



SPECIAL TRACTOR  
VALVES

**ORV-TV50**

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 (01/2017) . 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.

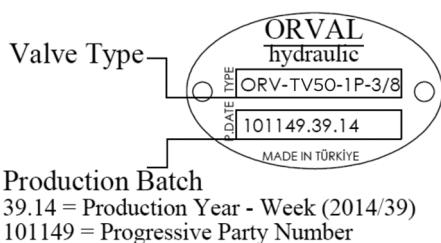
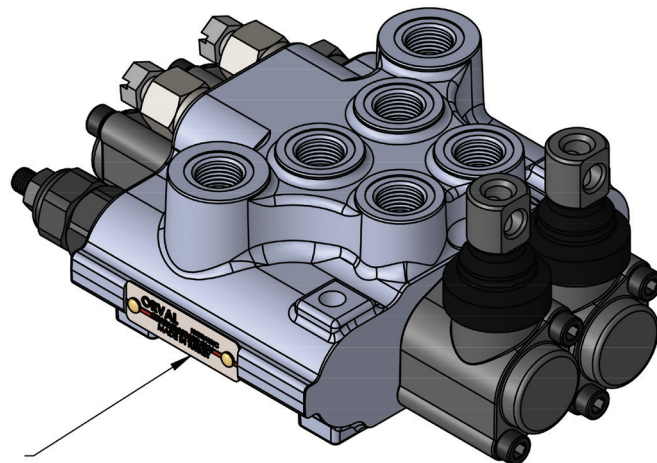
## WORKING CONDITIONS

Nominal Flow Rating / Displacement	50 l/min	13,5 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 Viscosity – Operating Range	From 10 to 75 mm <sup>2</sup> /s	From 10 to 75 cSt
Minimum / Maximum	10 / 400 mm <sup>2</sup> /s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperature Range	-35 to 60 C°	-31 to 140 F°
Number Of Spools	1 to 7	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm <sup>3</sup> /min	0,18 in <sup>3</sup> /min
Max. Level Of Contamination	19/16 – ISO 4406	

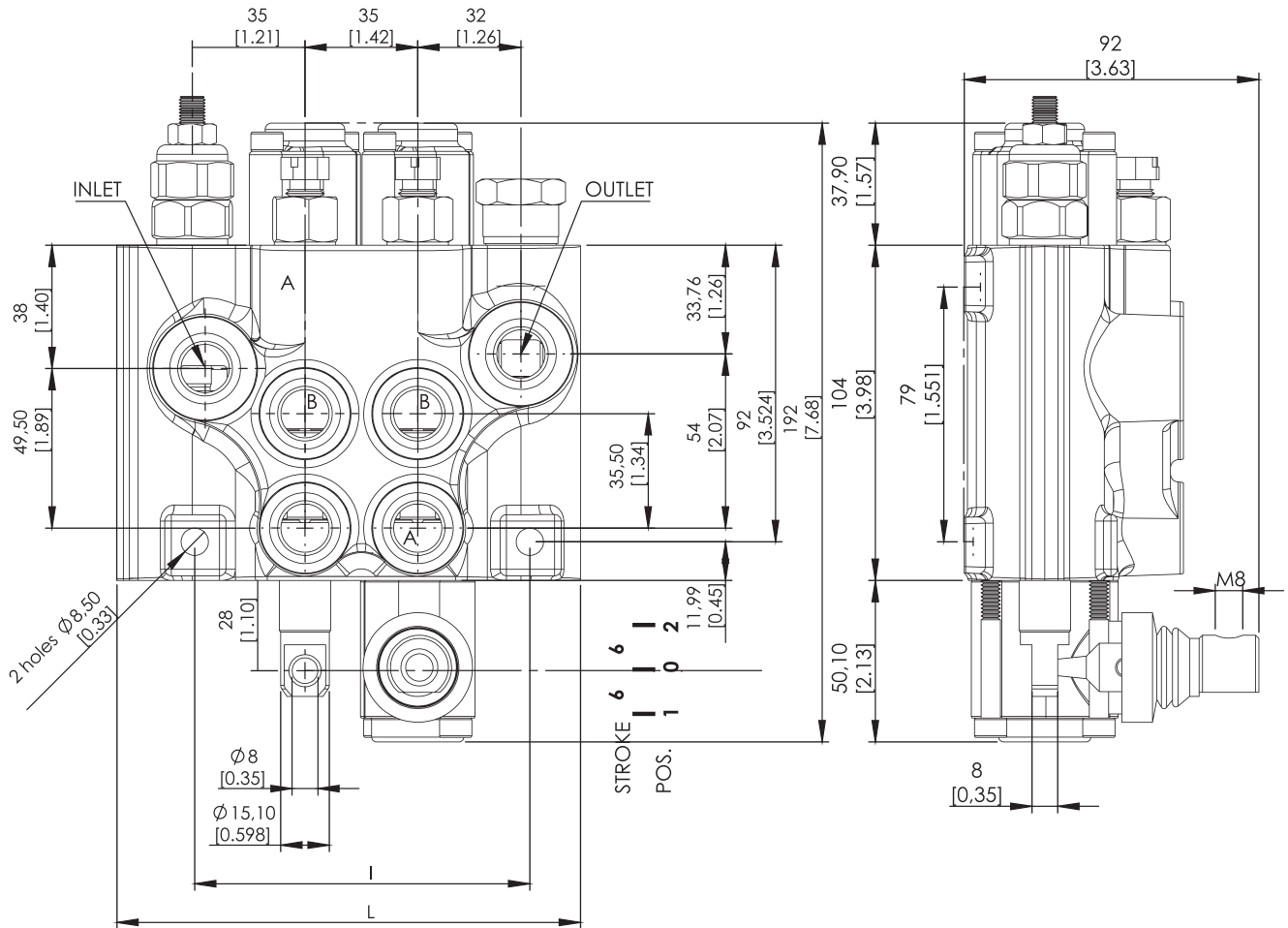
**Not:** This catalogue shows technical specifications measured with mineral oil of 46 mm<sup>2</sup>/s-46 cSt viscosity at 40 C° temperature.

## Features

- Simple, compact and heavy duty designed monoblock valves from 1 to 3 sections for open and closed center hydraulic systems.
- Fitted with a main pressure relief valve and a load check valve.
- Optional Carry-Over port only parallel circuit.
- Interchangeable spool diameter is 16 mm – 0,63 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.



**DIMENSIONAL DATA**



TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
ORV- TV50-1P	68	2,67	105	4,12	2,80	6,16
ORV- TV50-2P	104	4,09	140	5,49	4,50	9,90
ORV- TV50-3P	140	5,51	175	6,86	6,30	13,86

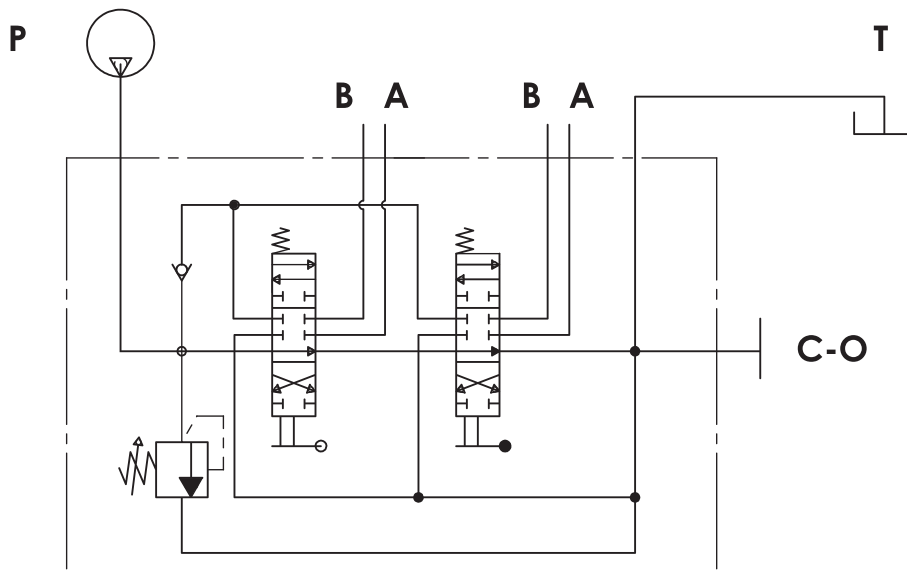
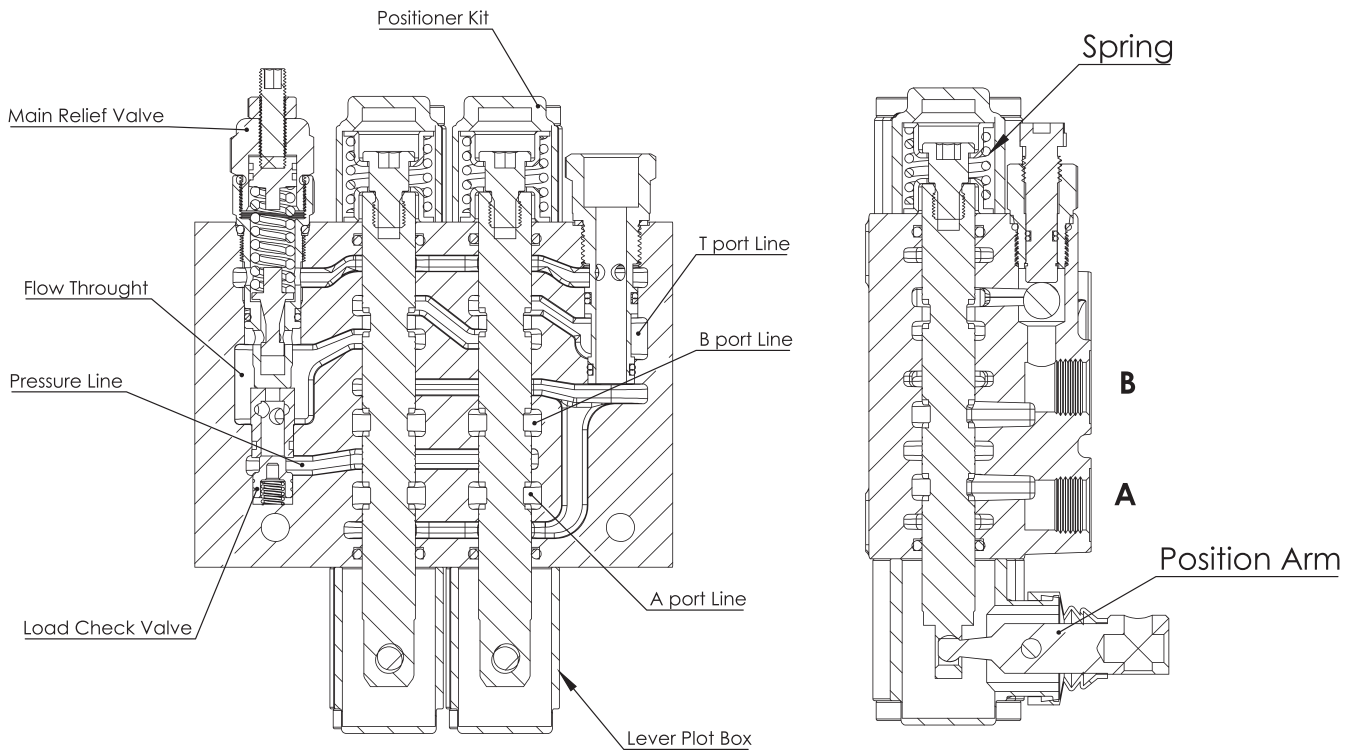
**STANDARD THREADS**

PORT	BSP (Iso 228) 3/8" Series	UN-UNF (Iso 11926-1)	Metric (Iso 262)
P Inlet	G 3/8	3/4-16 UNF	M18x1.5
A-B Ports	G 3/8	9/16-18 UNF	M18x1.5
T Outlet	G 1/2	3/4-16 UNF	M18x1.5
Pneumatic	G 1/4	NPTF 1/8 - 27	NPTF 1/8 - 27
Carry-Over	G 3/8	3/4-16 UNF	G 3/8



**HYDRAULIC CIRCUIT**

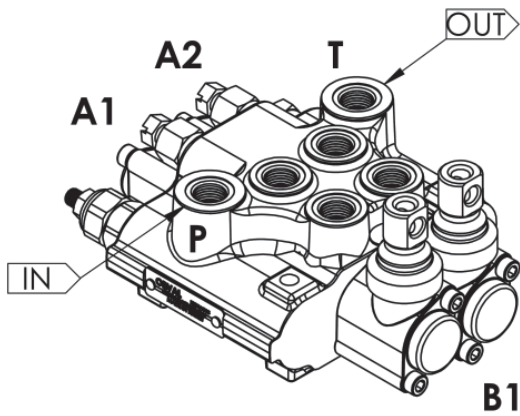
**Parallel - Standard Configurations With Side Inlet And Outlet Open Center**



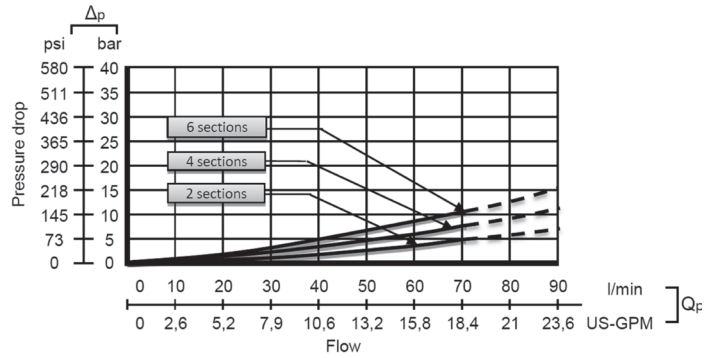
**Code:** ORV TV50-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

**PERFORMANCE DATA AND CURVE**

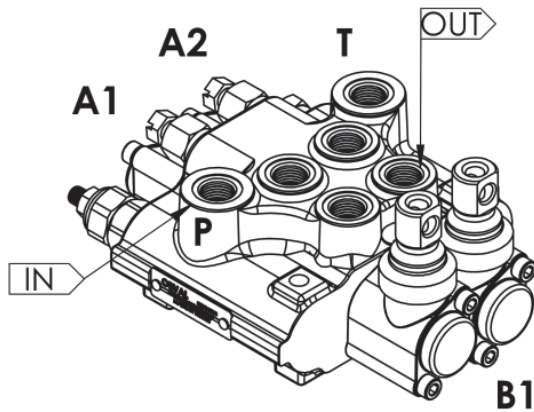
**Open Center - Pressure Drop (P-T)**



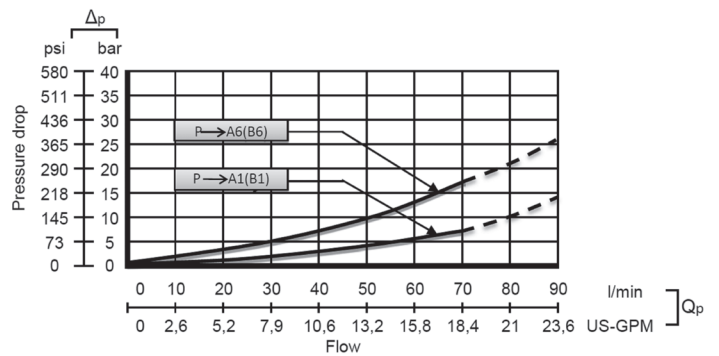
**B2**



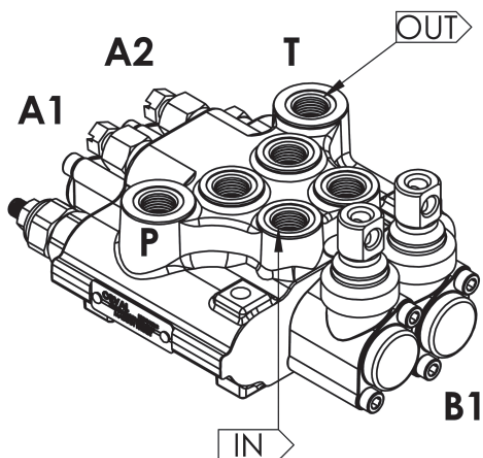
**Inlet to Work Port - Pressure Drop (P-A/B)**



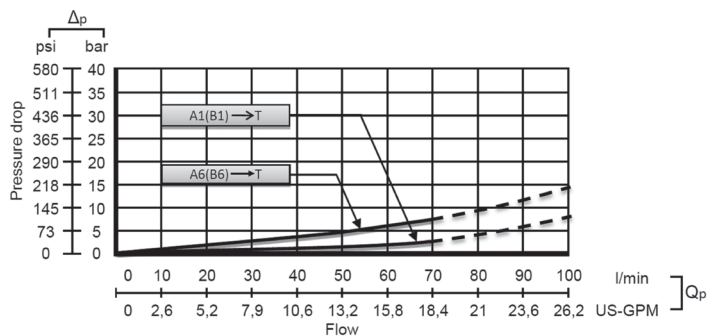
**B2**



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



**B2**



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

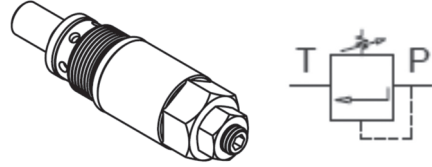
INLET RELIEF OPTIONS

Direct Pressure Relief Valve

Code:

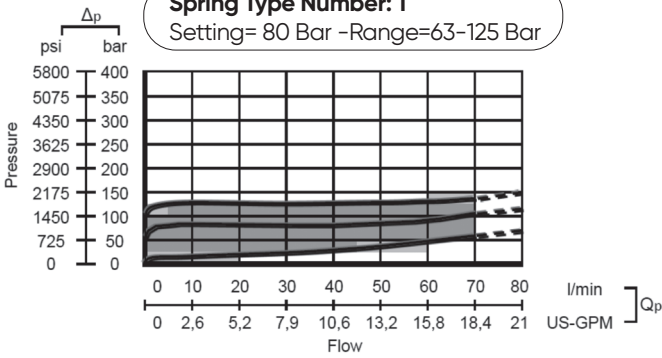
SMR2 - 120

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

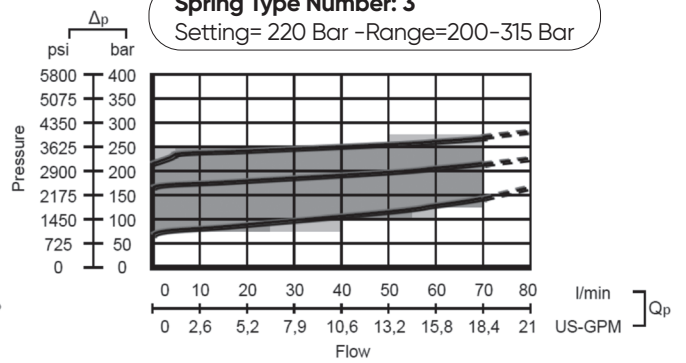


Performance Data

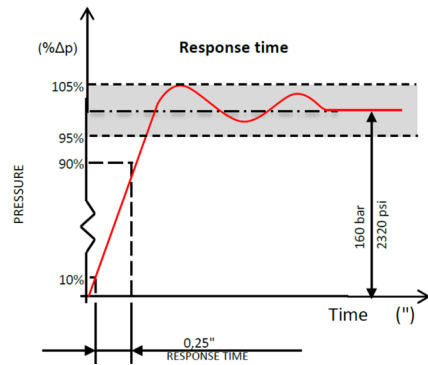
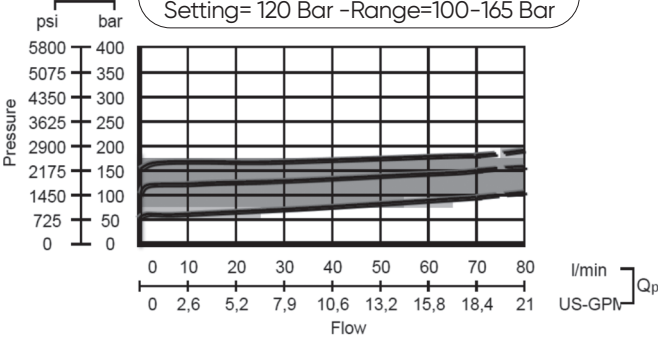
Spring Type Number: 1  
Setting= 80 Bar -Range=63-125 Bar



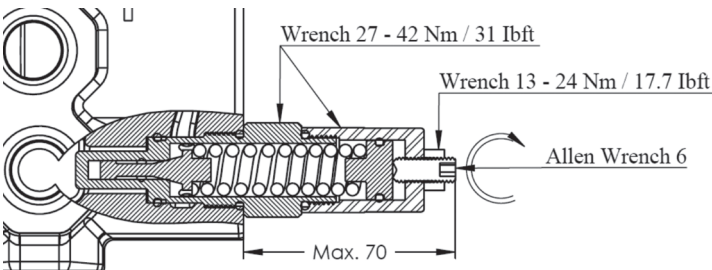
Spring Type Number: 3  
Setting= 220 Bar -Range=200-315 Bar



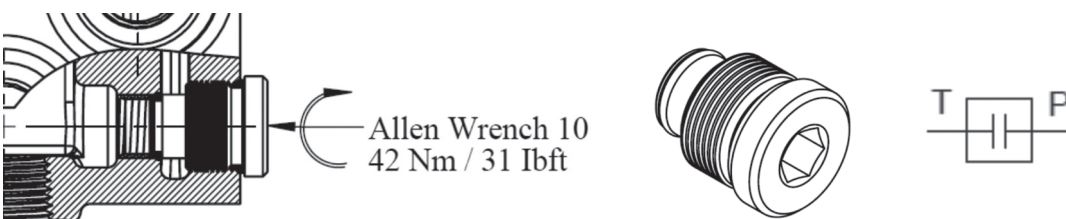
Spring Type Number: 2  
Setting= 120 Bar -Range=100-165 Bar



Adjustment Type on Valve

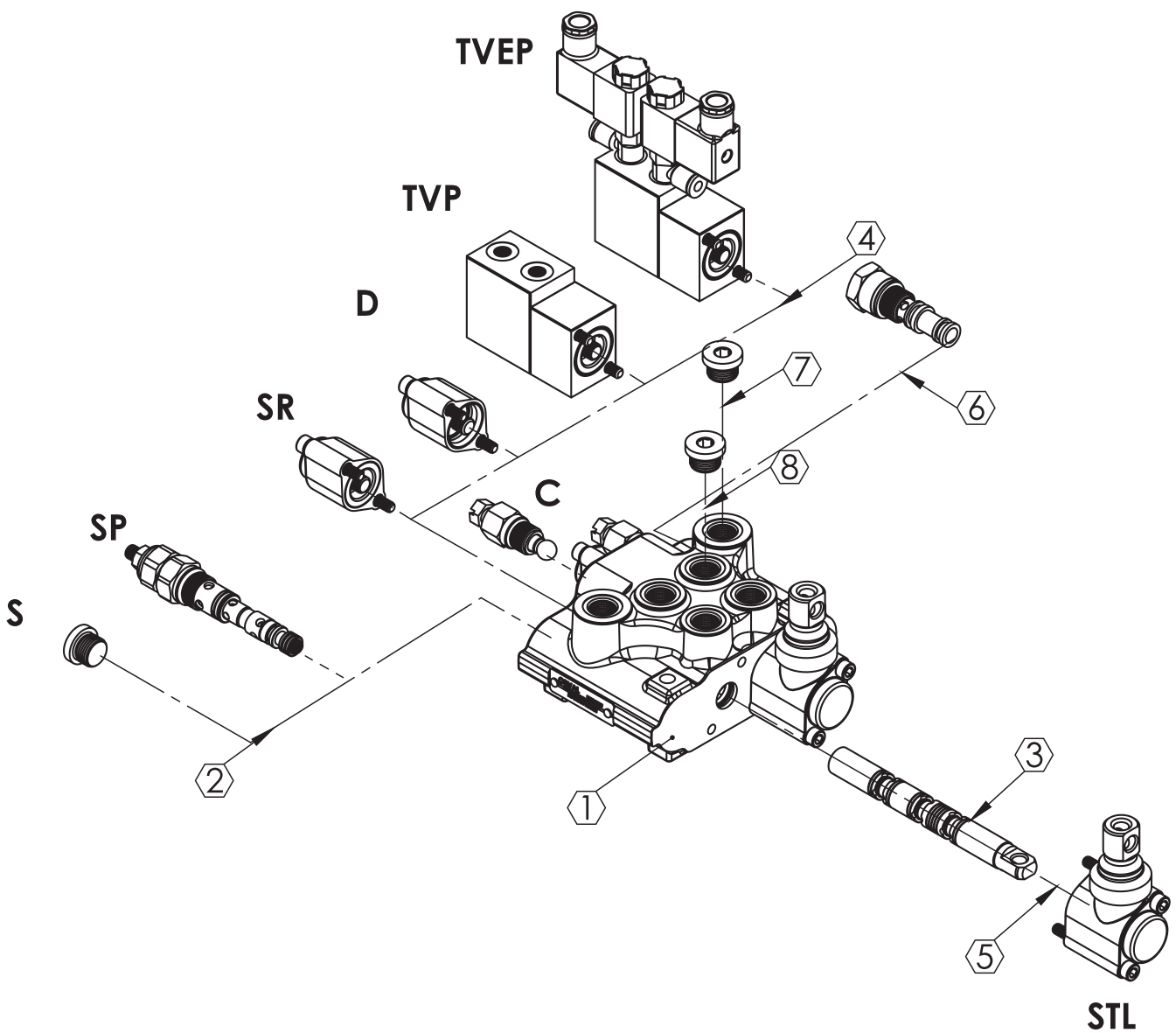
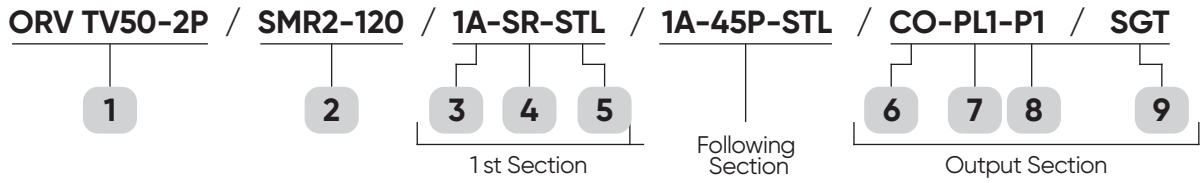


Relief Blanking Plug - WM



**ORDERING CODES**

**Order Example**



## ORDERING CODES

### 1- Valve Type and Body

TV50 =Valve Type - (TV) - Monoblok  
(50) - Max. Flow Rate

**1P** = Body for 1 Section - (1TV150100)  
**2P** = Body for 2 Sections - (1TV250100)  
**3P** = Body for 3 Sections - (1TV350100)

### 2- Pressure Relief Options

SMR = Standard direct pressure relief valve

**SMR1-080** - (2SMR145080)-Range 0-80 bar  
Setting 80 bar

**SMR2-120** - (2SMR245120)-Range 60-200 bar  
Setting 120 bar

**SMR3-220** - (2SMR345220)-Range 160-315 bar  
Setting 220 bar

**SP** = Standard relief plug - (2SP045100)

### 3- Spool Options

1A -(3STV150110) - 3 Positions ,Double acting

2A -(3STV150120) - 3 Positions ,Double acting  
A to tank B Blocked

3A -(3STV150130) - 3 Positions ,Double acting  
B to tank A blocked

4A -(3STV150140) - 3 Positions ,Double acting  
A and B tank

5A -(3STV150150) - 3 Positions ,Single acting on  
A (A to tank)

6A -(3STV150160) - 3 Positions ,Single acting on  
B (B to tank)

### 4- Spool Positioners

**SR** = Spring Return in neutral position - (4SR045100)

**D** = Detent in position 1, neutral and 2 - (4D045100)

**TVP** = ON/OFF Pneumatic - (445P045100)

**TVEP** = 12 VDC ON/OFF electro-pneumatic -  
(4TVEP045112)

24 VDC ON/OFF electro-pneumatic -  
(4TVEP045124)

### 5- Lever Options

**STL** = Standard Lever - (5STL045100)

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

### 6- Output Options

**CO** = G3/8" Carry-Over Connector - (6CO050100)

### 7- Ports Plug Options "If Required"

**PL2(5A)** = Plug for single action spool for 5A  
G3/8- (7PL2045138)

**PL2(6A)** = Plug for single action spool for 6A  
G3/8- (7PL2045138)

\*Page 13 for detail spool options.

### 8- Ports Input Plug Options

**PI2(T)** = G3/8 Top input - (7PL2045138)

**PI2(S)** = G3/8 Side input - (7PL2045138)

### 9- Ports Thread Options

**SGT2** = 3/8" Series Port Options - (9P045138)

**UNF** = UNF Series Port Options - (9U045138)

**M** = Metric Series Port Options - (9M045138)

\*Page 4 for detail port information.

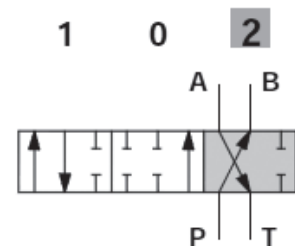
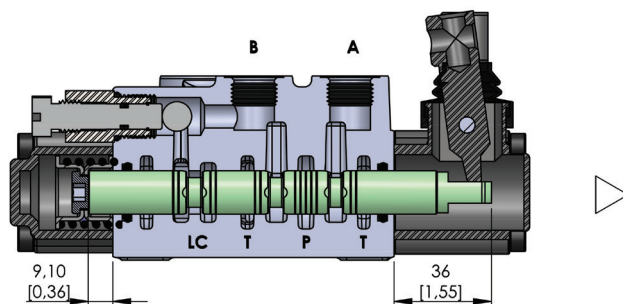
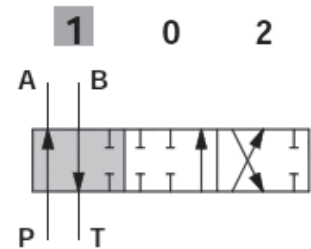
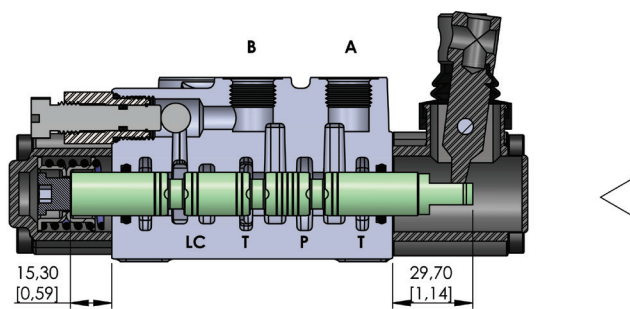
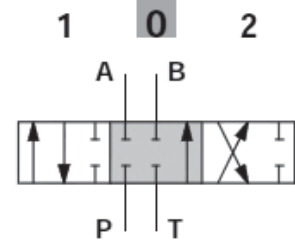
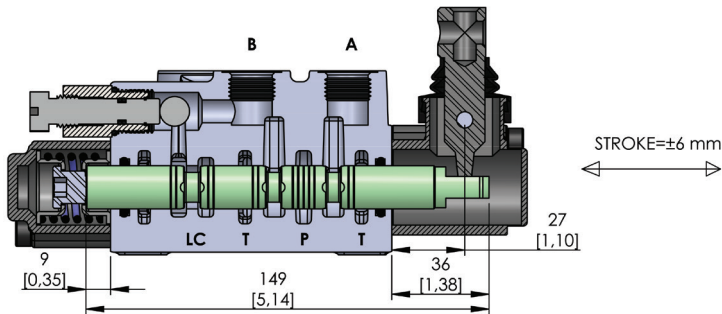
### HandLever

**L** = Standard HandLever (L=120mmxM10) -  
(7L040100)



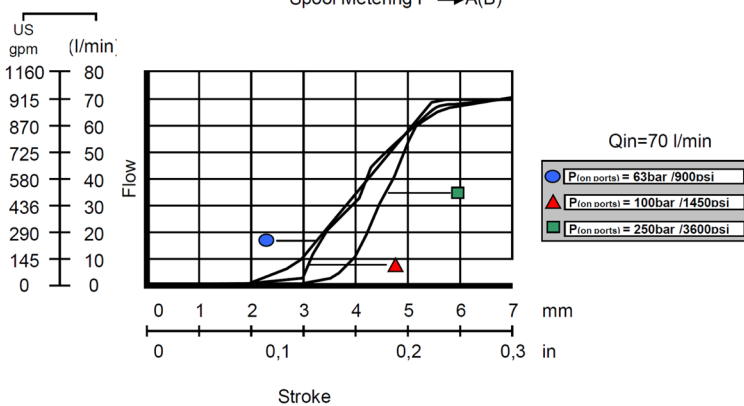
**SPOOL OPTIONS**

**Spool Type - 1A**

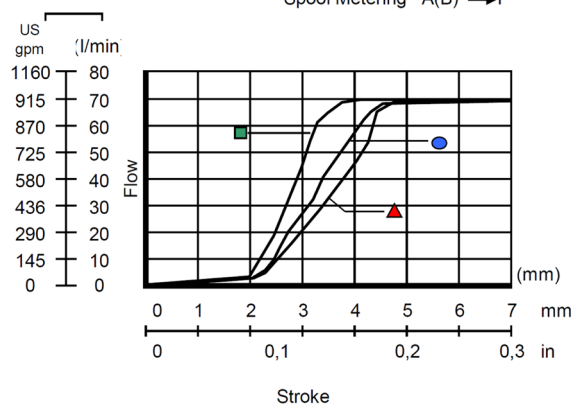


**Performance Curve And Data**

Spool Metering P → A(B)

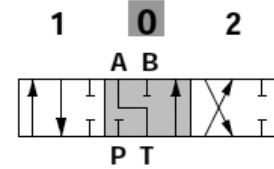
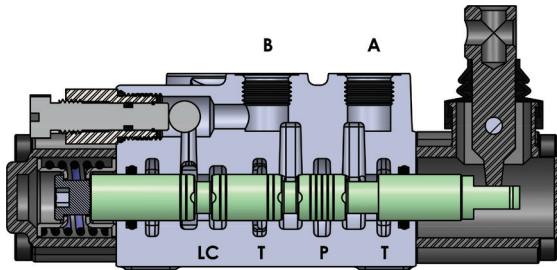


Spool Metering A(B) → T

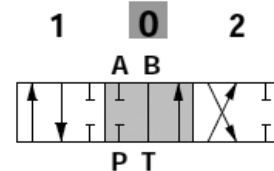
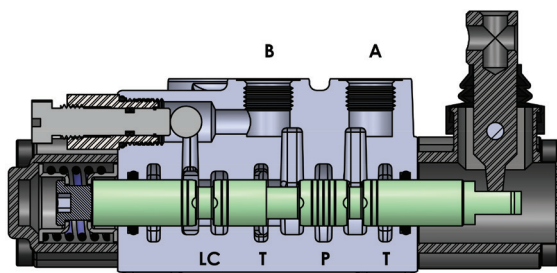


SPOOL OPTIONS

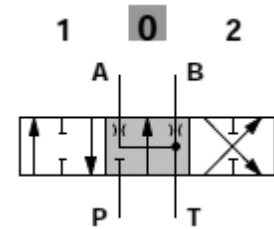
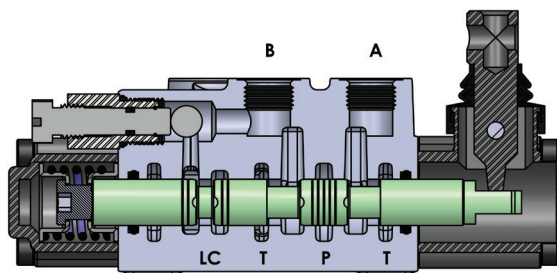
Spool Type - 2A



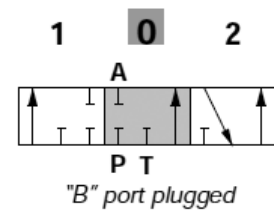
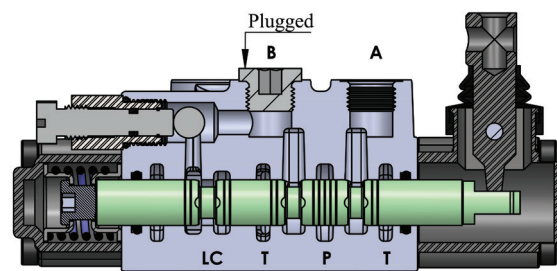
Spool Type - 3A



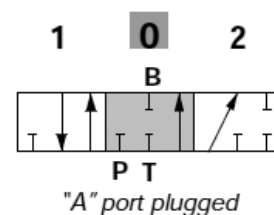
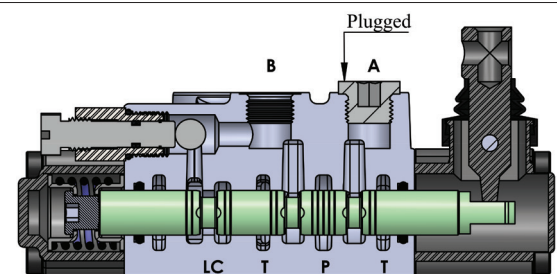
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

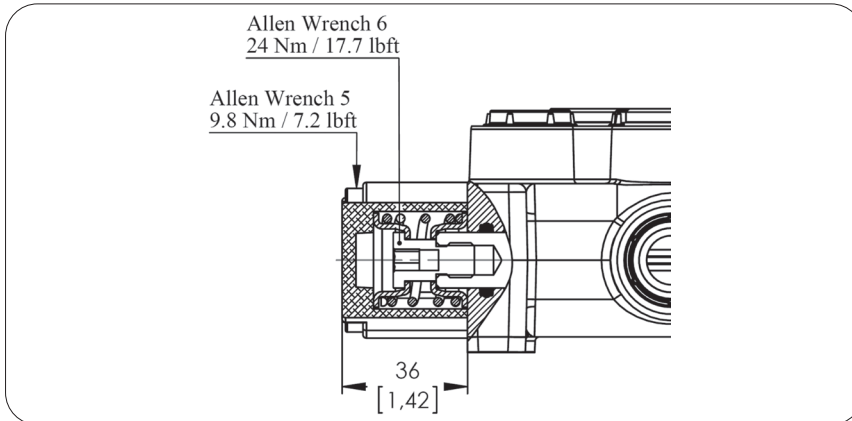


**SPOOL POSITIONERS – SIDE OF RETURN**

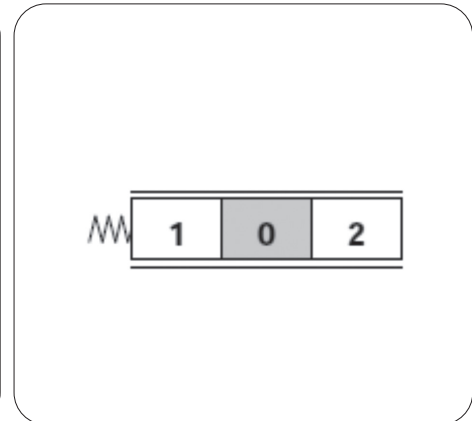
**With Spring Return in Neutral Position**

Kit No: **SR**

Sectional Appearance



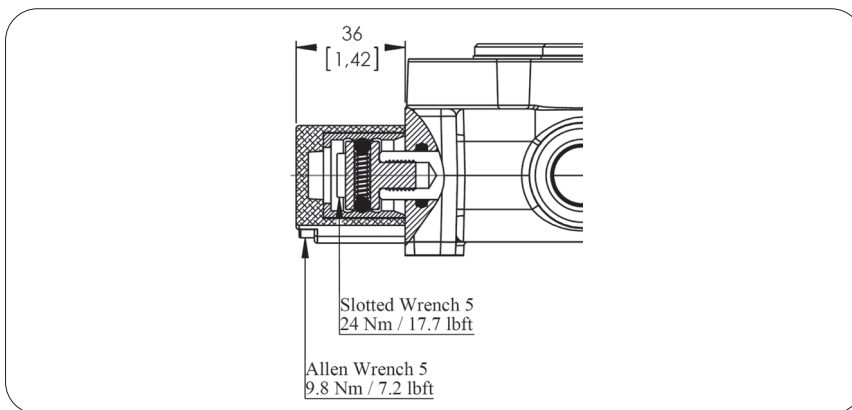
Diagram



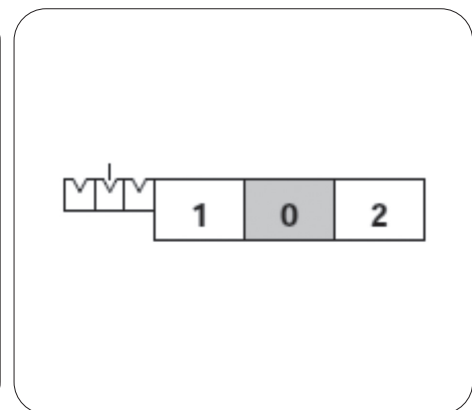
**With Detent**

Kit No: **D**

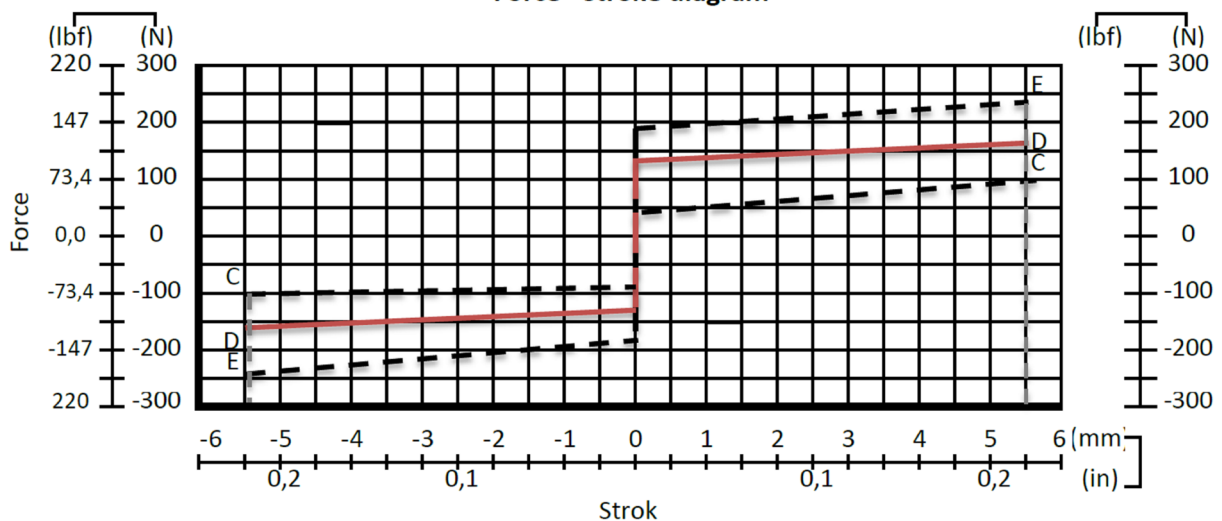
Sectional Appearance



Diagram



**Force - stroke diagram**

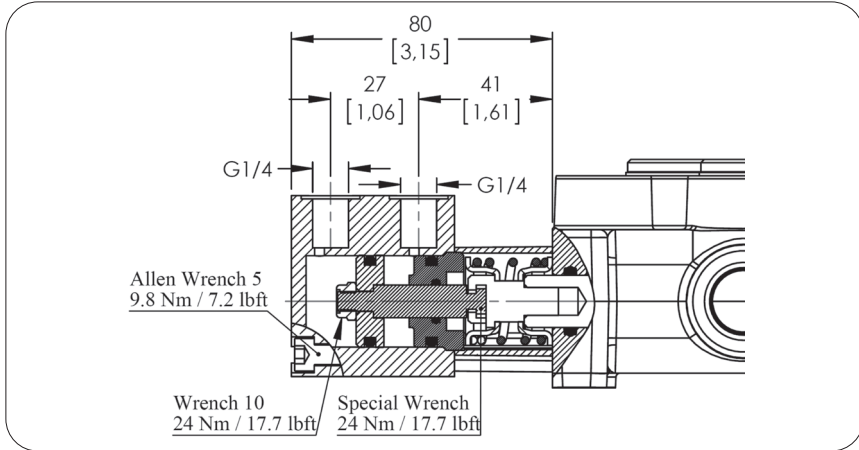


**SPOOL POSITIONERS – SIDE OF RETURN**

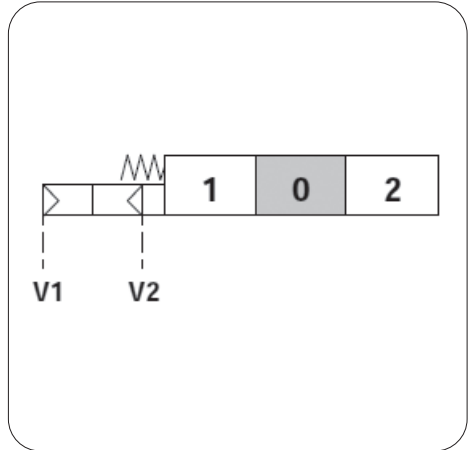
**ON/OFF Pneumatic Control**

Kit No: **TV80P**

Sectional Appearance



Diagram



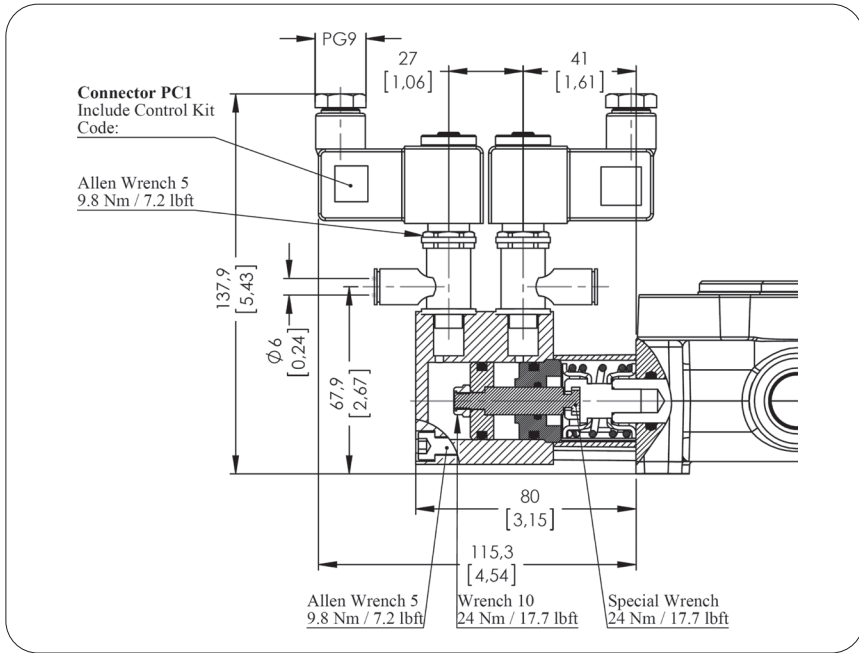
**Operating Features**

Pilot Pressure .....: 6 Bar (Max. 10) / 87 Psi (Max. 145)

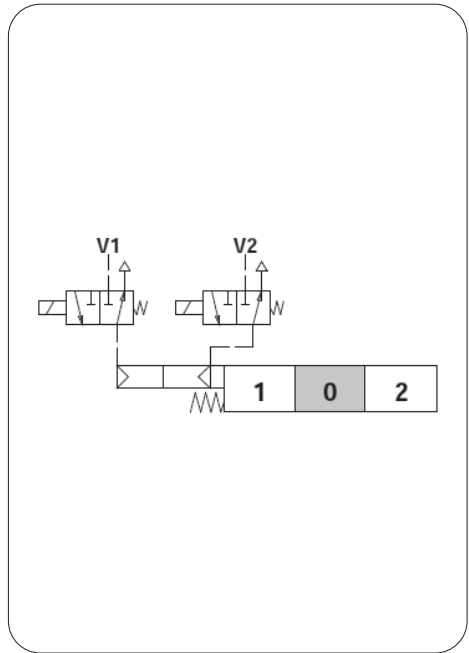
**ON/OFF Electro-Pneumatic Control**

Kit No: **TV80EP**

Sectional Appearance



Diagram



**Operating Features**

Pilot Pressure .....: 6 Bar (Max. 10) / 87 Psi (Max. 145)

**Solenoid Operating Features**

Nominal Voltage.....: 12VDC / 24 VDC

Power Rating.....: 6 W

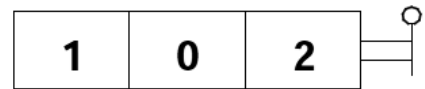
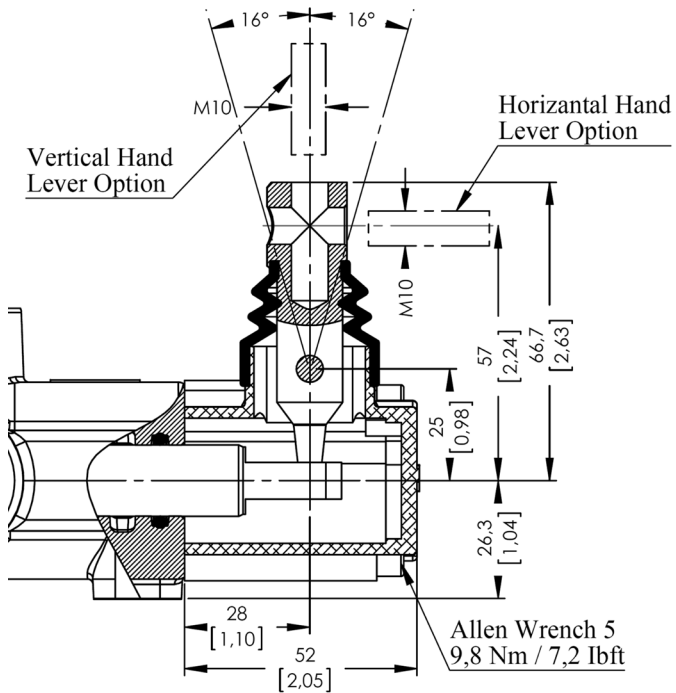
**SPOOL POSITIONERS – SIDE OF LEVER CONTROL**

**Lever Controls**

Kit No: **STL - L0**

Sectional Appearance

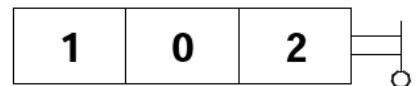
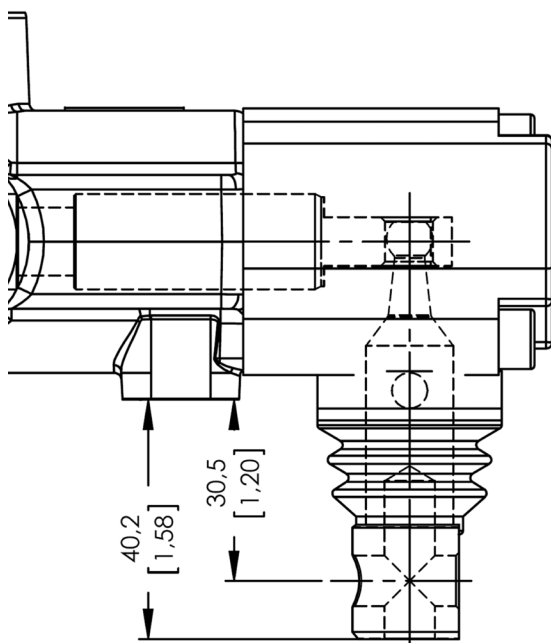
Diagram



Kit No: **STL - L180**

Sectional Appearance

Diagram



**Note:** Arm lever pivot box is aluminium cap protected. And it can be rotated 180°.



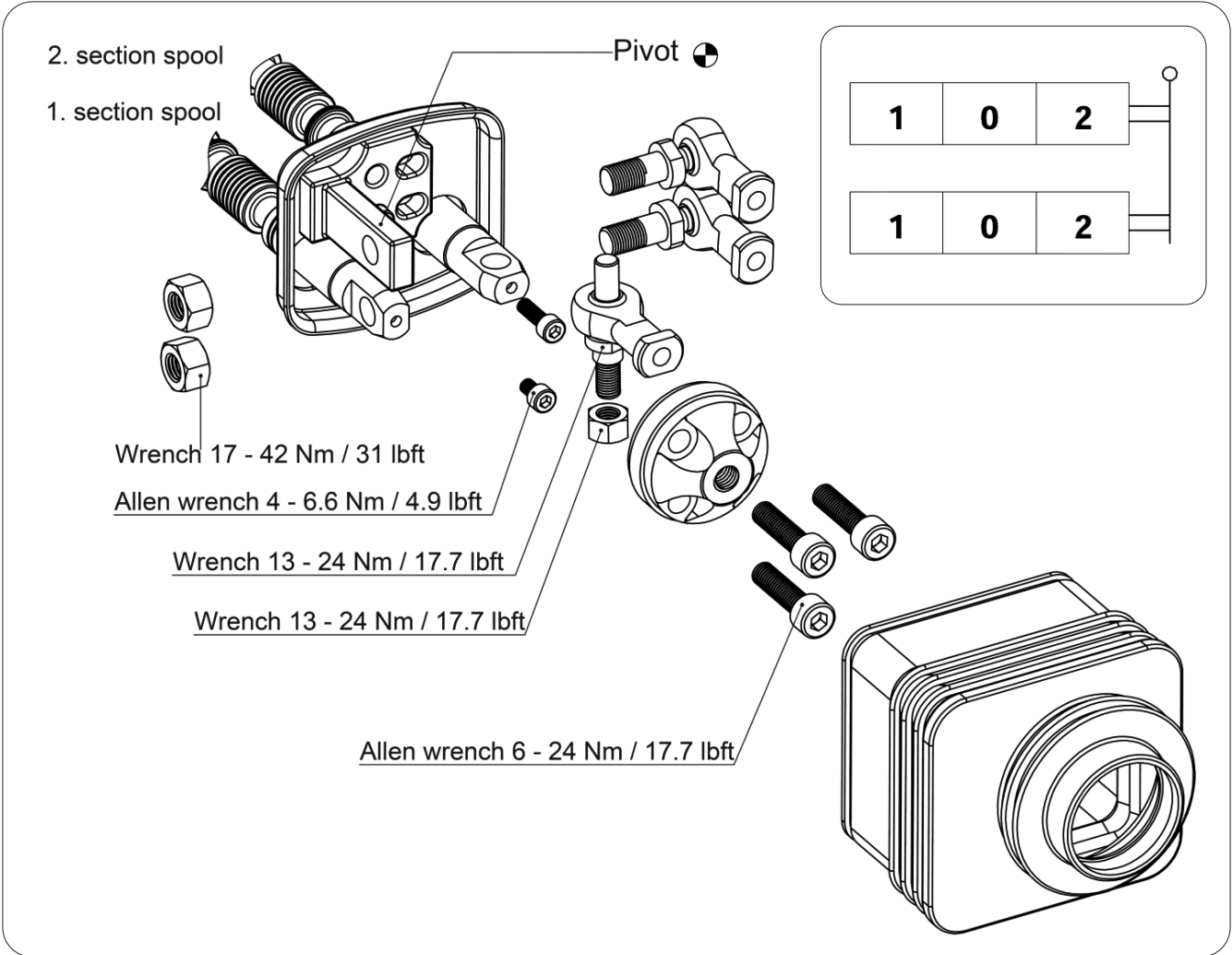
**SPOOL POSITIONERS – SIDE OF LEVER CONTROL**

**Lever Controls – Joystick**

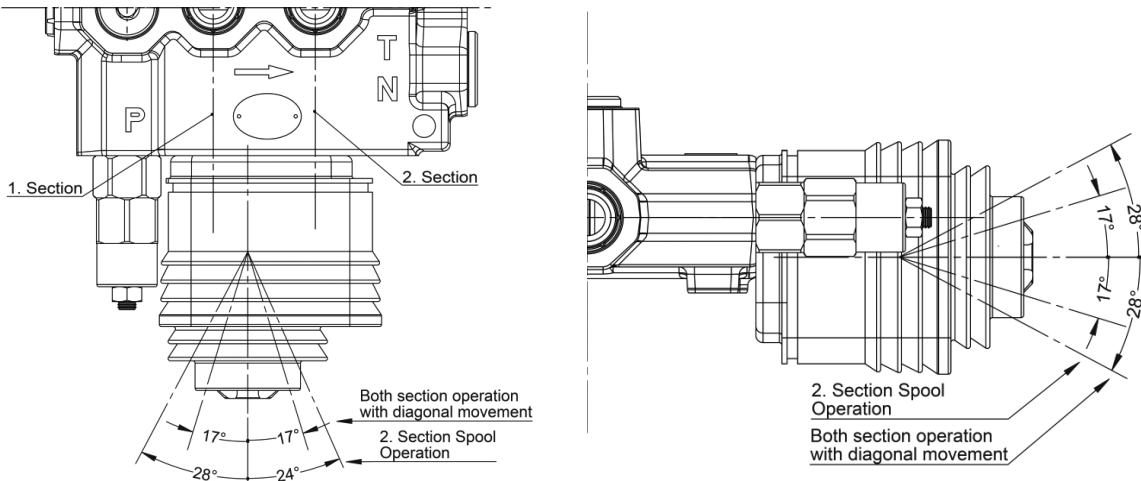
Kit No: **JL**

Exploded View

Diagram



**Operation Angle:**



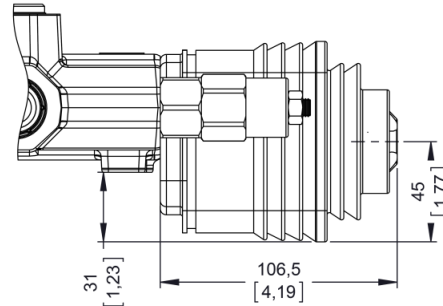
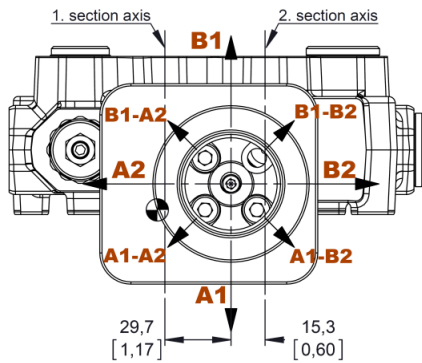
**SPOOL POSITIONERS – SIDE OF LEVER CONTROL**

**Lever Controls – Joystick**

**Dimensions and movement sceme**

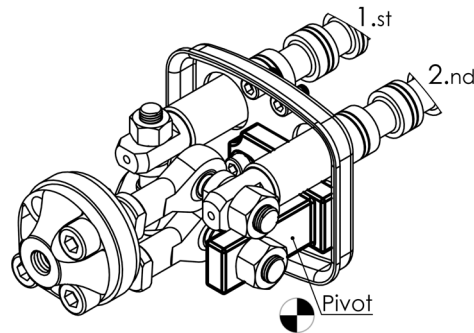
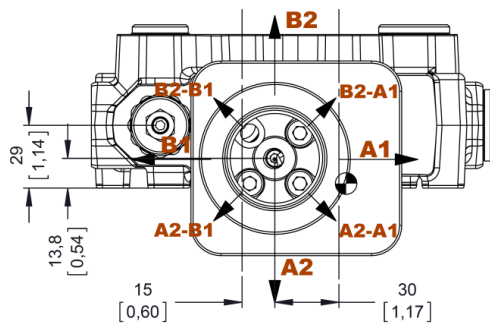
Type No: **JL1**

Application: Pivot placed down on the Left



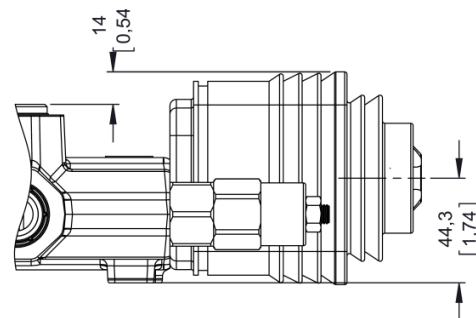
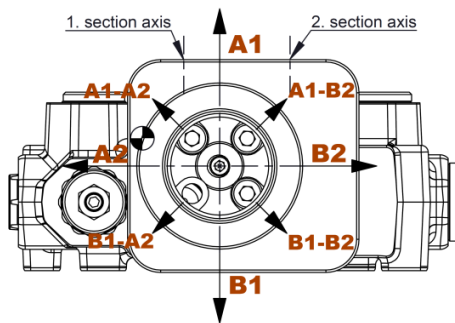
Type No: **JL2**

Application: Pivot placed down on the right



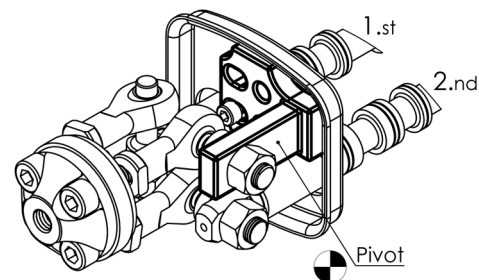
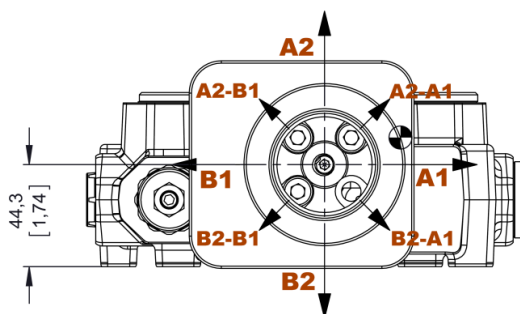
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

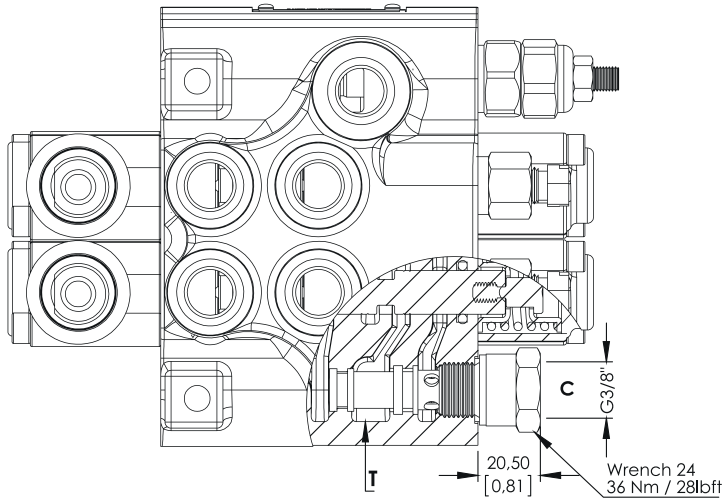
Application: Pivot placed above on the right



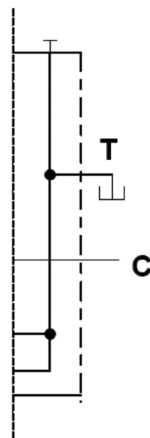
OUTLET PORT OPTIONS

Carry - Over Connection

Kit No: CO

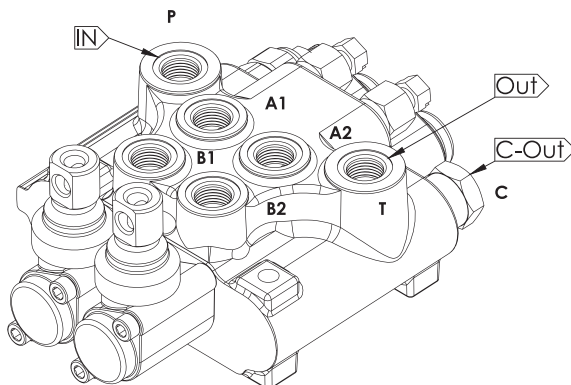


Sectional Appearance



Hydraulic Circuit

**Code:** ORV TV50-2P  
/ SMR2-120 / 1A-SR-  
STL/1A-SR-STL/CO-  
PA1/SGT



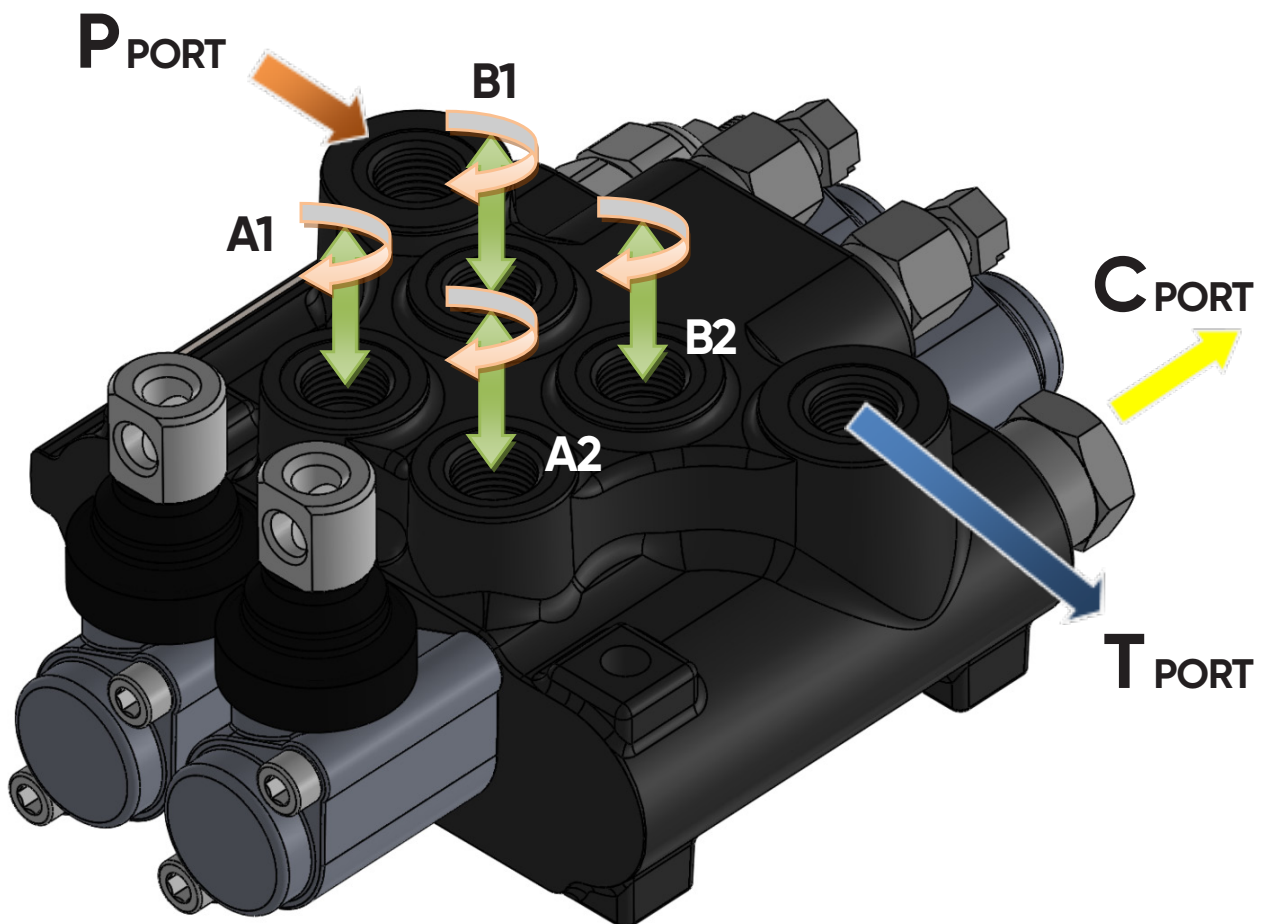
Direction of Port Connected

SGT : See page 5 for Standard center

**INSTALLATION AND MAINTENANCE**

The ORV TV50 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

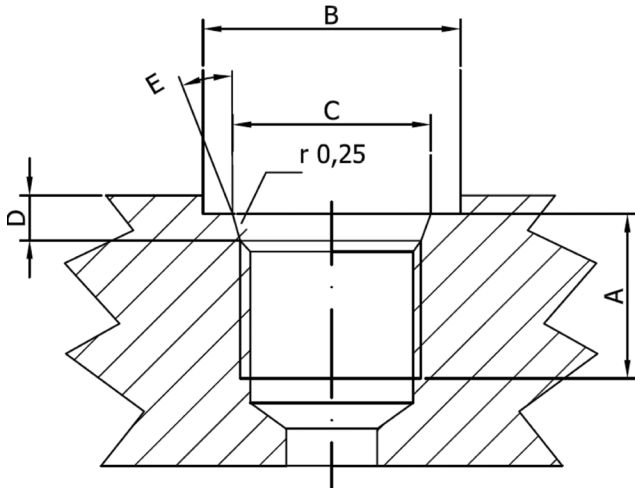
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



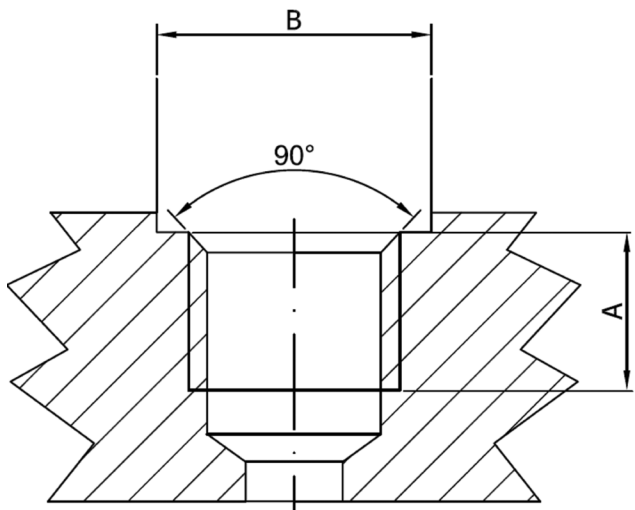
Threads Type (Nm / lbft)	P Port	A and B Port	T and C Port
BSP (ISO 228/1)	G 3/8	G 3/8	G 3/8
With O--Ring seal	35 / 25.8	35 / 25.8	35 / 25.8
With copper washer	40 / 29.5	40 / 29.5	40 / 29.5
With steel and rubber washer	30 / 22.1	30 / 22.1	30 / 22.1
UN--UNF (ISO 11926--1)	3/4--16 UNF--2B	9/16--18 UNF--2B	3/4--16 UNF--2B
With O--Ring seal	50 / 36.9	30 / 22.1	50 / 36.9
METRIC (ISO 262)	M18 x 1.5	M18 x 1.5	M18 x 1.5
With O--Ring seal	35 / 25.8	35 / 25.8	35 / 25.8
With copper washer	40 / 29.5	40 / 29.5	40 / 29.5
With steel and rubber washer	40 / 29.5	40 / 29.5	40 / 29.5

**TECHNICAL DATA**

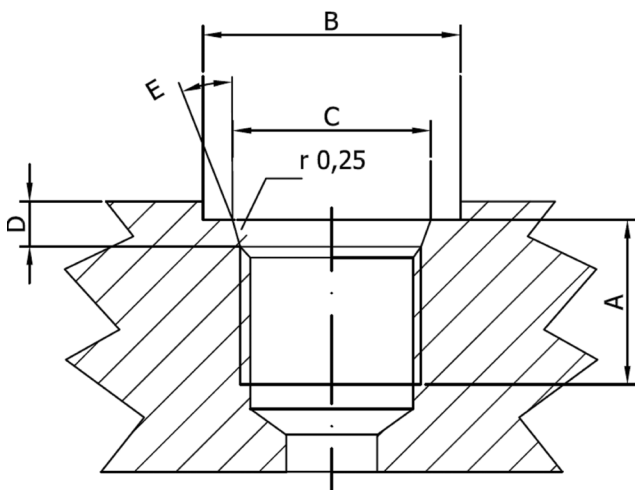
**Ports Dimensional Data**



SAE UN-UNF (ISO 725)							
Dimensions		9/16-18 UNF SAE6		3/4-16 UNF SAE8		7/8-14 UNF SAE10	
mm	in						
A		13	0,51	15	13	0,51	15
B		25	0,83	30	25	0,83	30
C		13,6	0,61	20,6	13,6	0,61	20,6
D		2,5	0,10	2,5	2,5	0,10	2,5
E		15°		15°		15°	



BSP (ISO 228)							
Dimensions		G 1/4		G 3/8		G 1/2	
mm	in						
A		14	0,55	14	14	0,55	14
B		19	0,75	23	19	0,75	23



METRIC (ISO 262)					
Dimensions		M18x1,5 ISO 262		M22x1,5 ISO 262	
mm	in				
A		14	0,55	14	0,55
B		27,5	1,08	27,5	1,08






# ORV TV50





# ORIGINAL VALVE



 BÜsan Org. San. Fevzi Çakmak Mah. Kosgeb Cad.  
10641. Sk. No: 37 Karatay/KONYA/TÜRKİYE

 +90 332 345 29 29  +90 332 345 29 23

 satis@orval.com.tr  bilgi@orval.com.tr

