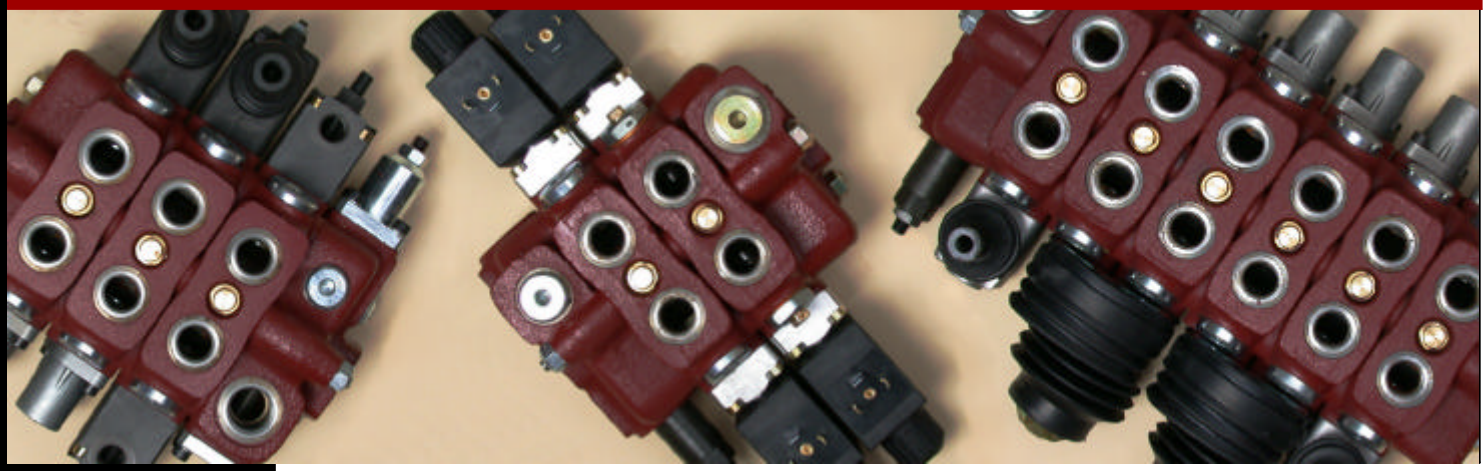


SECTIONAL DIRECTIONAL
CONTROL VALVES

SD 6

DLS 7

walvoil
HYDRAULIC CONTROL SYSTEMS

SD6 – DLS7

SD6 . . . . . *page 3*

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

H Fitted with a main pressure relief valve and a load check valve on every working section

H Available with parallel, tandem or series circuit.

H Optional carry-over port.

H A wide variety of port and circuit valves.

H Available manual, pneumatic, hydraulic, electro-hydraulic, and remote with flexible cables spool control kits.

H Diameter 16 mm (*0.63 in)* interchangeable spools.

DLS7 . . . . . *page 65*

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

H Load-indipendent flow control.

H Ports valves and “B” side control kits are the same of SD6 directional valve.

H L.S. signal connections on every working section.

Accessories . . . . . *page 94*

Electric connectors and fixing brackets.

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 December 2002:

Content

Content

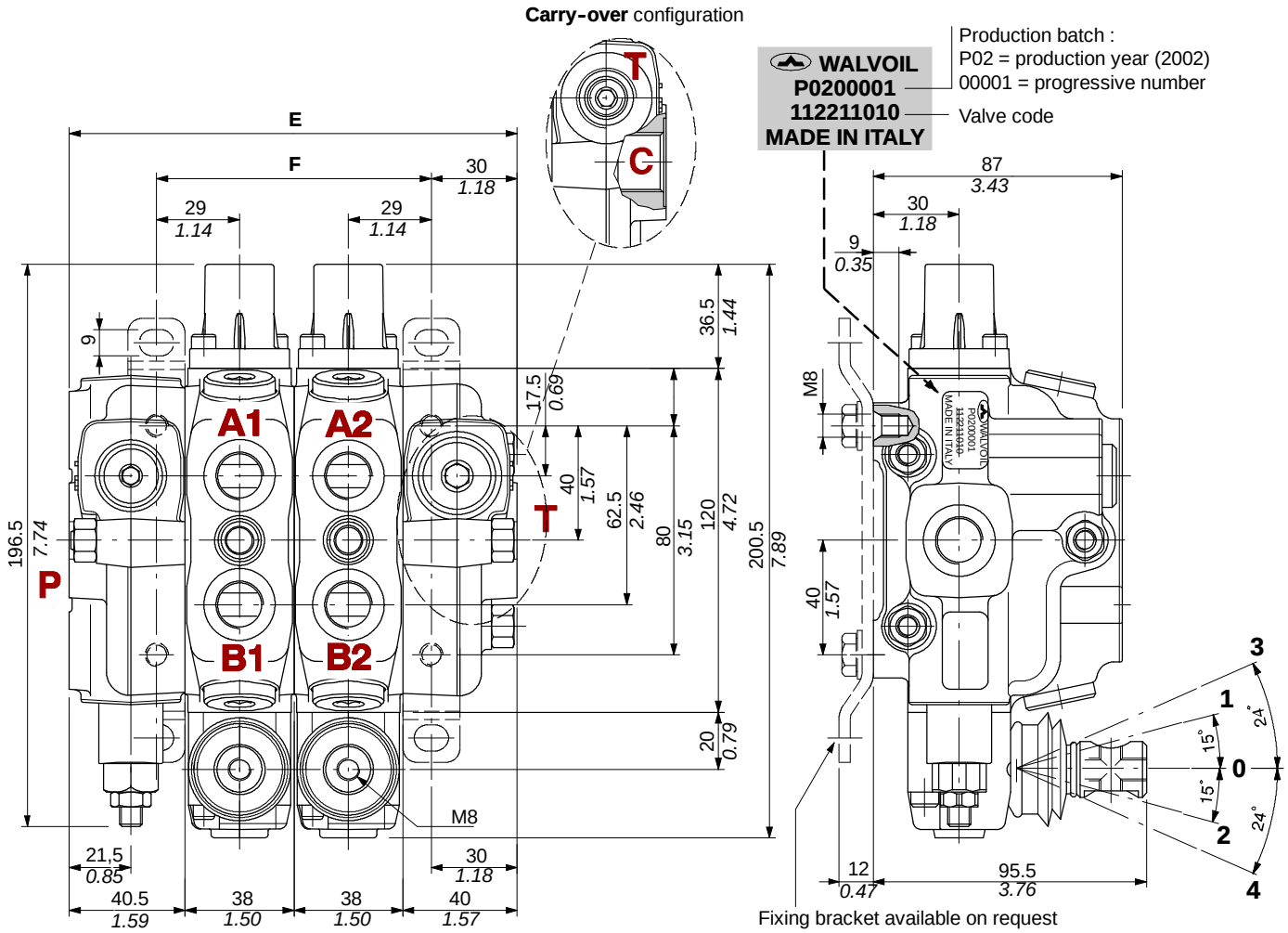
Working conditions

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

Nominal flow rating		45 l/min	
Operating pressure (maximum)	*parallel or tandem circuit*	315 bar	*4600 psi*
	series circuit	210 bar	*3050 psi*
Back pressure (maximum)	*on outlet port T*	25 bar	*360 psi*
Internal leakage A(B)→T	*Δp=100 bar - 1450 psi fluid and valve at 40°C*	3 cm^3/min	*0.18 in^3/min*
Fluid		Mineral based oil	
Fluid temperature	*with NBR (BUNA-N) seals*	from -20° to 80°C	
	with FPM (VITON) seals	from -20° to 100°C	
Viscosity	*operating range*	from 15 to 75 mm^2/s	*from 15 to 75 cSt*
	min.	12 mm^2/s	*12 cSt*
	max.	400 mm^2/s	*400 cSt*
Max level of contamination		19/16 - ISO 4406	
Ambient temperature		da -40° a 60°C	
Tie rods tightening torque (wrench 13)		30 Nm	*22 lbft*

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

Dimensional data (series or tandem circuit)



TYPE	E		F		Weight	
	mm	*in*	mm	*in*	kg	*lb*
SD6/1	118.5	*4.66*	58	*2.28*	5.3	*11.7*
SD6/2	156.5	*6.16*	96	*3.78*	7.6	*16.6*
SD6/3	194.5	*7.66*	134	*5.28*	9.9	*21.8*
SD6/4	232.5	*9.15*	172	*6.77*	12.2	*26.9*
SD6/5	270.5	*10.65*	210	*8.27*	14.8	*32.6*
SD6/6	308.5	*12.15*	248	*9.76*	17.1	*37.7*

TYPE	E		F		Weight	
	mm	*in*	mm	*in*	kg	*lb*
SD6/7	346.5	*13.65*	286	*11.26*	19.4	*42.8*
SD6/8	384.5	*15.15*	324	*12.76*	21.7	*47.9*
SD6/9	422.5	*16.65*	362	*14.26*	24	*53*
SD6/10	460.5	*18.15*	400	*15.76*	26.3	*58.1*
SD6/11	498.5	*19.65*	438	*17.26*	28.6	*63.2*
SD6/12	536.5	*21.15*	476	*18.76*	30.9	*68.3*

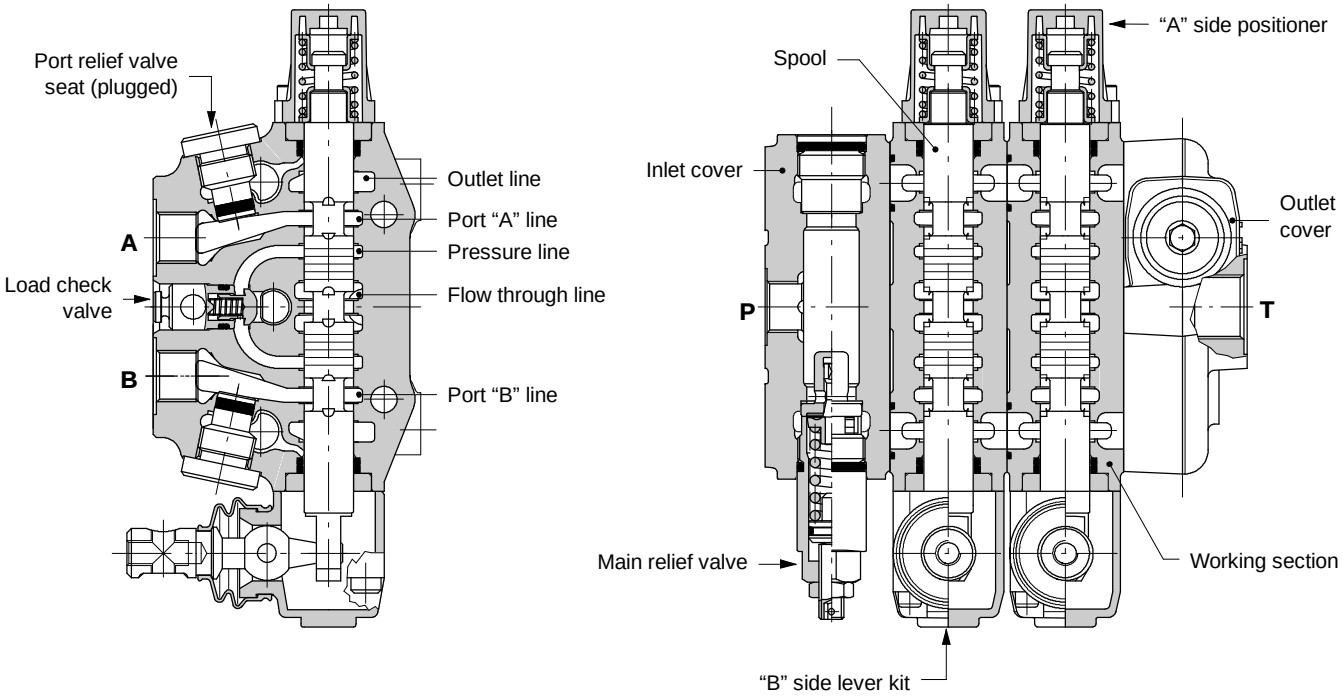
Standard threads

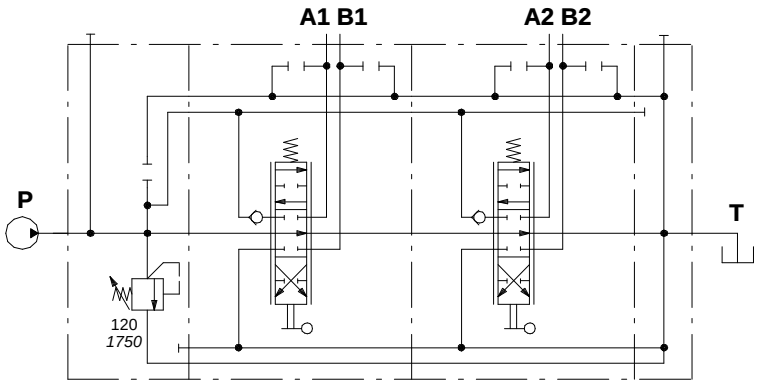
PORT	**BSP** (ISO 228/1)	**UN-UNF** (ISO 11926-1)	**METRIC** (ISO 262)
Inlet **P**	G 3/8	3/4-16 (SAE 8)	M18x1.5
A and **B** ports	G 3/8	9/16-18 (SAE 6)	M18x1.5
Outlet **T** and carry-over **C**	G 1/2	3/4-16 (SAE 8)	M22x1.5
PILOT PORTS			
Hydraulic	G 1/4	9/16-18 (SAE 6)	G 1/4
Pneumatic	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27

Hydraulic circuit

Parallel circuit

Standard configuration with open centre and side inlet and outlet.



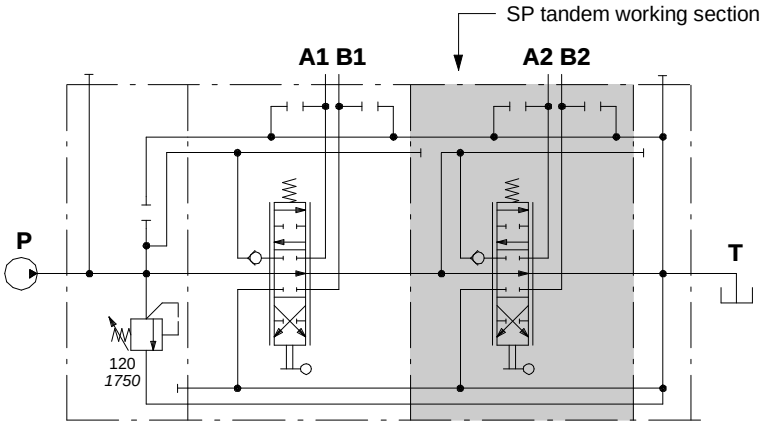


Description example: SD6/2/AC(YG3-120)/18L/18L/RC

Series-parallel (tandem) circuit

It needs a special working section kit (see page 22).

Tandem section is fed from thr free flow pressure line; it's excluded when an up strem section is operated,.



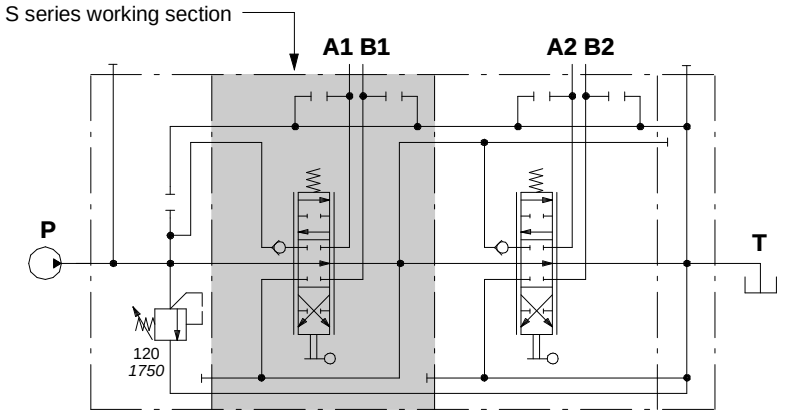
Description example:

SD6/2/AC(YG3-120)/18L/**SP**-18L/RC

Series circuit

It needs a special working section kit (see page 22).

The return oil from service ports feed the remaining down stream sections

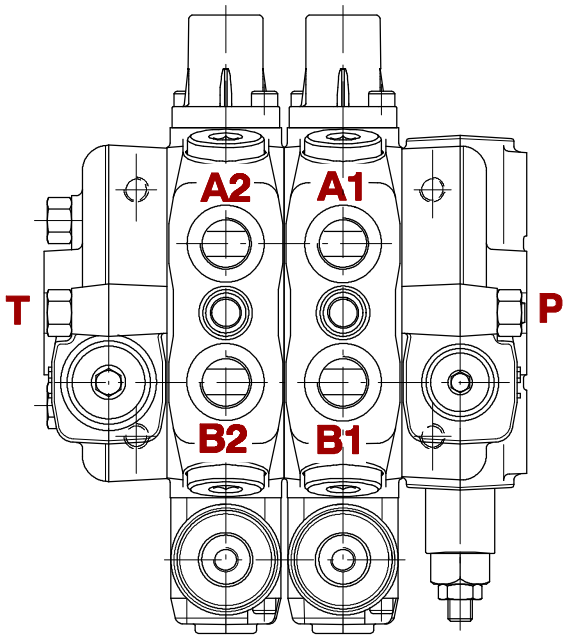


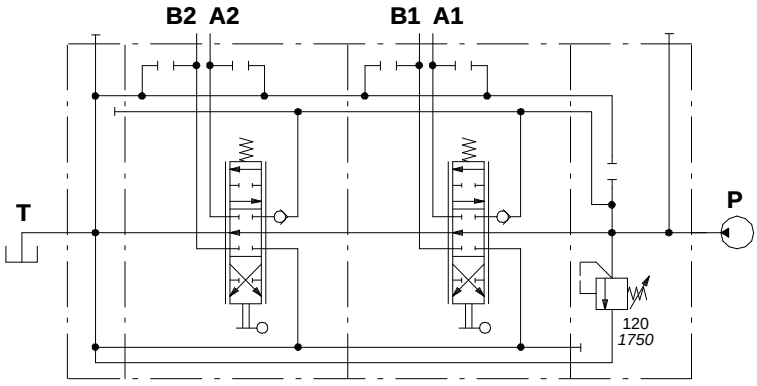
Description example:

SD6/2/AC(YG3-120)/**S**-18L/P-18L/RC

Hydraulic circuit

Directional valve with right inlet



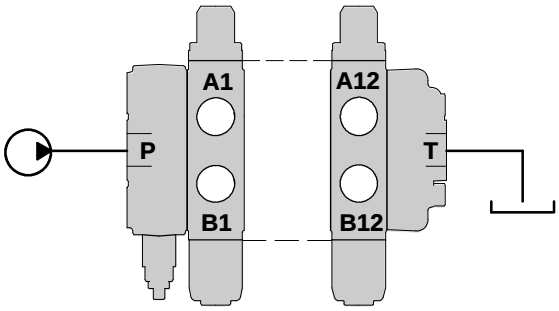


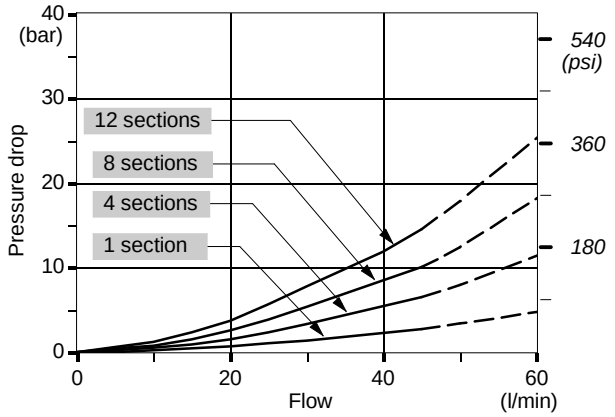
Description example:
SD6/2/**BC**(YG3-120)/18L/18L/RC

Performance data (pressure drop vs. flow)

Open centre

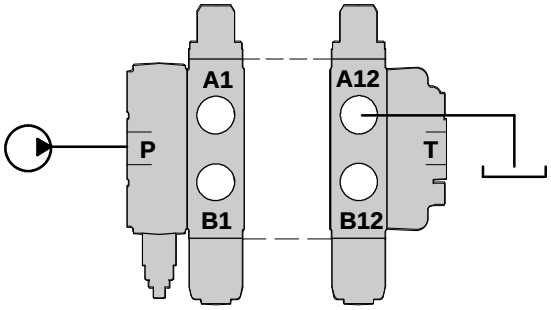
From side inlet to side outlet.

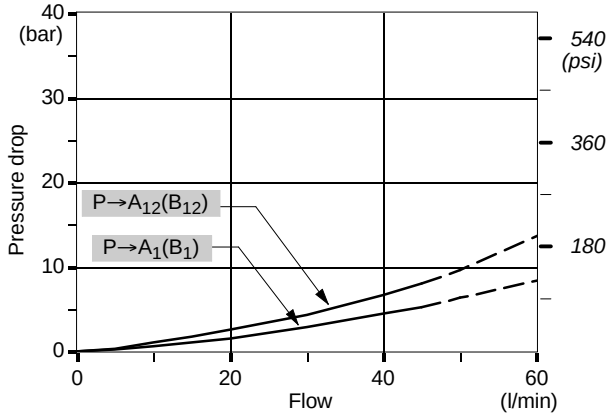




Inlet to work port

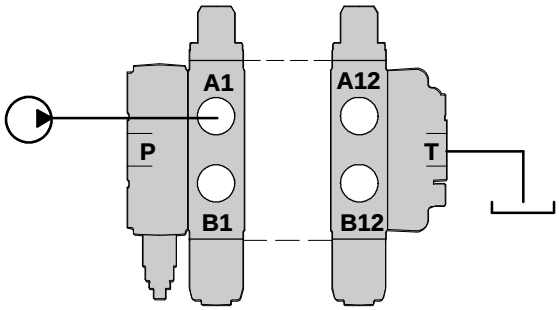
From side inlet to **A** port (spool in position **1**) or **B** port (spool in position **2**).

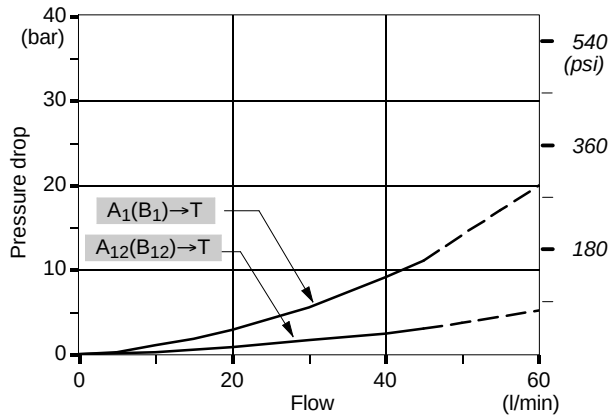




Work port to outlet

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





NOTE – *Measured with spool type 1.*

Ordering codes

Description example: standard configuration with side inlet and outlet

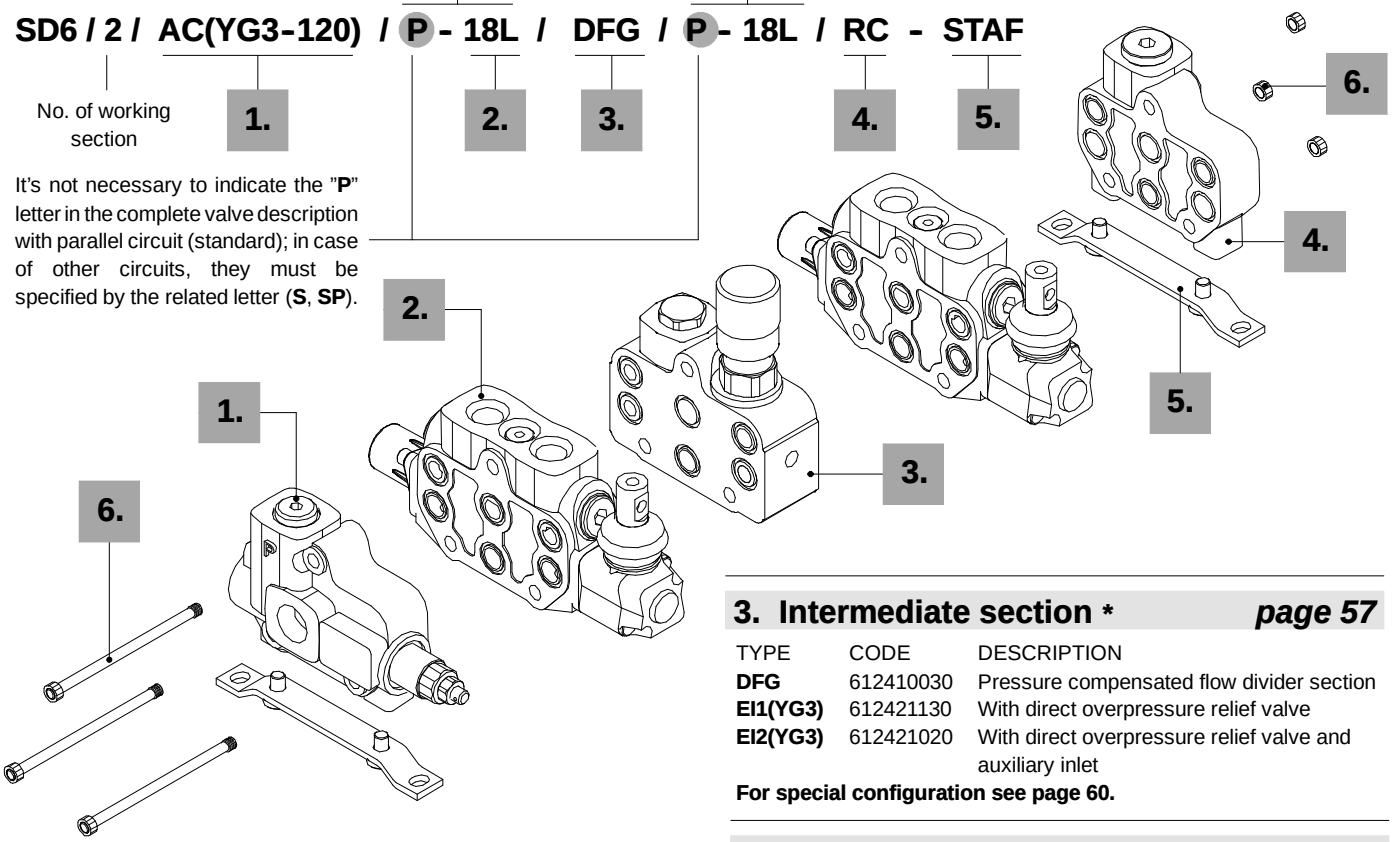
1st section — following section

SD6 / 2 / AC(YG3-120) / P - 18L / DFG / P - 18L / RC - STAF

No. of working section

1. **2.** **3.** **4.** **5.**

It's not necessary to indicate the "**P**" letter in the complete valve description with parallel circuit (standard); in case of other circuits, they must be specified by the related letter (**S**, **SP**).



1. Complete inlet cover * *page 12*

TYPE	CODE	DESCRIPTION
AC(JG3-120)	612201171	Side inlet with VMDJ direct pressure relief valve
AC(YG3-120)	612201110	Side inlet with VMDY direct pressure relief valve
AD(YG3-120)	612201120	Upper inlet with VMDY direct pressure relief valve

For special configuration see page 17.

2. Complete working section * *page 20*

TYPE	CODE	DESCRIPTION
P-18L	612101001	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
S-18L	612111001	As previous with series circuit
SP-18L	612121001	As previous with series-parallel (tandem) circuit

3. Intermediate section * *page 57*

TYPE	CODE	DESCRIPTION
DFG	612410030	Pressure compensated flow divider section
EI1(YG3)	612421130	With direct overpressure relief valve
EI2(YG3)	612421020	With direct overpressure relief valve and auxiliary inlet

For special configuration see page 60.

4. Complete outlet cover * *page 61*

TYPE	CODE	DESCRIPTION
RC	612300110	Side outlet
RD	612300120	Upper outlet
RE	612300114	Upper outlet with side carry-over
RK	612300117	Upper outlet with closed centre

5. Fixing bracket *page 95*

TYPE	CODE	DESCRIPTION
STAF	5STA120160	Brackets with fixing screws

6. Assembling kit

CODE	DIRECTIONAL VALVE
5TIR108117	Tie rod kit for 1 section valve
5TIR108155	Tie rod kit for 2 sections valve
5TIR108193	Tie rod kit for 3 sections valve
5TIR108231	Tie rod kit for 4 sections valvei
5TIR108269	Tie rod kit for 5 sections valve
5TIR108307	Tie rod kit for 6 sections valve
5TIR108345	Tie rod kit for 7 sections valve
5TIR108383	Tie rod kit for 8 sections valve
5TIR108421	Tie rod kit for 9 sections valve
5TIR108459	Tie rod kit for 10 sections valve
5TIR108497	Tie rod kit for 11 sections valve
5TIR108535	Tie rod kit for 12 sections valve

NOTE (*) - *Items are referred to **BSP** thread.*

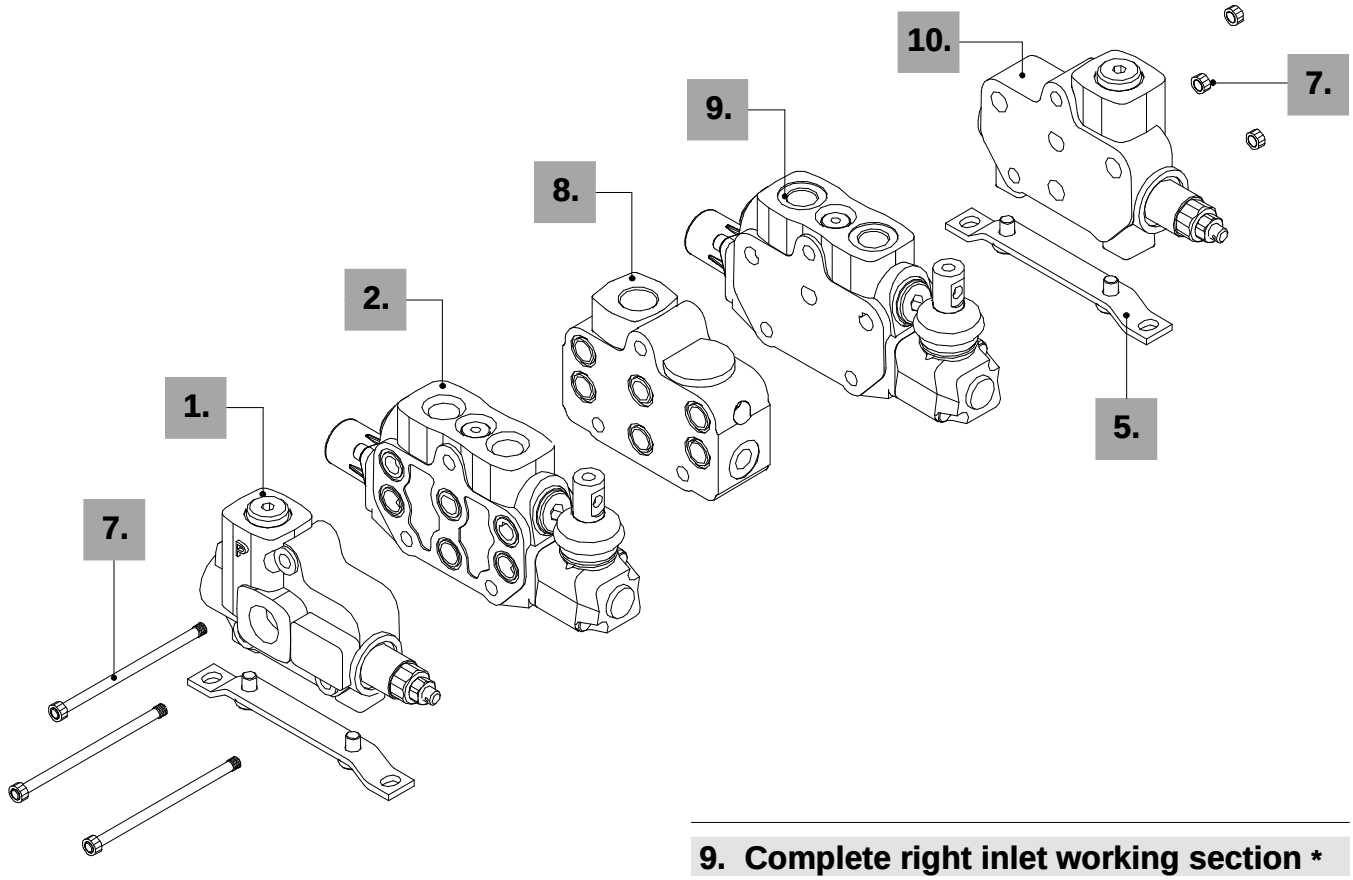
Ordering codes

Description example: configuration with 2 side inlets and mid return manifold:

1st section — following section

SD6 / 2 / AC(YG3-120) / P - 18L / CS1 / P - ED - 18L / BC(YG3-120) - STAF

No. of working section	1.	2.	8.	9.	10.	5.



7. Assembling kit for valve with CS1

CODE	DIRECTIONAL VALVE (with CSMT)
5TIR108193	Tie rod kit for 2 sections valve (with CS1)
5TIR108231	Tie rod kit for 3 sections valve (with CS1)
5TIR108269	Tie rod kit for 4 sections valve (with CS1)
5TIR108307	Tie rod kit for 5 sections valve (with CS1)
5TIR108345	Tie rod kit for 6 sections valve (with CS1)
5TIR108383	Tie rod kit for 7 sections valve (with CS1)
5TIR108421	Tie rod kit for 8 sections valve (with CS1)
5TIR108459	Tie rod kit for 9 sections valve (with CS1)
5TIR108497	Tie rod kit for 10 sections valve (with CS1)

8. Return manifold *page 55*

TYPE	CODE	DESCRIPTION
CS1	612400010	Mid return manifold with G1/2 outlet port

9. Complete right inlet working section *

TYPE	CODE	DESCRIPTION
P-ED-18L	612101048	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
S-ED-18L	612111017	As previous with series circuit
SP-ED-18L	612121003	As previous with series-parallel (tandem) circuit

10.Complete right inlet cover *

TYPE	CODE	DESCRIPTION
BC(JG3-120)	612201117	Side inlet with VMDJ direct pressure relief valve
BC(YG3-120)	612201130	Side inlet with VMDY direct pressure relief valve
BD(YG3-120)	612201115	Upper inlet with VMDY direct pressure relief valve

For special configuration see page 17.

NOTE (*) - *Items are referred to **BSP** thread; sections and covers for right inlet are different from the standard (see ref. 1 e 2) because of different components assembling*

Ordering codes

Description example:

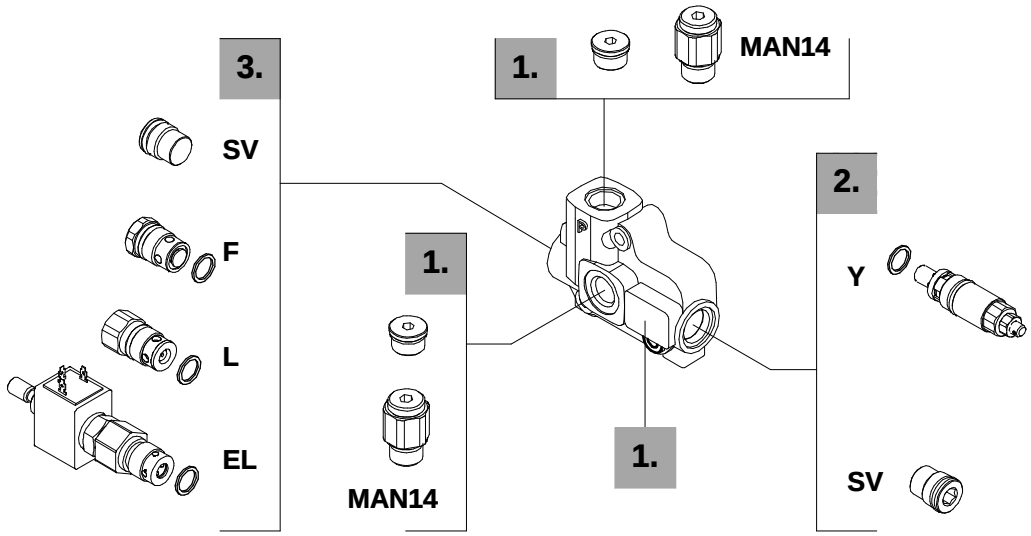
FE SD6 / AC (YG3 - 120) EL - MAN1/4 - 12VDC *

1. 2. 3. 1. 3.

Pressure relief valve setting (bar)

Available configurations

AC: with side inlet, for left inlet (standard) directional valve
AD: with upper inlet, for left inlet (standard) directional valve
BC: with side inlet, for right inlet directional valve
BD: with upper inlet, for right inlet directional valve
See page 13.



1. Inlet cover body * *page 13*

CODE	DESCRIPTION
3FIA106300+3XTAP722160	Standard
3FIA106300+5MAN621200	With G1/8 pressure gauge prearrangement
3FIA106300+5MAN622320	With G1/4 pressure gauge prearrangement

3. Inlet valve options *page 15*

TYPE	CODE	DESCRIPTION
F	5KIT406200	Inlet anti-cavitation valve
L	5KIT406300*	Hydraulic pilot unloader valve
EL	5CAR406305	12 VDC electromagnetic controlled unloader valve
	5CAR406310	24 VDC electromagnetic controlled unloader valve
SV	XTAP623282	Relief valve blanking plug

2. Inlet relief options *page 14*

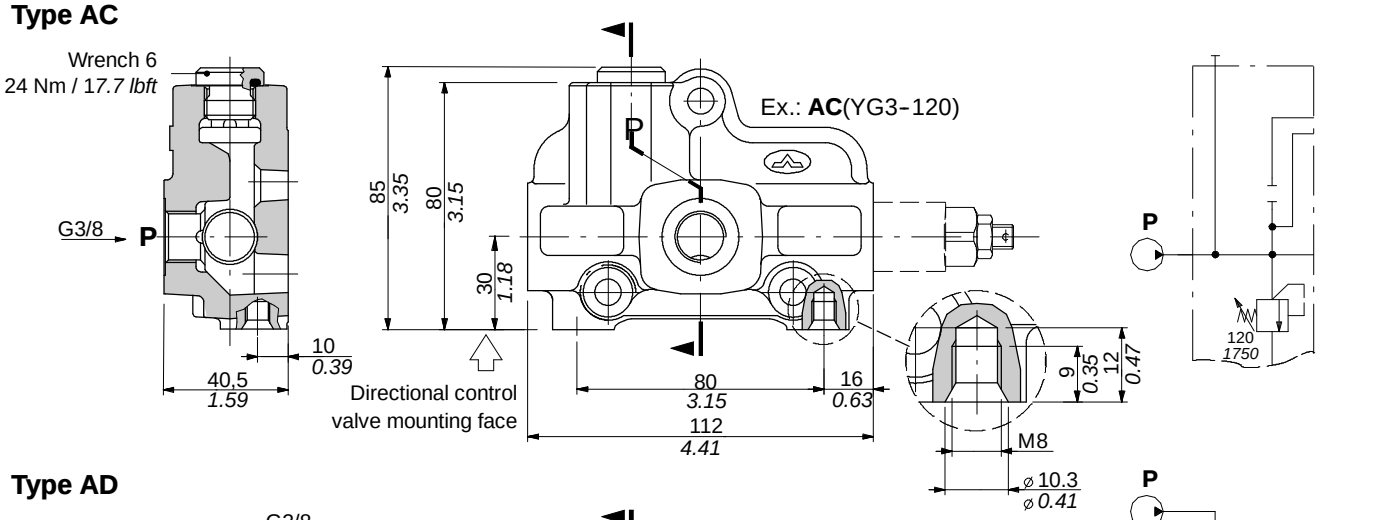
TYPE	CODE	DESCRIPTION
VMD5/1 balanced direct pressure relief valve type Y		
(YG2)	5KIT105212	Range 63 to 125 bar / *900 to 1800 psi* standard setting 80 bar / *1150 psi*
(YG3)	5KIT105213	Range 100 to 200 bar / *1450 to 2900 psi* standard setting 120 bar / *1750 psi*
(YG4)	5KIT105214	Range 160 to 315 bar / *2300 to 4600 psi* standard setting 250 bar / *3600 psi*
Standard setting is referred to 10 l/min flow.		
SV	XTAP623282	Relief valve blanking plug
Direct pressure relief valve type J is available on request: contact Customer Service		
(JG2)	5KIT105412	Range 40 to 80 bar / *580 to 1150 psi* standard setting 80 bar / *1150 psi*
(JG3)	5KIT105413	Range 63 to 200 bar / *900 to 2900 psi* standard setting 120 bar / *1750 psi*
(JG4)	5KIT105414	Range 160 to 315 bar / *2300 to 4600 psi* standard setting 220 bar / *3200 psi*

NOTE (*) - *Items are referred to **BSP** thread.*

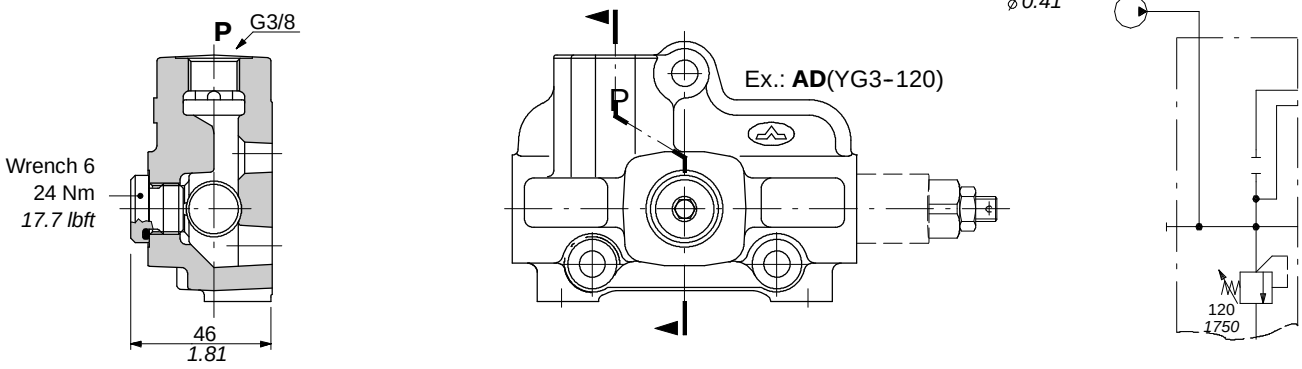
Dimensional data and hydraulic circuit

For left inlet directional valve (standard)

Type AC

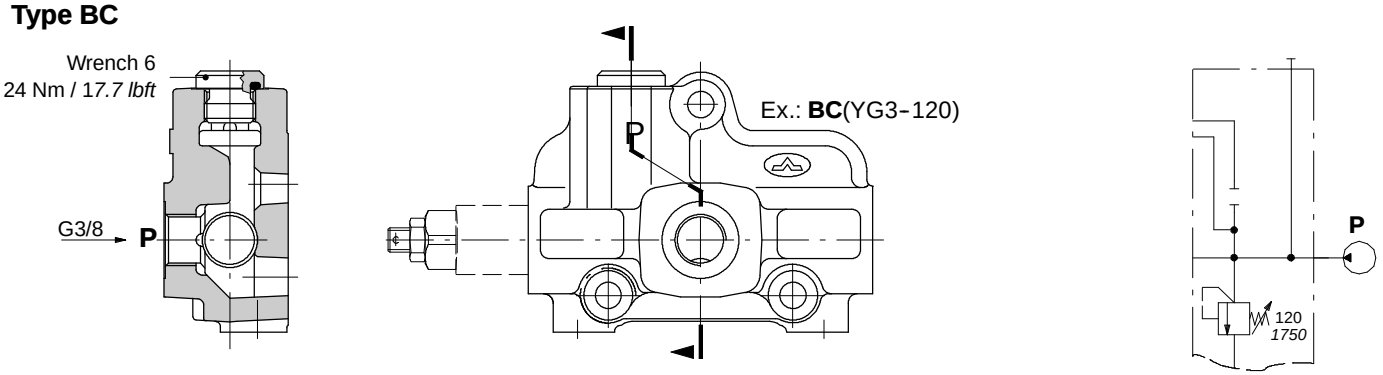


Type AD

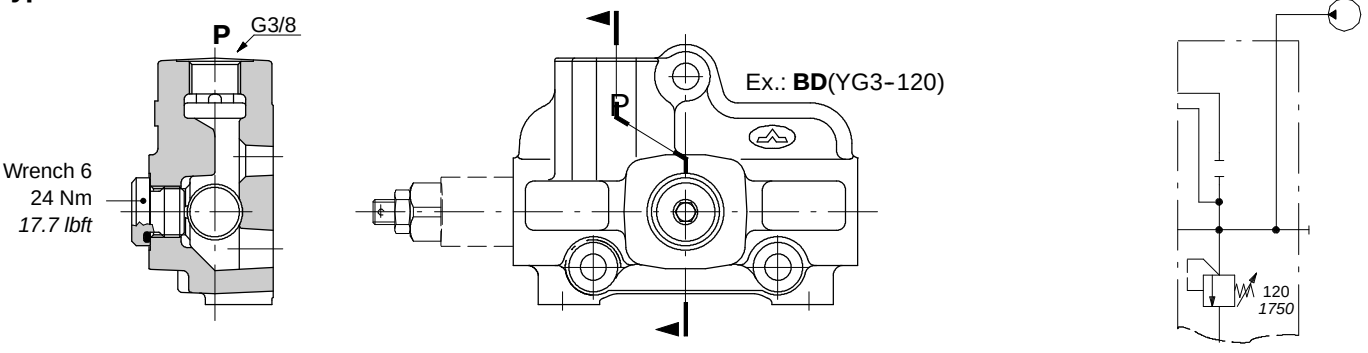


For left inlet directional valve (standard)

Type BC



Type BD

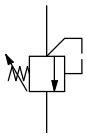


Inlet relief options

Direct overpressure relief valve

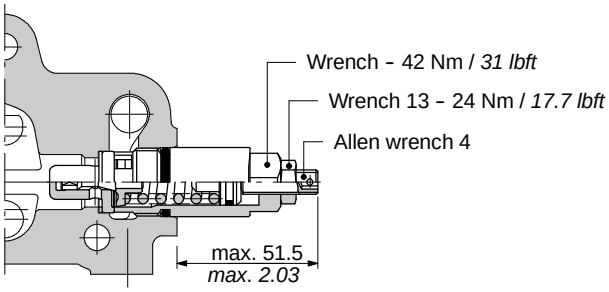
VMD5 (Y G 3 - 120)

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

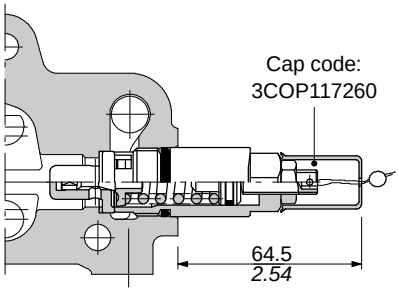


Adjustment type

G: with screw

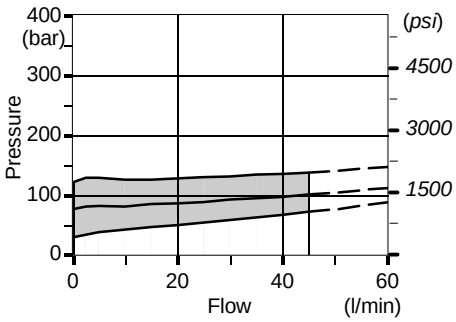


H: valve set and locked

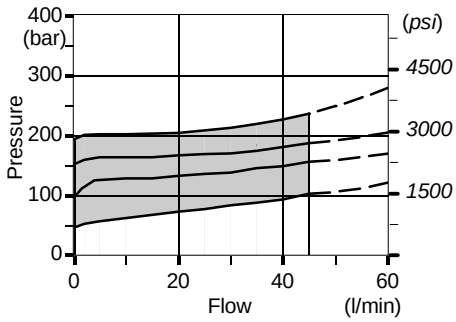


Performance data

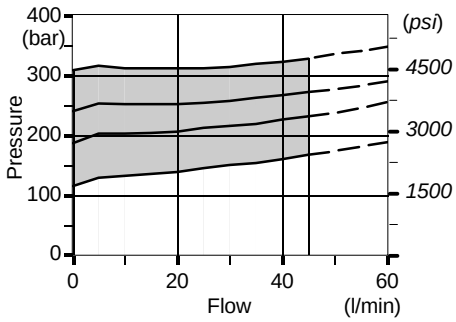
Spring nr. 2 (green band)



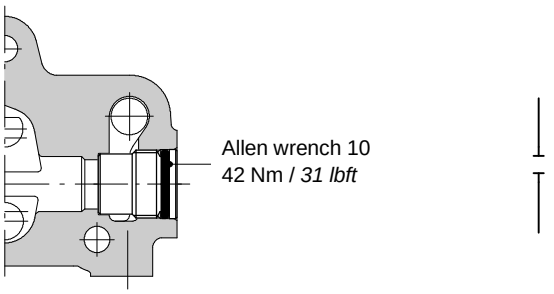
Spring nr. 3 (blue band)



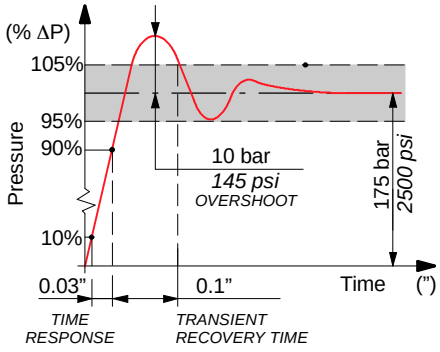
Spring nr. 4 (red band)



SV: relief valve blanking plug

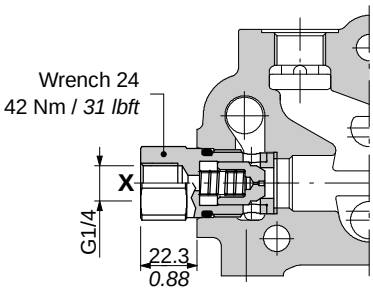


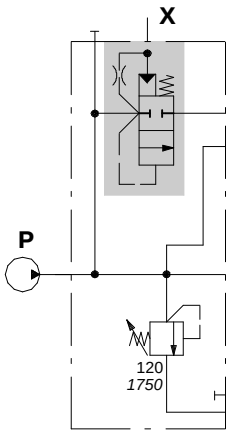
Time response



Unloader valves

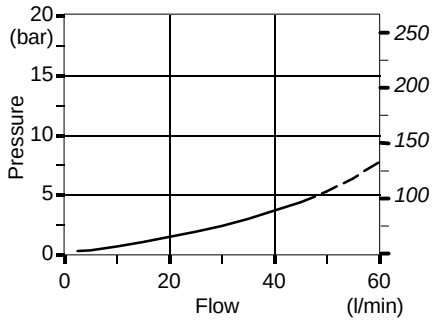
Hydraulic pilot operated type L





Ex.:AC(YG3-120)**L**

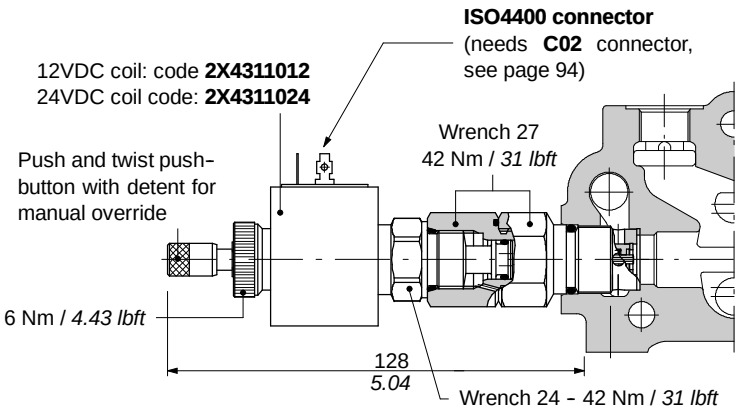
Pressure drop curve T→P

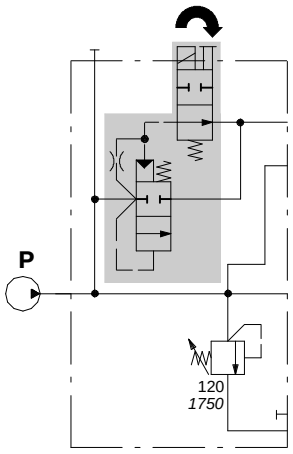


Operating features

Internal leakage . . . . . : 10 cm³/min at 100 bar
0.61 in³/min at 1450 psi

Electro-hydraulic pilot operated type EL



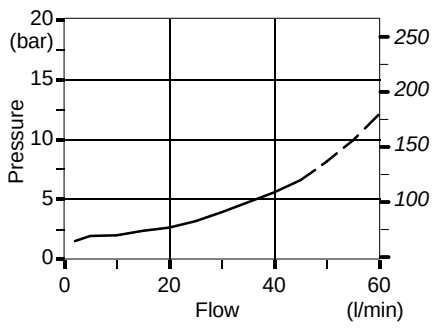


Ex.:AC(YG3-120)**EL-12VDC**

Solenoid operating features

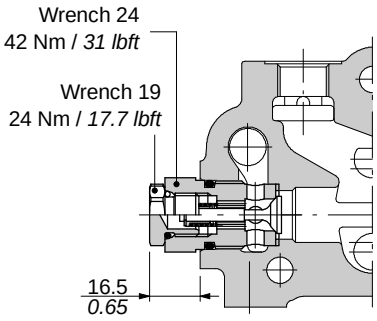
Nominal voltage tolerance . . . . . : ±10%
Power rating . . . . . : 19 W
Nominal current . . . . . : 1.58A - 12 VDC
: 0.81 A - 24VDC
Coil insulation . . . . . : Class F
Weather protection . . . . . : IP65
Duty cycle . . . . . : 100%

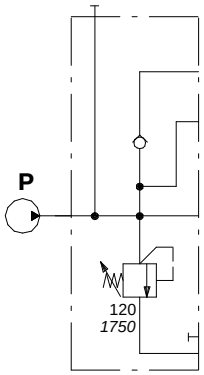
Pressure drop curve T→P



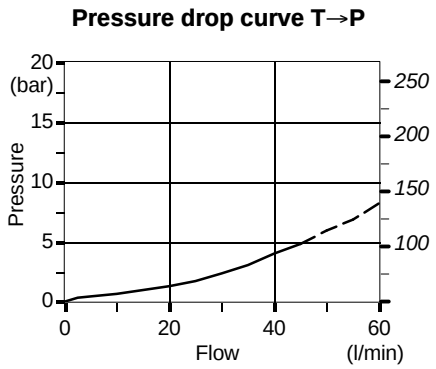
Inlet valve options

Anti-cavitation valve F



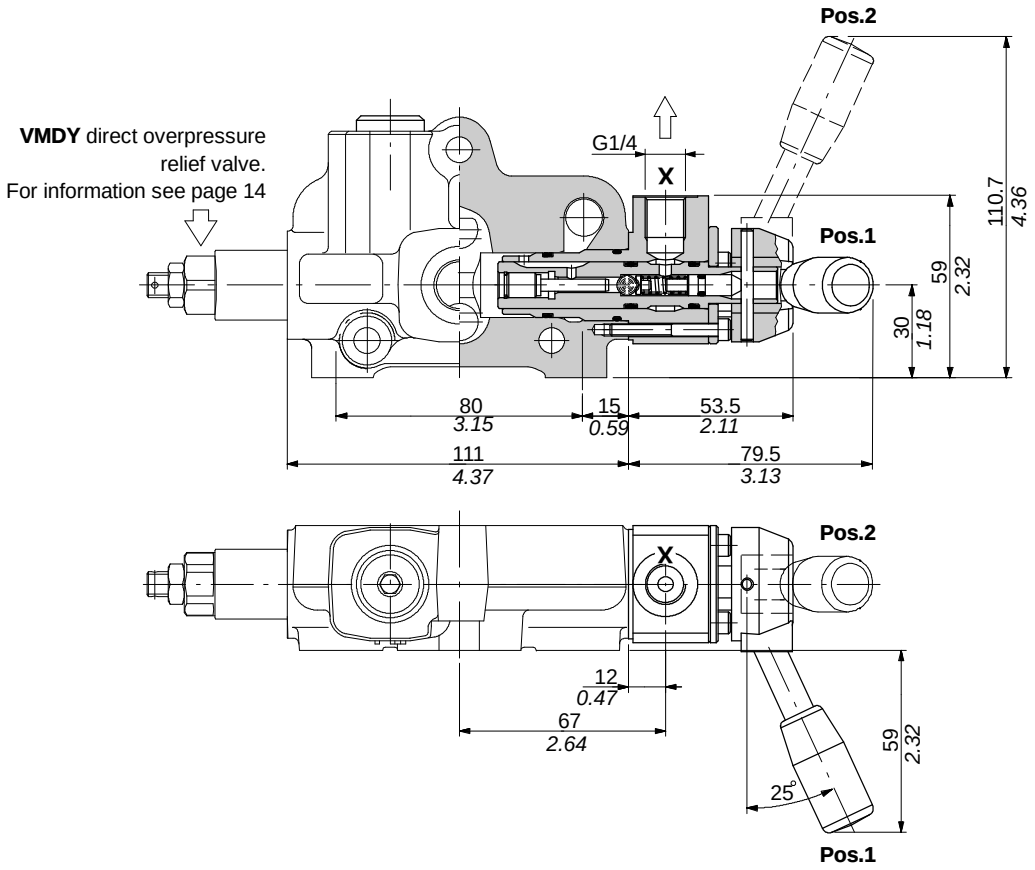


Ex.: AC(YG3-120)**F**



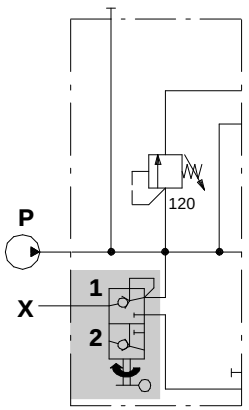
R2 commutator configuration

Manual rotary Backhoe clamp device.
Normally mounted on the lever side, into the main relief valve cavity, properly modified. Main relief valve available in the opposite side.
Available for left inlet (standard) and right inlet valve.



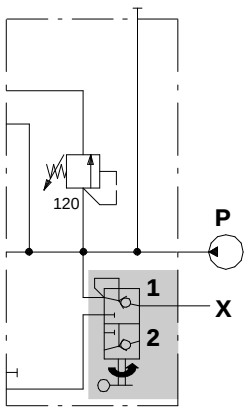
Hydraulic circuit and ordering codes

Left inlet



AC(YG3-120)**R2**
code: 612201158

Right inlet

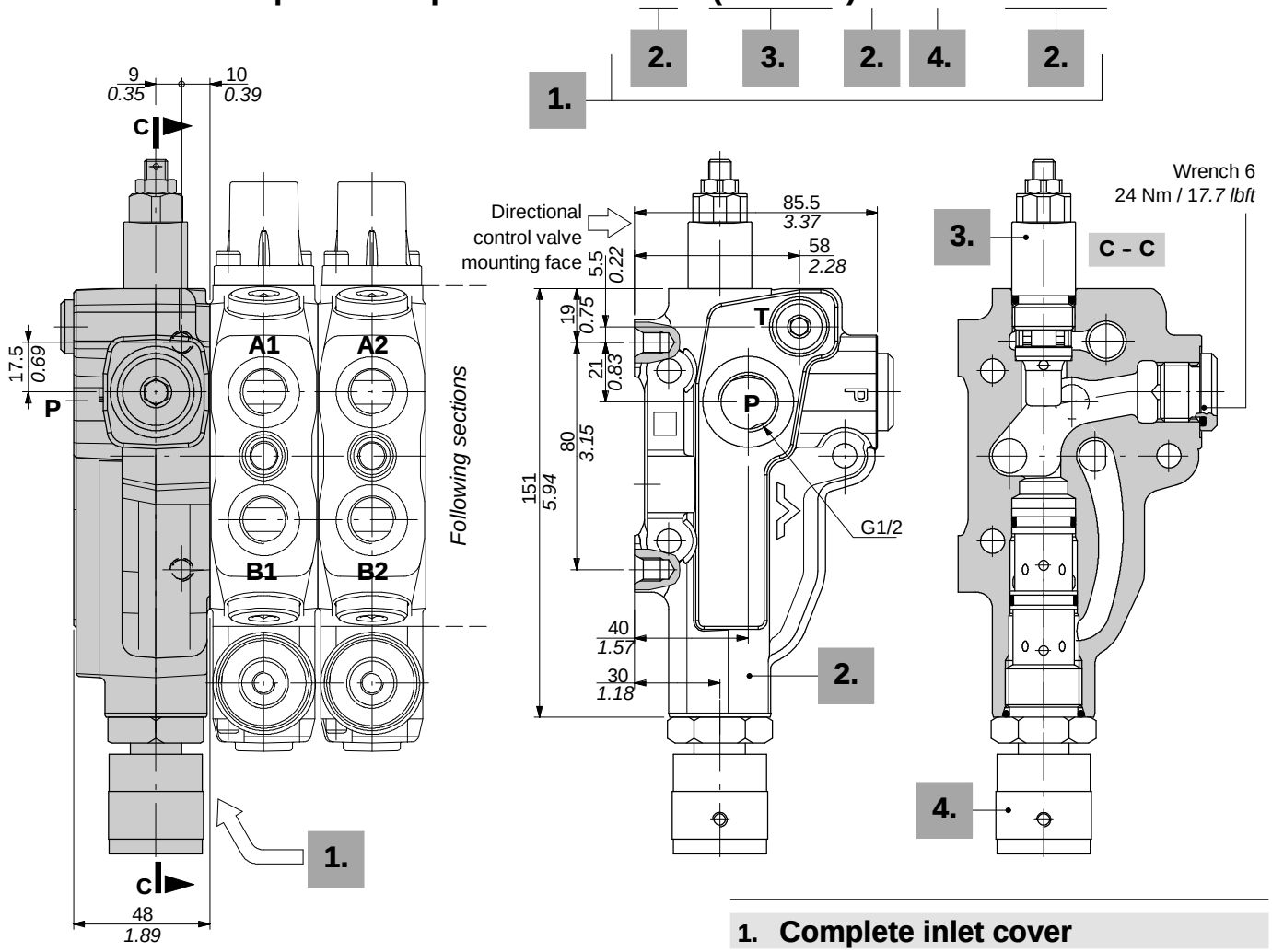


BC(YG3-120)**R2**
code: 612201159

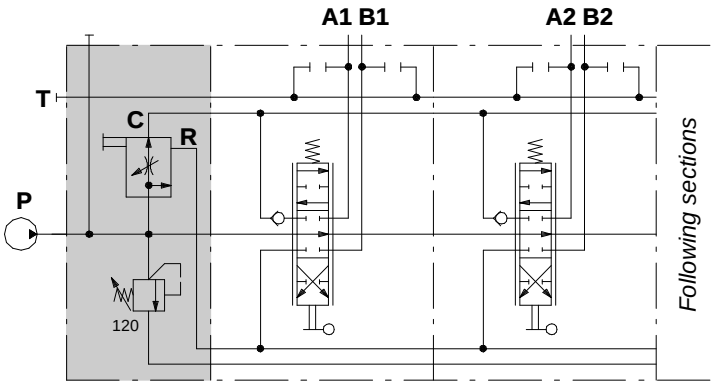
S flow regulator configuration

Inlet cover with flow regulator on lever side: prioritary flow to working sections and exceeding flow to tank line.

Inlet covber description example : FE SD6 / AC (YG3-120) S N - BSP1/2



Hydraulic circuit



Description example:

SD6/4/**AC(YG3-120)SN**/18L/18L/...-BSP12(PT)38(AB)

1. Complete inlet cover

TYPE:	**AC(YG3-120)SN-BSP1/2**
CODE:	612202015
DESCRIPTION:	Side inlet, VMDY overpressure relief valve and N handwheel flow control valve
NOTE:	For other configurations please contact Sales Dept.

2. Inlet cover body

CODE:	3FIA106475+3XTAP719150+3XTAP727180
DESCRIPTION:	Type AC-AD-BC-BD, port P = G1/2, prearranged for flow control

3. Inlet relief options

Direct overpressure relief valves type Y and J: see page 12.

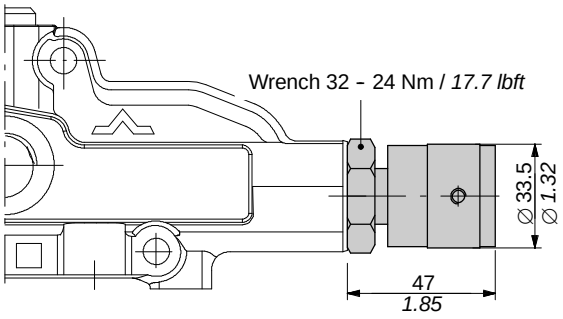
4. Flow control valve

TYPE	CODE	DESCRIPTION
M	2S0PP12002000	Handwheel control
N	2S1636030210	Handwheel control with detent
W2	2S0PP12002015	12VDC proportional solenoid valve

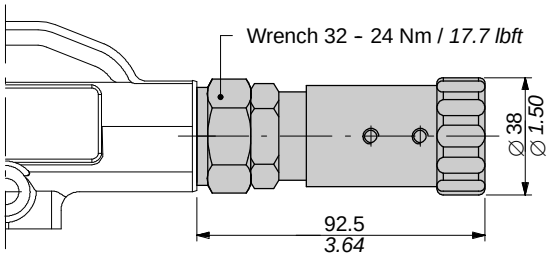
S flow regulator configuration

Handwheel operated

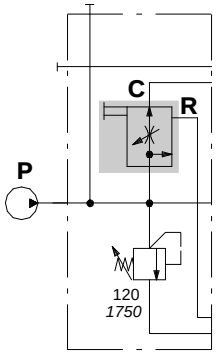
Continuous fine regulation



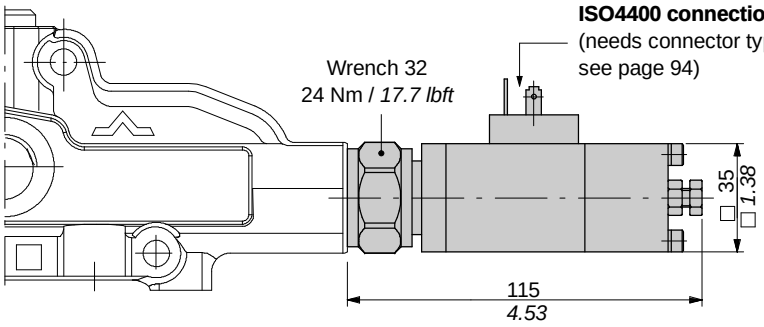
One turn with detent



Valve circuit



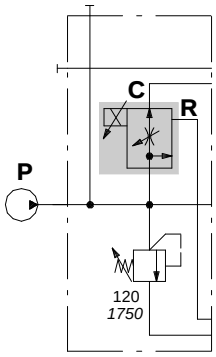
With proportional solenoid control



Solenoid operating features

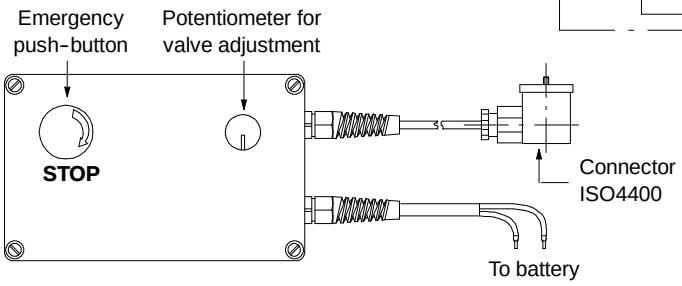
Nominal voltage . . : 12 VDC
Power rating . . . . . : 17,4 W
Duty cycle . . . . . : 100%

Valve circuit



Example of solenoid flow control valve connection

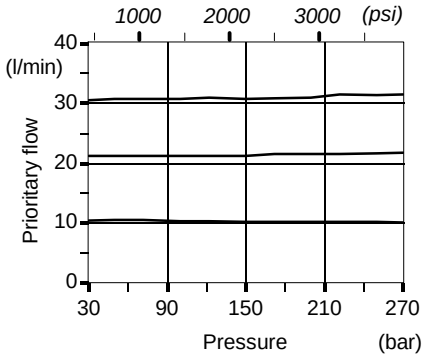
It's show a configuration with push-button panel type UPA model **UPA12/100/SC01B22**: for information contact Sales Dept.



Performance data

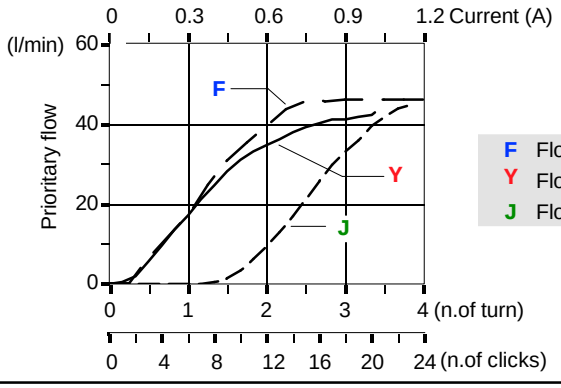
Pressure-flow diagram

Qin = 45 l/min



Flow regulation diagram

Qin = 45 l/min - P = 100 bar (*1450 psi*)



F Flow control valve type M
Y Flow control valve type N
J Flow control valve type W2

Ordering codes

Description example:

EL SD6 / P - 1 8 L . P 1 (G3 - 125) *

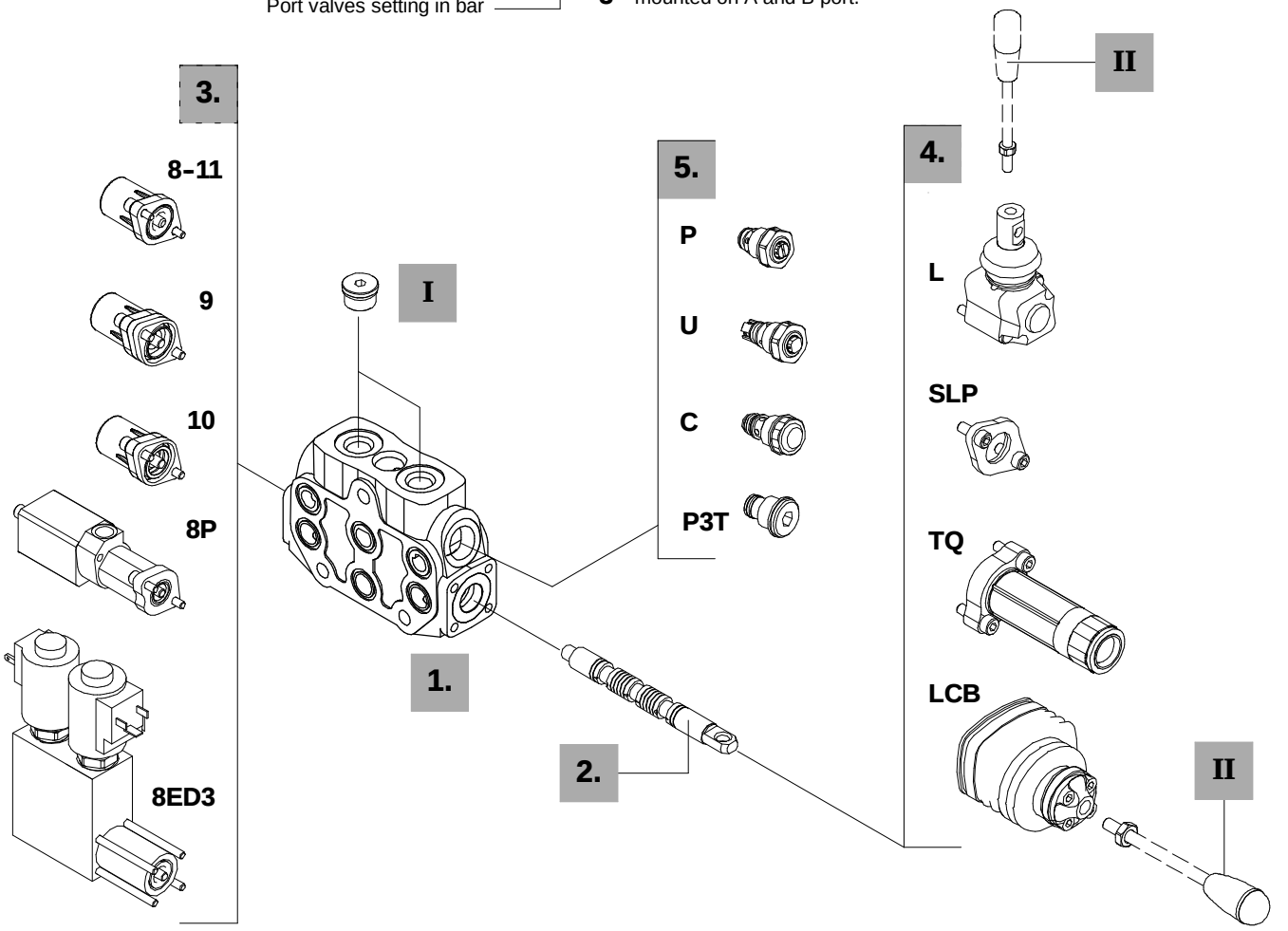
1. **2.** **3.** **4.** **5.**

Port valves setting in bar

1 mounted on A port.
2 mounted on B port.
3 mounted on A and B port.

EL SD6 / P - 1M 8IM

6.



1. Working section kit * *page 22*

TYPE	CODE	DESCRIPTION
P	5EL1063001	With paralle circuit
S	5EL2063001	With serie circuit
SP	5EL3063001	With serie-parallel (tandem) circuit

Include body, seals, rings and load check valve.

2. Spools *page 23*

TYPE	CODE	DESCRIPTION
1	3CU2210130	Double acting, 3 positions, with A and B closed in neutral position
1CS	3CU2210210	Double acting, 3 positions, with A and B closed in neutral position, sensitive type
1A	3CU2221130	Double acting, 3 positions, with A open to tank in neutral position

. . . . . follow

2. Spools *page 23*

TYPE	CODE	DESCRIPTION
1B	3CU2222130	Double acting, 3 positions, with B open to tank in neutral position
2	3CU2225130	Double acting, 3 positions, with A and B open to tank in neutral position
3	3CU2231130	Single acting on A, 3 positions, B plugged; requires G1/2 plug (see part **I**)
4	3CU2235130	Single acting on B, 3 positions, A plugged; requires G1/2 plug (see part **I**)

Special spools for particular positioner kits . . . . . *page 27*

5Y	3CU2242140	Double acting, 4 positions, float in position 3 with spool in
5BY	3CU2243130	Double acting, 4 positions, float in position 3 with spool out
8	3CU2262100	Double acting, 4 positions, regenerative in position 3

Ordering codes

3. "A" side spool positioners *page 30*

TYPE	CODE	DESCRIPTION
7FT	5V07405000	With friction and neutral position sensor
8	5V08105000	With spring return in neutral position
8D	5V08105200	As type 8 and pin with M8 female thread for dual control
8D2	5V08105220	As type 8 and pin with ∅ 8 mm / *0.31 in* radial hole
8F2	5V08105101	With spring return in neutral position and adjustable flow limiter
19	5V19105000	2 positions, with spring return in neutral position from position 1
20	5V19105000	2 positions, with spring return in neutral position from position 2
9B	5V09202010	With detent in position 1 and spring return in neutral position
10B	5V10202010	With detent in position 2 and spring return in neutral position
11B	5V11202010	With detent in position 1 and 2, spring return in neutral position
8MG3	5V08105660	With spring return in neutral position and operation with microswitch in pos. 1 and 2
8EM2	5V08106580	With spring return in neutral position and 12VDC electromagnetic detent in pos. 2
	5V08106590	As previous, 24VDC
8MHE3(NC)	5V08106541	With spring return in neutral position and spool postioning ON/OFF electric signal circuit normally closed
8MHE3(NO)	5V08106540	As previous, with circuit normally open
8P	5V08105701	ON/OFF pneumatic kit
8EP3	5V08105735	ON/OFF 12 VDC electro-pneumatic kit
	5V08105740	ON/OFF 24 VDC electro-pneumatic kit
8ED3	5V08105350	ON/OFF 12 VDC electro-hydraulic kit
	5V08105351	ON/OFF 24 VDC electro-hydraulic kit

Particular positioner kits for special spools ..... *page 27*

13NZ	5V13305010	4 positions with spring return in neutral position and detent in pos.3**: for spool 5Y**
13QN	5V13405020	4 positions with spring return in neutral position and detent in pos.3**: for spool 5BY**
13F	5V13506100	4 positions with spring return in neutral position: **for spool 8**

4. "B" side options *page 38*

TYPE	CODE	DESCRIPTION
L	5LEV105000	Standard lever box
LM10	5LEV205000	Lever box with M10 thread
LF1	5LEV105102	Lever box with adjustable flow limiter in pos.1
LFG5	5LEV105800	Cast iron lever box with adjustable flow limiter in positions 1 and 2
LB1	5LEV305100	Steel lever box with pivot placed down
LB3	5LEV305000	Steel lever box with pivot placed above
SL	-	Withou lever box
SLP	5COP105000	Without lever box, with dust-proof plate
SLCZ	5COP205030	Without lever box, with endcap.
LEB	5LEV605000	Safety lever box
LUP	5LEV805005	Safety lever box, horizontal type
TQ	5TEL105110	Flexible cable connection; for CD cables
LCB	5CLO206100	Joystick lever for 2 sections operation

5. Port valves *page 50*

TYPE	CODE	DESCRIPTION
Anti-shock valve		
P(G2)	5KIT206112	From 50 to 125 bar / *725 to 1800 psi* standard setting 63 bar / *900 psi*
P(G3)	5KIT206113	From 100 to 200 bar / *1450 to 2900 psi* standard setting 100 bar / *1450 psi*
P(G4)	5KIT206114	From 160 to 315 bar / *2300 to 4600 psi* standard setting 200 bar / *2900 psi*
Anti-shock and anti-cavitation valve		
U(G2)	5KIT306112	From 50 to 125 bar / *725 to 1800 psi* standard setting 63 bar / *900 psi*
U(G3)	5KIT306113	From 100 to 250 bar / *1450 to 3600 psi* standard setting 100 bar / *1800 psi*
U(G4)	5KIT306114	From 160 to 315 bar / *2300 to 4600 psi* standard setting 200 bar / *2900 psi*

Standard setting is referred to 10 l/min flow.

C	5KIT406100	Anti-cavitation
P3T	XTAP524280	A and B ports valve blanking plugs
Pilot check valve fitted with mounting block		
Direct type		
BP1	612002000*	Block with valve on port A
BP2	612002000*	Block with valve on port B
BP3	612002100*	Block with valves on ports A and B
BP	XCAR605110	Single valve
With Pre-opening		
BPS1	612003000*	Block with valve on port A
BPS2	612003000*	Block with valve on port B
BPS3	612003100*	Block with valves on ports A and B
BPS	XCAR605210	Single valve
BPT	XTAP627300	BP and BPS valves blanking plug

6. Complete controls *page 44*

Proportional hydraulic and* ON/OFF electric control kits.

I "A" and "B" ports plug *

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

II Optional handlevers

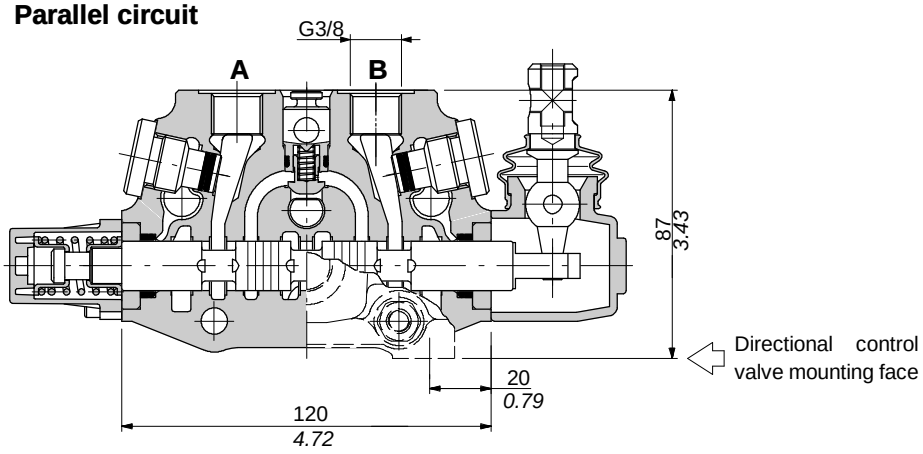
TYPE	CODE	DESCRIPTION
AL01/M8x150	170011215	For L lever box, L = 150 mm / *5.91 in*
AL01/M10x150	170012015	For LM10 and LFG5 lever boxes, L = 150 mm / *5.91 in*
AL08/M12x200	170013120	For LCB joystick, L = 200 mm / *7.87 in*

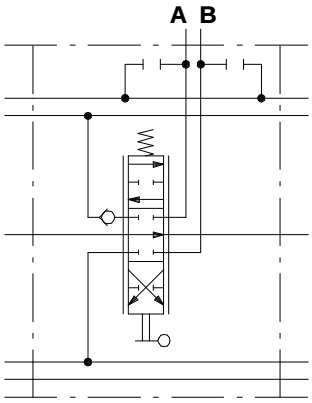
NOTE (*) - *Items are referred to **BSP** thread.*

Dimensional data and hydraulic circuit

They are available with parallel or tandem circuit, with or without ports relief valves prearrangement.

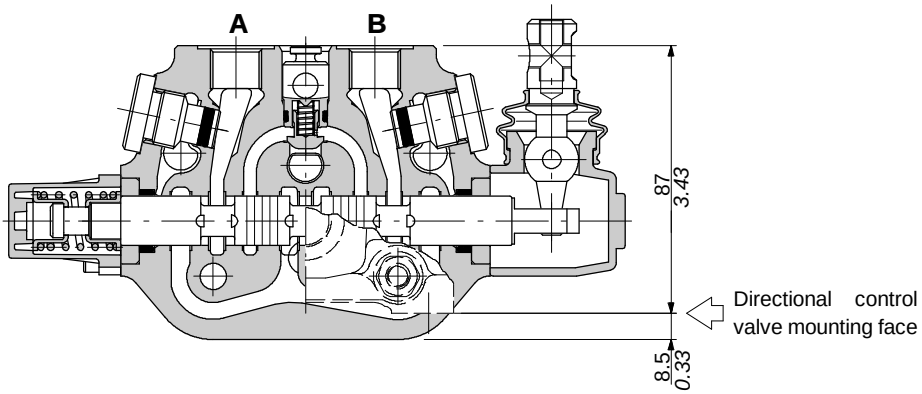
Parallel circuit

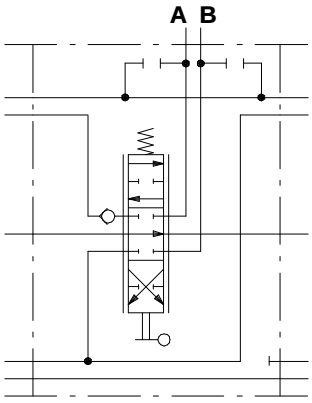




Description example:
P-18L

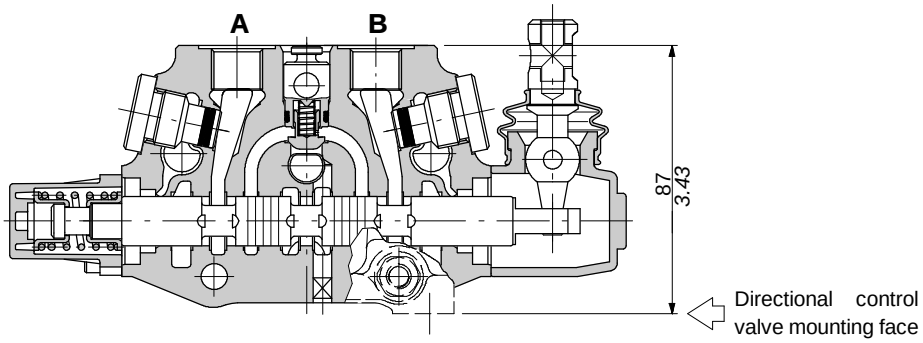
Series circuit

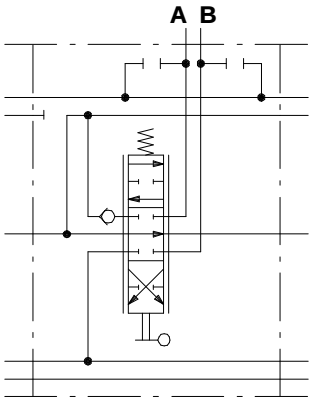




Description example
S-18L

Series-parallel (tandem) circuit

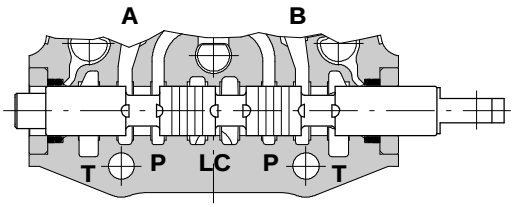




Description example
SP-18L

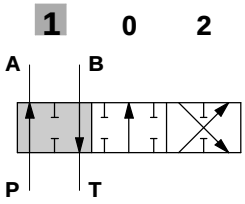
Spools

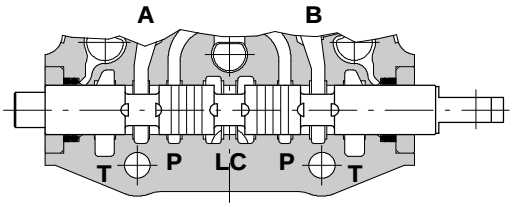
Type 1



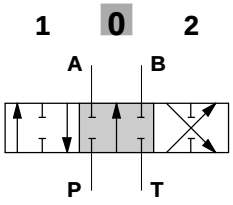
P → A B → T

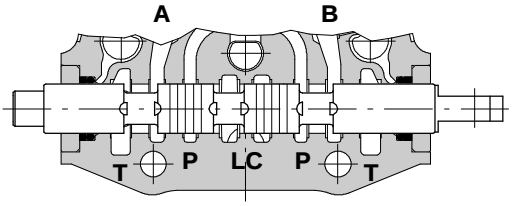
" stroke + 5.5 mm
+ 0.22 in





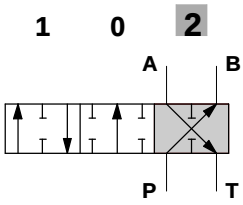
P-A-B-T closed, with flow through line (LC) open





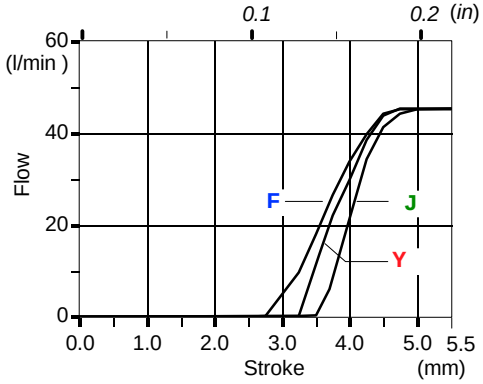
P→ B A → T

A stroke - 5.5 mm
- 0.22 in



Performance data

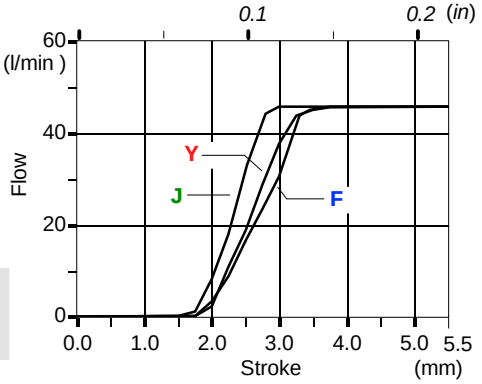
Spool metering P→A(B)



Qin = 45 l/min

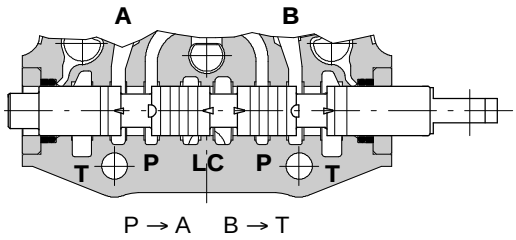
F $P_{(on\ ports)}$ = 63bar / *900 psi*
Y $P_{(on\ ports)}$ = 100bar / *1450 psi*
J $P_{(on\ ports)}$ = 250bar / *3600 psi*

Spool metering A(B)→T



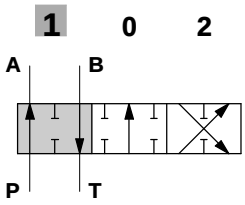
Spools

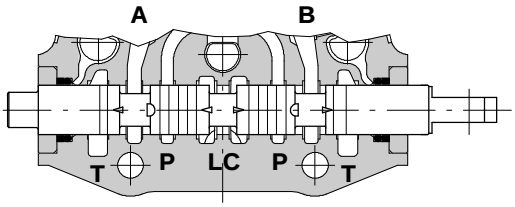
Type 1CS



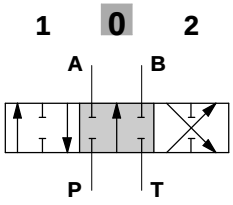
P → A B → T

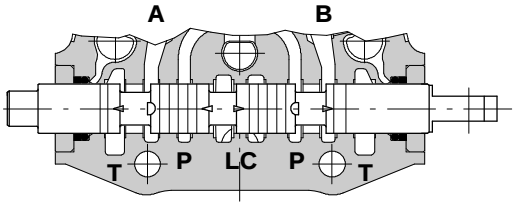
" stroke + 5.5 mm
+ 0.22 in





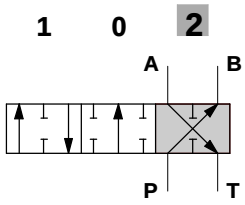
P–A–B–T closed, with flow through line (LC) open





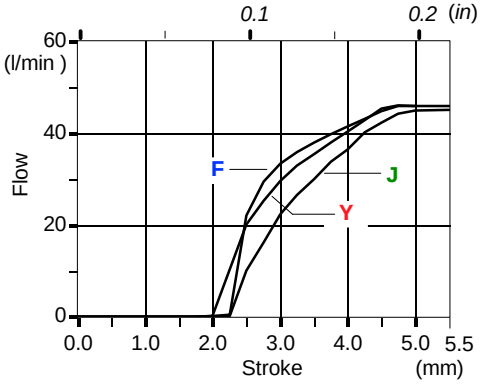
P→ B A → T

A stroke - 5.5 mm
- 0.22 in



Performance data

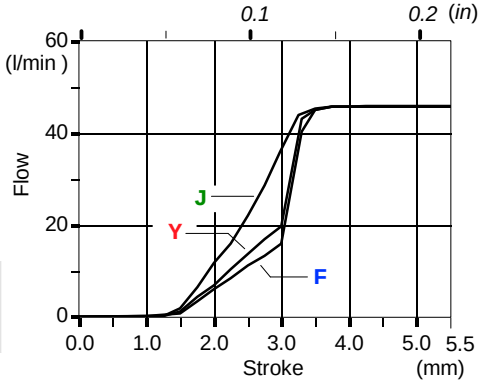
Spool metering P→A(B)



Qin = 45 l/min

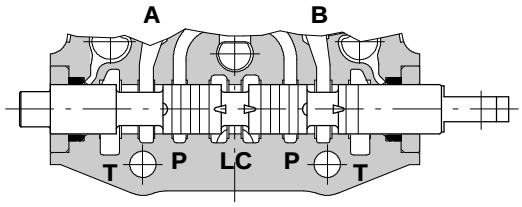
F $P_{(on\ ports)}$ = 63bar / *900 psi*
Y $P_{(on\ ports)}$ = 100bar / *1450 psi*
J $P_{(on\ ports)}$ = 250bar / *3600 psi*

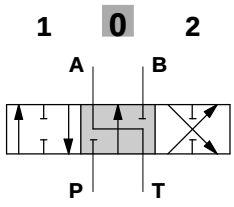
Spool metering A(B)→T



Spools

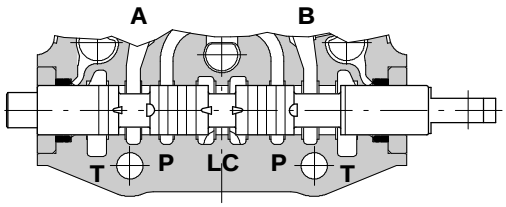
Type 1A

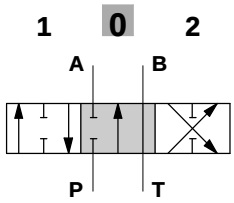




P–B closed, A→T, with flow through line (LC) open

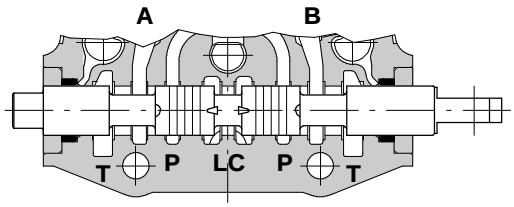
Type 1B

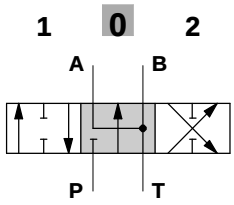




P–A closed, B→T, with flow through line (LC) open

Type 2

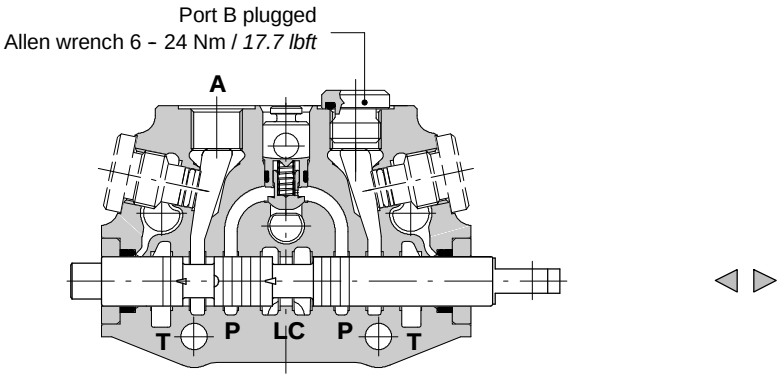


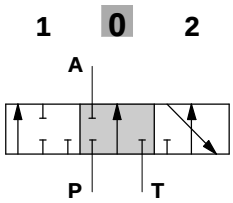


P closed, A–B→T, with flow through line (LC) open

Spools

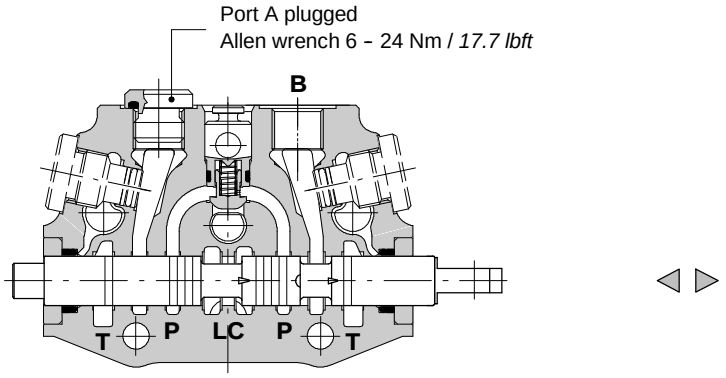
Type 3

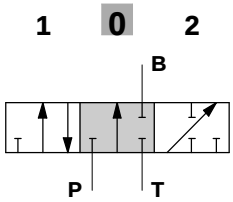




P–A–T closed, with flow through line (LC) open

Type 4



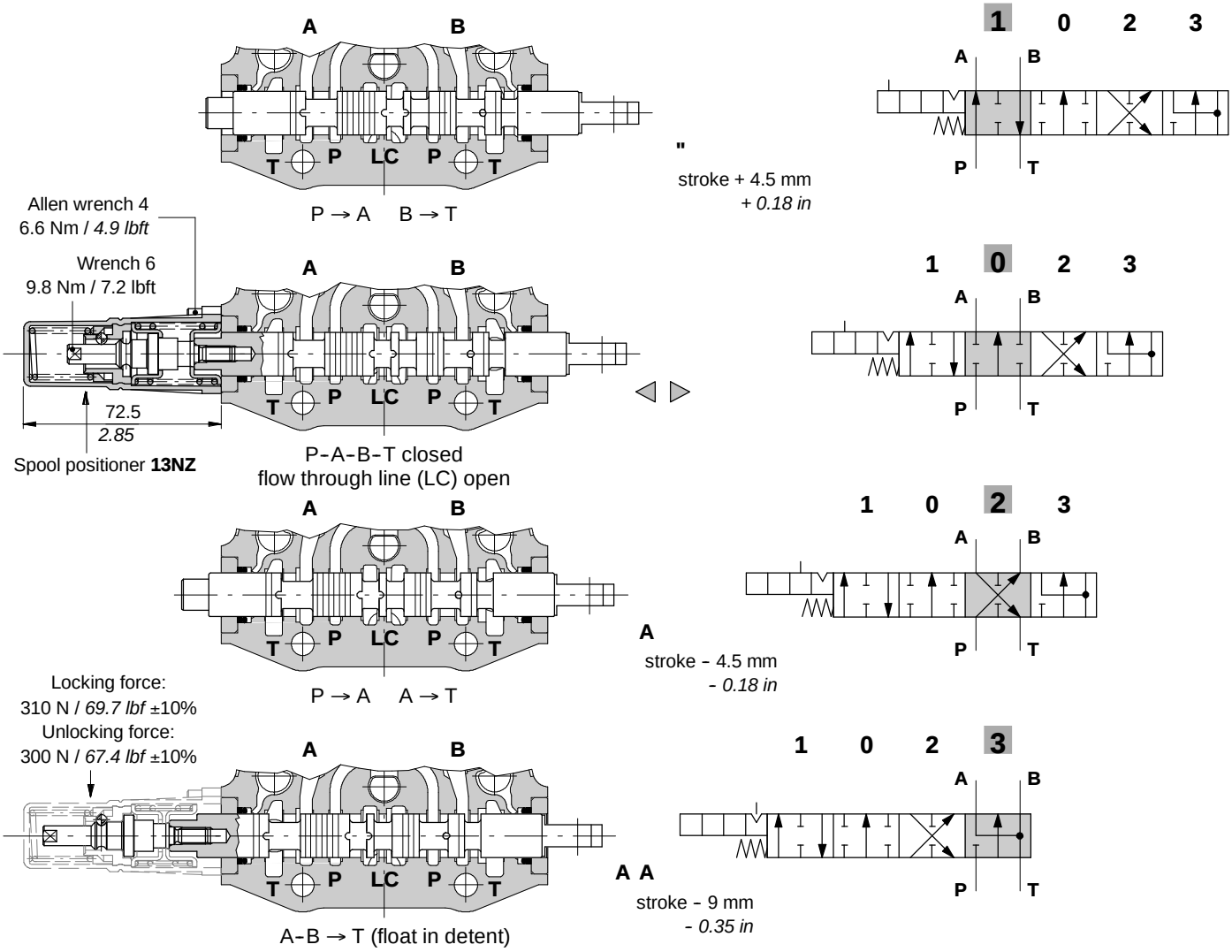


P–B–T closed, with flow through line (LC) open

Spools

Tipo 5Y

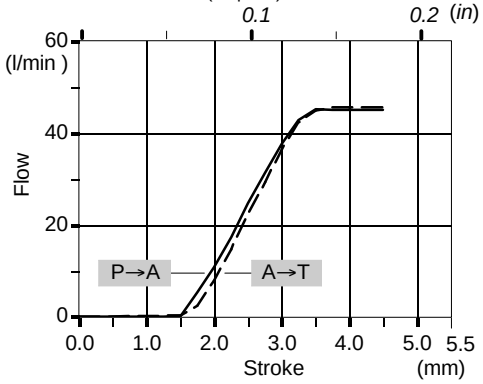
It needs special body with extra machining type **P-5Y** code **5EL1063203**. It must be coupled only with spool positioner **13NZ.**



Performance data

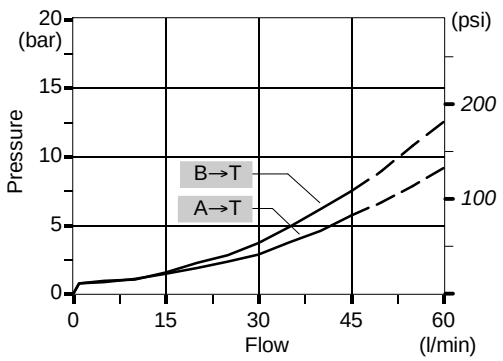
Spool metering

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



Pressure drop in position 3

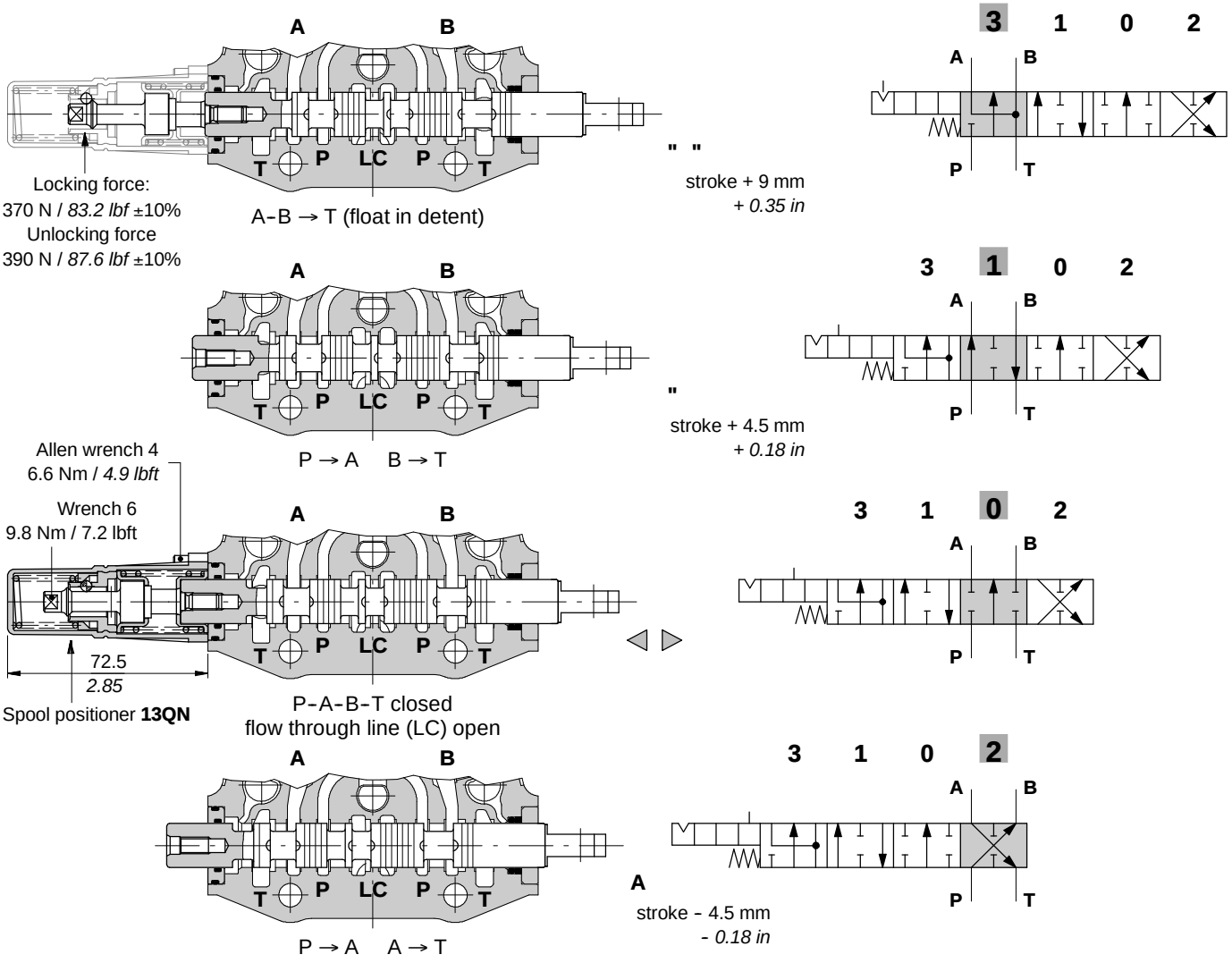
(last section)



Spools

Type 5BY

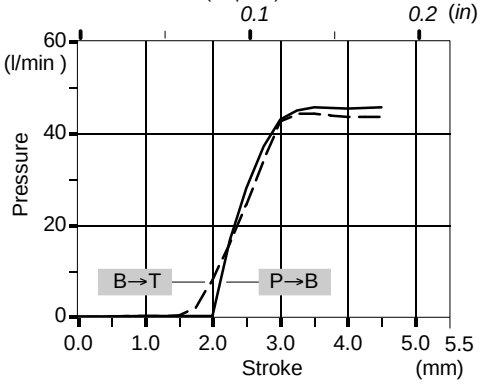
It needs special body with extra machining type **P-5B** code **5EL1063205**. It must be coupled only with spool positioner **13QN.**



Performance data

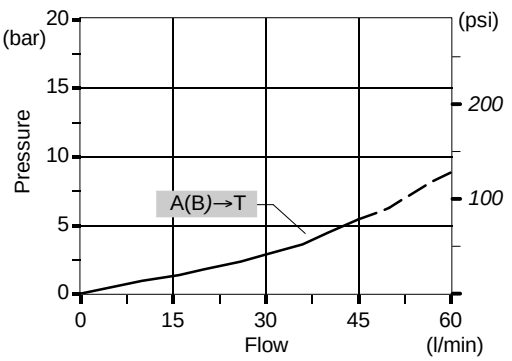
Spool metering

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



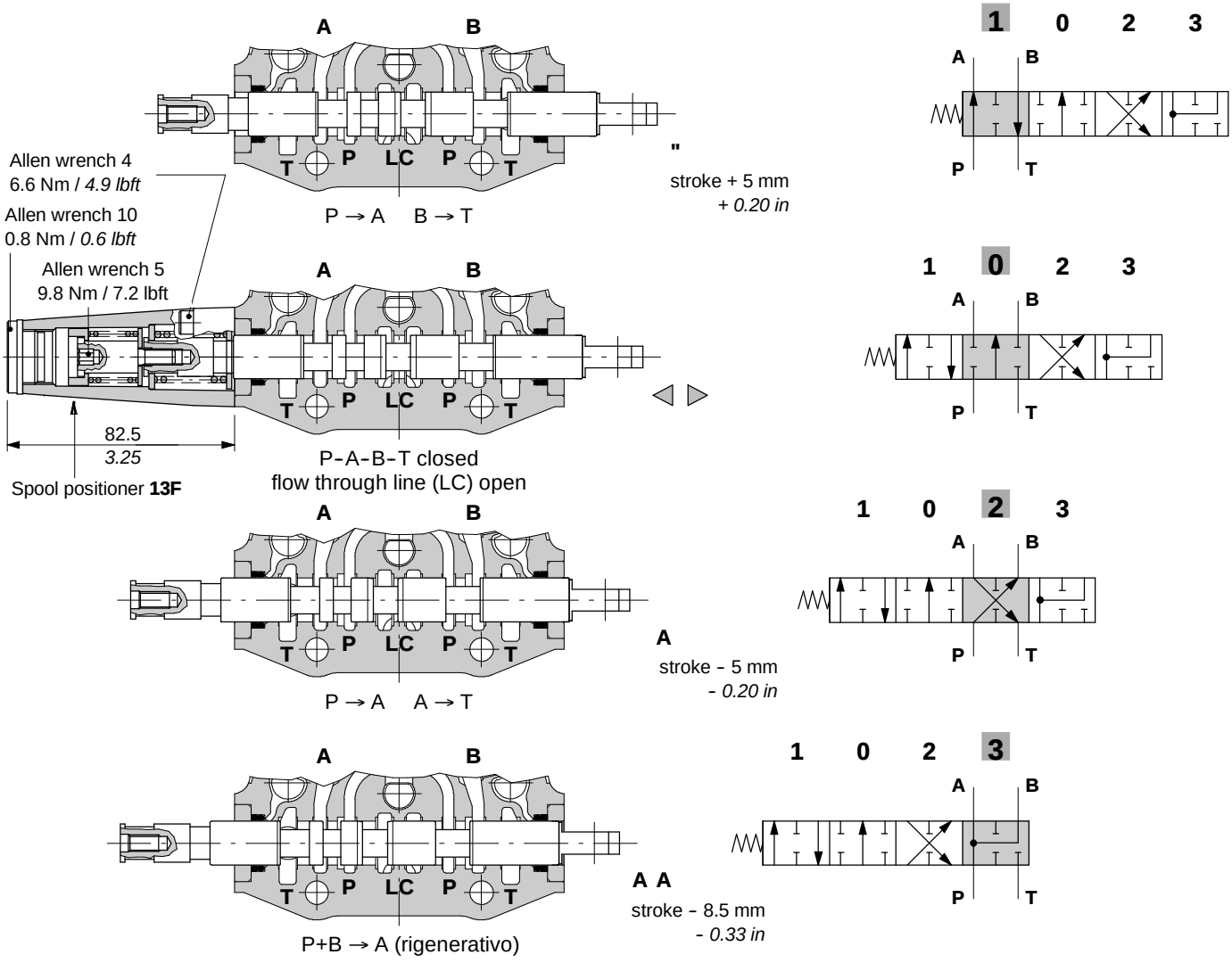
Pressure drop in position 3

(last section)



Type 8

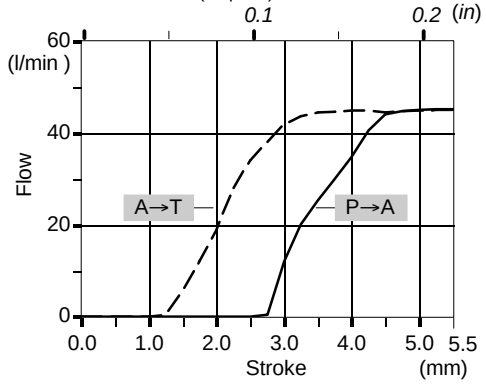
It needs special body with extra machining type **P-8** code **5EL1063500**. It must be coupled only with spool positioner **13F**.



Performance data

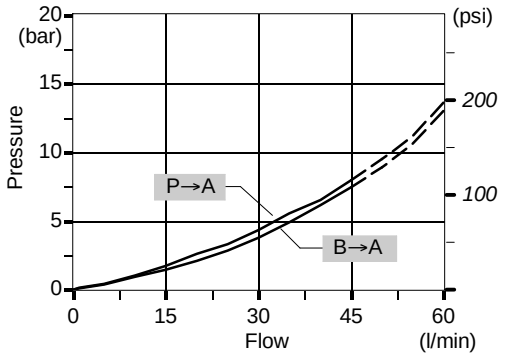
Spool metering

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



Pressure drop in position 3

(last section)

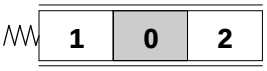


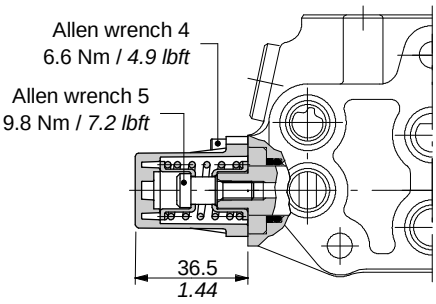
"A" side spool positioners

With spring return

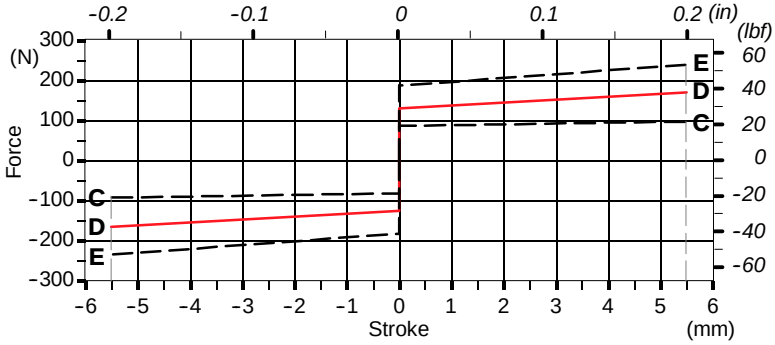
8 kit

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



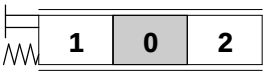


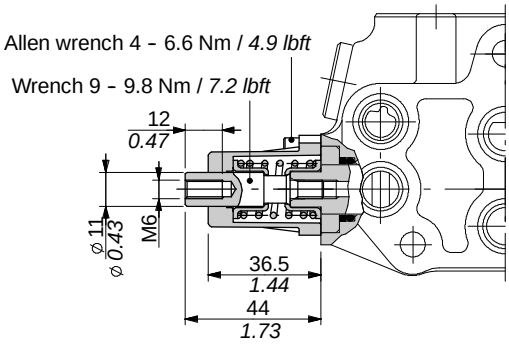
Force-stroke diagram



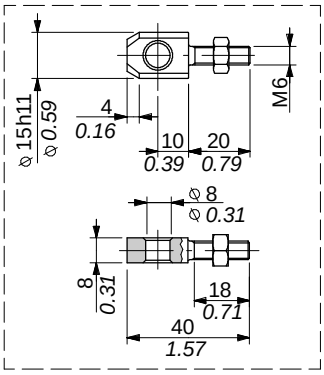
8D kit

It's available with lighter spring type C (**8DMC** code: **5V08205200**); see previous diagram.
Spool end joint code **XPER315400** is available on request in order to screw onto pin.

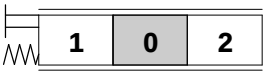


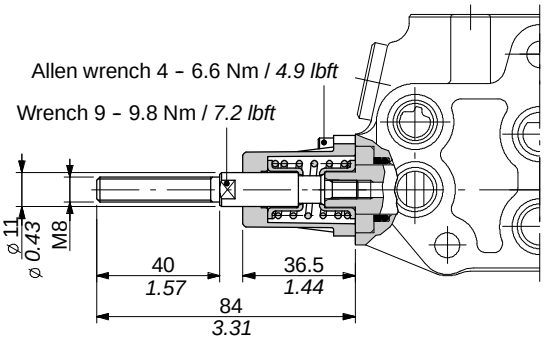


Spool end joint dimension



8D2 kit

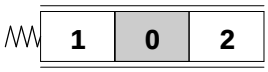


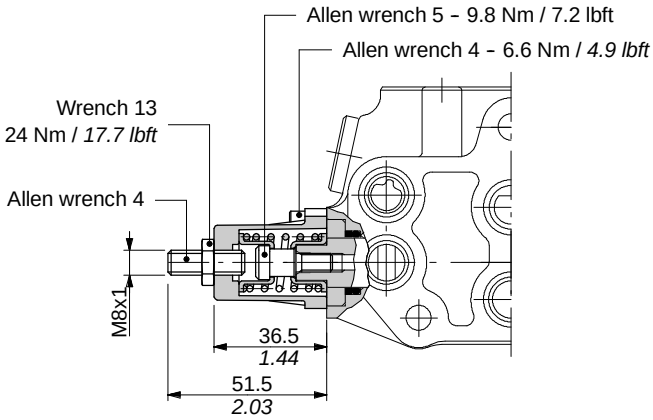


With spring return

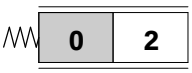
8F2 kit

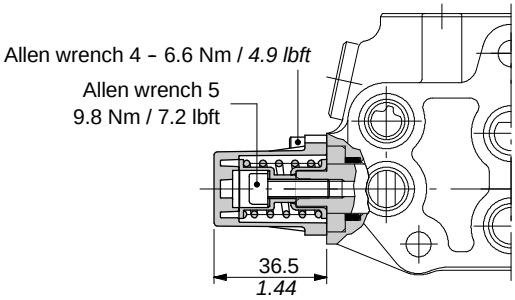
With spool stroke adjustment in position 2 (P→B).



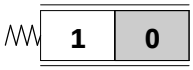


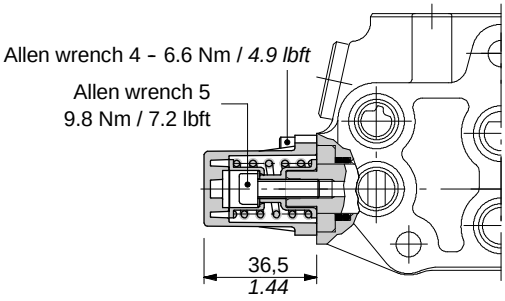
19 kit





20 kit

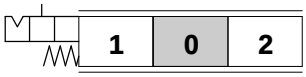


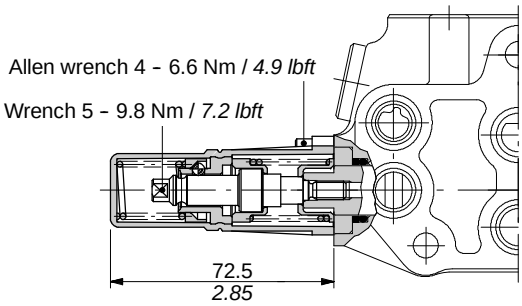


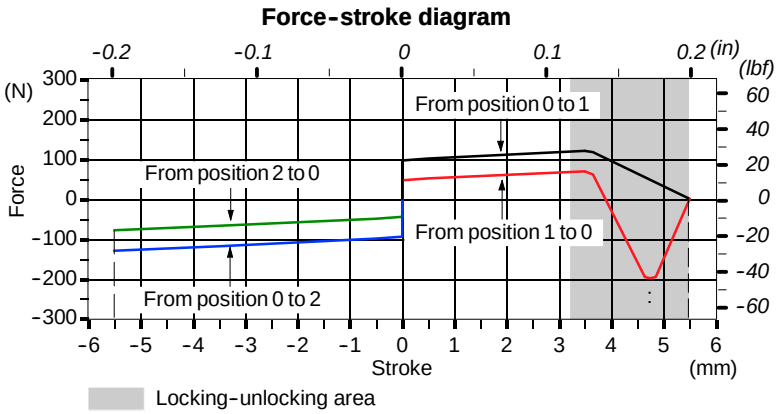
"A" side spool positioners

With detent and sprimg return to neutral from either directions

9B kit



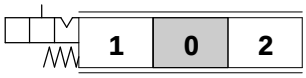


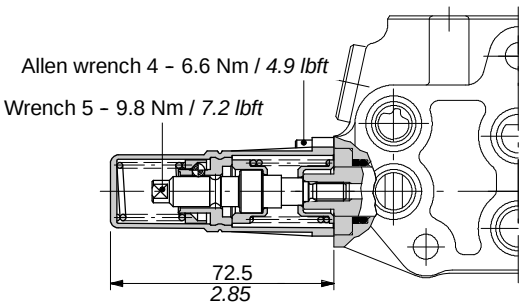


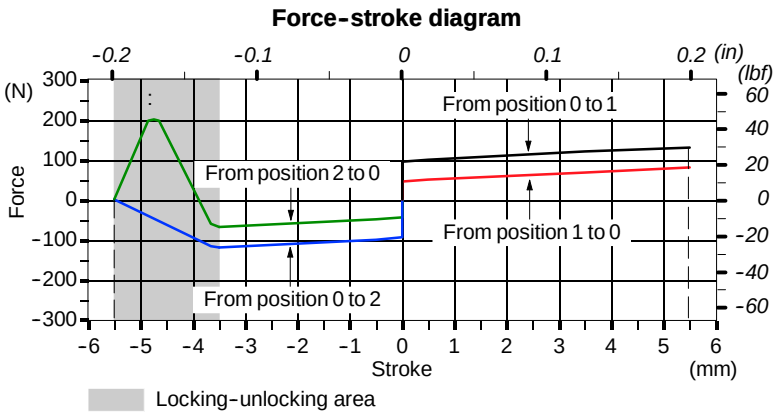
Locking-unlocking area

: Ulocking force: 200 N / *45 lbf* ±10%

10B kit



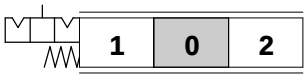


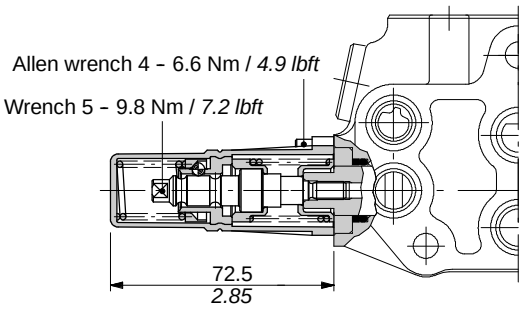


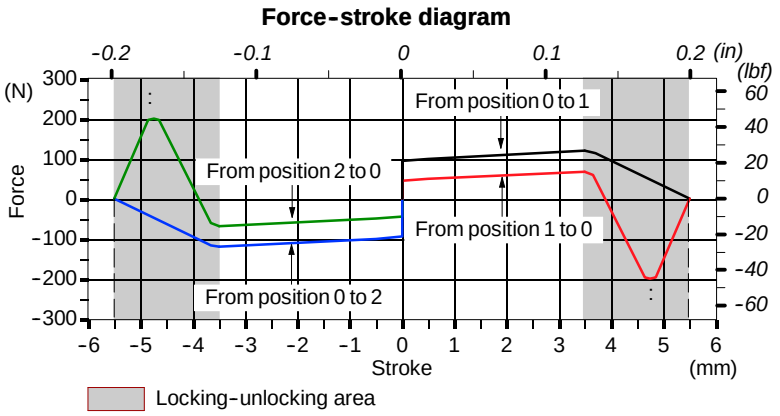
Locking-unlocking area

: Ulocking force: 200 N / *45 lbf* ±10%

11B kit





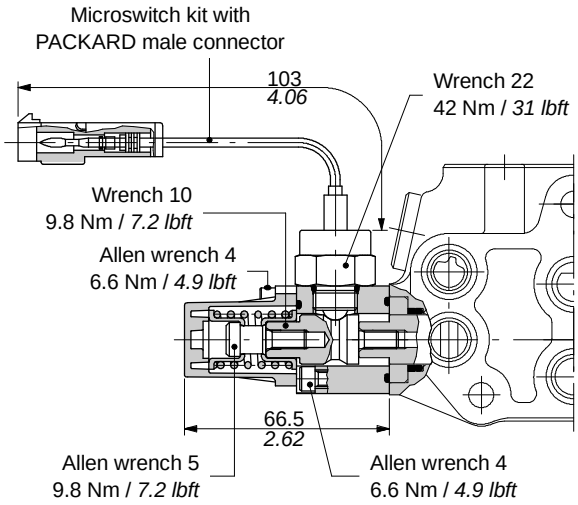


Locking-unlocking area

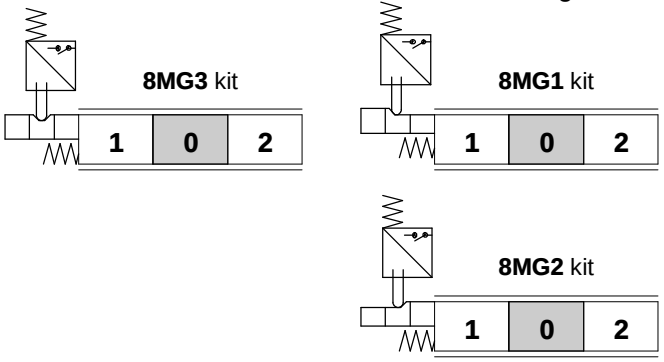
: Ulocking force: 200 N / *45 lbf* ±10%

With microswitch type 8MG3 (NO)

With spring return in neutral position and microswitch operated in both directions.
Also available **8MG1(NO)** configuration, code **5V08105670** (microswitch operated in position 1) and **8MG2(NO)** configuration, codice **5V08105680** (microswitch operated in position 2); dimensions are the same of 8MG3 configuration.



Other configurations



Microswitches ordering codes

The kit consisting of microswitch and connector, can be ordered separately (normally closed NC version is available on request).

CODE	DESCRIPTION
4MIC730	Normally **open** (NO) microswitch kit with PACKARD **male** connector: needs **C07** female connector
4MIC740	Normally **closed** (NC) microswitch kit with PACKARD **female** connector: nedds **C17** male connector

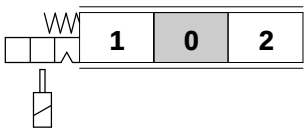
For connector see page 94.

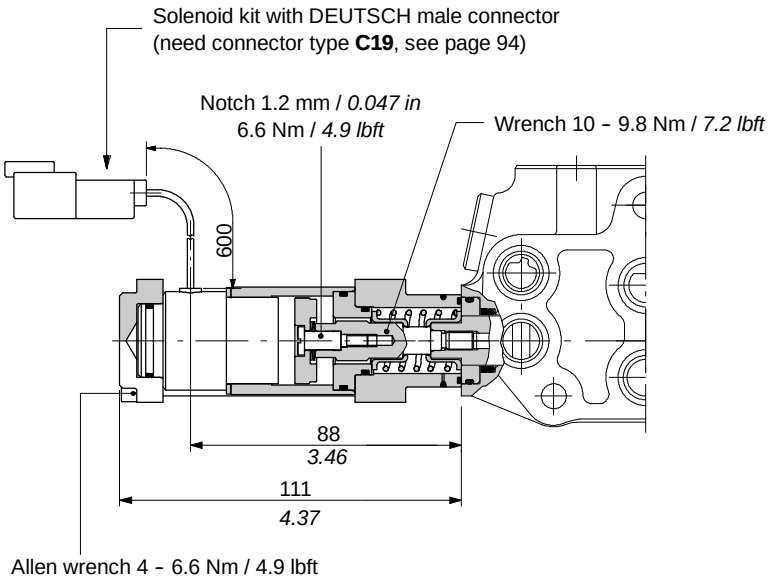
Microswitch operating features

Mechanical life . . . . . : $5x10^5$ operations
Electrical life (resistive load) : 10^5 operations – 7A / 13,5VDC
: $5x10^4$ operations – 10A / 12VDC
: $5x10^4$ operations – 3A / 28VDC

8EM2: with electromagnetic detent

With spring return in neutral position and electromagnetic detent in position2.





Operating features

Nominal voltage . . . . . : 12 / 24 VDC ± 10%
Power rating . . . . . : 4 W
Resistance (20 °C) . . . . . : 36 / 144 Ohm
Min. release force . . . . . : 145 N
Duty cycle . . . . . : 100%

Solenoid ordering codes

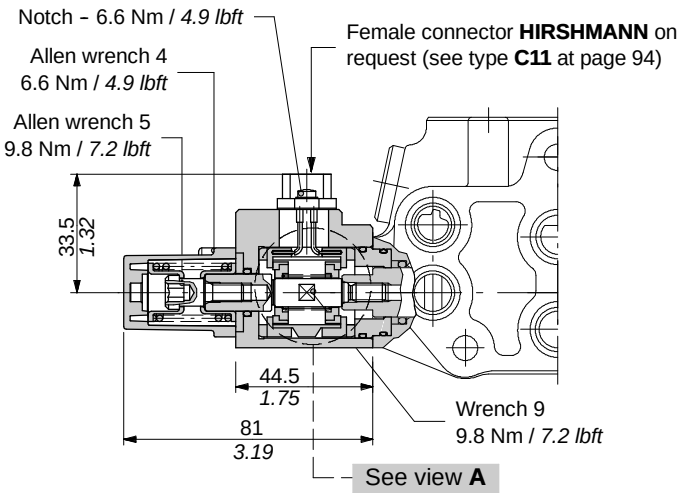
With male DEUTSCH connector

CODE	DESCRIPTION
YSOL528465	12 VDC solenoid
YSOL528466	24 VDC solenoid

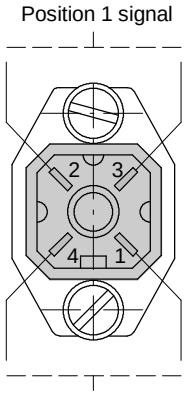
”A” side spool positioners

8MHE3 kit: with spring return in neutral position and spool positioning ON/OFF signal

This module supplies two different ON/OFF signals, related to the direction of the spool.
It has two separate contacts which can be normally open or normally closed.
It can be used with standard spools and working section (working section kit without ring on side “A”)



Connector wiring

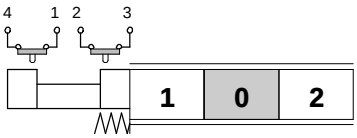


Operating features

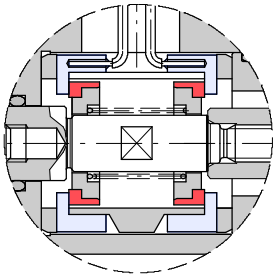
Power supply range : 12 / 24 VDC
Max. output current . : 500 mA
Weather protection . : IP65

8MHE3(NC) kit

Configuration with normally closed circuit

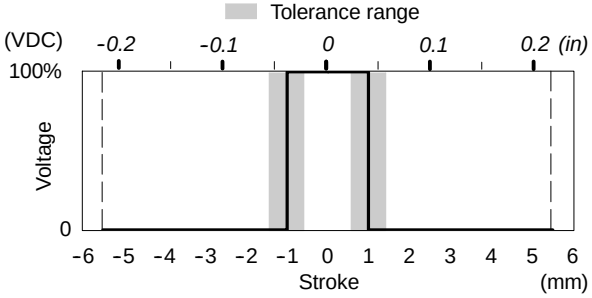


View A



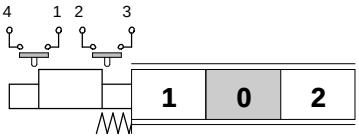
Mobile contact
Fixed contact

Ouput signal with NC circuit

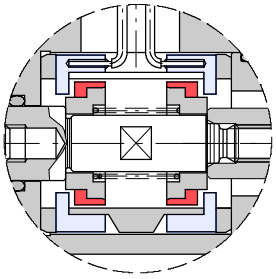


8MHE3(NO) kit

Configuration with normally open circuit

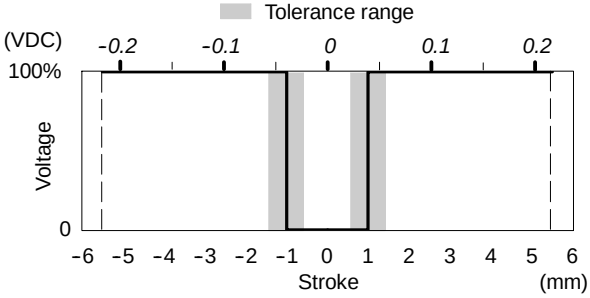


View A

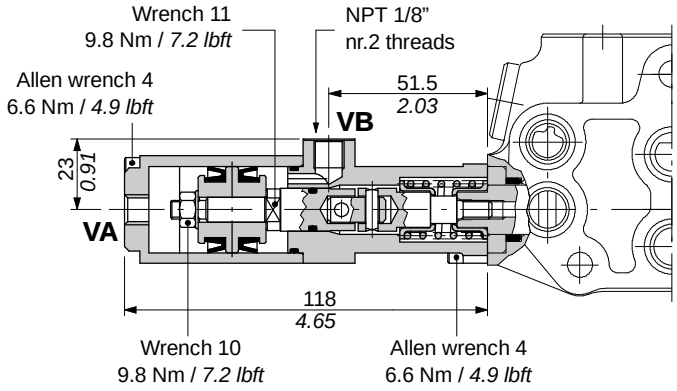


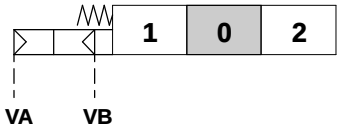
Mobile contact
Fixed contact

Ouput signal with NO circuit



8P ON/OFF pneumatic control

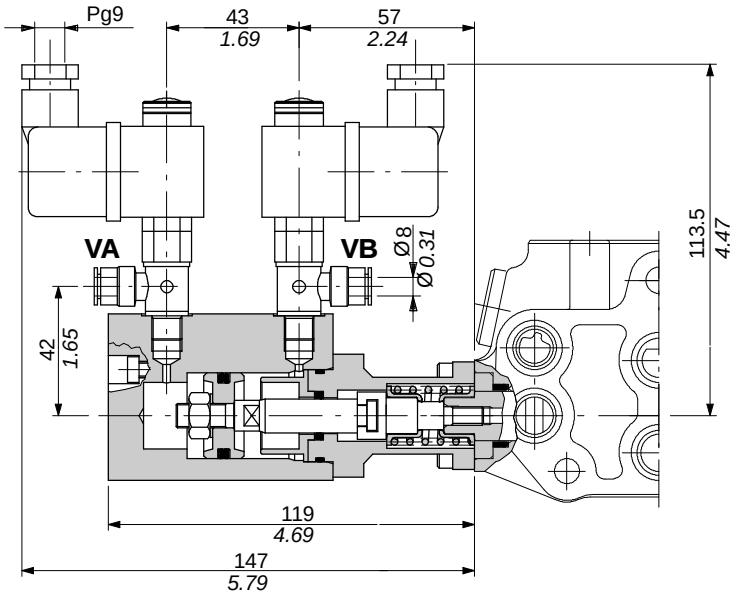




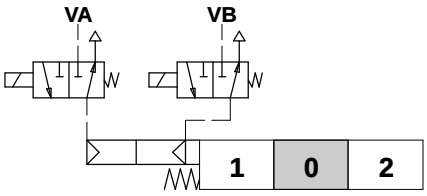
Operating features

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

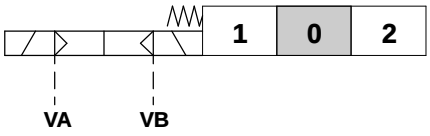
8EP3 ON/OFF electro-pneumatic control



Scheme



Scheme ISO 1219



Operating features

Pilot pressure . . . . . : min 6 bar / *87 psi*
: max 10 bar / *145 psi**

Solenoid operating features

Nominal voltage tolerance . . . . . : ±10%
Power rating . . . . . : 8 W
Duty cycle . . . . . : 100%

Pneumatic solenoid valves codes (with connector)

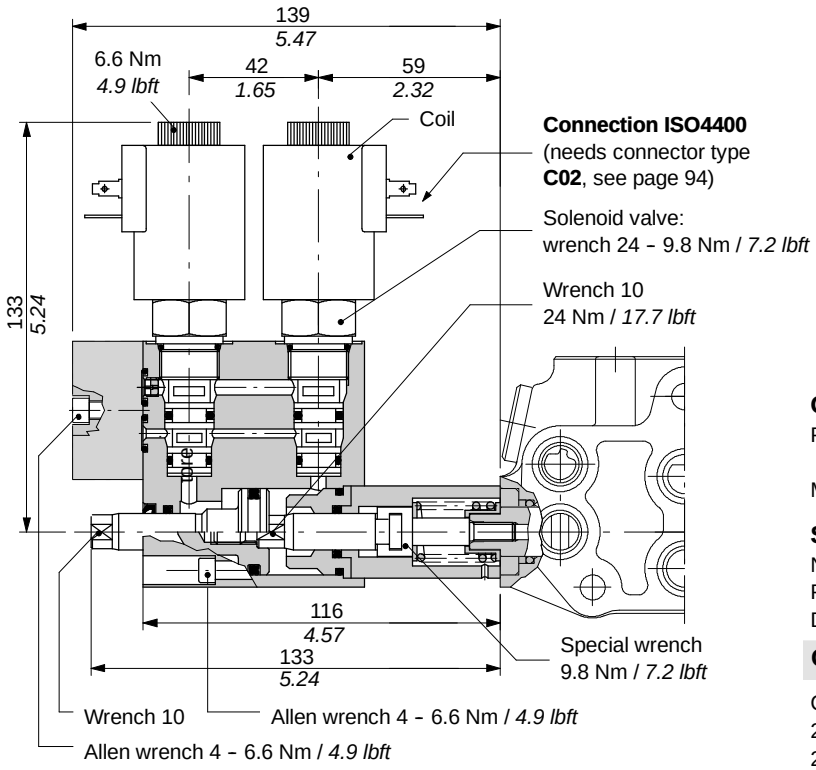
CODE	DESCRIPTION
2X4001012	Nominal voltage 12VDC
2X4001024	Nominal voltage 24VDC

NOTE (*) - *Also available in 15 bar / 218 psi configuration.*

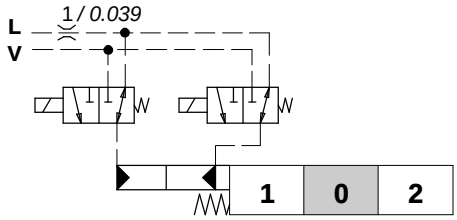
"A" side spool positioner

8ED3 ON/OFF electro-hydraulic control

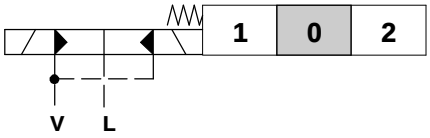
ON/OFF electro-hydraulic control with external pilot and drain.



Scheme



Scheme ISO 1219



Operating features

Pilot pressure . . . . . : min. 10 bar / *145 psi*
: max. 50 bar / *725 psi*
Max backpressure on drain L . . . . . : 25 bar / *360 psi*

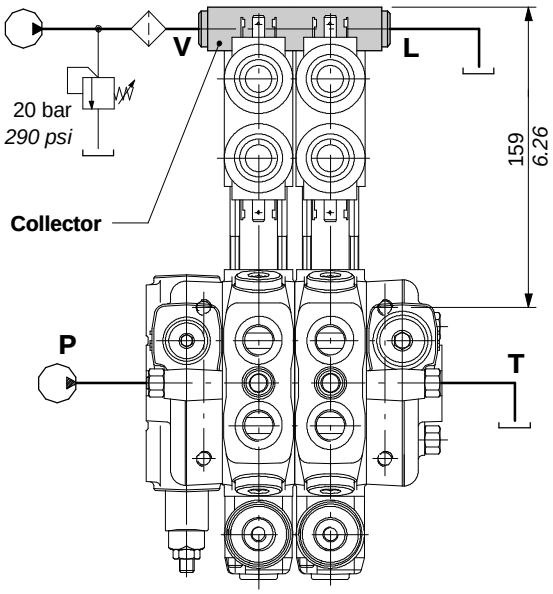
Solenoid operating features

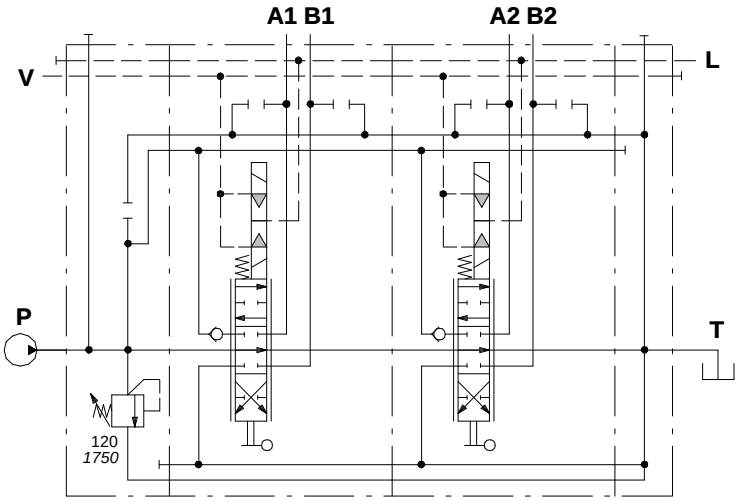
Nominal voltage tolerance . . . . . : ±10%
Power rating . . . . . : 21 W
Duty cycle . . . . . : 100%

Ordering codes

CODE	DESCRIPTION
2S0EJ08002013	3-way solenoid valves
2X4350012	12VDC coil
2X4350024	24VDC coil

Collector kit for external pilot and drain





Ordering codes (BSP thread)

TYPE	CODE	DESCRIPTION
KE1S0	5KE1S00030	Kit for 1 section
KE2S0	5KE2S01230	Kit for 2 sections
KE3S0	5KE3S01230	Kit for 3 sections
KE4S0	5KE4S01230	Kit for 4 sections
KE5S0	5KE5S01230	Kit for 5 sections
KE6S0	5KE6S02230	Kit for 6 sections
KE7S0	5KE7S01230	Kit for 7 sections

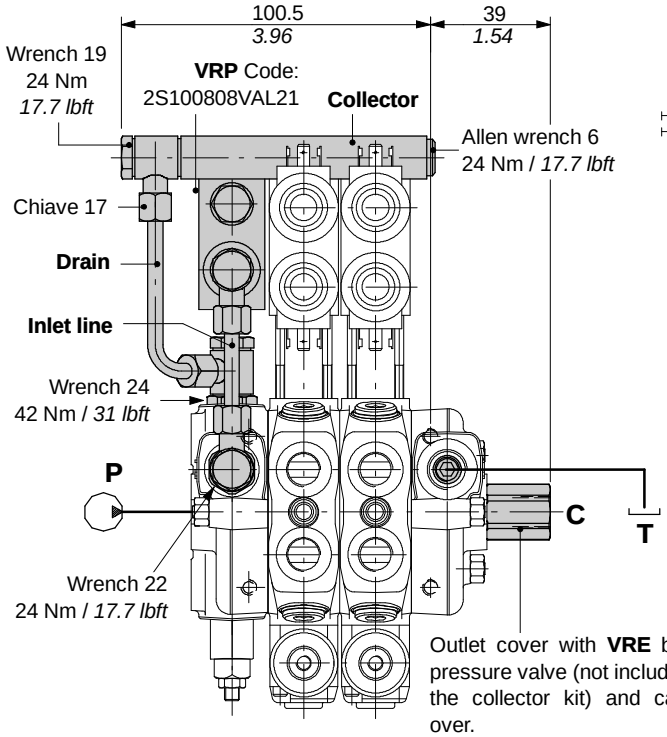
Description example

SD6/2/AC(YG3-120)/1**8ED3**L/1**8ED3**L/RC-**KE2S0-24VDC**

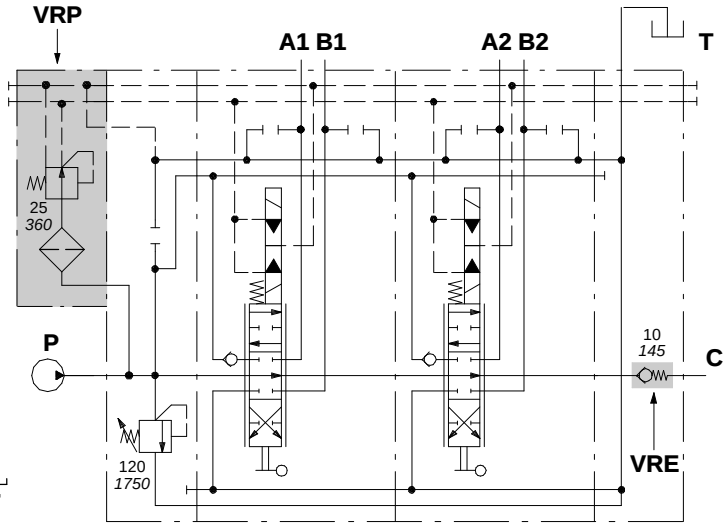
8ED3 ON/OFF electro-hydraulic control

Collector kit with pilot and drain lines

Thre kit consists of a collector with **VRP** pressure reducing valve and relative pipes.



Outlet cover with **VRE** back-pressure valve (not included in the collector kit) and carry-over.



VRP valve operating features

Outlet pressure . . . . . : 25 bar / *363 psi*
Max. flow . . . . . : 8 l/min
Filtering . . . . . : 80 µ

Ordering codes (BSP thread)

TYPE	CODE	DESCRIPTION
KE1R3	5KE1R31230	Kit for 1 section
KE2R3	5KE2R31230	Kit for 2 sections
KE3R3	5KE3R31230	Kit for 3 sections
KE4R3	5KE4R31230	Kit for 4 sections
KE5R3	5KE5R31230	Kit for 5 sections
KE6R3	5KE6R31230	Kit for 6 sections

Description example:

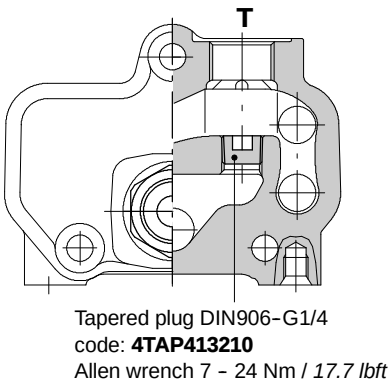
SD6/2/AC(YG3-120)/1**8ED3**L/1**8ED3**L/**RV-KE2R3-24VDC**

Description type for outlet cover with **VRE** valve.

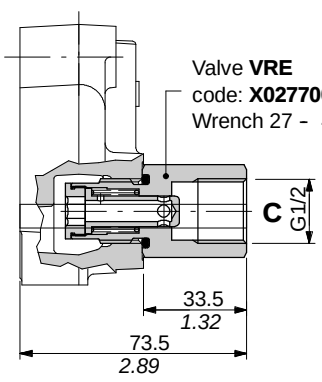
VRE back pressure valve

Valve is assembled on flow through passage of outlet cover; it's necessary to provides pilot pressure to the actuator.

RV complete outlet cover, code: **612300122**.

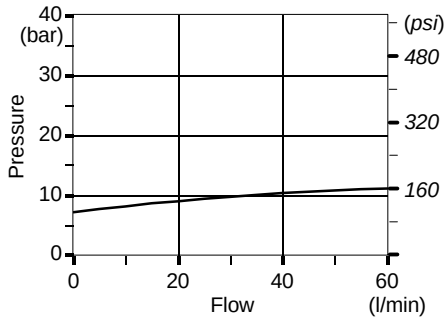


Tapered plug DIN906-G1/4
code: **4TAP413210**
Allen wrench 7 - 24 Nm / *17.7 lbft*



Valve **VRE**
code: **X027700008**
Wrench 27 - 42 Nm / *31 lbft*

Pressure drop P→C

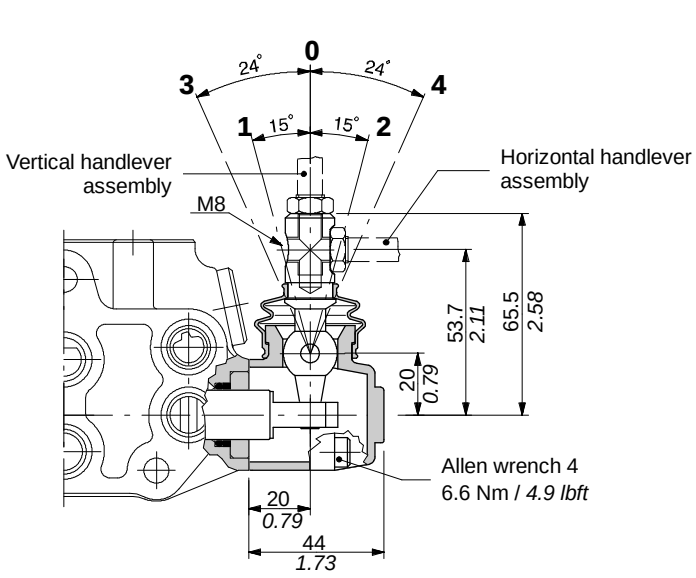


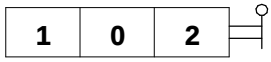
"B" side options

Lever controls

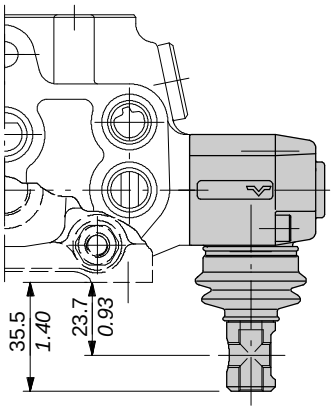
L type

Aluminium lever pivot box with protective rubber bellow; it can be rotated 180° (configuration **L180**).



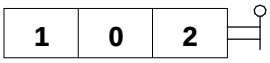


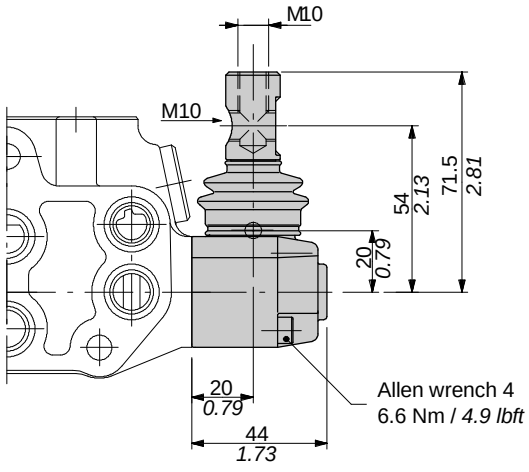
Configuration **L180**



LM10 type

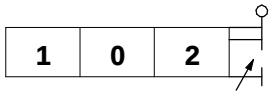
To be use with M10 handlever.
It can be rotated 180° (configuration **LM10180**).

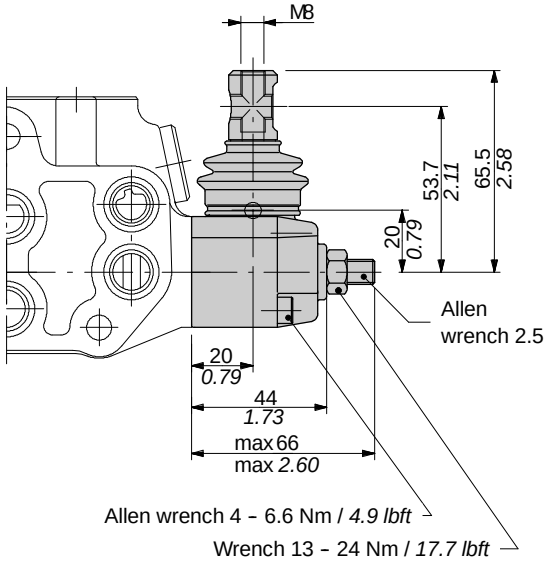




LF1 type

With spool stroke adjustment in position 12 (P→A).
It can be rotated 180° (configuration **LF1180**).



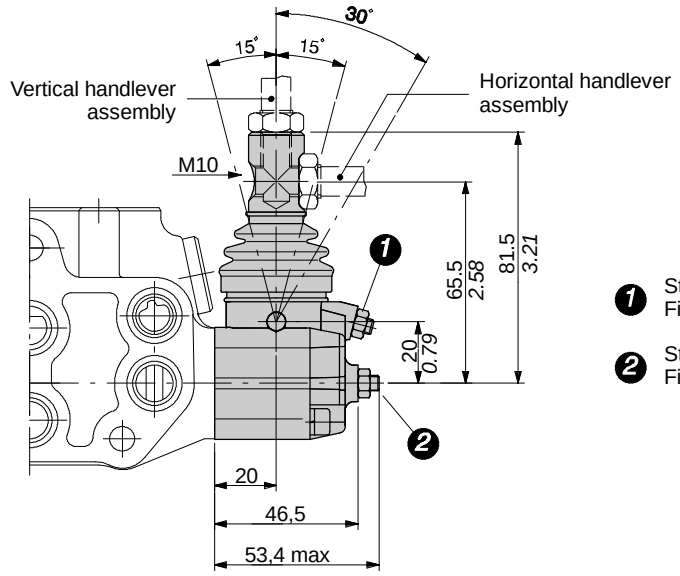


Lever control

LFG5 type

Cast iron lever pivot box with protective rubber bellow; it's complete of two screws for spool stroke adjusting in both directions. It can be rotated 180° (configuration **LFG5180**).

1	0	2

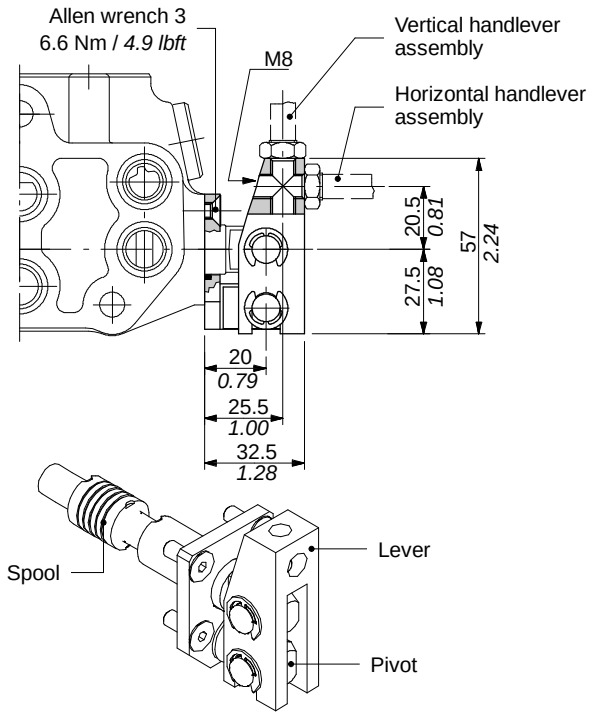


1. Stroke end screw for position 2 (P→B): allen wrench 2.5
   Fixing nut: wrench 8 - 6.6 Nm / *4.9 lbft*
2. Stroke end screw for position 1 (P→A): allen wrench 2.5
   Fixing nut: wrench 8 - 6.6 Nm / *4.9 lbft*

LB1 type

Steel construction, with pivot placed down.
Assembling with 5B and 5BY type spool is not possible.

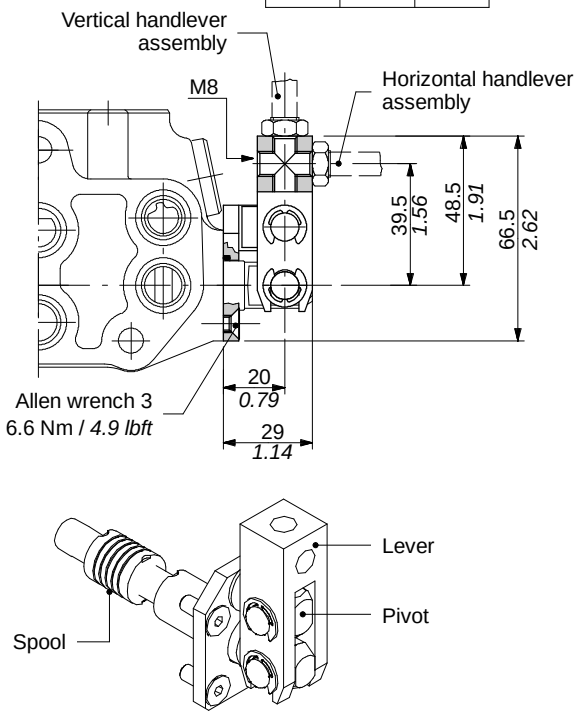
1	0	2



LB3 type

Steel construction, with pivot placed above.
Assembling with 5B, 5BY type spool and with port valves on port B, is not possible

1	0	2

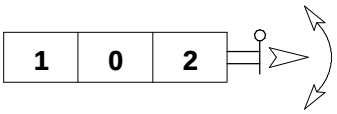


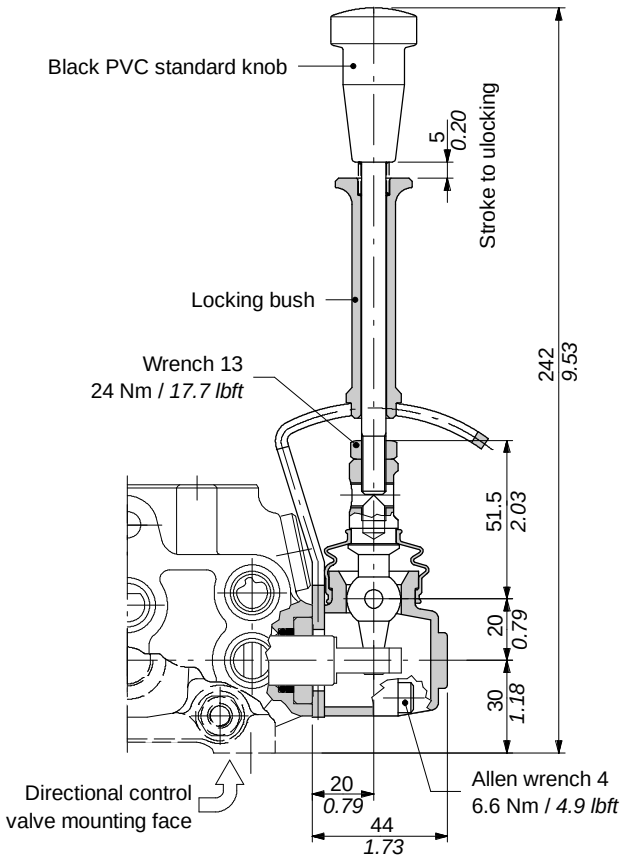
"B" side options

Safety lever control

Safety levers with lock in neutral complete with handlever; lift handlever knob to operate.

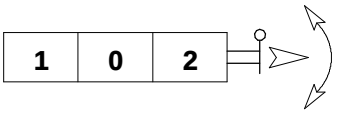
LEB type





LUP type

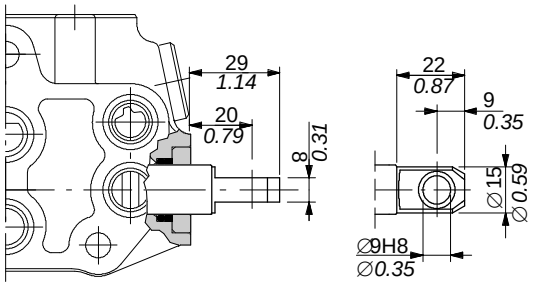
Available as **LUP(R150)** configuration, with lenght L = 150 mm / *5.91 in* and red knob: code **5LEV805010**.



Controls prearrangement

SL type

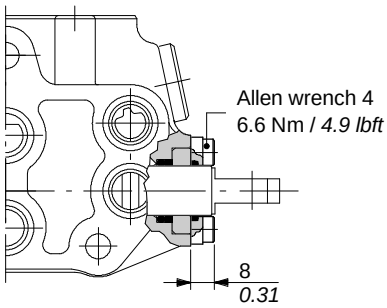
1	0	2



SLP type

Mechanical control with dust-proof plate kit.

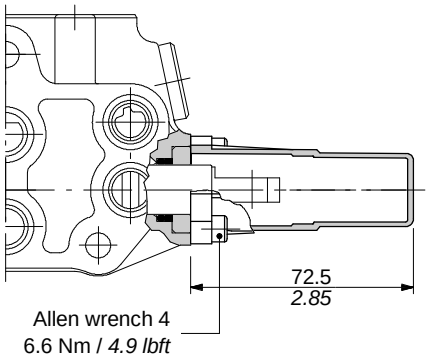
1	0	2



SLCZ type

Protection cap usable with pneumatic 8P, electro-pneumatic 8EP3, and electro-hydraulic 8ED3 spool positioners.

1	0	2

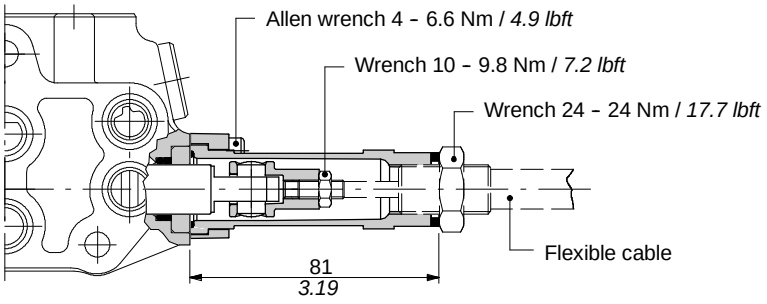


Kit comandi lato “B”

TQ cable remote control kit

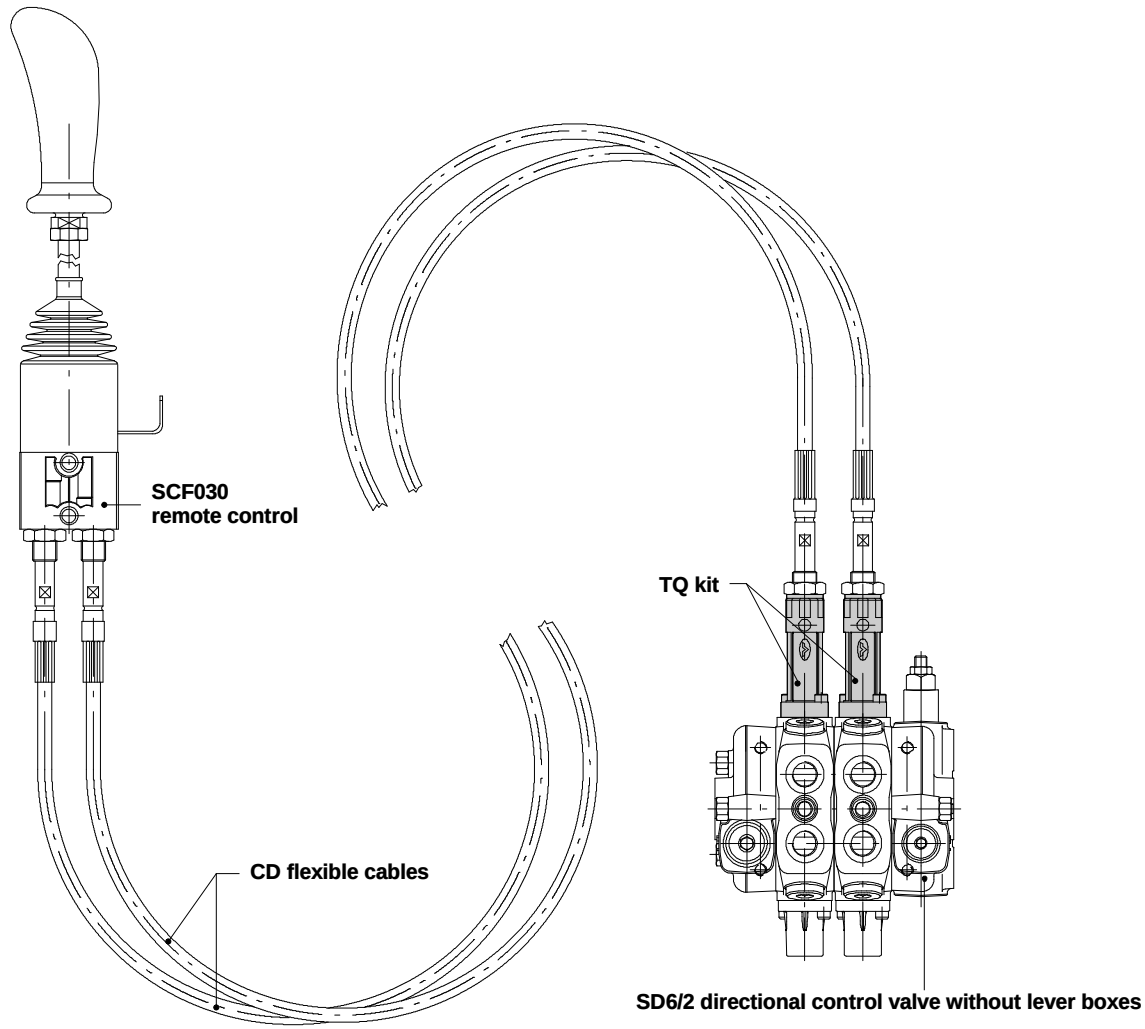
Waterproof cap prearranged for remote control with flexible cable.

1	0	2

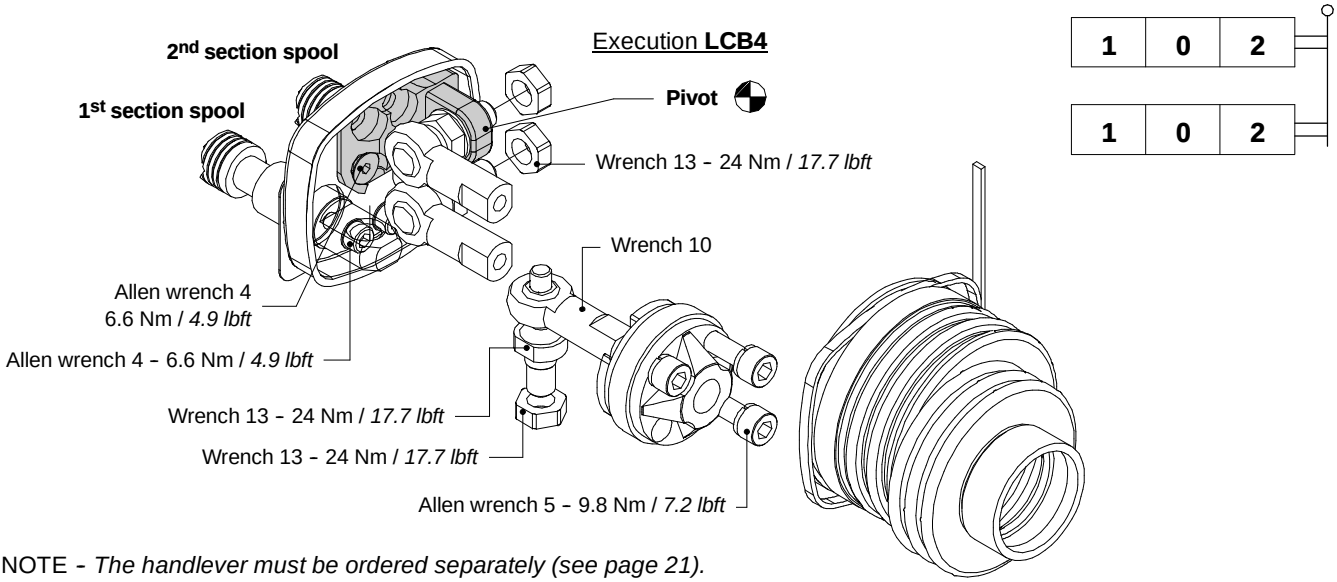


NOTE - *For further information about remote cable control, require related documentation.*

Example of cable control



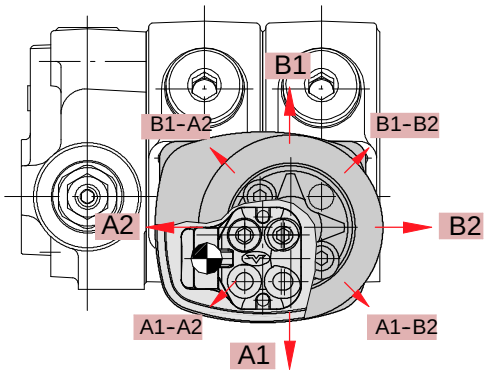
LCB joystick



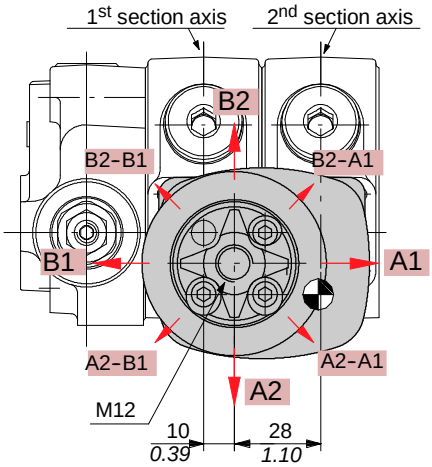
NOTE - *The handlever must be ordered separately (see page 21).*

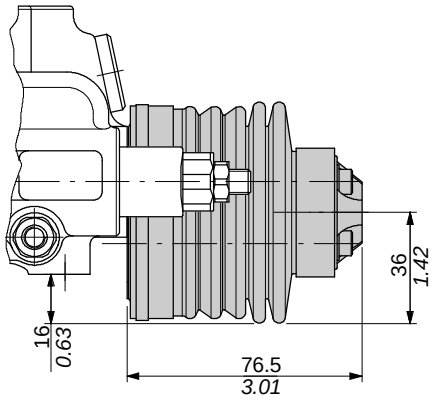
Dimensions and movement scheme

Execution **LCB1**
pivot placed down on the left

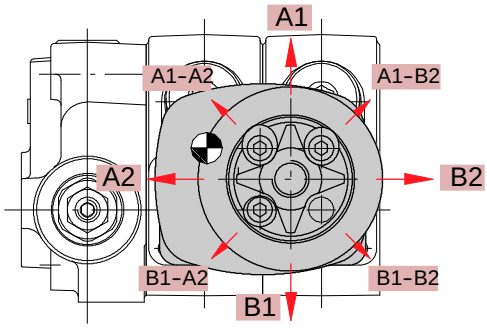


Execution **LCB2**
pivot placed down on the right

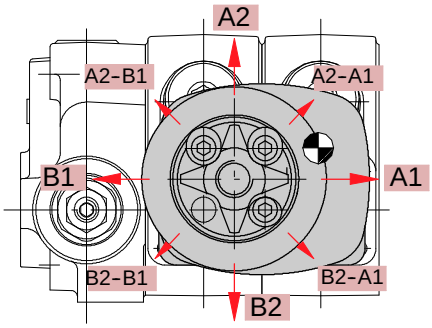


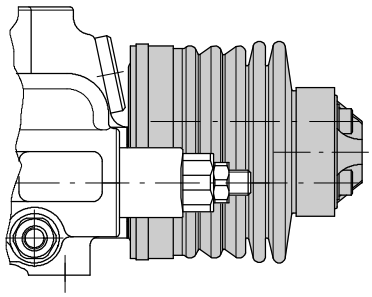


Execution **LCB3**
pivot placed above on the left



Execution **LCB4**
pivot placed above on the right





NOTE - *Due to limited space in case of LCB3 or LCB4 configuration the assembly of ports service relief valves is not possible.*

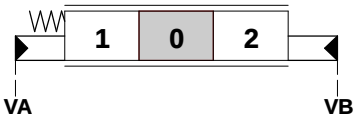
Complete controls

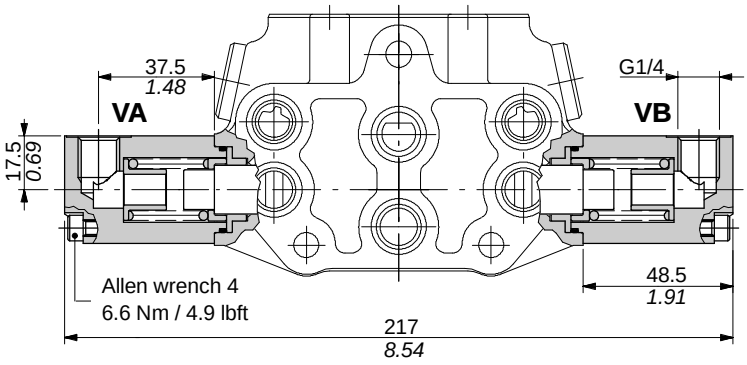
8IM proportional hydraulic kit

Code: **5IDR206010**

It can be used with special spools and body kit without seals and ring on spool (standard body) code: **5EL106300A**.

It's aldo available in **8IMF3-SD6** configuration with screws for spool stroke adjustment, codie: **5IDR206012.**



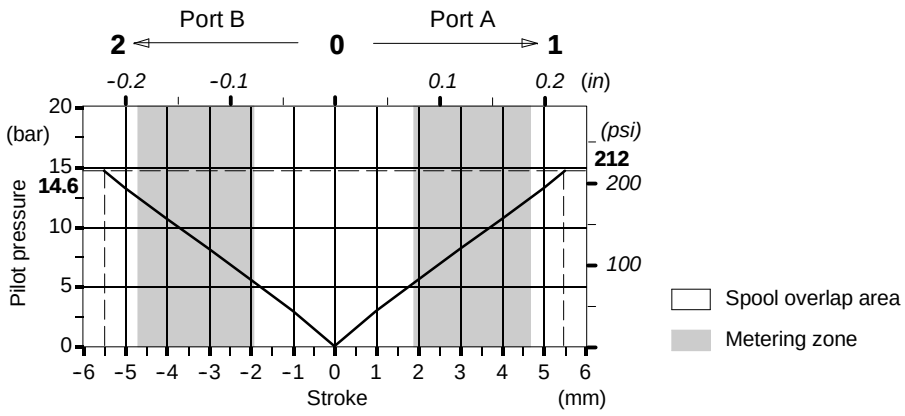


Available spools

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

Pilot pressure - stroke diagram

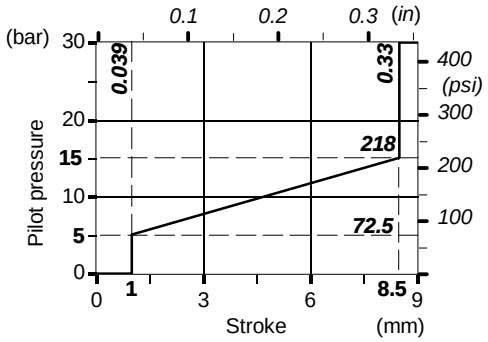
Max. pilot pressure 50 bar - *725 psi*.



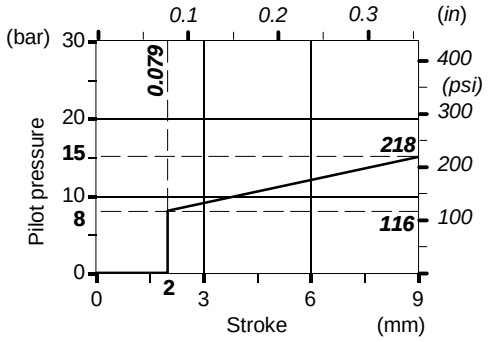
8IM proportional hydraulic kit

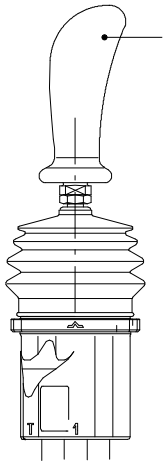
Connection example

8IM control kit
curve 075 with step



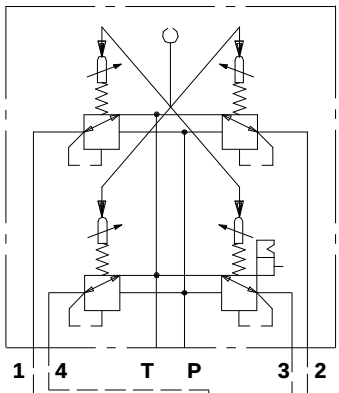
8IM control kit
curve 150 without step

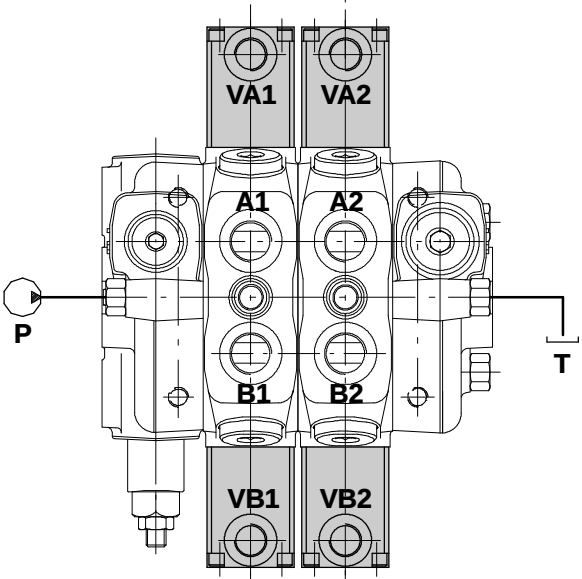


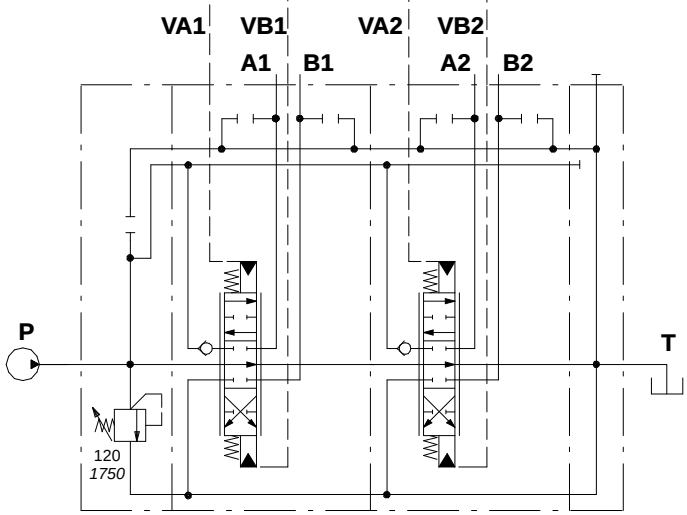


Hydraulic pilot control valve series SV01 with curve 075 or 150

Hydraulic circuit







Description example:
SD6/2/AC(YG3-120)/1IM**8IM**/1IM**8IM**/RC+
SV01-B/01W-075MA-075MA-075MA-075MA

Complete controls

8ESN solenoid control

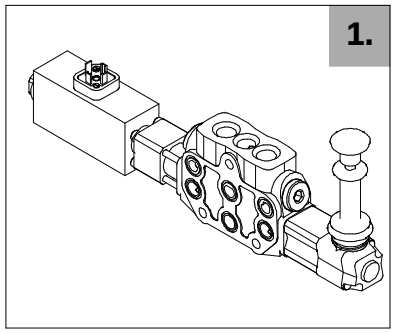
Direct control by double solenoid with spring return to neutral position, available with emergency manual override.
It's necessary special spool and standard body (body kit without spool seals).

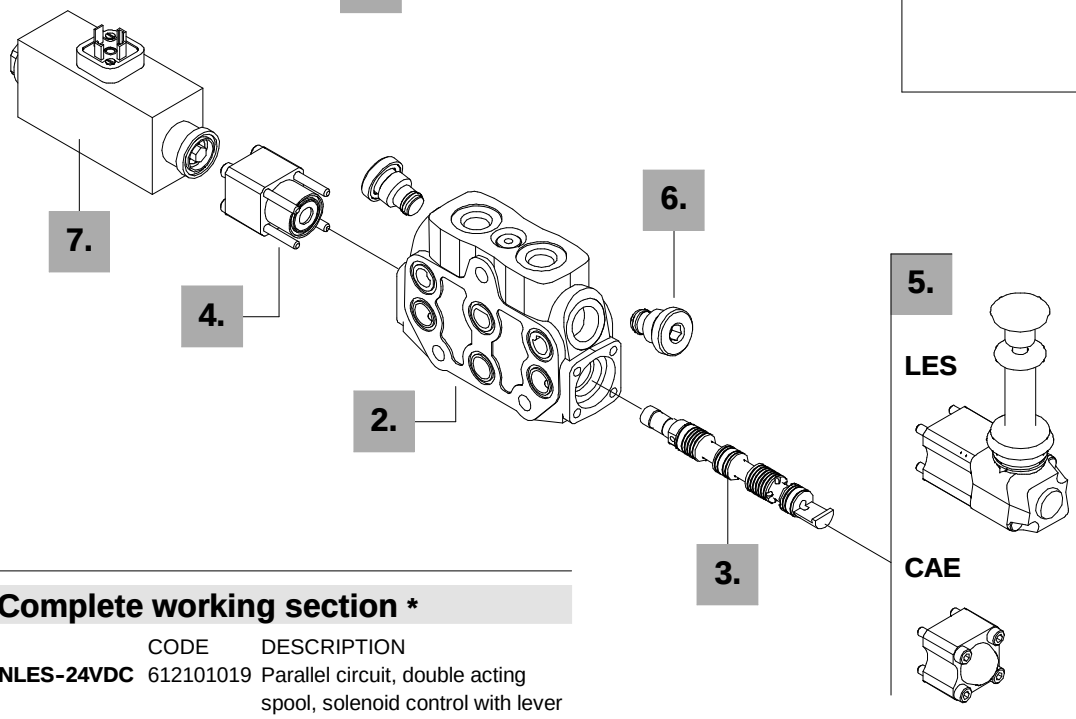
Description example:

EL SD6 / P - 1 8ESN LES P1(G3 - 125) - 24VDC

2. 3. 4. 5. 6. 7.

1.





1. Complete working section *

TYPE	CODE	DESCRIPTION
P-18ESNLES-24VDC	612101019	Parallel circuit, double acting spool, solenoid control with lever

2. Working section kit *

TYPE	CODE	DESCRIPTION
P/IM-ES	5EL106300A	Parallel circuit

3. Spools

TYPE	CODE	DESCRIPTION
1(ESN)	3CU2210050	Double acting, 3 positions, with A and B closed in neutral position
2(ESN)	3CU2225050	Double acting, 3 positions, with A and B open to tank in neutral position

4. Connection kit

TYPE	CODE	DESCRIPTION
8ESN	5V08012	For solenoid joint, with spring return in neutral position

5. "B" side options

TYPE	CODE	DESCRIPTION
LES	5LEV106410	Safety lever pivot box for manual operation
CAE	5COP206100	Endcap

6. Port relief valves

For codes please refer to page 21.

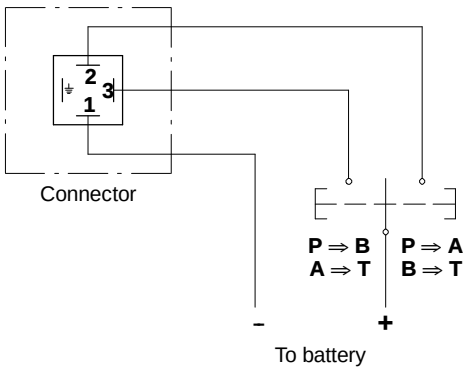
7. Solenoid

TYPE	CODE	DESCRIPTION
10.5VDC	XSOL314310	Nominal voltage 10.5VDC
12VDC	XSOL314312	Nominal voltage 12VDC
24VDC	XSOL314024	Nominal voltage 24VDC
192VDC	XSOL314192	Nominal voltage 192VDC; (for 220 VAC supply)

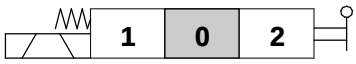
NOTE (*) - *Codes are referred to **BSP** threads.*

8ESN solenoid control

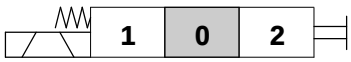
Electric wiring example



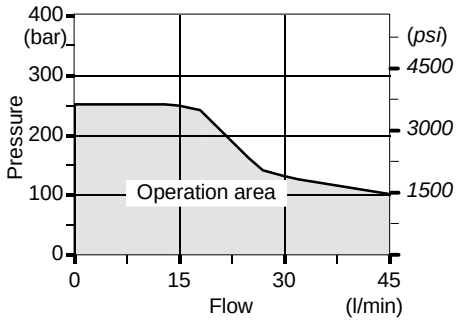
8ESNLES kit
with safety lever pivot box



8ESNCAE kit
with encadp



Operating condition diagram



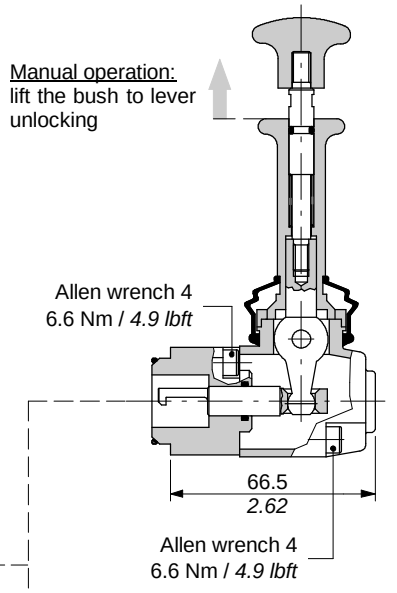
Operating features

Max. pressure . . . . . : 250 bar / *3600 psi*
Max. flow . . . . . : 45 l/min
Internal leakage A(B)→T
(Δp = 100 bar – *1450 psi* / T = 40°C) : 10 cm^3/min – *0.61 in^3/min*

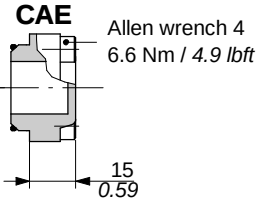
Solenoid operating features

Nominal voltage tolerance . . . . . : +10%
Power rating . . . . . : 65 W
Coil insulance . . . . . : class H
Duty cycle . . . . . : 100%

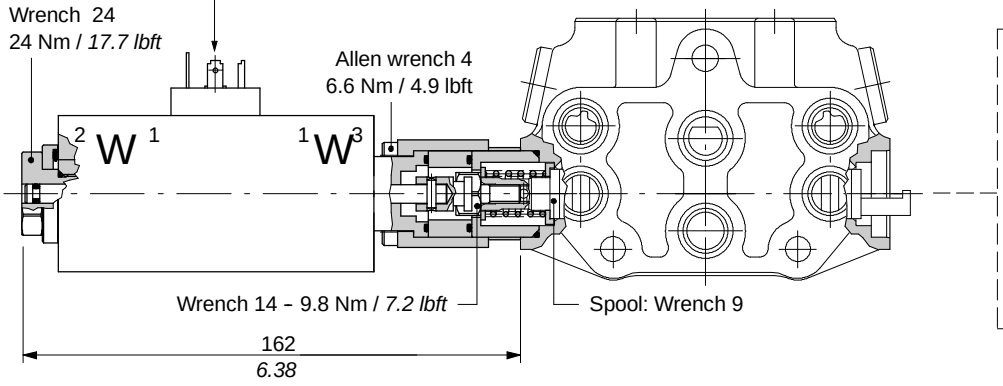
LES



CAE



Connection ISO4400
(needs **C03** connector for VDC supply or **C05** connector for VAC supply; see page 94)



Complete controls

8ES solenoid control

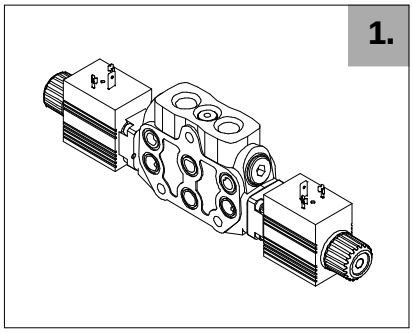
Solenoid direct control with spring return to neutral position; it needs special spools and standard working section body (body kit without seals on spool).

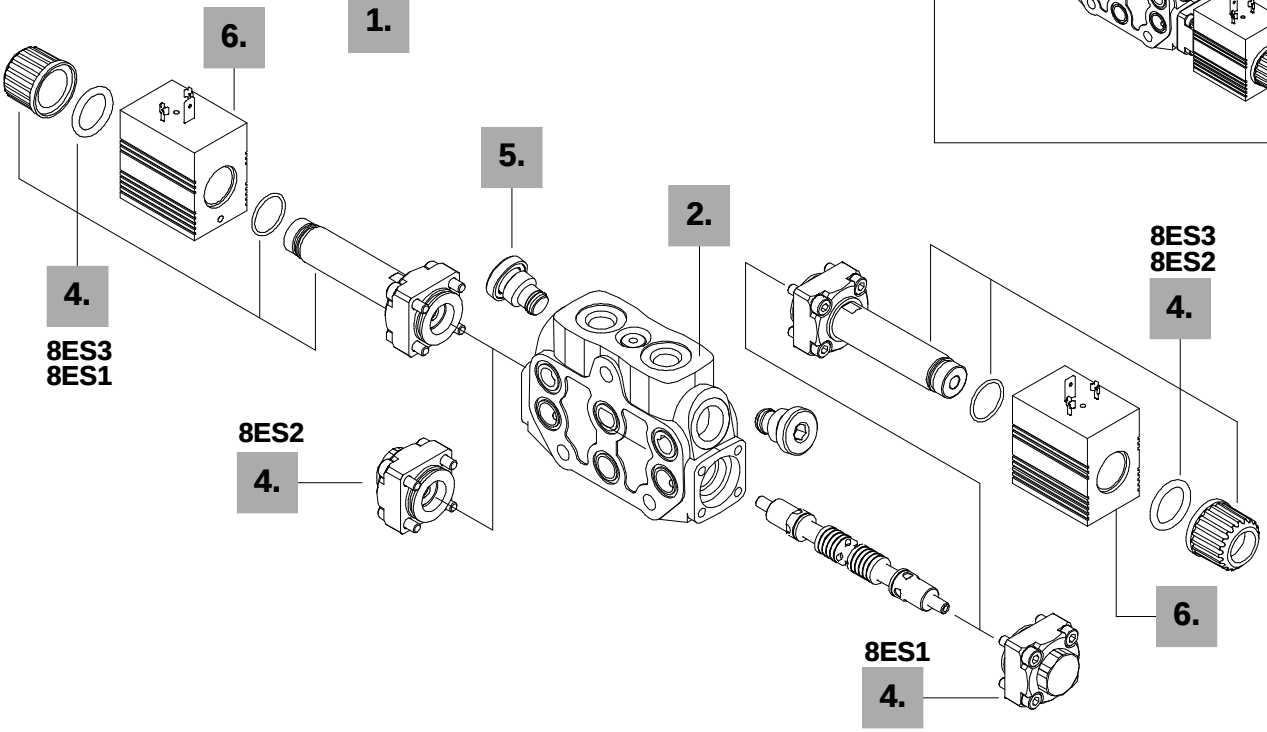
Description example:

EL SD6 / P - 1 8ES3 P1(G3 - 100) - 12VDC

2. 3. 4. 5. 6.

1.





1. Complete working section *

TYPE	CODE	DESCRIPTION
P-18ES3-12VDC	61210101C	Parallel circuit, double acting spool, double acting ON/OFF solenoid control

2. Working section kit *

TYPE	CODE	DESCRIPTION
P/IM-ES	5EL106300A	Distribuzione in parallelo

3. Spools

TYPE	CODE	DESCRIPTION
1(ES)	3CU2210015	Double acting, 3 positions, with A and B closed in neutral position
2(ES)	3CU2225015	Double acting, 3 positions, with A and B open to tank in neutral position

4. Control kit

TYPE	CODE	DESCRIPTION
8ES1	5V08026	P→A, with spring return to neutral position
8ES2	5V08026	P→B, with spring return to neutral position
8ES3	5V08027	Double acting with spring return to neutral position

5. Port valves

For codes please refer to page 21.

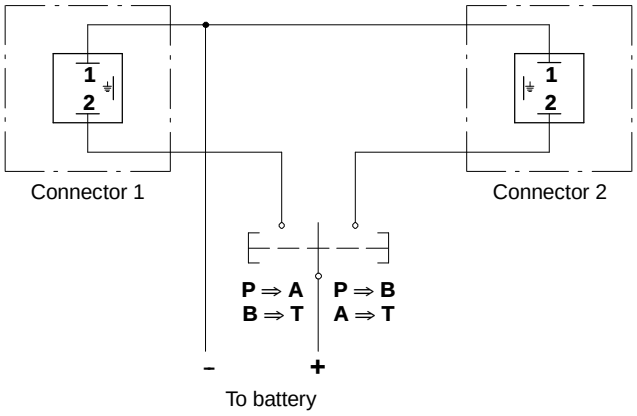
6. Coils

TYPE	CODE	DESCRIPTION
10.5VDC	4SOL512011	Nominal voltage 10.5VDC
12VDC	4SOL512012	Nominal voltage 12VDC
24VDC	4SOL512024	Nominal voltage 24VDC

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

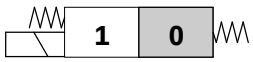
8ES solenoid control

Electric wiring example



8ES3 kit
double acting

8ES1 kit
single acting on A



8ES2 kit
single acting on B

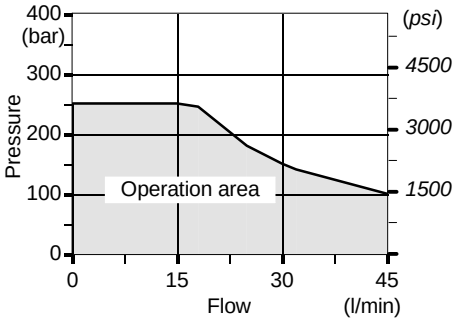
Operating features

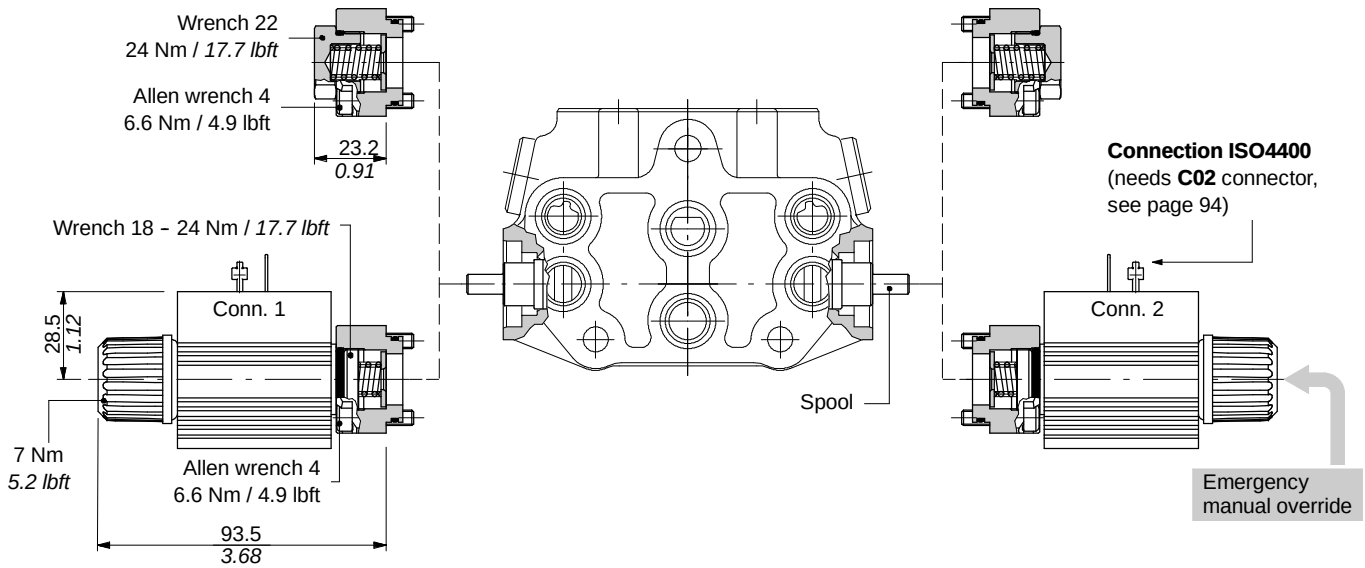
Max. pressure . . . . . : 250 bar / *3600 psi*
Max. flow . . . . . : 45 l/min
Internal leakage A(B)→T
(Δp = 100 bar – *1450 psi* / T = 40°C) : 10 cm^3/min – *0.61 in^3/min*

Coil operating features

Nominal voltage tolerance . . . . . : +10%
Power rating . . . . . : 36 W
Coil insulance . . . . . : class H
Duty cycle . . . . . : 100%

Operating condition diagram

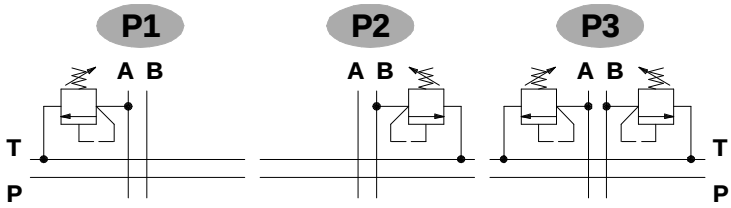




Anti-shock valves

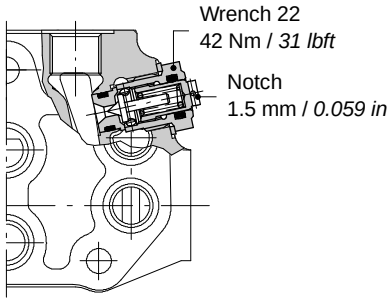
P 1 (G 3 - 100)

- Pressure setting in bar.
- Spring type **(2, 3, 4)**.
- Adjustment type **(G, H, Z)**.
- **1** mounted on port A.
- **2** mounted on port B.
- **3** mounted on porta A and B.

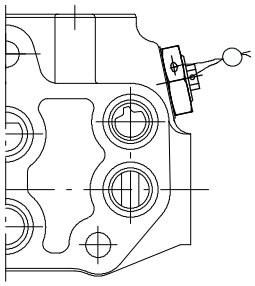


Adjustment type

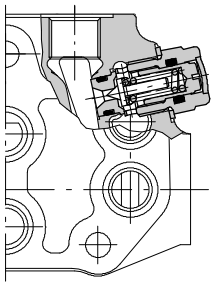
G: with screw



H: valve set and locked



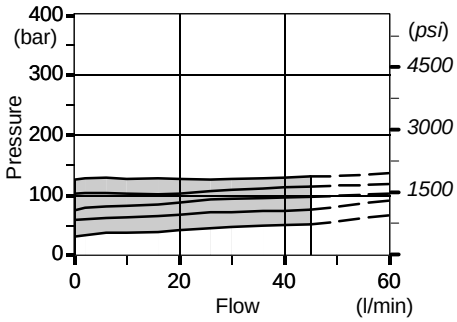
Z: tamper proof configuration



Performance data

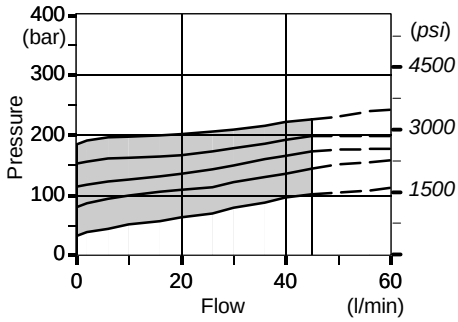
Spring nr. 2 (green band)

Standard setting: 63 bar / *900 psi*



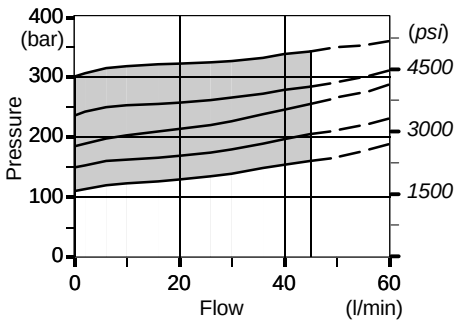
Spring nr. 3 (blue band)

Standard setting: 100 bar / *1450 psi*

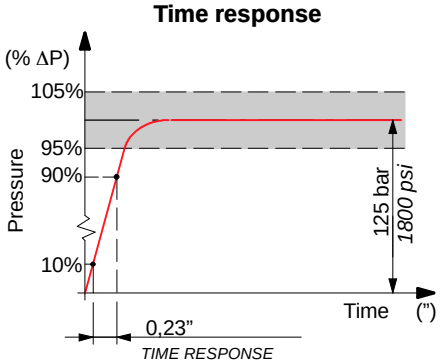


Spring nr. 4 (red band)

Standard setting: 200 bar / *2900 psi*



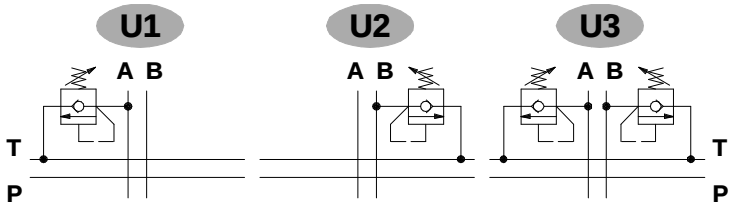
Time response



Anti-shock and anti-cavitation valves

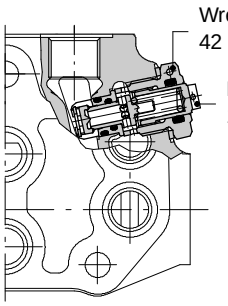
U 1 (G 3 - 100)

- Pressure setting in bar.
- Spring type **(2, 3, 4)**.
- Adjusting type **(G, H)**.
- **1** mounted on port A.
- **2** mounted on port B.
- **3** mounted on ports A and B.

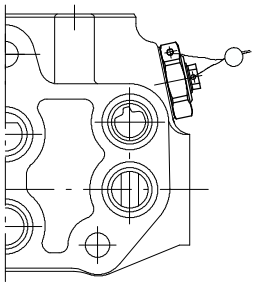


Adjusting type

G: with screw

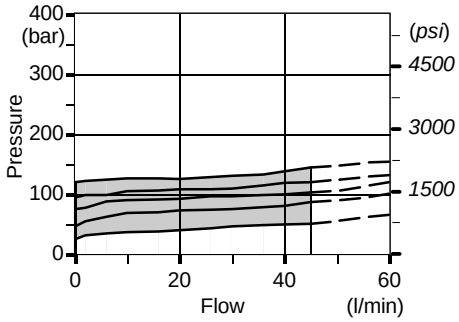


H: valve set and locked

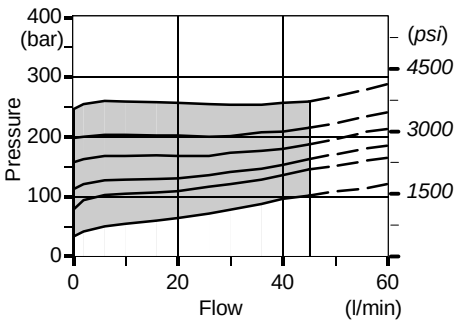


Performance data

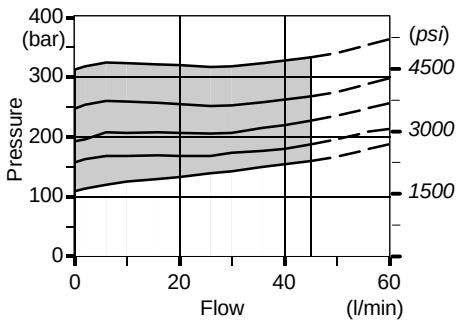
Spring nr.2 (green band)
Standard setting: 63 bar / *900 psi*



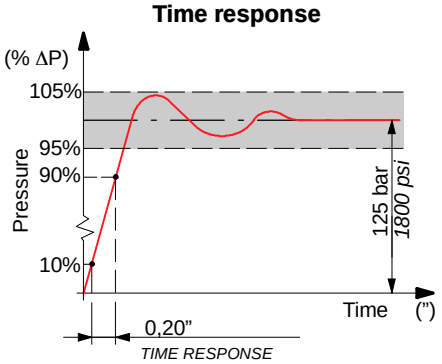
Spring nr.3 (blue band)
Standard setting: 100 bar / *1450 psi*



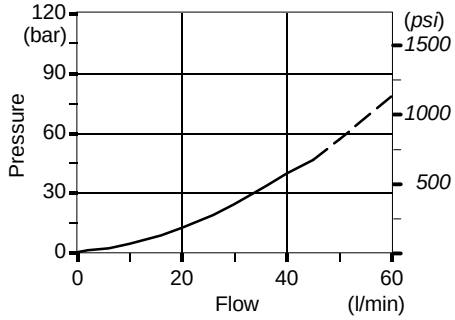
Spring nr.4 (red band)
Standard setting: 200 bar / *2900 psi*



Time response



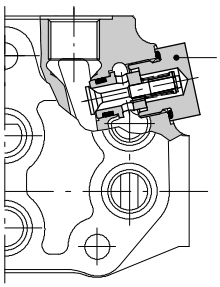
Pressure drop



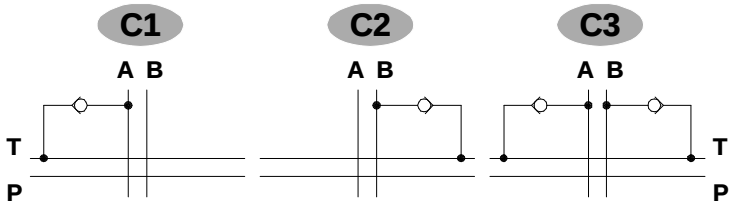
Anti-cavitation valves

C 1

1 mounted on port A.
2 mounted on port B.
3 mounted on ports A and B.

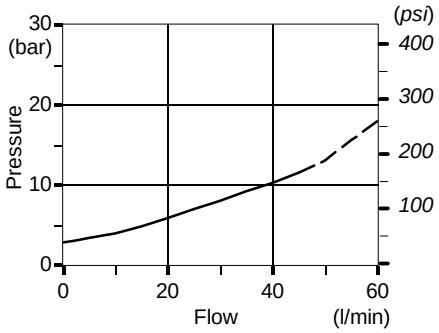


Wrench 24
42 Nm / *31 lbft*



Performance data

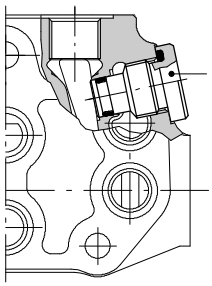
Pressure drop



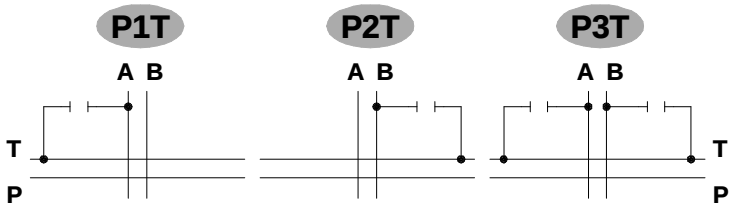
Valve blanking plug

P 1 T

1 mounted on port A.
2 mounted on port B.
3 mounted on ports A and B.



Allen wrench 8
42 Nm / *31 lbft*



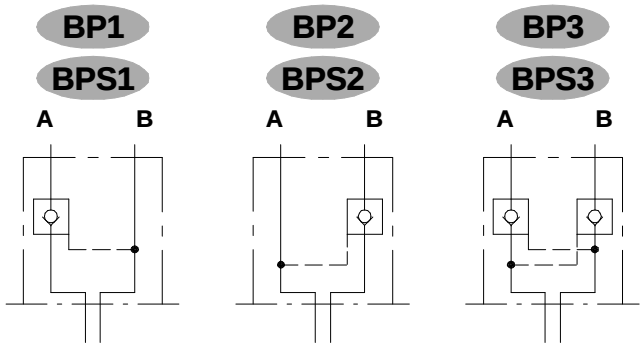
Pilot check valves

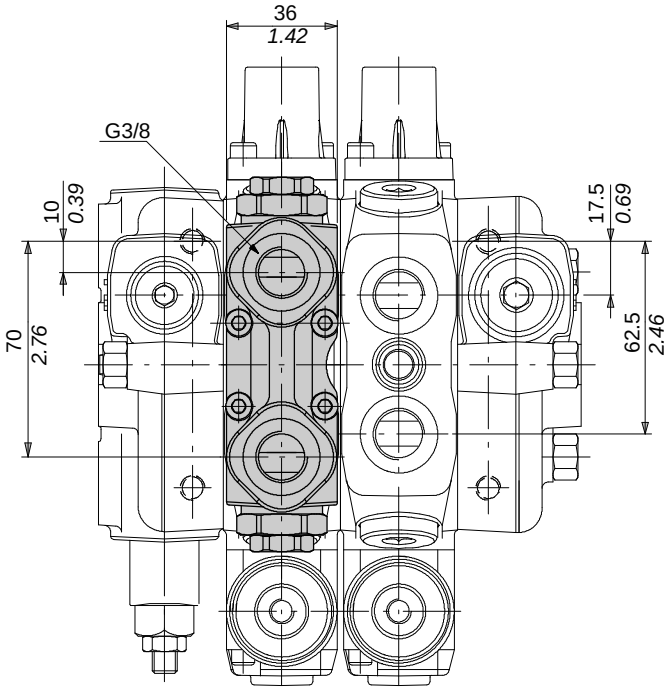
Cast iron block with pilot check valves.

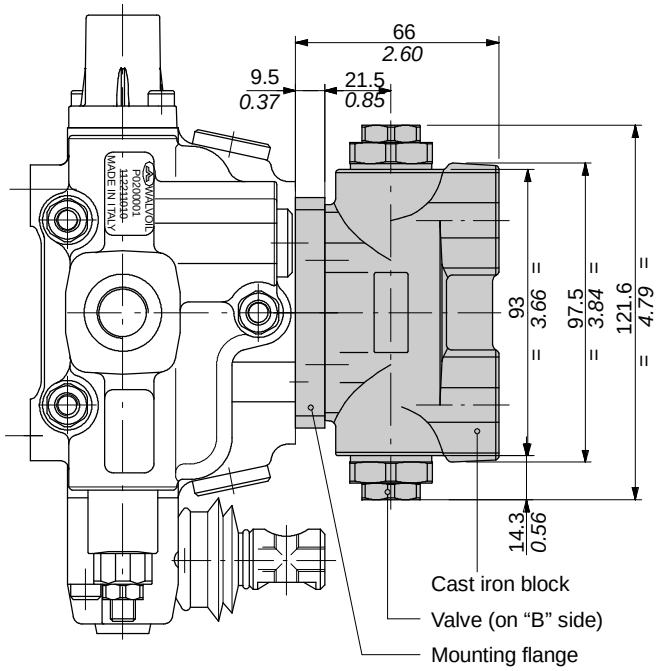
BPS 1

- **1** mounted on port A.
- **2** mounted on port B.
- **3** mounted on ports A and B.

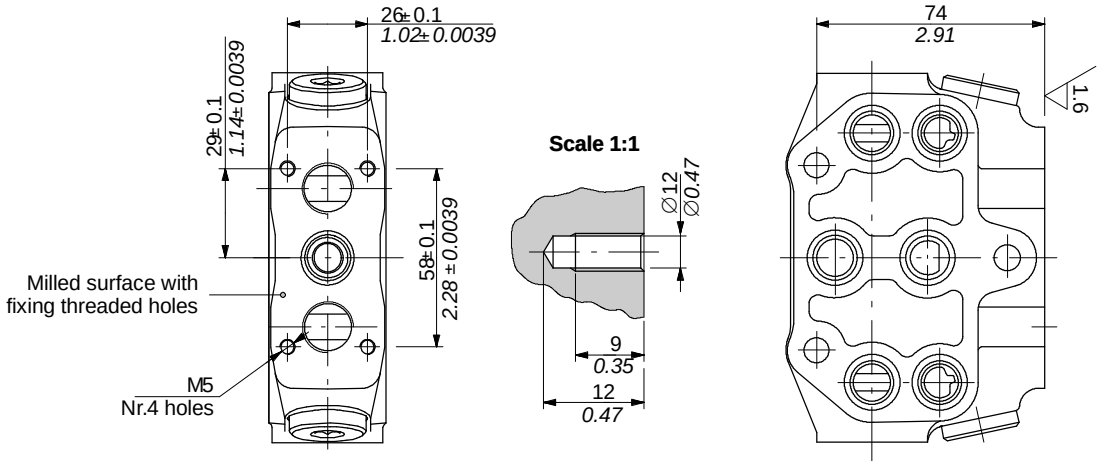
- **BP** direct type
- **BPS** with pre-opening







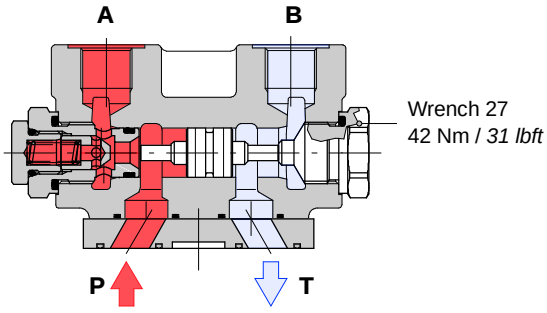
Example of extra machining on working section body



Pilot check valves

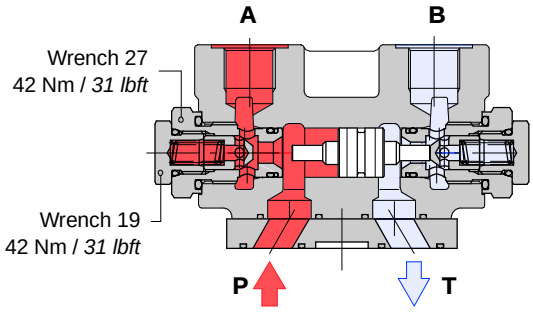
BP1 configuration

Example of pressure on port A and port B to tank

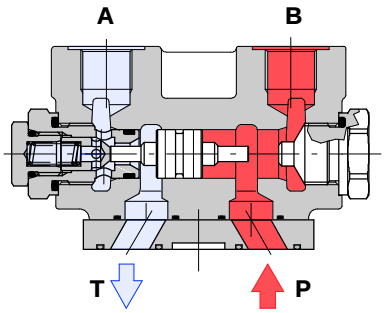


BP3 configuration

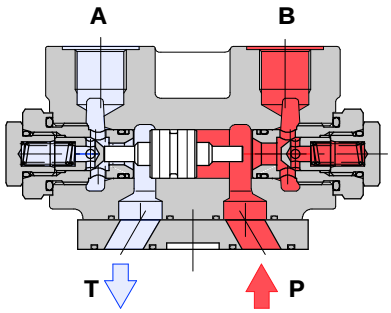
Example of pressure on port A and port B to tank



Example of pressure on port B and port A to tank

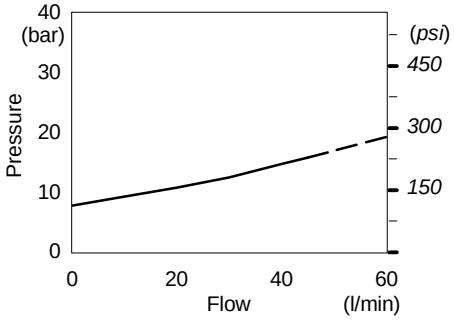


Example of pressure on port B and port A to tank



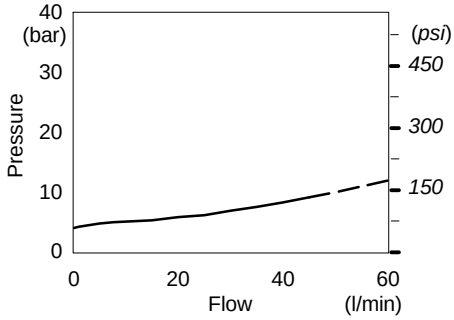
Performance data

BP valve pressure drop



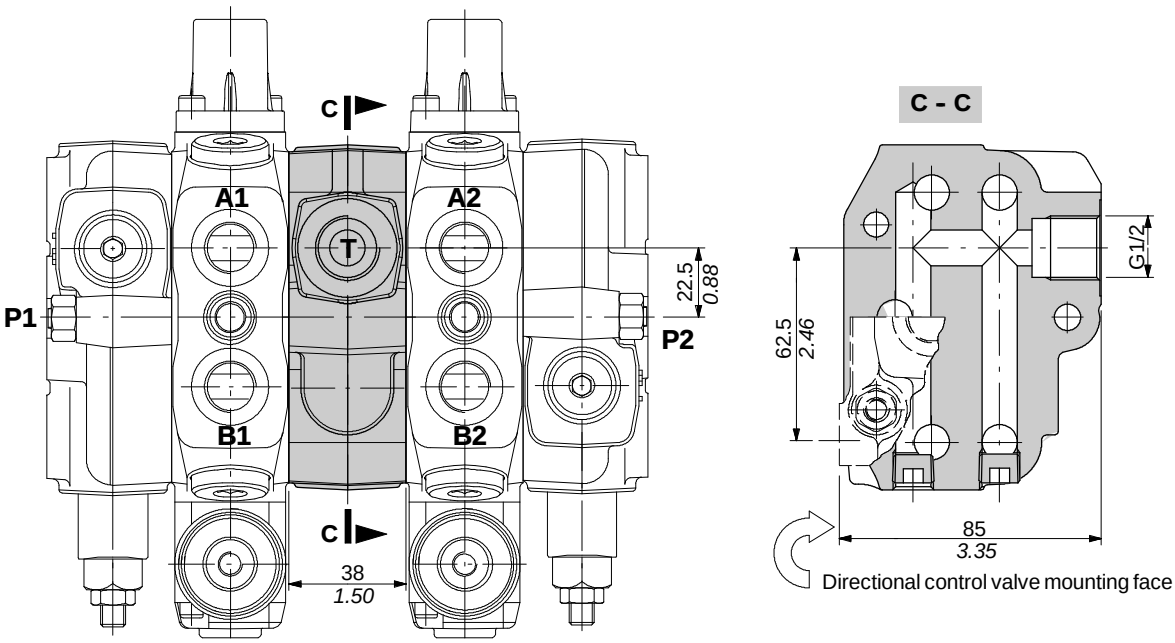
Type	Pilot ratio	
	With pre-opening	Main
BP	/	1 : 5.3
BPS	1 : 16	1 : 3.2

BPS valve pressure drop

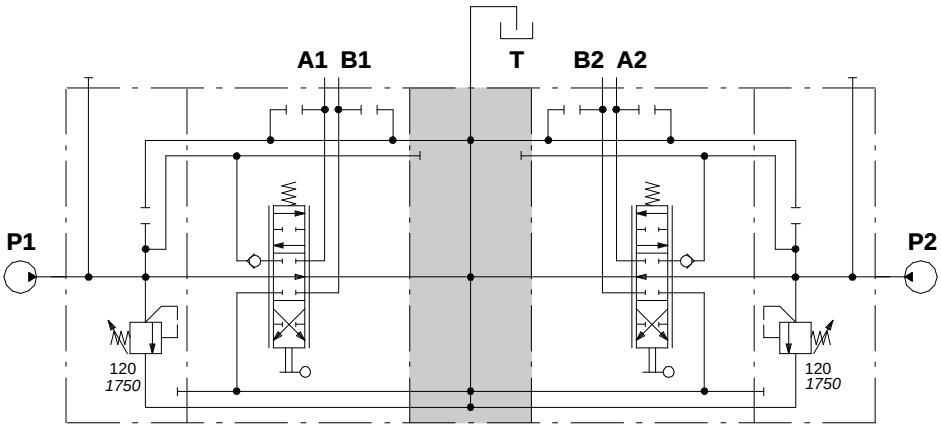


CS1 mid return manifolds

Mid return manifolds for directional valve with left and right inlet both; they allow 2 indipendent circuits with common outlet.



Hydraulic circuit



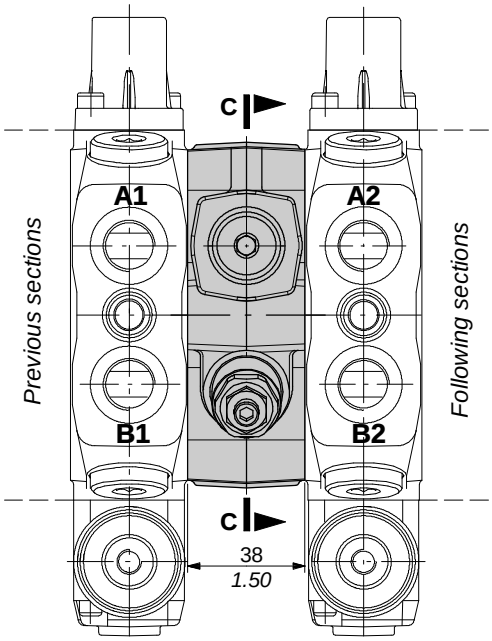
Description example:

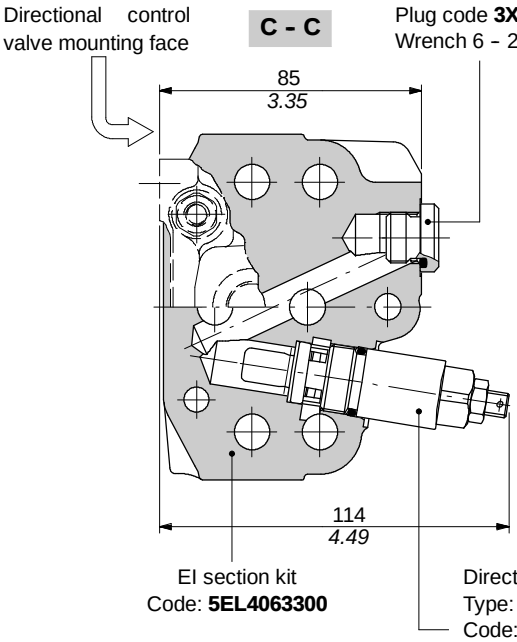
SD6/2/AC(YG3-120)/18L/**CS1**/18L/BC(YG3-120)

EI service relief valve section

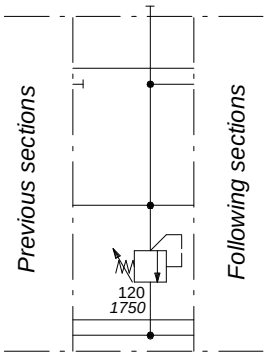
The operation of up stream section exclude the EI downstream section.
The pressure of the downstream sections should be adjusted at least 20 bar / *290 psi* below the relief valve setting.
Execution EI2 is prearranged for a second inlet.

Execution EI1



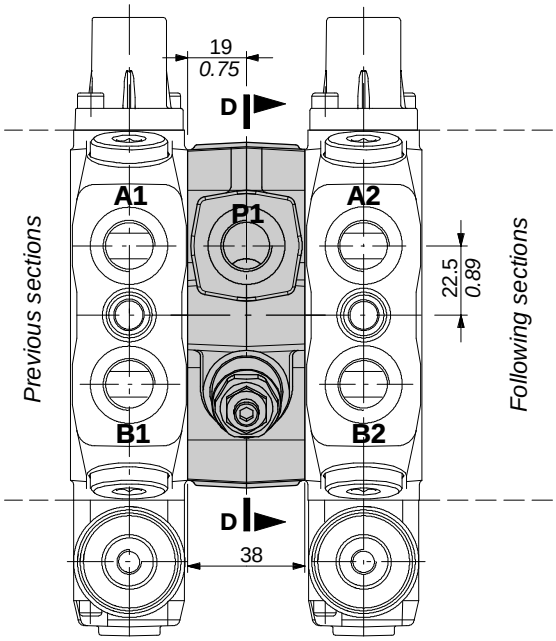


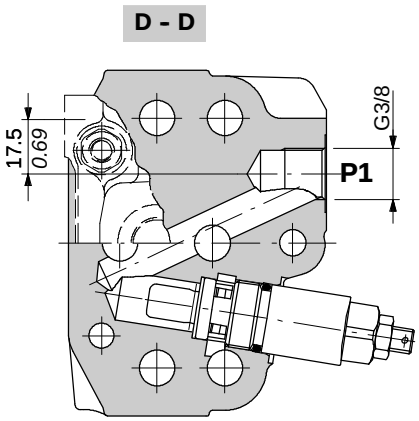
Hydraulic circuit



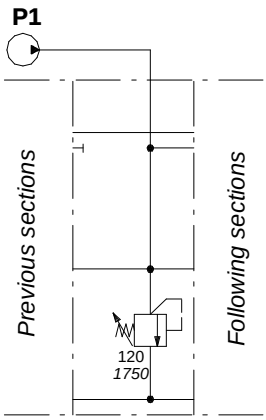
Description example:
SD6/2/AC(YG3-175)/18L/**EI1(YG3-120)**/18L/RC

Execution EI2





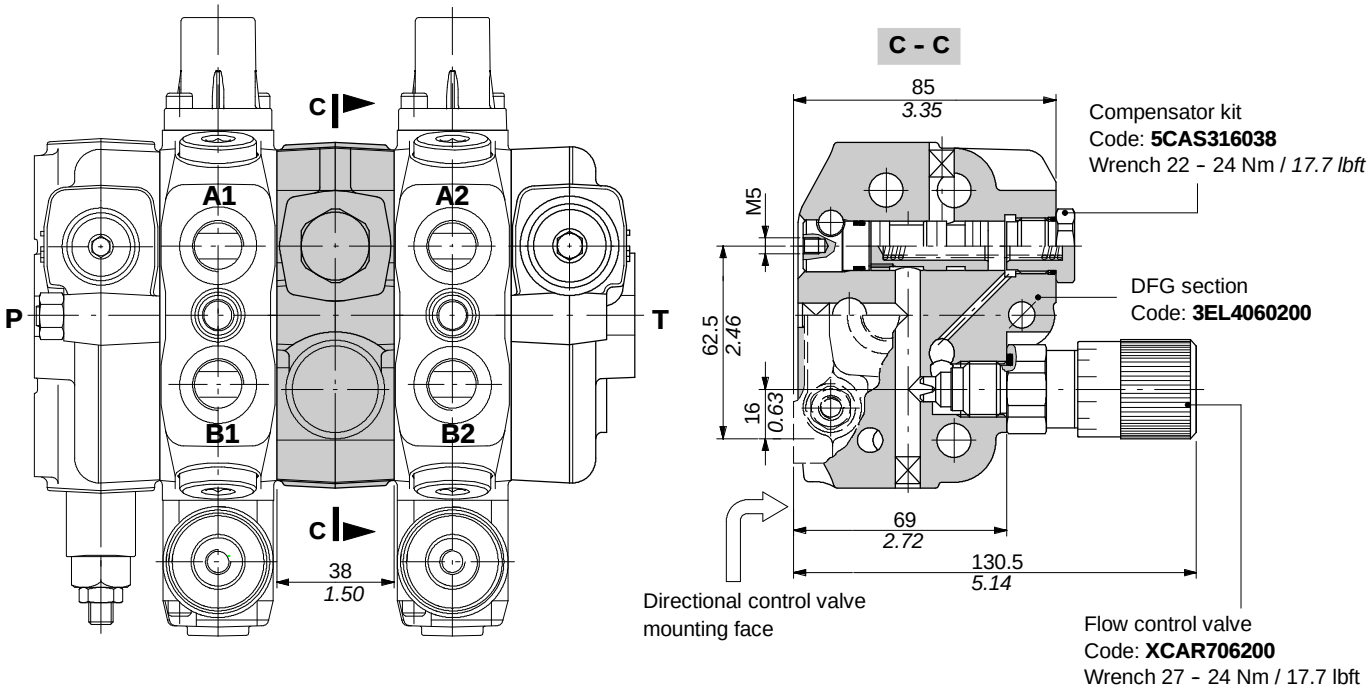
Schema elemento



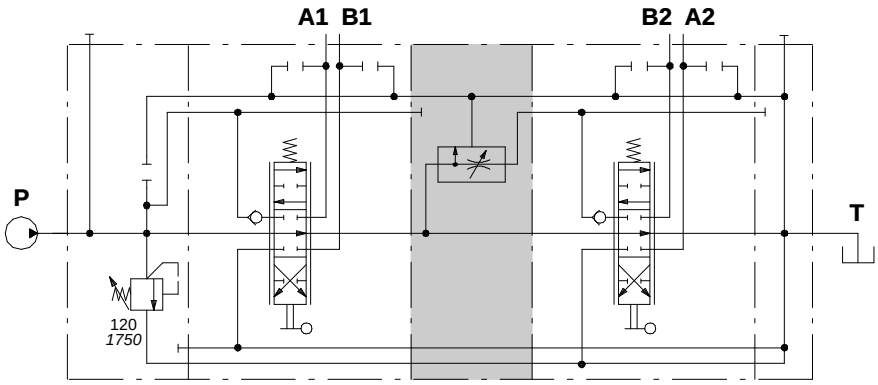
Description example:
SD6/2/AC(YG3-175)/18L/**EI2(YG3-120)**/18L/RC

DFG pressure compensated flow divider section

The flow on the downstream sections can be adjusted from 0 to 40 l/min by means of graduated handwheel; flow exceeding setting goes to tank.



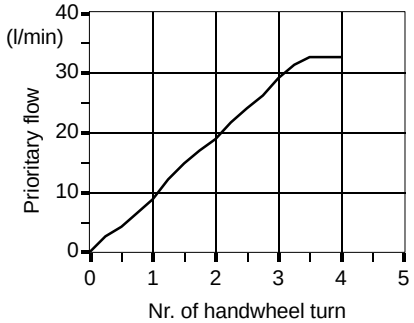
Hydraulic circuit



Description example:
SD6/2/AC(YG3-120)/18L/**DFG**/18L/RC

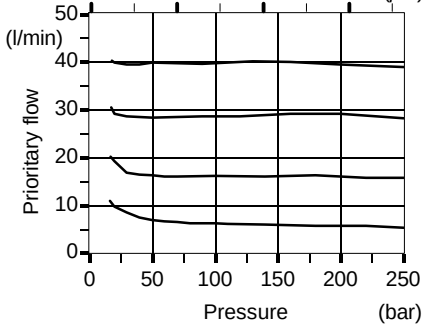
Flow regulation diagram

Q_{in} = 45 l/min - P_{ut} = 100 bar / *1450 psi*

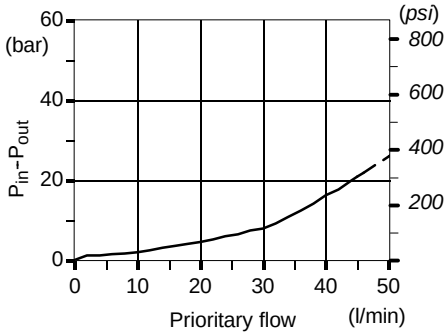


Pressure-flow diagram

Q_{in} = 45 l/min



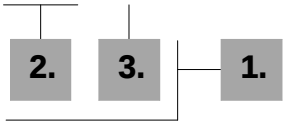
Pressure drop

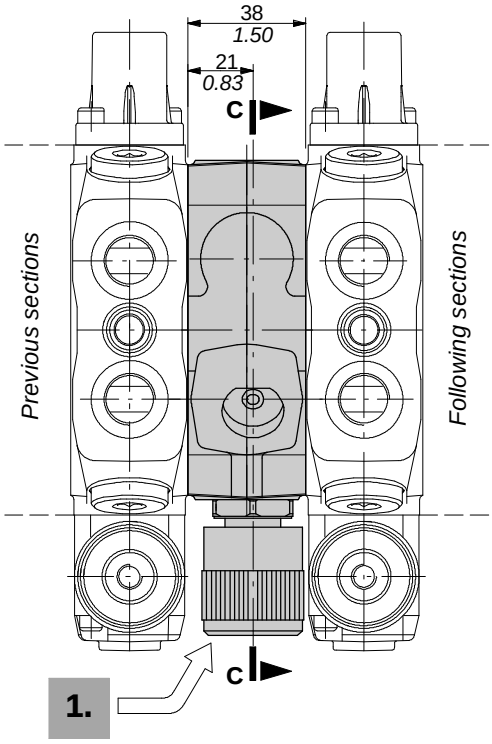


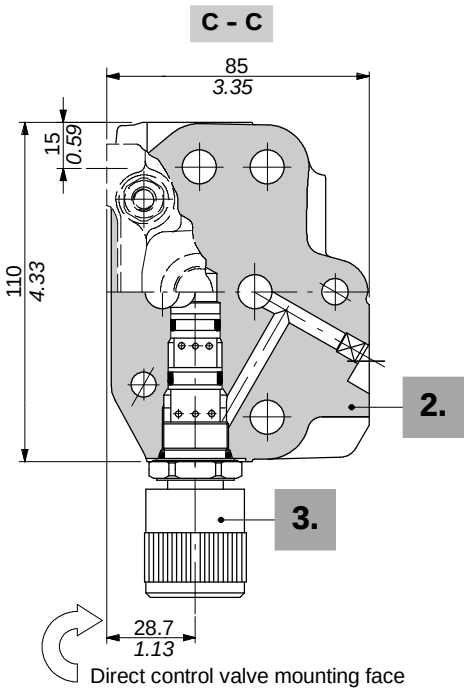
EVP9 pressure compensated flow control section

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, max. regulated flow is 30 l/min.

Description example : EL SD6 / EVP9 1

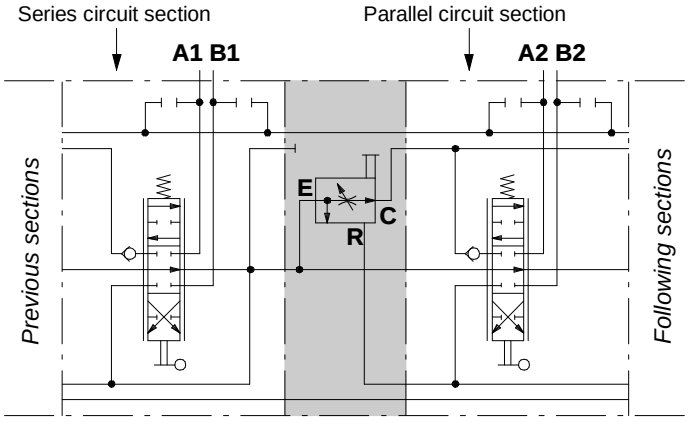






Direct control valve mounting face

Hydraulic circuit



Description example:
SD6/4/AC(JG3-120)/.../S-18L/**EVP91**/18L/.../RC

1. Complete section

TYPE	CODE	DESCRIPTION
EVP91	612423503	Fine handwheel operated
EVP92	612423501	One turn with detent handwheel
EVP93	612423502	With 12VDC proportional solenoid valve

2. Section body kit

TYPE	CODE	DESCRIPTION
EVP9	5EL4060302	Include body and seals

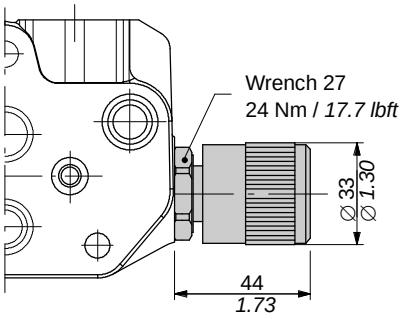
3. Flow control valve

TYPE	CODE	DESCRIPTION
1	2S0PP10002000	Fine handwheel operated valve
2	2S1636020206	Valve with one turn with detent handwheel
3	2S0PP10002002	12VDC proportional solenoid valve

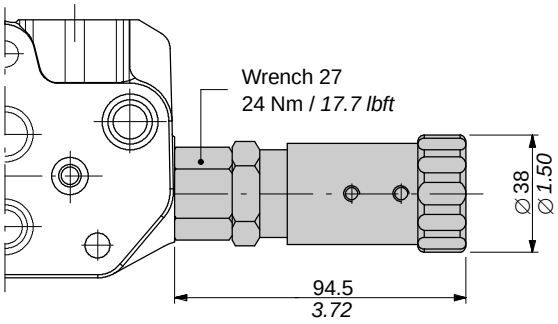
EVP9 pressure compensated flow control section

Handwheel operated

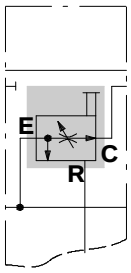
Continuous fine regulation



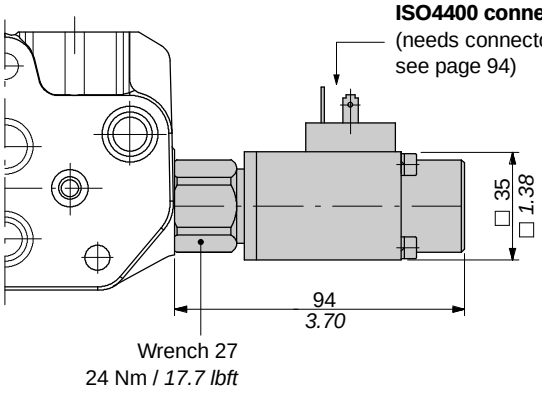
One turn with detent



Valve circuit

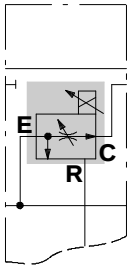


With proportional solenoid control



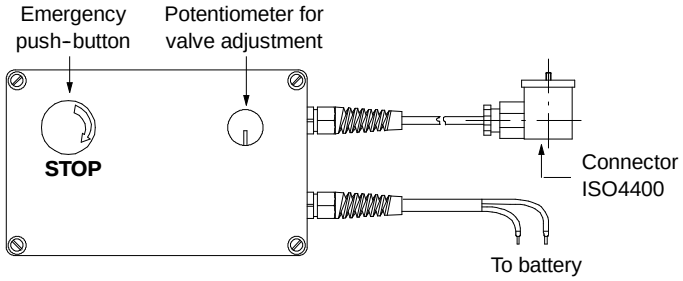
Solenoid operating features
Nominal voltage . . : 12 VDC
Power rating . . . . . : 28 W
Duty cycle . . . . . : 100%

Valve circuit



Example of solenoid flow control valve connection

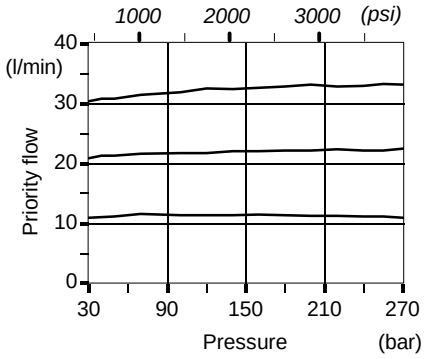
It's show a configuration with push-button panel type UPA model **UPA12/100/SC01B22**: for information contact Sales Dept.



Performance data

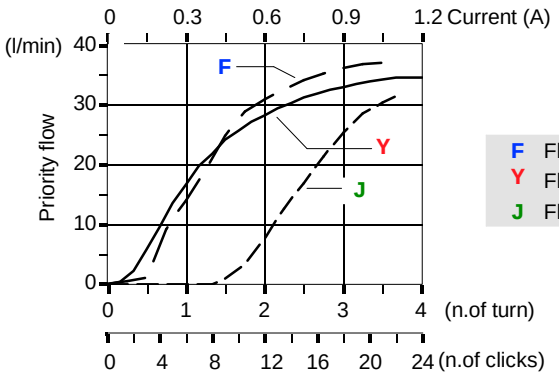
Pressure-flow diagram

Qin = 45 l/min (*12 US gpm*)



Flow regulation diagram

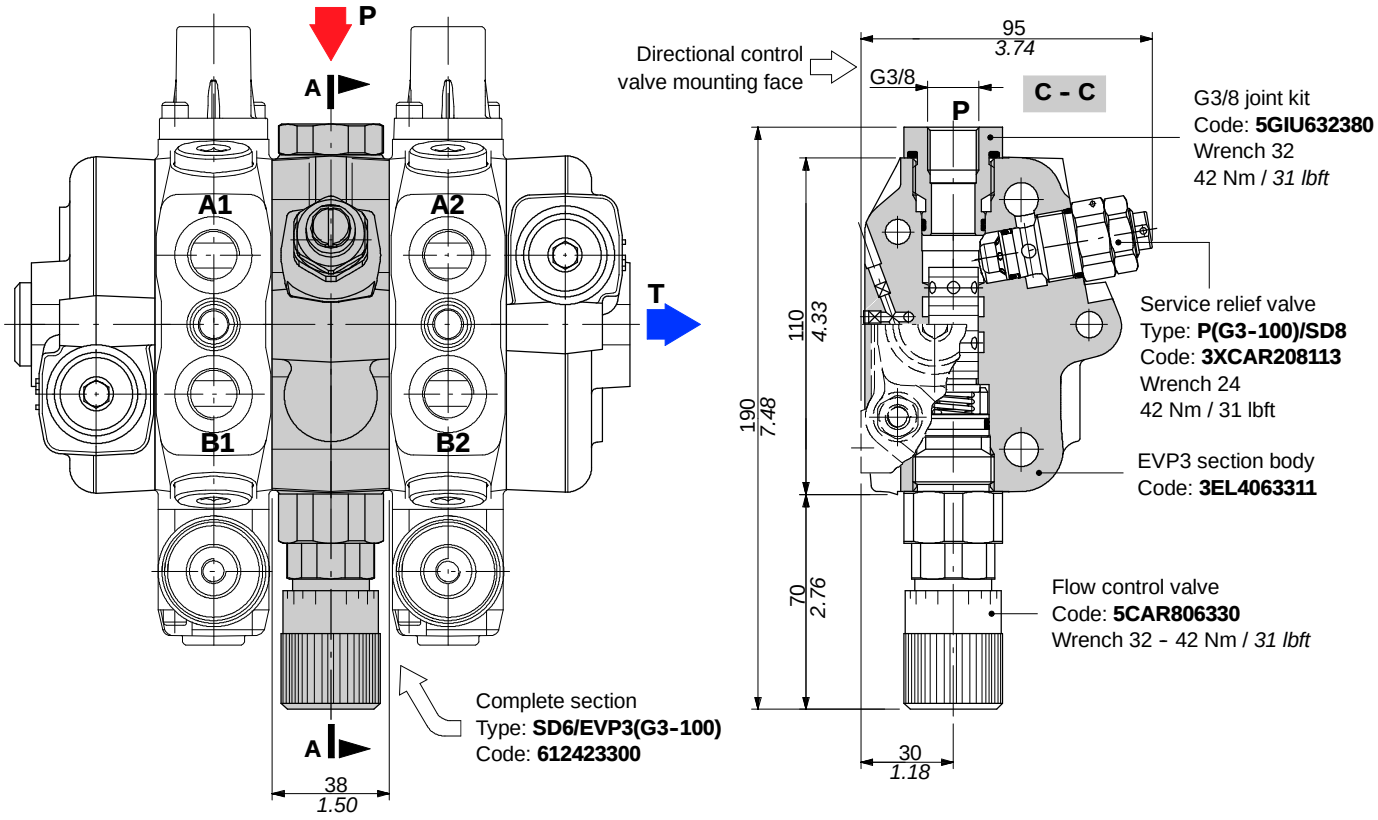
Qin = 45 l/min - P = 100 bar (*1450 psi*)



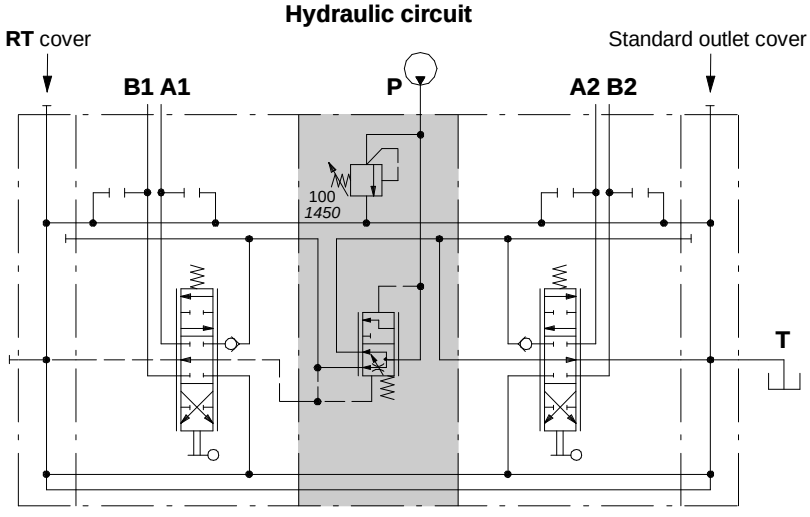
F Flow control valve type 1
Y Flow control valve type 2
J Flow control valve type 3

EVP3 inlet section with regulated flow

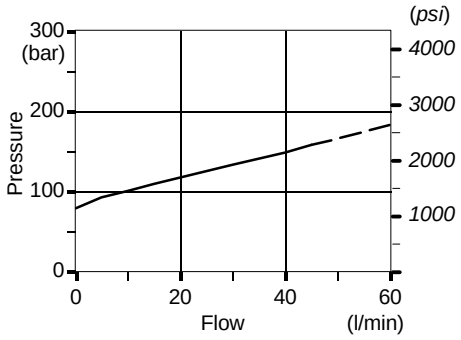
Intermediate inlet section with regulated flow prioritary valve and exceeding flow in pressure.
From EVP3, the regulated flow is supplied to left side working sections while the exceeding flow is supplied to right side working section.
On EVP3 is incorporate the main relief valve; the regulated flow is adjustable also with the circuit under pressure.
The working sections are assembled with two end cover, the left one is plugged (type **RT** code **612300112**), while the right one has the tank port technical data:
Max. inlet flow = 60 l/min, max. regulated flow = 40 l/min.



Hydraulic circuit



Service relief valve performance data



Description example: SD6/2/RT/18L/**EVP3(G3-100)**/18L/RC

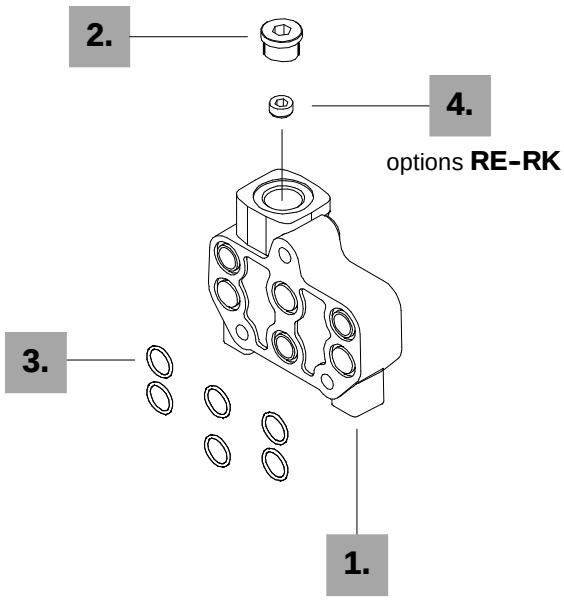
Ordering codes

Ordering example:

FS SD6 / RC *

Available configurations

RC: side outlet
RD: upper outlet
RE: upper outlet with side carry-over
RK: upper outlet and closed centre
See page 62.



Outlet section parts

Nr.	CODE	QTY	DESCRIPTION
1.	3FIA206300	1	Outlet cover body *
2.	3XTAP727180	1	G 1/2 plug *
3.	4GUA114018	6	14x1,78 NBR 70 SH O-ring seal

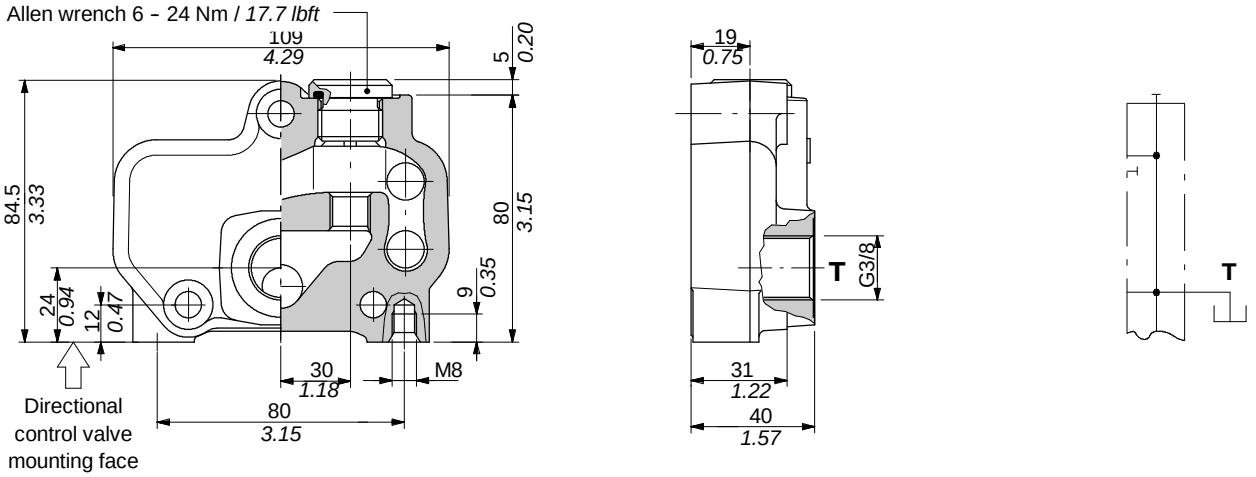
Circuit options

Nr.	CODE	QTY	DESCRIPTION
4.	4TAP413210	1	G1/4 plug for carry-over (RE) and closed centre (RK) options

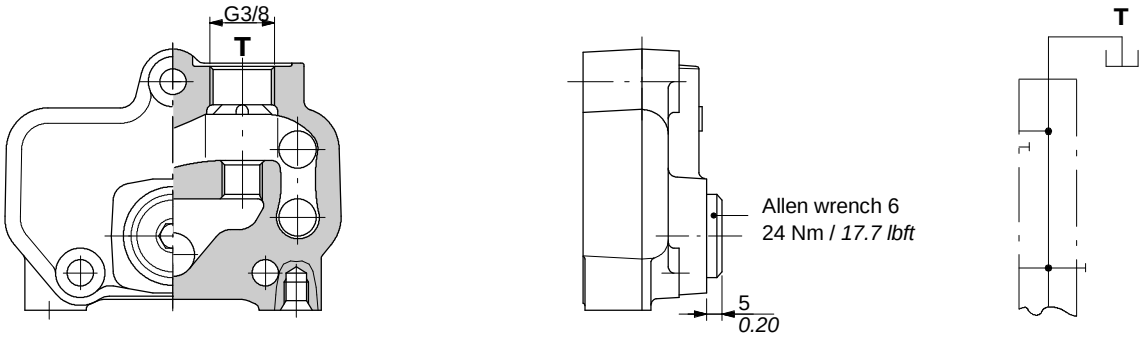
NOTE (*) - *Items are referred to **BSP** thread.*

Dimensional data and hydraulic circuit

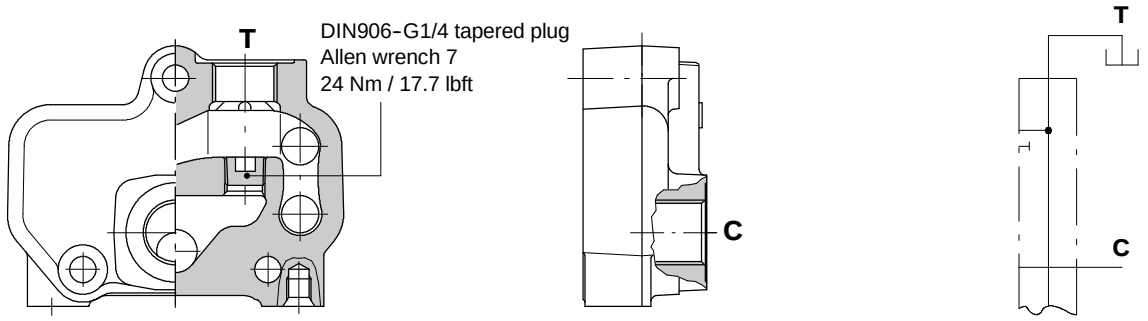
Type RC



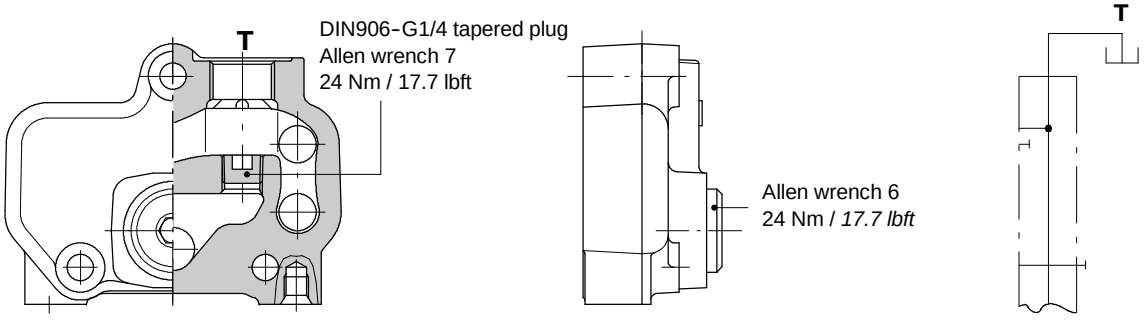
Type RD



Type RE



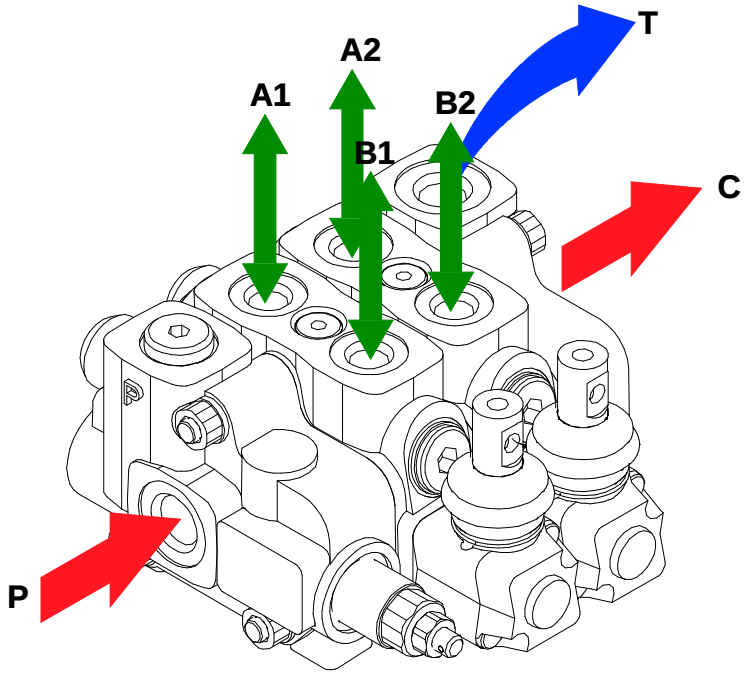
Type RK



Installation and maintenance

The SD6 valve is assembled and tested as per the technical specification of this catalogue.
Before the final installation on your equipment, follow the below recommendations:

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



Carry-over configuration

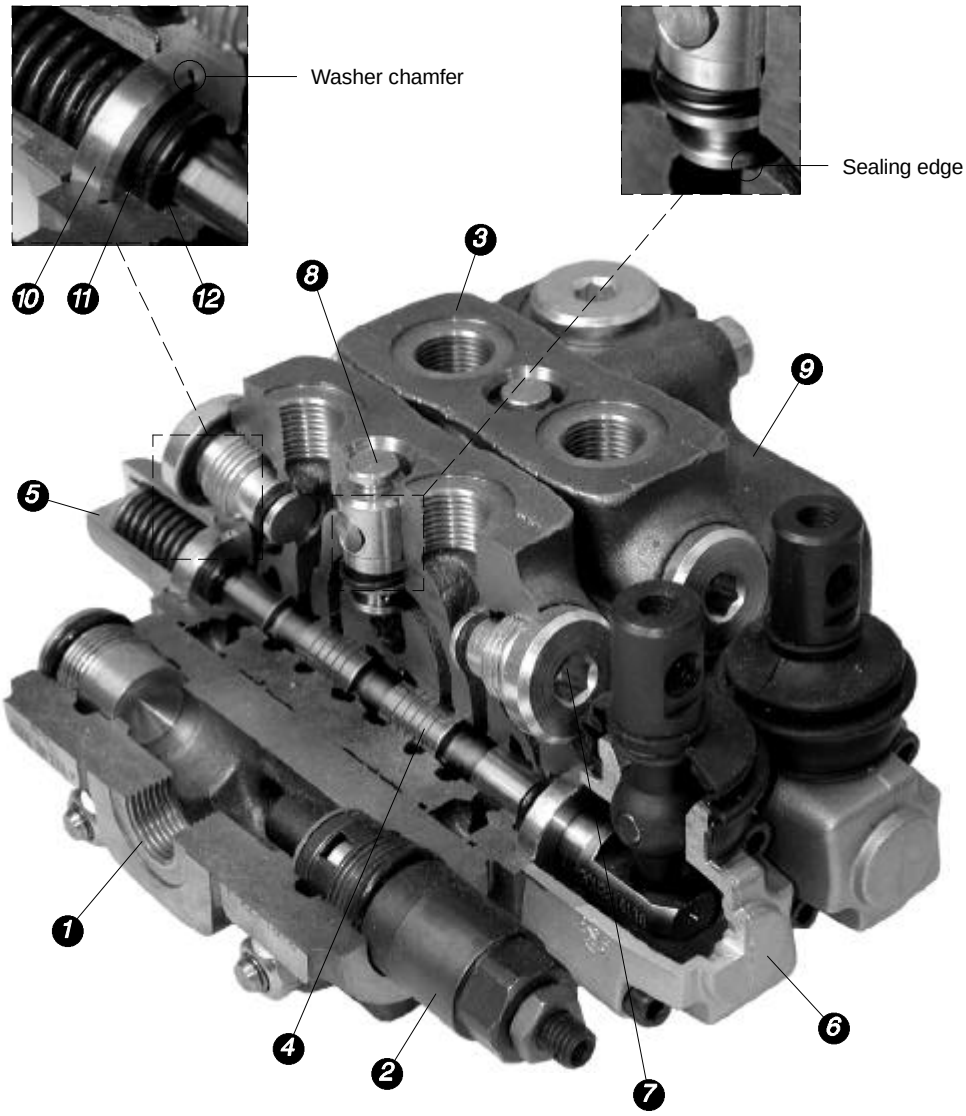
Fitting tightening torque - Nm / *lbft*

THREAD TYPE	**port P**	**ports A and B**	**ports C and T**
BSP (ISO 228/1)	G 3/8	G 3/8	G 1/2
With O-Ring seal	35 / *25.8*	35 / *25.8*	50 / *36.9*
With copper washer	40 / *29.5*	40 / *29.5*	60 / *44.3*
With steel and rubber washer	30 / *22.1*	30 / *22.1*	60 / *44.3*
UN-UNF (ISO 11926-1)	3/4-16 (SAE 8)	9/16-18 (SAE 6)	3/4-16 (SAE 8)
With O-Ring seal	50 / *36.9*	30 / *22.1*	50 / *36.9*
METRICA (ISO 262)	M18x1.5	M18x1.5	M22x1.5
With O-Ring seal	35 / *25.8*	35 / *25.8*	50 / *36.9*
With copper washer	40 / *29.5*	40 / *29.5*	40 / *29.5*
With steel and rubber washer	40 / *29.5*	40 / *29.5*	60 / *44.3*

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

Installation and maintenance

It's shown a section of SD6/2/AC(YG3-175)/18L/18L/RC valve.



Callout

1) Inlet cover
2) Overpressure relief valve
3) Working section
4) Spool: *normally spools are inter_ changeable, verify the smoothness during the assembly*
5) "A" side spool positioner
6) Lever pivot box
7) Port relief valve prearrangement
8) Load check valve
9) Outlet cover
10) Holding O-Ring washer
11) 16.26x2.18 Parback seal code: 4ANE816314
12) 15.88x2.62 O-ring seal code: 4GUA115926

NOTE - *All moving parts inside cap, lever box and mechanical joystick are lubricated with synthetic base grease grade NLGI2*

Malfunction	Cause	Remedy
External leakage pivot box lever or control kit side.	Worn spool seal due to mechanical actuation or high back pressure.	Locate the leakage and replace the seal. Check back pressure level.
Excessive internal leakage on A and B ports.	Increase clearance between spools and body due to high wear.	Replace the working section and check the oil contamination level.
Dropping load during transition while raising.	High leakage on the load check valve.	Remove the load check valve and clean the seat, verifing it's not dented.
Inability to build pressure on A and B ports.	Pressure relief valve blocked open.	Remove and clean or replace the valve.
	Low pump pressure and flow.	Check the pump and circuit.

Content

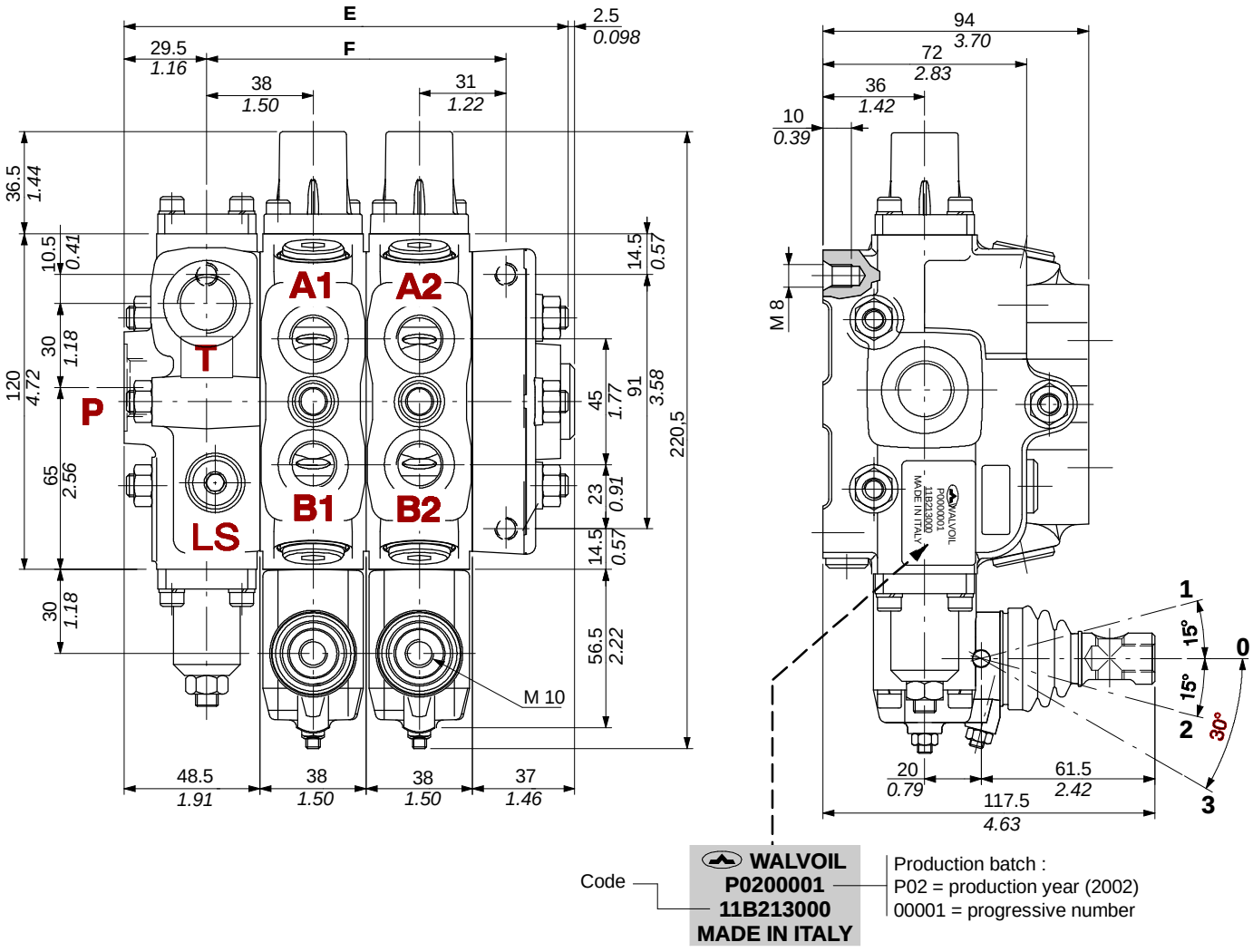
Working conditions

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

Nominal flow rating (with 14 bar / 200 psi stand-by)	*on inlet port P*	75 l/min	
	on ports A and B	60 l/min	
Operating pressure (maximum)		315 bar	*4600 psi*
Back pressure (maximum)	*on outlet port T*	25 bar	*360 psi*
Internal leakage A(B)→T	*Δp=100 bar - 1450 psi fluid and valve at 40°C*	3 cm^3/min	*0.18 in^3/min*
Fluid		Mineral based oil	
Fluid temperature	*with NBR (BUNA-N) seals*	da -20° a 80°C	
	with FPM (VITON) seals	da -20° a 100°C	
Viscosity	*operating range*	da 15 a 75 mm^2/s	*from 15 to 75 cSt*
	min.	12 mm^2/s	*12 cSt*
	max.	400 mm^2/s	*400 cSt*
Max level of contamination		19/16 - ISO 4406	
Ambient temperature		da -40° a 60°C	
Tie rods tightening torque (wrench 13)		30 Nm	*22 lbft*

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

Dimensional data (with inlet flow control valve)



TYPE	E		F		Weight	
	mm	*in*	mm	*in*	kg	*lb*
DLS7/1	121	*4.76*	69	*2.72*	6.4	*14.1*
DLS7/2	159	*6.26*	107	*4.21*	8.9	*19.6*
DLS7/3	197	*7.76*	145	*5.71*	11.5	*24.4*
DLS7/4	235	*9.25*	183	*7.2*	14	*30.9*
DLS7/5	273	*10.74*	221	*8.7*	16.6	*36.6*

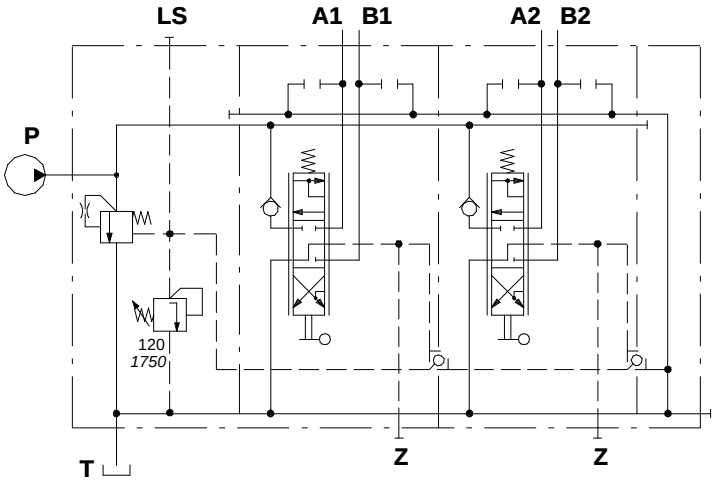
TYPE	E		F		Weight	
	mm	*in*	mm	*in*	kg	*lb*
DLS7/6	311	*12.24*	259	*10.2*	19.1	*42.1*
DLS7/7	349	*13.74*	297	*11.7*	21.7	*47.8*
DLS7/8	387	*15.24*	335	*13.2*	24.3	*53.5*
DLS7/9	425	*16.73*	373	*14.7*	26.9	*59.2*
DLS7/10	463	*18.23*	411	*16.2*	29.5	*64.9*

Standard threads

PORTS	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)
Inlet **P** - Outlet **T**	G 1/2	3/4-16 (SAE 8)
A and **B** ports	G 3/8	9/16-18 (SAE 6)
Load sensing **LS**	G 1/4	9/16-18 (SAE 6)
PILOT PORTS		
Pneumatic	NPTF 1/8-27	NPTF 1/8-27
Hydraulic	G 1/4	9/16-18 (SAE 6)

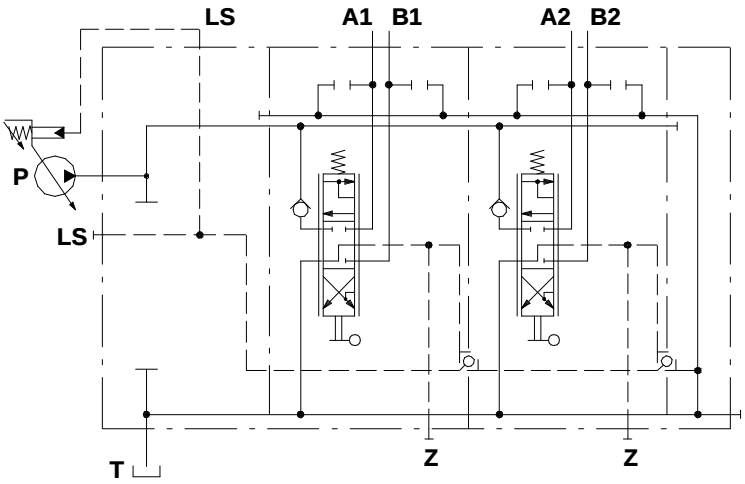
Hydraulic circuit

Fixed displacement pump (open centre)



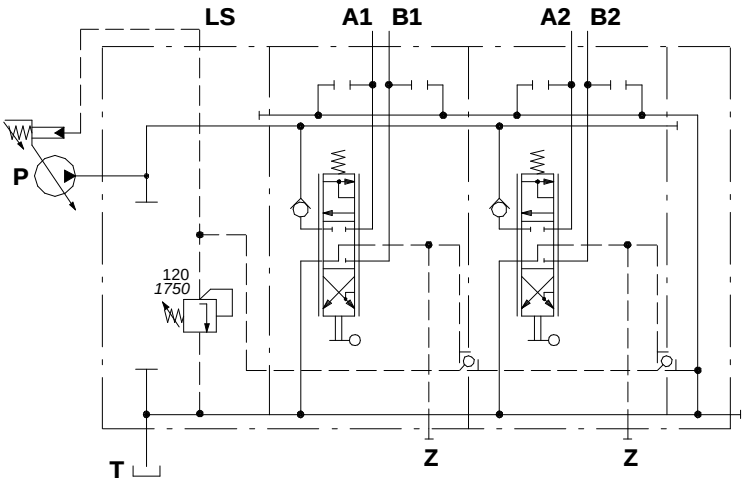
Description example:
DLS7/2/**AM**(G3-120)/6S8MCLFG/6S8MCLFG/RF

Variable displacement pump with load-sensing compensator (closed centre)



Description example:
DLS7/2/**AP**(SV)/6S8MCLFG/6S8MCLFG/RF

Configuration with L.S. relief valve is also available.

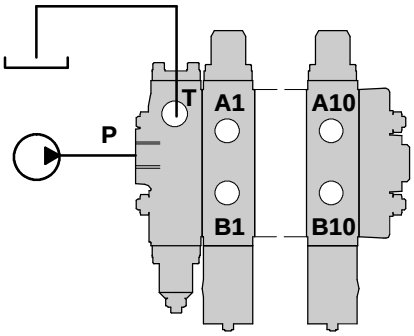


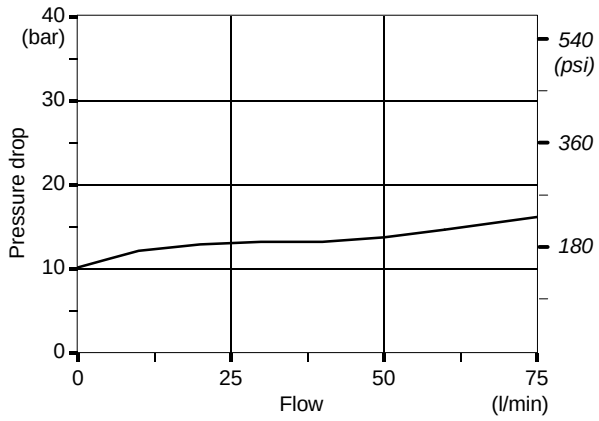
Description example:
DLS7/2/**AN**(G3-120)/6S8MCLFG/6S8MCLFG/RF

Performance data (pressure drop vs. flow)

Open centre

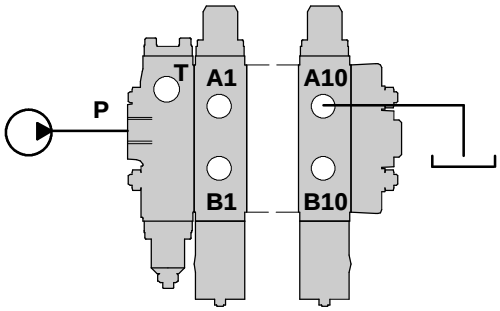
From inlet to outlet.

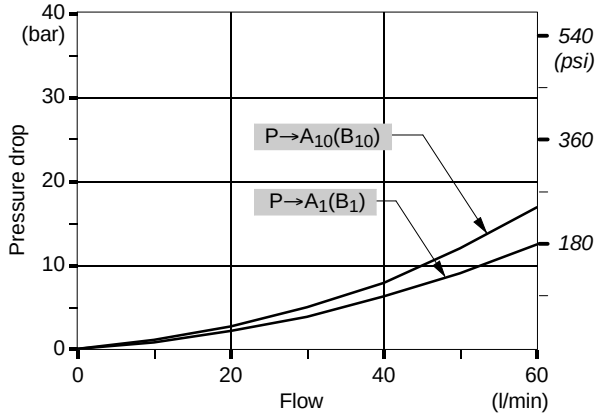




Inlet to work port

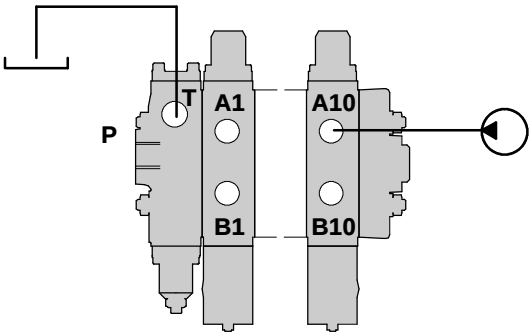
From inlet to **A** port (spool in position **1**) or **B** port (spool in position **2**).

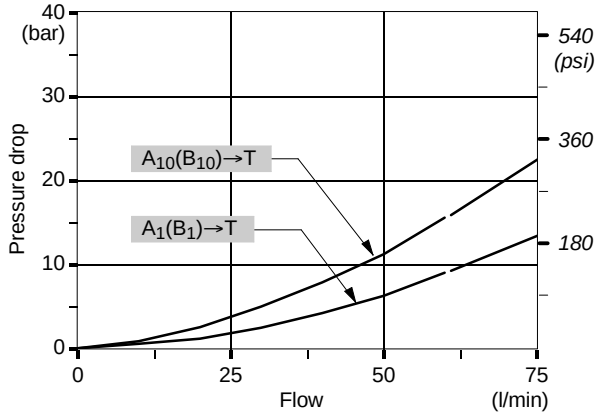




Work port to outlet

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





NOTE – *Measured with spool type 6S.*

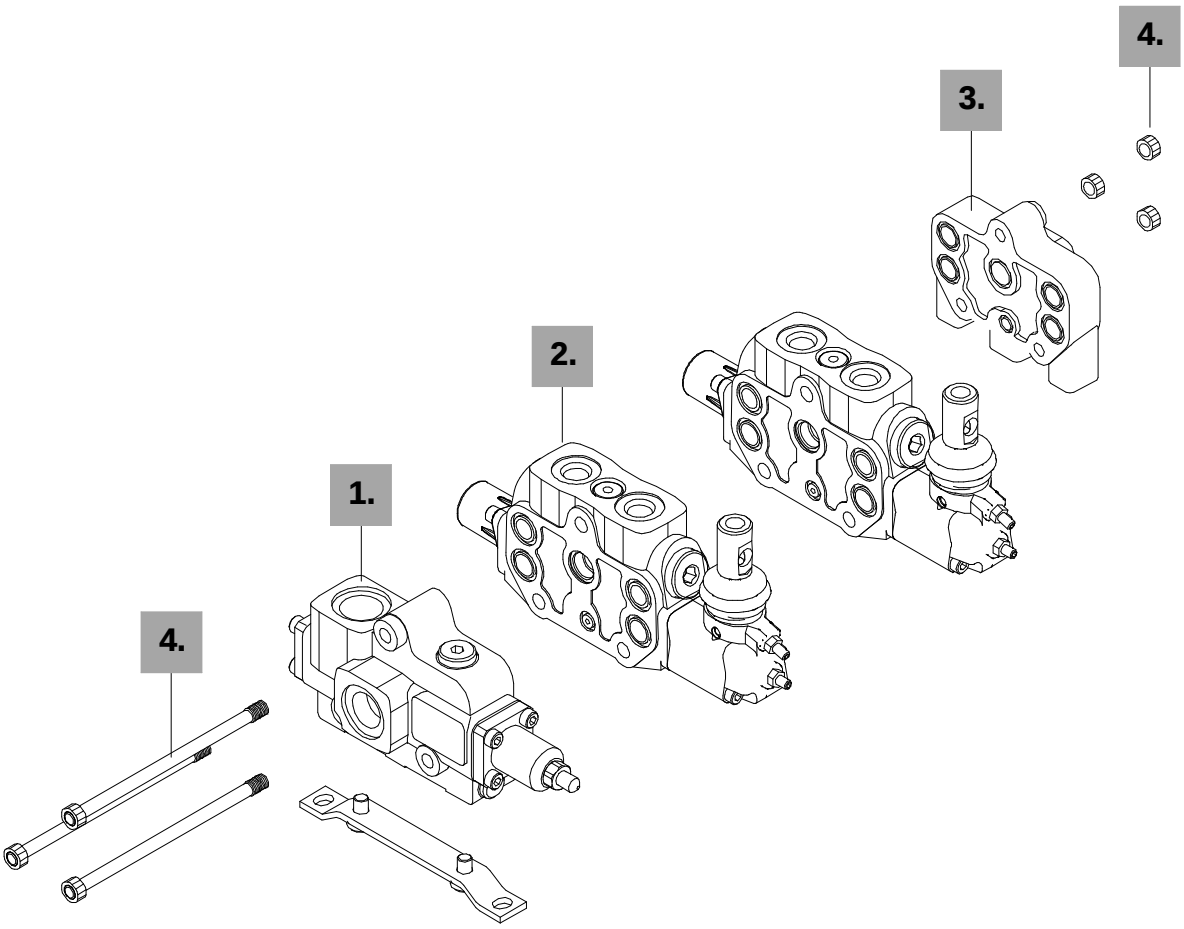
Ordering codes

Description example of standard configuration:

1ª section — following section

DLS7 / 2 / AM(G3-120) / 6V8MCLFG / 6V8MCLFG / RF

- Nr. of working section
- **1.** AM(G3-120)
- **2.** 6V8MCLFG
- **3.** RF



Ordering codes

1. Complete inlet / outlet cover * *page 72*

TYPE	CODE	DESCRIPTION
AM(G3-125)	61B331000	With flow control valve and L.S. overpressure relief valve
AP(SV)	61B333000	Without flow control valve and L.S. overpressure relief valve
AN(G3-125)	61B332000	Without flow control valve, with L.S. overpressure relief valve

2. Complete working section * *page 74*

TYPE	CODE	DESCRIPTION
6V8MCLFG	61B131201	Parallel circuit, double acting spool with spring return, lever control
6V8IMF3	61B131221	Parallel circuit, double acting spool, proportional hydraulic control with spool stroke adjusting

3. Return cover * *page 90*

TYPE	CODE	DESCRIPTION
RF	61B431000	Standard type
RH	61B433001	With L.S. signal carry-over

4. Assembling kit

CODE	DESCRIPTION
5TIR108126	tie rods with nuts for 1 sections
5TIR108166	tie rods with nuts for 2 sections
5TIR108204	tie rods with nuts for 3 sections
5TIR108242	tie rods with nuts for 4 sections
5TIR108280	tie rods with nuts for 5 sections
5TIR108318	tie rods with nuts for 6 sections
5TIR108356	tie rods with nuts for 7 sections
5TIR108394	tie rods with nuts for 8 sections
5TIR108432	tie rods with nuts for 9 sections
5TIR108470	tie rods with nuts for 10 sections
5TIR108508	tie rods with nuts for 11 sections
5TIR108546	tie rods with nuts for 12 sections

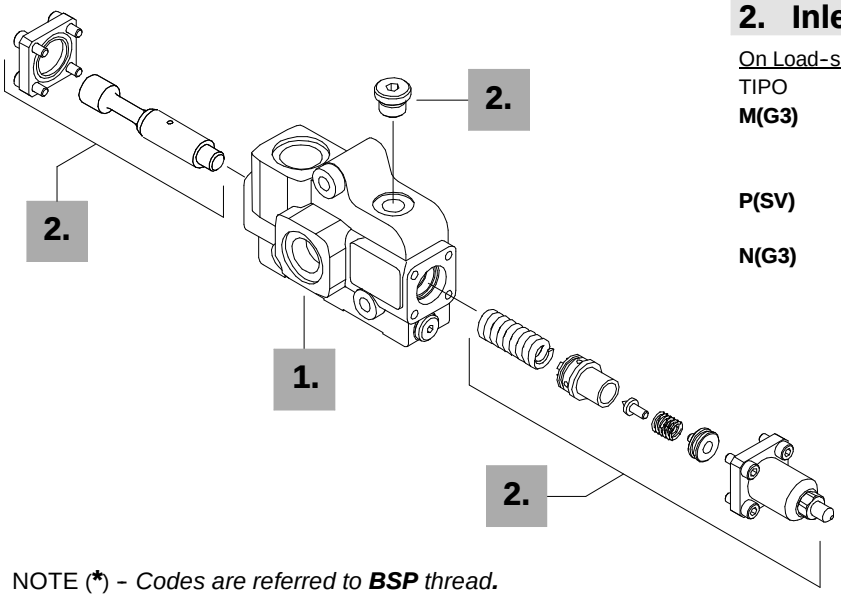
NOTE (*) - *Items are referred to **BSP** thread.*

Ordering codes

Description example:

FE DLS7 / A M (G3 - 120)

1. **2.** Pressure relief valve setting (bar)



1. Cover body kit *

CODE	DESCRIPTION
5FIA307320	A standard type

2. Inlet options *page 73*

On Load-sensing signal

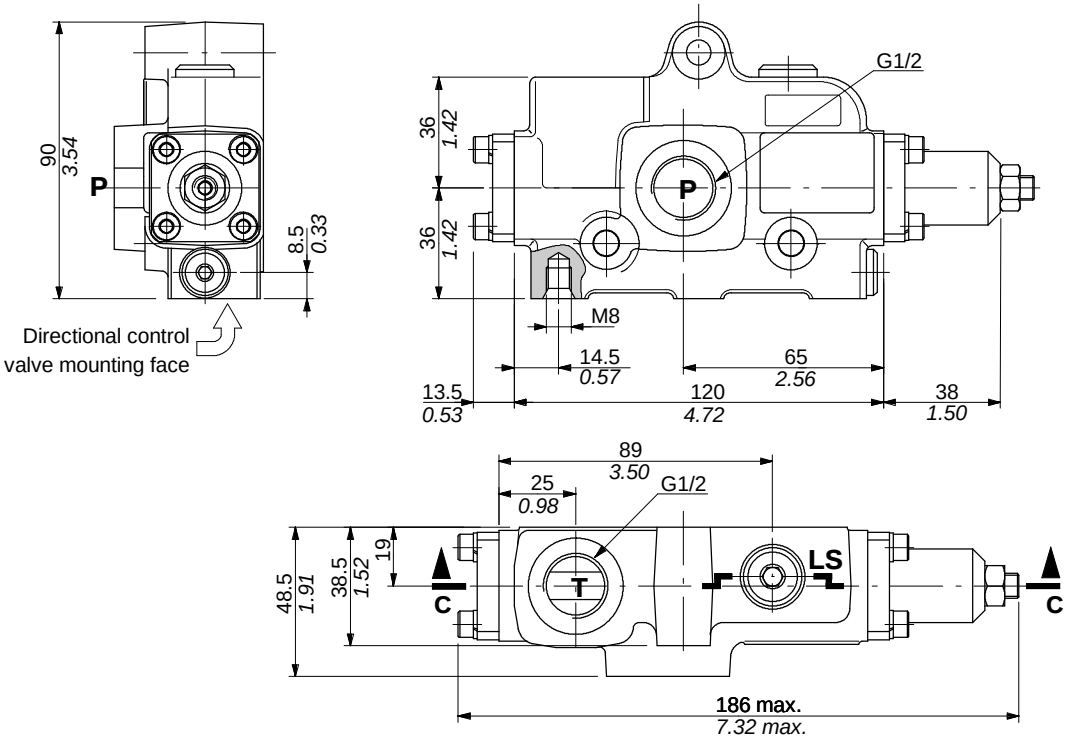
TIPO	CODICE	DESCRIZIONE
M(G3)	5KIT007300*****	Compensator kit with overpressure valve (from 80 to 315 bar / *1150 to 4600 psi*, standard setting 120 bar / *1750 psi*)
P(SV)	5KIT007320	Compensator and overpressure valve blanking kit
N(G3)	5KIT007310	Compensator blanking kit with overpressure valve (from 80 to 315 bar / *1150 to 4600 psi*, standard setting 120 bar / *1750 psi*)

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

Dimensional data and hydraulic circuit

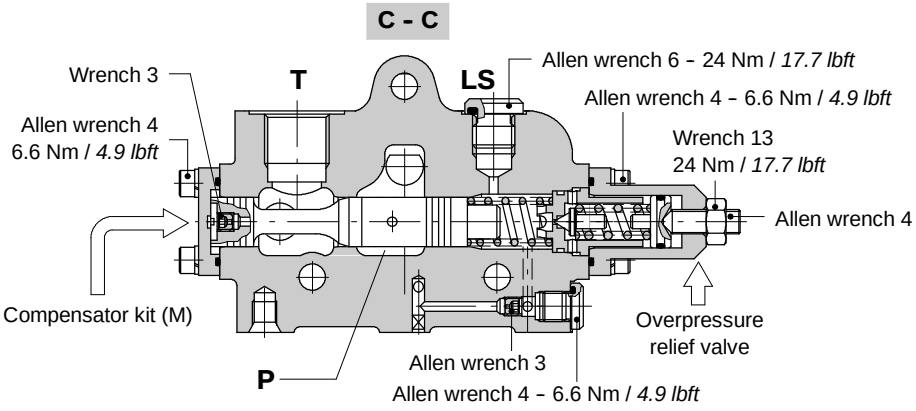
Dimensions

It's shown an AM inlet and outlet cover.

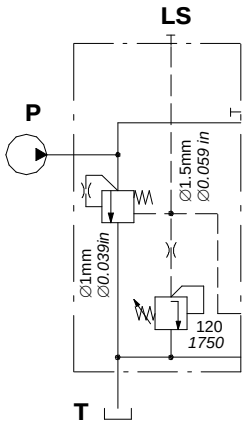


Type AM with flow control valve and L.S. overpressure relief valve

For systems with fixed displacement pumps (open centre version); see page 68.

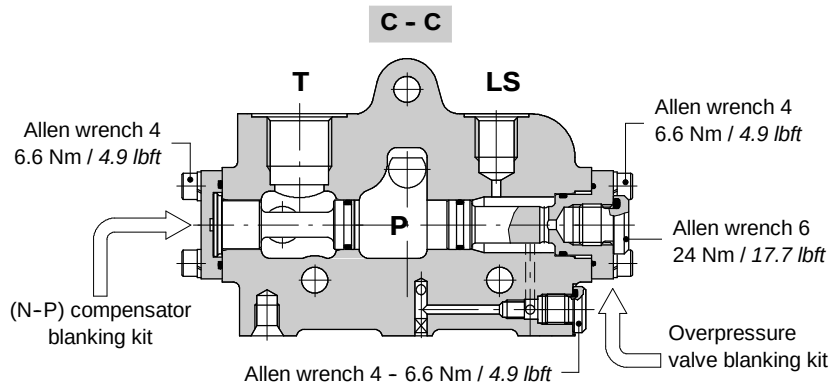


Hydraulic circuit

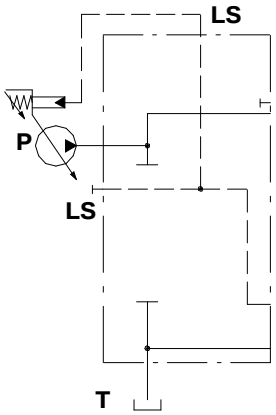


Type AP without flow control valve and L.S. overpressure relief valve

For systems with variable displacement pumps (closed centre version); see page 68.

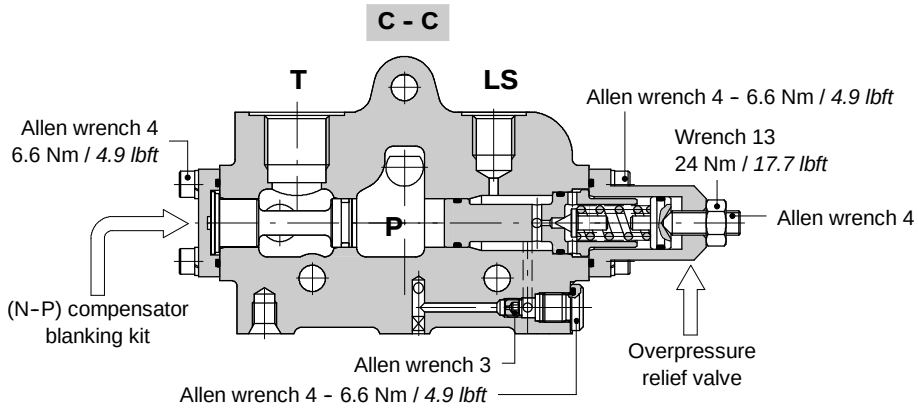


Hydraulic circuit

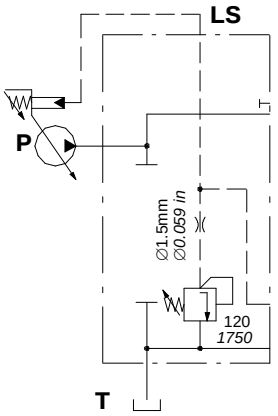


Type AN without flow control valve, with L.S. overpressure relief valve

For systems with variable displacement pumps (closed centre version); see page 68.



Hydraulic circuit



Ordering codes

Description example:

EL DLS7 / 6V 8MC LFG . P 3 (G3 - 125) *

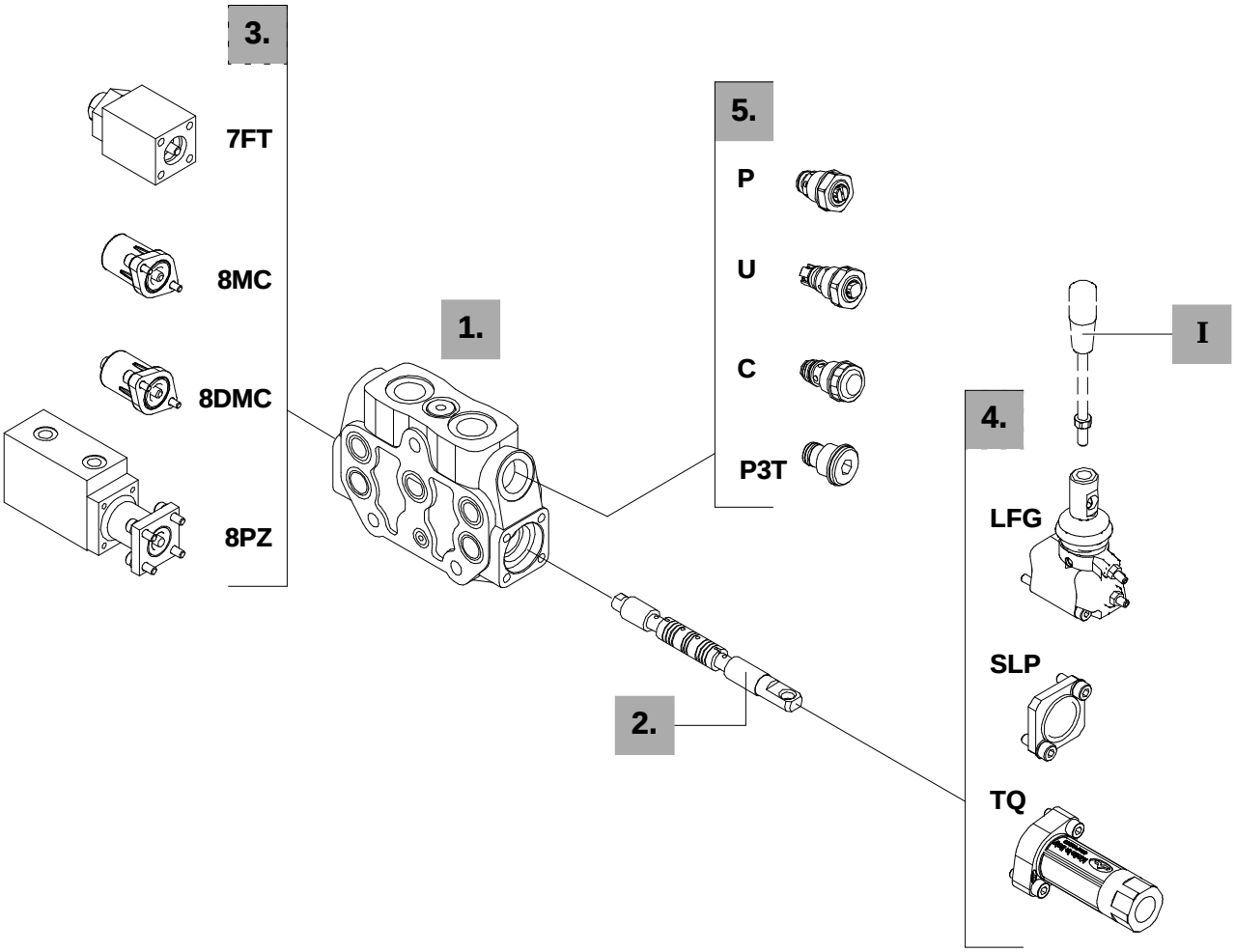
- **1** mounted on A port.
- **2** mounted on B port.
- **3** mounted on A and B ports.

1. **2.** **3.** **4.** **5.**

Port relief valve setting in bar

EL DLS7 / 6V 8IMF3

6.



Ordering codes

1. Working section kits * *page 76*

TYPE	CODE	DESCRIPTION
-	5EL5073000	Parallel circuit with port valves prearrangement

Include body, seals, rings and load check valve.

2. Spools *page 77*

TYPE	CODE						DESCRIPTION
	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min	60 l/min	Nominal flow with 14 bar / *203 psi* stand-by
	D	**V**	**T**	**Q**	**C**	**S**	
6	3CU3110010	3CU3110020	3CU3110030	3CU3110040	3CU3110050	3CU3110060	Double acting, 3 position, with A and B closed in neutral position
7	3CU3125010	3CU3125020	3CU3125030	3CU3125040	3CU3125050	3CU3125060	Double acting, 3 position, with A and B to tank in neutral position
Special spools for particular positioner kits							
5						3CU3142060	Double acting, 4 positions, flot in position 3 with spool in

3. "A" side spool positioners *page 81*

TYPE	CODE	DESCRIPTION
7FT	5V07405000	With friction
8MC	5V08205000	With spring return in neutral position
8DMC	5V08205200	As type 8 and pin with M8 female thread for dual control
8PZ	5V08105709	Proportional pneumatic kit
8IZ	5V08106800	Proportional hydraulic kit

4. "B" side options *page 83*

TYPE	CODE	DESCRIPTION
LFG	5LEV107800	Zama (zic alloy) lever with with adjustable flow limiters
SL	-	Without leve box
SLP70	5COP107000	Without lever box, with dust-proof plate
SLCZ	5COP205030	Without lever box, with endcap.
TQ	5TEL107110	Flexible cable connection; for CD cables
LCB	5CLO202000	Joystick lever for 2 sections operation

6. Complete controls * *page 86*

TIPO	CODICE	DESCRIZIONE
Proportional hydraulic control kit with flow limiter.		

I Optional handlevers

TYPE	CODE	DESCRIPTION
AL01/M10x150	170012015	For LFG lever box, L = 150mm / *5.91 in*
AL08/M12x200	170013120	For LCB joystick, L = 200 mm / *7.87 in*

5. Valvole sugli utilizzi *pag. 50*

TYPE	CODE	DESCRIPTION
Anti-shock valve		
P(G2)	5KIT206112	From 50 to 125 bar / *725 to 1800 psi* standard setting 63 bar / *900 psi*
P(G3)	5KIT206113	From 100 to 200 bar / *1450 to 2900 psi* standard setting 100 bar / *1450 psi*
P(G4)	5KIT206114	From 160 to 315 bar / *2300 to 4600 psi* standard setting 200 bar / *2900 psi*
Anti-shock and anti-cavitation valve		
U(G2)	5KIT306112	From 50 to 125 bar / *725 to 1800 psi* standard setting 63 bar / *900 psi*
U(G3)	5KIT306113	From 100 to 250 bar / *1450 to 3600 psi* standard setting 100 bar / *1800 psi*
U(G4)	5KIT306114	From 160 to 315 bar / *2300 to 4600 psi* standard setting 200 bar / *2900 psi*

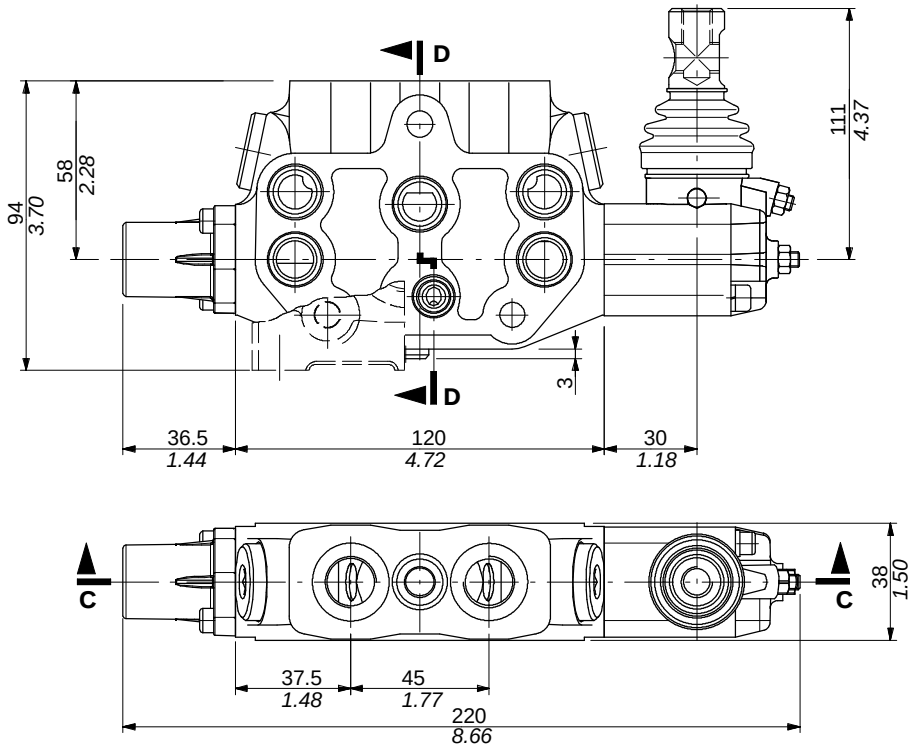
Standard setting is referred to 10 l/min flow.

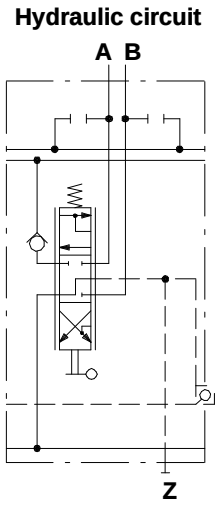
C	5KIT406100	Anti-cavitation
P3T	XTAP524280	A and B ports valve blanking plugs
Pilot check valve fitted with mounting block		
Direct type		
BP1	612002000*	Block with valve on port A
BP2	612002000*	Block with valve on port B
BP3	612002100*	Block with valves on ports A and B
BP	XCAR605110	Single valve
With Pre-opening		
BPS1	612003000*	Block with valve on port A
BPS2	612003000*	Block with valve on port B
BPS3	612003100*	Block with valves on ports A and B
BPS	XCAR605210	Single valve
BPT	XTAP627300	BP and BPS valves blanking plug

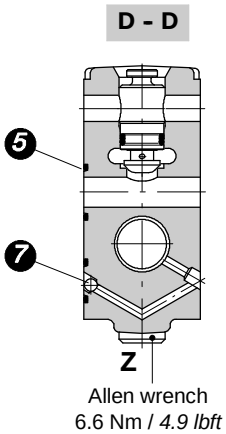
NOTE (*) - *Items are referred to **BSP** thread.*

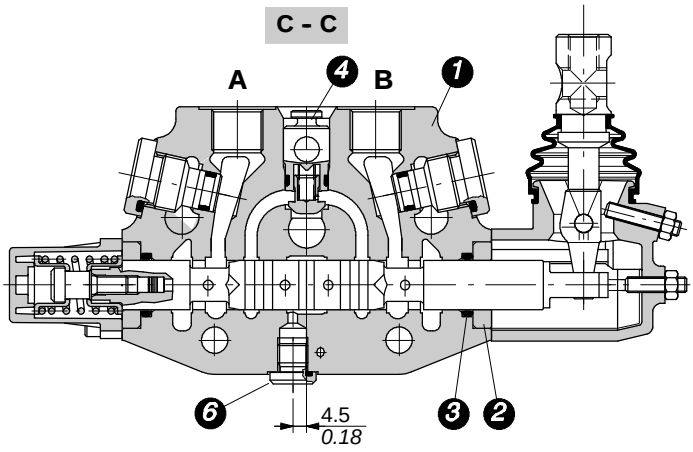
Dimensional data and hydraulic circuit

Working section kit is fitted with body (1), washer (2), spool O-ring seals (3), load chek valve (4), assembling O-ring seals (5), plug on L.S. signal (6) and ball on shuttle valve (7).
Working sections are supplied with port valve prearrangement.
Il disegno raffigura un elemento completo DLS7/P-7S8MCLFG.

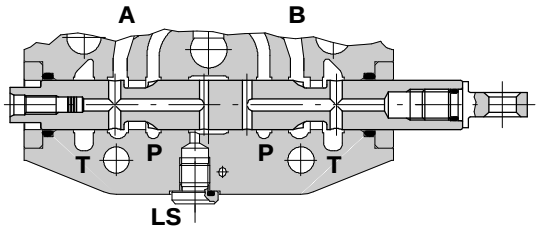






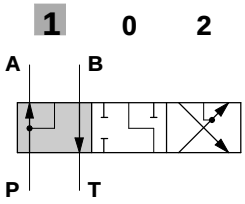


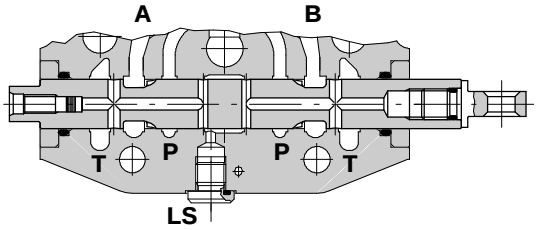
Type 6S



P→A B→T

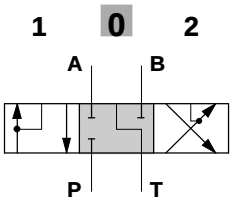
" stroke + 5.5 mm
+ 0.22 in

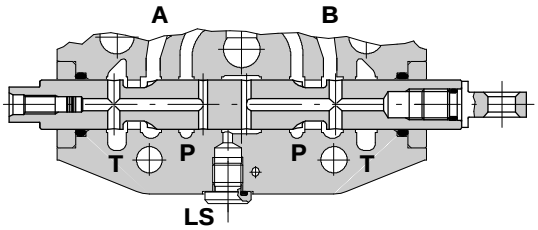




P–A–B closed

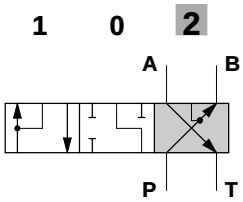
◁ ▷





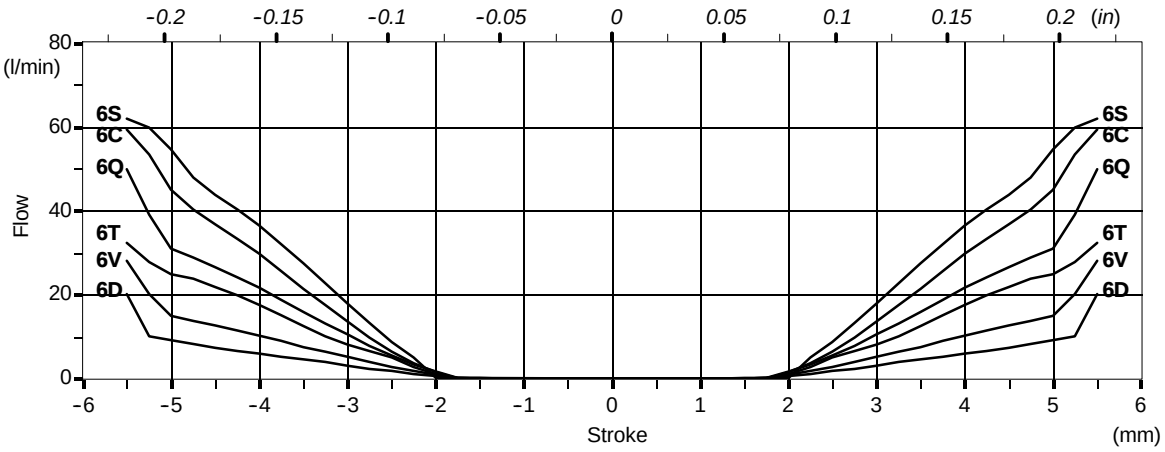
P→B A→T

A stroke – 5.5 mm
– 0.22 in



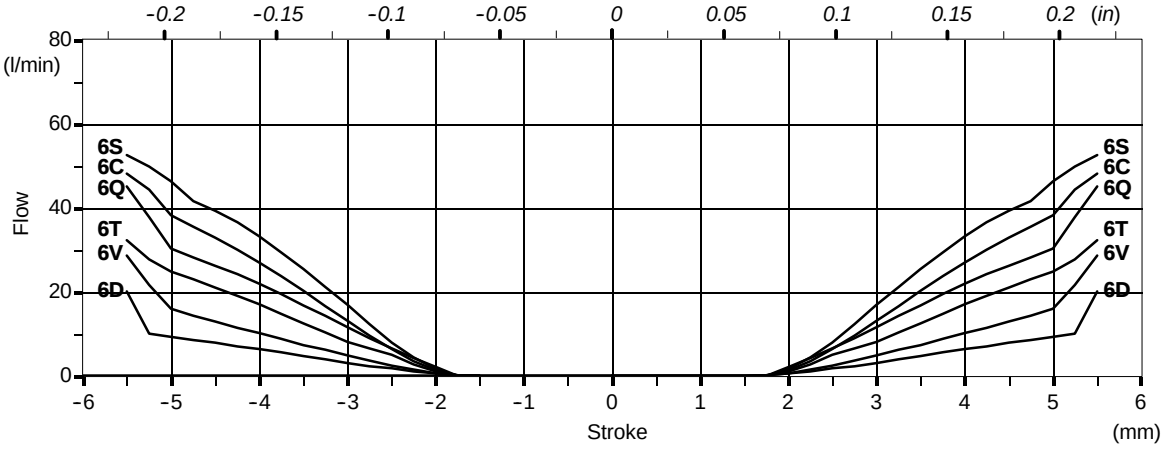
Spools

Spool metering with AM inlet cover and 14 bar / *203 psi* standard stand-by

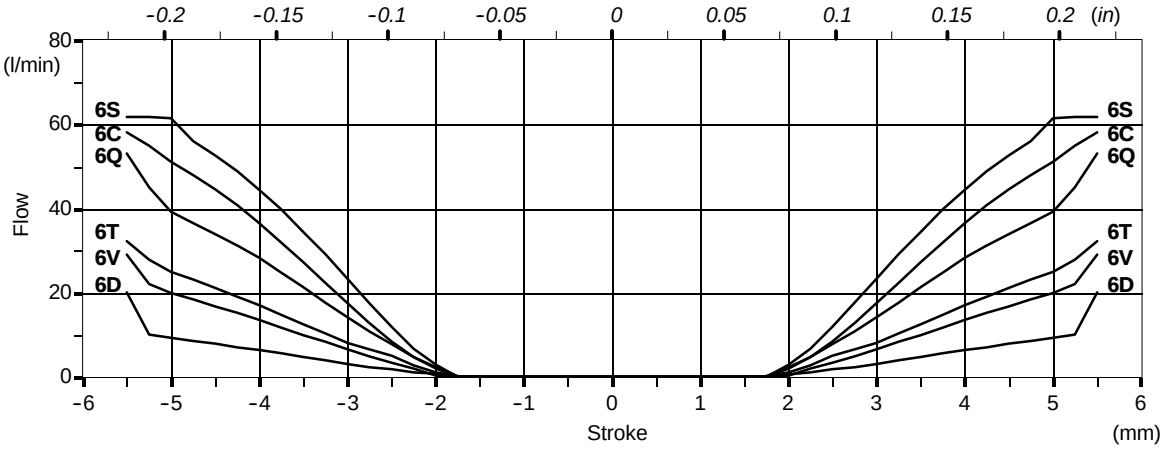


Spool metering with AN inlet cover

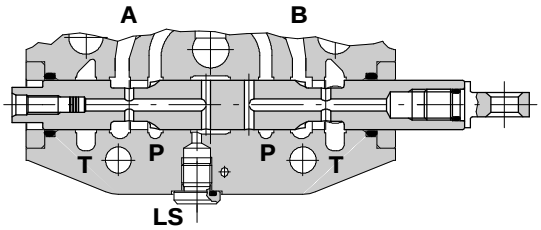
With 10 bar / *145 psi* L.S. pump stand-by



With 20 bar / *290 psi* L.S. pump stand-by

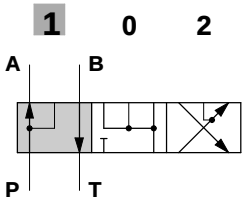


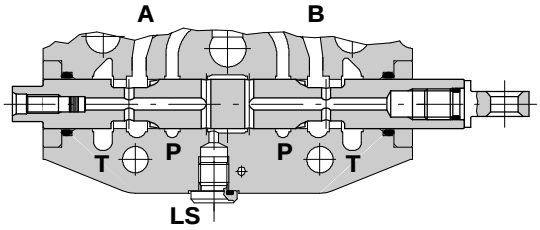
Type 7S



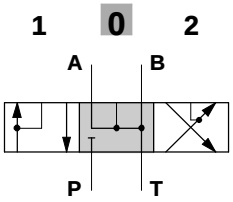
P→ A B → T

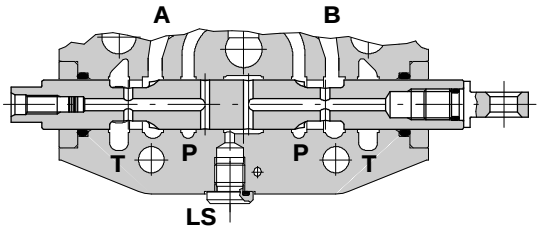
" stroke + 5.5 mm
+ 0.22 in





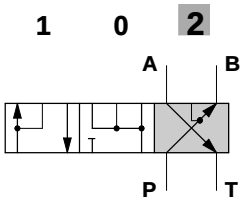
P closed, A and B to tank





P→ B A → T

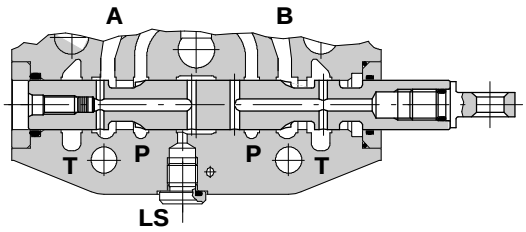
A stroke - 5.5 mm
- 0.22 in



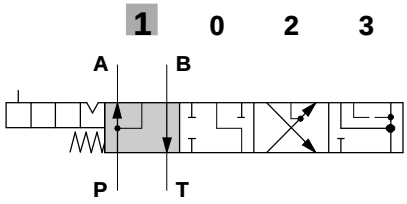
Spools

Type 5S

It needs special body with extra machining type **P-5** code **5EL5073200**. It must be coupled only with spool positioner **13B** code **5V13107000.**



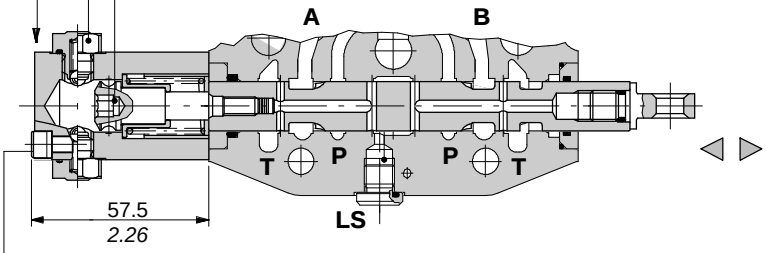
" stroke + 5.5 mm
+ 0.22 in



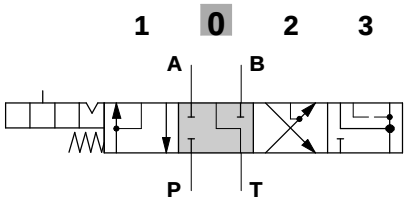
Spool positioner **13B**

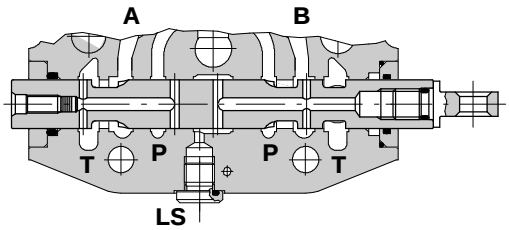
Wrench 15 - 24 Nm / *17.7 lbft*

Allen wrench 6 - 9.8 Nm / *7.2 lbft*

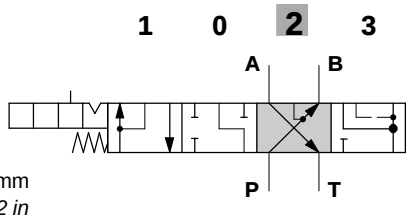


Allen wrench 4
6.6 Nm / *4.9 lbft*

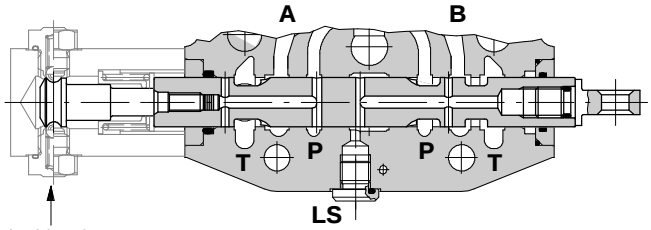




A stroke - 5.5 mm
- 0.22 in

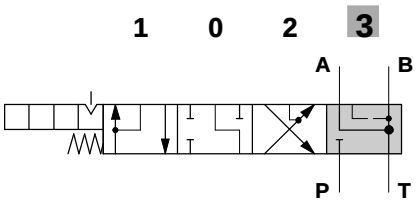


Positioner **13B** in detent

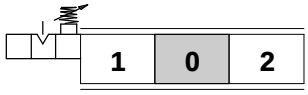


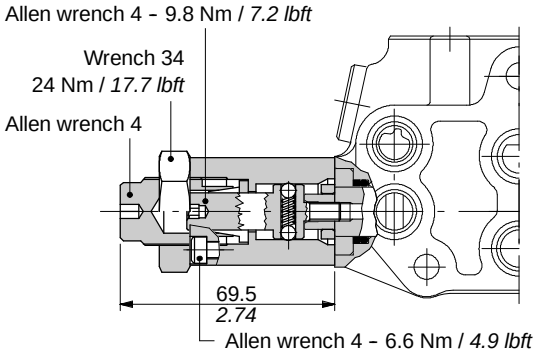
Unlocking force:
230 N / *51.7 lbf* ±10%

A A stroke - 10 mm
- 0.39 in



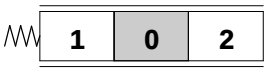
With friction type 7FT

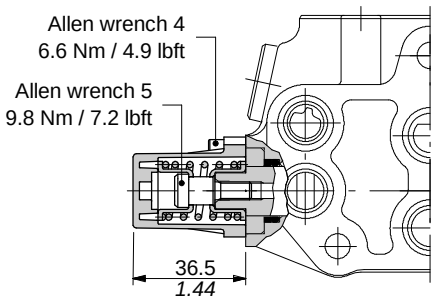




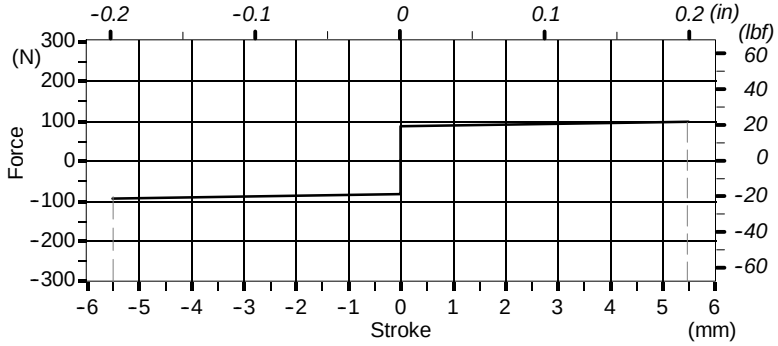
With spring return

8MC kit



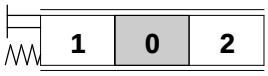


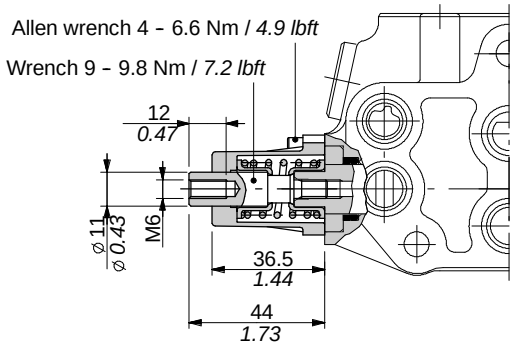
Force-stroke diagram



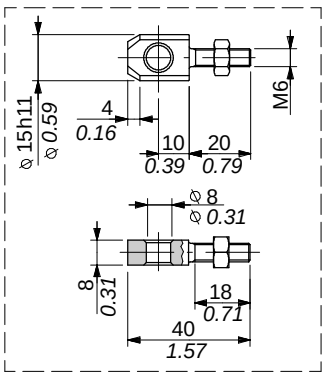
8DMC kit

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



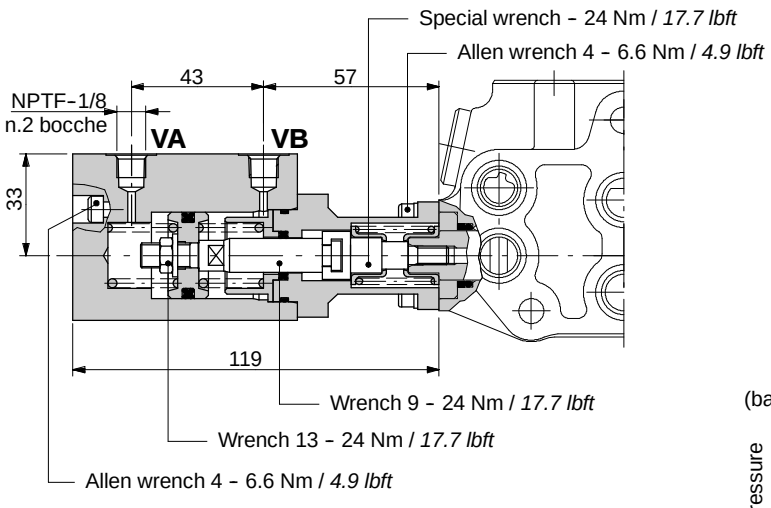


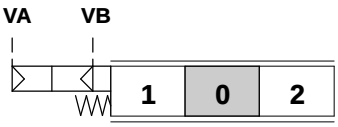
Spool end joint dimension



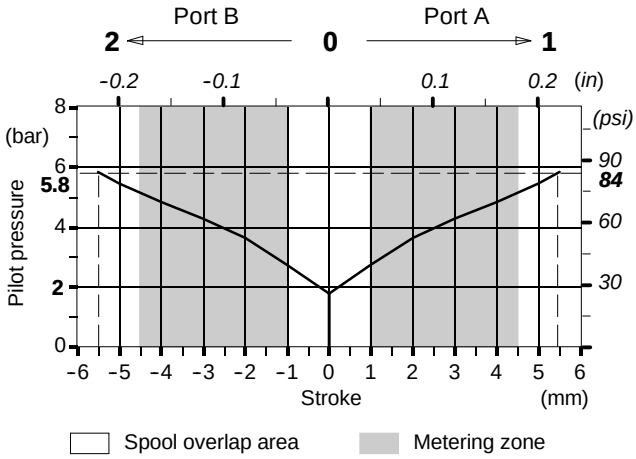
Kit comandi lato “A”

8PZ proportional pneumatic control





Pilot pressure – stroke diagram

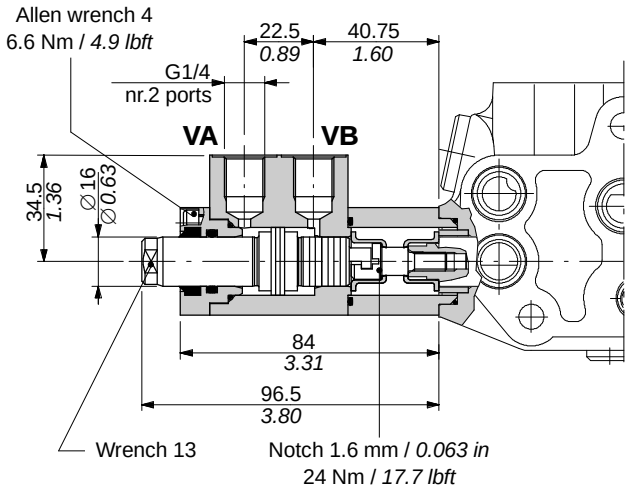


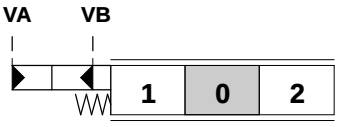
Operating features

Max. pilot pressure . . . . . : 10 bar / *145 psi*

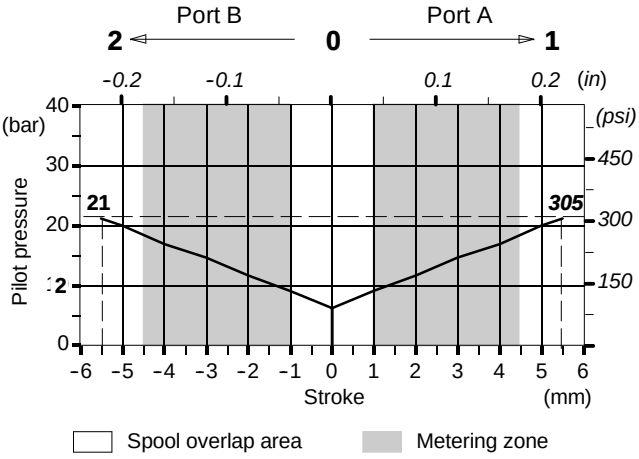
8IZ proportional hydraulic control

It can be used with body kit without seals and ring on spool (standard body) on side “A” code: **5EL507300B**.





Pilot pressure – stroke diagram



Operating features

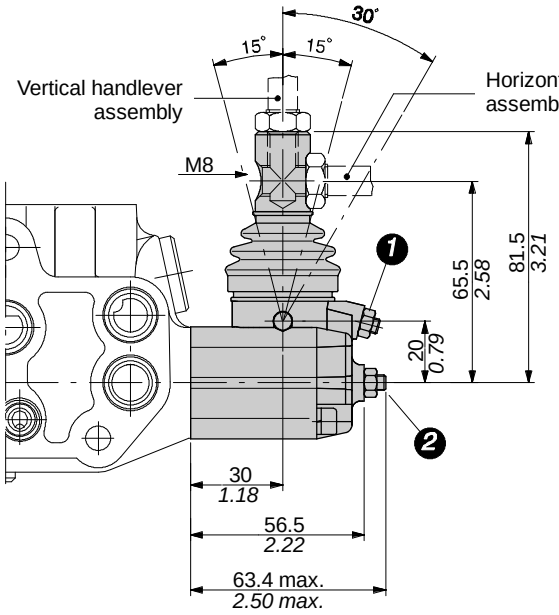
Max. pilot pressure . . . . . : 50 bar / *725 psi*

Lever controls

LFG type

Cast iron lever pivot box with protective rubber bellow; it’s complete of two screws for spool stroke adjusting in both directions. It can be rotated 180° (configuration **LFG180**).

1	0	2

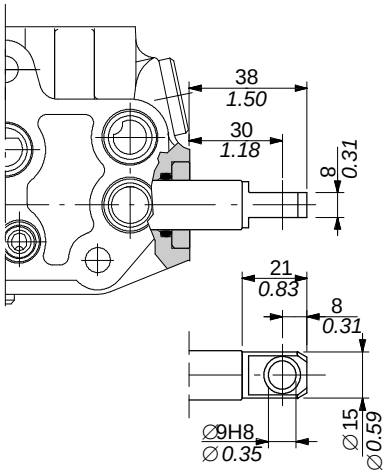


1. Stroke end screw for position 2: allen wrench 2.5
   Fixing nut: wrench 8 - 6.6 Nm / *4.9 lbft*
2. Stroke end screw for position 1: allen wrench 2.5
   Fixing nut: wrench 8 - 6.6 Nm / *4.9 lbft*

Controls prearrangement

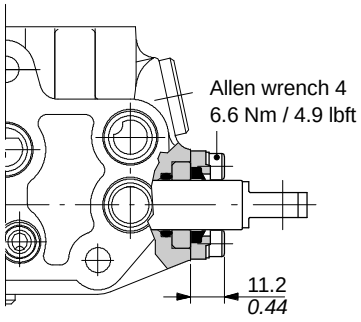
SL type

1	0	2



SLP70 type

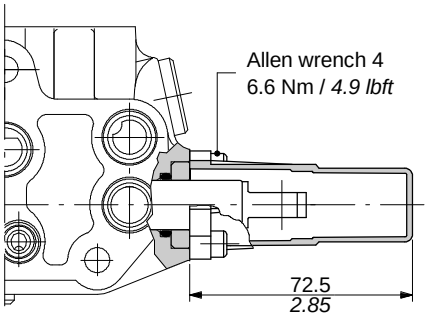
1	0	2



Mechanical control with dust-proof plate kit.

SLCZ type

1	0	2



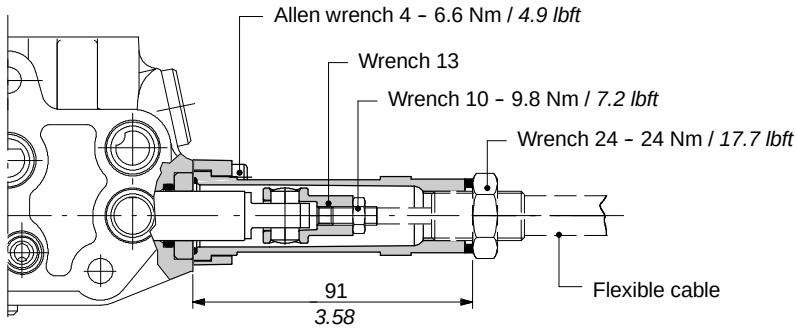
Protection cap usable with pneumatic 8P, electro-pneumatic 8EP3, and electro-hydraulic 8ED3 spool positioners.

"B" side options

TQ cable remote control kit

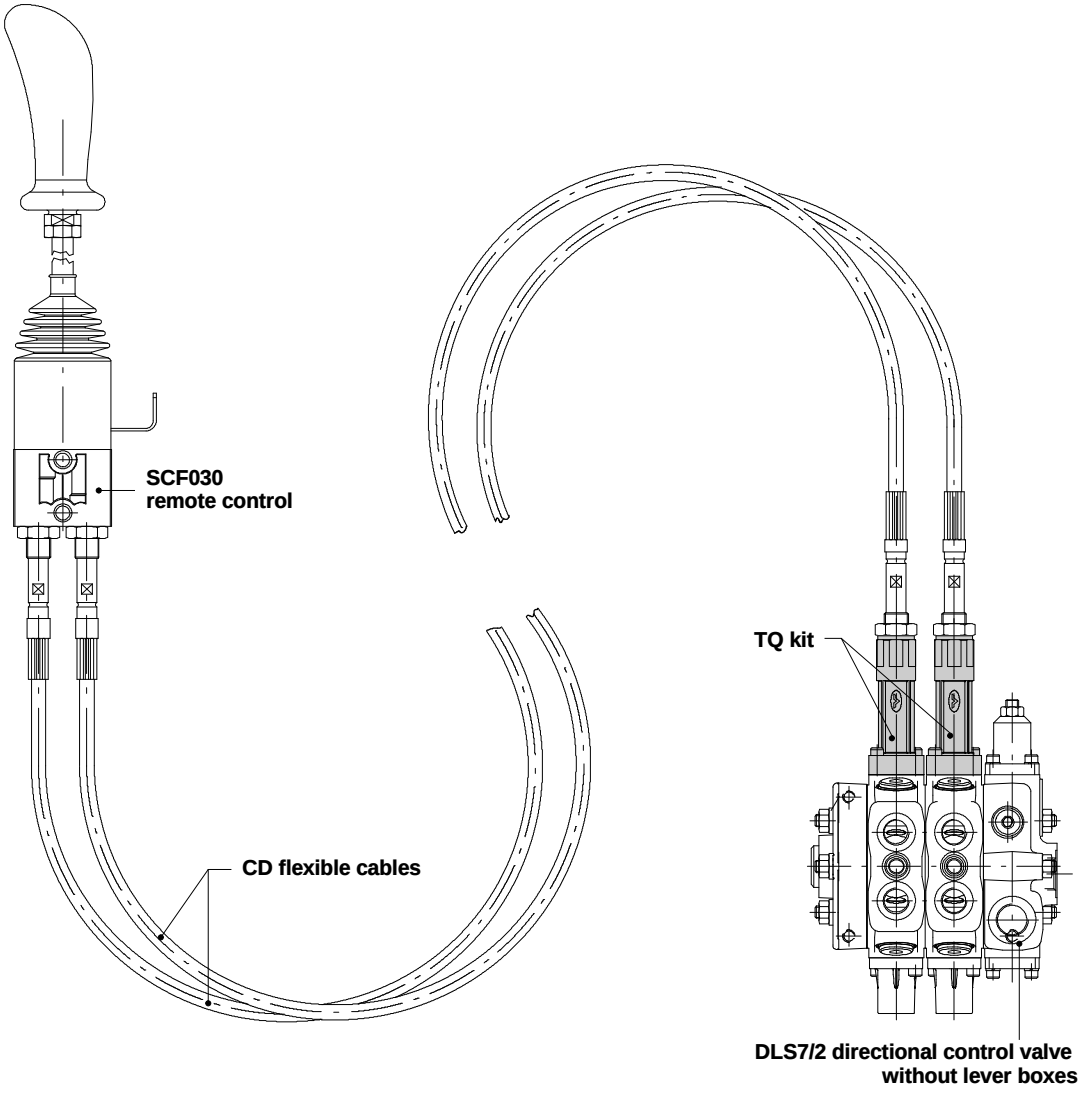
Waterproof cap prearranged for remote control with flexible cable.

1	0	2



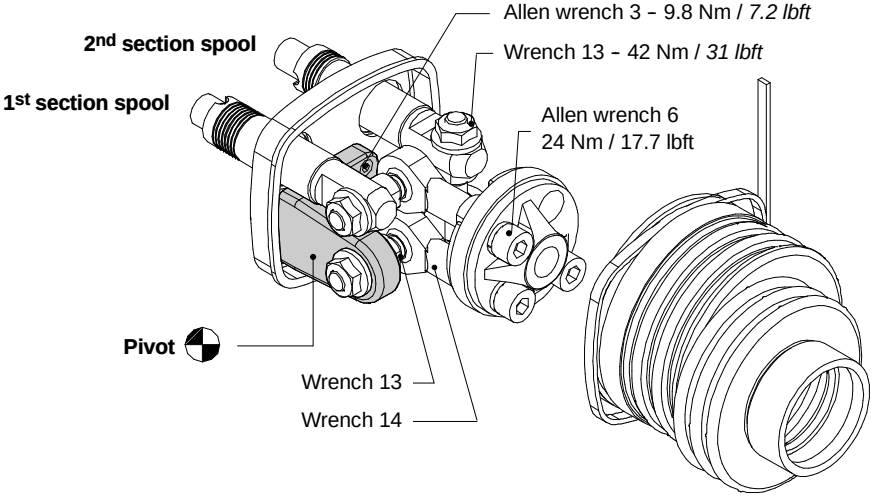
NOTE – *For further information about remote cable control, require related documentation.*

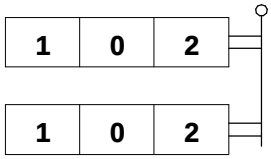
Example of cable control



LCB joystick

Execution **LCB1**

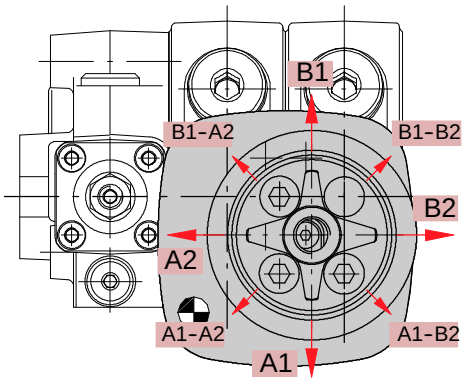




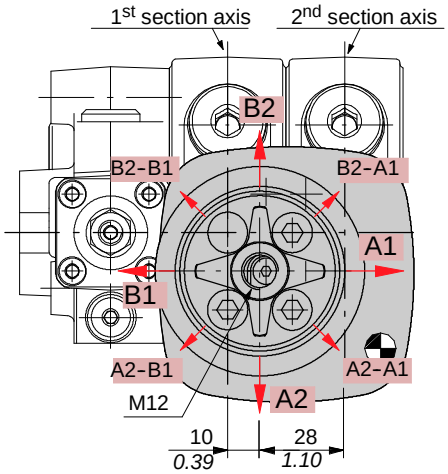
NOTE - *The handlever must be ordered separately (see page 75).*

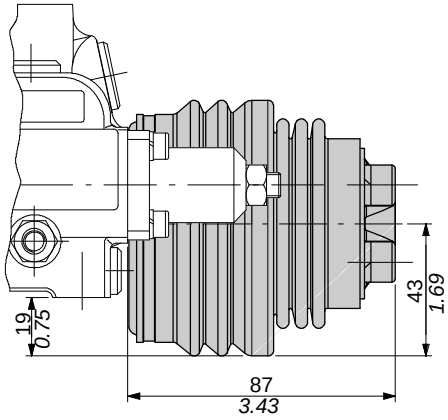
Dimensions and movement scheme

Execution **LCB1**
pivot placed down on the left

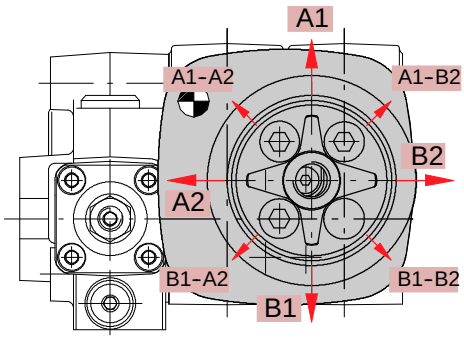


Execution **LCB2**
pivot placed down on the right

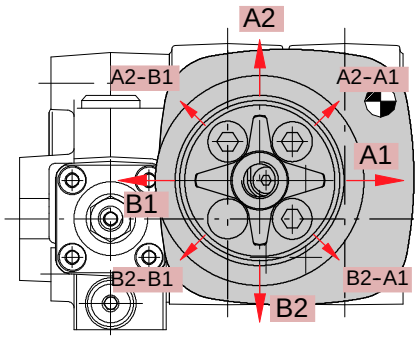


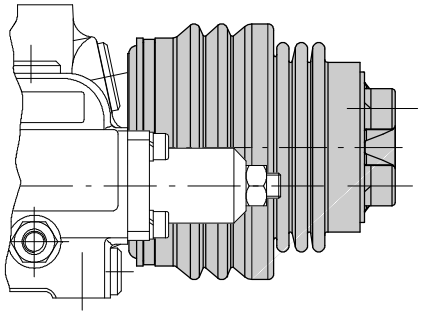


Execution **LCB3**
pivot placed above on the left



Execution **LCB4**
pivot placed above on the right





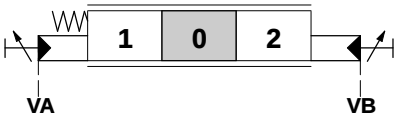
NOTE - *Due to limited space in case of LCB3 or LCB4 configuration the assembly of ports service relief valves is not possible.*

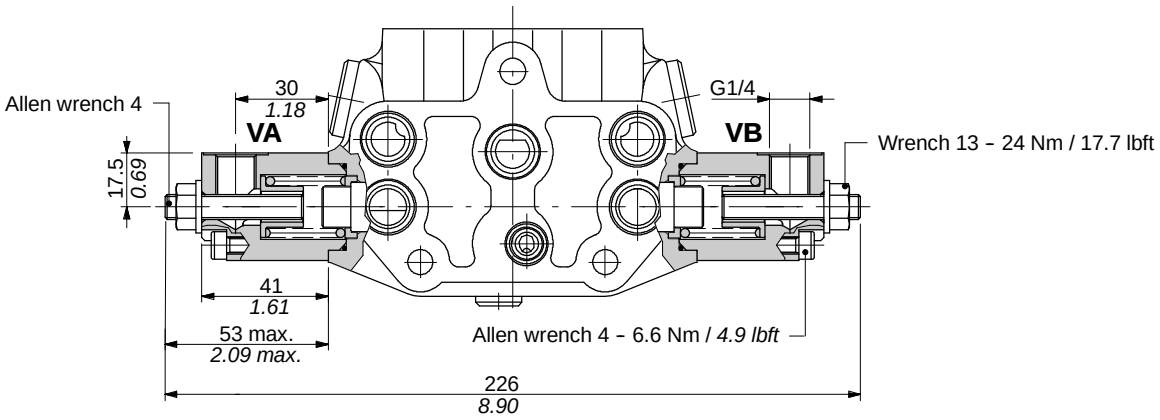
Complete controls

8IMF3 proportional hydraulic kit

With screws for spool stroke adjusting in both directions, code **5IDR207000**.

It can be used with special spools and body kit without seals and ring on spool (standard body) code: **5EL507300A**.



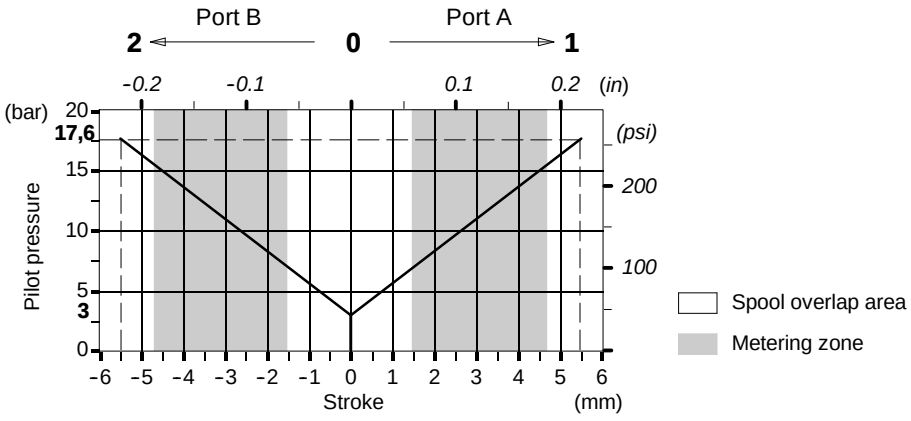


Available spools

TYPE	CODE						DESCRIPTION
	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min	60 l/min	Nominal flow with 14 bar / *203 psi* stand-by
	D	**V**	**T**	**Q**	**C**	**S**	
6	3CU3310010	3CU3310020	3CU3310030	3CU3310040	3CU3310050	3CU3110060	Double acting, 3 position, with A and B closed in neutral position
7	3CU3325010	3CU3325020	3CU3325030	3CU3325040	3CU3325050	3CU3325060	Double acting, 3 position, with A and B to tank in neutral position

Pilot pressure - stroke diagram

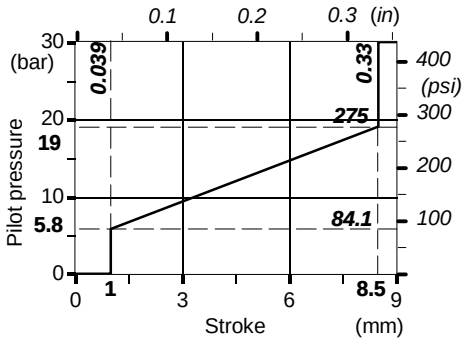
Max. pilot pressure 50 bar - *725 psi*.



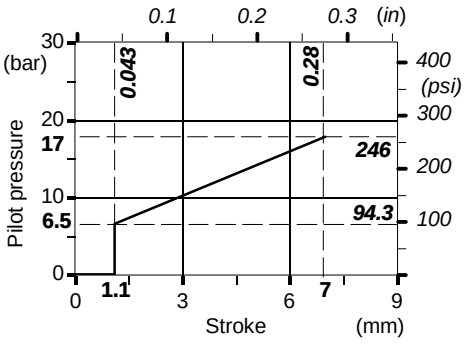
8IMF3 proportional hydraulic kit

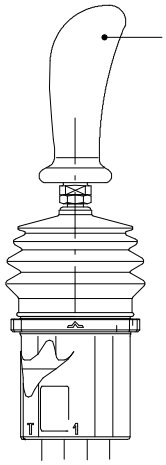
Connection example

8IMF3 control kit
curve 033 with step



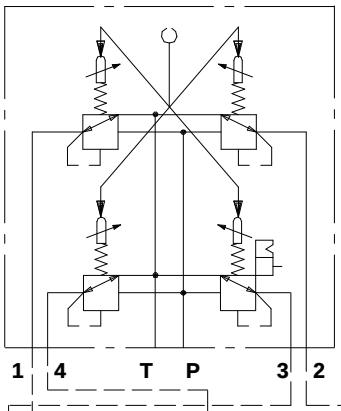
8IMF3 control kit
curve 178 without step

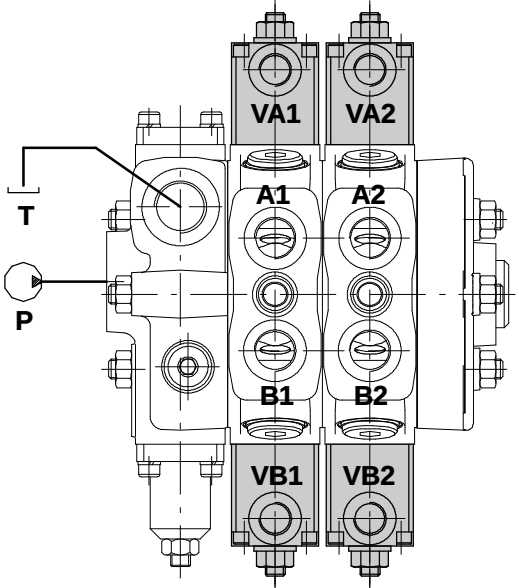


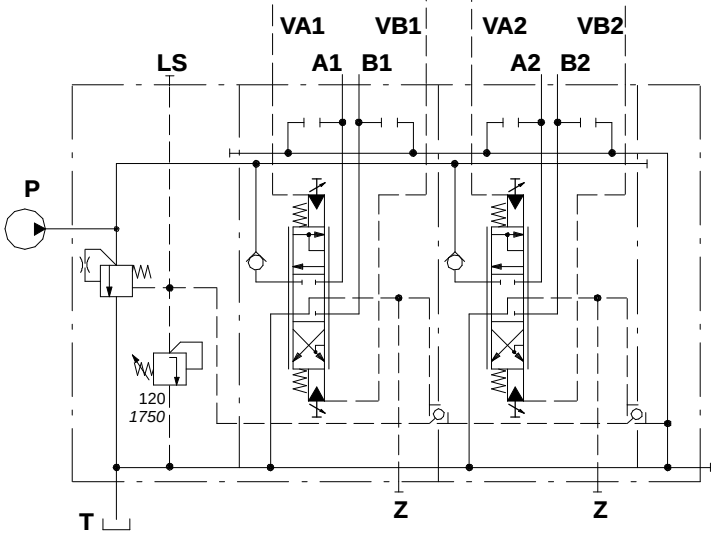


Hydraulic pilot control valve series SV01 with curve 033 or 178

Hydraulic circuit







Description example:
DLS7/2/AM(G3-120)/6S**8IMF3**/6S**8IMF3**/RF
SV01-B/01W-025MA-025MA-025MA-025MA

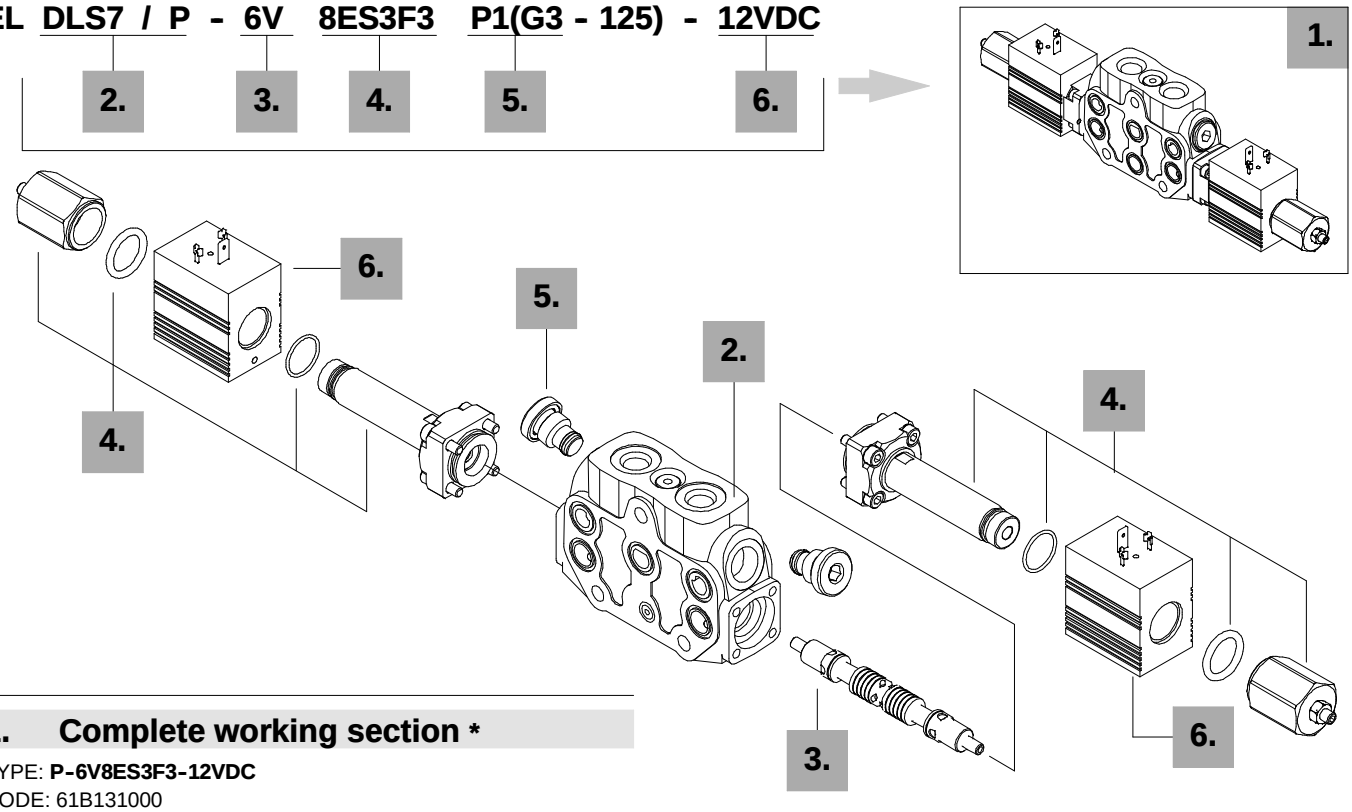
Complete controls

8ESF solenoid control

Solenoid direct control with spring return to neutral position; it needs special spools and standard working section body (body kit without seals on spool); fitted with screws for spool stroke adjusting in booth directions.

Description example:

EL DLS7 / P - 6V 8ES3F3 P1(G3 - 125) - 12VDC



1. Complete working section *

TYPE: **P-6V8ES3F3-12VDC**
CODE: 61B131000
DESCRIPTION: Parallel circuit, double acting spool, double acting ON/OFF solenoid control

2. Working section kit *

TYPE	CODE	DESCRIPTION
P/IM-ES	5EL507300A	Parallel circuit

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

3. Spools

TYPE	CODICE					DESCRIPTION
	10 l/min	20 l/min	30 l/min	40 l/min	60 l/min	Nominal flow with 15 bar / *218 psi* stand-by
	D	**V**	**T**	**Q**	**S**	
6	3CU3110013	3CU3110022	3CU3110031	3CU3110042	3CU3110062	Double acting, 3 pos., with A and B closed in neutral pos.
7	3CU3125014	3CU3125024	3CU3125032	3CU3125041	3CU3125061	Double acting, 3 pos., with A and B to tank in neutral pos.

4. Control kit

TYPE	CODE	DESCRIPTION
8ES3F3	5V08021	Double acting with spring return to neutral position

5. Port valves

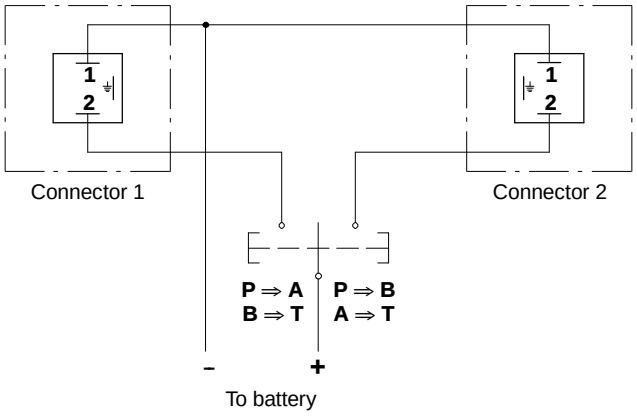
For codes please refer to page 75.

6. Coils

TYPE	CODE	DESCRIPTION
10.5VDC	4SOL512011	Nominal voltage 10.5VDC
12VDC	4SOL512012	Nominal voltage 12VDC
24VDC	4SOL512024	Nominal voltage 24VDC

8ESF solenoid control

Electric wiring example



8ES3F3 kit
double acting

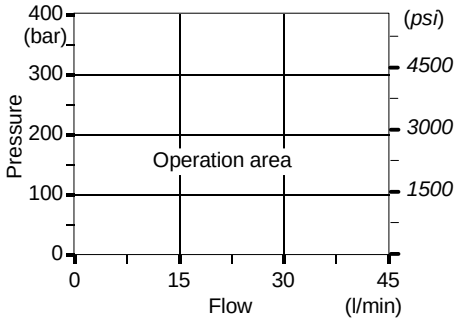
Operating features

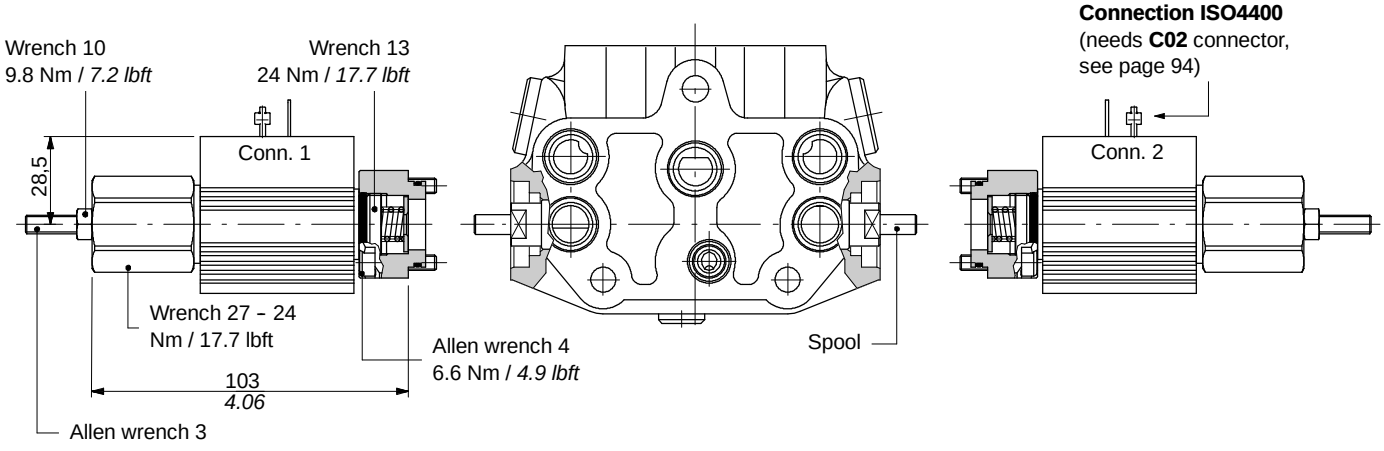
Internal leakage A(B)→T
(Δp = 100 bar – *1450 psi* / T = 40°C) : 10 cm³/min – *0.61 in³/min*

Coil operating features

Nominal voltage tolerance . . . . . : ±10%
Power rating . . . . . : 36 W
Coil insulance . . . . . : class H
Duty cycle . . . . . : 100%

Operating condition diagram

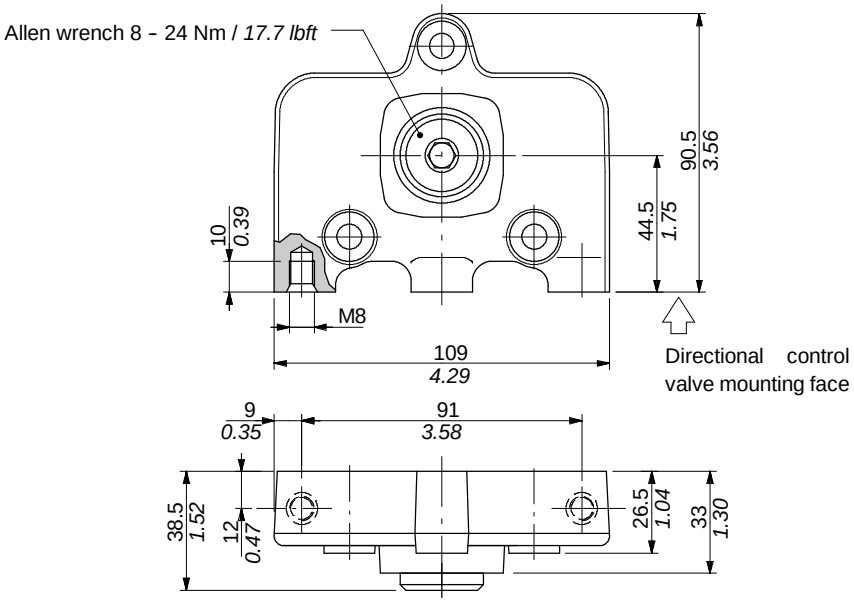




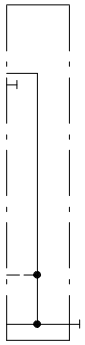
Connection ISO4400
(needs **C02** connector,
see page 94)

Dimensional data and hydraulic circuit

RF standard

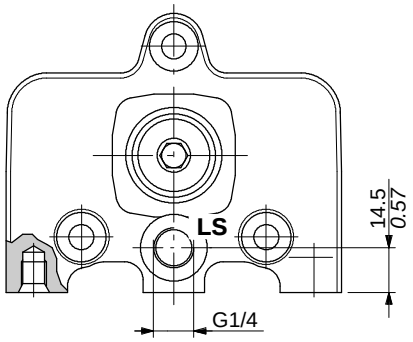


Hydraulic circuit

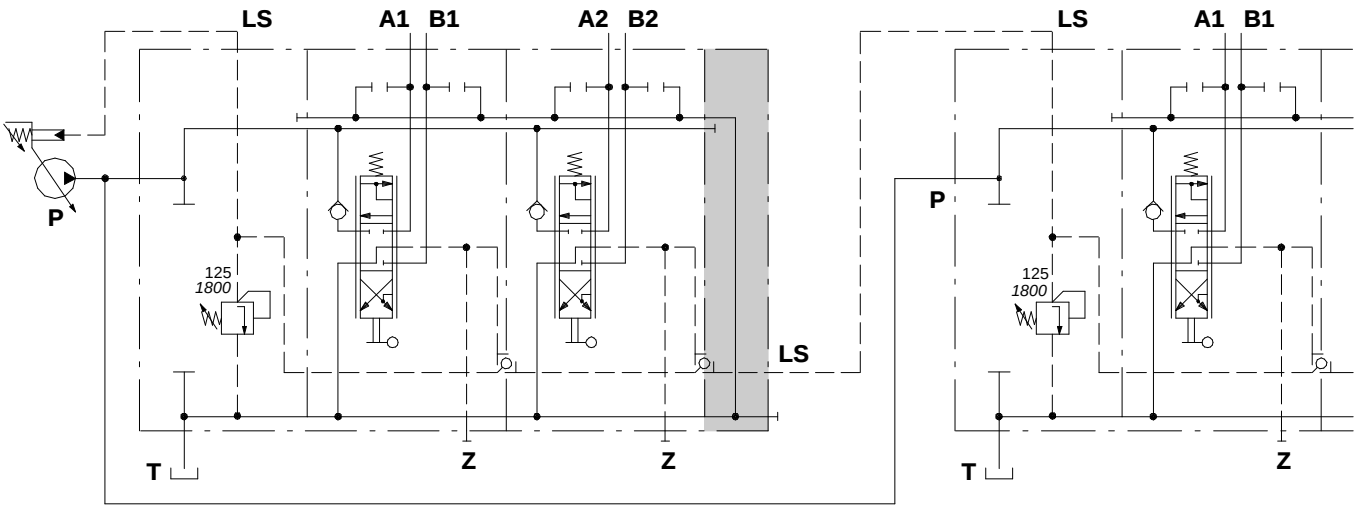


Type RH

With L.S. signal carry-over: dimensions are the same of RF return cover.



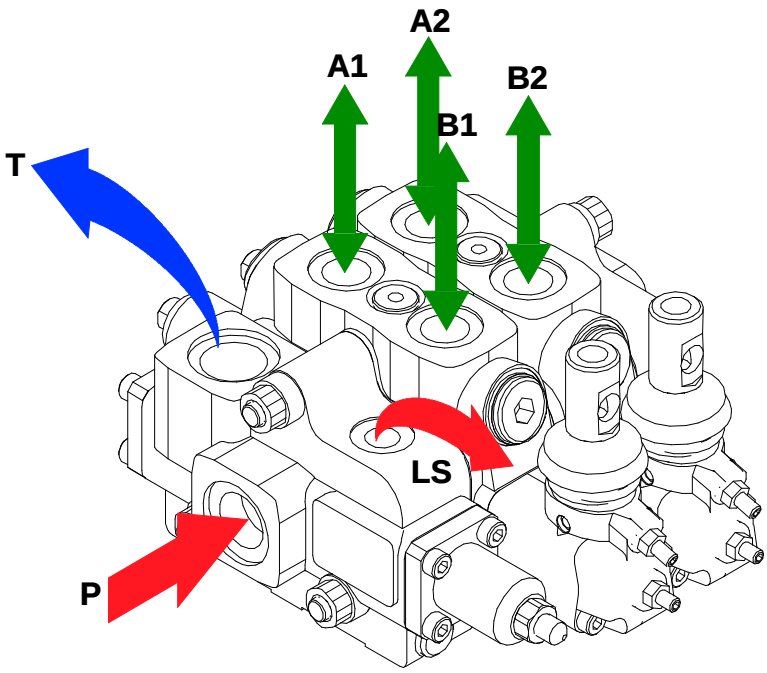
Hydraulic circuit example



Installation and maintenance

The DLS7 valve is assembled and tested as per the technical specification of this catalogue.
Before the final installation on your equipment, follow the below recommendations:

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



Configuration with AN inlet cover

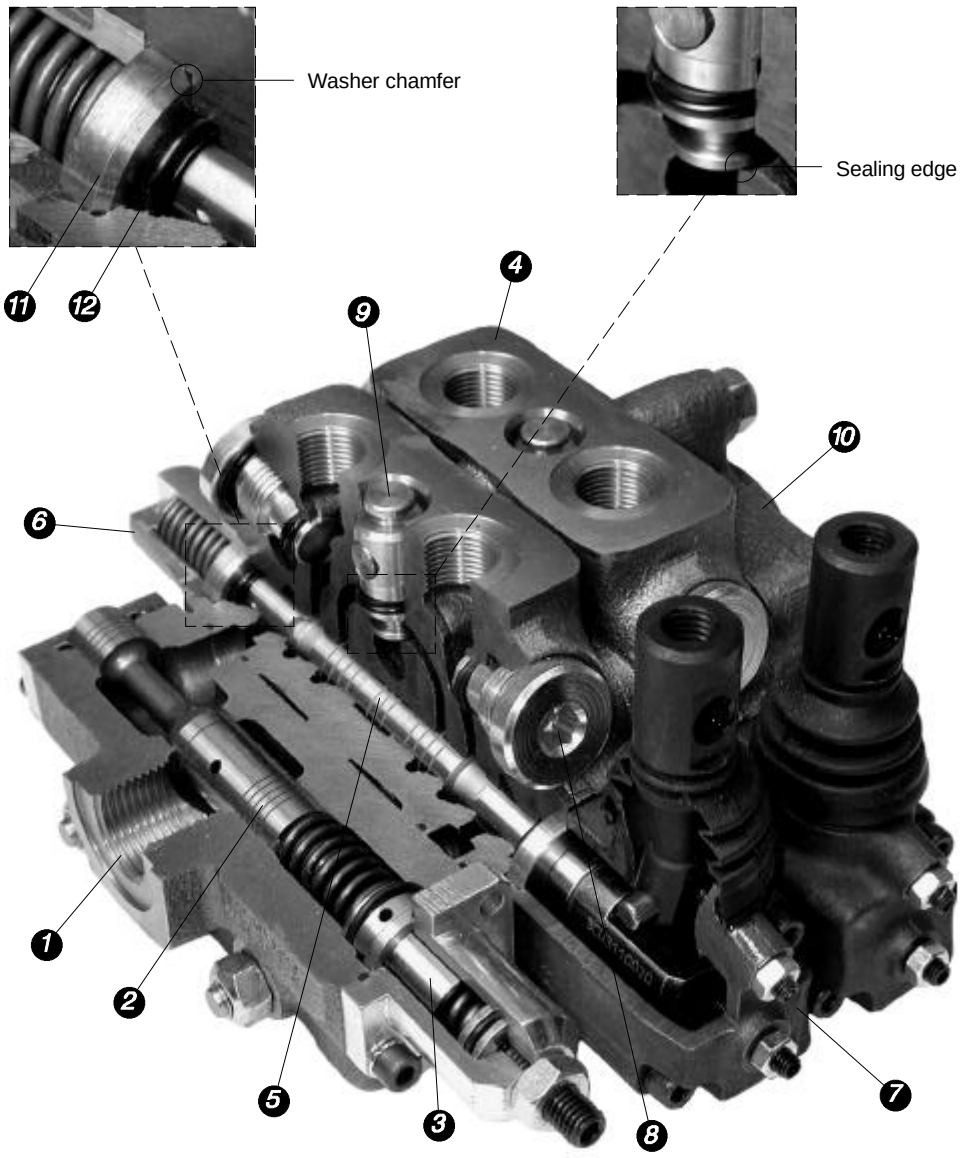
Fitting tightening torque - Nm / *lbft*

THREAD TYPE	**ports P and T**	**ports A and B**	**LS signal**
BSP (ISO 228/1)	G 1/2	G 3/8	G 1/4
With O-Ring sea	50 / *36.9*	35 / *25.8*	20 / *14.8*
With copper washer	60 / *44.3*	40 / *29.5*	25 / *18.4*
With steel and rubber washer	60 / *44.3*	30 / *22.1*	16 / *0.63*
UN-UNF (ISO 11926-1)	3/4-16 (SAE 8)	9/16-18 (SAE 6)	9/16-18 (SAE 6)
With O-Ring sea	50 / *36.9*	30 / *22.1*	50 / *36.9*
METRICA (ISO 262)	M22x1.5	M18x1.5	M14x1.5
With O-Ring sea	50 / *36.9*	35 / *25.8*	35 / *25.8*
With copper washer	40 / *29.5*	40 / *29.5*	
With steel and rubber washer	60 / *44.3*	40 / *29.5*	

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

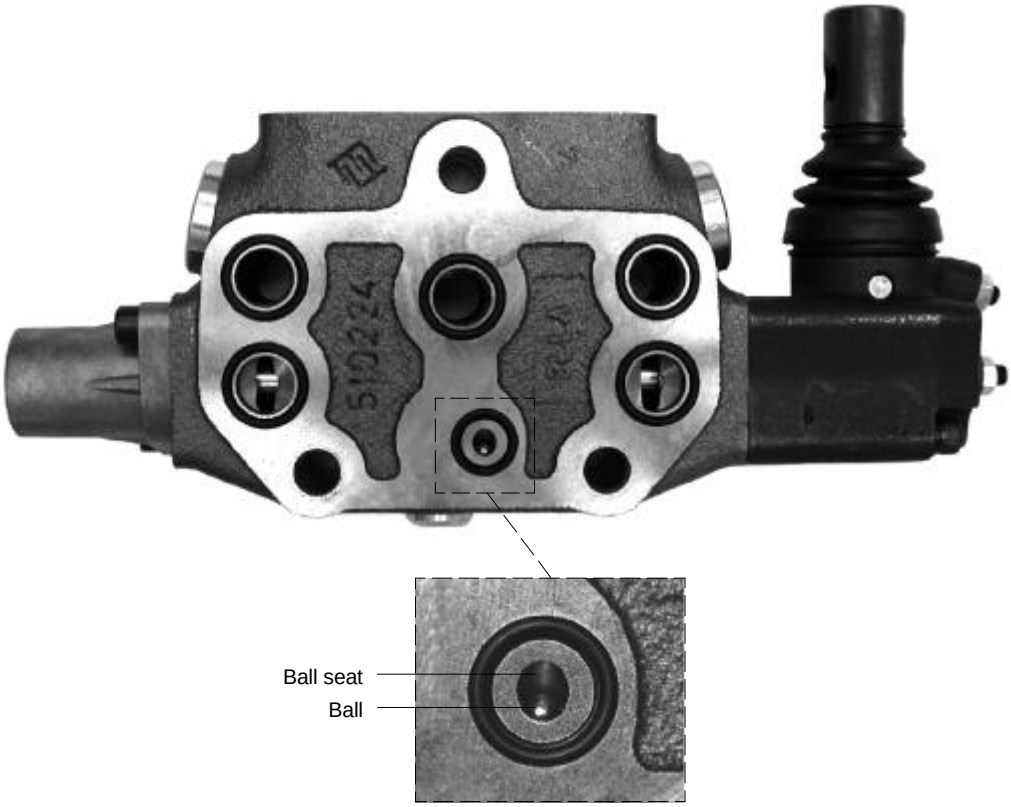
Installation and maintenance

It's shown a section of DLS7/2/AM(G3-120)/6V8MCLFG/6V8MCLFG/RF valve.



Callout	
1)	Inlet and outlet cover
2)	Compensator kit
3)	L.S. overpressure relief valve
4)	Working section
5)	Spool: *normally spools are inter_ changeable, verify the smoothness during the assembly*
6)	"A" side spool positioner
7)	Lever pivot box
8)	Port relief valve prearrangement
9)	Load check valve
10)	Return cover
11)	Holding O-Ring washer
12)	15.88x2.62 O-ring seal code: 4GUA115926

NOTE - *All moving parts inside cap, lever box and mechanical joystick are lubricated with synthetic base grease grade NLGI2*



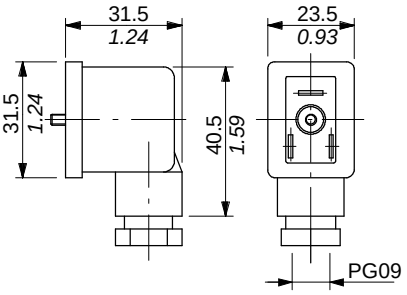
Malfunction	Cause	Remedy
External leakage pivot box lever or control kit side..	Worn spool seal due to mechanical actuation or high back pressure.	Locate the leakage and replace the seal. Check back pressure level.
Excessive internal leakage on A and B ports.	Increase clearance between spools and body due to high wear.	Replace the working section and check the oil contamination level
Dropping load during transition while raising.	High leakage on the load check valve.	Remove the load check valve and clean the seat, verifing it's not dented.
Inability to build pressure on A and B ports out of stand-by value.	L.S. overpressure valve blocked open.	Remove and clean or replace the valve.
	Low pump pressure and flow.	Check the pump and circuit.
	Flow compensator blocked open (only for AM configuration)	Smontare, pulire o sostituire il compensatore
	Shuttle valve on working section blocked	Disassembling directional valve and clean the seat, verifing it's not dented

Accessories

Connectors

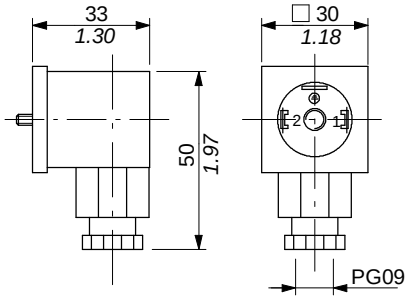
Type C01 code: 2X1001020

2P+T, according to DIN43650.



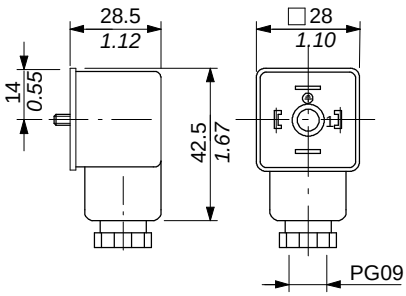
Type C02 code: 2X1001010

2P+T according to ISO4400 / DIN43650-A



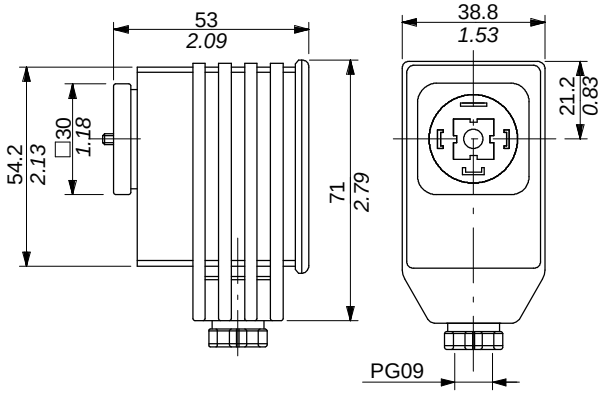
Type C03 code: 2X1001030

3P+T according to ISO4400 **/** DIN43650-A



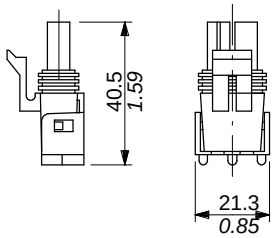
Type C05 code: 2X1001080

3P+T according to ISO4400 **/** DIN43650-A.
With bridge rectifier, to use with VAC supply.



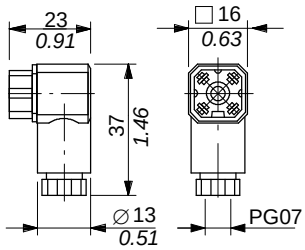
Type C07 code: 5CON001

2 Poles, type Packard



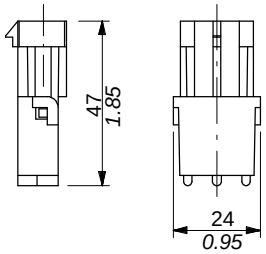
Type C11 code: 5CON006

4P according to VDE0660-0110



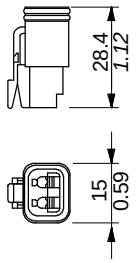
Type C17 code: 5CON005

2 Poles, type Packard



Type C19 code: 5CON130030

2P, type Deutsch DT06-2S

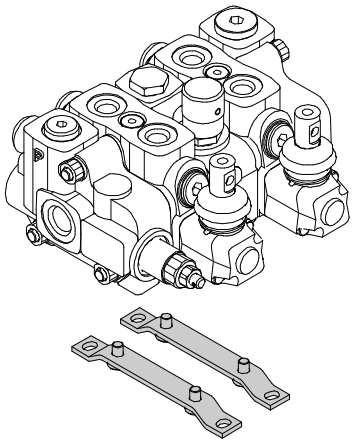


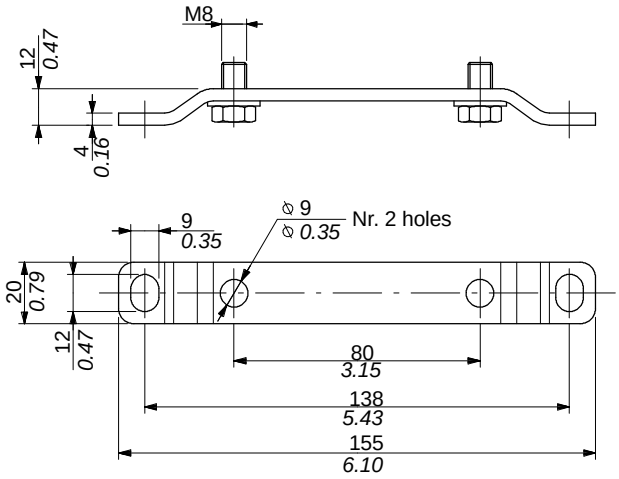
Type	Poles	Nominal voltage	Nominal current	Permitted conductor section range	Permitted cable diameter range	Weather protection
C01	2P + T	250 VAC / 300 VDC	10 A	max.1.5 mm^2 / *max.0.0023 in^2*	6-8 mm / *0.24-0.31 in*	IP65
C02	2P + T	250 VAC / 300 VDC	10 A	max.1.5 mm^2 / *max.0.0023 in^2*	6-8 mm / *0.24-0.31 in*	IP65
C03	3P + T	250 VAC / 300 VDC	10 A	max.1.5 mm^2 / *max.0.0023 in^2*	6-8 mm / *0.24-0.31 in*	IP65
C05	3P + T	230 VAC	1.5 A	max.1.5 mm^2 / *max.0.0023 in^2*	6-8 mm / *0.24-0.31 in*	IP65
C07	2P	/	20 A	1-2.5 mm^2 / *0.00155-0.0038 in^2*	2.8-3.5 mm / *0.11-0.14 in*	IP67
C11	4P	50 VAC / 120 VDC	6 A	0.14-0.5 mm^2 / *0.00022-0.00077 in^2*	4-7.5 mm / *0.16-0.29 in*	IP65
C17	2P	/	20 A	1-2 mm^2 / *0.00155-0.0031 in^2*	2.8-3.5 mm / *0.11-0.14 in*	IP67
C	2P	/	13 A	1-2 mm^2 / *0.00155-0.0031 in^2*	2.2-3.5 mm / *0.088-0.14 in*	IP67

Accessories

Fixing brackets

They are available for SD8 directional valve and they are zinc plated steel, complete with mounting screws.





Note

SD6 and DLS7 valves can be supplied with one coat of black paint (**CVN** configuration).
Description example: SD6/2/AC(YG3–175)/18L/18L/RC–**<CVN>**
Description example: DLS7/2/AM(G3–120)/6V8MCLFG/6V8MCLFG/RF–**<CVN>**

NOTE – *For different colour consult Sales Dept.*

HYDRAULIC CONTROL SYSTEMS

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