



SD 11

MONOBLOCK  
DIRECTIONAL CONTROL VALVES



# SD11

## Features

Simple, compact and heavy duty designed monoblock valves from 1 to 6 sections for open and closed center hydraulic systems.

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

H Available with parallel or series circuit.

H Optional power beyond port (only for parallel circuit).

H Diameter 20 mm - 0.79 in interchangeable spools.

H A wide variety of service ports and circuit valves.

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

## Working conditions

This catalog shows technical specifications and diagrams measured with mineral oil of 46 mm<sup>2</sup>/s - 46 cSt viscosity at 40°C - 104°F temperature.

Nominal flow rating		70 l/min	18 US gpm
Operating pressure (maximum)	<i>parallel circuit</i>	315 bar	4600 psi
	<i>series circuit</i>	250 bar	3600 psi
Back pressure (maximum)	<i>on outlet port T</i>	25 bar	360 psi
Internal leakage A(B)→T	<i>Δp=100 bar - 1450 psi fluid and valve at 40°C - 104°F</i>	3 cm <sup>3</sup> /min	0.18 in <sup>3</sup> /min
Fluid		Mineral base oil	
Fluid temperature range	<i>with NBR (BUNA-N) seals</i>	from -20° to 80°C	from -4° to 176°F
	<i>with FPM (VITON) seals</i>	from -20° to 100°C	from -4° to 212°F
Viscosity	<i>operating range</i>	from 15 to 75 mm <sup>2</sup> /s	from 15 to 75 cSt
	<i>min</i>	12 mm <sup>2</sup> /s	12 cSt
	<i>max</i>	400 mm <sup>2</sup> /s	400 cSt
Max level of contamination		19/16 - ISO 4406	NAS 1638 - class10
Ambient temperature range		from -40° to 60°C	from -40° to 140°F

NOTE - For different conditions please contact Customer Service.

### Additional information

This catalog 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 catalog refer to the standard product at this date.

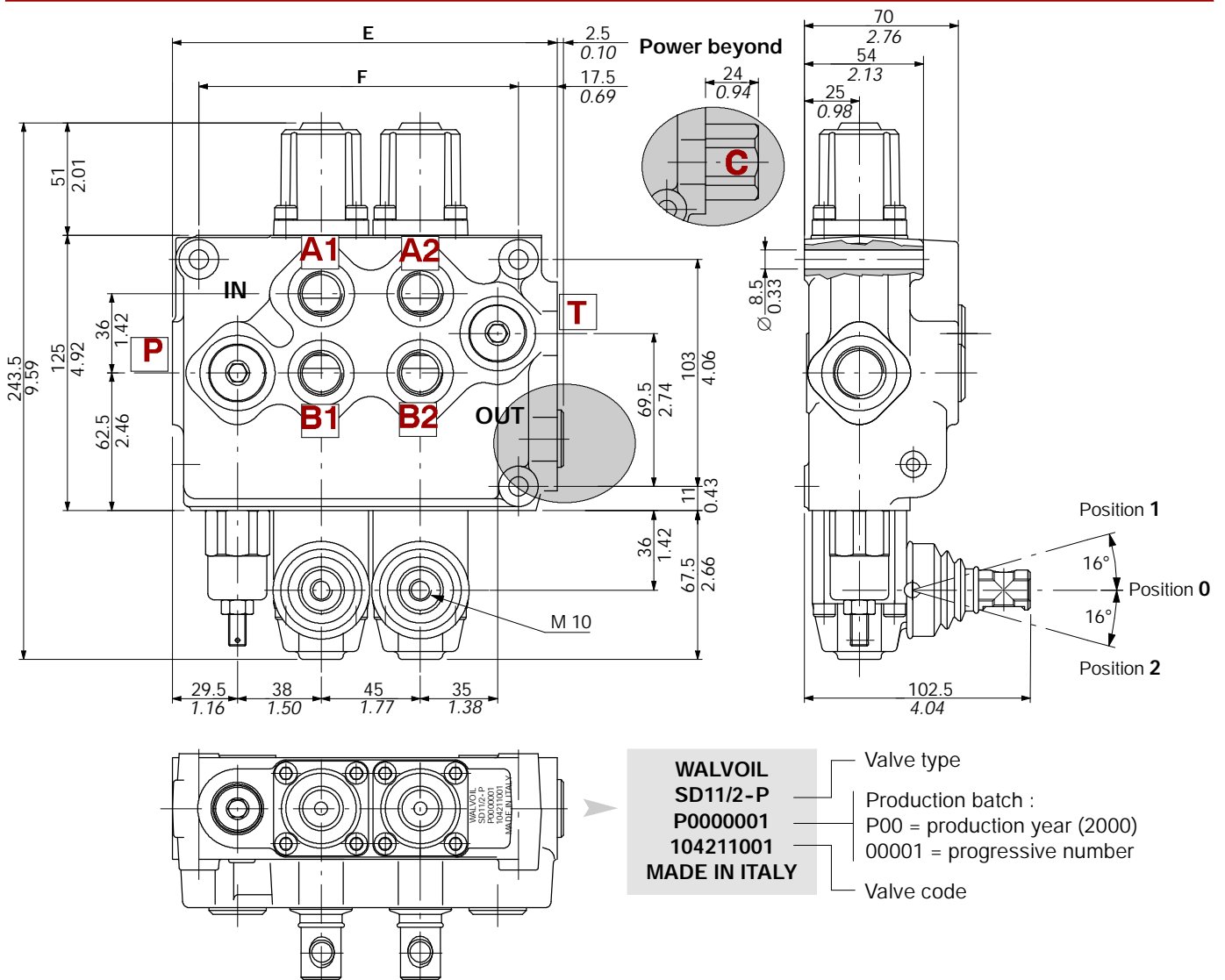
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

5<sup>th</sup> edition December 2000:

**This edition supercedes all prior documents.**

## Dimensional data (parallel circuit)



TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD11/1-P	130	5.12	100	3.94	6.1	13.4
SD11/2-P	174.5	6.87	145	5.71	8.8	19.4
SD11/3-P	219.5	8.64	190	7.48	11.4	25.1

TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD11/4-P	264.5	10.41	235	9.25	14.2	31.3
SD11/5-P	309.5	12.19	280	11.02	16.7	36.8
SD11/6-P	354.5	13.96	325	12.79	19.4	42.8

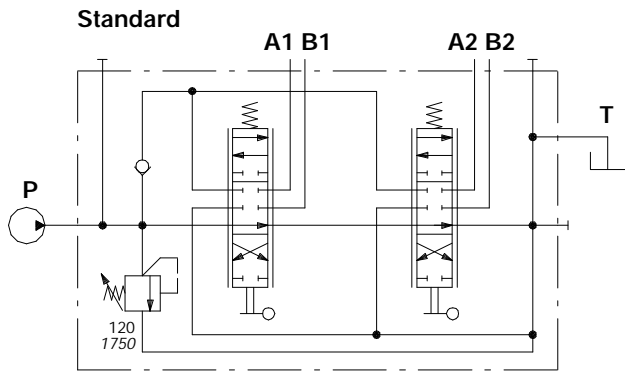
### Standard threads

PORT	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)	METRIC (ISO 262)
Inlet <b>P</b> and power beyond <b>C</b>	G 1/2	7/8-14 UNF-2B (SAE 10)	M18x1.5
<b>A</b> and <b>B</b> ports	G 1/2	3/4-16 UNF-2B (SAE 8)	M18x1.5
Outlet <b>T</b>	G 3/4	7/8-14 UNF-2B (SAE 10)	M22x1.5
<b>PILOT PORTS</b>			
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

# SD11

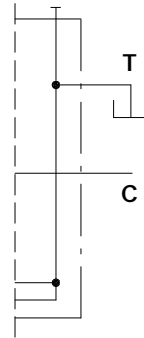
## Hydraulic circuit

### Parallel



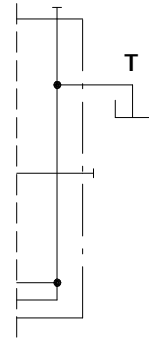
Ex.: SD11/2-P(KG3-120)/18L/18L/AET

### With power beyond



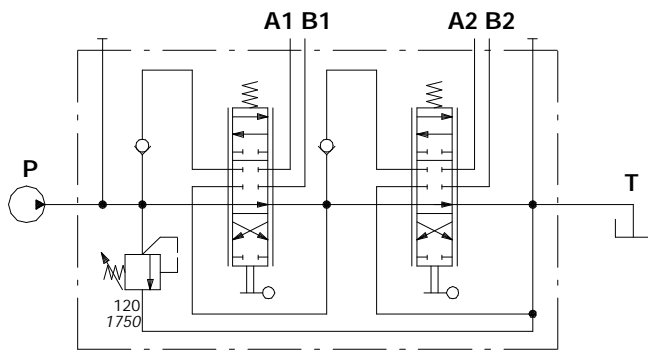
SD11/2-P(KG3-120)/18L/18L/  
AE

### With closed center



SD11/2-P(KG3-120)/18L/18L/  
AEK

### Series

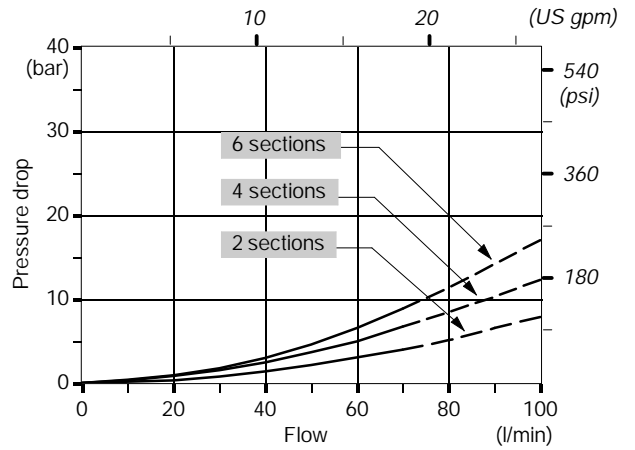
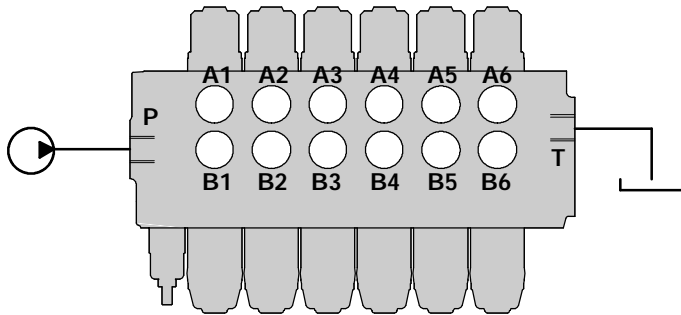


Ex.: SD11/2-S1(KG3-120)/18L/18L

Performance data (pressure drop vs. flow)

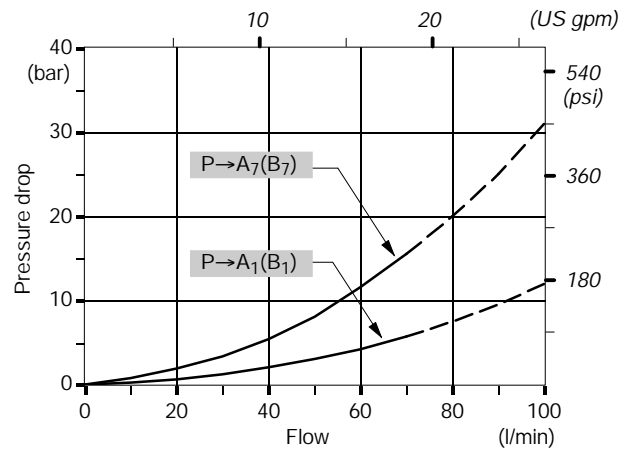
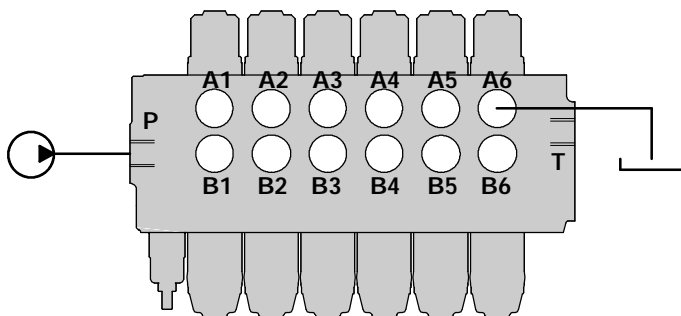
Open center

From side inlet to side outlet.



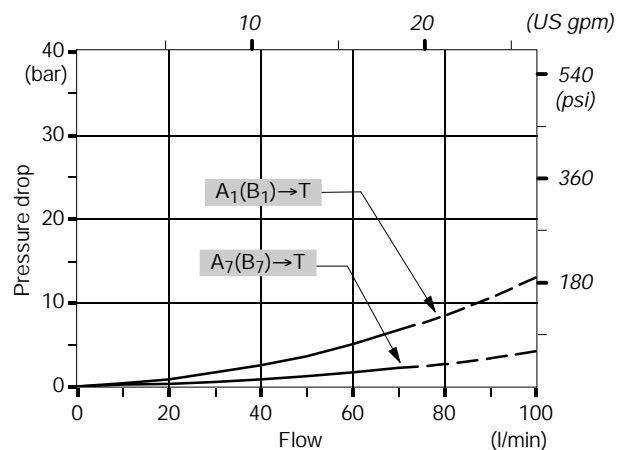
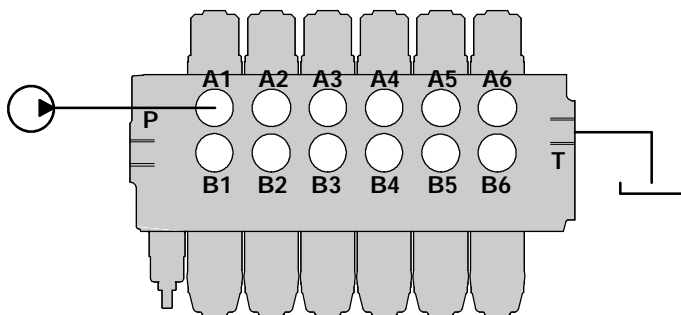
Inlet to work port

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



Work port to outlet

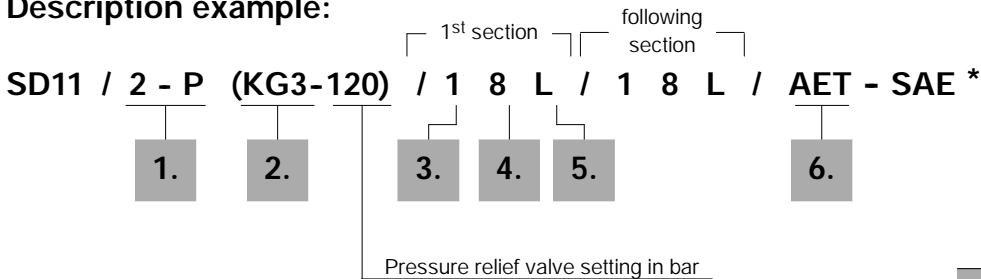
From A port (spool in position 2) or B port (spool in position 1) to side outlet.



NOTE - Measured with spool type 1.

# SD11

## Description example:



### 1. Body kits \*

TYPE	CODE	DESCRIPTION
1-P	5KC1417000	Parallel, 1 section
2-P	5KC1427000	Parallel, 2 sections
3-P	5KC1447000	Parallel, 3 sections
4-P	5KC1477000	Parallel, 4 sections
5-P	5KC1517000	Parallel, 5 sections
6-P	5KC1547000	Parallel, 6 sections

Include body, seals and load check valve.

### 2. Inlet relief options

TYPE	CODE	DESCRIPTION
<u>VMD10/1 direct pressure relief valve type K (standard)</u>		
(KG2-80)	5KIT110112	Range 25 to 100 bar / 360 to 1450 psi standard setting 80 bar / 1150 psi
(KG3-120)	5KIT110113	Range 80 to 200 bar / 1150 to 2900 psi standard setting 120 bar / 1750 psi
(KG4-220)	5KIT110114	Range 180 to 315 bar / 2600 to 4600 psi standard setting 220 bar / 3200 psi

VMD10/1 direct pressure relief valve type Y

(YG2-125)	3XCAR110212	Range 80 to 160 bar / 1150 to 2300 psi standard setting 125 bar / 1800 psi
(YG3-175)	3XCAR110213	Range 125 to 250 bar / 1800 to 3600 psi standard setting 175 bar / 2540 psi
(YG4-220)	3XCAR110214	Range 200 to 315 bar / 2900 to 4600 psi standard setting 220 bar / 3200 psi

VMP10/1 pilot operated pressure relief valve type X

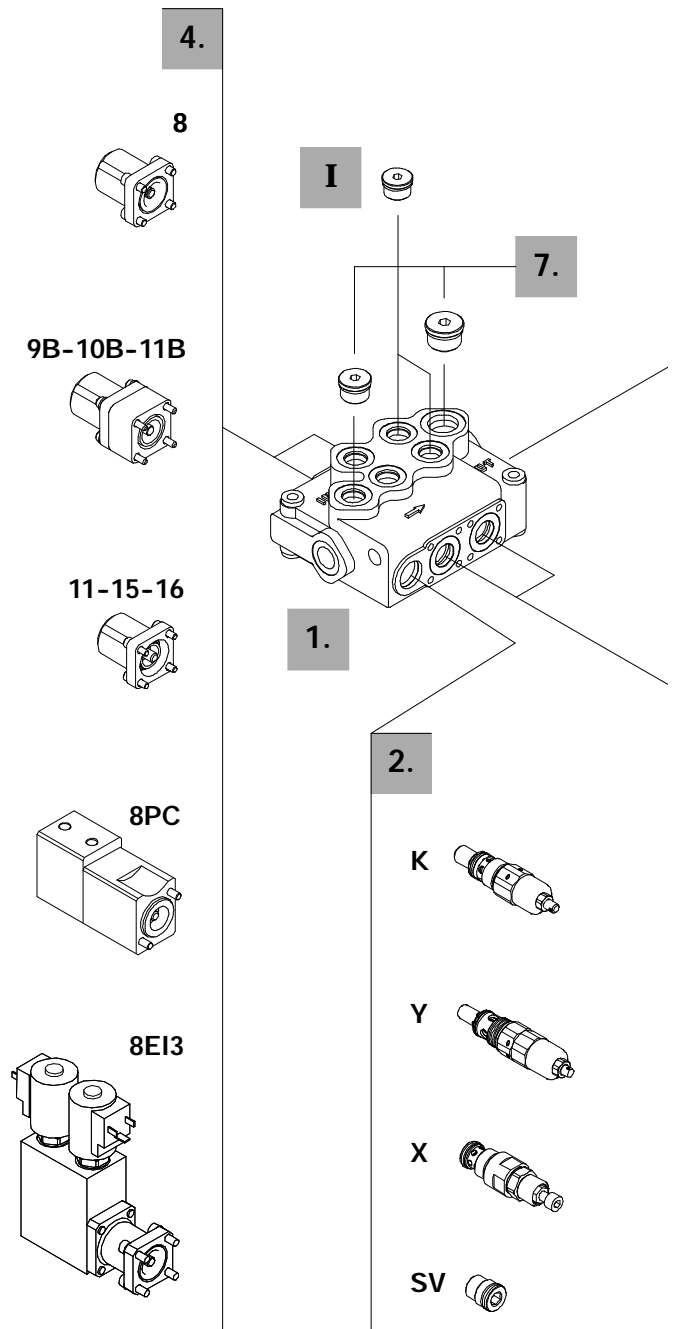
(XG-125)	X006211120	Range 25 to 315 bar / 360 to 4600 psi standard setting 125 bar / 1800 psi
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Standard setting is referred to 10 l/min - 2.6 US gpm flow.

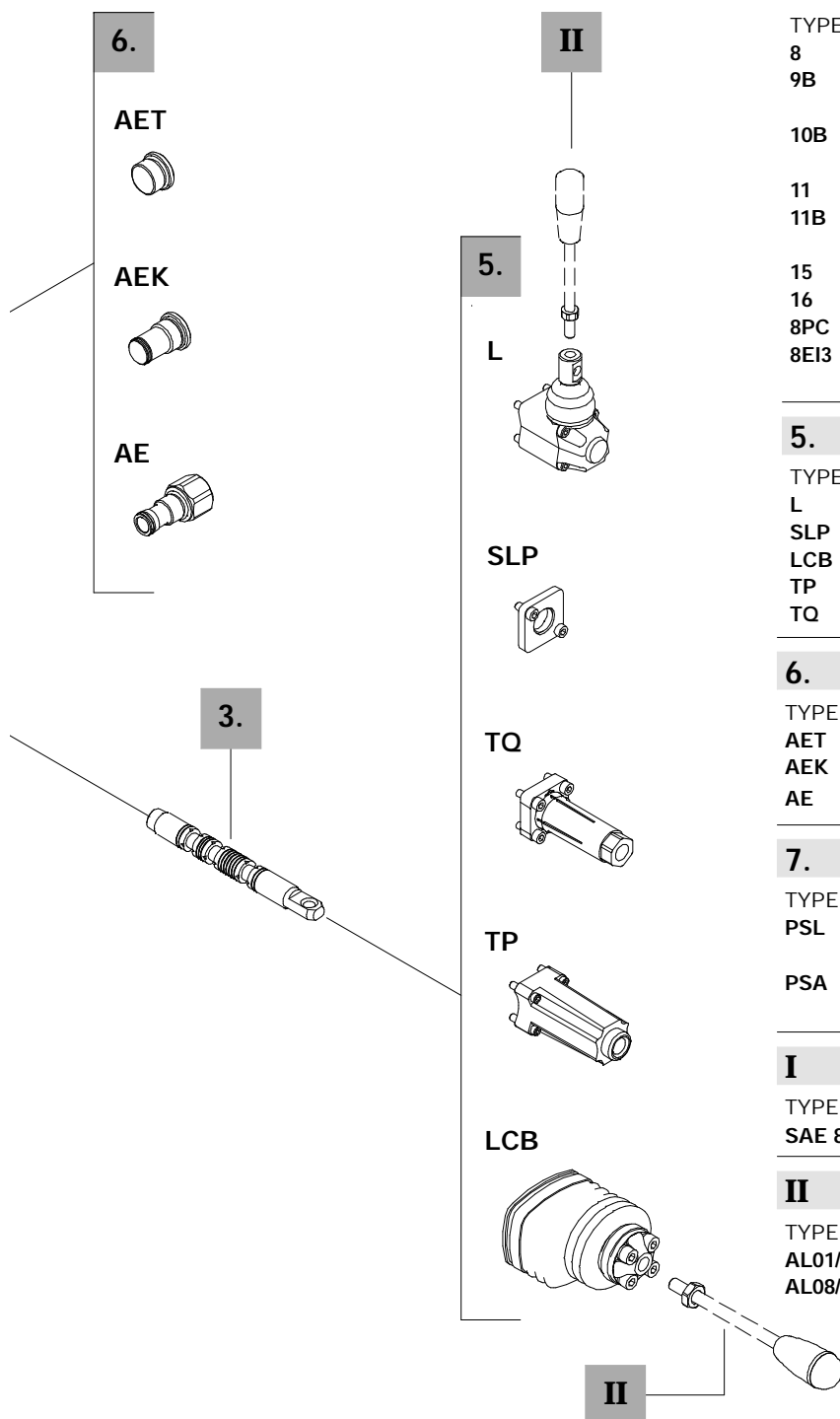
SV	XTAP526340	Relief valve blanking plug
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### 3. Spool options

TYPE	CODE	CIRCUIT DESCRIPTION
1	3CU1410130	Double acting, 3 positions, with A and B closed in neutral position
1A	3CU1421130	Double acting, 3 positions, with A open to tank in neutral position
1B	3CU1422130	Double acting, 3 positions, with B open to tank in neutral position
2	3CU1425130	Double acting, 3 positions, with A and B open to tank in neutral position



NOTE (\*) - Items are referred to **UN-UNF** thread.



### 3. Spool options

TYPE	CODE	CIRCUIT DESCRIPTION
3	3CU1431130	Single acting on A, 3 positions, B plugged requires SAE 8 plug (see part I)
4	3CU1435130	Single acting on B, 3 positions, A plugged requires SAE 8 plug (see part I)

### 4. "A" side spool positioners

TYPE	CODE	DESCRIPTION
8	5V08110000	With spring return in neutral position
9B	5V09110000	With detent in position 1 and spring return in neutral position
10B	5V09110000	With detent in position 2 and spring return in neutral position
11	5V11110000	With detent in position 1, neutral and 2
11B	5V11210000	With detent in position 1 and 2, spring return in neutral position
15	5V15110000	With detent in position 1 and neutral
16	5V16110000	With detent in position 2 and neutral
8PC	5V08111709	Proportional pneumatic kit
8EI3	5V08110350	12 VDC ON/OFF electro-hydraulic kit
	5V08110351	24 VDC ON/OFF electro-hydraulic kit

### 5. "B" side options

TYPE	CODE	DESCRIPTION
L	5LEV110000	Standard lever box
SLP	5COP110000	Without lever, with dust proof plate
LCB	5CLO211100	Mechanical joystick
TP	5TEL110005	CG cable connection
TQ	5TEL110110	CD cable connection

### 6. Outlet conversion port options

TYPE	CODE	DESCRIPTION
AET	3XTAP732201	Open center plug
AEK	3XTAP532450	Closed center plug
AE	3XGIU532660	SAE 10 power beyond sleeve *

### 7. Inlet and outlet selection \*

TYPE	CODE	DESCRIPTION
PSL	3XTAP826160	SAE 10 plug for side inlet (n.2 plugs required) standard configuration; must be omitted
PSA	3XTAP826160	SAE 10 plug for upper inlet (n.2 plugs required)

### I Port plug \*

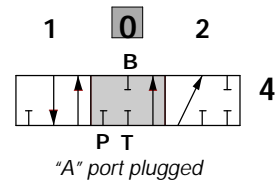
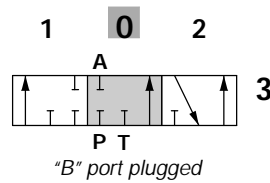
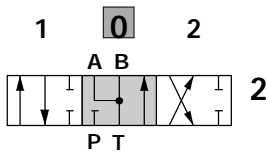
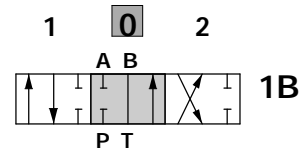
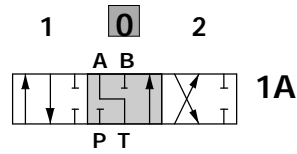
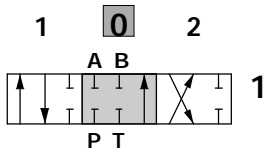
TYPE	CODE	DESCRIPTION
SAE 8	3XTAP822150	Plug for single acting spool

### II Optional handlevers

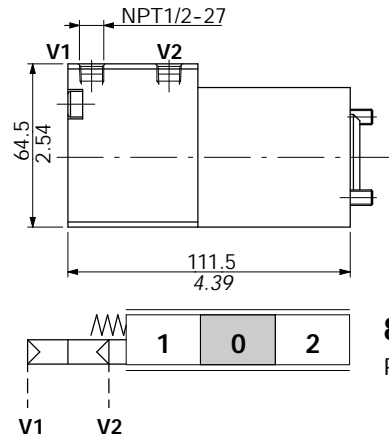
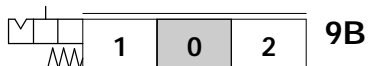
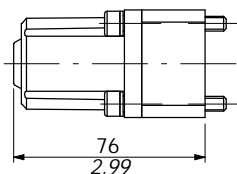
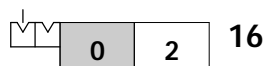
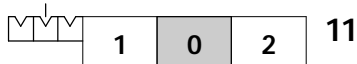
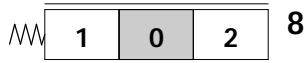
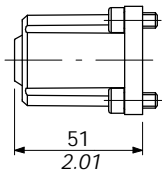
TYPE	CODE	DESCRIPTION
AL01/M10x200	170012020	Standard L = 200mm / 7.87in
AL08/M12x250	170013125	For joystick L = 250mm / 9.84in

For special configurations see pages 9 and 10

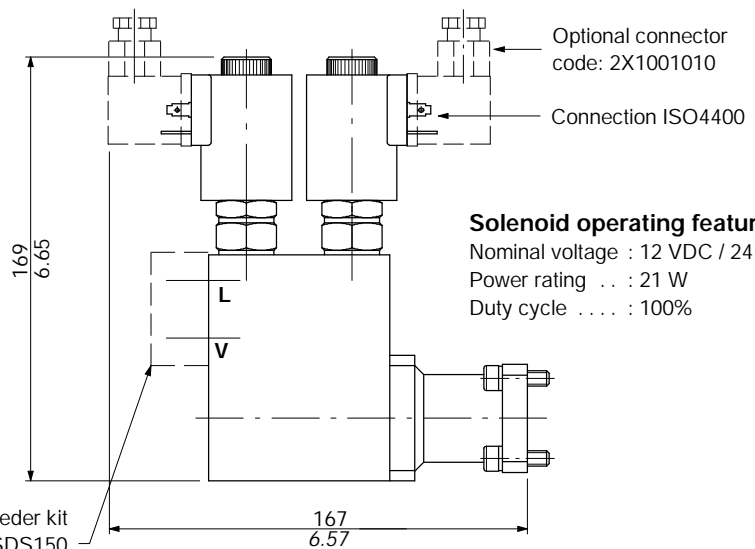
## Spools options



## "A" side spool positioners

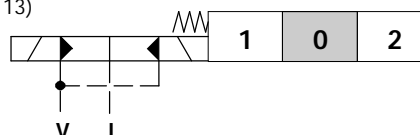


**8PC**  
Proportional pneumatic kit



**Solenoid operating features**  
Nominal voltage : 12 VDC / 24 VDC  
Power rating . . . : 21 W  
Duty cycle . . . . : 100%

Feeder kit  
(see catalogue SDS150  
at page 13)

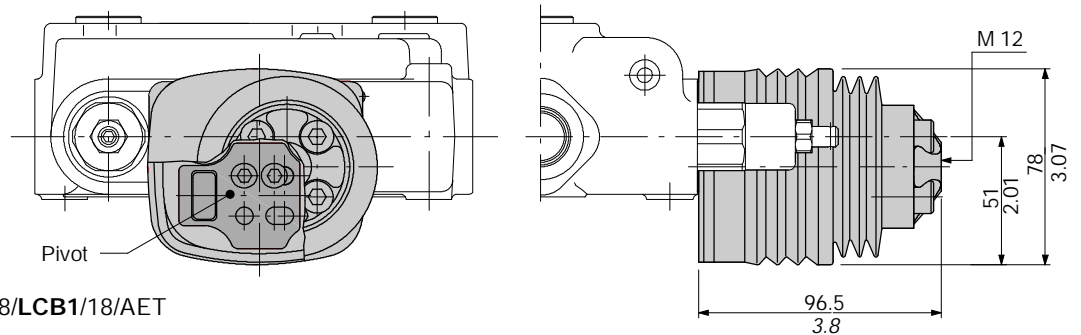
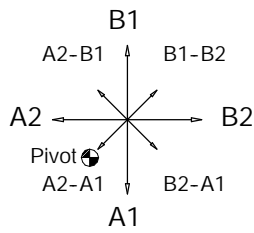


**8EI3**  
ON/OFF electro-hydraulic kit.



Mechanical joystick

**LCB1**  
movement scheme

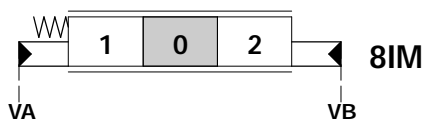


Ex.: SD11/2-P(KG3-120)/18/LCB1/18/AET

It is possible to have the fulcrum in the following other positions: **LCB2** bottom right, **LCB3** top left; **LCB4** top right.

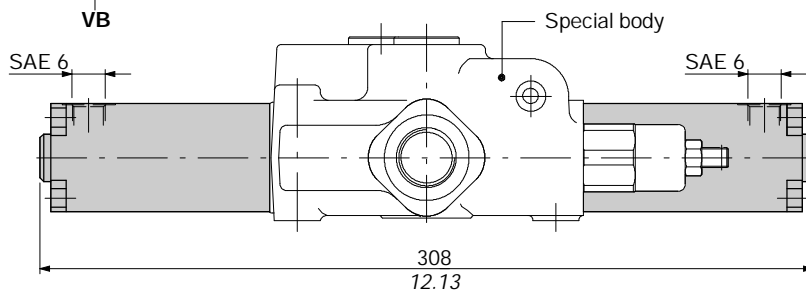
Special configurations

Hydraulic spool control



**Operating features**

Adjustment range from 5.8 to 22.4 bar (84 to 325 psi) - diagram 070  
Max. pilot pressure ..... : 50 bar / 720 psi



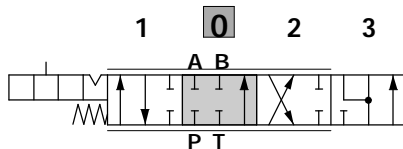
Ex.: SD11/2-P(KG3-120)/1C 8IM / ...

Spool type 1C: code **3CU1410400**

Spool type 2C: code **3CU1425400**

Hydraulic control kit : code **5IDR210700**

Floating circuit

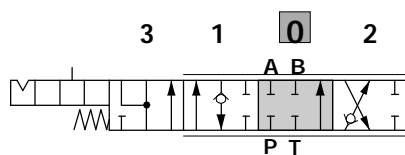
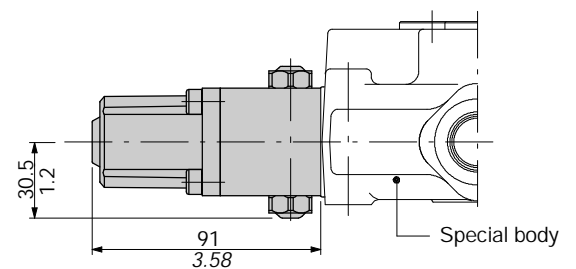


**513B**  
4<sup>th</sup> position  
spool *in* floating

Ex.: SD11/2-P(KG3-120)/5 13B L/ ...

Spool: code **3CU1442100**

Positioner kit: code **5V13111000**

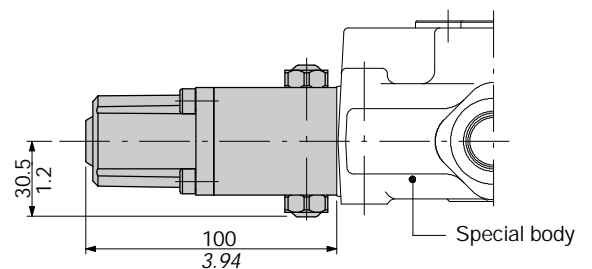


**5VR13C**  
4<sup>th</sup> position  
spool *out* floating

Ex.: SD11/2-P(KG3-120)/5VR 13C L/ ...

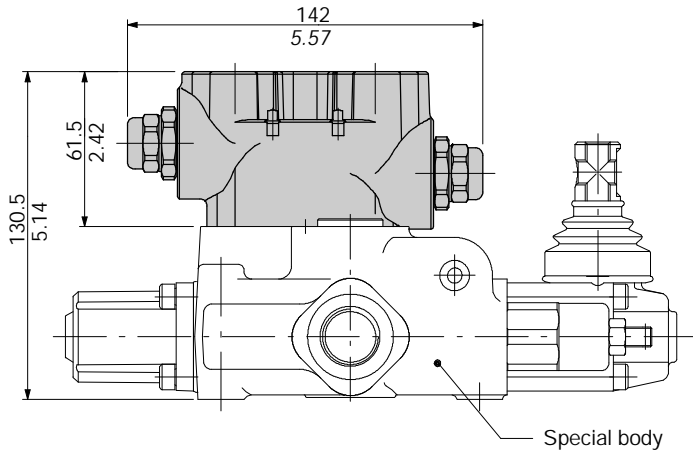
Spool: code **3CU1443600**

Positioner kit: code **5V13211000**

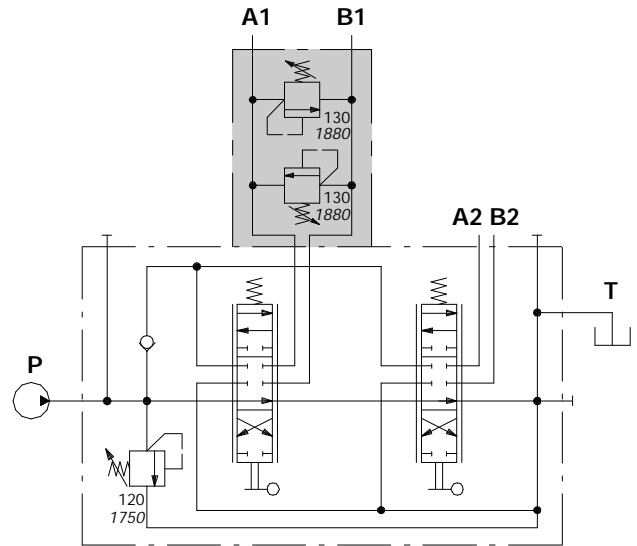


### Port valves

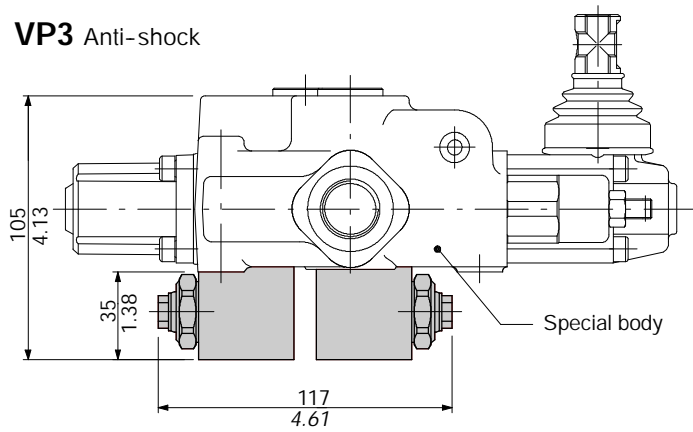
#### P3 Cross return



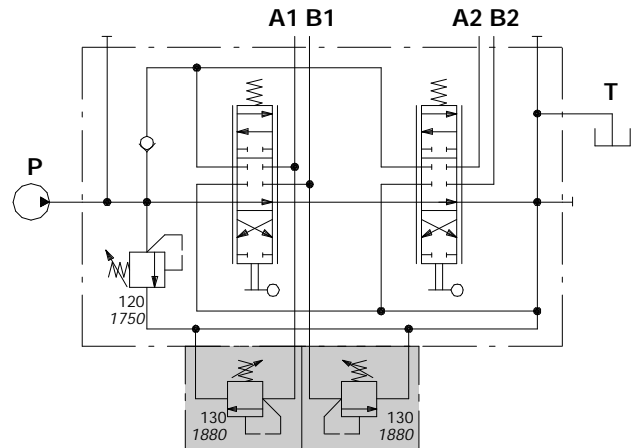
Ex.: SD11/2-P(KG3-120)/18L.P3(G3-130)/18L/AET



#### VP3 Anti-shock



Ex.: SD11/2-P(KG3-120)/18L.VP3(G3-130)/18L/AET

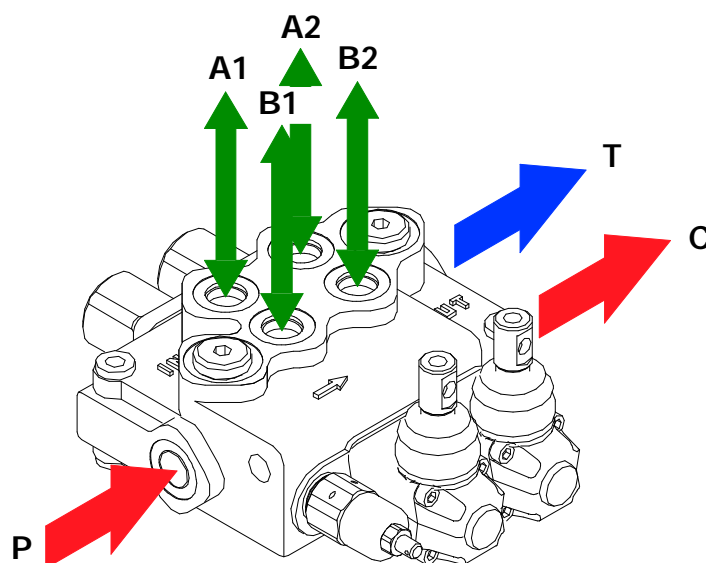


## Installation and maintenance

The SD11 valve is assembled and tested as per the technical specification of this catalog.

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

- 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.



**Power beyond configuration**

### Fitting tightening torque - Nm / lbft

THREADS TYPE	P and C ports	A and B ports	T port
BSP (ISO 228/1)	G 1/2	G 1/2	G 3/4
With O-Ring seal	50 / 36.9	50 / 36.9	70 / 51.6
With copper washer	60 / 44.3	60 / 44.3	70 / 51.6
With steel and rubber washer	60 / 44.3	60 / 44.3	70 / 51.6
UN-UNF (ISO 11926-1)	7/8-14 UNF-2B (SAE 10)	3/4-16 UNF-2B (SAE 8)	7/8-14 UNF-2B (SAE 10)
With O-Ring seal	60 / 44.3	50 / 36.9	60 / 44.3
METRIC (ISO 262)	M18x1.5	M18x1.5	M22x1.5
With O-Ring seal	35 / 25.8	35 / 25.8	50 / 36.9
With copper washer	40 / 29.5	40 / 29.5	60 / 44.3
With steel and rubber washer	40 / 29.5	40 / 29.5	60 / 44.3

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



**WALVOIL S.P.A.**

42100 REGGIO EMILIA • ITALY • VIA ADIGE, 13/D  
TEL. +39.0522.932411 • FAX +39.0522.300984  
E-MAIL: INFO@WALVOIL.COM • HTTP: //WWW.WALVOIL.COM

**SALES DEPARTMENT**

TEL. +39.0522.932555 • FAX +39.0522.932455

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