



ORVAL
HYDRAULIC



MONOBLOCK DIRECTIONAL
CONTROL VALVES

ORV-M70

DETAILED TECHNICAL CATALOGUE

CE





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Additional Informations

Note:This catalog shows the product in the most standard configurations. For Other Configurations, more detailed information or special request, Please contact Customer Service Dpt.

Warning! :All specifications of this catalog refer to the standard product at this date (07/2011) . ORVAL, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

ORVAL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN INCORRECT USE OF THE PRODUCT.

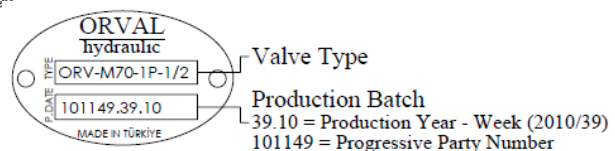
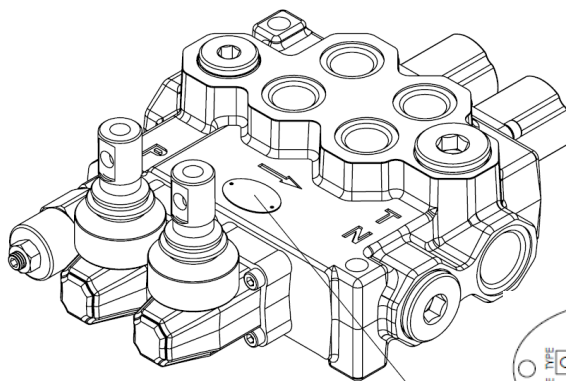
Working Conditions

Nominal Flow Rating / Displacement	70 l/min	18 U.S.G.P.M
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
(Series Circuit)	250 Bar	3600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F°
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F°
Oil Viskosity – Operating Range	From 10 to 75 mm ² /s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm ² /s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperature Range	-35 to 60 C°	-31 to 140 F°
Number Of Spools		1 to 6
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)—T)	3 cm ³ /min	0,18 in ³ /min
Max. Level Of Contamination	19/16 - ISO 4406	

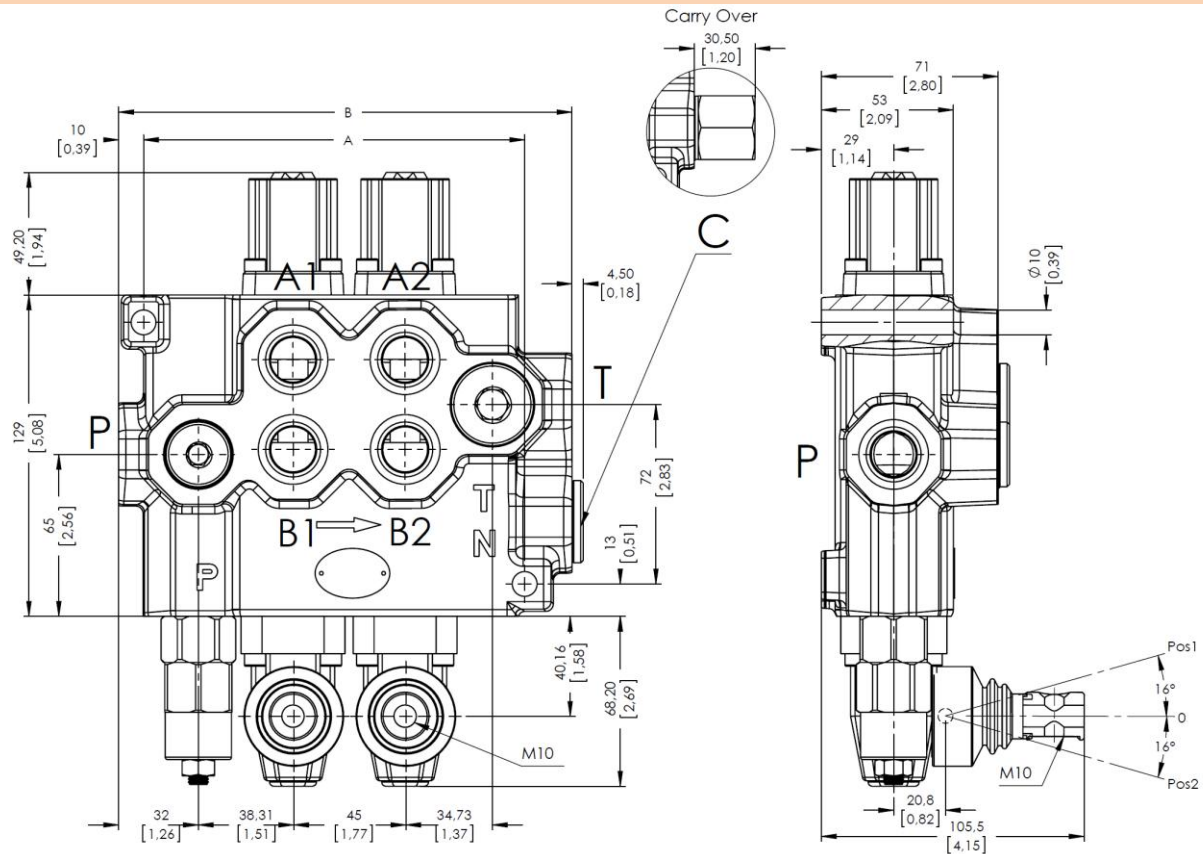
Not: This catalogue shows technical specifications measured with mineral oil of 46 mm²/s-46 cSt viscosity at 40 C° temparture.

Features

- Simple, compact and heavy duty designed monoblock valves from 1 to 6 sections for open and closed center hydraulic systems.
- Fitted with a main pressure relief valve and a load check valve.
- Optionaly Carry-Over port only parallel circuit.
- Interchangeable spool diameter is 18 mm – 0,71 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.



Dimensional Data



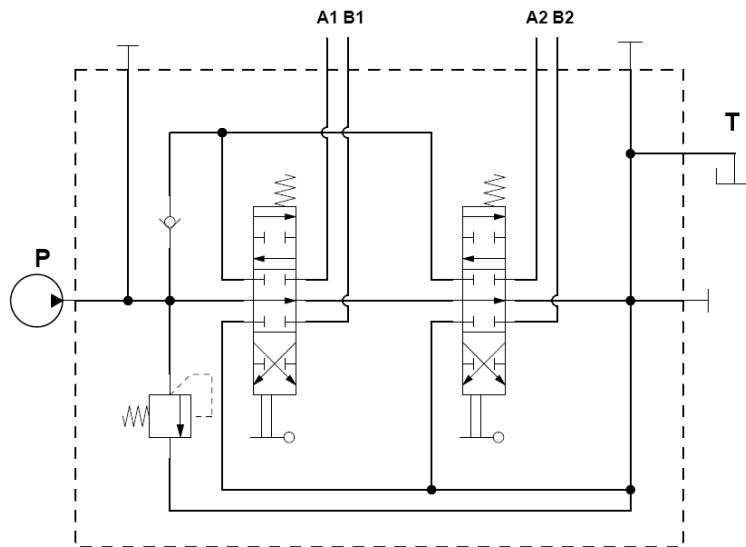
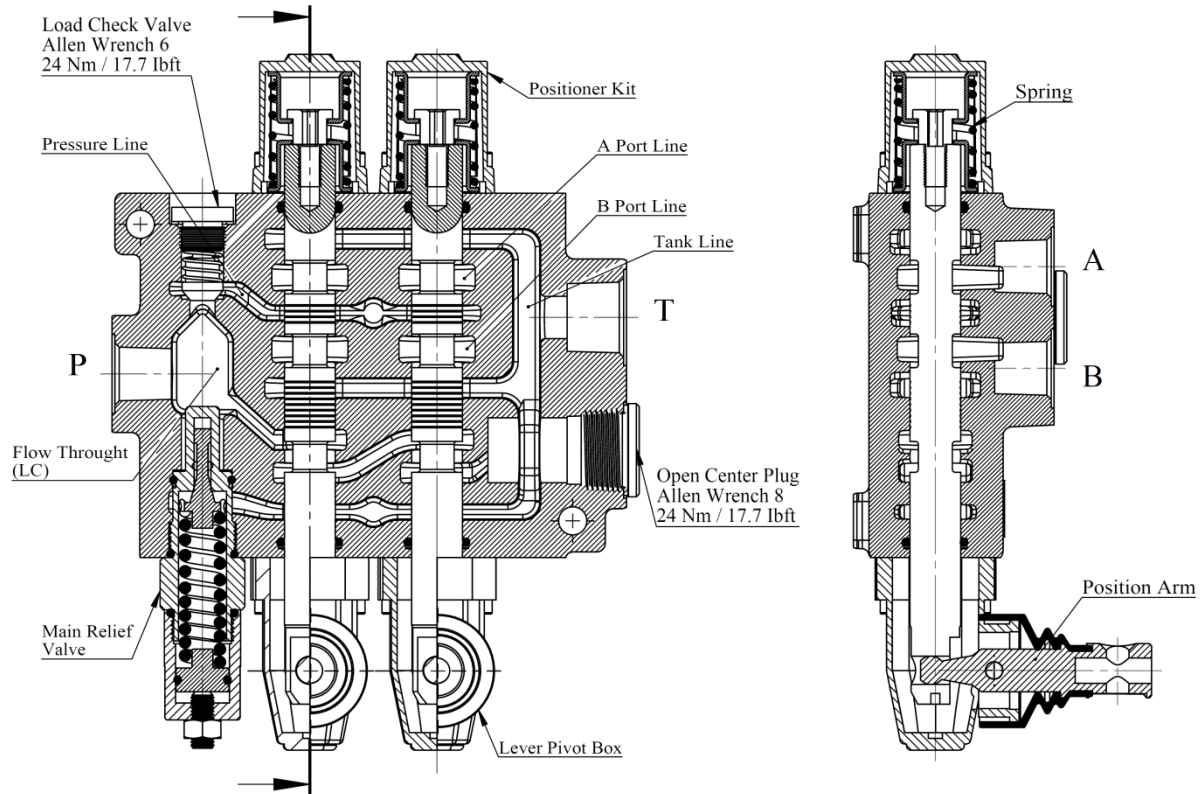
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
ORV-M70-1P	108	4,25	137	5,40	5,65	12,45
ORV-M70-2P	153	6,03	182	7,17	8,25	18,18
ORV-M70-3P	198	7,80	227	8,94	10,85	23,92
ORV-M70-4P	243	9,57	272	10,72	13,45	29,65
ORV-M70-5P	288	11,35	317	12,49	16,05	35,38
ORV-M70-6P	333	13,12	362	14,26	18,65	41,11

Standard Threads

PORT	BSP (Iso 228)		UN-UNF (Iso 11926-1)	Metric (Iso 262)
	1/2" Series	3/4" Series		
P Inlet	G 1/2	G 3/4	1 1/16-12 UN	M27x2
A-B Ports	G 1/2	G 3/4	7/8-14 UNF	M22x1.5
T Outlet	G 3/4	G 3/4	1 1/16-12 UN	M27x2
Pneumatic	G 1/4	G 1/4	NPTF 1/8 - 27	NPTF 1/8 - 27
Carry-Over	G 3/4	G 3/4	1 1/16-12 UN	G 3/4

Hydraulic Circuit

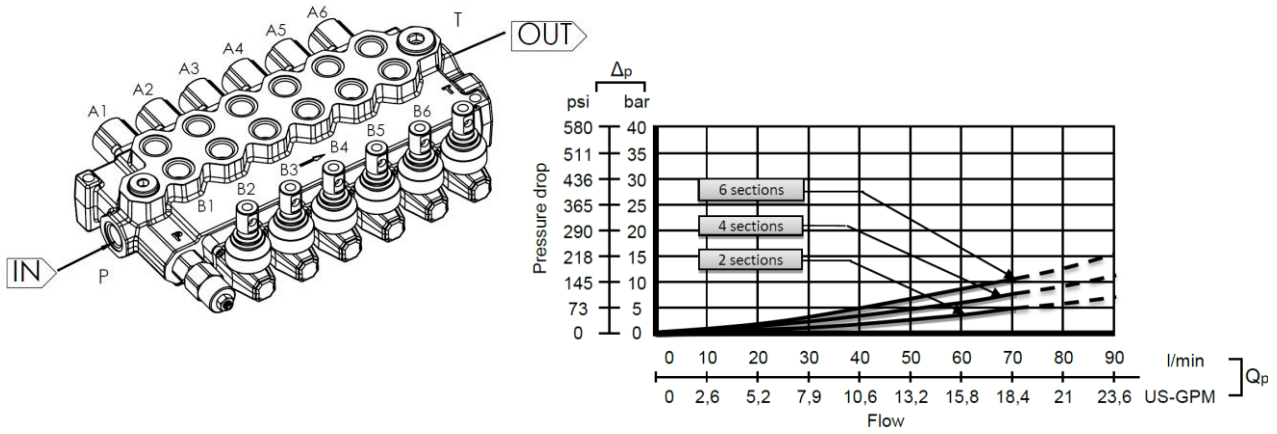
Parallel - Standard Configurations With Side Inlet And Outlet Open Center



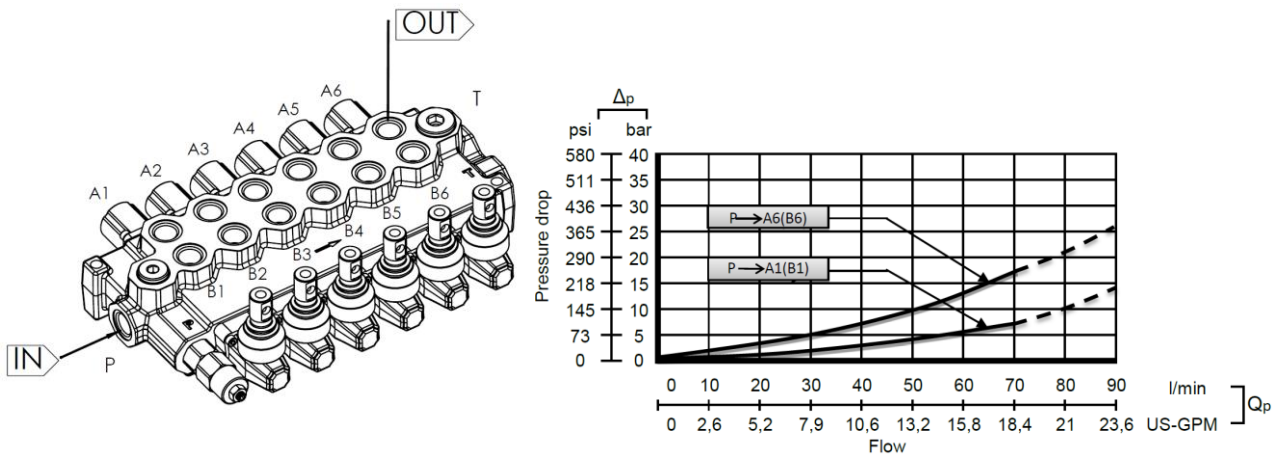
Code:ORV M70-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

Performance Data And Curve

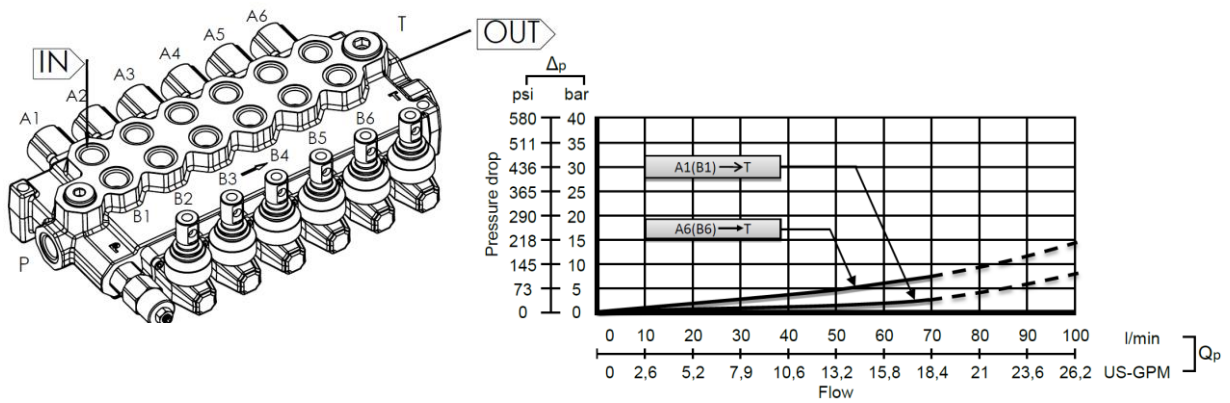
Open Center - Pressure Drop (P-T)



Inlet to Work Port - Pressure Drop (P-A/B)



Work Port to Outlet - Pressure Drop (A/B-T)



Note: Measured and chart value with spool type 1A.

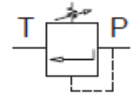
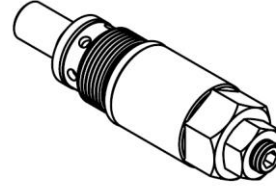
Inlet Relief Options

Direct Pressure Relief Valve

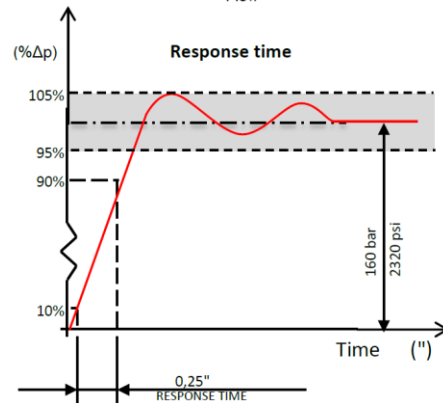
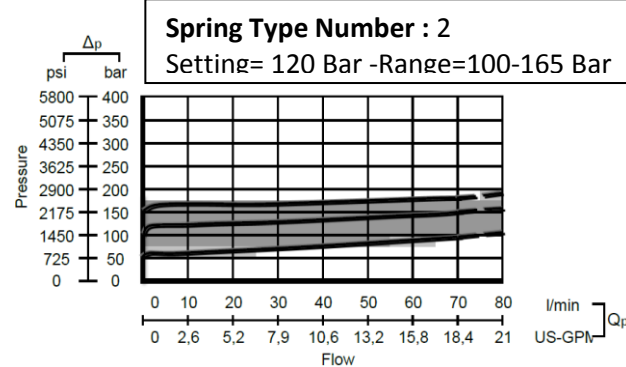
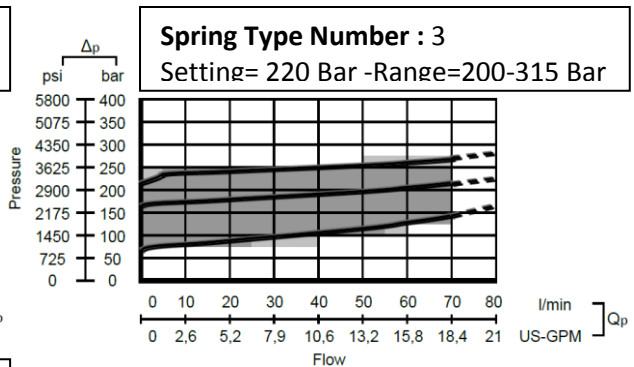
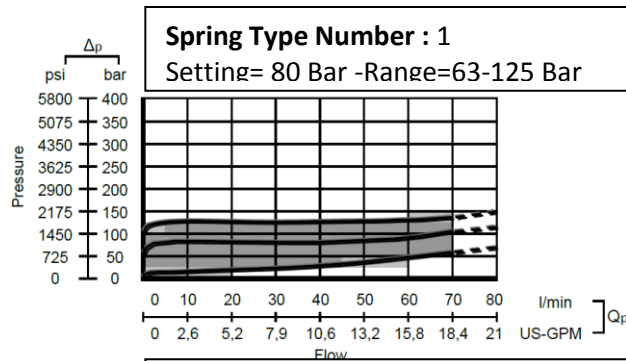
Code: _____

SMR2 – 120

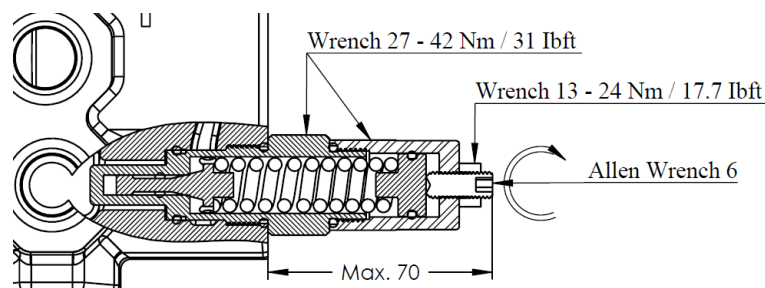
- Pressure Setting Bar in (Standard 120 bar)
- Standard Main Relief Spring Type -2



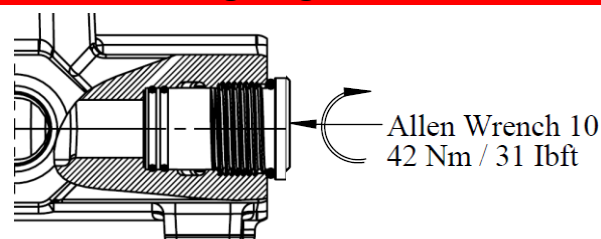
Performance Data: _____



Adjustment Type on Valve: _____

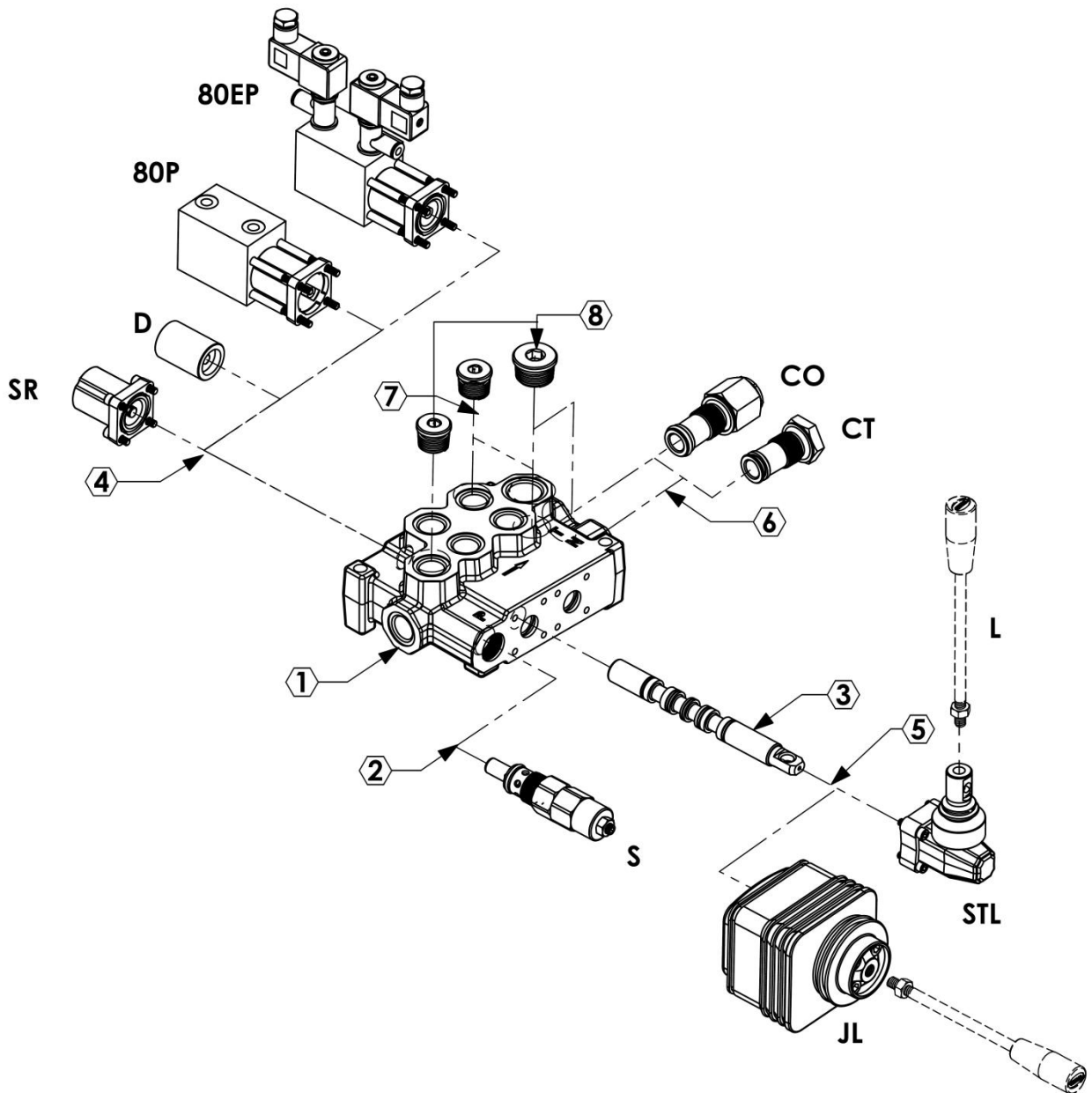
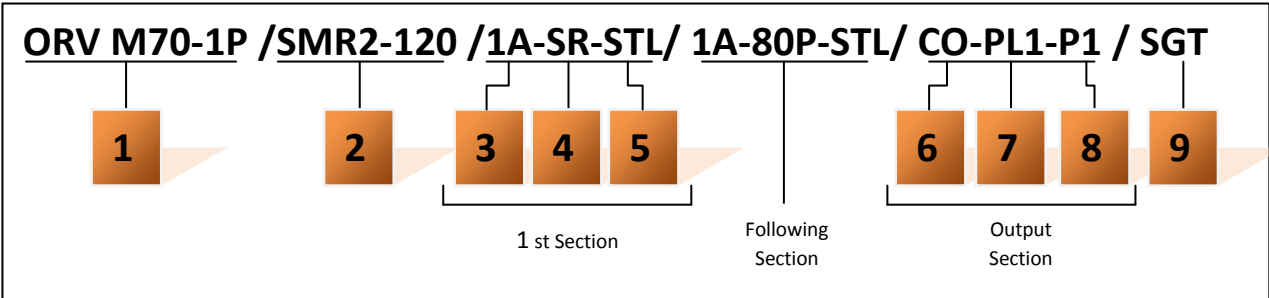


Relief Blanking Plug - WM



Ordering Codes

Order example



Ordering Codes

1-Valve Type and Body

M80 =Valve Type - (M) - Monoblok
(70) - Max. Flow Rate

1P =Body for 1 Section - (1BM170100)
2P =Body for 2 Sections - (1BM270100)
3P =Body for 3 Sections - (1BM370100)
4P =Body for 4 Sections - (1BM470100)
5P =Body for 5 Sections - (1BM570100)
6P =Body for 6 Sections - (1BM670100)

2-Pressure Relief Options

SMR = Standard direct pressure relief valve

SMR1-080 – (2SMR170080)–Range 63-125 bar
Setting 80 bar

SMR2-120 – (2SMR270120)–Range 100-165 bar
Setting 120 bar

SMR3-220 – (2SMR370220)–Range 200-315 bar
Setting 220 bar

3-Spool Options

1A -(3SM170110) – 3 Positions ,Double acting
 2A -(3SM170120) – 3 Positions ,Double acting
 A to tank B Blocked

3A -(3SM170130) – 3 Positions ,Double acting
 B to tank A blocked

4A -(3SM170140) – 3 Positions ,Double acting
 A and B tank

5A -(3SM170150) – 3 Positions ,Single acting on
 A (A to tank)

6A -(3SM170160) – 3 Positions ,Single acting on
 B (B to tank)

4- Spool Positioners

SR=Spring Return in neutral position –
(4SR080100)

D =Detent in position 1, neutral and 2 -
(4D080100)

80P=ON/OFF Pneumatic – (445P045100)

80EP=12 VDC ON/OFF electro-pneumatic –
(480EP080112)

24 VDC ON/OFF electro-pneumatic –
(480EP080124)

5-Lever Options

STL=Standard lever –(5STL080100)

JL=Joystick lever for two sections operation
- (5JL 080100)

6- Output Options

PA2(T) =G3/4 Top output plug - (6PL1080134)
PA2(S) =G3/4 Side output plug - (6PL1080134)
CO =G3/4 Carry-Over Connector - (6CO080100)
CT = G3/4 Carry-Over Plug - (6CT070100)

7-Ports Plug Options "If Required"

PL3(5A) =Plug for single action spool for 5A
 G3/4 –(6PL1080134)

PL3(6A) =Plug for single action spool for 6A
 G3/4 –(6PL1080134)

PL2(5A)=Plug for single action spool for 5A
 G1/2- (6PL1040112)

PL2(6A)=Plug for single action spool for 6A
 G1/2- (6PL1040112)

*Page 12 for detail spool options.

8- Ports Input Plug Options

PI1(T) = G1/2 Top input – (6PL1040112)
PI1(S) = G1/2 Side input – (6PL1040112)
PI3(T) = G3/4 Top input - (6PL1080134)
PI3(S) = G3/4 Side input - (6PL1080134)

9- Ports Thread Options

SGT1 =1/2" Series Port Options - (9P045112)
SGT3 =3/4" Series Port Options - (9P080134)
UNF =UNF Series Port Options - (9U045138)
M =Metric Series Port Options -
(9M045138)

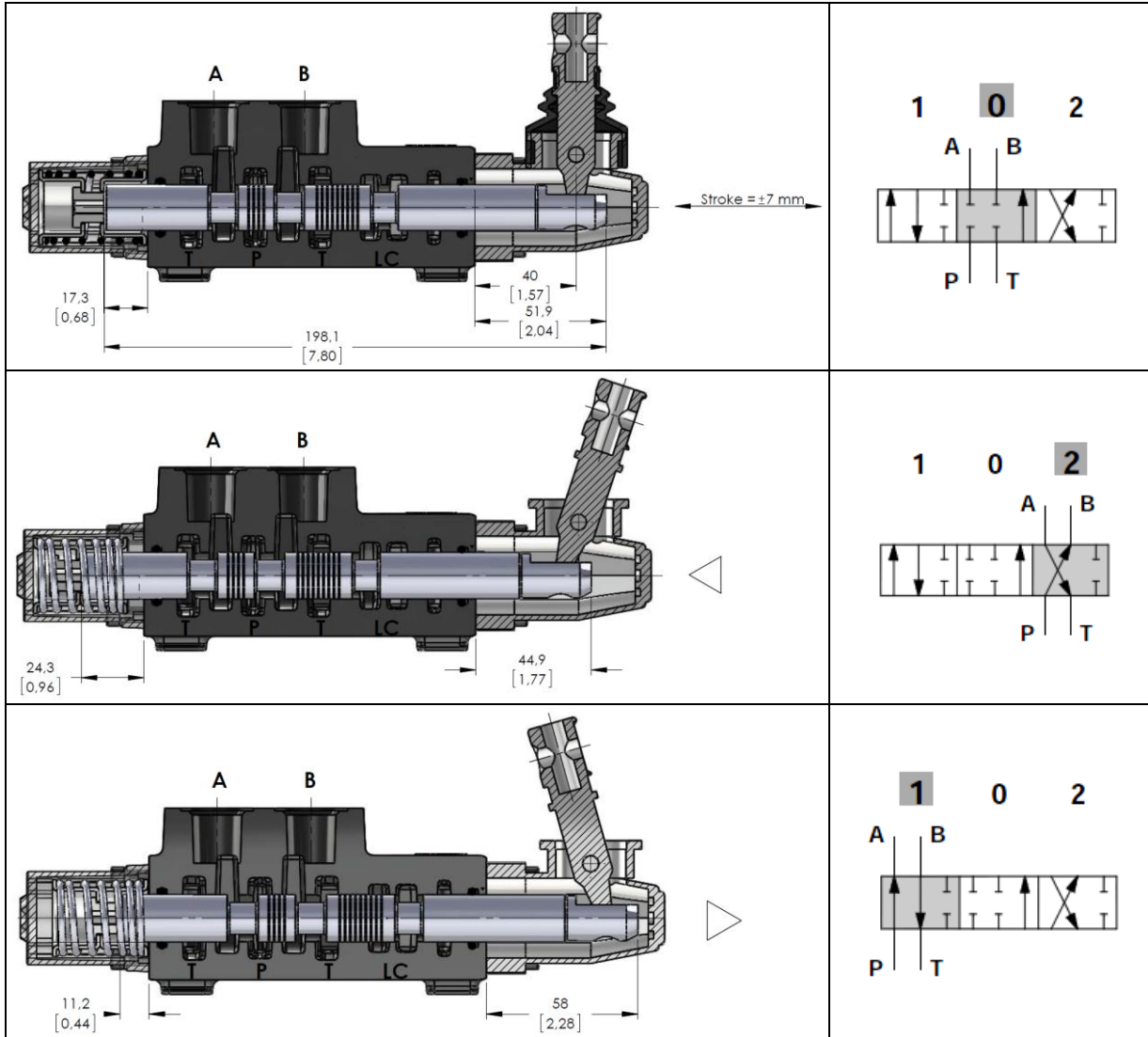
*Page 4 for detail port information.

HandLever

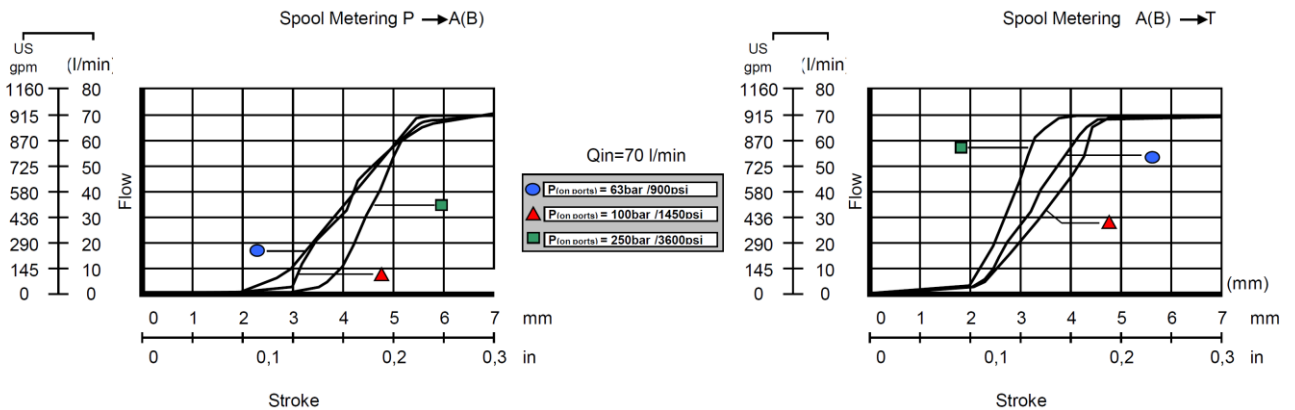
L =Standard HandLever (L=120mmxM8) -
(7L040100)

Spool Options

Spool Type - 1A

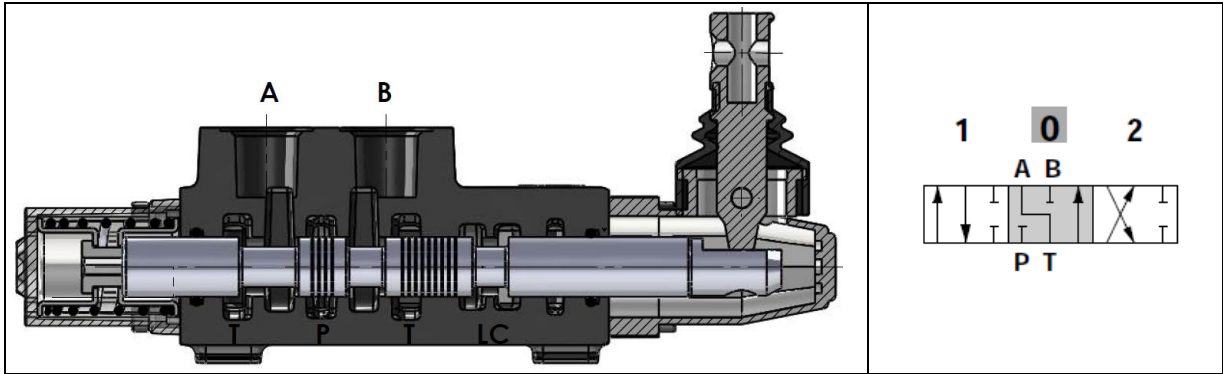


Performance Curve And Data:

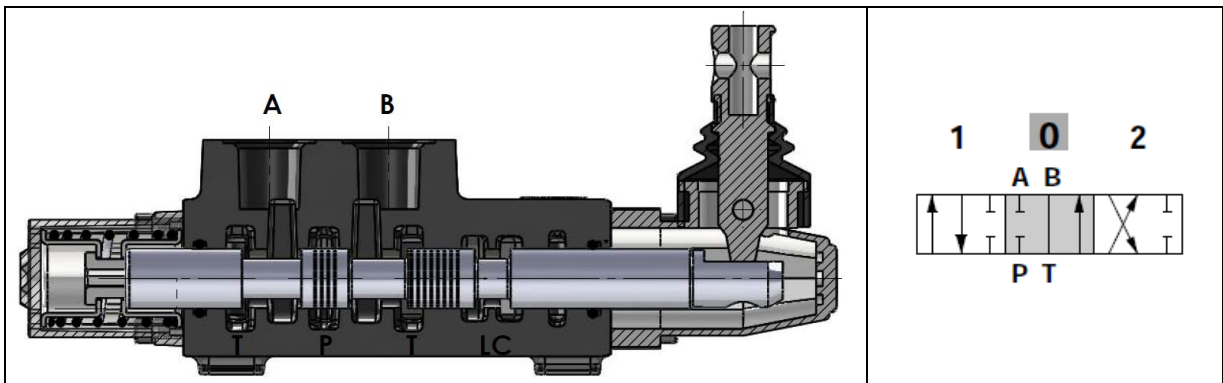


Spool Options

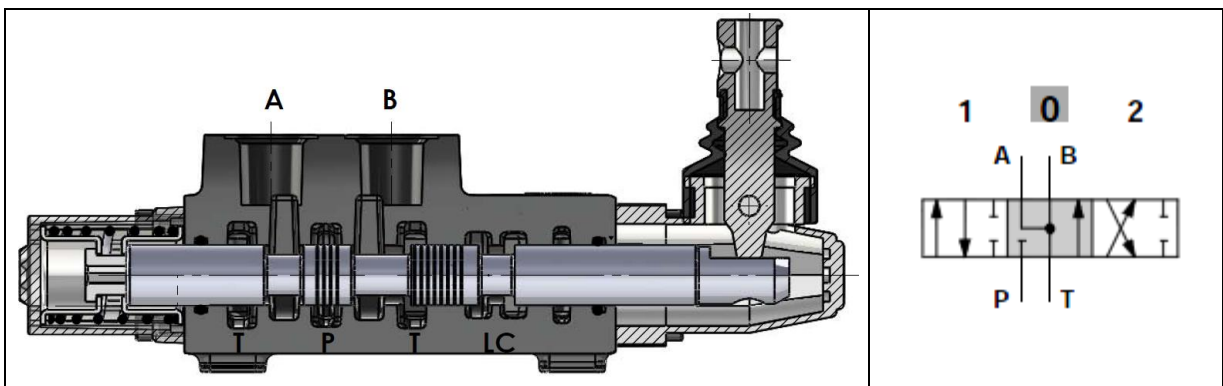
Spool Type - 2A



Spool Type - 3A

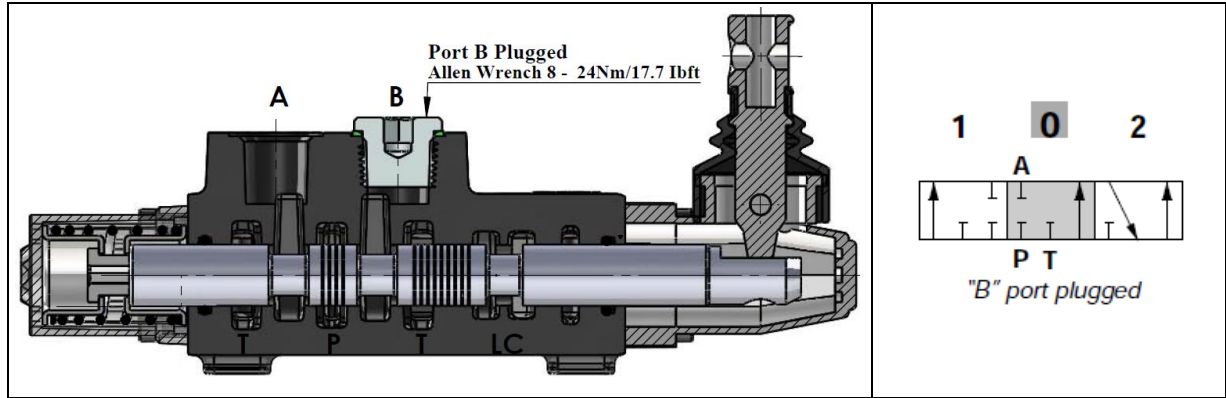


Spool Type - 4A

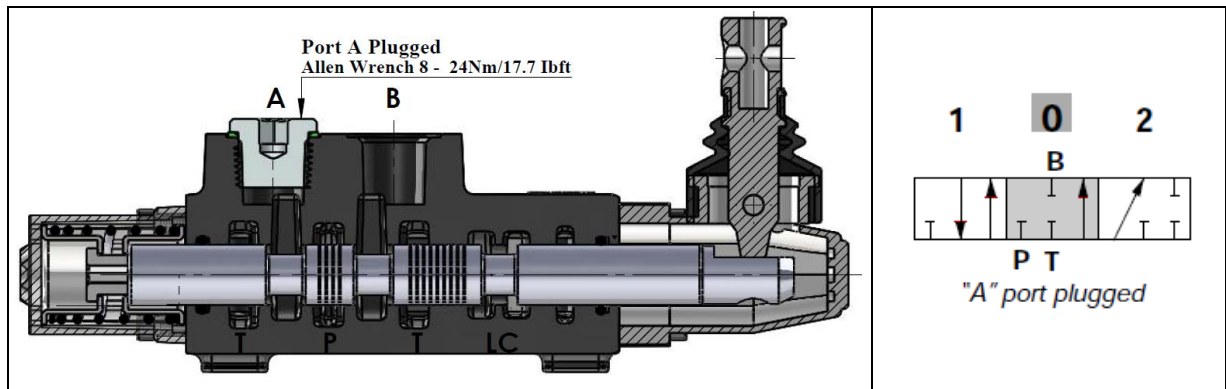


Spool Options

Spool Type - 5A



Spool Type - 6A



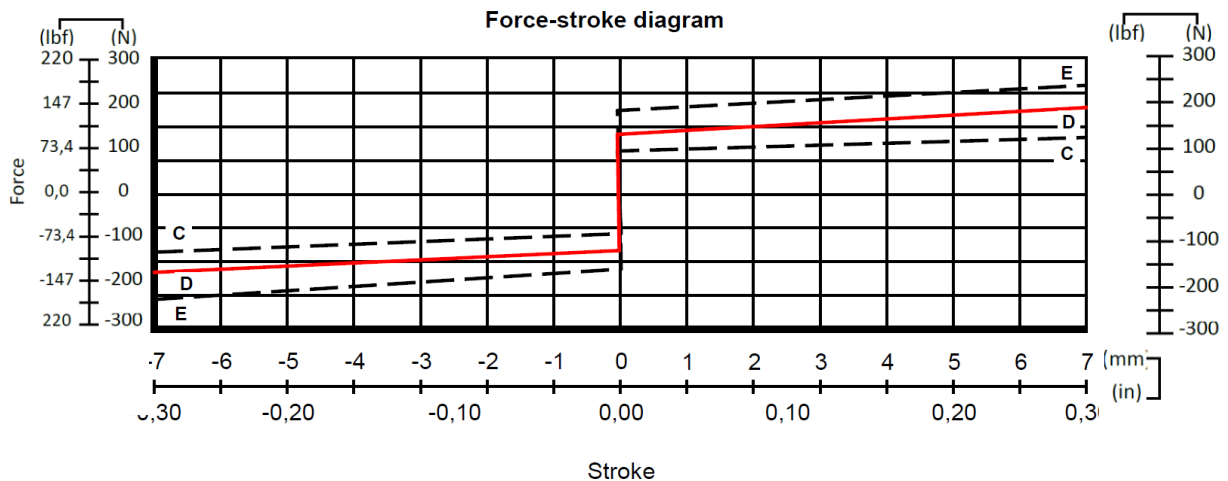
Spool Positioners – Side of Return

With Spring Return in Neutral Position

Kit No: SR	
Sectional Appearance	Diagram

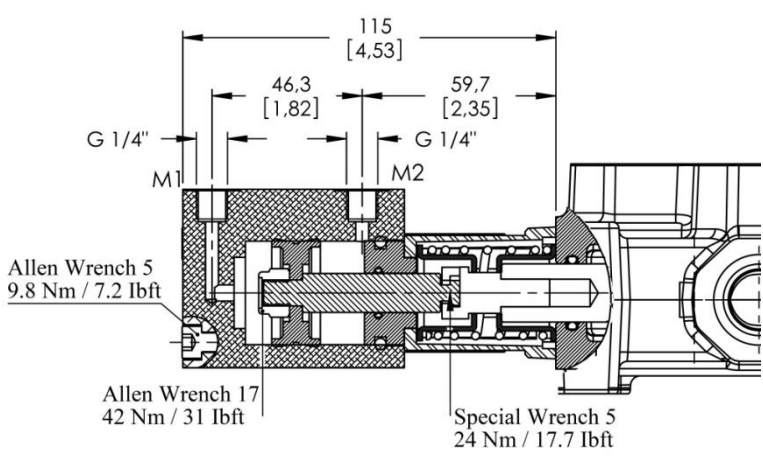
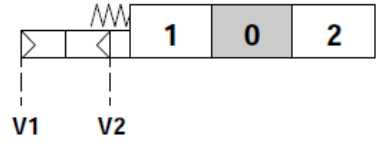
With Detent

Kit No: D	
Sectional Appearance	Diagram

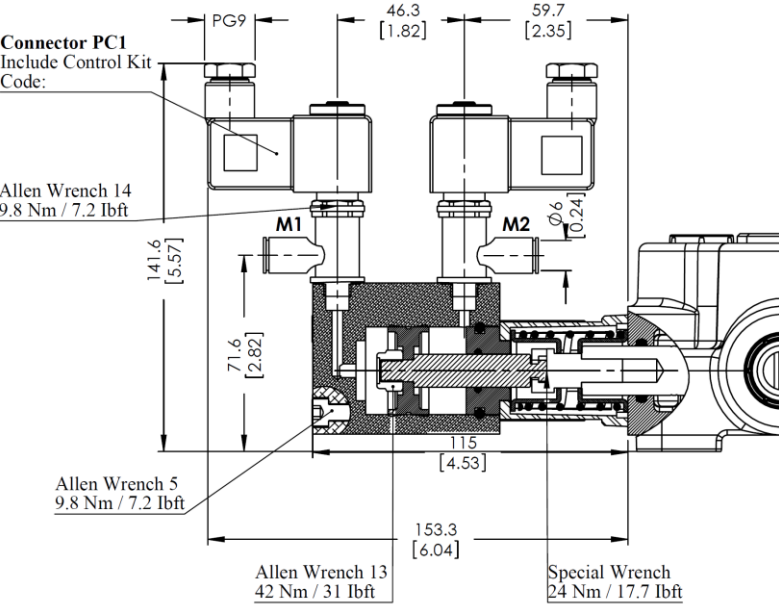
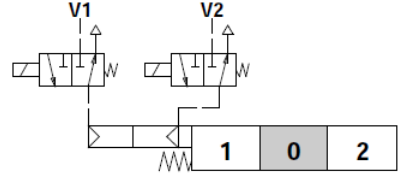


Spool Positioners – Side of Return

ON/OFF Pneumatic Control

Kit No: 80P	
Sectional Appearance	Diagram
 <p style="font-size: small;">Allen Wrench 5 9.8 Nm / 7.2 lbft</p> <p style="font-size: small;">Allen Wrench 17 42 Nm / 31 lbft</p> <p style="font-size: small;">Special Wrench 5 24 Nm / 17.7 lbft</p>	
Operatig Features Pilot Pressure: 6 Bar (Max. 10) / 87 Psi (Max. 145)	

ON/OFF Electro-Pneumatic Control

Kit No: 80EP	
Sectional Appearance	Diagram
 <p style="font-size: small;">Connector PC1 Include Control Kit Code:</p> <p style="font-size: small;">Allen Wrench 14 9.8 Nm / 7.2 lbft</p> <p style="font-size: small;">Allen Wrench 5 9.8 Nm / 7.2 lbft</p> <p style="font-size: small;">Allen Wrench 13 42 Nm / 31 lbft</p> <p style="font-size: small;">Special Wrench 24 Nm / 17.7 lbft</p>	
Operatig Features Pilot Pressure: 6 Bar (Max. 10) / 87 Psi (Max. 145)	
Selonoid Operating Features Nominal Voltage.....: 12VDC / 24 VDC Power Rating.....: 6 W	

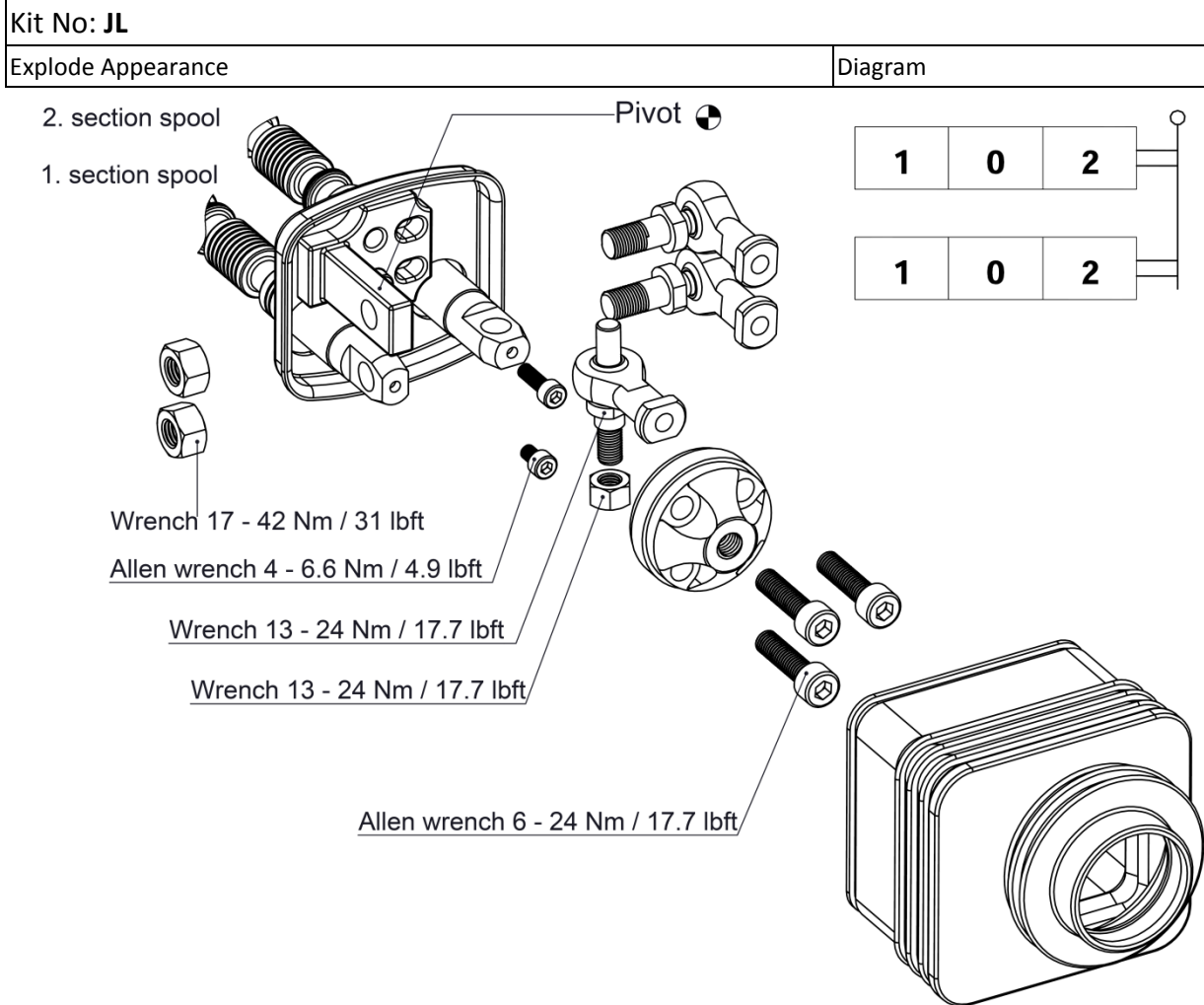
Spool Positioners – Side of Lever Control

Lever Controls

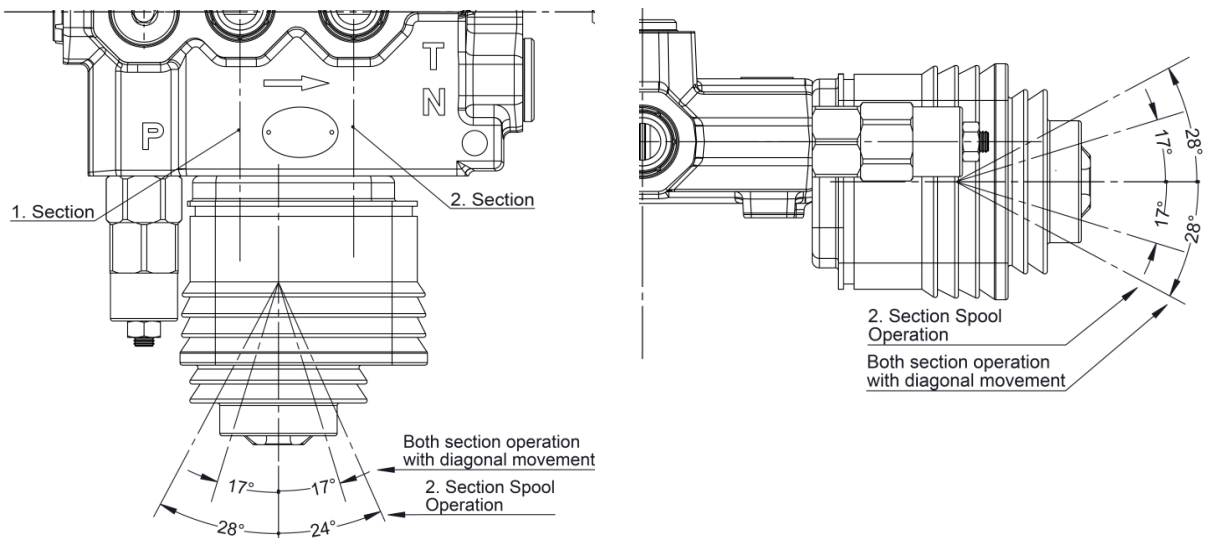
Kit No: STL - L0	
Sectional Appearance	Diagram
Kit No: STL - L180	
Sectional Appearance	Diagram
<p>Note: Aluminium with protection arm lever pivot box, it can be rotated 180°.</p>	

Spool Positioners – Side of Lever Control

Lever Controls - Joystick



Operation Angle:



Spool Positioners – Side of Lever Control

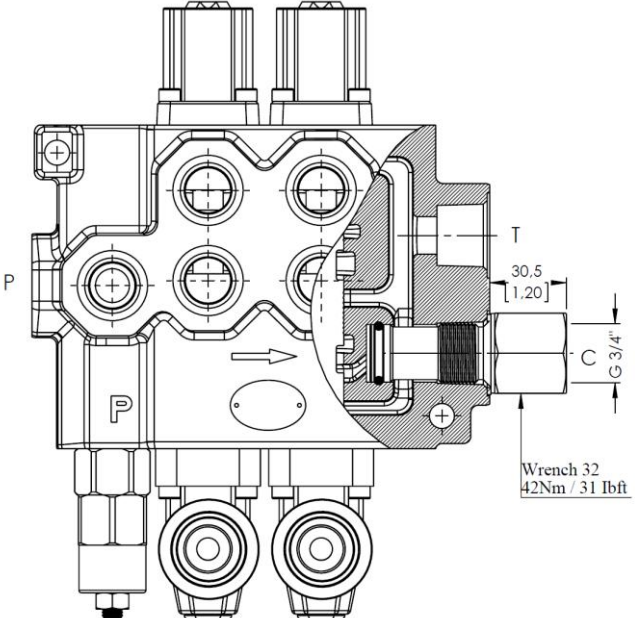
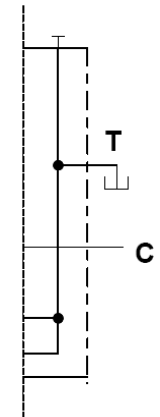
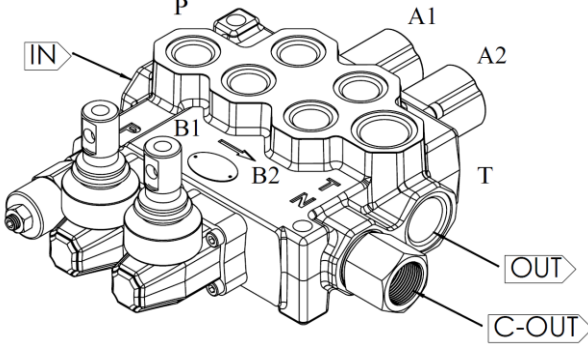
Lever Controls - Joystick

Dimensions and movement scene

Type No: JL1	Execution: Pivod placed down on the Left
Type No: JL2	Execution: Pivod placed down on the right
Type No: JL3	Execution: Pivod placed above on the Left
Type No: JL4	Execution: Pivod placed above on the right

Outlet Port Options

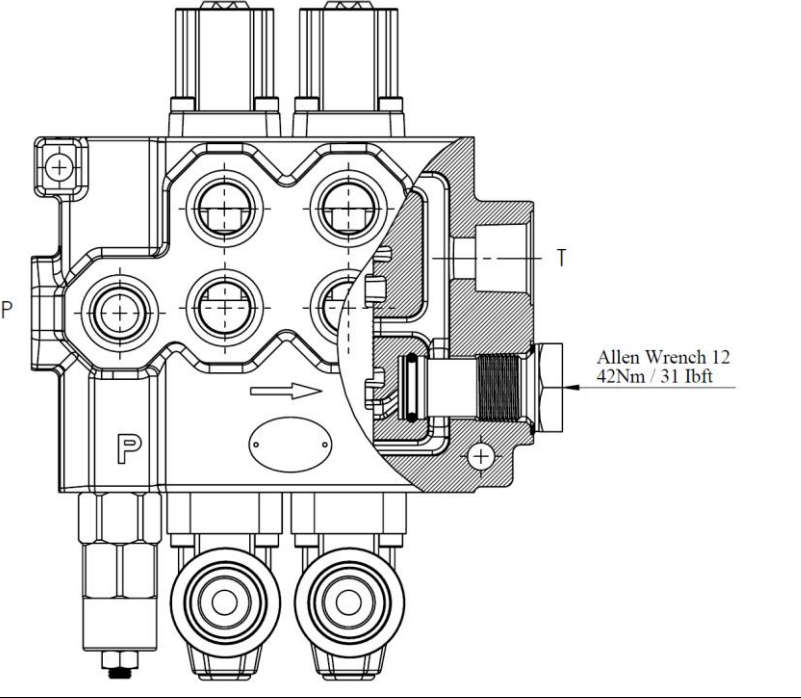
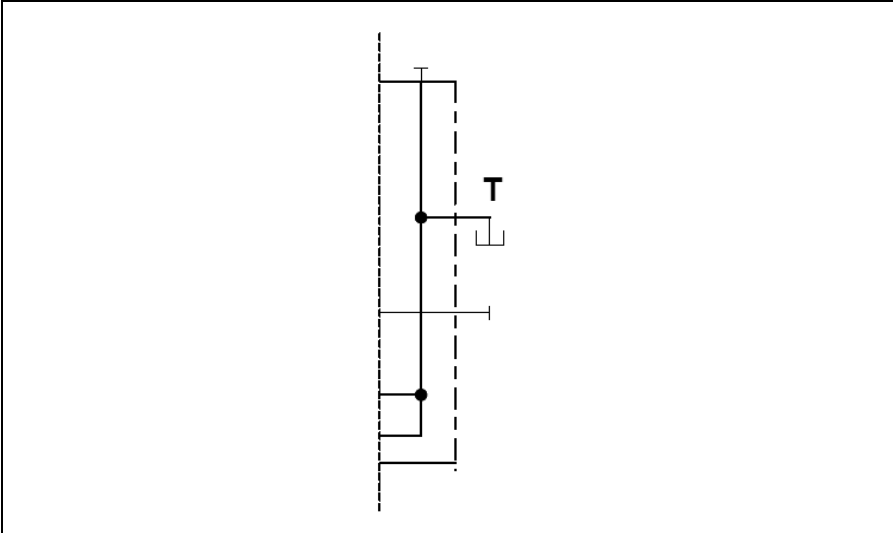
Carry - Over Connection

<p>Kit No: CO</p> 	<p>Sectional Appearance</p>
	<p>Hydraulic Circuit</p> <p>Code:ORV M70-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/CO-PA1/SGT</p>
	<p>Direction of Port Connected</p>

SGT : See page 5 for Standard center

Outlet Port Options

Closed Center

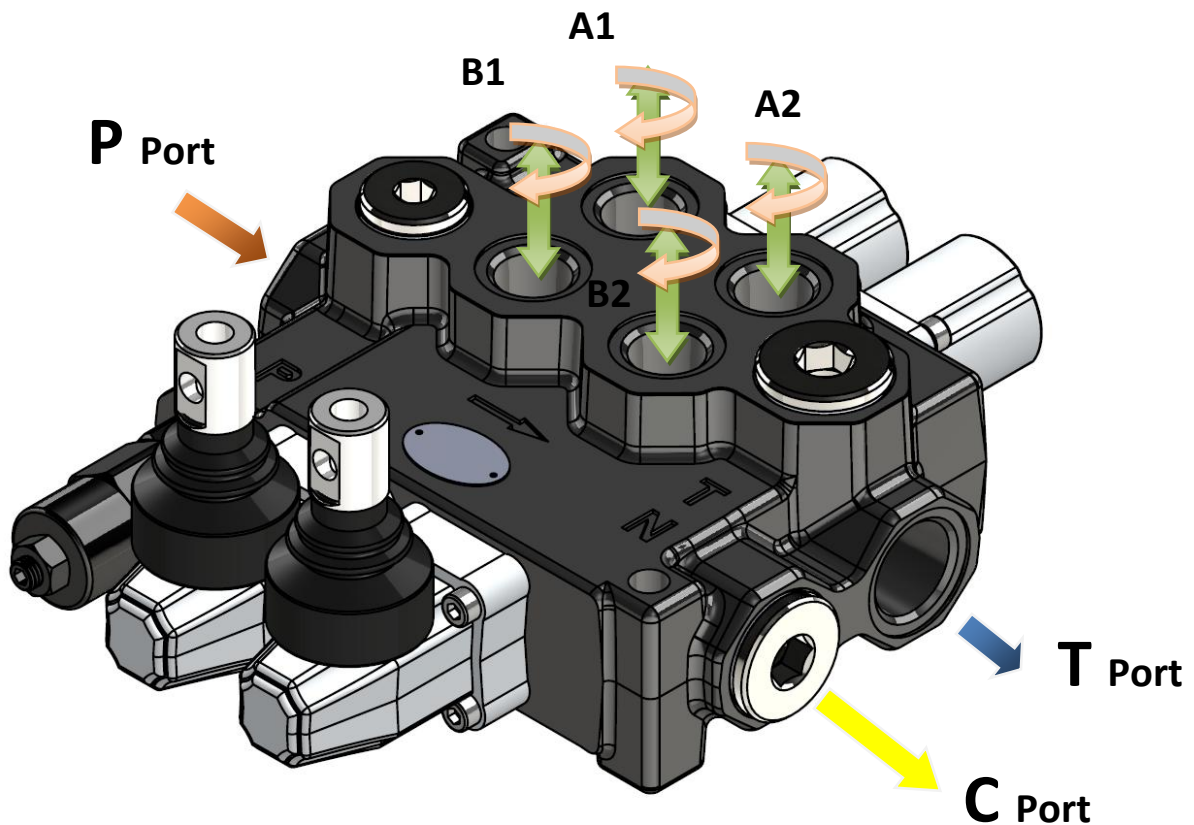
<p>Kit No: CS</p> 	<p>Sectional Appearance</p>
	<p>Hydraulic Circuit</p> <p>Code:ORV M70-2P / SMR2-120 / 1A-SR- STL/1A-SR-STL/CT- PA1/SGT</p>

Installation and Maintenance

The ORV M70 valve is assembled and tested as per the technical specification of this catalog.

Before the final installation on your equipment, follow the below recommendation:

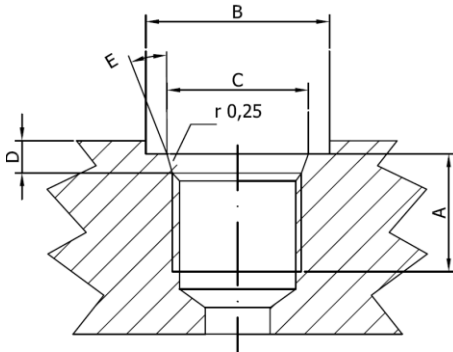
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Prior to painting, ensure plastic port plugs are tightly in place.



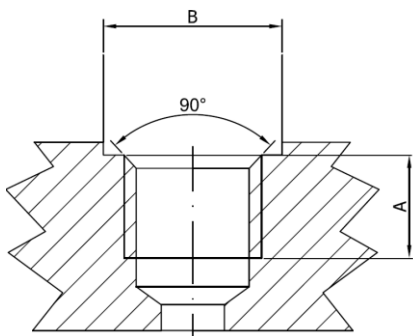
Threads Type (Nm / lbft)	P Port	A and B Port	T and C Port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O--Ring seal	50 / 36.9	50 / 36.9	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
BSP (ISO 228/1)	G 3/4	G 3/4	G 3/4
With O--Ring seal	70 / 51.6	70 / 51.6	70 / 51.6
With copper washer	70 / 51.6	70 / 51.6	70 / 51.6
With steel and rubber washer	70 / 51.6	70 / 51.6	70 / 51.6
UN--UNF (ISO 11926--1)	11/16--12 UNF--2B	9/16--18 UNF--2B	11/16--12 UNF--2B
With O--Ring seal	95 / 70	30 / 22.1	95 / 70
METRIC (ISO 262)	M27 x 2	M22 x 1.5	M27 x 2
With O--Ring seal	100 / 73.8	50 / 36.9	100 / 73.8
With copper washer	100 / 73.8	60 / 44.3	100 / 73.8
With steel and rubber washer	100 / 73.8	60 / 44.3	100 / 73.8

Technical Data

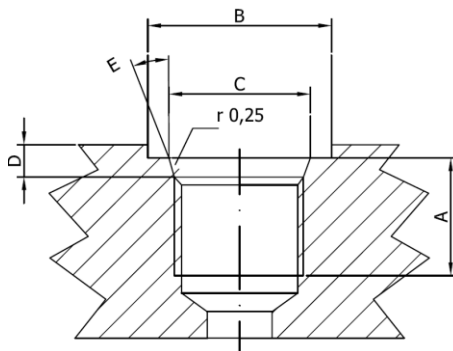
Ports Dimensional Data



SAE UN-UNF (ISO 725)							
Dimensions		7/8-14 UNF SAE10		1"1/16-12 UN SAE12		1"5/16-12 UN SAE16	
mm	in						
A		17	0,67	20	0,79	20	0,79
B		34	1,34	41	1,61	49	1,92
C		23,9	0,94	29,2	1,15	35,5	1,40
D		2,5	0,10	3,3	0,13	3,3	0,13
E		15°		15°		15°	



BSP (ISO 228)							
Dimensions		G 1/2"		G 3/4		G 1	
mm	in						
A		16	0,63	18	0,71	20	0,79
B		27	1,06	33	1,30	40	1,57



METRIC (ISO 262)							
Dimensions		M22x1,5 ISO 262		M27x2 ISO 262			
mm	in						
A		16	0,63	18	0,71		
B		31,5	1,24	37,7	1,48		

