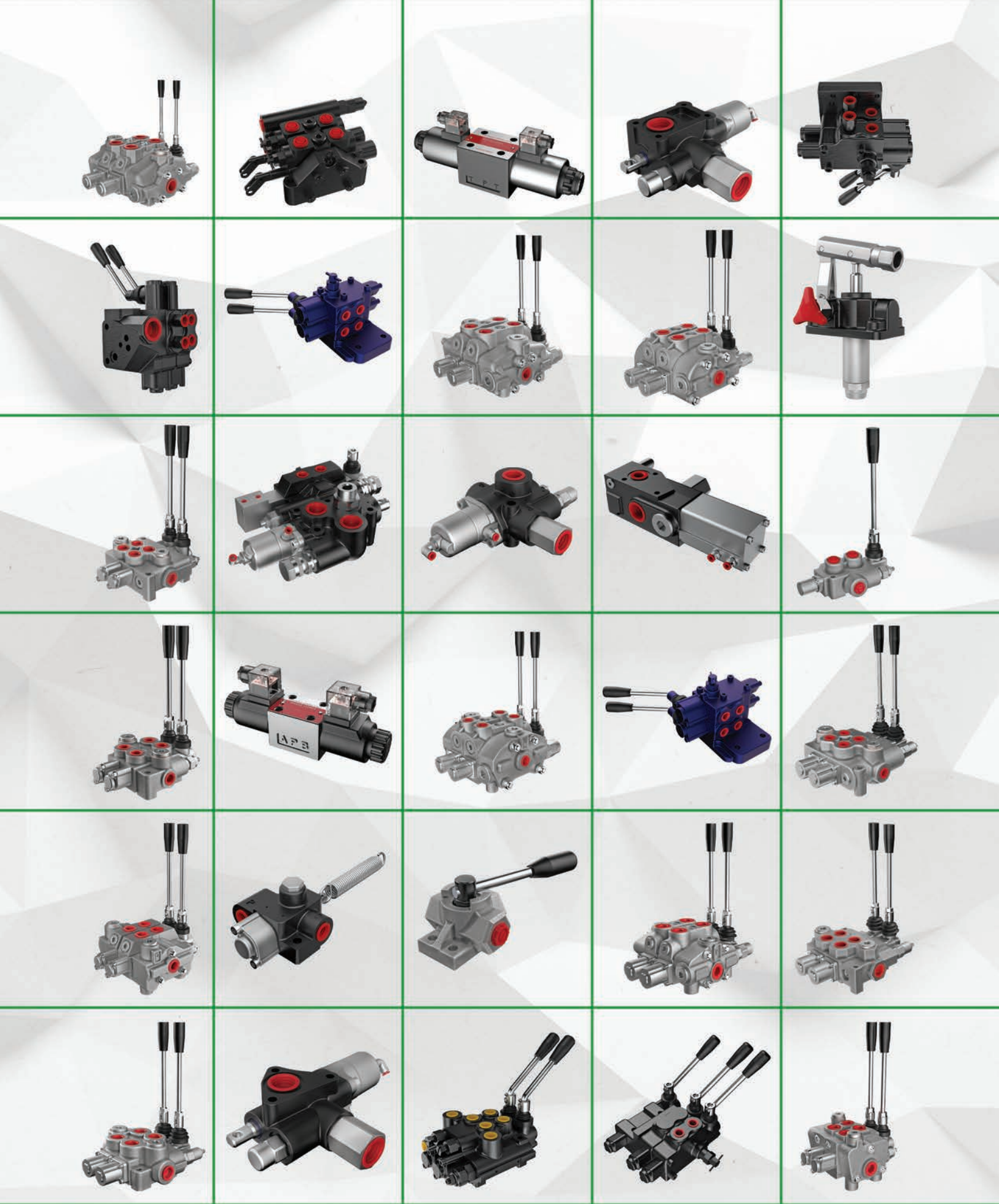


**PRODUCT
CATALOG**



gemmaautomotive.com



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ABOUT US

TURKEY'S NUMBER ONE TIPPING SYSTEMS MANUFACTURER

GEMMA AUTOMOTIVE IS A LEADING TURKISH COMPANY OPERATING IN THE INDUSTRY OF HYDRAULIC SYSTEMS FOR TIPPING TRUCKS, TRAILERS, SEMITRAILERS, GARBAGE TRUCKS AND CRANES.

Over 30 years old, serving more than 40 countries across the world, Gemma is based in Konya, Turkey, with one state-of-the-art 14.000 m² manufacturing plant.

The company is committed to the development, production, marketing and distribution of components mainly used in connection with hydraulic loading and unloading systems on tipper trucks and trailers for the road transportation industry in on- and off-road applications. All Gemma components are made to meet global market demands in terms of quality, price, availability, on-time deliveries and after sales service.

WIDE PRODUCT RANGE

Gemma brand is highly rated for reliable and top-quality production of hydraulic pumps, power take-offs, hydraulic valves, telescopic cylinders, wet kits, oil tanks, pumps, adapters and cardan shafts for trucks of European, Japanese and American brands working in compliance with the highest international quality standards (ISO 9001, CE and TSE). We manufacture and distribute a vast quantity and variety of hydraulic pumps, ptos and hydraulic valves with a wide selection for capacity and product variations.

PACKAGING

All packaging is done in keeping with international shipping standards which guarantees protection against harsh treatment. In addition, we offer VCI protective packaging which provides long-term protection to metallic parts against corrosion, and oil based rust prevention.

WARRANTY PERIOD

Gemma Automotive offers a limited one-year warranty on products purchased directly from Gemma. It warrants to buyers that its products will be free from defects in material or workmanship for a period of twelve months of normal use from the date of delivery. If these products prove to be defective in materials or workmanship during the warranty period, Gemma will repair or replace, at its option, the defective product free of charge.

Gemma can easily match and satisfy all market needs ensuring reliability, high performance and durability.

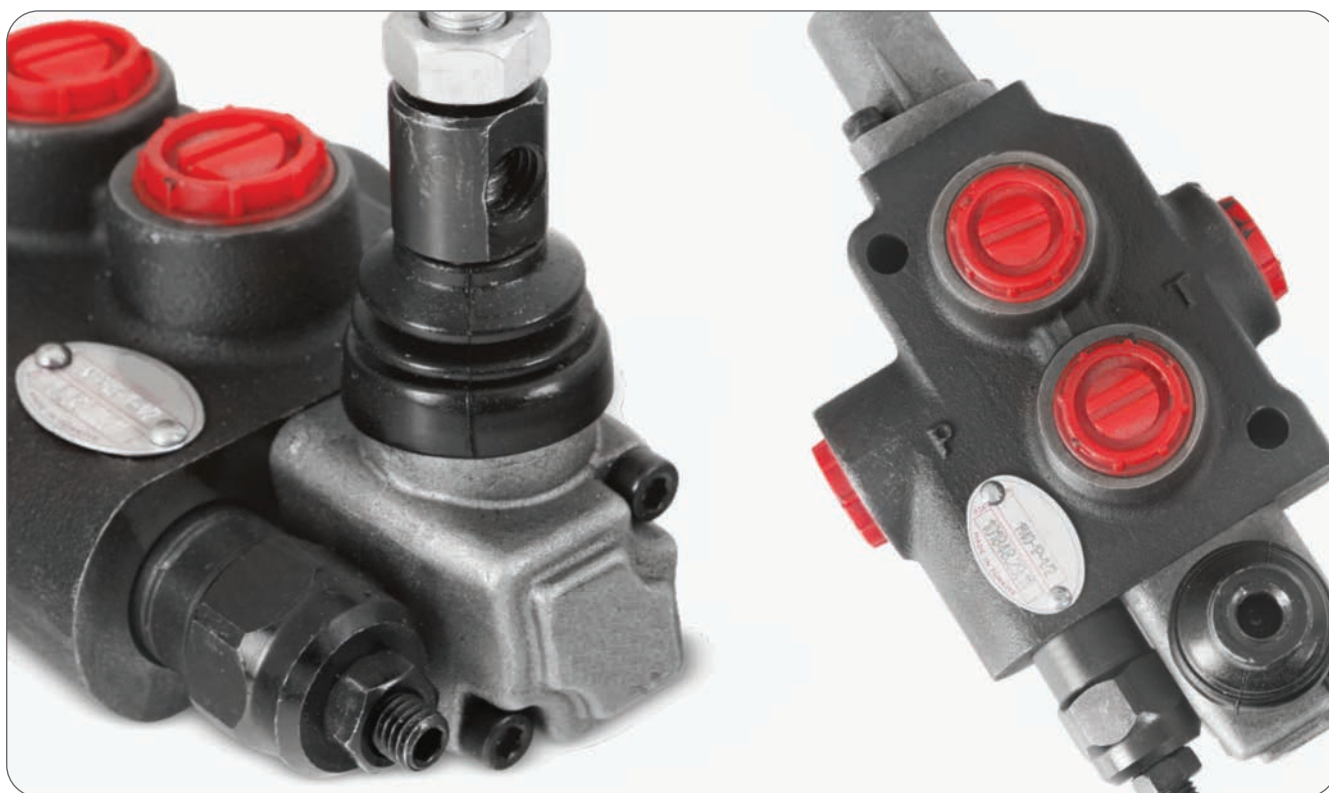




MONOBLOCK
DIRECTIONAL
CONTROL VALVES
GMM-M40

CE





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Performance Data And Curve	10
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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 (01/2011). GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

GEMMA IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN INCORRECT USAGE OF THE PRODUCT.

WORKING CONDITIONS

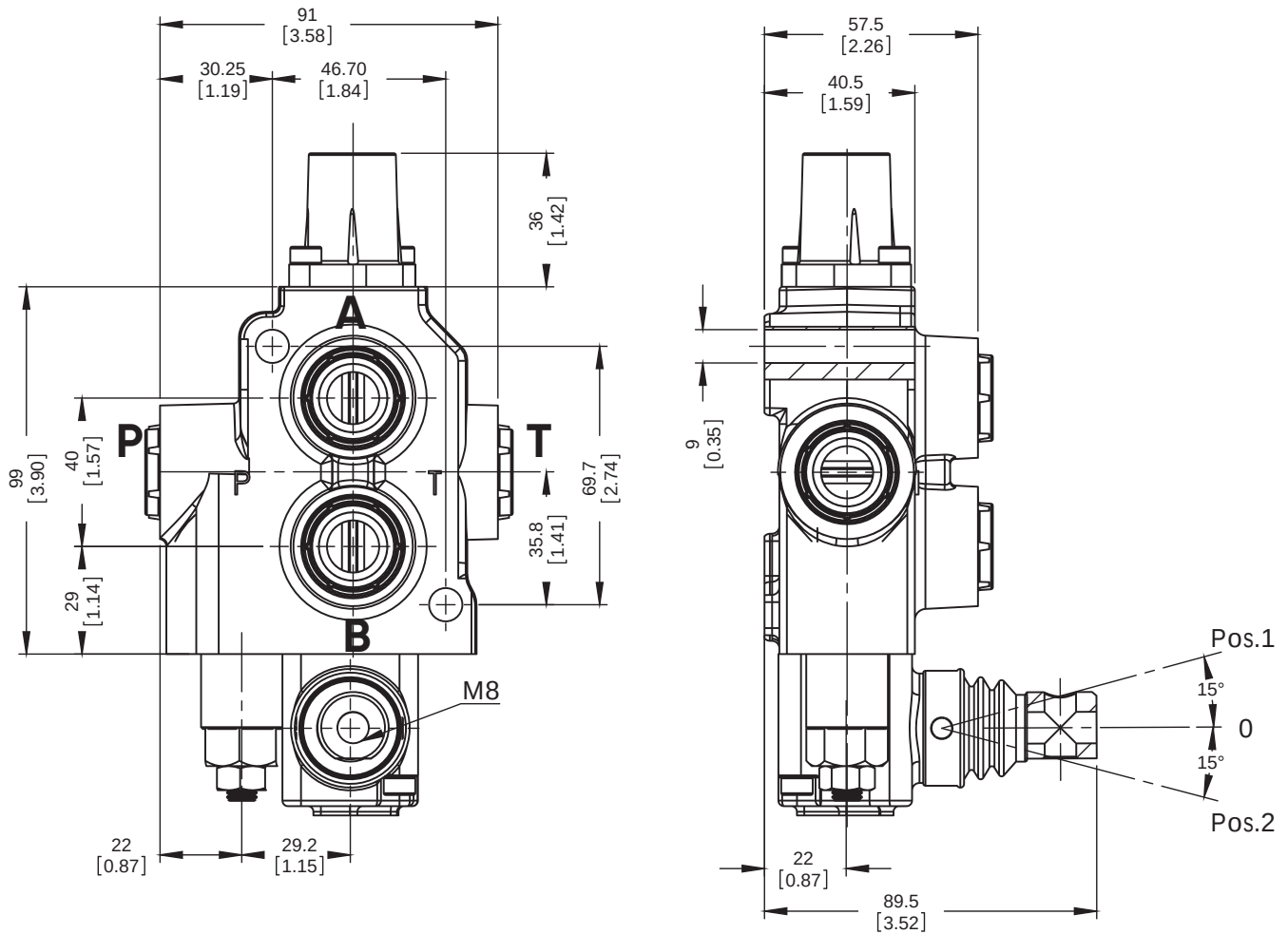
Nominal Flow Rating / Displacement	40 l/min	11 U.S.G.P.M
Maximum Working Pressure	250 Bar	3600 PSI
Max Back Pressure	25 Bar	360 PSI
Oil Temperture with NBR Seals	-20 to 80 C°	4 to 180 F °
with FPM (Viton) Seals	-20 to 100 C°	4 to 200 F °
Oil Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperture Range	-35 to 60 C°	-11 to 160 F °
Number Of Spools	1	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	4 cm3/min	0,24 in3/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° temperture.

Features

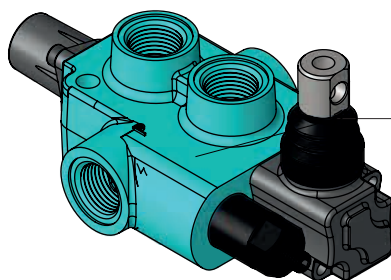
- This valve is only one section for open center and close center hydraulic systems.
- Fitted with a main pressure relief valve.
- Interchangeable spool diametre is 16 mm – 0,63 in.
- Avaible manual and pneumatic spool control kits.

DIMENSIONAL DATA



STANDARD THREADS

PORT	BSP (Iso 228)		UN-UNF (Iso 11926-1)	Metric (Iso 262)	Kg
	3/8" Series	1/2" Series			
P Inlet	G 3/8	G 1/2	3/4-16 UNF	M18x1.5	2,21 Kg
A-B Ports	G 3/8	G 1/2	9/16-18 UNF	M18x1.5	2,21 Kg
T Outlet	G 3/8	G 1/2	3/4-16 UNF	M18x1.5	2,21 Kg
Pneumatic	G 1/4	G 1/4	NPTF 1/8 - 27	NPTF 1/8 - 27	2,21 Kg



Valve Type

GMM-M45-1P-1/2

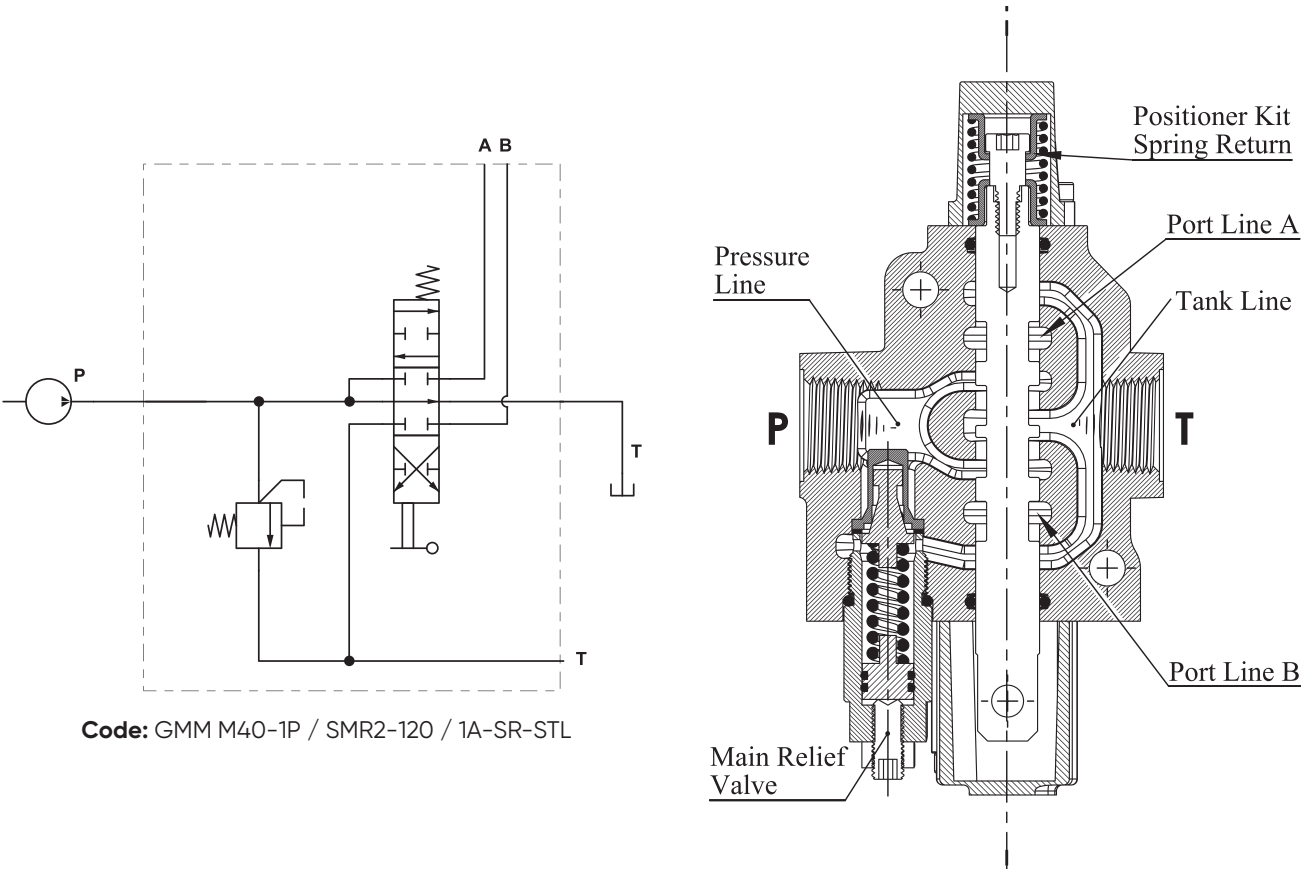
Production Batch

39.10 = Production Year - Week (2010/39)

101149 = Progressive Party Number

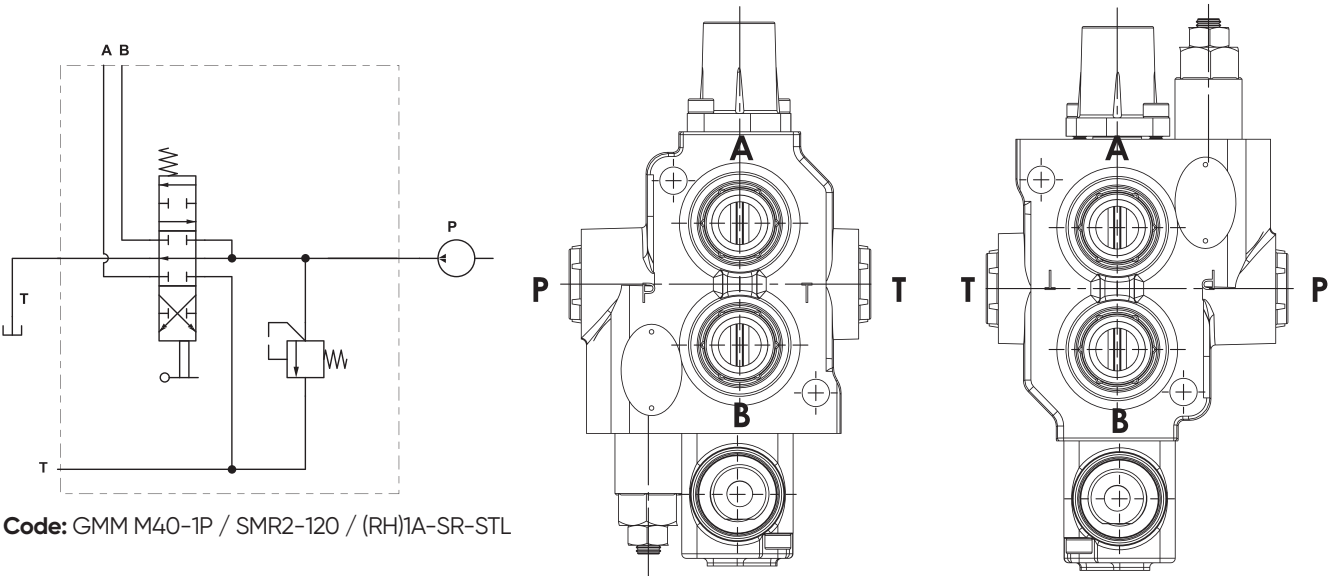
HYDRAULIC CIRCUIT

Standard Configurations With Side Inlet And Outlet Ports (1CP) - LH



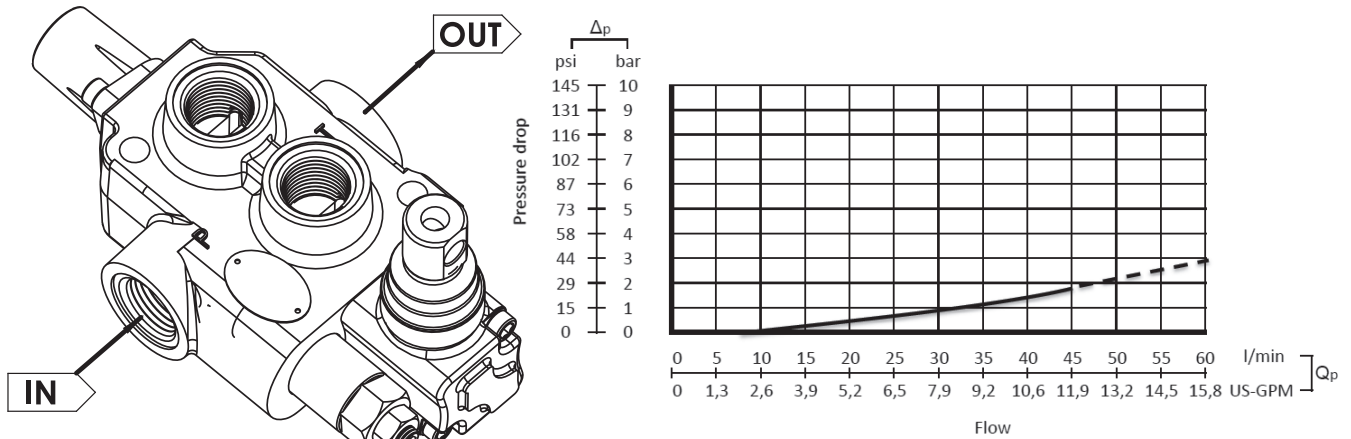
Standard Configurations (1CP) – RH (Right Inlet)

A symmetrical body allows the reverse assembly of spool and this with connected control kit (RH Configuration).

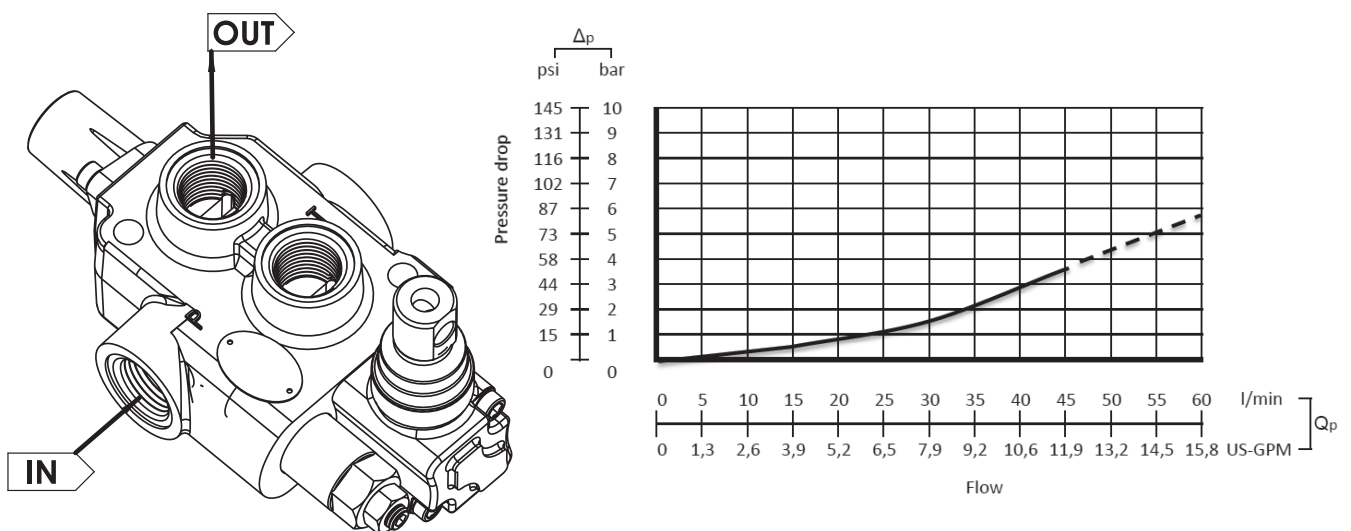


PERFORMANCE DATA AND CURVE

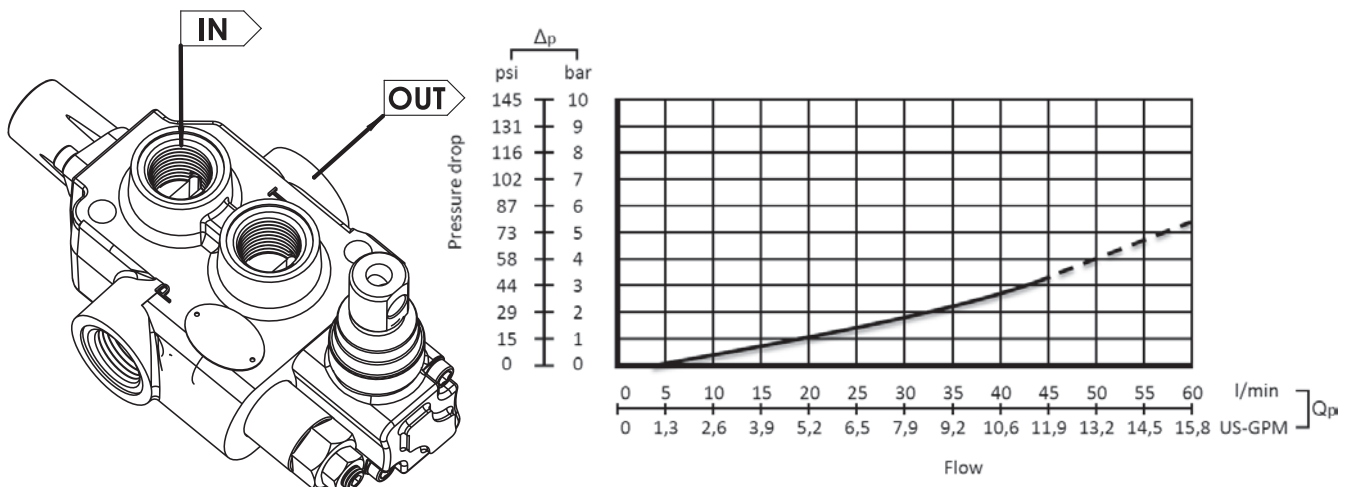
Open Center - Pressure Drop (P-T)



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



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



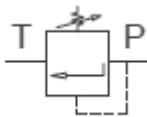
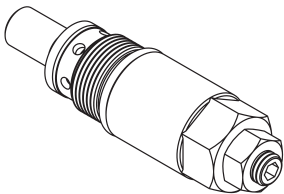
Note: Measured and chart value with spool type 1A.

INLET RELIEF OPTIONS

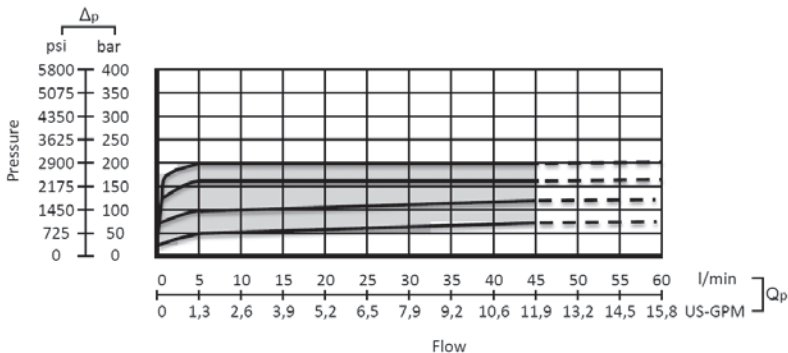
Direct Pressure Relief Valve

Code:

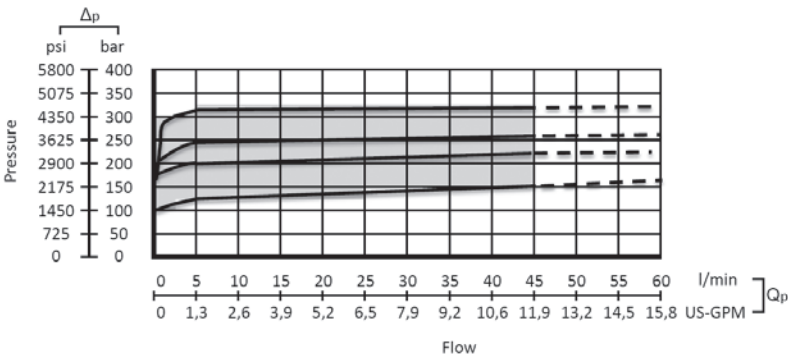
SMR2 – 120



Performance Data

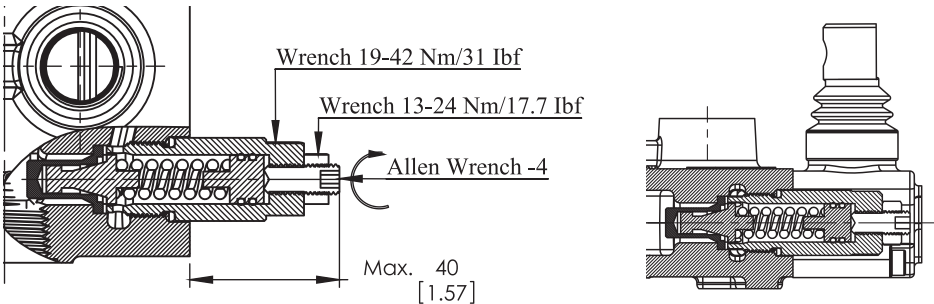


Spring Type Number: 2
Setting= 120 Bar - Range=60-200 Bar

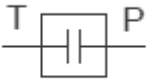
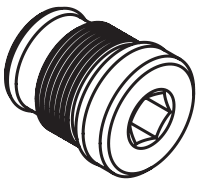
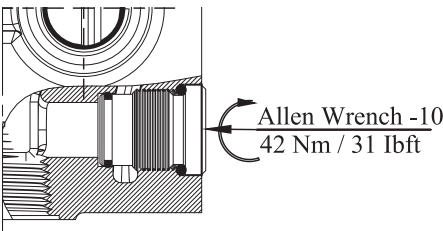


Spring Type Number: 3
Setting= 220 Bar -Range=160-250 Bar

Adjustment Type on Valve

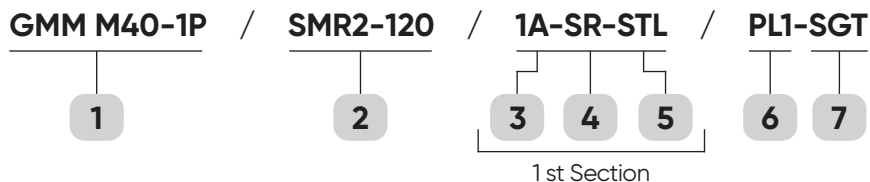


Relief Blanking Plug – WM



ORDERING CODES

Order Sample



1- Valve Type and Body

M40 = Valve Type - (M) - Monoblok
(40) - Max. Flow Rate
1P = Body Section - (1BM140100)

2- Pressure Relief Options

SMR = Standard direct pressure relief valve
SMR1-080 - (2SMR140080) - Range 0-80 bar
 Setting 80 bar
SMR2-120 - (2SMR240120) - Range 60-200 bar
 Setting 120 bar
SMR3-220 - (2SMR340220) - Range 160-250 bar
 Setting 220 bar
SP = Standard relief plug - (2SP040100)

3- Spool Options

1A - (3SM140110) - 3 Positions, Double acting
 2A - (3SM140120) - 3 Positions, Double acting
 A to tank B Blocked
 3A - (3SM140130) - 3 Positions, Double acting
 B to tank A blocked
 4A - (3SM140140) - 3 Positions, Double acting
 A and B tank
 5A - (3SM140150) - 3 Positions, Single acting on
 A (A to tank)
 6A - (3SM140160) - 3 Positions, Single acting on
 B (B to tank)

4- Spool Positioners

SR = Spring Return in neutral position - (4SR040100)
 D = Detent in position 1, neutral and 2 - (4D040100)

5- Lever Options

STL = Standard Lever - (5STL040100)

6- Port and Output Options "If Required"

PL1(5A) = Plug for single action spool 5A -
 G1/2" - (6PL1040112)
 PL1(6A) = Plug for single action spool 6A -
 G1/2" - (6PL2040112)
 *Page 11 for detail spool options.

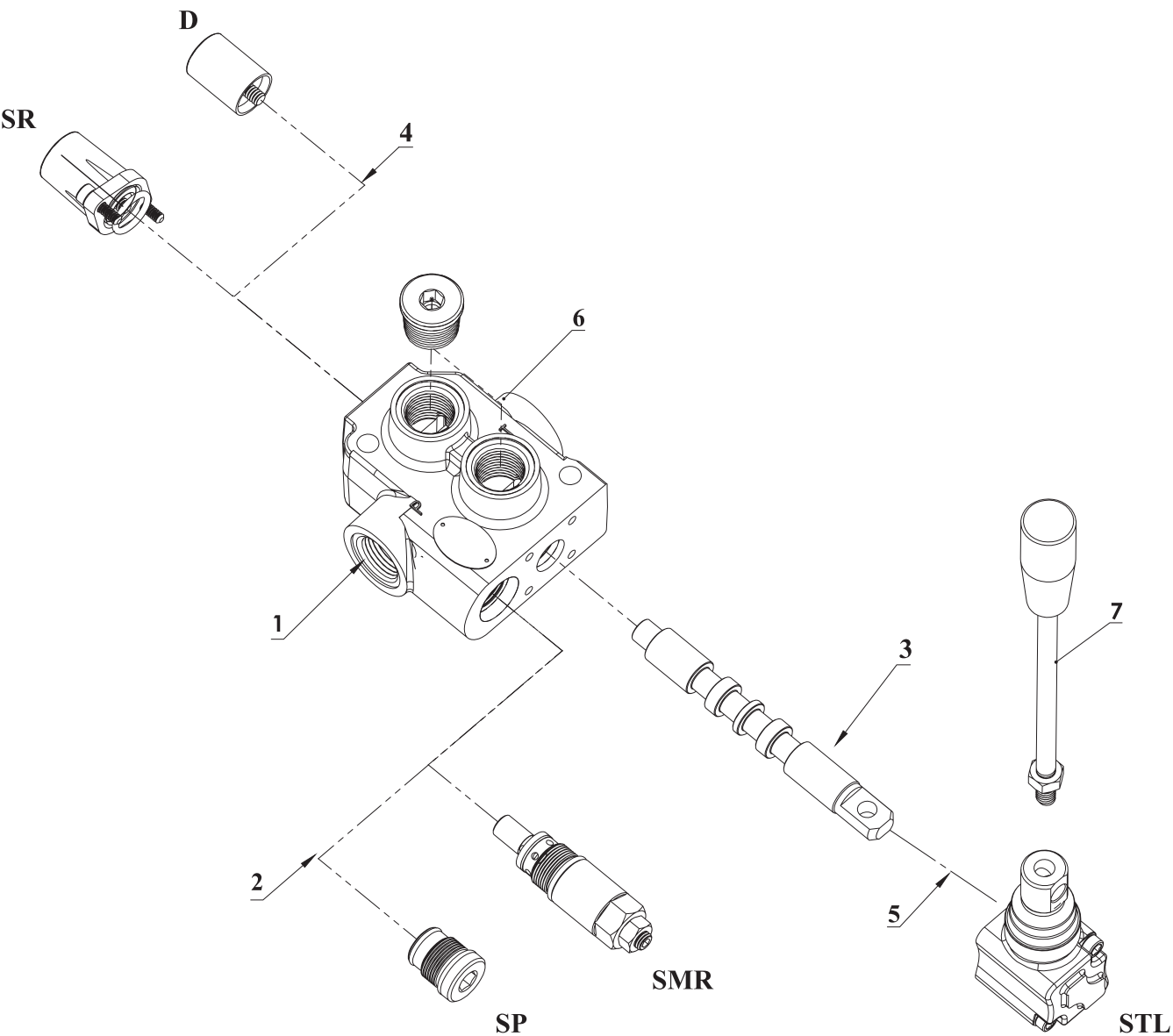
7- Ports Thread Options

SGT1 = 1/2" Series Port Options - (7P040112)
 SGT2 = 3/8" Series Port Options - (7P040138)
 UNF = UNF Series Port Options - (7U040100)
 M = Metric Series Port Options - (7M040100)
 *Page 4 for detail port information.

HandLever

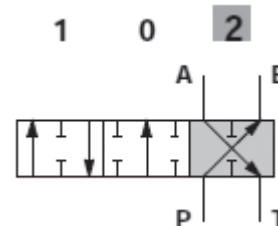
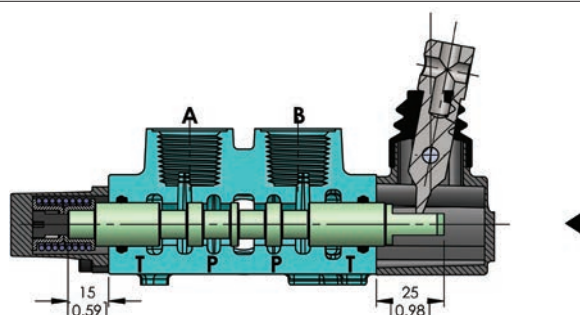
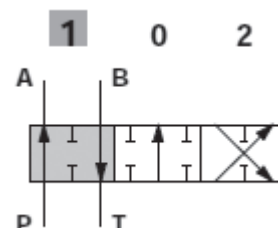
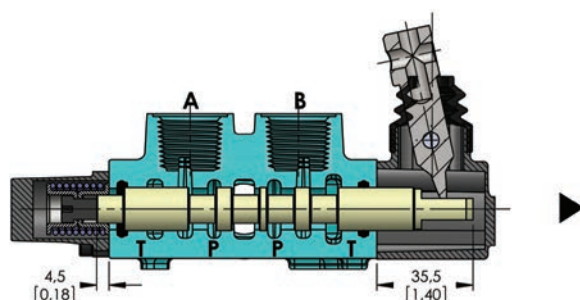
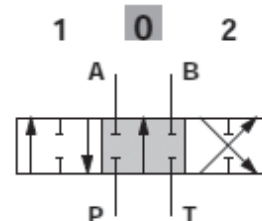
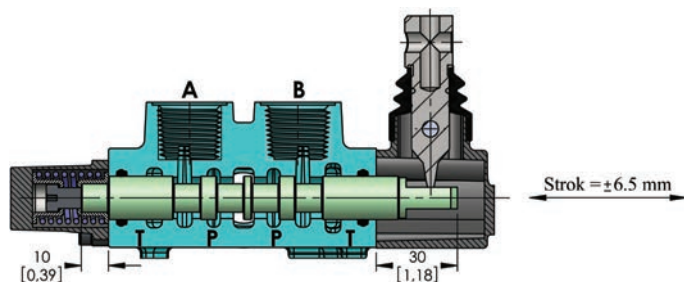
L = Standard HandLever (L=120mmxM8) - (7L040100)

ORDERING CODES

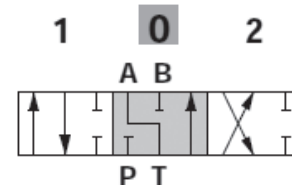
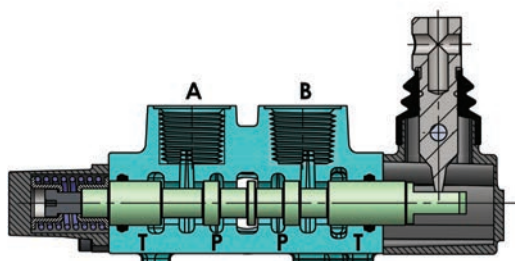


SPOOL OPTIONS

Spool Type - 1A

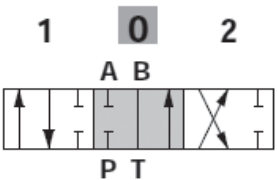
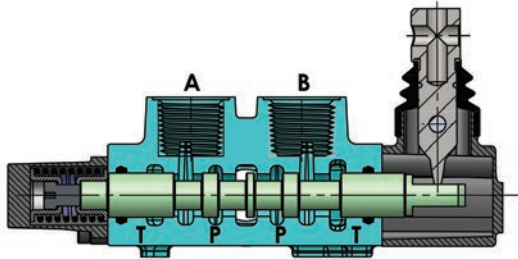


Spool Type - 2A

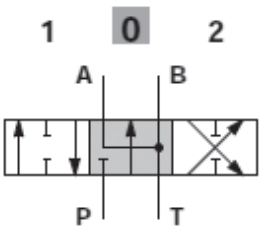
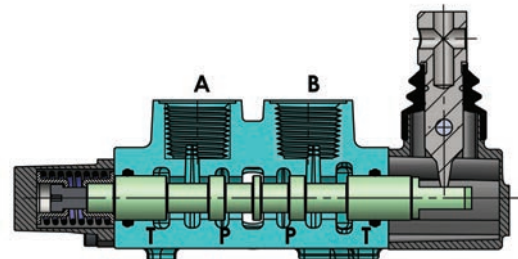


SPOOL OPTIONS

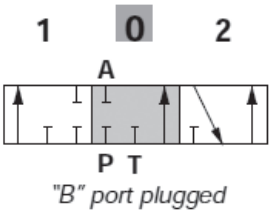
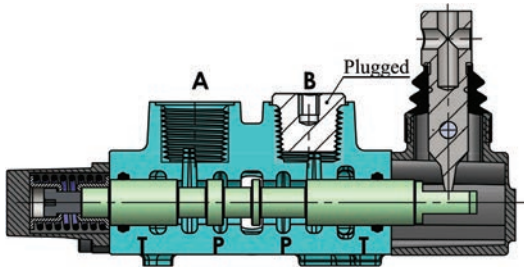
Spool Type - 3A



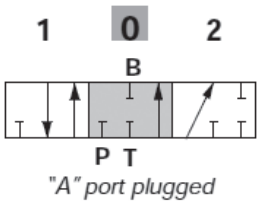
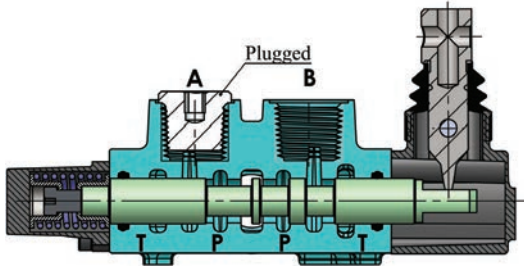
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A



SPOOL OPTIONS

Spool Positioners – Side of Return

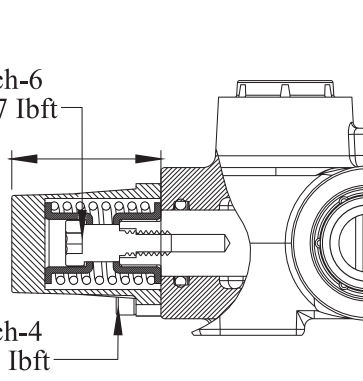
Kit No: **SR**

Sectional Appearance

Allen Wrench-6
24 Nm / 17.7 Ibft

36
[1.42]

Allen Wrench-4
6.6 Nm / 4.9 Ibft



Diagram



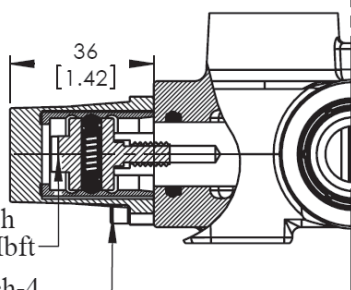
Kit No: **D**

Sectional Appearance

Slotted Wrench
24 Nm / 17.7 Ibft

Allen Wrench-4
6.6 Nm / 4.9 Ibft

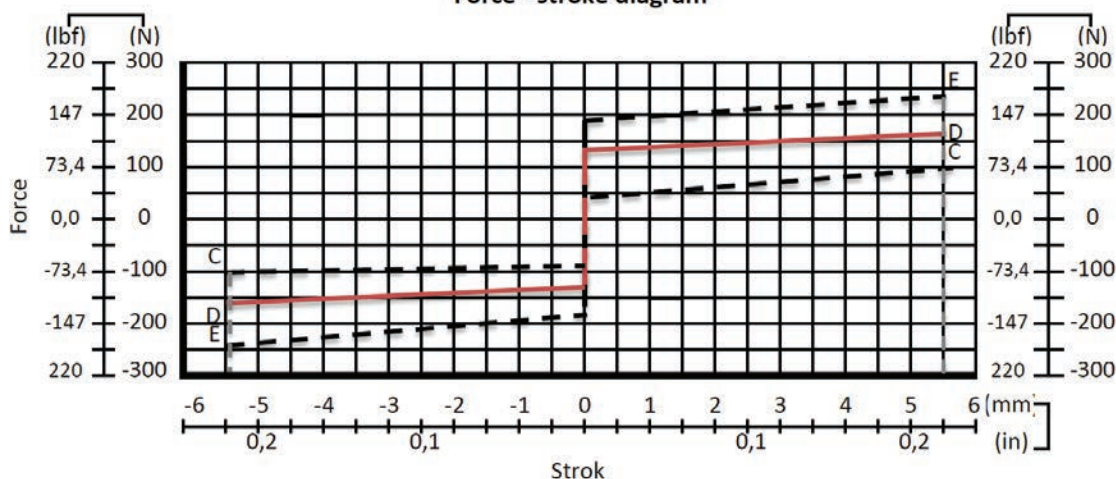
36
[1.42]



Diagram



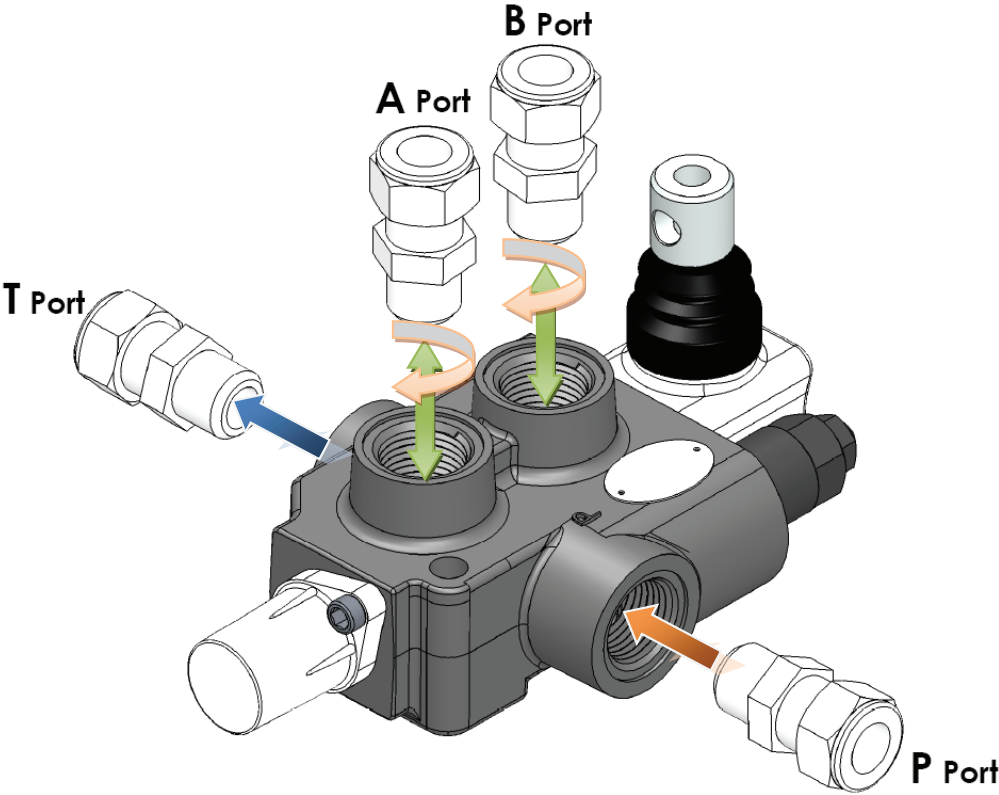
Force - stroke diagram



INSTALLATION AND MAINTENANCE

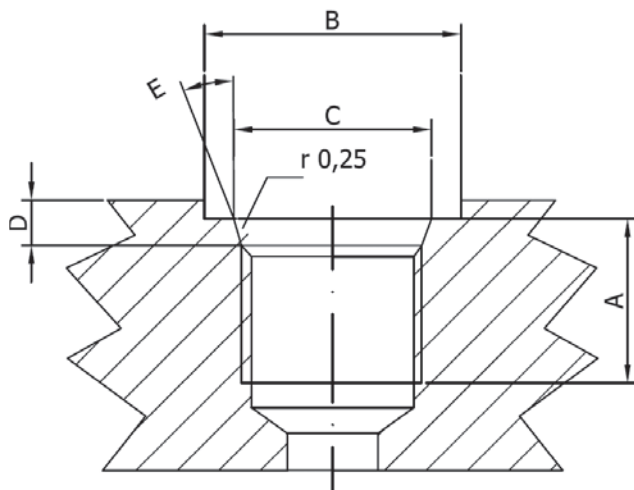
The GMM-M40 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

- 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.

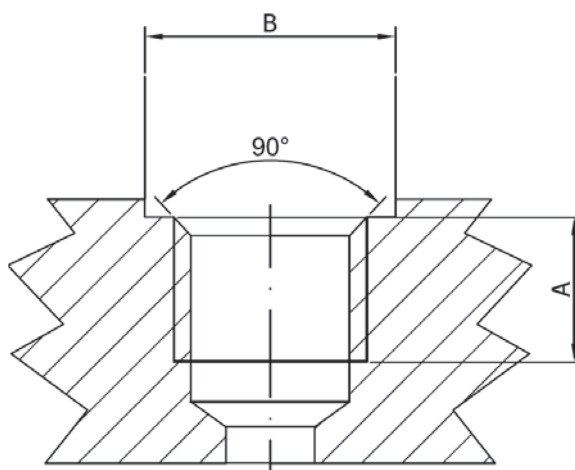


Ports Fitting Tightening Torque - Nm / lbft

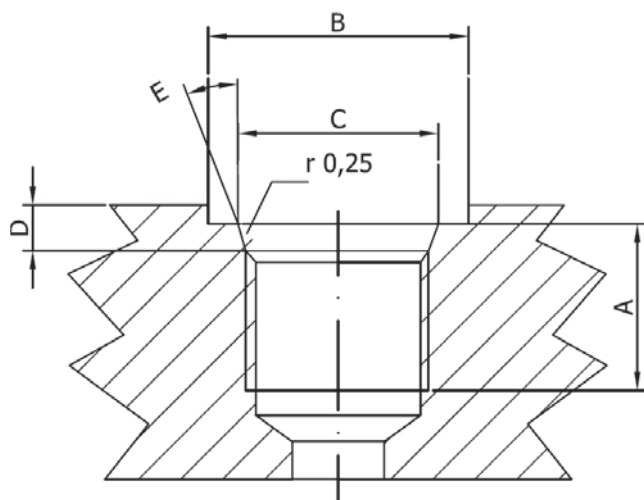
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 3/8	G 3/8	G 3/8
With O--Ring seal	35 / 25.8	35 / 25.8	35 / 25.8
With copper washer	40 / 29.5	40 / 29.5	40 / 29.5
With steel and rubber washer	30 / 22.1	30 / 22.1	30 / 22.1
BSP (ISO 228/1)	G 1/2	G 1/2	G 1/2
With O--Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3
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	0,59	17	0,67
B		25	0,83	30	1,18	34	1,34
C		13,6	0,61	20,6	0,81	23,9	0,94
D		2,5	0,10	2,5	0,10	2,5	0,10
E		15°		15°		15°	


BSP (ISO 228)

Dimensions		G1/4		G3/8		G1/2	
mm	in						
A		14	0,55	14	0,55	16	0,63
B		19	0,75	23	0,91	27	1,06


METRIC (ISO 262)

Dimensions		M18x1,5 ISO 262		M22x1,5 ISO 262	
mm	in				
A		14	0,55	16	0,63
B		27,5	1,08	31,5	1,24



MONOBLOCK
DIRECTIONAL
CONTROL VALVES
GMM-M45

CE





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Additional Informations

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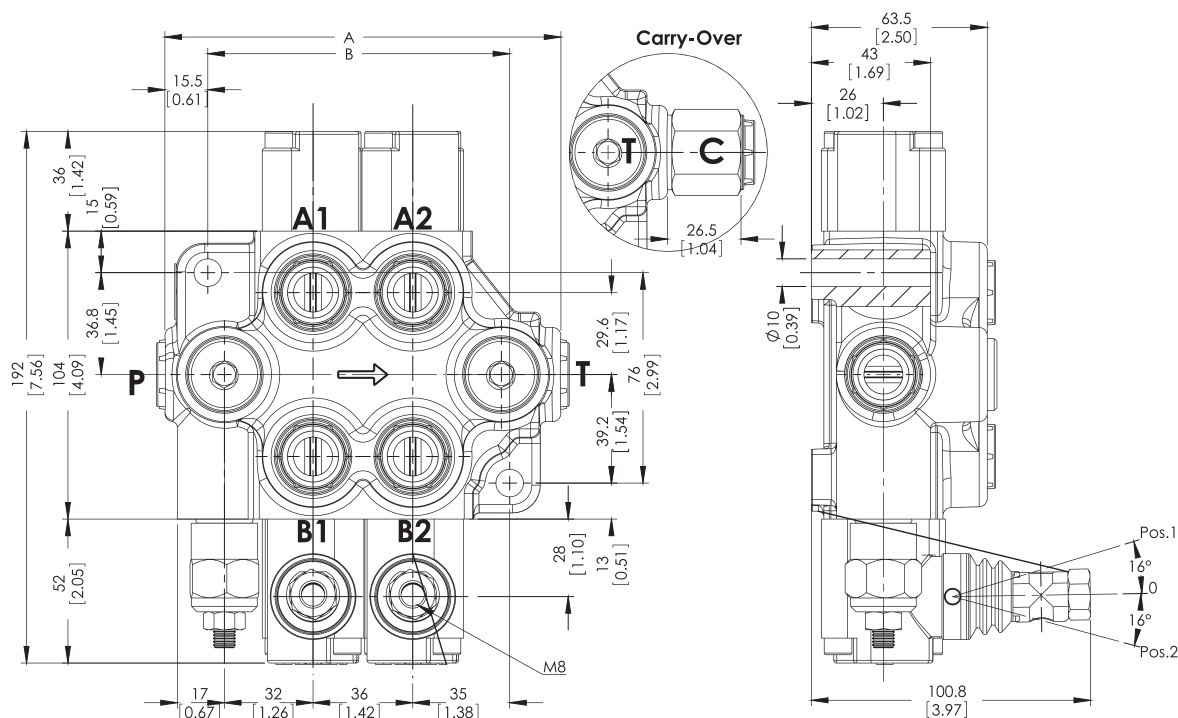
WORKING CONDITIONS

Nominal Flow Rating / Displacement	45 l/min	12 U.S.G.P.M
Maximum Working Pressure	315 Bar	4600 PSI
Max Back Pressure	25 Bar	360 PSI
Oil Temperture 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 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperture 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 cm3/min	0,18 in3/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° temperture.

Features

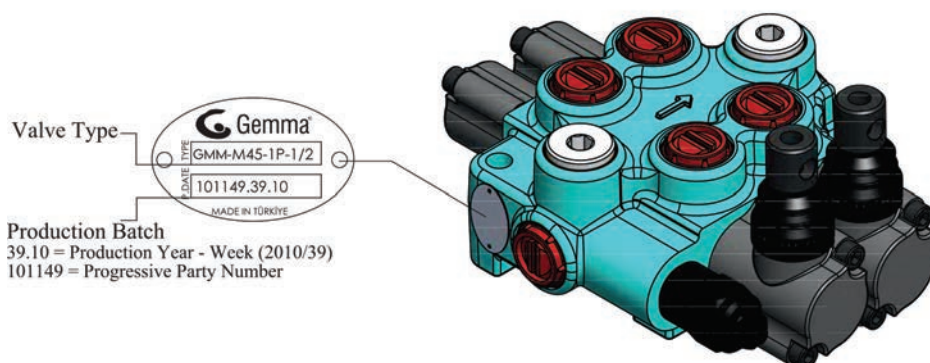
- Simple, compact and heavy duty designed monoblock valves from 1 to 6 sections for open and closed center hydraulic systems.
- Optionaly Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diametre is 16 mm – 0,63 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA


TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM-M45-1P	103	4,06	73	2,87	3.18	7,01
GMM-M45-2P	139	5,47	109	4,29	4.84	10,67
GMM-M45-3P	175	6,89	145	5,71	6.50	14,33
GMM-M45-4P	211	8,31	181	7,13	8.16	17,99
GMM-M45-5P	247	9,72	217	8,54	9.82	21,65
GMM-M45-6P	283	11,14	253	9,96	11.48	25,31

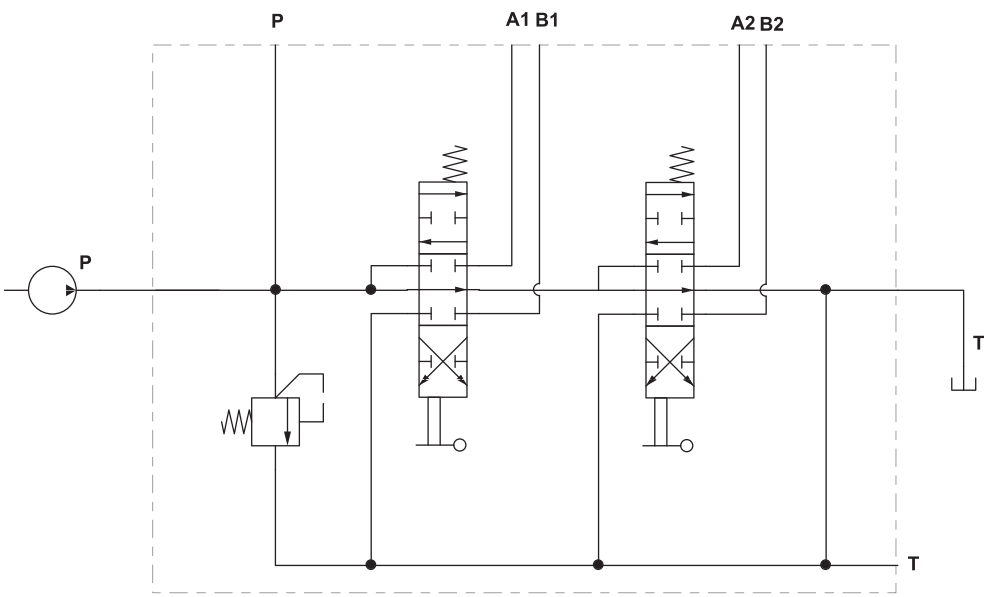
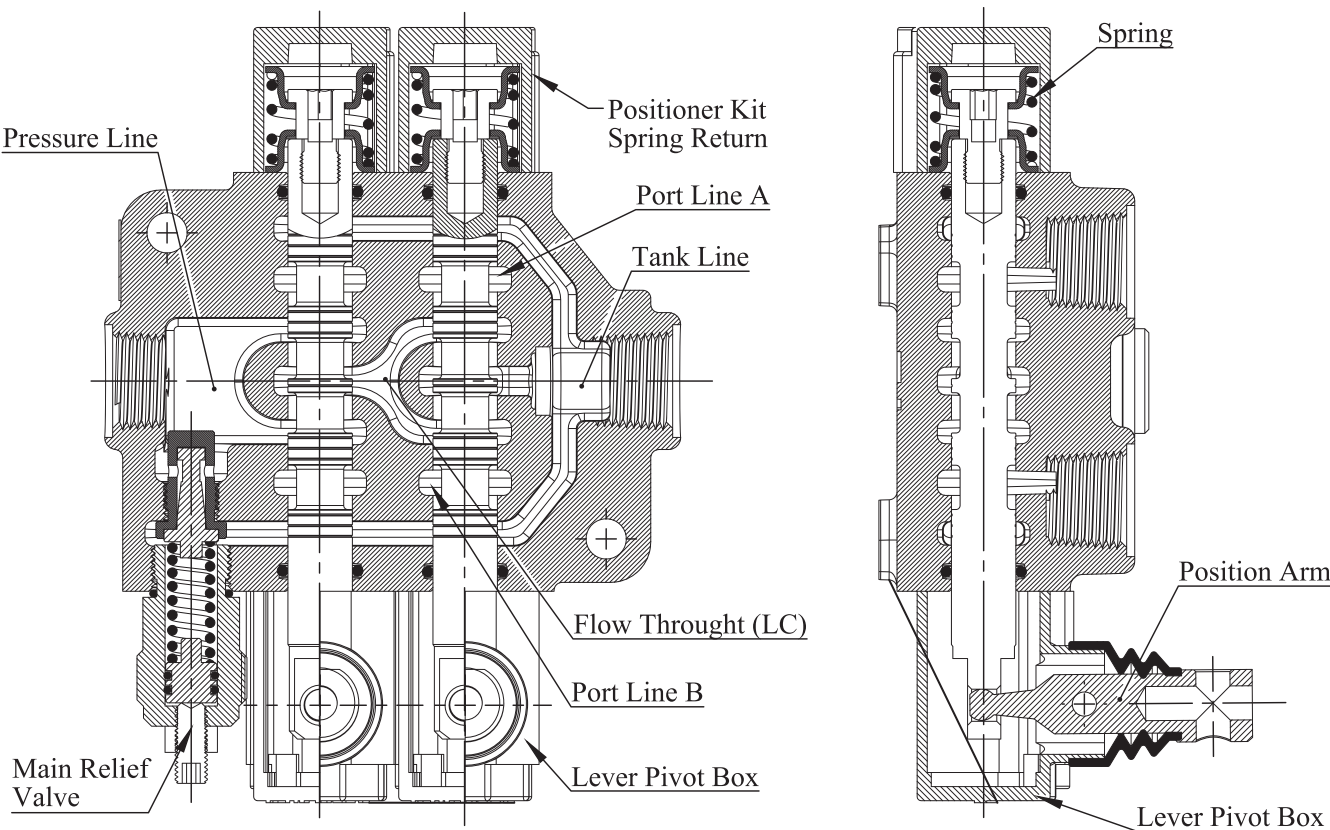
STANDARD THREADS

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



HYDRAULIC CIRCUIT

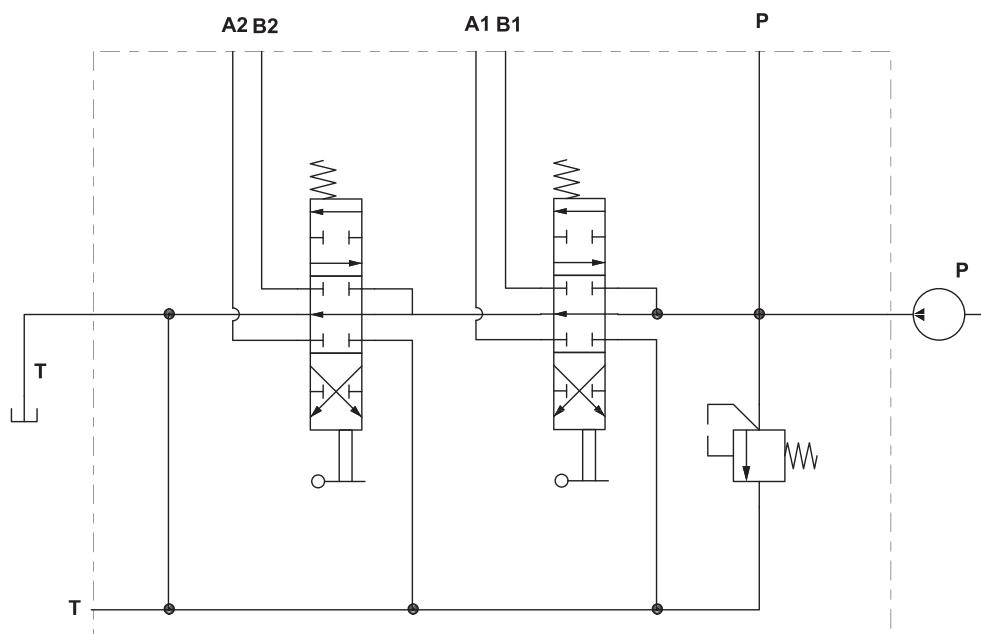
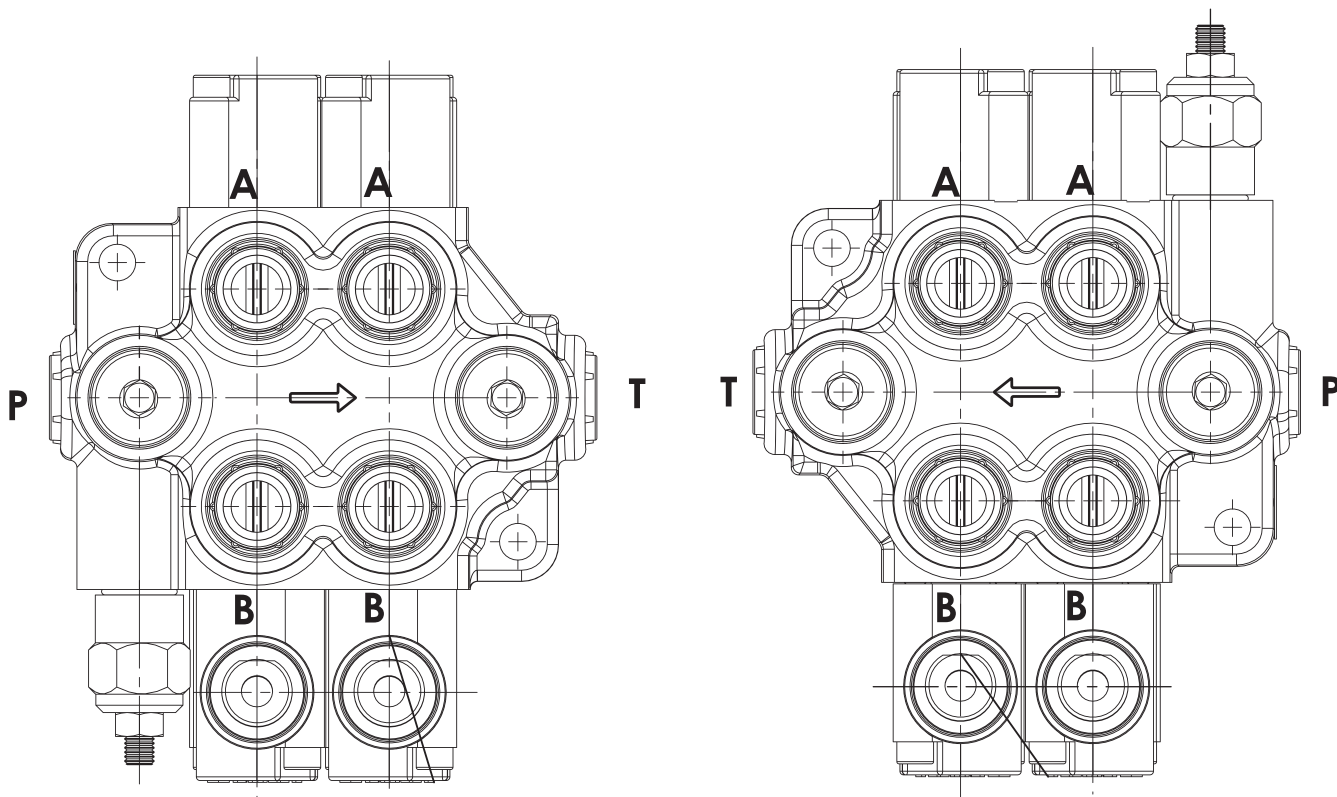
Standard Configurations With Side Inlet And Outlet Ports - LH



Code: GMM M45-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

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

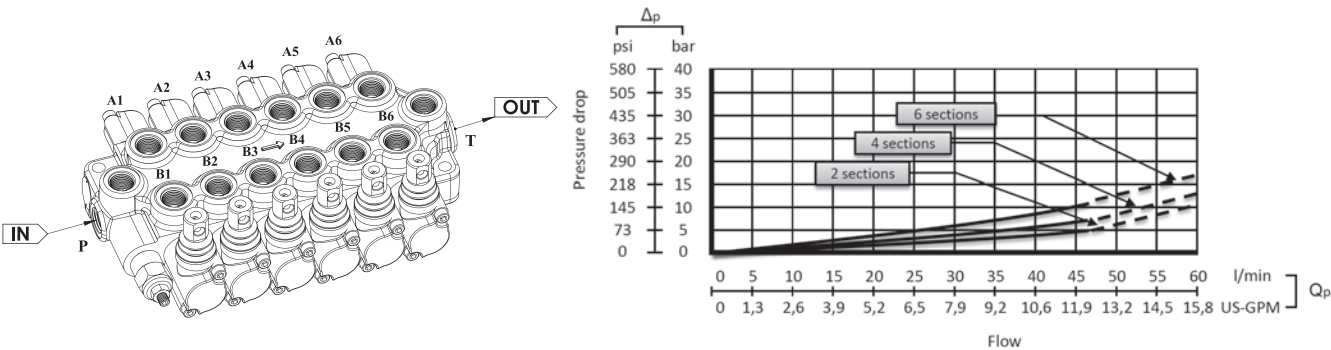
A symmetrical body allows the reverse assembly of spool and this with connected control kit (RH Configuration).



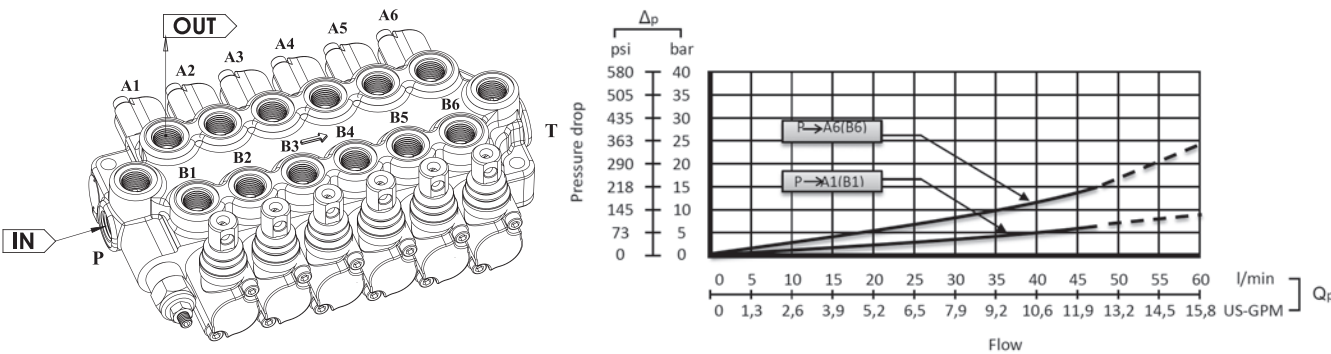
Code: GMM M45-2P / SMR2-120 / (RH) 1A-SR-STL/1A-SR-STL/PA1/SGT

PERFORMANCE DATA AND CURVE

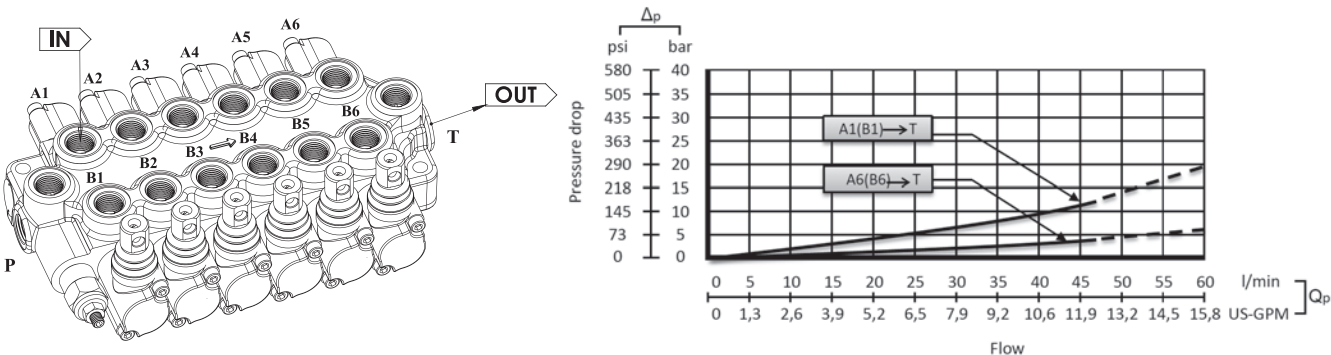
Open Center - Pressure Drop (P-T)



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



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



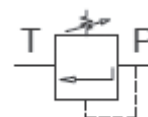
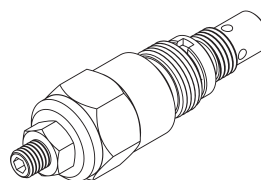
Note: Measured and chart value with spool type 1A.

INLET RELIEF OPTIONS

Direct Pressure Relief Valve

Code:

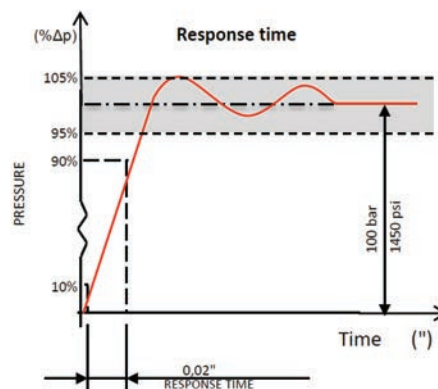
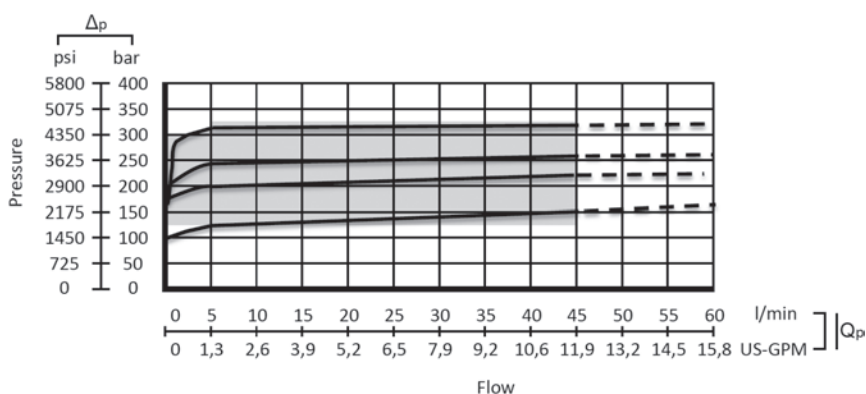
SMR2 – 120



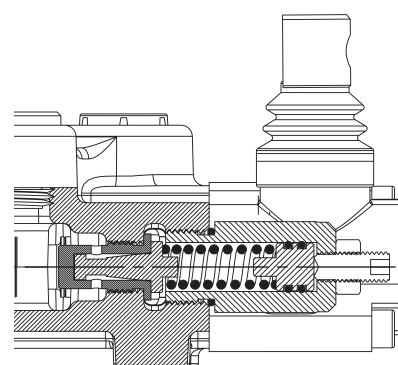
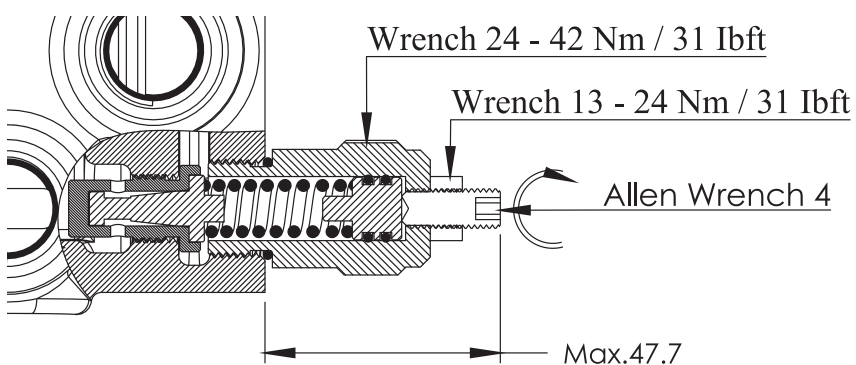
Performance Data

Spring Type Number: 3

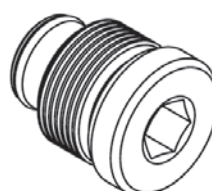
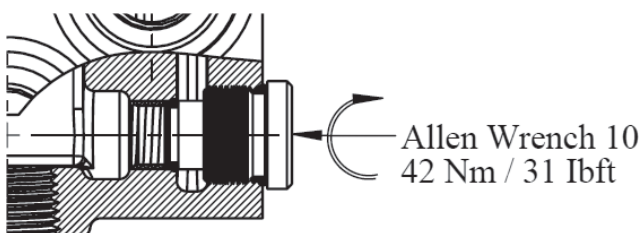
Setting= 220 Bar -Range=160-315 Bar



Adjustment Type on Valve

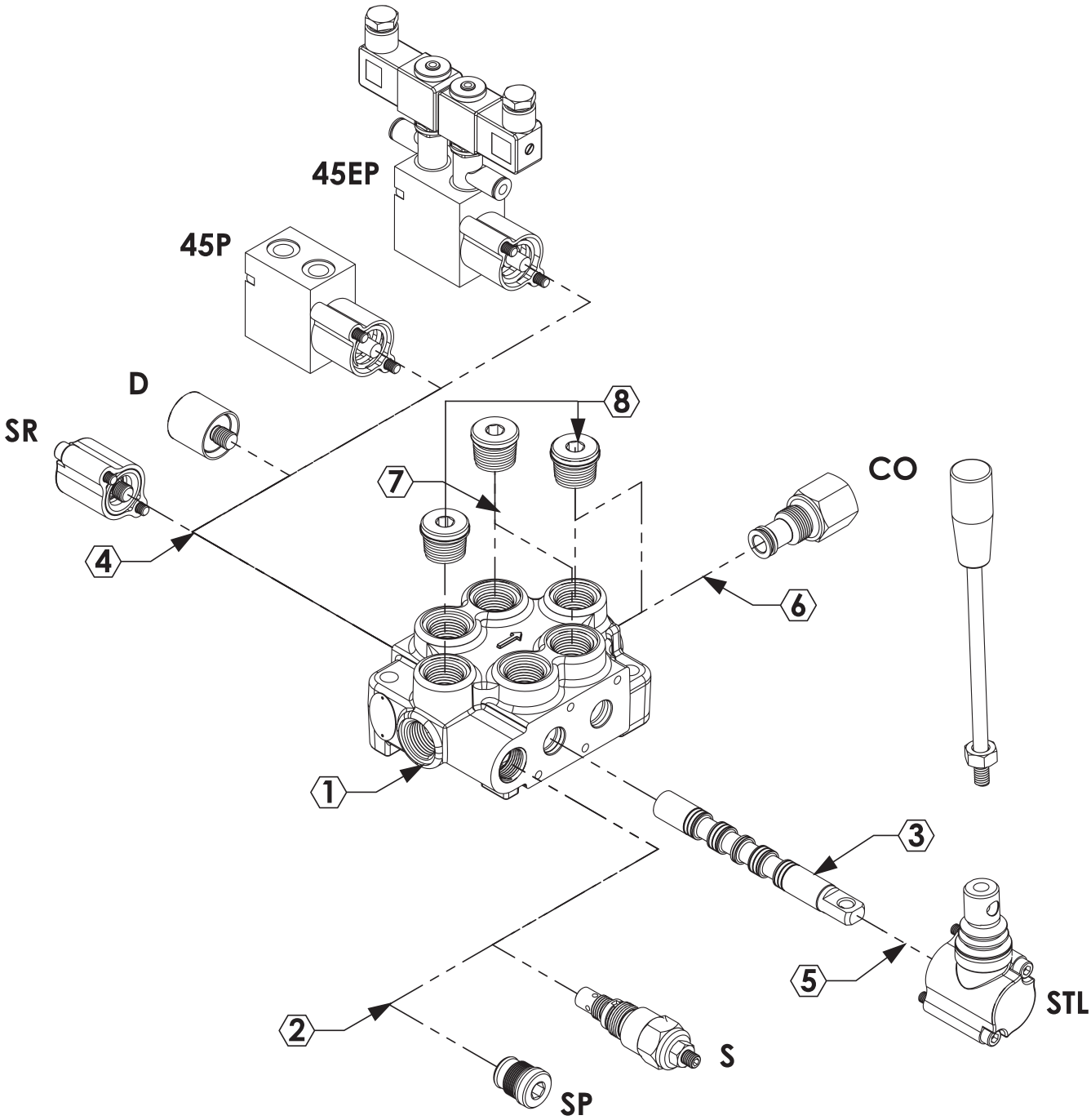
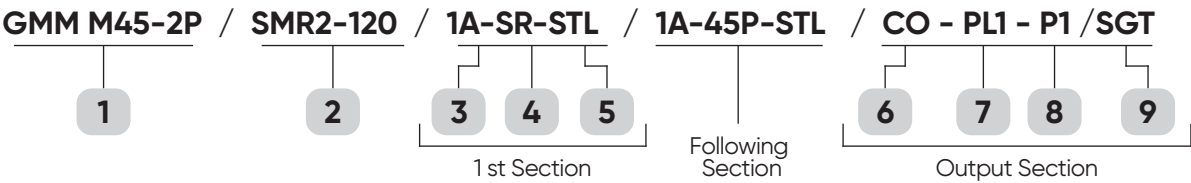


Relief Blanking Plug - WM



ORDERING CODES

Order Example



ORDERING CODES

1- Valve Type and Body

M45 = Valve Type - (M) - Monoblok
(45) - Max. Flow Rate

- 1P** = Body for 1 Section - (1BM145100)
- 2P** = Body for 2 Sections - (1BM245100)
- 3P** = Body for 3 Sections - (1BM345100)
- 4P** = Body for 4 Sections - (1BM445100)
- 5P** = Body for 5 Sections - (1BM545100)
- 6P** = Body for 6 Sections - (1BM645100)

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 - (3SM145110) - 3 Positions, Double acting
- 2A - (3SM145120) - 3 Positions, Double acting
A to tank B Blocked
- 3A - (3SM145130) - 3 Positions, Double acting
B to tank A blocked
- 4A - (3SM145140) - 3 Positions, Double acting
A and B tank
- 5A - (3SM145150) - 3 Positions, Single acting on
A (A to tank)
- 6A - (3SM145160) - 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)
- 45P** = ON/OFF Pneumatic - (445P045100)
- 45EP** = 12 / 24 VDC ON/OFF electro-pneumatic -
(445EP045112)

5- Lever Options

STL = Standard Lever - (5STL045100)

6- Output Options

- PA1(T)** = G1/2" Top output plug - (6PL1040112)
- PA1(S)** = G1/2" Side output plug - (6PL1040112)
- CO** = G1/2" Carry-Over Connector - (6CO045100)

7- Ports Plug Options "If Required"

- PL1(5A) = Plug for single action spool for 5A
G1/2 - (6PL1040112)
- PL1(6A) = Plug for single action spool for 6A
G1/2 - (6PL1040112)
- 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

- PI1(T)** = G1/2 Top input - (6PL1040112)
- PI1(S)** = G1/2 Side input - (6PL1040112)
- PI2(T)** = G3/8 Top input - (7PL2045138)
- PI2(S)** = G3/8 Side input - (7PL2045138)

9- Ports Thread Options

- SGT1** = 1/2" Series Port Options - (9P045112)
- SGT2** = 3/8" Series Port Options - (9P045138)
- UNF** = UNF Series Port Options - (9U045138)
- M** = Metric Series Port Options - (9M045138)

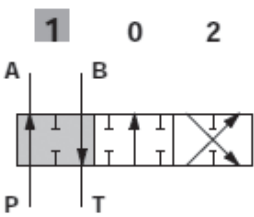
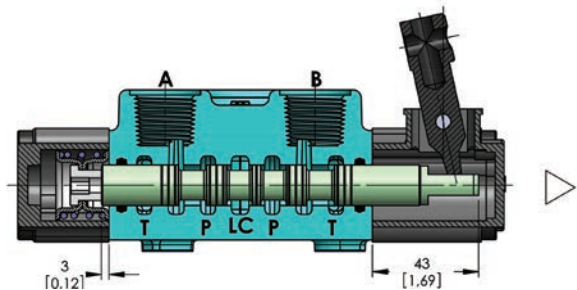
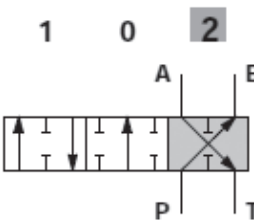
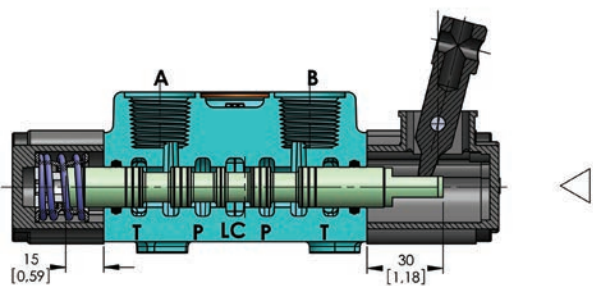
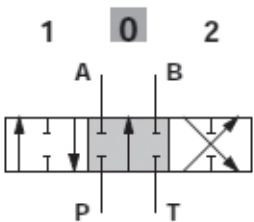
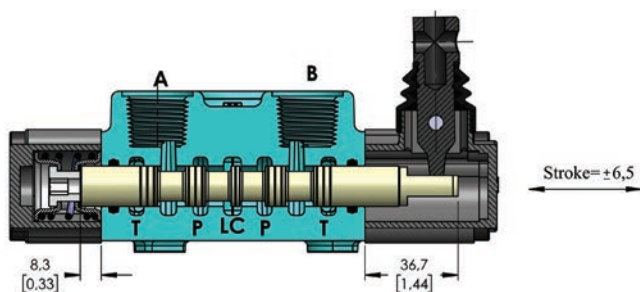
*Page 4 for detail port information.

HandLever

- L** = Standard HandLever (L=120mmxM8) - (7L040100)
- HL** = Remote Cable Kit - (80HL80100)

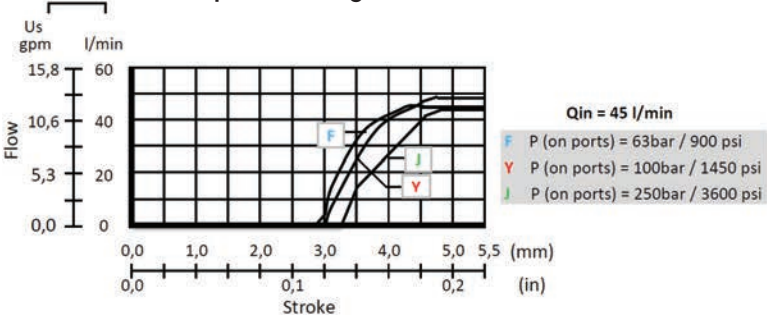
SPOOL OPTIONS

Spool Type - 1A

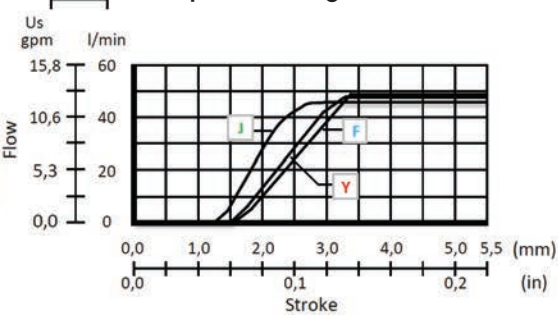


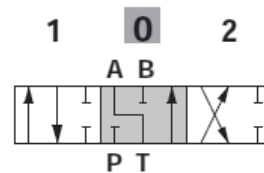
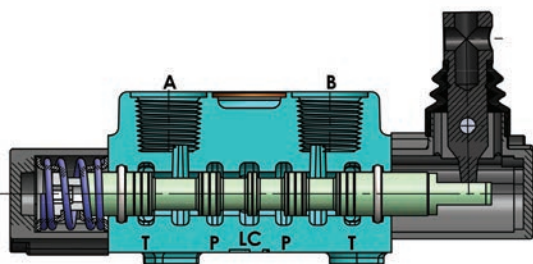
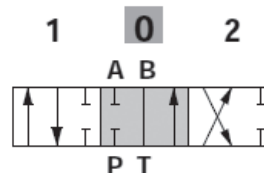
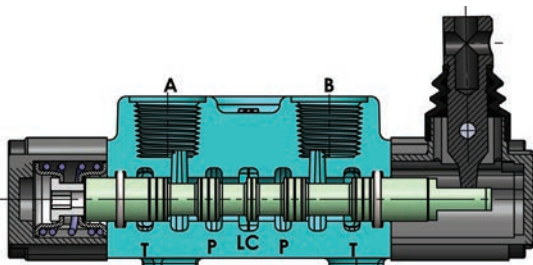
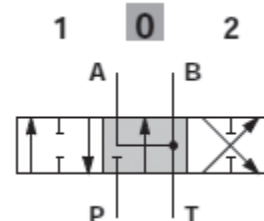
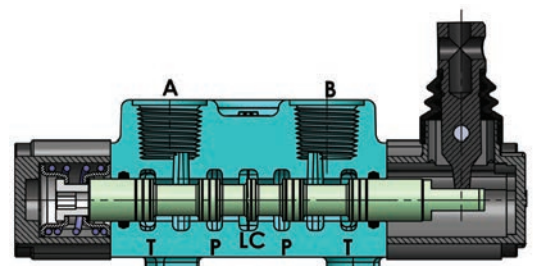
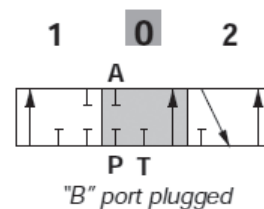
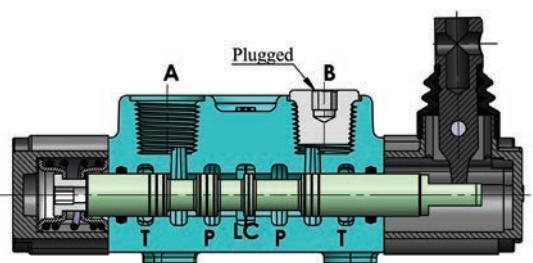
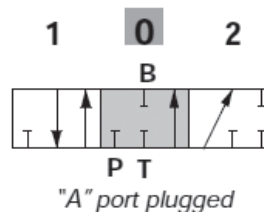
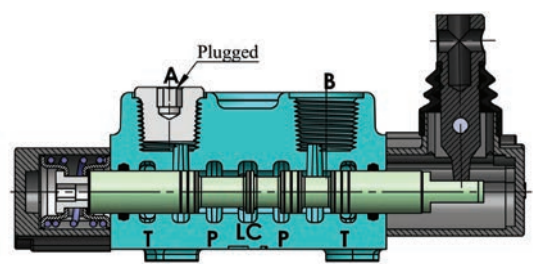
Performance Curve And Data

Spool metering P → A



Spool metering A → T



SPOOL OPTIONS
Spool Type - 2A

Spool Type - 3A

Spool Type - 4A

Spool Type - 5A

Spool Type - 6A


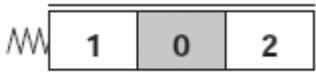
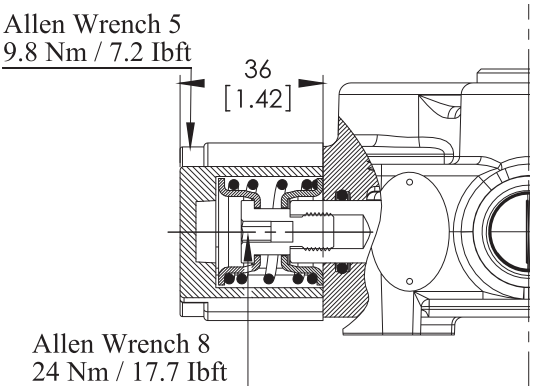
SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance

Diagram

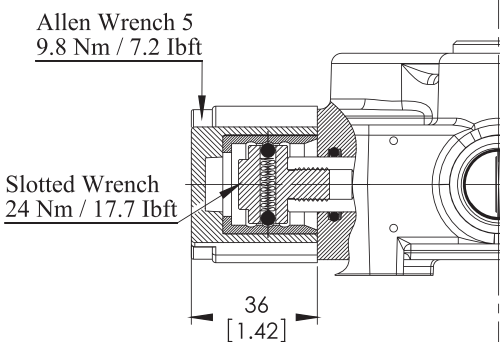


With Detent

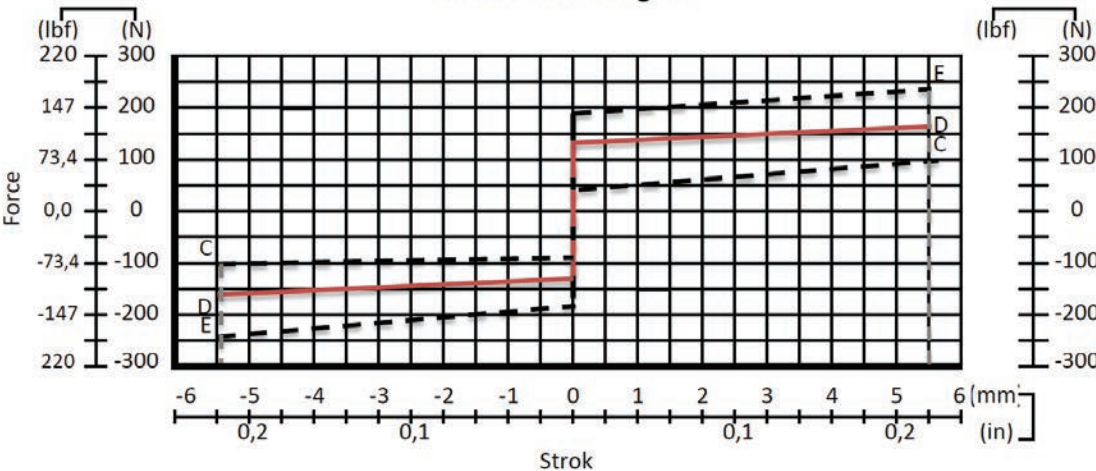
Kit No: **D**

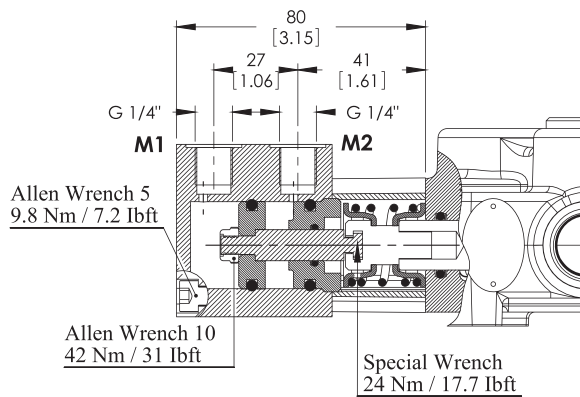
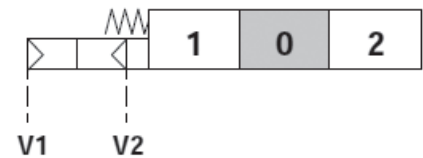
Sectional Appearance

Diagram

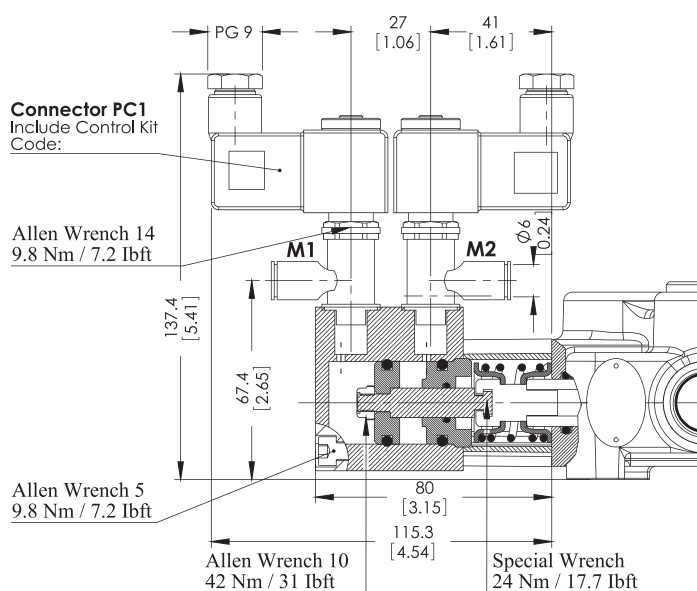
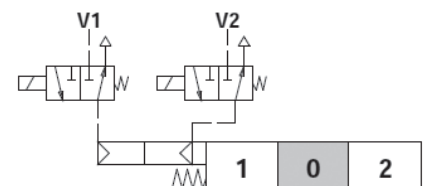


Force - stroke diagram



SPOOL POSITIONERS – SIDE OF RETURN
ON/OFF Pneumatic Control
Kit No: 45P
Sectional Appearance

Diagram

Operating Features

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

ON/OFF Electro-Pneumatic Control
Kit No: 45EP
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

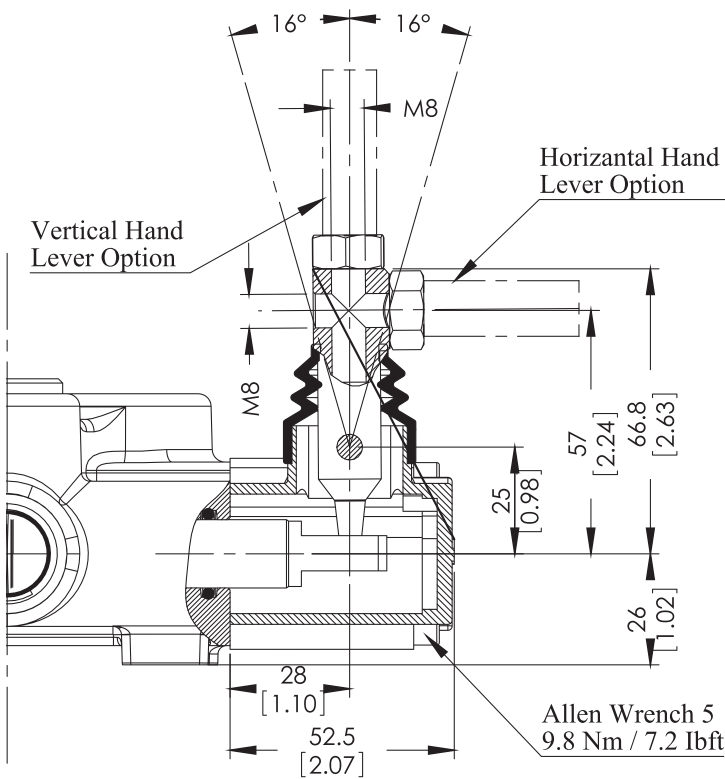
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: **STL - L0**

Sectional Appearance

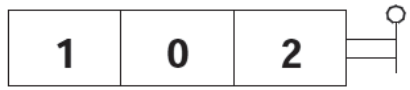
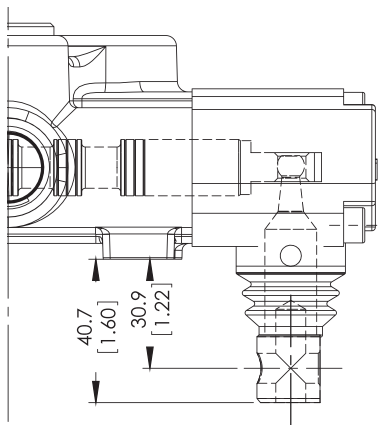
Diagram



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

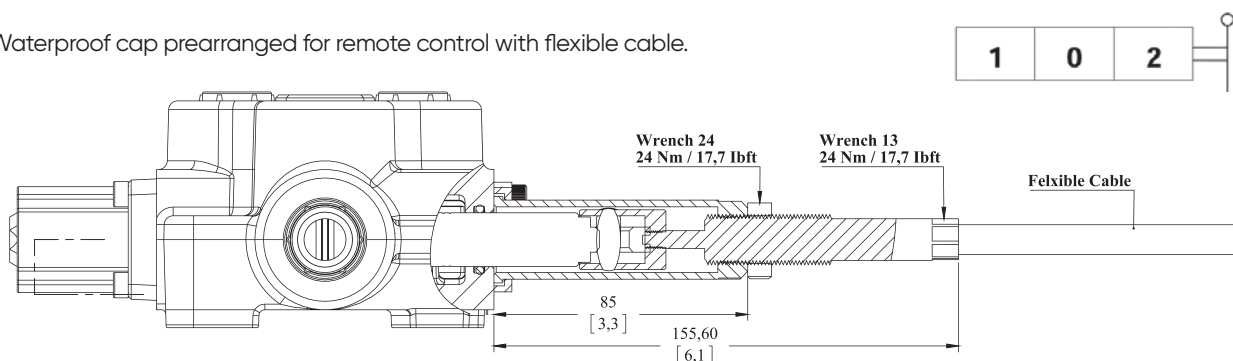
Lever Controls – Cable Control

Kit No: HL

Sectional Appearance

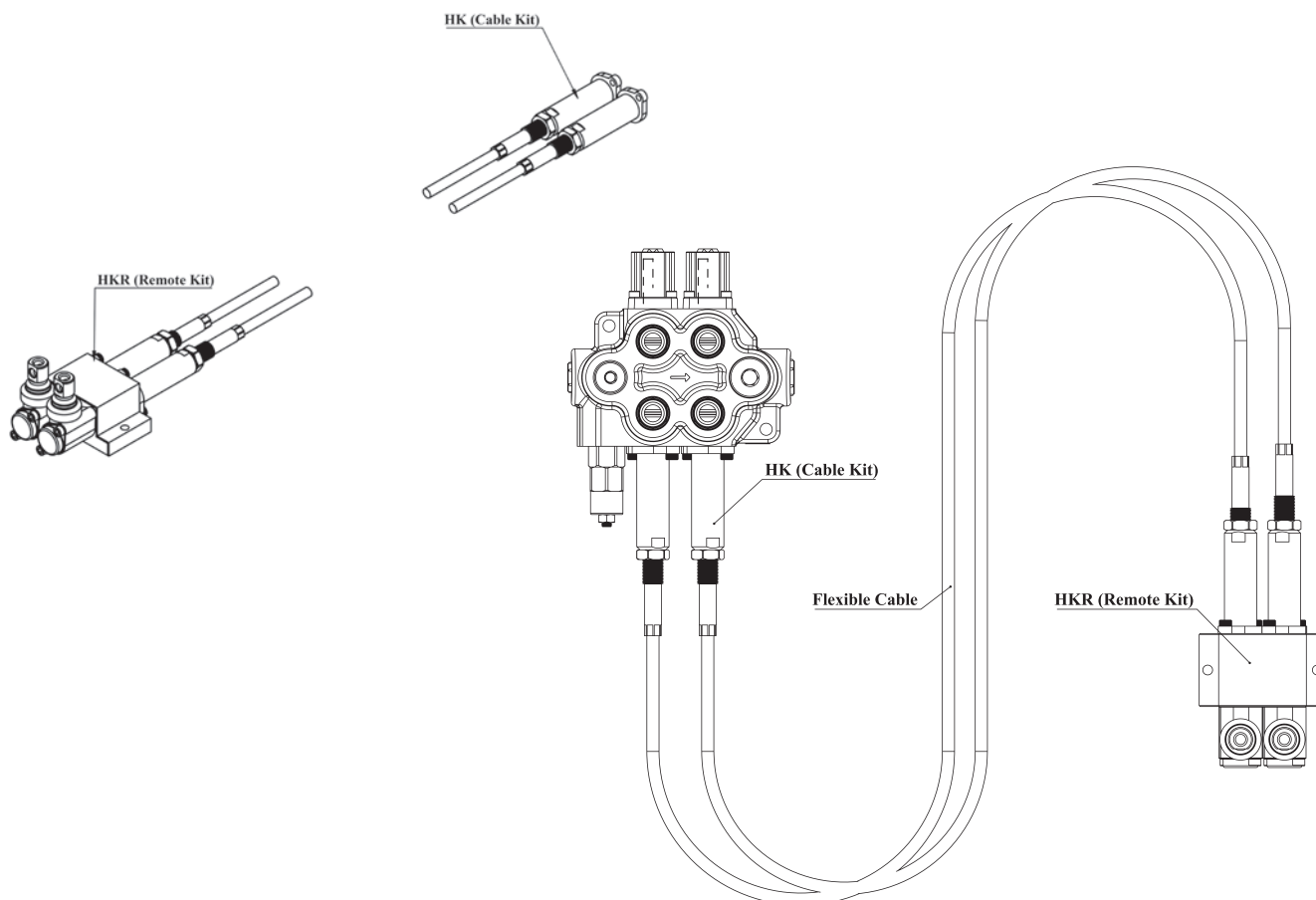
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control has several options. Please indicate the cable length demanded and contact our sales department.

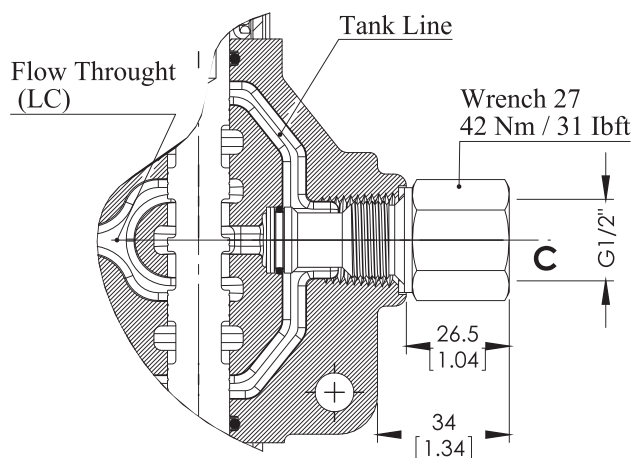
Example Operation



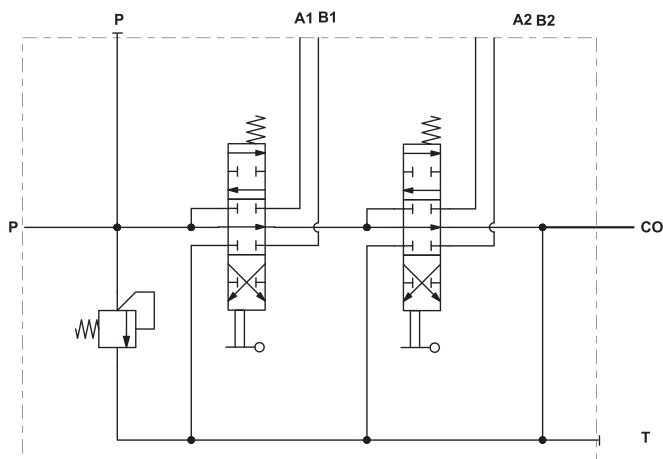
OUTLET PORT OPTIONS

Carry - Over Connection

Kit No: CO

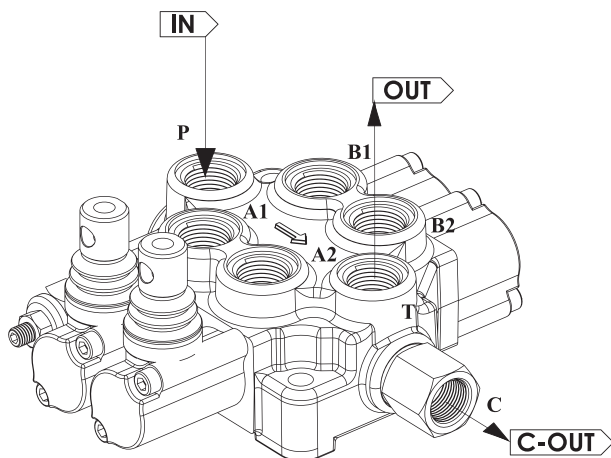


Sectional Appearance



Hydraulic Circuit

Code: GMM M45-2P /
SMR2-120 / 1A-SR-STL/
1A-SR-STL/CO-PA1/SGT



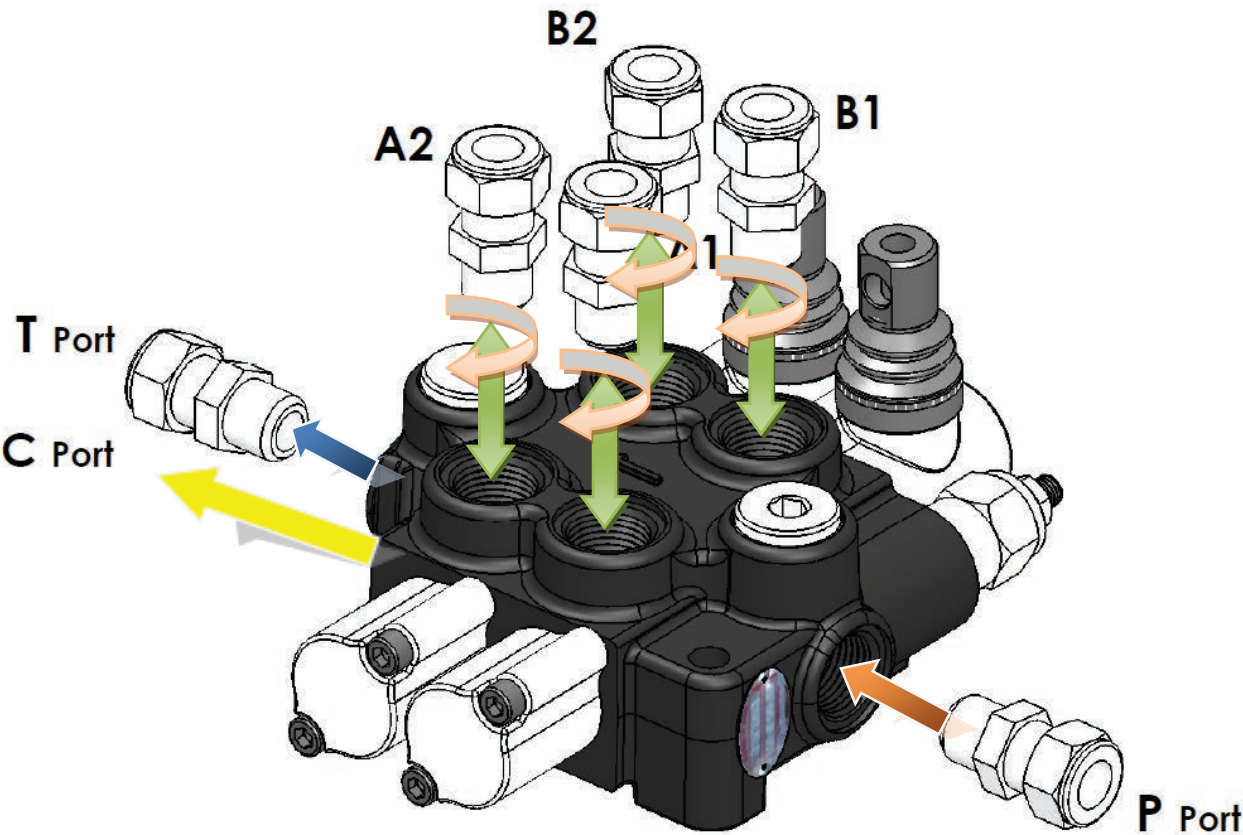
Direction of Port Connected

SGT : See page 5 for Standard center.

INSTALLATION AND MAINTENANCE

The GMM M45 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

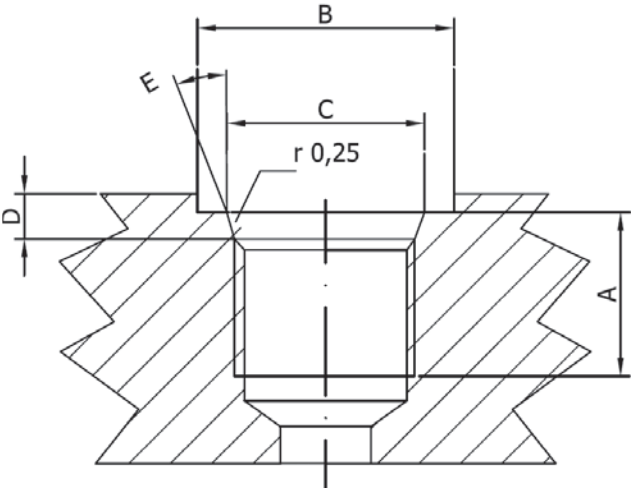
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking, mount the product on a flat surface;
- In order to prevent the possibility of water entering to the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before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



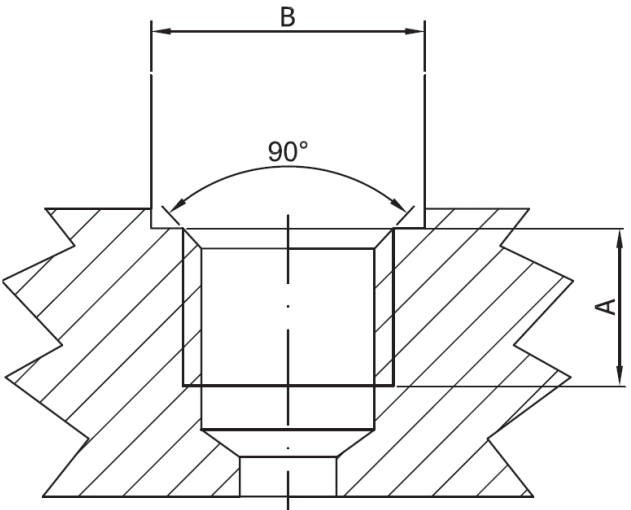
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 3/8	G 3/8	G 1/2
With O--Ring seal	35 / 25.8	35 / 25.8	50 / 36.9
With copper washer	40 / 29.5	40 / 29.5	60 / 44.3
With steel and rubber washer	30 / 22.1	30 / 22.1	60 / 44.3
BSP (ISO 228/1)	G 1/2	G 1/2	G 1/2
With O--Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3
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

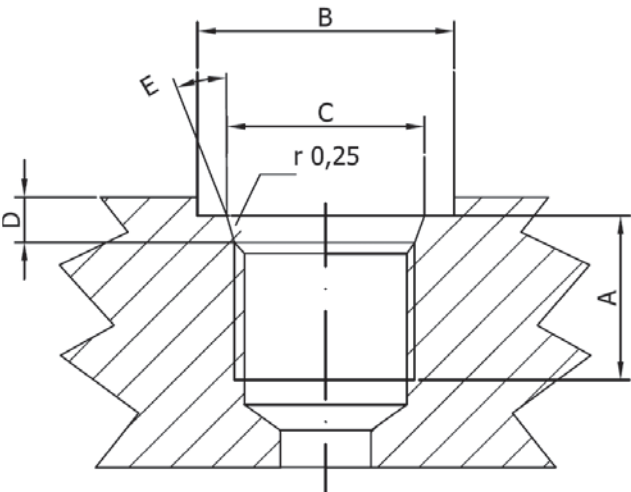
Ports Dimensional Data



SAE UN-UNF (ISO 725)							
Dimensions		9/16-18		3/4-16		7/8-14 UNF	
mm	in	UNF SAE6		UNF SAE8		SAE10	
A		13	0,51	15	0,59	17	0,67
B		25	0,83	30	1,18	34	1,34
C		13,6	0,61	20,6	0,81	23,9	0,94
D		2,5	0,10	2,5	0,10	2,5	0,10
E		15°		15°		15°	



BSP (ISO 228)							
Dimensions		G1/4		G3/8		G1/2	
mm	in						
A		14	0,55	14	0,55	16	0,63
B		19	0,75	23	0,91	27	1,06



METRIC (ISO 262)					
Dimensions		M18x1,5 ISO 262		M22x1,5 ISO 262	
mm	in				
A		14	0,55	16	0,63
B		27,5	1,08	31,5	1,24



GMM
M45

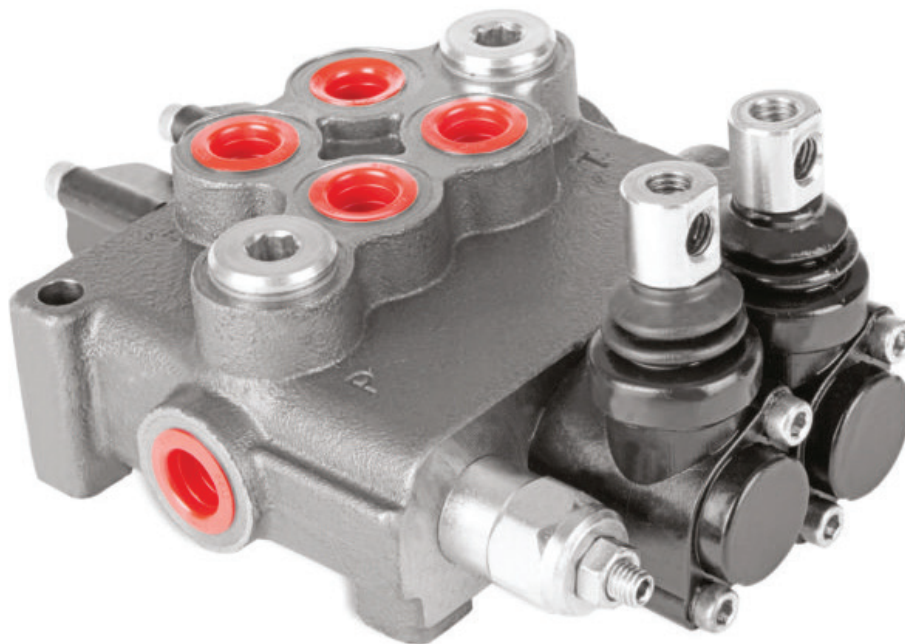




MONOBLOCK
DIRECTIONAL
CONTROL VALVES
GMM-MS45

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 (01/2020). GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

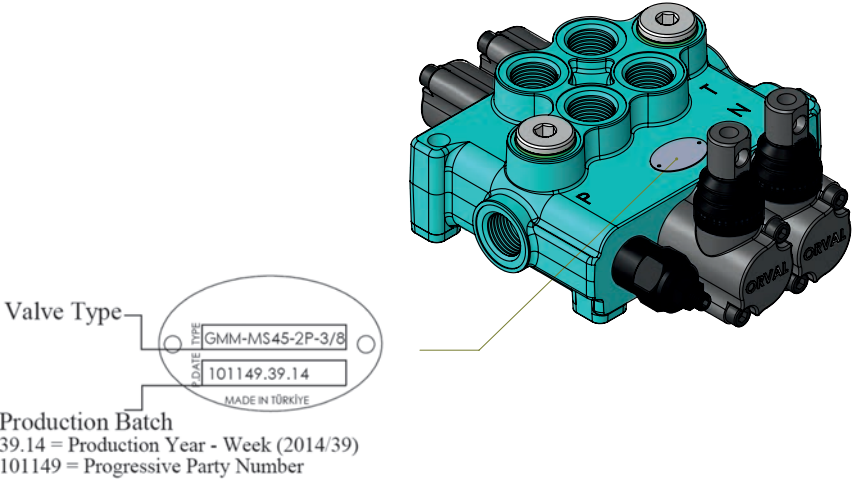
WORKING CONDITIONS

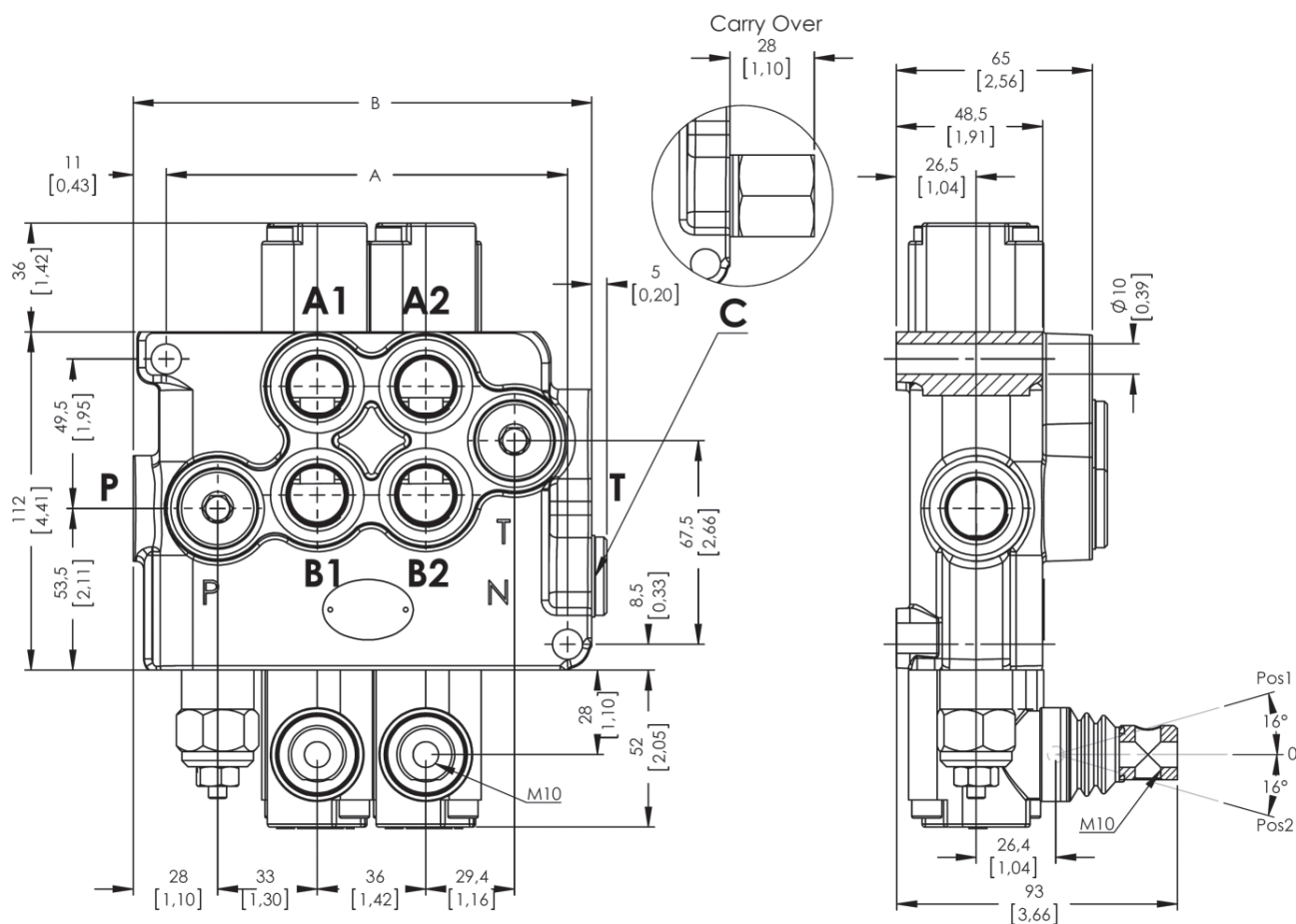
Nominal Flow Rating / Displacement	45 l/min	12 U.S.G.P.M
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
(Series Circuit)	250 Bar	3600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/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 cm3/min	0,18 in3/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 7 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 16 mm – 0,63 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.



DIMENSIONAL DATA


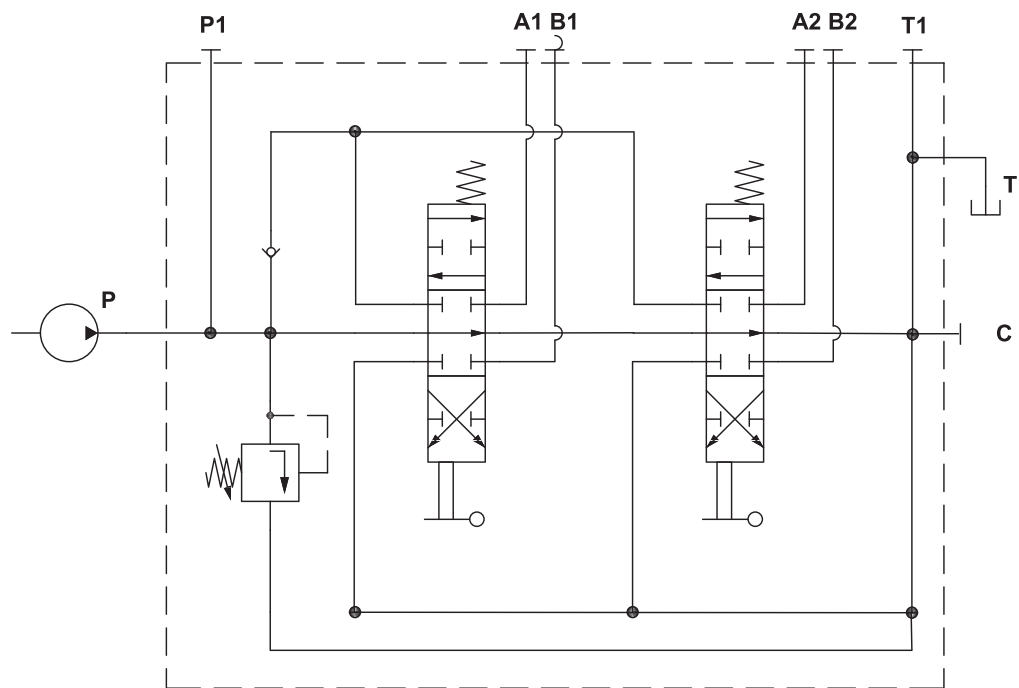
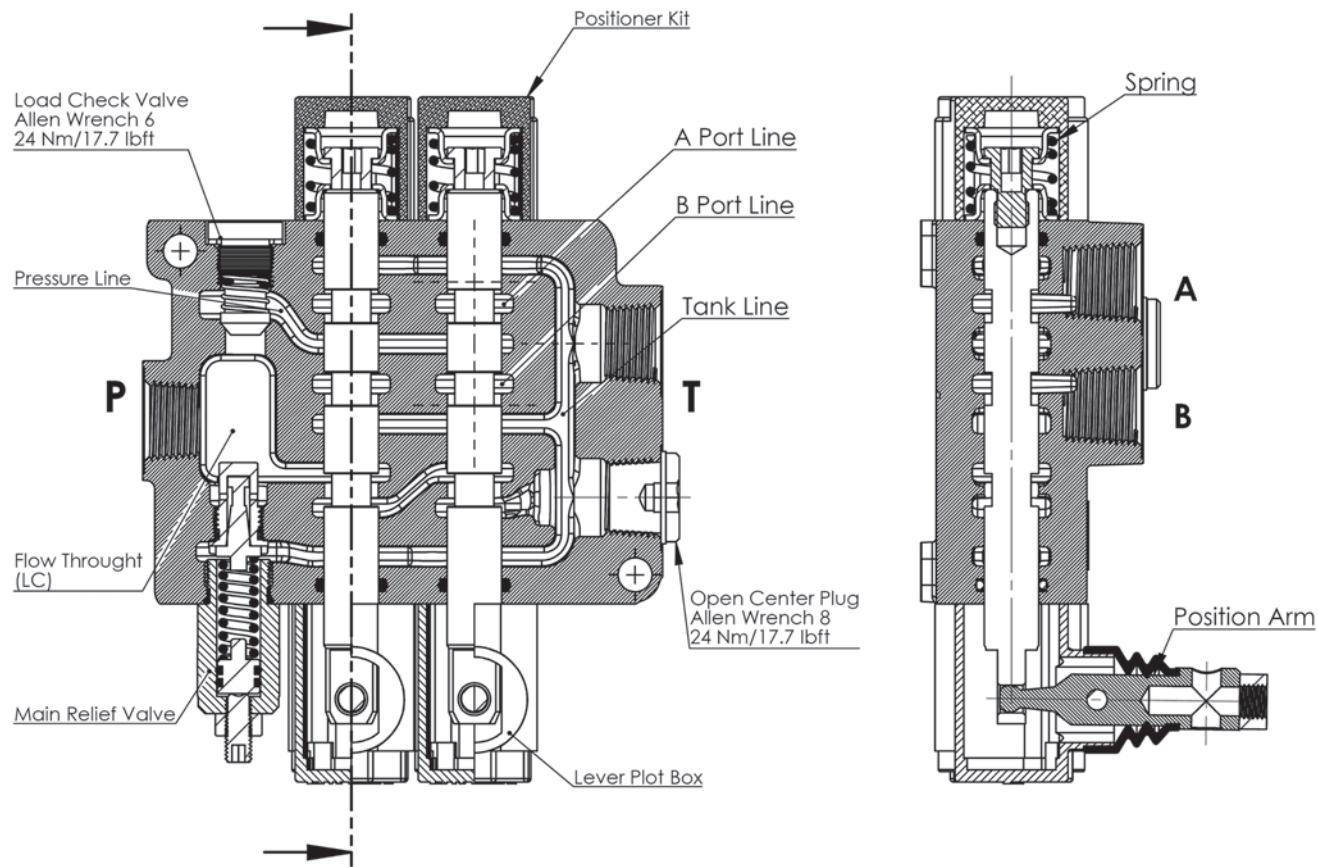
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM-MS45-1P	97	4,25	116	4,56	4,00	8,18
GMM-MS45-2P	133	5,23	152	5,98	6,00	13,23
GMM-MS45-3P	169	6,65	188	7,40	7,40	16,31
GMM-MS45-4P	205	8,07	224	8,82	9,00	19,84
GMM-MS45-5P	241	9,49	260	10,23	10,60	23,37
GMM-MS45-6P	277	10,90	296	11,65	12,30	27,12
GMM-MS45-7P	313	12,32	332	13,07	14,00	30,86

STANDARD THREADS

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

HYDRAULIC CIRCUIT

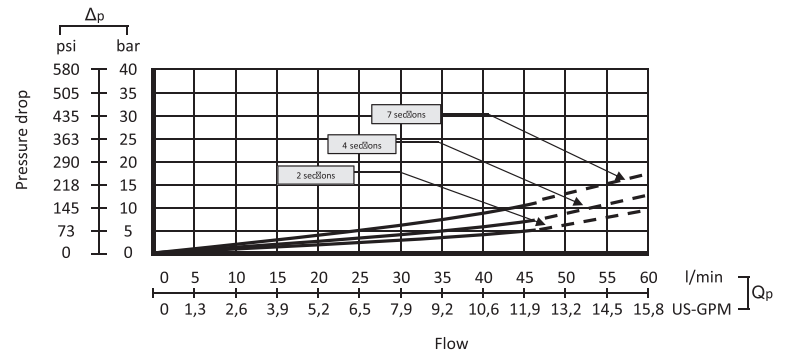
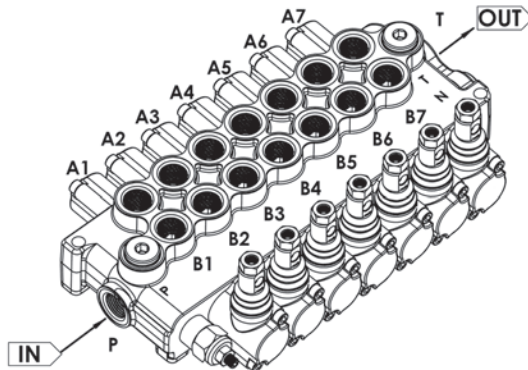
Parallel - Standard Configurations With Side Inlet And Outlet Open Center



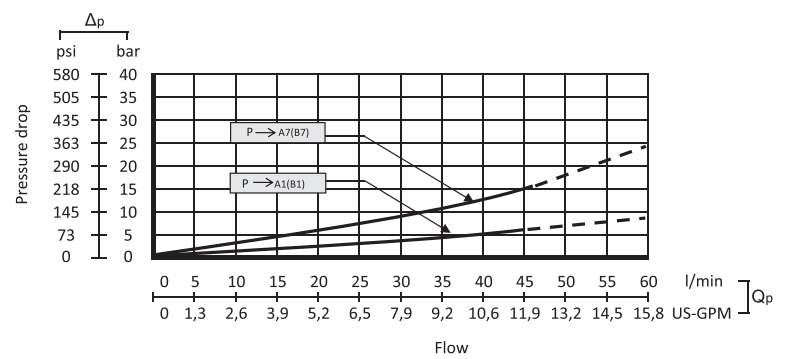
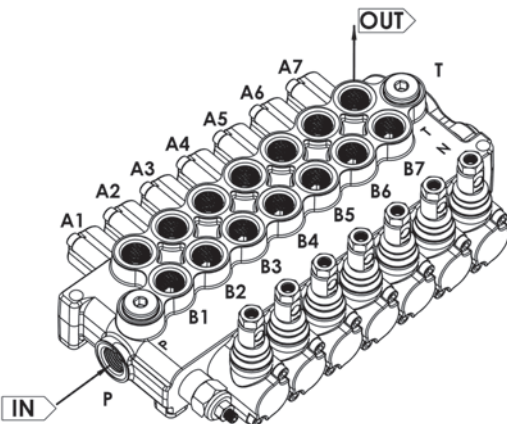
Code: GMM MS45-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

PERFORMANCE DATA AND CURVE

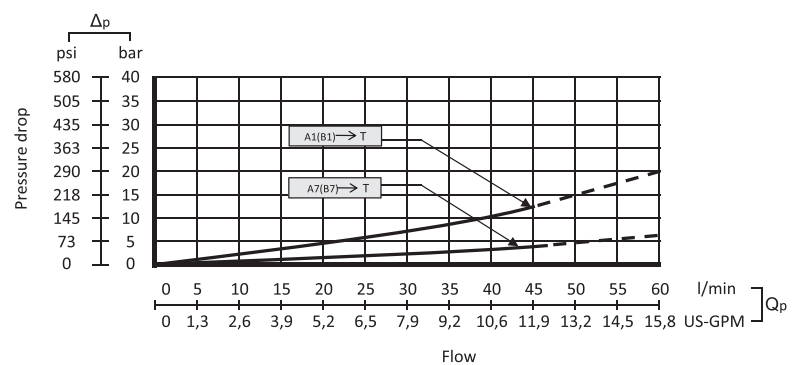
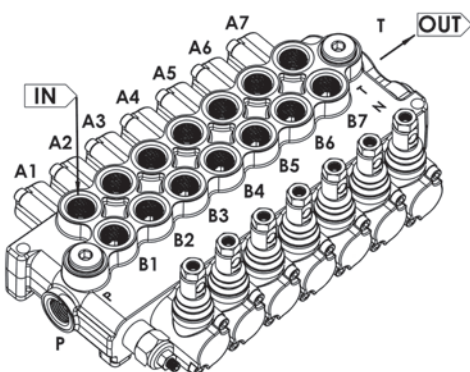
Open Center - Pressure Drop (P-T)



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



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



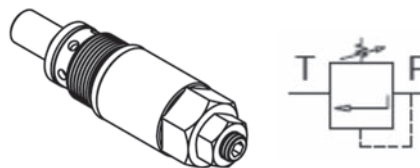
Note: Measured and chart value with spool type 1A.

INLET RELIEF OPTIONS

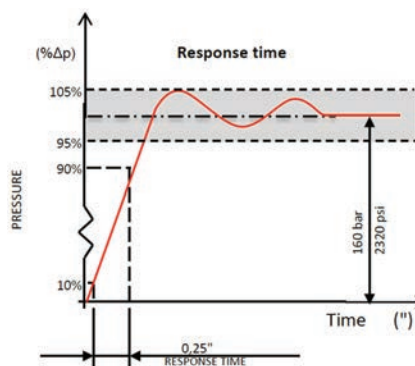
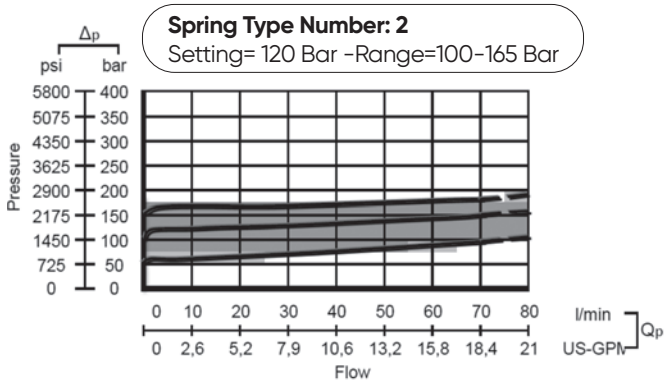
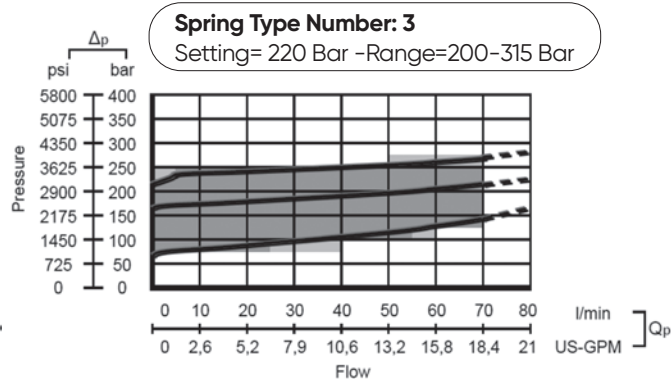
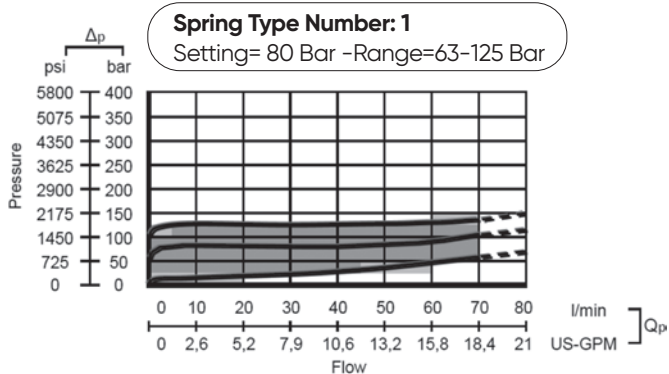
Direct Pressure Relief Valve

Code:

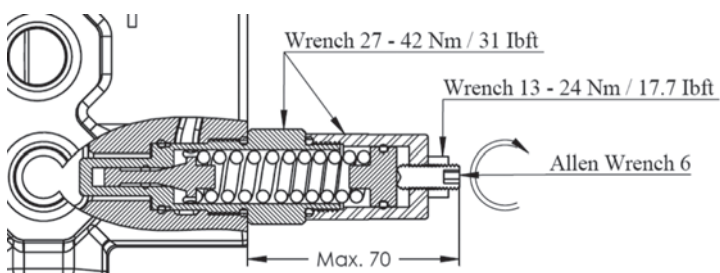
SMR2 – 120



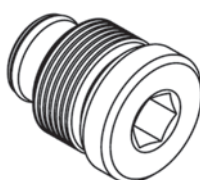
Performance Data



Adjustment Type on Valve

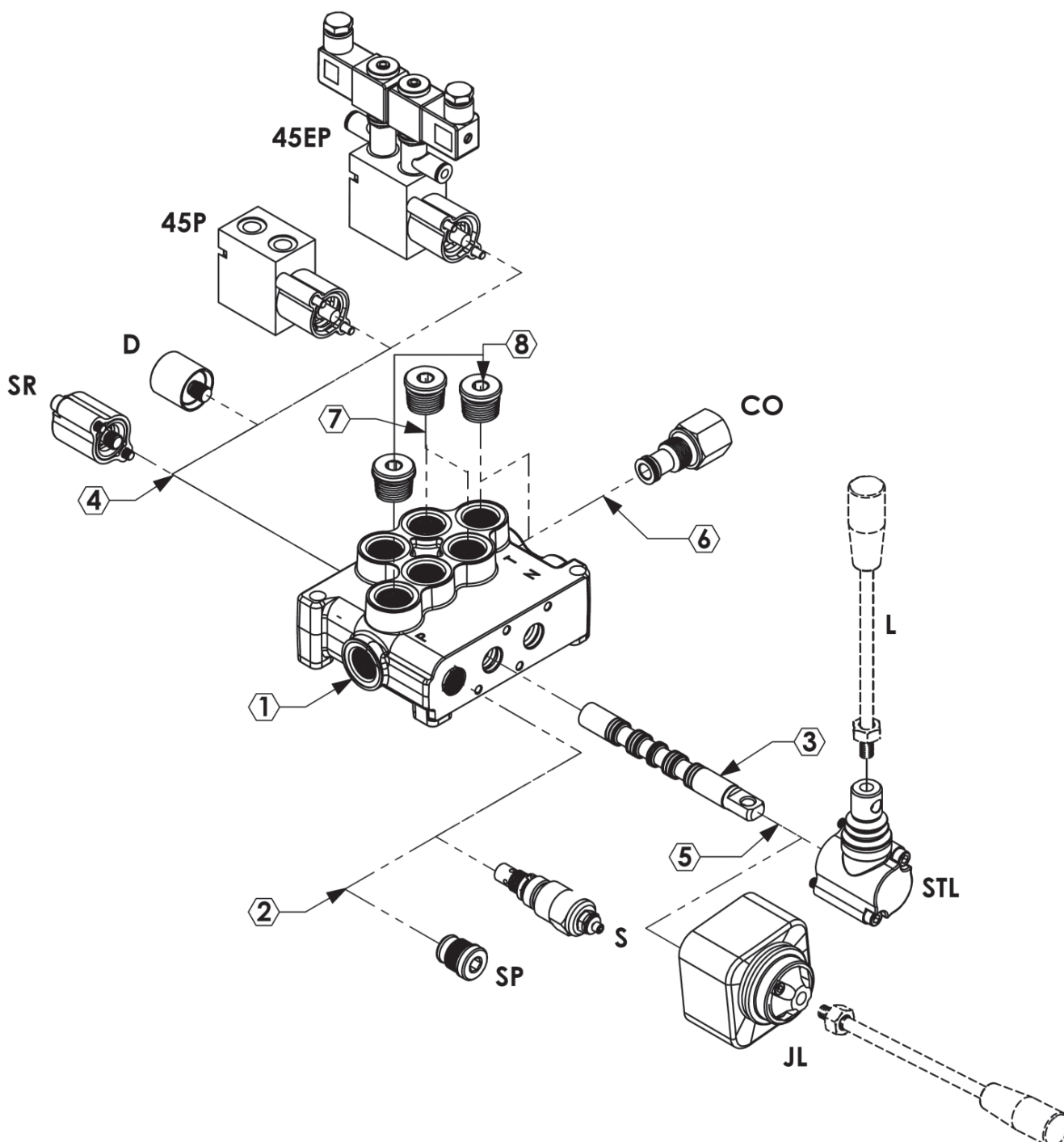
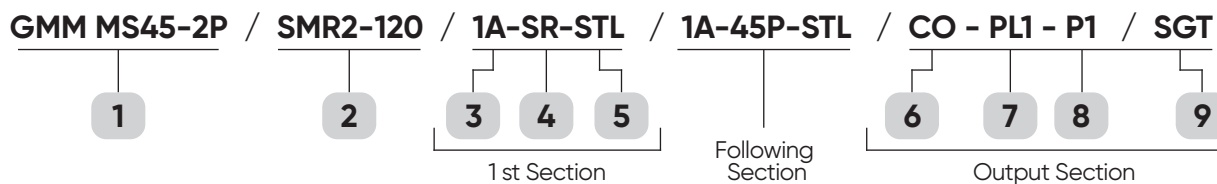


Relief Blanking Plug - WM



ORDERING CODES

Order Example



ORDERING CODES

1- Valve Type and Body

MS45 = Valve Type - (MS) - Monoblok
(45) - Max. Flow Rate

1P = Body for 1 Section - (1BMS145100)
2P = Body for 2 Sections - (1BMS245100)
3P = Body for 3 Sections - (1BMS345100)
4P = Body for 4 Sections - (1BMS445100)
5P = Body for 5 Sections - (1BMS545100)
6P = Body for 6 Sections - (1BMS645100)

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 - (3SMS145110) - 3 Positions, Double acting
 2A - (3SMS145120) - 3 Positions, Double acting
 A to tank B Blocked

3A - (3SMS145130) - 3 Positions, Double acting
 B to tank A blocked

4A - (3SMS145140) - 3 Positions, Double acting
 A and B tank

5A - (3SMS145150) - 3 Positions, Single acting on
 A (A to tank)

6A - (3SMS145160) - 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)
45P = ON/OFF Pneumatic - (445P045100)
45EP = 12 / 24 VDC ON/OFF electro-pneumatic -
 (445EP045112)
45EH = 12 VDC / 24 VDC ON/OFF electro-hydraulic
 (3645EH100112)

5- Lever Options

STL = Standard lever - (5STL045100)
JL = Joystick lever for two sections operation
 - (5JL 080100)

6- Output Options

PA1(T) = G1/2" Top output plug- (6PL1040112)
PA1(S) = G1/2" Side output plug- (6PL1040112)
CO = G1/2" Carry-Over Connector - (6CO045100)

7- Ports Plug Options "If Required"

PL1(5A) = Plug for single action spool for 5A
 G1/2 - (6PL1040112)
PL1(6A) = Plug for single action spool for 6A
 G1/2 - (6PL1040112)
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

PI1(T) = G1/2 Top input - (6PL1040112)
PI1(S) = G1/2 Side input - (6PL1040112)
PI2(T) = G3/8 Top input - (7PL2045138)
PI2(S) = G3/8 Side input - (7PL2045138)

9- Ports Thread Options

SGT1 = 1/2" Series Port Options - (9P045112)
SGT2 = 3/8" Series Port Options - (9P045138)
UNF = UNF Series Port Options - (9U045138)
M = Metric Series Port Options - (9M045138)

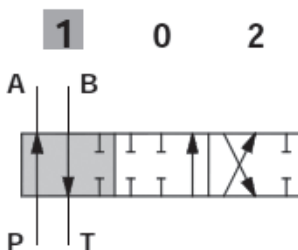
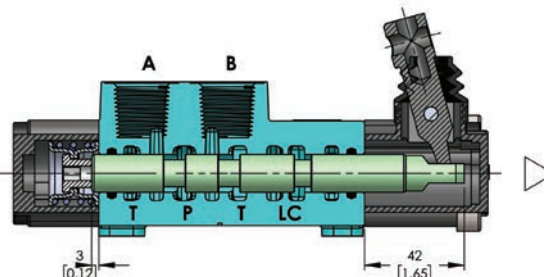
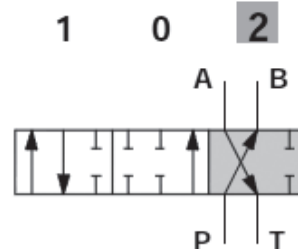
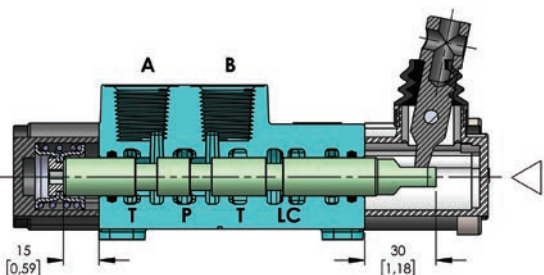
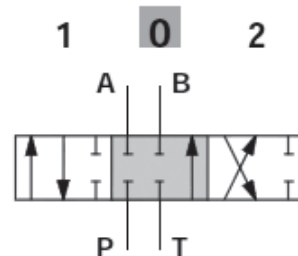
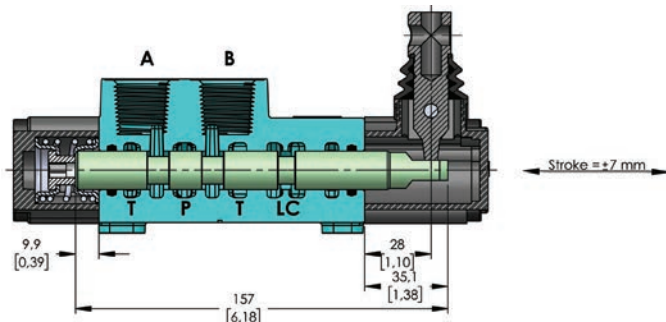
*Page 4 for detail port information.

HandLever

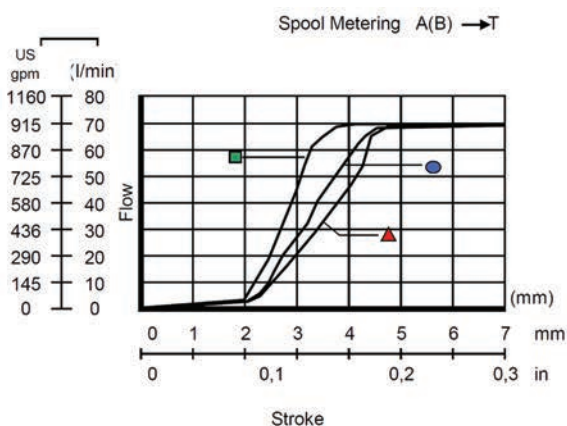
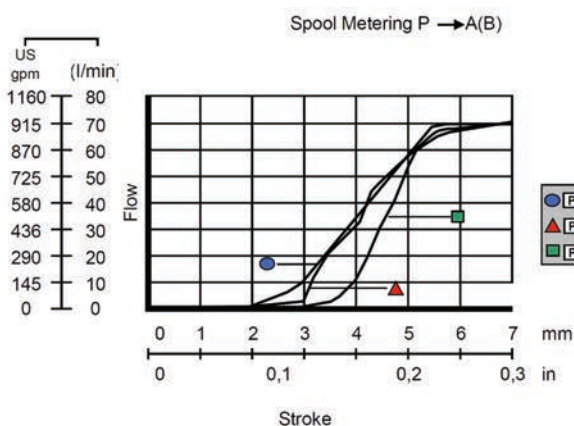
L = Standard HandLever (L=120mmxM10) - (7L040100)
HL = Remote Cable Kit - (80HL80100)

SPOOL OPTIONS

Spool Type - 1A

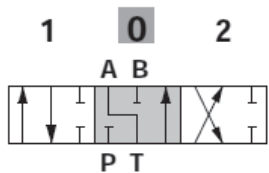
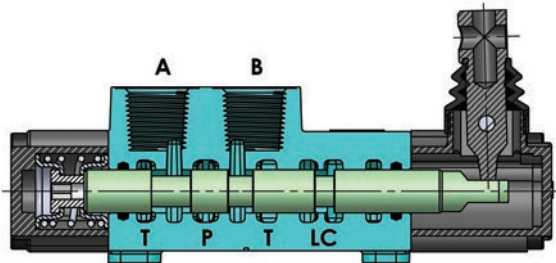


Performance Curve And Data

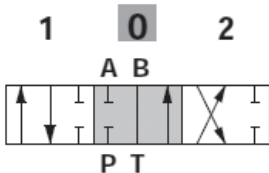
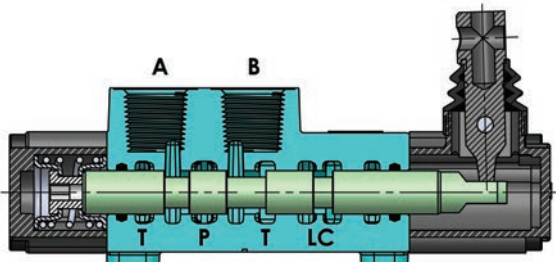


SPOOL OPTIONS

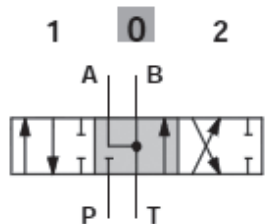
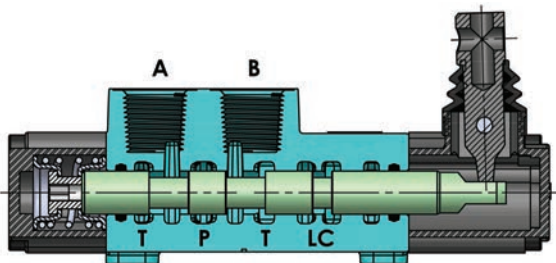
Spool Type - 2A



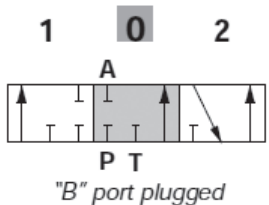
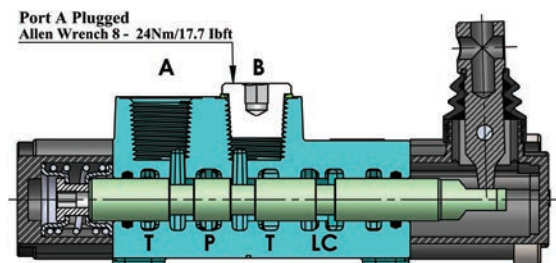
Spool Type - 3A



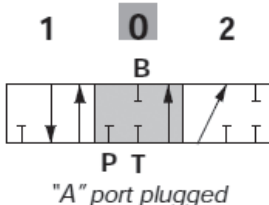
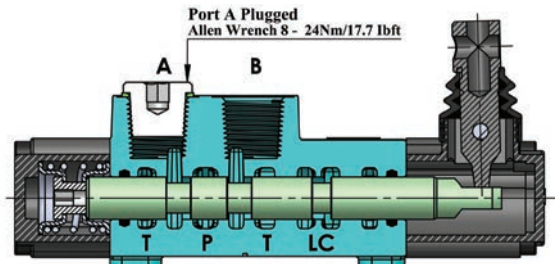
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A



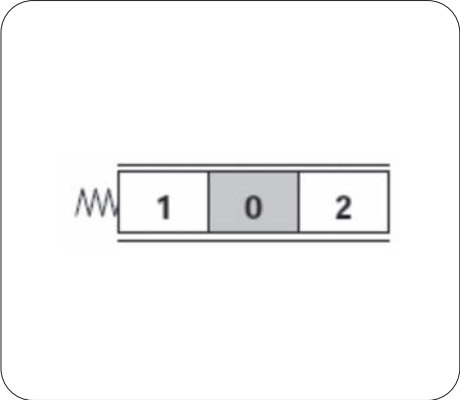
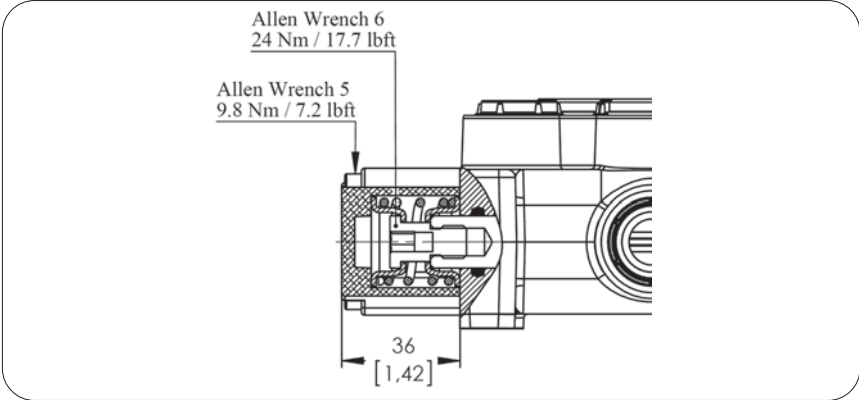
SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance

Diagram

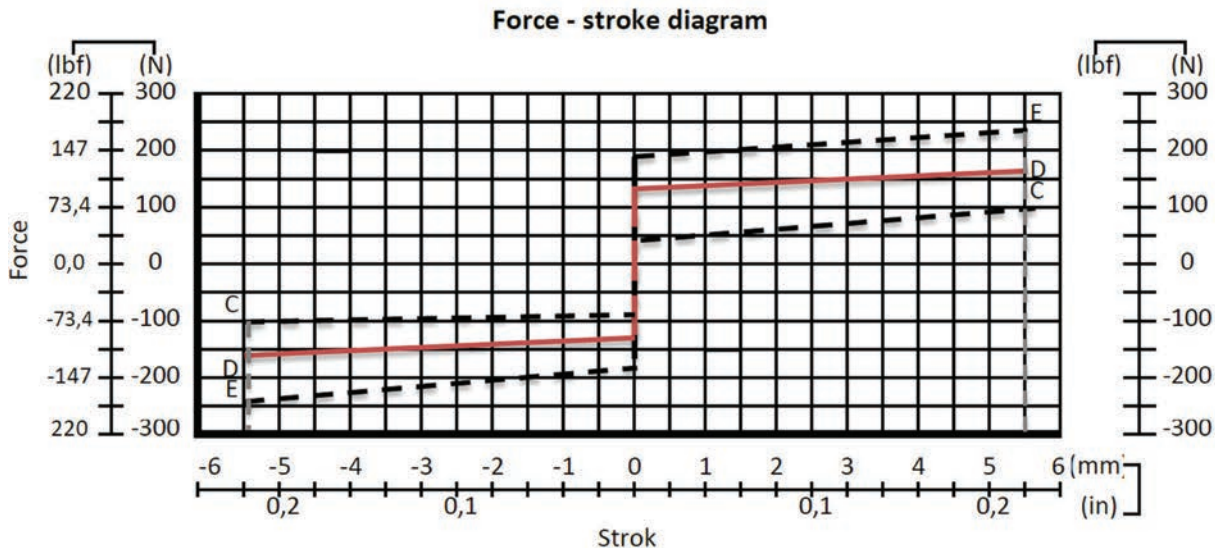
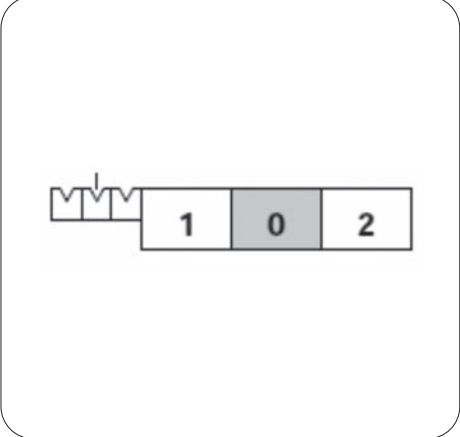
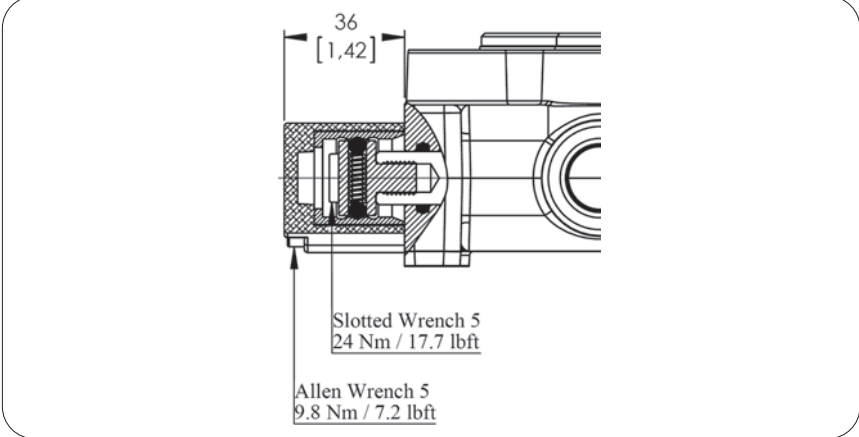


With Detent

Kit No: **D**

Sectional Appearance

Diagram



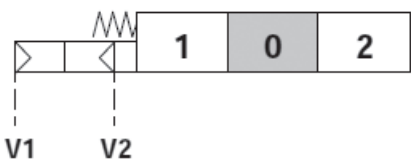
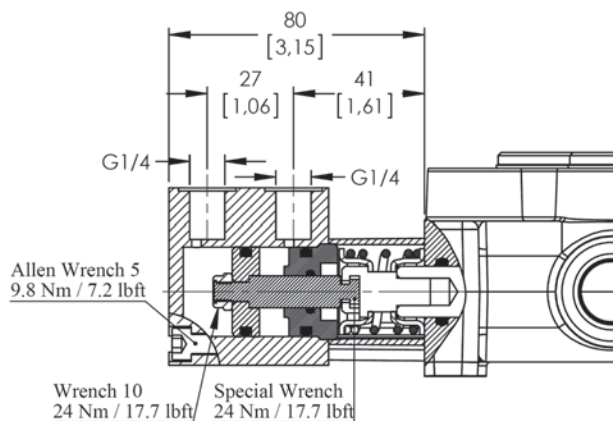
SPOOL POSITIONERS – SIDE OF RETURN

ON/OFF Pneumatic Control

Kit No: **45P**

Sectional Appearance

Diagram



Operating Features

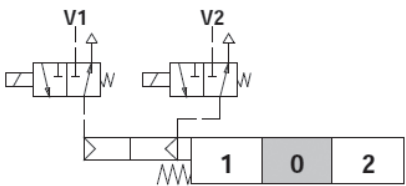
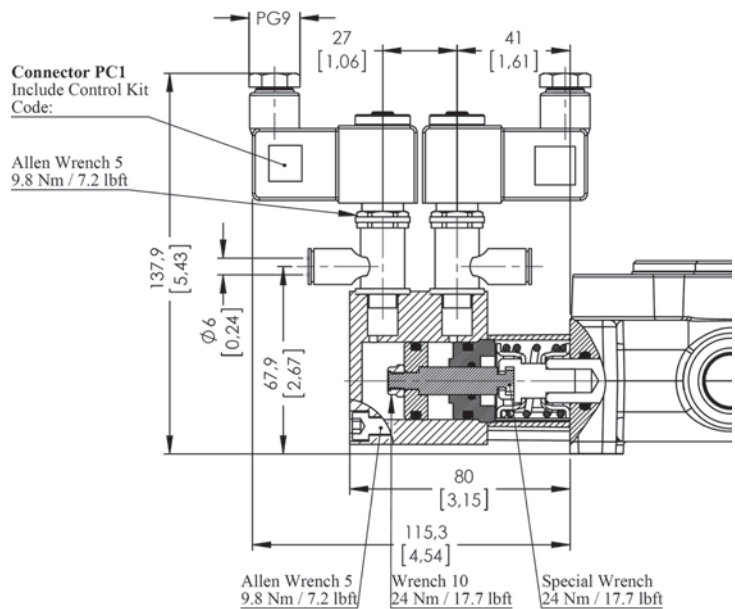
Pilot Pressure: 6 Bar (Max. 10) / 87 Psi (Max. 145)

ON/OFF Electro-Pneumatic Control

Kit No: **45EP**

Sectional Appearance

Diagram



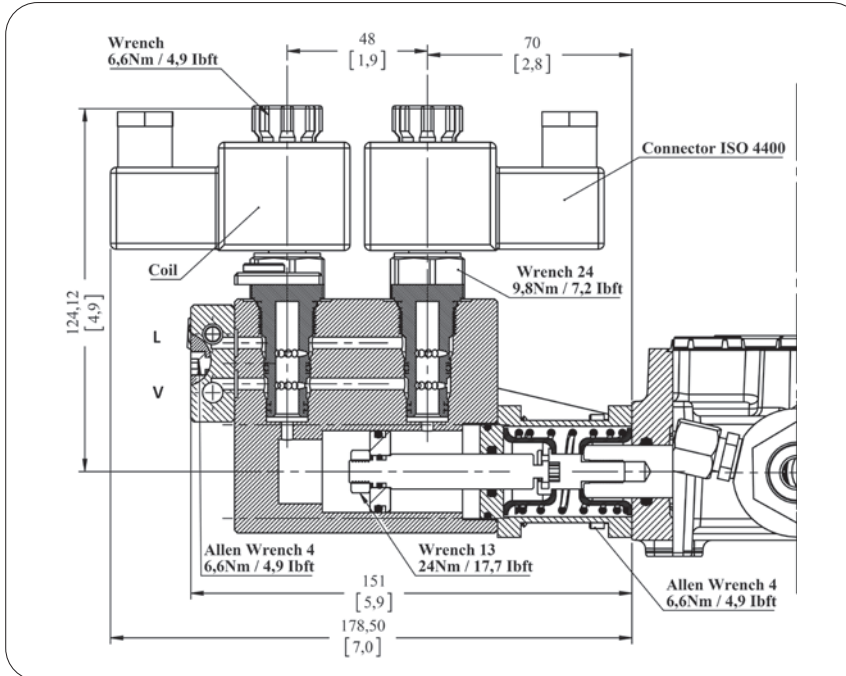
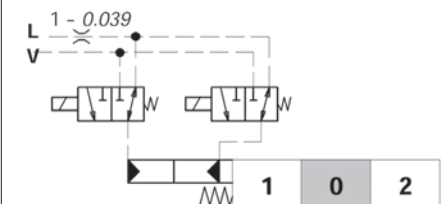
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 45EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
 : 50 Bar / 725 Psi
 Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
 Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 21 W
 Duty cycle.....: %100
 Protection type.....: IP 65
 Nominal voltage tolerance.....: ±10
 Max temperatures.....: 100 C°
 Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
 COL 12 - 10COL1001 - Kit For Section 2
 COL 13 - 10COL1001 - Kit For Section 3
 COL 14 - 10COL1001 - Kit For Section 4
 COL 15 - 10COL1001 - Kit For Section 5
 COL 16 - 10COL1001 - Kit For Section 6
 COL 17 - 10COL1001 - Kit For Section 7
 COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

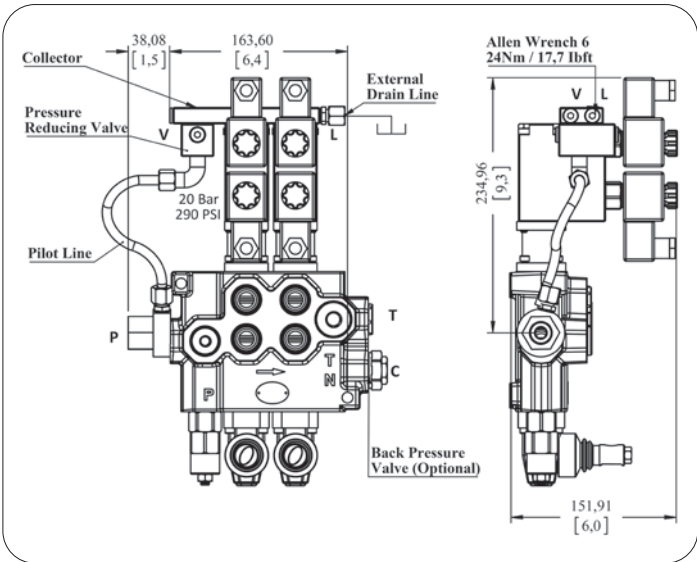
COL 21 - 10COL2001 - Kit For Section 1
 COL 22 - 10COL2001 - Kit For Section 2
 COL 23 - 10COL2001 - Kit For Section 3
 COL 24 - 10COL2001 - Kit For Section 4
 COL 25 - 10COL2001 - Kit For Section 5
 COL 26 - 10COL2001 - Kit For Section 6
 COL 27 - 10COL2001 - Kit For Section 7
 COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

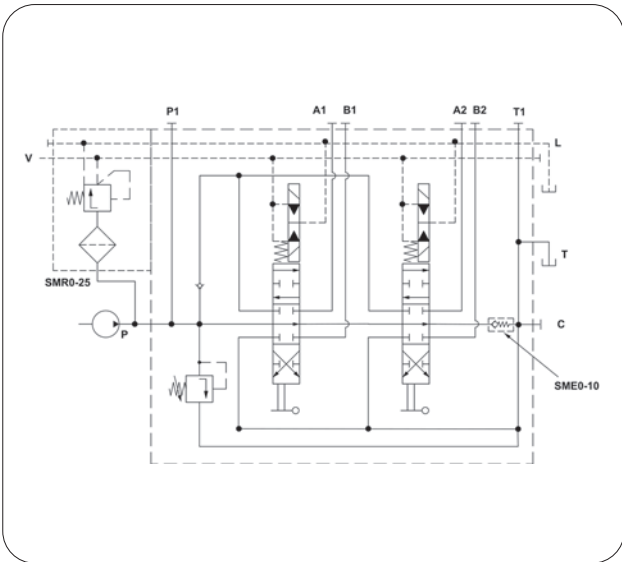
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram



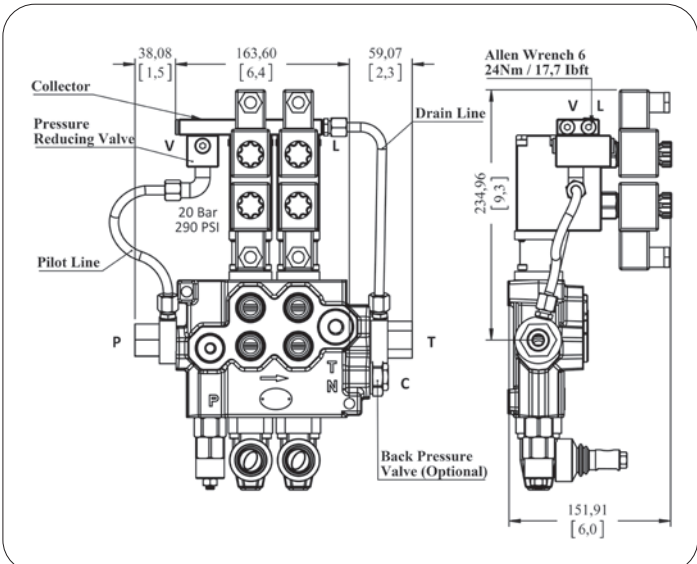
Operating Features

External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)

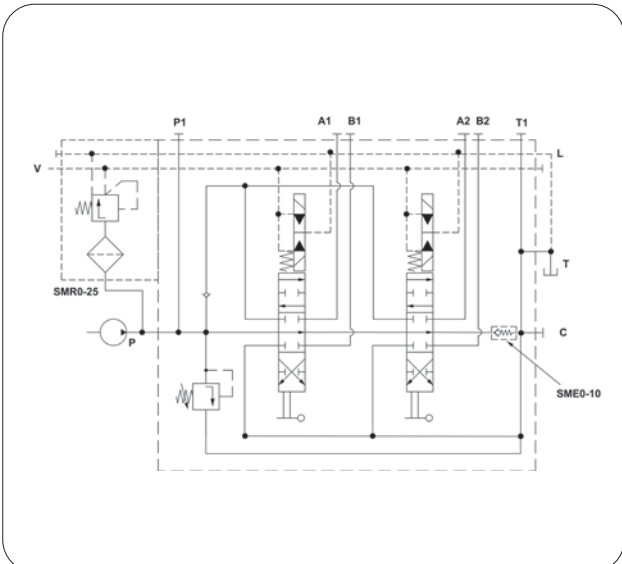
Code= GMM MS45-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-45EH/ P-1A-STL-45EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

Outlet Pressure: 20 Bar / 290 Psi

Max. Flow.....: 8 l/min

Filtering:80 µ

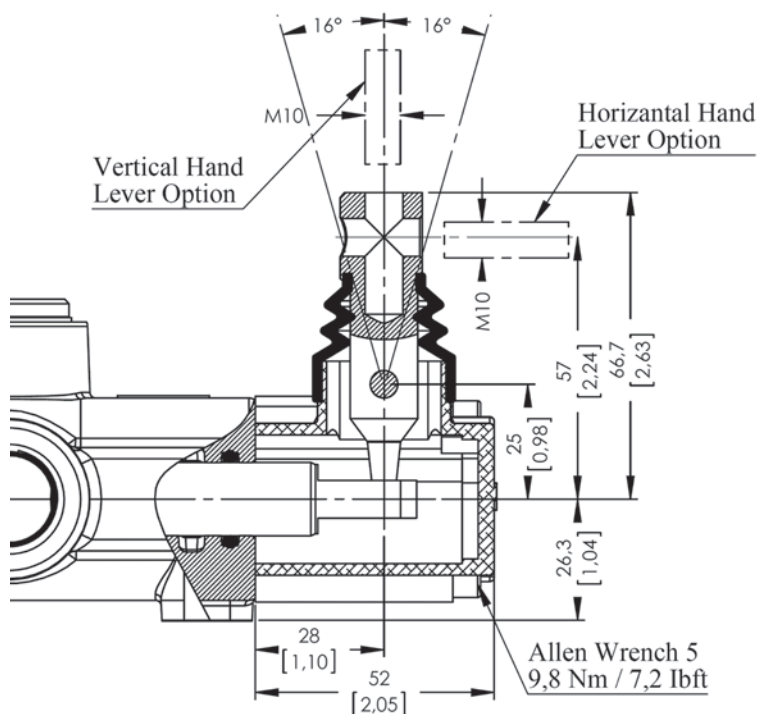
Code= GMM MS45-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-45EH/ P-1A-STL-45EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

SPOOL POSITIONERS – SIDE OF LEVER CONTROL

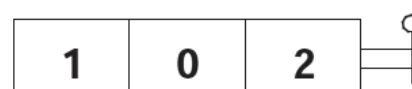
Lever Controls

Kit No: **STL - L0**

Sectional Appearance

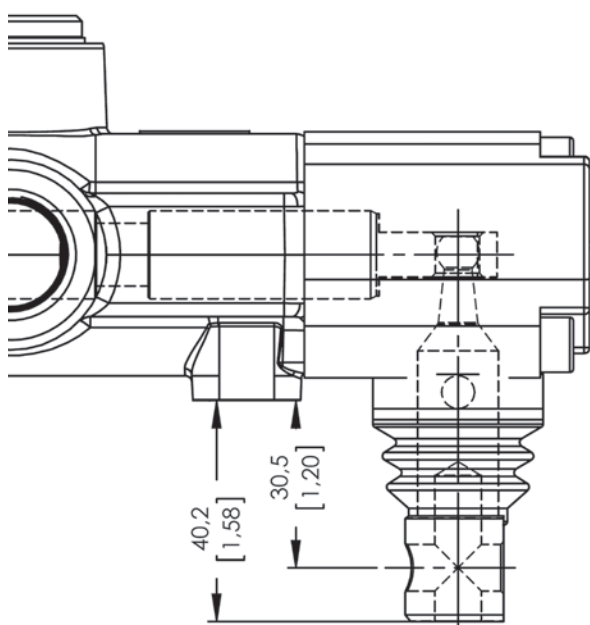


Diagram

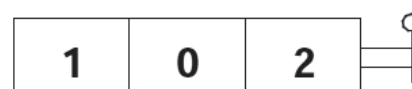


Kit No: **STL - L180**

Sectional Appearance



Diagram



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

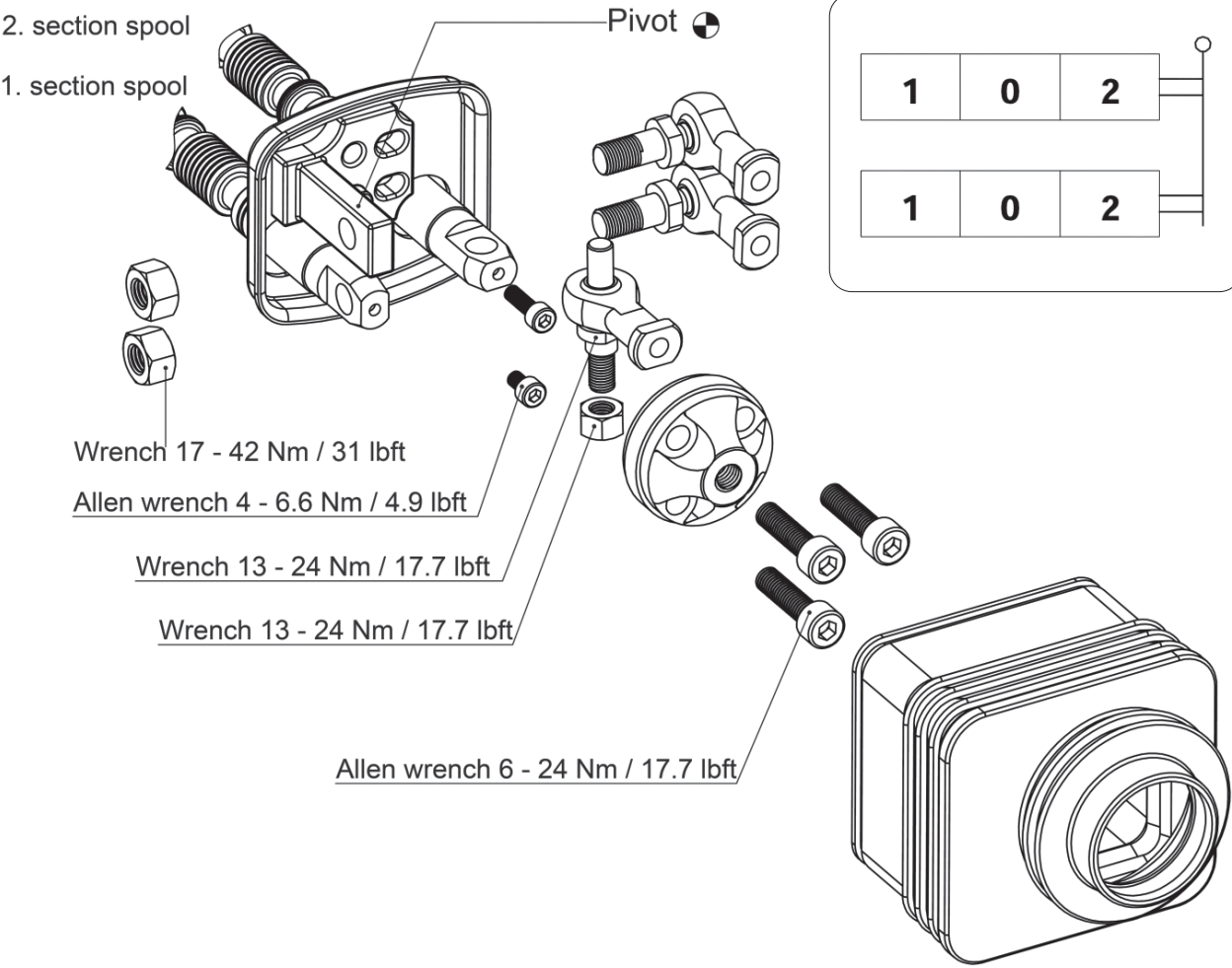
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls - Joystick

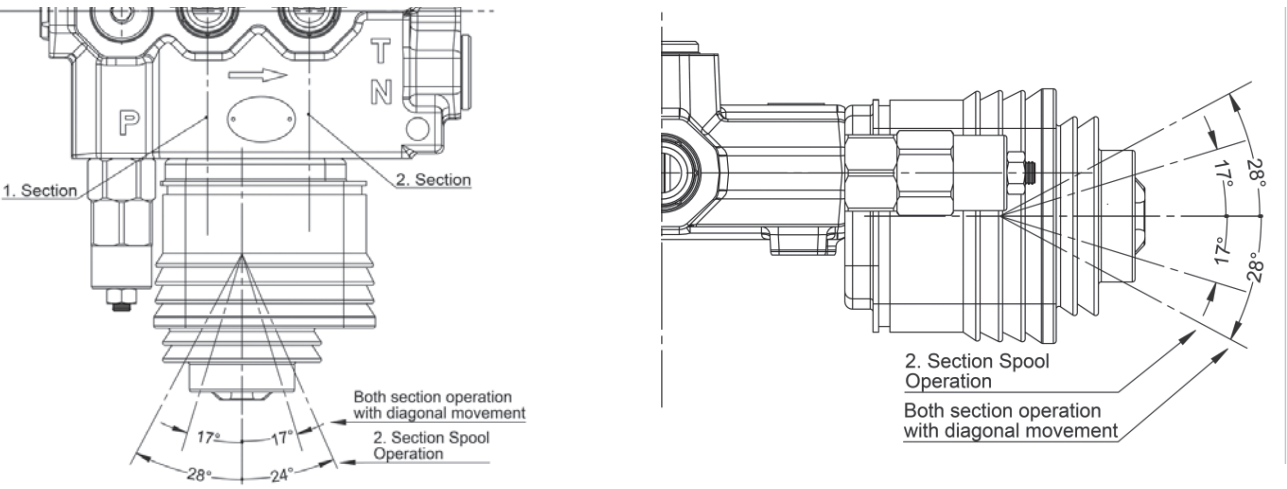
Kit No: JL

Exploded View

Diagram



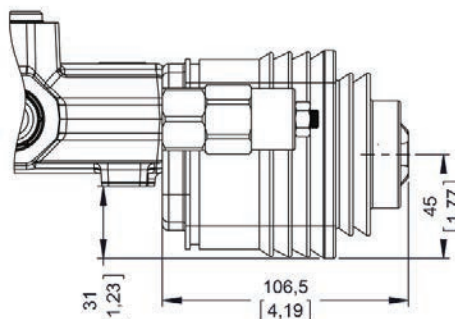
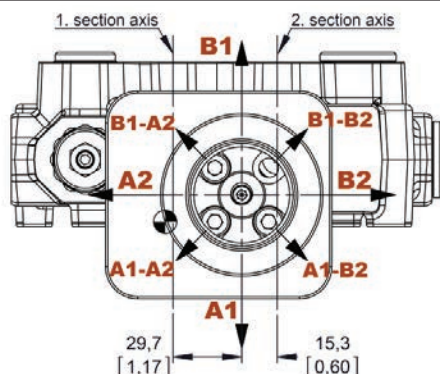
Operation Angle:



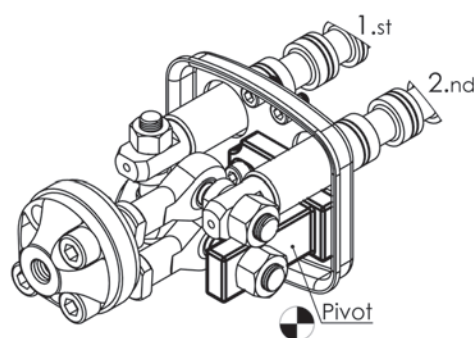
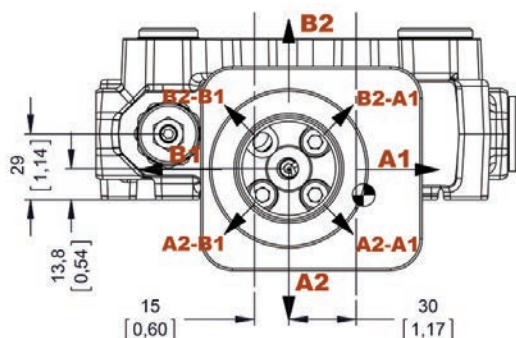
SPOOL POSITIONERS – SIDE OF LEVER CONTROL
Lever Controls – Joystick
Dimensions and movement scheme

Type No: **JL1**

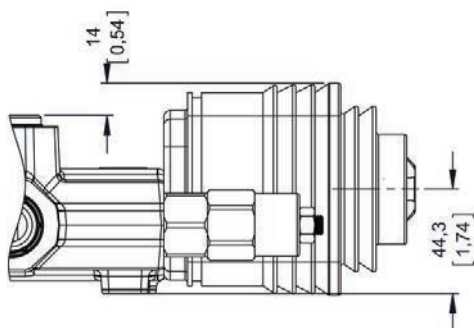
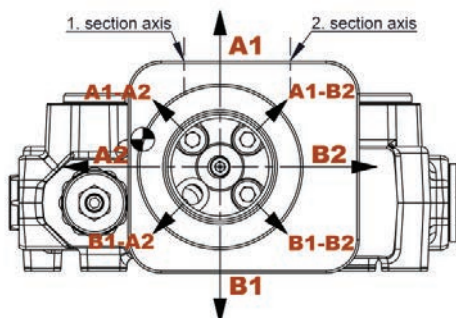
Pivot placed down on the Left


Type No: **JL2**

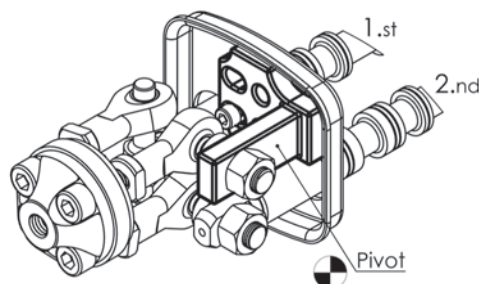
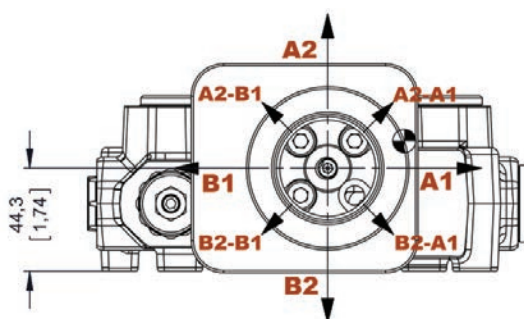
Pivot placed down on the right


Type No: **JL3**

Pivot placed above on the Left


Type No: **JL4**

Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

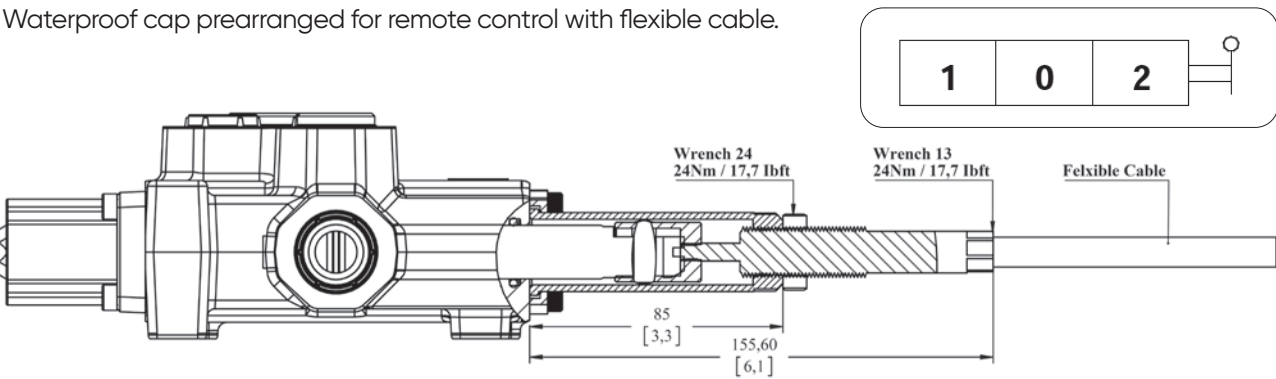
Lever Controls – Cable Control

Kit No: HL

Exploded View

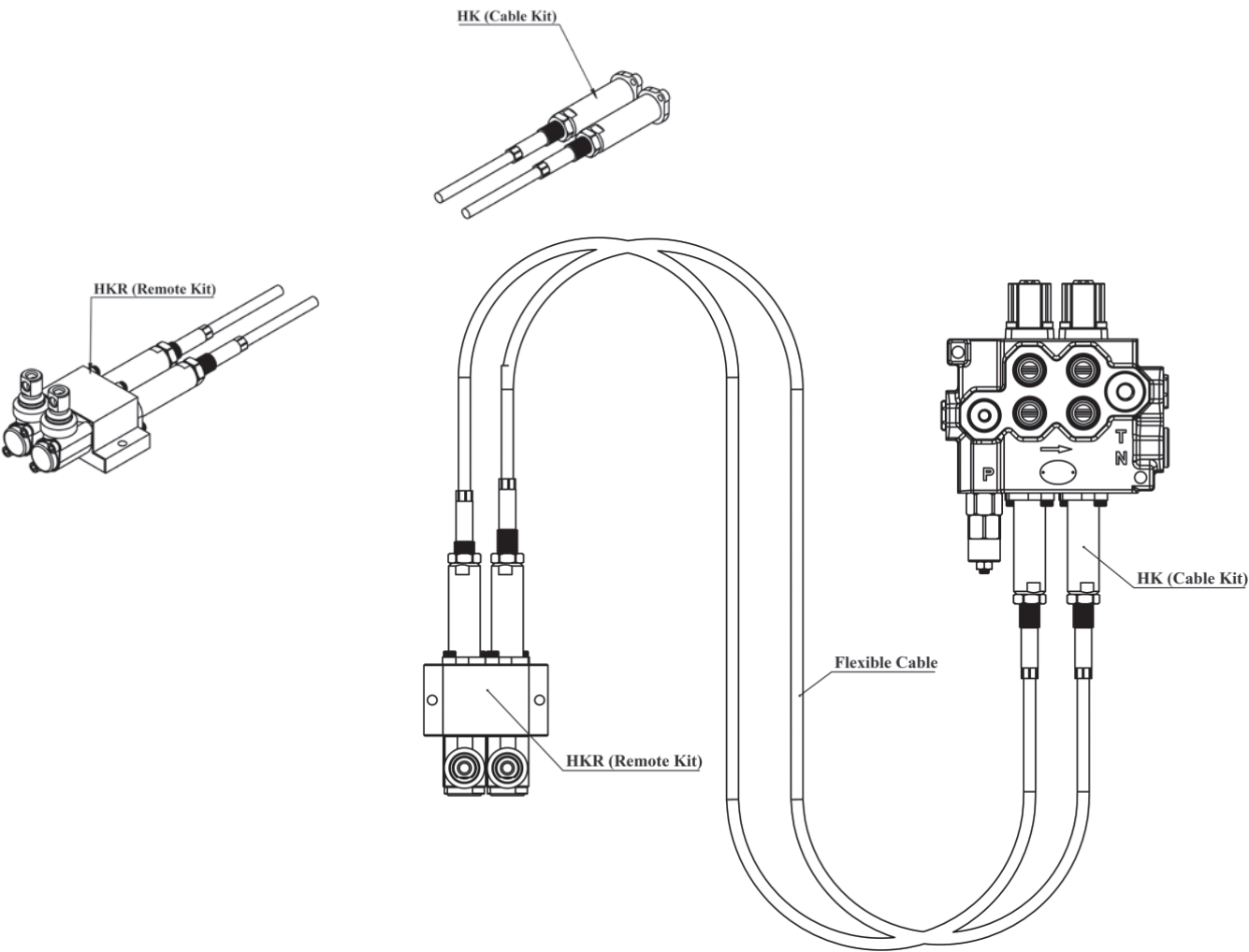
Diagram

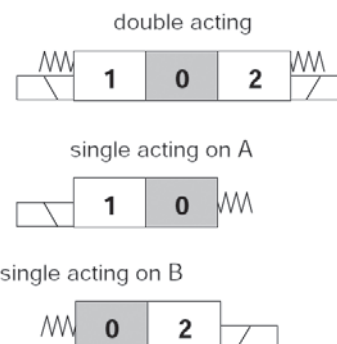
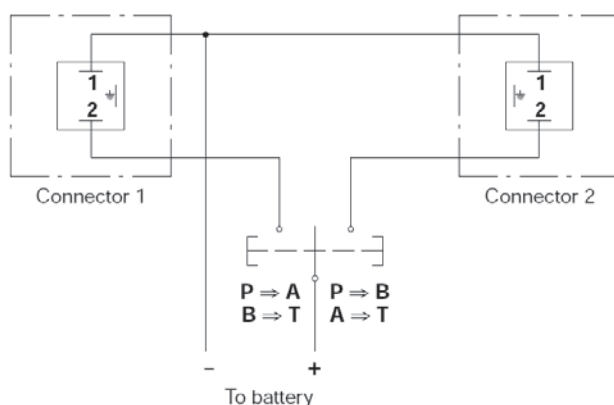
Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department.

Example Operation



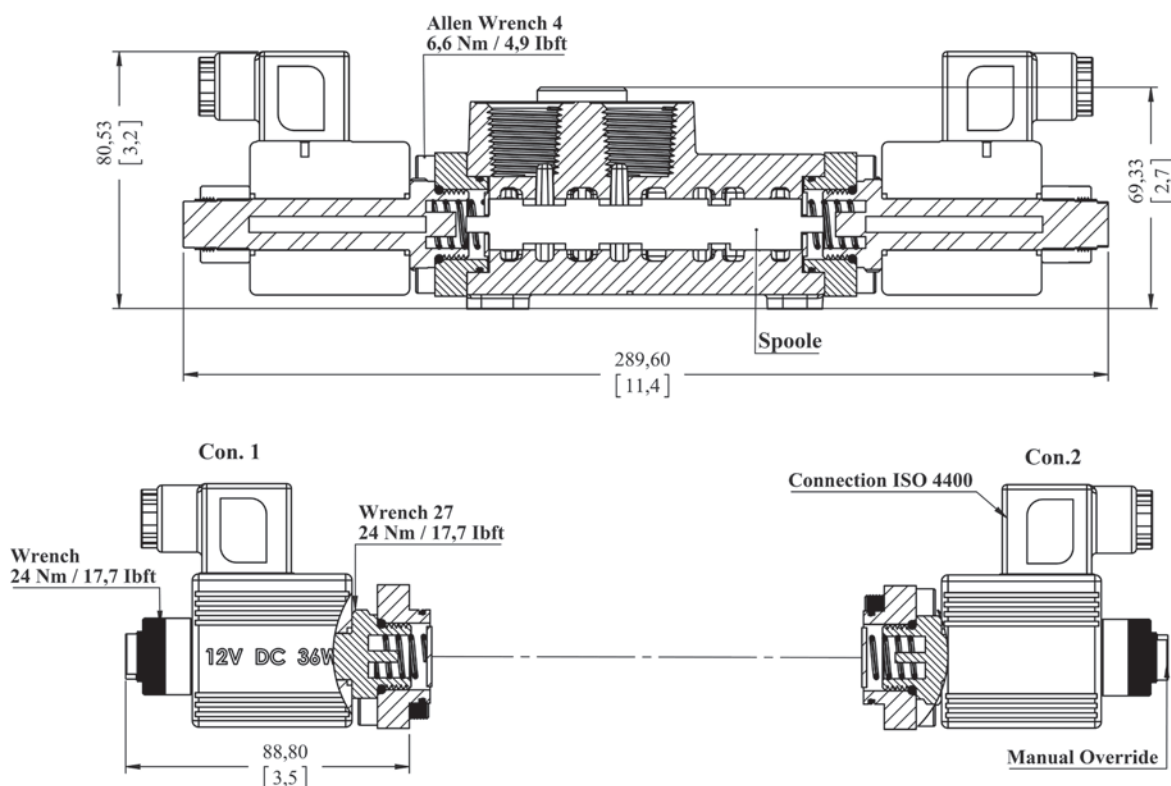
COMPLETE CONTROL – ON / OFF SOLENOID CONTROL
ON/OFF Solenoid Control
Kit No: SEC
Sectional Appearance
Diagram
Electric wiring example

Operating Features

Max Working Pressure.....: 230 Bar / 3300 Psi
 Max back pressure: 5 Bar / 80 Psi
 Internal Leakage.....: 10 cm³ / min

Solenoid Operating Features

Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 36 W
 Duty cycle.....: %100
 Nominal voltage tolerance.....: ±10

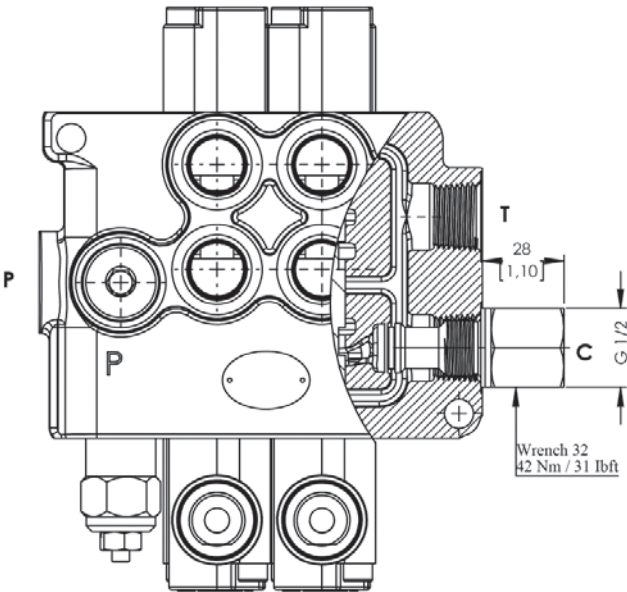
Coil insulation: Class H
 Stroke.....: ±3



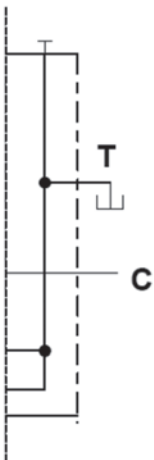
OUTLET PORT OPTIONS

Carry - Over Connection

Kit No: CO

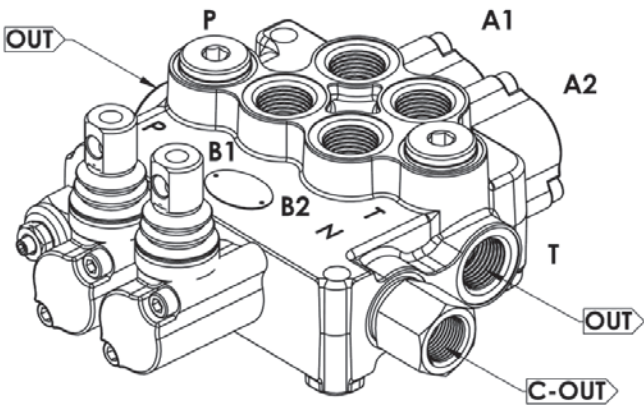


Sectional Appearance



Hydraulic Circuit

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



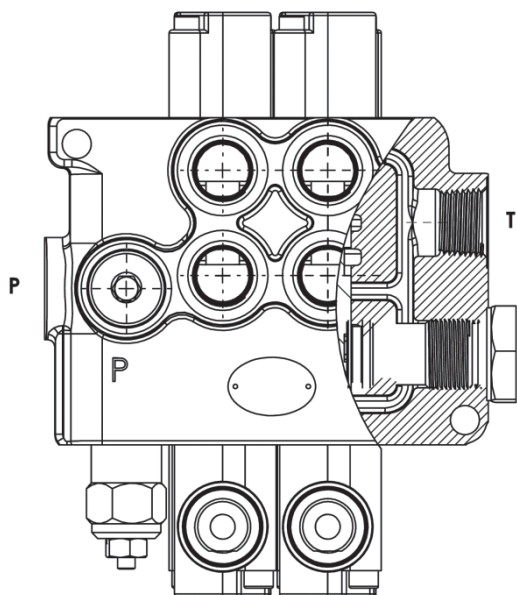
Direction of Port Connected

SGT : See page 5 for Standard center

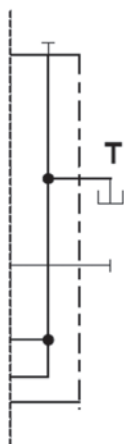
OUTLET PORT OPTIONS

Closed Center

Kit No: **CS**



Sectional Appearance



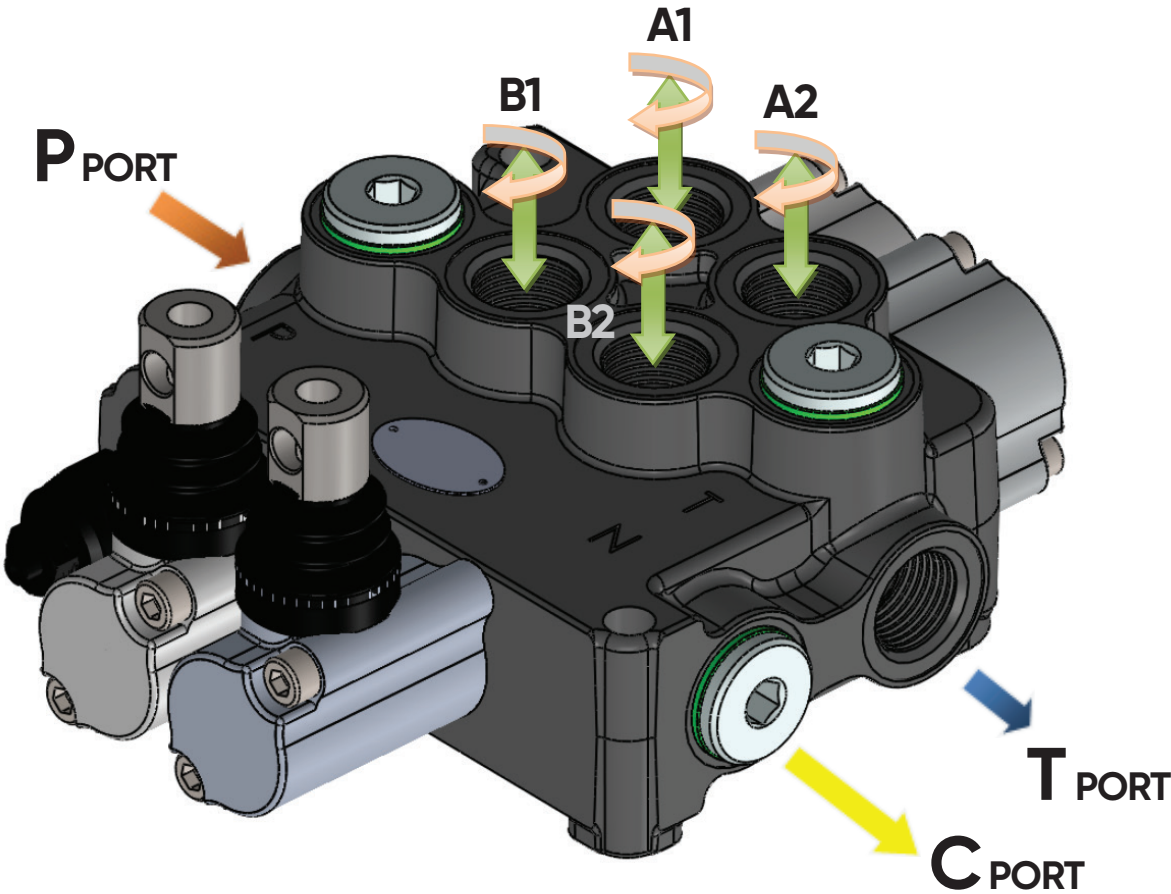
Hydraulic Circuit

Code: GMM MS45-2P
/ SMR2-120 / 1A-SR-
STL/1A-SR-STL/CT-
PA1/SGT

INSTALLATION AND MAINTENANCE

The GMM MS45 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

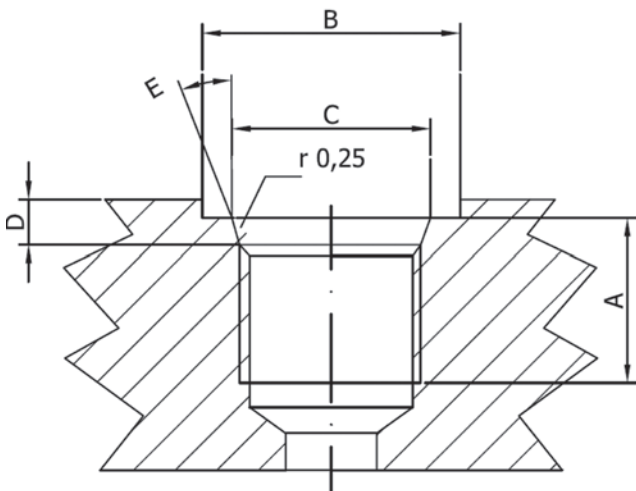
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking, mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



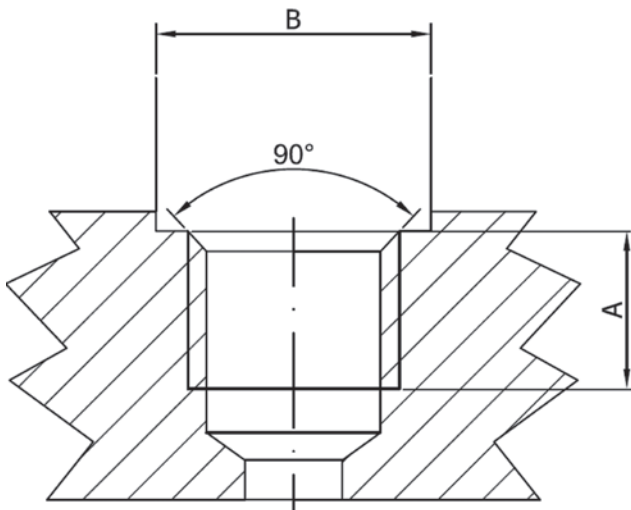
Threads Type (Nm / lbft)	P Port	A and B Port	T and C Port
BSP (ISO 228/1)	G 3/8	G 3/8	G 1/2
With O--Ring seal	35 / 25.8	35 / 25.8	50 / 36.9
With copper washer	40 / 29.5	40 / 29.5	60 / 44.3
With steel and rubber washer	30 / 22.1	30 / 22.1	60 / 44.3
BSP (ISO 228/1)	G 1/2	G 1/2	G 1/2
With O--Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3
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

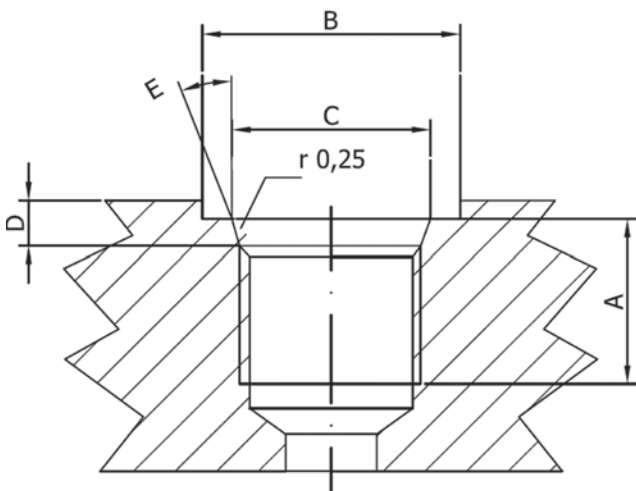
Ports Dimensional Data



SAE UN-UNF (ISO 725)						
Dimensions		9/16-18		3/4-16		7/8-14 UNF
mm	in	UNF SAE6		UNF SAE8		SAE10
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		G1/4		G3/8		G1/2
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		M22x1,5
mm	in	ISO 262		ISO 262
A		14	0,55	14 0,55
B		27,5	1,08	27,5 1,08



MONOBLOCK
DIRECTIONAL
CONTROL VALVES
GMM-M70

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 (01/2020). GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

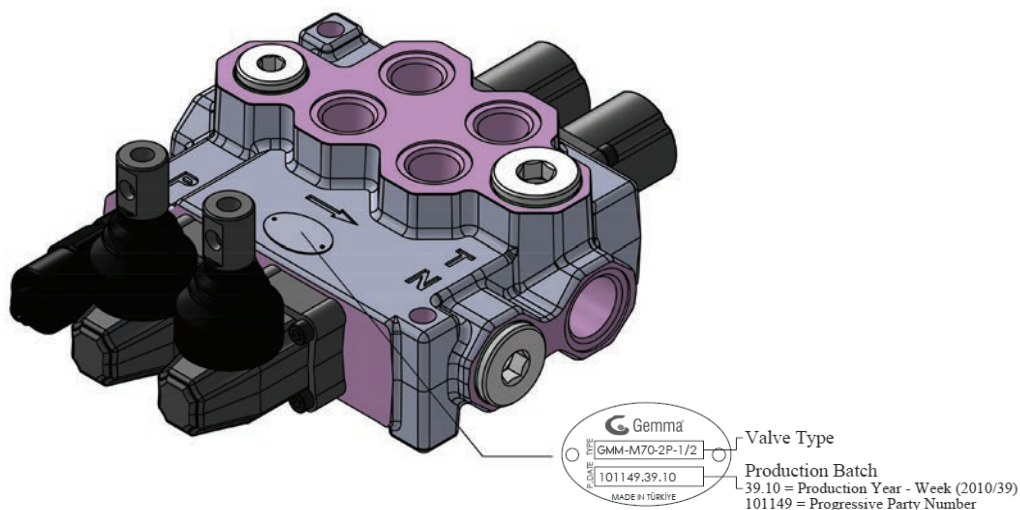
WORKING CONDITIONS

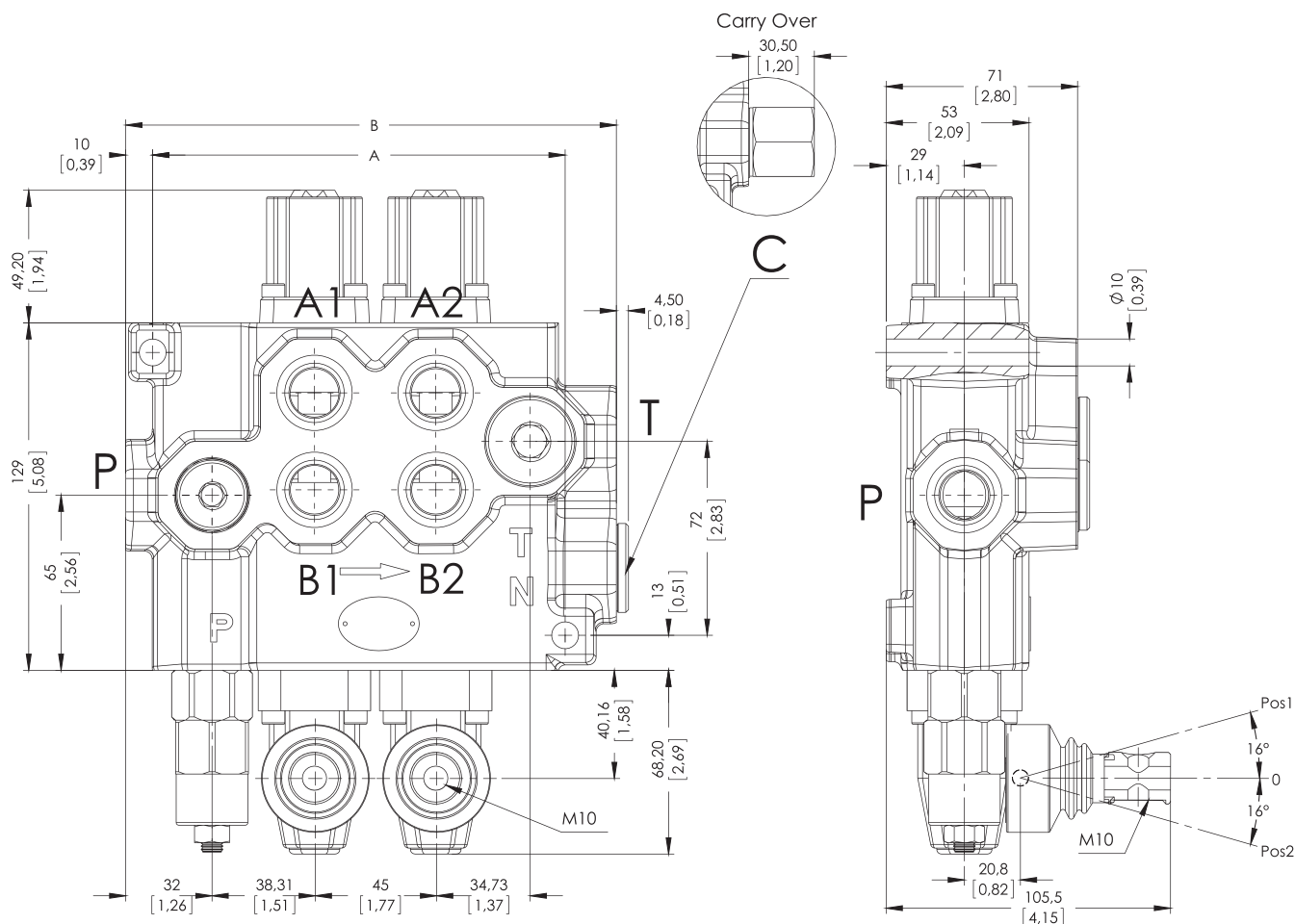
Nominal Flow Rating / Displacement	70 l/min	18 U.S.G.P.M
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
(Series Circuit)	250 Bar	3600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – 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.
- Optional 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


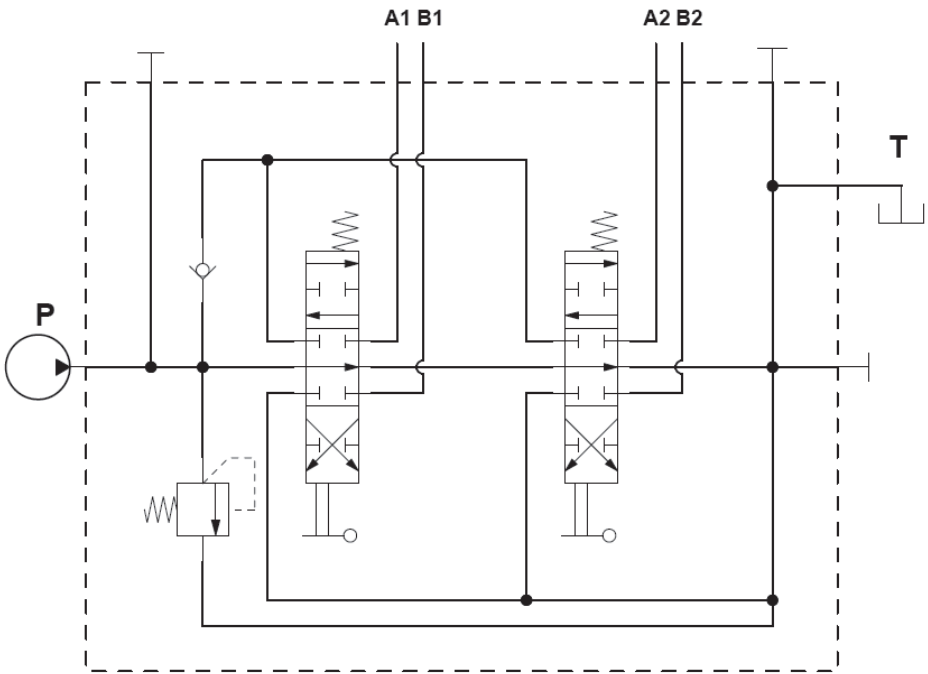
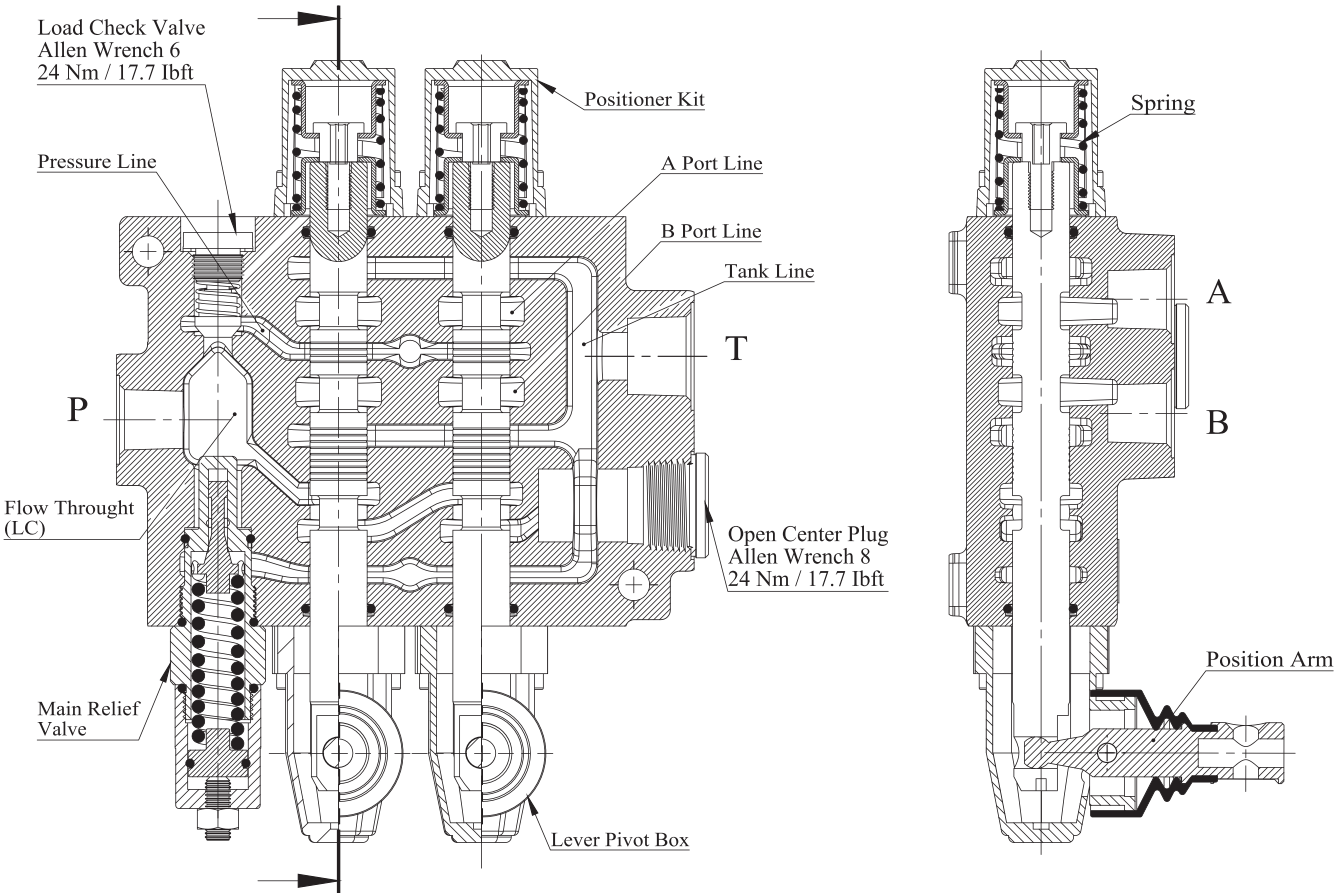
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM-M70-1P	108	4,25	137	5,40	5,65	12,45
GMM-M70-2P	153	6,03	182	7,17	8,25	18,18
GMM-M70-3P	198	7,80	227	8,94	10,85	23,92
GMM-M70-4P	243	9,57	272	10,72	13,45	29,65
GMM-M70-5P	288	11,35	317	12,49	16,05	35,38
GMM-M70-6P	333	13,12	362	14,26	18,65	41,11

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	11/16-12 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	11/16-12 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	11/16-12 UN	G 3/4

HYDRAULIC CIRCUIT

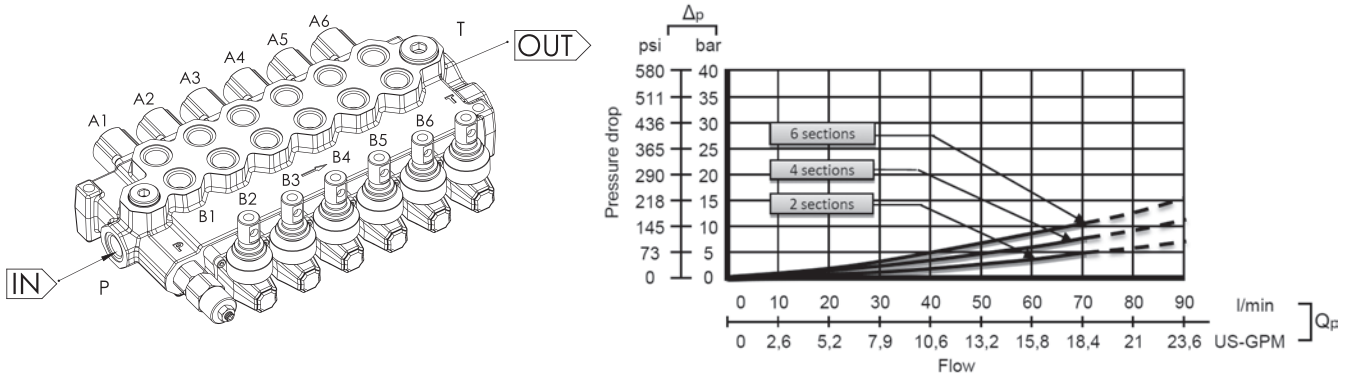
Parallel - Standard Configurations With Side Inlet And Outlet Open Center



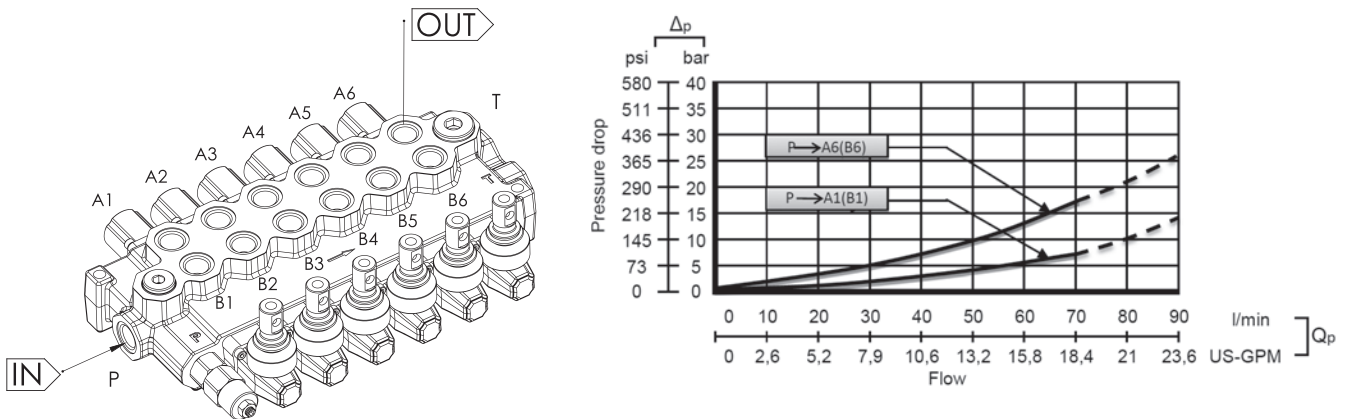
Code: GMM M70-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

PERFORMANCE DATA AND CURVE

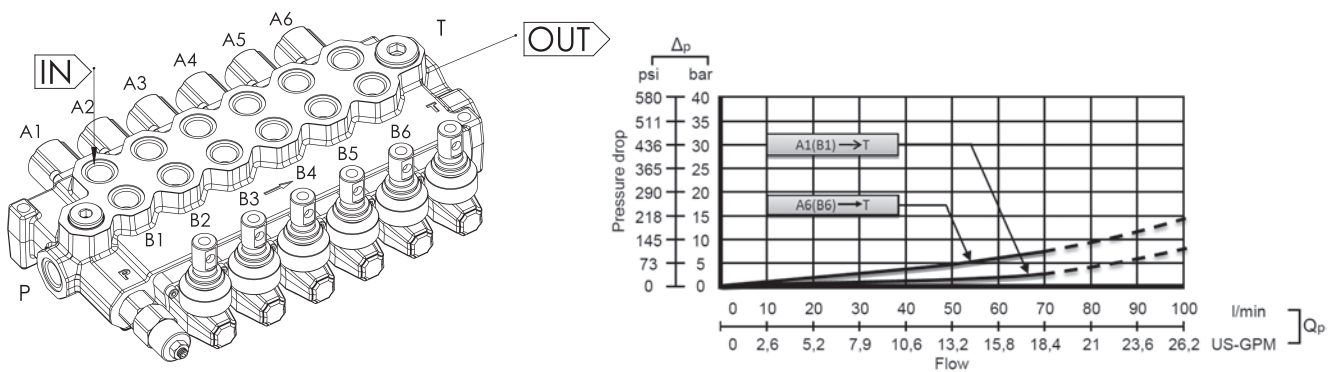
Open Center - Pressure Drop (P-T)



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.

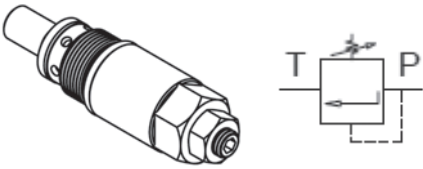
INLET RELIEF OPTIONS

Direct Pressure Relief Valve

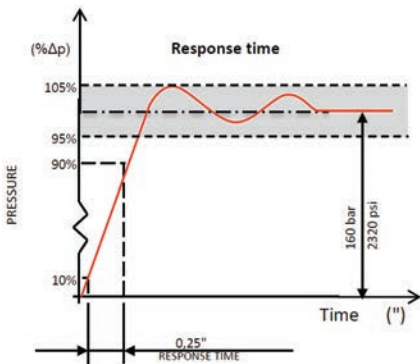
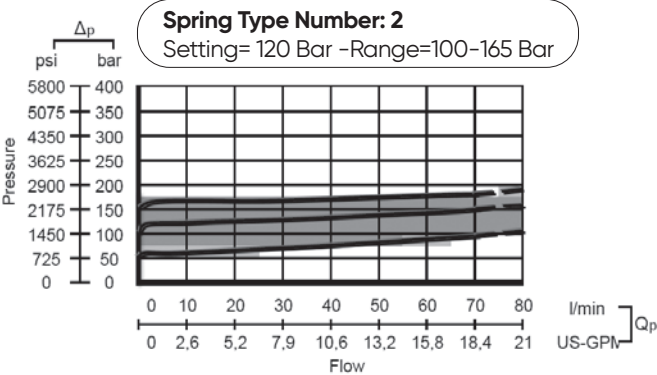
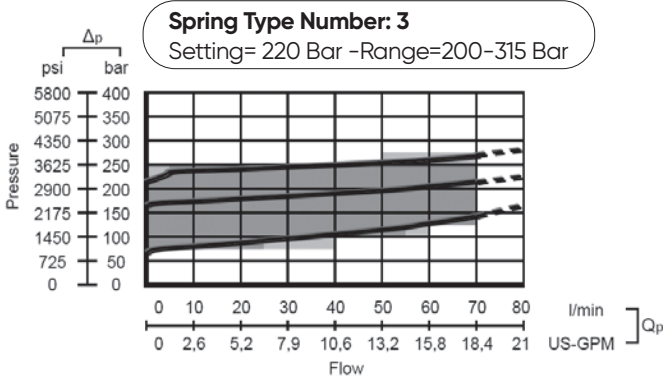
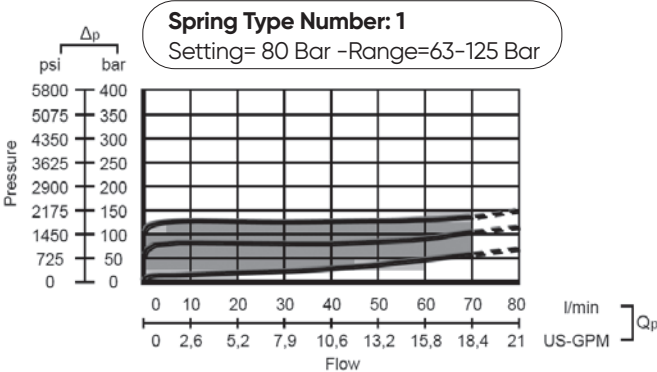
Code:

SMR2 – 120

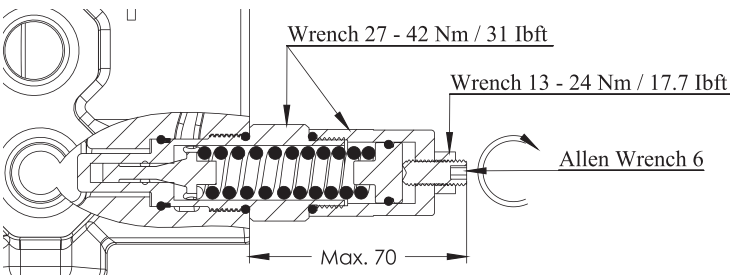
- Pressure Setting Bar in (Standard 120 bar)
- Standard Main Relief Spring Type -2



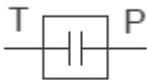
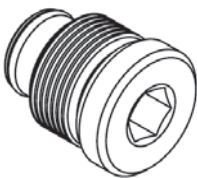
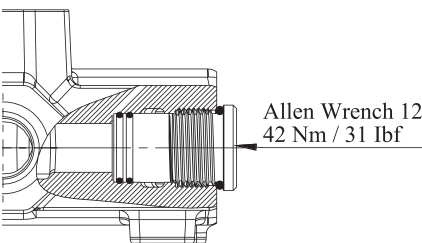
Performance Data



Adjustment Type on Valve

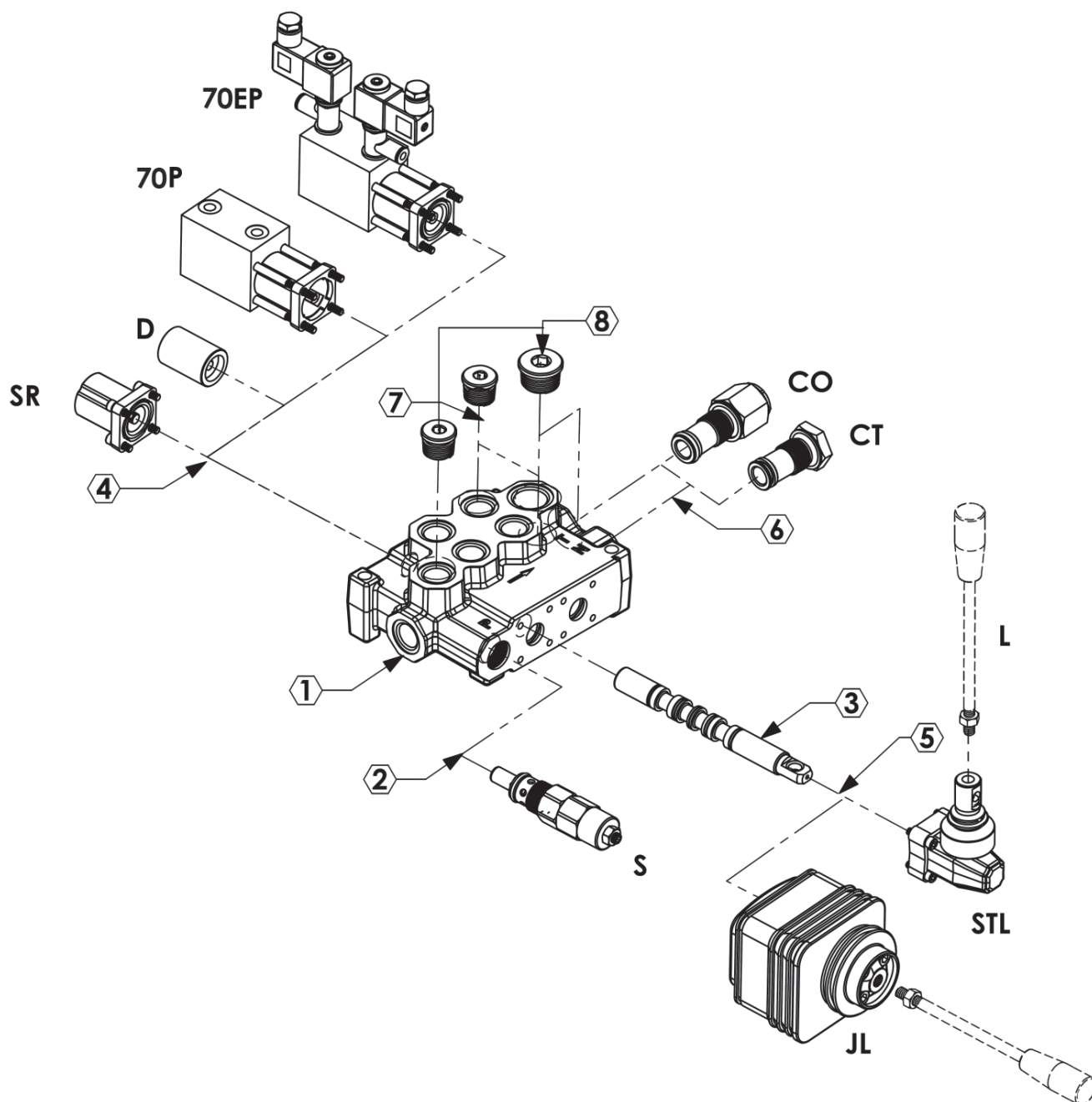
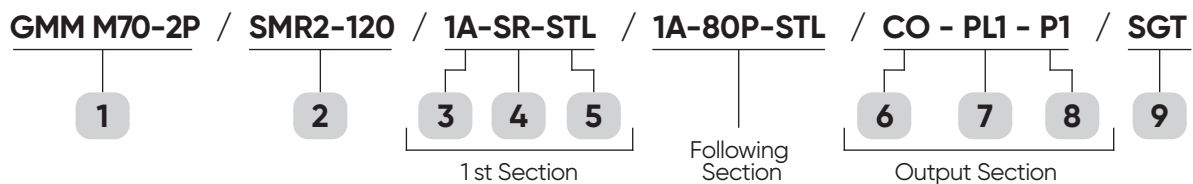


Relief Blanking Plug - WM



ORDERING CODES

Order Example



ORDERING CODES

1- Valve Type and Body

M70 = 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)
 80EH = 12 VDC/24 VDC ON/OFF electro-hydraulic
 (3645EH100112)

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)

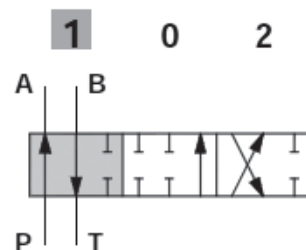
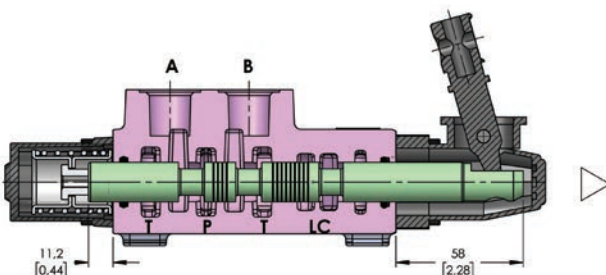
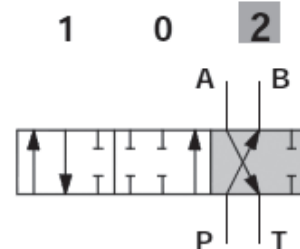
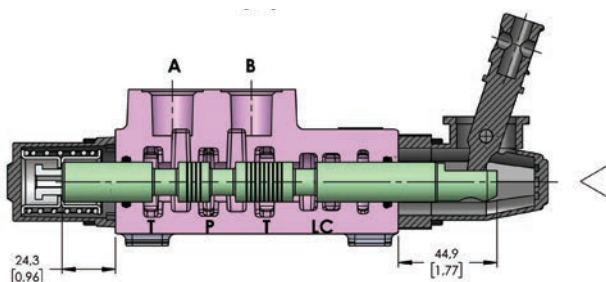
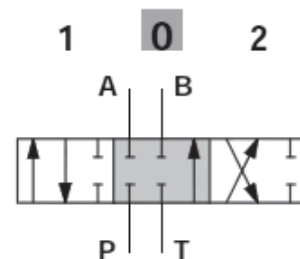
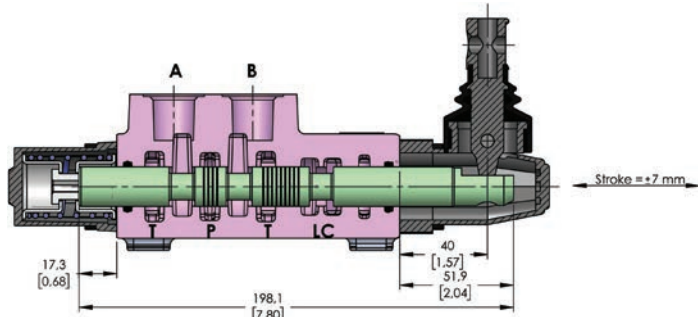
*Page 4 for detail port information.

HandLever

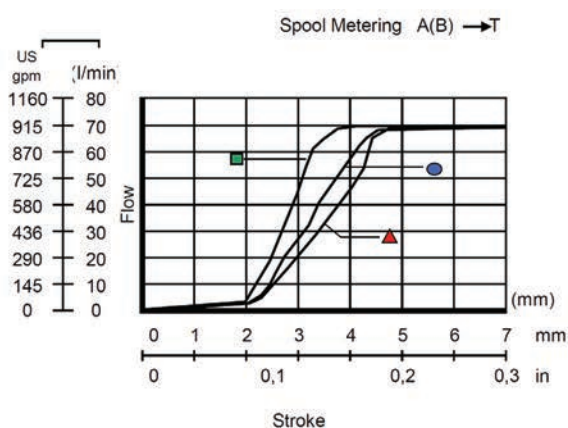
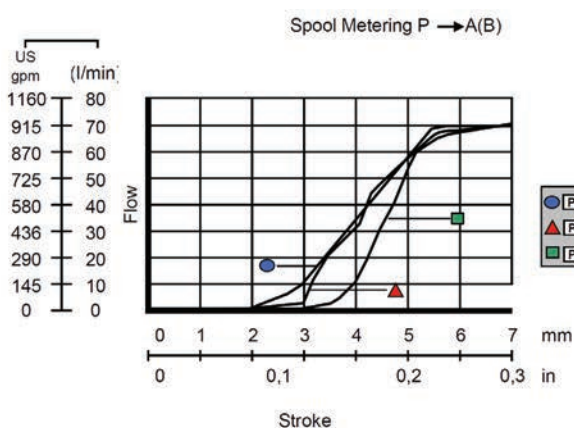
L = Standard HandLever (L=120mmxM8) - (7L040100)
HL = Remote Cable Kit - (80HL80100)

SPOOL OPTIONS

Spool Type - 1A

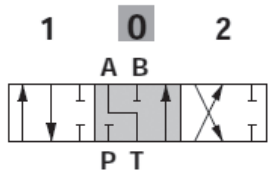
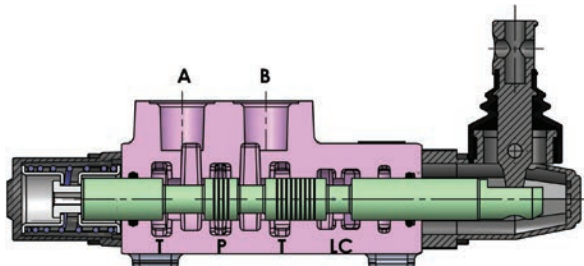


Performance Curve And Data

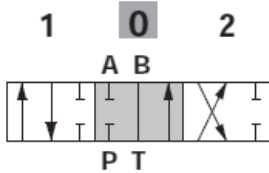
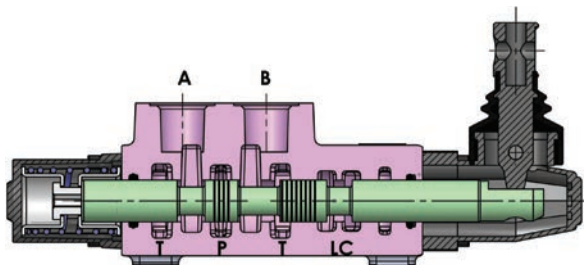


SPOOL OPTIONS

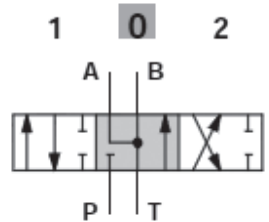
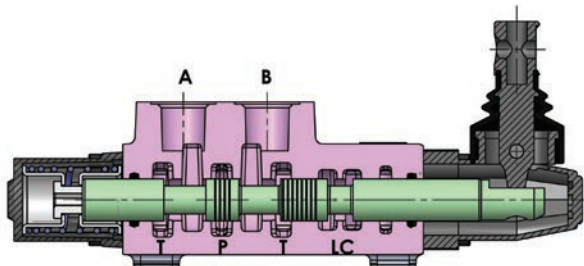
Spool Type - 2A



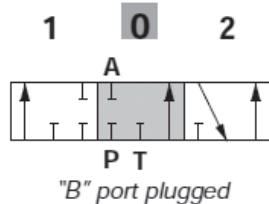
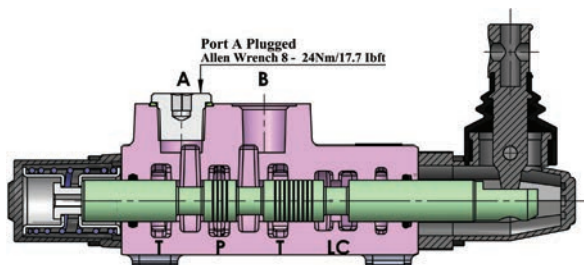
Spool Type - 3A



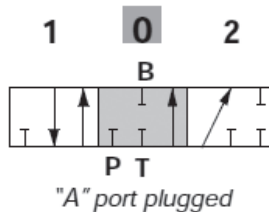
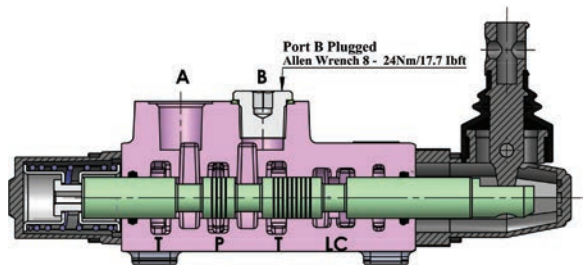
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

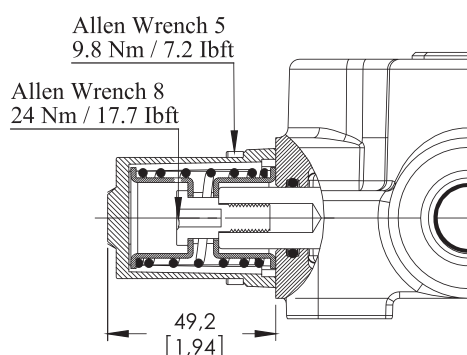


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



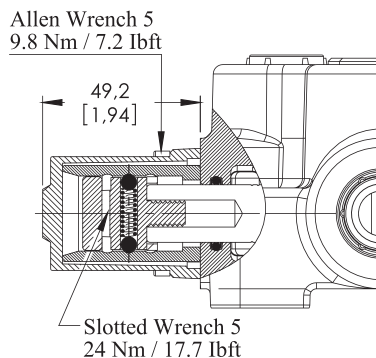
Diagram



With Detent

Kit No: **D**

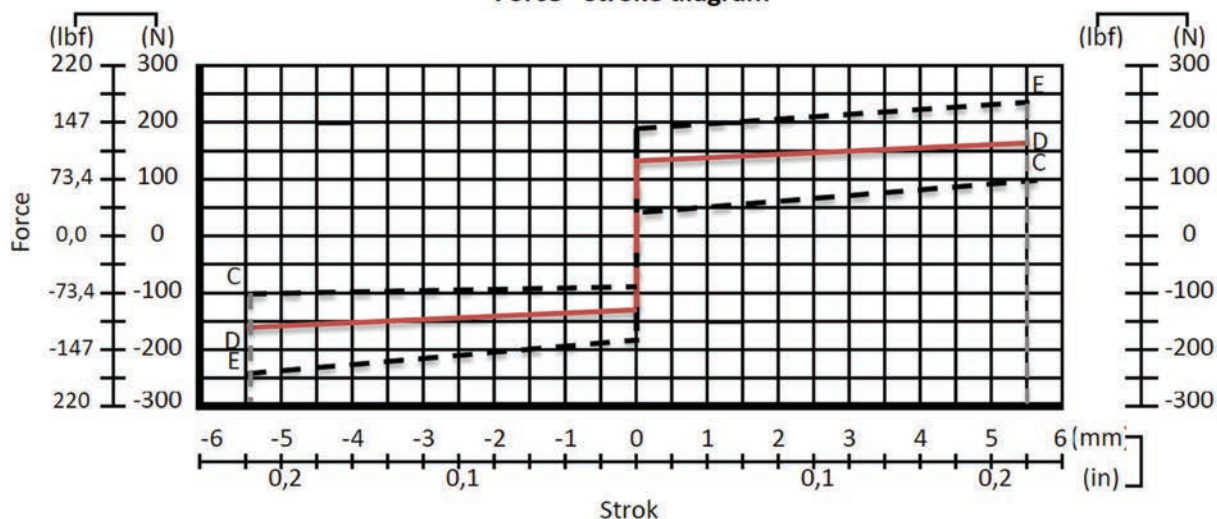
Sectional Appearance



Diagram



Force - stroke diagram

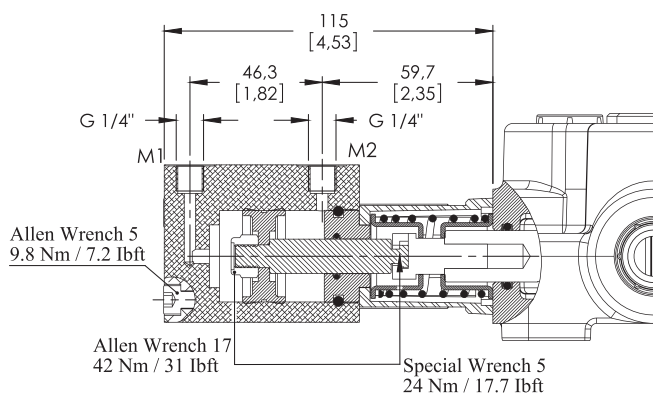


SPOOL POSITIONERS – SIDE OF RETURN

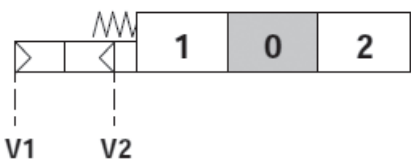
ON/OFF Pneumatic Control

Kit No: 70P

Sectional Appearance



Diagram



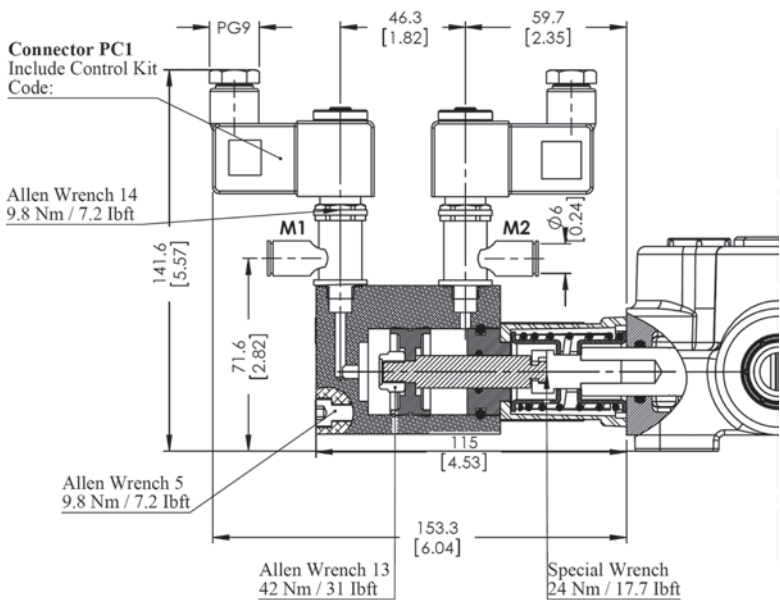
Operating Features

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

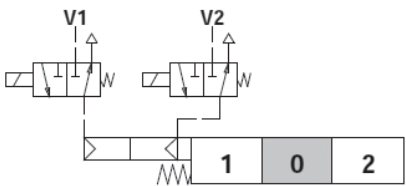
ON/OFF Electro-Pneumatic Control

Kit No: 70EP

Sectional Appearance



Diagram



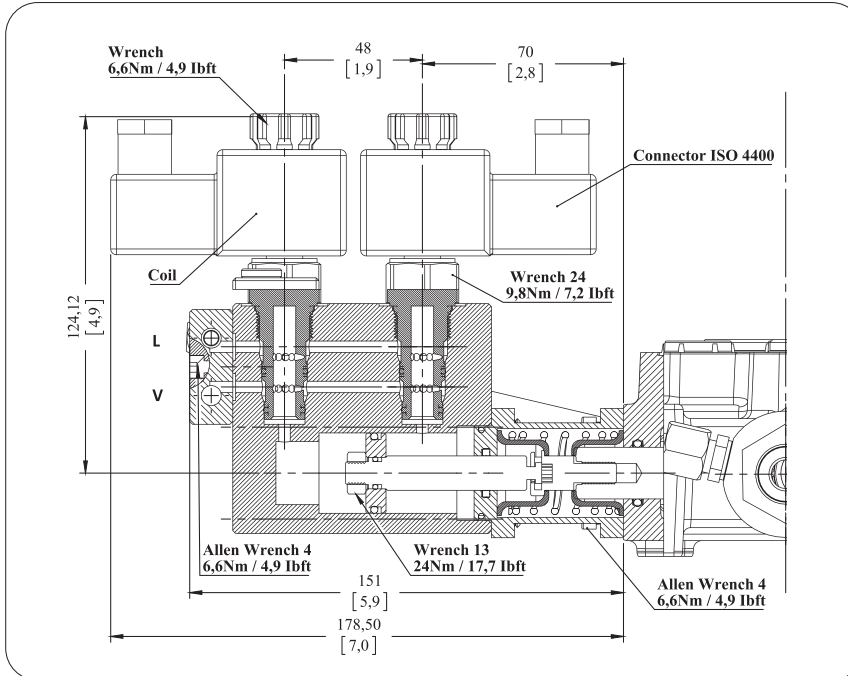
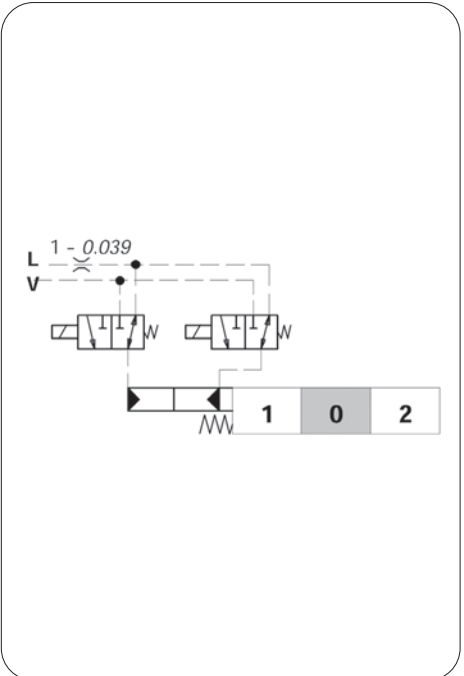
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 70EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
 Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
 Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 21 W
 Duty cycle.....: %100
 Protection type.....: IP 65
 Nominal voltage tolerance.....: ±10
 Max temperatures.....: 100 C°
 Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
 COL 12 - 10COL1001 - Kit For Section 2
 COL 13 - 10COL1001 - Kit For Section 3
 COL 14 - 10COL1001 - Kit For Section 4
 COL 15 - 10COL1001 - Kit For Section 5
 COL 16 - 10COL1001 - Kit For Section 6
 COL 17 - 10COL1001 - Kit For Section 7
 COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

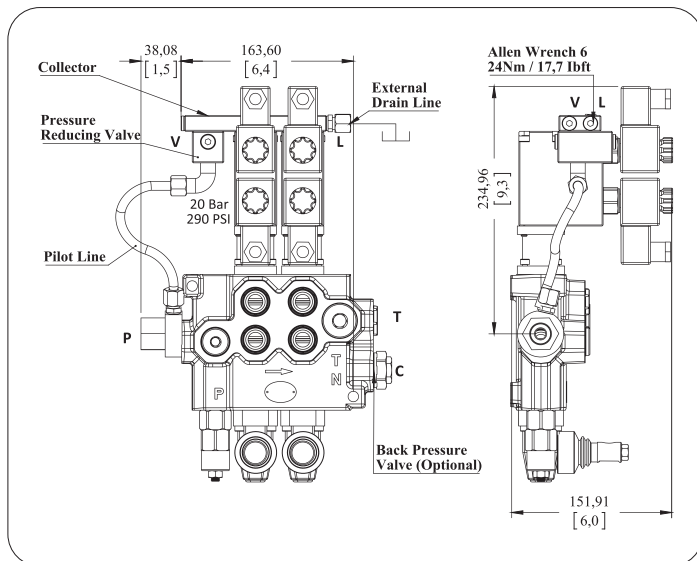
COL 21 - 10COL2001 - Kit For Section 1
 COL 22 - 10COL2001 - Kit For Section 2
 COL 23 - 10COL2001 - Kit For Section 3
 COL 24 - 10COL2001 - Kit For Section 4
 COL 25 - 10COL2001 - Kit For Section 5
 COL 26 - 10COL2001 - Kit For Section 6
 COL 27 - 10COL2001 - Kit For Section 7
 COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

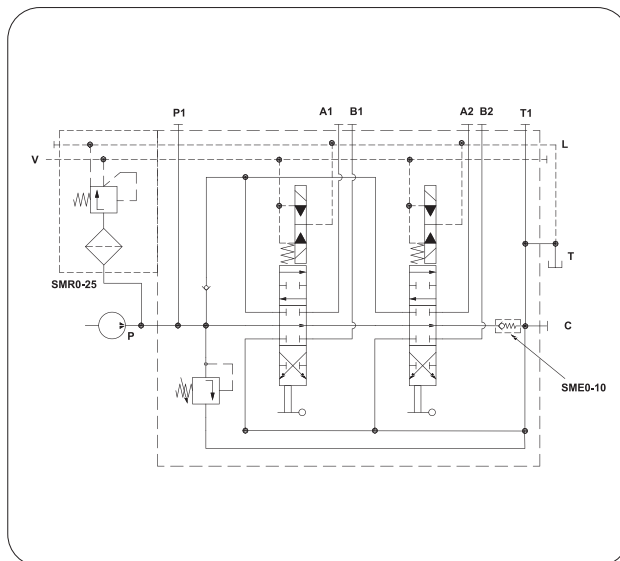
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram



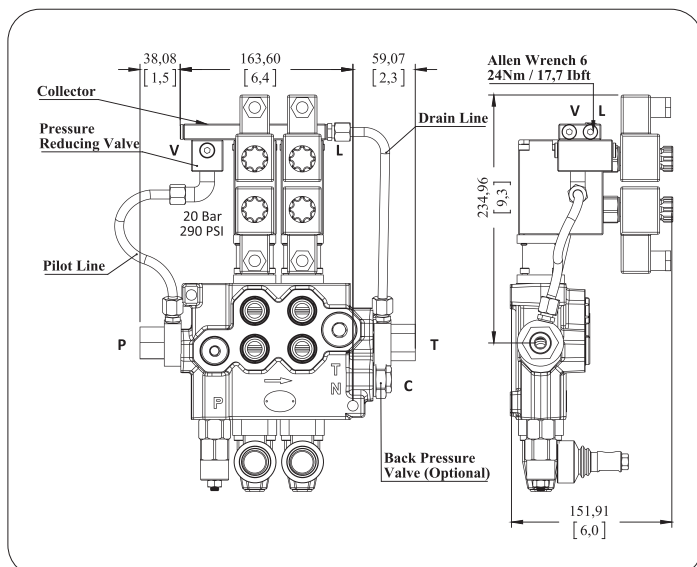
Operating Features

External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)

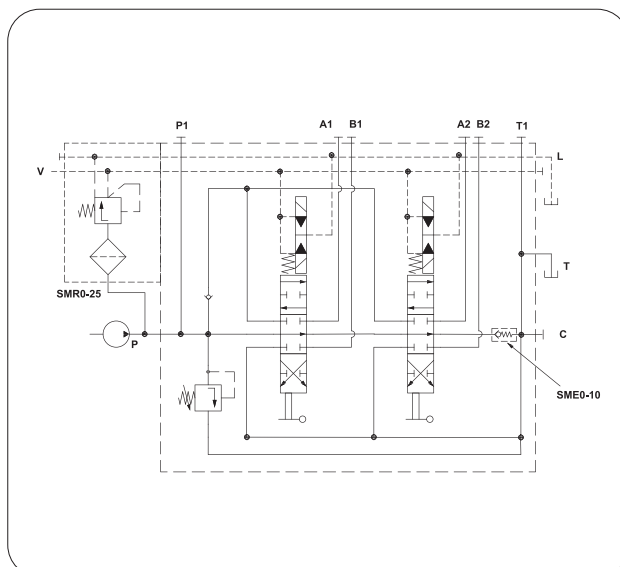
Code= GMM M70-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-70EH/ P-1A-STL-70EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

Outlet Pressure: 20 Bar / 290 Psi

Max. Flow.....: 8 l/min

Filtration: 80 µ

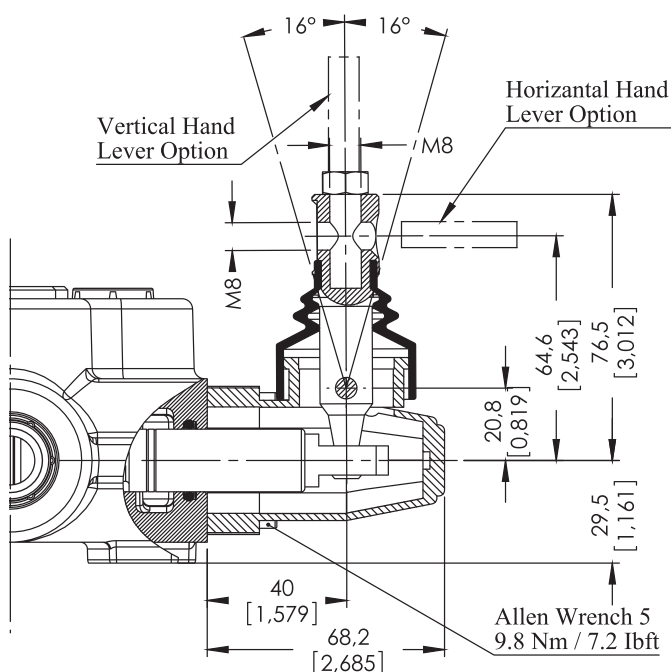
Code = GMM M70-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-70EH/ P-1A-STL-70EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

SPOOL POSITIONERS – SIDE OF LEVER CONTROL

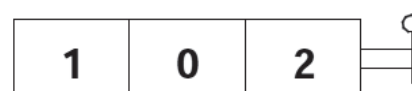
Lever Controls

Kit No: **STL - L0**

Sectional Appearance

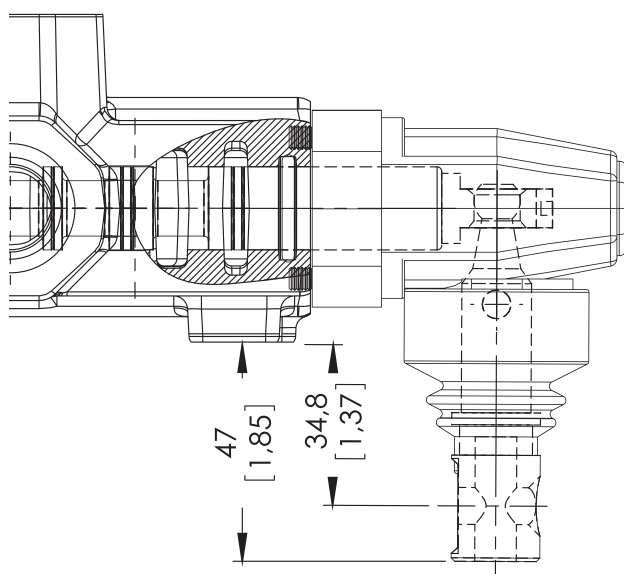


Diagram

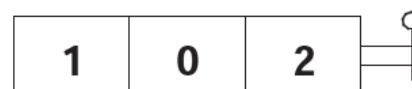


Kit No: **STL - L180**

Sectional Appearance



Diagram



Note: Aluminium protected arm lever pivot box can be rotated 180°.

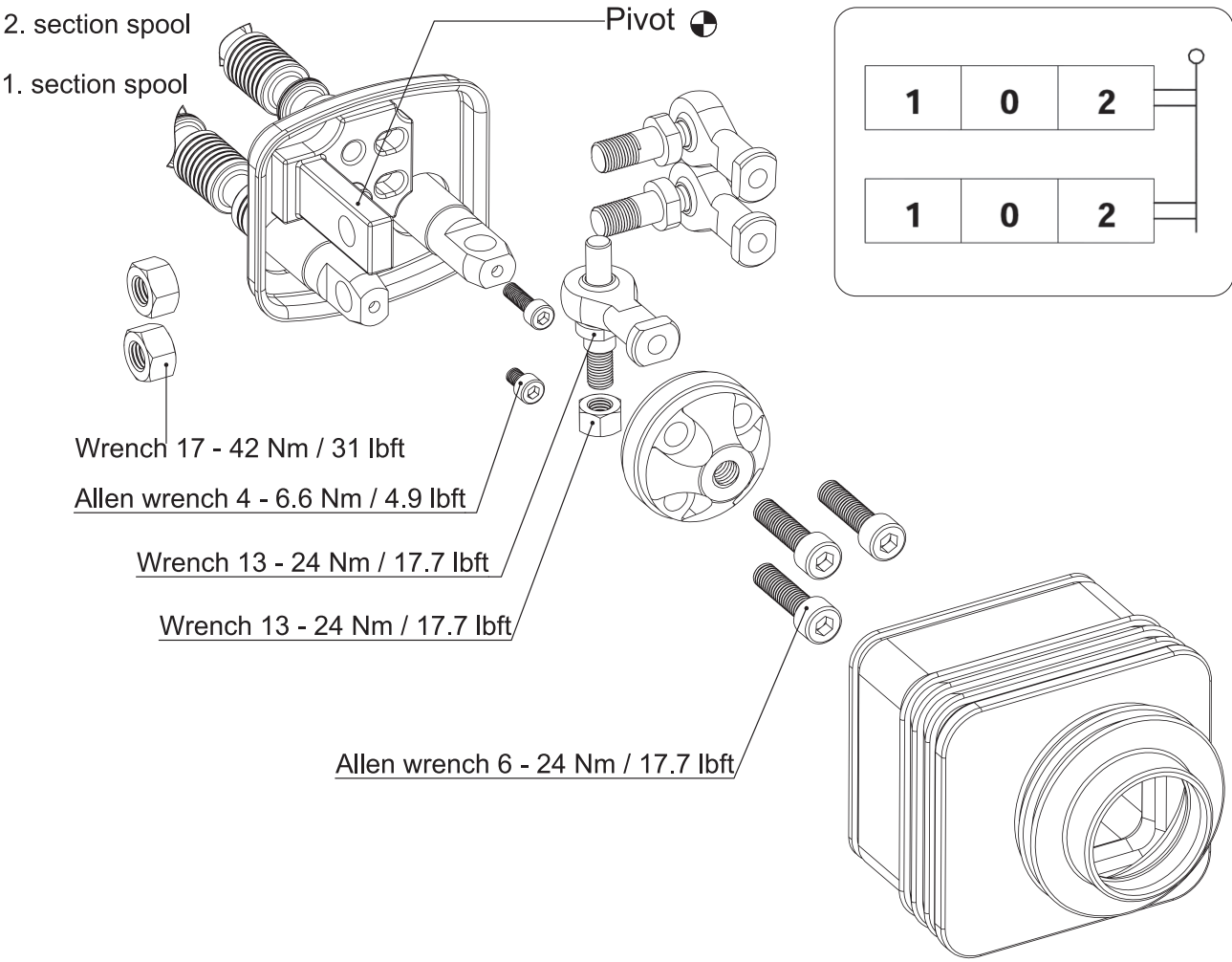
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls - Joystick

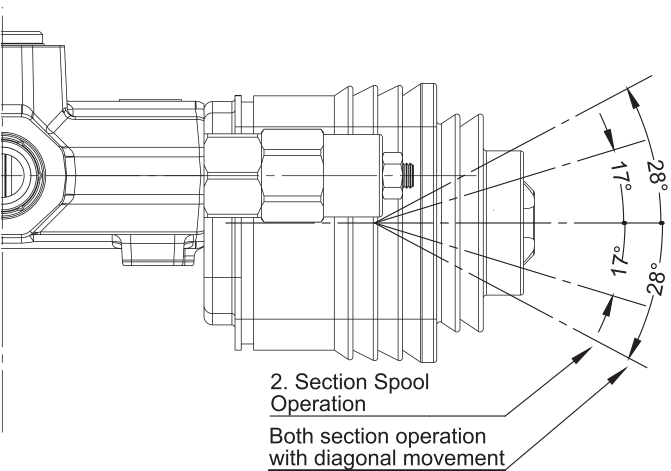
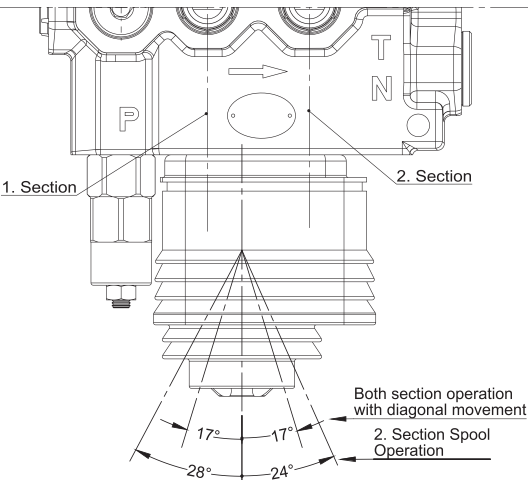
Kit No: JL

Exploded View

Diagram



Operation Angle:



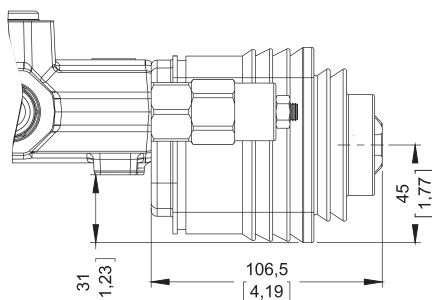
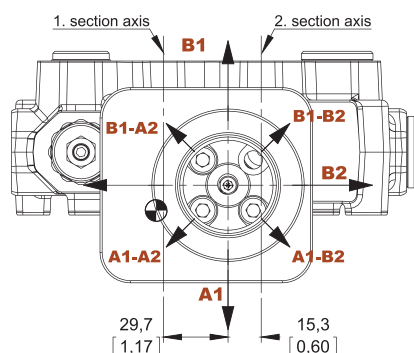
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement scheme

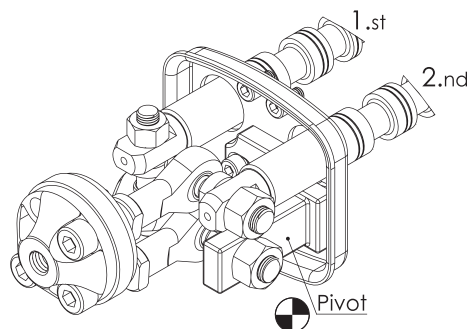
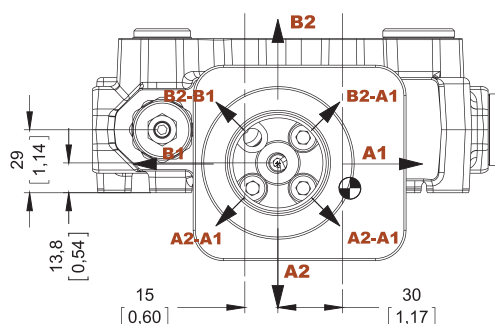
Type No: **JL1**

Application: Pivot placed down on the Left



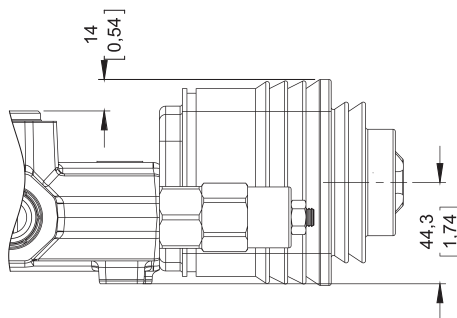
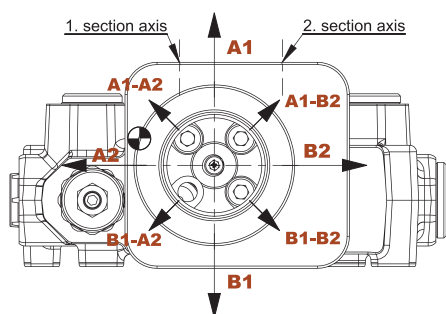
Type No: **JL2**

Application: Pivot placed down on the right



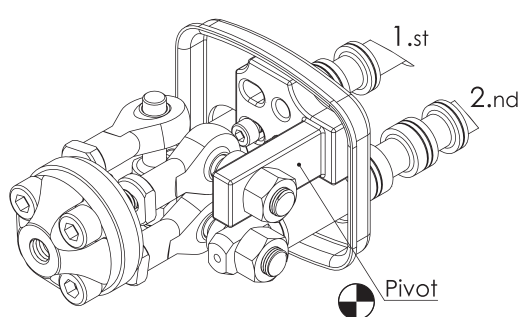
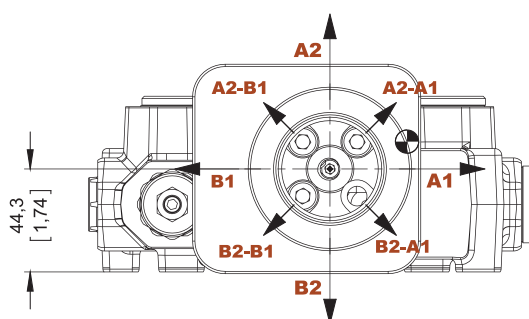
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

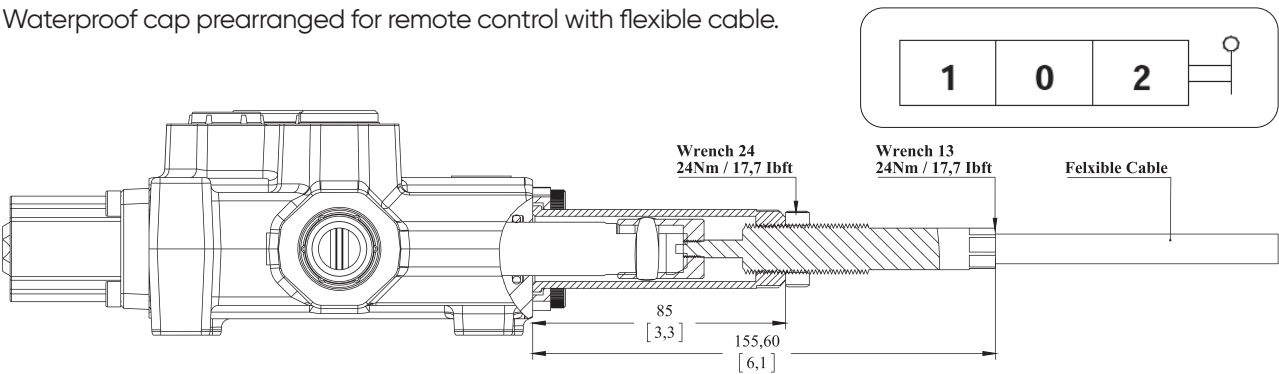
Lever Controls – Cable Control

Kit No: HL

Exploded View

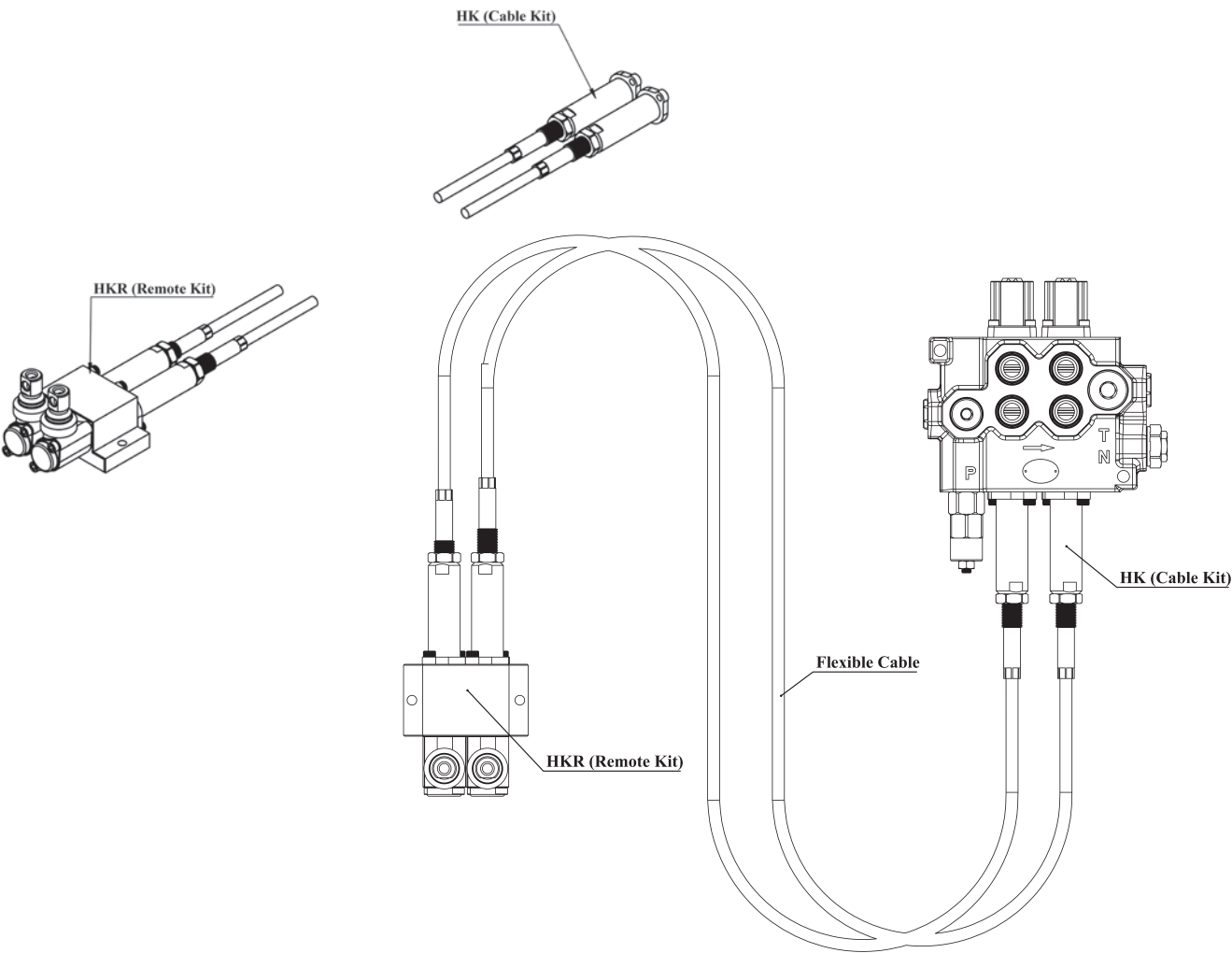
Diagram

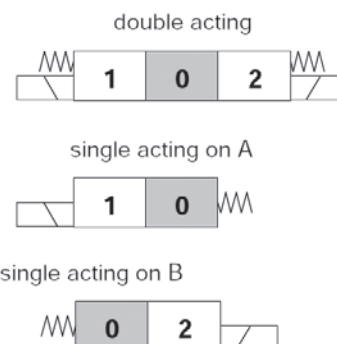
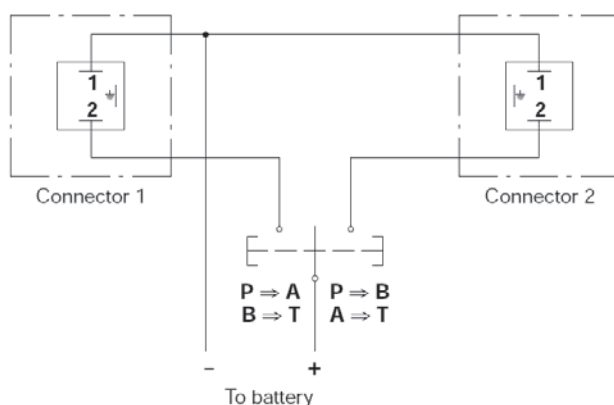
Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department.

Example Operation



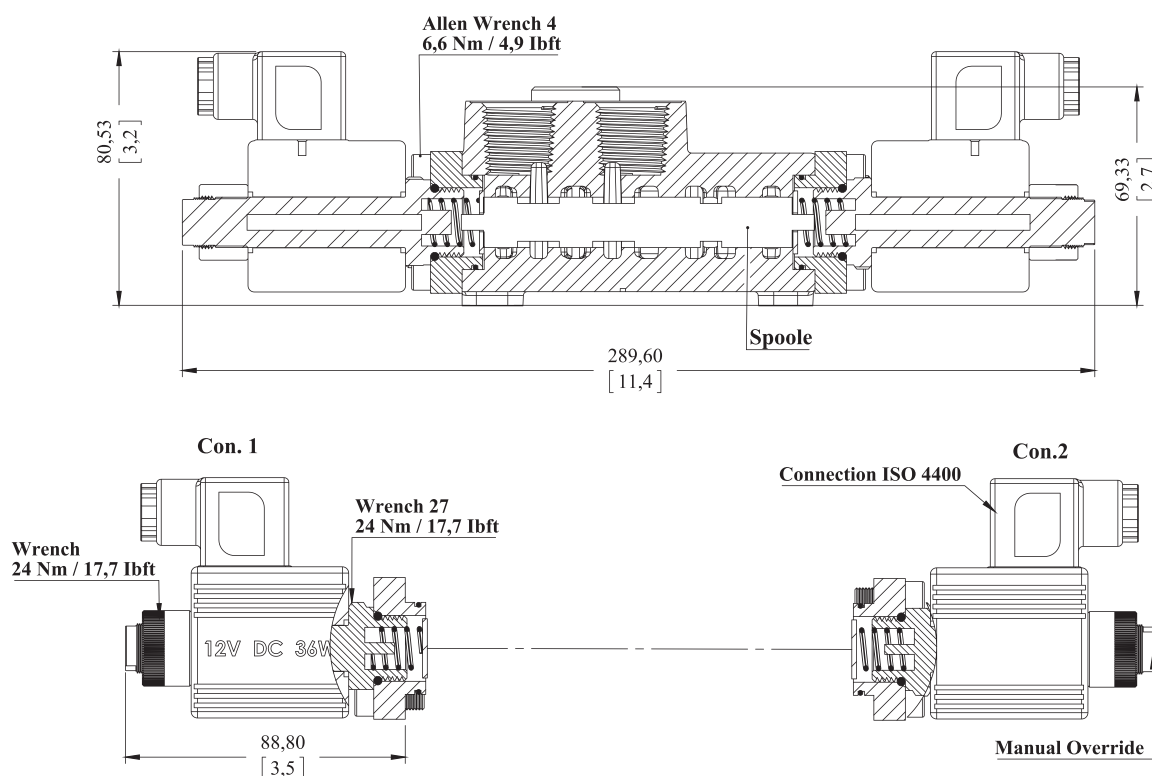
COMPLETE CONTROL – ON / OFF SOLENOID CONTROL
ON/OFF Solenoid Control
Kit No: SEC
Sectional Appearance
Diagram
Electric wiring example

Operating Features

Max Working Pressure.....: 230 Bar / 3300 Psi
 Max back pressure: 5 Bar / 80 Psi
 Internal Leakage.....: 10 cm³ / min

Solenoid Operating Features

Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 36 W
 Duty cycle.....: %100
 Nominal voltage tolerance.....: ±10

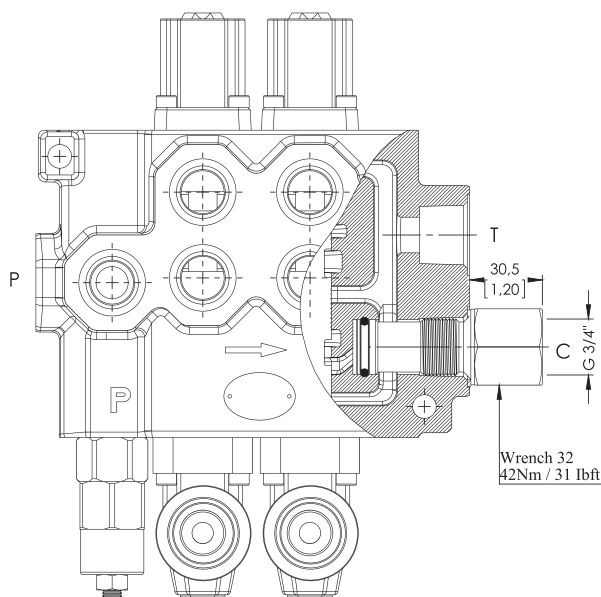
Coil insulation: Class H
 Stroke.....: ±3



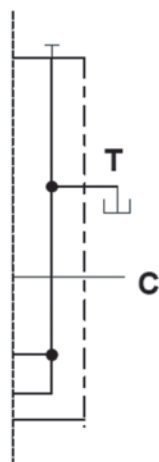
OUTLET PORT OPTIONS

Carry - Over Connection

Kit No: CO

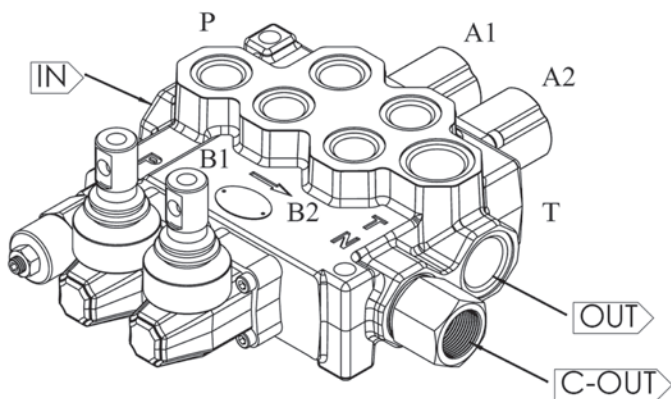


Sectional Appearance



Hydraulic Circuit

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



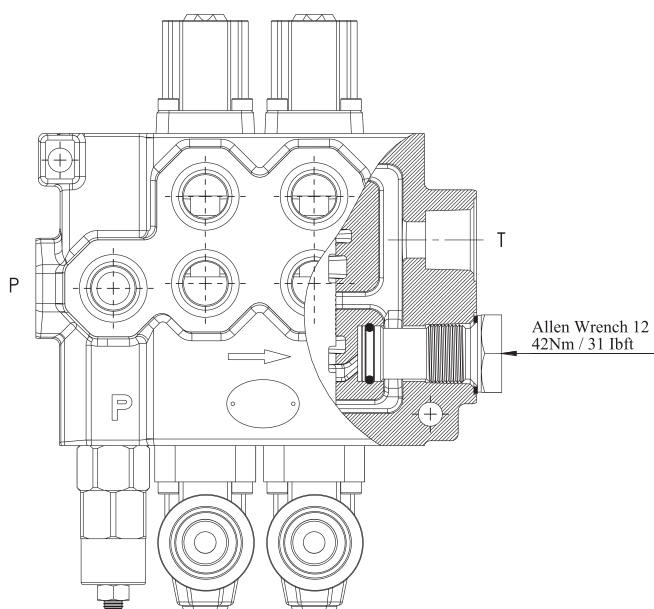
Direction of Port Connected

SGT : See page 5 for Standard center

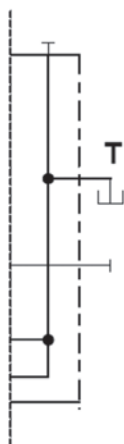
OUTLET PORT OPTIONS

Closed Center

Kit No: **CS**



Sectional Appearance



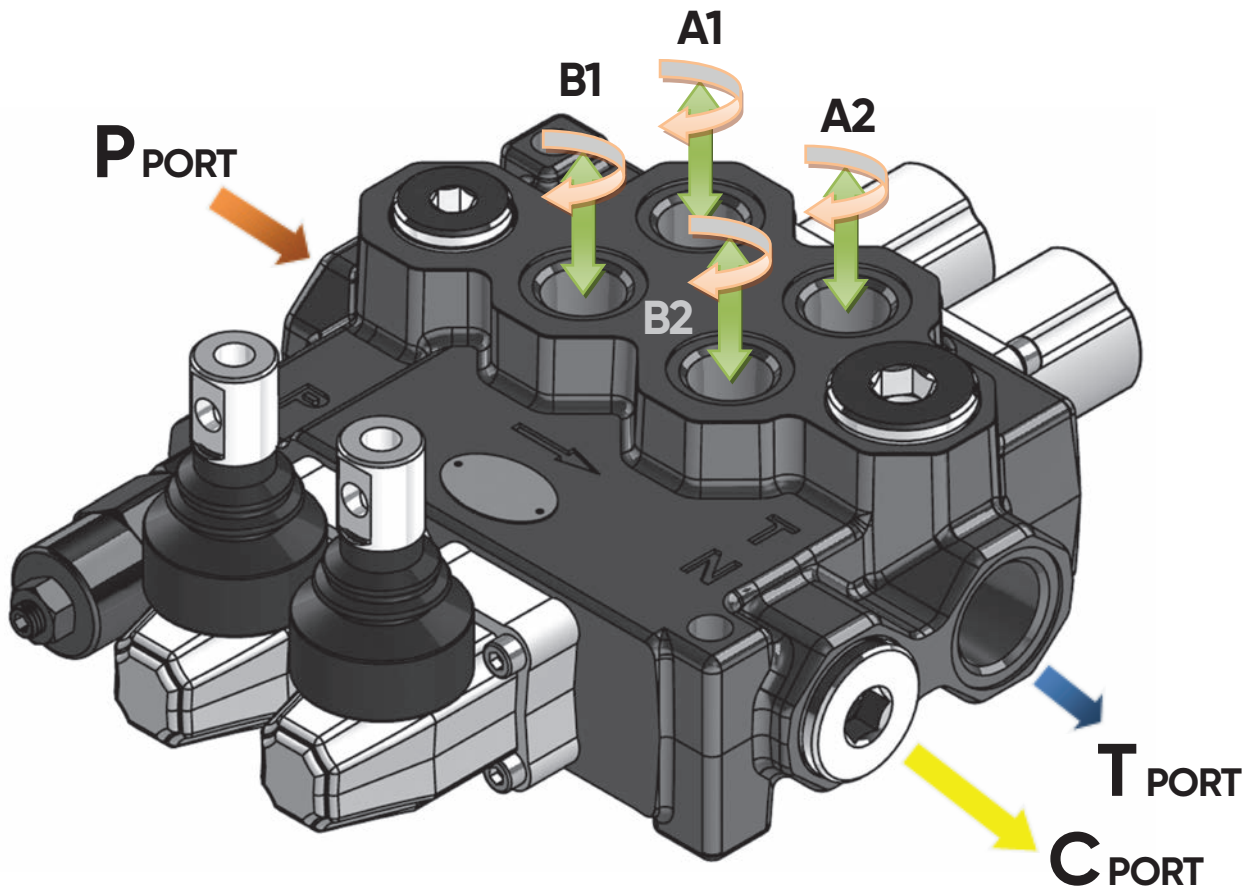
Hydraulic Circuit

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

INSTALLATION AND MAINTENANCE

The GMM 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:

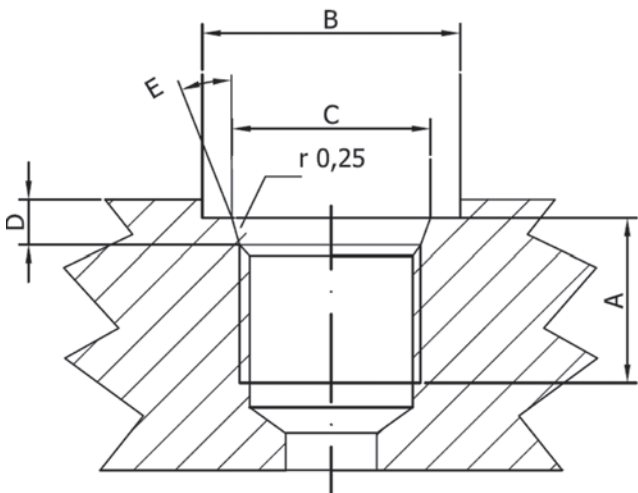
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



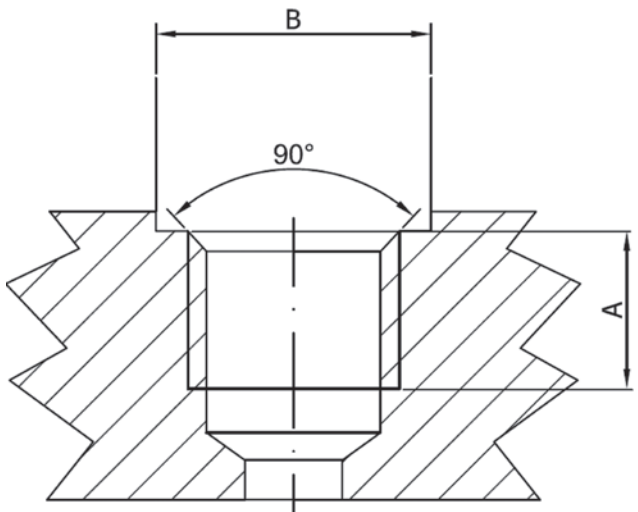
Threads Type (Nm / lbft)	P Port	A and B Port	T and C Port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O--Ring seal	50 / 36.9	50 / 36.9	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
BSP (ISO 228/1)	G 3/4	G 3/4	G 3/4
With O--Ring seal	70 / 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

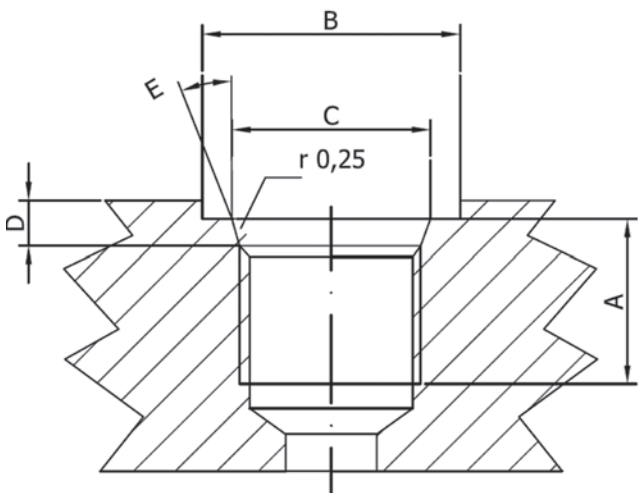
Ports Dimensional Data



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		G1	
mm	in						
A		16	0,63	18	0,71	20	0,79
B		27	1,06	33	1,30	40	1,57



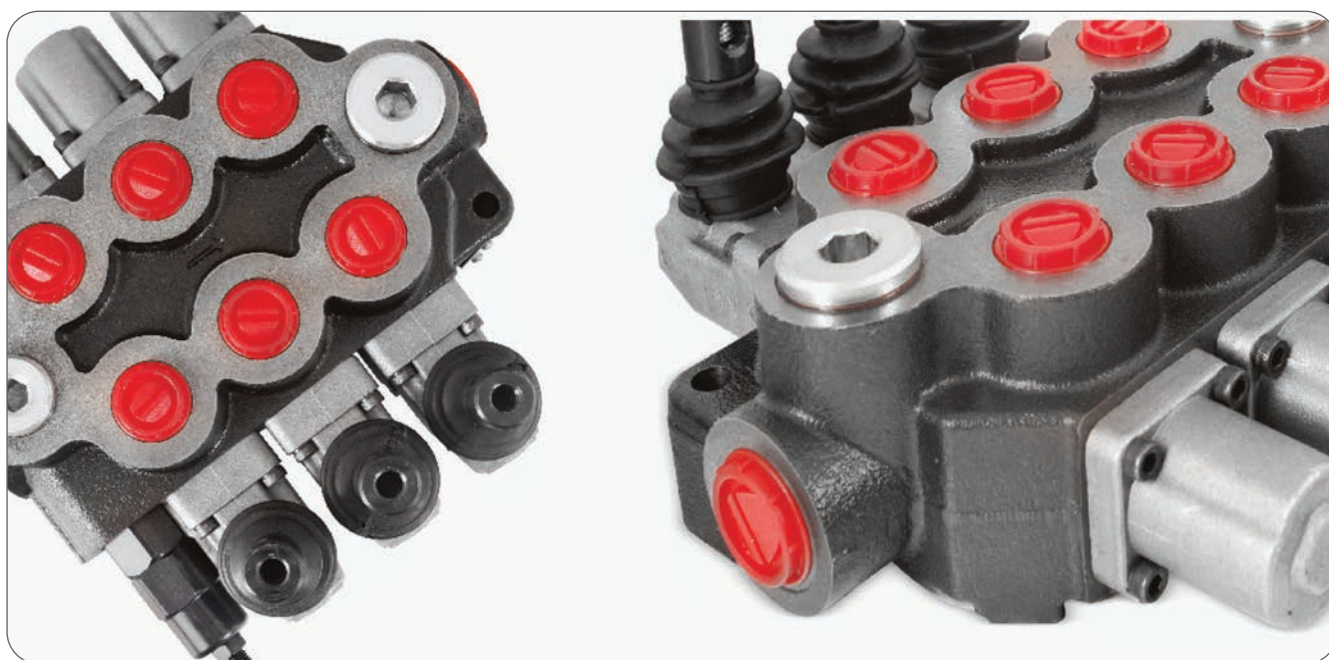
METRIC (ISO 262)					
Dimensions		M22x1,5 ISO 262		M27x2 ISO 262	
mm	in				
A		16	0,63	18	0,71
B		31,5	1,24	37,7	1,48



MONOBLOCK
DIRECTIONAL
CONTROL VALVES
GMM-M80

CE





CONTENTS

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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 (01/2020). GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

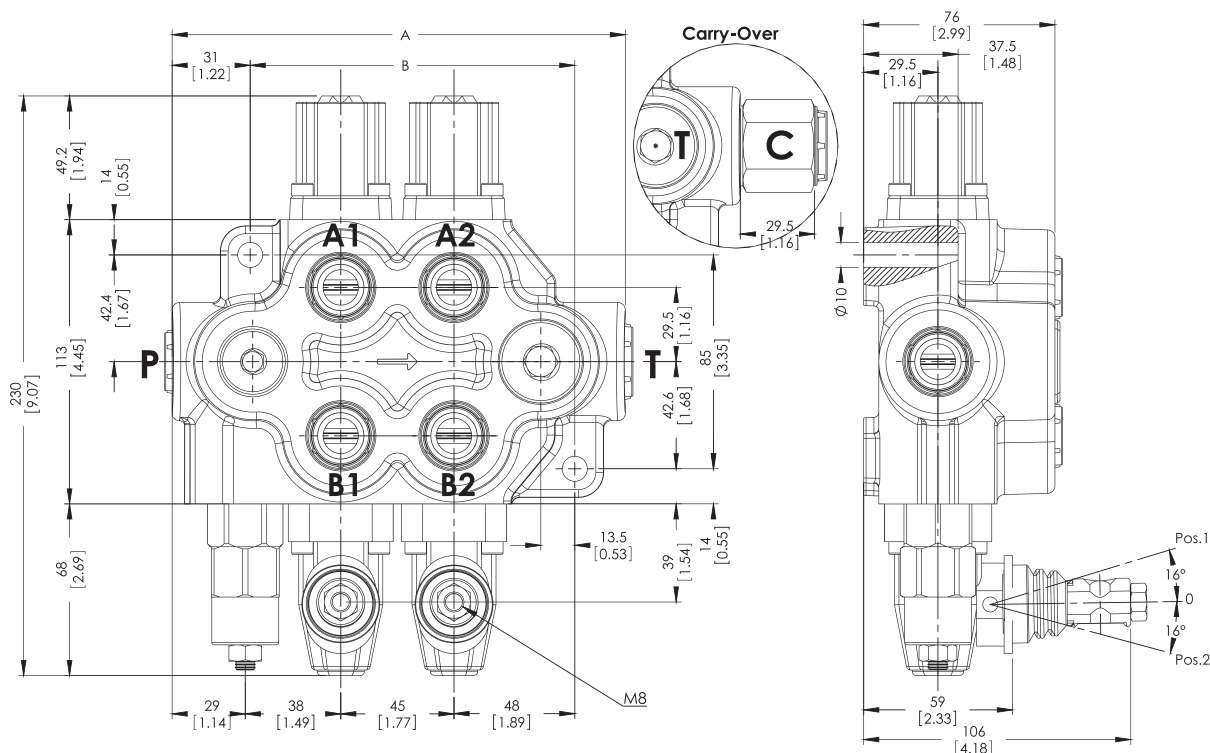
WORKING CONDITIONS

Nominal Flow Rating / Displacement	80 l/min	21 U.S.G.P.M
Maximum Working Pressure (Series 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 Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/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 cm3/min	0,18 in3/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

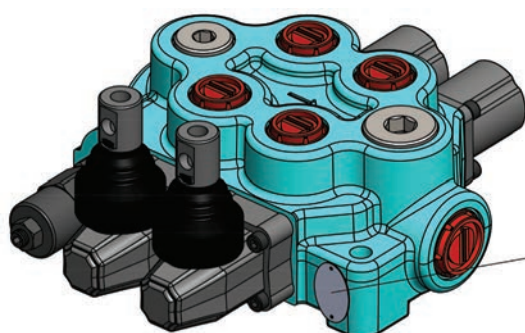
- Simple, compact and heavy duty designed monoblock valves from 1 to 6 sections for open and closed center hydraulic systems.
- Fitted with a main pressure relief valve.
- Optionaly Carry-Over port only tandem circuit.
- Interchangeable spool diametre is 18 mm – 0,71 in.
- Available manual, pneumatic,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

DIMENSIONAL DATA


TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM-M80-1P	130	5,12	84	3,31	4,92	10,56
GMM-M80-2P	175	6,89	129	5,08	7,32	15,96
GMM-M80-3P	220	8,66	174	6,85	9,72	21,36
GMM-M80-4P	265	10,43	219	8,65	12,12	26,76
GMM-M80-5P	310	12,20	264	10,39	14,52	32,17
GMM-M80-6P	355	13,98	309	12,17	16,92	37,57

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	11/16-12 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	11/16-12 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	11/16-12 UN	G 3/4



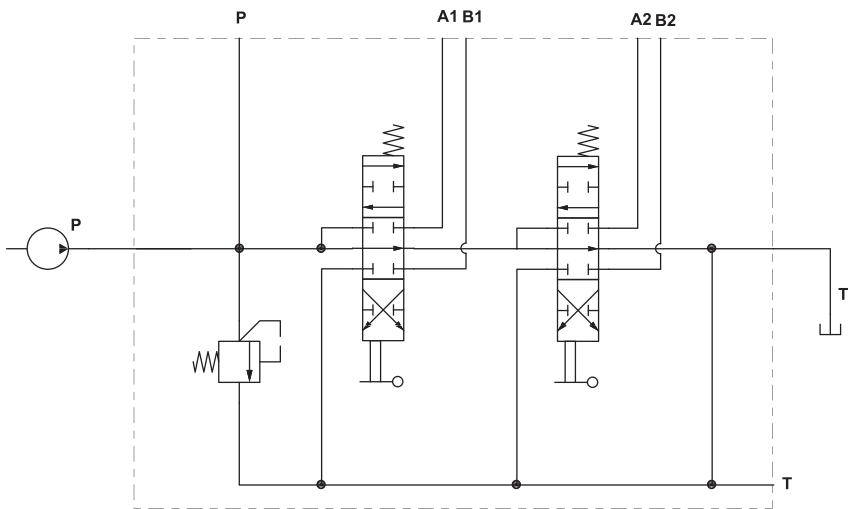
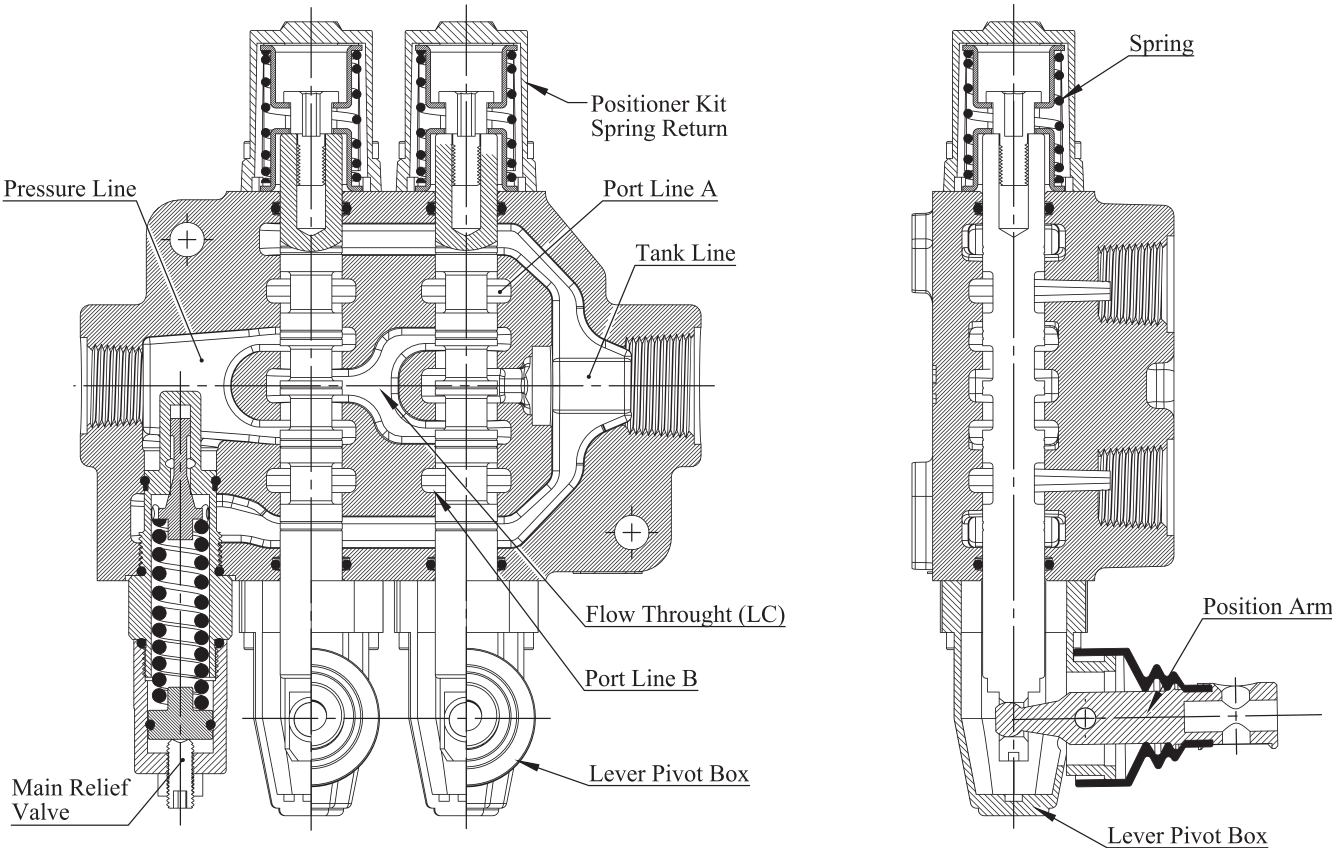
Valve Type

Production Batch

39.10 = Production Year - Week (2010/39)
101149 = Progressive Party Number

HYDRAULIC CIRCUIT

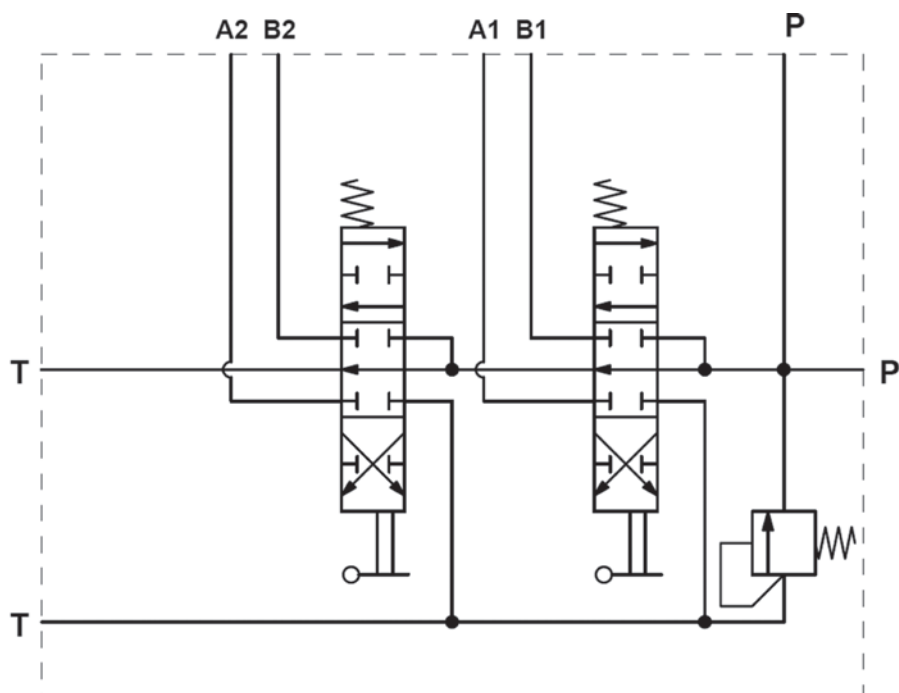
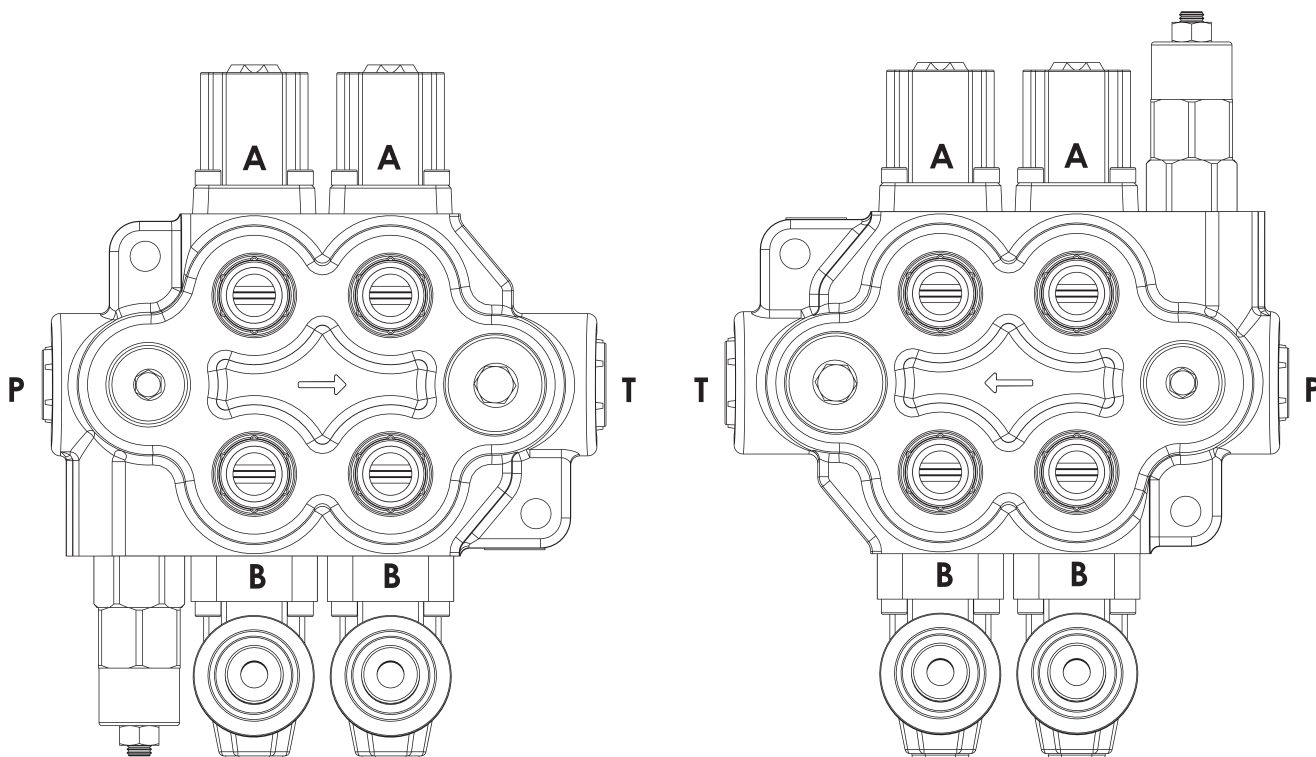
Standard Configurations With Top Inlet And Outlet Ports - LH



Code: GMM M80-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

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

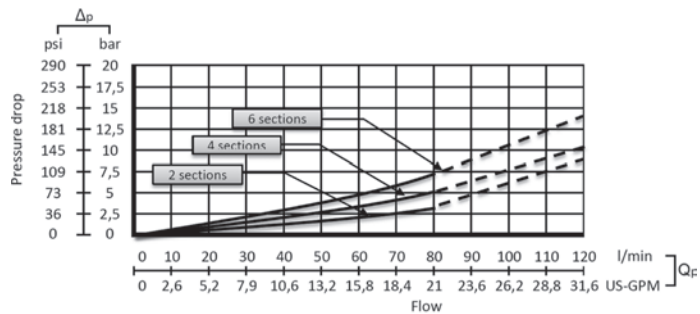
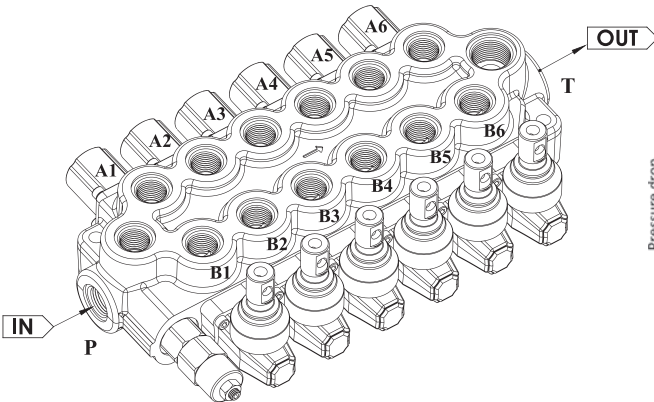
A symetrical body allows the reverse assembly of spool and this with connected control kit (RH Configuration).



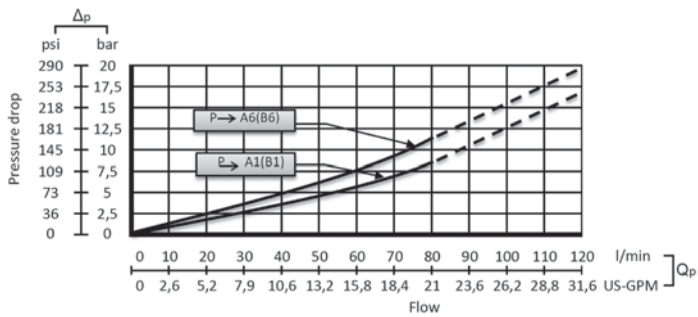
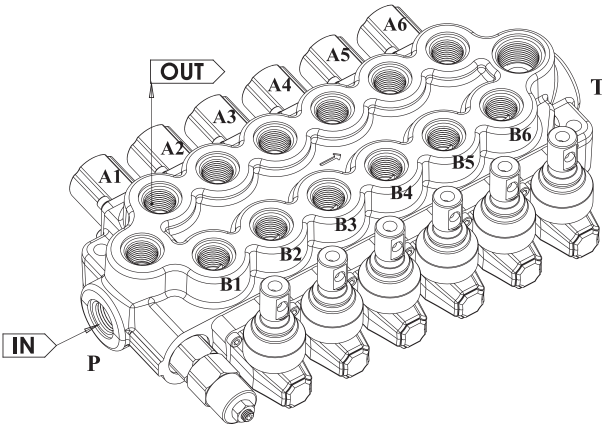
Code: GMM M80-2P / SMR2-120 / (RH) 1A-SR-STL/1A-SR-STL/PA1/SGT

PERFORMANCE DATA AND CURVE

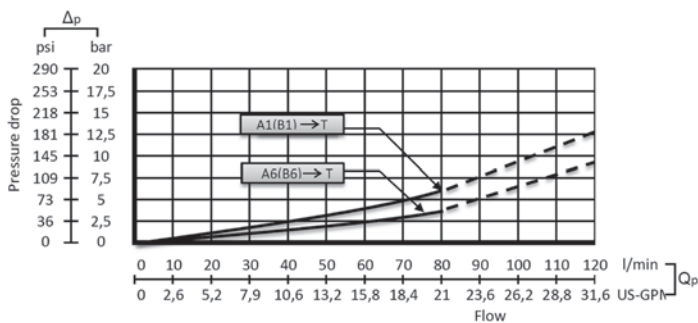
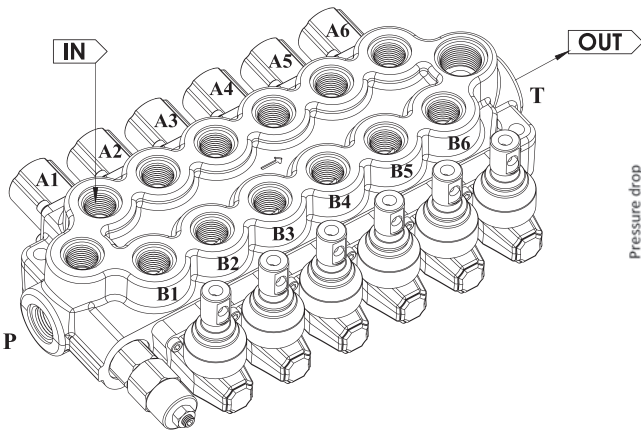
Open Center - Pressure Drop (P-T)



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



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



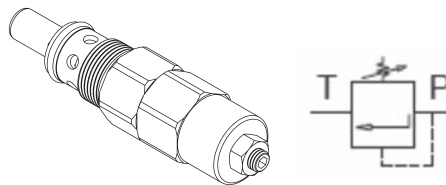
Note: Measured and chart value with spool type 1A.

INLET RELIEF OPTIONS

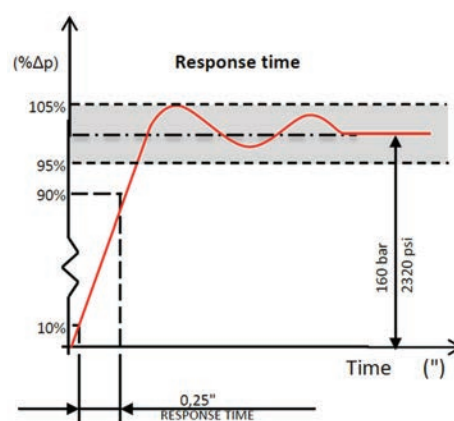
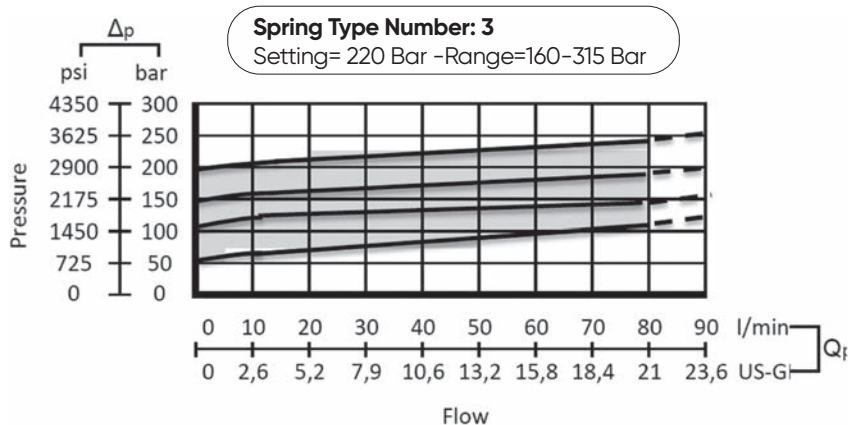
Direct Pressure Relief Valve

Code:

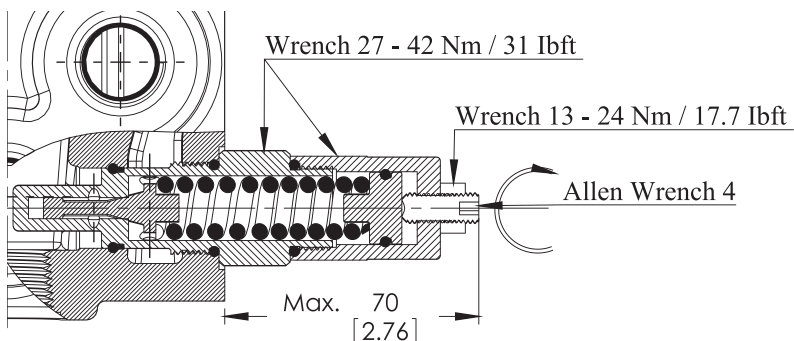
SMR2 – 120



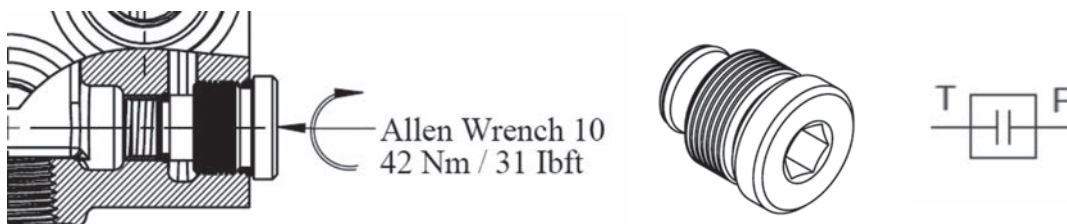
Performance Data



Adjustment Type on Valve

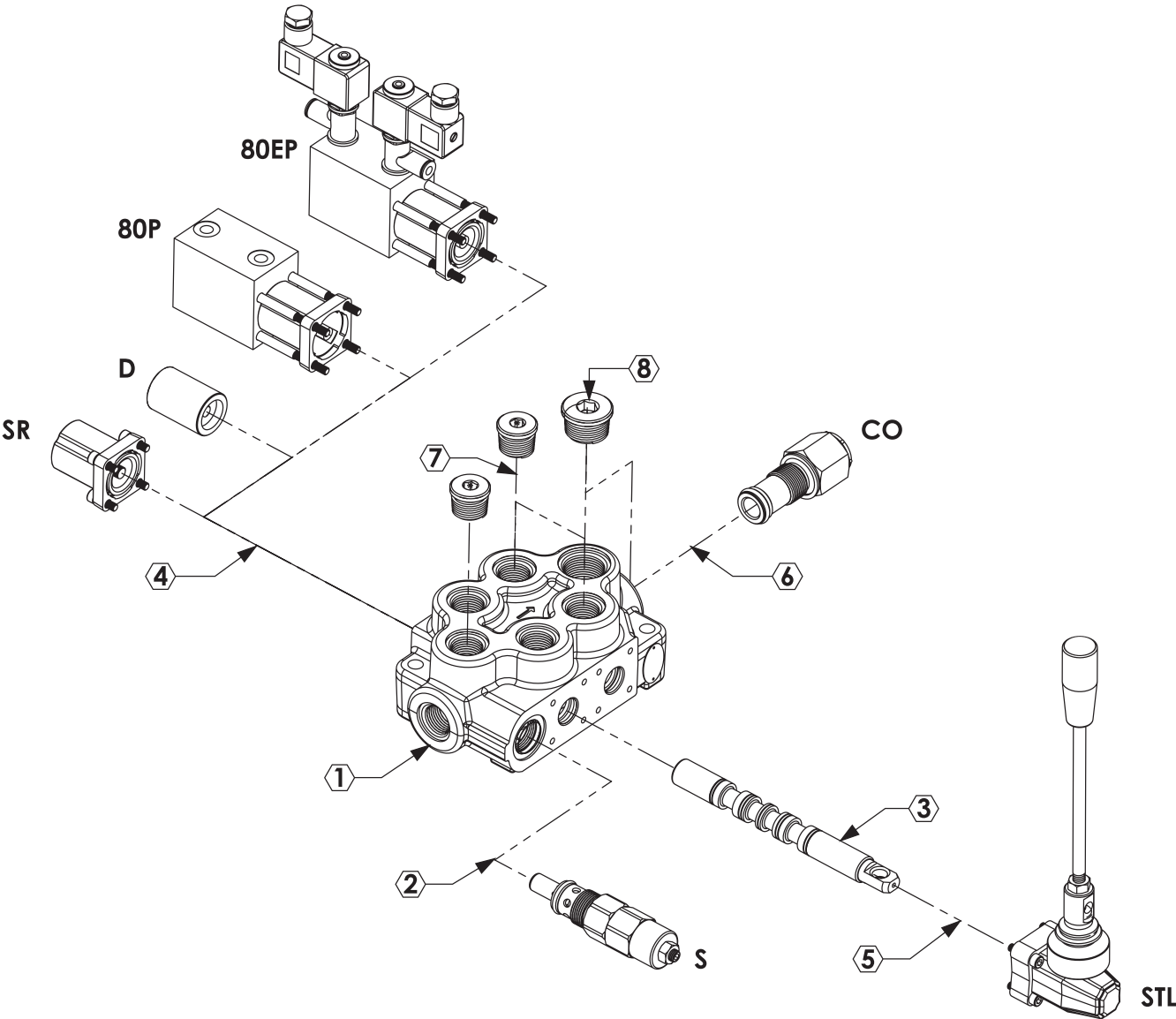
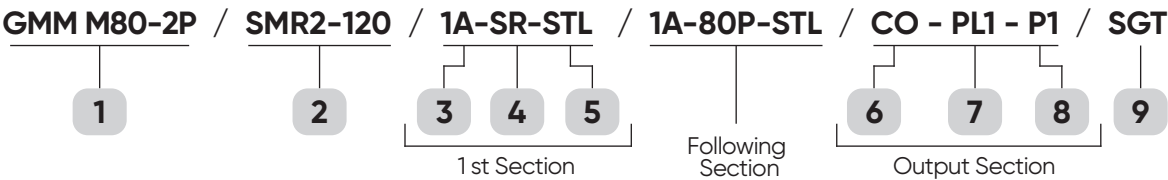


Relief Blanking Plug - WM



ORDERING CODES

Order Example



ORDERING CODES

1- Valve Type and Body

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

- 1P** = Body for 1 Section - (1BM180100)
- 2P** = Body for 2 Sections - (1BM280100)
- 3P** = Body for 3 Sections - (1BM380100)
- 4P** = Body for 4 Sections - (1BM480100)
- 5P** = Body for 5 Sections - (1BM580100)
- 6P** = Body for 6 Sections - (1BM680100)

2- Pressure Relief Options

- SMR = Standard direct pressure relief valve
- SMR1-080** - (2SMR180080) - Range 0-80 bar
Setting 80 bar
 - SMR2-120** - (2SMR280120) - Range 60-200 bar
Setting 120 bar
 - SMR3-220** - (2SMR380220) - Range 160-315 bar
Setting 220 bar

3- Spool Options

- 1A** - (3SM180110) - 3 Positions, Double acting
- 2A** - (3SM180120) - 3 Positions, Double acting
A to tank B Blocked
- 3A** - (3SM180130) - 3 Positions, Double acting
B to tank A blocked
- 4A** - (3SM180140) - 3 Positions, Double acting
A and B tank
- 5A** - (3SM180150) - 3 Positions, Single acting on
A (A to tank)
- 6A** - (3SM180160) - 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)

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)

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 13 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

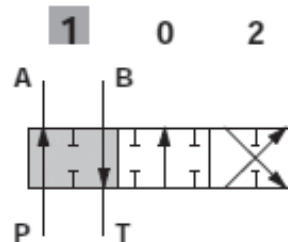
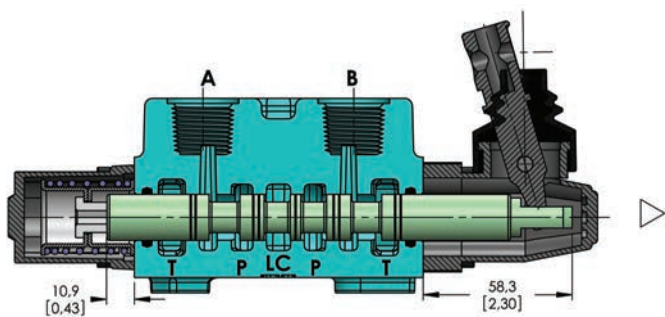
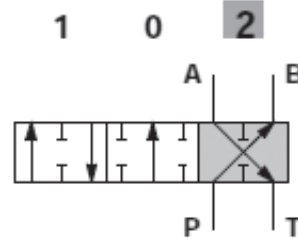
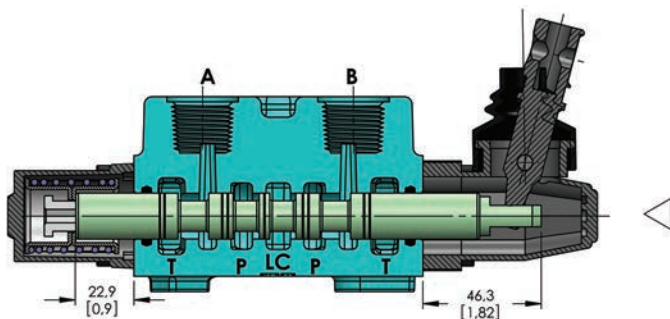
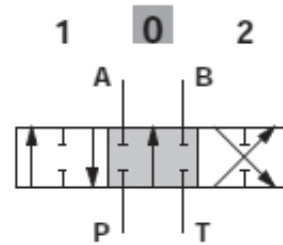
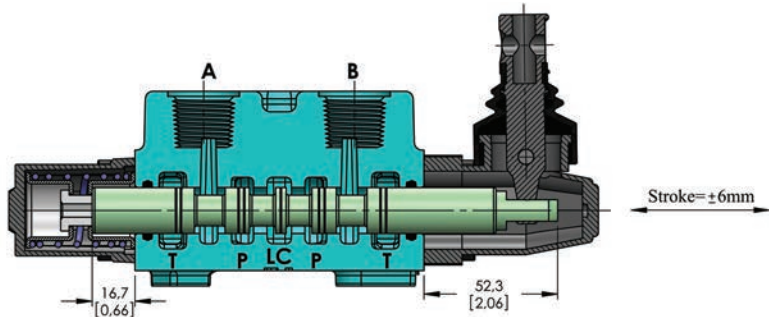
- SGT1** =1/2" Series Port Options - (9P045112)
- SGT3** =3/4" Series Port Options - (9P080134)
- UNF** =UNF Series Port Options - (9U045138)
- M** =Metric Series Port Options - (9M045138)
- *Page 4 for detail port information.

HandLever

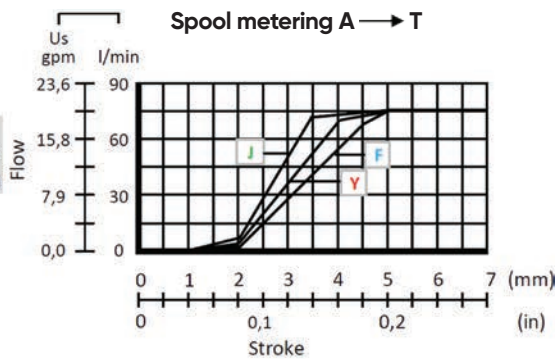
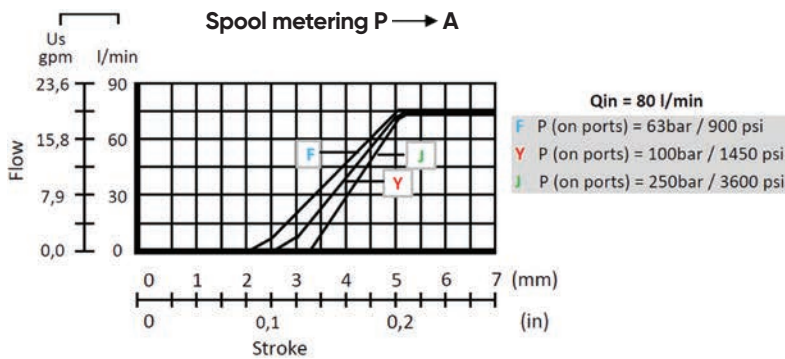
- L** = Standard HandLever (L=120mmxM8)-(7L040100)
- HL** = Remote Cable Kit - (80HL80100)

SPOOL OPTIONS

Spool Type - 1A

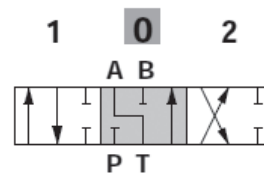
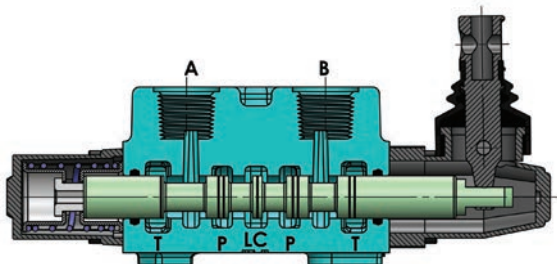


Performance Curve And Data

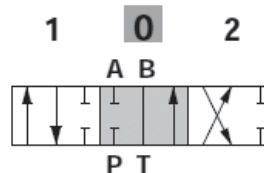
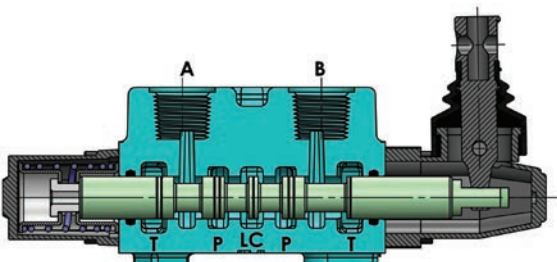


SPOOL OPTIONS

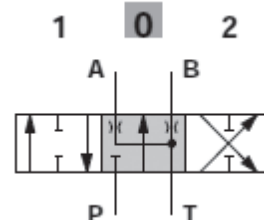
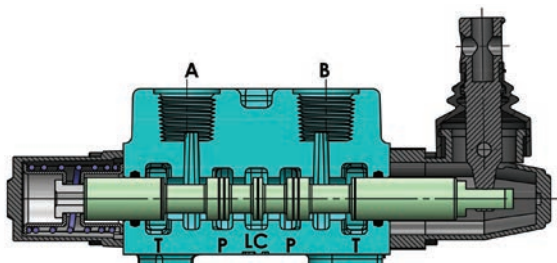
Spool Type - 2A



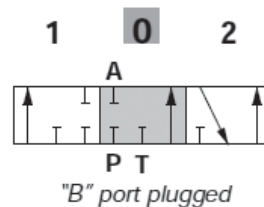
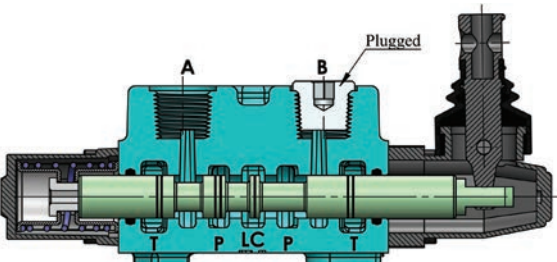
Spool Type - 3A



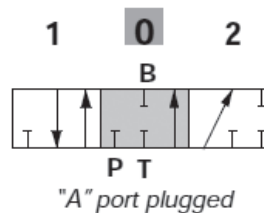
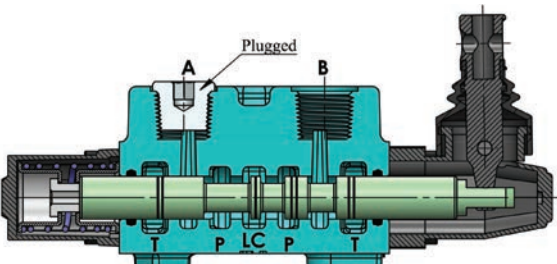
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A



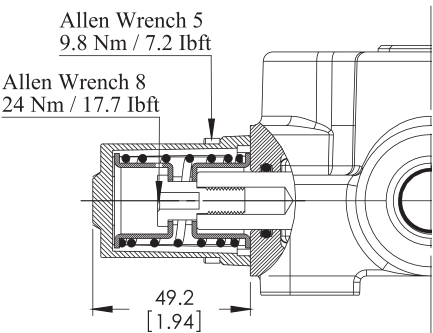
SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance

Diagram

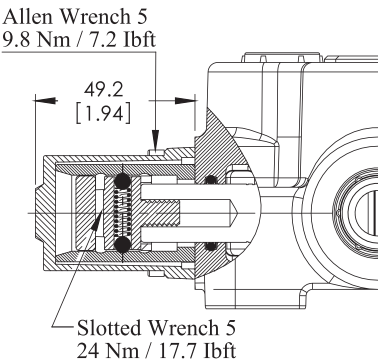


With Detent

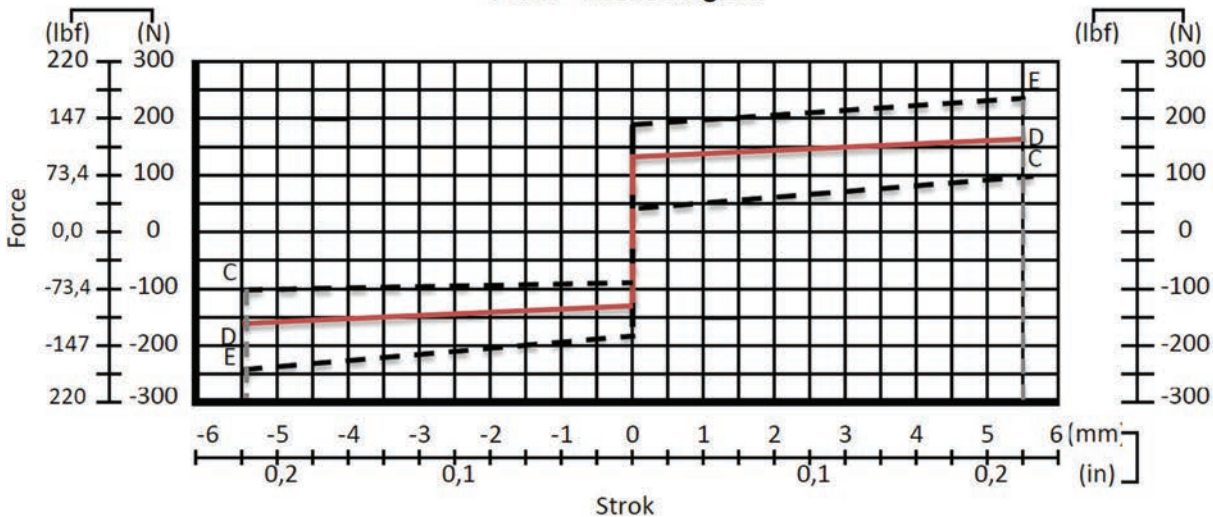
Kit No: **D**

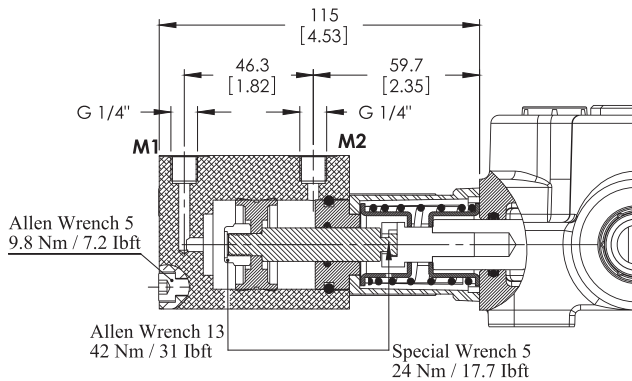
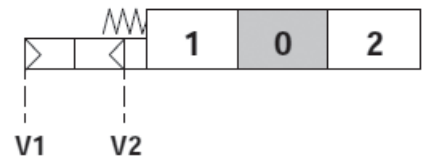
Sectional Appearance

Diagram

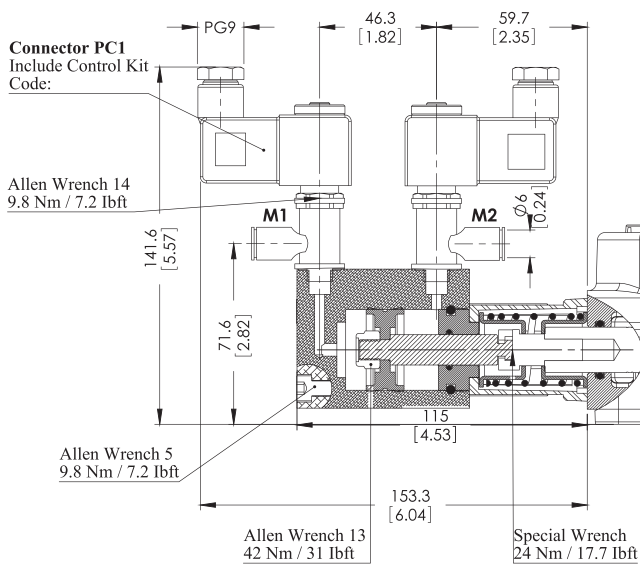
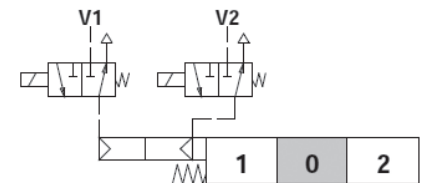


Force - stroke diagram



SPOOL POSITIONERS – SIDE OF RETURN
ON/OFF Pneumatic Control
Kit No: 80P
Sectional Appearance

Diagram

Operating Features

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

ON/OFF Electro-Pneumatic Control
Kit No: 80EP
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

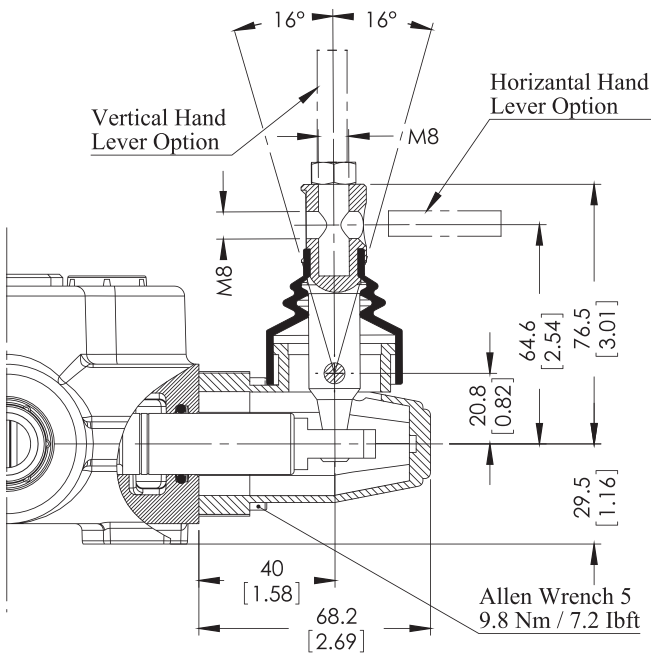
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: **STL - L0**

Sectional Appearance

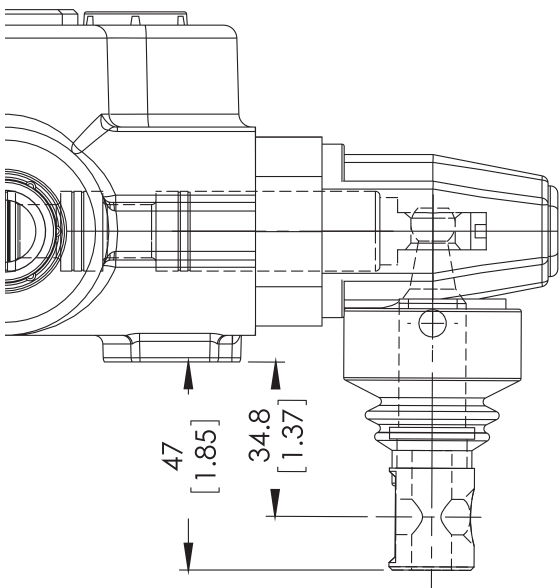
Diagram



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

2. section spool

1. section spool

Pivot

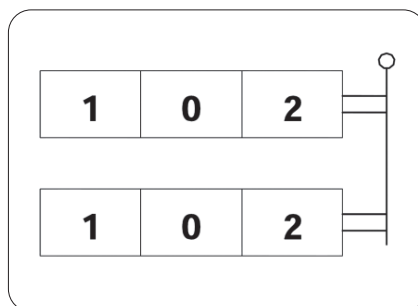
Wrench 17 - 42 Nm / 31 lbft

Allen wrench 4 - 6.6 Nm / 4.9 lbft

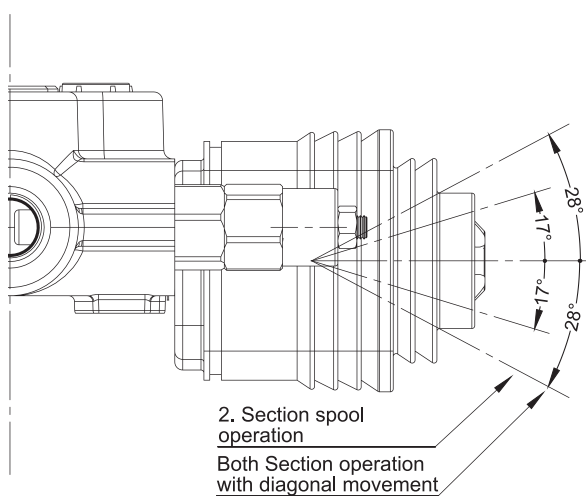
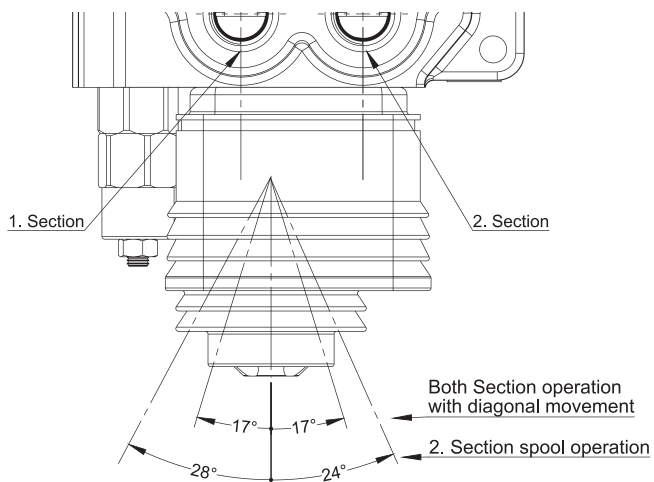
Wrench 13 - 24 Nm / 17.7 lbft

Wrench 13 - 24 Nm / 17.7 lbft

Allen wrench 6 - 24 Nm / 17.7 lbft



Operation Angle:



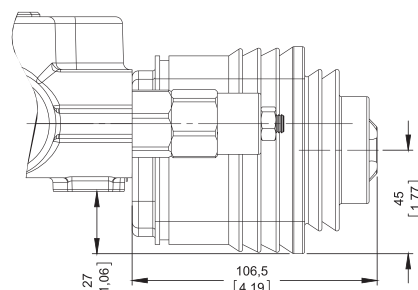
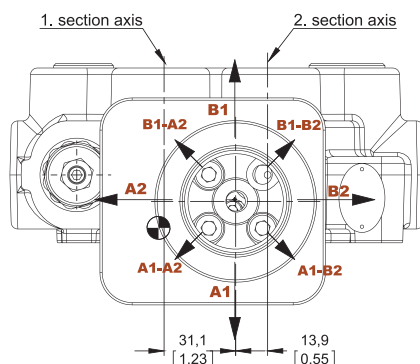
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement scheme

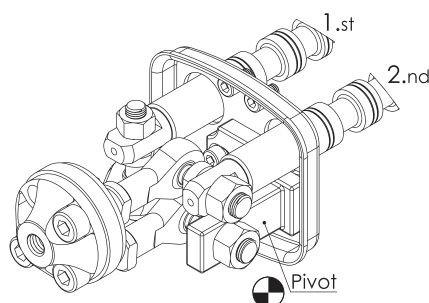
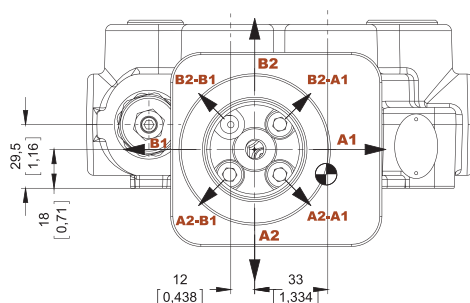
Type No: **JL1**

Application: Pivot placed down on the Left



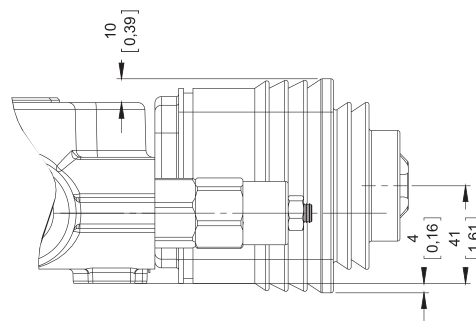
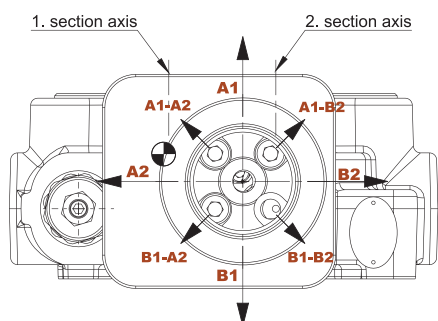
Type No: **JL2**

Application: Pivot placed down on the right



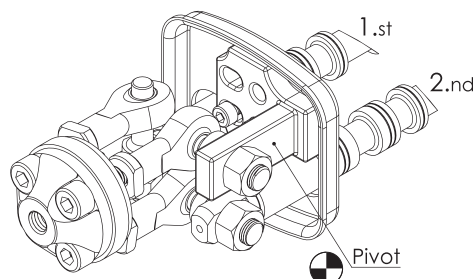
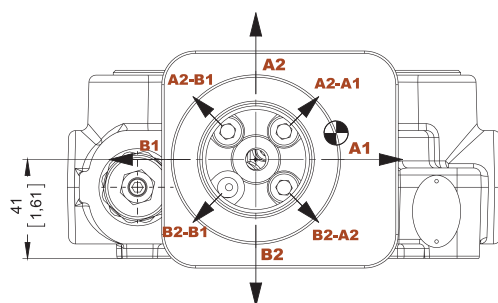
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

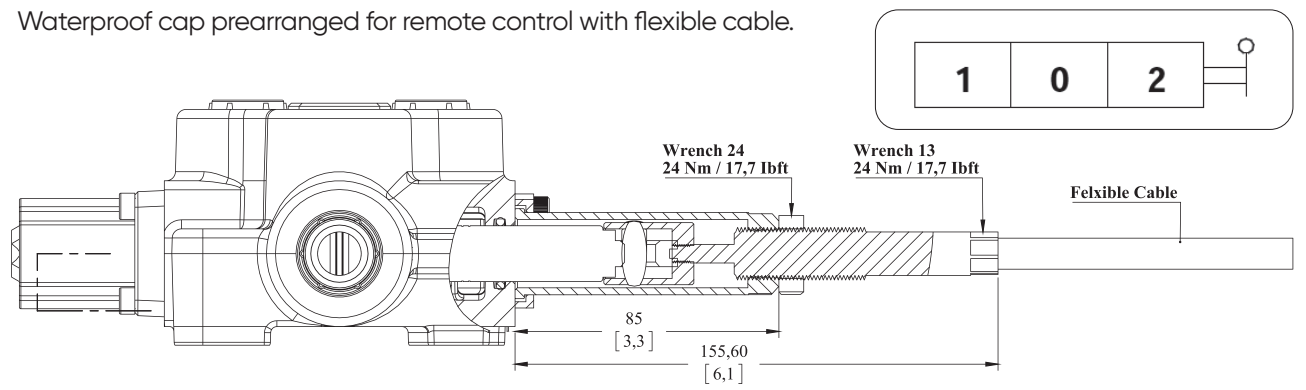
Lever Controls – Cable Control

Kit No: HL

Exploded View

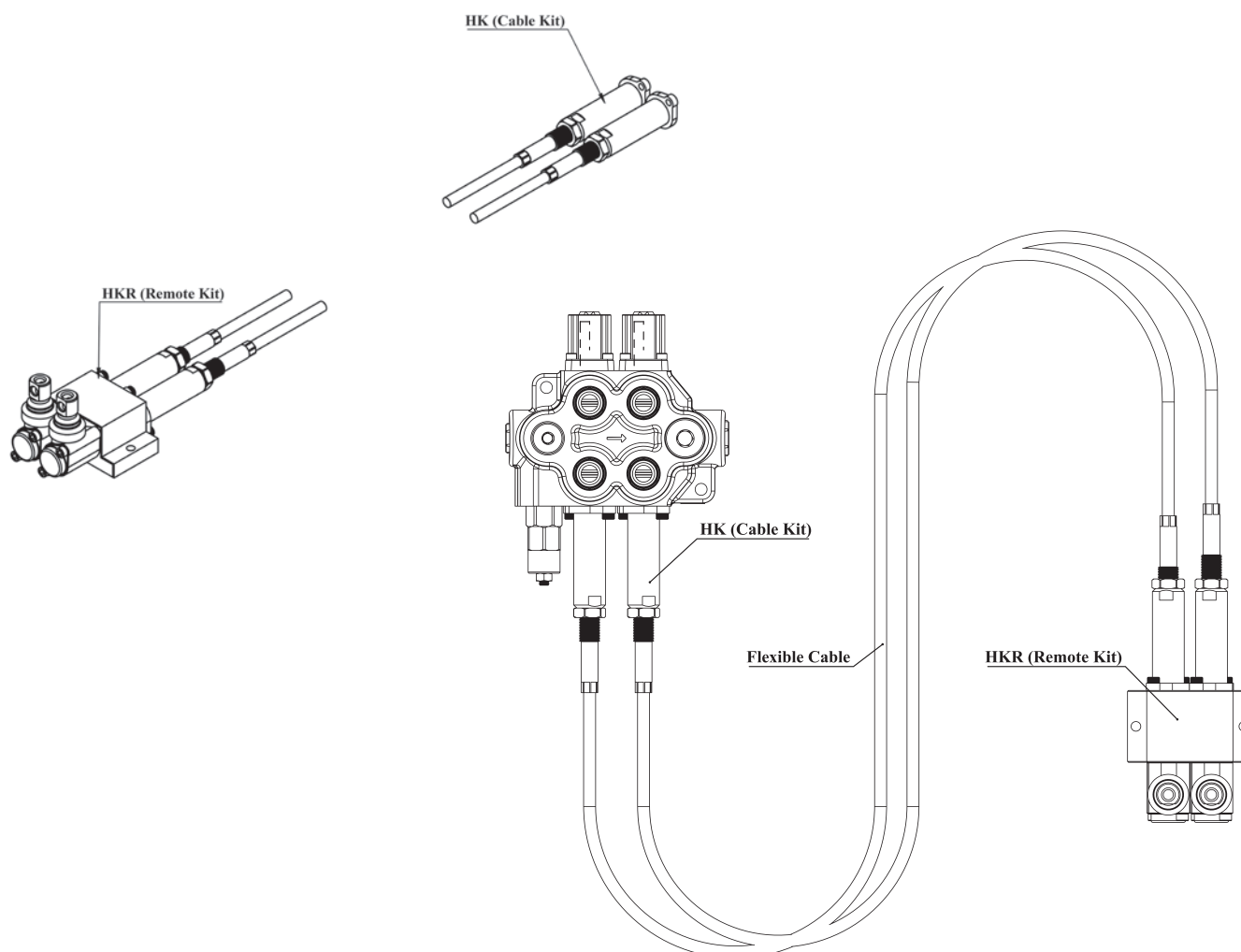
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control has several options. Please indicate the cable length demanded and contact our sales department.

Example Operation

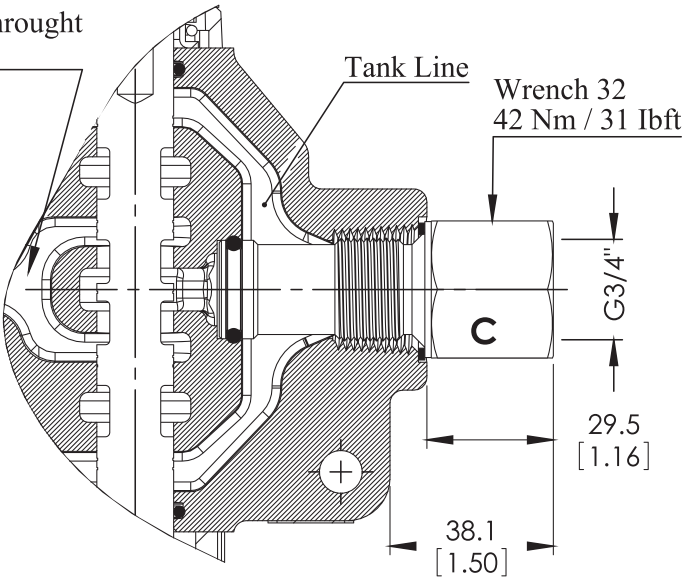


OUTLET PORT OPTIONS

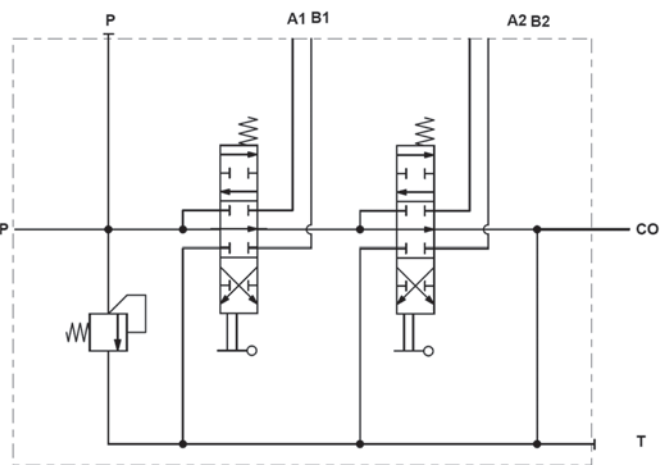
Carry - Over Connection

Kit No: CO

Flow Throught
(LC)

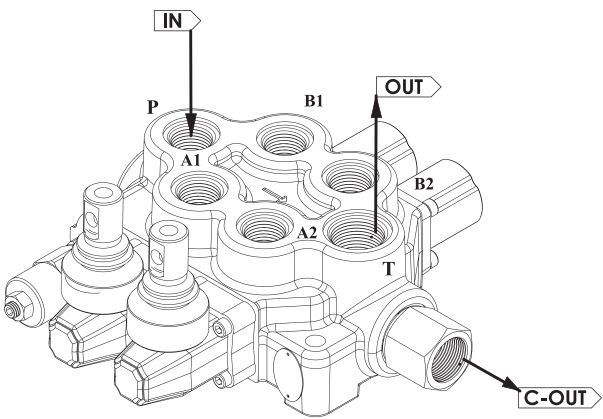


Sectional Appearance



Hydraulic Circuit

Code: GMM M80-2P
/ SMR2-120 / 1A-SR-
STL/1A-SR-STL/CO-
PA1/SGT



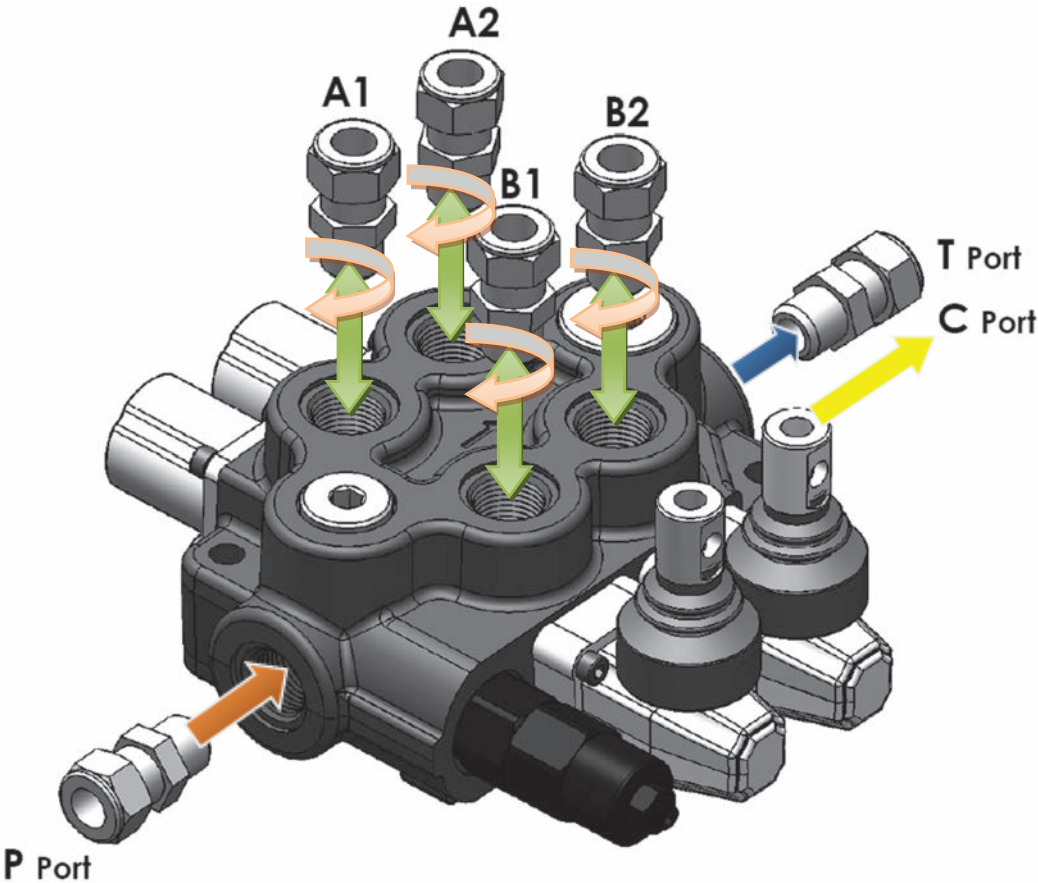
Direction of Port Connected

SGT : See page 5 for Standard center

INSTALLATION AND MAINTENANCE

The GMM M80 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

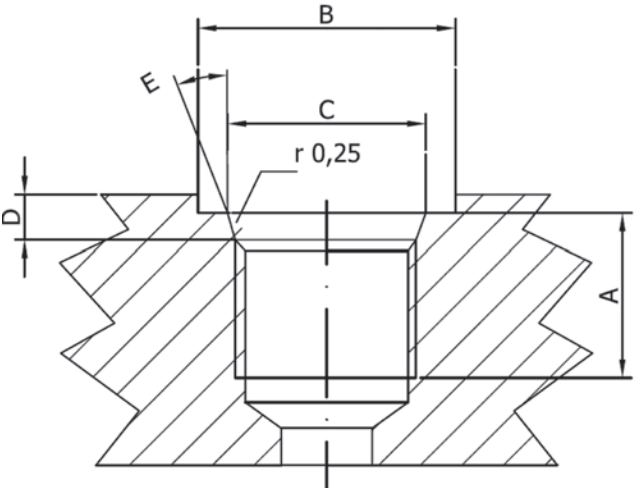
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



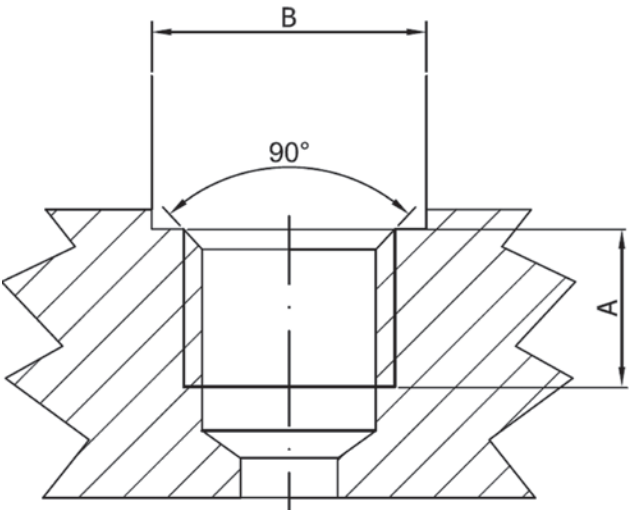
Threads Type (Nm / lbft)	P Port	A and B Port	T and C Port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O--Ring seal	50 / 36.9	50 / 36.9	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
BSP (ISO 228/1)	G 3/4	G 3/4	G 3/4
With O--Ring seal	70 / 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

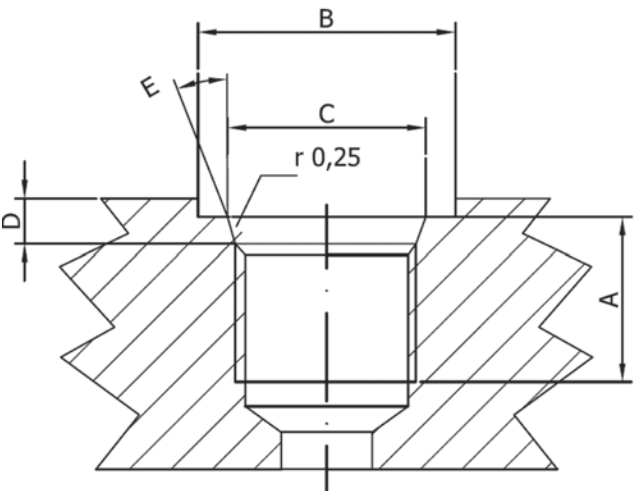
Ports Dimensional Data



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		G1	
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



GMM
M80

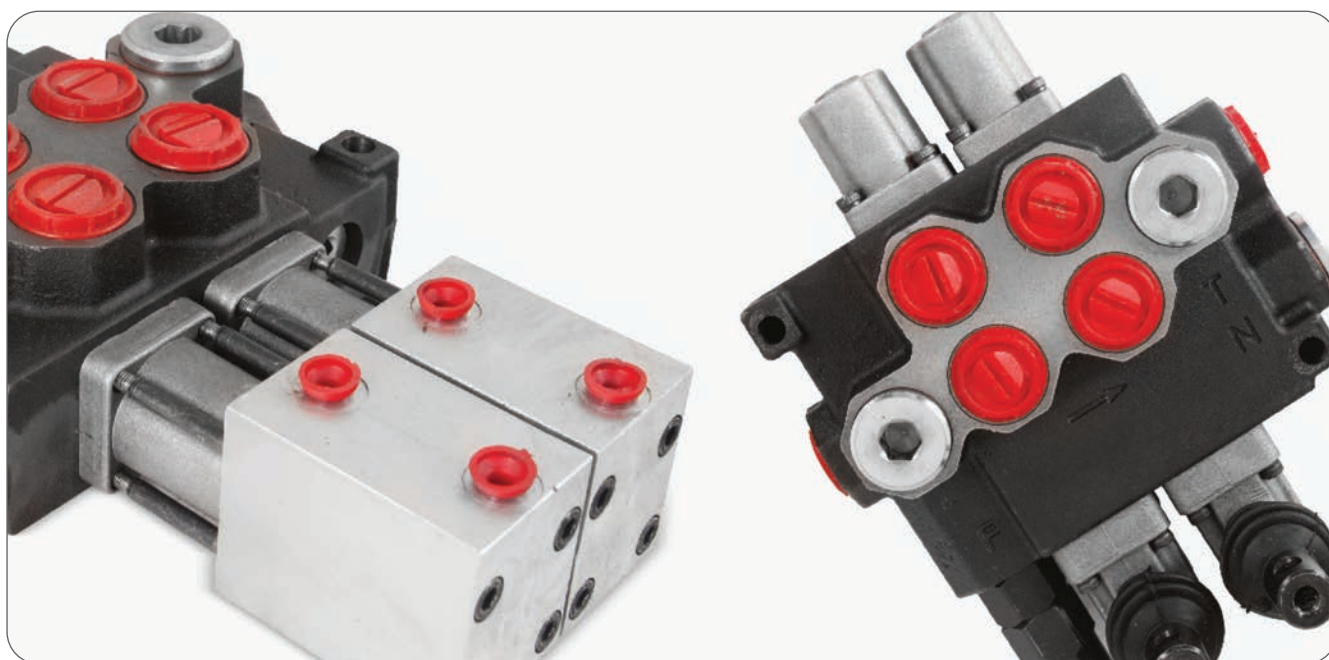




MONOBLOCK
DIRECTIONAL
CONTROL VALVES
GMM-M100

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 (01/2020) . GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

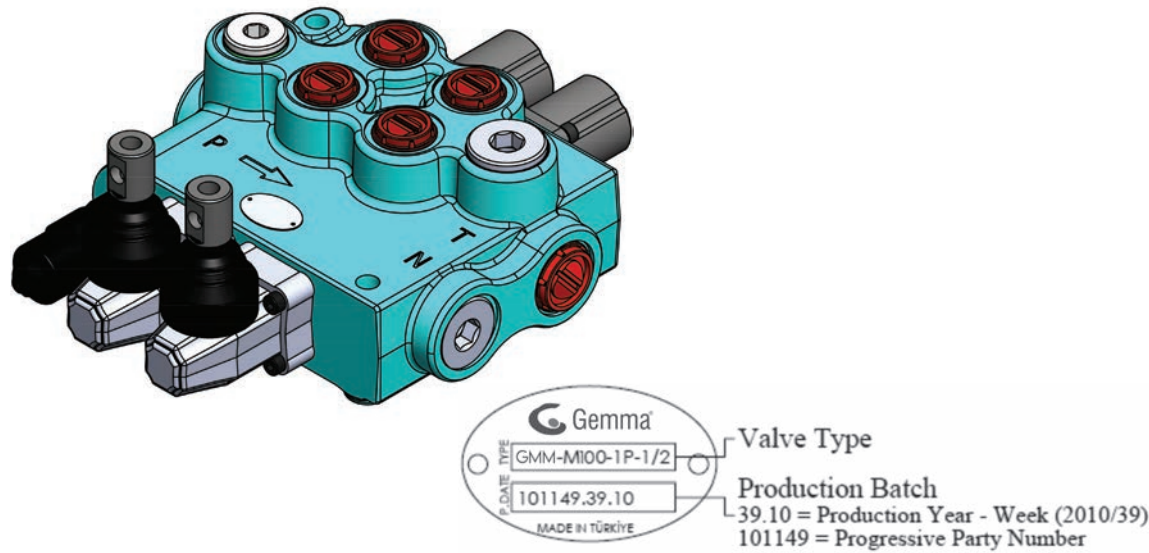
WORKING CONDITIONS

Nominal Flow Rating / Displacement	100 l/min	26 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 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/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 cm3/min	0,18 in3/min
Max. Level Of Contamination	19/16 – ISO 4406	

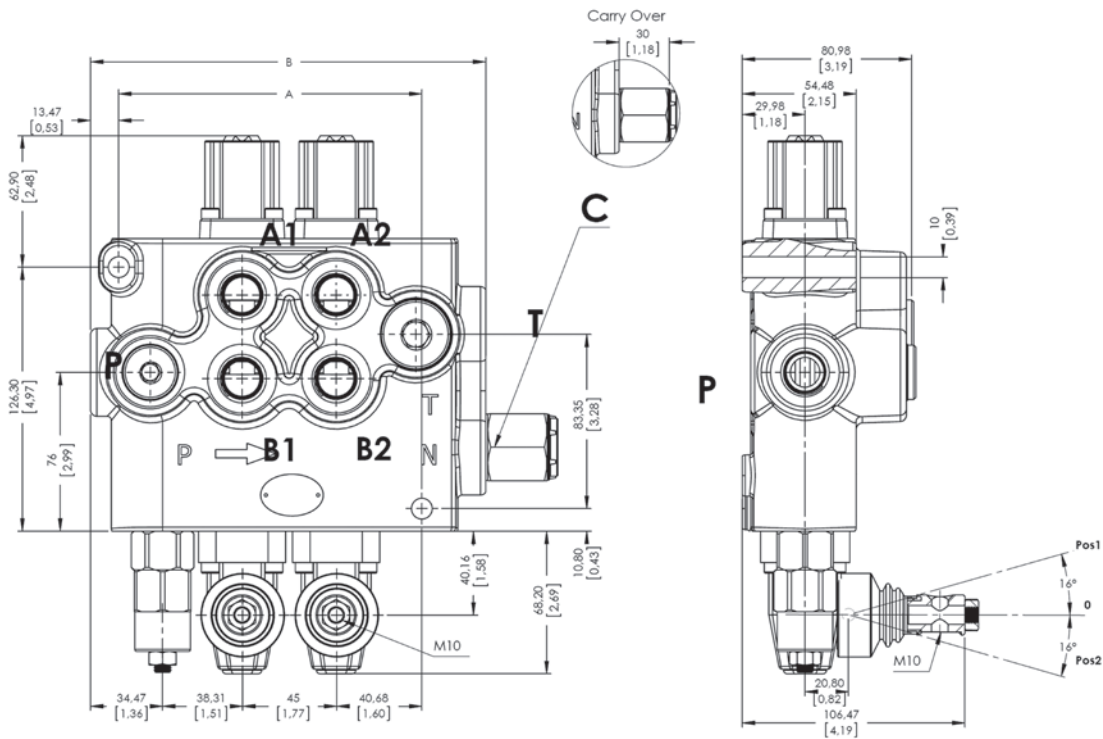
Not: This catalogue shows technical specifications measured with mineral oil of 46 mm2/s-46 cSt viscosity at 40 C° temparture.

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



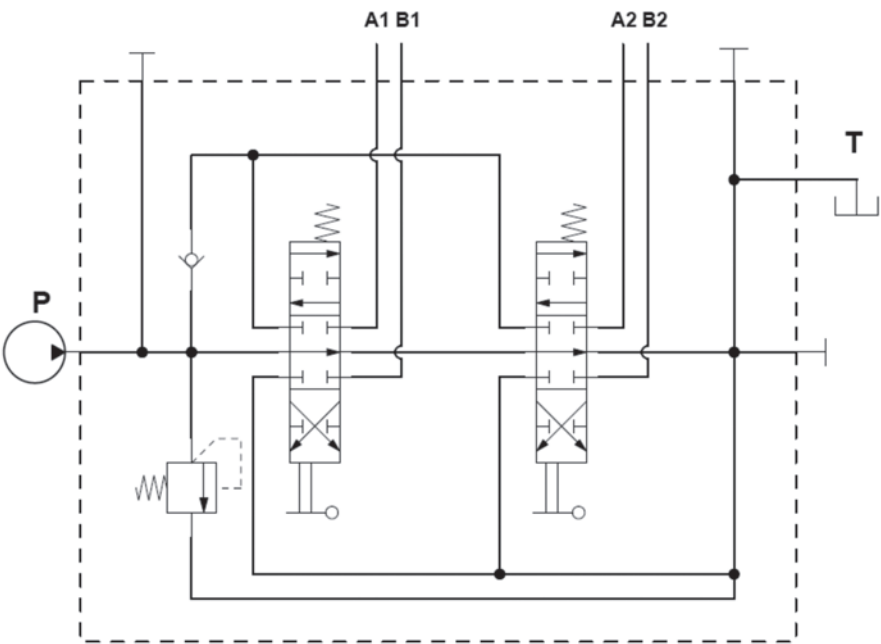
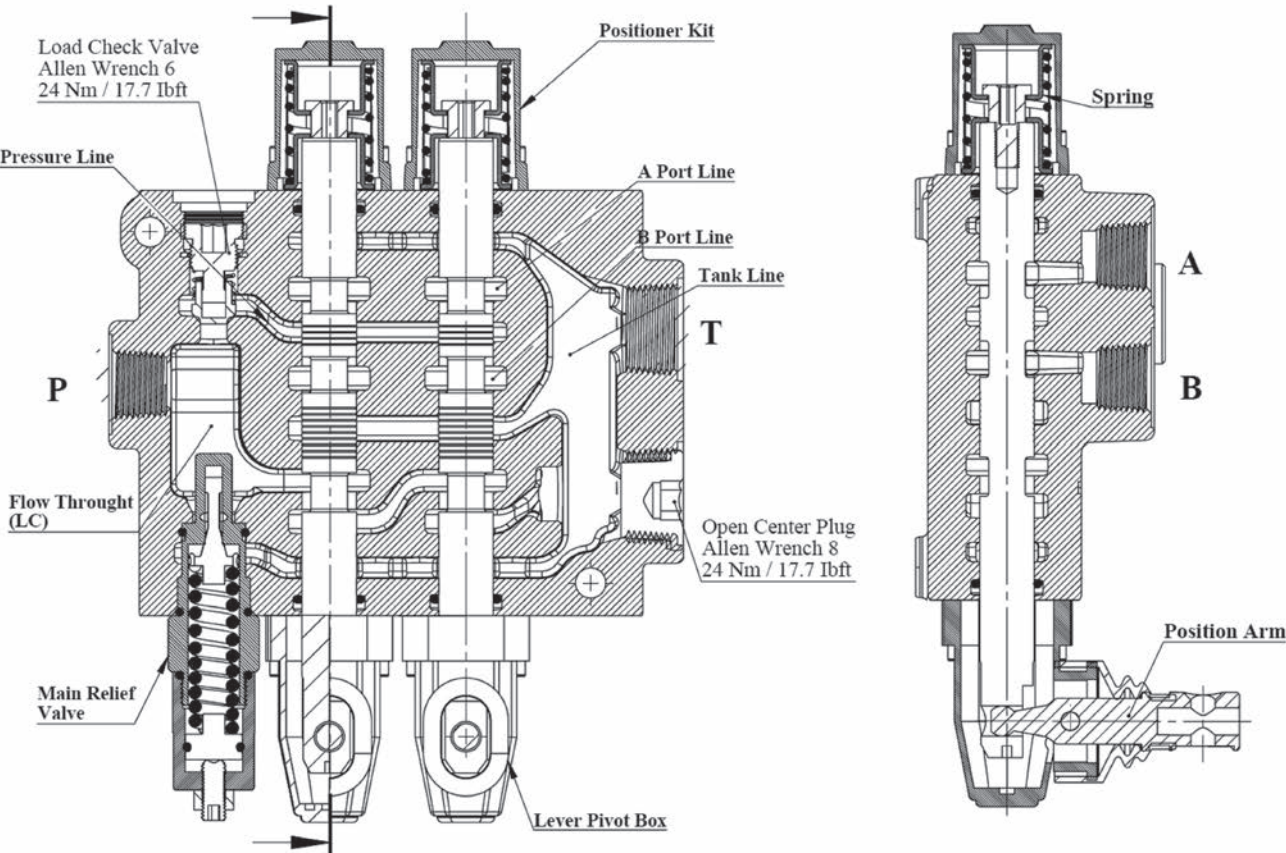
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM-M100-1P	108	4,25	137	5,40	5,65	12,45
GMM-M100-2P	153	6,03	182	7,17	8,25	18,18
GMM-M100-3P	198	7,80	227	8,94	10,85	23,92
GMM-M100-4P	243	9,57	272	10,72	13,45	29,65
GMM-M100-5P	288	11,35	317	12,49	16,05	35,38
GMM-M100-6P	333	13,12	362	14,26	18,65	41,11

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

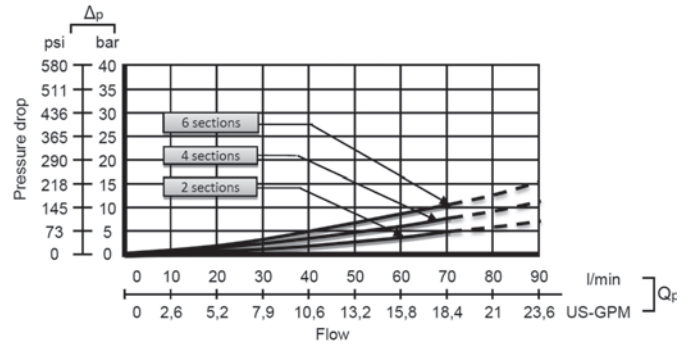
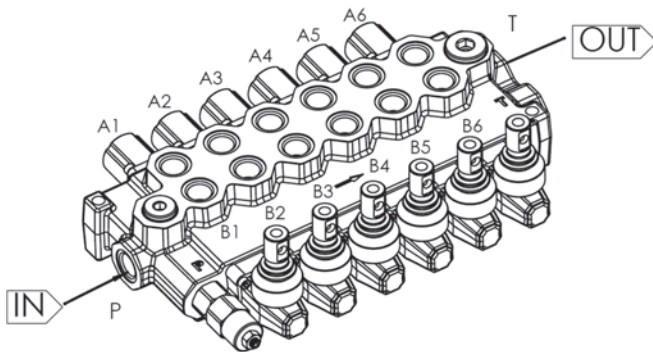
Parallel - Standard Configurations With Side Inlet And Outlet Open Center



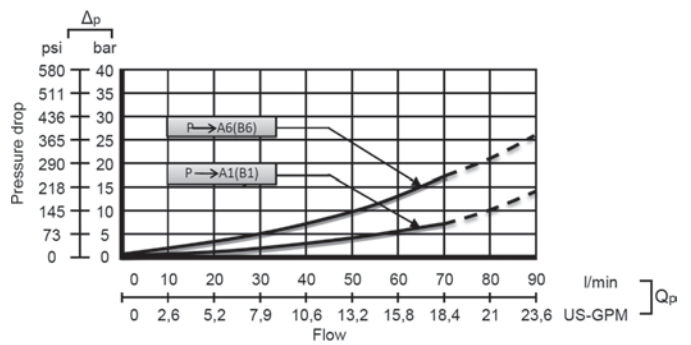
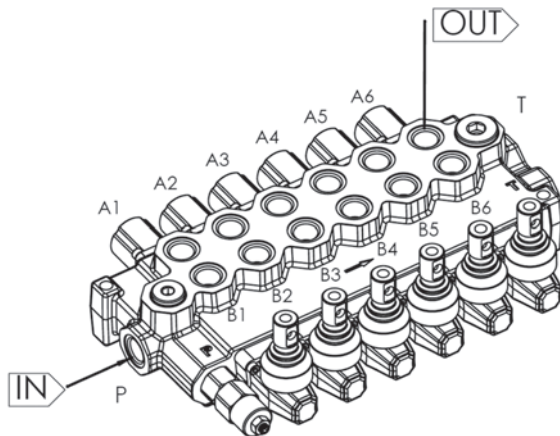
Code: GMM M100-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

PERFORMANCE DATA AND CURVE

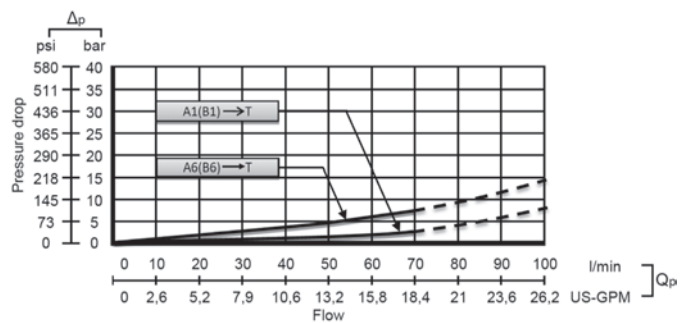
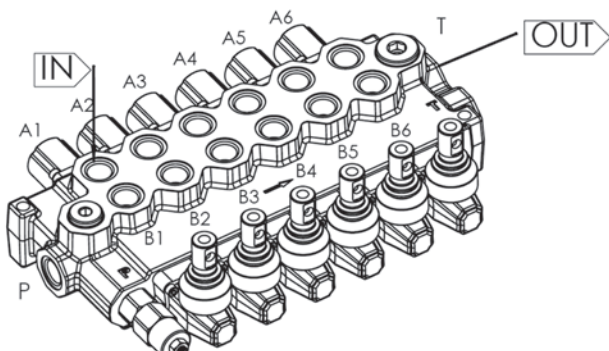
Open Center - Pressure Drop (P-T)



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



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



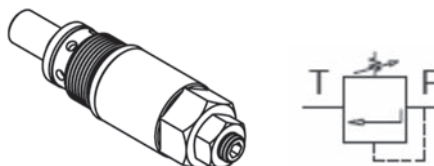
Note: Measured and chart value with spool type 1A.

INLET RELIEF OPTIONS

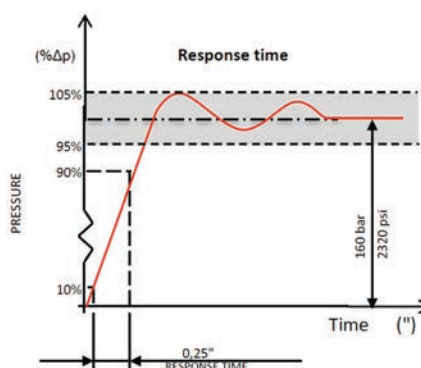
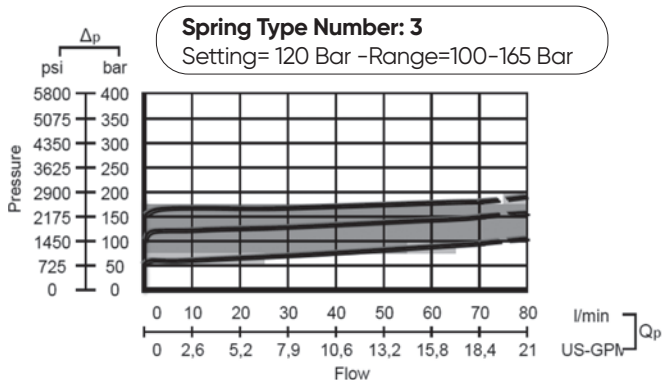
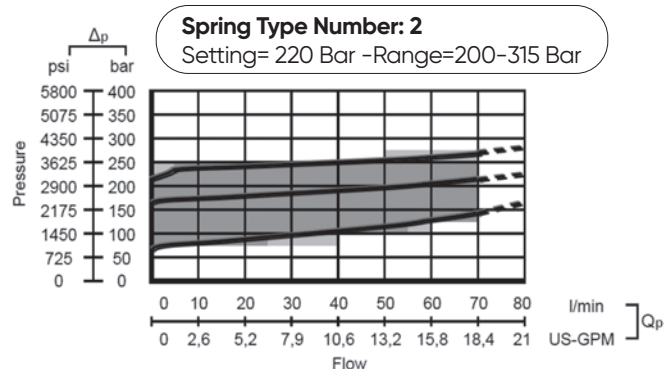
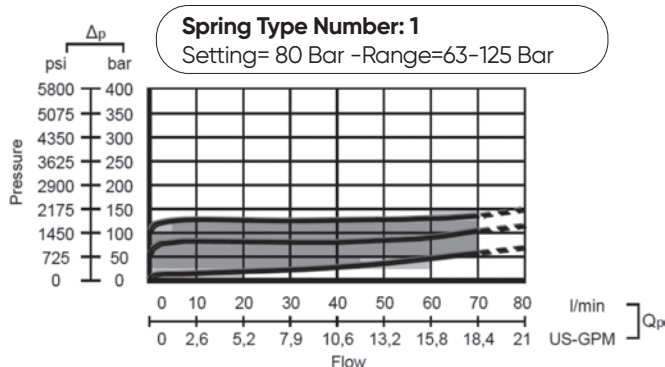
Direct Pressure Relief Valve

Code:

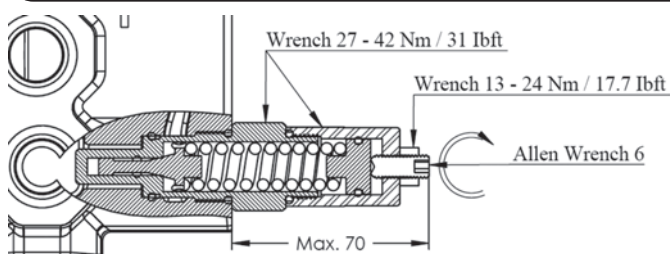
SMR2 – 120



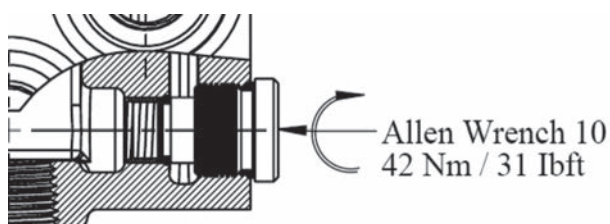
Performance Data



Adjustment Type on Valve

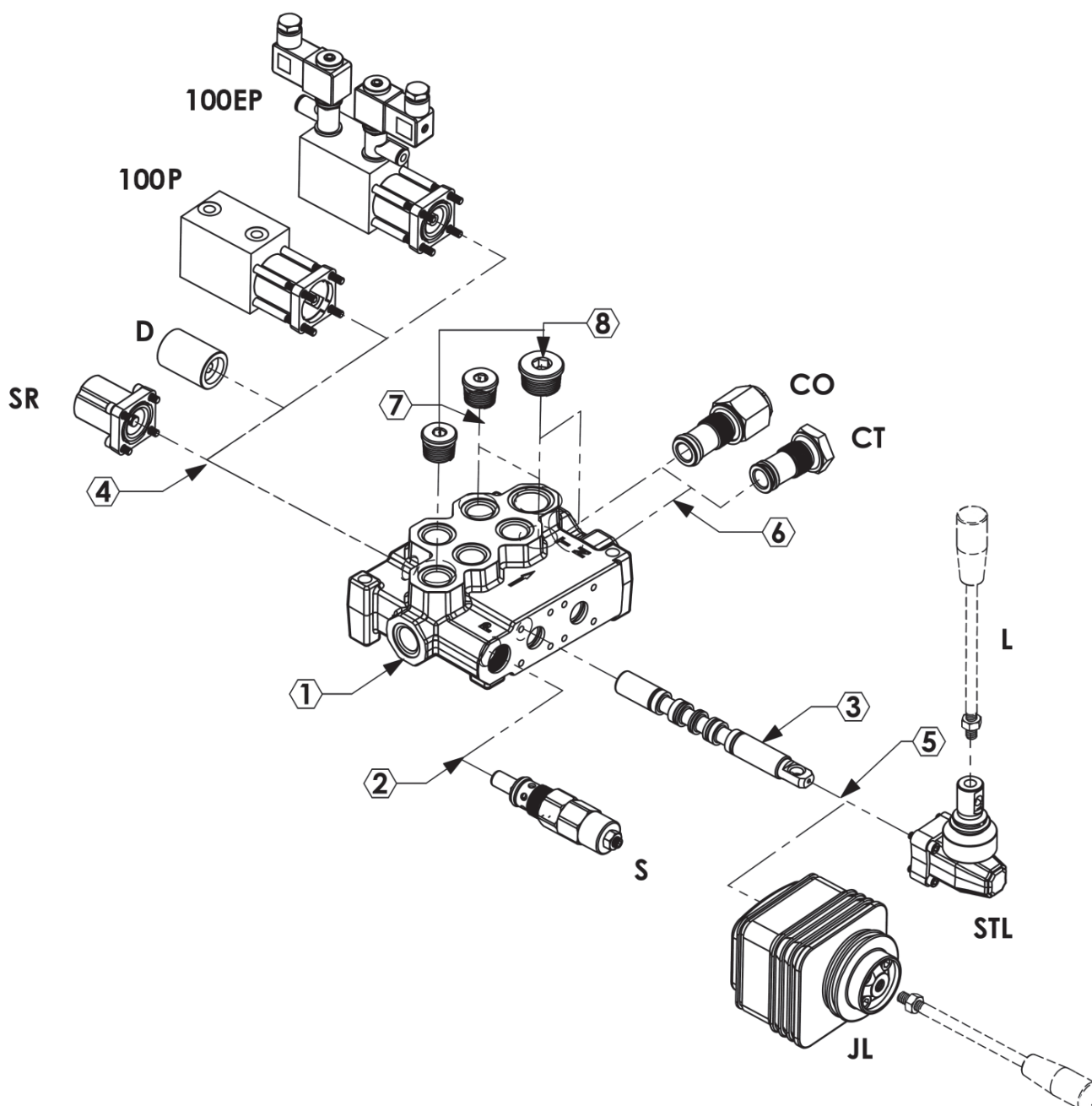
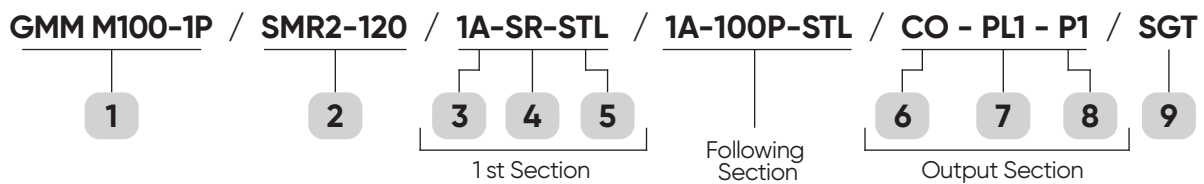


Relief Blanking Plug - WM



ORDERING CODES

Order Example



ORDERING CODES

1- Valve Type and Body

M100 =Valve Type - (M) - Monoblok
(100) - Max. Flow Rate

- 1P** = Body for 1 Section - (1BM1100100)
- 2P** = Body for 2 Sections - (1BM2100100)
- 3P** = Body for 3 Sections - (1BM3100100)
- 4P** = Body for 4 Sections - (1BM4100100)
- 5P** = Body for 5 Sections - (1BM5100100)
- 6P** = Body for 6 Sections - (1BM6100100)

2- Pressure Relief Options

SMR = Standard direct pressure relief valve
SMR1-080 - (2SMR1100080)-Range 63-125 bar
 Setting 80 bar
SMR2-120 - (2SMR2100120)-Range 100-165 bar
 Setting 120 bar
SMR3-220 - (2SMR31070220)-Range 200-315 bar
 Setting 220 bar

3- Spool Options

- 1A -(3SM1100110) - 3 Positions ,Double acting
- 2A -(3SM1100120) - 3 Positions ,Double acting
A to tank B Blocked
- 3A -(3SM1100130) - 3 Positions ,Double acting
B to tank A blocked
- 4A -(3SM1100140) - 3 Positions ,Double acting
A and B tank
- 5A -(3SM1100150) - 3 Positions ,Single acting on
A (A to tank)
- 6A -(3SM1100160) - 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)
100P=ON/OFF Pneumatic - (445P045100)
100EP=12 VDC ON/OFF electro-pneumatic -
 (480EP080112)
100EH= 12 VDC/24 VDC ON/OFF electro-hydraulic
 (3645EH100112)

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 -(6CT100100)

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

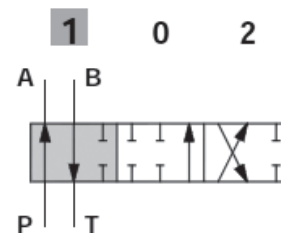
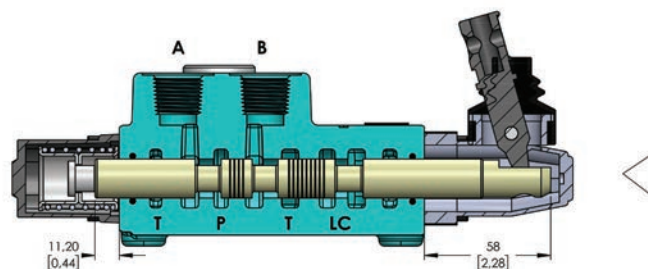
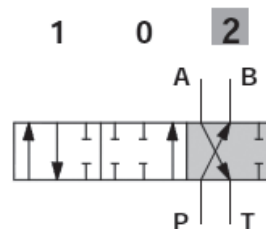
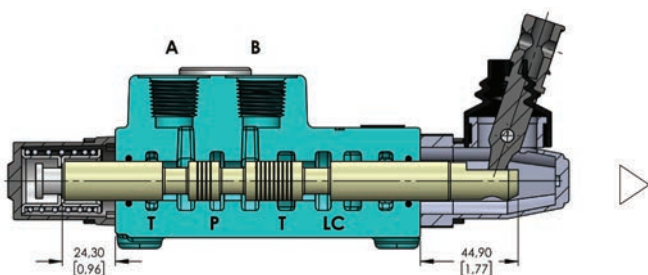
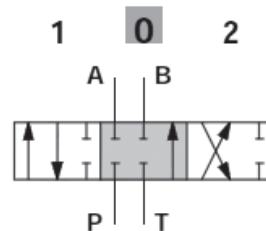
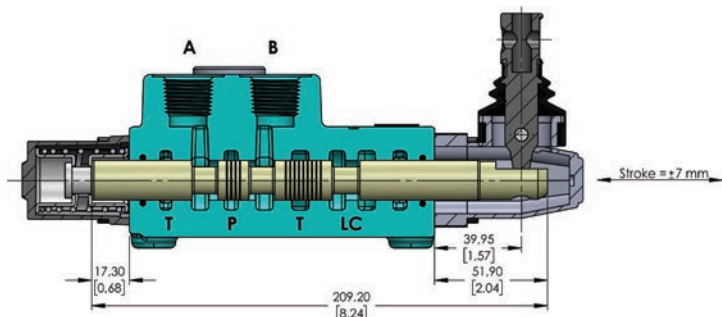
SGT1 =1/2" Series Port Options - (9P045112)
SGT3 =3/4" Series Port Options - (9P080134)
UNF =UNF Series Port Options - (9U045138)
M =Metric Series Port Options - (9M045138)
 *Page 4 for detail port information.

HandLever

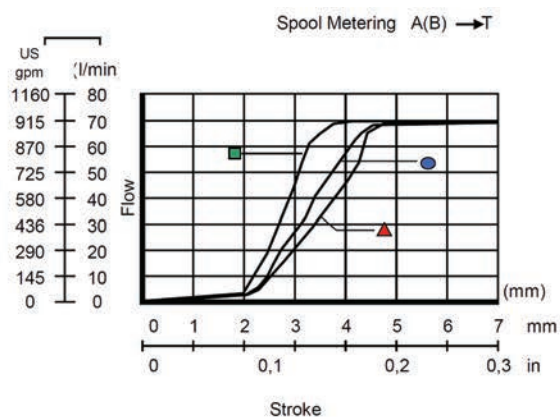
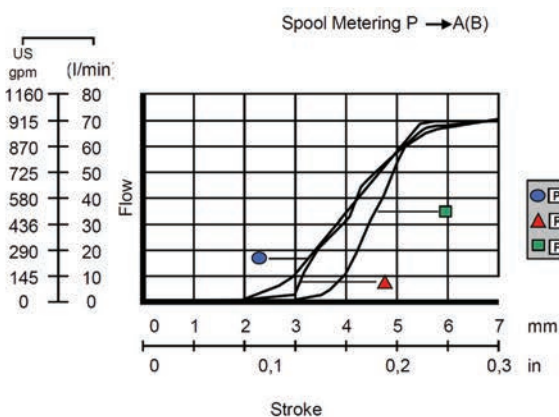
L = Standard HandLever (L=120mmxM8) -(7L040100)
HL = Remote Cable Kit - (80HL80100)

SPOOL OPTIONS

Spool Type - 1A

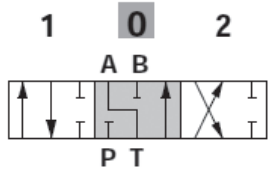
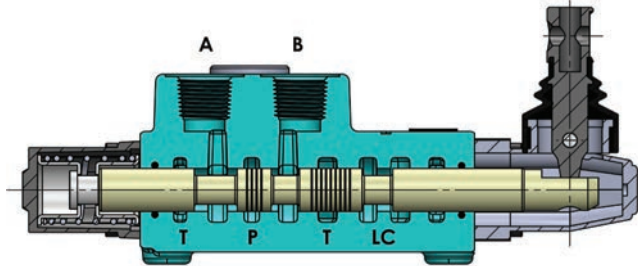


Performance Curve And Data

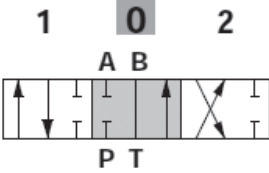
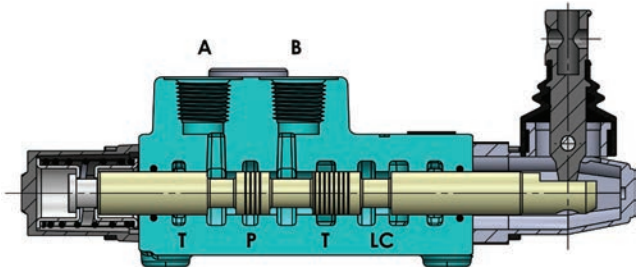


SPOOL OPTIONS

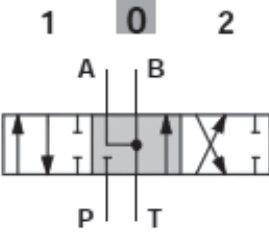
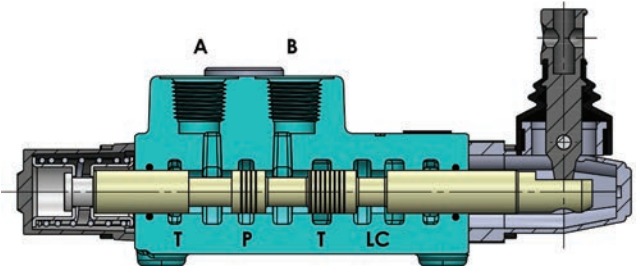
Spool Type - 2A



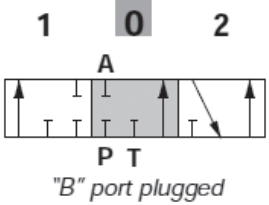
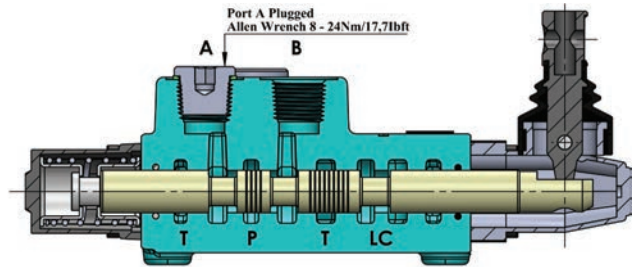
Spool Type - 3A



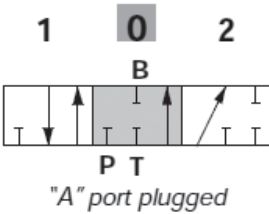
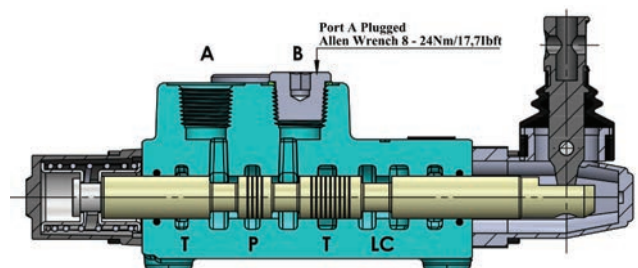
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

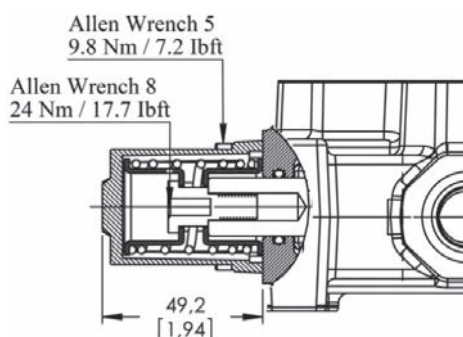


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



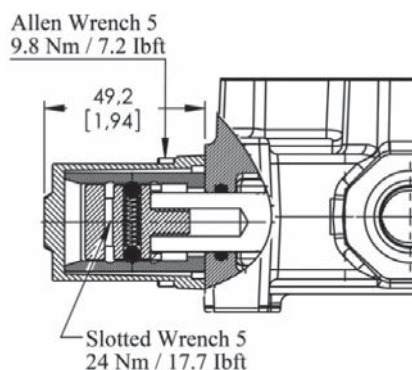
Diagram



With Detent

Kit No: **D**

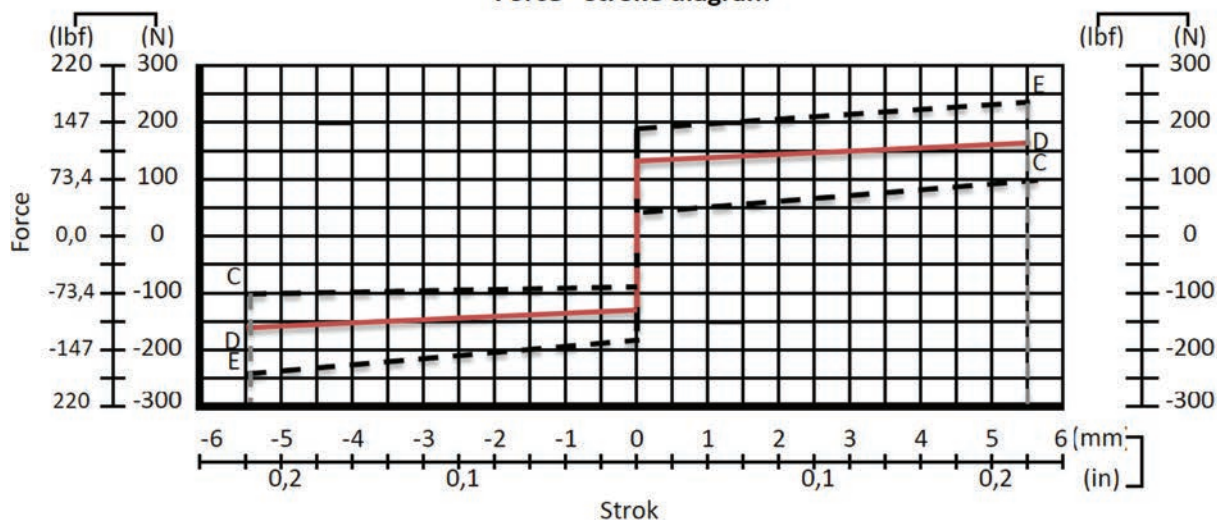
Sectional Appearance



Diagram



Force - stroke diagram

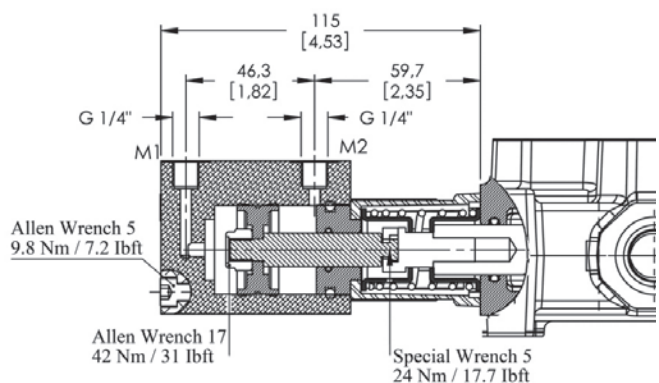


SPOOL POSITIONERS – SIDE OF RETURN

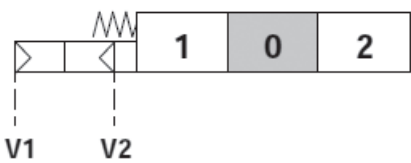
ON/OFF Pneumatic Control

Kit No: 100P

Sectional Appearance



Diagram



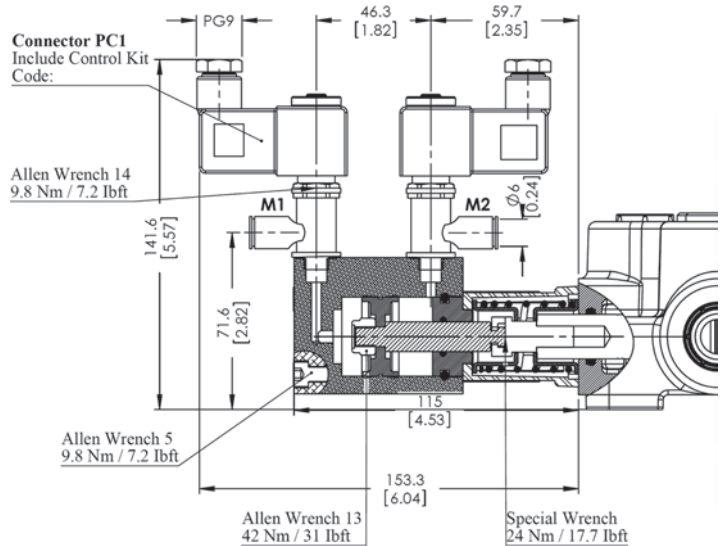
Operating Features

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

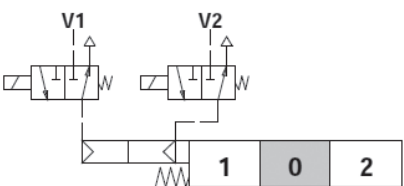
ON/OFF Electro-Pneumatic Control

Kit No: 100EP

Sectional Appearance



Diagram



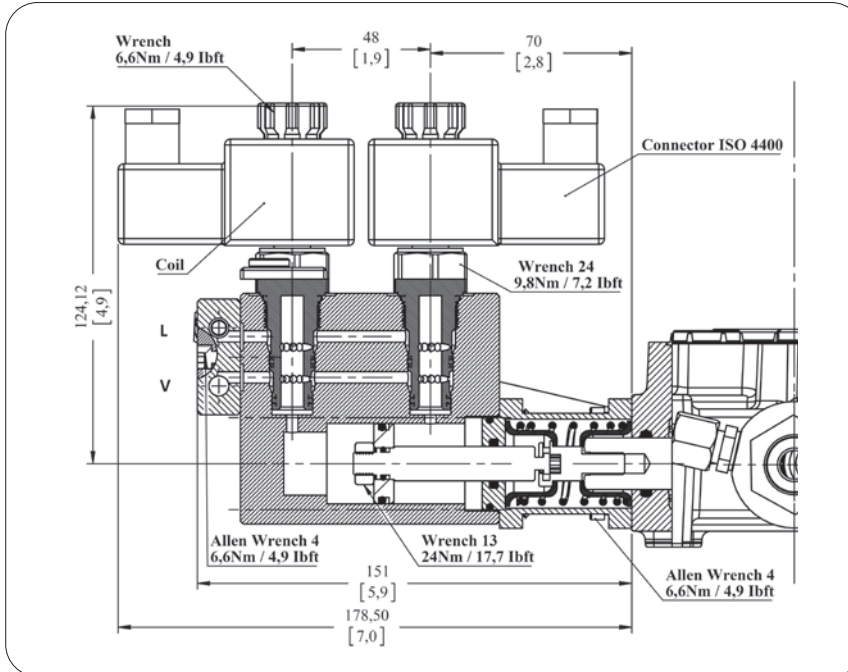
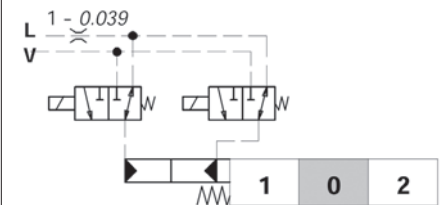
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 100EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
Nominal voltage.....: 12 VDC / 24 VDC
Power rating.....: 21 W
Duty cycle.....: %100
Protection type.....: IP 65
Nominal voltage tolerance.....: ±10
Max temperatures.....: 100 C°
Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
COL 12 - 10COL1001 - Kit For Section 2
COL 13 - 10COL1001 - Kit For Section 3
COL 14 - 10COL1001 - Kit For Section 4
COL 15 - 10COL1001 - Kit For Section 5
COL 16 - 10COL1001 - Kit For Section 6
COL 17 - 10COL1001 - Kit For Section 7
COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

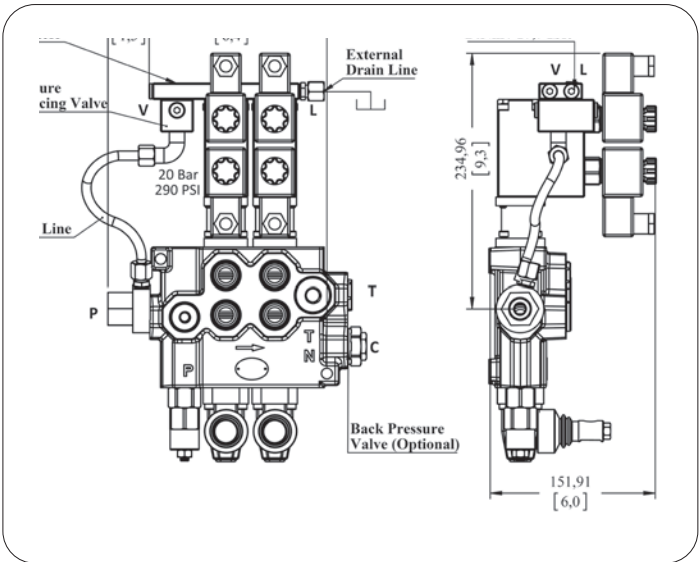
COL 21 - 10COL2001 - Kit For Section 1
COL 22 - 10COL2001 - Kit For Section 2
COL 23 - 10COL2001 - Kit For Section 3
COL 24 - 10COL2001 - Kit For Section 4
COL 25 - 10COL2001 - Kit For Section 5
COL 26 - 10COL2001 - Kit For Section 6
COL 27 - 10COL2001 - Kit For Section 7
COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

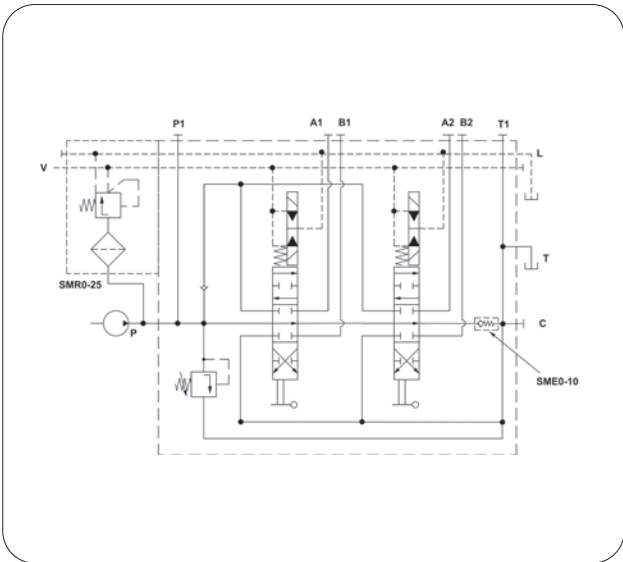
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram

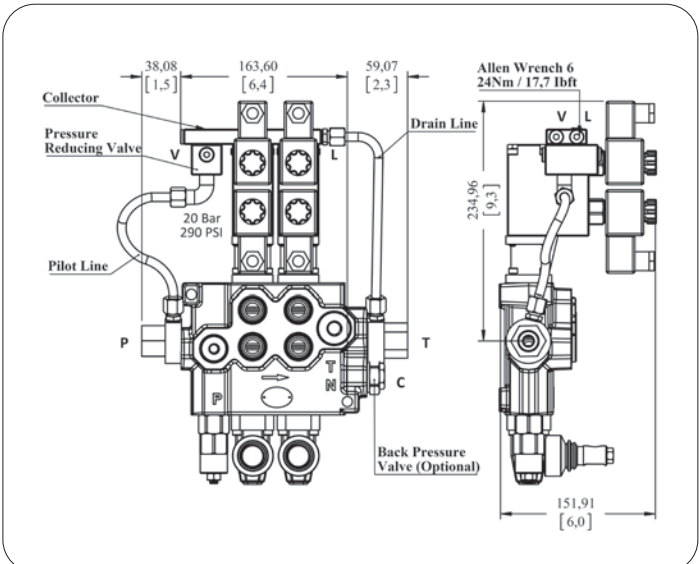


Operating Features

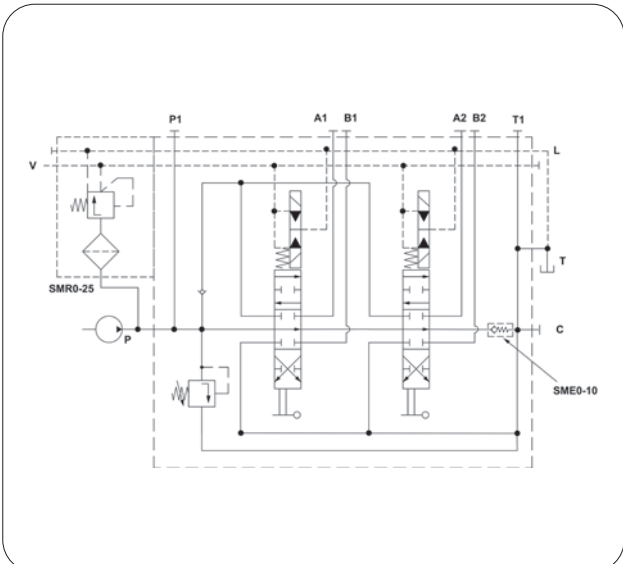
External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)
Code= GMM M100-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-45EH/P-1A-STL-45EH (SMR0 -COL12-12V)/ SO-PT1 /SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

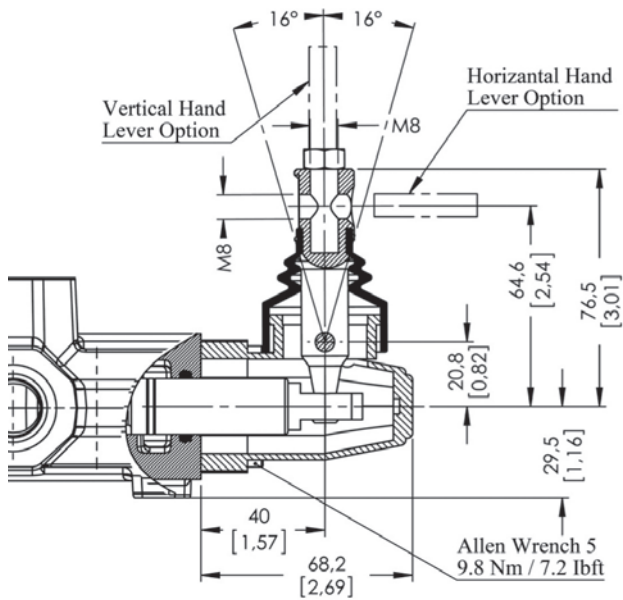
Outlet Pressure: 20 Bar / 290 Psi
Max. Flow.....: 8 l/min
Filtering:80 µ
Code= GMM M100-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-45EH/P-1A-STL-45EH (SMR0 -COL22-12V)/ SO-PT1/SGT

SPOOL POSITIONERS – SIDE OF LEVER CONTROL

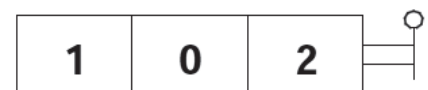
Lever Controls

Kit No: **STL - L0**

Sectional Appearance

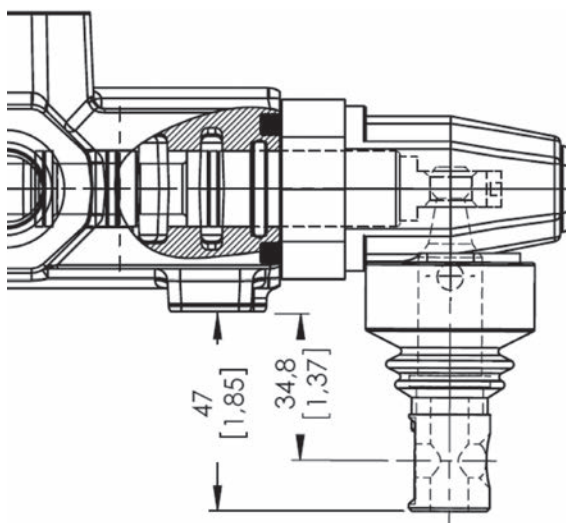


Diagram

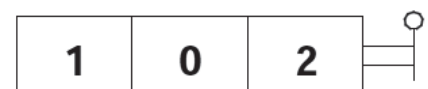


Kit No: **STL - L180**

Sectional Appearance



Diagram



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

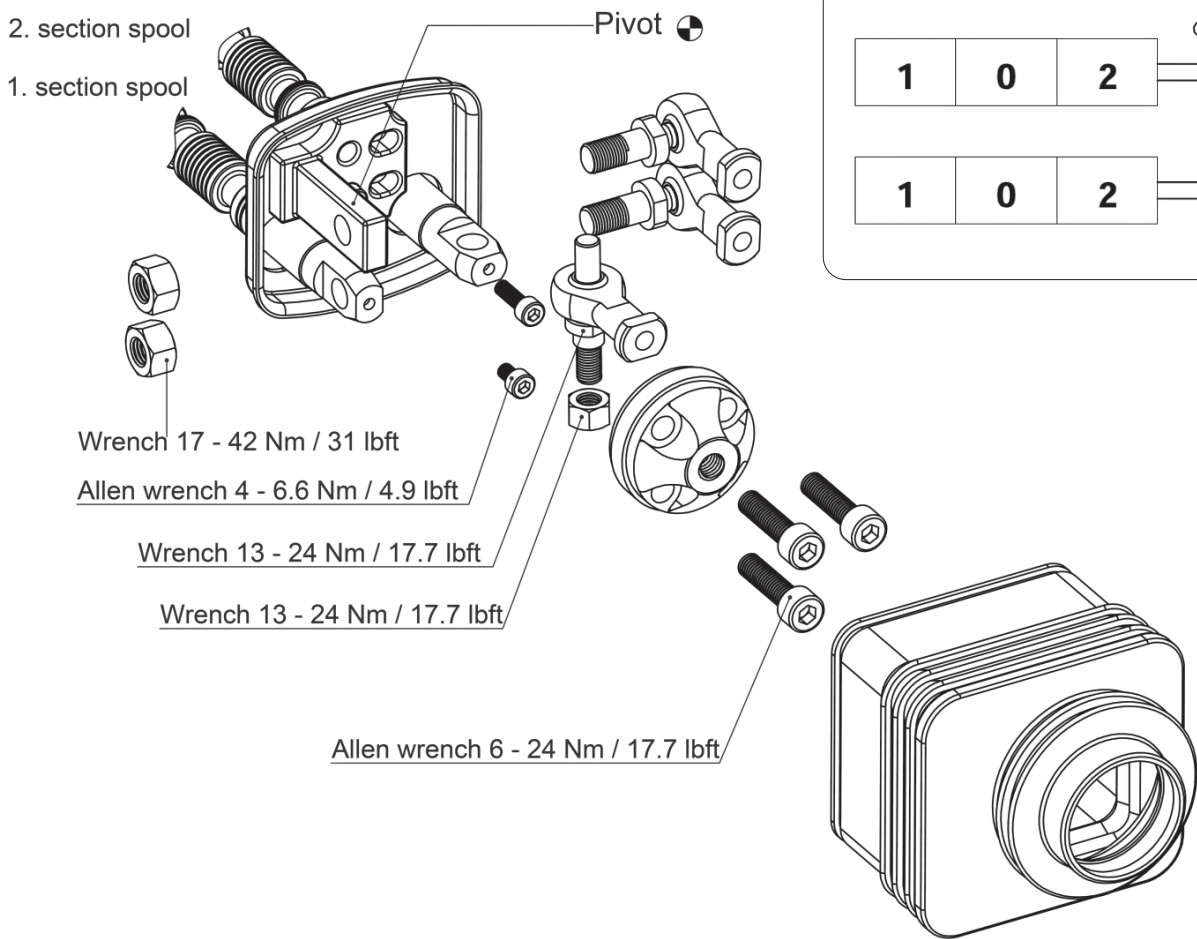
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls - Joystick

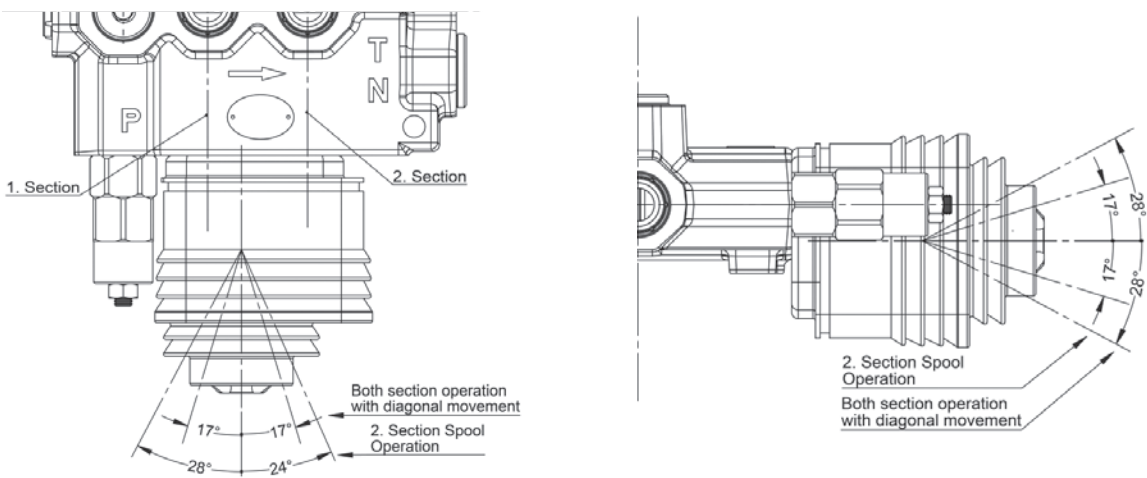
Kit No: JL

Exploded View

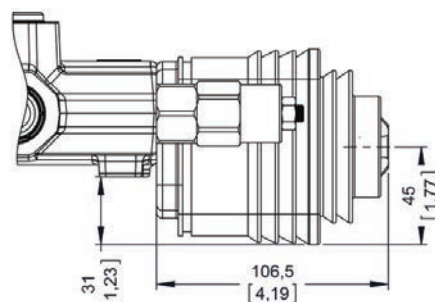
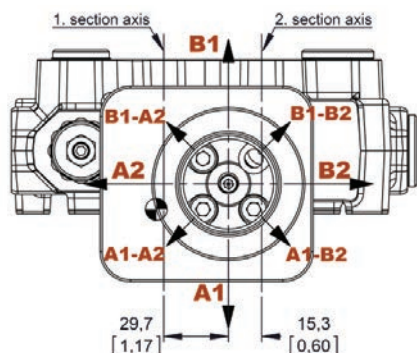
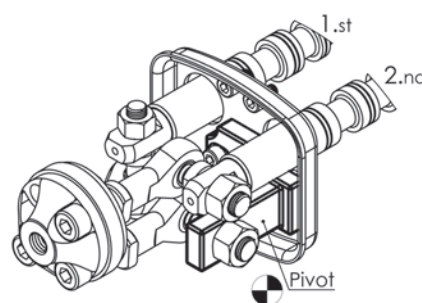
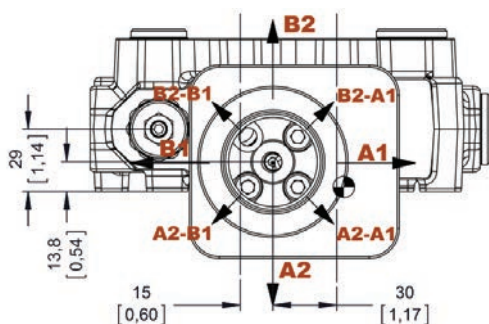
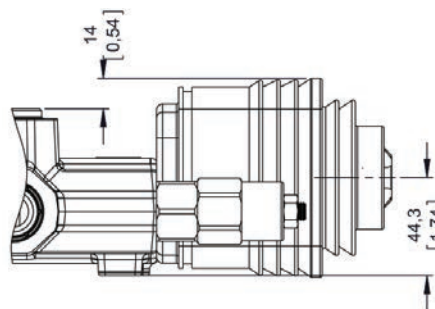
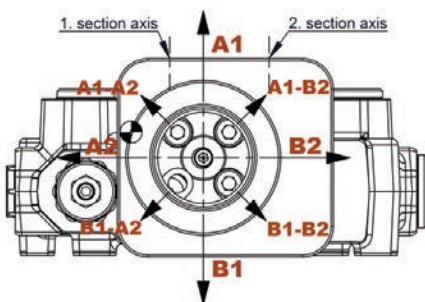
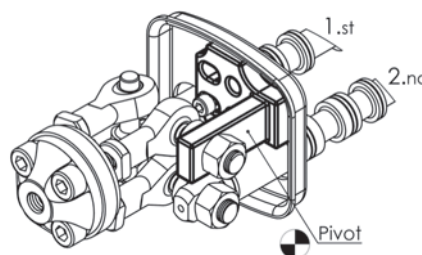
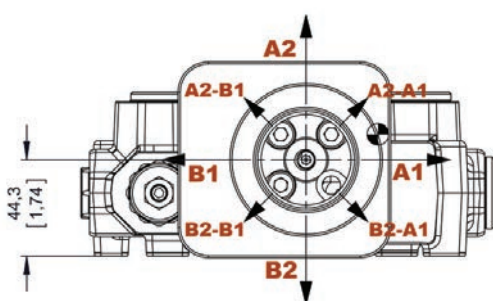
Diagram



Operation Angle:



SPOOL POSITIONERS – SIDE OF LEVER CONTROL
Lever Controls – Joystick
Dimensions and movement scheme

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


SPOOL POSITIONERS – SIDE OF LEVER CONTROL

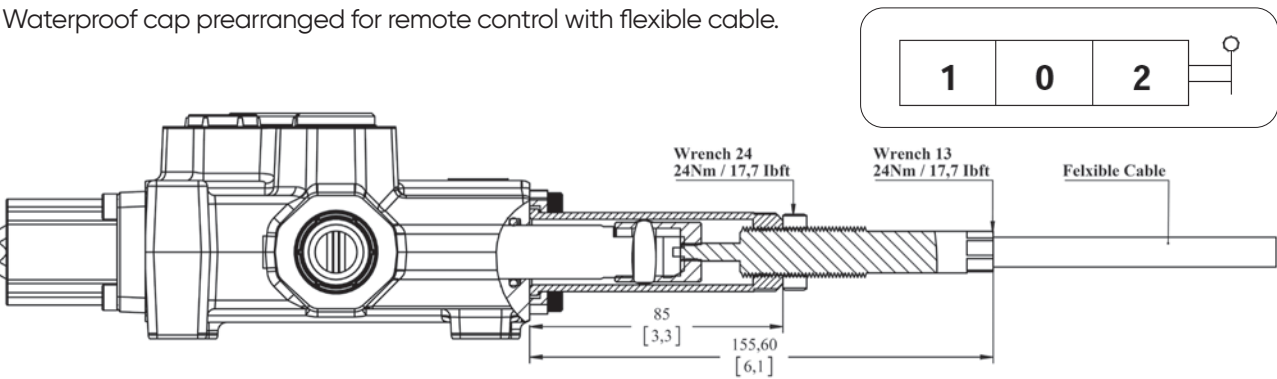
Lever Controls – Cable Control

Kit No: HL

Exploded View

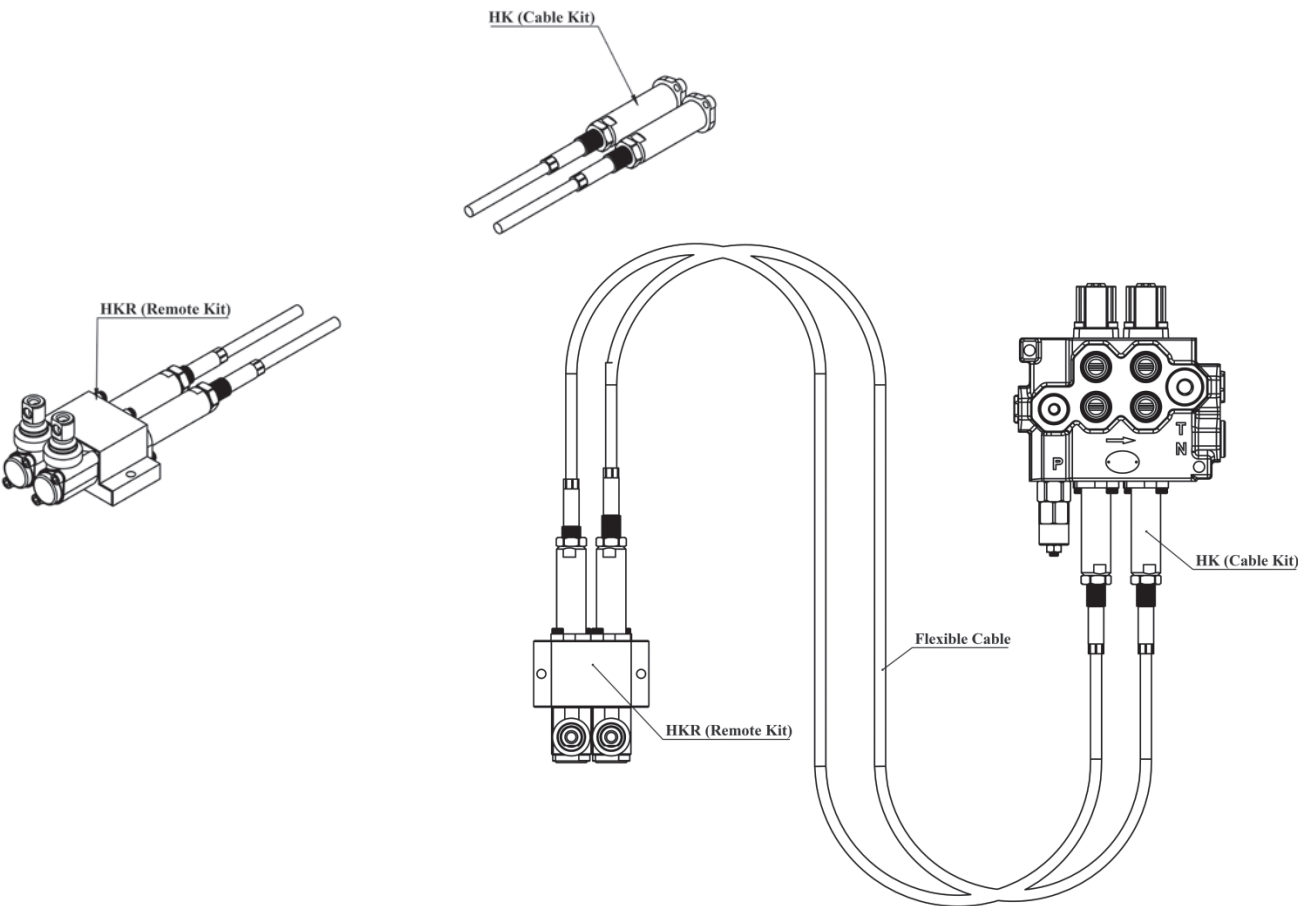
Diagram

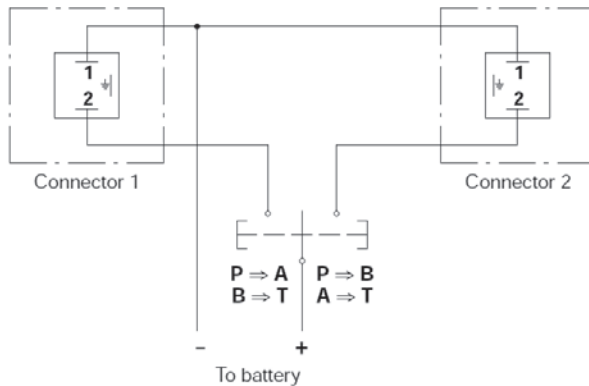
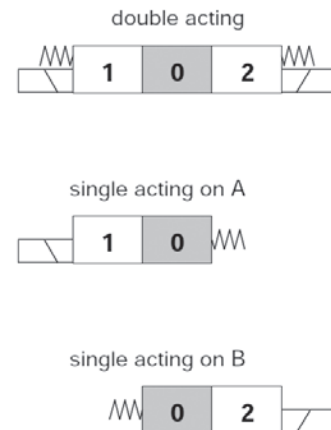
Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department. Standard cable length 1m- 2m- 3m- 4m- 5 meter.

Example Operation



COMPLETE CONTROL – ON / OFF SOLENOID CONTROL
ON/OFF Solenoid Control
Kit No: SEC
Sectional Appearance
Electric wiring example

Diagram

Operating Features

Max Working Pressure.....: 230 Bar / 3300 Psi

Max back pressure: 5 Bar / 80 Psi

 Internal Leakage.....: 10 cm³ / min

Solenoid Operating Features

Nominal voltage.....: 12 VDC / 24 VDC

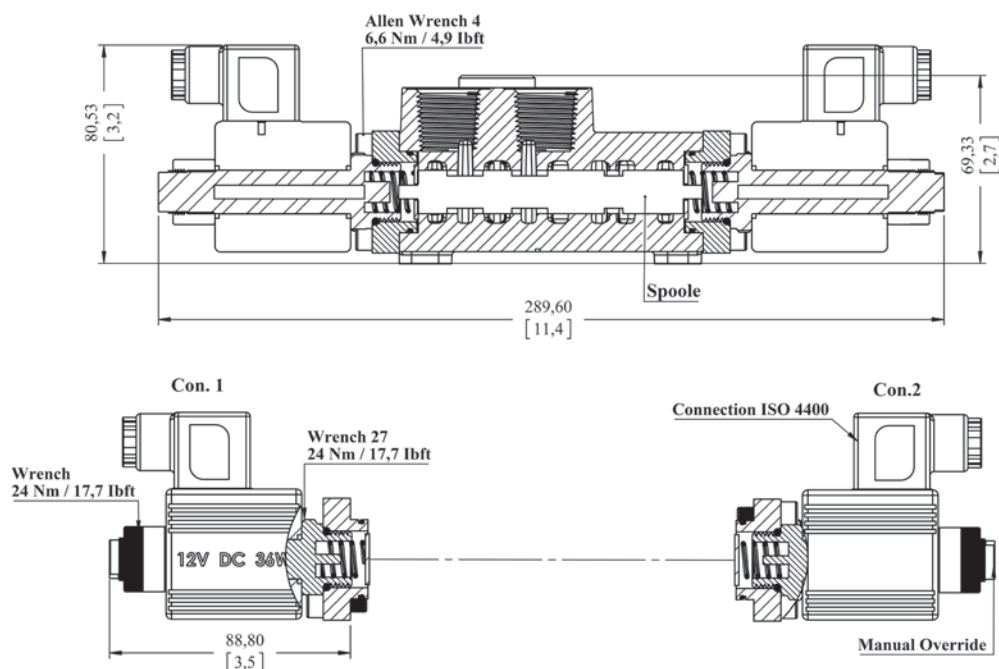
Power rating.....: 36 W

Duty cycle.....: %100

Nominal voltage tolerance.....: ±10

Coil insulation: Class H

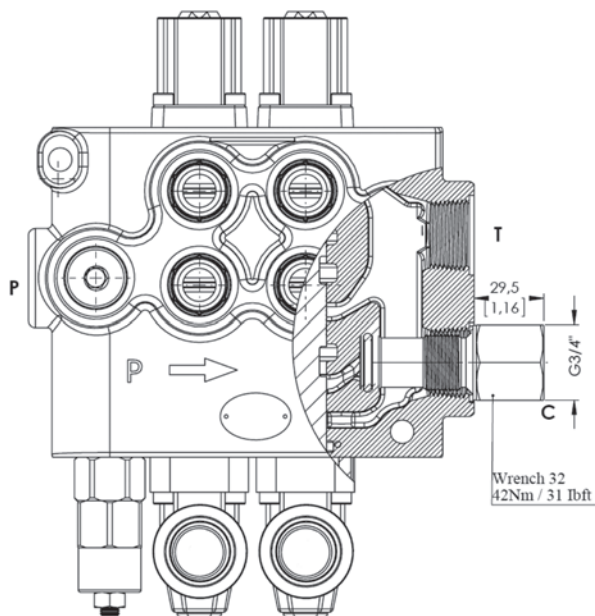
Stroke.....: ±3



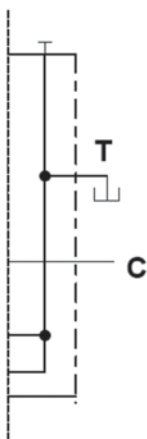
OUTLET PORT OPTIONS

Carry - Over Connection

Kit No: CO

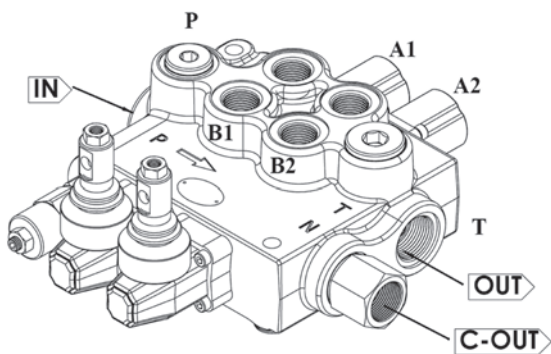


Sectional Appearance



Hydraulic Circuit

Code: GMM M100-2P
/ SMR2-120 / 1A-SR-
STL/1A-SR-STL/CO-
PA1/SGT



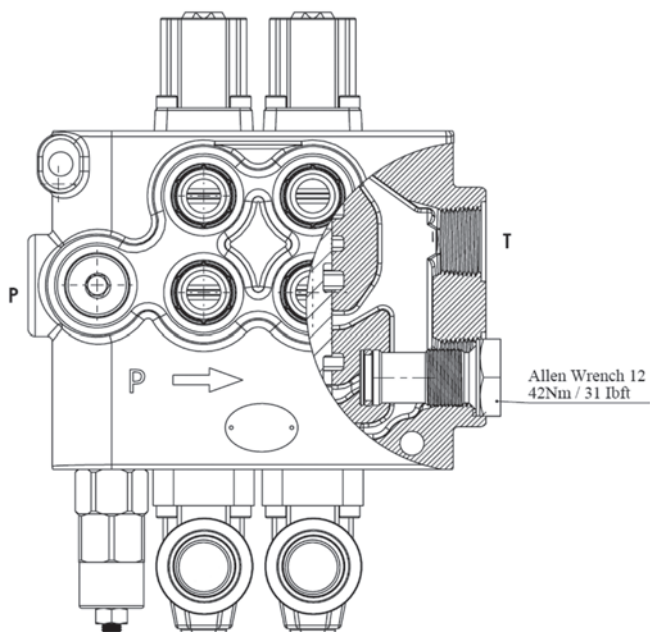
Direction of Port Connected

SGT : See page 5 for Standard center

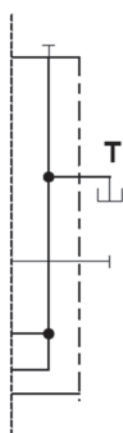
OUTLET PORT OPTIONS

Closed Center

Kit No: **CS**



Sectional Appearance



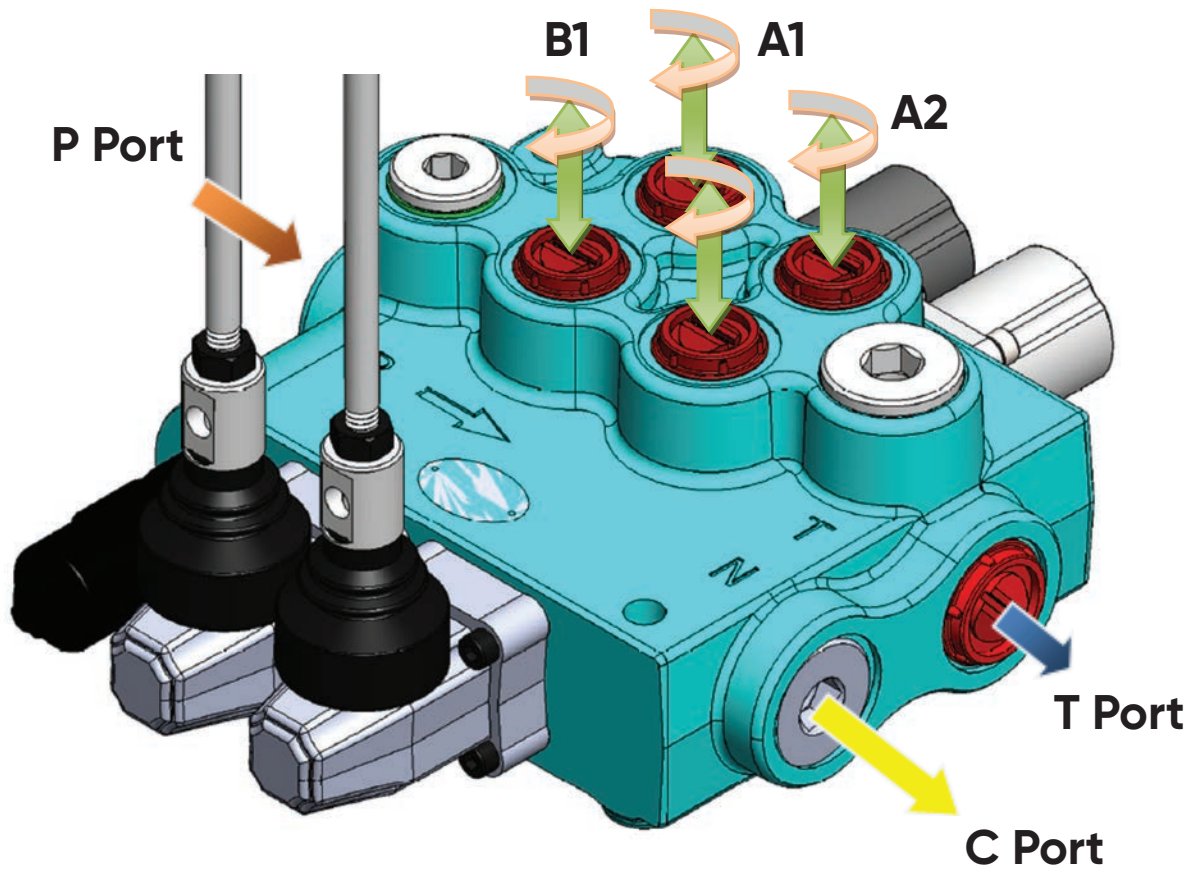
Hydraulic Circuit

Code: GMM M100-2P
/ SMR2-120 / 1A-SR-
STL/1A-SR-STL/CT-
PA1/SGT

INSTALLATION AND MAINTENANCE

The GMM M100 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

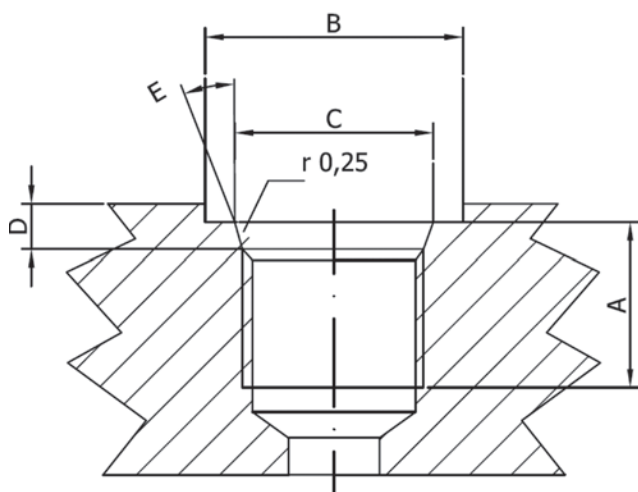
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



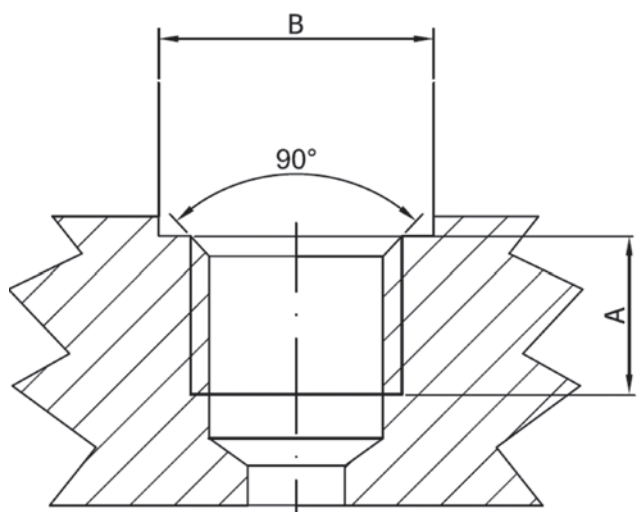
Threads Type (Nm / lbft)	P Port	A and B Port	T and C Port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O--Ring seal	50 / 36.9	50 / 36.9	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
BSP (ISO 228/1)	G 3/4	G 3/4	G 3/4
With O--Ring seal	70 / 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

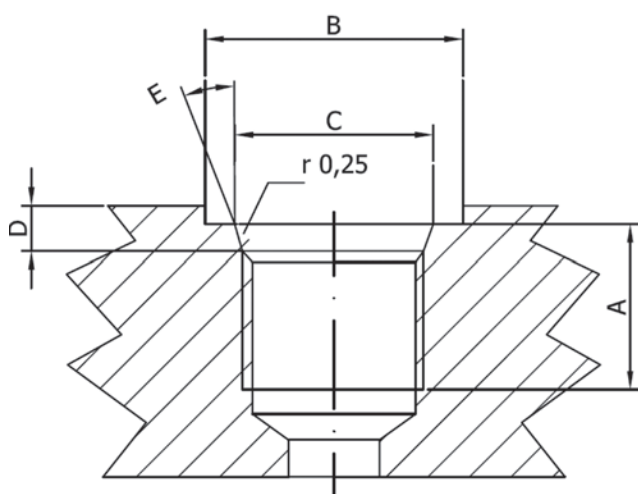
Ports Dimensional Data



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		G1	
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



SECTIONAL
VALVES

GMM-PD45

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 (01/2020).

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

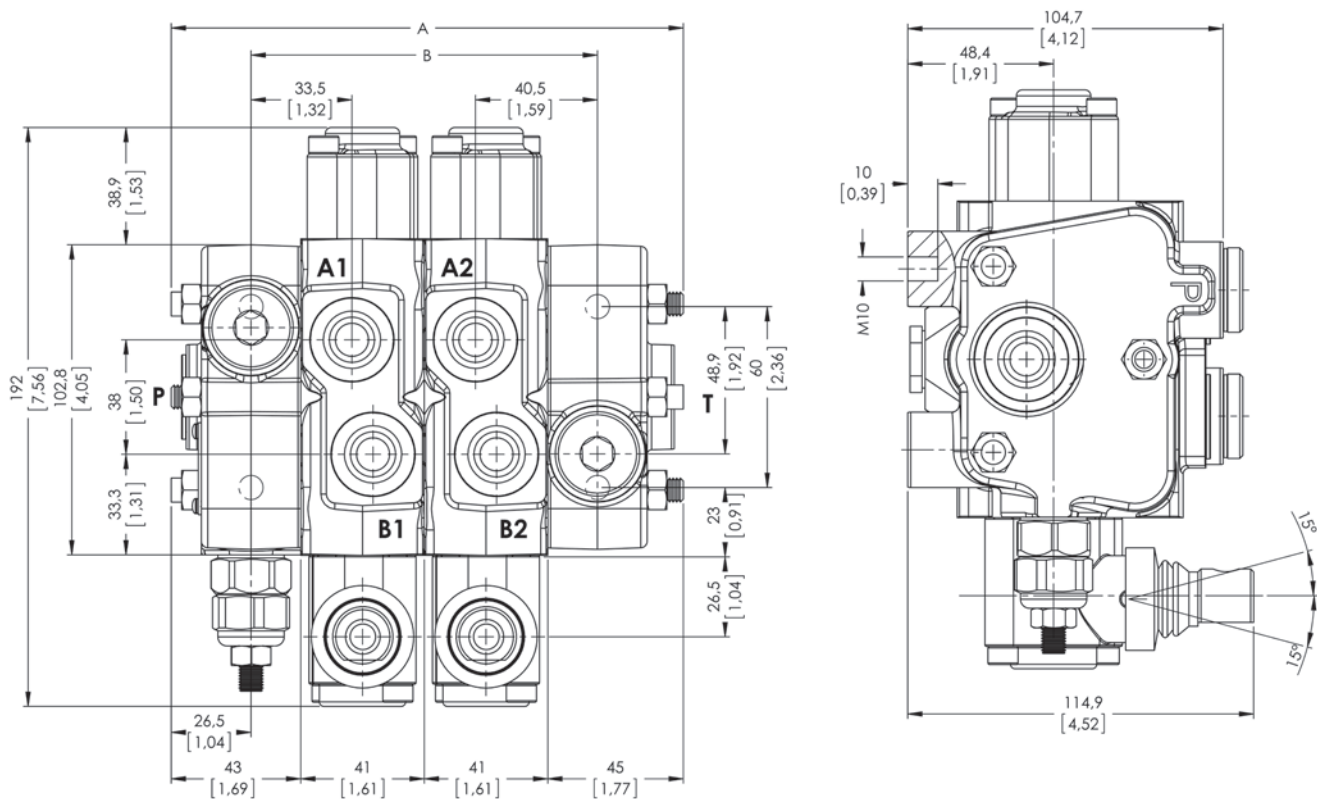
WORKING CONDITIONS

Nominal Flow Rating / Displacement	45 l/min	12 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 Viscosity – 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	30 Nm	22 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.
- Optional Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diameter is 16 mm – 0,63 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA


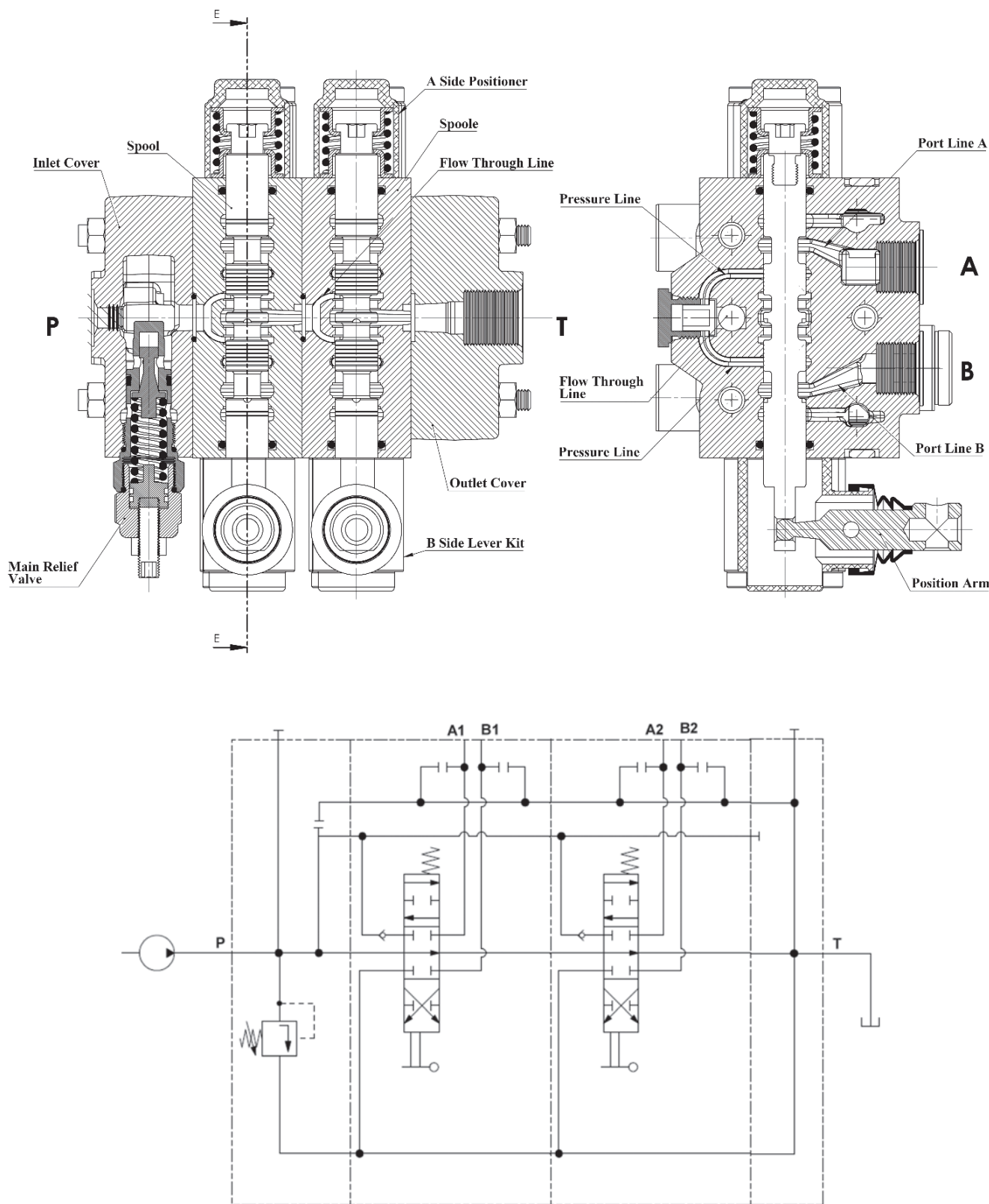
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- PD45-1P	129	5,08	74	2,91	5,9	13,01
GMM- PD45-2P	170	6,69	115	4,53	8,35	18,41
GMM- PD45-3P	211	8,31	156	6,14	10,8	23,81
GMM- PD45-4P	252	9,92	197	7,76	13,25	29,22
GMM- PD45-5P	293	11,54	238	9,37	15,7	34,62
GMM- PD45-6P	334	13,15	279	10,98	18,15	40,02
GMM- PD45-7P	375	14,76	320	12,60	20,6	45,42
GMM- PD45-8P	416	16,38	361	14,21	23,05	50,83
GMM- PD45-9P	457	17,99	402	15,83	25,5	56,23
GMM- PD45-10P	498	19,61	443	17,44	27,95	61,63
GMM- PD45-11P	539	21,22	484	19,06	30,4	67,03
GMM- PD45-12P	580	22,83	525	20,67	32,85	72,43

STANDARD THREADS

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

HYDRAULIC CIRCUIT

Parallel

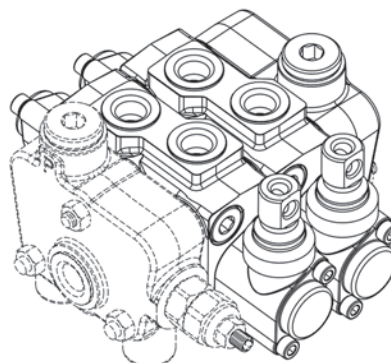


Code: GMM PD45-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

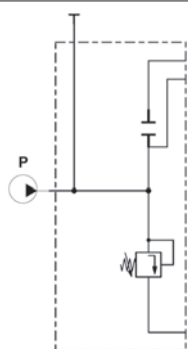
HYDRAULIC CIRCUIT

Inlet Cover – Pump Side

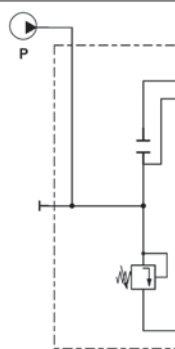
SD - Side inlet with direct pressure relief valve
TD - Top inlet with direct pressure relief valve



Type = SD

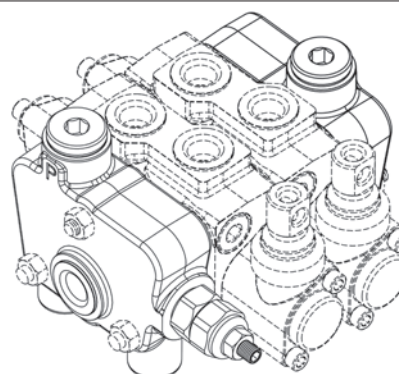


Type = TD

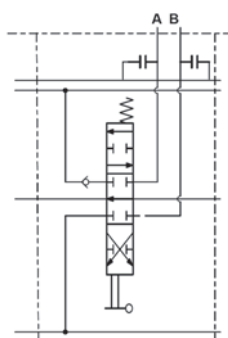


Working Sections

P – Parallel



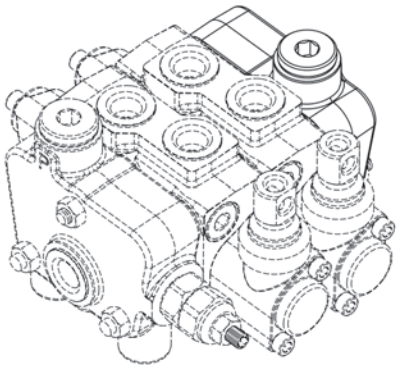
Type = P



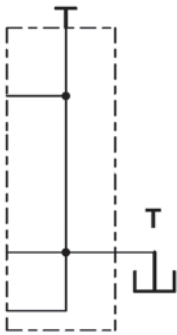
HYDRAULIC CIRCUIT

Outlet Cover (Tank Side)

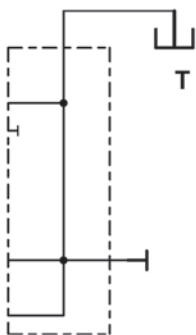
SO - Side outlet
TO - Top outlet
TCO - Top outlet with carry-over
TC - Top outlet with closed centre



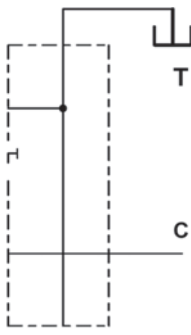
Type = SO



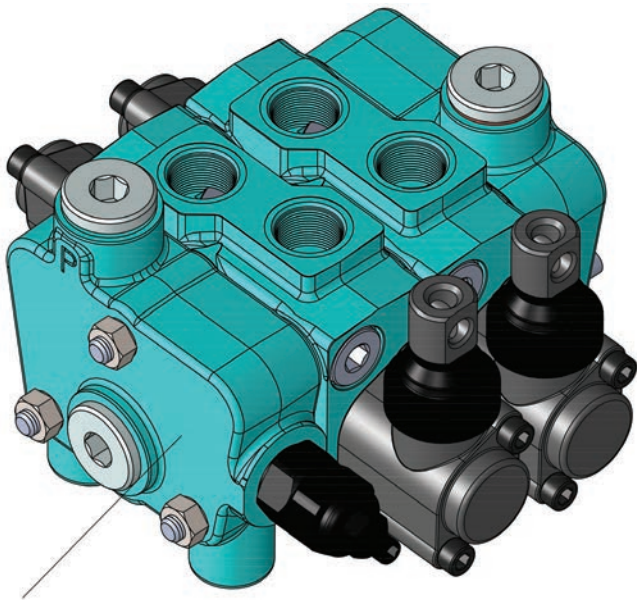
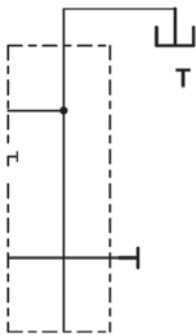
Type = TO



Type = TCO



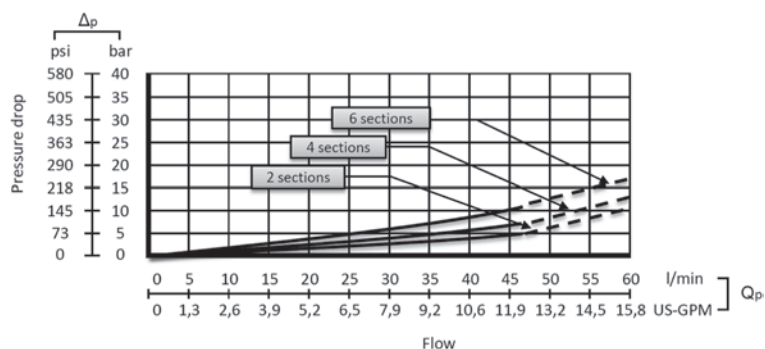
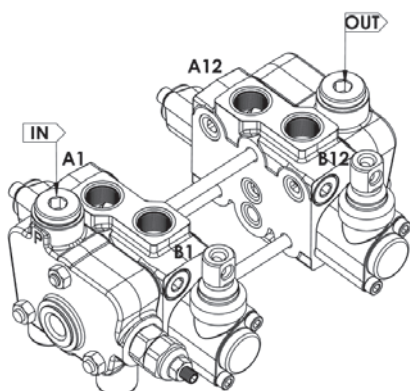
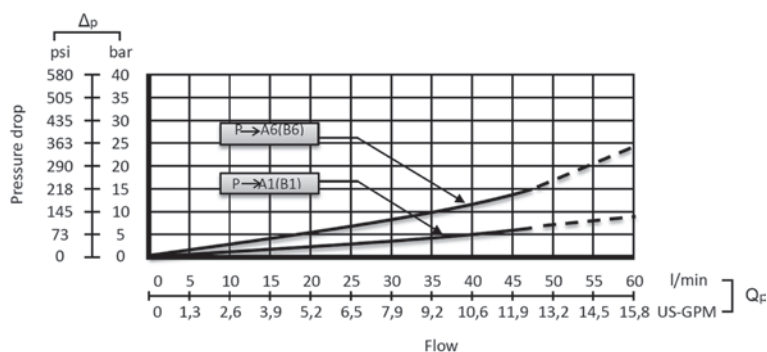
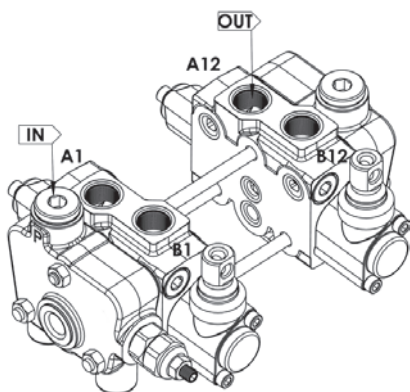
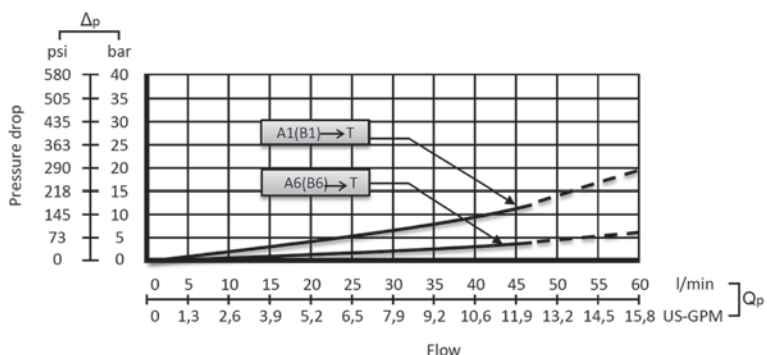
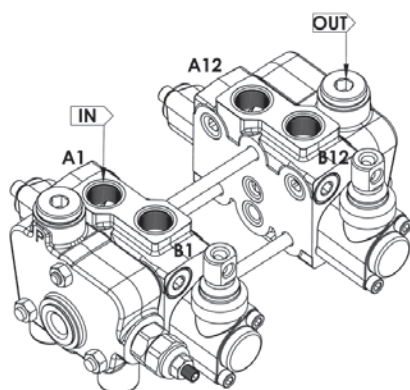
Type = TC



Valve Type

Production Batch

39.14 = Production Year - Week (2014/39)
101149=Progressive Party Number

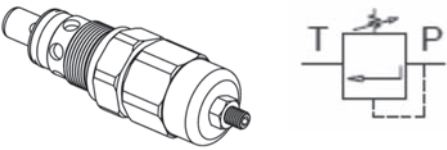
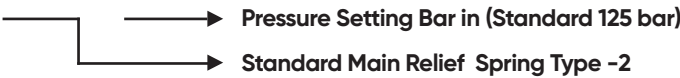
PERFORMANCE DATA AND CURVE
Open Center - Pressure Drop (P-T)

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

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


INLET RELIEF OPTIONS

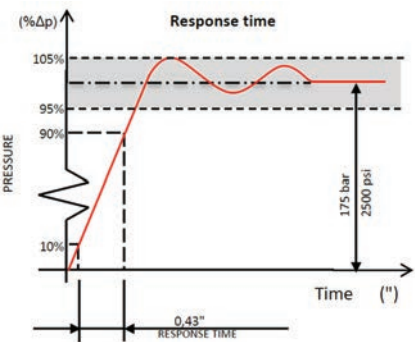
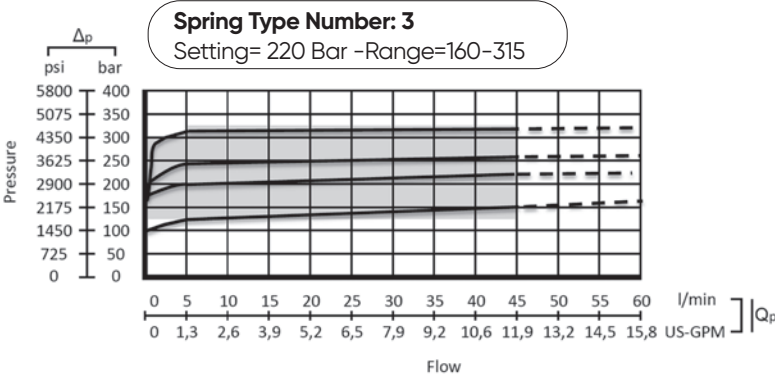
Direct Pressure Relief Valve

Code:

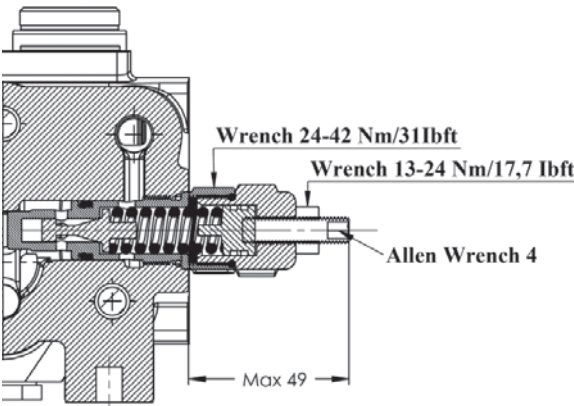
SMR2 – 125



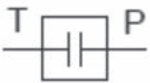
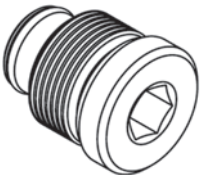
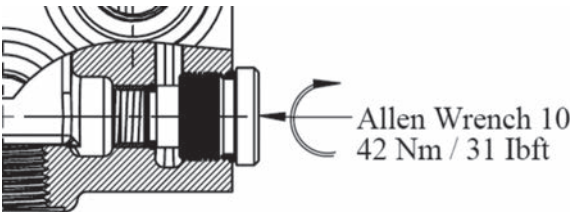
Performance Data



Adjustment Type on Valve

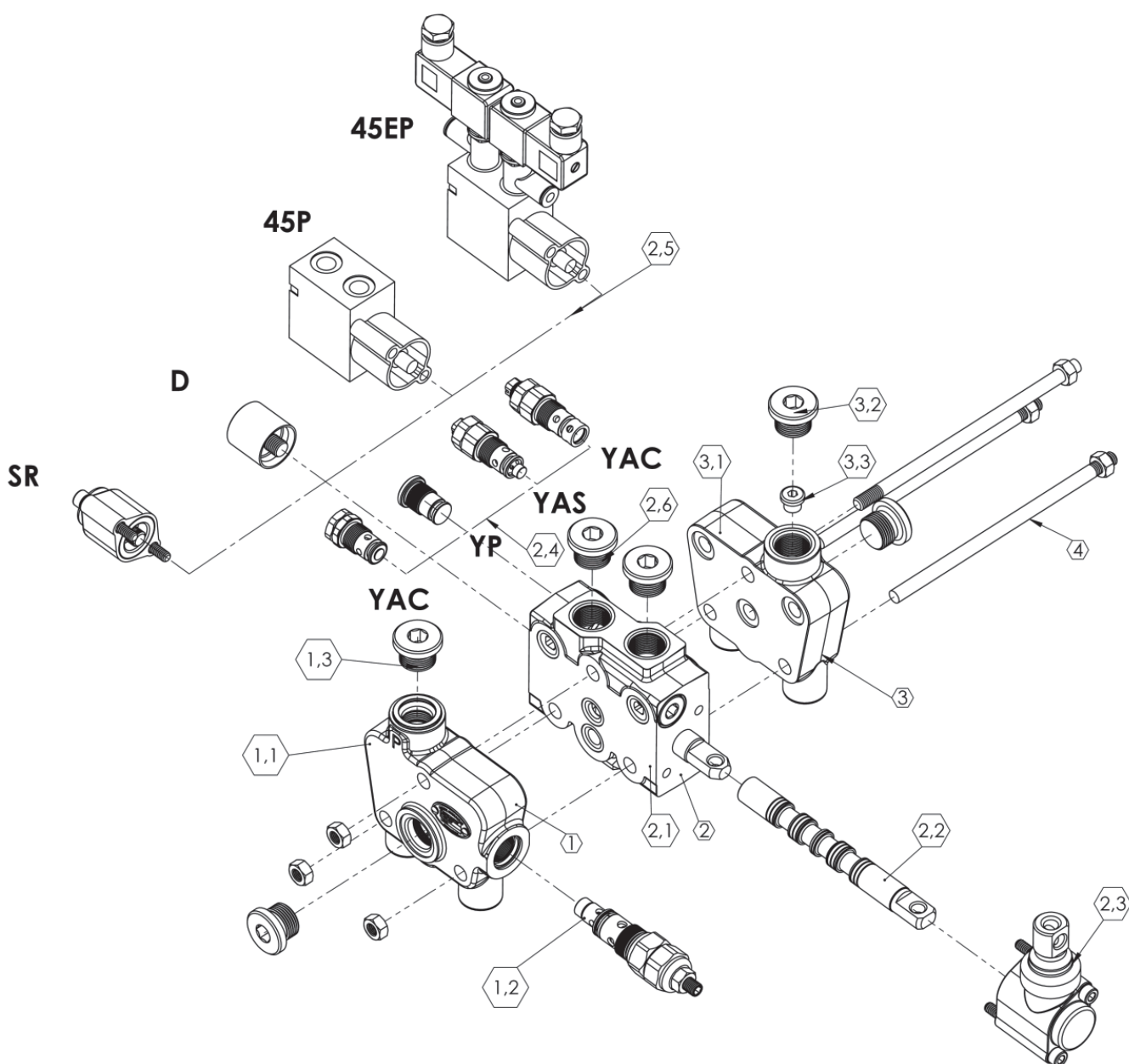
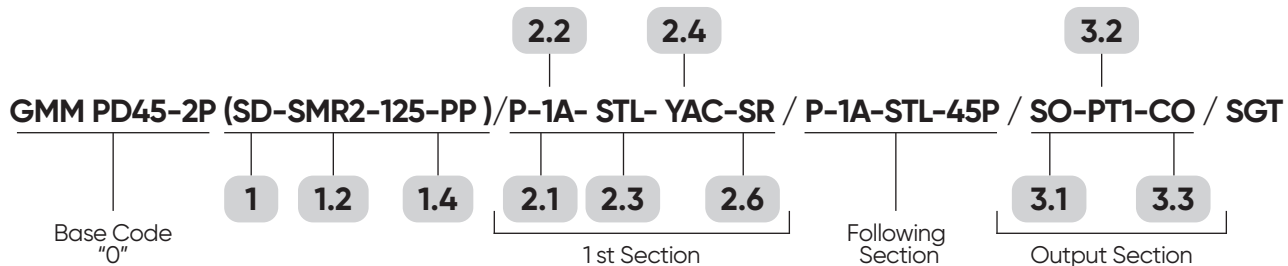


Relief Blanking Plug - WM



ORDERING CODES

Order Example



ORDERING CODES

1- Inlet Section

GMM PD45-2P PD45 = Valve Type-(PD)- Sectional (45) - Max. Flow Rate
2P = Sections Quantity
SD = Side inlet with direct pressure relief valve (1SD45100)
TD = Top inlet with direct pressure relief valve (1TD45100)

2- Working Section

P = Parallel (2P45100)

3- Output Section

SO = Side outlet (3SO45100)
TO = Top outlet (3TO45100)
TCO = Top outlet with carry-over (3TCO45100)
TC = Top outlet with closed centre (3TC45100)

4- Assembling Kit

Tie rod kit for 1 section valve - (4TRK145100)
Tie rod kit for 2 section valve - (4TRK245100)
Tie rod kit for 3 section valve - (4TRK345100)
Tie rod kit for 4 section valve - (4TRK445100)
Tie rod kit for 5 section valve - (4TRK545100)
Tie rod kit for 6 section valve - (4TRK645100)
Tie rod kit for 7 section valve - (4TRK745100)
Tie rod kit for 8 section valve - (4TRK845100)
Tie rod kit for 9 section valve - (4TRK945100)
Tie rod kit for 10 section valve - (4TRK1045100)
Tie rod kit for 11 section valve - (4TRK1145100)
Tie rod kit for 12 section valve - (4TRK1245100)

5-6- O_Ring Kit

5. -1700x2.65 NBR 70 SH O-Ring seal (3 Qty.) (5MK45100)
6. -22.40x2.65 NBR 70 SH O-Ring seal (1 Qty.) (6MK45100)

1.*-Inlet Options

1.1 Inlet Cover
Body = Standard (11BS45100)

1.2 Inlet Relief
SMR1-080 - (12SMR145080)-Range 63-125 bar
Setting 80 bar
SMR2-125 - (12SMR245125)-Range 100-160 bar
Setting 125 bar
SMR3-175 - (12SMR345175)-Range 125-250 bar
Setting 175 bar
SMR4-220 - (12SMR445220)-Range 200-315 bar
Setting 220 bar

1.3 Ports Plug
PA1 =G1/2 Top and side input - (13PA045100)
PA2 = G1/2 Top and side input - (13PA245100)

2.*- Working Options

2.1 Working Section

PA = Without ports valve prearrangement, with parallel circuit - Body (21BSPA45100)

2.2 Spool Options

1A - (22SS45110) - 3 Positions, Double acting
2A - (22SS45120) - 3 Positions, Double acting
A to tank B Blocked
3A - (22SS45130) - 3 Positions, Double acting
B to tank A blocked
4A - (22SS45140) - 3 Positions, Double acting
A and B tank
5A - (22SS45150) - 3 Positions, Single acting on
A (A to tank)
6A - (22SS45160) - 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-(5JL045100)
STL=Standard Lever - (23STL80100)
HL = Remote Cable Kit - (80HL80100)

2.4 Port Relief Valves

Anti-Shock Valve

YAS (T1-50) - (24YAC45050)-Range 35-70 bar
Setting 50 bar

YAS (T1-100) - (24YAC45100)-Range 63-220 bar
Setting 100 bar

YAS (T1-200) - (24YAC45200)-Range 180-350 bar
Setting 200 bar

Anti-Shock and Anti-Cavitation Valve

YAA (T1-63) - (24YAA45063)-Range 35-70 bar
Setting 50 bar

YAA (T1-100) - (24YAA45063)-Range 63-220 bar
Setting 100 bar

YAA (T1-200) - (24YAA45063)-Range 180-350 bar
Setting 200 bar

YAC - Anti Cavitation- (24YAS45100)

YP- A and B ports valve blanking plug (24YP45100)

DST-A and B ports valve blanking plugs with connection to tank-(24DST45100)

2.5 Ports Plug Options

PL1 =Plug for single action spool for 2A-3A, G1/2 (25PL145100)

PL2 =Plug for single action spool for 2A-3A, G3/8 (25PL245100)

2.6 Spool Positioners

SR=Spring Return in neutral position - (26SR45100)

D =Detent in position 1, neutral and 2 -(26D45100)

45P=ON/OFF Pneumatic - (2645P150100)

45EP=12 VDC ON/OFF electro-pneumatic (2645EP150112)

45EH= 12 VDC/24 VDC ON/OFF electro-hydraulic (3645EH100112)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS45100)

3.2 Output Plug

PT1 =G1/2 Top and Side output (32PT145100)

3.3 Circuits Options

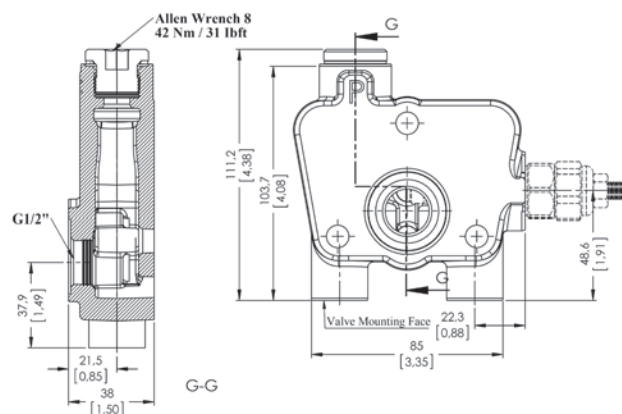
CO =G1/8 Carry-Over Connector (33CO45100)

INLET COVER - PUMP SIDE

LH Inlet Valve Options

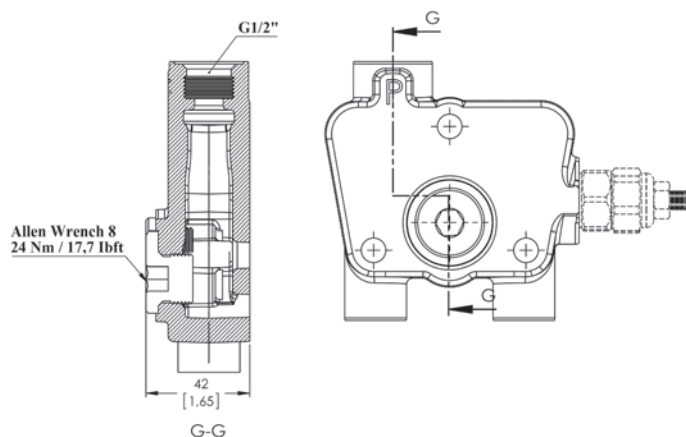
Type No: **SD**

Sectional Appearance



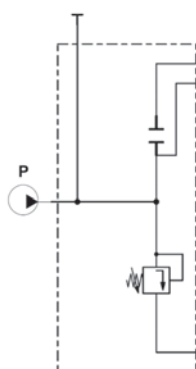
Type No: **TD**

Sectional Appearance

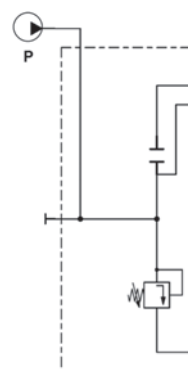


Hydraulic Diagram

Type No: **SD**

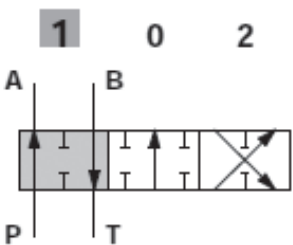
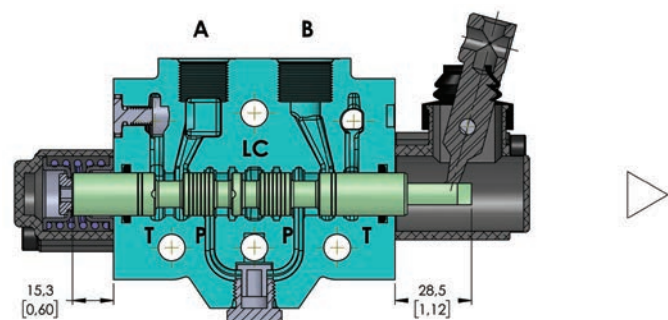
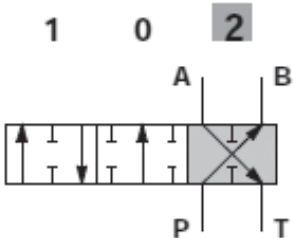
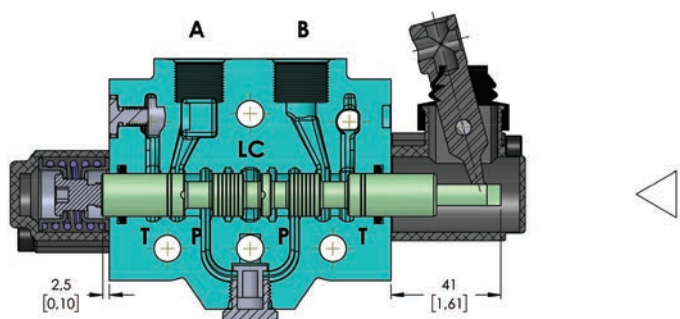
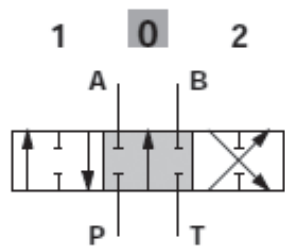
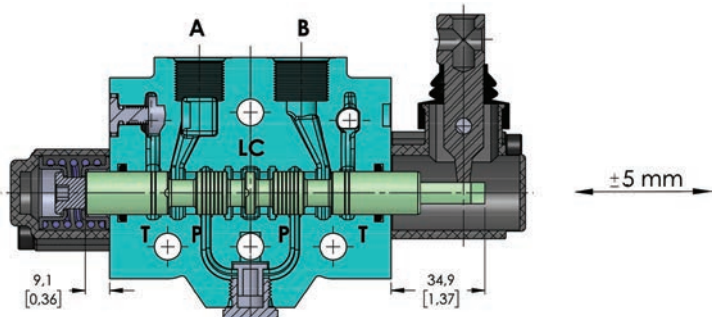


Type No: **TD**

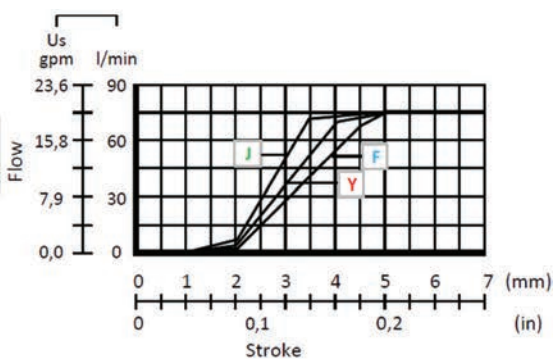
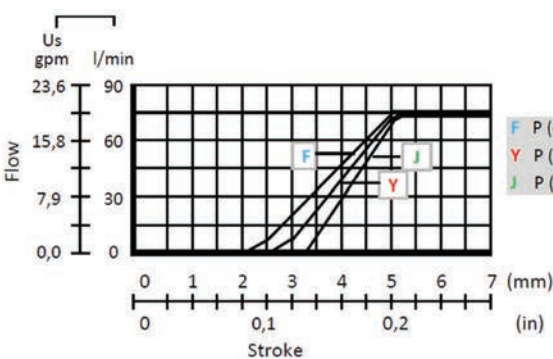


SPOOL OPTIONS

Spool Type - 1A

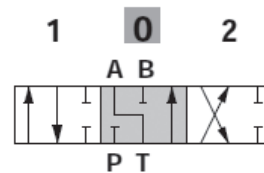
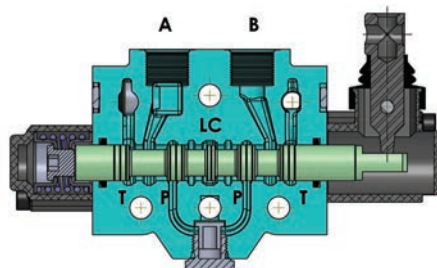


Performance Curve And Data

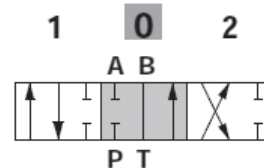
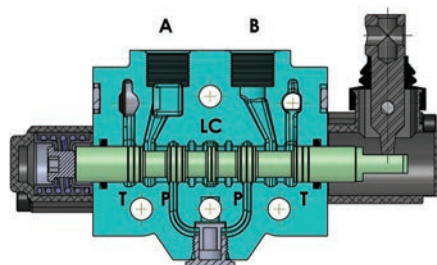


SPOOL OPTIONS

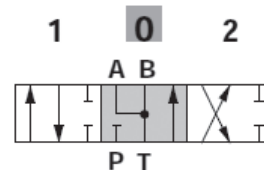
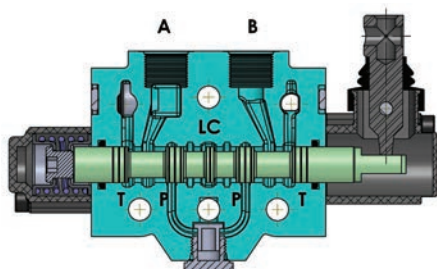
Spool Type - 2A



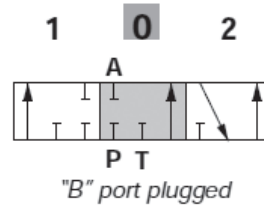
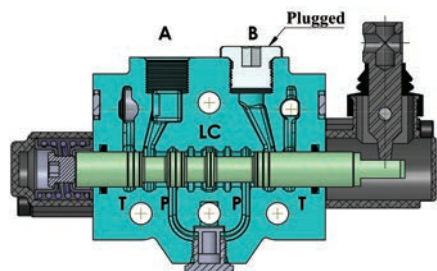
Spool Type - 3A



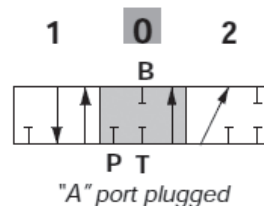
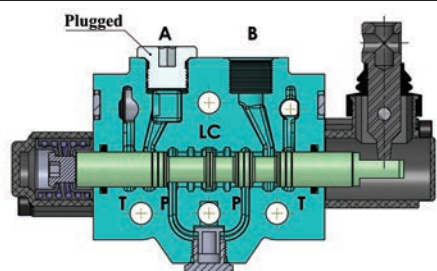
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A



SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: SR

Sectional Appearance

Diagram

Allen Wrench 8
24 Nm / 17,7 lbft

Allen Wrench 5
9,8 Nm / 7,2 lbft

36,9
[1,45]



With Detent

Kit No: D

Sectional Appearance

Diagram

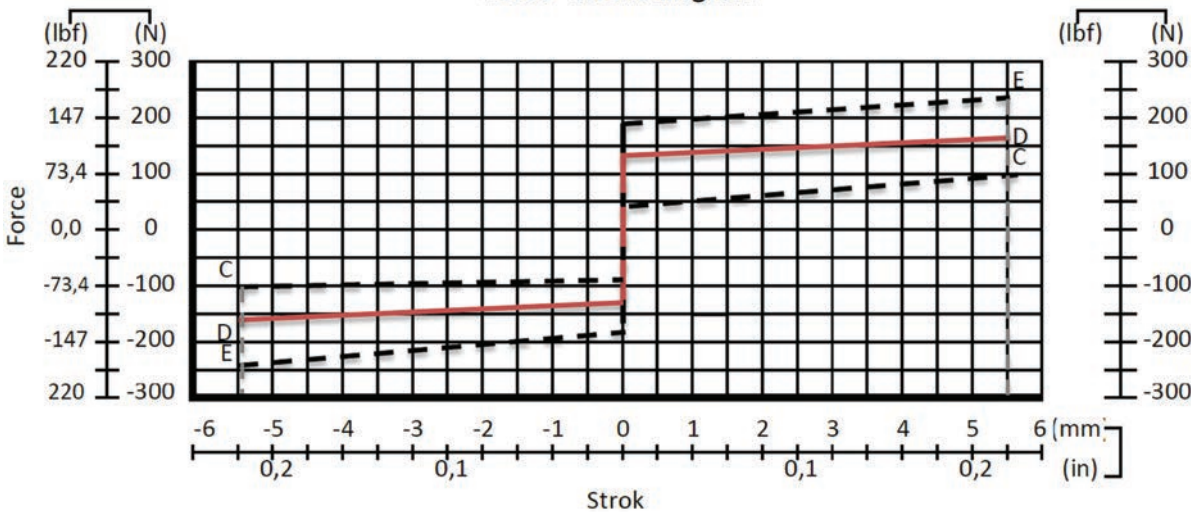
Slotted Wrench 8
24 Nm / 17,7 lbft

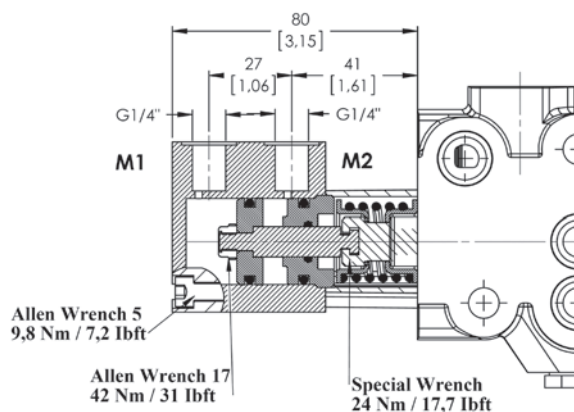
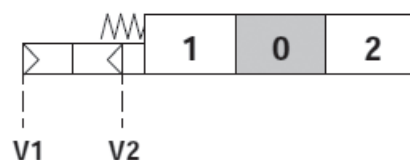
Allen Wrench 5
9,8 Nm / 7,2 lbft

36,9
[1,45]

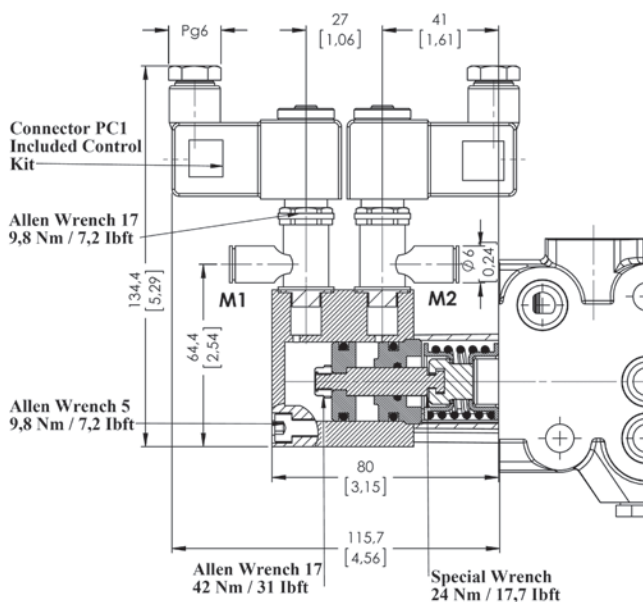
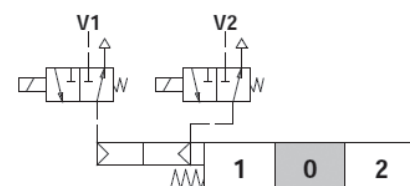


Force - stroke diagram



SPOOL POSITIONERS – SIDE OF RETURN
ON/OFF Pneumatic Control
Kit No: 45P
Sectional Appearance

Diagram

Operating Features

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

ON/OFF Electro-Pneumatic Control
Kit No: 45EP
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

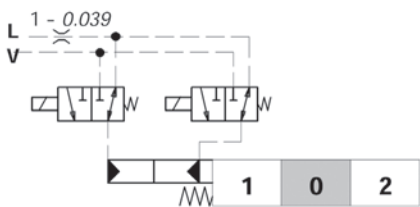
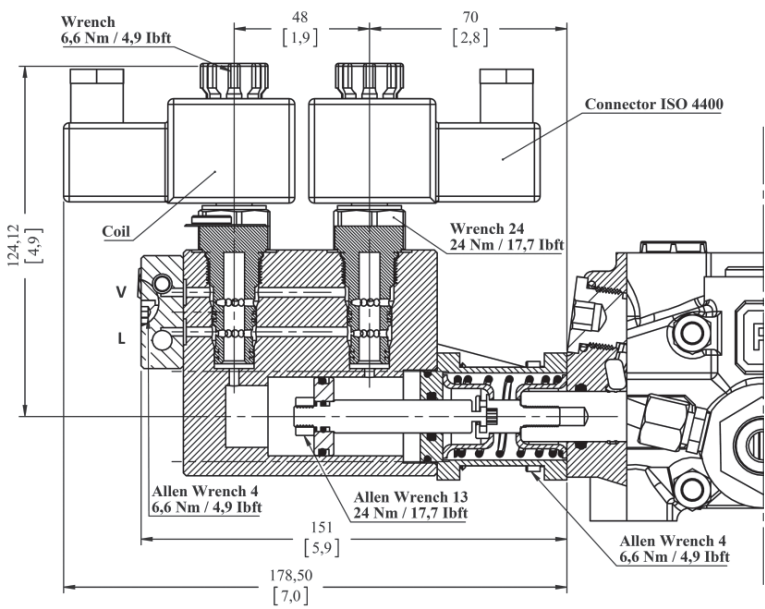
SPOOL POSITIONERS – SIDE OF RETURN

ON/OFF Electro - Hydraulic Control

Kit No: 45EH

Sectional Appearance

Diagram



Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
Nominal voltage.....: 12 VDC / 24 VDC
Power rating.....: 21 W
Duty cycle.....: %100
Protection type.....: IP 65
Nominal voltage tolerance.....: ±10
Max temperatures.....: 100 C°
Stroke.....: ±5,5 mm

ORDER CODE

External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
COL 12 - 10COL1001 - Kit For Section 2
COL 13 - 10COL1001 - Kit For Section 3
COL 14 - 10COL1001 - Kit For Section 4
COL 15 - 10COL1001 - Kit For Section 5
COL 16 - 10COL1001 - Kit For Section 6
COL 17 - 10COL1001 - Kit For Section 7
COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

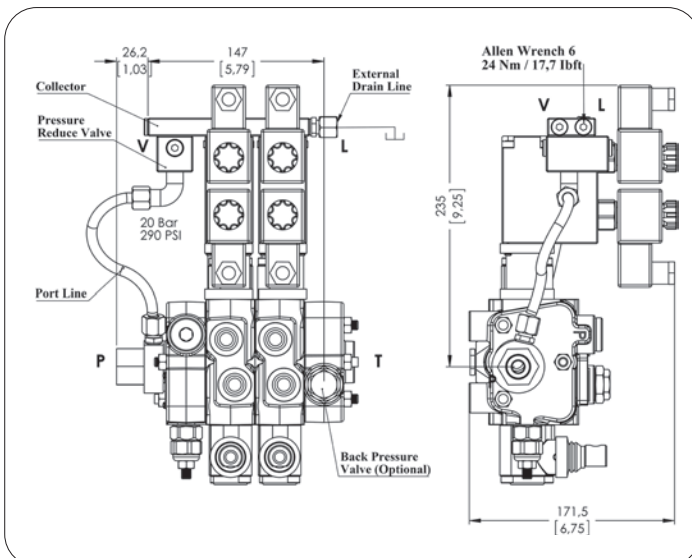
COL 21 - 10COL2001 - Kit For Section 1
COL 22 - 10COL2001 - Kit For Section 2
COL 23 - 10COL2001 - Kit For Section 3
COL 24 - 10COL2001 - Kit For Section 4
COL 25 - 10COL2001 - Kit For Section 5
COL 26 - 10COL2001 - Kit For Section 6
COL 27 - 10COL2001 - Kit For Section 7
COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

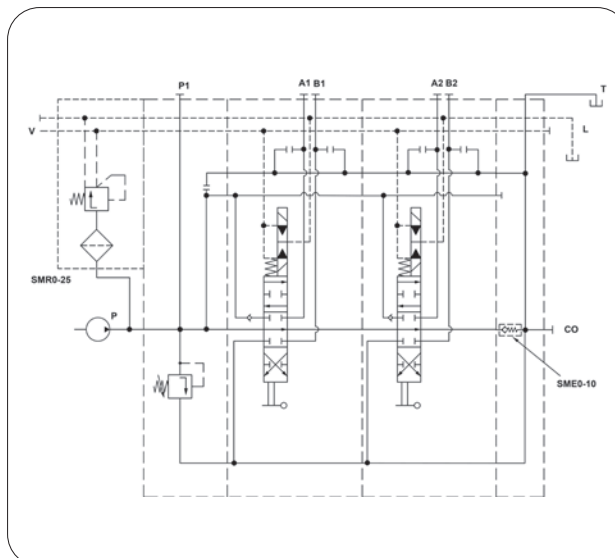
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram



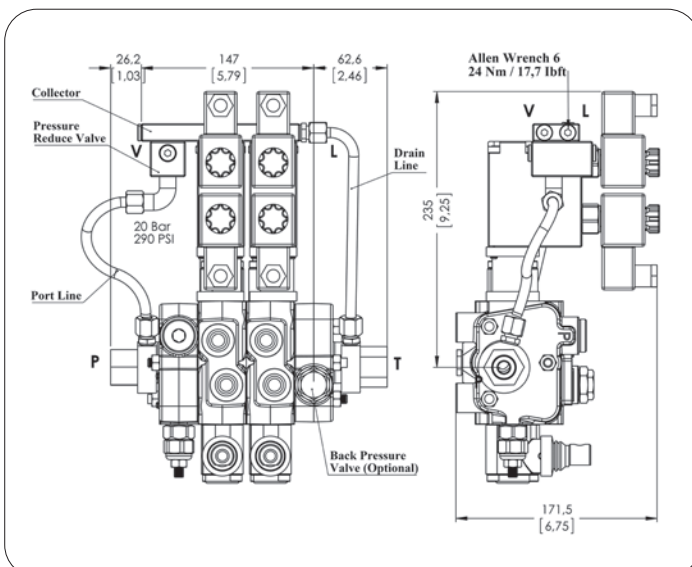
Operating Features

External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)

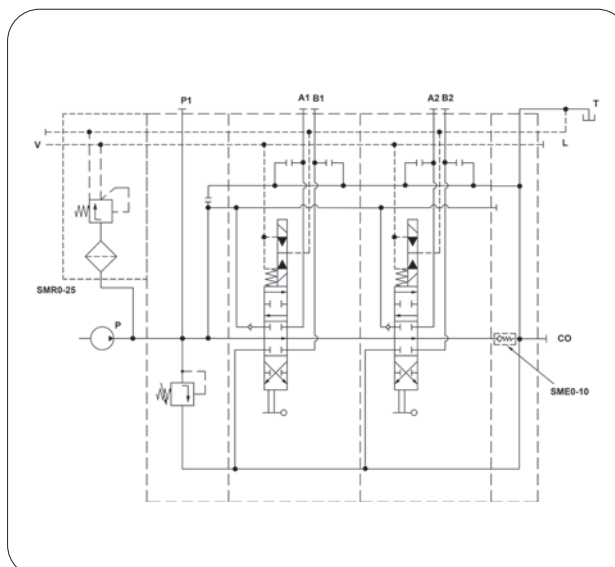
Code= GMM PD45-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-45EH/ P-1A-STL-45EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

Outlet Pressure: 20 Bar / 290 Psi

Max. Flow.....: 8 l/min

Filtration: 80 µ

Code= GMM PD45-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-45EH/ P-1A-STL-45EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

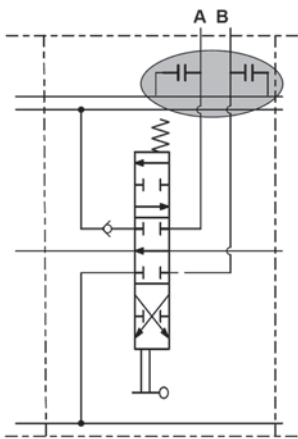
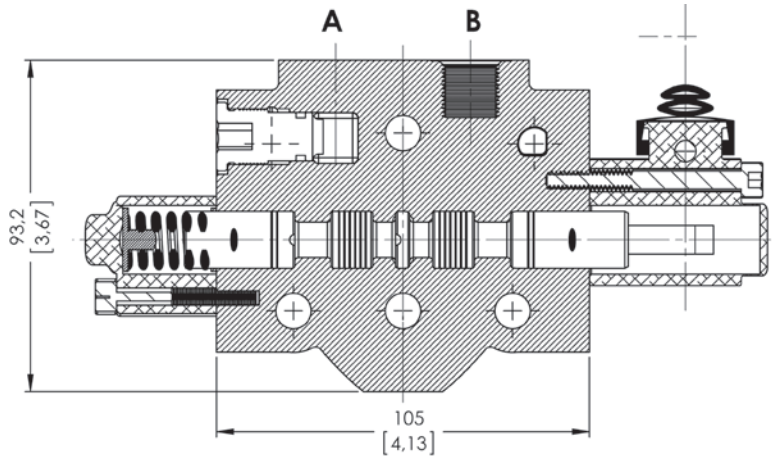
WORKING SECTION KIT

With Port Valves Type

Kit No: 45P

Sectional Appearance

Diagram



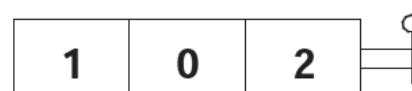
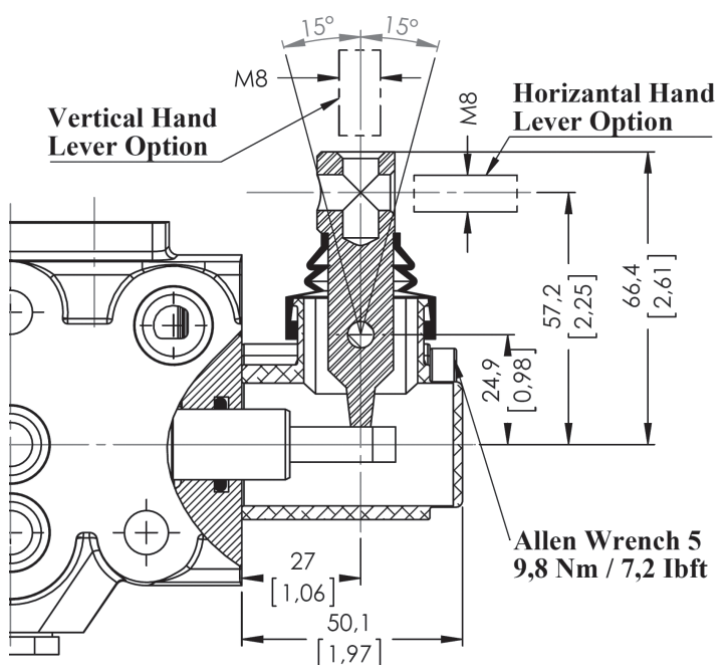
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: **STL - L0**

Sectional Appearance

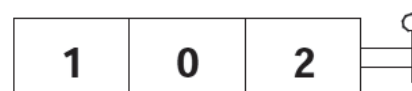
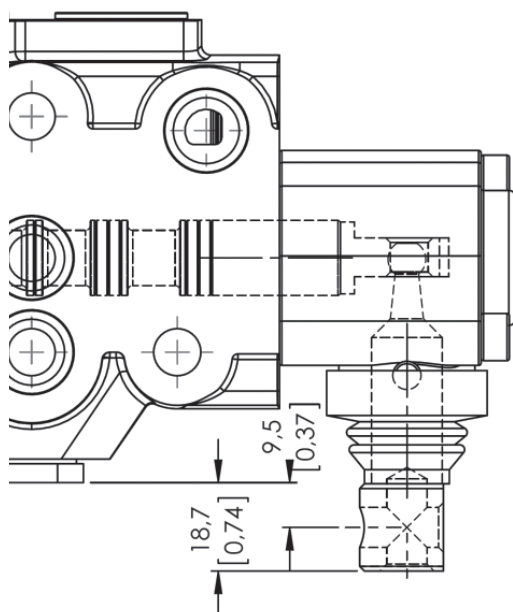
Diagram



Kit No: **STL - L180**

Sectional Appearance

Diagram



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

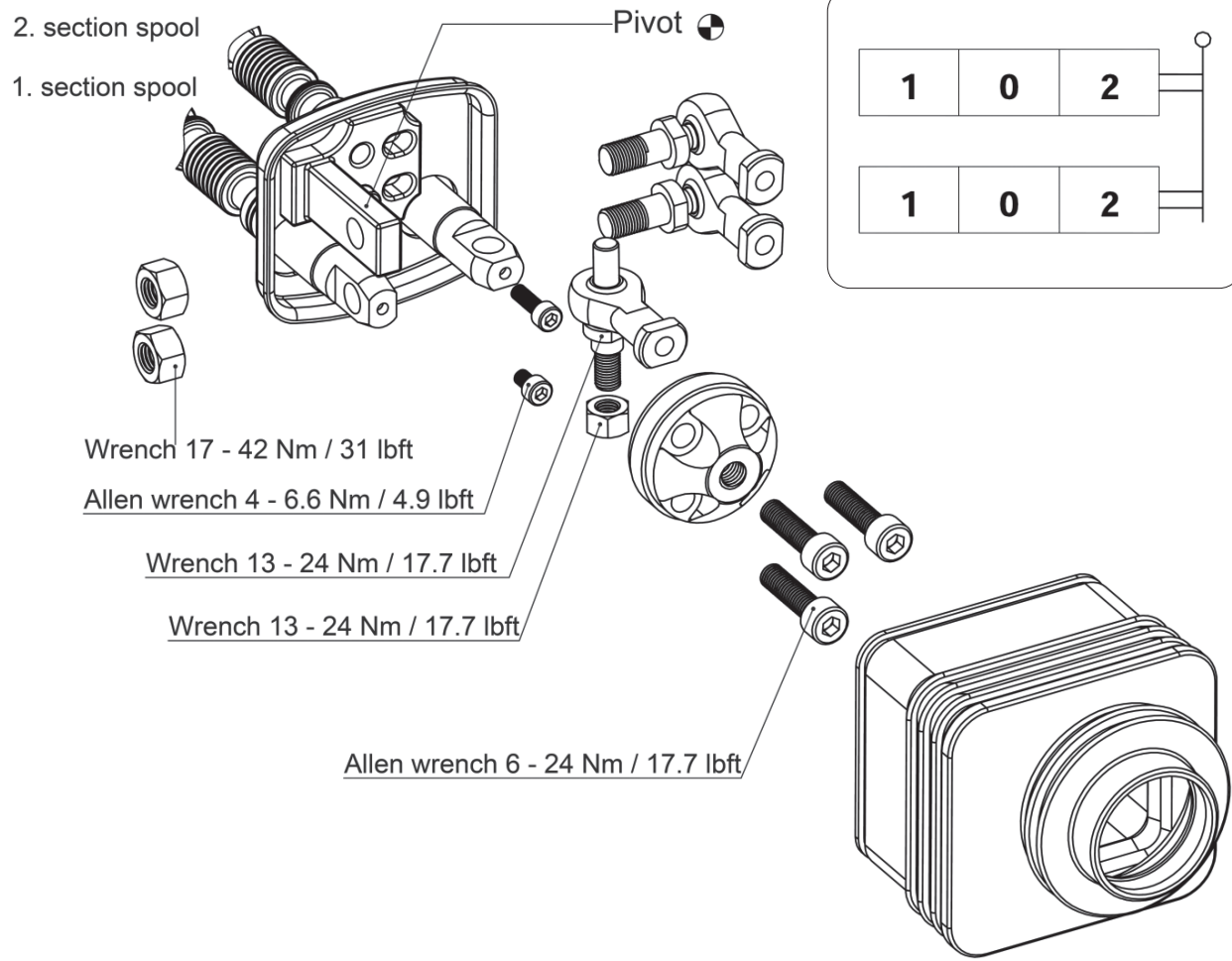
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls - Joystick

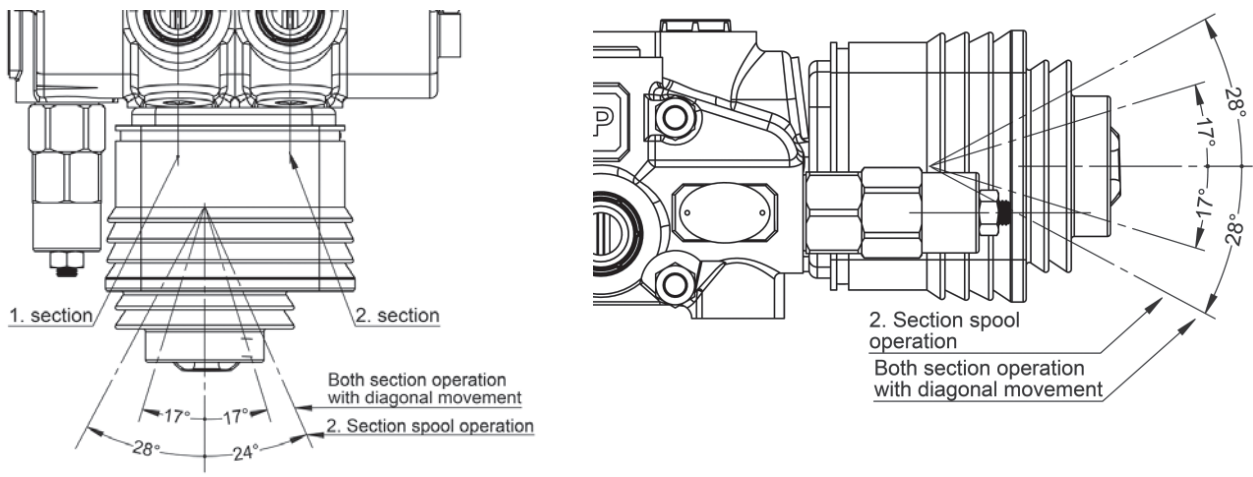
Kit No: JL

Exploded View

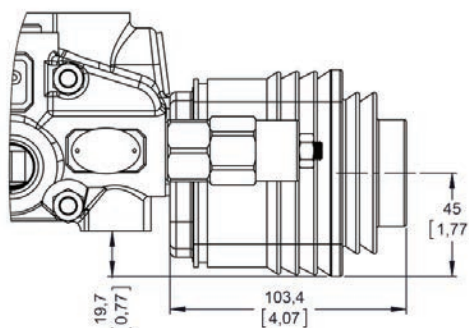
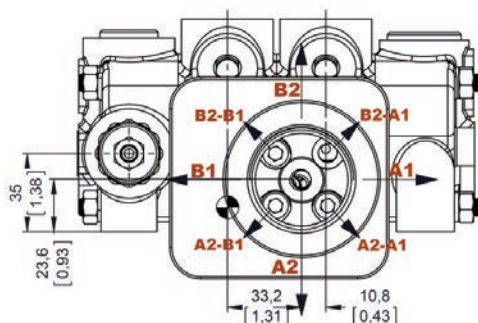
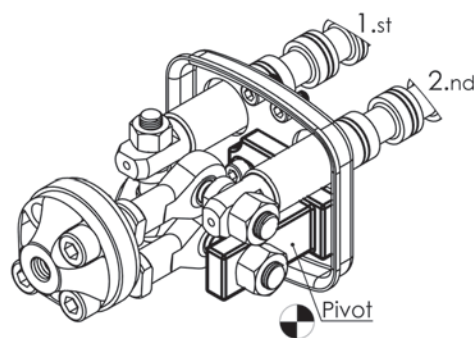
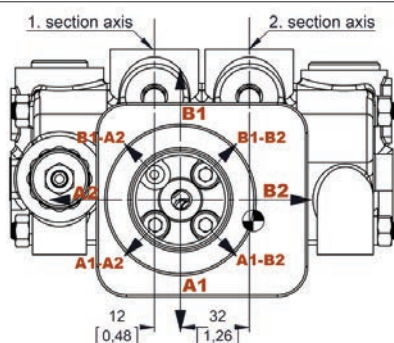
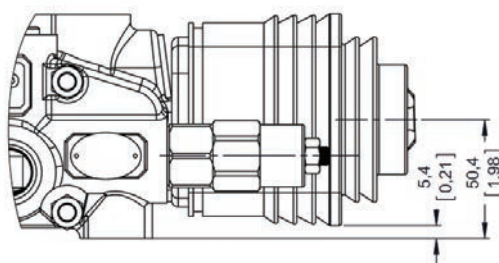
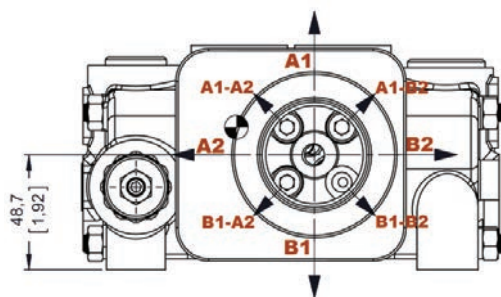
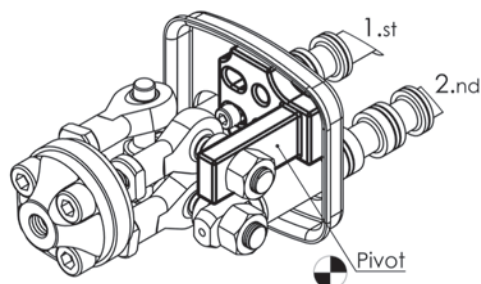
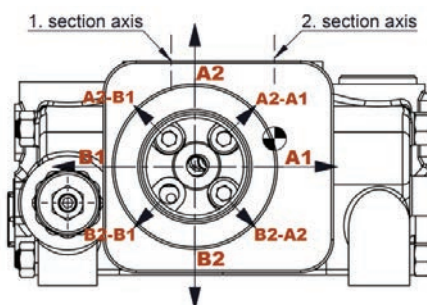
Diagram



Operation Angle:



SPOOL POSITIONERS – SIDE OF LEVER CONTROL
Lever Controls – Joystick
Dimensions and movement scheme

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


SPOOL POSITIONERS – SIDE OF LEVER CONTROL

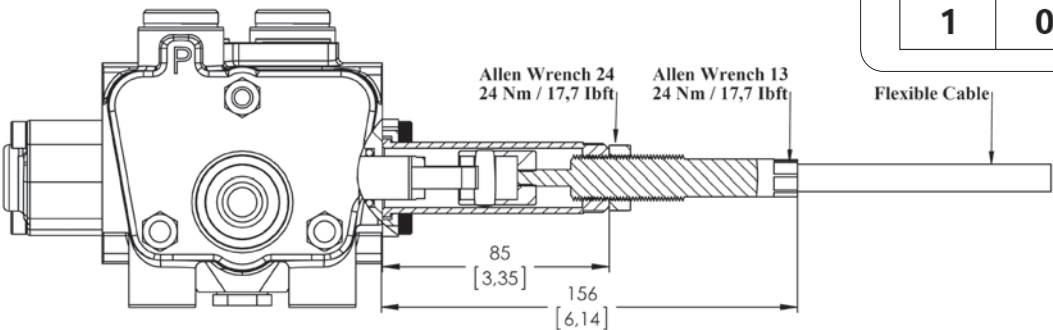
Lever Controls – Cable Control

Kit No: HL

Sectional Appearance

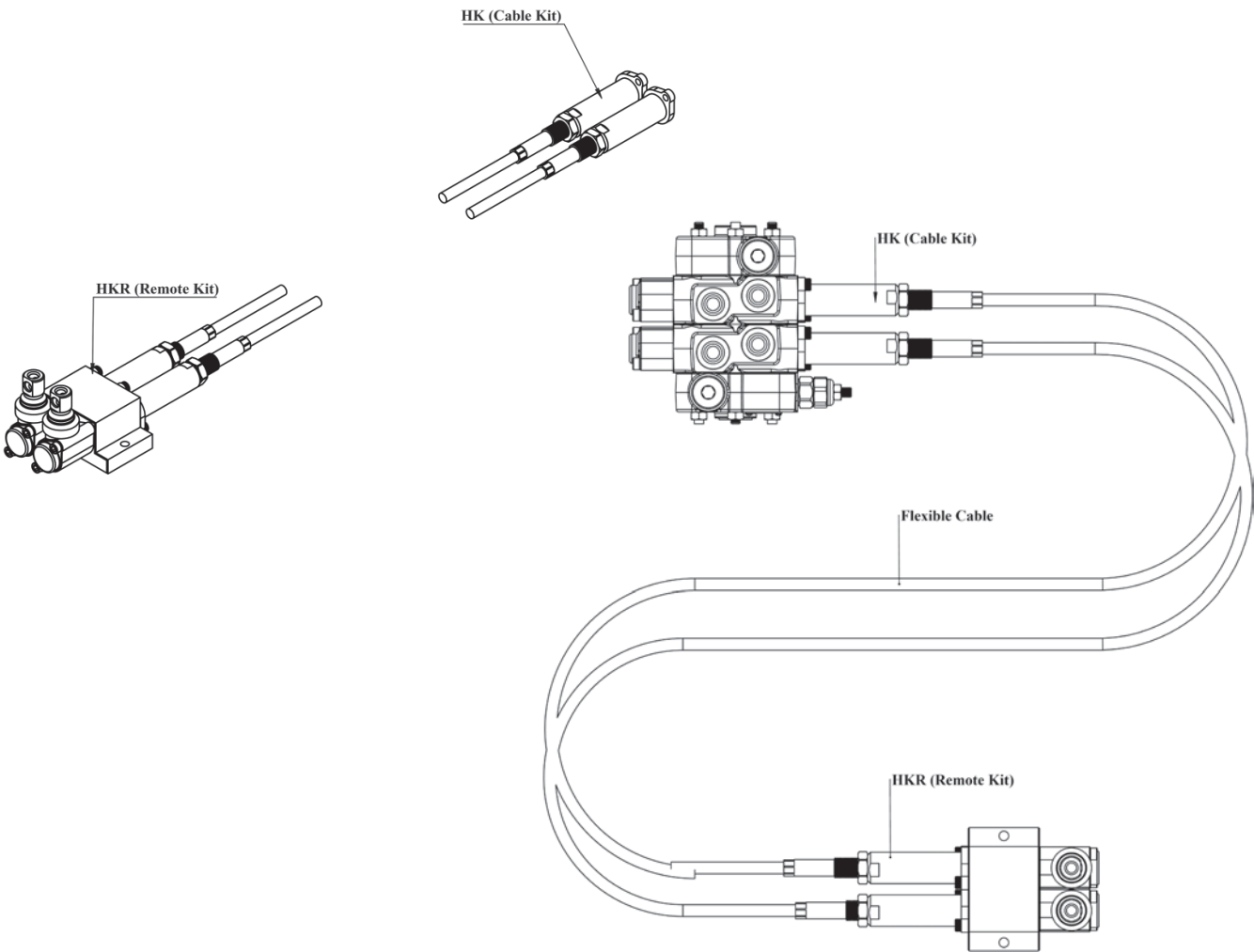
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control has several options. Please indicate the cable length demanded and contact our sales department.

Example Operation



COMPLETE CONTROL – ON / OFF SOLENOID CONTROL

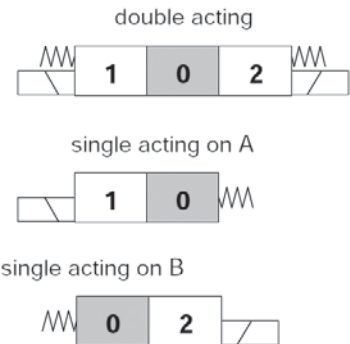
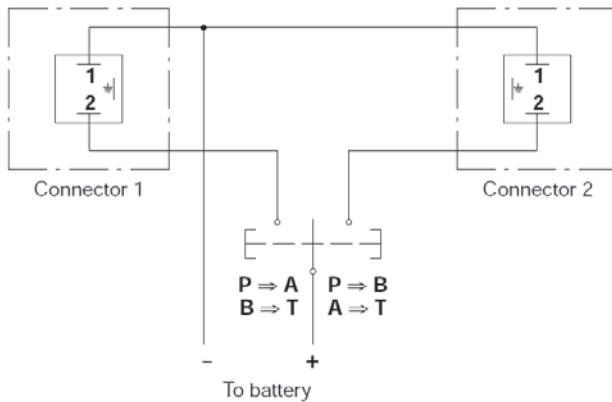
ON/OFF Solenoid Control

Kit No: **SEC**

Sectional Appearance

Diagram

Electric wiring example



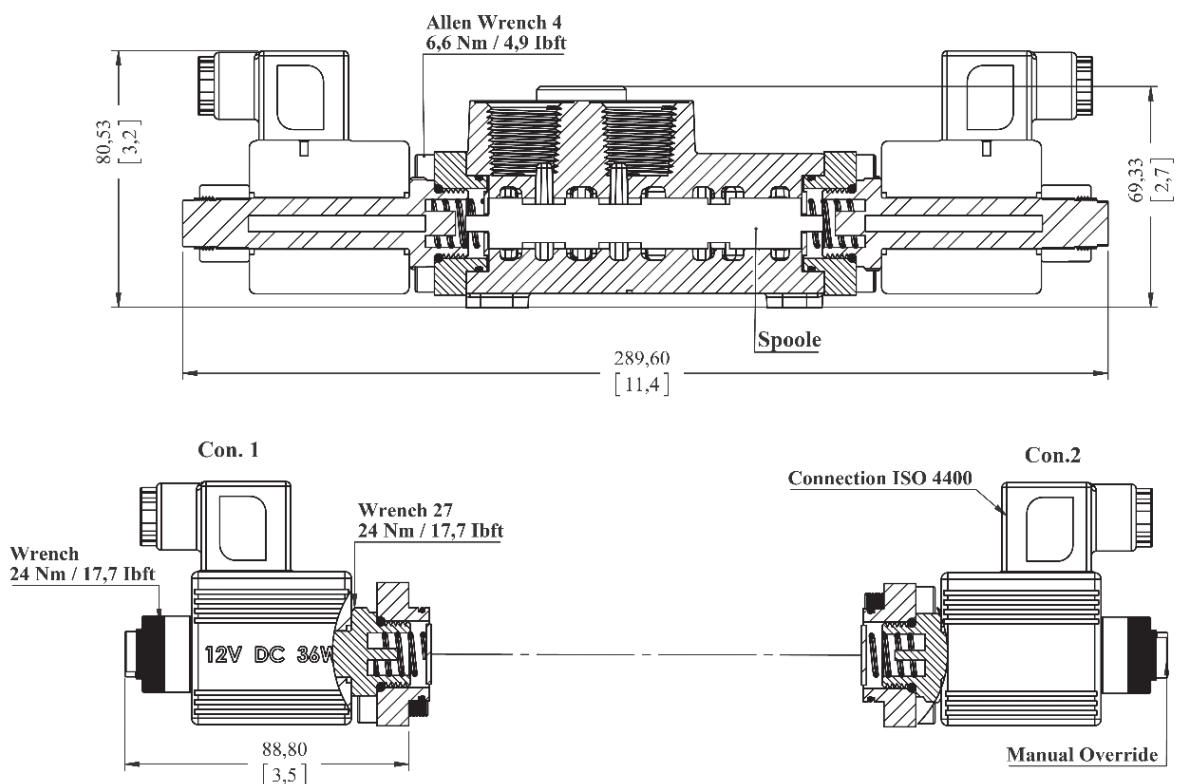
Operating Features

Max Working Pressure.....: 230 Bar / 3300 Psi
Max back pressure: 5 Bar / 80 Psi
Internal Leakage.....: 10 cm³ / min

Solenoid Operating Features

Nominal voltage.....: 12 VDC / 24 VDC
Power rating.....: 36 W
Duty cycle.....: %100
Nominal voltage tolerance.....: ±10

Coil insulation: Class H
Stroke.....: ±3

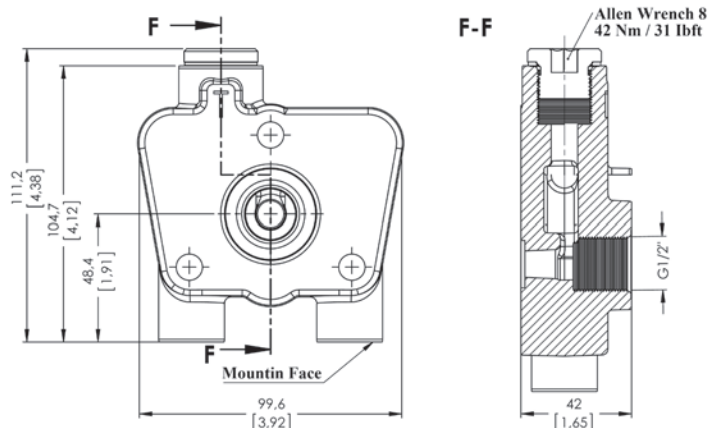


OUTLET COVER - TANK SIDE

Output Cover Options

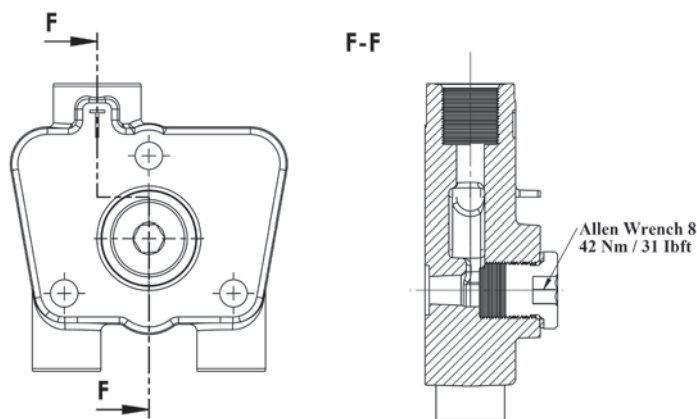
Kit No: **SO**

Sectional Appearance



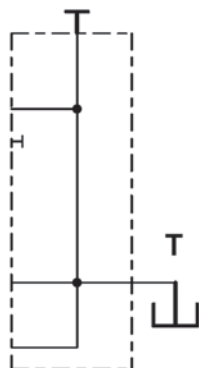
Kit No: **TO**

Sectional Appearance

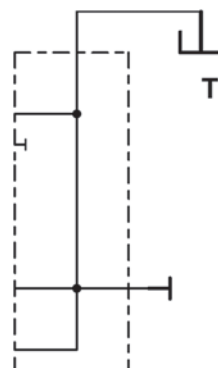


Hydraulic Diagram

Type No: **SO**



Type No: **TO**

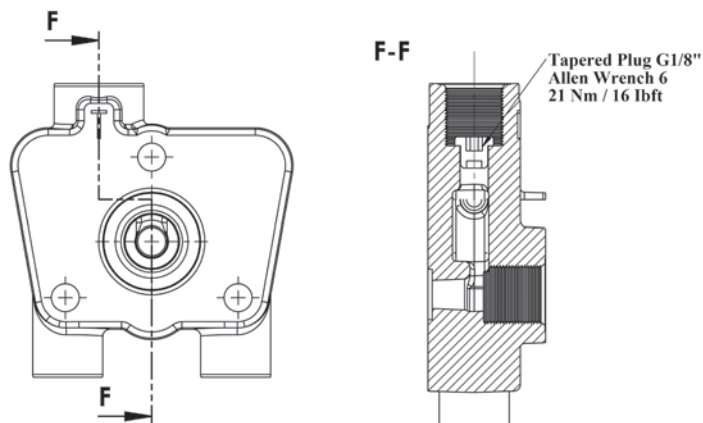


OUTLET COVER - TANK SIDE

Output Cover Options

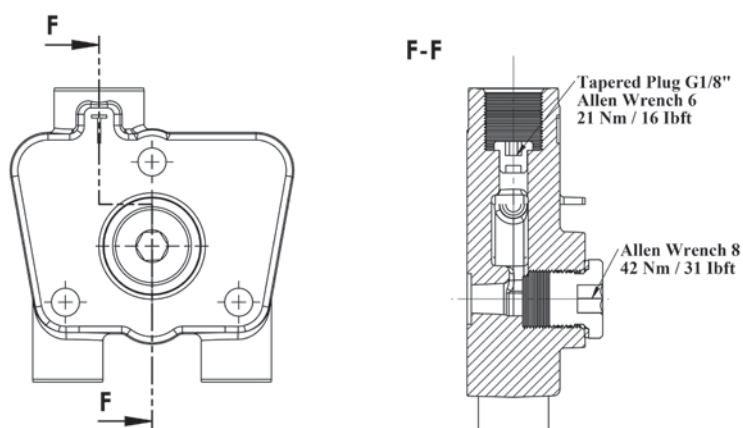
Kit No: **TCO**

Sectional Appearance



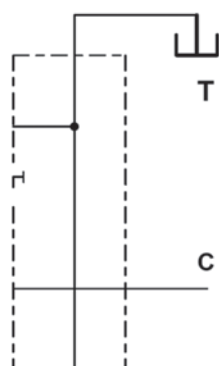
Kit No: **TC**

Sectional Appearance

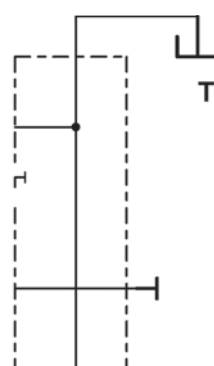


Hydraulic Diagram

Type No: **TCO**



Type No: **TC**



PORT VALVES OPTIONS

Anti Shock Valves

Code:

YAS-1 (T1-100)

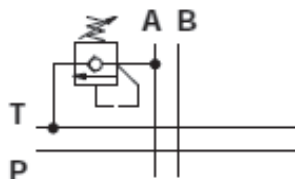
Pressure Setting in Bar

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

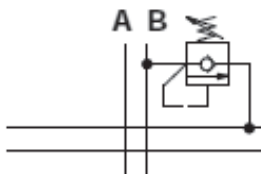
1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

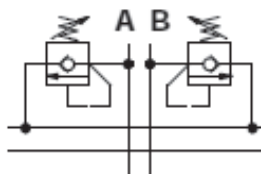
Kit No: YAS1



Kit No: YAS2



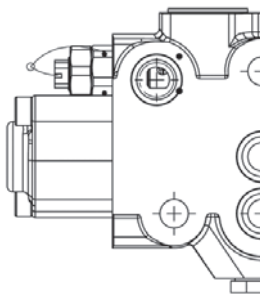
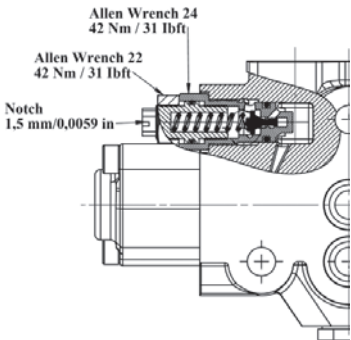
Kit No: YAS3



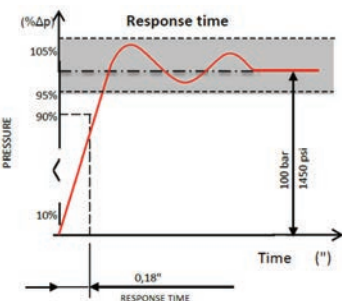
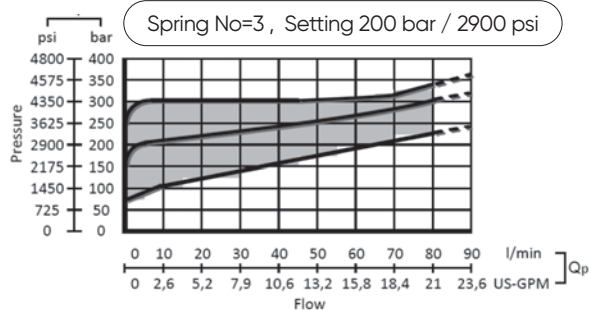
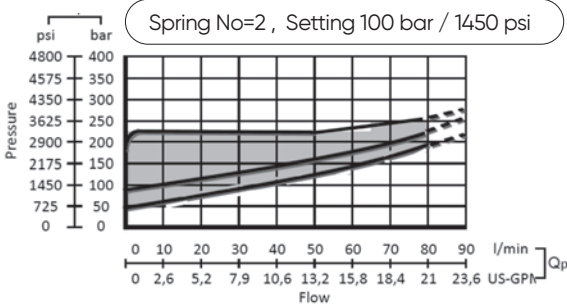
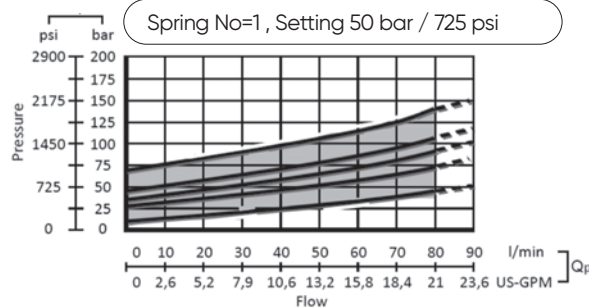
Adjustment Type on Valve:

T = With screw

L = Valve set



Performance Data:



PORT VALVES OPTIONS

Anti shock And Anti Cavitation Valves

Code:

YAA-1 (T1-100)

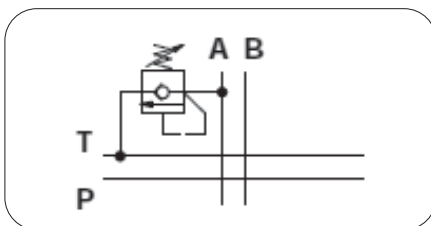
→ Pressure Setting in Bar

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

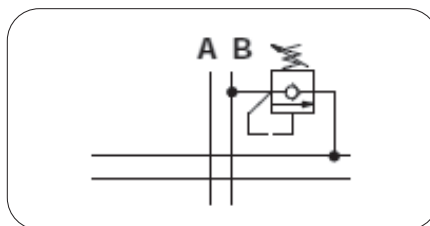
→ 1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

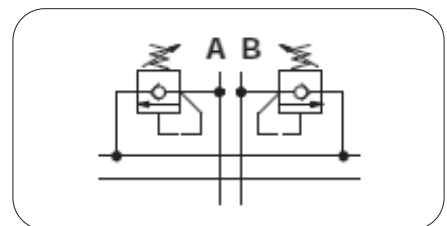
Kit No: **YAA1**



Kit No: **YAA2**

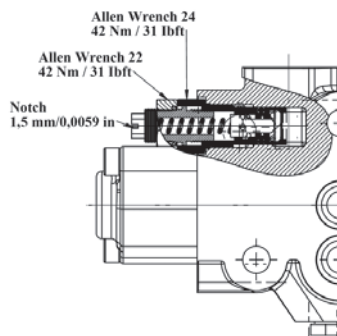


Kit No: **YAA3**

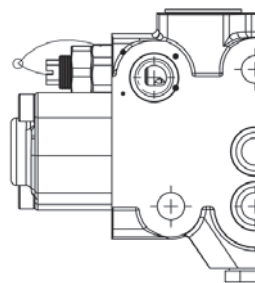


Adjustment Type on Valve:

T = With screw

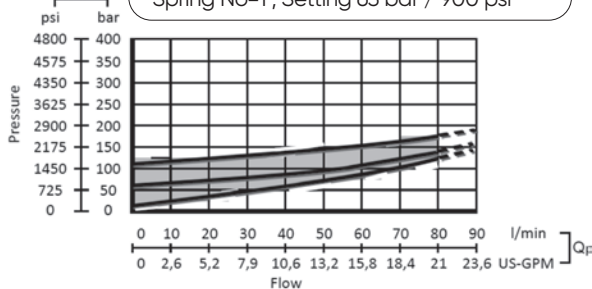


L = Valve set

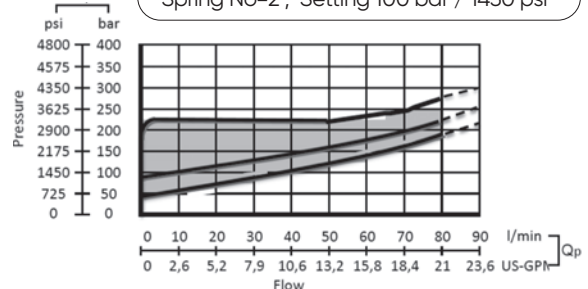


Performance Data:

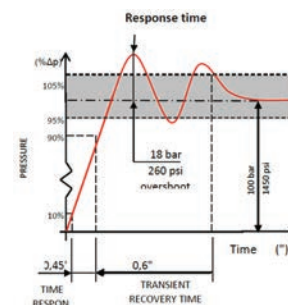
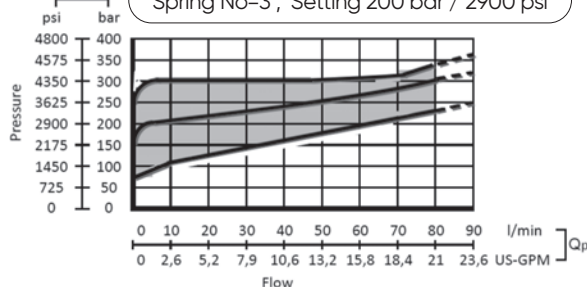
Spring No=1 , Setting 63 bar / 900 psi



Spring No=2 , Setting 100 bar / 1450 psi



Spring No=3 , Setting 200 bar / 2900 psi



PORT VALVES OPTIONS

Anti Cavitation Valves

Code:

YAC-1

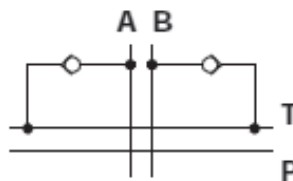
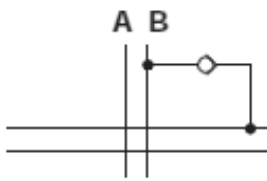
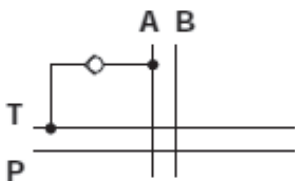
→ 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram

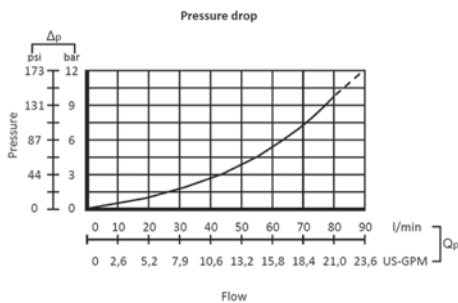
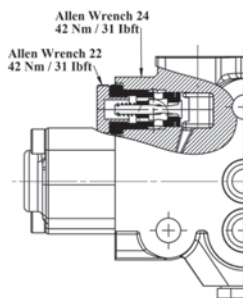
Kit No: YAC1

Kit No: YAC2

Kit No: YAC3



Adjustment Type on Valve And Data:



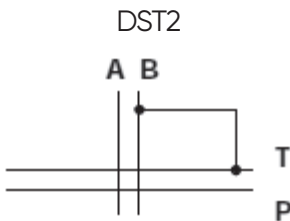
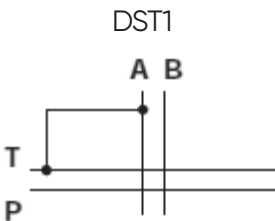
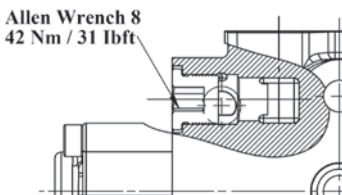
Valve Blanking

Plug with tank connection

DST-1 (1:Mounted port A – 2:Mounted port B)

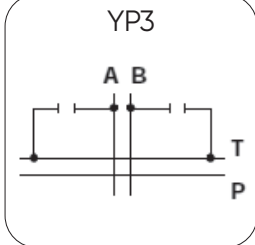
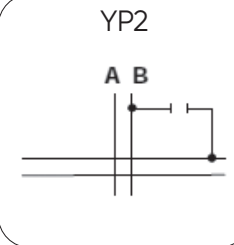
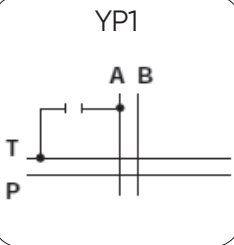
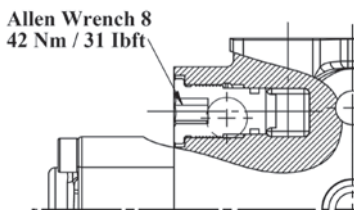
Sectional Appearance

Hydraulic Diagram



Plug

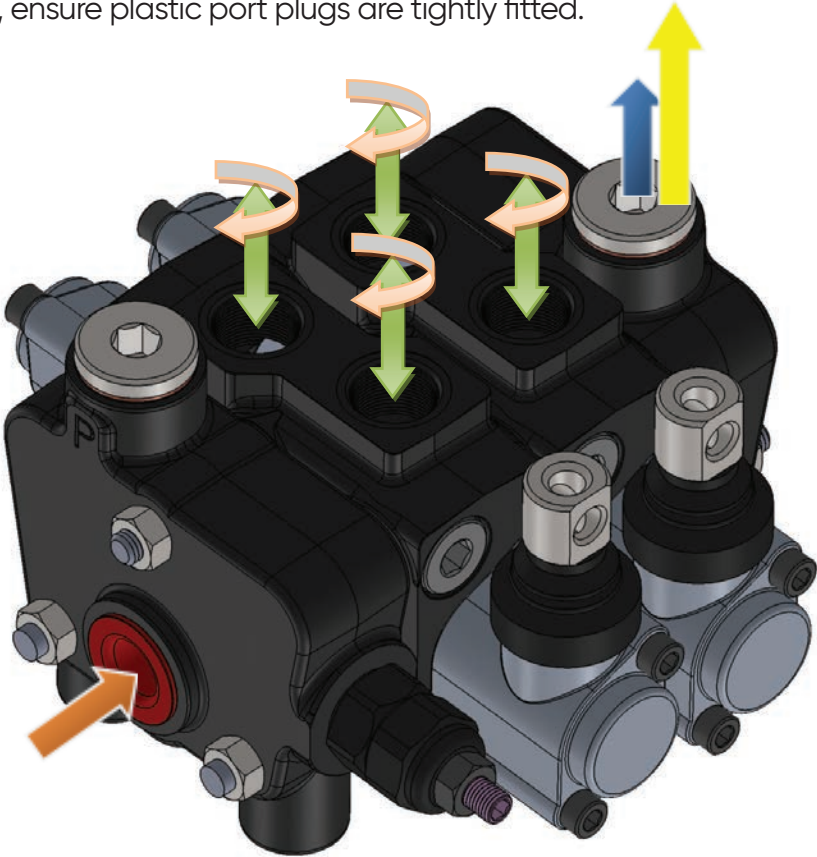
YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)



INSTALLATION AND MAINTENANCE

The GMM-PD45 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

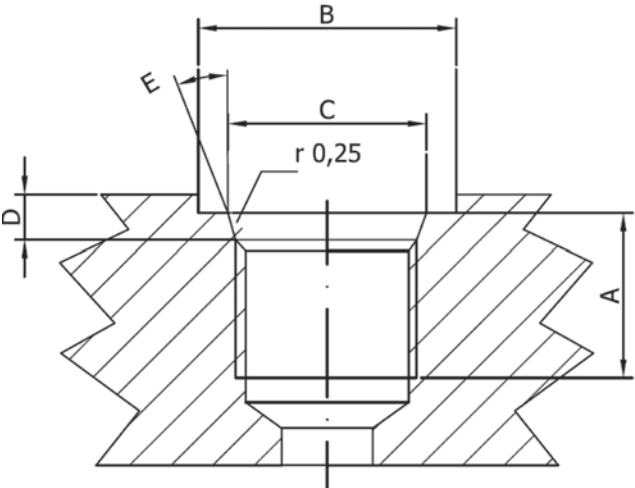
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



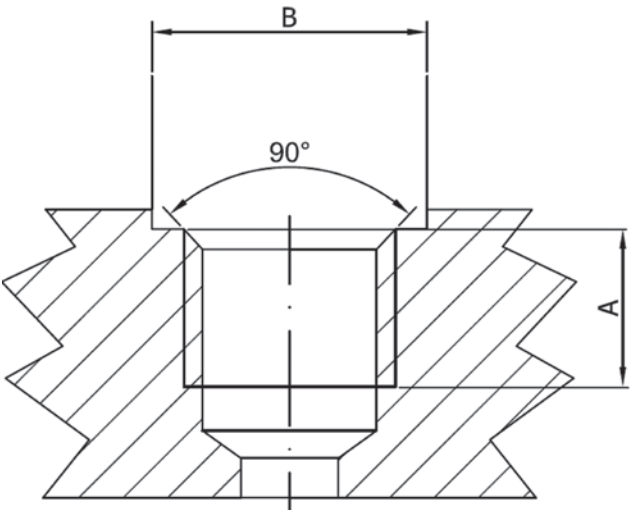
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 3/8	G 3/8	G 1/2
With O--Ring seal	35 / 25.8	35 / 25.8	50 / 36.9
With copper washer	40 / 29.5	40 / 29.5	60 / 44.3
With steel and rubber washer	30 / 22.1	30 / 22.1	60 / 44.3
BSP (ISO 228/1)	G 1/2	G 1/2	G 1/2
With O--Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3
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

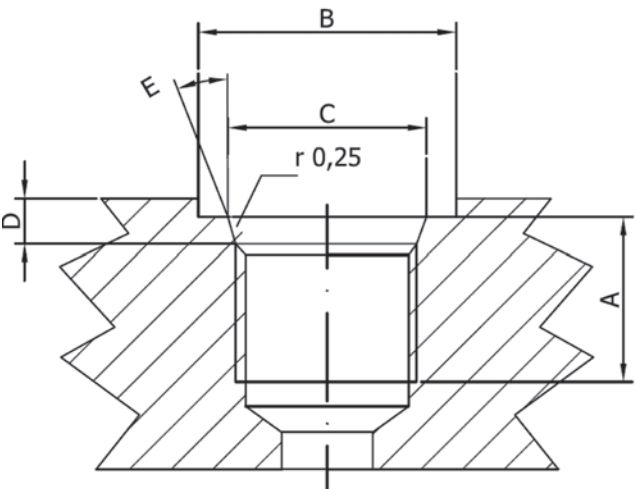
Ports Dimensional Data



SAE UN-UNF (ISO 725)							
Dimensions		9/16-18		3/4-16		7/8-14 UNF	
mm	in	UNF SAE6		UNF SAE8		SAE10	
A		13	0,51	15	0,59	17	0,67
B		25	0,83	30	1,18	34	1,34
C		13,6	0,61	20,6	0,81	23,9	0,94
D		2,5	0,10	2,5	0,10	2,5	0,10
E		15°		15°		15°	



BSP (ISO 228)							
Dimensions		G1/4		G3/8		G1/2	
mm	in						
A		14	0,55	14	0,55	16	0,63
B		19	0,75	23	0,91	27	1,06



METRIC (ISO 262)					
Dimensions		M18x1,5 ISO 262		M22x1,5 ISO 262	
mm	in				
A		14	0,55	16	0,63
B		27,5	1,08	31,5	1,24



GMM
PD45



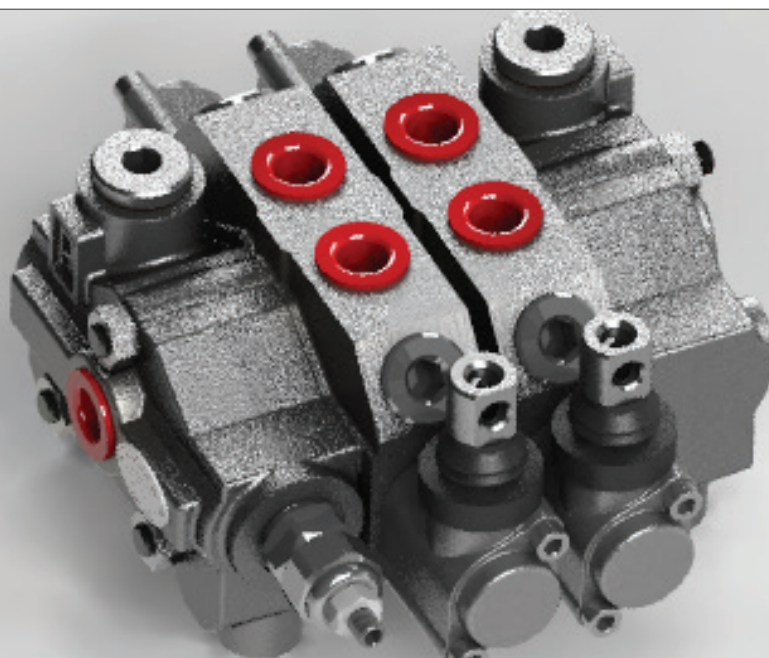


SECTIONAL
VALVES

GMM-PD60

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 (01/2020).

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

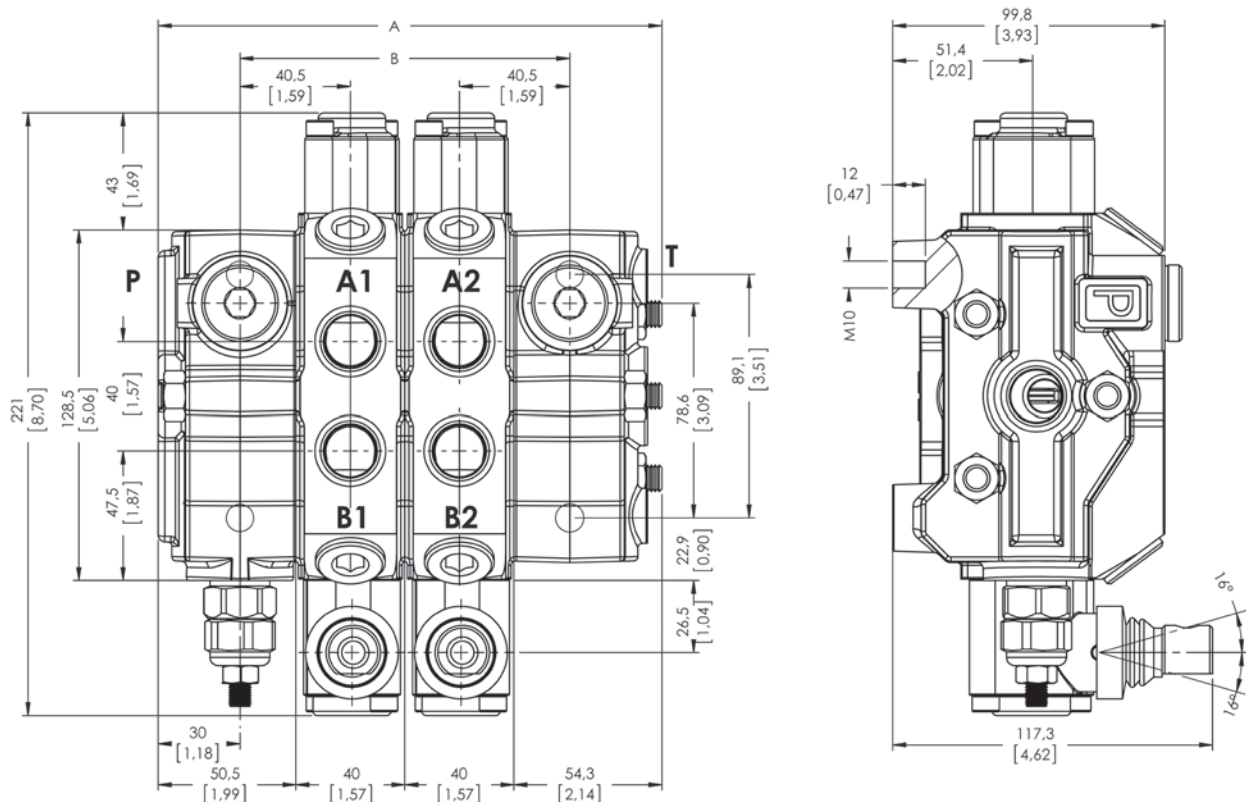
WORKING CONDITIONS

Nominal Flow Rating / Displacement	60 l/min	16 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 Viscosity – 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	30 Nm	22 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.
- Optional Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diameter is 16 mm – 0,63 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA


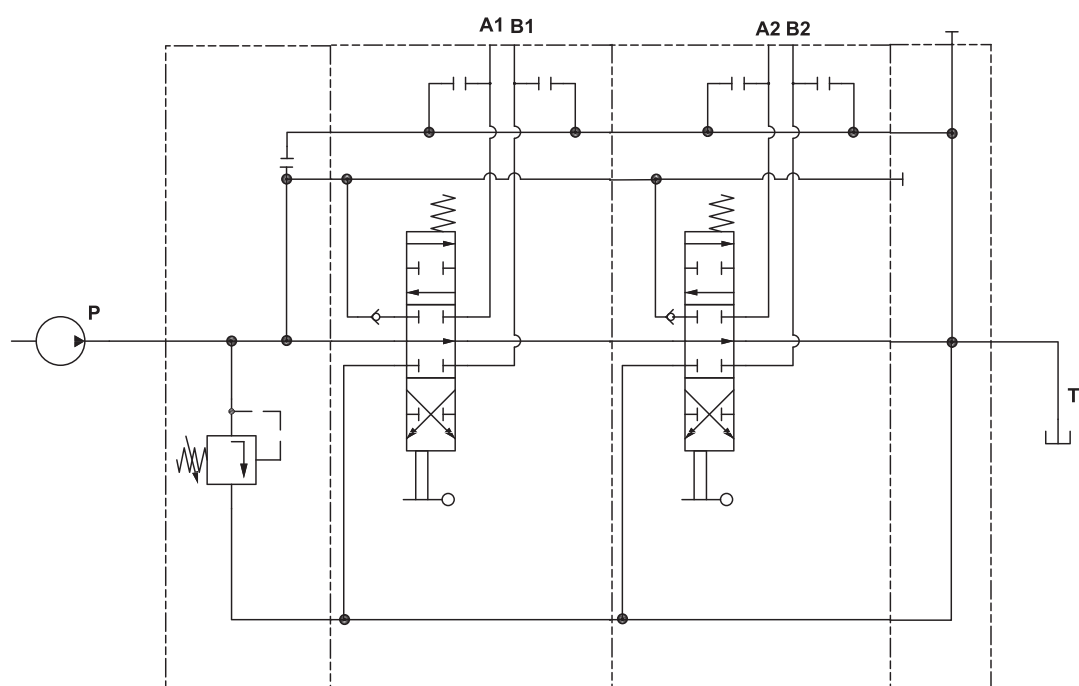
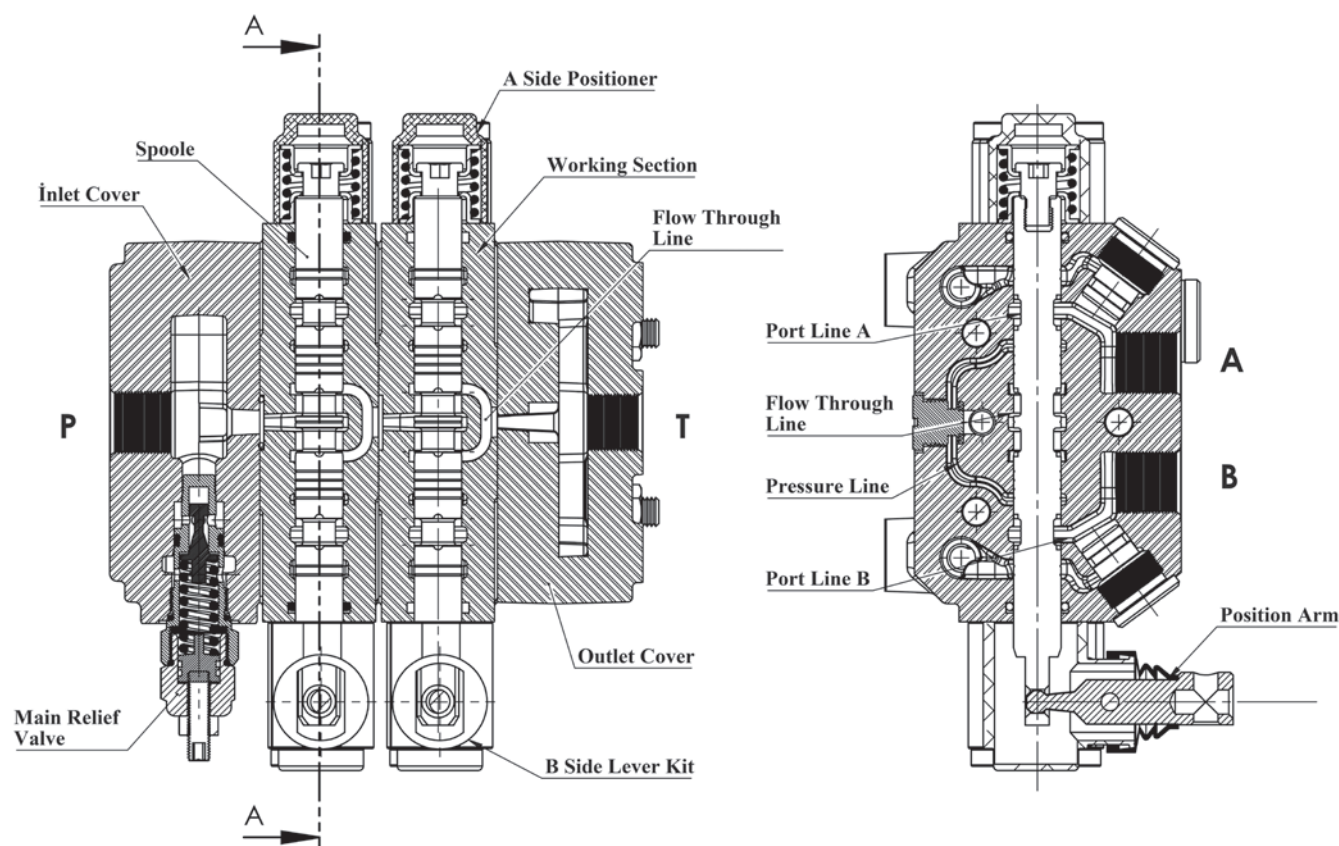
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- PD60-1P	139,5	5.49	81	3.19	7.26	16.13
GMM- PD60-2P	179,5	7.07	121	4.76	9.95	22.11
GMM- PD60-3P	219,5	8.64	161	6.34	12.64	28.09
GMM- PD60-4P	259,5	10.22	201	7.91	15.33	34.07
GMM- PD60-5P	299,5	11.79	241	9.49	18.02	40.04
GMM- PD60-6P	339,5	13.37	281	11.06	20.71	46.02
GMM- PD60-7P	379,5	14.94	321	12.64	23.40	52.00
GMM- PD60-8P	419,5	16.52	361	14.21	26.09	57.98
GMM- PD60-9P	459,5	18.09	401	15.79	28.78	63.96
GMM- PD60-10P	499,5	19.67	441	17.36	31.47	69.93
GMM- PD60-11P	539,5	21.24	481	18.94	34.16	75.91
GMM- PD60-12P	579,5	22.81	521	20.51	36.85	81.89

STANDARD THREADS

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

HYDRAULIC CIRCUIT

Parallel

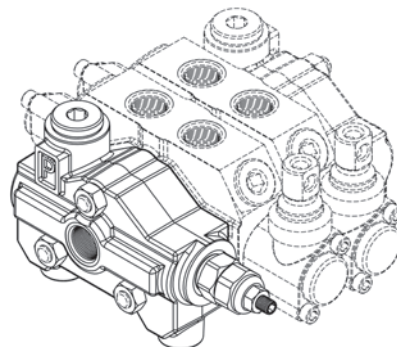


Code: GMM PD60-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

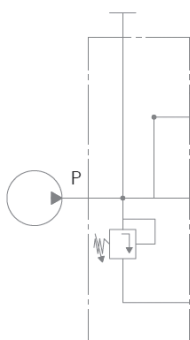
HYDRAULIC CIRCUIT

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



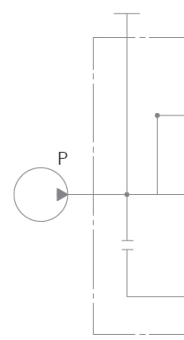
Type = SD



Type = TD

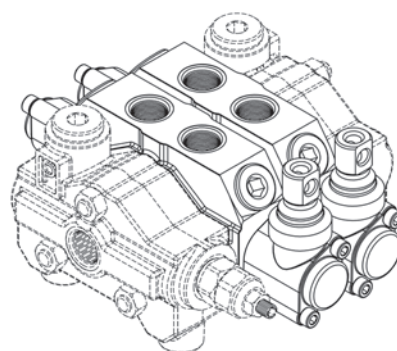


Type = SP

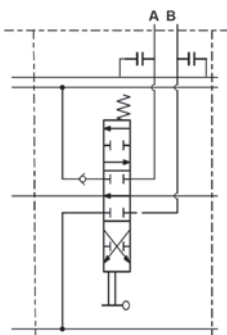


Working Sections

P – Parallel



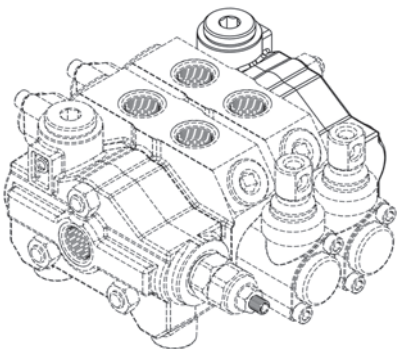
Type = P



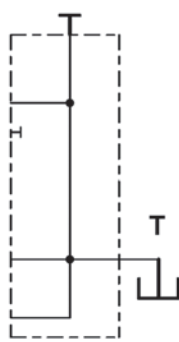
HYDRAULIC CIRCUIT

Outlet Cover (Tank Side)

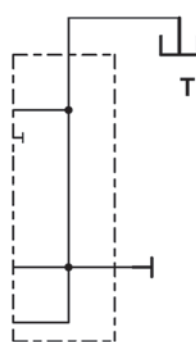
SO - Side outlet
TO - Top outlet
TCO - Top outlet with carry-over
TC - Top outlet with closed centre



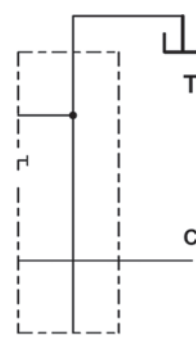
Type = SO



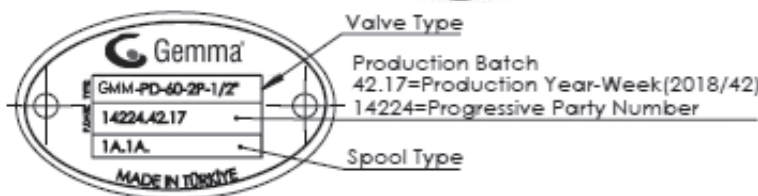
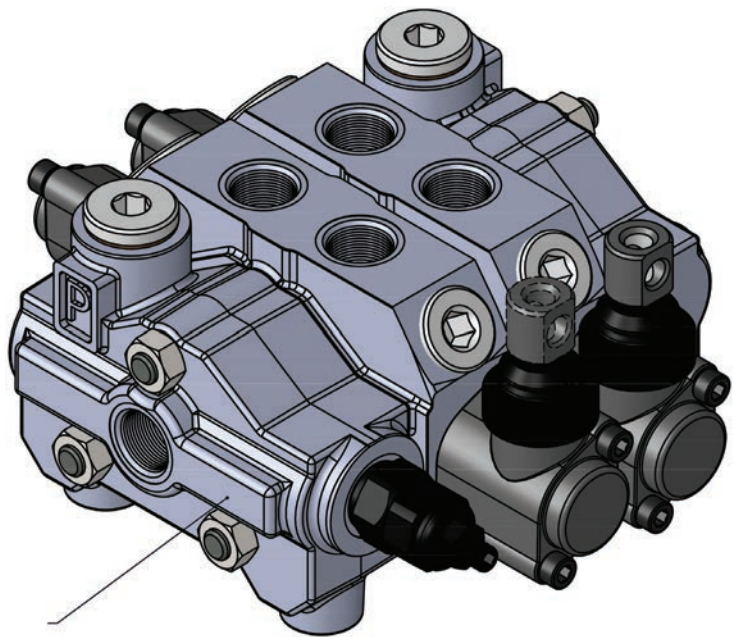
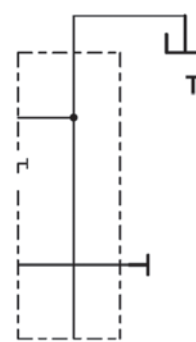
Type = TO



Type = TCO

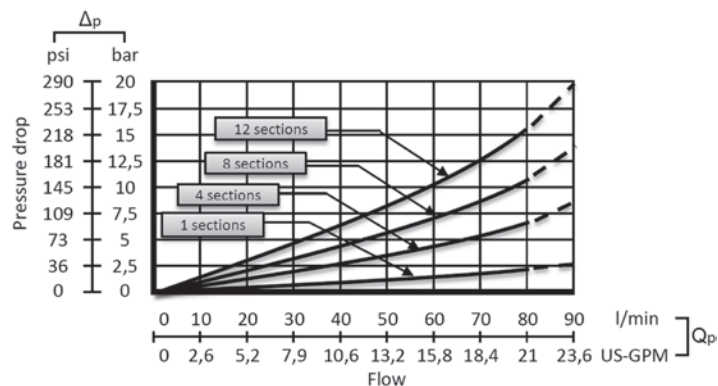
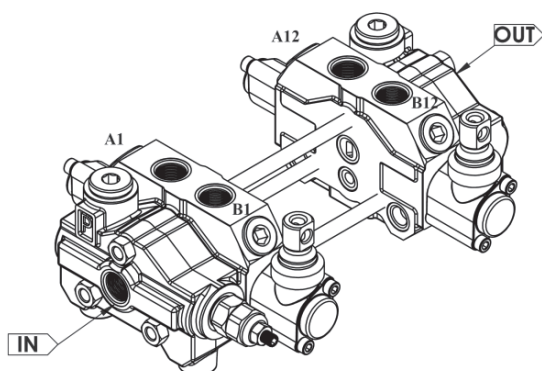


Type = TC

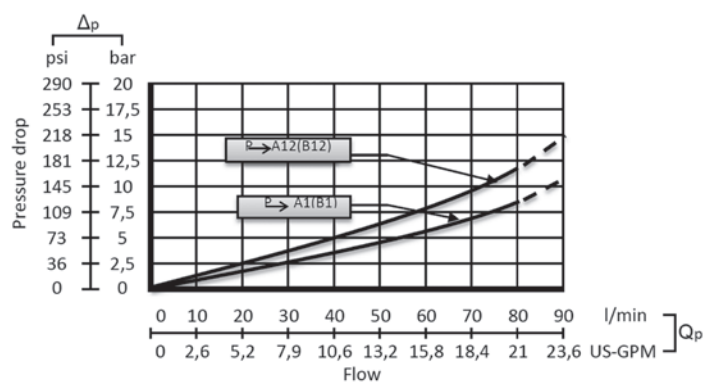
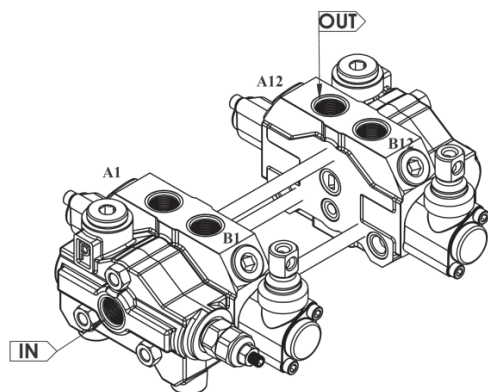


PERFORMANCE DATA AND CURVE

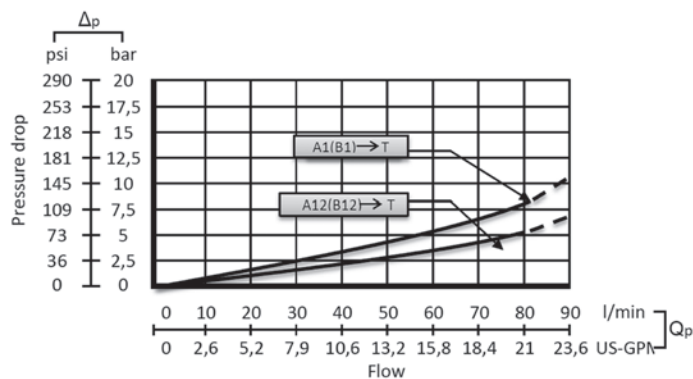
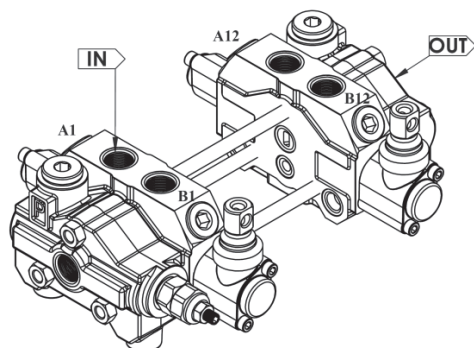
Open Center - Pressure Drop (P-T)



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



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



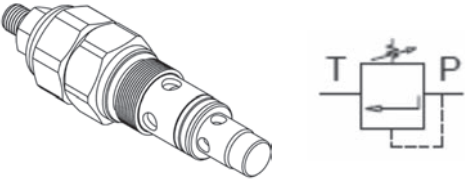
INLET RELIEF OPTIONS

Direct Pressure Relief Valve

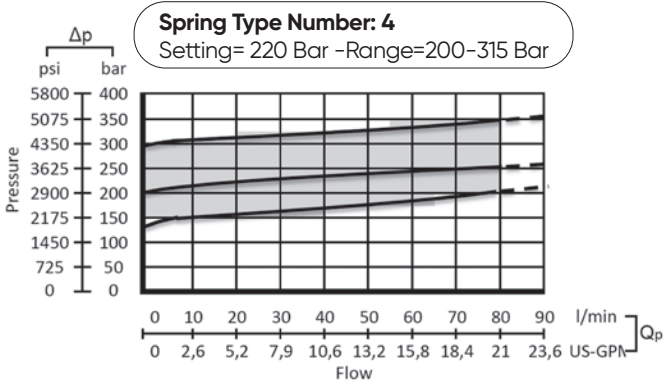
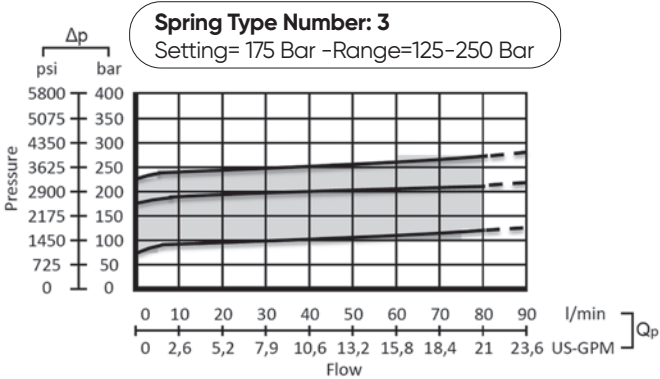
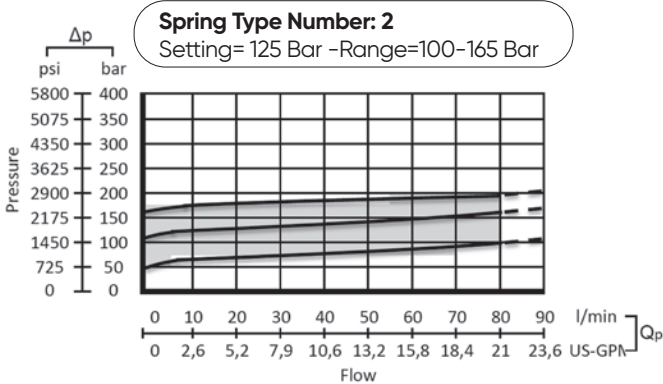
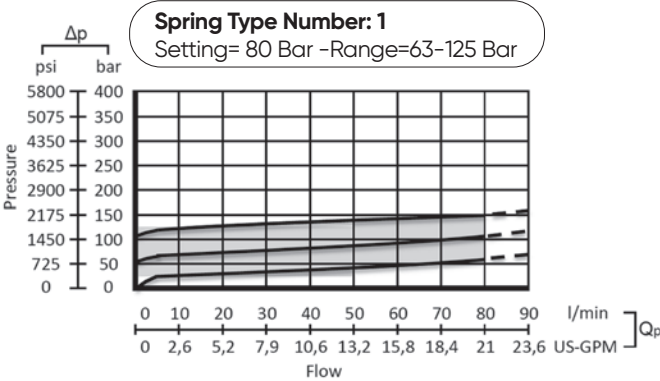
Code:

SMR2 – 125

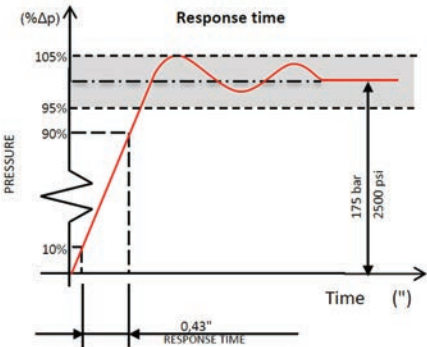
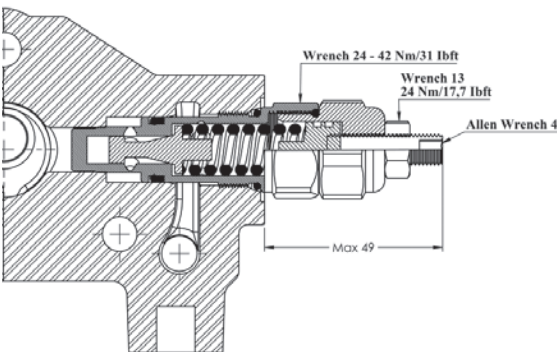
- Pressure Setting Bar in (Standard 125 bar)
- Standard Main Relief Spring Type -2



Performance Data

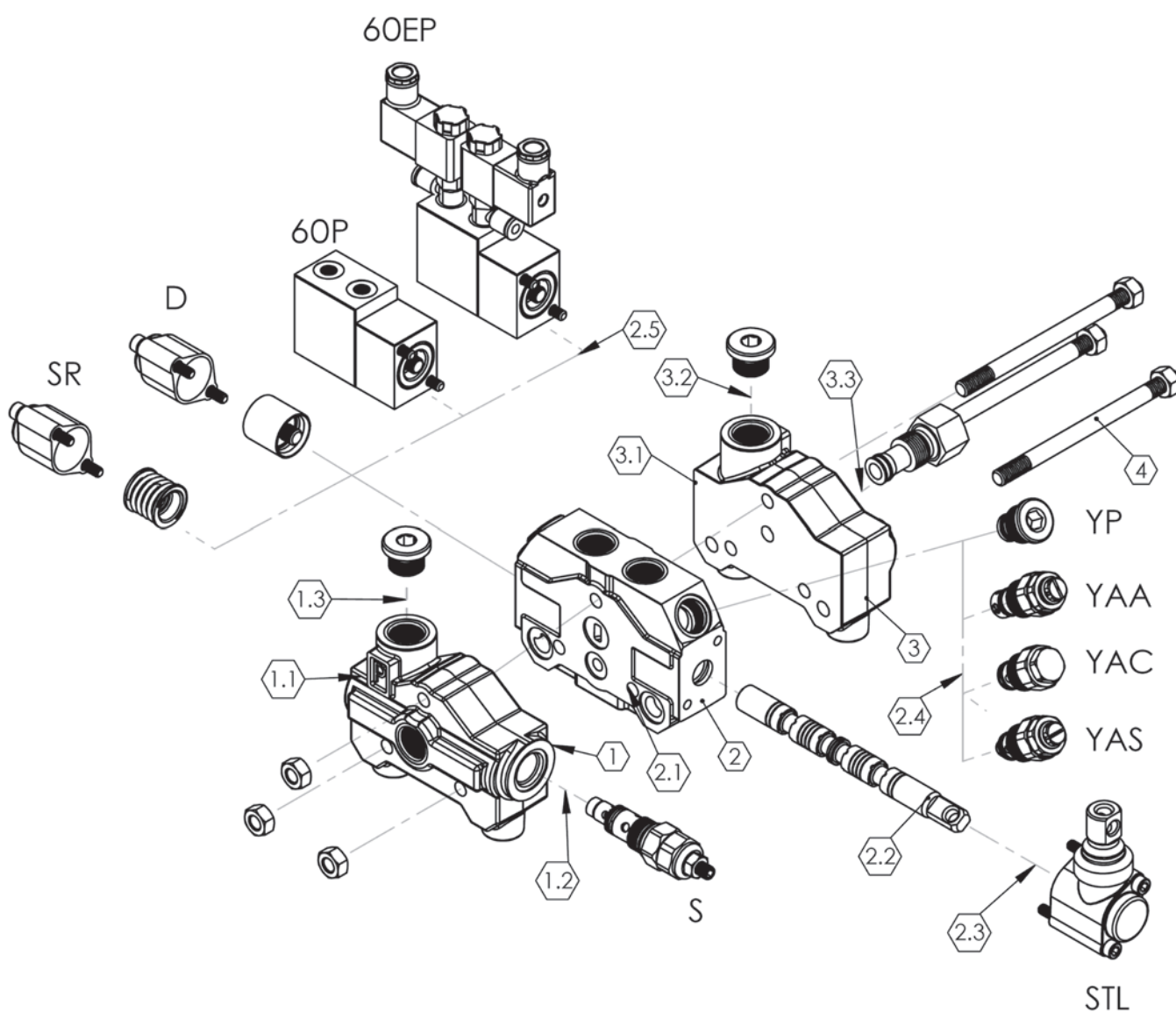
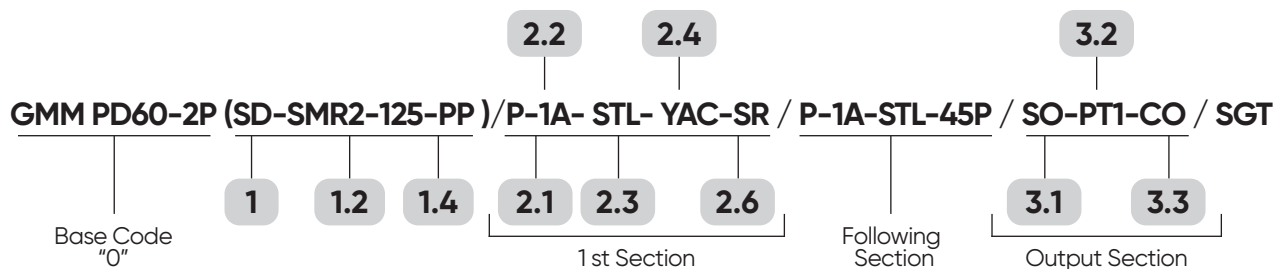


Adjustment Type on Valve



ORDERING CODES

Order Example



ORDERING CODES

1- Inlet Section

GMM PD60-2P PD60 = Valve Type-(PD)- Sectional
(60) - Max. Flow Rate
2P =Sections Quantity
SD = Side inlet with direct pressure relief valve (1SD60100)
TD = Top inlet with direct pressure relief valve (1TD60100)
SP = Side inlet with relief valve blanking plug (1SP60100)

2- Working Section

P = Parallel (2P60100)

3- Output Section

SO = Side outlet (3SO60100)
TO = Top outlet (3TO60100)
TCO = Top outlet with carry-over (3TCO60100)
TC = Top outlet with closed centre (3TC60100)

4- Assembling Kit

Tie rod kit for 1 section valve - (4TRK160100)
Tie rod kit for 2 section valve - (4TRK260100)
Tie rod kit for 3 section valve - (4TRK360100)
Tie rod kit for 4 section valve - (4TRK460100)
Tie rod kit for 5 section valve - (4TRK560100)
Tie rod kit for 6 section valve - (4TRK660100)
Tie rod kit for 7 section valve - (4TRK760100)
Tie rod kit for 8 section valve - (4TRK860100)
Tie rod kit for 9 section valve - (4TRK960100)
Tie rod kit for 10 section valve - (4TRK1060100)
Tie rod kit for 11 section valve - (4TRK1160100)
Tie rod kit for 12 section valve - (4TRK1260100)

5-6- O_Ring Kit

5. -17.00x2.65 NBR 70 SH O-Ring seal (3 Qty.) (5MK60100)
6. -22.40x2.65 NBR 70 SH O-Ring seal (1 Qty.) (6MK60100)

1.*-Inlet Options

1.1 Inlet Cover
Body = Standard (11BS60100)

1.2 Inlet Relief
SMR1-080 - (12SMR180080)-Range 63-125 bar
Setting 80 bar
SMR2-125 - (12SMR280125)- Range 100-160 bar
Setting 125 bar
SMR3-175 - (12SMR380175)- Range 125-250 bar
Setting 175 bar
SMR4-220 - (12SMR480220)-Range 200-315 bar
Setting 220 bar

1.3 Ports Plug

PA1 =G1/2 Top and side input - (13PA060100)
PA2 = G3/4 Top and side input - (13PA260100)

2.*- Working Options

2.1 Working Section

PA = Without ports valve prearrangement, with parallel circuit - Body (21BSPA60100)

2.2 Spool Options

1A -(22SS45110) - 3 Positions ,Double acting
2A -(22SS45120) - 3 Positions ,Double acting
A to tank B Blocked
3A -(22SS45130) - 3 Positions ,Double acting
B to tank A blocked
4A -(22SS45140) - 3 Positions ,Double acting
A and B tank
5A -(22SS45150) - 3 Positions ,Single acting on
A (A to tank)
6A -(22SS45160) - 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 - (23STL80100)
HL = Remote Cable Kit - (80HL80100)

2.4 Port Relief Valves

Anti-Shock Valve

YAS (T1-50) - (24YAC80050)-Range 35-70 bar
Setting 50 bar

YAS (T1-100) - (24YAC80100)-Range 63-220 bar
Setting 100 bar

YAS (T1-200) - (24YAC80200)-Range 180-350 bar
Setting 200 bar

Anti-Shock and Anti-Cavitation Valve

YAA (T1-63) - (24YAA80063)-Range 35-70 bar
Setting 50 bar

YAA (T1-100) - (24YAA80063)-Range 63-220 bar
Setting 100 bar

YAA (T1-200) - (24YAA80063)-Range 180-350 bar
Setting 200 bar

YAC - Anti Cavitation- (24YAS80100)

YP- A and B ports valve blanking plug (24YP80100)

DST-A and B ports valve blanking plugs with
connection to tank-(24DST80100)

2.5 Spool Positioners

SR=Spring Return in neutral position - (26SR80100)

D =Detent in position 1, neutral and 2 -(26D80100)

60P=ON/OFF Pneumatic - (2645P150100)

60EP=12 VDC ON/OFF electro-pneumatic
(2645EP150112)

60EH= 12 VDC/24 VDC ON/OFF electro-hydraulic
(3645EH100112)

SOC = 12 VDC/24 VDC ON/OFF solenoid control
(46SOC100112)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS80100)

3.2 Output Plug

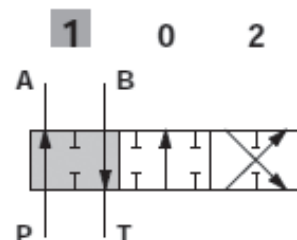
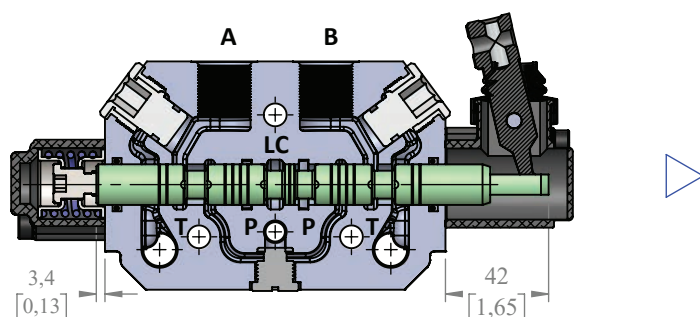
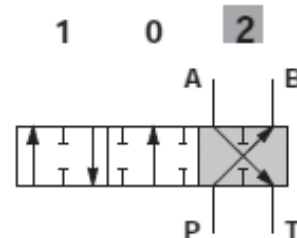
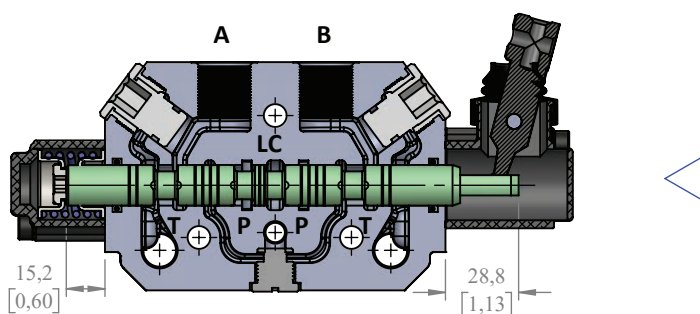
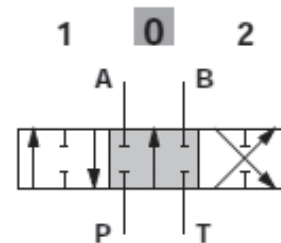
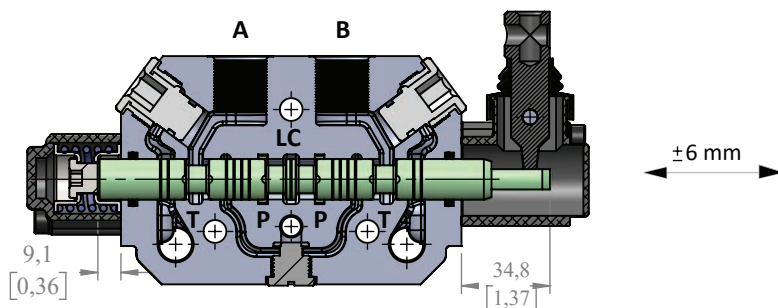
PT1 =G1/2 Top and Side output (32PT180100)

3.3 Circuits Options

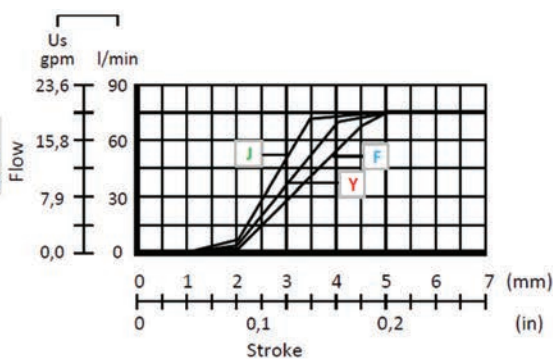
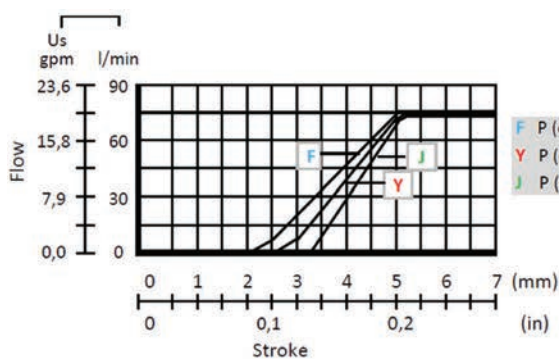
CO =G1/8 Carry-Over Connector (33CO80100)

SPOOL OPTIONS

Spool Type - 1A

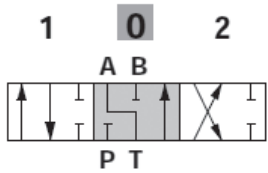
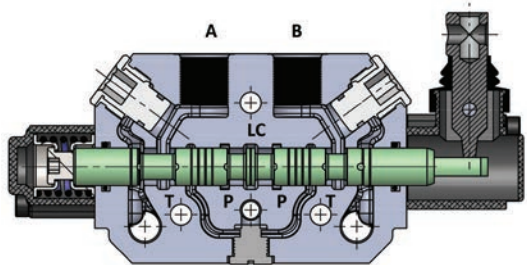


Performance Curve And Data

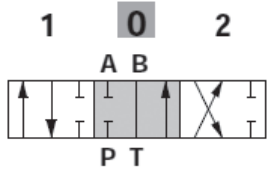
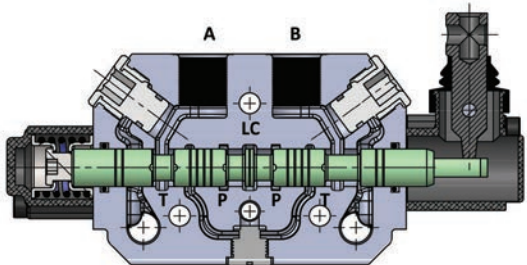


SPOOL OPTIONS

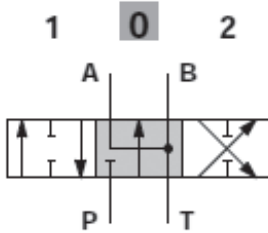
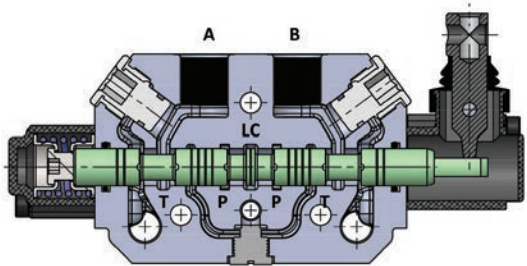
Spool Type - 2A



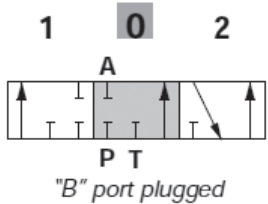
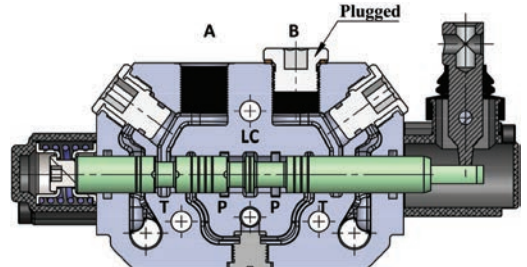
Spool Type - 3A



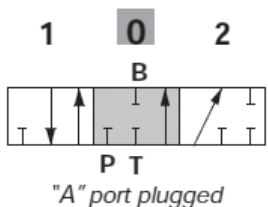
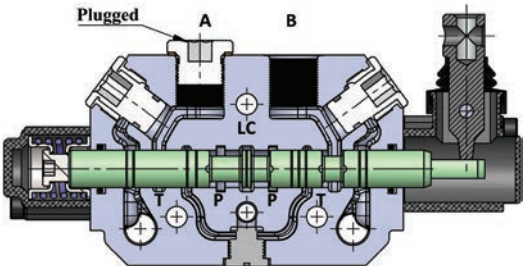
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

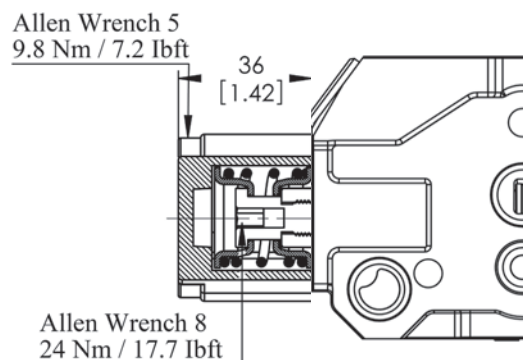


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



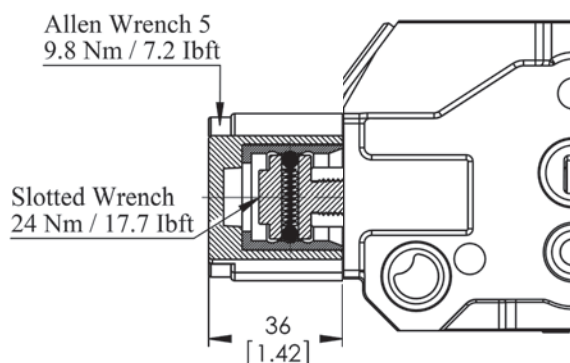
Diagram



With Detent

Kit No: **D**

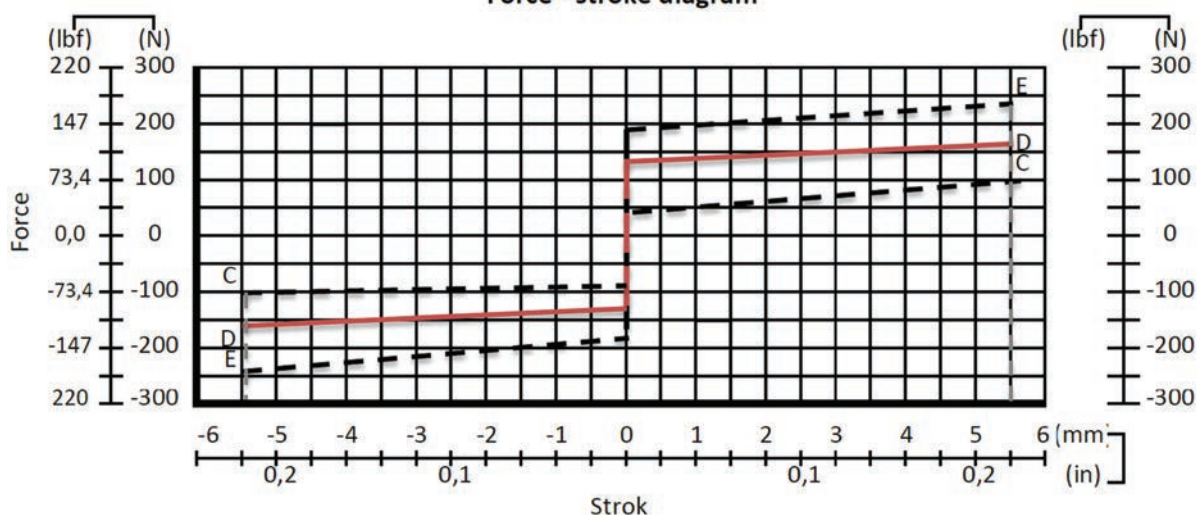
Sectional Appearance



Diagram



Force - stroke diagram

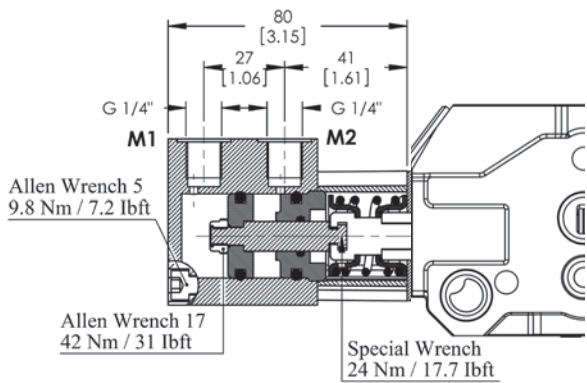


SPOOL POSITIONERS – SIDE OF RETURN

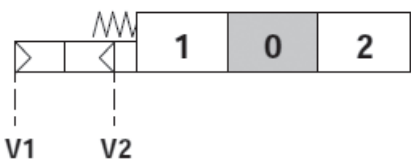
ON/OFF Pneumatic Control

Kit No: 60P

Sectional Appearance



Diagram



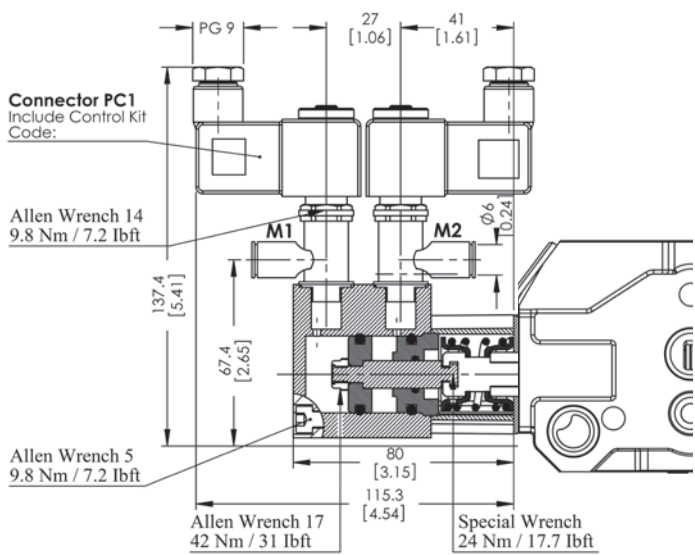
Operating Features

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

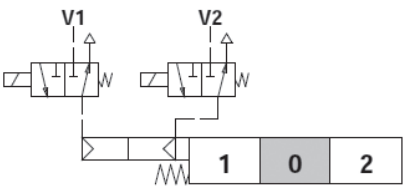
ON/OFF Electro-Pneumatic Control

Kit No: 60EP

Sectional Appearance



Diagram



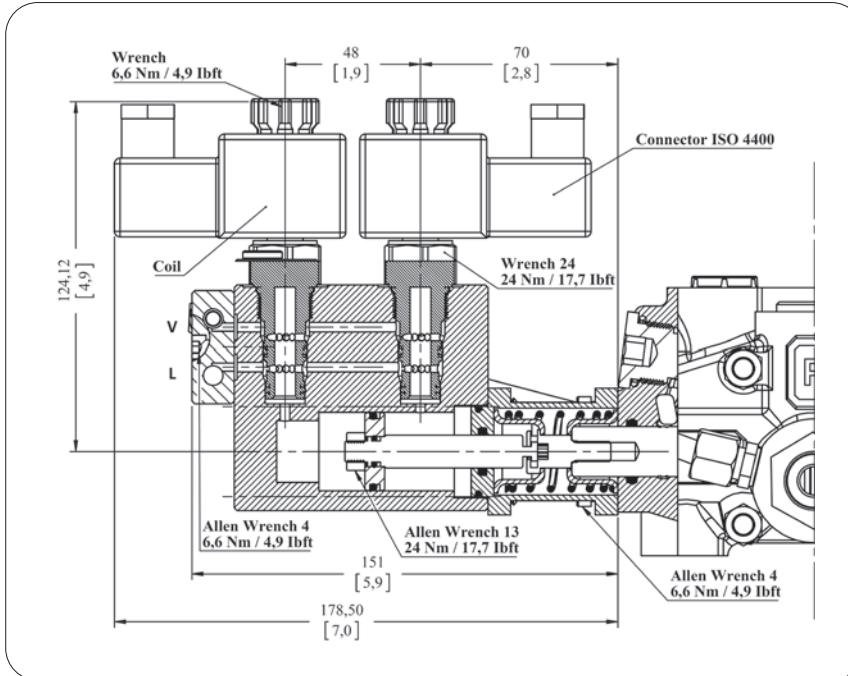
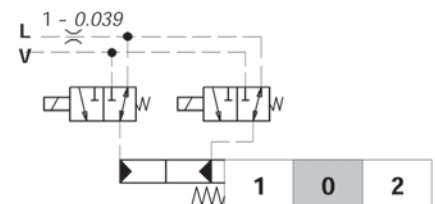
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 60EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
 Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
 Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 21 W
 Duty cycle.....: %100
 Protection type.....: IP 65
 Nominal voltage tolerance.....: ±10
 Max temperatures.....: 100 C°
 Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
 COL 12 - 10COL1001 - Kit For Section 2
 COL 13 - 10COL1001 - Kit For Section 3
 COL 14 - 10COL1001 - Kit For Section 4
 COL 15 - 10COL1001 - Kit For Section 5
 COL 16 - 10COL1001 - Kit For Section 6
 COL 17 - 10COL1001 - Kit For Section 7
 COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

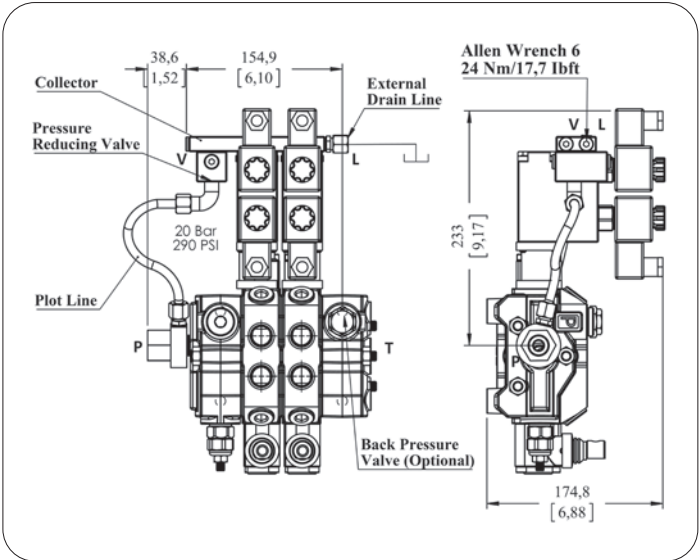
COL 21 - 10COL2001 - Kit For Section 1
 COL 22 - 10COL2001 - Kit For Section 2
 COL 23 - 10COL2001 - Kit For Section 3
 COL 24 - 10COL2001 - Kit For Section 4
 COL 25 - 10COL2001 - Kit For Section 5
 COL 26 - 10COL2001 - Kit For Section 6
 COL 27 - 10COL2001 - Kit For Section 7
 COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

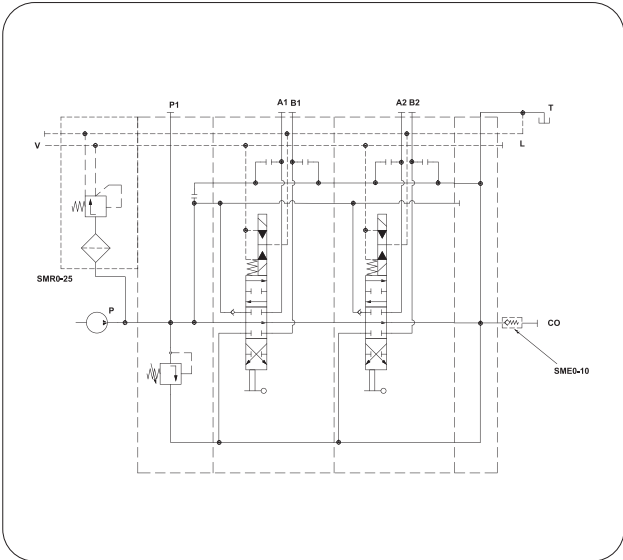
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram



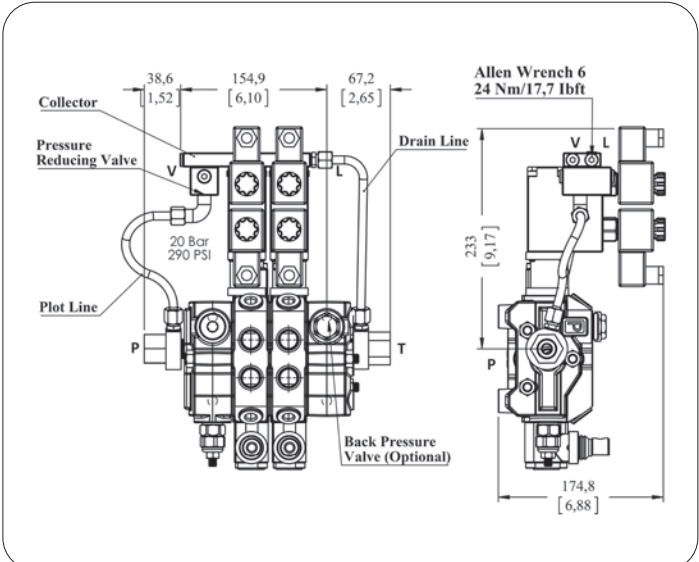
Operating Features

External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)

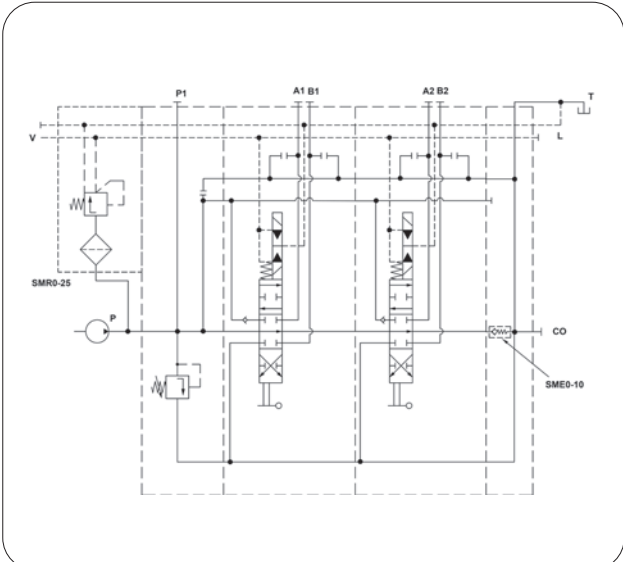
Code= GMM PD60-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-60EH/ P-1A-STL-60EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

Outlet Pressure: 20 Bar / 290 Psi

Max. Flow.....: 8 l/min

Filtration: 80 µ

Code= GMM PD60-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-60EH/ P-1A-STL-60EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

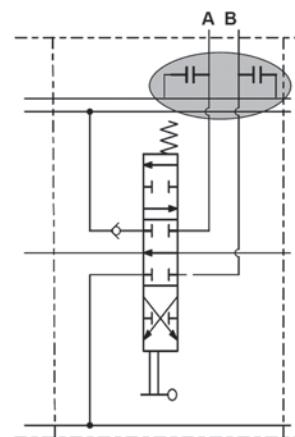
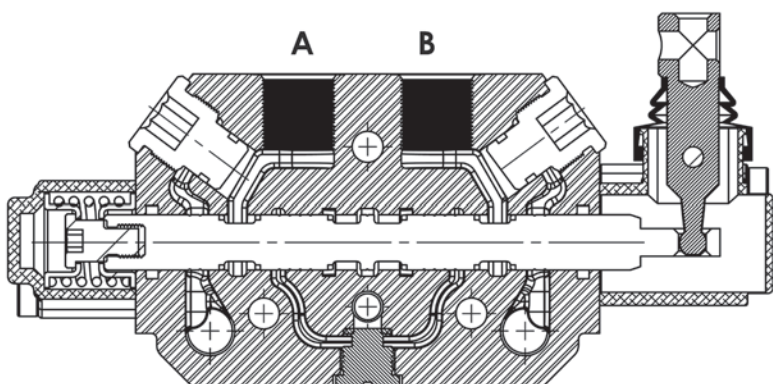
WORKING SECTION KIT

With Port Valves Type

Kit No: **P**

Sectional Appearance

Diagram

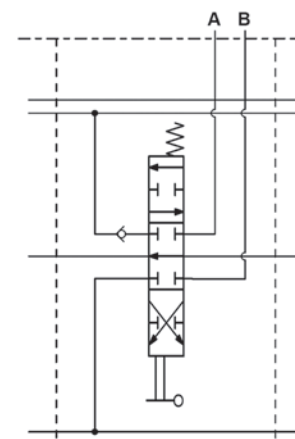
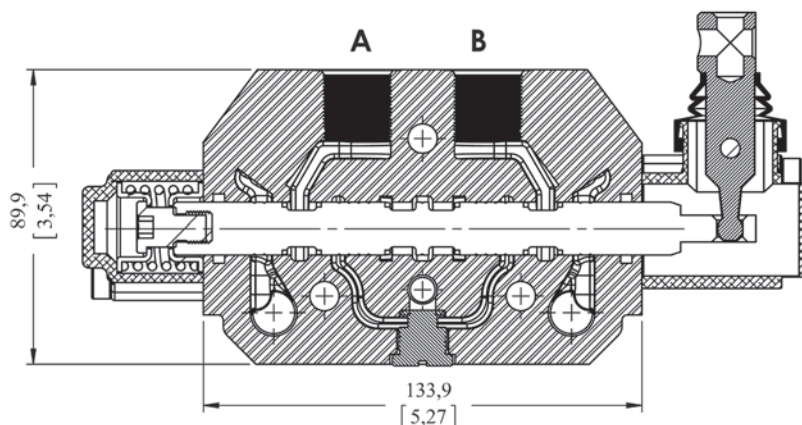


With Port Valves Type

Kit No: **PA**

Sectional Appearance

Diagram



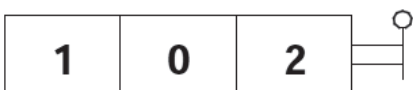
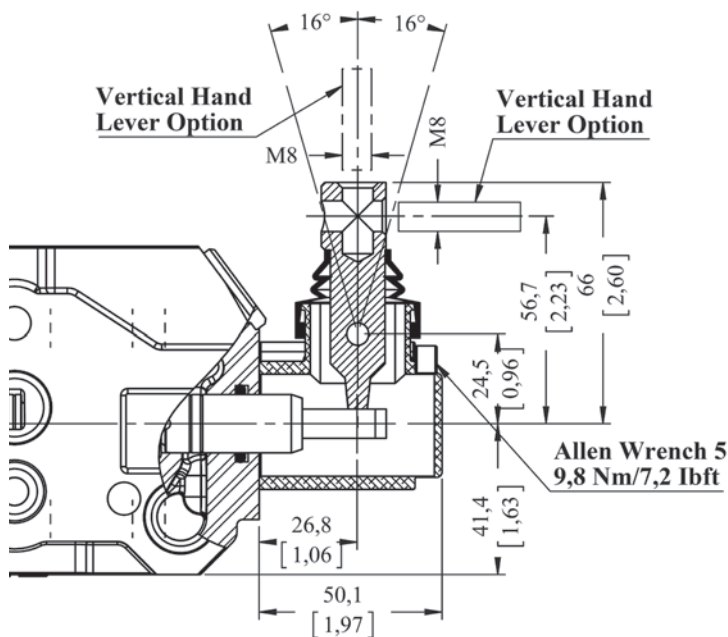
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: STL - L0

Sectional Appearance

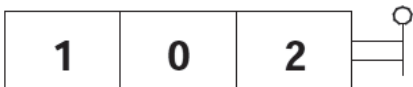
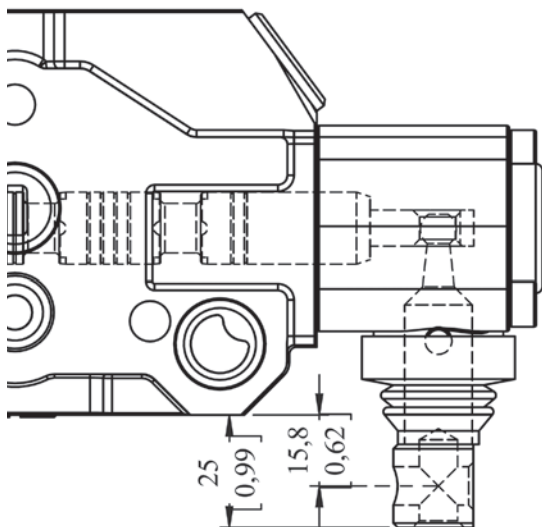
Diagram



Kit No: STL - L180

Sectional Appearance

Diagram



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

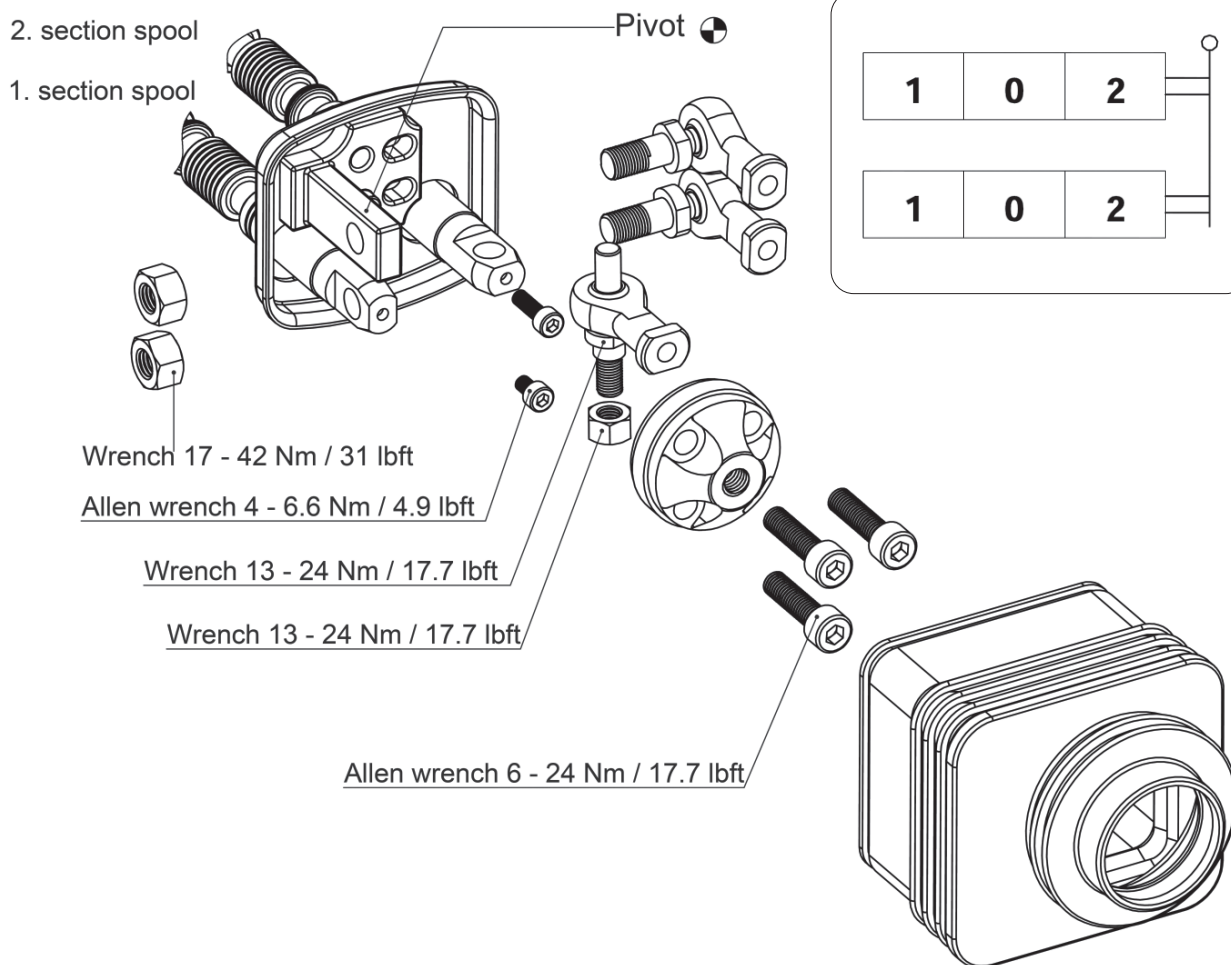
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

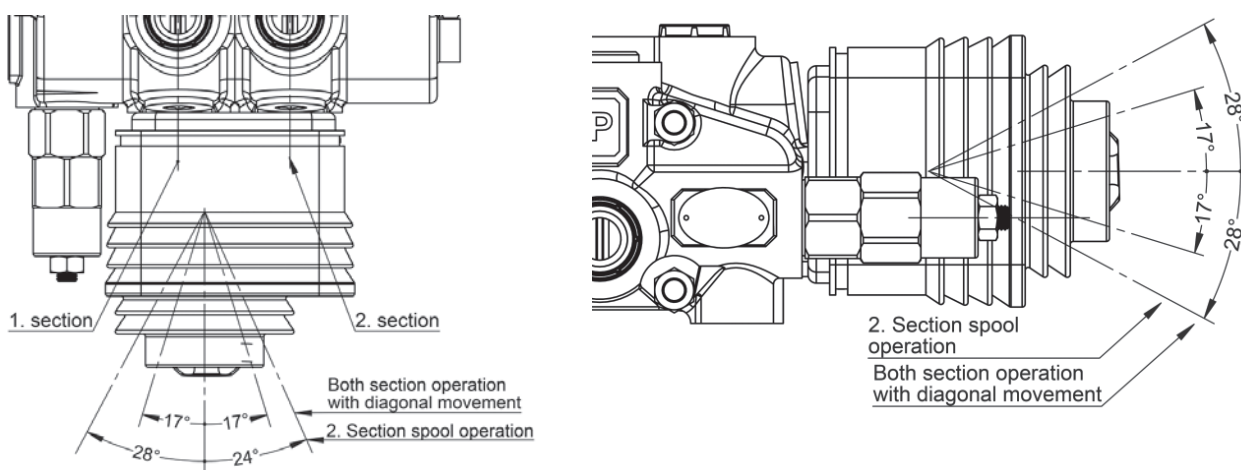
Kit No: **JL**

Exploded View

Diagram



Operation Angle:



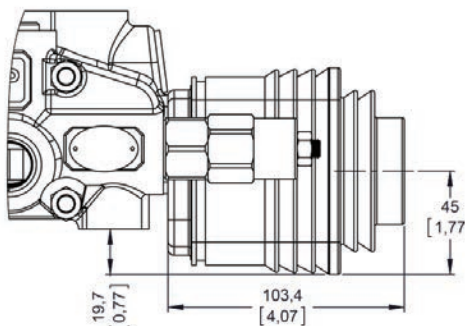
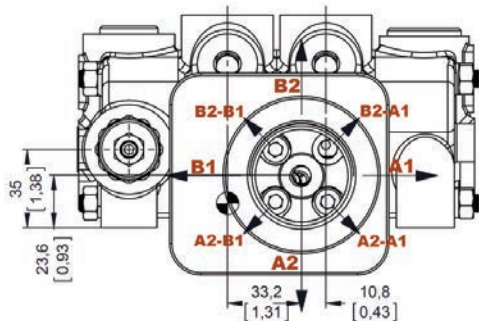
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement sceme

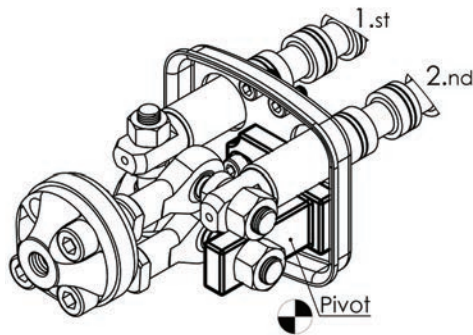
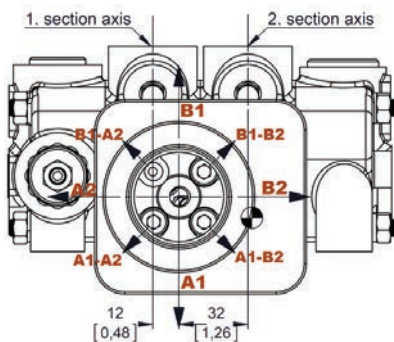
Type No: **JL1**

Application: Pivot placed down on the Left



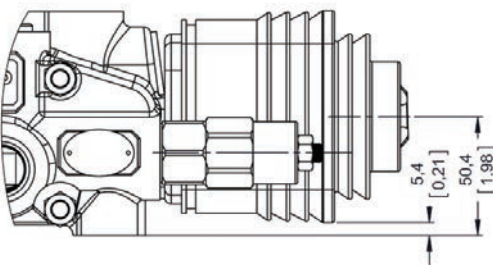
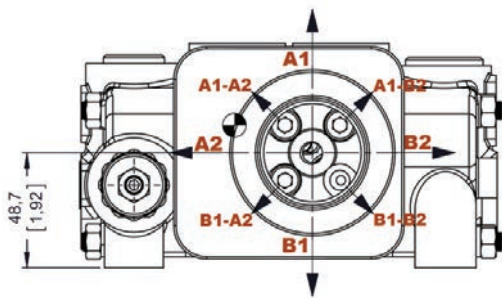
Type No: **JL2**

Application: Pivot placed down on the right



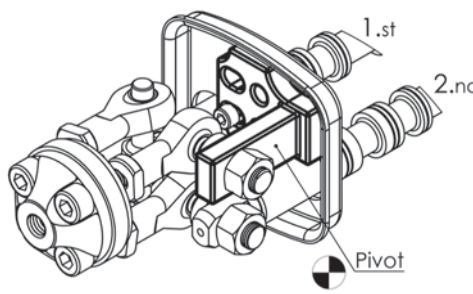
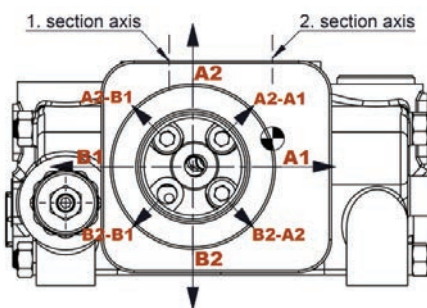
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

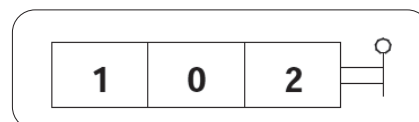
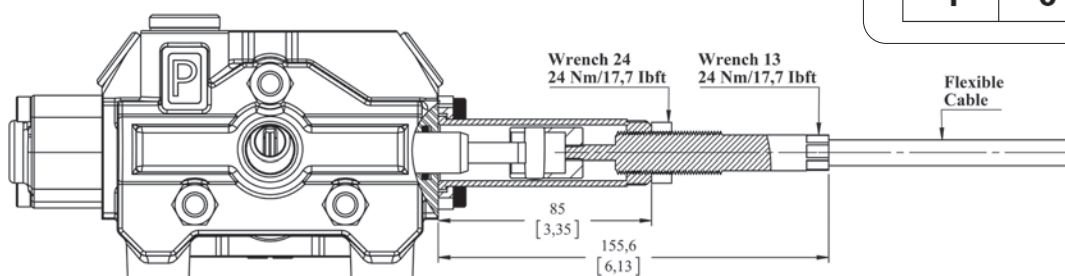
Lever Controls – Cable Control

Kit No: HL

Sectional Appearance

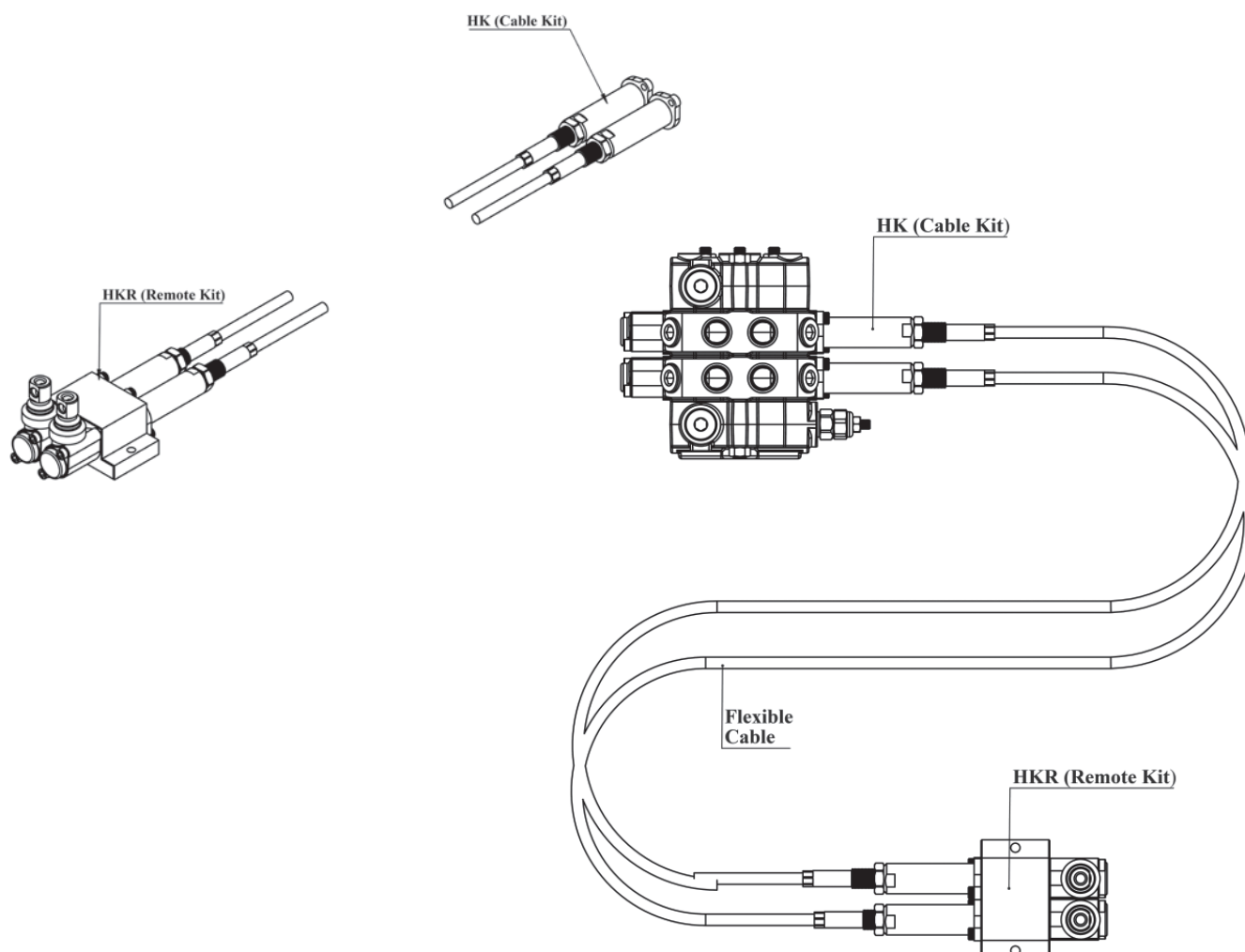
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department.

Example Operation



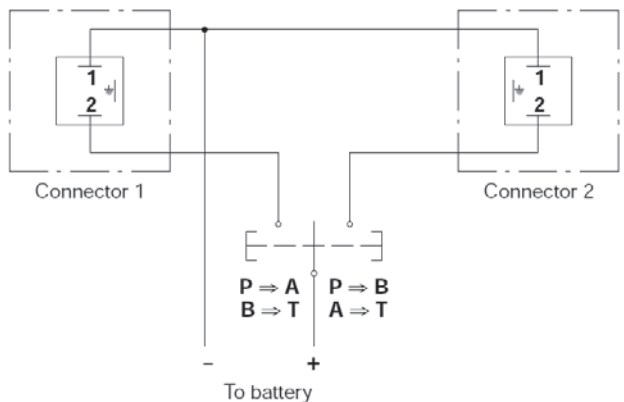
COMPLETE CONTROL – ON / OFF SOLENOID CONTROL

ON/OFF Solenoid Control

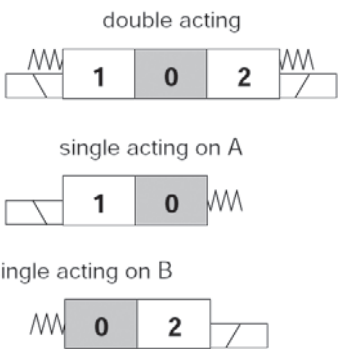
Kit No: SEC

Sectional Appearance

Electric wiring example



Diagram



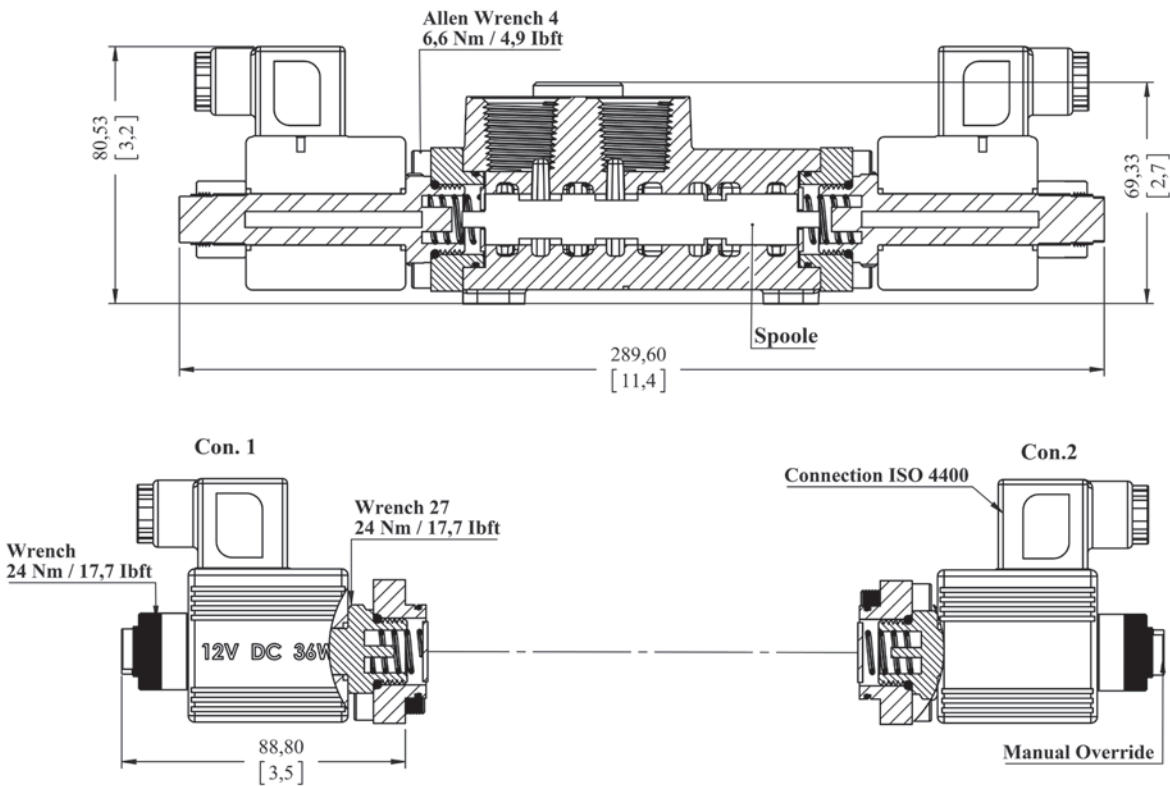
Operating Features

Max Working Pressure.....: 230 Bar / 3300 Psi
Max back pressure: 5 Bar / 80 Psi
Internal Leakage.....: 10 cm³ / min

Solenoid Operating Features

Nominal voltage.....: 12 VDC / 24 VDC
Power rating.....: 36 W
Duty cycle.....: %100
Nominal voltage tolerance.....: ±10

Coil insulation: Class H
Stroke.....: ±3

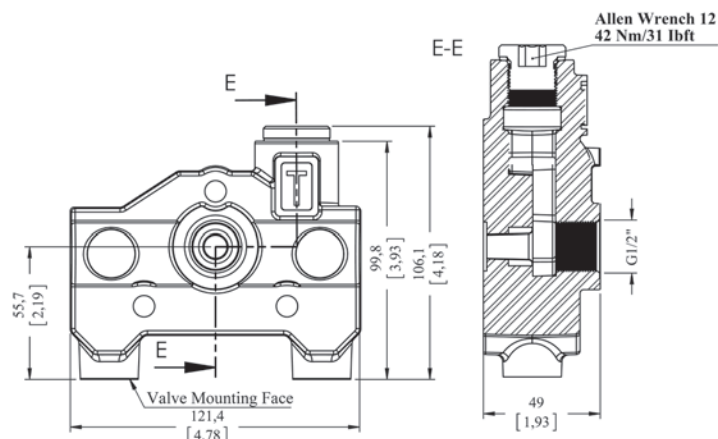


OUTLET COVER - TANK SIDE

Output Cover Options

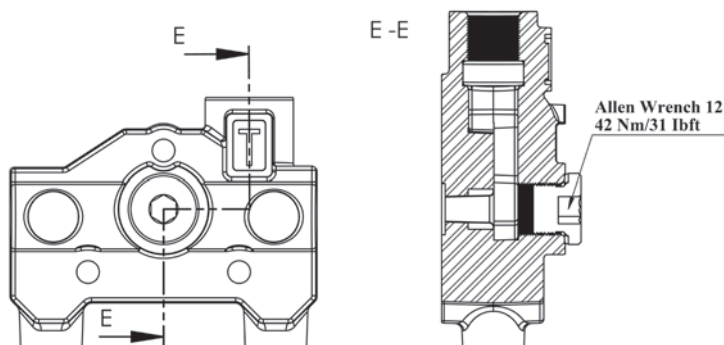
Kit No: **SO**

Sectional Appearance



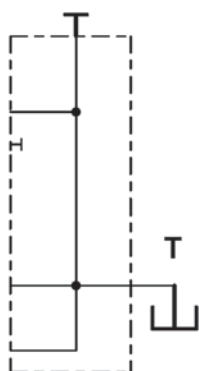
Kit No: **TO**

Sectional Appearance

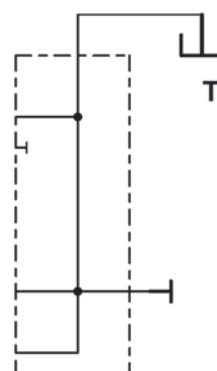


Hydraulic Diagram

Type No: **SO**



Type No: **TO**

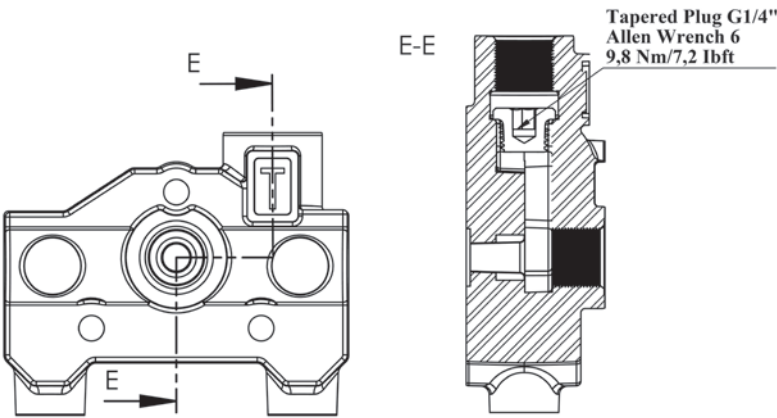


OUTLET COVER - TANK SIDE

Output Cover Options

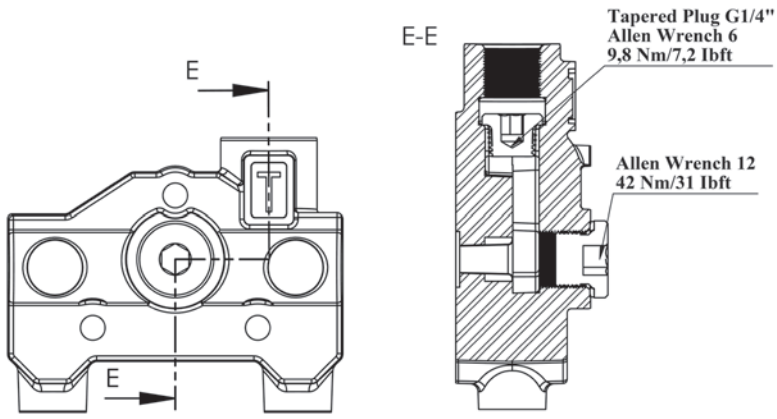
Kit No: TCO

Sectional Appearance



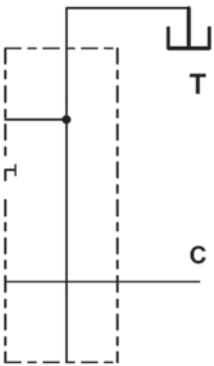
Kit No: TC

Sectional Appearance

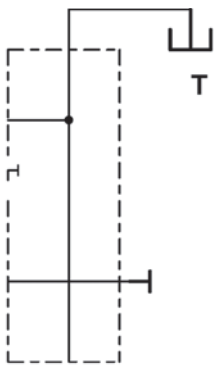


Hydraulic Diagram

Type No: TCO



Type No: TC



PORT VALVES OPTIONS

Anti Shock Valves

Code:

YAS-1 (T1-100)

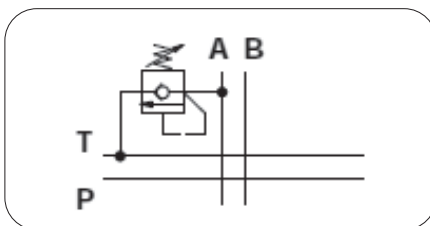
→ Pressure Setting in Bar

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

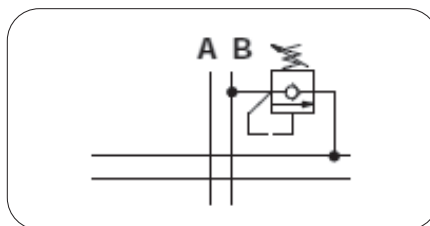
→ 1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

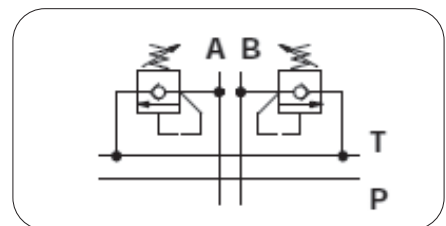
Kit No: **YAS1**



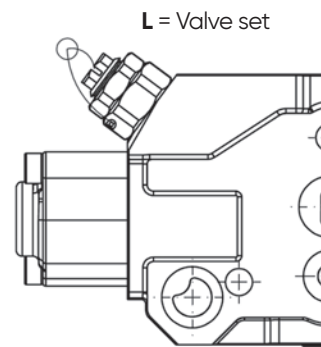
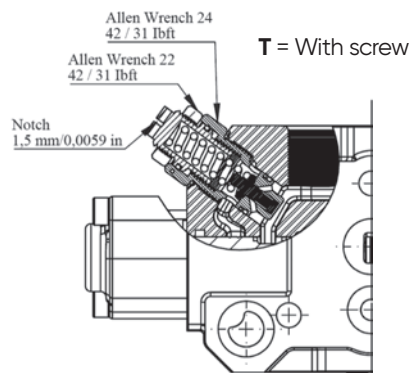
Kit No: **YAS2**



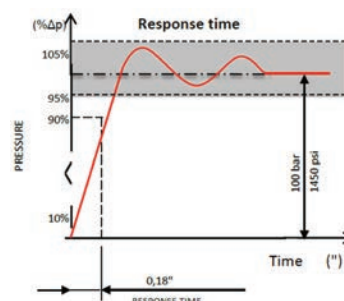
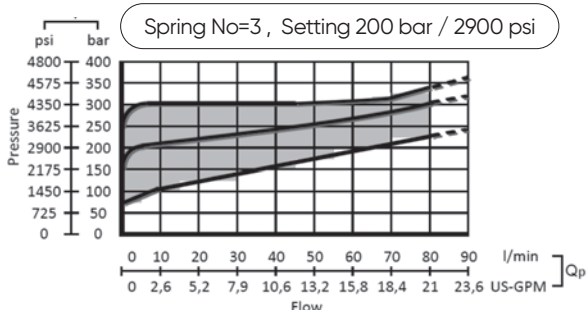
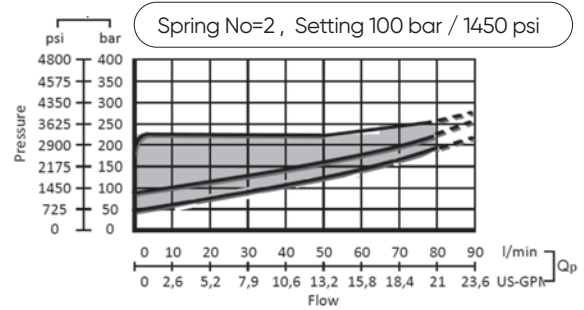
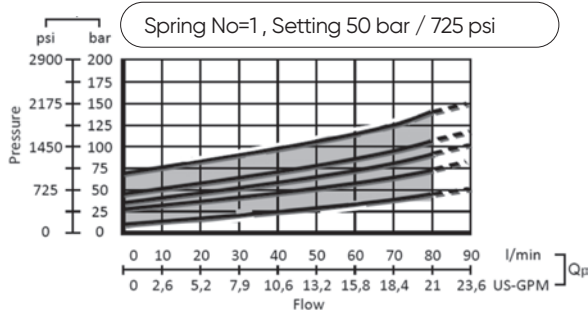
Kit No: **YAS3**



Adjustment Type on Valve:



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)

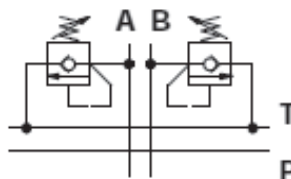
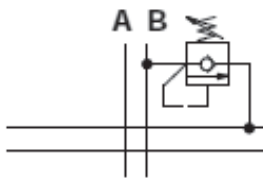
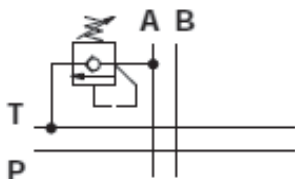
1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

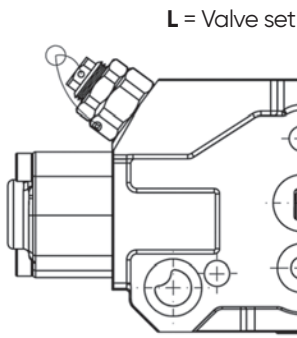
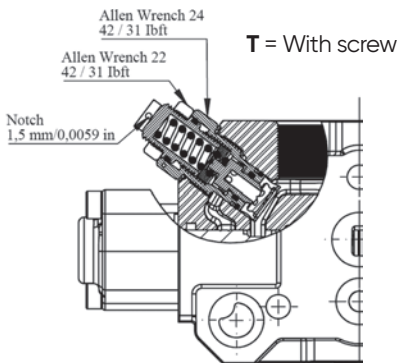
Kit No: YAA1

Kit No: YAA2

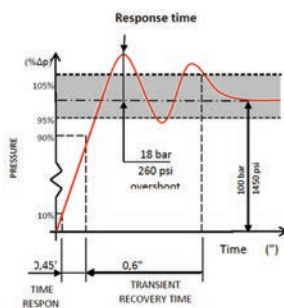
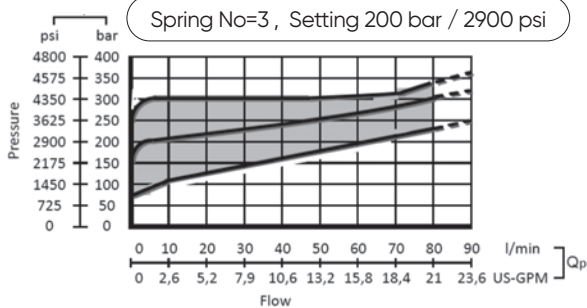
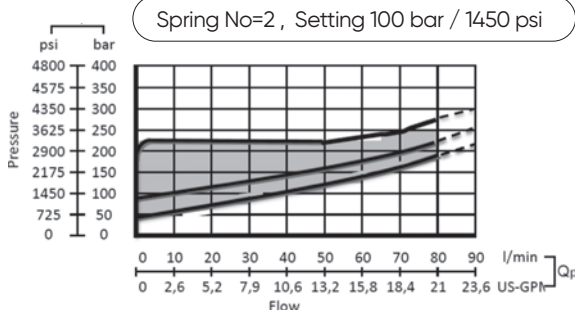
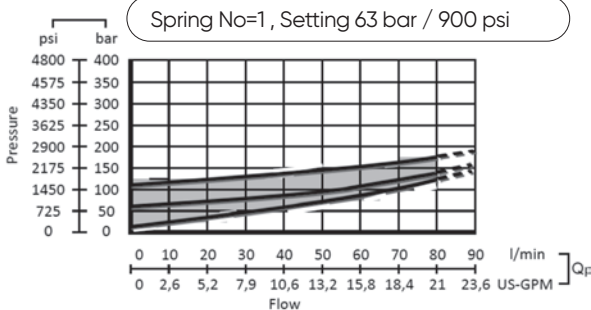
Kit No: YAA3



Adjustment Type on Valve:



Performance Data:



PORT VALVES OPTIONS

Anti Cavitation Valves

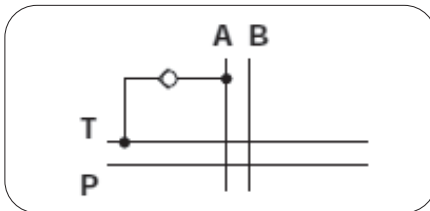
Code:

YAC-1

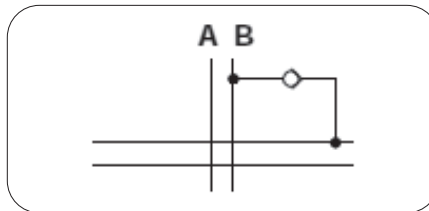
→ 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram

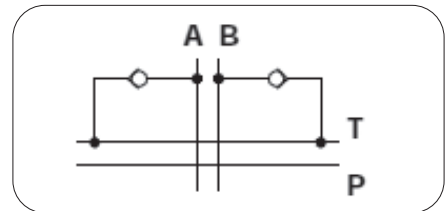
Kit No: **YAC1**



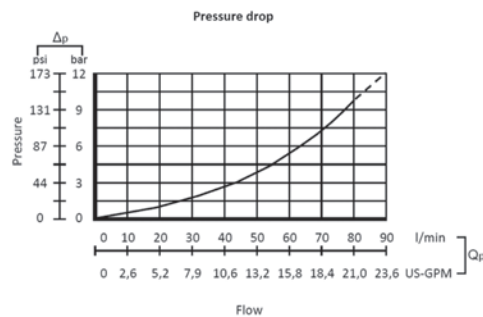
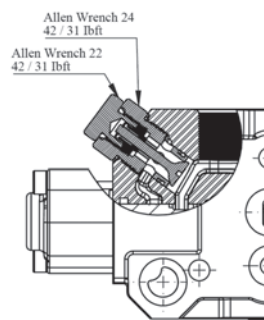
Kit No: **YAC2**



Kit No: **YAC3**



Adjustment Type on Valve And Data:

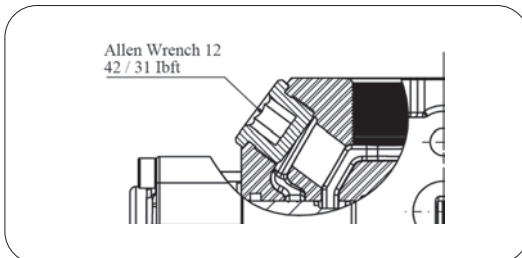


Valve Blanking

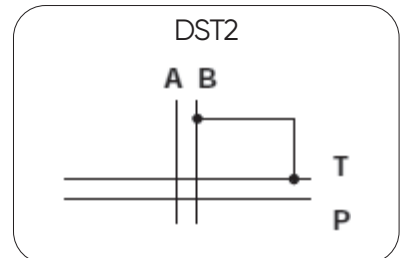
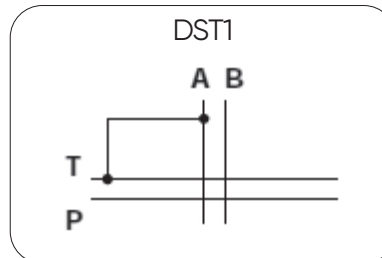
Plug with tank connection

DST-1 (1:Mounted port A – 2:Mounted port B)

Sectional Appearance

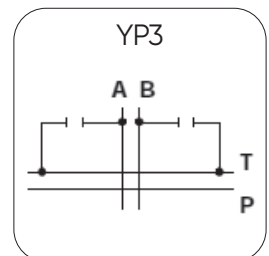
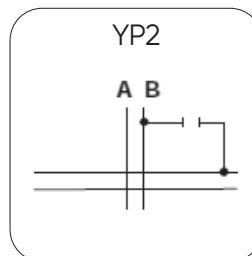
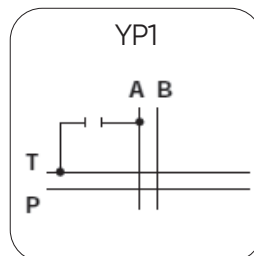
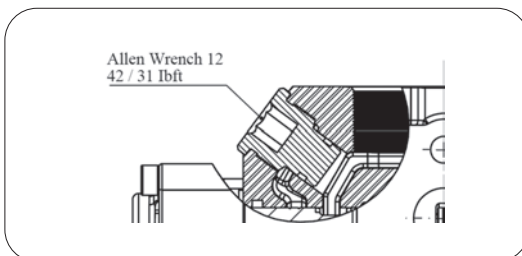


Hydraulic Diagram



Plug

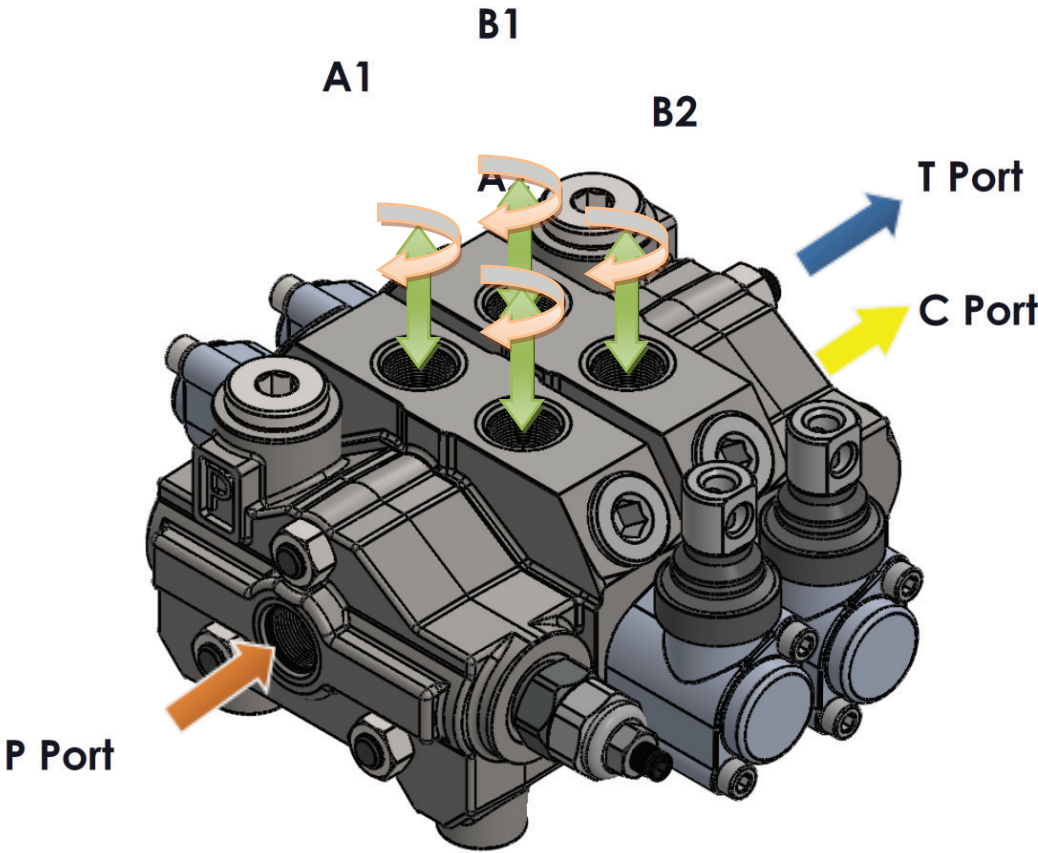
YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)



INSTALLATION AND MAINTENANCE

The GMM-PD60 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

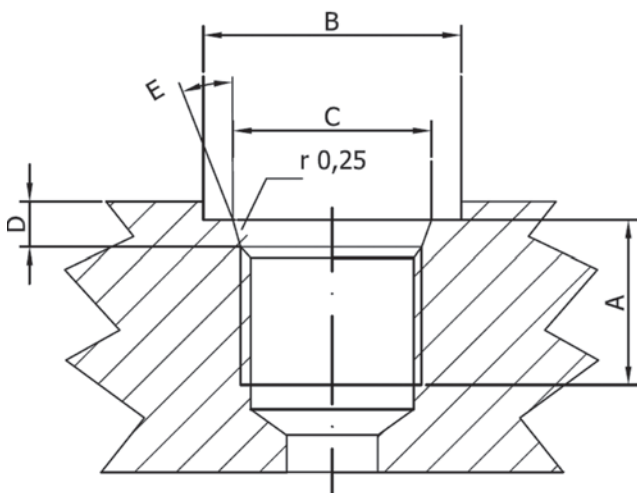
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



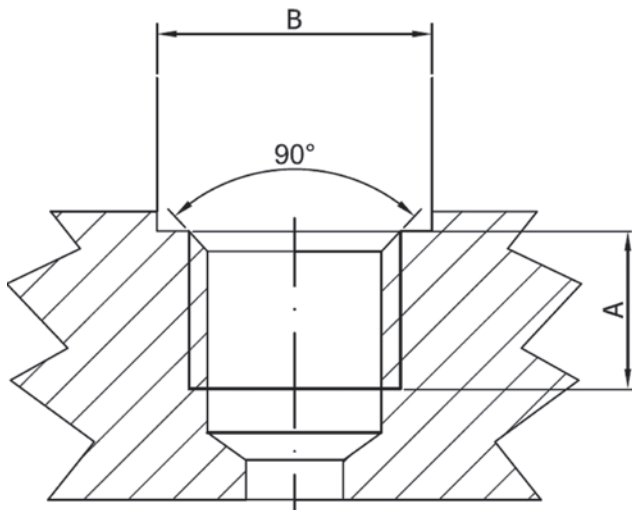
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 3/8	G 3/8	G 1/2
With O--Ring seal	35 / 25.8	35 / 25.8	50 / 36.9
With copper washer	40 / 29.5	40 / 29.5	60 / 44.3
With steel and rubber washer	30 / 22.1	30 / 22.1	60 / 44.3
BSP (ISO 228/1)	G 1/2	G 1/2	G 1/2
With O--Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3
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

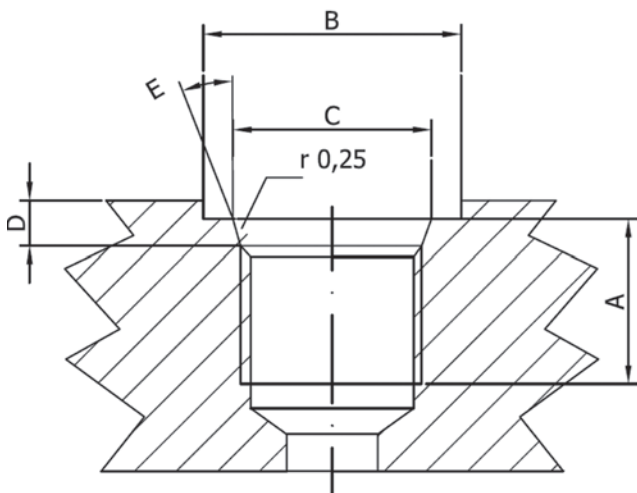
Ports Dimensional Data



SAE UN-UNF (ISO 725)							
Dimensions		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"		G3/4		G1	
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		M18x1,5 ISO 262		M27x2 ISO 262	
mm	in				
A		16	0,63	18	0,71
B		31,5	1,24	37,7	1,48

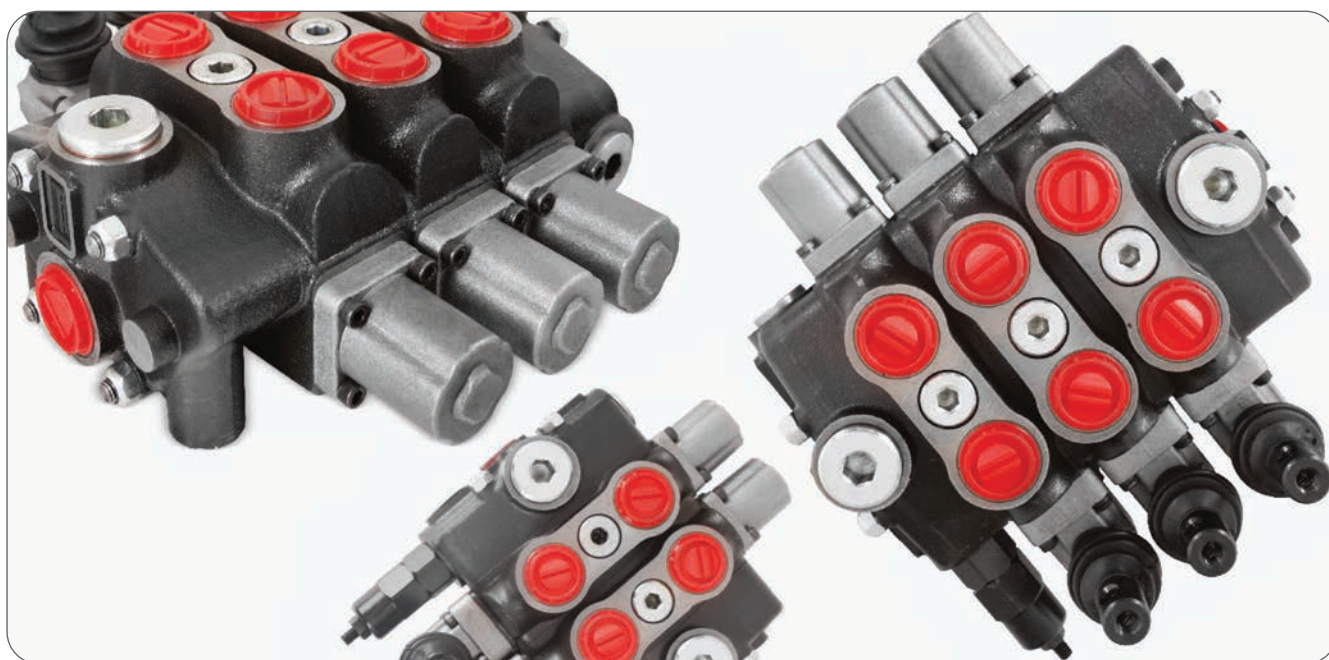


SECTIONAL
VALVES

GMM-PD80

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 (01/2020).

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

WORKING CONDITIONS

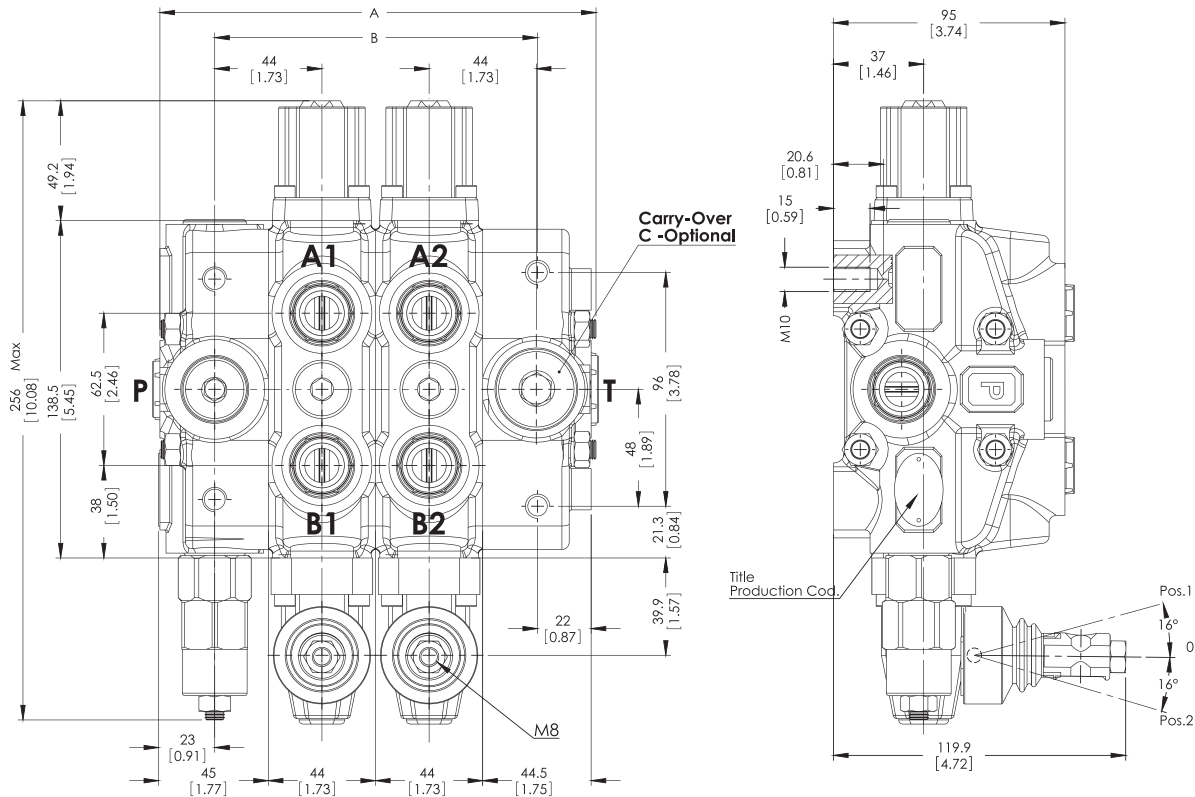
Nominal Flow Rating / Displacement	80 l/min	21 U.S.G.P.M
Maximum Working Pressure (Series Circuit)	210 Bar	3050 PSI
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – 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	30 Nm	22 lbft

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

Features

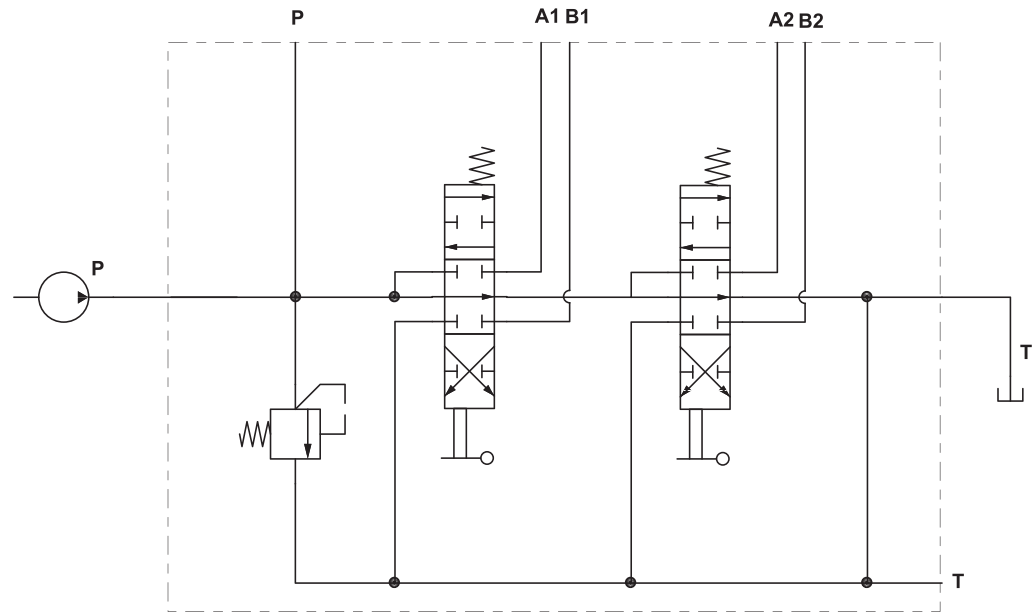
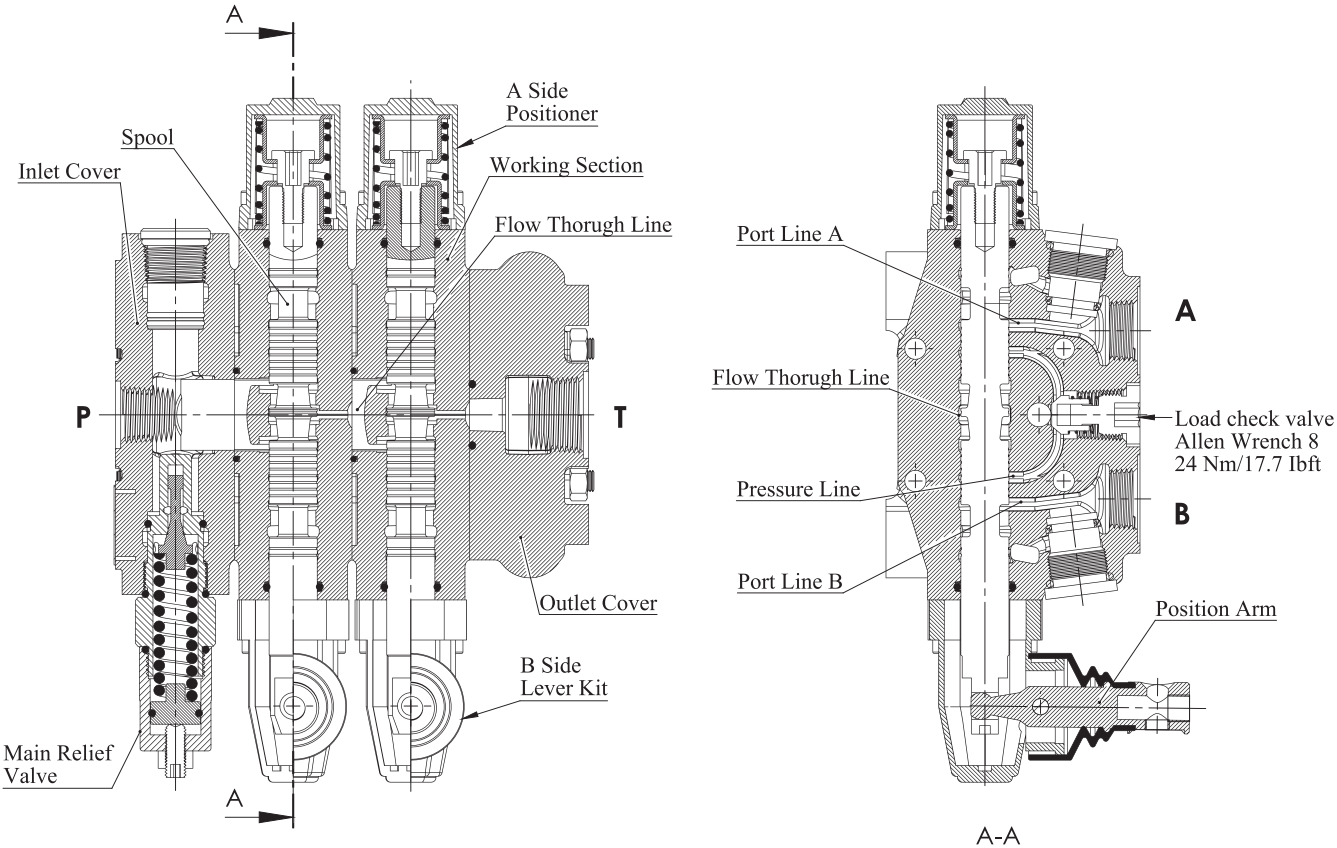
- Simple, compact and heavy duty designed sectional valves from 1 to 12 sections for open and closed center hydraulic systems.
- Optional Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diameter is 18 mm – 0,71 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA



HYDRAULIC CIRCUIT

Parallel

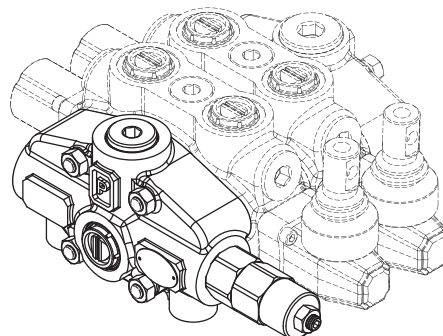


Code: GMM PD80-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

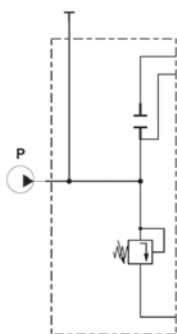
HYDRAULIC CIRCUIT

Inlet Cover – Pump Side

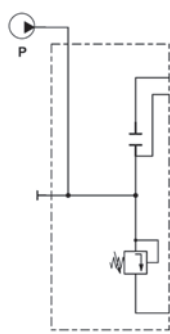
SD – Side inlet with direct pressure relief valve
 TD – Top inlet with direct pressure relief valve
 SP – Side inlet with relief valve blanking plug



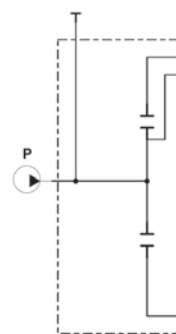
Type = SD



Type = TD

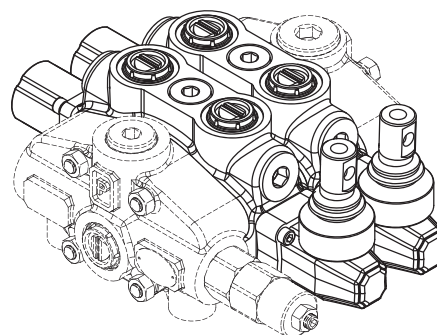


Type = SP

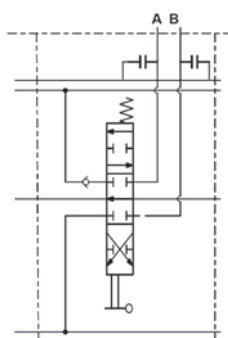


Working Sections

P – Parallel



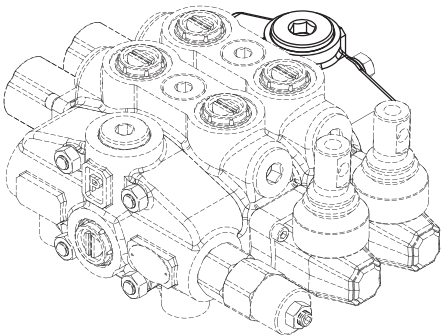
Type = P



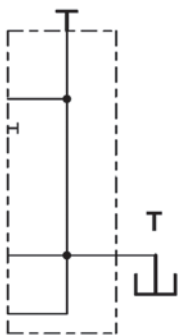
HYDRAULIC CIRCUIT

Outlet Cover (Tank Side)

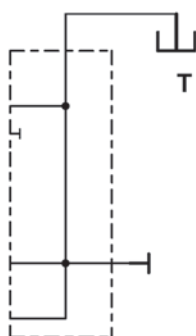
SO - Side outlet
TO - Top outlet
TCO - Top outlet with carry-over
TC - Top outlet with closed centre



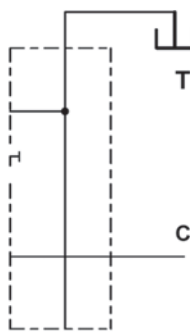
Type = SO



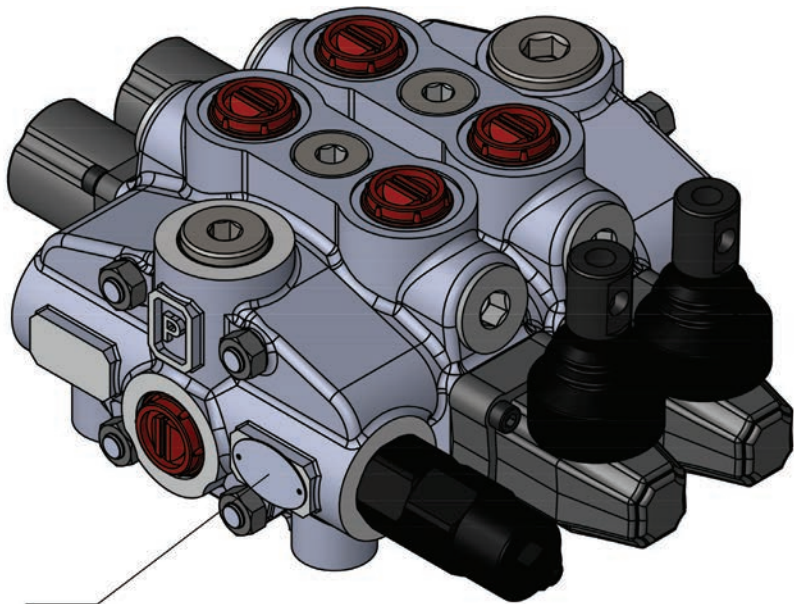
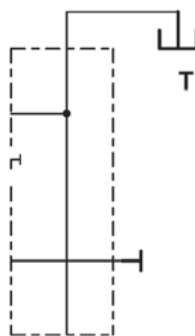
Type = TO



Type = TCO



Type = TC



Valve Type

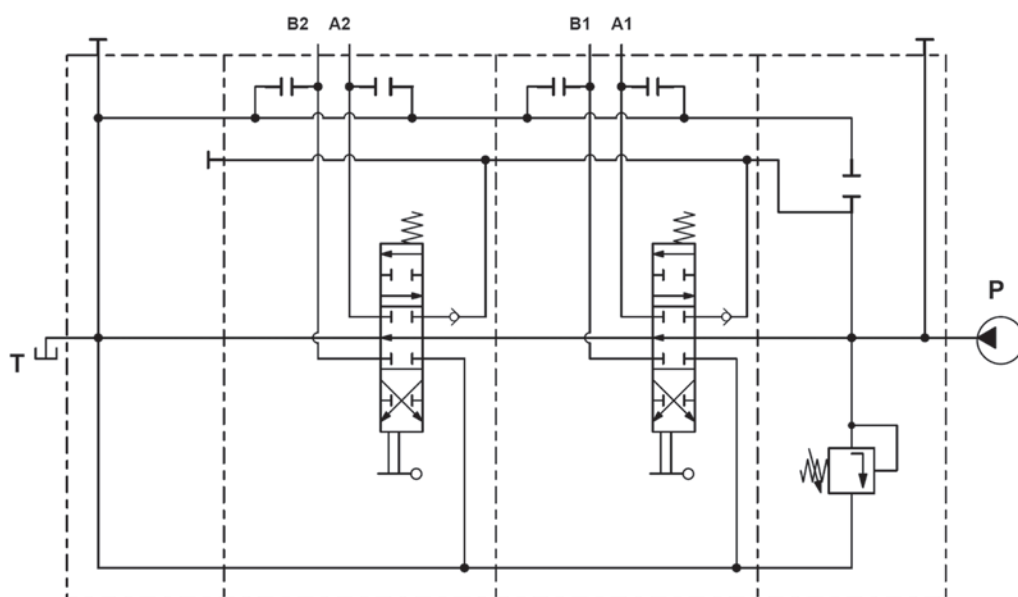
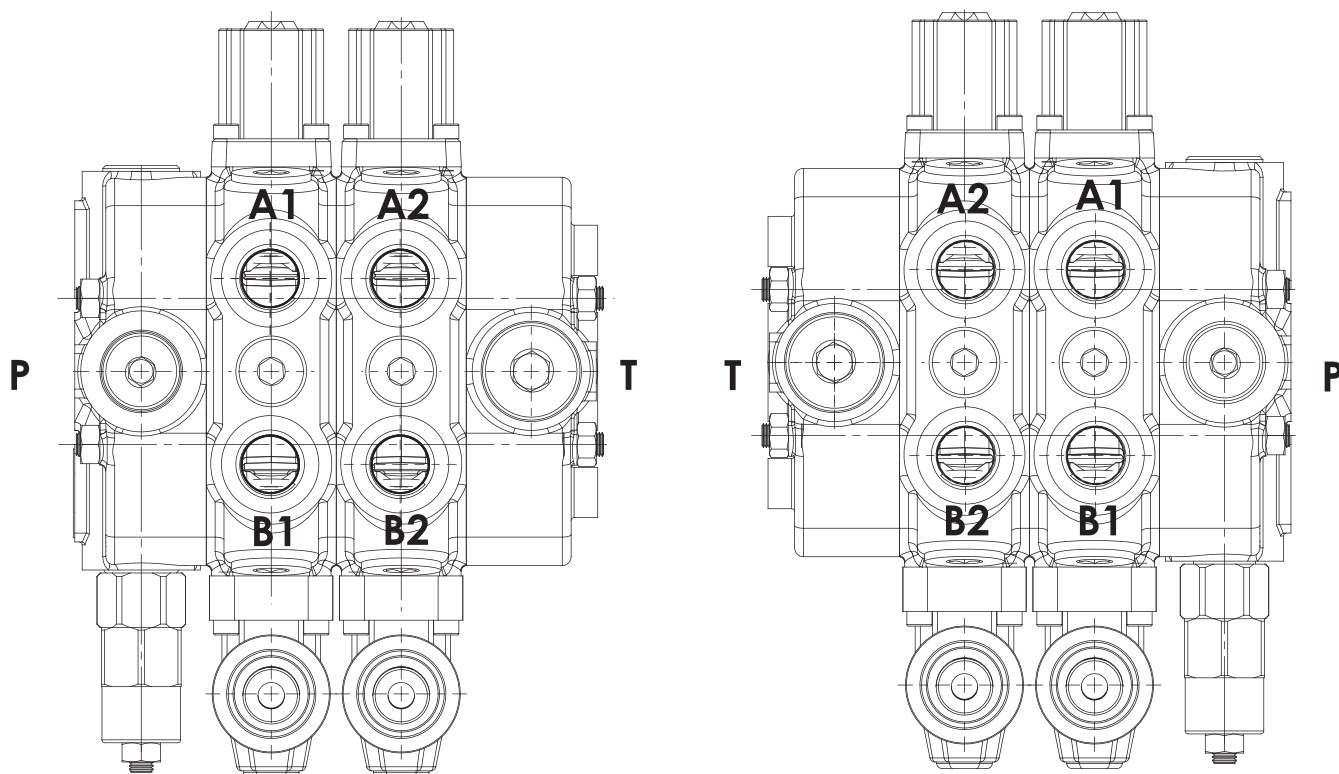
Production Batch

39.10 = Production Year - Week (2010/39)
101149 = Progressive Party Number

HYDRAULIC CIRCUIT

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

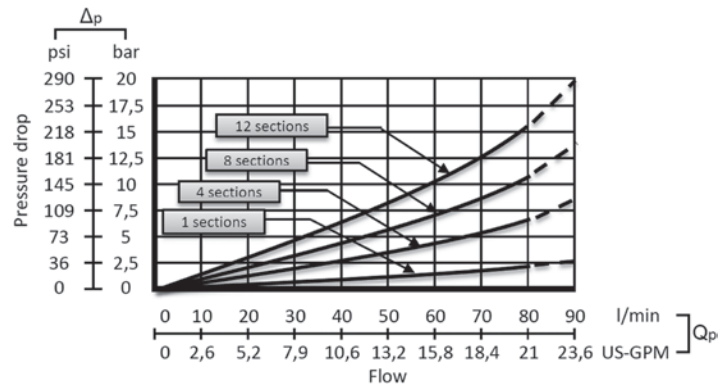
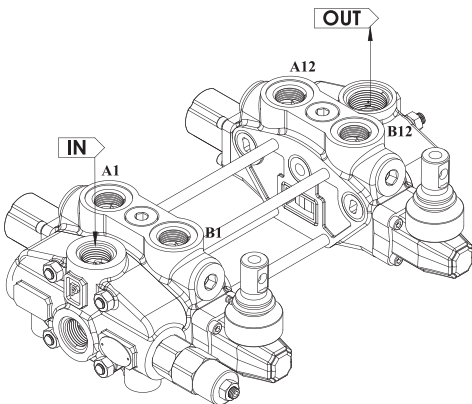
A symmetrical body allows the reverse assembly of spool.



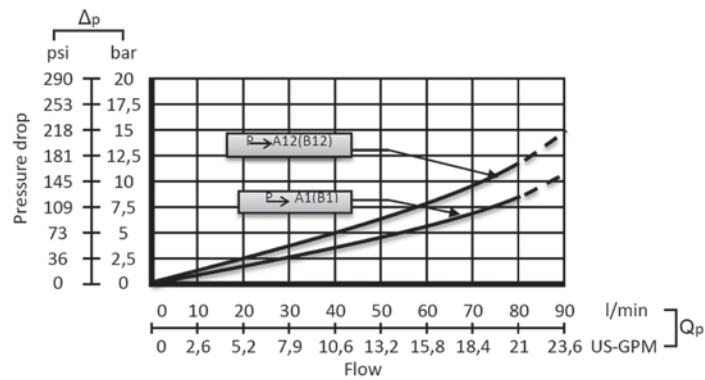
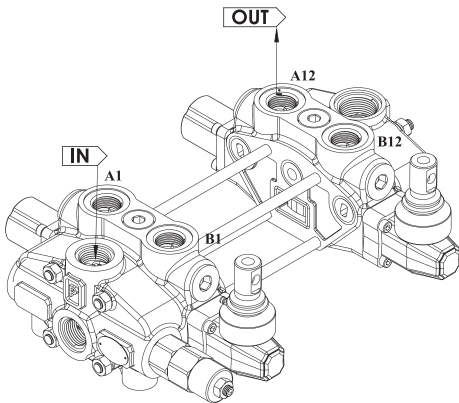
Code: GMM PD80-2P (SD(RA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

PERFORMANCE DATA AND CURVE

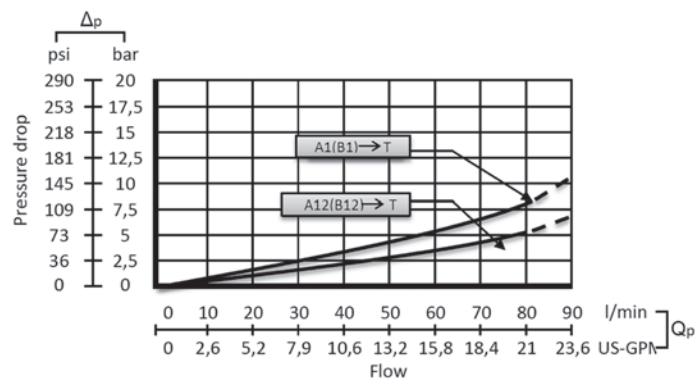
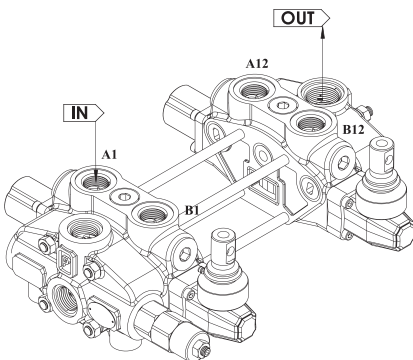
Open Center - Pressure Drop (P-T)



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



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

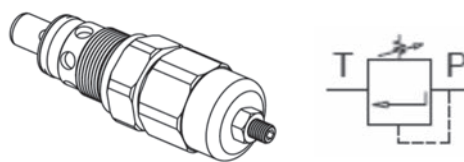


INLET RELIEF OPTIONS

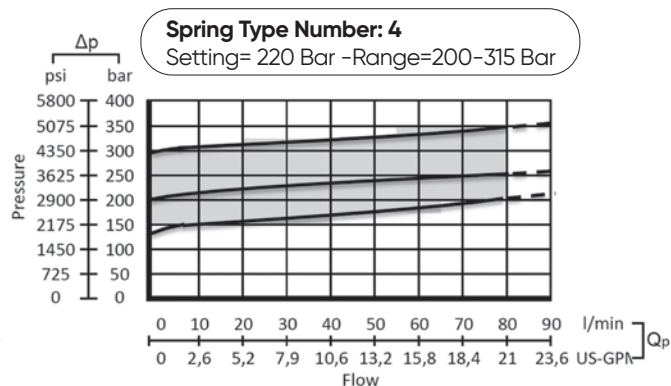
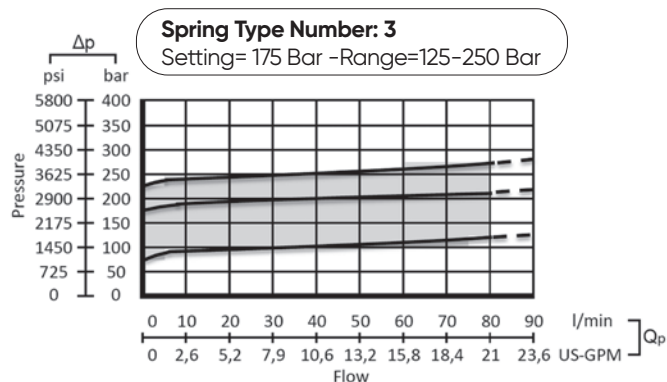
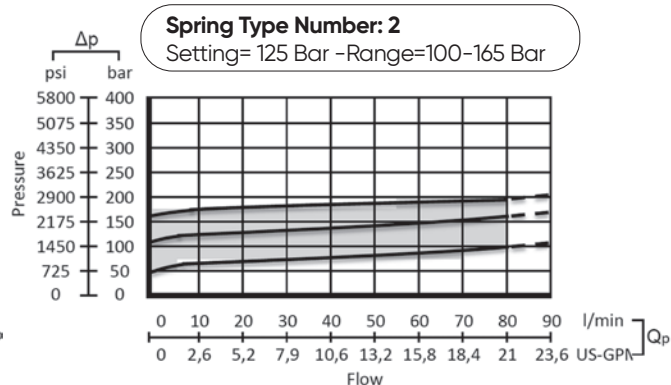
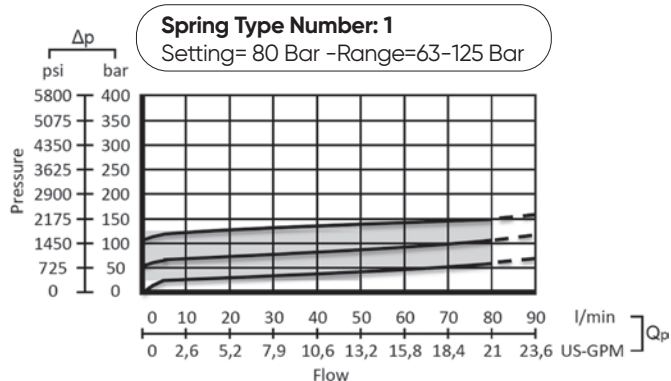
Direct Pressure Relief Valve

Code:

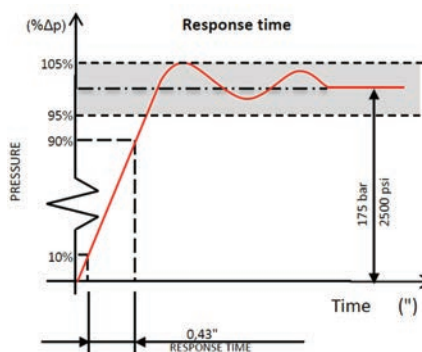
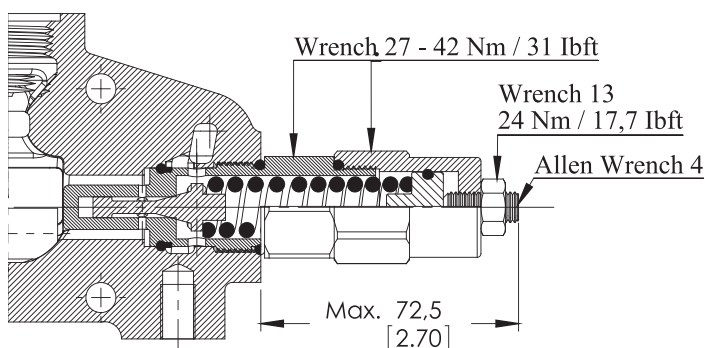
SMR2 – 125



Performance Data



Adjustment Type on Valve



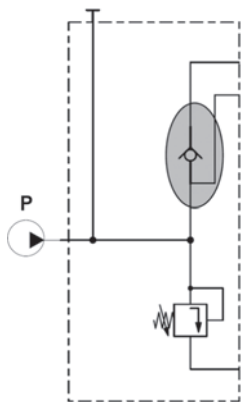
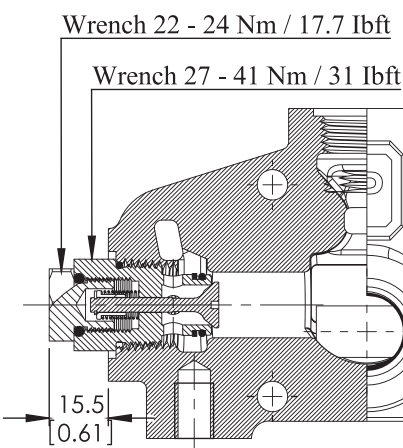
INLET RELIEF OPTIONS

Direct Pressure Relief Valve

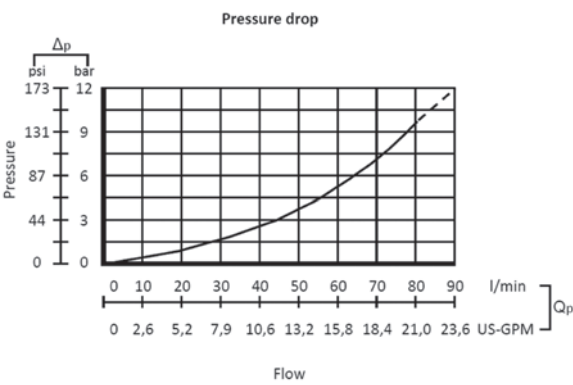
Kit No: PAC

Sectional Appearance

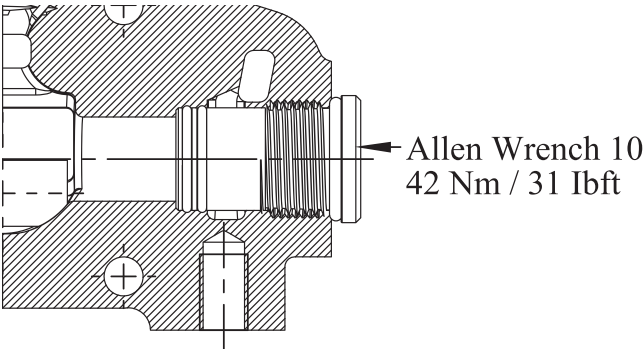
Diagram



Performance Data

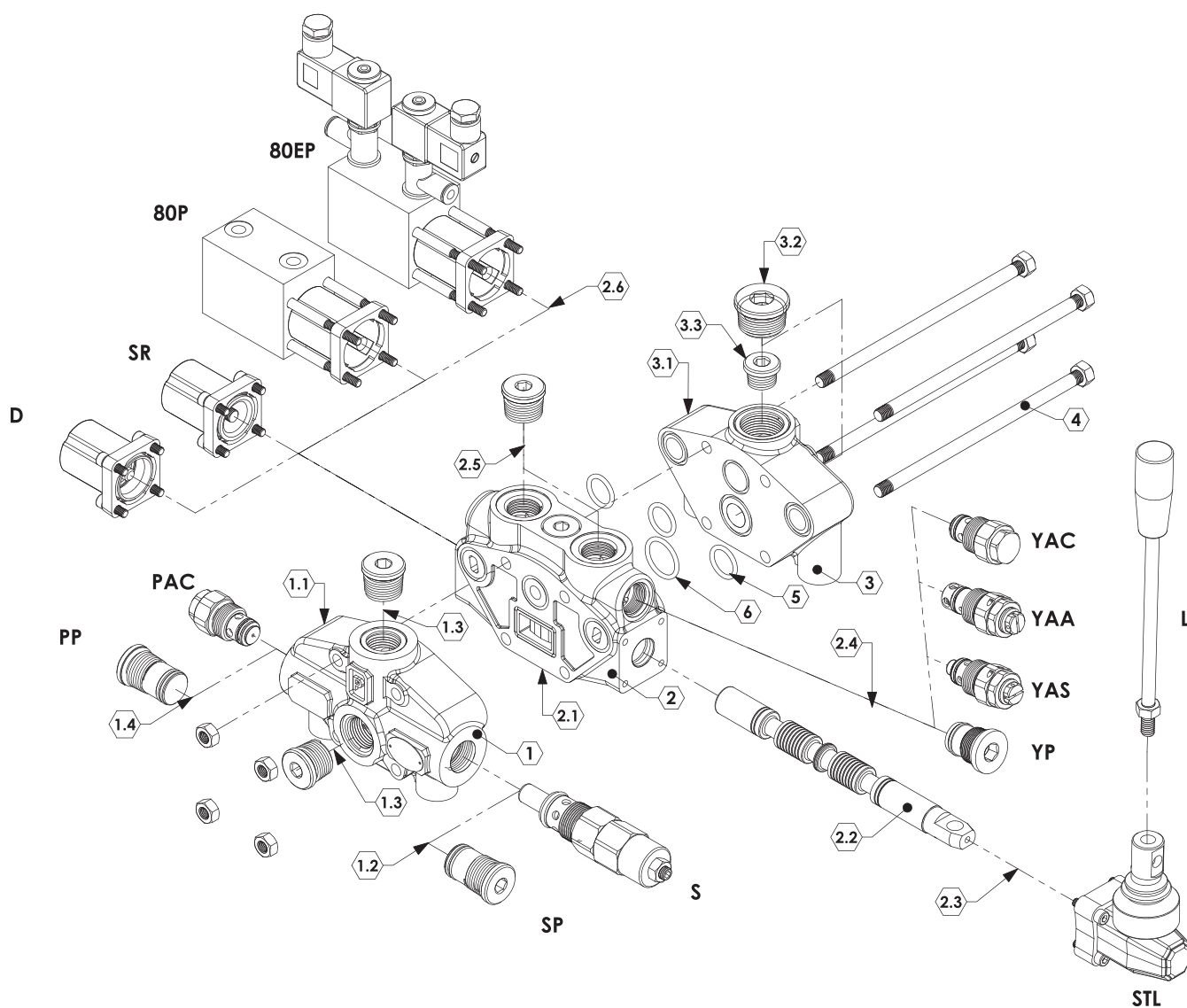
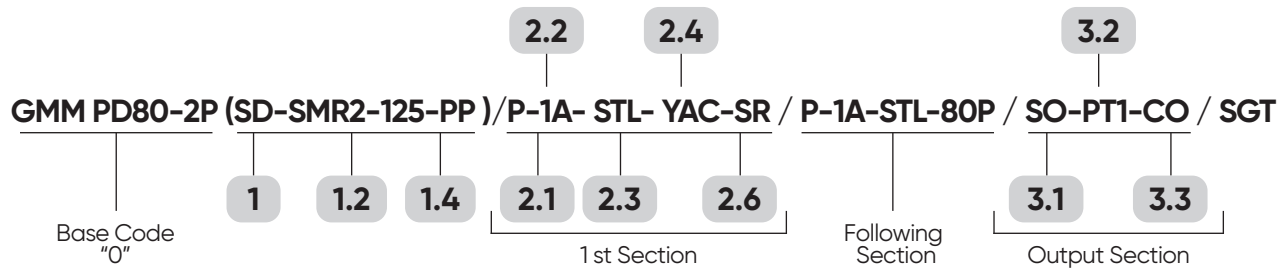


Relief Blanking Plug - SP



ORDERING CODES

Order Example



ORDERING CODES

1- Inlet Section

GMM PD80-2P PD80 = Valve Type-(PD)- Sectional
(80) - Max. Flow Rate
2P =Sections Quantity
SD = Side inlet with direct pressure relief valve (1SD80100)
TD = Top inlet with direct pressure relief valve (1TD80100)
SP = Side inlet with relief valve blanking plug (1SP80100)

2- Working Section

P = Parallel (2P80100)

3- Output Section

SO = Side outlet (3SO80100)
TO = Top outlet (3TO80100)
TCO = Top outlet with carry-over (3TCO80100)
TC = Top outlet with closed centre (3TC80100)

4- Assembling Kit

Tie rod kit for 1 section valve - (4TRK180100)
Tie rod kit for 2 section valve - (4TRK280100)
Tie rod kit for 3 section valve - (4TRK380100)
Tie rod kit for 4 section valve - (4TRK480100)
Tie rod kit for 5 section valve - (4TRK580100)
Tie rod kit for 6 section valve - (4TRK680100)
Tie rod kit for 7 section valve - (4TRK780100)
Tie rod kit for 8 section valve - (4TRK880100)
Tie rod kit for 9 section valve - (4TRK980100)
Tie rod kit for 10 section valve - (4TRK1080100)
Tie rod kit for 11 section valve - (4TRK1180100)
Tie rod kit for 12 section valve - (4TRK1280100)

5-6- O_Ring Kit

5. -17.00x2.65 NBR 70 SH O-Ring seal (3 Qty.) (5MK80100)
6. -22.40x2.65 NBR 70 SH O-Ring seal (1 Qty.) (6MK80100)

1.*-Inlet Options

1.1 Inlet Cover
Body = Standard (11BS80100)
1.2 Inlet Relief
SMR1-080 - (12SMR180080)-Range 63-125 bar
Setting 80 bar
SMR2-125 - (12SMR280125)- Range 100-160 bar
Setting 125 bar
SMR3-175 - (12SMR380175)- Range 125-250 bar
Setting 175 bar
SMR4-220 - (12SMR480220)-Range 200-315 bar
Setting 220 bar
1.3 Ports Plug
PA1 =G3/4 Top and side input - (13PA080100)
PA2 = G1 Top and side input -(13PA280100)
1.4 Inlet Valve
PAC =Inlet anti-cavitation valve -(14PAC80100)
PP(SP) = Relief valve blanking plug -(14PSP80100)

2.*- Working Options

2.1 Working Section

PA = Without ports valve prearrangement, with parallel circuit - Body (21BSPA80100)

2.2 Spool Options

1A -(22SS80110) - 3 Positions ,Double acting
2A -(22SS80120) - 3 Positions ,Double acting
A to tank B Blocked
3A -(22SS80130) - 3 Positions ,Double acting
B to tank A blocked
4A -(22SS80140) - 3 Positions ,Double acting
A and B tank
5A -(22SS80150) - 3 Positions ,Single acting on
A (A to tank)
6A -(22SS80160) - 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 - (23STL80100)
HL = Remote Cable Kit - (80HL80100)

2.4 Port Relief Valves

Anti-Shock Valve

YAS (T1-50) - (24YAC80050)-Range 35-70 bar
Setting 50 bar

YAS (T1-100) - (24YAC80100)-Range 63-220 bar
Setting 100 bar

YAS (T1-200) - (24YAC80200)-Range 180-350 bar
Setting 200 bar

Anti-Shock and Anti-Cavitation Valve

YAA (T1-63) - (24YAA80063)-Range 35-70 bar
Setting 50 bar

YAA (T1-100) - (24YAA80063)-Range 63-220 bar
Setting 100 bar

YAA (T1-200) - (24YAA80063)-Range 180-350 bar
Setting 200 bar

YAC - Anti Cavitation- (24YAS80100)

YP- A and B ports valve blanking plug (24YP80100)

DST-A and B ports valve blanking plugs with connection to tank-(24DST80100)

2.5 Ports Plug Options

PL1 =Plug for single action spool for 2A-3A, G3/4 (25PL180100)

PL2 =Plug for single action spool for 2A-3A, G1 (25PL280100)

2.6 Spool Positioners

SR=Spring Return in neutral position - (26SR80100)

D =Detent in position 1, neutral and 2 -(26D80100)

80P=ON/OFF Pneumatic - (2645P150100)

80EP=12 VDC ON/OFF electro-pneumatic (2680EP150112)

80EH= 12 VDC/24 VDC ON/OFF electro-hydraulic (3680EH100112)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS80100)

3.2 Output Plug

PT1 =G1 Top and Side output (32PT180100)

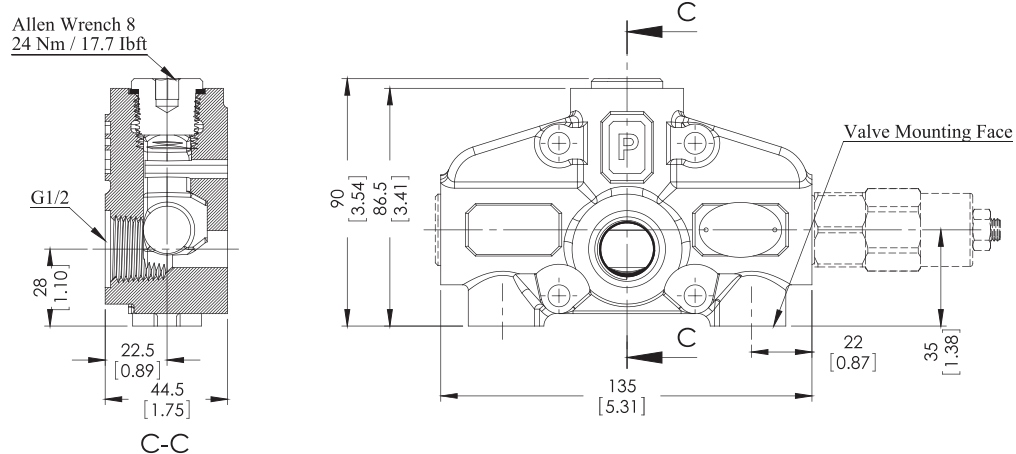
3.3 Circuits Options

CO =G1/8 Carry-Over Connector (33CO80100)

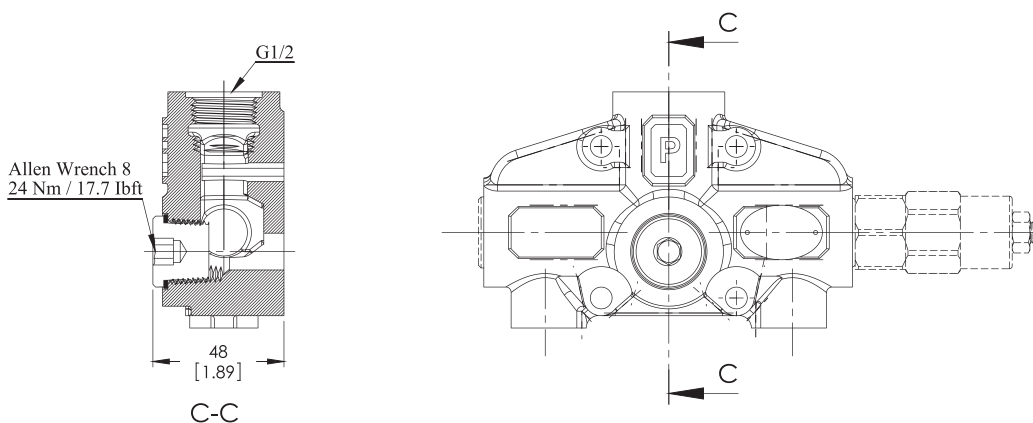
INLET COVER- PUMP SIDE
LH Inlet Valve Options

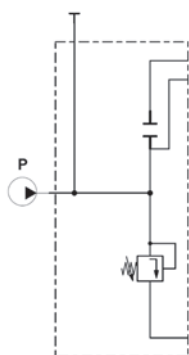
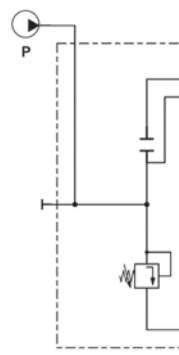
Type No: **SD**

Sectional Appearance


Type No: **TD**

Sectional Appearance


Hydraulic Diagram

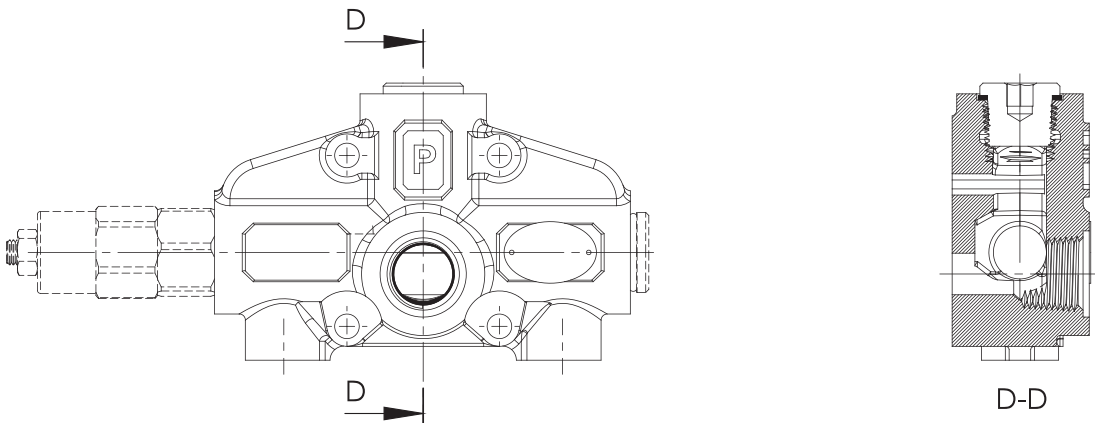
Type No: **SD**

Type No: **TD**


INLET COVER- PUMP SIDE

RH Inlet Valve Options

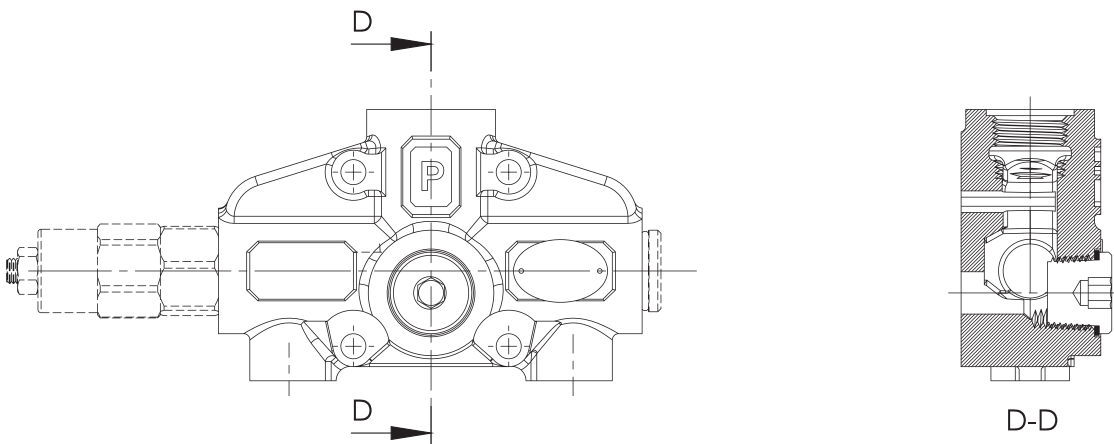
Type No: **RA**

Sectional Appearance



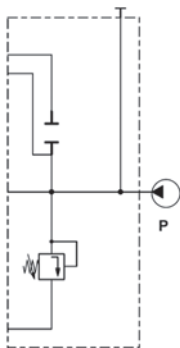
Type No: **RB**

Sectional Appearance

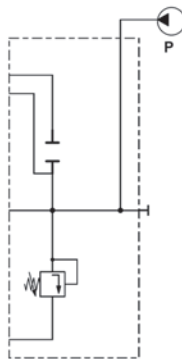


Hydraulic Diagram

Type No: **RA**

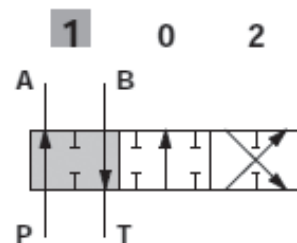
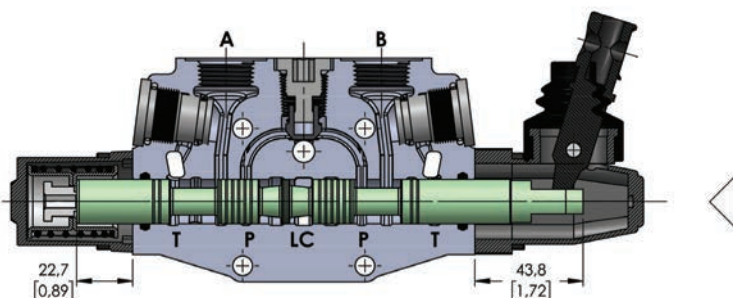
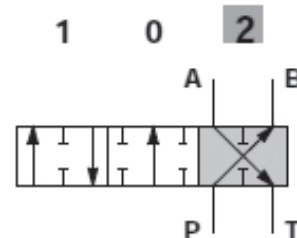
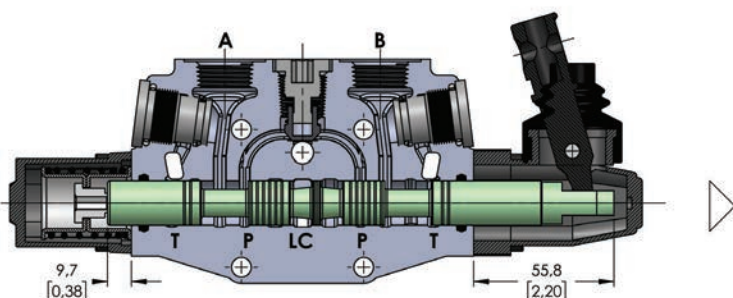
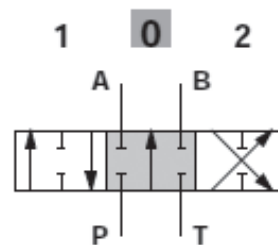
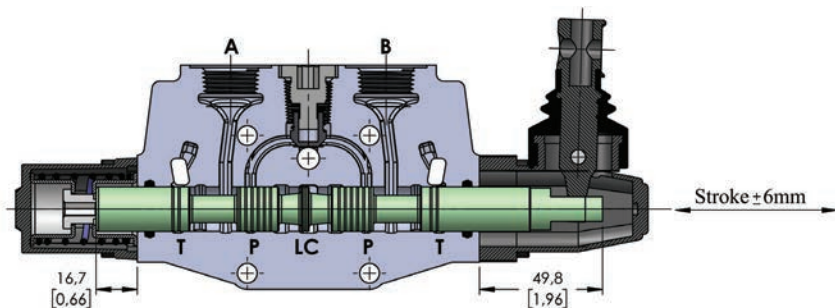


Type No: **RB**

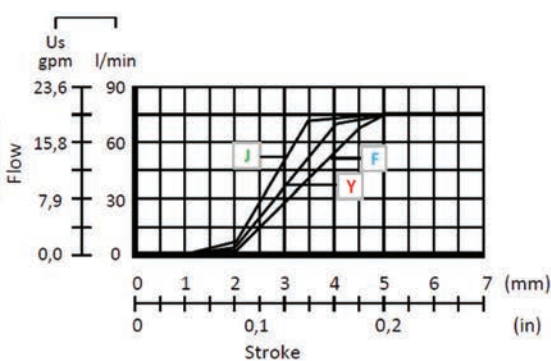
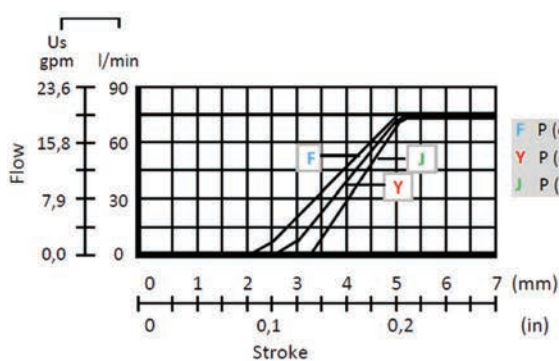


SPOOL OPTIONS

Spool Type - 1A

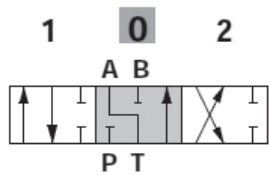
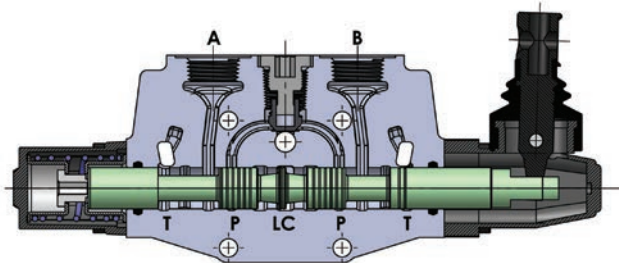


Performance Curve And Data

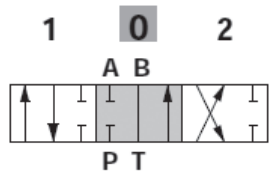
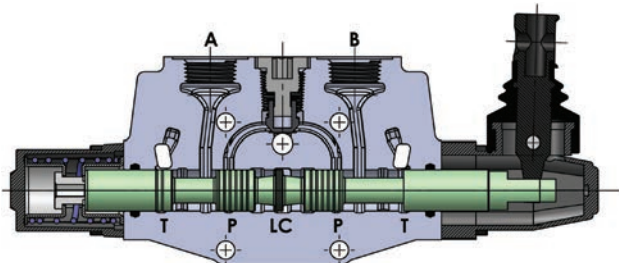


SPOOL OPTIONS

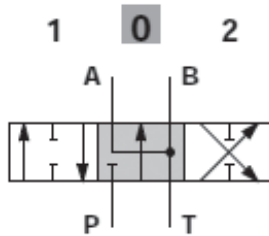
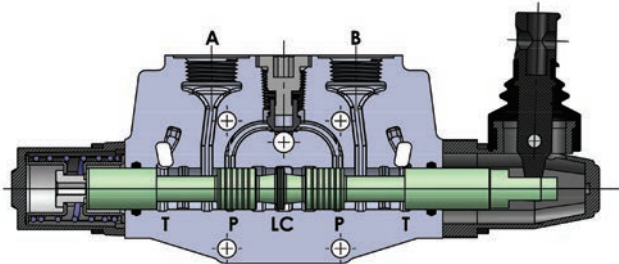
Spool Type - 2A



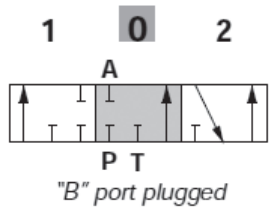
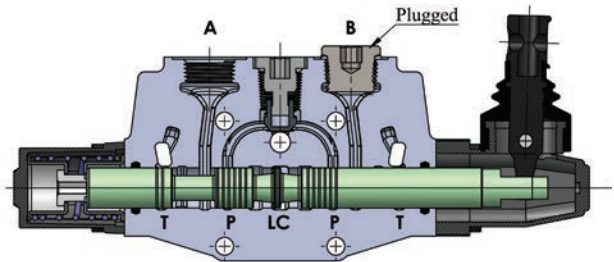
Spool Type - 3A



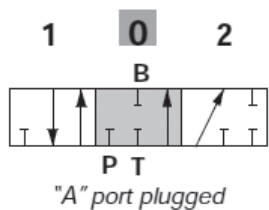
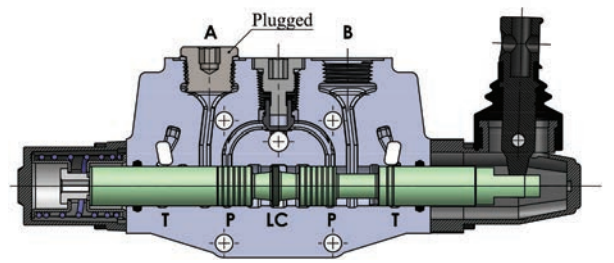
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

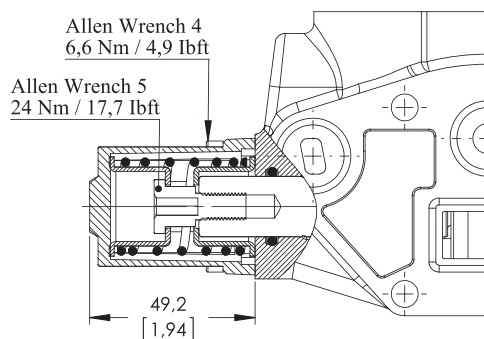


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



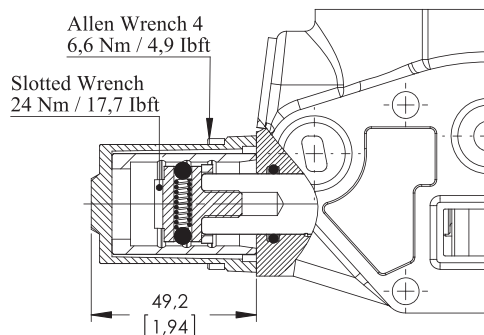
Diagram



With Detent

Kit No: **D**

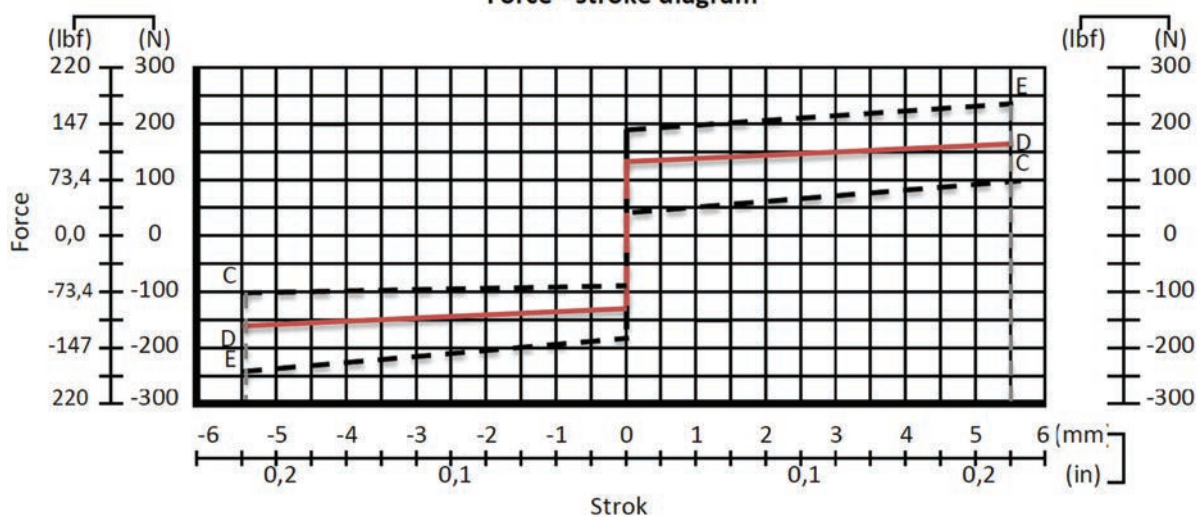
Sectional Appearance



Diagram



Force - stroke diagram

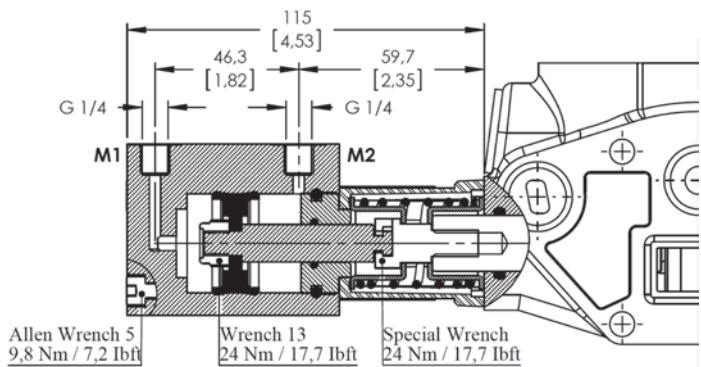


SPOOL POSITIONERS – SIDE OF RETURN

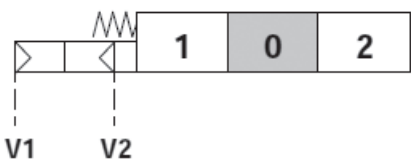
ON/OFF Pneumatic Control

Kit No: 80P

Sectional Appearance



Diagram



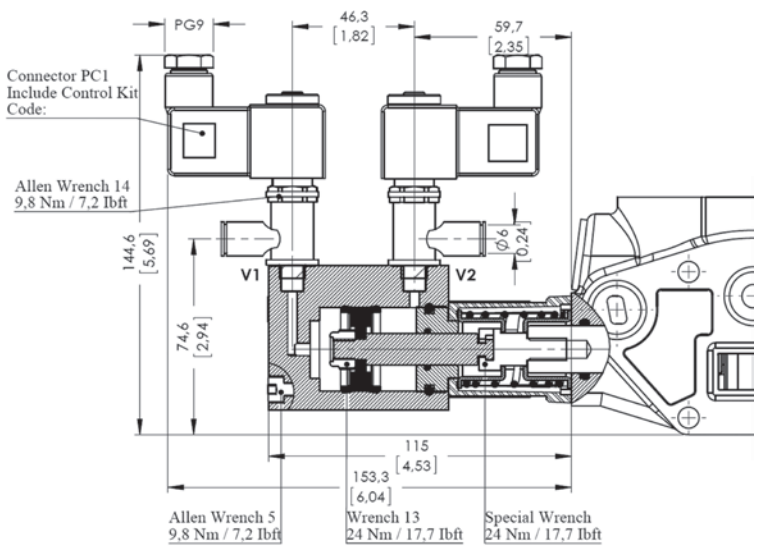
Operating Features

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

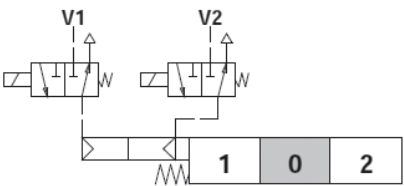
ON/OFF Electro-Pneumatic Control

Kit No: 80EP

Sectional Appearance



Diagram



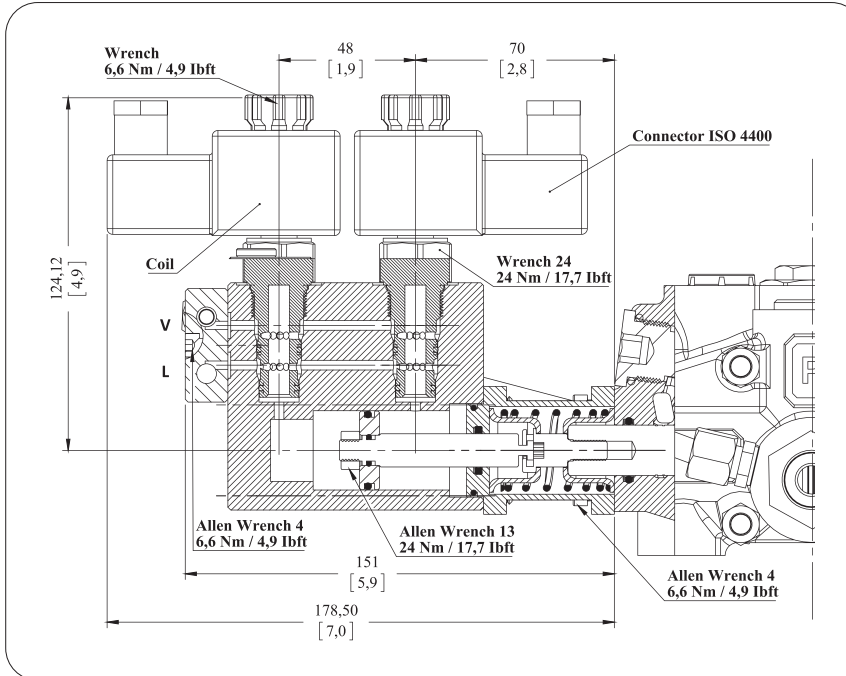
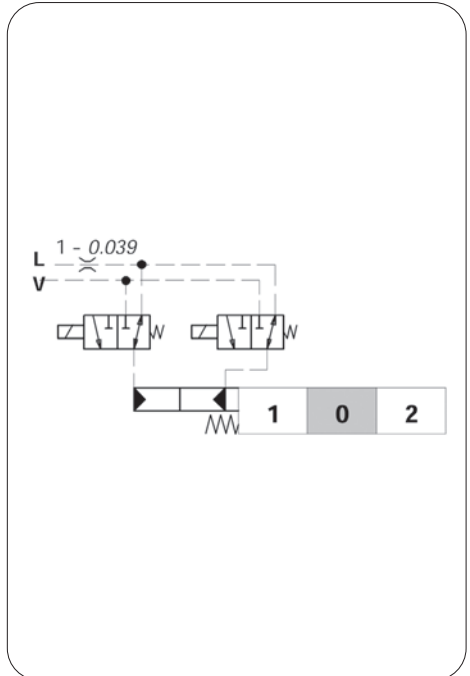
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 80EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
 Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
 Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 21 W
 Duty cycle.....: %100
 Protection type.....: IP 65
 Nominal voltage tolerance.....: ±10
 Max temperatures.....: 100 C°
 Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
 COL 12 - 10COL1001 - Kit For Section 2
 COL 13 - 10COL1001 - Kit For Section 3
 COL 14 - 10COL1001 - Kit For Section 4
 COL 15 - 10COL1001 - Kit For Section 5
 COL 16 - 10COL1001 - Kit For Section 6
 COL 17 - 10COL1001 - Kit For Section 7
 COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

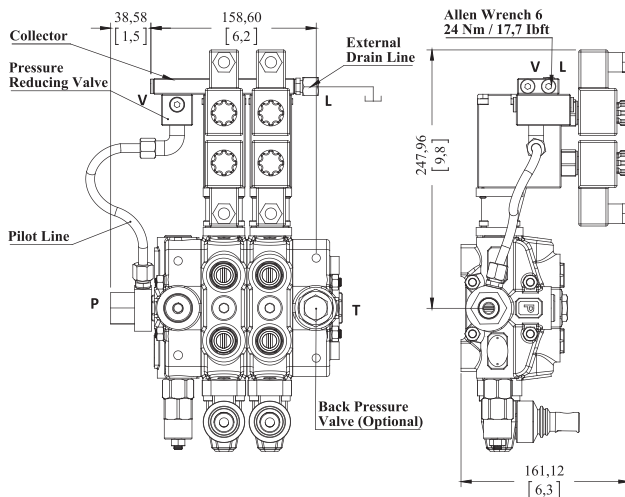
COL 21 - 10COL2001 - Kit For Section 1
 COL 22 - 10COL2001 - Kit For Section 2
 COL 23 - 10COL2001 - Kit For Section 3
 COL 24 - 10COL2001 - Kit For Section 4
 COL 25 - 10COL2001 - Kit For Section 5
 COL 26 - 10COL2001 - Kit For Section 6
 COL 27 - 10COL2001 - Kit For Section 7
 COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

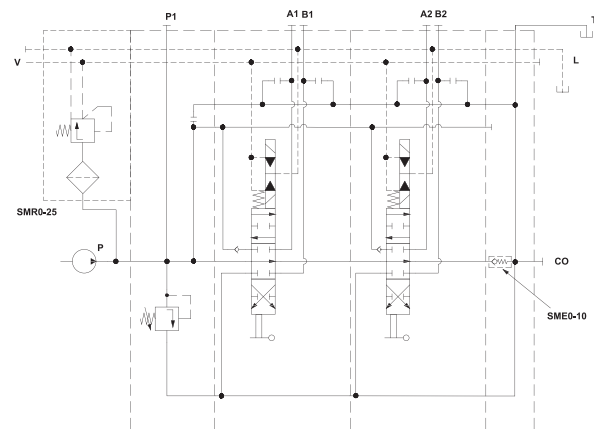
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram



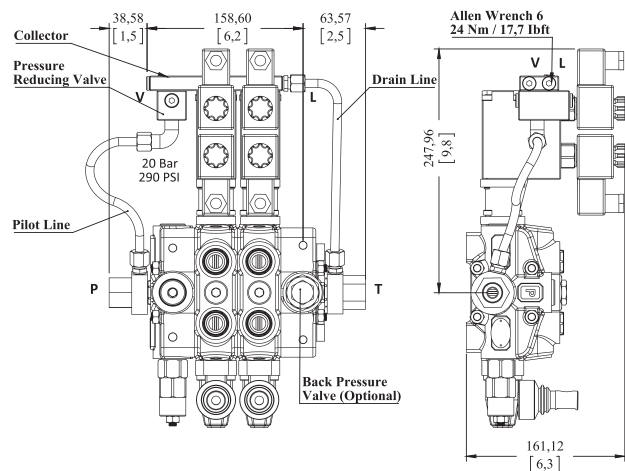
Operating Features

External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)

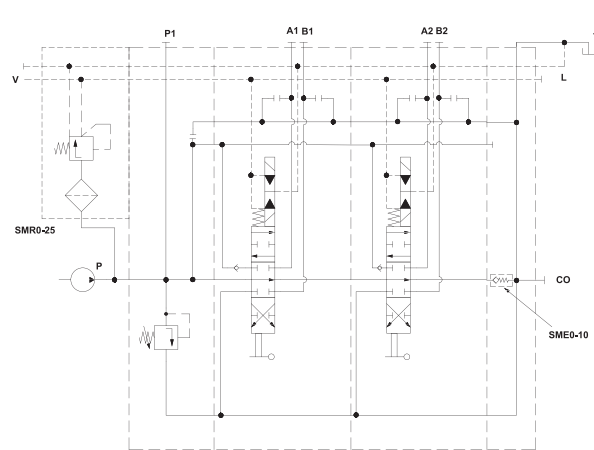
Code= GMM PD80-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-80EH/ P-1A-STL-80EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

Outlet Pressure: 20 Bar / 290 Psi

Max. Flow.....: 8 l/min

Filtration: 80 µ

Code= GMM PD80-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-80EH/ P-1A-STL-80EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

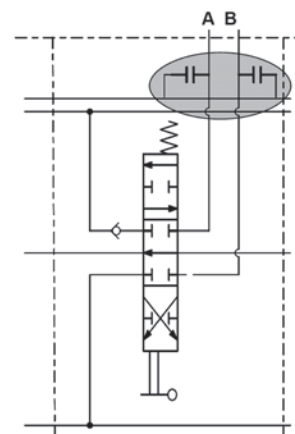
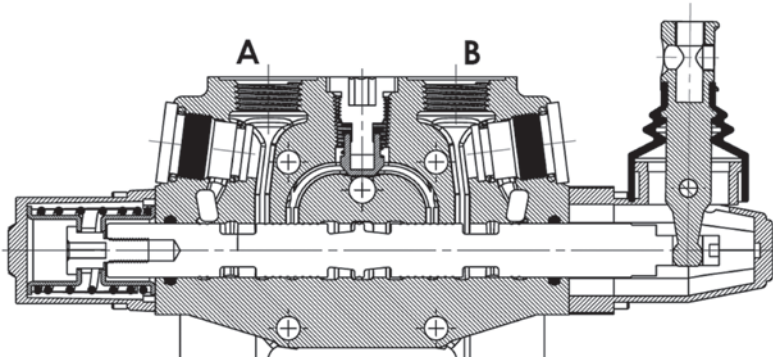
WORKING SECTION KIT

With Port Valves Type

Kit No: **P**

Sectional Appearance

Diagram

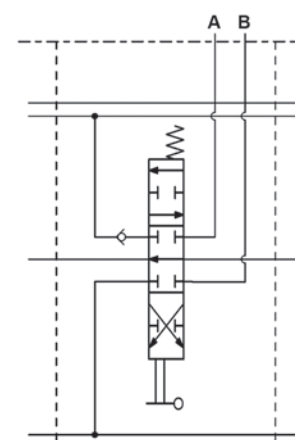
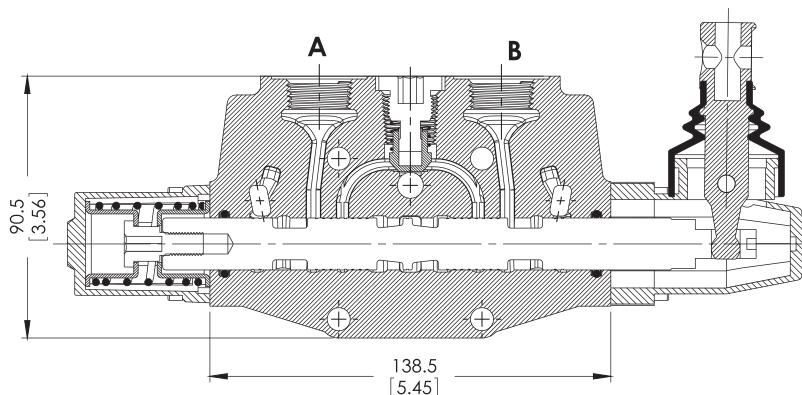


Without Port Valves Type

Kit No: **PA**

Sectional Appearance

Diagram



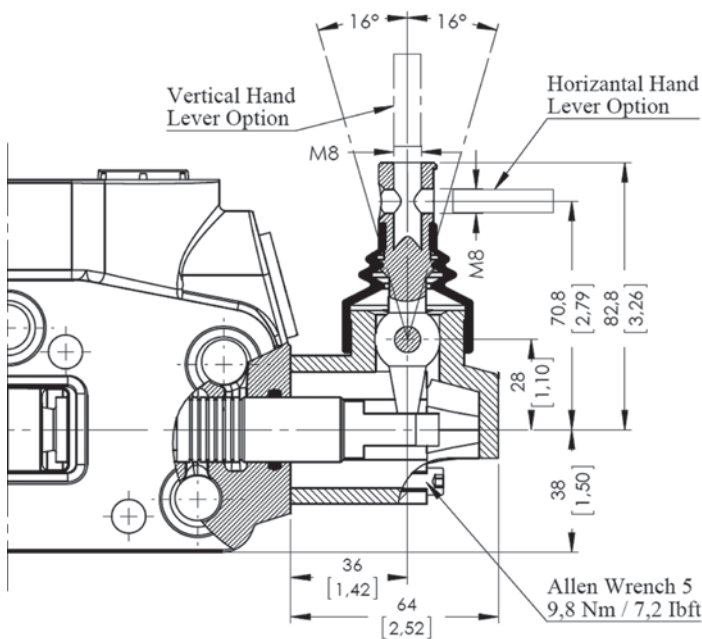
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: **STL - L0**

Sectional Appearance

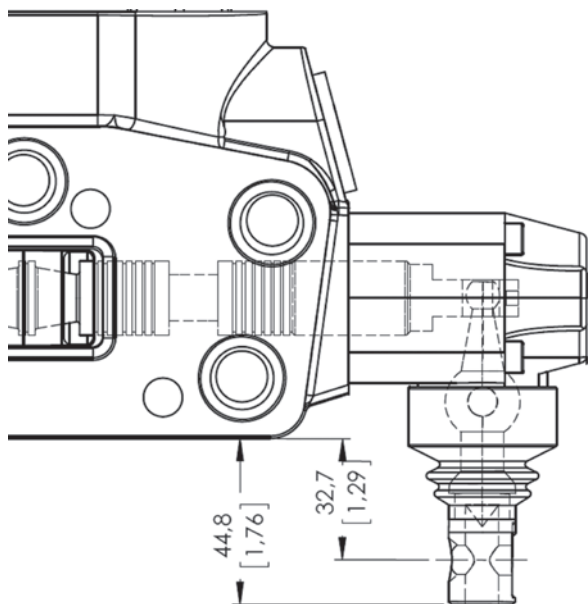
Diagram



Kit No: **STL - L180**

Sectional Appearance

Diagram



Note: 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

2. section spool

1. section spool

Pivot

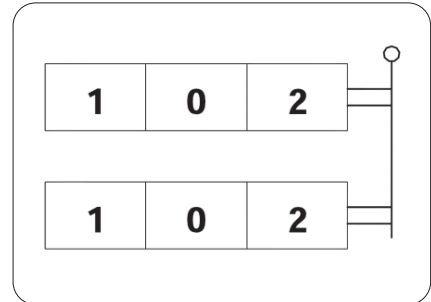
Wrench 17 - 42 Nm / 31 lbft

Allen wrench 4 - 6.6 Nm / 4.9 lbft

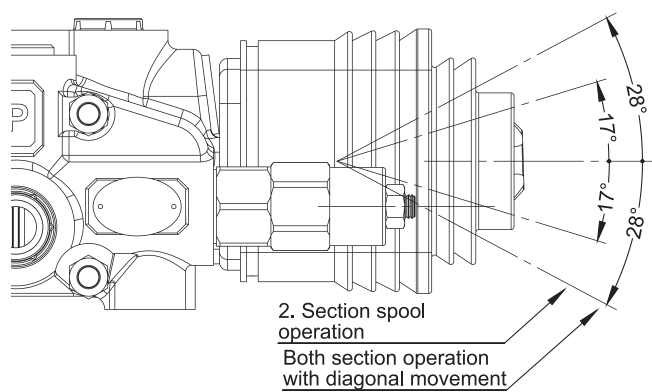
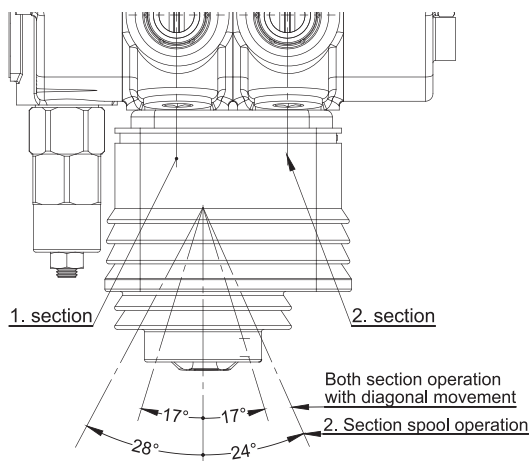
Wrench 13 - 24 Nm / 17.7 lbft

Wrench 13 - 24 Nm / 17.7 lbft

Allen wrench 6 - 24 Nm / 17.7 lbft



Operation Angle:



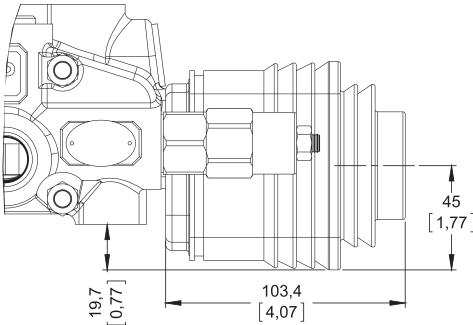
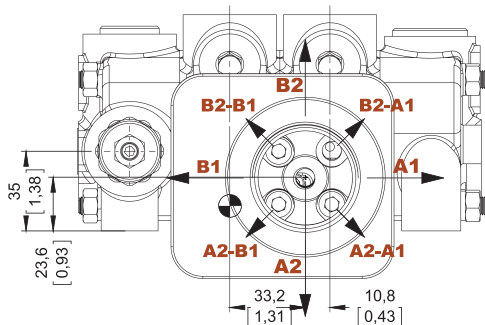
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement scene

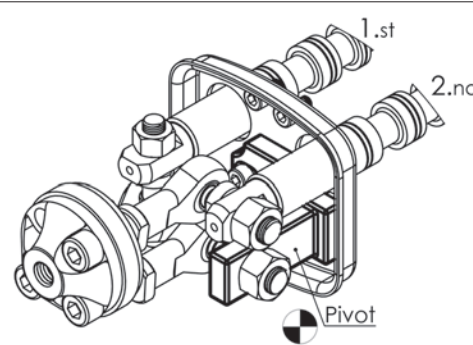
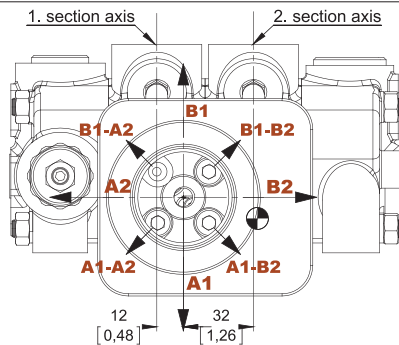
Type No: **JL1**

Application: Pivot placed down on the Left



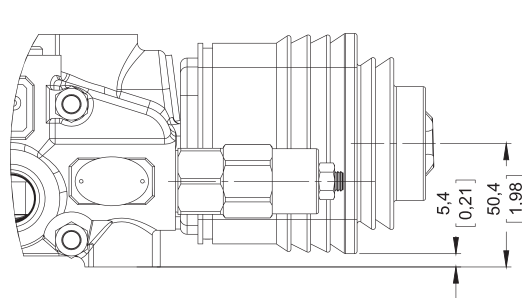
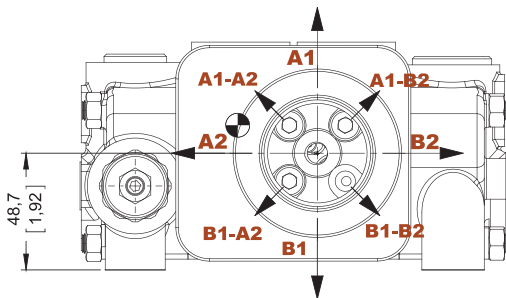
Type No: **JL2**

Application: Pivot placed down on the right



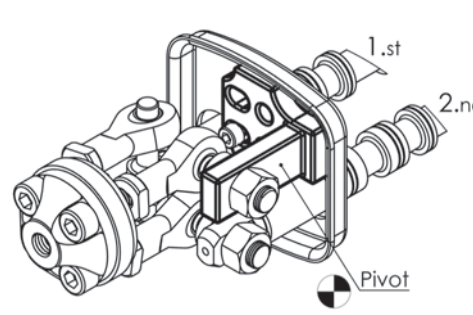
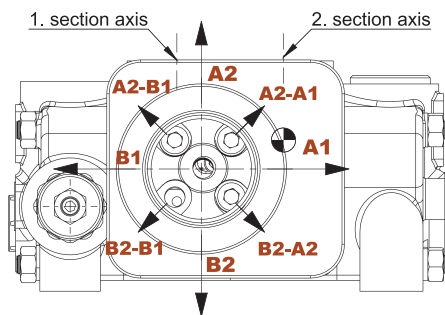
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

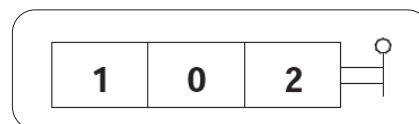
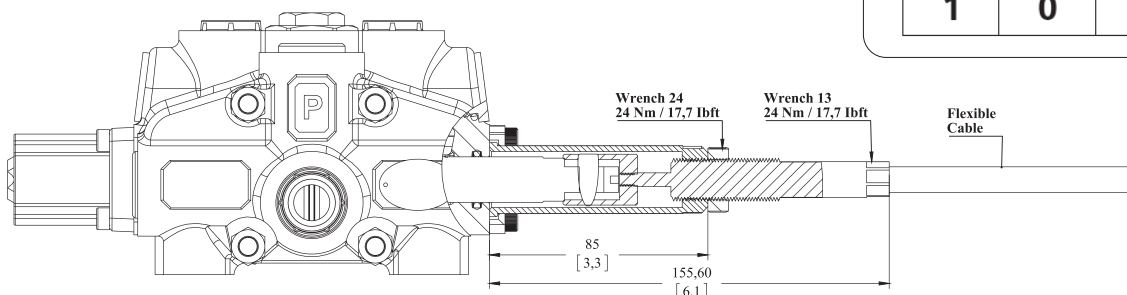
Lever Controls – Cable Control

Kit No: **HL**

Sectional Appearance

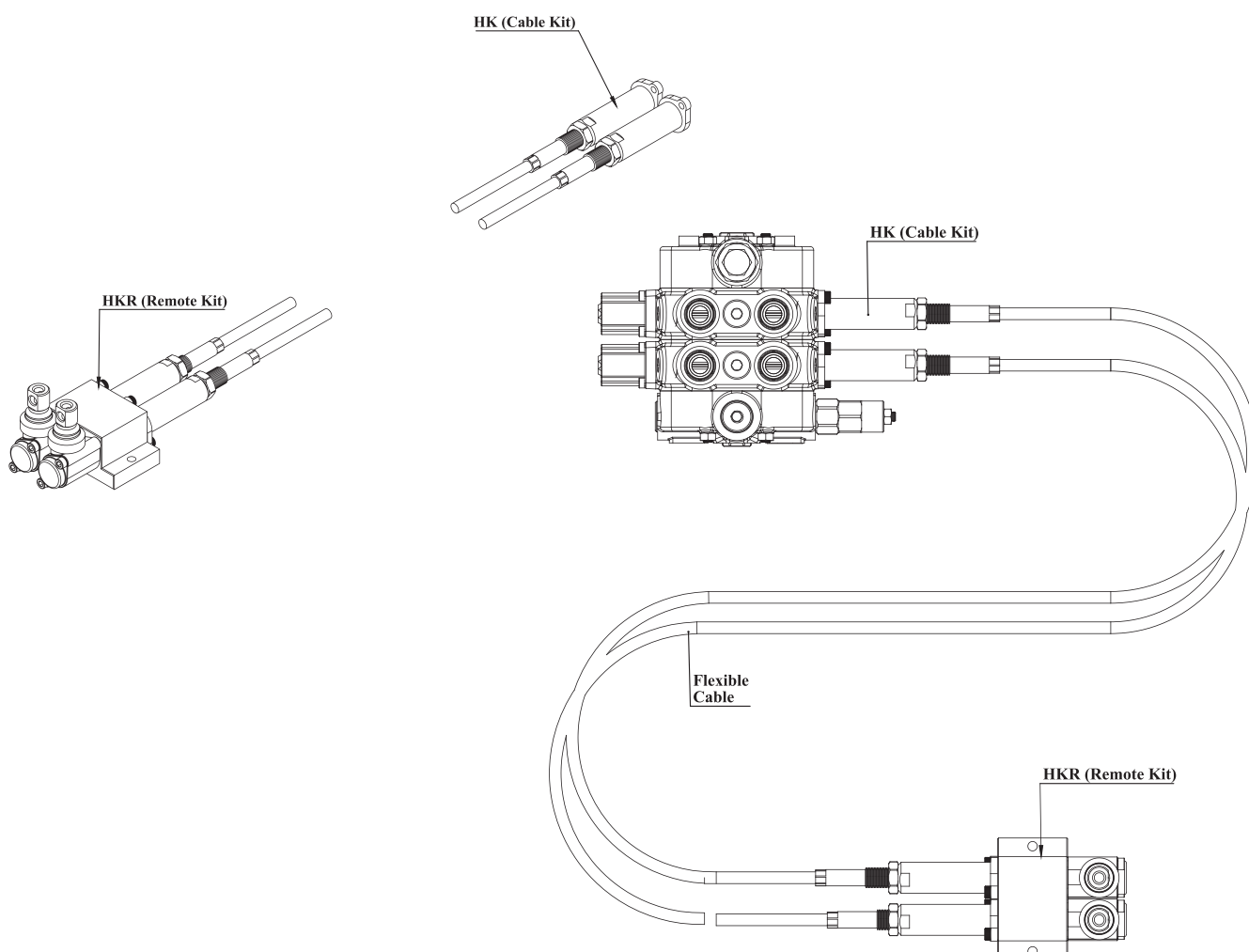
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department.

Example Operation



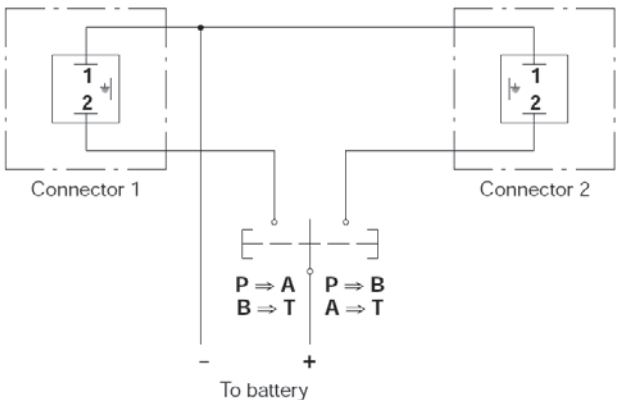
COMPLETE CONTROL – ON / OFF SELENOID CONTROL

ON/OFF Selenoid Control

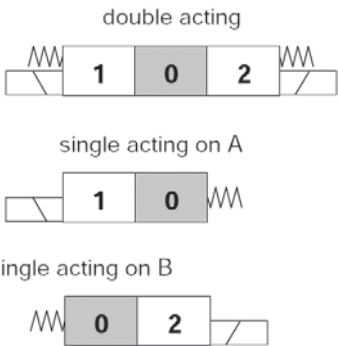
Kit No: SEC

Sectional Appearance

Electric wiring example



Diagram



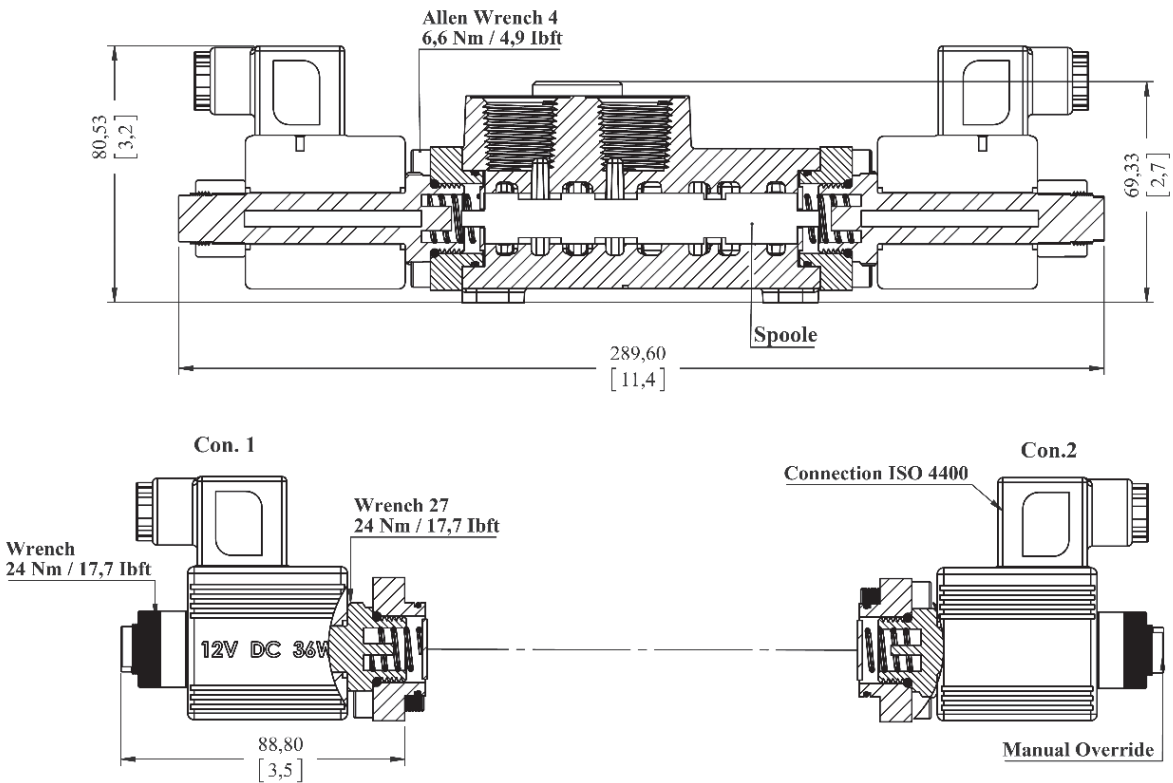
Operating Features

Max Working Pressure.....: 230 Bar / 3300 Psi
Max back pressure: 5 Bar / 80 Psi
Internal Leakage.....: 10 cm³ / min

Solenoid Operating Features

Nominal voltage.....: 12 VDC / 24 VDC
Power rating.....: 36 W
Duty cycle.....: %100
Nominal voltage tolerance.....: ±10

Coil insulation: Class H
Stroke.....: ±3

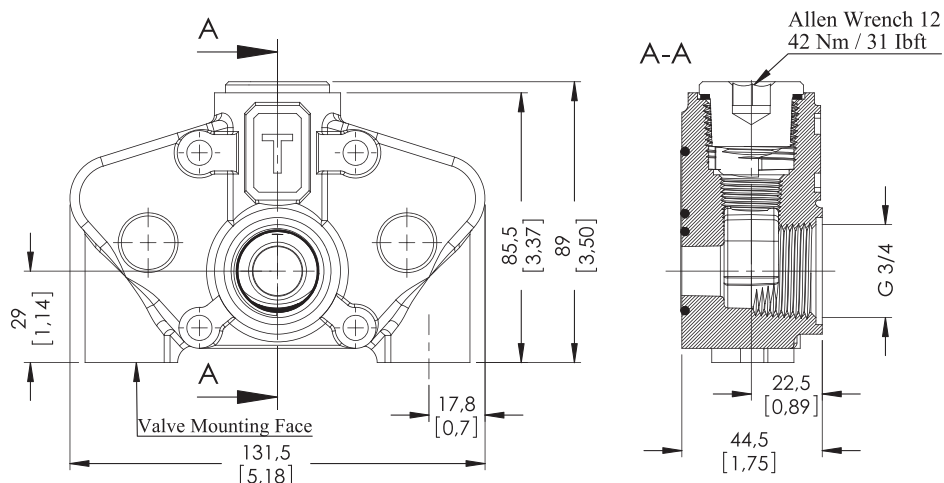


OUTLET COVER - TANK SIDE

Output Cover Options

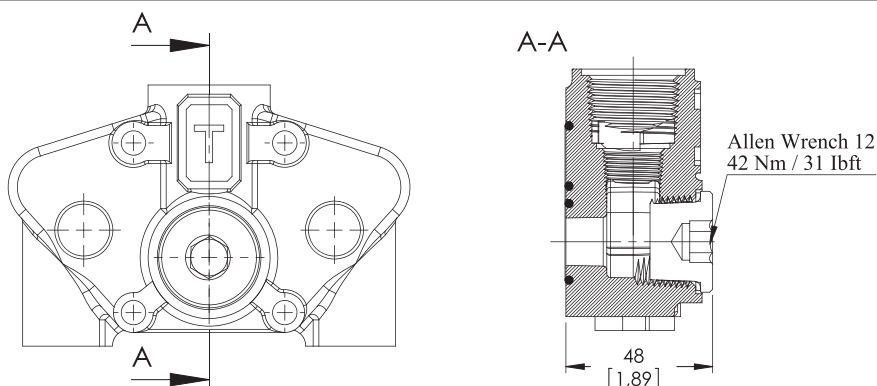
Kit No: **SO**

Sectional Appearance



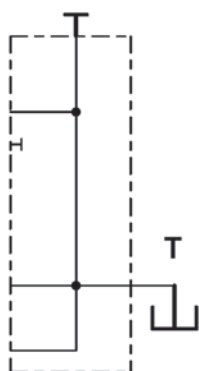
Kit No: **TO**

Sectional Appearance

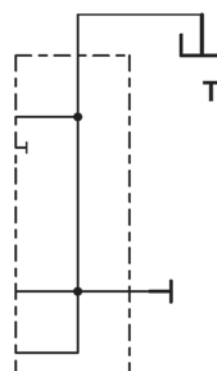


Hydraulic Diagram

Type No: **SO**



Type No: **TO**

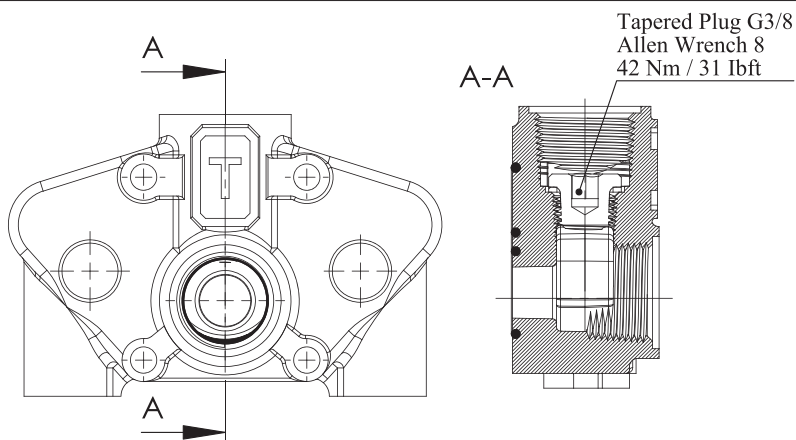


OUTLET COVER - TANK SIDE

Output Cover Options

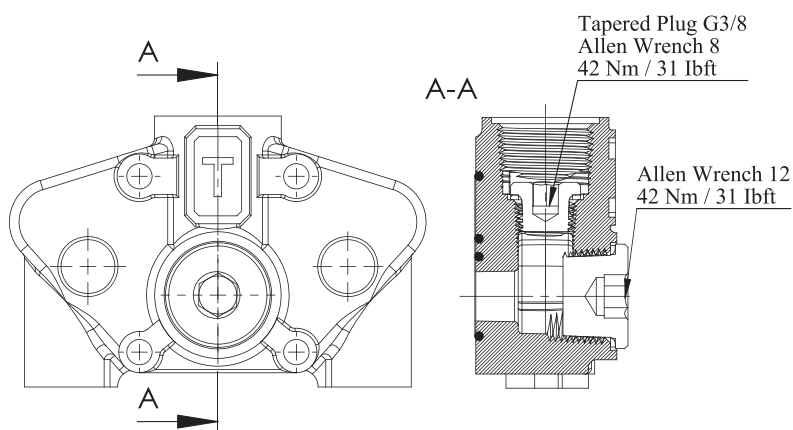
Kit No: TCO

Sectional Appearance



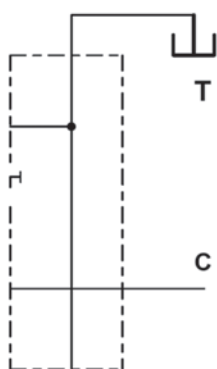
Kit No: TC

Sectional Appearance

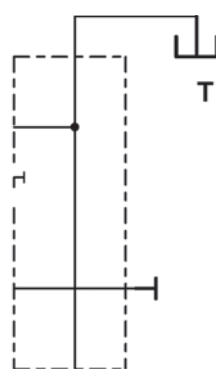


Hydraulic Diagram

Type No: TCO



Type No: TC



PORT VALVES OPTIONS

Anti Shock Valves

Code:

YAS-1 (T1-100)

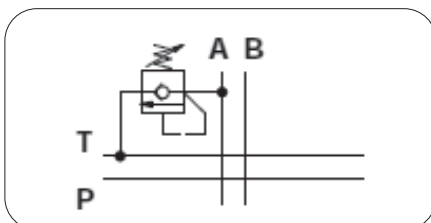
Pressure Setting in Bar

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

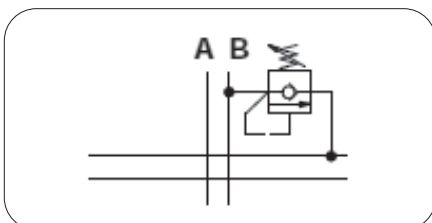
1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

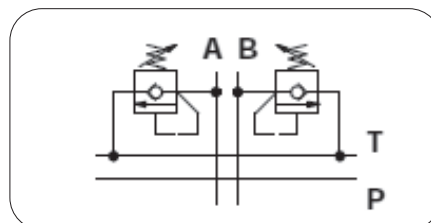
Kit No: **YAS1**



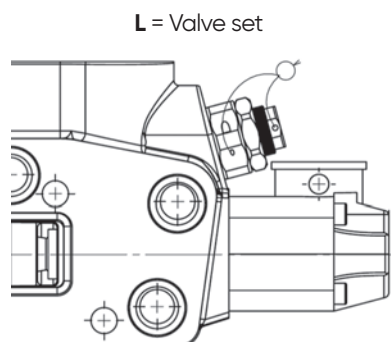
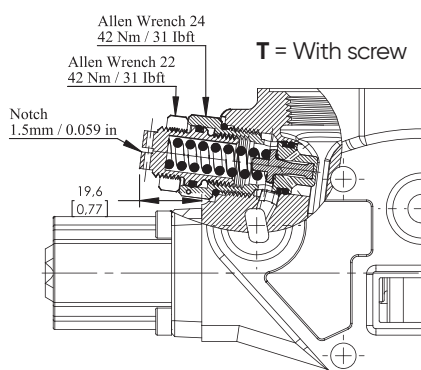
Kit No: **YAS2**



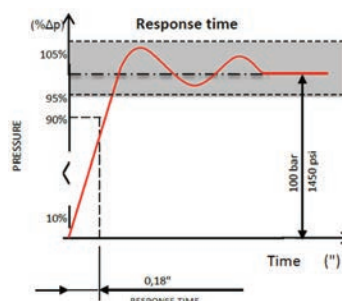
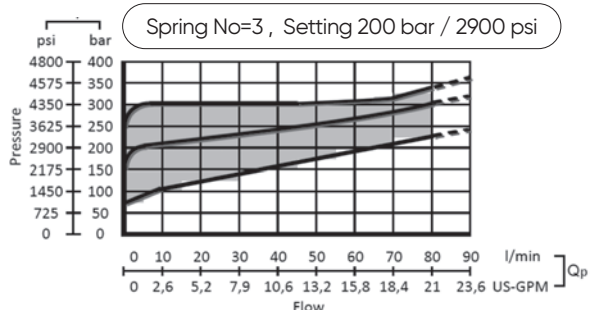
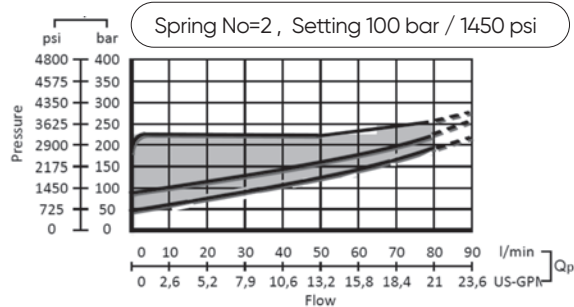
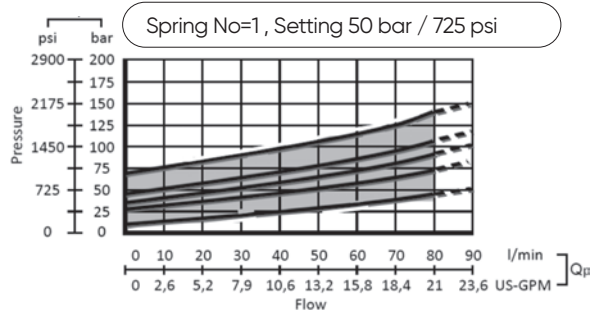
Kit No: **YAS3**



Adjustment Type on Valve:



Performance Data:



PORT VALVES OPTIONS

Anti shock And Anti Cavitation Valves

Code:

YAA-1 (T1-100)

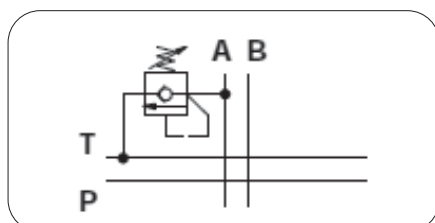
Pressure Setting in Bar

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

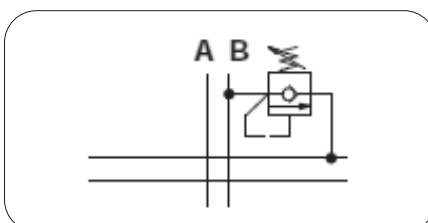
1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

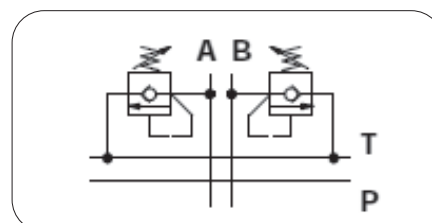
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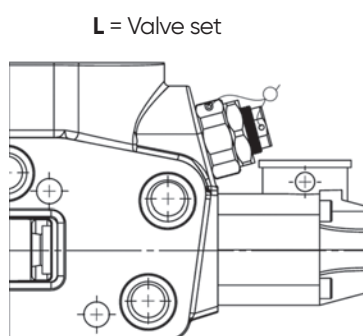
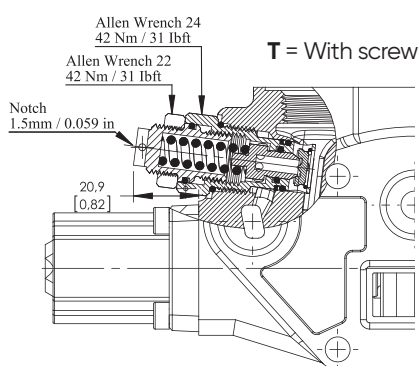
Kit No: **YAA2**



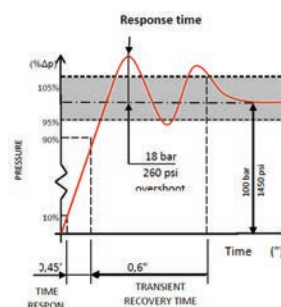
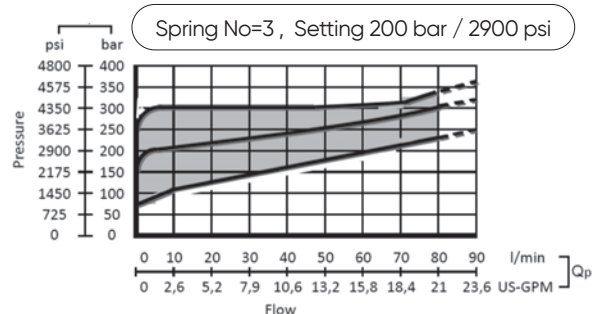
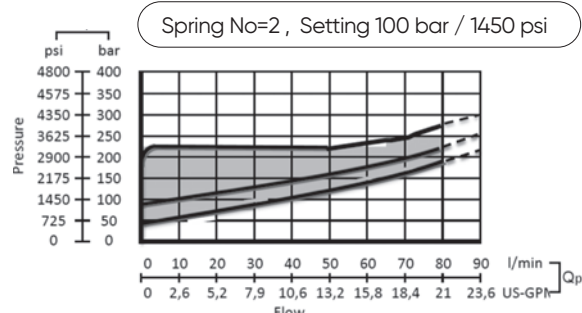
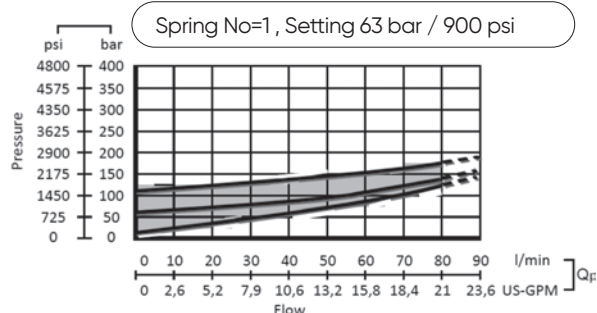
Kit No: **YAA3**



Adjustment Type on Valve:



Performance Data:



PORT VALVES OPTIONS

Anti Cavitation Valves

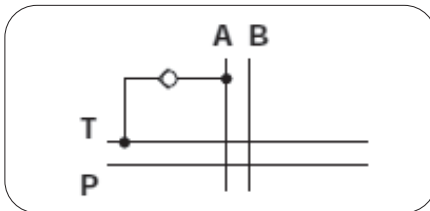
Code:

YAC-1

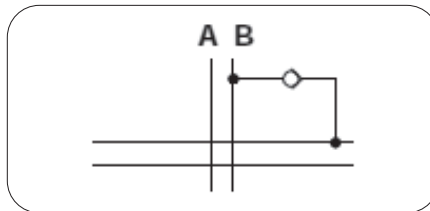
→ 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram

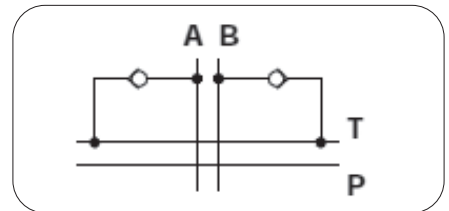
Kit No: **YAC1**



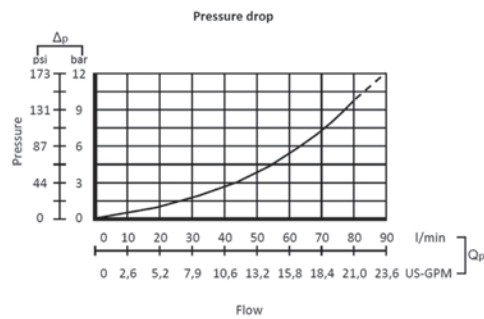
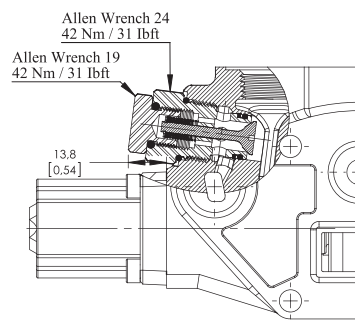
Kit No: **YAC2**



Kit No: **YAC3**



Adjustment Type on Valve And Data:

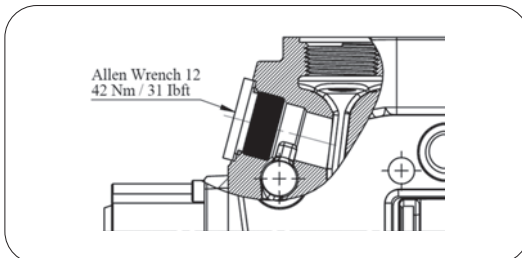


Valve Blanking

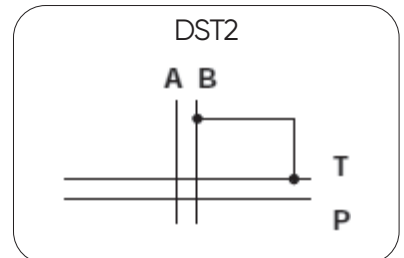
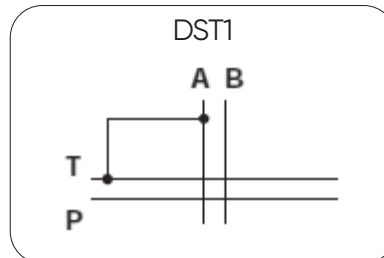
Plug with tank connection

DST-1 (1:Mounted port A – 2:Mounted port B)

Sectional Appearance

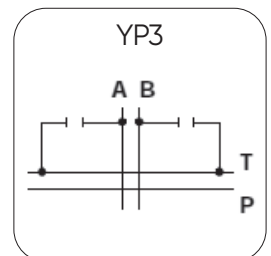
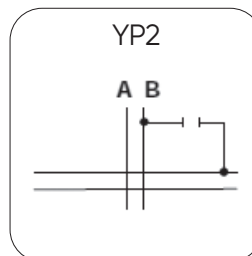
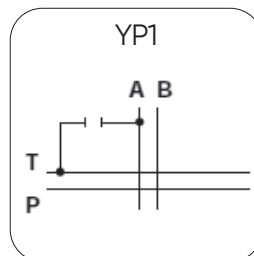
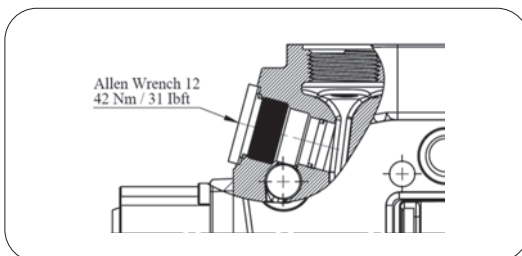


Hydraulic Diagram



Plug

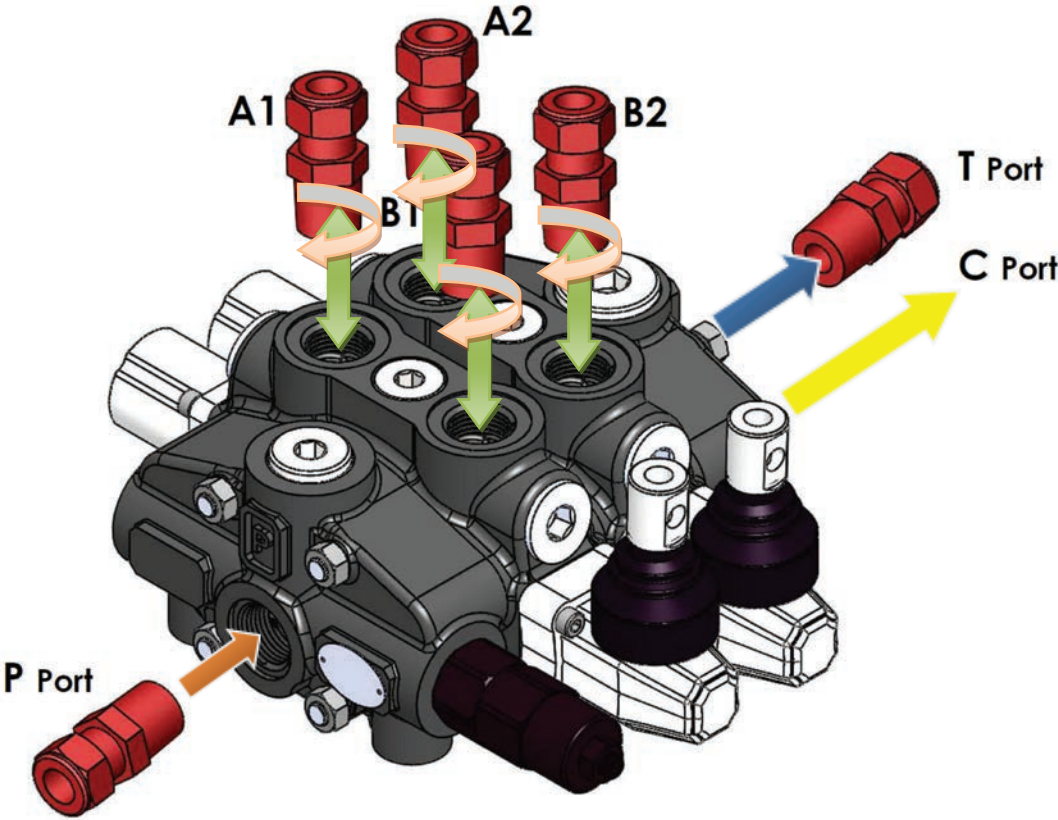
YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)



INSTALLATION AND MAINTENANCE

The GMM-PD80 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

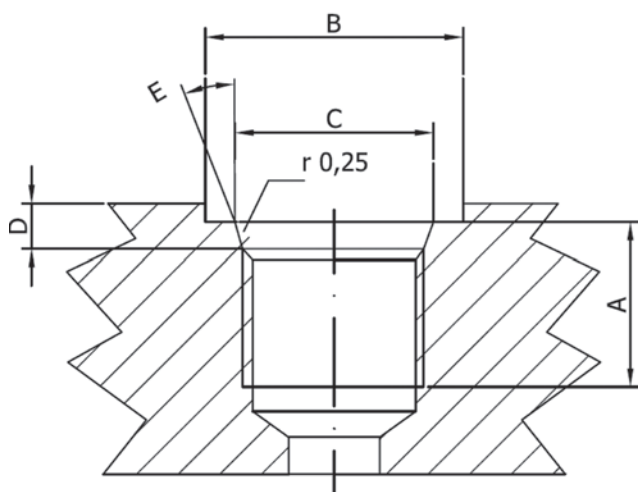
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



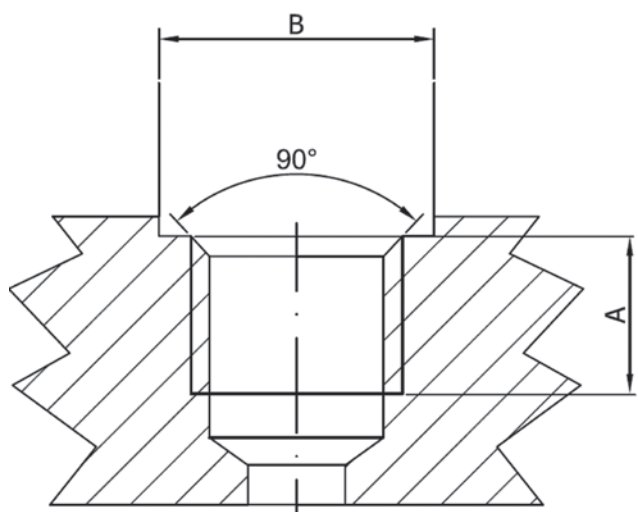
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O--Ring seal	50 / 36.9	50 / 36.9	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
BSP (ISO 228/1)	G 3/4	G 3/4	G 3/4
With O--Ring seal	70 / 51.6	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

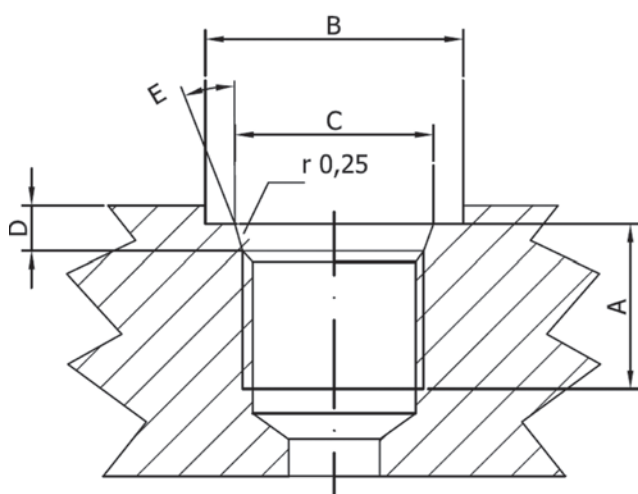
Ports Dimensional Data



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"		G3/4		G1	
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		M18x1,5 ISO 262		M27x2 ISO 262	
mm	in				
A		16	0,63	18	0,71
B		31.5	1.24	37.7	1.48

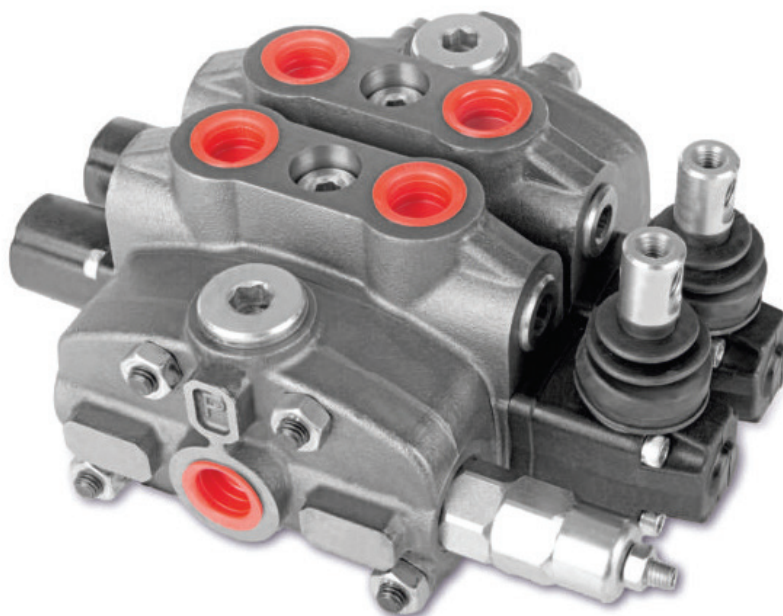


SECTIONAL
VALVES

GMM-PD100

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 (01/2020).

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

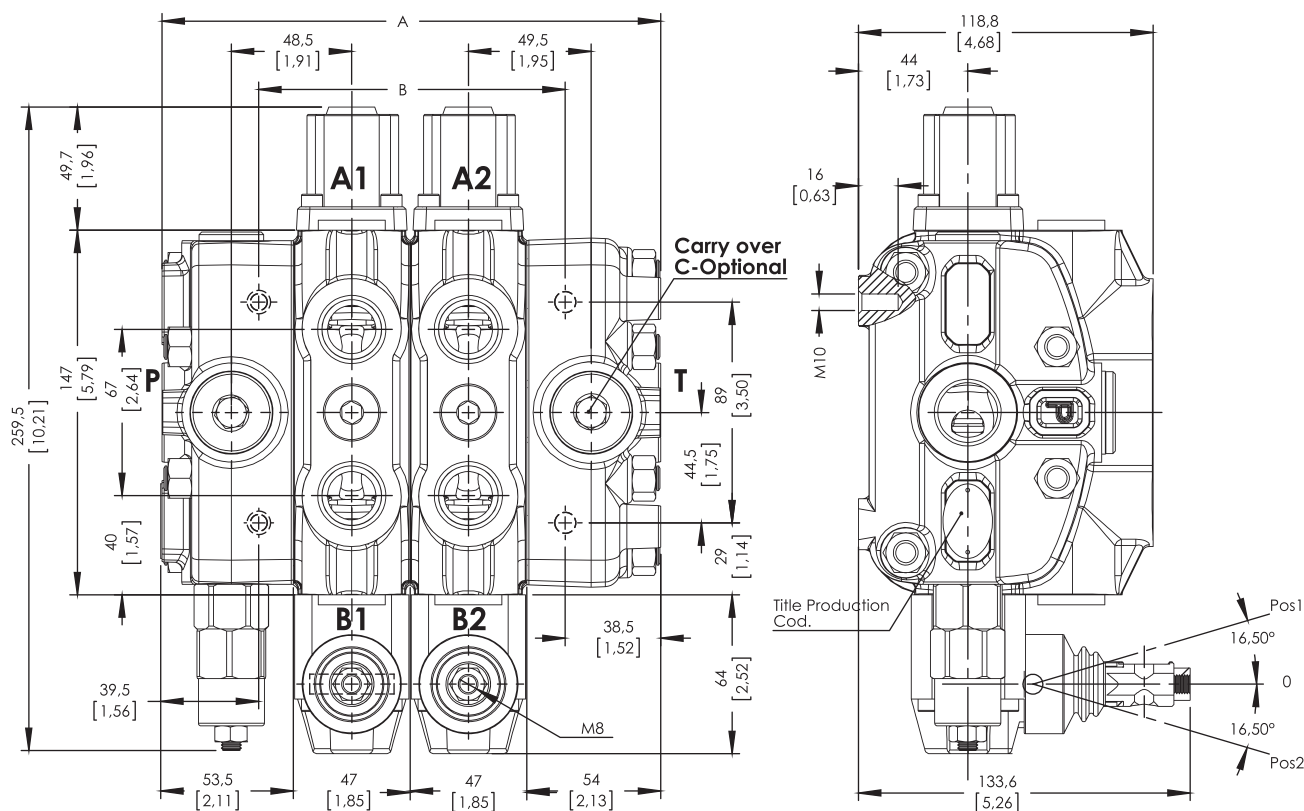
WORKING CONDITIONS

Nominal Flow Rating / Displacement	100 l/min	26 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 Viscosity – Operating Range	From 15 to 75 mm ² /s	From 15 to 75 cSt
Minumum / Maximum	12 / 400 mm ² /s	12 / 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)	4 cm ³ /min	0,24 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.
- Optional Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diameter is 20 mm – 0,79 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA


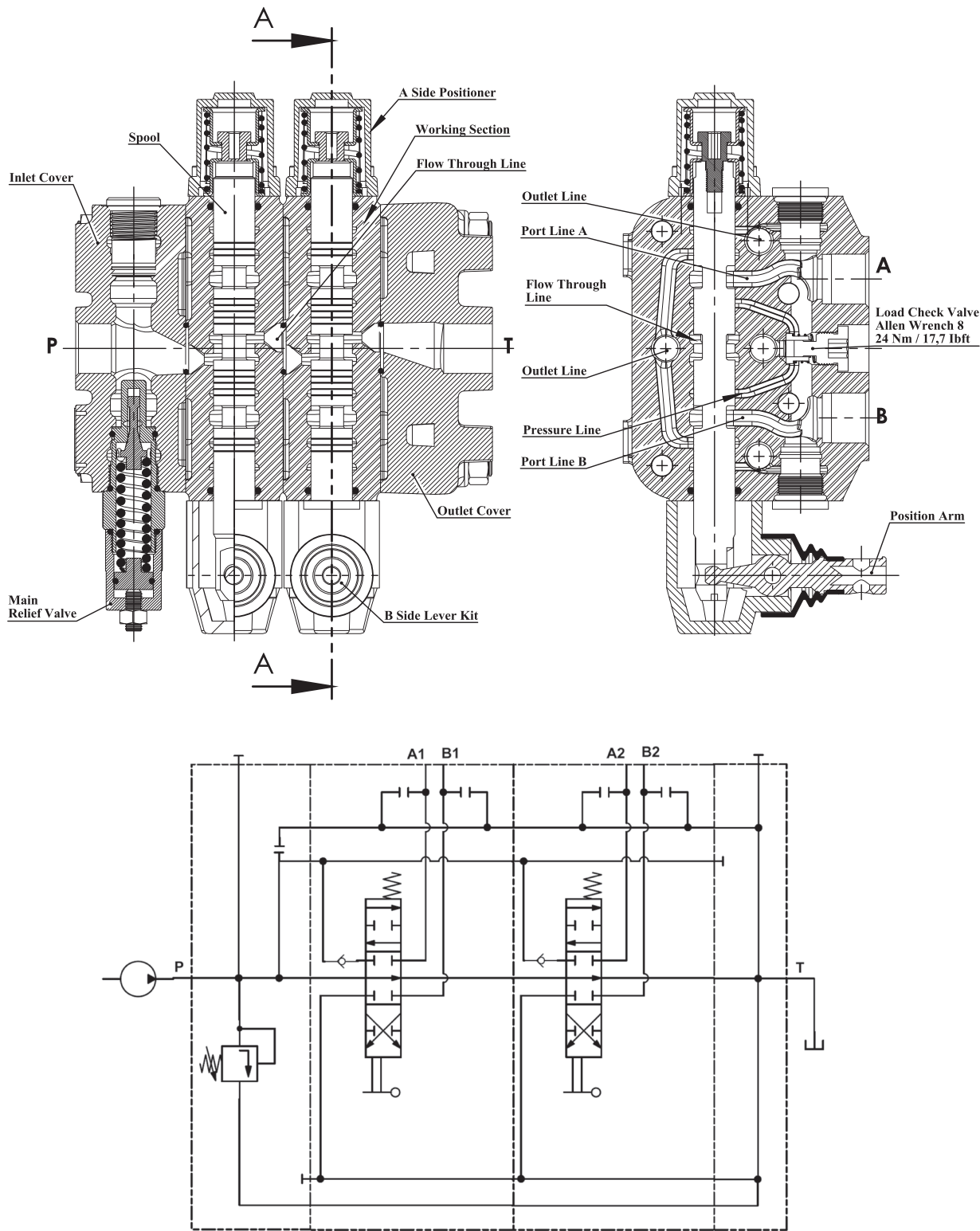
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- PD100-1P	201.5	7.94	123.5	4.86	10.90	24.03
GMM- PD100-2P	248.5	9.79	170.5	6.71	15.60	34.39
GMM- PD100-3P	295.5	11.64	217.5	8.56	20.30	44.75
GMM- PD100-4P	342.5	13.49	264.5	10.41	25.00	55.12
GMM- PD100-5P	389.5	15.34	311.5	12.26	29.70	65.48
GMM- PD100-6P	436.5	17.19	358.5	14.11	34.40	75.84
GMM- PD100-7P	483.5	19.04	405.5	15.96	39.10	86.20
GMM- PD100-8P	530.5	20.89	452.5	17.81	43.80	96.56
GMM- PD100-9P	577.5	22.74	499.5	19.66	48.50	106.92
GMM- PD100-10P	624.5	24.59	546.5	21.51	53.20	117.29
GMM- PD100-11P	671.5	26.44	593.5	23.36	57.90	127.65
GMM- PD100-12P	718.5	28.29	640.5	25.11	62.60	138.01

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 3/8	G 3/8	3/4-16 UNF	G 3/8

HYDRAULIC CIRCUIT

Parallel

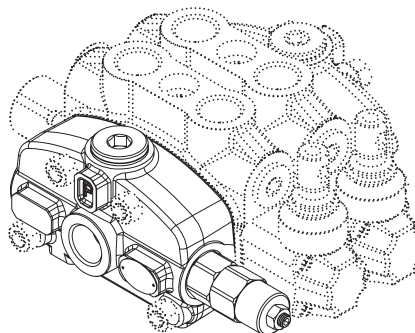


Code: GMM PD100-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

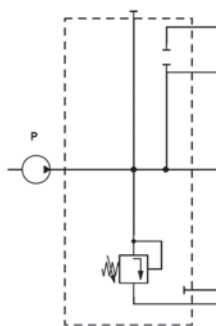
HYDRAULIC CIRCUIT

Inlet Cover – Pump Side

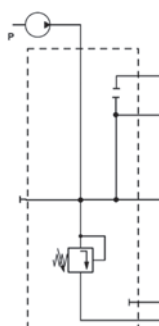
SD – Side inlet with direct pressure relief valve
 TD – Top inlet with direct pressure relief valve
 SP – Side inlet with relief valve blanking plug



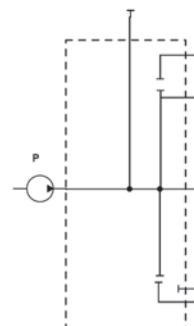
Type = SD



Type = TD

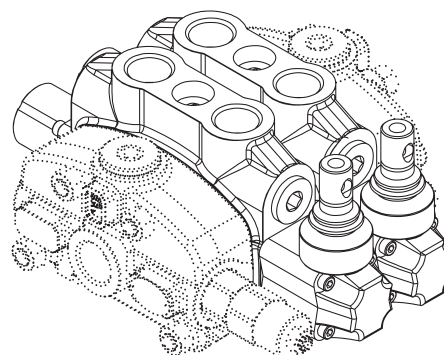


Type = SP

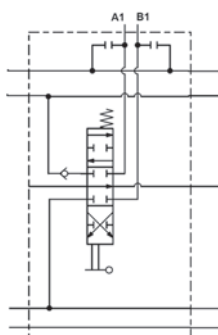


Working Sections

P – Parallel



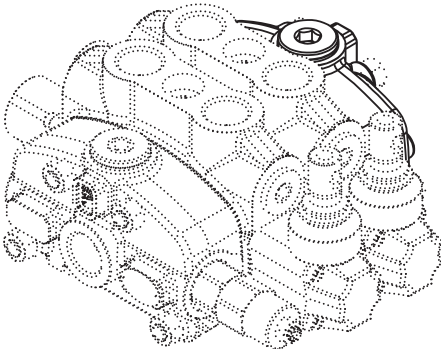
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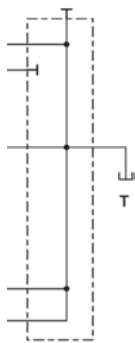
HYDRAULIC CIRCUIT

Outlet Cover (Tank Side)

SO - Side outlet
TO - Top outlet
TCO - Top outlet with carry-over
TC - Top outlet with closed centre



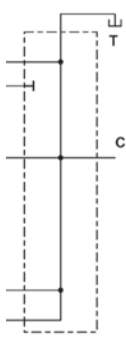
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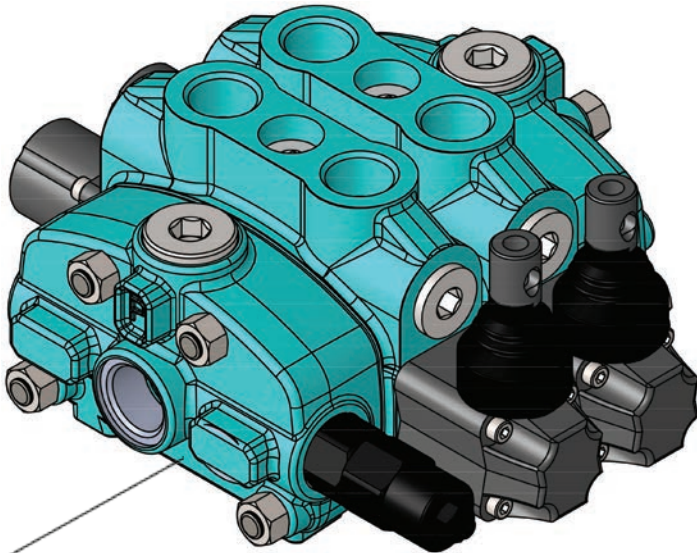
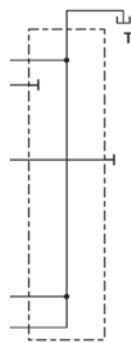
Type = TO



Type = TCO



Type = TC



Valve Type

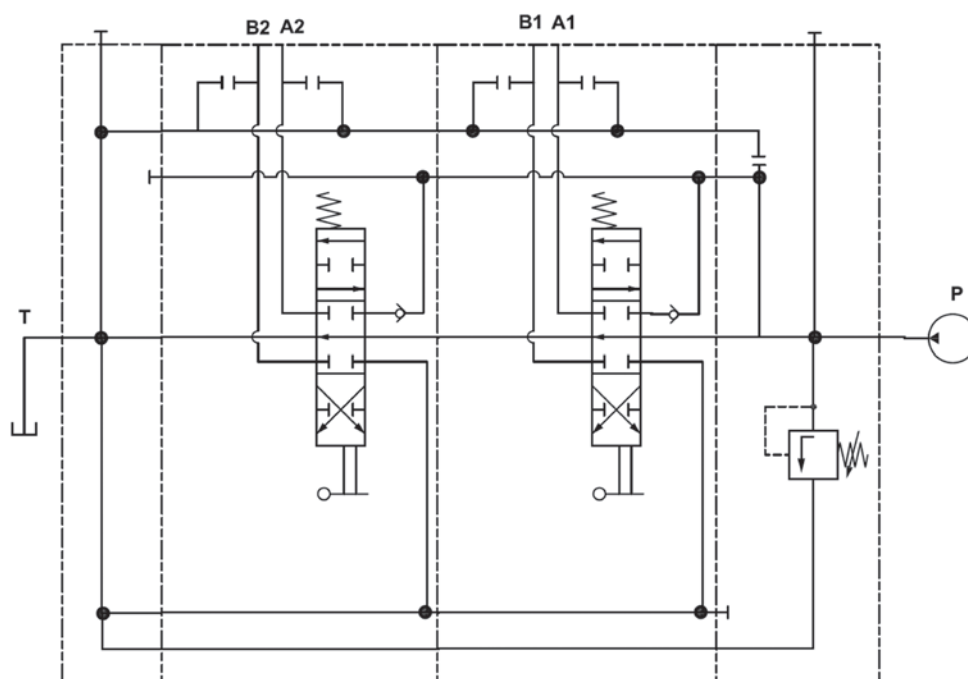
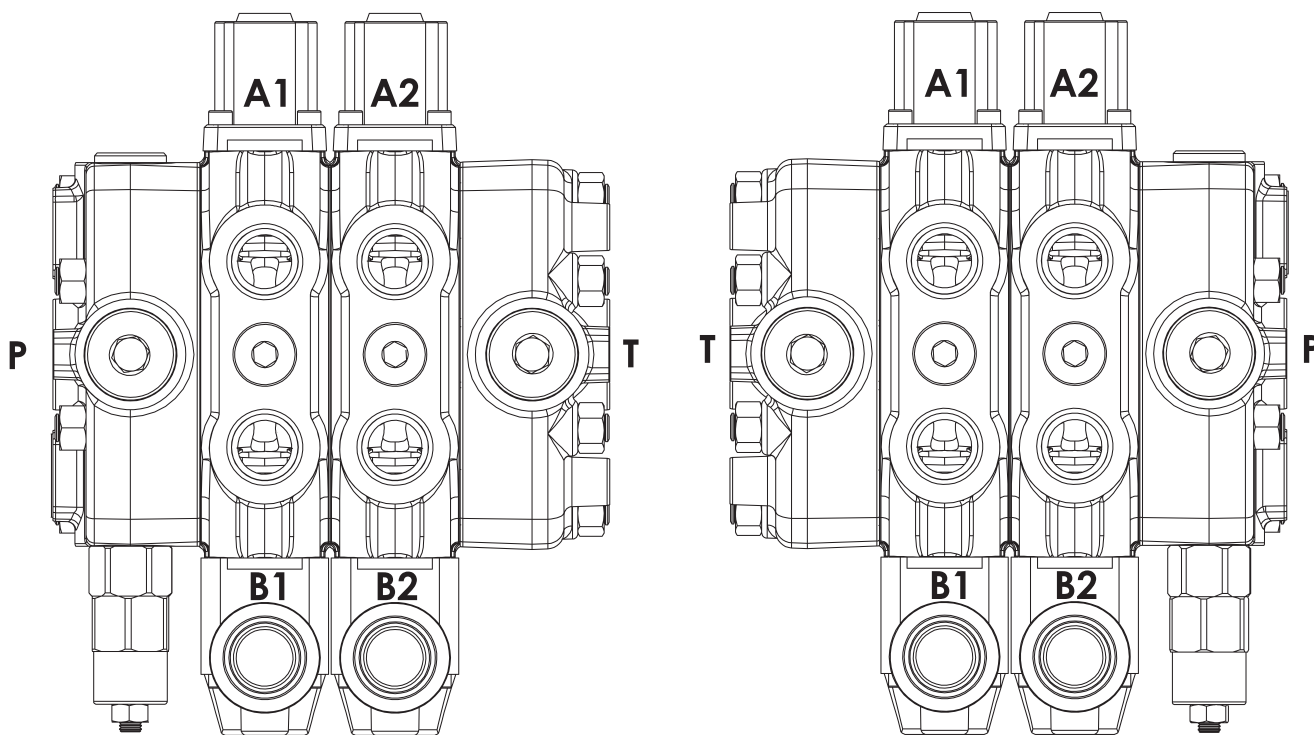


Production Batch
39.14 = Production Year - Week (2014/39)
101150 = Progressive Party Number

HYDRAULIC CIRCUIT

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

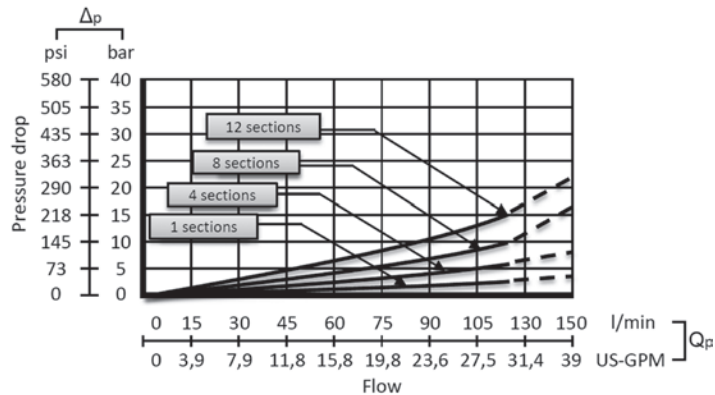
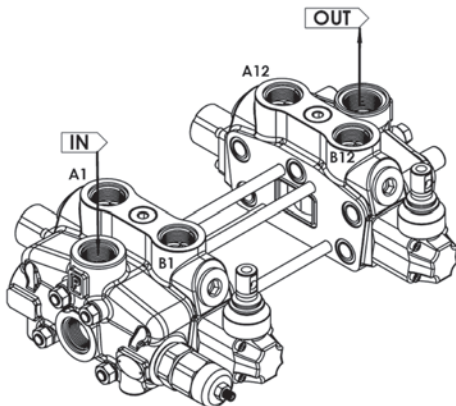
A symmetrical body allows the reverse assembly of spool.



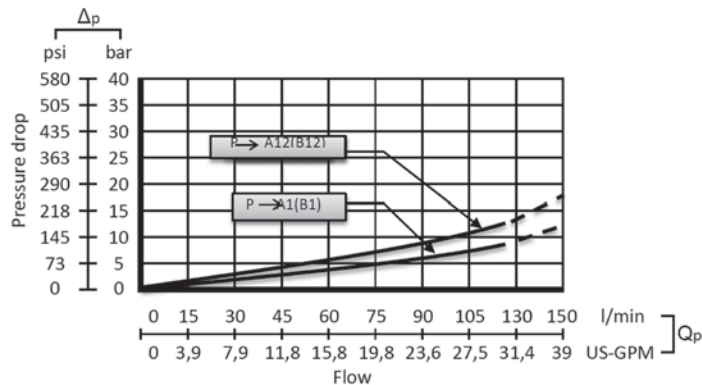
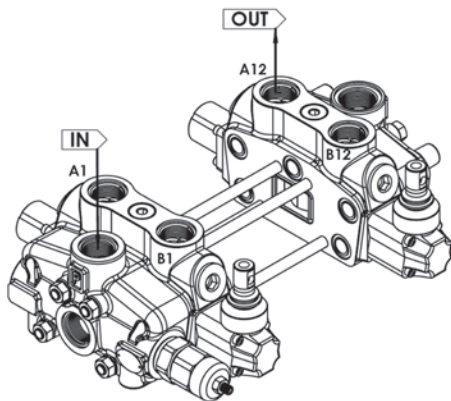
Code: GMM PD100-2P (SD(RA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 /

PERFORMANCE DATA AND CURVE

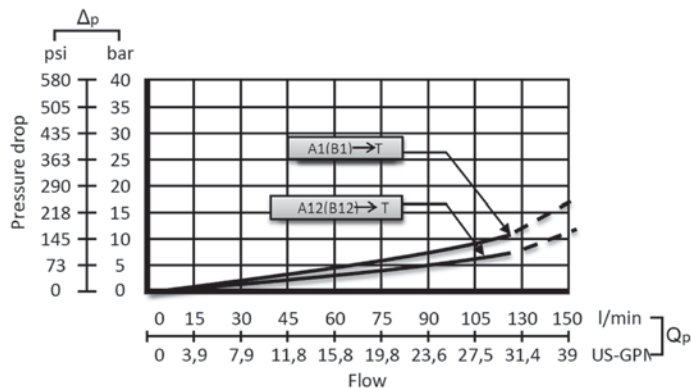
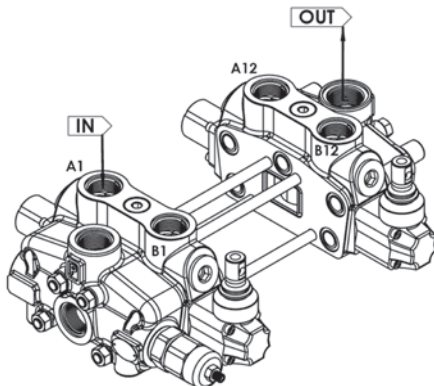
Open Center - Pressure Drop (P-T)



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



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

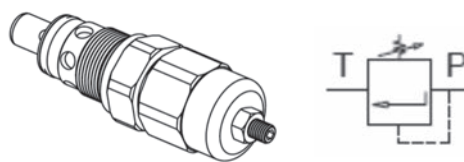


INLET RELIEF OPTIONS

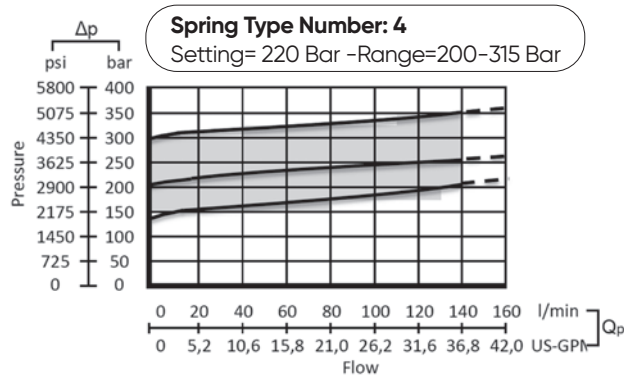
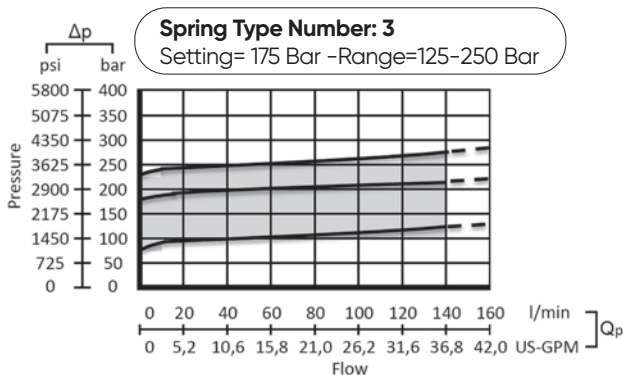
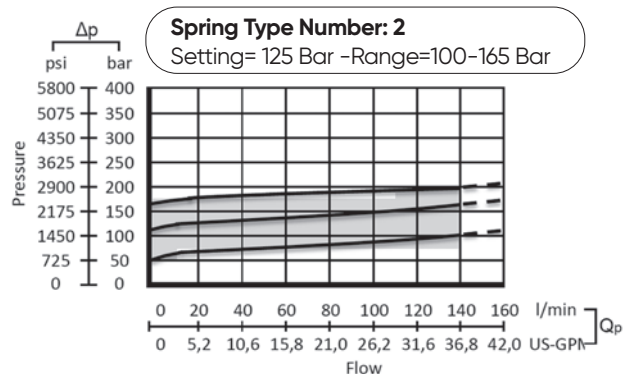
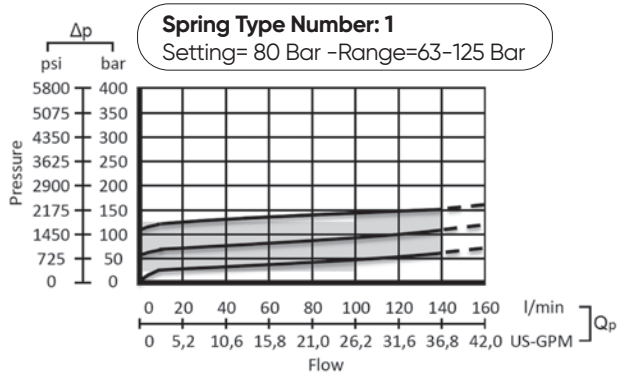
Direct Pressure Relief Valve

Code:

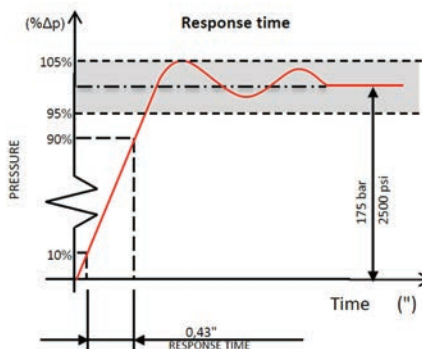
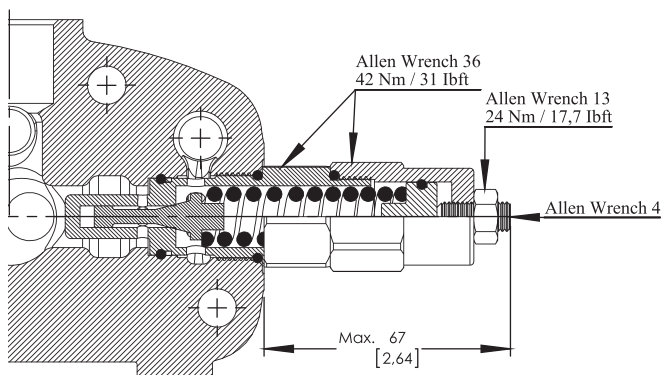
SMR2 – 125



Performance Data



Adjustment Type on Valve

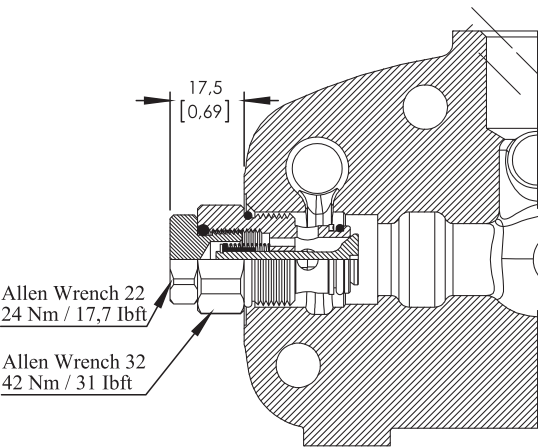


INLET RELIEF OPTIONS

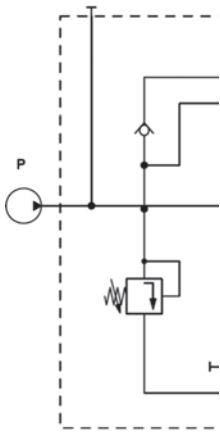
Direct Pressure Relief Valve

Kit No: PAC

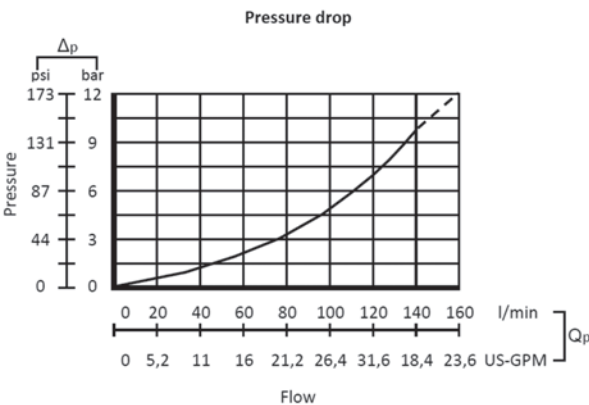
Sectional Appearance



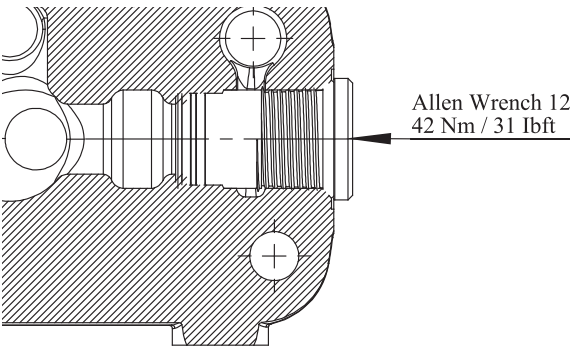
Diagram



Performance Data

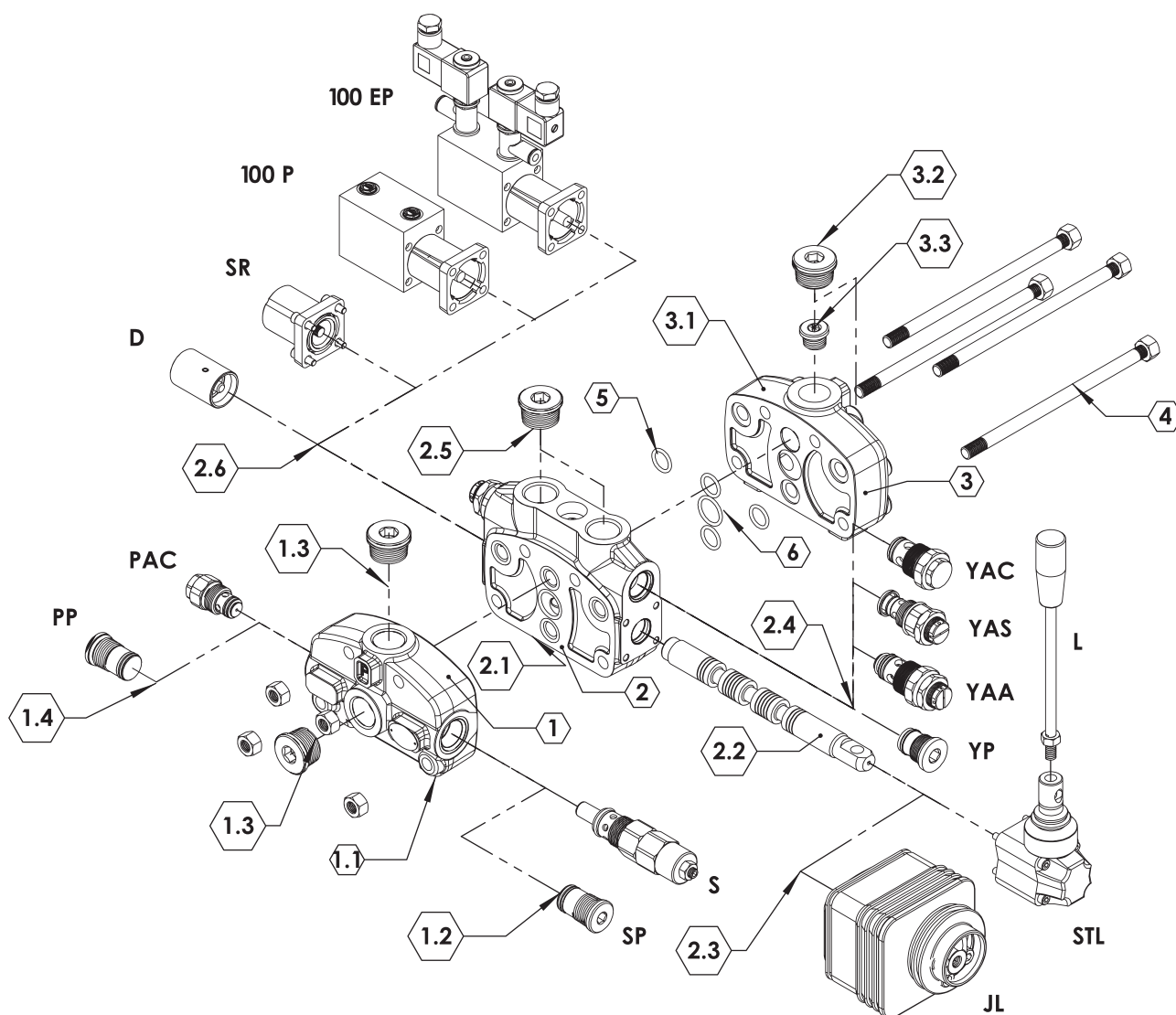
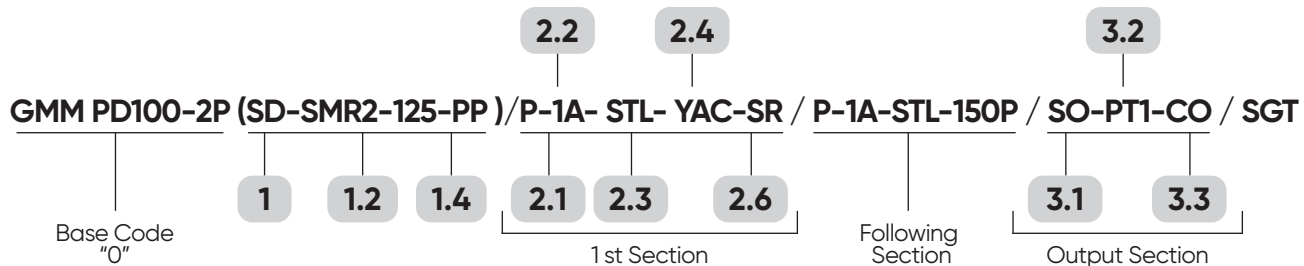


Relief Blanking Plug - SP



ORDERING CODES

Order Example



ORDERING CODES

1- Inlet Section

GMM PD100-2P PD100 = Valve Type-(PD)- Sectional
(100) - Max. Flow Rate
2P =Sections Quantity
SD = Side inlet with direct pressure relief valve (1SD100100)
TD = Top inlet with direct pressure relief valve (1TD100100)
SP = Side inlet with relief valve blanking plug (1SP100100)

2- Working Section

P = Parallel (2P100100)

3- Output Section

SO = Side outlet (3SO100100)
TO = Top outlet (3TO100100)
TCO = Top outlet with carry-over (3TCO100100)
TC = Top outlet with closed centre (3TC100100)

4- Assembling Kit

Tie rod kit for 1 section valve - (4TRK1100100)
Tie rod kit for 2 section valve - (4TRK2100100)
Tie rod kit for 3 section valve - (4TRK3100100)
Tie rod kit for 4 section valve - (4TRK4100100)
Tie rod kit for 5 section valve - (4TRK5100100)
Tie rod kit for 6 section valve - (4TRK6100100)
Tie rod kit for 7 section valve - (4TRK7100100)
Tie rod kit for 8 section valve - (4TRK8100100)
Tie rod kit for 9 section valve - (4TRK9100100)
Tie rod kit for 10 section valve - (4TRK10100100)
Tie rod kit for 11 section valve - (4TRK11100100)
Tie rod kit for 12 section valve - (4TRK12100100)

5-6- O_Ring Kit

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

1.*-Inlet Options

1.1 Inlet Cover

Body = Standard (11BS100100)

1.2 Inlet Relief

SMR1-080 - (12SMR1150080)-Range 63-125 bar
Setting 80 bar
SMR2-125 - (12SMR2150125)- 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 = G1/2 Top and side input - (13PA180100)
PA2 = G3/4 Top and side input - (13PA280100)

1.4 Inlet Valve

PAC =Inlet anti-cavitation valve -(14PAC150100)
PP(SP) = Relief valve blanking plug -(14PSP150100)

2.*- Working Options

2.1 Working Section

PA = Without ports valve prearrangement, with parallel circuit - Body (21BSPA100100)

2.2 Spool Options

1A -(22SS100110) - 3 Positions ,Double acting
2A -(22SS100120) - 3 Positions ,Double acting
A to tank B Blocked
3A -(22SS100130) - 3 Positions ,Double acting
B to tank A blocked
4A -(22SS100140) - 3 Positions ,Double acting
A and B tank
5A -(22SS100150) - 3 Positions ,Single acting on
A (A to tank)
6A -(22SS100160) - 3 Positions ,Single acting on
B (B to tank)

2.3 Lever Options

L = Standard HandLever (L=120mmxM10) - (7L040100)
JL = Joystick lever for two sections operation (5JL 080100)
STL = Standard Lever -(23STL150100)
HL = Remote Cable Kit - (80HL80100)

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, G1/2
(25PL180100)

PL2 =Plug for single action spool for 2A-3A, G3/4
(25PL280100)

2.6 Spool Positioners

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

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

100P=ON/OFF Pneumatic - (2645P150100)

100EP=12 VDC ON/OFF electro-pneumatic
(26150EP150112)

100EH= 12 VDC/24 VDC ON/OFF electro-hydraulic
(36150EH100112)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS100100)

3.2 Output Plug

PT1 =G3/4 Top and Side output (32PT180100)

3.3 Circuits Options

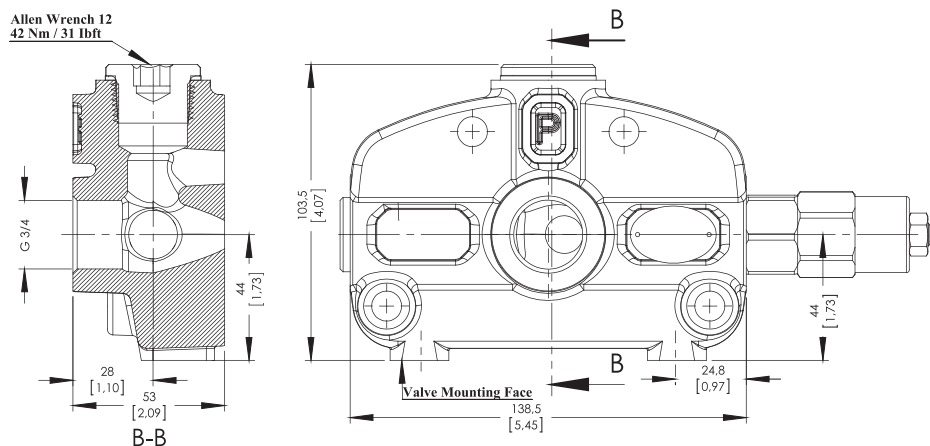
CO =G1/8 Carry-Over Connector (33CO150100)

INLET COVER- PUMP SIDE

LH Inlet Valve Options

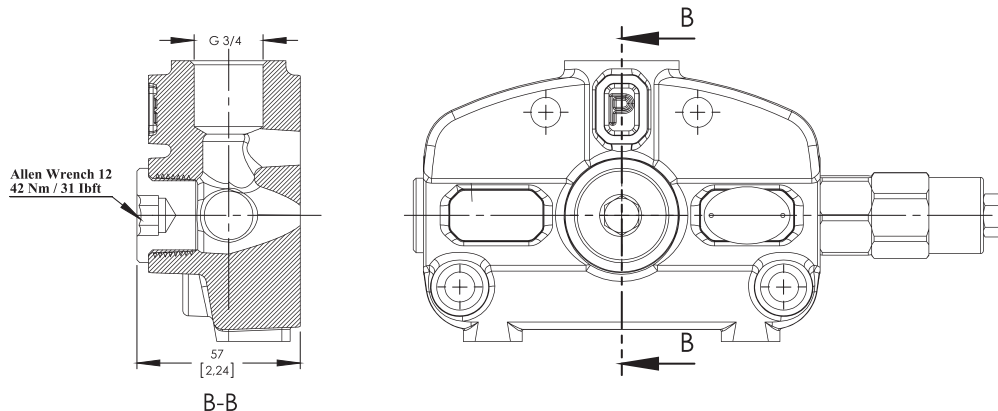
Type No: **SD**

Sectional Appearance



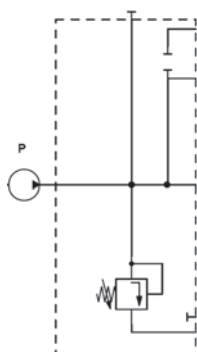
Type No: **TD**

Sectional Appearance



Hydraulic Diagram

Type No: **SD**



Type No: **TD**

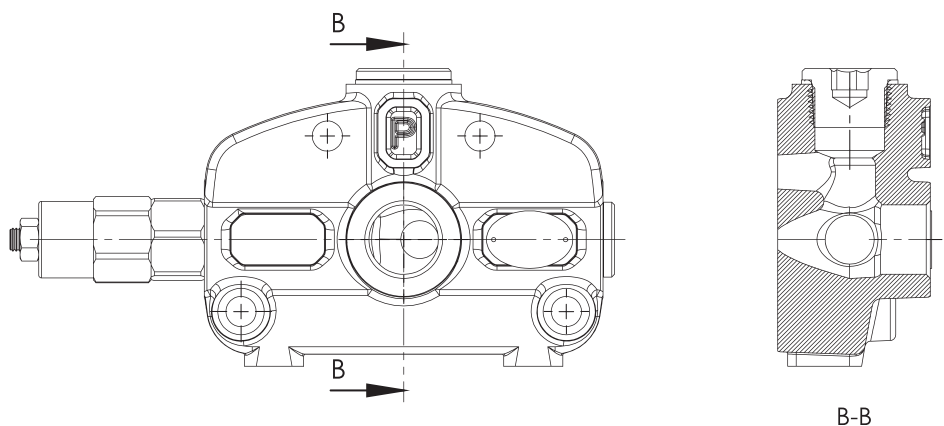


INLET COVER- PUMP SIDE

RH Inlet Valve Options

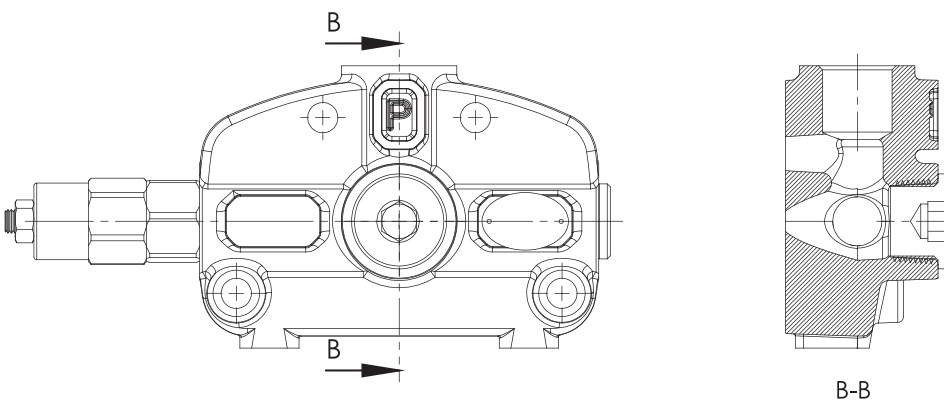
Type No: RA

Sectional Appearance



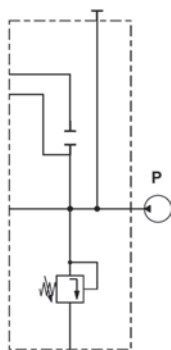
Type No: RB

Sectional Appearance

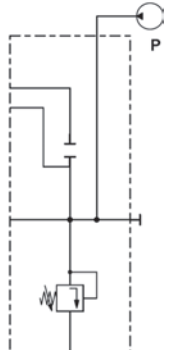


Hydraulic Diagram

Type No: RA

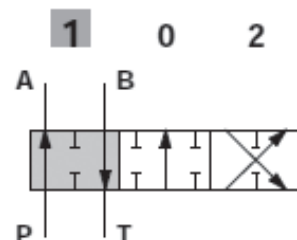
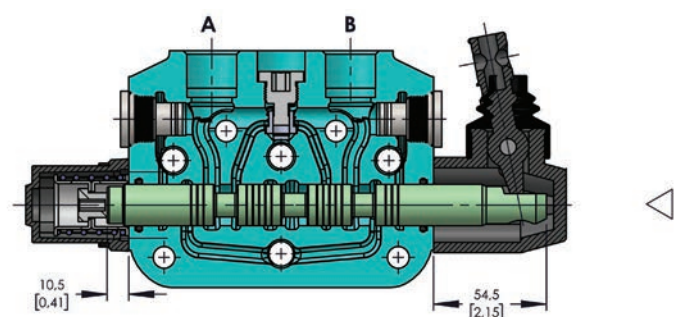
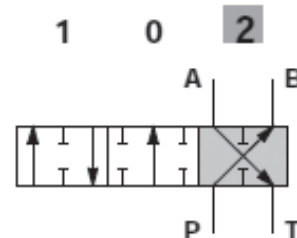
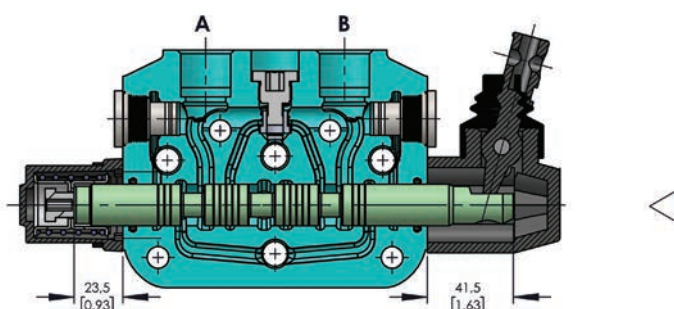
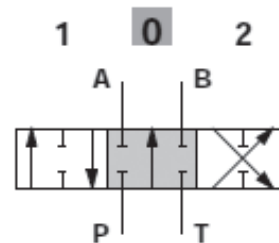
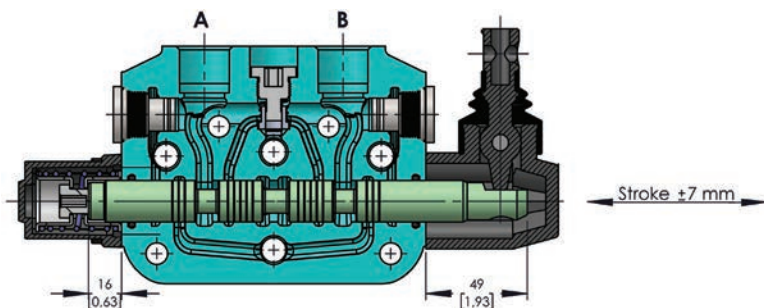


Type No: RB

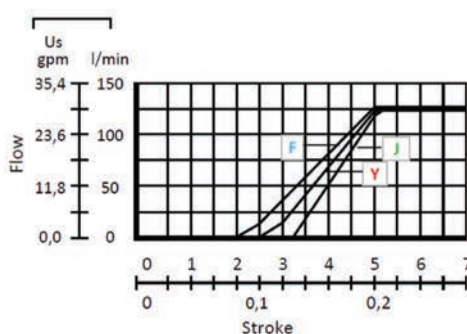


SPOOL OPTIONS

Spool Type - 1A

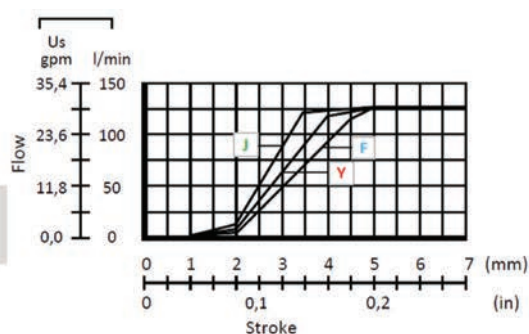


Performance Curve And Data



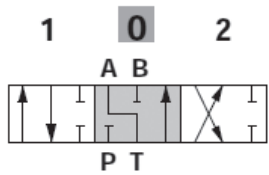
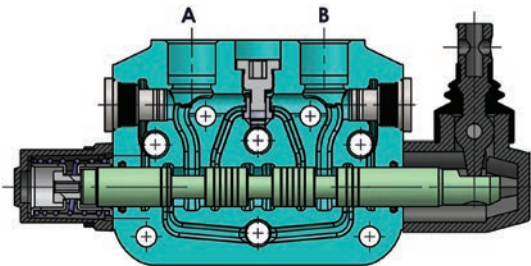
QIn = 150 l/min

F P (on ports) = 63bar / 900 psi
Y P (on ports) = 100bar / 1450 psi
J P (on ports) = 250bar / 3600 psi

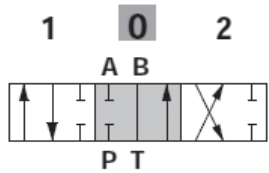
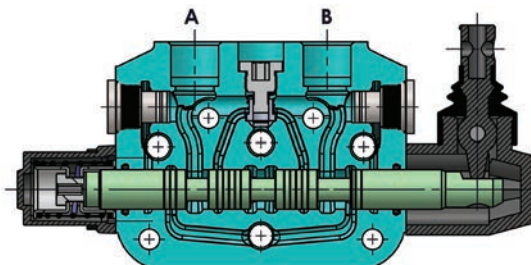


SPOOL OPTIONS

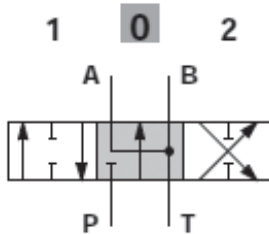
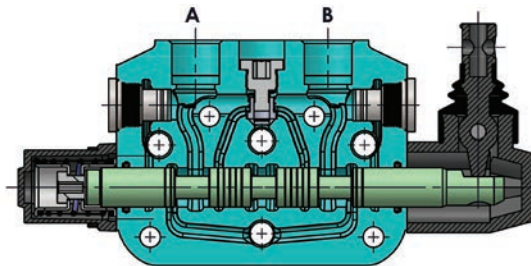
Spool Type - 2A



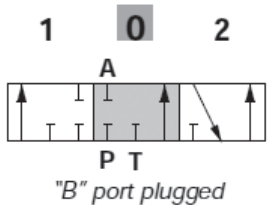
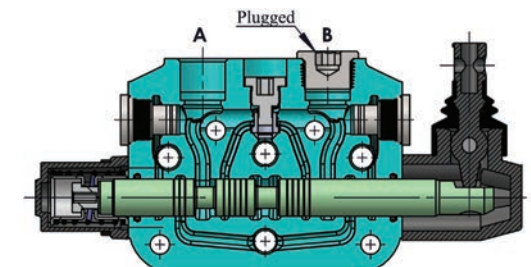
Spool Type - 3A



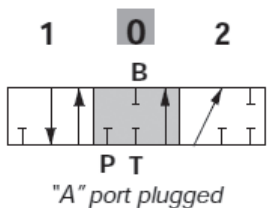
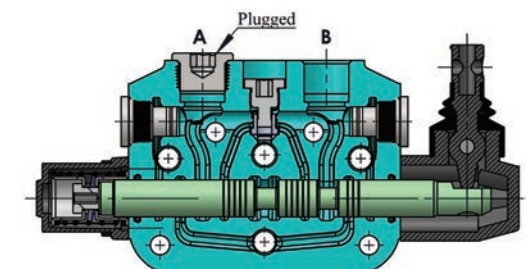
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A



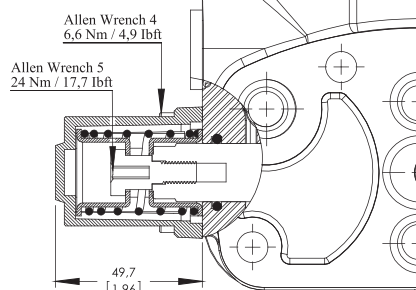
SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance

Diagram

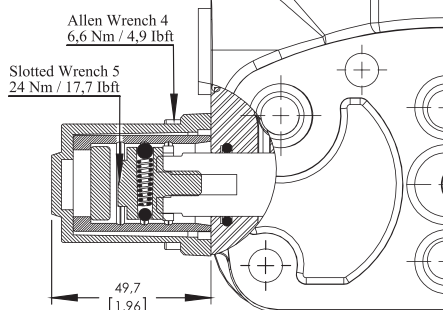


With Detent

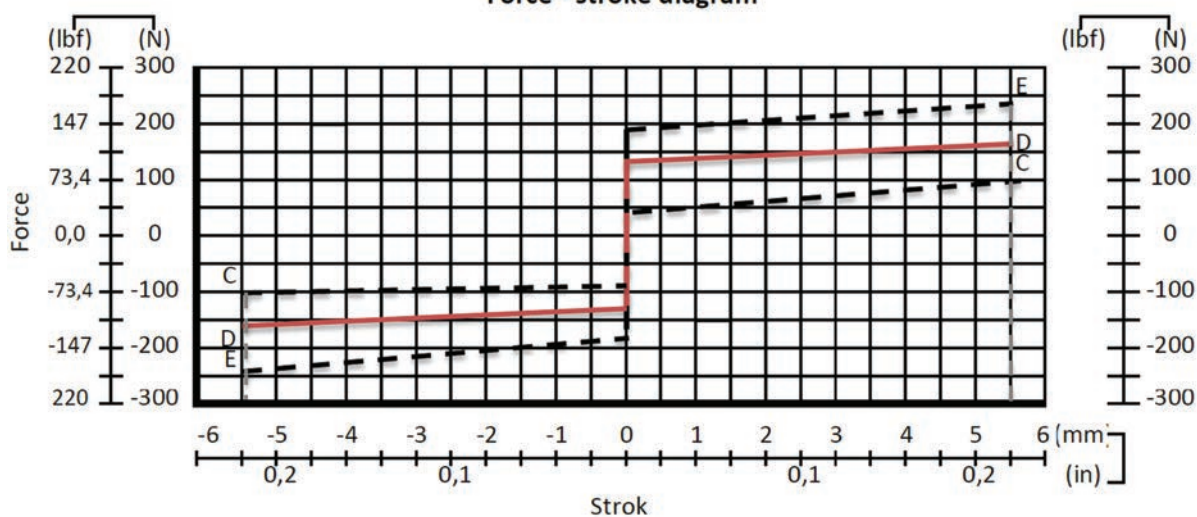
Kit No: **D**

Sectional Appearance

Diagram



Force - stroke diagram

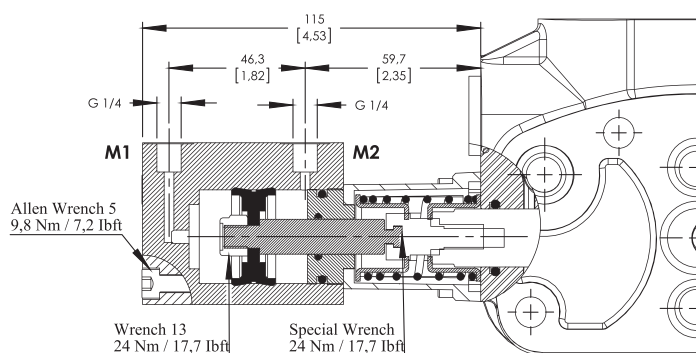


SPOOL POSITIONERS – SIDE OF RETURN

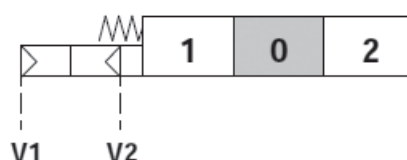
ON/OFF Pneumatic Control

Kit No: **100P**

Sectional Appearance



Diagram



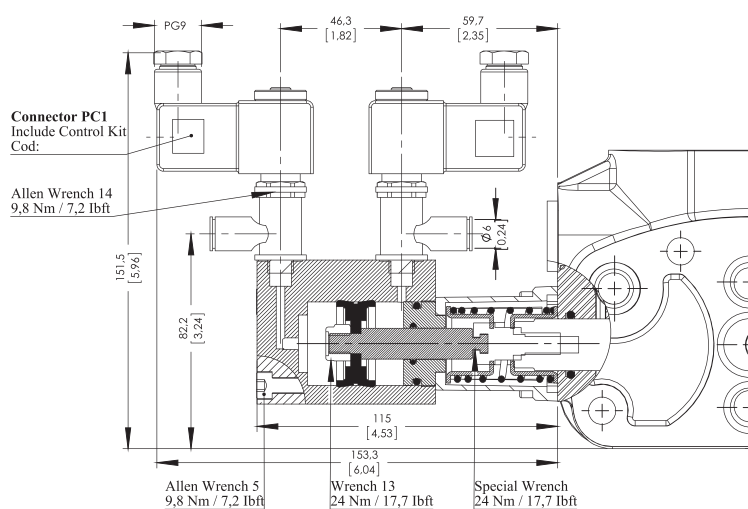
Operating Features

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

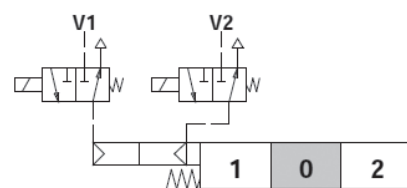
ON/OFF Electro-Pneumatic Control

Kit No: **100EP**

Sectional Appearance



Diagram



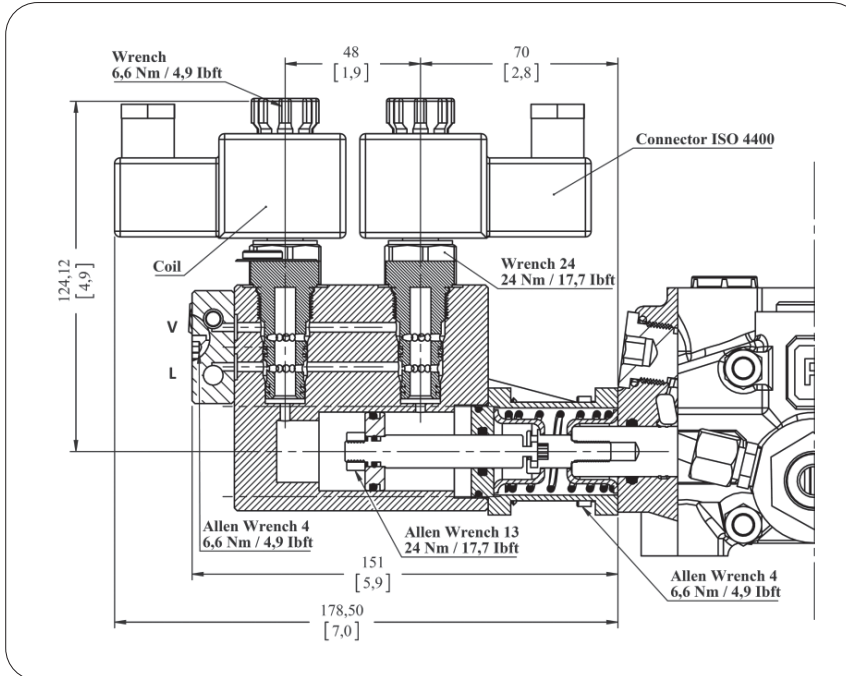
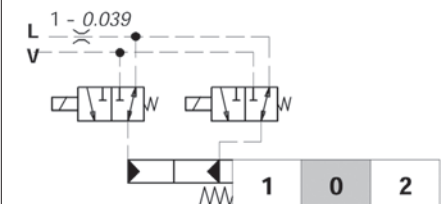
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 100EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
 Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
 Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 21 W
 Duty cycle.....: %100
 Protection type.....: IP 65
 Nominal voltage tolerance.....: ±10
 Max temperatures.....: 100 C°
 Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
 COL 12 - 10COL1001 - Kit For Section 2
 COL 13 - 10COL1001 - Kit For Section 3
 COL 14 - 10COL1001 - Kit For Section 4
 COL 15 - 10COL1001 - Kit For Section 5
 COL 16 - 10COL1001 - Kit For Section 6
 COL 17 - 10COL1001 - Kit For Section 7
 COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

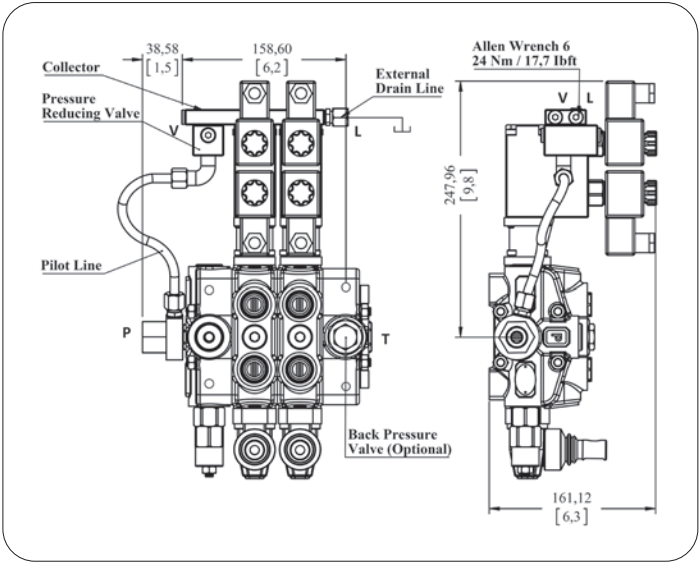
COL 21 - 10COL2001 - Kit For Section 1
 COL 22 - 10COL2001 - Kit For Section 2
 COL 23 - 10COL2001 - Kit For Section 3
 COL 24 - 10COL2001 - Kit For Section 4
 COL 25 - 10COL2001 - Kit For Section 5
 COL 26 - 10COL2001 - Kit For Section 6
 COL 27 - 10COL2001 - Kit For Section 7
 COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

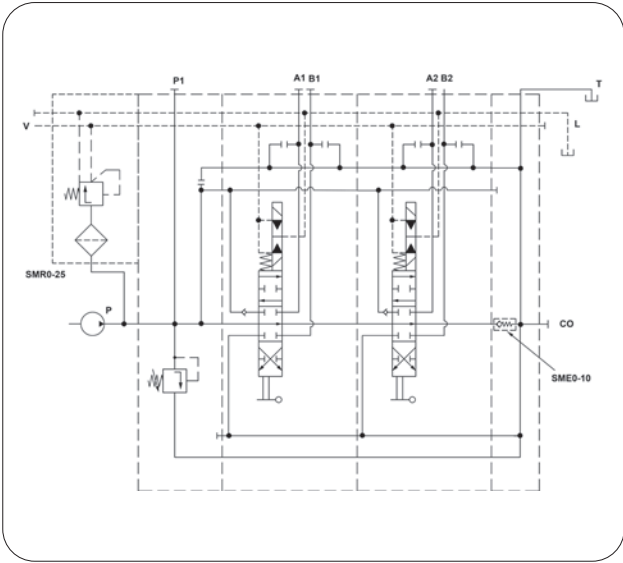
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram



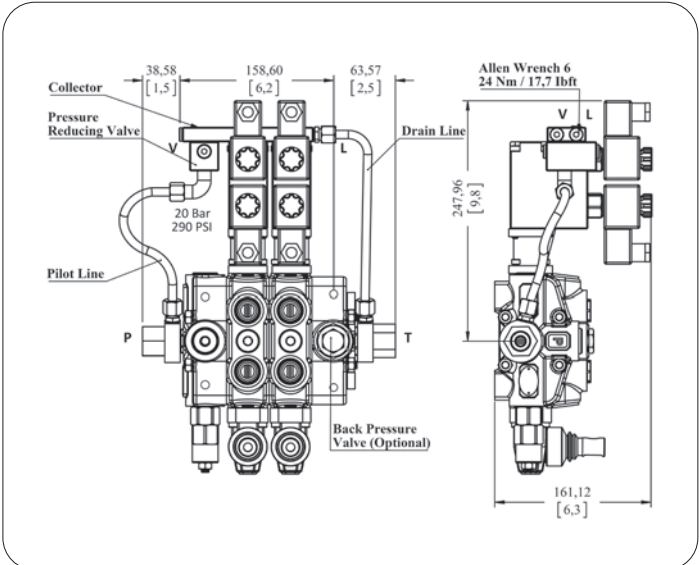
Operating Features

External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)

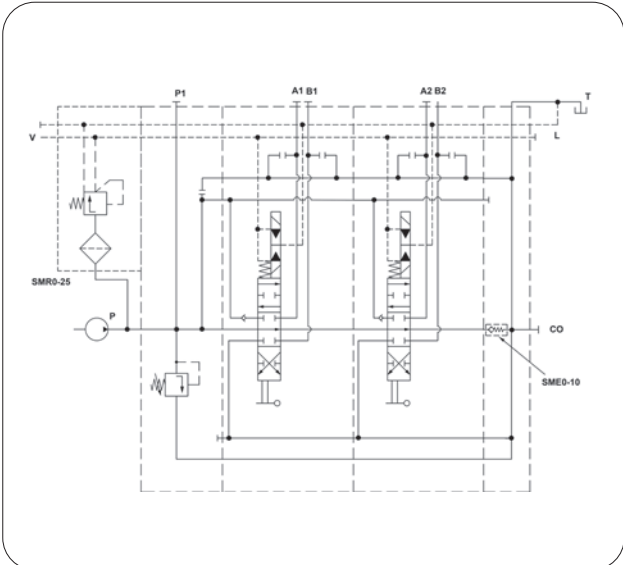
Code= GMM PD100-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-100EH/ P-1A-STL-100EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

Outlet Pressure: 20 Bar / 290 Psi

Max. Flow.....: 8 l/min

Filtration:80 µ

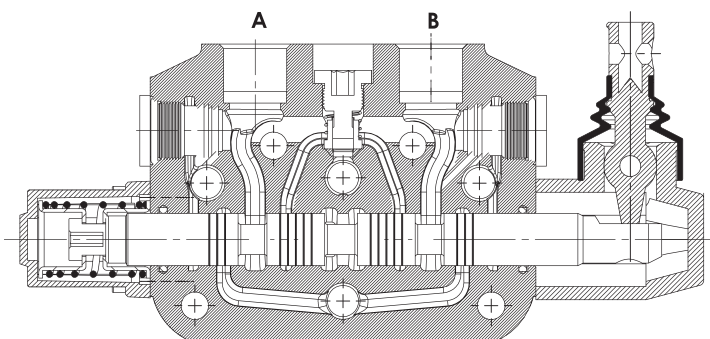
Code= GMM PD100-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-100EH/ P-1A-STL-100EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

WORKING SECTION KIT

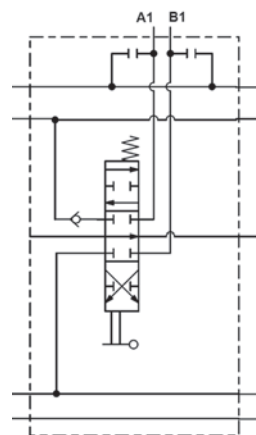
With Port Valves Type

Kit No: AA

Sectional Appearance



Diagram

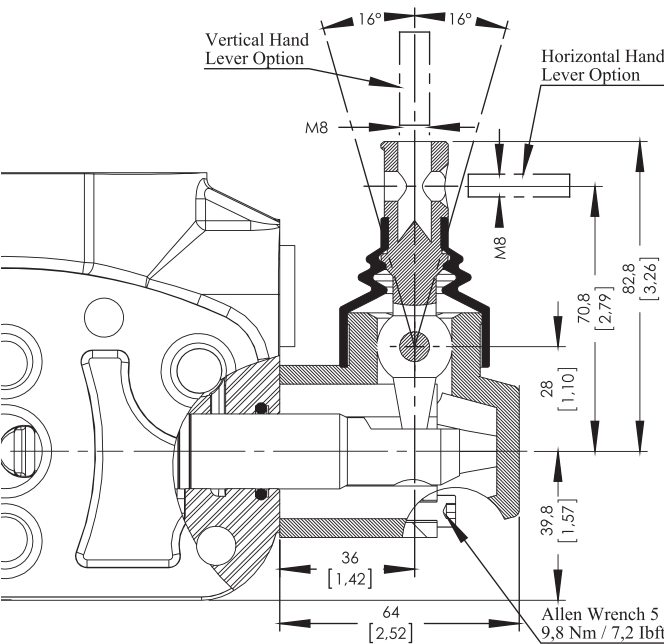


SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: STL - L0

Sectional Appearance

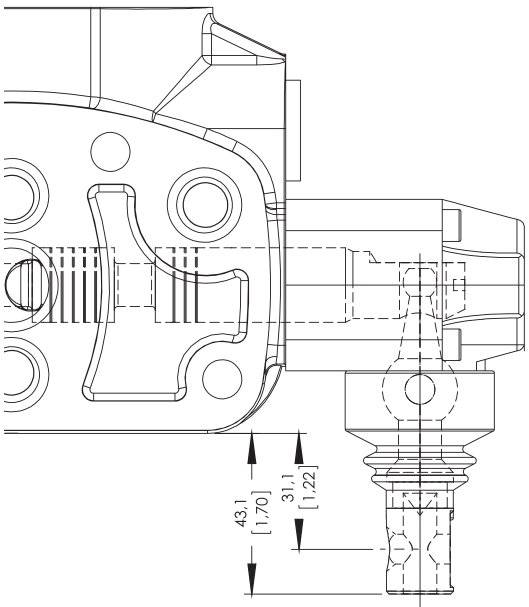


Diagram



Kit No: STL - L180

Sectional Appearance



Diagram



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

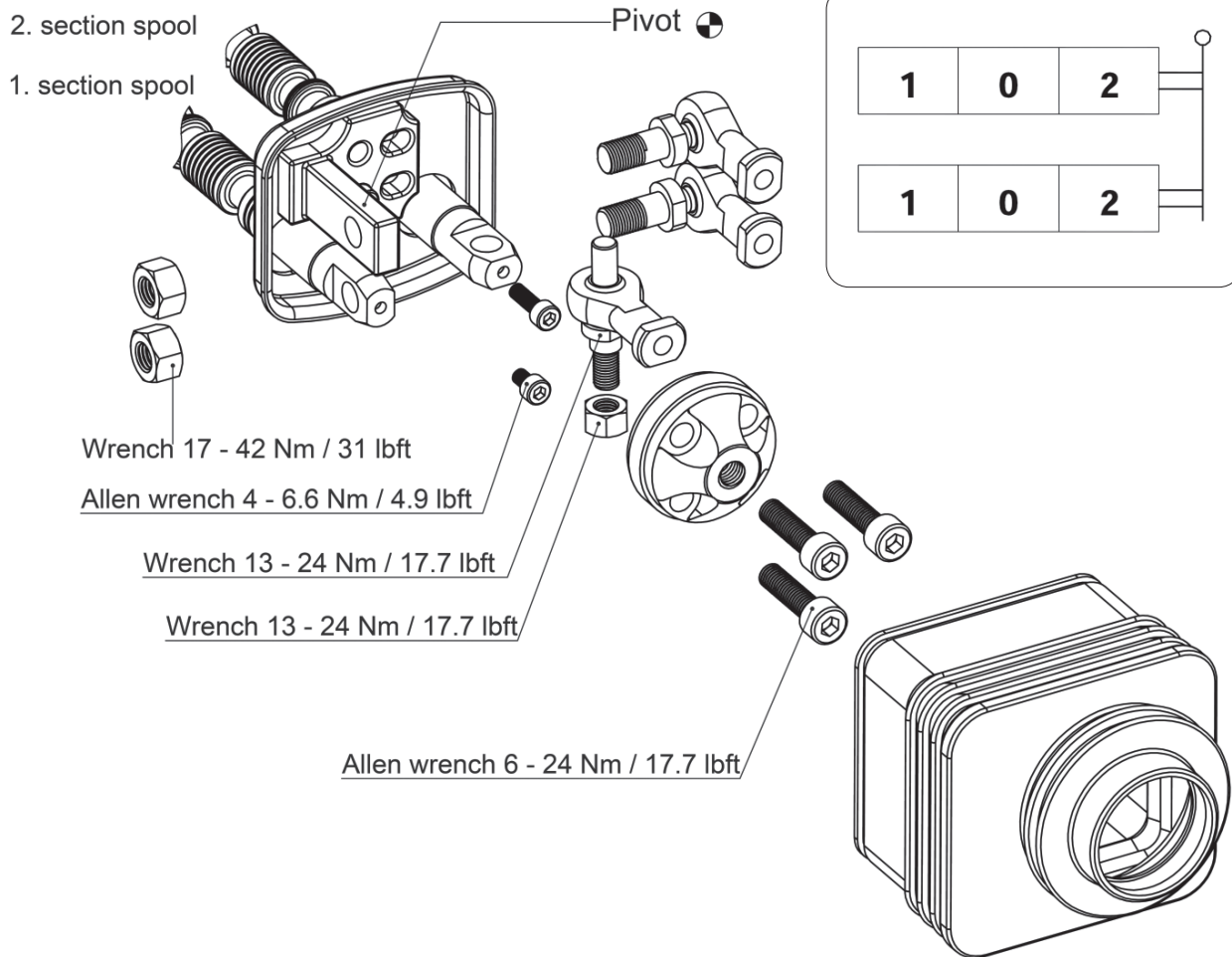
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

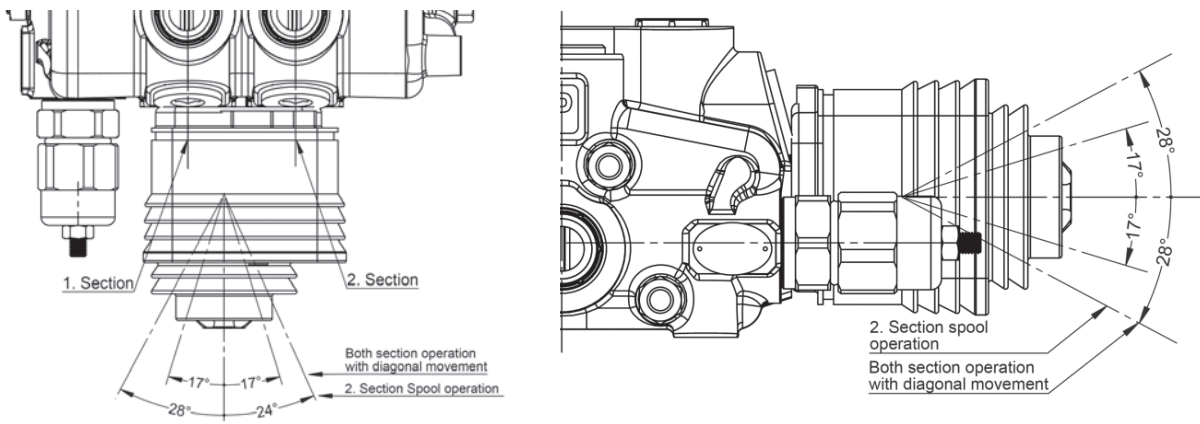
Kit No: **JL**

Exploded View

Diagram



Operation Angle:



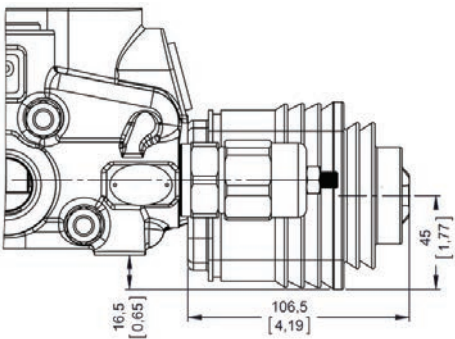
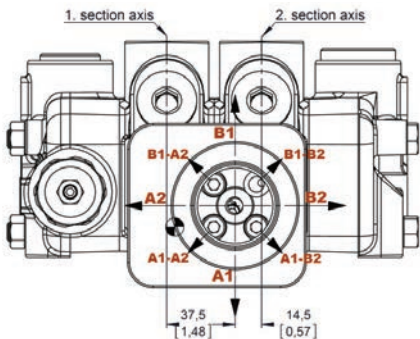
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement sceme

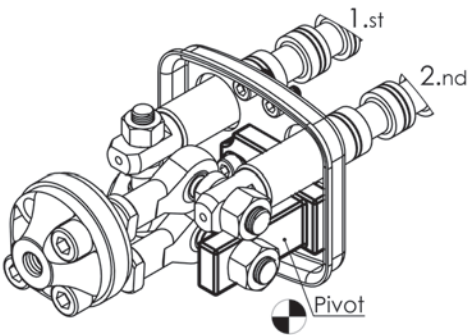
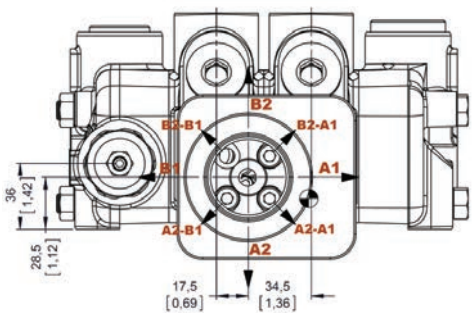
Type No: **JL1**

Application: Pivot placed down on the Left



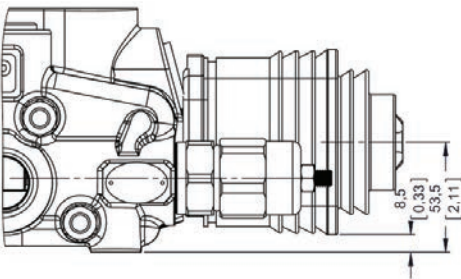
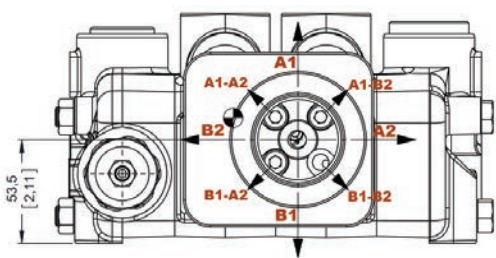
Type No: **JL2**

Application: Pivot placed down on the right



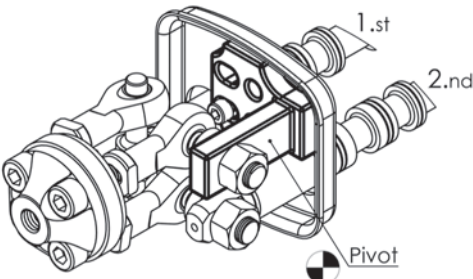
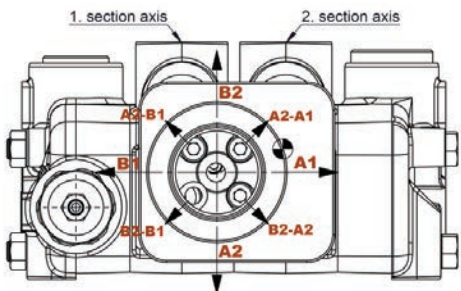
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

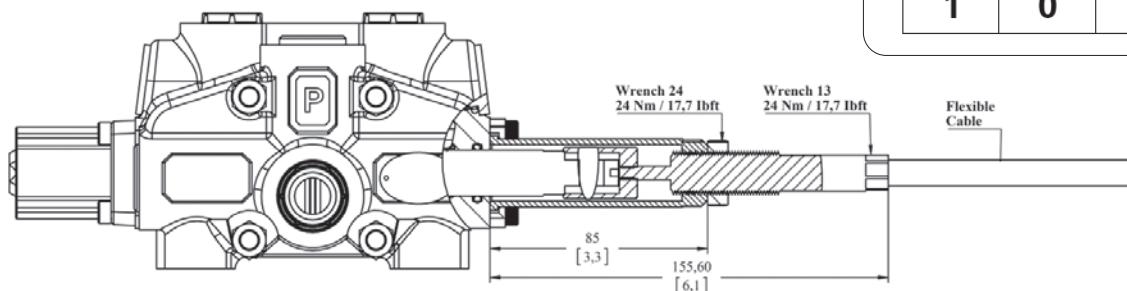
Lever Controls - Cable Control

Kit No: HL

Sectional Appearance

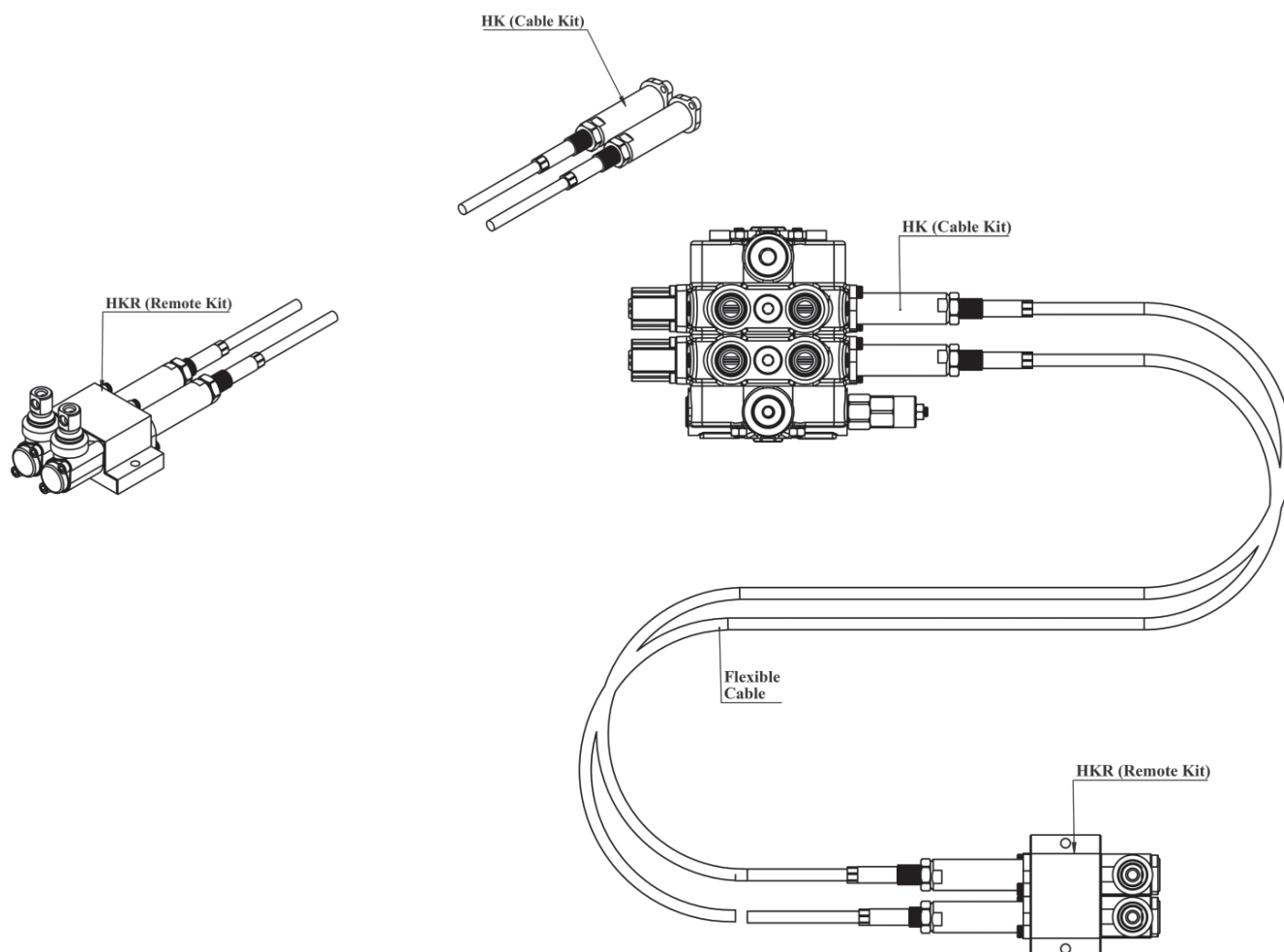
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department.

Example Operation

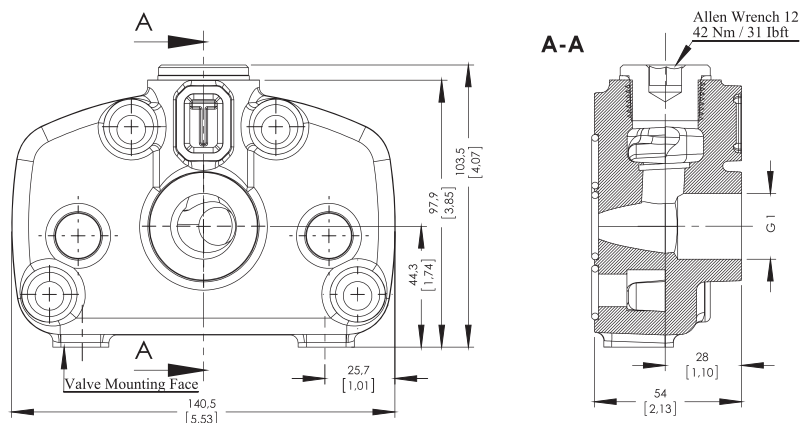


OUTLET COVER - TANK SIDE

Output Cover Options

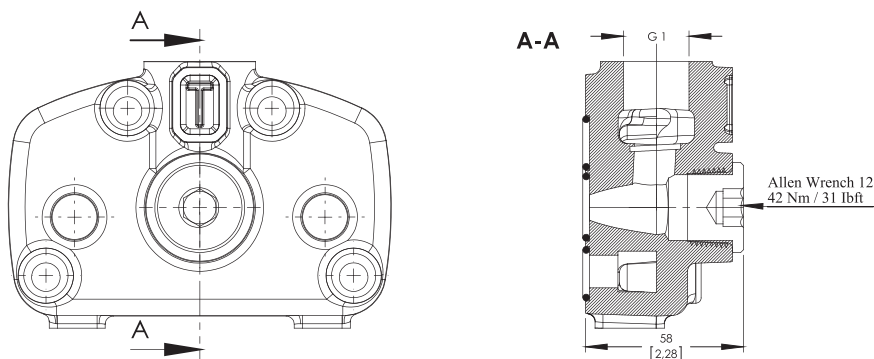
Kit No: **SO**

Sectional Appearance



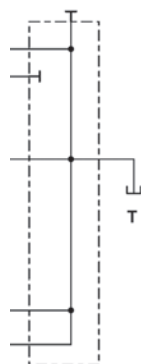
Type No: **TO**

Sectional Appearance

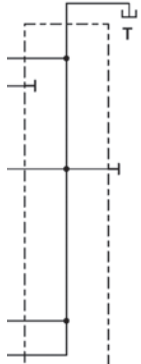


Hydraulic Diagram

Type No: **SO**



Type No: **TO**

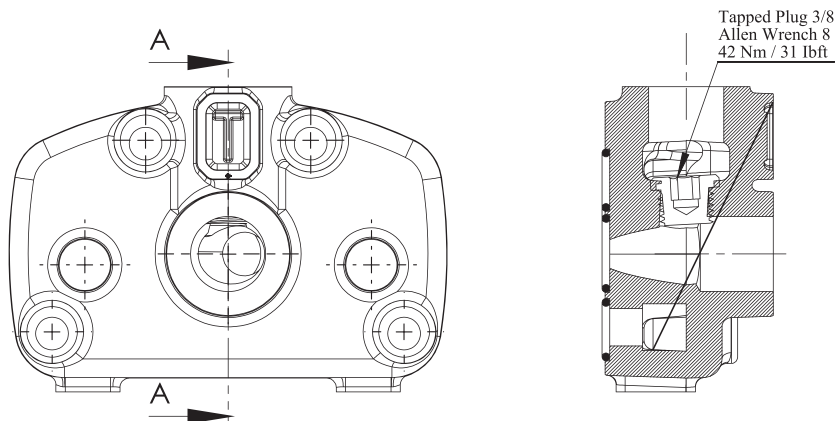


OUTLET COVER - TANK SIDE

Output Cover Options

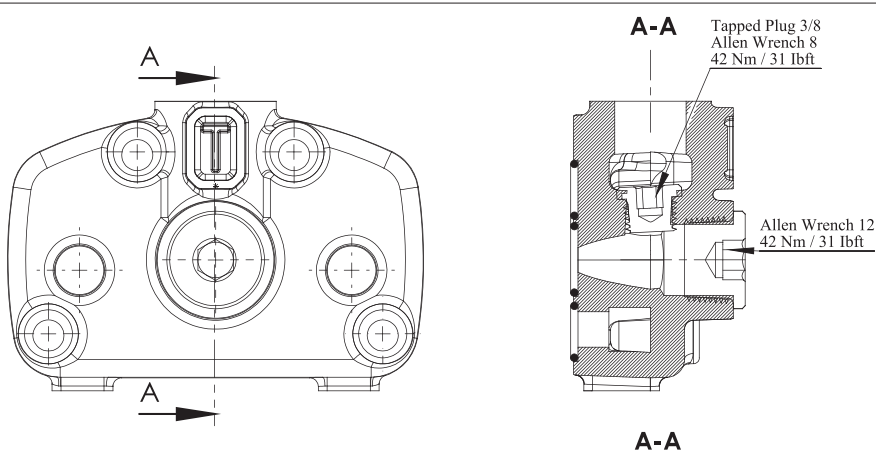
Kit No: **TCO**

Sectional Appearance



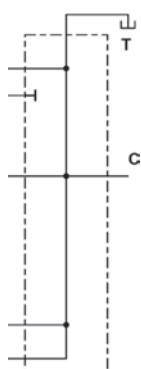
Kit No: **TC**

Sectional Appearance

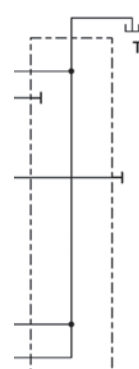


Hydraulic Diagram

Type No: **TCO**



Type No: **TC**



PORT VALVES OPTIONS

Anti Shock Valves

Code:

YAS-1 (T1-100)

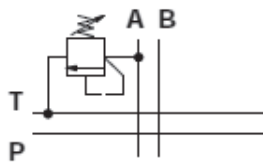
Pressure Setting in Bar

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

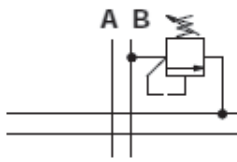
1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

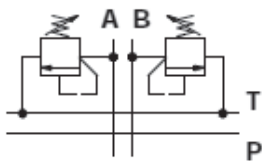
Kit No: YAS1



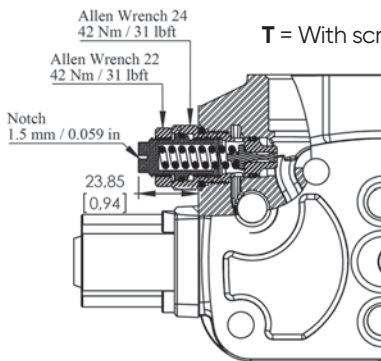
Kit No: YAS2



Kit No: YAS3

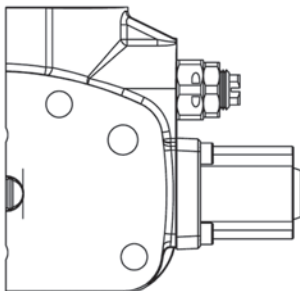


Adjustment Type on Valve:

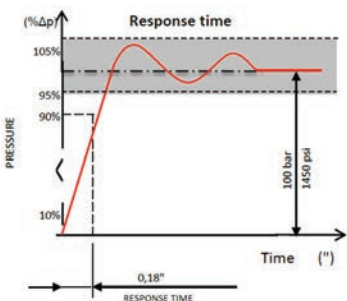
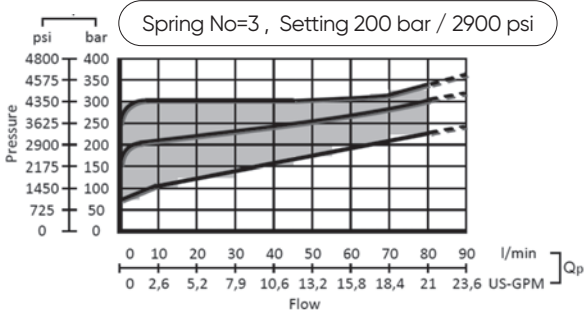
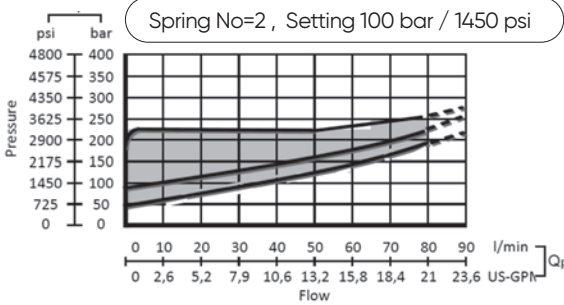
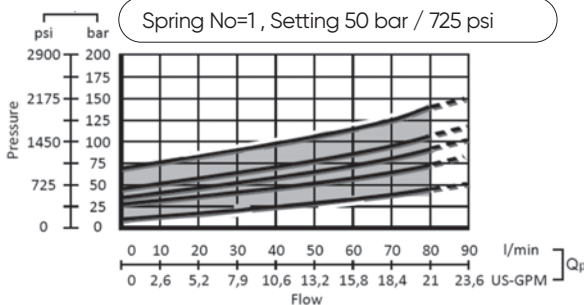


T = With screw

L = Valve set



Performance Data:



PORT VALVES OPTIONS

Anti shock And Anti Cavitation Valves

Code:

YAA-1 (T1-100)

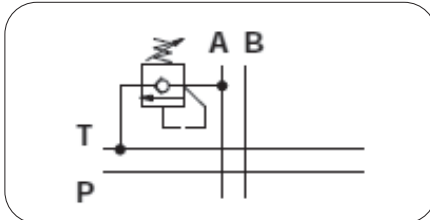
→ Pressure Setting in Bar

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

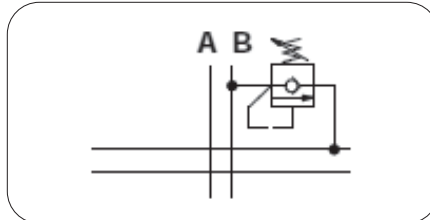
→ 1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

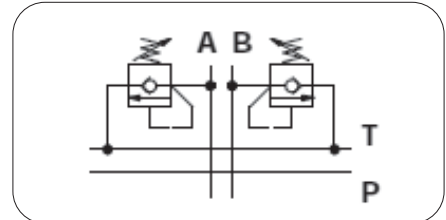
Kit No: **YAA1**



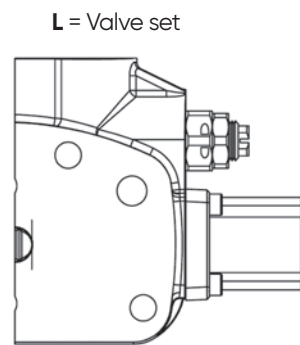
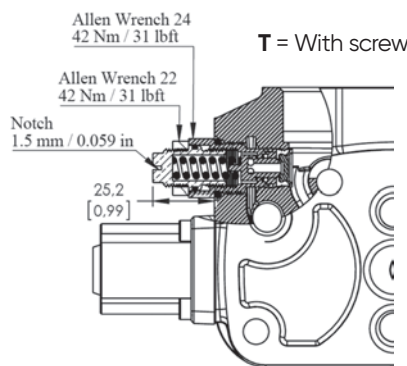
Kit No: **YAA2**



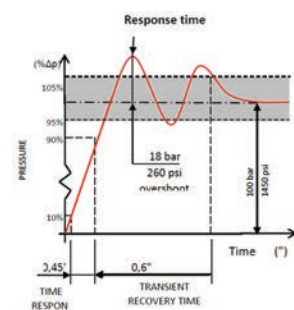
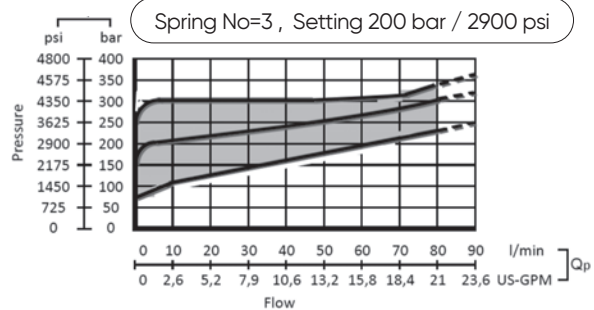
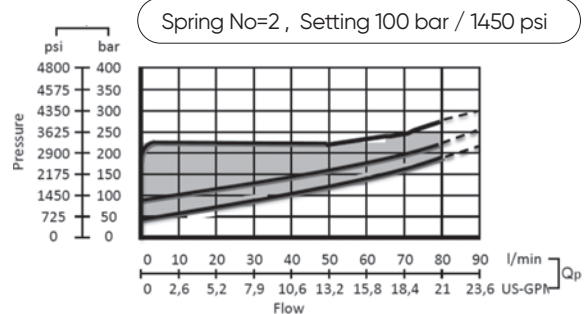
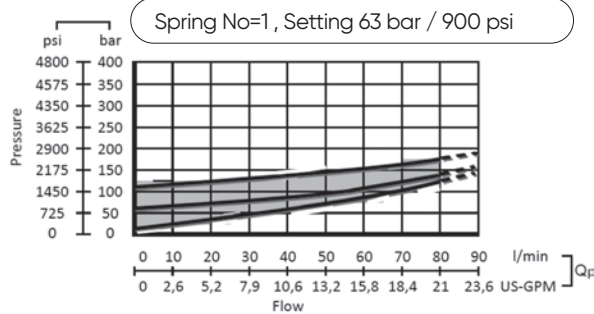
Kit No: **YAA3**



Adjustment Type on Valve:



Performance Data:



PORT VALVES OPTIONS

Anti Cavitation Valves

Code:

YAC-1

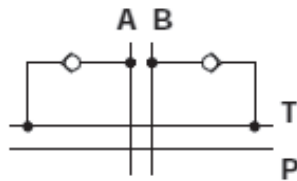
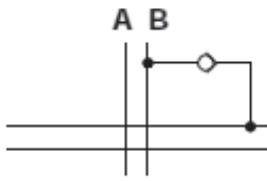
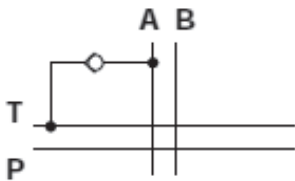
→ 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram

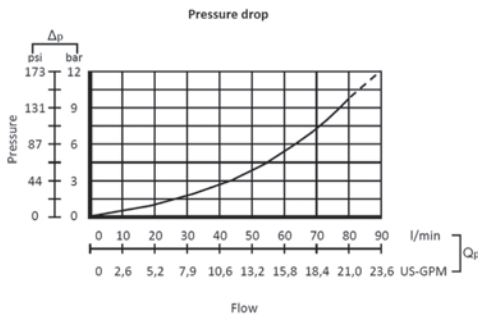
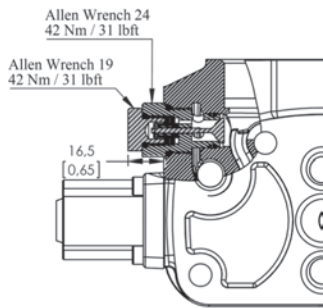
Kit No: YAC1

Kit No: YAC2

Kit No: YAC3



Adjustment Type on Valve And Data:



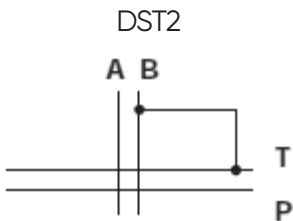
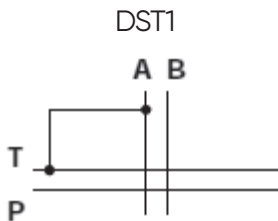
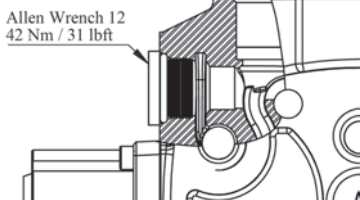
Valve Blanking

Plug with tank connection

DST-1 (1:Mounted port A – 2:Mounted port B)

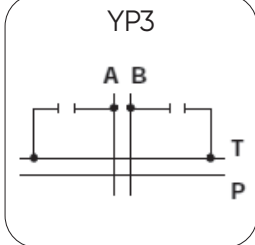
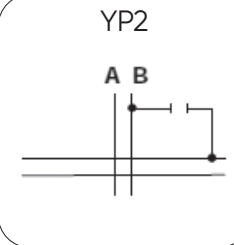
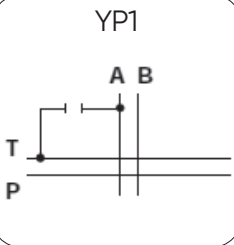
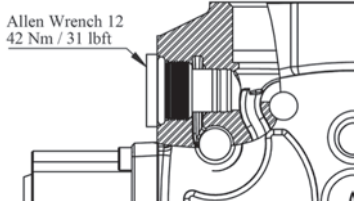
Sectional Appearance

Hydraulic Diagram



Plug

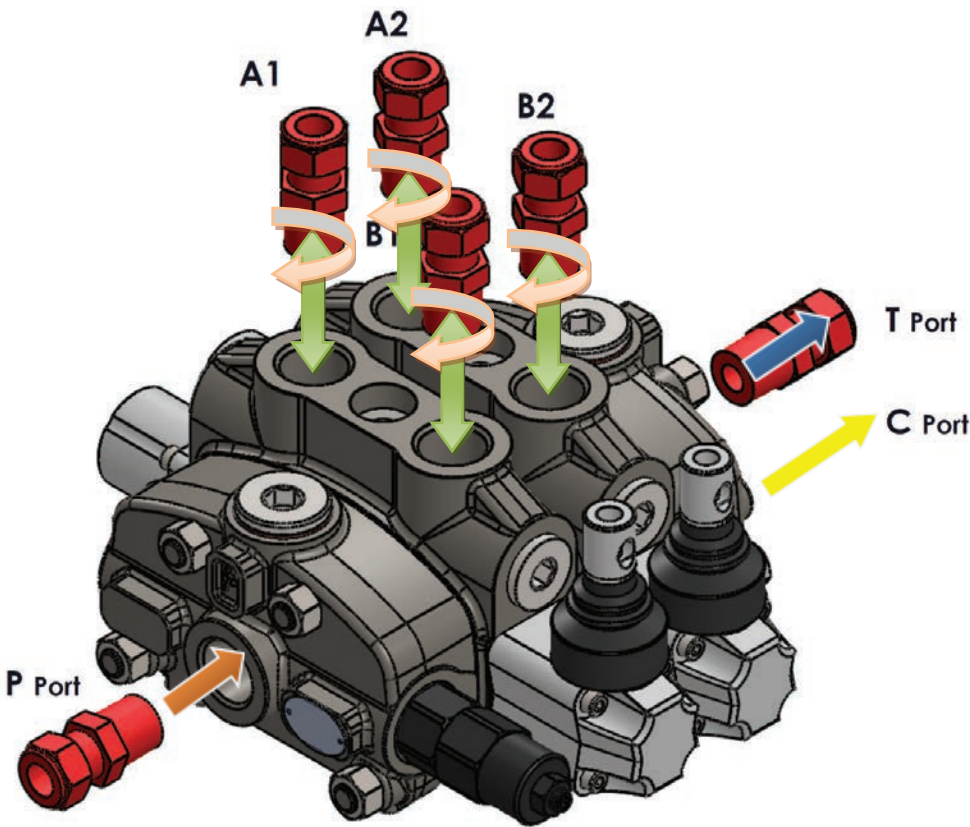
YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)



INSTALLATION AND MAINTENANCE

The GMM-PD100 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

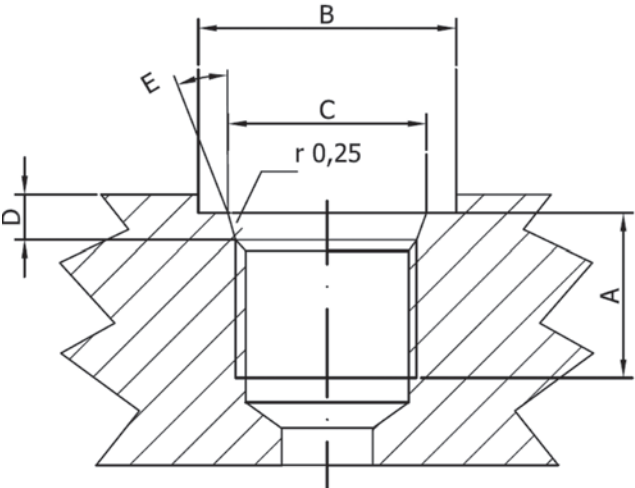
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



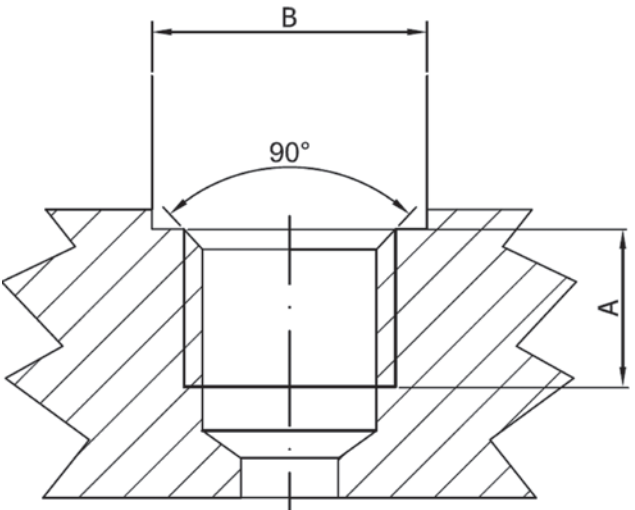
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O--Ring seal	50 / 36.9	50 / 36.9	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
BSP (ISO 228/1)	G 3/4	G 3/4	G 3/4
With O--Ring seal	70 / 51.6	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	7/8--14 UNF--2B	11/16--12 UNF--2B
With O--Ring seal	95 / 70	30 / 22.1	95 / 70

TECHNICAL DATA

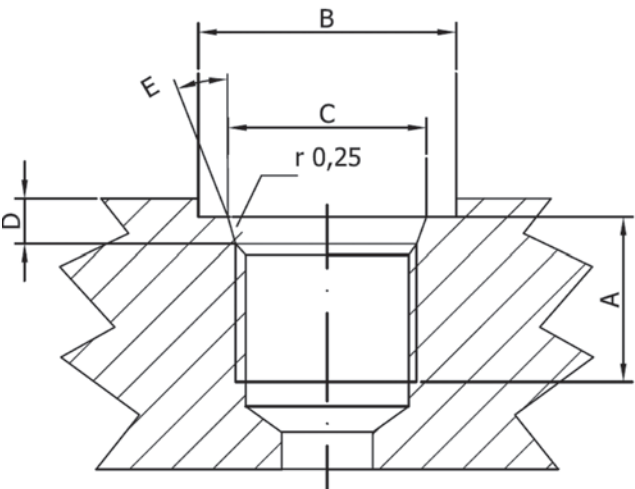
Ports Dimensional Data



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"		G3/4		G1	
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



GMM
PD100



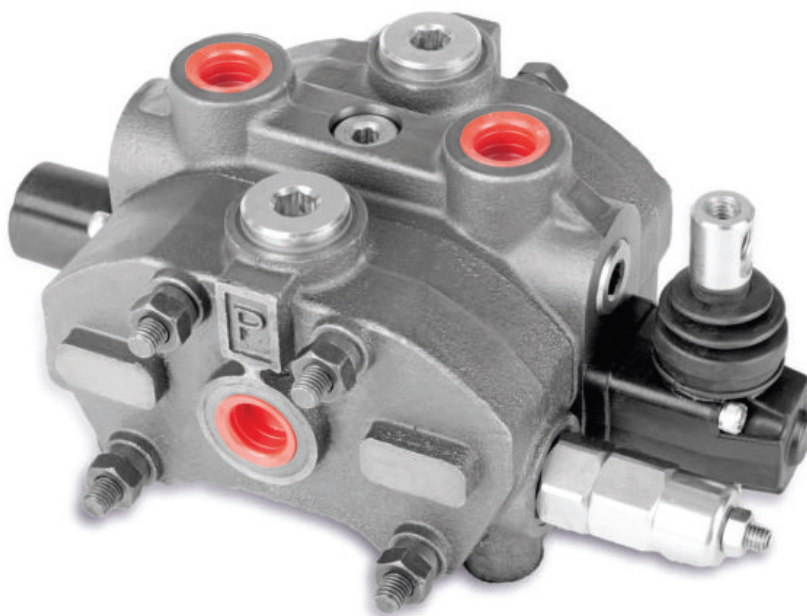


SECTIONAL
VALVES

GMM-PD120

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 (01/2020).

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

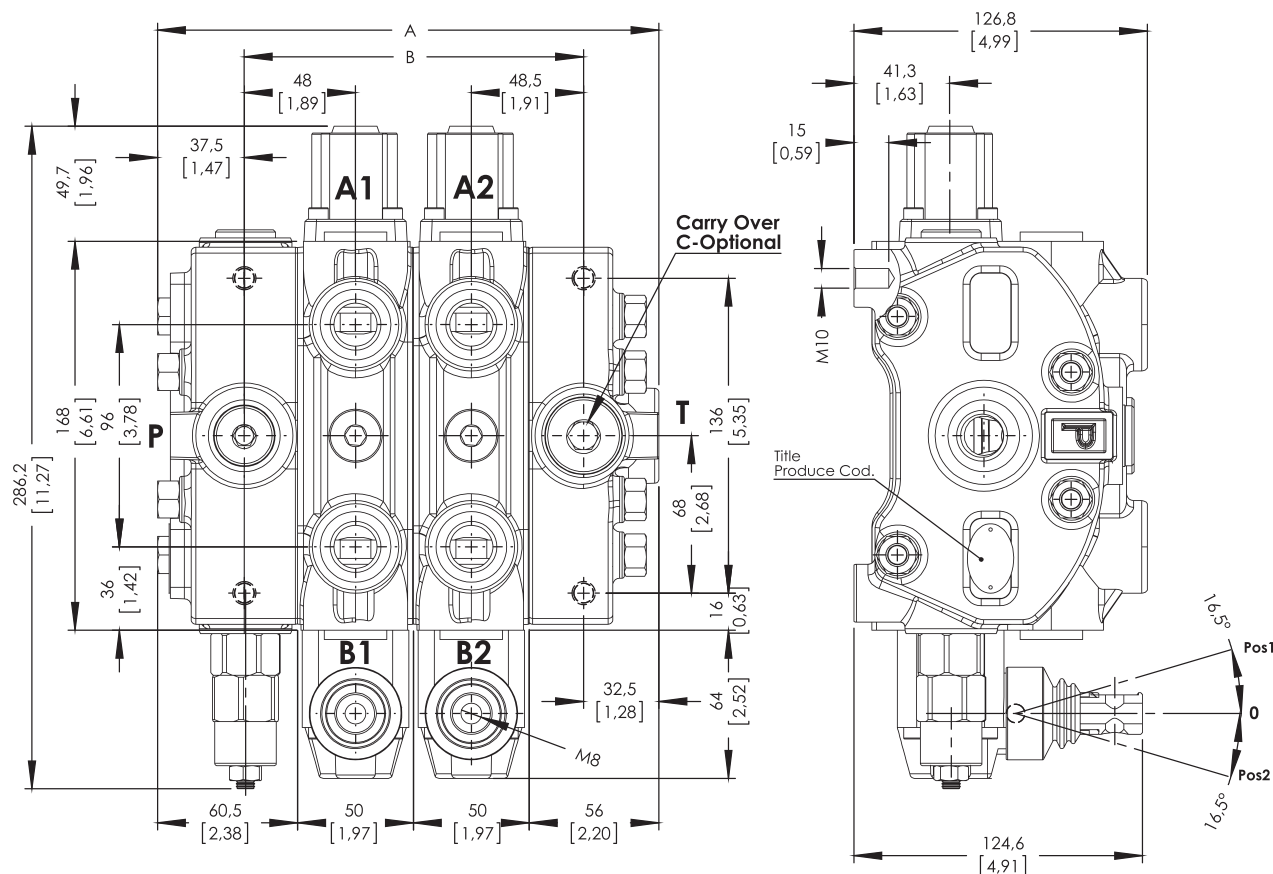
WORKING CONDITIONS

Nominal Flow Rating / Displacement	120 l/min	31 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 Viscosity – Operating Range	From 15 to 75 mm ² /s	From 15 to 75 cSt
Minumum / Maximum	12 / 400 mm ² /s	12 / 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)	4 cm ³ /min	0,24 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.
- Optional Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diameter is 20 mm – 0,79 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA


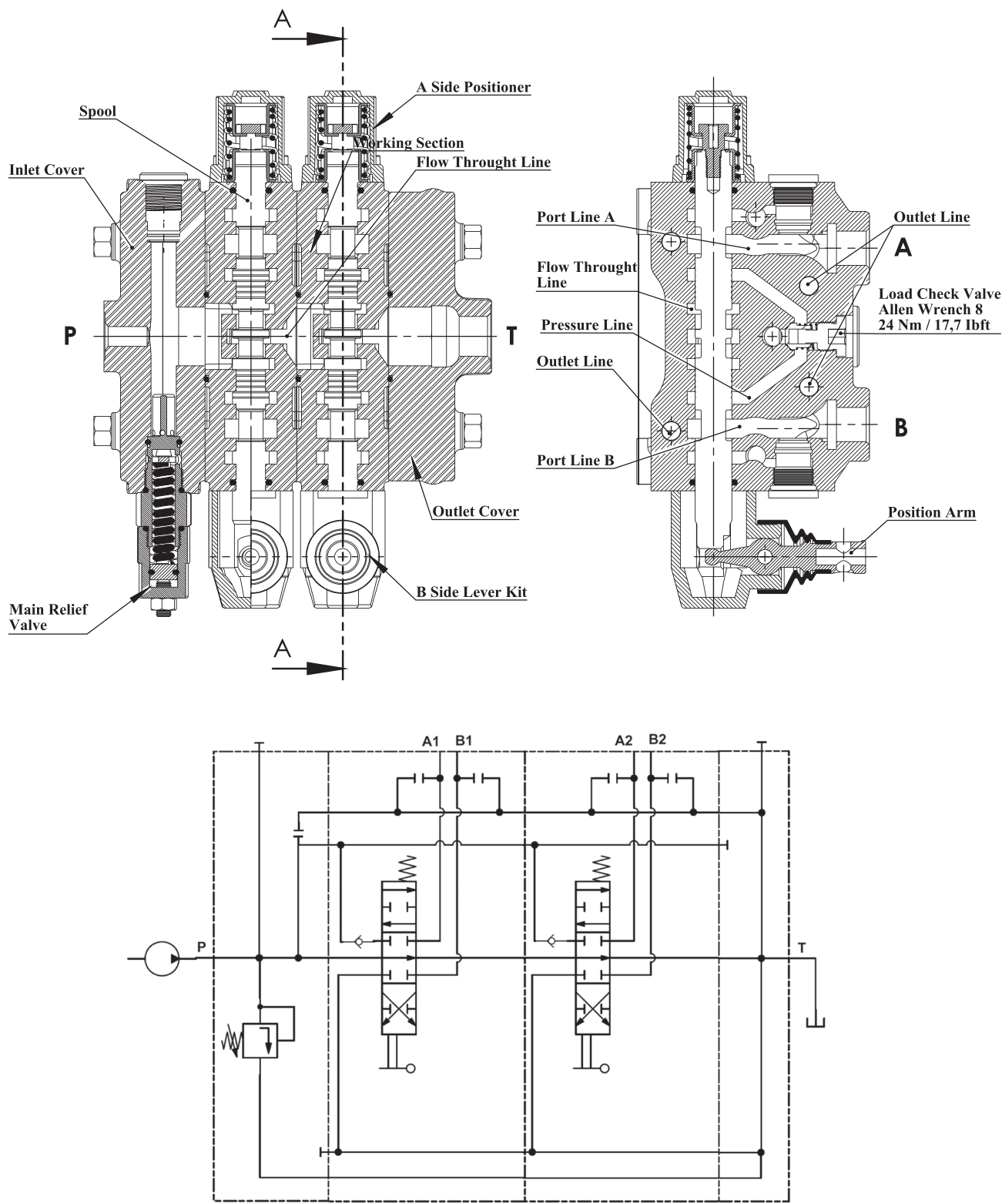
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- PD120-1P	216,5	8,52	146,5	5,77	13.70	29.67
GMM- PD120-2P	266,5	10,49	196,5	7,74	19.18	43.21
GMM- PD120-3P	316,5	12,46	246,5	9,71	24.70	56.75
GMM- PD120-4P	366,5	14,43	296,5	11,68	30.30	70.29
GMM- PD120-5P	416,5	16,40	346,5	13,65	35.82	83.83
GMM- PD120-6P	466,5	18,37	396,5	15,62	41.80	97.37
GMM- PD120-7P	516,5	20,34	446,5	17,59	46.97	110.91
GMM- PD120-8P	566,5	22,31	496,5	19,56	52.60	124.45
GMM- PD120-9P	616,5	24,28	546,5	21,53	58.00	137.99
GMM- PD120-10P	666,5	26,25	596,5	23,50	63.56	151.53
GMM- PD120-11P	716,5	28,22	646,5	24,57	69.00	165.07
GMM- PD120-12P	766,5	30,19	696,5	27,44	74.50	178.61

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 3/8	G 3/8	3/4-16 UNF	G 3/8

HYDRAULIC CIRCUIT

Parallel

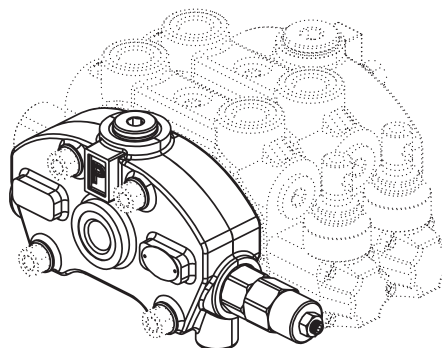


Code: GMM PD120-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

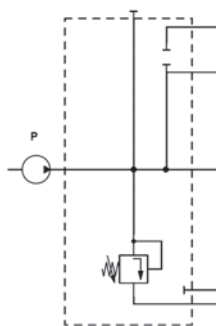
HYDRAULIC CIRCUIT

Inlet Cover – Pump Side

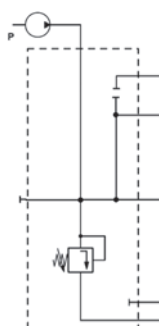
SD – Side inlet with direct pressure relief valve
 TD – Top inlet with direct pressure relief valve
 SP – Side inlet with relief valve blanking plug



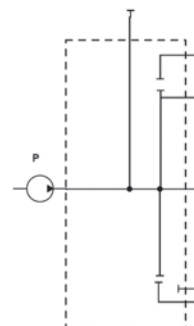
Type = SD



Type = TD

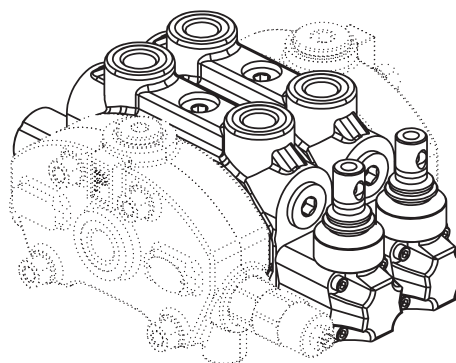


Type = SP

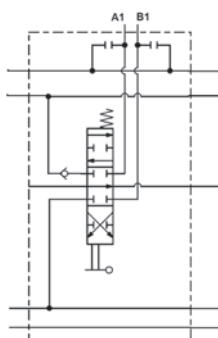


Working Sections

P – Parallel



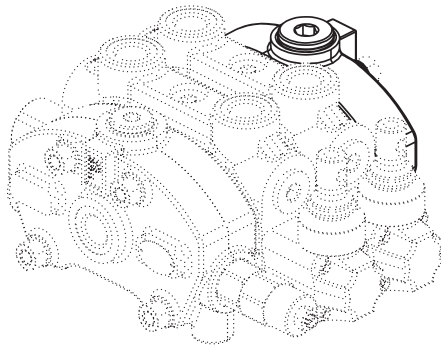
Type = P



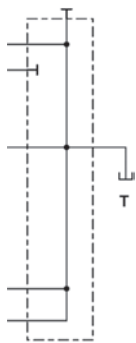
HYDRAULIC CIRCUIT

Outlet Cover (Tank Side)

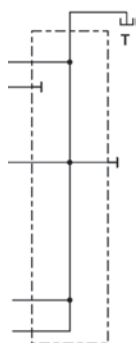
SO - Side outlet
TO - Top outlet
TCO - Top outlet with carry-over
TC - Top outlet with closed centre



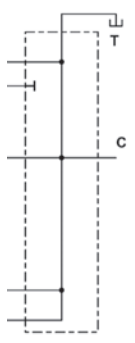
Type = SO



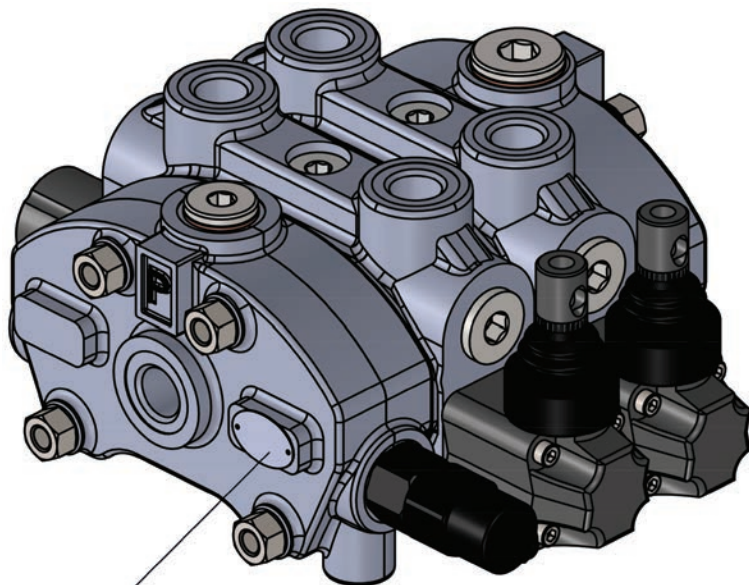
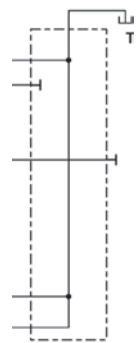
Type = TO



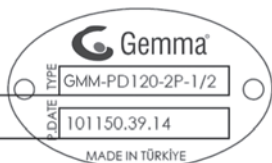
Type = TCO



Type = TC



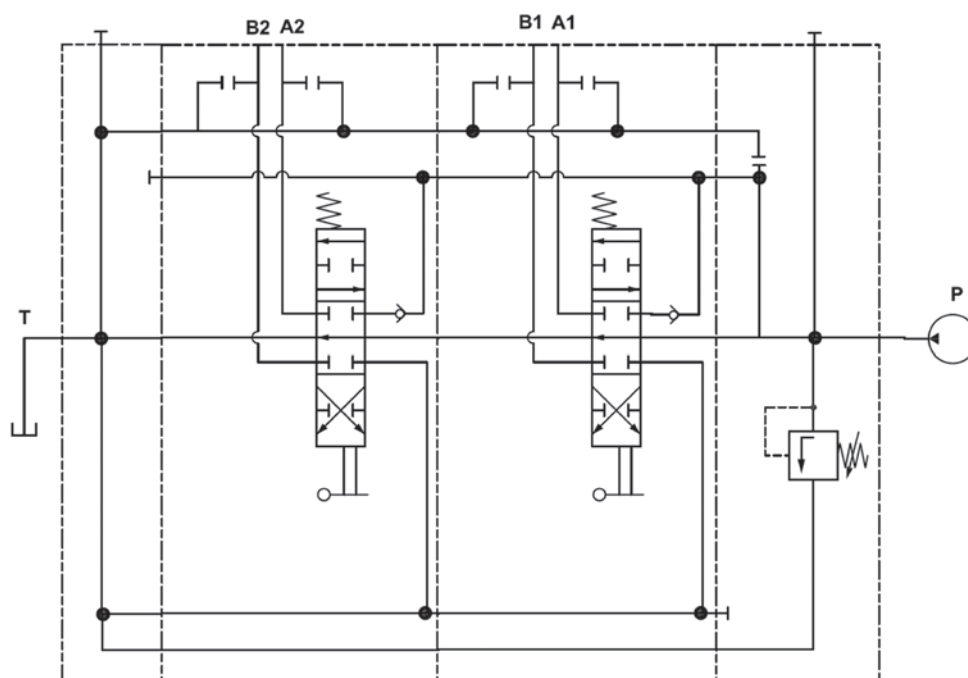
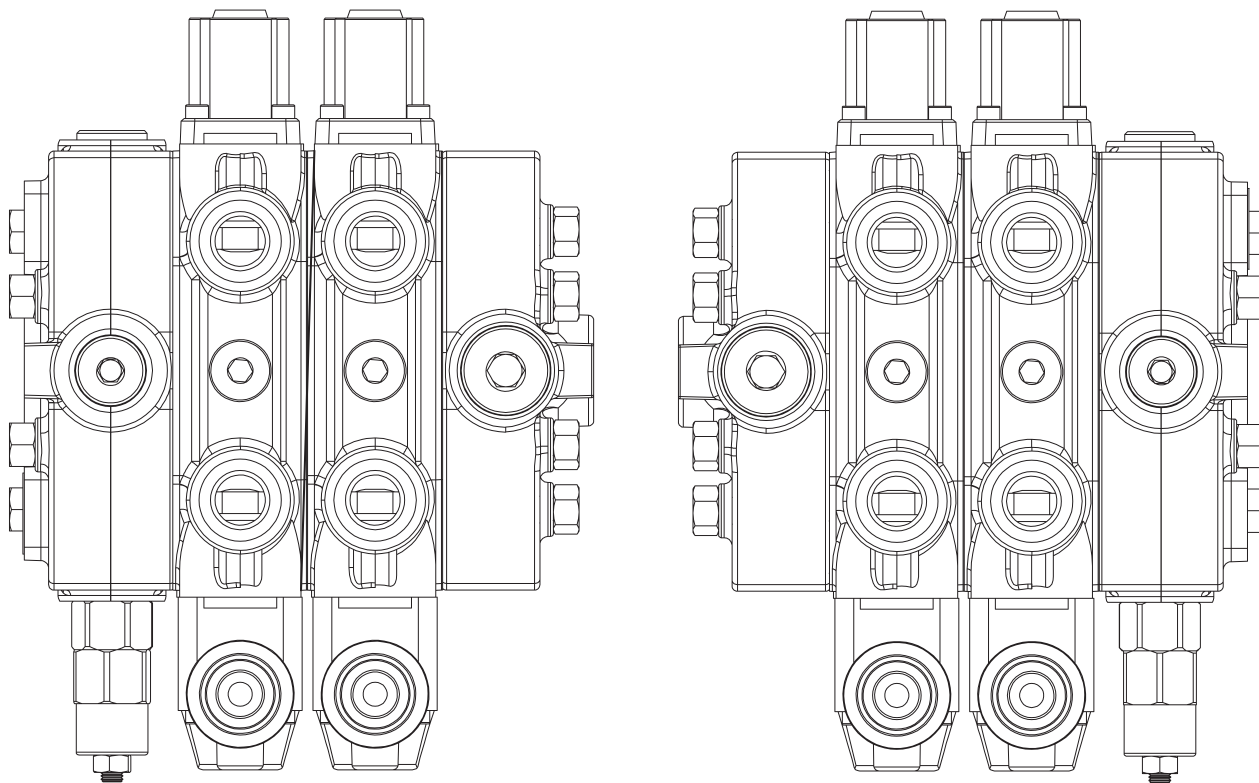
Valve Type



Production Batch
39.14 = Production Year - Week (2014/39)
101150 = Progressive Party Number

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

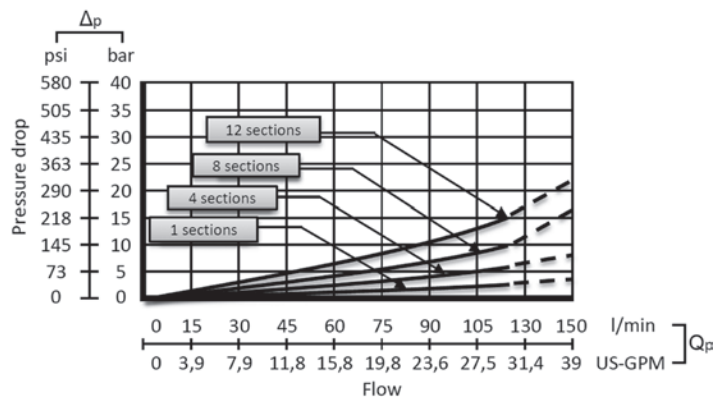
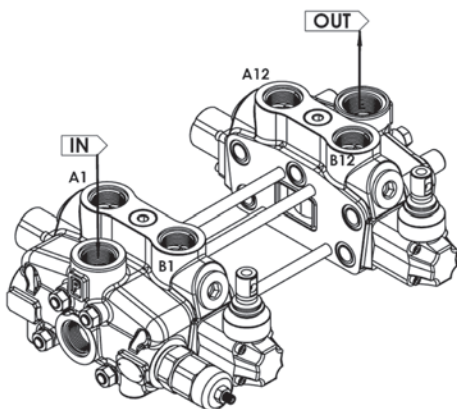
A symmetrical body allows the reverse assembly of spool.



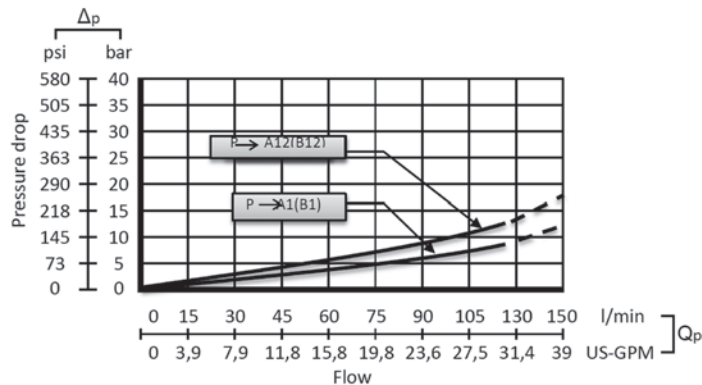
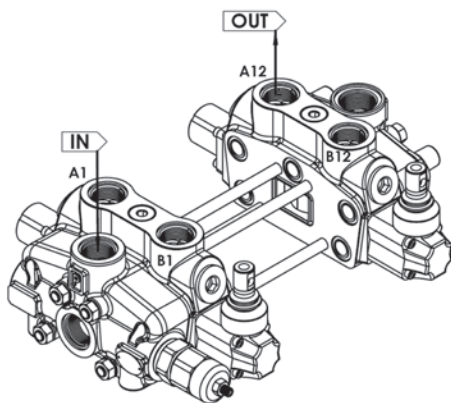
Code: GMM PD120-2P (SD(RA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 /

PERFORMANCE DATA AND CURVE

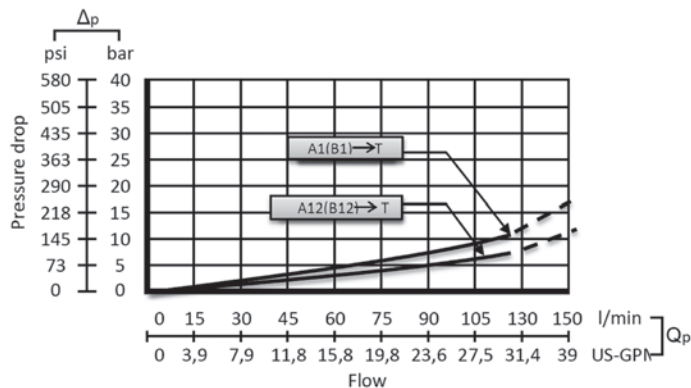
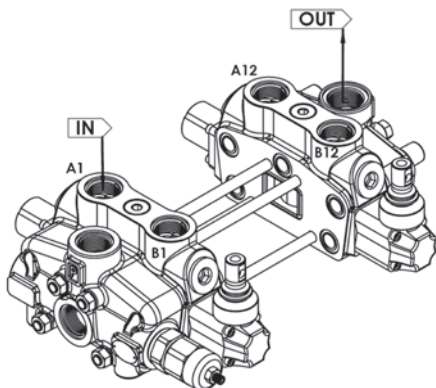
Open Center - Pressure Drop (P-T)



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



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

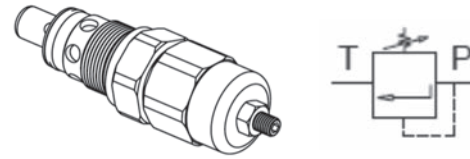


INLET RELIEF OPTIONS

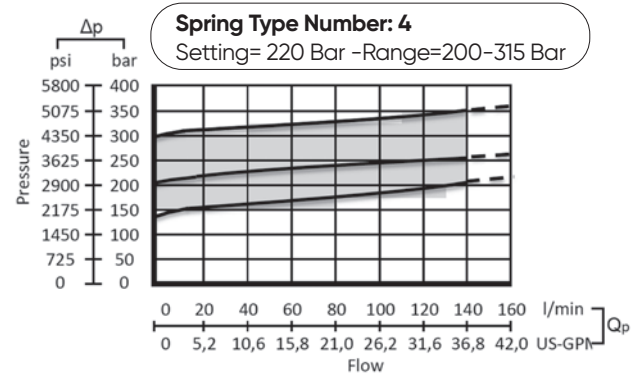
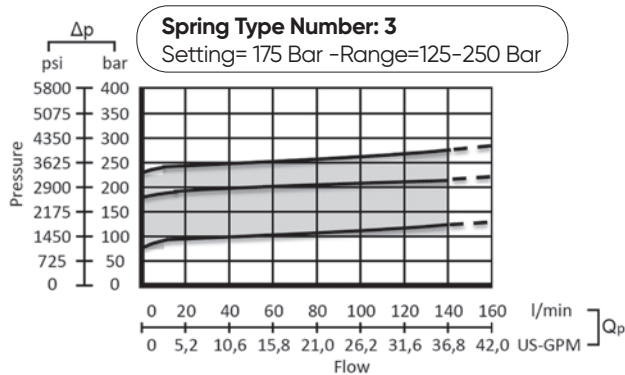
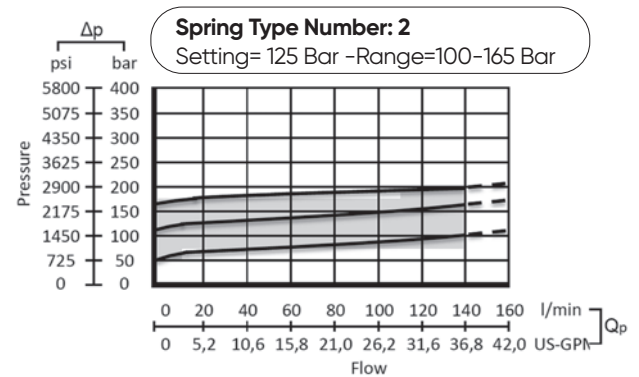
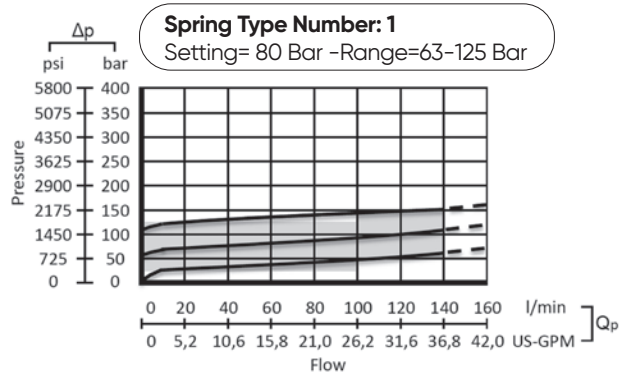
Direct Pressure Relief Valve

Code:

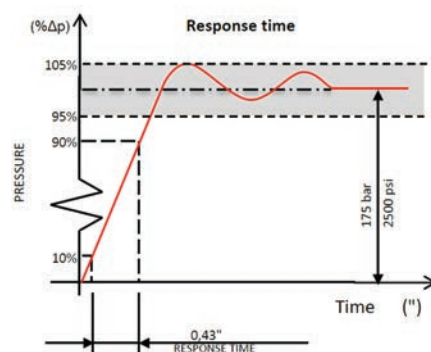
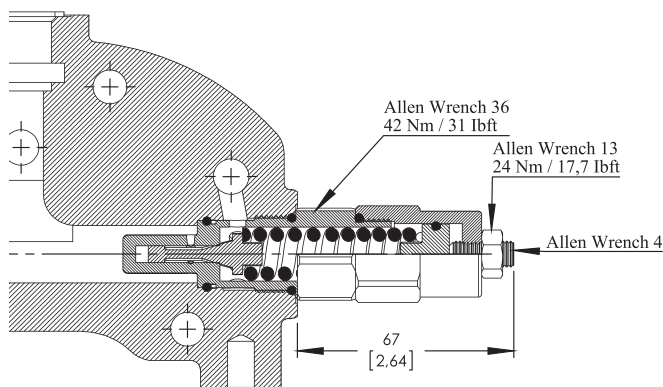
SMR2 – 125



Performance Data



Adjustment Type on Valve

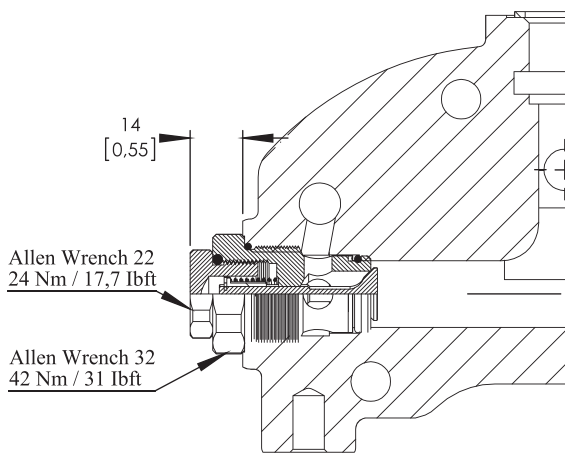


INLET RELIEF OPTIONS

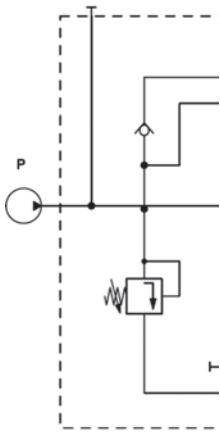
Direct Pressure Relief Valve

Kit No: PAC

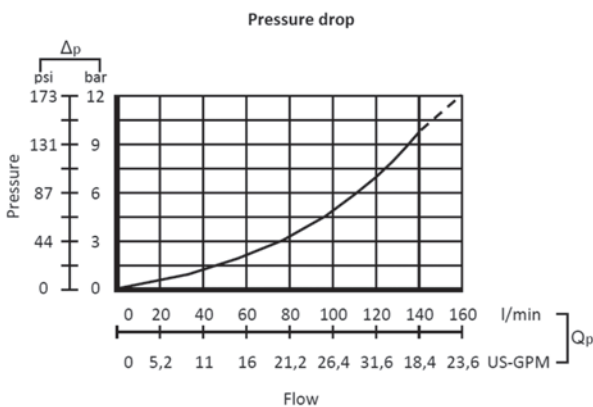
Sectional Appearance



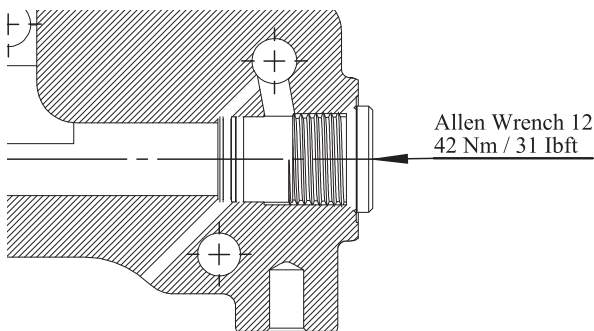
Diagram



Performance Data

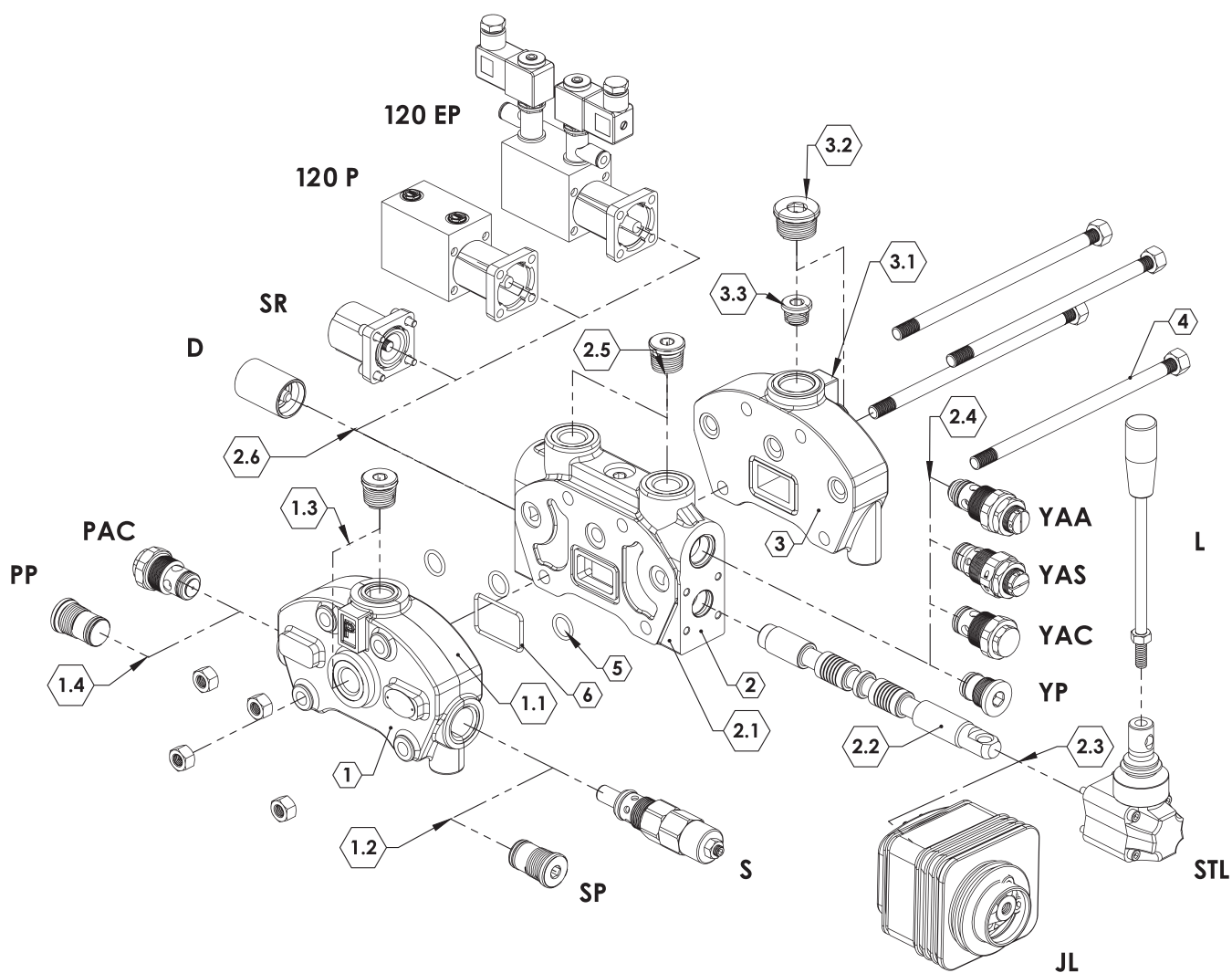
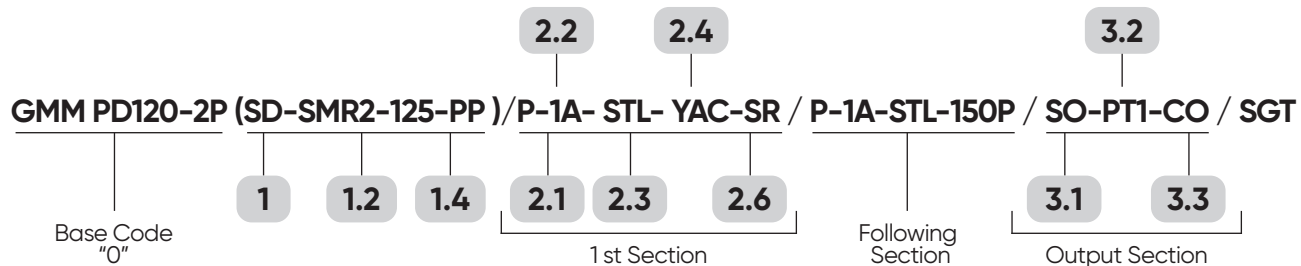


Relief Blanking Plug - SP



ORDERING CODES

Order Example



ORDERING CODES

1- Inlet Section

GMM PD120-2P PD120 = Valve Type-(PD)- Sectional
(120) - Max. Flow Rate
2P =Sections Quantity
SD = Side inlet with direct pressure relief valve (1SD120100)
TD = Top inlet with direct pressure relief valve (1TD120100)
SP = Side inlet with relief valve blanking plug (1SP120100)

2- Working Section

P = Parallel (2P120100)

3- Output Section

SO = Side outlet (3SO120100)
TO = Top outlet (3TO120100)
TCO = Top outlet with carry-over (3TCO120100)
TC = Top outlet with closed centre (3TC120100)

4- Assembling Kit

Tie rod kit for 1 section valve - (4TRK1120100)
Tie rod kit for 2 section valve - (4TRK2120100)
Tie rod kit for 3 section valve - (4TRK3120100)
Tie rod kit for 4 section valve - (4TRK4120100)
Tie rod kit for 5 section valve - (4TRK5120100)
Tie rod kit for 6 section valve - (4TRK6120100)
Tie rod kit for 7 section valve - (4TRK7120100)
Tie rod kit for 8 section valve - (4TRK8120100)
Tie rod kit for 9 section valve - (4TRK9120100)
Tie rod kit for 10 section valve - (4TRK10120100)
Tie rod kit for 11 section valve - (4TRK11120100)
Tie rod kit for 12 section valve - (4TRK12120100)

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 (11BS120100)
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 = G1/2 Top and side input - (13PA1800100)
PA2= G3/4 Top and side input - (13PA2800100)
1.4 Inlet Valve
PAC =Inlet anti-cavitation valve -(14PAC150100)
PP(SP) = Relief valve blanking plug -(14PSP150100)

2.*- Working Options

2.1 Working Section

PA = Without ports valve prearrangement, with parallel circuit - Body (21BSPA120100)

2.2 Spool Options

1A -(22SS120110) - 3 Positions ,Double acting
2A -(22SS120120) - 3 Positions ,Double acting
A to tank B Blocked
3A -(22SS120130) - 3 Positions ,Double acting
B to tank A blocked
4A -(22SS120140) - 3 Positions ,Double acting
A and B tank
5A -(22SS120150) - 3 Positions ,Single acting on
A (A to tank)
6A -(22SS120160) - 3 Positions ,Single acting on
B (B to tank)

2.3 Lever Options

L = Standard HandLever (L=120mmxM10) - (7L040100)
JL = Joystick lever for two sections operation (5JL 080100)
STL = Standard Lever - (23STL150100)
HL = Remote Cable Kit - (80HL80100)

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, G1/2 (25PL180100)

PL2 =Plug for single action spool for 2A-3A, G3/4 (25PL280100)

2.6 Spool Positioners

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

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

100P=ON/OFF Pneumatic - (2645P150100)

100EP=12 VDC ON/OFF electro-pneumatic (26150EP150112)

100EH= 12 VDC/24 VDC ON/OFF electro-hydraulic (36150EH100112)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS150100)

3.2 Output Plug

PT1 =G3/4 Top and Side output (32PT180100)

3.3 Circuits Options

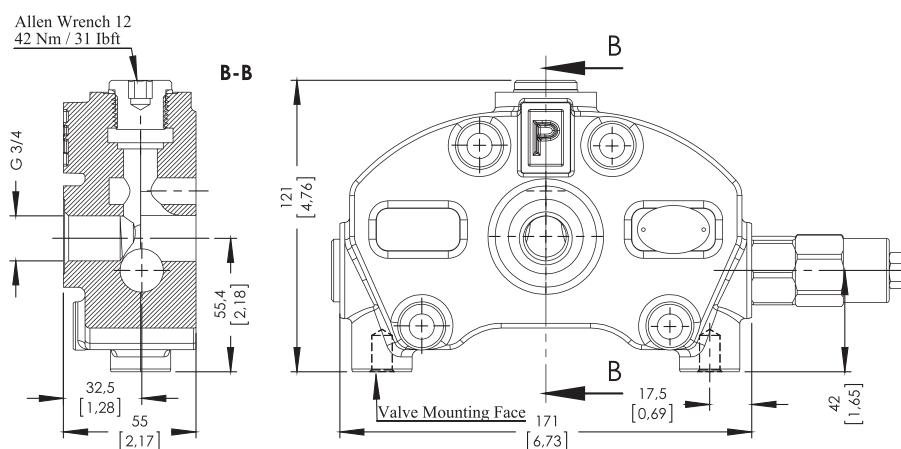
CO =G1/8 Carry-Over Connector (33CO150100)

INLET COVER- PUMP SIDE

LH Inlet Valve Options

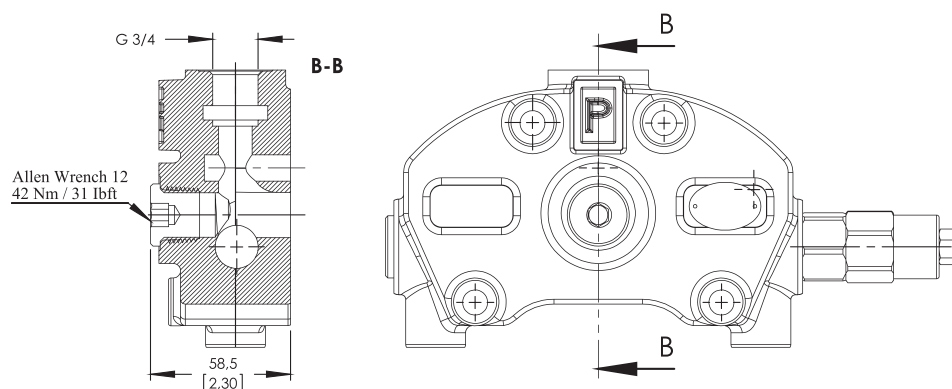
Type No: **SD**

Sectional Appearance



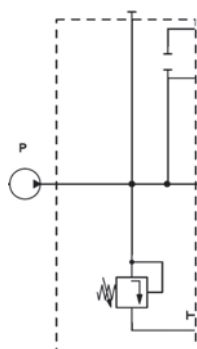
Type No: **TD**

Sectional Appearance



Hydraulic Diagram

Type No: **SD**



Type No: **TD**

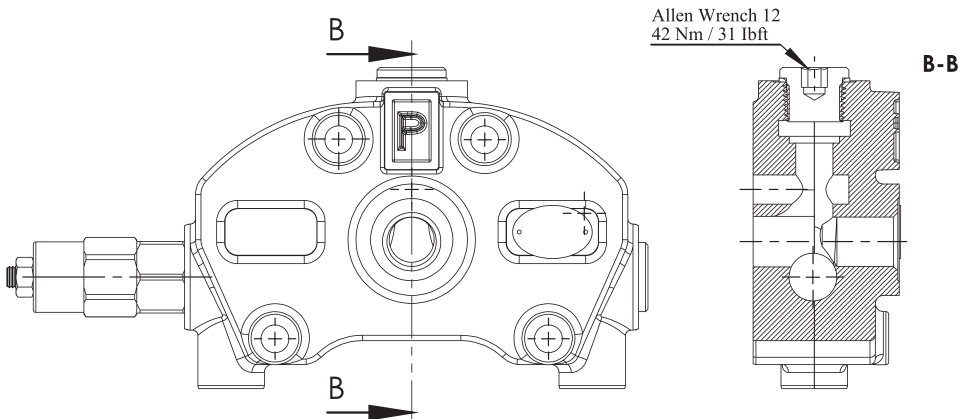


INLET COVER- PUMP SIDE

RH Inlet Valve Options

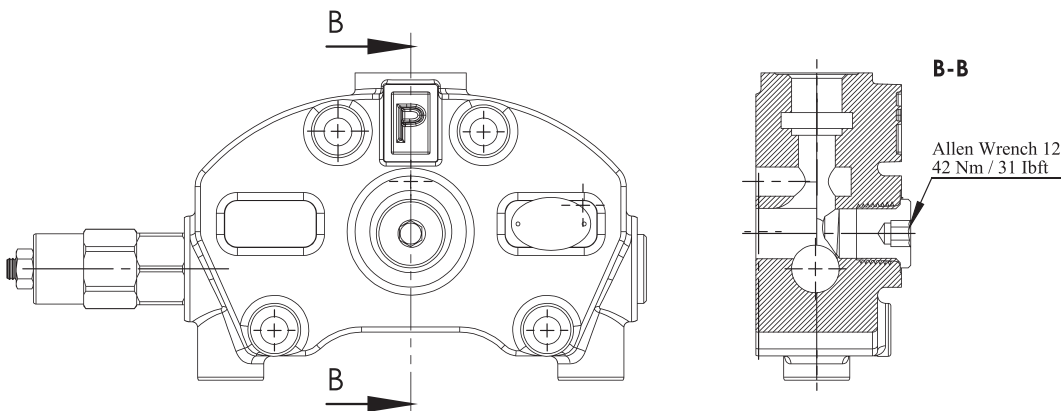
Type No: RA

Sectional Appearance



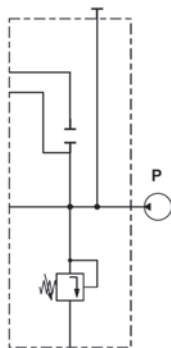
Type No: RB

Sectional Appearance

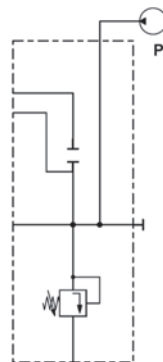


Hydraulic Diagram

Type No: RA

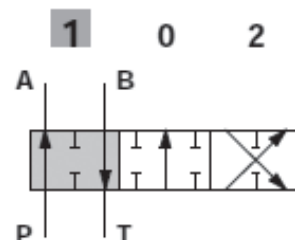
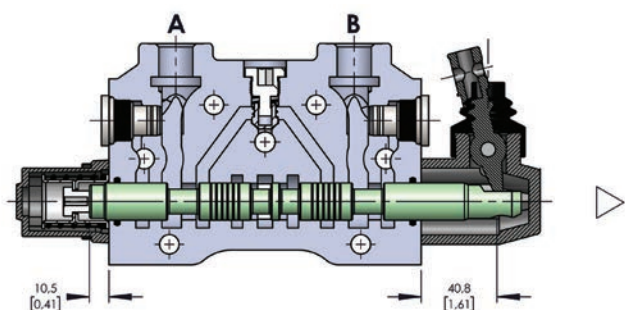
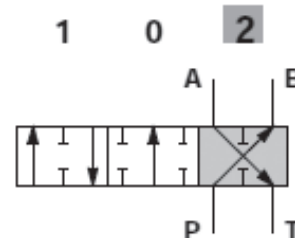
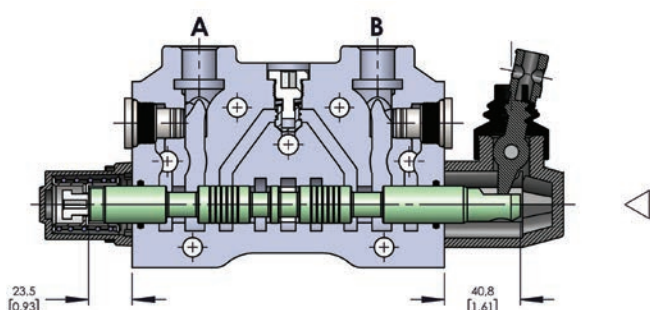
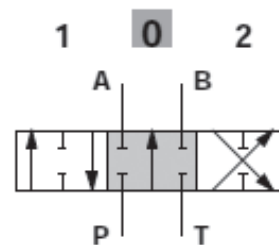
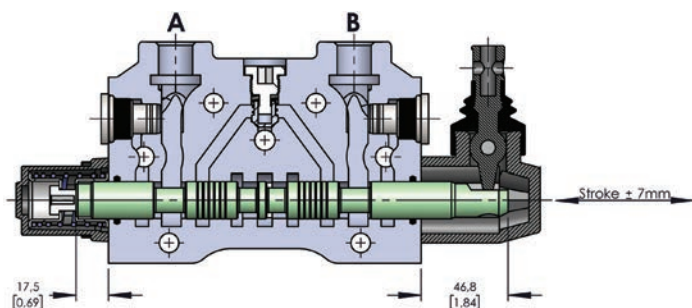


Type No: RB

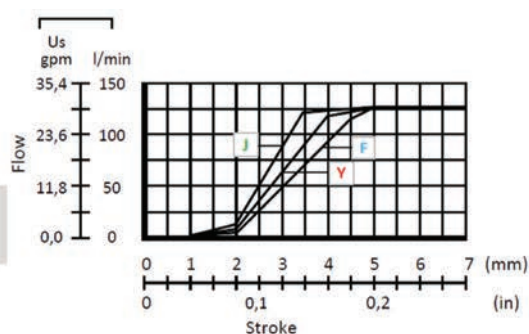
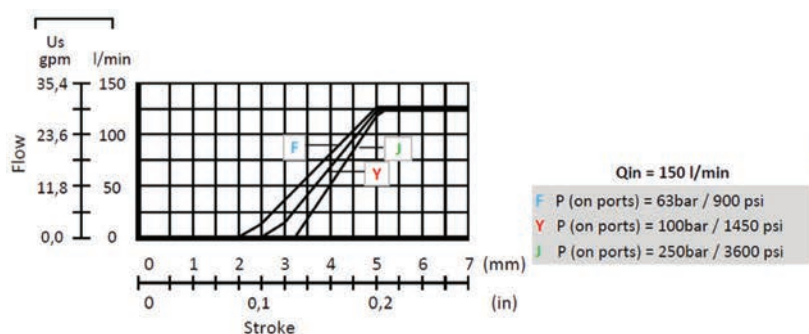


SPOOL OPTIONS

Spool Type - 1A

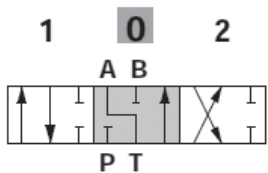
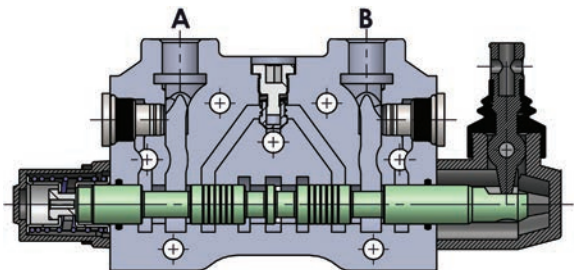


Performance Curve And Data

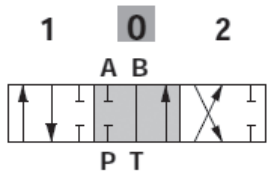
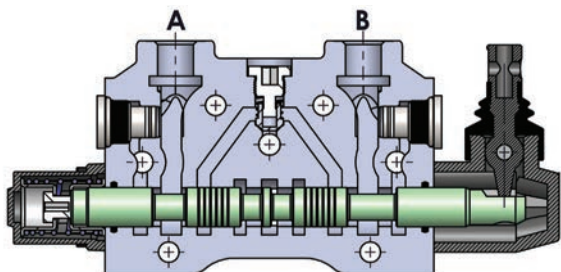


SPOOL OPTIONS

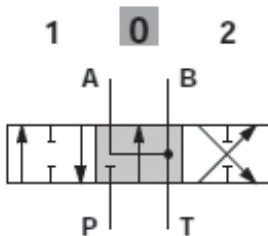
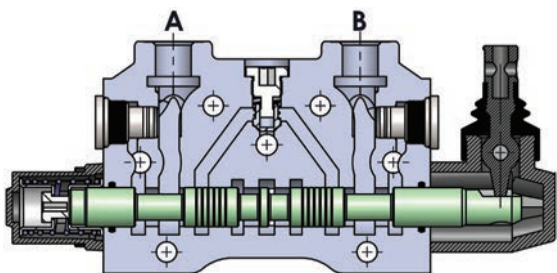
Spool Type - 2A



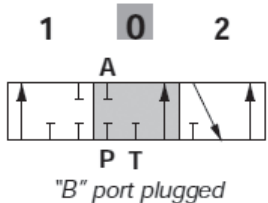
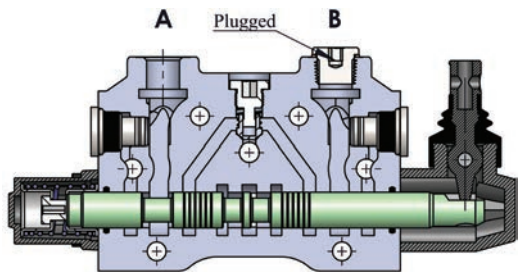
Spool Type - 3A



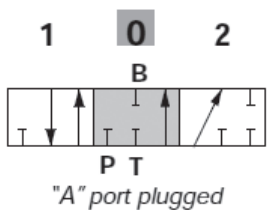
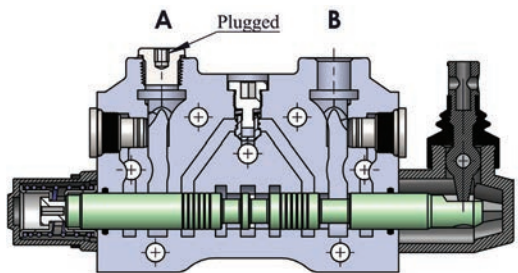
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

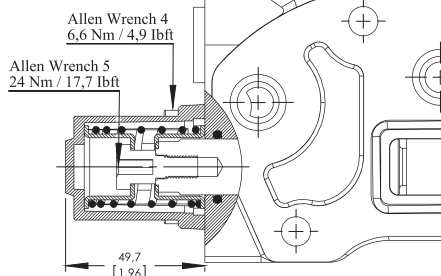


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



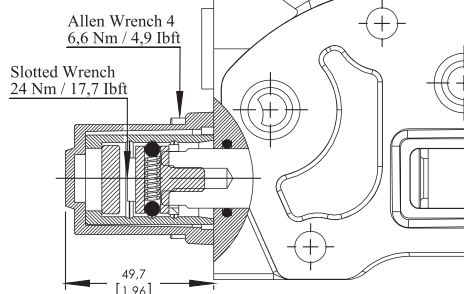
Diagram



With Detent

Kit No: **D**

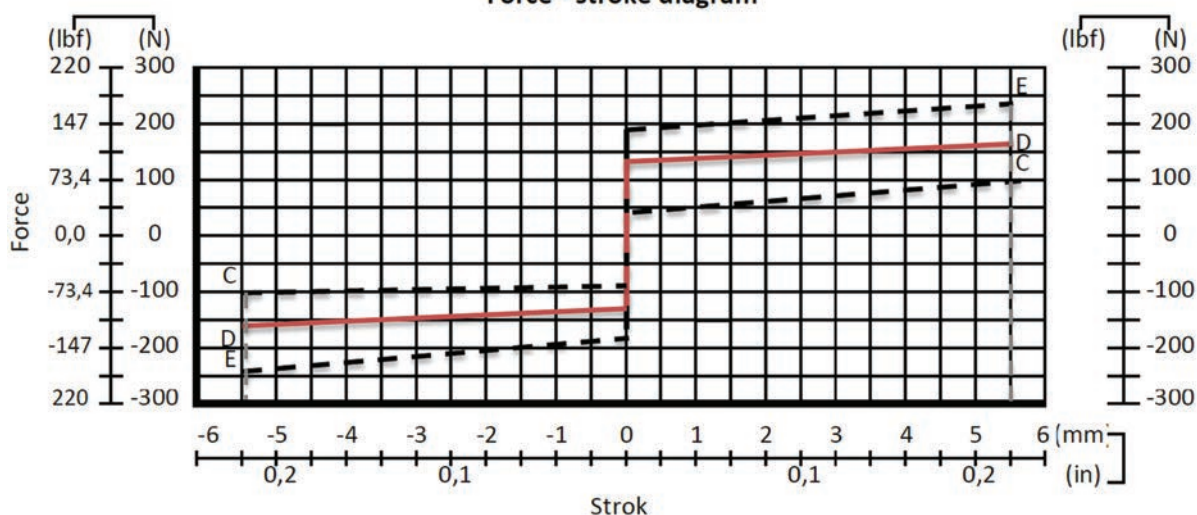
Sectional Appearance



Diagram



Force - stroke diagram

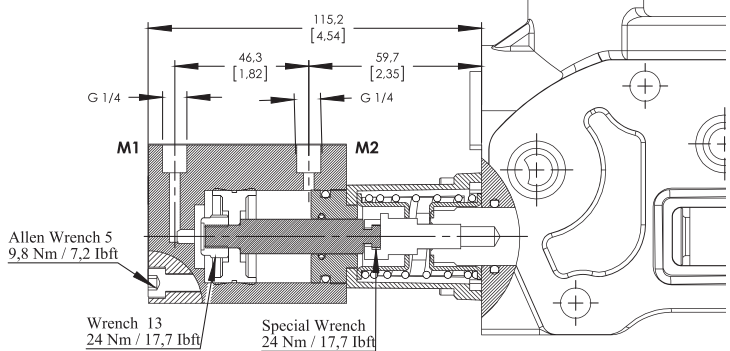


SPOOL POSITIONERS – SIDE OF RETURN

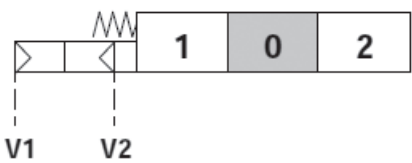
ON/OFF Pneumatic Control

Kit No: 120P

Sectional Appearance



Diagram



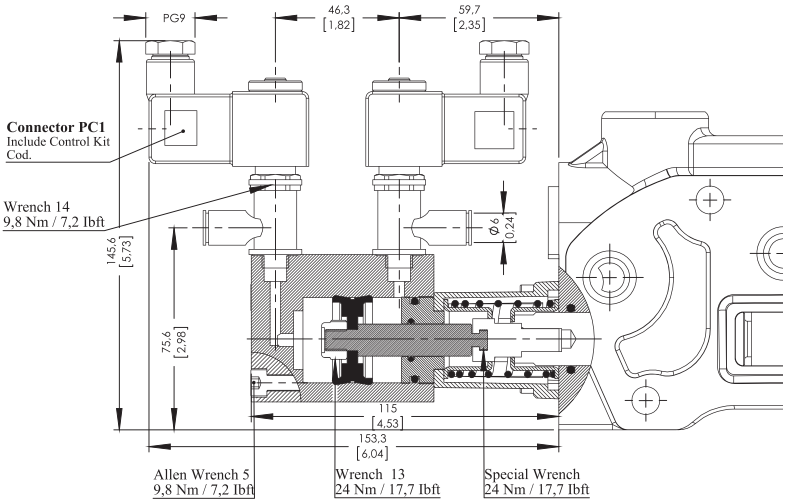
Operating Features

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

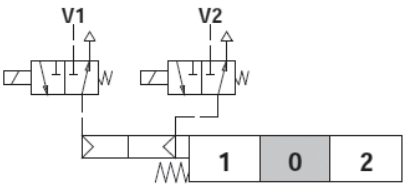
ON/OFF Electro-Pneumatic Control

Kit No: 120EP

Sectional Appearance



Diagram



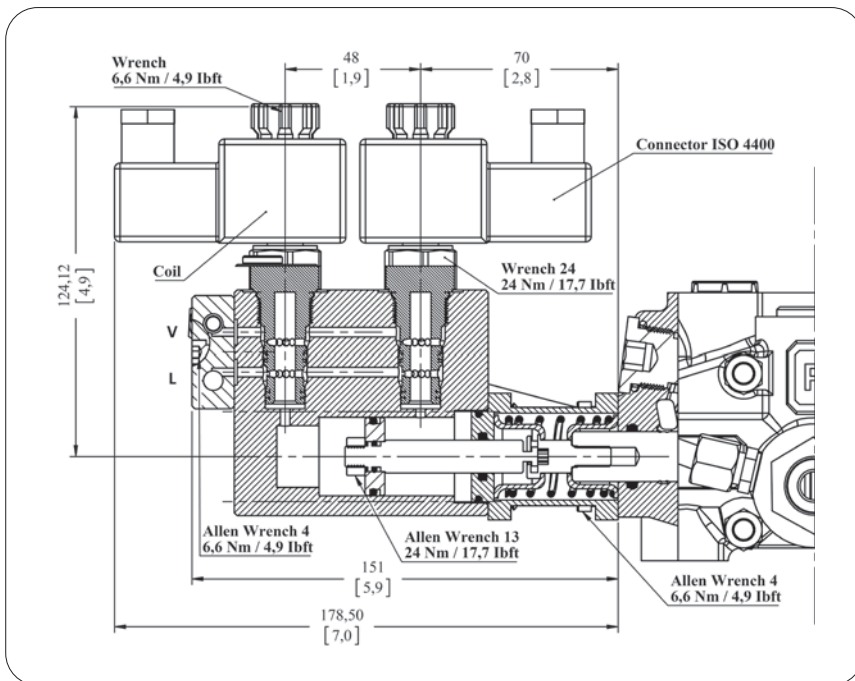
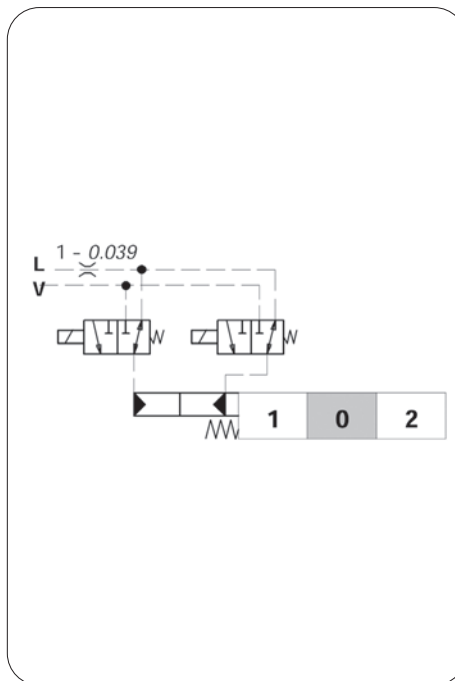
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 120EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
 Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
 Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 21 W
 Duty cycle.....: %100
 Protection type.....: IP 65
 Nominal voltage tolerance.....: ±10
 Max temperatures.....: 100 C°
 Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 - Kit For Section 1
 COL 12 - 10COL1001 - Kit For Section 2
 COL 13 - 10COL1001 - Kit For Section 3
 COL 14 - 10COL1001 - Kit For Section 4
 COL 15 - 10COL1001 - Kit For Section 5
 COL 16 - 10COL1001 - Kit For Section 6
 COL 17 - 10COL1001 - Kit For Section 7
 COL 18 - 10COL1001 - Kit For Section 8

Standard Pilot Collector

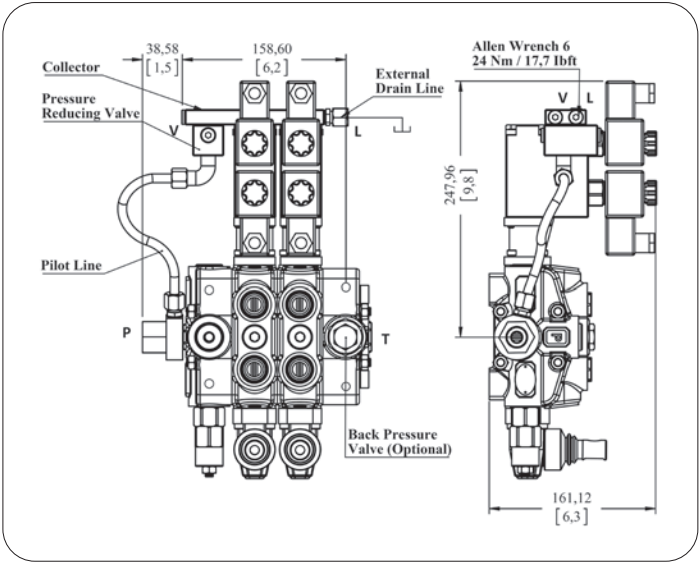
COL 21 - 10COL2001 - Kit For Section 1
 COL 22 - 10COL2001 - Kit For Section 2
 COL 23 - 10COL2001 - Kit For Section 3
 COL 24 - 10COL2001 - Kit For Section 4
 COL 25 - 10COL2001 - Kit For Section 5
 COL 26 - 10COL2001 - Kit For Section 6
 COL 27 - 10COL2001 - Kit For Section 7
 COL 28 - 10COL2001 - Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

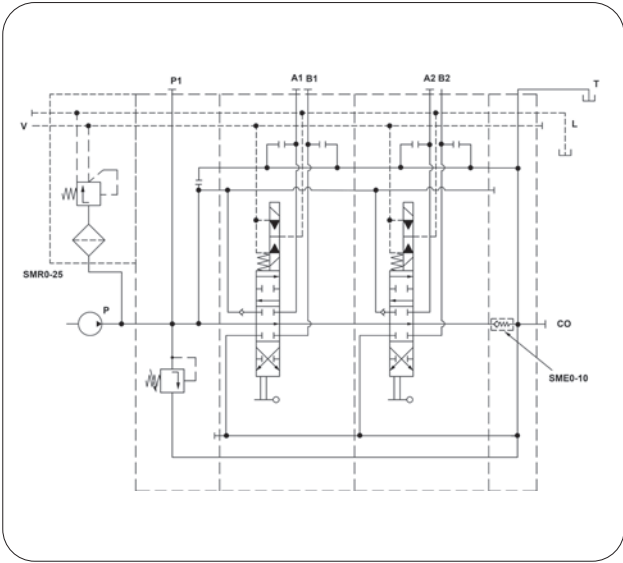
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram

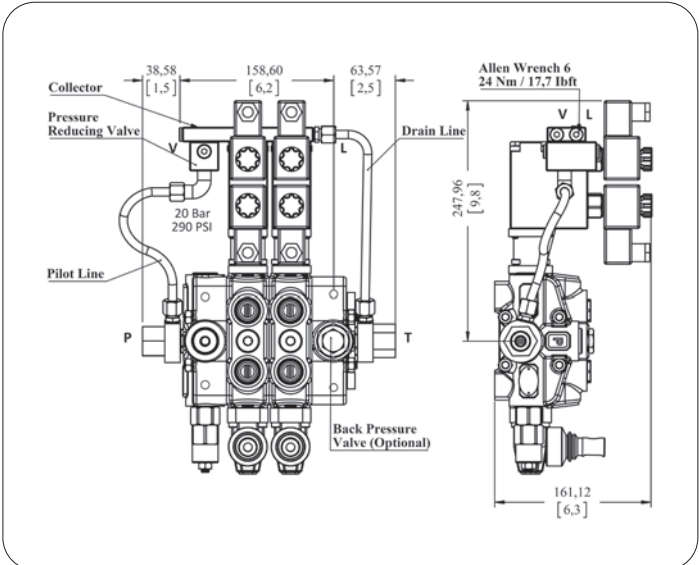


Operating Features

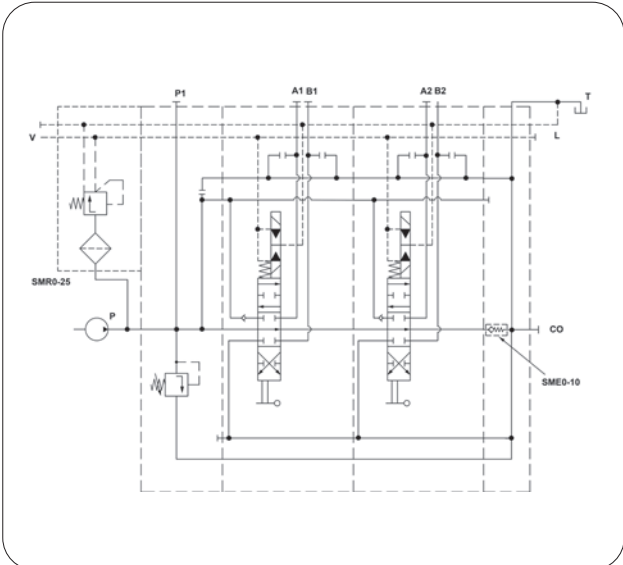
External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)
Code= GMM PD120-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-120EH/ P-1A-STL-120EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

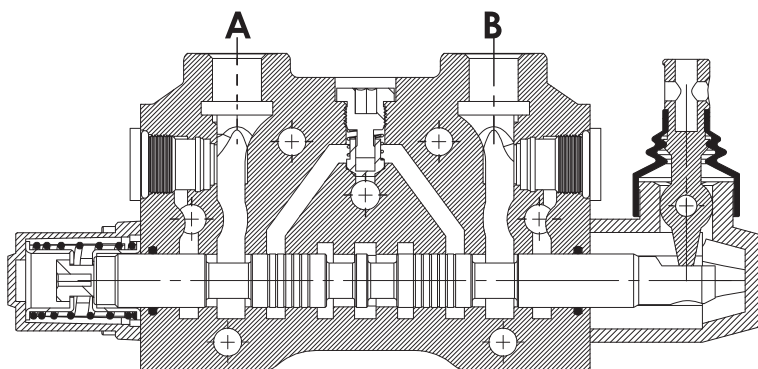
Outlet Pressure: 20 Bar / 290 Psi
Max. Flow.....: 8 l/min
Filtering: 80 µ
Code= GMM PD120-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-120EH/ P-1A-STL-120EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

WORKING SECTION KIT

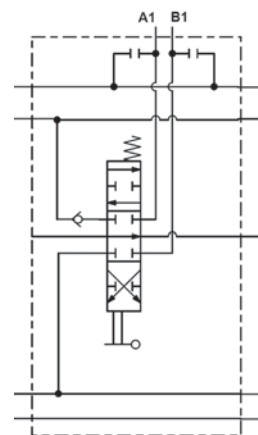
With Port Valves Type

Kit No: **AA**

Sectional Appearance



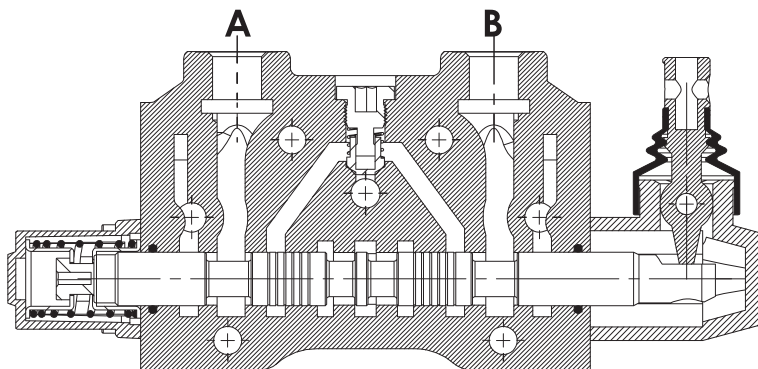
Diagram



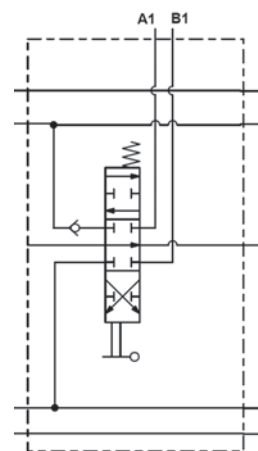
With Port Valves Type

Kit No: **AB**

Sectional Appearance



Diagram



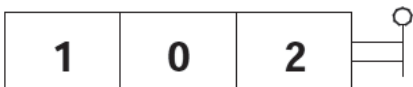
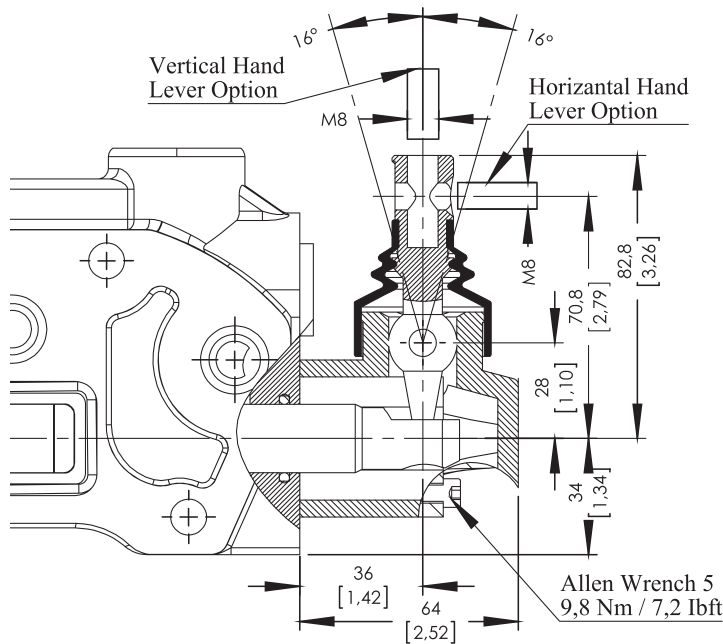
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: **STL - L0**

Sectional Appearance

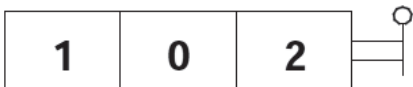
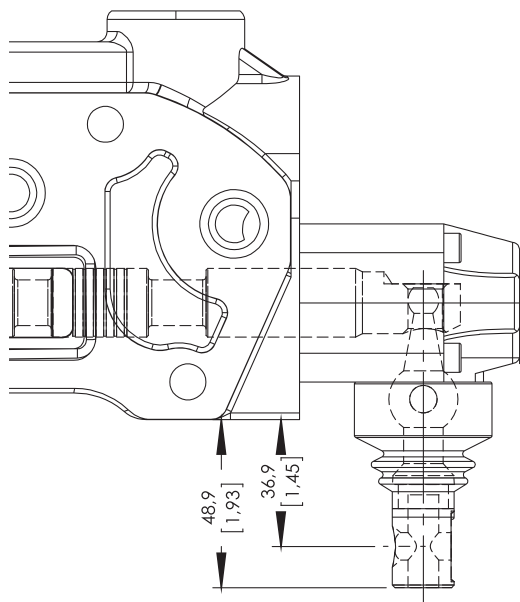
Diagram



Kit No: **STL - L180**

Sectional Appearance

Diagram



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

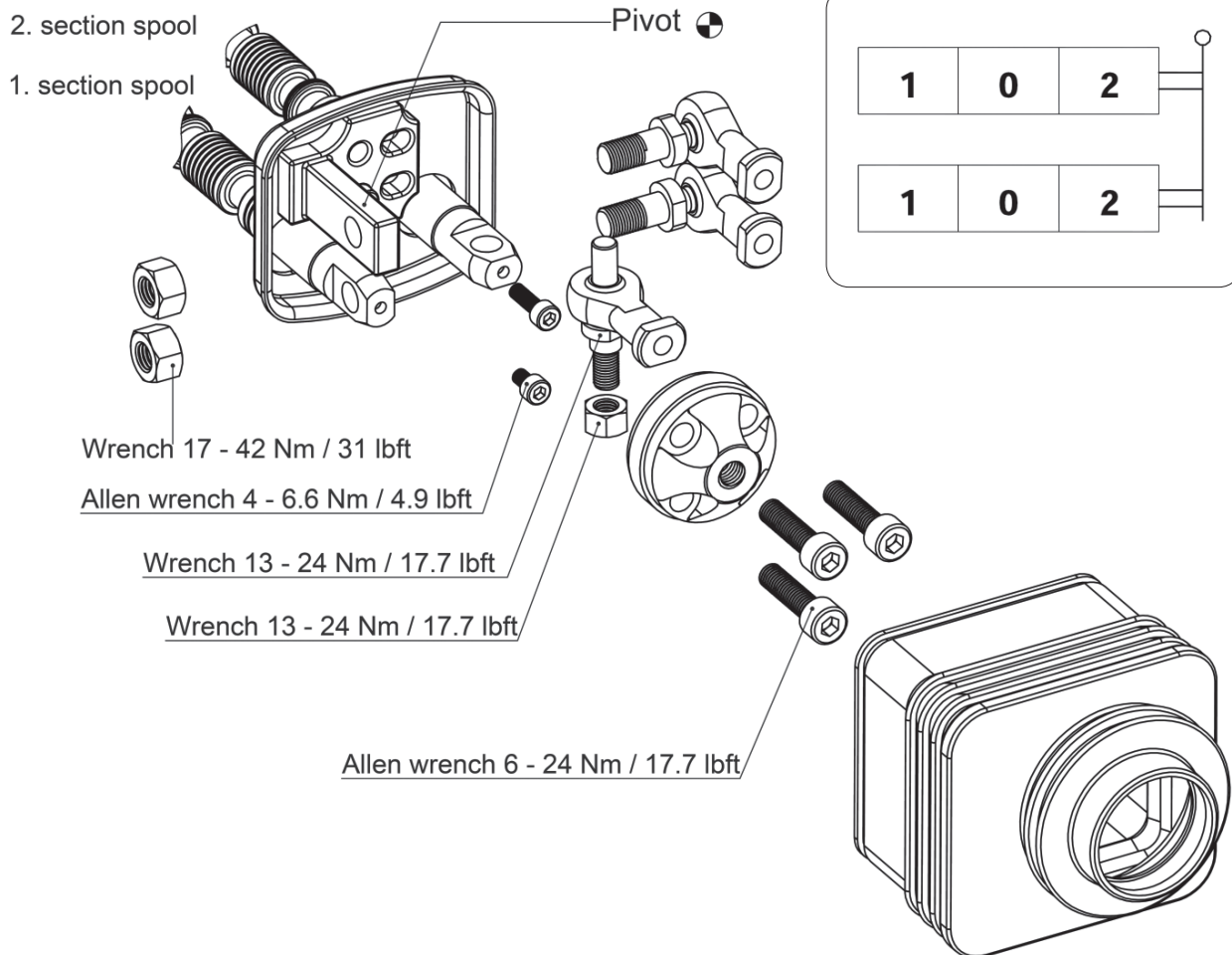
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

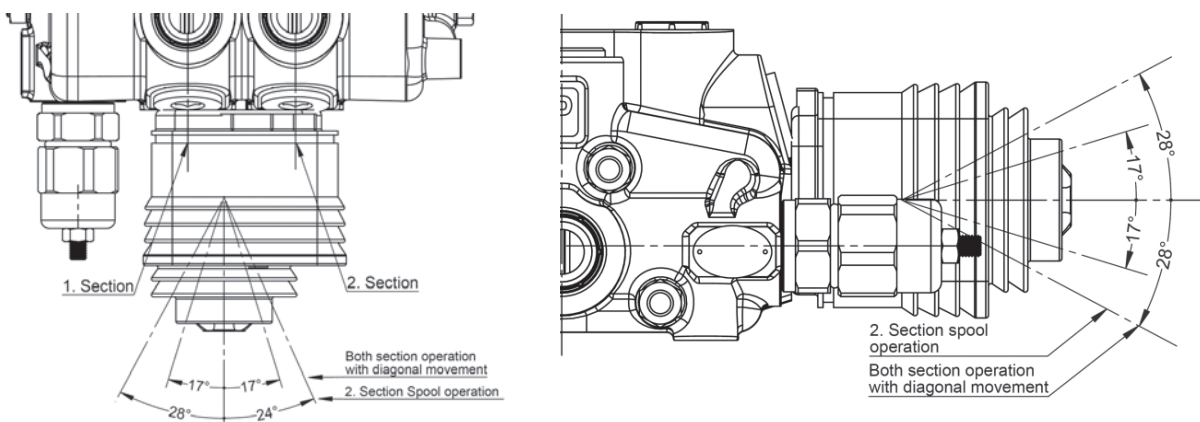
Kit No: **JL**

Exploded View

Diagram



Operation Angle:



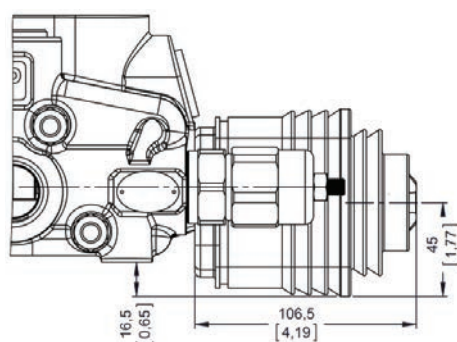
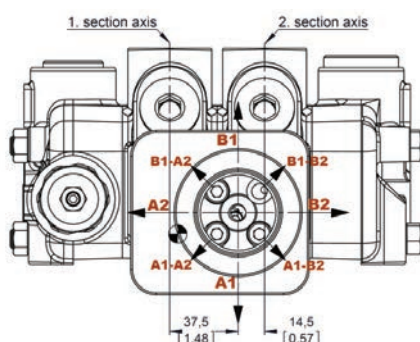
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement scheme

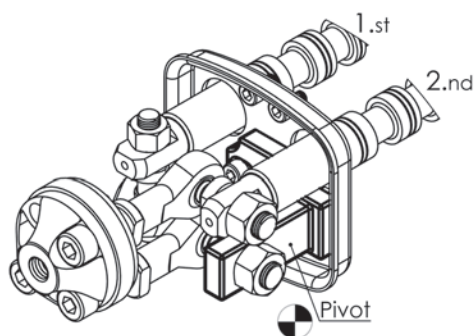
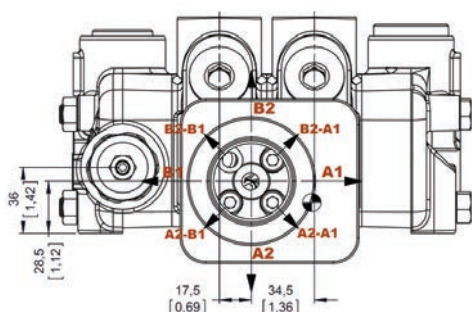
Type No: **JL1**

Application: Pivot placed down on the Left



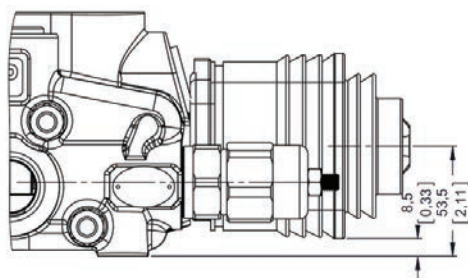
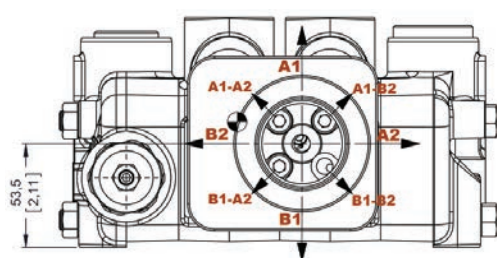
Type No: **JL2**

Application: Pivot placed down on the right



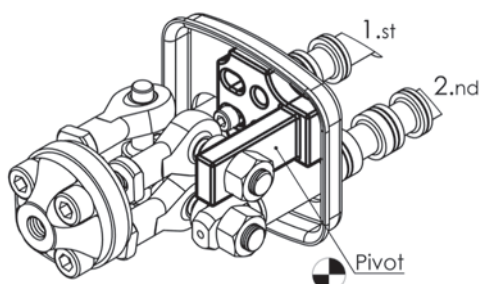
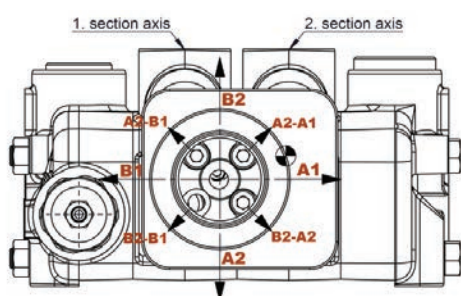
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

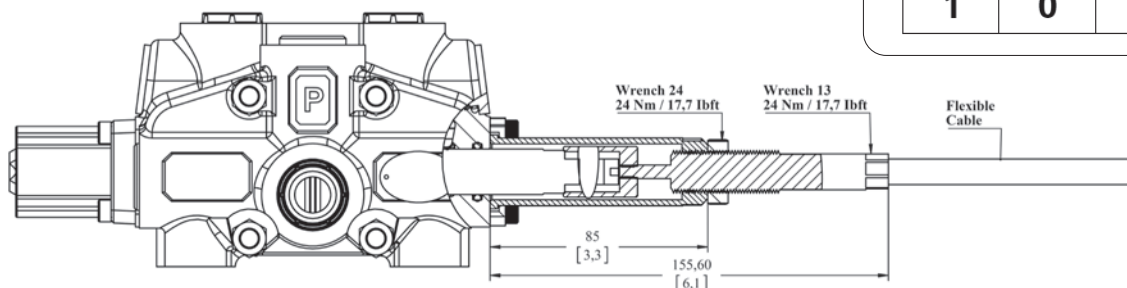
Lever Controls - Cable Control

Kit No: HL

Sectional Appearance

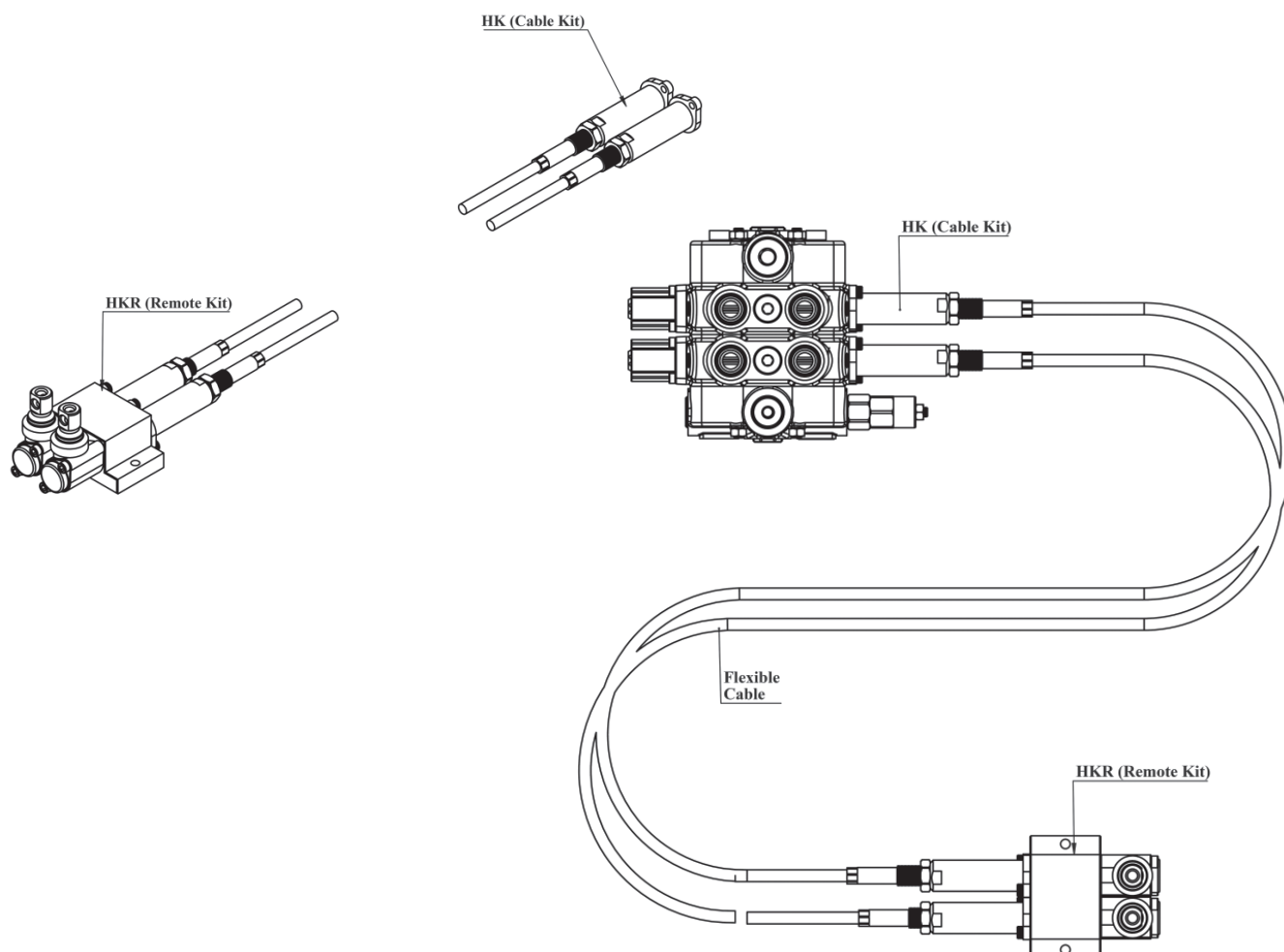
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department.

Example Operation

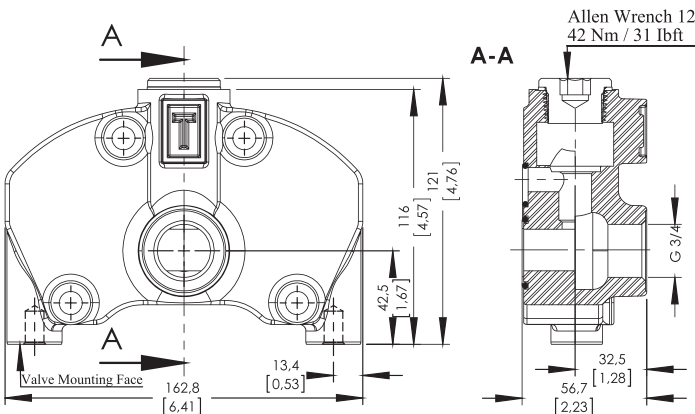


OUTLET COVER - TANK SIDE

Output Cover Options

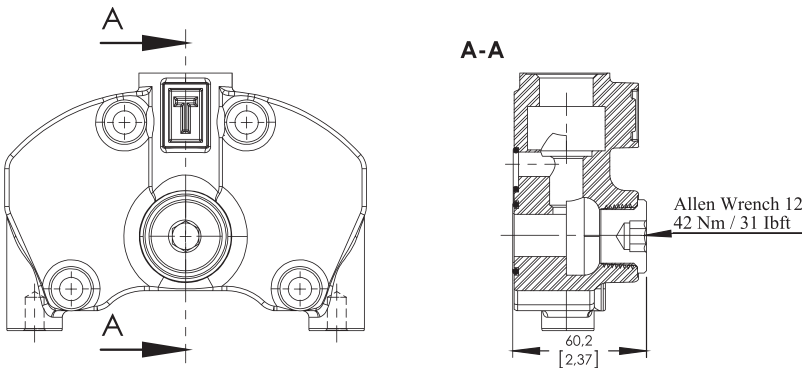
Kit No: **SO**

Sectional Appearance



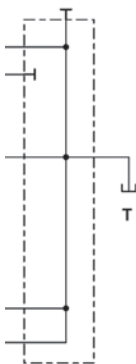
Type No: **TO**

Sectional Appearance

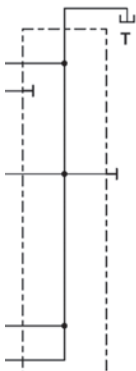


Hydraulic Diagram

Type No: **SO**



Type No: **TO**

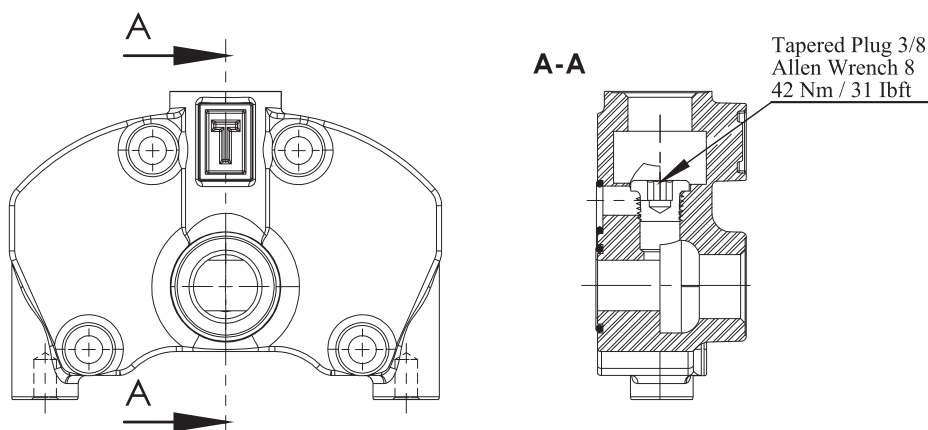


OUTLET COVER - TANK SIDE

Output Cover Options

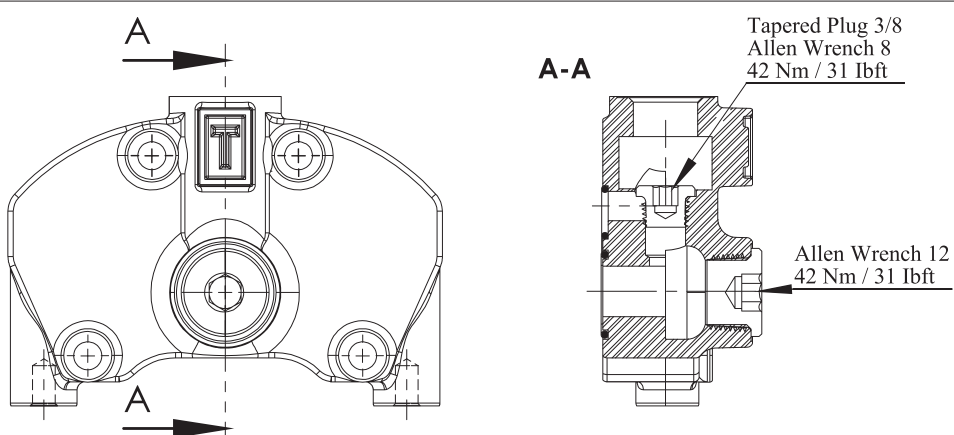
Kit No: **TCO**

Sectional Appearance



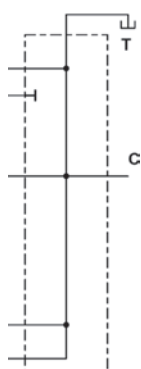
Kit No: **TC**

Sectional Appearance

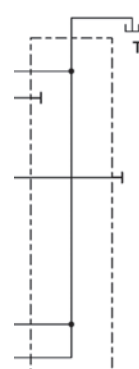


Hydraulic Diagram

Type No: **TCO**



Type No: **TC**



PORT VALVES OPTIONS

Anti Shock Valves

Code:

YAS-1 (T1-100)

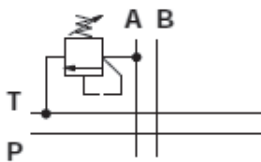
Pressure Setting in Bar

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

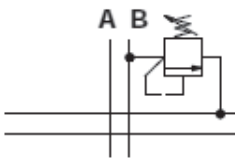
1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

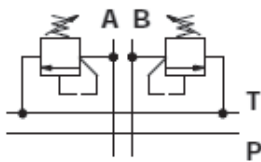
Kit No: YAS1



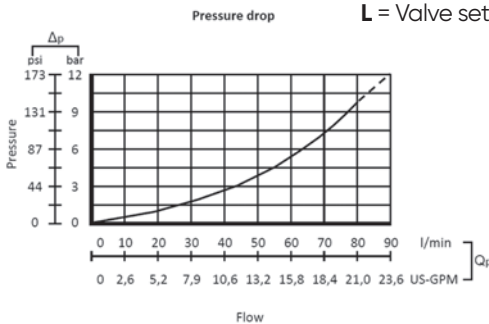
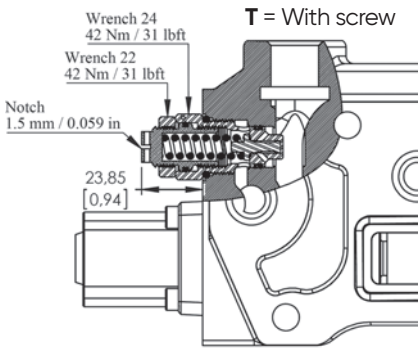
Kit No: YAS2



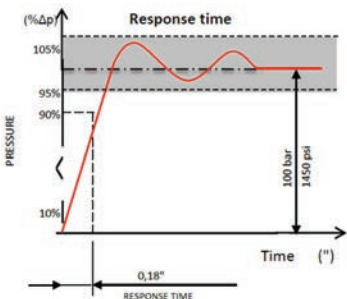
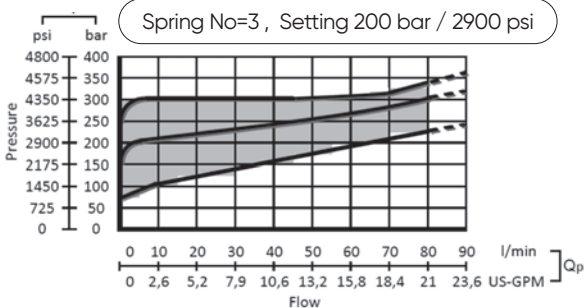
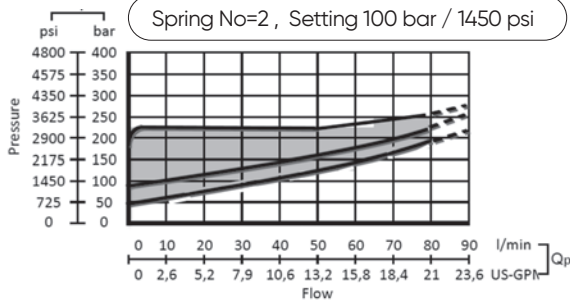
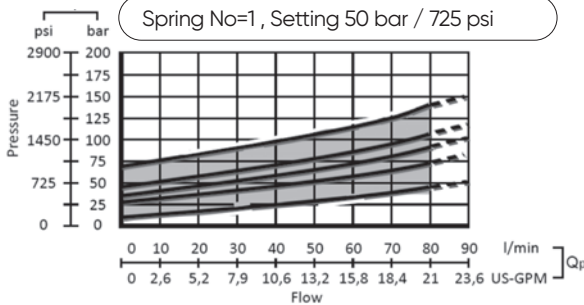
Kit No: YAS3



Adjustment Type on Valve:



Performance Data:



PORT VALVES OPTIONS

Anti shock And Anti Cavitation Valves

Code:

YAA-1 (T1-100)

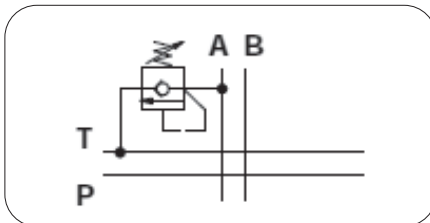
→ Pressure Setting in Bar

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

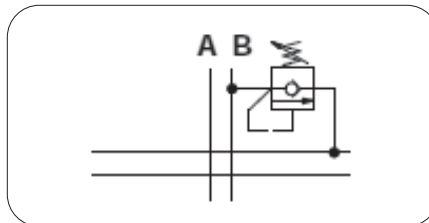
→ 1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

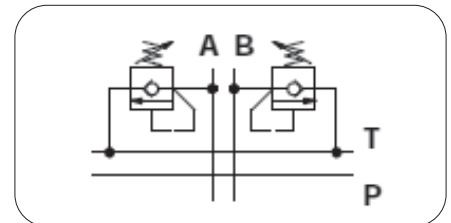
Kit No: **YAA1**



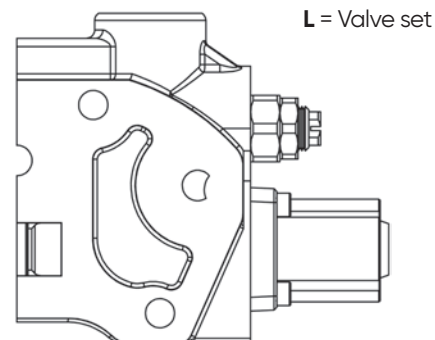
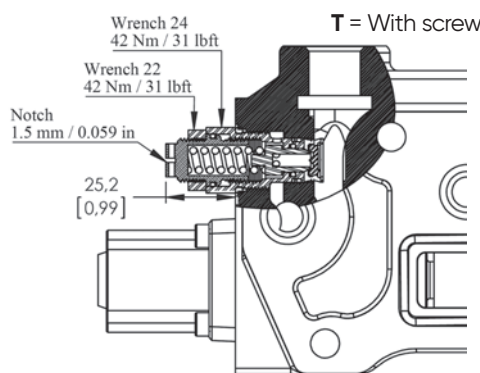
Kit No: **YAA2**



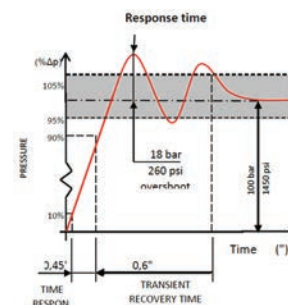
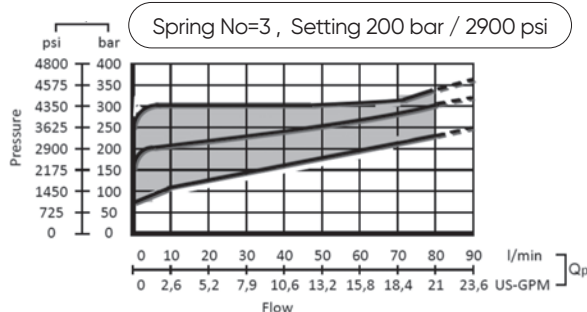
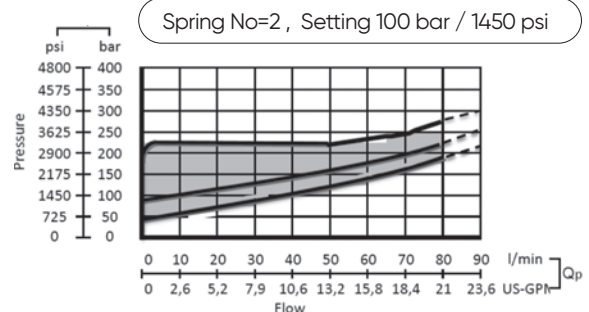
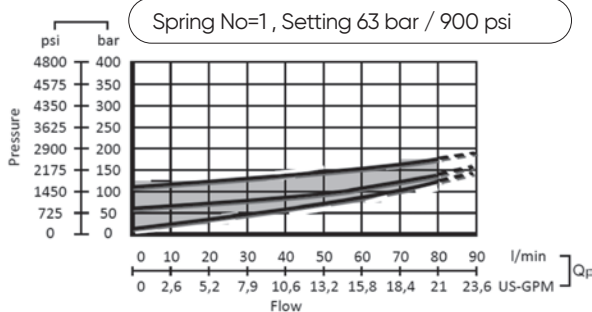
Kit No: **YAA3**



Adjustment Type on Valve:



Performance Data:



PORT VALVES OPTIONS

Anti Cavitation Valves

Code:

YAC-1

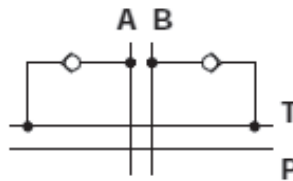
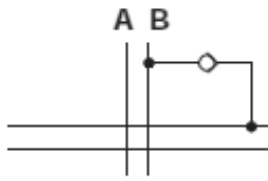
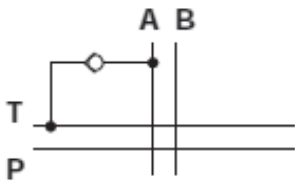
→ 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram

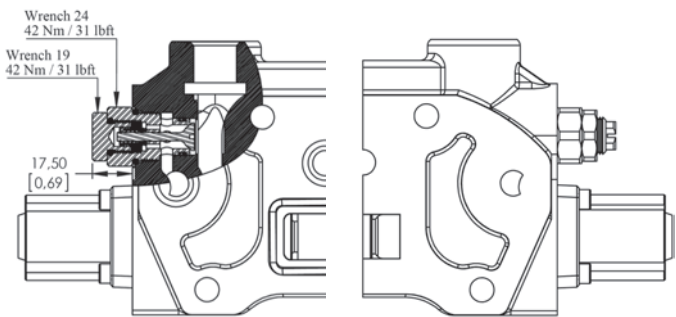
Kit No: YAC1

Kit No: YAC2

Kit No: YAC3



Adjustment Type on Valve And Data:



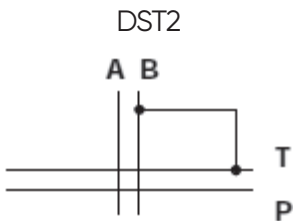
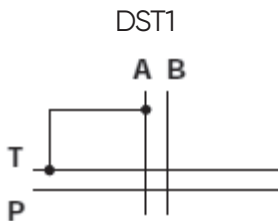
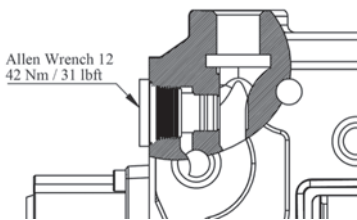
Valve Blaking

Plug with tank connection

DST-1 (1:Mounted port A – 2:Mounted port B)

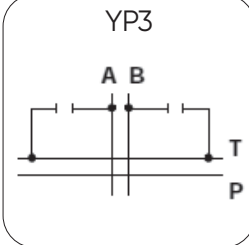
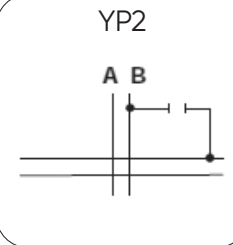
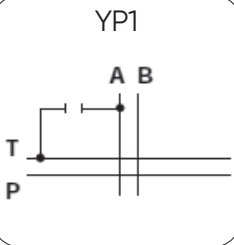
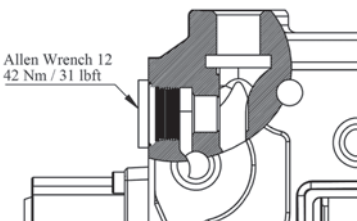
Sectional Appearance

Hydraulic Diagram



Plug

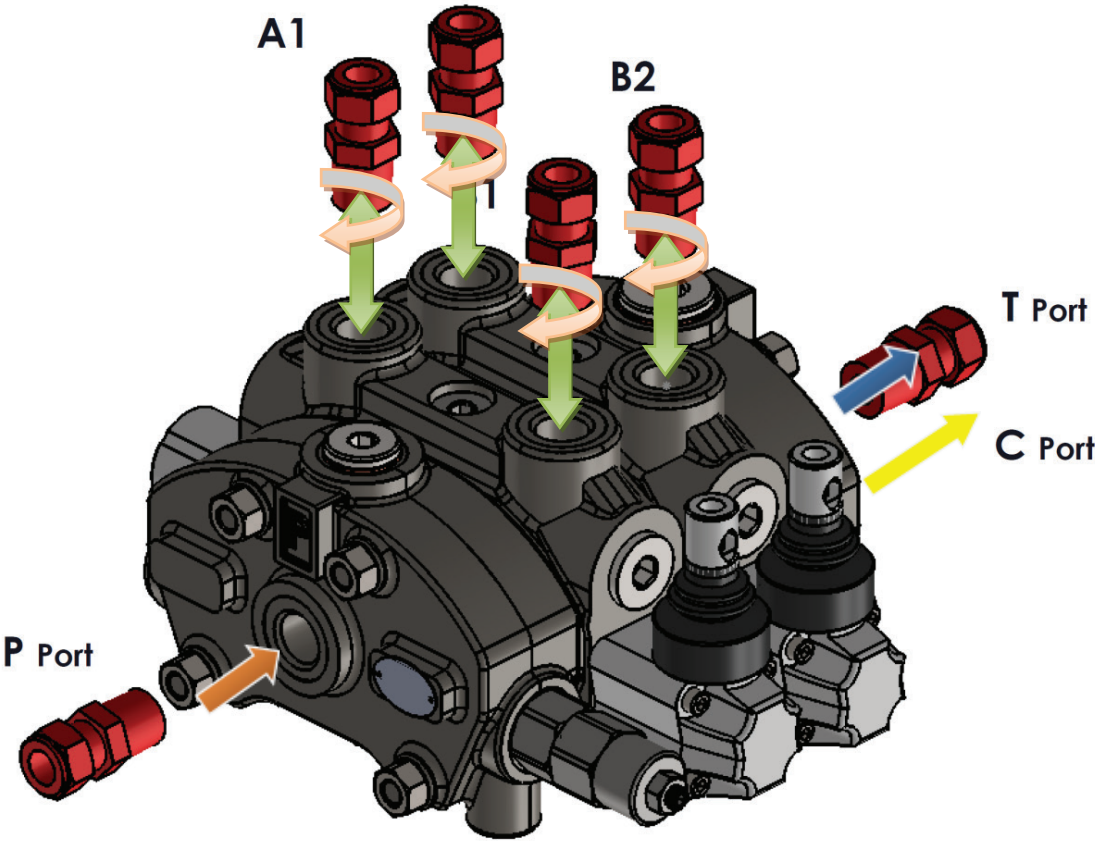
YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)



INSTALLATION AND MAINTENANCE

The GMM-PD120 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

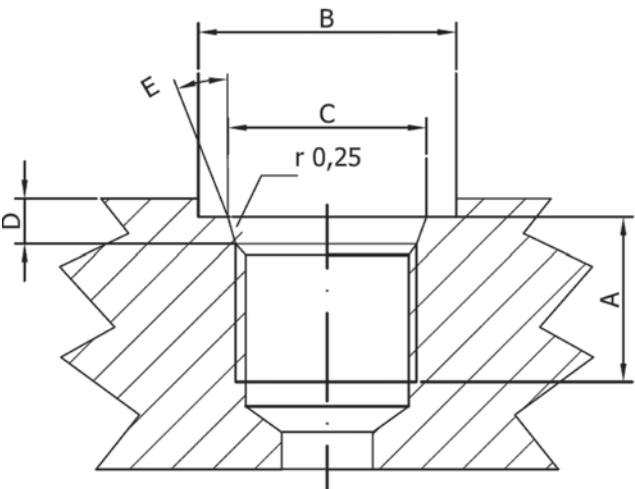
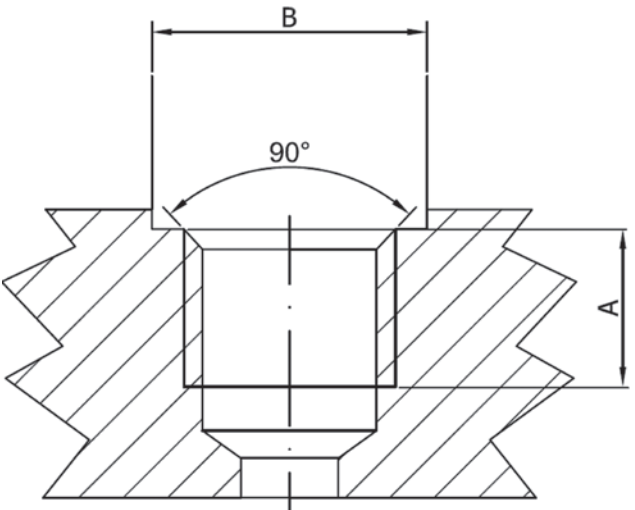
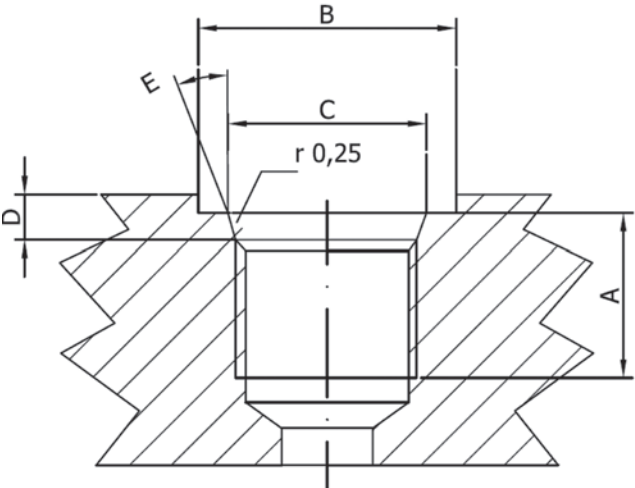
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



Threads Type (Nm / lbft)	P Port	A and B Port	T 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	7/8--16 UNF--2B	11/16--12 UNF--2B
With O--Ring seal	95 / 70	30 / 22.1	95 / 70

TECHNICAL DATA

Ports Dimensional Data



SAE UN-UNF (ISO 725)

Dimensions	SAE UN-UNF (ISO 725)					
	mm	in	7/8-14 UNF SAE10	1"1/16-12 UN SAE12	1"5/16-12 UN 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	BSP (ISO 228)					
	mm	in	G 1/2"	G3/4	G1	
A	16	0,63	18	0,71	20	0,79
B	27	1,06	33	1,30	40	1,57

METRIC (ISO 262)

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



GMM
PD120



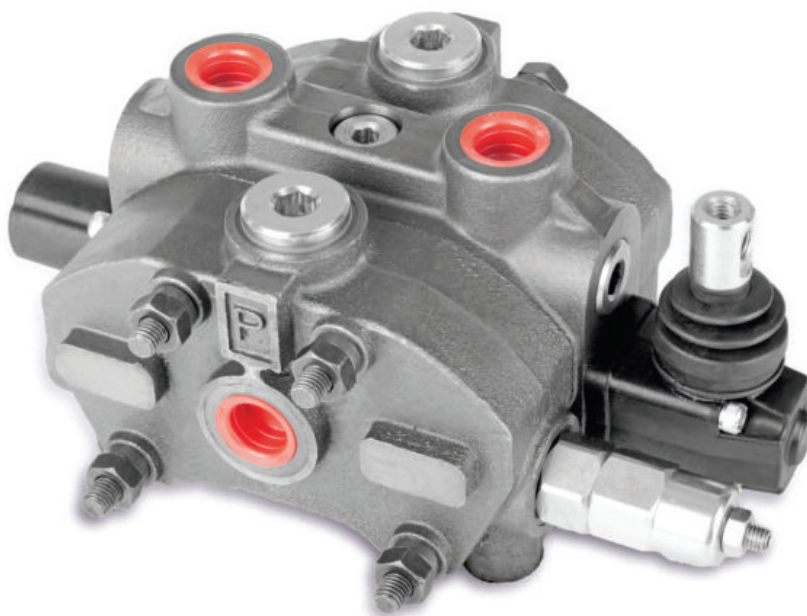


SECTIONAL
VALVES

GMM-PD150

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 (01/2020).

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

WORKING CONDITIONS

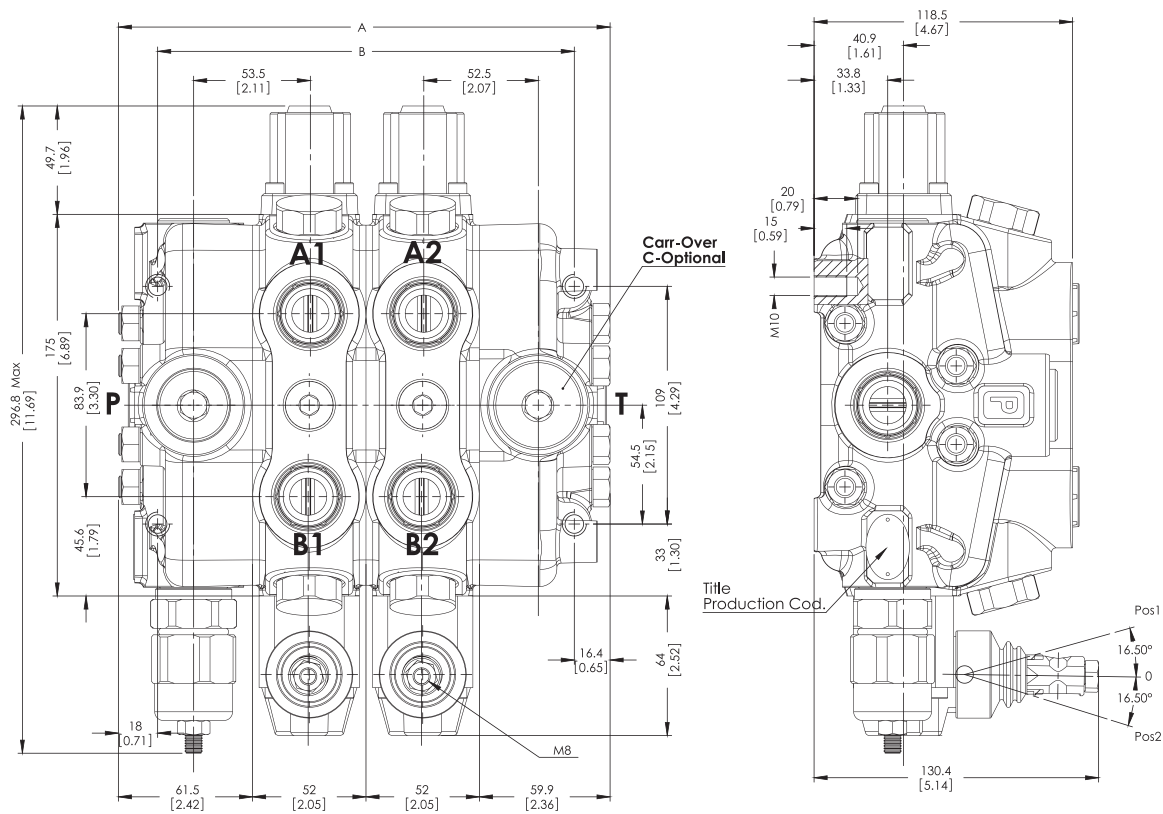
Nominal Flow Rating / Displacement	150 l/min	38 U.S.G.P.M
Maximum Working Pressure (Series Circuit)	210 Bar	3050 PSI
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – 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.
- Optional Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diameter is 20 mm – 0,79 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA



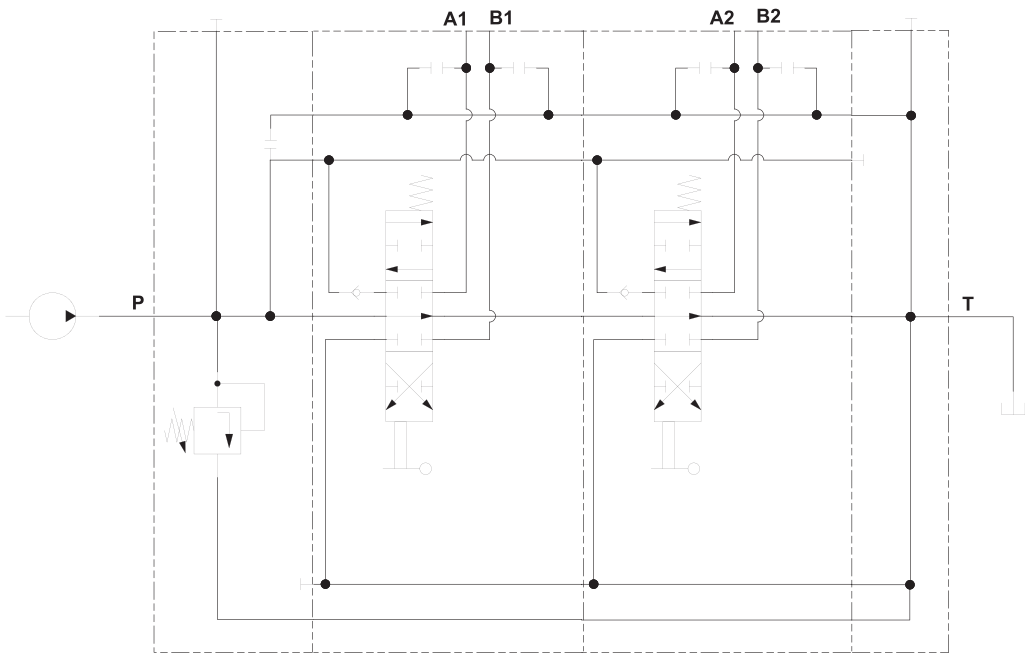
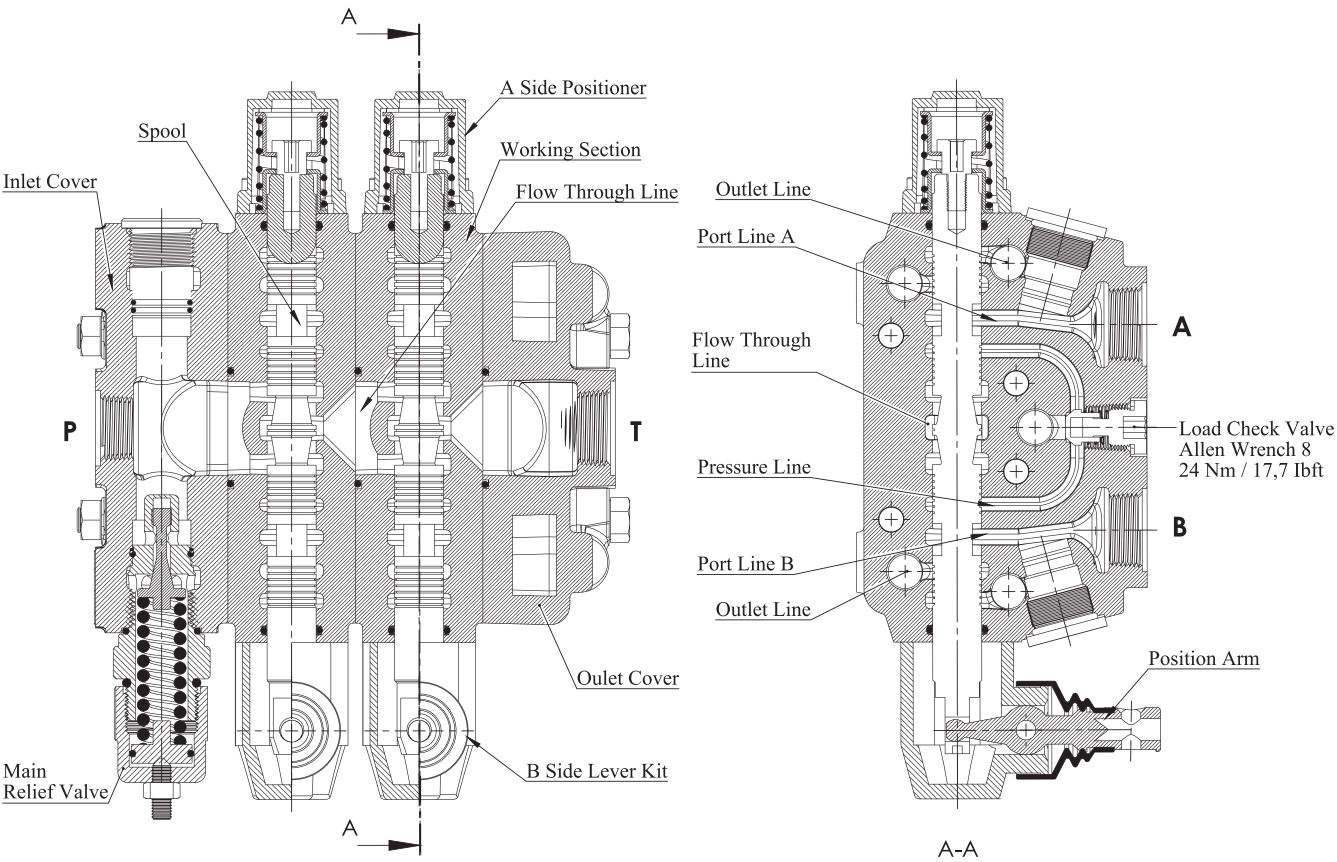
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- PD120-1P	160	6.30	73	2.87	13.46	29.67
GMM- PD120-2P	212.5	8.37	125.5	4.94	19.60	43.21
GMM- PD120-3P	265	10.43	178	7.00	25.74	56.75
GMM- PD120-4P	317.5	12.50	230.5	9.07	31.88	70.29
GMM- PD120-5P	370	14.56	283	11.14	38.02	83.83
GMM- PD120-6P	422.5	16.63	335.5	13.20	44.16	97.37
GMM- PD120-7P	475	18.50	388	14.96	50.30	110.91
GMM- PD120-8P	527.5	20.76	440.5	17.34	56.44	124.45
GMM- PD120-9P	580	22.83	493	19.41	62.58	137.99
GMM- PD120-10P	632.5	24.90	545.5	21.48	68.72	151.53
GMM- PD120-11P	685	26.97	598	23.54	74.86	165.07
GMM- PD120-12P	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

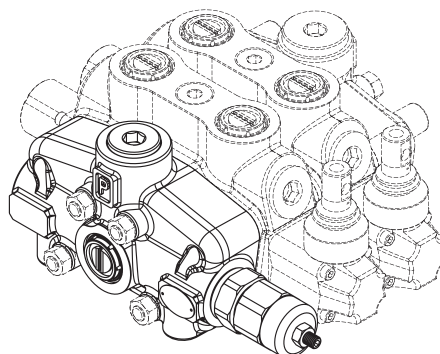


Code: GMM PD150-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

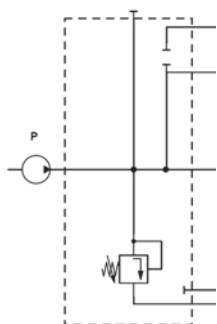
HYDRAULIC CIRCUIT

Inlet Cover – Pump Side

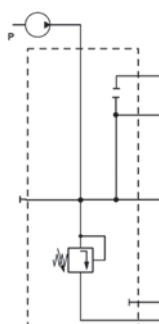
SD – Side inlet with direct pressure relief valve
 TD – Top inlet with direct pressure relief valve
 SP – Side inlet with relief valve blanking plug



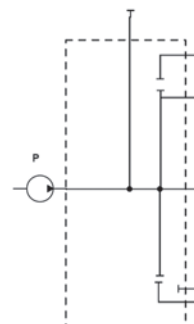
Type = SD



Type = TD

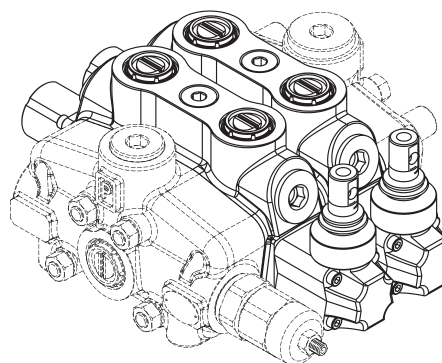


Type = SP

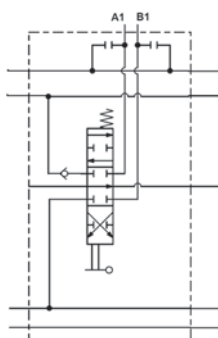


Working Sections

P – Parallel



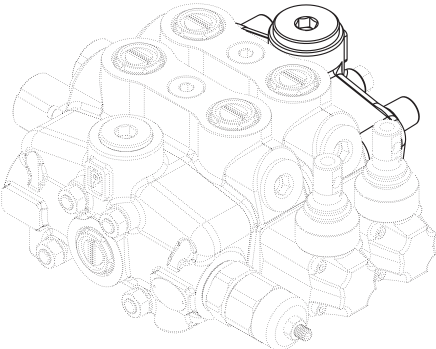
Type = P



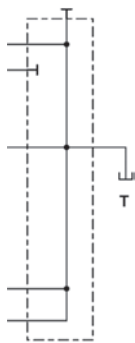
HYDRAULIC CIRCUIT

Outlet Cover (Tank Side)

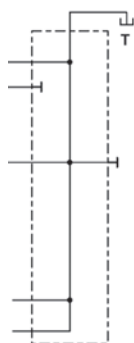
SO - Side outlet
TO - Top outlet
TCO - Top outlet with carry-over
TC - Top outlet with closed centre



Type = SO



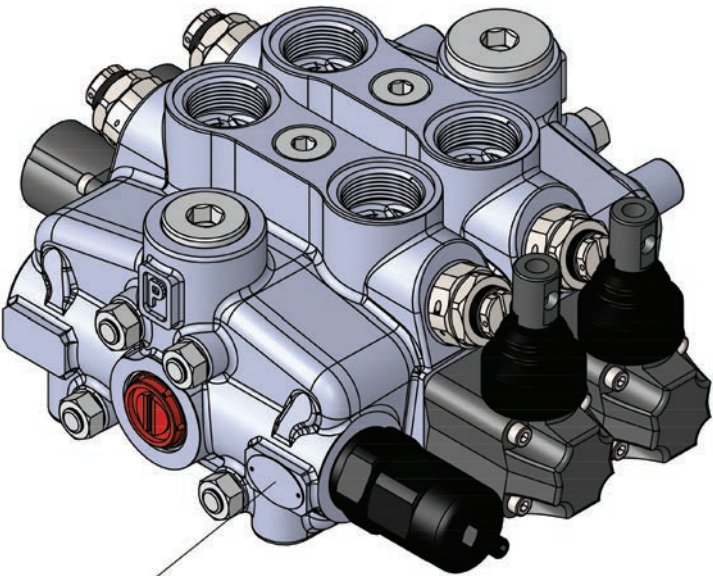
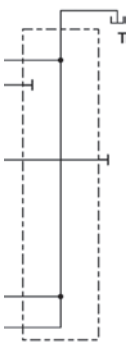
Type = TO



Type = TCO



Type = TC



Valve Type

Production Batch

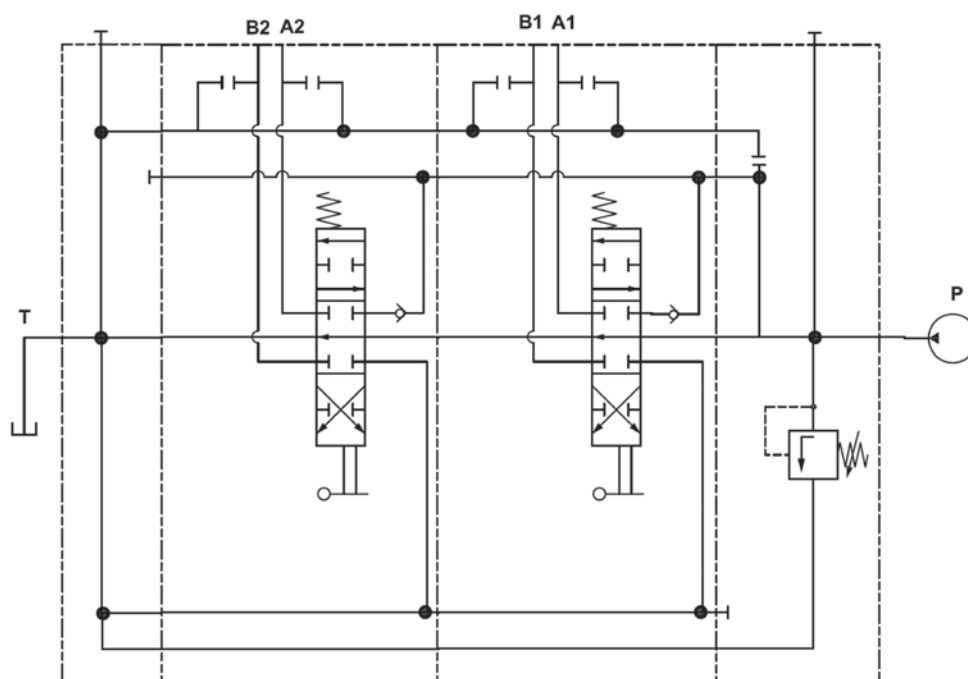
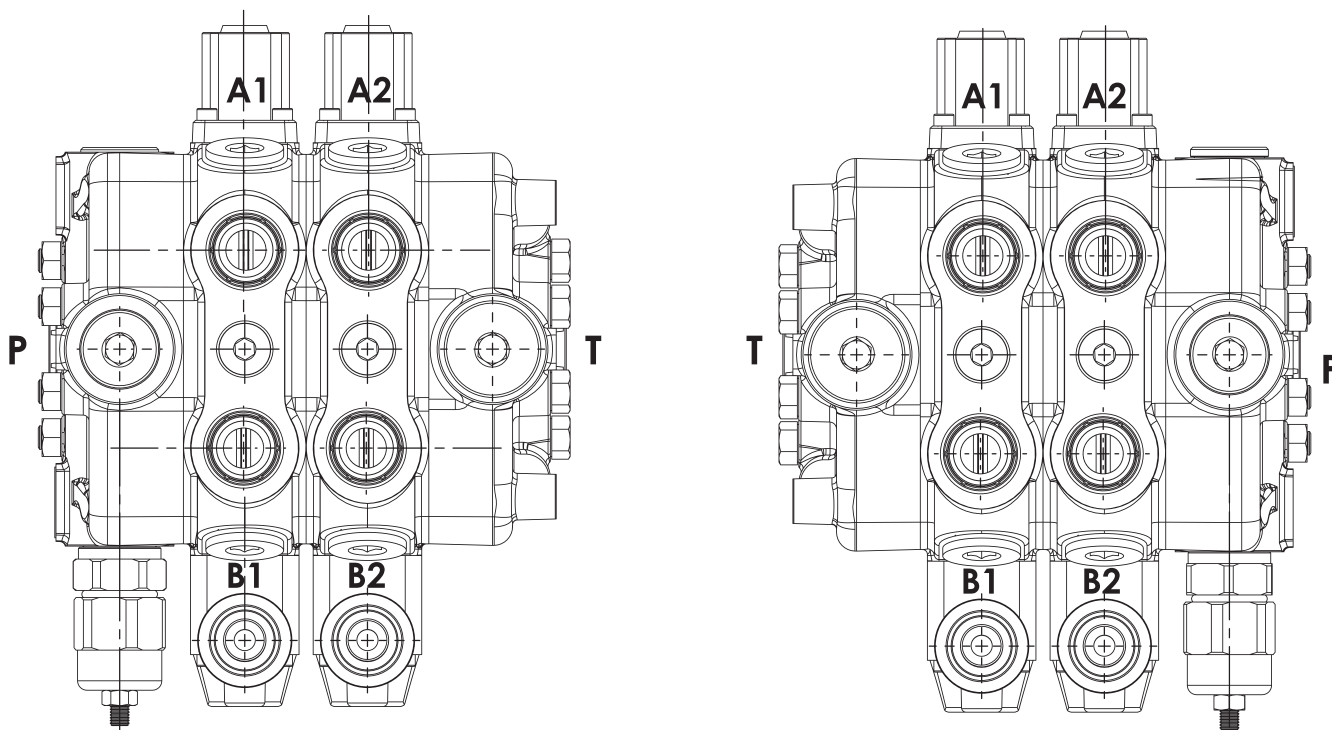
39.10 = Production Year - Week (2010/39)

101149 = Progressive Party Number

HYDRAULIC CIRCUIT

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

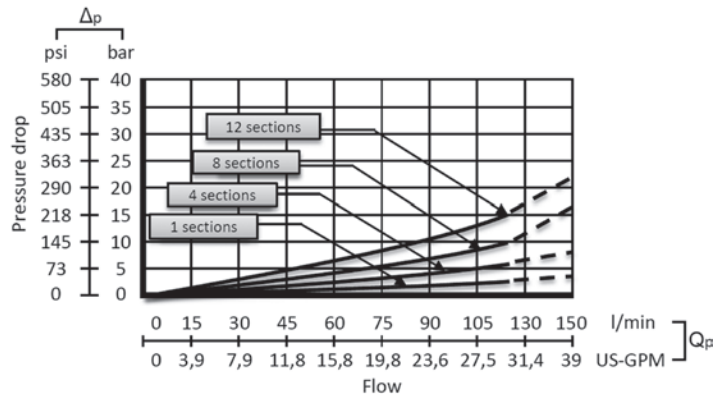
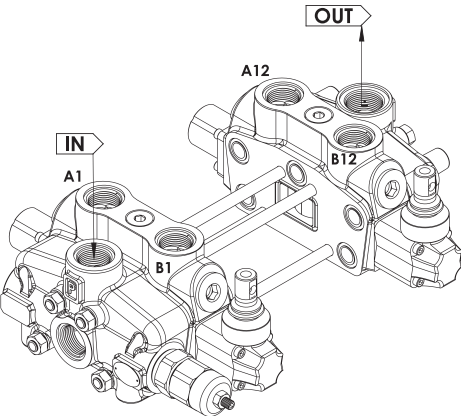
A symmetrical body allows the reverse assembly of spool.



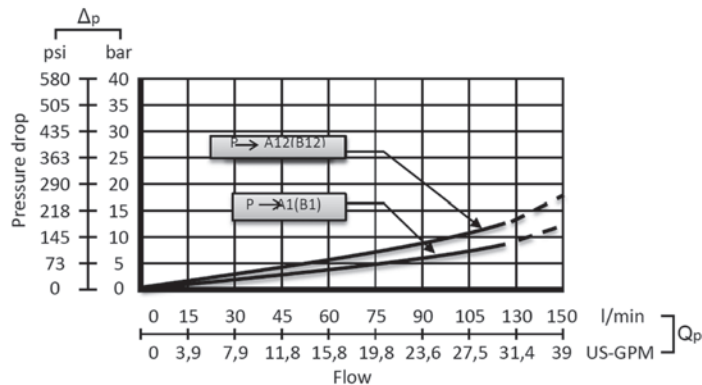
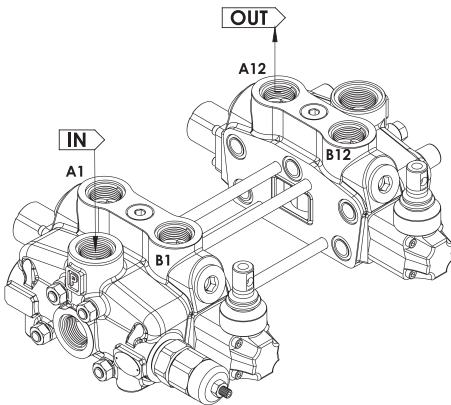
Code: GMM PD150-2P (SD(RA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 /

PERFORMANCE DATA AND CURVE

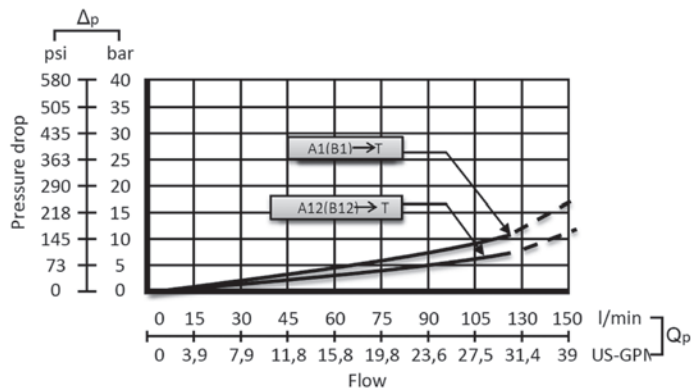
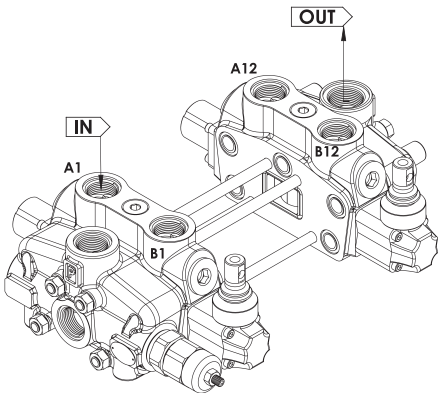
Open Center - Pressure Drop (P-T)



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



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

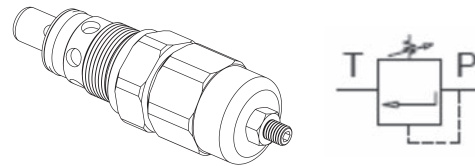


INLET RELIEF OPTIONS

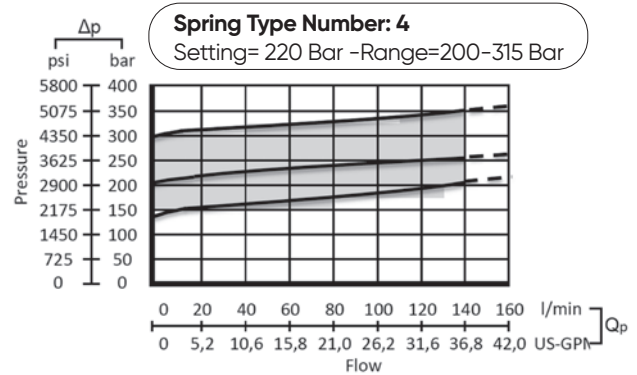
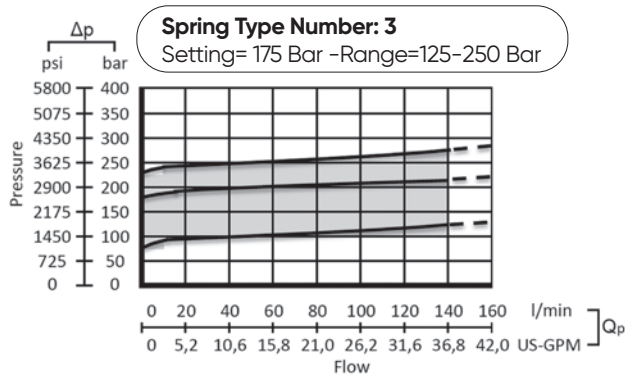
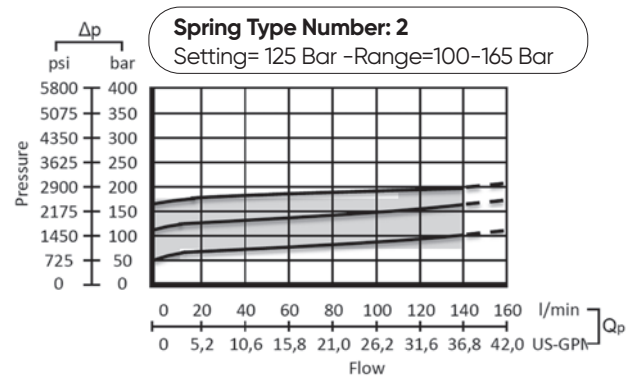
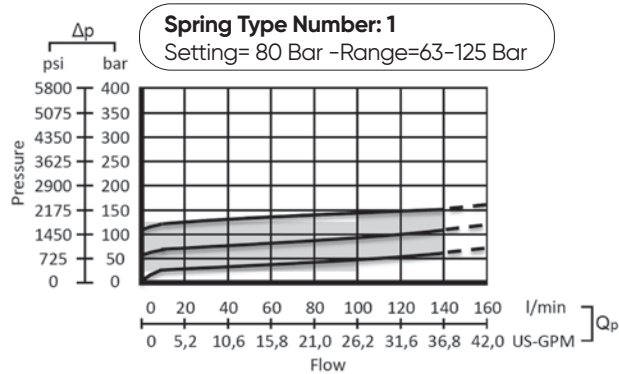
Direct Pressure Relief Valve

Code:

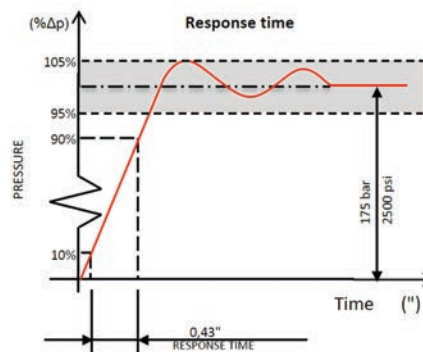
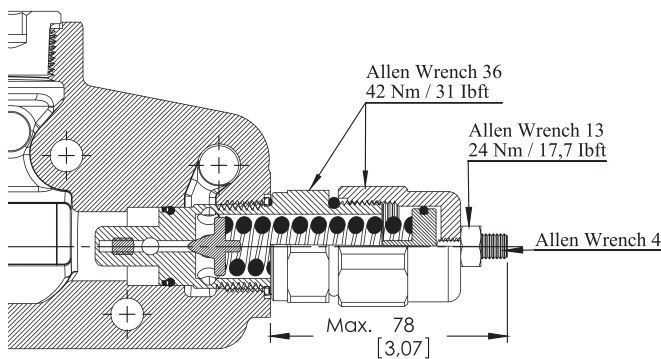
SMR2 – 125



Performance Data



Adjustment Type on Valve



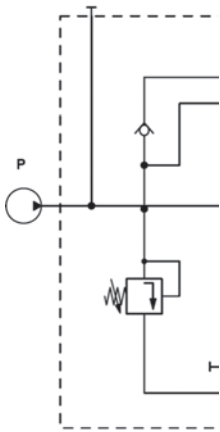
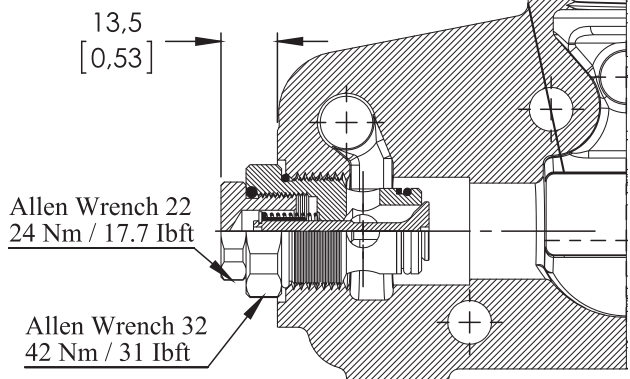
INLET RELIEF OPTIONS

Direct Pressure Relief Valve

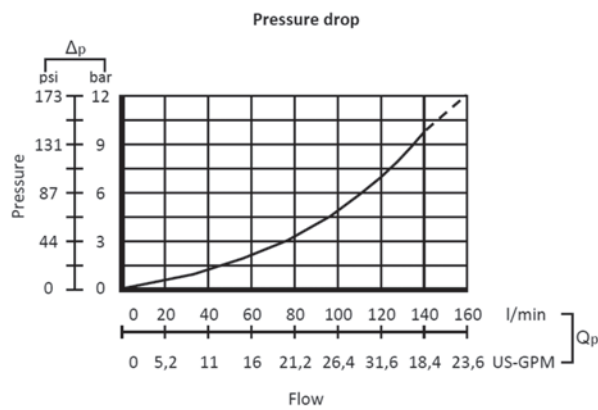
Kit No: PAC

Sectional Appearance

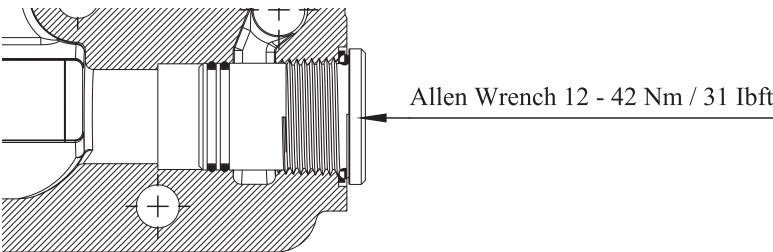
Diagram



Performance Data

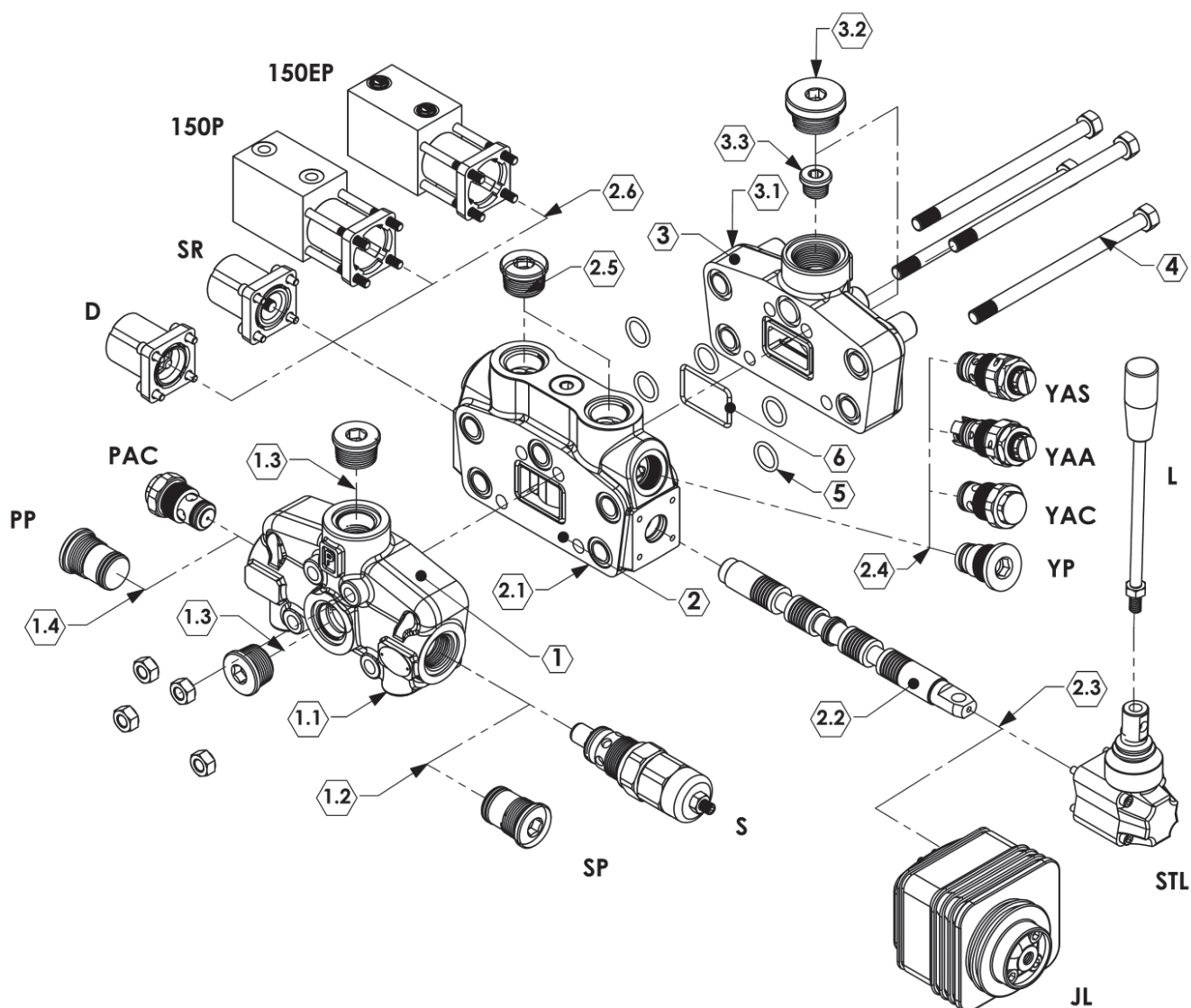
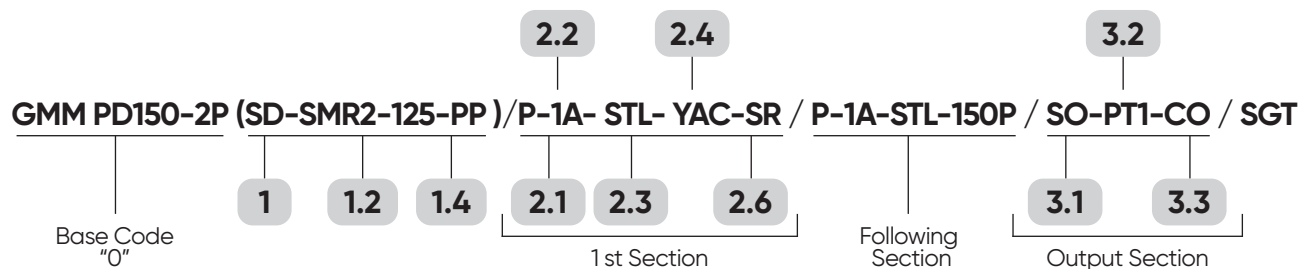


Relief Blanking Plug - SP



ORDERING CODES

Order Example



ORDERING CODES

1- Inlet Section

GMM 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)

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)

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=120mmxM10) - (7L040100)
JL = Joystick lever for two sections operation (5JL 080100)
STL = Standard Lever - (23STL150100)
HL = Remote Cable Kit - (80HL80100)

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)

100P=ON/OFF Pneumatic - (2645P150100)

100EP=12 VDC ON/OFF electro-pneumatic
(26150EP150112)

100EH= 12 VDC/24 VDC ON/OFF electro-hydraulic
(36150EH100112)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS150100)

3.2 Output Plug

PT1 =G1 Top and Side output (32PT1150100)

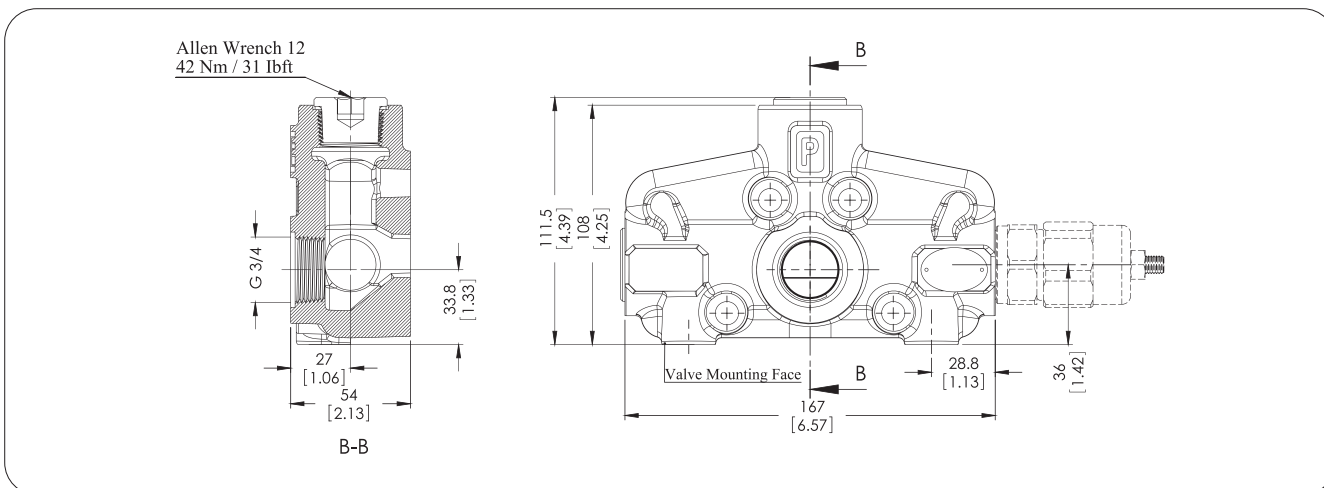
3.3 Circuits Options

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

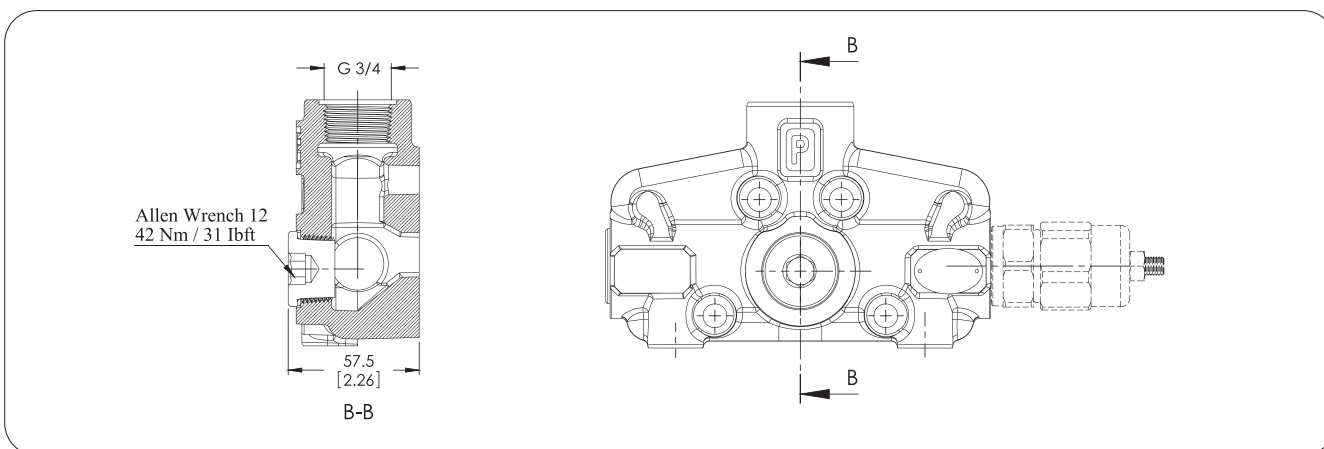
INLET COVER- PUMP SIDE
LH Inlet Valve Options

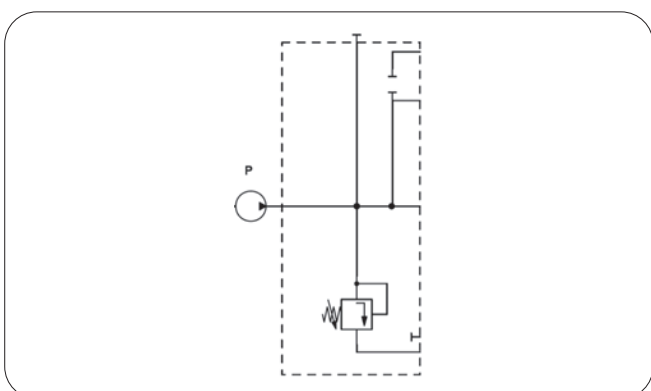
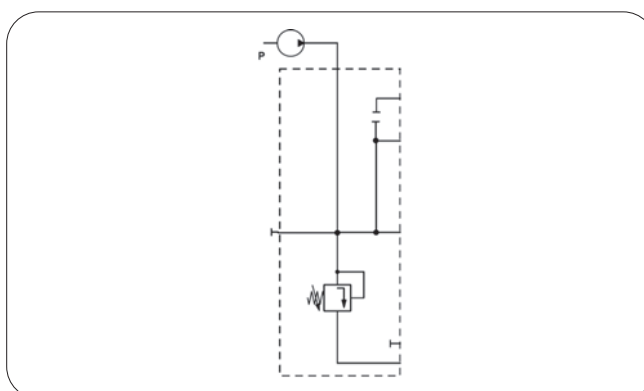
Type No: **SD**

Sectional Appearance


Type No: **TD**

Sectional Appearance


Hydraulic Diagram

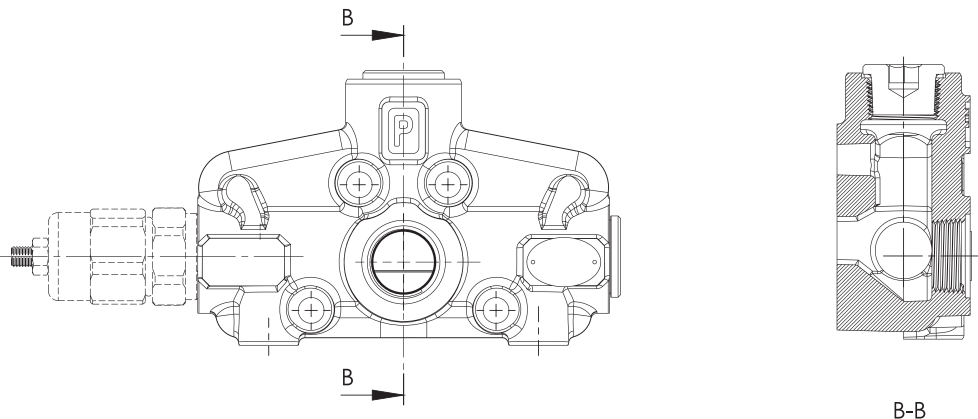
Type No: **SD**

Type No: **TD**


INLET COVER- PUMP SIDE

RH Inlet Valve Options

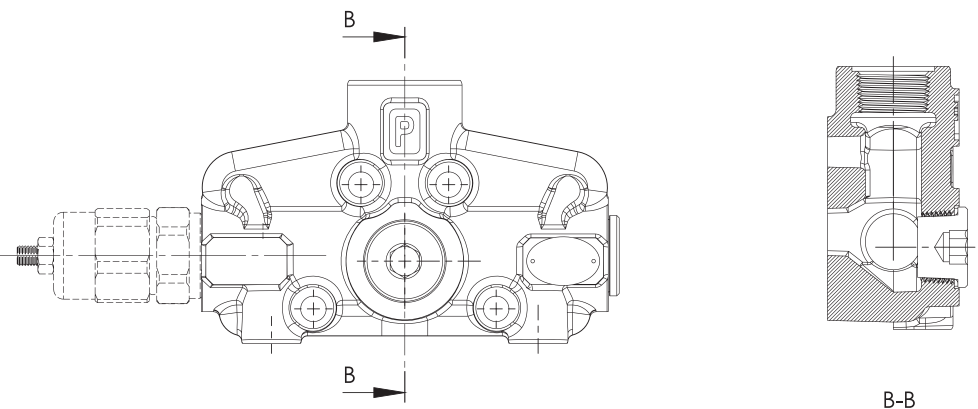
Type No: RA

Sectional Appearance



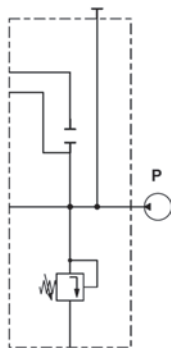
Type No: RB

Sectional Appearance

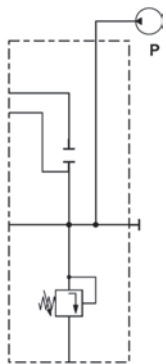


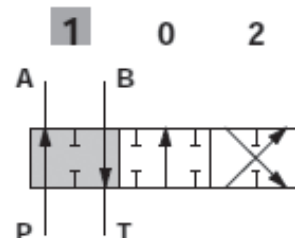
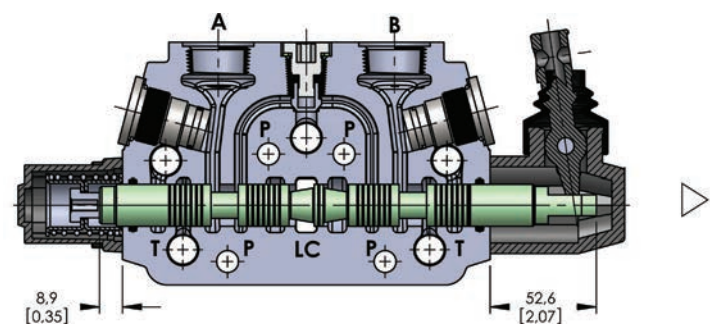
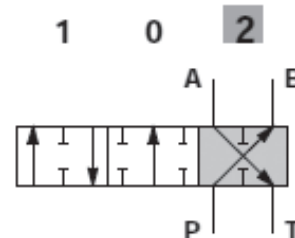
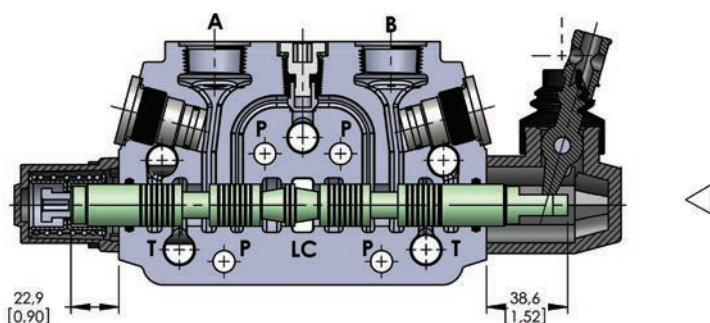
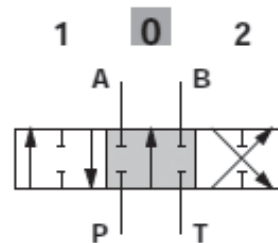
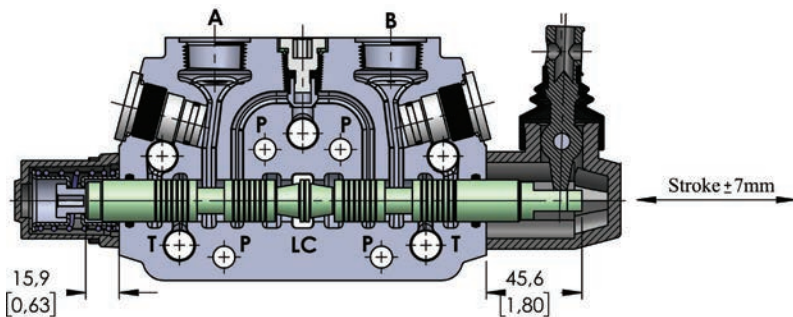
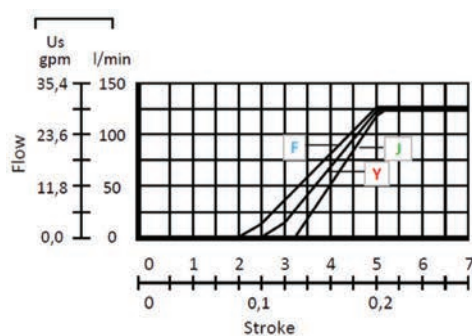
Hydraulic Diagram

Type No: RA

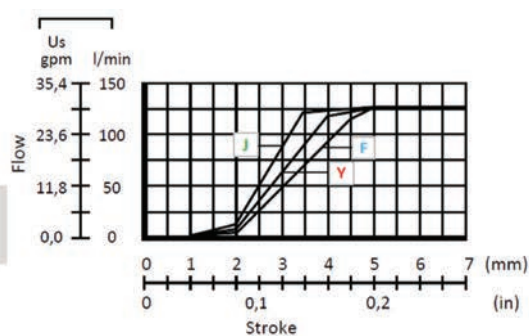


Type No: RB



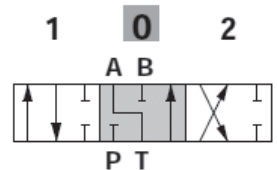
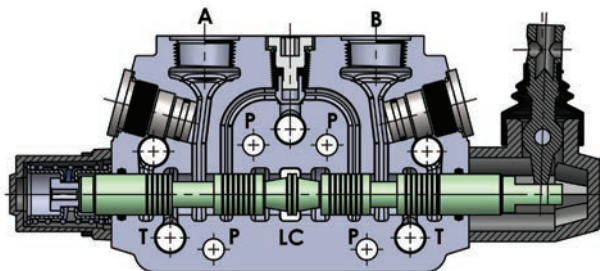
SPOOL OPTIONS
Spool Type - 1A

Performance Curve And Data


Q_{in} = 150 l/min
 F P (on ports) = 63bar / 900 psi
 Y P (on ports) = 100bar / 1450 psi
 J P (on ports) = 250bar / 3600 psi

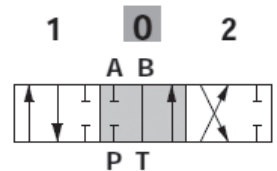
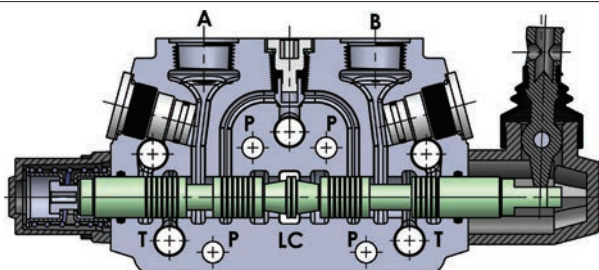


SPOOL OPTIONS

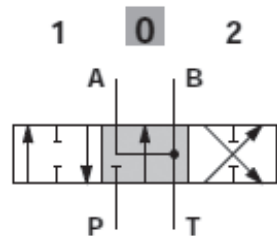
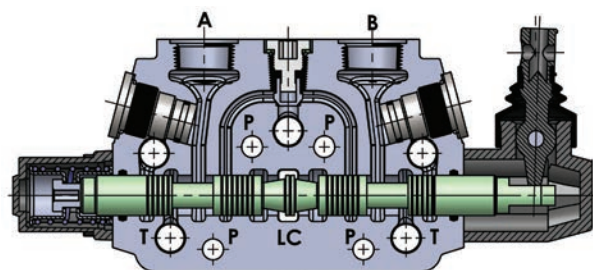
Spool Type - 2A



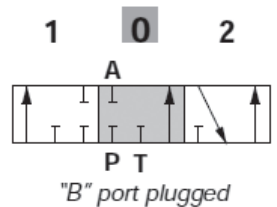
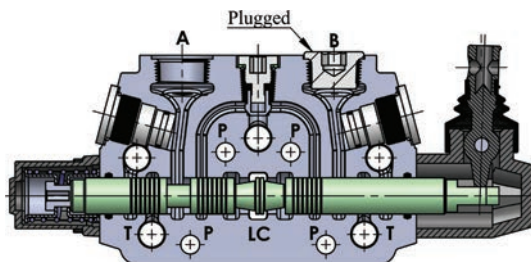
Spool Type - 3A



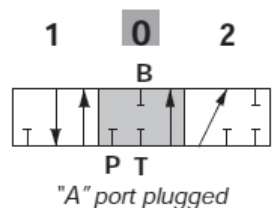
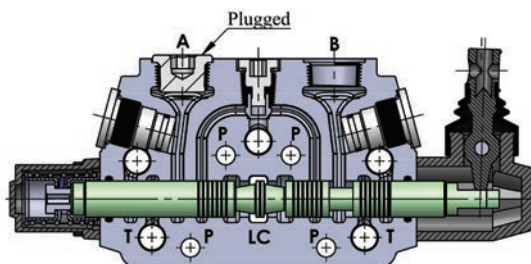
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

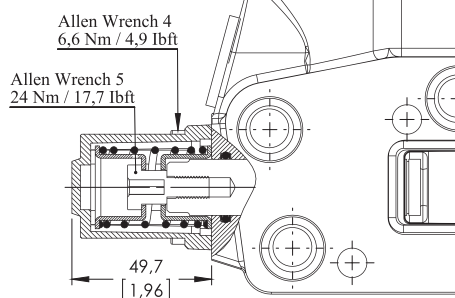


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



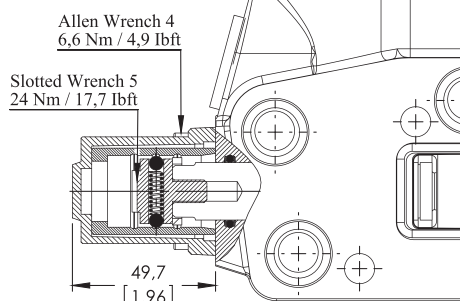
Diagram



With Detent

Kit No: **D**

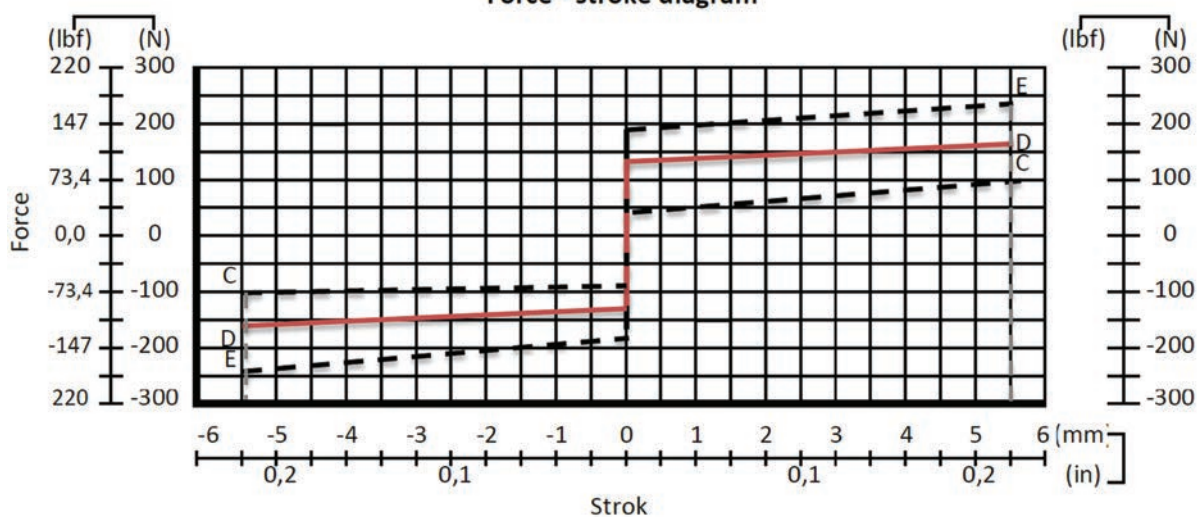
Sectional Appearance



Diagram



Force - stroke diagram

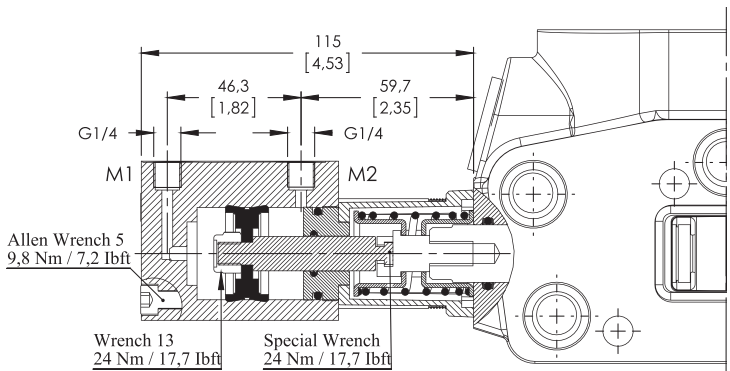


SPOOL POSITIONERS – SIDE OF RETURN

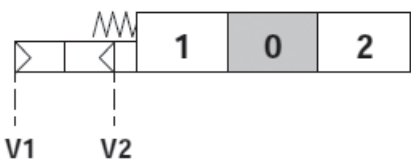
ON/OFF Pneumatic Control

Kit No: 150P

Sectional Appearance



Diagram



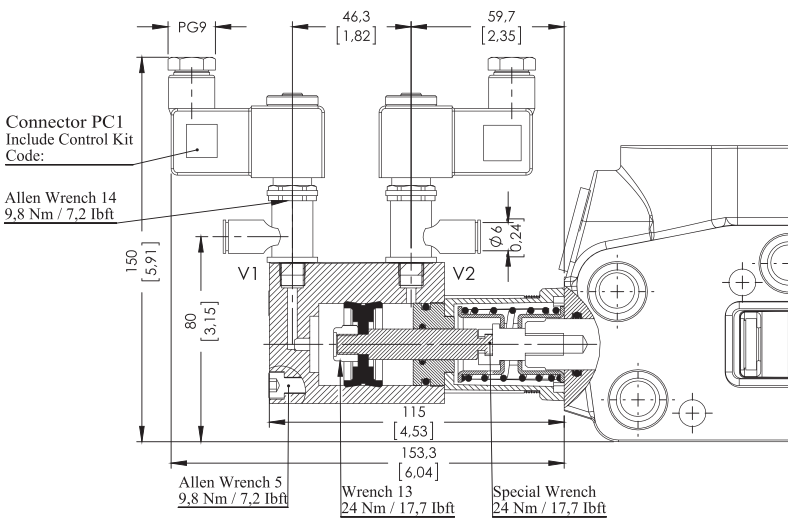
Operating Features

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

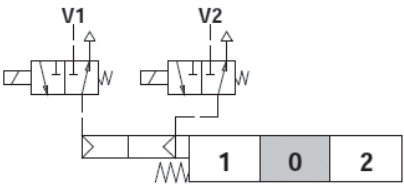
ON/OFF Electro-Pneumatic Control

Kit No: 150EP

Sectional Appearance



Diagram



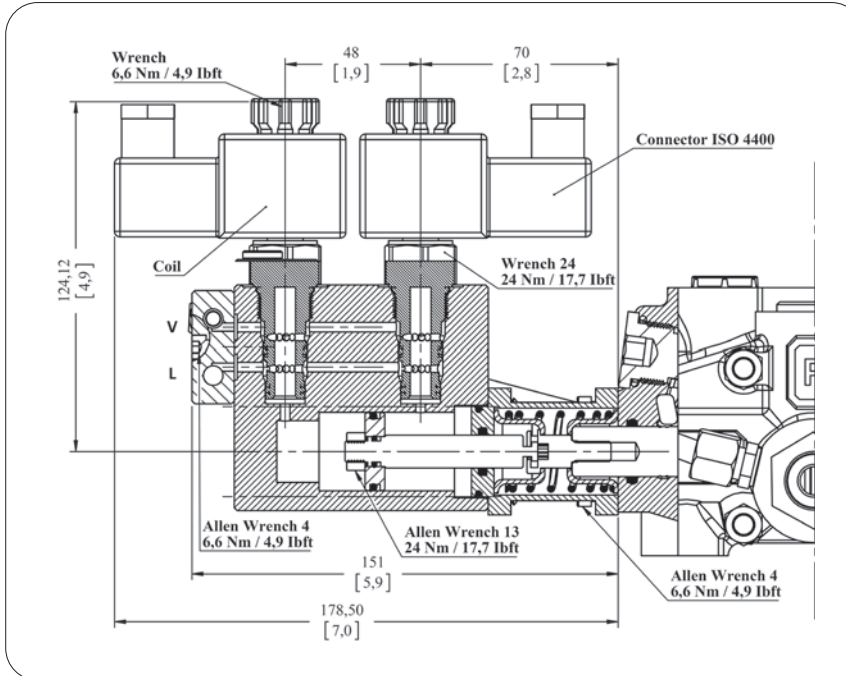
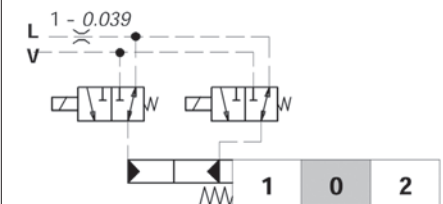
Operating Features

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 RETURN
ON/OFF Electro - Hydraulic Control
Kit No: 150EH
Sectional Appearance

Diagram

Operating Features

Pilot Pressure: 10 Bar / 145 Psi
: 50 Bar / 725 Psi
 Max back pressure on drain L.....: 25 Bar / 360 Psi

Solenoid Operating Features

Coil Connection.....: ISO 4400
 Nominal voltage.....: 12 VDC / 24 VDC
 Power rating.....: 21 W
 Duty cycle.....: %100
 Protection type.....: IP 65
 Nominal voltage tolerance.....: ±10
 Max temperatures.....: 100 C°
 Stroke.....: ±5,5 mm

ORDER CODE
External Pilot Collector

COL 11 - 10COL1001 – Kit For Section 1
 COL 12 - 10COL1001 – Kit For Section 2
 COL 13 - 10COL1001 – Kit For Section 3
 COL 14 - 10COL1001 – Kit For Section 4
 COL 15 - 10COL1001 – Kit For Section 5
 COL 16 - 10COL1001 – Kit For Section 6
 COL 17 - 10COL1001 – Kit For Section 7
 COL 18 - 10COL1001 – Kit For Section 8

Standard Pilot Collector

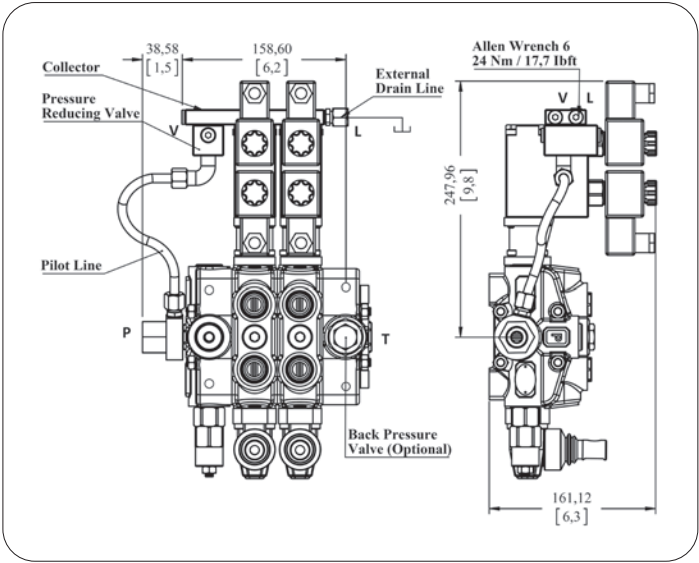
COL 21 - 10COL2001 – Kit For Section 1
 COL 22 - 10COL2001 – Kit For Section 2
 COL 23 - 10COL2001 – Kit For Section 3
 COL 24 - 10COL2001 – Kit For Section 4
 COL 25 - 10COL2001 – Kit For Section 5
 COL 26 - 10COL2001 – Kit For Section 6
 COL 27 - 10COL2001 – Kit For Section 7
 COL 28 - 10COL2001 – Kit For Section 8

SPOOL POSITIONERS – SIDE OF RETURN

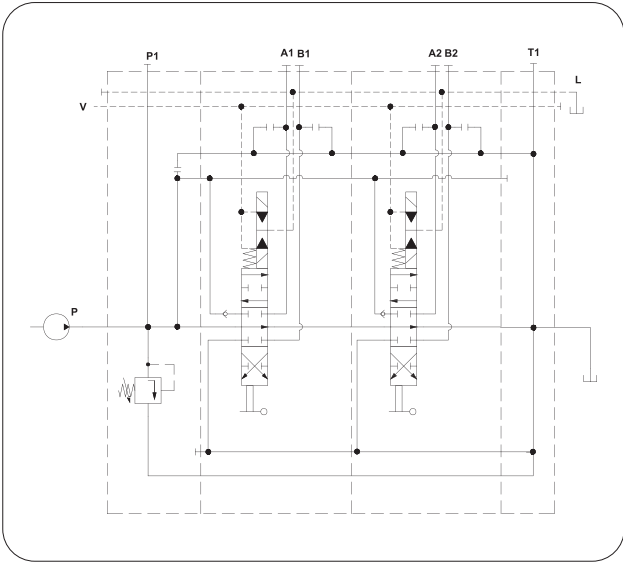
ON/OFF Electro - Hydraulic Control Connections

Connection Type 1: Collector kit for external pilot and drain

Sectional Appearance



Diagram



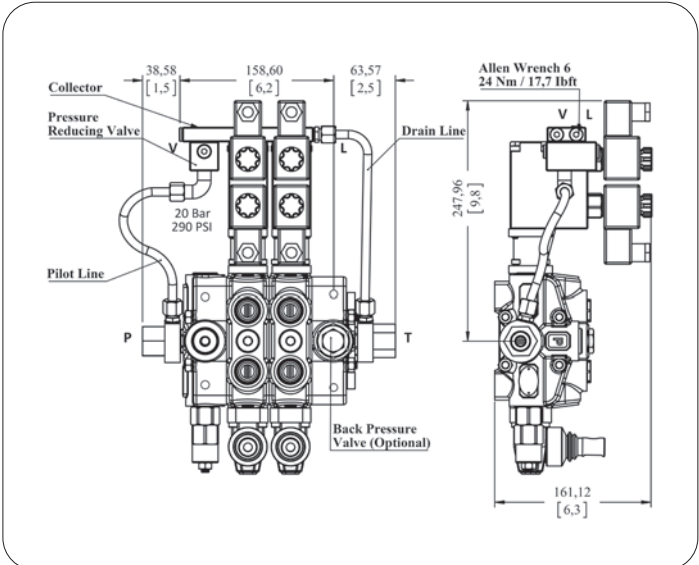
Operating Features

External Pressure Reducing Valve: 20 Bar / 290 Psi (For V line)

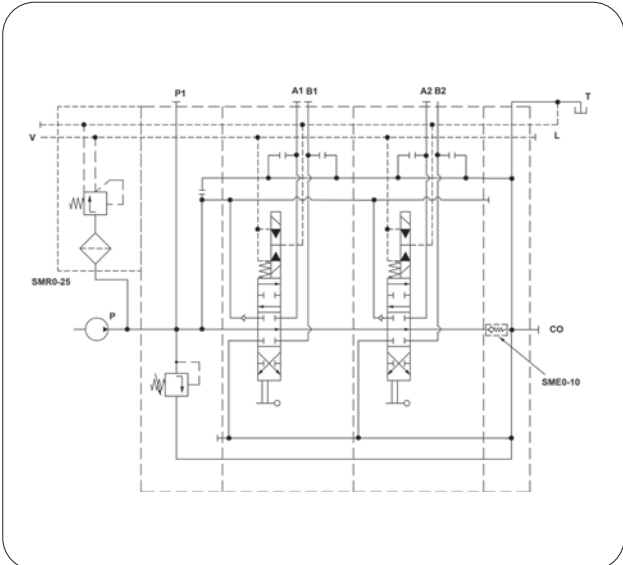
Code= GMM PD150-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-150EH/ P-1A-STL-150EH (SMR0 -COL12-12V)/ SO-PT1 / SGT

Connection Type 2: Collector kit with pilot and drain lines

Sectional Appearance



Diagram



SMR 0-25 Valve Operating Features (Pressure reducing valve)

Outlet Pressure: 20 Bar / 290 Psi

Max. Flow.....: 8 l/min

Filtration: 80 µ

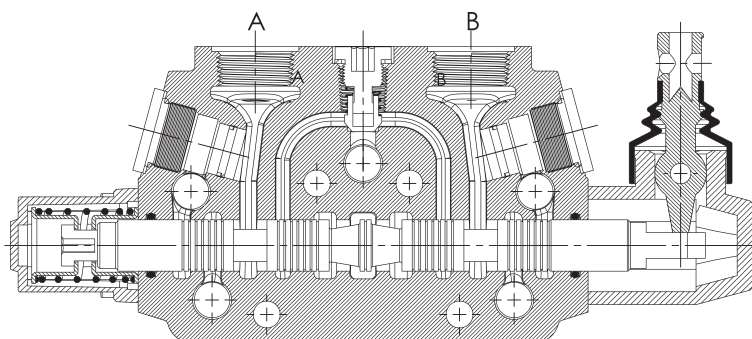
Code= GMM PD150-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-150EH/ P-1A-STL-150EH (SMR0 -COL22-12V)/ SO-PT1 / SGT

WORKING SECTION KIT

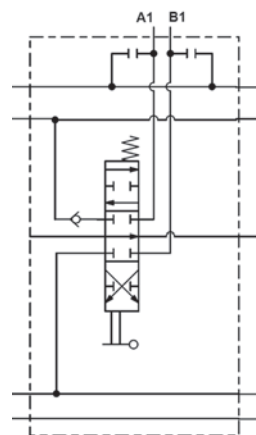
With Port Valves Type

Kit No: **AA**

Sectional Appearance



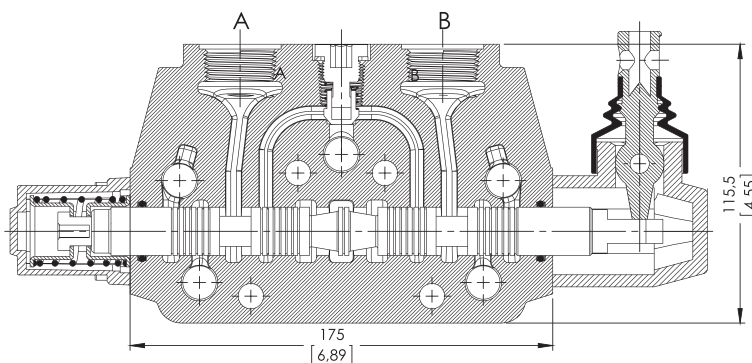
Diagram



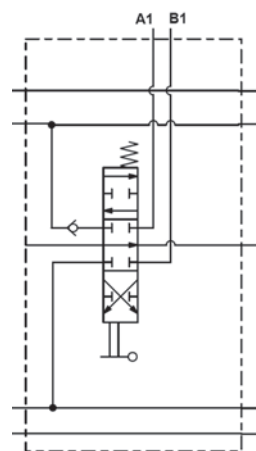
With Port Valves Type

Kit No: **AB**

Sectional Appearance



Diagram



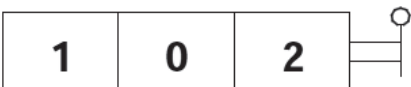
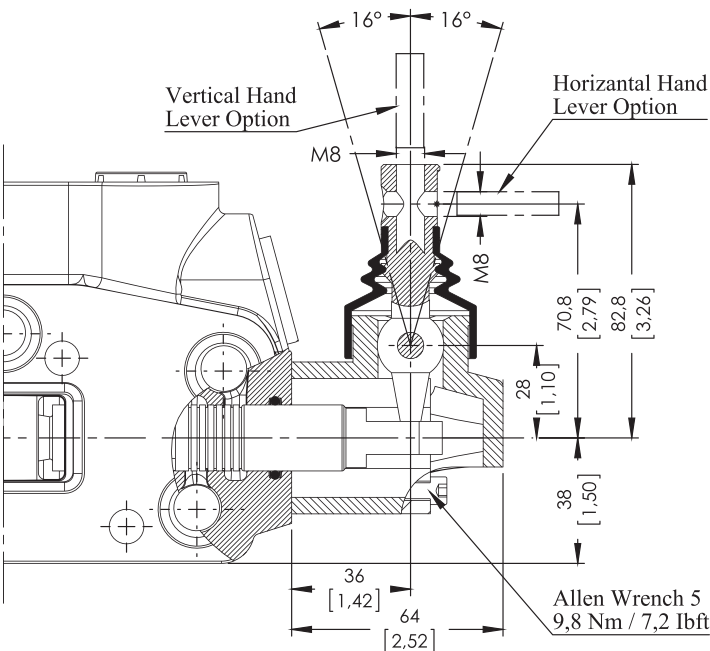
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: **STL - L0**

Sectional Appearance

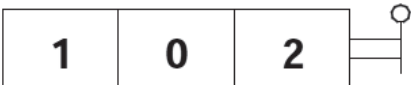
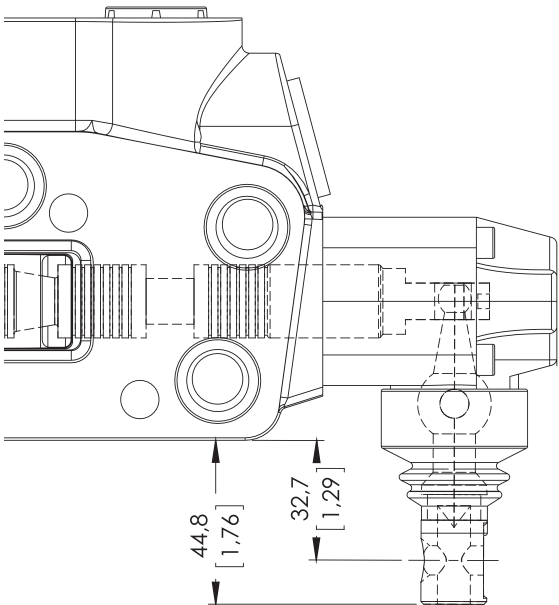
Diagram



Kit No: **STL - L180**

Sectional Appearance

Diagram



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

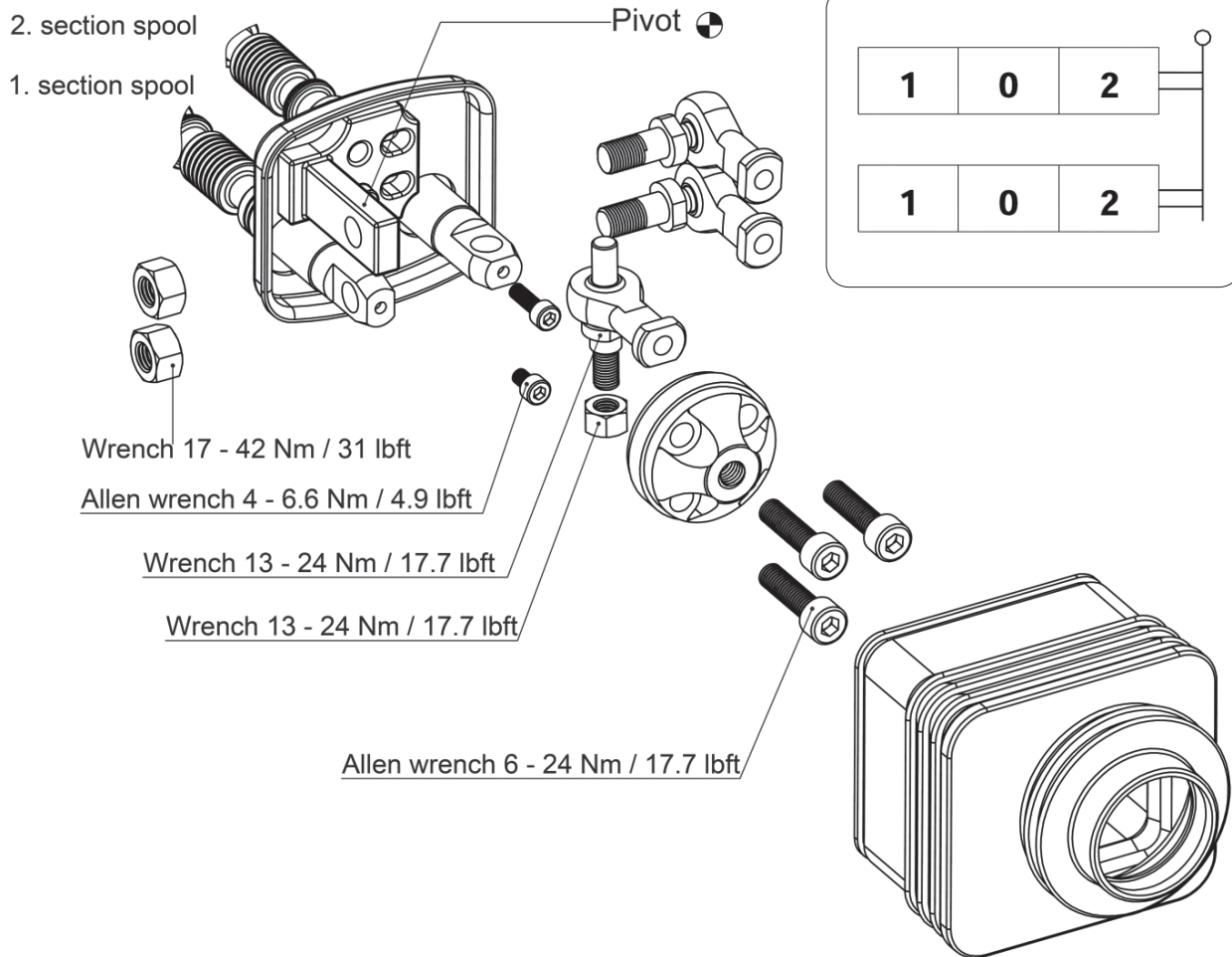
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

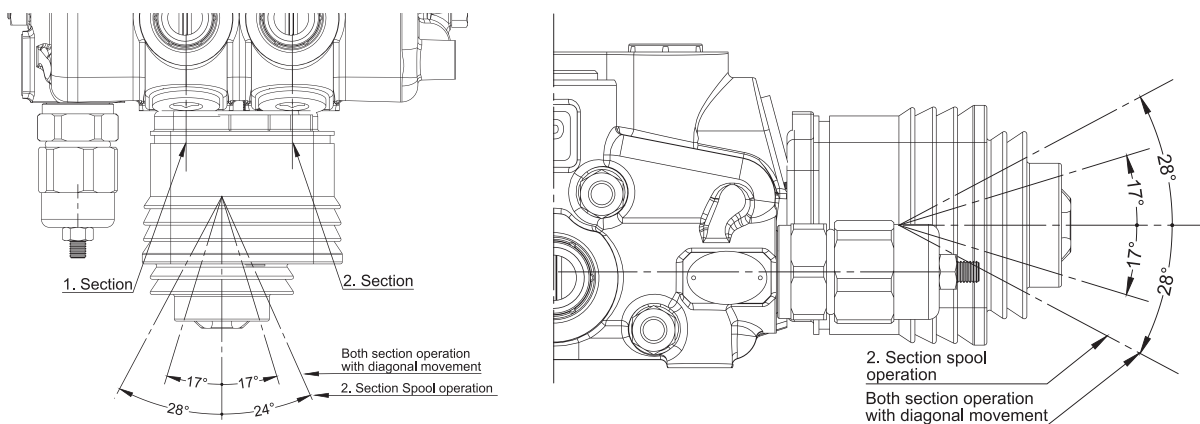
Kit No: **JL**

Exploded View

Diagram



Operation Angle:



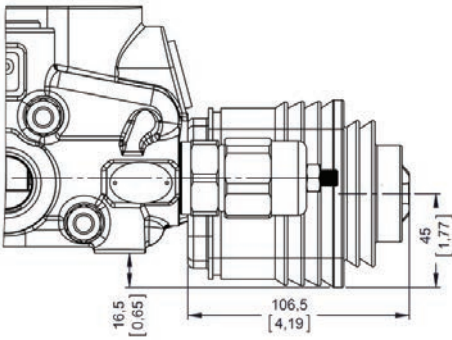
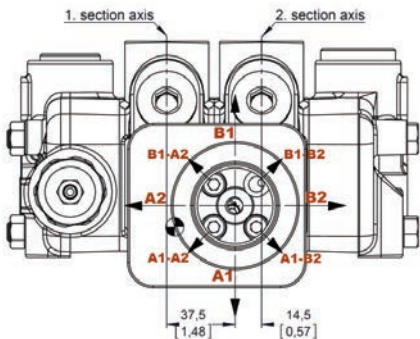
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement scheme

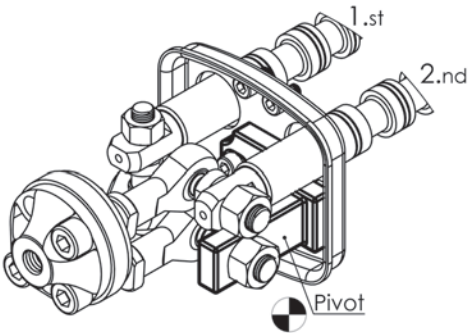
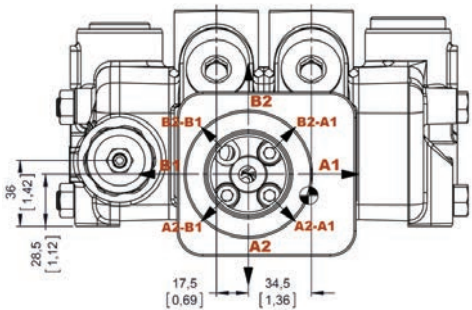
Type No: **JL1**

Application: Pivot placed down on the Left



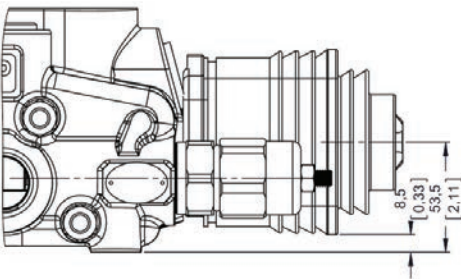
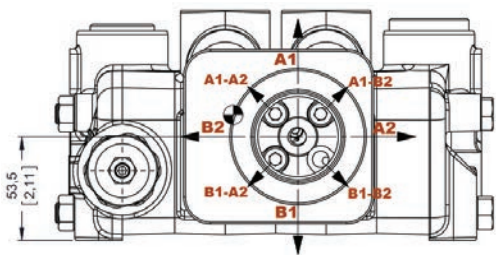
Type No: **JL2**

Application: Pivot placed down on the right



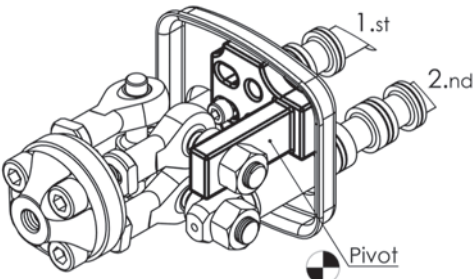
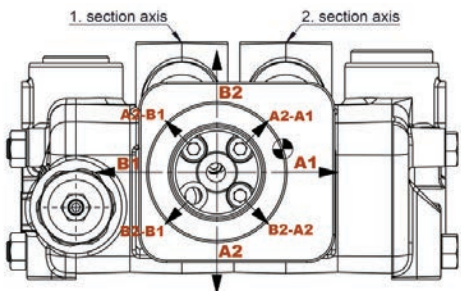
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right



SPOOL POSITIONERS – SIDE OF LEVER CONTROL

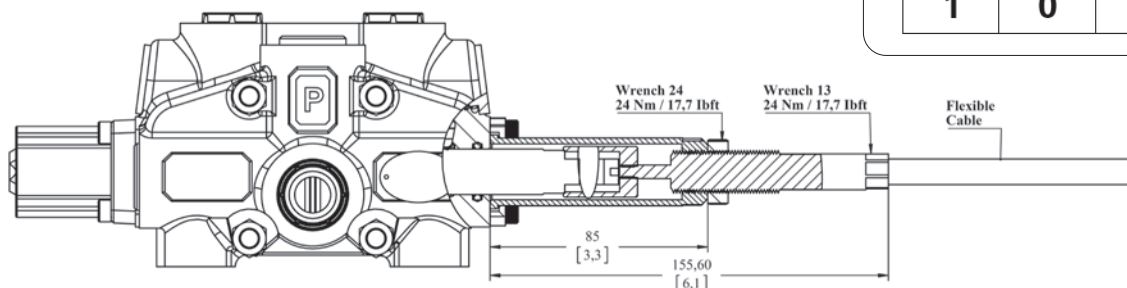
Lever Controls – Cable Control

Kit No: **HL**

Sectional Appearance

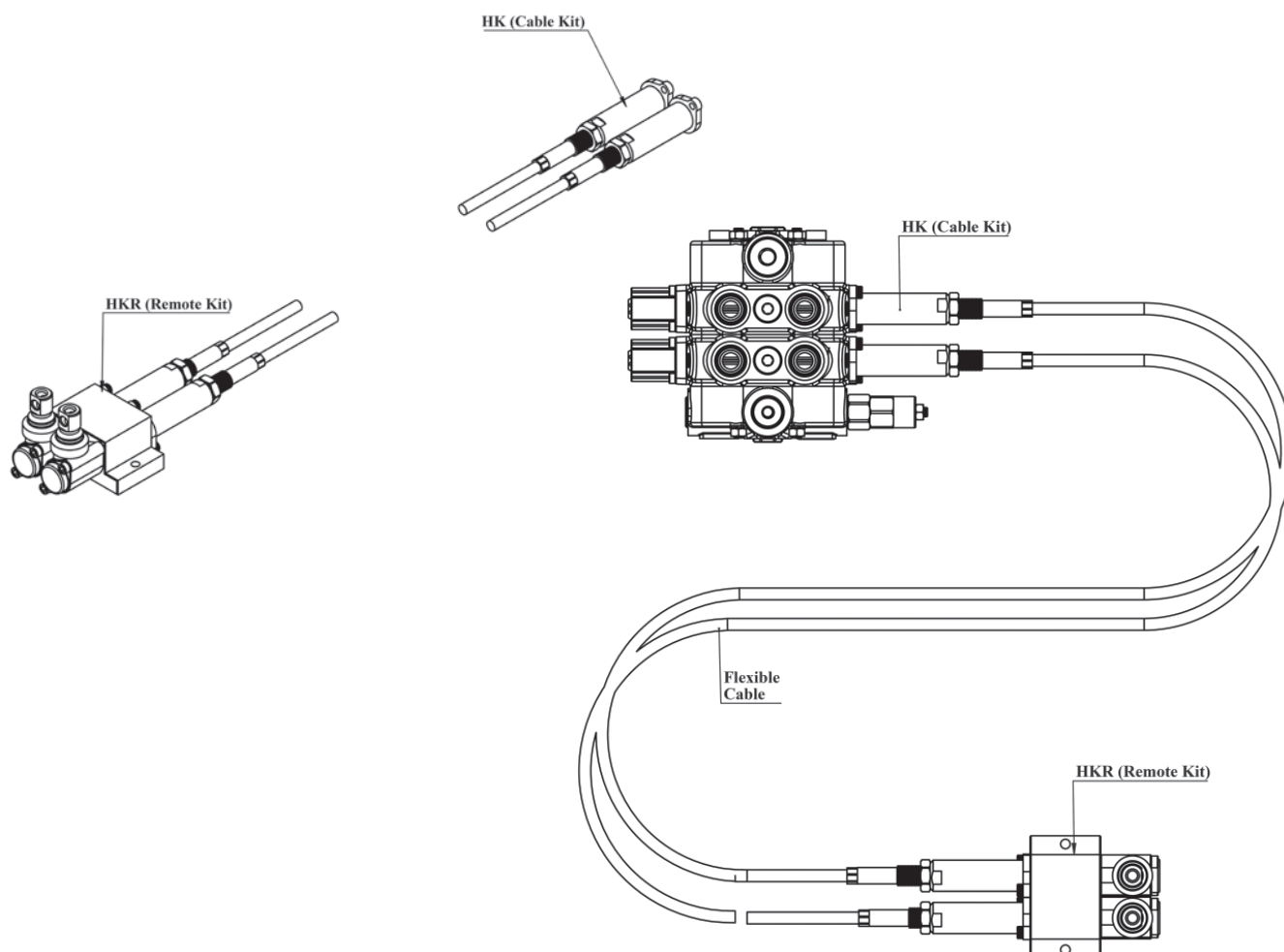
Diagram

Waterproof cap prearranged for remote control with flexible cable.



Note: Remote cable control is several options. Please indicate the cable length demanded and contact our sales department.

Example Operation

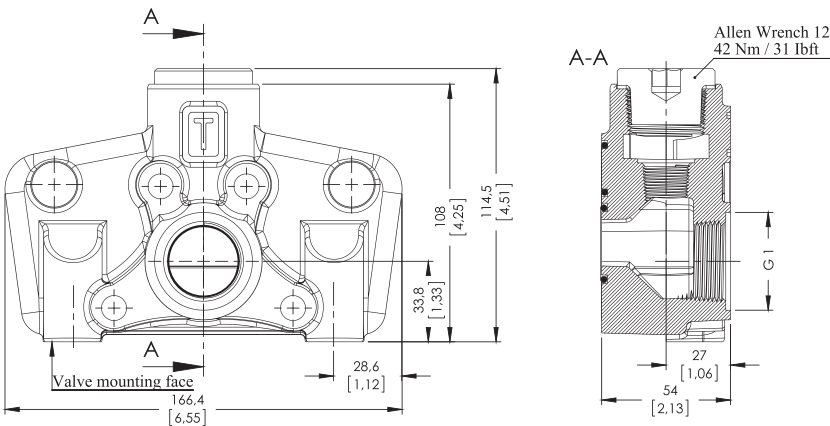


OUTLET COVER - TANK SIDE

Output Cover Options

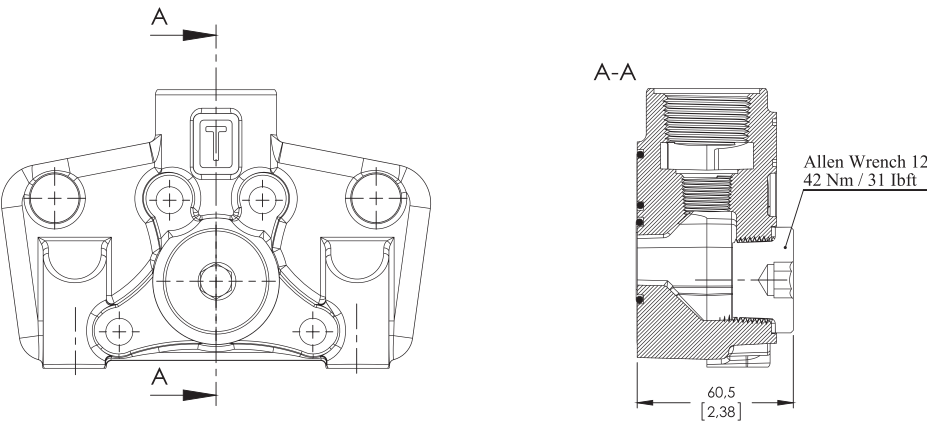
Kit No: **SO**

Sectional Appearance



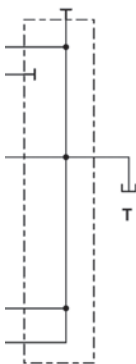
Type No: **TO**

Sectional Appearance

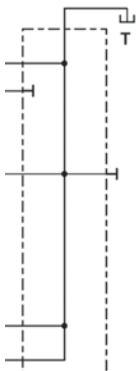


Hydraulic Diagram

Type No: **SO**



Type No: **TO**

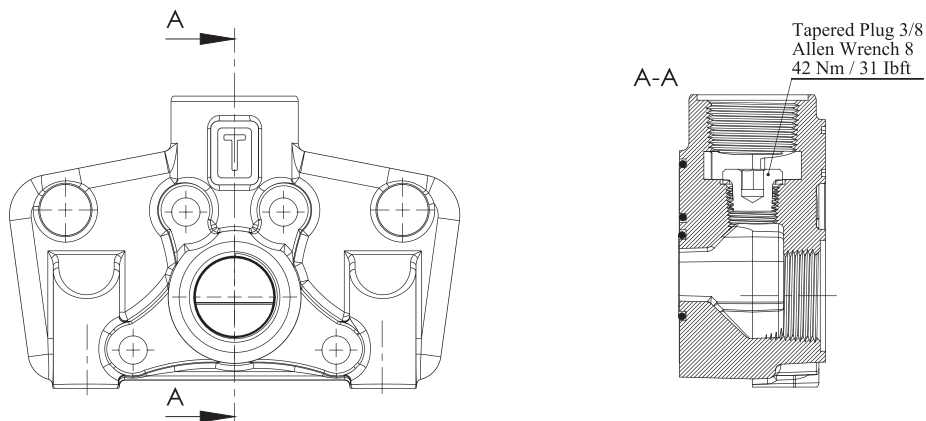


OUTLET COVER - TANK SIDE

Output Cover Options

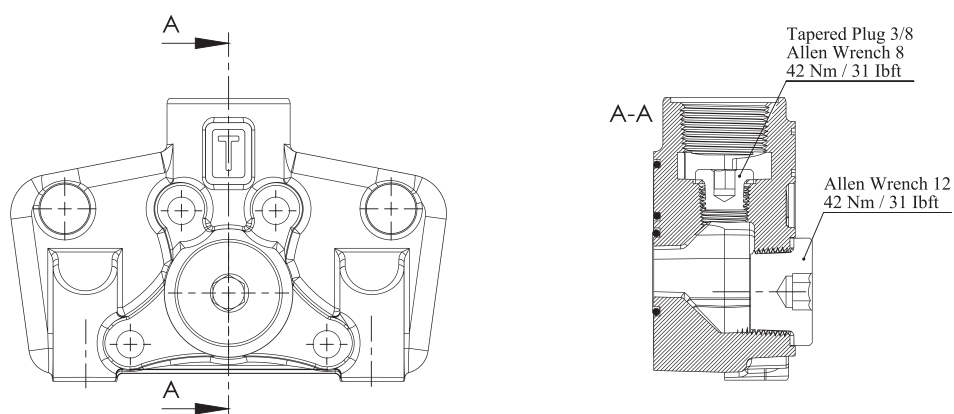
Kit No: **TCO**

Sectional Appearance



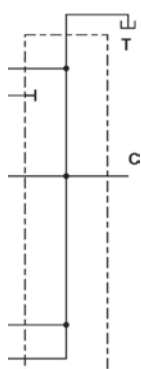
Kit No: **TC**

Sectional Appearance

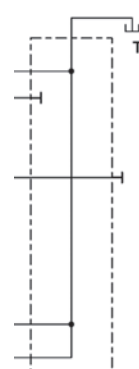


Hydraulic Diagram

Type No: **TCO**



Type No: **TC**



PORT VALVES OPTIONS

Anti Shock Valves

Code:

YAS-1 (T1-100)

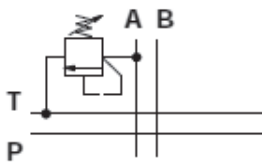
Pressure Setting in Bar

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

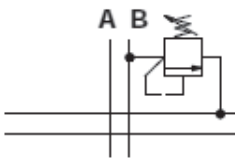
1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

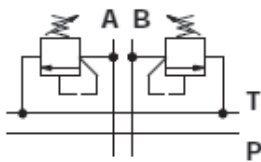
Kit No: YAS1



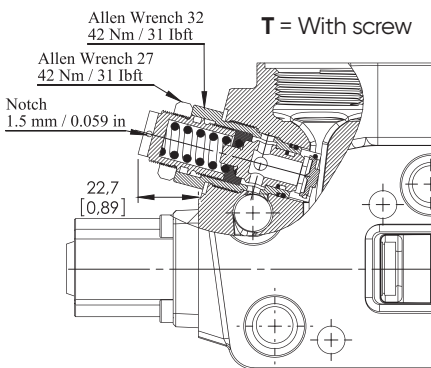
Kit No: YAS2



Kit No: YAS3

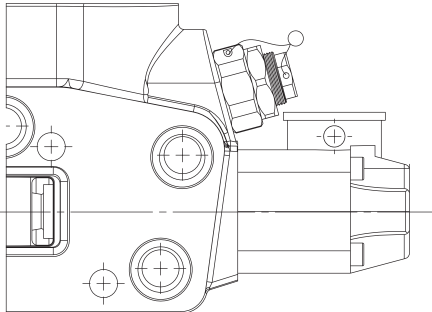


Adjustment Type on Valve:

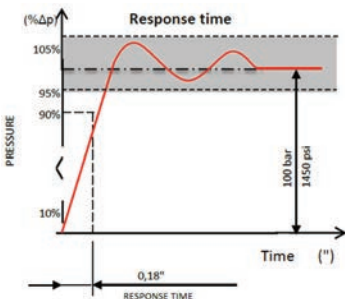
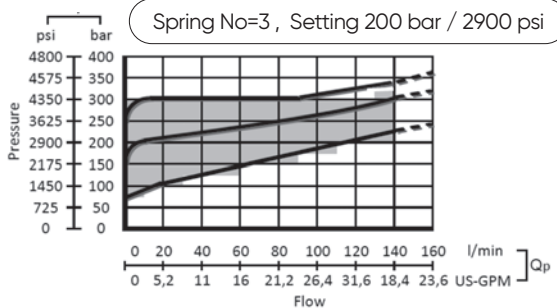
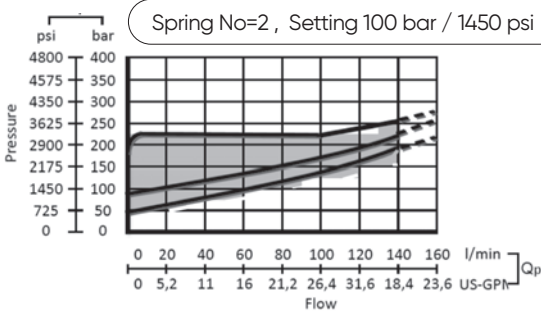
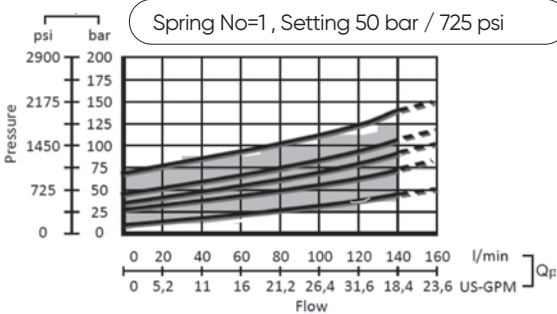


T = With screw

L = Valve set



Performance Data:



PORT VALVES OPTIONS

Anti shock And Anti Cavitation Valves

Code:

YAA-1 (T1-100)

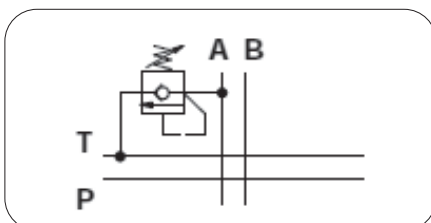
→ Pressure Setting in Bar

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

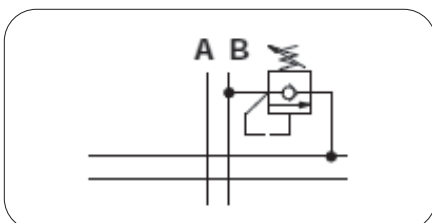
→ 1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

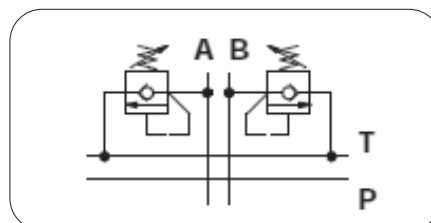
Kit No: **YAA1**



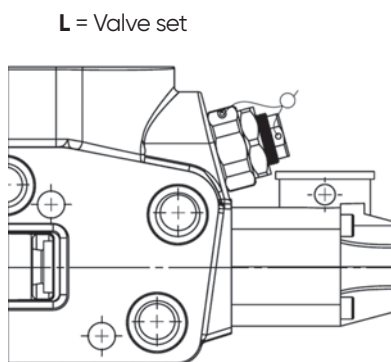
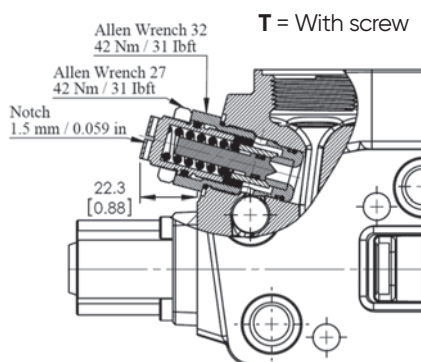
Kit No: **YAA2**



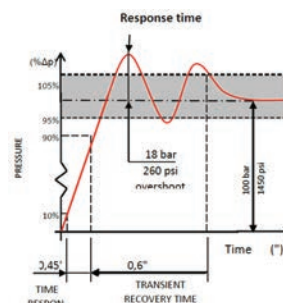
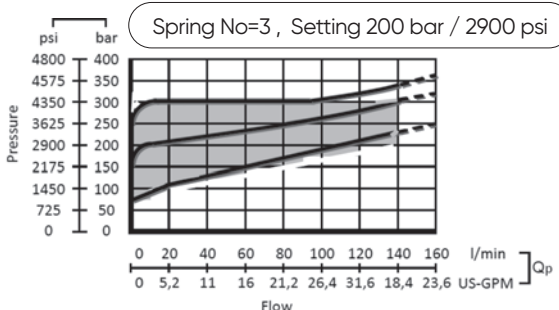
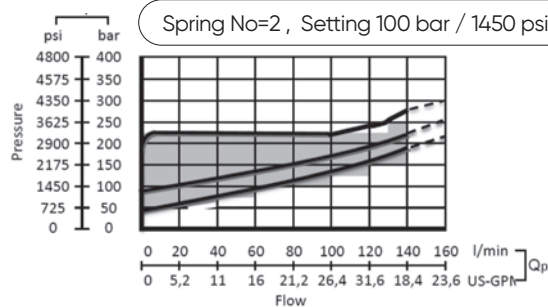
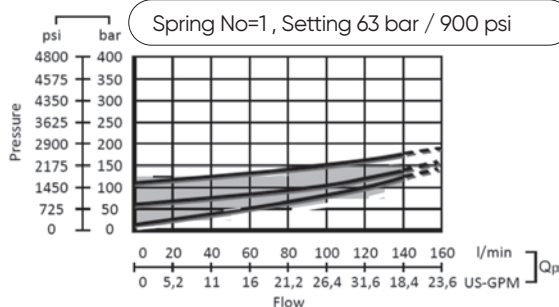
Kit No: **YAA3**



Adjustment Type on Valve:



Performance Data:



PORT VALVES OPTIONS

Anti Cavitation Valves

Code:

YAC-1

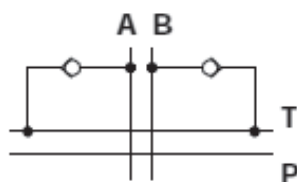
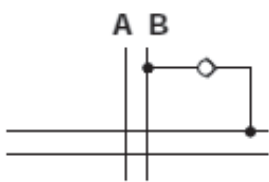
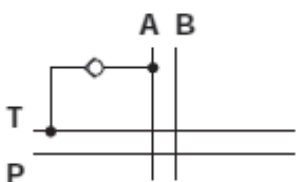
→ 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram

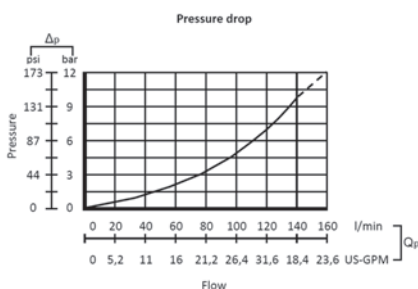
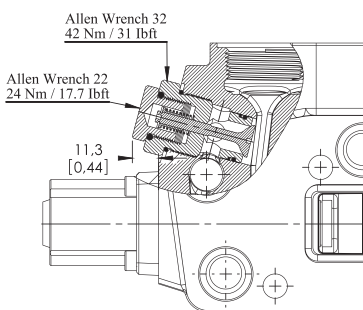
Kit No: YAC1

Kit No: YAC2

Kit No: YAC3



Adjustment Type on Valve And Data:



Valve Blaking

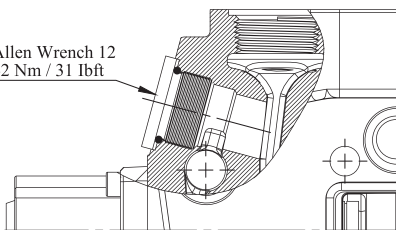
Plug with tank connection

DST-1 (1:Mounted port A – 2:Mounted port B)

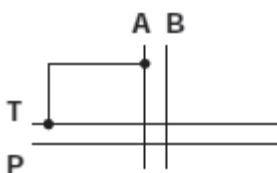
Sectional Appearance

Hydraulic Diagram

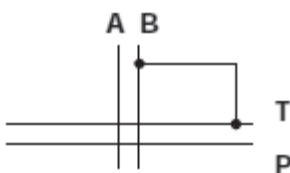
Allen Wrench 12
42 Nm / 31 lbft



DST1



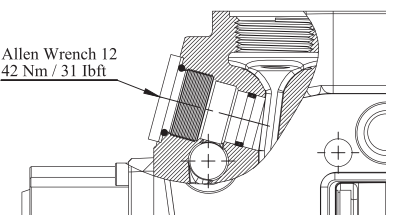
DST2



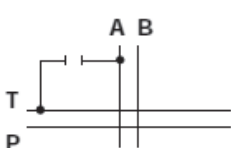
Plug

YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)

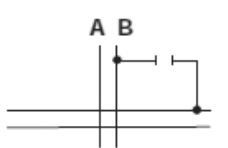
Allen Wrench 12
42 Nm / 31 lbft



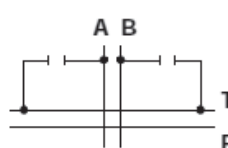
YP1



YP2



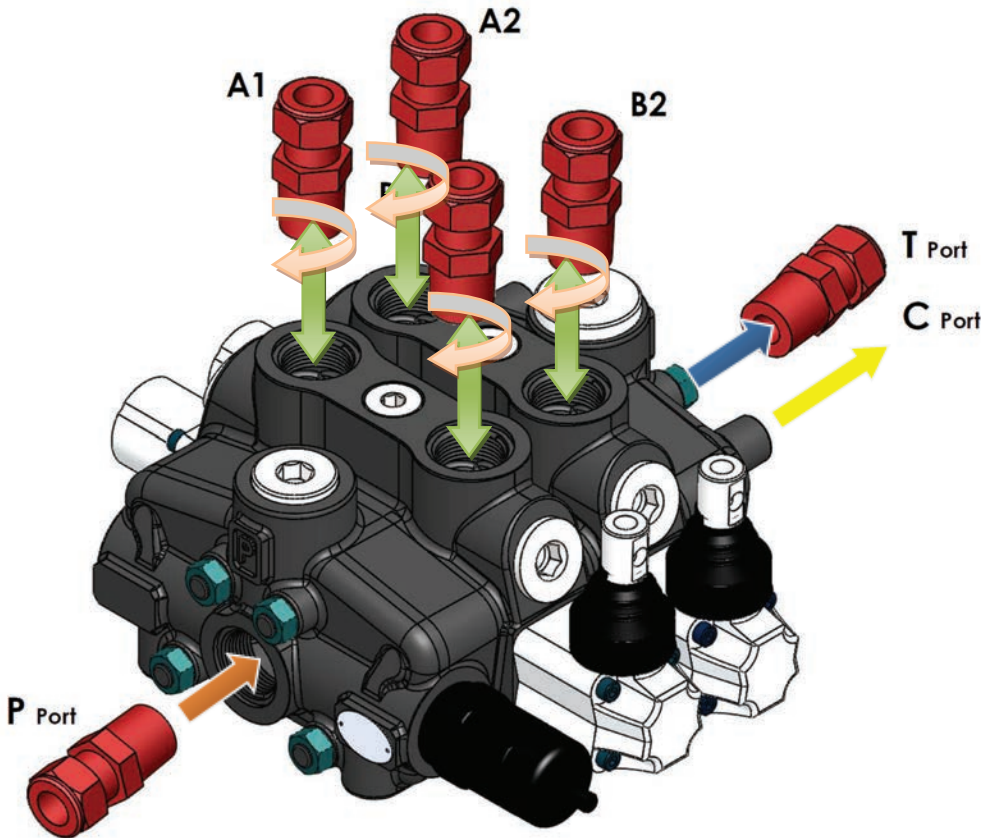
YP3



INSTALLATION AND MAINTENANCE

The GMM-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:

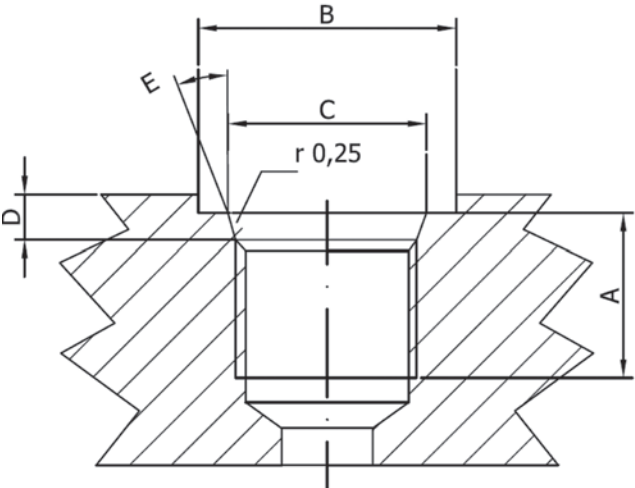
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



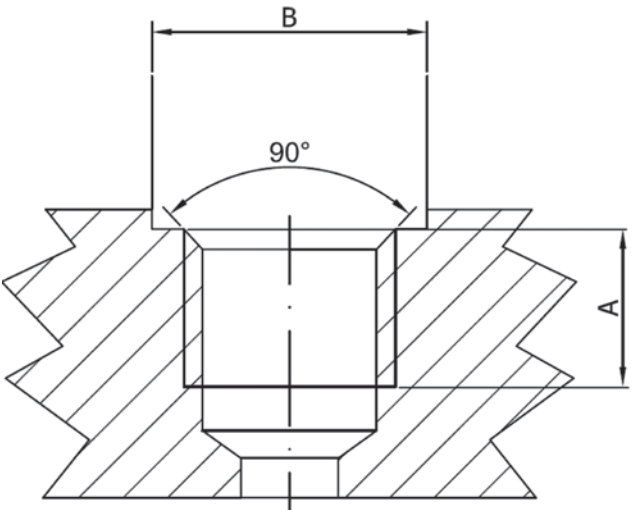
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 3/4	G 3/4	G 1
With O--Ring seal	70 / 51.6	70 / 51.6	100 / 73.7
With copper washer	70 / 51.6	70 / 51.6	90 / 66.3
With steel and rubber washer	70 / 51.6	70 / 51.6	100 / 51.6
BSP (ISO 228/1)	G 1	G 1	G 1
With O--Ring seal	100 / 73.7	100 / 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



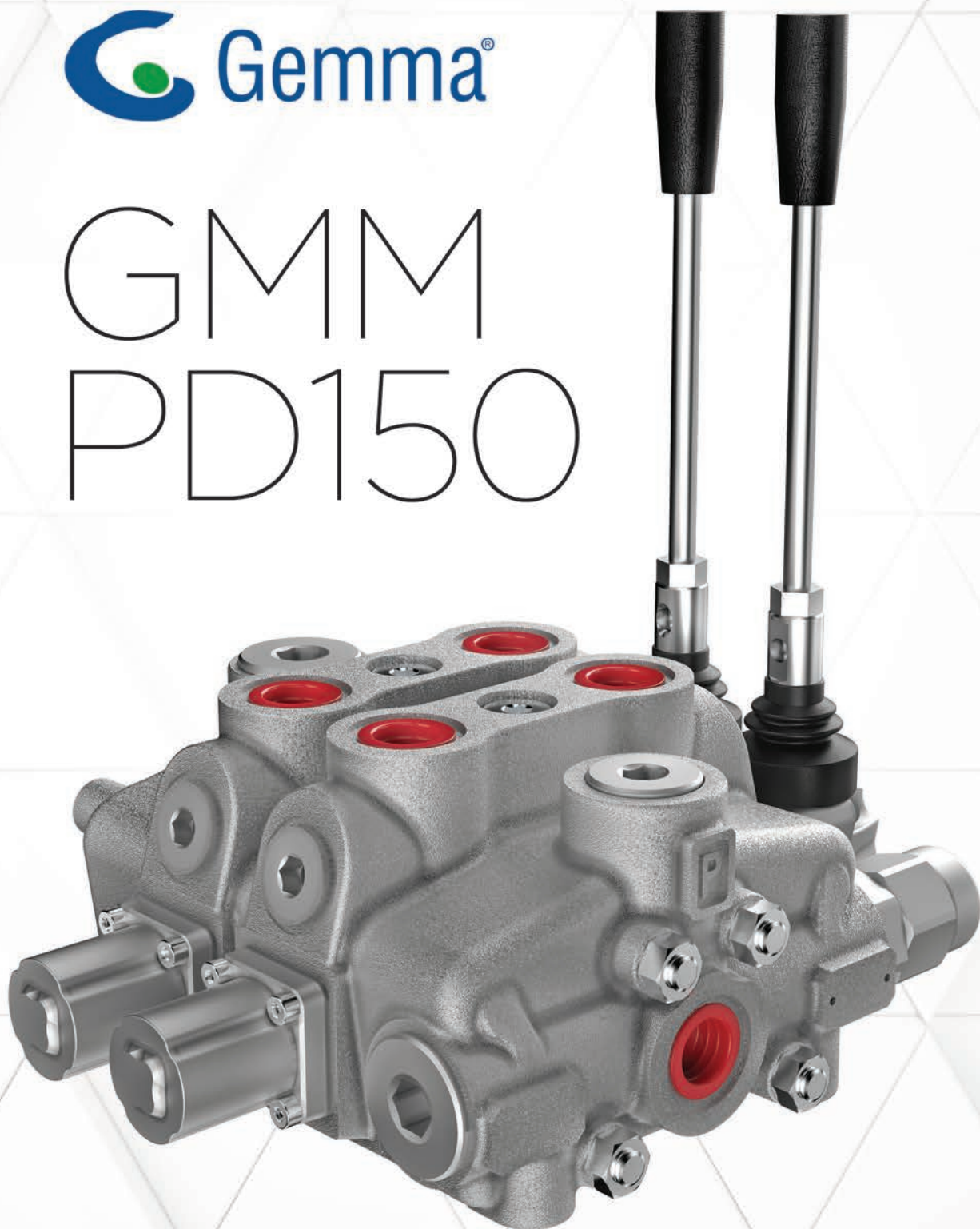
SAE UN-UNF (ISO 725)							
Dimensions		7/8-14 UNF		1"1/16-12		1"5/16-12	
mm	in	SAE10		UN SAE12		UN SAE16	
A		17	0,67	20	0,79	20	0,79
B		34	1,34	41	1,61	49	1,92
C		23,9	0,94	29,2	1,15	35,5	1,40
D		2,5	0,10	3,3	0,13	3,3	0,13
E		15°		15°		15°	



BSP (ISO 228)							
Dimensions		G 1/2"		G3/4		G1	
mm	in						
A		16	0,63	18	0,71	20	0,79
B		27	1,06	33	1,30	40	1,57



GMM
PD150





SECTIONAL
VALVES

GMM-PD250

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 (11/2019) .

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

WORKING CONDITIONS

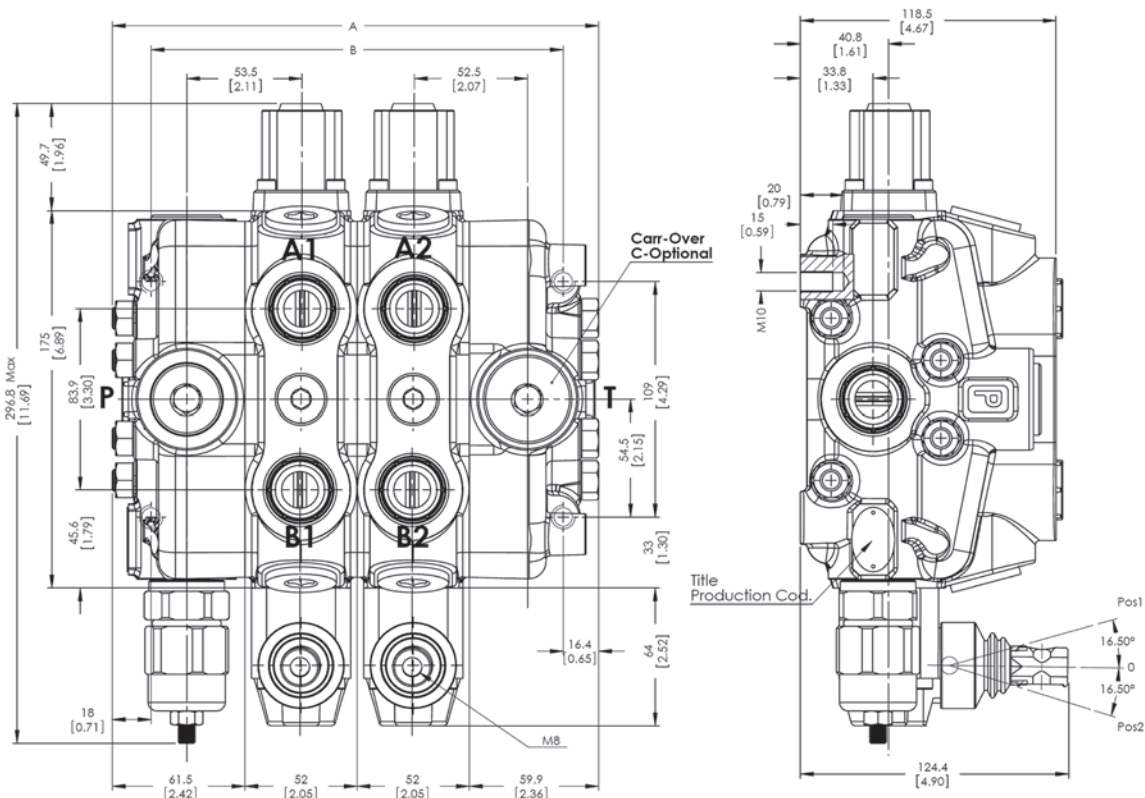
Nominal Flow Rating / Displacement	240 l/min	63 U.S.G.P.M
Maximum Working Pressure (Series Circuit)	210 Bar	3050 PSI
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – 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)	4 cm ³ /min	0,24 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.
- Optional Carry-Over port only tandem circuit.
- Fitted with a main pressure relief valve.
- Interchangeable spool diametre is 25 mm – 0,79 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.

DIMENSIONAL DATA



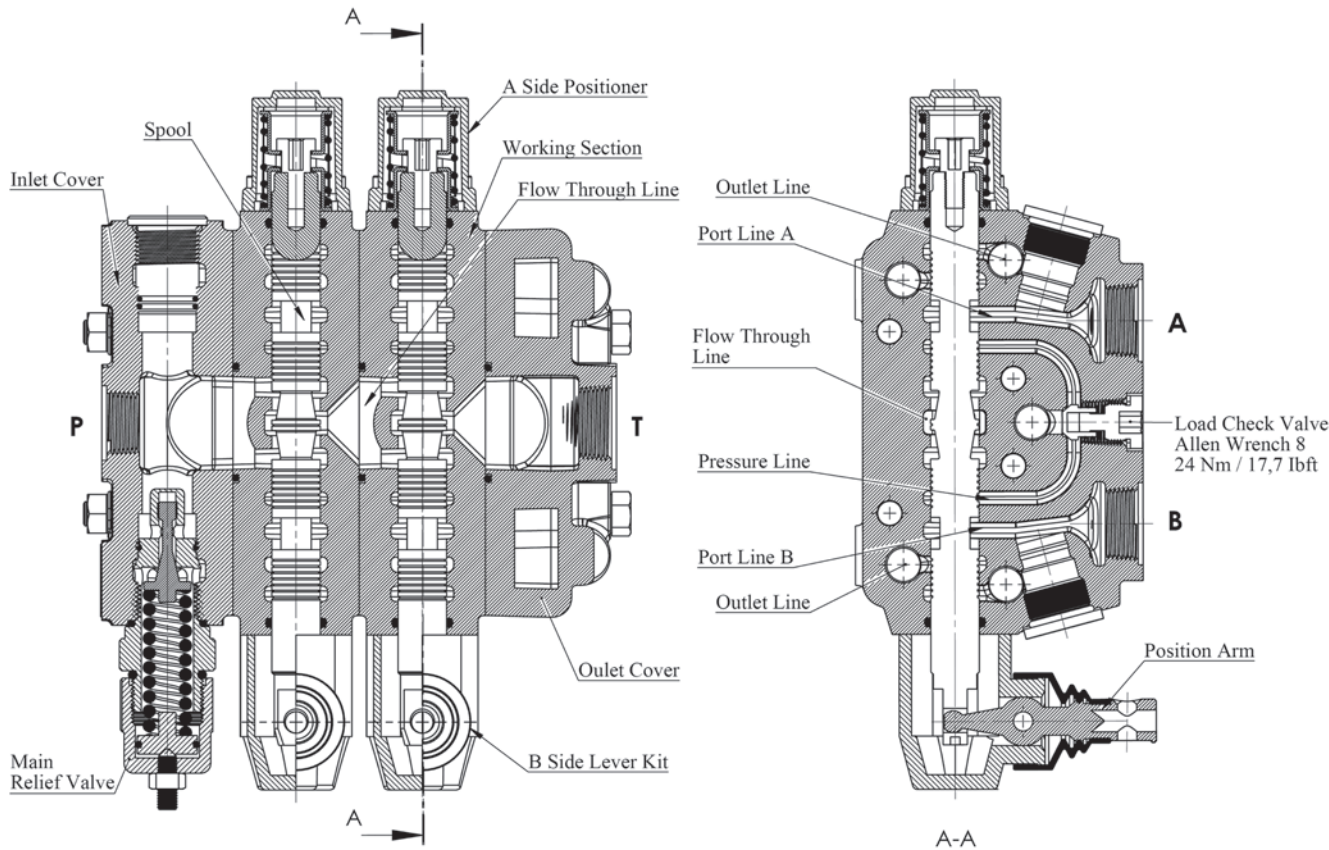
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- PD250-1P	160	6.30	73	2.87	13.46	29.67
GMM- PD250-2P	212.5	8.37	125.5	4.94	19.60	43.21
GMM- PD250-3P	265	10.43	178	7.00	25.74	56.75
GMM- PD250-4P	317.5	12.50	230.5	9.07	31.88	70.29
GMM- PD250-5P	370	14.56	283	11.14	38.02	83.83
GMM- PD250-6P	422.5	16.63	335.5	13.20	44.16	97.37
GMM- PD250-7P	475	18.50	388	14.96	50.30	110.91
GMM- PD250-8P	527.5	20.76	440.5	17.34	56.44	124.45
GMM- PD250-9P	580	22.83	493	19.41	62.58	137.99
GMM- PD250-10P	632.5	24.90	545.5	21.48	68.72	151.53
GMM- PD250-11P	685	26.97	598	23.54	74.86	165.07
GMM- PD250-12P	737.5	29.03	650.5	25.61	81.00	178.61

STANDARD THREADS

PORT	BSP (Iso 228)		UN-UNF (Iso 11926-1)
	1" Series	1 1/4"Series	
P Inlet	G 1	G 1/4	1 5/16 -12 UN
A-B Ports	G 1	G 1/4	11/16 - 12 UN
T Outlet	G 1/4	G 1/14	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

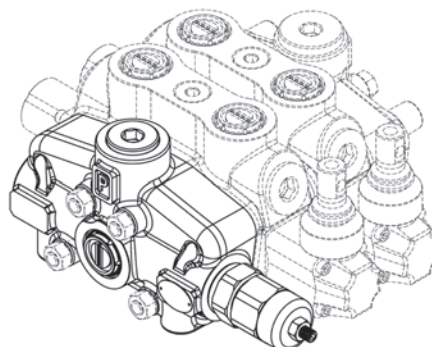


Code: GMM PD250-2P (SD(LA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 / SGT

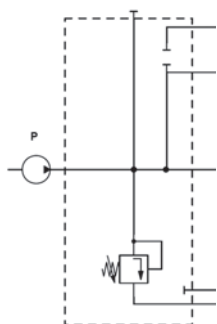
HYDRAULIC CIRCUIT

Inlet Cover – Pump Side

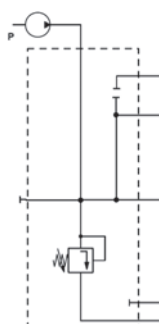
SD – Side inlet with direct pressure relief valve
 TD – Top inlet with direct pressure relief valve
 SP – Side inlet with relief valve blanking plug



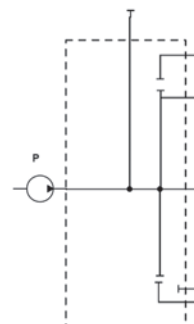
Type = SD



Type = TD

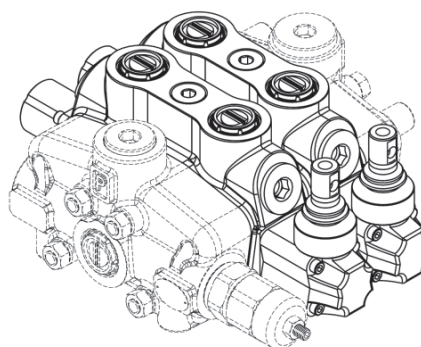


Type = SP

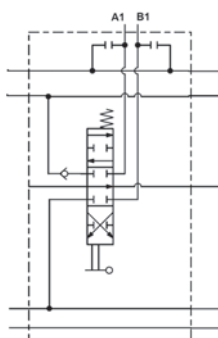


Working Sections

P – Parallel



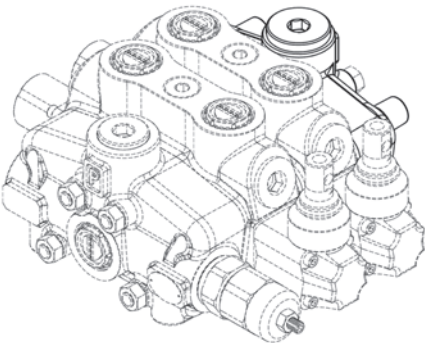
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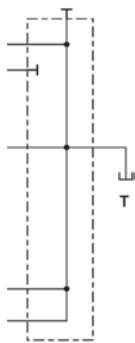
HYDRAULIC CIRCUIT

Outlet Cover (Tank Side)

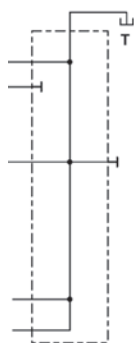
SO - Side outlet
TO - Top outlet
TCO - Top outlet with carry-over
TC - Top outlet with closed centre



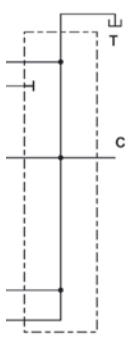
Type = SO



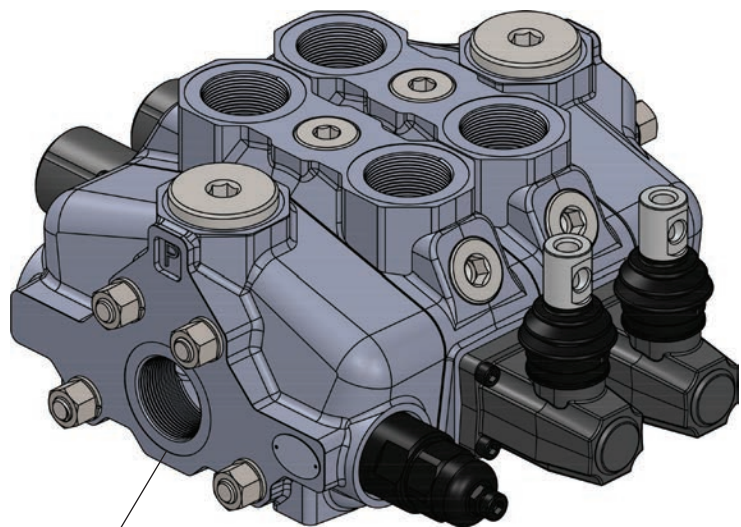
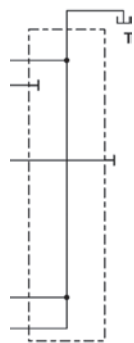
Type = TO



Type = TCO



Type = TC



Valve Type

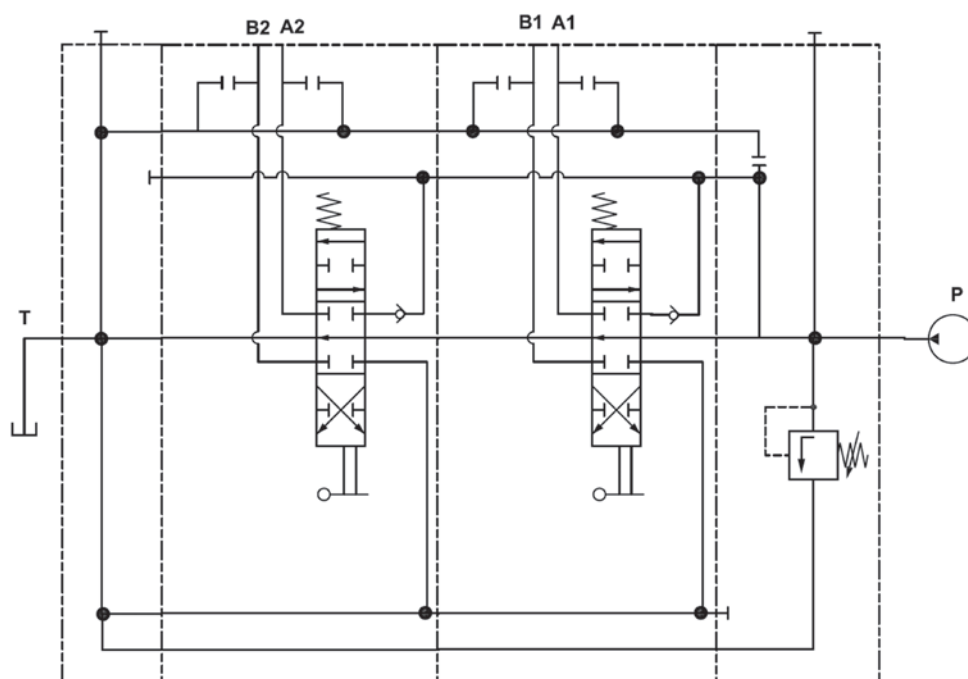
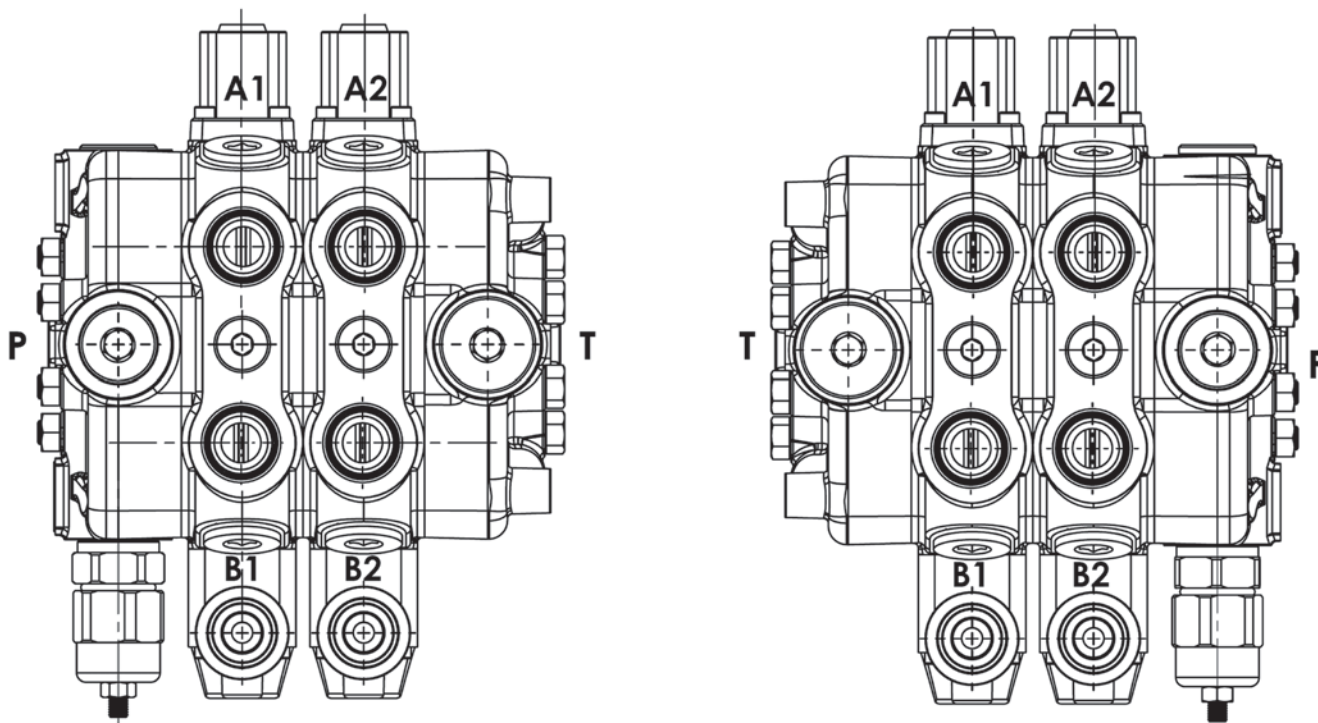
Production Batch

39.10 = Production Year - Week (2010/39)
101149 = Progressive Party Number

HYDRAULIC CIRCUIT

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

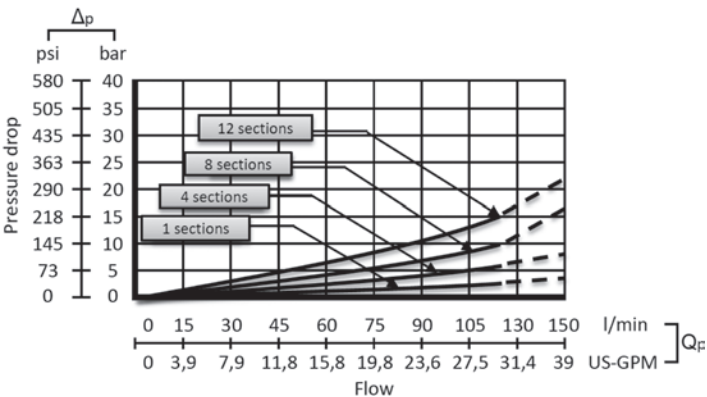
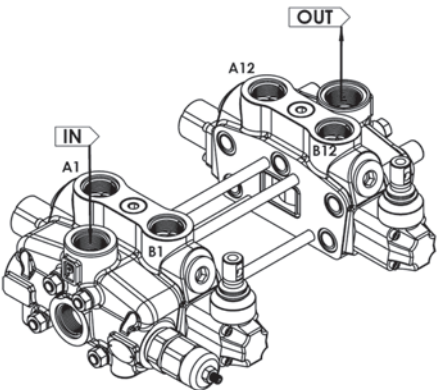
A symmetrical body allows the reverse assembly of spool.



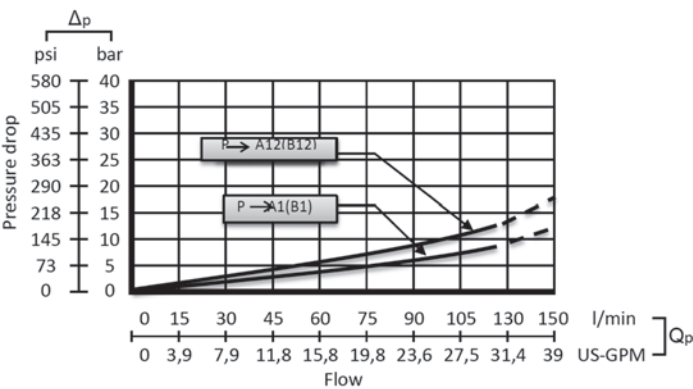
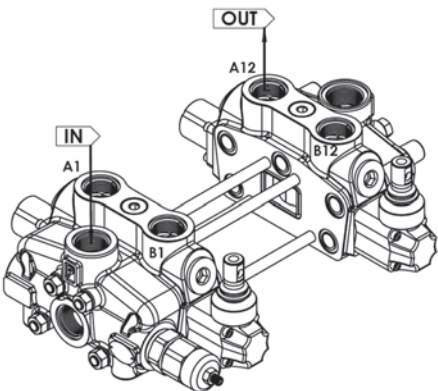
Code: GMM PD250-2P (SD(RA)-SMR2-125-PP)/P-1A-STL-SR/ P-1A-STL-SR/ SO-PT1 /

PERFORMANCE DATA AND CURVE

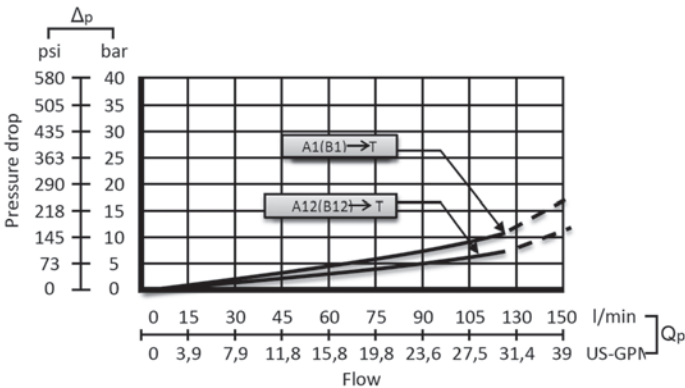
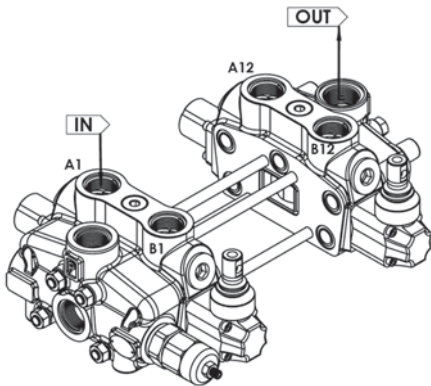
Open Center - Pressure Drop (P-T)



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



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

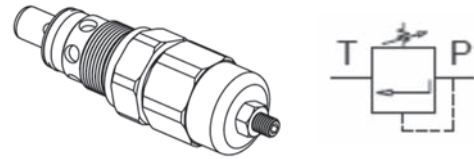


INLET RELIEF OPTIONS

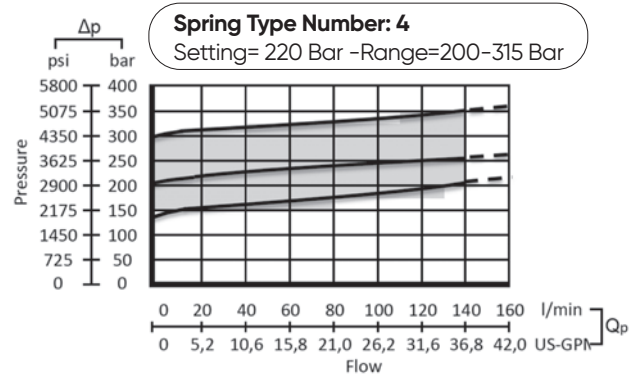
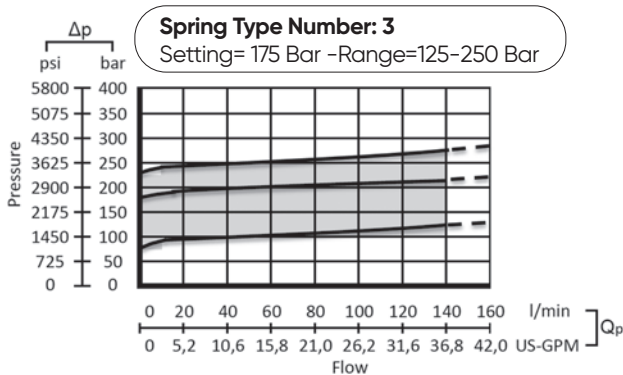
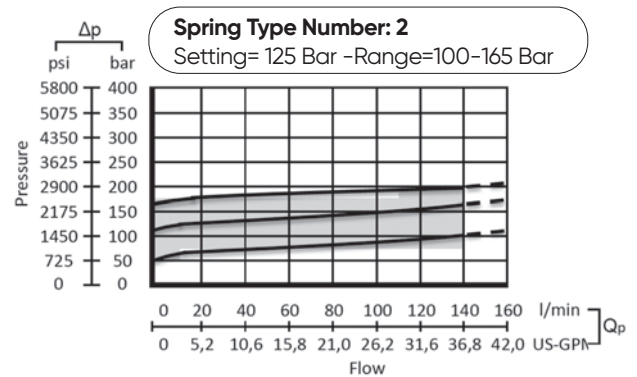
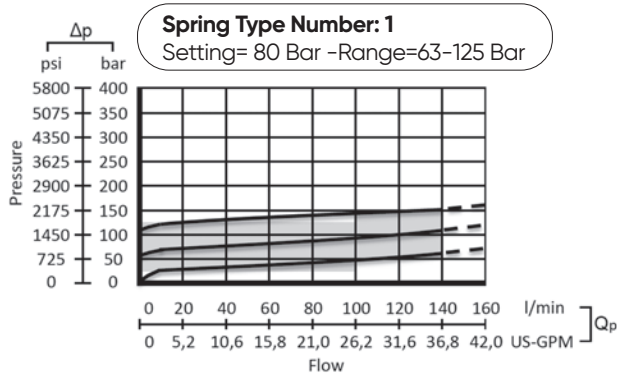
Direct Pressure Relief Valve

Code:

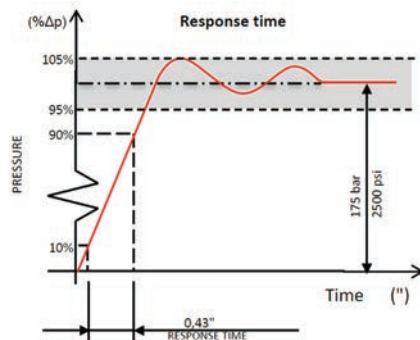
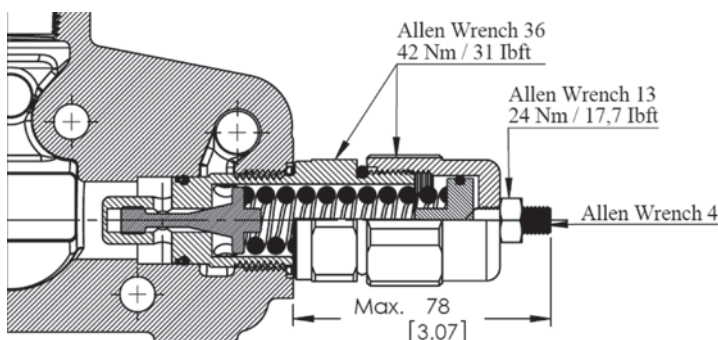
SMR2 – 125



Performance Data



Adjustment Type on Valve



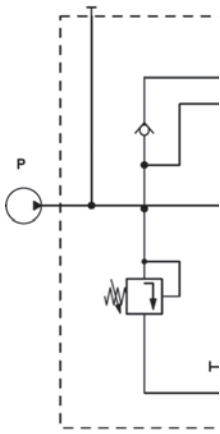
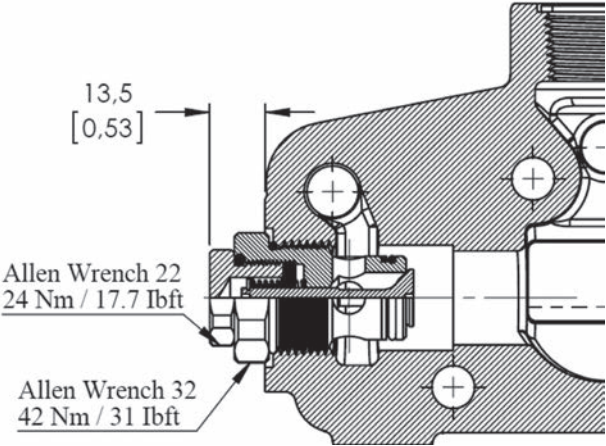
INLET RELIEF OPTIONS

Direct Pressure Relief Valve

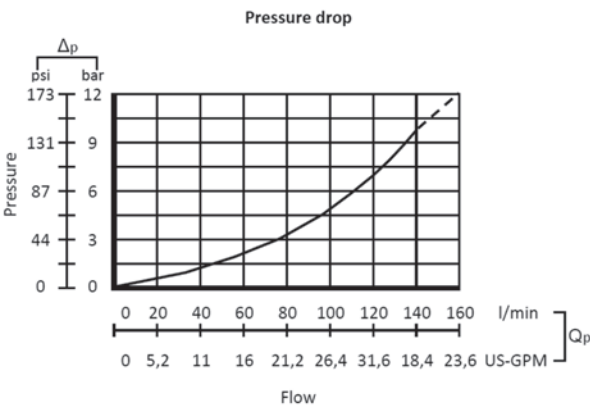
Kit No: PAC

Sectional Appearance

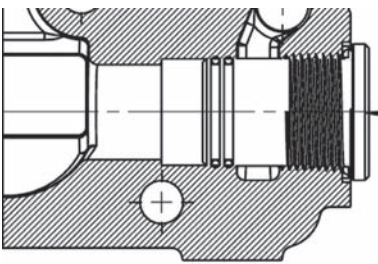
Diagram



Performance Data



Relief Blanking Plug - SP

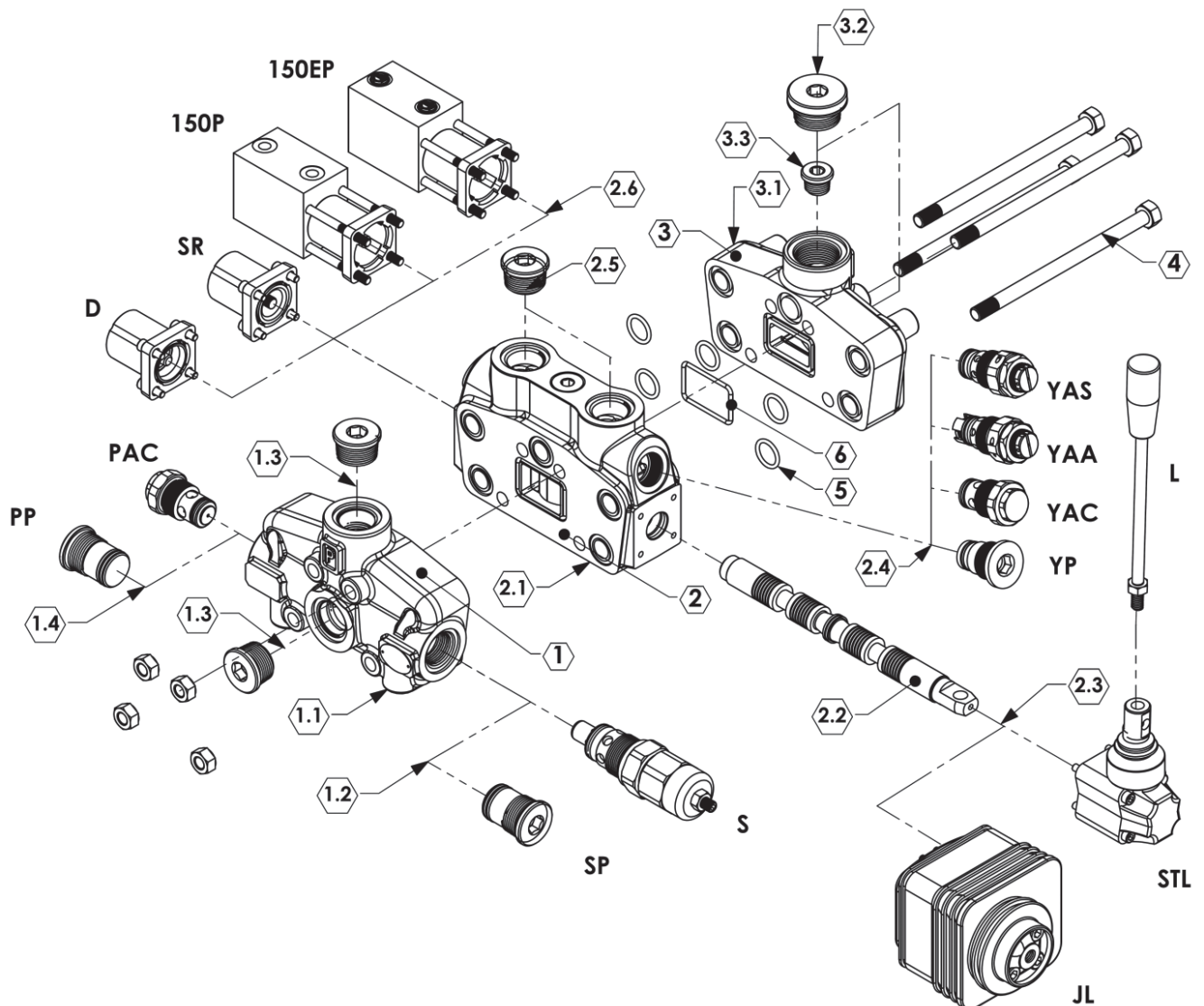
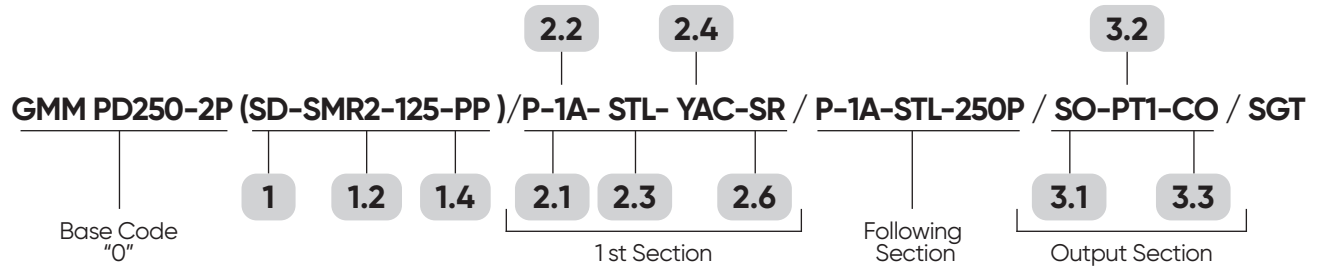


Allen Wrench 12 - 42 Nm / 31 Ibft



ORDERING CODES

Order Example



ORDERING CODES

1- Inlet Section

GMM PD250-2P PD150 =Valve Type-(PD)- Sectional
(250) - Max. Flow Rate
2P =Sections Quantity

SD = Side inlet with direct pressure relief valve
(1SD250100)

TD = Top inlet with direct pressure relief valve
(1TD250100)

SP = Side inlet with relief valve blanking plug
(1SP250100)

2- Working Section

P = Parallel (2P250100)

3- Output Section

SO = Side outlet (3SO250100)

TO = Top outlet (3TO250100)

TCO = Top outlet with carry-over (3TCO250100)

TC = Top outlet with closed centre (3TC250100)

4- Assembling Kit

Tie rod kit for 1 section valve - (4TRK1250100)

Tie rod kit for 2 section valve - (4TRK2250100)

Tie rod kit for 3 section valve - (4TRK3250100)

Tie rod kit for 4 section valve - (4TRK4250100)

Tie rod kit for 5 section valve - (4TRK5250100)

Tie rod kit for 6 section valve - (4TRK6250100)

Tie rod kit for 7 section valve - (4TRK7250100)

Tie rod kit for 8 section valve - (4TRK8250100)

Tie rod kit for 9 section valve - (4TRK9250100)

Tie rod kit for 10 section valve - (4TRK10250100)

Tie rod kit for 11 section valve - (4TRK11250100)

Tie rod kit for 12 section valve - (4TRK12250100)

5-6- O_Ring Kit

5. -17.00x2.65 NBR 70 SH O-Ring seal (3 Qty.) (5MK250100)

6. -34.60x2.62 NBR 70 SH O-Ring seal (1 Qty.) (6MK250100)

1.*-Inlet Options

1.1 Inlet Cover
Body = Standard (11BS150100)

1.2 Inlet Relief
SMR1-080 - (12SMR1250080)-Range 63-125 bar
Setting 80 bar

SMR2-125 - (12SMR2250120)-Range 100-160 bar
Setting 125 bar

SMR3-175 - (12SMR3250175)-Range 125-250 bar
Setting 175 bar

SMR4-220 - (12SMR4250220)-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)

2.*- Working Options

2.1 Working Section

PA= Without ports valve prearrangement,
with parallel circuit - Body (21BSPA250100)

2.2 Spool Options

1A -(22SS250110) - 3 Positions ,Double acting

2A -(22SS250120) - 3 Positions ,Double acting
A to tank B Blocked

3A -(22SS250130) - 3 Positions ,Double acting
B to tank A blocked

4A -(22SS250140) - 3 Positions ,Double acting
A and B tank

5A -(22SS250150) - 3 Positions ,Single acting on
A (A to tank)

6A -(22SS250160) - 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)

3.*- Working Options

3.1 Working Section

Body = Standard (31BS250100)

3.2 Output Plug

PT1 =G1 Top and Side output (32PT1250100)

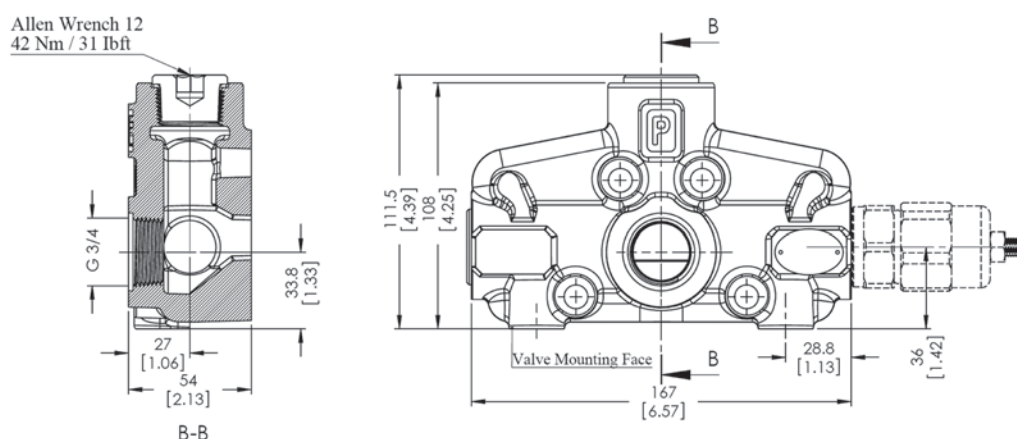
3.3 Circuits Options

CO =G1/8 Carry-Over Connector (33CO250100)

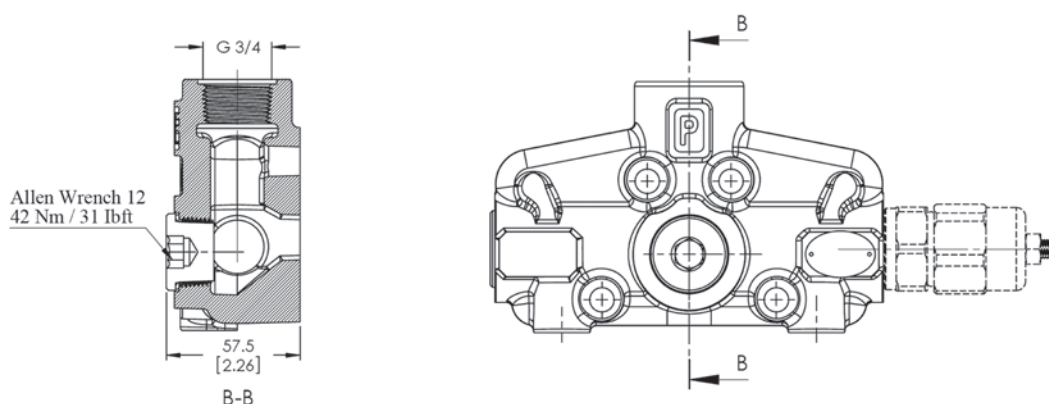
INLET COVER- PUMP SIDE
LH Inlet Valve Options

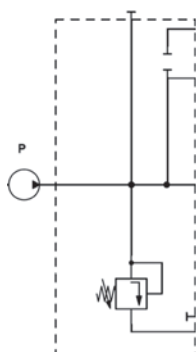
Type No: **SD**

Sectional Appearance


Type No: **TD**

Sectional Appearance


Hydraulic Diagram

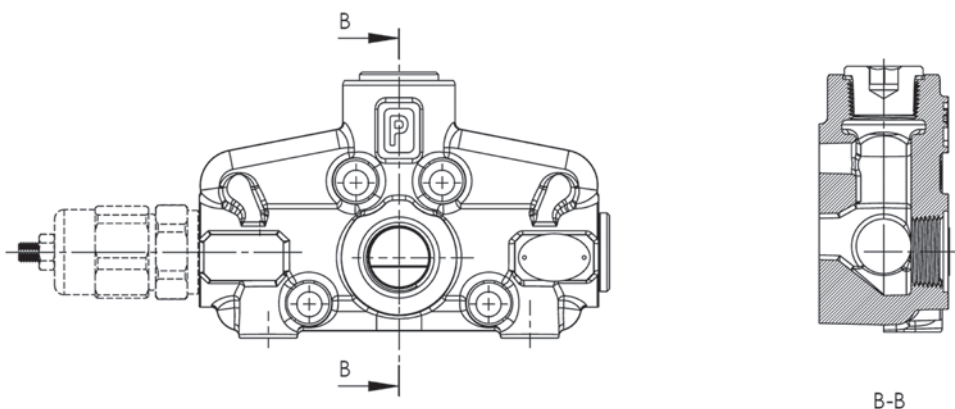
Type No: **SD**

Type No: **TD**


INLET COVER- PUMP SIDE

RH Inlet Valve Options

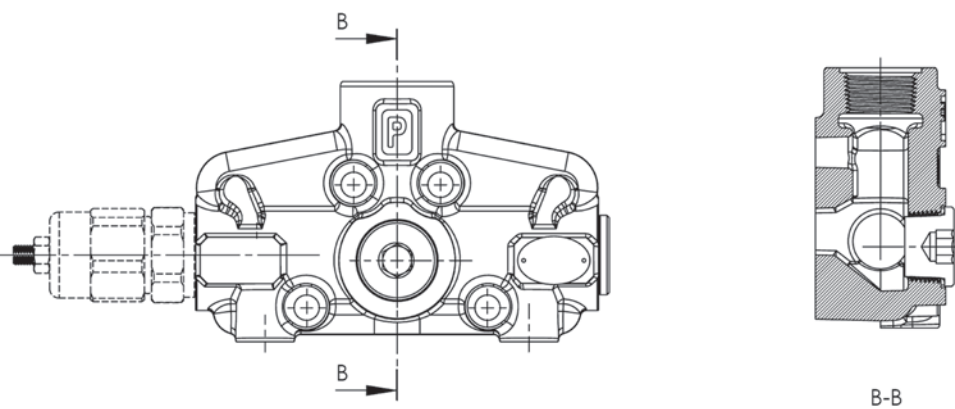
Type No: RA

Sectional Appearance



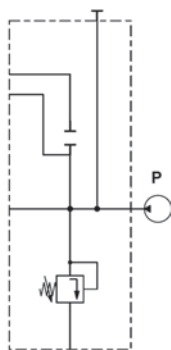
Type No: RB

Sectional Appearance

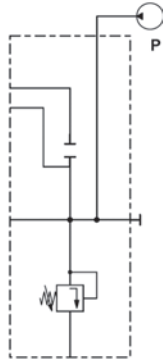


Hydraulic Diagram

Type No: RA

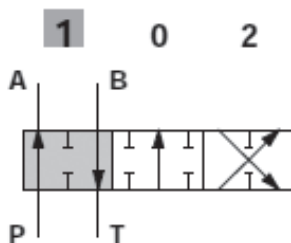
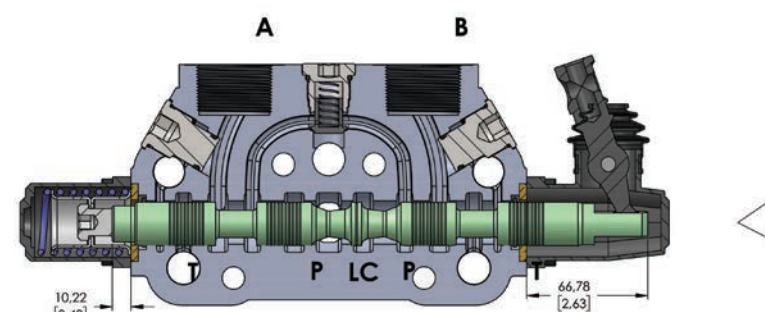
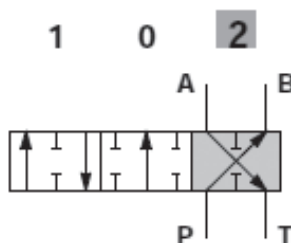
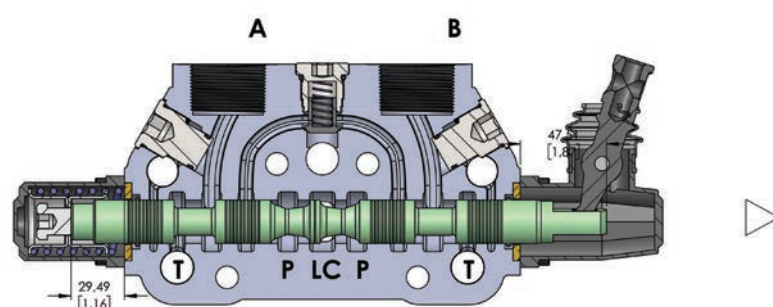
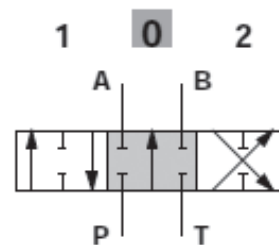
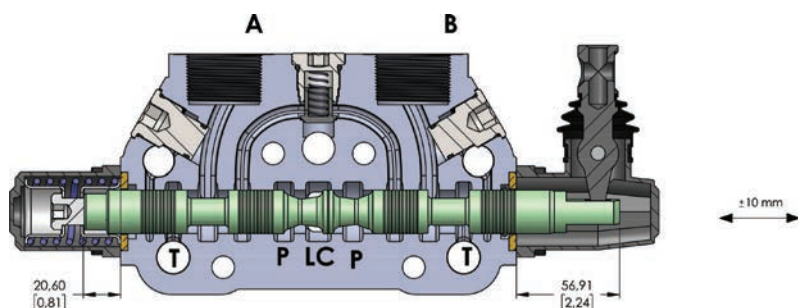


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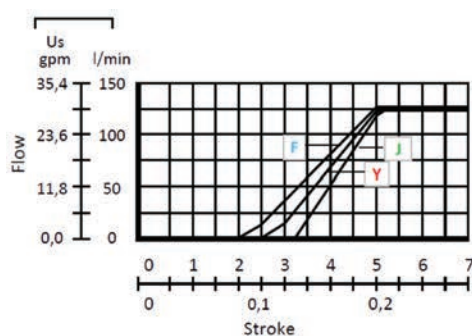


SPOOL OPTIONS

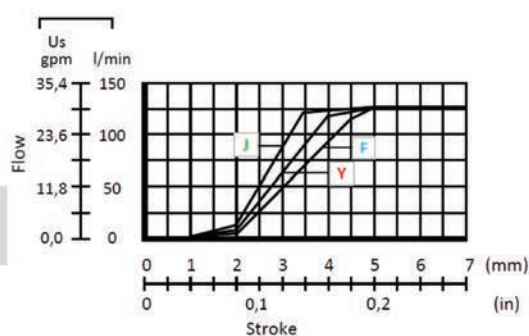
Spool Type - 1A



Performance Curve And Data

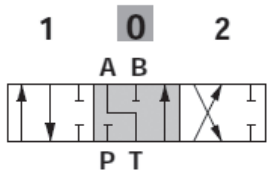
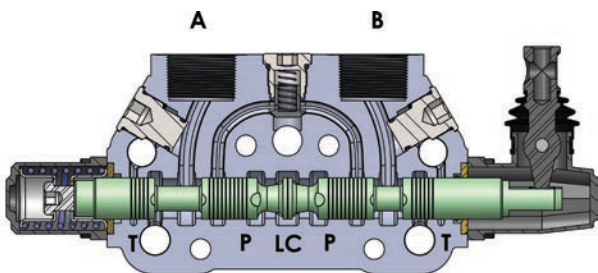


Qin = 150 l/min
 F P (on ports) = 63bar / 900 psi
 Y P (on ports) = 100bar / 1450 psi
 J P (on ports) = 250bar / 3600 psi

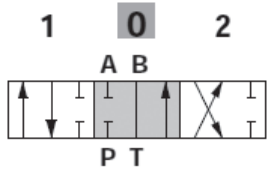
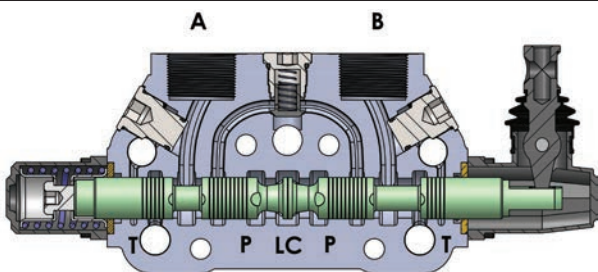


SPOOL OPTIONS

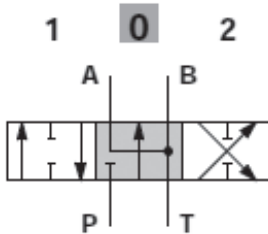
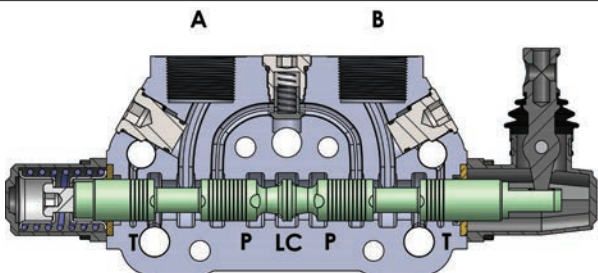
Spool Type - 2A



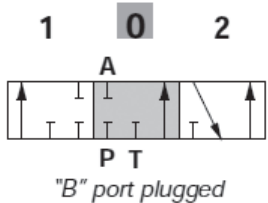
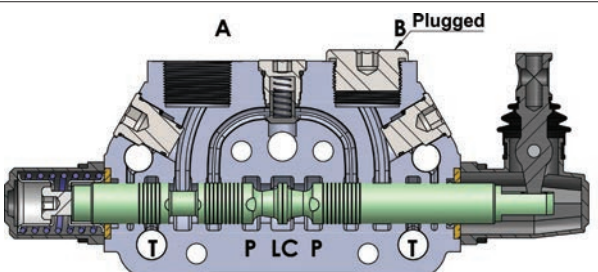
Spool Type - 3A



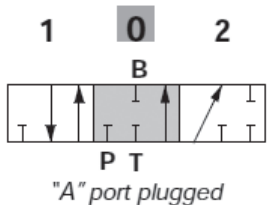
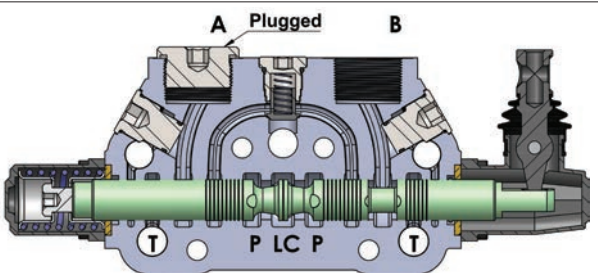
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

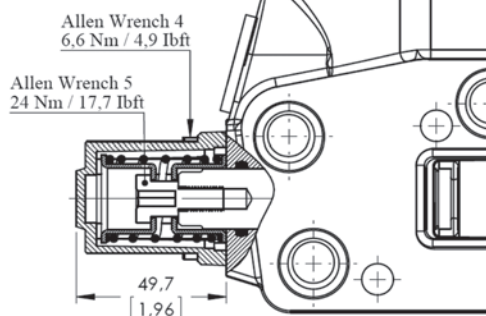


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



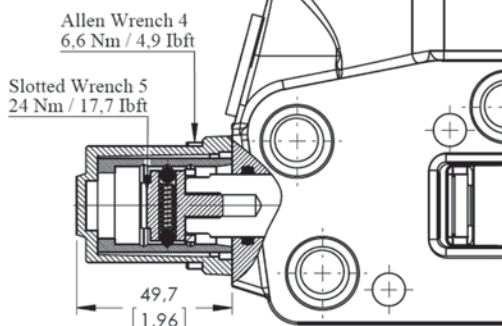
Diagram



With Detent

Kit No: **D**

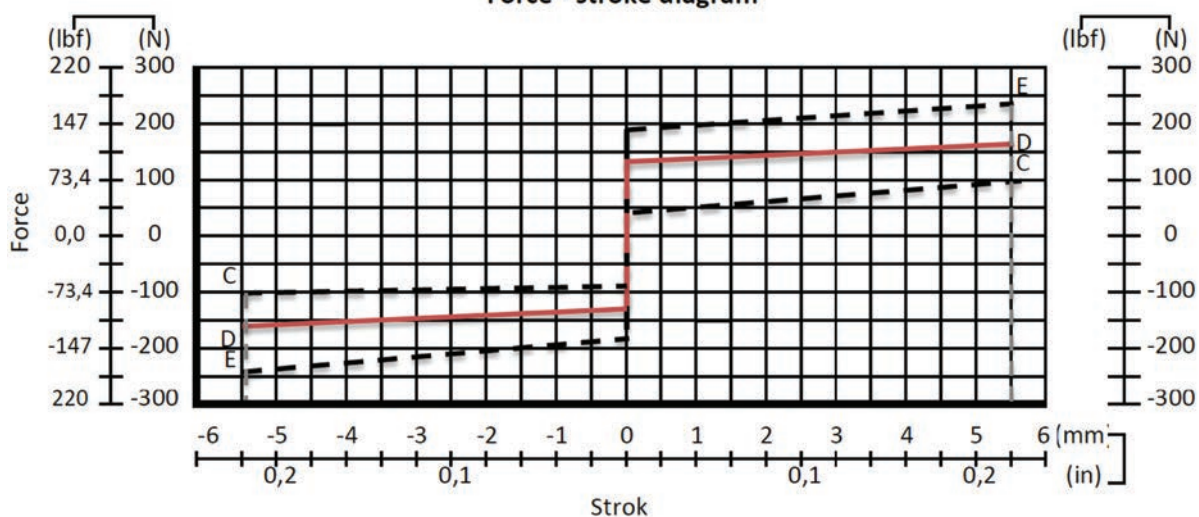
Sectional Appearance



Diagram



Force - stroke diagram

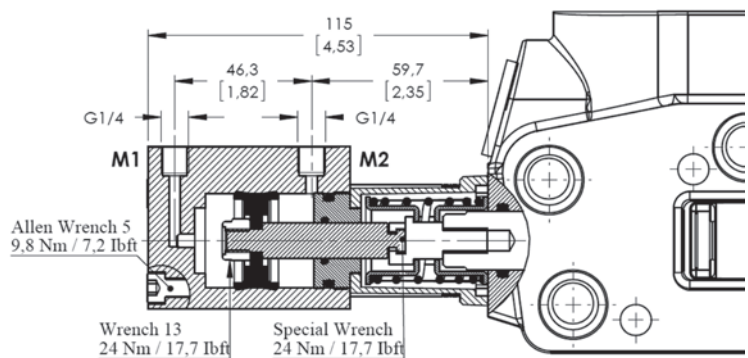


SPOOL POSITIONERS – SIDE OF RETURN

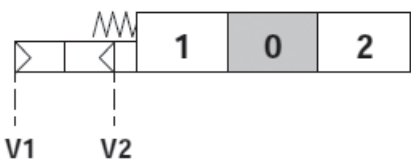
ON/OFF Pneumatic Control

Kit No: 250P

Sectional Appearance



Diagram



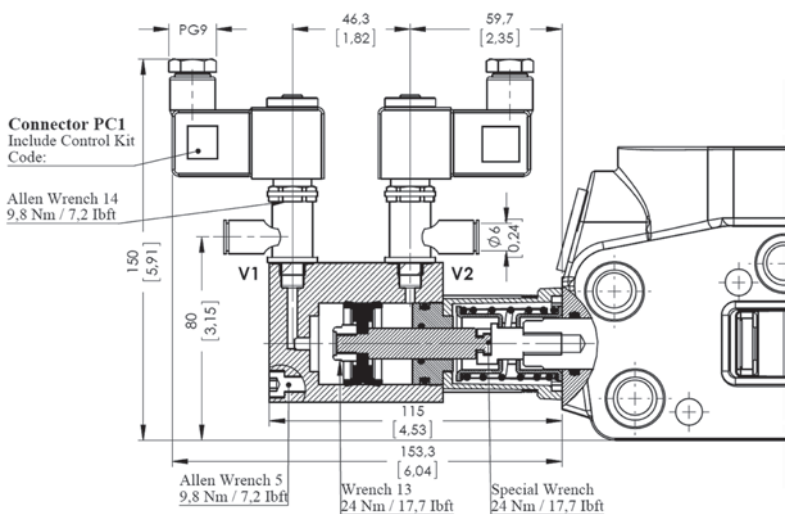
Operating Features

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

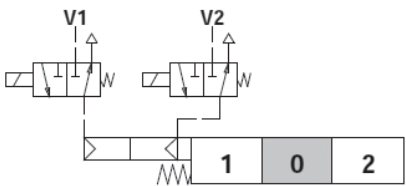
ON/OFF Electro-Pneumatic Control

Kit No: 250EP

Sectional Appearance



Diagram



Operating Features

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

Solenoid Operating Features

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

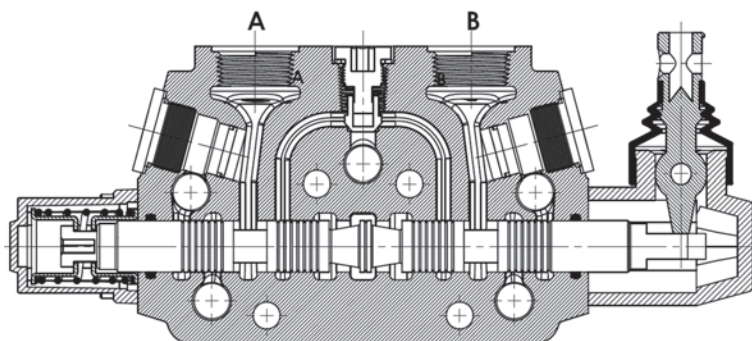
Power Rating.....: 6 W

WORKING SECTION KIT

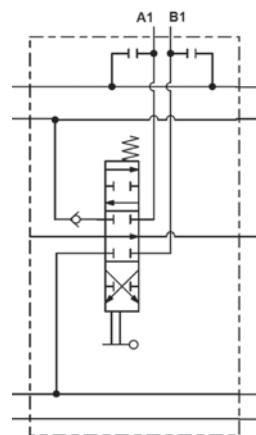
With Port Valves Type

Kit No: **AA**

Sectional Appearance



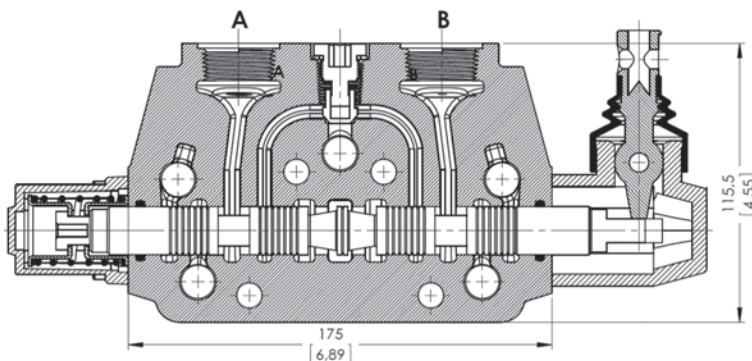
Diagram



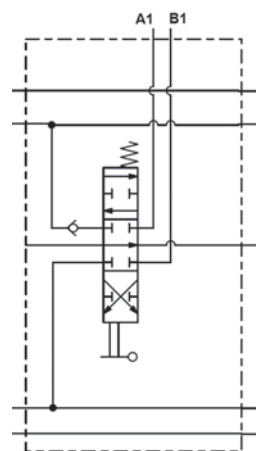
With Port Valves Type

Kit No: **AB**

Sectional Appearance



Diagram



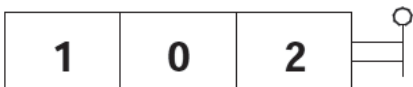
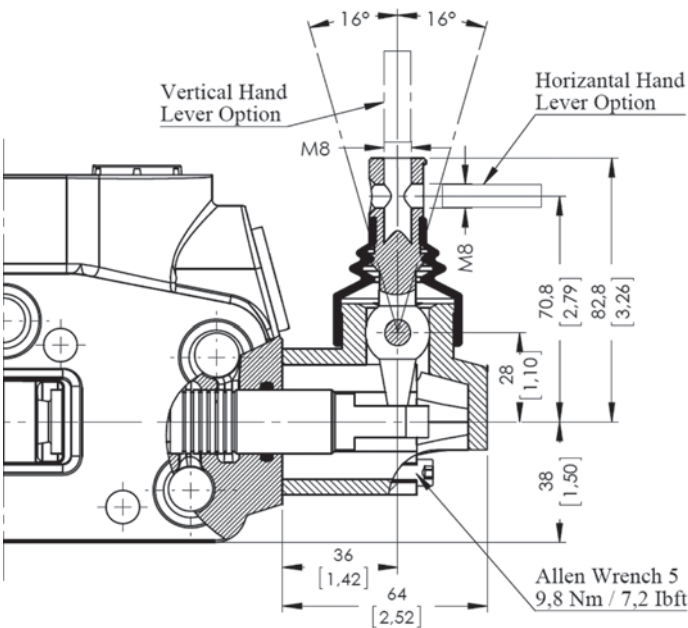
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: STL - L0

Sectional Appearance

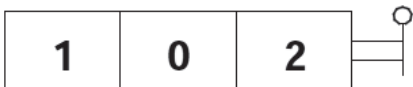
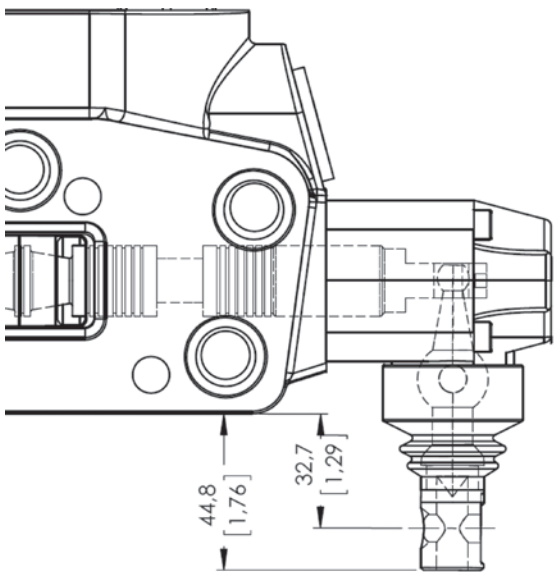
Diagram



Kit No: STL - L180

Sectional Appearance

Diagram



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

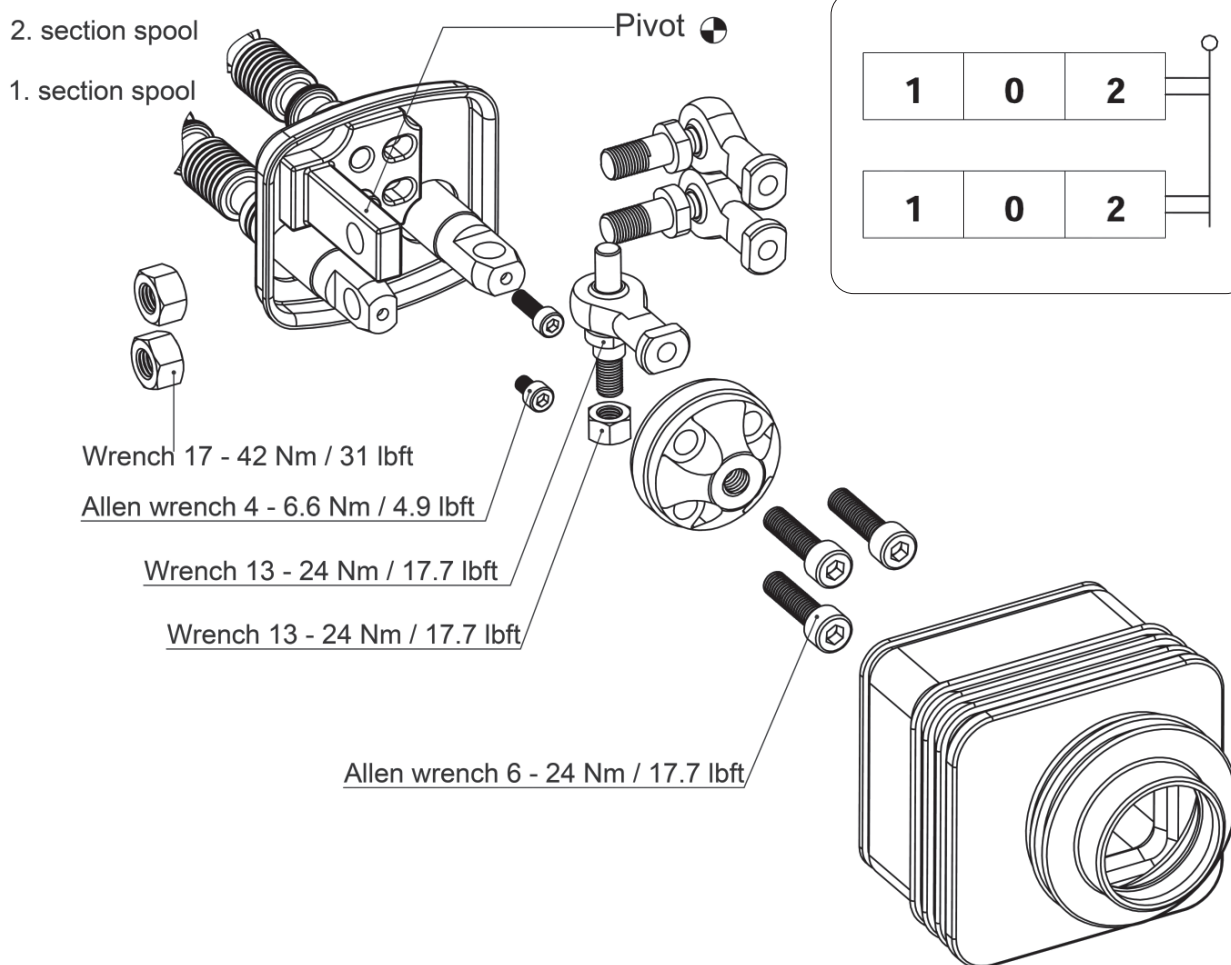
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

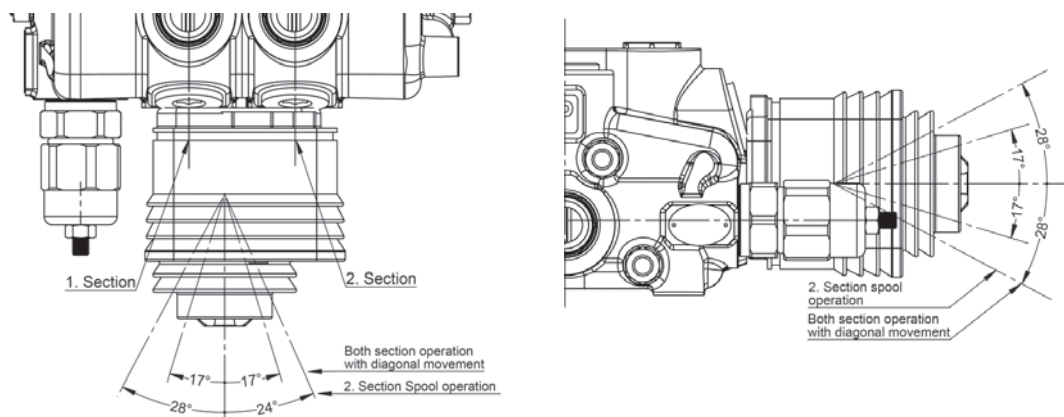
Kit No: JL

Exploded View

Diagram



Operation Angle:



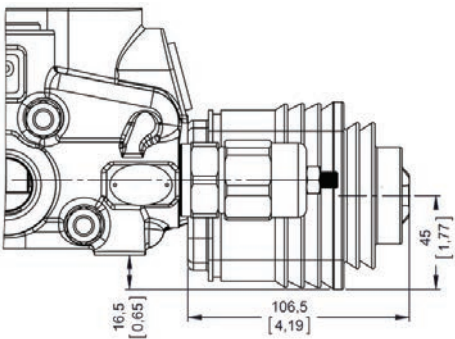
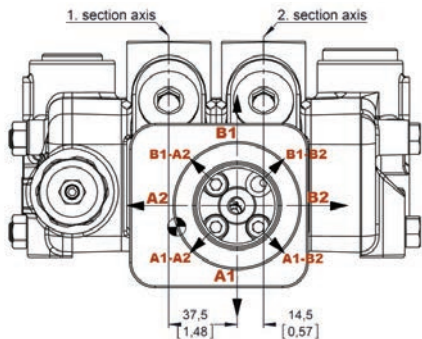
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls – Joystick

Dimensions and movement scheme

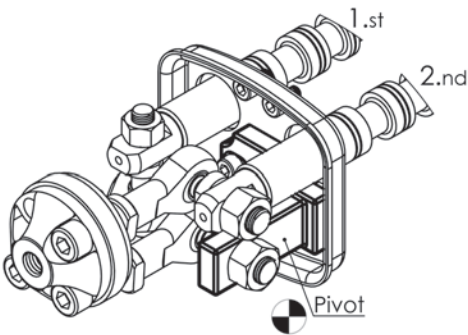
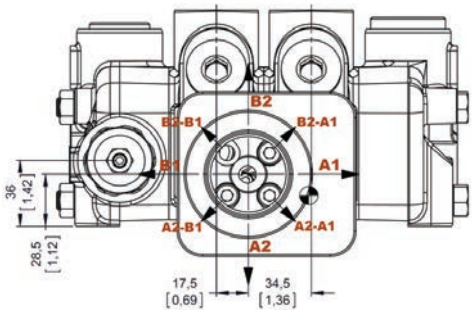
Type No: **JL1**

Application: Pivot placed down on the Left



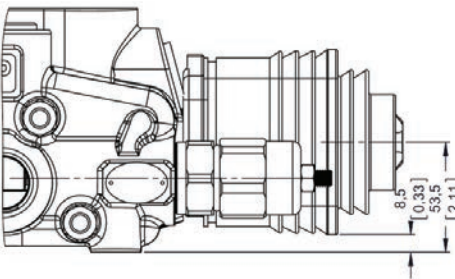
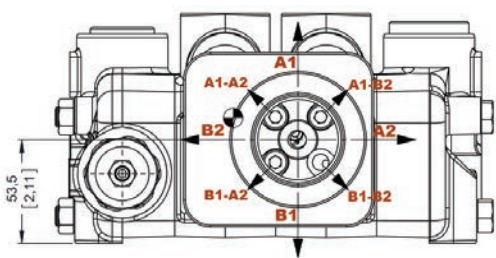
Type No: **JL2**

Application: Pivot placed down on the right



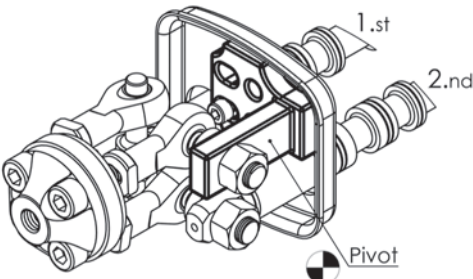
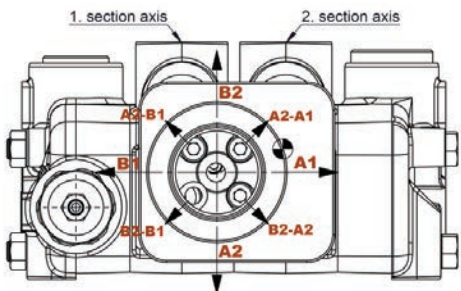
Type No: **JL3**

Application: Pivot placed above on the Left



Type No: **JL4**

Application: Pivot placed above on the right

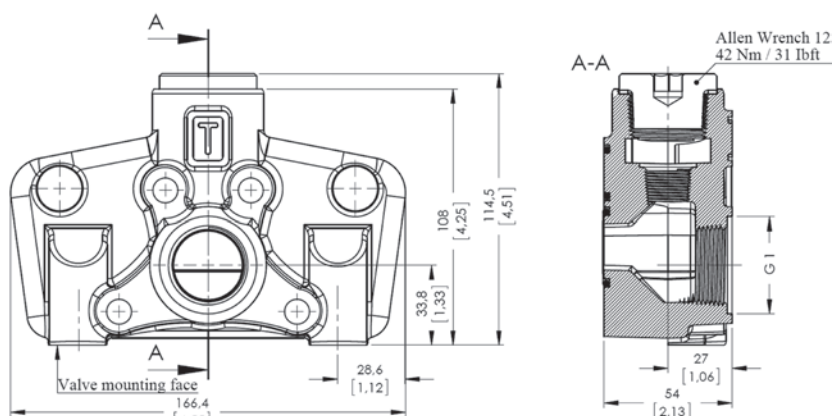


OUTLET COVER - TANK SIDE

Output Cover Options

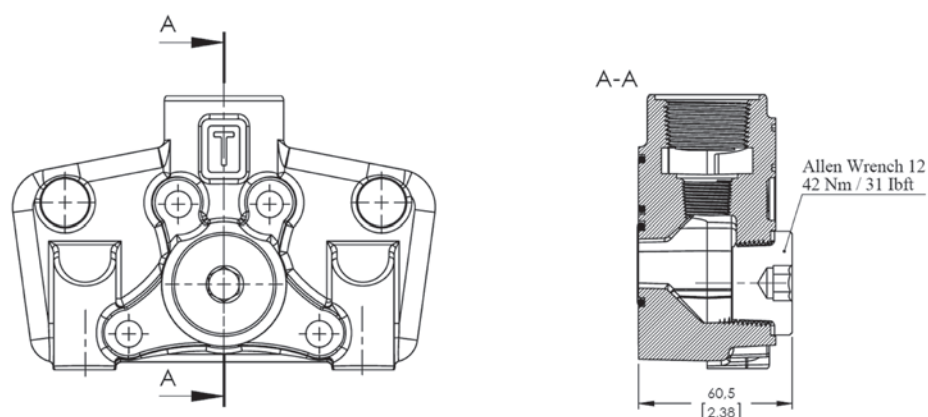
Kit No: **SO**

Sectional Appearance



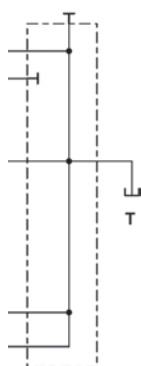
Type No: **TO**

Sectional Appearance

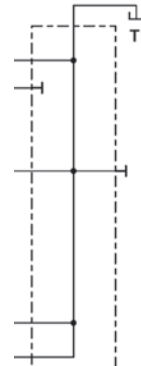


Hydraulic Diagram

Type No: **SO**



Type No: **TO**

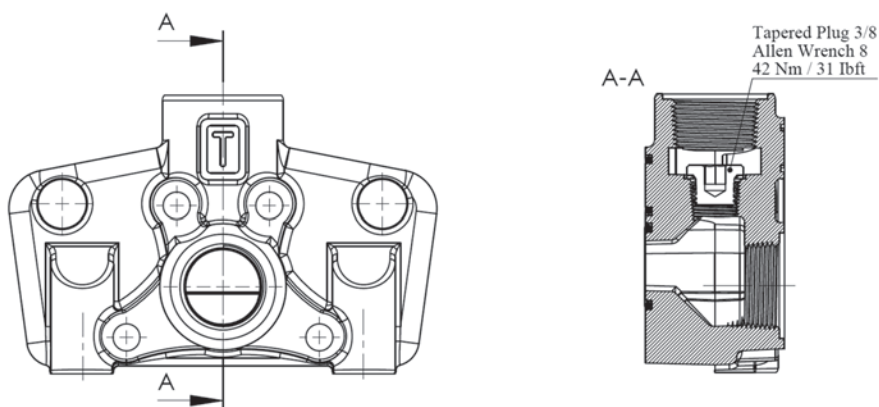


OUTLET COVER - TANK SIDE

Output Cover Options

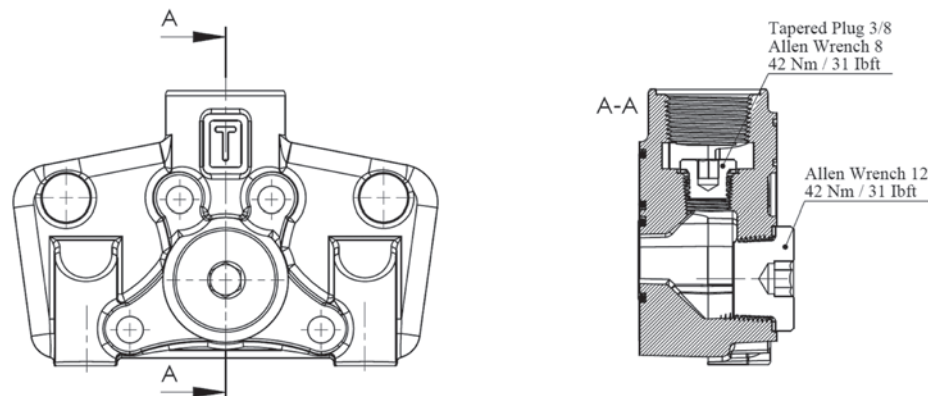
Kit No: TCO

Sectional Appearance



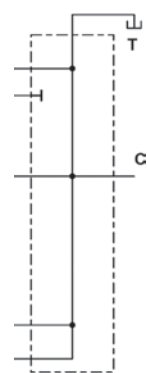
Kit No: TC

Sectional Appearance

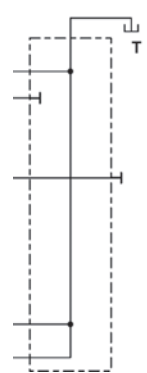


Hydraulic Diagram

Type No: TCO



Type No: TC



PORT VALVES OPTIONS

Anti Shock Valves

Code:

YAS-1 (T1-100)

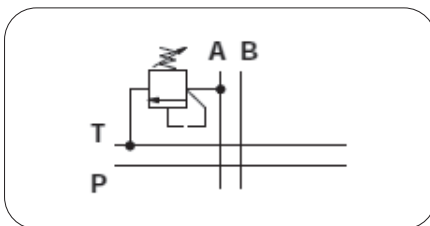
→ Pressure Setting in Bar

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

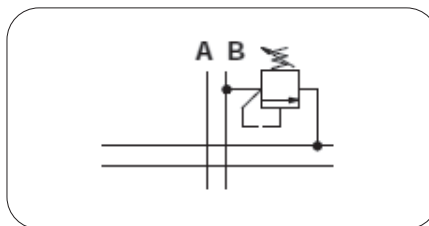
→ 1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

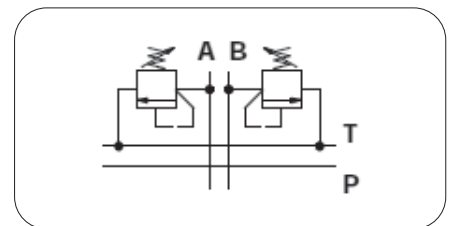
Kit No: **YAS1**



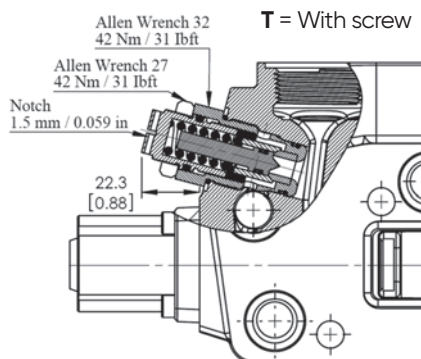
Kit No: **YAS2**



Kit No: **YAS3**

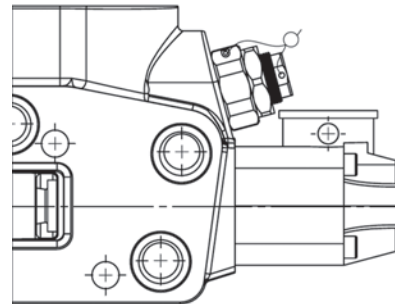


Adjustment Type on Valve:

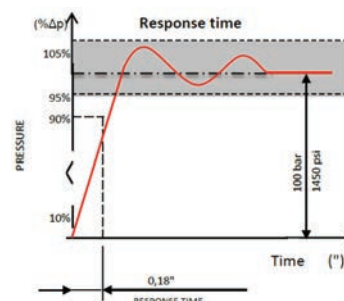
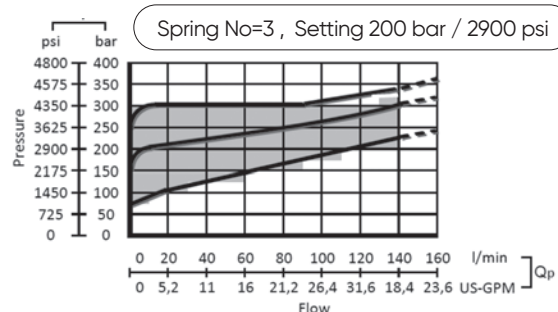
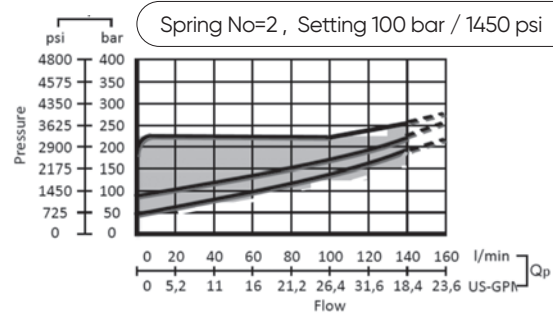
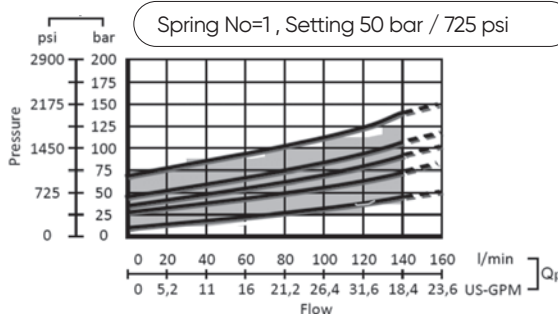


T = With screw

L = Valve set



Performance Data:



PORT VALVES OPTIONS

Anti shock And Anti Cavitation Valves

Code:

YAA-1 (T1-100)

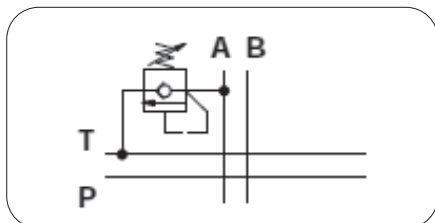
→ Pressure Setting in Bar

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

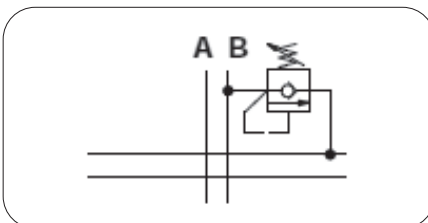
→ 1 = Mounted Port A , 2 = Mounted Port B , 3 = Mounted Port A and B

Hydraulic Diagram

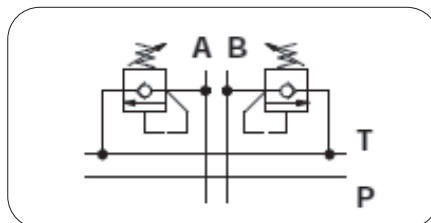
Kit No: **YAA1**



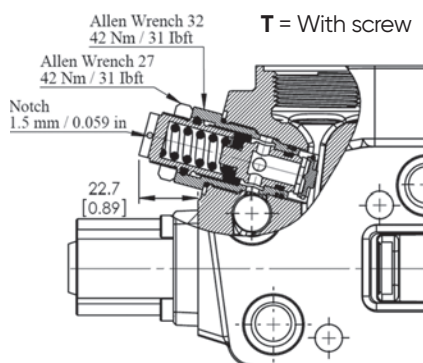
Kit No: **YAA2**



Kit No: **YAA3**

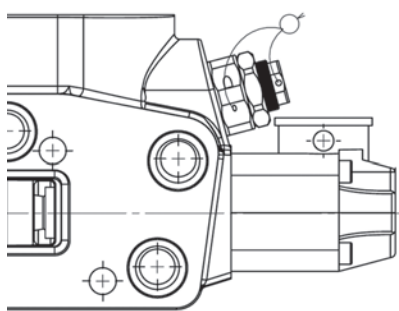


Adjustment Type on Valve:

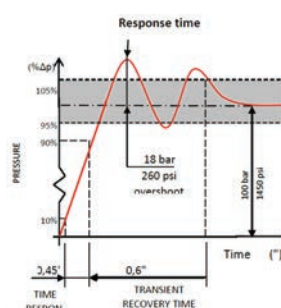
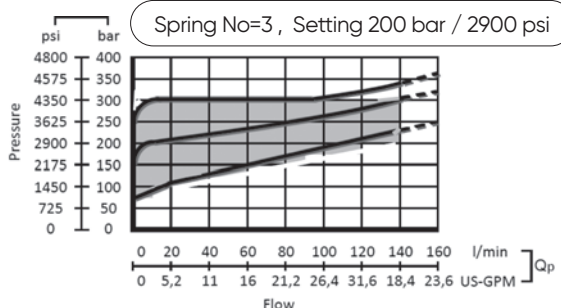
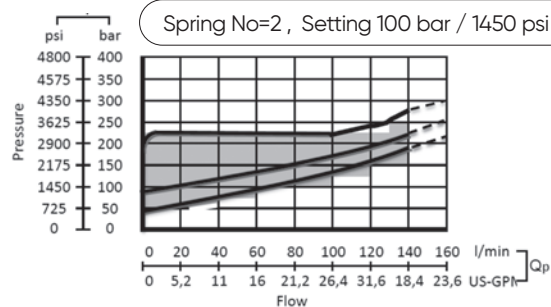
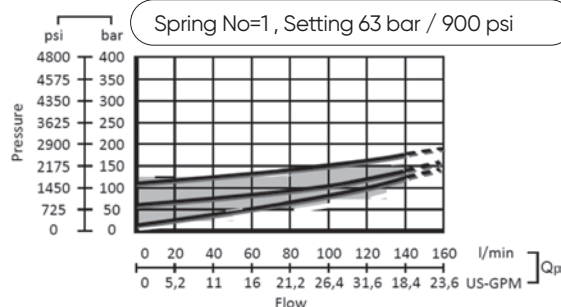


T = With screw

L = Valve set



Performance Data:



PORT VALVES OPTIONS

Anti Cavitation Valves

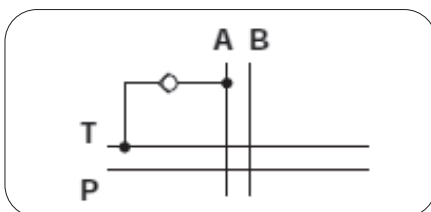
Code:

YAC-1

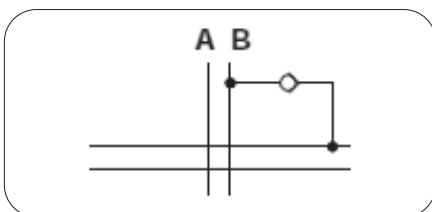
→ 1= Mounted Port A , 2=Mounted Port B , 3=Mounted Port A and B

Hydraulic Diagram

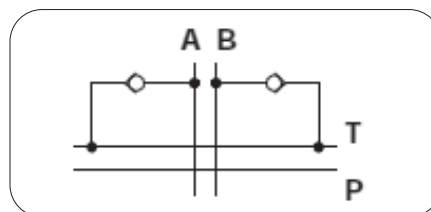
Kit No: **YAC1**



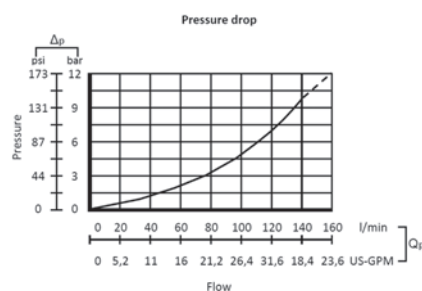
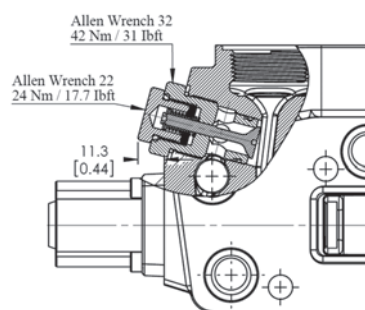
Kit No: **YAC2**



Kit No: **YAC3**



Adjustment Type on Valve And Data:

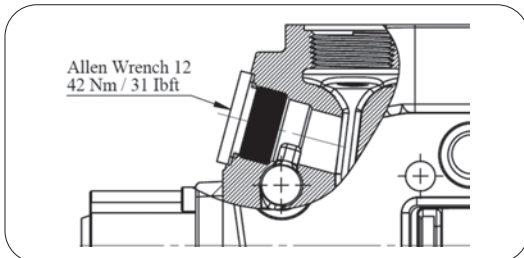


Valve Blanking

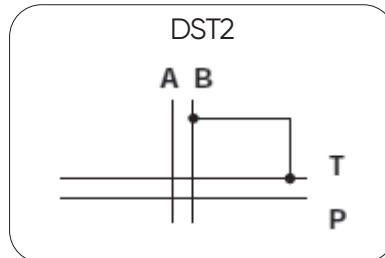
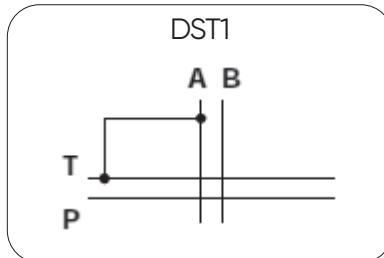
Plug with tank connection

DST-1 (1:Mounted port A – 2:Mounted port B)

Sectional Appearance

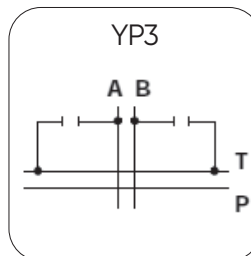
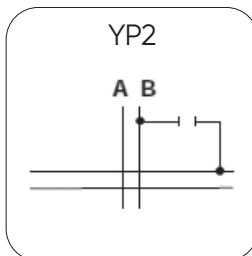
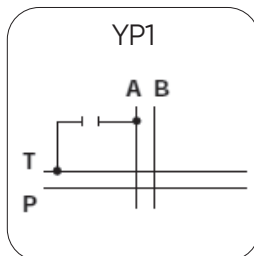
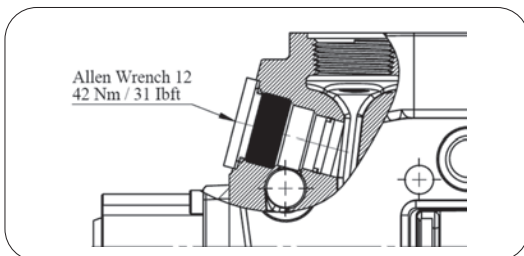


Hydraulic Diagram



Plug

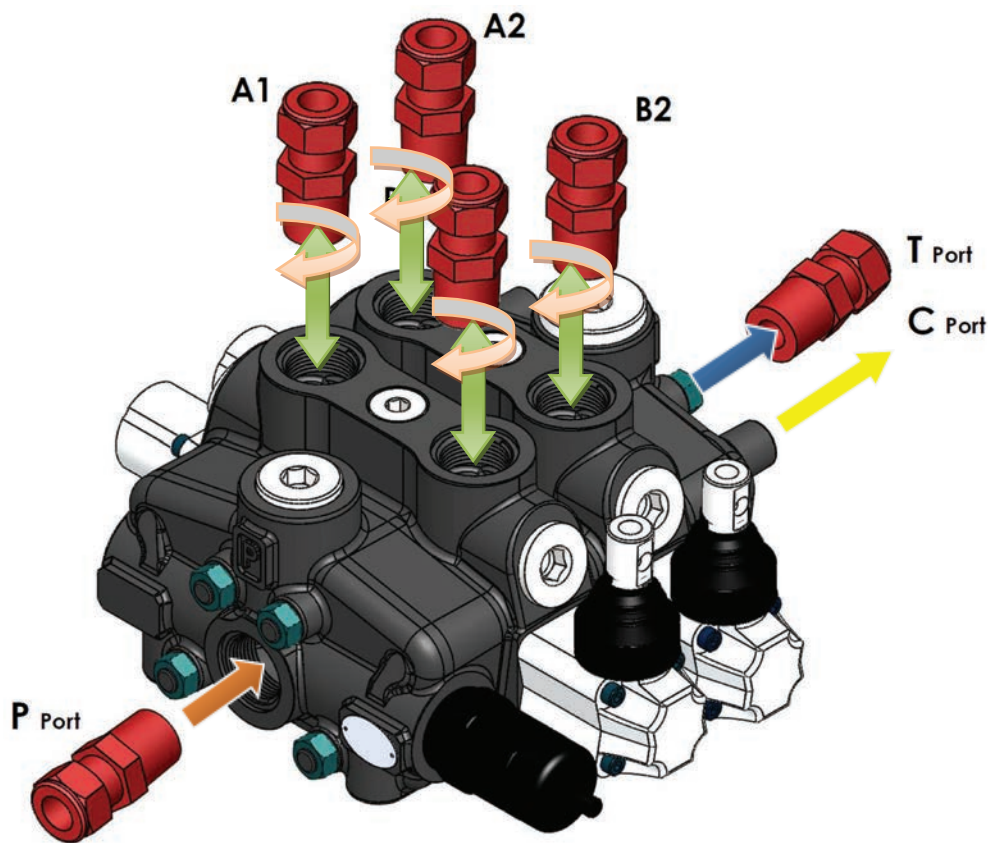
YP-1 (1:Mounted port A – 2:Mounted port B – 3:Mounted port A and B)



INSTALLATION AND MAINTENANCE

The GMM-PD250 valve is assembled and tested as per the technical specification of this catalog. Before the final installation on your equipment, follow the below recommendation:

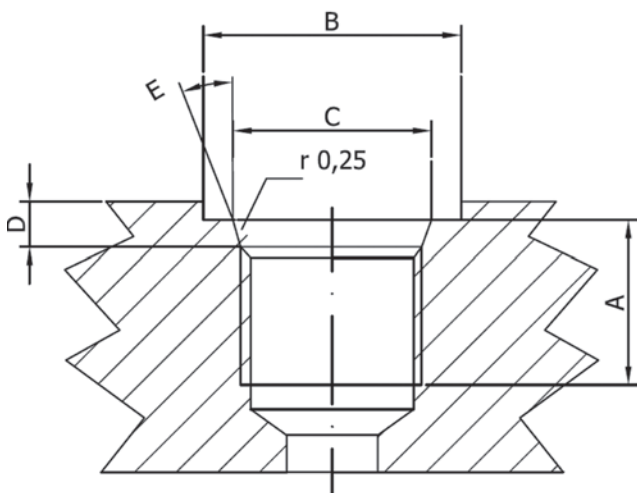
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



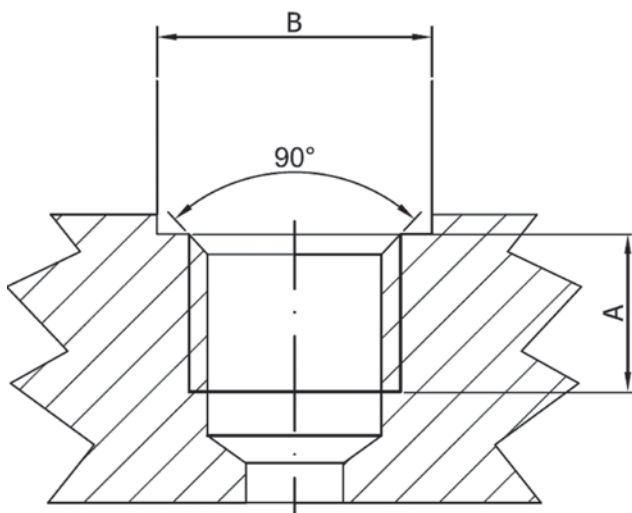
Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 1	G 1	G 1/4
With O--Ring seal	70 / 51.6	70 / 51.6	100 / 73.7
With copper washer	70 / 51.6	70 / 51.6	90 / 66.3
With steel and rubber washer	70 / 51.6	70 / 51.6	100 / 51.6
BSP (ISO 228/1)	G 1/4	G 1/4	G 1/4
With O--Ring seal	100 / 73.7	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 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"		G3/4		G1	
mm	in						
A		16	0,63	18	0,71	20	0,79
B		27	1,06	33	1,30	40	1,57

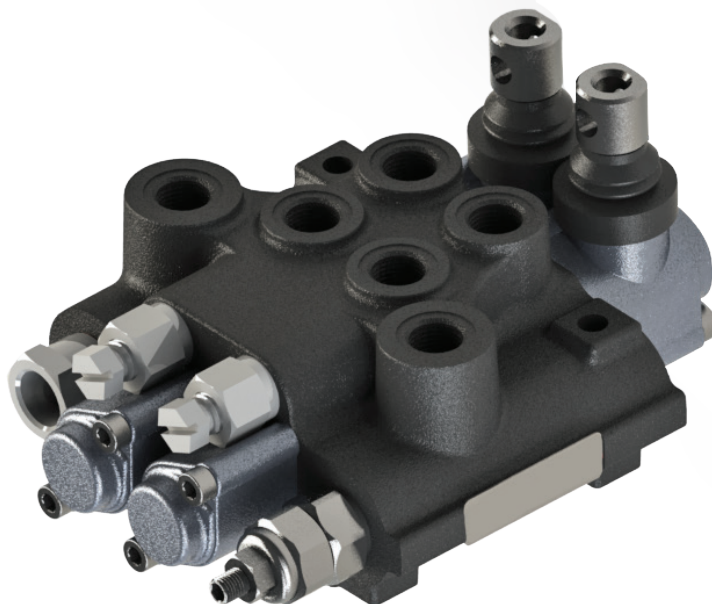


SPECIAL TRACTOR
VALVES

GMM-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) .

GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

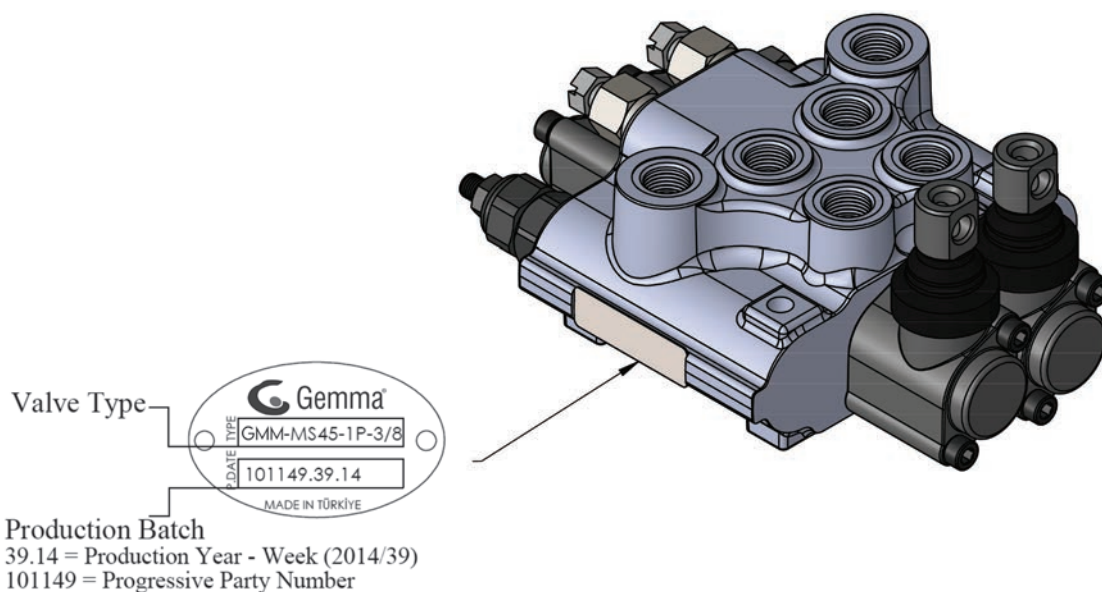
WORKING CONDITIONS

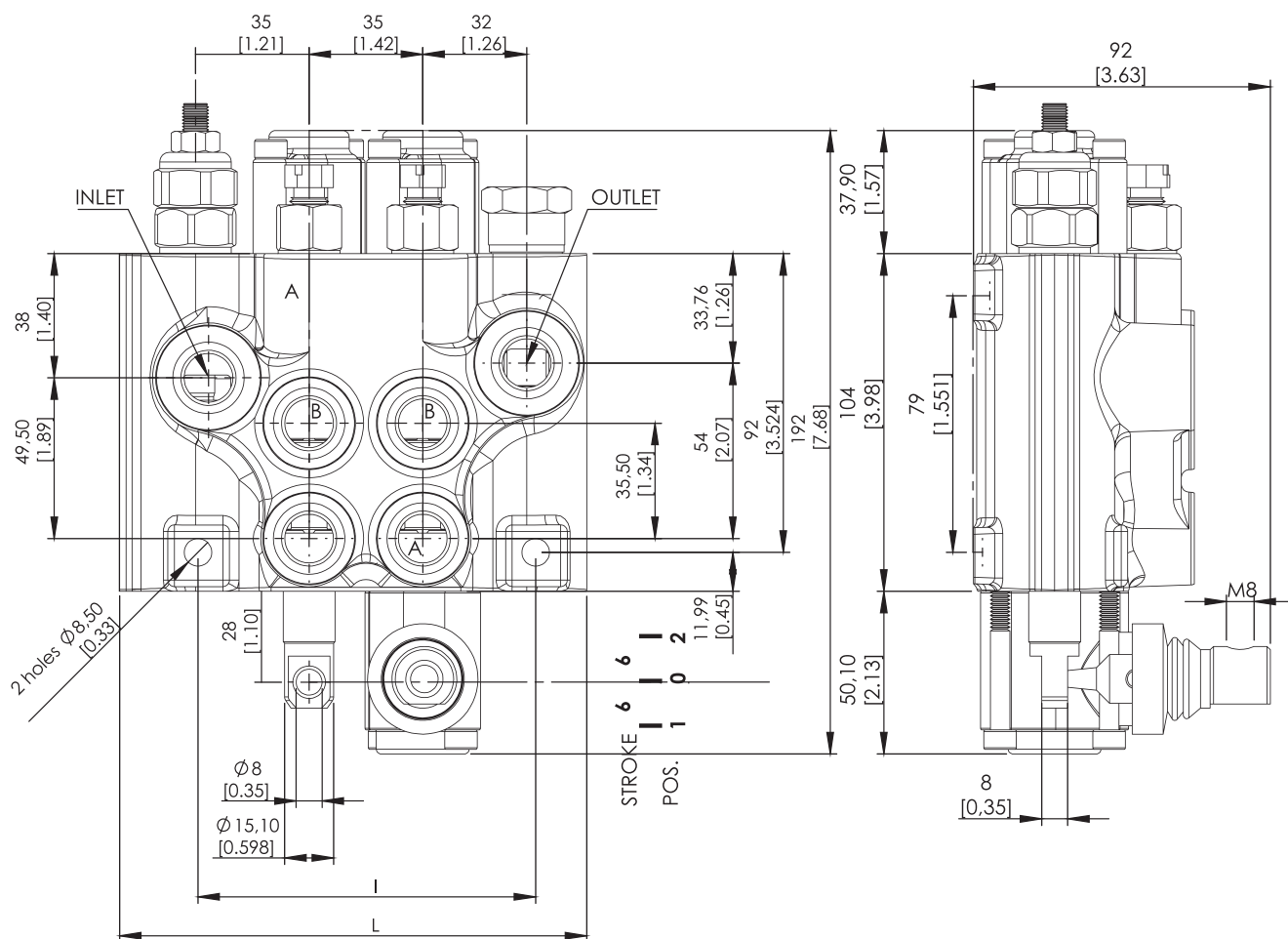
Nominal Flow Rating / Displacement	50 l/min	13,5 U.S.G.P.M
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
(Series Circuit)	250 Bar	3600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range	From 10 to 75 mm ² /s	From 10 to 75 cSt
Minimum / 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 7	
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° 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


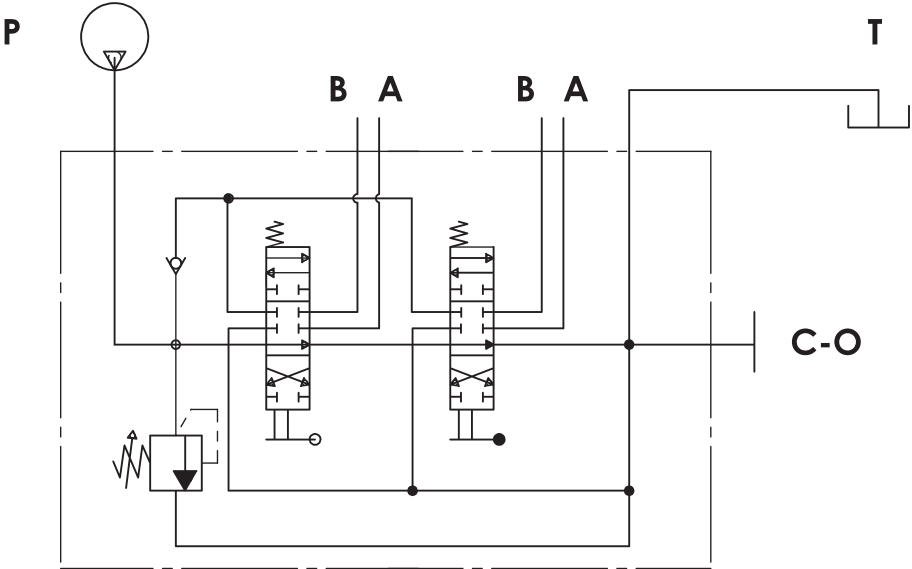
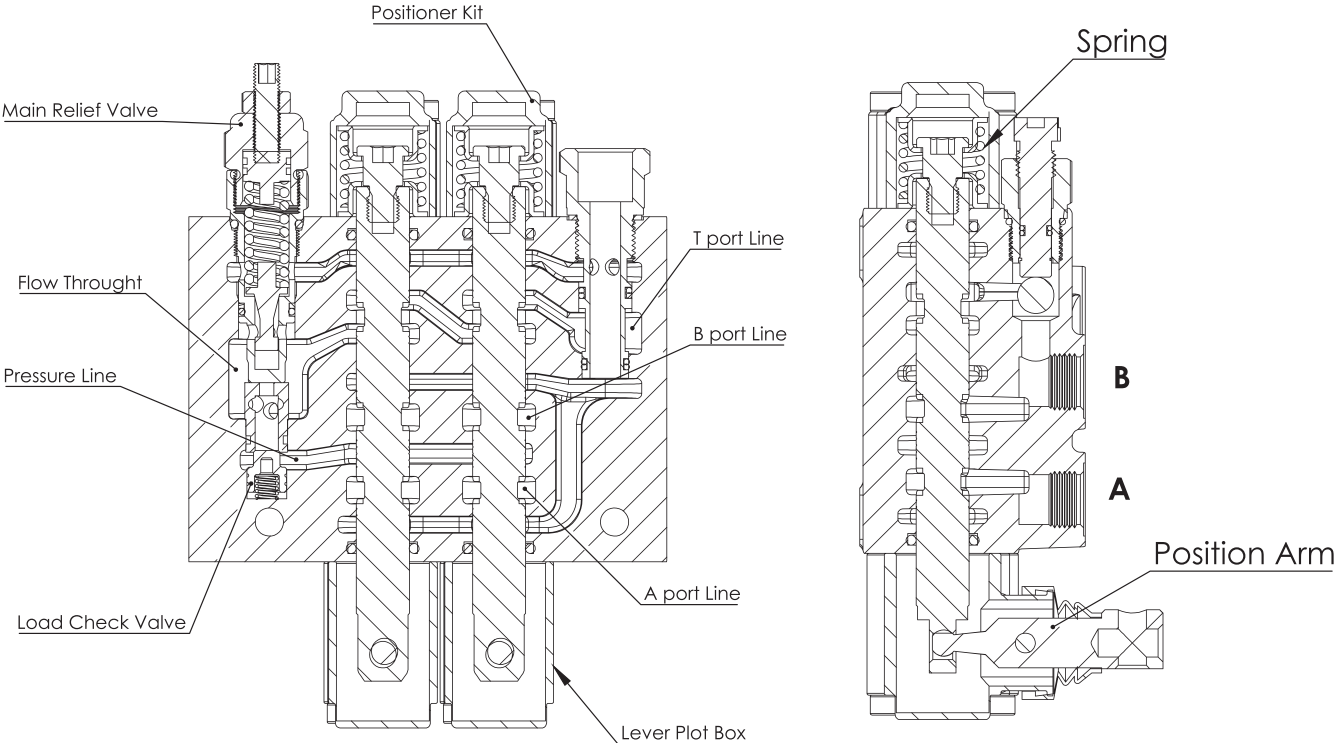
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- TV50-1P	68	2,67	105	4,12	2,80	6,16
GMM- TV50-2P	104	4,09	140	5,49	4,50	9,90
GMM- TV50-3P	140	5,51	175	6,86	6,30	13,86

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

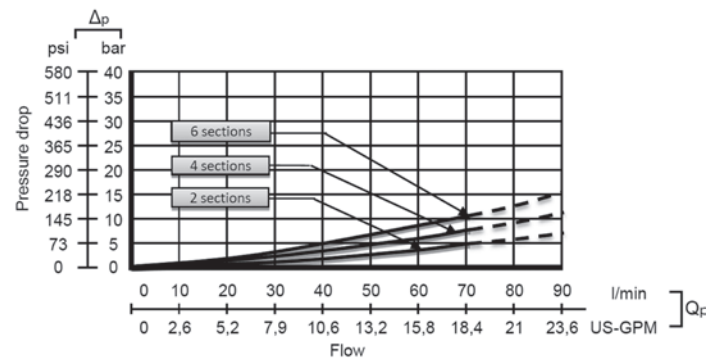
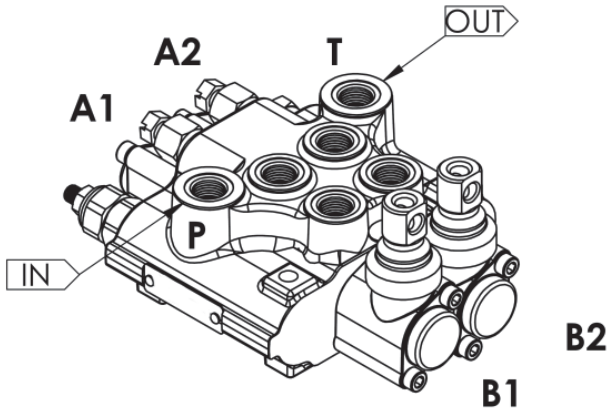
Parallel - Standard Configurations With Side Inlet And Outlet Open Center



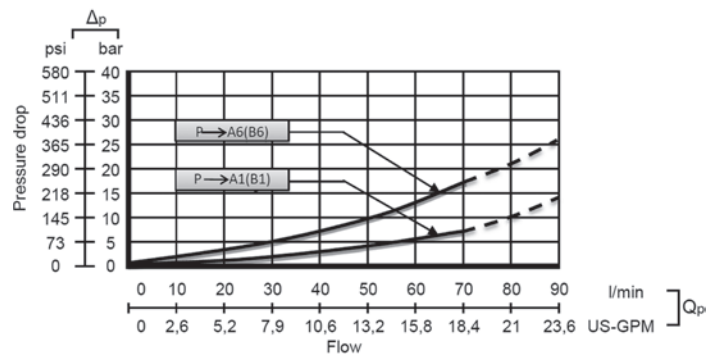
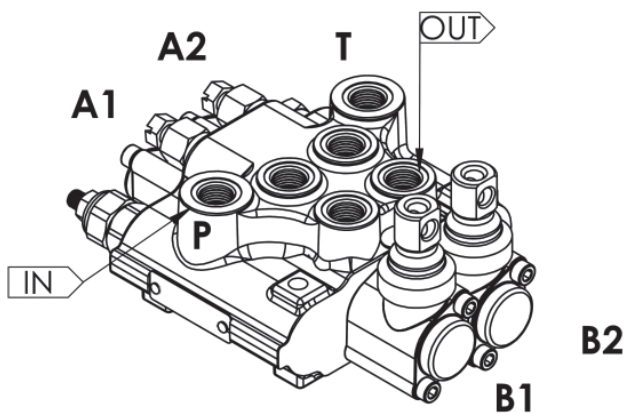
Code: GMM TV50-2P / SMR2-120 / 1A-SR-STL/1A-SR-STL/PA1/SGT

PERFORMANCE DATA AND CURVE

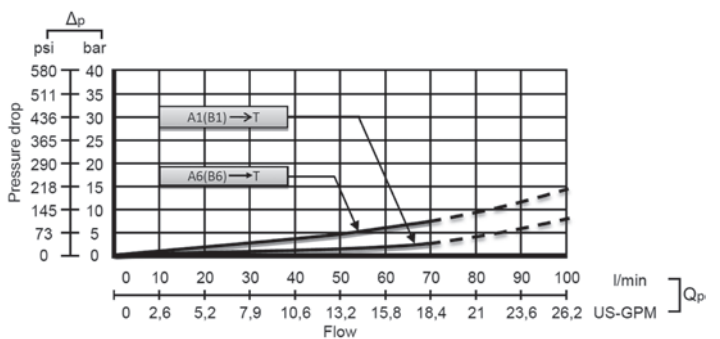
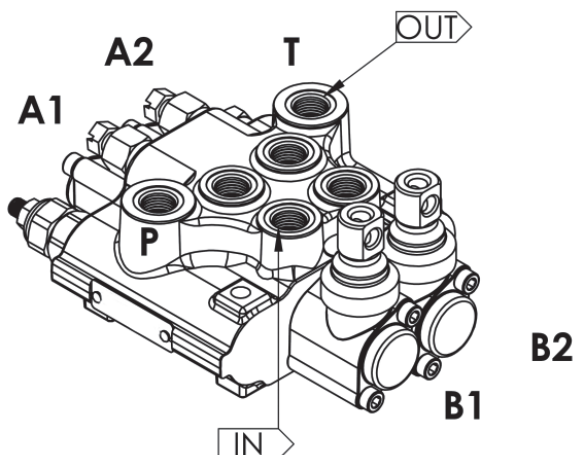
Open Center - Pressure Drop (P-T)



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



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



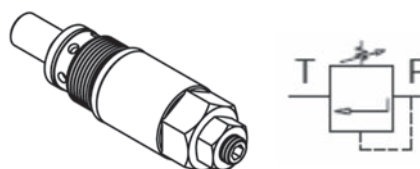
Note: Measured and chart value with spool type 1A.

INLET RELIEF OPTIONS

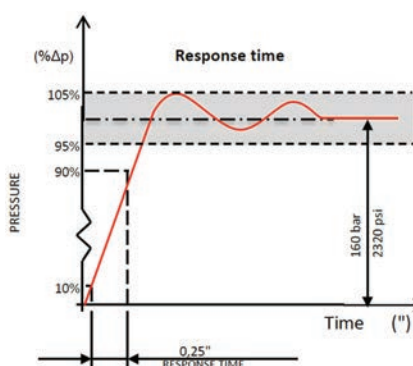
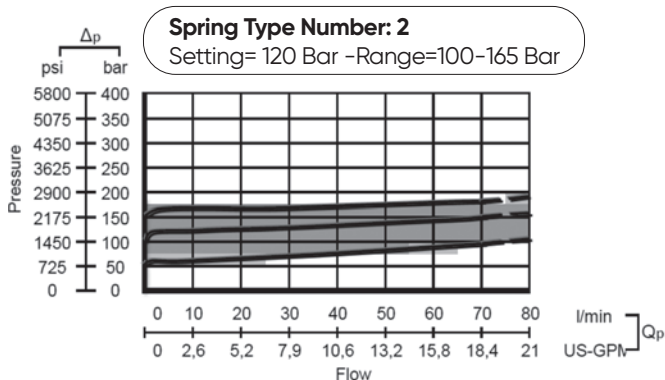
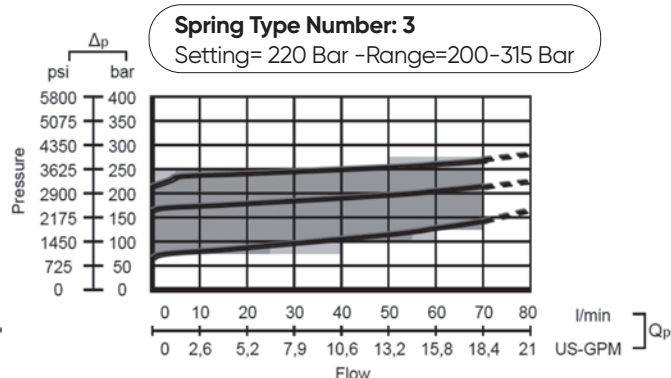
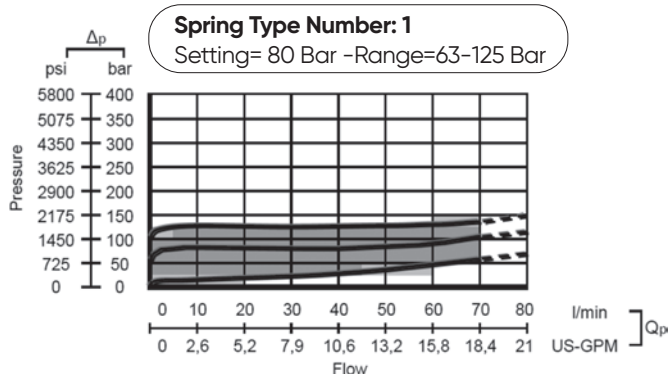
Direct Pressure Relief Valve

Code:

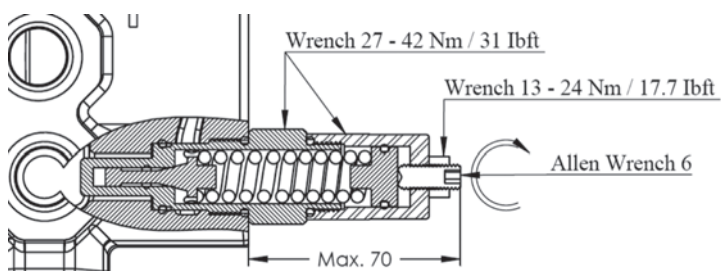
SMR2 – 120



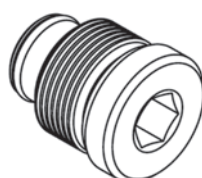
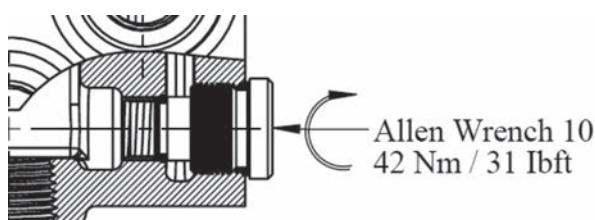
Performance Data



Adjustment Type on Valve

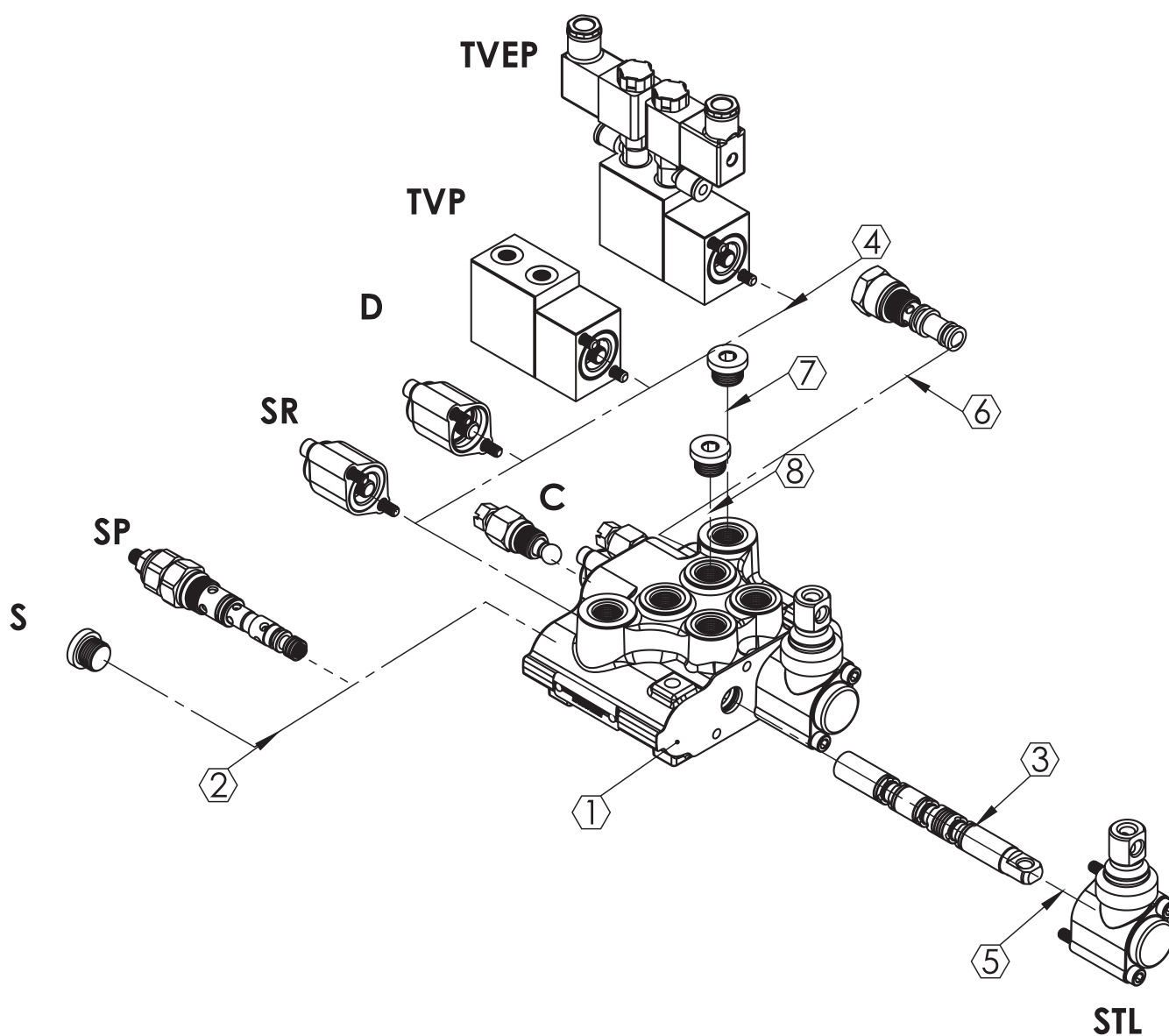
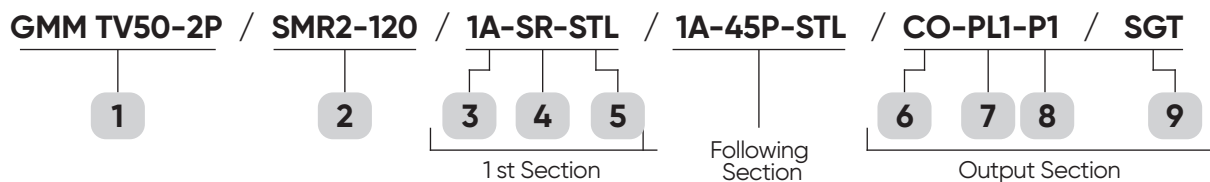


Relief Blanking Plug - WM



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)

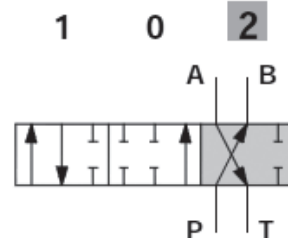
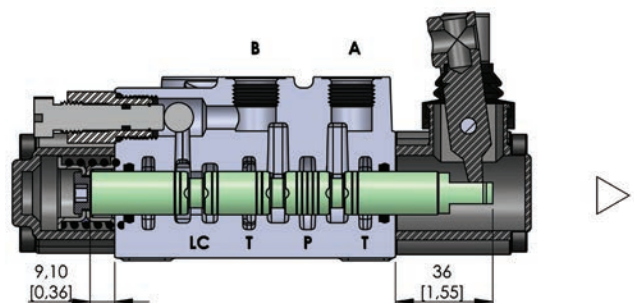
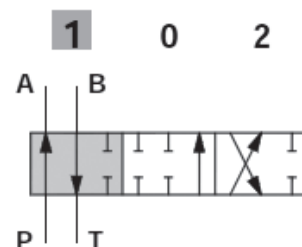
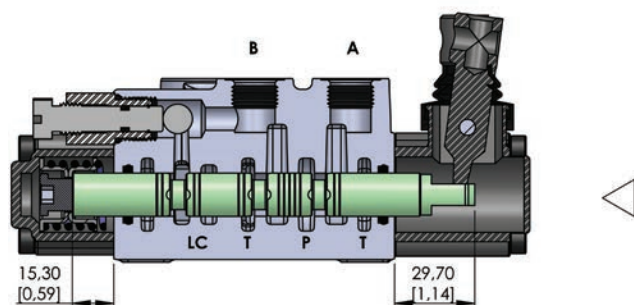
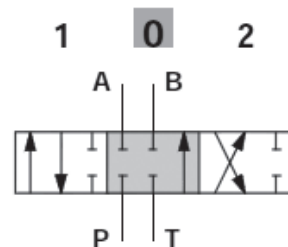
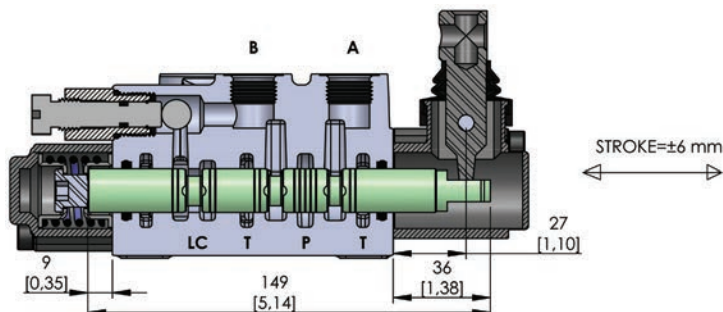
*Page 4 for detail port information.

HandLever

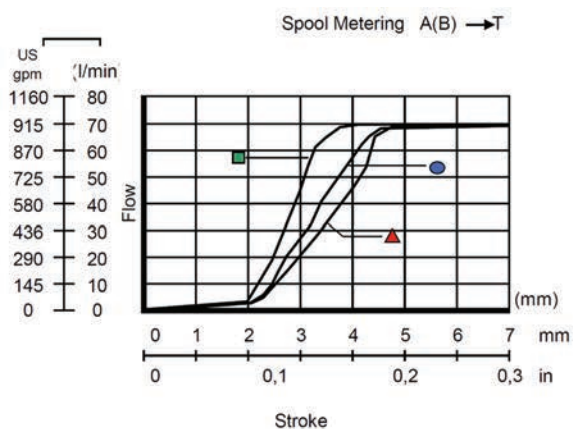
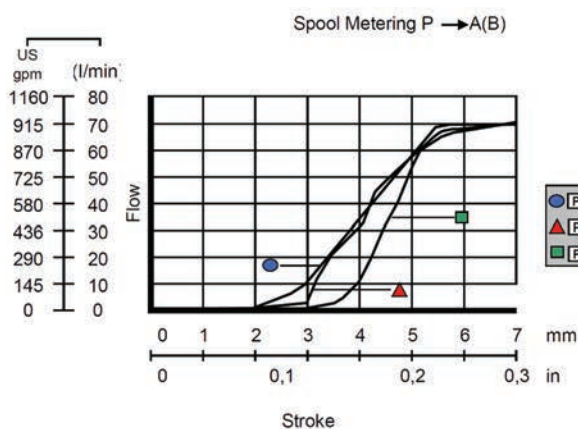
L = Standard HandLever (L=120mmxM10) -
(7L040100)

SPOOL OPTIONS

Spool Type - 1A

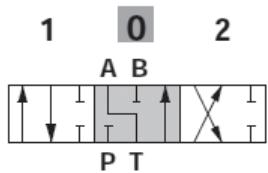
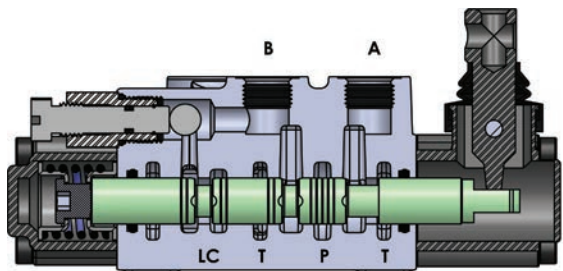


Performance Curve And Data

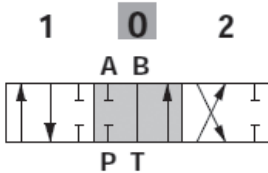
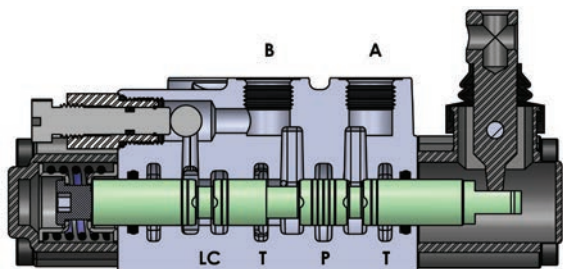


SPOOL OPTIONS

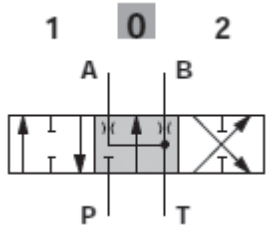
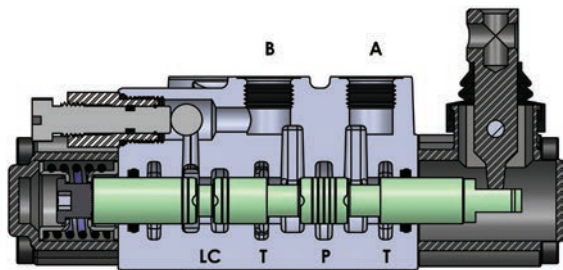
Spool Type - 2A



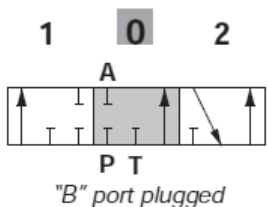
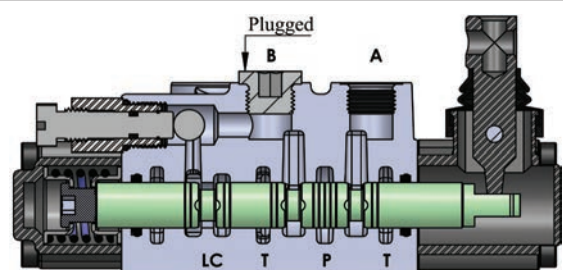
Spool Type - 3A



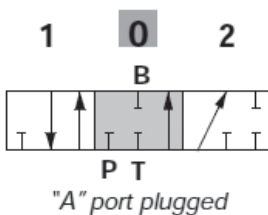
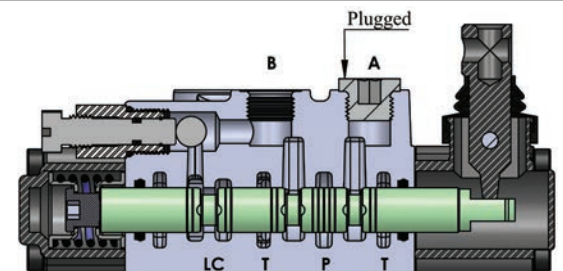
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

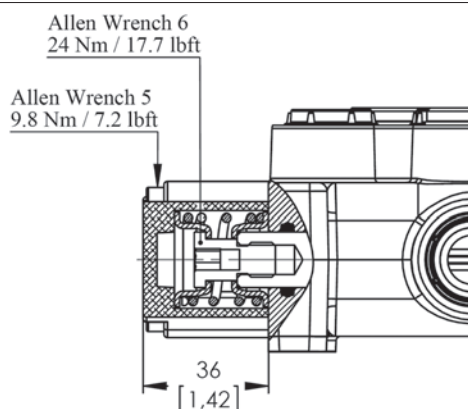


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



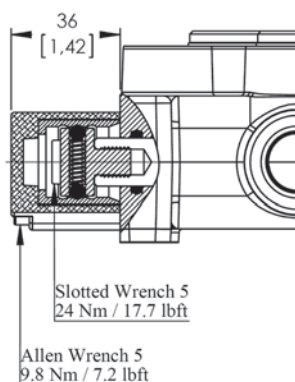
Diagram



With Detent

Kit No: **D**

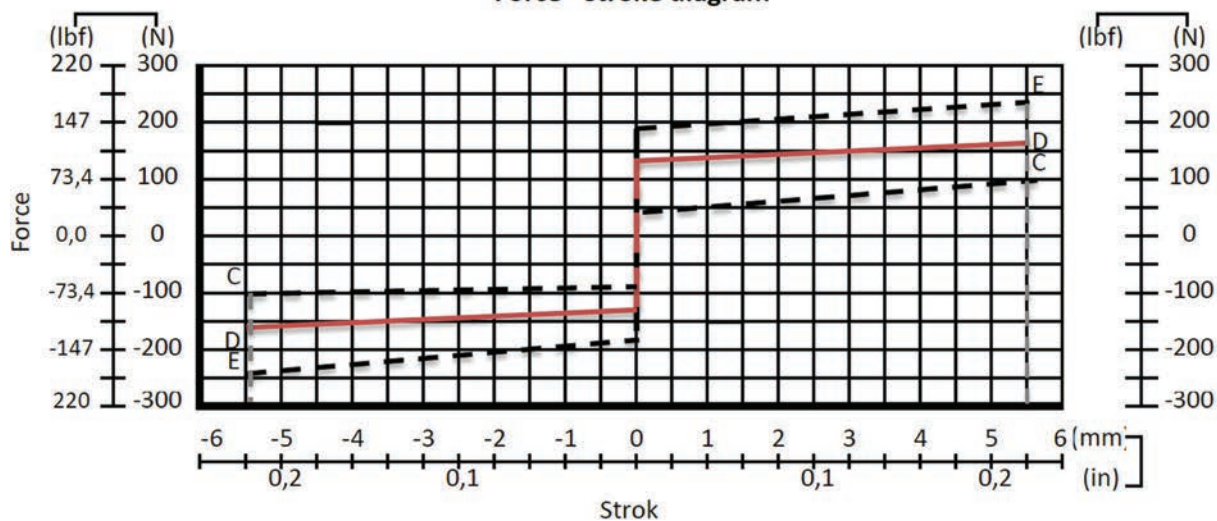
Sectional Appearance



Diagram



Force - stroke diagram

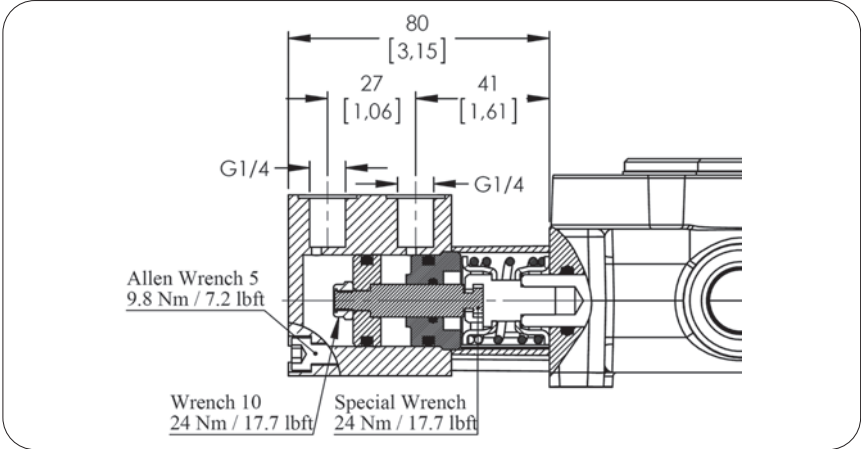


SPOOL POSITIONERS – SIDE OF RETURN

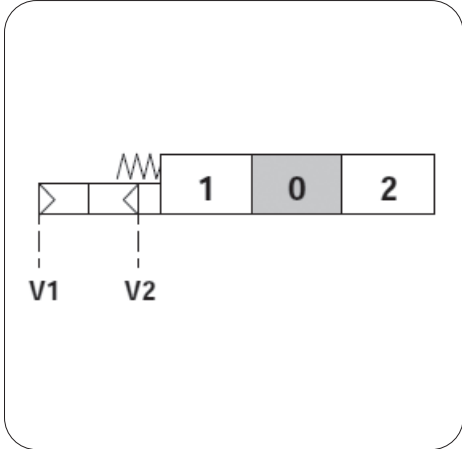
ON/OFF Pneumatic Control

Kit No: TV80P

Sectional Appearance



Diagram



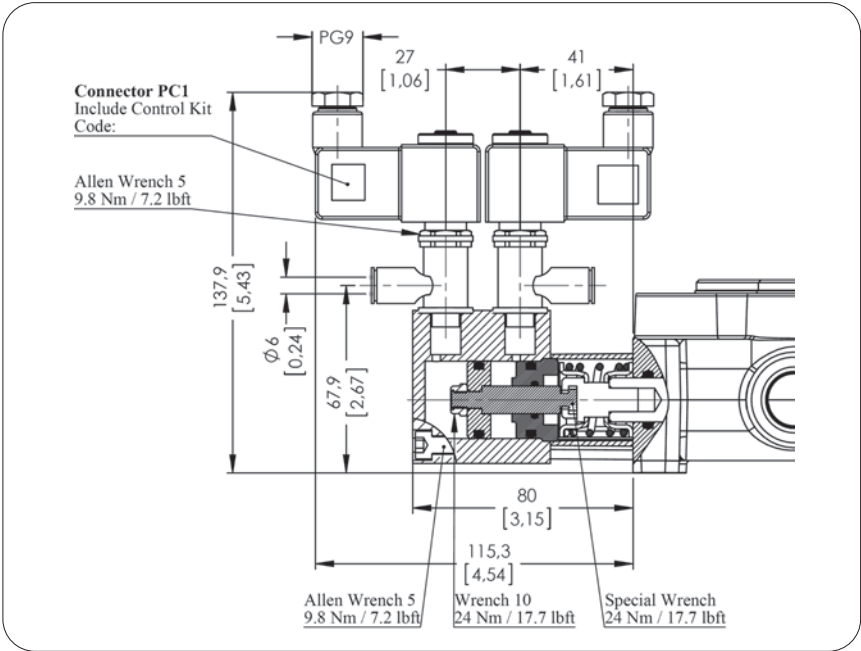
Operating Features

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

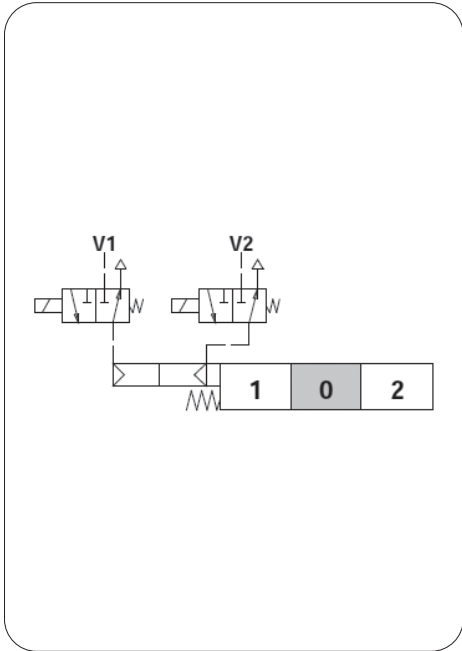
ON/OFF Electro-Pneumatic Control

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

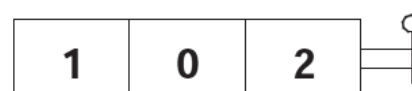
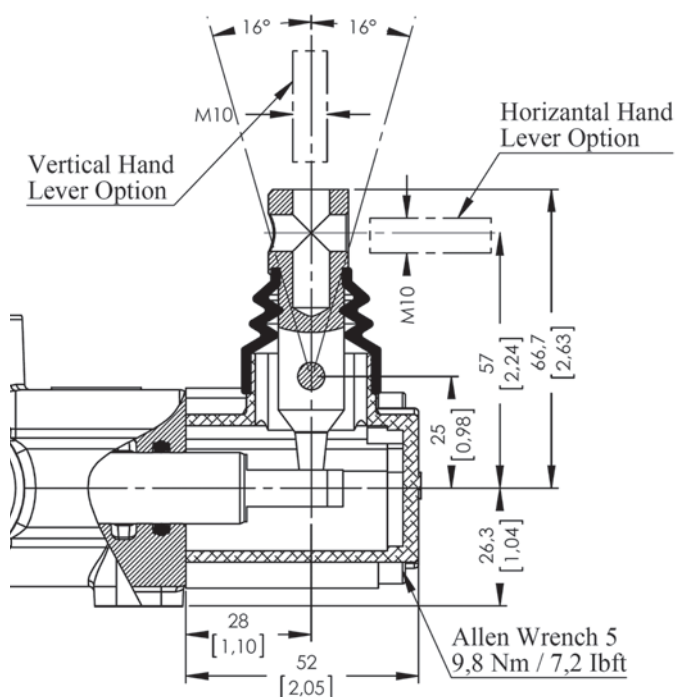
SPOOL POSITIONERS – SIDE OF LEVER CONTROL

Lever Controls

Kit No: **STL - L0**

Sectional Appearance

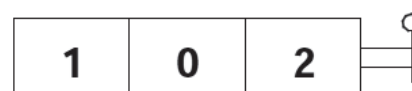
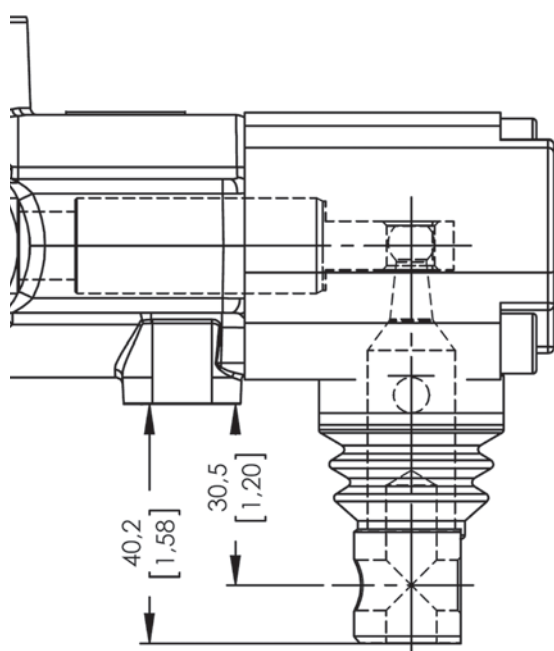
Diagram



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

2. section spool

1. section spool

Pivot

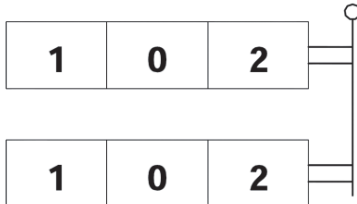
Wrench 17 - 42 Nm / 31 lbft

Allen wrench 4 - 6.6 Nm / 4.9 lbft

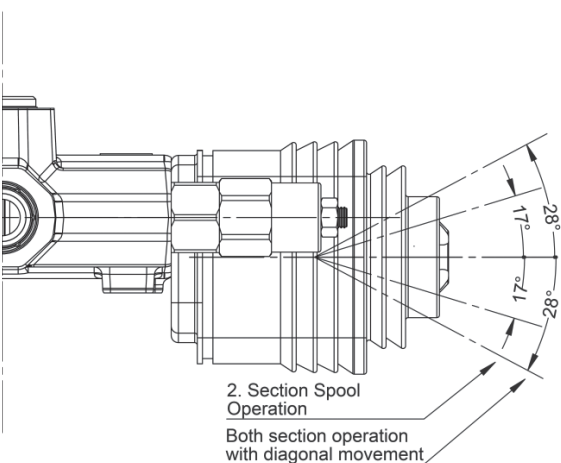
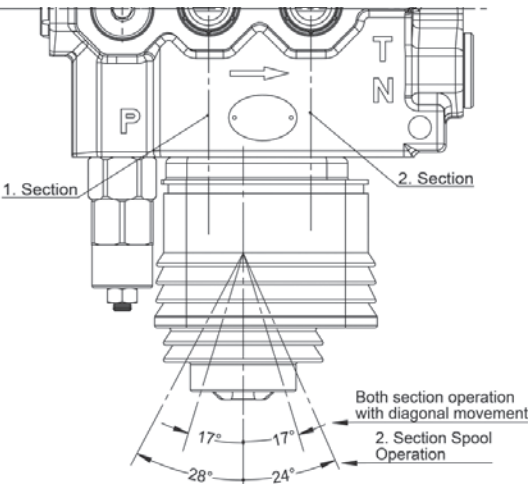
Wrench 13 - 24 Nm / 17.7 lbft

Wrench 13 - 24 Nm / 17.7 lbft

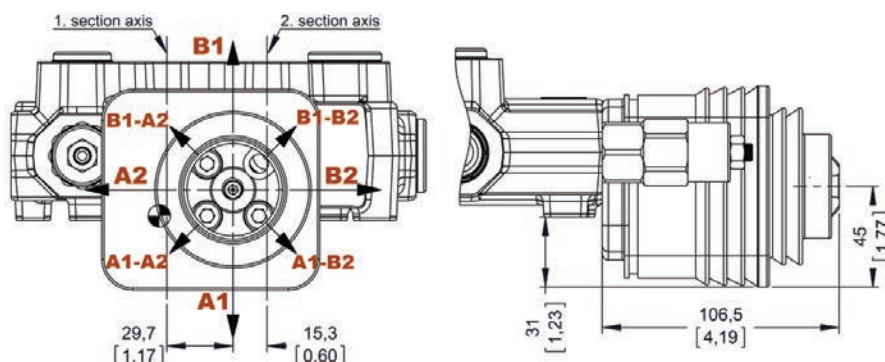
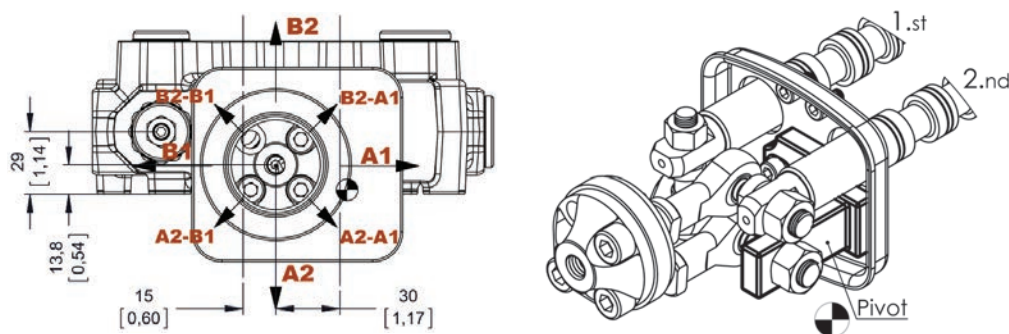
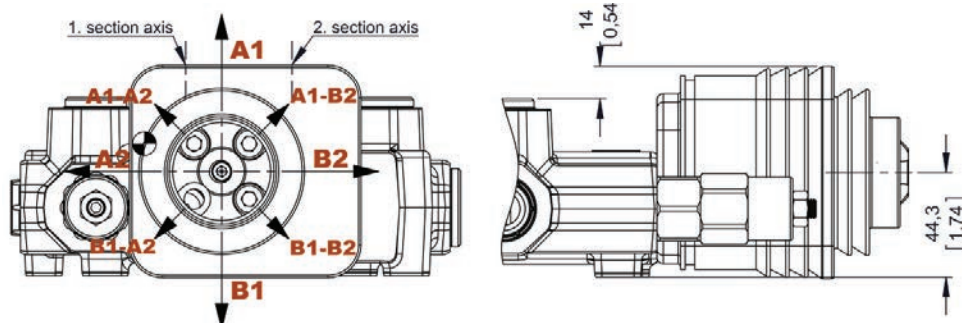
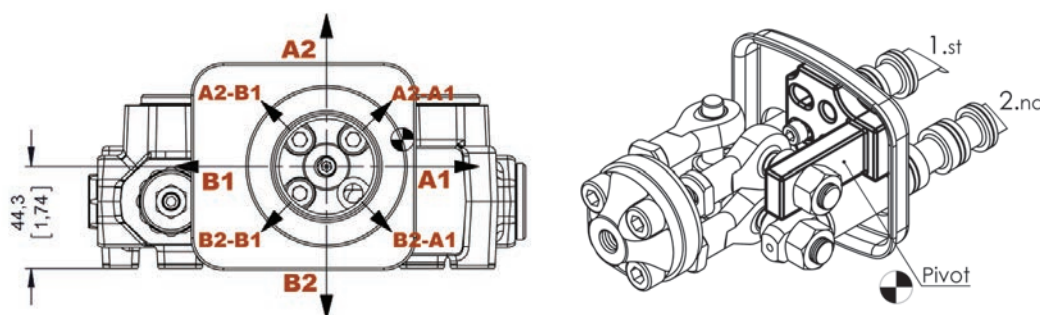
Allen wrench 6 - 24 Nm / 17.7 lbft



Operation Angle:



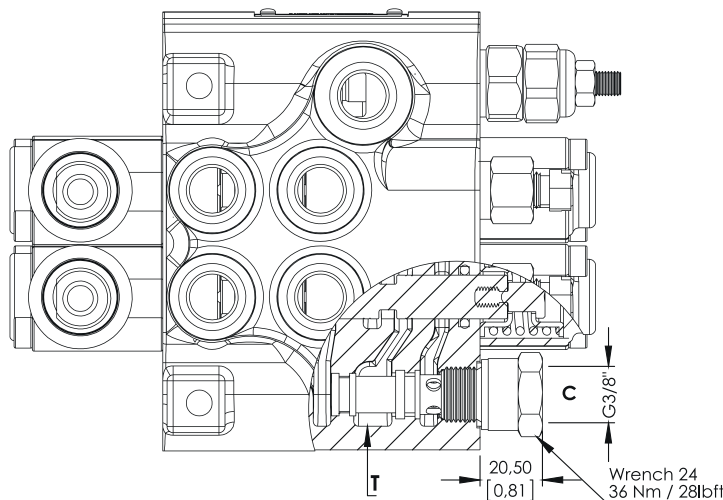
SPOOL POSITIONERS – SIDE OF LEVER CONTROL
Lever Controls - Joystick
Dimensions and movement scheme

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


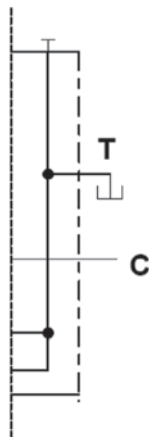
OUTLET PORT OPTIONS

Carry - Over Connection

Kit No: CO

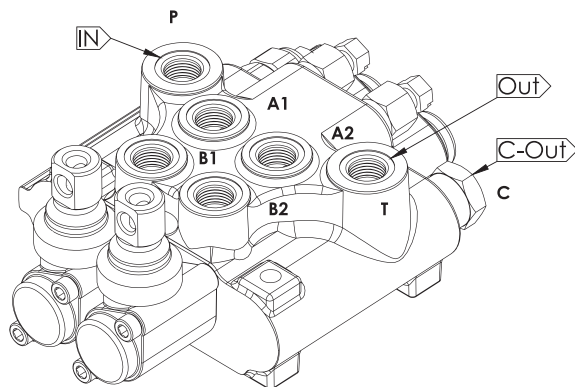


Sectional Appearance



Hydraulic Circuit

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



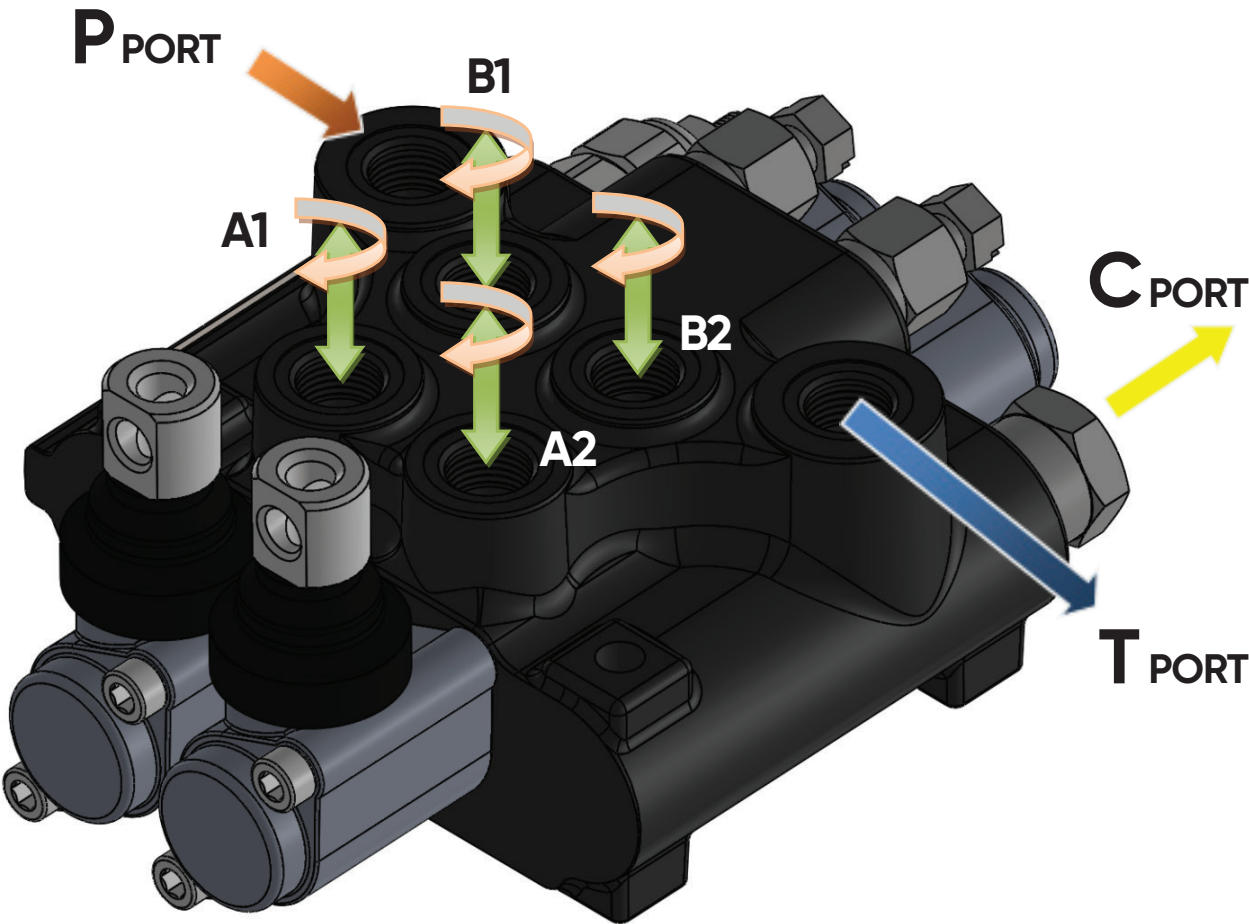
Direction of Port Connected

SGT : See page 5 for Standard center

INSTALLATION AND MAINTENANCE

The GMM 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:

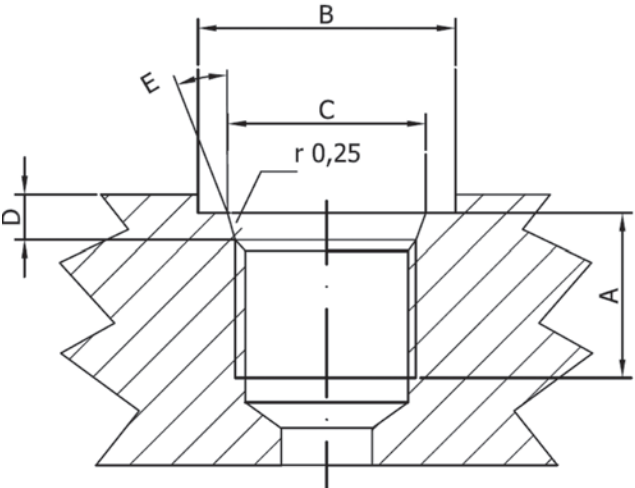
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



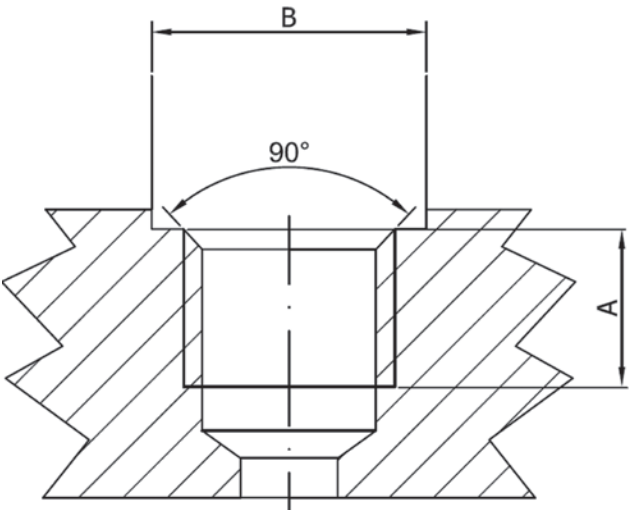
Threads Type (Nm / lbft)	P Port	A and B Port	T and C Port
BSP (ISO 228/1)	G 3/8	G 3/8	G 3/8
With O--Ring seal	35 / 25.8	35 / 25.8	35 / 25.8
With copper washer	40 / 29.5	40 / 29.5	40 / 29.5
With steel and rubber washer	30 / 22.1	30 / 22.1	30 / 22.1
UN--UNF (ISO 11926--1)	3/4--16 UNF--2B	9/16--18 UNF--2B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

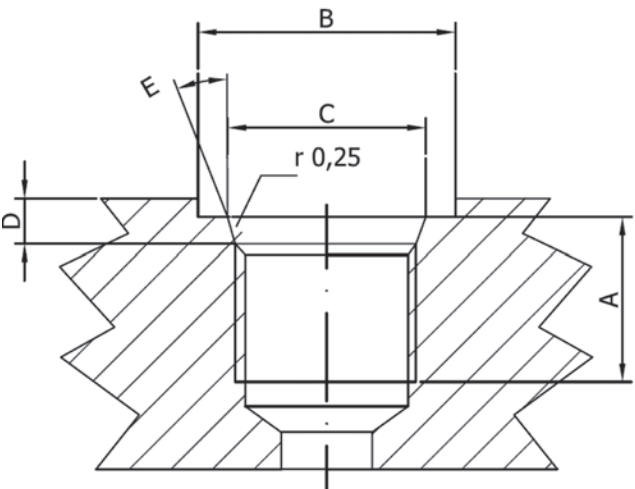
Ports Dimensional Data



SAE UN-UNF (ISO 725)						
Dimensions		9/16-18		3/4-16		7/8-14 UNF
mm	in	UNF SAE6		UNF SAE8		SAE10
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		G1/2
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		M22x1,5
mm	in	ISO 262		ISO 262
A		14	0,55	14 0,55
B		27,5	1,08	27,5 1,08



GMM
TV50

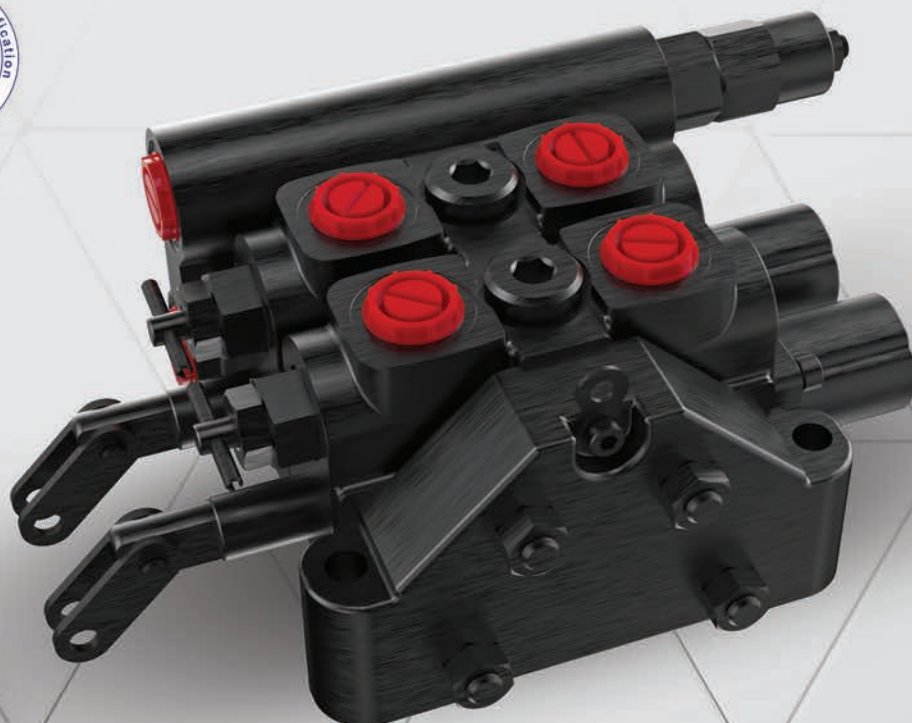


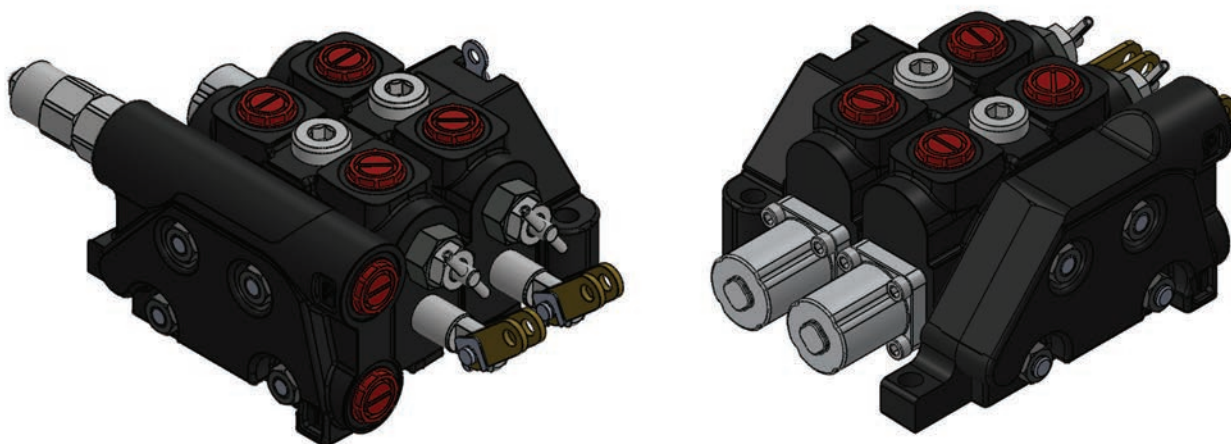


SPECIAL TRACTOR
VALVES

GMM-DMF

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 Dept.

Warning!: All specifications of this catalog refer to the standard product at this date (09/2018). GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

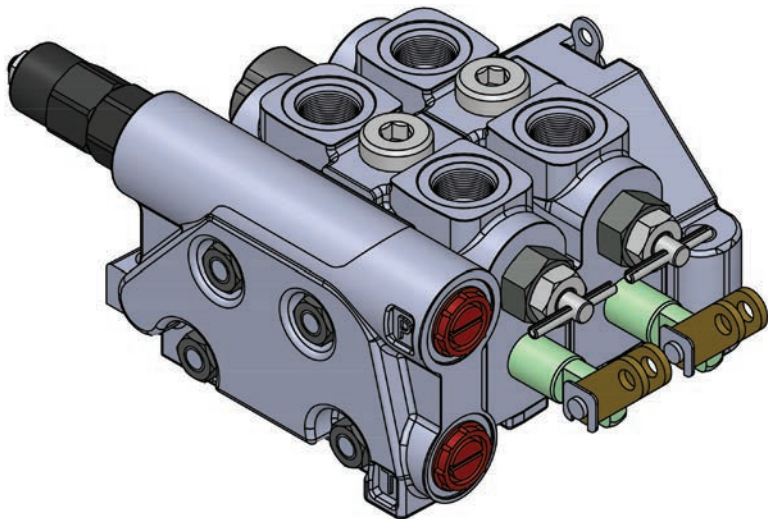
WORKING CONDITIONS

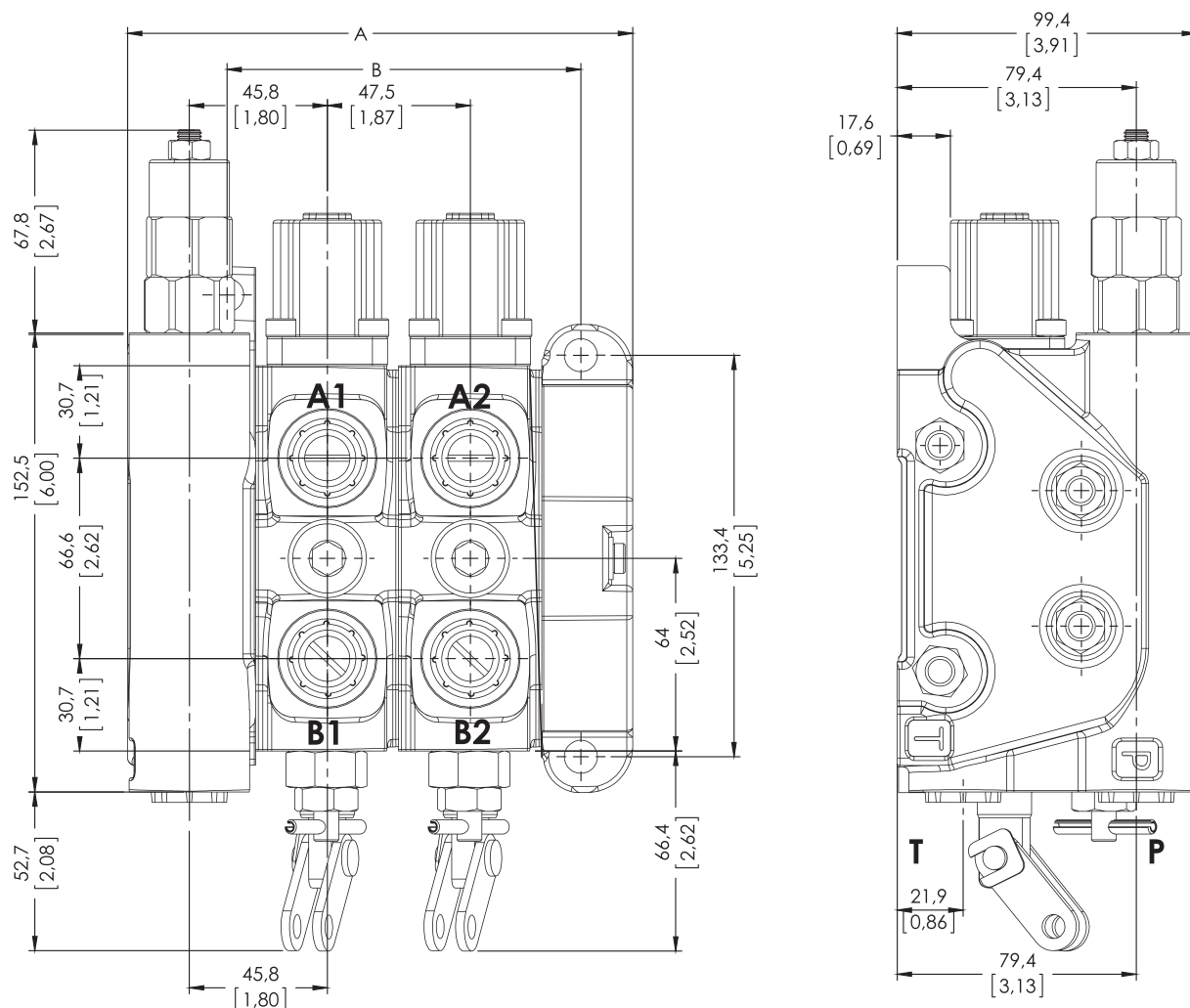
Nominal Flow Rating / Displacement	80 l/min	21 U.S.G.P.M
Maximum Working Pressure (Series Circuit)	210 Bar	3050 PSI
Maximum Working Pressure (Parallel Circuit)	315 Bar	4600 PSI
Max. Back Pressure	25 Bar	360 PSI
Oil Temperature with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/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 cm3/min	0,18 in3/min
Max. Level Of Contamination	19/16 – ISO 4406	
Tie rod tightening torque	30 Nm	22 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 4 sections for open and closed center hydraulic systems.
- Fitted with a main pressure relief valve.
- Interchangeable spool diameter is 18 mm – 0,71 in.
- Available manual, pneumatic, hydraulic and electro-pneumatic spool control kits.



DIMENSIONAL DATA


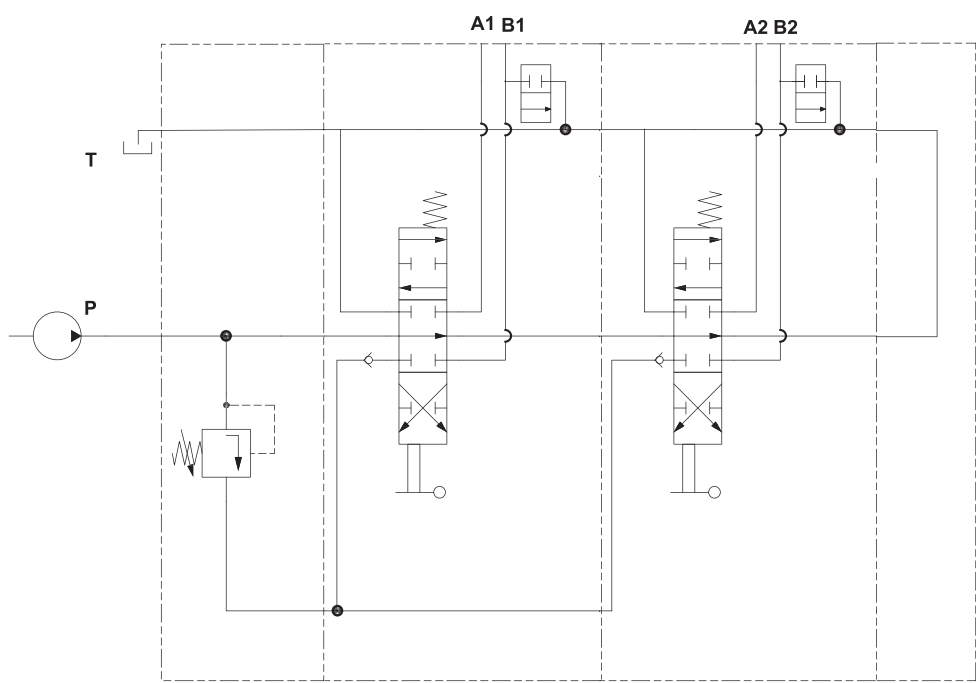
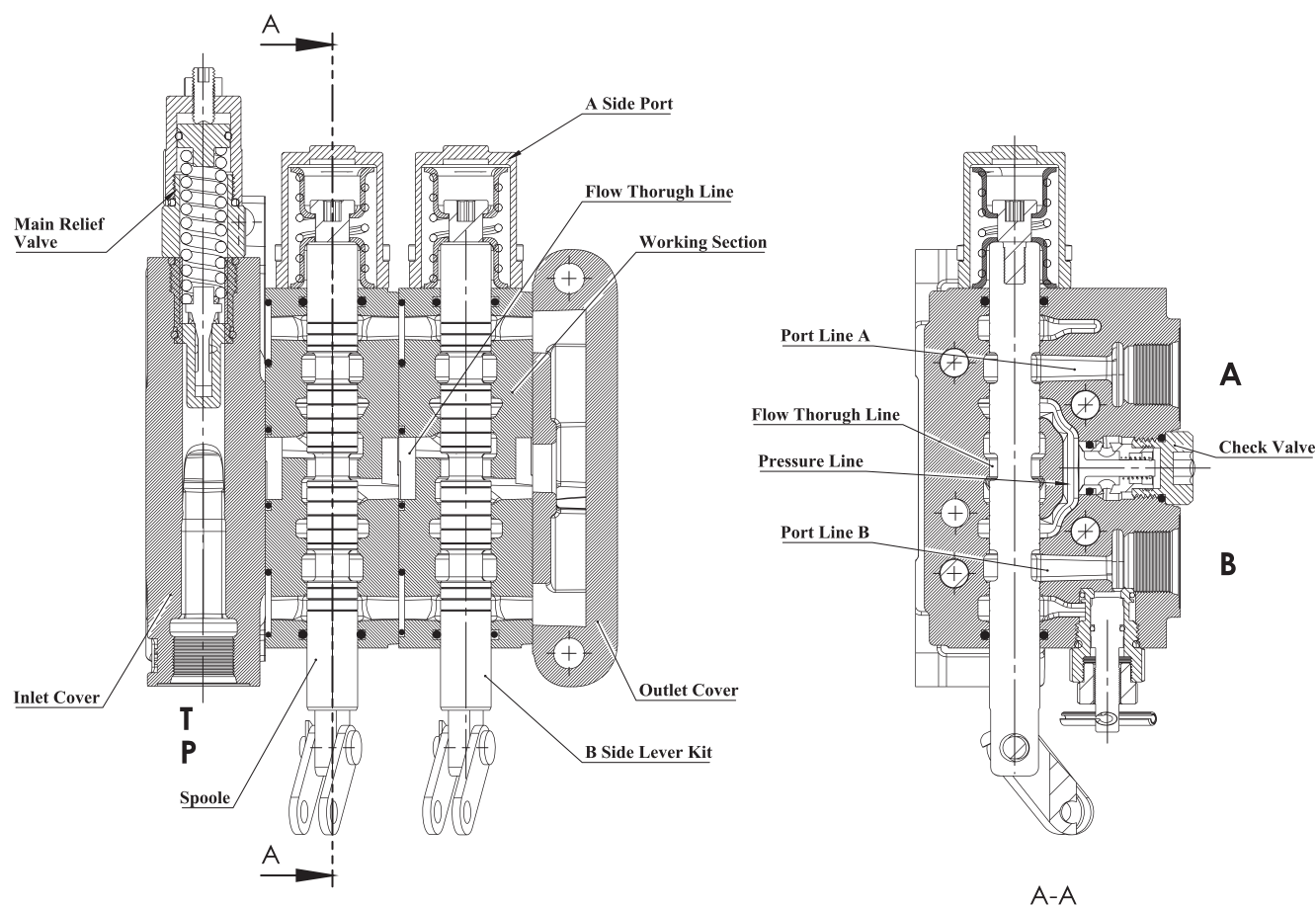
TYPE	A		B		Weight	
	mm	in	mm	in	Kg	lb
GMM- DMF-1P	119,2	4,69	69	2,71	7.58	16.71
GMM- DMF-2P	166,7	6,56	116,5	4,58	10.96	24.16
GMM- DMF-3P	214,2	8,43	164	6,45	14.34	31.61
GMM- DMF-4P	261,7	10,30	211,5	8,32	17.37	39.06

STANDARD THREADS

PORT	BSP (Iso 228) 1/2" Series	UN-UNF (Iso 11926-1)	Metric (Iso 262)
P Inlet	G 1/2	3/4 - 16 UNF	M22x1.5
A-B Ports	G 1/2	3/4 - 16 UNF	M22x1.5
T Outlet	G 1/2	3/4 - 16 UNF	M22x1.5

HYDRAULIC CIRCUIT

Parallel

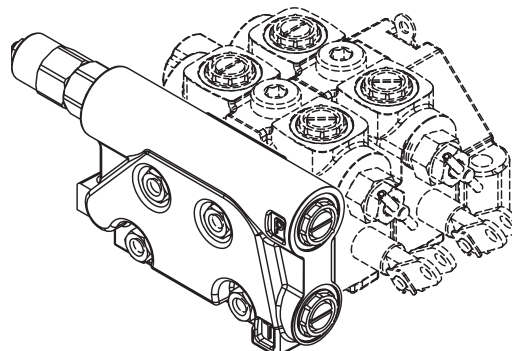


Code: GMM DMF-2P (SD(-SMR2-125)/P-1A -SR/ P-1A -SR

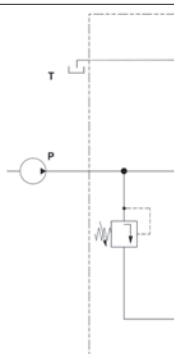
HYDRAULIC CIRCUIT

Inlet Cover – Pump Side

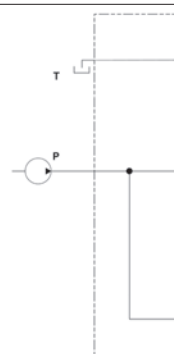
SD – Side inlet with direct pressure relief valve
SP – Side inlet with Non – relief valve



Type = SD

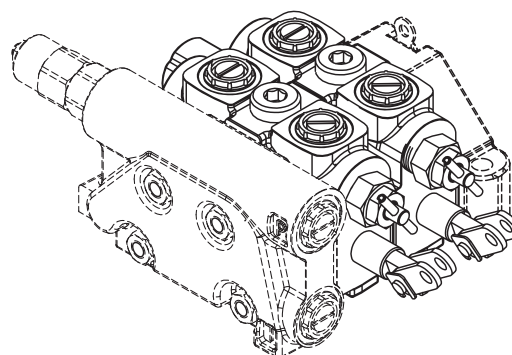


Type = SP

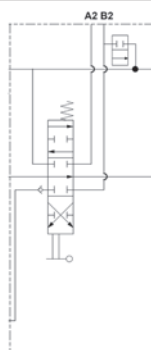


Working Sections

P – Parallel

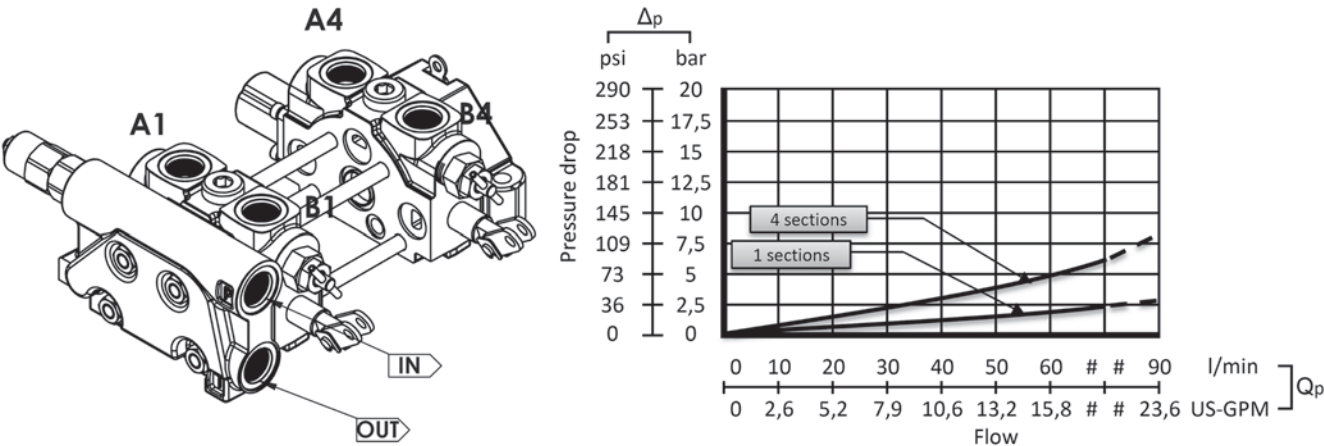


Type=P

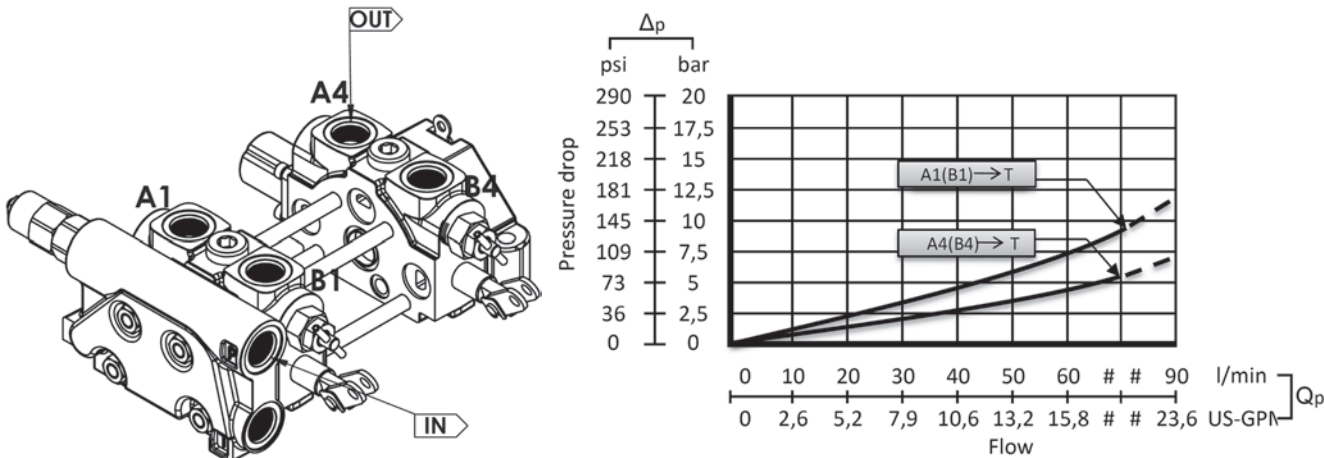


PERFORMANCE DATA AND CURVE

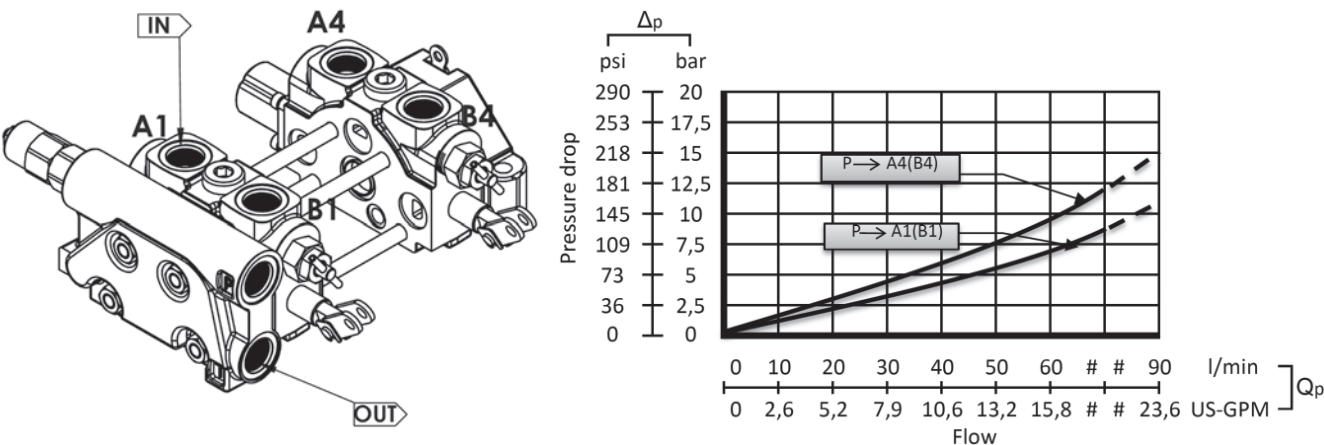
Open Center - Pressure Drop (P-T)



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



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



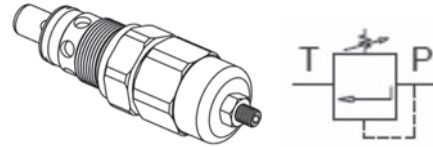
INLET RELIEF OPTIONS

Direct Pressure Relief Valve

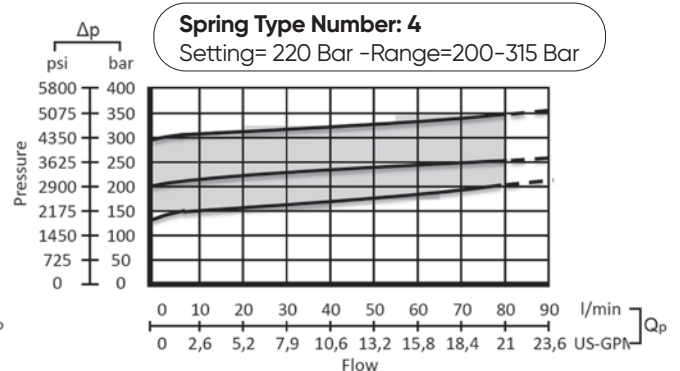
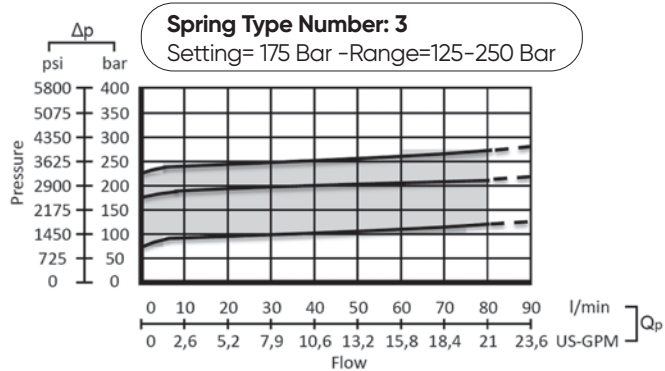
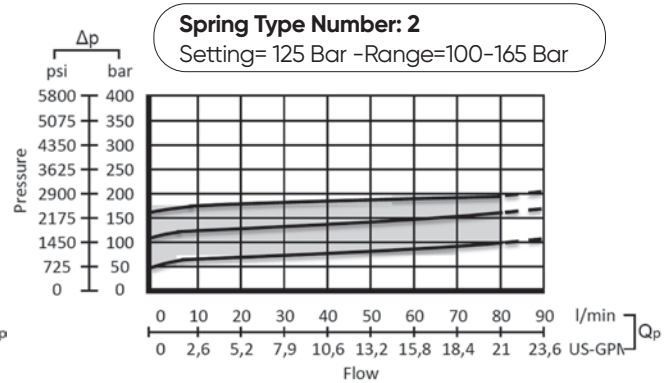
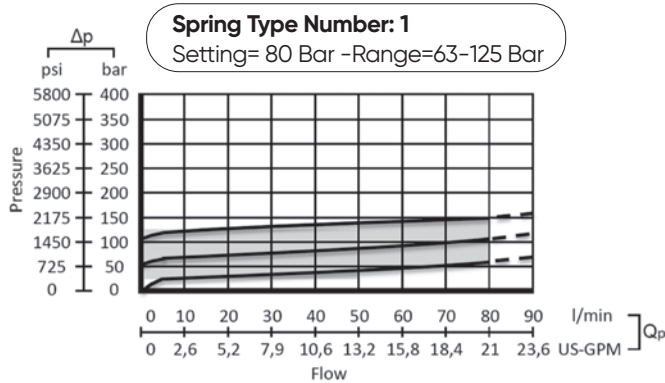
Code:

SMR2 – 125

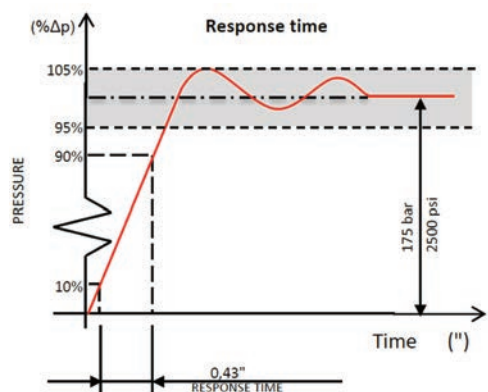
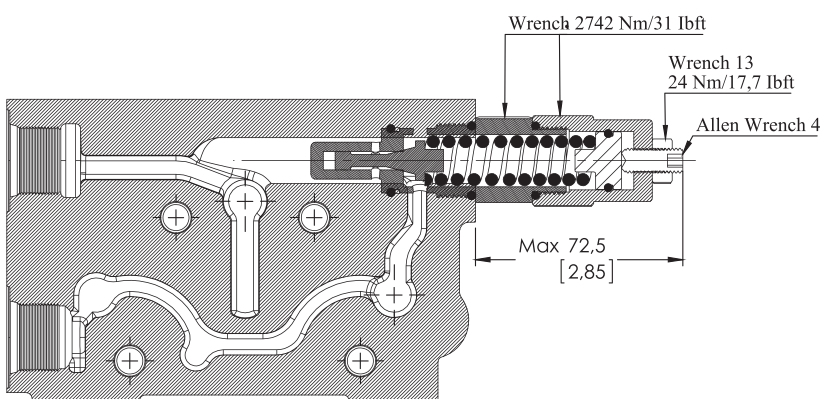
- Pressure Setting Bar in (Standard 125 bar)
- Standard Main Relief Spring Type -2



Performance Data

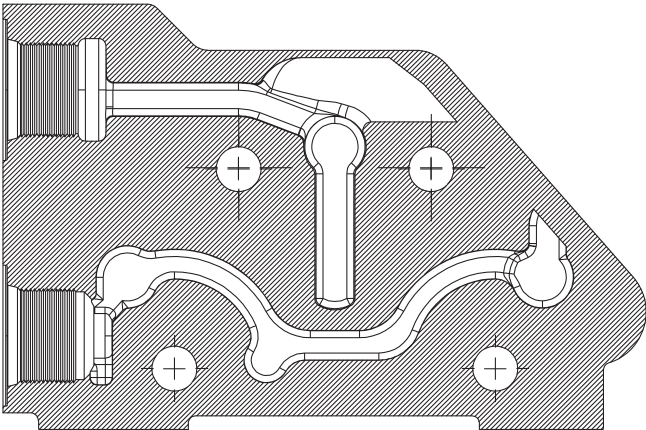


Adjustment Type on Valve



INLET RELIEF OPTIONS

Non Relief Blanking - SP



Order Example

Base Code
"0"

1

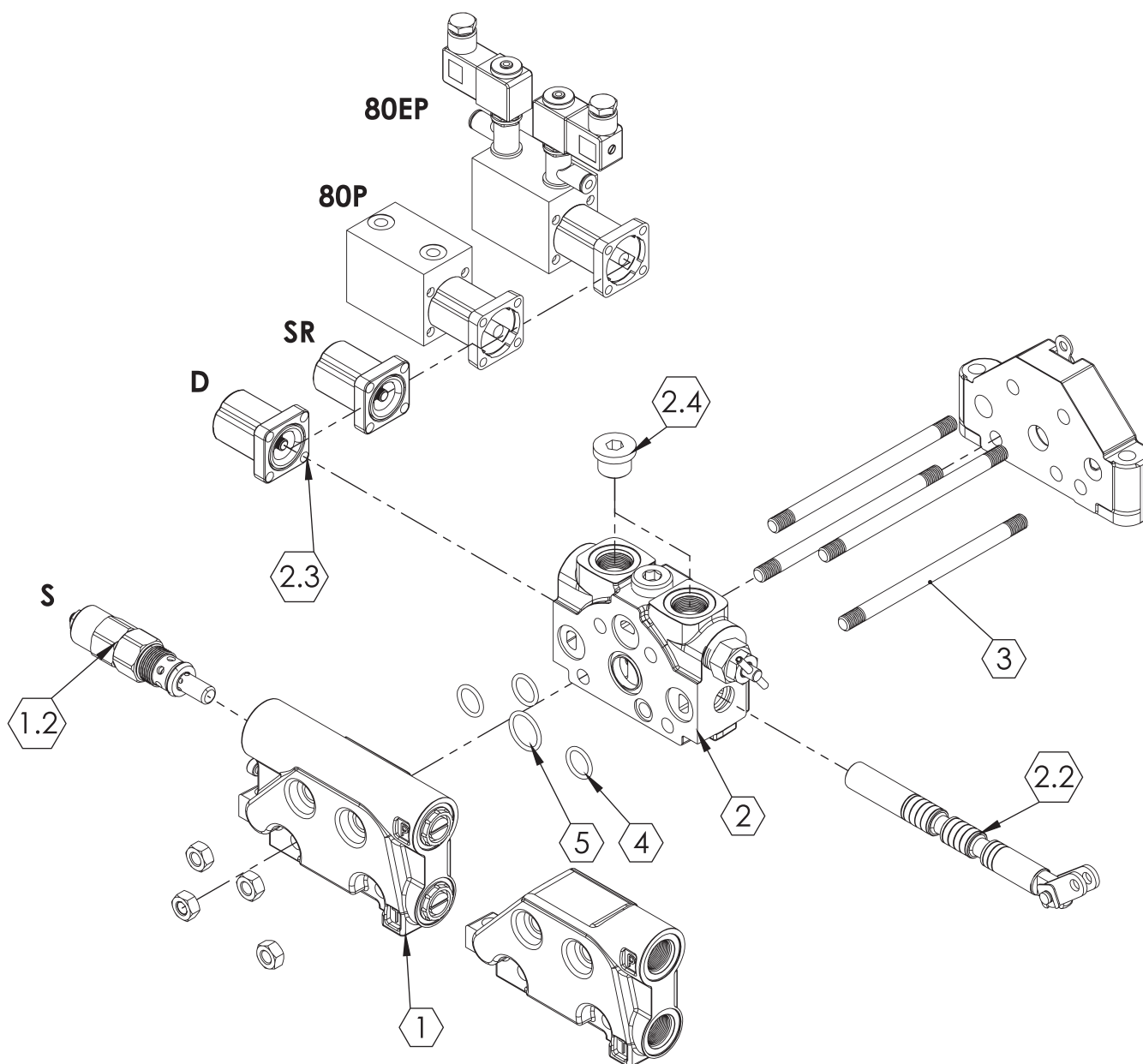
1.2

2.1

2.2

2.3

1st Section



ORDERING CODES

1- Inlet Section

GMM DMF-2P DMF = Valve Type-(DMF)- Sectional
(80) - Max. Flow Rate
2P = Sections Quantity

SD = Side inlet with direct pressure relief valve
(1DD80100)

SP = Non relief valve (1DP80100)

2- Working Section

P = Parallel (2D80100)

3- Assembling Kit

Tie rod kit for 1 section valve - (4TRK180100)
Tie rod kit for 2 section valve - (4TRK280100)
Tie rod kit for 3 section valve - (4TRK380100)
Tie rod kit for 4 section valve - (4TRK480100)

4-5-O_Ring Kit

5. -17.00x2.65 NBR 70 SH O-Ring seal (3 Qty.)
(5MK80100)

6. -22.40x2.65 NBR 70 SH O-Ring seal (1 Qty.)
(6MK80100)

1.*-Inlet Options

1.1 Inlet Cover
Body = Standard (11DP80100)
Non Relief Valve (11DS80100)

1.2 Inlet Relief
SMR1-080 - (12SMR180080)-Range 63-125 bar
Setting 80 bar
SMR2-125 - (12SMR280125)- Range 100-160 bar
Setting 125 bar
SMR3-175 - (12SMR380175)- Range 125-250 bar
Setting 175 bar
SMR4-220 - (12SMR480220)-Range 200-315 bar
Setting 220 bar

2.*- Working Options

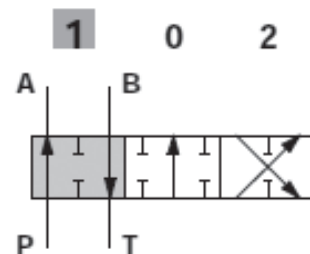
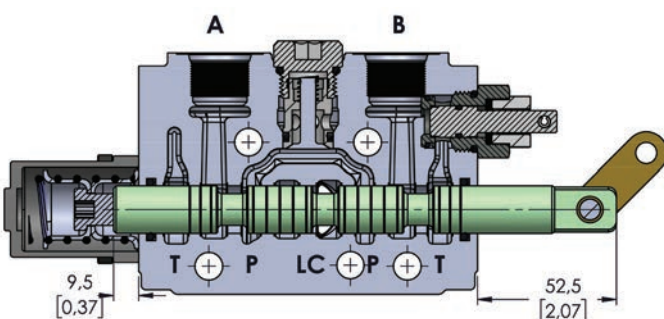
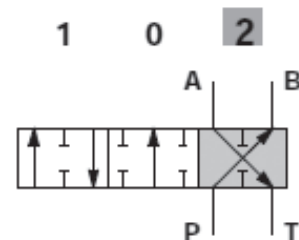
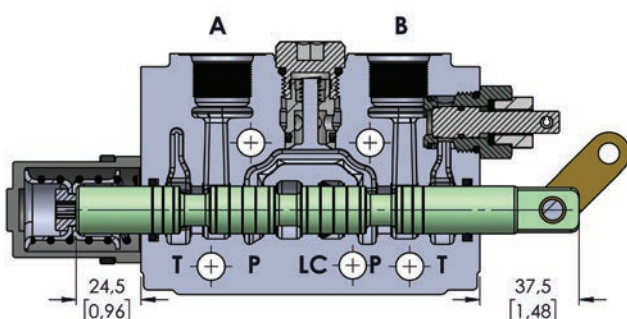
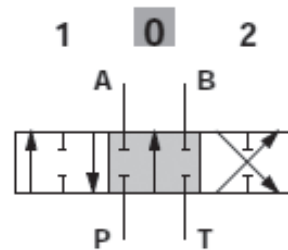
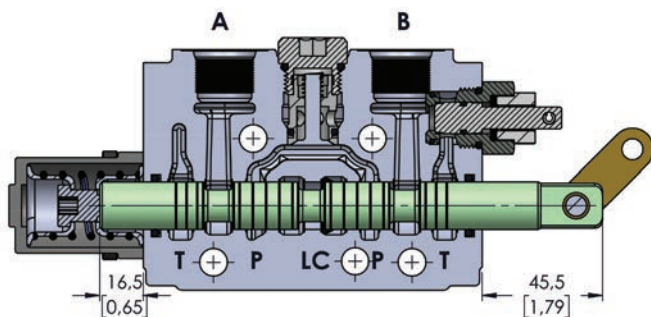
2.1 Working Section
PA= Without ports valve prearrangement, with
parallel circuit - Body (21DSPA80100)

2.2 Spool Options
1A -(22DS80110) - 3 Positions, Double acting
2A -(22DS80120) - 3 Positions, Double acting
A to tank B Blocked
3A -(22DS80130) - 3 Positions, Double acting
B to tank A blocked
4A -(22DS80140) - 3 Positions, Double acting
A and B tank
5A -(22DS80150) - 3 Positions, Single acting on
A (A to tank)
6A -(22DS80160) - 3 Positions, Single acting on
B (B to tank)

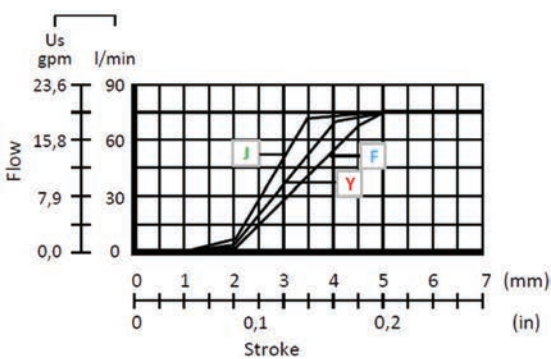
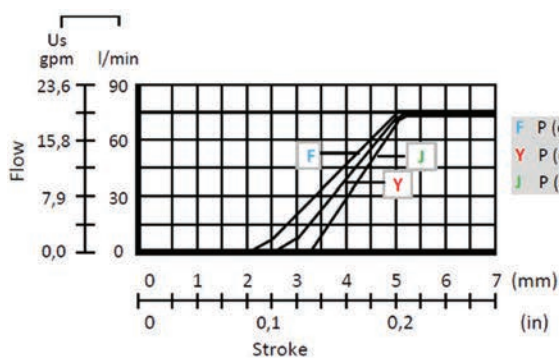
2.3 Spool Positioners
SR = Spring Return in neutral position - (26SR80100)
D = Detent in position 1, neutral and 2 -(26D80100)
80P = ON/OFF Pneumatic - (2645P150100)
80EP = 12 VDC ON/OFF electro-pneumatic
(2680EP150112)
24 VDC ON/OFF electro-pneumatic -
(2680EP150124)

SPOOL OPTIONS

Spool Type - 1A

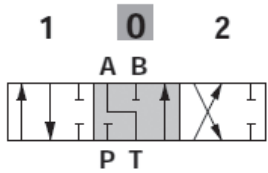
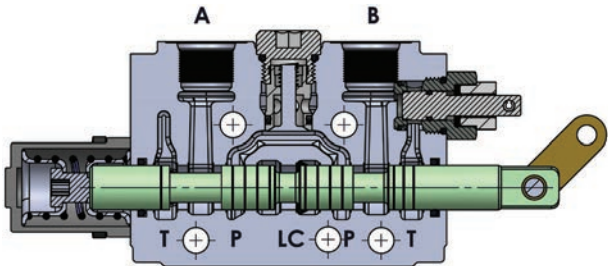


Performance Curve And Data

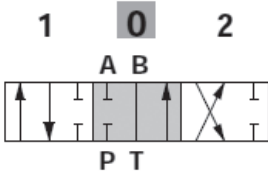
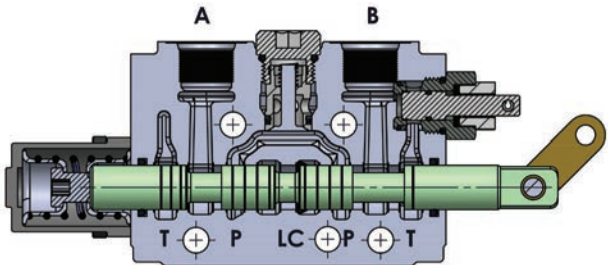


SPOOL OPTIONS

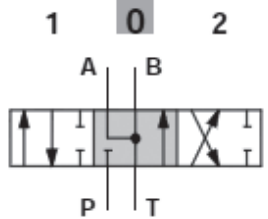
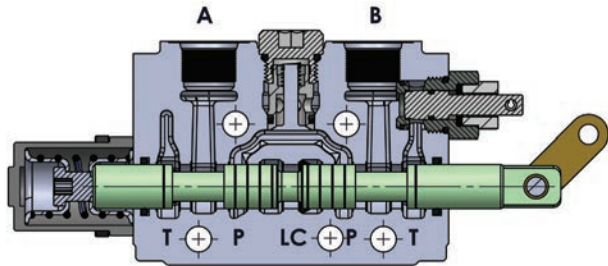
Spool Type - 2A



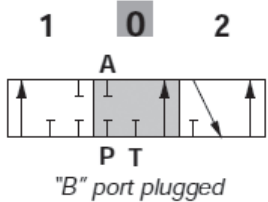
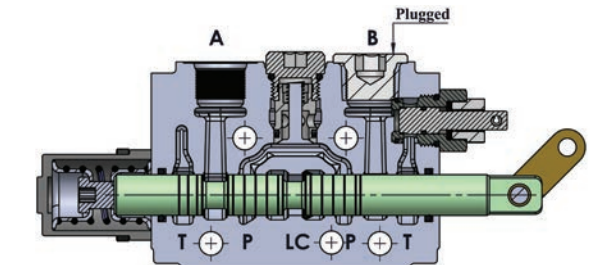
Spool Type - 3A



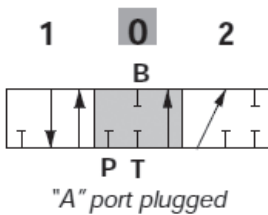
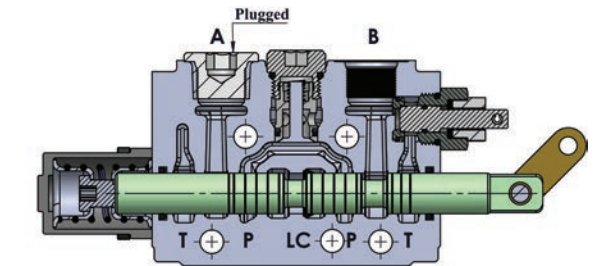
Spool Type - 4A



Spool Type - 5A



Spool Type - 6A

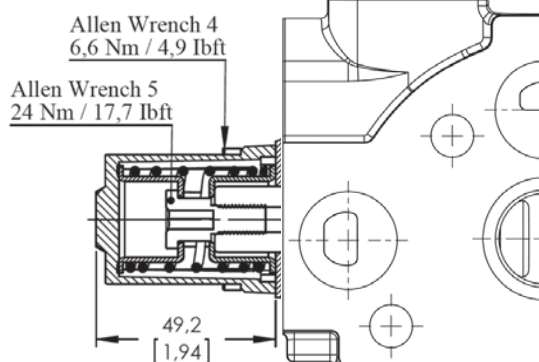


SPOOL POSITIONERS – SIDE OF RETURN

With Spring Return in Neutral Position

Kit No: **SR**

Sectional Appearance



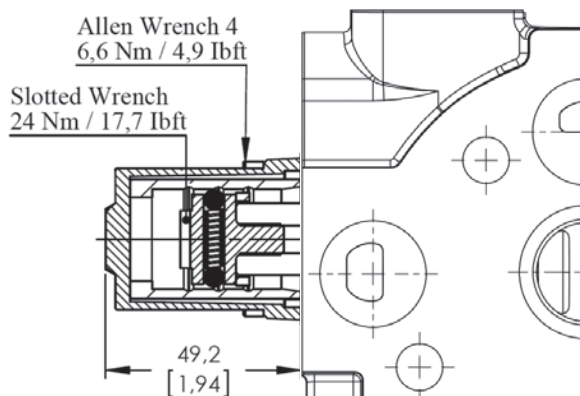
Diagram



With Detent

Kit No: **D**

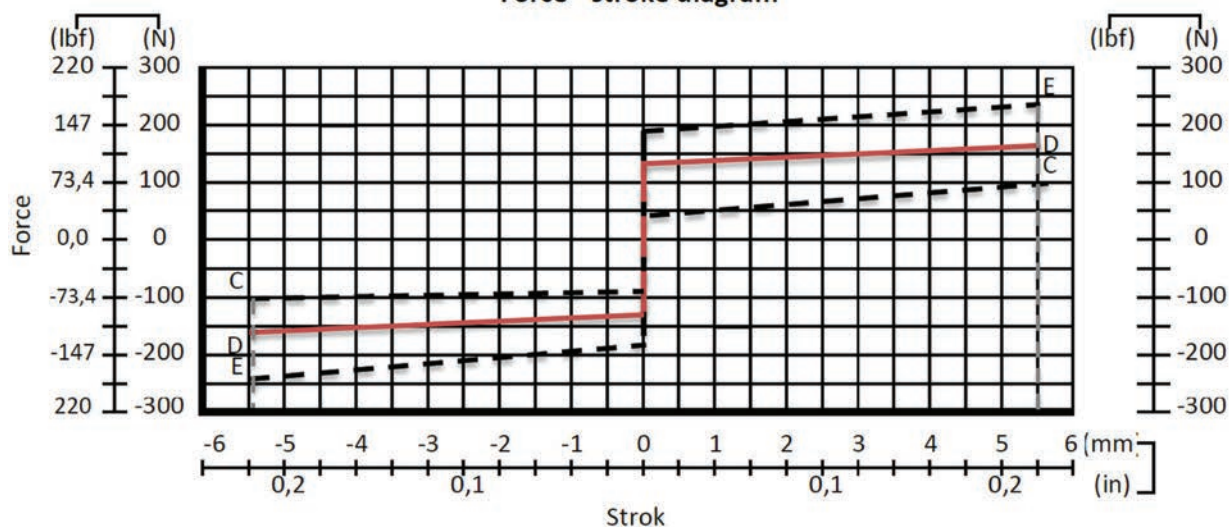
Sectional Appearance



Diagram



Force - stroke diagram

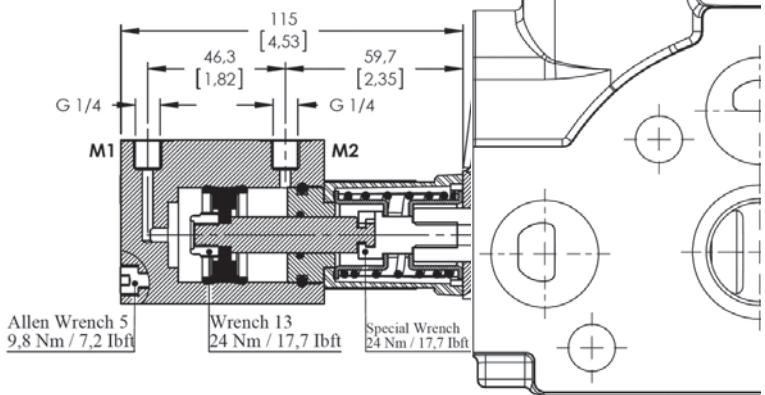


SPOOL POSITIONERS – SIDE OF RETURN

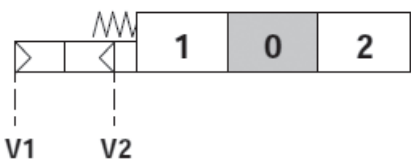
ON/OFF Pneumatic Control

Kit No: 80P

Sectional Appearance



Diagram



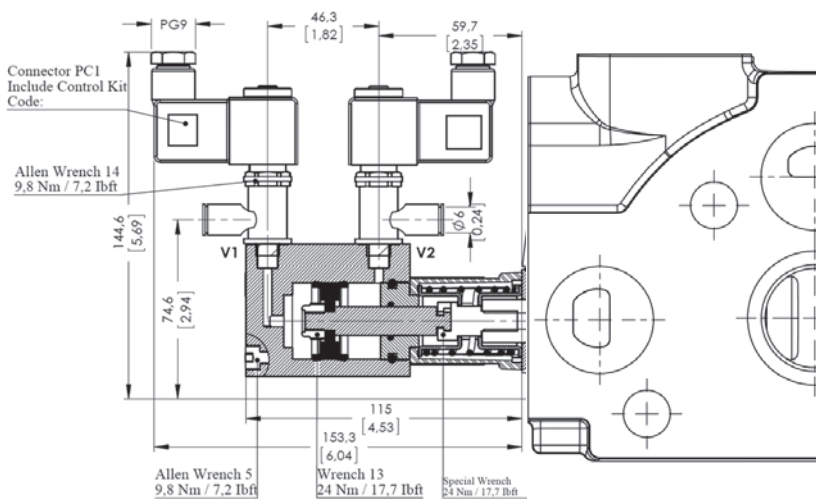
Operating Features

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

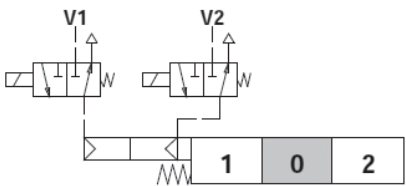
ON/OFF Electro-Pneumatic Control

Kit No: 80EP

Sectional Appearance



Diagram



Operating Features

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

Solenoid Operating Features

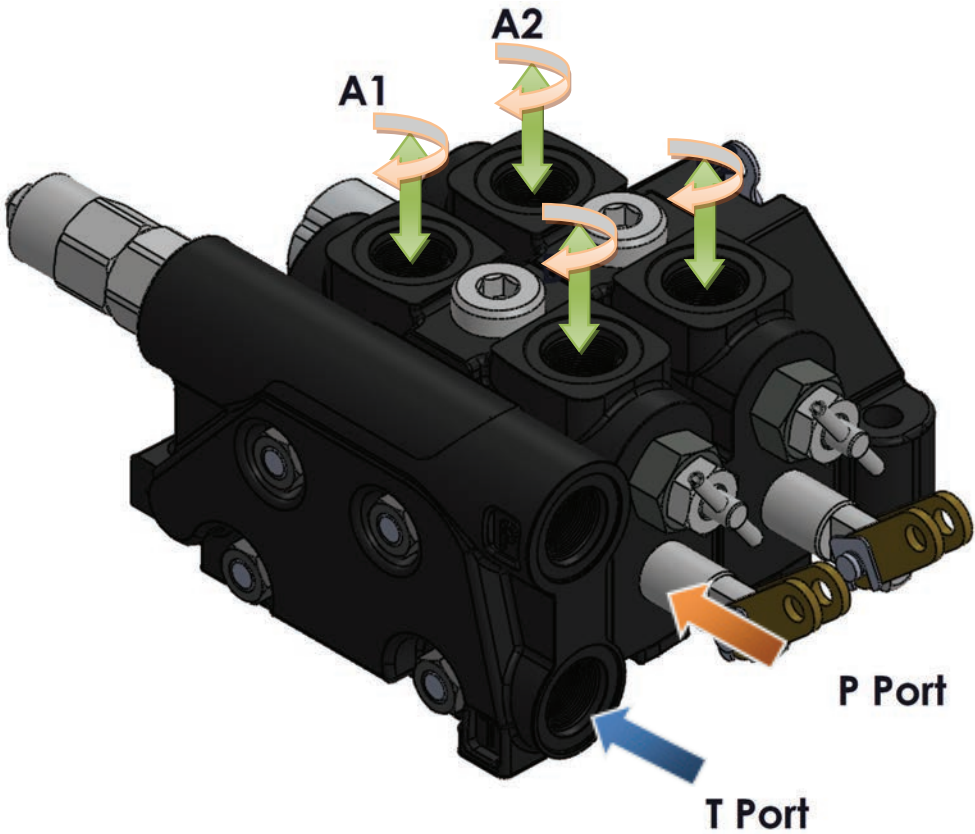
Nominal Voltage.....: 12VDC / 24 VDC

Power Rating.....: 6 W

INSTALLATION AND MAINTENANCE

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

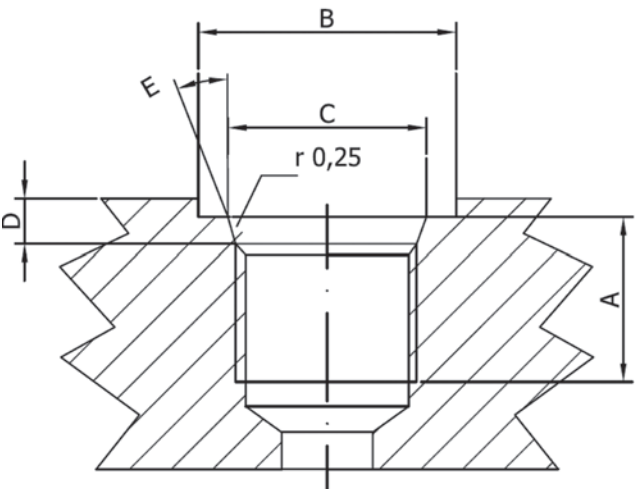
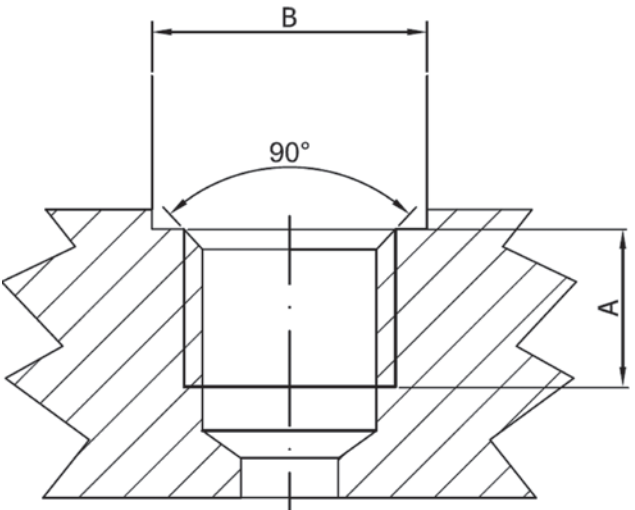
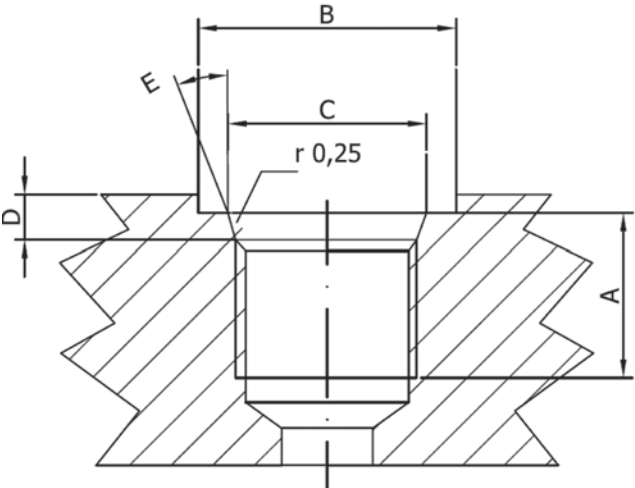
- The valve can be assembled in any position, in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the lever box and spool control kit, do not use high pressure wash down directly on the valve;
- Before painting,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



Threads Type (Nm / lbft)	P Port	A and B Port	T Port
BSP (ISO 228/1)	G 1/2	G 1/2	G 1/2
With O--Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3
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)	9/16--18 UNF--2B	9/16--18 UNF--2B	9/16--18 UNF--2B
With O--Ring seal	30 / 22.1	30 / 22.1	30 / 22.1
METRIC (ISO 262)	M22 x 1.5	M22 x 1.5	M22 x 1.5
With O--Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3

TECHNICAL DATA

Ports Dimensional Data



SAE UN-UNF (ISO 725)

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

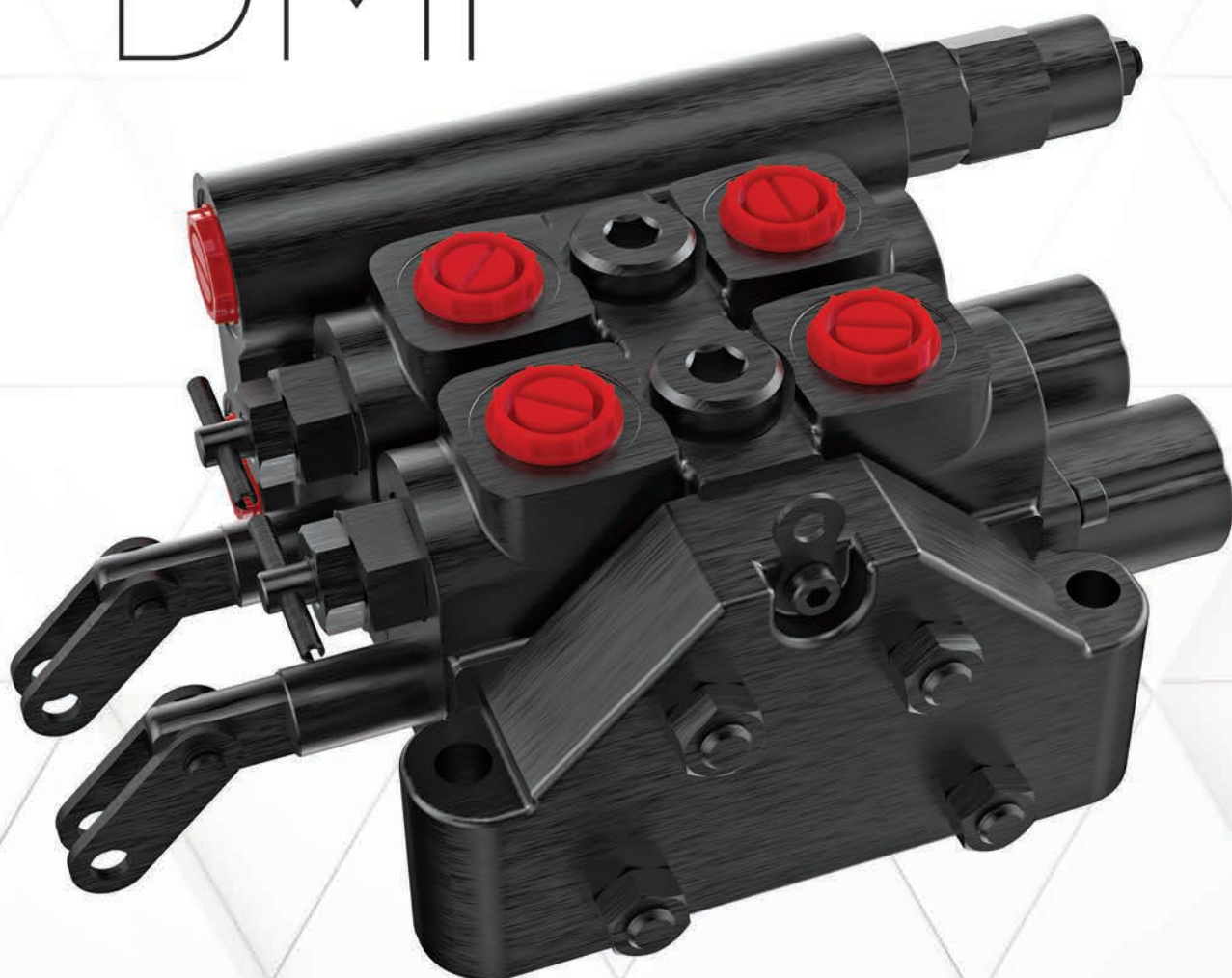
Dimensions	BSP (ISO 228)					
	mm	in	G 1/2"	G 3/4	G 1	
A	16	0,63	18	0,71	20	0,79
B	27	1,06	33	1,30	40	1,57

METRIC (ISO 262)

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



GMM
DMF

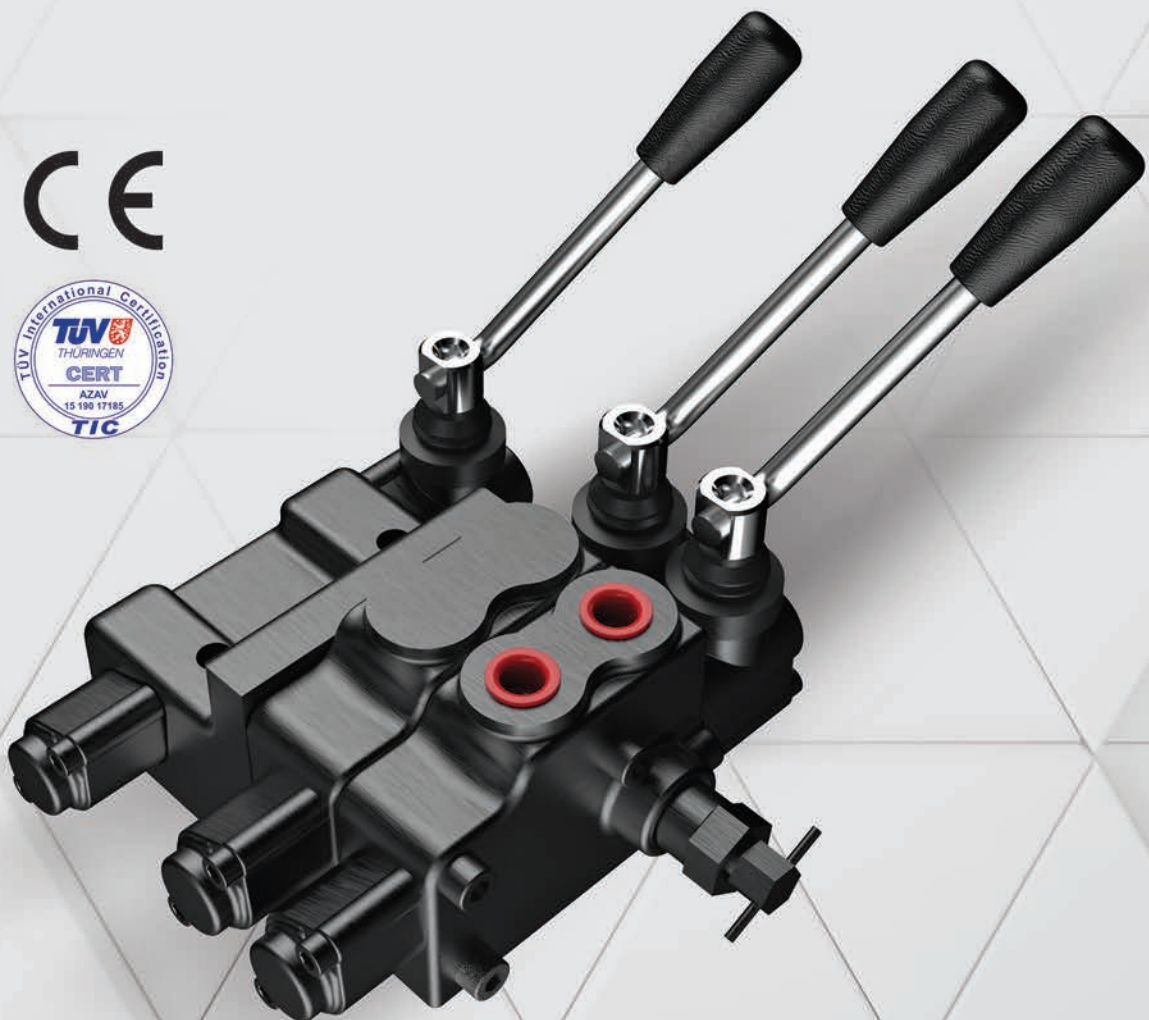




SPECIAL TRACTOR
VALVES

GMM-MF

CE





CONTENTS

Working Conditions	401
Dimensional Data	402
Hydraulic Circuit	403
Performance Data And Curve	404
Ports And Mounting Face	405
Ordering Codes And Installation	406

Additional Informations

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WORKING CONDITIONS

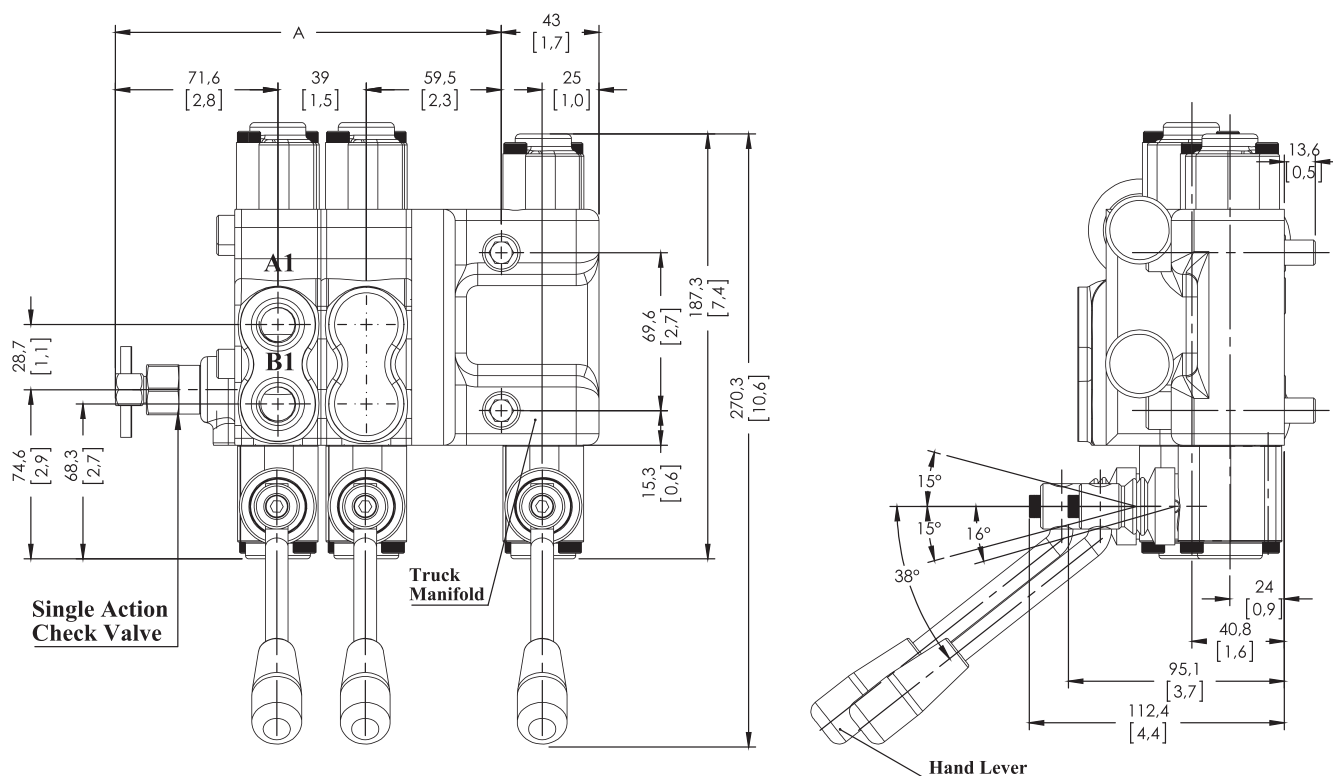
Nominal Flow Rating / Displacement	45 l/min	12 U.S.G.P.M
Maximum Working Pressure	315 Bar	4600 PSI
Max Back Pressure	25 Bar	360 PSI
Oil Temperture with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperture Range	-35 to 60 C°	-31 to 140 F °
Number Of Spools	1 to 3	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min	0,18 in3/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° temperture.

Features

- Simple, compact and heavy duty designed sectional truck mounted valves from 1 to 3 sections for open center hydraulic systems.
- Interchangeable spool diametre is 16 mm – 0,63 in.
- It can be work working section and truck lift for some time.
- It has low tank pressure for additional tank line.
- It can be use single and double acting for only last working section.



DIMENSIONAL DATA


TYPE	A		WEIGHT	
	mm	in	Kg	lb
GMM-MF-2	131	5,16	7,53	16,6
GMM-MF-2+H	170	6,69	9,83	21,67
GMM-MF-4	170	6,69	11,24	24,78
GMM-MF-4+H	209	8,23	13,55	29,87
GMM-MF-6	209	8,23	14,95	32,96

STANDARD THREADS

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

Compatible Models

Massey Ferguson (Old All Models) And

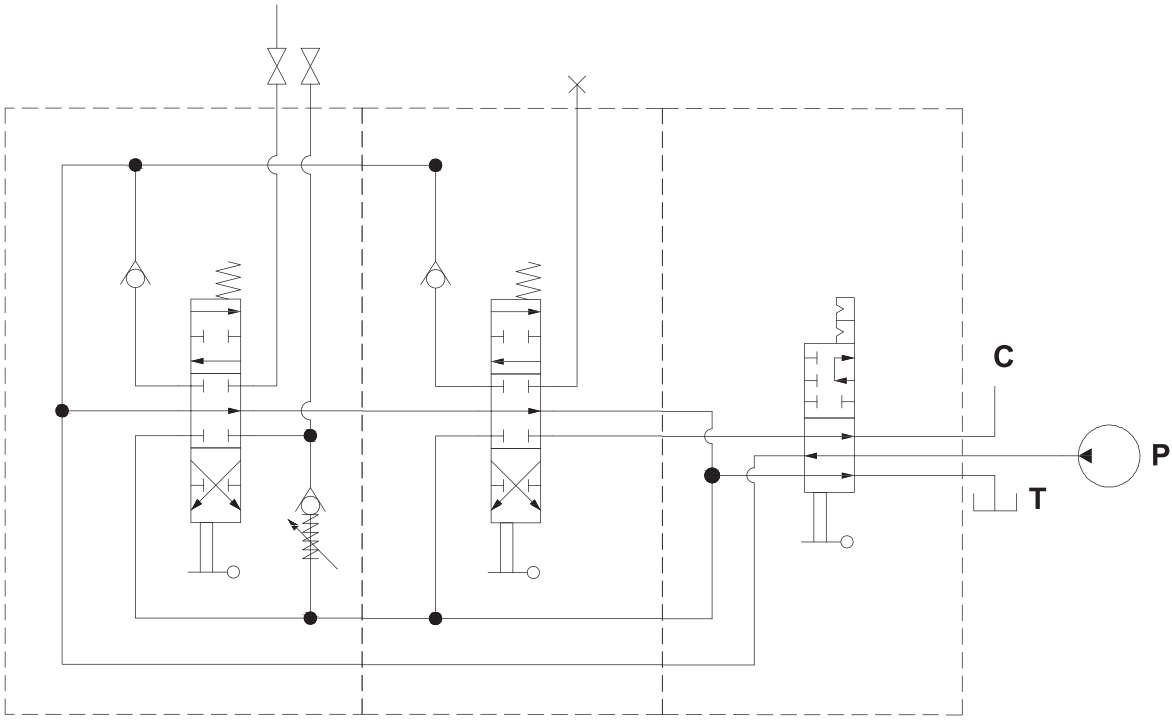
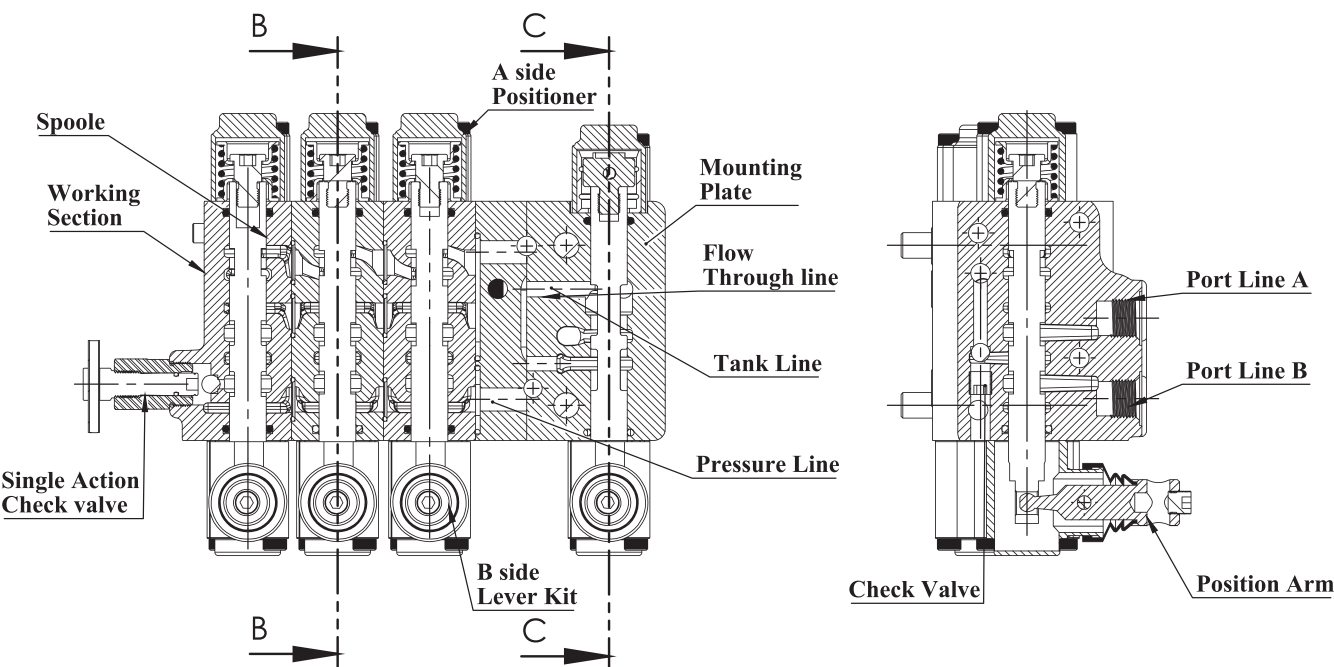
100 Series – 135, 148, 165, 175, 178, 185, 188

200 Series – 230, 240, 245, 250, 260, 265, 275, 290, 298

300 Series – 362, 365, 372, 375, 390, 398, 399

500 Series – 550, 560, 565, 590, 595

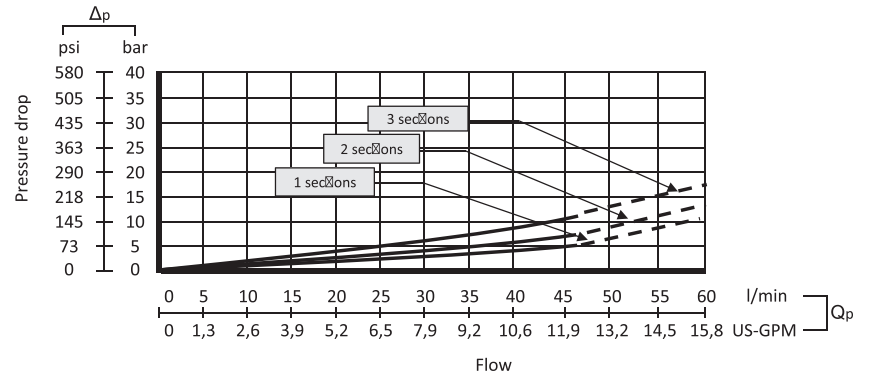
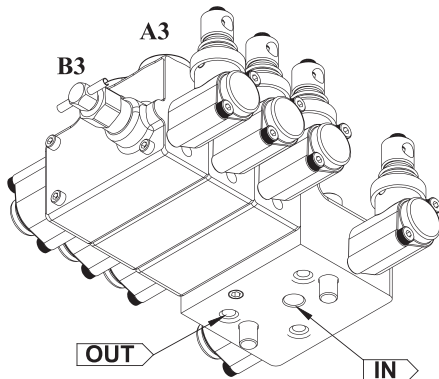
HYDRAULIC CIRCUIT



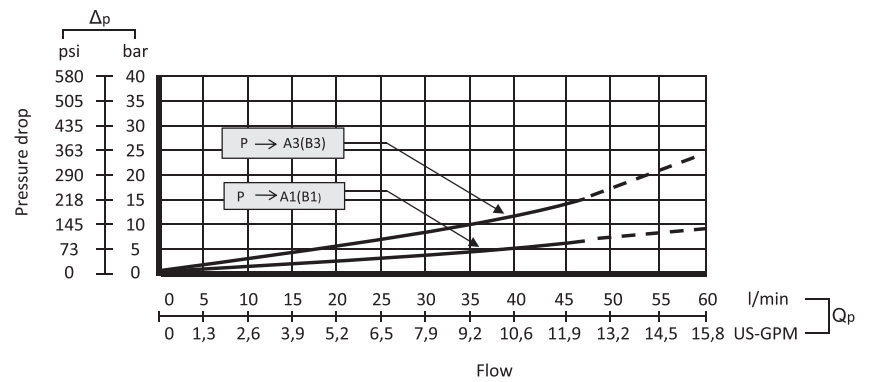
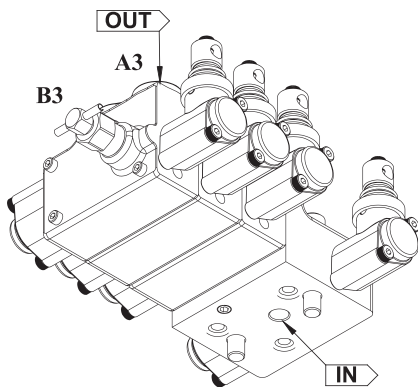
Order Code GMM – MF – 2+H

PERFORMANCE DATA AND CURVE

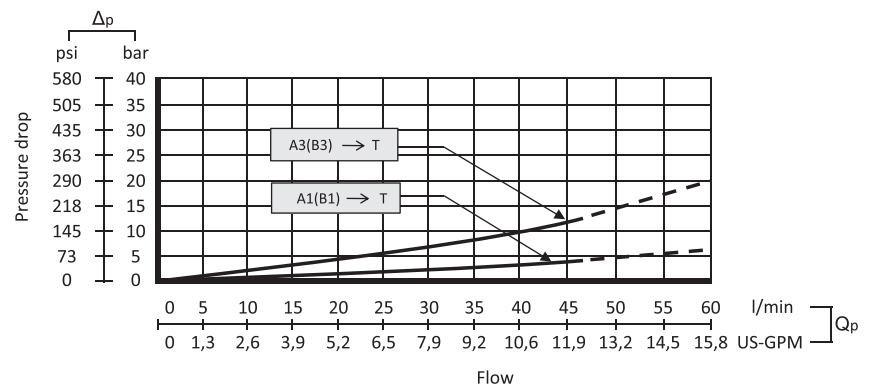
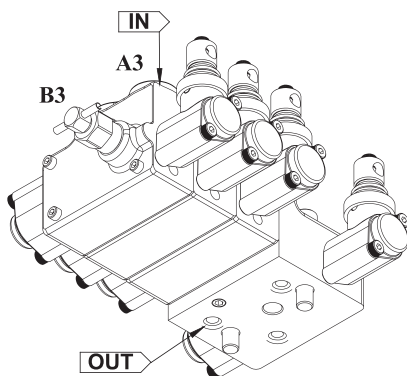
Open Center - Pressure Drop (P-T)



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



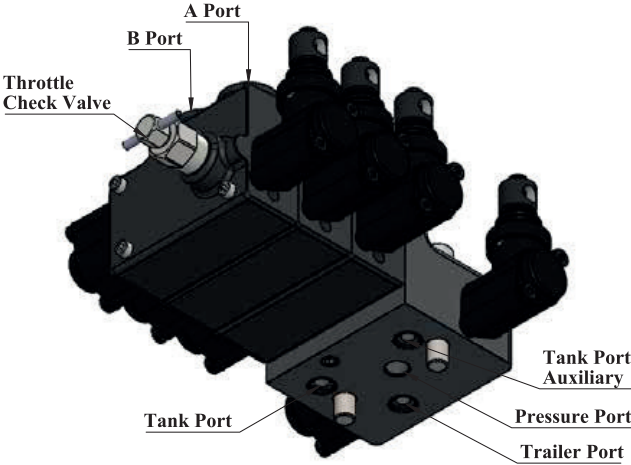
Work Port to Outlet - Pressure Drop (A/B-T)



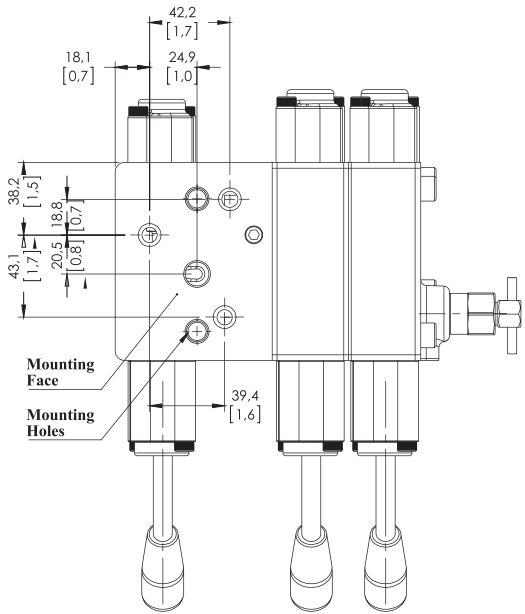
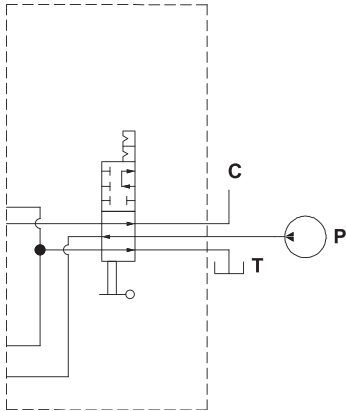
PORTS AND MOUNTING FACE

Port Directional And Type

Port Appearance



Diagram

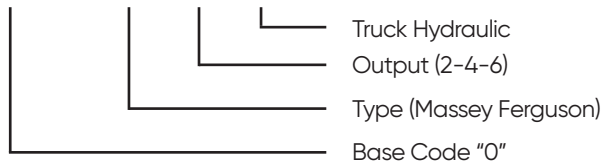


Mounting Face
Technical
Dimension

ORDERING CODES AND INSTALLATION

Order Code

GMM - MF - 2 + H



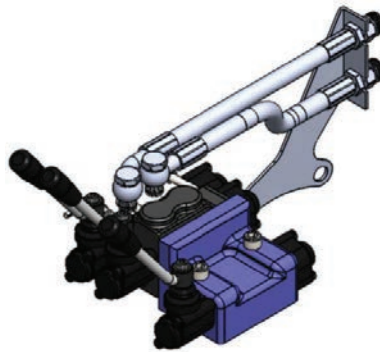
MF-2 (1 section - 2 Output)
MF-2 +H (1 section - 2 Output And Truck Hydraulic)
MF-4 (2 section - 4 Output)
MF-4 +H (2 section - 4 Output And Truck Hydraulic)
MF-6 (3 section - 6 Output)
MF-6 +H (3 section - 6 Output And Truck Hydraulic)

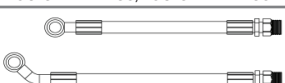
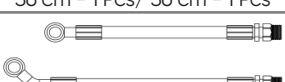
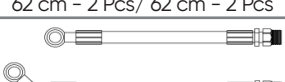
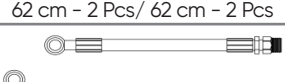
Installation

The GMM MF 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.



MODEL	HOSE	COUPLING HOLES 3/8"	COPPER WASHER	SHEET CONNECTION	CONNECTION BOLT	LEVER COUNT
GMM - MF-2	 56 cm - 1 Pcs/ 56 cm - 1 Pcs	 2 Pcs	4 Pcs		UNC -7/16-2 1/2" - 2 Pcs	2 pcs
GMM - MF-2+H	 56 cm - 1 Pcs/ 56 cm - 1 Pcs	 2 Pcs	4 Pcs		UNC -7/16-2 1/2" - 2 Pcs	3 pcs
GMM - MF-4	 62 cm - 2 Pcs/ 62 cm - 2 Pcs	 4 Pcs	8 Pcs		UNC -7/16-2 1/2" - 2 Pcs	3 pcs
GMM - MF-4+H	 62 cm - 2 Pcs/ 62 cm - 2 Pcs	 4 Pcs	8 Pcs		UNC -7/16-2 1/2" - 2 Pcs	4 pcs
GMM - MF-6	 62 cm - 3 Pcs/ 62 cm - 3 Pcs	 6 Pcs	12 Pcs		UNC -7/16-2 1/2" - 2 Pcs	4 pcs

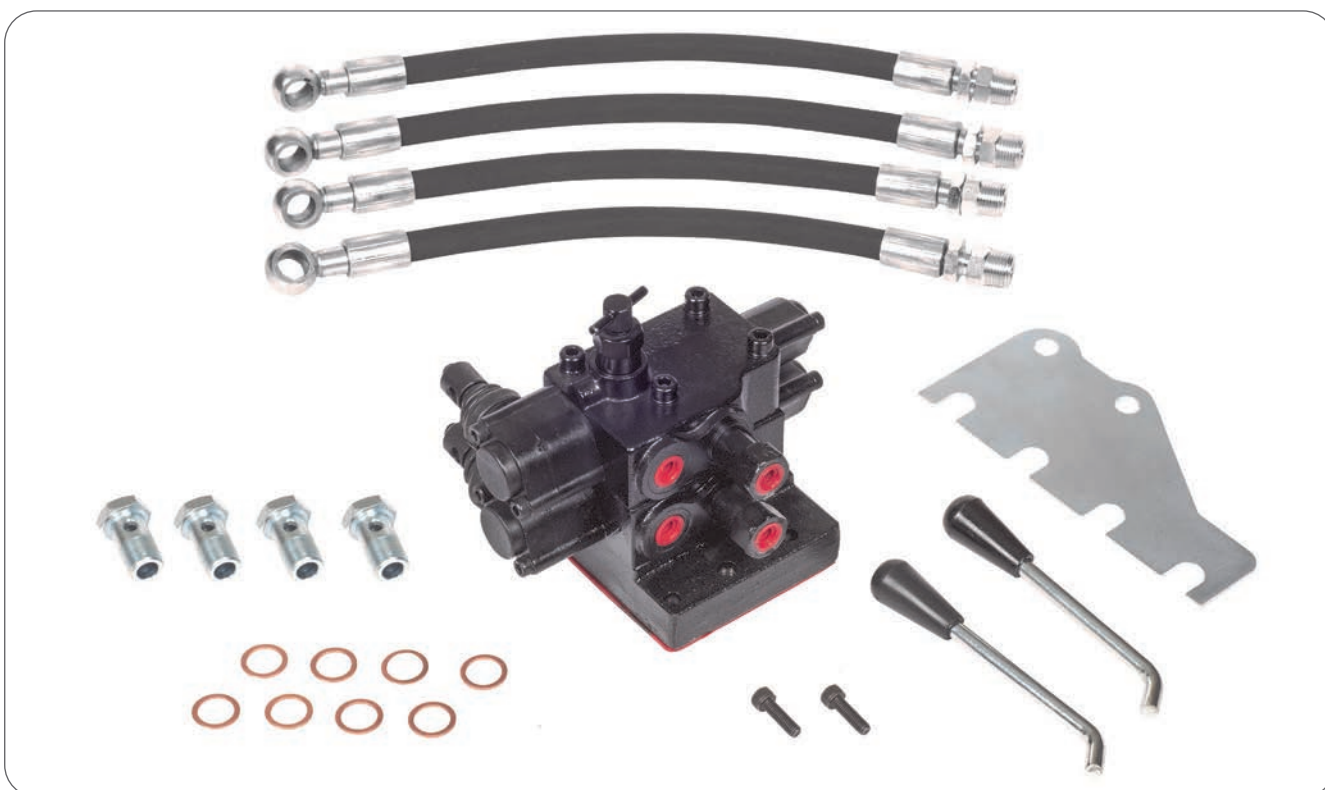


SPECIAL TRACTOR
VALVES

GMM-STY

CE





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Additional Informations

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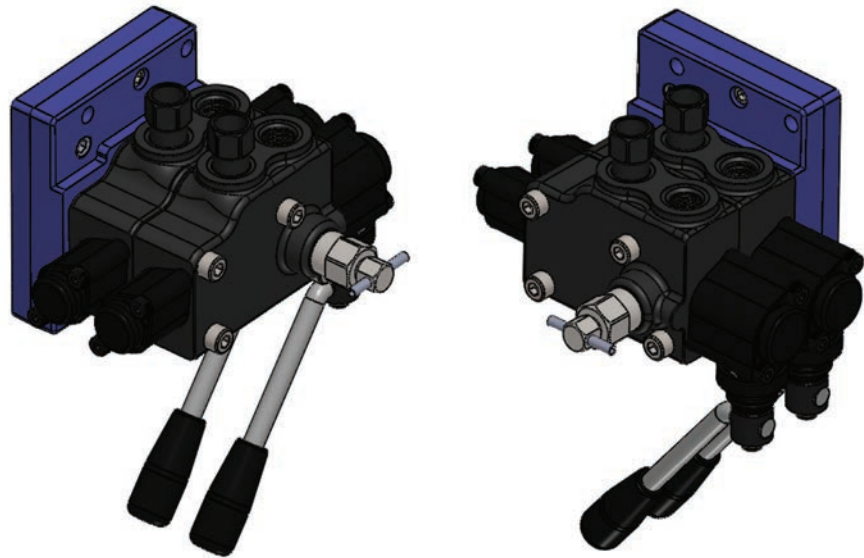
WORKING CONDITIONS

Nominal Flow Rating / Displacement	45 l/min	12 U.S.G.P.M
Maximum Working Pressure	315 Bar	4600 PSI
Max Back Pressure	25 Bar	360 PSI
Oil Temperture 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 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperture Range	-35 to 60 C°	-31 to 140 F °
Number Of Spools	1 to 3	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min	0,18 in3/min
Max. Level Of Contamination	19/16 – ISO 4406	

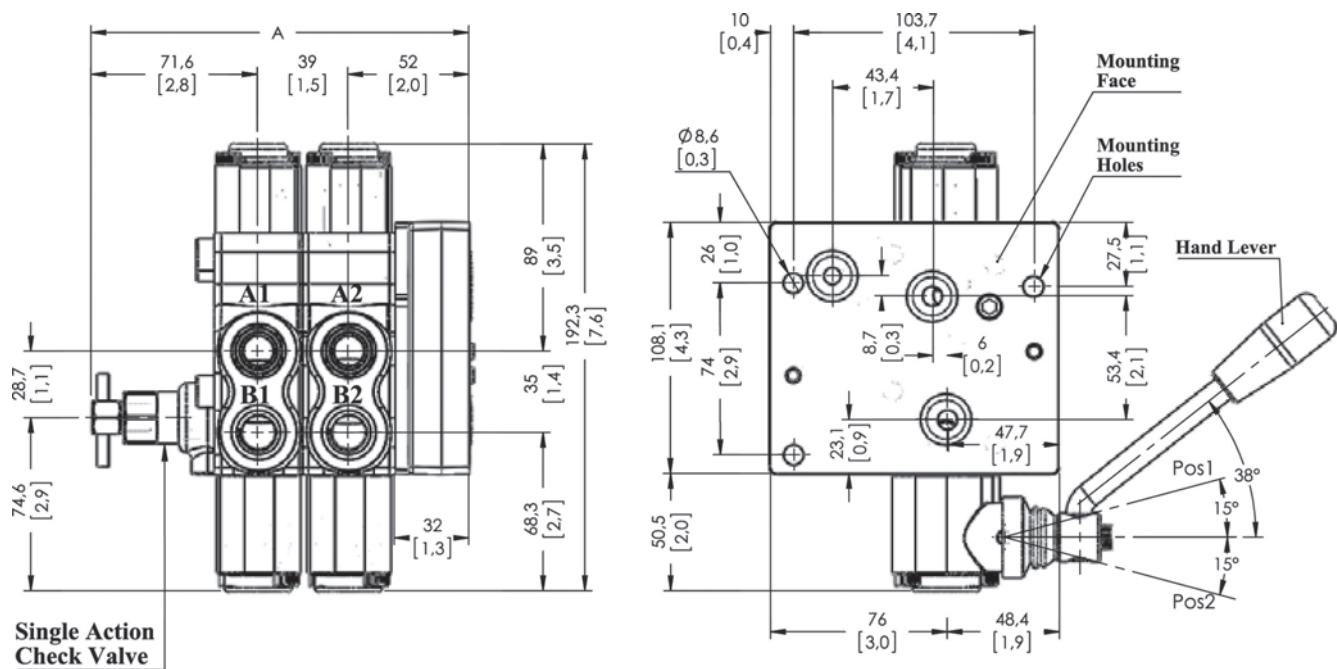
Not: This catalogue shows technical specifications measured with mineral oil of 46 mm2/s-46 cSt viscosity at 40 C° temperture.

Features

- Simple, compact and heavy duty designed sectional truck mounted valves from 1 to 3 sections for open center hydraulic systems.
- Interchangeable spool diametre is 16 mm – 0,63 in.
- It can be work working section and truck lift for some time.
- It has low tank pressure for additional tank line.
- It can be use single and double acting for only last working section.



DIMENSIONAL DATA



TYPE	A		WEIGHT	
	mm	in	Kg	lb
GMM-STY - 2	123,5	4,86	6,50	13,33
GMM-STY - 4	162,5	6,40	10,00	22,05
GMM-STY - 6	201,5	7,93	13,50	29,76

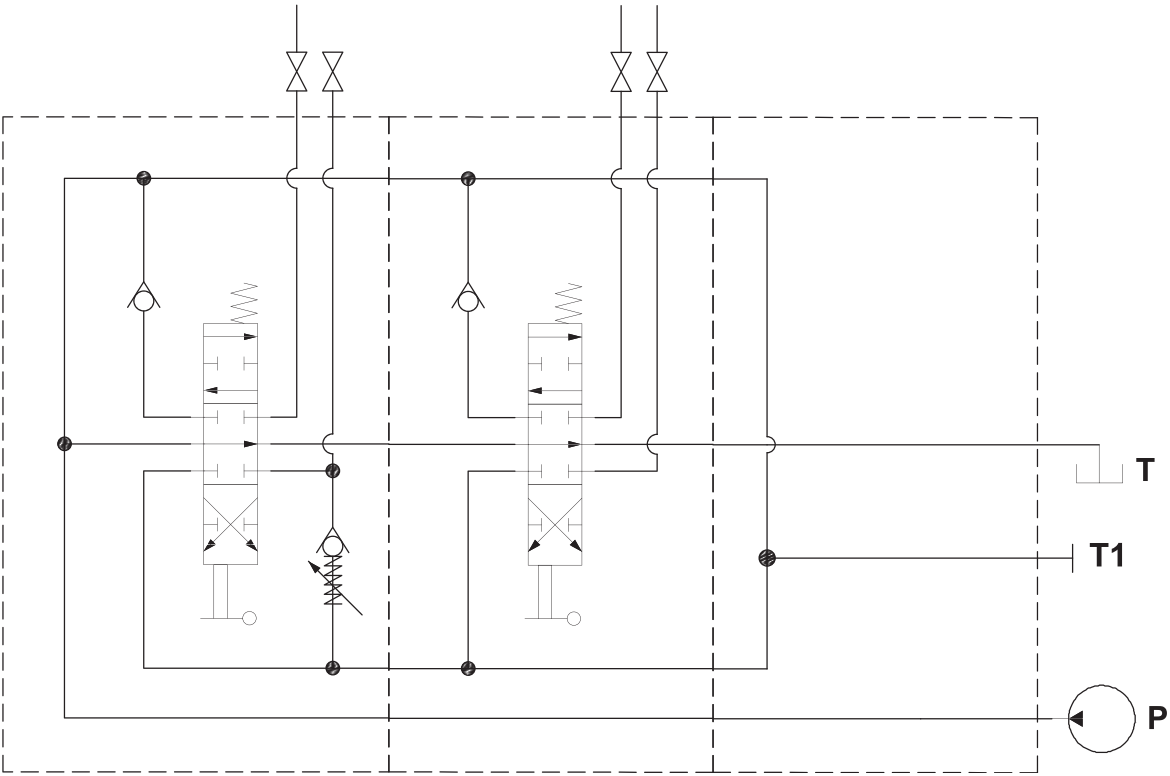
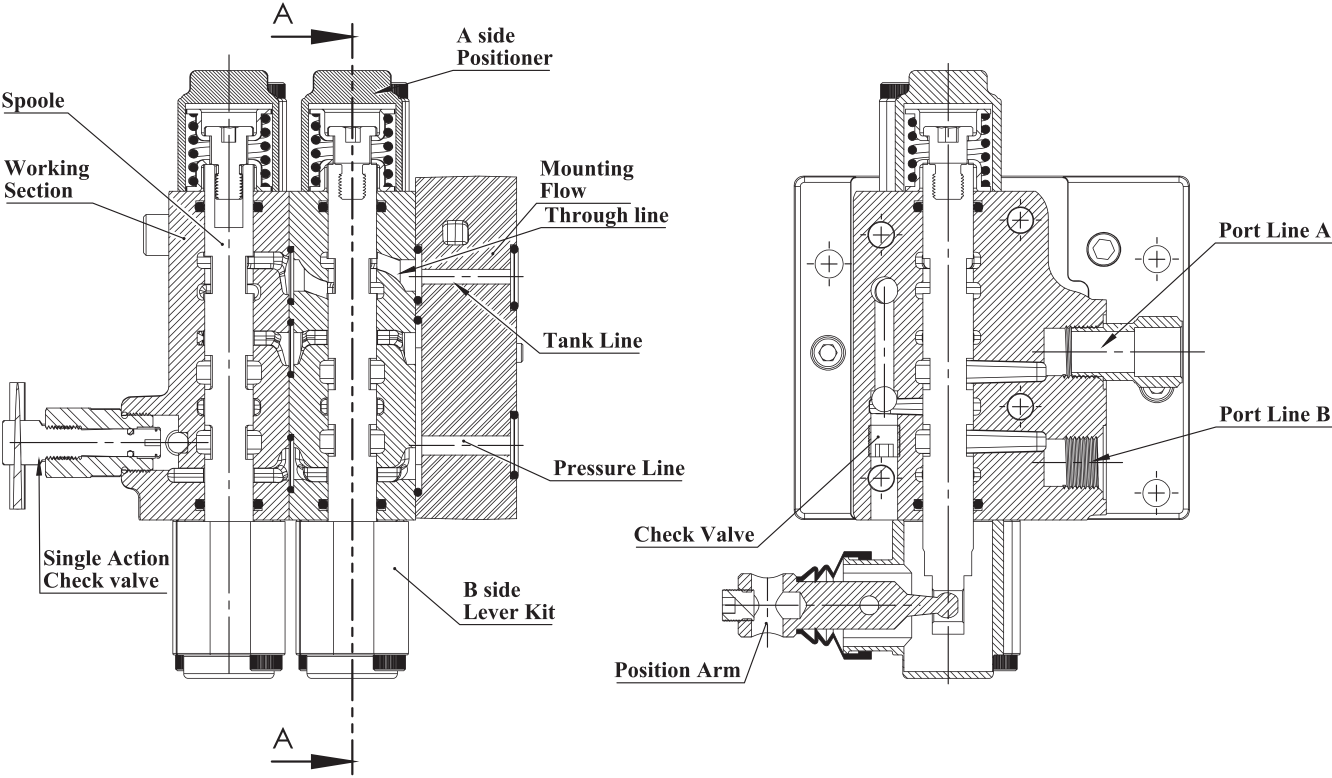
STANDARD THREADS

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

Compatible Models

Steyr All Models

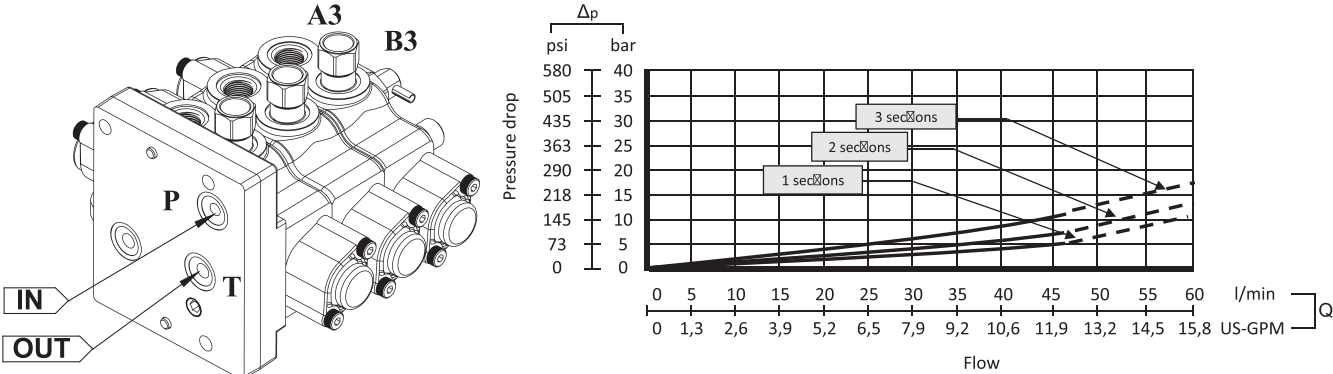
HYDRAULIC CIRCUIT



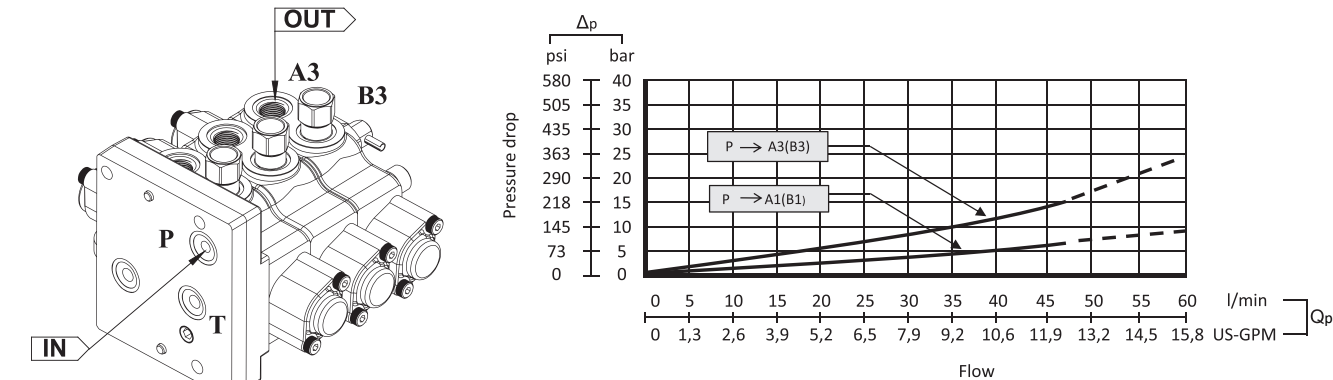
Order Code GMM – STY – 4

PERFORMANCE DATA AND CURVE

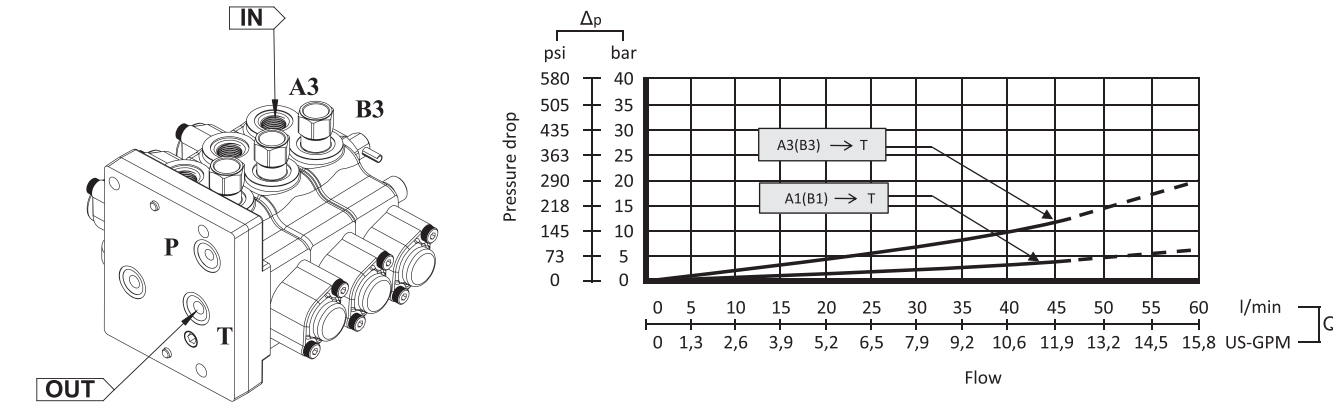
Open Center - Pressure Drop (P-T)



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



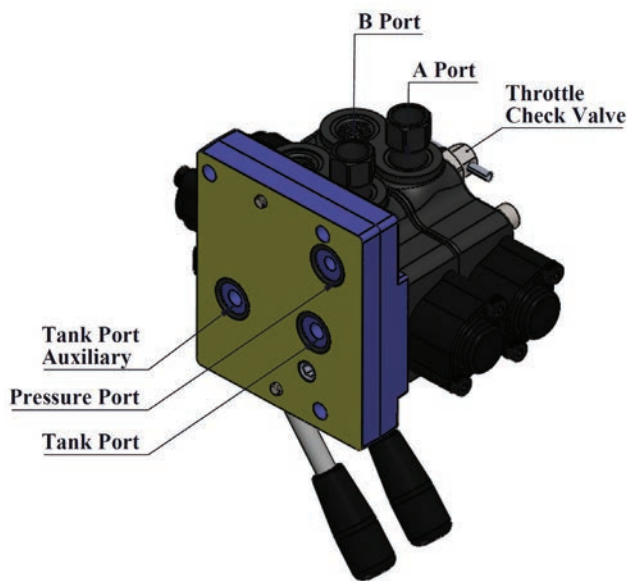
Work Port to Outlet - Pressure Drop (A/B-T)



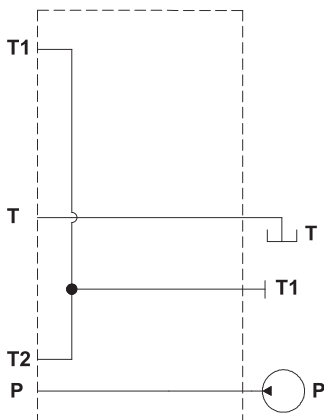
PORTS AND MOUNTING FACE

Port Directional And Type

Port Appearance



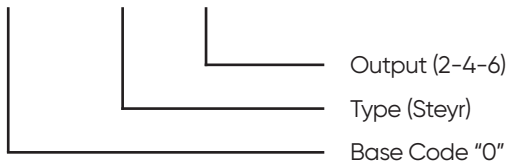
Diagram



ORDERING CODES AND INSTALLATION

Order Code

GMM – STY – 4

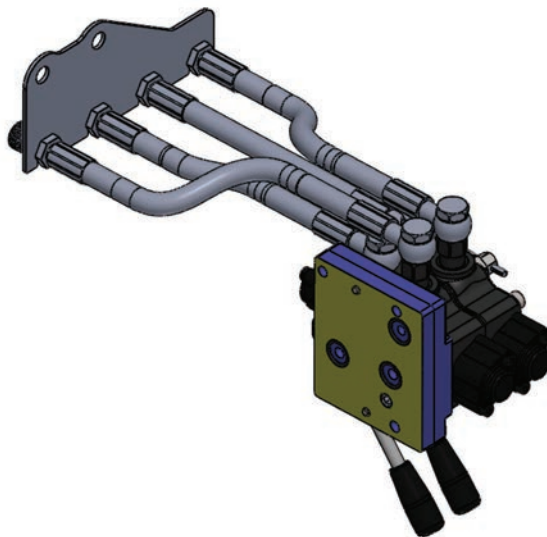


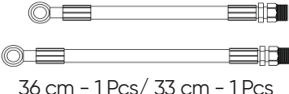
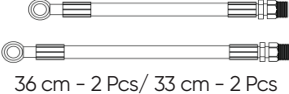
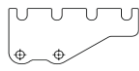
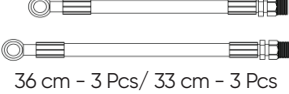
STY-2 (1 section - 2 Output)
 STY-4 (2 section - 4 Output)
 STY-6 (3 section - 6 Output)

Installation

The GMM STY 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.



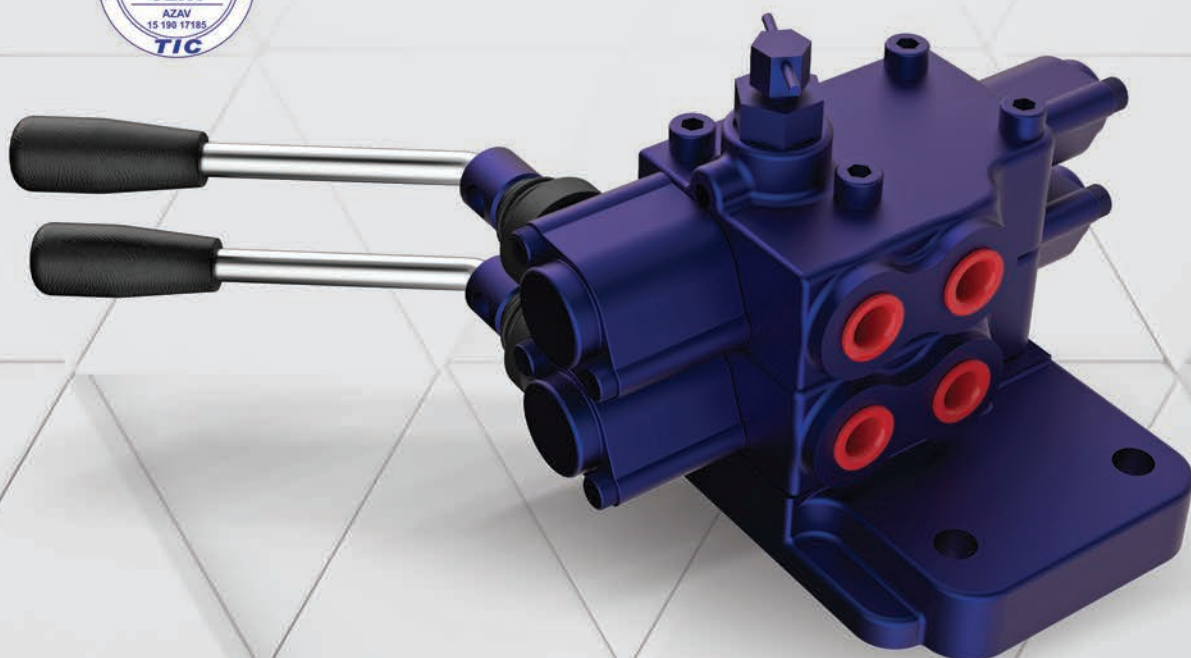
MODEL	HOSE	COUPLING HOLES 3/8"	COPPER WASHER	SHEET CONNECTION	CONNECTION BOLT	LEVER COUNT
GMM- STY-2	 36 cm - 1 Pcs/ 33 cm - 1 Pcs	 2 Pcs	4 Pcs		DIN 912 M6x20 - 2 Pcs	1 pcs
GMM- STY-4	 36 cm - 2 Pcs/ 33 cm - 2 Pcs	 4 Pcs	8 Pcs		DIN 912 M6x20 - 2 Pcs	2 pcs
GMM- STY-6	 36 cm - 3 Pcs/ 33 cm - 3 Pcs	 6 Pcs	12 Pcs		DIN 912 M6x20 - 2 Pcs	3 pcs

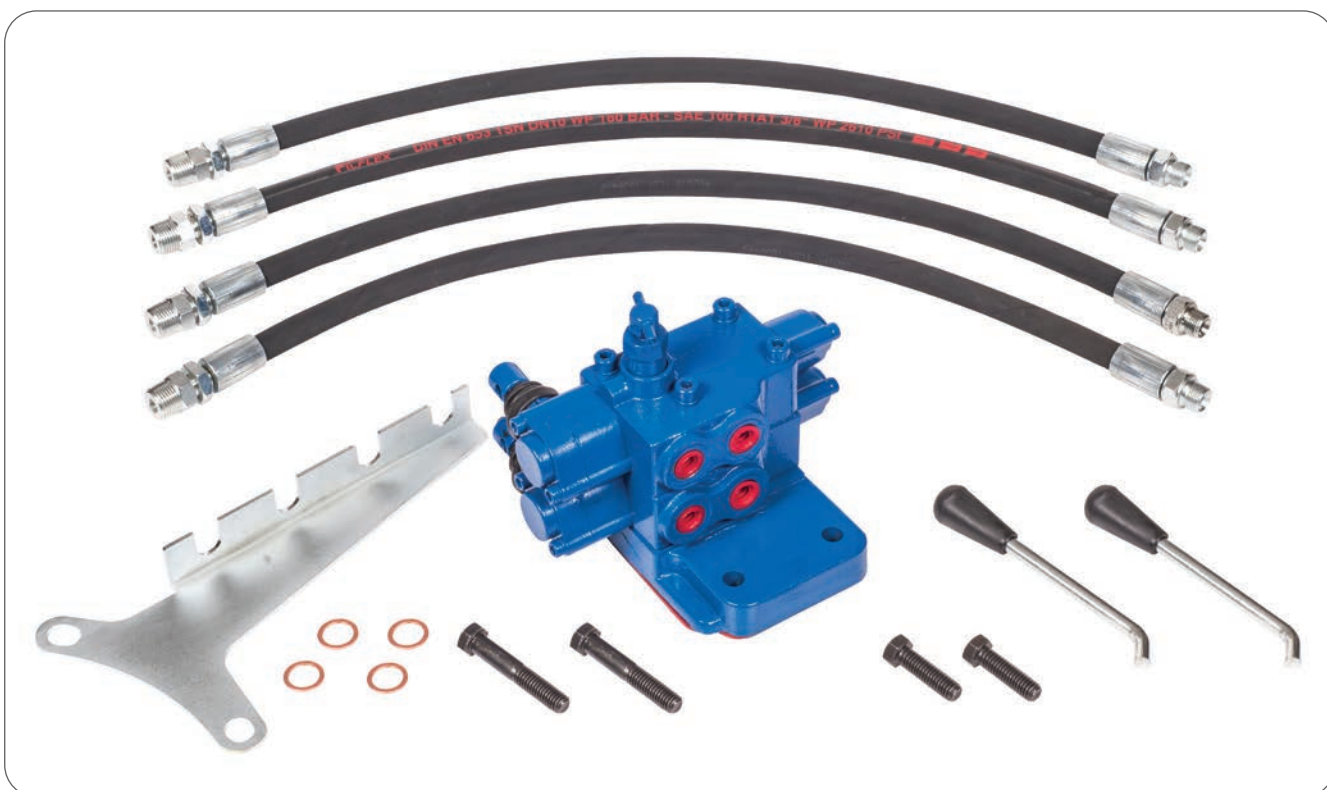


SPECIAL TRACTOR
VALVES

GMM-FRD3000

CE





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Additional Informations

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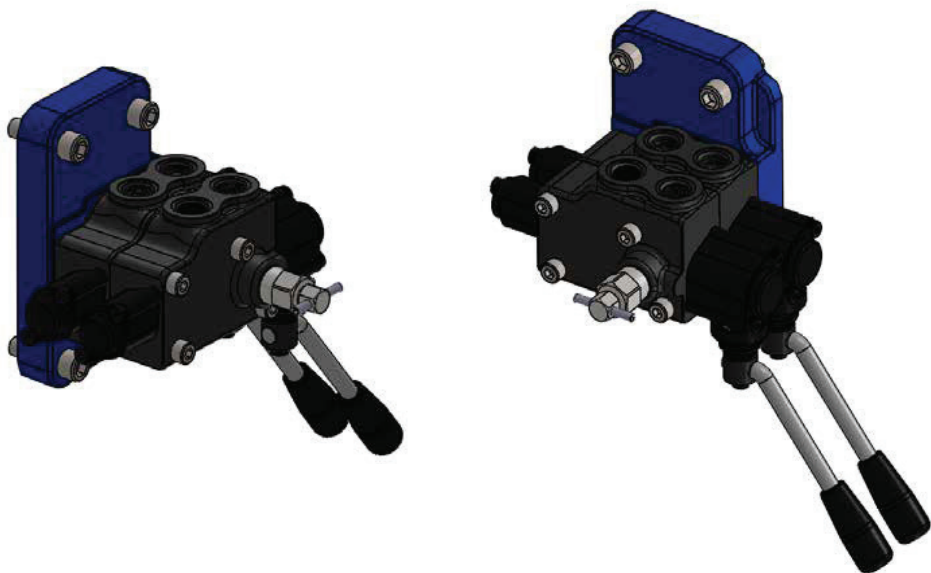
WORKING CONDITIONS

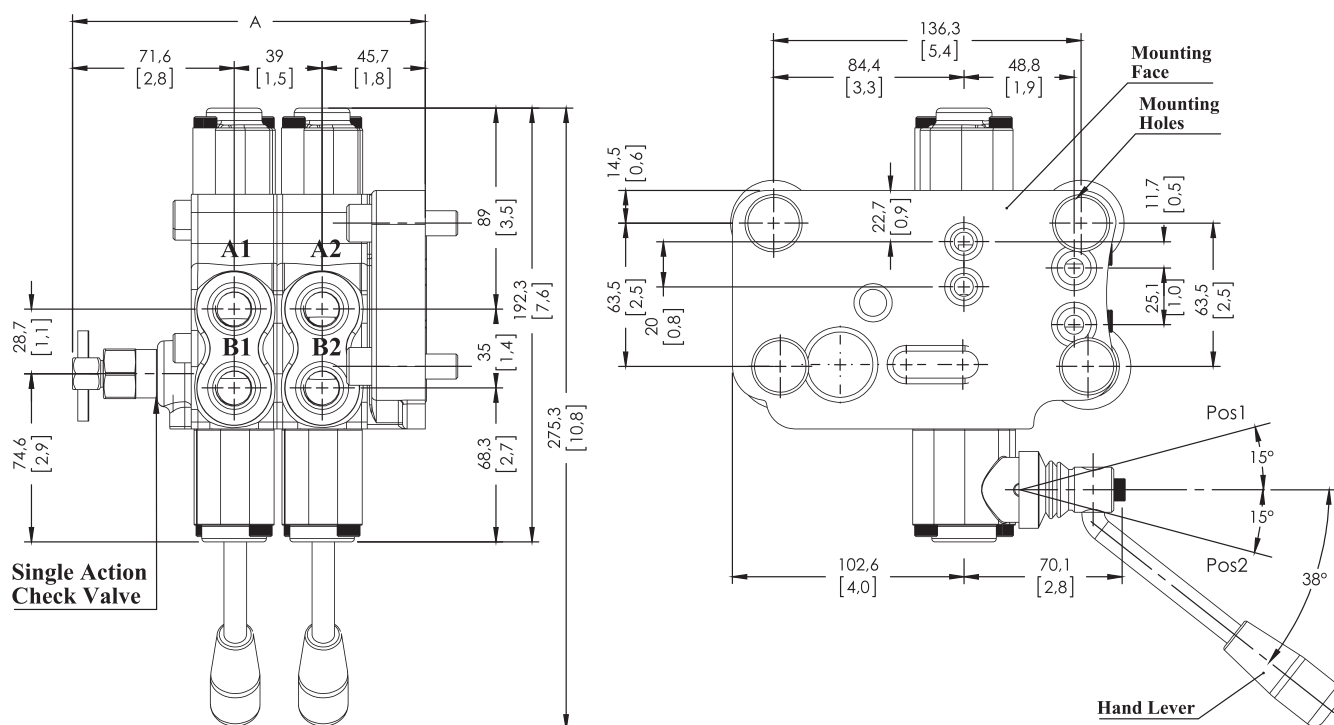
Nominal Flow Rating / Displacement	45 l/min	12 U.S.G.P.M
Maximum Working Pressure	315 Bar	4600 PSI
Max Back Pressure	25 Bar	360 PSI
Oil Temperture with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperture Range	-35 to 60 C°	-31 to 140 F °
Number Of Spools	1 to 3	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min	0,18 in3/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° temperture.

Features

- Simple, compact and heavy duty designed sectional truck mounted valves from 1 to 3 sections for open center hydraulic systems.
- Interchangeable spool diameter is 16 mm – 0,63 in.
- It can be work working section and truck lift for some time.
- It has low tank pressure for additional tank line.
- It can be use single and double acting for only last working section.



DIMENSIONAL DATA


TYPE	A		WEIGHT	
	mm	in	Kg	lb
GMM-FRD3000-2	117,0	4,61	6,90	15,21
GMM-FRD3000-4	156,0	6,14	10,61	23,39
GMM-FRD3000-6	195,0	7,68	14,32	31,57

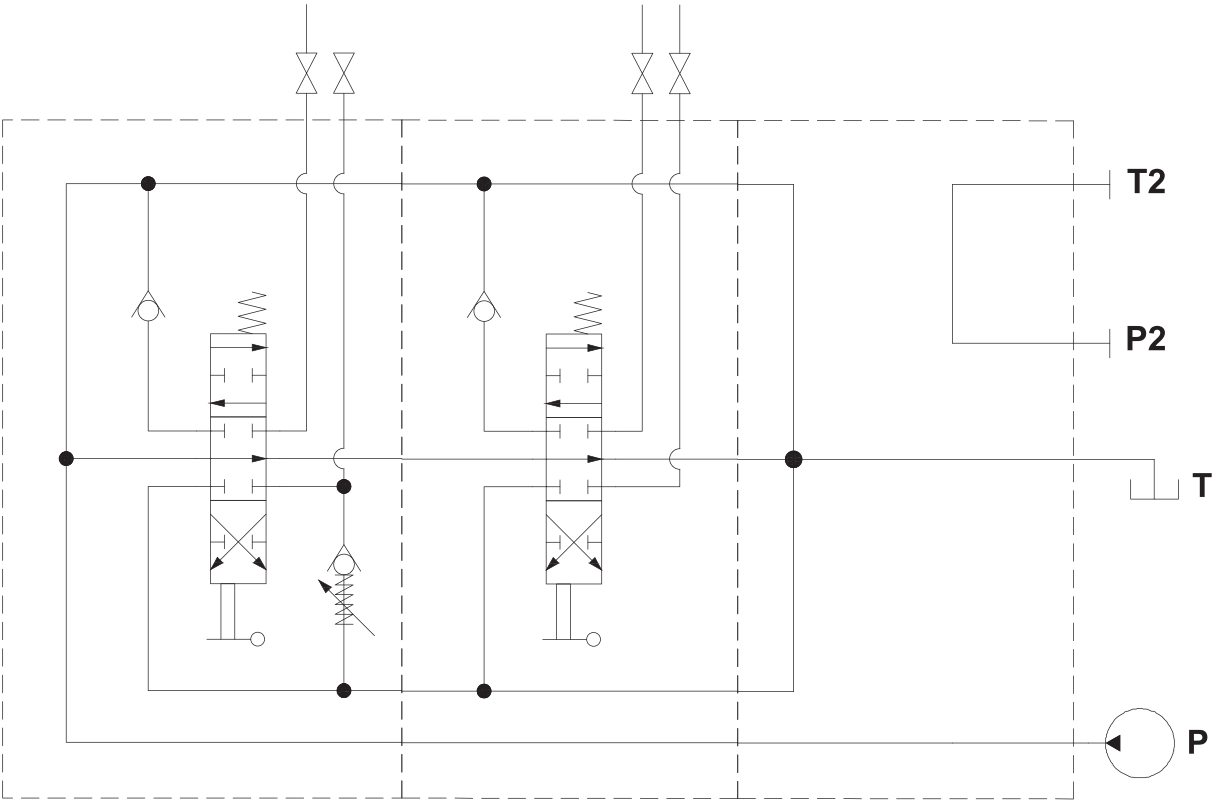
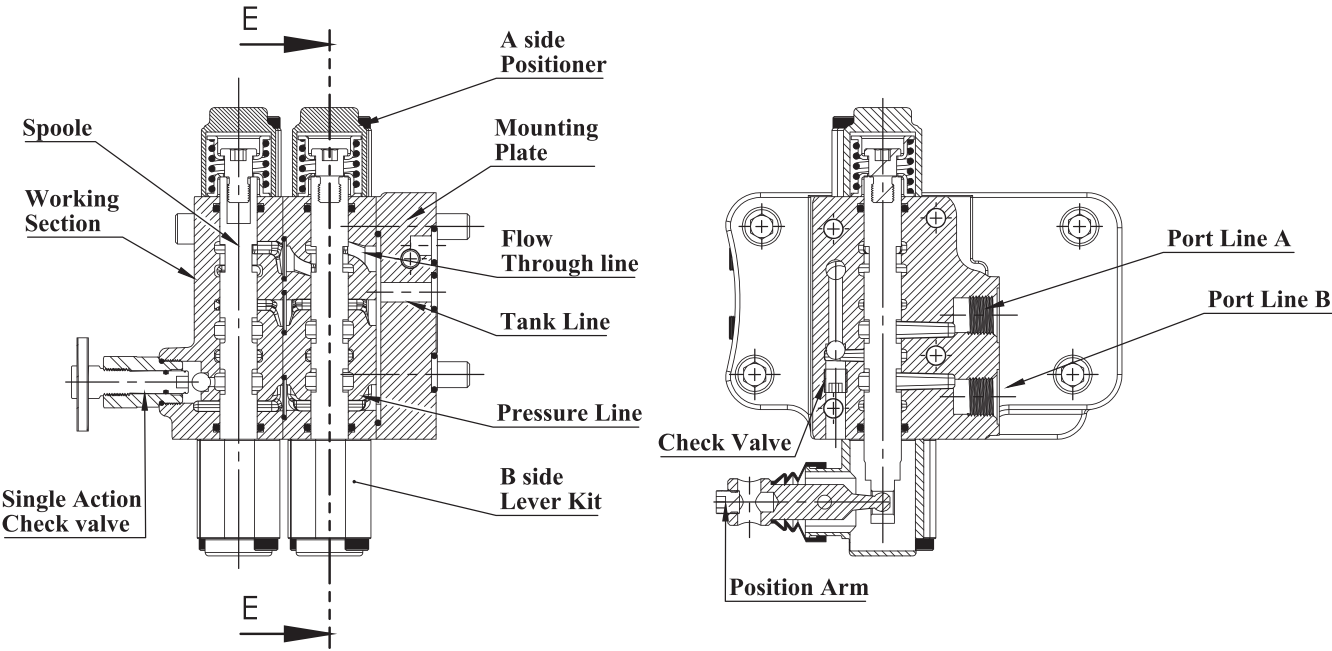
STANDARD THREADS

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

Compatible Models

Ford All Old Models
3000 Series – 2000, 2600, 3000, 3600, 4000, 4600

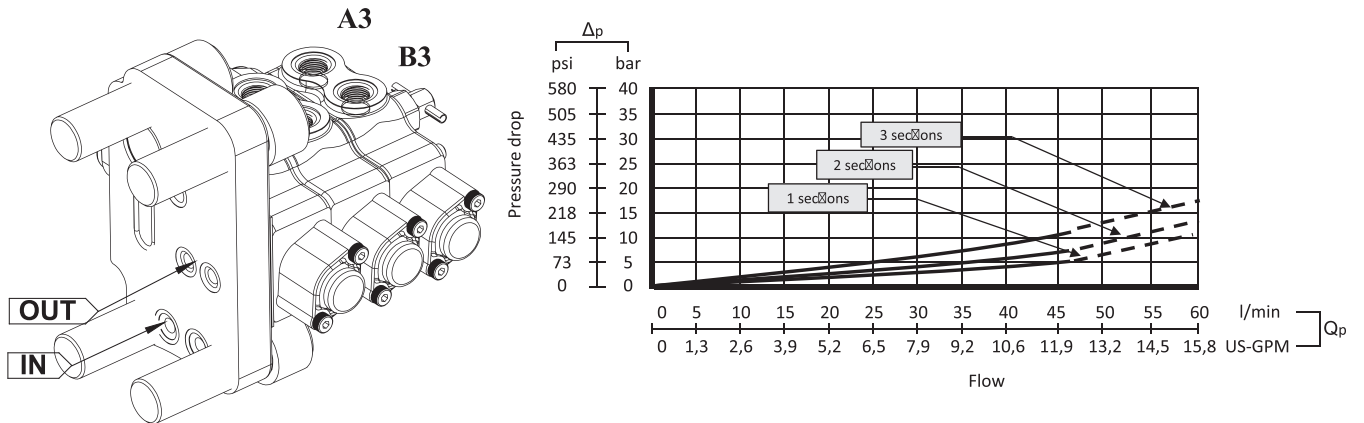
HYDRAULIC CIRCUIT



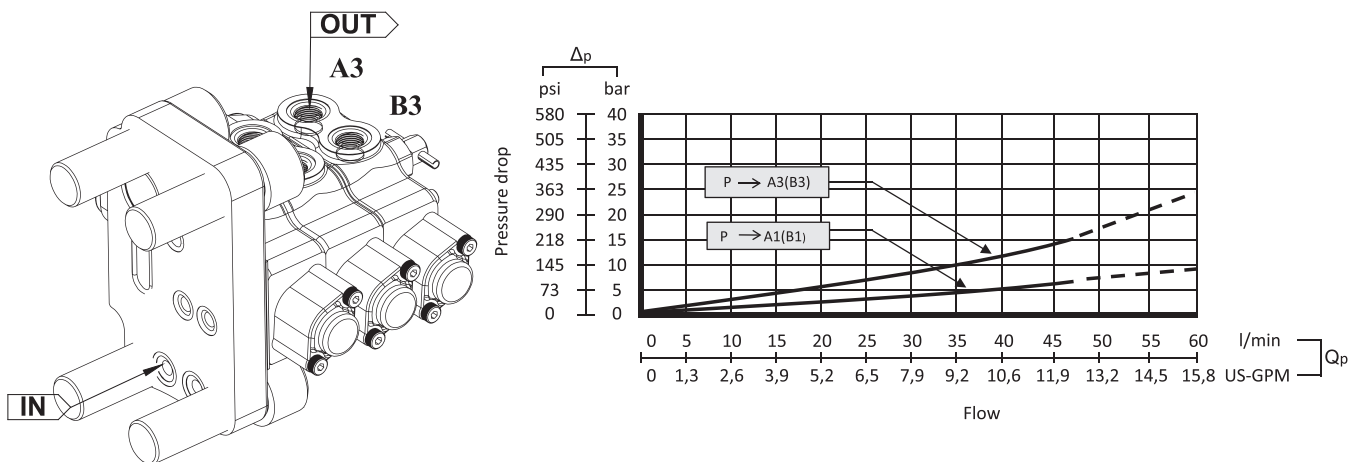
Order Code GMM – FRD3000 – 4

PERFORMANCE DATA AND CURVE

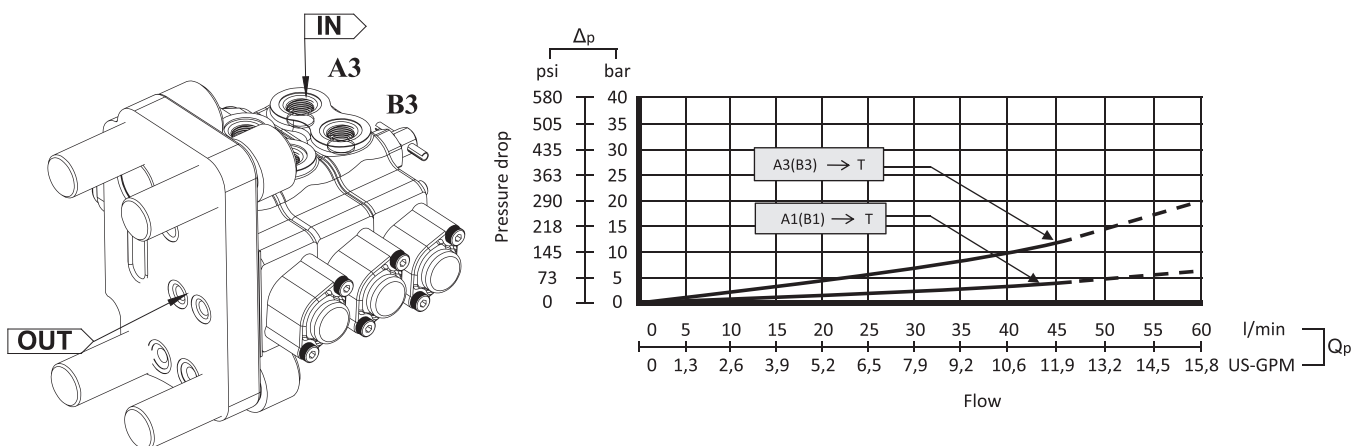
Open Center - Pressure Drop (P-T)



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



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

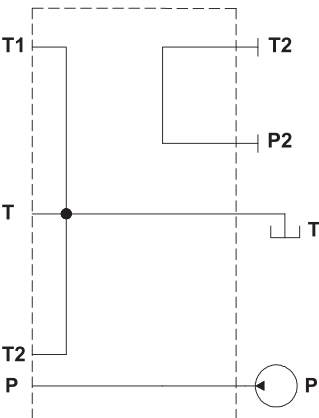
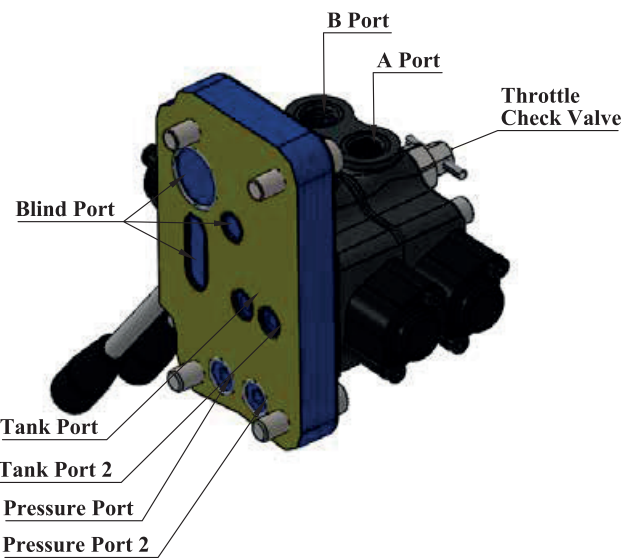


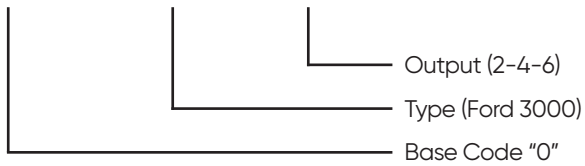
PORTS AND MOUNTING FACE

Port Directional And Type

Port Appearance

Diagram



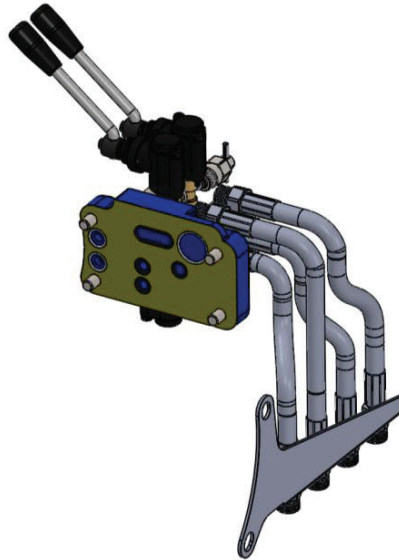
ORDERING CODES AND INSTALLATION
Order Code
GMM – FRD 3000 – 4


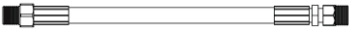
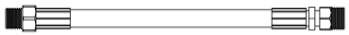
FRD3000 – 2 (1 section – 2 Output)
FRD3000 – 4 (2 section – 4 Output)
FRD3000 – 6 (3 section – 6 Output)

Installation

The GMM FRD3000 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.



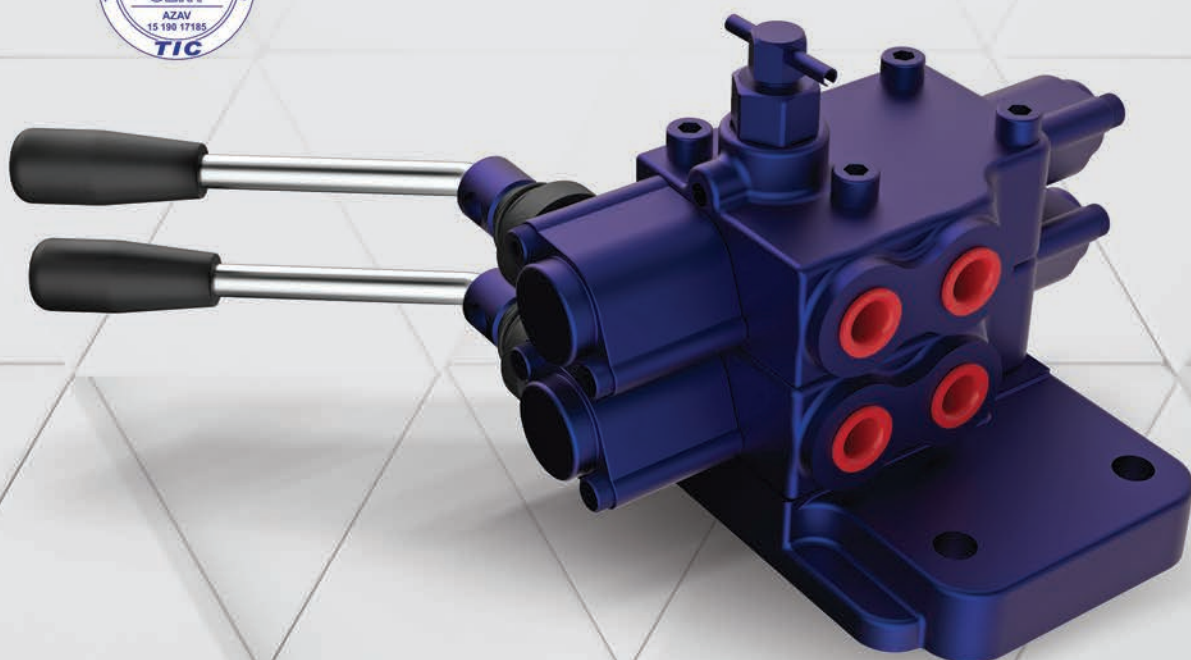
MODEL	HOSE	COPPER WASHER 3/8"	SHEET CONNECTION	CONNECTION BOLT	LEVER COUNT
GMM - FRD3000-2	 63 cm - 2 Pcs	2 pcs		UNC-7/16-1 1/2"-2 Pcs UNC 7/16-2 1/2"-2 Pcs	1 pcs
GMM - FRD3000-4	 63 cm - 4 Pcs	4 pcs		UNC-7/16-1 1/2"-2 Pcs UNC 7/16-2 1/2"-2 Pcs	2 pcs
GMM - FRD3000-6	 63 cm - 6 Pcs	6 pcs		UNC-7/16-1 1/2"-2 Pcs UNC 7/16-2 1/2"-2 Pcs	3 pcs

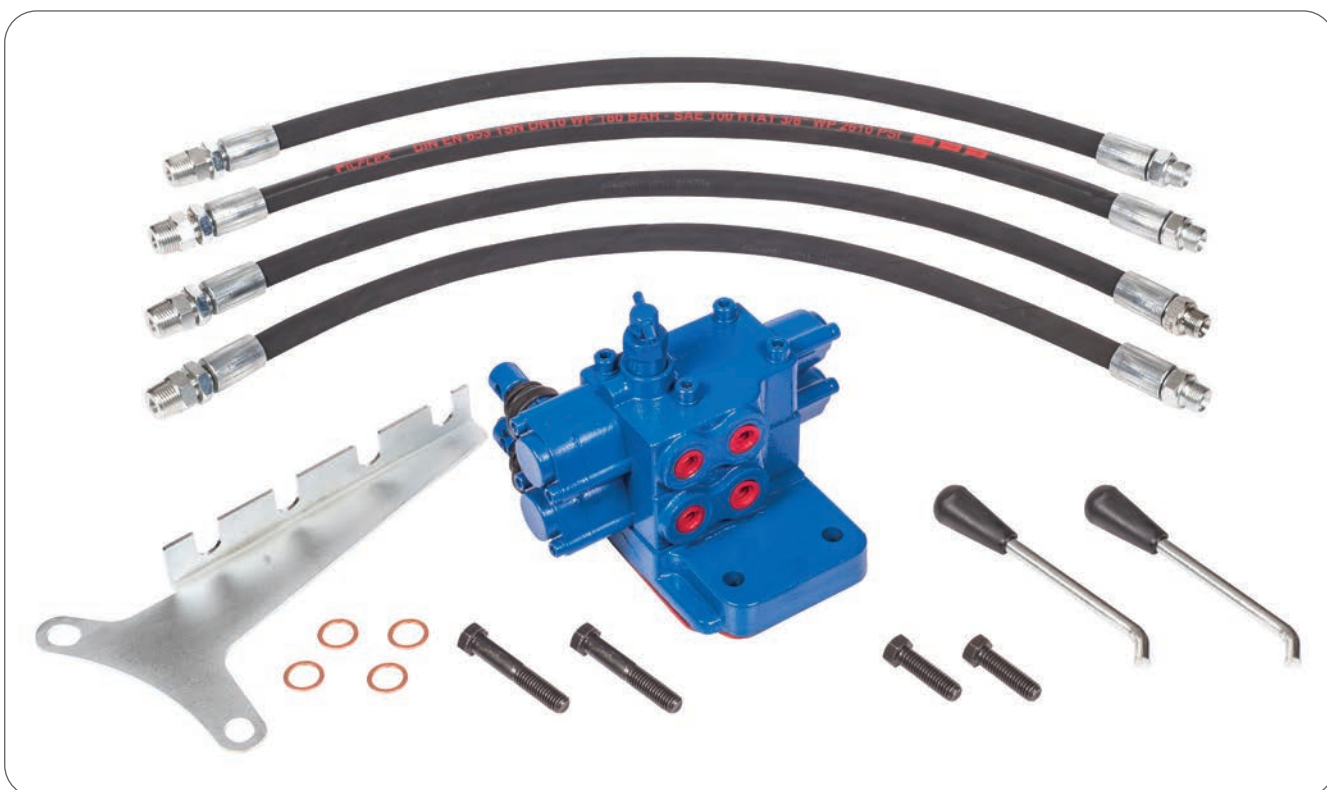


SPECIAL TRACTOR
VALVES

GMM-FRD5000

CE





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Additional Informations

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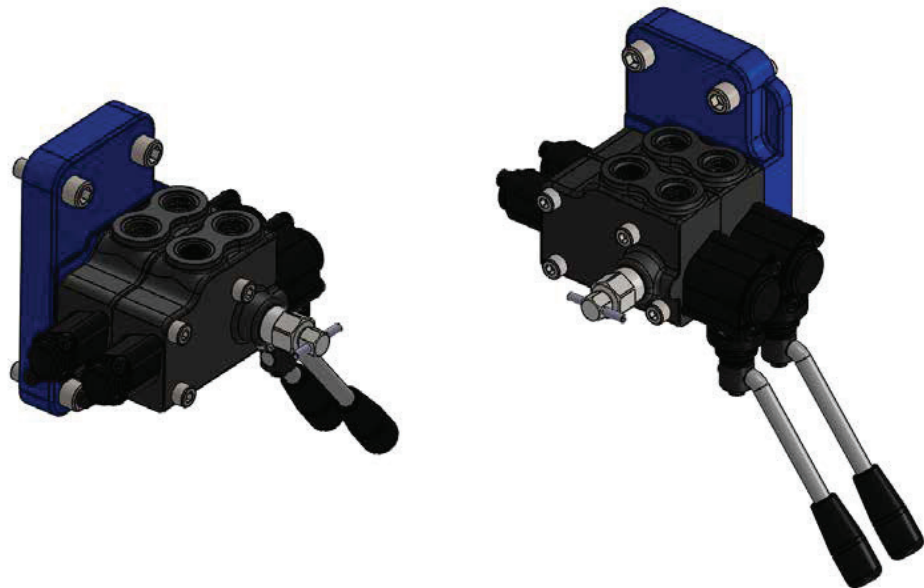
WORKING CONDITIONS

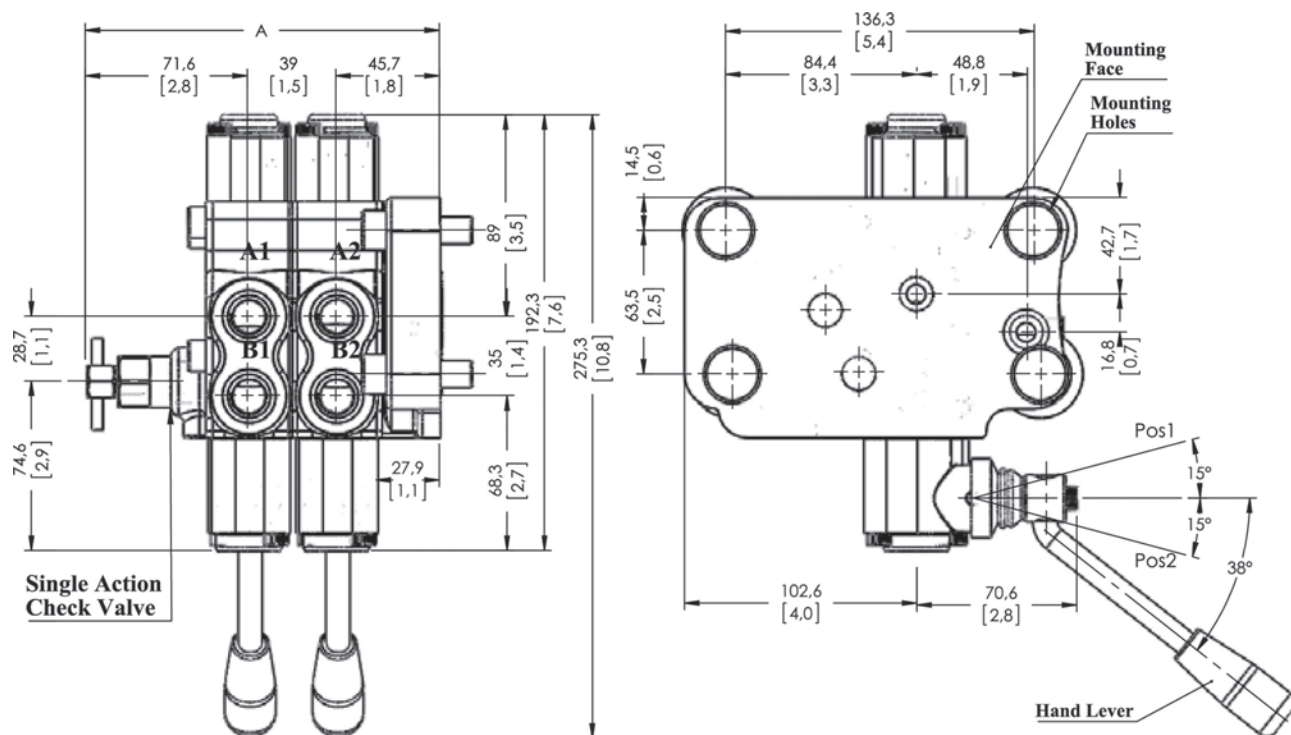
Nominal Flow Rating / Displacement	45 l/min	12 U.S.G.P.M
Maximum Working Pressure	315 Bar	4600 PSI
Max Back Pressure	25 Bar	360 PSI
Oil Temperture with NBR Seals	-20 to 80 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperture Range	-35 to 60 C°	-31 to 140 F °
Number Of Spools	1 to 3	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min	0,18 in3/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° temperture.

Features

- Simple, compact and heavy duty designed sectional truck mounted valves from 1 to 3 sections for open center hydraulic systems.
- Interchangeable spool diameter is 16 mm – 0,63 in.
- It can be work working section and truck lift for some time.
- It has low tank pressure for additional tank line.
- It can be use single and double acting for only last working section.



DIMENSIONAL DATA


TYPE	A		WEIGHT	
	mm	in	Kg	lb
GMM-FRD5000-2	117,0	4,61	7,18	15,83
GMM-FRD5000-4	156,0	6,14	10,74	23,68
GMM-FRD5000-6	195,0	7,68	14,45	31,83

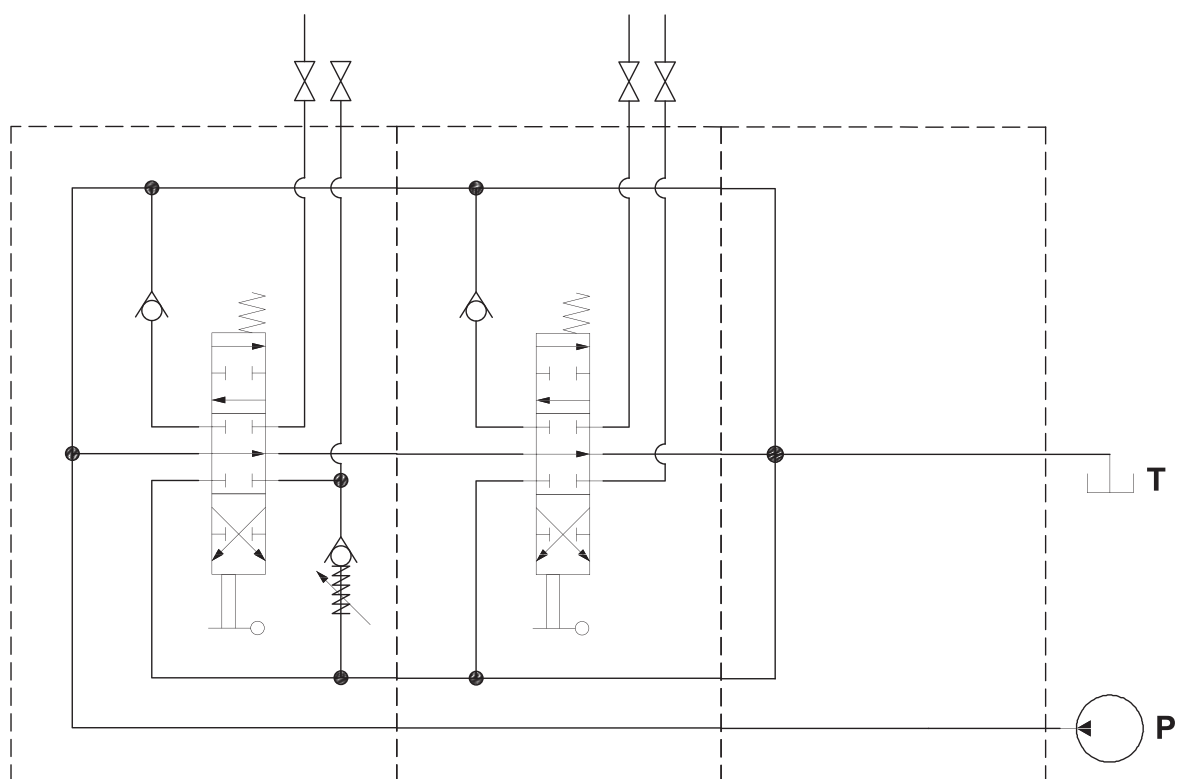
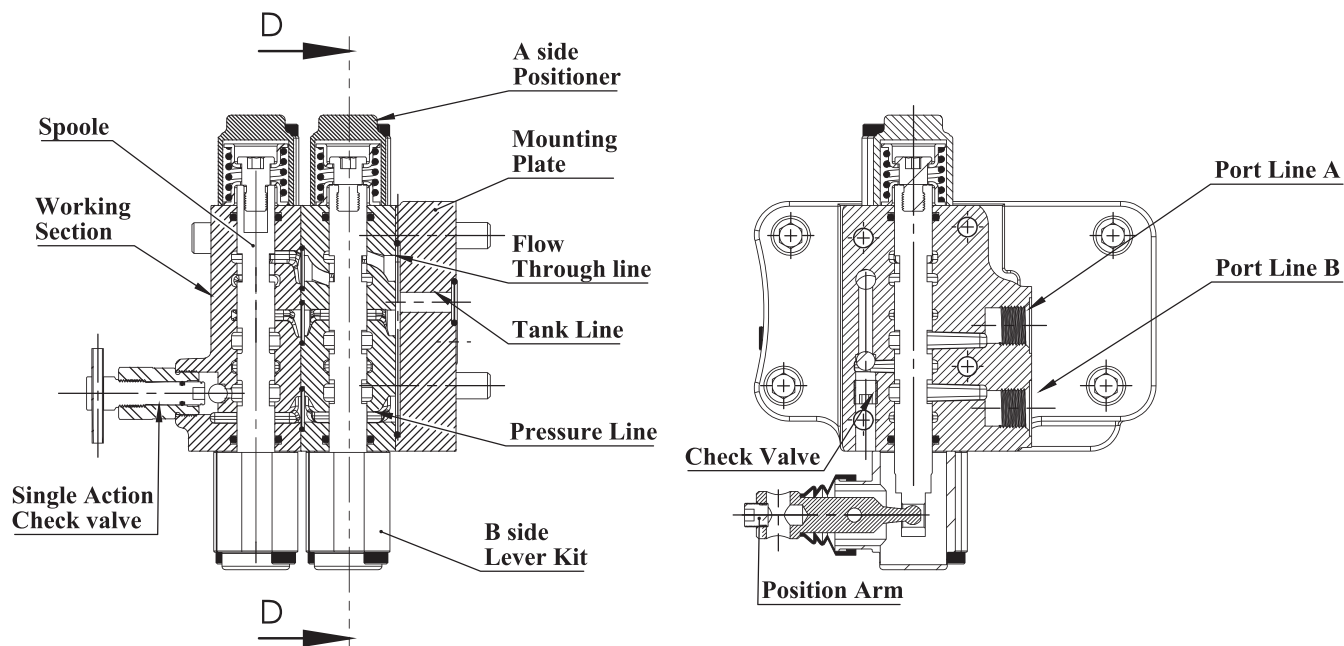
STANDARD THREADS

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

Compatible Models

Ford (All Old Models)
 5000 Series – 5000, 5600
 6000 Series – 6000, 6600

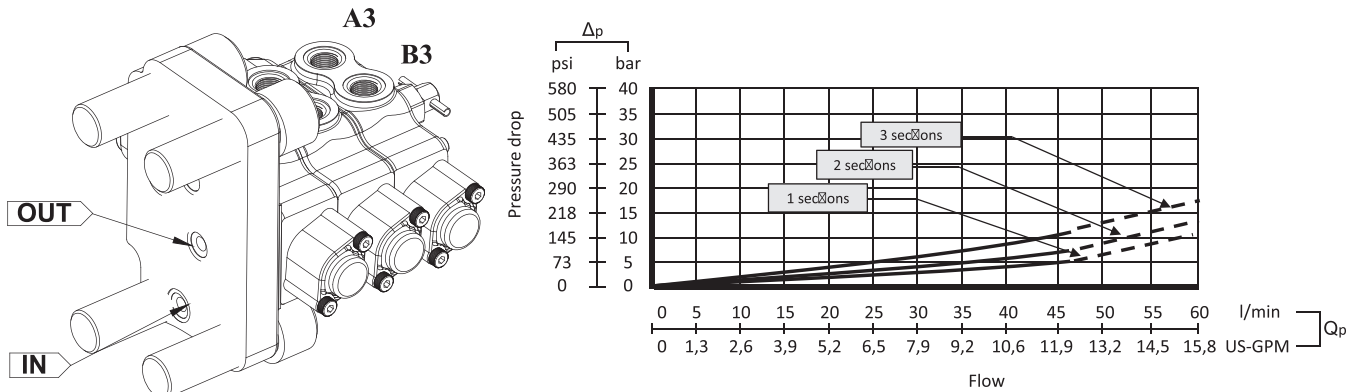
HYDRAULIC CIRCUIT



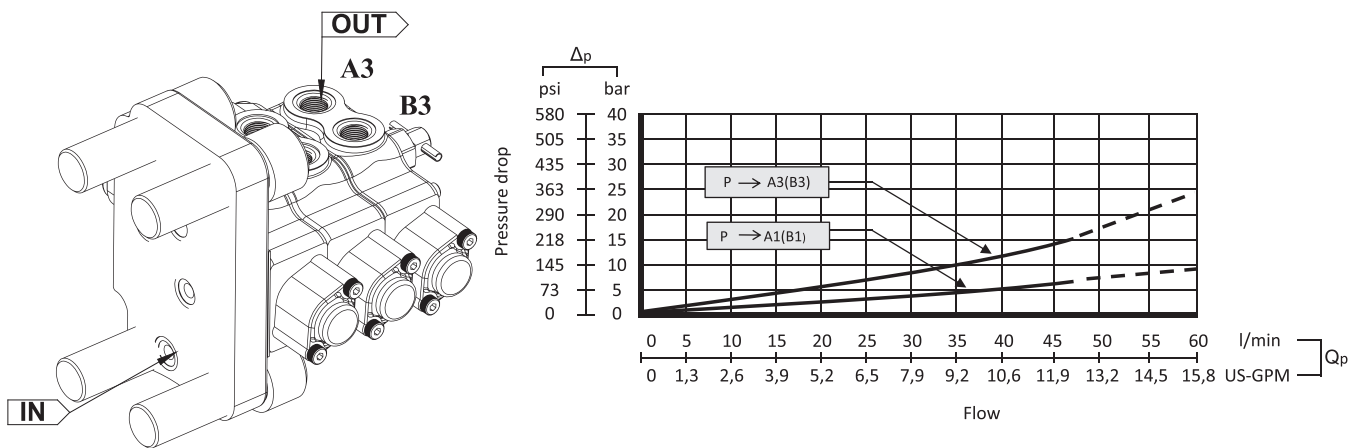
Order Code GMM – FRD5000 – 4

PERFORMANCE DATA AND CURVE

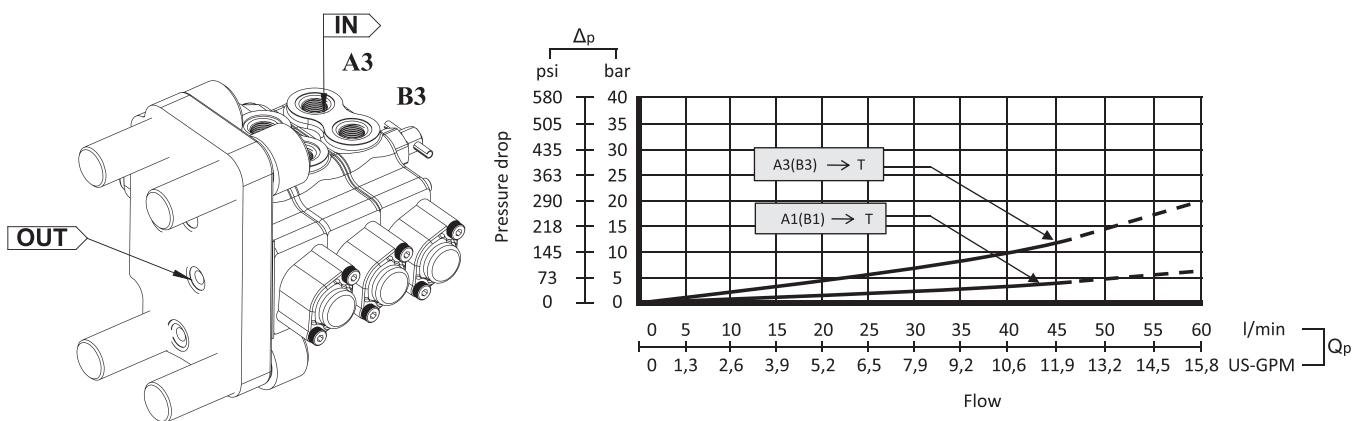
Open Center - Pressure Drop (P-T)



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



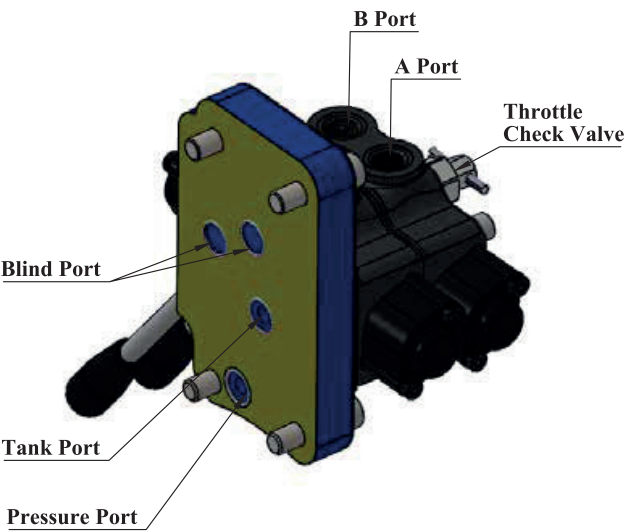
Work Port to Outlet - Pressure Drop (A/B-T)



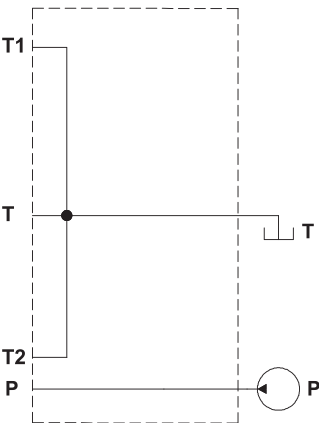
PORTS AND MOUNTING FACE

Port Directional And Type

Port Appearance



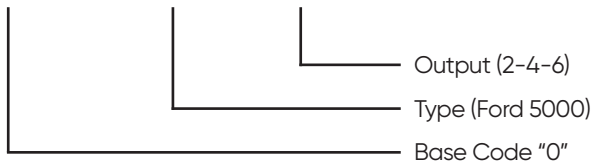
Diagram



ORDERING CODES AND INSTALLATION

Order Code

GMM – FRD5000 – 4

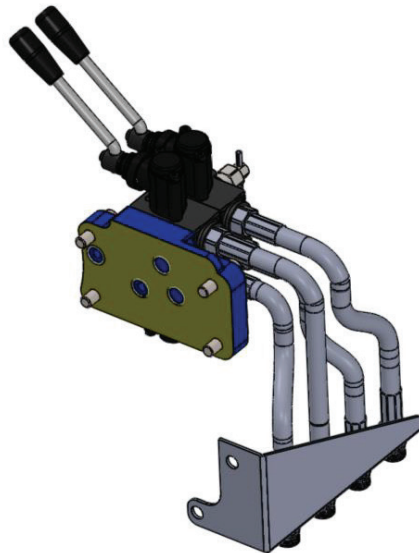


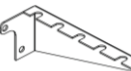
FRD5000 – 2 (1 section – 2 Output)
 FRD5000 – 4 (2 section – 4 Output)
 FRD5000 – 6 (3 section – 6 Output)

Installation

The GMM FRD5000 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.



MODEL	HOSE	COPPER WASHER	SHEET CONNECTION	CONNECTION BOLT	LEVER COUNT
GMM – FRD5000-2	 63 cm – 2 Pcs	2 pcs		UNC-7/16-1 1/2"-4 Pcs	1 pcs
GMM – FRD5000-4	 63 cm – 4 Pcs	4 pcs		UNC-7/16-1 1/2"-4 Pcs	2 pcs
GMM – FRD5000-6	 63 cm – 6 Pcs	6 pcs		UNC-7/16-1 1/2"-4 Pcs	3 pcs

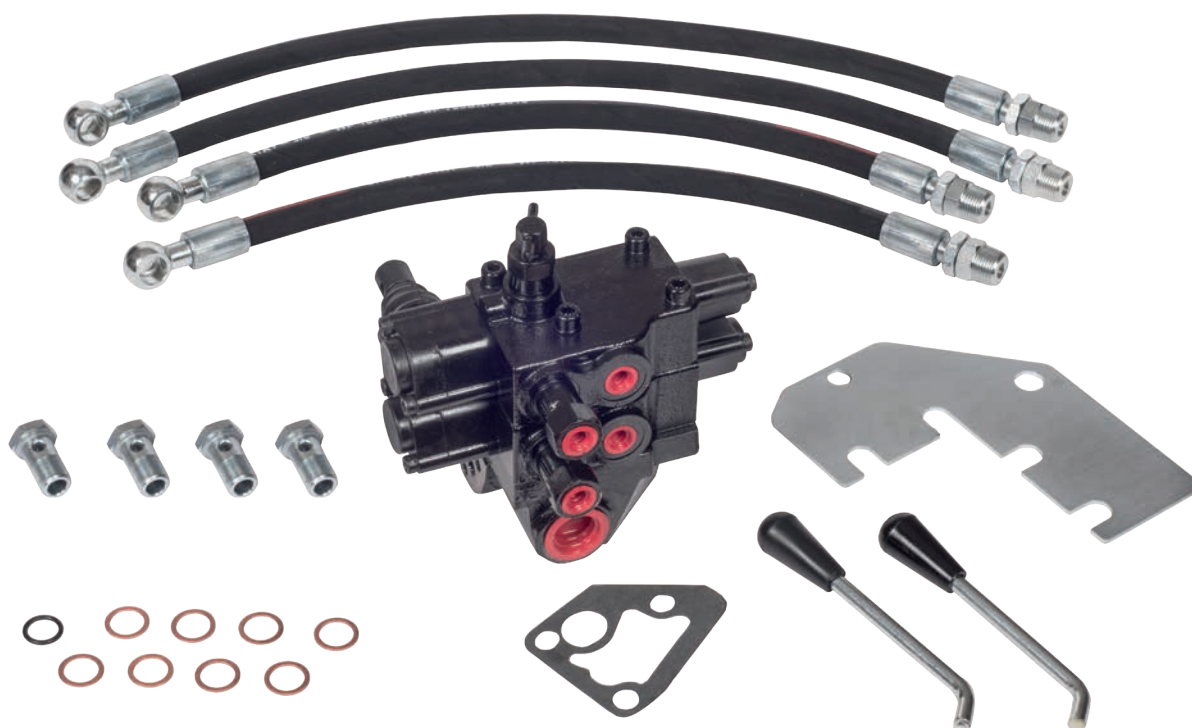


SPECIAL TRACTOR
VALVES

GMM-FT

CE





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Hydraulic Circuit	435
Performance Data And Curve	436
Ports And Mounting Face	437
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Additional Informations

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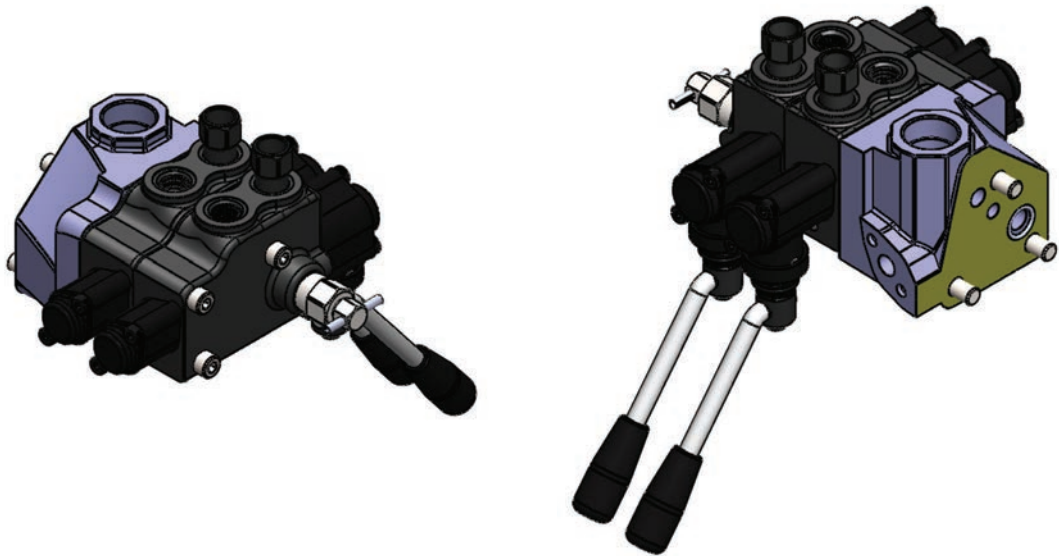
WORKING CONDITIONS

Nominal Flow Rating / Displacement	45 l/min	12 U.S.G.P.M
Maximum Working Pressure	315 Bar	4600 PSI
Max Back Pressure	25 Bar	360 PSI
Oil Temperture 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 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ	
Ambiant Temperture Range	-35 to 60 C°	-31 to 140 F °
Number Of Spools	1 to 3	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min	0,18 in3/min
Max. Level Of Contamination	19/16 – ISO 4406	

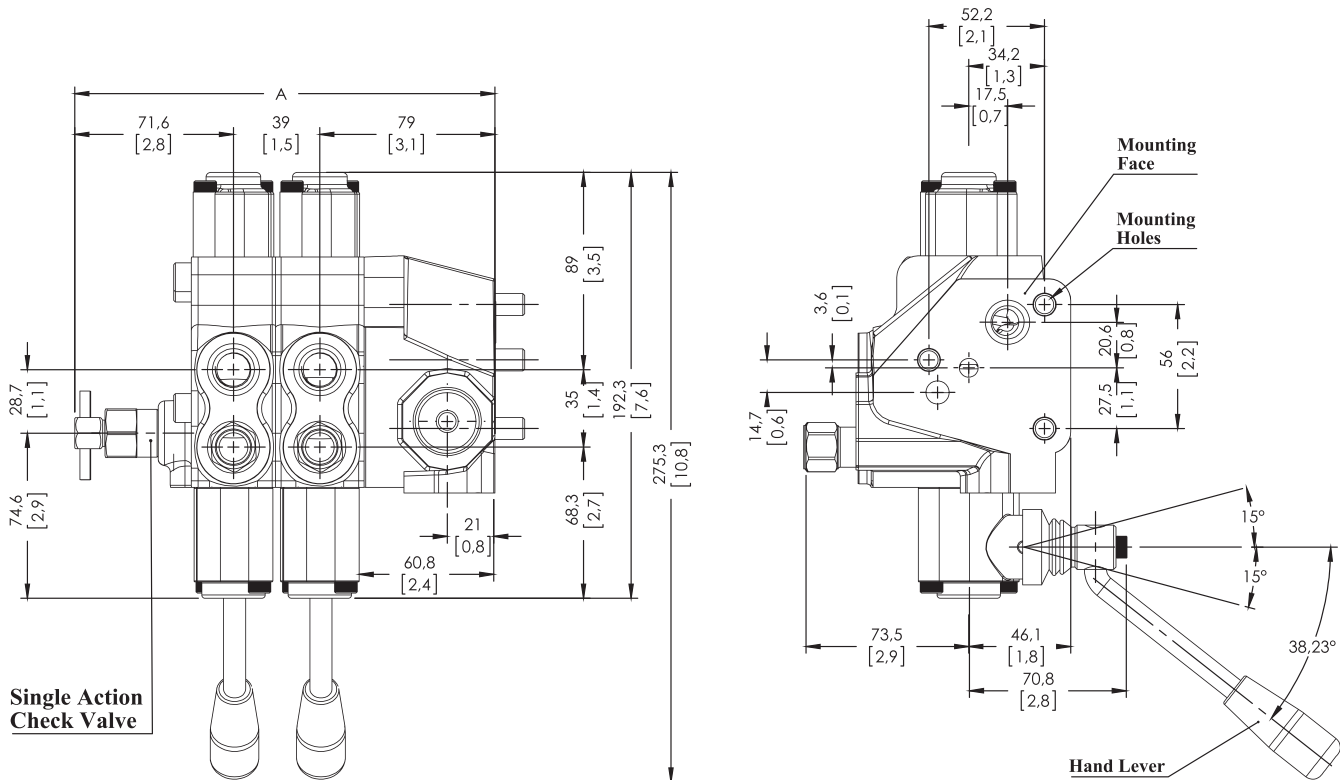
Not: This catalogue shows technical specifications measured with mineral oil of 46 mm2/s-46 cSt viscosity at 40 C° temperture.

Features

- Simple, compact and heavy duty designed sectional truck mounted valves from 1 to 3 sections for open center hydraulic systems.
- Interchangeable spool diametre is 16 mm – 0,63 in.
- It can be work working section and truck lift for some time.
- It has low tank pressure for additional tank line.
- It can be use single and double acting for only last working section.



DIMENSIONAL DATA



TYPE	A		WEIGHT	
	mm	in	Kg	lb
GMM-FT - 2	150,5	5,93	6,75	14,88
GMM-FT - 4	189,5	7,46	10,13	22,33
GMM-FT - 6	228,5	9,00	13,51	29,78

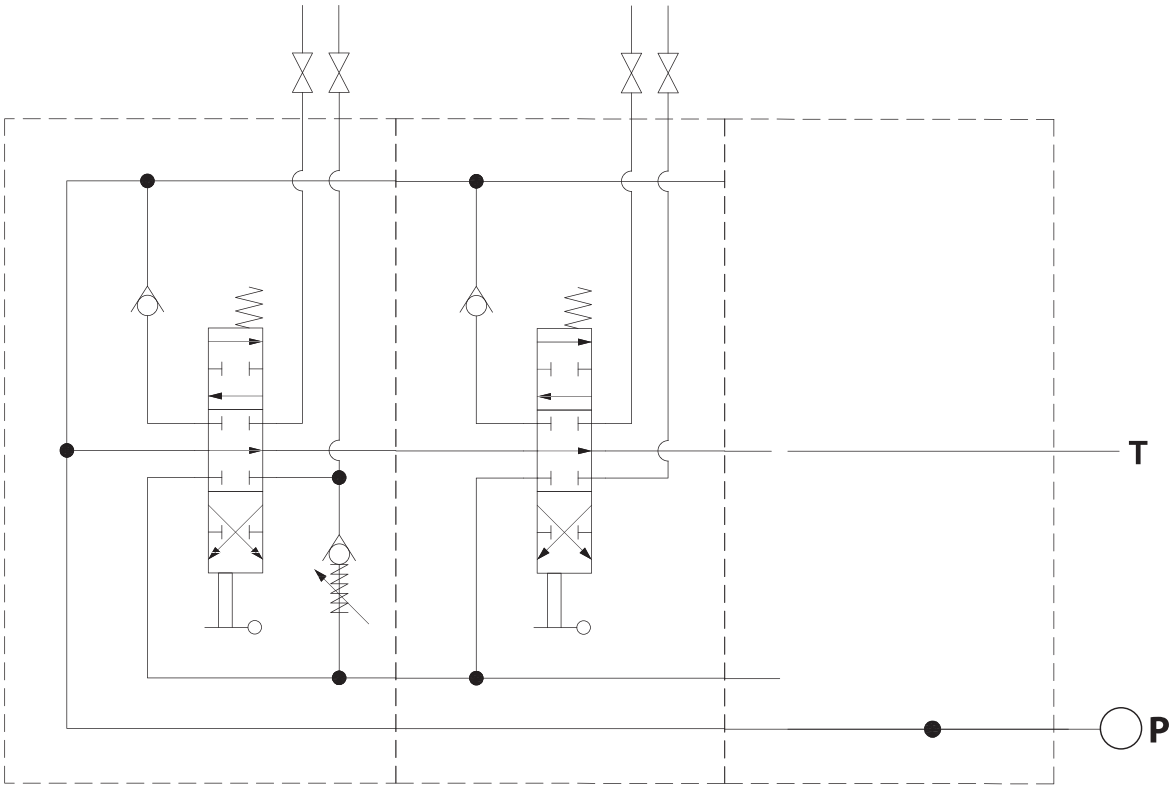
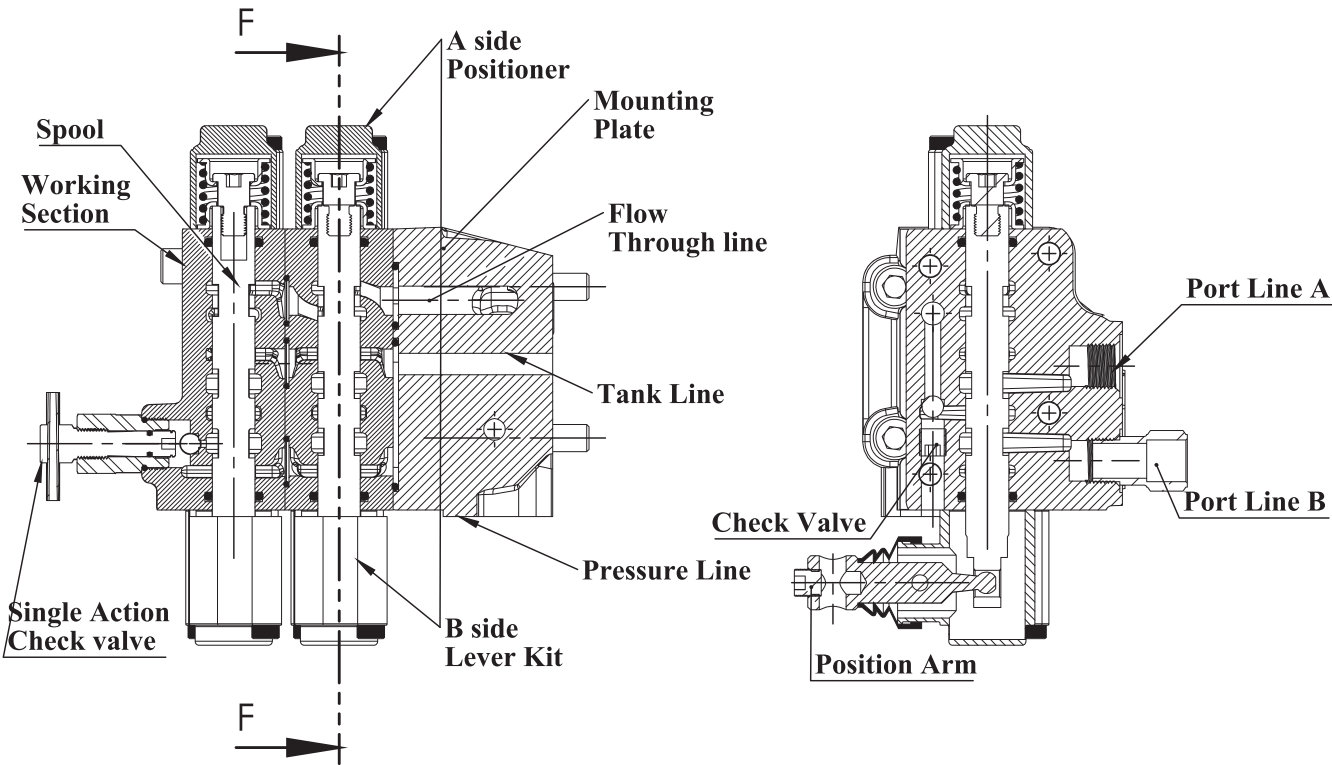
STANDARD THREADS

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

Compatible Models

Fiat (All Old Models)
 400 Series - 480
 600 Series - 640

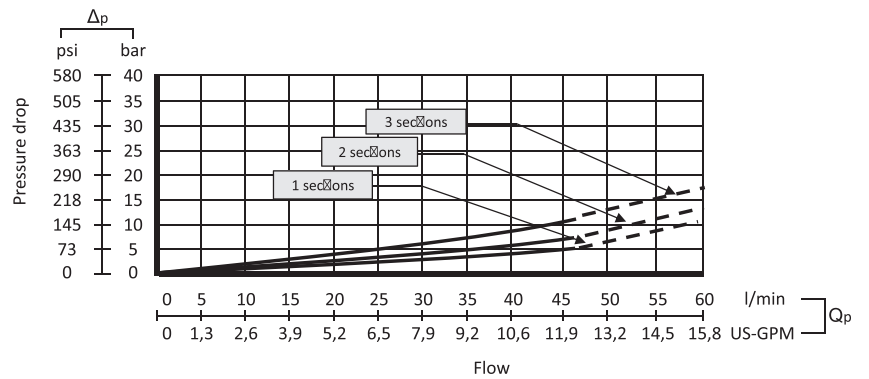
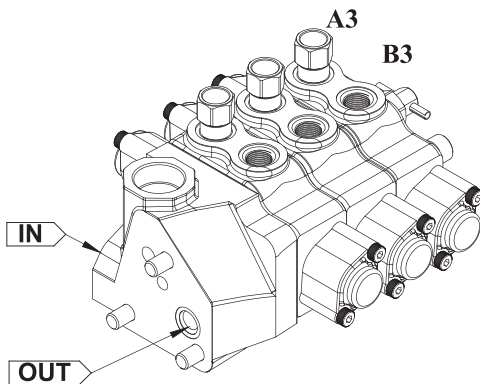
HYDRAULIC CIRCUIT



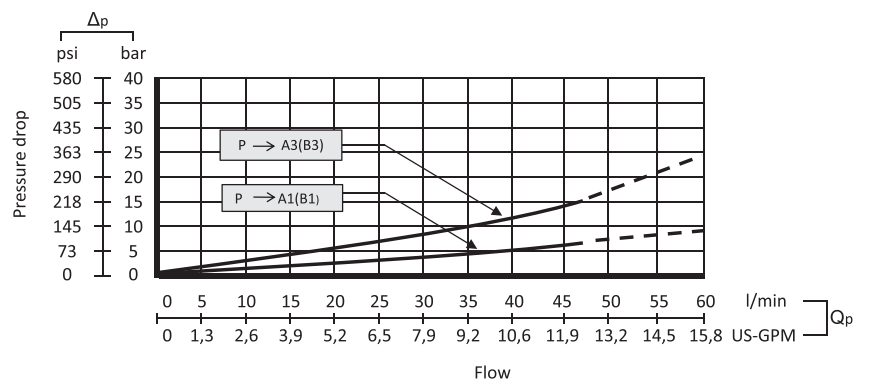
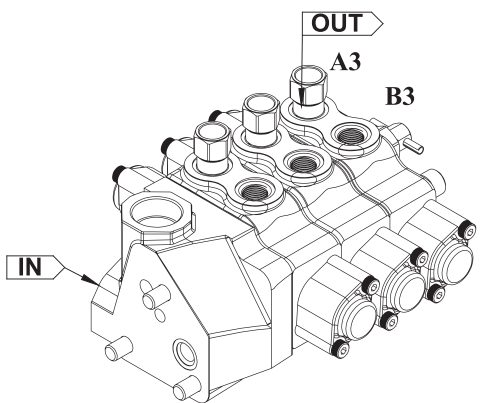
Order Code GMM - FT - 4

PERFORMANCE DATA AND CURVE

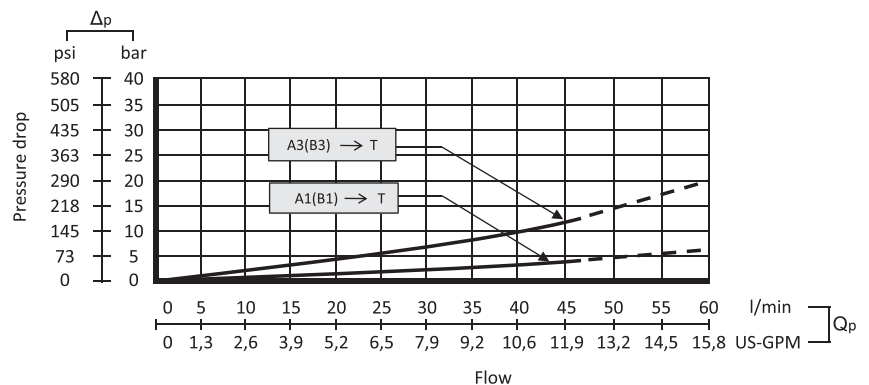
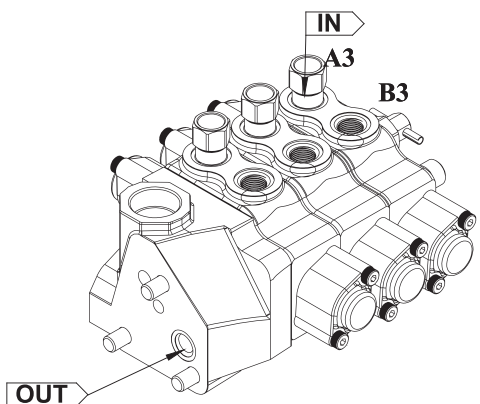
Open Center - Pressure Drop (P-T)



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



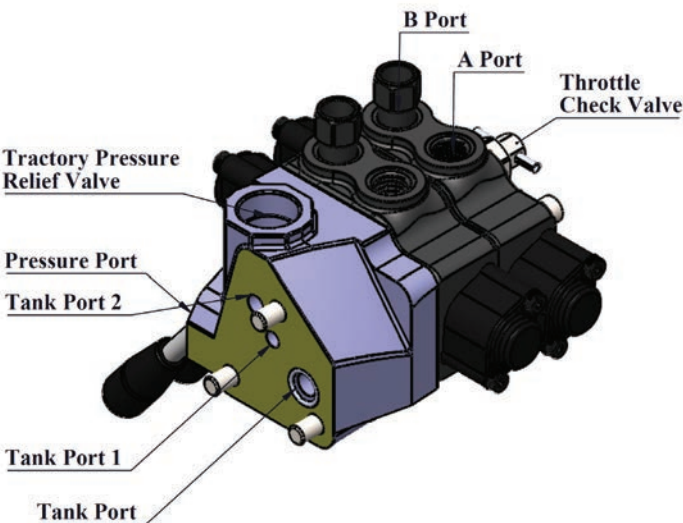
Work Port to Outlet - Pressure Drop (A/B-T)



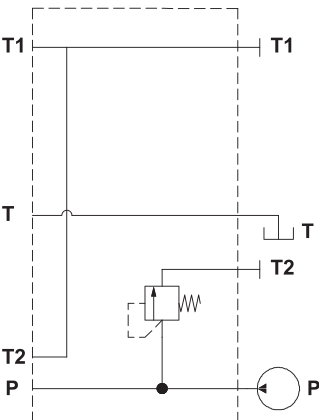
PORTS AND MOUNTING FACE

Port Directional And Type

Port Appearance



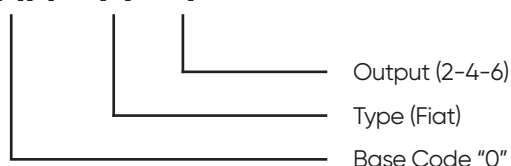
Diagram



ORDERING CODES AND INSTALLATION

Order Code

GMM – FT – 4

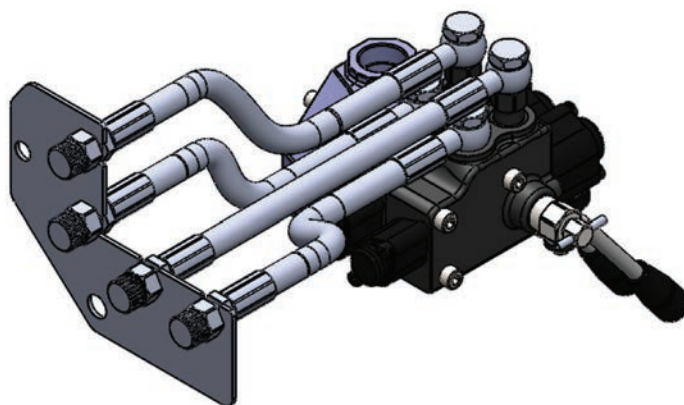


FT-2 (1 section - 2 Output)
 FT-4 (2 section - 4 Output)
 FT-6 (3 section - 6 Output)

Installation

The GMM FT 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.



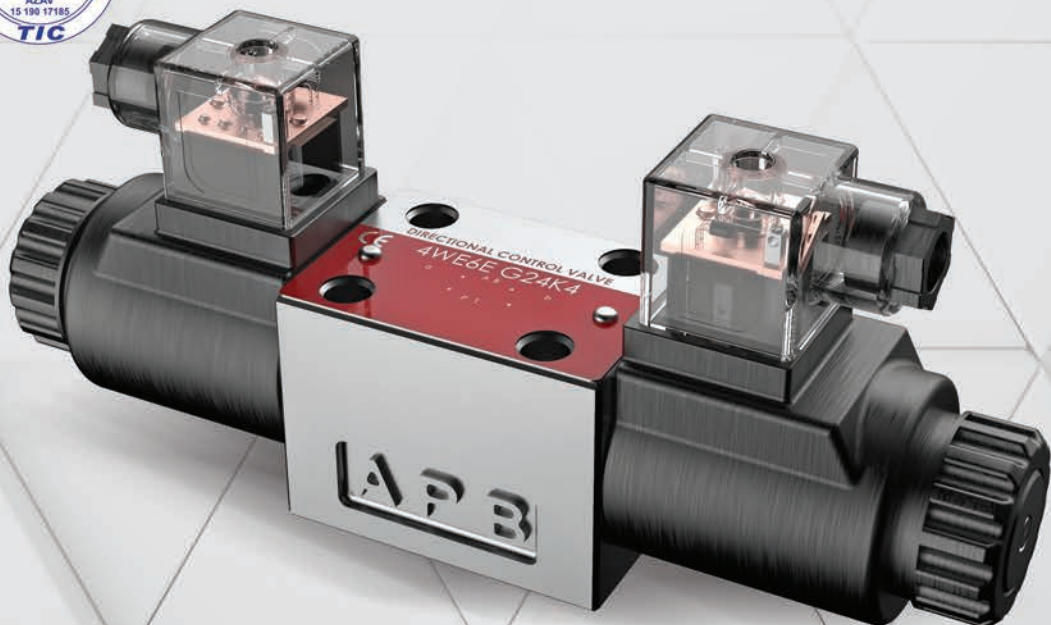
MODEL	HOSE	COUPLING HOLES 3/8"	COPPER WASHER	SHEET CONNECTION	CONNECTION BOLT	LEVER COUNT
GMM - FT-2	 56 cm - 1 Pcs/ 45 cm - 1 Pcs	 2 Pcs	3/8"-4 Pcs M18-1 Pcs		 Gasket - 1 Pcs DIN 912 M10x1,25 - 45 - 3Pcs	1 pcs
GMM - FT-4	 56 cm - 2 Pcs/ 45 cm - 2 Pcs	 4 Pcs	3/8"-8 Pcs M18-1 Pcs		 Gasket - 1 Pcs DIN 912 M10x1,25 - 45 - 3Pcs	2 pcs
GMM - FT-6	 56 cm - 3 Pcs/ 45 cm - 3 Pcs	 6 Pcs	3/8"-12 Pcs M18-1 Pcs		 Gasket - 1 Pcs DIN 912 M10x1,25 - 45 - 3Pcs	3 pcs

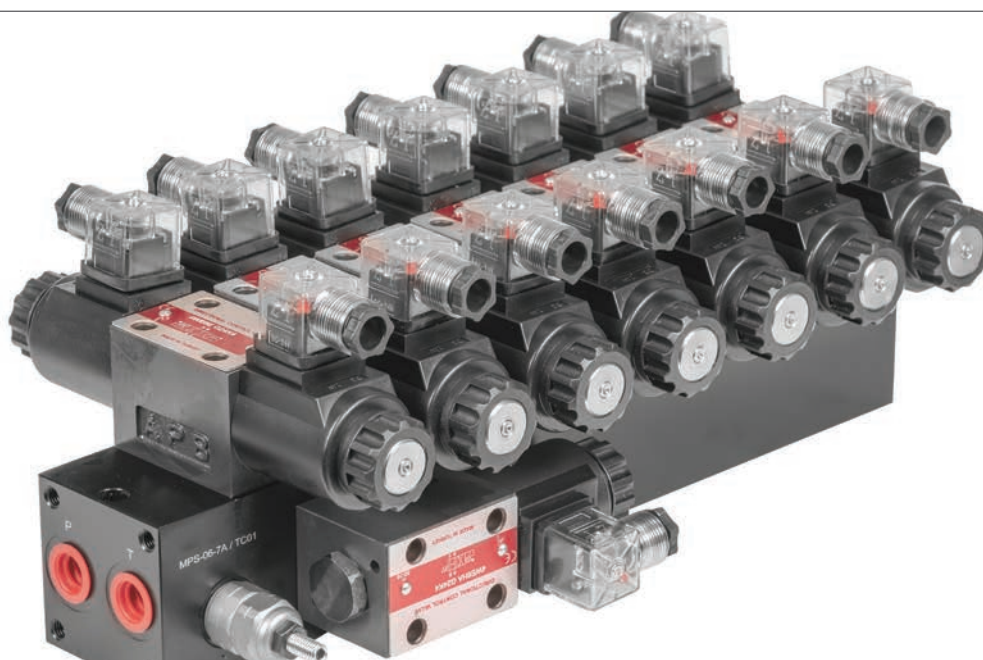


SELENOID DIRECTIONAL
CONTROL VALVES

GMM-4WE6

CE





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Spoole Types and Performance Curve	443
Ordering Codes	444
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Additional Informations

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WORKING CONDITIONS

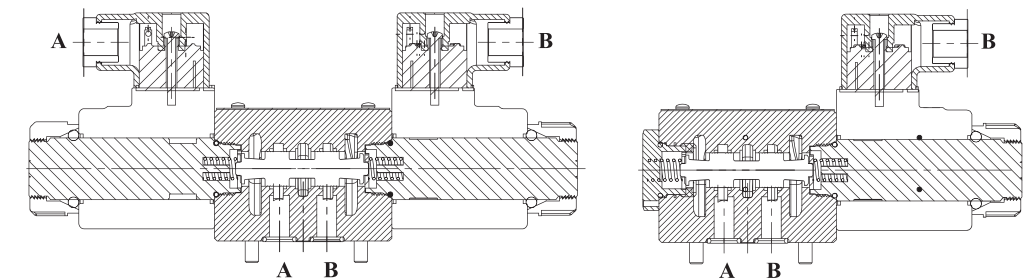
Nominal Flow Rating / Displacement	80 l/min	21 U.S.G.P.M
Maximum Working Pressure	315 Bar	4600 PSI
Max. Back Pressure	160 Bar	2300 PSI
Hydraulic Oil	ISO VG 32,46,68	
Oil Temperature with NBR Seals	-15 to 70 C°	-4 to 176 F °
with FPM (Viton) Seals	-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range	From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum	10 / 400 mm2/s	10 / 400 cSt
Oil Filtration	≤30 μ NAS Class 9 Max	
Ambiant Temperature Range	-15 to 60 C°	-31 to 140 F °
Degree of protection to DIN 40050 And IEP	IP 65	
Max voltage variation	±10	
Power consumption	32 W	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	2 cm3/min	0,12 in3/min
Max. Level Of Contamination	19/16 – ISO 4406	
Mounting Pattern	ISO 4401 – 03	
Weight Single Solenoid / Double Solenoid	1,56 Kg/3,44 lb	2,05 Kg/4,52 lb

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

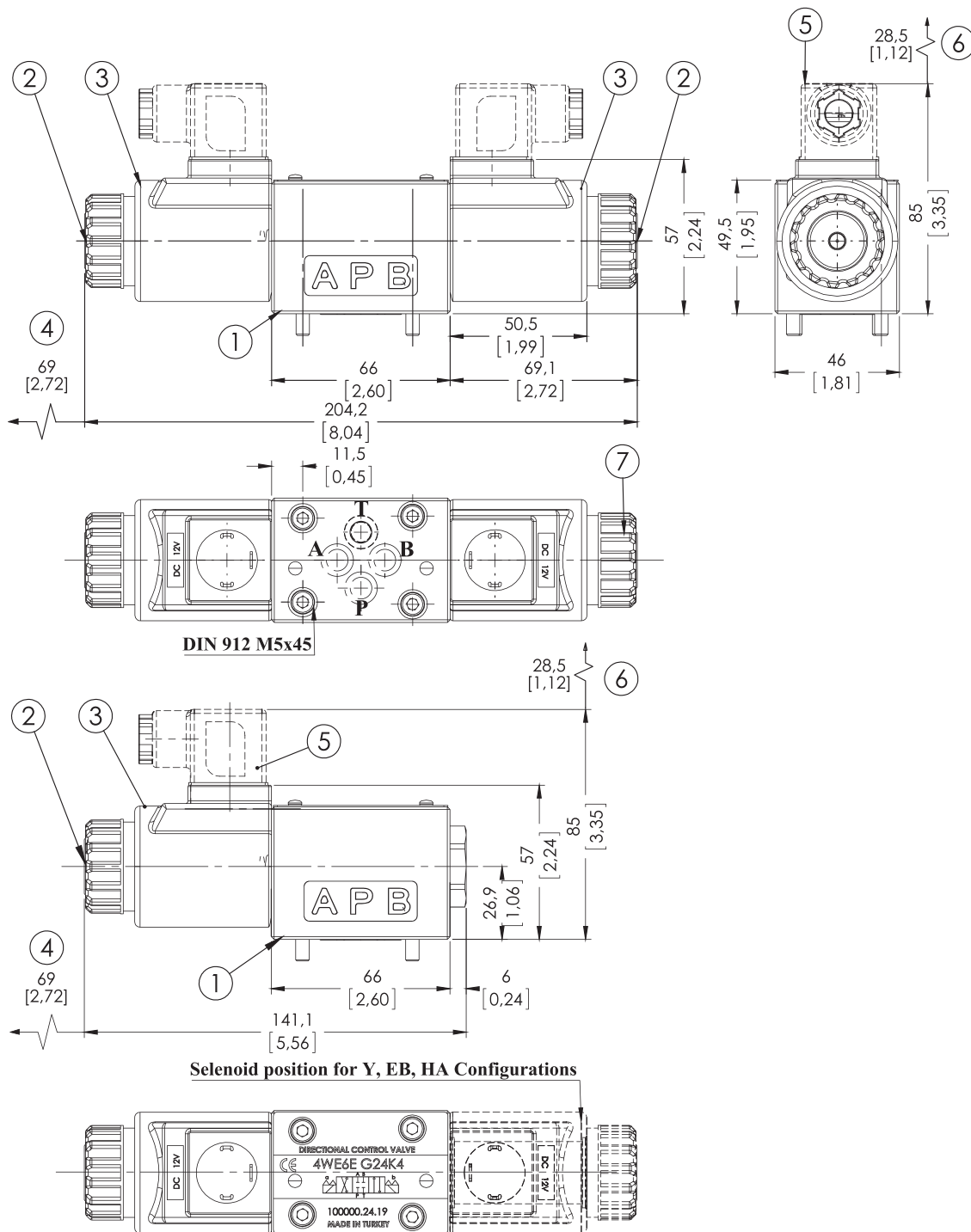
Features

- The 4WE6 valve consists of a high strength iron castings body, a control spool with two centering springs and operating solenoid coils.
- 4/3, 4/2 and 3/2 way directional control
- Two position valves consist of one coil and spring, three position valves utilise two coils and two springs.
- Solenoid coils are 12 & 24VDC, and 110V & 220VAC Coils which have built in rectifiers.
- Wet – pin core tubes and connectors with LED's.
- Service life 10 milion cycle.
- Connections to DIN, ISO and CETOP.
- Optimize spoole design to reduce flow force.

Cross Section



DIMENSIONAL DATA



Solenoid position for Y, EB, HA Configurations

1	Mounting surface with sealing rings: 4x(9,25x1,78) – 90 Schore
2	Standart Manuel override included in the solenoid tube
3	Coil (360® revolving)
4	Coil removal space
5	EN 175301-803 connector to be ordered separatel.
6	Connector removal space
7	Locking ring: tightening torque $5 \pm 0,5$ Nm – (Valve Fastening =DIN 912 M5x45 mm)

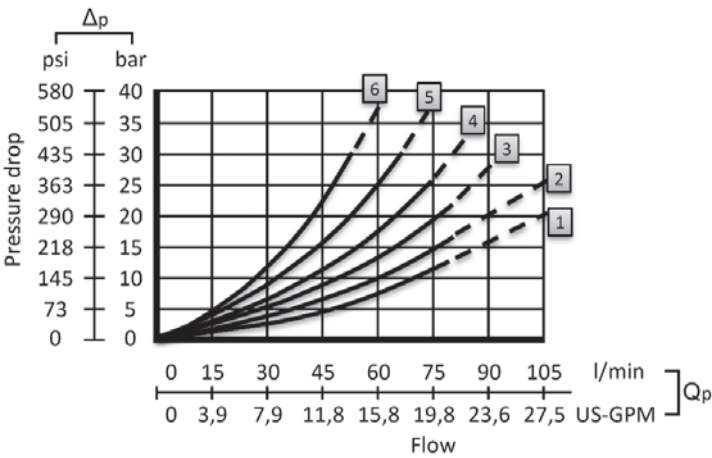
SPOOL TYPES AND PERFORMANCE CURVE

Spool Center Types

Code	Hydraulic Circuit	Description	Code	Hydraulic Circuit	Description
E		Double Action 3 position P-A-B-T Closed	Y		Single Action 2 position P->B flow and A->T flow tank
G		Double Action 3 position P->T flow tank and A-B Closed	C		Single Action 2 position P->A flow and B->T flow tank
H		Double Action 3 position P-A-B-T Flow Tank	EA		Single Action 2 position P-A-B-T closed and other position P->B flow and A->T flow tank
J		Double Action 3 position P Closed A-B->T Flow Tank	EB		Single Action 2 position P-A-B-T closed and other position P->A flow and B->T flow tank
			HA		Single Action 2 position P-A-B-T flow tank and other position P->A flow and B->T flow tank
			HB		Single Action 2 position P-A-B-T flow tank and other position P->B flow and A->T flow tank

Performance Curve

Spool	P-A	P-B	A-T	B-T	P-T
E	2	2	3	3	-
G	5	5	5	6	3
H	2	2	2	2	3
J	2	2	2	2	-
Y	2	2	3	3	-
EA	-	2	3	-	-
EB	2	2	3	3	-
HB	-	2	3	-	-
HA	2	2	2	2	3

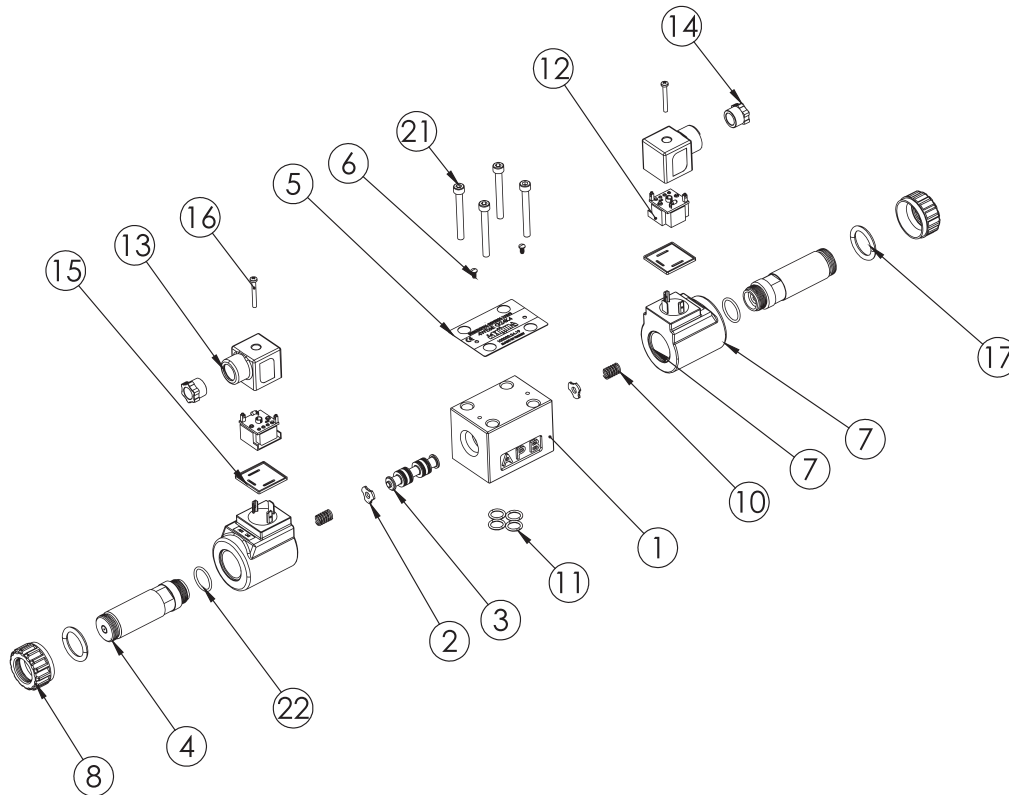


ORDERING CODES

Order Example

GMM 4 - WE - 6 - E - G24 - K4

1 2 3 4 5 6 7



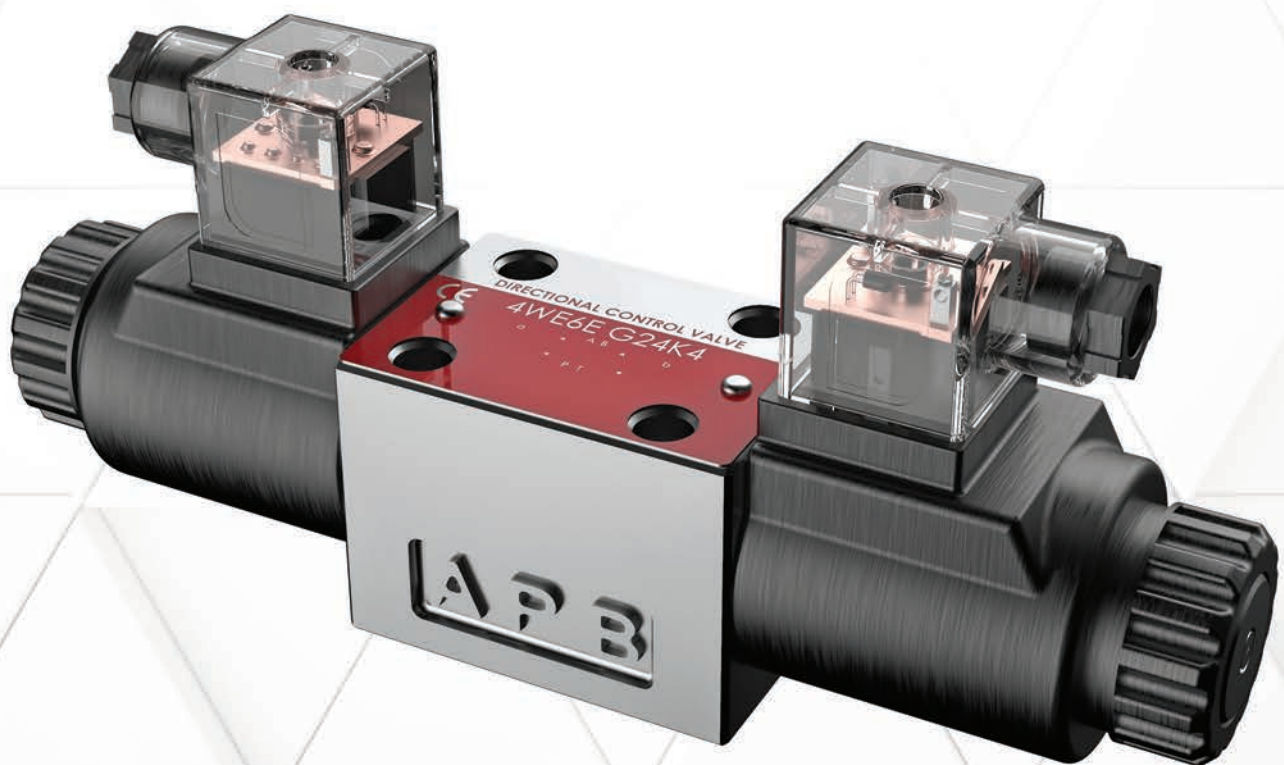
1 – Base Code =GMM
 2 – Type =4 Port (3 Port)
 3 - Design =WE
 4 – Size =6 NG6 / CETOP 3

5 – Spool Type =E/G/H/J/Y/C/EA/EB/HA/HB
 6 – Coil Voltage =G12/G24/A110/A220
 7 – Coil Electric Connection =K4

Item No	Order Code	Part Name	Description	Quantity
1	16060000	Body	NG 6	1
2	940135	Washer	Stamp for rounded	2
3	82NG6E	Spool	Close Center	1
4	450011	Coil Core		2
5	940014	Label	NG6	1
6	950000	Label Rivet	2,9x5,5	2
7	450011	Coil	NG 6	2
8	450011	Rubber Nut		2
9	9506009	Slot Pim	7X27	4
10	940132	Spring	NG 6	2
11	9507069	O-RING	8,73x1,78	4
12	450021	Coil electric Base		2
13	450021	Coil Socket Cap		2
14	450021	Cable Cap		2
15	450021	Socket Up Seal		2
16	450021	ISO 7045	M3 x 25 - Z2	2
17	450011	O-RING	22x3	2
21	9501057-S	DIN 912	M5 x 45 --- 22N	4
22	450011	O-RING	17,17x1,78	2



GMM
4WE6

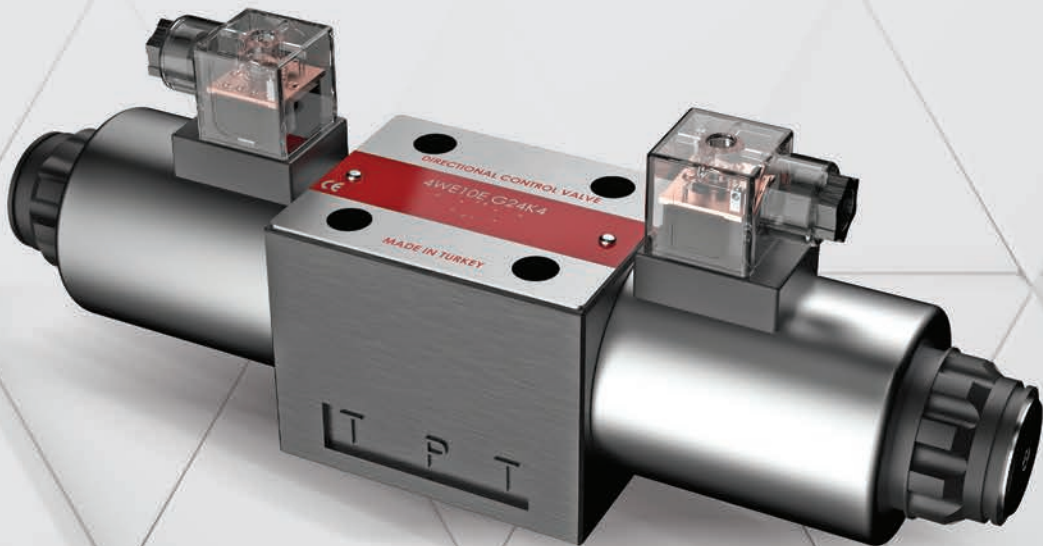




SELENOID DIRECTIONAL
CONTROL VALVES

GMM-4WE10

CE





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WORKING CONDITIONS

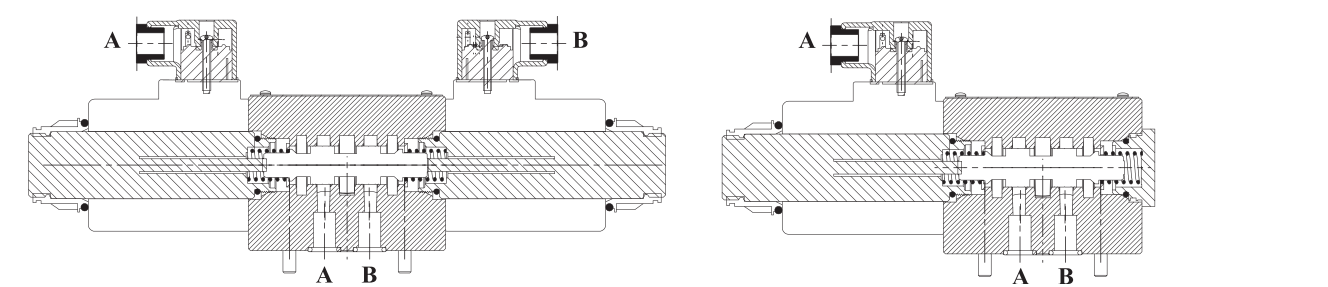
Nominal Flow Rating Displacement	AC Voltage	120 l/min	31 U.S.G.P.M
	DC Voltage	150 l/min	38 U.S.G.P.M
Maximum Working Pressure		315 Bar	4600 PSI
Max. Back Pressure		160 Bar	2300 PSI
Hydraulic Oil		ISO VG 32,46,68	
Oil Temperature with NBR Seals		-15 to 70 C°	-4 to 176 F °
with FPM (Viton) Seals		-20 to 100 C°	-4 to 212 F °
Oil Viscosity – Operating Range		From 10 to 75 mm2/s	From 10 to 75 cSt
Minumum / Maximum		10 / 400 mm2/s	10 / 400 cSt
Oil Filtration		≤30 μ NAS Class 9 Max	
Ambiant Temperature Range		-15 to 60 C°	-31 to 140 F °
Degree of protection to DIN 40050 And IEP		IP 65	
Max voltage variation		±10	
Power consumption		32 W	
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)		2 cm3/min	0,12 in3/min
Max. Level Of Contamination		19/16 – ISO 4406	
Mounting Pattern		ISO 4401 – 03	
Weight Single Solenoid / Double Solenoid		4,64 Kg /10,23 lb	6,14 Kg/13,53 lb

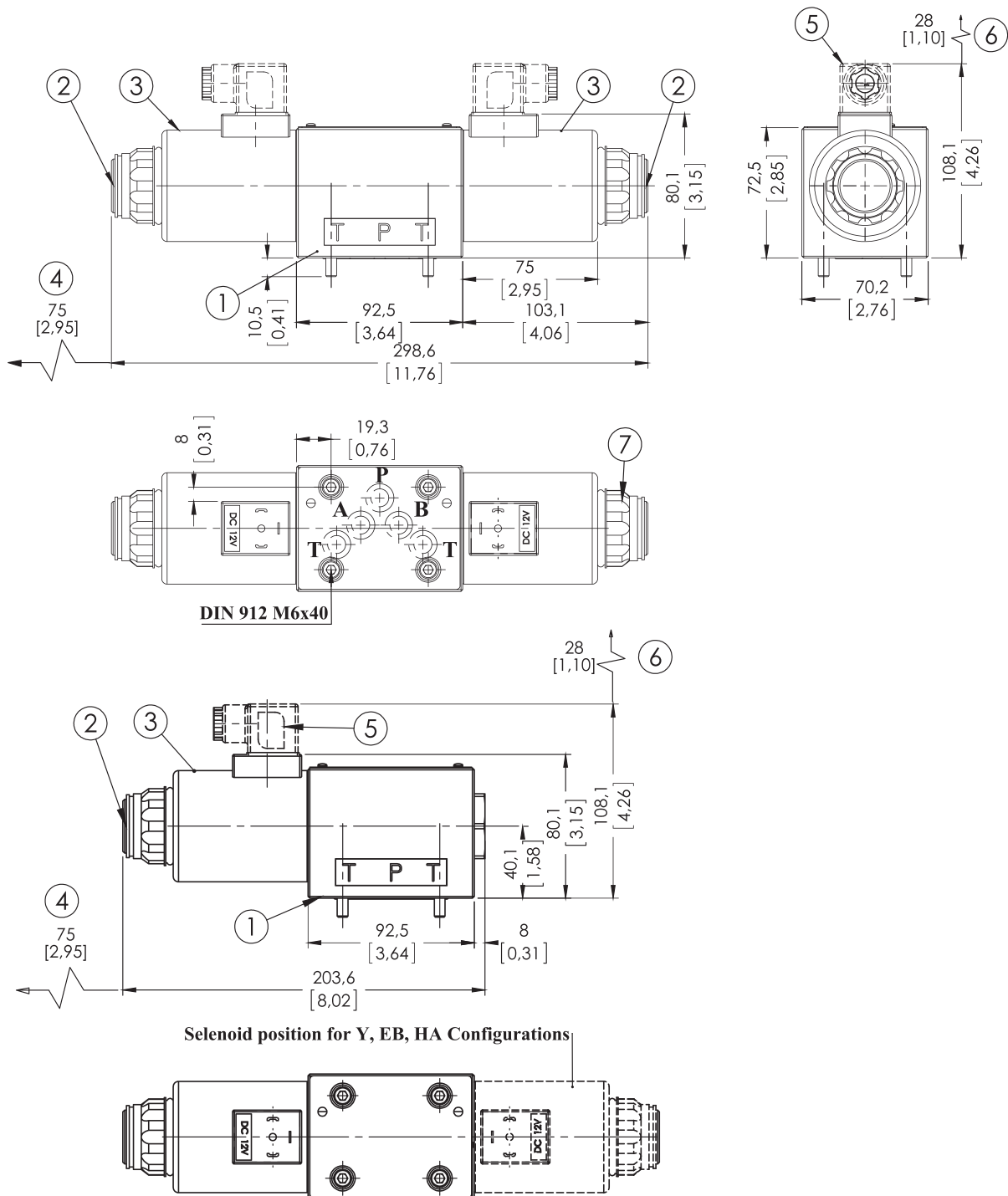
Not: This catalogue shows technical specifications measured with mineral oil of 46 mm2/s-46 cSt viscosity at 40 C° temparture.

Features

- The 4WE10 valve consists of a high strength iron castings body, a control spool with two centering springs and operating solenoid coils.
- 4/3, 4/2 and 3/2 way directional control
- Two position valves consist of one coil and spring, three position valves utilise two coils and two springs.
- Solenoid coils are 12 & 24VDC, and 110V & 220VAC Coils which have built in rectifiers.
- Wet – pin core tubes and connectors with LED's.
- Service life 10 milion cycle.
- Connections to DIN, ISO and CETOP.
- Optimize spoole design to reduce flow force.

Cross Section

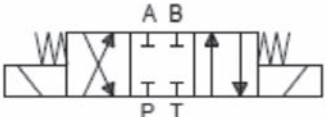
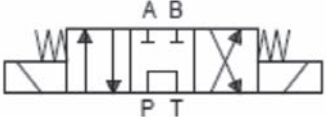
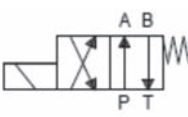
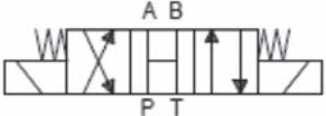
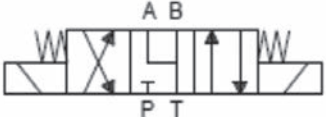
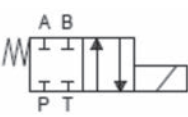
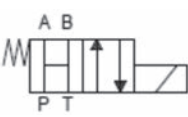


DIMENSIONAL DATA


1	Mounting surface with sealing rings: 4x(12x2) – 90 Shore
2	Standart Manuel override included in the solenoid tube
3	Coil (360® revolving)
4	Coil removal space
5	EN 175301-803 connector to be ordered separatel.
6	Connector removal space
7	Locking ring: tightening torque $8 \pm 0,5$ Nm - (Valve Fastening =DIN 912 M6x40 mm)

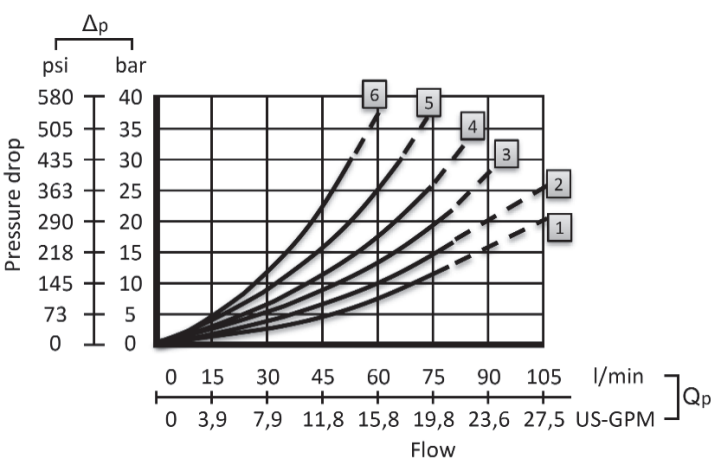
SPOOLE TYPES AND PERFORMANCE CURVE

Spoole Center Types

Code	Hydraulic Circuit	Description	Code	Hydraulic Circuit	Description
E		Double Action 3 position P-A-B-T Closed	Y		Single Action 2 position P->B flow and A->T flow tank
G		Double Action 3 position P->T flow tank and A-B Closed	C		Single Action 2 position P->A flow and B->T flow tank
H		Double Action 3 position P-A-B-T Flow Tank	EA		Single Action 2 position P-A-B-T closed and other position P->B flow and A->T flow tank
J		Double Action 3 position P Closed A-B->T Flow Tank	EB		Single Action 2 position P-A-B-T closed and other position P->A flow and B->T flow tank
			HA		Single Action 2 position P-A-B-T flow tank and other position P->A flow and B->T flow tank
			HB		Single Action 2 position P-A-B-T flow tank and other position P->B flow and A->T flow tank

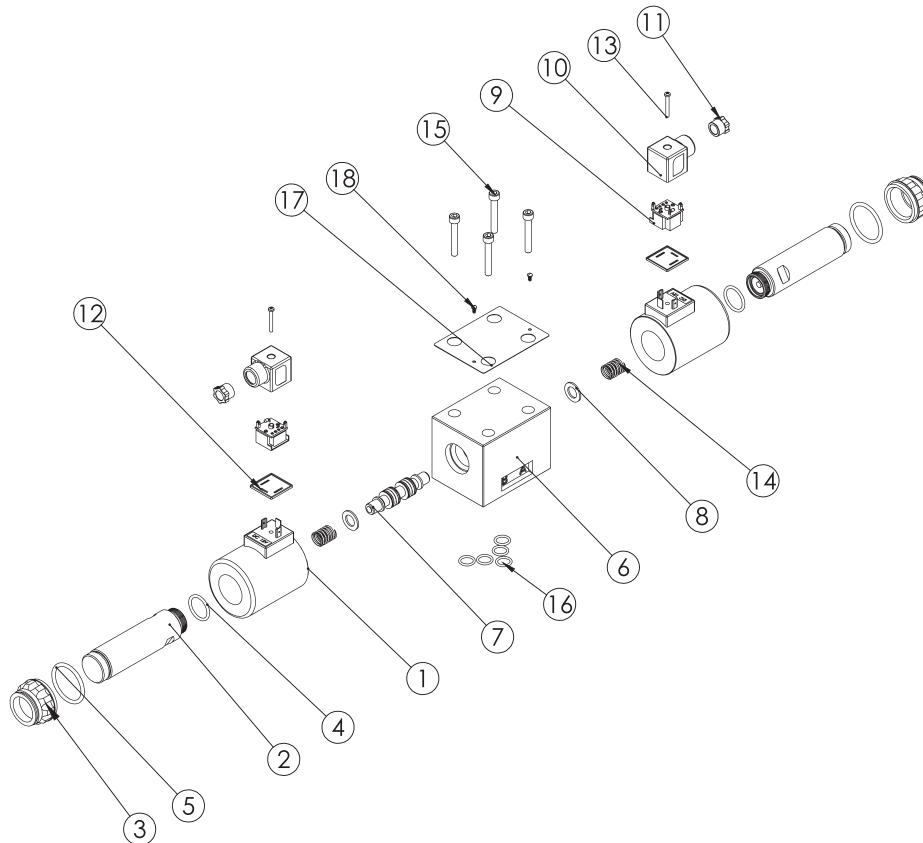
Performance Curve

Spool	P-A	P-B	A-T	B-T	P-T
E	2	2	3	3	-
G	5	5	5	6	3
H	2	2	2	2	3
J	2	2	2	2	-
Y	2	2	3	3	-
EA	-	2	3	-	-
EB	2	2	3	3	-
HB	-	2	3	-	-
HA	2	2	2	2	3



ORDERING CODES
Order Example

GMM	4	-	WE	-	10	-	E	-	G24	-	K4
1	2		3		4		5		6		7


1 – Base Code =GMM

2 – Type =4 Port (3 Port)

3 - Design =WE

4 – Size =10 NG10 / CETOP 5

5 – Spool Type

=E/G/H/J /Y/C/EA/EB/HA/HB

6 – Coil Voltage

=G12/G24/ A110/ A220

7 – Coil Electric Connection =K4

Item No	Order Code	Part Name	Description	Quantity
1	4500015	Coil	NG10	2
2	4500015	Coil Core		2
3	4500015	Rubber Nut		2
4	4500015	O-ring	22,22x2,62	2
5	4500015	O-ring	36x3,5	2
6	16100000	Body	NG 10	1
7	82NG10E	Spool	(Close Center)	1
8	940138	Washer	Stamp for rounded	2
9	450021	Coil electric Base		2
10	450021	Coil Socket Cap		2
11	450021	Cable Cap		2
12	450021	Socket Up Seal		2
13	450021	ISO 7045	M3 x 25 - Z --- 25N	2
14	940136	Spring		2
15	9501063-S	DIN	912M6 x 40 --- 24N	4
16	9507031-1	O-RING	12x2	5
17	9500015	Label	NG 10	1
18	950000	Label Rivet	2,9x5,5	2

ELECTROMAGNETIC COIL AND CONNECTION

Current Limits

The tests have been carried out with solenoids at operating temperature and a voltage 10 % less than rated with a fluid temperature of 40 C. The fluid used was a mineral oil with a viscosity of 46 mm2/s at 40 C. The values in the diagram refers to test carried out with the oil flow in two directions simultaneously T=2 bar (e.g.. from P to A and the same B to T). In the case where valves 4/2 and 4/3 were used with the flow in one direction only, limits of use could have variations which may even be negative. Rest times: the values are indicative and depend on following parameters: hydraulic circuit, fluid used and variations in hydraulics scales (pressure P, flow Q, temperature T). The limit of use for AC solenoids were detected with 50 Hz power.

Direct Current: Energizing 30 – 50 ms, **Alternatif Current:** Energizing 8 – 30 ms.
De-Energizing 10 – 30 ms, De- Energizing 15 – 55 ms.

Features of Electro-magnetic Coil

Solenoid Classification	Power Source	Voltage V	Frequency (Hz)	Inrush Current (A)	Holding Current (A)	Holding Power (W)	Permissible Voltage (%)	Insulation Grade	Coil Insulation Class	Insulation Resistance
AC	A1	110	50	6,2	0,63		+10,-15	B	H (180 C)	> 50
	A2	220	50	3,1	0,32		+10,-15			
DC	D1	12	-	-	3,17	38	+10,-15			
	D2	24	-	-	1,58	38	+10,-15			

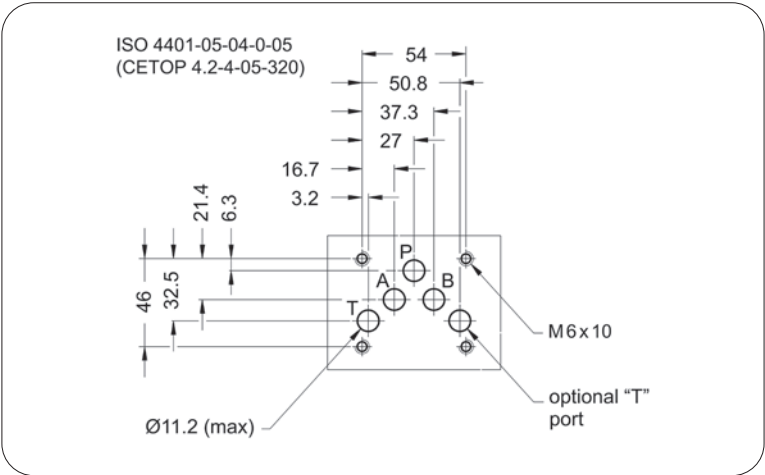
Electrical Connection, assigment

Electrical connections and coil combinations

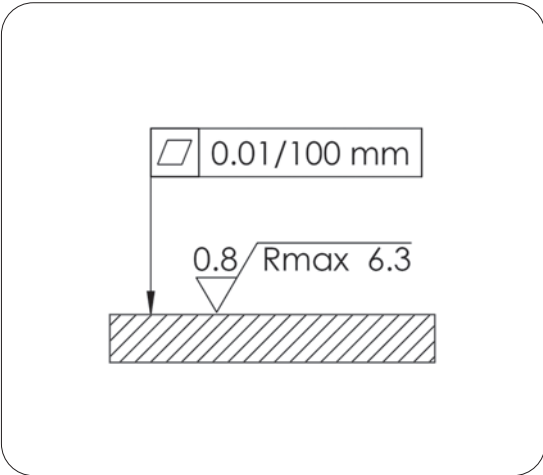
Ordering Code connector	Top view	Circuit diagram	Pin	Connections, assigment
Connector, 3 pole (2+PE) according to DIN EN 175301-803 (IP65) K4 - Code			1	Solenoid coil, polarity - independent
			2	
				Connection for protective grounding conductor

TECHNICAL DATA

Mounting Interface

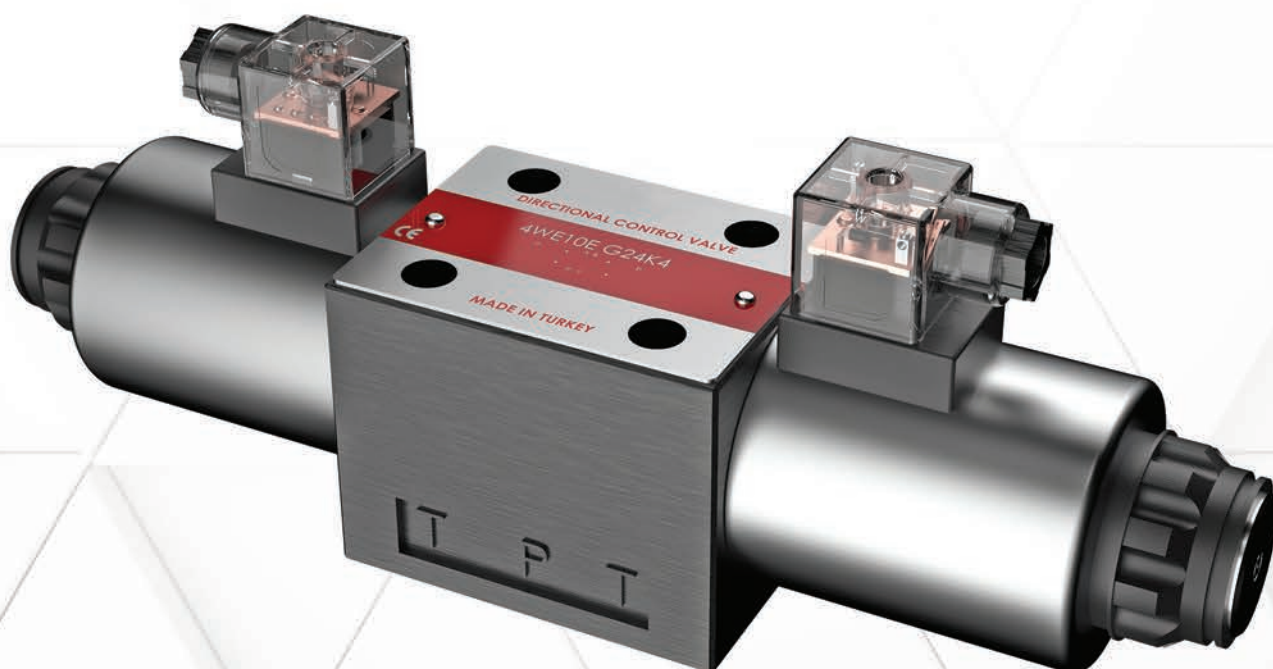


Necessary Surface Quality





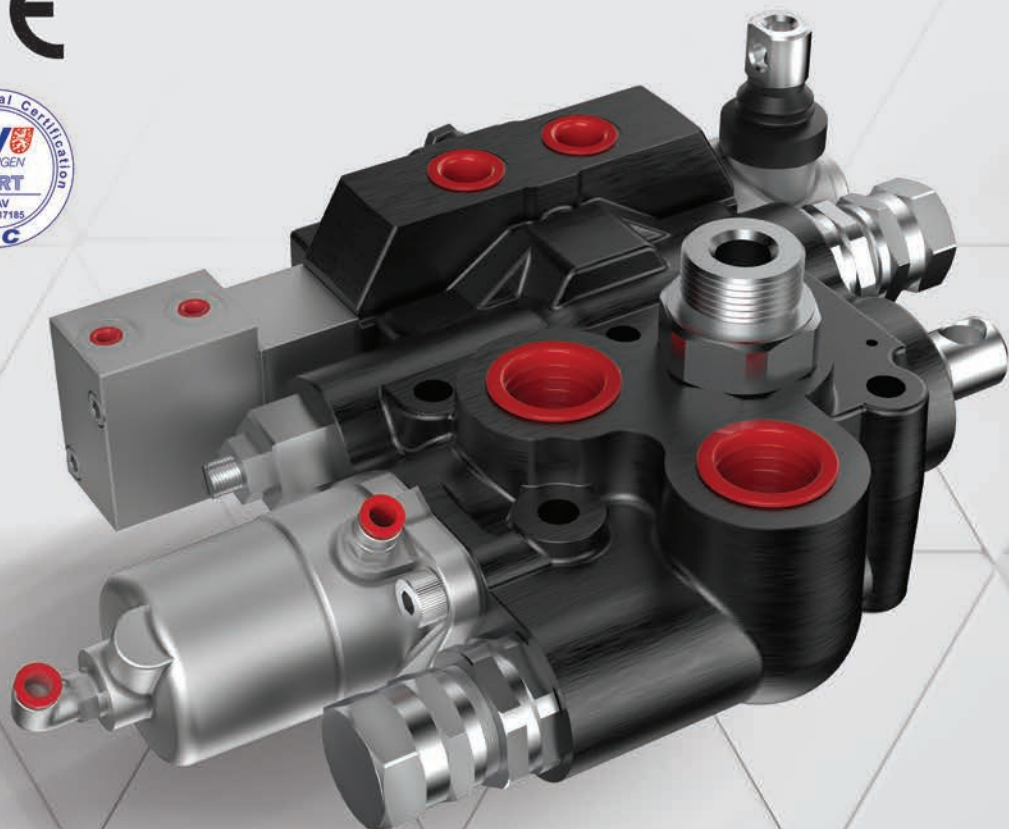
GMM 4WE10

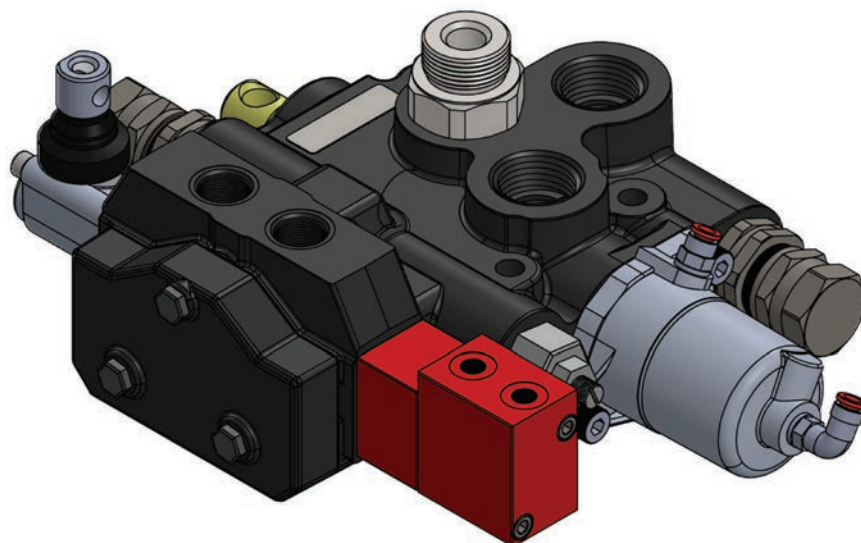




TIPPER VALVE
GMM-KMV

CE





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WORKING CONDITIONS

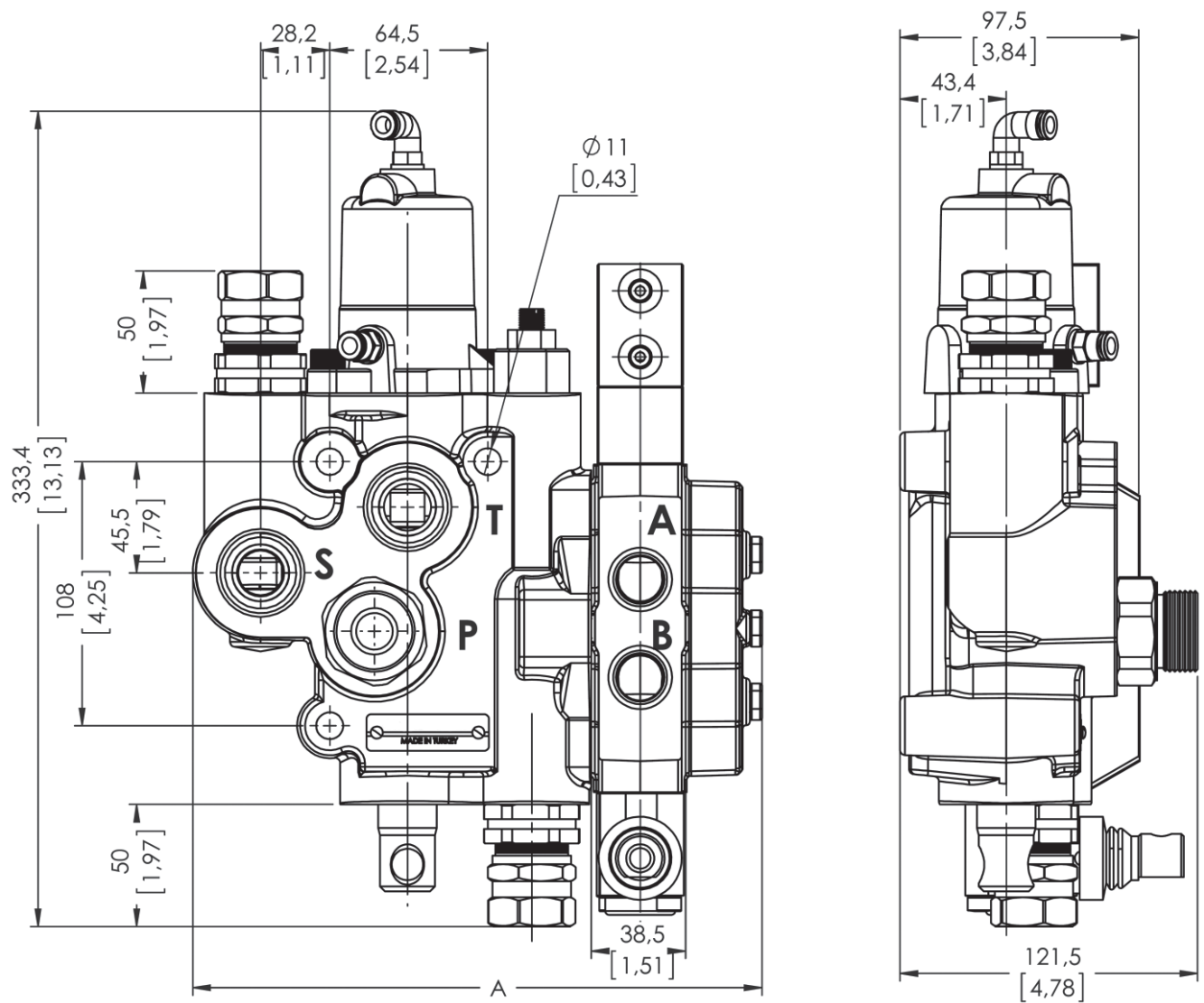
MODEL	GMM-KMV
Nominal Flow Displacement Main Auxiliary Section	150 l/dk 38 USGPM 60 l/dk 15 USGPM
- Pilot Pressure	6-12 Bar 90-180 PSI
- Tank Pressure	30 Bar 450 PSI
Maximum Operating Pressure	250 Bar - 4600 PSI
Maximum Peak Pressure	300 Bar - 4400 PSI
Weight	21,1 Kg - 7,05 lbs
Oil Temperature with NBR Seals	-20 to 80 C° (-4 to 176 F°)
Oil Viscosity - Operating Range Minumum / Maximum	From 10 to 75 mm2/s - 10 / 400 mm2/s From 10 to 75 cSt - 10 / 400 cSt
Oil Filtration	≤30 μ
Ambiant Temperature Range	-35 to 80 C° (-31 to 140 F°)
Internal Leakage at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt - A(B)-T)	3 cm3/min 0,18 in3/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.

PORT	GMM-KMV
P Pressure Port	G 1" (G 3/4)
S Cylinder Port	G 1" (G 3/4)
T Tank Port	G 1" (G 3/4)
X-Y Pneumatic	G 1/8" (Ø6)
A-B Ports	G 1/2"
X1-Y1 Pneumatic	G 1/8" (Ø6)

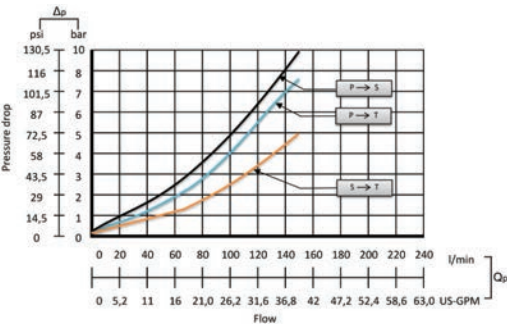
DIMENSIONAL DATA AND PRESSURE DROP

Dimensional Data



Pressure Drop (ΔP) - Pressure Range

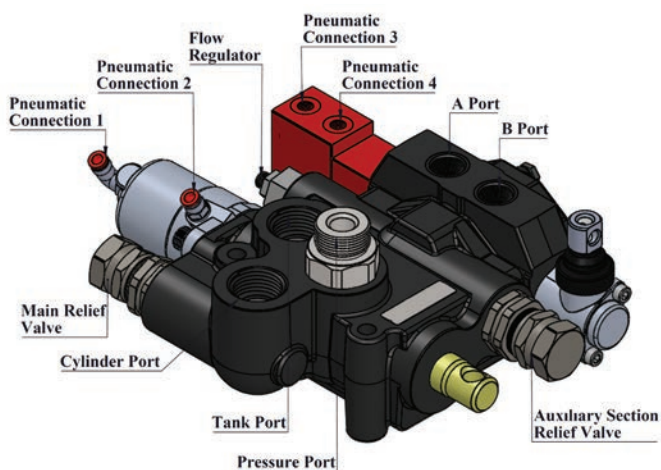
Pressure Range Options		
Order Code	Product Code	Range - Settings
KMR1-200	KMR180200	Range 140-250 Bar Setting 140 Bar



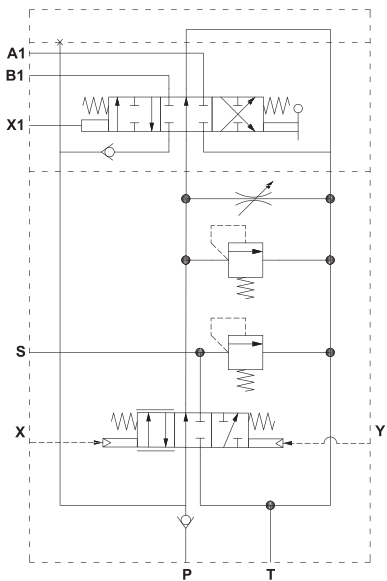
HYDRAULIC CIRCUIT

Port Direction and Type

Port Apperance



Diagram



ORDERING CODES

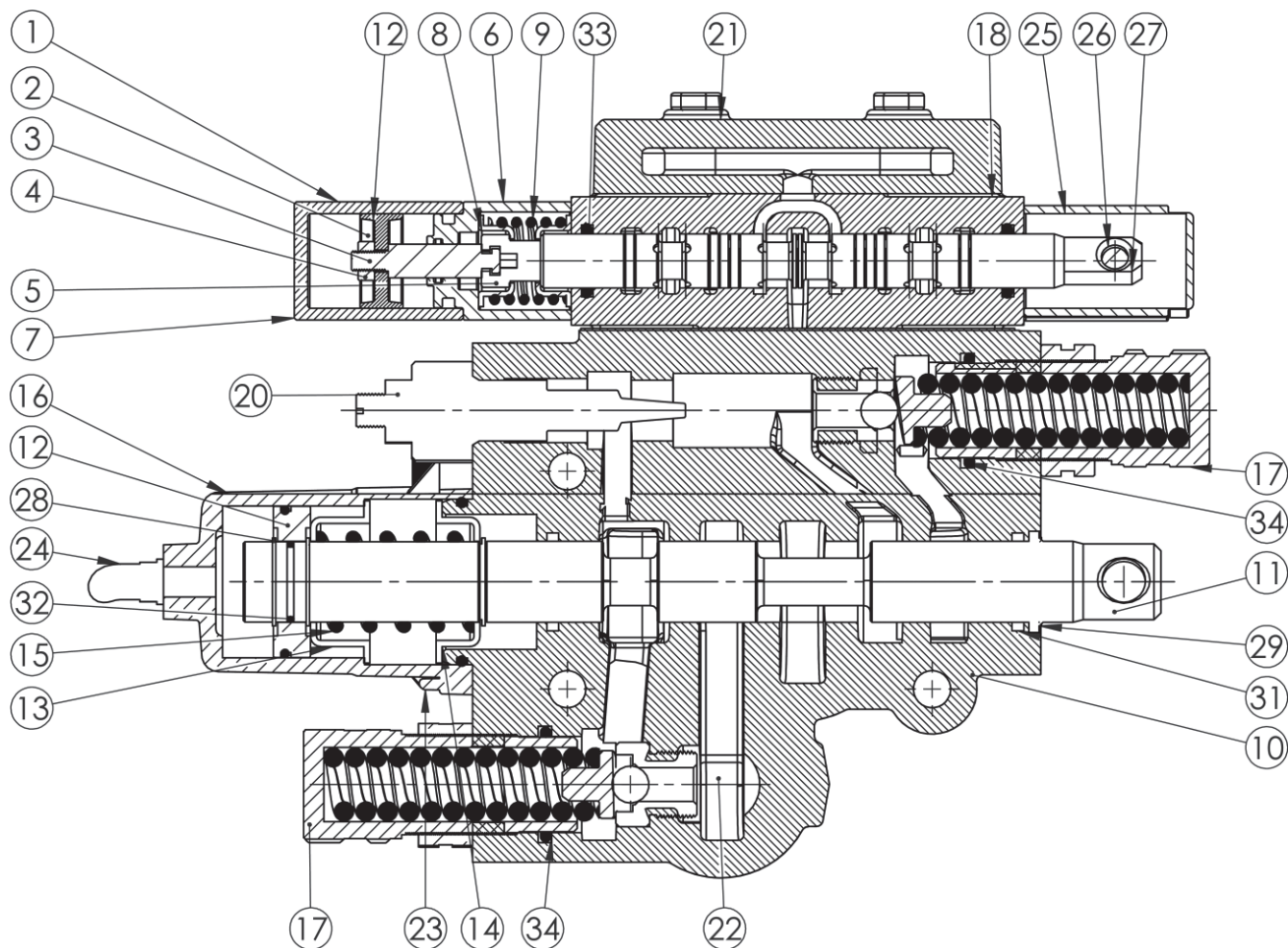
Order Example

GMM KMV - 1P

Base Code
"0"

Sections (Max 3 Sections)

Type

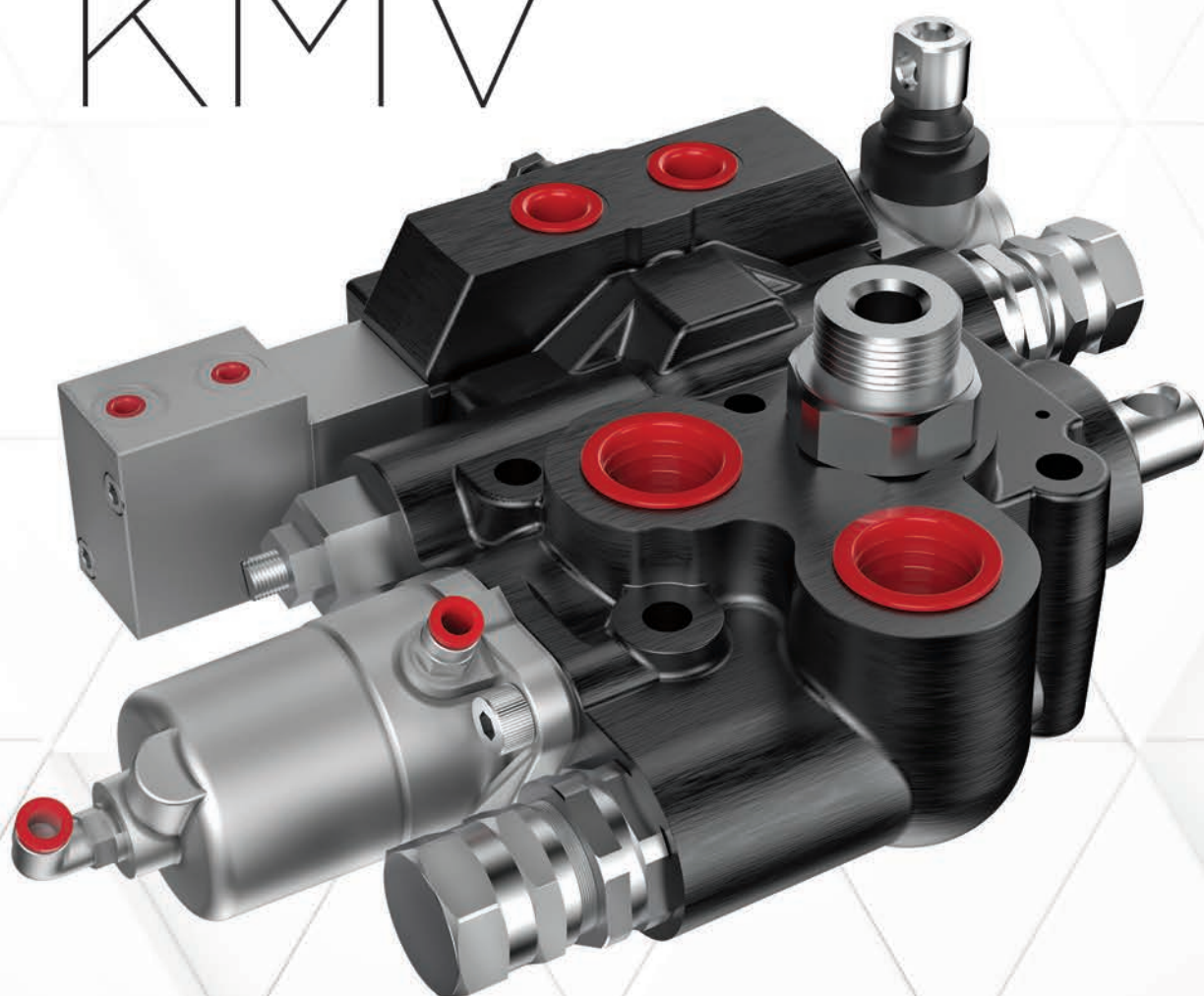


PART LIST

ITEM NO	ORDER CODE	PART NAME	DESCRIPTION	QUANTITY
1	963002	45 LT Pneumatic Rear Cap		1
2	9508012	45 LT Pneumatic Seal		1
3	963006	45 LT Pneumatic Pin		1
4	9504003	45 LT Pneumatic Nut	M6	1
5	942007	45 LT Pneumatic Forehead Screw		1
6	963001	45 LT Pneumatic Front Cap		1
7	9501008	45 Pneumatic Imbus		2
8	940102	45 LT Cup		2
9	940112	45 LT Cup Spring		1
10	1530KMV40	Truck Tipping Base		1
11	829901	Truck Tipping Spool		1
12	941018	Pneumatic Piston		1
13	940107	Thick Cup		1
14	940106	Thin Cup		1
15	940113	Cup Spring		1
16	941015	Tipping Valve Cover		1
17	Y812007	KMV Pressure Relief Valve		2
18	Y800605	PD60 LT Sectional Valve		1
19	960120	Tipping Pneumatic Cover		1
20	941021	KMV Flow Regulator Rod		1
21	9501011	Stud	M8x80	3
22	Y818003	Check Valve		1
23	946001	Pneumatik Coupling	1/8-6 Straight	1
24	946002	Pneumatik Coupling	1/8-6 Elbow	1
25	960102	45 LT Arm Cup		1
26	948001	45 LT Bellows		1
27	874001	45 LT Pivot		1
28	9509012	Retainer	Din 472 - Ø 24	3
29	9508013	TOZ KEÇESİ	24 X 32,6 X 7/2	1
30	9507020	O-RİNG	16x2	8
31	9507050	O-RİNG	24x3	2
32	9507008	O-RİNG	20x2	1
33	9507003	O-RİNG	16x3	2
34	9507051	O-RİNG	28X3	2



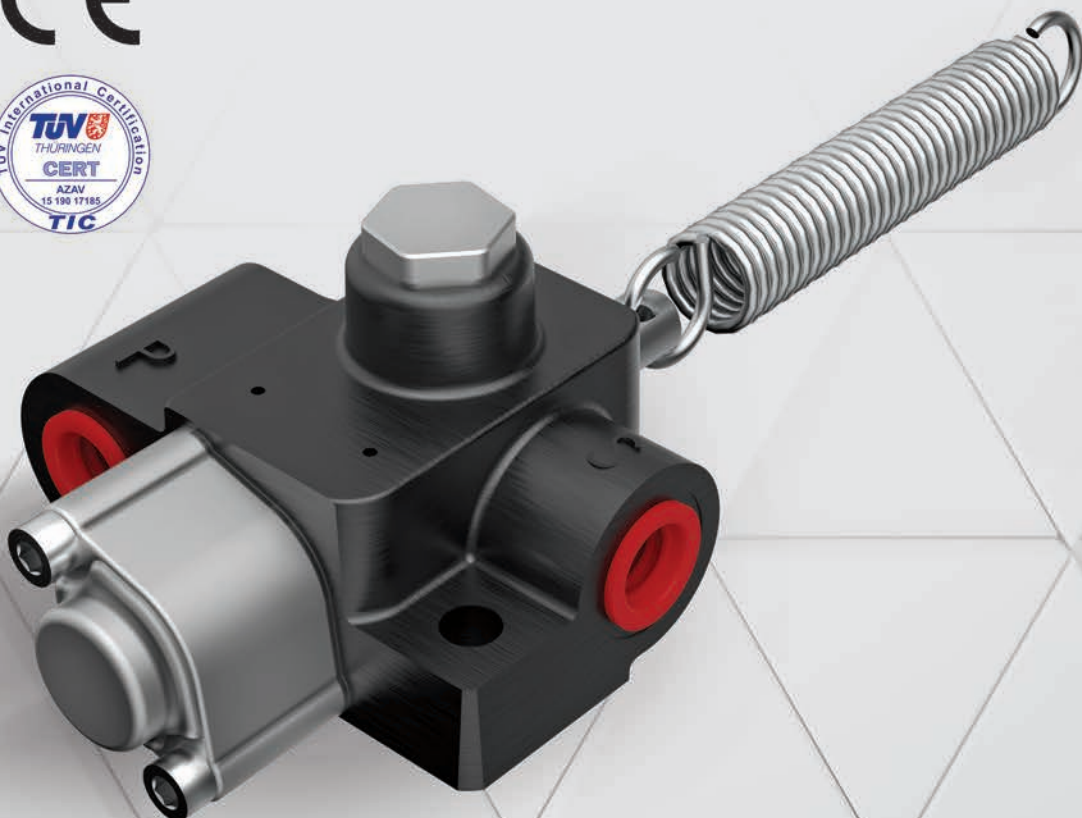
GMM
KMOV

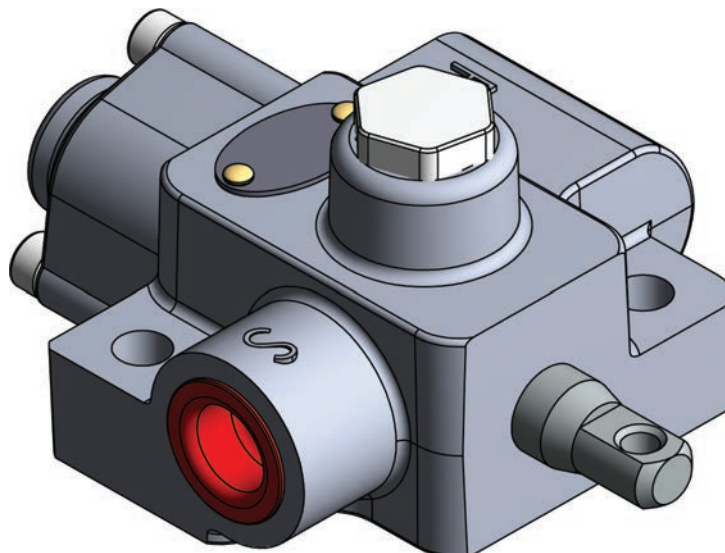




TIPPER VALVE
GMM-RSV

CE





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RSV - Part List

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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 (03/2013). GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

WORKING CONDITIONS

MODEL	GMM-RSV
Nominal Flow Displacement Totally	80 l/min 21 USGPM
Maximum Operating Pressure	300 Bar - 4400 PSI
Weight	3,2 Kg - 7,05 lbs
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 Filtration	≤30 μ
Ambiant Temperature Range	-35 to 60 C° (-31 to 140 F°)
Internal Leakage at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt - A(B)-T)	3 cm3/min 0,18 in3/min
Max. Level Of Contamination	19/16 - ISO 4406

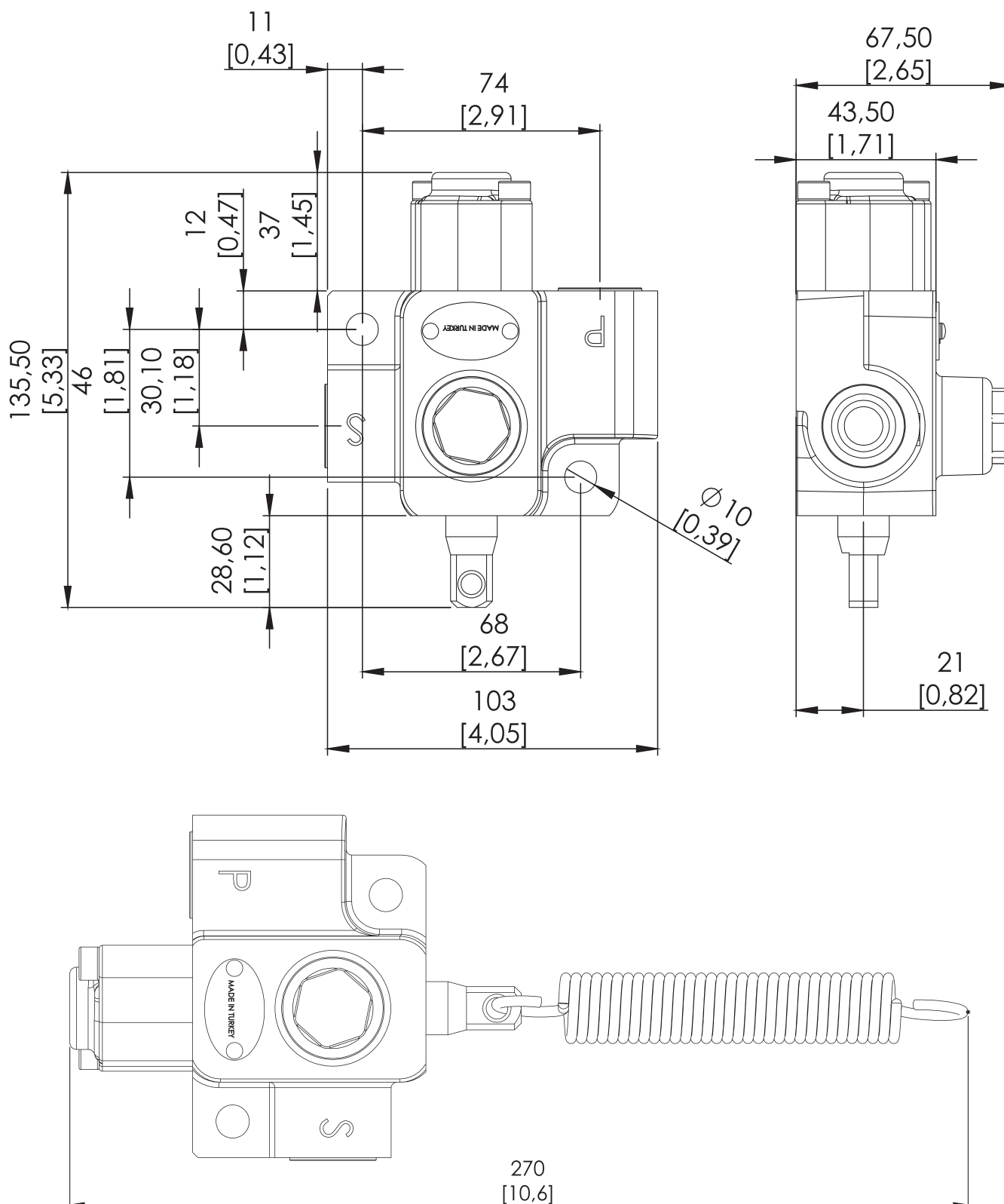
Not: This catalogue shows technical specifications measured with mineral oil of 46 mm2/s-46 cSt viscosity at 40 C° temparture.

Double acting hand pumps suitable to operate single acting applications. They can be fitted also onto tank and are equipped with tapered lowering valve. They are available with nodular cast-iron body and nickel-plated spool.

PORTS THREADS And STANDART THREADS			
Model	BSP (Iso 228)	UN-UNF (Iso 11926-1)	Metric (Iso 262)
RSV	G 1/2	3/4 - 16 UNF	M22x1.5
	G 3/8	9/16 - 18 UNF	M8x1.5

DIMENSIONAL DATA

RSV – End Of Stroke Valves

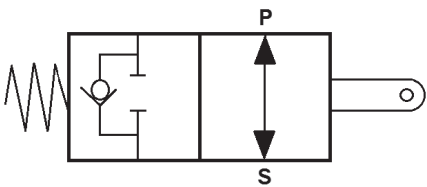
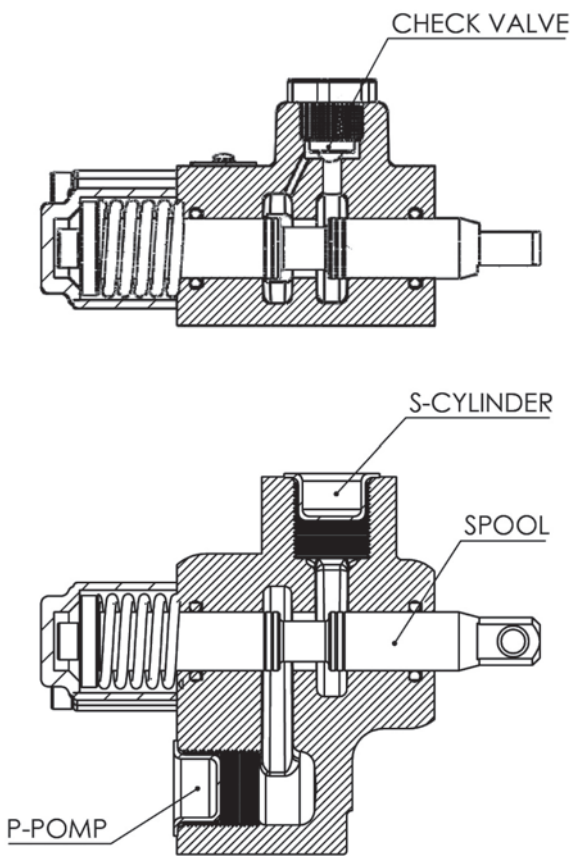


HYDRAULIC CIRCUIT

RSV-end of stroke valve

Port Apperance

Diagram

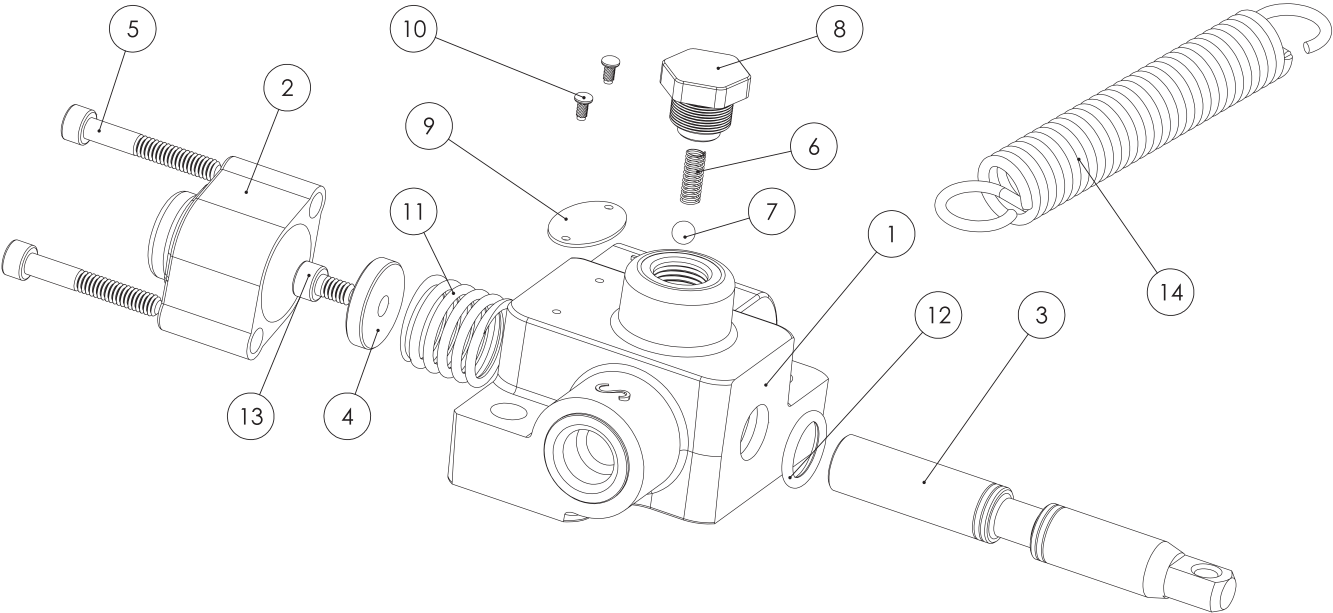


RSV - Part List

Order Example

GMM RSV

Base Code "0" Type

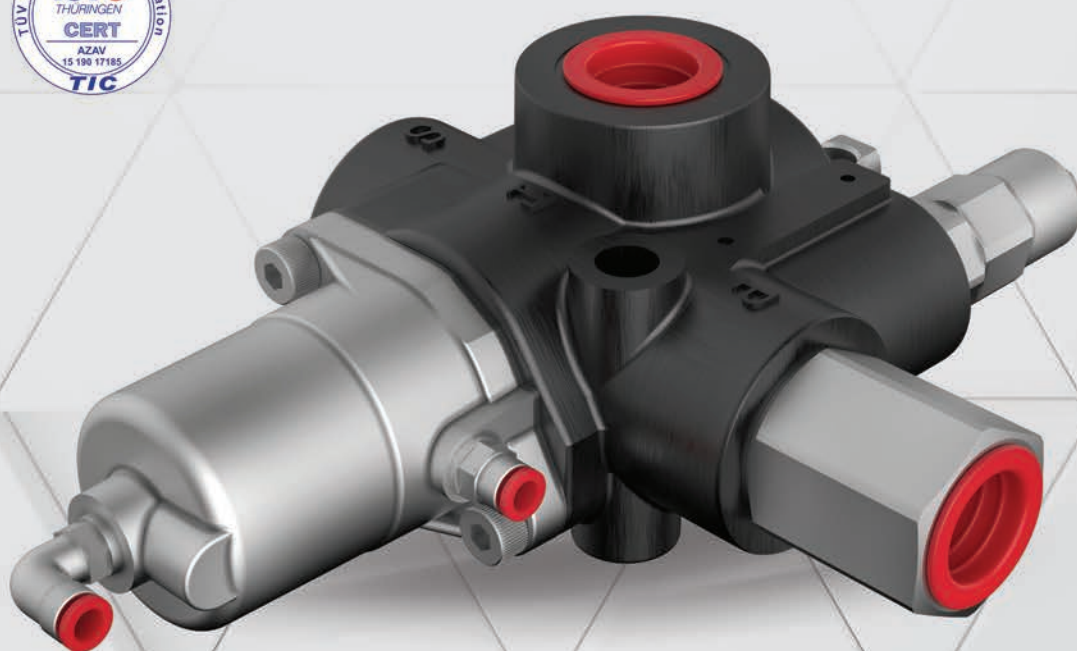


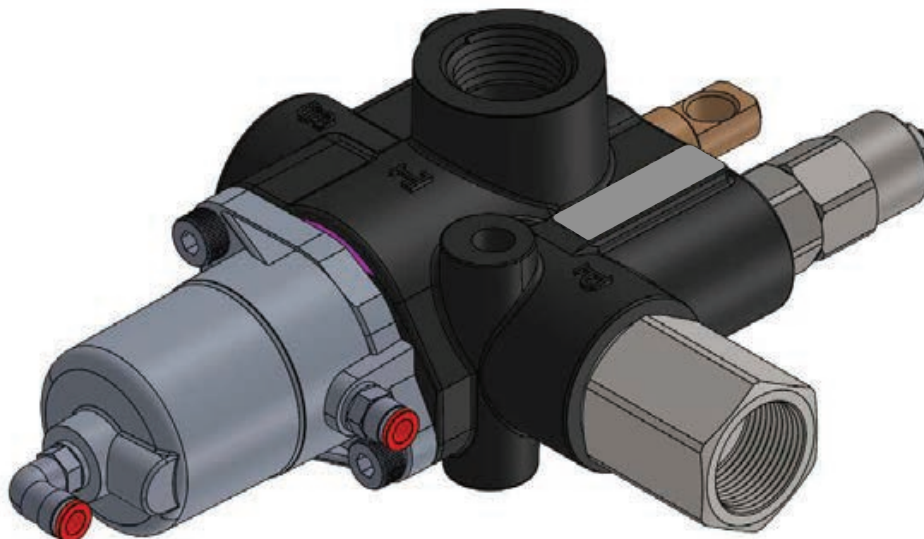
ITEM NO	ORDER CODE	PART NAME	DESCRIPTION	QUANTITY
1	1509120	RSV Body		1
2	960112	Spring Cap		1
3	820001	RSV 1A Spool		1
4	9505019	RSV Washer		1
5	9501005	Bolt	M6x35	2
6	940120	RSV Check Valve Spring		1
7	9510002	Suction Ball		1
8	943024	RSV Check Valve Plug		1
9	950001	Number Plate		1
10	950000	Rivet		1
11	940121	RSV Spool Spring		1
12	9507003	O-ring	16x3	2
13	9501001	Bolt	M5x14	1
14	940122	RSV Tension Spring		1



TIPPER VALVE
GMM-2B

CE





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Additional Informations

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WORKING CONDITIONS

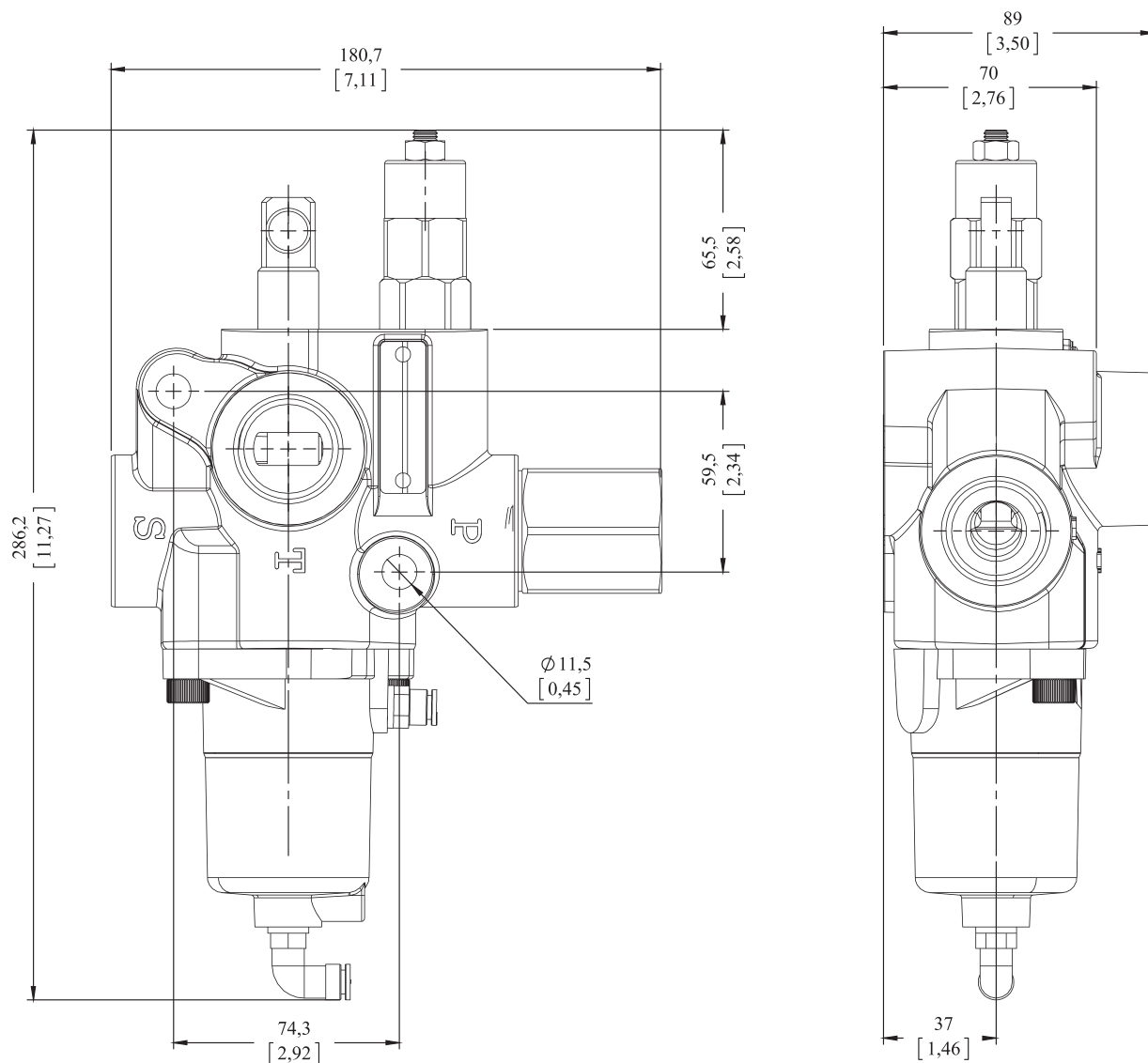
MODEL	GMM-2B
Nominal Flow Displacement	110 l/dk 29 U.S.G.M.
- Pilot Pressure	6-12 Bar 90-180 PSI
- Tank Pressure	30 Bar - 450 PSI
Maximum Operating Pressure	190 Bar - 2800 PSI
Maximum Peak Pressure	250 Bar - 3600 PSI
Weight	3,2 Kg-7,05 lbs
Oil Temperature with NBR Seals	-20 to 80 C° (-4 to 176 F°)
Oil Viscosity – Operating Range Minumum / Maximum	From 10 to 75 mm2/s - 10 / 400 mm2/s From 10 to 75 cSt - 10 / 400 cSt
Oil Filtration	≤30 μ
Ambiant Temperature Range	-35 to 80 C° (-31 to 140 F°)
Internal Leakage at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min 0,18 in3/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.

PORT	GMM-2B
P Pressure Port	G 1" (G 3/4)
S Cylinder Port	G 1" (G 3/4)
T Tank Port	G 1" (G 3/4)
X-Y Pneumatic	G 1/4" (Ø6)

DIMENSIONAL DATA AND PRESSURE DROP

Dimensional Data



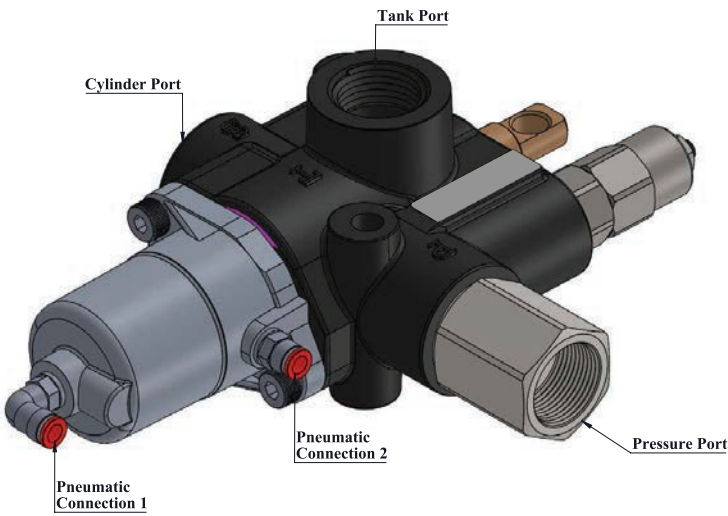
Pressure Drop (ΔP) - Pressure Range

Pressure Range Options		
Order Code	Product Code	Range - Settings
SMR1-080	2SMR180080	Range 0-80 Bar Setting 80 Bar
SMR2-120	2SMR280120	Range 60-200 Bar Setting 120 Bar

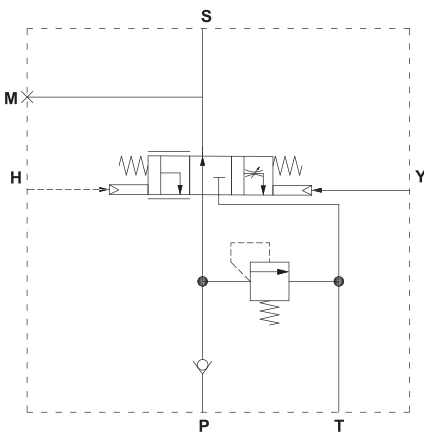
HDRAULIC CIRCUIT

Port Direction and Type

Port Apperance

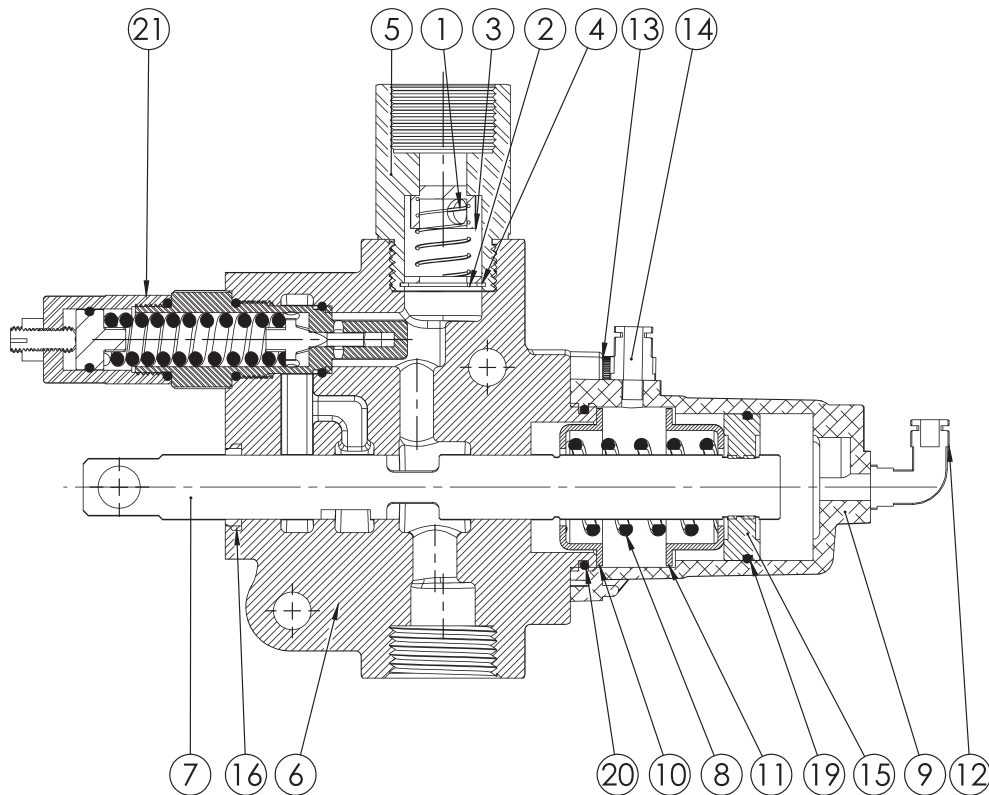


Diagram



ORDERING CODES
Order Example
GMM 2B - 3/4"

Base Code "0" _____ Port Size _____ Type _____

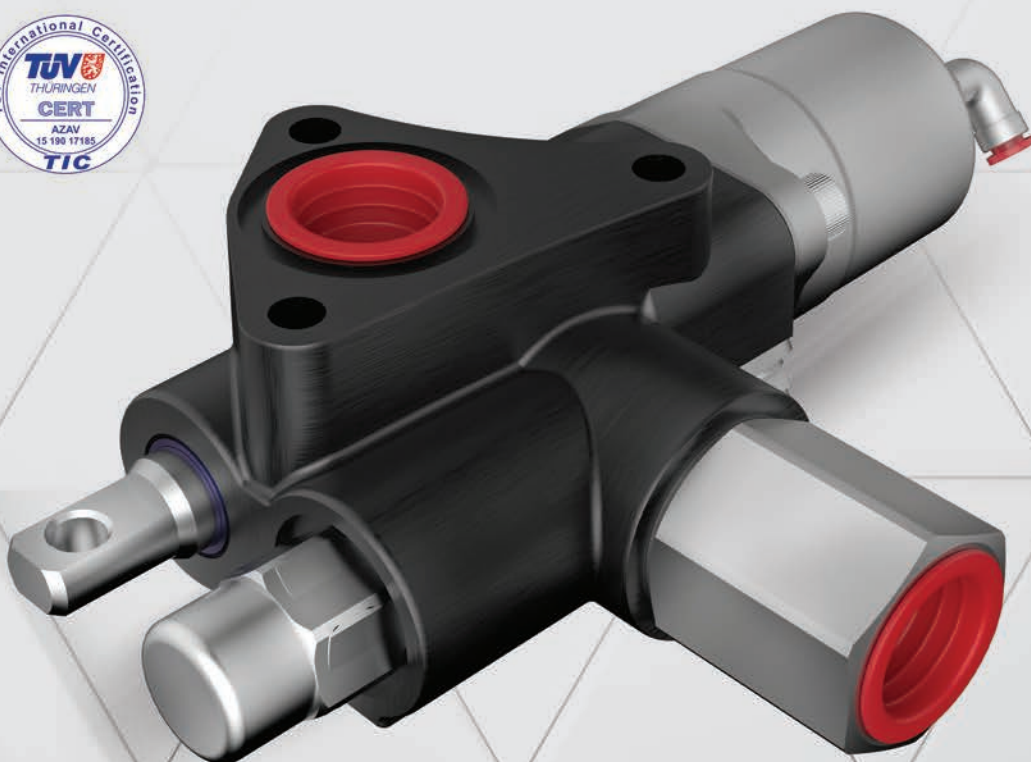


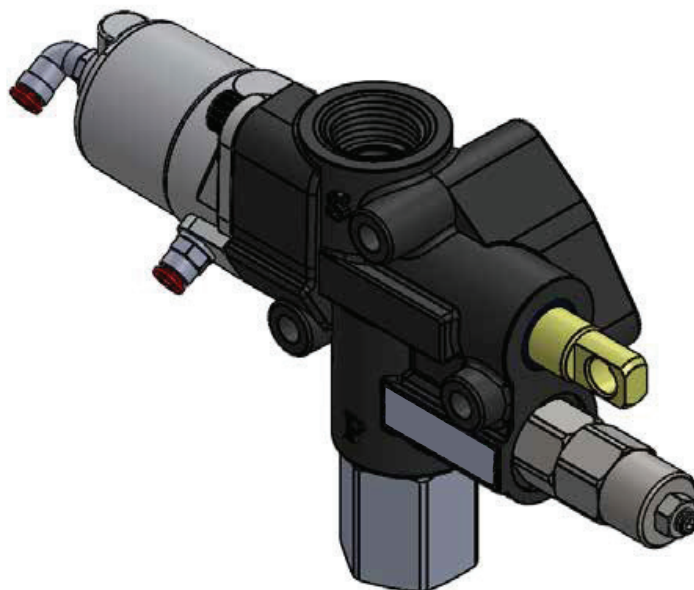
ITEM NO	ORDER CODE	PART NAME	DESCRIPTION	QUANTITY
1	940123	Check Valve Spring		1
2	9509008	Retainer	DIN 472 - Ø 24	1
3	943015	Check Valve Thrust Part		1
4	9505018	Check Valve Washer		1
5	943014	1" Tipping Check Valve Coupling		1
6	15302B30	2B Tipping Base		1
7	820201	2B Tipping Spool		1
8	940113	Cup Spring		1
9	960120	Tipping Pneumatic Cover		1
10	940104	Thin Cup		1
11	940105	Thick Cup		1
12	946002	Pneumatic Coupling	1/8-6 Elbow	1
13	9501010	DIN 972 Bolt	M8x20	2
14	946001	Pneumatic Coupling	1/8-6 Straight	1
15	941014	Pneumatic Piston		1
16	9508007	Wipers	20x28x7/4	1
17	9507005	O-ring	20x3	2
18	9507020	O-ring	16x2	1
19	9507034	O-ring	40x2,5	1
20	9507036	O-ring	44x3	1
21	Y812003	Pressure Relief Valve		1
22	9509011	Retainer	DIN 472 - Ø 20	3



TIPPER VALVE
GMM-3B

CE





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WORKING CONDITIONS

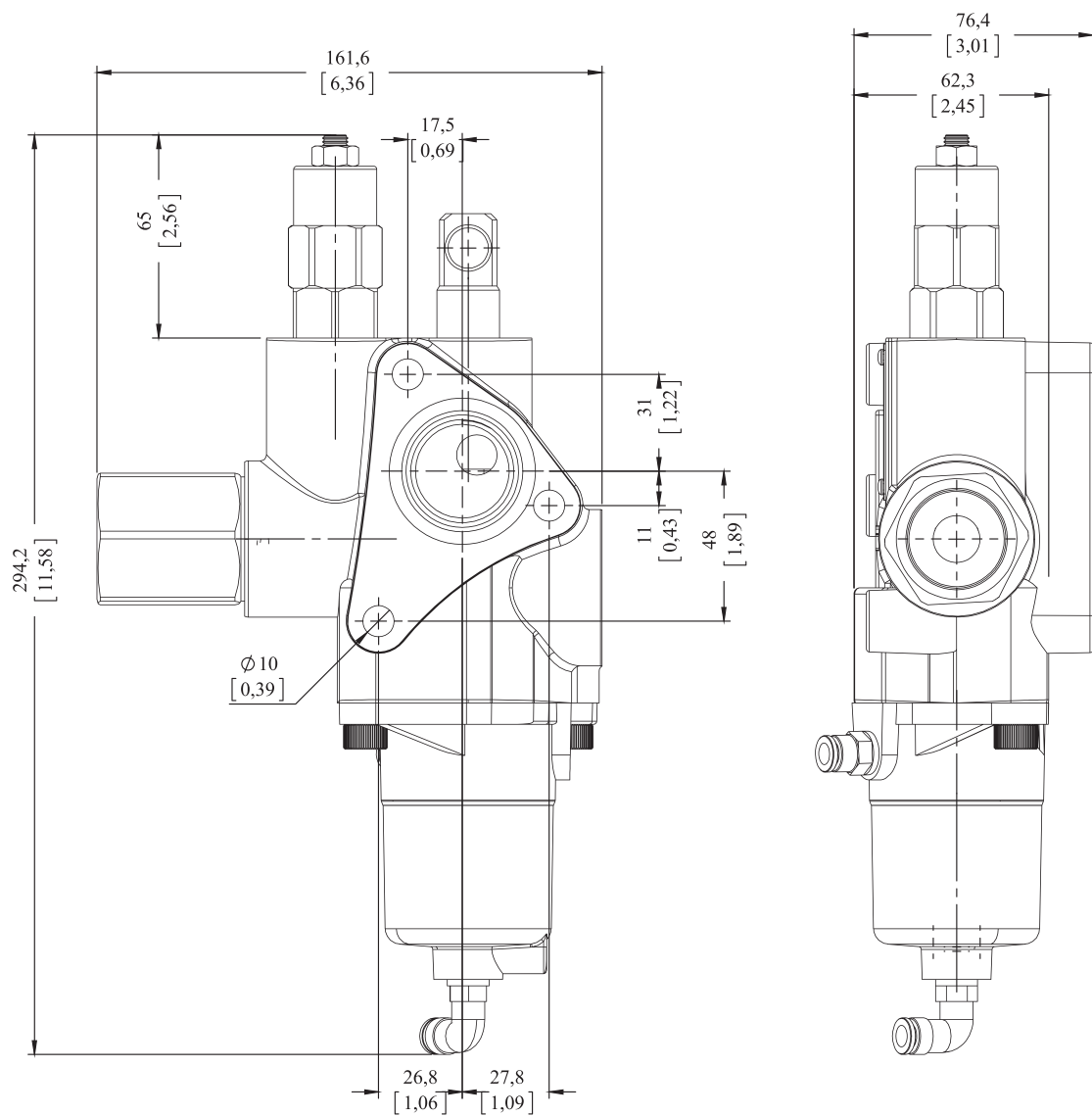
MODEL	GMM-3B
Nominal Flow Displacement	110 l/dk 29 U.S.G.M.
- Pilot Pressure	6-12 Bar 90-180 PSI
- Tank Pressure	30 Bar - 450 PSI
Maximum Operating Pressure	190 Bar - 2800 PSI
Maximum Peak Pressure	250 Bar - 3600 PSI
Weight	3,2 Kg-7,05 lbs
Oil Temperature with NBR Seals	-20 to 80 C° (-4 to 176 F°)
Oil Viscosity – Operating Range Minumum / Maximum	From 10 to 75 mm2/s - 10 / 400 mm2/s From 10 to 75 cSt - 10 / 400 cSt
Oil Filtration	≤30 µ
Ambiant Temperature Range	-35 to 80 C° (-31 to 140 F°)
Internal Leakage at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min 0,18 in3/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.

PORT	GMM-2B
P Pressure Port	G 1" (G 3/4)
S Cylinder Port	G 1" (G 3/4)
T Tank Port	G 1" (G 3/4)
X-Y Pneumatic	G 1/4" (Ø6)

DIMENSIONAL DATA AND PRESSURE DROP

Dimensional Data



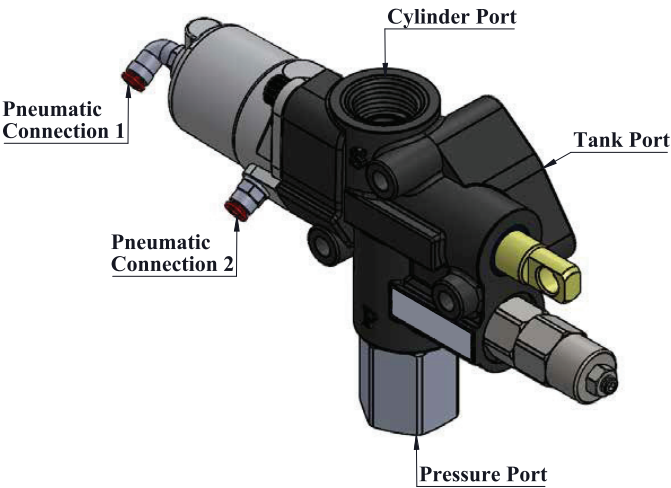
Pressure Drop (ΔP) - Pressure Range

Pressure Range Options		
Order Code	Product Code	Range - Settings
SMR1-080	2SMR180080	Range 0-80 Bar Setting 80 Bar
SMR2-120	2SMR280120	Range 60-200 Bar Setting 120 Bar

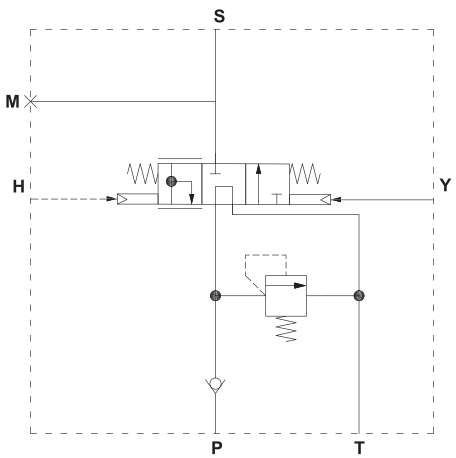
HYDRAULIC CIRCUIT

Port Direction and Type

Port Apperance



Diagram



ORDERING CODES

Order Example

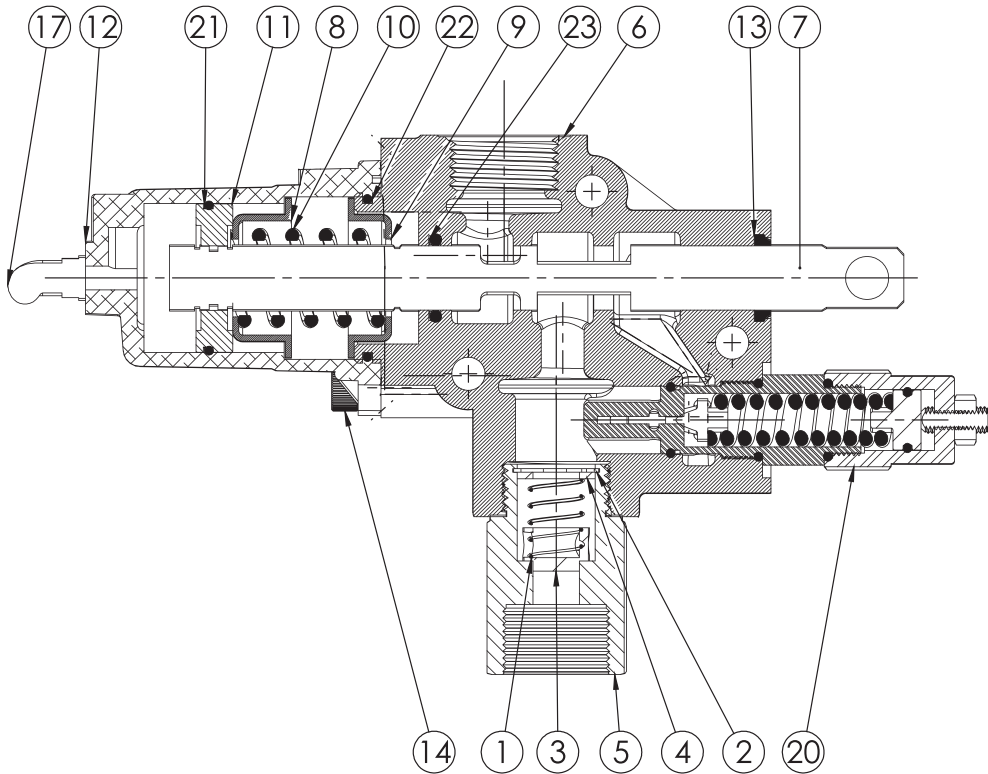
GMM 3B - 3/4"

Base Code

"0"

Port Size

Type

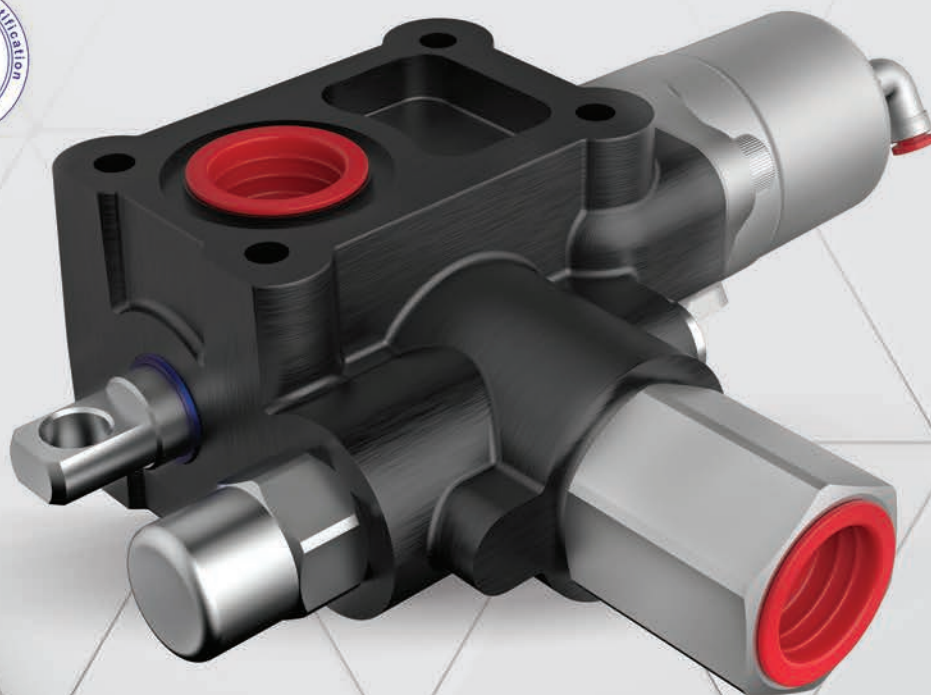


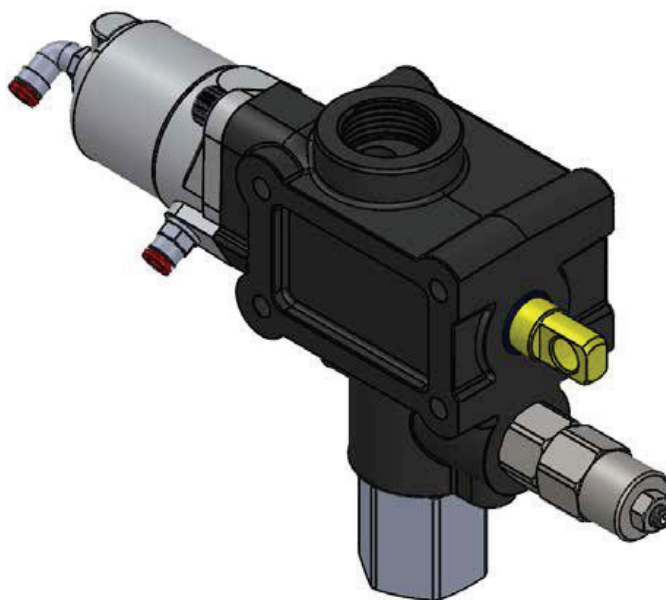
ITEM NO	ORDER CODE	PART NAME	DESCRIPTION	QUANTITY
1	940123	Check Valve Spring		1
2	9509008	Retainer	DIN 472 - Ø 24	1
3	943015	Check Valve Thrust Part		1
4	9505018	Check Valve Washer		1
5	943014	1" Tipping Check Valve Coupling		1
6	15303B30	3B Tipping Base		1
7	820301	3B Tipping Spoole		1
8	940104	Thin Cup		1
9	940105	Thick Cup		1
10	940113	Cup Spring		1
11	941014	Pneumatic Piston		1
12	960120	Tipping Pneumatic Cover		1
13	9508007	Wipers	20x28x7/4	1
14	9501010	DIN 972 Bolt	M8x20	2
15	946002	Pneumatic Coupling	1/8-6 Elbow	1
16	946001	Pneumatic Coupling	1/8-6 Straight	1
17	Y812003	Pressure Relief Valve		1
18	9507034	O-ring	40x2,5	1
19	9507036	O-ring	44x3	1
20	9507005	O-ring	20x3	2
21	9507020	O-ring	16x2	1
22	9509011	Retainer	DIN 472 - Ø 20	3



TIPPER VALVE
GMM-4B

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.

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WORKING CONDITIONS

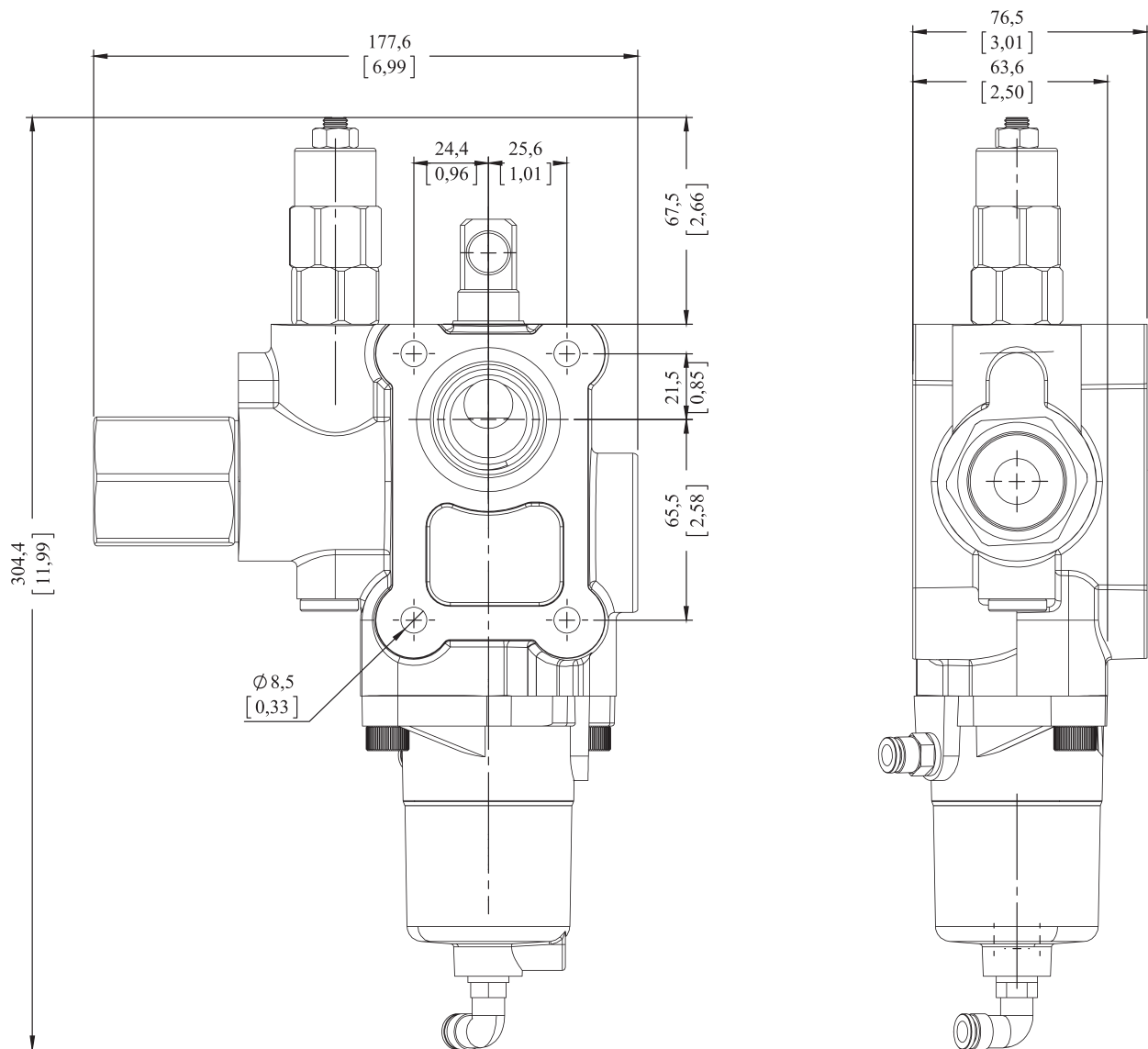
MODEL	GMM-4B
Nominal Flow Displacement Main	140 l/dk 37 U.S.G.M.
- Pilot Pressure	6-12 Bar 90-180 PSI
- Tank Pressure	30 Bar - 450 PSI
Maximum Operating Pressure	190 Bar - 2800 PSI
Maximum Peak Pressure	250 Bar - 3600 PSI
Weight	3,2 Kg-7,05 lbs
Oil Temperature with NBR Seals	-20 to 80 C° (-4 to 176 F°)
Oil Viscosity – Operating Range Minumum / Maximum	From 10 to 75 mm2/s - 10 / 400 mm2/s From 10 to 75 cSt - 10 / 400 cSt
Oil Filtration	≤30 μ
Ambiant Temperature Range	-35 to 80 C° (-31 to 140 F°)
Internal Leakage at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min 0,18 in3/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.

PORT	GMM-4B
P Pressure Port	G 1" (G 3/4)
S Cylinder Port	G 1" (G 3/4)
T Tank Port	G 1" (G 3/4)
X-Y Pneumatic	G 1/4" (Ø6)

DIMENSIONAL DATA AND PRESSURE DROP

Dimensional Data



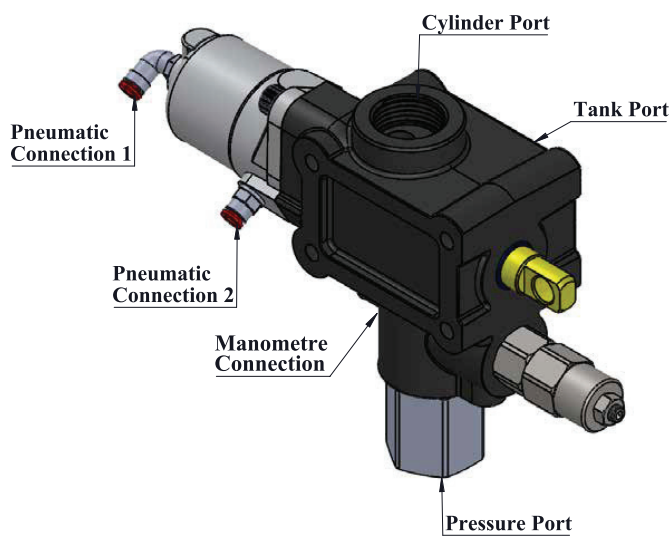
Pressure Drop (ΔP) - Pressure Range

Pressure Range Options		
Order Code	Product Code	Range - Settings
SMR1-080	2SMR180080	Range 0-80 Bar Setting 80 Bar
SMR2-120	2SMR280120	Range 60-200 Bar Setting 120 Bar

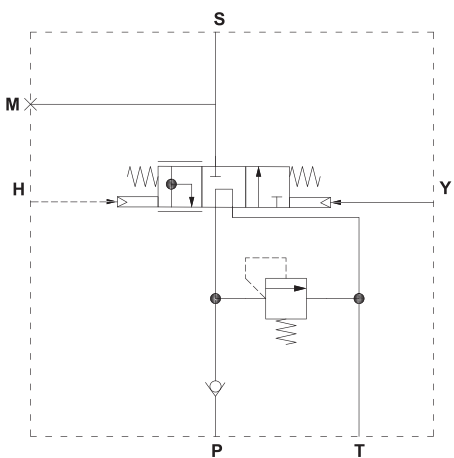
HYDRAULIC CIRCUIT

Port Direction and Type

Port Apperance

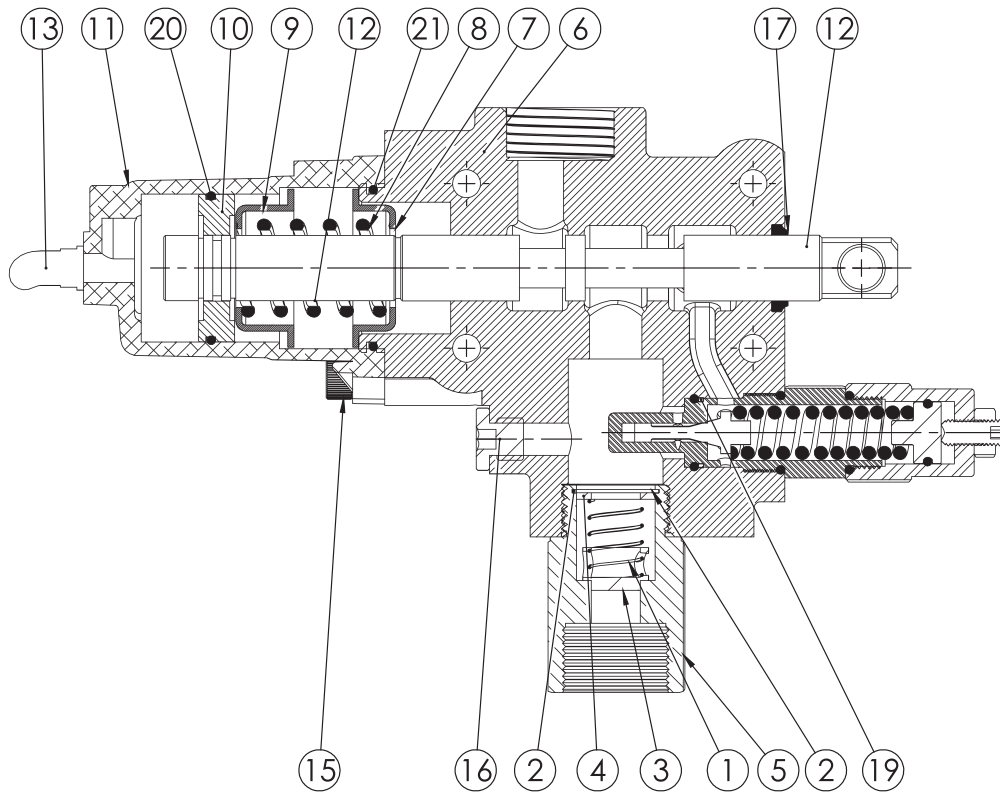


Diagram



ORDERING CODES
Order Example
GMM 4B - 3/4"

Base Code "0" _____ Port Size _____ Type _____

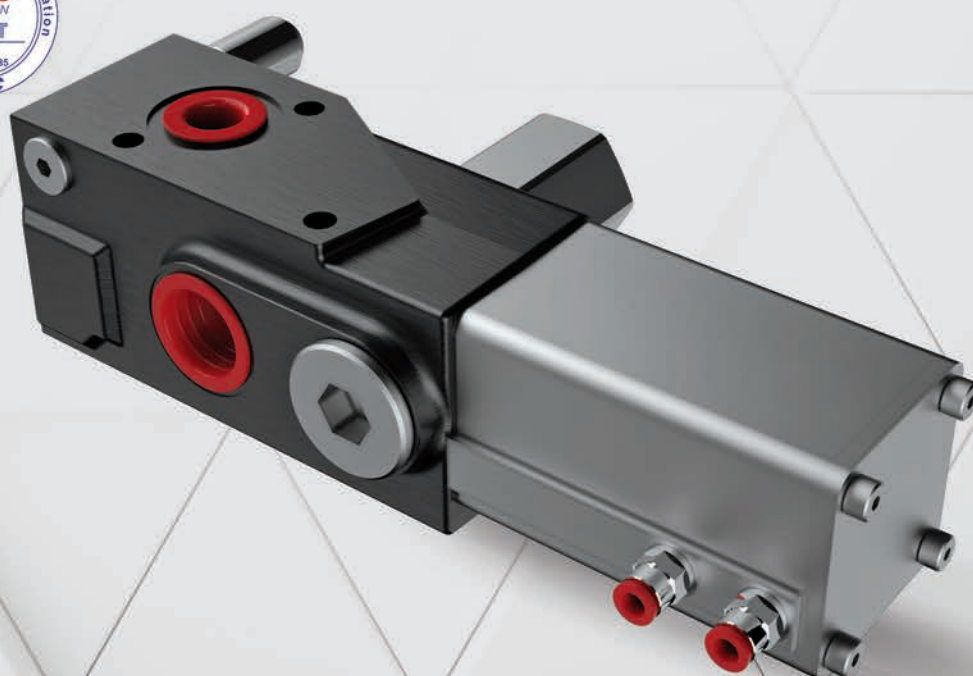


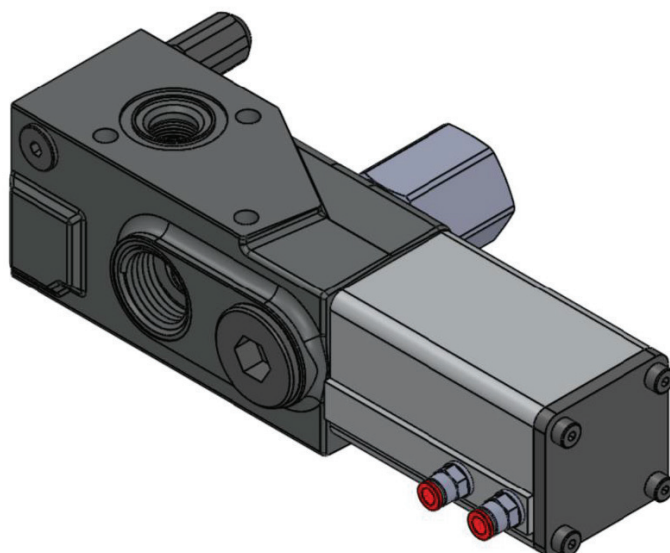
ITEM NO	ORDER CODE	PART NAME	DESCRIPTION	QUANTITY
1	940123	Check Valve Spring		1
2	9509008	Retainer	DIN 472 - Ø 24	1
3	943015	Check Valve Thrust Part		1
4	9505018	Check Valve Washer		1
5	943014	1" Tipping Check Valve Coupling		1
6	15304B30	4B Tipping Base		1
7	940104	Thin Cup		1
8	940113	Cup Spring		1
9	940105	Thick Cup		1
10	941014	Pneumatic Piston		1
11	960120	Tipping Pneumatic Cover		1
12	820401	4B Tipping Spool		1
13	946002	Pneumatic Coupling	1/8-6 Elbow	1
14	946001	Pneumatic Coupling	1/8-6 Straight	1
15	9501010	DIN 972 Bolt	M8x20	2
16	9508007	Wipers	20x28x7/4	1
17	Y812003	Pressure Relief Valve		1
18	9507005	O-ring	20x3	2
19	9507034	O-ring	40x2,5	1
20	9507036	O-ring	44x3	1
21	943001	Plug	BSP 3/8"	1
22	9509011	Retainer	DIN 472 - Ø 20	3



TIPPER VALVE
GMM-KV

CE





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Additional Informations

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WORKING CONDITIONS

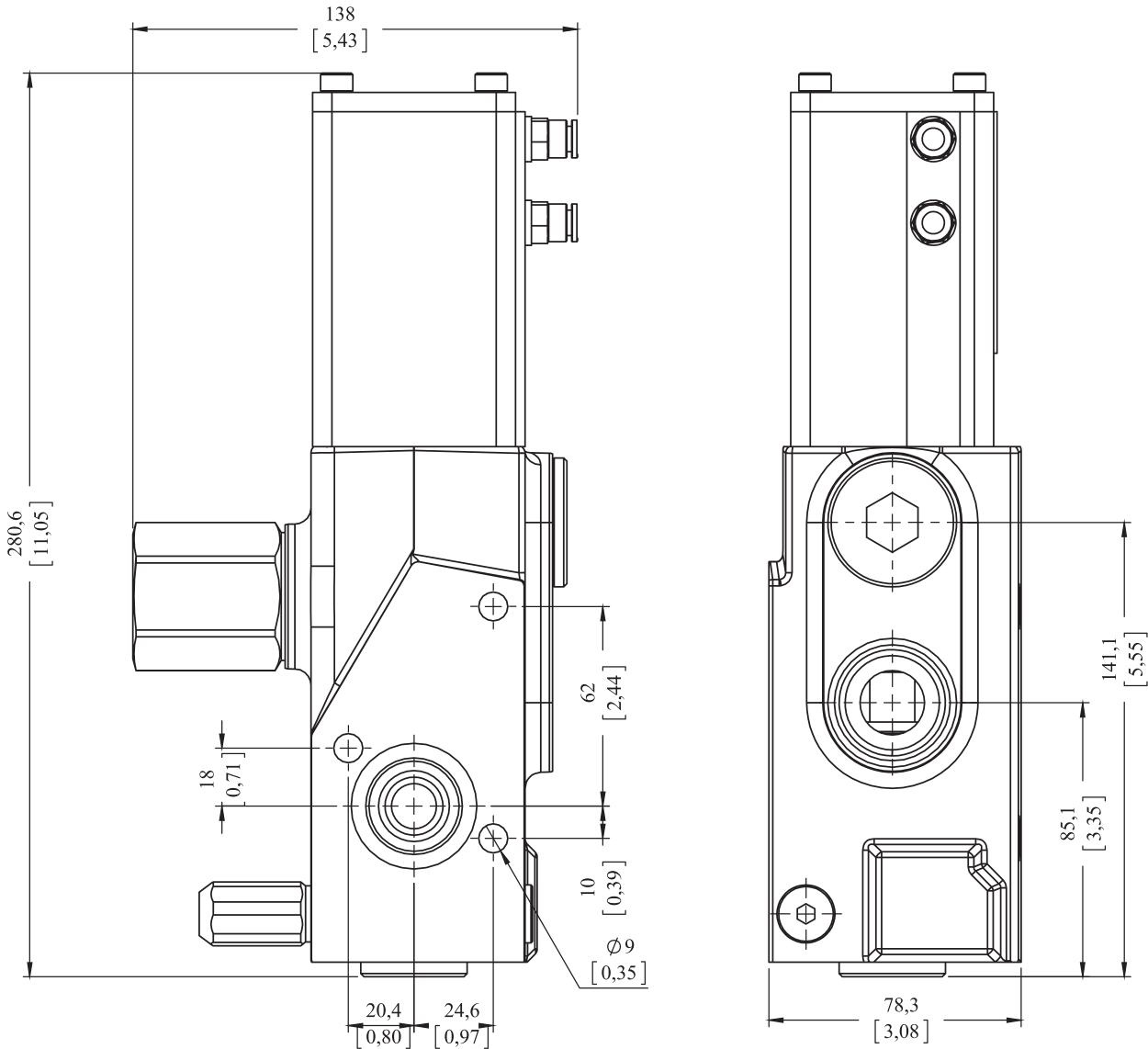
MODEL	GMM-KV
Nominal Flow Displacement	220 l/dk 59 USGPM
- Pilot Pressure	6-12 Bar 90-180 PSI
- Tank Pressure	10 Bar 150 PSI
Maximum Operating Pressure	315 Bar 4600 PSI
Maximum Peak Pressure	350 Bar 5100 PSI
Weight	3,8 Kg
Oil Temperature with NBR Seals	-20 to 80 C° (-4 to 176 F °)
Oil Viscosity – Operating Range Minumum / Maximum	From 10 to 75 mm2/s - 10 / 400 mm2/s From 10 to 75 cSt - 10 / 400 cSt
Oil Filtration	≤30 μ
Ambiant Temperature Range	-35 to 80 C° - (-31 to 140 F °)
Internal Leakage at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min 0,18 in3/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.

PORT	GMM-KV
P Pressure Port	G 1" (G 3/4)
S Cylinder Port	G 1" (G 3/4)
T Tank Port	G 1" (G 3/4)
X-Y Pneumatic	G 1/8" (Ø6)
M Port	G 1/8"

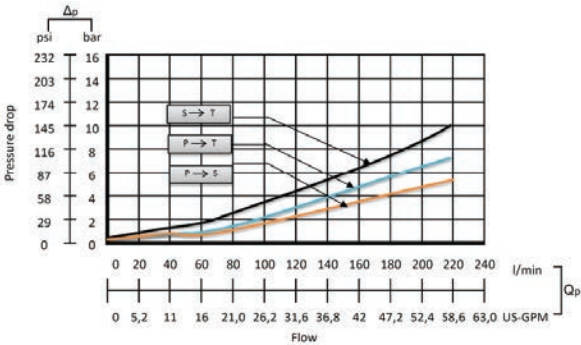
DIMENSIONAL DATA AND PRESSURE DROP

Dimensional Data



Pressure Drop (ΔP) - Pressure Range

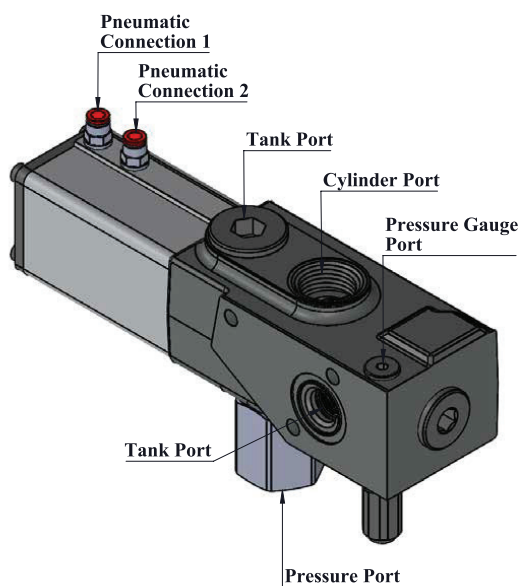
Pressure Range Options		
Order Code	Product Code	Range - Settings
KMR1-080	2KMR180080	Range 63-135 bar Setting 80 bar
KMR2-125	2KMR280125	Range 100-190 bar Setting 125 bar
KMR3-175	2KMR280175	Range 125-250 bar Setting 175 bar
KMR4-220	2KMR280220	Range 200-315 bar Setting 220 bar



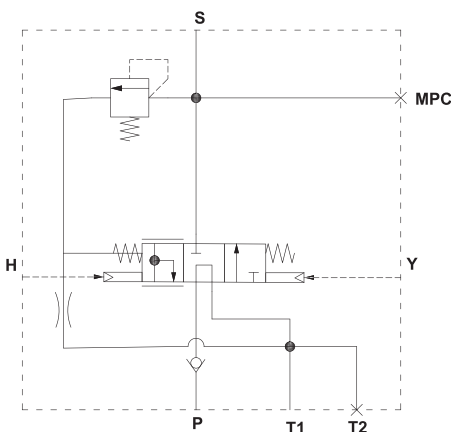
HYDRAULIC CIRCUIT

Port Direction and Type

Port Apperance



Diagram



ORDERING CODES

Order Example

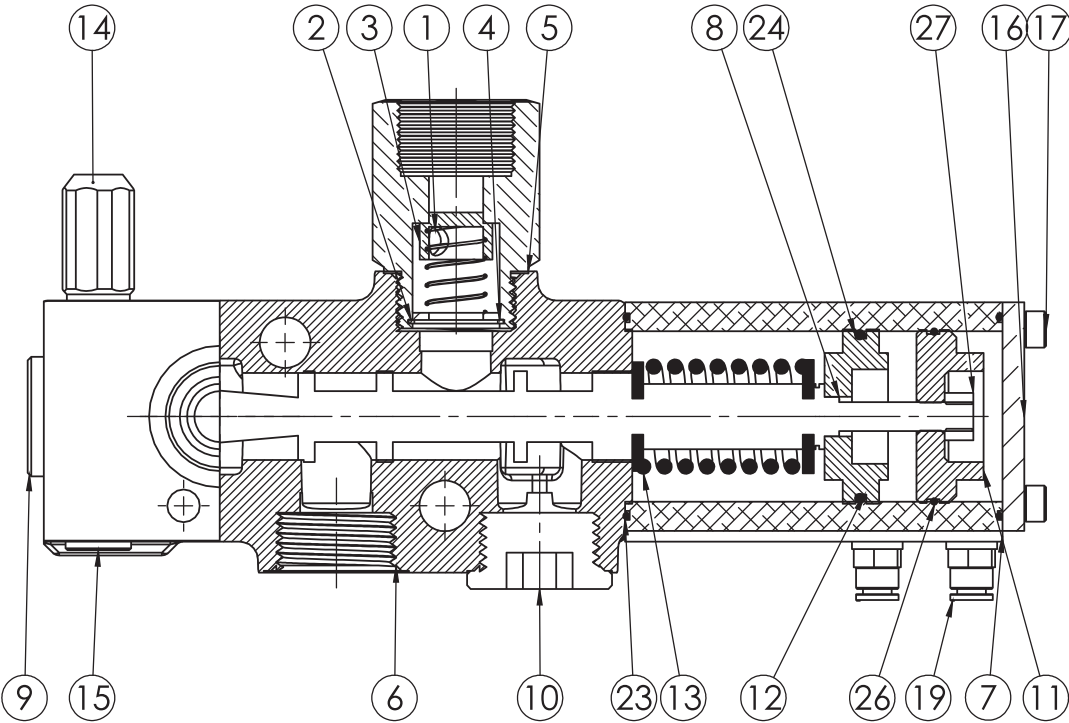
GMM - KV - 1"

Base Code

"0"

Port Size

Type



ITEM NO	ORDER CODE	PART NAME	DESCRIPTION	QUANTITY
1	940123	Check Valve Spring		1
2	9509008	Retainer	DIN 472 - Ø 24	1
3	943015	Check Valve Thrust Part		1
4	9505018	Check Valve Washer		1
5	943014	1" Tipping Check Valve Coupling		1
6	1530K40	Square Tipping Base		1
7	960121	Square Tipping Pneumatic Base		1
8	829801	Square Tipping Spool		1
9	943003	Plug	BSP 3/4"	1
10	943004	Plug	BSP 1/2"	1
11	941019	Square Tipping Shaft		1
12	941020	Square Tipping Shaft		1
13	940131	Square Tipping Cup Spring		1
14	Y812006	Square Tipping Pressure Relief Valve		1
15	943001	Plug	BSP 3/8"	1
16	960122	Square Tipping Pneumatic Base		1
17	9501043	DIN 972 Bolt	M6x120	4
18	946001	Pneumatik Coupling	1/8-6 Straight	2
19	9503006	Spring Washer	M6	4
20	9507033	O-ring	53,67x1,78	2
21	9507048	O-ring	14x1,78	1
22	9513001	X-ring	40,87x3,53	1
23	9507049	O-ring	44X2,5	1
24				



HAND PUMP
GMM-HP

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.

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WORKING CONDITIONS

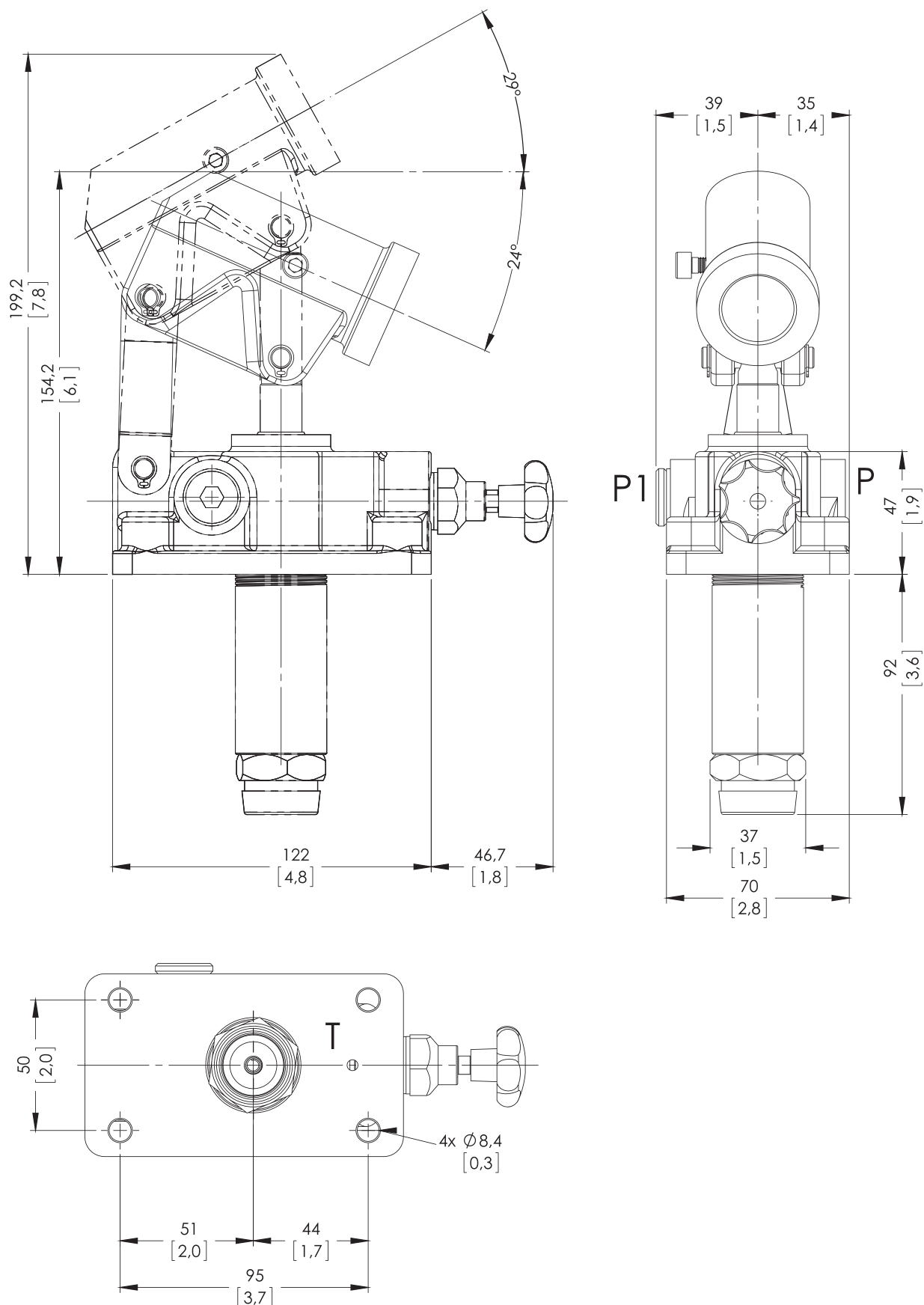
MODEL	TE - 25	CE - 25	KCE - 25
Nominal Flow Displacement - Totally	25 cc/cycle - 0,007 U.S.G./cycle		
- Pull Direction	14,5 cc/cycle - 0,004 U.S.G./cycle		
- Push Direction	10,5 cc/cycle - 0,003 U.S.G./cycle		
Maximum Operating Pressure	300 Bar - 4400 PSI		
Weight	3,2 Kg-7,05 lbs	3,2 Kg-7,05 lbs	3,2 Kg-7,05 lbs
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 Minimum / Maximum	From 10 to 75 mm ² /s - 10 / 400 mm ² /s From 10 to 75 cSt - 10 / 400 cSt		
Oil Filtration	≤30 μ		
Ambiant Temperature Range	-35 to 60 C° (-31 to 140 F°)		
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt - A(B)-T)	3 cm 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° temperature.

Double acting hand pumps suitable to operate single acting applications. They can be fitted also onto tank and are equipped with tapered lowering valve. They are available with nodular cast-iron body and nickel-plated spool.

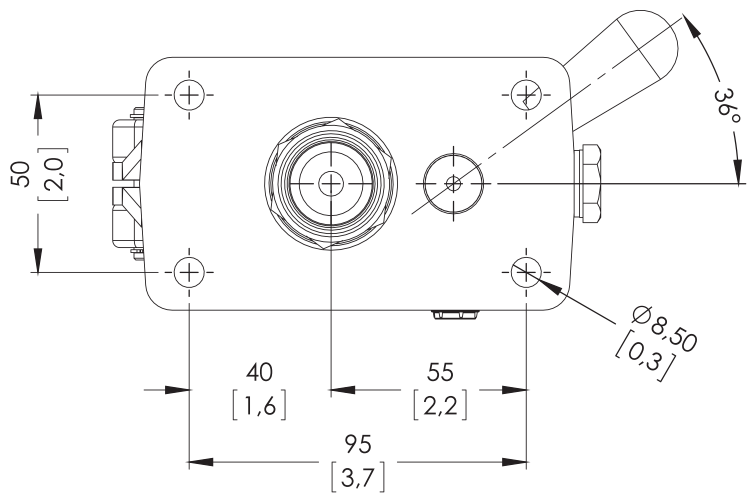
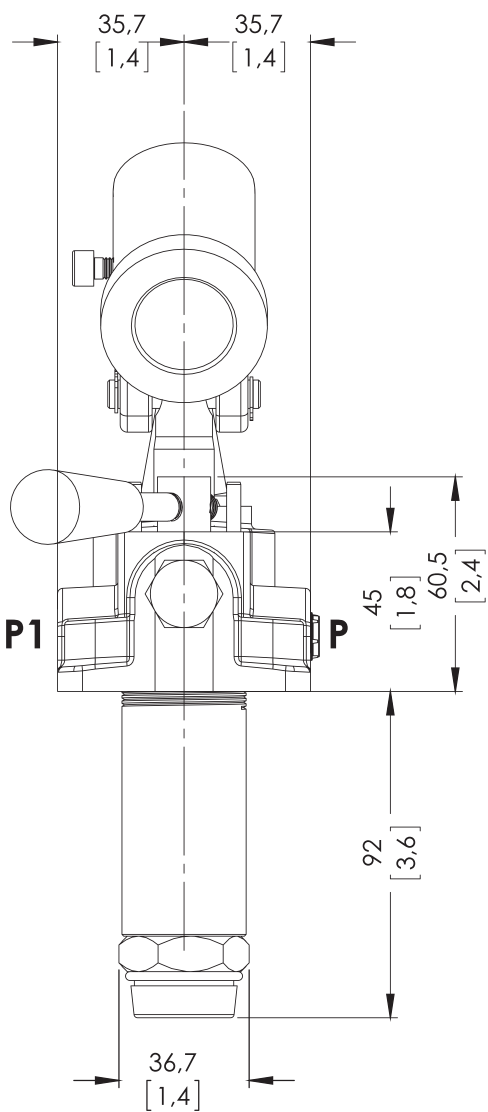
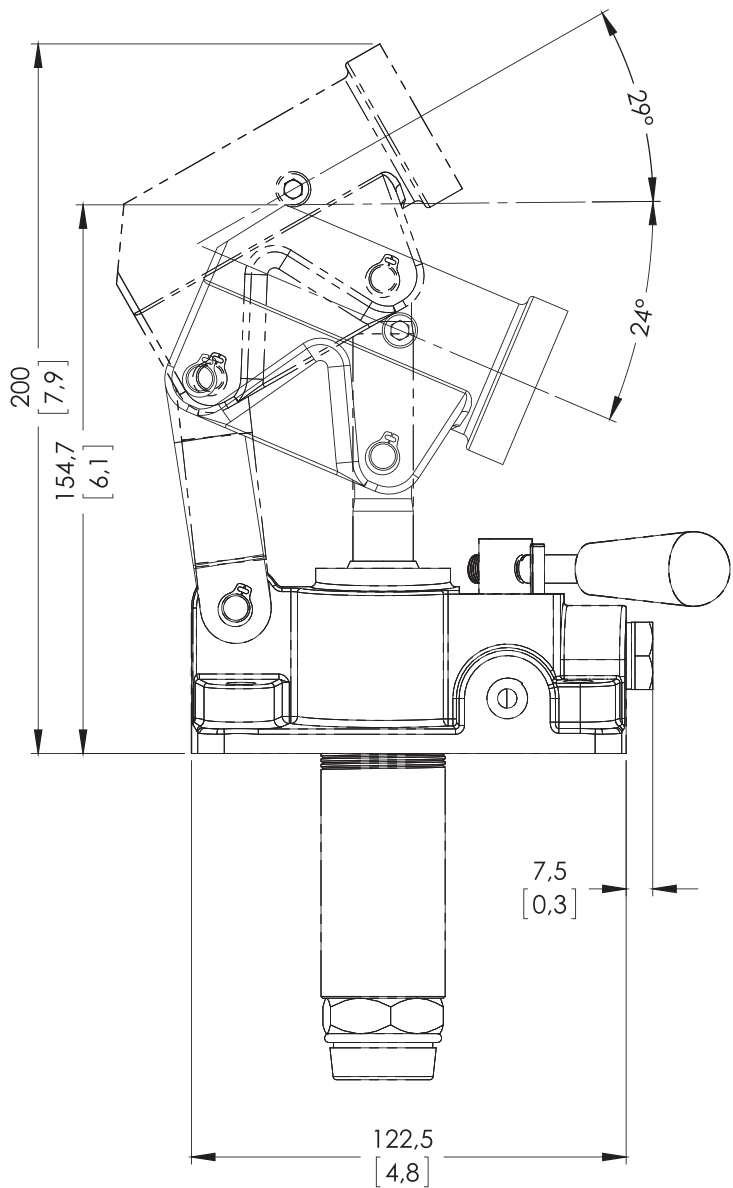
PORTS THREADS AND STANDARD THREADS

MODEL	BSP (Iso 228)	UN-UNF (Iso 11926-1)	Metric (Iso 262)
TT-25	G 3/8"	3/4 - 16 UNF	M22x1.5
TC-25	G 3/8"	3/4 - 16 UNF	M22x1.5
CT-25	G 1/4"	3/4 - 16 UNF	M22x1.5
CC-25	G 1/4"	3/4 - 16 UNF	M22x1.5
RTC-25	G 3/8"	3/4 - 16 UNF	M22x1.5

DIMENSIONAL DATA
TT 25 - TC 25 - Single Action Hand Pump


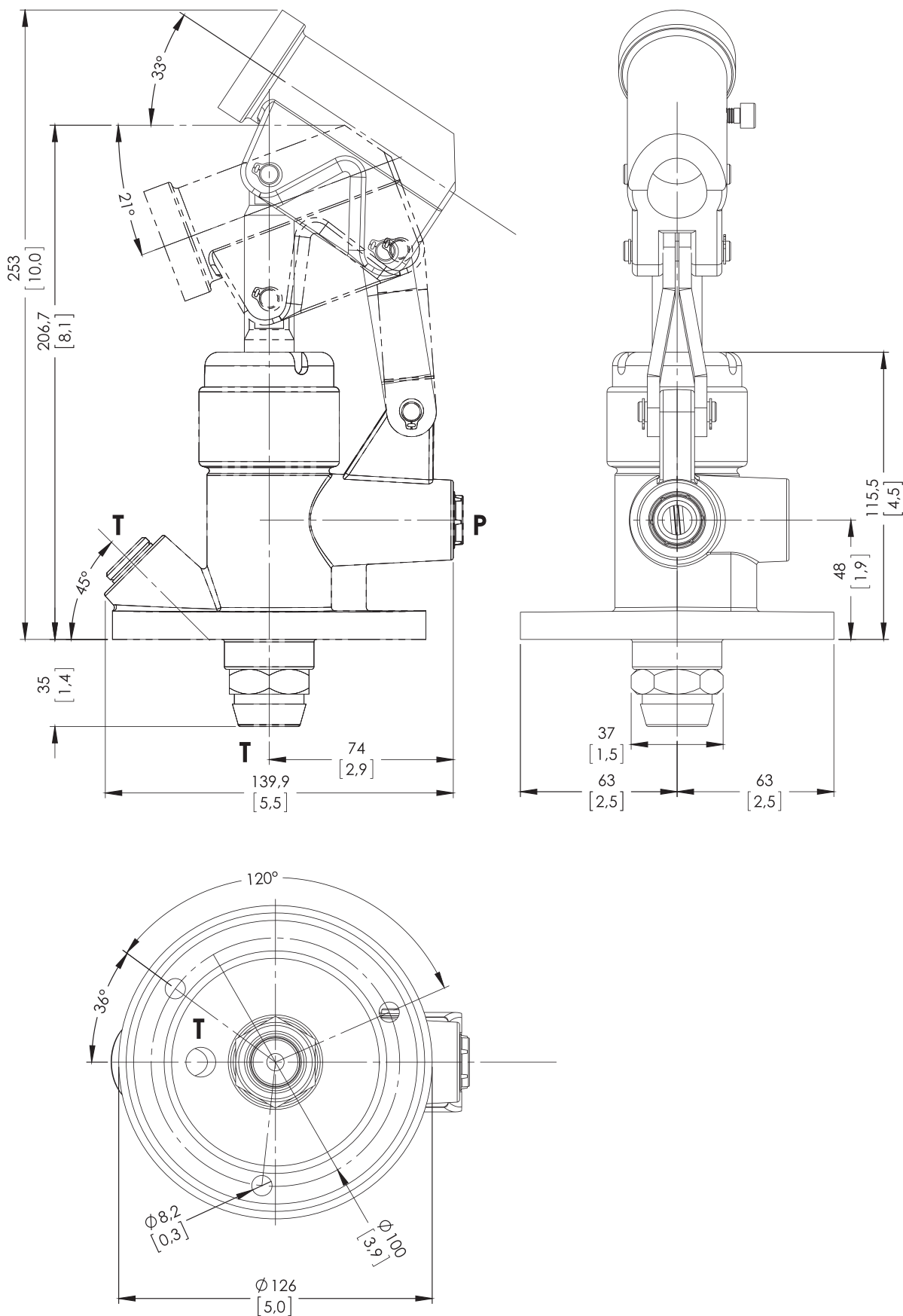
DIMENSIONAL DATA

CC 25 - CT 25 - Double Action Hand Pump



DIMENSIONAL DATA

RTC 25 - Single Action Hand Pump With Round Type

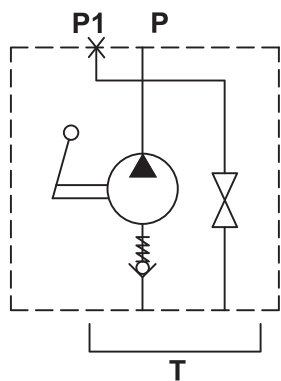
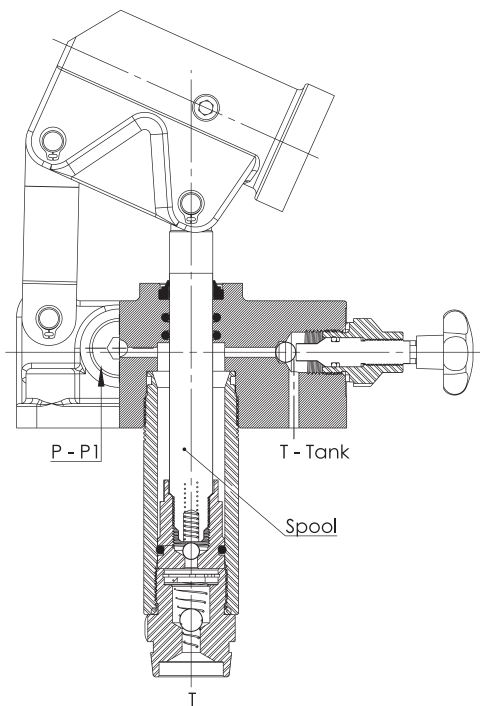


HYDRAULIC CIRCUIT

TT 25 - TC 25 - Single Action Hand Pump

Sectional Appearance

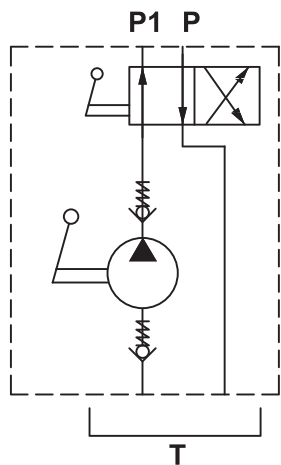
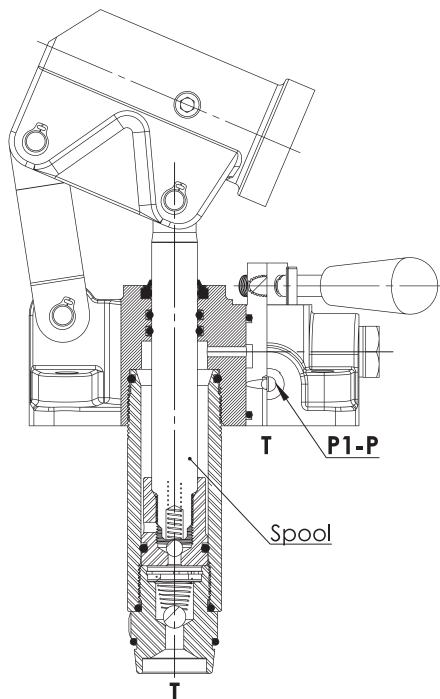
Diagram



CC 25 - CT 25 - Double Action Hand Pump

Sectional Appearance

Diagram

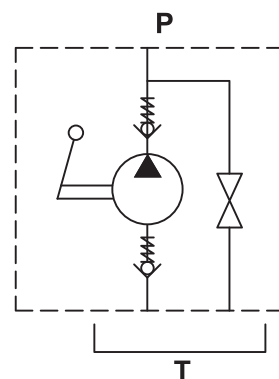
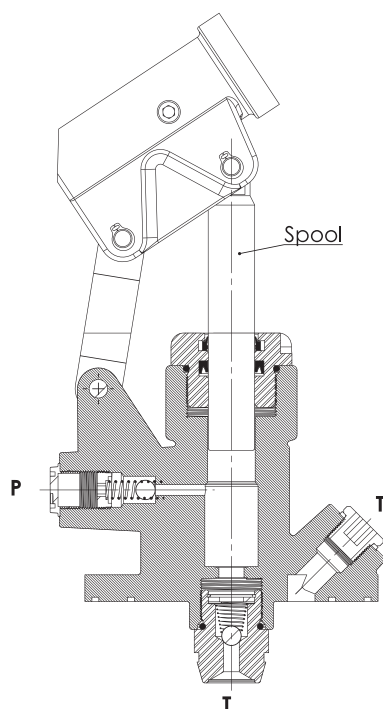


HYDRAULIC CIRCUIT

RTC 25 - Single Action Hand Pump With Round Type

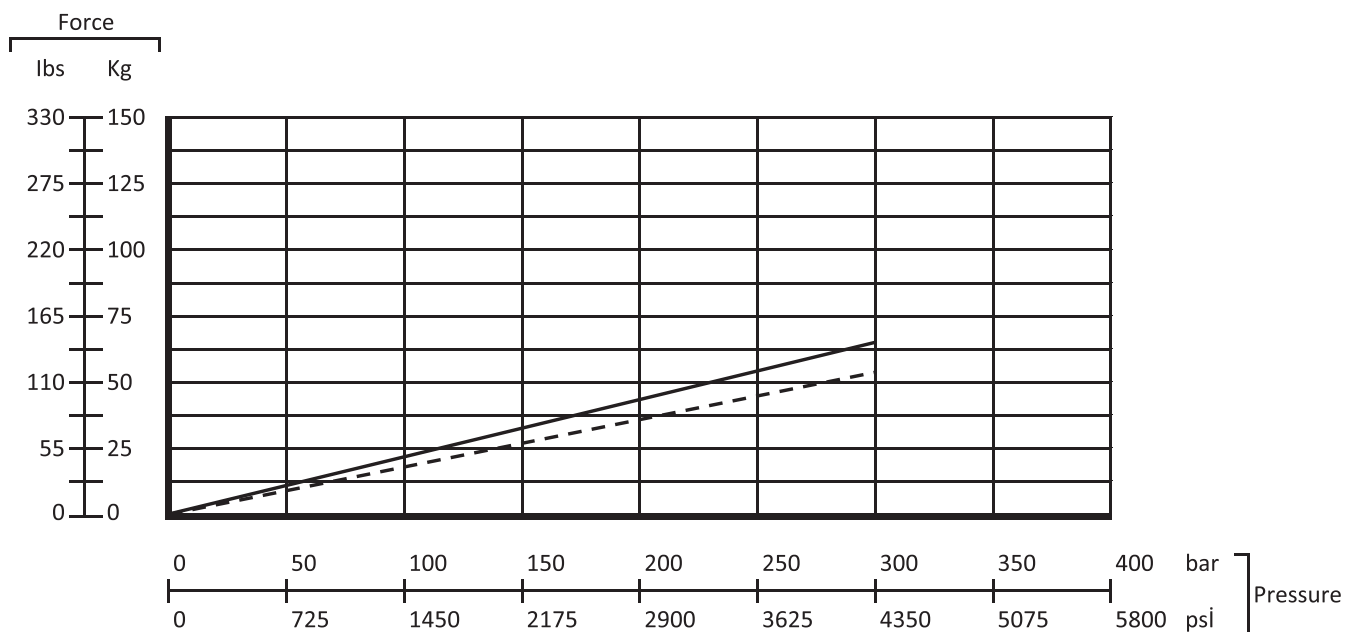
Sectional Appearance

Diagram



Performance Data and Curve

Force while pumping with standard lever (600 mm); Force and pressure table

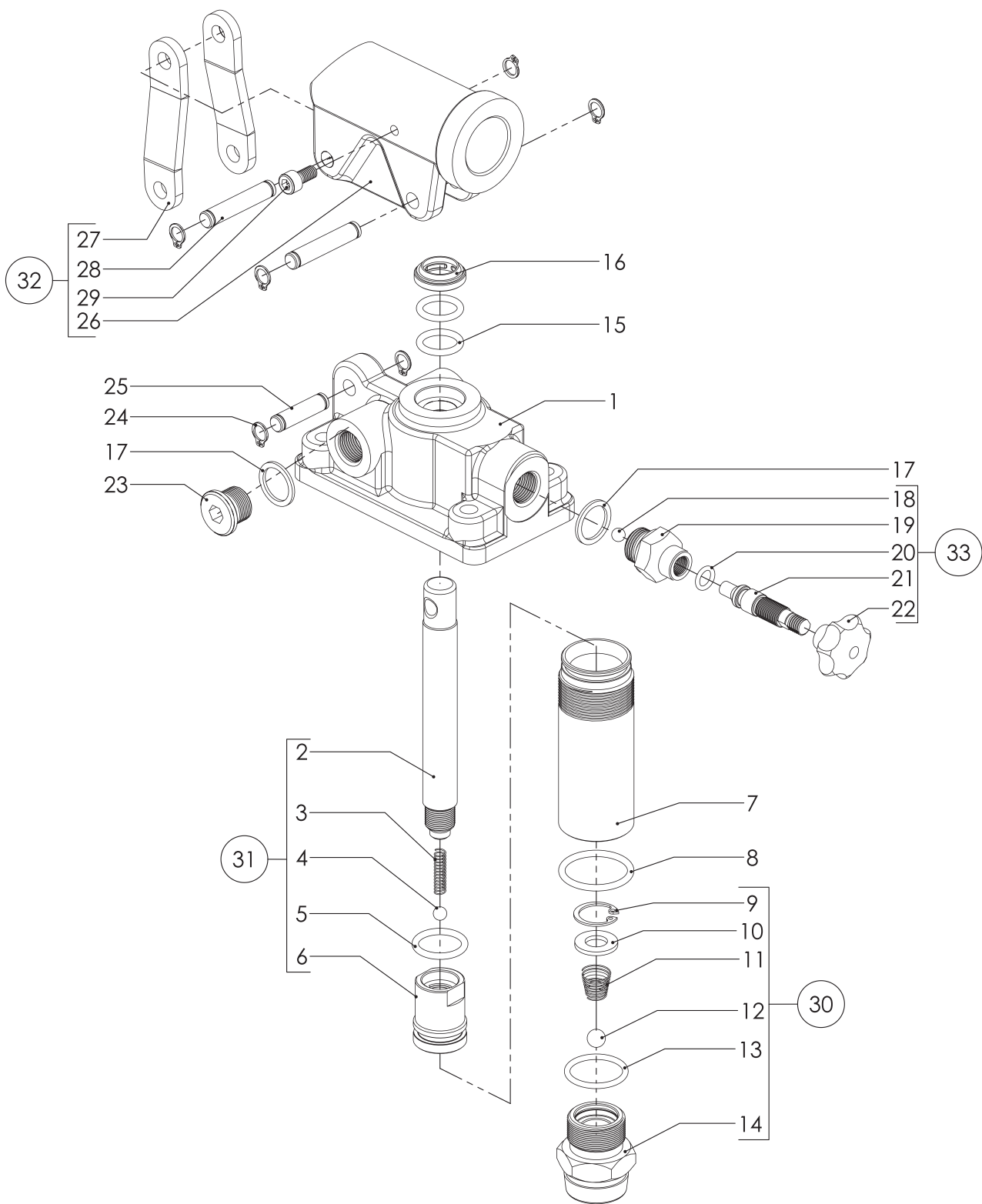


ORDERING CODES

Order Example

GMM TT - 25

Base Code "0" Displacement Type



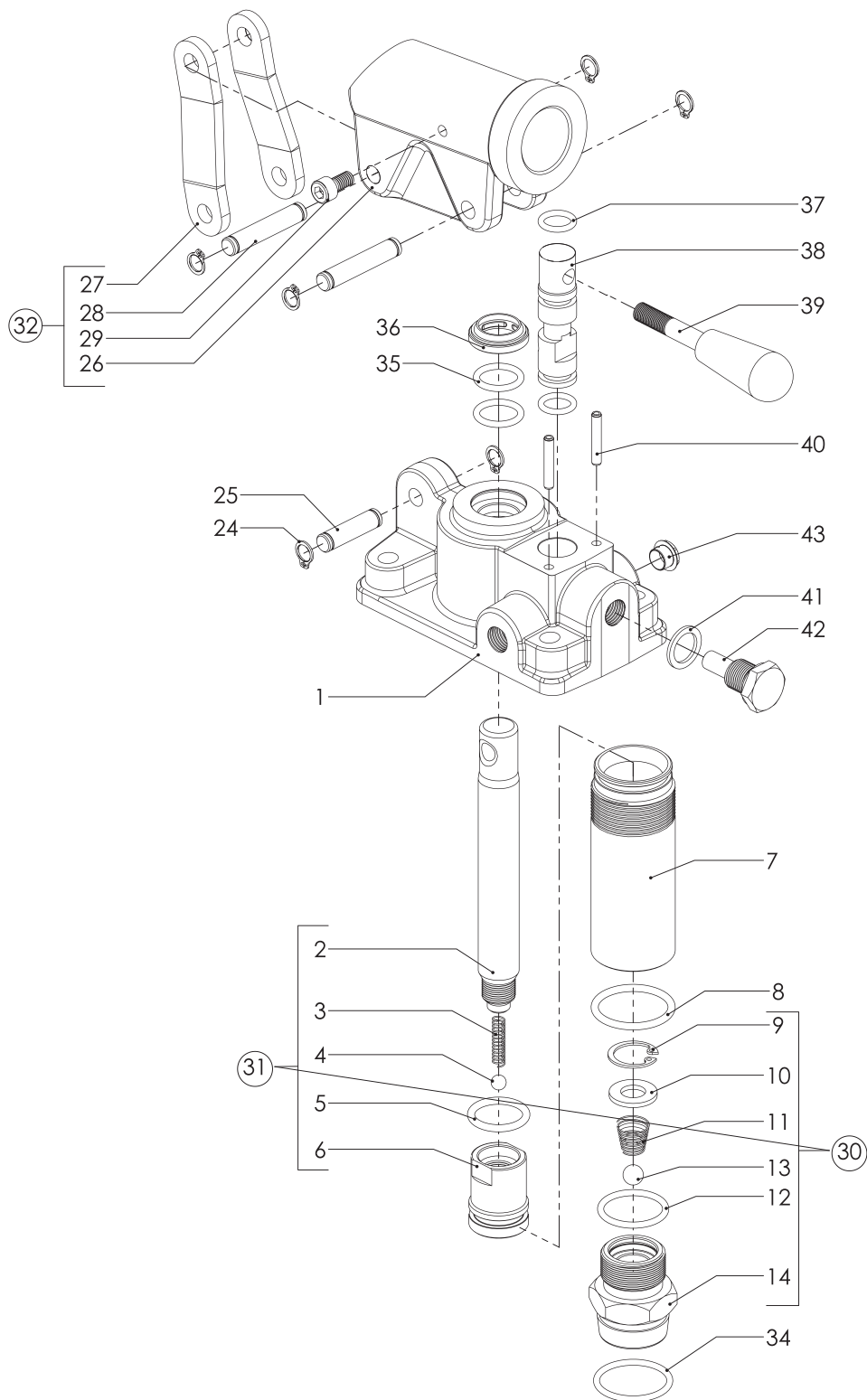
ORDERING CODES

Order Example

Base Code
"0"

GMM CC - 25

Displacement
Type

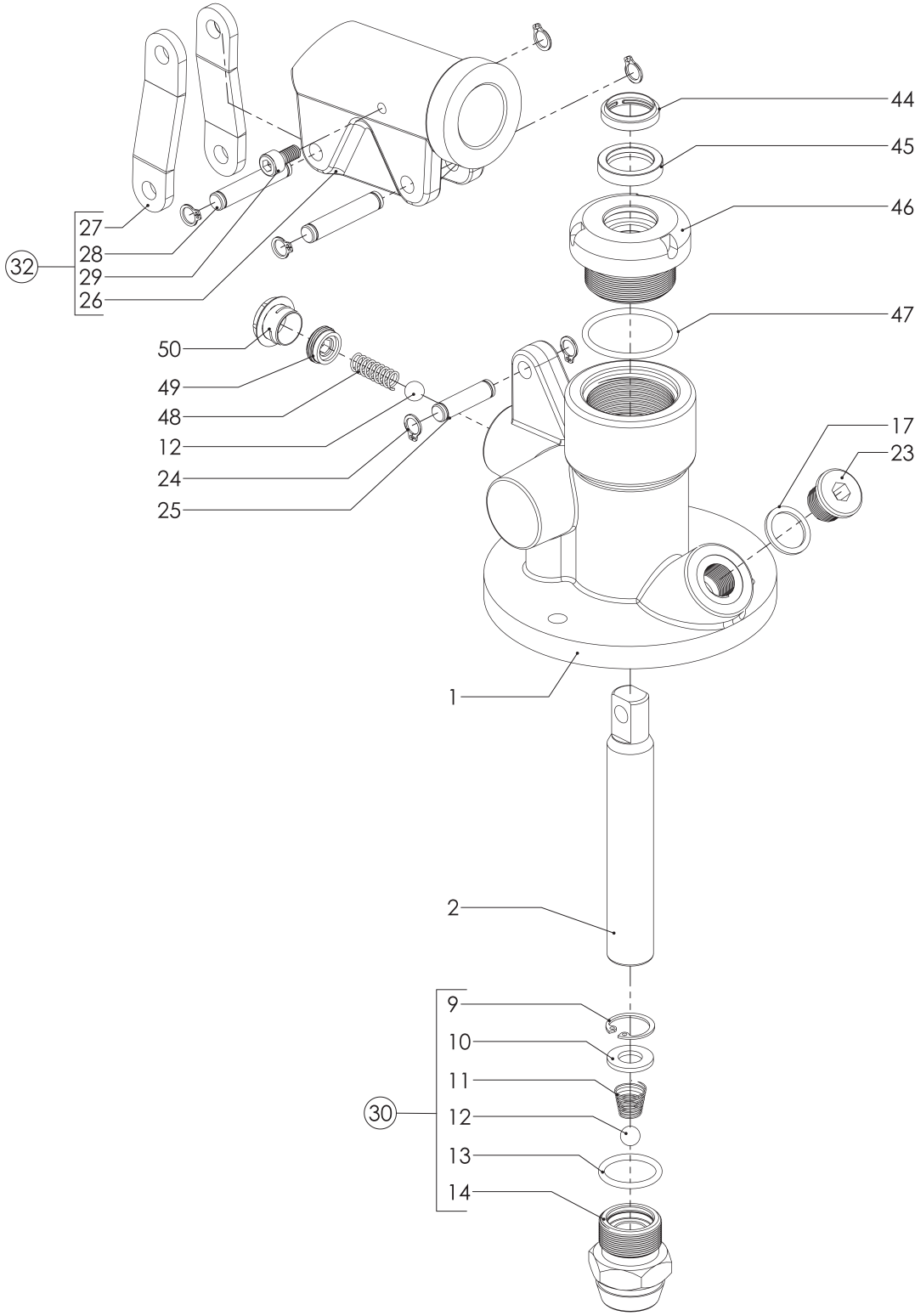


ORDERING CODES

Order Example

GMM RTC - 25

Base Code "0" Displacement Type

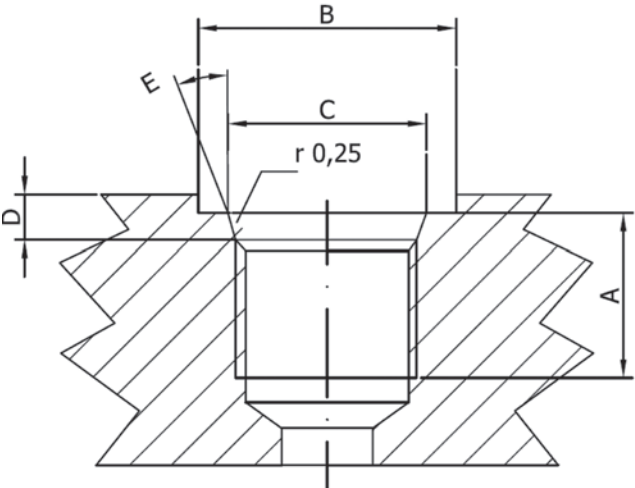


PART LIST

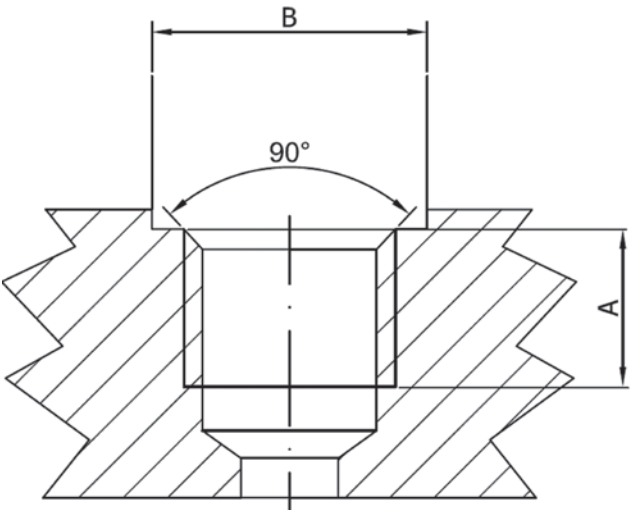
ITEM NO	TYPE			ORDER CODE	PART NAME	DESCRIPTION	QUANTITY
	TT-25	CC-25	RTC-25				
1a	x			1TE025100	Hand Pump Body		1
1b		x		1CE025100	Hand Pump Body		1
1c			x	1KCE025100	Hand Pump Body		1
2a	x			1TE025101	Rod		1
2b		x		1CE025101	Rod		1
2c			x	1KCE025101	Rod		1
3	x	x	x	1TE025102	Piston Spring		1
4	x	x	x	1TE025103	Piston Ball		1
5	x	x	x	1TE025104	O-ring	20x3	1
6	x	x	x	1TE025105	Piston		1
7	x	x	x	1TE025106	Steel Pipe		1
8	x	x	x	1TE025107	O-ring	29x3	1
9	x	x	x	1TE025108	Circlip	DIN472 – 20x1	1
10	x	x	x	1TE025109	Washer	M10	1
11	x	x	x	1TE02510	Suction Spring		1
12	x	x	x	1TE025111	Suction Ball		1
13	x	x	x	1TE025112	O-ring	24,5x2,58	1
14	x	x	x	1TE025113	Suction Valve Casing		1
15	x			1TE025114	O-ring	16x3	2
16	x			1TE025115	Wiper Seal	16x24x5/7	1
17	x		x	1TE025116	Washer	G 3/8"	2
18	x			1TE025117	Tank Ball		1
19	x			1TE025118	Tank Valve Casing		1
20	x			1TE025119	O-ring	8x2	1
21	x			1TE025120	Tank Pin		1
22	x			1TE025121	Knob		1
23	x		x	1TE025122	Plug	G 3/8"	1
24	x	x	x	1TE025123	Circlip	DIN 471 – 8x0,8	6
25	x	x	x	1TE025124	Short Pin		1
26	x	x	x	1TE025125	Lever Holder		1
27	x	x	x	1TE025126	Holder Bracket		2
28	x	x	x	1TE025127	Long Pin		2
29	x	x	x	1HP025101	Screw	DIN 912 – M6x12	1
30	x	x	x	1HP025102	Cylinder Group		
31	x	x	x	1HP025102	Piston Group		
32	x	x	x	1HP025103	Hinge Group		
33	x	x	x	1HP025104	Valve Group		
34		x		1CE025102	O-ring	23x2,5	1
35		x		1CE025103	O-ring	15,88x2,62	2
36		x		1CE025104	Wiper Seal	17x25x4x7	1
37		x		1CE025105	O-ring	11,3x2,4	2
38		x		1CE025106	Spool		1
39		x		1CE025107	Handle	M8	1
40		x		1CE025108	Spring Pin	ISO 8752 – 4x24	2
41		x		1CE025109	Washer	G 1/4"	1
42		x		1CE025110	Plug		1
43		x		1CE025111	Plastig Plug	G 1/4"	1
44			x	1KCE025102	Wiper Seal	20x25x4,3/6	1
45			x	1KCE025103	Rod Seal	20x28x5,5	1
46			x	1KCE025104	Rod Cover		1
47			x	1KCE025105	O-ring	36,17x2,62	1
48			x	1KCE025106	Tank Spring		1
49			x	1KCE025107	Tank Cover		1
50			x	1KCE025108	Plastig Plug	G 3/8"	1

TECHNICAL DATA

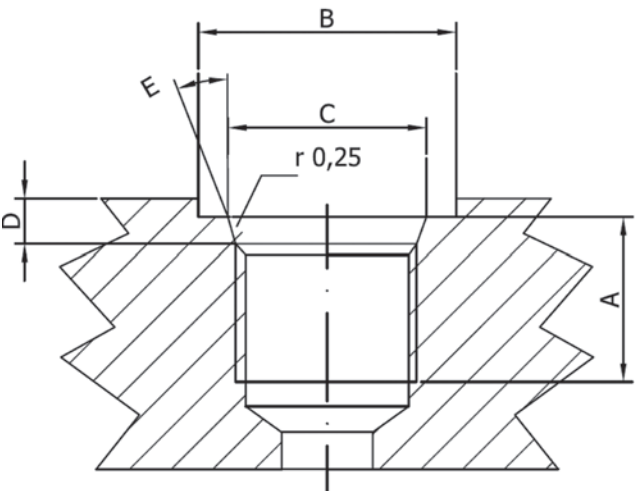
Ports Dimensional Data



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		G1	
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



GMM
HP

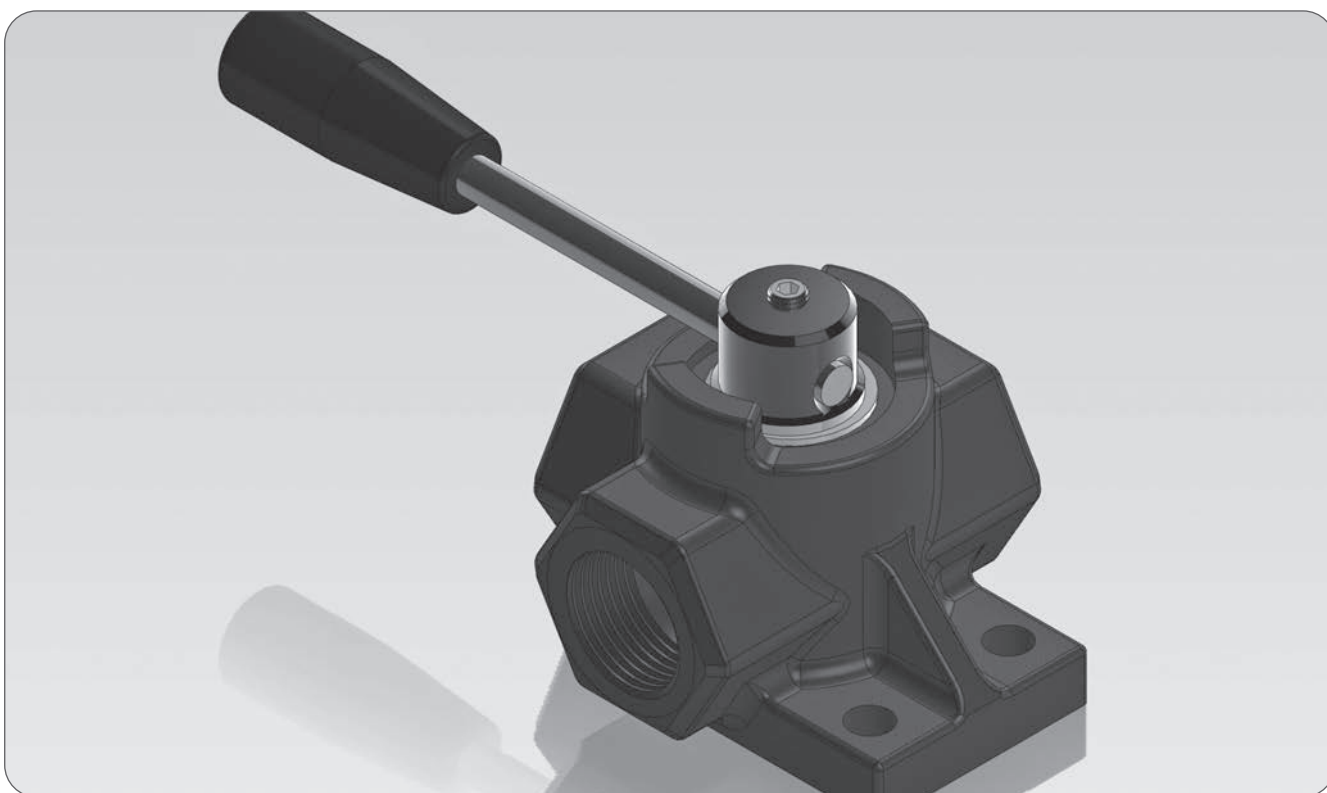




THREE
WAY VALVES
GMM-3YV

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 Dept.

Warning! :All specifications of this catalog refer to the standard product at this date (03/2013). GEMMA, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

WORKING CONDITIONS

MODEL	3YV60	3YV90	3YV140	3YV200
Nominal Flow Rating / Displacement	60 l/min 21 U.S.G.P.M	90 l/min 21 U.S.G.P.M	140 l/min 21 U.S.G.P.M	200 l/min 21 U.S.G.P.M
Maximum Operating Pressure	315 Bar 4600 PSI	315 Bar 4600 PSI	315 Bar 4600 PSI	250 Bar 3600 PSI
Number of Available Ways	3	3	3	3
Oil Temperture 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 Minumum / Maximum	From 10 to 75 mm2/s - 10 / 400 mm2/s From 10 to 75 cSt - 10 / 400 cSt			
Oil Filtration	≤30 μ			
Ambiant Temperture Range	-35 to 60 C° - (-31 to 140 F °)			
Internal Leakage (at 100 bar (1450 PSI), 40C° (110 F°), 46 cSt – A(B)–T)	3 cm3/min 0,18 in3/min			
Max. Level Of Contamination	19/16 – ISO 4406			

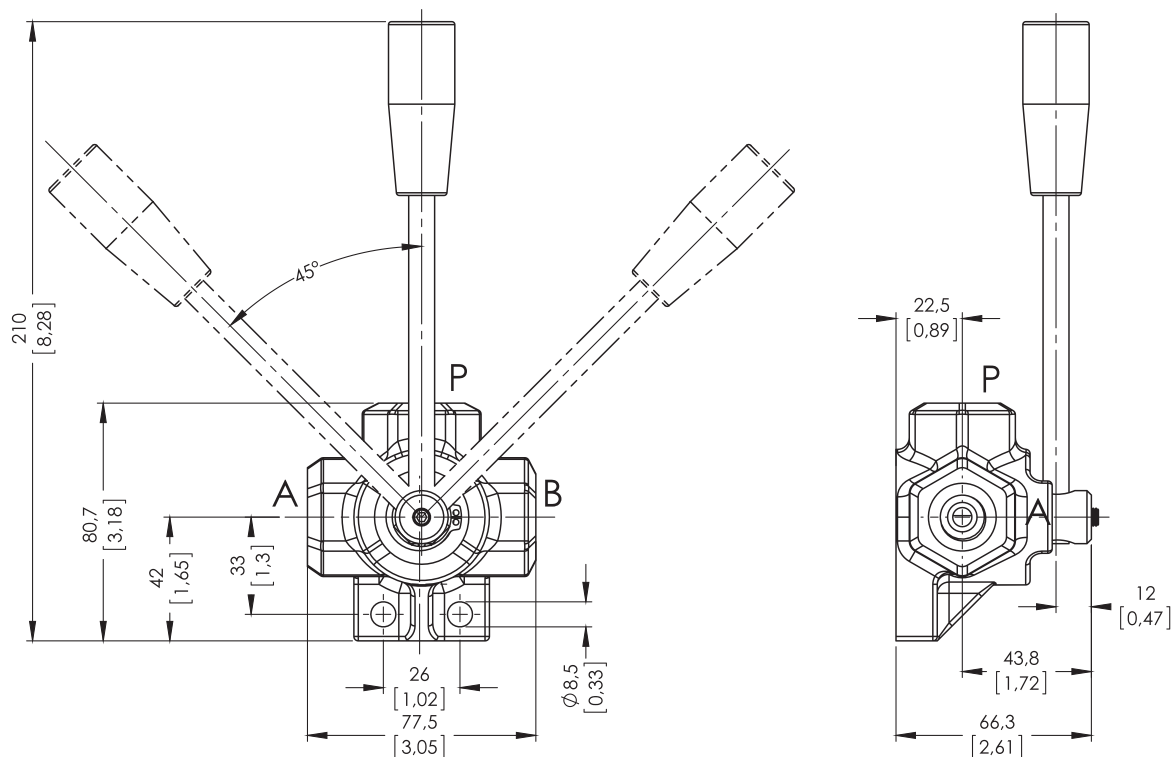
Not: This catalogue shows technical specifications measured with mineral oil of 46 mm2/s-46 cSt viscosity at 40 C° temperture. V Rotary spool diverter valve position cannot be changed when valve is pressurized.

PORTS THREADS AND STANDARD THREADS

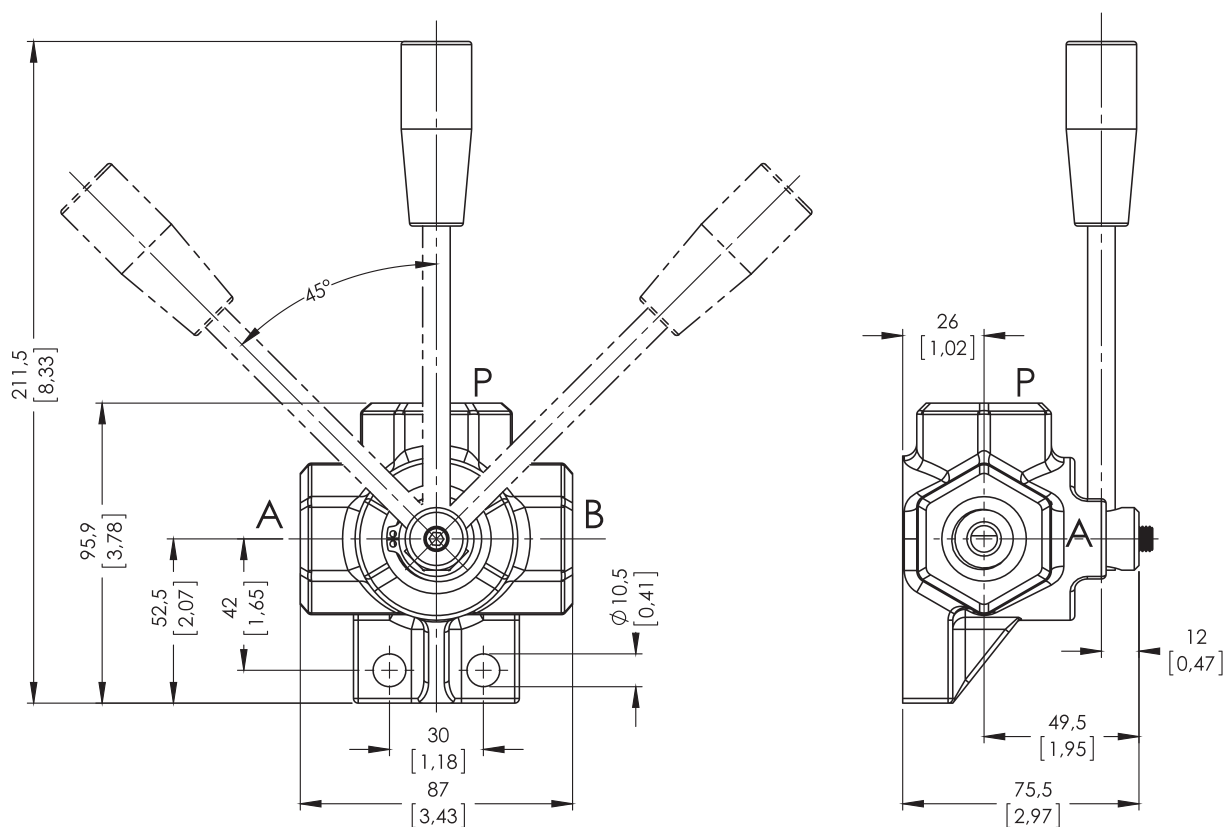
MODEL	BSP (Iso 228)	UN-UNF (Iso 11926-1)	Metric (Iso 262)
3YV 60	G 3/8	3/4 - 16 UNF	M18x1.5
3YV 90	G 1/2	7/8 - 14 UNF	M22x1,5
3YV 140	G 3/4	1 1/16 – 12 UNF	M27x2
3YV 200	G 1	1 5/16 – 12 UNF	-

DIMENSIONAL DATA

3 – Way V 60/3 valve

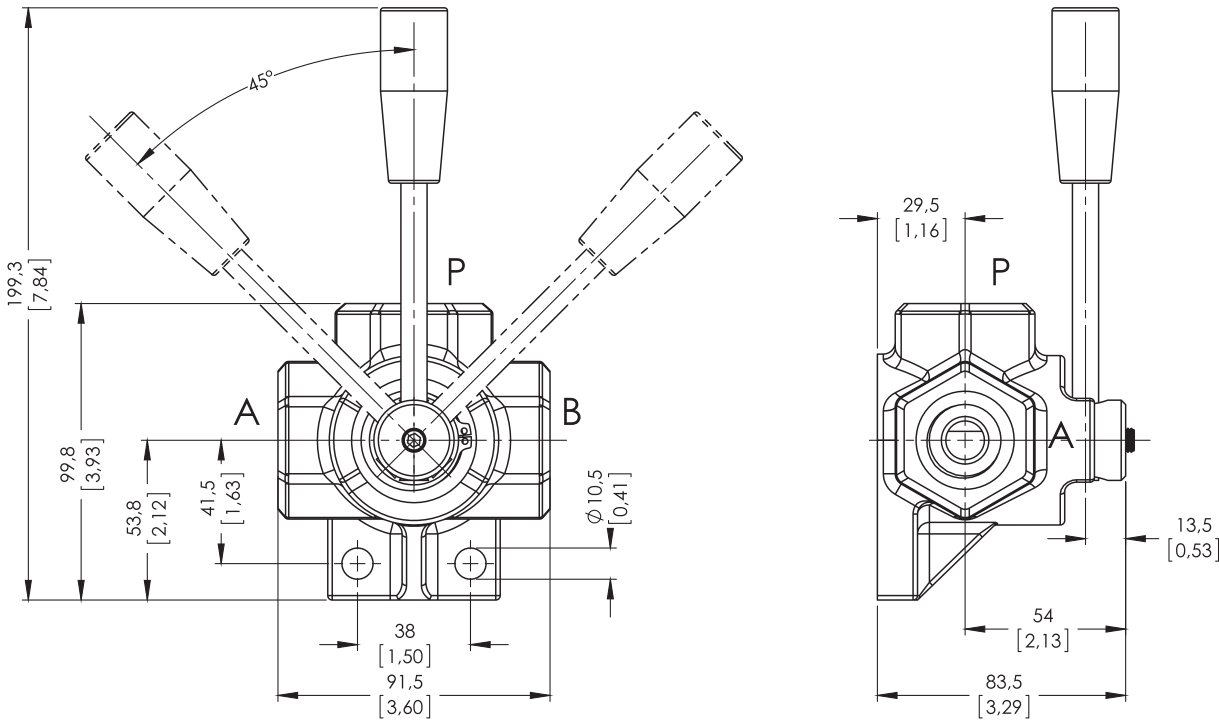


3 – Way V 90/3 valve

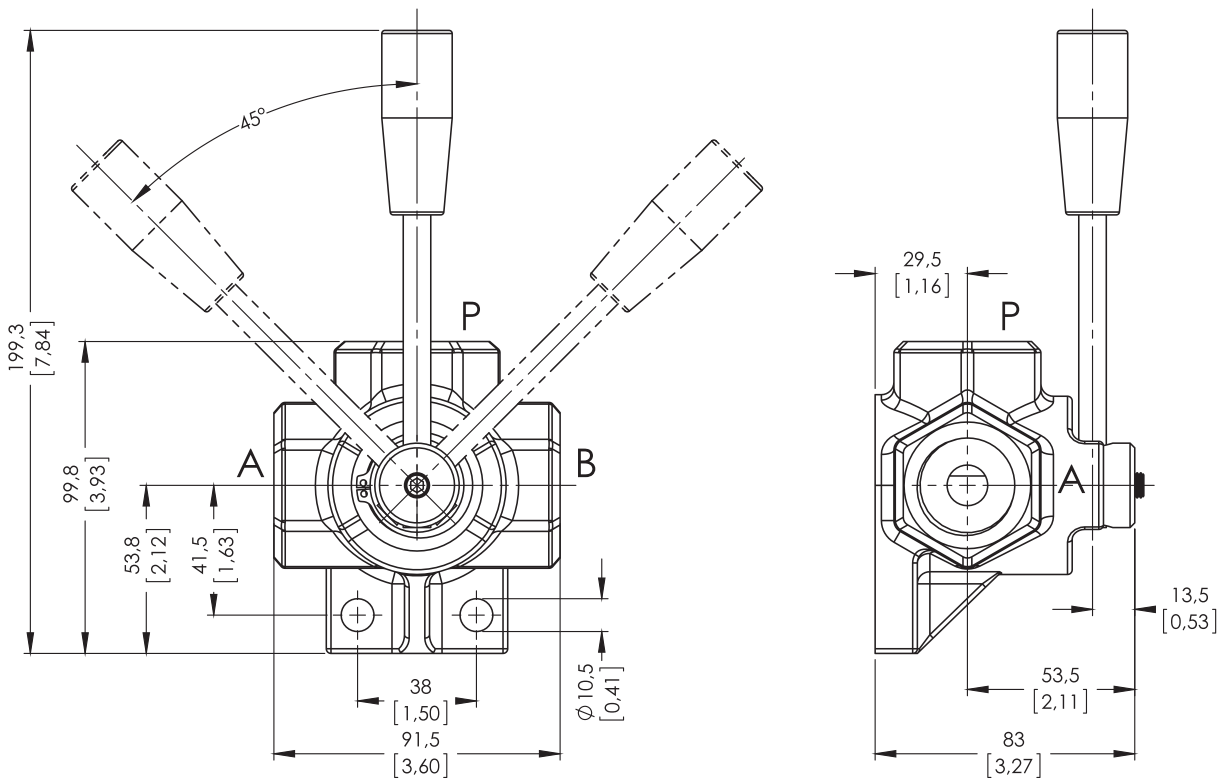


DIMENSIONAL DATA

3 – Way V 140/3 valve



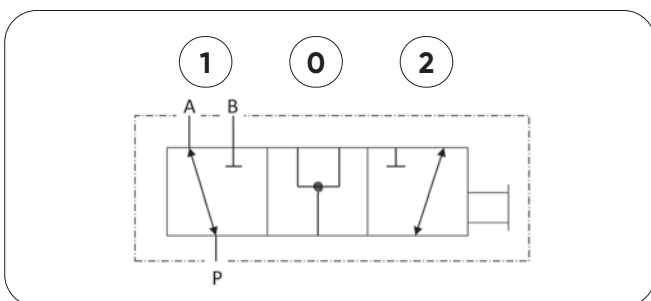
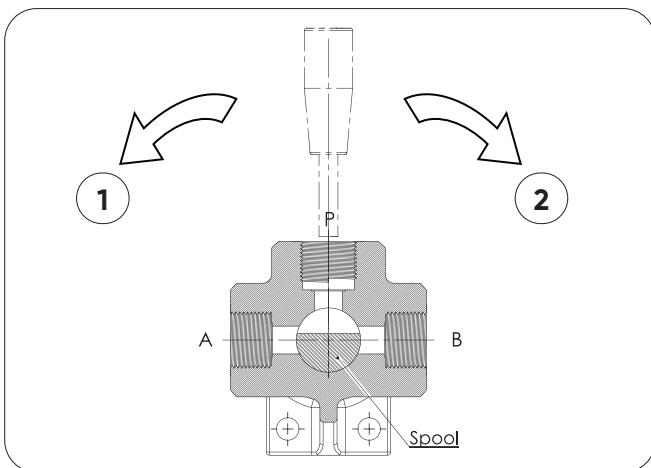
3 – Way V 200/3 valve



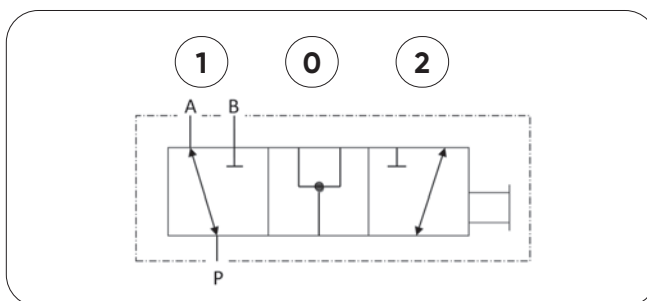
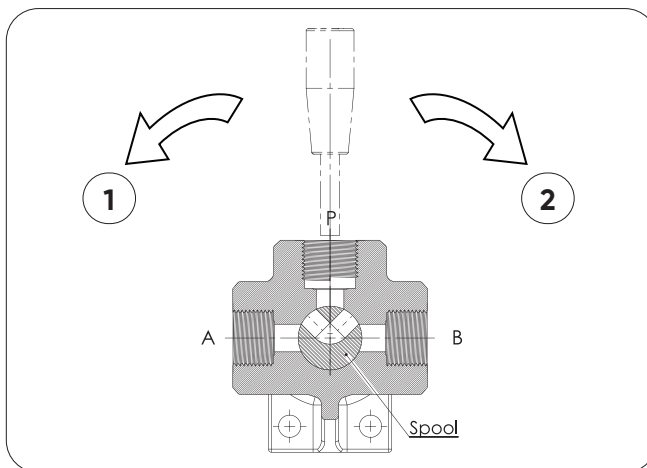
HYDRAULIC CIRCUIT

3-Way valve - (V Series)

Spool type A

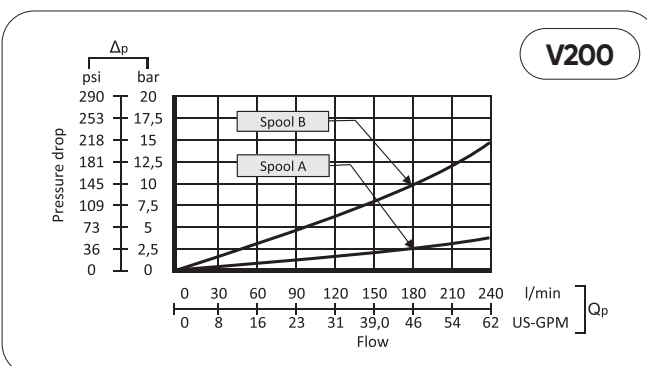
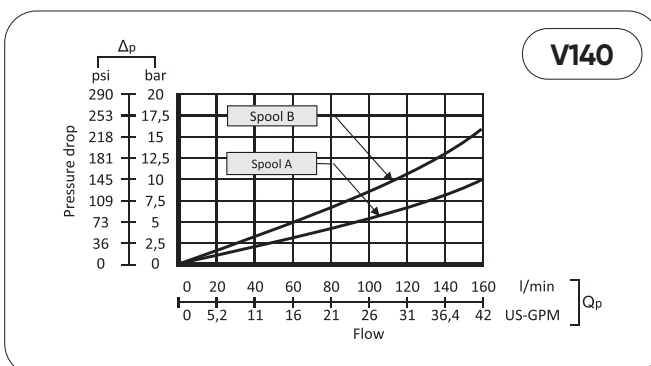
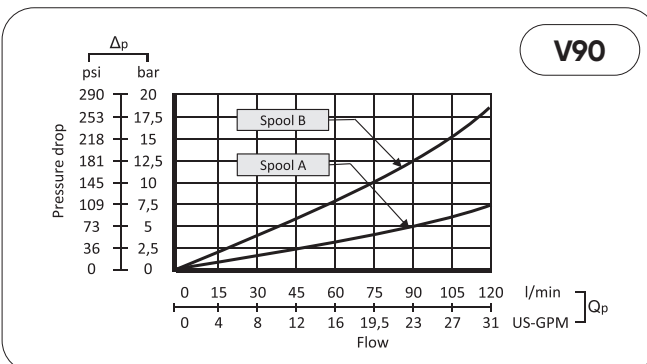
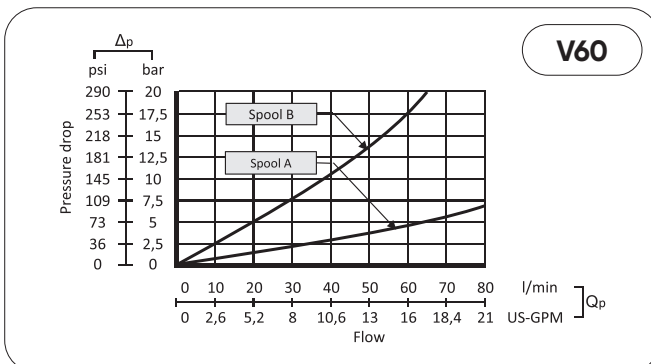


Spool type B



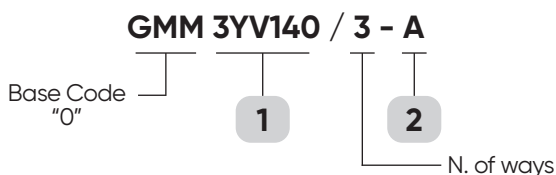
Performance Data And Curve

Pressure drop versus flow P → A (B): spool in position 1 (2)



ORDERING CODES

Order Example



1- Body

3YV 60	= 3/8" Output – 60 lt Body	(1BV60100)
3YV 90	= 1/2" Output – 90 lt Body	(1BV90100)
3YV 140	= 3/4" Output – 140 lt Body	(1BV140100)
3YV 200	= 1" Output – 200 lt Body	(1BV20 0100)

2- Spool

3YV60 -A	= Open Center	(2O60100)
3YV60 - B	= Closed Center	(2C60100)
3YV90 - A	= Open Center	(2O90100)
3YV90 - B	= Closed Center	(2C90100)
3YV140/3YV200 - A	= Open Center	(2O140100)
3YV140/3YV200 - B	= Closed Center	(2C140100)

3-4 O-ring

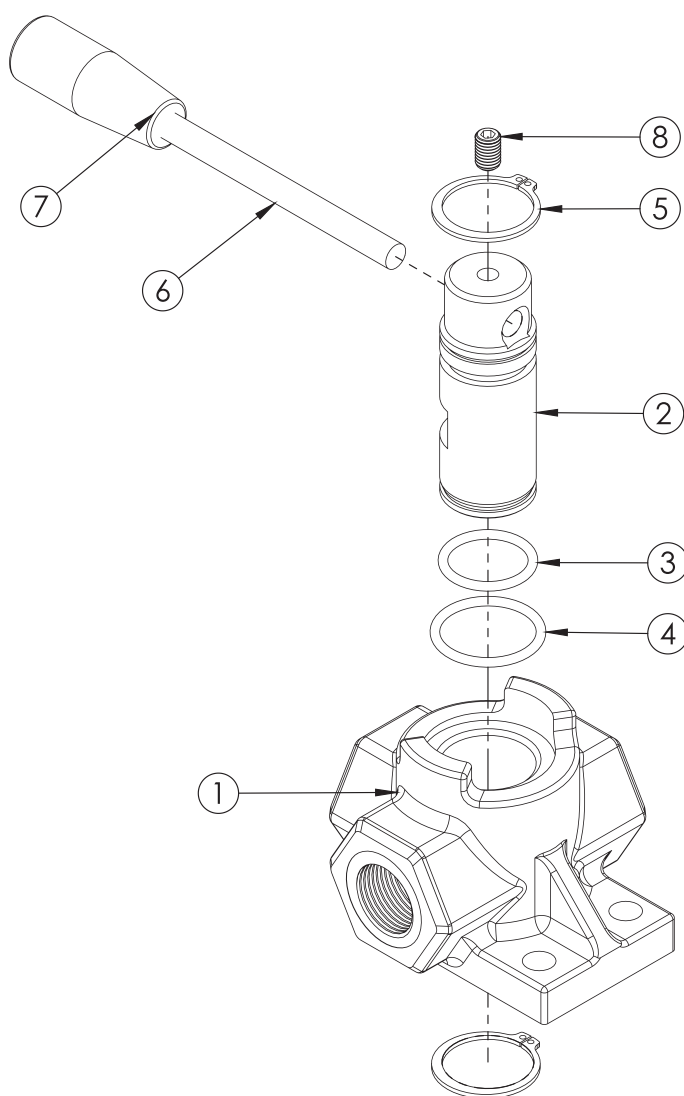
3YV60 Series 16x3 and 20x3 O-rings	(3SO60100)
3YV90 Series 19x3 and 24x3 O-rings	(3SO90100)
3YV140 Series 25x3 and 30x3 O-rings	(3SO14100)
3YV200 Series 25x3 and 30x3 O-rings	(3SO20100)

5- Circlip

3YV60 Series 20x1,2	(3SO80100)
3YV90 Series 24x1,2	(3TO80100)
3YV140 Series 30x1,5	(3TCO80100)
3YV200 Series 30x1,5	(3TCO80100)

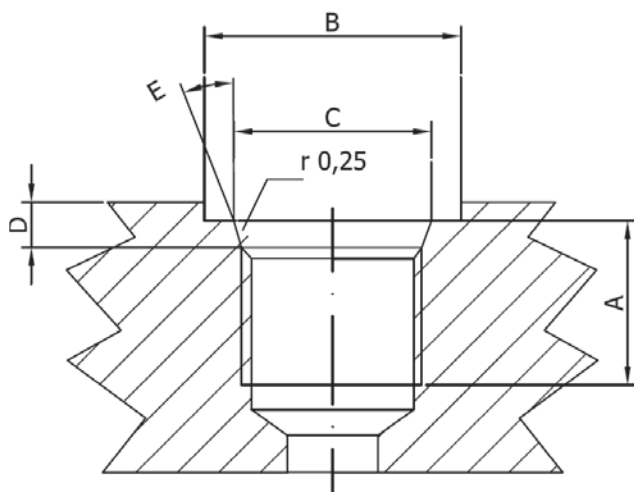
6-7- HandLevel

L	= Standard HandLever (L=120mmxM8) – (7L040100)
8-3YV60 Series = M6x10	(8SO60100)
3YV90, 3YV140, 3YV200 = M8x200	(8SO90100)

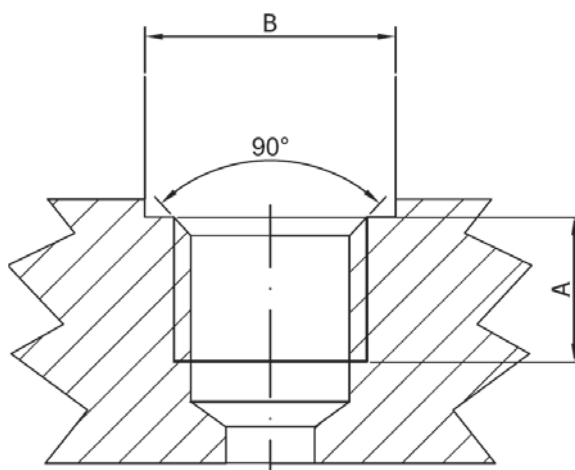


TECHNICAL DATA

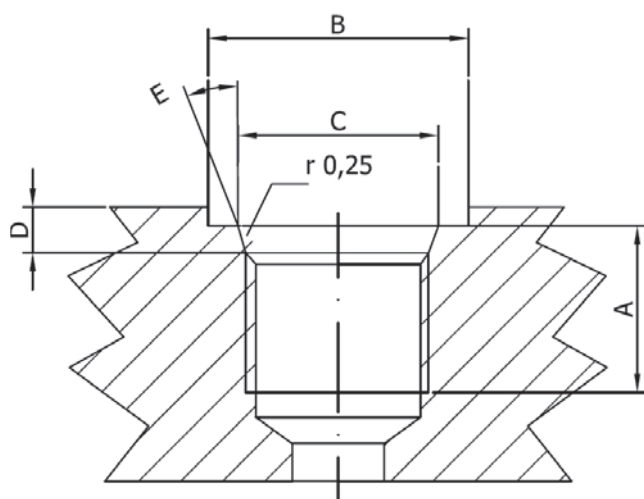
Ports Dimensional Data



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°	



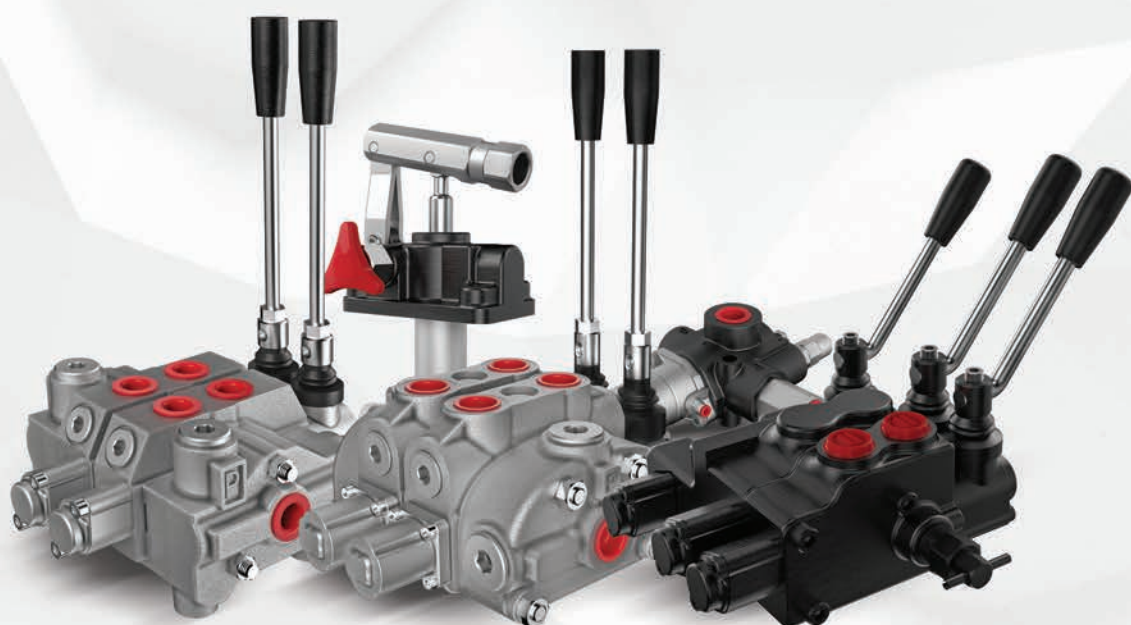
BSP (ISO 228)							
Dimensions		G 1/2"		G 3/4		G 1	
mm	in						
A		16	0,63	18	0,71	20	0,79
B		27	1,06	33	1,30	40	1,57



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



gemmaautomotive.com





medyapın



Buyuk Kayacık O.S.B. Mahallesi,
413 Nolu Sokak, No: 9 Selcuklu, Konya, Turkey



+90 332 236 01 80 (Pbx)



+90 332 236 01 83



info@**gemmaautomotive**.com