

MONOBLOCK DIRECTIONAL  
CONTROL VALVE

**D5**



 **walvoil**  
HYDRAULIC CONTROL SYSTEMS

## Features

Simple, compact and heavy duty designed monoblock valves from 1 to 7 sections for open and closed centre hydraulic systems..

H Fitted with a main pressure relief valve and a load check valve.

H Available with parallel, series or tandem circuit.

H Optional carry-over port (only for parallel or tandem circuit).

H Diameter 16 mm - 0.63 in interchangeable spools.

H A wide variety of service port valve options.

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

### Additional information

This catalogue shows the product in the most standard configurations.

Please contact Customer Service Dpt. for more detailed information or special request.

### WARNING!

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

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

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

5<sup>th</sup> edition November 2002:

**This edition supercedes all prior documents.**

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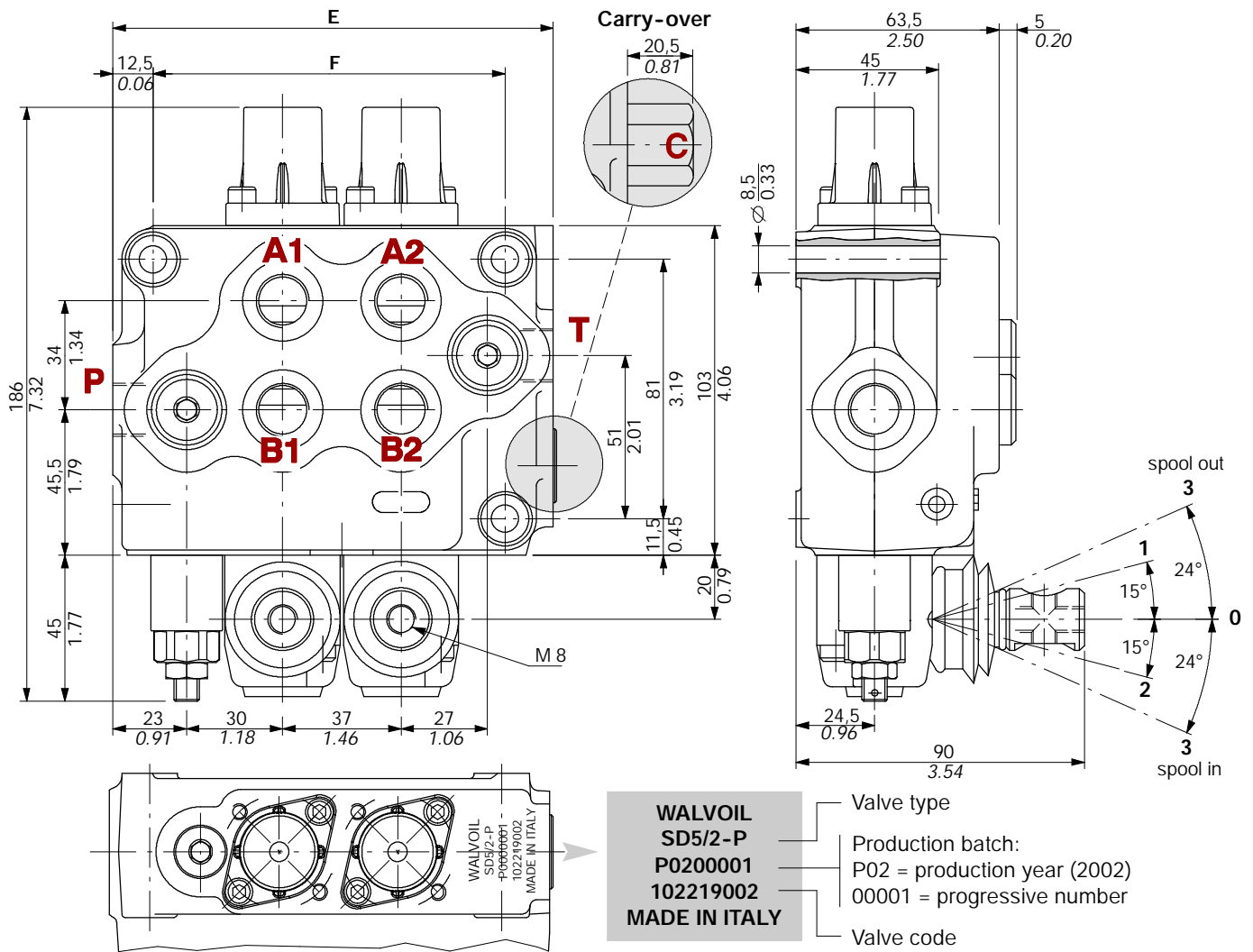
## Working conditions

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

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

NOTE - For different conditions please contact Customer Service.

## Dimensional data (parallel circuit)



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

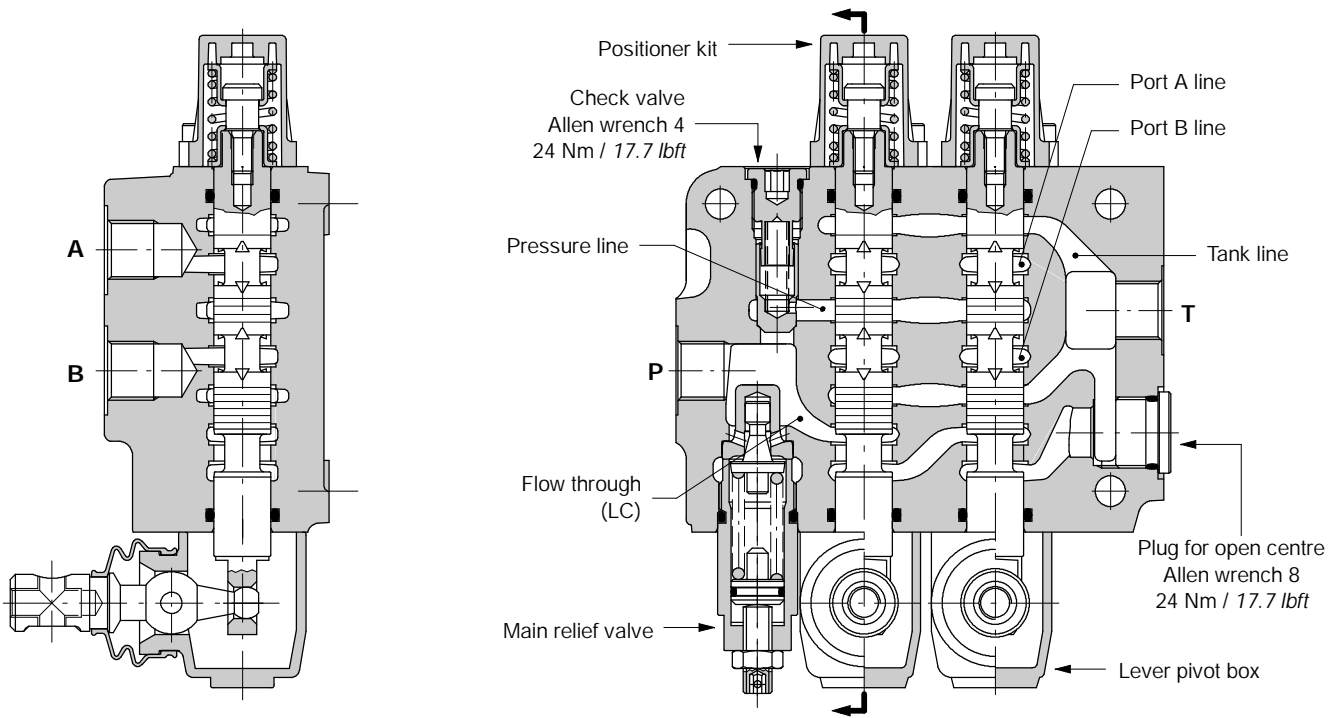
TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD5/5-P	248.5	9.78	221	8.70	10.1	22.3
SD5/6-P	285.5	11.24	258	10.16	11.7	25.8
SD5/7-P	322.5	12.70	295	11.61	13.2	29.1

### Standard threads

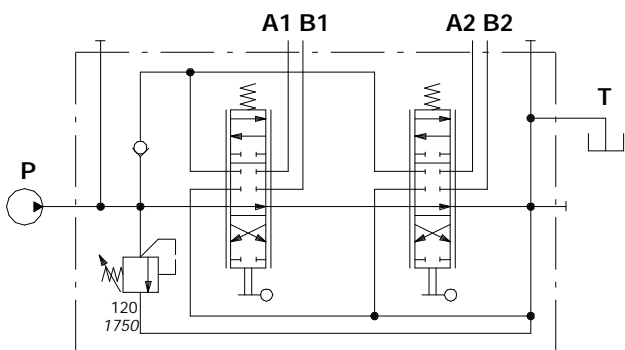
PORTS	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)	METRIC (ISO 262)
Inlet P and carry-over C	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5
A and B ports	G 3/8	9/16-18 UNF-2B (SAE 6)	M18x1.5
Outlet T	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5
PILOT PORTS			
Pneumatic	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27
Hydraulic	G 1/4	9/16-18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

### Parallel

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

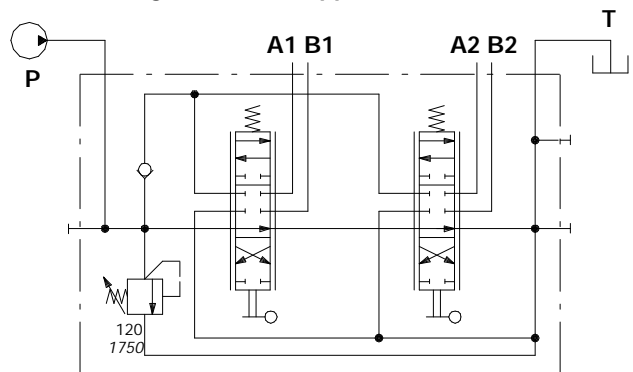


Standard configuration



Ex.: SD5/2-P(JG3-120)/18L/18L/AET

Configuration with upper inlet and outlet

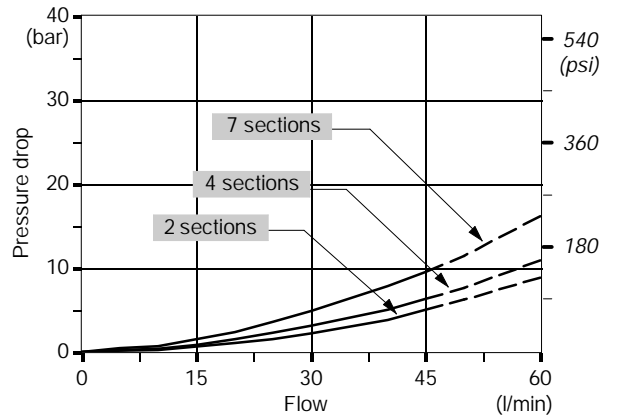
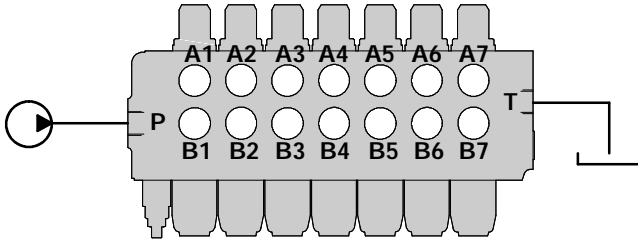


Ex.: SD5/2-P(JG3-120)/18L/18L/AET-PSA

Performance data (pressure drop vs. flow)

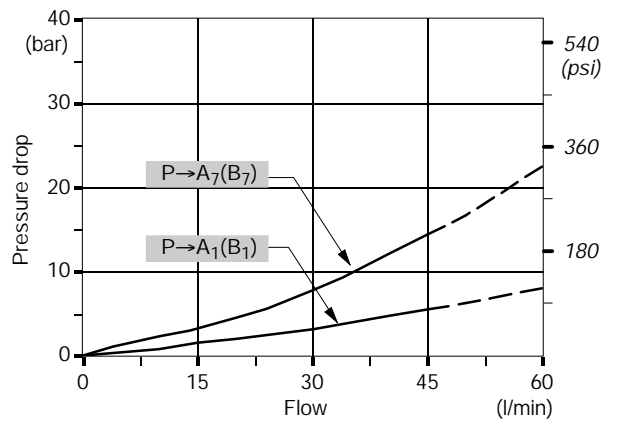
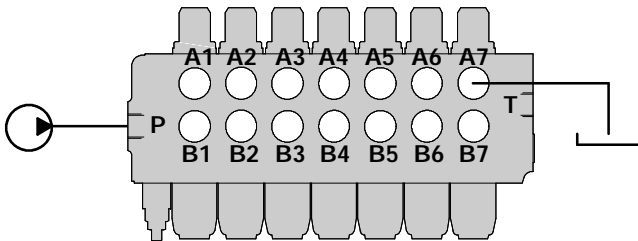
Open centre

From side inlet to side outlet.



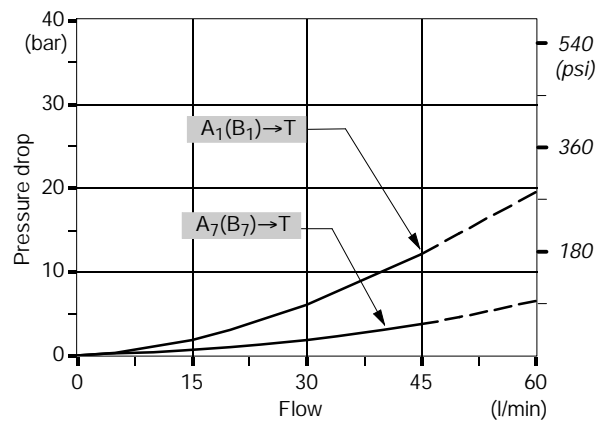
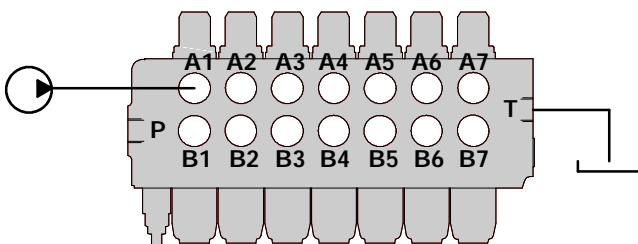
Inlet to work port

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



Work port to outlet

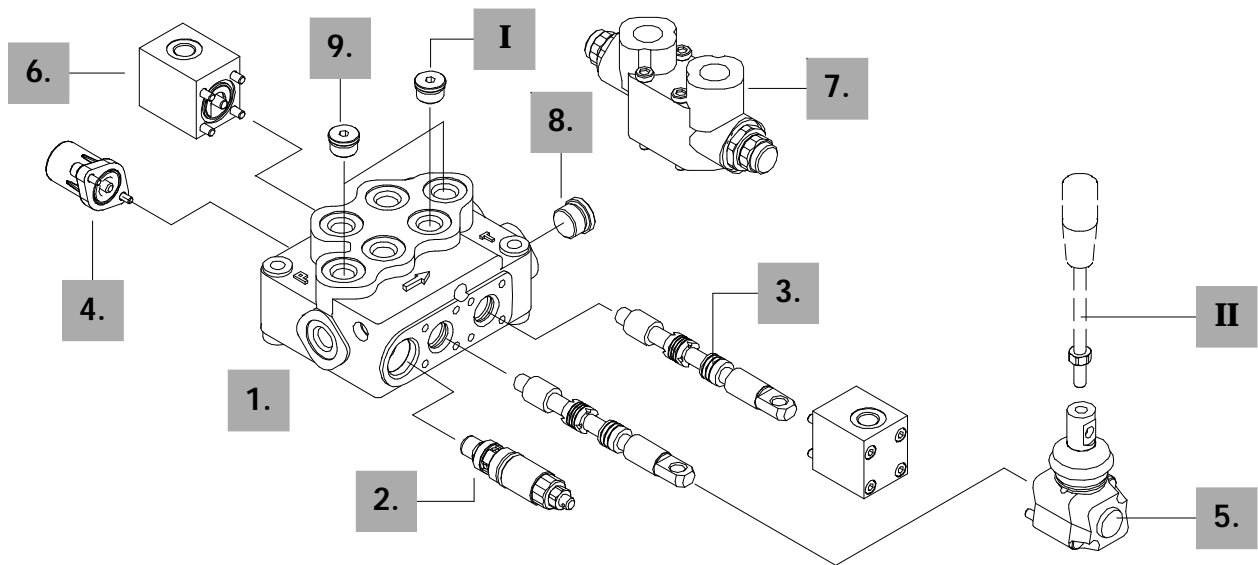
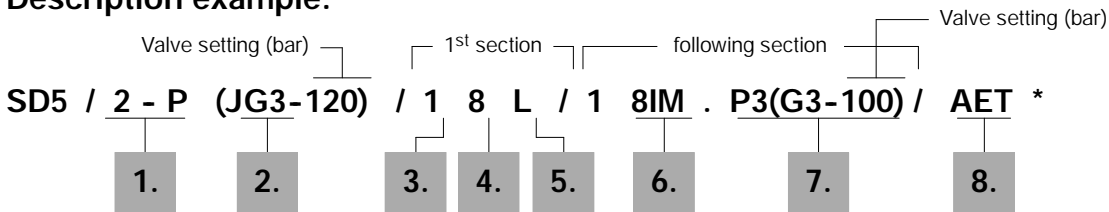
From A port (spool in position 2) or B port (spool in position 1) to side outlet.



NOTE - Measured with spool type 1.

## Ordering codes

### Description example:



### 1. Body kits \*

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

Include boby, seals and load check valve.

### 2. Inlet relief options page 10

TYPE	CODE	DESCRIPTION
VMD5 direct pressure relief valve type J		
(JG2-80)	5KIT105412	Range 40 to 80 bar / 580 to 1150 psi standard setting 80 bar / 1150 psi
(JG3-120)	5KIT105413	Range 63 to 200 bar / 900 to 2900 psi standard setting 120 bar / 1750 psi
(JG4-220)	5KIT105414	Range 160 to 315 bar / 2300 to 4600 psi standard setting 220 bar / 3200 psi

Standard setting is referred to 10 l/min flow.

SV XTAP623282 Relief valve blanking plug

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

### 3. Spool options page 11

TYPE	CODE	DESCRIPTION
1	3CU1210130	Double acting, 3 positions, with A and B closed in neutral position
1A	3CU1221130	Double acting, 3 positions, with A open to tank in neutral position
1B	3CU1222130	Double acting, 3 positions, with B open to tank in neutral position
2	3CU1225130	Double acting, 3 positions, with A and B open to tank in neutral position
2H	3CU1225225	Double acting, 3 positions, with A e B partially open to tank in neutral position
3	3CU1231130	Single acting on A, 3 positions, B plugged requires G3/8 plug (see part I)
Special spools for particular positioner kits		..... page 14
5DY	3CU1242220	Double acting, 4 positions, floating circuit in 4 <sup>th</sup> position with spool in
5PY	3CU1245620	Double acting, 4 positions, floating circuit in 4 <sup>th</sup> position with spool out, fitted with check valve
8	3CU1262120	Double acting, 4 positions, regenerative circuit in 4 <sup>th</sup> position with spool in
Special spools for standard positioner kits		..... page 17
8F	3CU1261100	Double acting, 3 positions, regenerative circuit in 2 <sup>nd</sup> position with spool out



**4. "A" side spool positioners page 18**

TYPE	CODE	DESCRIPTION
<b>8</b>	5V08105000	With spring return in neutral position
<b>8D</b>	5V08105200	With spring return in neutral position and pin with M6 female thread for dual control
<b>8D2</b>	5V08105220	With spring return in neutral position and pin with M8 male thread for dual control
<b>8F2</b>	5V08105101	With spring return in neutral position and adjustable flow limiter
<b>19</b>	5V19105000	2 positions, with spring return in neutral position from position 1
<b>20</b>	5V19105000	2 positions, with spring return in neutral position from position 2
<b>9</b>	5V09105010	With detent in position 1 and spring return in neutral position
<b>10</b>	5V10105010	With detent in position 2 and spring return in neutral position
<b>11</b>	5V11105000	Detent in positions neutral, 1 and 2
<b>12</b>	5V12105000	Detent in positions 1 and 2
<b>15</b>	5V15105000	2 positions, detent in positions 1 and neutral
<b>16</b>	5V16105000	2 positions, detent in positions 2 and neutral
<b>9B</b>	5V09202010	With detent in position 1 and spring return in neutral position
<b>10B</b>	5V10202010	With detent in position 2 and spring return in neutral position
<b>11B</b>	5V11202010	Detent in positions 1 and 2 and spring return in neutral position
<b>8MS3</b>	5V08105553	With spring return in neutral position, operation signalling in position 1 and 2, prearranged for centralized microswitch control
<b>8MG1</b>	5V08105670	With spring return in neutral position and microswitch in position 1
<b>8MG2</b>	5V08105680	With spring return in neutral position and microswitch in position 2
<b>8MG3</b>	5V08105660	With spring return in neutral position and microswitch in positions 1 and 2
<b>8M3</b>	5V08105400	With spring return in neutral position and external pin for microswitch control in positions 1 and 2
<b>8EM2</b>	5V08105580	With spring return in neutral position and 12VDC electromagnetic detent in pos. 2
	5V08105590	As previous, 24VDC
<b>8MHE3(NC)</b>	5V08105541	With spring return in neutral position and spool positioning ON/OFF electric signal circuit normally closed
<b>8MHE3(NO)</b>	5V08105540	As previous, with circuit normally open
<b>8P</b>	5V08105701	ON/OFF pneumatic kit
<b>8EP3</b>	5V08105735	ON/OFF 12 VDC electro-pneumatic kit
	5V08105740	ON/OFF 24 VDC electro-pneumatic kit
<b>8ED3</b>	5V08105350	ON/OFF 12 VDC electro-hydraulic kit
	5V08105351	ON/OFF 24 VDC electro-hydraulic kit
Particular positioner kits for special spools ..... page 14		
<b>13NZ</b>	5V13305010	...4 positions with spring return in neutral pos. and detent in 4 <sup>th</sup> pos.: <b>for spool 5DY</b>
<b>13QN</b>	5V13405020	4 positions with spring return in neutral pos. and detent in 4 <sup>th</sup> pos.: <b>for spool 5PY</b>
<b>13FZ</b>	5V13505400	4 positions with spring return in neutral position: <b>for spool 8</b>

**5. "B" side options page 30**

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

**6. Complete spool control kits page 34**

Hydraulic proportional and ON/OFF electric spool control kits.

**7. Service valves page 42**

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

**8. Outlet port options pag. 40**

TYPE	CODE	DESCRIPTION
<b>AET</b>	XTAP623170	Open centre plug
<b>AEK</b>	3XTAP522282	Closed centre plug
<b>AE</b>	3XGIU522460*	G3/8 carry-over sleeve
<b>AET-L</b>	XCAR405300	With hydraulic pilot unloader valve
<b>AET-EL</b>	YCAR405305	With 12VDC electric control unloader valve
	YCAR405310	With 24VDC electric control unloader valve
<b>AET-LT</b>	XTAP523370	Prearranged for unloader valve, with blanking plug

**9. Inlet and outlet selection \* page 6**

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

**I "A" and "B" ports plugs \***

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

**II Optional handlevers**

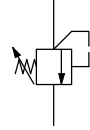
TYPE	CODE	DESCRIPTION
<b>AL01/M8x120</b>	170011012	For lever L: height 120 mm / 4.72 in
<b>AL01/M10x150</b>	170012015	For lever LM10: height 150 mm / 5.91 in
<b>AL08/M12x150</b>	170013115	For joystick LCB: height 150 mm / 5.91 in

## Inlet relief options

### Direct pressure relief valve

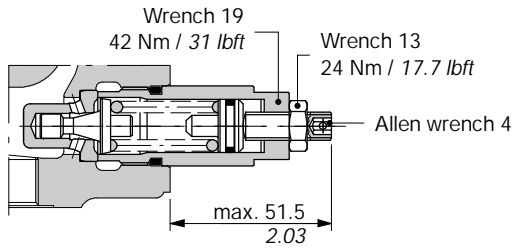
#### VMD5 ( J G 3 - 120 )

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

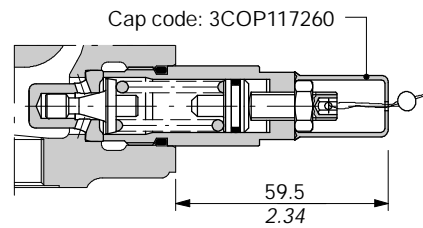


### Adjustment type

#### G: with screw

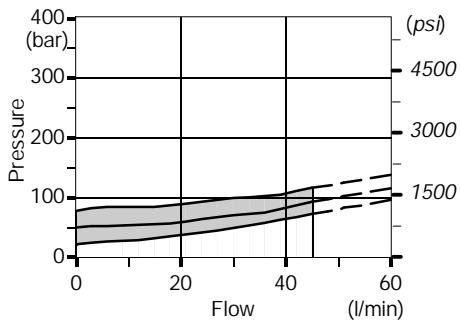


#### H: valve set and locked

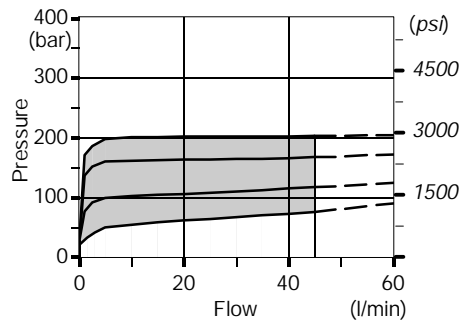


### Performance data

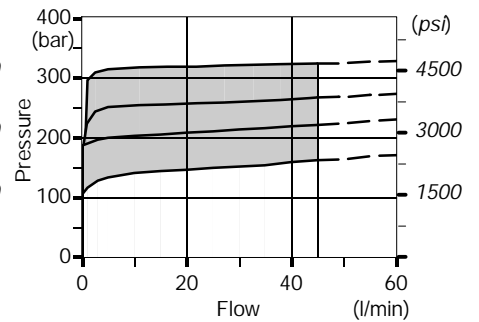
#### Spring nr. 2 (green band)



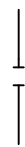
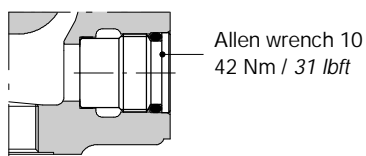
#### Spring nr. 3 (blue band)



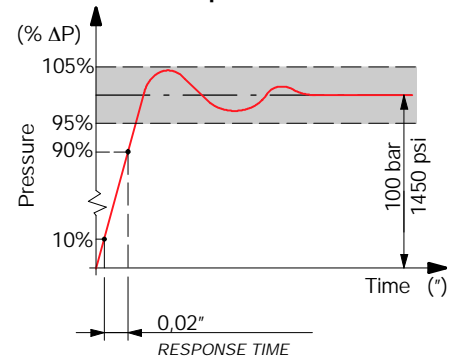
#### Spring nr. 4 (red band)



### SV: relief valve blanking plug

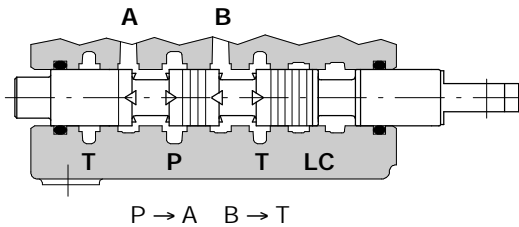


#### Response time

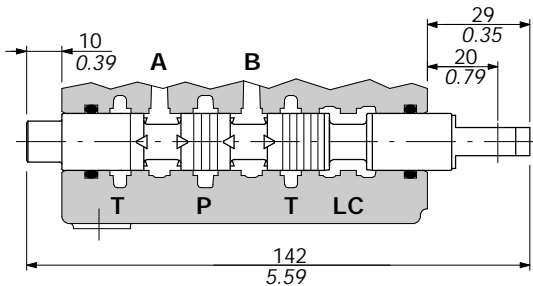
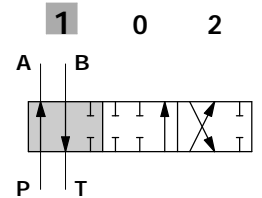


Type 1

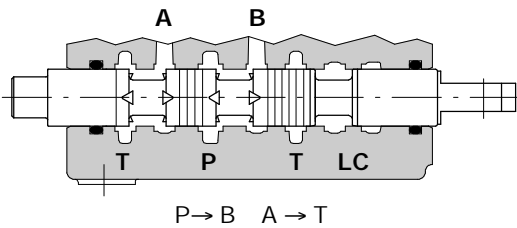
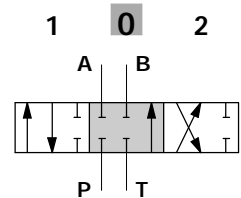
For special requirement, spool 1CS code 3CU1210200 suggested for flow from 15 to 30 l/min and spool 1CEX code 3CU1210230 suggested for flow up to 15 l/min, are available.



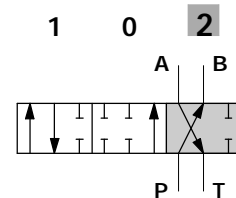
stroke + 5.5 mm  
+ 0.22 in



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

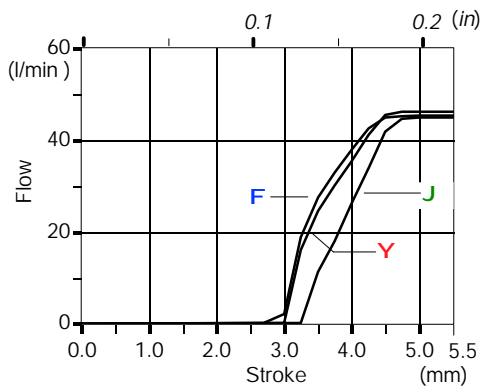


A stroke - 5.5 mm  
- 0.22 in



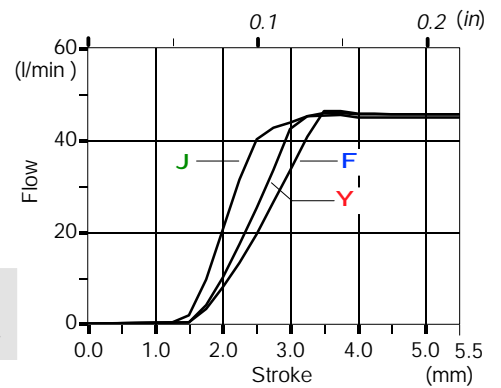
Performance data

Spool metering P → A(B)



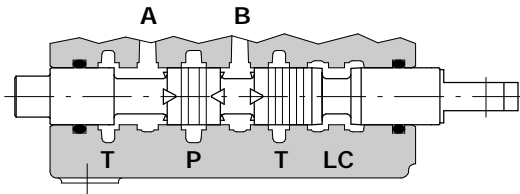
Q<sub>in</sub> = 45 l/min  
**F** P(on ports) = 63bar / 900 psi  
**Y** P(on ports) = 100bar / 1450 psi  
**J** P(on ports) = 250bar / 3600 psi

Spool metering A(B) → T

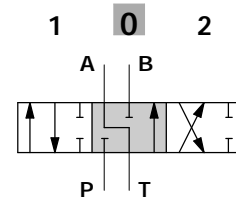


## Spool options

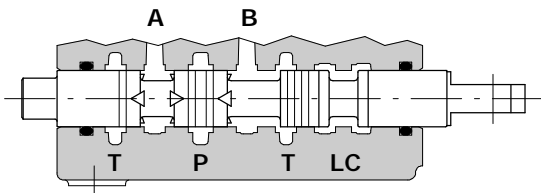
### Type 1A



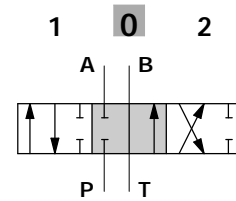
P-B closed, A→T, flow through line (LC) open



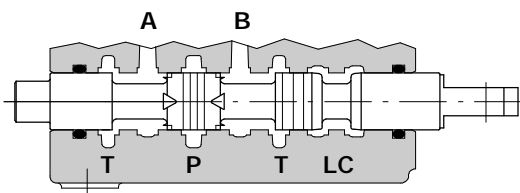
### Type 1B



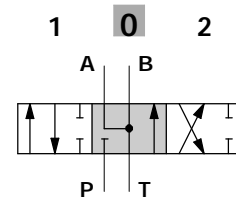
P-A closed, B→T, flow through line (LC) open



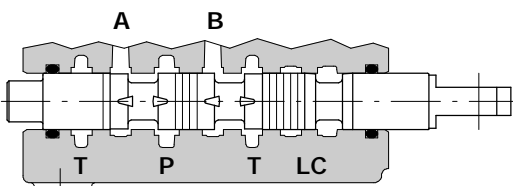
### Type 2



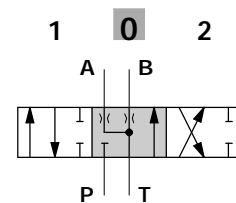
P closed, A-B→T, flow through line (LC) open



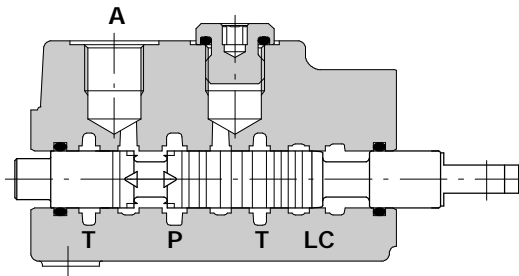
### Type 2H



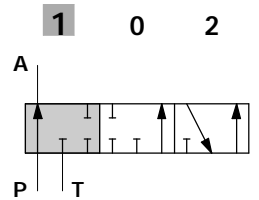
P closed, A-B partially open to tank,  
flow through line (LC) open



Type 3

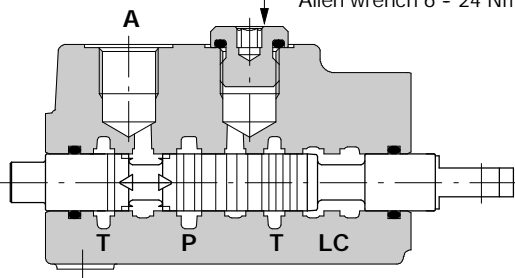


stroke + 5.5 mm  
+ 0.22 in

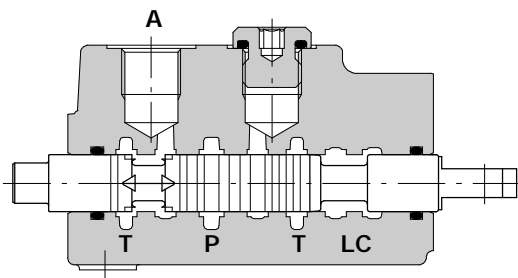
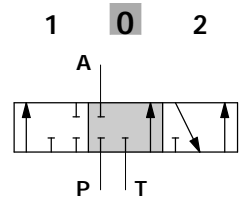


P → A

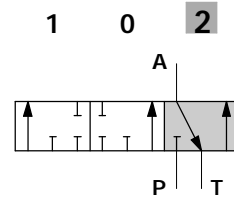
Port B plugged  
Allen wrench 6 - 24 Nm / 17.7 lbft



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



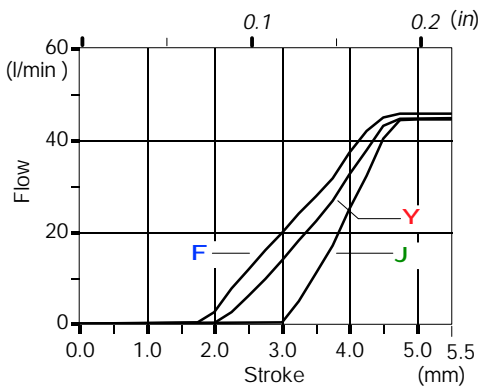
A stroke - 5.5 mm  
- 0.22 in



A → T

Performance data

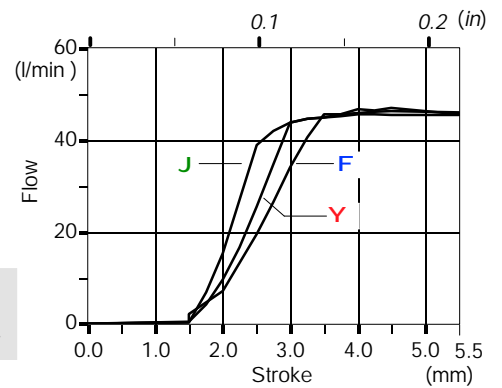
Spool metering P→A



Q<sub>in</sub> = 45 l/min

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

Spool metering A→T



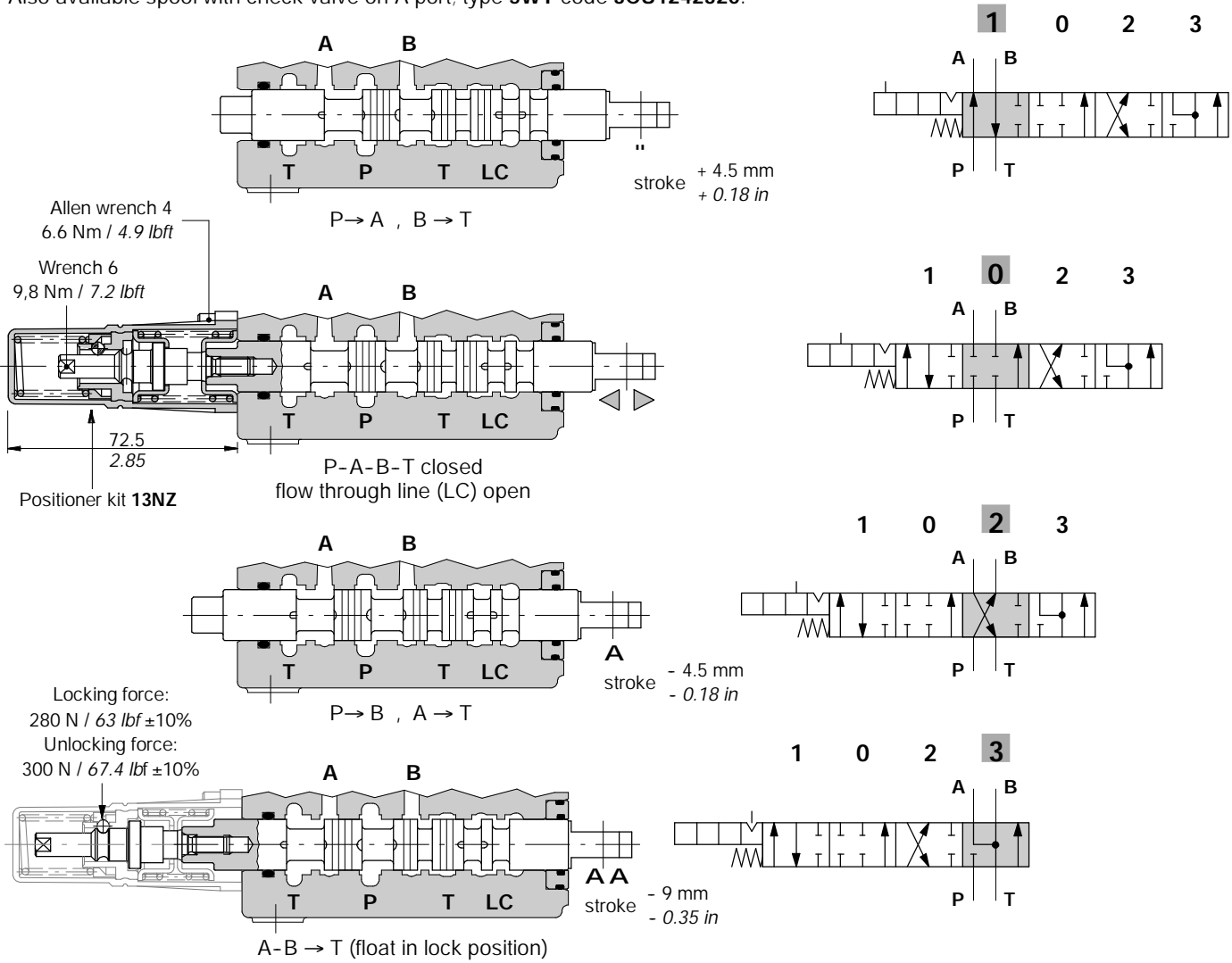
# SD5

## Spool options

### Type 5DY

It needs special body with extra machining: for information please contact Customer Service. This spool must be coupled with positioner type 13NZ.

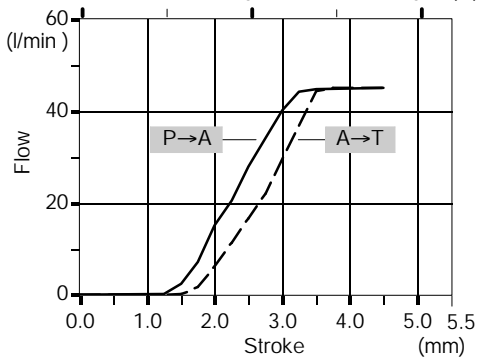
Also available spool with check valve on A port; type 5WY code 3CU1242320.



### Performance data

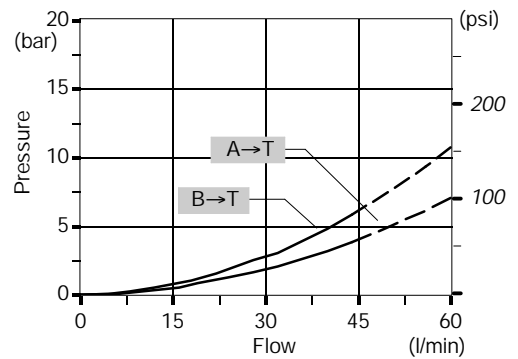
#### Spool metering

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



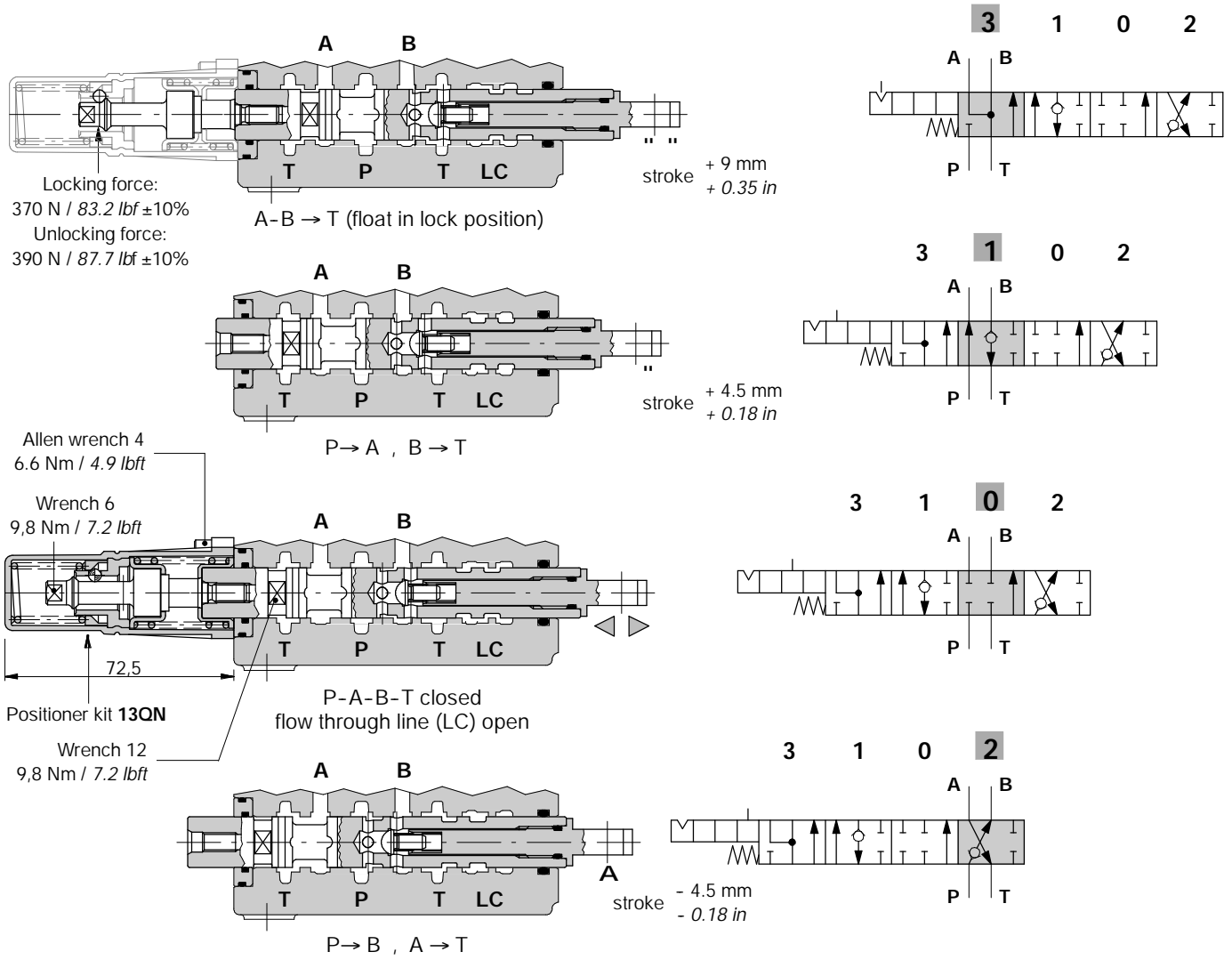
#### Pressure drop in position 3

(last section)



Type 5PY

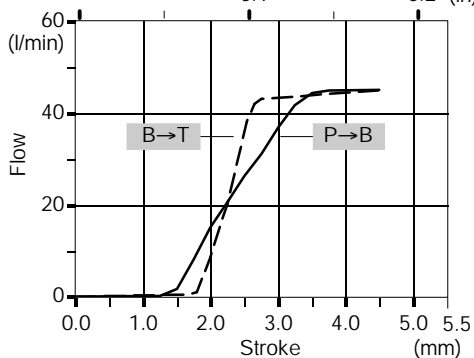
It needs special body with extra machining: for information please contact Customer Service. This spool must be coupled with positioner type 13QN.



Performance data

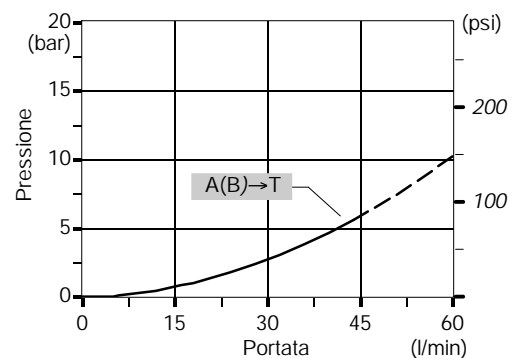
Spool metering

Q<sub>in</sub> = 45 l/min / P<sub>(on ports)</sub> = 100 bar - 1450 psi  
0.1 0.2 (in)



Pressure drop in position 3

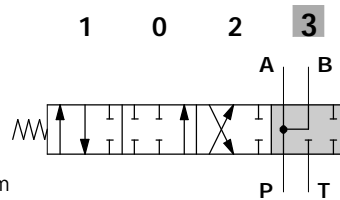
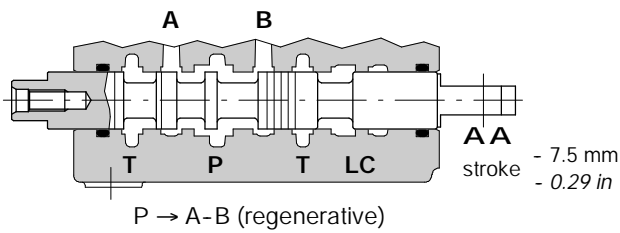
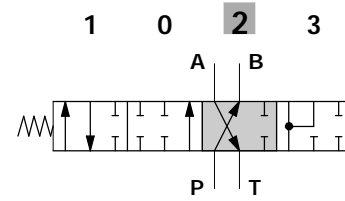
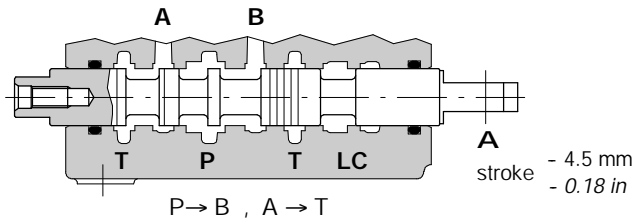
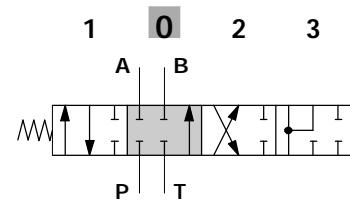
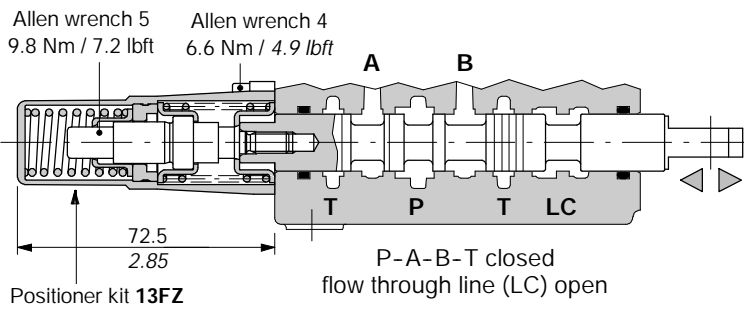
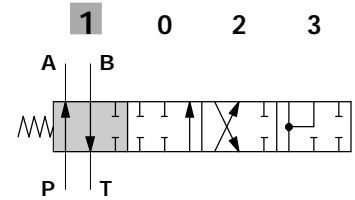
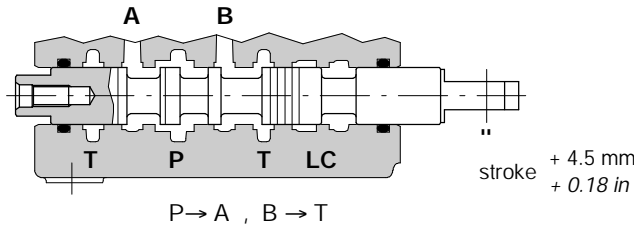
(last section)



## Spool options

### Type 8

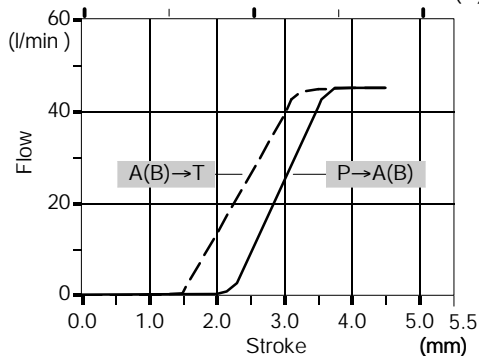
It needs special body with extra machining: for information please contact Customer Service. This spool must be coupled with positioner type 13FZ.



### Performance data

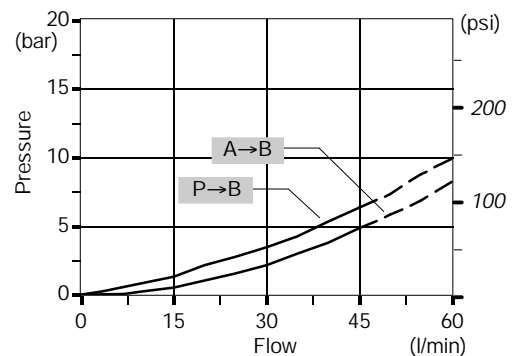
#### Spool metering

$Q_{in} = 45 \text{ l/min} / P_{(on ports)} = 100 \text{ bar} - 1450 \text{ psi}$   
0.1 0.2 (in)



#### Pressure drop in position 3

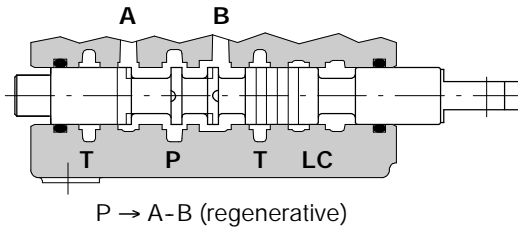
(last section)



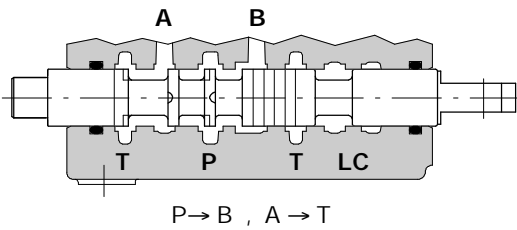
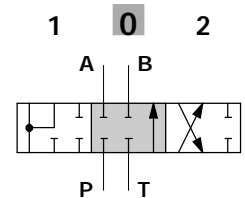
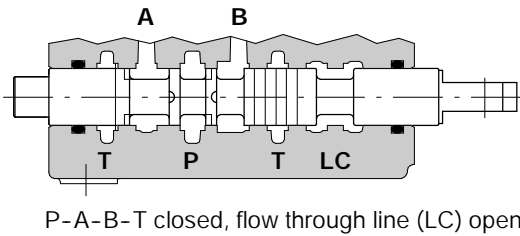
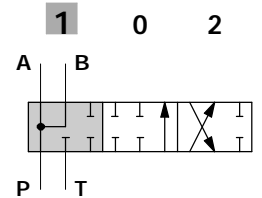


Type 8F

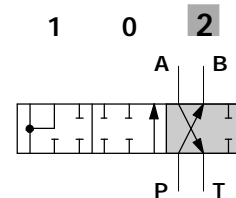
It needs special body with extra machining: for information please contact Customer Service.



" stroke + 5.5 mm  
+ 0.22 in



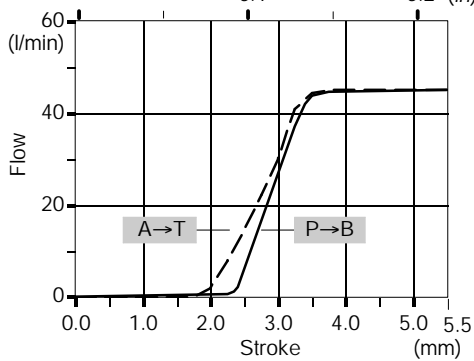
A stroke - 5.5 mm  
- 0.22 in



Performance data

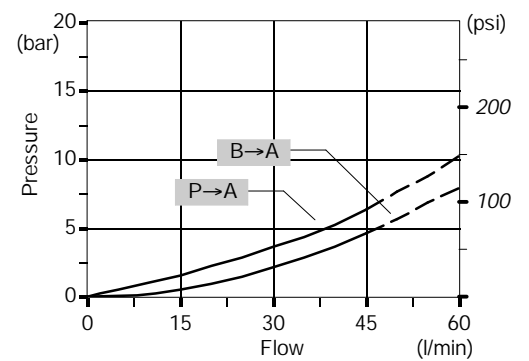
Spool metering

Q<sub>in</sub> = 45 l/min / P<sub>(on ports)</sub> = 100 bar - 1450 psi  
0.1 0.2 (in)



Pressure drop in position 1

(last section)

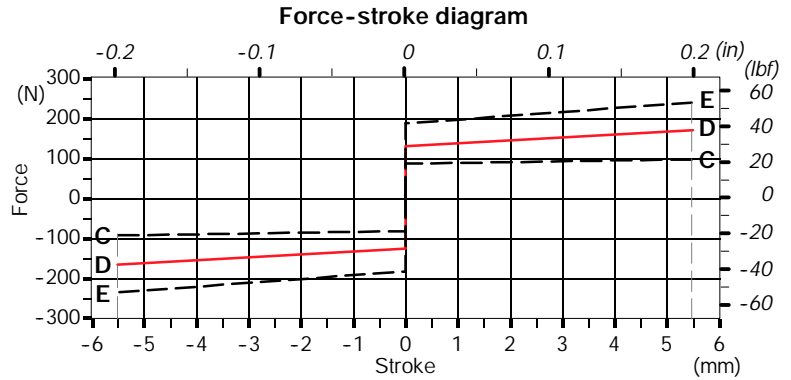
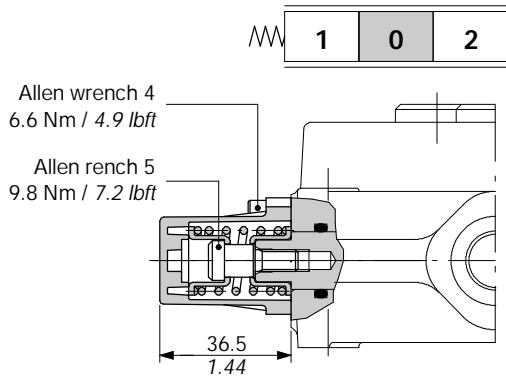


## "A" side spool positioners

### With spring return in neutral position

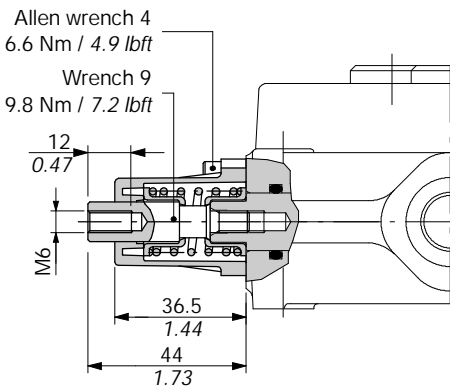
#### 8 kit

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

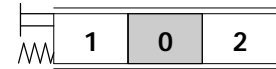
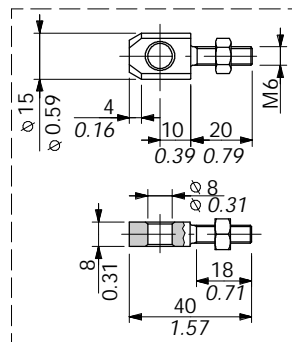


#### 8D kit

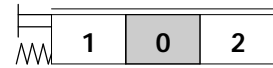
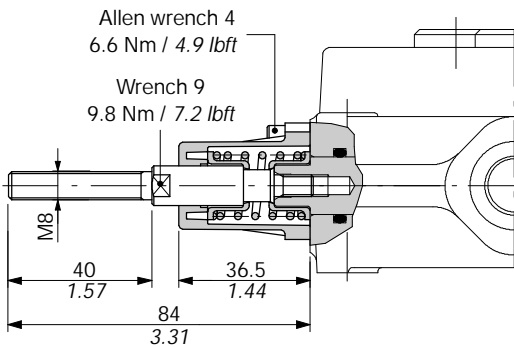
Spool end joint code **XPER315400**, is available on request in order to screw onto pin.



Spool end joint dimensions



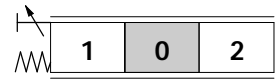
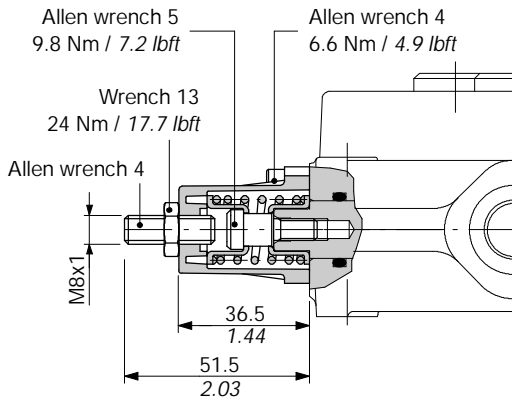
#### 8D2 kit



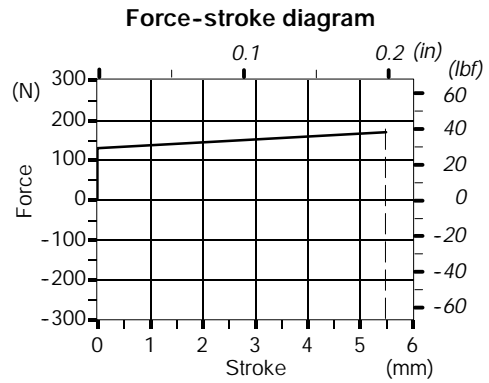
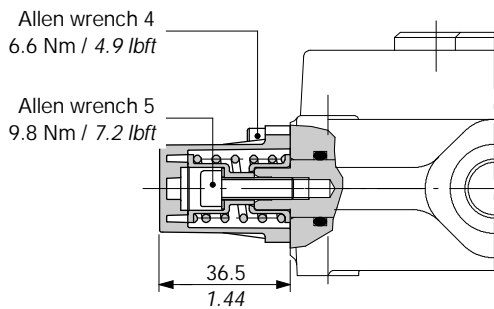
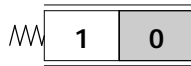
"A" side spool positioners

With spring return in neutral position

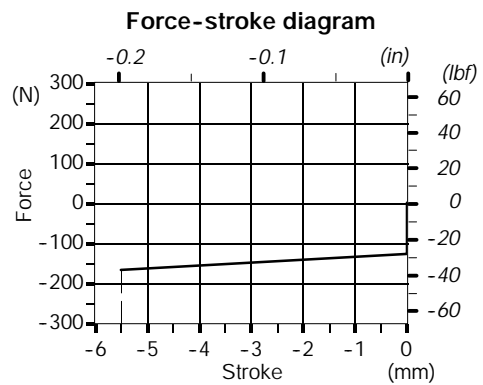
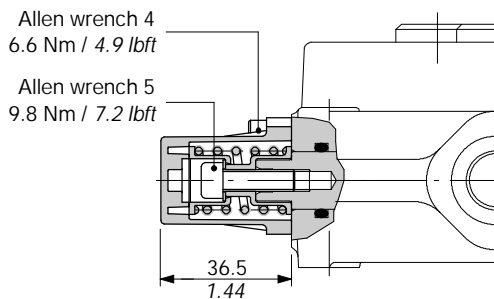
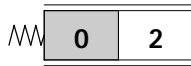
8F2 kit



19 kit



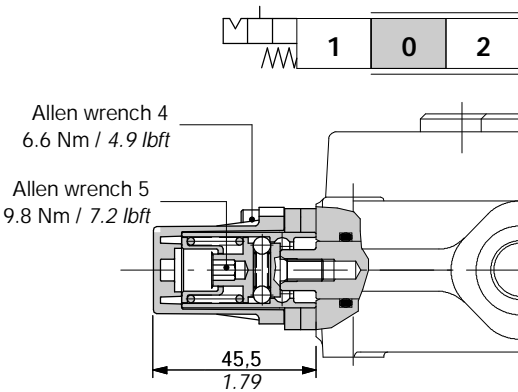
20 kit



## "A" side spool positioners

### With detent

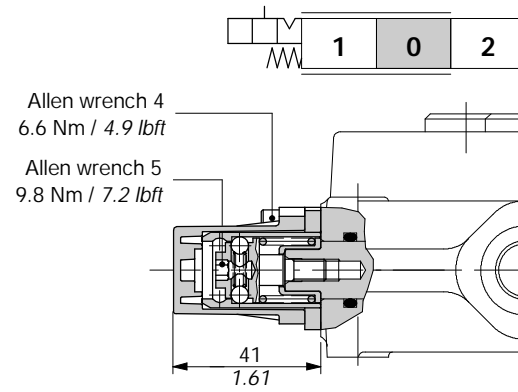
#### 9 kit



#### Operating features

Locking force (from pos. 0 to 1) . . . : 150 N / 33.7 lbf ±10%  
 Unlocking force (from pos. 1 to 0) . . : 140 N / 31.5 lbf ±10%

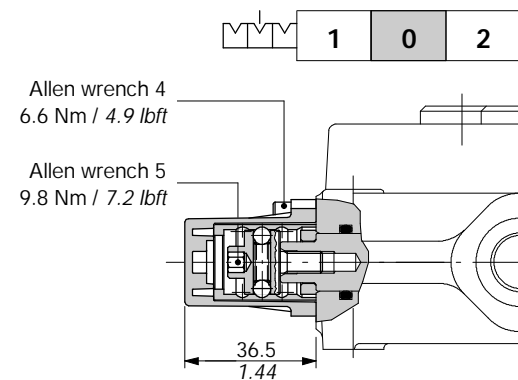
#### 10 kit



#### Operating features

Locking force (from pos. 0 to 2) . . . : 150 N / 33.7 lbf ±10%  
 Unlocking force (from pos. 2 to 0) . . : 140 N / 31.5 lbf ±10%

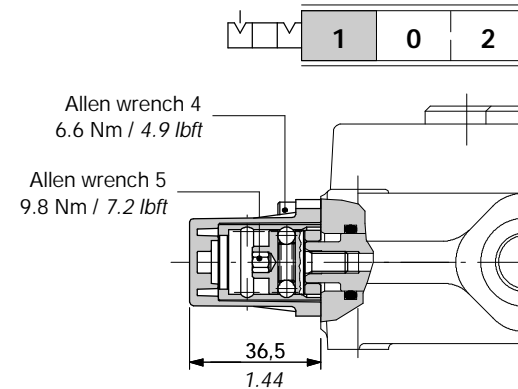
#### 11 kit



#### Operating features

Locking and unlocking force . . . . . : 120 N / 27 lbf ±10%

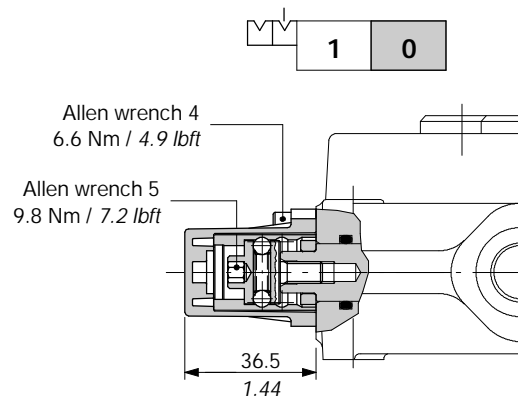
#### 12 kit



#### Operating features

Locking and unlocking force . . . . . : 100 N / 22.5 lbf ±10%

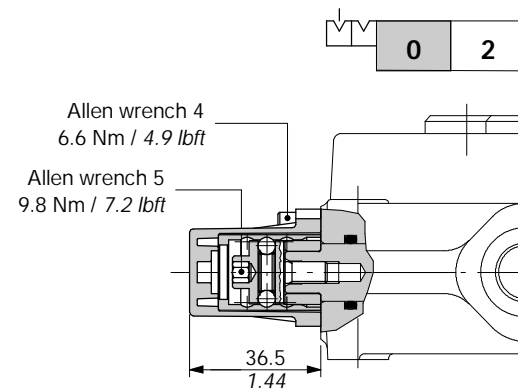
#### 15 kit



#### Operating features

Locking and unlocking force . . . . . : 100 N / 22.5 lbf ±10%

#### 16 kit



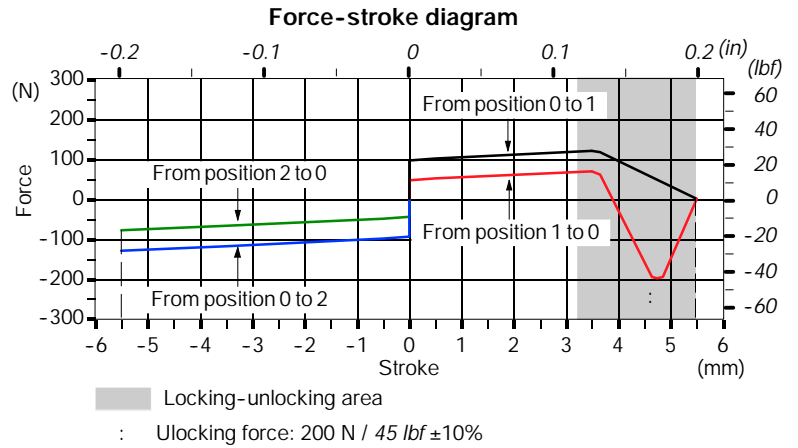
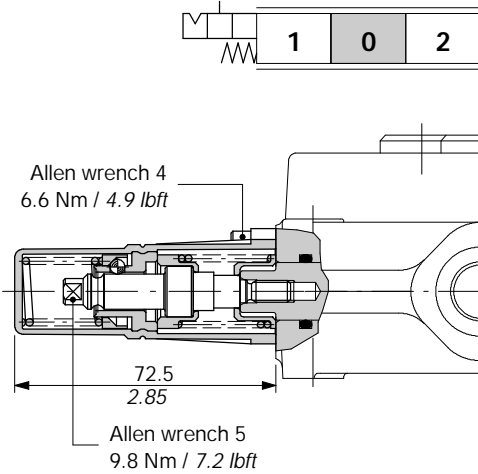
#### Operating features

Locking and unlocking force . . . . . : 100 N / 22.5 lbf ±10%

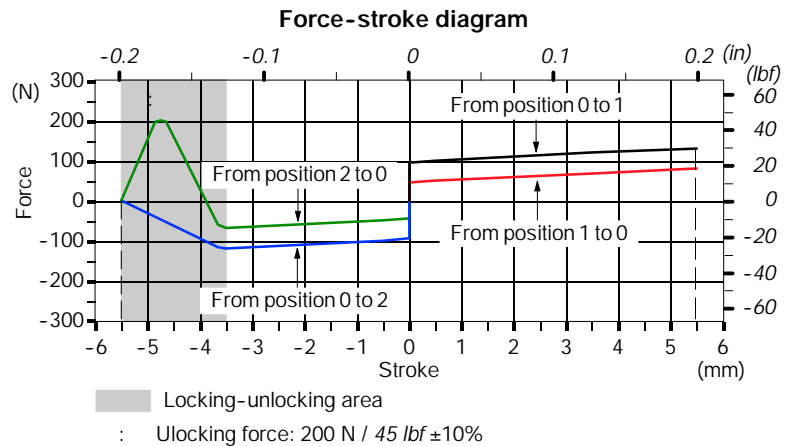
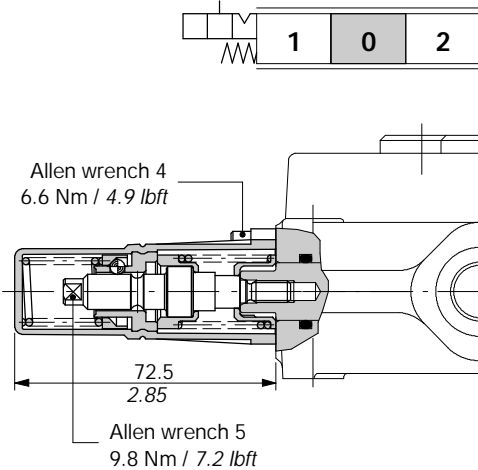
"A" side spool positioners

With detent and spring return to neutral position from either directions

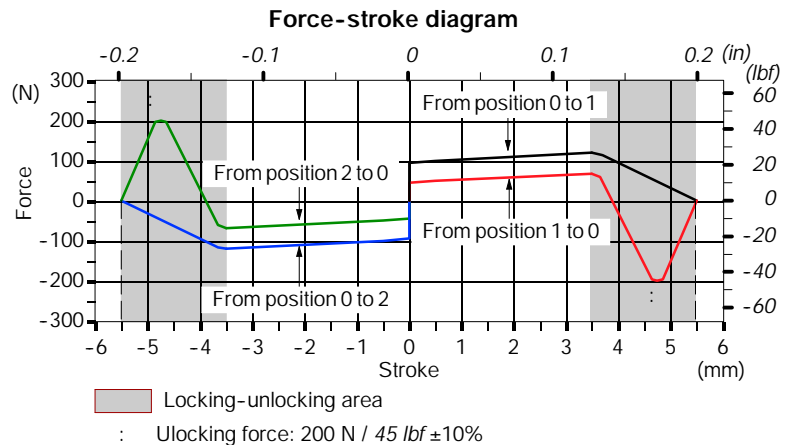
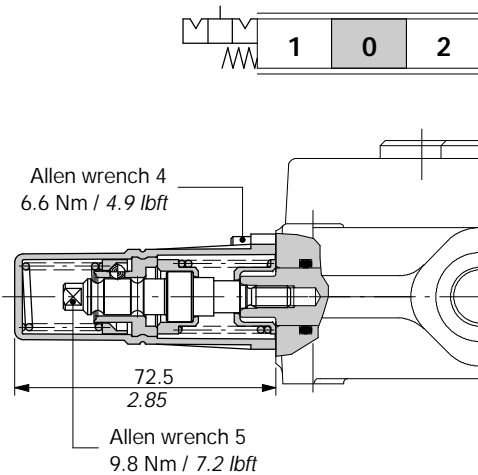
9B kit



10B kit



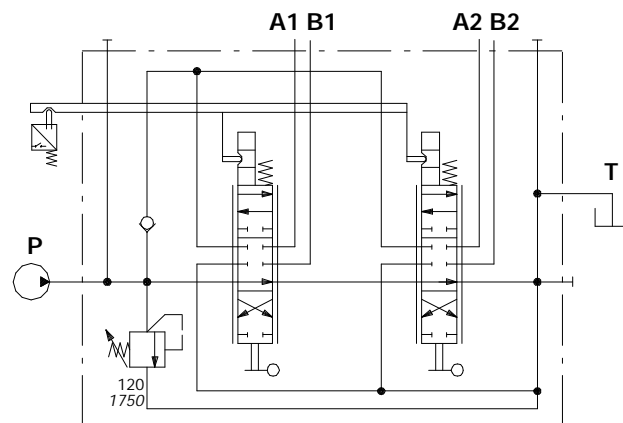
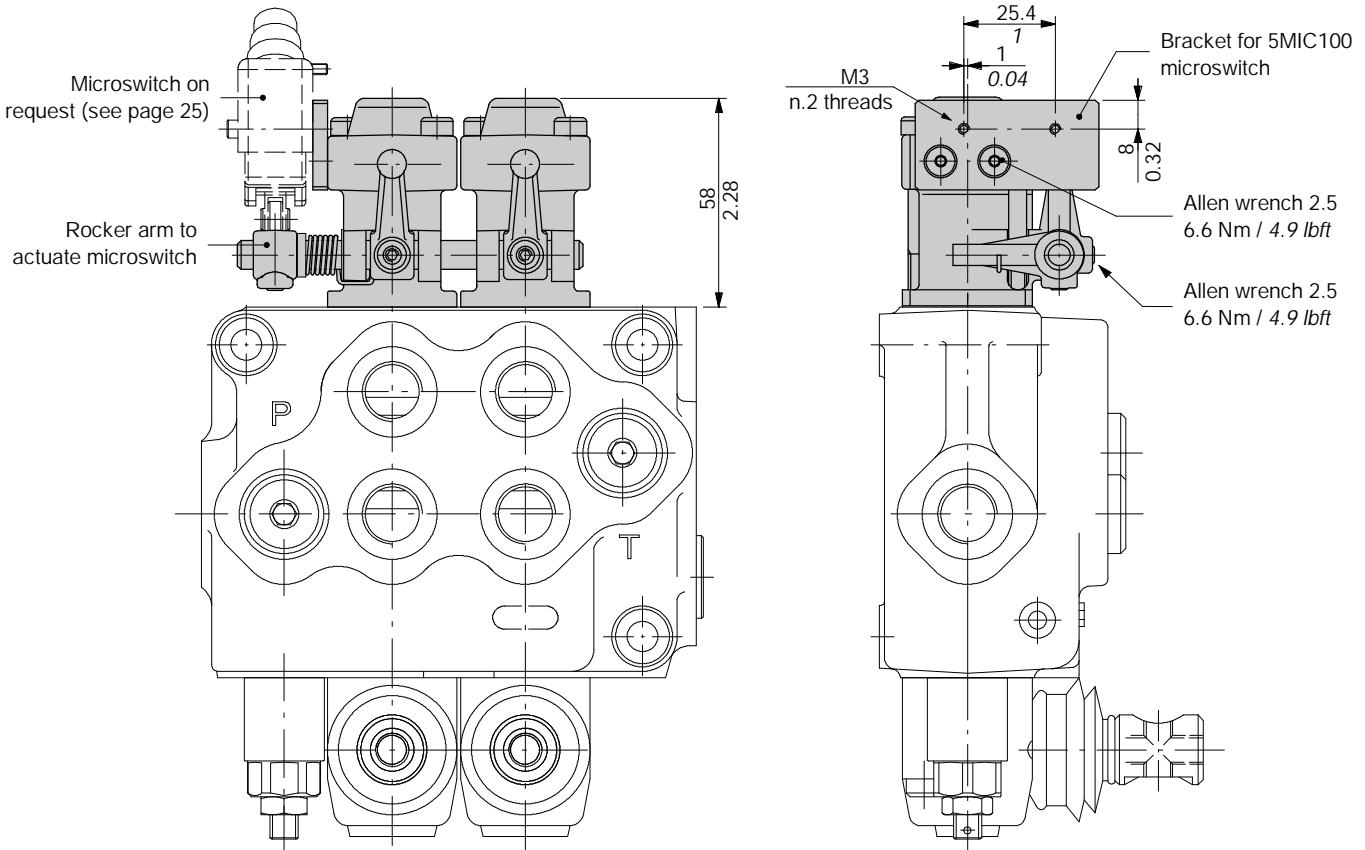
11B kit



## "A" side spool positioners

### 8MS3 kit: with centralized control for microswitch

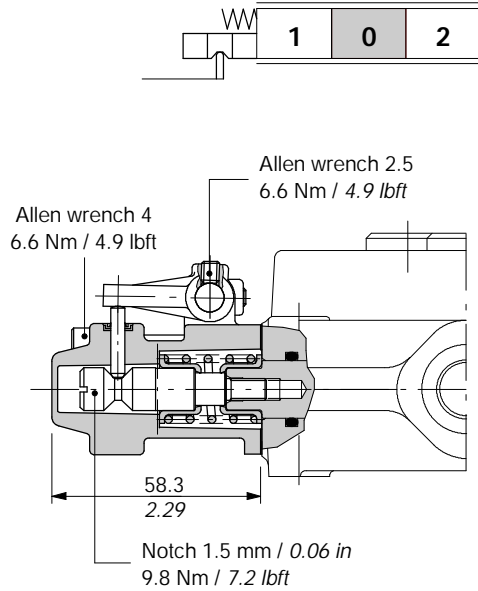
#### Example of a two section valve assembly



Es.: SD5/2-P(JG3-120)/18MS3L/18MS3L/AET - **KM 2 S 51**

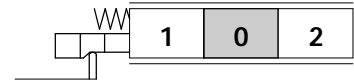
- Assembling kit
  - 51 = with bracket for M51 (IP51) microswitch fixing
  - 67 = with bracket for M67 (IP67) microswitch fixing
- Nr. of working sections
  - S = bracket placed on left
  - D = bracket placed on right

8MS3 kit: with centralized control for microswitch

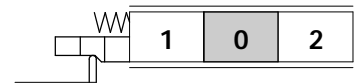


Other configurations

**8MS1 kit**  
microswitch operation in position 1

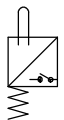


**8MS2 kit**  
microswitch operation in position 2

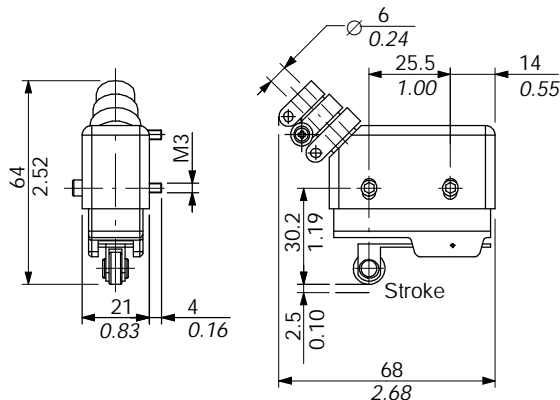


Microswitches for 8MS kits

Complete with rubber cover and mounting screws.



M51 code: 5MIC100

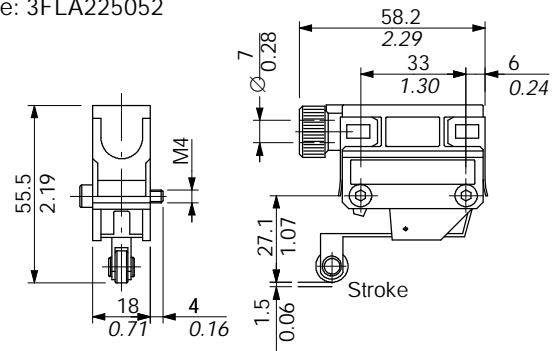


Operating features

Max. current / voltage : 15 A / 480 VAC  
 : 0.25 A / 250 VDC  
 Weather protection : IP51

M67 code: 5MIC200

Dedicated bracket is needed for the assembly  
 code: 3FLA225052



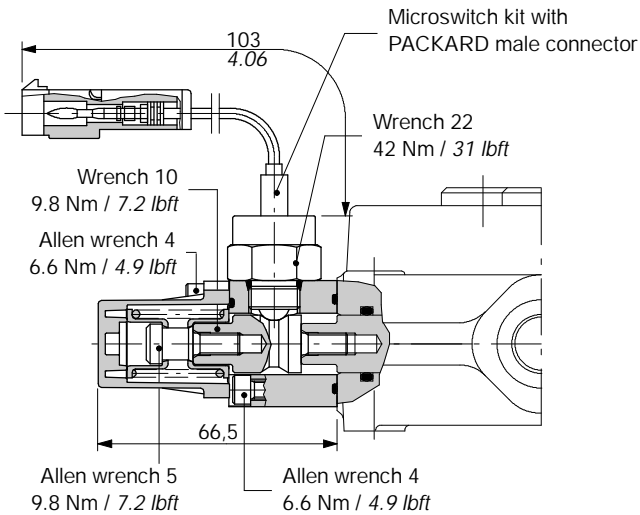
Operating features

Max. current / voltage : 5 A / 250 VAC  
 : 0.25 A / 230VDC  
 Weather protection : IP67

## "A" side spool positioners

### With microswitch and spring return in neutral position

#### 8MG3 kit



#### Microswitch operating features

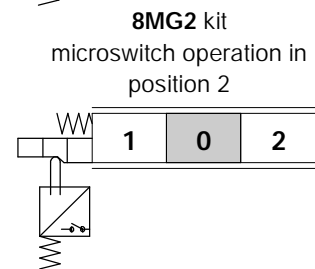
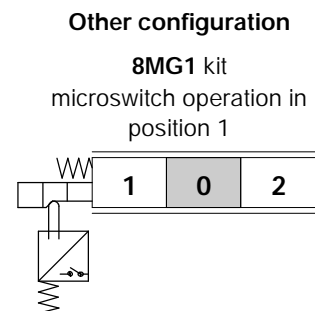
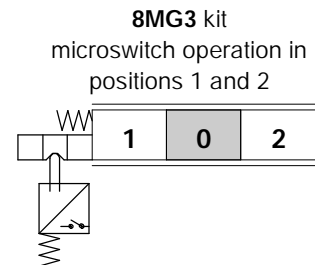
Mechanical life :  $5 \times 10^5$  operations  
 Electrical life (resistive load) :  $10^5$  operations - 7A / 13,5VDC  
 :  $5 \times 10^4$  operations - 10A / 12VDC

#### Microswitches ordering codes

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

CODE	DESCRIPTION
4MIC730	Normally <b>open</b> (NO) microswitch kit with PACKARD <b>male</b> connector: needs <b>C07</b> female connector
4MIC740	Normally <b>closed</b> (NC) microswitch kit with PACKARD <b>female</b> connector: needs <b>C17</b> male connector

For connection see page 62.

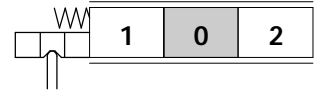
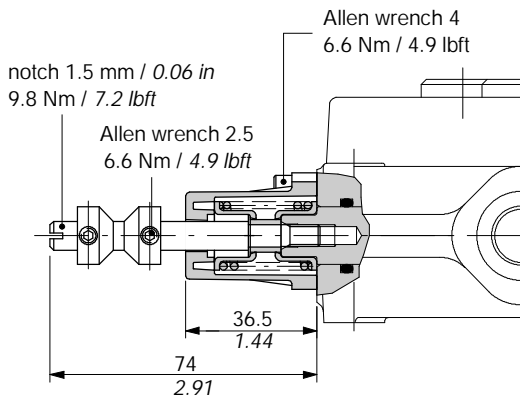




"A" side spool positioners

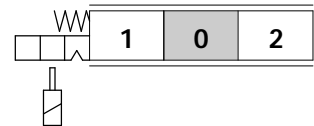
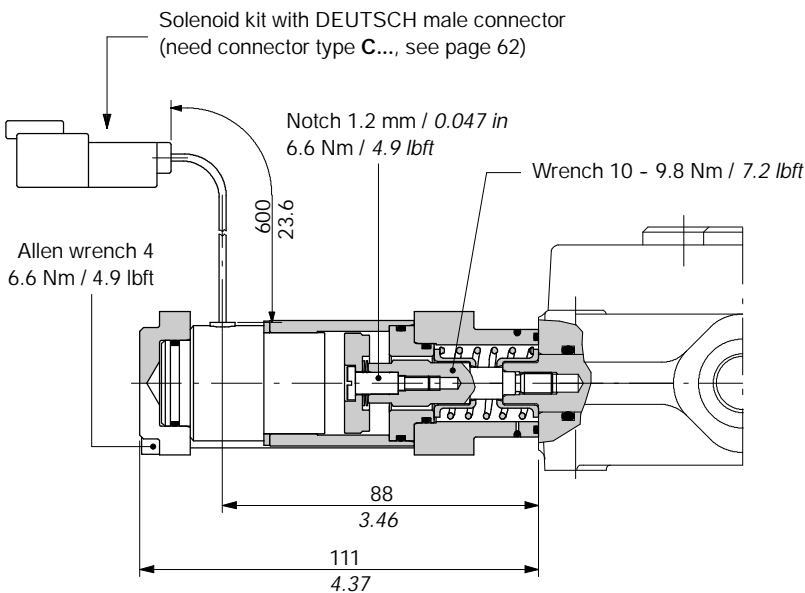
With microswitch and spring return in neutral position

8M3 kit



8EM2: with electromagnetic detent

With spring return in neutral position and electromagnetic detent in position 2.



Operating features

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

Solenoid ordering codes

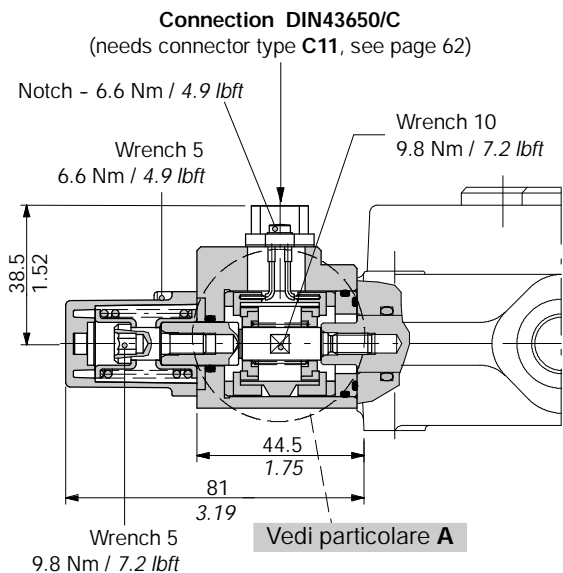
With male DEUTSCH connector

CODE	DESCRIPTION
YSOL528465	12 VDC solenoid
YSOL528466	24 VDC solenoid

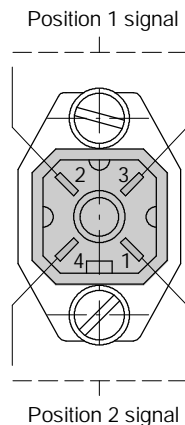
## "A" side spool positioners

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

This module supplies two different ON/OFF signals, related to the direction of the spool. It has two separate contacts which can be normally open or normally closed.



#### Connector wiring

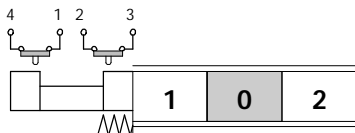


#### Operating features

Power supply range : from 3 da 28 VDC  
Max. output current : 500 mA  
Weather protection : IP65

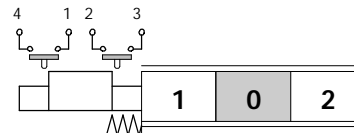
### 8MHE3(NC) kit

Configuration with normally closed circuit

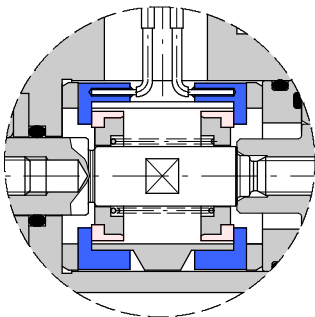


### 8MHE3(NO) kit

Configuration with normally open circuit

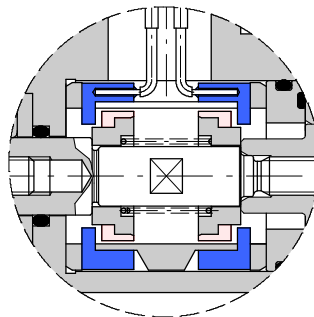


#### View A



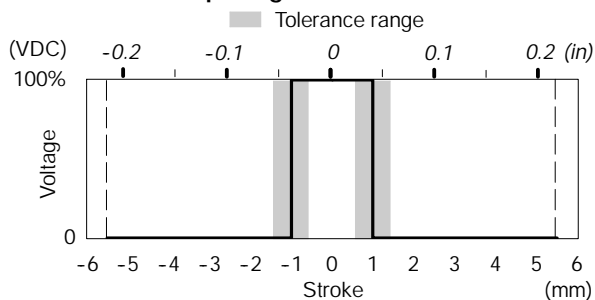
Mobile contact  
Fixed contact

#### View A

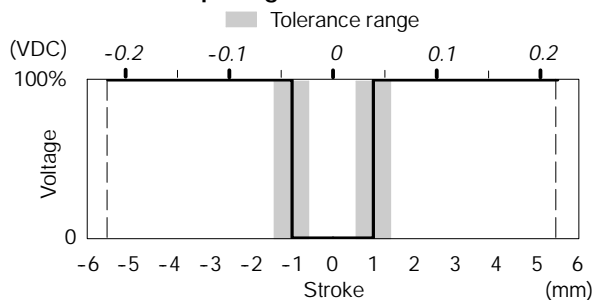


Mobile contact  
Fixed contact

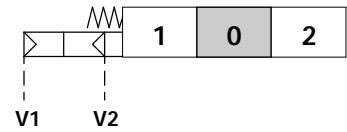
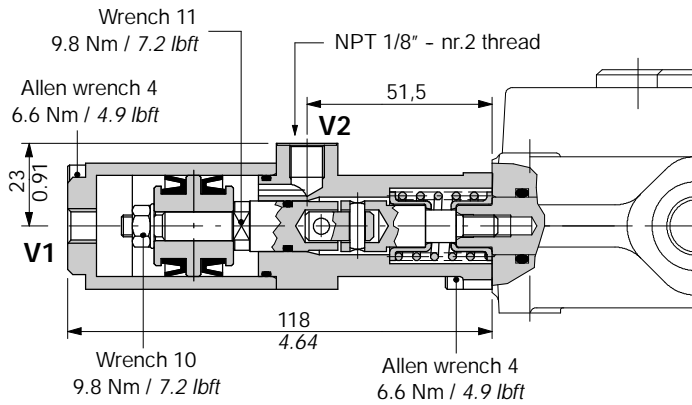
#### Output signal with NC circuit



#### Output signal with NO circuit



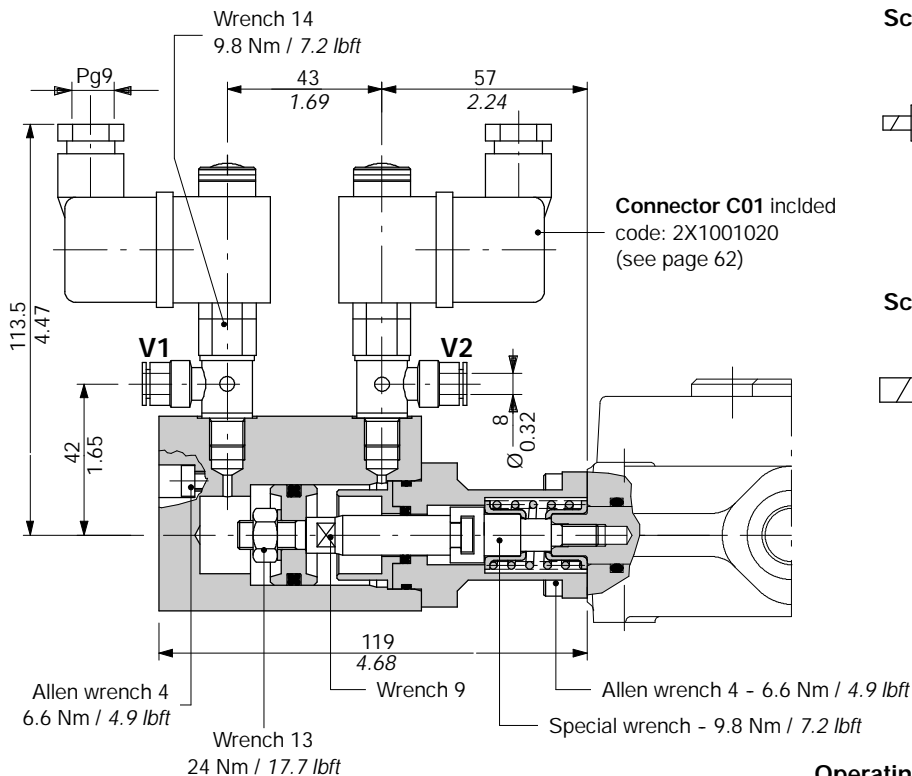
8P: ON/OFF pneumatic kit



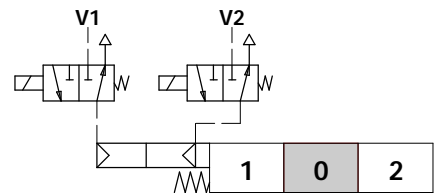
Operating features

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

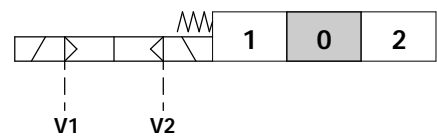
8EP3: ON/OFF electro-pneumatic kit



Scheme



Scheme ISO 1219



Operating features

Pilot pressure ..... : 6 bar / 87 psi  
 : (max.10 bar / 145 psi)

Pneumatic solenoid valves codes (with connector)

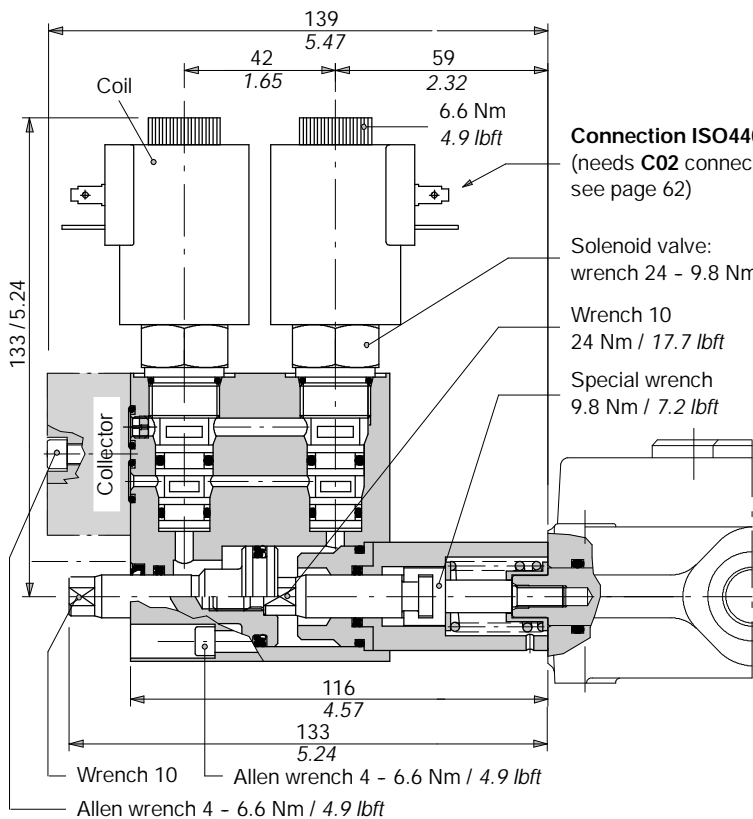
CODE	DESCRIPTION
2X4001012	Nominal voltage 12VDC
2X4001024	Nominal voltage 24VDC

Solenoid operating features

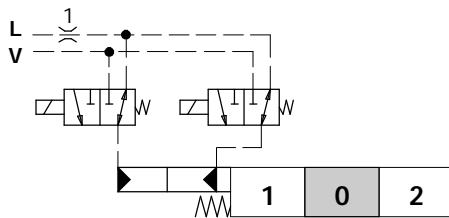
Nominal voltage tolerance ..... : ±10%  
 Power rating ..... : 8 W  
 Duty Cycle ..... : 100%

### 8ED3: ON/OFF electro-hydraulic kit

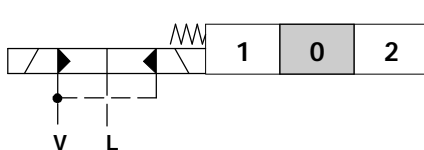
With external pilot and drain.



#### Scheme



#### Scheme ISO 1219



#### Operating features

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

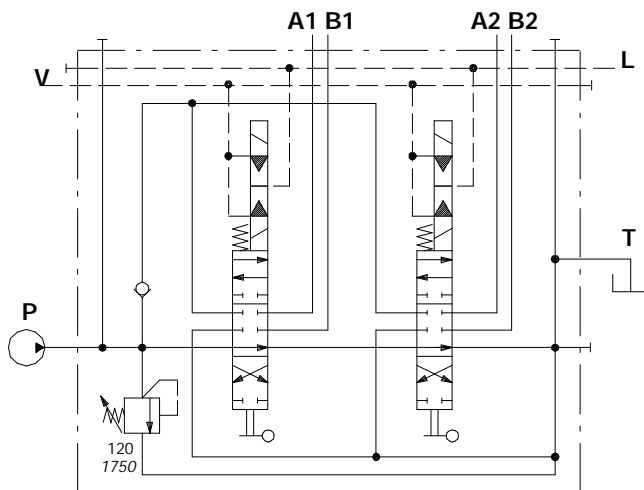
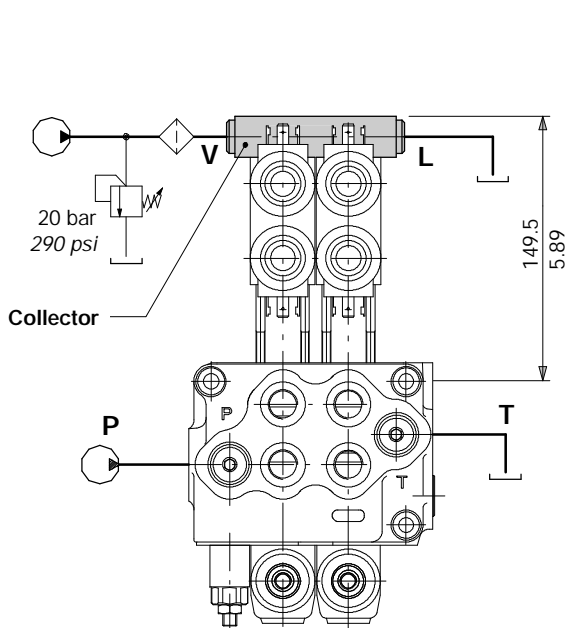
#### Solenoid operating features

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

#### Ordering codes

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

### Collector kit for external pilot and drain



#### Ordering codes (BSP thread)

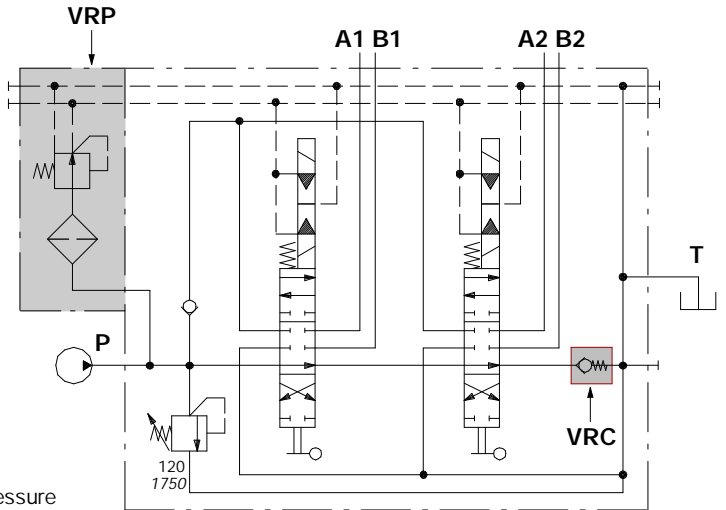
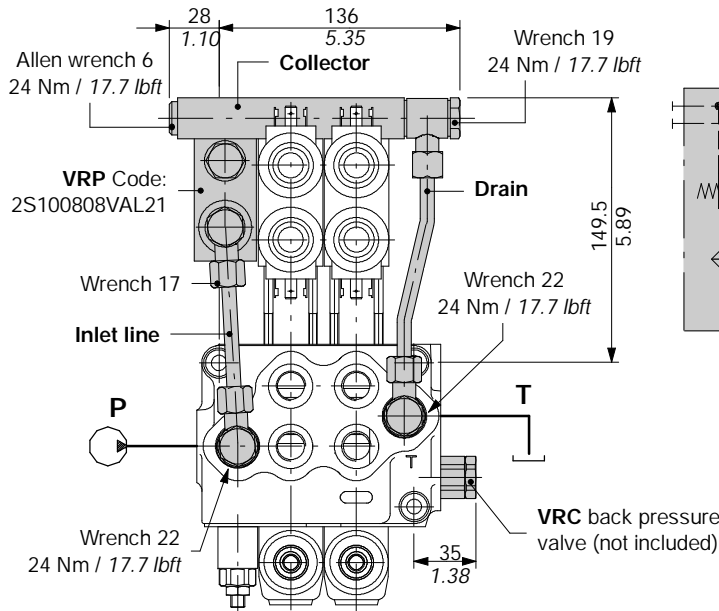
TYPE	CODE	DESCRIPTION
KE1S0	5KE1S00030	Kit for 1 section
KE2S0	5KE2S00230	Kit for 2 sections
KE3S0	5KE3S00230	Kit for 3 sections
KE4S0	5KE4S00230	Kit for 4 sections
KE5S0	5KE5S00230	Kit for 5 sections
KE6S0	5KE6S00230	Kit for 6 sections
KE7S0	5KE7S00230	kit for 7 sections

Ex: SD5/2-P(JG3-120)/18ED3L/18ED3L/AET-KE2S0-24VDC

**8ED3: ON/OFF electro-hydraulic kit**

**Collector kit with pilot and drain lines**

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



Ex: SD5/2-P(JG3-120)/18ED3L/18ED3L/VRC-KE2R3-24VDC

**VRP valve operating features**

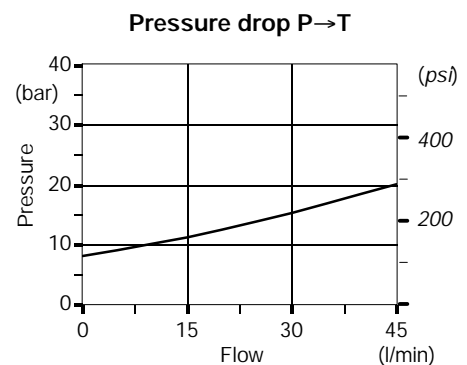
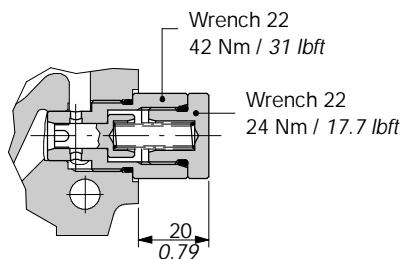
- Outlet pressure ..... : 20 bar / 290 psi
- Max. flow ..... : 8 l/min
- Filtering ..... : 80 μ

**Ordering codes (BSP thread)**

TYPE	CODE	DESCRIPTION
KE1R3	5KE1R30230	Kit for 1 section
KE2R3	5KE2R30230	Kit for 2 sections
KE3R3	5KE3R30230	Kit for 3 sections
KE4R3	5KE4R30230	Kit for 4 sections
KE5R3	5KE5R30230	Kit for 5 sections
KE6R3	5KE6R30230	Kit for 6 sections

**VRC valve : code X003600010**

Valve assembled on flow through passage provides pilot pressure to the actuator.

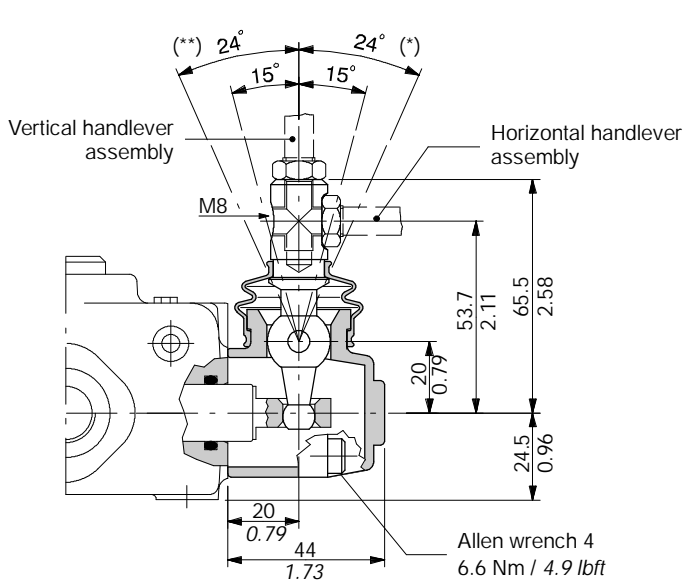


## "B" side options

### Lever controls

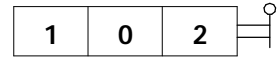
#### L type

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

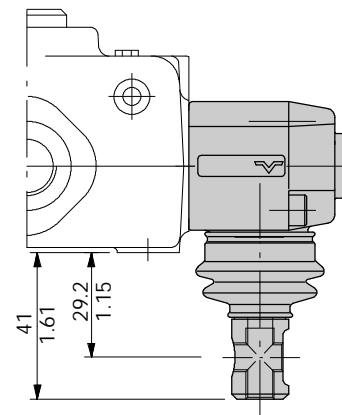


NOTE (\*) - With spool type 5DY (see page 14)

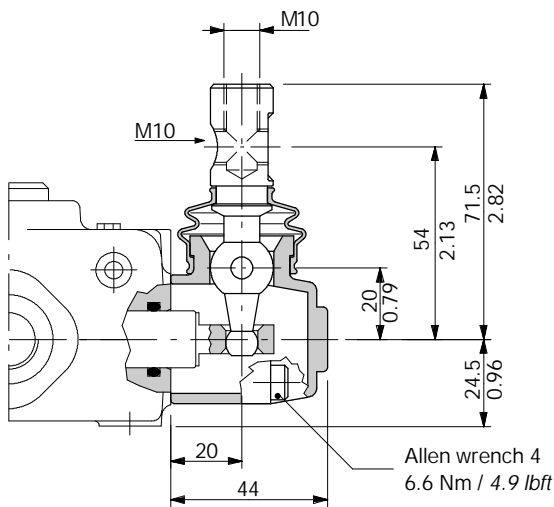
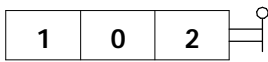
(\*\*) - With spool type 5PY (see page 15)



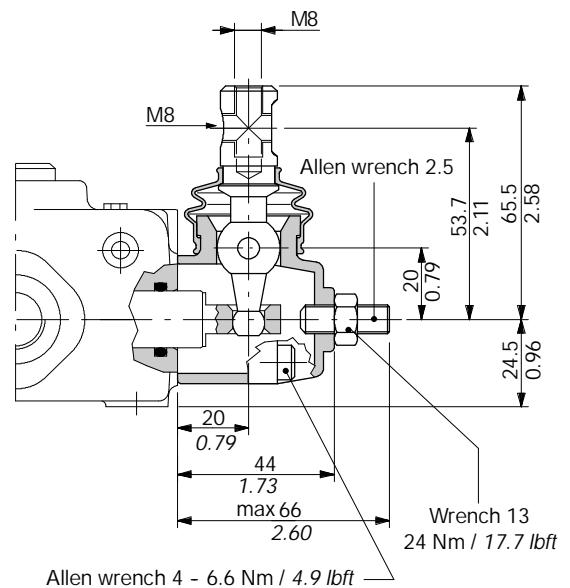
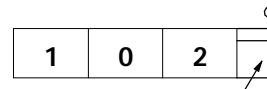
Execution L180



#### LM10 type



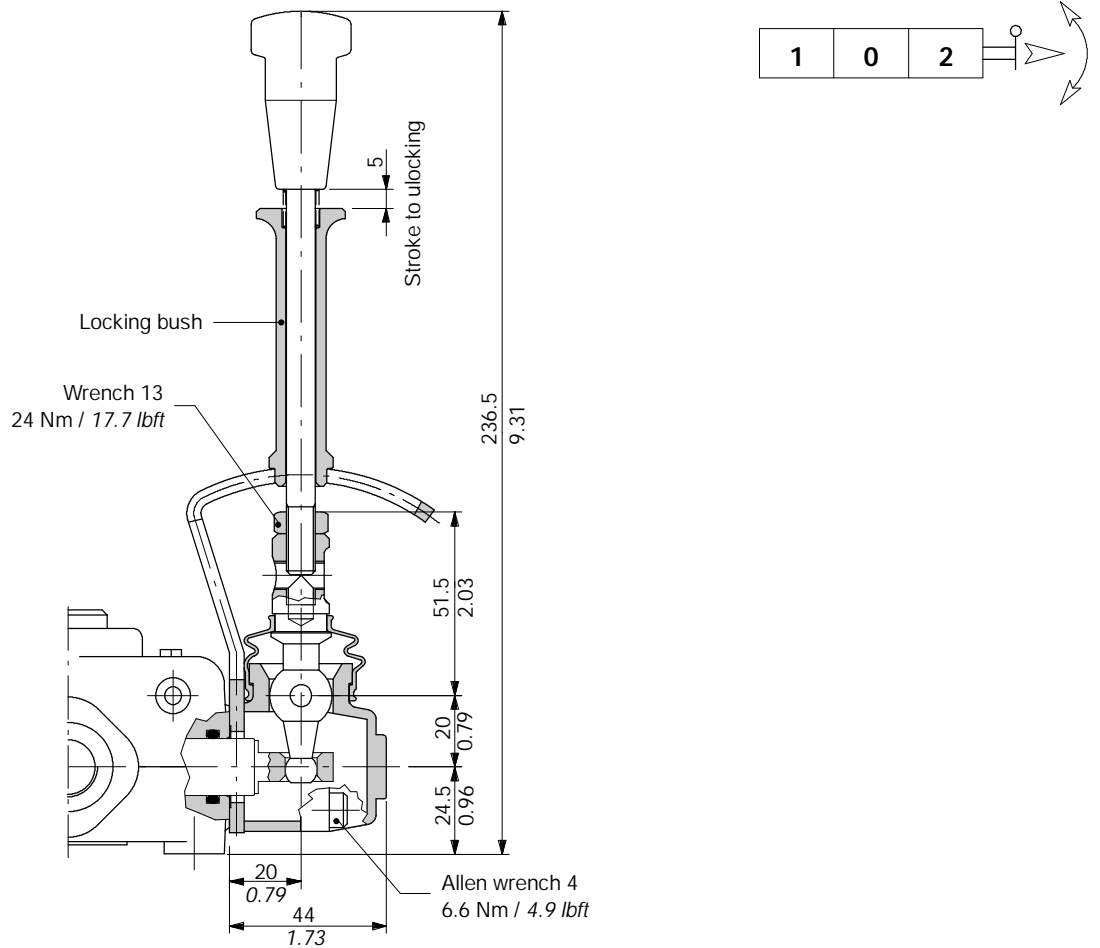
#### LF1 type



Special lever controls

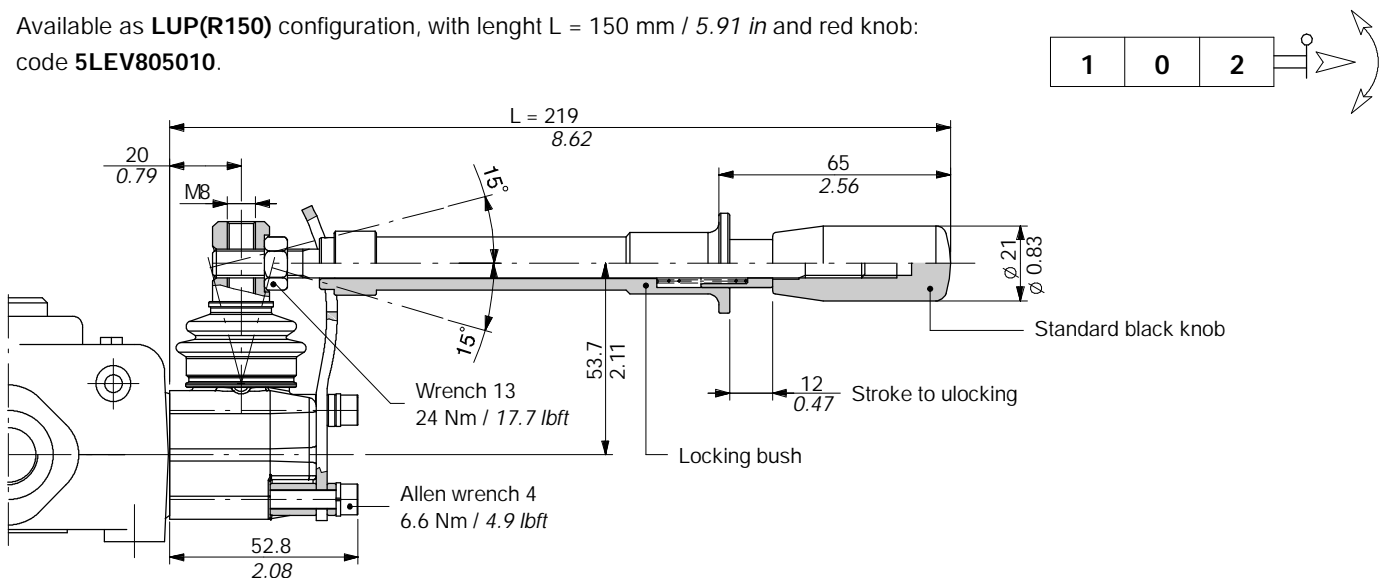
Safety levers with lock in neutral complete with handlever; lift handlever knob to operate.

LEB type



LUP type

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

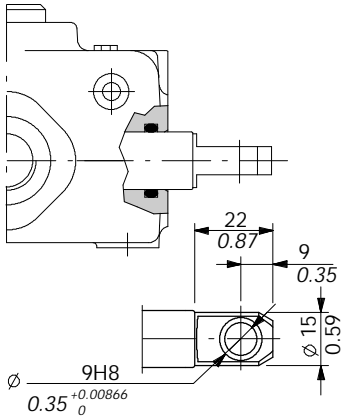
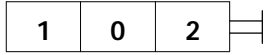


# SD5

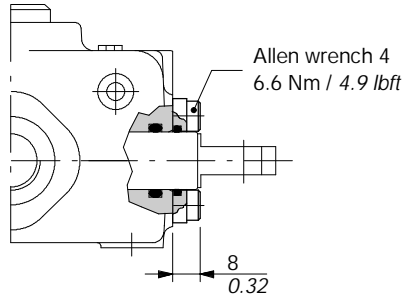
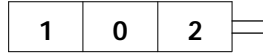
## "B" side options

### Controls prearrangement

SL type

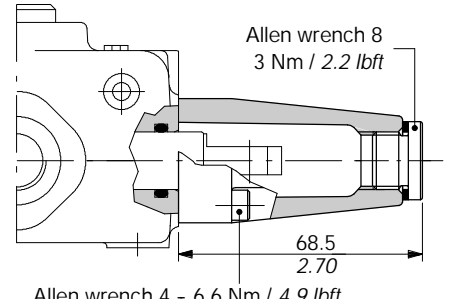
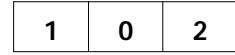


SLP type



Mechanical control with dust-proof plate.

SLC type

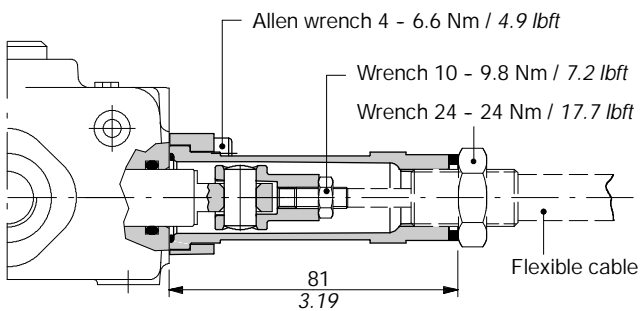


Allen wrench 4 - 6.6 Nm / 4.9 lbf

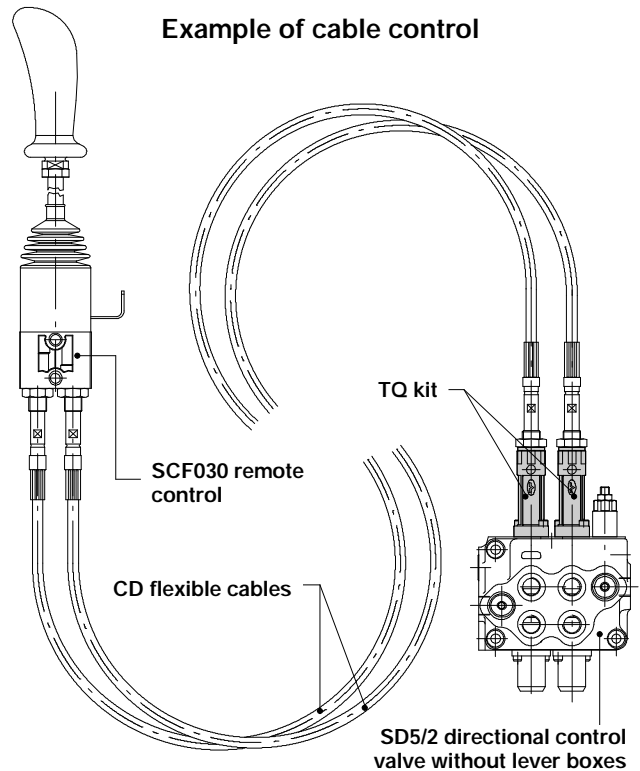
Protection cap usable with pneumatic, electro-pneumatic, and electro-hydraulic spool positioners.

### TQ cable remote control kit

Waterproof cap prearranged for remote control with flexible cable.

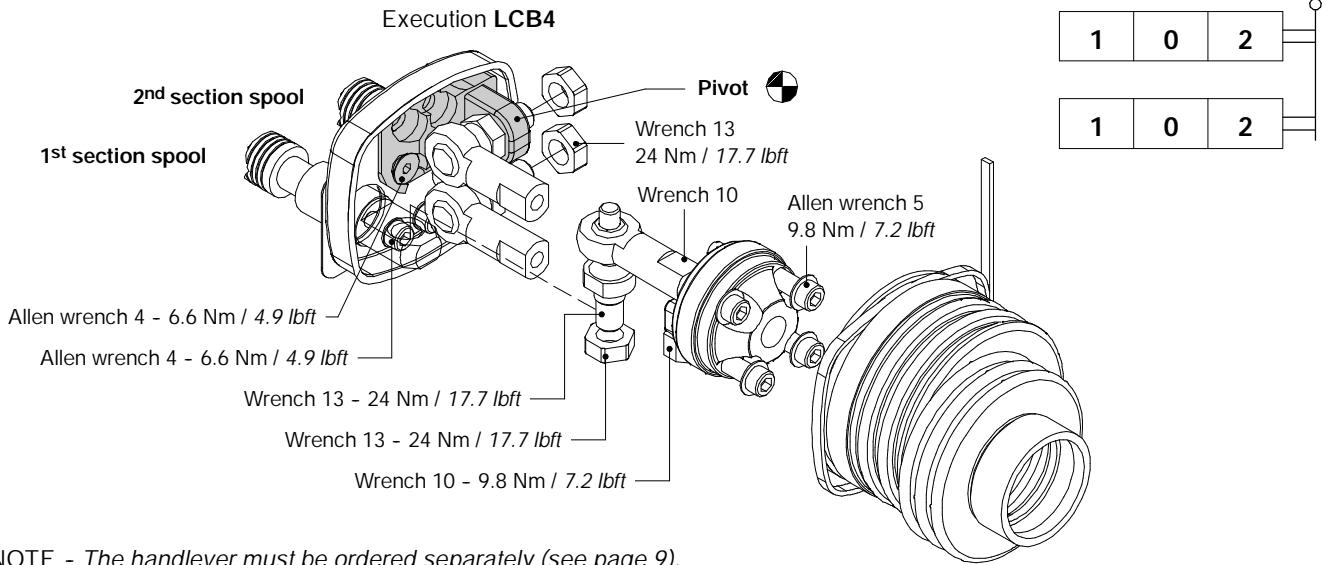


NOTE - For more information about remote cable control, require appropriate documentation.

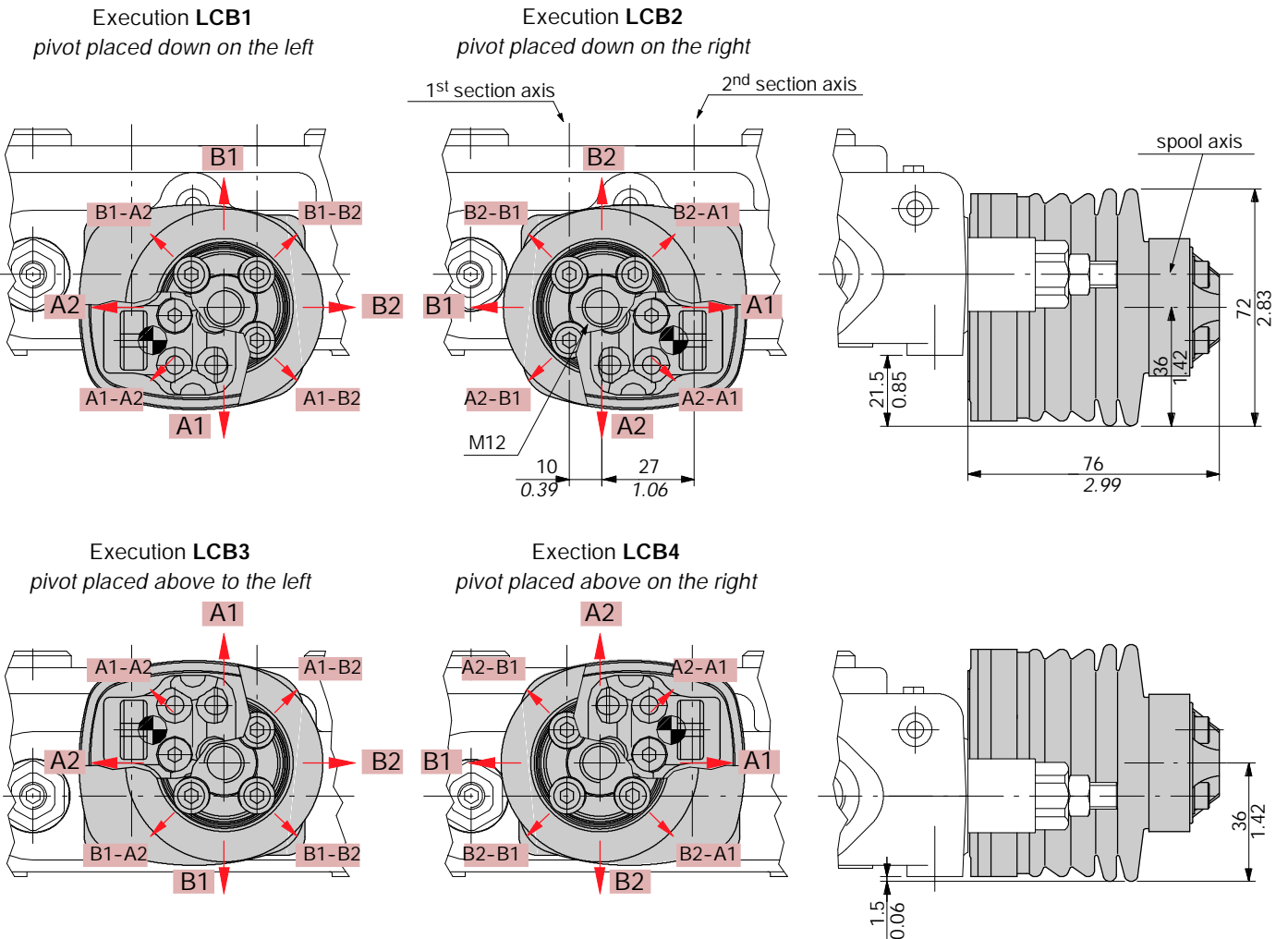




LCB mechanical joystick for two sections control



Dimensions and movement scheme

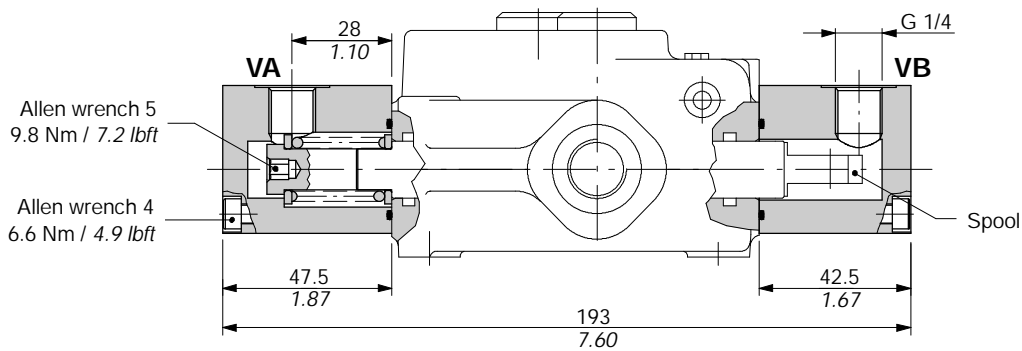
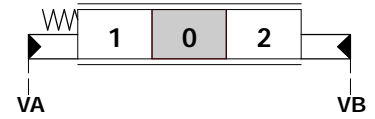


NOTE - Don't use with spool type 5DY.

### 8IM: proportional hydraulic control code 5IDR205021

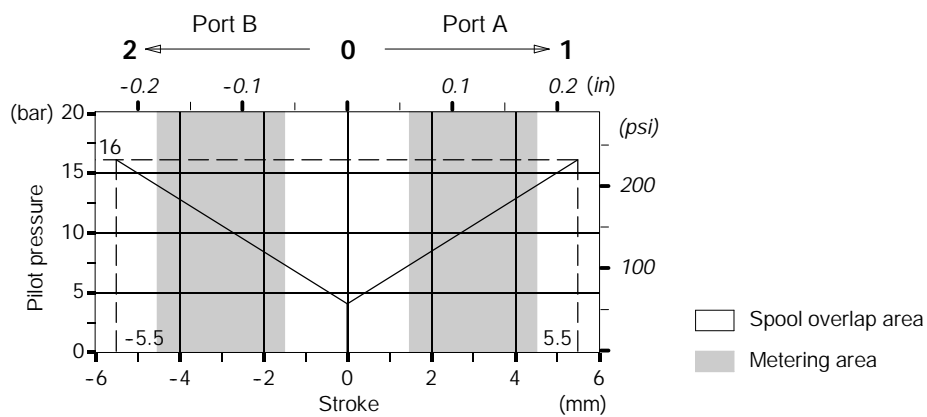
It can be used with standard spools and body (body kit without seals on spool).

Coupling suggested with type **1CS** spool (see page 11).



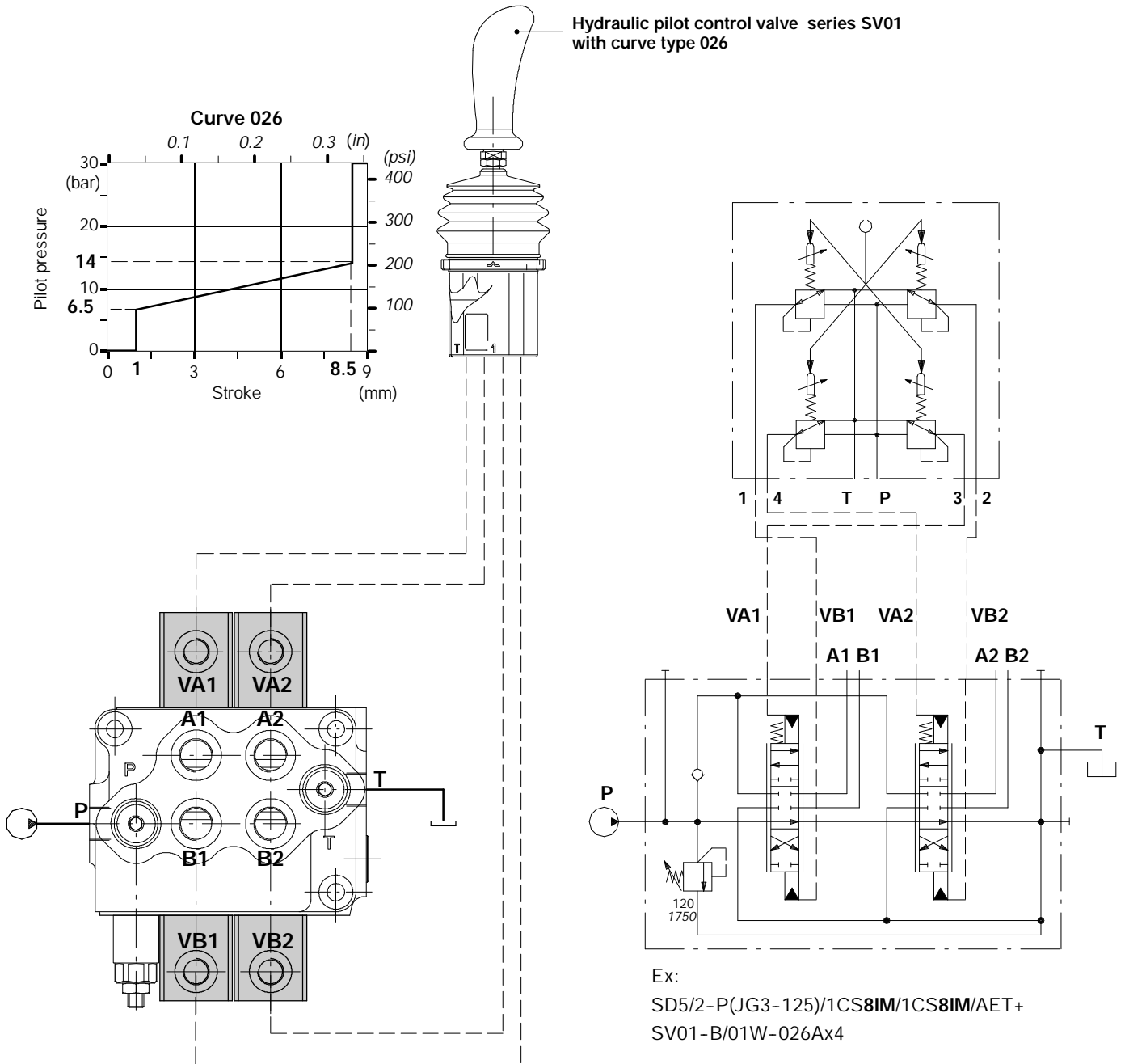
**Pilot pressure - stroke diagram**

Max. pilot pressure 50 bar - 720 psi



8IM: proportional hydraulic control code 5IDR205021

Connection example



## Complete controls

### 8ESN solenoid control

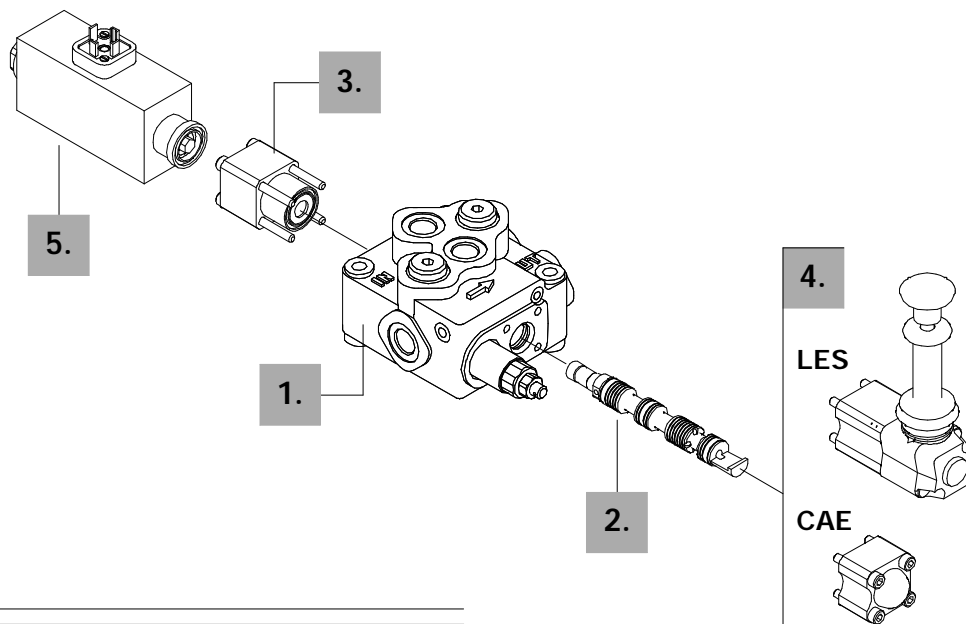
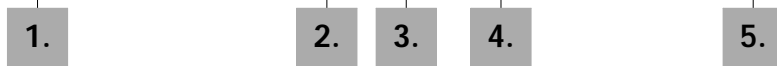
Direct control by double solenoid with spring return to neutral position, available with emergency manual override.

It's necessary special spool and standard body (body kit without spool seals).

Due to the large dimension, it's not possible to assembly more than one control consecutively, except **SD5/2-P** and **SD5/3-P** that have special bodies with bigger centre-to-centre.

#### Description example:

**SD5 / 1 - P (JG3-120) / 1 8ESN LES / AET - 24VDC**



#### 1. Body kit \*

TYPE	CODE	DESCRIPTION
<b>SD5/1-P</b>	5KC1193100	1 section, standard body
<b>SD5/2-PS</b>	5KC1223003	2 sections, special body
<b>SD5/3-PS</b>	5KC1243006	3 sections, special body

#### 2. Spool options

TYPE	CODE	DESCRIPTION
<b>1(ESN)</b>	3CU1210036	Double acting, 3 positions, with A and B closed in neutral position
<b>2(ESN)</b>	3CU1225036	Double acting, 3 positions, with A and B open to tank in neutral position

#### 3. Connection kit

TYPE	CODE	DESCRIPTION
<b>8ESN</b>	5V08009	For solenoid joint, with spring return in neutral position

#### 4. "B" side options

TYPE	CODE	DESCRIPTION
<b>LES</b>	5LEV105410	Safety lever pivot box for manual operation
<b>CAE</b>	5COP205100	Endcap

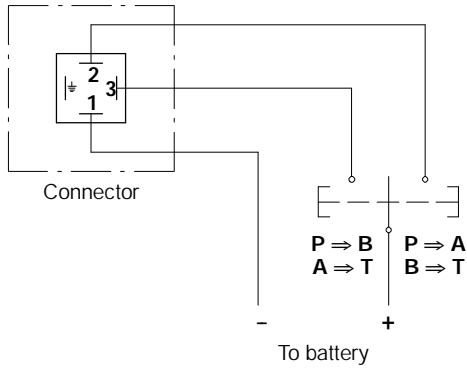
#### 5. Solenoid

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

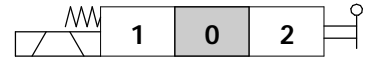
NOTE (\*) - Codes are referred to **BSP** threads.

8ESN solenoid control

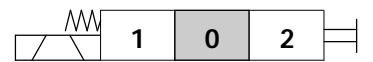
Electric wiring example



8ESNLES kit  
with safety lever pivot box



8ESNCAE kit  
with encadp



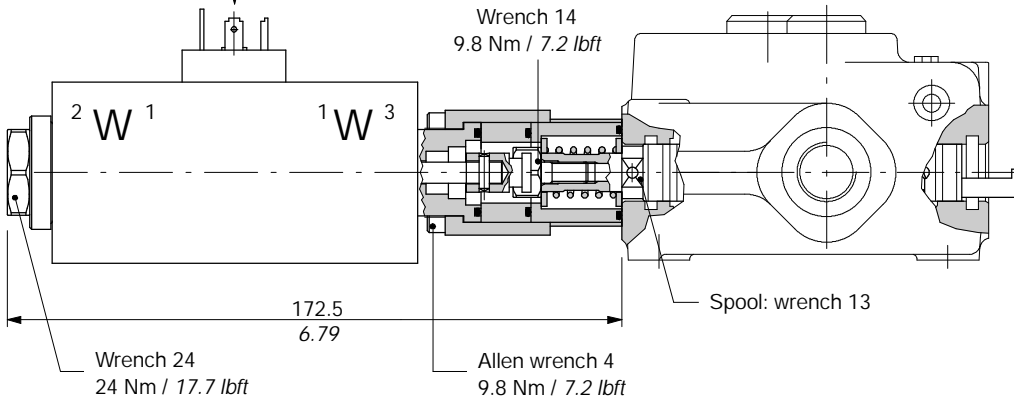
Operating features

Internal leakage A(B)→T  
( $\Delta p = 100 \text{ bar} - 1450 \text{ psi} / T = 40^\circ\text{C}$ ) :  $10 \text{ cm}^3/\text{min} - 0.61 \text{ in}^3/\text{min}$

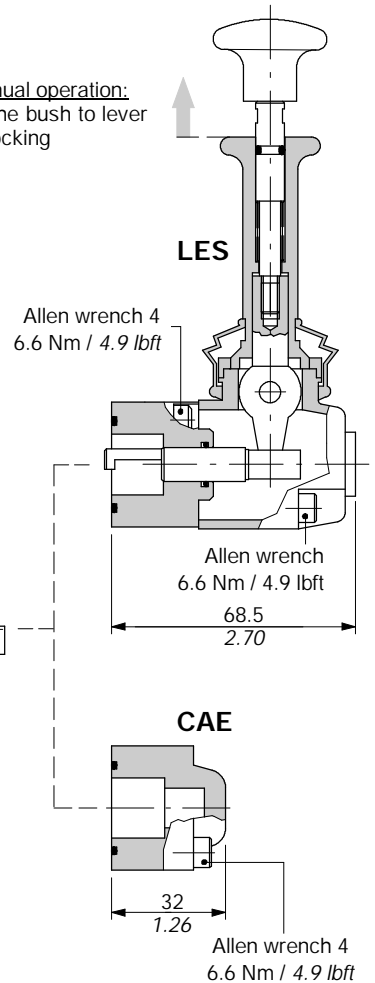
Solenoid operating features

- Nominal voltage tolerance :  $\pm 10\%$
- Power rating : 65 W
- Coil insulation : class H
- Duty cycle : 100%

Connection ISO4400  
(needs C03 connector for VDC supply or C05 connector for VAC supply; see page 62)



Manual operation:  
lift the bush to lever  
unlocking



## Complete controls

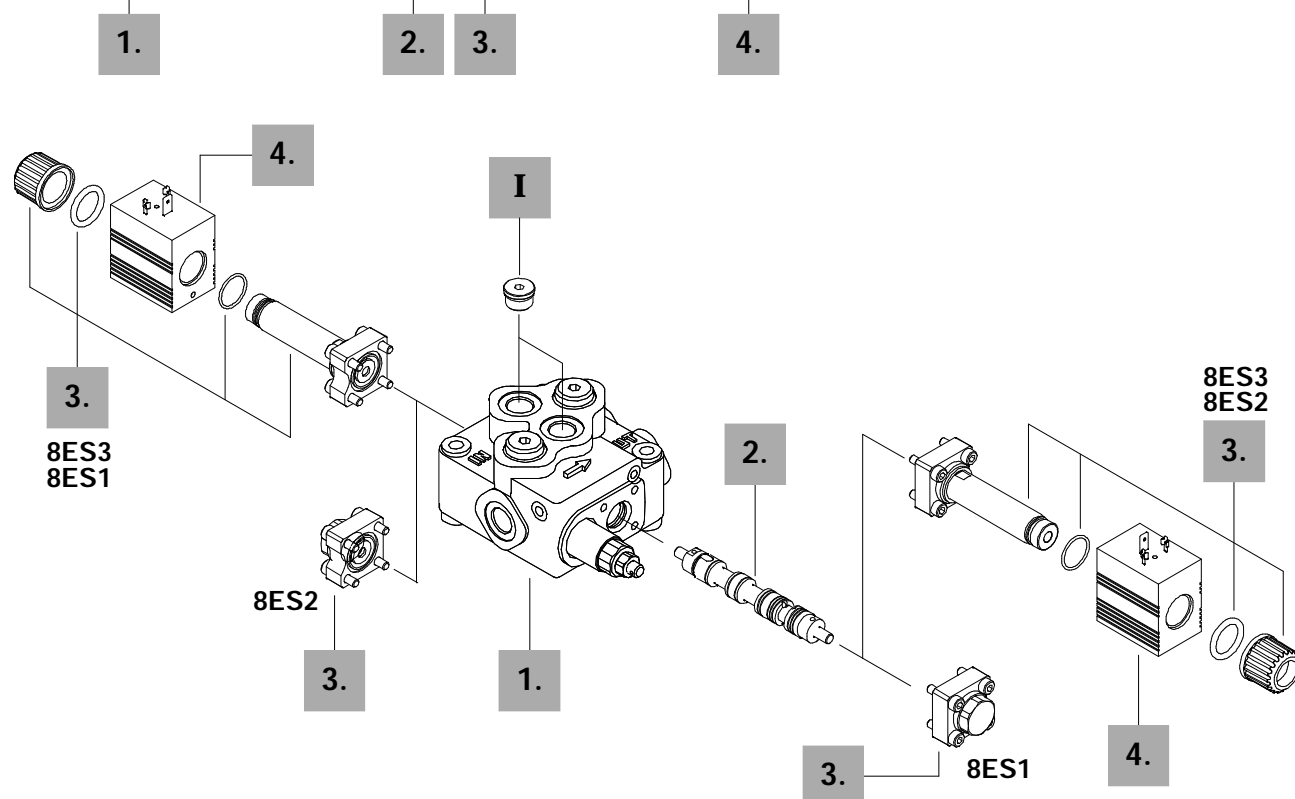
### 8ES solenoid control

Solenoid direct control with spring return to neutral position.

It needs special spools and standard body (body kit without seals on spool).

#### Description example:

SD5 / 1 - P (JG3-120) / 1 8ES3 / AET - 24VDC



#### 1. Body kit \*

TYPE	CODE	DESCRIPTION
SD5/1-P	5KC1193100	1 section
SD5/2-P	5KC1223100	2 sections
SD5/3-P	5KC1243100	3 sections
SD5/4-P	5KC1273100	4 sections
SD5/5-P	5KC1313100	5 sections
SD5/6-P	5KC1353100	6 sections
SD5/7-P	5KC3E3100	7 sections

#### 2. Spool options

TYPE	CODE	DESCRIPTION
1(ES)	3CU1210011	Double acting, 3 positions, with A and B closed in neutral position
2(ES)	3CU1225010	Double acting, 3 positions, with A and B open to tank in neutral position

#### 3. Control kit

TYPE	CODE	DESCRIPTION
8ES1	5V08024	Single acting P→A, with spring return to neutral position
8ES2	5V08024	Single acting P→B, with spring return to neutral position
8ES3	5V08025	Double acting, with spring return to neutral position

#### 4. Coil

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

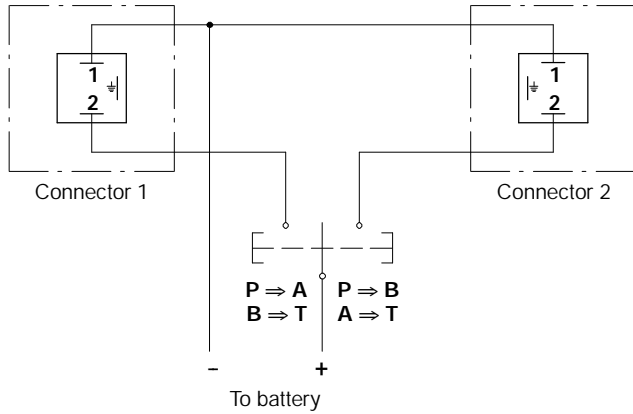
#### I "A" and "B" ports plugs \*

TYPE	CODE	DESCRIPTION
G3/8	3XTAP722160	For single acting controls type 8ES1 and 8ES2

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

8ES solenoid control

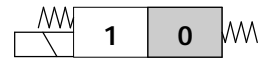
Electric wiring example



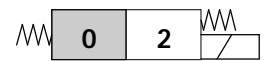
8ES3 kit  
double acting



8ES1 kit  
single acting on A



8ES2 kit  
single acting on B



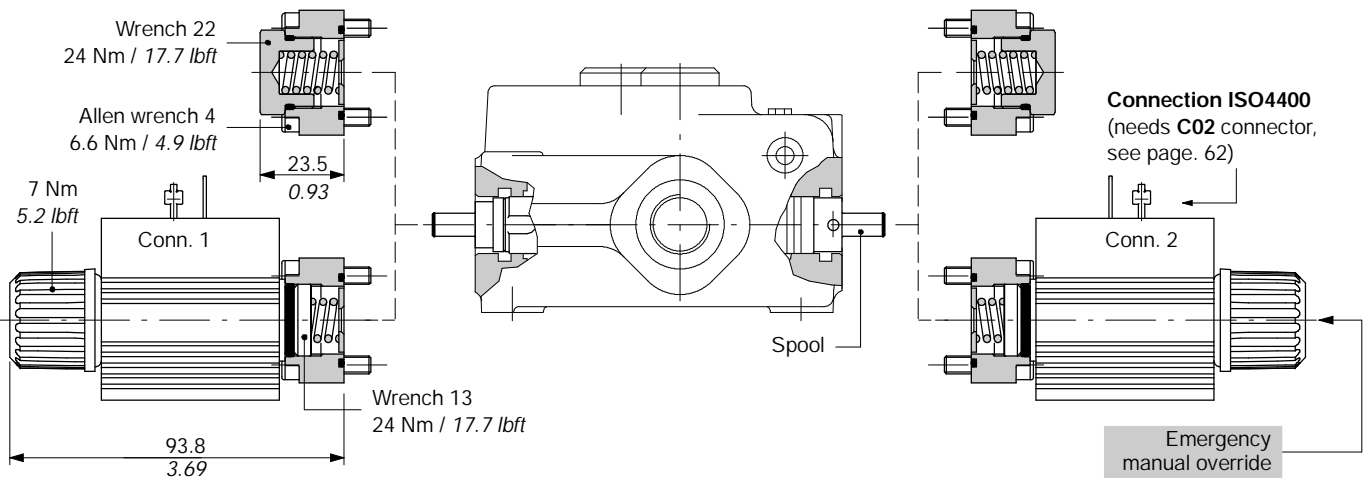
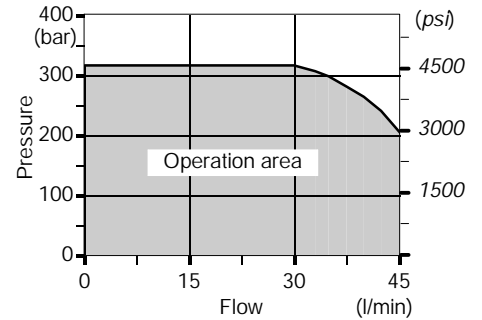
Operating features

Internal leakage A(B)→T  
 (Δp = 100 bar - 1450 psi / T = 40°C) : 10 cm<sup>3</sup>/min - 0.61 in<sup>3</sup>/min

Coil operating features

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

Operating condition diagram



# SD5

## Outlet port options

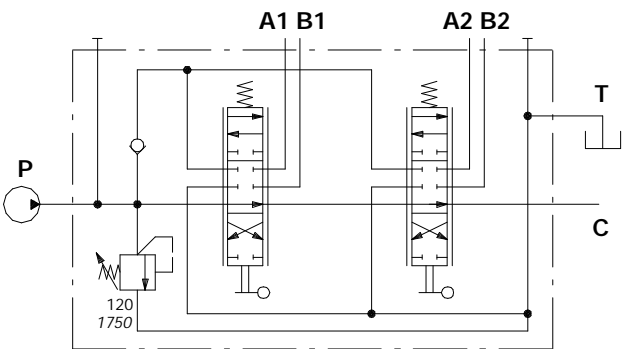
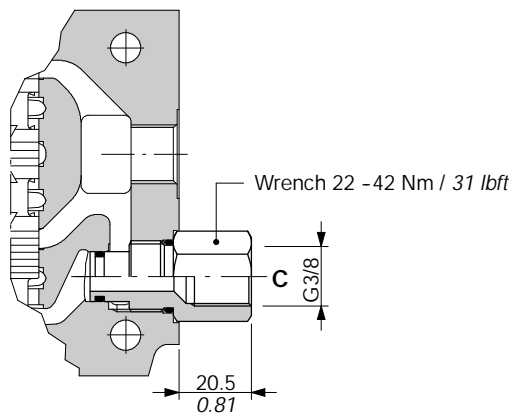
It's possible to have open centre, closed centre and carry-over.

Unloader valves are available: these valves need special bodies with appropriate cavity on lateral outlet port, the tank connection T must be on top.

### AET: open centre (standard)

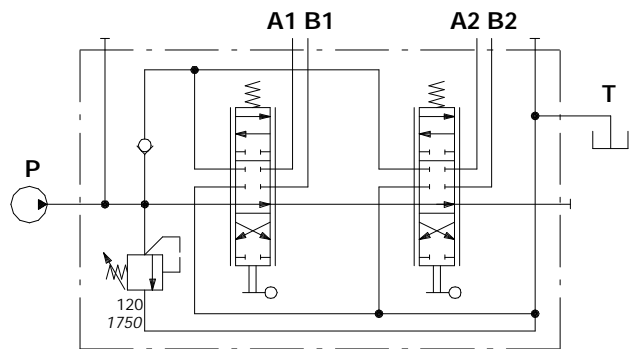
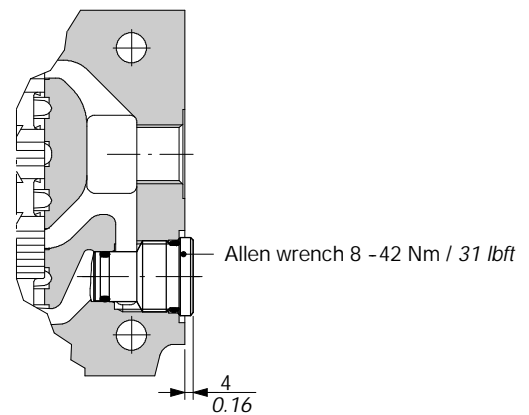
See page 6

### AE: with carry-over



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

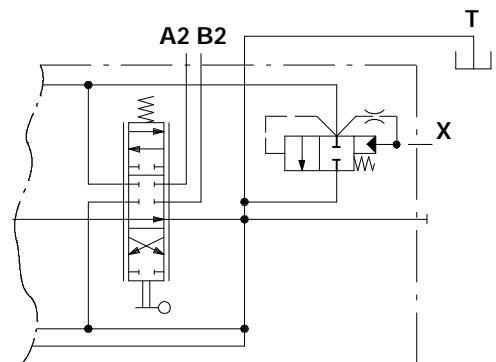
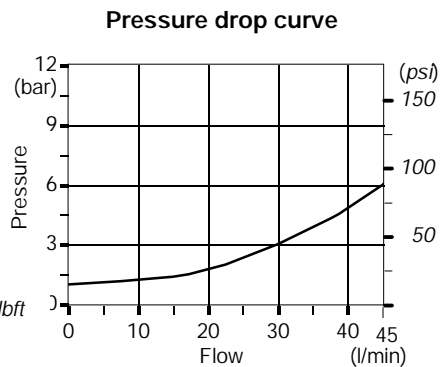
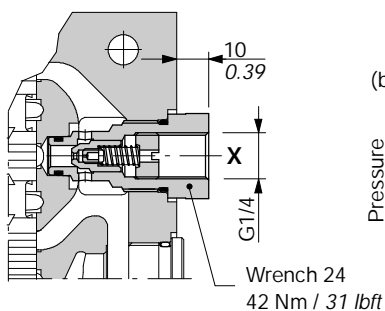
### AEK: closed centre



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

### L: hydraulic pilot unloader valve

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



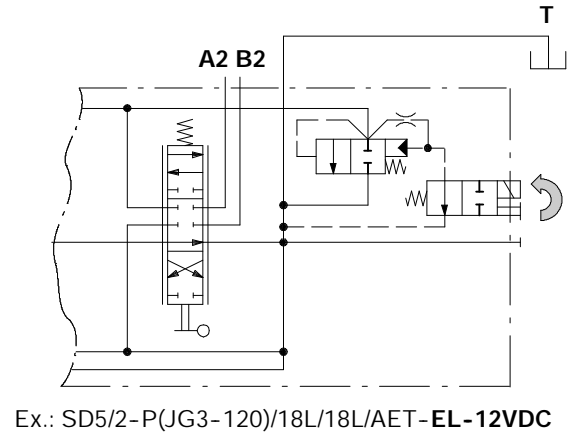
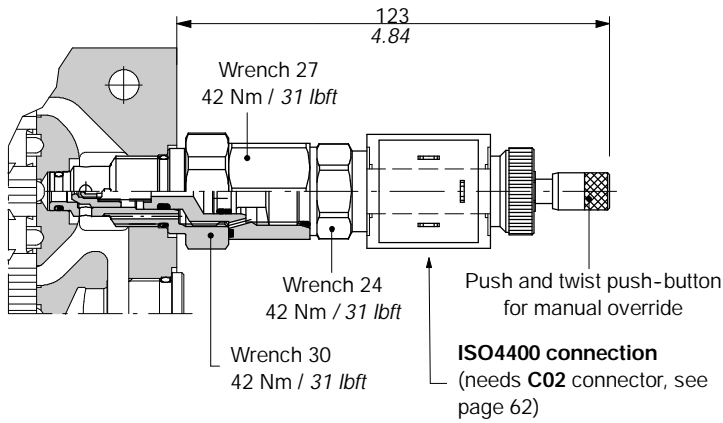
Ex.: SD5/2-P(JG3-120)/18L/18L/AET-L

#### Operating features

Internal leakage ..... : 10 cm<sup>3</sup>/min a 100 bar  
 : 0.61 in<sup>3</sup>/min at 1450 psi



**EL: electric control unloader valve**



**Operating features**

Internal leakage (excited position) ... : 75 cm<sup>3</sup>/min at 100 bar  
 : 4.6 in<sup>3</sup>/min at 1450 psi

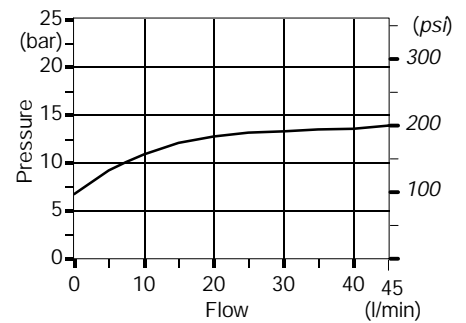
**Solenoid operating features**

Nominal voltage ..... : 12 VDC    24 VDC  
 Nominal voltage tolerance ..... : ±10%  
 Power rating ..... : 19 W  
 Nominal current ..... : 1,58 A    0,81 A  
 Resistance ..... : 7,6 Ω    29,5 Ω  
 Coil insulation ..... : Class F  
 Duty cycle ..... : 100%

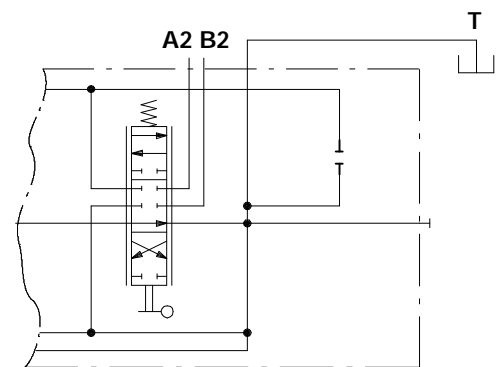
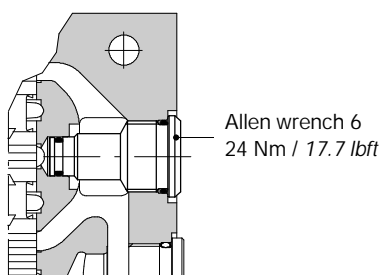
**Coils ordering codes**

CODE	DESCRIPTION
2X4311012	Nominal voltage 12VDC
2X4311024	Nominal voltage 24VDC

Pressure drop curve

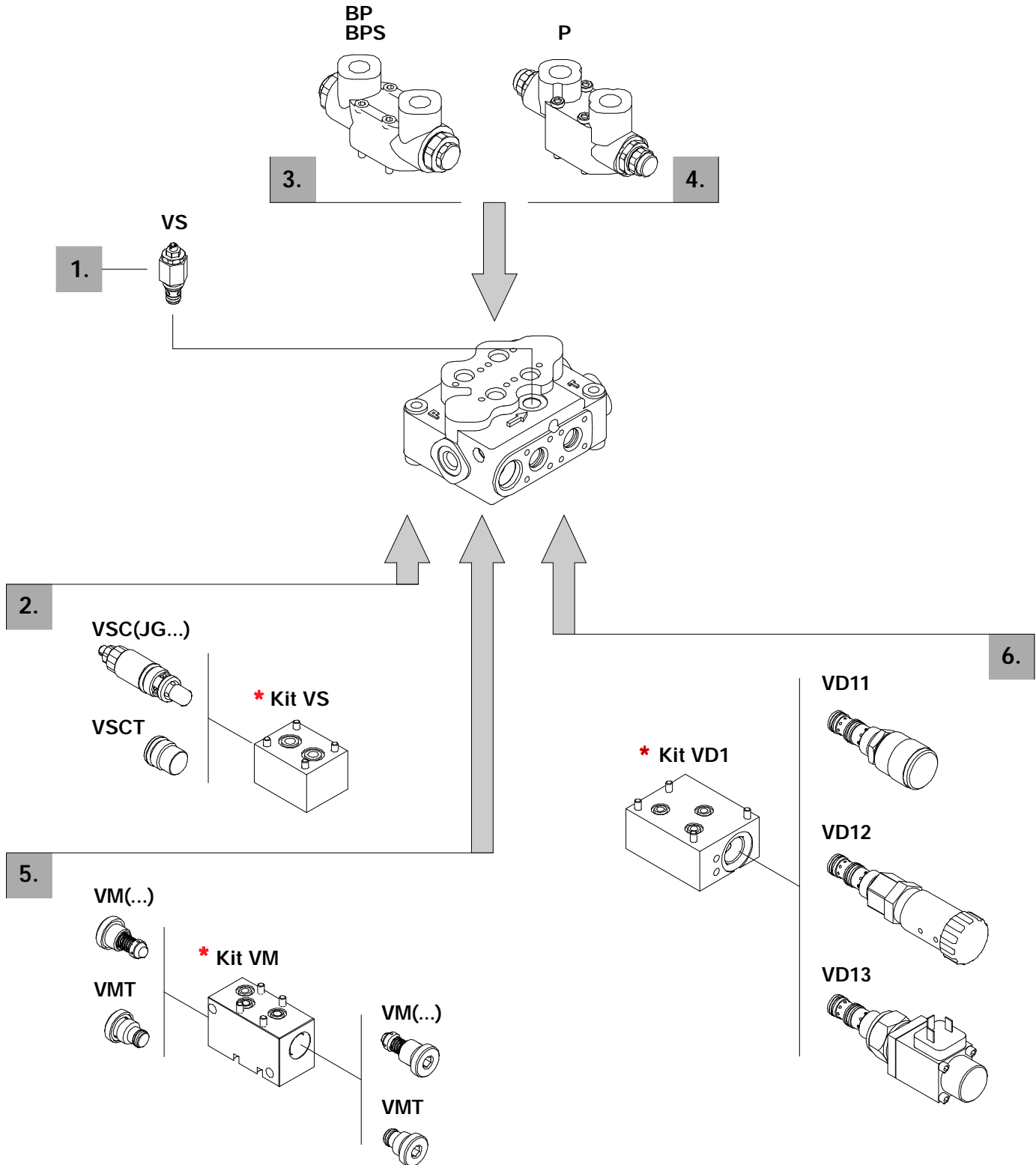


**LT: unloader valve prearrangement**



## Service valves

All service valves need **special body**: contact Customer Service.



**1. Relief valve** *page 44*

TYPE	CODE	DESCRIPTION
<b>VS(G3-100)</b>	3XCAR505113	Range 40 to 200 bar / 580 to 2900 psi standard setting 100 bar / 1450 psi
<b>VST</b>	3XTAP419300	Valve blanking plug

**2. Flange mounted relief valve** *page 45*

TYPE	CODE	DESCRIPTION
<b>VSC(JG2-60)</b>	5KIT105412	Range 40 to 80 bar / 580 to 1150 psi standard setting 60 bar / 870 psi
<b>VSC(JG3-100)</b>	5KIT105413	Range 63 to 200 bar / 900 to 2900 psi standard setting 100 bar / 1450 psi
<b>VSC(JG4-200)</b>	5KIT105414	Range 160 to 250 bar / 2300 to 3600 psi standard setting 200 bar / 2900 psi
<b>VSCT</b>	XTAP623282	Valve blanking plug
<b>Kit VS</b>	5CO2420000	Mounting block kit

**3. Antishock valves** *page 46*

Cross return type, fitted with mounting block

TYPE	CODE	DESCRIPTION
<b>P1(D3-100)</b>	602001000*	Block with valve on port A
<b>P2(D3-100)</b>	602001000*	Block with valve on port B
<b>P3(D3-100)</b>	602001100*	Block with valves on ports A and B
<b>P(D2-60)</b>	5CAR211112	Single valve: range 40 to 100 bar / 580 to 1450 psi, standard setting 60 bar / 870 psi
<b>P(D3-100)</b>	5CAR211113	Single valve: range 80 to 200 bar / 1150 to 2900 psi, standard setting 100 bar / 1450 psi
<b>P(D4-200)</b>	5CAR211113	Single valve: range 180 to 315 bar / 2600 to 4600 psi, standard setting 200 bar / 2900 psi
<b>PT</b>	XTAP526430	Valve blanking plug (for configuration P1, P2)

NOTE - Valve setting at points 1-2-3 are referred to 10 l/min flow.  
- (\*) Codes are referred to **BSP** threads.

**4. Pilot check valves** *page 47*

Fitted with mounting block		
TYPE	CODE	DESCRIPTION
<u>Directv type</u>		
<b>BP1</b>	602002000*	Block with valve on port A
<b>BP2</b>	602002000*	Block with valve on port B
<b>BP3</b>	602002100*	Block with valves on ports A and B
<b>BP</b>	XCAR605110	Single valve
<u>With pre-opening</u>		
<b>BPS1</b>	602003000*	Block with valve on port A
<b>BPS2</b>	602003000*	Block with valve on port B
<b>BPS3</b>	602003100*	Block with valves on ports A and B
<b>BPS</b>	XACR605210	Single valve
<b>BPT</b>	XTAP627300	BP and BPS valves blanking plug

**5. Anti-schock+anti-cavitation valve** *page 49*

Flange mounted type with fixed setting  
(setting is referred to Q = 10 l/min flow)

TYPE	CODE	DESCRIPTION
<b>VM(50)</b>	5KIT326050	Setting 50 bar / 720 psi
<b>VM(60)</b>	5KIT326060	Setting 60 bar / 870 psi
<b>VM(70)</b>	5KIT326070	Setting 70 bar / 1010 psi
<b>VM(80)</b>	5KIT326080	Setting 80 bar / 1150 psi
<b>VM(90)</b>	5KIT326090	Setting 90 bar / 1300 psi
<b>VM(100)</b>	5KIT326100	Setting 100 bar / 1450 psi
<b>VM(125)</b>	5KIT326125	Setting 125 bar / 1800 psi
<b>VM(140)</b>	5KIT326140	Setting 140 bar / 2050 psi
<b>VM(160)</b>	5KIT326160	Setting 160 bar / 2300 psi
<b>VM(175)</b>	5KIT326175	Setting 175 bar / 2550 psi
<b>VM(190)</b>	5KIT326190	Setting 190 bar / 2750 psi
<b>VM(210)</b>	5KIT326210	Setting 210 bar / 3050 psi
<b>VM(230)</b>	5KIT326230	Setting 230 bar / 3350 psi
<b>VM(250)</b>	5KIT326250	Setting 250 bar / 3600 psi
<b>VM(260)</b>	5KIT326260	Setting 260 bar / 3750 psi
<b>VM(280)</b>	5KIT326280	Setting 280 bar / 4050 psi
<b>VM(300)</b>	5KIT326300	Setting 300 bar / 4350 psi
<b>VMT</b>	XTAP221340	Valve blanking plug
<b>Kit VM</b>	5CO2820020	Mounting block kit

**6. Flow control valves** *page 50*

Flow control on every section; with auxiliary inlet

TYPE	CODE	DESCRIPTION
<b>VD11</b>	2S0PP10002000	Fine regulation from 3 to 30 l/min
<b>VD12</b>	2S1636020211	As VD11, one turn with detent
<b>VD13</b>	2S0PP10002002	12VDC proportional solenoid valve
<b>Kit VD1</b>	5CO2822010*	Mounting block kit

# SD5

## Services valves

### VS relief valve

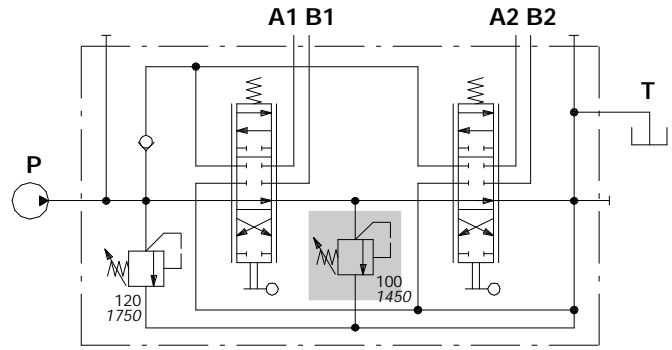
It's suggested for flow up to 25 l/min, and it's mounted on parallel body to limitate the pressure, at lower value than main relief valve (min. gap 20 bar / 290 psi), on downstream section.

It's in parallel with flow trough and it works only with single operation.

### VS5 ( G 3 - 100 )

Pressure setting in bar  
(standard 100 bar / 1450 psi)

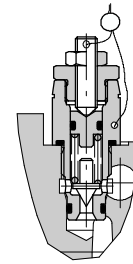
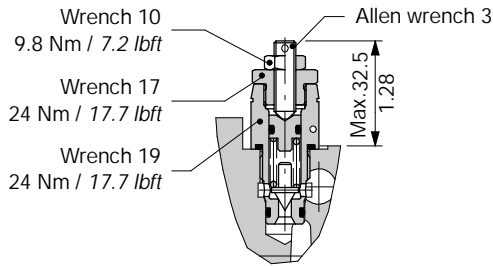
Adjustment type (G, H)



### Adjustment type

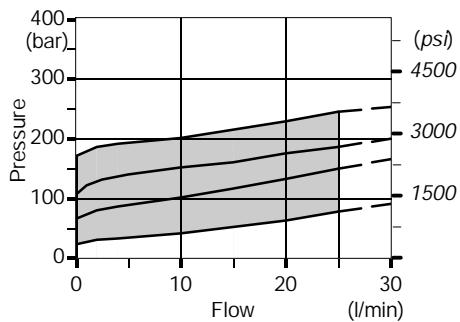
**G:** with screw

**H:** valve set and locked

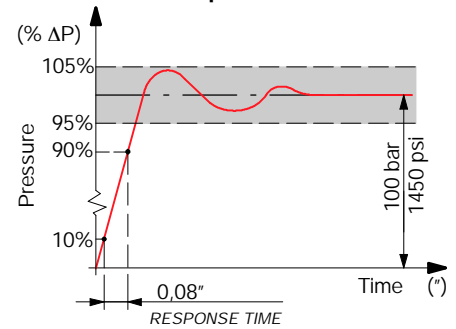


### Performance data

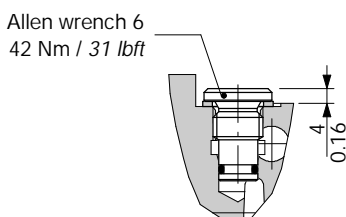
#### Spring nr. 3 (blue band)



#### Response time



### VST: valve blanking plug



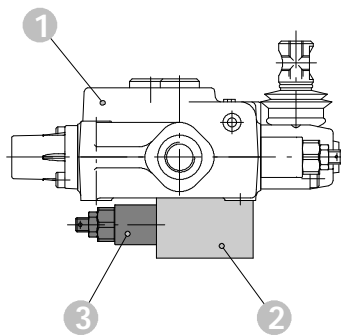
**VSC relief valve**

It's flange mounted on parallel body on the opposite side of working ports, the function to limit the pressure, at lower value than main relief valve (min. gap 20 bar / 290 psi) on downstream sections.

It's in parallel with flow through line and it works only with single operation.

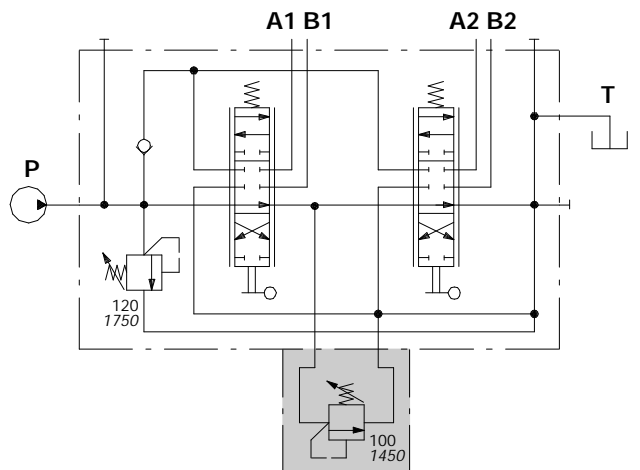
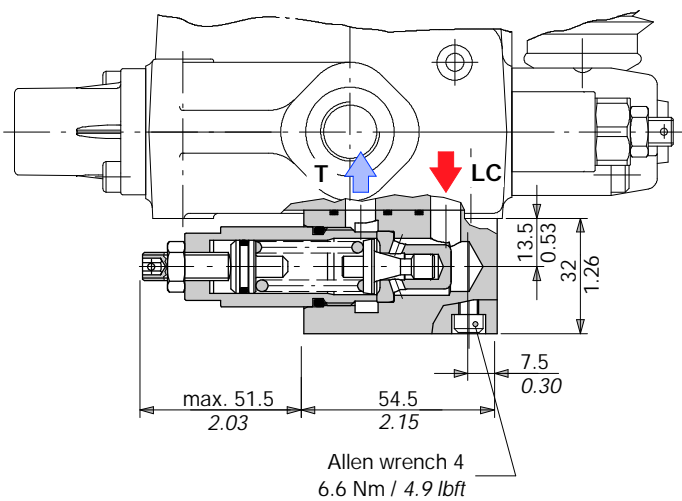
It needs a dedicated body with extra machining: for production requirements, the block (2) is flanged (1) before the final honing of spool hole, while the valve (3) is mounted during final assembling phase.

For information contact Customer Service.



**VSC ( J G 3 - 100 )**

- Standard setting in bar (for value see page 43)
- Adjustable spring type (2, 3, 4).
- Adjustment type (G, H)



Ex.: SD5/2-P(JG3-120)/18L/VSC(JG3-100)/18L/AET

NOTE - For valve performance data see page 10.

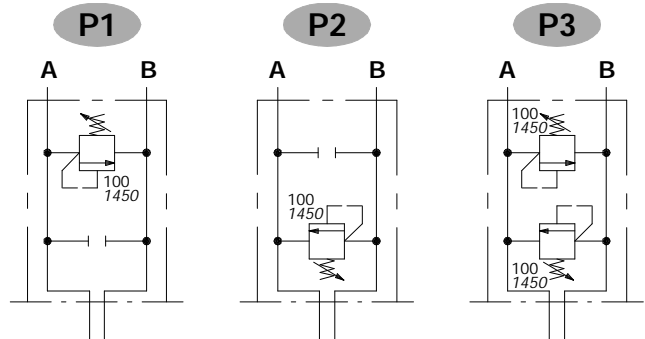
## Service valves

### P anti-shock valves with cross return

Cast iron block with antishock valves.

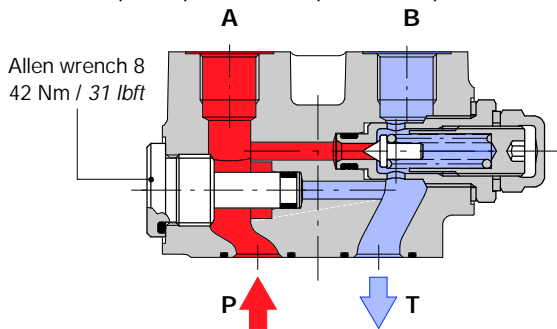
**P 1 (D 3 - 100)**

- Standard setting in bar (for value see page 43)
- Spring type (2, 3, 4).
- Adjustment with blind nut (D).
- 1 mounted on port A.
- 2 mounted on port B.
- 3 mounted on ports A and B.



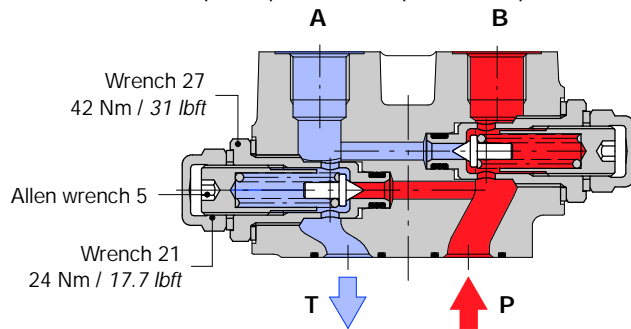
#### P1 configuration

Example of pressure on port A and port B to tank



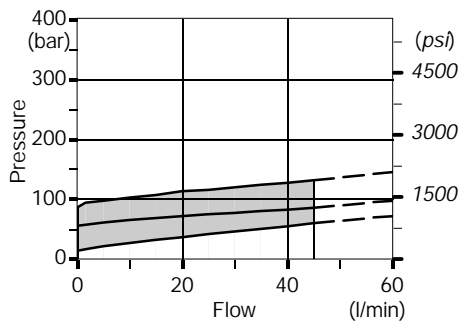
#### P3 configuration

Example of pressure on port B and port A to tank

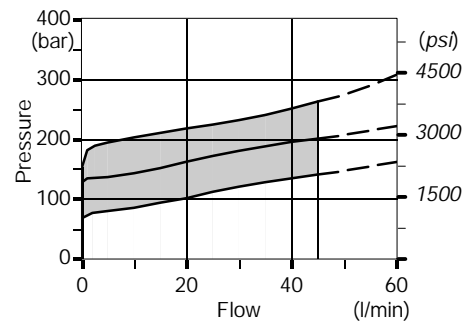


### Performance data

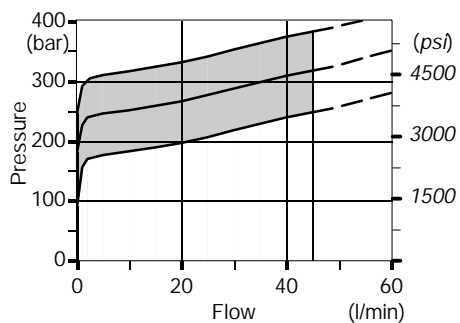
#### Spring nr. 2 (green band)



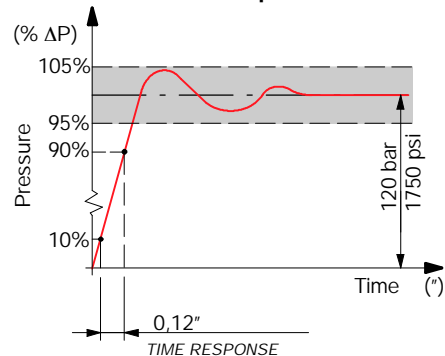
#### Spring nr. 3 (blue band)



#### Spring nr. 4 (red band)



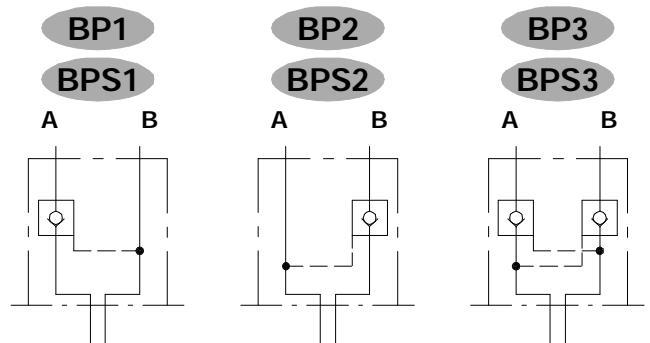
#### Time response



**BP, BPS pilot check valves**

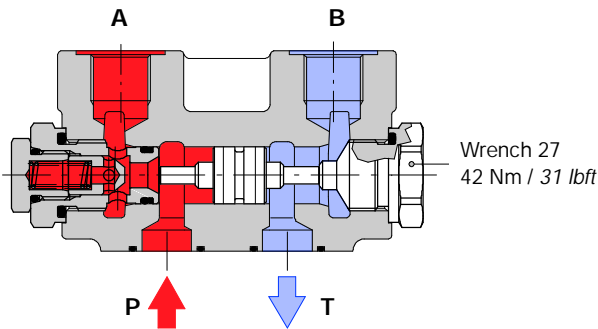
Cast iron block with pilot check valves.

- BPS 1**
- 1 mounted on port A.
  - 2 mounted on port B.
  - 3 mounted on ports A and B.
- BP** direct type  
**BPS** with pre-opening



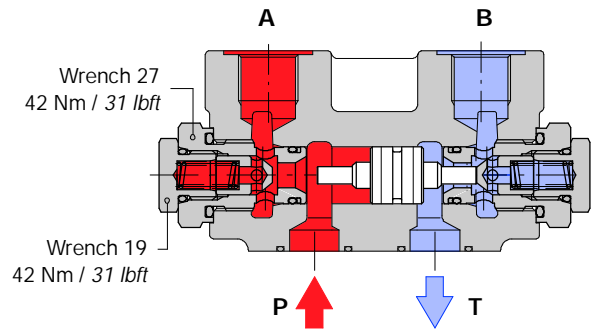
**BP1 configuration**

Example of pressure on port A and port B to tank

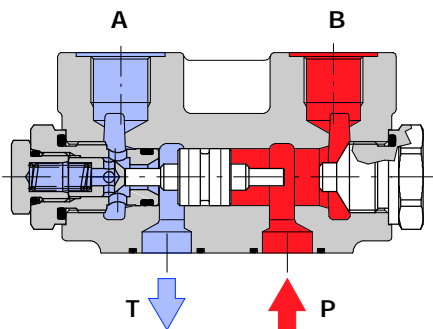


**BP3 configuration**

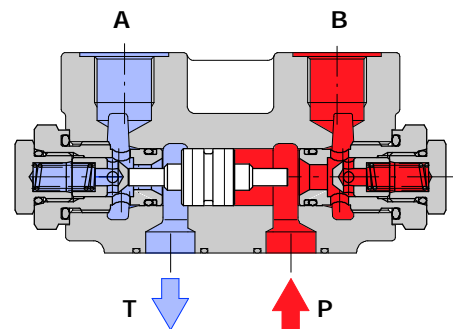
Example of pressure on port A and port B to tank



Example of pressure on port B and port A to tank

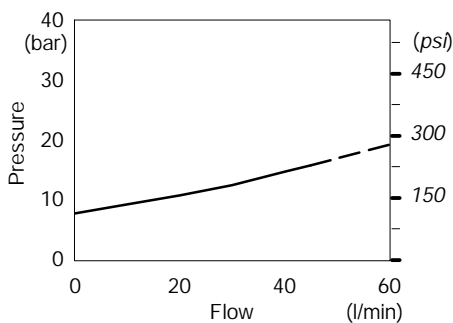


Example of pressure on port B and port A to tank



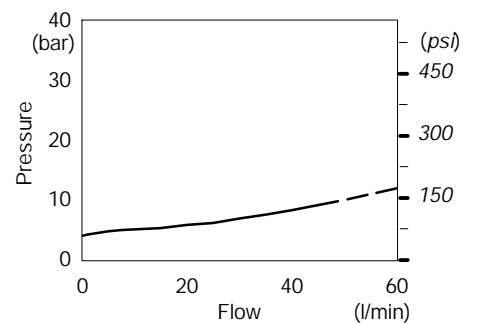
**Performance data**

**BP valve pressure drop**

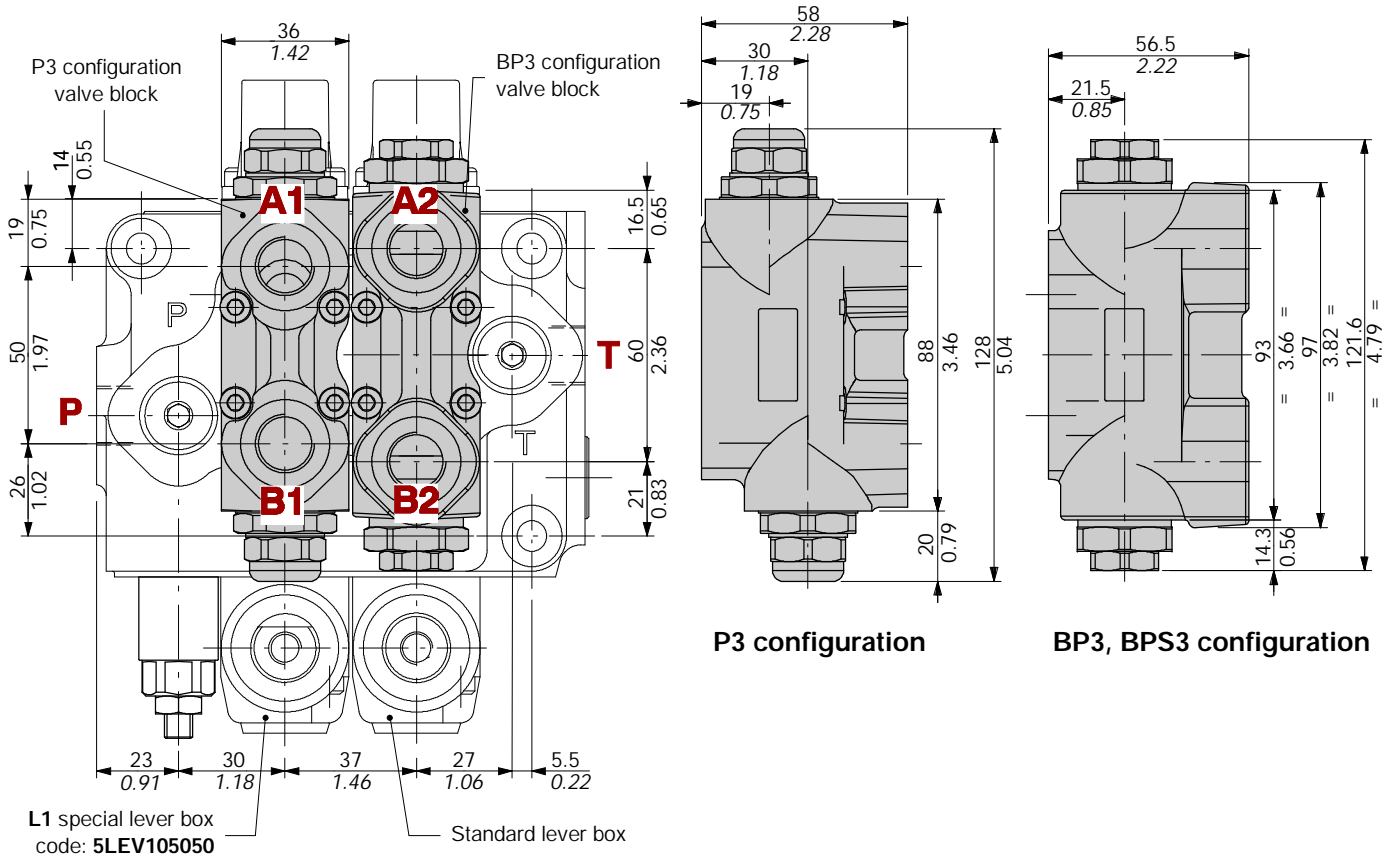


Type	Pilot ratio	
	With pre-opening	Main
BP	/	1 : 5.3
BPS	1 : 16	1 : 3.2

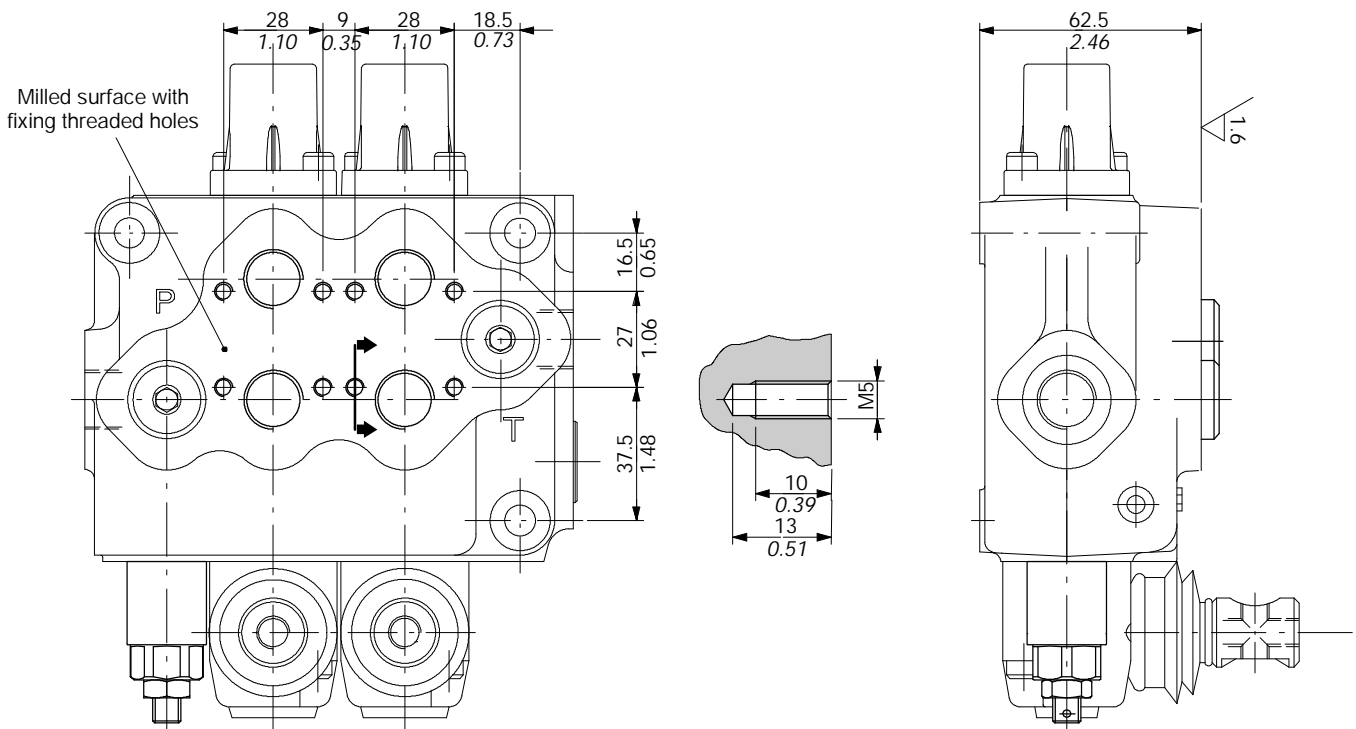
**BPS valve pressure drop**



### P antishock valves with cross return



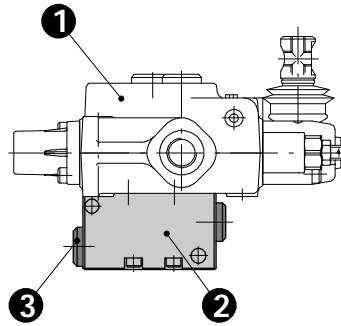
### Example of extra machining on directional valve body





**VM anti-shock and anti-cavitation**

They are flange mounted on the opposite side of working ports, connected in parallel with A and B ports and with outlet on T port. It needs a dedicated body with extra machining: for production requirements, the block (2) is flanged (1) before the final honing of spool hole, while the valve (3) is mounted during final assembling phase. For information contact Customer Service.



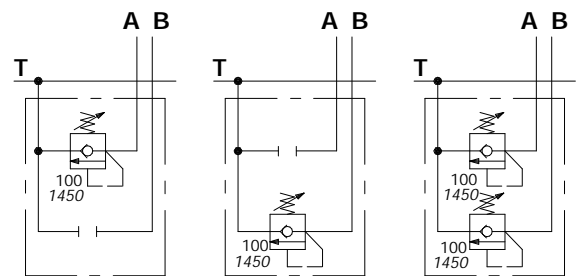
**VM 1 (100)**

- Valve setting in bar
- 1** mounted on port A
- 2** mounted on port B
- 3** mounted on ports A and B

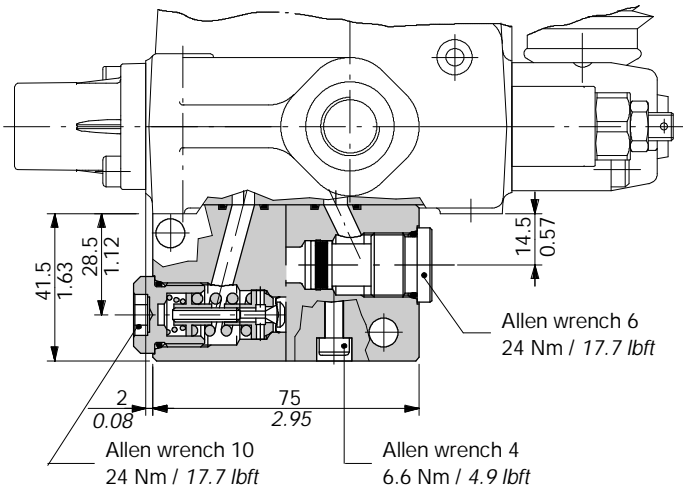
**VM1**

**VM2**

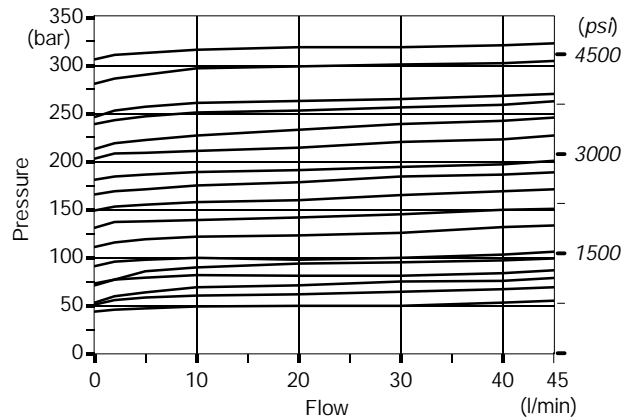
**VM3**



**VM1 configuration**



**Pressure-flow diagram**



### VD1 flow control valves

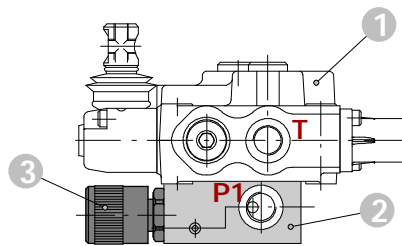
Block with pressure compensated 3-way flow control valve, to be flange mounted on body with parallel circuit.

The cavity is oriented toward lever side.

The flow is regulated on every working section while the exceeding flow goes to tank: max. regulated flow 30 l/min (with inlet on P1 port).

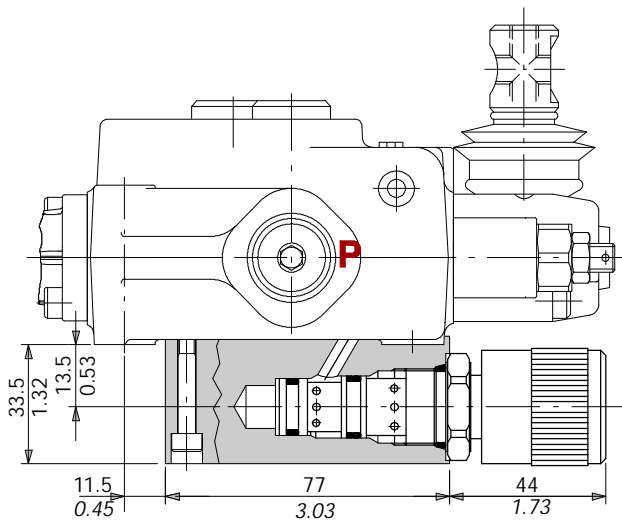
It needs a dedicated body with extra machining: for production requirements, the block (2) is flanged (1) before the final honing of spool hole, while the valve (3) is mounted during final assembling phase.

For information contact Customer Service.



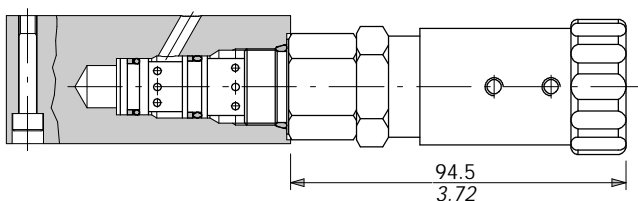
### Manual control

#### VD11: continuous fine regulation

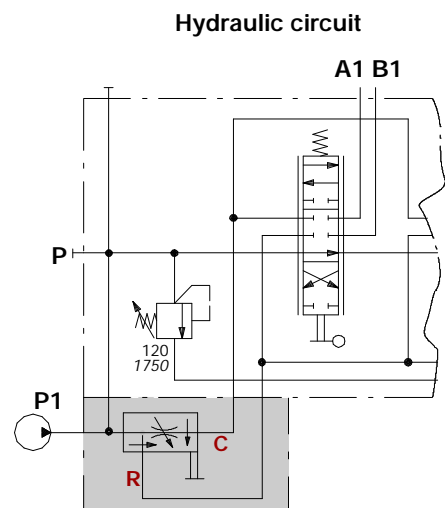


Ex.: SD5/2-P(JG3-120)VD11/18L/18L/AET

#### VD12: one turn with detent handknob regulated

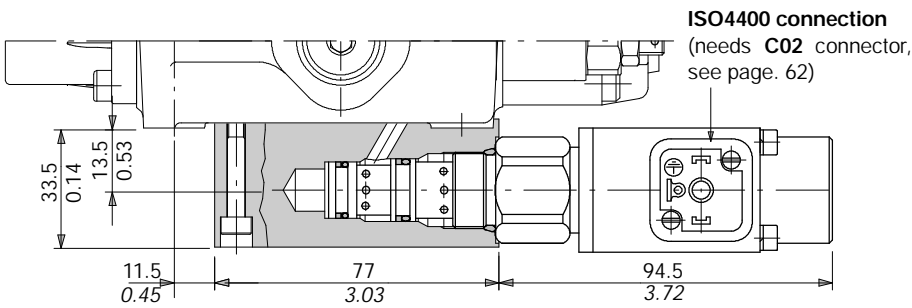


Ex.: SD5/2-P(JG3-120)VD12/18L/18L/AET

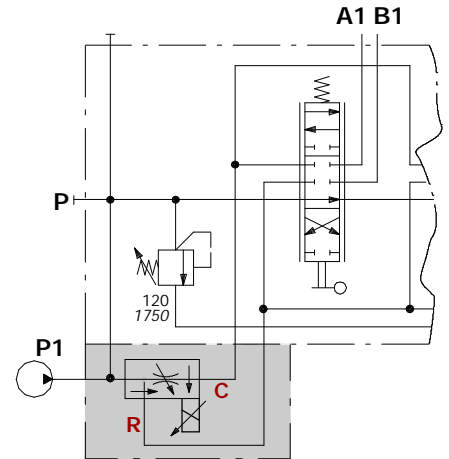


VD1 flow control valves

VD13 with proportional solenoid control



Hydraulic circuit

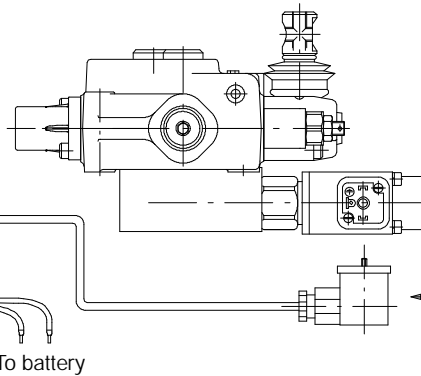
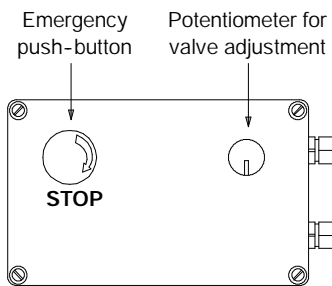


Ex.: SD5/2-P(JG3-120)VD13/18L/18L/AET

VD13 proportional solenoid flow control valve connection

It's shows a configuration with push-button panel type UPA.

For information contact Customer Service.



Solenoid operating features

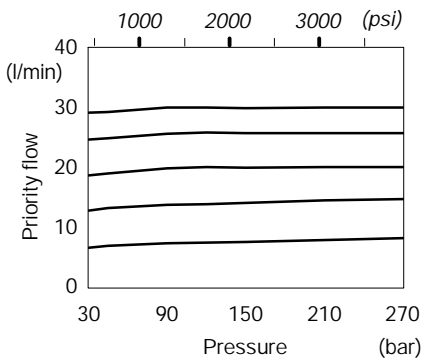
Nominal voltage ..... : 12 VDC  
Power rating ..... : 28 W  
Duty cycle ..... : 100%

Push-button panel type:  
**UPA12/100/SC01B22**

Performance data

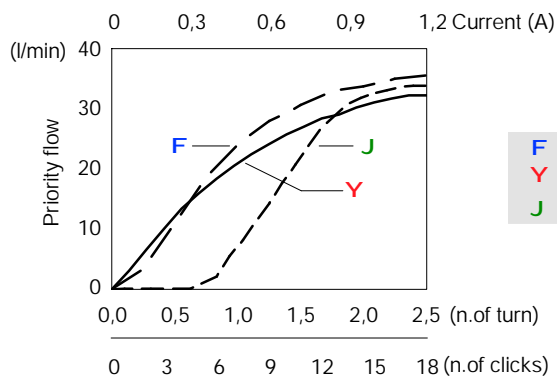
Pressure-flow diagram

Qin = 45 l/min



Flow regulation diagram

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



- F VD11 flow control valve
- Y VD12 flow control valve
- J VD13 flow control valve





**SD5/1-N** ..... page 54

It's available only with one working section and it can be used in hydraulic circuits where carry-over doesn't required.



**SD5/1-D** ..... page 55

It's available only with one working section and it can be used in hydraulic circuits where carry-over is required.



**SD5-S: with series circuit** ..... page 56

Available from 2 to 6 sections, it can be used in systems with one downstream section from series connection must work with upstream ones at the same time.

It's not available the carry-over circuit.

On the same body are possible more than one connection.



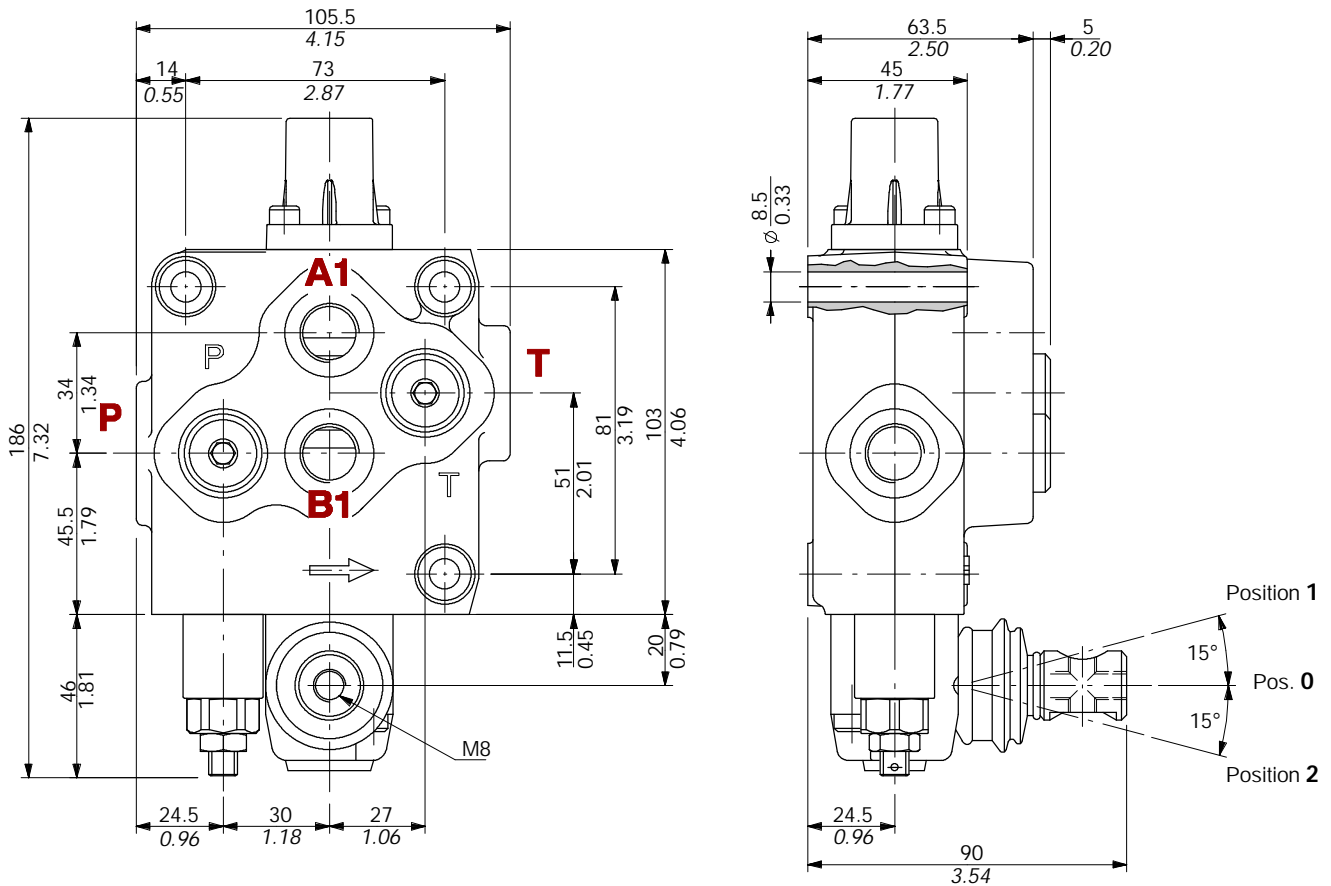
**SD5-SP: with tandem circuit** ..... pag. 58

Available from 2 to 6 sections, for security reasons it can be used in systems which is required to prohibit engagement of downstream sections from tandem connection when the upstream sections are working.

On the same body are possible more than one connection.

# SD5/1-N

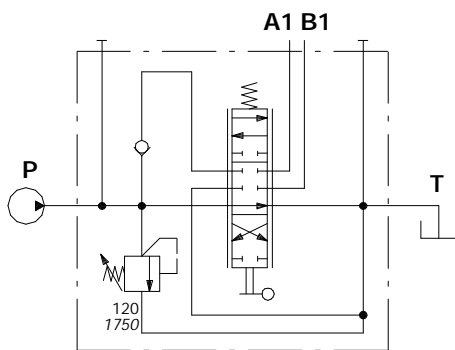
## Dimensional data



## Standard threads

PORTS	BSP (ISO228/1)	UN-UNF (ISO 11926-1)	METRIC (ISO 262)
Inlet P	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5
Ports A and B	G 3/8	9/16-18 UNF-2B (SAE 6)	M18x1.5
Outlet T	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5

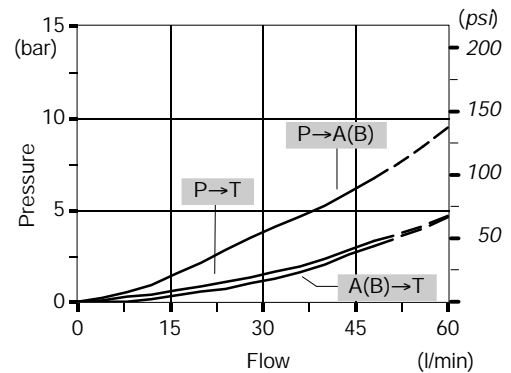
## Hydraulic circuit



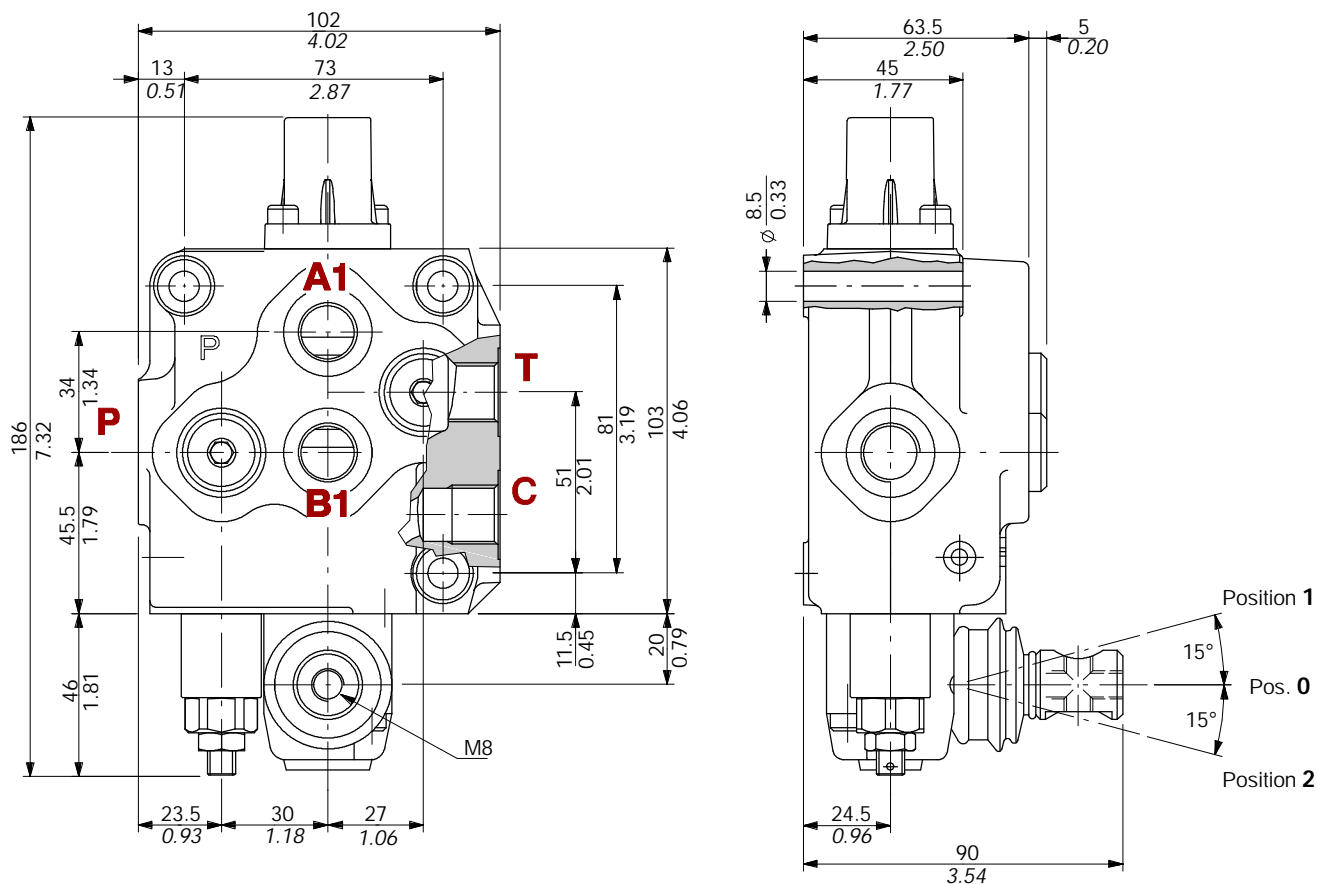
Ex.: SD5/1-N(JG3-120)/18L  
Code: 102110033

## Performance data

### Pressure drop curve



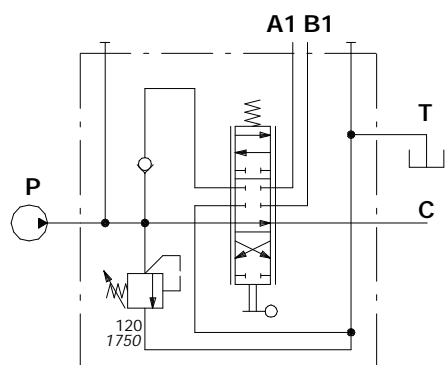
## Dimensional data



## Standard threads

PORTS	BSP (ISO228/1)	UN-UNF (ISO 11926-1)	METRIC (ISO 262)
Inlet P and carry-over C	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5
Ports A and B	G 3/8	9/16-18 UNF-2B (SAE 6)	M18x1.5
Outlet T	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5

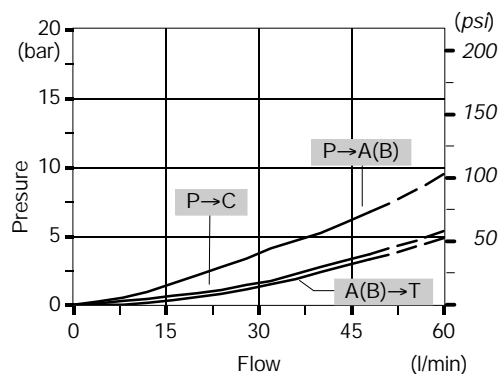
## Hydraulic circuit



Ex.: SD5/1-D(JG3-120)/18L  
Code: 102160027

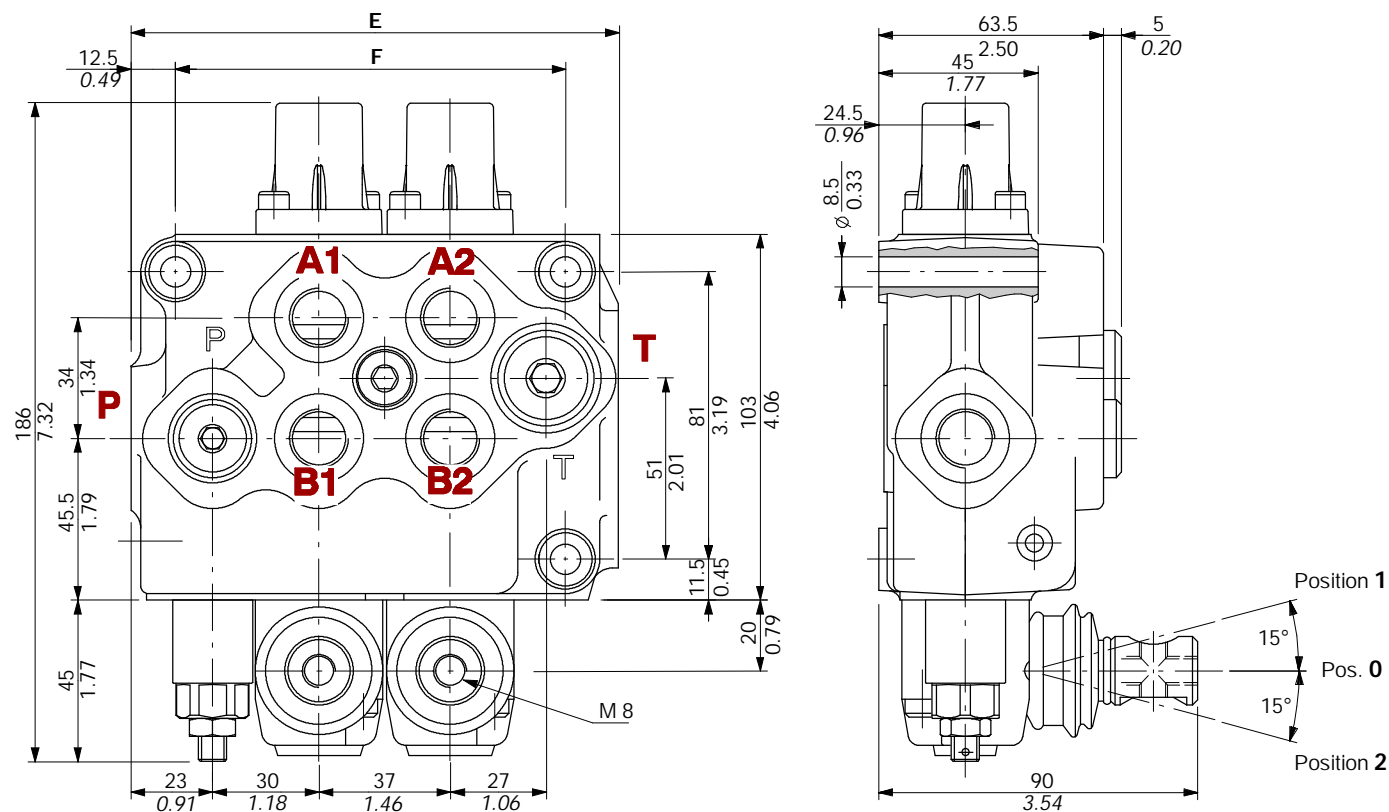
## Performance data

### Pressure drop curve



# SD5-S

## Dimensional data



TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD5/2-S	137.5	5.41	110	4.33	5.2	11.4
SD5/3-S	174.5	6.87	147	5.79	6.9	15.2
SD5/4-S	211.5	8.33	184	7.24	8.1	17.9

TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD5/5-S	248.5	9.78	221	8.70	10.1	22.3
SD5/6-S	285.5	11.2	258	10.2	11.7	25.8

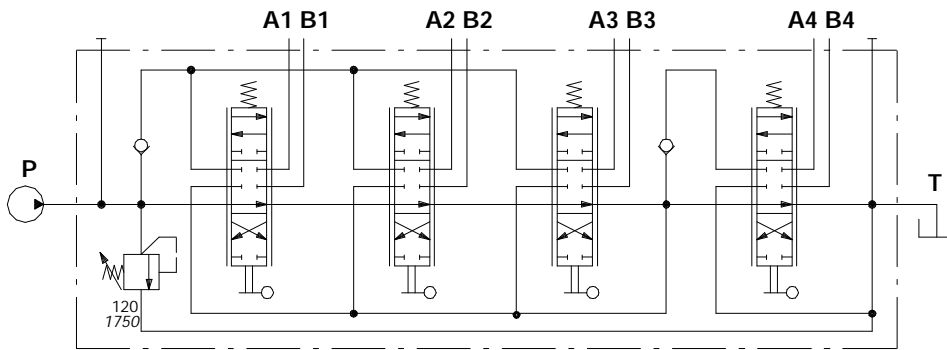
## Standard threads

PORTS	BSP (ISO228/1)	UN-UNF (ISO 11926-1)	METRIC (ISO 262)
Inlet P	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5
Ports A and B	G 3/8	9/16-18 UNF-2B (SAE 6)	M18x1.5
Outlet T	G 1/2	3/4-16 UNF-2B (SAE 8)	M22x1.5



## Hydraulic circuit

The description of SD5 valve with series circuit is marked with letter "S" and one figure which indicate the downstream sections from series connection.



Ex.: SD5/4-S1(JG3-120)/18L/18L/18L/18L  
Code: 1024B0027

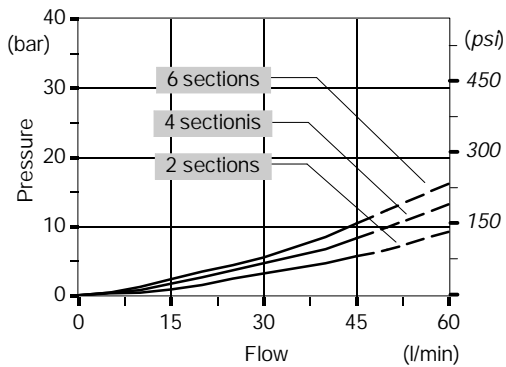
### Available body kits

CODE	DESCRIPTION
5KC1153040	SD5/2-S1
5KC1253003	SD5/3-S1
5KC12D3000	SD5/3-S1+1
5KC1283003	SD5/4-S1
5KC12E3000	SD5/4-S1+1+1
5KC1324033	SD5/5-S1
5KC1073001	SD5/5-S1+1+1+1
5KC13A3000	SD5/5-S2+1
5KC1363003	SD5/6-S1

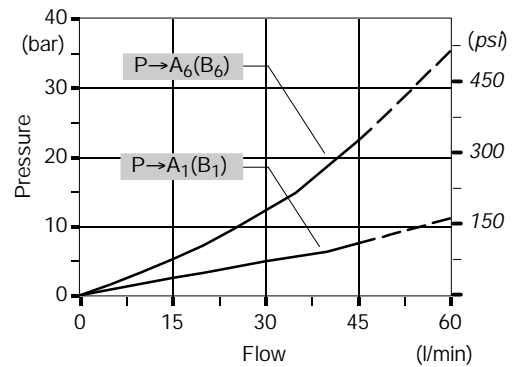
Include boby, seals and load check valves.

## Performance data

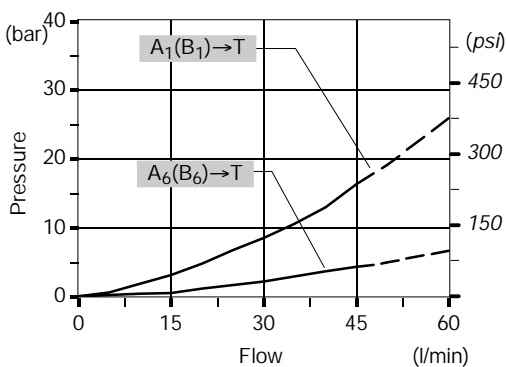
### Pressure drop P→T



### Pressure drop P→A(B)

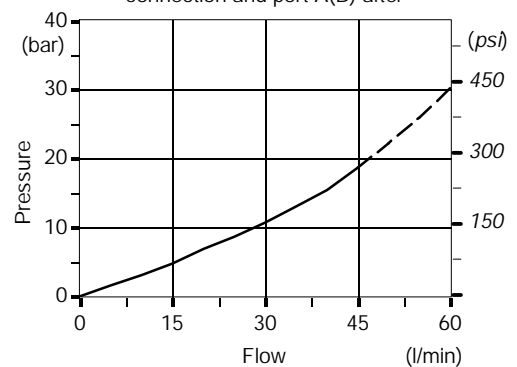


### Pressure drop A(B)→T



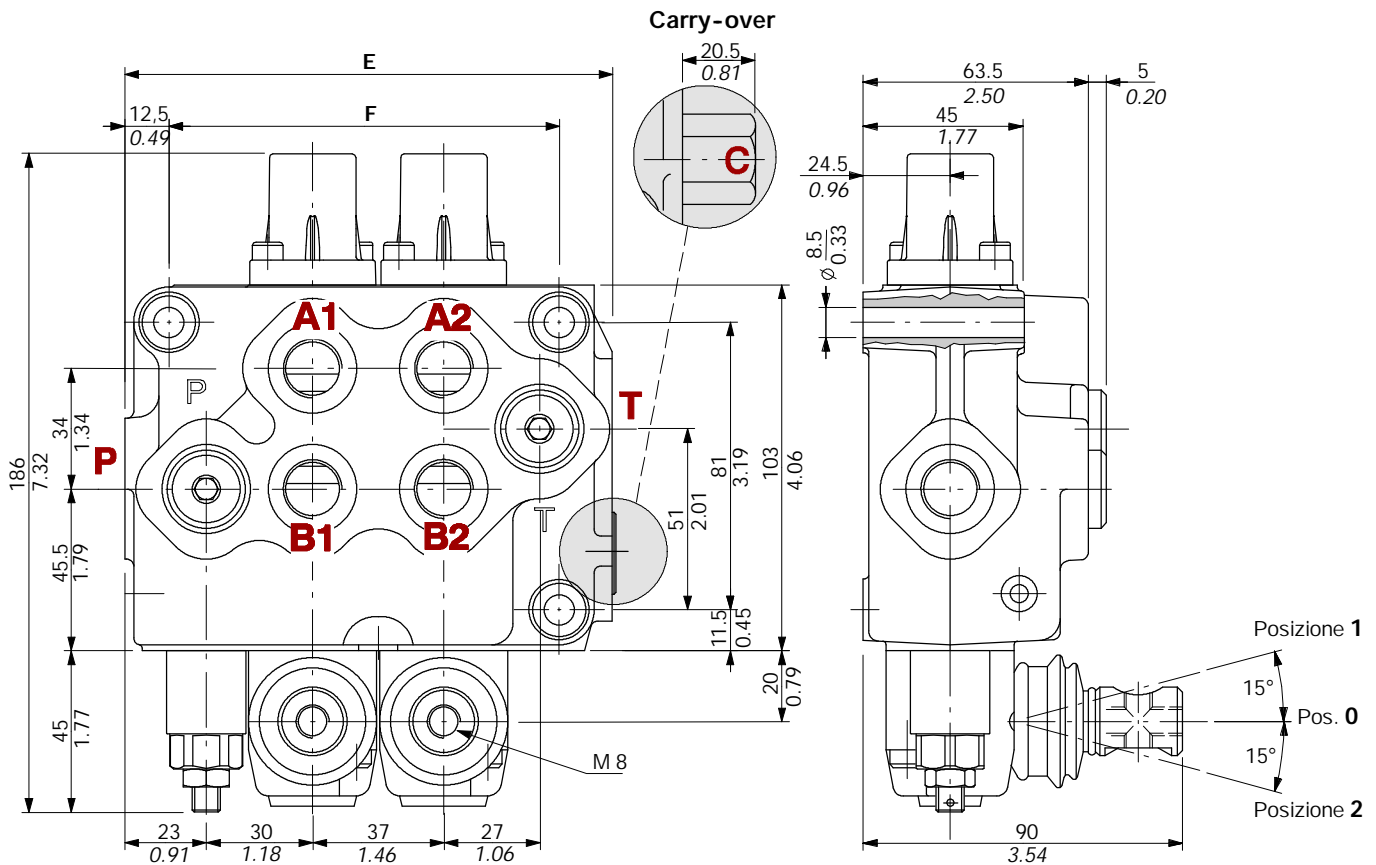
### Pressure drop

between port A(B) before series connection and port A(B) after



# SD5-SP

## Dimensional data



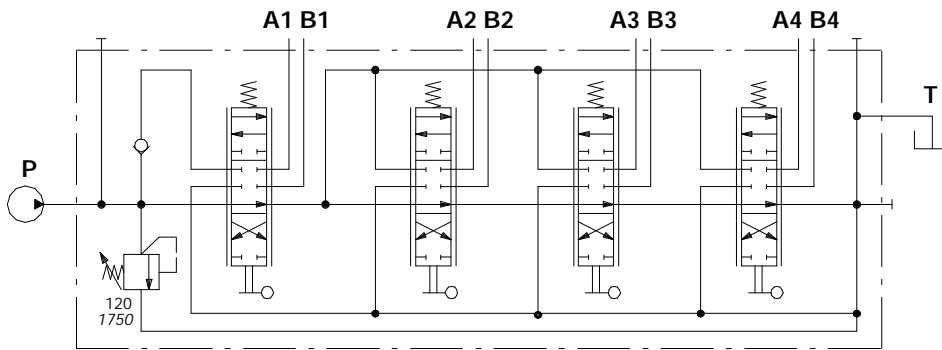
TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD5/2-SP1	137.5	5.41	110	4.33	4.8	10.6
SD5/3-SP2	174.5	6.87	147	5.79	6.7	14.8
SD5/4-SP3	211.5	8.33	184	7.24	8.1	17.6

TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD5/5-SP4	248.5	9.78	221	8.70	10.2	22.5
SD5/6-SP5	285.5	11.2	258	10.2	11.3	24.9
SD5/7-SP6	322.5	13.1	295	11.6	12.7	28

## Standard thread

PORTS	BSP (ISO228/1)	UN-UNF (ISO 11926-1)	METRIC (ISO 262)
Inlet P and carry-over C	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5
Ports A and B	G 3/8	9/16-18 UNF-2B (SAE 6)	M18x1.5
Outlet T	G 3/8	3/4-16 UNF-2B (SAE 8)	M18x1.5

The description of SD5 valve with tandem circuit is marked with letters "SP" and one figure which indicate the downstream sections from tandem connection.



Ex.: SD5/4-SP3(JG3-120)/18L/18L/18L/18L/AET

Code: 1024A0016

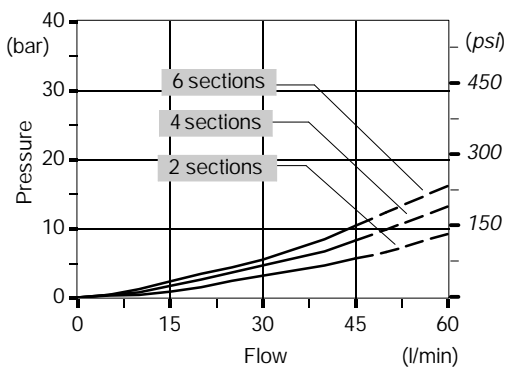
### Available body kits

CODE	DESCRIPTION
5KC1183000	SD5/2-SP1
5KC12G3000	SD5/3-SP2
5KC1303000	SD5/4-SP1
5KC12H3000	SD5/4-SP1+1
5KC12I3000	SD5/4-SP2+1
5KC1293000	SD5/4-SP3
5KC13D3000	SD5/5-SP2+2
5KC1343000	SD5/5-SP3+1
5KC1333000	SD5/5-SP4
5KC1393000	SD5/6-SP3+1
5KC13Y3000	SD5/6-SP3+2
5KC1373000	SD5/6-SP5
5KC13I3000	SD5/7-SP3+1
5KC13G3000	SD5/7-SP4
5KC13L3000	SD5/7-SP5+1
5KC13F3000	SD5/7-SP6

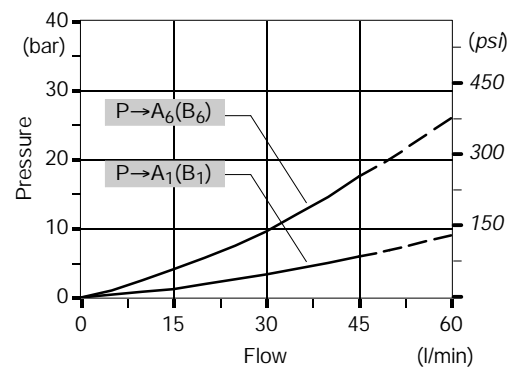
Include body, seals and load check valve.

## Performance data

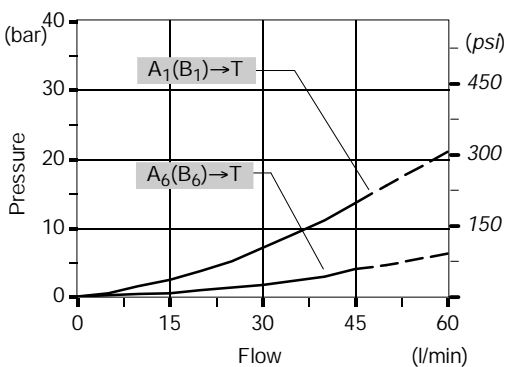
Pressure drop P→T



Pressure drop P→A(B)



Pressure drop A(B)→T

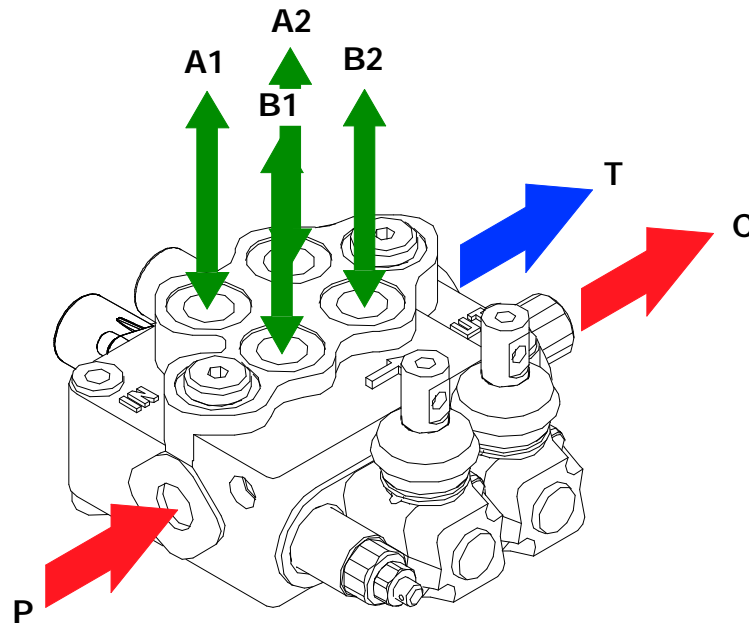


## Installation and maintenance

The SD5 valve is assembled and tested as per the technical specification of this catalogue.

Before the final installation on your equipment, follow the below recommendations:

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



Carry-over configuration

### Fitting tightening torque - Nm / lbft

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

(\*) - Only for series circuit.

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

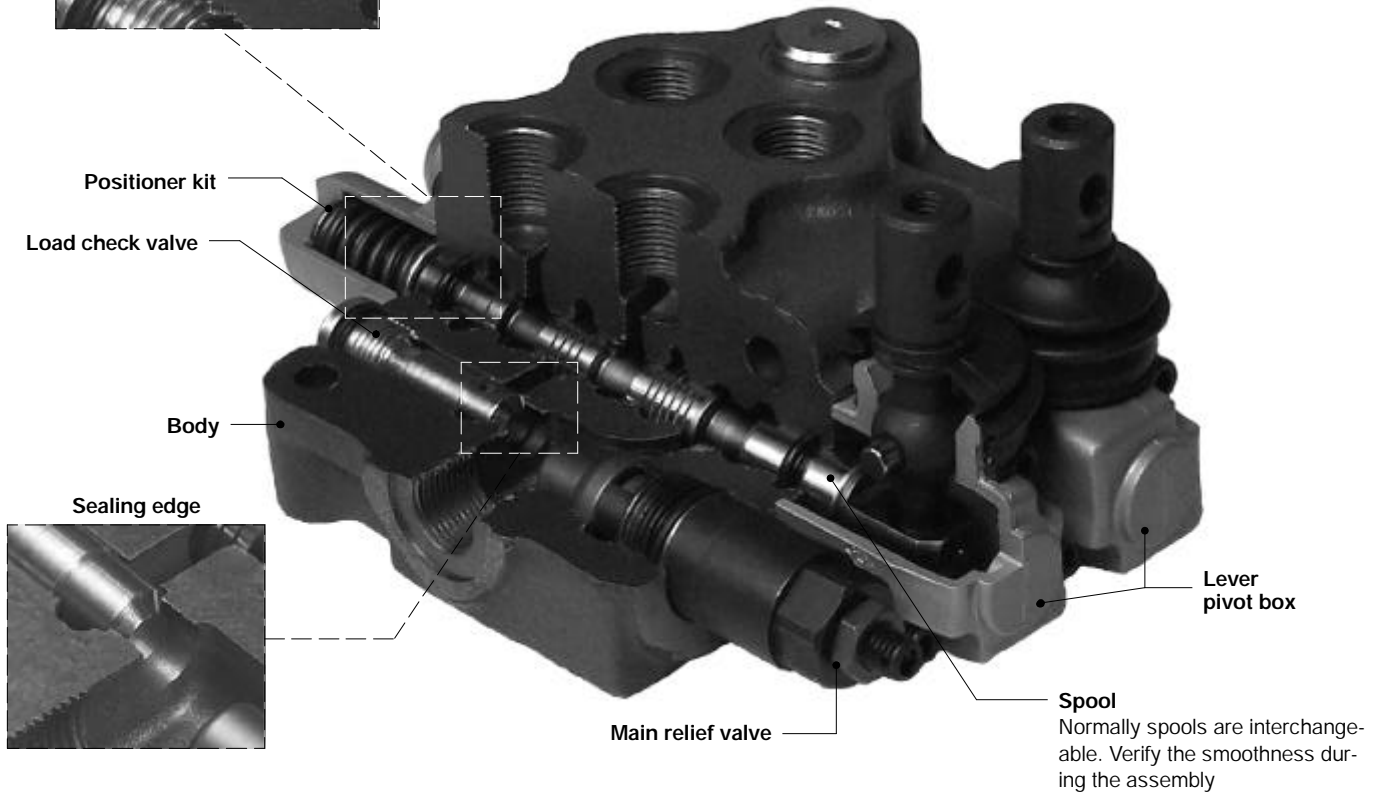


O-Ring seal 15,88x2,62 - code: 4GUA115926

**Note**

In case of assistance follow this assembling procedure

- fit the O-Ring seal in seat on lever side;
- fit the spool from the opposite side and till it is possible to fit the other O-Ring seal;
- position the spool in centre.



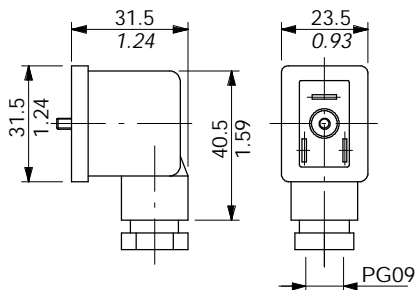
NOTE - All articulated parts inside cap, lever box and mechanical joystick are lubricated with synthetic base grease grade NLGI2

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

### Optional connectors

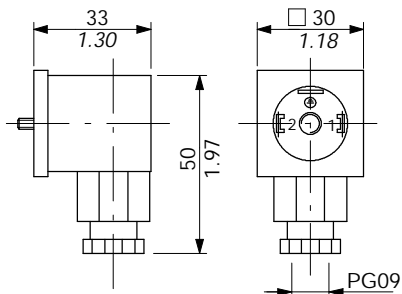
#### Type C01 code: 2X1001020

2P+T, according to DIN43650.



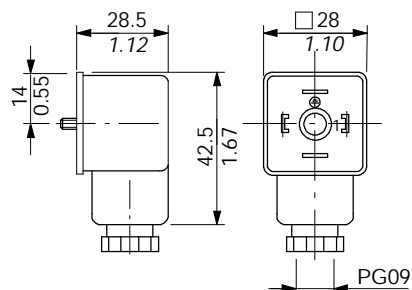
#### Type C02 code: 2X1001010

2P+T according to ISO4400 / DIN43650-A



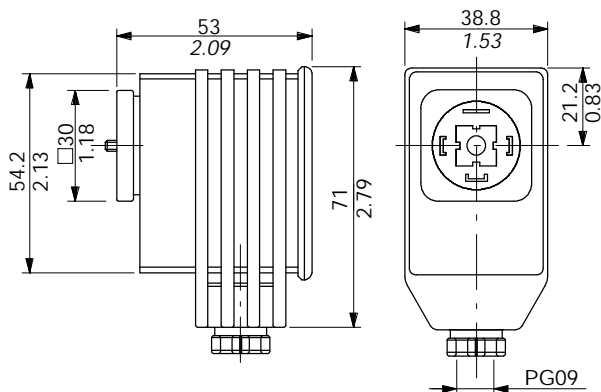
#### Type C03 code: 2X1001030

3P+T according to ISO4400 / DIN43650-A



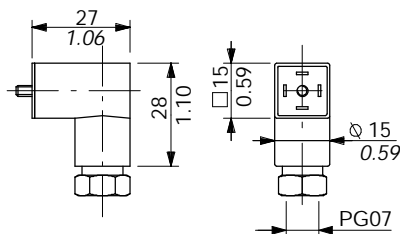
#### Type C05 code: 2X1001080

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



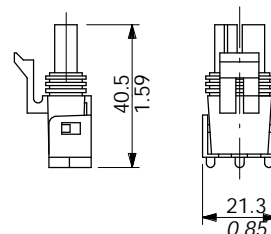
#### Type C06 code: 5CON002

3P+T according to DIN43650-C



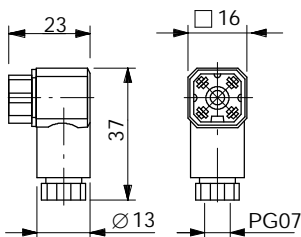
#### Type C07 code: 5CON001

2 poles, type Packard



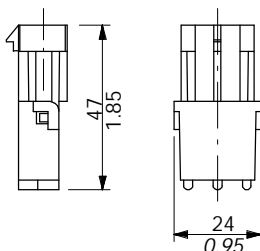
#### Type C11 code: 5CON006

4P according to VDE0660-0110



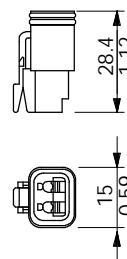
#### Type C17 code: 5CON005

2 poles, type Packard



#### Type C19 code: 5CON130030

2P, type Deutsch DT06-2S



Type	Poles	Nominal voltage	Nominal current	Permitted conductor section range	Permitted cable diameter range	Weather protection
C01	2P + T	250 VAC / 300 VDC	10 A	max.1.5 mm <sup>2</sup> / max.0.0023 in <sup>2</sup>	6-8 mm / 0.24-0.31 in	IP65
C02	2P + T	250 VAC / 300 VDC	10 A	max.1.5 mm <sup>2</sup> / max.0.0023 in <sup>2</sup>	6-8 mm / 0.24-0.31 in	IP65
C03	3P + T	250 VAC / 300 VDC	10 A	max.1.5 mm <sup>2</sup> / max.0.0023 in <sup>2</sup>	6-8 mm / 0.24-0.31 in	IP65
C05	3P + T	230 VAC	1.5 A	max.1.5 mm <sup>2</sup> / max.0.0023 in <sup>2</sup>	6-8 mm / 0.24-0.31 in	IP65
C06	3P + T	250 VAC / 300 VDC	6 A	max.0.75 mm <sup>2</sup> / max.0.00116 in <sup>2</sup>	6-8 mm / 0.24-0.31 in	IP65
C07	2P	/	20 A	1-2.5 mm <sup>2</sup> / 0.00155-0.0038 in <sup>2</sup>	2.8-3.5 mm / 0.11-0.14 in	IP67
C11	4P	50 VAC / 120 VDC	6 A	0.14-0.5 mm <sup>2</sup> / 0.00022-0.00077 in <sup>2</sup>	4-7.5 mm / 0.16-0.29 in	IP65
C17	2P	/	20 A	1-2 mm <sup>2</sup> / 0.00155-0.0031 in <sup>2</sup>	2.8-3.5 mm / 0.11-0.14 in	IP67
C19	2P	/	13 A	1-2 mm <sup>2</sup> / 0.00155-0.0031 in <sup>2</sup>	2.2-3.5 mm / 0.088-0.14 in	IP67

SD5 valve can be supplied with one coat of black paint (CVN configuration).  
Description example: SD5/2-P(JG3-120)/18L/18L/AET-<CVN>

NOTE - For different colour consult Customer Service.



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