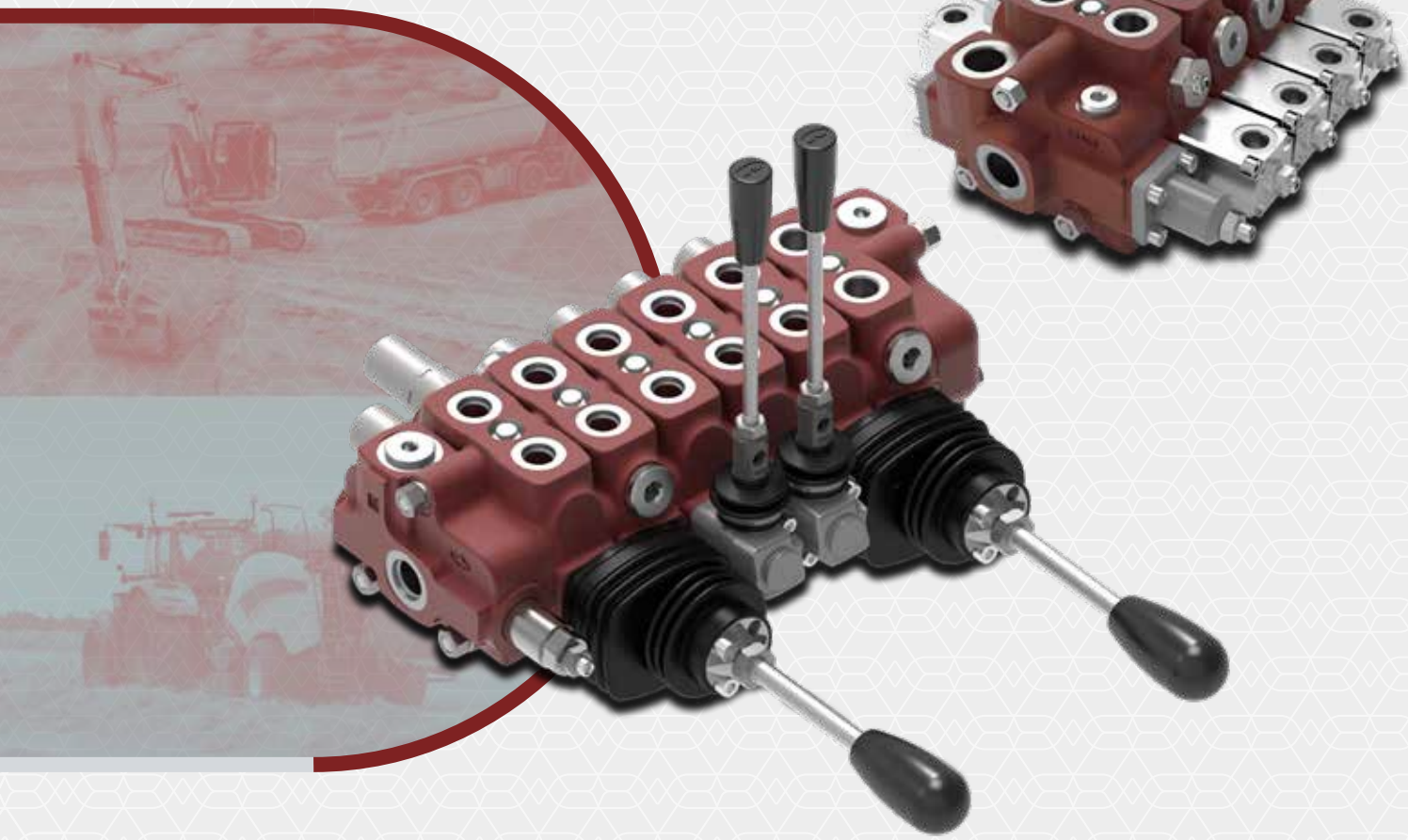
walvoil

MOTION BY PEOPLE

SD6-DLS7

Sectional Directional Control Valves





DIRECTIONAL VALVES

General informations

SD6 Valve

Simple, compact and heavy duty designed sectional valve from 1 to 12 sections for open and closed centre hydraulic systems.

- Fitted with a main pressure relief valve and a load check valve on every working section.
- Available with parallel, tandem or series circuit.
- Optional carry-over port.
- A wide variety of port and circuit valves.
- Available manual, pneumatic, hydraulic, electrohydraulic, and remote with flexible cables spool control kits.
- Diameter 16 mm *(0.63 in)* interchangeable spools.

DLS7 Valve

They are for systems with fixed displacementpumps (open centre version), or variable displacement pumps (closed centre version), with Load Sensing signal on each working section to pump flow control valve control.

- Load indipendent flow control.
- Ports valves and "A" side control kits are the same of SD6 directional valve.
- L.S. signal connections on every working section.

Additional information

This catalogue shows the product in the most standard configurations.
Please contact Sales Dpt. for more detailed information or special request.

WARNING!

All specifications of this catalogue refer to the standard product at this date.
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

1st edition June 2026

SD 6

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DLS 7

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Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46mm²/s - *46 cSt* viscosity at 40°C - *104°F* temperature.

Number sections		From 1 to 10	
Nominal flow rating		45 l/min	*11.8 US gpm*
Max pressure	parallel or tandem circuit	315 bar	*4600 psi*
	series circuit	210 bar	*3045 psi*
Back pressure (max.) on outlet **T** port		25 bar	*3625 psi*
Internal leakage A(B)->T (standard)	Δp = 100 bar - *1450 psi*	3 cm³/min	*0.18 in³/min*
Fluid		Mineral based oil	
Fluid temperature	With NBR (BUNA-N) seals	from -20°C to 80°C	*from -4° to 176°F*
	With FPM (VITON) seals	from -20°C to 100°C	*from -4° to 212°F*
Viscosity	Operating range	from 15 to 75 mm²/s	*from 15 to 75 cSt*
	Min.	12 mm²/s	*12 cSt*
	Max.	400 mm²/s	*400 cSt*
Max level of contamination		-/19/16 - ISO 4406	*NAS 1638 - class 10*
Environmental temperature for working conditions	With mechanical devices	from -40°C to 60°C	*from -40°F to 140°F*
	With hydraulic and pneumatic devices	from -30°C to 60°C	*from -22°F to 140°F*
	With electric devices	from -20°C to 50°C	*from -4°F to 122°F*
Tie rods tightening torque (wrench 13)		30 Nm	*22 lbft*

Note - For different conditions please contact Walvoil Sales Dept.

Standard thread

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	1179-1	11926-1	9974-1	
	SAE		J1926-1	J2244	J476a
	DIN	3852-2 shape X or Y		3852-1 shape X or Y	

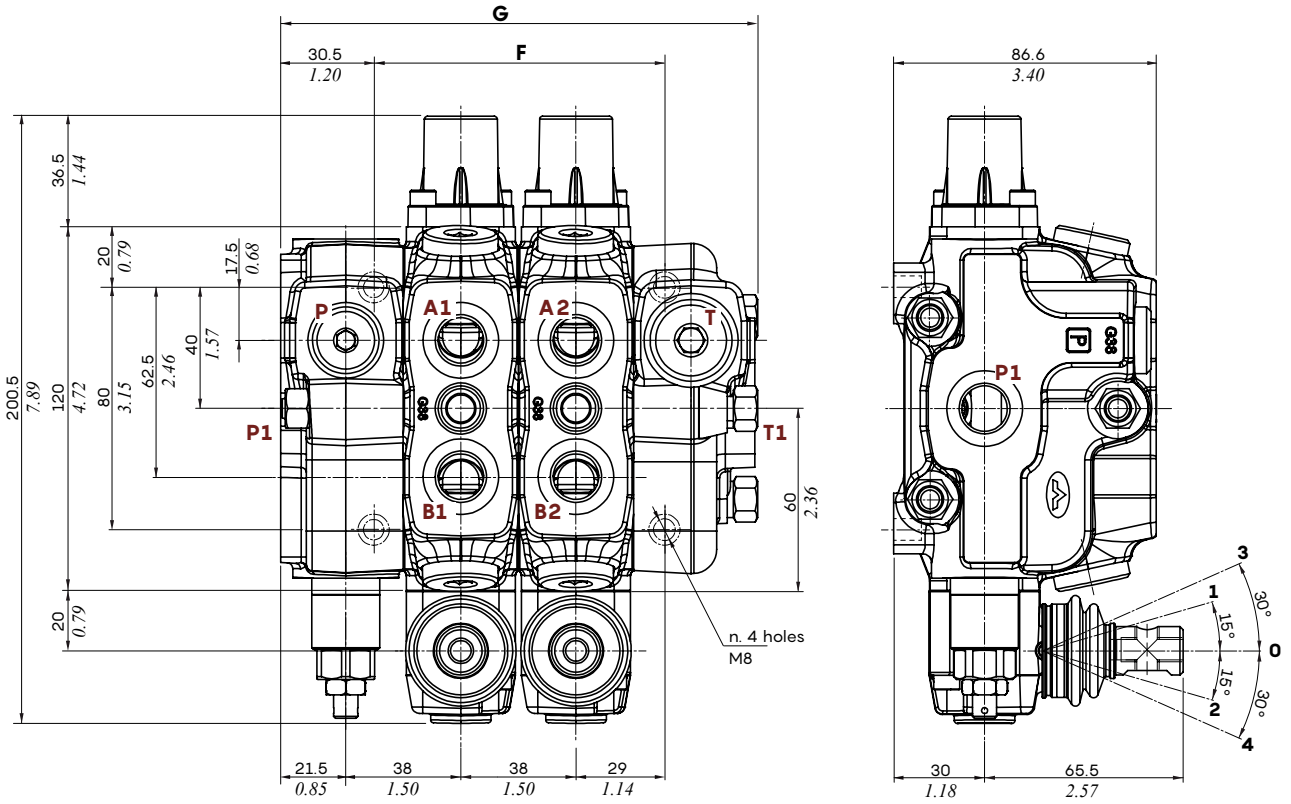
PORTS THREAD			
MAIN PORTS	**BSP**	**UN-UNF**	**METRIC**
Inlet **P** and **P1**	G 3/8 - G 1/2	3/4"-16 (SAE 8) - 7/8-14 (SAE 10)*	M18x1.5
Ports **A** and **B**	G 3/8 - G 1/2	9/16-18 (SAE 6) - 3/4"-16 (SAE8)	M18x1.5
Outlet **T** and **T1**/carry-over **C**	G 1/2	3/4"-16 (SAE 8) - 7/8-14 (SAE 10)*	M22x1.5
CONTROLS PILOT PORTS			
Hydraulic pilots	G 1/4	9/16-18 (SAE 6)	G 1/4
Pneumatic pilots	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27

Note (*) - CAUTION: Do not use in applications with a maximum working pressure exceeding 180 bar.

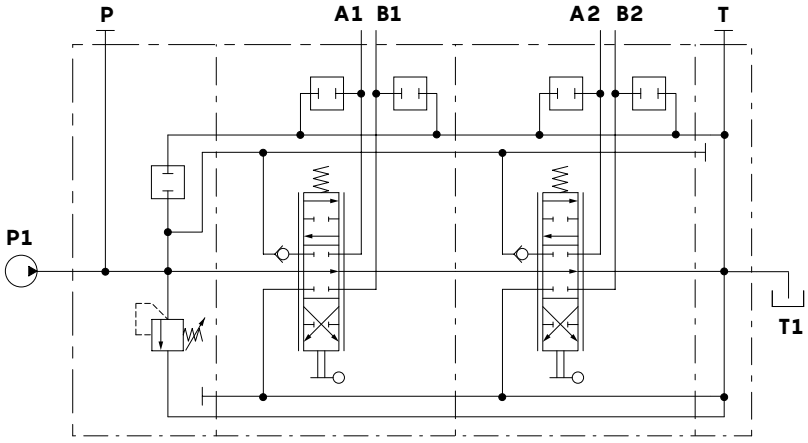
Dimensional data and hydraulic circuit

Configuration example with std. left inlet

Standard configurations are also available with right inlet.



Type	G		F	
	mm	*in*	mm	*in*
SD6/1	118.5	*4.66*	58	*2.28*
SD6/2	156.5	*6.16*	96	*3.78*
SD6/3	194.5	*7.66*	134	*5.28*
SD6/4	232.5	*9.15*	172	*6.77*
SD6/5	270.5	*10.65*	210	*8.27*
SD6/6	308.5	*12.15*	248	*9.76*
SD6/7	346.5	*13.65*	286	*11.26*
SD6/8	384.5	*15.15*	324	*12.76*
SD6/9	422.5	*16.65*	362	*14.26*
SD6/10	460.5	*18.15*	400	*15.76*
SD6/11	498.5	*19.65*	438	*17.26*
SD6/12	536.5	*21.15*	476	*18.76*



Parallel circuit

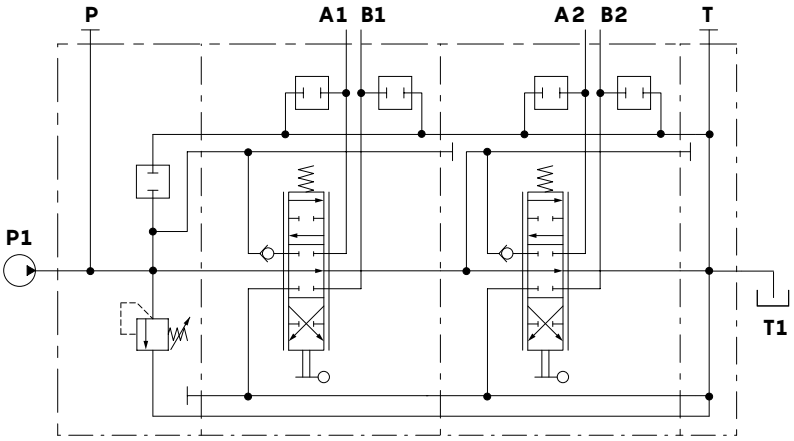
Mechanical control, port valve arrangement on the sections (plugged):
SD6/2/AC(JNG3-120)/18L/18L/RC

Note - Drawings and dimensions are referred to **BSP** thread

Dimensional data and hydraulic circuit

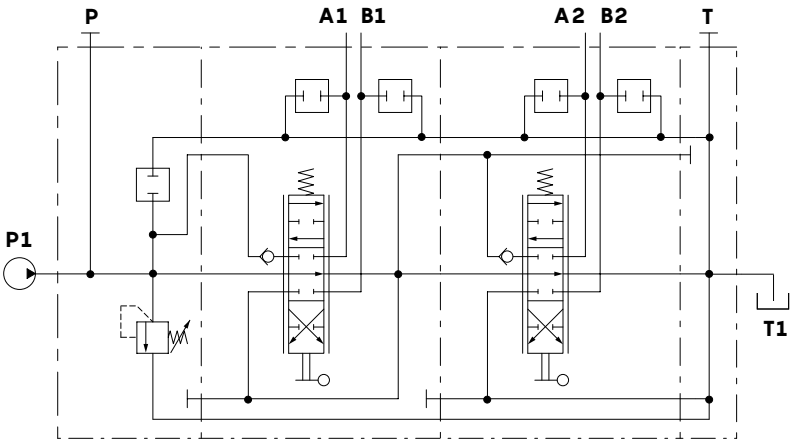
Configuration example with std. left inlet

In addition to parallel circuit, the SD6 is available with parallel-series circuit (tandem) and series circuit working sections.



Parallel-series (tandem) circuit

SD6/2/AC(JNG3-120)/18L/**SP**-18L/RC

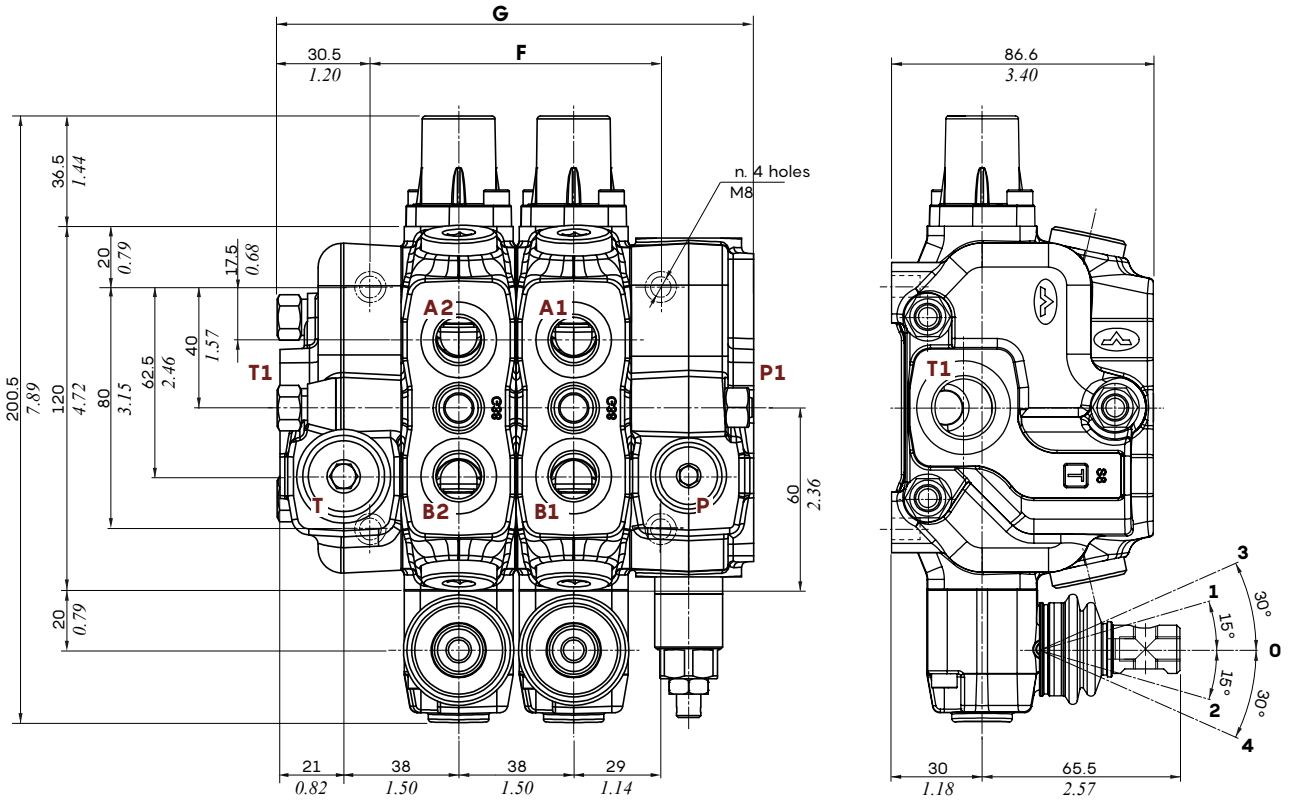


Series circuit

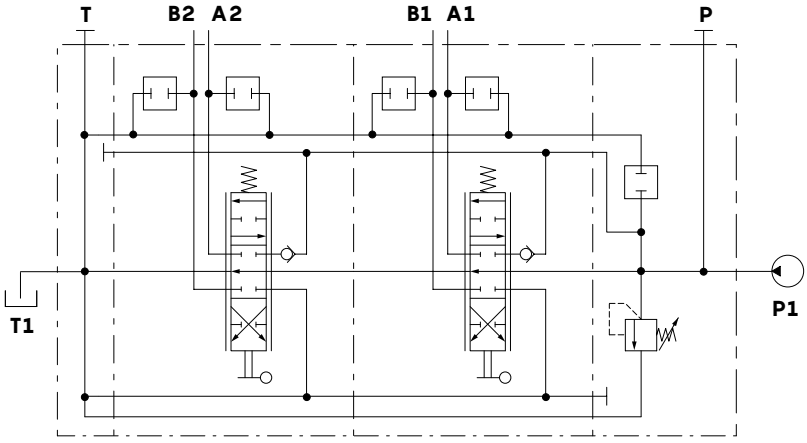
SD6/2/AC(JNG3-120)/**S**-18L/18L/RC

Dimensional data and hydraulic circuit

Configuration example with right inlet



Type	G		F	
	mm	*in*	mm	*in*
SD6/1	118.5	*4.66*	58	*2.28*
SD6/2	156.5	*6.16*	96	*3.78*
SD6/3	194.5	*7.66*	134	*5.28*
SD6/4	232.5	*9.15*	172	*6.77*
SD6/5	270.5	*10.65*	210	*8.27*
SD6/6	308.5	*12.15*	248	*9.76*
SD6/7	346.5	*13.65*	286	*11.26*
SD6/8	384.5	*15.15*	324	*12.76*
SD6/9	422.5	*16.65*	362	*14.26*
SD6/10	460.5	*18.15*	400	*15.76*
SD6/11	498.5	*19.65*	438	*17.26*
SD6/12	536.5	*21.15*	476	*18.76*



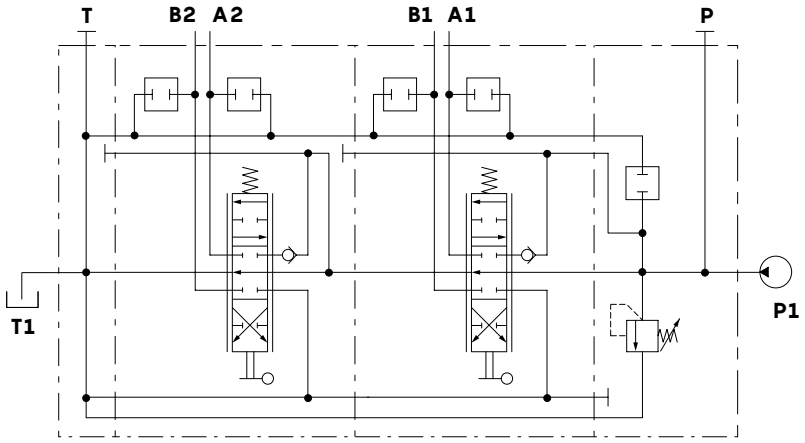
Parallel circuit

Mechanical control, port valve arrangement on the sections (plugged):
SD6/2/BC(JNG3-120)/18L/18L/RC

Note - Drawings and dimensions are referred to **BSP** thread

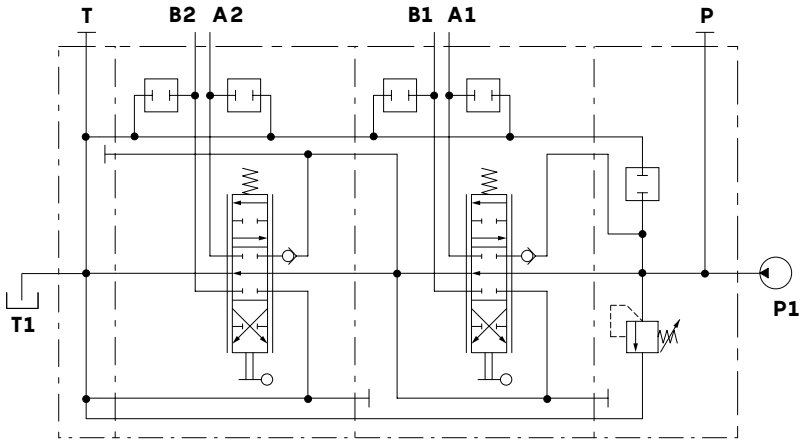
Dimensional data and hydraulic circuit

Configuration example with right inlet



Parallel-series (tandem) circuit

SD6/2/BC(JNG3-120)/18L/**SP**-18L/RC

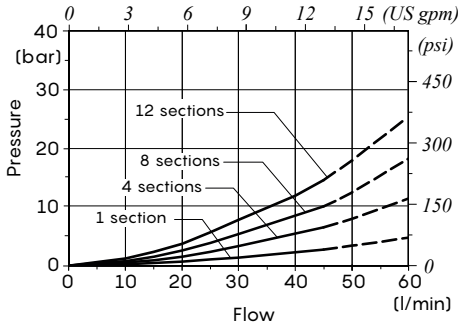


Series circuit

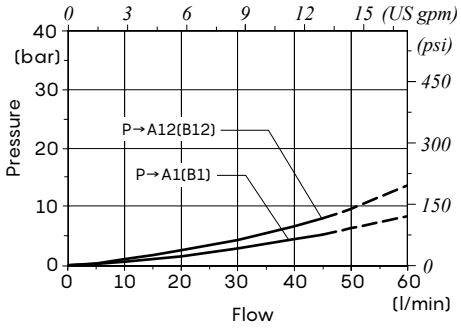
SD6/2/BC(JNG3-120)/**S**-18L/18L/RC

Performance data

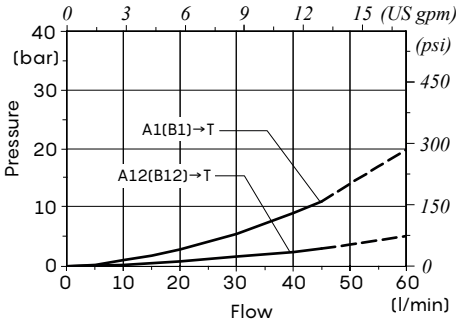
P⇒T pressure drops
(spool type 1)



P⇒A(B) pressure drops
(spool type 1)



A(B)⇒T pressure drops
(spool type 1)



Complete section ordering codes

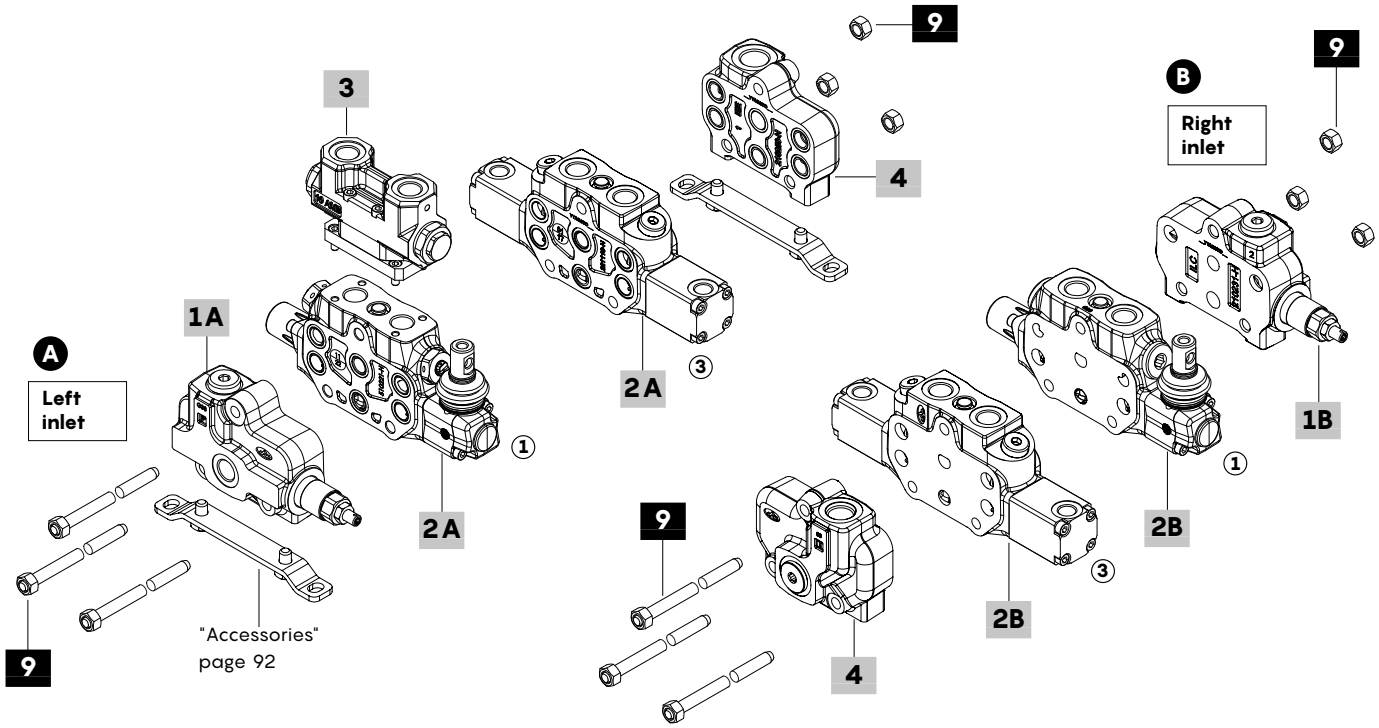
Configuration example

A SD6/2/AC(JNG3-120)/18L.U3(G2-125).BP3/RPH-1IM8IM.U3(150)/RE-...

Nr of working sections: 1A | 2A | 3 | 2A | 4 | 8

B SD6/2/BC(JNG3-120)/18L/RPH-1IM8IM.U3(150)/RE-...

1B | 2B | 2B | 4 | 8



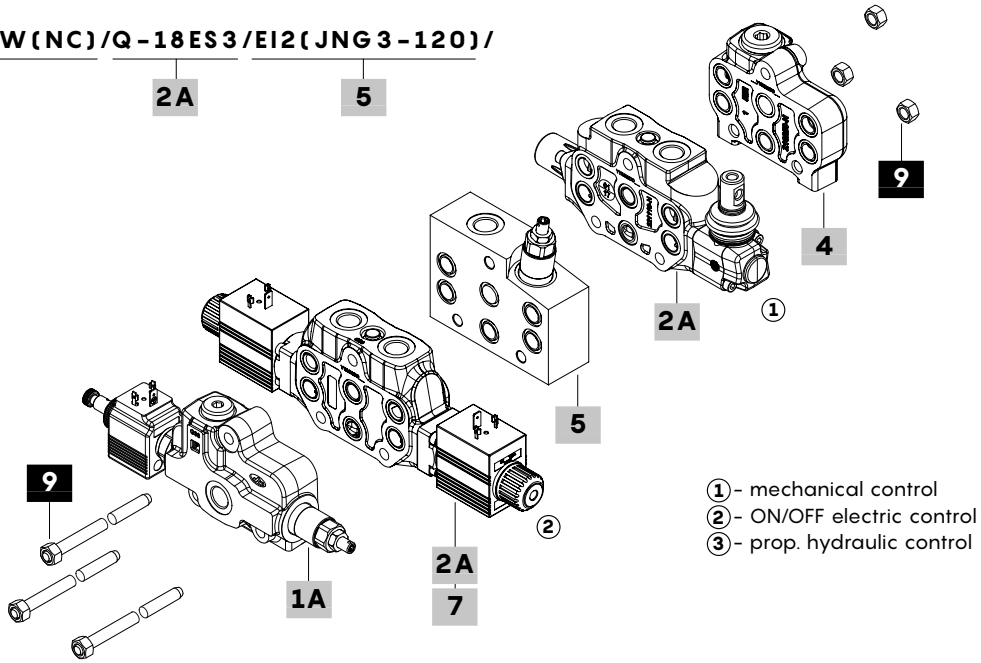
Configuration example with EI2 intermediate section (secondary pressure relief valve)

SD6/2/AC(JNG3-120)ELTW(NC)/Q-18ES3/EI2(JNG3-120)/

1A | 2A | 5

RQH-18L/RC-12VDC-...

2A | 4 | 7 | 8

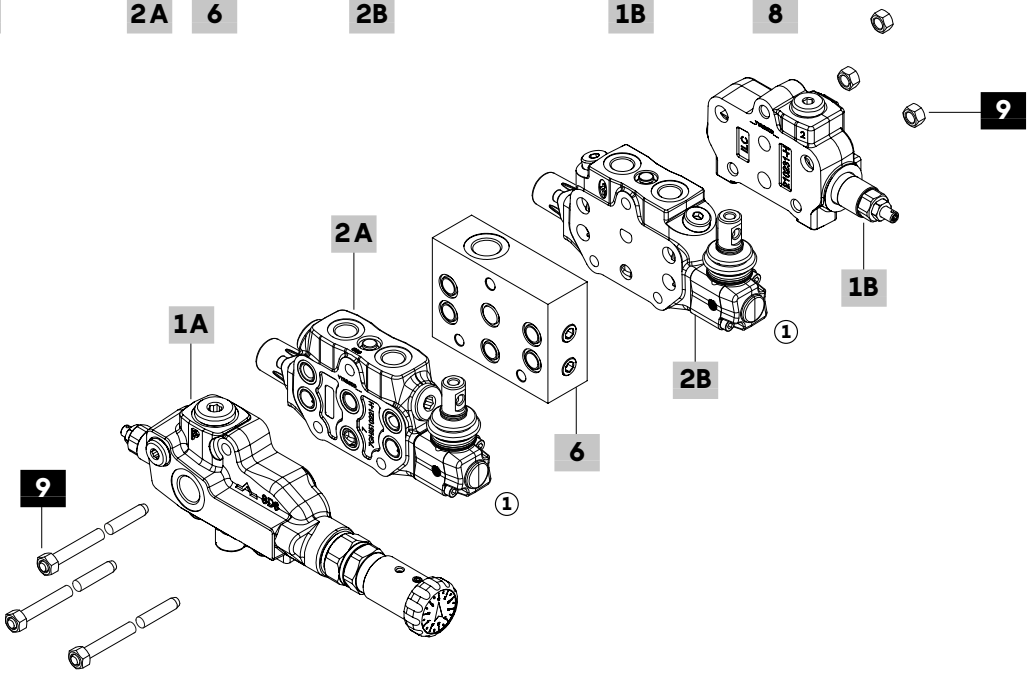


Complete section ordering codes

Configuration example with CS1 intermediate outlet manifold (2-input directional control valves)

SD6/2/AC(JNG3-120)SN/18L/CS1/RPH-18L.U3(150)/BC(JNG3-120)- ...

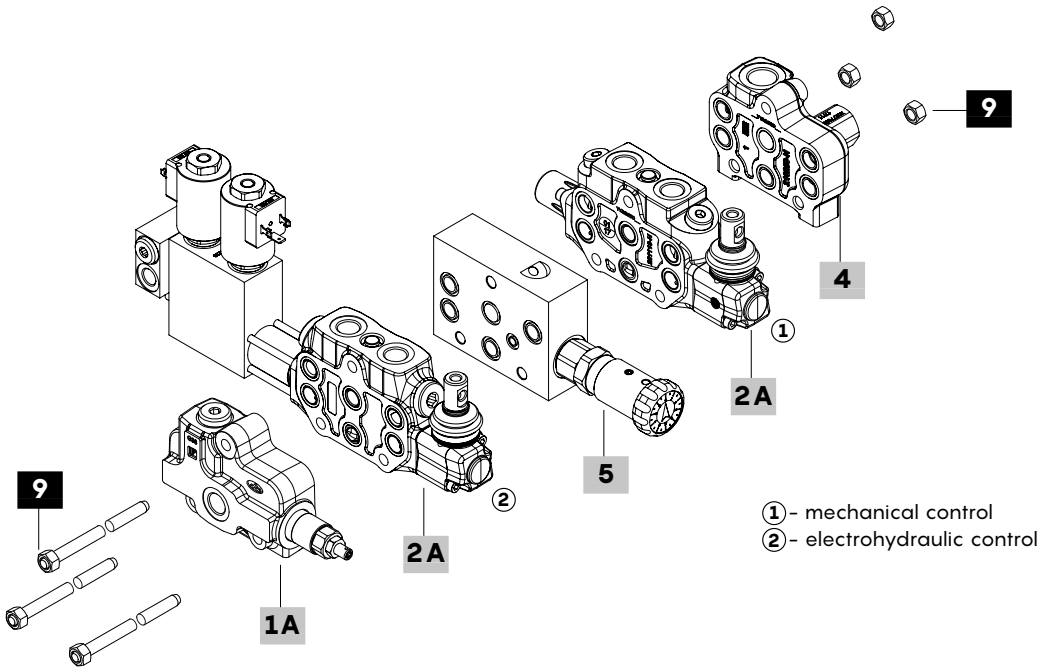
1A 2A 6 2B 1B 8



Configuration example with EVP92 intermediate section (manual flow regulator valve)

SD6/2/AC(JNG3-120)/S-18ED3L/EVP92/RPH-18L.U3(150)/RV-KE1S0-12VDC- ...

1A 2A 5 2A 4 2A 7 8



Complete section ordering codes

Configuration with mechanical, hydraulic, ON/OFF electric and electrohydraulic controls

1A Inlet section*

TYPE: **SD6/AC(JNG3-120)** CODE: 612201171
DESCRIPTION: Side inlet with main pressure relief valve
TIPO: **SD6/ACK(JNG3-120)EVPK** CODE: 612200044
DESCRIZIONE: As previous one, to be used in combination with EVPK1 intermediate section type
TYPE: **SD6/AC(JNG3-120)R2** CODE: 612201161
DESCRIPTION: Side inlet with main pressure relief valve with rotary commutator
TYPE: **SD6/AC(YG3-120)SN-BSP12** CODE: 612202015
DESCRIPTION: Side inlet with main pressure relief valve and flow regulator valve, G 1/2 ports
TYPE: **SD6/AD(YG3-120)** CODE: 612201120
DESCRIPTION: Upper inlet with main pressure relief valve

1B Right inlet section*

TYPE: **SD6/BC(JNG3-120)** CODE: 612201117
DESCRIPTION: Side inlet with main pressure relief valve
TIPO: **SD6/BCK(JNG3-120)EVPK** CODE: 612200045
DESCRIZIONE: As previous one, to be used in combination with EVPK1 intermediate section type
TYPE: **SD6/BC(JNG3-120)R2** CODE: 612201164
DESCRIPTION: Side inlet with main pressure relief valve with rotary commutator
TYPE: **SD6/BC(YG3-120)SN-BSP12** CODE: 612202015
DESCRIPTION: Side inlet with main pressure relief valve and flow regulator valve, G 1/2 ports
TYPE: **SD6/BD(YG3-120)** CODE: 612201115
DESCRIPTION: Upper inlet with main pressure relief valve

2A Working section*

Unless otherwise specified, the auxiliary valves are designed to be adjustable.
Type **R** sections are specifically designed for use with fixed-setting auxiliary valves.

Mechanical control
TYPE: **SD6/P-18L** CODE: 612101001
DESCRIPTION: Parallel circuit, lever control with port valves arrangement (plugged)
TYPE: **SD6/Q-18L** CODE: 612151006
DESCRIPTION: Parallel circuit, lever control, without port valves arrangement
TYPE: **SD6/S-18L** CODE: 612111001
DESCRIPTION: Series circuit, lever control with port valves arrangement (plugged)
TYPE: **SD6/SP-18L** CODE: 612121001
DESCRIPTION: As previous one, with parallel-series circuit
TYPE: **SD6/RPH-18L.U3(150)** CODE: 612100220
DESCRIPTION: Type R section, parallel circuit, lever control with fixed setting valves (150 bar)
TYPE: **SD6/RQH-18L** CODE: 612100219
DESCRIPTION: As previous one, without fixed setting valves

ON/OFF electric direct control
TYPE: **SD6/P-18ES3-12VDC** CODE: 61210101C
DESCRIPTION: Parallel circuit, with port valves arrangement (plugged)
TYPE: **SD6/Q-18ES3-12VDC** CODE: 612109007
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SD6/P-18ES3LHE-12VDC** CODE: 612100223
DESCRIPTION: Parallel circuit, with safety lever control and port valves arrangement (plugged)
TYPE: **SD6/RPH-18ES3.U3(150)-12VDC** CODE: 612100221
DESCRIPTION: Type R section, parallel circuit, with fixed setting valves (150 bar)

2A Working section* (continuous)

ON/OFF electric direct control
TYPE: **SD6/RPH-18ES3LHE.U3(150)-12VDC** CODE: 612100224
DESCRIPTION: As previous one, with safety lever control
TYPE: **SD6/RQH-18ES3-12VDC** CODE: 612100222
DESCRIPTION: Type R section, parallel circuit, without fixed setting valves

Proportional hydraulic control
TYPE: **SD6/P-1IM8IM** CODE: 612101003
DESCRIPTION: Parallel circuit, standard section **(dedicated spool)** with port valves arrangement (plugged)
TYPE: **SD6/PI-18IMP** CODE: 612101102
DESCRIPTION: Parallel circuit, dedicated section **(standard spool)**, with port valves arrangement (plugged)
TYPE: **SD6/RPH-1IM8IM.U3(150)** CODE: 612100225
DESCRIPTION: Type R section, parallel circuit, dedicated spool, with fixed setting valves (150 bar)

ON/OFF electrohydraulic control
TYPE: **SD6/P-18ED3L-12VDC** CODE: 612100207
DESCRIPTION: Parallel circuit, with port valves arrangement (plugged)
TYPE: **SD6/Q-18ED3L-12VDC** CODE: 612100206
DESCRIPTION: Parallel circuit, without port valves arrangement
TYPE: **SD6/RPH-18ED3L.U3(150)-12VDC** CODE: 612100226
DESCRIPTION: Type R section, parallel circuit, with fixed setting valves (150 bar)
TYPE: **SD6/RQH-18ED3L-12VDC** CODE: 612100227
DESCRIPTION: As previous one, without fixed setting valves

2B Right working section*

Mechanical control
TYPE: **SD6/P-ED-18L** CODE: 612101048
DESCRIPTION: Parallel circuit, lever control with port valves arrangement (plugged)
TYPE: **SD6/Q-ED-18L** CODE: 612100208
DESCRIPTION: Parallel circuit, lever control without port valves arrangement
TYPE: **SD6/S-ED-18L** CODE: 612111017
DESCRIPTION: Series circuit, lever control with port valves arrangement (plugged)
TYPE: **SD6/SP-ED-18L** CODE: 612121003
DESCRIPTION: As previous one, with parallel-series circuit
TYPE: **SD6/RPH-ED-18L.U3(150)** CODE: 612100228
DESCRIPTION: Type R section, parallel circuit, lever control with fixed setting valves (150 bar)
TYPE: **SD6/RQH-ED-18L** CODE: 612100229
DESCRIPTION: As previous one, without fixed setting valves

3 Secondary aux valve block*

Pilot operated check valve
TYPE: **BP1/BP2** CODE: 612002000
DESCRIPTION: Piloted block valve on A or B ports
TYPE: **BP3** CODE: 612002100
DESCRIPTION: Piloted block valve on A and B ports

Pilot operated check valve with pre-opening
TYPE: **BPS1/BPS2** CODE: 612003000
DESCRIPTION: Piloted block valve on A or B ports
TYPE: **BPS3** CODE: 612003100
DESCRIPTION: Piloted block valve on A and B ports

Note (*) - Codes are referred to **BSP** thread

Complete section ordering codes

Configuration with mechanical, hydraulic, ON/OFF electric and electrohydraulic controls

4 Outlet section*

TYPE: **SD6/RC** CODE: 612300110
DESCRIPTION: T1 side outlet, T upper closed port. Open center
TYPE: **SD6/RD** CODE: 612300120
DESCRIPTION: T upper outlet, T1 side closed port. Open center
TYPE: **SD6/RCD** CODE: 612300109
DESCRIPTION: T upper and T1 side outlets. Open center
TYPE: **SD6/RE** CODE: 612300114
DESCRIPTION: T upper outlet, with carry-over in T1 side port
TYPE: **SD6/RK** CODE: 612300117
DESCRIPTION: T upper outlet, T1 side closed port. Closed center
TYPE: **SD6/RV** CODE: 612300123
DESCRIPTION: T upper outlet, back pressure valve in T1 side port. For use only with electrohydraulic configurations.

5 Intermediate section*

TYPE: **SD6/DFG** CODE: 612410030
DESCRIPTION: Compensated flow regulator, operated by a graduated handwheel
TYPE: **SD6/EI1(JNG3)** CODE: 612421131
DESCRIPTION: With secondary pressure relief valve
TYPE: **SD6/EI2(JNG3)** CODE: 612421136
DESCRIPTION: With secondary pressure relief valve and auxiliary P inlet
TYPE: **SD6/EVP91**[(1)(2)] CODE: 612423503
DESCRIPTION: Flow regulator with compensated cartridge valve, handwheel-operated
TYPE: **SD6/EVPK1** CODE: 612423593
DESCRIPTION: As previous one, to be used for mounting downstream of the inlet section. To be used ONLY with the special EVPK inlet section type (for code, see #1A page 14)
TYPE: **SD6/EVP93-12VDC**[(2)] CODE: 612423502
DESCRIPTION: Flow regulator with proportional solenoid valve, without manual emergency, 12 VDC
Note[(1)]- Attention: DO NOT use immediately after a standard FE. Use EVPK1 intermediate section with dedicate EVPK inlet section.
Note[(2)]: must always be mounted downstream of series section.
For additional codes of flow control valves, please contact Walvoil Sales Dpt.
For drawings and hydraulic circuits, see page 67

6 Intermediate outlet manifold*

TYPE: **SD6/CS1** CODE: 612400010
DESCRIPTION: Intermediate outlet manifold

7 Voltage

Specify the voltage of electric devices

8 Valve threading

Only specify if it is different from **BSP** standard (see page 4)

9 Assembly kit

CODE	DESCRIPTION	CODE	DESCRIPTION
5TIR108117	1 section valve	5TIR108383	8 sections valve
5TIR108155	2 sections valve	5TIR108421	9 sections valve
5TIR108193	3 sections valve	5TIR108459	10 sections valve
5TIR108231	4 sections valve	5TIR108498	11 sections valve
5TIR108269	5 sections valve	5TIR108535	12 sections valve
5TIR108307	6 sections valve	5TIR108573	13 sections valve
5TIR108345	7 sections valve	5TIR108611	14 sections valve

Note - The intermediate section and manifold are to be considered as an additional section

Note (*) - Codes are referred to **BSP** thread

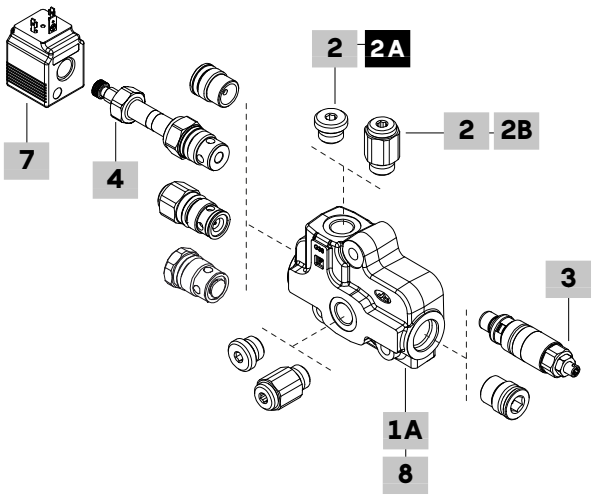
Part ordering codes

Standard inlet section:

A: left inlet
B: right inlet
C: side inlet port
D: upper inlet port
CD: side and upper inlet port
Valve setting (bar)

SD6 / AC (JNG3 - 120) ELPW - MAN14 - 12VDC - ....

1A | 2 | 2B | 3 | 4 | 2B | 7 | 8



Inlet section for
EVPK1 intermediate section

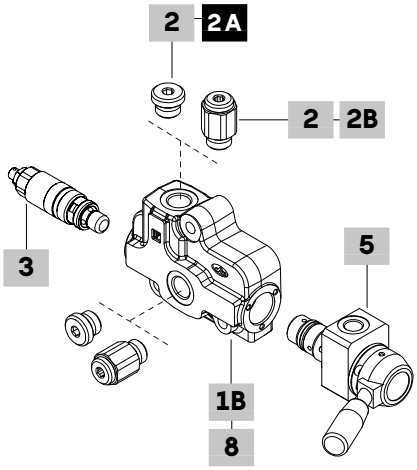
SD6 / ACK (JNG3 - 120) EVPK - ELPW - MAN14 - 12VDC - ....

Inlet section with rotary commutator:

A: left inlet
B: right inlet
C: side inlet port
D: upper inlet port
CD: side and upper inlet port
Valve setting (bar)

SD6 / AC (JNG3 - 120) - R2 - ....

1B | 2 | 2B | 3 | 5 | 8

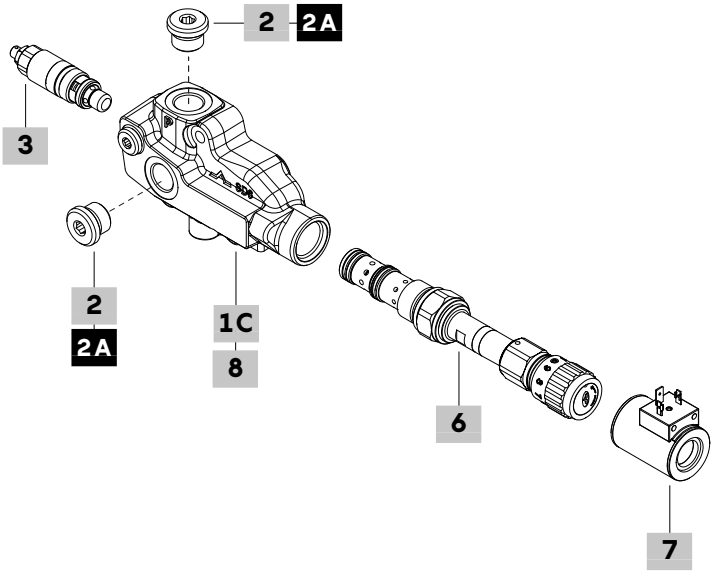


Inlet section with fow regulator valve:

A: left inlet
B: right inlet
C: side inlet port
D: upper inlet port
CD: side and upper inlet port
Valve setting (bar)

SD6 / AC (JNG3 - 120) S-X3 - 12VDC - ....

1C | 2 | 3 | 1C | 6 | 7 | 8



Parts ordering codes

Configuration with mechanical, hydraulic, ON/OFF electric and electrohydraulic controls

1A Inlet section* page 15

For left inlet and right inlet
TYPE: **SD6/FE** CODE: 3FIA106302-H
DESCRIPTION: P upper port and P1 side port, G 3/8
TYPE: **SD6/FE-BSP12** CODE: 3FIA106404-H
DESCRIPTION: As previous one, G 1/2 ports
TYPE: **SD6/FE-EVPK** CODE: 3FIA106309
DESCRIPTION: P upper port and P1 side port, G 3/8
To be combined with EVPK1 intermediate section (see #5 page 12)

1B Inlet section for rotary commutator* page 16

For left inlet
TYPE: **SD6/FE-R2** CODE: 3FIA106314-H
DESCRIPTION: P upper port and P1 side port, G 3/8
TYPE: **SD6/FE-R2-BSP12** CODE: 3FIA106413-H
DESCRIPTION: As previous one, G 1/2 ports
NOTE: For right inlet section, please contact Sales Dpt.

1C Inlet section for flow regulator valve* page 17

For left inlet and right inlet
TYPE: **SD6/FE-S-BSP12** CODE: 3FIA106476
DESCRIPTION: P upper port and P1 side port, G 1/2.
T side, G1/4 port (plugged), code 3XTAP719150 plug

2 Configuration ports* page 15

TYPE	DESCRIPTION
C	P1 side inlet port, P upper port closed; require n. 1 G 3/8 plug, G 1/2 plug or pressure gauge arrangement plug
D	P upper inlet port, P1 side port closed; require n. 1 G 3/8 plug, G 1/2 plug or pressure gauge arrangement plug
CD	P upper and P1 side inlet ports

2A Plug for P and P1 ports*

TYPE	CODE	DESCRIPTION
-	3XTAP722160	G 3/8 plug
-	3XTAP727180	G 1/2 plug

2B Pressure gauge for P and P1 ports*

TYPE	CODE	DESCRIPTION
MAN18	5MAN621200	G 1/8 joint for pressure gauge arrangement (plugged)
MAN14	5MAN622320	G 1/4 joint for pressure gauge arrangement (plugged)

7 Coil

TYPE	CODE	DESCRIPTION
For standard inlet section		
BER-12VDC	4SLE001200A	Type BER coil, 12 VDC, conn. ISO4400

For **BER** coil list and connectors, see page 90

For inlet section with flow regulator valve		
BH-12VDC	4SLD001200A	Type BH coil, 12 VDC, conn. ISO4400

For **BH** coil list and connectors, see page 90
NB: It is possible to configure the flow regulator valves with **BQP19** coils. Please, contact Walvoil Sales Dpt.

3 Main pressure relief valve page 18

Valves standard setting is referred to 10 l/min *(2.64 US gpm)* flow.

TYPE	CODE	DESCRIPTION
SV	XTAP623282	Relief valve blanking plug
Type J direct acting		
(JNG1-20)	5KIT105500	Range 10-40 bar *(145-580 psi)* std. setting 20 bar *(290 psi)*
(JNG2-60)	5KIT105512	Range 40-60 bar *(580-870 psi)* std. setting 60 bar *(870 psi)*
(JNG3-120)	5KIT105513	Range 50-200 bar *(725-2900 psi)* std. setting 120 bar *(1740 psi)*
(JNG4-250)	5KIT105514	Range 160-315 bar *(2320-4570 psi)* std. setting 250 bar *(3625 psi)*
Type Y balanced direct acting		
(YG2-80)	5KIT105212	Range 65-125 bar *(942-1810 psi)* std. setting 80 bar *(1160 psi)*
(YG3-120)	5KIT105213	Range 100-200 bar *(1450-2900 psi)* std. setting 120 bar *(1740 psi)*
(YG4-250)	5KIT105214	Range 160-315 bar *(2320-4570 psi)* std. setting 250 bar *(3625 psi)*

4 Optional inlet valve page 20

TYPE	CODE	DESCRIPTION
F	5KIT406200	Anticavitation valve
SV	XTAP623282	Relief valve blanking plug
Unloading valve		
ELNW	0EFW0012000	Solenoid valve without manual emergency
ELPW	0EFW0012003	Solenoid valve with push-button manual emergency
ELTW	0EFW0012001	Solenoid valve with "twist&push" manual emergency
ELTH	0EFW0012002	As ELTW, with sealing prearrangement
L	5KIT406300	Hydraulic pilot valve

5 Commutator* page 16

TYPE: **R2** CODE: 5COM406202
DESCRIPTION: Manual rotary commutator for external pilot, G 1/4 port

6 Flow regulator valve page 21

TYPE: **M**(PP12A/AM0B) CODE: 0PP12002000
DESCRIPTION: Manual adjustment fine to handwheel
TYPE: **N**(VPR/3/EP/C 12/MG/LW/QR1/SAE) CODE: 1636030210
DESCRIPTION: One-turn flyer adjustment, with detent
TYPE: **X1**(PP12X/A0NB) CODE: 0PP12002037
DESCRIPTION: Proportional solenoid valve, without manual emergency
TYPE: **X2**(PP12X/A0TB) CODE: 0PP12002039
DESCRIPTION: Proportional solenoid valve, manual screw emergency
TYPE: **X3**(PP12X/A0VB) CODE: 0PP12002041
DESCRIPTION: Proportional solenoid valve, manual handwheel emergency

8 Inlet section threading

Only specify if it is different from **BSP** standard (see page 4)

Note (*) - Codes are referred to **BSP** thread

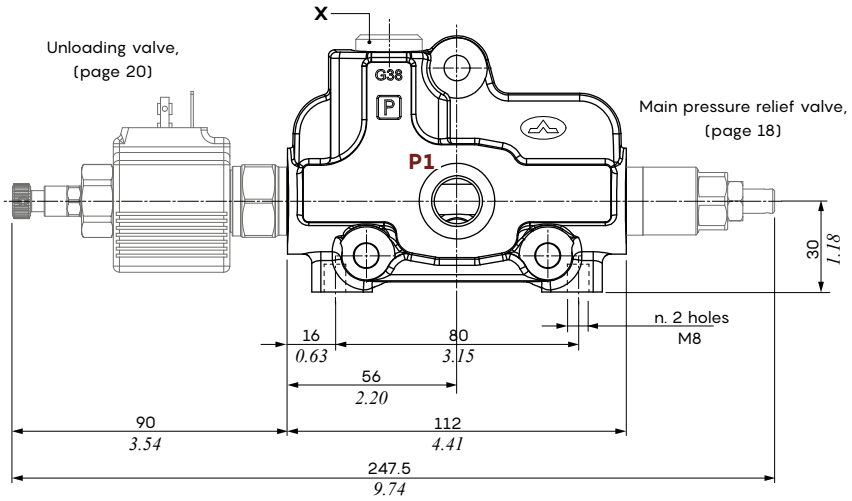
Dimensional data and hydraulic circuit

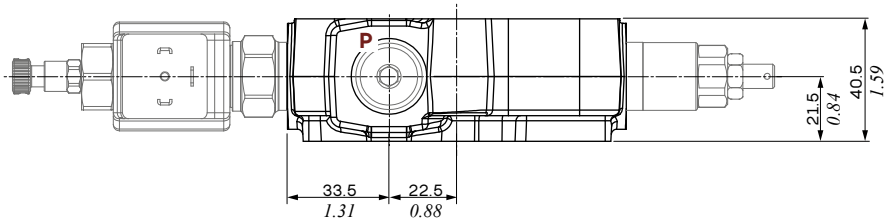
Inlet section

ACK-EVPK inlet section type have the same dimensions as AC standard inlet section type.

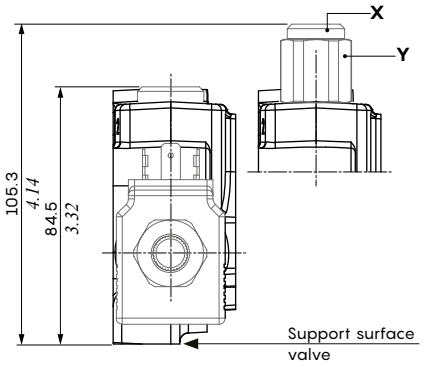
Type AC

Left inlet, P1 side inlet.
Body kit also available with G 1/2 ports





MAN 14 joint
for pressure gauge
arrangement



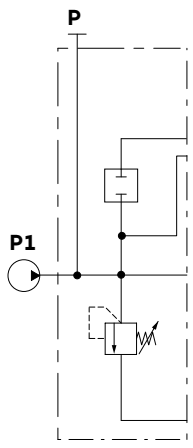
Wrenches and tightening torques

X = allen wrench 6 - 24 Nm *(17.7 lbft)* (G 3/8)
allen wrench 8 - 24 Nm *(17.7 lbft)* (G 1/2)
Y = wrench 22 - 24 Nm *(17.7 lbft)*
For valves wrench and torque see related pages

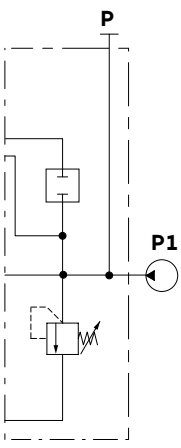
Configuration ports		
Type	**P port**	**P1 port**
AC/BC	plugged	open
AD/BD	open	plugged
ACD/BCD	open	open

Features of **BER** coils and connectors, on page 93

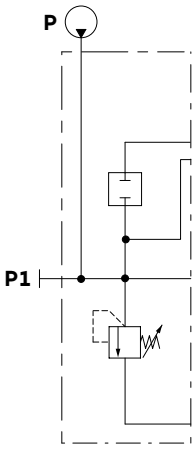
Type AC
Left inlet,
P1 side inlet



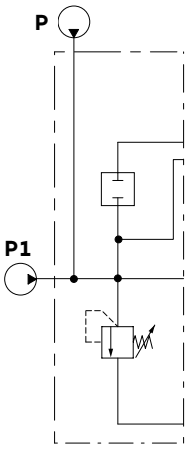
Type BC
As AC,
for right inlet



Type AD
Left inlet,
P upper inlet



Type ACD
Left inlet,
P upper inlet and P1 side inlet



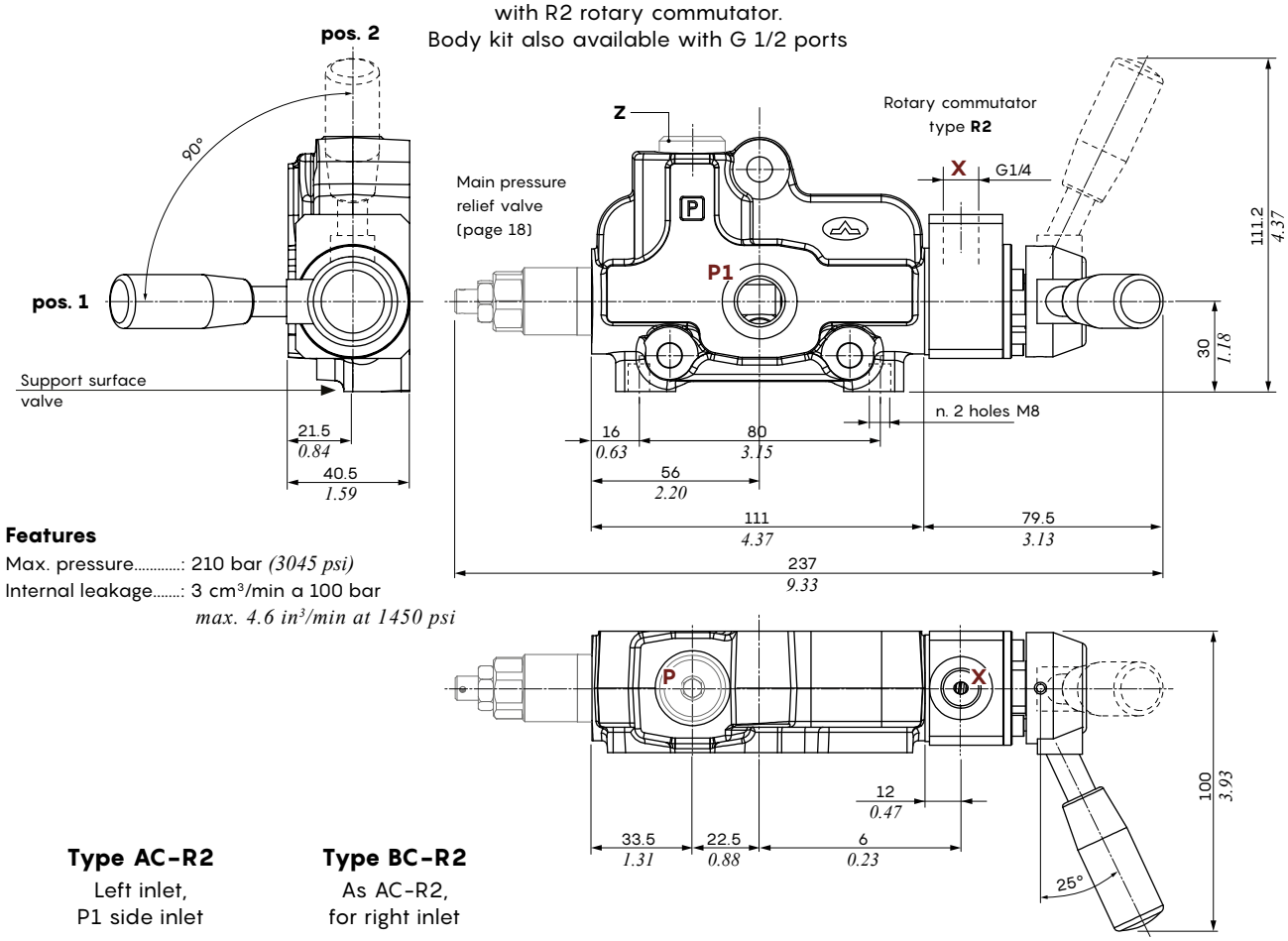
Note - The drawings and dimensions refer to the **BSP** thread

Dimensional data and hydraulic circuit

Inlet section for R2 rotary commutator

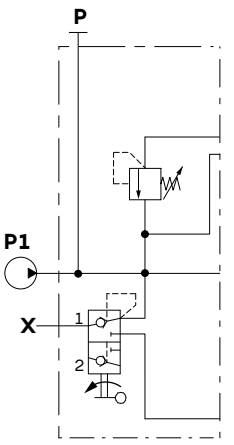
Inlet section with R2 rotary commutator arrangement, for external pilot (X).
The rotary commutator must always be mounting on the lever side of the valve, and the main pressure relief valve is mounting on the opposite side.
Left inlet std.; for right inlet, please contact Walvoil Sales Dpt.

Type AC-R2
Left inlet, P1 side inlet,
with R2 rotary commutator.
Body kit also available with G 1/2 ports

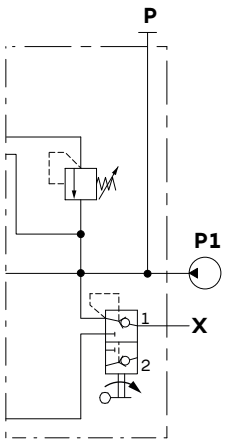


Features
Max. pressure.....: 210 bar *(3045 psi)*
Internal leakage.....: 3 cm³/min a 100 bar
max. 4.6 in³/min at 1450 psi

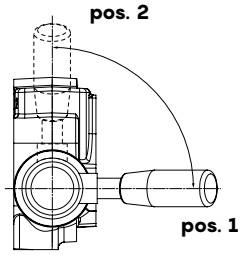
Type AC-R2
Left inlet,
P1 side inlet



Type BC-R2
As AC-R2,
for right inlet



Type BC-R2



Wrenches and tightening torques
Z = allen wrench 6 - 24 Nm *(17.7 lbft)* (G 3/8)
allen wrench 8 - 24 Nm *(17.7 lbft)* (G 1/2)
For valves wrench and torque see related pages

Configuration ports		
Type	**P port**	**P1 port**
AC/BC	plugged	open
AD/BD	open	plugged
ACD/BCD	open	open

Note - The drawings and dimensions refer to the **BSP** thread

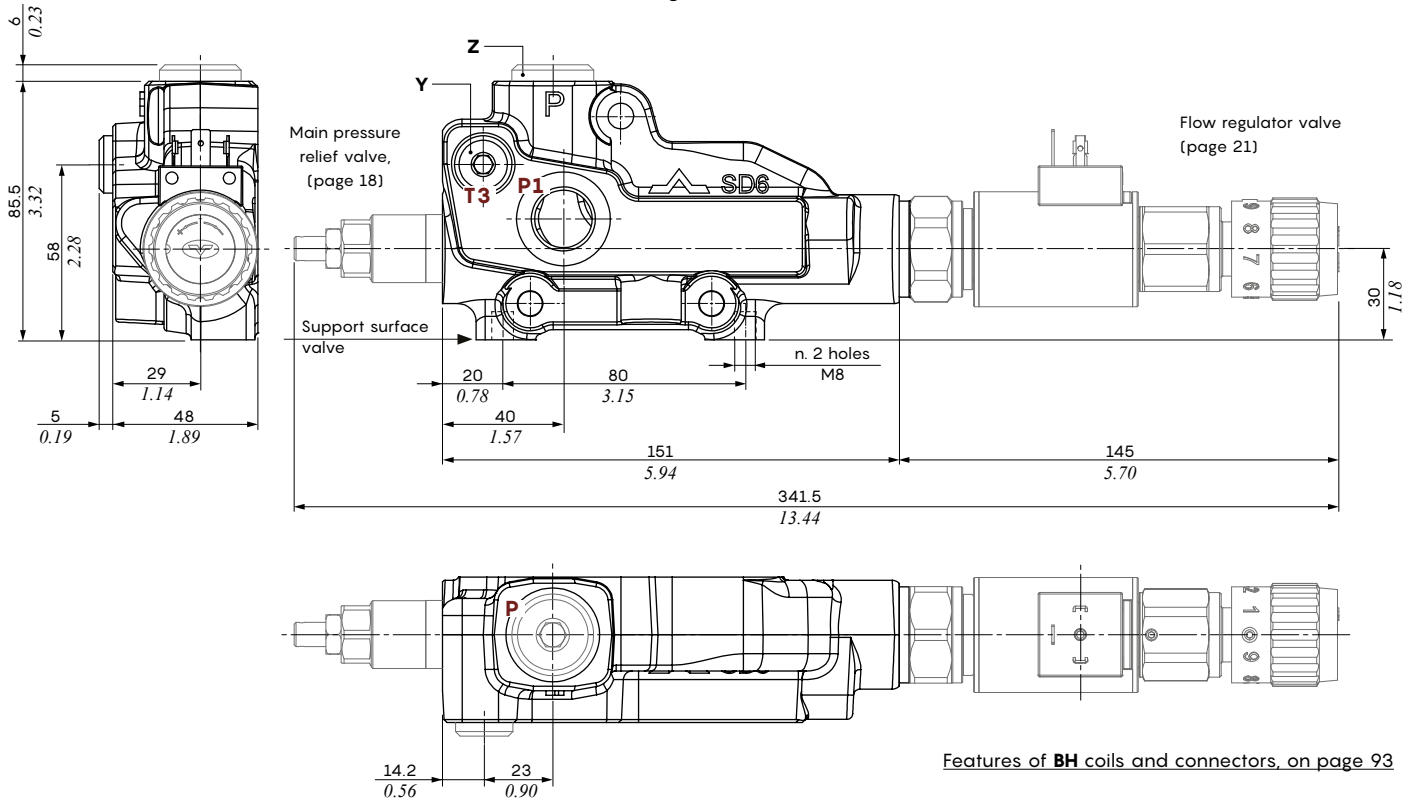
Dimensional data and hydraulic circuit

Inlet section for flow regulator valve

Inlet section for flow regulator valve; The main pressure relief valve is mounting on the opposite side.
Prioritary flow to working sections and exceeding flow to T2 tank line.
Can also be configured for right inlet.

Type AC-S(X3)

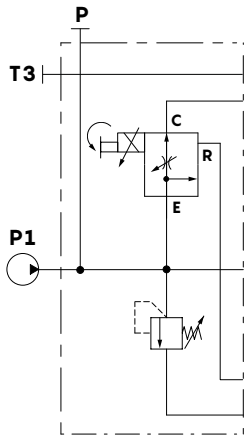
Left inlet, P1 side inlet,
with X3 flow regulator valve



Features of **BH** coils and connectors, on page 93

Type AC-S(X3)

Left inlet,
with X3 flow regulator valve (see page 21)



Wrenches and tightening torques
Z = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = allen wrench 8 - 24 Nm *(17.7 lbft)*
For valves wrench and torque
see related pages

Configuration ports		
Type	**P port**	**P1 port**
AC/BC	plugged	open
AD/BD	open	plugged
ACD/BCD	open	open

Note - The drawings and dimensions refer to the **BSP** thread

Main pressure relief valve

Direct acting

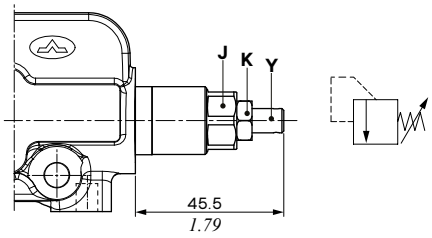
SD6/AC **(JN G 3 - 120)** /18L

- type:
  - **JN** = direct acting
  - **Y** = balanced direct acting
- spring type
- valve setting (bar)
- configuration:
  - **G** = with screw
  - **V** = with handwheel
  - **H** = set and locked
  - **ZT** = fix setting with plastic cap

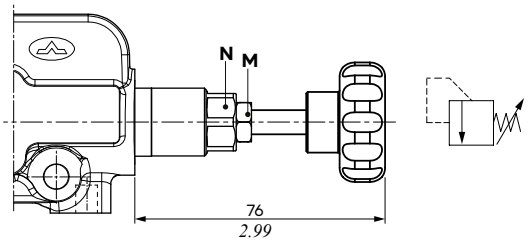
SV
Relief valve blanking plug



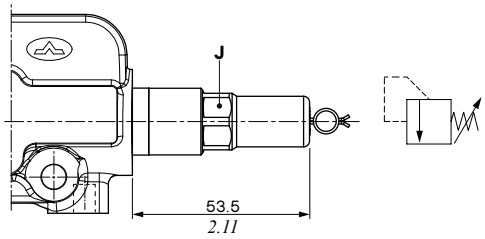
Type G
With screw regulation



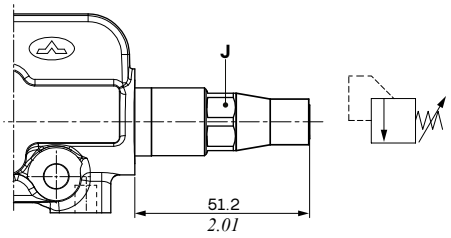
Type V
With handweel regulation



Type H
Set and locked



Type ZT
Fix setting with plastic cap

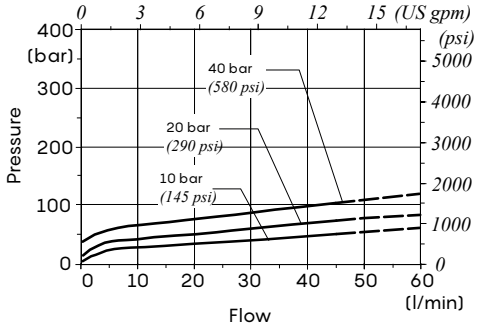


Wrenches and tightening torques
J = wrench 19 - 42 Nm *(30.9 lbft)*
K = wrench 13 - 24 Nm *(17.7 lbft)*
Y = allen wrench 4
M = wrench 13 - 30 Nm *(22.1 lbft)*
N = wrench 19 - 50 Nm *(36.8 lbft)*
Relief valve blanking plug:
wrench 10 - 42 Nm *(30.9 lbft)*

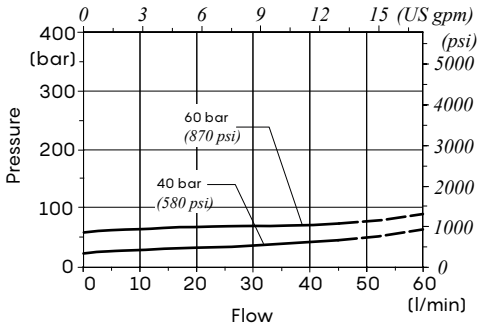
Main pressure relief valve

Performance data

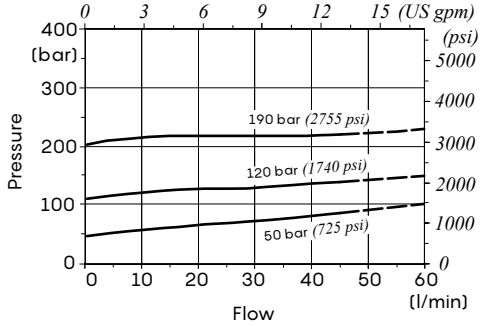
Type JN
Setting range 1



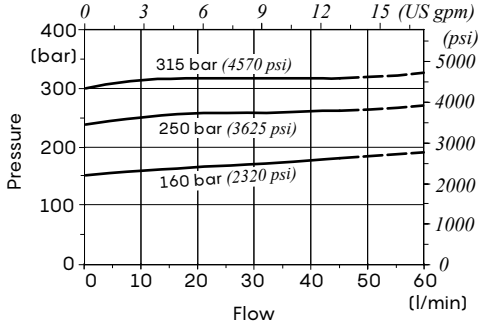
Type JN
Setting range 2



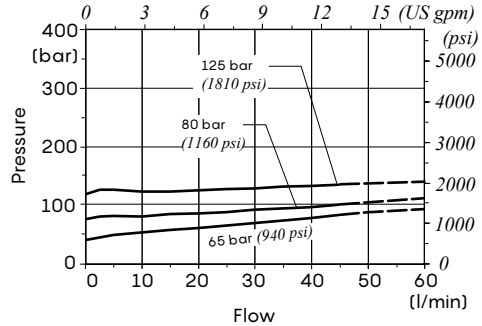
Type JN
Setting range 3



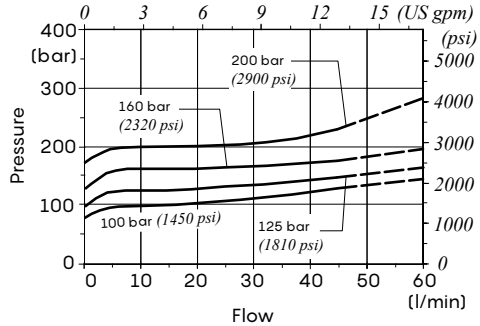
Type JN
Setting range 4



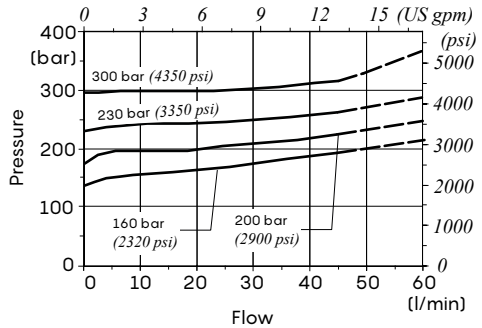
Type Y
Setting range 2



Type Y
Setting range 3



Type Y
Setting range 4

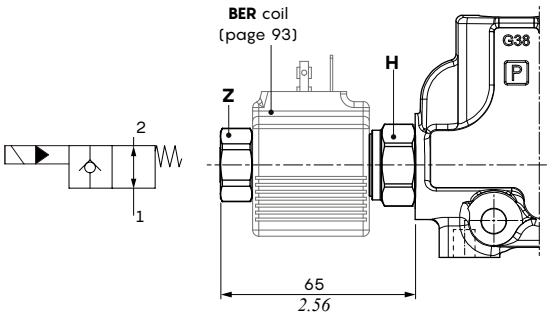


Optional inlet valve

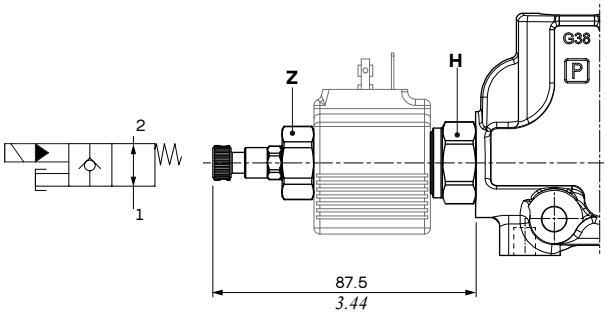
Pilot unloader valves

Solenoid control

Type ELNW
Without manual emergency

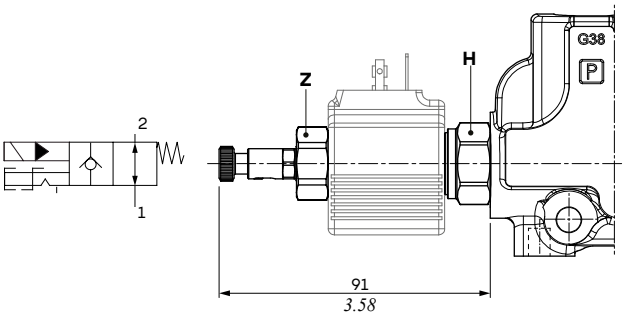


Type ELPW
With push-button manual emergency



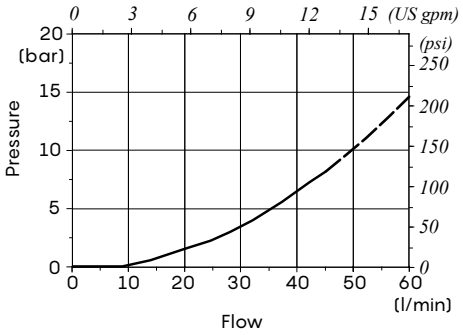
Type ELTW
With "twist&push" manual emergency

Type ELTH
As ELTW, with sealing prearrangement



Wrenches and tightening torques
H = wrench 24 - 42 Nm *(30.9 lbft)*
Z = manual tightening - 6 Nm *(4.4 lbft)*
Relief valve blanking plug = wrench 10 - 42 Nm *(30.9 lbft)*

Pressure drops

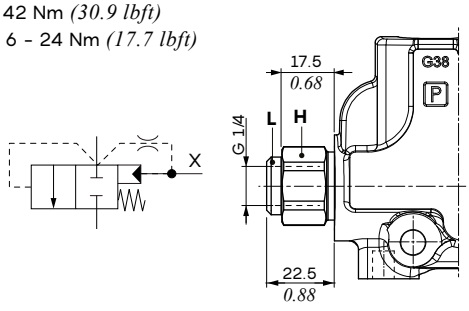


Features
Max. flow.....: 45 l/min *(11.8 US gpm)*
Max. pressure.....: 315 bar *(4567 psi)*
Internal leakage.....: max. 3 cm³/min at 210 bar
max. 4.6 in³/min at 3045 psi
Features of **BER** coils and connectors, on page 93

Hydraulic pilot

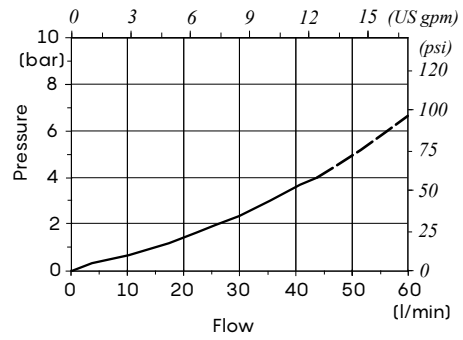
Wrenches and tightening torques
H = wrench 24 - 42 Nm *(30.9 lbft)*
L = allen wrench 6 - 24 Nm *(17.7 lbft)*

Type L



Note - the directional control valve is supplied with the valve plugged.

Pressure drops



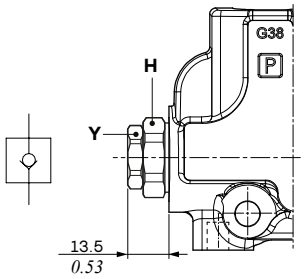
Features
Internal leakage: .....max. 15 cm³/min at 100 bar
max. 0.91 in³/min at 1450 psi

Optional inlet valve

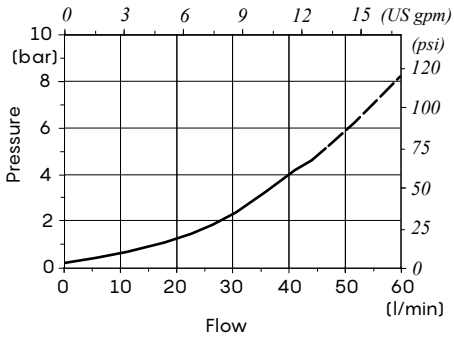
Anticavitation valve

Wrenches and tightening torques
H = wrench 24 - 42 Nm *(30.9 lbft)*
Y = wrench 19 - 24 Nm *(17.7 lbft)*

Type F



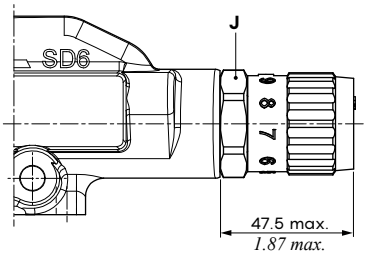
Pressure drops

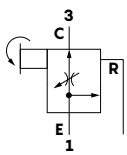


Flow regulator valve

Manual adjustment

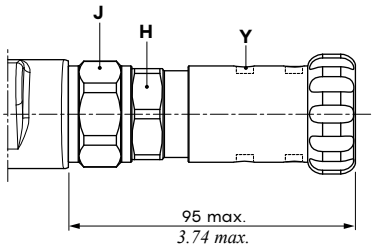
Type M(PP12A/AM0B)
Fine to handwheel

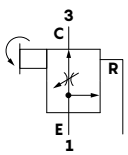




Max. flow:
in 1.....90 l/min
23.7 US gpm
in 3.....50 l/min
13.2 US gpm

Type N(VPR/3/EP/C12/MG/LW/QR1/SAE)
One-turn, with detent

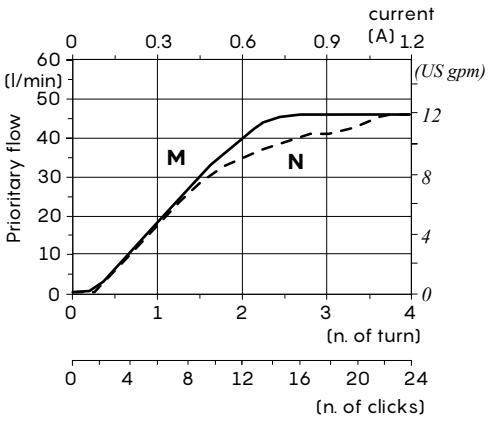




Max. flow:
in 1.....90 l/min
23.7 US gpm
in 3.....50 l/min
13.2 US gpm

Flow control

Q_{in} = 45 l/min *(11.8 US gpm)* - P= 100 bar *(1450 psi)*

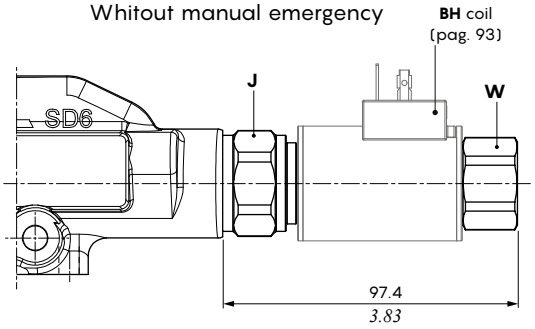


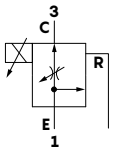
Wrenches and tightening torques
J = wrench 32 - 80 Nm *(59.1 lbft)*
H = wrench 30 - 50 Nm *(36.8 lbft)*
Y = wrench 3 - 6.6 Nm *(4.86 lbft)*

Flow regulator valve

Proportional solenoid control adjustment

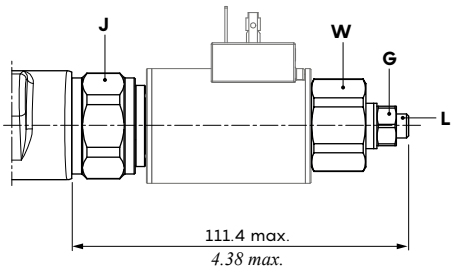
Type X1(PP12X/A0NB)
Whitout manual emergency

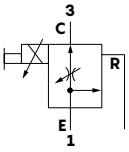




Max. flow:
in 1.....90 l/min
23.7 US gpm
in 3.....60 l/min
15.8 US gpm

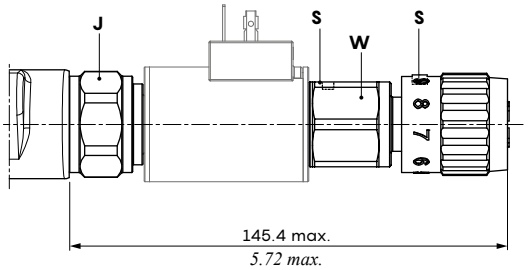
Type X2(PP12X/A0NB)
Manual screw emergency

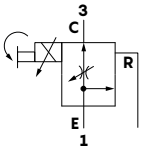




Max. flow:
in 1.....90 l/min
23.7 US gpm
in 3.....60 l/min
15.8 US gpm

Type X3(PP12X/A0VB)
Manual handwheel emergency





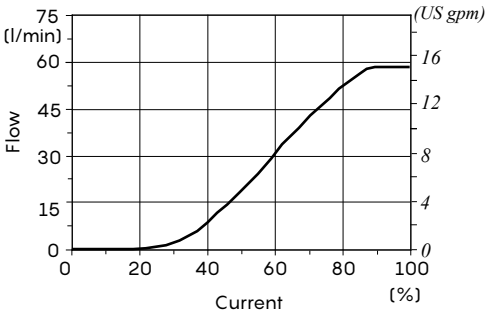
Max. flow:
in 1.....90 l/min
23.7 US gpm
in 3.....60 l/min
15.8 US gpm

Features of **BH** coils and connectors, on page 93

Wrenches and tightening torques
J = wrench 32 - 80 Nm *(59.1 lbft)*
W = wrench 28 - 6 Nm *(4.4 lbft)*
G = wrench 8 - 15 Nm *(11.1 lbft)*
L = allen wrench 4
S = allen wrench 2

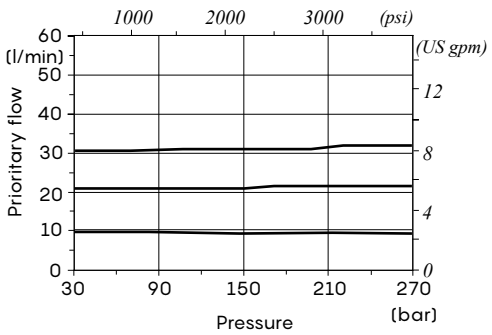
Flow control

Q_{in} = 60 l/min *(15.8 US gpm)* - P= 100 bar *(1450 psi)*



Pressure vs Flow
(for all control valves)

Q_{in} = 45 l/min *(11.8 US gpm)* - P = 100 bar *(1450 psi)*



Parts ordering codes

Mechanical control configuration

Left inlet std. working section:

Setting valve (bar): A.....B port

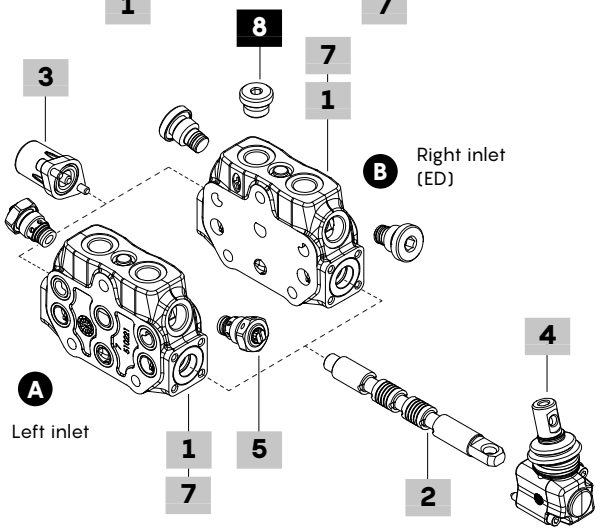
A SD6 - P / 1 - 8 - L . P3(G3-120/G3-180) - ...

1 2 3 4 5 7

Right inlet std. working section:

B SD6 - P-ED / 1 - 8 - L - ...

1 7



Std. section with BP/BPS secondary aux valve block:

Setting valve (bar): A and B port

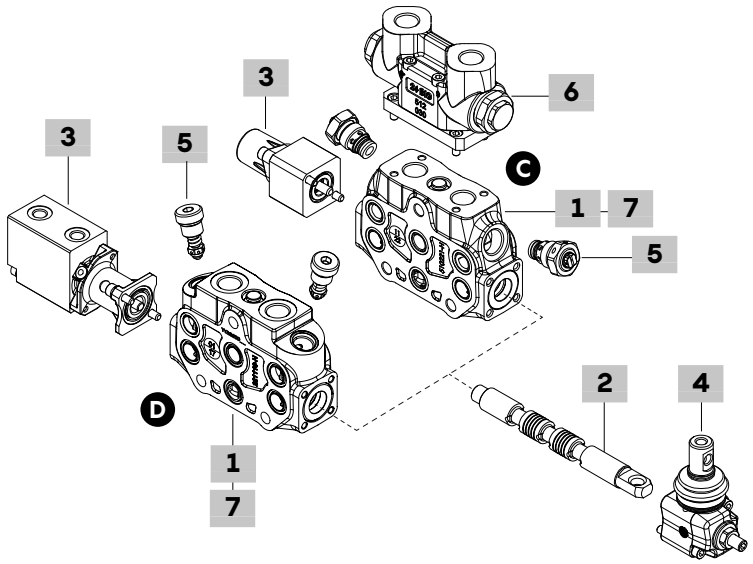
C SD6 - PT / 1 - 21 - LF1 . P3(G3-120) - BP3 - ...

1 2 3 4 5 6 7

R section with pneumatic control:

D SD6 - RPH / 1 - 8PNB - LF1 . U3(150) - ...

1 3 5 7



Std. section with electrohydraulic control

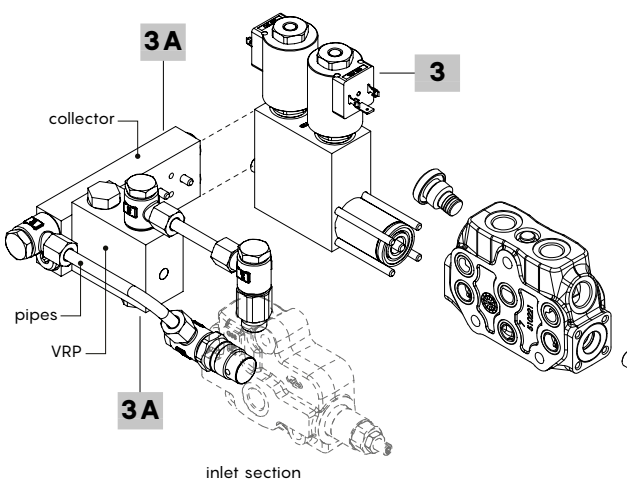
with collector, pipes and VRP valve:

R: with VRP pressure reducing valve
S: without VRP pressure reducing valve

0: without pipes
3: with pipes

SD6 - P / 1 - 8ED3 - L - KE1R3 - 12VDC - ...

3 3A 3

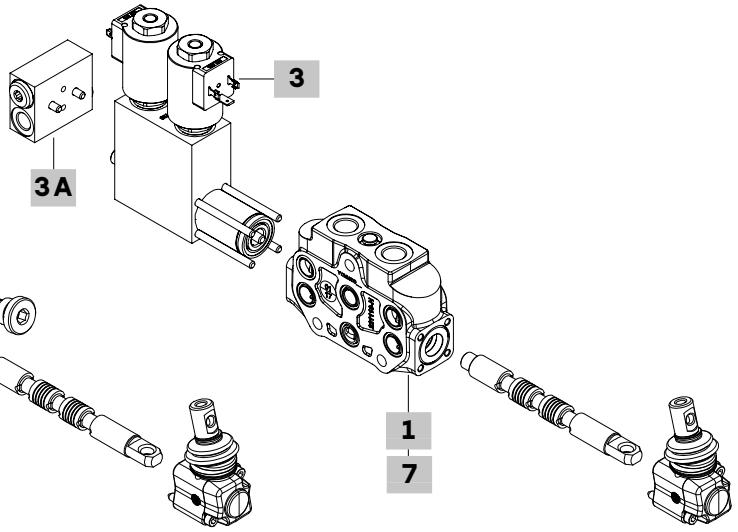


R section with electrohydraulic control

with collector:

SD6 - RQH / 1 - 8ED3 - L - KE1S0 - 12VDC - ...

1 3 3A 3 7



Parts ordering codes

Mechanical control configuration

Unless otherwise specified, the working section are intended for valve with standard left inlet and right inlet.

1 Working section* page 29

The body kit includes O-ring seals, rings, and a check valve.

With port valve arrangement:

TYPE: **SD6/P** CODE: 5EL1063001-F
DESCRIPTION: Standard, for parallel circuit

TYPE: **SD6/P-BSP12** CODE: 5EL1064001
DESCRIPTION: As previous one, with G 1/2 ports

TYPE: **SD6/P-PT** CODE: 5EL1063032
DESCRIPTION: For parallel circuit, with BP/BPS secondary aux valve block arrangement

TYPE: **SD6/P-MG** CODE: 5EL106300G-H
DESCRIPTION: For parallel circuit, for **8MG controls**

TYPE: **SD6/S** CODE: 5EL2063001
DESCRIPTION: Standard, for series circuit

TYPE: **SD6/S-BSP12** CODE: 5EL2064001
DESCRIPTION: As previous one, with G 1/2 port

TYPE: **SD6/S-PT** CODE: 5EL2063030
DESCRIPTION: For series circuit, with BP/BPS secondary aux valve block arrangement

TYPE: **SD6/SP** CODE: 5EL3063001-H
DESCRIPTION: Standard, for parallel-series circuit

TYPE: **SD6/SP-PT** CODE: 5EL3063030
DESCRIPTION: For parallel-series circuit, with BP/BPS secondary aux valve block arrangement

TYPE: **SD6/RPH** CODE: 5EL1063060-H
DESCRIPTION: Type R, for parallel circuit, with fixed setting valves

For floating circuit

TYPE: **SD6/P-5Y** CODE: 5EL1063203A
DESCRIPTION: Standard, for parallel circuit. Only for **13NZ** or **14NZ controls**, in combination with **5Y spool**

TYPE: **SD6/ED-P-5Y** CODE: 5EL1063202A
DESCRIPTION: As previous one, **for right inlet**

TYPE: **SD6/SP-5Y** CODE: 5EL3063203A
DESCRIPTION: Standard, for parallel-series circuit. Only for **13NZ** or **14NZ controls**, in combination with **5Y spool**

TYPE: **SD6/P-5BY** CODE: 5EL1063205A
DESCRIPTION: For parallel circuit. Only for **13QN control**, in combination with **5BY spool**

For regenerative circuit

TYPE: **SD6/P-8** CODE: 5EL1063500
DESCRIPTION: Standard, for parallel circuit. Only for **13F control**, in combination with **8 spool**

Without port valve arrangement:

TYPE: **SD6/Q** CODE: 5EL1063010
DESCRIPTION: Standard, for parallel circuit

TYPE: **SD6/Q-BSP12** CODE: 5EL1064010-H
DESCRIPTION: As previous one, with G 1/2 ports

TYPE: **SD6/Q-MG** CODE: 5EL1063010G
DESCRIPTION: For parallel circuit, for **8MG controls**

TYPE: **SD6/RQH** CODE: 5EL1063800-H
DESCRIPTION: Type R, for parallel circuit, without fixed setting valves

For floating circuit

TYPE: **SD6/Q-5Y** CODE: 5EL1063213A
DESCRIPTION: Standard, for parallel circuit. Only for **13NZ** or **14NZ controls**, in combination with **5Y spool**

NOTE- For standard section, in the configuration description, the letter **P** representing the parallel element is omitted as it is standard; the others indicating different configurations (**Q, S, SP**) must instead always be specified.
Example:
SD6/2/AC(JNG3-120)/**Q**-18L..

2 Spool page 31

TYPE	CODE	DESCRIPTION
Double acting, 3 position		
1	3CU2210130	A and B closed in neutral position
1CS	3CU2210210	As type 1, metering type
1CEX	3CU2210230	As type 1, extra metering type
1A	3CU2221130	A to tank in neutral position
1B	3CU2222130	B to tank in neutral position
2	3CU2225130	A and B to tank in neutral position
2CEX	3CU2215230	As type 2, extra metering type
2HCEX	3CU2215225	As type 2, with A and B partially to tank in neutral position
Single acting, 3 position		
3	3CU2231130	Single acting in A, requires plug on B
4	3CU2235130	Single acting in B, requires plug on A
4CEX	3CU2235230	As type 4, extra metering type
Double acting, 4 position, floating		
5Y	3CU2242140	A and B to tank in position 3 (4th pos.) spool in (lever to pull), requires **13NZ** or **14NZ controls**
NB: the 5Y spool is not compatible with LCA-LCN cloche lever side.		
5BY	3CU2243130	A and B to tank in position 3 (4th pos.) spool out (lever to push), requires **13QN control**
Double acting, 4 position, regenerative		
8	3CU2262100	Regenerative in position 3 (4th pos.) spool in (lever to pull), requires **13F control**

3 "A" side control kit page 33

TYPE	CODE	DESCRIPTION
7	5V07105000	Free control
3 position, with spring return		
6	5V06105000	Spring return in neutral position (non-kit components)
8(1)	5V08105000	Spring return in neutral position
8WPO(1)	5V08105003	As type 8, waterproof
8F2(1)	5V08105101	Spool stroke limiter on B port
8D(1)	5V08105200	External pin with M6 female thread
8D1(1)	5V08105210	External pin with Ø 8 *(Ø 0.31)* hole
8D2(1)	5V08105220	External pin with M8 male thread
8D3(1)	5V08105230	External pin with M8 female thread
8TL(1)	5V08105310	Double control arrangement
8TLTS	5V08105320	As type 8TL, waterproof
8TCL(1)	5V08105300	With flexible cable control arrangement
17	5V17105000	Spring return in position 1 from position 2, free neutral position

Note (*) - Codes are referred to **BSP** thread
(1) - With standard spring type D.
For other types of springs and codes, see page 33

Parts ordering codes

Mechanical control configuration

3 "A" side control kit (continuation) page 33

TYPE	CODE	DESCRIPTION
3 position, with spring return		
17TCL	5V17105300	As type 17, flexible cable control arrangement
18ME	5V18405100	Spring return in position 2
18TCL	5V18105300	As type 18ME, flexible cable control arrangement
18DB	5V18105240	As type 18ME, external pin with M6 female thread
3 position, with spring return, pneumatic control		
8P	5V08105701	ON/OFF pneumatic control
8PNB	5V08105718	As type 8P, waterproof
8PNBZ	5V08105717	Proportional pneumatic control
3 position, with spring return, electropneumatic control		
8EPNB3	5V08105745	ON/OFF, 12 VDC
	5V08105746	As previous one, 24 VDC
3 position, spool control with microswitch		
1 microswitch:		
8MG1(NO)	5V08105670	With microswitch in position 1, NO contact
8MG2(NO)	5V08105680	With microswitch in position 2, NO contact
8MG3(NO)	5V08105660	With microswitch in positions 1 and 2, NO contact
8MG3(NC)	5V08105662	With microswitch in positions 1 and 2, NC contact
8MG39(NO)	5V08105669	As type 8MG3(NO), with integrate connection
2 microswitch:		
8MG19\MG29 (NC\NC)	5V08105691	With 2 NC microswitch
8MG19\MG29 (NO\NO)	5V08105675	With 2 NO microswitch
3 position, with detent and spring return in neutral position		
9	5V09105010	Detent in position 1
9TCL	5V09105300	As type 9 with flexible cable control arrangement
9D	5V09105200	As type 9, external pin with M6 female thread
9BZ	5V09202010	As type 9, Zama execution
10	5V10105010	Detent in position 2
10BZ	5V10202010	As type 10, Zama execution
10TCL	5V10105300	As type 10, flexible cable control arrangement
10TL	5V10105310	As type 10, double control arrangement
10D	5V10105200	As type 10, external pin with M6 female thread
11B	5V11205000	Detent in positions 1 and 2
11BZ	5V11202010	As type 11B, Zama execution
21	5V21105003	Detent in position 2 and spring return in position 1
3 position, with detent		
11	5V11105000	Detent in all positions
11WPO	5V11105004	As type 11, waterproof
11D	5V11105200	As type 11, external pin with M6 female thread
11D2	5V11105220	As type 11, external pin with M8 male thread
11TCL	5V11105300	As type 11, flexible cable control arrangement
11TL	5V11105310	As type 11, double control arrangement
12	5V12105000	Detent in positions 1 and 2

3 "A" side control kit (continuation) page 33

TYPE	CODE	DESCRIPTION
2 position, with spring return		
17A	5V17105050	Position 1-0, spring return in position 1
18BME	5V18405000	Position 2-0, spring return in position 2
19	5V19105000	Position 1-0, spring return in position 0
20	5V19105000	Position 2-0, spring return in position 0
2 position, with detent		
15	5V15105000	Position 1-0, detent in both position
15WPO	5V15105002	As type 15, waterproof
16	5V16105000	Position 2-0, detent in both position
16WPO	5V16105003	As type 16, waterproof
4 position, with spring return, for floating circuit		
13NZ	5V13305010	Detent in pos. 3, spring return in neutral position, for **5Y spool**
14NZ	5V14305010	Detent in pos. 1, 2, 3, spring return in neutral position, for **5Y spool**
13QN	5V13405020	Detent in pos. 3, spring return in neutral position, for **5BY spool**
4 position, with spring return, for regenerative circuit		
13F	5V13506100	Spring return in pos. 0, for **8 spool**
3 position, with spring return, ON/OFF electrohydraulic control		
8ED3	5V08105350	Spring return in neutral position, ON/OFF electrohydraulic control in pos. 1 e 2, 12 VDC
	5V08105351	As previous one, 24 VDC

For **BT** coil list and connectors, see page 90

2 position, with spring return, ON/OFF electrohydraulic control		
19ED1	5V19105350	Spring return in neutral position from pos. 1, ON/OFF electrohydraulic control in position 1, 12 VDC
	5V19105351	As previous one, 24 VDC
20ED2	5V20105350	Spring return in neutral position from pos. 2, ON/OFF electrohydraulic control in position 2, 12 VDC

For **BT** coil list and connectors, see page 93

3A Collector kit for electrohydraulic control

For the list of collector kits, see page 49

Note (*) - Codes are referred to **BSP** thread

Parts ordering codes

Mechanical control configuration

4 "B" side control kit page 50

TYPE	CODE	DESCRIPTION
Aluminium lever box		
L	5LEV105000	Standard lever kit
LM10	5LEV205000	As type L, with M10 thread
LSG	5LEV105000S	As type L, waterproof
LSGM10	5LEV205000S	As type LSG, with M10 thread
LW	5LEV105005	As type L, with rust preventer treatment
LWM10	5LEV205005	As type LM10, with rust preventer treatment
LF1	5LEV105102	As type L, with spool stroke limiter on A port
LF1M10	5LEV205100	As type LF1, with M10 thread
L9	5LEV105950	With spool extension
LSG9	5LEV105950S	As type L9, waterproof
Aluminium lever box with detent		
LE	5LEV505000	With detent in neutral position
LEB	5LEV605000	As type LE, with safety lever
LEB5	5LEV605030	With detent in position 1 and 2, safety lever
LSGEB5	5LEV605001S	As type LEB5, waterproof
LUP	5LEV805005	Horizontal safety lever
LSGUP	5LEV805005S	As type LUP, waterproof
LUP(R150)	5LEV805010	As type LUP, with short lever
LSGUP(R150)F1	5LEV805012S	As type LUP(150), waterproof and spool stroke limiter on A port
Cast iron lever box		
LG	5LEV105805	Standard lever kit
LFG	5LEV105800	As type LG, with spool stroke limiter
Steel lever		
LB3	5LEV305000	With upper pivot
LB3M10	5LEV305050	As type LB3, with M10 thread
LB1	5LEV305100	With low pivot
Cloche for simultaneous operation of 2 sections		
LCN1-4	5CLO306100	Mechanical joystick, right drive, with nylon bearing
LCN2-3	5CLO306101	Mechanical joystick, left drive, with nylon bearing
LCA1-4	5CLO306055	Mechanical joystick, right drive, with bronze bearing
LCA2-3	5CLO306056	Mechanical joystick, left drive, with bronze bearing
Without lever		
SLP	5COP105000	Dustproof plate
SLCZ	5COP205030	With endcap
TQ50	5TEL105110	Flexible cable connection

8 Plug for single acting spool*

CODE	DESCRIPTION
3XTAP722160	G 3/8 plug
3XTAP727180	G 1/2 plug

5 Auxiliary valve page 59

TYPE	CODE	DESCRIPTION
Valves for standard section:		
P3T	XTAP524280	Valve blanking plug
C	5KIT406110	Anticavitation valve
PDS	5KIT406520	Single/Double acting selector
Antishock valve		
setting is referred to 10 l/min *(2.6 US gpm)*		
P(G2)	5KIT206112	Setting range 50-125 bar *(725-1810 psi)* std. setting 80 bar *(1160 psi)*
P(G3)	5KIT206113	Setting range 100-200 bar *(1450-2900 psi)* std. setting 120 bar *(1740 psi)*
P(G3)	5KIT206113A	Setting range 130-210 bar *(1880-3040 psi)* std. setting 160 bar *(2320 psi)*
P(G4)	5KIT206114	Setting range 160-315 bar *(2320-4560 psi)* std. setting 200 bar *(2900 psi)*
Antishock and anticavitation valve		
setting is referred to 10 l/min *(2.6 US gpm)*		
U(G2)	5KIT306112	Setting range 50-125 bar *(725-1810 psi)* std. setting 60 bar *(870 psi)*
U(G3)	5KIT306113	Setting range 100-200 bar *(1450-2900 psi)* std. setting 100 bar *(1450 psi)*
U(G4)	5KIT306114	Setting range 160-315 bar *(2320-4560 psi)* std. setting 200 bar *(2900 psi)*
Valves for type R section:		
UT	XTAP518370	Valve blanking plug

Antishock and anticavitation valve with fixed setting
setting is referred to 10 l/min *(2.6 US gpm)*

TIPO: **U100** CODICE: 5KIT308100
└ setting (bar) └ setting (bar)

SETTING:

40 bar	50 bar	60 bar	80 bar
100 bar	120 bar	130 bar	140 bar
150 bar	165 bar	185 bar	200 bar
210 bar	220 bar	235 bar	250 bar
270 bar	300 bar	340 bar	

NOTE- In the configuration description, the wording **P3T** indicating the valve blanking plug, is omitted; the others indicating different configurations of aux valves (**P**, **U**, **C**, **PDS**) instead, they must always be specified.

6 Secondary aux valve block* page 63

TYPE	CODE	DESCRIPTION
BPT	XTAP627300	Valve blanking plug
Pilot operated check valve		
BP1	612002000	Valve on A port
BP2	612002000	Valve on B port
BP3	612002100	Valve on A or B ports
Pilot operated check valve with pre-opening		
BPS1	612003000	Valve on A port
BPS2	612003000	Valve on B port
BPS3	612003100	Valve on A or B ports

7 Working section threading

Only specify if it is different from **BSP** standard (see page 4)

Note (*) - Codes are referred to **BSP** thread

Parts ordering codes

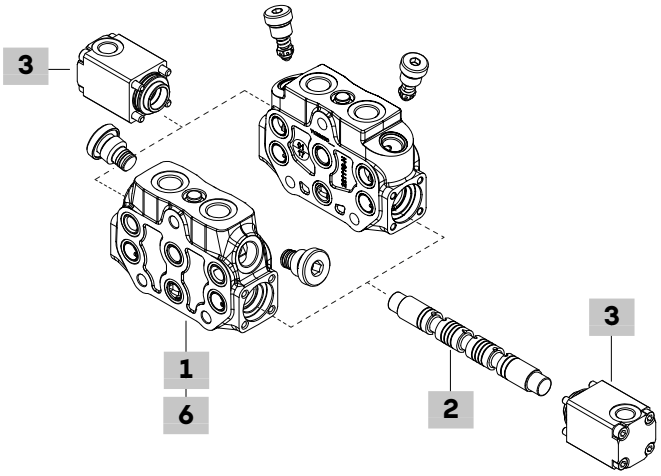
Proportional hydraulic control configuration

Unless otherwise specified, the working section are intended for valve with standard left inlet and right inlet.

Std. section and dedicated spool

SD6 - P-IM-ES / 1IM - 8IM - ...

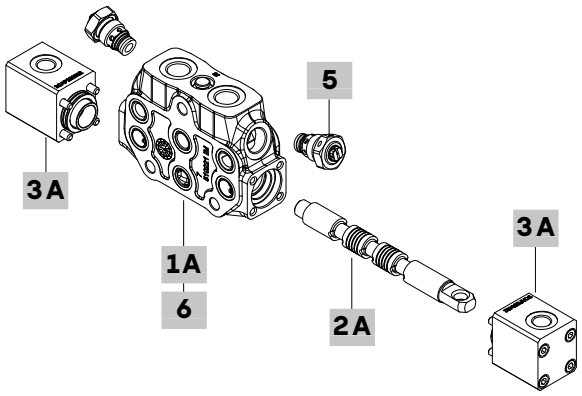
1 **2** **3** **6**



Dedicated section and std. spool

SD6 - PI / 1 - 8IMP . P3(G3-100) - ...

1A **2A** **3A** **5** **6**



1 Working section* page 28

The body kit includes O-ring seals and a check valve.

With port valve arrangement:

TYPE: **SD6/P-IM-ES** CODE: 5EL106300A-H
DESCRIPTION: Standard, for parallel circuit
TYPE: **SD6/P-IM-ES/BSP12** CODE: 5EL106400C
DESCRIPTION: As previous one, with G 1/2 port
TYPE: **SD6/RPH-IM-ES** CODE: 5EL1063060-H
DESCRIPTION: Type R, for parallel circuit, with fixed setting port valves arrangement
TYPE: **SD6/S-IM-ES** CODE: 5EL206300A
DESCRIPTION: Standard, for series circuit
TYPE: **SD6/S-IM-ES/BSP12** CODE: 5EL206400A
DESCRIPTION: As previous one, with G 1/2 port
TYPE: **SD6/SP-IM-ES** CODE: 5EL306300A-H
DESCRIPTION: Standard, for parallel-series circuit

Without port valve arrangement:

TYPE: **SD6/Q-IM-ES** CODE: 5EL1063010A
DESCRIPTION: Standard, for parallel circuit
TYPE: **SD6/Q-IM-ES/BSP12** CODE: 5EL1064010A
DESCRIPTION: As previous one, with G 1/2 port
TYPE: **SD6/RQH-IM-ES** CODE: 5EL1063800-H
DESCRIPTION: Type R, for parallel circuit, without fixed setting port valves arrangement

2 Spool page 31

TYPE	CODE	DESCRIPTION
Double acting, 3 position		
1IM	3CU2210420	A and B closed in neutral position
2IM	3CU2225420	A and B to tank in neutral position

3 Complete hydraulic control* page 57

TYPE	CODE	DESCRIPTION
3 position, with spring return in neutral position		
8IM	5IDR206010	With G 1/4 upper port
8IMF3	5IDR206012	As previous one, with spool stroke limiter

1A Dedicated working section* page 28

The body includes O-ring seals and a check valve.

With port valve arrangement:

TYPE: **SD6/PI** CODE: 5EL1063003
DESCRIPTION: For parallel circuit

2A Spool page 31

For list of spool, see #2 page 24

3A Complete hydraulic control* page 57

TYPE	CODE	DESCRIPTION
3 position, with spring return in neutral position		
8IMP	5IDR206020	With G 1/4 upper port, for use with mechanical spool

5 Auxiliary valve page 59

For list of auxiliary valve, see #5 page 26

6 Working section threading

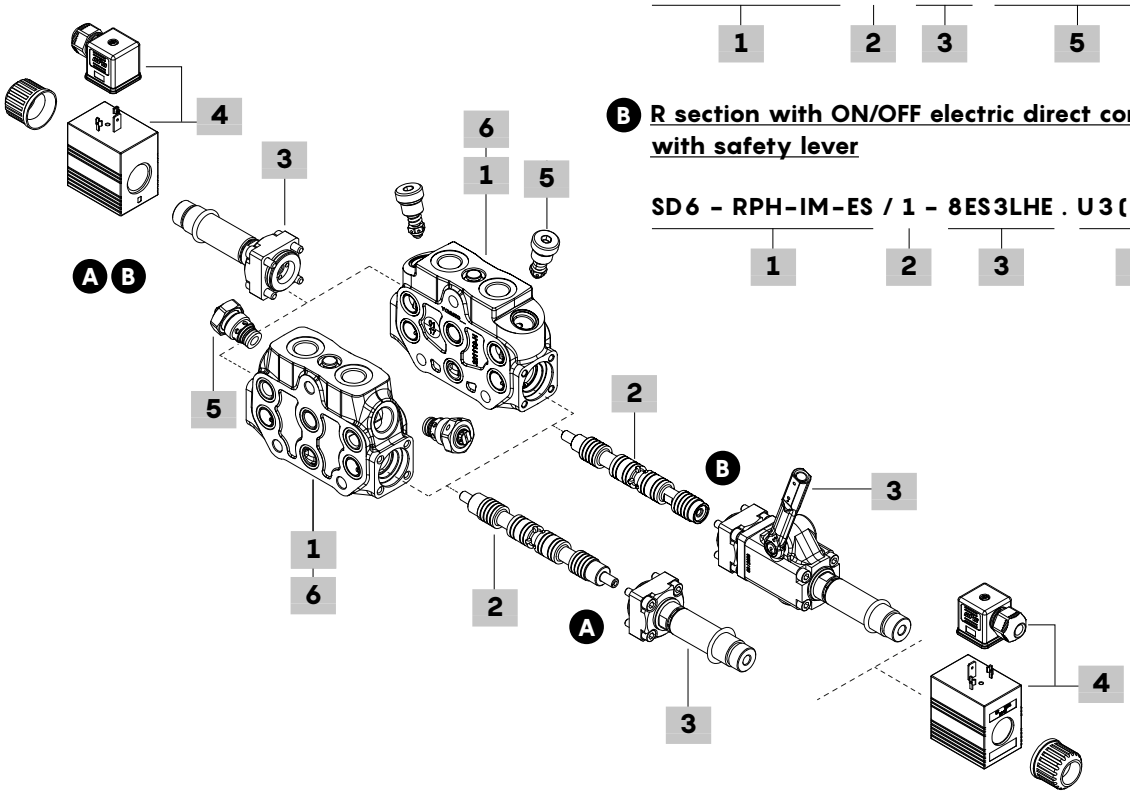
Only specify if it is different from **BSP** standard (see page 4)

Note (*) - Codes are referred to **BSP** thread

Parts ordering codes

ON/OFF electric direct control configuration

Unless otherwise specified, the working section are intended for valve with standard left inlet and right inlet.



A **Std. section with ON/OFF electric direct control**

SD6 - P-IM-ES / 1 - 8ES3 . P3(G3-120) - 12VDC - ...

1 2 3 5 4 6

B **R section with ON/OFF electric direct control, with safety lever**

SD6 - RPH-IM-ES / 1 - 8ES3LHE . U3(150) - 12VDC - ...

1 2 3 5 4 6

1 Working section* page 28

For list of working section, see #1 page 27

2 Spool page 31

TYPE	CODE	DESCRIPTION
For ON/OFF electric direct control		
Double acting, 3 position		
1(ES3)	3CU2210015	A and B closed in neutral position
2(ES3)	3CU2225015	A and B to tank in neutral position
Single acting, 3 position		
3(ES)	3CU2231021	Single acting in A, requires plug on B
4(ES)	3CU2231021	Single acting in B, requires plug on A
For ON/OFF electric control, with safety lever		
Double acting, 3 position		
1(ES3LHE)	3CU2210018	A and B closed in neutral position
2(ES3LHE)	3CU2225018	A and B to tank in neutral position
Single acting, 3 position		
3(ES3LHE)	3CU2231052	Single acting in A, requires plug on B

3 ON/OFF electric direct control* page 58

NB: coils are not included.

TYPE	CODE	DESCRIPTION
ON/OFF electric direct control		
3 position, with spring return in neutral position		
8ES3	5CAN08027	Double acting in A and B
8ES1	5CAN08026	Single acting in A
8ES2	5CAN08026	Single acting in B
ON/OFF electric direct control with safety control		
3 position, with spring return in neutral position		
8ES3LHE	5CAN08090	Double acting in A and B

4 Coil

TYPE	CODE	DESCRIPTION
D12-12VDC	4SOL412012	Type D12 coil, 12 VDC, conn ISO4400

For **D12** coil list and connectors, see page 93

5 Auxiliary valve page 59

For list of auxiliary valve, see #5 page 26

6 Working section threading

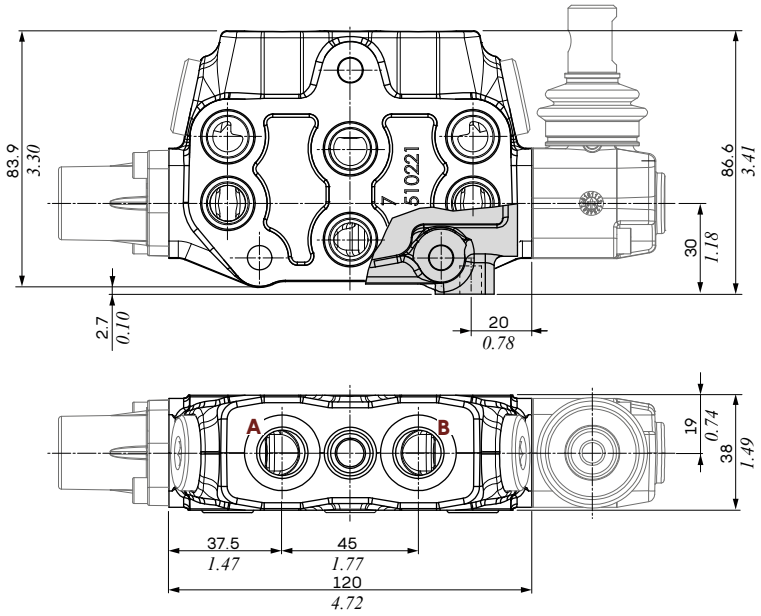
Only specify if it is different from **BSP** standard (see page 4)

Note (*) - Codes are referred to **BSP** thread

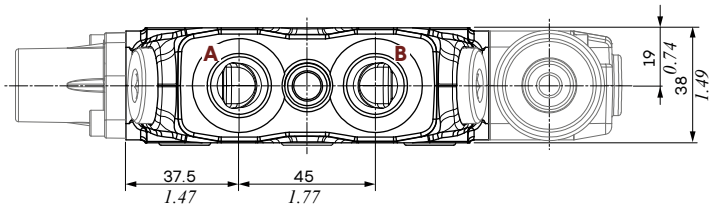
Dimensional data and hydraulic circuit

Standard working section

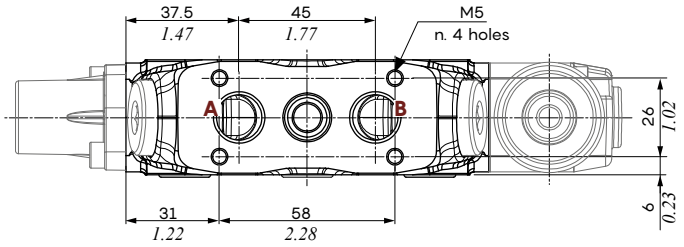
Section for
Parallel or Parallel-series (tandem) circuit
(counterbore side view)



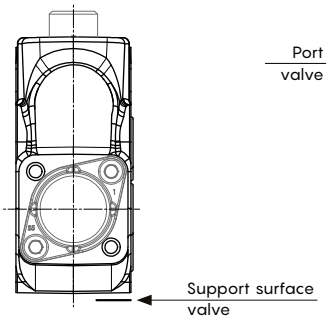
With G 1/2 ports



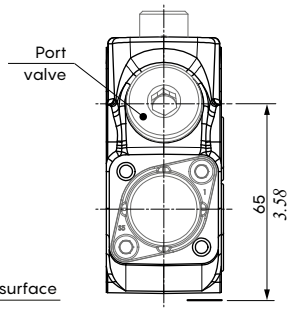
Type PT*
(secondary aux valve block arrangement)



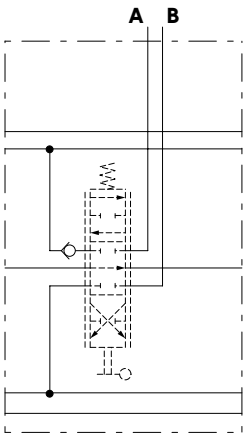
Type Q/Q5Y
Without port valves
arrangement
(type Q5Y for floating circuit)



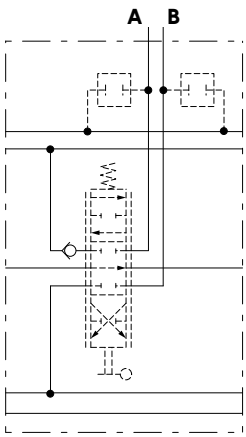
Type P/SP/P5/P8
With port valves
arrangement
(type P5 for floating circuit)
(type P8 for regenerative circuit)



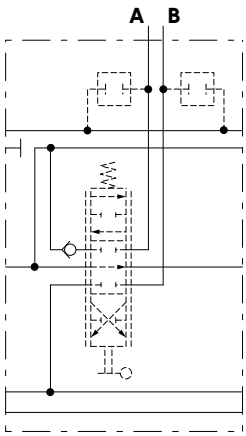
Type Q



Type P



Type SP



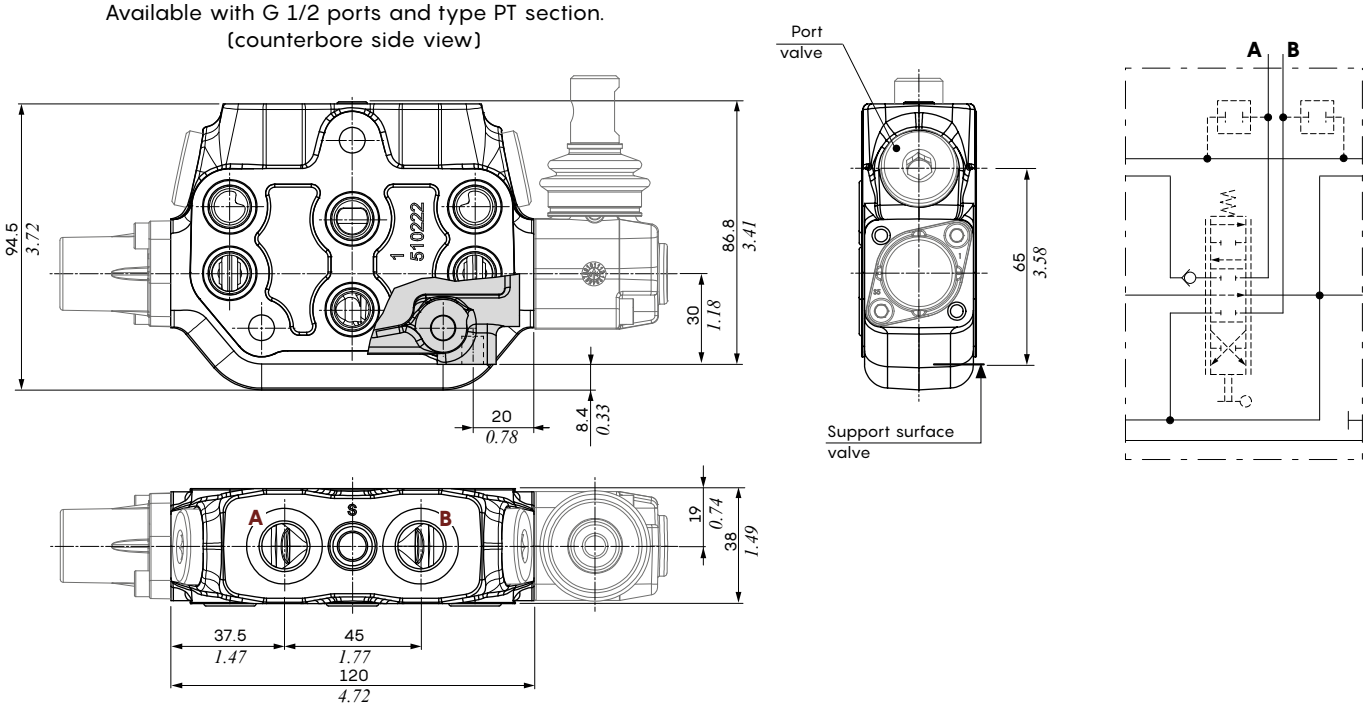
Note - The drawings and dimensions refer to the **BSP** thread
(*) - For dimensions and circuits of valve block, see page 63

Dimensional data and hydraulic circuits

Standard working section

Type S

Section for Series circuit, with port valve arrangement.
Available with G 1/2 ports and type PT section.
(counterbore side view)



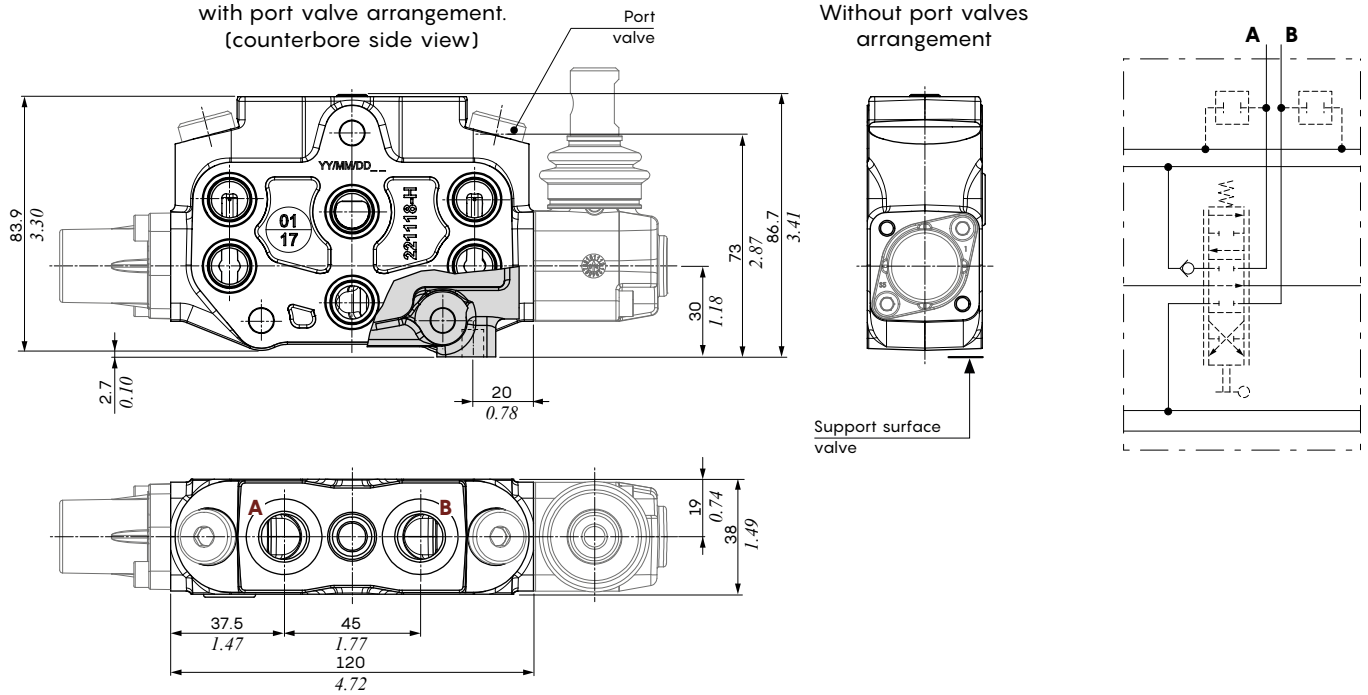
Type R section for fixed setting auxiliary valves

Type RPH

Section for Parallel circuit,
with port valve arrangement.
(counterbore side view)

Type RQH

Without port valves
arrangement

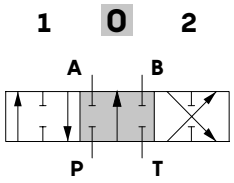


Note - The drawings and dimensions refer to the **BSP** thread

Double and single acting

Type 1
(1-1CS-1CEX-1IM-1ES3-1[ESLHE])

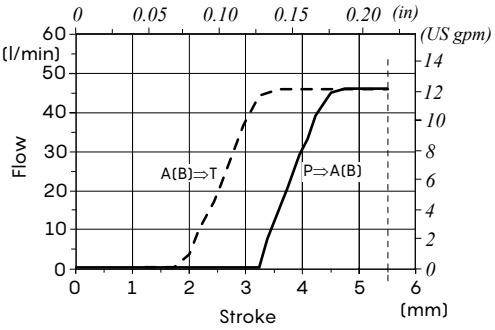
A and B closed in neutral position



Stroke
(1-1CS-1CEX-1IM)
position 1: + 5.5 mm *(+ 0.21 in)*
position 2: - 5.5 mm *(- 0.21 in)*
(1ES3-1[ESLHC])
position 1: + 3.4 mm *(+ 0.13 in)*
position 2: - 3.4 mm *(- 0.13 in)*

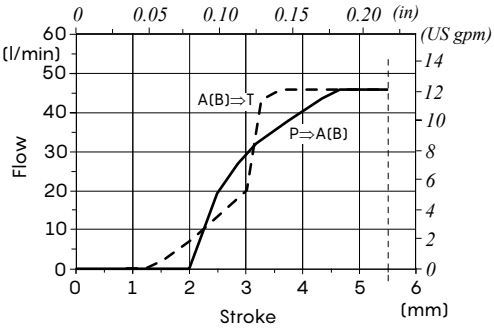
Spool metering type 1
P→A(B) - A(B)→T

Q_{in} = 45 l/min *(11.8 US gpm)* - $P_{(on\ ports)}$ = 100 bar *(1450 psi)*

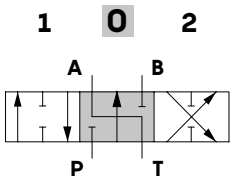


Spool metering type 1CS
P→A(B) - A(B)→T

Q_{in} = 45 l/min *(11.8 US gpm)* - $P_{(on\ ports)}$ = 100 bar *(1450 psi)*

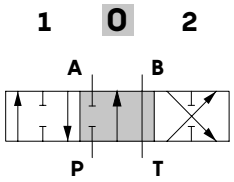


Type 1A
A to tank in neutral position



Stroke
position 1: + 5.5 mm *(+ 0.21 in)*
position 2: - 5.5 mm *(- 0.21 in)*

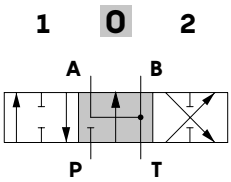
Type 1B
B to tank in neutral position



Stroke
position 1: + 5.5 mm *(+ 0.21 in)*
position 2: - 5.5 mm *(- 0.21 in)*

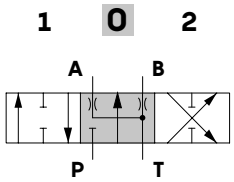
Type 2
(2-2CEX-2IM-2ES3-2[ESLHE])

A and B to tank in neutral position



Stroke
(2-2CEX-2IM)
position 1: + 5.5 mm *(+ 0.21 in)*
position 2: - 5.5 mm *(- 0.21 in)*
(2ES3-2[ESLHC])
position 1: + 3.4 mm *(+ 0.13 in)*
position 2: - 3.4 mm *(- 0.13 in)*

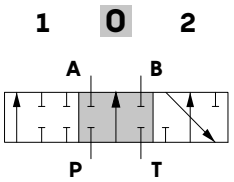
Type 2HCEX
A and B partially to tank in neutral position



Stroke
position 1: + 5.5 mm *(+ 0.21 in)*
position 2: - 5.5 mm *(- 0.21 in)*

Type 3
(3-3ES-3[ESLHE])

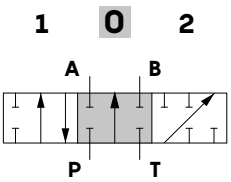
Single acting in A, B plugged



Stroke
position 1: + 5.5 mm *(+ 0.21 in)*
position 2: - 5.5 mm *(- 0.21 in)*

Type 4
(4-4CEX-4ES)

Single acting in B, A plugged



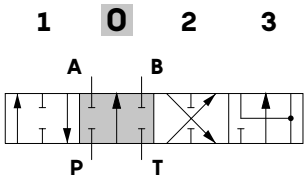
Stroke
position 1: + 5.5 mm *(+ 0.21 in)*
position 2: - 5.5 mm *(- 0.21 in)*

Spools

Double acting, for floating circuit

Type 5Y

Floating in position 3
(4th pos.), spool in

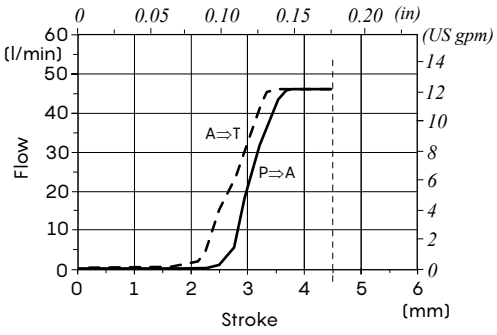


Stroke

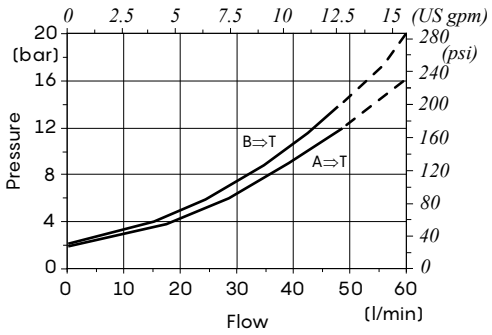
position 1: + 4.5 mm *(+ 0.17 in)*
position 2: - 4.5 mm *(- 0.17 in)*
position 3: - 9 mm *(- 0.35 in)*

Spool metering

Q_{in} = 45 l/min *(11.8 US gpm)* - $P_{(on\ ports)}$ = 100 bar *(1450 psi)*

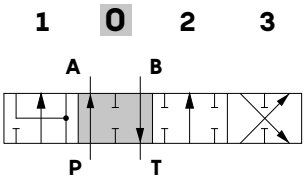


Pressure drop in position 3



Type 5BY

Floating in position 3
(4th pos.), spool out

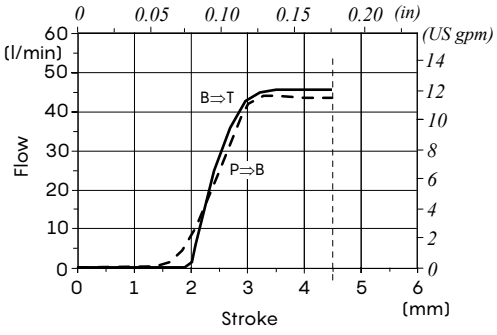


Stroke

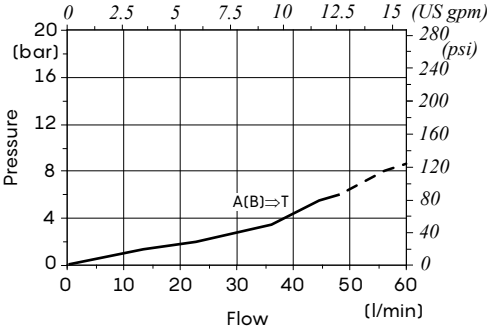
position 1: + 4.5 mm *(+ 0.17 in)*
position 2: - 4.5 mm *(- 0.17 in)*
position 3: + 9 mm *(+ 0.35 in)*

Spool metering

Q_{in} = 45 l/min *(11.8 US gpm)* - $P_{(on\ ports)}$ = 100 bar *(1450 psi)*



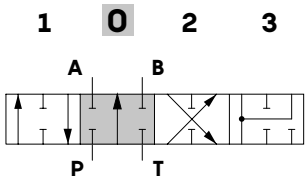
Pressure drop in position 3



Double acting, for regenerative circuit

Type 8

Regenerative in position 3
(4th pos.), spool in

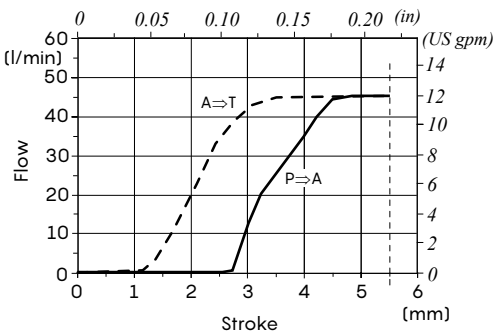


Stroke

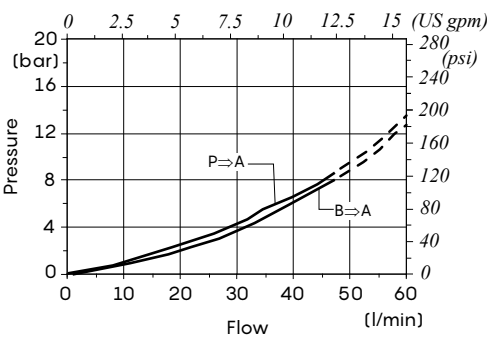
position 1: + 5 mm *(+ 0.19 in)*
position 2: - 5 mm *(- 0.19 in)*
position 3: - 8.5 mm *(- 0.33 in)*

Spool metering

Q_{in} = 45 l/min *(11.8 US gpm)* - $P_{(on\ ports)}$ = 100 bar *(1450 psi)*



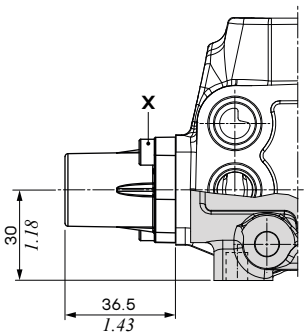
Pressure drop in position 3



"A" side control

Mechanical control

Free control



Type 7

1	0	2

Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

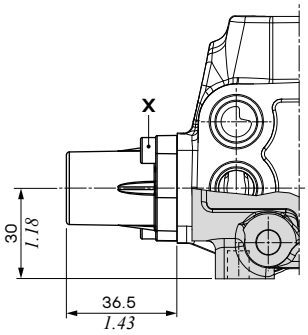
3 position, with spring return in neutral position

Type 6
With the possibility of spring replacement

Type 8
Spring return in neutral position

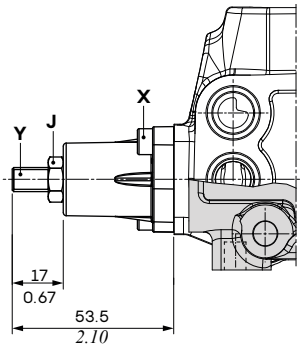
Type 8WPO
As type 8, waterproof

1	0	2



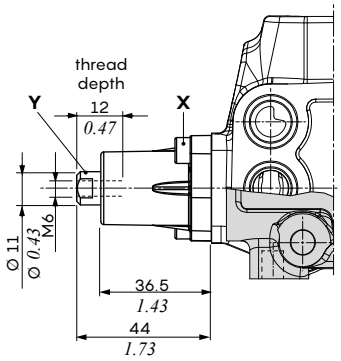
Type 8F2
Spool stroke limiter on B port

1	0	2



Type 8D
External pin with M6 female thread

1	0	2



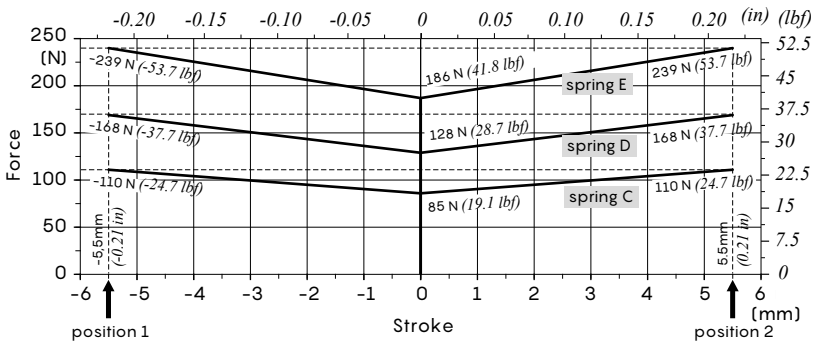
On request the spool end pin cod. **XPER315400**, to be screwed on the pin

Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
J = wrench 13 - 24 Nm *(17.7 lbft)*
Y = allen wrench 4

Control	Ordering codes		
	Spring type C (soft)	Spring type D (standard)	Spring type E (hard)
8	5V08205000	**5V08105000**	5V08405000
8WPO	5V08205003	**5V08105003**	5V08405003
8F2	5V08205101	**5V08105101**	5V08405101
8D	5V08205200	**5V08105200**	5V08405200

Note: bold code represent standard version

Force vs. Stroke diagram



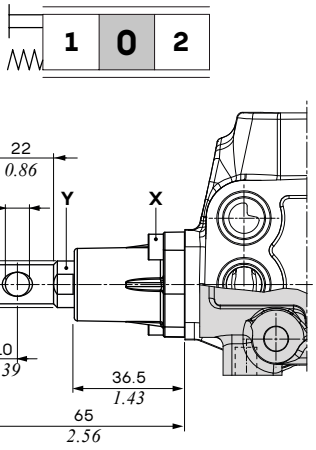
"A" side control

Mechanical control

3 position, with spring return in neutral position

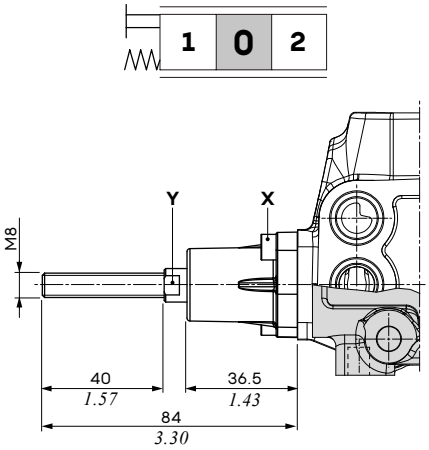
Type 8D1

External pin with Ø 8 *(Ø 0.31)* hole



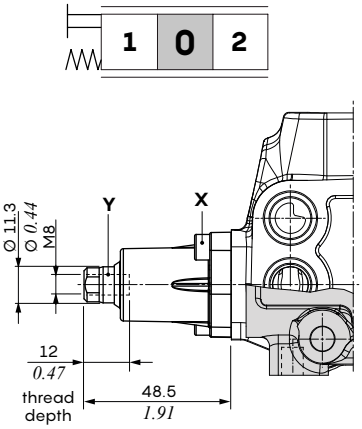
Type 8D2

External pin with M8 male thread



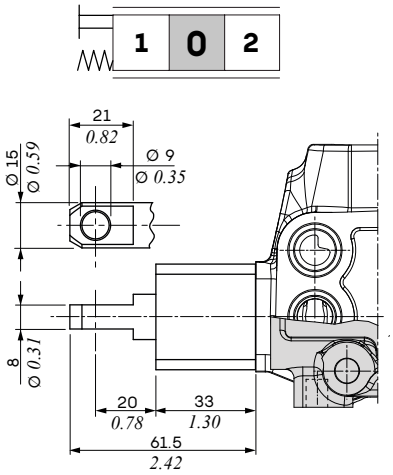
Type 8D3

External pin with M8 female thread



Type 8TL

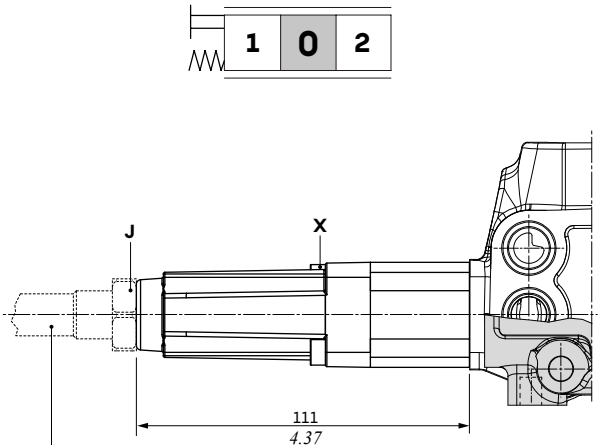
Double control arrangement



For use with **TQ50** kit, cod. 5TEL105101

Type 8TCL

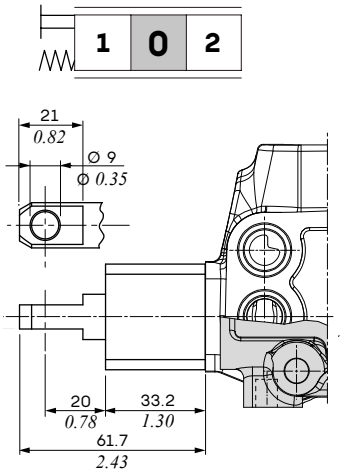
With flexible cable control arrangement



Flexible cable type CD or CG, not included

Type 8TLTS

As type 8TL, waterproof



For use with **TQTL50**, cod. 5TEL105101RF

Control	Ordering codes		
	Spring type C (soft)	Spring type D (standard)	Spring type E (hard)
8D1	/	**5V08105210**	/
8D2	5V08205220	**5V08105220**	/
8D3	/	**5V08105230**	5V08405230
8TL	**5V08105310**	5V08105312	5V08105314
8TCL	**5V08105300**	/	5V08405300

Note: bold code represent standard version

Wrenches and tightening torques

X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

Y = wrench 9 - 9.8 Nm *(7.2 lbft)*

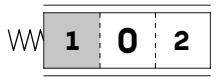
J = wrench 24

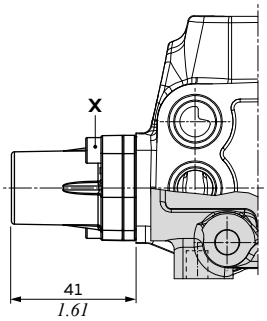
"A" side control

Mechanical control

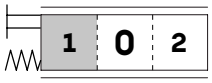
3 position, with spring return in position 1 or 2

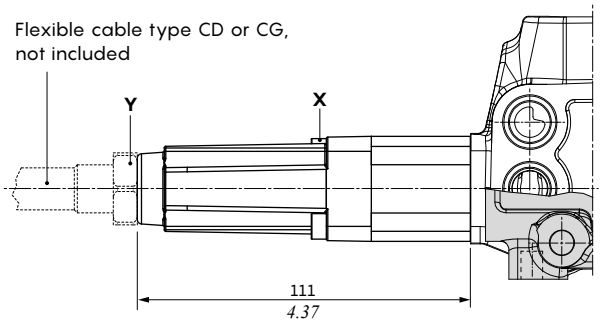
Type 17
Spring return in position 1



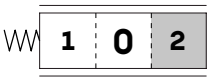


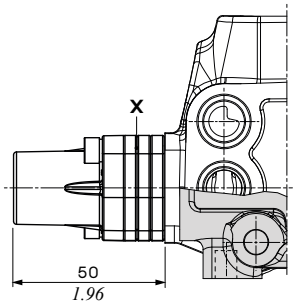
Type 17TCL
With flexible cable control arrangement



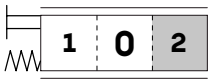


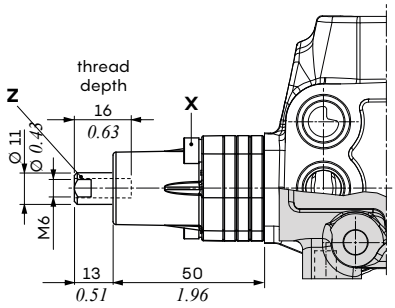
Type 18ME
Spring return in position 2



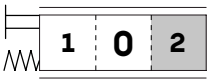


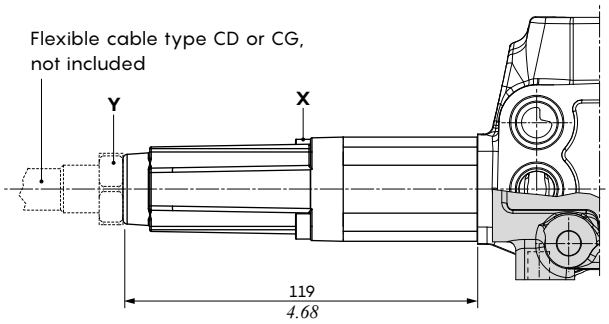
Type 18DB
As type 18ME,
external pin with M6 female thread





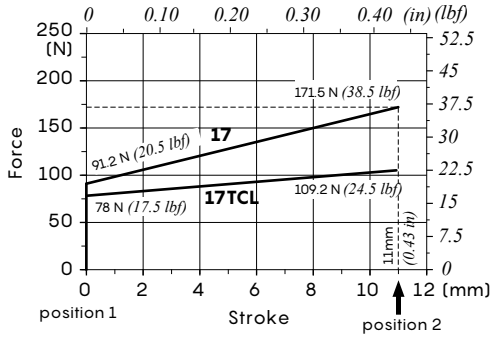
Type 18TCL
With flexible cable control arrangement



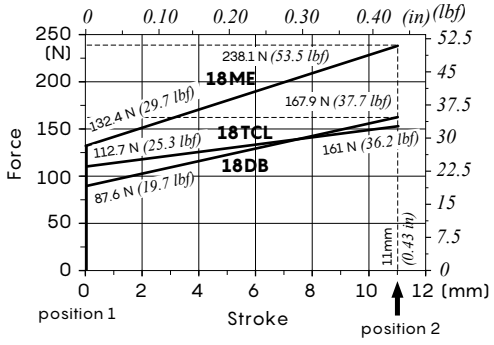


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
Y = wrench 9 - 9.8 Nm *(7.2 lbft)*
J = wrench 24

Force vs. Stroke diagram
(Type 17 - 17TCL)



Force vs. Stroke diagram
(Type 18ME - 18TCL - 18DB)

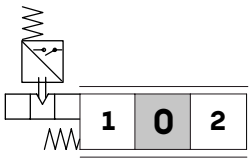


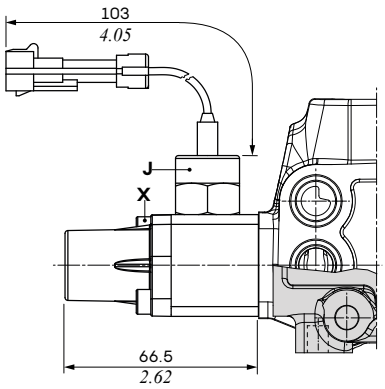
"A" side control

Mechanical control

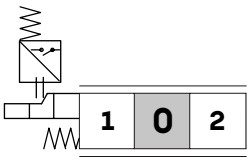
3 position, spool control with microswitch

Type 8MG3(NO)
Microswitch in positions 1 and 2,
NO (normally opened) contact

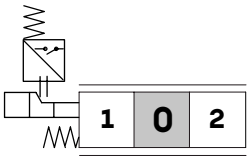




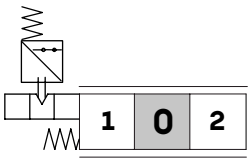
Type 8MG2(NO)
Microswitch in position 2,
NO (normally opened) contact

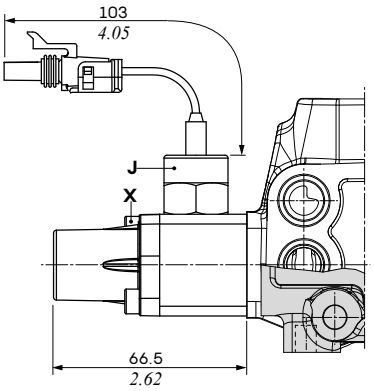


Type 8MG1(NO)
Microswitch in position 1,
NO (normally opened) contact

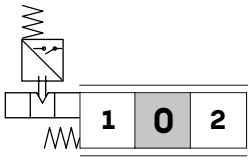


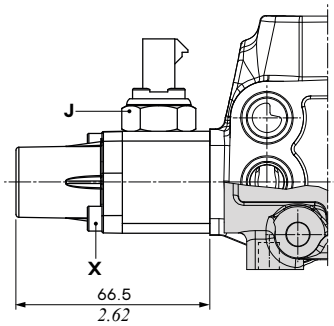
Type 8MG3(NC)
Microswitch in positions 1 and 2,
NC (normally closed) contact



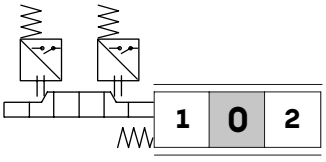


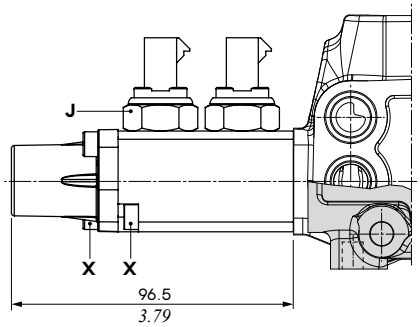
Type 8MG39(NO)
As type 8MG3(NO) with integrated
connector NO (normally opened)



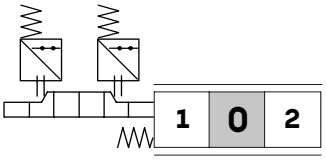


Type 8MG19/MG29(NO/NO)
Microswitch in positions 1 and 2,
NO (normally opened) contact





Type 8MG19/MG29(NC/NC)
Microswitch in positions 1 and 2,
NC (normally closed) contact



Microswitch features (for all types 8MG controls)

Mechanical life.....$5x10^5$ operations
Electrical life (resistive load).....10^5 cicli - 7 A / 13.5 VDC
$5x10^4$ cicli - 10 A / 12 VDC
$5x10^4$ cicli - 3 A / 28 VDC

Wrenches and tightening torques

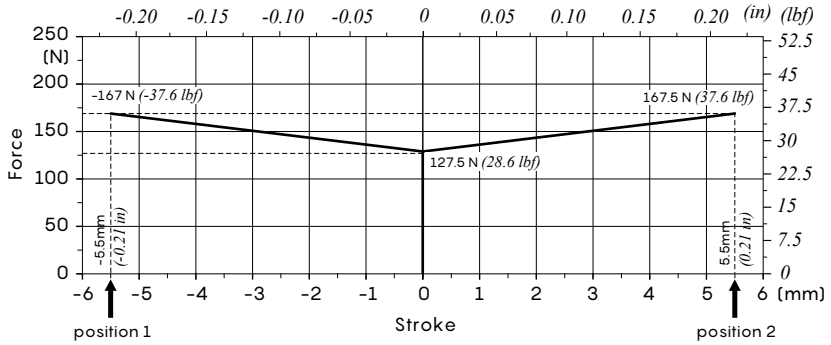
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
J = wrench 22 - 42 Nm *(31 lbft)*

"A" side control

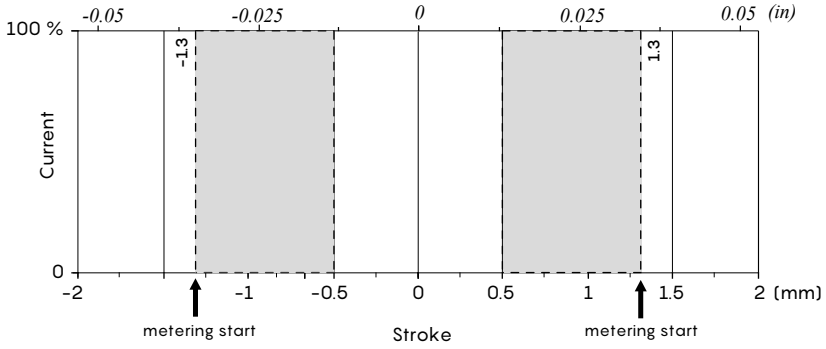
Mechanical control

3 position, spool control with microswitch

Force vs. Stroke diagram
(for all types 8MG controls)



Microswitch operation
(for all types 8MG controls)



Ordering codes complete controls (microswitch operations)					
Circuit	position 1 **8MG1**	position 2 **8MG2**	position 1, 2 **8MG3**	position 1, 2 **8MG39**	position 1, 2 **8MG19/MG29**
(NO)	5V08105670	5V08105680	5V08105660	5V08105669	5V08105675
(NC)	-	-	5V08105662	-	5V08105691

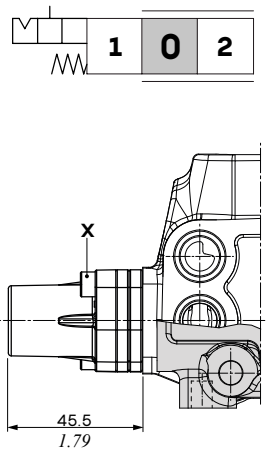
Ordering codes microswitch		
Control type	**Microswitch**	**Mating connector code (not included)**
8MG3(NC)	4MIC744	5CON005
8MG3(NO) **8MG1(NO)** **8MG2(NO)**	4MIC730	5CON001
8MG39(NO)	4MIC733	5CON001
8MG19/29(NC/NC)	4MIC743	5CON140047
8MG19/29(NO/NO)	4MIC733	5CON140047

"A" side control

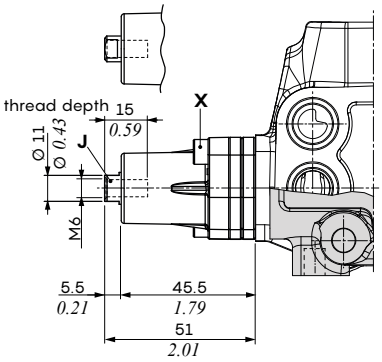
Mechanical control

3 position, with detent and spring return in neutral position

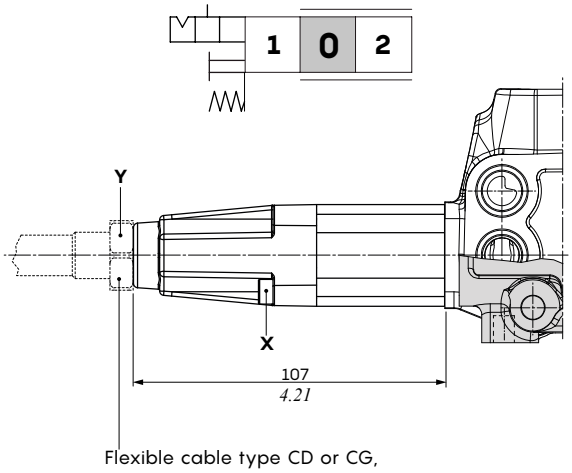
Type 9
Detent in position 1



Type 9D
As type 9, external pin with M6 female thread



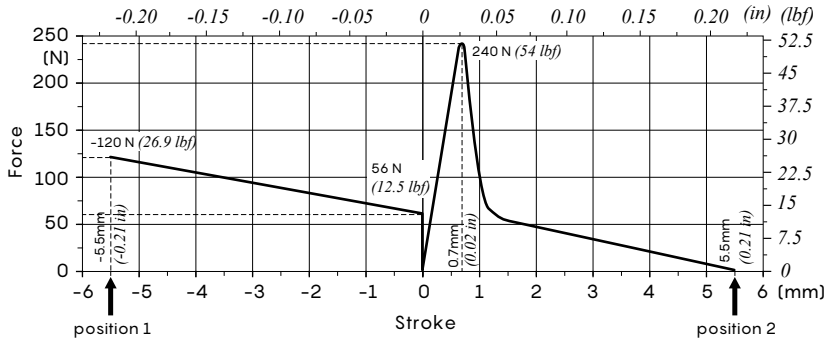
Type 9TCL
With flexible cable control arrangement



Flexible cable type CD or CG, not included

Features (all types)
Locking force (pos. from 0 to 2): .....240 N *(54 lbf)*
Release force (pos. from 2 to 0).: .....150 N *(33.7 lbf)*

Force vs. Stroke diagram
(9-9D-9TCL)



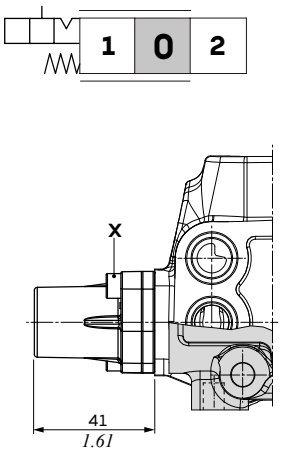
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
J = wrench 9 - 9.8 Nm *(7.2 lbft)*
Y = wrench 24

"A" side control

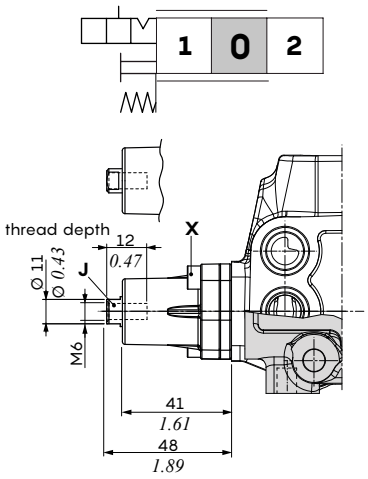
Mechanical control

3 position, with detent and spring return in neutral position

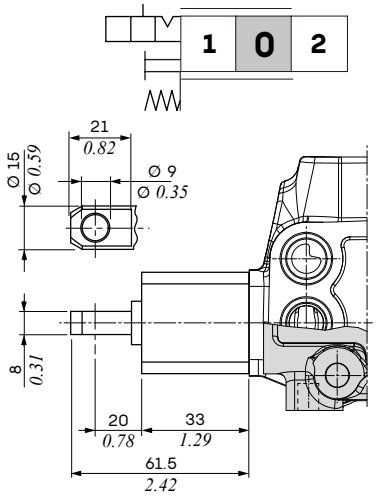
Type 10
Detent in position 2



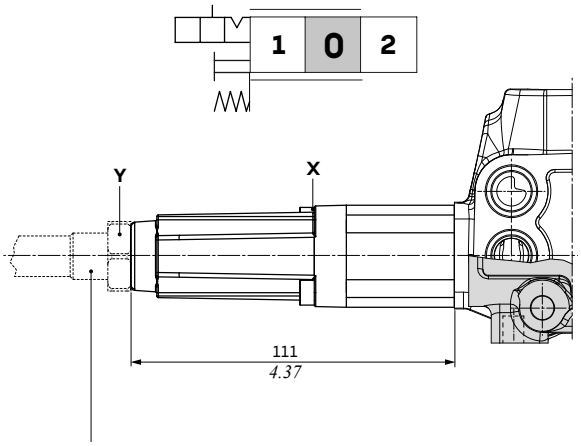
Type 10D
As type 10, external pin with M6 female thread



Type 10TL
Double control arrangement



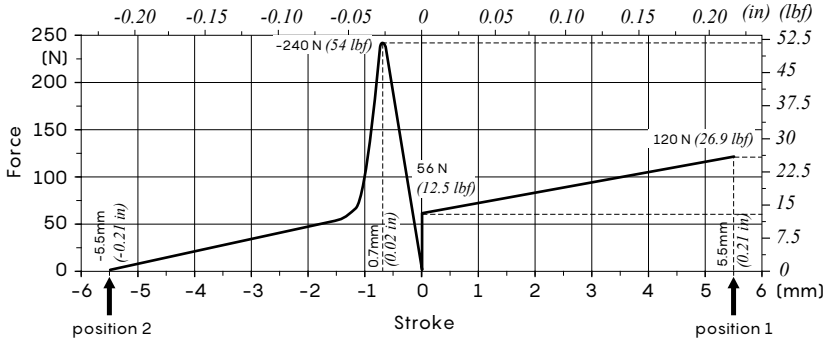
Type 10TCL
Flexible cable control arrangement



Flexible cable type CD or CG, not included

Features (all types)
Locking force (pos. from 0 to 2): .....240 N *(54 lbf)*
Release force (pos. from 2 to 0).: .....150 N *(33.7 lbf)*

Force vs. Stroke diagram (10-10D-10TL-10TCL)



Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
J = wrench 9 - 9.8 Nm *(7.2 lbft)*
Y = wrench 24

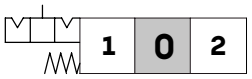
"A" side control

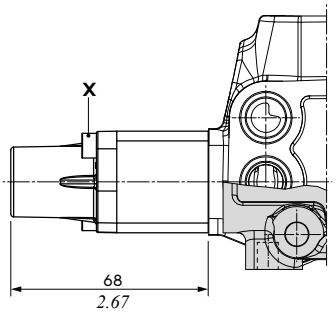
Mechanical control

3 position, with detent and spring return in neutral position

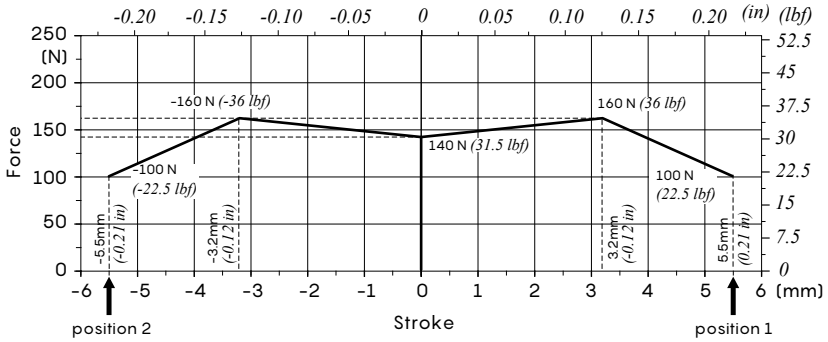
Type 11B

Detent in positions 1 and 2





Force vs. Stroke diagram
(11B)



Features type 11B

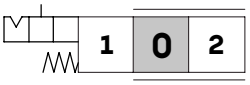
Locking and release force: .....120 N *(27 lbf)*

Wrenches and tightening torques

X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

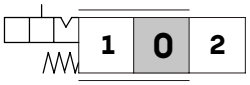
Type 9BZ

Detent in position 1
(A curve)



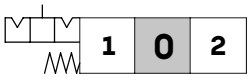
Type 10BZ

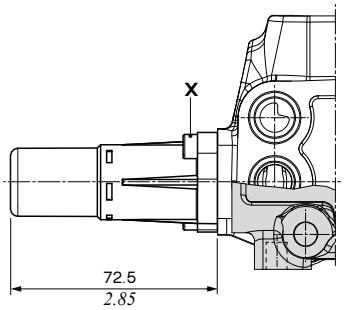
Detent in position 2
(B curve)



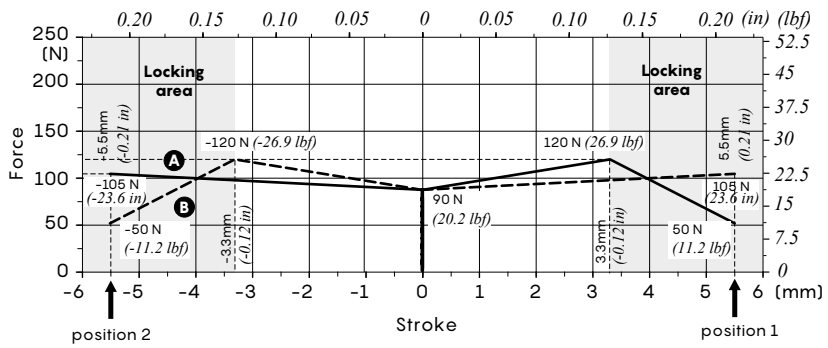
Type 11BZ

Detent in positions
1 (A curve) and 2 (B curve)





Force vs. Stroke diagram
(9BZ-10BZ-11BZ)



Features types 9BZ-10BZ-11BZ

Locking force: .....120 N *(27 lbf)*

Release force: .....230 N *(51.7 lbf)*

Ⓐ A curve

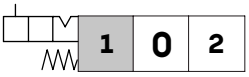
Ⓑ B curve

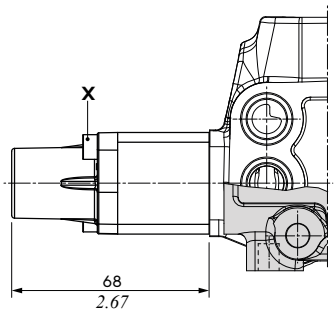
"A" side control

Mechanical control

3 position, with detent and spring return

Type 21
Detent in position 2
and spring return in position 1





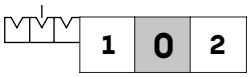
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

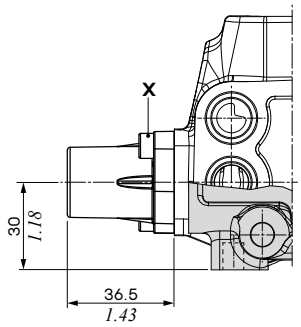
Features
Locking and release force: .....300 N *(68 lbf)*

3 position, with detent

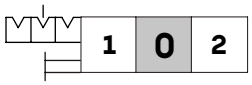
Type 11
Detent in all positions

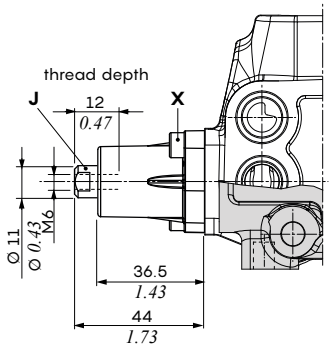
Type 11WPO
As type 11, waterproof



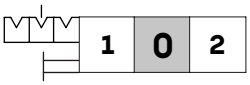


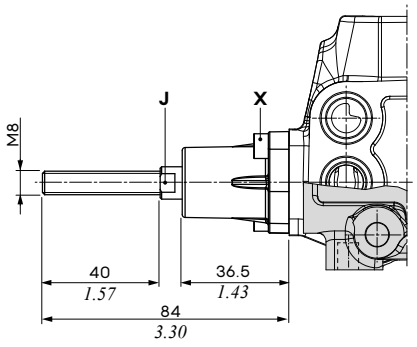
Type 11D
As type 11, external pin
with M6 female thread





Type 11D2
As type 11, external pin
with M8 male thread





Features (all types)
Locking and release force: .....120 N *(27 lbf)*

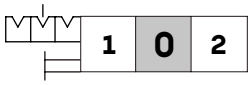
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
J = wrench 9 - 9.8 Nm *(7.2 lbft)*

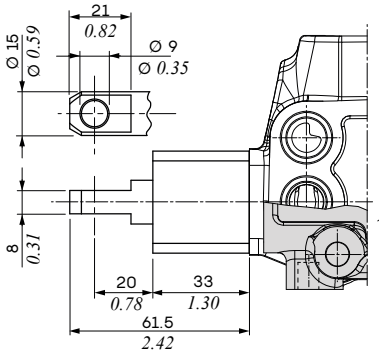
"A" side control

Mechanical control

3 position, with detent

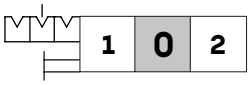
Type 11TL
Double control arrangement

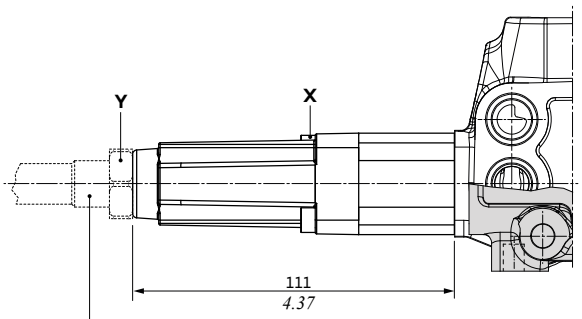




For use with **TQ50** kit,
cod. 5TEL105101

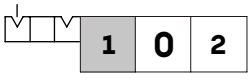
Type 11TCL
Flexible cable control arrangement

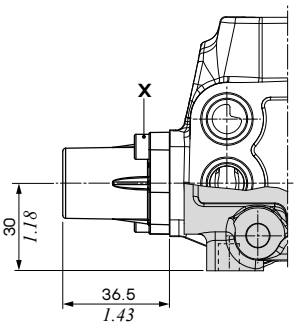




Flexible cable type CD or CG,
not included

Type 12
Detent in positions 1 and 2



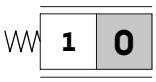


Features type 12
Locking and release force: .....120 N *(27 lbf)*

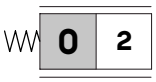
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
Y = wrench 24

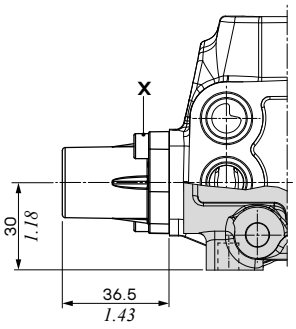
2 position, with spring return

Type 19
Positions 1-0,
spring return in position 0

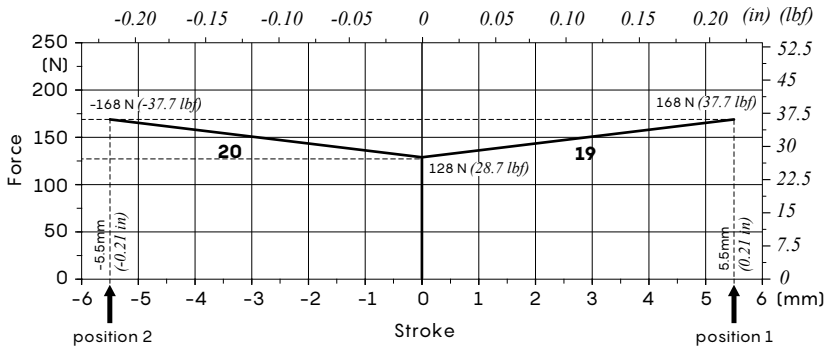


Type 20
Positions 2-0,
spring return in position 0





Force vs. Stroke diagram
(19-20)



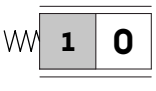
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

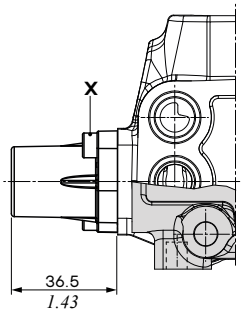
"A" side control

Mechanical control

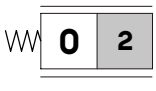
2 position, with spring return

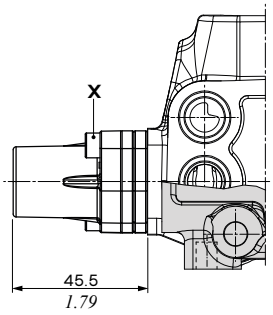
Type 17A
Position 1-0,
spring return in position 1





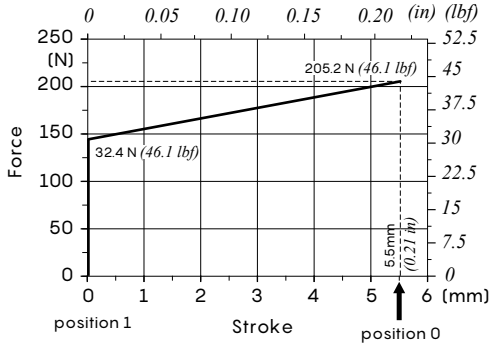
Type 18BME
Position 2-0,
spring return in position 2



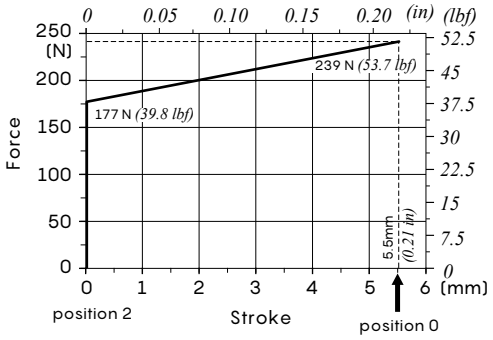


Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

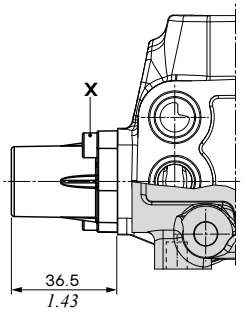
Force vs. Stroke diagram (17A)



Force vs. Stroke diagram (18BME)

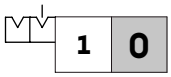


2 position, with detent



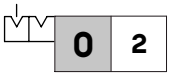
Type 15
Detent in position 1 and 0

Type 15WPO
As type 15, waterproof



Type 16
Detent in position 2 and 0

Type 16WPO
As type 16, waterproof



Features (all types)
Locking and release force: .....120 N *(27 lbf)*

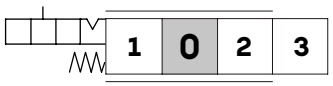
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

"A" side control

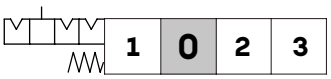
Mechanical control

4 position, with detent and spring return in neutral position, for floating circuit

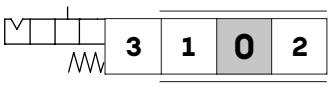
Type 13NZ (spool in)
Detent in position 3
for spool type 5Y

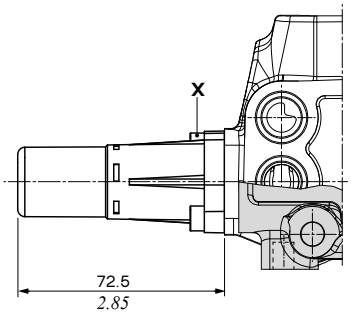


Type 14NZ (spool in)
Detent in positions 1, 2, 3
for spool type 5Y



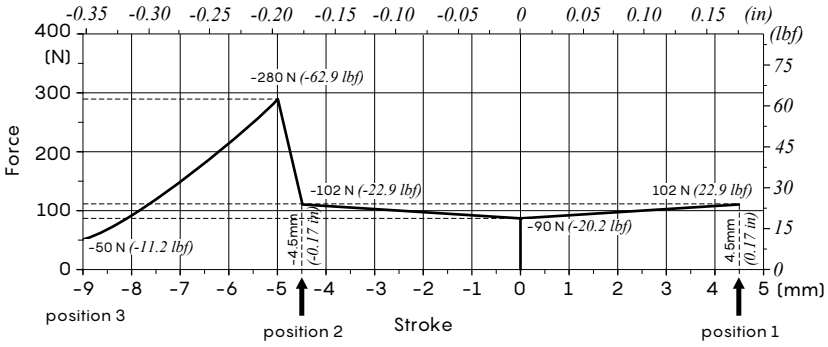
Type 13QN (spool out)
Detent in position 3
for spool type 5BY





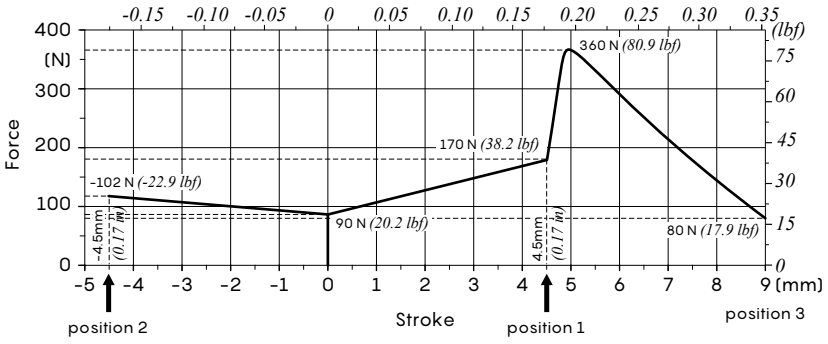
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

Force vs. Stroke diagram
(13NZ)



Features type 13NZ
Locking force: .....280 N *(63 lbf)*
Release force: .....300 N *(68 lbf)*

Force vs. Stroke diagram
(13QN)



Features type 13QN
Locking force: .....360 N *(81 lbf)*
Release force: .....390 N *(88 lbf)*

"A" side control

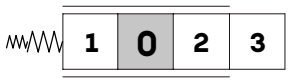
Mechanical control

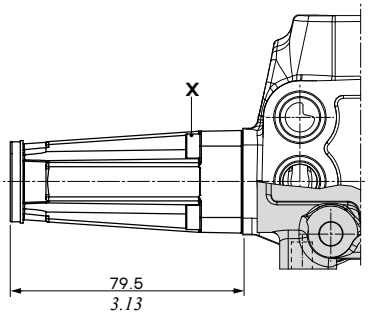
4 position, with detent and spring return in neutral position, for regenerative circuit

Type 13F

Spring return in position 0

(for spool type 8)





Wrenches and tightening torques

X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

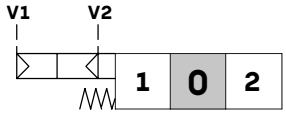
"A" side control

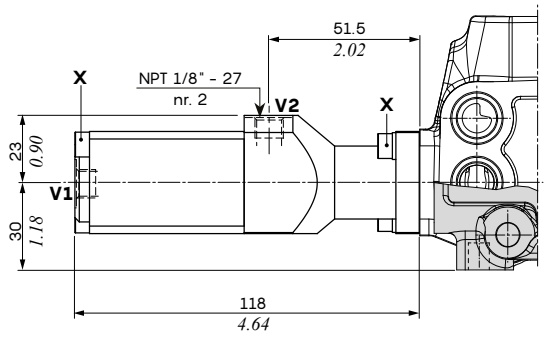
Mechanical control

3 position, with ON/OFF pneumatic and electropneumatic controls

Type 8P

ON/OFF pneumatic control



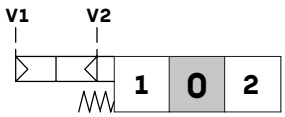


Features type 8P

Pilot pressure: ..... min. 5.5 bar *(80 psi)*
max. 10 bar *(145 psi)*

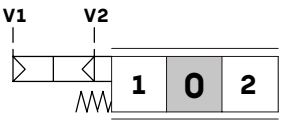
Type 8PNB

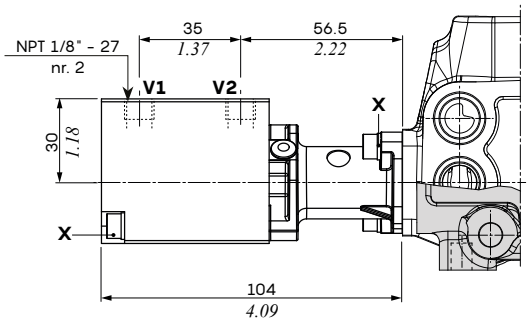
As type 8P, waterproof



Type 8PNBZ

Proportional pneumatic control





Features types 8PNB-8PNBZ

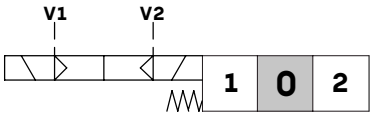
Pilot pressure: ..... min. 6 bar *(87 psi)*
max. 15 bar *(217 psi)*

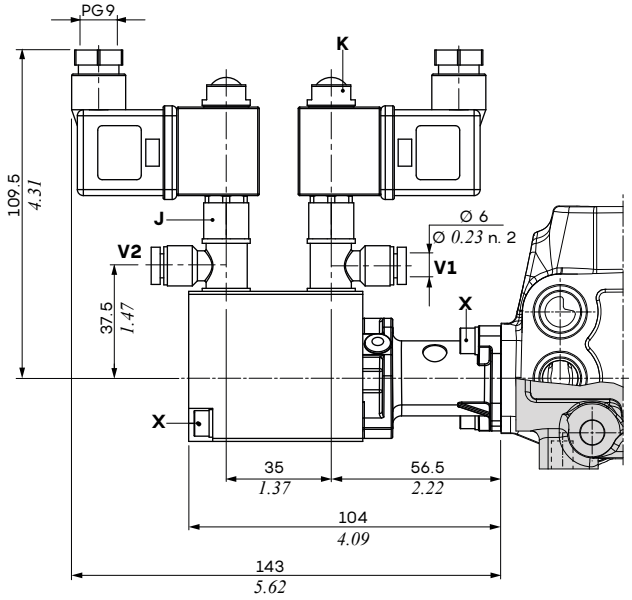
Wrenches and tightening torques

X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
K = wrench 13 - 1.5 Nm *(1.10 lbft)*
J = wrench 15 - 6.6 Nm *(4.4 lbft)*

Type 8EPNB3

ON/OFF electropneumatic control, 12/24 VDC





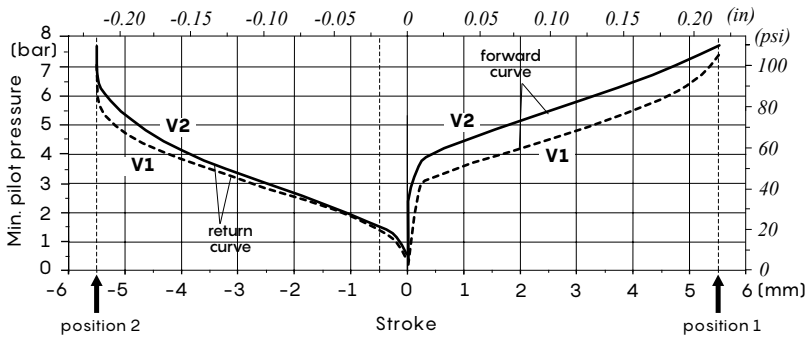
Features type 8EPNB3

Pilot pressure: ..... min. 6 bar *(87 psi)*
max. 15 bar *(217 psi)*

Features of **BPV** coils and connectors, on page 93

Pilot vs Stroke type 8PNBZ

(executed without oil passage)



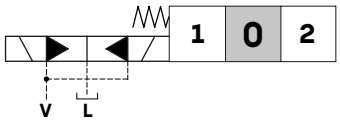
"A" side control

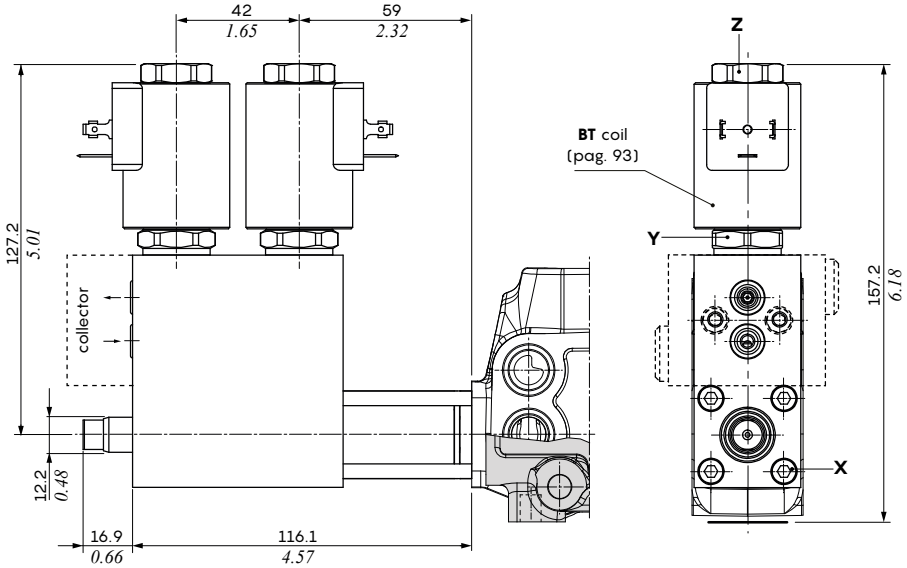
ON/OFF electrohydraulic control

3 position, with spring return in neutral position

Type 8ED3

ON/OFF, in position 1 and 2, 12/24 VDC





Features (all types)

Pilot pressure:.....min. 10 bar *(145 psi)*
max. 50 bar *(725 psi)*

Max. backpressure on drain L:.....min. 25 bar *(362 psi)*

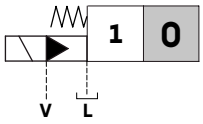
Features of **BT** coils and connectors, on page 93

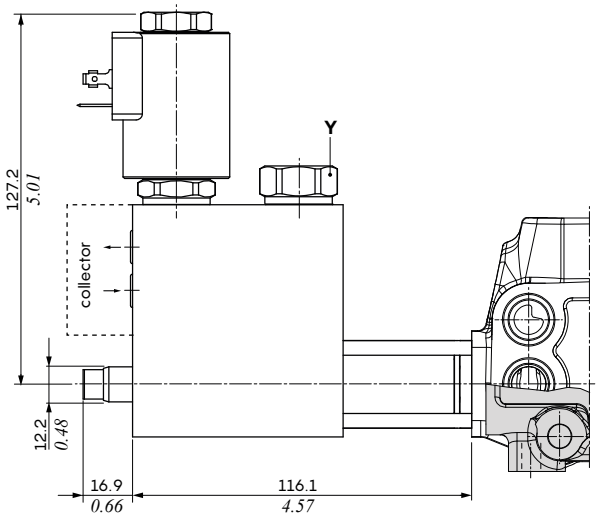
Wrenches and tightening torques

X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
Y = wrench 24 - 30 Nm *(22.1 lbft)*
Z = wrench 22 - 5 Nm *(1.1 lbft)*

Type 19ED1

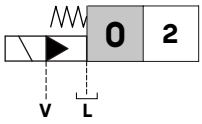
ON/OFF, 2 position (1 and 0), 12/24 VDC

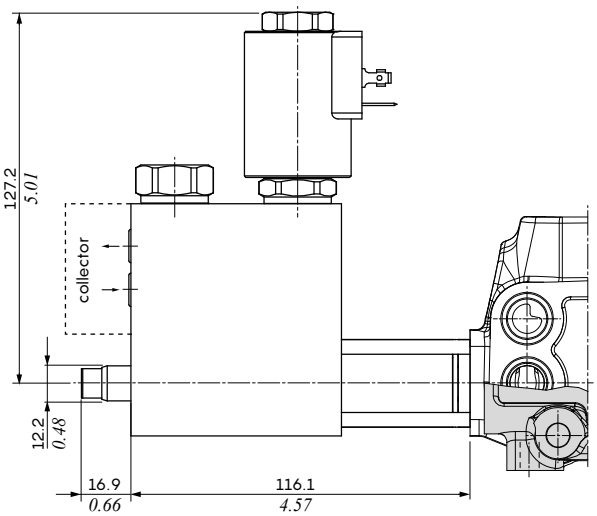




Type 20ED2

ON/OFF, 2 position (2 and 0), 12/24 VDC

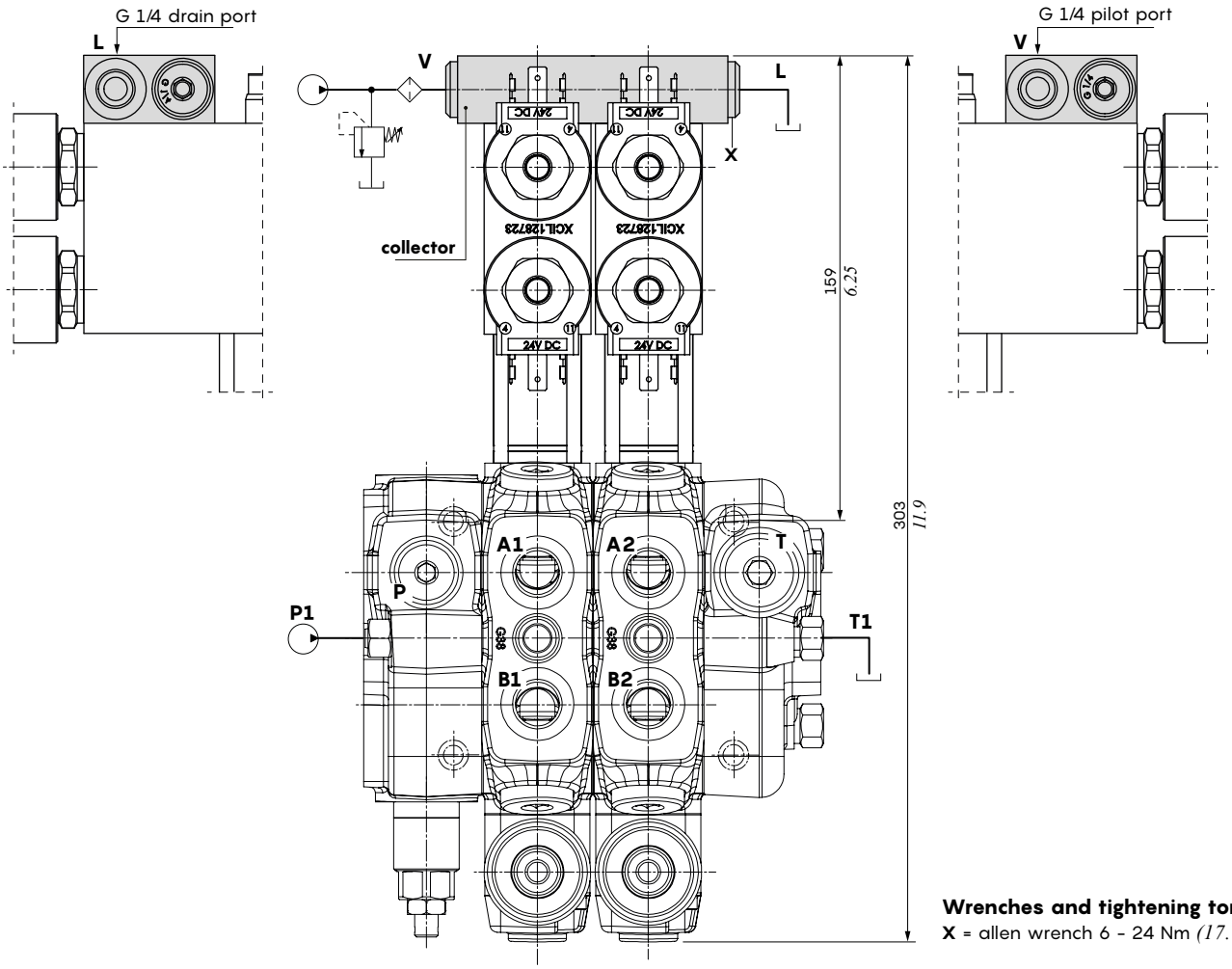


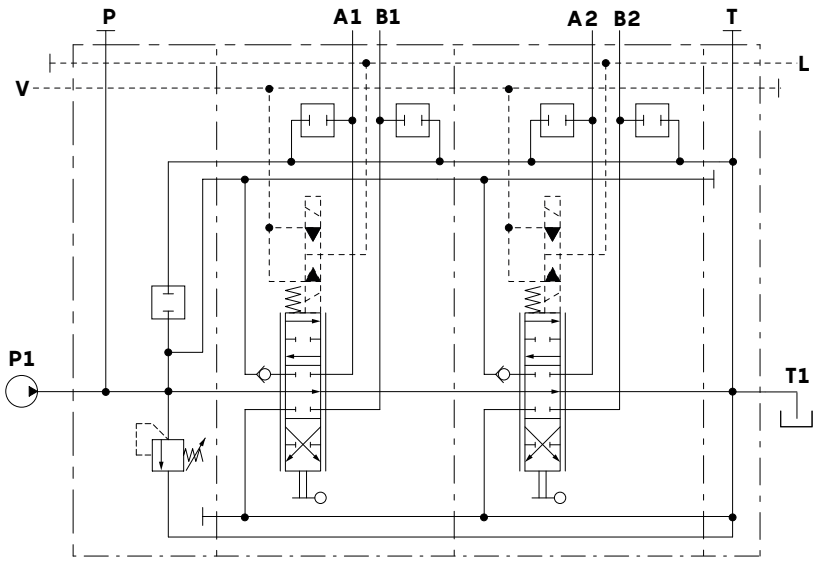


"A" side control

ON/OFF electrohydraulic control

Collector kit for internal pilot and drain





Wrenches and tightening torques
X = allen wrench 6 - 24 Nm *(17.7 lbft)*

Collector kit		
Type	**Code(*)**	**Description**
KE1S0	5KE1S00030	for 1 section
KE2S0	5KE2S01230	for 2 sections
KE3S0	5KE3S01230	for 3 sections
KE4S0	5KE4S01230	for 4 sections
KE5S0	5KE5S01230	for 5 sections
KE6S0	5KE6S01230	for 6 sections
KE7S0	5KE7S01230	for 7 sections
KE8S0	5KE8S01230	for 8 sections

(*) codes are referred to **BSP** thread

Example description
SD6/2/AC(JNG3-120)/**18ED3L**/**18ED3L**/RC-**KE2S0-12VDC**

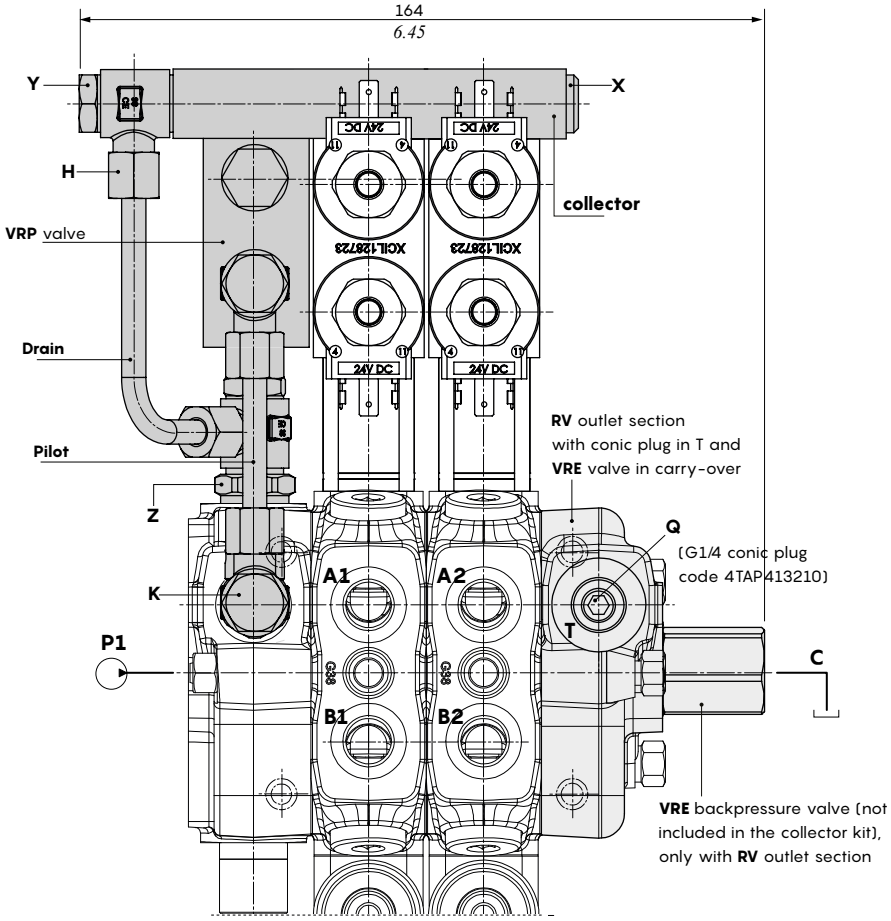
Note - The drawings and dimensions refer to the **BSP** thread

"A" side control

ON/OFF electrohydraulic control

Collector kit for external pilot and drain

The kit is made of collector, VRP pressure reducing valve and pipes.

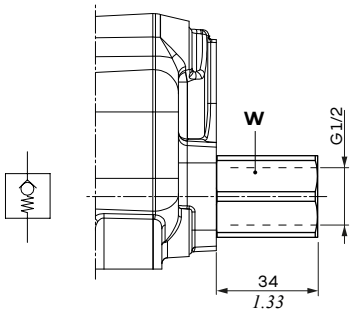


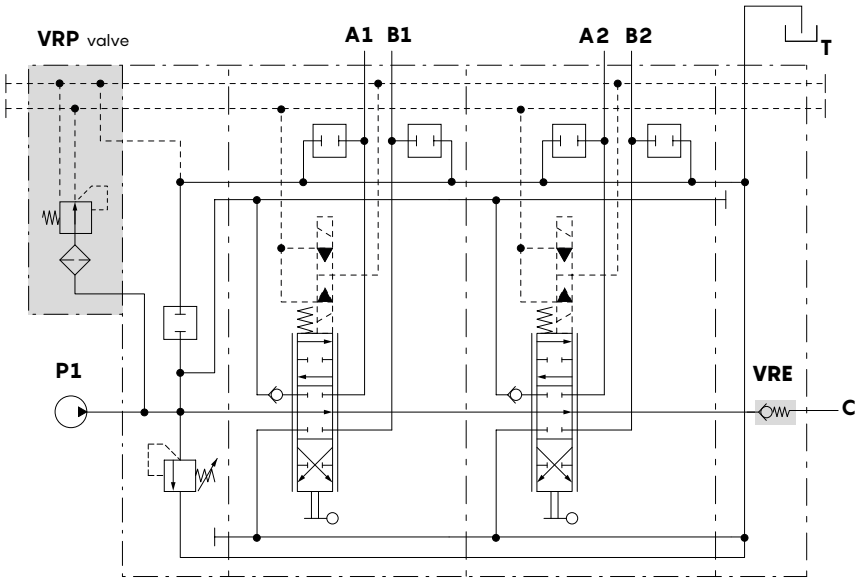
Collector kit		
Type	**Code(*)**	**Description**
KE1R3	5KE1R31230	for 1 section
KE2R3	5KE2R31230	for 2 sections
KE3R3	5KE3R31230	for 3 sections
KE4R3	5KE4R31230	for 4 sections
KE5R3	5KE5R31230	for 5 sections
KE6R3	5KE6R31230	for 6 sections
KE7R3	5KE7R31230	for 7 sections
KE8R3	5KE8R31230	for 8 sections

(*) codes are referred to **BSP** thread

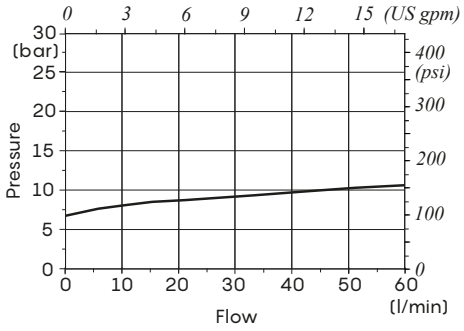
Backpressure valve		
Type	**Code(*)**	**Description**
VRE-BSP12	X027700009	8 bar *(116 psi)*

(*) codes are referred to **BSP** thread





VRE valve pressure drop
P⇒C



Example description

SD6/2/AC(JNG3-120)/**18ED3L**/**18ED3L**/RV-**KE2R3-12VDC**

Wrenches and tightening torques

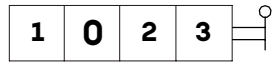
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = wrench 19 - 24 Nm *(17.7 lbft)*
H = wrench 17
Z = wrench 24 - 42 Nm *(31 lbft)*
K = wrench 22 - 24 Nm *(17.7 lbft)*
Q = allen wrench 7 - 24 Nm *(17.7 lbft)*
W = wrench 27 - 42 Nm *(31 lbft)*

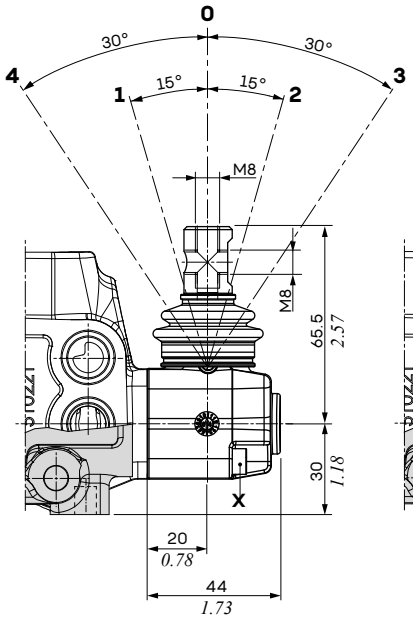
"B" side control

Mechanical control

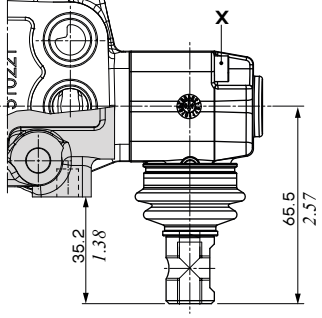
Aluminium lever box

Type L
Standard lever kit
Type LW
As type L, with rust preventer treatment



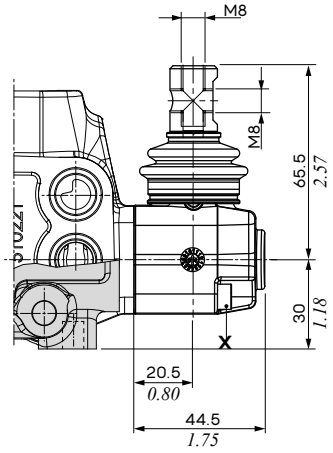


L180 configuration

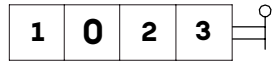


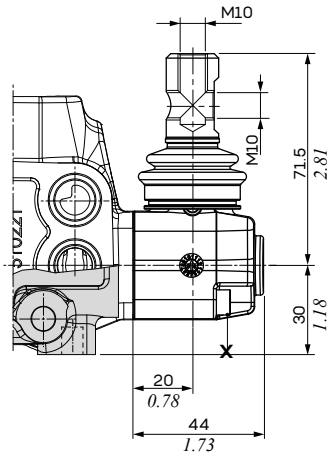
Type LSG
As type L, waterproof



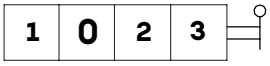


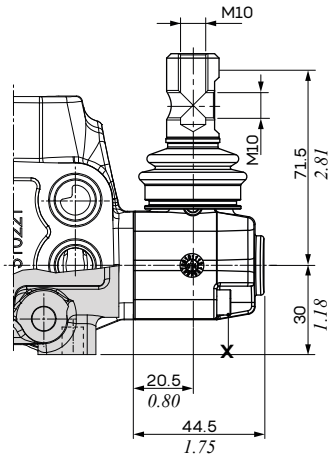
Type LM10
Lever kit with M10 thread
Type LWM10
As type LM10, with rust preventer treatment





Type LSGM10
As type LM10, waterproof





Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

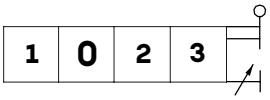
"B" side control

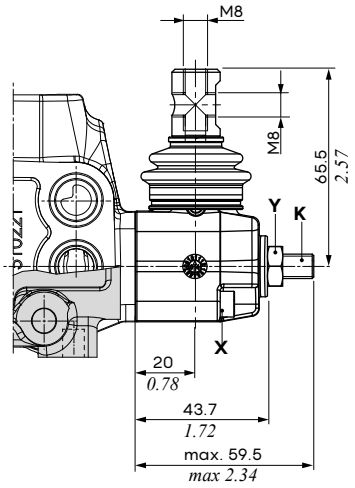
Mechanical control

Aluminium lever box

Type LF1

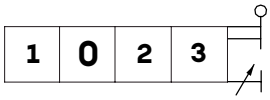
As type L, with spool stroke limiter

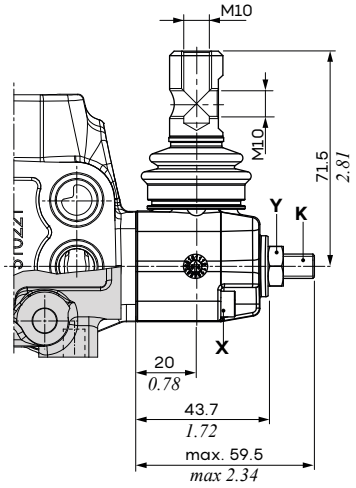




Type LF1M10

As type LF1, with M10 thread

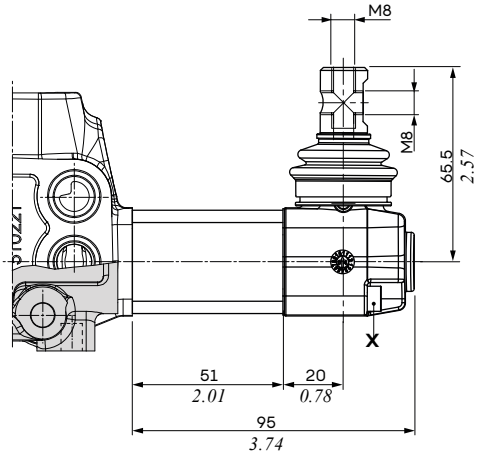




Type L9

As type L, with spool extension

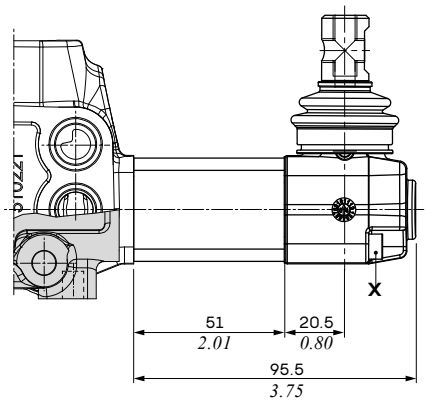




Type LSG9

As type 9, waterproof





Wrenches and tightening torques

X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*

Y = wrench 13 - 24 Nm *(17.7 lbft)*

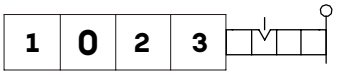
K = allen wrench 4

"B" side control

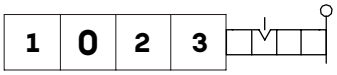
Mechanical control

Aluminium lever box with detent

Type LE
Detent in neutral position

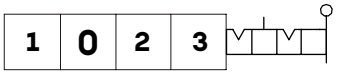


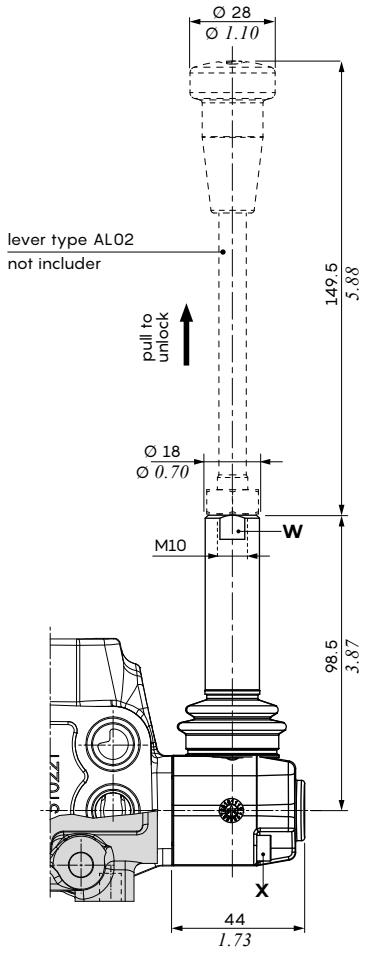
Type LEB
As type LE, with safety lever

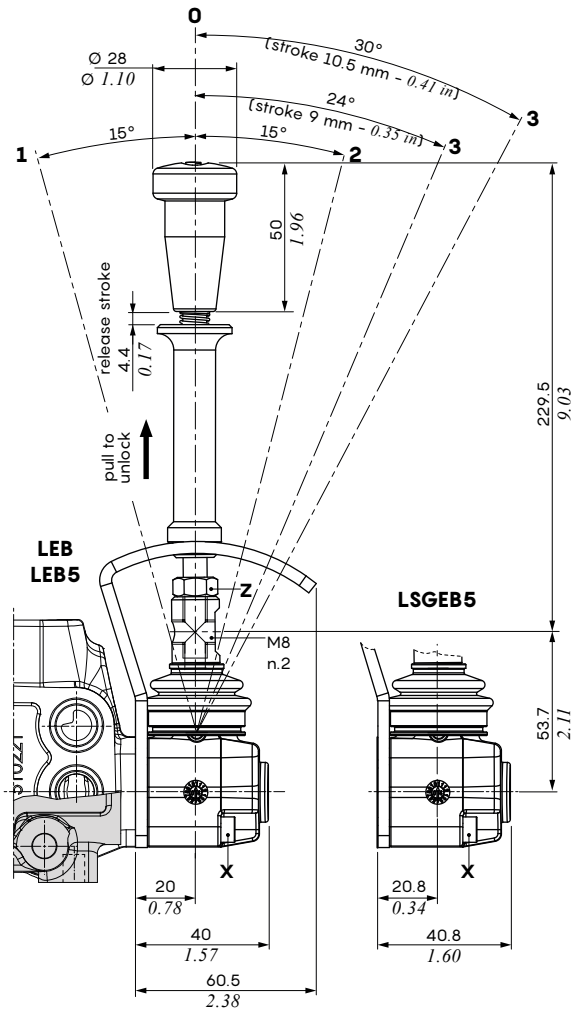


Type LEB5
Detent in position 1 and 2, with safety lever

Type LSGEB5
As type LEB5, waterproof







Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
W = wrench 16
Z = allen wrench 13 - 24 Nm *(17.7 lbft)*

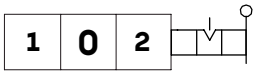
"B" side control

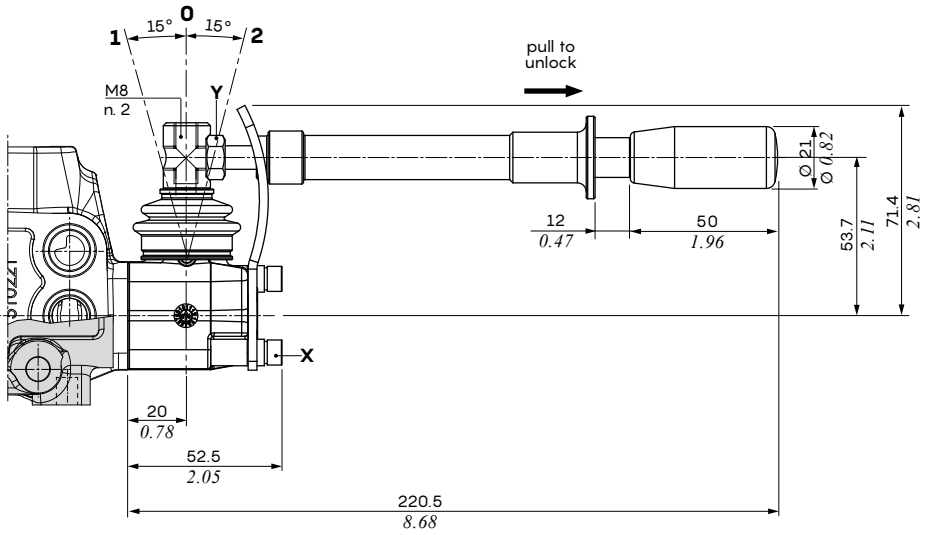
Mechanical control

Aluminium lever box with detent

Type LUP

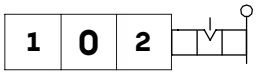
As type LEB, with horizontal safety lever

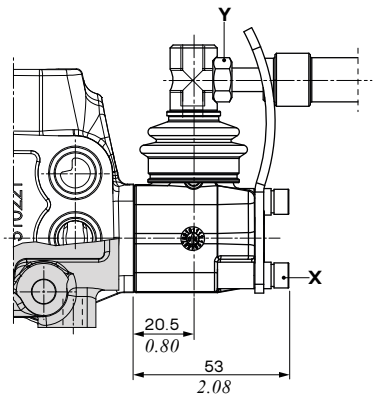




Type LSGUP

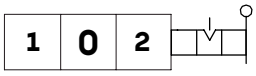
As type LUP, waterproof

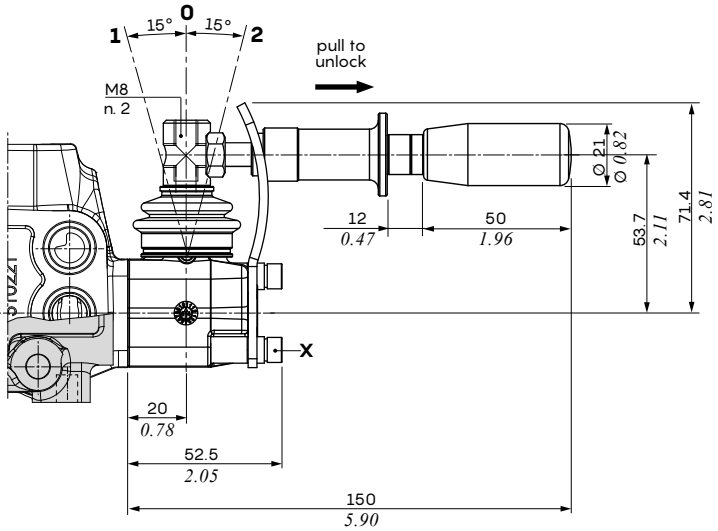




Type LUP(R150)

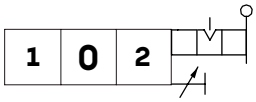
As type LUP, with short lever

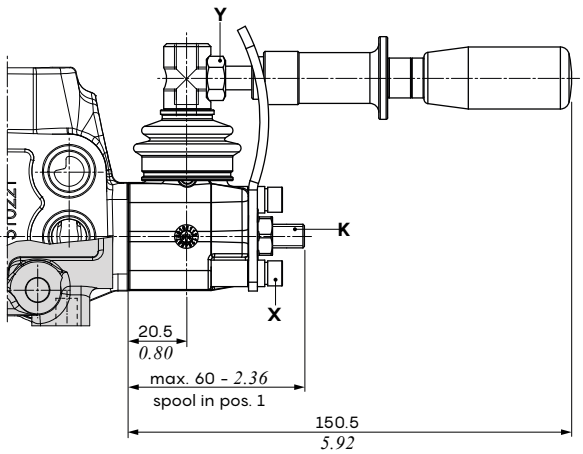




Type LSGUP(R150)F1

As type LUP(R150), waterproof
with spool stroke limiter on A port





Wrenches and tightening torques

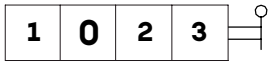
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
Y = allen wrench 13 - 24 Nm *(17.7 lbft)*
K = allen wrench 4

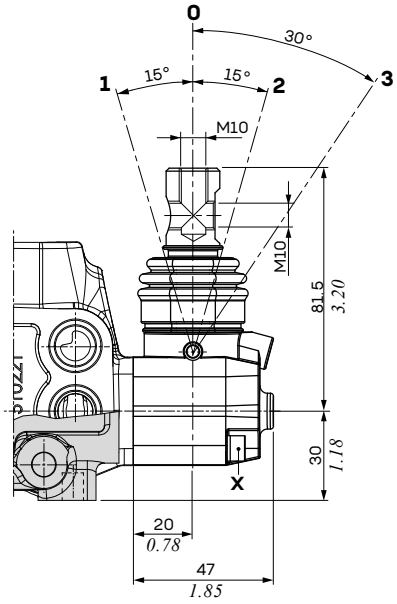
"B" side control

Mechanical control

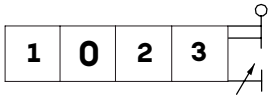
Cast iron lever box

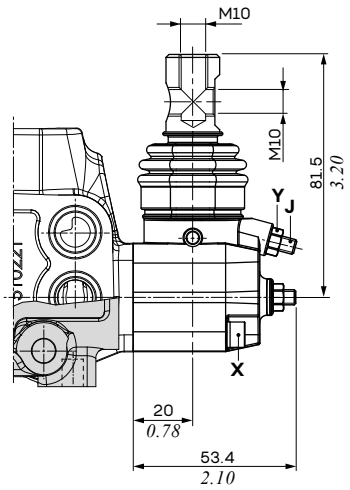
Type LG
Standard lever kit





Type LFG
As type LG, with spool stroke limiter





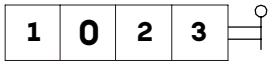
Wrenches and tightening torques
X = allen wrench 4 - 10 Nm *(7.3 lbft)*
Y = wrench 8 - 6.6 Nm *(4.4 lbft)*
J = allen wrench 2.5

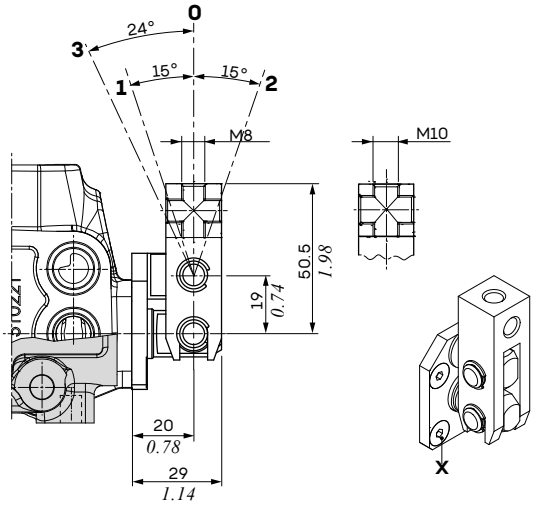
Steel lever

Type LB3
With upper pivot

Type LB3M10
As type LB3, with M10 thread

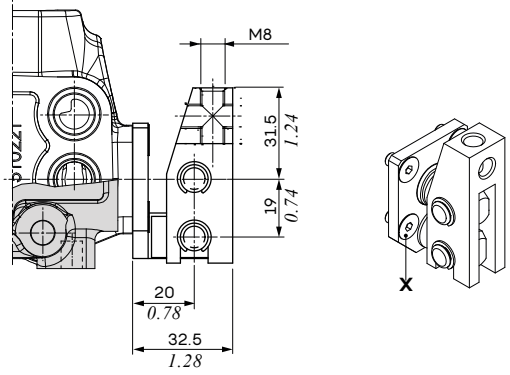
Wrenches and tightening torques
X = allen wrench 4 - 10 Nm *(7.3 lbft)*





Type LB1
With low pivot





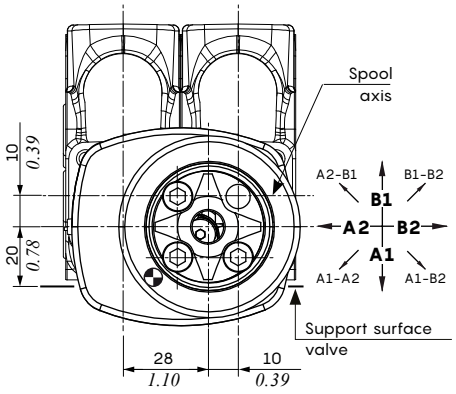
"B" side control

Mechanical control

Cloche for simultaneous operation of 2 sections

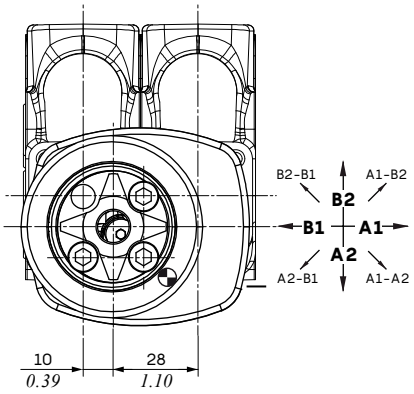
Pivot placed down on the left

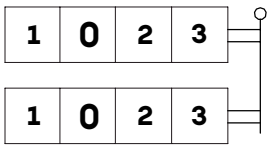
Type LCN1
Cloche with nylon bearing
Type LCA1
Cloche with bronze bearing

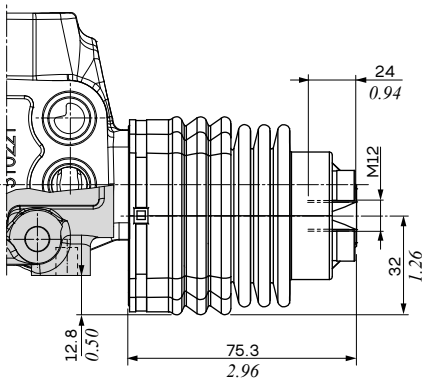


Pivot placed down on the right

Type LCN2
Cloche with nylon bearing
Type LCA2
Cloche with bronze bearing

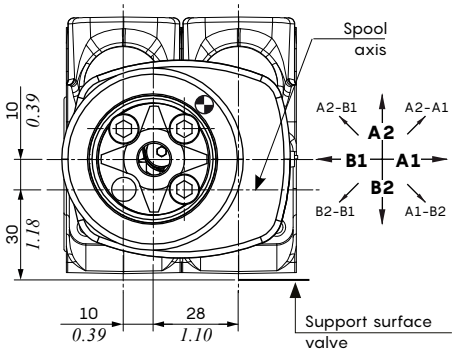






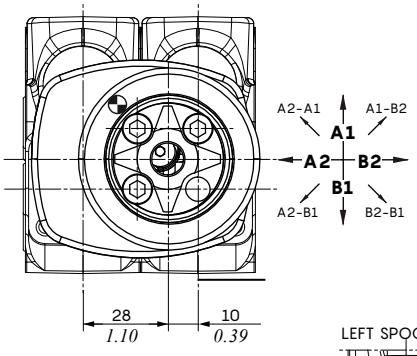
Pivot placed above on the right

Type LCN4
Cloche with nylon bearing
Type LCA4
Cloche with bronze bearing

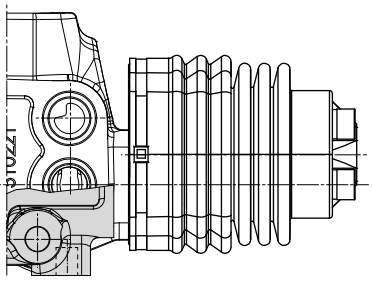


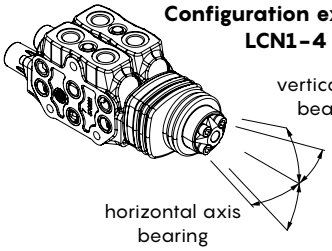
Pivot placed above on the left

Type LCN3
Cloche with nylon bearing
Type LCA3
Cloche with bronze bearing

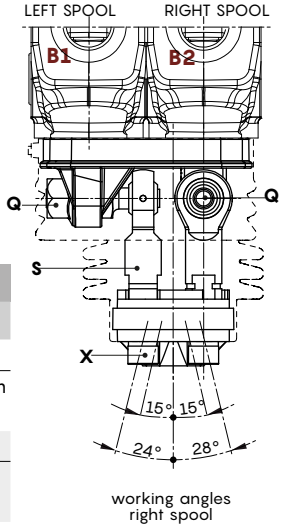


Wrenches and tightening torques
X = allen wrench 5 - 15 Nm *(11 lbft)*
Q = wrench 13 - 24 Nm *(17.7 lbft)*
S = wrench 9.4

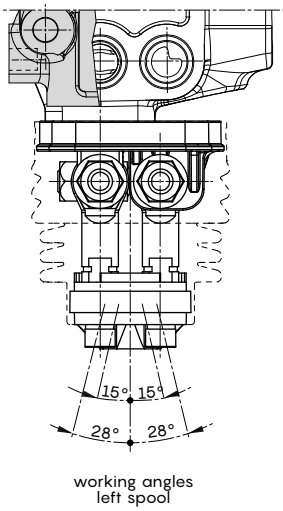




Configuration example
LCN1-4



working angles right spool



working angles left spool

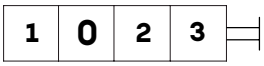
Working angles				
	RIGHT SPOOL		LEFT SPOOL	
angle	15°		15°	
stroke	+5.5 mm *+0.22 in*	-5.5 mm *-0.22 in*	+5.5 mm *+0.22 in*	-5.5 mm *-0.22 in*
angle	24°	28°	28°	
stroke	+9 mm *+0.35 in*	-10.5 mm *-0.41 in*	+9 mm *+0.35 in*	-9 mm *-0.35 in*

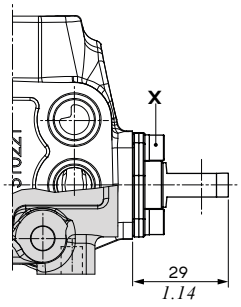
"B" side control

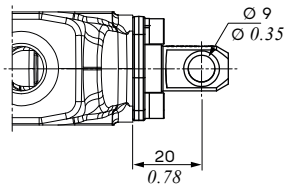
Mechanical control

Without lever

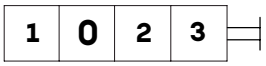
Type SLP
Dustproof plate

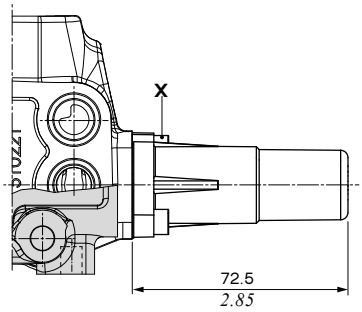






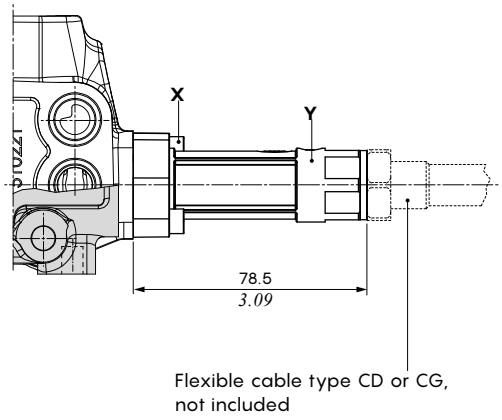
Type SLCZ
With endcap





Type TQ50
Flexible cable connection





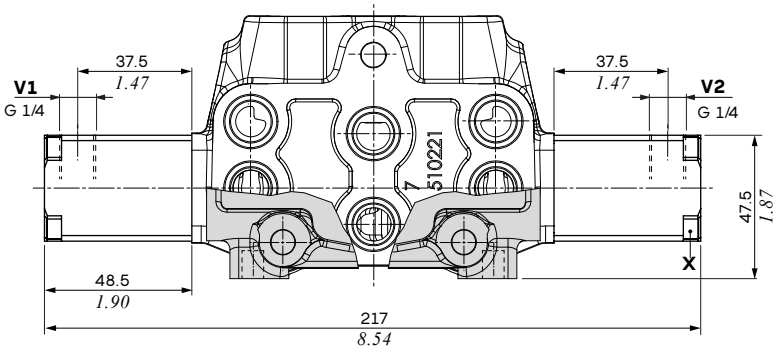
Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
Y = wrench 24

Complete control

Proportional hydraulic control

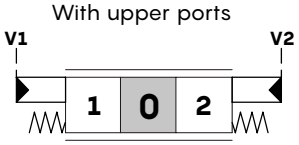
3 position, with spring return in neutral position

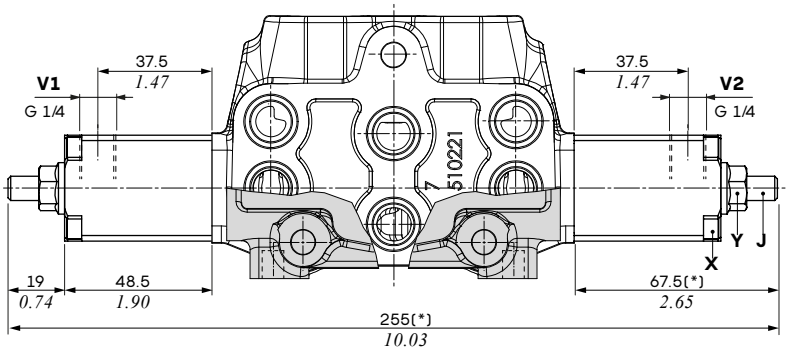
With standard section and dedicated spool (1IM/2IM)



Type 8IM

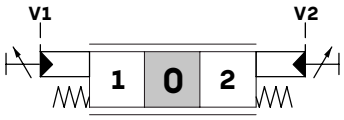
With upper ports





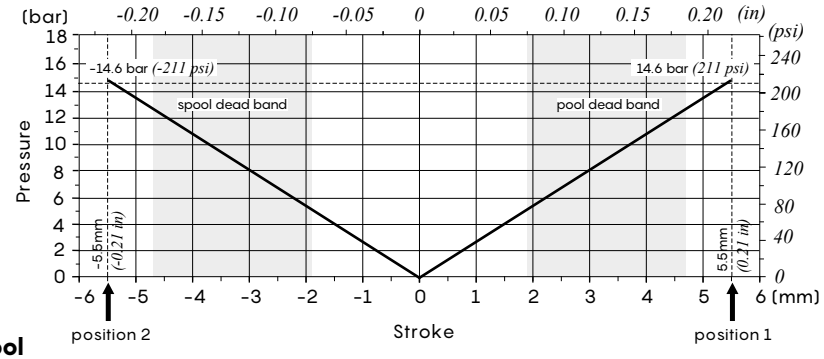
Type 8IMF3

With upper ports and spool stroke limiter



(*):Minimum distance for no adjustment

Pilot pressure vs. stroke diagram (8IM)



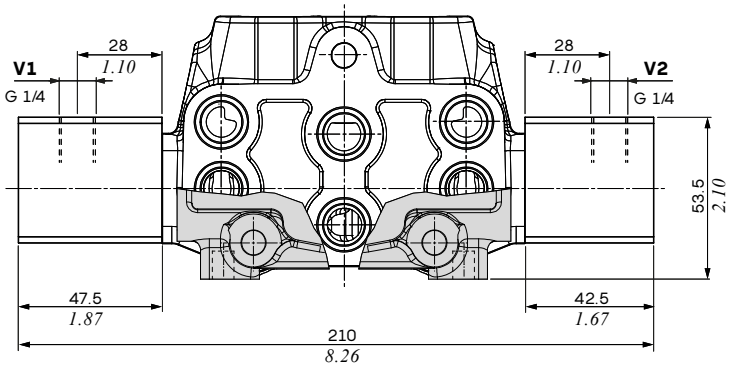
Features types (all types)

Max. pressure.....: 50 bar *(725 psi)*

Wrenches and tightening torques

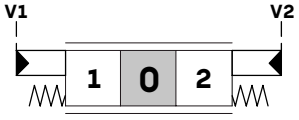
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
Y = wrench 13 - 15 Nm *(11 lbft)*
J = allen wrench 4

With dedicated section (PI) and standard spool



Type 8IMP

With upper ports



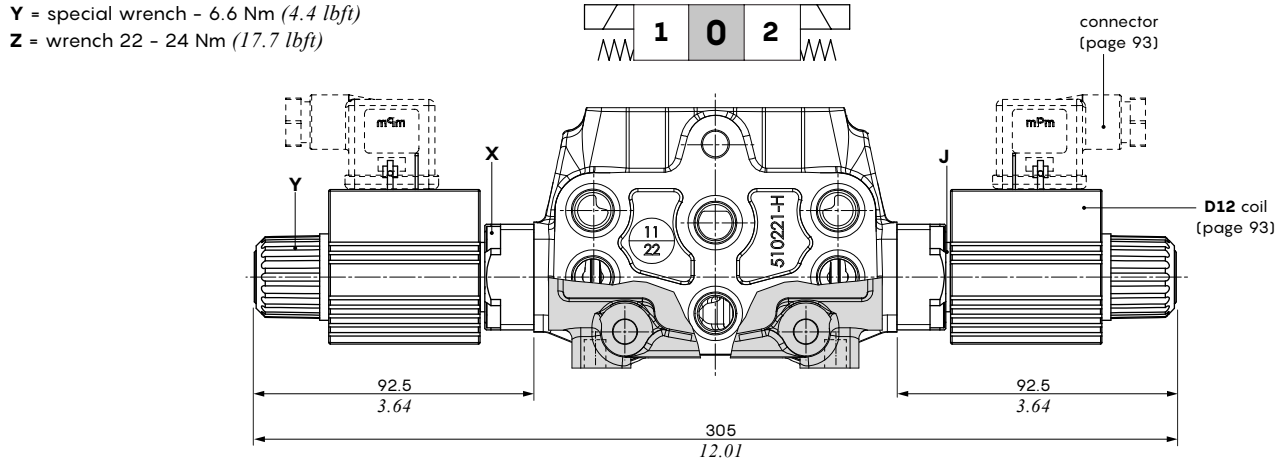
Complete control

ON/OFF electric direct control

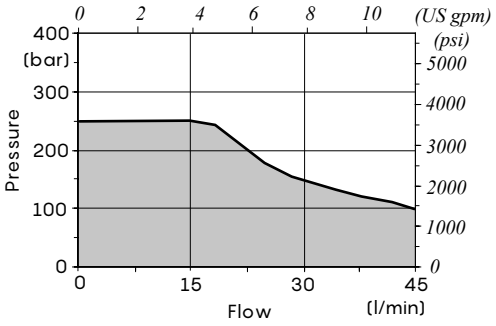
3 position, with spring return in neutral position

Wrenches and tightening torques
X = allen wrench 4 - 6.6 Nm *(4.4 lbft)*
H = allen wrench 6 - 24 Nm *(17.7 lbft)*
J = wrench 17 - 24 Nm *(17.7 lbft)*
Y = special wrench - 6.6 Nm *(4.4 lbft)*
Z = wrench 22 - 24 Nm *(17.7 lbft)*

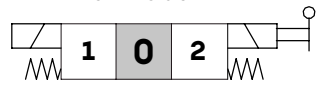
Type 8ES3
Double acting



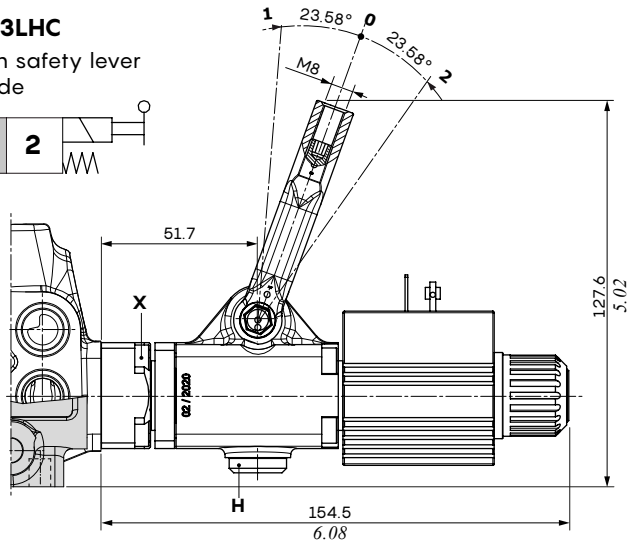
Operating condition



Type 8ES3LHC
Double acting with safety lever on B side

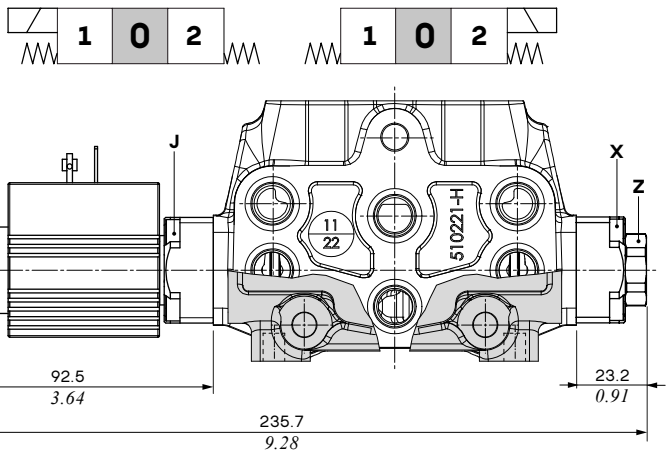


IMPORTANT: lever to be used only for emergency operation, not for continuative use.



Type 8ES1(*)
Single acting in A

Type 8ES2(*)
Single acting in B



Features
Max. flow on ports.....: 60 l/min *(16 US gpm)*
Internal leakage A(B)⇒T.....: 15 cm³/min a 100 bar e 40°C
(0.91 cm³/min @ 1450 psi and 104°F)
Features of **D12** coils and connectors, on page 93

(*) The drawing refer to type **8ES1** (control on A side and plug on B side).
For type **8ES2**, mount control on B side and plug on A side.

Auxiliary valve

Valve for standard section

Dimensional data and hydraulic circuit

SD6/P-18L. **P 3 (G 2 - 100 / G2-80)** -18L-RC

type:
P = antichock valve
C = anticavitation valve
U = antishock and anticavitation valve

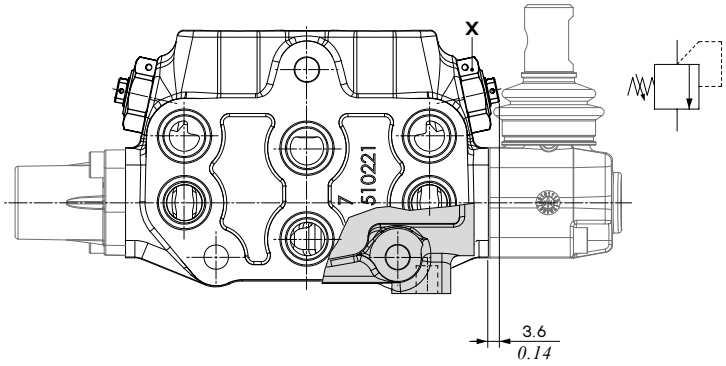
mounting:
1= on A port
2= on B port
3= on A and B ports

configuration:
G = screw adjustment
H = setting with locked
Z = fix setting with plastic cap

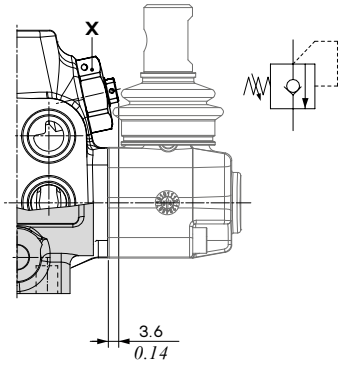
spring type

setting valve (bar)

Type P
Antishock valve



Type U
Antishock and anticavitation valve



SD6/P-18L. **C 3** -18L-RC

type:
C = anticavitation valve

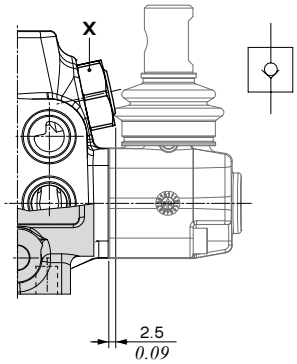
mounting:
1= on A port
2= on B port
3= on A and B ports

SD6/P-18L. **P 3 T** -18L-RC

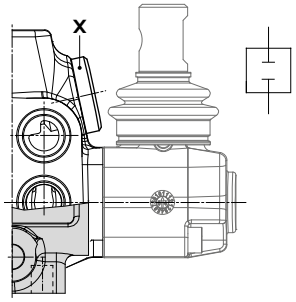
mounting:
1= on A port
2= on B port
3= on A and B ports

type:
PT = Valve blanking plug

Type C
Anticavitation valve



Type PT
Valve blanking plug



Wrenches and tightening torques
X = wrench 22 - 24 Nm *(17.7 lbft)*

Note - For other configuration, please contact Walvoil Sales dpt.

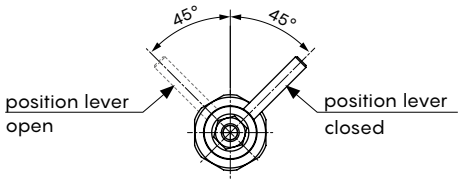
Auxiliary valve

Single/Double acting selector, for standar section

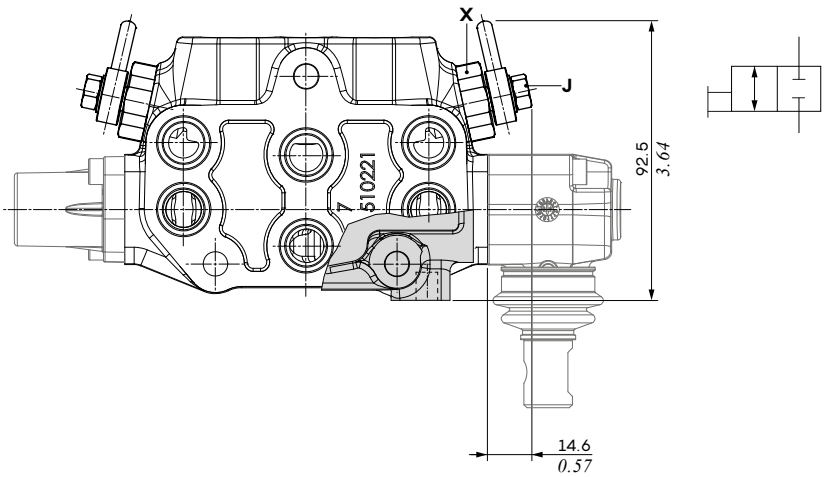
Dimensional data and hydraulic circuit

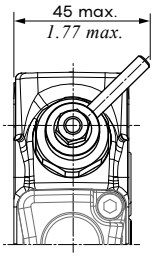
SD6/P-18L180. **PDS 3** -18L-RC

- single/double acting selector
- mounting:
  - **1**= on A port
  - **2**= on B port
  - **3**= on A and B ports



Type PDS





Note- Attach the lever to the pin after mounting the valve in the section, ensuring that its rotation is symmetrical respect to the vertical.

Note - For other configuration, please contact Walvoil Sales dpt.

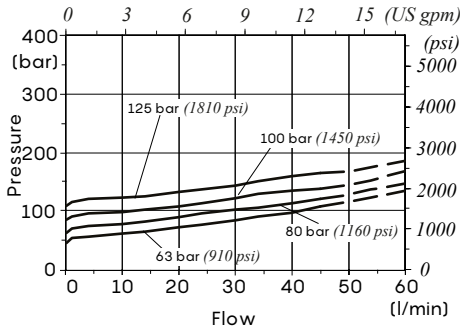
Wrenches and tightening torques
J = wrench 24 - 42 Nm *(31 lbft)*
Z = wrench 10 - 10 Nm *(0.39 lbft)*

Auxiliary valve

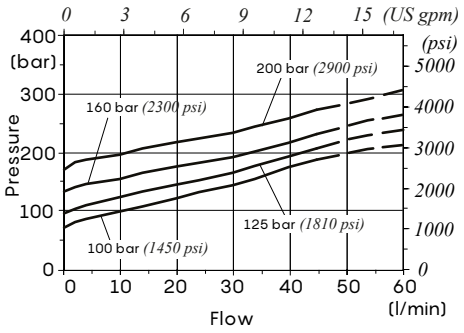
Valve for standard section

Performance data

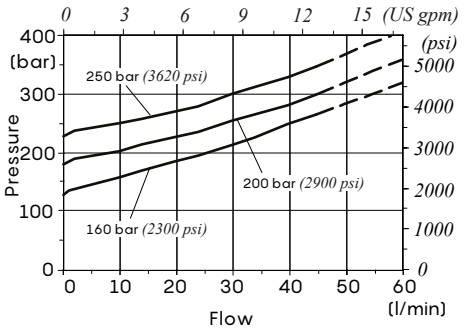
P2 valve setting range
spring n.2 - std. setting 80 bar *(1160 psi)*



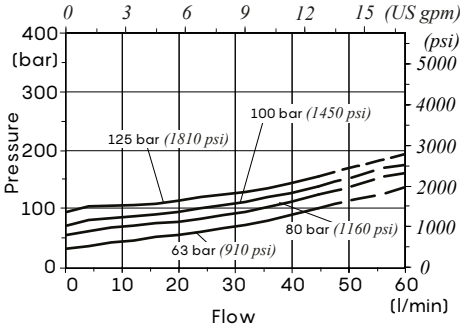
P3 valve setting range
spring n.3 - std. setting 120 bar *(1740 psi)*



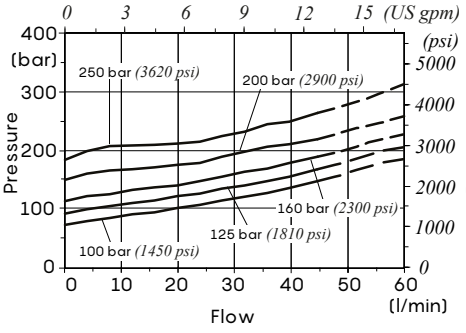
P4 valve setting range
spring n.4 - std. setting 200 bar *(2900 psi)*



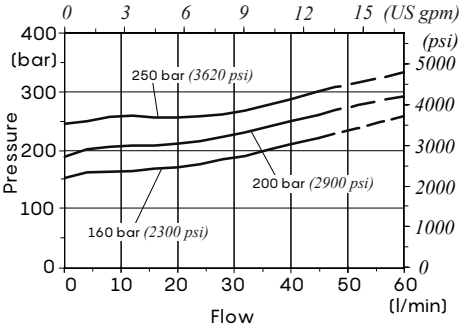
U2 valve setting range
spring n.2 - std. setting 60 bar *(870 psi)*



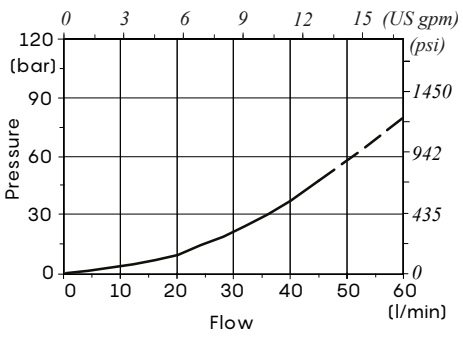
U3 valve setting range
spring n.3 - std. setting 100 bar *(1450 psi)*



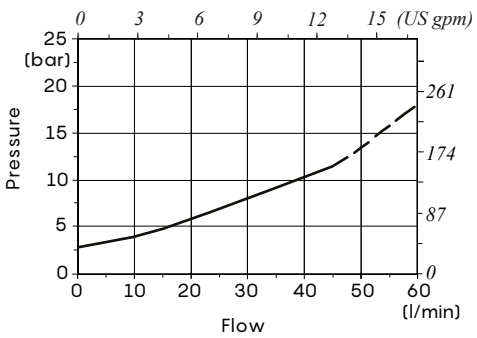
U4 valve setting range
spring n.4 - std. setting 200 bar *(2900 psi)*



Pressure drop
U valve



Pressure drop
C valve



Auxiliary valve

Valve for type R section

Dimensional data, hydraulic circuit and performance data

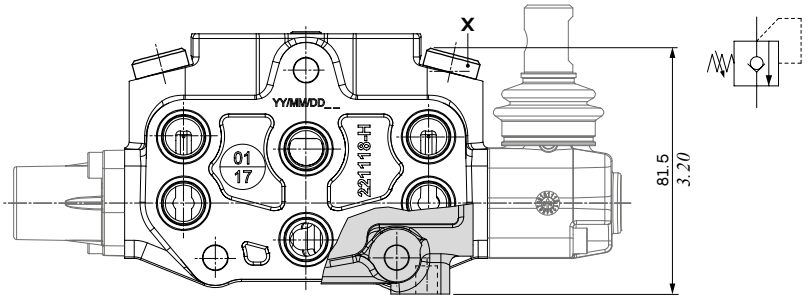
SD6/RPH-18L. **U 3 (150)** -18L-RC

tipo:
U = antishock and anticavitation valve

mounting:
1= on A port
2= on B port
3= on A and B ports

valve with fixed setting (bar)

Type U
Antishock and anticavitation valve with fixed setting

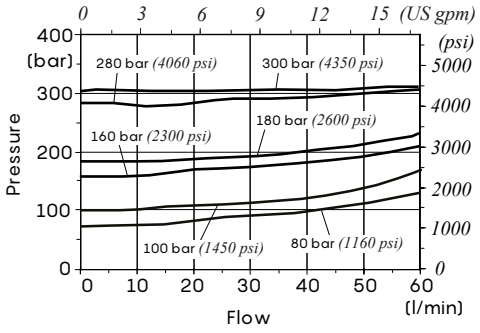


Type UT
Valve blanking plug

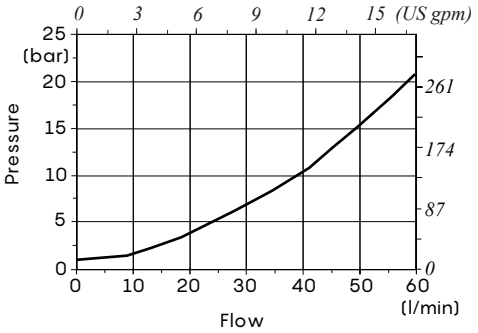


Wrenches and tightening torques
allen wrench 6 - 24 Nm *(17.7 lbft)*

U valve setting example
10 l/min *(2.64 psi)*



Pressure drop



Secondary auxiliary valve

Upper block valve

Dimensional data, hydraulic circuit and performance data

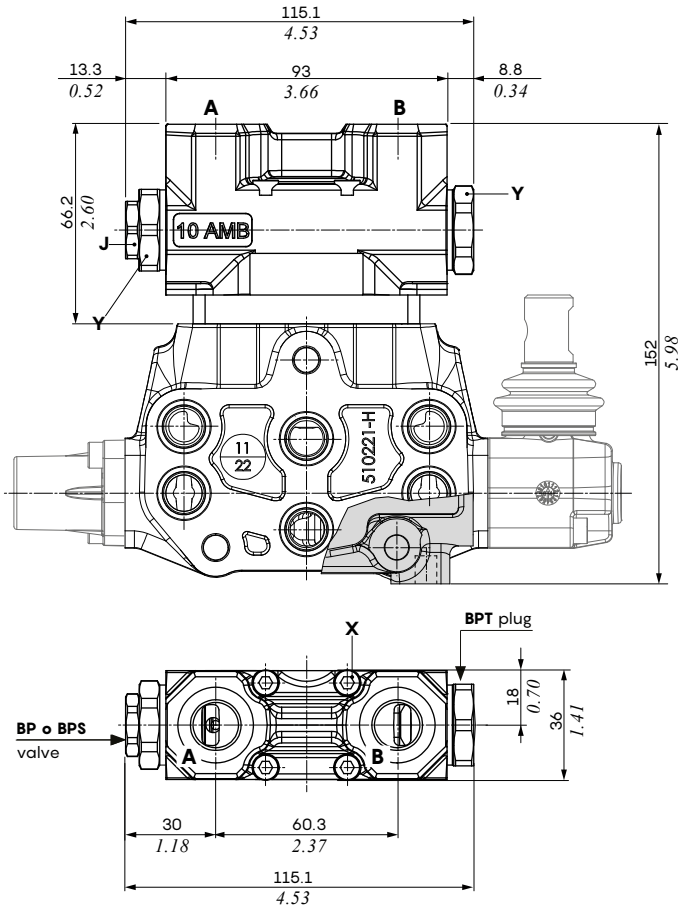
Cast iron blocks with shock valves; includes flange and fixing screws on the body.
Requires **PT** section (milled surface section). For information on the **PT** section, see page 29

SD6/P-18L1. P3T. **BP1** -RC

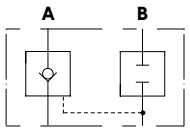
type:
BP = pilot valve block
BPS = pilot valve block with pre-opening

mounting:
1= on A port
2= on B port
3= on A and B ports

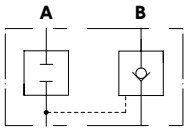
BP1 or BPS1
configuration



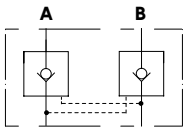
BP1 - BPS1
Valve in A, B plugged



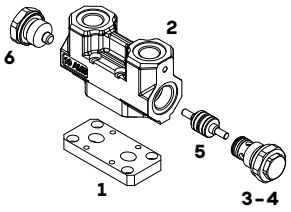
BP2 - BPS2
Valve in B, A plugged



BP3 - BPS3
Valve in A and B

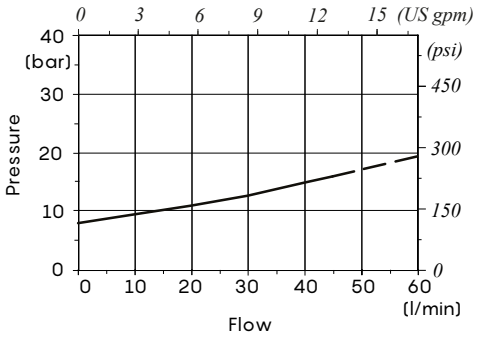


Component codes			
	Type	**Code**	**Description**
1	**-**	3FLA336075	block fixing flange on SD6
2	**BP/BPS**	3CO2620300-H	cast iron block for shock valves
3	**VBP5**	XCAR605110-H	BP block cartridge
4	**VBPS5**	XCAR605210	BPS block cartridge
5	**-**	3PIS216450	Piston for BP/BPS
6	**BPT**	XTAP627300-H	Valve blanking plug

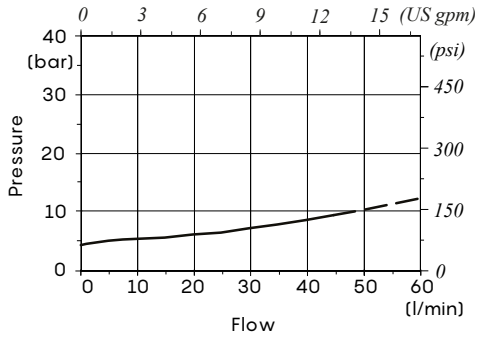


Pilot report		
Type	**With pre-opening**	**Main**
BP	-	1 : 5.3
BPS	1 : 16	1 : 3.2

Pressure drop BP valve



Pressure drop BPS valve



Wrenches and tightening torques
X = allen wrench 4 - 9.8 Nm *(7.2 lbft)*
J = wrench 19 - 42 Nm *(31 lbft)*
Y = wrench 27 - 42 Nm *(31 lbft)*

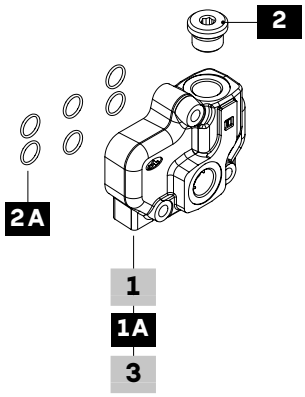
Note - Drawings and dimensions are referred to **BSP** thread

Part ordering codes

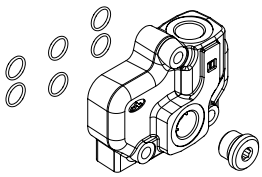
SD6 / RC - ....

1 3
1A
2
2A

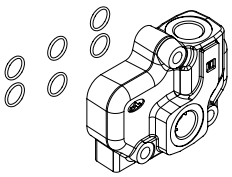
Type RC



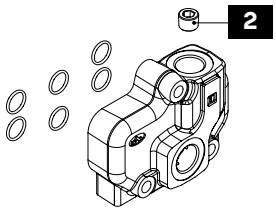
Type RD



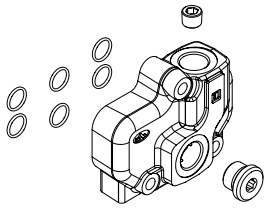
Type RCD



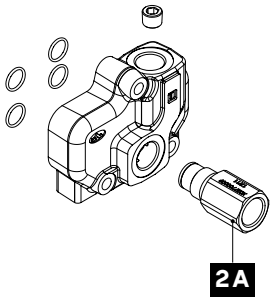
Type RE



Type RK



Type RV



1 Outlet section* page 65

For left inlet and right inlet
TYPE: **SD6/FS** CODE: 3FIA206300-H
DESCRIPTION: T upper and T1 side ports, G 1/2

1A Configuration ports* page 65

TYPE	DESCRIPTION
RC	T1 outlet side port, T upper port closed; require n. 1 G 1/2 plug
RD	T outlet upper port, T1 side port closed; require n. 1 G 1/2 plug
RCD	T upper and T1 side outlet ports
RE	T outlet upper port, carry-over in T1 side port
RK	T outlet upper port, T1 side port closed. Closed center, require n. 1 G 1/4 conic plug and n. 1 G 1/2 plug
RV	T outlet upper port, VRE backpressure valve in T1 side port. To be used only for electrohydraulic control configurations

2 Components*

TYPE	CODE	DESCRIPTION
-	3XTAP727180	G 1/2 plug
-	4TAP413210	G 1/4 conic plug
-	4GUA114018	O-Ring for outlet section (n. 6 OR 2056 14x1,78 NBR)

2A VRE backpressure valve* page 65

TYPE	CODE	DESCRIPTION
-	X027700009	VRE valve G 1/2 port. To be used only for electrohydraulic control configurations.

For other information, see page 49

3 Outlet section threading

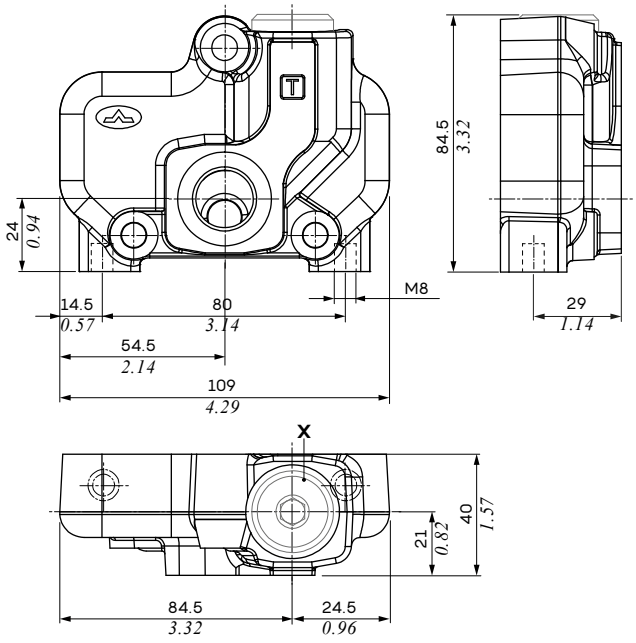
Only specify if it is different from **BSP** standard (see page 4)

Note (*) - Codes are referred to **BSP** thread

Dimensional data and hydraulic circuit

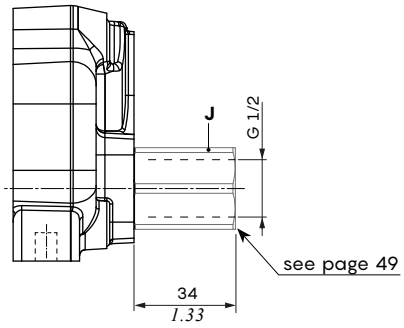
Type RC

T1 outlet side.
Open center



Type RV(1)

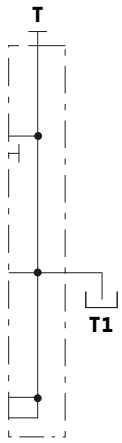
Body kit with
VRE backpressure valve



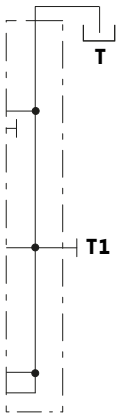
Note (1) - To be used only for electrohydraulic control configurations.

Wrenches and tightening torques
X = allen wrench 8 - 24 Nm *(17.7 lbft)*
J = wrench 27 - 42 Nm *(31 lbft)*

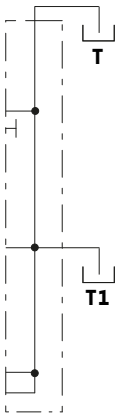
Type RC



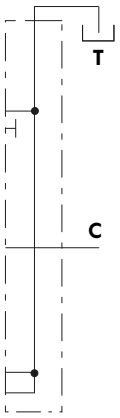
Type RD



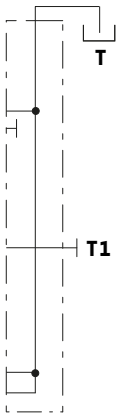
Type RCD



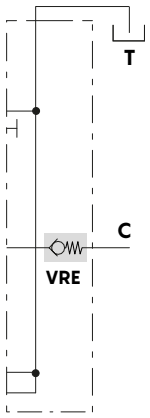
Type RE



Type RK



Type RV(1)



Configuration ports			
Type	**T port**	**T1 port**	**Carry-over**
RC	plugged	open	-
RD	open	plugged	-
RCD	open	open	-
RE	open	-	open
RK	open	plugged	-
RV	open	open	open

Note - Drawings and dimensions are referred to **BSP** thread

Parts ordering codes

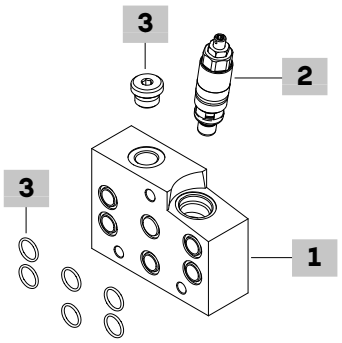
EI. intermediate section with secondary pressure relief valve

EI1 and EI2 intermediate sections with secondary pressure relief valve; the pressure of the downstream sections should be adjusted at least 20 bar *(290 psi)* below the relief valve setting. Execution EI2 is prearranged for a second inlet.

EI1 configuration example (P ausiliary inlet plugged):

SD6/2/AC(YG3-175)/18L/**EI1(JNG3-120)**/18L/RC/...

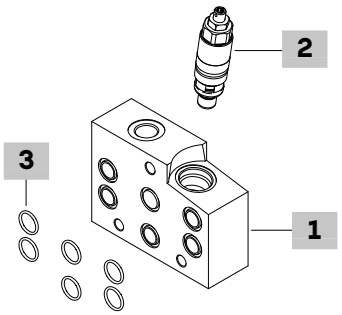
N° of working section | Inlet section | Working section | 1 | 3 | 2 | Outlet section



EI2 configuration example (P ausiliary inlet):

SD6/2/AC(YG3-175)/18L/**EI2(JNG3-120)**/18L/RC/...

N° of working section | Inlet section | Working section | 1 | 3 | 2 | Outlet section



1 Intermediate section **page 67**

For left inlet and right inlet
TYPE: **SD6/EI** CODE: 3EL4063300G
DESCRIPTION: Section for secondary pressure relief valve

2 Pressure relief valve **page 18**

Valves standard setting is referred to 10 l/min *(2.64 US gpm)* flow.

TYPE	CODE	DESCRIPTION
Type J direct acting		
(JNG1-20)	5KIT105500	Range 10-40 bar *(145-580 psi)* std. setting 20 bar *(290 psi)*
(JNG2-60)	5KIT105512	Range 40-60 bar *(580-870 psi)* std. setting 60 bar *(870 psi)*
(JNG3-120)	5KIT105513	Range 50-200 bar *(725-2900 psi)* std. setting 120 bar *(1740 psi)*
(JNG4-250)	5KIT105514	Range 160-315 bar *(2320-4570 psi)* std. setting 250 bar *(3625 psi)*

For pressure relief valve drawings and performance data, see page 18

3 Components*

TYPE	CODE	DESCRIPTION
-	3XTAP722160	G 3/8 plug
-	4GUA114018	O-Ring for intermediate section (n. 6 OR 2056 14x1,78 NBR)

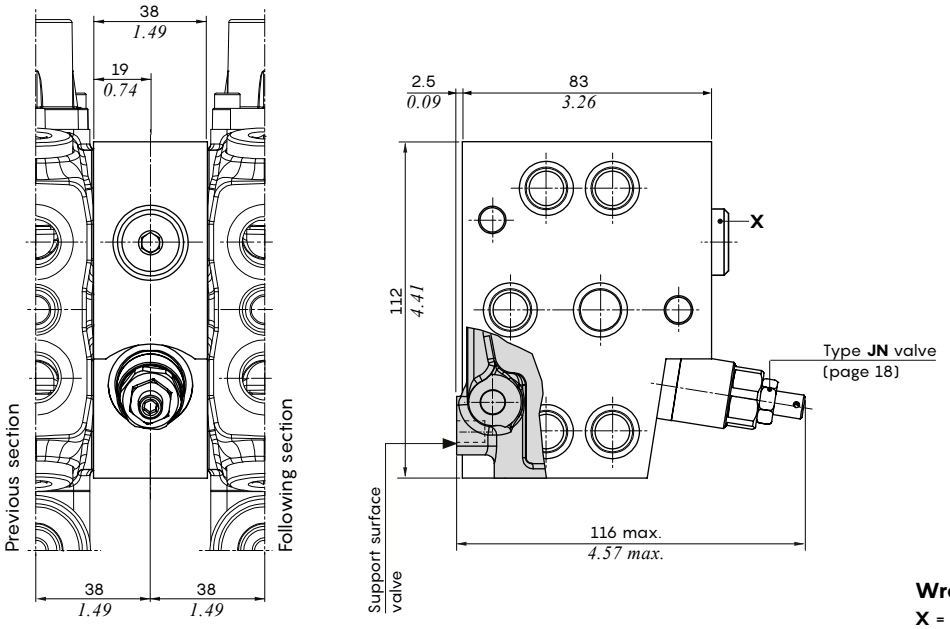
Note (*) - Codes are referred to **BSP** thread

Dimensional data and hydraulic circuit

EI. intermediate section with secondary pressure relief valve

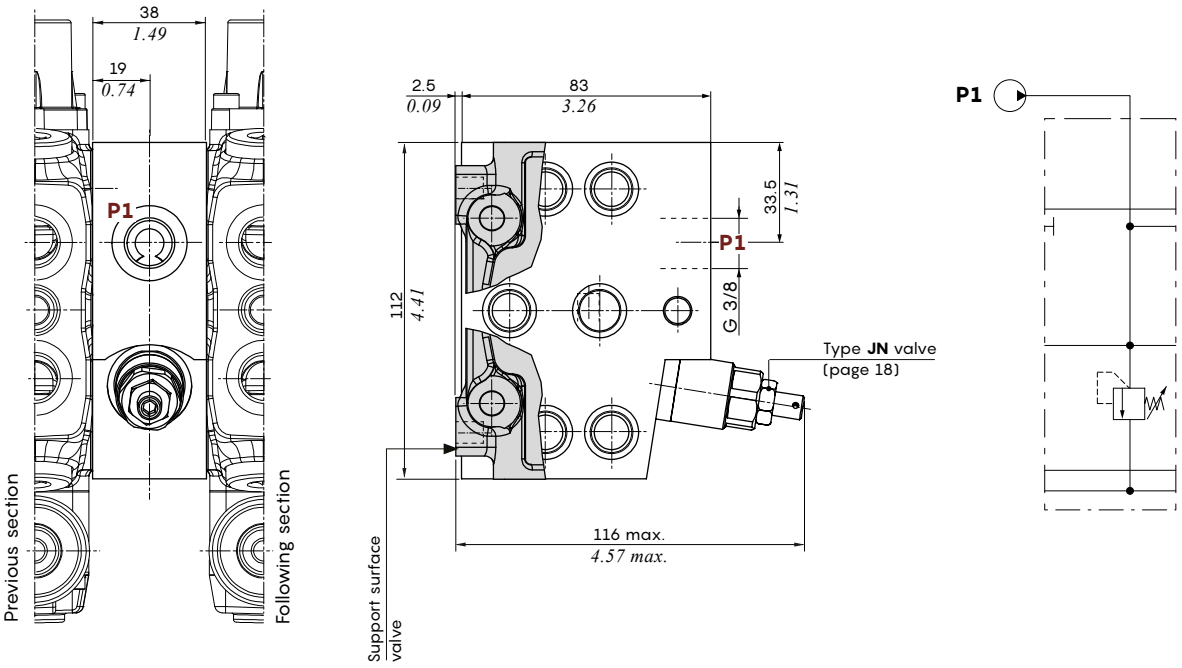
The overall dimensions of the configuration with intermediate EI section, are the same as configuration with intermediate DFG section (see DFG configuration page 72)

EI1 configuration example (P ausiliary inlet plugged):



Wrenches and tightening torques
X = allen wrench 6 - 24 Nm *(17.7 lbft)*

EI2 configuration example (P ausiliary inlet):



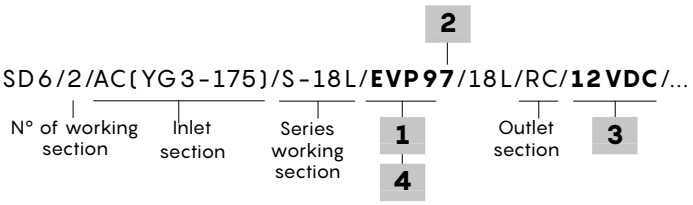
Note - Drawings and dimensions are referred to **BSP** thread

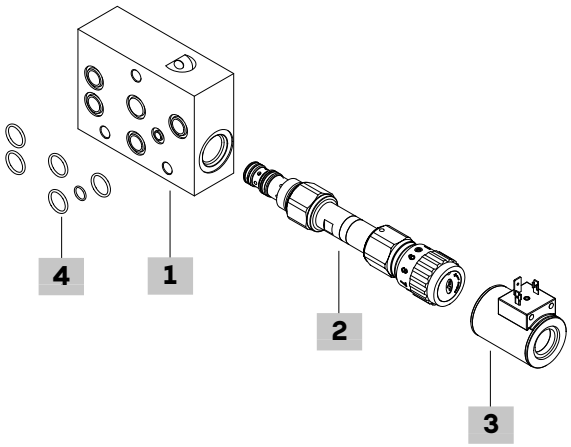
Parts ordering codes

EVP9. intermediate section with compensated flow regulator valves

Section with pressure compensated 3-ways flow control cartridge valve: the regulated flow is supplied to down stream sections, while the exceeding flow goes to tank.
Max. inlet flow is 45 l/min *(11.8 US gpm)*, max. regulated flow is 30 l/min *(7.9 US gpm)*.
N.B.: EPV9. sections must always be preceded by a series element; for mounting with an upstream inlet side, please contact Walvoil Sales Dpt.

EVP97 configuration example:





1 Intermediate section page 69

For left inlet and right inlet
TYPE: **SD6/EVP9** CODE: 5EL4060302G
DESCRIPTION: Section for compensate flow regulator valves

2 Compensated flow regulator valve page 70

TYPE: **1**(PP10A/AM0B) CODE: 0PP10002000
DESCRIPTION: Handwheel fine adjustment
TYPE: **2**(VPR/3/EP/C38/MG/LW/QR1.SB/SAE) CODE: 1636020211
DESCRIPTION: One-turn flyer adjustment and withholdings
TYPE: **3**(PP10X/A0NB) CODE: 0PP10002031
DESCRIPTION: Proportional solenoid valve, without manual emergency
TYPE: **5**(PP10A/AS0B) CODE: 0PP10002005
DESCRIPTION: Screw and nut adjustment
TYPE: **6**(PP10X/A0TB) CODE: 0PP10002033
DESCRIPTION: Proportional solenoid valve, manual screw emergency
TYPE: **7**(PP10X/A0VB CODE: 0PP10002035
DESCRIPTION: Proportional solenoid valve, manual handwheel emergency

3 Coil

TYPE	CODE	DESCRIPTION
BH-12VDC	4SLD001200A	Type BH coil, 12 VDC, conn. ISO4400 (for 3, 6, 7 prop. valve)

For **BH** coil list and connector, see page 93
NB: It is possible to configure the flow regulator valves with **BQP19** coils. Please, contact Walvoil Sales Dpt.

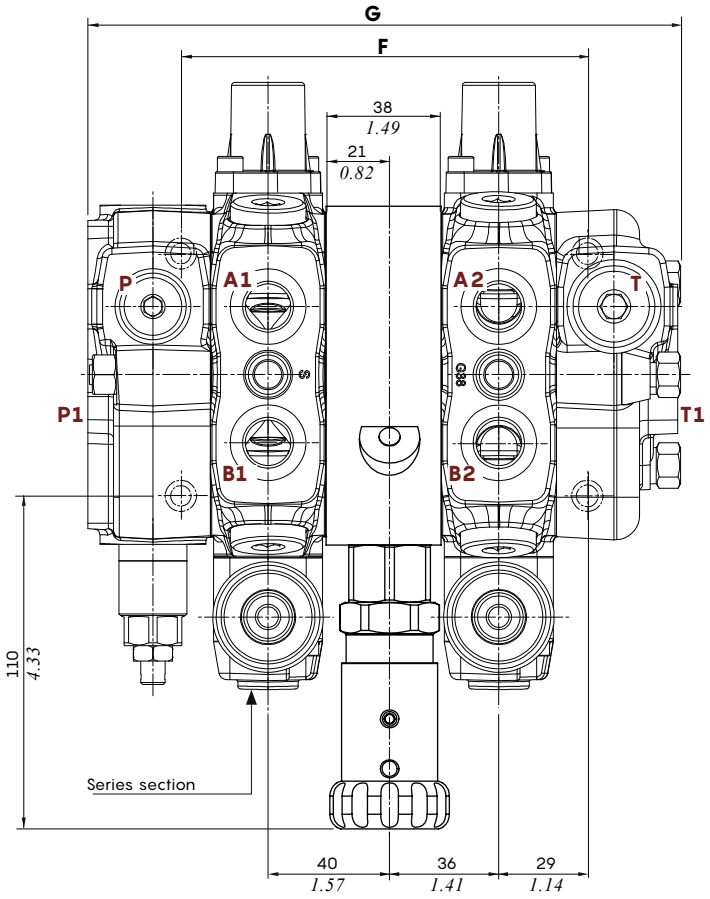
4 Components

TYPE	CODE	DESCRIPTION
-	4GUA114018	O-Ring for intermediate section (n. 5 OR 2056 14x1,78 NBR)
-	4GUA108718	O-Ring for intermediate section (n. 1 OR 108 8,74x1,78 NBR)

Dimensional data, hydraulic circuit and performance data

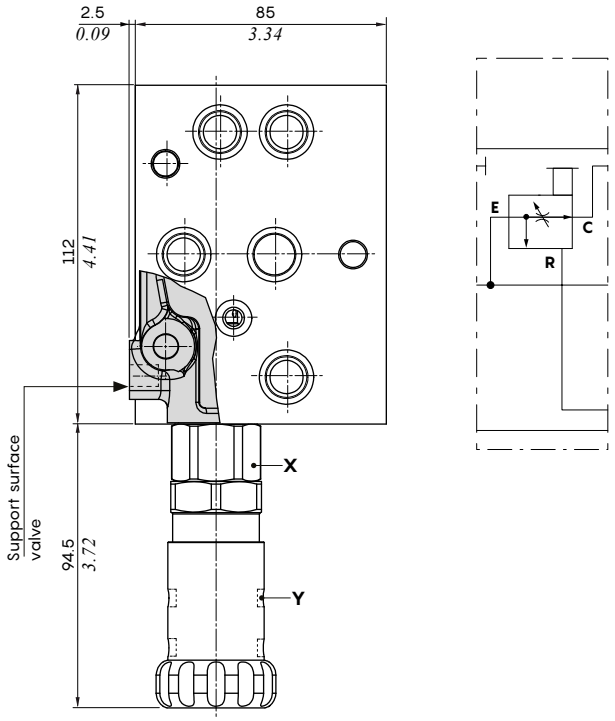
EVP9. intermediate section with compensated flow regulator valves

EVP92 manual adjustment configuration example:



Type EVP92

One-turn flyer adjustment and withholdings



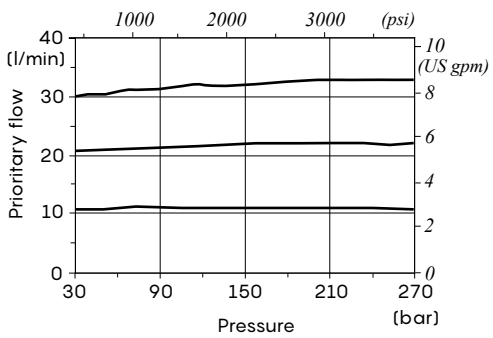
Wrenches and tightening torques

X = wrench 27 - 50 Nm *(36.8 lbft)*

Y = allen wrench 3 - 6.6 Nm *(4.8 lbft)*

Pressure vs. flow diagram (for all flow regulator valves)

Q_{in} = 45 l/min *(11.8 US gpm)* - P= 100 bar *(1450 psi)*



Direction valve dimensions with EVP. section

Type	G mm - *in*	F mm - *in*	Type	G mm - *in*	F mm - *in*
SD6/1+EVP.	156.5 *6.16*	96 *3.78*	**SD6/7+EVP.**	384.5 *15.13*	324 *12.75*
SD6/2+EVP.	194.5 *7.65*	134 *5.27*	**SD6/8+EVP.**	422.5 *16.63*	362 *14.25*
SD6/3+EVP.	232.5 *9.15*	172 *6.77*	**SD6/9+EVP.**	460.5 *18.13*	400 *15.74*
SD6/4+EVP.	270.5 *10.64*	210 *8.26*	**SD6/10+EVP.**	498.5 *19.62*	438 *17.24*
SD6/5+EVP.	308.5 *12.44*	248 *9.76*	**SD6/11+EVP.**	536.5 *22.18*	476 *18.74*
SD6/6+EVP.	346.5 *13.64*	286 *11.26*	**SD6/12+EVP.**	574.5 *22.61*	514 *20.23*

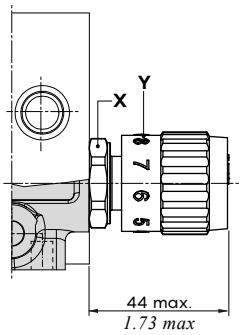
Note - Drawings and dimensions are referred to **BSP** thread

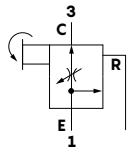
Dimensional data, hydraulic circuit and performance data

EVP 9. intermediate section with compensated flow regulator valves

Manual adjustment

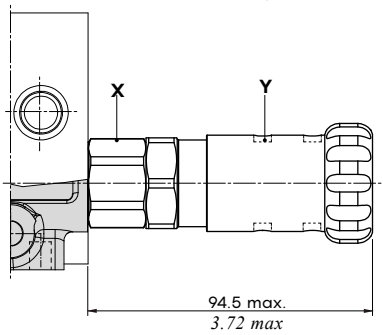
Type EVP 91
Handwheel fine

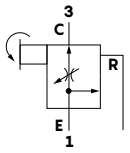




Max. flow:
in 1.....50 l/min
12.2 US gpm
in 3.....30 l/min
7.9 US gpm

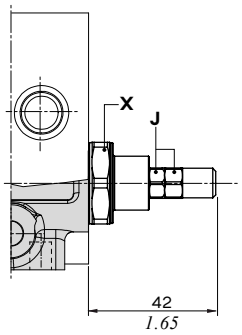
Type EVP 92
One-turn flyer
and withholdings

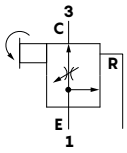




Max. flow:
in 1.....50 l/min
12.2 US gpm
in 3.....30 l/min
7.9 US gpm

Type EVP 95
Screw and nut



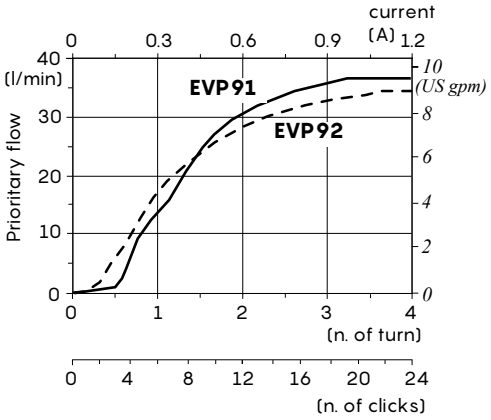


Max. flow:
in 1.....50 l/min
12.2 US gpm
in 3.....30 l/min
7.9 US gpm

Wrenches and tightening torques
X = wrench 27 - 50 Nm *(36.8 lbft)*
Y = allen wrench 2 - 1.5 Nm *(1.1 lbft)*
E = allen wrench 3 - 6.6 Nm *(4.8 lbft)*
J = wrench 10 - 6.6 Nm *(4.8 lbft)*
W = wrench 8 - 15 Nm *(11 lbft)*
Z = wrench 28 - 5 Nm *(3.6 lbft)*
C = allen wrench 4

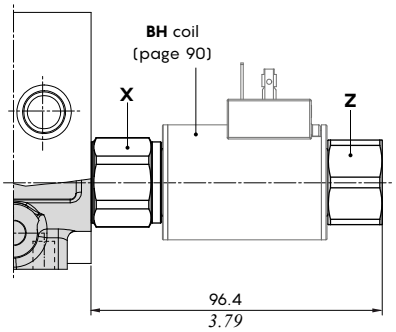
Flow control diagram
(EVP 91-EVP 92)

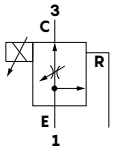
Q_{in} = 45 l/min *(11.8 US gpm)* - P= 100 bar *(1450 psi)*



Proportional solenoid adjustment

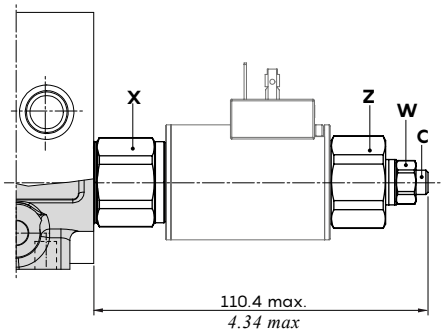
Type EVP 93
Without emergency

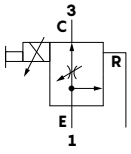




Max. flow:
in 1.....50 l/min
12.2 US gpm
in 3.....30 l/min
7.9 US gpm

Type EVP 96
Manual screw emergency

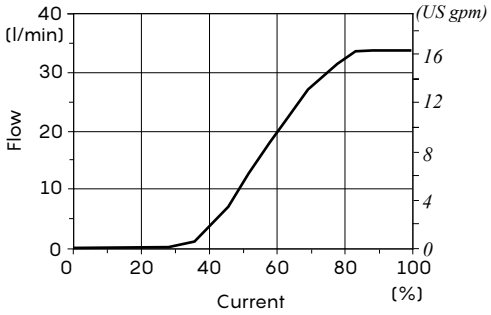




Max. flow:
in 1.....50 l/min
12.2 US gpm
in 3.....30 l/min
7.9 US gpm

Flow control diagram
(EVP 93-EVP 96)

Q_{in} = 45 l/min *(11.8 US gpm)* - P= 100 bar *(1450 psi)*

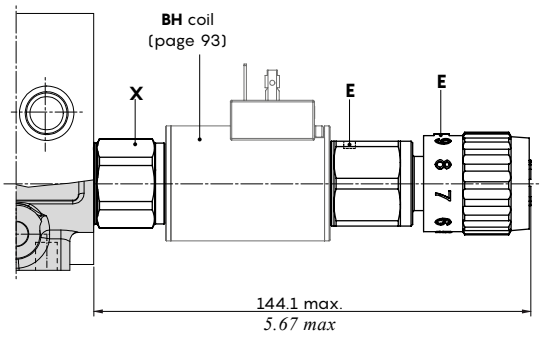


Dimensional data, hydraulic circuit and performance data

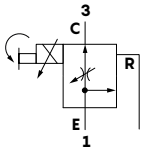
EVP9. intermediate section with compensated flow regulator valves

Proportional solenoid control

Type EVP97
Manual handwheel emergency

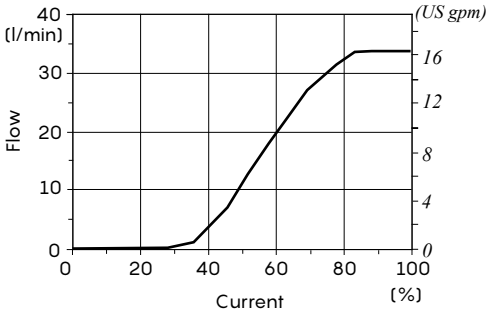


Wrenches and tightening torques
X = wrench 27 - 50 Nm *(36.8 lbft)*
E = allen wrench 3 - 6.6 Nm *(4.8 lbft)*



Max. flow:
in 1.....50 l/min
12.2 US gpm
in 3.....30 l/min
7.9 US gpm

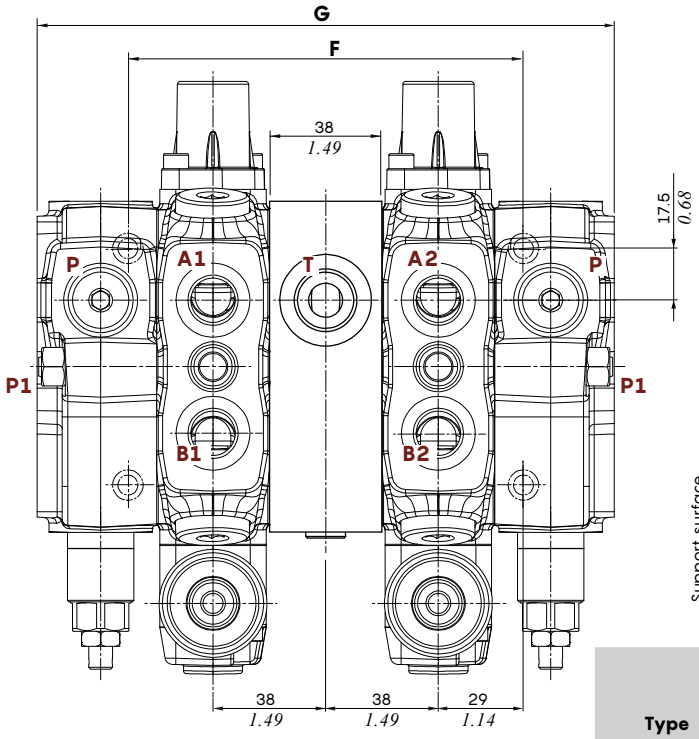
Flow control diagram
(EVP97)
Q_{in} = 45 l/min *(11.8 US gpm)* - P= 100 bar *(1450 psi)*



Dimensional data and hydraulic circuit

CS1 intermediate outlet manifold

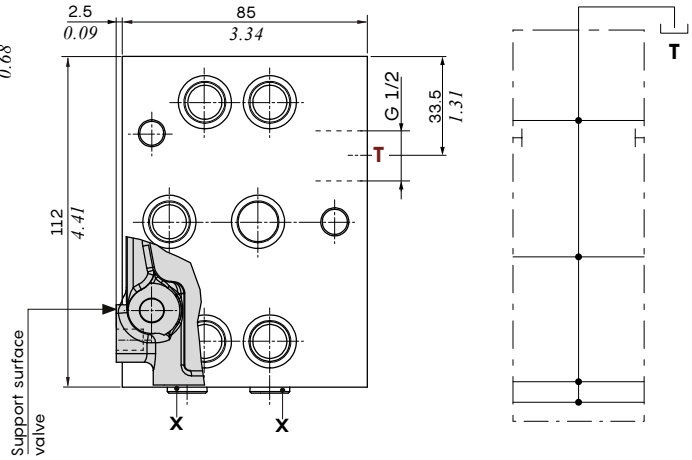
Intermediate outlet manifold for directional valve with left and right inlet both; they allow 2 indipendent circuits with common outlet.



Intermediate outlet manifold

SD6/2/AC(YG3-175)/18L/**CS1**/18L/BC(YG3-175)/...

N° of working section | Inlet section | Working section | Right inlet section



Wrenches and tightening torques
X = allen wrench 7 - 24 Nm *(17.7 lbft)*

Note - Drawings and dimensions are referred to **BSP** thread

Direction valve dimensions with CS1 section

Type	G mm - *in*	F mm - *in*	Type	G mm - *in*	F mm - *in*
SD6/1+CS1	157 - *6.18*	96 - *3.78*	**SD6/7+CS1**	385 - *15.15*	324 - *12.75*
SD6/2+CS1	195 - *7.67*	134 - *5.27*	**SD6/8+CS1**	423 - *16.65*	362 - *14.25*
SD6/3+CS1	233 - *9.17*	172 - *6.77*	**SD6/9+CS1**	461 - *18.14*	400 - *15.74*
SD6/4+CS1	271 - *10.67*	210 - *8.26*	**SD6/10+CS1**	499 - *19.64*	438 - *17.24*
SD6/5+CS1	309 - *12.16*	248 - *9.76*	**SD6/11+CS1**	537 - *21.14*	476 - *18.74*
SD6/6+CS1	347 - *13.66*	286 - *11.26*	**SD6/12+CS1**	575 - *22.63*	514 - *20.23*

Dimensional data, hydraulic circuit and performance data

DFG intermediate section with compensated flow regulator valve

Section kit with handwheel for graduated adjustment.
The flow on the downstream sections can be adjusted from 0 to 40 l/min *(from 0 to 10.5 US gpm)*; flow exceeding setting goes to tank.

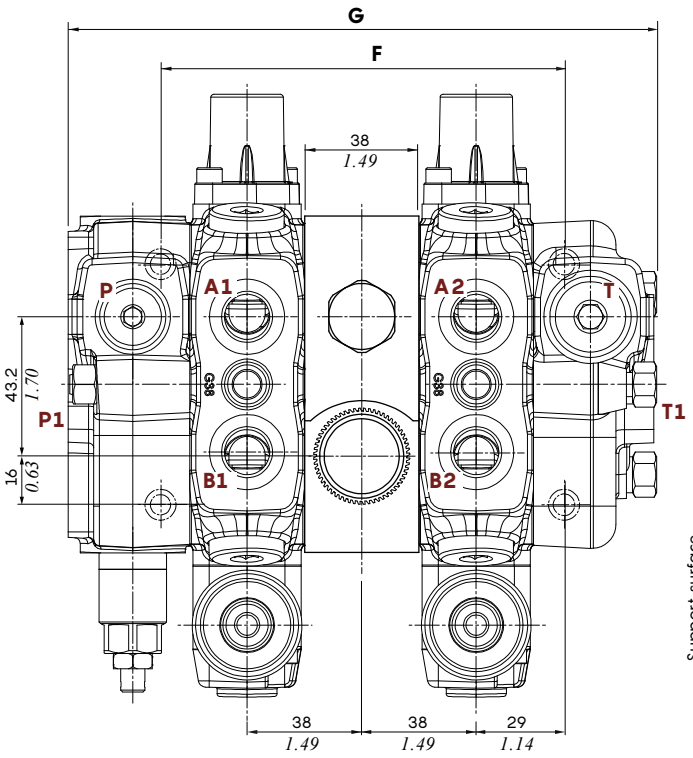
Configuration example:

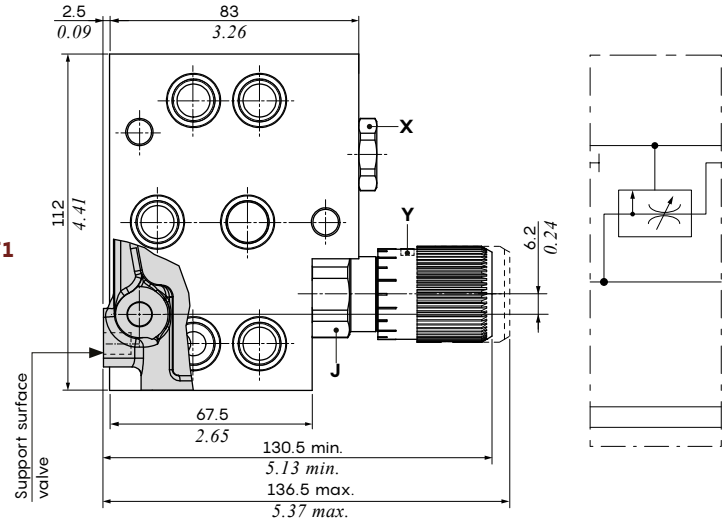
Intermediate section with flow regulator valve

SD6/2/AC(YG3-175)/18L/**DFG**/18L/RC/...

N° of working section | Inlet section | Working section | Outlet section

Direction valve dimensions with DFG section					
Type	G mm - *in*	F mm - *in*	Type	G mm - *in*	F mm - *in*
SD6/1+DFG	156.5 *6.16*	96 *3.78*	SD6/7+DFG	384.5 *15.13*	324 *12.75*
SD6/2+DFG	194.5 *7.65*	134 *5.27*	SD6/8+DFG	422.5 *16.63*	362 *14.25*
SD6/3+DFG	232.5 *9.15*	172 *6.77*	SD6/9+DFG	460.5 *18.13*	400 *15.74*
SD6/4+DFG	270.5 *10.64*	210 *8.26*	SD6/10+DFG	498.5 *19.62*	438 *17.24*
SD6/5+DFG	308.5 *12.44*	248 *9.76*	SD6/11+DFG	536.5 *22.18*	476 *18.74*
SD6/6+DFG	346.5 *13.64*	286 *11.26*	SD6/12+DFG	574.5 *22.61*	514 *20.23*

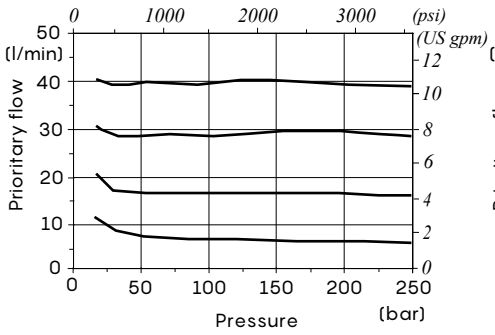




Wrenches and tightening torques
X = wrench 22 - 42 Nm *(31 lbft)*
Y = allen wrench 2 - 7.5 Nm *(5.5 lbft)*
J = wrench 27 - 24 Nm *(17.7 lbft)*

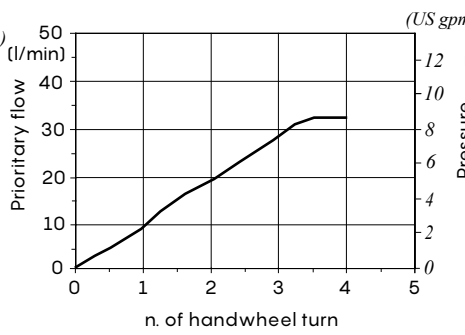
Pressure vs. flow diagram

Q_{in} = 45 l/min - $P_{(on\ ports)}$ = 100 bar

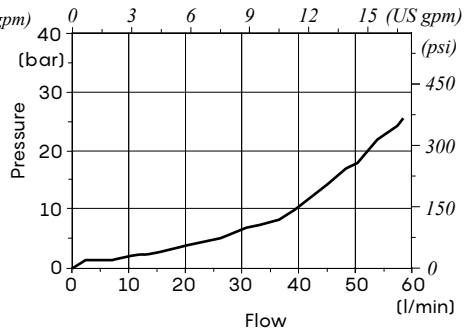


Flow control

Q_{in} = 45 l/min *(11.8 US gpm)* - P= 100 bar *(1450 psi)*



Pressure drop



Note - Drawings and dimensions are referred to **BSP** thread