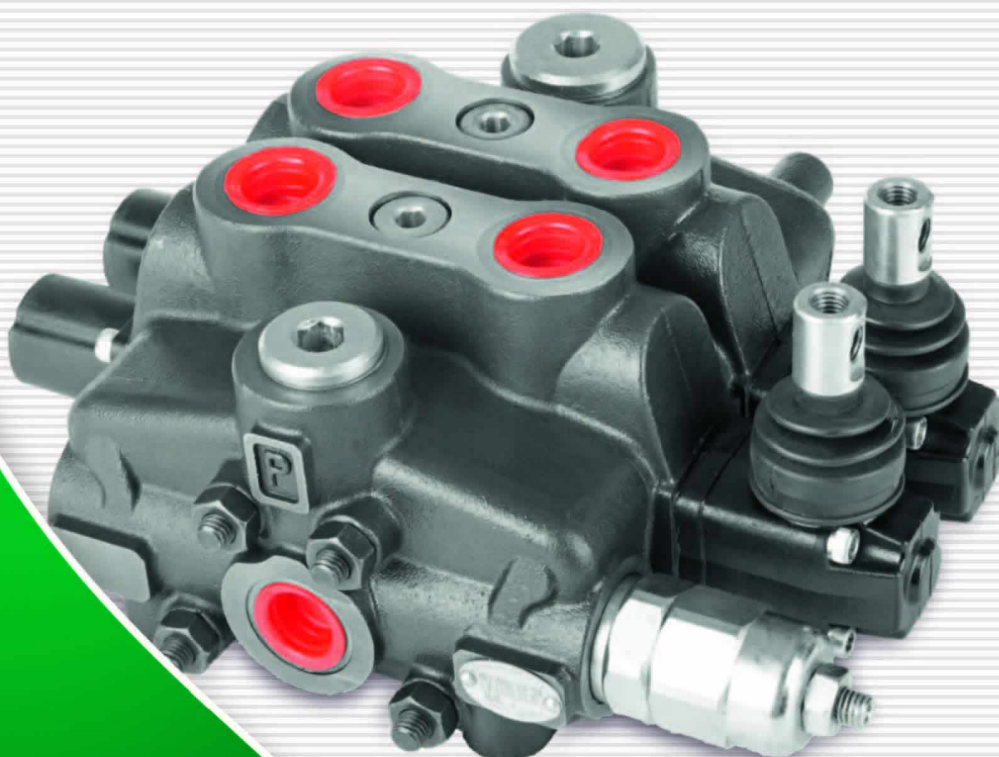




ORVAL
HYDRAULIC



SECTIONAL DIRECTIONAL
CONTROL VALVES

ORV-PD150

DETAILED TECHNICAL CATALOGUE

CE





Contents

Working Conditions	3
Dimensional Data	4
Hydraulic Circuit	5
Performance Data And Curve	9
Inlet Relief Options	10
Ordering Codes	12
Inlet Cover- Pump Side	14
Spool Options	16
Spool Positioners – Side of Return	19
Working Section Kit	21
Spool Positioners – Side of Lever Control	22
Spool Positioners – Side of Lever Control	23
Spool Positioners – Side of Lever Control	24
Outlet Cover- Tank Side	25
Port Valves Options	27
Installation and Maintenance	30
Technical Data	31

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 Dept.

Warning! :All specifications of this catalog refer to the standard product at this date (01/2011) . 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

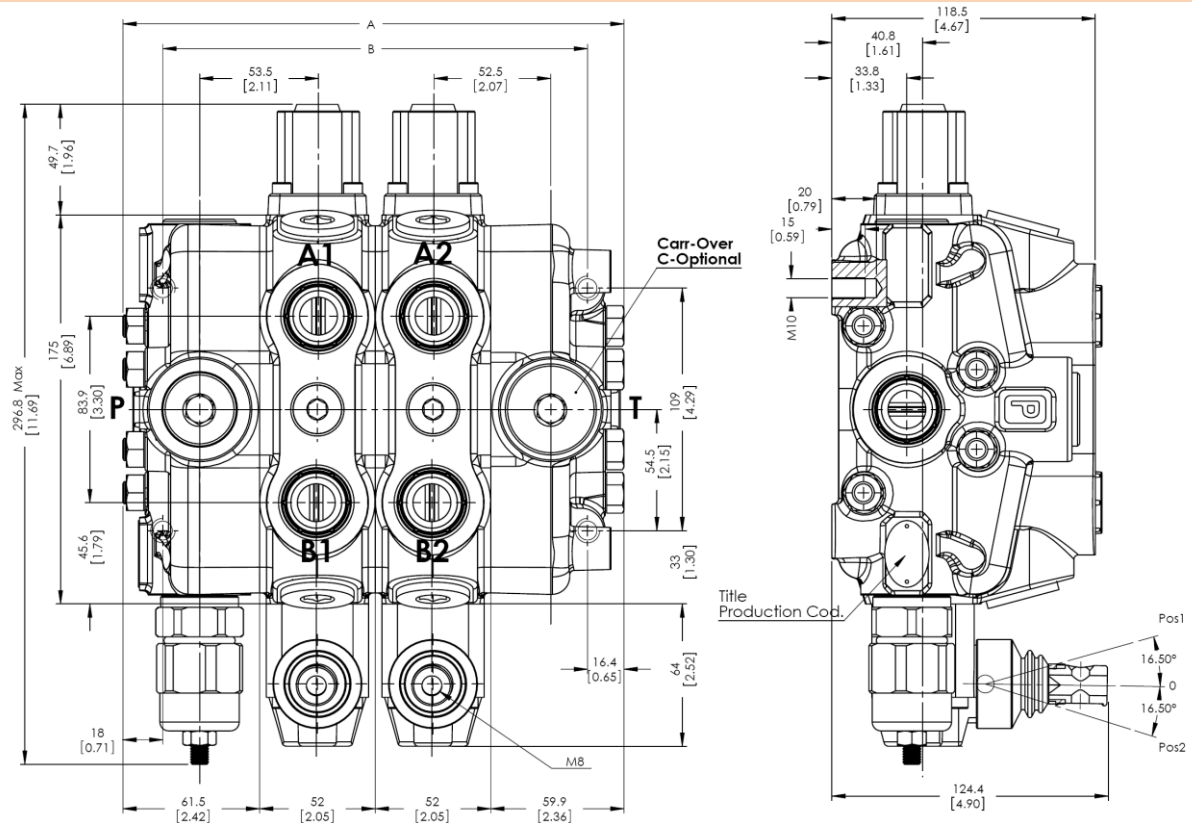
Nominal Flow Rating / Displacement	150 l/min	38 U.S.G.P.M
Maximum Working Pressure (Series Circuit)	210 Bar	3050 PSI
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F°
with FPM (Viton) Seals	-20 to 100 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 12	
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	
Tie rod tightening torque	40 Nm	30 lbft

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 sectional valves from 1 to 12 sections for open and closed center hydraulic systems.
- Optionaly Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diametre is 20 mm – 0,79 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

Dimensional Data



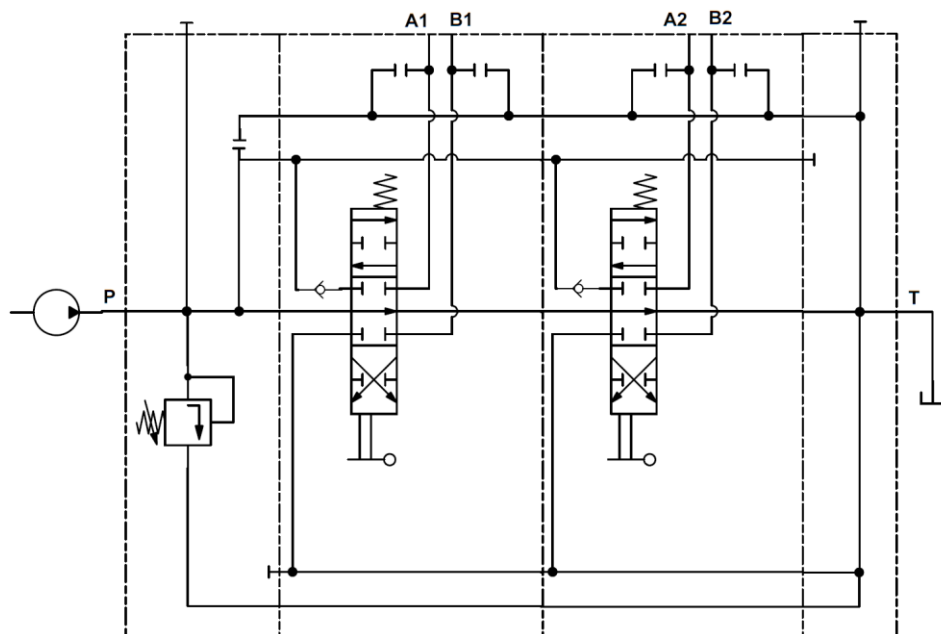
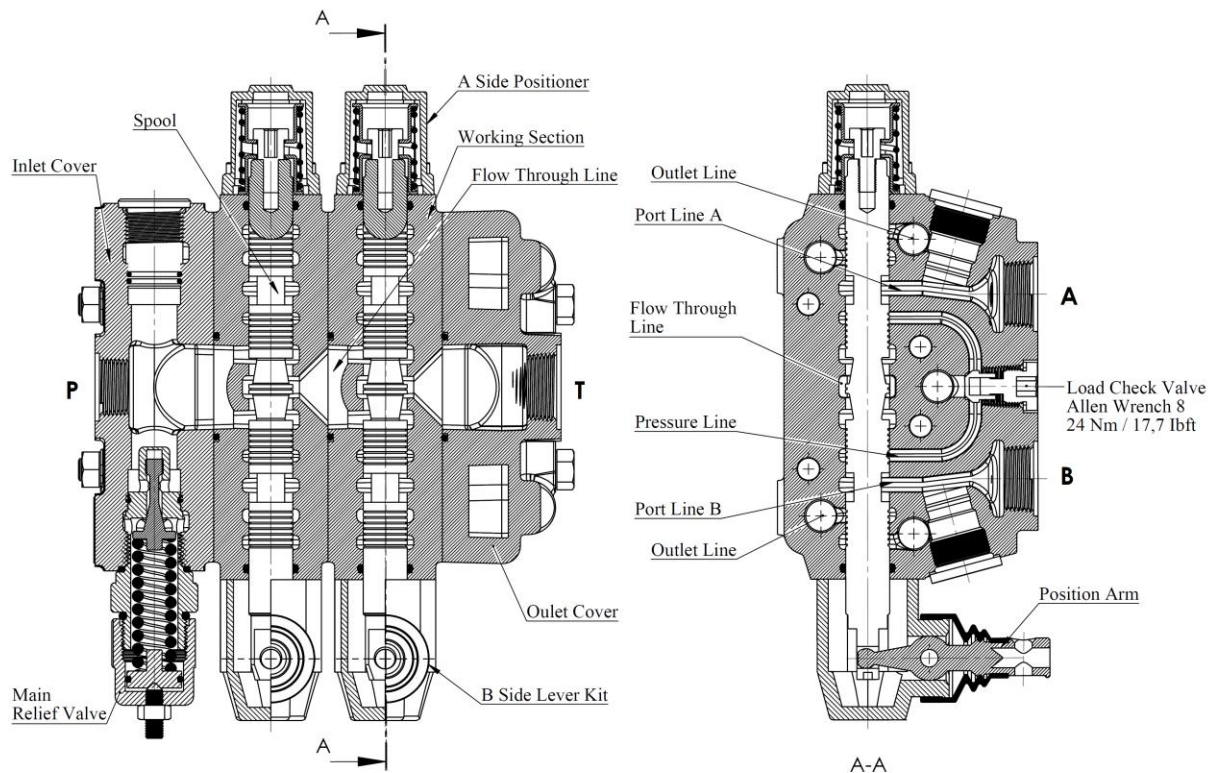
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
ORV- PD150-1P	160	6.30	73	2.87	13.46	29.67
ORV- PD150-2P	212.5	8.37	125.5	4.94	19.60	43.21
ORV- PD150-3P	265	10.43	178	7.00	25.74	56.75
ORV- PD150-4P	317.5	12.50	230.5	9.07	31.88	70.29
ORV- PD150-5P	370	14.56	283	11.14	38.02	83.83
ORV- PD150-6P	422.5	16.63	335.5	13.20	44.16	97.37
ORV- PD150-7P	475	18.50	388	14.96	50.30	110.91
ORV- PD150-8P	527.5	20.76	440.5	17.34	56.44	124.45
ORV- PD150-9P	580	22.83	493	19.41	62.58	137.99
ORV- PD150-10P	632.5	24.90	545.5	21.48	68.72	151.53
ORV- PD150-11P	685	26.97	598	23.54	74.86	165.07
ORV- PD150-12P	737.5	29.03	650.5	25.61	81.00	178.61

Standard Threads

PORT	BSP (Iso 228)		UN-UNF (Iso 11926-1)
	3/4" Series	1"Series	
P Inlet	G 3/4	G 1	1 5/16 -12 UN
A-B Ports	G 3/4	G 1	11/16 - 12 UN
T Outlet	G 1	G 1	1 5/16 -12 UN
Pneumatic	G 1/4	G 1/4	NPTF 1/8 - 27
Carry-Over	G 3/8	G 3/8	G 3/8

Hydraulic Circuit

Parallel



Code: ORV PD150-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

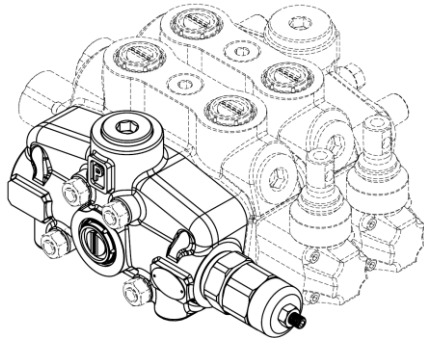
Hydraulic Circuit

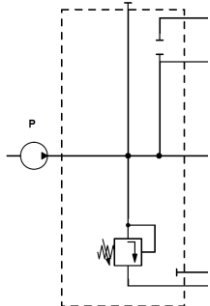
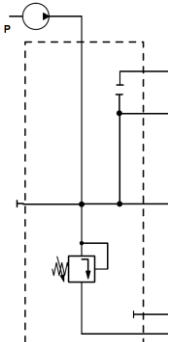
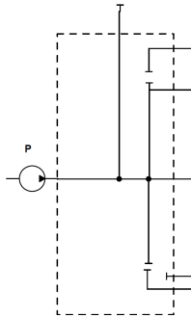
Inlet Cover – Pump Side

SD - Side inlet with direct pressure relief valve

TD - Top inlet with direct pressure relief valve

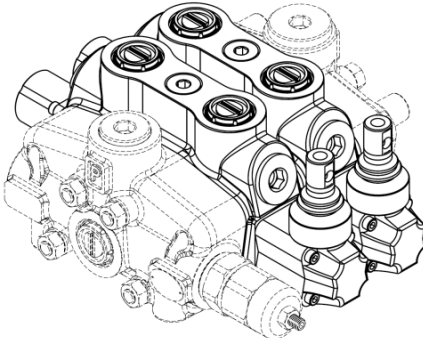
SP - Side inlet with relief valve blanking plug



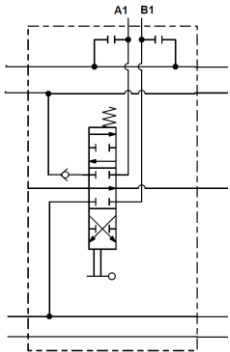
Type=SD	Type=TD	Type=SP
		

Working Sections

P – Parallel



Type=P



Hydraulic Circuit

Outlet Cover (Tank Side)

SO - Side outlet

TO - Top outlet

TCO - Top outlet with carry—over

TC - Top outlet with closed centre

Type=SO	Type=TO	Type=TCO	Type=TC

ORVAL hydraulic

ORV-PD150-2P-1

101149.39.10

MADE IN TÜRKİYE

Valve Type

Production Batch

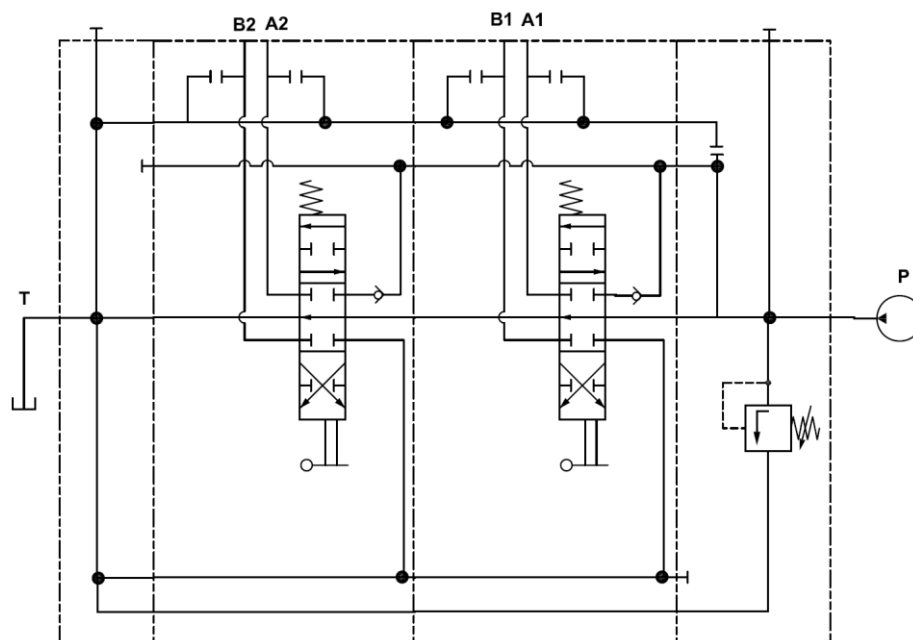
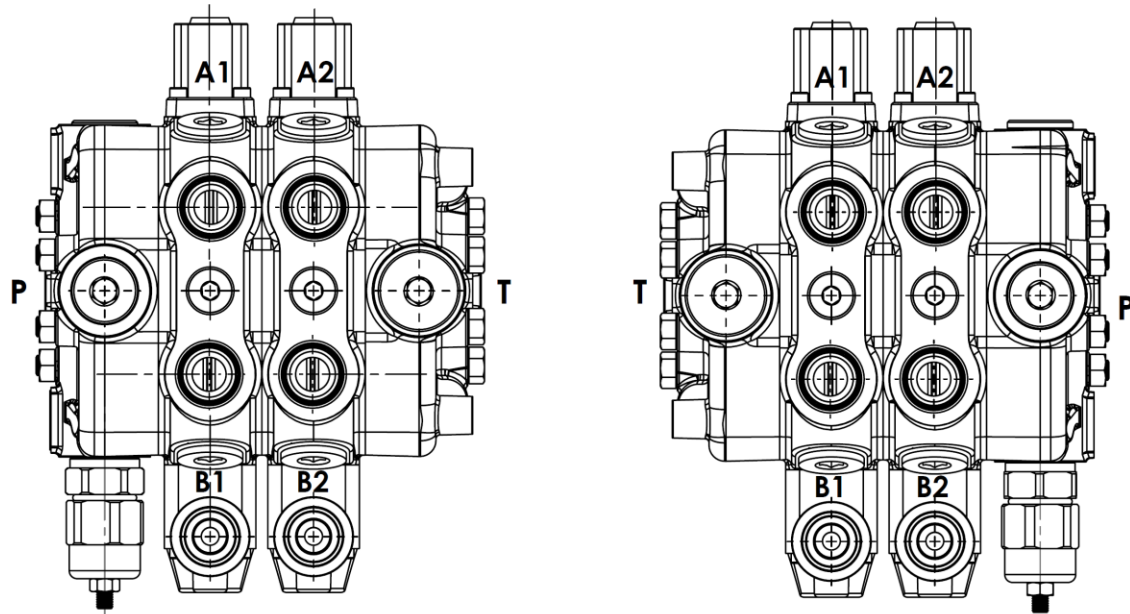
39.10 = Production Year - Week (2010/39)

101149 = Progressive Party Number

Hydraulic Circuit

Standard Configurations With Top Inlet And Outlet Ports - RH (Right Inlet)

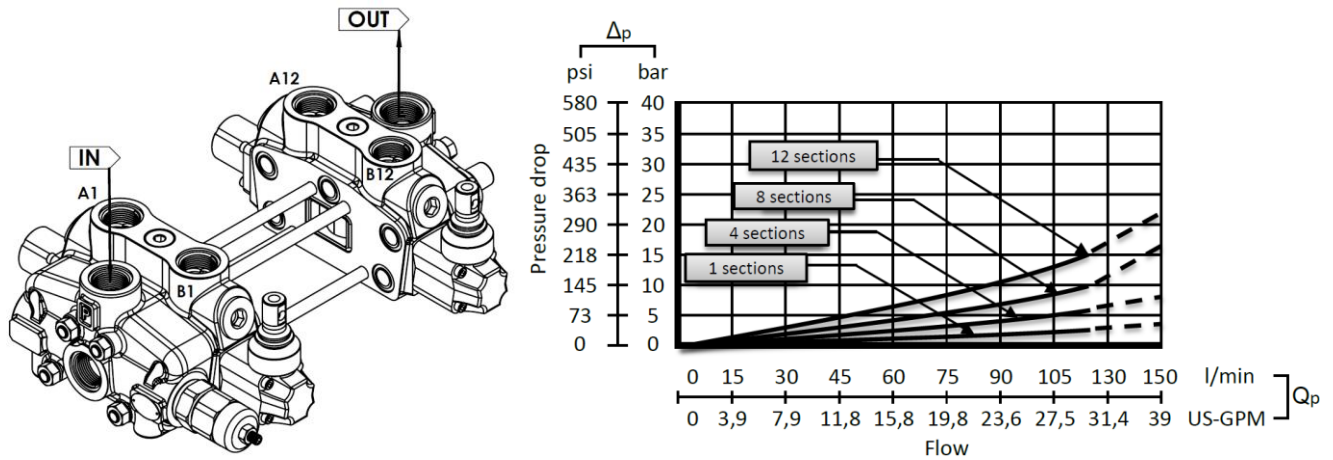
A symmetrical body allows the reverse assembly of spool.



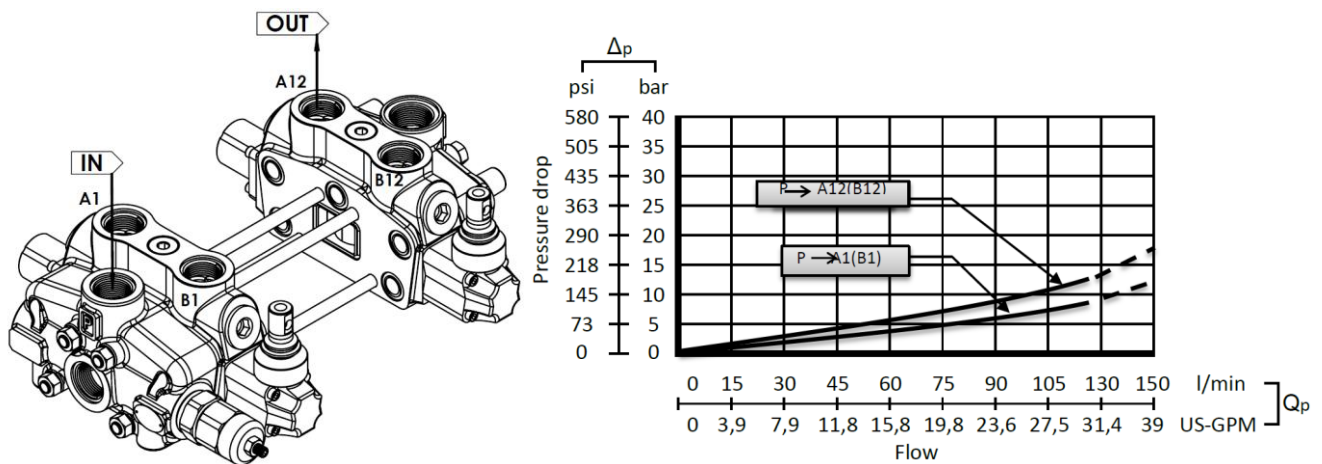
Code: ORV PD150-2P (SD(RA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 /

Performance Data And Curve

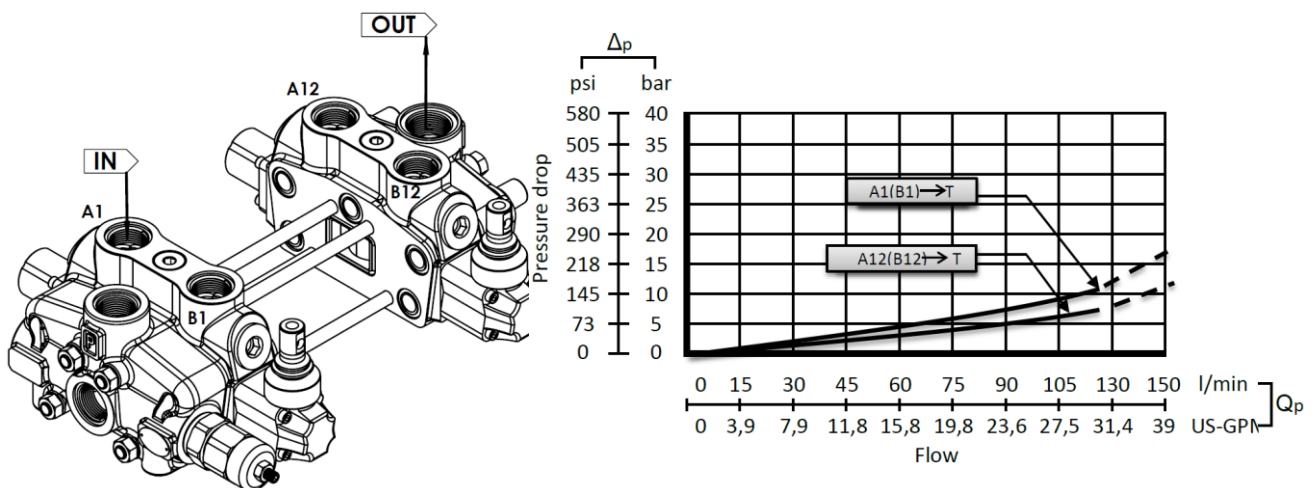
Open Center - Pressure Drop (P-T)



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



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



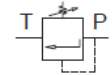
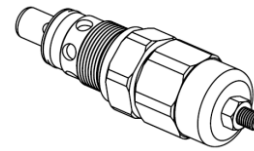
Inlet Relief Options

Direct Pressure Relief Valve

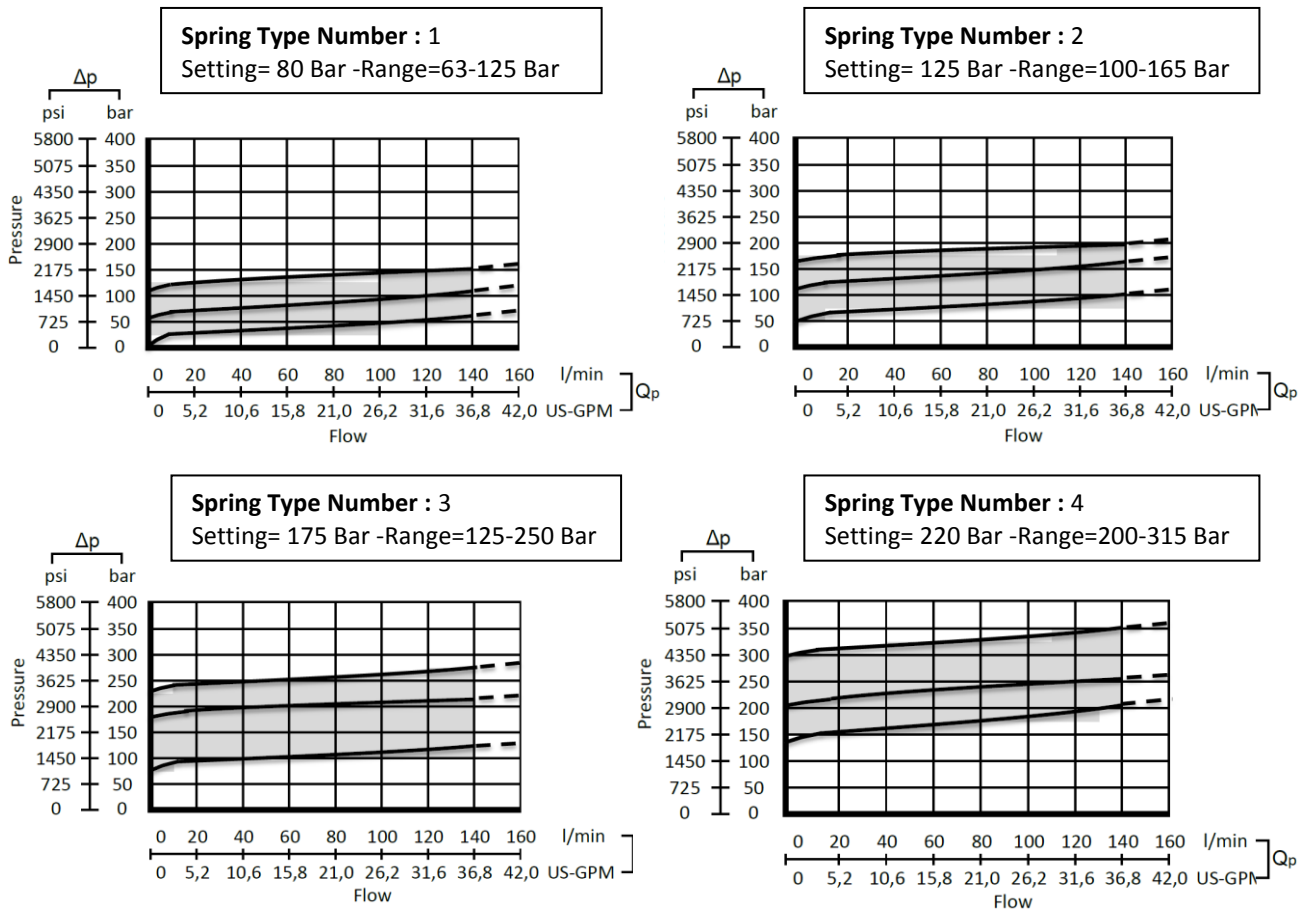
Code: _____

SMR2 – 125

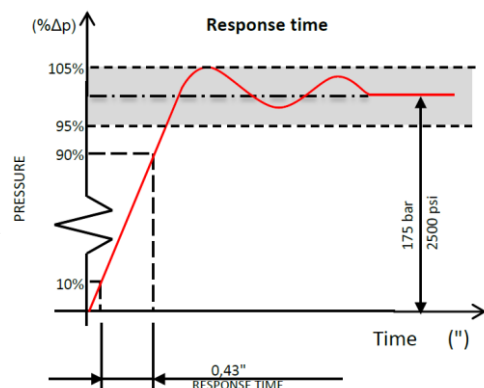
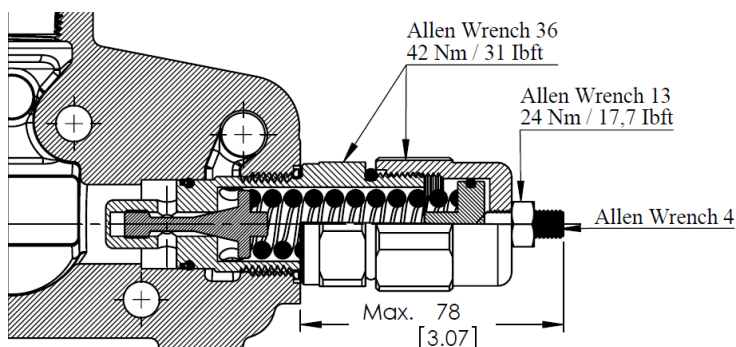
- Pressure Setting Bar in (Standard 125 bar)
- Standard Main Relief Spring Type -2



Performance Data: _____



Adjustment Type on Valve: _____

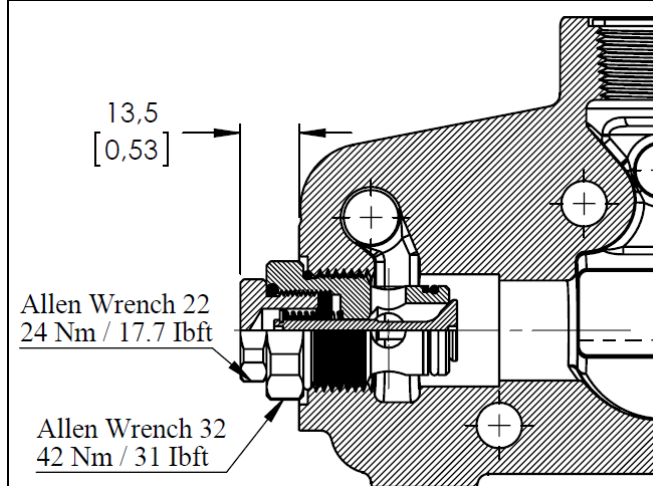


Inlet Relief Options

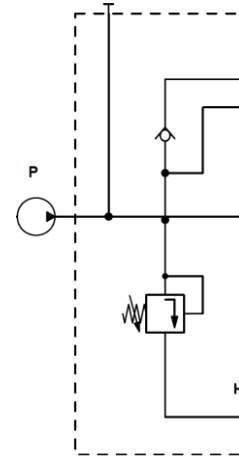
Direct Pressure Relief Valve

Kit No: **PAC**

Sectional Appearance

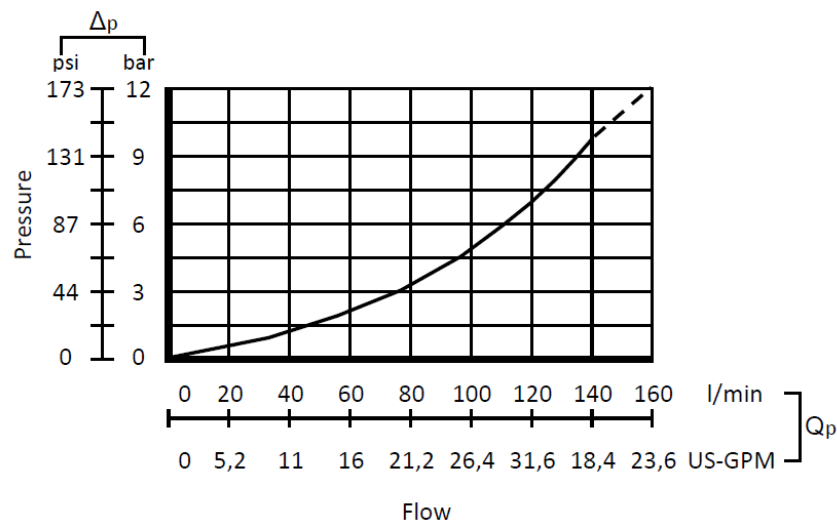


Diagram

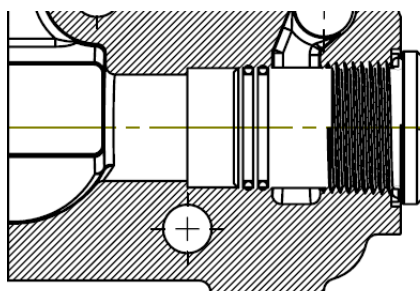


Performance Data

Pressure drop



Relief Blanking Plug - SP

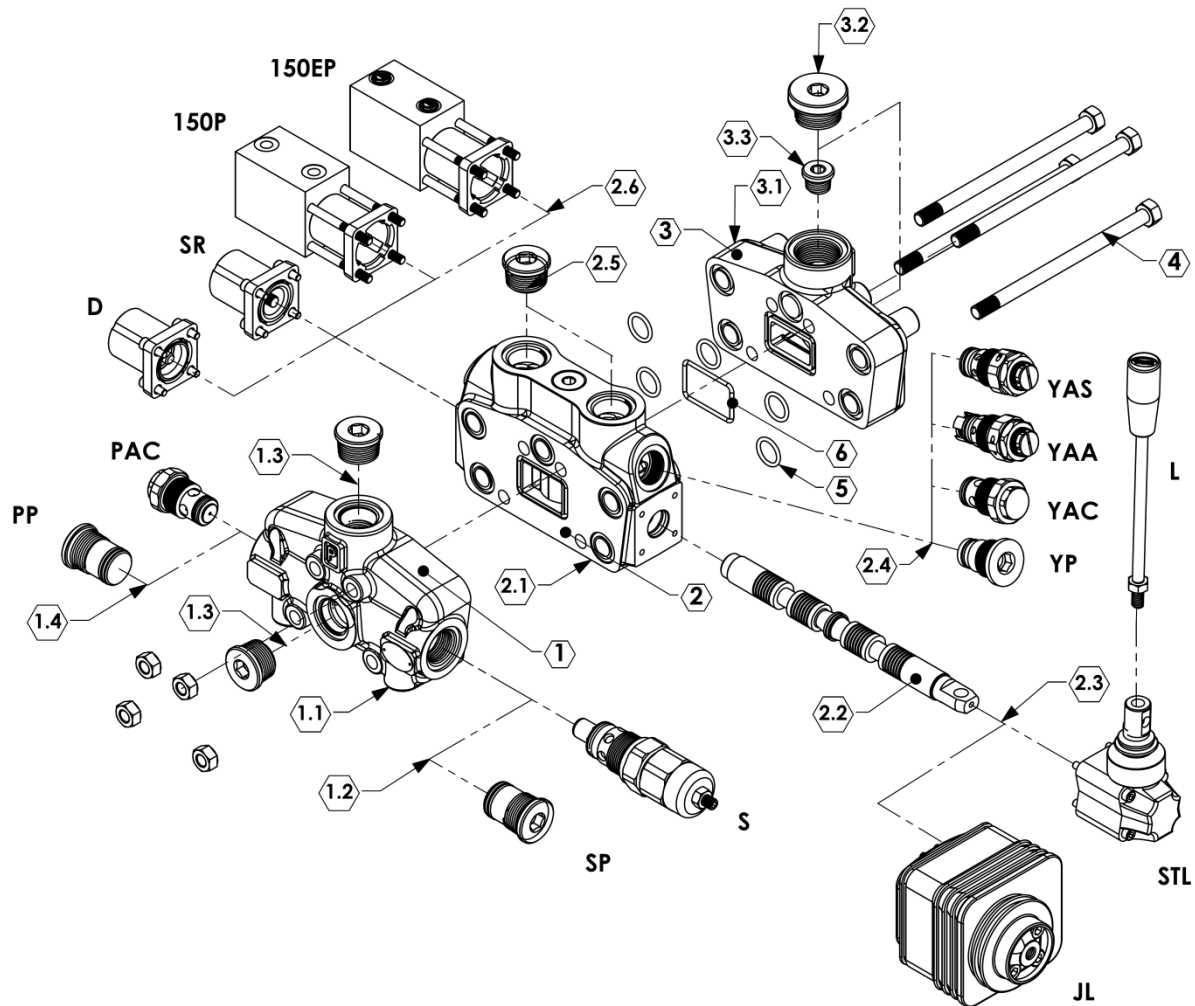
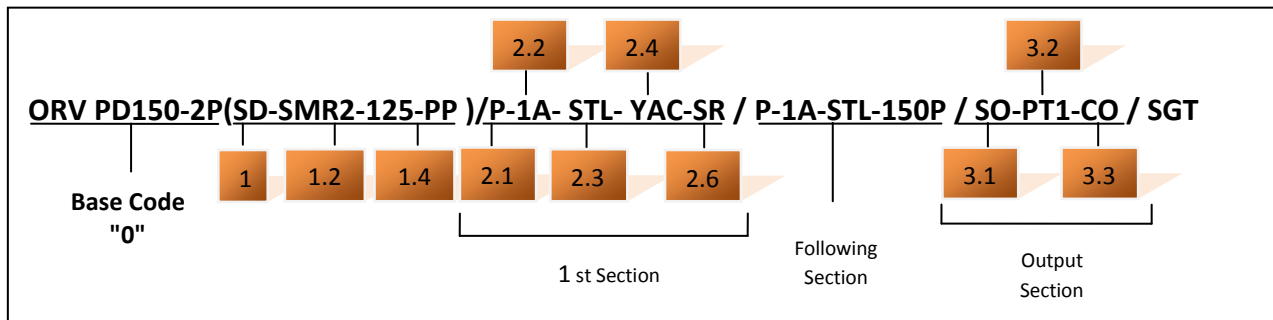


Allen Wrench 12 - 42 Nm / 31 Ibft



Ordering Codes

Order example



1-Inlet Section

ORV PD150-2P PD150 = Valve Type-(PD)- Sectional (150) - Max. Flow Rate
2P = Sections Quantity
SD = Side inlet with direct pressure relief valve (1SD150100)
TD = Top inlet with direct pressure relief valve (1TD150100)
SP = Side inlet with relief valve blanking plug (1SP150100)

2-Working Section

P = Parallel (2P150100)

3-Output Section

SO = Side outlet (3SO150100)
TO = Top outlet (3TO150100)
TCO = Top outlet with carry—over (3TCO150100)
TC = Top outlet with closed centre (3TC150100)

Ordering Codes

4-Assembling Kit

Tie rod kit for 1 section valve	- (4TRK1150100)
Tie rod kit for 2 section valve	- (4TRK2150100)
Tie rod kit for 3 section valve	- (4TRK3150100)
Tie rod kit for 4 section valve	- (4TRK4150100)
Tie rod kit for 5 section valve	- (4TRK5150100)
Tie rod kit for 6 section valve	- (4TRK6150100)
Tie rod kit for 7 section valve	- (4TRK7150100)
Tie rod kit for 8 section valve	- (4TRK8150100)
Tie rod kit for 9 section valve	- (4TRK9150100)
Tie rod kit for 10 section valve	- (4TRK10150100)
Tie rod kit for 11 section valve	- (4TRK11150100)
Tie rod kit for 12 section valve	- (4TRK12150100)

5-6-O_Ring Kit

5. -17.00x2.65 NBR 70 SH O-Ring seal (3 Qty.)	(5MK150100)
6. -34.60x2.62 NBR 70 SH O-Ring seal (1 Qty.)	(6MK150100)

1.*-Inlet Options

1.1 Inlet Cover

Body = Standard (11BS150100)

1.2 Inlet Relief

SMR1-080 – (12SMR1150080)–Range 63-125 bar
Setting 80 bar

SMR2-125 – (12SMR2150120)–Range 100-160 bar
Setting 125 bar

SMR3-175 – (12SMR3150175)–Range 125-250 bar
Setting 175 bar

SMR4-220 – (12SMR4150220)–Range 200-315 bar
Setting 220 bar

1.3 Ports Plug

PA1 =G3/4 Top and side input - (13PA1150100)

PA2= G1 Top and side input –(13PA2150100)

1.4 Inlet Valve

PAC = Inlet anti-cavitation valve –(14PAC150100)

PP(SP) = Relief valve blanking plug –(14PSP150100)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS150100)

3.2 Output Plug

PT1 =G1 Top and Side output (32PT1150100)

3.3 Circuits Options

CO =G1/8 Carry-Over Connector (33CO150100)

2.*- Working Options

2.1 Working Section

PA= Without ports valve prearrangement, with parallel circuit - Body (21BSPA150100)

2.2 Spool Options

1A -(22SS150110) – 3 Positions ,Double acting

2A -(22SS150120) – 3 Positions ,Double acting
A to tank B Blocked

3A -(22SS150130) – 3 Positions ,Double acting
B to tank A blocked

4A -(22SS150140) – 3 Positions ,Double acting
A and B tank

5A -(22SS150150) – 3 Positions ,Single acting on
A (A to tank)

6A -(22SS150160) – 3 Positions ,Single acting on
B (B to tank)

2.3 Lever Options

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

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

STL=Standard Lever –(23STL150100)

2.4 Port Relief Valves

Anti-Shock Valve

YAS (T1-50) – (24YAC150050)–Range 35-70 bar
Setting 50 bar

YAS (T1-100) – (24YAC150100)–Range 63-220 bar
Setting 100 bar

YAS (T1-200) – (24YAC150200)–Range 180-350 bar
Setting 200 bar

Anti-Shock and Anti-Cavitation Valve

YAA (T1-63) – (24YAA150063)–Range 35-70 bar
Setting 50 bar

YAA (T1-100) – (24YAA150100)–Range 63-220 bar
Setting 100 bar

YAA (T1-200) – (24YAA150200)–Range 180-350 bar
Setting 200 bar

YAC - Anti Cavitation– (24YAS150100)

YP- A and B ports valve blanking plug (24YP150100)

DST-A and B ports valve blanking plugs with
connection to tank–(24DST150100)

2.5 Ports Plug Options

PL1 =Plug for single action spool for 2A-3A, G3/4
(25PL1150100)

PL2 =Plug for single action spool for 2A-3A, G1
(25PL2150100)

2.6 Spool Positioners

SR=Spring Return in neutral position – (26SR150100)

D =Detent in position 1, neutral and 2 -(26D150100)

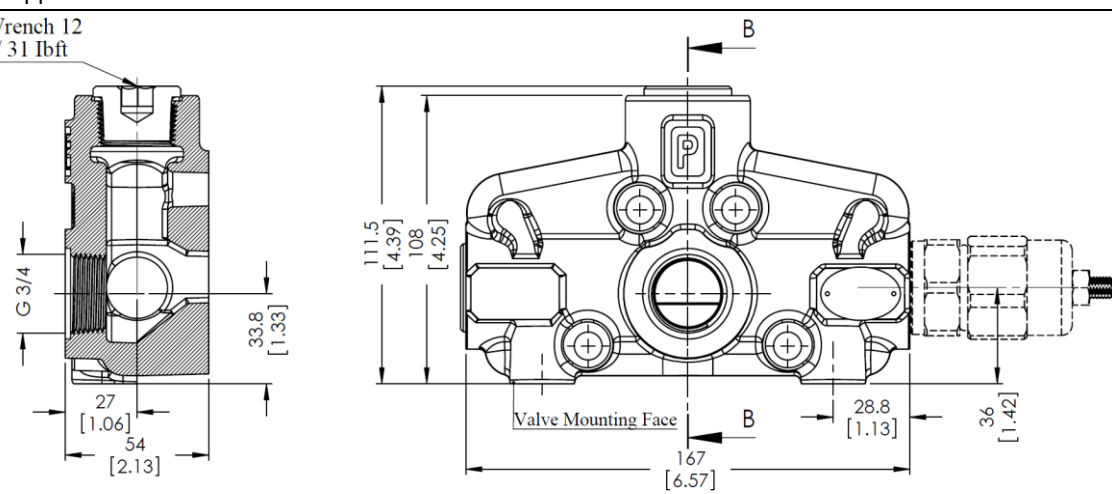
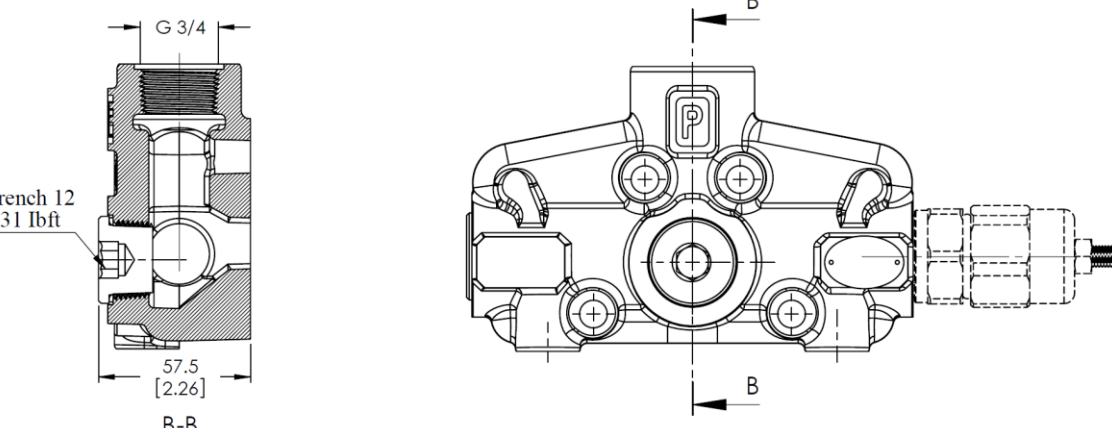
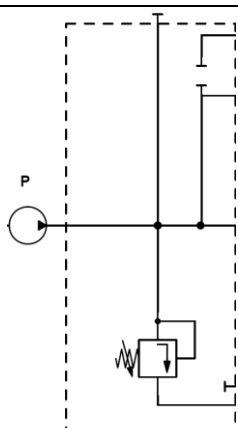
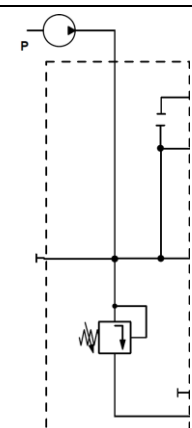
150P=ON/OFF Pneumatic – (2645P150100)

150EP=12 VDC ON/OFF electro-pneumatic –
(2680EP150112)

24 VDC ON/OFF electro-pneumatic –
(2680EP150124)

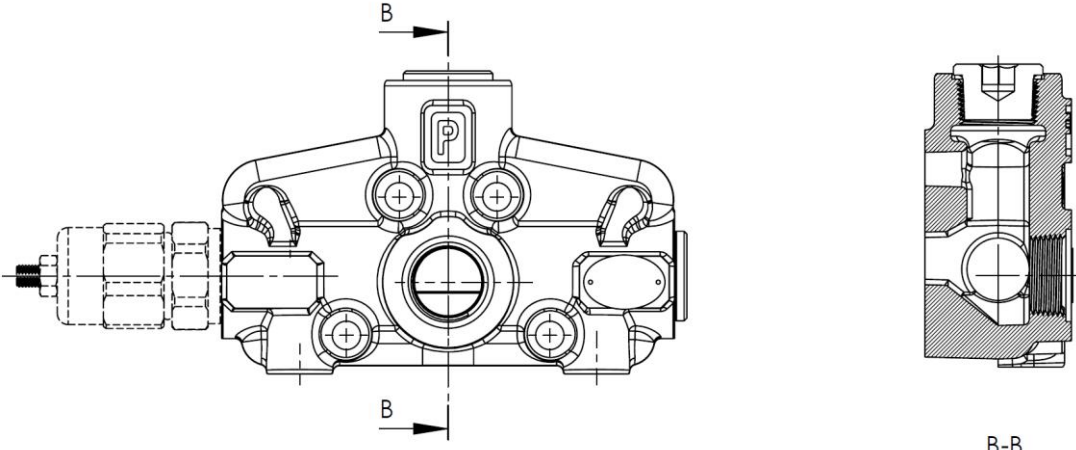
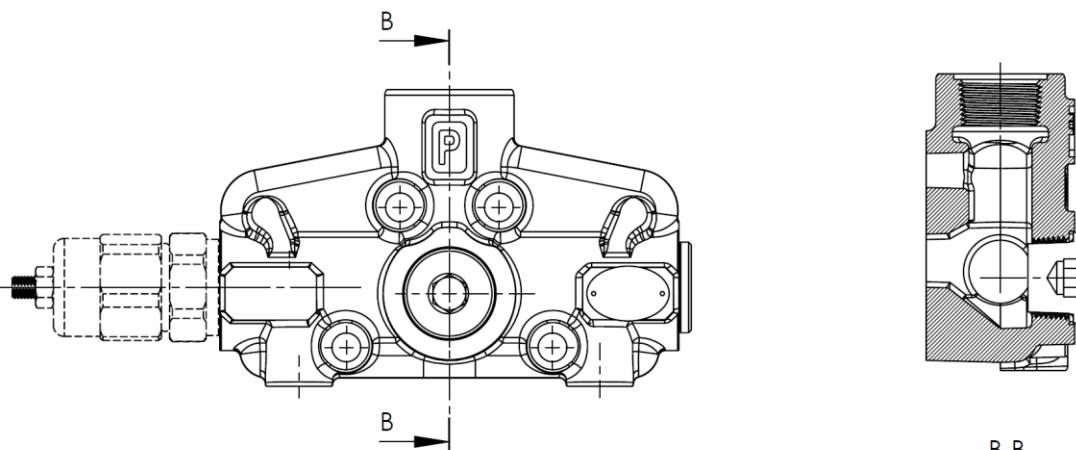
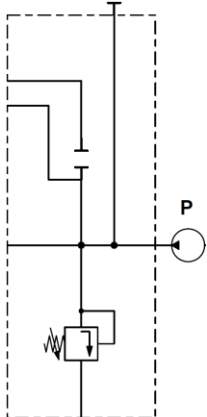
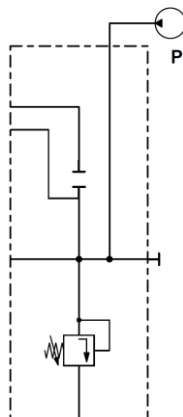
Inlet Cover- Pump Side

LH Inlet Valve Options

Type No:SD	
Sectional Appearance	
Allen Wrench 12 42 Nm / 31 lbf  B-B	
Type No:TD	
Sectional Appearance	
Allen Wrench 12 42 Nm / 31 lbf  B-B	
Hydraulic Diagram	
Type =SD	Type =TD
	

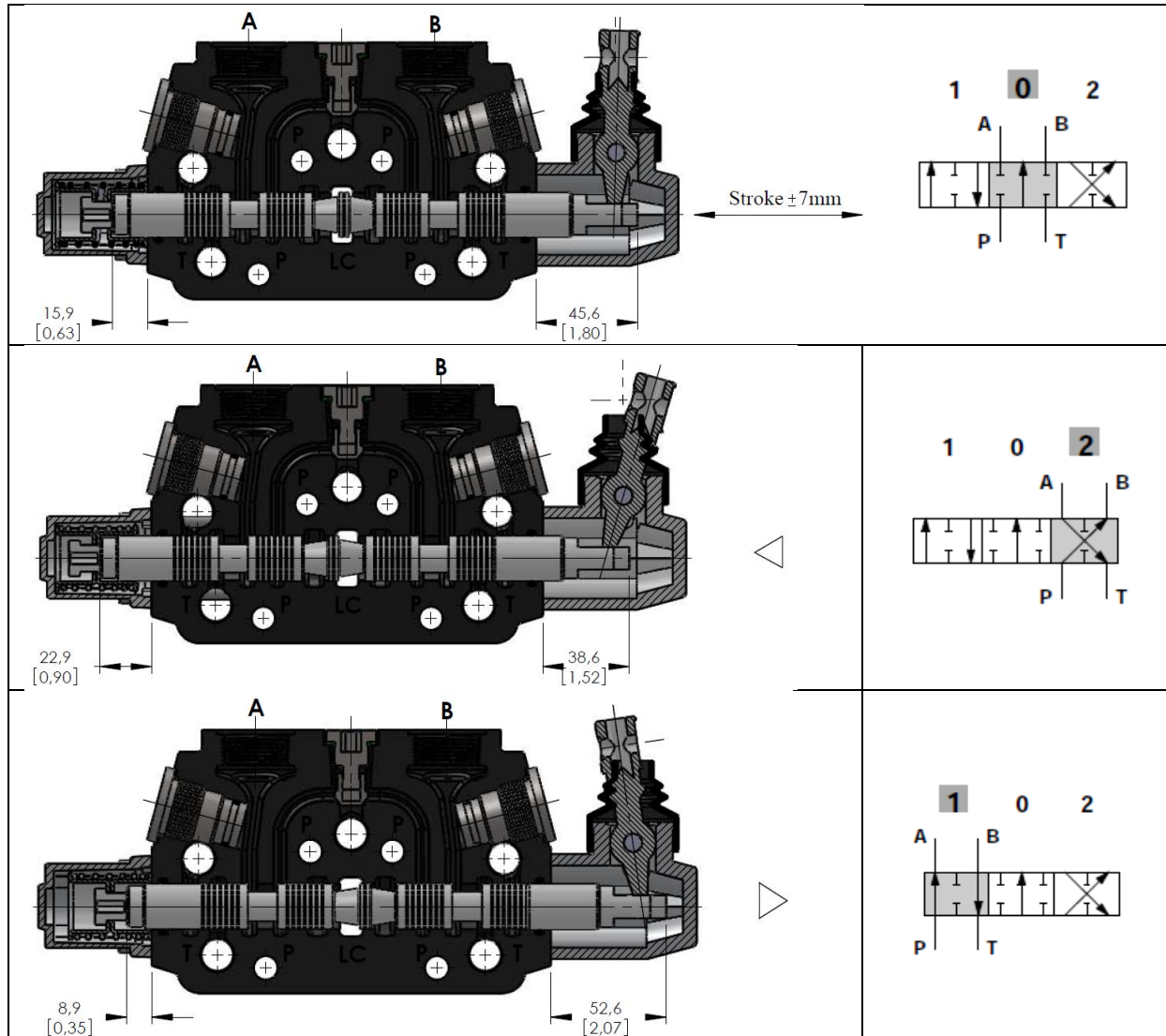
Inlet Cover- Pump Side

RH Inlet Valve Options

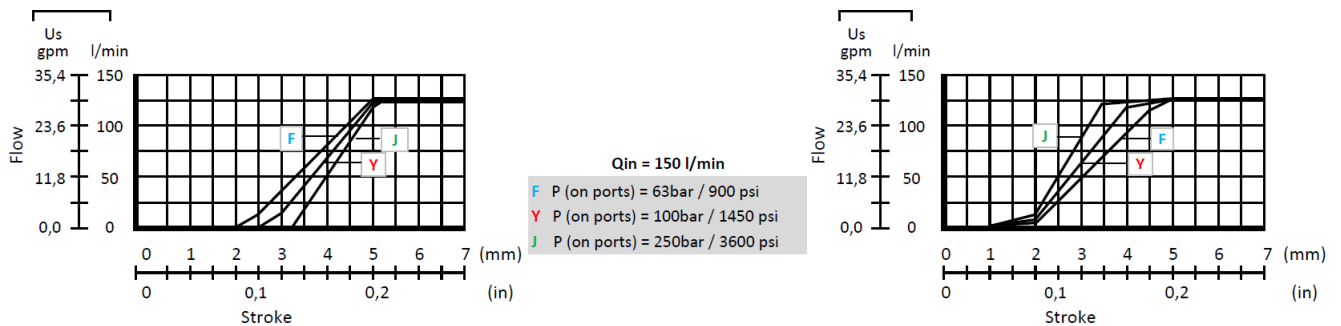
Type No: RA	
Sectional Appearance	
	
Type No: RB	
Sectional Appearance	
	
Hydraulic Diagram	
Type = RA	Type = RB
	

Spool Options

Spool Type - 1A

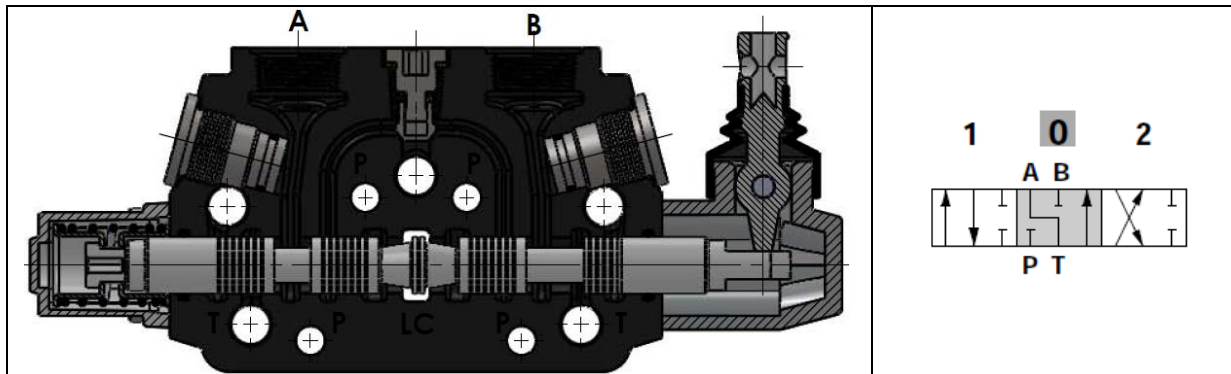


Performance Curve And Data:

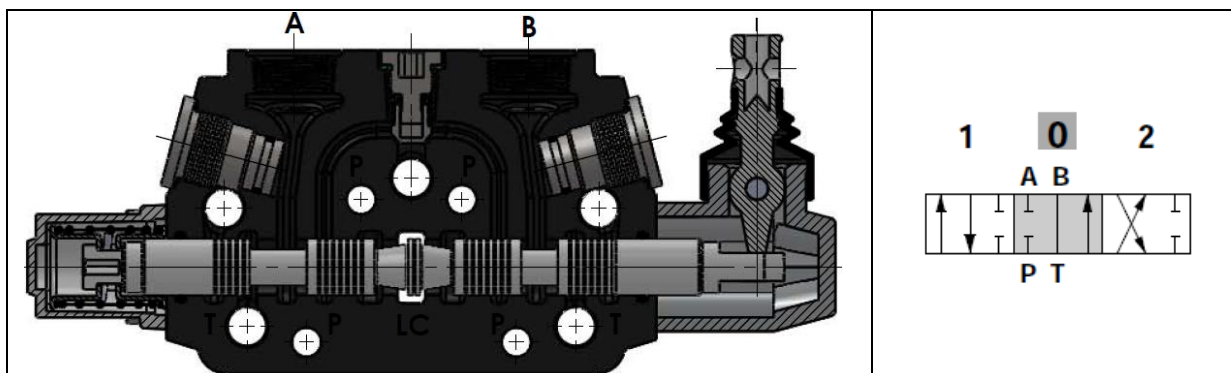


Spool Options

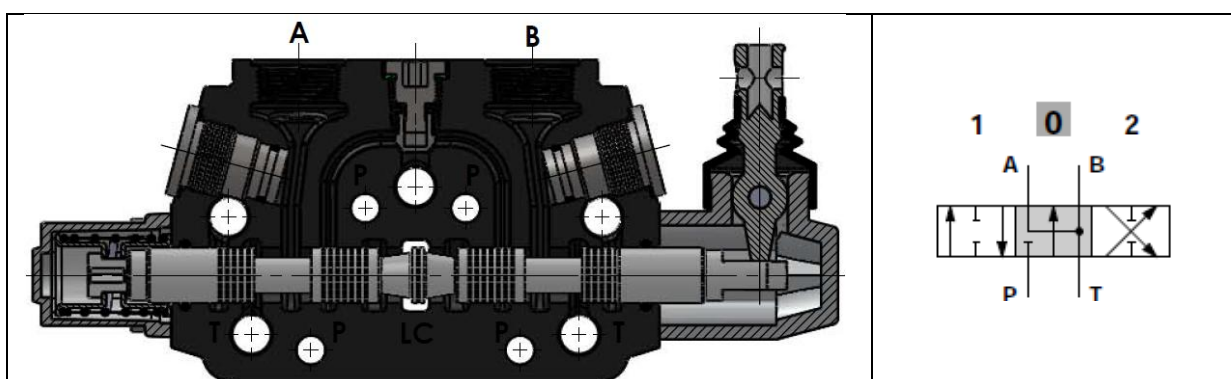
Spool Type - 2A



Spool Type - 3A

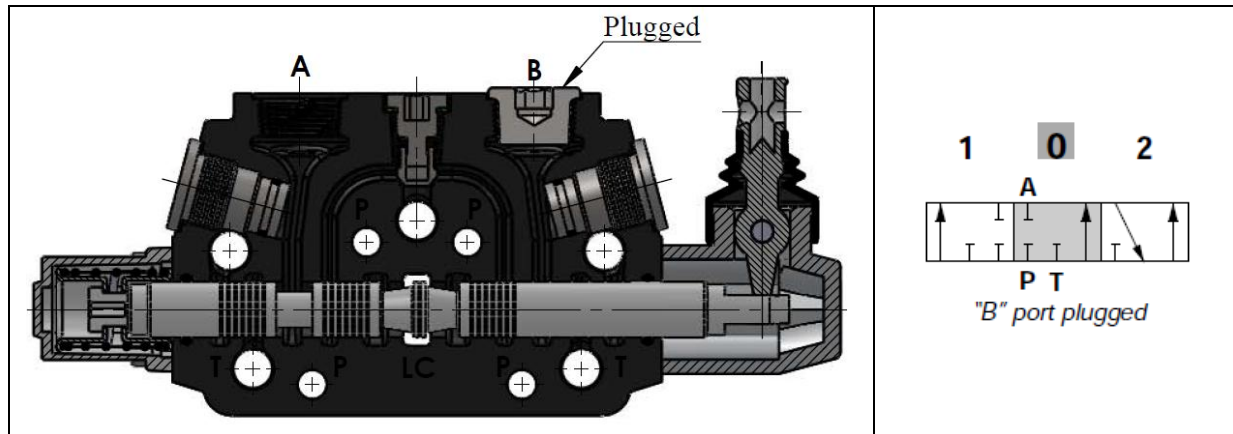


Spool Type - 4A

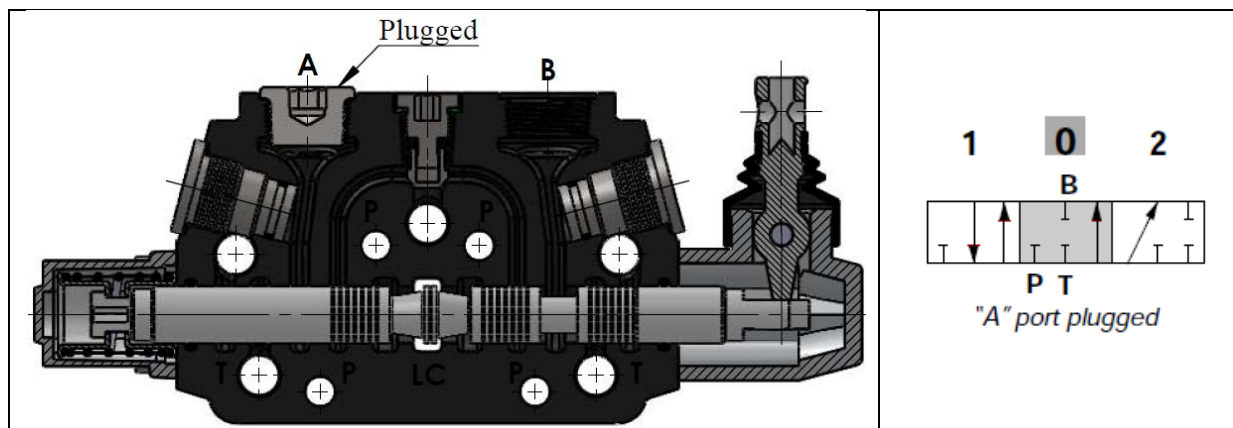


Spool Options

Spool Type - 5A

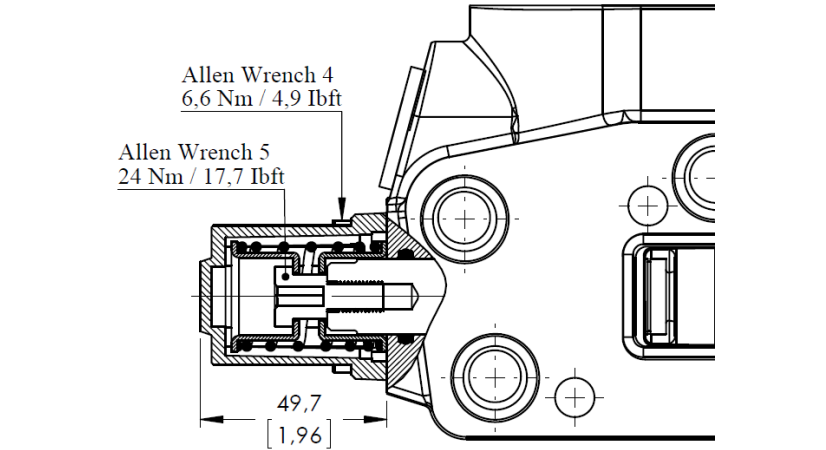
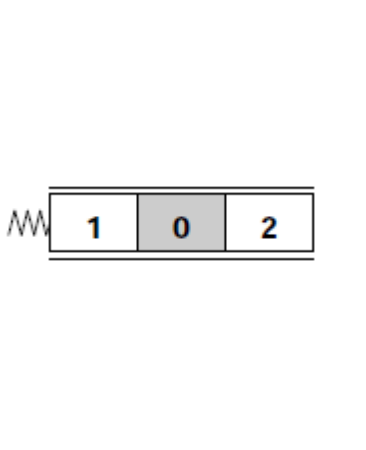


Spool Type - 6A

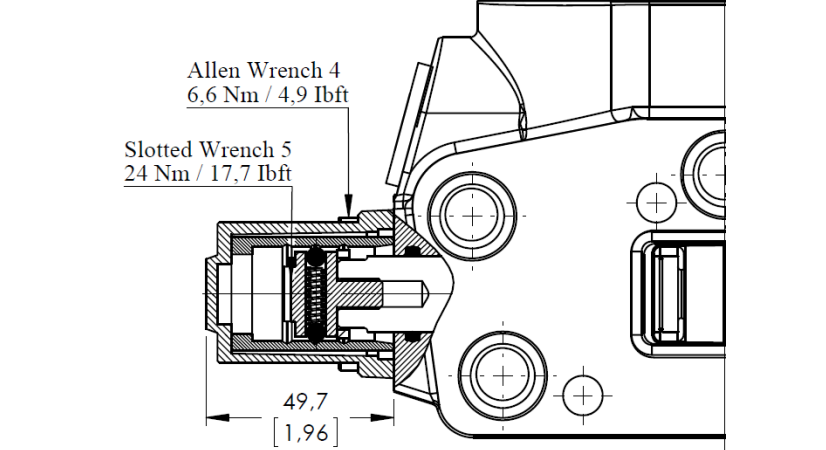
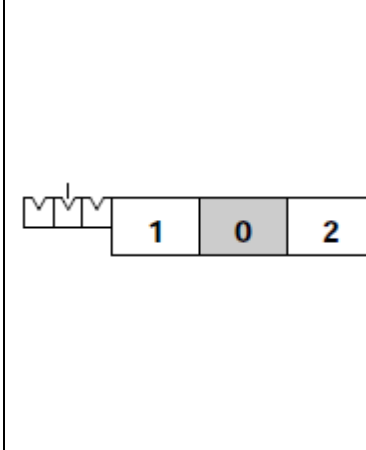


Spool Positioners – Side of Return

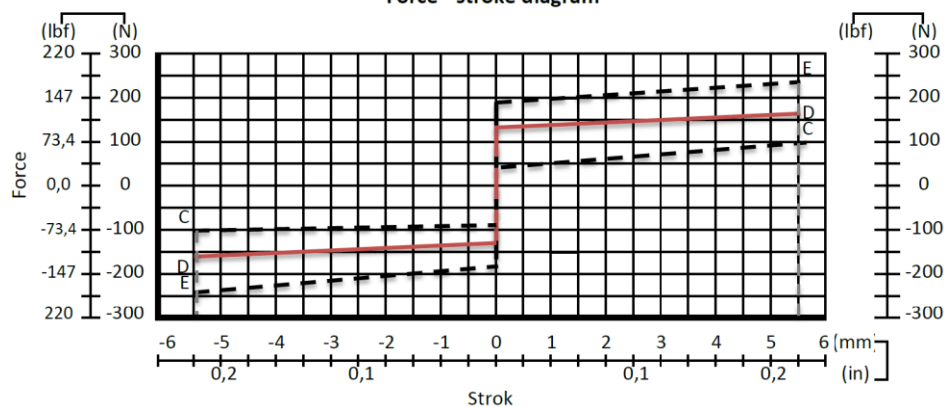
With Spring Return in Neutral Position

Kit No:SR	
Sectional Appearance	Diagram
	

With Detent

Kit No:D	
Sectional Appearance	Diagram
	

Force - stroke diagram



Spool Positioners – Side of Return

ON/OFF Pneumatic Control

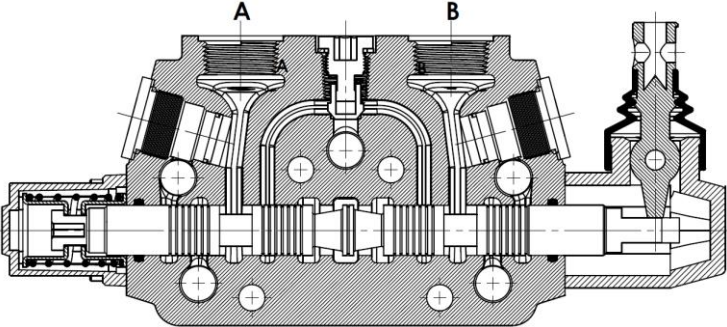
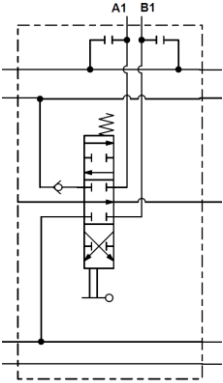
Kit No: 150P	
Sectional Appearance	Diagram
Operatig Features Pilot Pressure: 6 Bar (Max. 10) / 87 Psi (Max. 145)	

ON/OFF Electro-Pneumatic Control

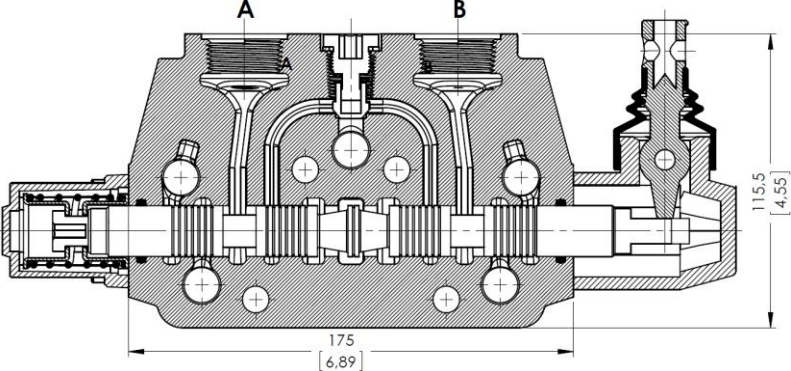
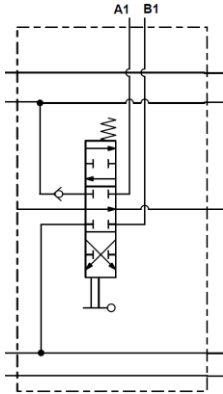
Kit No: 150EP	
Sectional Appearance	Diagram
Operatig Features Pilot Pressure: 6 Bar (Max. 10) / 87 Psi (Max. 145)	
Selonoid Operating Features Nominal Voltage.....: 12VDC / 24 VDC Power Rating.....: 6 W	

Working Section Kit

With Port Valves Type

Kit No: AA	
Sectional Appearance	Diagram
	

Without Port Valves Type

Kit No: AB	
Sectional Appearance	Diagram
	

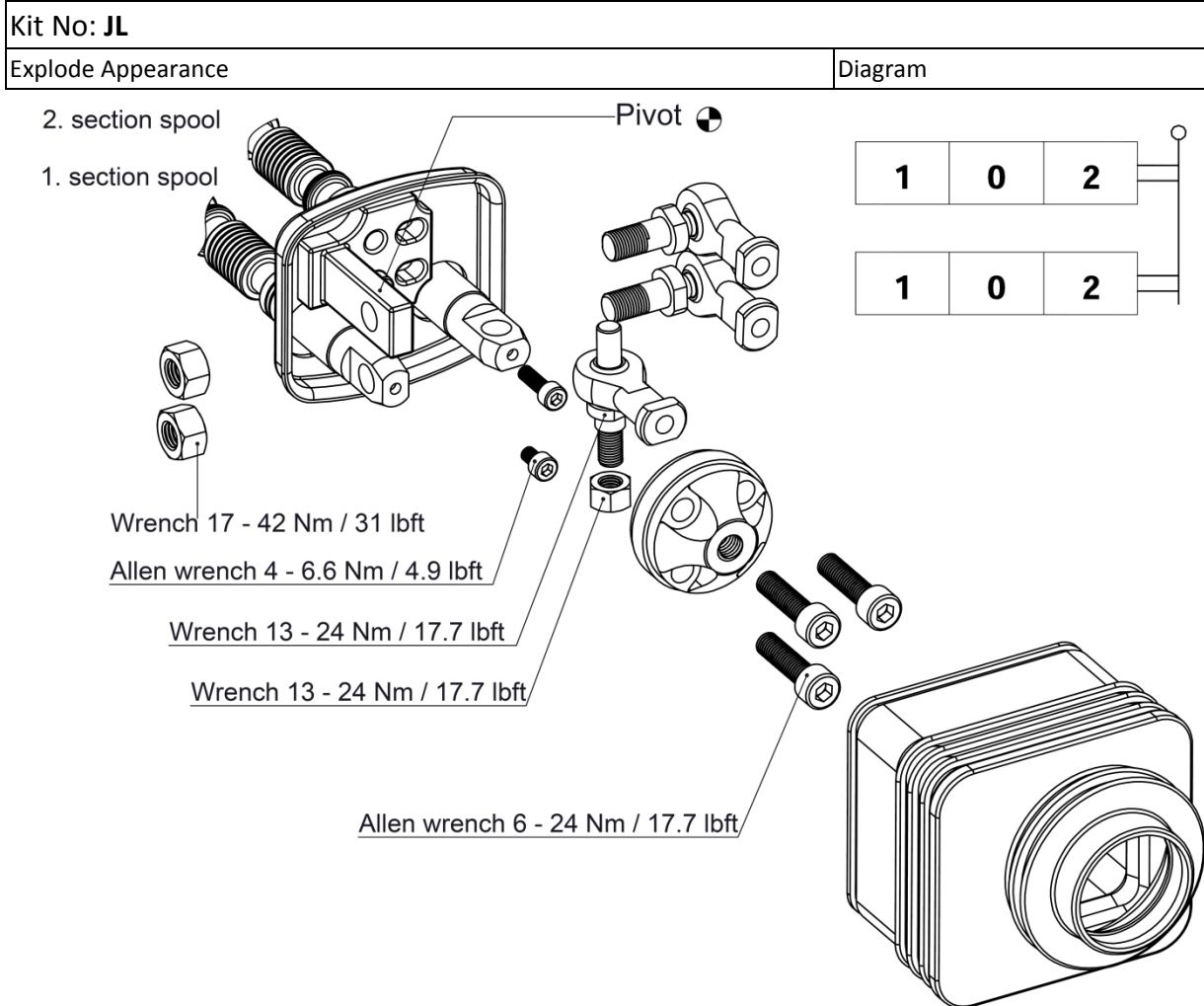
Spool Positioners – Side of Lever Control

Lever Controls

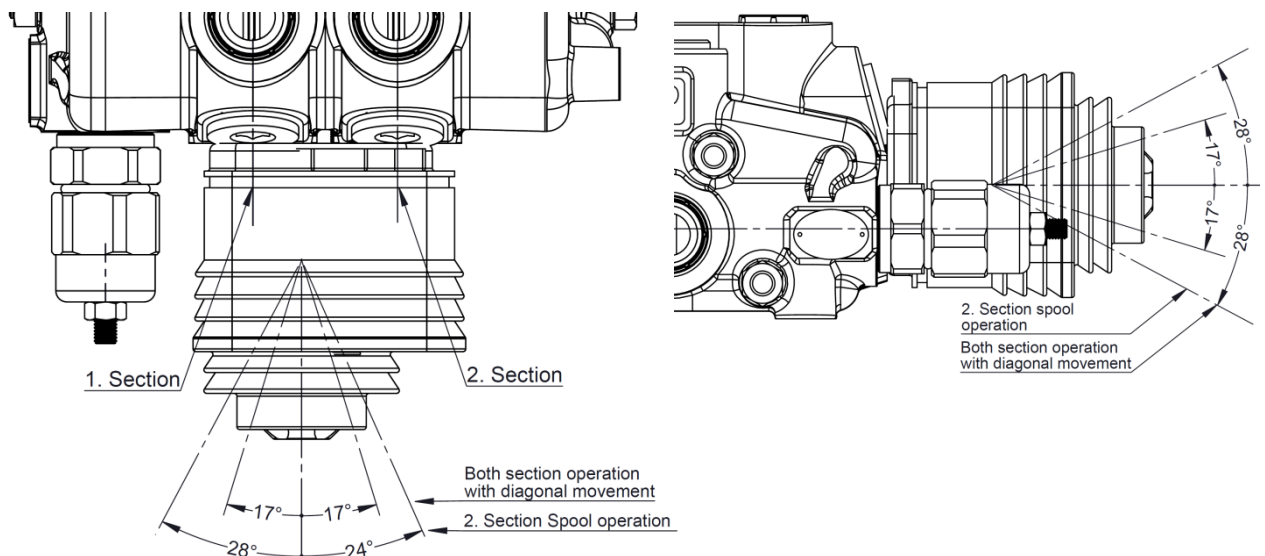
Kit No: STL - L0	
Sectional Appearance	Diagram
Kit No: STL - L180	
Sectional Appearance	Diagram
Note: Alluminium with protection arm lever pivot box, it can be rotated 180°.	

Spool Positioners – Side of Lever Control

Lever Controls - Joystick



Operation Angle:



Spool Positioners – Side of Lever Control

Lever Controls - Joystick

Dimensions and movement scheme

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

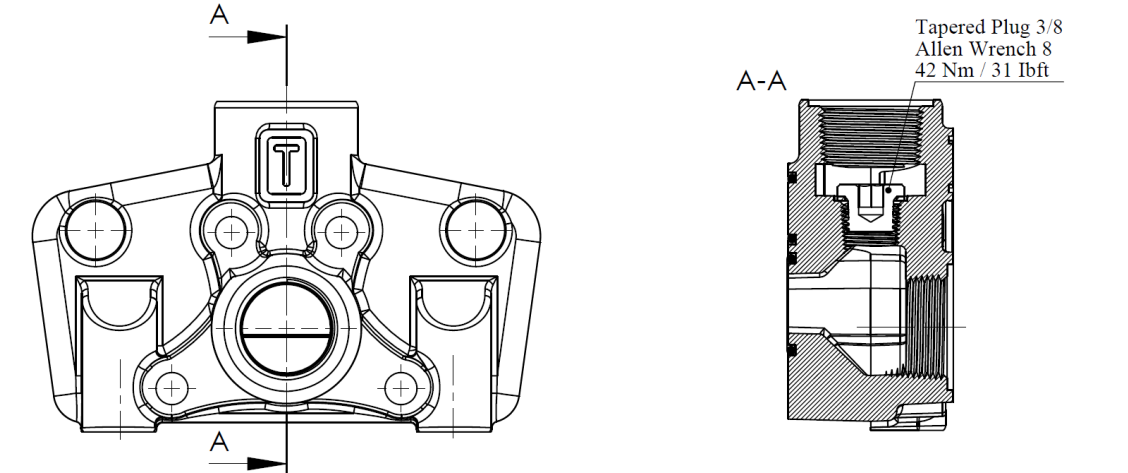
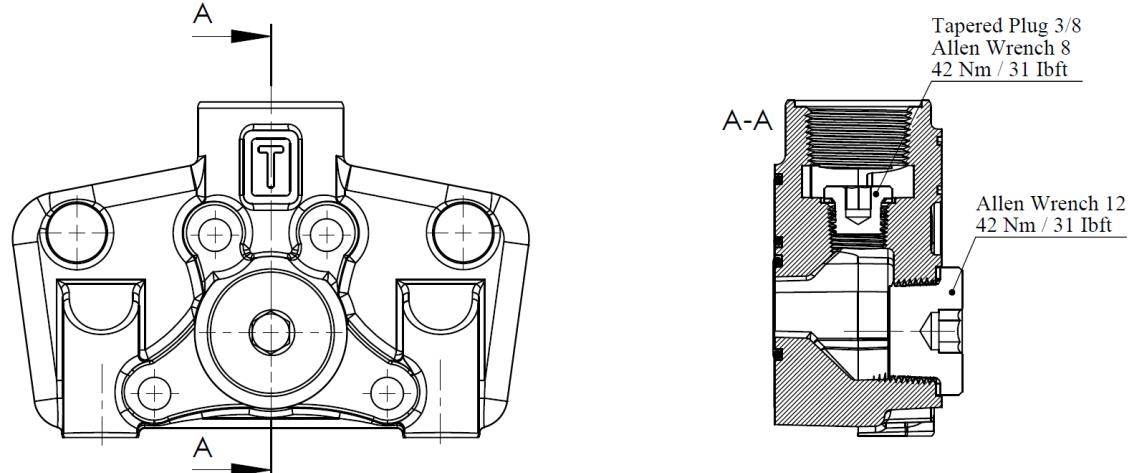
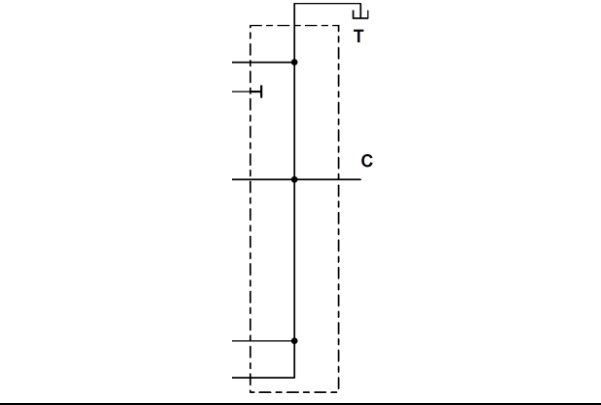
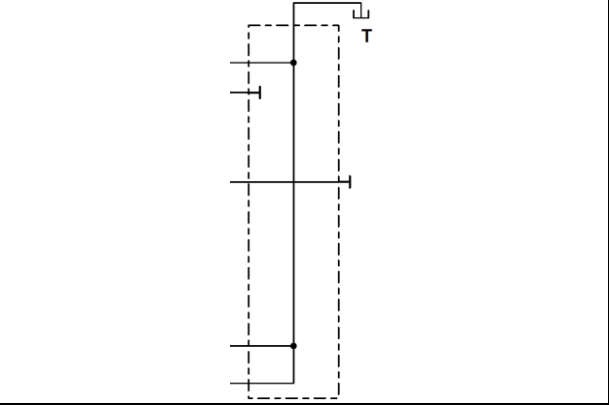
Outlet Cover- Tank Side

Output Cover Options

Type No:SO	
Sectional Appearance	
Type No:TO	
Sectional Appearance	
Hydraulic Diagram	
Type = SO	Type=TO

Outlet Cover- Tank Side

Output Cover Options

Type No:TCO	
Sectional Appearance	
	
Type No:TC	
Sectional Appearance	
	
Hydraulic Diagram	
Type = TCO	Type=TC
	

Port Valves Options

Anti Shock Valves

Code: _____

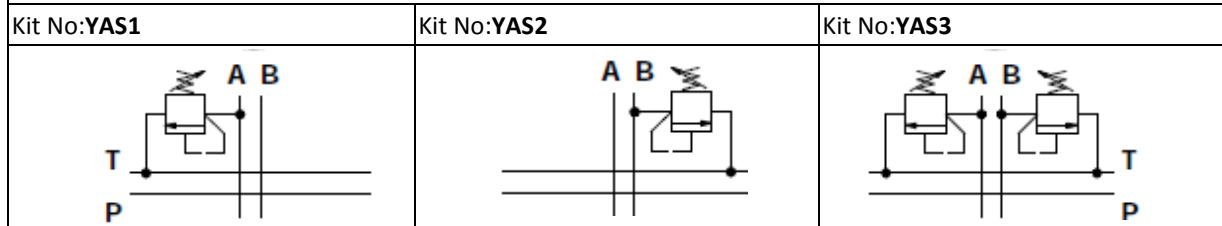
YAS -1(T1-100)

→ Pressure setting in bar.

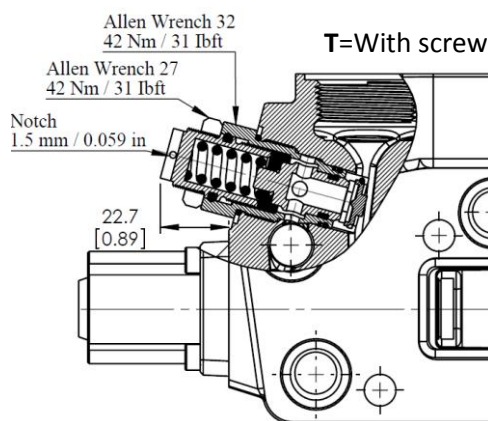
→ Adjusting type **T**=With screw , **L**=Valve Set / Spring Type **(1,2,3)**

→ **1**= Mounted Port A , **2**=Mounted Port B , **3**=Mounted Port A and B

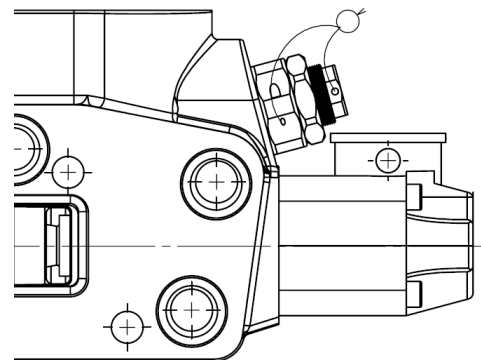
Hydraulic Diagram



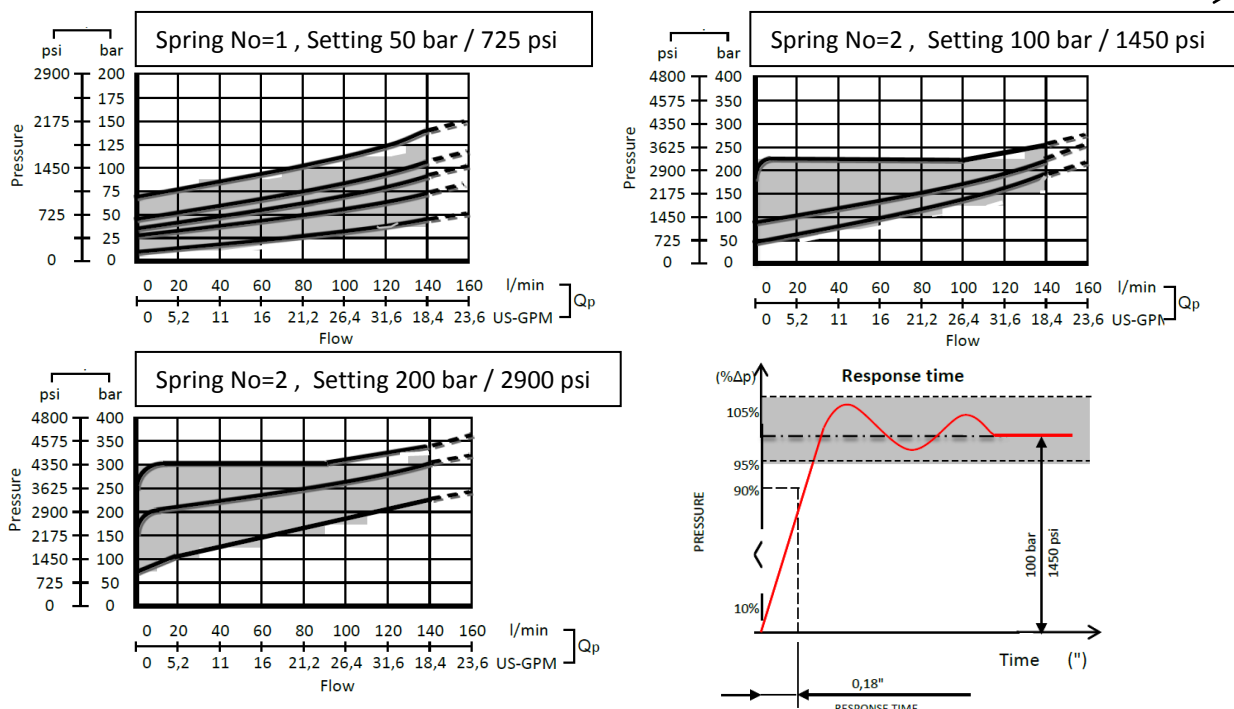
Adjustment Type on Valve: _____



L=Valve set



Performance Data: _____



Port Valves Options

Anti shock And Anti Cavitation Valves

Code:

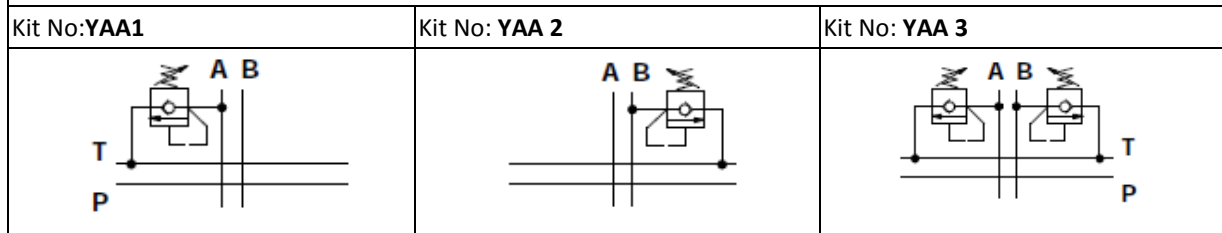
YAA -1(T1-100)

→ Pressure setting in bar.

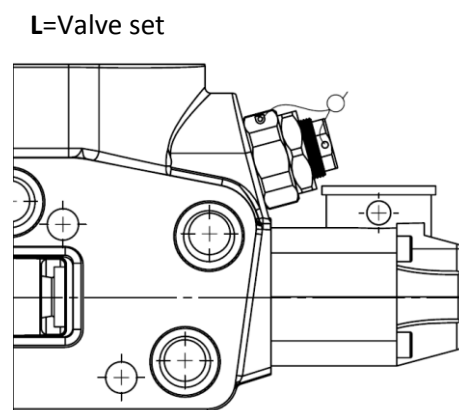
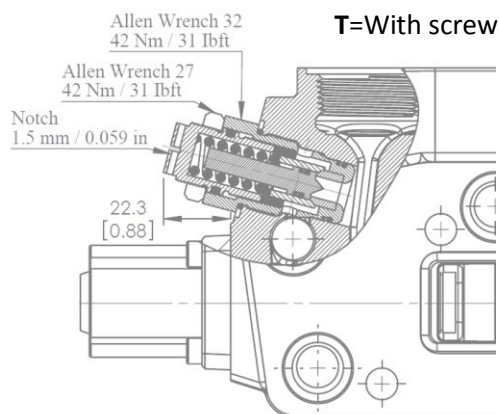
→ Adjusting type **T**=With screw , **L**=Valve Set / Spring Type **(1,2,3)**

→ **1**= Mounted Port A , **2**=Mounted Port B , **3**=Mounted Port A and B

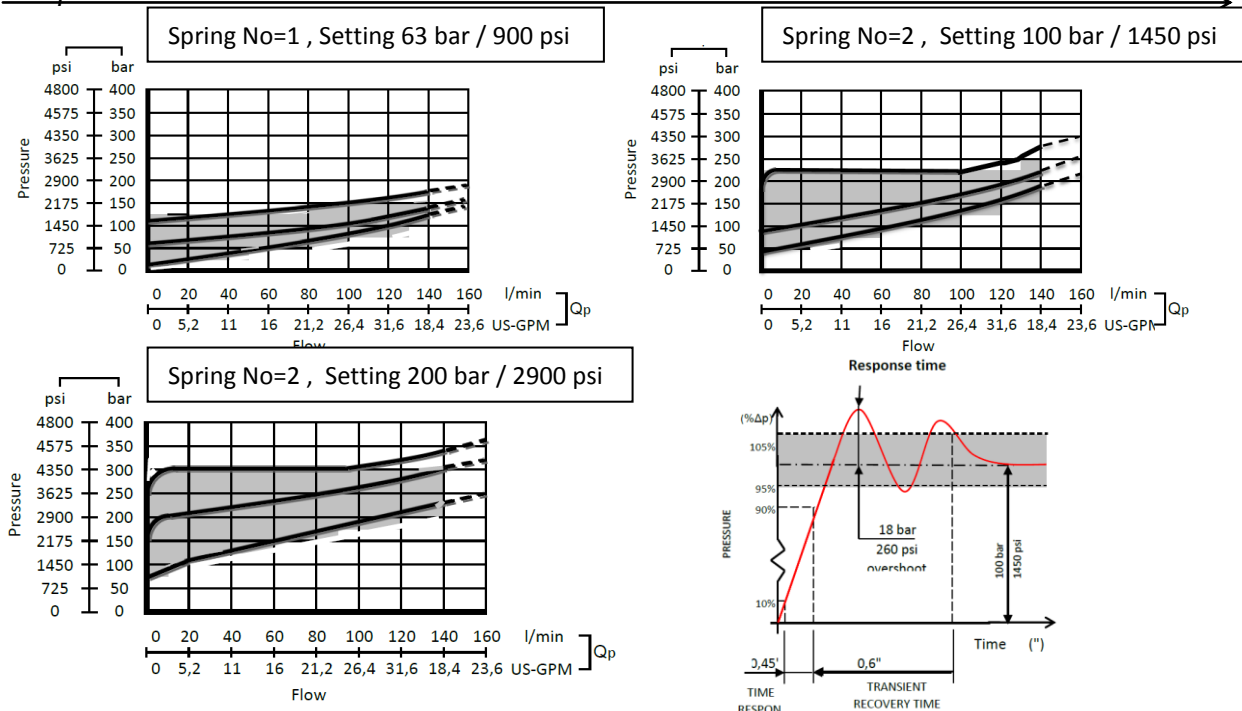
Hydraulic Diagram



Adjustment Type on Valve:



Performance Data:

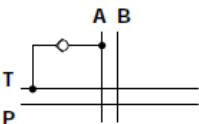
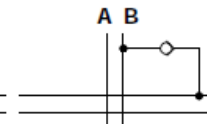
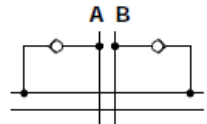


Port Valves Options

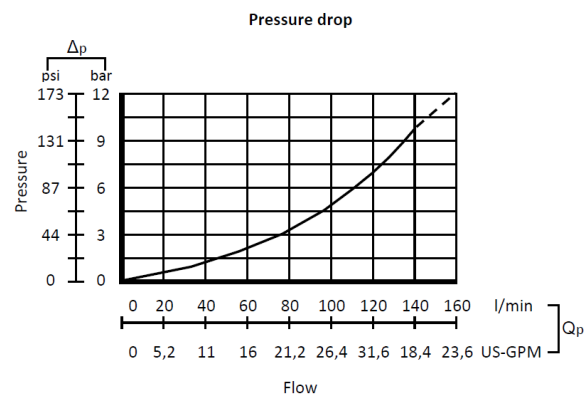
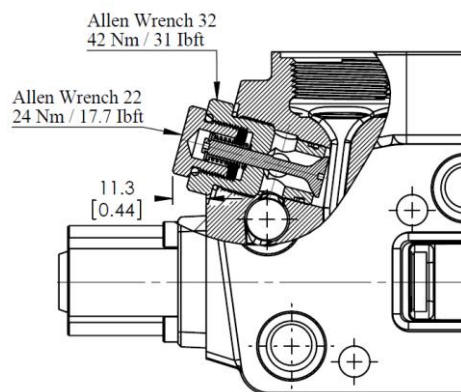
Anti Cavitation Valves

Code: _____

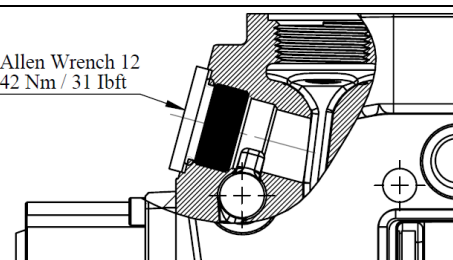
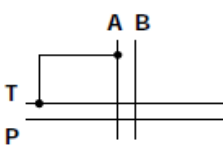
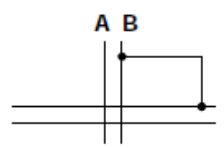
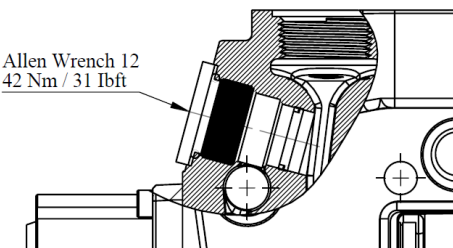
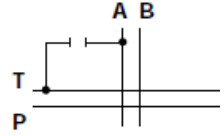
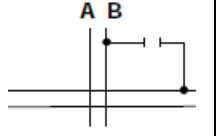
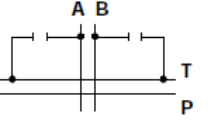
YAC – 1 → 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram		
Kit No: YAC1	Kit No: YAC 2	Kit No: YAC 3
		

Adjustment Type on Valve And Data: _____



Valve Blaking

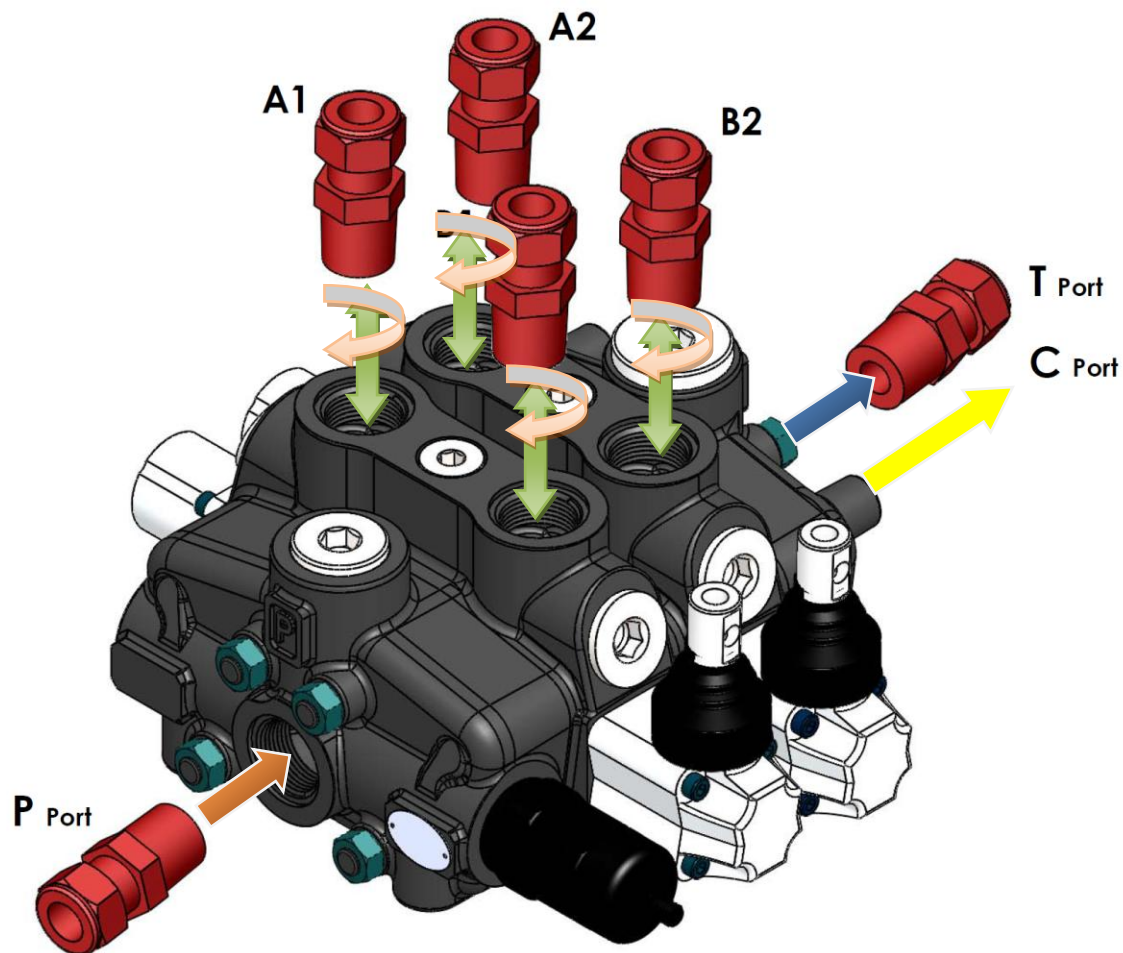
Plug with tank connection				
DST-1 (1:Mounted port A – 2:Mounted port B)				
Sectional Appearance		Hydraulic Diagram		
		DST1	DST2	
				
Plug				
YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)				
		YP1	YP 2	YP 3
				

Installation and Maintenance

The ORV-PD150 valve is assembled and tested as per the technical specification of this catalog.

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

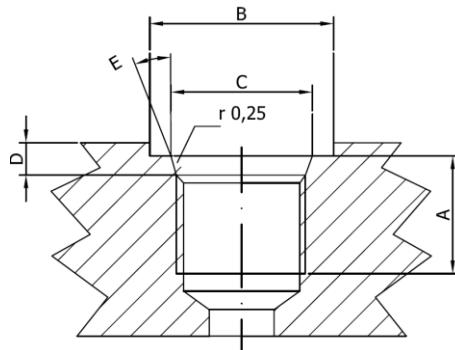
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Prior to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



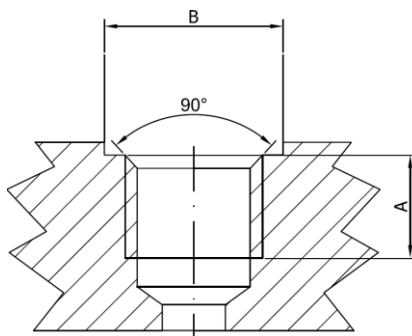
Therads Type	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 3/4	G 3/4	G 1
With O--Ring seal	70 / 51.6	70 / 51.6	100 / 73.7
With copper washer	70 / 51.6	70 / 51.6	90 / 66.3
With steel and rubber washer	70 / 51.6	70 / 51.6	100 / 51.6
BSP (ISO 228/1)	G 1	G 1	G 1
With O--Ring seal	100 / 73.7	100 / 73.7	100 / 73.7
With copper washer	90 / 66.3	90 / 66.3	90 / 66.3
With steel and rubber washer	100 / 51.6	100 / 51.6	100 / 51.6
UN--UNF (ISO 11926--1)	1 5/16--12 UNF--2B	1 1/16--12 UNF--2B	1 5/16--12 UNF--2B
With O--Ring seal	150 / 110.6	95 / 70	150 / 110.6

Technical Data

Ports Dimensional Data



SAE UN-UNF (ISO 725)							
Dimensions		7/8-14 UNF		1"1/16-12 UN		1"5/16-12 UN	
Mm	In	SAE10		SAE12		SAE16	
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

