Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm^2/s - *46 cSt* viscosity at 40°C temperature.

Nominal flow rating		45 l/min	
Operating pressure (max.)	*parallel pr tandem circuit*	315 bar	*4600 psi*
	series circuit	250 bar	*3600 psi*
Max. back pressure	*on outlet port T*	25 bar	*360 psi*
Internal leakage A(B)→T	*Δp=100 bar - 1450psi with fluid and valve at 40°C*	3 cm^3/min	*0.18 in^3/min*
Hydraulic fluid		Mineral base oil	
Fluid temperature	*with NBR seals*	from -20° to 80°C	
	with FPM seals	from -20° to 100°C	
Viecosity	*operating range*	from 15 to 75 mm^2/s	*from 15 to 75 cSt*
	minimum	12 mm^2/s	*12 cSt*
	maximum	400 mm^2/s	*400 cSt*
Max. level of contamination		19/16 - ISO 4406	
Ambient temperature	*with mechanical, pneumatic and hydraulic devices*	from -40° to 60°C	
	with electric devices	from -20° to 60°C	

NOTE - *For different conditions please contact Sales Dept.*

Standard threads

REFERENCE STANDARDS

		BSP	UN-UNF	METRIC	NPTF
THREAD ACCORDING TO		ISO 228/1	ISO 263	ISO 262	ANSI B1.20.3
		BS 2779	ANSI B1.1 unified		
CAVITY ACCORDING TO	ISO	1179	11926	9974-1	
	SAE		J1926	J2244	J476a
	DIN	3852-2 shape X o Y		3852-1 shape X o Y	

PORTS THREAD

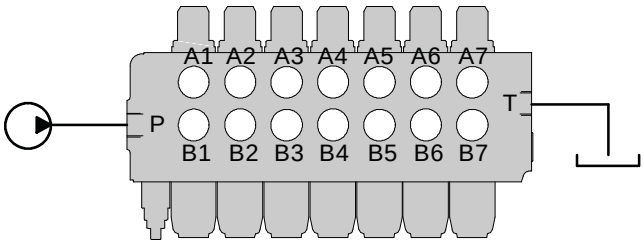
MAIN PORTS	BSP	UN-UNF	METRICA
IInlet P and carry-over C	G 3/8	3/4-16 (SAE 8)	M18x1,5
Ports A and B	G 3/8	9/16-18 (SAE 6)	M18x1,5
Outlet T	G 3/8 G 1/2 *	3/4-16 (SAE 8)	M18x1,5 M22x1,5 *
CONTROL PILOT PORTS			
Pneumatics	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27
Hydraulics	G 1/4	9/16-18 (SAE 6)	G 1/4

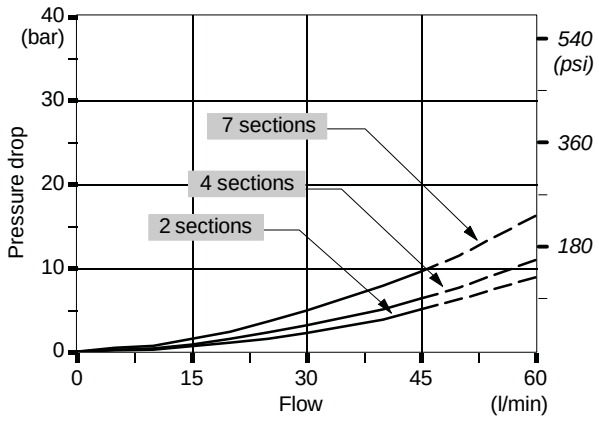
(*) - *Only for series circuit..*

Performance data (pressure drop vs. flow)

Open centre

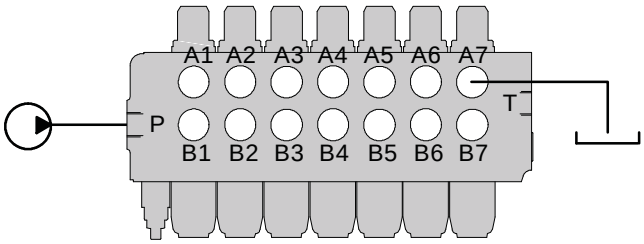
From side inlet to side outlet.

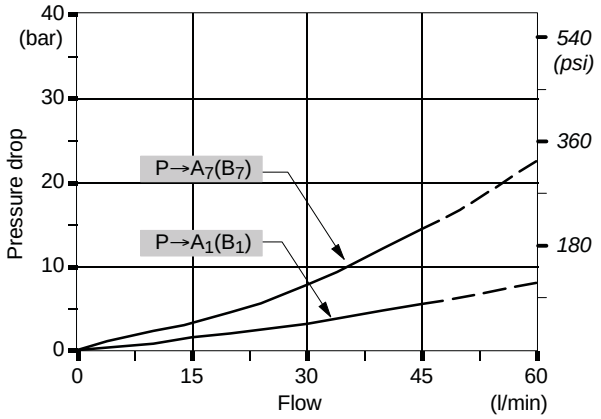




Inlet to work port

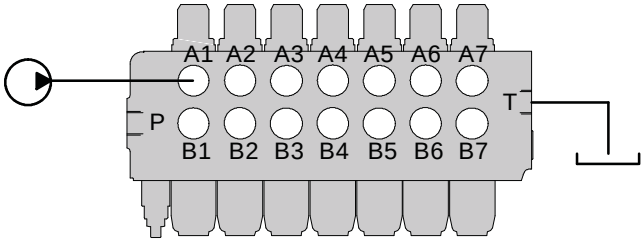
From side inlet to A port (spool in position 1) or B port (spool in position 2).

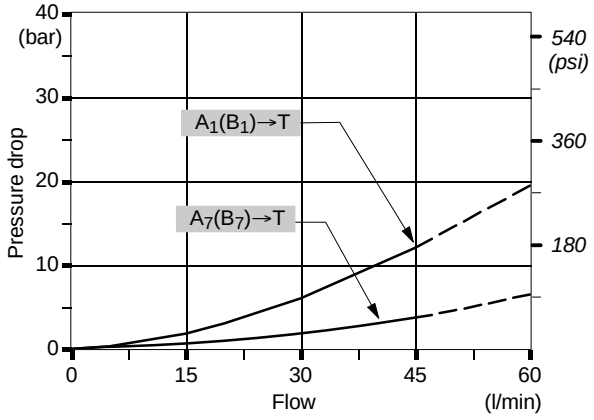




Work port to outlet

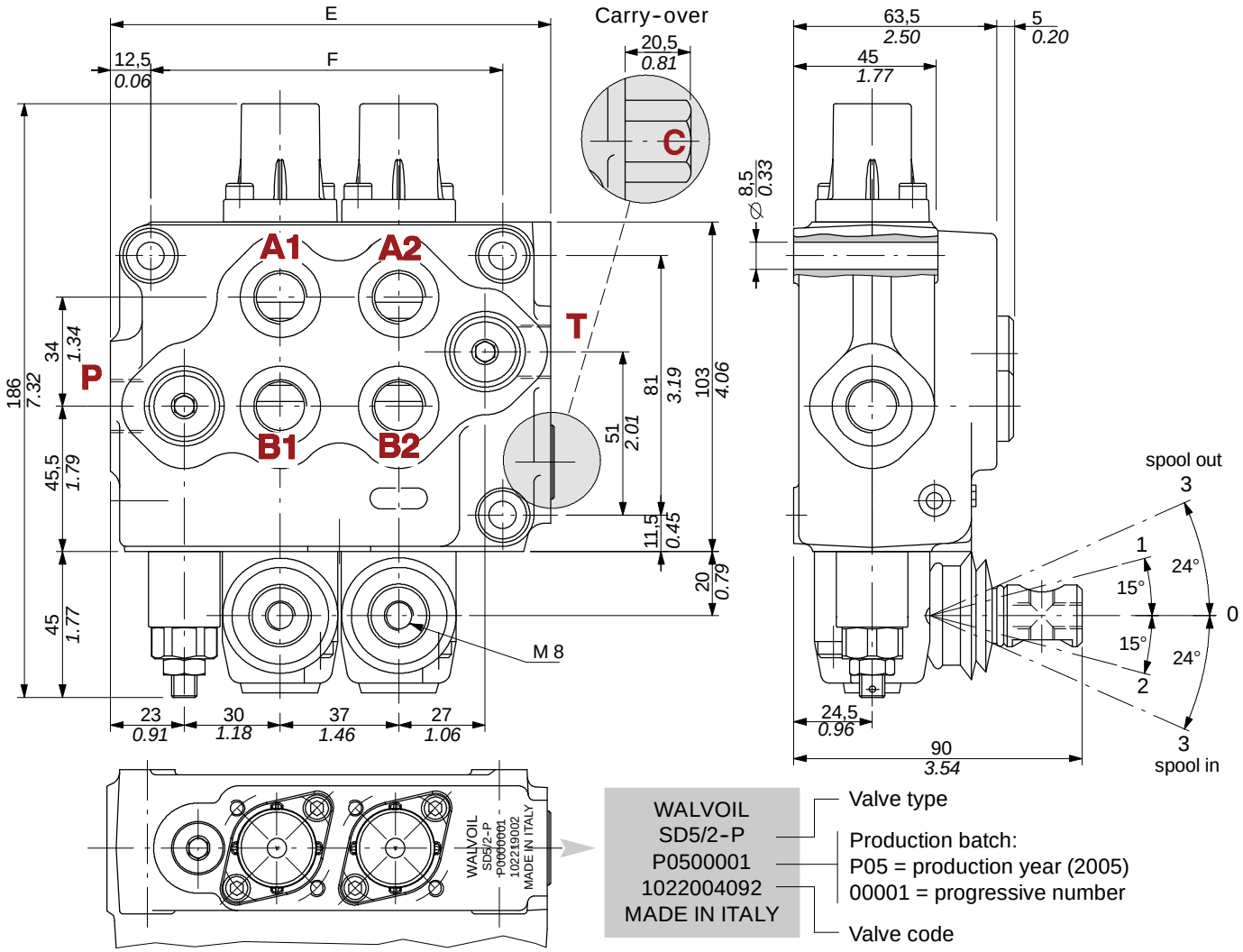
From A port (spool in position 2) or B port (spool in position 1) to side outlet.





NOTE – *Measured with spool type 1.*

Dimensional data (parallel circuit)

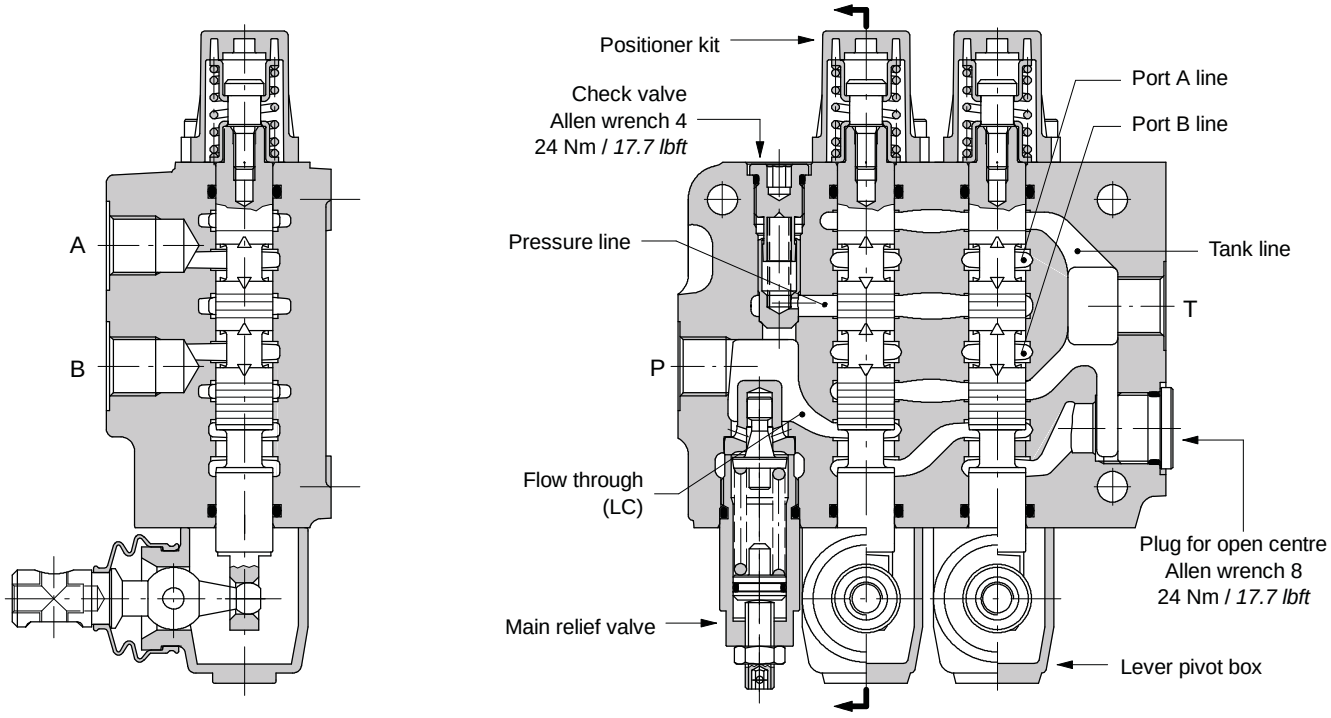


TYPE	E		F		Weight	
	mm	*in*	mm	*in*	kg	*lb*
SD5/1-P	100.5	*3.96*	73	*2.87*	3.5	*7.7*
SD5/2-P	137.5	*5.41*	110	*4.33*	5.2	*11.5*
SD5/3-P	174.5	*6.87*	147	*5.79*	6.9	*15.2*
SD5/4-P	211.5	*8.33*	184	*7.24*	8.1	*17.9*

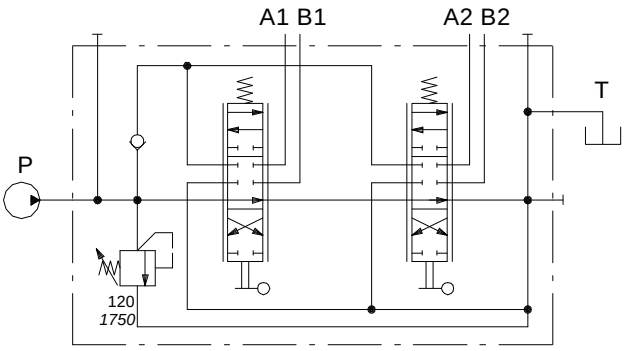
TYPE	E		F		Weight	
	mm	*in*	mm	*in*	kg	*lb*
SD5/5-P	248.5	*9.78*	221	*8.70*	10.1	*22.3*
SD5/6-P	285.5	*11.24*	258	*10.16*	11.7	*25.8*
SD5/7-P	322.5	*12.70*	295	*11.61*	13.2	*29.1*

Parallel

Standard configuration with side inlet and outlet and open centre (AET execution).

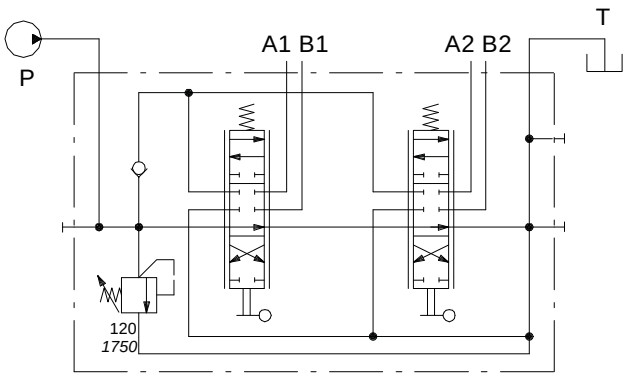


Standard configuration



Description example
SD5/2-P(JG3-120)/18L/18L/AET

Configuration with upper inlet and outlet



Description example:
SD5/2-P(JG3-120)/18L/18L/AET-PSA

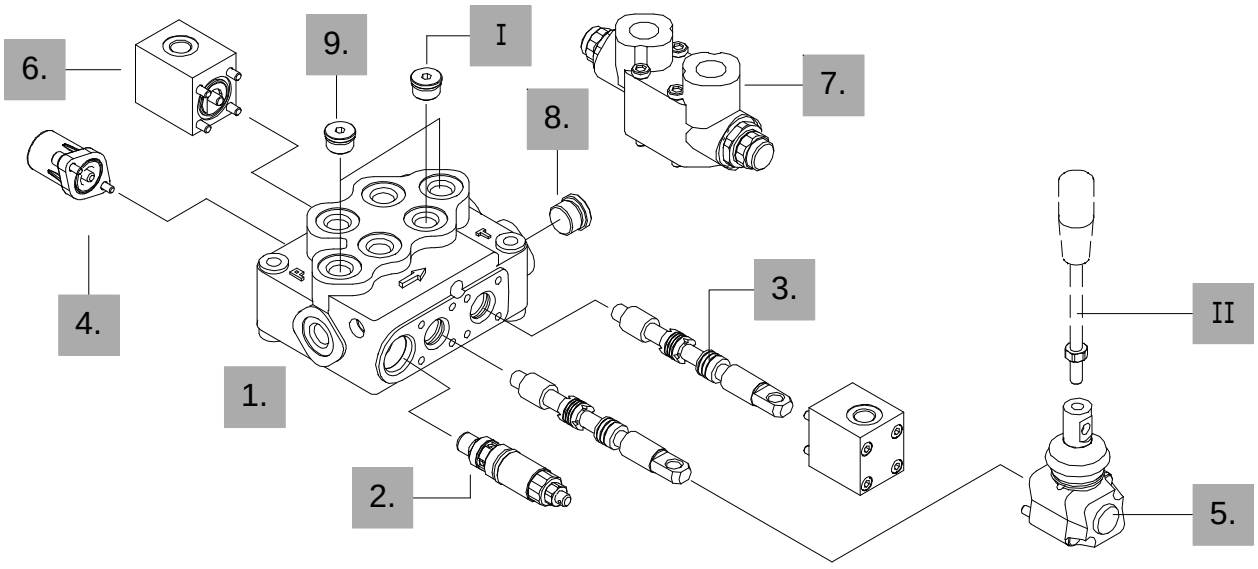
Ordering codes

Description example:

Valve setting (bar) — 1st section — following section — Valve setting (bar)

SD5 / 2 - P (JG3-120) / 1 8 L / 1 8IM . P3(G3-100) / AET *

1. 2. 3. 4. 5. 6. 7. 8.



1. Body kits *

TYPE	CODE	DESCRIPTION
1-P	5KC1193000	Parallel, 1 section
2-P	5KC1223000	Parallel, 2 sections
3-P	5KC1243000	Parallel, 3 sections
4-P	5KC1273000	Parallel, 4 sections
5-P	5KC1313000	Parallel, 5 sections
6-P	5KC1353000	Parallel, 6 sections
7-P	5KC13E3000	Parallel, 7 sections

Include boby, seals and load check valve.

2. Inlet relief options *page 12*

TYPE	CODE	DESCRIPTION
VMD5 direct pressure relief valve type J		
Standard setting is referred to 10 l/min flow.		
(JG2-63)	5KIT105412	Range 40 to 63 bar / *580 to 900 psi* standard setting 63 bar / *900 psi*
(JG3-120)	5KIT105413	Range 50 to 200 bar / *725 to 2900 psi* standard setting 120 bar / *1750 psi*
(JG4-220)	5KIT105414	Range 160 to 315 bar / *2300 to 4600 psi* standard setting 220 bar / *3200 psi*
SV	XTAP623282	Relief valve blanking plug

3. Spool options *page 13*

TYPE	CODE	DESCRIPTION
1	3CU1210130	Double acting, 3 positions, with A and B closed in neutral position
1A	3CU1221130	Double acting, 3 positions, with A open to tank in neutral position
1B	3CU1222130	Double acting, 3 positions, with B open to tank in neutral position
2	3CU1225130	Double acting, 3 positions, with A and B open to tank in neutral position
2H	3CU1225225	Double acting, 3 positions, with A e B partially open to tank in neutral position
3	3CU1231130	Single acting on A, 3 positions, B plugged requires G3/8 plug (see part I)
Special spools for particular positioner kits . . . . . *page 16*		
5DY	3CU1242220	Double acting, 4 positions, floating circuit in 4th position with spool in
5PY	3CU1245620	Double acting, 4 positions, floating circuit in 4th position with spool out, with check valve
8	3CU1262120	Double acting, 4 positions, regenerative circuit in 4th position with spool in
Special spools for standard positioner kits . . . . . *page 19*		
8F	3CU1261100	Double acting, 3 positions, regenerative circuit in 2nd position with spool out

NOTE (*) - *Codes are referred to BSP threads.*

Ordering codes

4. "A" side spool positioners *page 20*

TYPE	CODE	DESCRIPTION
8	5V08105000	With spring return in neutral position
8D	5V08105200	With spring return in neutral position and pin with M6 female thread for dual control
8D2	5V08105220	With spring return in neutral position and pin with M8 male thread for dual control
8F2	5V08105101	With spring return in neutral position and adjustable flow limiter
19	5V19105000	2 positions, with spring return in neutral position from position 1
20	5V19105000	2 positions, with spring return in neutral position from position 2
9	5V09105010	With detent in position 1 and spring return in neutral position
10	5V10105010	With detent in position 2 and spring return in neutral position
11	5V11105000	Detent in positions neutral, 1 and 2
12	5V12105000	Detent in positions 1 and 2
15	5V15105000	2 positions, detent in positions 1 and neutral
16	5V16105000	2 positions, detent in positions 2 and neutral
9BZ	5V09202010	With detent in position 1 and spring return in neutral position
10BZ	5V10202010	With detent in position 2 and spring return in neutral position
11BZ	5V11202010	Detent in positions 1 and 2 and spring return in neutral position
8K	5V08705112	With spring return in neutral position and 12 VDC spool solenoid lock device
	5V08705124	As previous, 24VDC
8RM2	5V08105590	With spring return in neutral position and 12VDC electromagnetic detent in pos. 2
	5V08105595	As previous, 24VDC
8MHE3(NC)	5V08106541	With spring return in neutral position and spool postioning ON/OFF electric signal circuit normally closed
8MHE3(NO)	5V08106540	As previous, with circuit normally open
8MS3	5V08105553	With spring return in neutral position, operation signalling in position 1 and 2, prearranged for centralized microswitch control: need KM connection kit
8MG3(NO)	5V08105660	With spring return in neutral position and microswitch in positions 1 and 2
8P	5V08105701	ON/OFF pneumatic kit
8EP3	5V08105735	ON/OFF 12 VDC electro-pneumatic kit
	5V08105740	ON/OFF 24 VDC electro-pneumatic kit
8ED3	5V08105350	ON/OFF 12 VDC electro-hydraulic kit
	5V08105351	ON/OFF 24 VDC electro-hydraulic kit

II Optional handlevers

TYPE	CODE	DESCRIPTION
AL01/M8x120	170011012	For lever L: height 120 mm / *4.72 in*
AL01/M10x150	170012015	For lever LM10: height 150 mm / *5.91 in*
AL08/M12x150	170013115	For joystick LCB: height 150 mm / *5.91 in*

4. "A" side spool positioners

Particular positioner kits for special spools . . . . . *page 36*

13NZ	5V13305010	4 pos. with spring return in neutral pos. and detent in 4th pos.: for spool 5DY
13QN	5V13405020	4 pos. with spring return in neutral pos. and detent in 4th pos.: for spool 5PY
13FZ	5V13505400	4 positions with spring return in neutral position: for spool 8
13QNMG3(NO)	5V13405660	As type 13QN with microswitch in positions 1 and 2: for spool 5PY

5. "B" side options *page 39*

TYPE	CODE	DESCRIPTION
L	5LEV105000	Standard lever box
LM10	5LEV205000	Lever box for M10 handlever
LF1	5LEV105102	Lever box with adjustable flow limiter
LEB	5LEV605000	Safety lever box, vertical configuration
LUP	5LEV805005	Safety lever box, horizontal configuration
SLP	5COP105000	Without lever box, with dust-proof plate
SLC	5COP205000	Without lever box, with endcap
TQ	5TEL105110	Flexible cable connection
LCB	5CLO205100	Joystick lever for 2 sections operation

6. Complete controls *page 44*

Proportional hydraulic control type 8IM and ON/OFF solenoid controls type 8ES and 8ESN.

7. Service valves *page 52*

Port relief, anti-shock, pilot operated check and flow regulation valves.

8. Outlet port options *page 49*

TYPE	CODE	DESCRIPTION
AET	XTAP623170	Open centre plug
AEK	3XTAP522282	Closed centre plug
AE	3XGIU522460*	G3/8 carry-over sleeve
AET-L	XCAR405300	With hydraulic pilot unloader valve
AET-EL	YCAR405305	With 12VDC electric control unloader valve; normally open circuit
	YCAR405310	As previous 24VDC
AET-ELC	5CAR405330	With 12VDC electric control unloader valve; normally closed circuit
	5CAR405331	As previous 24VDC
AET-LT	XTAP523370	Prearranged for unloader valve, with blanking plug

9. Inlet and outlet selection * *page 9*

TYPE	CODE	DESCRIPTION
PSL	3XTAP722160	Side ports; need n.2 G 3/8 plugs, standard configuration (omit in valve description)
PSA	3XTAP722160	Upper ports; need n.2 G 3/8 plugs

I "A" and "B" ports plugs *

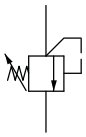
TYPE	CODE	DESCRIPTION
G3/8	3XTAP722160	for single acting spool type 3

Inlet relief options

Direct pressure relief vave

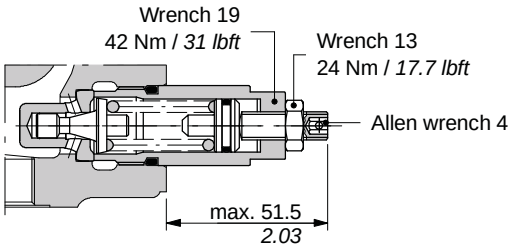
VMD5 (J G 3 - 120)

- 120 — Standard setting in bar (for value see page 8)
- 3 — Adjustable spring type (2, 3, 4).
- G — Adjustment type (G, H)

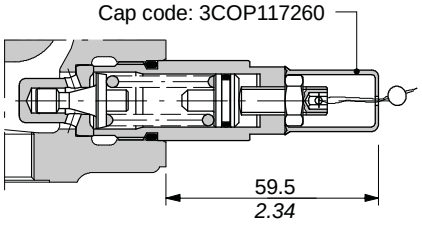


Adjustment type

G: *with screw*

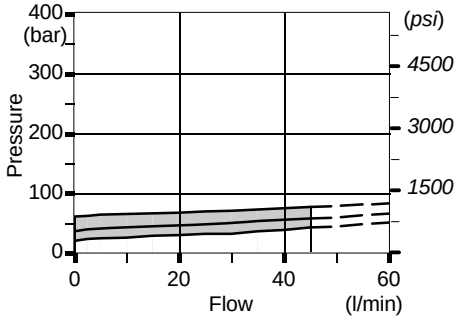


H: *valve set and locked*

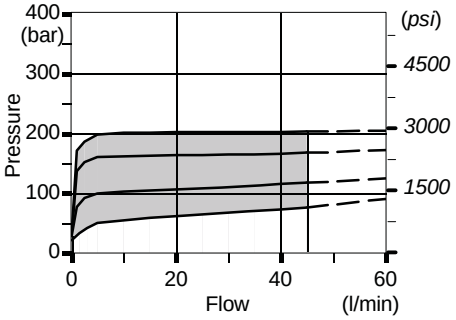


Performance data

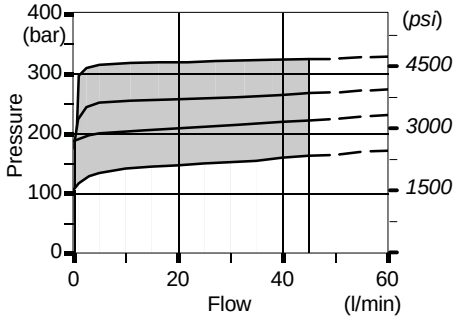
Spring nr. 2 (green band)



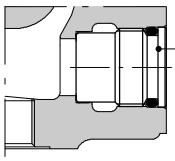
Spring nr. 3 (blue band)

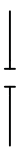


Spring nr. 4 (red band)

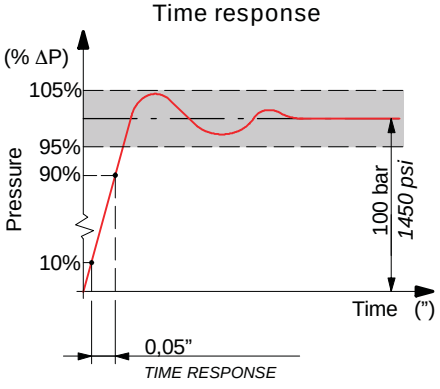


SV: relief valve blanking plug





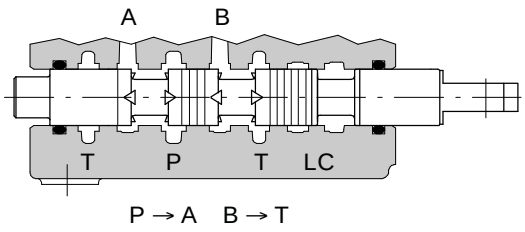
Time response



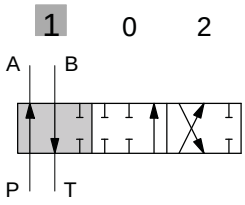
Spool options

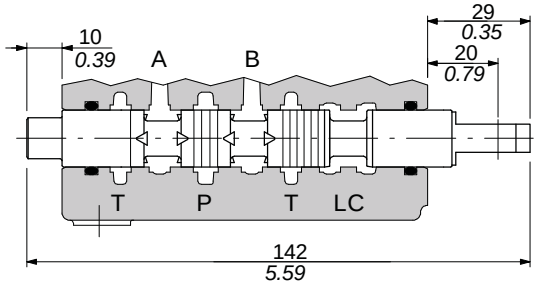
Type 1

For special requirement, spool 1CS code 3CU1210200 suggested for flow from 15 to 30 l/min and spool 1CEX code 3CU1210230 suggested for flow up to 15 l/min, are available.



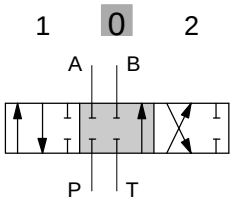
▶
stroke:
+ 5.5 mm / *0.22 in*

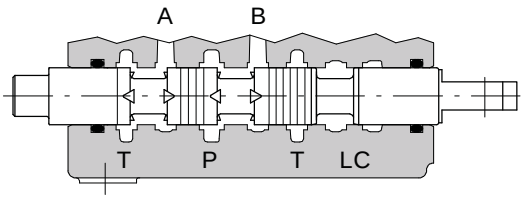




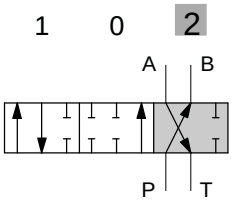
P-A-B-T closed, with flow through line (LC) open

◀ ▶



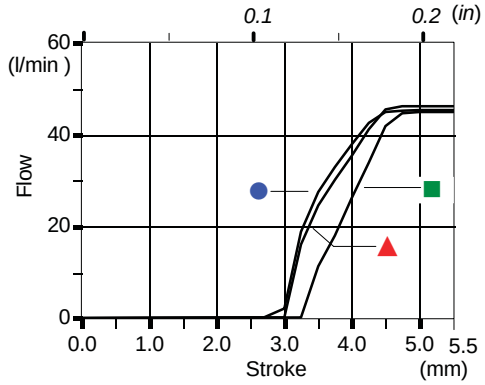


◀
stroke:
+ 5.5 mm / *0.22 in*



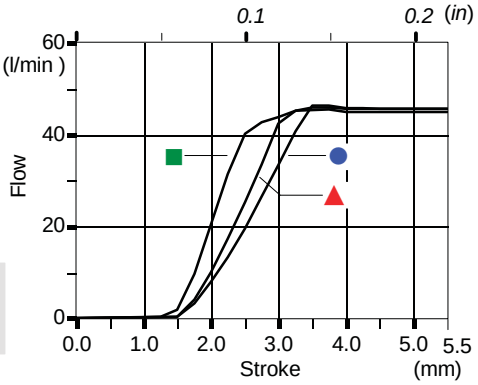
Performance data

Spool metering P→A(B)



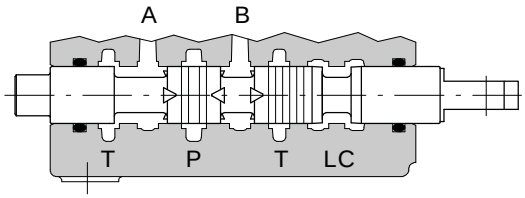
Qin = 45 l/min
- $P_{(on\ ports)}$ = 63bar / *900 psi*
- $P_{(on\ ports)}$ = 100bar / *1450 psi*
- $P_{(on\ ports)}$ = 250bar / *3600 psi*

Spool metering A(B)→T



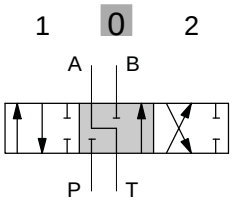
Spool options

Type 1A

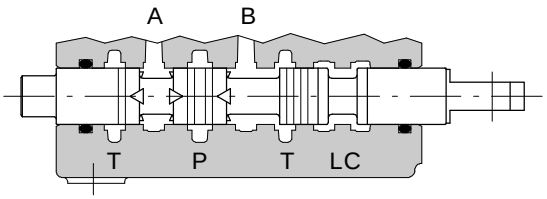


P–B closed, A→T, flow through line (LC) open

+ 5,5 mm / *0.22 in*
(1) ▶
◁ ▷ (0)
◀ (2)
– 5,5 mm / *0.22 in*

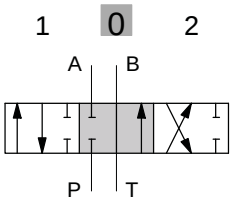


Type 1B

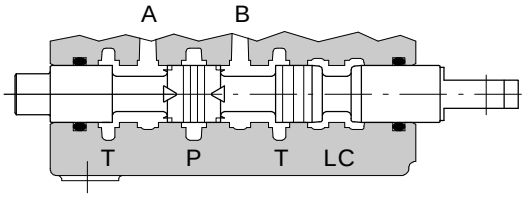


P–A closed, B→T, flow through line (LC) open

+ 5,5 mm / *0.22 in*
(1) ▶
◁ ▷ (0)
◀ (2)
– 5,5 mm / *0.22 in*

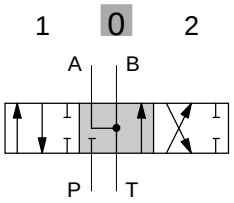


Type 2

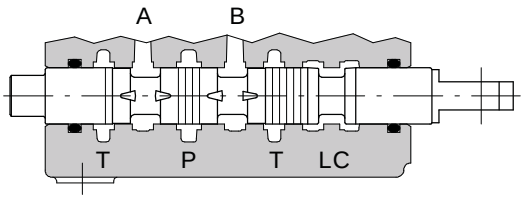


P closed, A–B→T, flow through line (LC) open

+ 5,5 mm / *0.22 in*
(1) ▶
◁ ▷ (0)
◀ (2)
– 5,5 mm / *0.22 in*

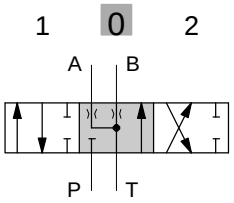


Type 2H



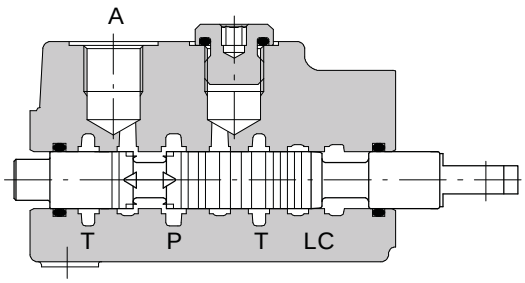
P closed, A–B partially open to tank,
flow through line (LC) open

+ 5,5 mm / *0.22 in*
(1) ▶
◁ ▷ (0)
◀ (2)
– 5,5 mm / *0.22 in*



Spool options

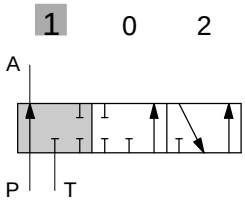
Type 3



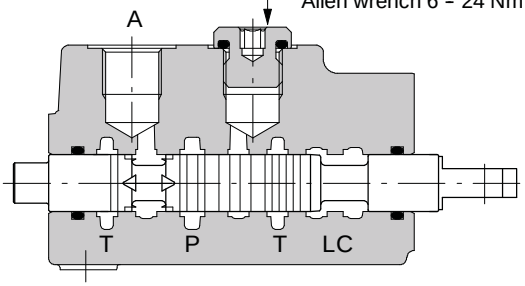
P → A

▶

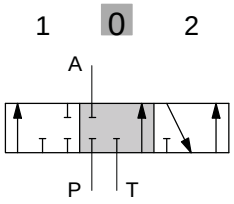
stroke:
+ 5.5 mm / *0.22 in*



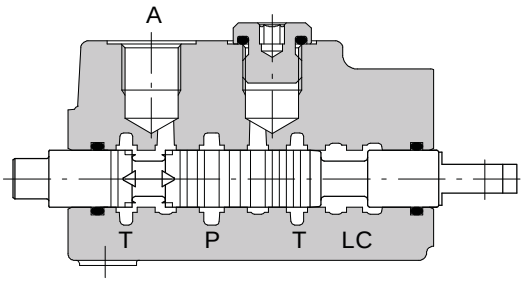
Port B plugged
Allen wrench 6 – 24 Nm / *17.7 lbft*



◀ ▶



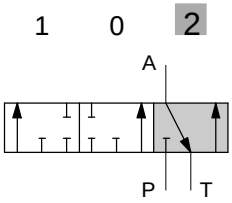
P–B–T closed, flow through line (LC) open



A → T

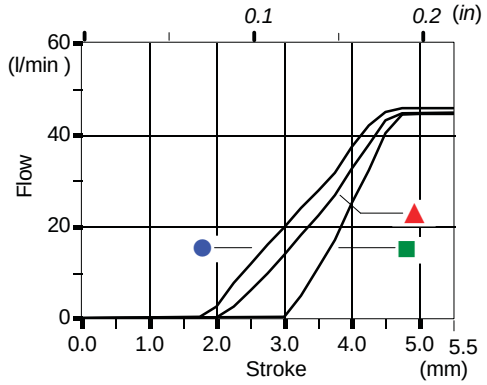
◀

stroke:
– 5.5 mm / *0.22 in*



Performance data

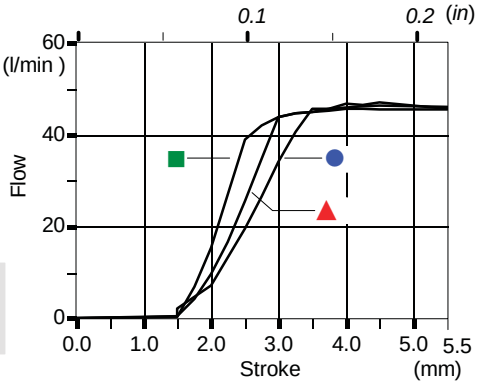
Spool metering P→A



Qin = 45 l/min

- $P_{(on\ ports)}$ = 63bar / *900 psi*
- $P_{(on\ ports)}$ = 100bar / *1450 psi*
- $P_{(on\ ports)}$ = 250bar / *3600 psi*

Spool metering A→T

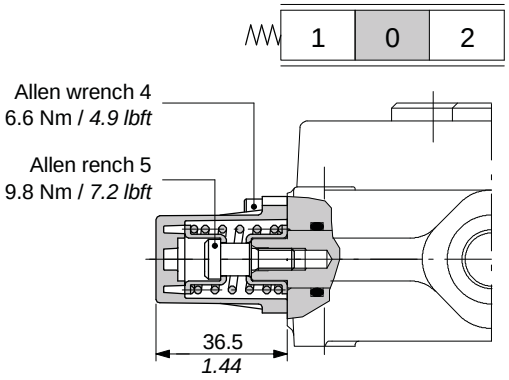


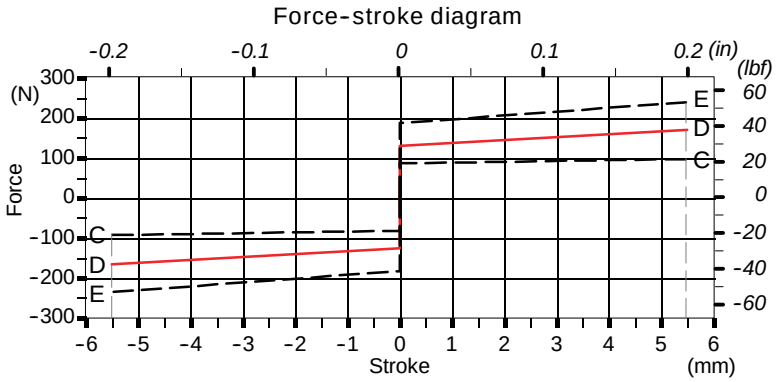
"A" side spool positioners

With spring return in neutral position

8 kit

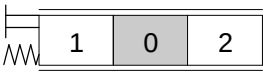
It's supplied with standard spring type D (see force-stroke diagram) and available with lighter spring type C (8MC code: 5V08205000) or heavier type E (8ME code: 5V08405000).

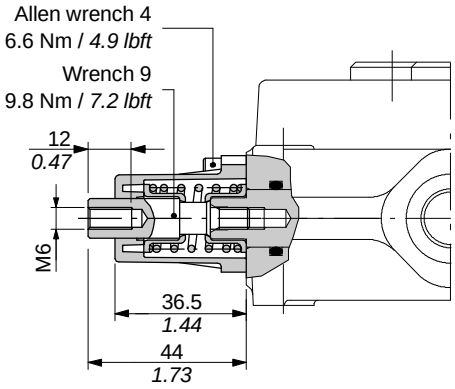




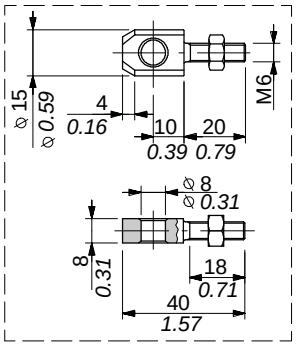
8D kit

Spool end joint code XPER315400, is available on request in order to screw onto pin.

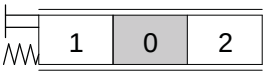


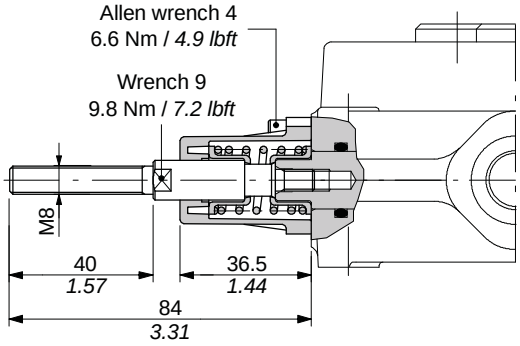


Spool end joint dimensions



8D2 kit

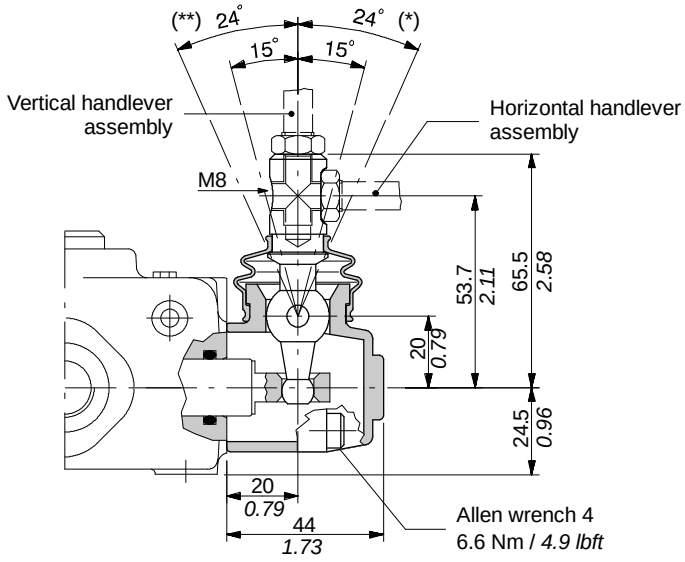




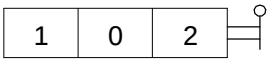
Lever control

Type L

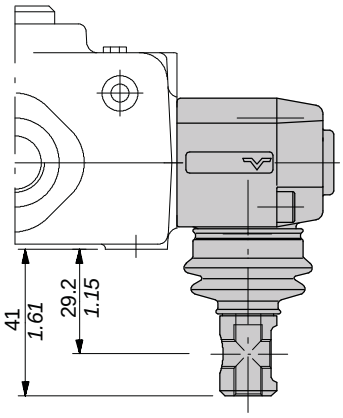
Alluminium with protection boot lever pivot box; it can be rotated 180° (execution L180).



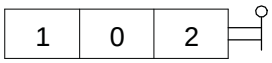
NOTE (*) - *With spool type 5DY (see page 16)*
(**) - *With spool type* 5PY (see page 17)

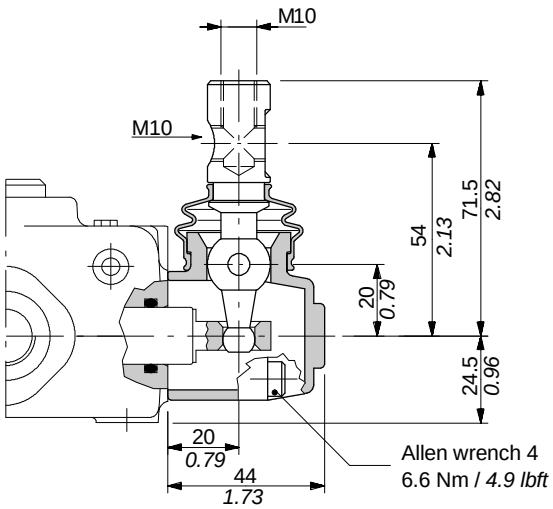


Execution L180

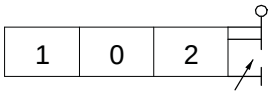


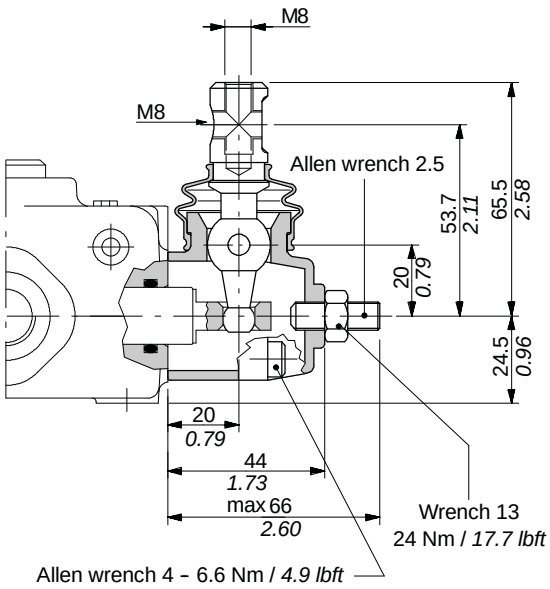
Type LM10





Type LF1





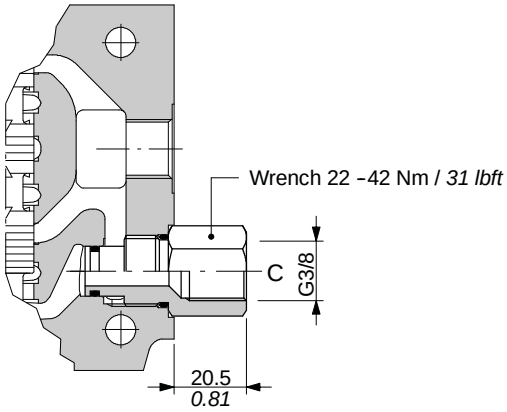
Outlet port options

It's possible to have open centre, closed centre and carry-over.
Unloader valves are available: these valves need special bodies with appropriate cavity on lateral outlet port, the tank connection T must be on top.

AET: open centre (standard)

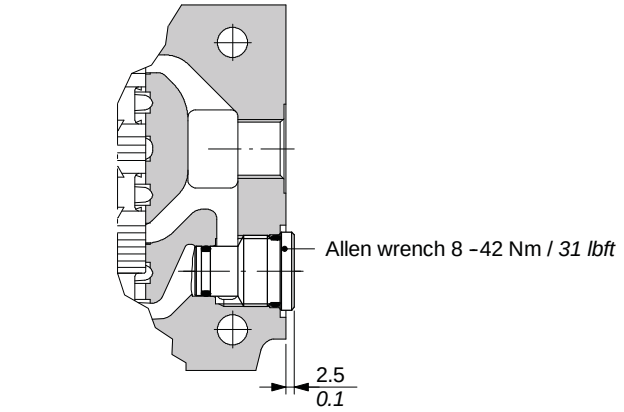
See page 9.

AE: with carry-over



Description example: SD5/2-P(KG3-120)/18L/18L/AE

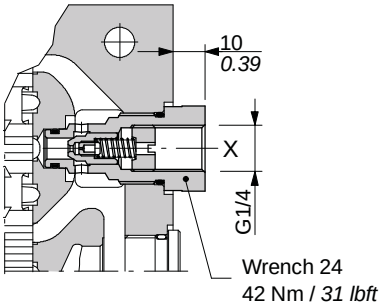
AEK: closed centre

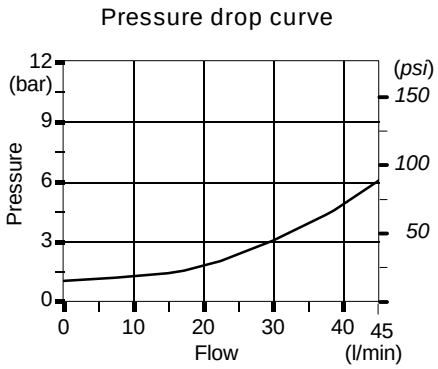


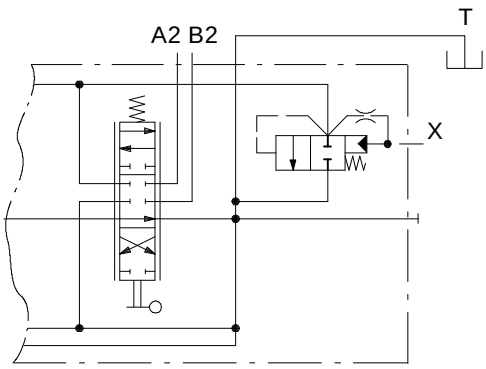
Description example: SD5/2-P(KG3-120)/18L/18L/AEK

With hydraulic pilot unloader valve type L

For safety reasons it's provided with pilot port plugged.



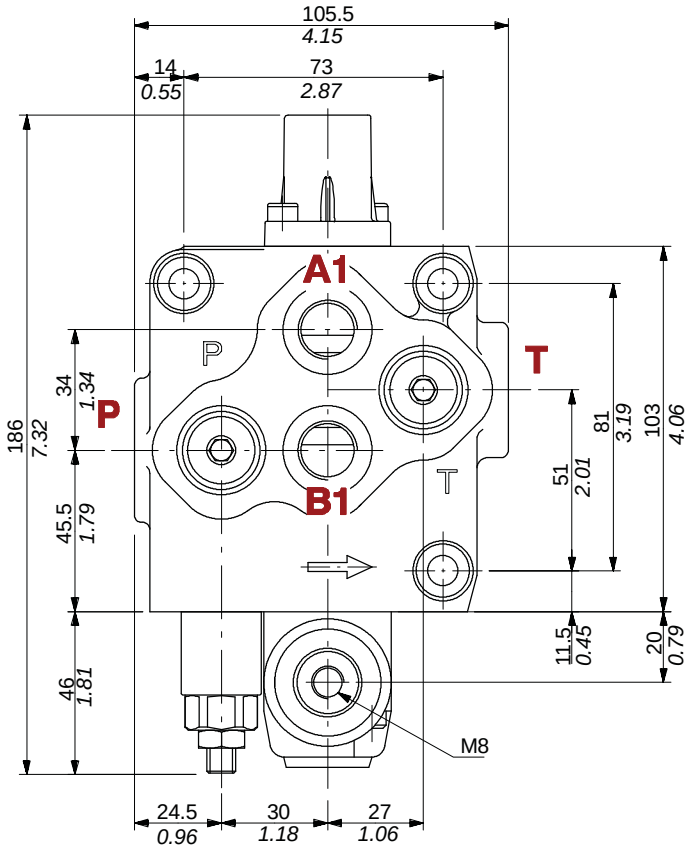


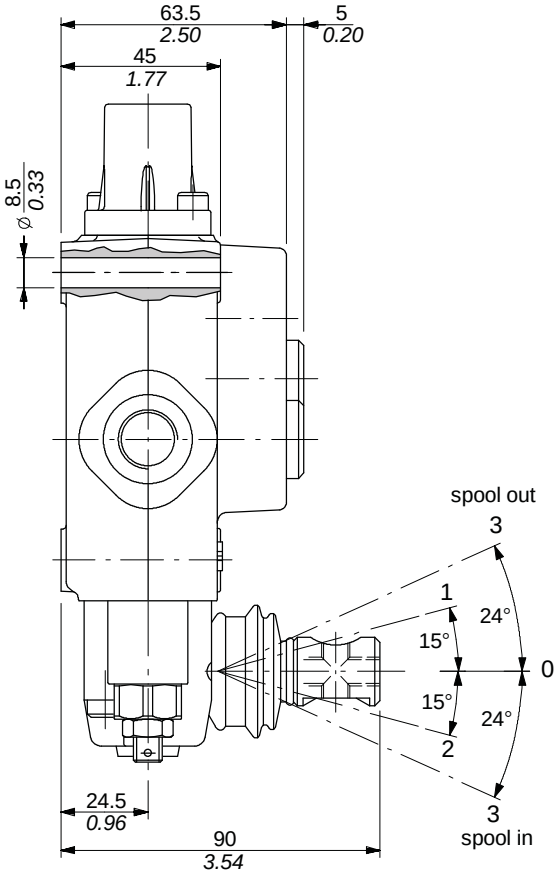


Description example:
SD5/2-P(JG3-120)/18L/18L/AET-L

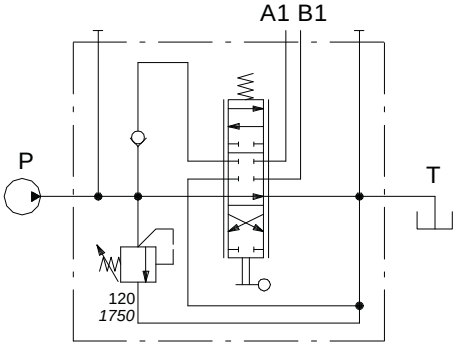
Operating features
Internal leakage . . . . . : 10 cm^3/min a 100 bar
: *0.61 in^3/min at 1450 psi*

Dimensional data





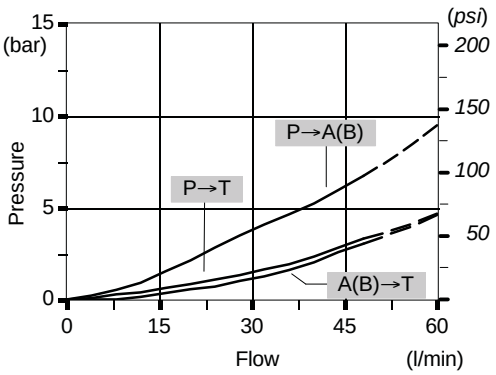
Hydraulic circuit



Description example:
SD5/1-N(JG3-120)/18L
Code: 102110033

Performance data

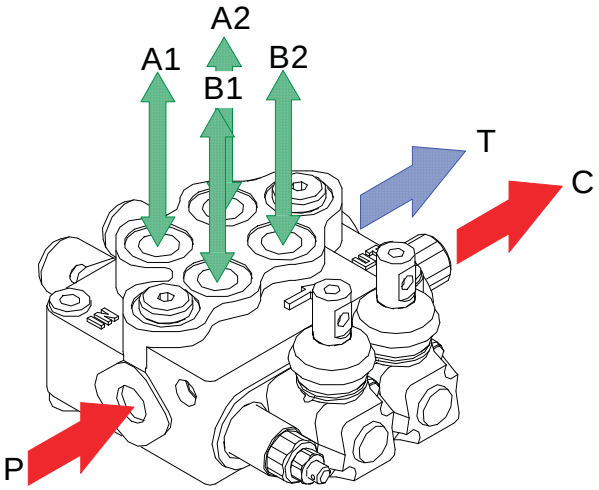
Pressure drop curve



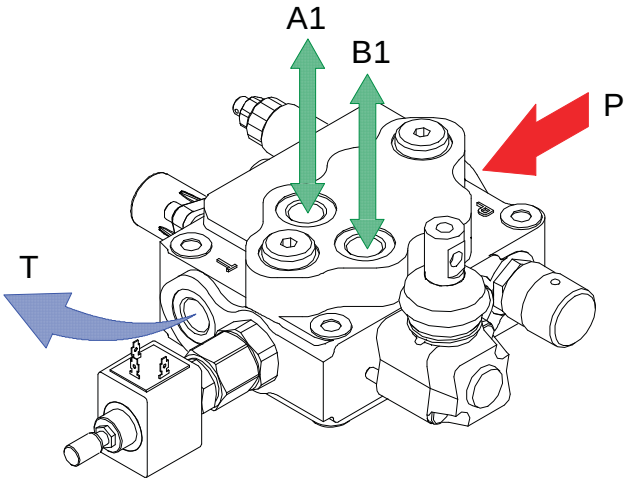
Installation and maintenance

The SD5 valve is assembled and tested as per the technical specification of this catalogue.
Before the final installation on your equipment, follow the below recommendations:

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



SD5 directional valve
with carry-over configuration



SDM105 directional valve

Fittings tightening torque - Nm / *lbft*

THREADS TYPE	P and C ports	A and B ports	T port
BSP (ISO 228/1)	G 3/8	G 3/8	G 3/8 (G 1/2*)
With O-Ring seal	35 / *25.8*	35 / *25.8*	35 / *25.8*(50 / *36.9**)
With copper washer	40 / *29.5*	40 / *29.5*	40 / *29.5* (50 / *36.9**)
With steel and rubber washer	30 / *22.1*	30 / *22.1*	30 / *22.1* (50 / *36.9**)
UN-UNF (ISO 11926-1)	3/4-16 UNF-2B (SAE 8)	9/16-18 UNF-2B (SAE 6)	3/4-16 UNF-2B (SAE 8)
With O-Ring seal	40 / *29.5*	30 / *22.1*	30 / *22.1*
METRIC (ISO 262)	M18 x 1.5	M18 x 1.5	M18 x 1.5 (M22x1.5*)
With O-Ring seal	35 / *25.8*	35 / *25.8*	35 / *25.8* (50*)
With copper washer	40 / *29.5*	40 / *29.5*	40 / *29.5* (50*)
With steel and rubber washer	40 / *29.5*	40 / *29.5*	40 / *29.5* (50*)

(*) - *Only for series circuit.*

NOTE - *These torque are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish. The manufacturer shall be consulted.*