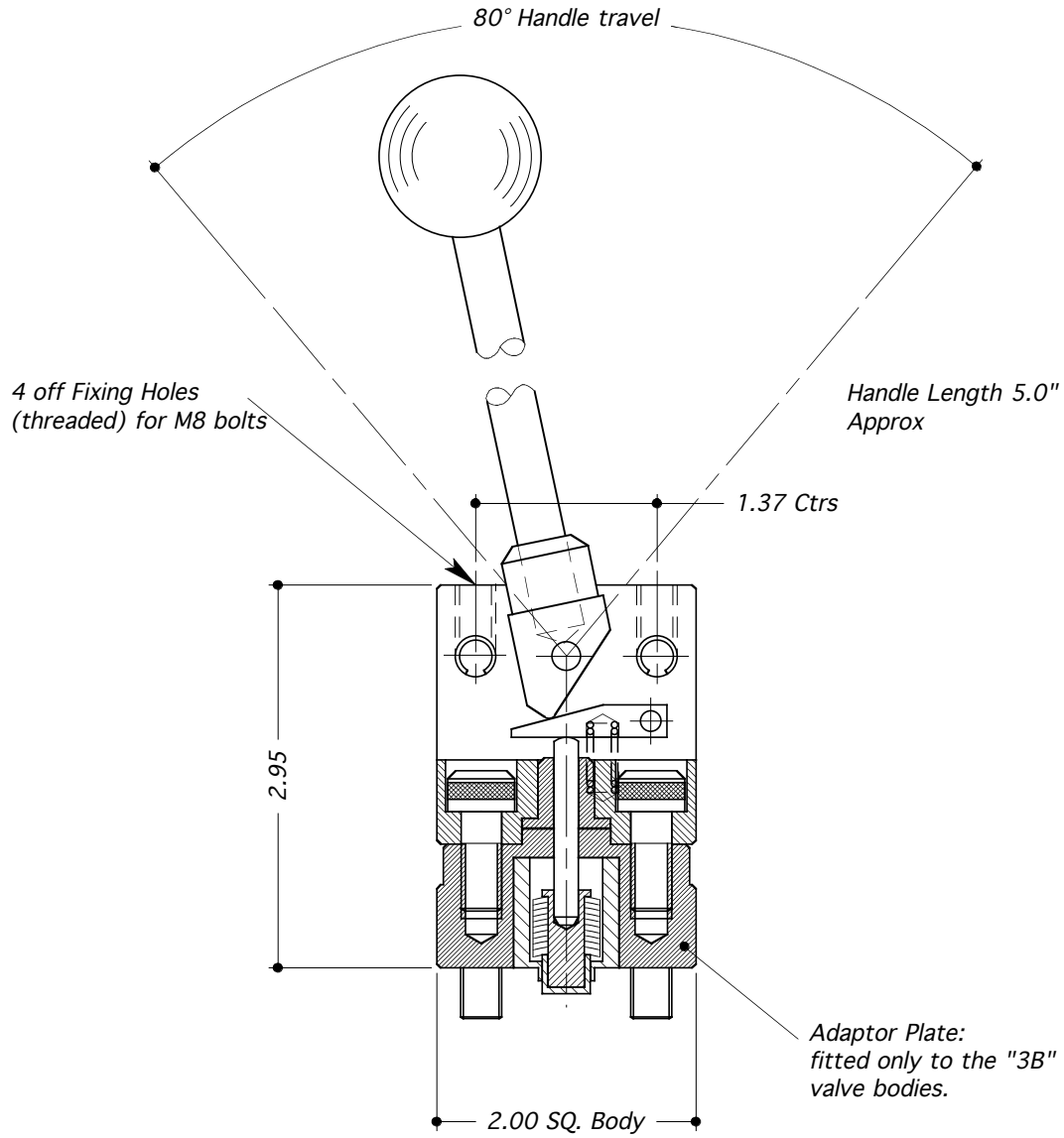
## Technical Specification Note:-

\* The Maximum Pilot Pressure is for the above Actuator design only. Different applications may limit the Maximum Pilot Pressure due to the design of the Valve Body being used. Check with the individual Valve Body technical specification sheets for details.

TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	H3	H3
Pilot Port Size:	1/4"	
Thread Form: (Pilot supply)	NPT (Taper)	
Maximum Pilot Pressure: *	500 psi	
Seal Material:	Viton	
Dry Weight (kg)	1.0	
Working Temperature Range:	-10°C to +120°C	

# MANUAL LEVER ACTUATOR TYPES: L, DL

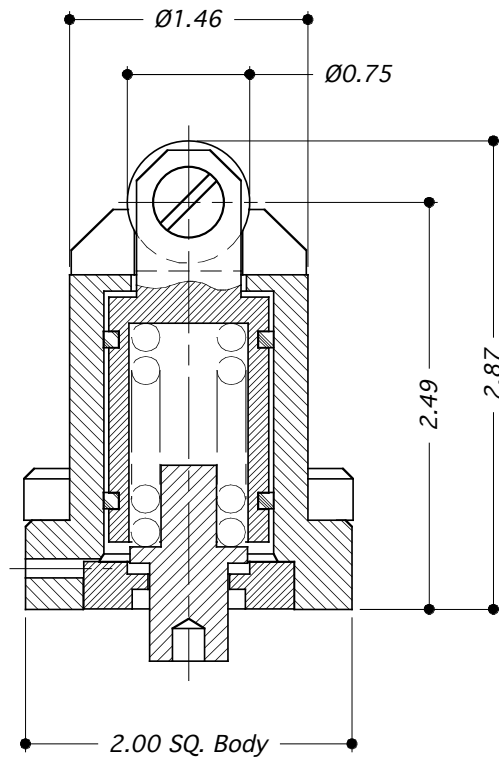
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION			ORDERING EXAMPLE
Actuator Type:	L	DL	L
Type "L"	Lever remains at limit of travel after operating		
Type "DL"	Lever returns to centre position after operating		
Dry Weight (kg)	1.5		
Working Temperature Range:	-10°C to +120°C		

# CAM ROLLER ACTUATOR TYPE: C0

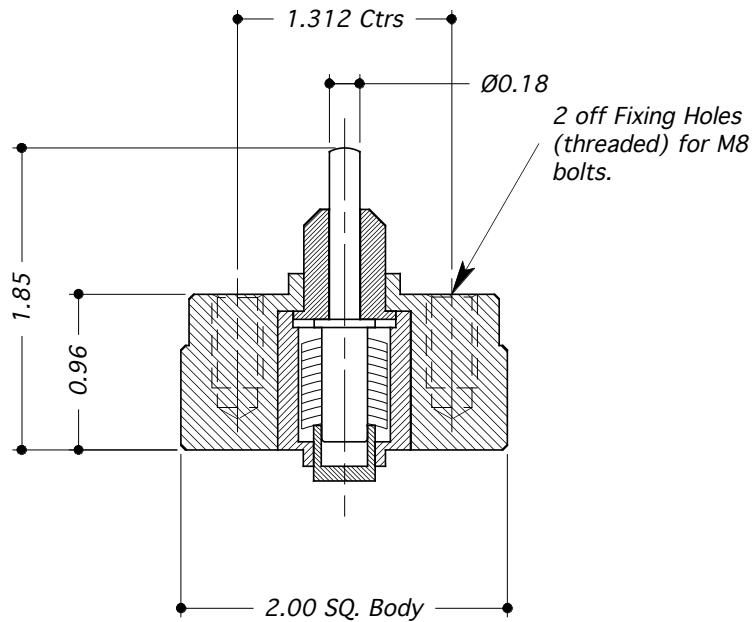
- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	C0	C0
Dry Weight (kg)	0.6	
Working Temperature Range:	-10°C to +120°C	

# GAM PIN ACTUATOR TYPE: C1

- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Actuator Type:	C1	C1
Dry Weight (kg)	0.5	
Working Temperature Range:	-10°C to +120°C	

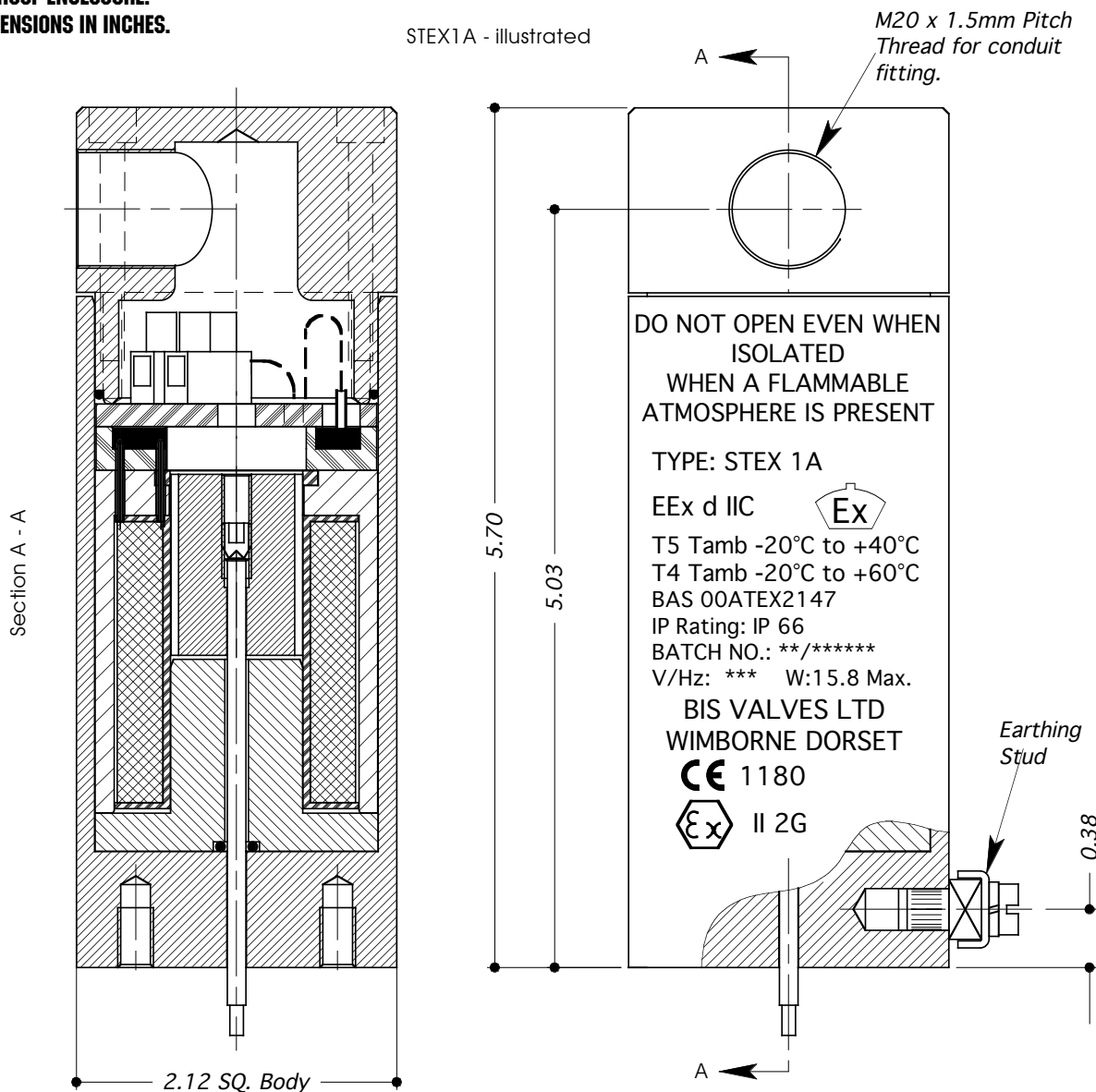


# SOLENOID THRUSTER TYPE: STEX1



Valves Ltd

- ATEX DIRECTIVE 94/9/EC APPROVED - FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES.
- STAINLESS STEEL HOUSING.
- TYPE: EEX'D' IIC.
- EXPLOSION PROOF.
- FLAMEPROOF ENCLOSURE.
- ALL DIMENSIONS IN INCHES.



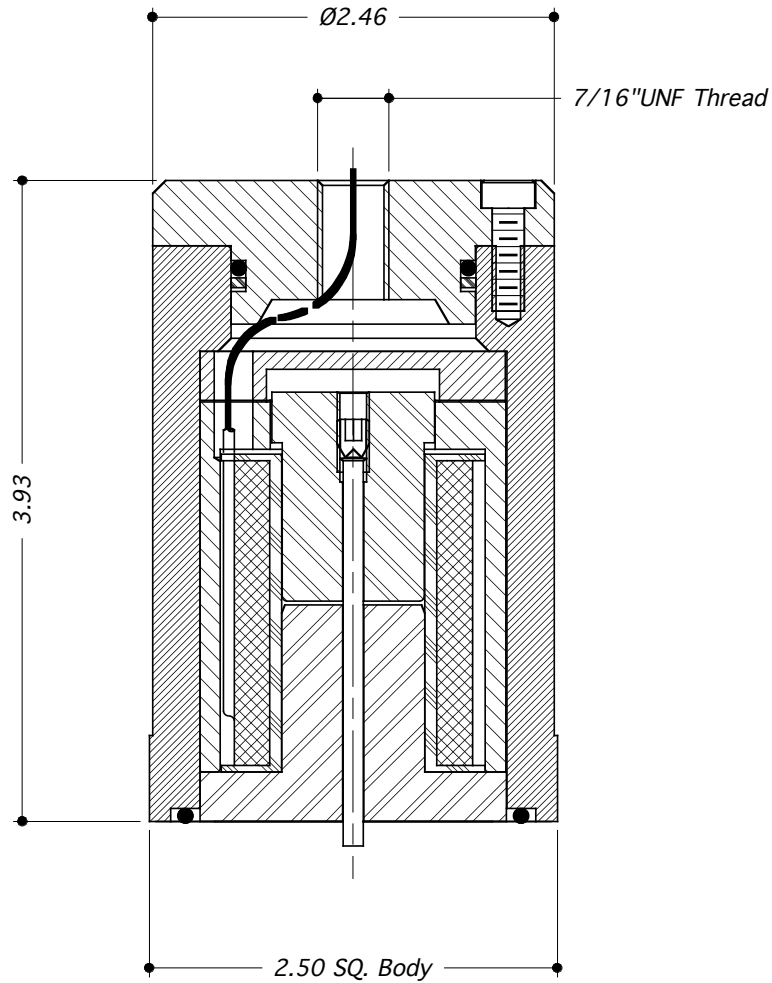
TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Solenoid Type:	STEX 1	STEX 1A
Conduit Connection:	A - Radial Exit as shown	
	B - Axial Exit	
Voltage Rating:	24 V (for other voltages contact our Technical Department)	
Power Rating:	15.8 Watts MAX	
IP Rating	IP 66	
Dry Weight: (kg)	2.8 kg	
Temperature Rating:	T5 @ -10°C to +40°C Ambients, T4 @ -10°C to +60°C Ambients	

**Power Consumption:** Coils with power consumption reduced down to 8W can be produced as a "special" if required. It should be noted that solenoid performance will be impaired, hence the valve operating pressures may differ from a standard build design.

# SOLENOID THRUSTER (SUB-SEA) TYPE: SW



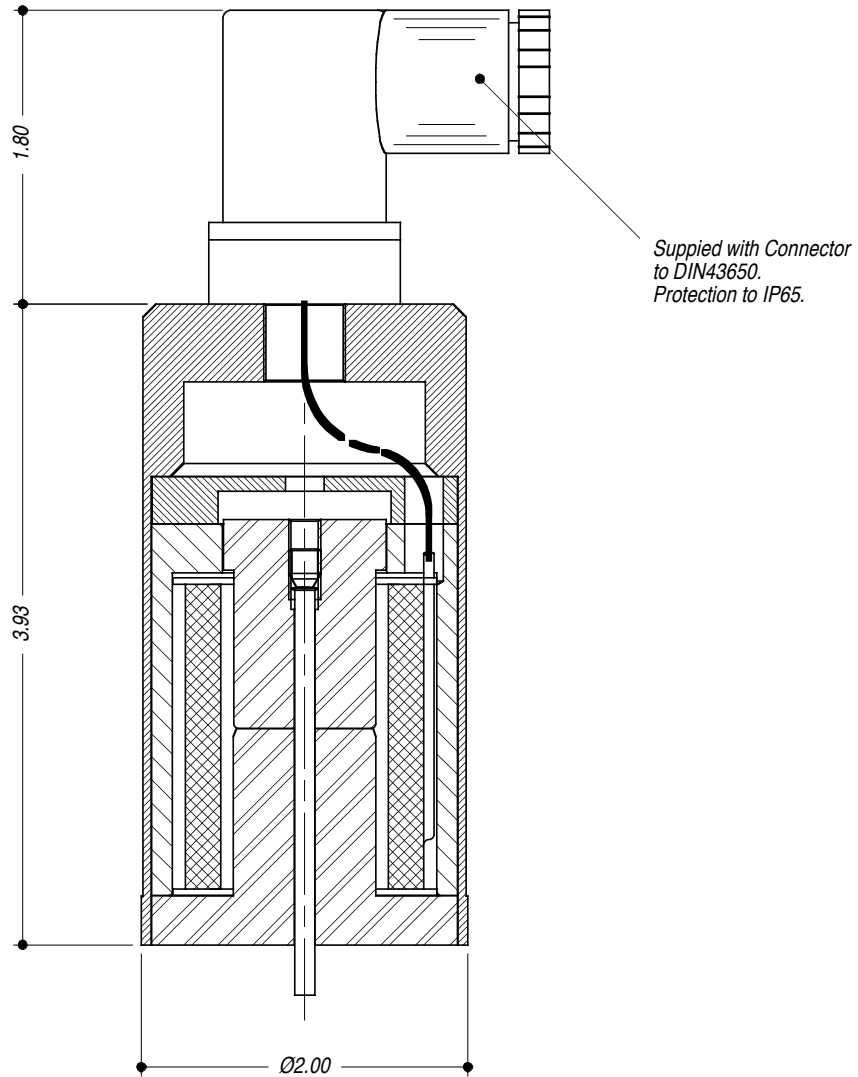
- STAINLESS STEEL (316 / 1.4404)
- SUB-SEA OPERATION (DEPTH OF 21,000 FT)
- A SUB-SEA CONNECTOR IS NOT SUPPLIED WITH THE SOLENOID THRUSTER.
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Solenoid Type:	SW	SW
Voltage Rating:	24 V D.C.	
Power Rating:	15.5 Watts	
Dry Weight: (kg)	1.0	
Working Temperature Range:	-10°C to +60°C (Ambient)	

# SOLENOID THRUSTER TYPE: HC

- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.

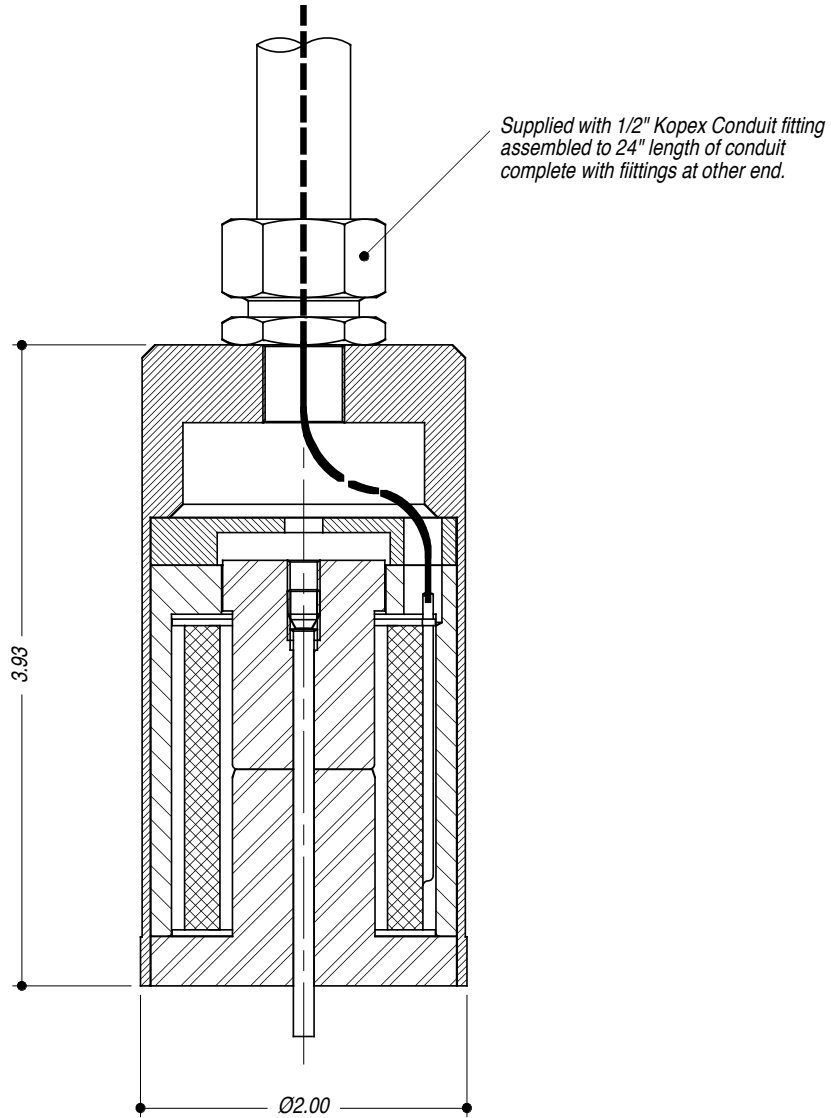


TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Solenoid Type:	HC	HC
Voltage Rating:	24 V D.C.	
Power Rating:	15.5 Watts	
Dry Weight: (kg)	1.0	
Working Temperature Range:	-10°C to +60°C (Ambient)	

# SOLENOID THRUSTER TYPE: KC



- STAINLESS STEEL (316 / 1.4404)
- ALL DIMENSIONS IN INCHES.



TECHNICAL SPECIFICATION		ORDERING EXAMPLE
Solenoid Type:	KC	KC
Voltage Rating:	24 V D.C.	
Power Rating:	15.5 Watts	
Dry Weight: (kg)	1.0	
Working Temperature Range:	-10°C to +60°C (Ambient)	



**TERMS AND CONDITIONS Rev: 3**



## **TERMS AND CONDITIONS Rev: 3**

### **INDEX of CONTENTS**

- 1. INTERPRETATION**
- 2. BASIS OF THE CONTRACT**
- 3. ORDERS AND SPECIFICATIONS**
- 4. PRICE OF THE GOODS**
- 5. TERMS OF PAYMENT**
- 6. DELIVERY**
- 7. TITLE AND RISK**
- 8. QUALITY**
- 9. LIMITATION OF LIABILITY**
- 10. FORCE MAJURE**
- 11. BUYER INSOLVENCY OR INCAPACITY**
- 12. TEST OR INSPECTION OF THE GOODS**
- 13. ASSIGNMENT AND SUBCONTRACTING**
- 14. NOTICES**
- 15. SEVERANCE**
- 16. WAIVER**
- 17. THIRD PARTY RIGHTS**
- 18. VARIATION**
- 19. GOVERNING LAW AND JURISDICTION**



BiS Valves Ltd., Units 17-23 Kingfisher Park, West Moors, Wimborne, Dorset, BH21 6US, United Kingdom.

## TERMS AND CONDITIONS Rev: 3

### 1. INTERPRETATION

1.1 Definitions. In these Conditions, the following definitions apply:

**‘Business Day’** means a day (other than a Saturday, Sunday or public holiday) when banks in London are open for business.

**‘Buyer’** means the person or firm who accepts a quotation of the Seller for the sale of the goods or whose order for the goods is accepted by the Seller.

**‘Conditions’** means the standard terms and conditions of sale set out in this document as amended from time to time and (unless the context otherwise requires) includes any special terms and conditions agreed in writing between the Buyer and the Seller.

**‘Contract’** means the contract between the Seller and the Buyer for the sale and purchase of the Goods in accordance with these conditions.

**‘Force Majure’** Event has the meaning given in clause 10.

**‘Goods’** means the goods (including any installment of the goods or any parts for them) which the Seller is to supply in accordance with these Conditions.

**‘Order’** means the Buyer’s Order for the Goods.

**‘Seller’** means BiS Valves Limited (registered in England and Wales with Company Number 826821)

**‘Specification’** means any specification for the Goods, including any related plans and drawings that are agreed in writing by the Buyer and the Seller.

**‘Writing’** includes facsimile transmission email and any comparable means of communication.

1.2 Construction. In these Conditions, the following rules apply:

1.2.1 The headings in these Conditions are for convenience only and shall not affect their interpretation.

1.2.2 A **person** includes a natural person, corporate or unincorporated body (whether or not having a separate legal personality).

1.2.3 A reference to a party includes its personal representatives, successors or permitted assigns.

1.2.4 A reference to a statute or statutory provision is a reference to such statute or provision as amended or re-enacted. A reference to a statute or statutory provision includes any subordinate legislation made under that statute or statutory provision, as amended or re-enacted.

1.2.5 Any phrase introduced by the terms **including, include, in particular** or any similar expression shall be construed as illustrative and shall not limit the sense of the words preceding those terms.

### 2. BASIS OF THE CONTRACT

2.1 These Conditions apply to the Contract to the exclusion of any other terms that the Buyer seeks to impose or incorporate, or which are implied by trade, custom, practice or course of dealing.

2.2 The Order constitutes an offer by the Buyer to purchase the Goods in accordance with these Conditions. The Buyer is responsible for ensuring that the terms of the Order are complete and accurate and for giving the Seller any and all necessary information relating to the Goods within a reasonable time to enable the Seller to perform the Contract in accordance with its terms.

2.3 No variation to these Conditions shall be binding unless agreed in writing between the authorised representatives of the Buyer and the Seller.

2.4 The Contract constitutes the entire agreement between the parties. The Buyer acknowledges that it has not relied on any statement, promise or representation made or given by or on behalf of the Seller which is not set out in the Contract.



2.5 Any samples, drawings, descriptive matter, or advertising produced by the Seller and any descriptions or illustrations contained in the Seller's catalogues or brochures are produced for the sole purpose of giving an approximate idea of the Goods described in them. They shall not form part of the Contract or have any contractual force.

2.6 A quotation for the Goods given by the Seller shall not constitute an offer and shall only be valid for a period of 90 days from its date of issue.

### **3. ORDERS AND SPECIFICATIONS**

3.1 No Order submitted by the Buyer shall be deemed to be accepted by the Seller unless and until confirmed in writing by the Seller's authorised representative.

3.2 The quantity, quality and description of and any Specification for the Goods shall be those set out in the Seller's quotation (if accepted by the Buyer) or the Buyer's order (if accepted by the Seller).

3.3 To the extent that the Goods are to be manufactured in accordance with a Specification supplied by the Buyer, the Buyer shall indemnify the Seller against all liabilities, costs, expenses, damages and losses (including any direct, indirect or consequential losses, loss of profit, loss of reputation and all interest, penalties and legal and other professional costs and expenses) suffered or incurred by the Seller in connection with any claim made against the Seller for actual or alleged infringement of any third party's intellectual property rights arising out of or in connection with the Seller's use of the Specification. This clause 3 shall survive termination of the Contract.

3.4 The Seller reserves the right to amend the Specification of the Goods if required by any applicable statutory or regulatory requirements.

3.5 No Order which has been accepted by the Seller may be cancelled by the Buyer except with the agreement in writing of the Seller and on terms that the Buyer shall indemnify the Seller in full against all loss (including loss of profit) costs (including the cost of all labour and materials used) damages charges and expenses incurred by the Seller as the result of cancellation.

### **4. PRICE OF THE GOODS**

4.1 The price of the Goods shall be the price set out in the Seller's quotation, or, in the case of an Order placed without a prior quotation from the Seller the price shall be as per the Seller's most up to date price list.

4.2 Where the Goods are supplied for export from the United Kingdom the Seller's published export price list shall apply. All prices quoted are valid for 90 days only or until earlier acceptance by the Buyer after which time they may be altered by the Seller without giving notice to the Buyer. All orders are subject to a minimum order charge.

4.3 The Seller may, by giving notice to the Buyer at any time up to 30 Business Days before delivery, increase the price of the Goods to reflect any increase in the cost of the Goods that is due to:

4.3.1 any factor beyond the Seller's control (including foreign exchange fluctuations, increases in taxes and duties, and increases in the cost of labour, materials and other manufacturing costs);

4.3.2 any request by the Buyer to change the delivery date(s), quantities or types of Goods ordered, or the Specification; or

4.3.3 any delay caused by any instructions of the Buyer or failure of the Buyer to give the Seller adequate or accurate information or instructions.

4.4 Except as otherwise agreed in writing between the Buyer and Seller the price of the Goods is on an ex-works basis and is exclusive of the costs and charges of packaging, carriage freight insurance and transport of the Goods which shall be invoiced to the Buyer. The Seller will use its reasonable endeavours to include the costs of [packaging, carriage, freight, [insurance] and transport] in any quotation provided to the Buyer.





4.5 The price of the Goods is exclusive of amounts in respect of value added tax (VAT). The Buyer shall, on receipt of a valid VAT invoice from the Seller, pay to the Seller such additional amounts in respect of VAT as are chargeable on the supply of the Goods.

4.6 The cost of pallets and return of containers will be charged to the Buyer in addition to the price of the Goods but full credit will be given to the Buyer provided they are returned undamaged to the Seller before the due payment date.

## 5. TERMS OF PAYMENT

5.1 Subject to any special terms agreed in writing between the Buyer and the Seller the Seller shall be entitled to invoice the Buyer for the price of the goods on or at any time after delivery. If the Goods are to be collected by the Buyer or the Buyer wrongfully fails to take delivery of the goods the Seller shall be entitled to invoice the Buyer for the price at any time after the Seller has notified the Buyer that the Goods are ready for collection or the Seller has tendered delivery of the Goods.

5.2 The Buyer shall pay the invoice in the manner detailed on the invoice in full and cleared funds on or before the last working day of the month following the date of invoice. The Seller shall be entitled to recover the invoice amount notwithstanding that delivery may not have taken place and that the property and the Goods have not passed to the Buyer. Time of payment is of the essence.

5.3 If the Buyer fails to make any payment on the due date then without prejudice to any other right or remedy available to the Seller the Seller shall be entitled to:

5.3.1 cancel the Contract or suspend any further deliveries to the Buyer;

5.3.2 appropriate any payment made by the Buyer to such of the Goods (or the Goods supplied under any other contract between the Buyer and the Seller) as the Seller may see fit (notwithstanding any purported appropriation by the Buyer) and

5.3.3 charge the Buyer interest (both before and after any judgment) on the amount unpaid at the rate of 4% per cent per annum above Bank of England base rate as varied from time to time. Such interest shall accrue on a daily basis from the due date until the date of actual payment of the overdue amount, whether before or after judgment. The Buyer shall pay the interest together with the overdue amount.

5.4 The Buyer shall pay all amounts due under the Contract in full without any deduction or withholding except as required by law and the Buyer shall not be entitled to assert any credit, set-off or counterclaim against the Seller in order to justify withholding payment of any such amount in whole or in part. The Seller may at any time, without limiting any other rights or remedies it may have, set off any amount owing to it by the Buyer against any amount payable by the Seller to the Buyer.

5.4 The Buyer shall also reimburse the Seller all costs and expenses (including legal costs) incurred in the collection of any overdue amount.

5.5 The Buyer shall pay all amounts due under the Contract in full without any deduction or withholding except as required by law and the Buyer shall not be entitled to assert any credit, set-off or counterclaim against the Seller in order to justify withholding payment of any such amount in whole or in part. The Seller may at any time, without limiting any other rights or remedies it may have, set off any amount owing to it by the Buyer against any amount payable by the Seller to the Buyer.

## 6. DELIVERY

6.1 The Buyer shall collect the Goods from the Seller's premises at Unit 19, Kingfisher Park, Collingwood Road, West Moors, Wimborne, Dorset BH21 6US or such other location as may be advised by the Seller prior to delivery (**Delivery Location**) within 5 Business Days of the Seller notifying the Buyer that the Goods are ready for collection or if some other place is agreed in writing by both the Seller and Buyer then the Seller shall deliver the Goods to that location.



- 6.2 If the Seller requires the Buyer to return any packaging materials to the Seller, that fact will be clearly stated on the delivery note. The Buyer shall make any such packaging materials available for collection at such times as the Seller shall reasonably request. [Returns of packaging materials shall be at the Seller's expense.]
- 6.3 Any dates quoted for delivery are approximate only, and the time of delivery is not of the essence. The Seller shall not be liable for any delay in delivery of the Goods that is caused by a Force Majeure Event or the Buyer's failure to provide the Seller with adequate delivery instructions or any other instructions that are relevant to the supply of the Goods. The Goods may be delivered by the Seller in advance of the quoted delivery date.
- 6.4 Where delivery of the Goods is to be made by the Seller in bulk the Seller reserves the right to deliver up to 5% more or less than the quantity ordered without any adjustment in the price and the quantity so delivered shall be deemed to be the quantity ordered.
- 6.5 The Seller may at its discretion deliver the Goods by instalments, which shall be invoiced and paid for separately. Each instalment shall constitute a separate Contract. Any delay in delivery or defect in an instalment shall not entitle the Buyer to cancel any other instalment.
- 6.6 If the Seller fails to deliver the Goods, its liability shall be limited to the costs and expenses incurred by the Buyer in obtaining replacement goods of similar description and quality in the cheapest market available, less the price of the Goods. The Seller shall have no liability for any failure to deliver the Goods to the extent that such failure is caused by a Force Majeure Event or the Buyer's failure to provide the Seller with adequate delivery instructions or any other instructions that are relevant to the supply of the Goods.
- 6.7 If the Buyer fails to take delivery or collect the Goods within five Business Days of the Seller notifying the Buyer that the Goods are ready, then, except where such failure or delay is caused by a Force Majeure Event or the Seller's failure to comply with its obligations under the Contract:
- 6.7.1 delivery of the Goods shall be deemed to have been completed at 9.00 am on the fifth Business Day after the day on which the Seller notified the Buyer that the Goods were ready; and
- 6.7.2 the Seller shall store the Goods until delivery takes place, and charge the Buyer for all related costs and expenses (including insurance).
- 6.8 If 10 Business Days after the day on which the Seller notified the Buyer that the Goods were ready for delivery the Buyer has not taken delivery of them, the Seller may resell or otherwise dispose of part or all of the Goods.

## **7. TITLE AND RISK**

- 7.1 The risk in the Goods shall pass to the Buyer on completion of delivery.
- 7.2 Title to the Goods shall not pass to the Buyer until the Seller has received payment in full (in cash or cleared funds) for:
- 7.2.1 the Goods; and
- 7.2.2 any other goods or services that the Seller has supplied to the Buyer in respect of which payment has become due.
- 7.3 Until title to the Goods has passed to the Buyer, the Buyer shall:
- 7.3.1 hold the Goods on a fiduciary basis as the Seller's bailee;
- 7.3.2 store the Goods separately from all other goods held by the Buyer so that they remain readily identifiable as the Seller's property;



- 7.3.3 not remove, deface or obscure any identifying mark or packaging on or relating to the Goods;
  - 7.3.4 maintain the Goods in satisfactory condition and keep them insured against all risks for their full price from the date of delivery;
  - 7.3.5 notify the Seller immediately if it becomes subject to any of the events listed in clause 11.2; and
  - 7.3.6 give the Seller such information relating to the Goods as the Seller may require from time to time,
- 7.4 If, before title to the Goods passes to the Buyer, the Buyer becomes subject to any of the events listed in clause 11.2, or the Seller reasonably believes that any such event is about to happen and notifies the Buyer accordingly, then, provided that the Goods have not been resold, or irrevocably incorporated into another product, and without limiting any other right or remedy the Seller may have, the Seller may at any time require the Buyer to deliver up the Goods and, if the Buyer fails to do so promptly, enter any premises of the Buyer or of any third party where the Goods are stored in order to recover them.

## 8. QUALITY

- 8.1 The Seller warrants that for a period of 12 months from the date of first use or for a period of 24 months from date of delivery (whichever expires first) the Goods shall:
- 8.1.1 conform in all material respects with their description;
  - 8.1.2 be free from material defects in design, material and workmanship; and
  - 8.1.3 be of satisfactory quality (within the meaning of the Sale of Goods Act 1979); and
  - 8.1.4 be fit for any purpose held out by the Seller.
- 8.2 Subject to clause 8.1, if the Buyer gives notice in writing to the Seller during the warranty period and within a reasonable period of discovery that some or all of the Goods do not comply with the warranty set out in clause 8.10 then the Seller shall be given a reasonable opportunity to examine such Goods and the Buyer (if asked to do so by the Seller) shall return such Goods to the Seller's place of business at the Buyer's cost, and the Seller shall, at its option, repair or replace any Goods found to be defective, or refund the price of any Goods found to be defective, in full.
- 8.3 The Seller shall not be liable for Goods' failure to comply with the warranty set out in clause 8.1 in any of the following events:
- 8.3.1 the Buyer makes any further use of such Goods after giving notice in accordance with clause 8.2;
  - 8.3.2 the defect arises because the Buyer failed to follow the Seller's oral or written instructions as to the storage, commissioning, installation, use and maintenance of the Goods or (if there are none) good trade practice regarding the same;
  - 8.3.3 the defect arises as a result of the Seller following any drawing, design or Specification supplied by the Buyer;
  - 8.3.4 the Buyer alters or repairs such Goods without the written consent of the Seller;
  - 8.3.5 the defect arises as a result of fair wear and tear, wilful damage, negligence, or abnormal storage or working conditions;
  - 8.3.6 the Goods differ from their description as a result of changes made to ensure they comply with applicable statutory or regulatory requirements;
  - 8.3.7 the Goods are used in an application beyond the Seller's design specification
- 8.4 Except as provided in this clause 8, the Seller shall have no liability to the Buyer in respect of the Goods' failure to comply with the warranty set out in clause 8.1.



8.5 Except as set out in these Conditions, all warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

8.6 These Conditions shall apply to any repaired or replacement Goods supplied by the Seller.

## **9. LIMITATION OF LIABILITY**

9.1 Nothing in these Conditions shall limit or exclude the Seller's liability for:

9.1.1 death or personal injury caused by its negligence, or the negligence of its employees, agents or subcontractors (as applicable);

9.1.2 fraud or fraudulent misrepresentation;

9.1.3 breach of the terms implied by section 12 of the Sale of Goods Act 1979;

9.1.4 defective products under the Consumer Protection Act 1987 (where applicable); or

9.1.5 any matter in respect of which it would be unlawful for the Seller to exclude or restrict liability.

9.2 Subject to clause 9.1 the Seller shall under no circumstances whatsoever be liable to the Buyer, whether in contract, tort (including negligence), breach of statutory duty, or otherwise, for any loss of profit, or any indirect or consequential loss arising under or in connection with the Contract.

## **10. FORCE MAJEURE**

10.1 Neither party shall be liable for any failure or delay in performing its obligations under the Contract to the extent that such failure or delay is caused by a Force Majeure Event. A Force Majeure Event means any event beyond a party's reasonable control, which by its nature could not have been foreseen, or, if it could have been foreseen, was unavoidable, including strikes, lock-outs or other industrial disputes (whether involving its own workforce or a third party's), failure of energy sources or transport network, acts of God, war, terrorism, riot, civil commotion, interference by civil or military authorities, national or international calamity, armed conflict, malicious damage, breakdown of plant or machinery, nuclear, chemical or biological contamination, sonic boom, explosions, collapse of building structures, fires, floods, storms, earthquakes, loss at sea, epidemics or similar events, natural disasters or extreme adverse weather conditions, or default of Sellers or subcontractors.

## **11. BUYER INSOLVENCY OR INCAPACITY**

11.1 If the Buyer becomes subject to any of the events listed in clause 11.2(a)-(l), or the Seller reasonably believes that the Buyer is about to become subject to any of them and notifies the Buyer accordingly, then, without limiting any other right or remedy available to the Seller, the Seller may cancel or suspend all further deliveries under the Contract or under any other contract between the Buyer and the Seller without incurring any liability to the Buyer, and all outstanding sums in respect of Goods delivered to the Buyer shall become immediately due.

11.2 For the purposes of clause 11.1 the relevant events are:

(a) the Buyer suspends, or threatens to suspend, payment of its debts, or is unable to pay its debts as they fall due or admits inability to pay its debts, or (being a company) is deemed unable to pay its debts within the meaning of section 123 of the Insolvency Act 1986, or (being an individual) is deemed either unable to pay its debts or as having no reasonable prospect of so doing, in either case, within the meaning of section 268 of the Insolvency Act 1986, or (being a partnership) has any partner to whom any of the foregoing apply;

(b) the Buyer commences negotiations with all or any class of its creditors with a view to rescheduling any of its debts, or makes a proposal for or enters into any compromise or arrangement with its creditors;



- (c) (being a company) a petition is filed, a notice is given, a resolution is passed, or an order is made, for or in connection with the winding up of the Buyer, other than for the sole purpose of a scheme for a solvent amalgamation of the Buyer with one or more other companies or the solvent reconstruction of the Buyer;
- (d) (being an individual) the Buyer is the subject of a bankruptcy petition or order;
- (e) a creditor or encumbrance of the Buyer attaches or takes possession of, or a distress, execution, sequestration or other such process is levied or enforced on or sued against, the whole or any part of its assets and such attachment or process is not discharged within 14 days;
- (f) (being a company) an application is made to court, or an order is made, for the appointment of an administrator or if a notice of intention to appoint an administrator is given or if an administrator is appointed over the Buyer;
- (g) (being a company) a floating charge holder over the Buyer's assets has become entitled to appoint or has appointed an administrative receiver;
- (h) a person becomes entitled to appoint a receiver over the Buyer's assets or a receiver is appointed over the Buyer's assets;
- (i) the Buyer suspends, threatens to suspend, ceases or threatens to cease to carry on all or substantially the whole of its business;
- (j) the Buyer's financial position deteriorates to such an extent that in the Seller's opinion the Buyer's capability to adequately fulfil its obligations under the Contract has been placed in jeopardy; and
- (k) (being an individual) the Buyer dies or, by reason of illness or incapacity (whether mental or physical), is incapable of managing his or her own affairs or becomes a patient under any mental health legislation.
- (l) any event occurs, or proceeding is taken, with respect to the Buyer in any jurisdiction to which it is subject that has an effect equivalent or similar to any of the events mentioned in clause 11.2(a) to clause 11.2(k) (inclusive);

11.3 Termination of the Contract, however arising, shall not affect any of the parties' rights and remedies that have accrued as at termination. Clauses which expressly or by implication survive termination of the Contract shall continue in full force and effect.

## **12. TEST OR INSPECTION OF THE GOODS**

12.1 Where the Contract provides for test and inspection before dispatch and delivery by or on behalf of the Buyer at the Seller's premises the following conditions shall apply:

12.2 In the event of inspection by the Buyer and/or their servant or agent any complaint in relation to the Goods must be notified to the Seller in writing within seven days of that inspection and in the absence of such notice the Buyer shall be conclusively deemed to have accepted the Goods as being in conformity with the Contract and shall not thereafter be entitled to reject the Goods.

12.3 Examination of Goods during construction by an external authority where required shall be payable by and at the cost of the Buyer in addition to the ordinary price of the Goods.

12.4 The Seller reserves the right to charge the Buyer the cost of all test pieces which comply with specification.

## **13. ASSIGNMENT AND SUBCONTRACTING**

13.1 The Seller may at any time assign, transfer, charge, subcontract or deal in any other manner with all or any of its rights or obligations under the Contract.

13.2 The Buyer may not assign, transfer, charge, subcontract or deal in any other manner with all or any of its rights or obligations under the Contract without the prior written consent of the Seller.



**14. NOTICES**

- 14.1 Any notice or other communication given to a party under or in connection with the Contract shall be in writing, addressed to that party at its registered office (if it is a company) or its principal place of business (in any other case) or such other address as that party may have specified to the other party in writing in accordance with this clause, and shall be delivered personally, sent by pre-paid first class post, recorded delivery, commercial courier, fax or e-mail.
- 14.2 A notice or other communication shall be deemed to have been received: if delivered personally, when left at the address referred to in clause 14.1; if sent by pre-paid first class post or recorded delivery, at 9.00 am on the second Business Day after posting; if delivered by commercial courier, on the date and at the time that the courier's delivery receipt is signed; or, if sent by fax or e-mail, one Business Day after transmission.
- 14.3 The provisions of this clause shall not apply to the service of any proceedings or other documents in any legal action.

**15. SEVERANCE**

- 15.1 If any court or competent authority finds that any provision of the Contract (or part of any provision) is invalid, illegal or unenforceable, that provision or part-provision shall, to the extent required, be deemed to be deleted, and the validity and enforceability of the other provisions of the Contract shall not be affected.
- 15.2 If any invalid, unenforceable or illegal provision of the Contract would be valid, enforceable and legal if some part of it were deleted, the provision shall apply with the minimum modification necessary to make it legal, valid and enforceable.

**16. WAIVER**

A waiver of any right or remedy under the Contract is only effective if given in writing and shall not be deemed a waiver of any subsequent breach or default. No failure or delay by a party to exercise any right or remedy provided under the Contract or by law shall constitute a waiver of that or any other right or remedy, nor shall it preclude or restrict the further exercise of that or any other right or remedy. No single or partial exercise of such right or remedy shall preclude or restrict the further exercise of that or any other right or remedy.

**17. THIRD PARTY RIGHTS**

A person who is not a party to the Contract shall not have any rights under or in connection with it.

**18. VARIATION**

Except as set out in these Conditions, any variation to the Contract, including the introduction of any additional terms and conditions, shall only be binding when agreed in writing and signed by the Buyer and the Seller.

**19. GOVERNING LAW AND JURISDICTION**

The Contract, and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims), shall be governed by, and construed in accordance with, English law, and the parties irrevocably submit to the exclusive jurisdiction of the courts of England and Wales.