



100L GS

GMS
hydraulic

Specifications

Spool: 1.. 12 Spools /Double - Single - Closed Center - Motor - Floating - Regenerative Spool

Liter: 100L Nominal - 120L Max

Ports: 3/4 Standard -1/2 Optional

Front Cap: Handle - Mechanical Joystick - Hydraulic Joystick - Remote Cable Control - Lock Handle

End Cap: Spring - Detent - Floating - Pneumatic - Proportional Coil - Hydraulic Control - Electro Hydraulic - Remote Cable Control

Open Center / Carry over / Parallel Circuit

Features

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

- ▶ Fitted with a main pressure relief valve and a load check valve on every working section
- ▶ Available with parallel, tandem or series circuit.
- ▶ Optional carryover port.
- ▶ A wide variety of auxiliary valves.
- ▶ Intermediate sections for several types of circuit.
- ▶ Available manual, pneumatic, hydraulic, electro--hydraulic, and remote with flexible cables spool control kits.
- ▶ Diameter 20 mm (0.79 in) interchangeable spools.

Additional information

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

WARNING!

All specifications of this catalogue refer to the standard product at this date.

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

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

1st edition April 2018:

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- Working section

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- Outlet section

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Valve general informations

Working conditions

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

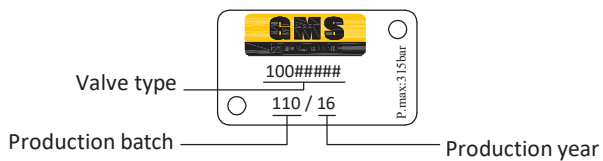
Nominal flow rating		100 l/min.	
Max. flow		120 l	
Operating pressure (max.)	Series-parallel (tandem) circuit	315 bar	4600 psi
Back pressure (max.)	on outlet port T	25 bar	360 psi
Internal leakage A(B)→T	Δp=100 bar – 1450 psi fluid and valve at 40°C	3cm ³ /min.	0.18 in ³ /min.
Hydraulic fluid		Mineral base oil	
Fluid temperature	with NBR 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	
Tie rods tightening torque (wrench 17)		50 Nm	37 lbft

Standard threads

REFERENCE STANDARD

PORTS	BSP (ISO 228/1)	OPTIONAL	UN-UNF (ISO 11926-1)	METRIC (ISO 6149-1)
Inlet P	G 3/4	-	1 1/16-12 UN- (SAE 12)	M27x2
A and B ports	G 3/4	G 1/2	1 1/16-12 UN- (SAE 12)	M22x1,5
Outlet T and carry-over C	G 3/4	-	1 1/16-12 UN- (SAE 12)	M27x2
PILOT PORTS				
Hydraulic ports	G 1/4		-	-
Pneumatic ports	G 1/8		-	-

Dimensional data



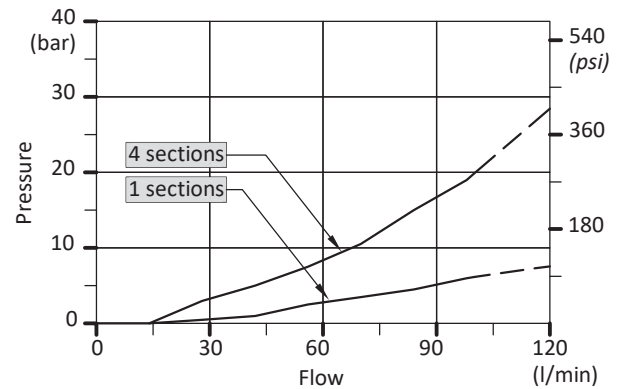
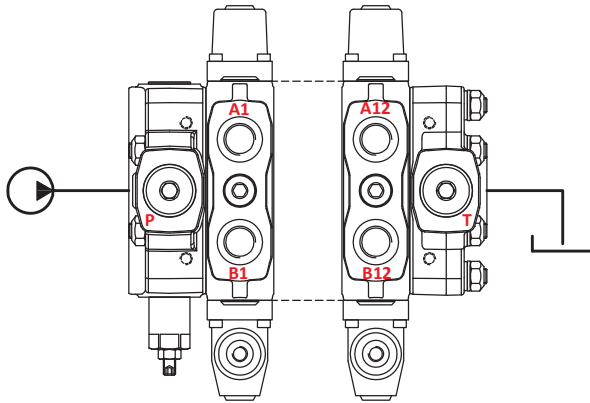
TYPE	A		B		Weight	
	mm	in	mm	in	kg	lb
100L GS 16/7	417	16.42	341	13.43	34.7	76.50
100L GS 16/8	462	18.19	386	15.20	38.9	85.76
100L GS 16/9	507	19.96	431	16.97	43.1	95.02
100L GS 16/10	552	21.73	476	18.74	47.3	104.28
100L GS 16/11	597	23.50	521	20.51	51.5	113.54
100L GS 16/12	642	25.28	566	22.28	55.7	122.80

Valve general informations

Performance data (pressure drop vs. flow)

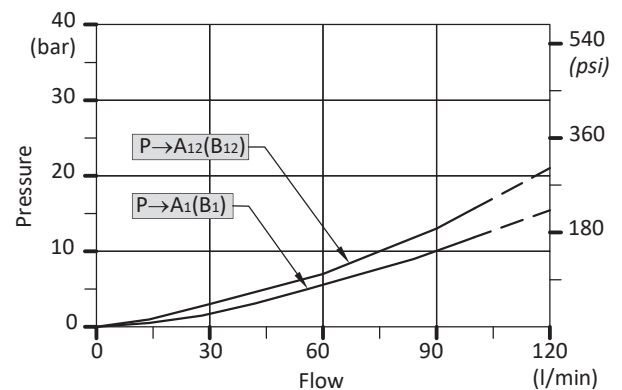
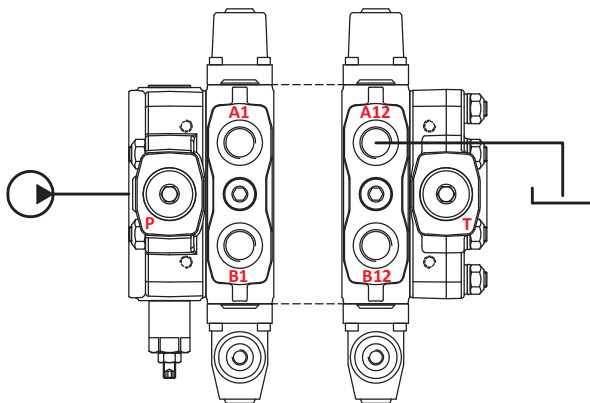
Open centre

From side inlet to side outlet.



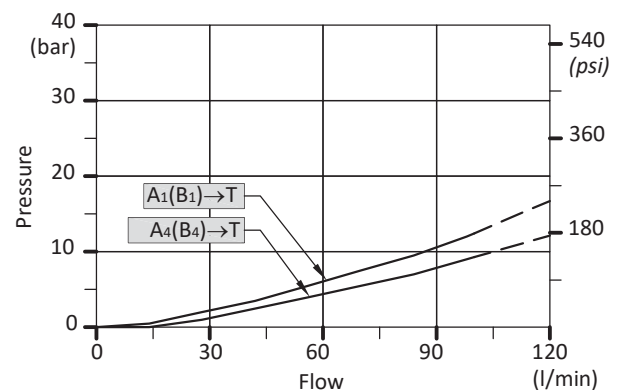
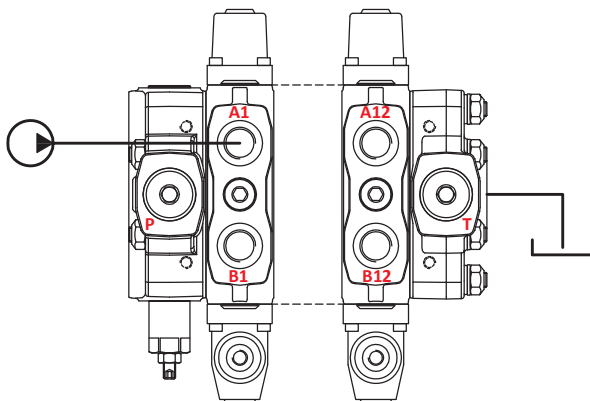
Inlet to work port

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.

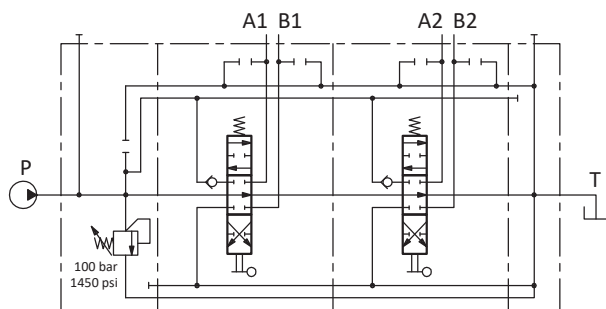


Valve general informations

Hydraulic circuit

Parallel circuit

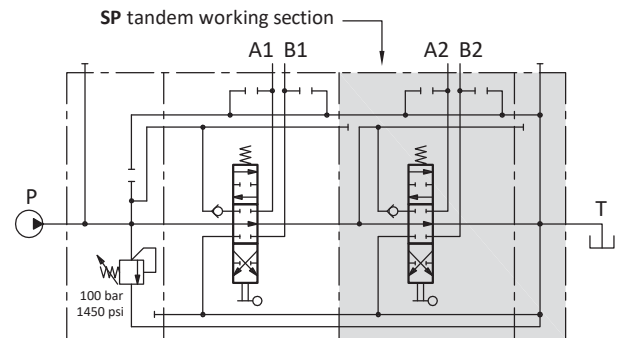
Standard configuration with open centre and side inlet and outlet.



Description example
100L GS16/2/AC(X-100)/18L/18L/RC

Series-parallel (tandem) circuit

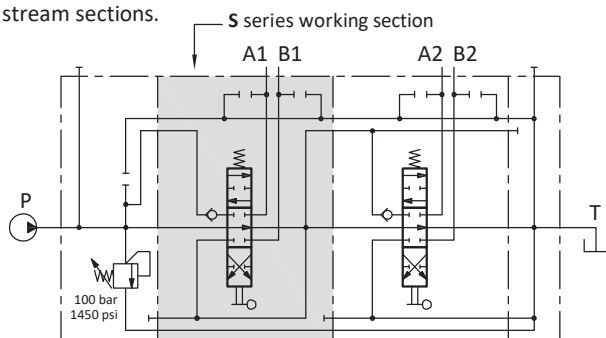
It needs a special working section kit
Tandem section is fed from the free flow pressure line; it's excluded when an upstream section is operated.



Description example
100L GS16/2/AC(X-100)/18L/ SP-18L/RC

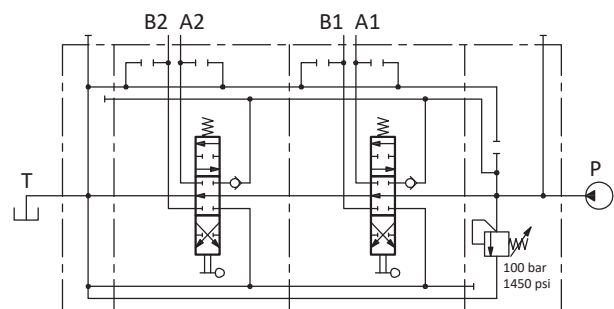
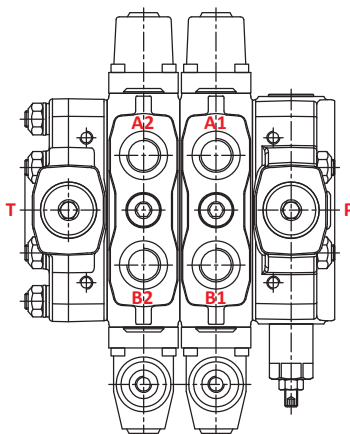
Series circuit

It needs a special working section kit
The return oil from service ports feeds the remaining downstream sections.



Description example
100L GS16/2/AC(X-100)/S-18L/P-18L/RC

Directional valve with right inlet



Description example
100L GS16/2/BC(X-100)/18L/18L/RC

Valve general informations

Complete sections ordering codes

Standard configuration with side inlet and outlet

100L GS16 / 2 / AC(X-100) / (P)- 18L.P3T / EI1 / (P)- 18L.P3T / RC

Nr. of working
section

1.

2.

3.

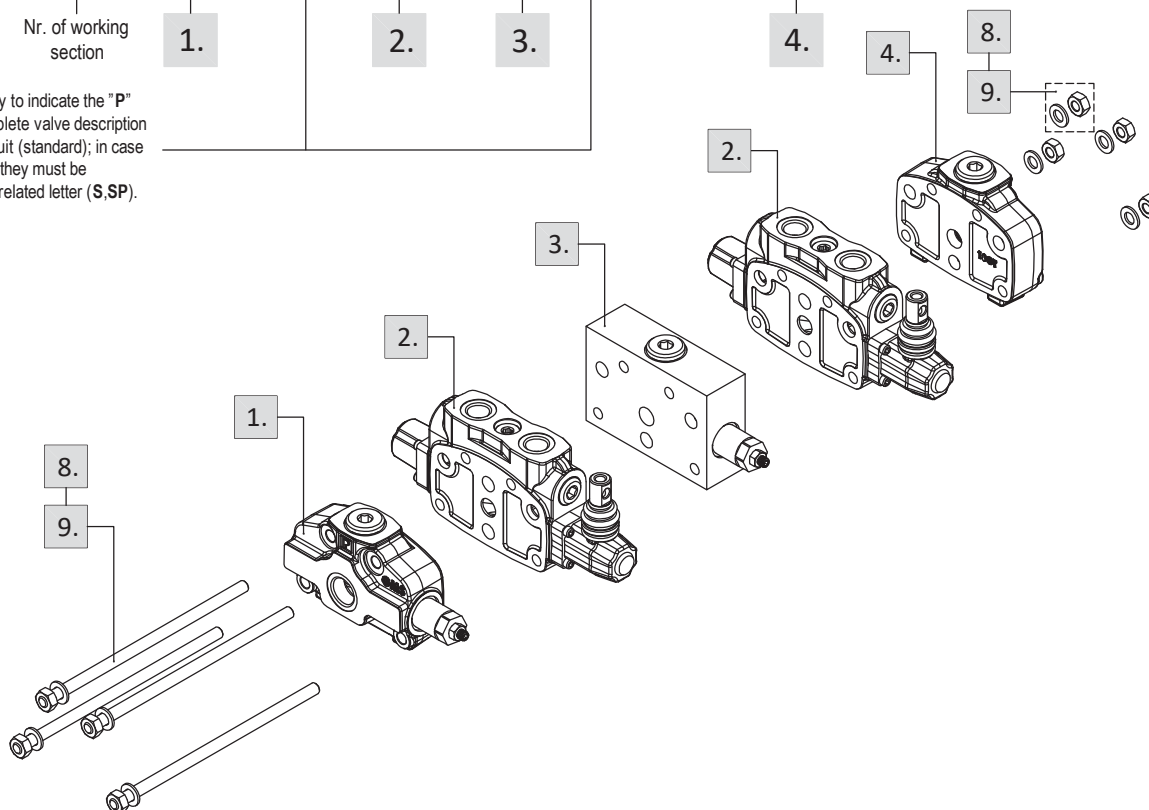
4.

4.

8.

9.

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. Inlet section * page 10

TYPE	CODE	DESCRIPTION
AC(X-100)	30 08 5750	Side inlet with direct pressure relief valve
AD(X-100)	30 08 5665	Upper inlet with direct pressure relief valve
AC(V)	30 08 5653	Without pressure relief valve

2. Working section * page 16

TYPE	CODE	DESCRIPTION
P-18L	10W010000	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
S-18L	10W010002	Series circuit, lever control
SP-18L	10W010003	As previous with series-parallel (tandem) circuit

3. Intermediate sections * page 43

TYPE	CODE	DESCRIPTION
DFG	30 08 5775	Pressure compensated flow divider section
EI1(X-100)	30 08 5734	With direct overpressure relief valve
EI2(X-100)	30 08 5735	With direct overpressure relief valve and auxiliary inlet

4. Outlet section * page 45

TYPE	CODE	DESCRIPTION
RC	30 08 5654	Side outlet
RD	30 08 5716	Upper outlet
RE	30 08 5718	Upper outlet with side carry-over sleeve
RK	30 08 5717	Upper outlet with closed centre
RV	30 08 5719	With backpressure valve the combination with electro-hydraulic control is required
VRC	30 08 5720	Backpressure valve for VRC configuration

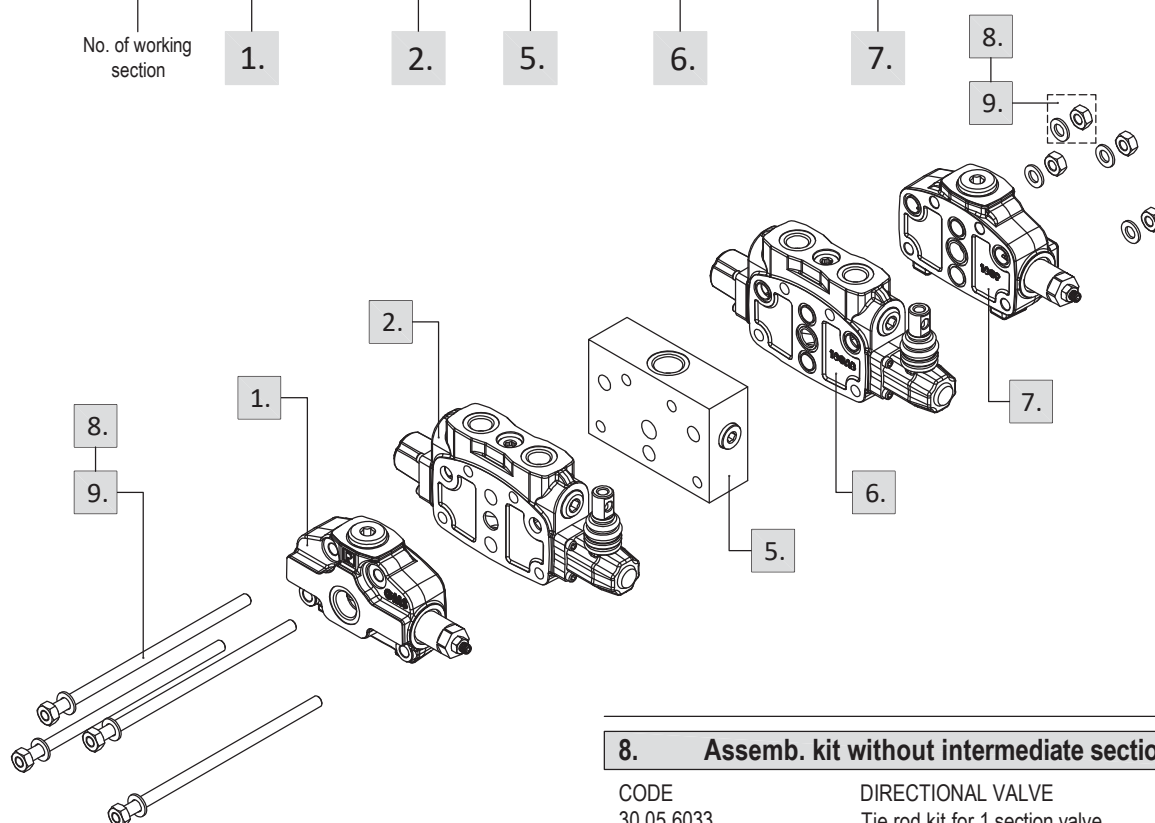
NOTE (*) - Items are referred to **BSP** thread.

Valve general informations

Complete sections ordering codes

Configuration with 2 side inlets and mid return manifold

100L GS16 / 2 / AC(X-100) / 18L.P3T / CS1 / ED - 18L.P3T / BC(X-100)

**5. Return manifold *** page 42

TYPE	CODE	DESCRIPTION
CS1	30 08 5780	Mid return manifold with G3/4 outlet port

6. Right inlet working section *

TYPE	CODE	DESCRIPTION
P-ED-18L	10W010006	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
S-ED-18L	10W010004	As previous with series circuit
SP-ED-18L	10W010005	As previous with series-parallel (tandem) circuit

7. Right inlet section *

TYPE	CODE	DESCRIPTION
BC(X-100)	30 08 5754	Side inlet with direct pressure relief valve
BD(X-100)	30 08 5758	Upper inlet with pilot operated pressure relief valve
BC(V)	30 08 5770	Side inlet with valve blanking plug

8. Assemb. kit without intermediate section

CODE	DIRECTIONAL VALVE
30 05 6033	Tie rod kit for 1 section valve
30 05 6037	Tie rod kit for 2 sections valve
30 05 6038	Tie rod kit for 3 sections valve
30 05 6039	Tie rod kit for 4 sections valve
30 05 6040	Tie rod kit for 5 sections valve
30 05 6041	Tie rod kit for 6 sections valve
30 05 6042	Tie rod kit for 7 sections valve
30 05 6043	Tie rod kit for 8 sections valve
30 05 6044	Tie rod kit for 9 sections valve
30 05 6034	Tie rod kit for 10 sections valve
30 05 6035	Tie rod kit for 11 sections valve
30 05 6036	Tie rod kit for 12 sections valve

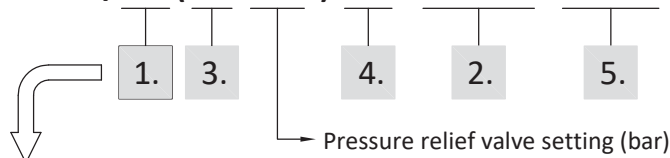
9. Assemb. kit with intermediate section

CODE	DIRECTIONAL VALVE
30 05 6038	Tie rod kit for 2 sections valve (with CS1)
30 05 6039	Tie rod kit for 3 sections valve (with CS1)
30 05 6040	Tie rod kit for 4 sections valve (with CS1)
30 05 6041	Tie rod kit for 5 sections valve (with CS1)
30 05 6042	Tie rod kit for 6 sections valve (with CS1)
30 05 6043	Tie rod kit for 7 sections valve (with CS1)
30 05 6044	Tie rod kit for 8 sections valve (with CS1)
30 05 6034	Tie rod kit for 9 sections valve (with CS1)
30 05 6035	Tie rod kit for 10 sections valve (with CS1)

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

Parts ordering codes

100L GS16 / AC (X - 100) ELN - MAN14 - 12VDC



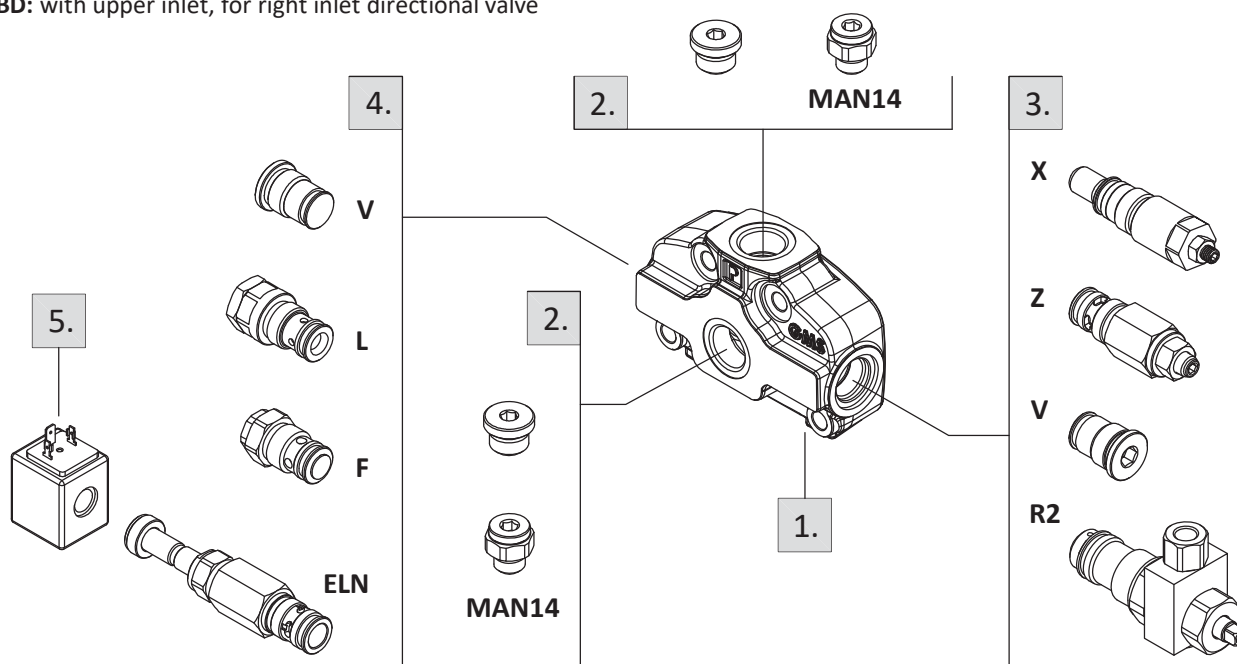
Available configurations

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



1. Inlet cover body * page 11

CODE	DESCRIPTION
-	Standard body

2. Parts *

TYPE	CODE	DESCRIPTION
MAN18	30 05 6102	G1/8 Pressure gauge arrangement
MAN14	30 05 6101	G1/4 Pressure gauge arrangement

3. Inlet relief valve options page 12

TYPE	CODE	DESCRIPTION
KE10K01 : direct pressure relief valve type X (X-100)	30 05 4912	Range 20 to 315 bar / 290 to 4600 psi standard setting 100 bar / 1450 psi

KE10K02 : pilot operated pressure relief valve type **Z**
(Z-100) 30 05 4915 Range 25 to 315 bar / 360 to 4600 psi
standard setting 100 bar / 1450 psi

Standard setting is referred to 6 l/min flow.

V	30 05 4914	Relief valve blanking plug
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NOTE (*) - Items are referred to **BSP** thread.

4. Inlet valve options page 14

TYPE	CODE	DESCRIPTION
-	30 05 4914	Relief valve blanking plug (omit in description)
F	-	Inlet anti-cavitation valve
L	-	Hydraulic pilot unloader valve
Solenoid operated unloader valve		
ELN	30 05 6108	Without emergency
ELP	30 05 6109	Push-button emergency
ELT	30 05 6110	Push and twist type with detent emergency

5. Coils

TYPE	CODE	DESCRIPTION
12VDC	20 03 2268	Coil type BER , ISO4400 integrated type 12VDC
24VDC	20 03 2269	Coil type BER , ISO4400 integrated type 24VDC

Inlet section

Dimensional data and hydraulic circuit

For left inlet directional valve (standard)

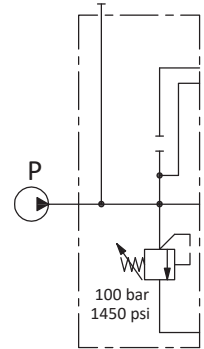
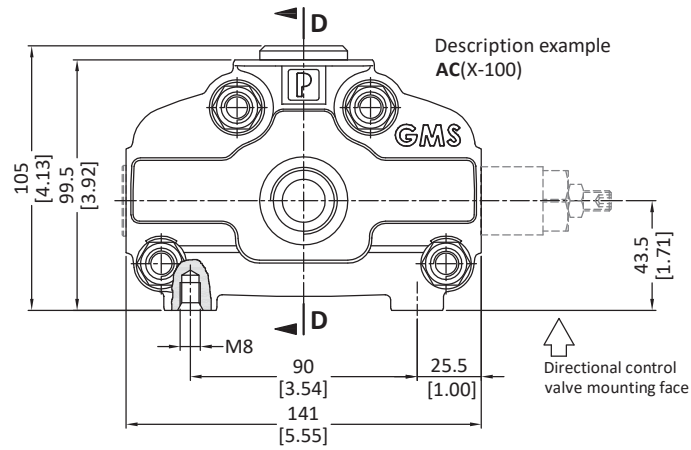
With side inlet, type AC

Allen wrench 10
24 Nm / 17.7 lbft

D - D

G 3/4

P

43.5
[1.71]27
[1.06]51
[2.01]

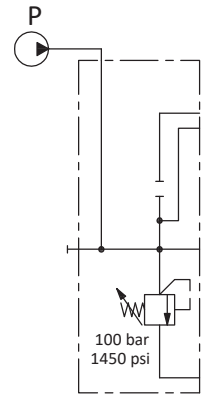
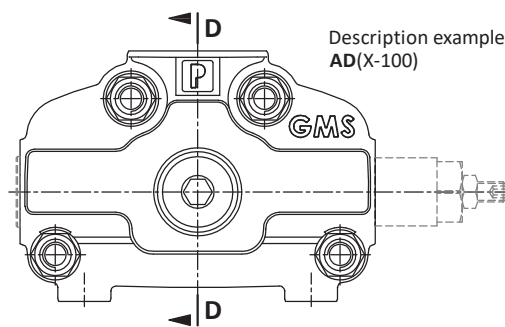
With upper inlet, type AD

D - D

G 3/4

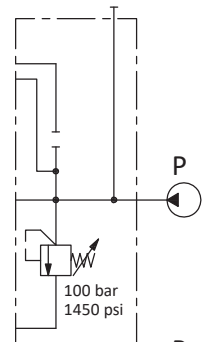
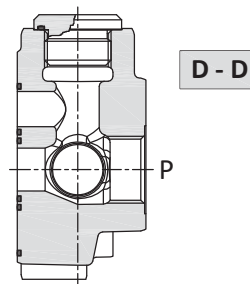
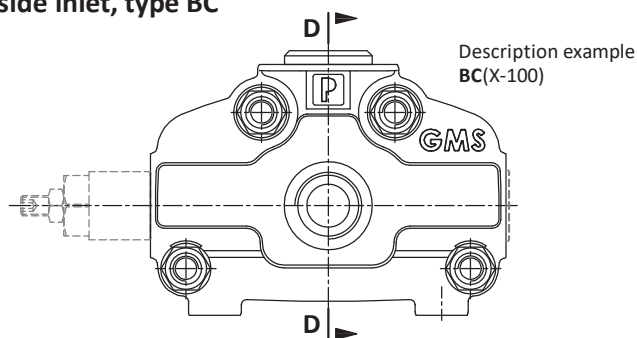
P

Allen wrench 10
24 Nm / 17.7 lbft

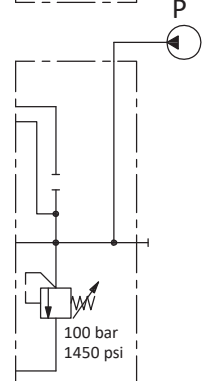
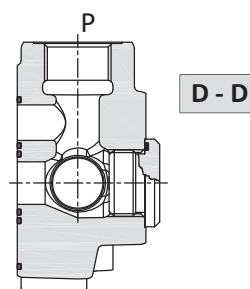
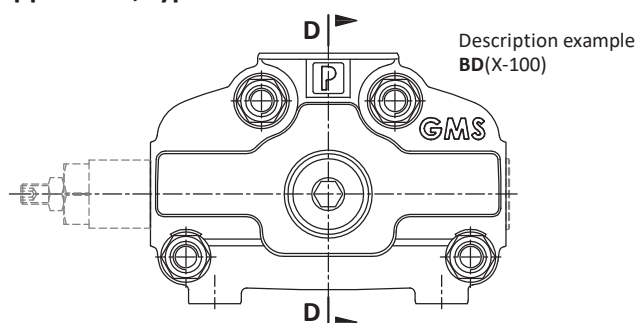
56.5
[2.22]

For right inlet directional valve

With side inlet, type BC



With upper inlet, type BD



Inlet section

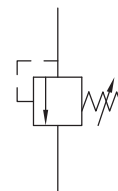
Inlet relief options

Direct pressure relief valve

KE10K01 (X - 100)

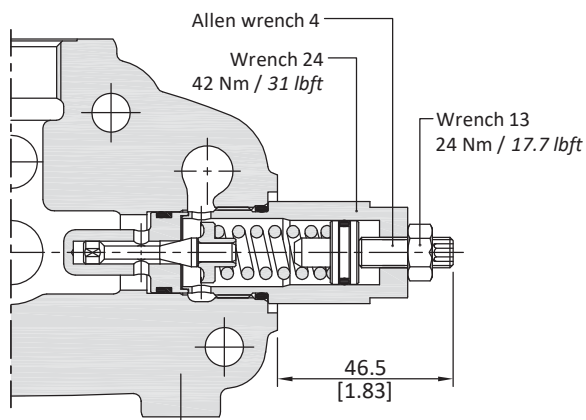
Standard setting in bar

Adjustment type (X, XH)

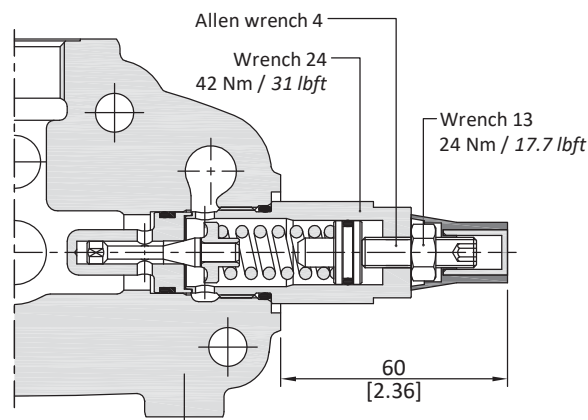


Adjustment type

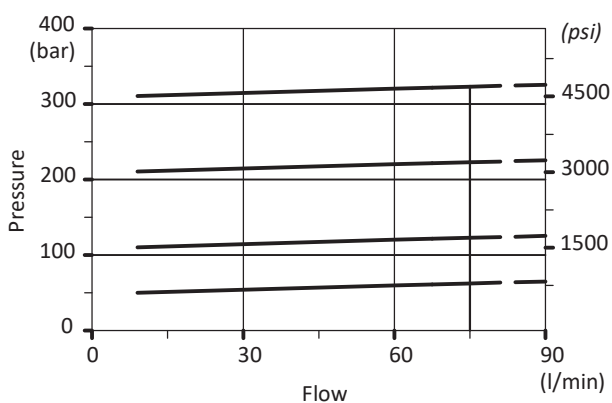
X: with screw



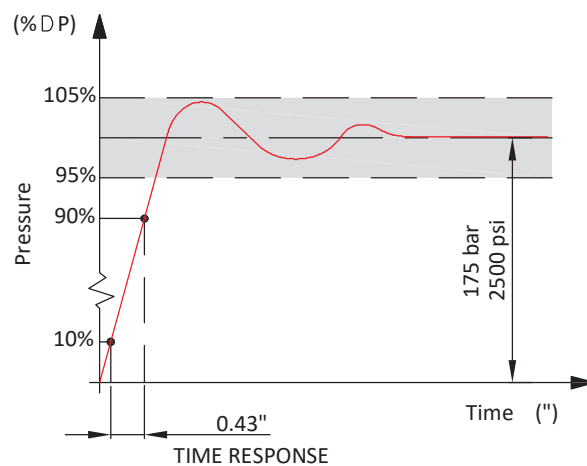
XH: valve set and locked



Performance data



Time response



Inlet section

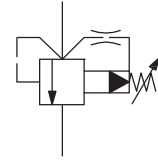
Inlet relief options

Pilot pressure relief valve

KE10K02 (Z - 100)

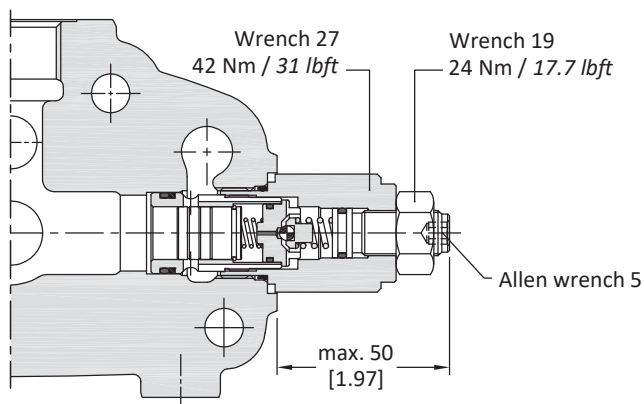
Standard setting in bar

Adjustment type (Z, ZH)

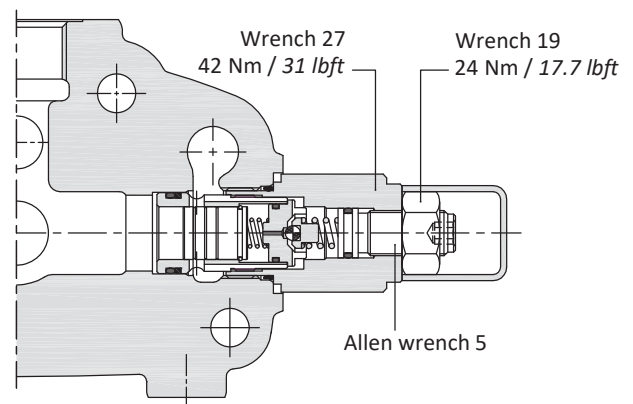


Adjustment type

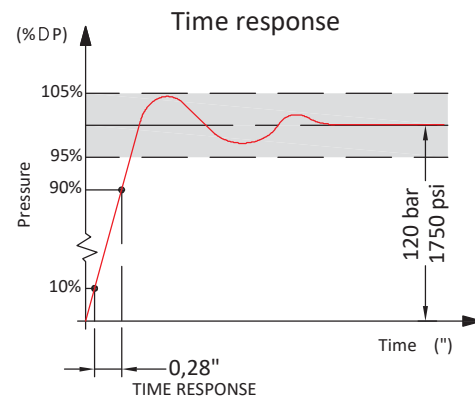
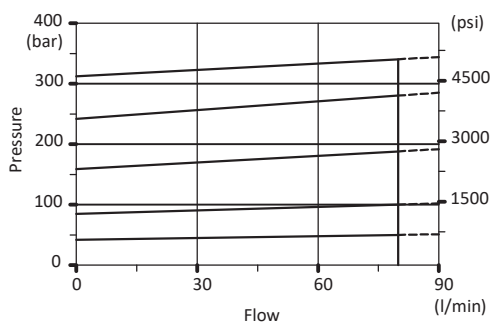
Z: with screw



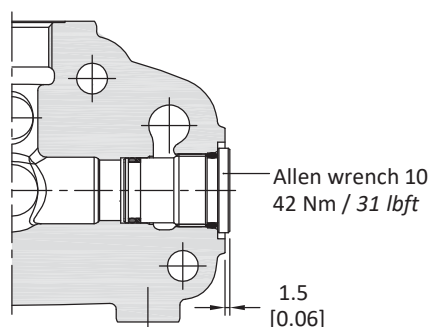
ZH: valve set and locked



Performance data



V: relief valve blanking plug



Inlet section

Inlet valve options

Unloader valves

Description example: AC (X - 100) **ELN** - **12VDC**

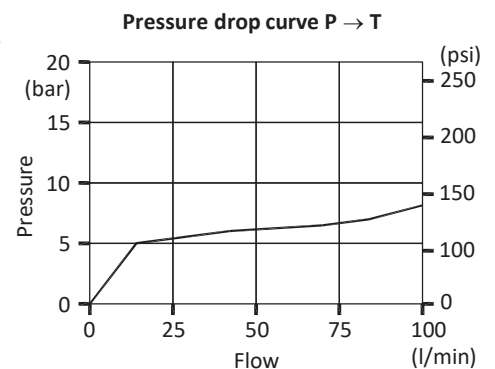
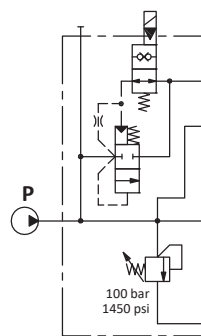
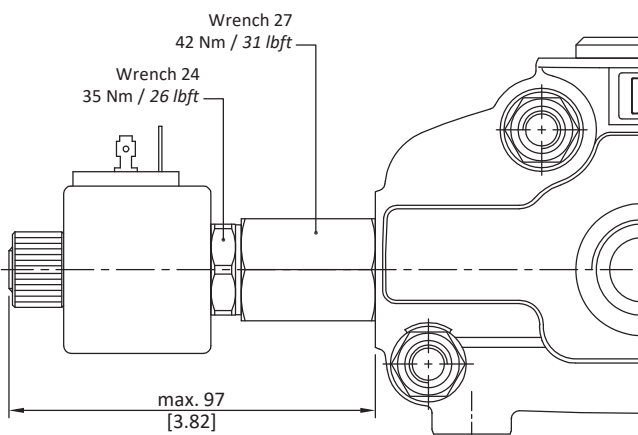
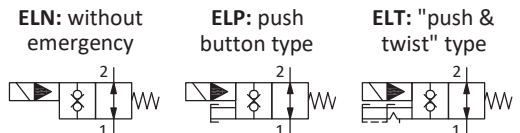
Hydraulic operated valve: **L**
Solenoid operated valve: **ELN**
ELP
ELT

Feeding voltage: for
solenoid operated

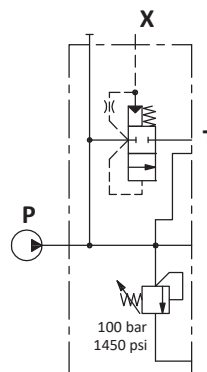
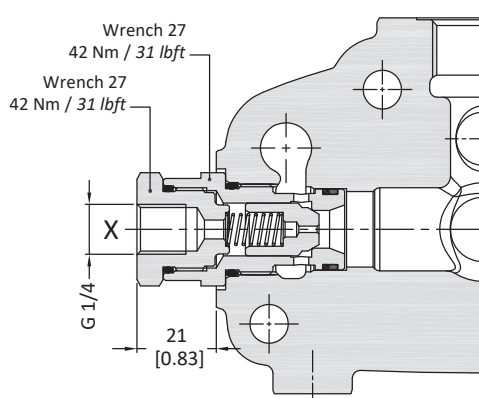
Solenoid operated

Emergency with push button and spring return; for detent position turn the button after press it.

WARNING: the manual override option is intended for emergency use, not for continuous duty operation.

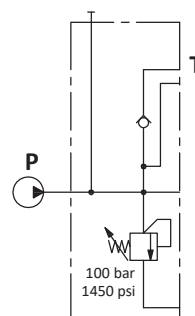
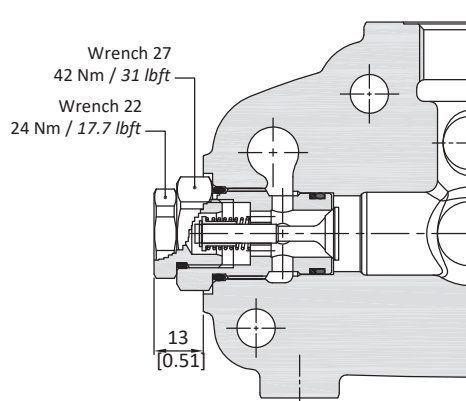


Hydraulic operated



Anti-cavitation valve

Description example: AC (X - 100) **F**

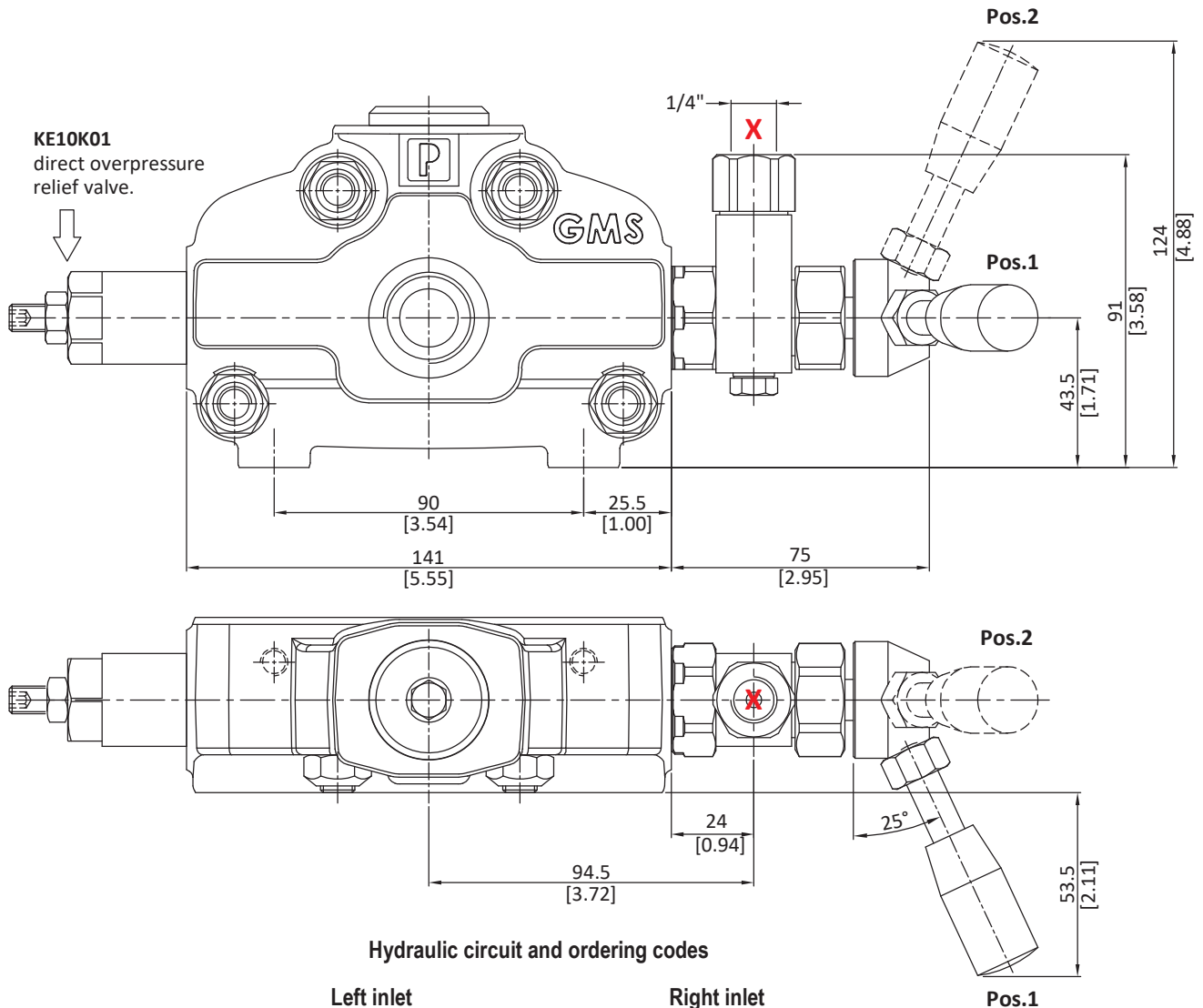


Inlet section for special applications

Configuration with rotary commutator

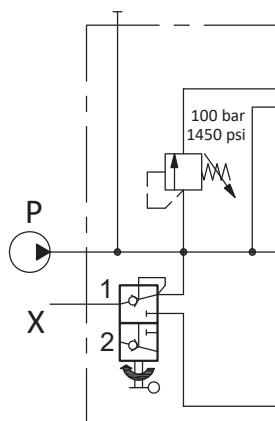
Dimensional data and hydraulic circuit

Drawing and circuit are referred to left inlet directional valve.



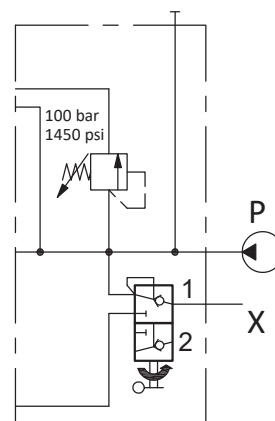
Hydraulic circuit and ordering codes

Left inlet



AC(X-100)R2

Right inlet



BC(X-100)R2

Parts ordering codes (mechanical control)

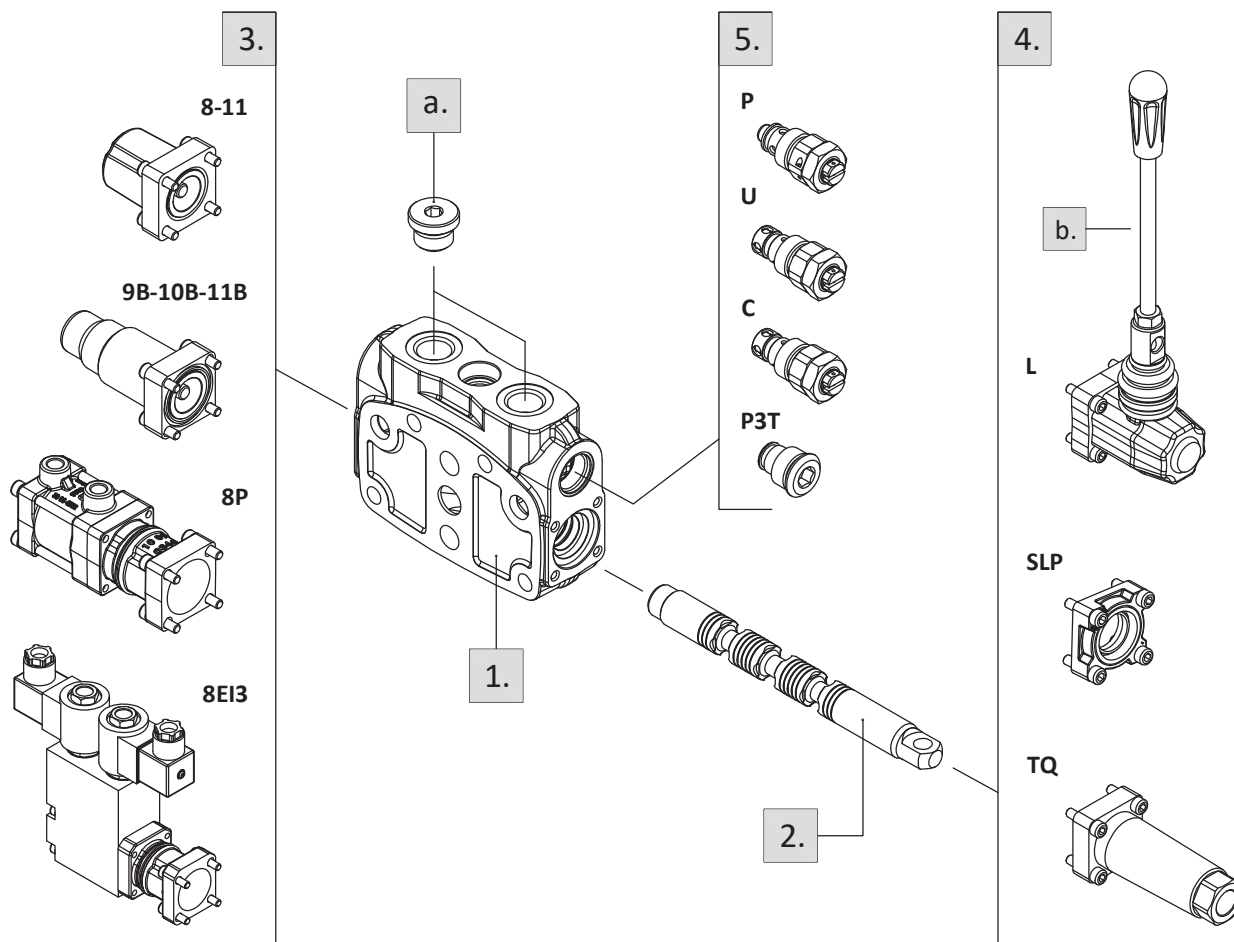
Description example:

100L GS16 / P - 1 8 L . U 1 (100) *

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.



1. Working section kit *

TYPE	CODE	DESCRIPTION
P	-	With parallel circuit
S	-	With series circuit
SP	-	With series-parallel (tandem) circuit

Include body, seals, rings and load check valve.

2. Spools

[page 18](#)

TYPE	CODE	DESCRIPTION
1	30 01 3581	Double acting, 3 positions, with A and B closed in neutral position
1A	30 01 3585	Double acting, 3 positions, with A open to tank in neutral position
1B	30 01 3586	Double acting, 3 positions, with B open to tank in neutral position

2. Spools

[page 18](#)

TYPE	CODE	DESCRIPTION
2	30 01 3582	Double acting, 3 positions, with A and B open to tank in neutral position
3	30 01 3587	Single acting on A, 3 positions, B plugged; requires G3/4 plug (see part a)
4	30 01 3588	Single acting on B, 3 positions, A plugged; requires G3/4 plug (see part a)

Special spools for particular positioner kits [page 18](#)
5DY 30 01 3584 Double acting, 4 positions, float in position 3 with spool in, **13NZ type positioner kit is required**

Working section

Parts ordering codes (mechanical control)

3. "A" side spool positioners *page 19*

TYPE	CODE	DESCRIPTION
8	30 07 5375	With spring return in neutral position
8D	30 07 5383	As type 8, M8 female threaded pin extension for dual control
8D1	30 07 5402	As type 8, pin with Ø 8 mm (0.31 in) radial hole
8D2	30 07 5384	As type 8, M8 male threaded pin extension for dual control
8TL	30 07 5397	As type 8 with pin control with flexible cable
8F2	30 07 5377	As type 8 with adjustable stroke limiter
19	30 07 5436	2 positions, with spring return in neutral position from position 1
20	30 07 5437	2 positions, with spring return in neutral position from position 2
11	30 07 5378	With detent in position 1, neutral and 2
12	30 07 5438	Detent in positions 1 and 2
15	30 07 5439	2 positions, detent in pos. 1 and neutral
16	30 07 5440	2 positions, detent in pos. 2 and neutral
17	30 07 5441	With spring return position 1
18	30 07 5381	With spring return position 2
17D	30 07 5442	With spring return position 1 and pin with M8 female thread for dual control
18D	30 07 5382	With spring return position 2 and pin with M8 female thread for dual control
9B	30 07 5386	With detent in position 1 and spring return in neutral position
10B	30 07 5387	With detent in position 2 and spring return in neutral position
11B	30 07 5388	With detent in position 1, 2 and spring return in neutral position
8MG3(NO)	30 07 5435	As type 8 and operation with microswitch in positions 1 and 2, contact normally open
8MG3(NC)	30 07 5434	As previous, with contact normally closed
8P	30 07 5399	ON-OFF pneumatic kit
8PF	-	Proportional pneumatic kit
8EP3	30 07 5443	ON-OFF 12VDC electro-pneumatic kit
	30 07 5400	ON-OFF 24VDC electro-pneumatic kit
8EP4	30 07 5345	ON-OFF 12VDC electro-pneumatic kit with manifold
	30 07 5346	ON-OFF 24VDC electro-pneumatic kit with manifold
8EI3	30 07 5401	ON-OFF 12VDC electro-hydraulic kit
	30 07 5361	ON-OFF 24VDC electro-hydraulic kit
8EI3F2	-	12 VDC ON/OFF electrohydraulic kit with adjustable stroke limiter
	-	24 VDC ON/OFF electrohydraulic kit with adjustable stroke limiter
Particular positioner kits for special spools <i>page 31</i>		
13NZ	30 07 5415	4 positions with spring return in neutral position and detent in pos.3: for 5DY spool

4. "B" side options *page 32*

TYPE	CODE	DESCRIPTION
L	30 07 5403	Standard lever box
LF1	30 07 5405	Lever box with spool stroke limiter in position 1
SL	-	Without lever box
SLP	30 07 5406	Without lever box, with dust-proof plate
SLCZ	-	Without lever box, with endcap.
LB	30 07 5407	Steel lever
LEB	30 07 5409	Safety lever box, vertical configuration
TQ	30 07 5398	Flexible cable connection; for CG cables
LCB	30 07 5433	Joystick lever for 2 sections operation

5. Port valves *page 39*

TYPE	CODE	DESCRIPTION
Assembled on section		
P3T	30 05 4940	A and B ports valve blanking plugs
C	-	Anti-cavitation
<u>Anti-shock valve</u>		
P	30 05 6195	From 0 to 315 bar / 0 to 4600 psi standard setting 100 bar / 1450 psi
<u>Anti-shock and anti-cavitation valve</u>		
U	30 05 4908	From 0 to 315 bar / 0 to 4600 psi standard setting 100 bar / 1450 psi

Standard setting is referred to 6 l/min flow.

6. Complete controls *page 37*

TYPE	CODE	DESCRIPTION
8IM	30 07 5414	-
R	30 07 5379	-

Proportional hydraulic control type **8IM** and rotative control type **R**.

a. "A" and "B" ports plugs

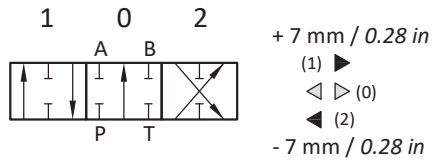
TYPE	CODE	DESCRIPTION
G3/4	30 05 4920	For single acting spools type 3 and 4

b. Optional handlers

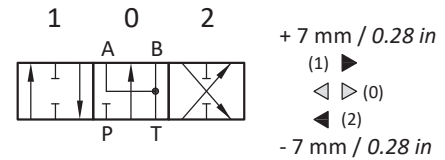
TYPE	CODE	DESCRIPTION
AL01/M10x200	30 05 4989	Length L = 200mm / 7.87in

Spools options

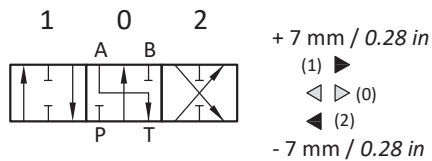
Type 1 (30 01 3581)



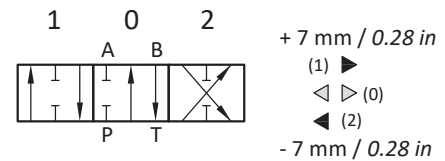
Type 2 (30 01 3582)



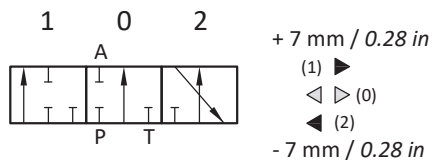
Type 1A (30 01 3585)



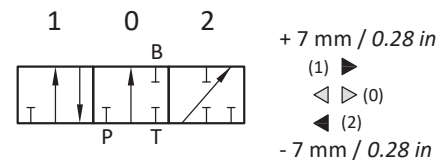
Type 1B (30 01 3586)



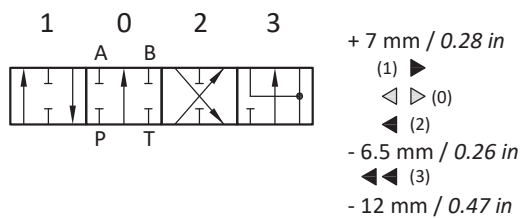
Type 3 (30 01 3587)



Type 4 (30 01 3588)



Type 5DY (30 01 3584)



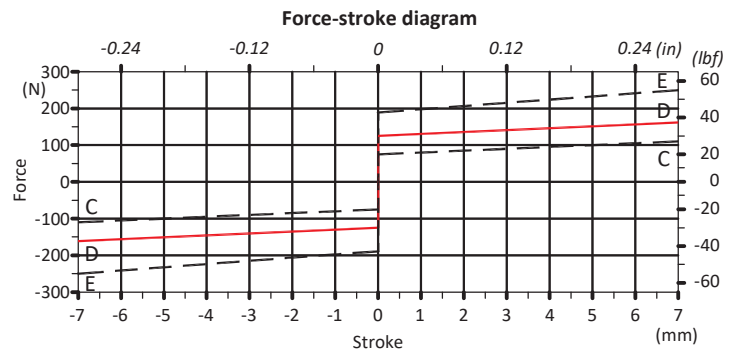
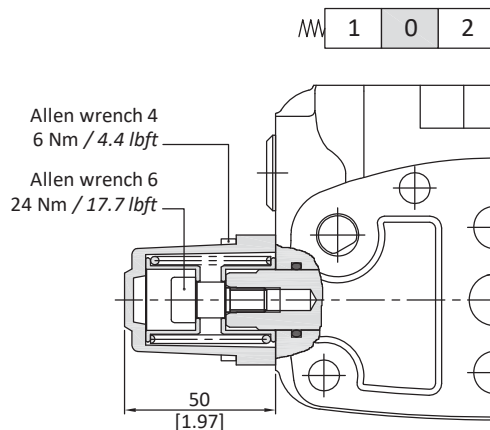
Working section

"A" side spool positioners

With spring return in neutral position

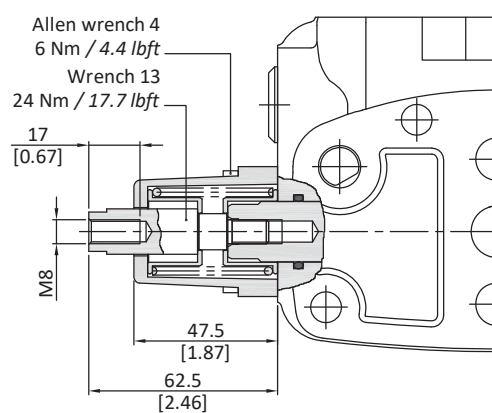
8 kit (30 07 5375)

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

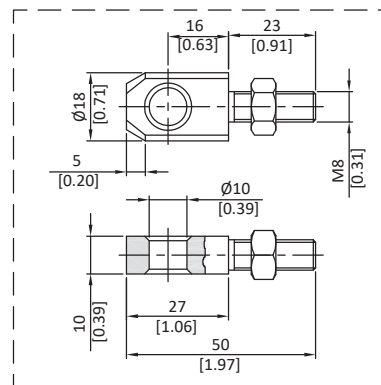


8D kit (30 07 5383)

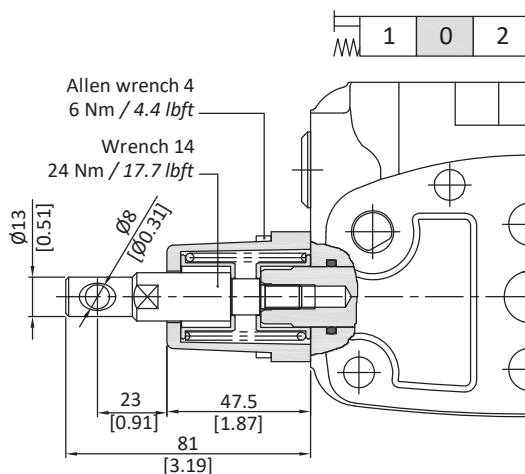
With M8 female threaded pin extension for dual control.



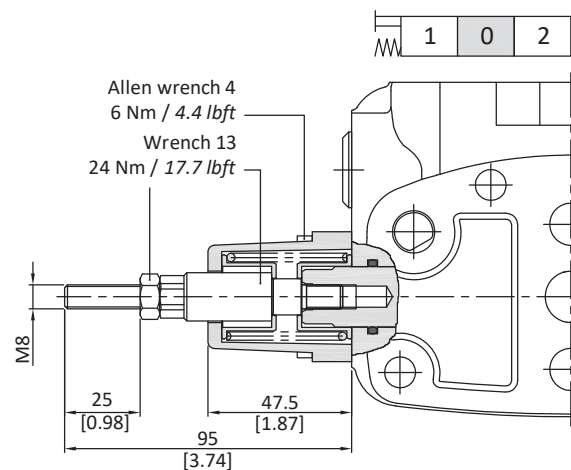
Spool end joint dimensions (optional)



8D1 kit (30 07 5402)



8D2 kit (30 07 5384)

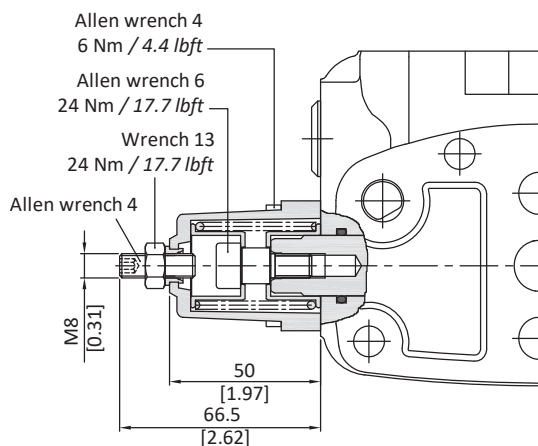


"A" side spool positioners

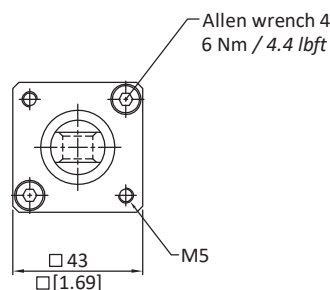
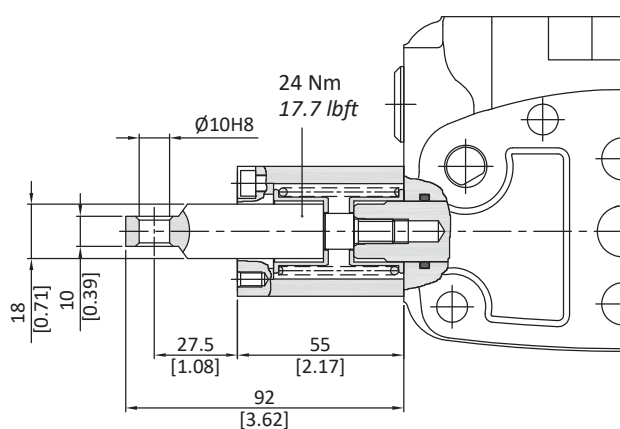
With spring return in neutral position

8F2 kit (30 07 5377)

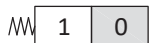
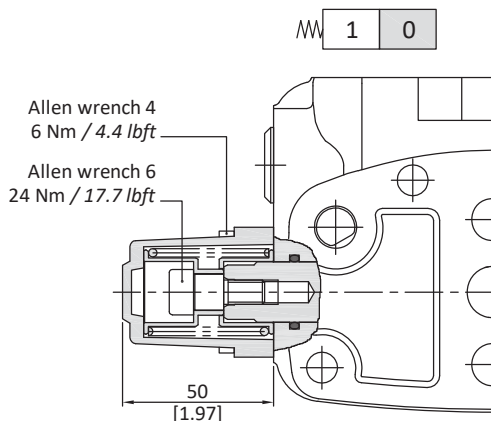
With spool stroke adjustment in position 2 (P → B)



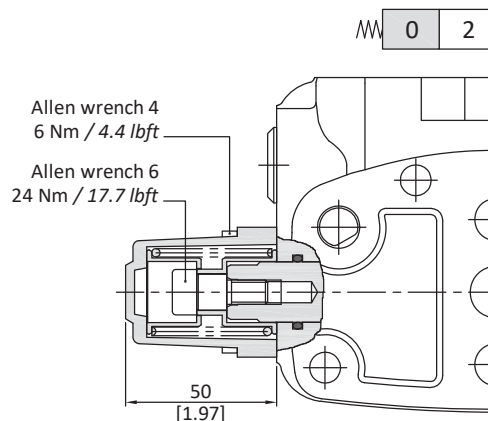
8TL kit (30 07 5397)



19 kit (30 07 5436)



20 kit (30 07 5437)

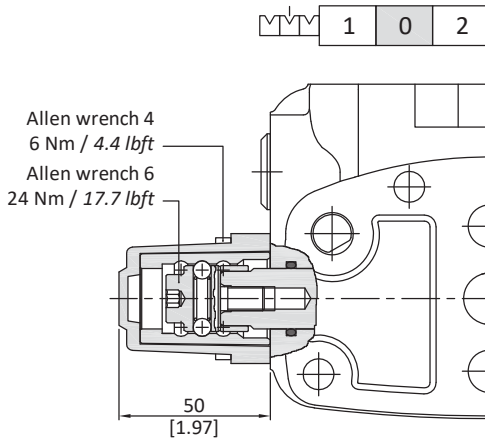


Working section

"A" side spool positioners

With detent

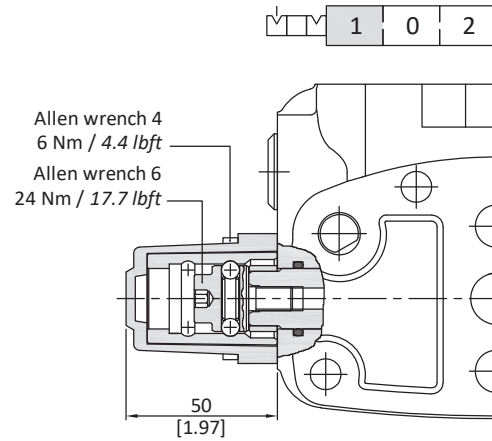
11 kit (30 07 5378)



Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

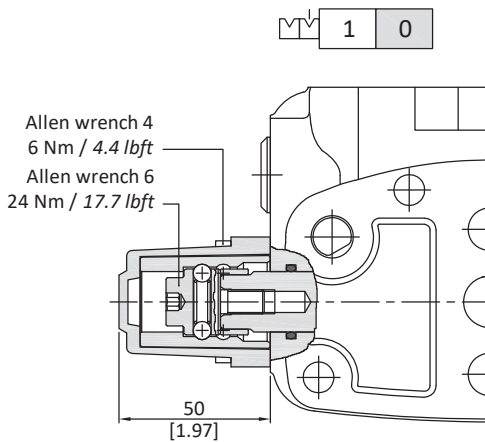
12 kit (30 07 5438)



Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

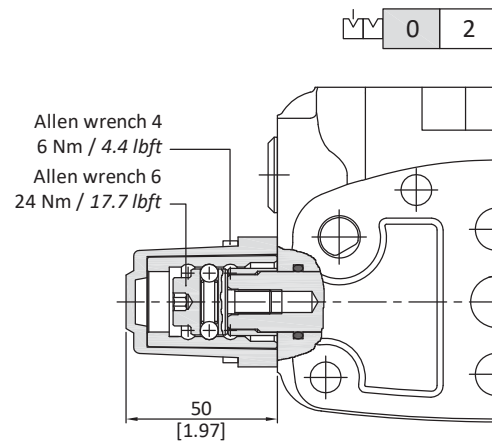
15 kit (30 07 5439)



Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

16 kit (30 07 5440)



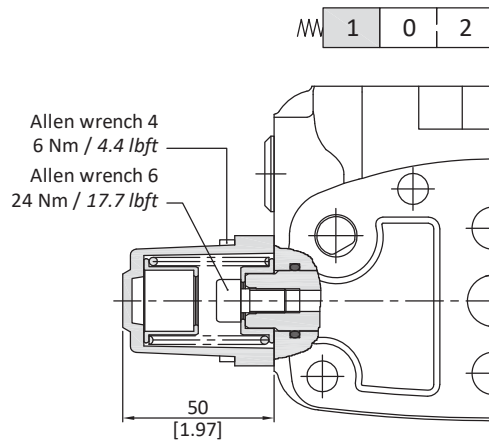
Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

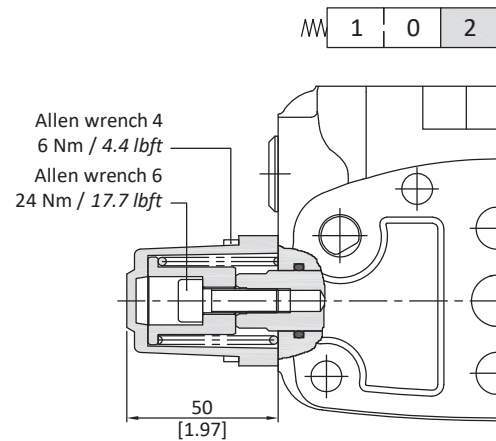
"A" side spool positioners

With spring return

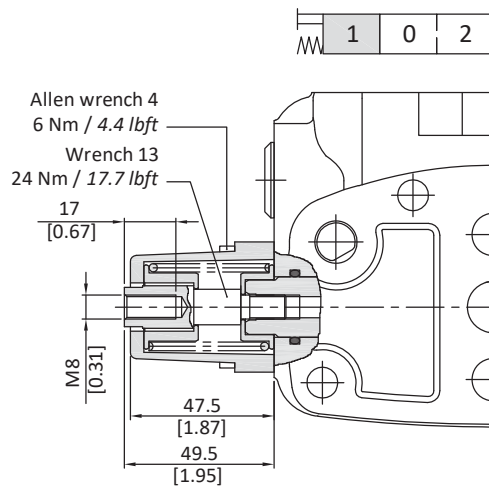
17 kit (30 07 5441)



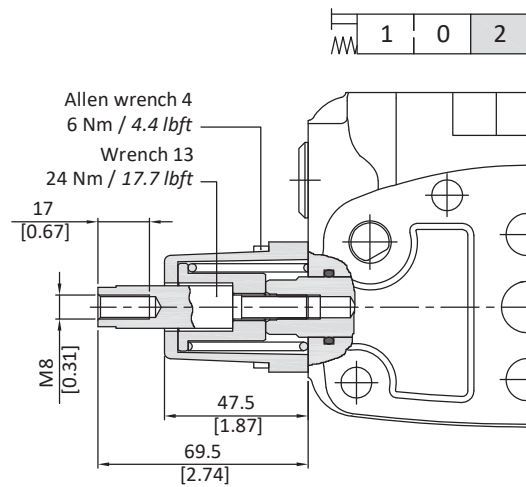
18 kit (30 07 5381)



17D kit (30 07 5442)



18D kit (30 07 5382)

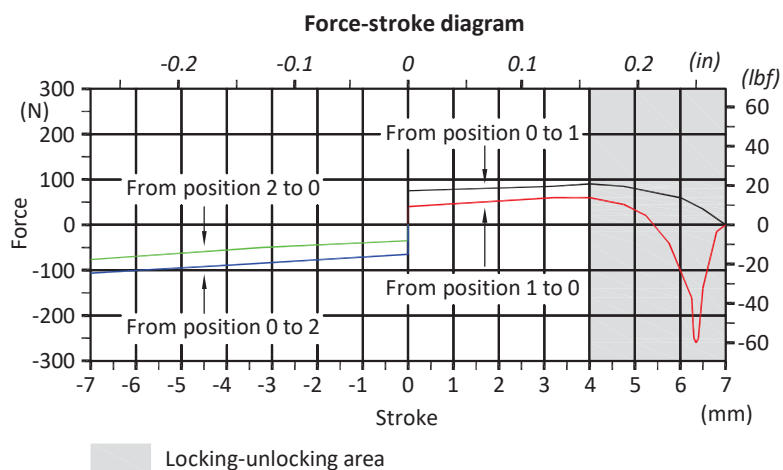
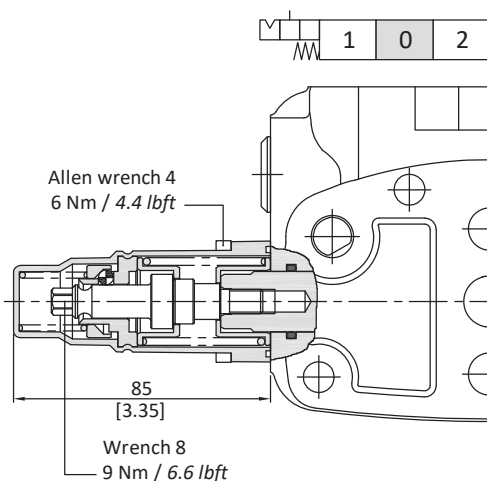


Working section

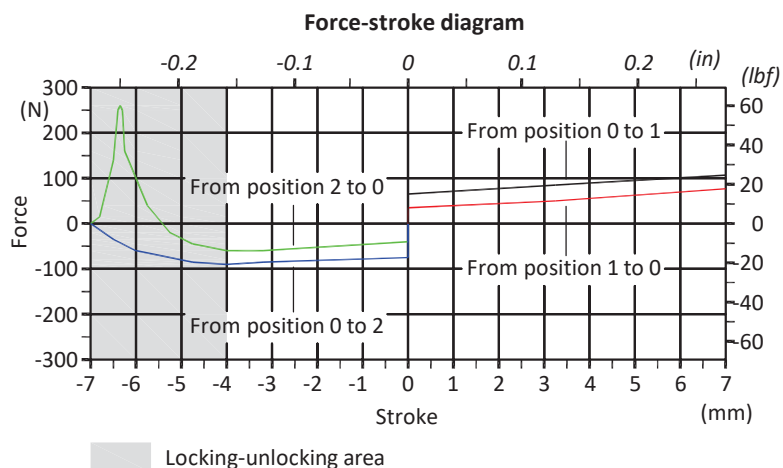
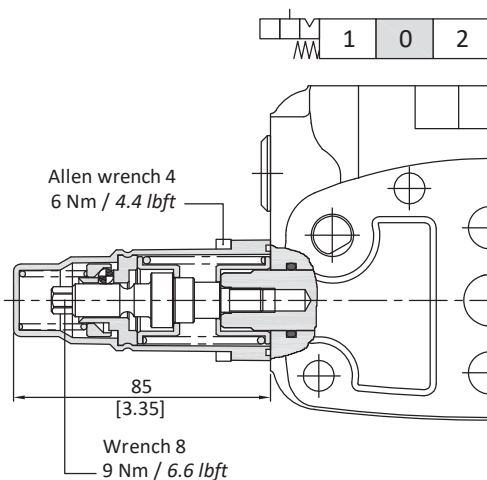
"A" side spool positioners

With detent and spring return to neutral position from either directions

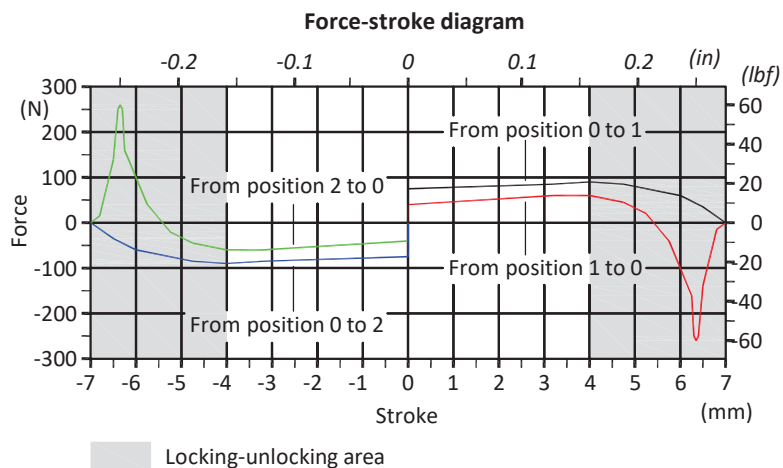
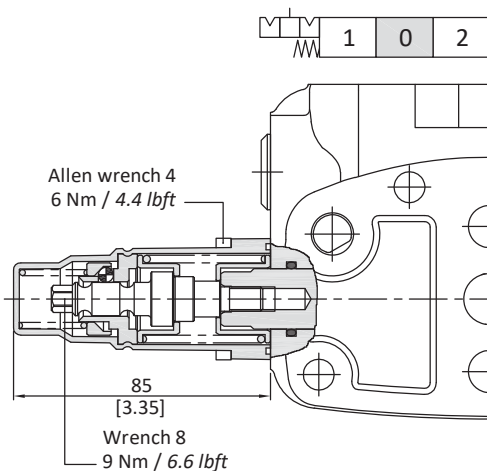
9B kit (30 07 5386)



10B kit (30 07 5387)



11B kit (30 07 5388)



Working section

"A" side spool positioners

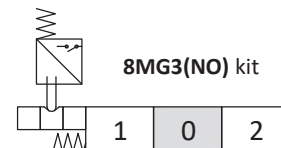
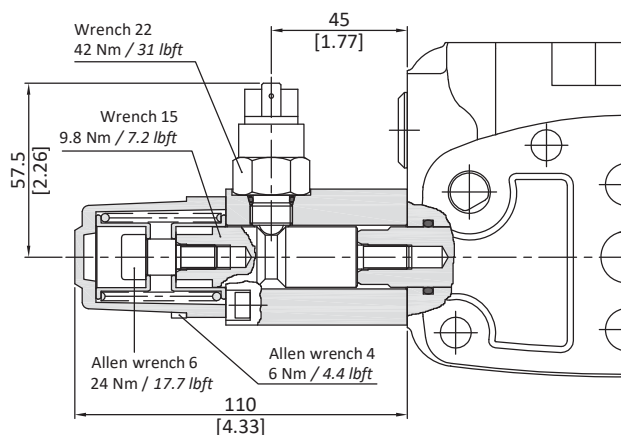
With microswitch type 8MG3(NO) (30 07 5435)

With spring return in neutral position and microswitch operated in both directions.

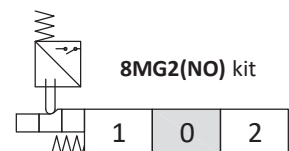
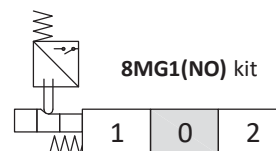
Also available **8MG1(NO)** configuration (microswitch operated in position 1) and **8MG2(NO)** configuration (microswitch operated in position 2); dimensions are the same of **8MG3(NO)** configuration.

Same configurations are available with normally closed (NC) contact.

For more information contact Sales Department.



Other configurations



Operating features

MICROSWITCH

Mechanical life

: 5×10^5 operations

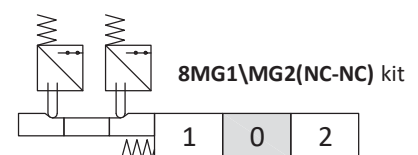
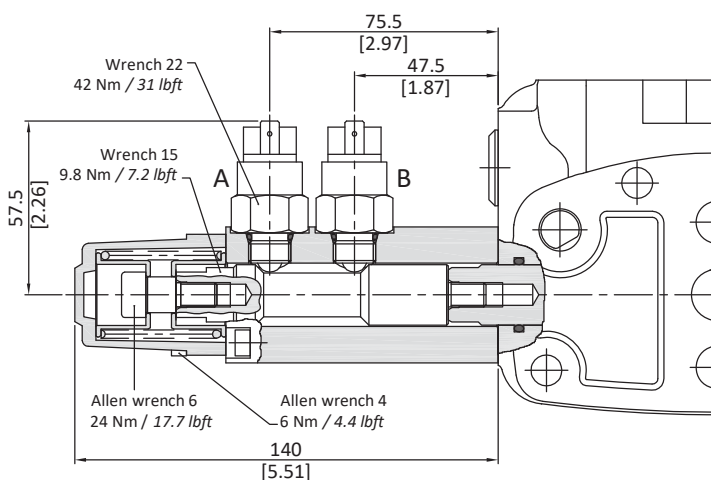
Electrical life (resistive load)

: 5×10^4 operations 10A / 12VDC

: 5×10^4 operations 3A / 24VDC

Type 8MG1\MG2(NC-NC) (30 07 5396)

With double microswitch in position 1 and 2.



Positions	A	B
1		
0		
2		

Operating features

MICROSWITCH

Mechanical life

: 5×10^5 operations

Electrical life (resistive load)

: 5×10^4 operations 10A / 12VDC

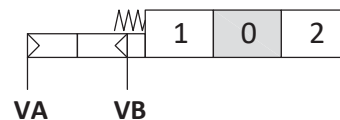
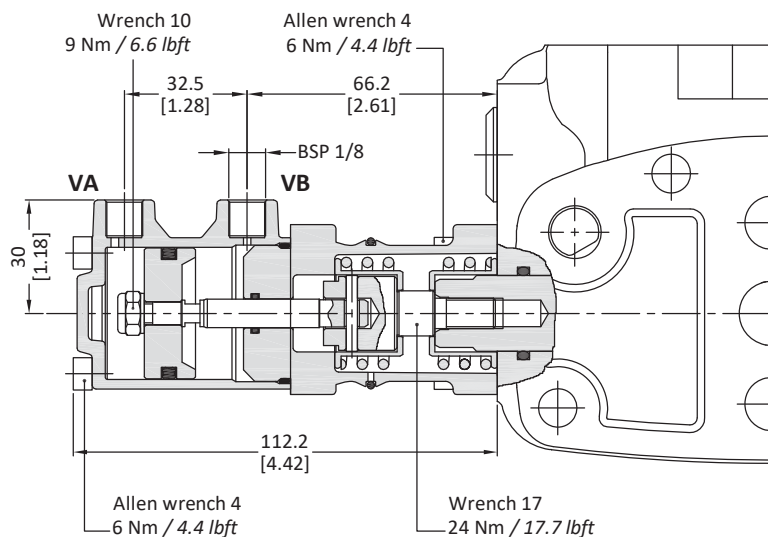
: 5×10^4 operations 3A / 24VDC

Working section

"A" side spool positioners

ON/OFF pneumatic kit type 8P (30 07 5399)

With spring return to neutral position.

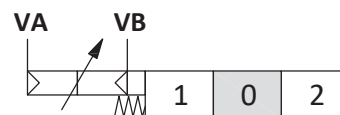
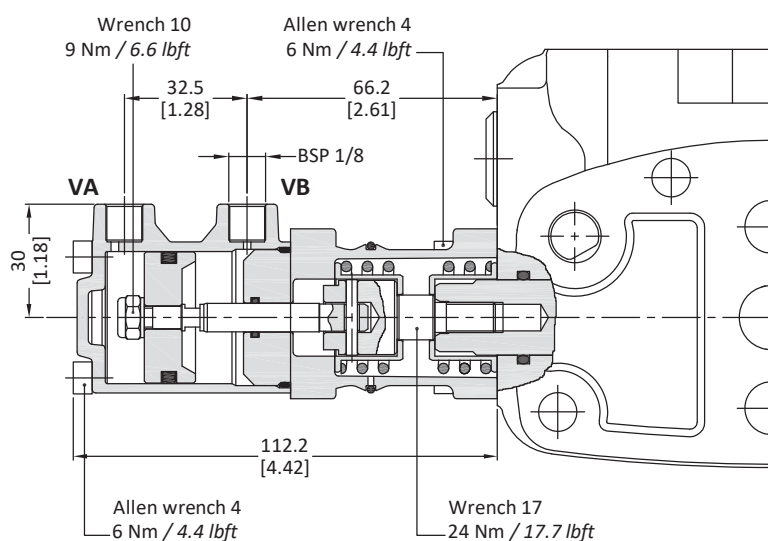


Operating features

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

8PF pneumatic proportional kit (30 07 5596)

With spring return to neutral position.



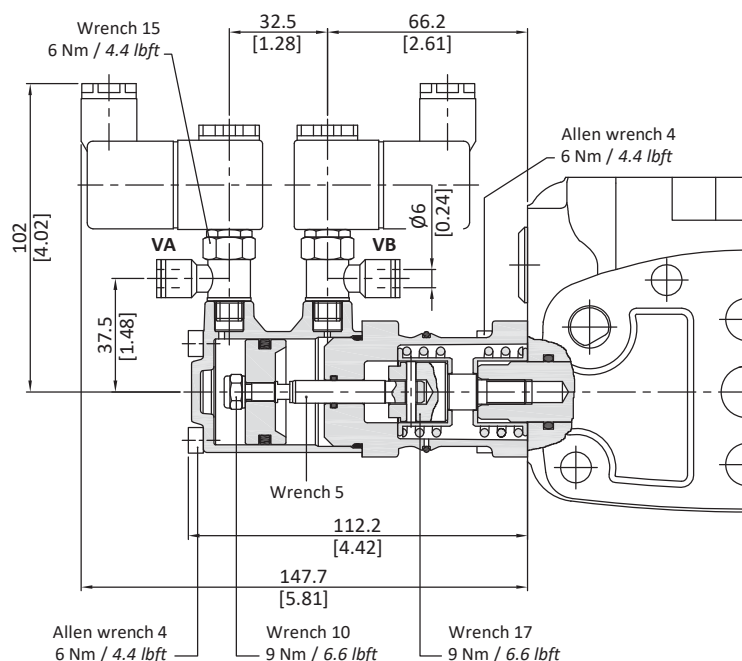
Operating features

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

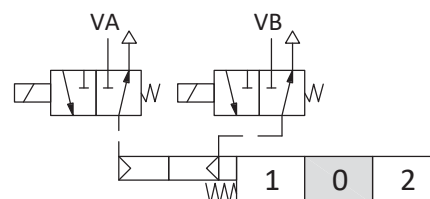
"A" side spool positioners

ON/OFF electropneumatic kit type 8EP3 - 30 07 5443 (12V) - 30 07 5400 (24V)

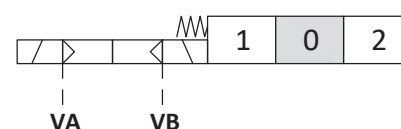
With spring return to neutral position.



Scheme



Scheme ISO 1219



Operating features

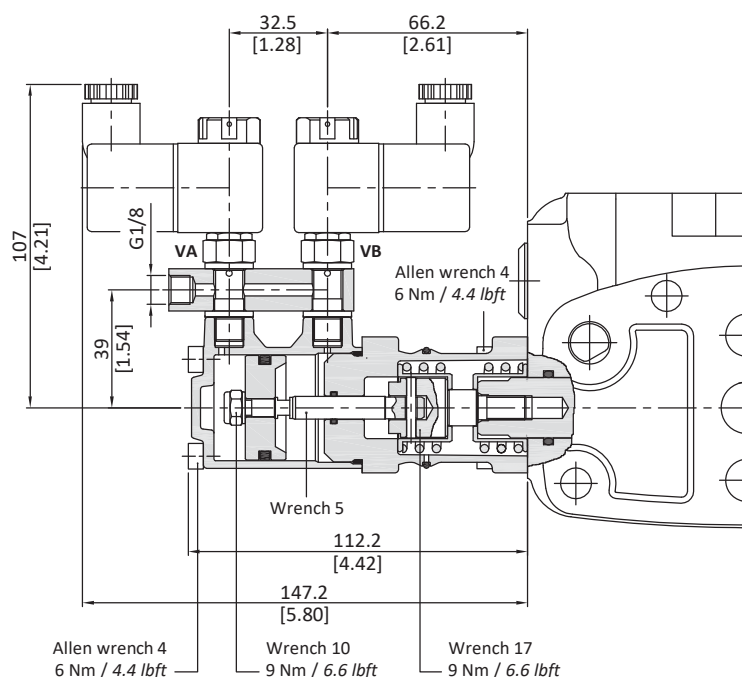
CONTROL

Pilot pressure : 6 bar / 87 psi
: max. 15 bar / 218 psi

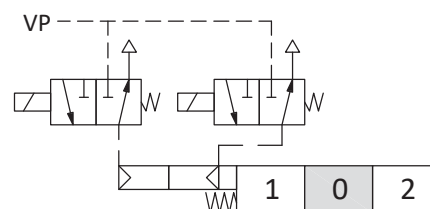
COIL

Nominal voltage tolerance : ±10%
Power rating : 8 W
Nominal current : 12 VDC
: 24 VDC
Coil insulation : Class H
Weather protection : IP65

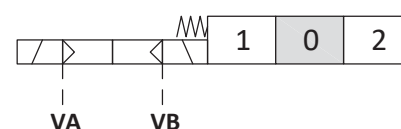
ON/OFF electropneumatic kit type 8EP4 - 30 07 5345 (12V) - 30 07 5346 (24V)



Scheme



Scheme ISO 1219

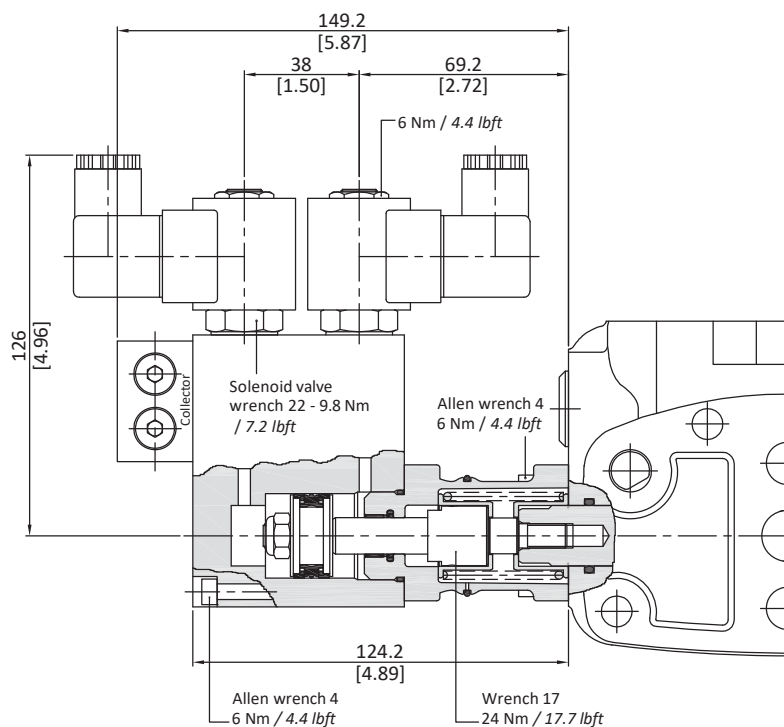


Working section

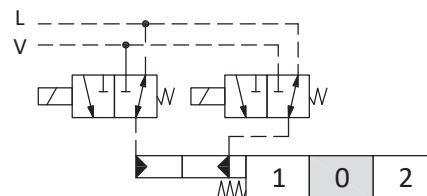
"A" side spool positioners

ON/OFF electrohydraulic kit type 8EI3 - 30 07 5401 (12V) - 30 07 5361 (24V)

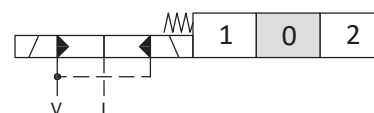
ON/OFF electro-hydraulic control with external pilot and drain.



Scheme



Scheme ISO 1219



Operating features

CONTROL

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

COIL

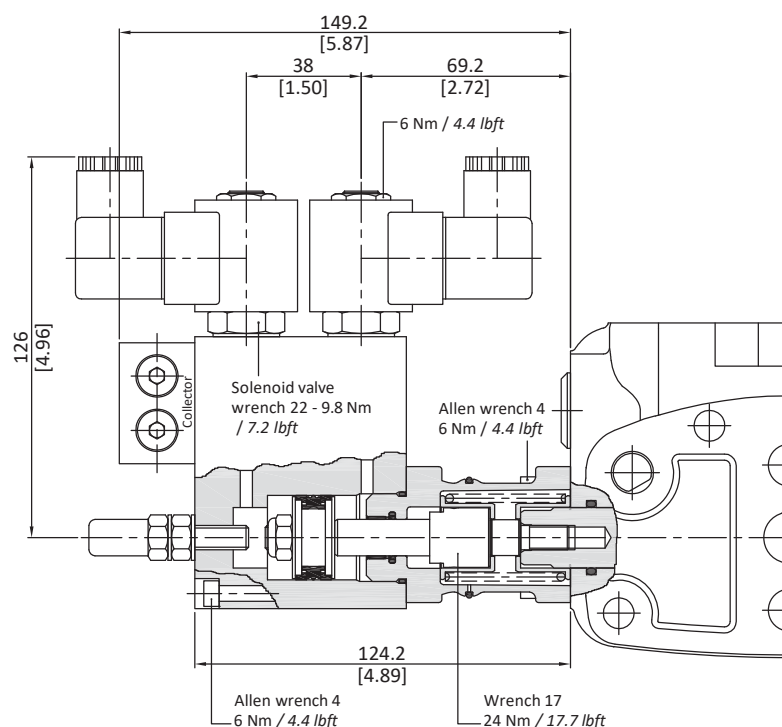
Nominal voltage tolerance	: $\pm 10\%$
Power rating	: 21 W
Nominal current	: 1.75 A - 12 VDC / 0.87 A - 24 VDC
Coil insulation	: Class F
Weather protection	: IP65

Working section

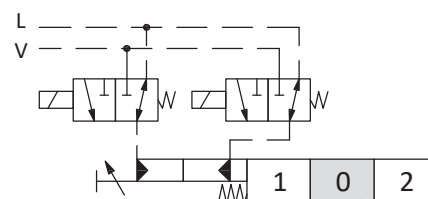
"A" side spool positioners

ON/OFF electrohydraulic kit type 8EI3F2

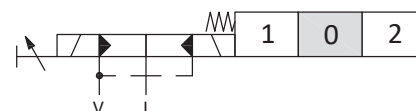
Collector kit with pilot and drain lines with stroke limiter



Scheme



Scheme ISO 1219



Operating features

CONTROL

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

COIL

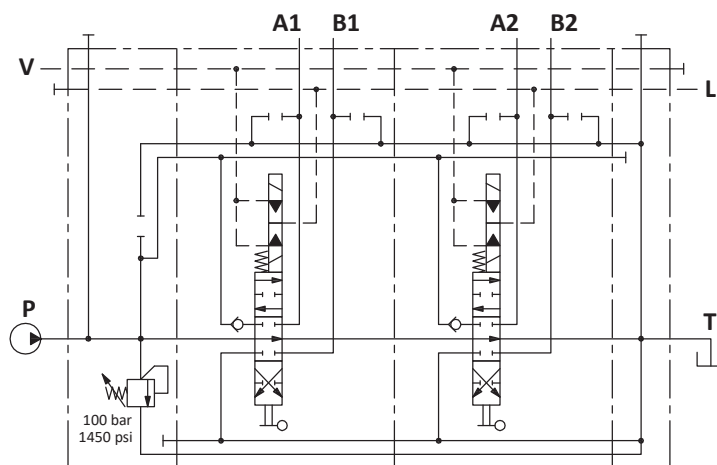
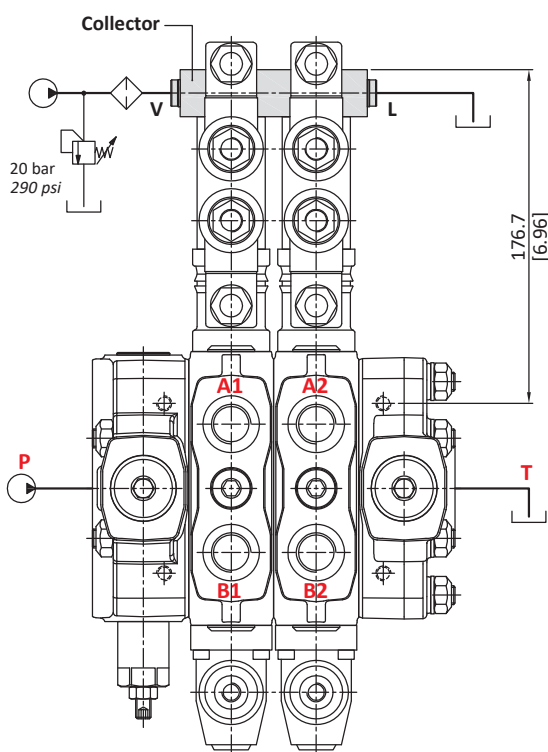
Nominal voltage tolerance	: $\pm 10\%$
Power rating	: 21 W
Nominal current	: 1.75 A - 12 VDC / 0.87 A - 24 VDC
Coil insulation	: Class F
Weather protection	: IP65

Working section

"A" side spool positioners

ON/OFF electrohydraulic kit type 8EI3

Collector kit for external pilot and drain



Description example :

100L GS16/2/AC(X-100)/18EI3L/18EI3L/RC-KE2S0-24VDC

COLLECTOR KIT CODES

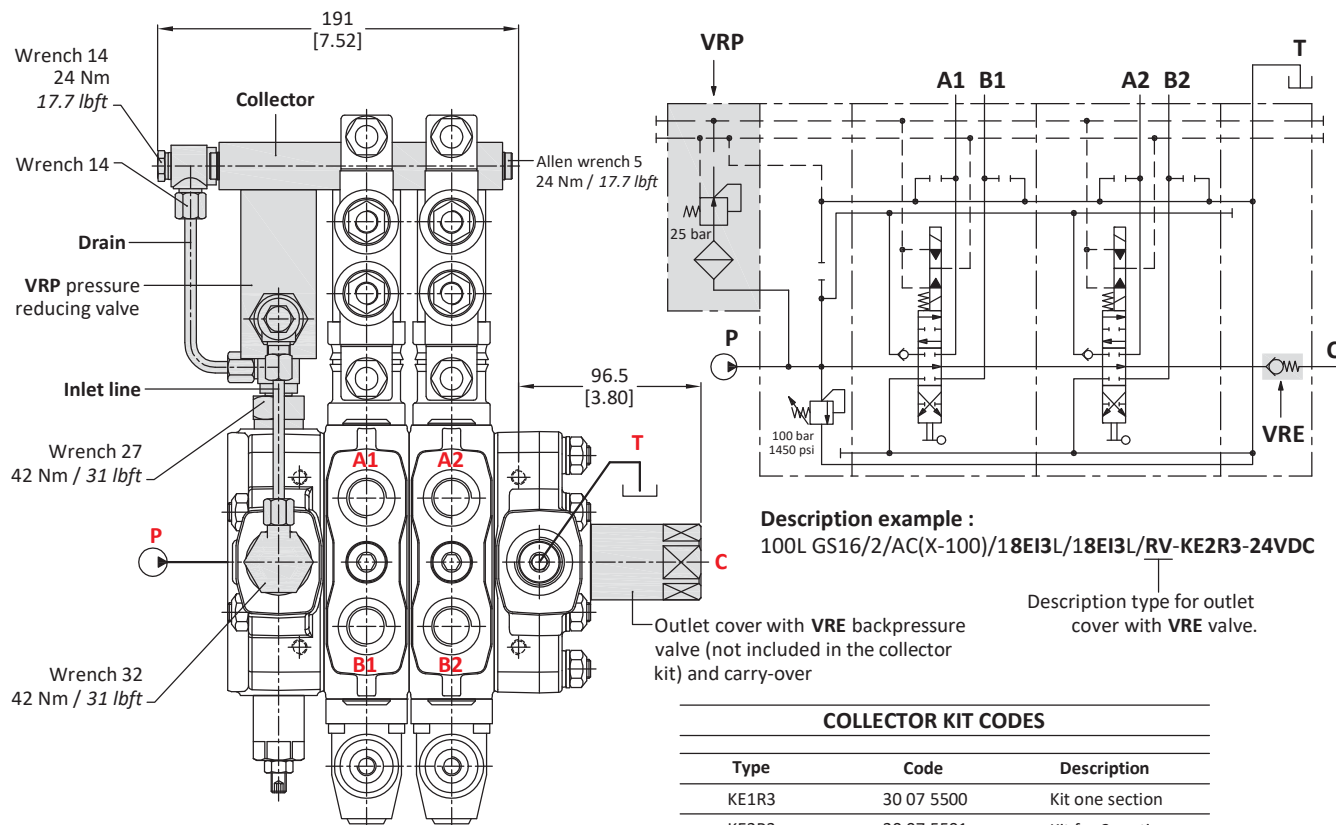
Type	Code	Description
KE1S0	30 07 5537	Kit one section
KE2S0	30 07 5527	Kit for 2 sections
KE3S0	30 07 5528	Kit for 3 sections
KE4S0	30 07 5529	Kit for 4 sections
KE5S0	30 07 5530	Kit for 5 sections
KE6S0	30 07 5531	Kit for 6 sections
KE7S0	--	Kit for 7 sections

"A" side spool positioners

ON/OFF electrohydraulic kit type 8EI3

Collector kit with pilot and drain lines

The kit include collector, VRP pressure reducing valve and pipes.



Operating features

VRP VALVE

Output pressure : 25 bar / 363 psi

Max. flow : 8 l/min

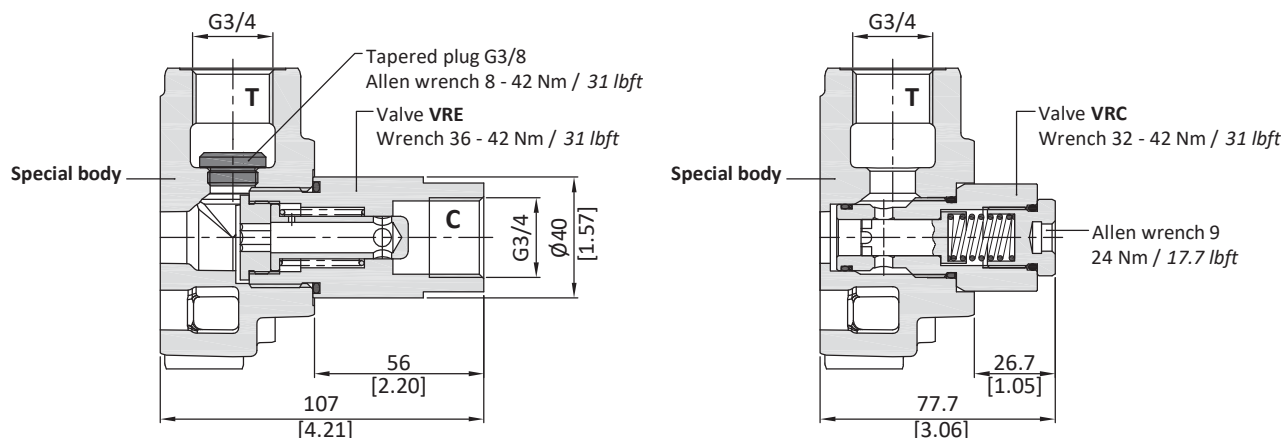
Filtration : 80 µ

COLLECTOR KIT CODES

Type	Code	Description
KE1R3	30 07 5500	Kit one section
KE2R3	30 07 5501	Kit for 2 sections
KE3R3	30 07 5502	Kit for 3 sections
KE4R3	30 07 5503	Kit for 4 sections
KE5R3	30 07 5504	Kit for 5 sections
KE6R3	30 07 5505	Kit for 6 sections

VRE - VRC backpressure valve

Valve is assembled on flow through passage of outlet cover; it's necessary to provides pilot pressure to the actuator.
RV complete (with backpressure valve and tapered plug)



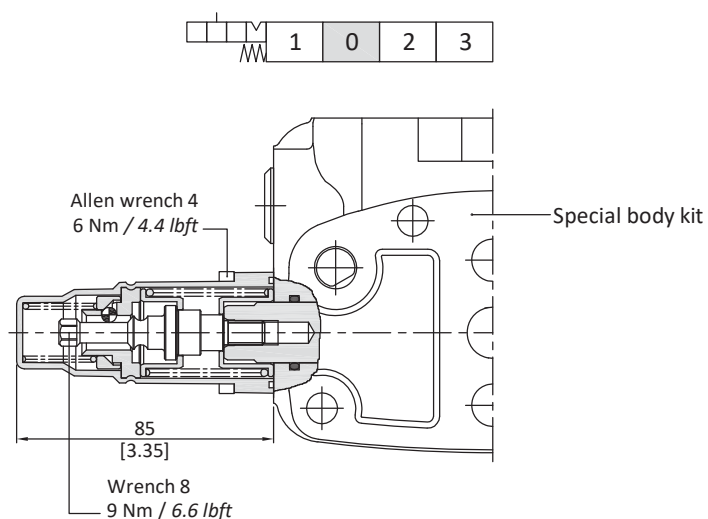
Working section

"A" side spool positioners

Particular positioner kits for special spools

13NZ kit (30 07 5415)

4 positions with spring return in neutral and detent in position 3: **for 5DY spool**.

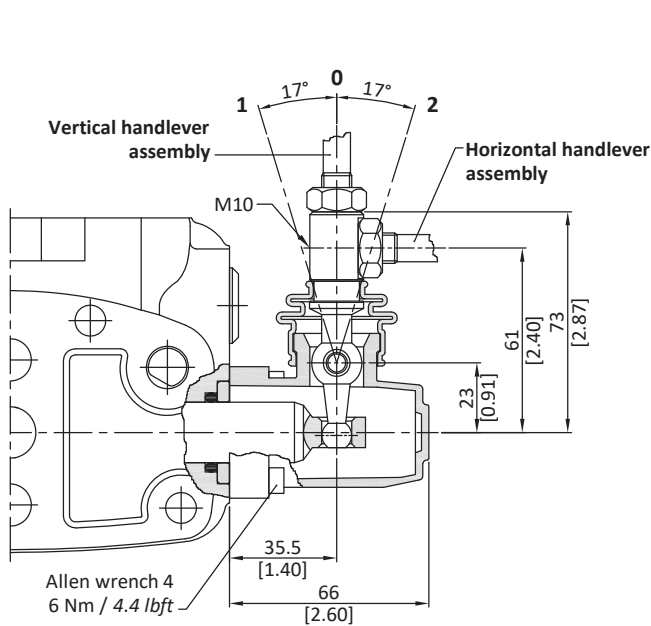


"B" side options

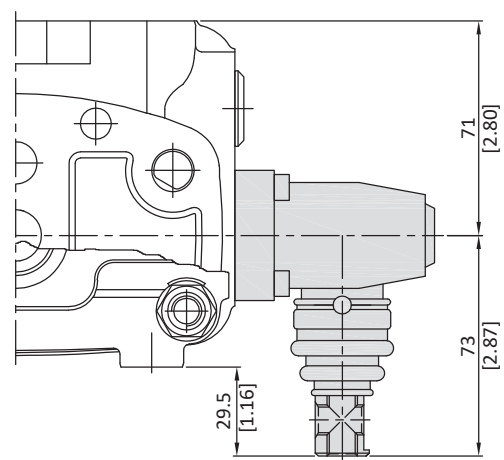
Lever control

Type L (30 07 5403)

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

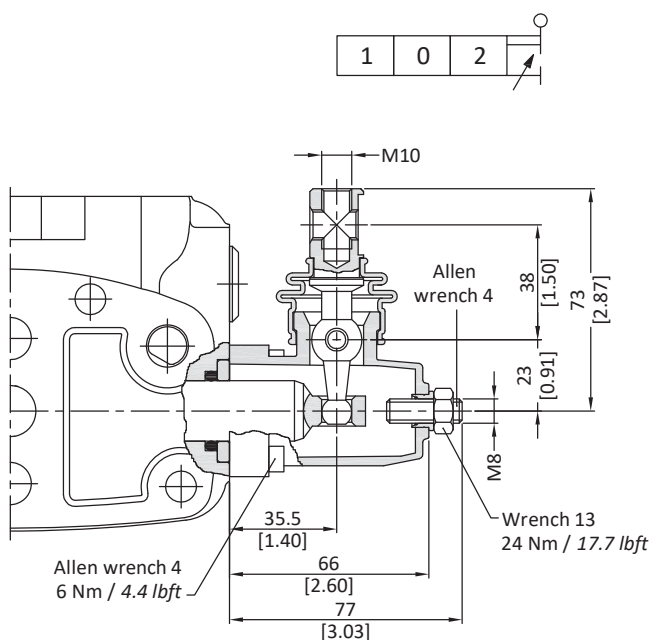


configuration L180



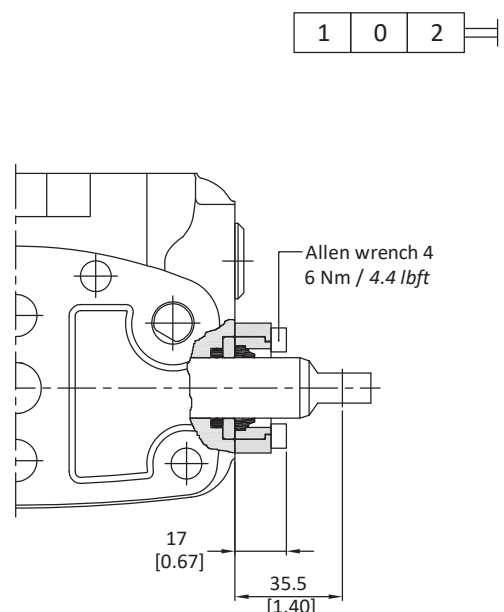
Type LF1 (30 07 5405)

With spool stroke adjustment in position 1 (P → A).



Type SLP (30 07 5406)

Mechanical control with dust-proof plate kit.



Working section

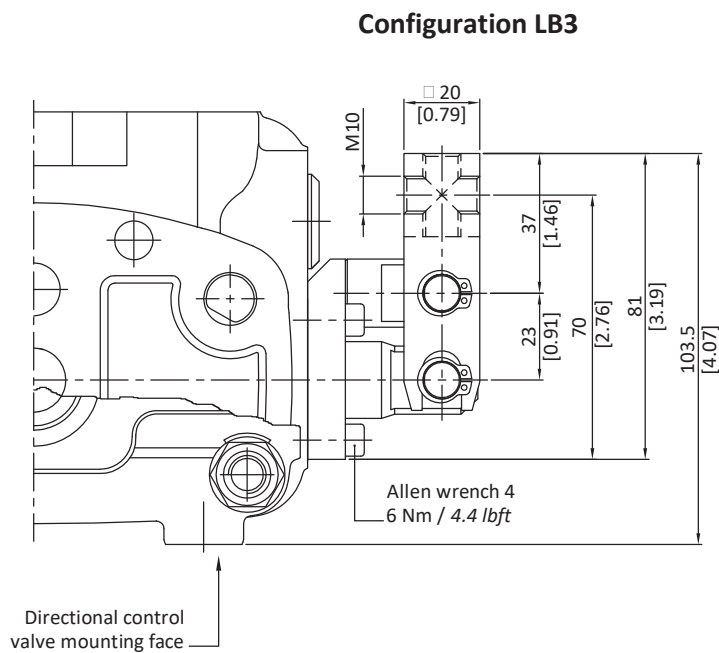
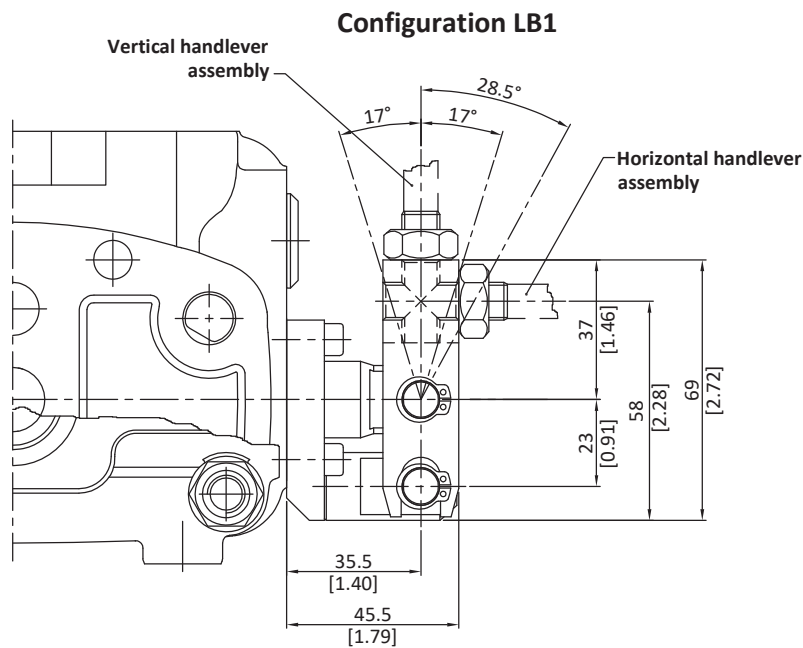
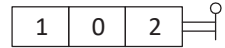
"B" side options

Lever control

Type LB (30 07 5407)

Steel manufacture.

Pivot can be assembled below (LB1 configuration) or above (LB3 configuration).

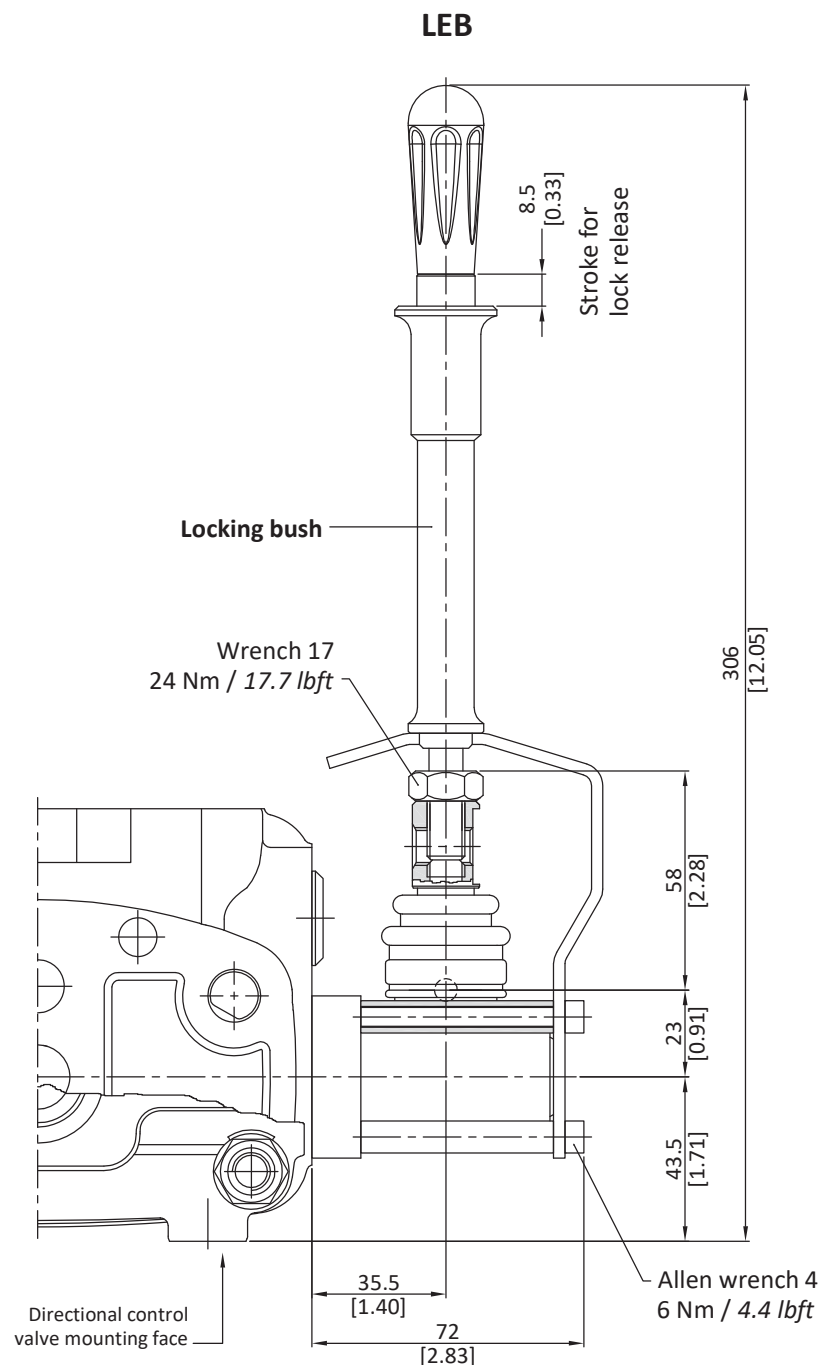
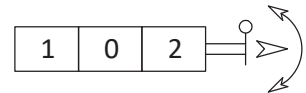


"B" side options

Safety lever control

Safety levers with lock in neutral complete with handlever; lift handlever knob to operate.
With insulated handlever type **LEBP**

Type LEB (30 07 5409)

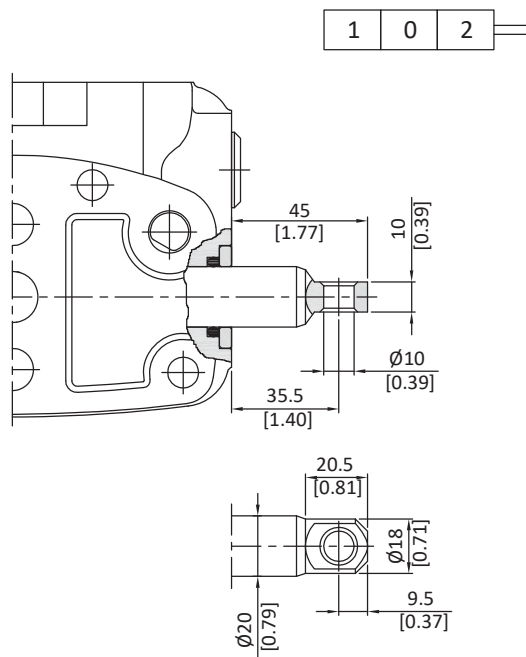


Working section

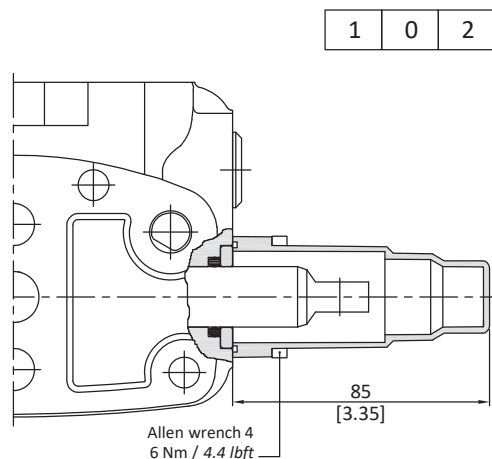
"B" side options

Controls prearrangement

Type SL



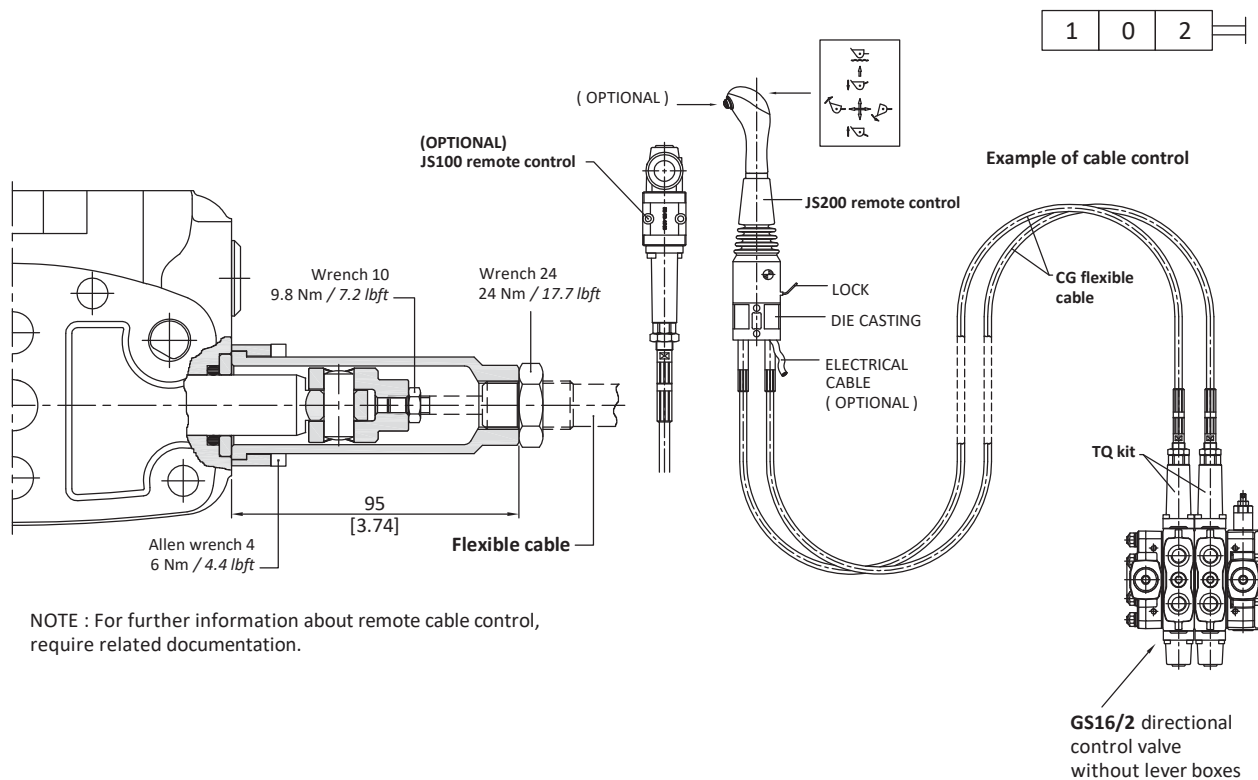
Type SLCZ (30 07 5347)



Protection cap usable with pneumatic, electropneumatic, and electrohydraulic spool positioners.

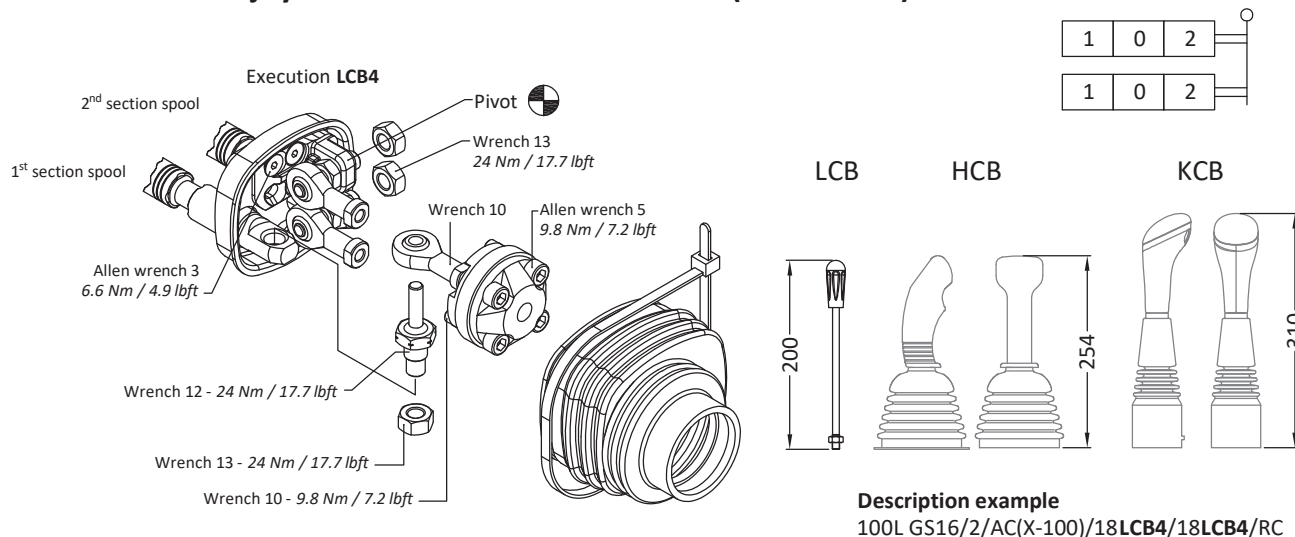
TQ cable remote control kit (30 07 5398)

Waterproof cap prearranged for remote control with flexible cable.

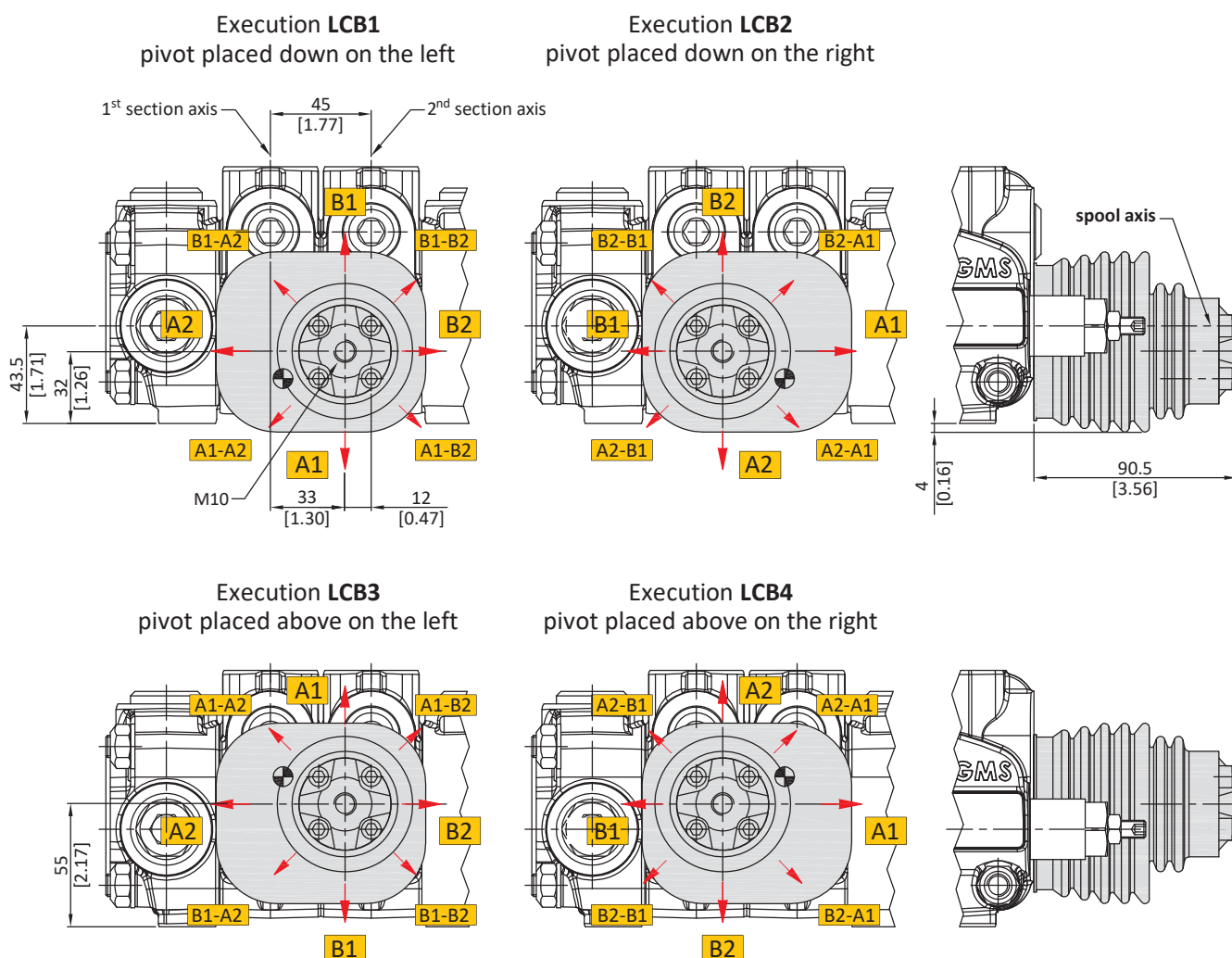


"B" side options

LCB mechanical joystick for two sections control (30 07 5433)



Dimensions and movement scheme

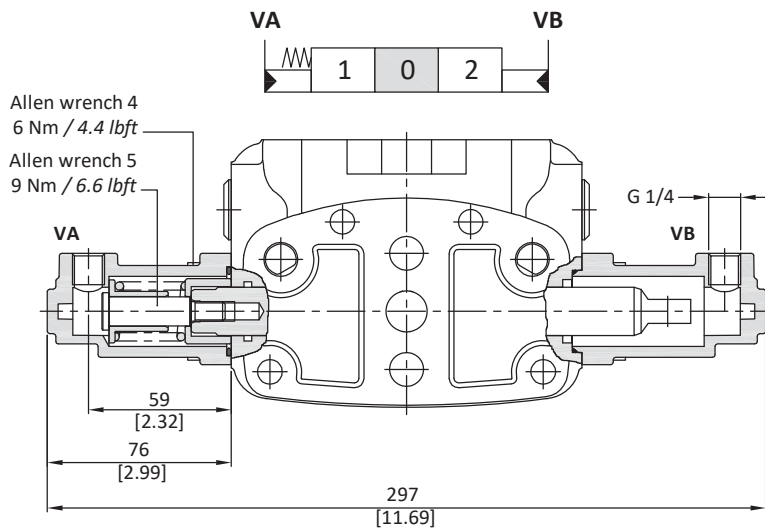


Working section

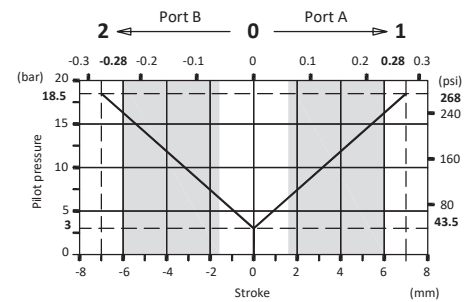
Complete controls

Proportional hydraulic control type 8IM (30 07 5414)

It can be used with standard spools and body



Pilot pressure - stroke diagram



□ Spool overlap area
 ■ Metering area

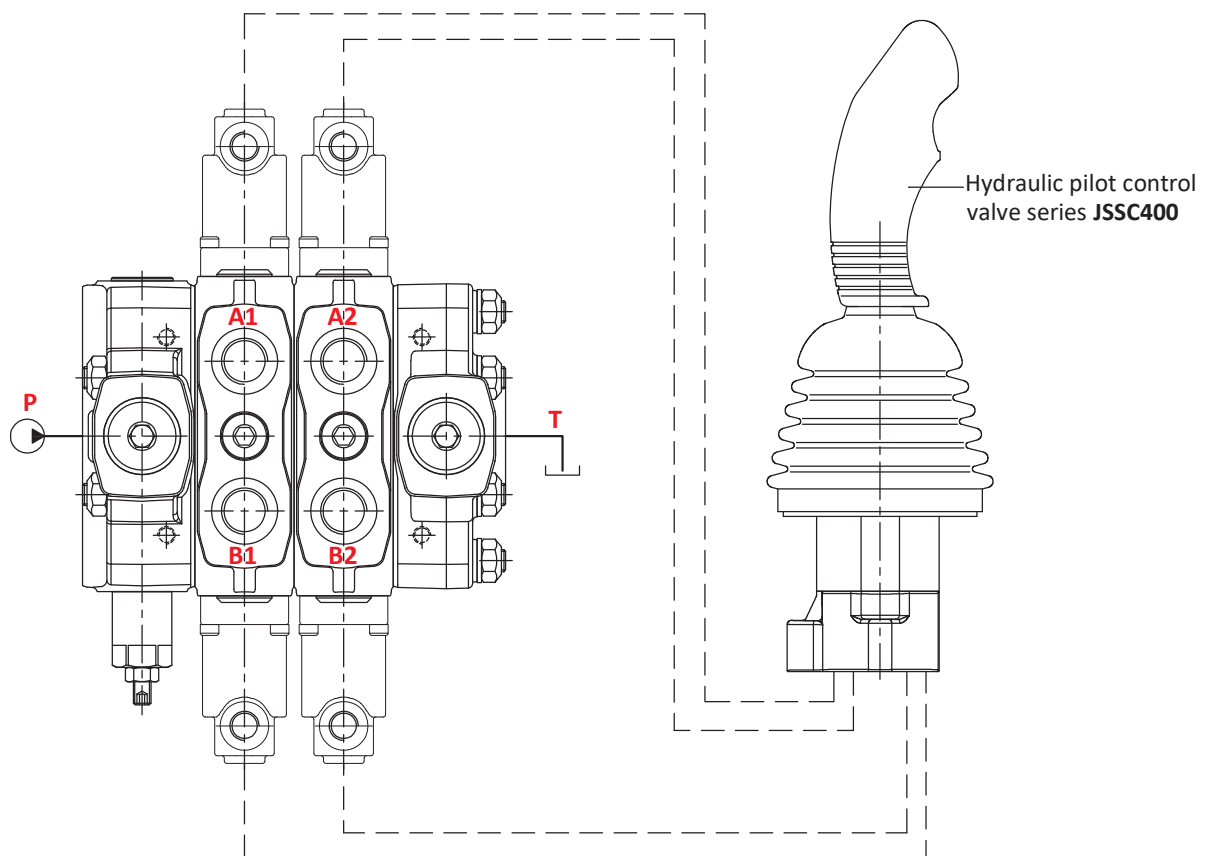
Operating features

Pilot pressure : max. 50 bar / 725 psi

Internal leakage A(B) → T ($\Delta p = 100$ bar - 1450 psi / $T = 40^\circ\text{C}$)

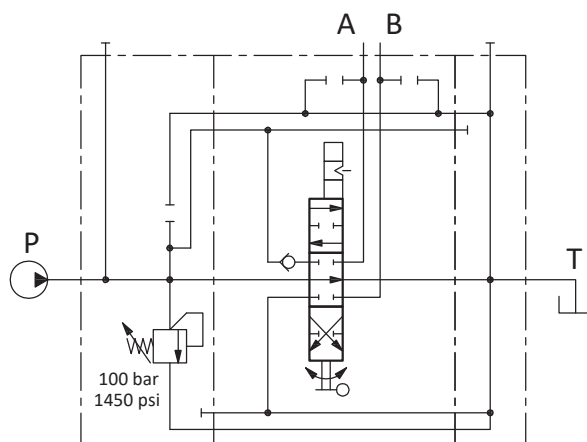
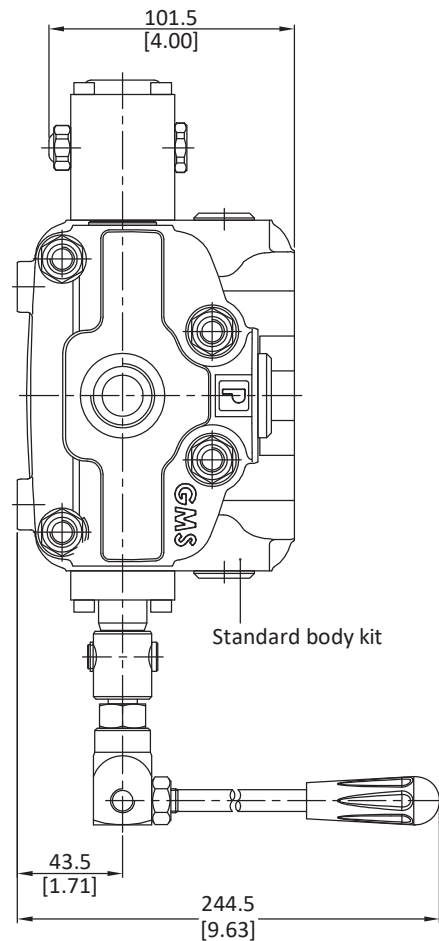
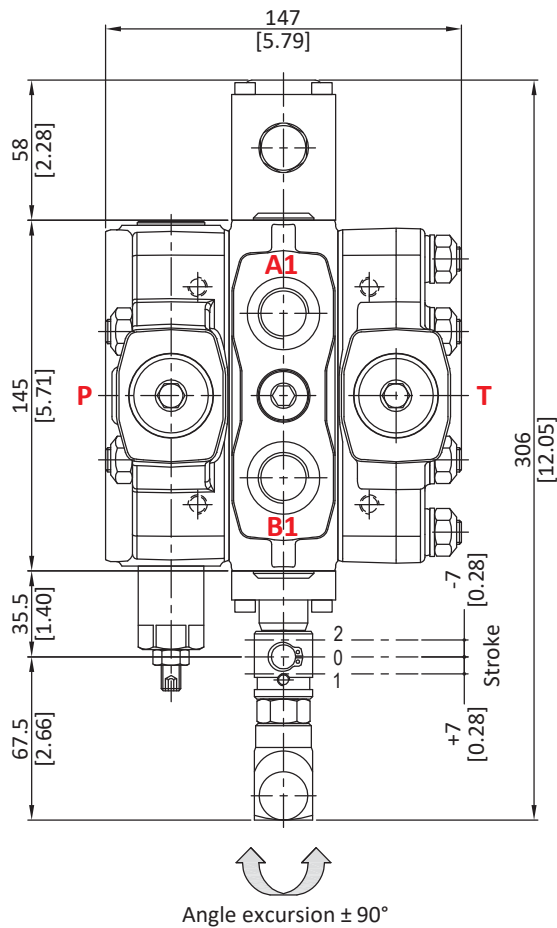
.....: max. 6cm³/min - 0.37 in³/min

Connection example



Special configurations

Directional valve with rotary control kit (30 07 5379)



Description example
100L GS16/1/AC(X-100)/1 R SLP /RC

Working section

Port valves

Anti - shock valves

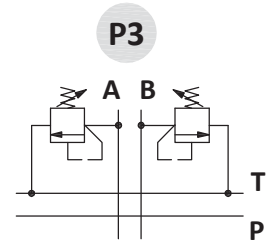
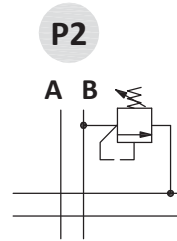
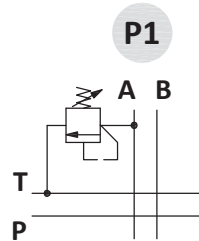
P 1 (100)

Standard setting in bar

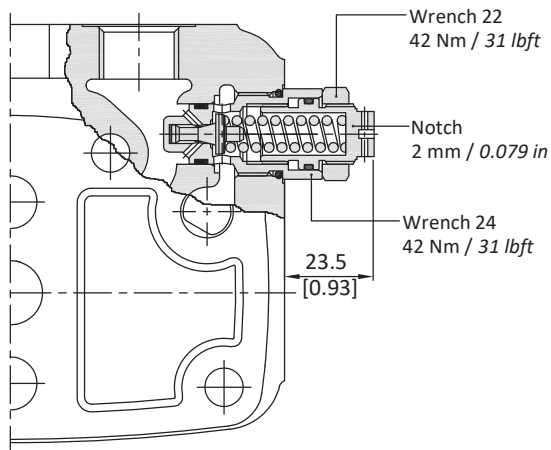
1 mounted on port A.

2 mounted on port B.

3 mounted on ports A and B.



Valve type



Performance data

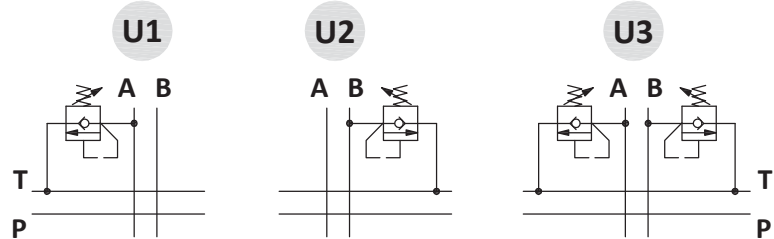
Port valves

Antishock and anticavitation valves

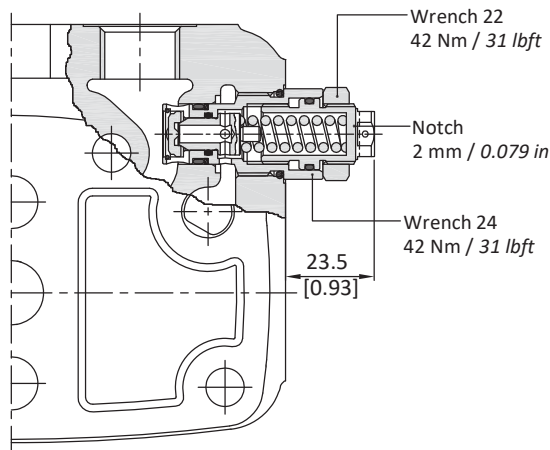
U 1 (100)

Standard setting in bar

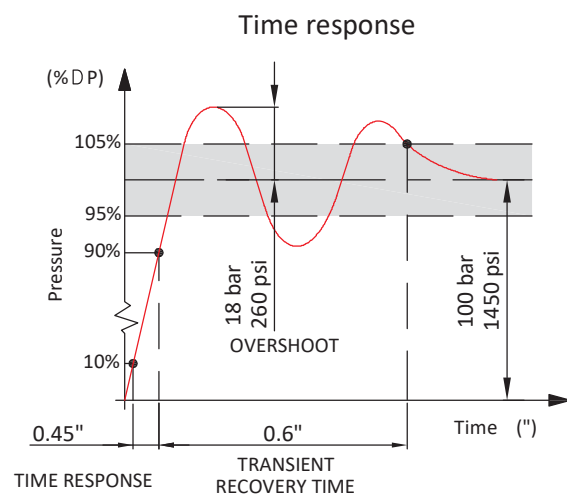
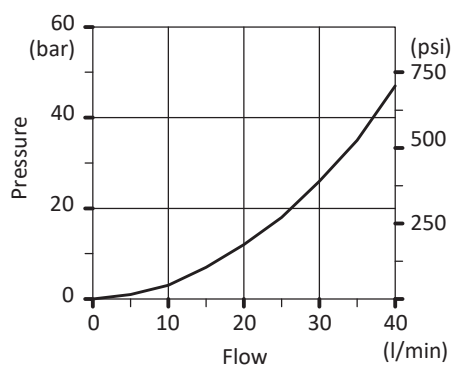
- 1 mounted on port A.
- 2 mounted on port B.
- 3 mounted on ports A and B.



Valve type



Performance data (Antishock and anticavitation valves)



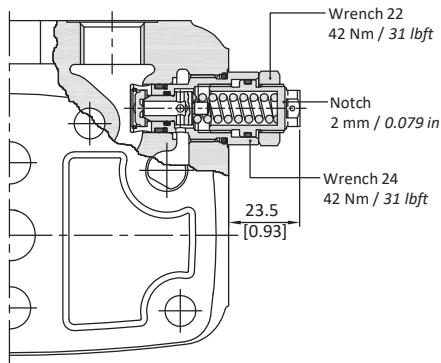
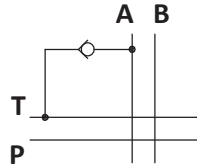
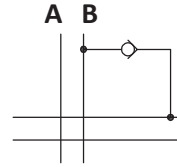
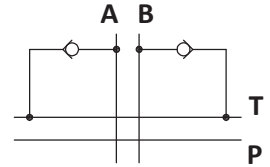
Working section

Port valves

Anticavitation valves

C 1

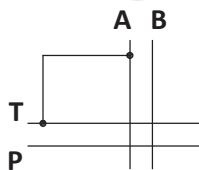
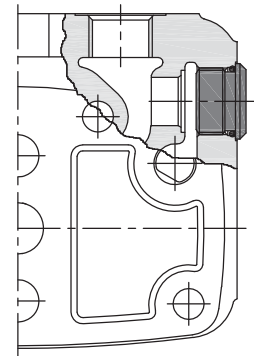
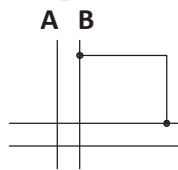
- 1 mounted on port A.
- 2 mounted on port B.
- 3 mounted on ports A and B.

**C1****C2****C3**

Valve blanking plug with tank connection

DST 1

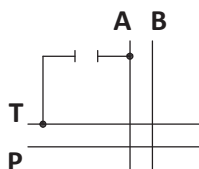
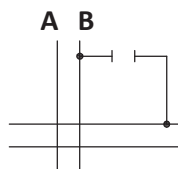
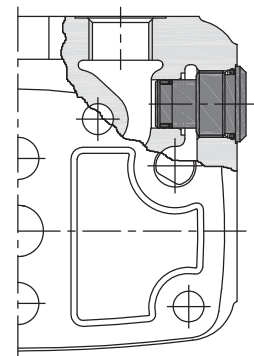
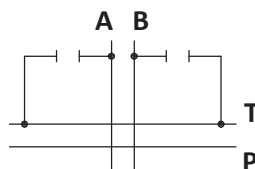
- 1 mounted on port A.
- 2 mounted on port B.

DST1**DST2**

Valve blanking plug

P 1 T

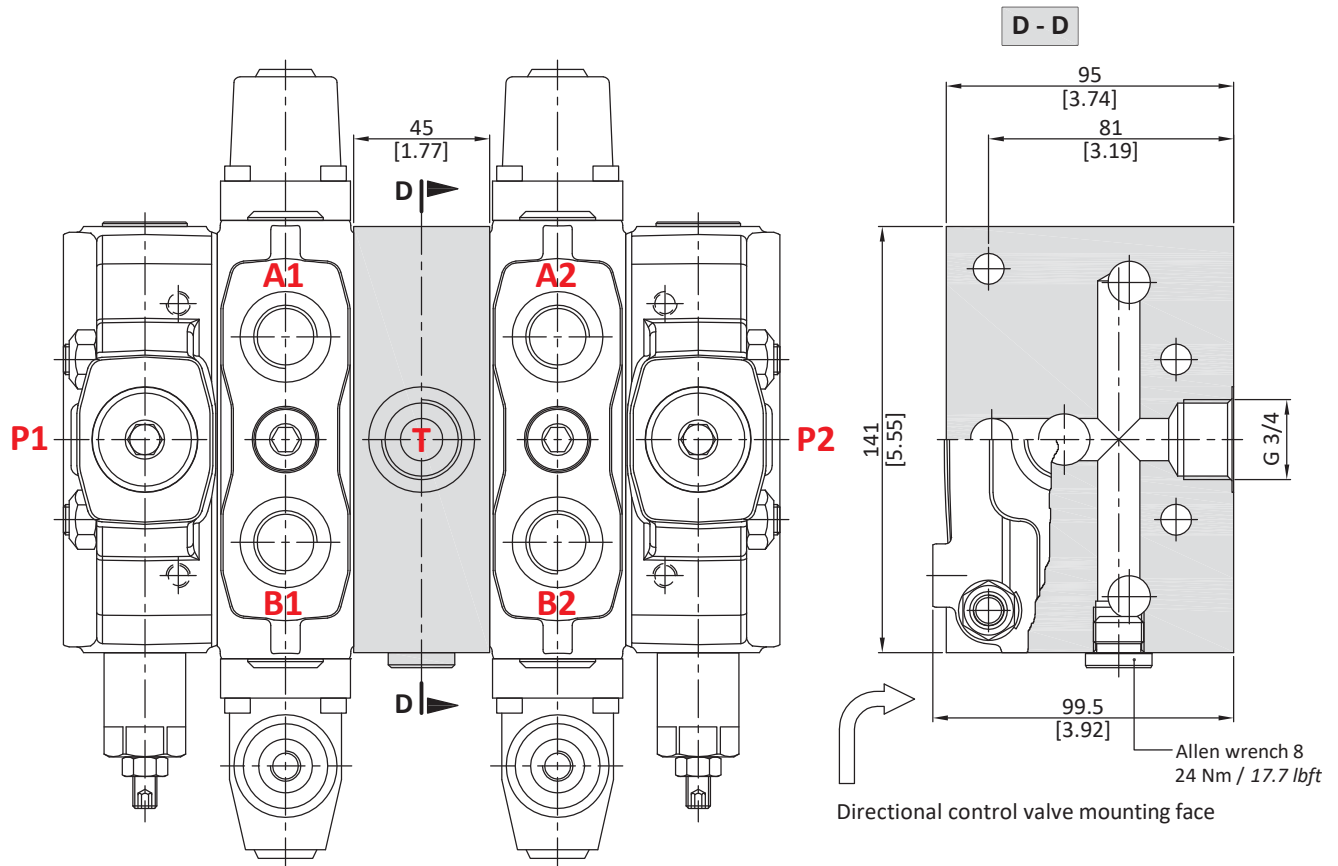
- 1 mounted on port A.
- 2 mounted on port B.
- 3 mounted on ports A and B.

P1T**P2T****P3T**

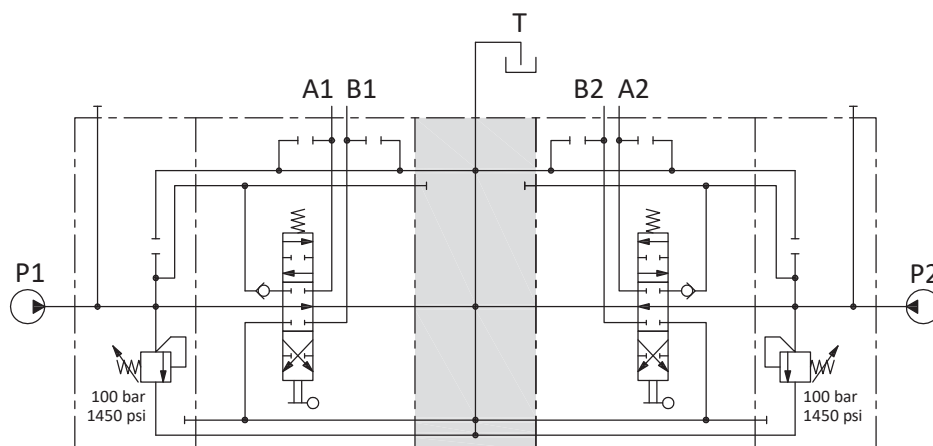
Intermediate section

CS1 mid return manifold

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



Hydraulic circuit



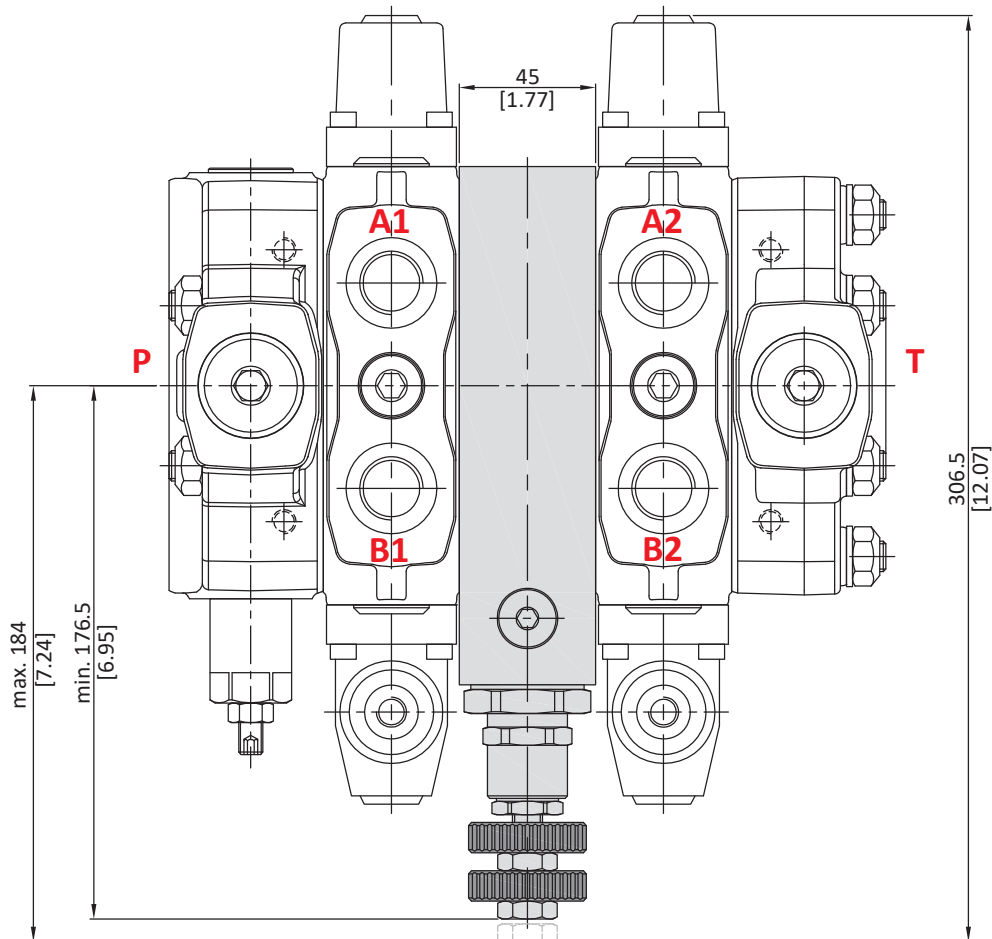
Description example:

100L GS16/2/AC(X-100)/18L/CS1/ED-18L/BC(X-100)

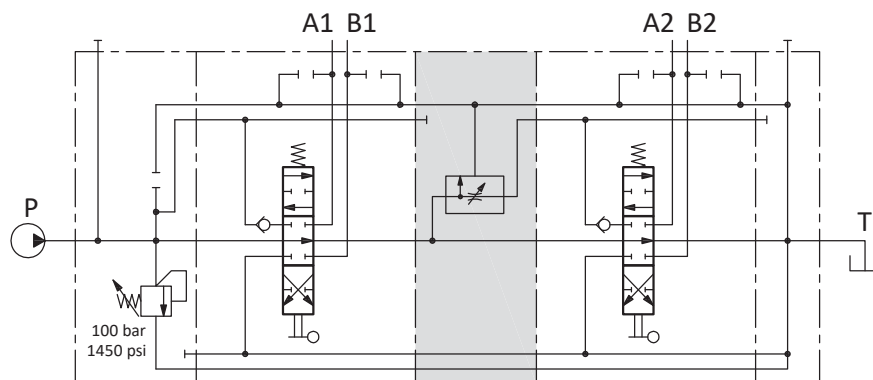
Intermediate section

DFG pressure compensated flow divider section

The flow on the downstream sections can be adjusted from 0 to 100 l/min. by means of graduated handwheel; exceeding setting flow goes to tank.



Hydraulic circuit



Description example:

100L GS16/2/AC(X-100)/18L/DFG/18L/RC

Intermediate section

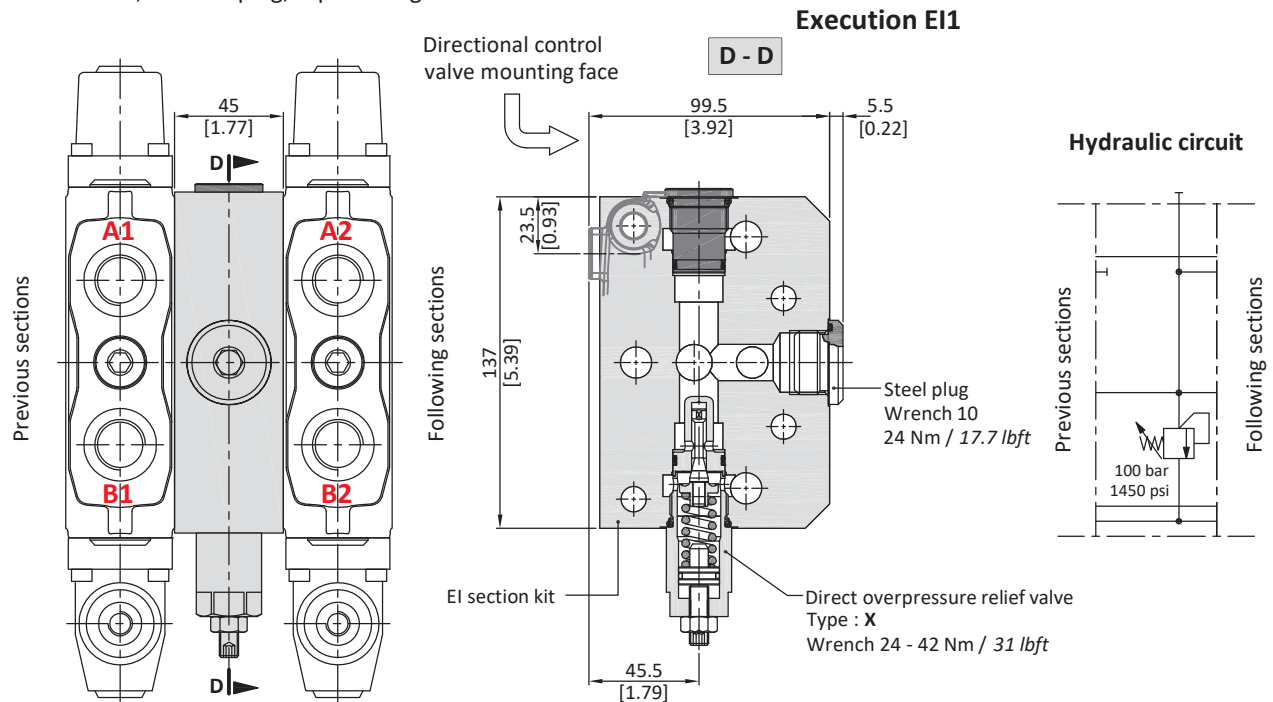
Service relief valve section

EI configuration

The operation of up stream section exclude the EI downstream section.

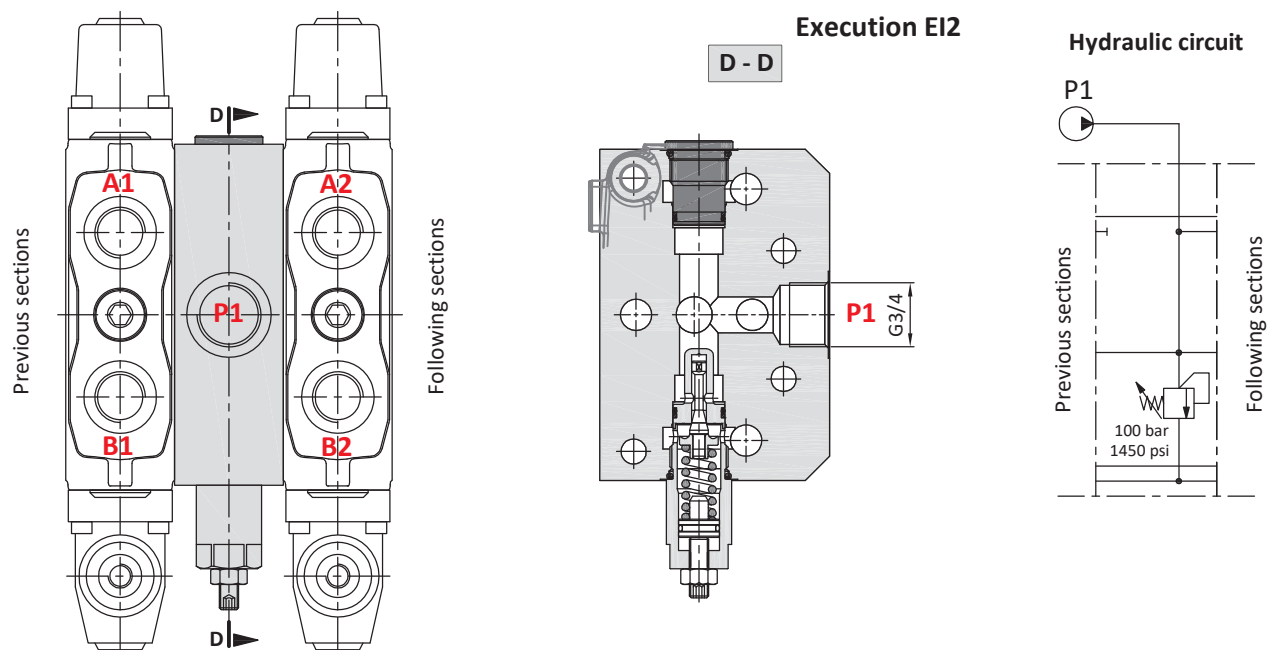
The pressure of the downstream sections should be adjusted at least 20 bar below the relief valve setting.

Execution EI2, without plug, is prearranged for a second inlet.



Description example:

100L GS16/2/AC(X-100)/18L/ **EI1(X-100)**/18L/RC



Description example:

100L GS16/2/AC(X-100)/18L/ **EI2(X-100)**/18L/RC

Outlet section

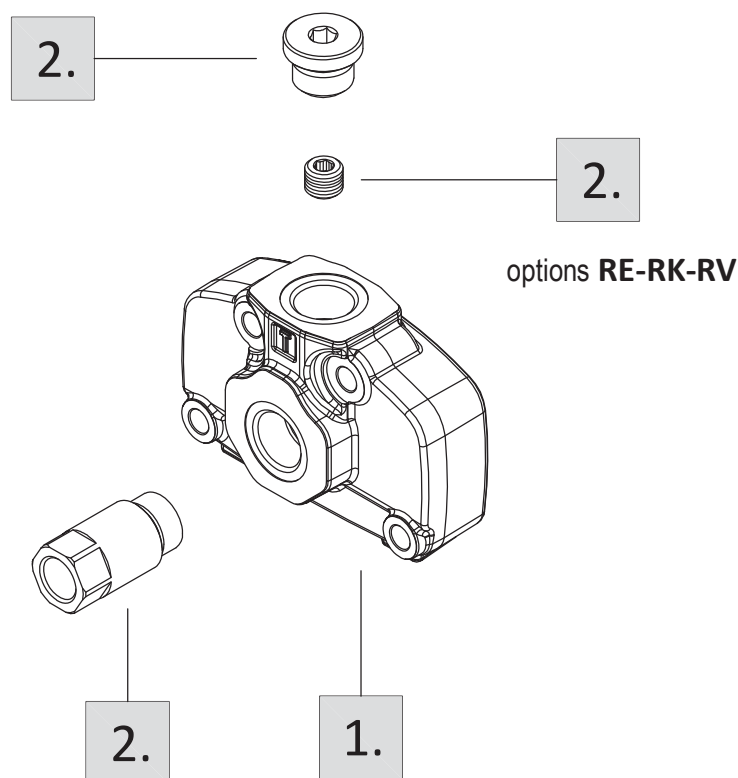
Parts ordering codes

Ordering example:

100L GS16 / RC



Available configurations

RC: side outlet**RD:** upper outlet**RE:** upper outlet with side carry-over**RK:** upper outlet and closed centre**RV:** With backpressure valve: **to be used together with the electro-hydraulic control**

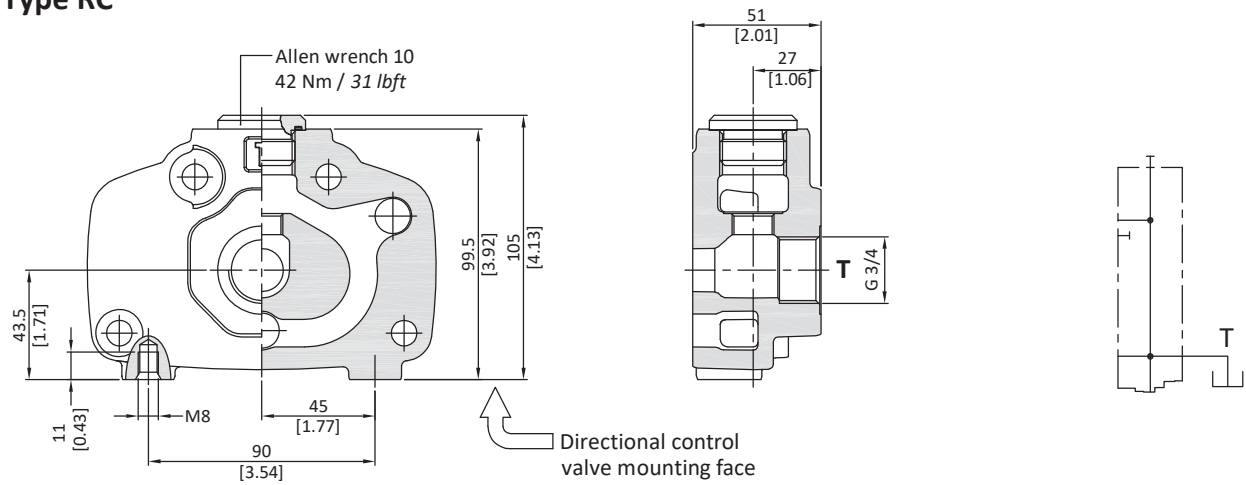
1. Complete outlet cover *			2. Circuit options *			
TYPE	CODE	DESCRIPTION	TYPE	CODE	QTY	DESCRIPTION
RC	30 08 5654	Side outlet	-	30 05 4918	1	G 3/8 plug for carry-over (RE), carry-over with backpressure valve (RV) and closed centre (RK) options
RD	30 08 5716	Upper outlet	VRE	30 05 4905	1	VRE backpressure valve for RV configuration
RE	30 08 5718	Upper outlet with side carry-over sleeve	VRC	30 05 4904	1	Backpressure valve for VRC configuration
RK	30 08 5717	Upper outlet with closed center	-	30 05 4920	1	Plug G 3/4
RV	30 08 5719	With backpressure valve				
VRC	30 08 5720	With backpressure valve				

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

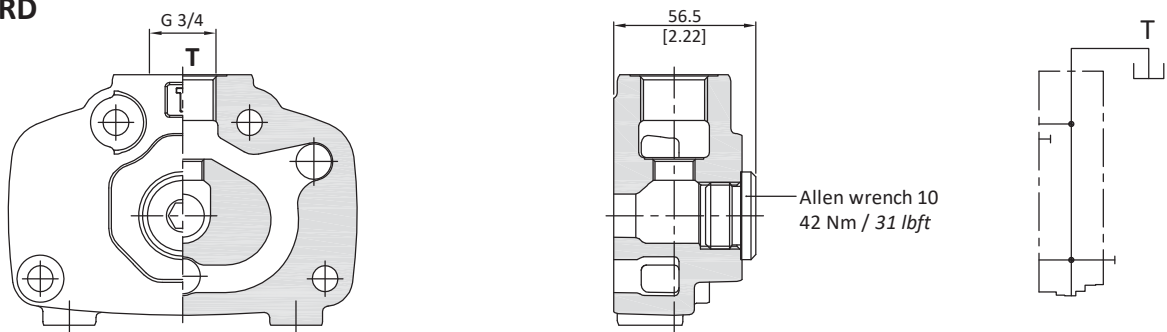
Outlet section

Dimensional data and hydraulic circuit

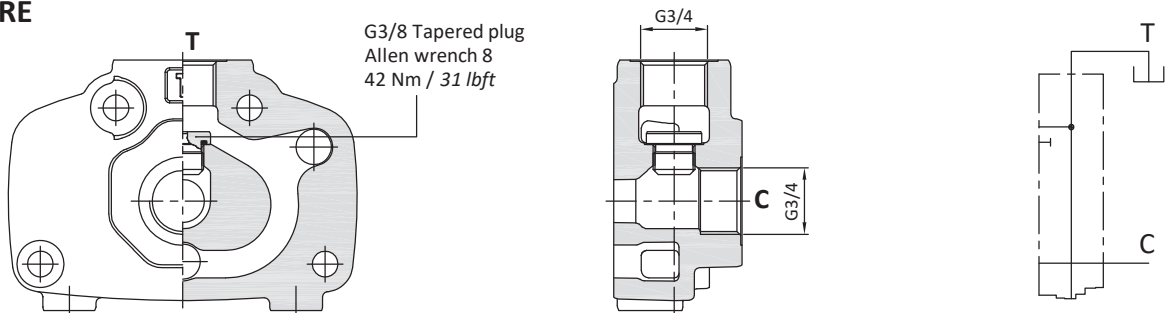
Type RC



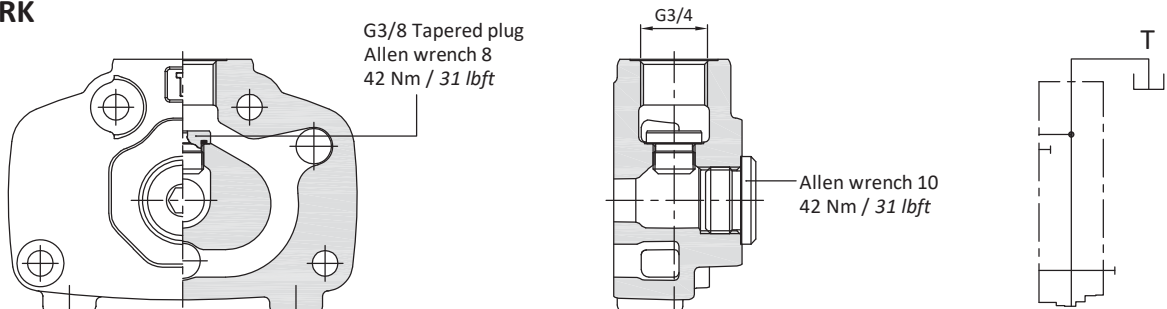
Type RD



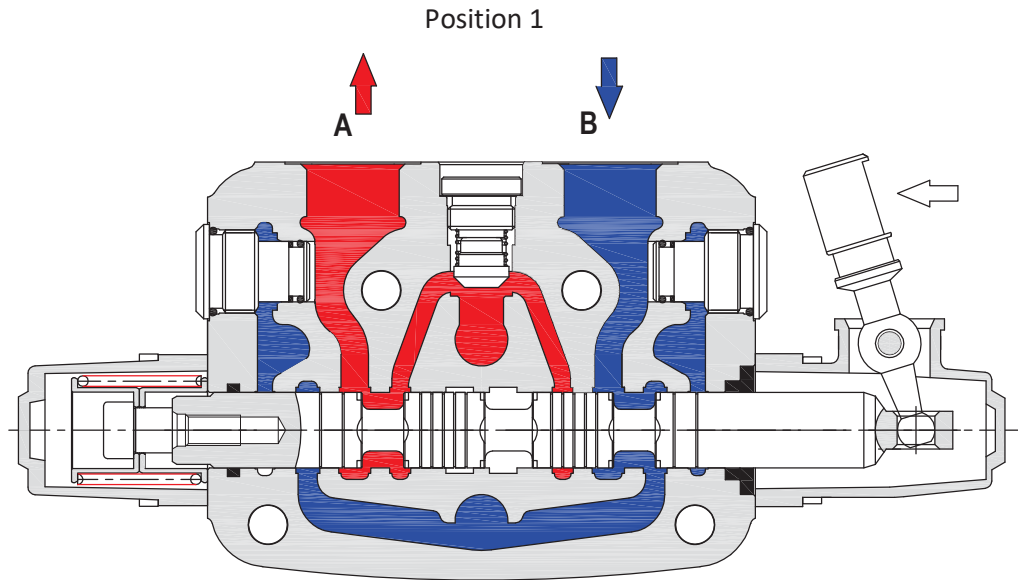
Type RE



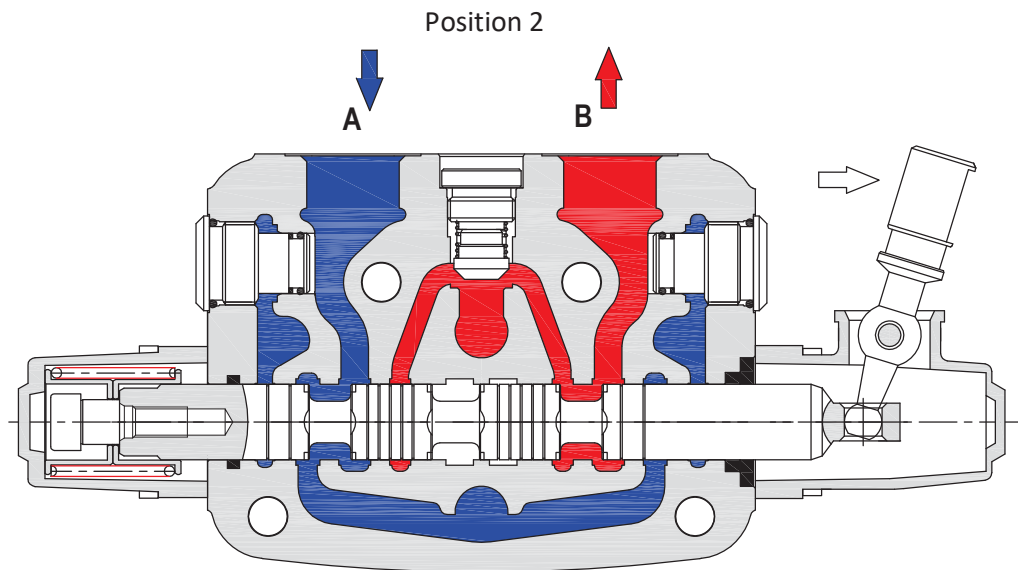
Type RK



When hand lever pushed (spool out position) P to A port. B to T port.



When hand lever pulled (spool in position) P to B port. A to T port.



100L GS

GS Series[illegible]



150L GS

GMS

hydraulic

Specifications

Spool: 1..12 Spools/Double - Single - Closed Center - Motor - Floating - Regenerative Spool

Liter: 150L Nominal -170L Max

Ports: 3/4 Standard

Front Cap: Handle - Mechanical Joystick - Hydraulic Joystick - Remote Cable Control - Lock Handle

End Cap: Spring - Detent - Floating - Pneumatic - Proportional Coil - Hydraulic Control - Electro Hydraulic - Remote Cable Control

Open Center / Carry over / Parallel Circuit

Features

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

- ▶ Fitted with a main pressure relief valve and a load check valve on every working section
- ▶ Available with parallel, tandem or series circuit.
- ▶ Optional carryover port.
- ▶ A wide variety of auxiliary valves.
- ▶ Intermediate sections for several types of circuit.
- ▶ Available manual, pneumatic, hydraulic, electro--hydraulic, and remote with flexible cables spool control kits.
- ▶ Diameter 20 mm (0.79 in) interchangeable spools.

Additional information

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

WARNING!

All specifications of this catalogue refer to the standard product at this date.

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

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

1st edition April 2018:

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- Inlet section

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Inlet relief options.	page 12

- Inlet section for special application

Configuration with rotary commutator.	page 15
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- Working section

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“A” side spool positioners.	page 19
“B” side options	page 32
Complete controls.	page 37
Port valves.	page 40

- Intermediate section

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DFG pressure compensated flow divider section. .	page 44
EI service relief valve section.	page 45

- Outlet section

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Valve general informations

Working conditions

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

Nominal flow rating		150 l/min.	
Max. flow		170 l	
Operating pressure (max.)	Series-parallel (tandem) circuit	315 bar	4600 psi
Back pressure (max.)	on outlet port T	25 bar	360 psi
Internal leakage A(B)→T	Δp=100 bar – 1450 psi fluid and valve at 40°C	3cm ³ /min.	0.18 in ³ /min.
Hydraulic fluid		Mineral base oil	
Fluid temperature	with NBR 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	
Tie rods tightening torque (wrench 17)		50 Nm	36 lbft

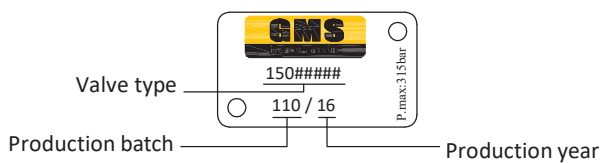
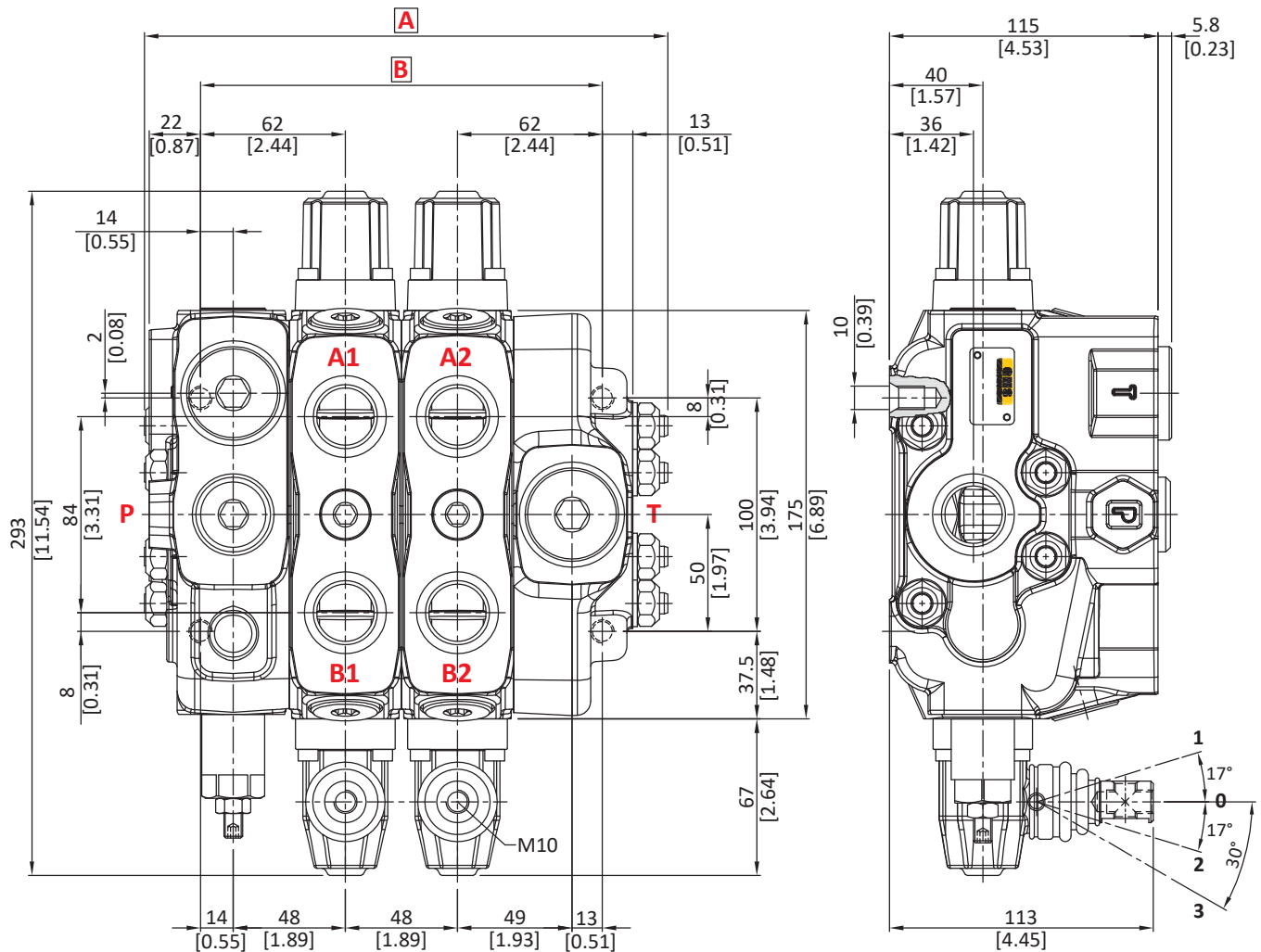
Standard threads

REFERENCE STANDARD

PORTS	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)
Inlet P	G 3/4	1 5/16 - 12 UN - 2B (SAE 16)
A and B ports	G 3/4	1 1/16 - 12 UN - 2B (SAE 12)
Outlet T and carry-over C	G 1	1 5/16 - 12 UN - 2B (SAE 16)
PILOT PORTS		
Hydraulic ports	G 1/4	-
Pneumatic ports	G 1/8	-

Valve general informations

Dimensional data



TYPE	A		B		Weight	
	mm	in	mm	in	kg	lb
150L GS 16/1	176	6.93	124	4.88	13	28.7
150L GS 16/2	224	8.82	172	6.77	18.5	40.8
150L GS 16/3	272	10.71	220	8.66	24	52.9
150L GS 16/4	320	12.60	268	10.55	29.5	65
150L GS 16/5	368	14.49	316	12.44	35	77.2
150L GS 16/6	416	16.38	364	14.33	40.5	89.3

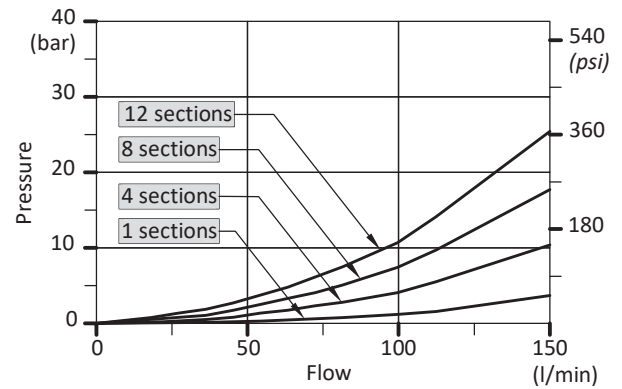
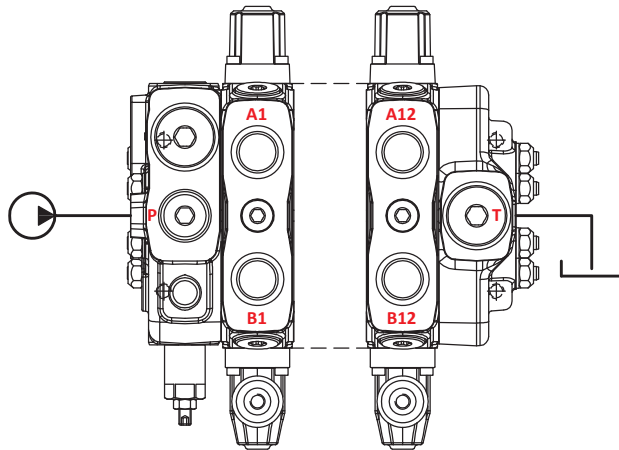
TYPE	A		B		Weight	
	mm	in	mm	in	kg	lb
150L GS 16/7	464	18.27	412	16.22	46	101.4
150L GS 16/8	512	20.16	460	18.11	51.5	113.5
150L GS 16/9	560	22.05	508	20.00	57	125.7
150L GS 16/10	608	23.94	556	21.89	62.5	137.8
150L GS 16/11	656	25.83	604	23.78	68	149.9
150L GS 16/12	704	27.72	652	25.67	73.5	162

Valve general informations

Performance data (pressure drop vs. flow)

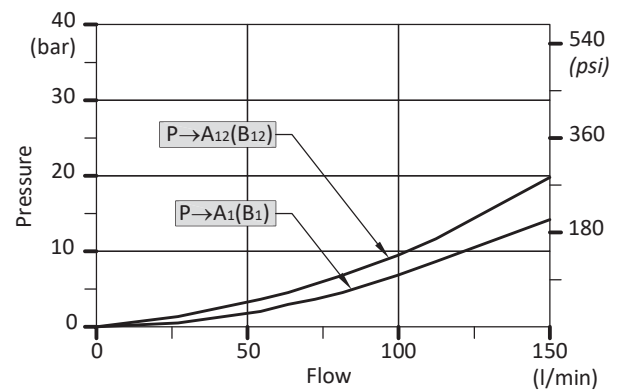
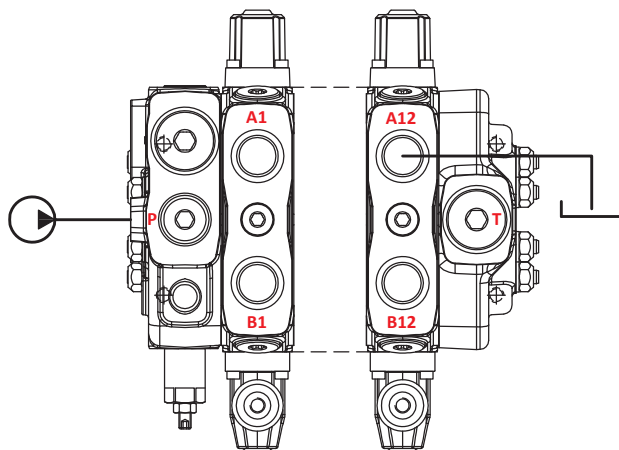
Open centre

From side inlet to side outlet.



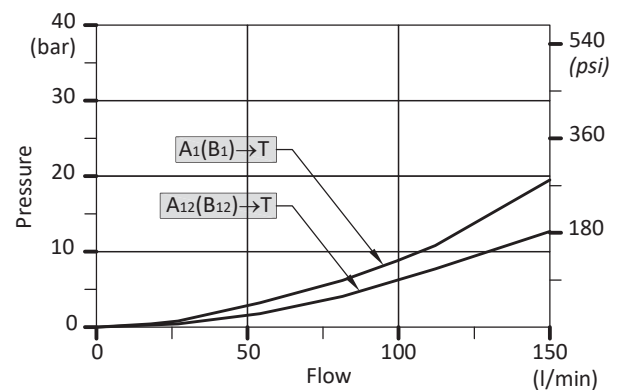
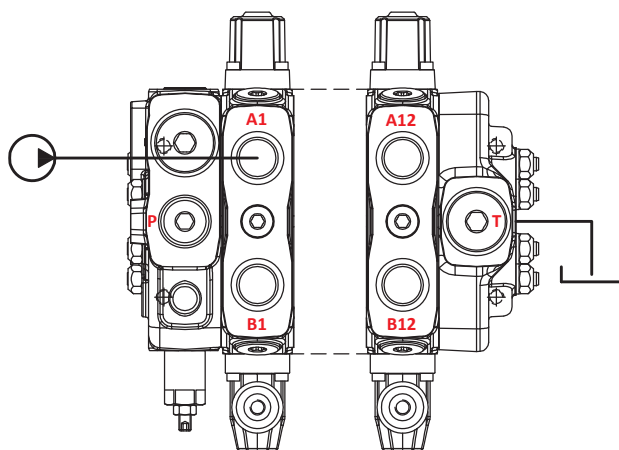
Inlet to work port

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.

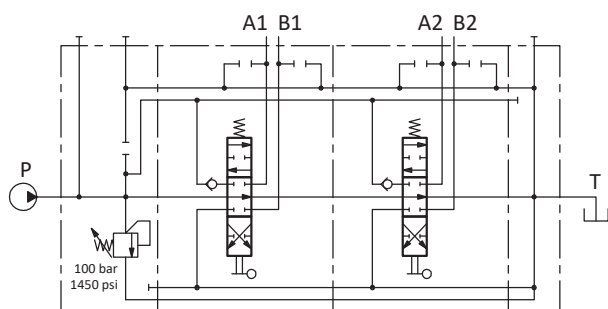


Valve general informations

Hydraulic circuit

Parallel circuit

Standard configuration with open centre and side inlet and outlet.

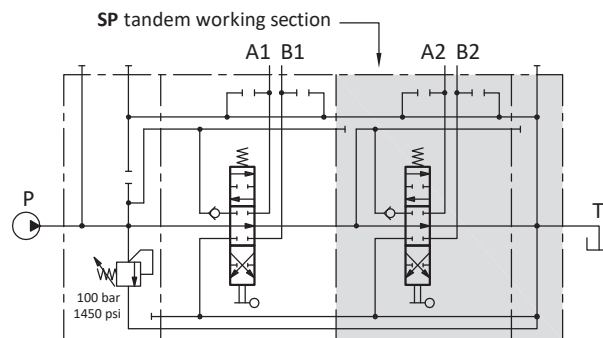


Description example

150L GS16/2/AC(X-100)/18L/18L/RC

Series-parallel (tandem) circuit

It needs a special working section kit
Tandem section is fed from the free flow pressure line; it's excluded when an upstream section is operated.

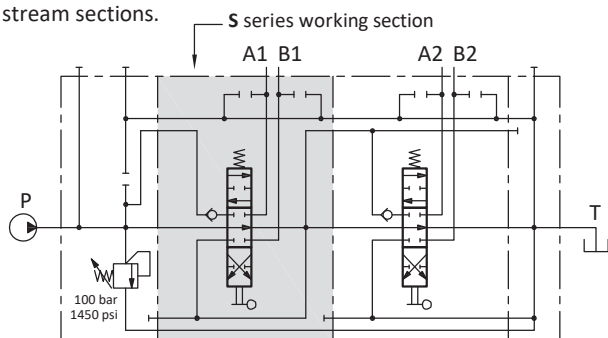


Description example

150L GS16/2/AC(X-100)/18L/ SP-18L/RC

Series circuit

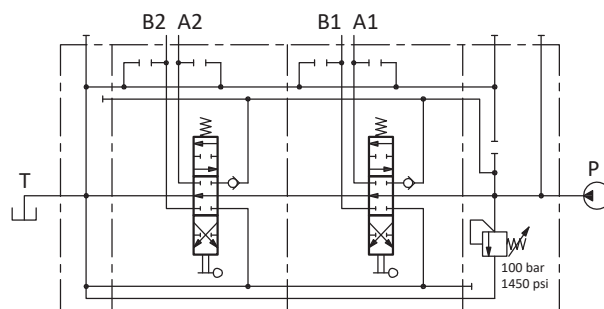
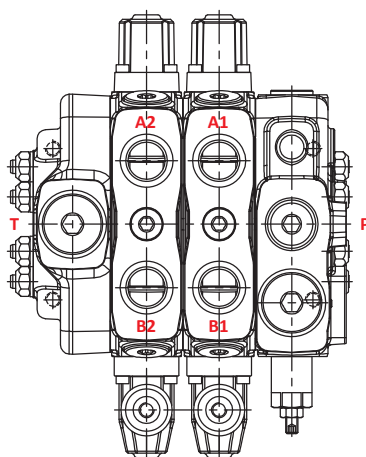
It needs a special working section kit
The return oil from service ports feed the remaining downstream sections.



Description example

150L GS16/2/AC(X-100)/S-18L/P-18L/RC

Directional valve with right inlet



Description example

150L GS16/2/BC(X-100)/18L/18L/RC

Valve general informations

Complete sections ordering codes

Standard configuration with side inlet and outlet

150L GS16 / 2 / AC(X-100) / (P)- 18L.P3T / EI1 / (P)- 18L.P3T / RC

Nr. of working
section

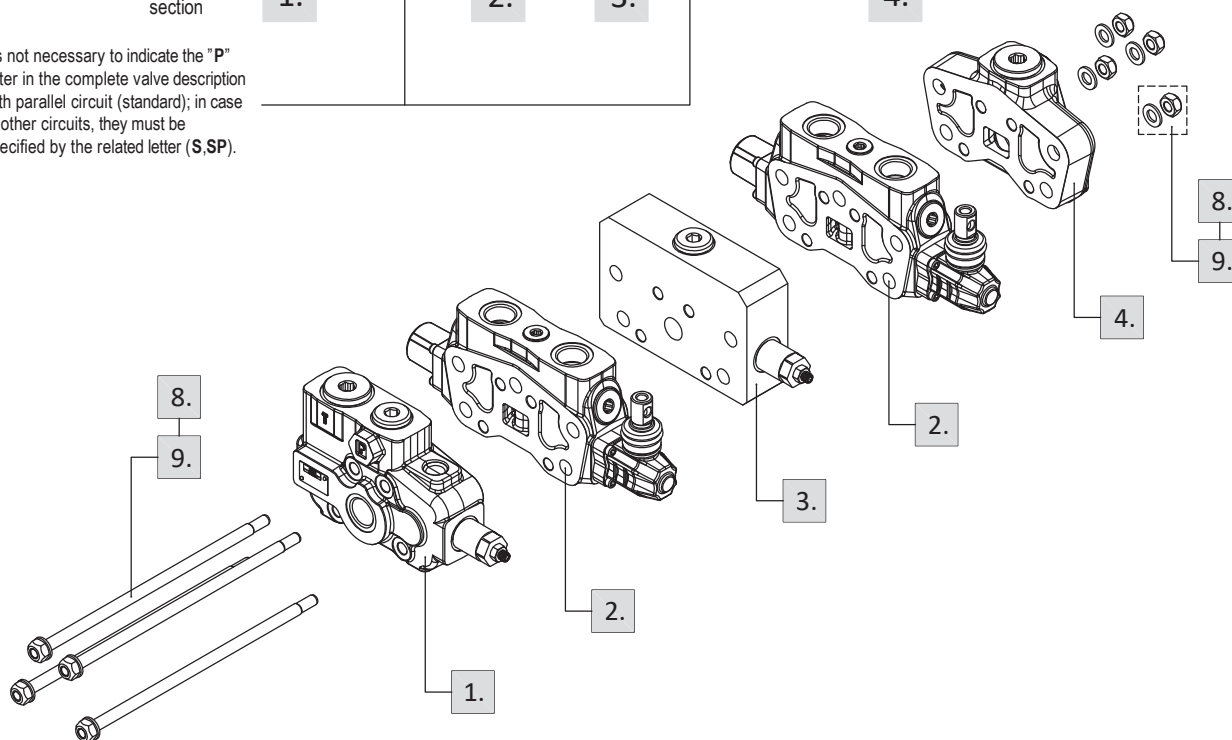
1.

2.

3.

4.

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. Inlet section * page 10

TYPE	CODE	DESCRIPTION
AC(X-100)	30 08 5751	Side inlet with direct pressure relief valve
AD(X-100)	30 08 5666	Upper inlet with direct pressure relief valve
AC(V)	30 08 5657	Without pressure relief valve

2. Working section * page 16

TYPE	CODE	DESCRIPTION
P-18L	15W010000	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
S-18L	15W010002	Series circuit, lever control
SP-18L	15W010003	As previous with series-parallel (tandem) circuit

3. Intermediate sections * page 44

TYPE	CODE	DESCRIPTION
DFG	30 08 5776	Pressure compensated flow divider section
EI1(X-100)	30 08 5736	With direct pressure relief valve
EI2(X-100)	30 08 5737	With direct pressure relief valve and auxiliary inlet

4. Outlet section * page 46

TYPE	CODE	DESCRIPTION
RC	30 08 5658	Side outlet
RD	30 08 5721	Upper outlet
RE	30 08 5723	Upper outlet with side carry-over sleeve
RK	30 08 5722	Upper outlet with closed centre
RF	30 08 5725	With ports plugged
RV	30 08 5724	With backpressure valve the combination with electro-hydraulic control is required

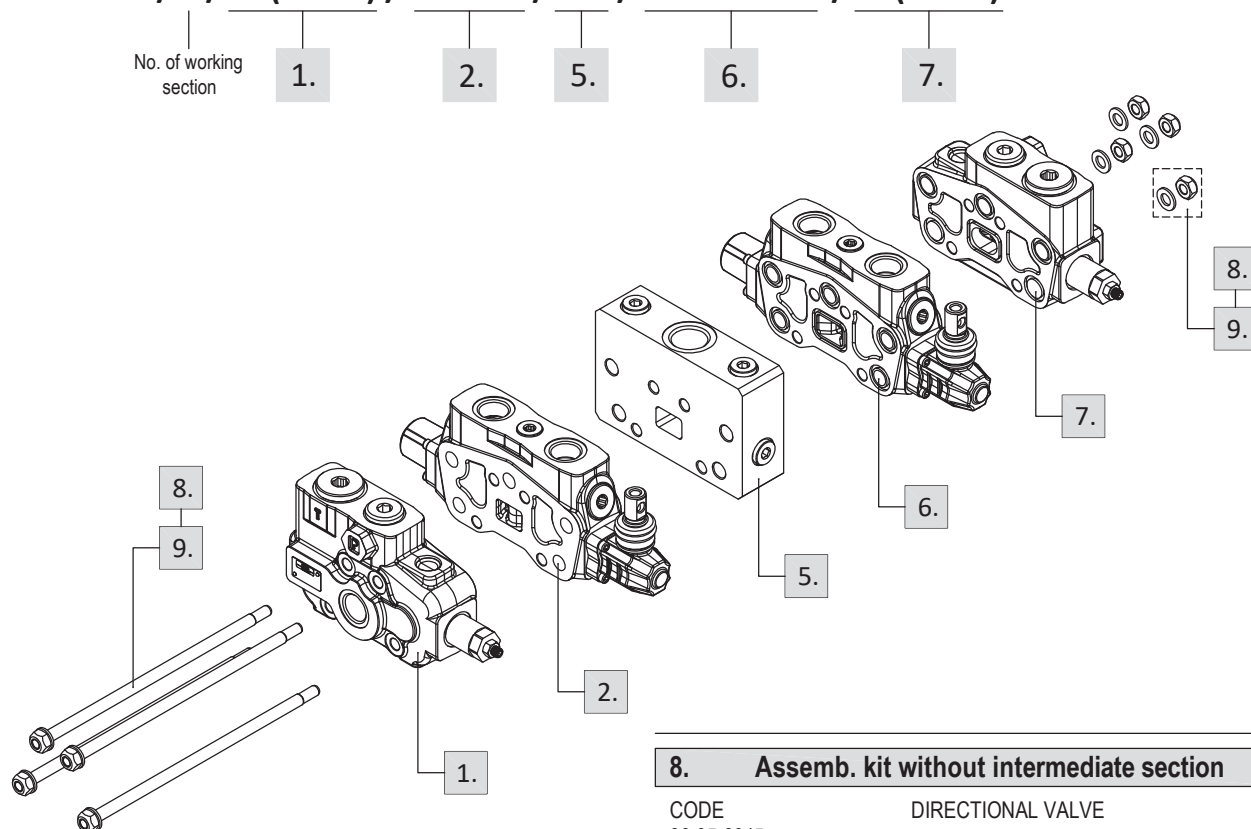
NOTE (*) - Items are referred to **BSP** thread.

Valve general informations

Complete sections ordering codes

Configuration with 2 side inlets and mid return manifold

150L GS16 / 2 / AC(X-100) / 18L.P3T / CS1 / ED - 18L.P3T / BC(X-100)

**5. Return manifold *** page 43

TYPE	CODE	DESCRIPTION
CS1	30 08 5781	Mid return manifold with G3/4 outlet port

6. Right inlet working section *

TYPE	CODE	DESCRIPTION
P-ED-18L	15W010006	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
S-ED-18L	15W010004	As previous with series circuit
SP-ED-18L	15W010005	As previous with series-parallel (tandem) circuit

7. Right inlet section *

TYPE	CODE	DESCRIPTION
BC(X-100)	30 08 5755	Side inlet with direct pressure relief valve
BD(X-100)	30 08 5759	Upper inlet with pilot operated pressure relief valve
BC(V)	30 08 5771	Side inlet with valve blanking plug

8. Assemb. kit without intermediate section

CODE	DIRECTIONAL VALVE
30 05 6045	Tie rod kit for 1 section valve
30 05 6049	Tie rod kit for 2 sections valve
30 05 6050	Tie rod kit for 3 sections valve
30 05 6089	Tie rod kit for 4 sections valve
30 05 6090	Tie rod kit for 5 sections valve
30 05 6093	Tie rod kit for 6 sections valve
30 05 6114	Tie rod kit for 7 sections valve
30 05 6115	Tie rod kit for 8 sections valve
30 05 6051	Tie rod kit for 9 sections valve
30 05 6046	Tie rod kit for 10 sections valve
30 05 6047	Tie rod kit for 11 sections valve
30 05 6048	Tie rod kit for 12 sections valve

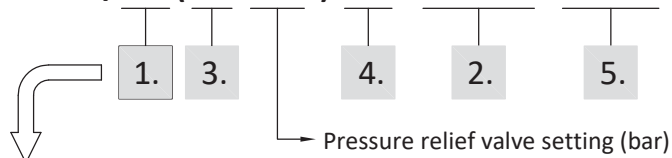
9. Assemb. kit with intermediate section

CODE	DIRECTIONAL VALVE
30 05 6050	Tie rod kit for 2 sections valve (with CS1)
30 05 6089	Tie rod kit for 3 sections valve (with CS1)
30 05 6090	Tie rod kit for 4 sections valve (with CS1)
30 05 6093	Tie rod kit for 5 sections valve (with CS1)
30 05 6114	Tie rod kit for 6 sections valve (with CS1)
30 05 6115	Tie rod kit for 7 sections valve (with CS1)
30 05 6051	Tie rod kit for 8 sections valve (with CS1)
30 05 6046	Tie rod kit for 9 sections valve (with CS1)
30 05 6047	Tie rod kit for 10 sections valve (with CS1)

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

Parts ordering codes

150L GS16 / AC (X - 100) ELN - MAN14 - 12VDC



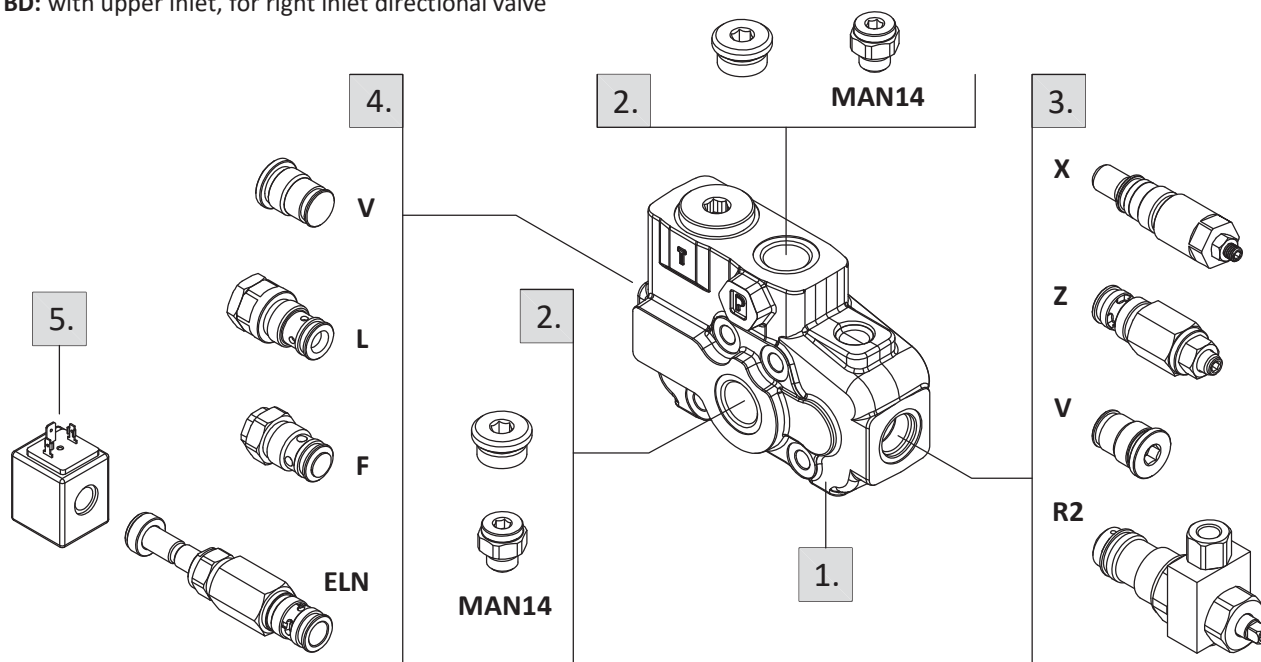
Available configurations

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



1. Inlet cover body * page 11

CODE	DESCRIPTION
-	Standard body

2. Parts *

TYPE	CODE	DESCRIPTION
MAN18	30 05 6102	G1/8 Pressure gauge arrangement
MAN14	30 05 6101	G1/4 Pressure gauge arrangement

3. Inlet relief valve options page 12

TYPE	CODE	DESCRIPTION
KE10K01 : direct pressure relief valve type X (X-100)	30 05 4912	Range 20 to 315 bar / 290 to 4600 psi standard setting 100 bar / 1450 psi

KE10K02 : pilot operated pressure relief valve type **Z**
(Z-100) 30 05 4915 Range 25 to 315 bar / 360 to 4600 psi
standard setting 100 bar / 1450 psi

Standard setting is referred to 6 l/min flow.

V	30 05 4914	Relief valve blanking plug
---	------------	----------------------------

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

4. Inlet valve options page 14

TYPE	CODE	DESCRIPTION
-	30 05 4914	Relief valve blanking plug (omit in description)
F	-	Inlet anti-cavitation valve
L	-	Hydraulic pilot unloader valve
Solenoid operated unloader valve		
ELN	30 05 6108	Without emergency
ELP	30 05 6109	Push-button emergency
ELT	30 05 6110	Push and twist type with detent emergency

5. Coils

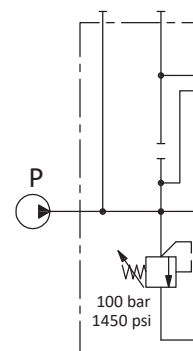
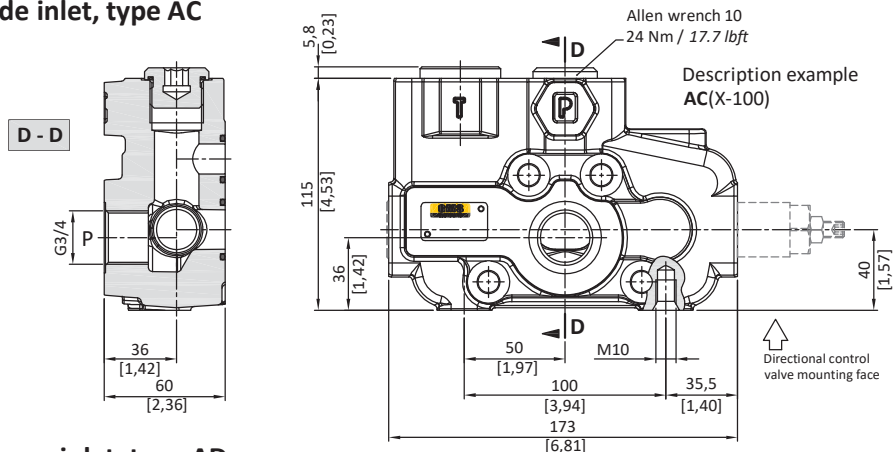
TYPE	CODE	DESCRIPTION
12VDC	20 03 2268	Coil type BER , ISO4400 integrated type 12VDC
24VDC	20 03 2269	Coil type BER , ISO4400 integrated type 24VDC

Inlet section

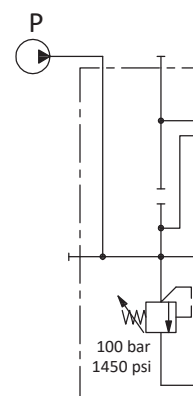
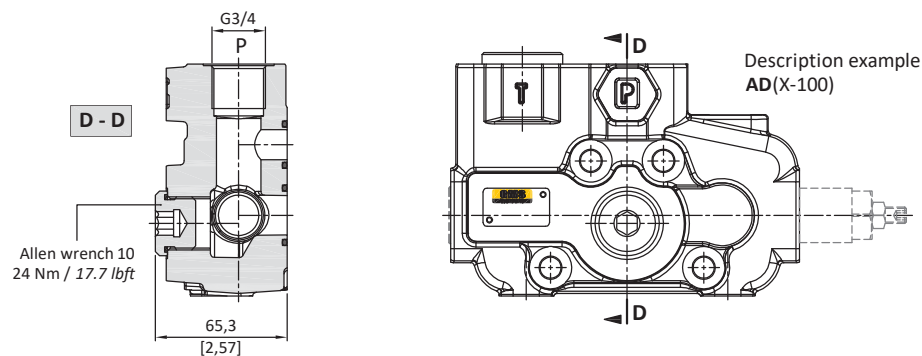
Dimensional data and hydraulic circuit

For left inlet directional valve (standard)

With side inlet, type AC

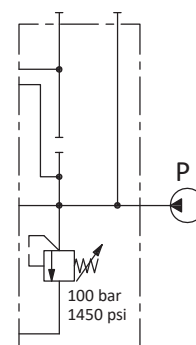
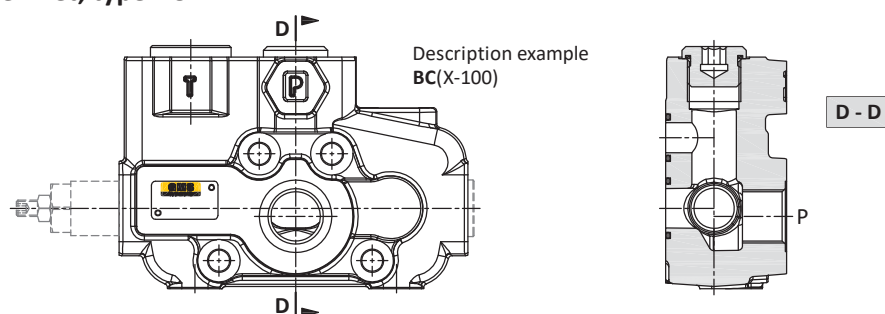


With upper inlet, type AD

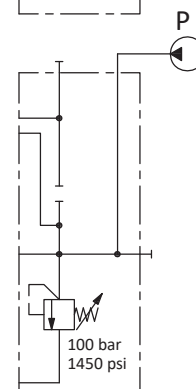
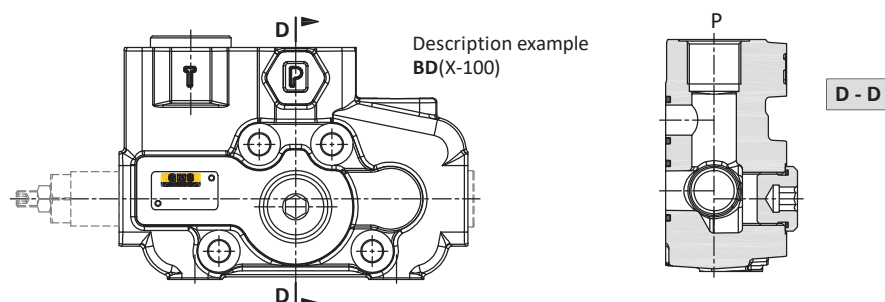


For right inlet directional valve

With side inlet, type BC



With upper inlet, type BD



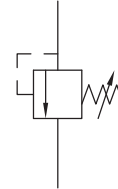
Inlet section

Inlet relief options

Direct pressure relief valve

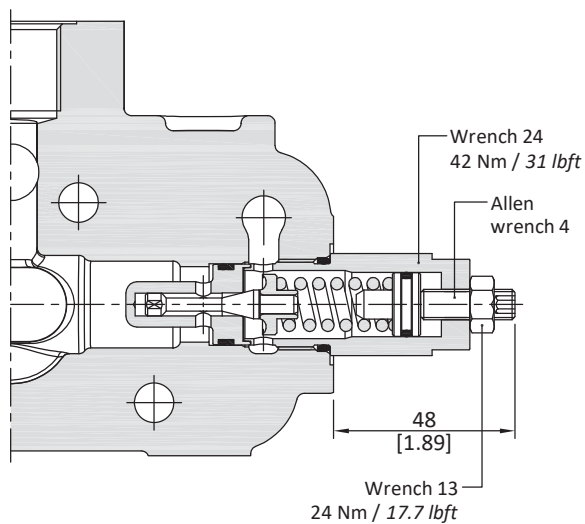
KE10K01 (X - 100)

Standard setting in bar
Adjustment type (X, XH)

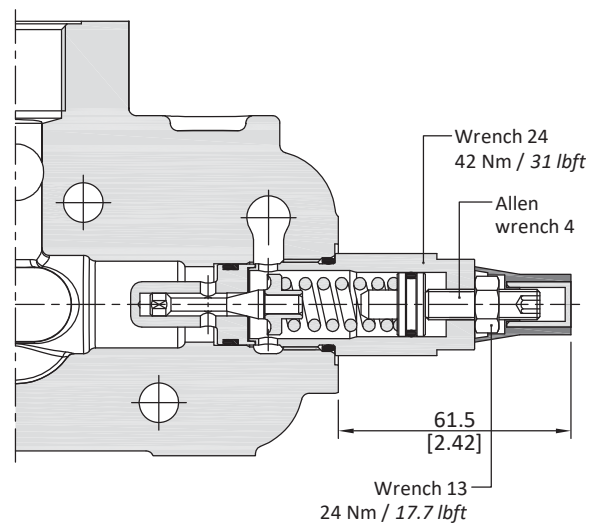


Adjustment type

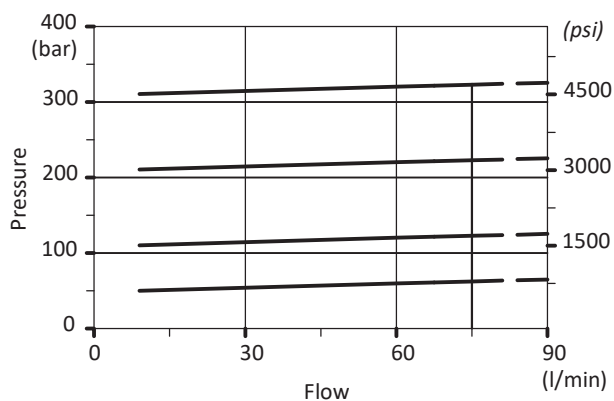
X: with screw



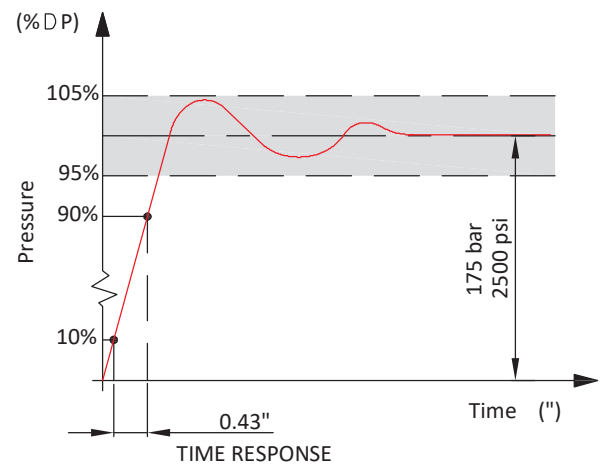
XH: valve set and locked



Performance data



Time response



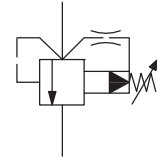
Inlet section

Inlet relief options

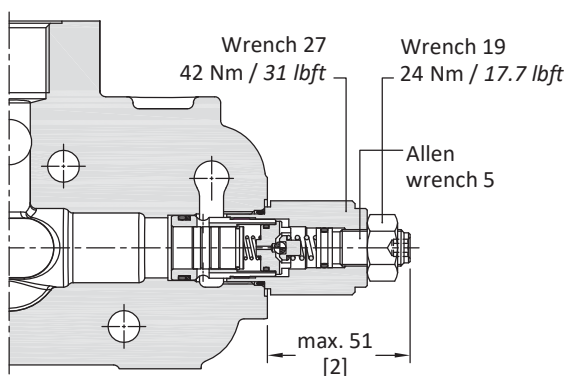
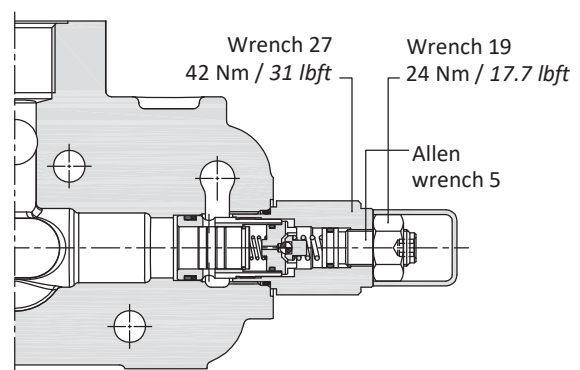
Pilot pressure relief valve

KE10K02 (Z - 100)

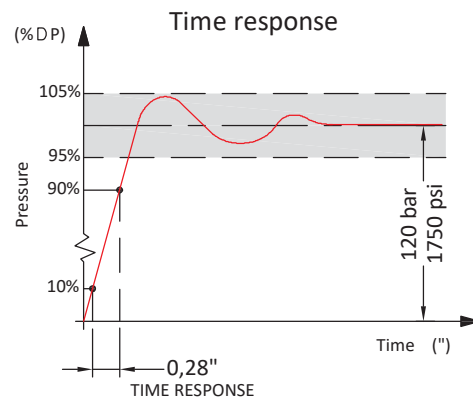
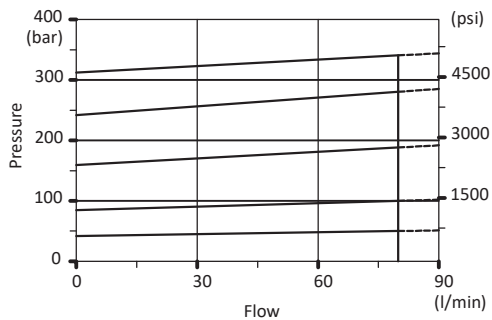
Standard setting in bar
Adjustment type (Z, ZH)



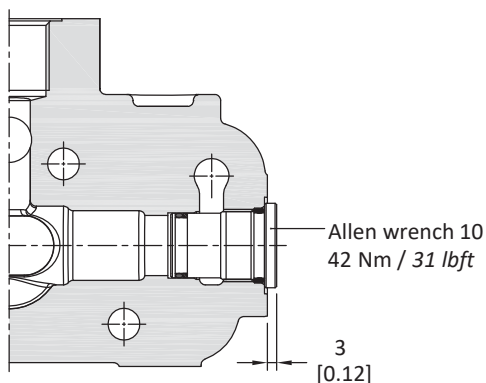
Adjustment type

Z: with screw**ZH: valve set and locked**

Performance data



V: relief valve blanking plug



Inlet section

Inlet valve options

Unloader valves

Description example: AC (X - 100) **ELN** - **12VDC**

Hydraulic operated valve: **L**

Solenoid operated valve: **ELN**

ELP

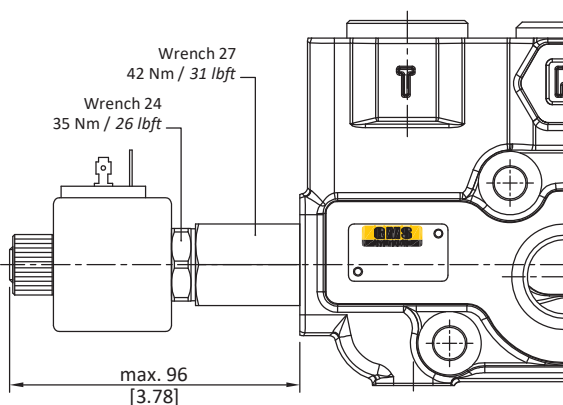
ELT

Feeding voltage: for
solenoid operated

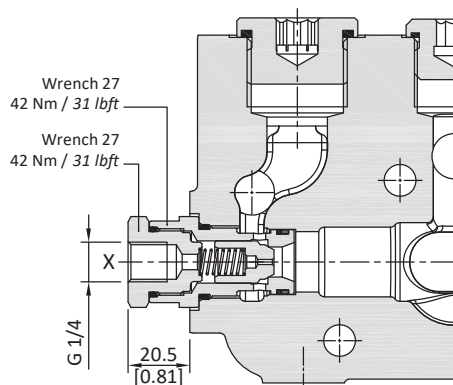
Solenoid operated

Emergency with push button and spring return; for detent position turn the button after press it.

WARNING: the manual override option is intended for emergency use, not for continuous duty operation.



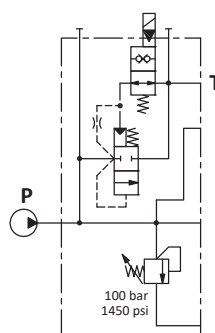
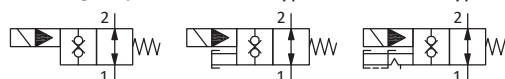
Hydraulic operated



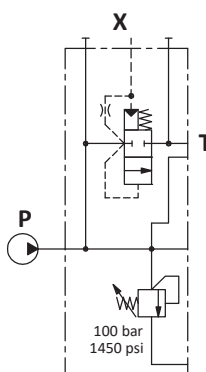
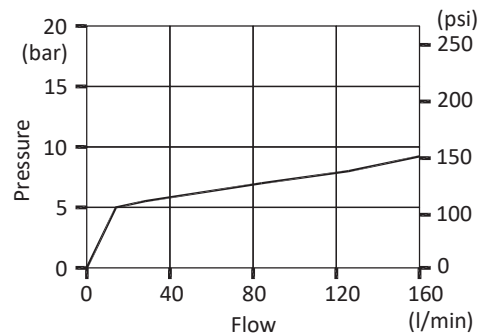
ELN: without
emergency

ELP: push
button type

ELT: "push &
twist" type

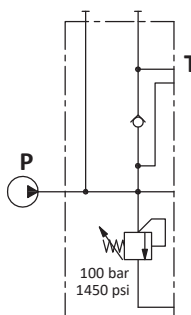
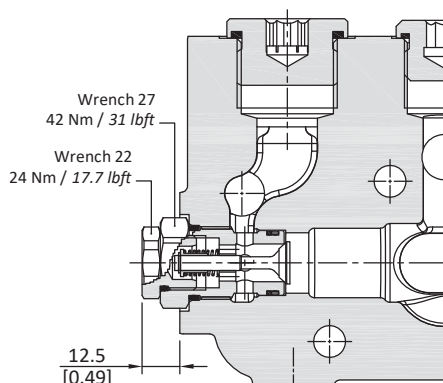


Pressure drop curve P → T



Anti-cavitation valve

Description example: AC (X - 100) **F**

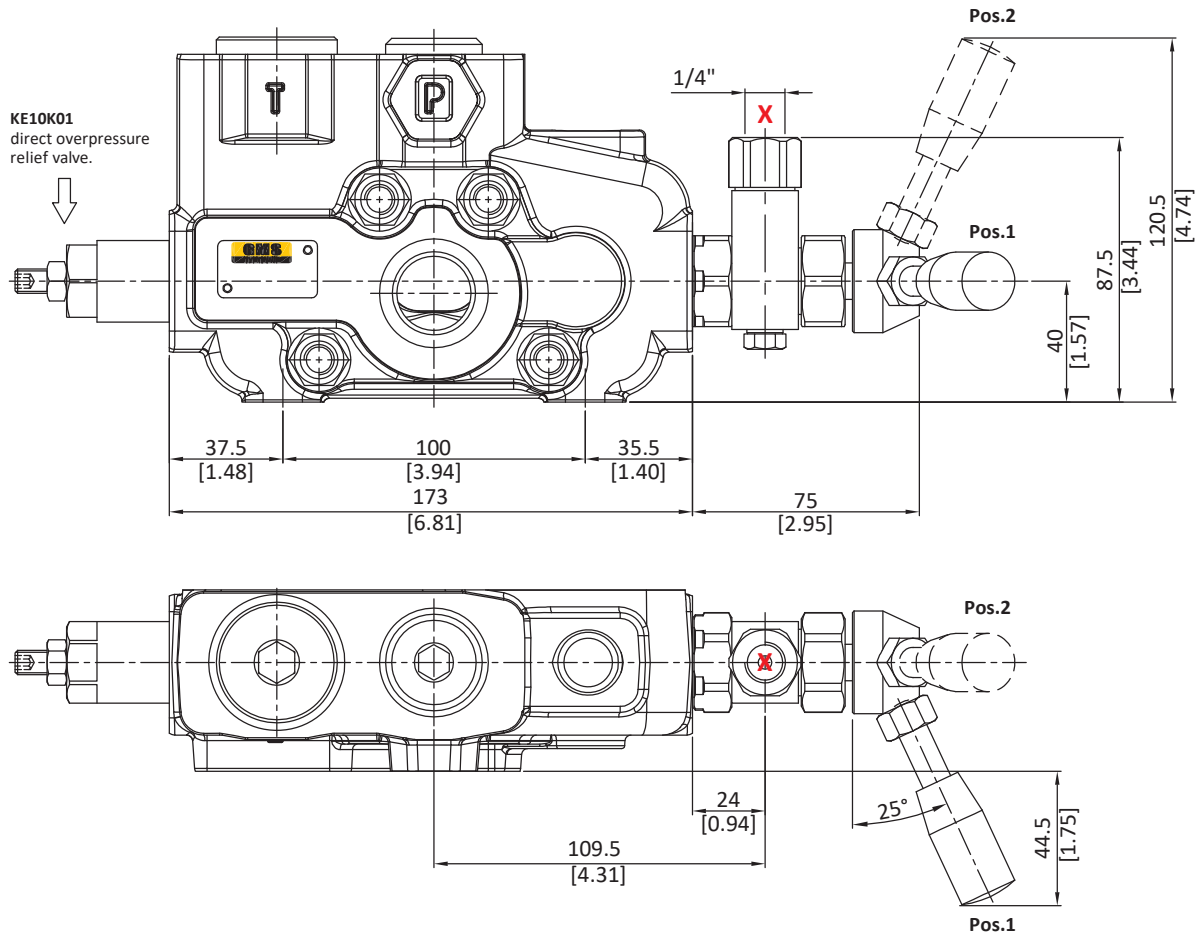


Inlet section for special applications

Configuration with rotary commutator

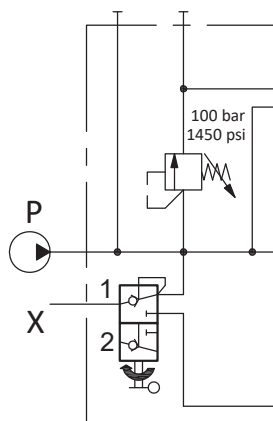
Dimensional data and hydraulic circuit

Drawing and circuit are referred to left inlet directional valve.



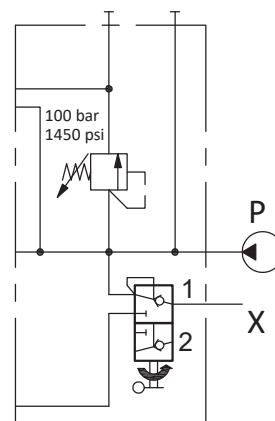
Hydraulic circuit and ordering codes

Left inlet



AC(X-100)R2

Right inlet



BC(X-100)R2

Parts ordering codes (mechanical control)

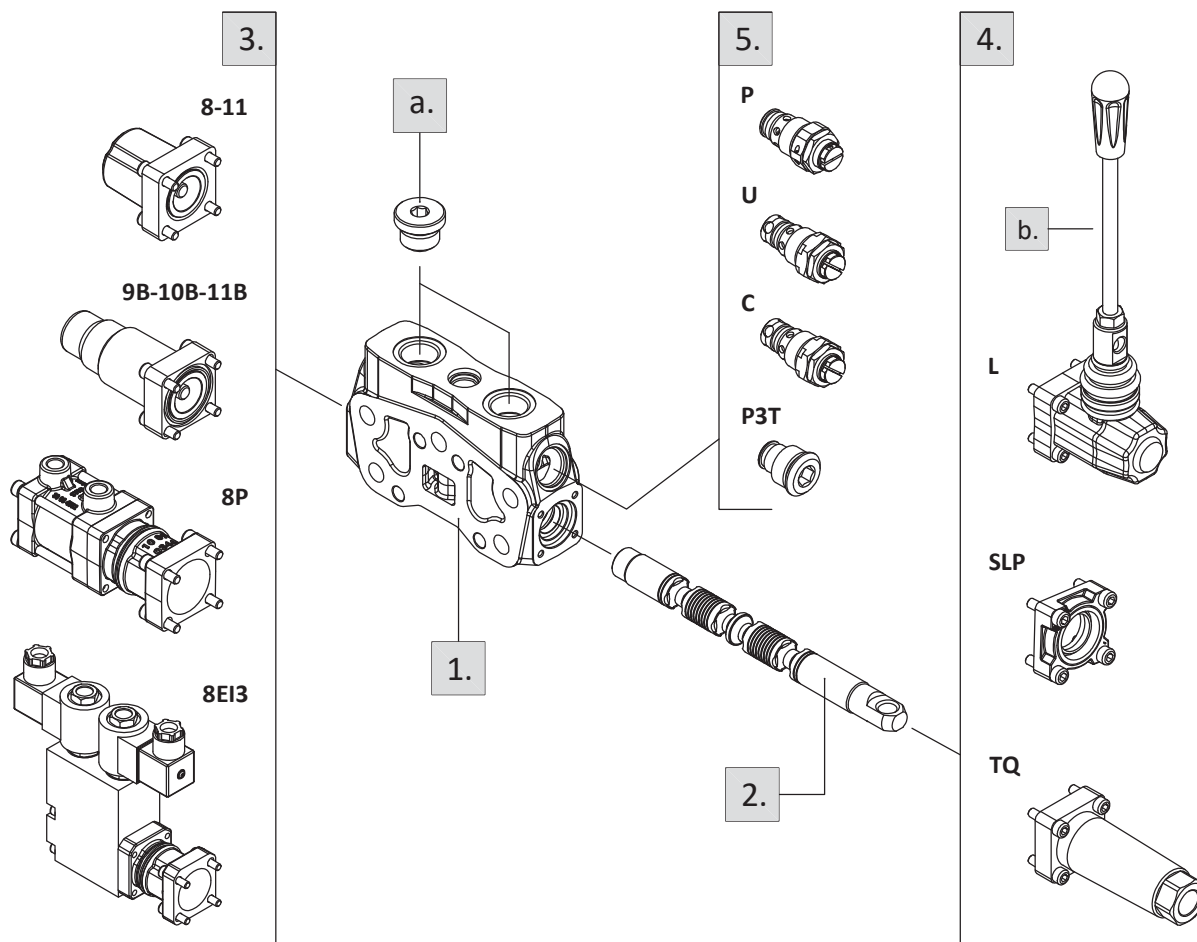
Description example:

150L GS16 / P - 1 8 L . U 1 (100) *

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.



1. Working section kit *

TYPE	CODE	DESCRIPTION
P	-	With parallel circuit
S	-	With series circuit
SP	-	With series-parallel (tandem) circuit

Include body, seals, rings and load check valve.

2. Spools

page 18

TYPE	CODE	DESCRIPTION
1	30 01 3604	Double acting, 3 positions, with A and B closed in neutral position
1A	30 01 3607	Double acting, 3 positions, with A open to tank in neutral position
1B	30 01 3608	Double acting, 3 positions, with B open to tank in neutral position

2. Spools

page 18

TYPE	CODE	DESCRIPTION
2	30 01 3605	Double acting, 3 positions, with A and B open to tank in neutral position
3	30 01 3611	Single acting on A, 3 positions, B plugged; requires G3/4 plug (see part a)
4	30 01 3612	Single acting on B, 3 positions, A plugged; requires G3/4 plug (see part a)
2H	30 01 3606	Double acting, 3 positions, with A and B partially open to tank in neutral position
1AH	30 01 3609	Double acting, 3 positions, with A partially open to tank in neutral position
1BH	30 01 3610	Double acting, 3 positions, with B partially open to tank in neutral position

Working section

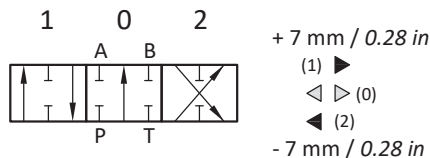
Parts ordering codes (mechanical control)

2. Spool options page 18			3. "A" side spool positioners page 19		
TYPE	CODE	DESCRIPTION	TYPE	CODE	DESCRIPTION
Special spools for particular positioner kits			Particular positioner kits for special spools		
. page 31					
5DY	30 01 3614	Double acting, 4 positions, float in position 3 with spool in, 13NZ type positioner kit is required	13NZ	30 07 5419	4 positions with spring return in neutral position and detent in pos.3: for 5DY spool
8P	30 01 3613	Double acting 3 positions, regenerative circuit in 3rd position with spool in: need dedicated positioner kit	8CR	30 07 5575	3 positions with spring return in neutral and reduced spool stroke: for 8P spool
3. "A" side spool positioners page 19			4. "B" side options page 32		
TYPE	CODE	DESCRIPTION	TYPE	CODE	DESCRIPTION
8	30 07 5375	With spring return in neutral position	L	30 07 5403	Standard lever box
8D	30 07 5383	As type 8, M8 female threaded pin extension for dual control	LF1	30 07 5405	Lever box with spool stroke limiter in position 1
8D1	30 07 5402	As type 8, pin with Ø 8 mm (0.31 in) radial hole	SL	-	Without lever box
8D2	30 07 5384	As type 8, M8 male threaded pin extension for dual control	SLP	30 07 5406	Without lever box, with dust-proof plate
8TL	30 07 5397	As type 8 with pin control with flexible cable	SLCZ	30 07 5347	Without lever box, with endcap.
8F2	30 07 5377	As type 8 with adjustable stroke limiter	LB	30 07 5407	Steel lever
19	30 07 5436	2 positions, with spring return in neutral position from position 1	LEB	30 07 5409	Safety lever box, vertical configuration
20	30 07 5437	2 positions, with spring return in neutral position from position 2	TQ	30 07 5398	Flexible cable connection; for CG cables
11	30 07 5378	With detent in position 1, neutral and 2	LCB	30 07 5433	Joystick lever for 2 sections operation
12	30 07 5438	Detent in positions 1 and 2			
15	30 07 5439	2 positions, detent in pos. 1 and neutral	5. Port valves page 40		
16	30 07 5440	2 positions, detent in pos. 2 and neutral	TYPE	CODE	DESCRIPTION
17	30 07 5441	With spring return position 1	Assembled on section		
18	30 07 5381	With spring return position 2	P3T	30 05 4941	A and B ports valve blanking plugs
17D	30 07 5442	With spring return position 1 and pin with M8 female thread for dual control	C	-	Anti-cavitation
18D	30 07 5382	With spring return position 2 and pin with M8 female thread for dual control	<u>Anti-shock valve</u>		
9B	30 07 5386	With detent in position 1 and spring return in neutral position	P	30 05 6196	From 0 to 315 bar / 0 to 4600 psi standard setting 100 bar / 1450 psi
10B	30 07 5387	With detent in position 2 and spring return in neutral position	<u>Anti-shock and anti-cavitation valve</u>		
11B	30 07 5388	With detent in position 1, 2 and spring return in neutral position	U	30 05 4938	From 0 to 315 bar / 0 to 4600 psi standard setting 100 bar / 1450 psi
8MG3(NO)	30 07 5435	As type 8 and operation with microswitch in positions 1 and 2, contact normally open	<i>Standard setting is referred to 6 l/min flow.</i>		
8MG3(NC)	30 07 5434	As previous, with contact normally closed	6. Complete controls page 37		
8P	30 07 5399	ON-OFF pneumatic kit	TYPE	CODE	DESCRIPTION
8PF	-	Proportional pneumatic kit	8IM	30 07 5414	-
8EP3	30 07 5443	ON-OFF 12VDC electro-pneumatic kit	R	30 07 5379	-
8EP4	30 07 5400	ON-OFF 24VDC electro-pneumatic kit	Proportional hydraulic control type 8IM , 13IM and rotative control type R .		
	30 07 5345	ON-OFF 12VDC electro-pneumatic kit with manifold	a. "A" and "B" ports plugs		
8EI3	30 07 5346	ON-OFF 24VDC electro-pneumatic kit with manifold	TYPE	CODE	DESCRIPTION
	30 07 5401	ON-OFF 12VDC electro-hydraulic kit	G3/4	30 05 4920	For single acting spools type 3 and 4
8EI3F2	30 07 5361	ON-OFF 24VDC electro-hydraulic kit	b. Optional handlevers		
	-	12 VDC ON/OFF electrohydraulic kit with adjustable stroke limiter	TYPE	CODE	DESCRIPTION
-	24 VDC ON/OFF	electrohydraulic kit with adjustable stroke limiter	AL01/M10x200	30 05 4989	Lenght L = 200mm / 7.87in

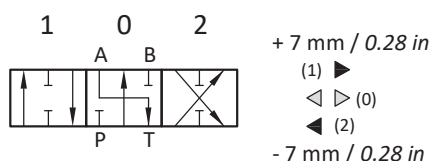
Working section

Spools options

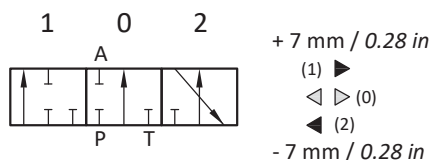
Type 1 (30 01 3604)



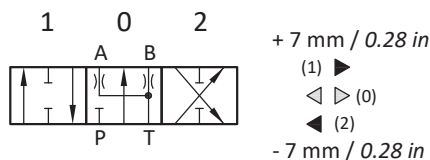
Type 1A (30 01 3607)



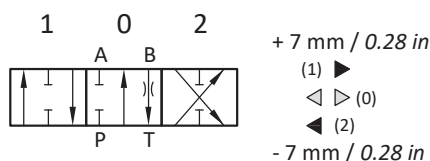
Type 3 (30 01 3611)



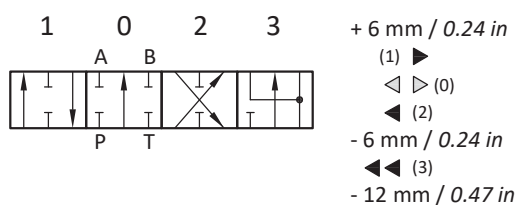
Type 2H (30 01 3606)



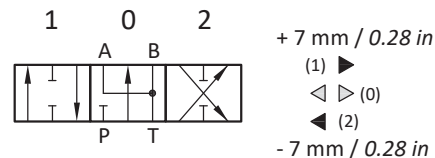
Type 1BH (30 01 3610)



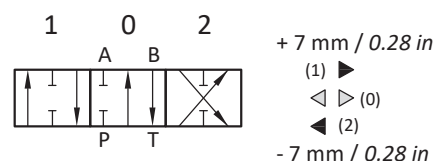
Type 5DY (30 01 3614)



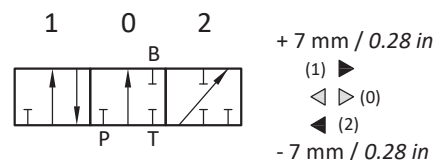
Type 2 (30 01 3605)



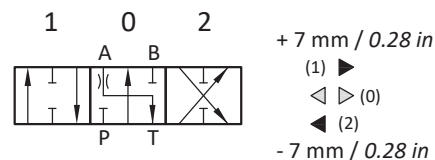
Type 1B (30 01 3608)



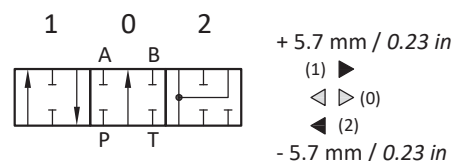
Type 4 (30 01 3612)



Type 1AH (30 01 3609)



Type 8P (30 01 3613)



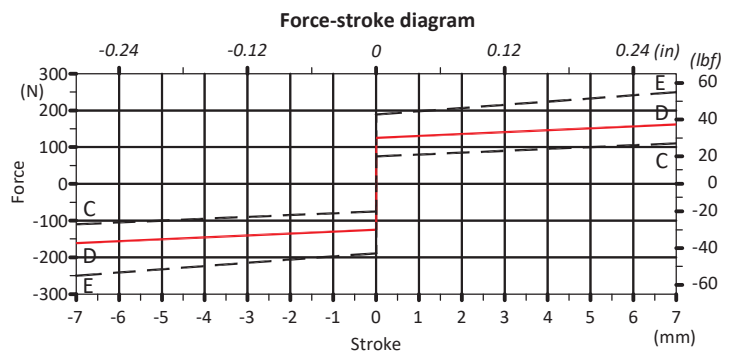
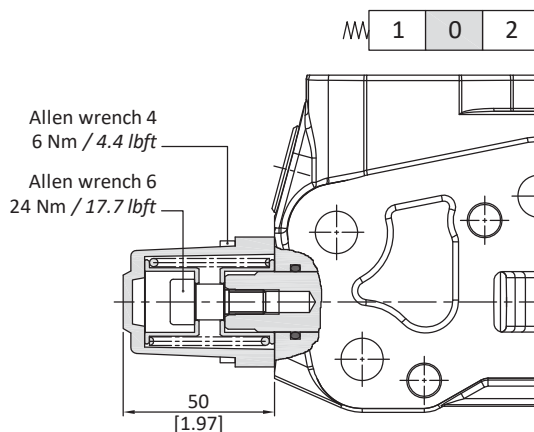
Working section

"A" side spool positioners

With spring return in neutral position

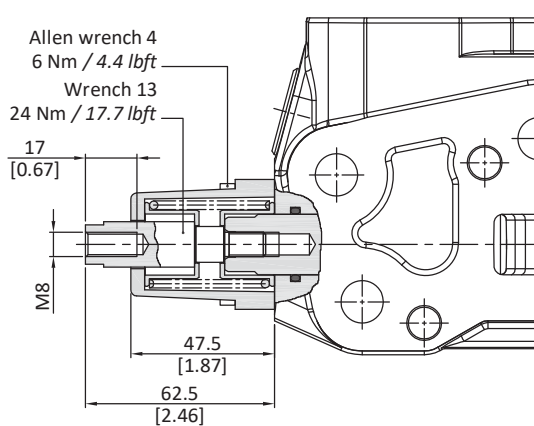
8 kit (30 07 5375)

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

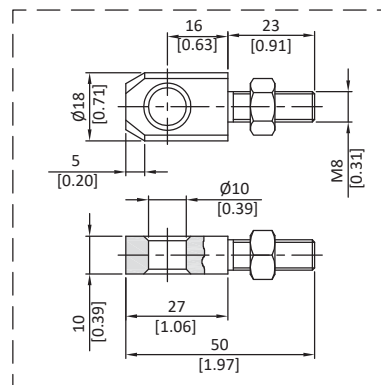


8D kit (30 07 5383)

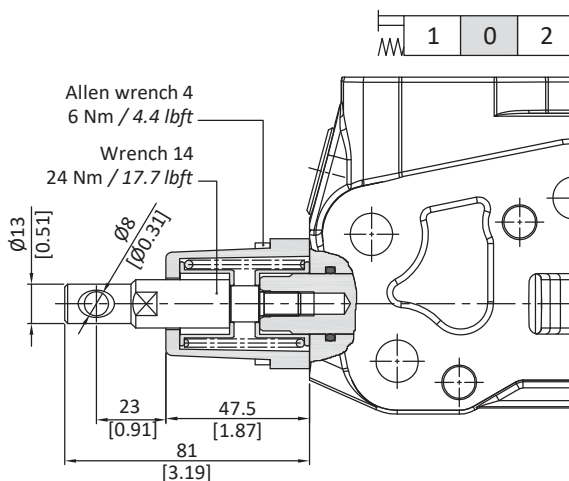
With M8 female threaded pin extension for dual control.



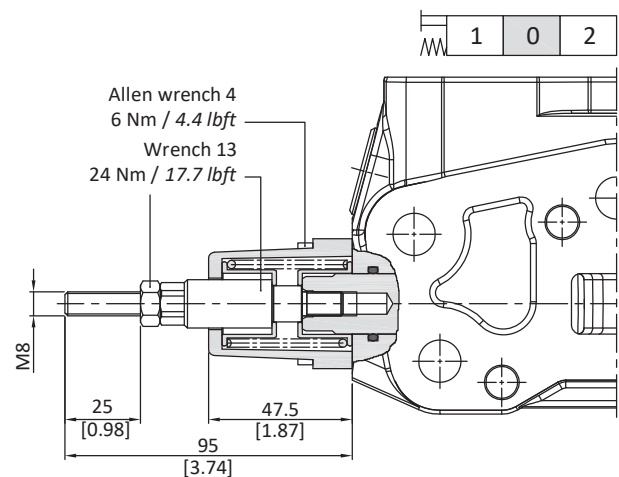
Spool end joint dimensions (optional)



8D1 kit (30 07 5402)



8D2 kit (30 07 5384)

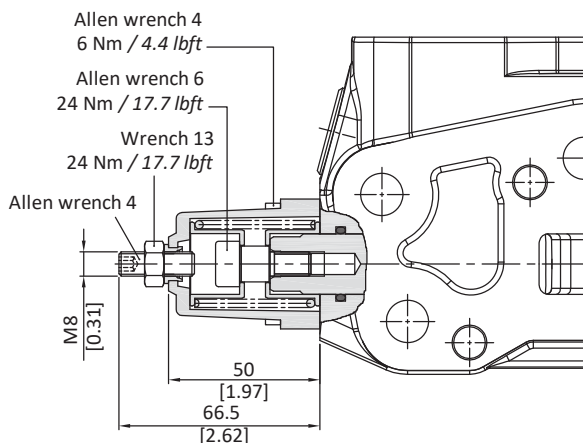


"A" side spool positioners

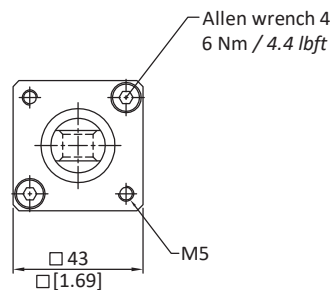
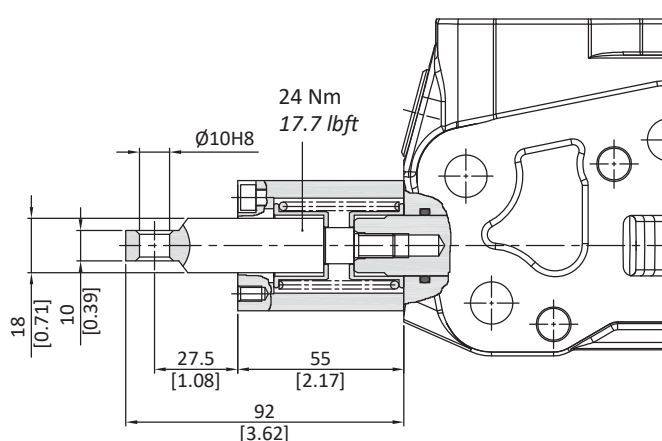
With spring return in neutral position

8F2 kit (30 07 5377)

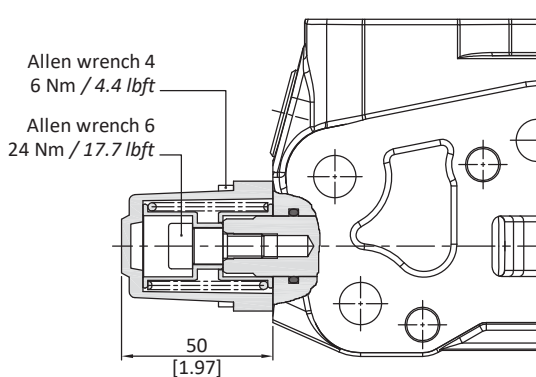
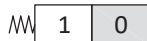
With spool stroke adjustment in position 2 (P → B)



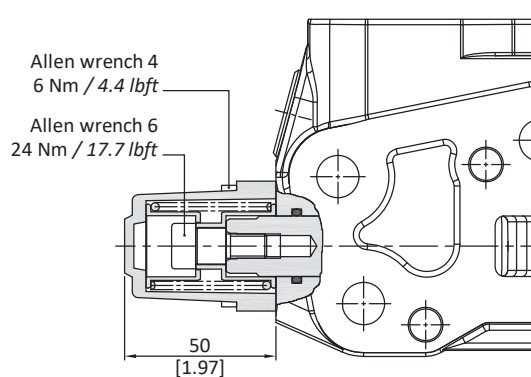
8TL kit (30 07 5397)



19 kit (30 07 5436)



20 kit (30 07 5437)

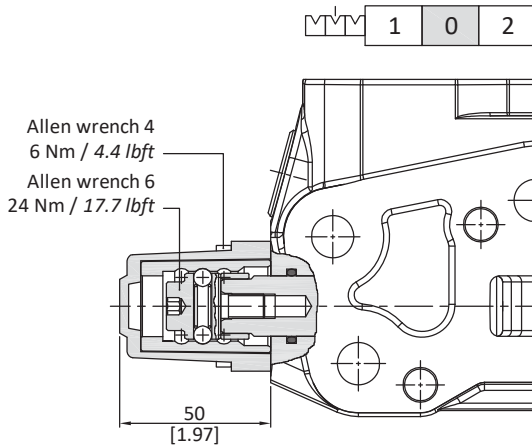


Working section

"A" side spool positioners

With detent

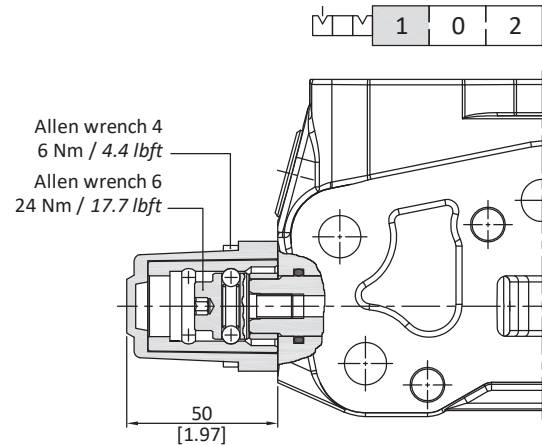
11 kit (30 07 5378)



Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

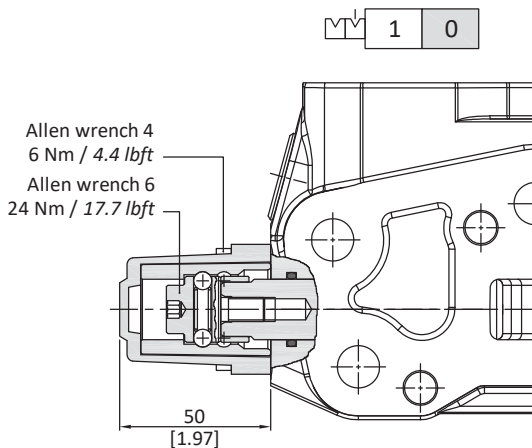
12 kit (30 07 5438)



Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

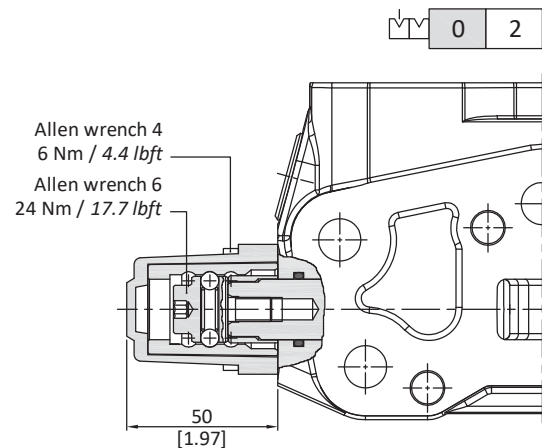
15 kit (30 07 5439)



Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

16 kit (30 07 5440)



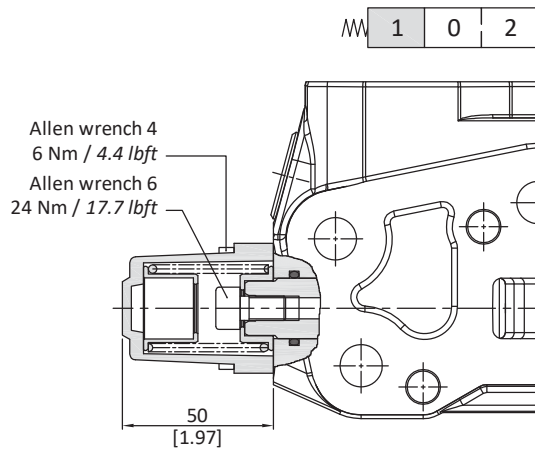
Operating features

Locking and release force : 260 N / 58 lbf $\pm 10\%$

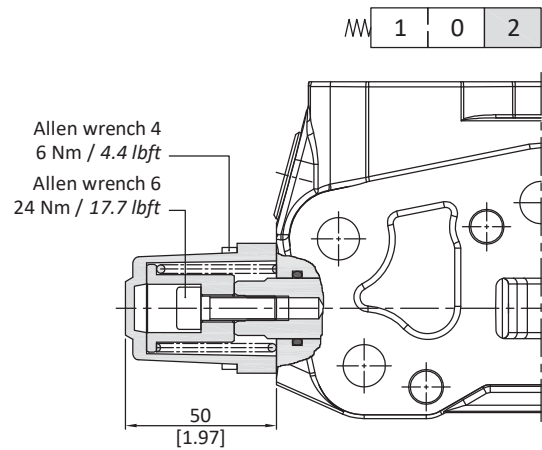
"A" side spool positioners

With spring return

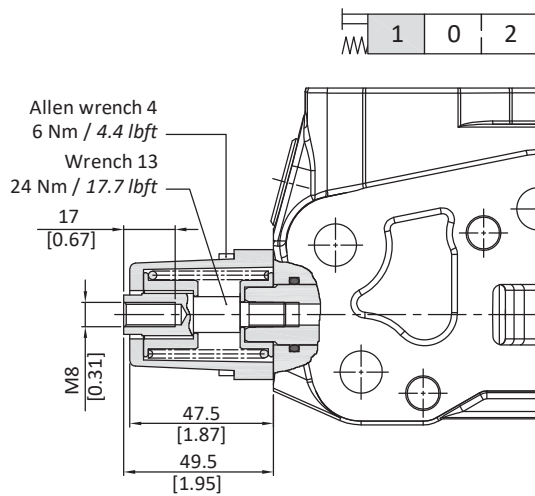
17 kit (30 07 5441)



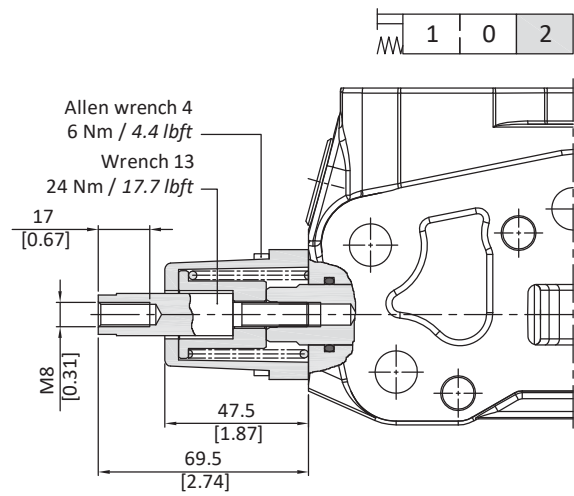
18 kit (30 07 5381)



17D kit (30 07 5442)



18D kit (30 07 5382)

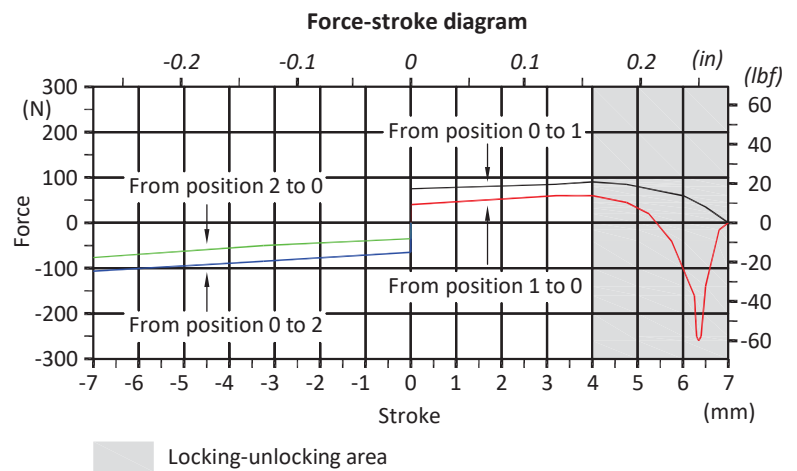
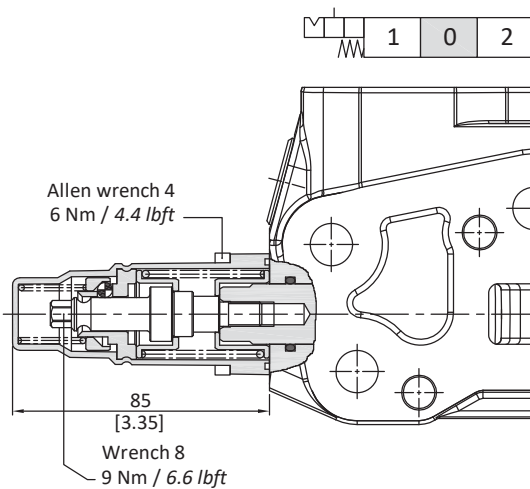


Working section

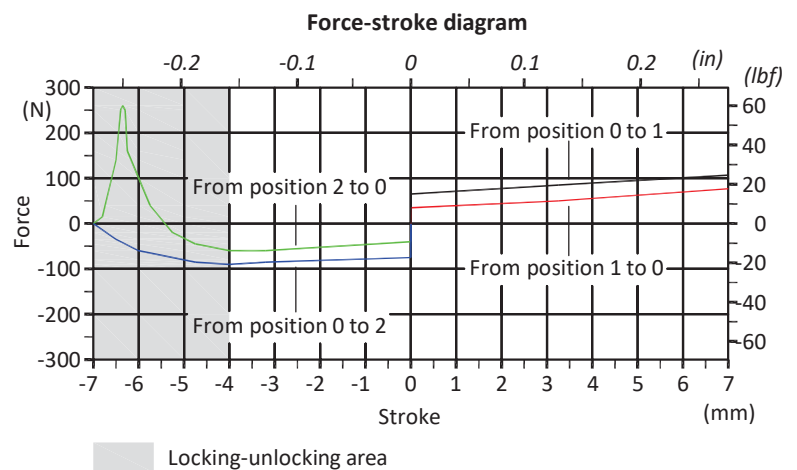
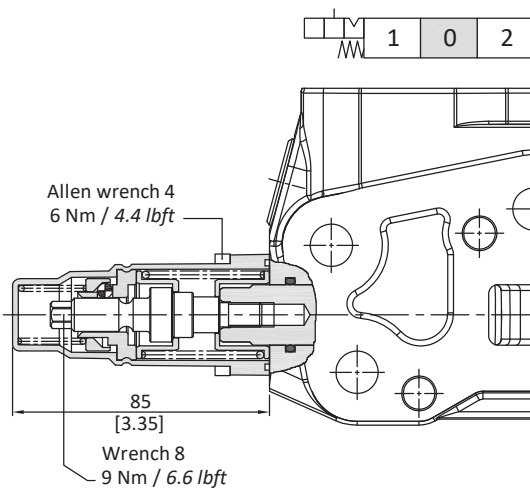
"A" side spool positioners

With detent and spring return to neutral position from either directions

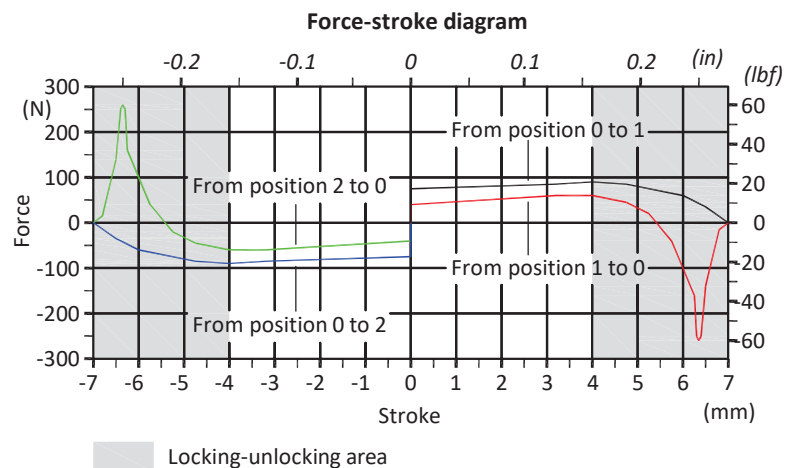
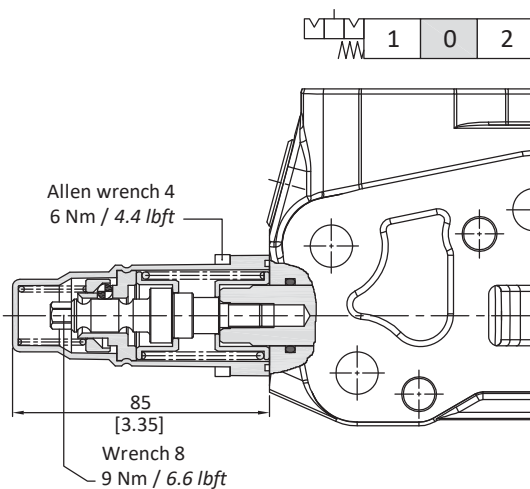
9B kit (30 07 5386)



10B kit (30 07 5387)



11B kit (30 07 5388)



"A" side spool positioners

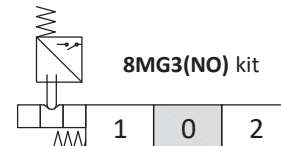
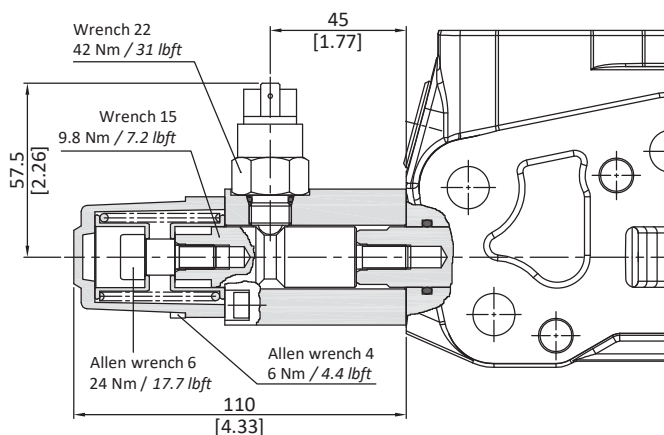
With microswitch type 8MG3(NO) (30 07 5435)

With spring return in neutral position and microswitch operated in both directions.

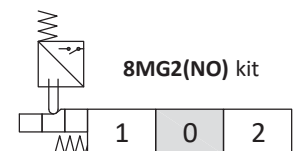
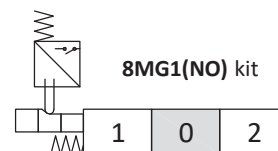
Also available **8MG1(NO)** configuration (microswitch operated in position 1) and **8MG2(NO)** configuration (microswitch operated in position 2); dimensions are the same of **8MG3(NO)** configuration.

Same configurations are available with normally closed (NC) contact.

For more information contact Sales Department.



Other configurations



Operating features

MICROSWITCH

Mechanical life

: 5×10^5 operations

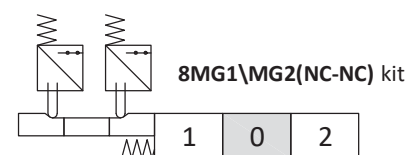
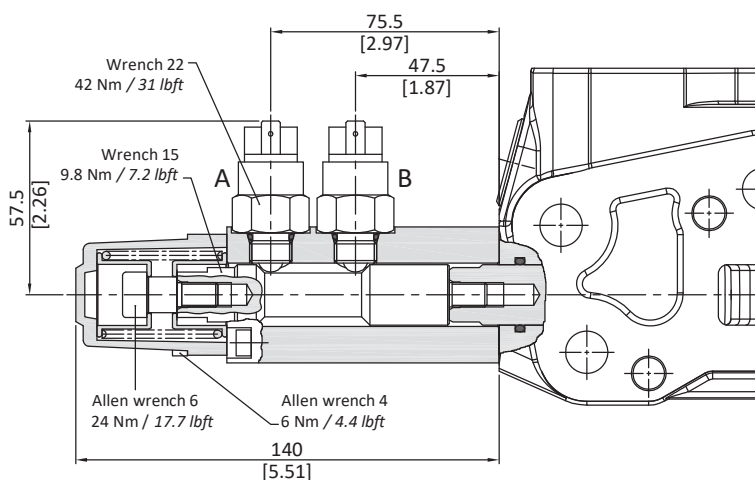
Electrical life (resistive load)

: 5×10^4 operations 10A / 12VDC

: 5×10^4 operations 3A / 24VDC

Type 8MG1\MG2(NC-NC) (30 07 5396)

With double microswitch in position 1 and 2.



Positions	A	B
1		
0		
2		

Operating features

MICROSWITCH

Mechanical life

: 5×10^5 operations

Electrical life (resistive load)

: 5×10^4 operations 10A / 12VDC

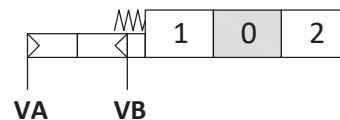
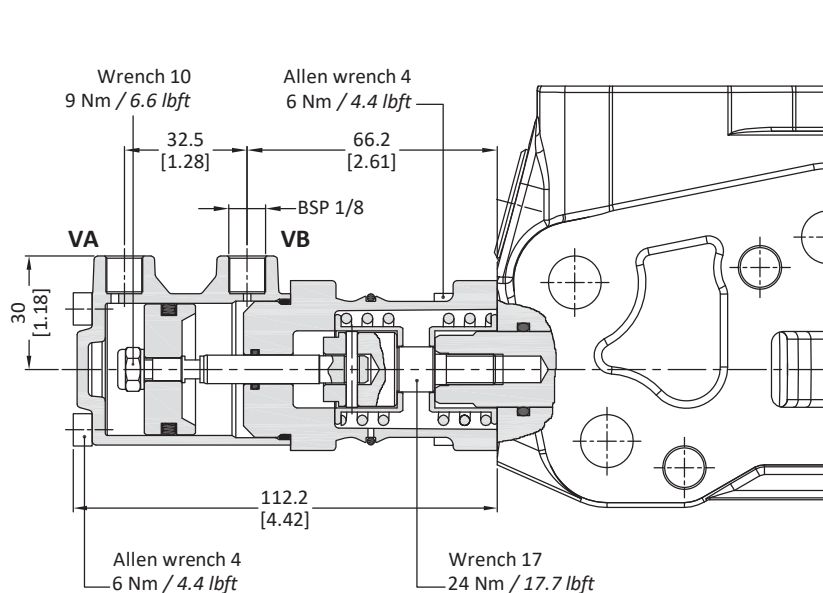
: 5×10^4 operations 3A / 24VDC

Working section

"A" side spool positioners

ON/OFF pneumatic kit type 8P (30 07 5399)

With spring return to neutral position.

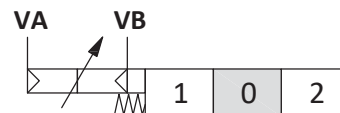
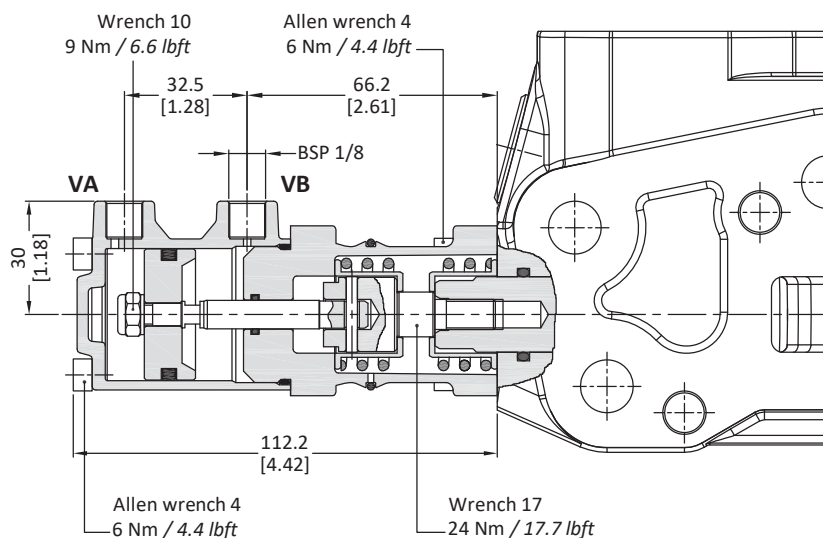


Operating features

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

8PF pneumatic proportional kit (30 07 5596)

With spring return to neutral position.



Operating features

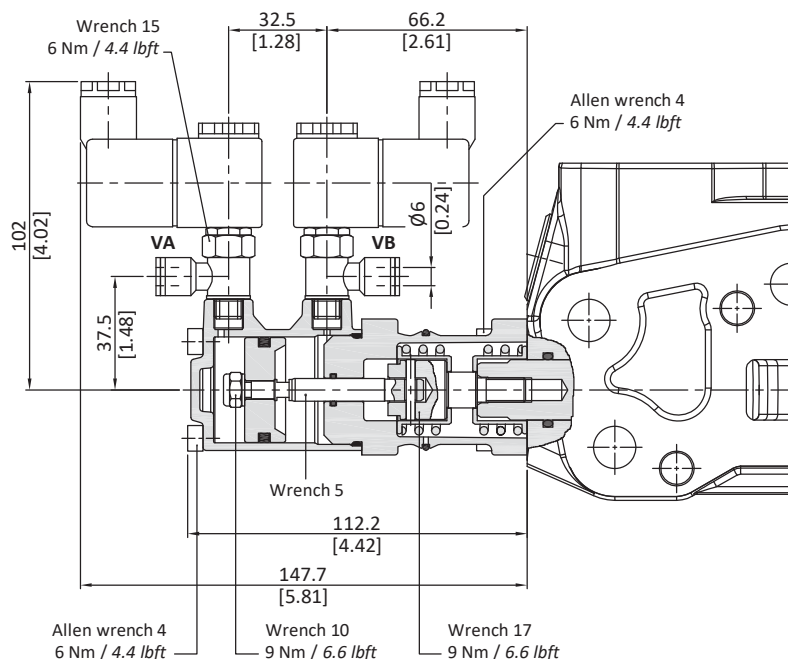
Pilot pressure.....: min. 5.5 bar / 80 psi
: max.10 bar / 145 psi

Working section

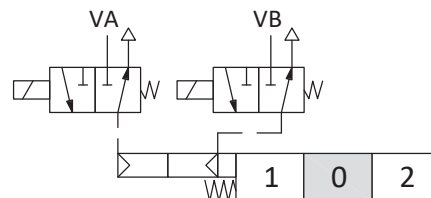
"A" side spool positioners

ON/OFF electropneumatic kit type 8EP3 - 30 07 5443 (12V) - 30 07 5400 (24V)

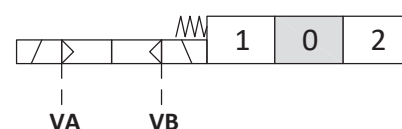
With spring return to neutral position.



Scheme



Scheme ISO 1219



Operating features

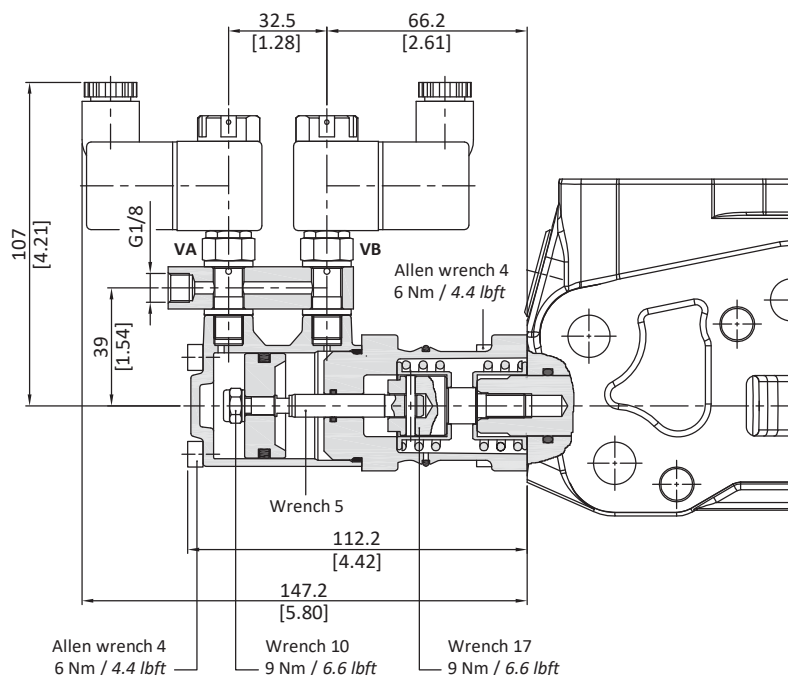
CONTROL

Pilot pressure : 6 bar / 87 psi
: max. 15 bar / 218 psi

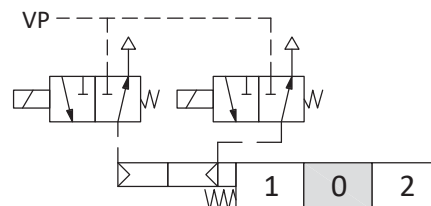
COIL

Nominal voltage tolerance : $\pm 10\%$
Power rating : 8 W
Nominal current : 12 VDC
: 24 VDC
Coil insulation : Class H
Weather protection : IP65

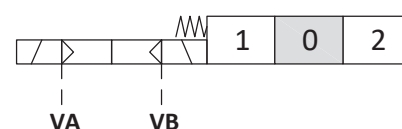
ON/OFF electropneumatic kit type 8EP4 - 30 07 5345 (12V) - 30 07 5346 (24V)



Scheme



Scheme ISO 1219

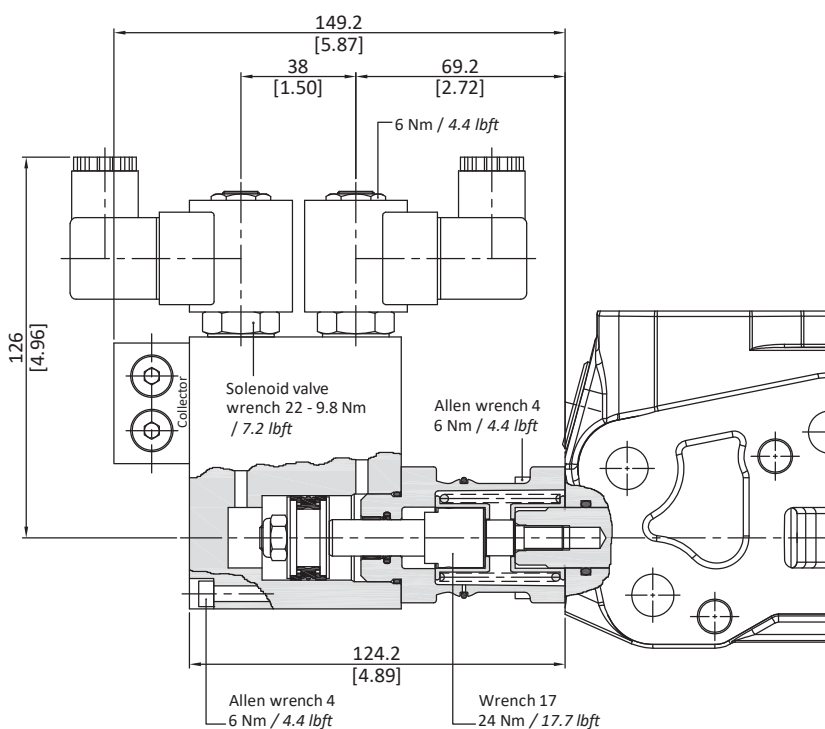


Working section

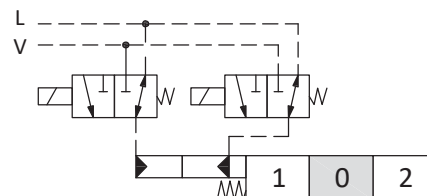
"A" side spool positioners

ON/OFF electrohydraulic kit type 8E13 - 30 07 5401 (12V) - 30 07 5361 (24V)

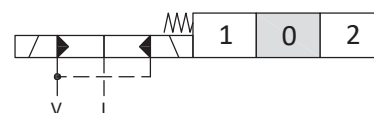
ON/OFF electro-hydraulic control with external pilot and drain.



Scheme



Scheme ISO 1219



Operating features

CONTROL

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

COIL

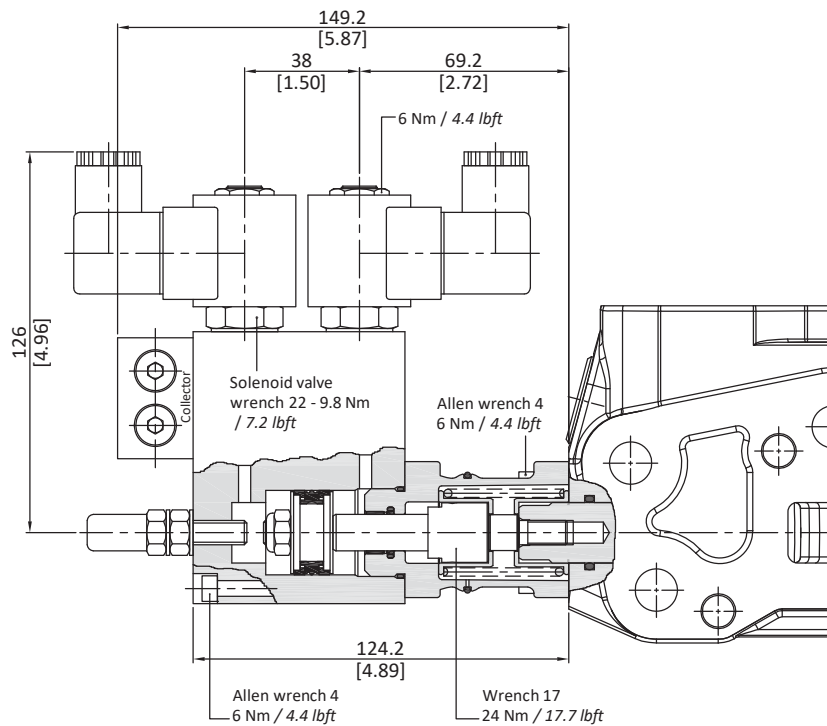
Nominal voltage tolerance	: $\pm 10\%$
Power rating	: 21 W
Nominal current	: 1.75 A - 12 VDC / 0.87 A - 24 VDC
Coil insulation	: Class F
Weather protection	: IP65

Working section

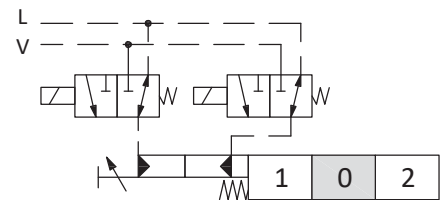
"A" side spool positioners

ON/OFF electrohydraulic kit type 8EI3F2

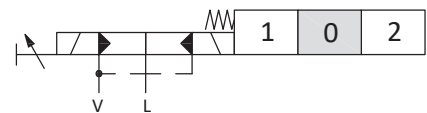
Collector kit with pilot and drain lines with stroke limiter



Scheme



Scheme ISO 1219



Operating features

CONTROL

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

COIL

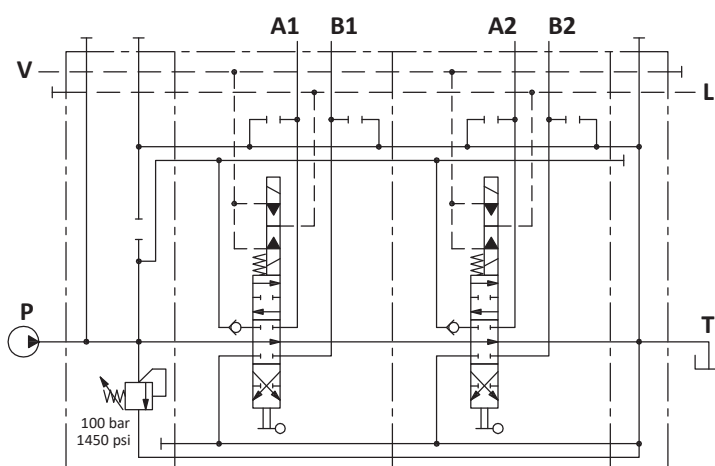
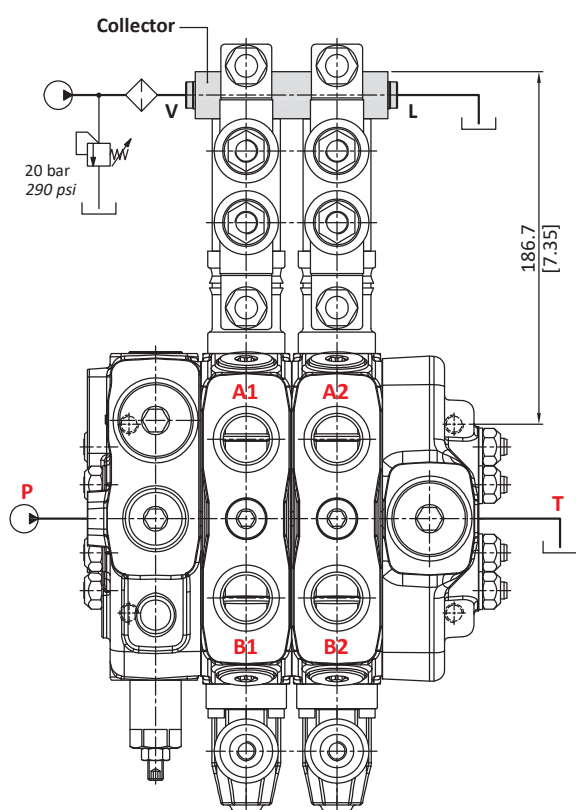
Nominal voltage tolerance	: $\pm 10\%$
Power rating	: 21 W
Nominal current	: 1.75 A - 12 VDC / 0.87 A - 24 VDC
Coil insulation	: Class F
Weather protection	: IP65

Working section

"A" side spool positioners

ON/OFF electrohydraulic kit type 8EI3

Collector kit for external pilot and drain



Description example :

150L GS16/2/AC(X-100)/18EI3L/18EI3L/RC-KE2S0-24VDC

COLLECTOR KIT CODES

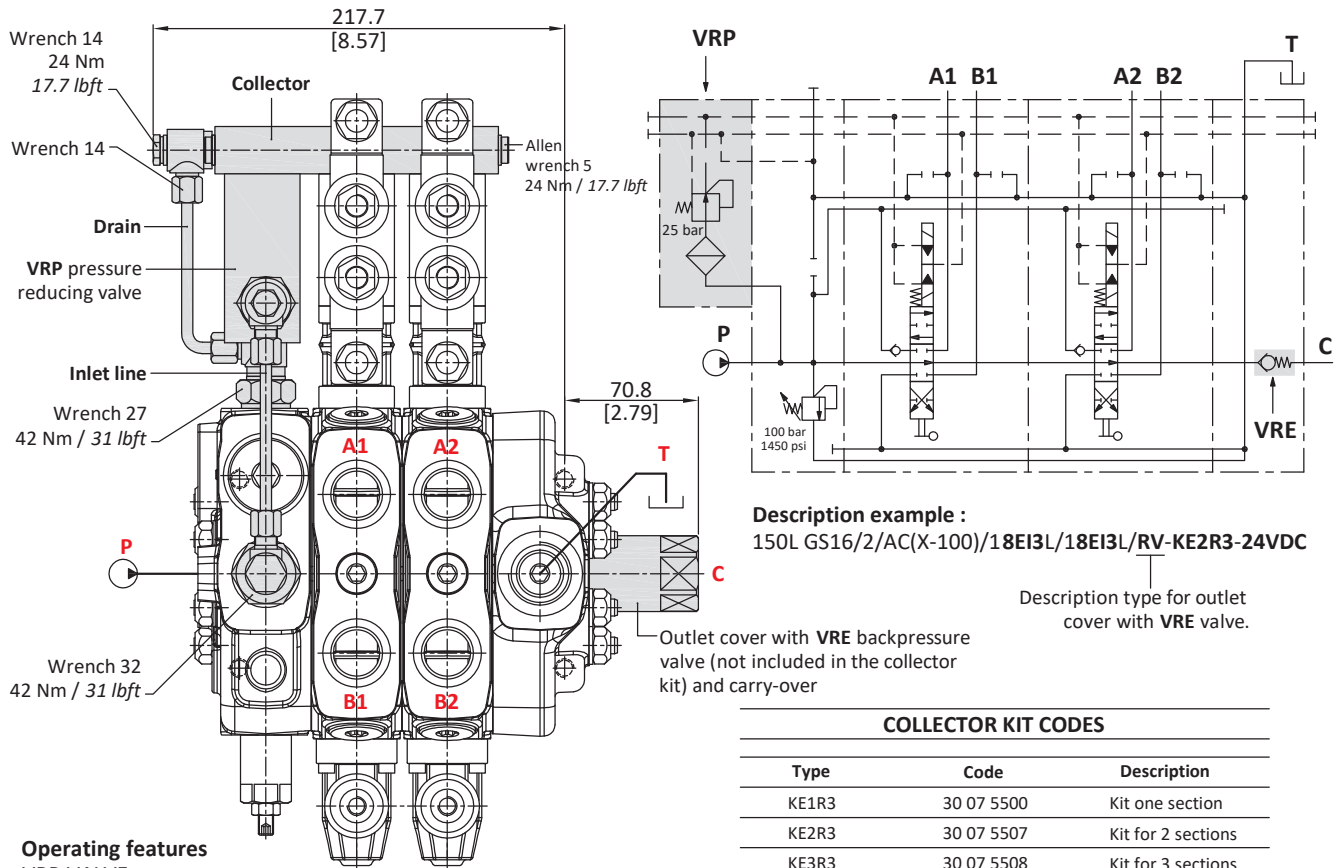
Type	Code	Description
KE1S0	30 07 5537	Kit one section
KE2S0	30 07 5532	Kit for 2 sections
KE3S0	30 07 5533	Kit for 3 sections
KE4S0	30 07 5534	Kit for 4 sections
KE5S0	30 07 5535	Kit for 5 sections
KE6S0	30 07 5536	Kit for 6 sections
KE7S0	--	Kit for 7 sections

"A" side spool positioners

ON/OFF electrohydraulic kit type 8EI3

Collector kit with pilot and drain lines

The kit include collector, VRP pressure reducing valve and pipes.



Operating features

VRP VALVE

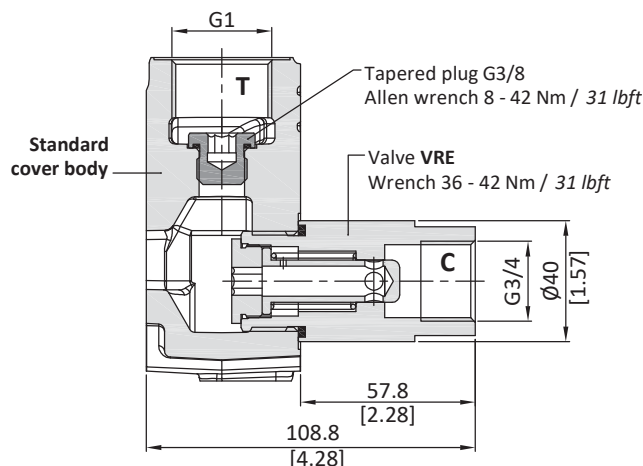
Output pressure : 25 bar / 363 psi
Max. flow : 8 l/min
Filtering : 80 µ

COLLECTOR KIT CODES

Type	Code	Description
KE1R3	30 07 5500	Kit one section
KE2R3	30 07 5507	Kit for 2 sections
KE3R3	30 07 5508	Kit for 3 sections
KE4R3	30 07 5509	Kit for 4 sections
KE5R3	30 07 5510	Kit for 5 sections
KE6R3	30 07 5511	Kit for 6 sections

VRE backpressure valve

Valve is assembled on flow through passage of outlet cover; it's necessary to provides pilot pressure to the actuator.
RV complete (with backpressure valve and tapered plug)



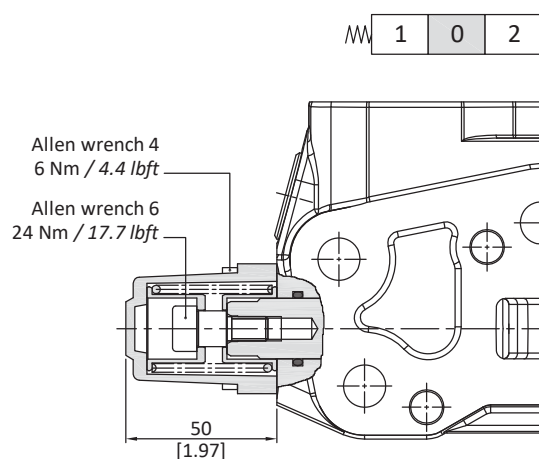
Working section

"A" side spool positioners

Particular positioner kits for special spools

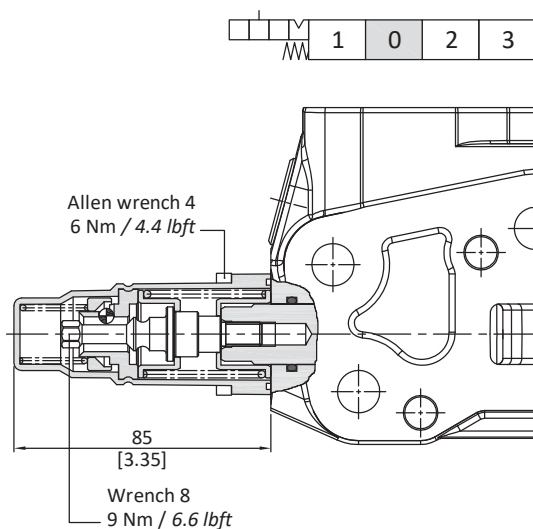
8CR kit (30 07 5575)

3 positions with spring return in neutral and reduced spool stroke: **for 8P spool.**



13NZ kit (30 07 5419)

4 positions with spring return in neutral and detent in position 3: **for 5DY spool.**



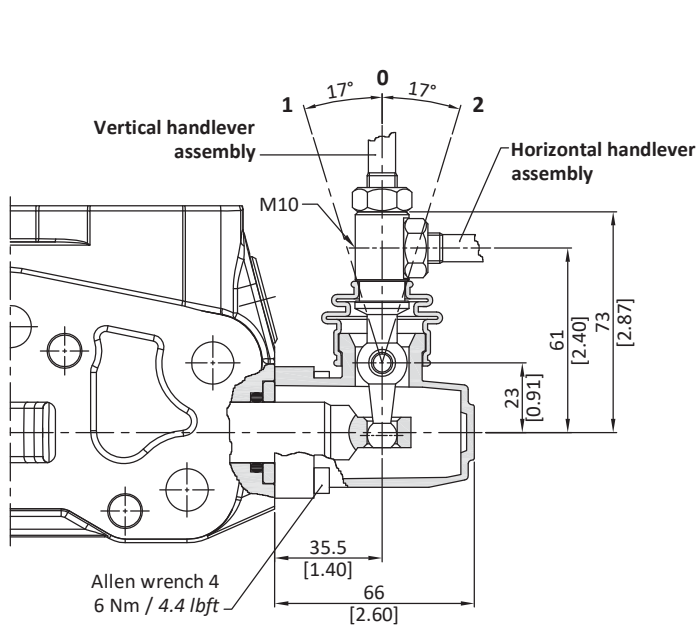
Working section

"B" side options

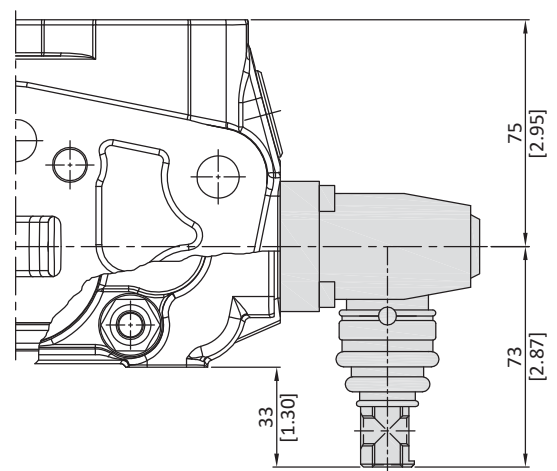
Lever control

Type L (30 07 5403)

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

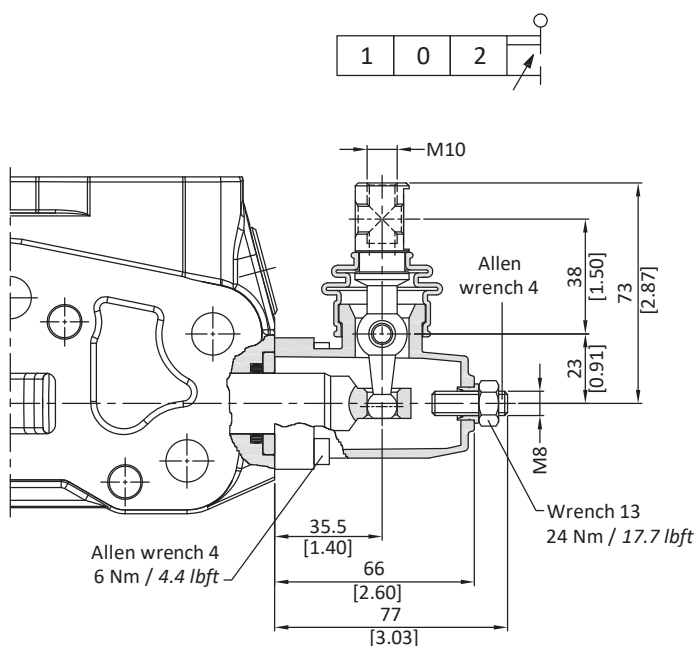


configuration L180



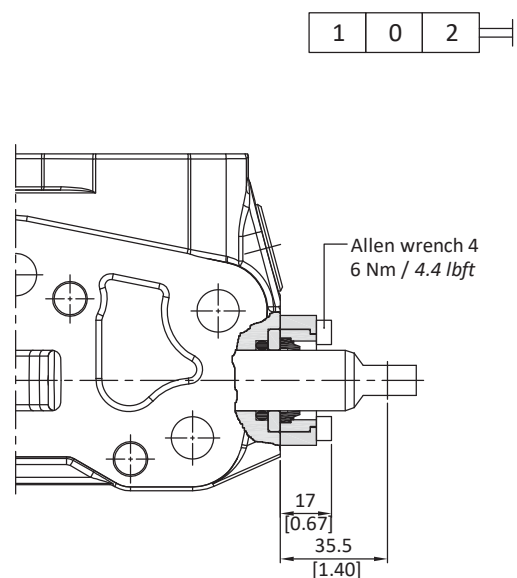
Type LF1 (30 07 5405)

With spool stroke adjustment in position 1 (P → A).



Type SLP (30 07 5406)

Mechanical control with dust-proof plate kit.



Working section

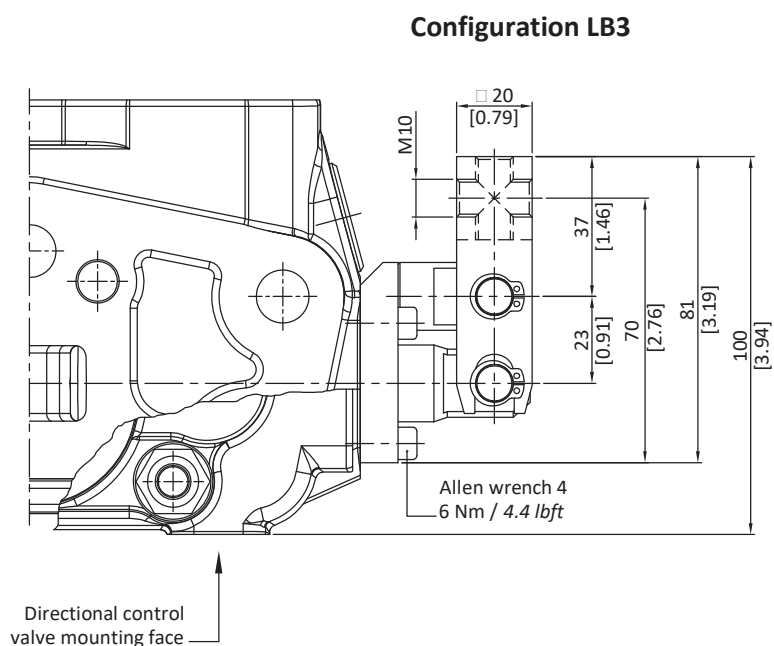
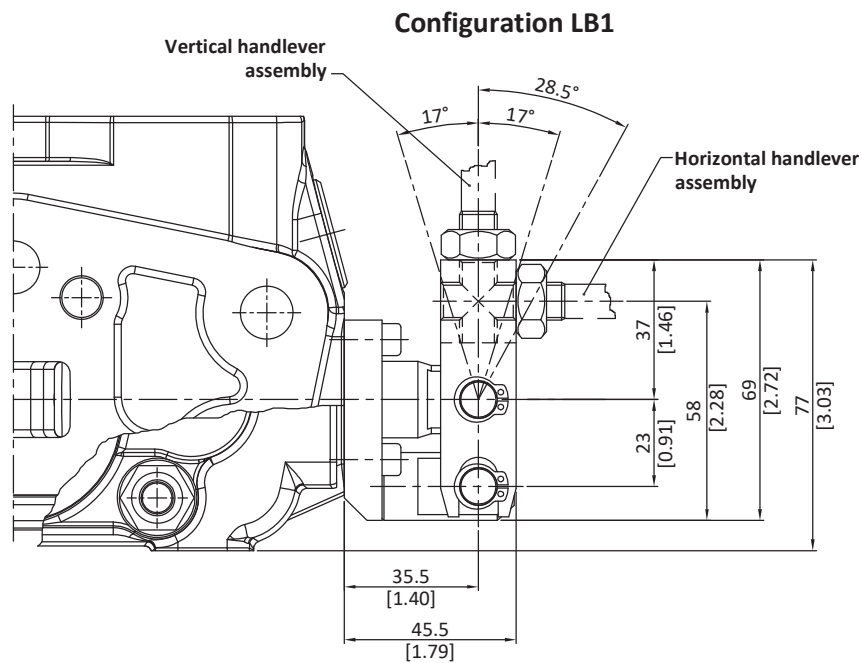
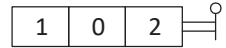
"B" side options

Lever control

Type LB (30 07 5407)

Steel manufacture.

Pivot can be assembled below (LB1 configuration) or above (LB3 configuration).

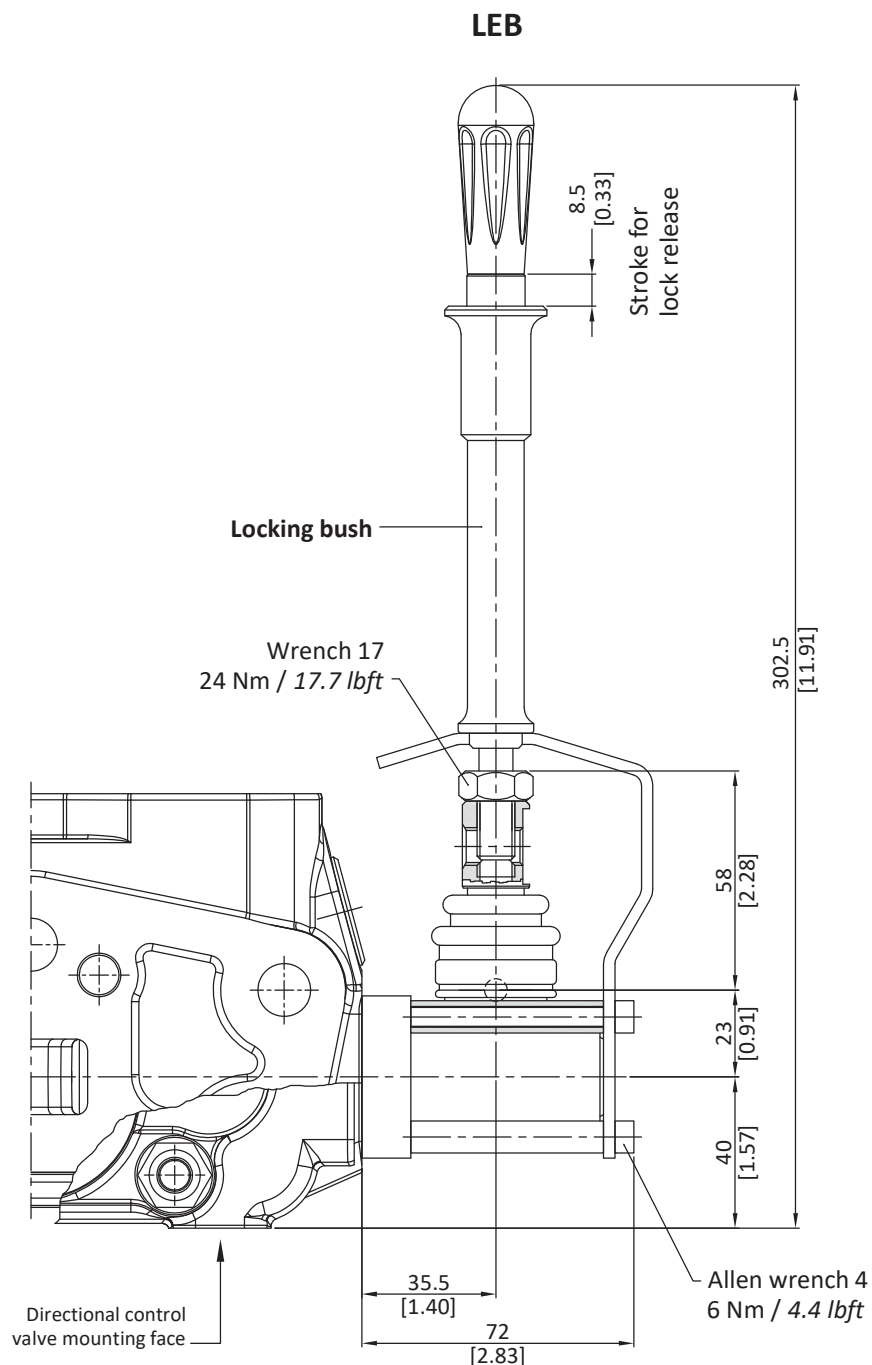
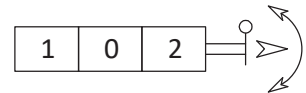


"B" side options

Safety lever control

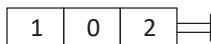
Safety levers with lock in neutral complete with handlever; lift handlever knob to operate.
With insulated handlever type **LEBP**

Type LEB (30 07 5409)



"B" side options

Type SL



Technical drawing showing the rear view of the 1000 Series. The drawing includes a table with the following values:

1	0	2
---	---	---

The drawing shows the rear view of the device, including the Allen wrench connection. The dimensions are:

- Allen wrench 4
- 6 Nm / 4.4 lbf
- 85 [3.35]

1	0	2
---	---	---

1	0	2
---	---	---



(OPTIONAL)
JS100 remote control

Wrench 10
9.8 Nm / 7.2 lbft

Wrench 24
24 Nm / 17.7 lbft

Allen wrench 4
6 Nm / 4.4 lbft

Flexible cable

(OPTIONAL)

- JS200 remote control

LOCK

CABLE
(OPTIONAL)

Example of cable control

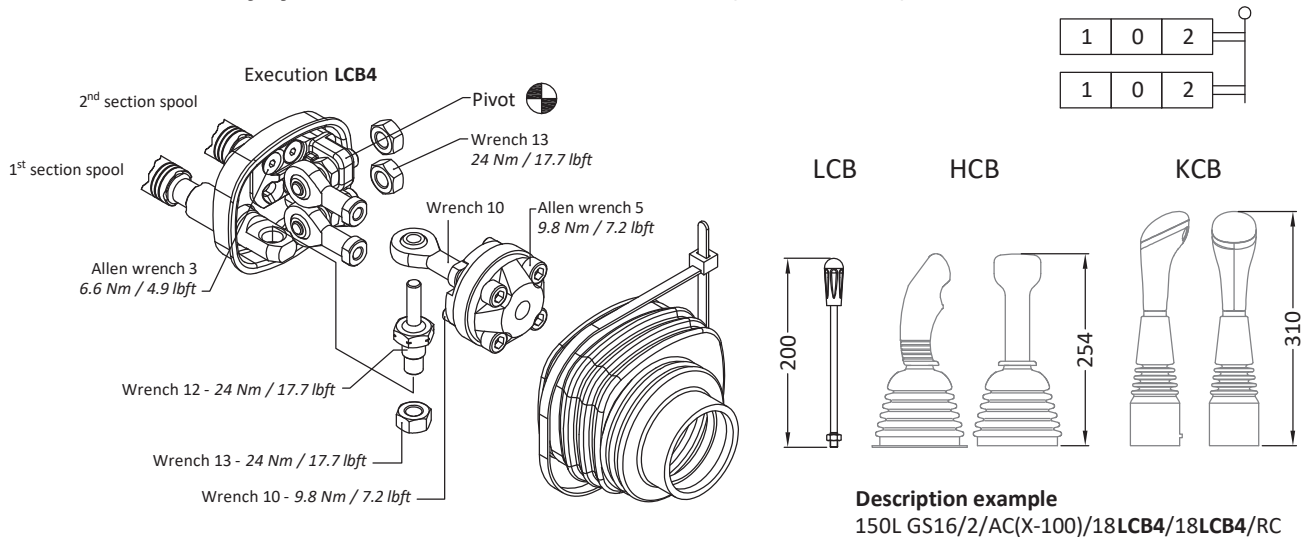
cable

TQ kit

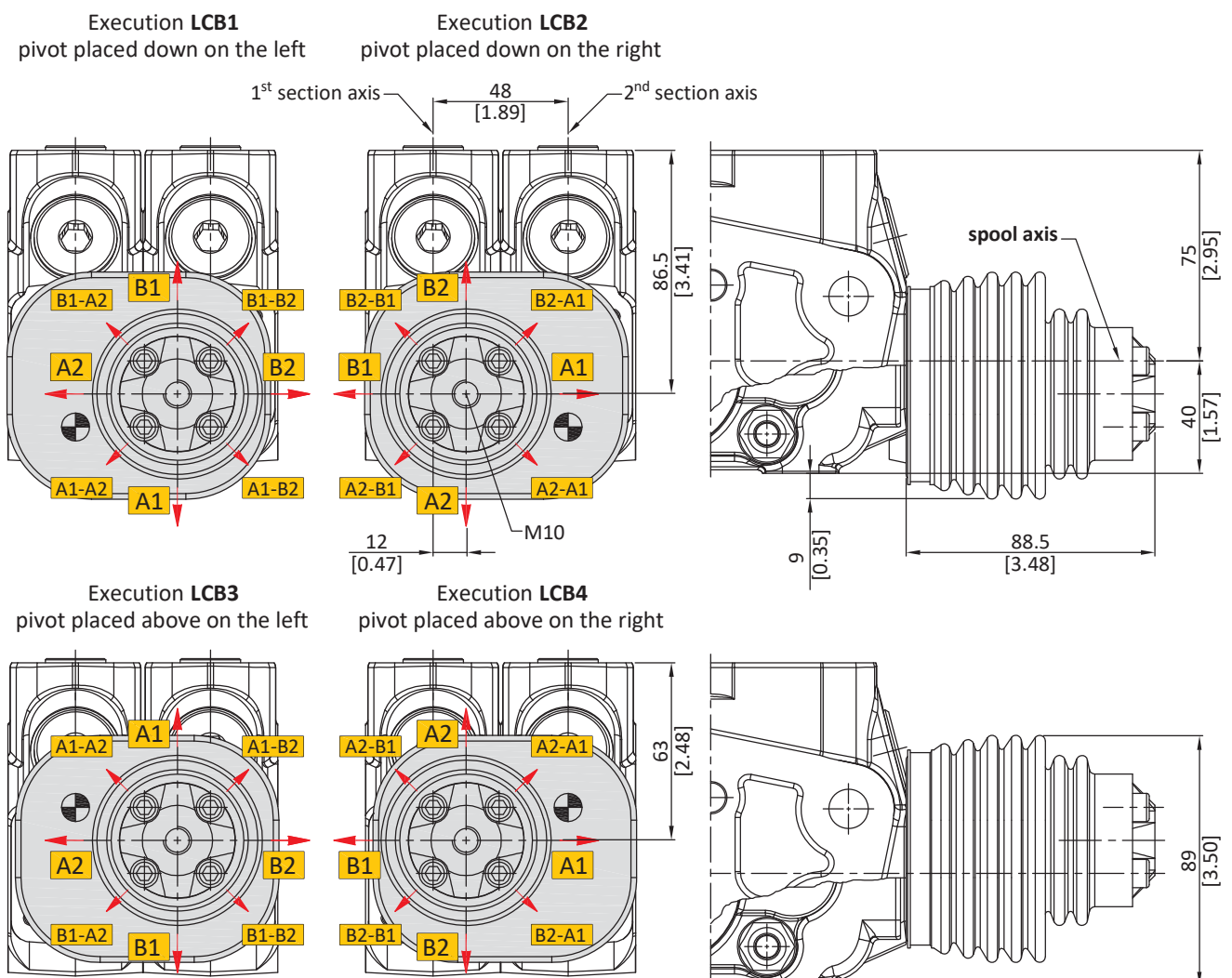
GS16/2 directional control valve without lever boxes

"B" side options

LCB mechanical joystick for two sections control (30 07 5433)



Dimensions and movement scheme

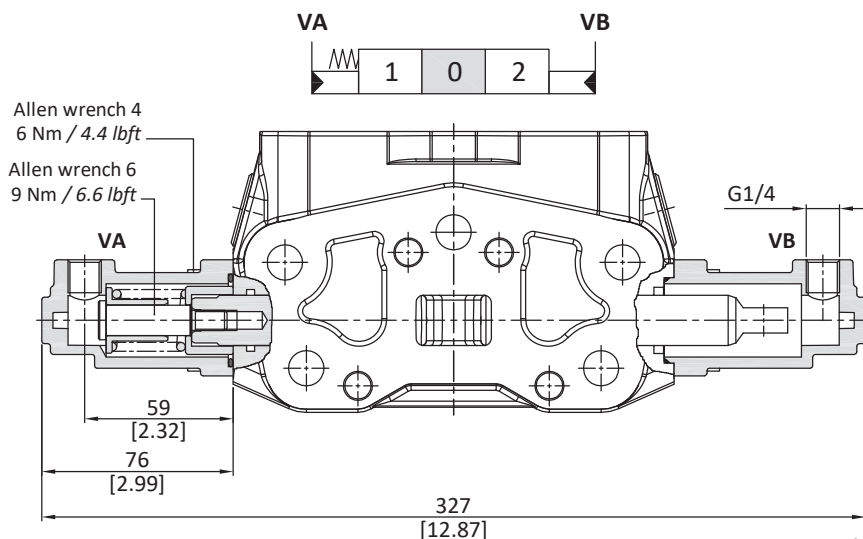


Working section

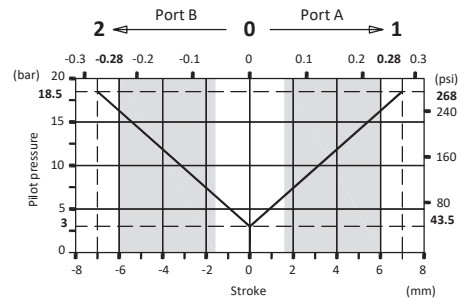
Complete controls

Proportional hydraulic control type 8IM (30 07 5414)

It can be used with standard spools and body



Pilot pressure - stroke diagram

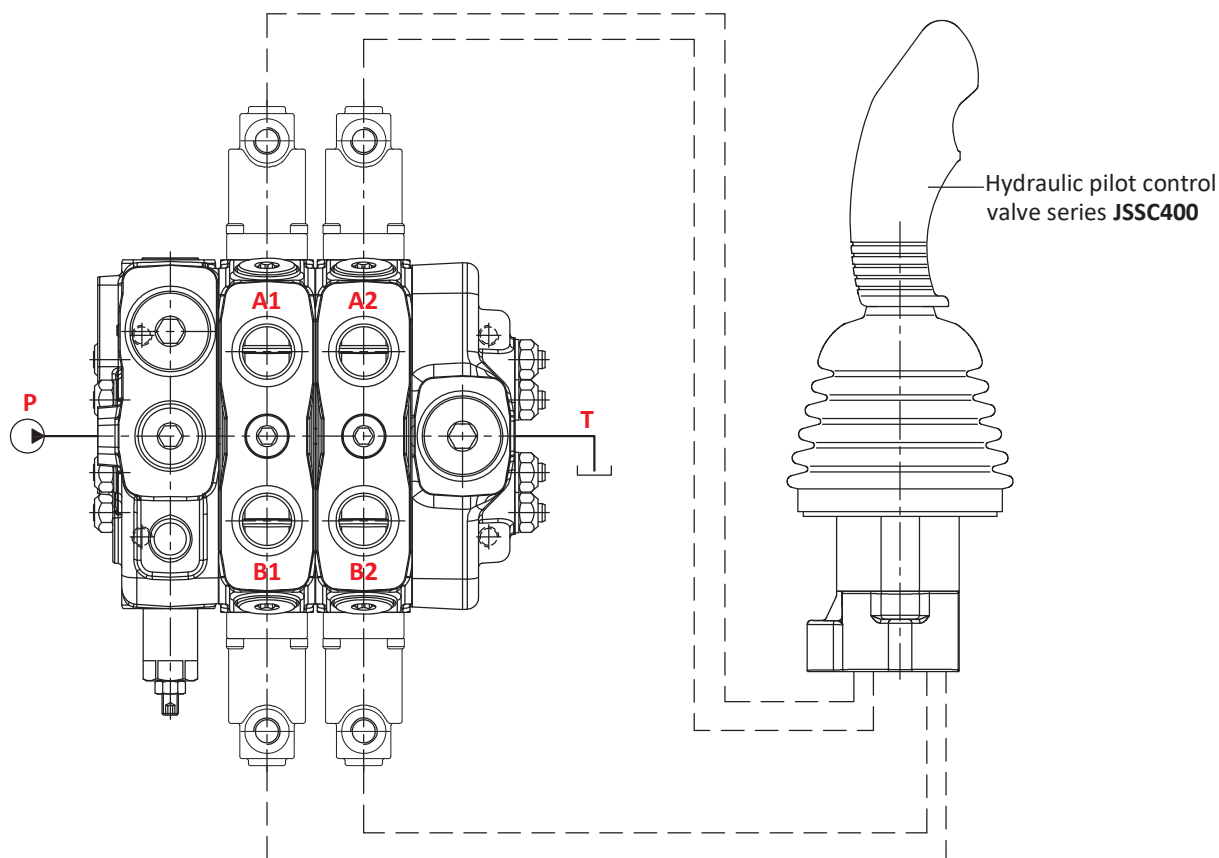


Operating features

Pilot pressure : max. 50 bar / 725 psi

Internal leakage A(B) → T ($\Delta p = 100$ bar - 1450 psi / $T = 40^\circ\text{C}$)
.....: max. 6 cm³/min - 0.37 in³/min

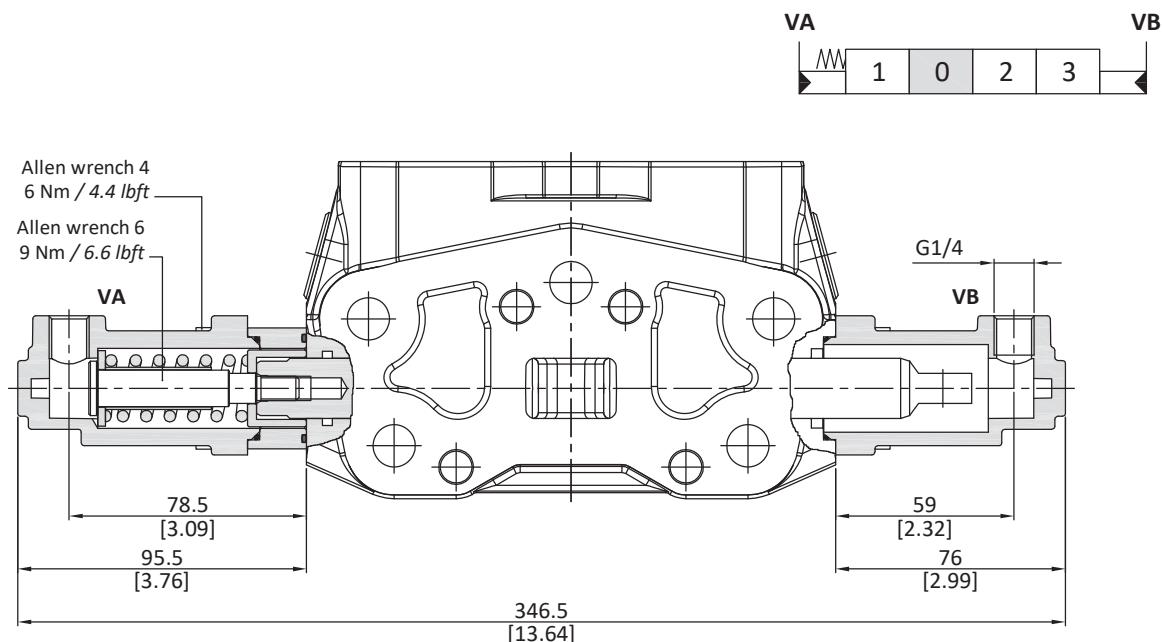
Connection example



Complete controls

Proportional hydraulic control type 13IM (30 07 5421)

It can be used with floating spools and special body kit



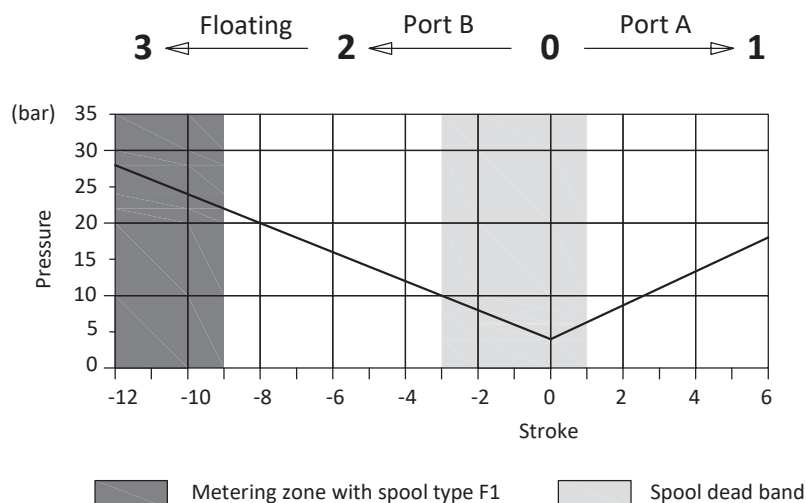
Operating features

Pilot pressure : max. 50 bar / 725 psi
Internal leakage A(B) → T ($\Delta p = 100$ bar - 1450 psi / $T = 40^\circ\text{C}$)
..... : max. 6 cm³/min - 0.37 in³/min

Performance data

Pressure - stroke diagram

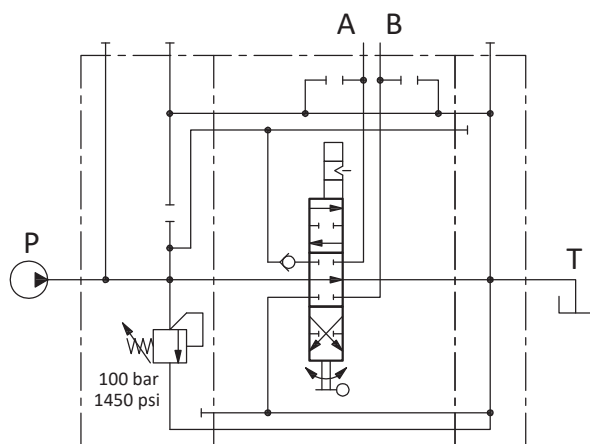
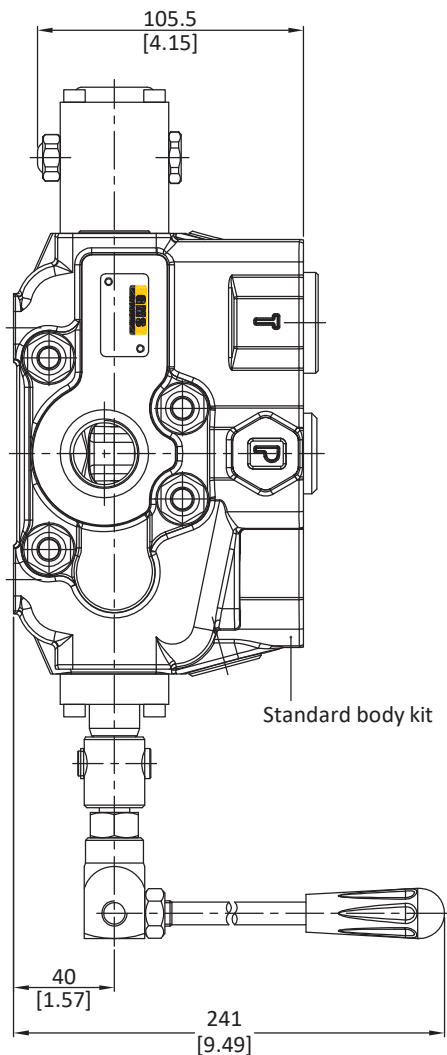
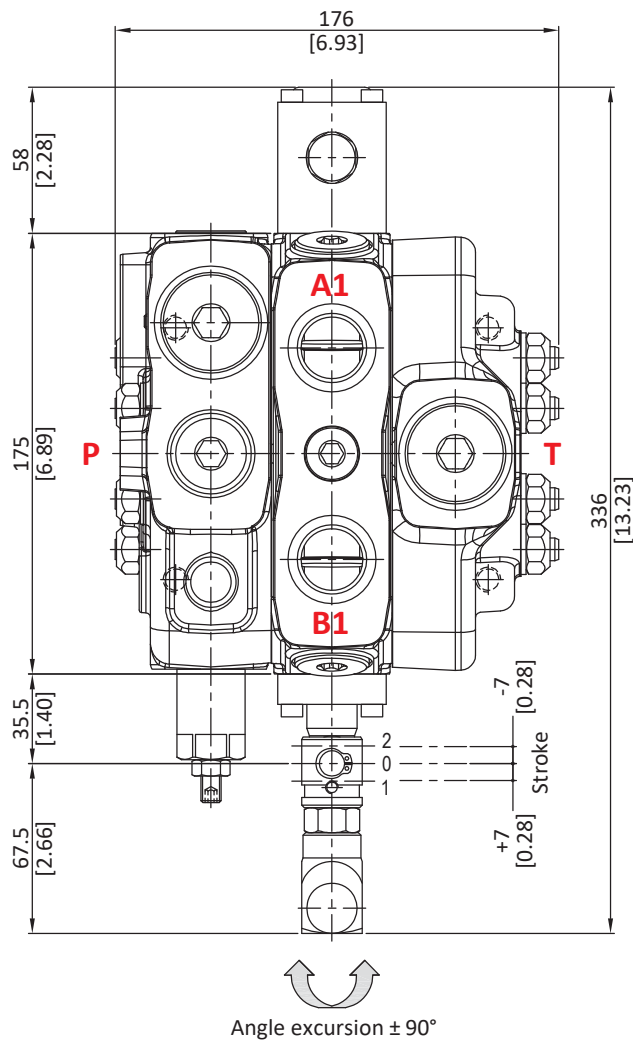
Max. pilot pressure 30 bar - 435 psi.



Working section

Special configurations

Directional valve with rotary control kit (30 07 5379)



Description example
150L GS16/1/AC(X-100)/1 R SLP /RC

Working section

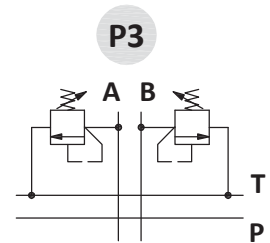
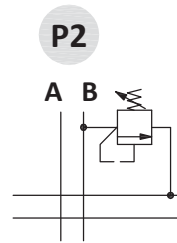
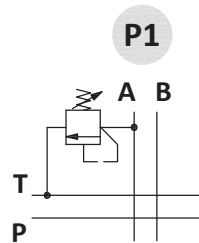
Port valves

Anti - shock valves

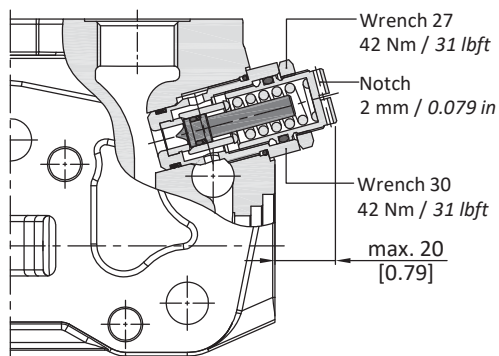
P 1 (100)

Standard setting in bar

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



Valve type



Performance data

Working section

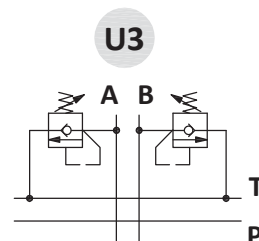
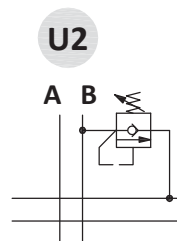
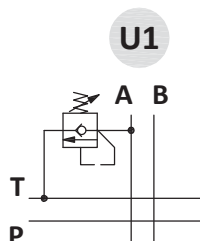
Port valves

Antishock and anticavitation valves

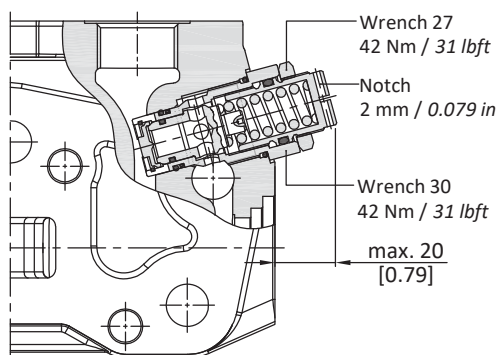
U 1 (100)

Standard setting in bar

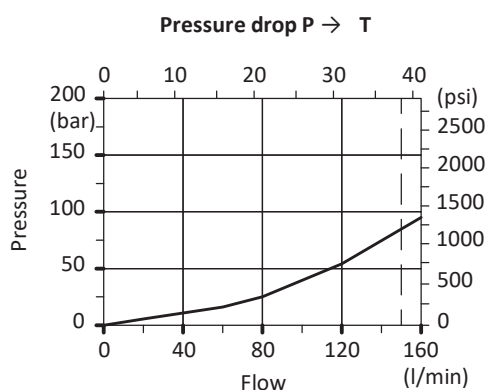
- 1 mounted on port A.
- 2 mounted on port B.
- 3 mounted on ports A and B.



Valve type



Performance data (Antishock and anticavitation valves)

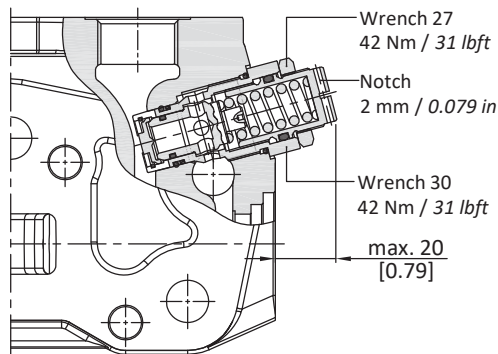
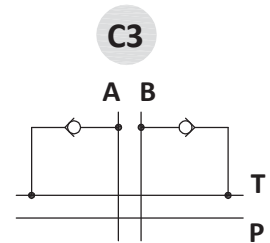
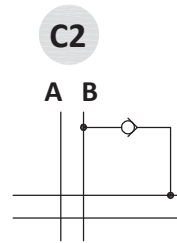
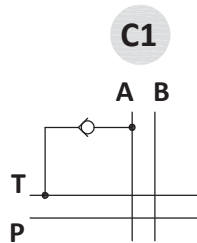


Port valves

Anticavitation valves

C 1

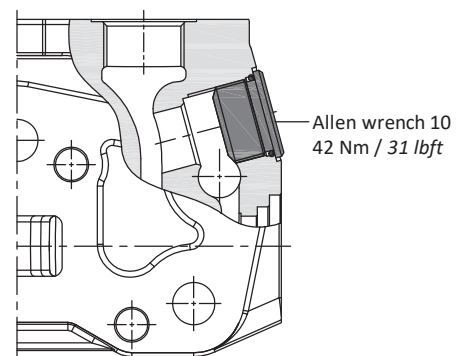
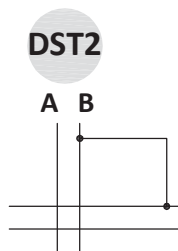
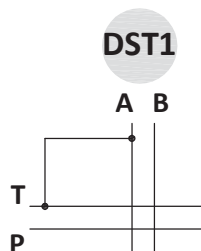
- 1 mounted on port A.
- 2 mounted on port B.
- 3 mounted on ports A and B.



Valve blanking plug with tank connection

DST 1

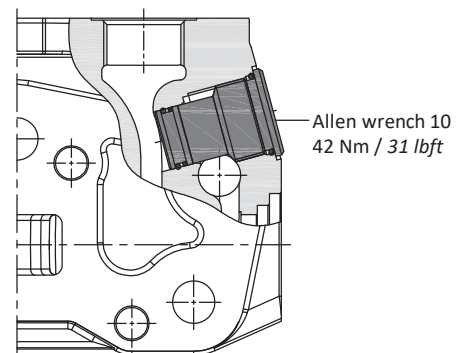
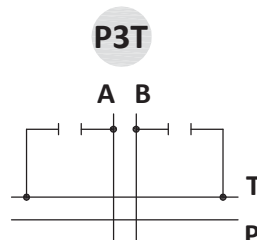
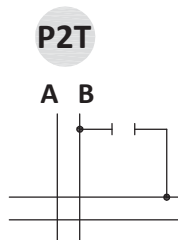
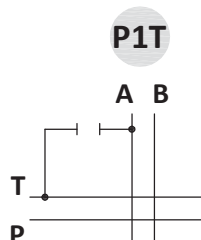
- 1 mounted on port A.
- 2 mounted on port B.



Valve blanking plug

P 1 T

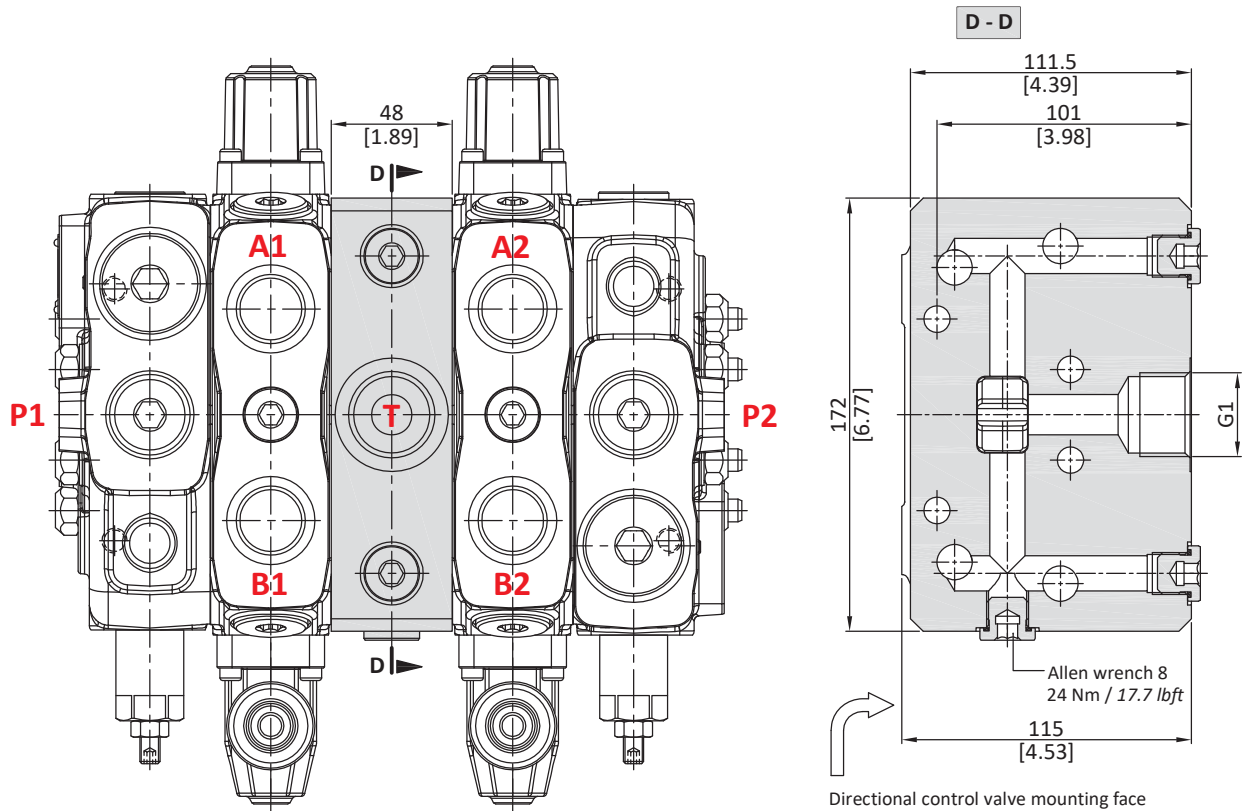
- 1 mounted on port A.
- 2 mounted on port B.
- 3 mounted on ports A and B.



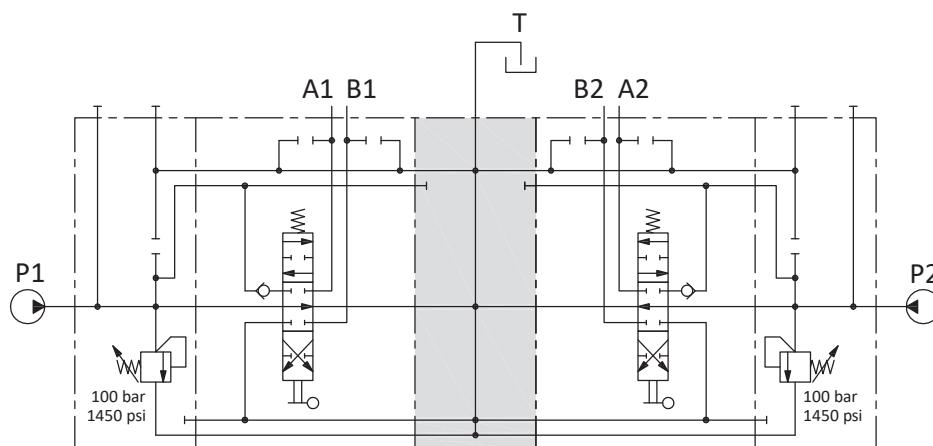
Intermediate section

CS1 mid return manifold

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



Hydraulic circuit



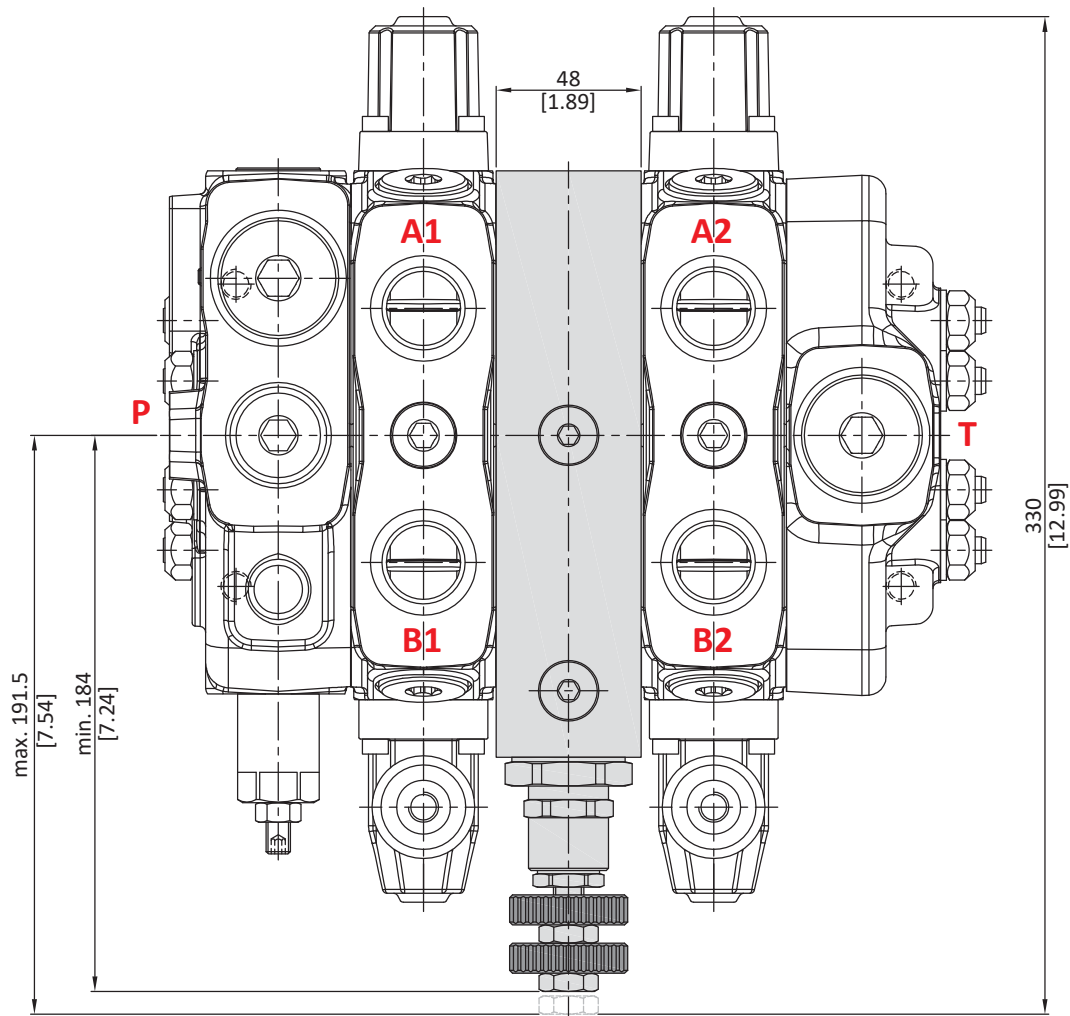
Description example:

150L GS16/2/AC(X-100)/18L/CS1/ED-18L/BC(X-100)

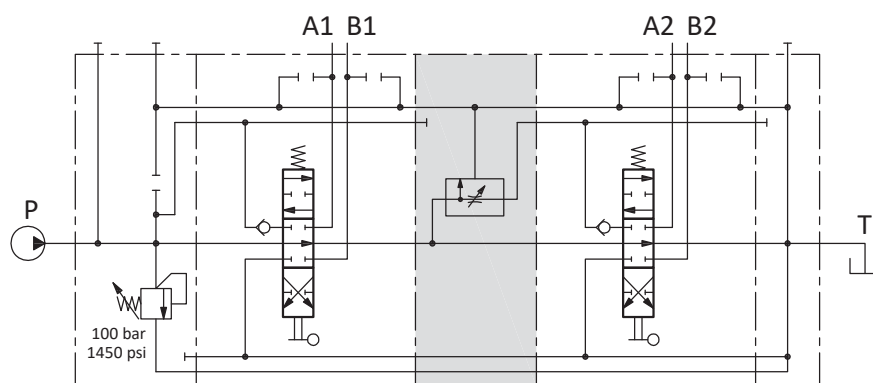
Intermediate section

DFG pressure compensated flow divider section

The flow on the downstream sections can be adjusted from 0 to 150 l/min. by means of graduated handwheel; exceeding setting flow goes to tank.



Hydraulic circuit



Description example:

150L GS16/2/AC(X-100)/18L/DFG/18L/RC

Intermediate section

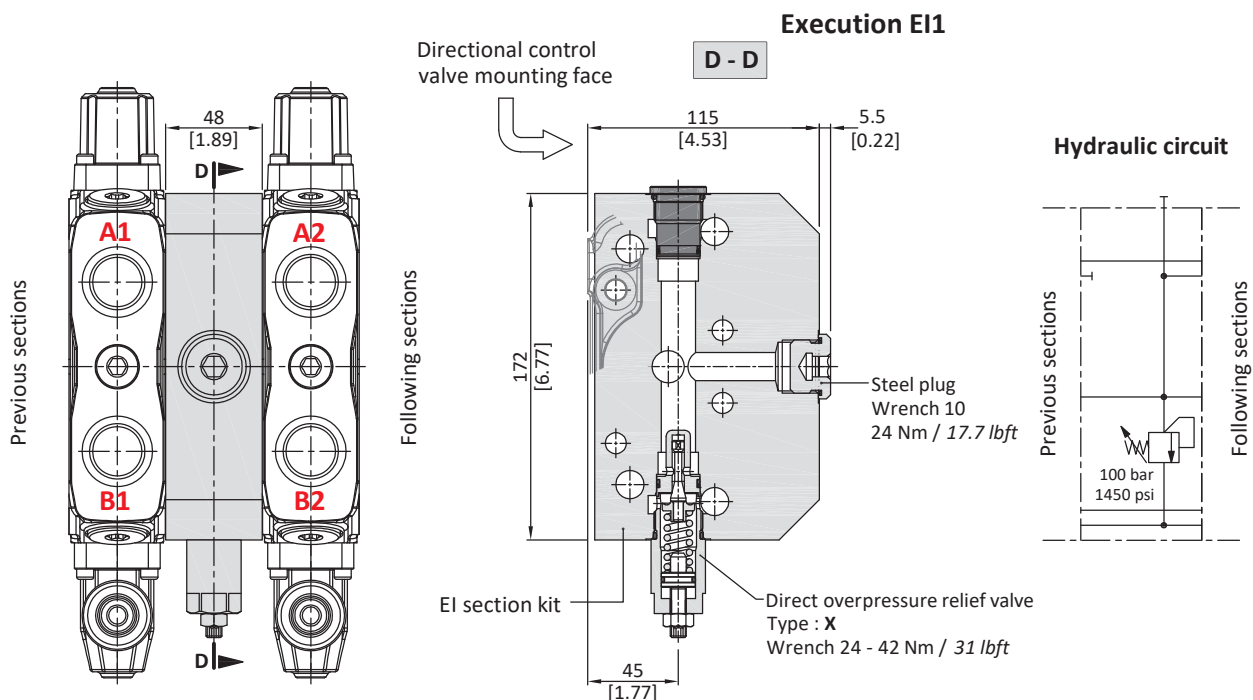
Service relief valve section

EI configuration

The operation of up stream section exclude the EI downstream section.

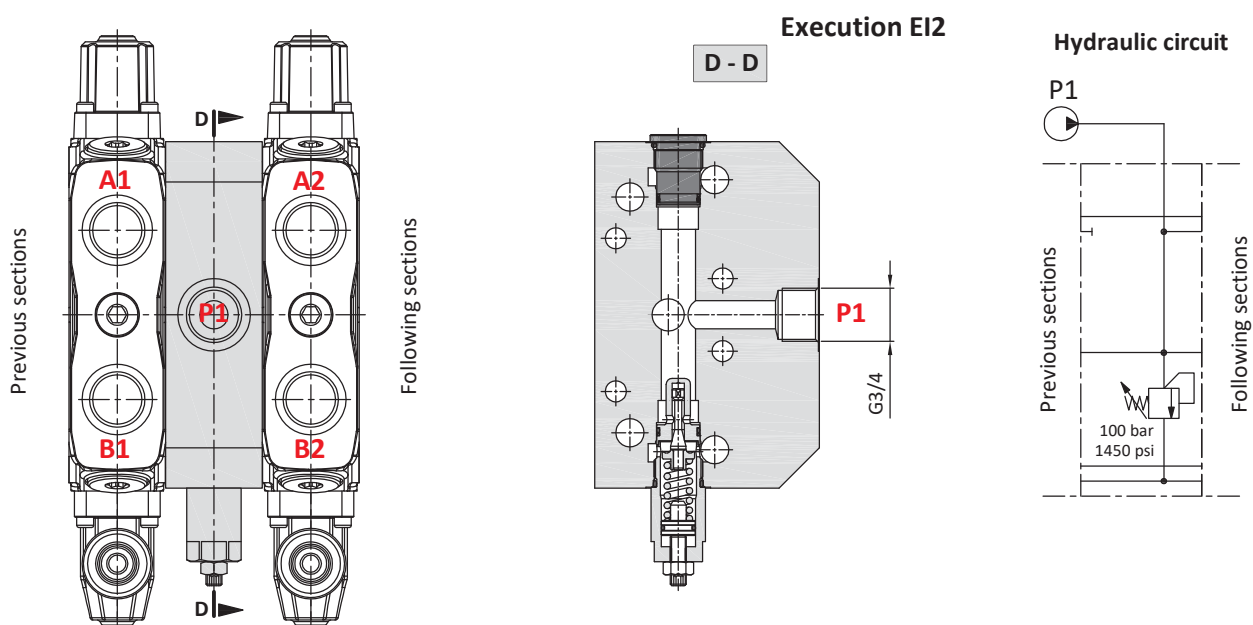
The pressure of the downstream sections should be adjusted at least 20 bar below the relief valve setting.

Execution EI2, without plug, is prearranged for a second inlet.



Description example:

150L GS16/2/AC(X-100)/18L/EI1(X-100)/18L/RC



Description example:

150L GS16/2/AC(X-100)/18L/EI2(X-100)/18L/RC

Parts ordering codes

Ordering example:

150L GS16 / RC



Available configurations

RC: side outlet

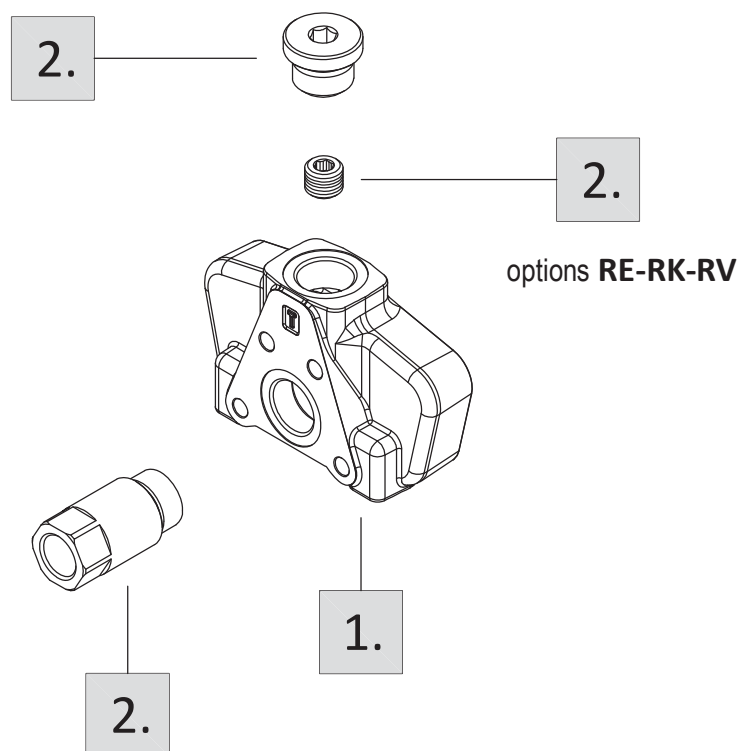
RD: upper outlet

RE: upper outlet with side carry-over

RK: upper outlet and closed centre

RF: With ports plugged

RV: With backpressure valve: **to be used together with the electro-hydraulic control**

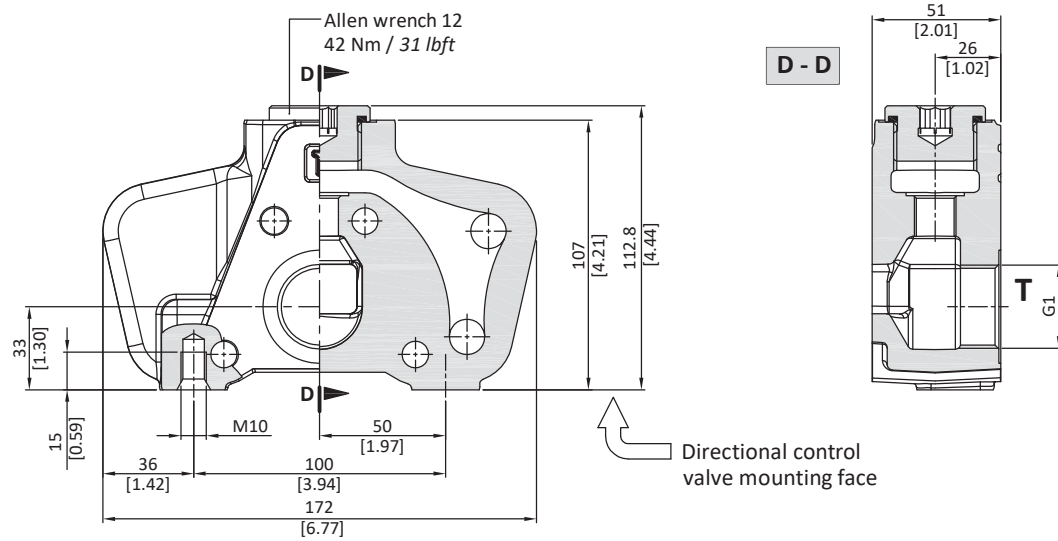


1. Complete outlet cover *			2. Circuit options *			
TYPE	CODE	DESCRIPTION	TYPE	CODE	QTY	DESCRIPTION
RC	30 08 5658	Side outlet	-	30 05 4918	1	G 3/8 plug for carry-over (RE), carry-over with backpressure valve (RV) and closed centre (RK) options
RD	30 08 5721	Upper outlet	VRE	30 05 4905	1	VRE backpressure valve for RV configuration
RE	30 08 5723	Upper outlet with side carry-over sleeve	-	30 05 4993	1	Plug G1
RK	30 08 5722	Upper outlet with closed center				
RF	30 08 5725	With ports plugged				
RV	30 08 5724	With backpressure valve				

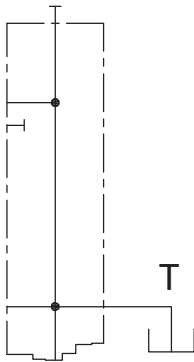
NOTE (*) - Items are referred to **BSP** thread.

Outlet section

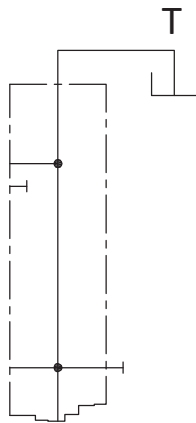
Dimensional data and hydraulic circuit



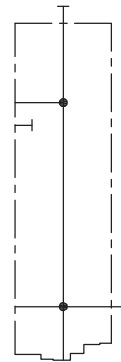
Type RC



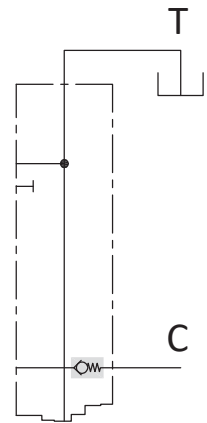
Type RD



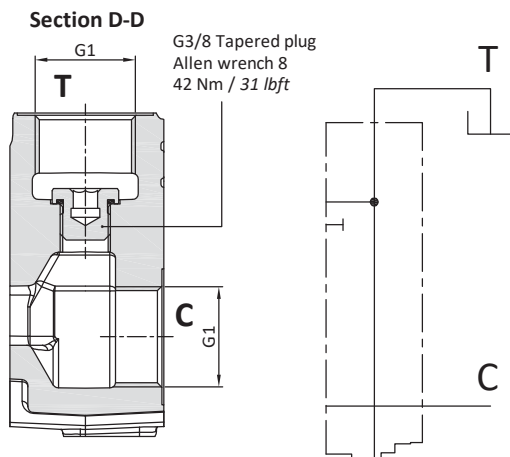
Type RF



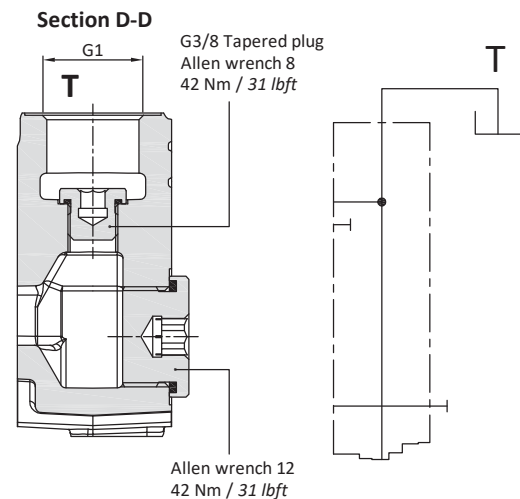
Type RV



Type RE

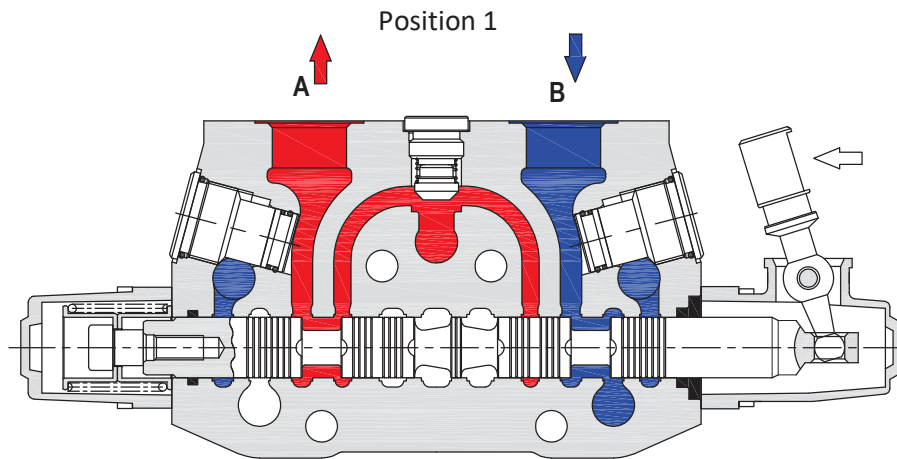


Type RK



Sectional drawing

When hand lever pushed (spool out position) P to A port. B to T port.



When hand lever pulled (spool in position) P to B port. A to T port.

