



DS 150

SECTIONAL  
DIRECTIONAL CONTROL VALVES



## Features

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

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

## 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		90 l/min	
Operating pressure (maximum)	<i>parallel or tandem circuit</i>	315 bar	4600 psi
	<i>series circuit</i>	210 bar	3050 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</i>	3 cm <sup>3</sup> /min	0.18 in <sup>3</sup> /min
Fluid		Mineral base oil	
Fluid temperature	<i>with NBR (BUNA-N) seals</i>	from -20° to 80°C	
	<i>with FPM (VITON) 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>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	
Ambient temperature		from -40° to 60°C	

NOTE - For different conditions please contact Sales Dept.

### Additional information

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

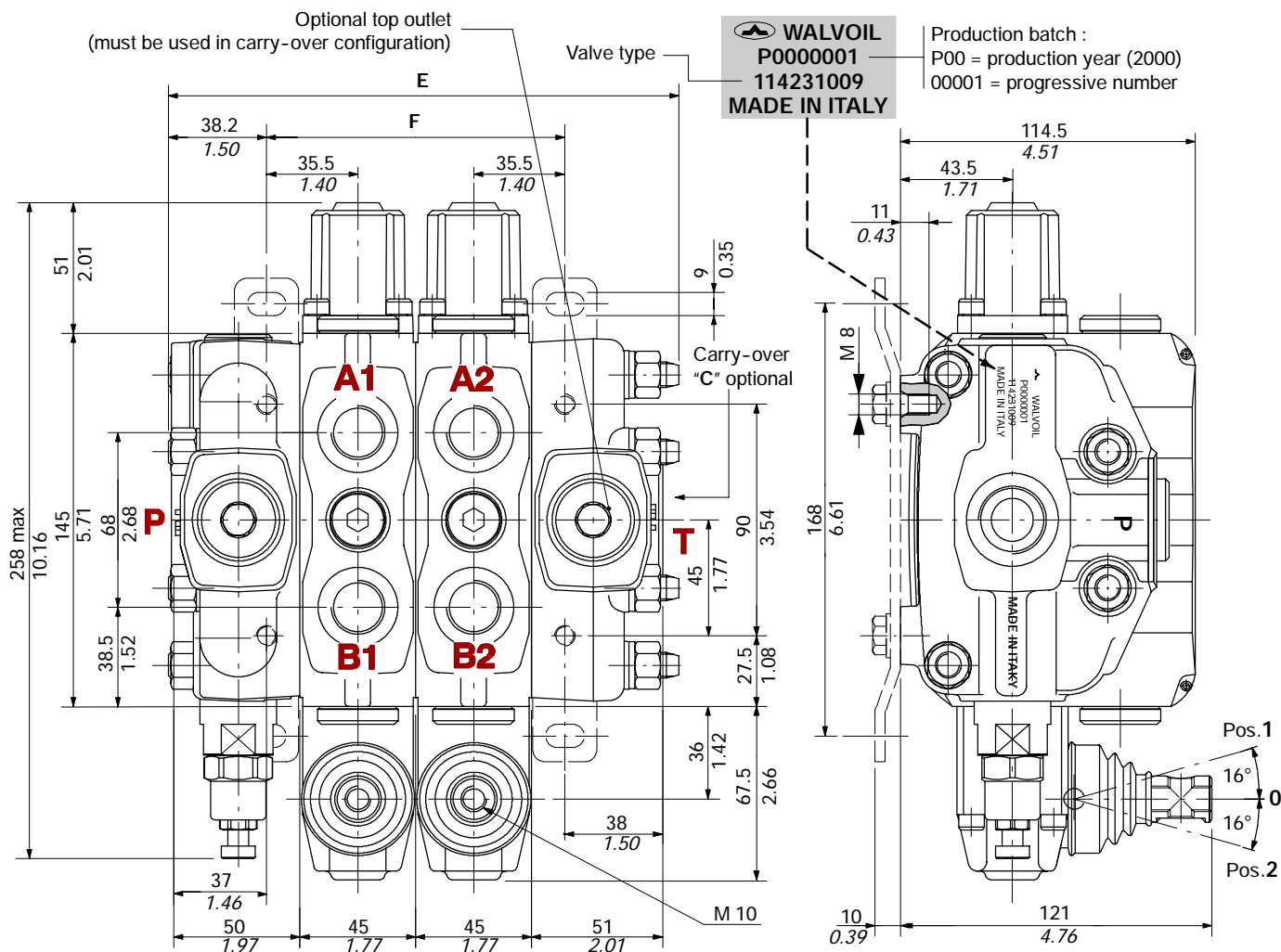
### WARNING!

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

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

7<sup>th</sup> edition November 2000:

This edition supersedes all prior documents.



TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SDS150/1	154	6.06	71	2.80	11	24.2
SDS150/2	199	7.83	116	4.57	16	35.3
SDS150/3	244	9.61	161	6.34	20.9	46.1
SDS150/4	289	11.4	206	8.11	25.9	57.1
SDS150/5	334	13.2	251	9.88	30.8	67.9
SDS150/6	379	14.9	296	11.7	35.8	78.9

TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SDS150/7	424	16.7	341	13.4	40.7	89.7
SDS150/8	469	18.5	386	15.2	45.7	101
SDS150/9	514	20.2	431	17.0	50.6	112
SDS150/10	559	22.0	476	18.7	55.6	123
SDS150/11	604	23.8	521	20.5	60.5	133
SDS150/12	649	25.6	566	22.3	65.5	144

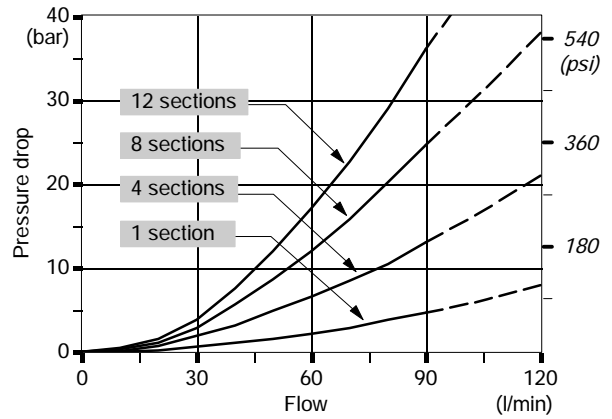
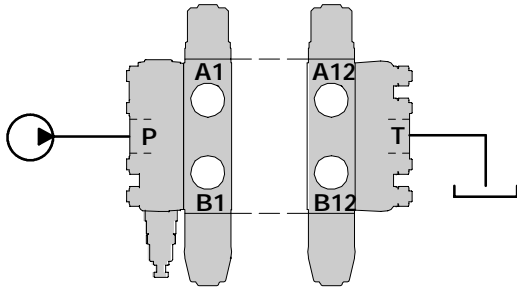
### Standard threads

PORTS	BSP (ISO 228/1)	UN-UNF (ISO 11926-1)
Inlet P and carry-over C	G 3/4	1 1/16-12 UN-2B (SAE 12)
A and B ports	G 1/2	7/8-14 UNF-2B (SAE 10)
Outlet T	G 3/4	1 1/16-12 UN-2B (SAE 12)
PILOT PORTS		
Hydraulic	G 1/4	9/16-18 UNF-2B (SAE 6)
Pneumatic	NPTF 1/8-27	NPTF 1/8-27

## Performance data (pressure drop vs. flow)

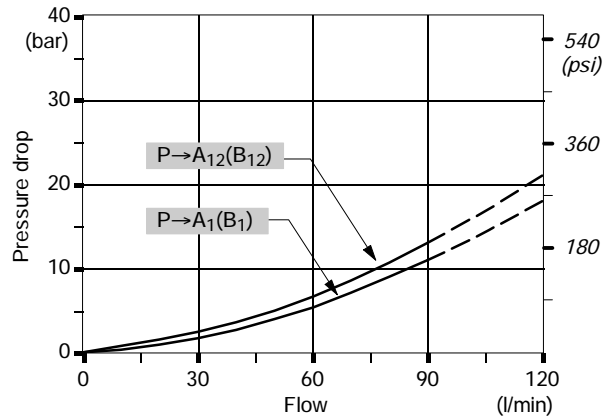
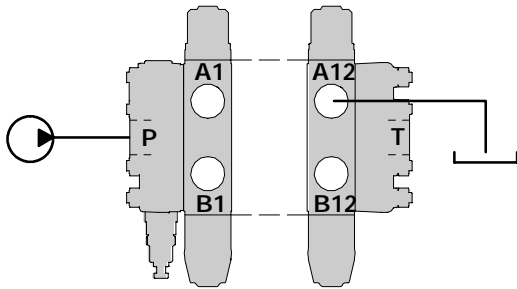
### Open centre

From side inlet to side outlet.



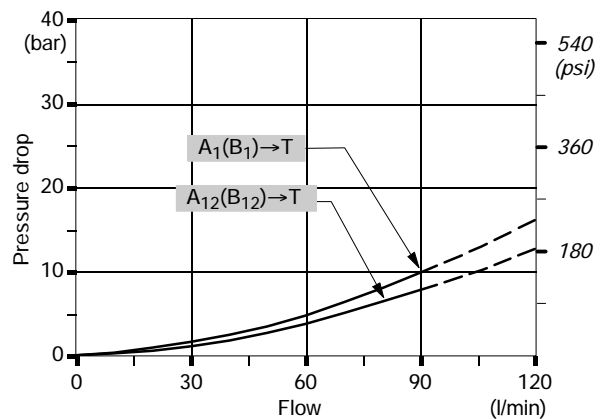
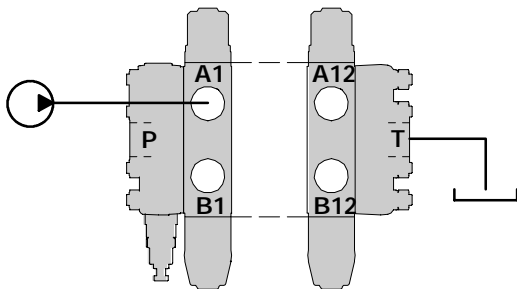
### Inlet to work port

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



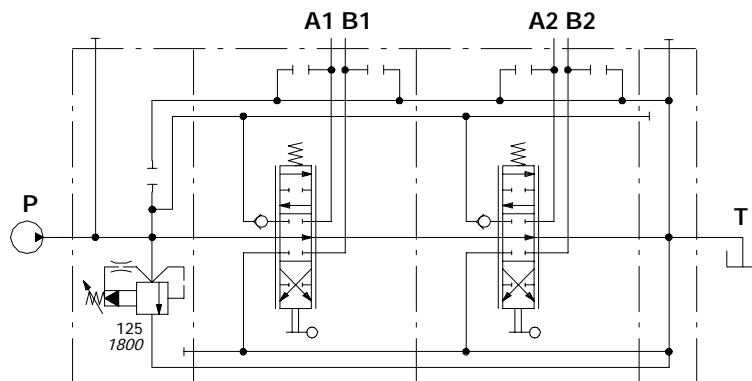
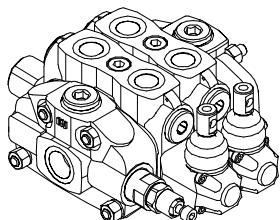
### Work port to outlet

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



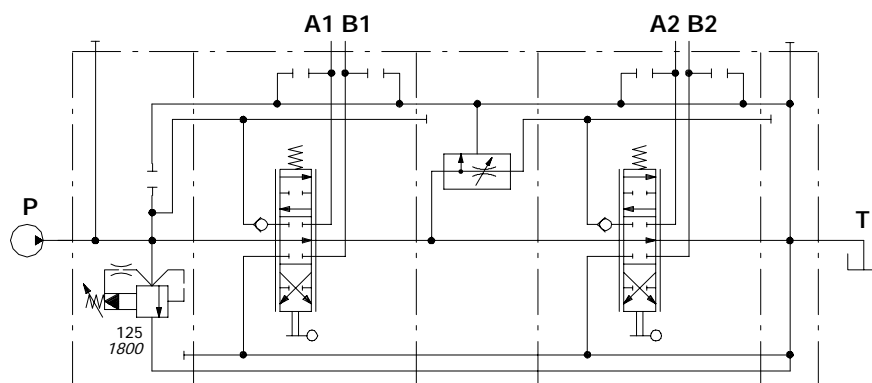
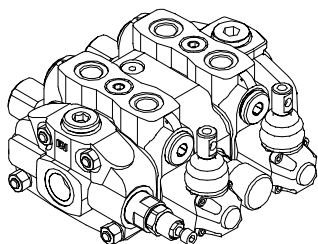
NOTE - Measured with spool type 1.

2 parallel working sections



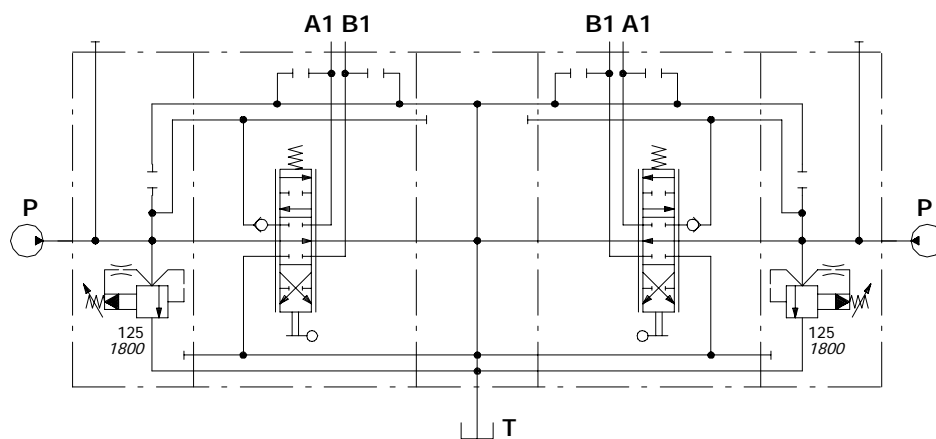
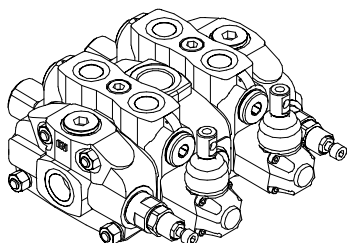
Ex.: SDS150/2/AC(XG-125)/18L/18L/RC

Intermediate pressure compensated flow divider section



Ex.: SDS150/2/AC(XG-125)/18L/DFG/18L/RC

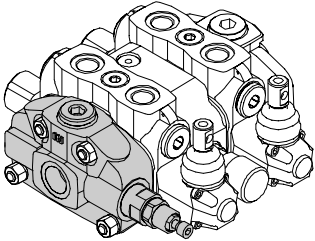
2 inlet cover and mid return manifold section



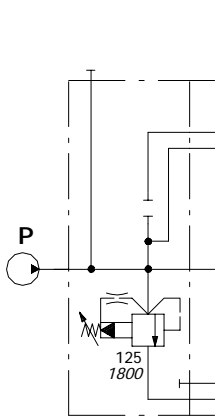
Ex.: SDS150/2/AC(XG-125)/18L/CS1/18L/BC(XG-125)

## Hydraulic circuit

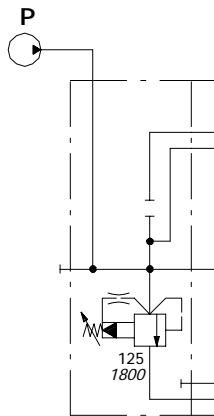
### Inlet cover



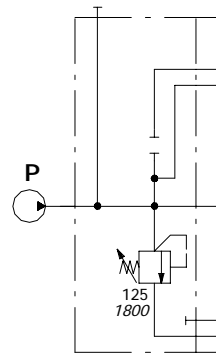
TYPE	CODE	DESCRIPTION
AC(XG)	614261001	Side inlet with pilot operated pressure relief valve
AD(XG)	614261004	Top inlet with pilot operated pressure relief valve
AC(YG3)	614261010	Side inlet with direct pressure relief valve
AC(SV)	614261003	Side inlet with relief valve blanking plug



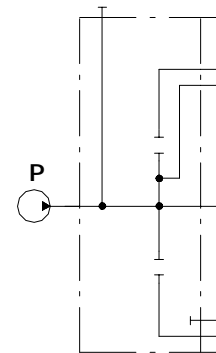
AC(XG-125)



AD(XG-125)

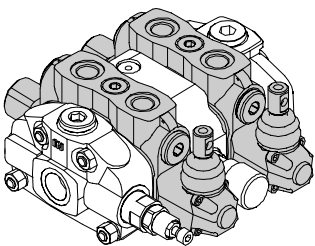


AC(YG3-125)

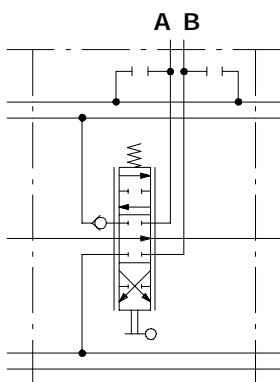


AC(SV)

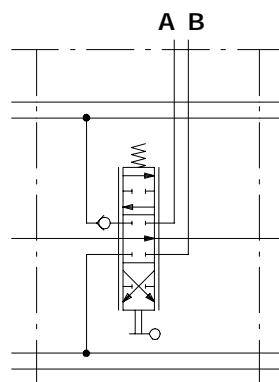
### Working sections



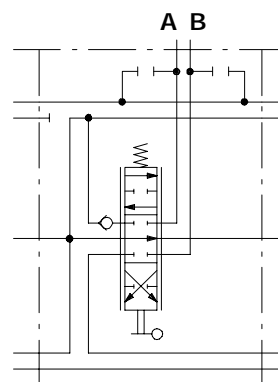
TYPE	CODE	DESCRIPTION
P-18L	614161001	Parallel
Q-18L	614151001	Parallel without valve prearrangement
S-18L	614171001	Series
SP-18L	614181001	Tandem



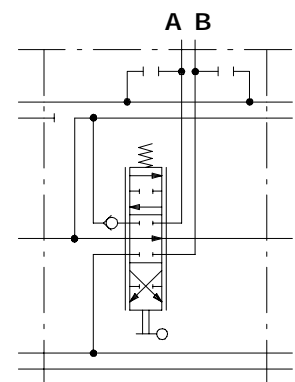
P-18L



Q-18L

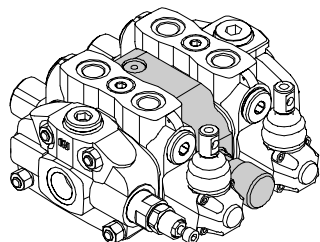


S-18L

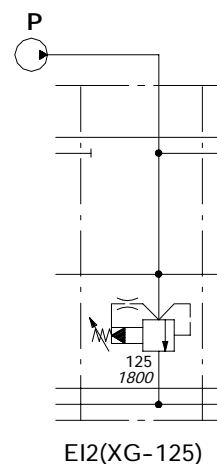
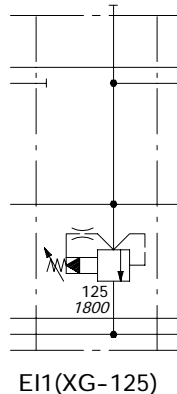
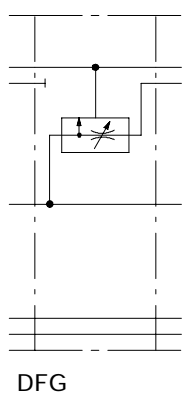
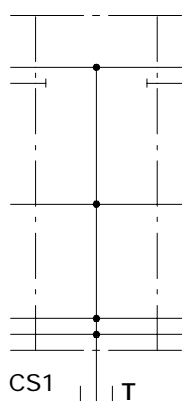


SP-18L

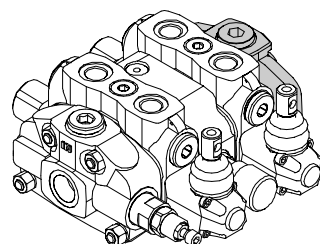
### Intermediate sections



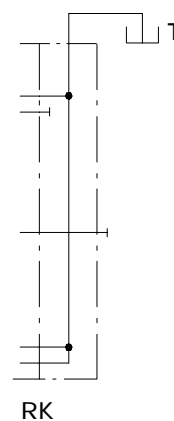
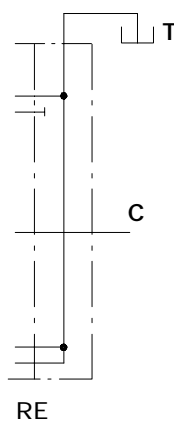
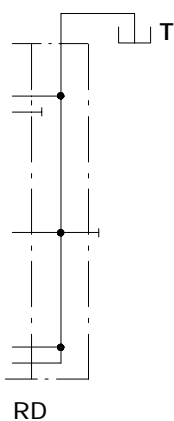
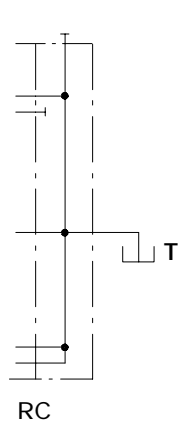
TYPE	CODE	DESCRIPTION
CS1	614402100	Mid return manifold section
DFG	614461020	Pressure compensated flow divider section
EI1(XG)	614521010	Secondary pilot operated pressure relief valve
EI2(XG)	614521025	Mid inlet with secondary pilot operated pressure relief valve



### Outlet cover

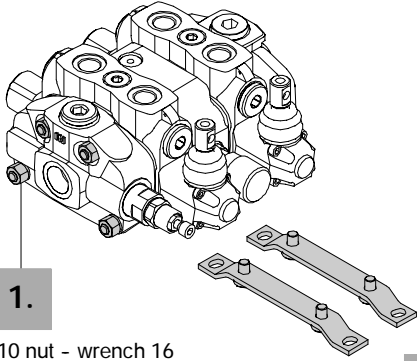


TYPE	CODE	DESCRIPTION
RC	614361001	Side outlet
RD	614361005	Top outlet
RE	614361002	Top outlet with carry-over
RK	614361004	Top outlet with closed centre



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

## Assembling parts



M10 nut - wrench 16

PART	CODE	DESCRIPTION
1.	5TIR110149	Tie rod kit for 1 section valve
	5TIR110194	Tie rod kit for 2 sections valve
	5TIR110239	Tie rod kit for 3 sections valve
	5TIR110284	Tie rod kit for 4 sections valve
	5TIR110329	Tie rod kit for 5 sections valve
	5TIR110374	Tie rod kit for 6 sections valve
	5TIR110419	Tie rod kit for 7 sections valve
	5TIR110465	Tie rod kit for 8 sections valve
	5TIR110509	Tie rod kit for 9 sections valve
	5TIR110555	Tie rod kit for 10 sections valve
	5TIR110599	Tie rod kit for 11 sections valve
	5TIR110644	Tie rod kit for 12 sections valve

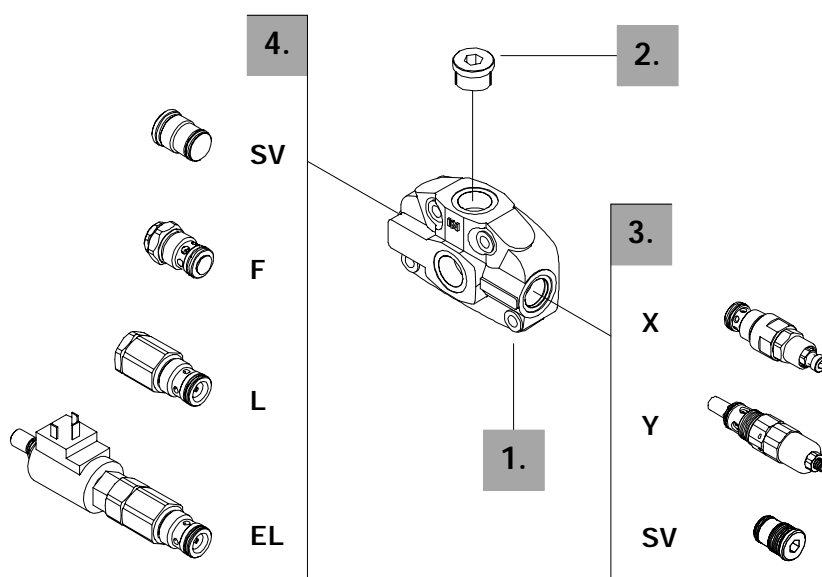
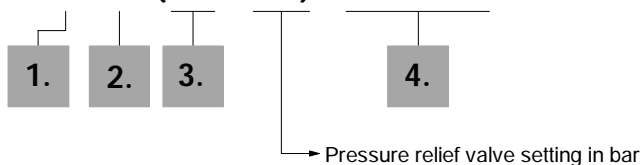
Tie rod tightening torque 40 Nm (29.6 lbf<sup>t</sup>)

2.	5STA125190	Brakets kit
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Description example:

FE SDS150 / A C (XG - 125) EL-12VDC \*



**1. Inlet cover body \***

CODE	DESCRIPTION
3FIA111400	AC-AD type body

**2. Inlet port options \***

CODE	DESCRIPTION
3XTAP732200	G 3/4 plug (n.1 plug required)

**3. Inlet relief options**

TYPE	CODE	DESCRIPTION
<u>VMP10/1 pilot operated pressure relief valve type X (standard)</u>		
(XG-125)	X006211120	Range 25 to 315 bar / 360 to 4600 psi standard setting 125 bar / 1800 psi
<u>VMD10/1 direct pressure relief valve type Y</u>		
(YG2-125)	3XCAR110212	Range 80 to 160 bar / 1160 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 / 2500 psi
(YG4-220)	3XCAR110214	Range 200 to 315 bar / 2900 to 4600 psi standard setting 220 bar / 3200 psi

Standard setting is referred to 10 l/min flow.

SV	XTAP526340	Relief valve blanking plug
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**4. Inlet valves options**

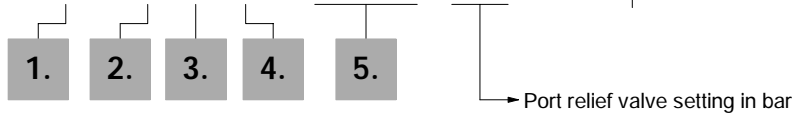
TYPE	CODE	DESCRIPTION
F	3XCAR410200	Inlet anti-cavitation valve
L	XCAR410311	Hydraulic pilot unloader valve (FC1.5)
EL	YCAR410305	12 VDC electromagnetic controlled unloader valve
	YCAR410320	24 VDC electromagnetic controlled unloader valve
SV	XTAP526340	Relief valve blanking plug -

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

## Working section options

### Description example:

EL SDS150 / P - 1 8 L . P 1 (G3 - 100) \*



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

### 1. Working section kits \*

TYPE	CODE	DESCRIPTION
Q	5EL113010	Parallel without valve prearrangement
P	5EL1123000	Parallel
S	5EL2123000	Series
SP	5EL3123000	Tandem

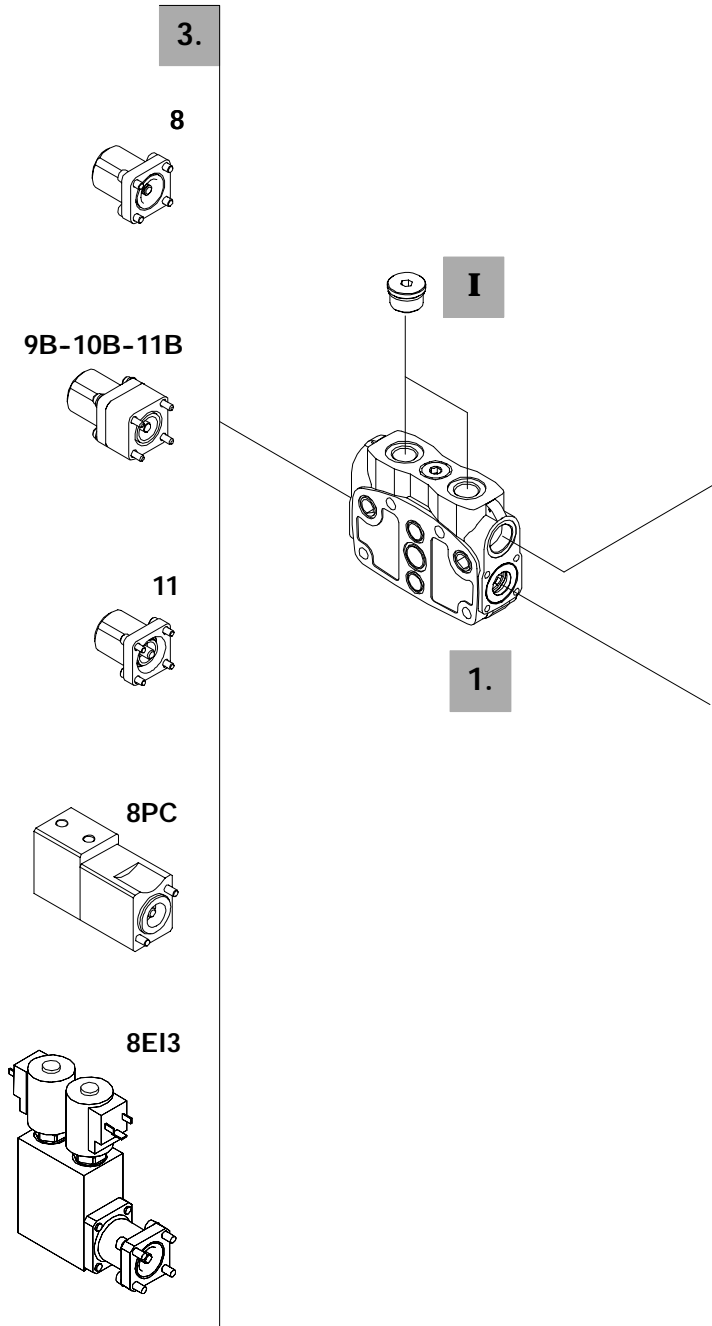
Include boby, seals, rings and load check valve.

### 2. Spool options

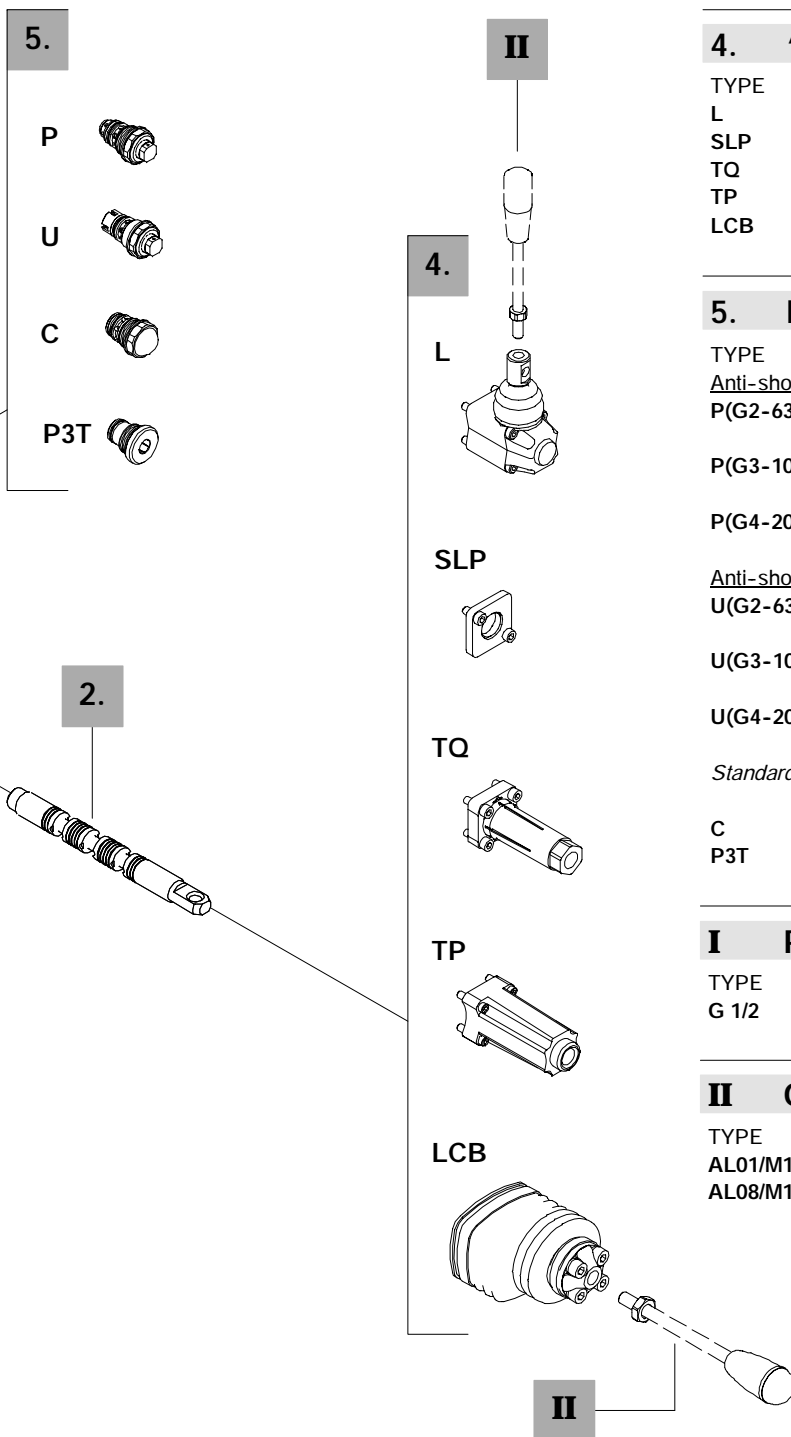
TYPE	CODE	CIRCUIT DESCRIPTION
1	3CU2410120	Double acting, 3 positions, with A and B closed in neutral position
1CS	3CU2410200	Double acting, 3 positions, with A and B closed in neutral position, metering type
1A	3CU2421200	Double acting, 3 positions, with A open to tank in neutral position
1B	3CU2422130	Double acting, 3 positions, with B open to tank in neutral position
2	3CU2425200	Double acting, 3 positions, with A and B open to tank in neutral position
3	3CU2431180	Single acting on A, 3 positions, B plugged; requires G1/2 plug (see part I)
4	3CU2435100	Single acting on B, 3 positions, A plugged; requires G1/2 plug (see part I)

### 3. "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 1 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
8PC	5V08111709	Proportional pneumatic kit
8EI3	5V08110350	12 VDC ON/OFF electro-hydraulic kit
	5V08110351	24 VDC ON/OFF electro-hydraulic kit



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



**4. "B" side options**

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

**5. Port relief options**

TYPE	CODE	DESCRIPTION
<u>Anti-shock valve</u>		
P(G2-63)	5KIT210212	Range 40 to 80 bar / from 580 to 1150 psi standard setting 63 bar / 900 psi
P(G3-100)	5KIT210213	Range 63 to 200 bar / from 900 to 2900 psi standard setting 100 bar / 1450 psi
P(G4-200)	5KIT210214	Range 160 to 315 bar / from 2300 to 4600 psi standard setting 200 bar / 2900 psi
<u>Anti-shock and anti-cavitation valve</u>		
U(G2-63)	5KIT310112	Range 63 to 125 bar / from 900 to 1800 psi standard setting 63 bar / 900 psi
U(G3-100)	5KIT310113	Range 100 to 250 bar / from 1450 to 3600 psi standard setting 100 bar / 1450 psi
U(G4-200)	5KIT310114	Range 200 to 315 bar / from 2900 to 4600 psi standard setting 200 bar / 2900 psi
<i>Standard setting is referred to 10 l/min flow.</i>		
C	5KIT410100	Anti-cavitation
P3T	5TAP528320	A and B ports valve blanking plugs

**I Port plug \***

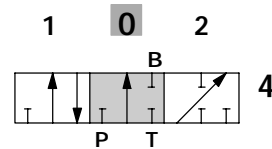
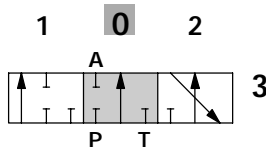
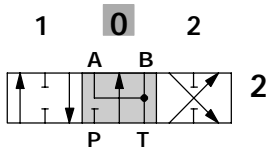
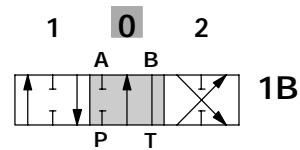
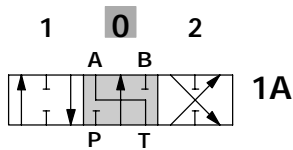
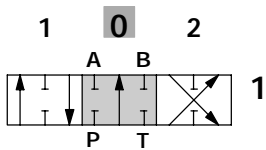
TYPE	CODE	DESCRIPTION
G 1/2	3XTAP727180	Plug for single acting spool

**II Optional handlevers**

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

For special configurations see page 13

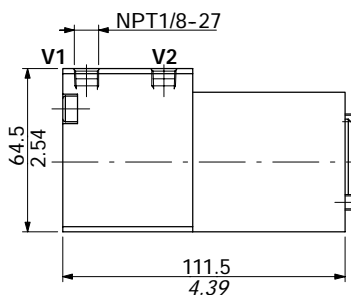
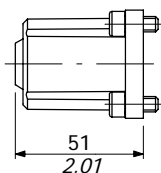
## Spools options



"B" port plugged

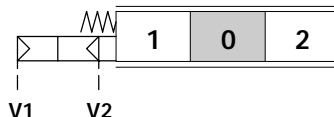
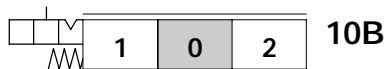
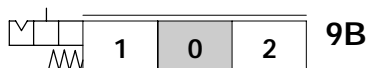
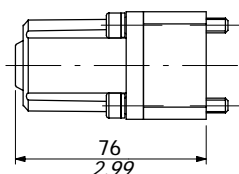
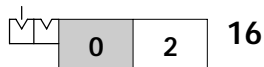
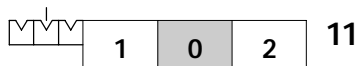
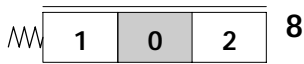
"A" port plugged

## "A" side spool positioners



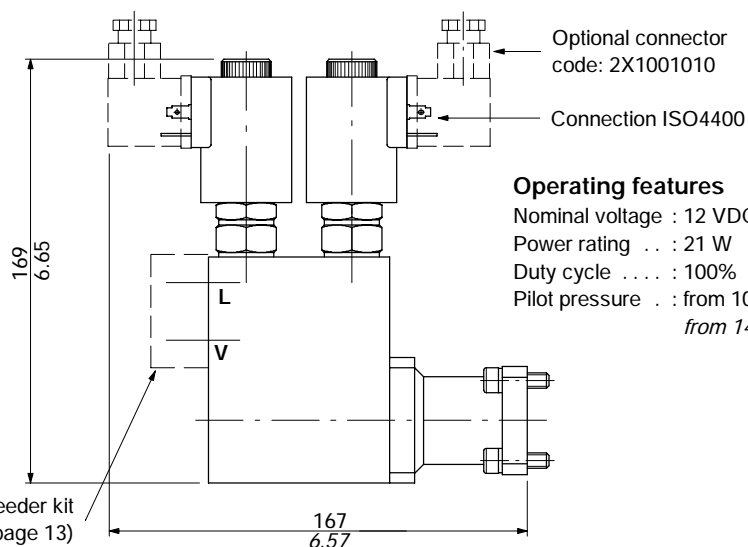
### Operating features

Adjustment range : from 1 to 5.5 bar  
from 14.5 to 79.8 psi  
diagram 501A  
Max.pilot pressure : 10 bar / 145 psi



### 8PC

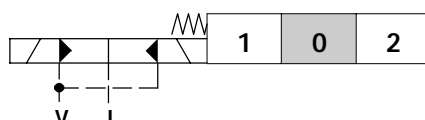
Proportional pneumatic kit



### Operating features

Nominal voltage : 12 VDC / 24 VDC  
Power rating . . . : 21 W  
Duty cycle . . . . : 100%  
Pilot pressure . . : from 10 to 50 bar  
from 145 to 725 psi

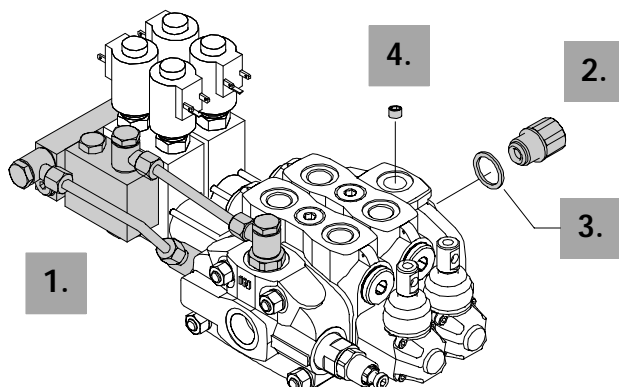
Feeder kit (see page 13)



### 8E13

ON/OFF electro-hydraulic kit

Electro-hydraulic feeder kit



PART	TYPE	CODE	DESCRIPTION
1.	KE1R3	5KE1R31431	kit for 1 section
	KE2R3	5KE2R31431	kit for 2 sections
	KE3R3	5KE3R31431	kit for 3 sections
	KE4R3	5KE4R31431	kit for 4 sections
	KE5R3	5KE5R31431	kit for 5 sections
	KE6R3	5KE6R31431	kit for 6 sections
2.	VRE	3XGIU632520	G 3/4 back-pressure valve (carry-over configuration)
3.		4RON427025	G 3/4 washer
4.	RE	4TAP318010	M18X1.5 plug

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

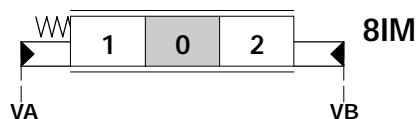
Special configurations

Hydraulic spool control

Operating features

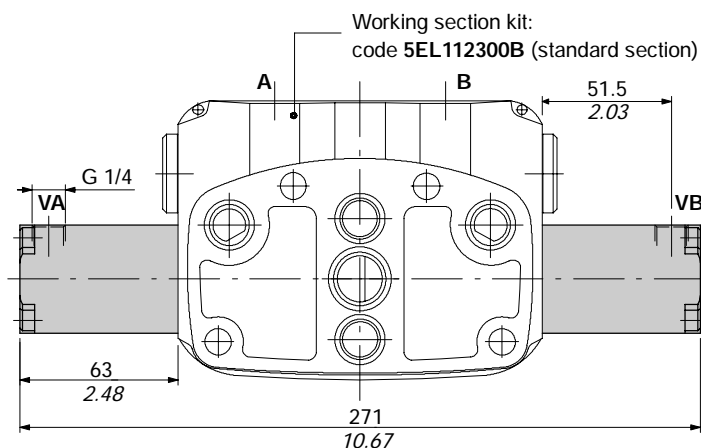
Adjustment range : from 5.8 to 19 bar / 84 to 276 psi - diagram 024

Max.pilot pressure : 100 bar / 1450 psi



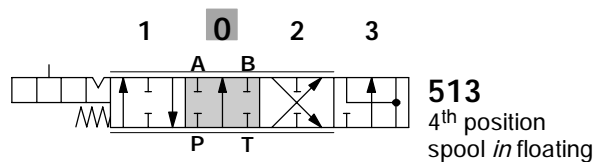
Ex.: EL SDS150/P-1IM 8IM

Spools:  
 1IM code 3CU2410420  
 2IM code 3CU2425420  
 Hydraulic spool control:  
 code 5IDR216000



Working section kit:  
 code 5EL112300B (standard section)

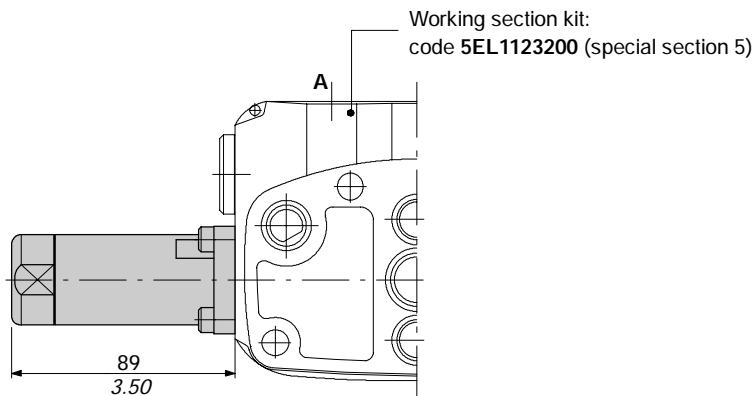
Floating circuit



Ex.: EL SDS150/P-5 13...

Spool: code 3CU2441200

Spool positioner:  
 code 5V13210000

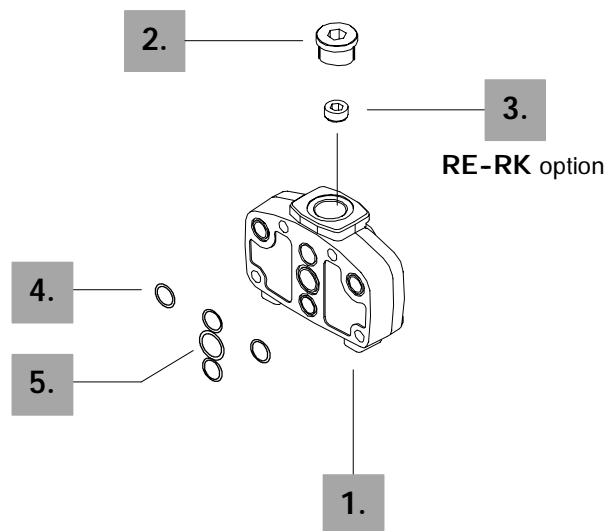


Working section kit:  
 code 5EL1123200 (special section 5)

## Outlet cover options

Description example:

FS SDS150 / RC \*



### Outlet section parts

PART	CODE	QTY	DESCRIPTION
1.	3FIA211300	1	Outlet section body *
2.	3XTAP732200	1	G 3/4 plug *
4.	4GUA117218	4	17.17x1.78 NBR 70 SH O-Ring seal
5.	4GUA122018	1	21.95x1.78 NBR 70 SH O-Ring seal

### Circuit option

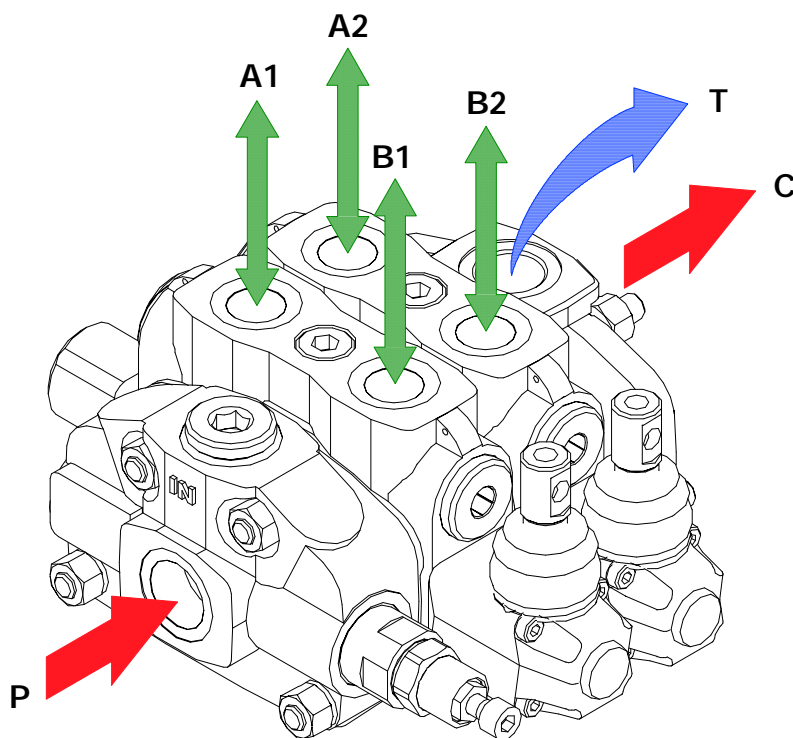
PART	CODE	QTY	DESCRIPTION
3.	4TAP318010	1	M18x1.5 plug for carry-over (RE) and closed centre (RK) configuration

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

The SDS150 valve is assembled and tested as per the technical specification of this catalogue.

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

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



Carry-over configuration

**Fitting tightening torque - Nm / lbft**

THREAD TYPE	P and C ports	A and B ports	T port
BSP (ISO 228/1)	G 3/4	G 1/2	G 3/4
With O-Ring seal	70 / 51.6	50 / 36.9	70 / 51.6
With copper washer	70 / 51.6	60 / 44.3	70 / 51.6
With steel and rubber washer	70 / 51.6	60 / 44.3	70 / 51.6
UN-UNF (ISO 11926-1)	1 1/16-12 UN-2B (SAE 12)	7/8-14 UNF-2B (SAE 10)	1 1/16-12 UN-2B (SAE 12)
With O-Ring seal	95 / 70	60 / 44.3	95 / 70

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



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