

SD 16

SECTIONAL
DIRECTIONAL CONTROL VALVES



SD16

Features

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

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

H Available with parallel, tandem or series circuit.

H Optional carry-over port.

H A wide variety of port and circuit valves.

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

H Diameter 20 mm (0.79 in) interchangeable spools.

Working conditions

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

Nominal flow rating		140 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 ³ /min	0.18 in ³ /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 ² /s	<i>from 15 to 75 cSt</i>
	<i>min.</i>	12 mm ² /s	12 cSt
	<i>max.</i>	400 mm ² /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.

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.

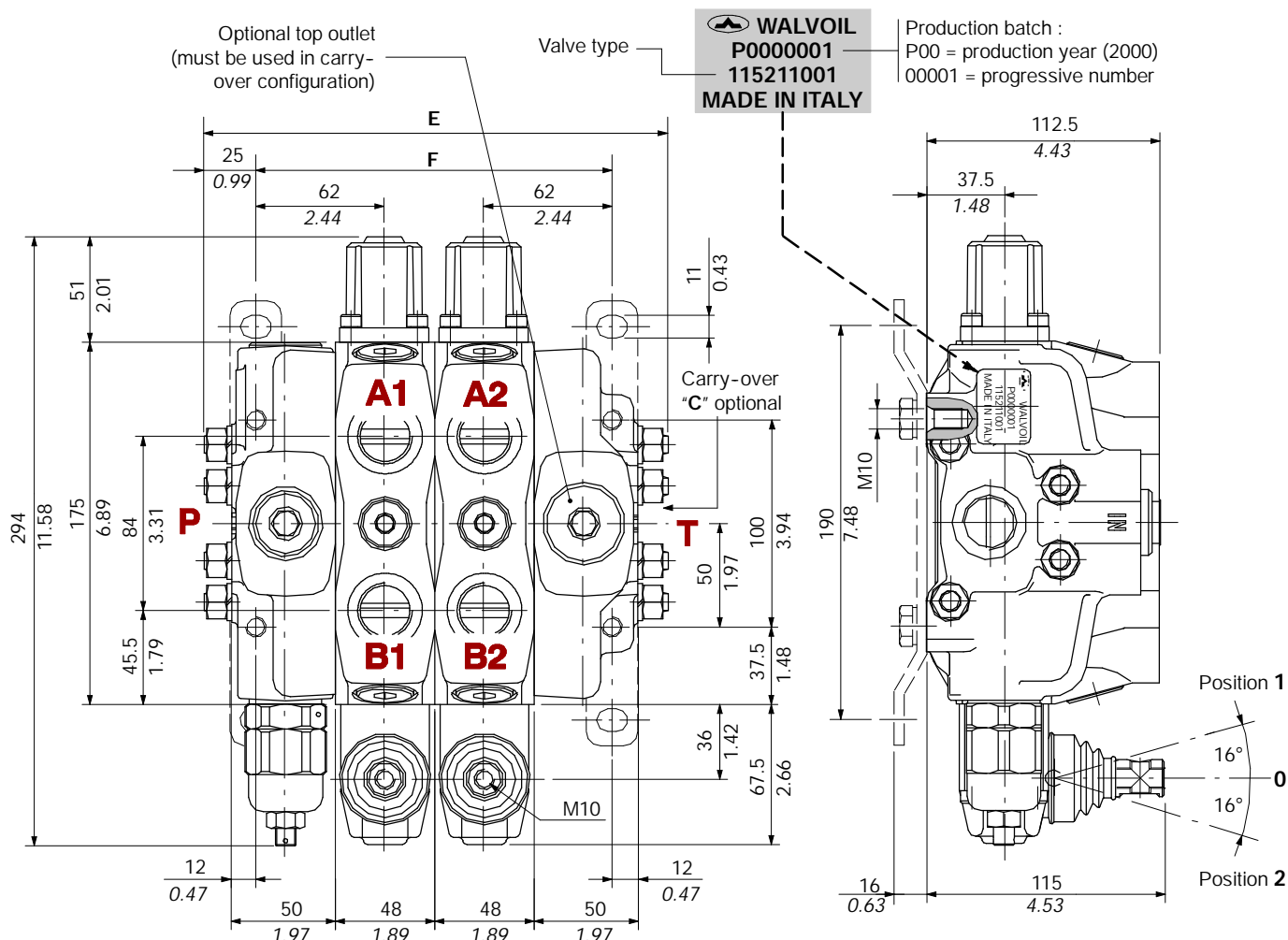
Walvoil, oriented to a continuous improvement, reserves the right to discontinue, modify or revise the specifications, without notice.

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

4th edition November 2000:

This edition supersedes all prior documents.

Dimensional data (parallel and tandem circuit)



TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD16/1	176	6.63	124	4.88	13	28.7
SD16/2	224	8.82	172	6.77	19	41.9
SD16/3	272	10.71	220	8.66	24.9	54.9
SD16/4	320	12.60	268	10.55	30.9	68.1
SD16/5	368	14.49	316	12.44	36.8	81.1
SD16/6	416	16.38	364	14.33	42.8	94.4

TYPE	E		F		Weight	
	mm	in	mm	in	kg	lb
SD16/7	464	18.27	412	16.22	48.7	107.7
SD16/8	512	20.16	460	18.11	54.6	121
SD16/9	560	22.05	508	20	60.5	134.3
SD16/10	608	23.94	556	21.89	66.4	147.6
SD16/11	656	25.83	604	23.78	72.3	160.9
SD16/12	704	27.72	652	25.67	78.2	174.2

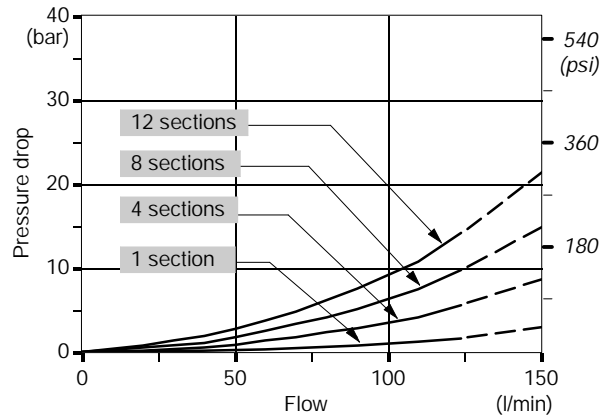
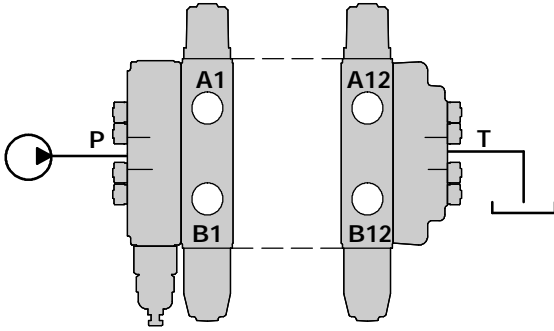
Standard threads

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

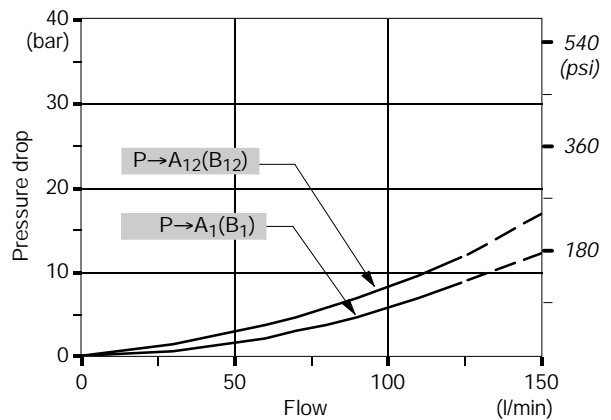
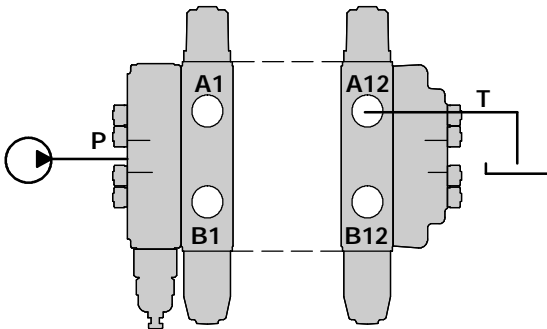
Open centre

From side inlet to side outlet.



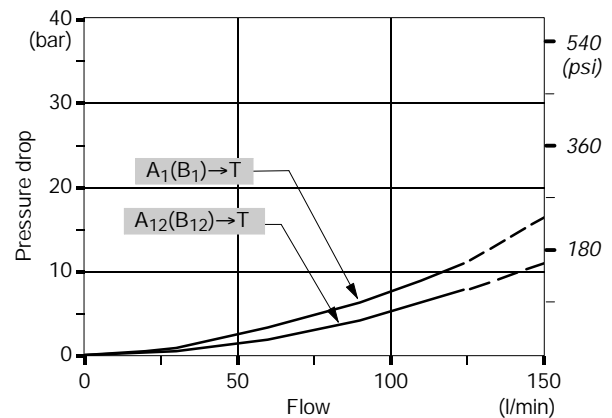
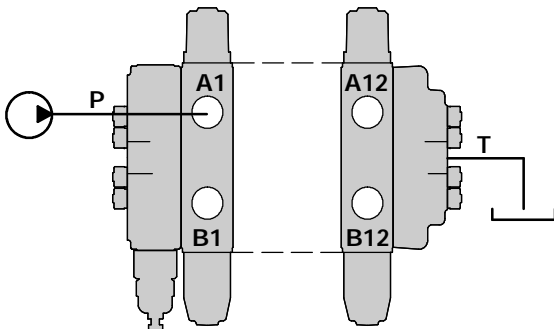
Inlet to work port

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



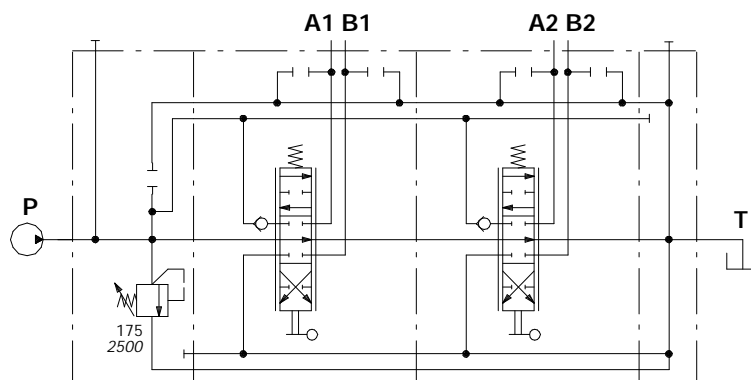
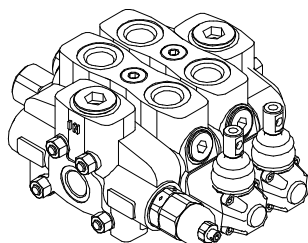
Work port to outlet

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



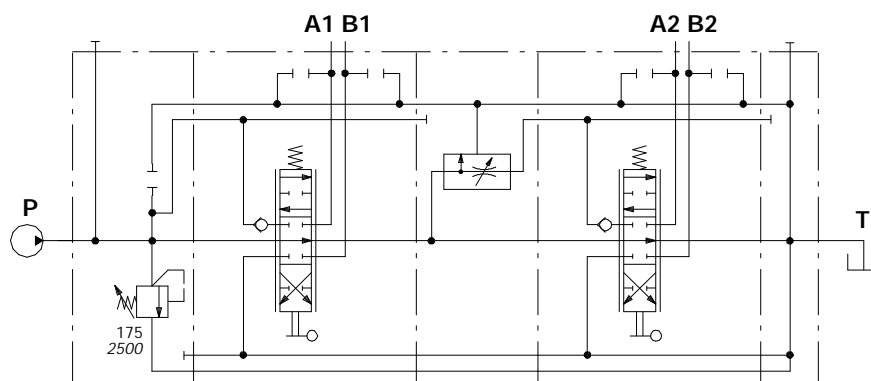
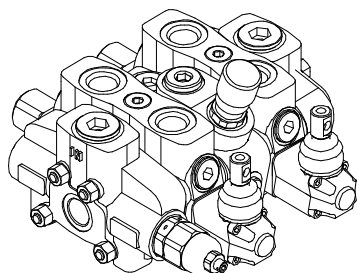
NOTE - Measured with spool type 1.

2 parallel working sections



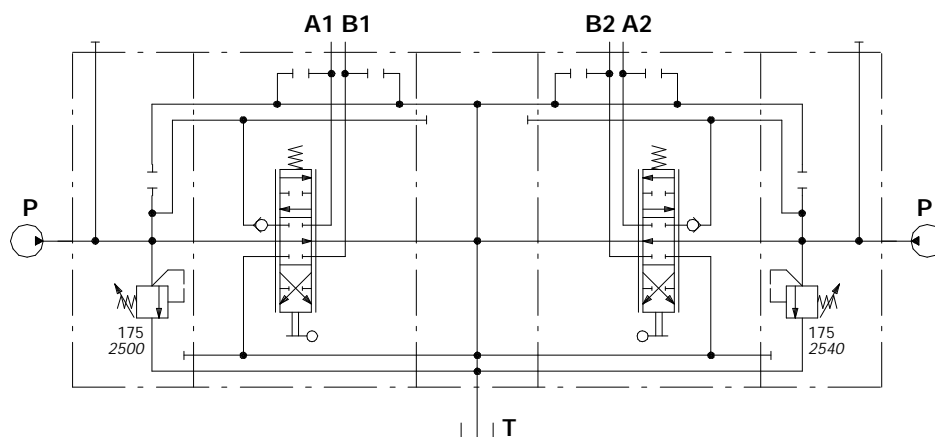
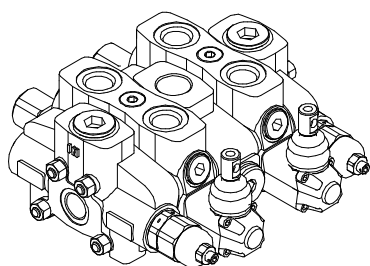
Ex.: SD16/2/AC(YG3-175)/18L/18L/RC

Intermediate pressure compensated flow divider section



Ex.: SD16/2/AC(YG3-175)/18L/DFG/18L/RC

2 inlet cover and mid return manifold section

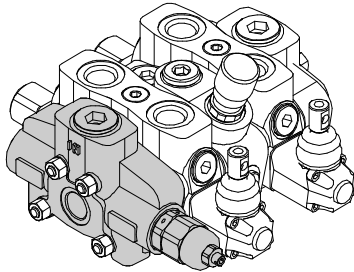


Ex.: SD16/2/AC(YG3-175)/18L/CS1/18L/BC(YG3-175)

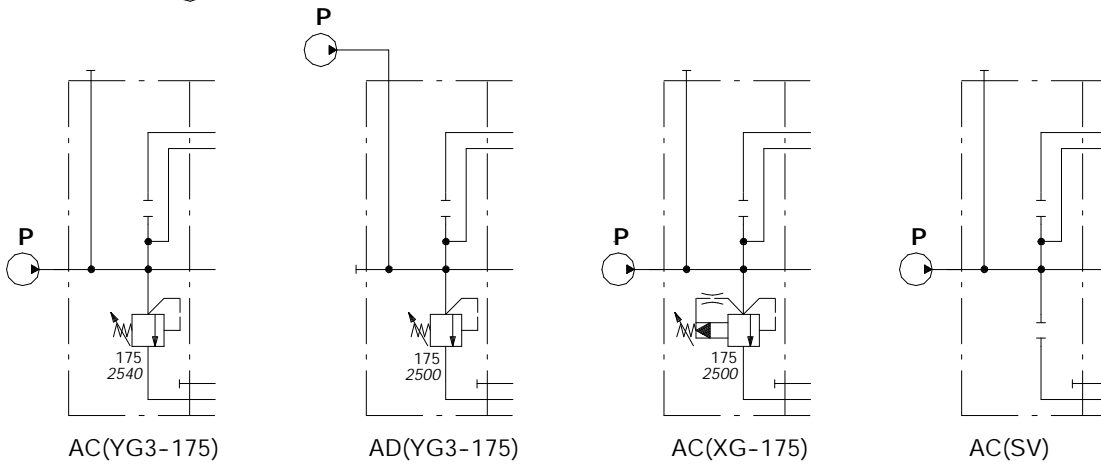
SD16

Hydraulic circuit

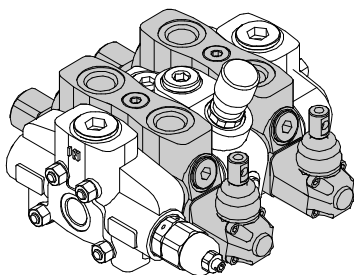
Inlet cover



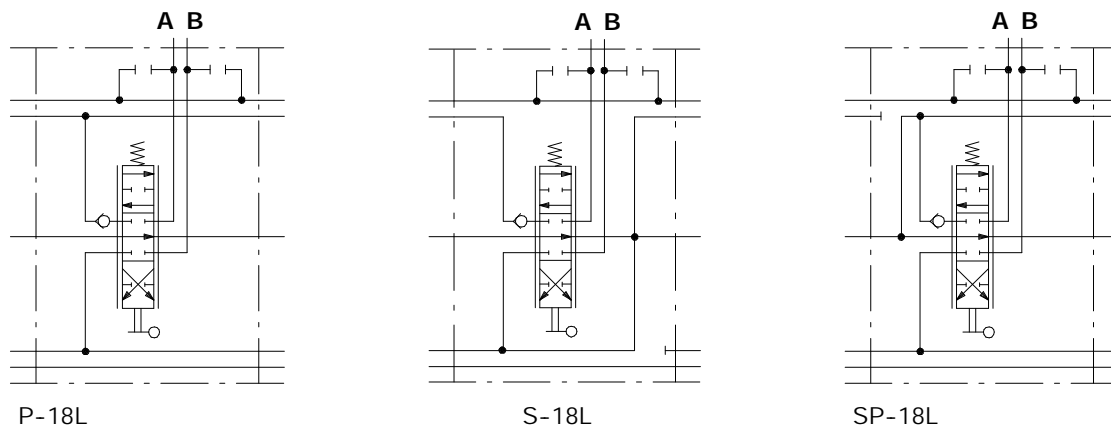
TYPE	CODE	DESCRIPTION
AC(YG3)	615201103	Side inlet with direct pressure relief valve
AD(YG3)	615201104	Top inlet with direct pressure relief valve
AC(XG)	615201139	Side inlet with pilot operated pressure relief valve
AC(SV)	615201101	Side inlet with relief valve blanking plug



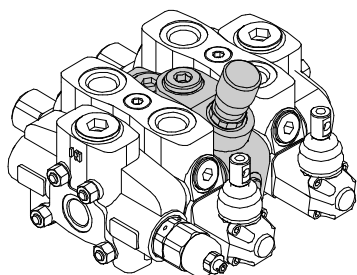
Working sections



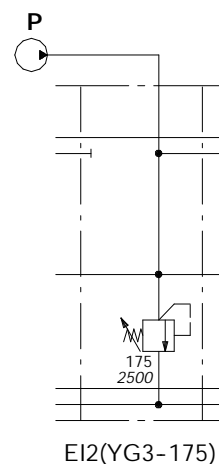
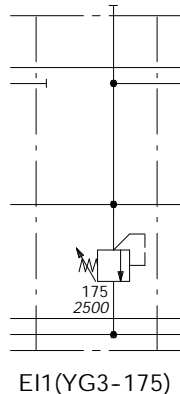
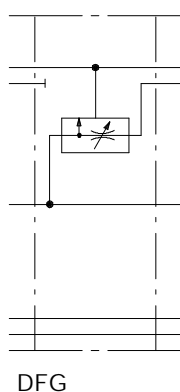
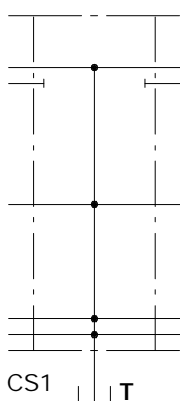
TYPE	CODE	DESCRIPTION
P-18L	615101001	Parallel
S-18L	615111001	Series
SP-18L	615121001	Tandem



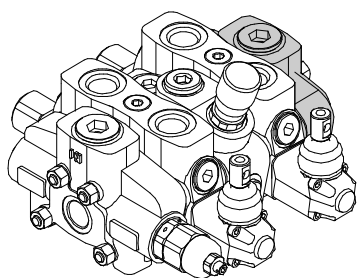
Intermediate sections



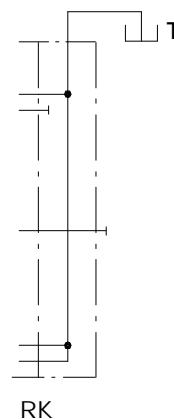
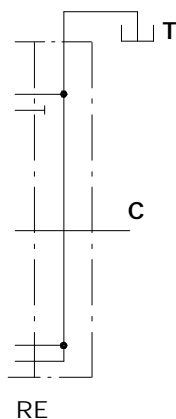
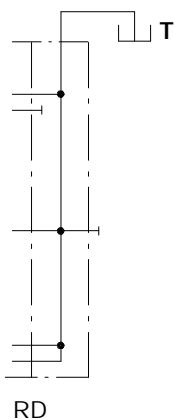
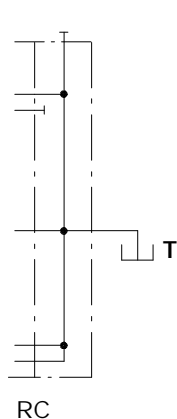
TYPE	CODE	DESCRIPTION
CS1	615401010	Mid return manifold section
DFG	615411020	Pressure compensated flow divider section
EI1(YG3)	615421010	Secondary direct operated pressure relief valve
EI2(YG3)	615421015	Mid inlet with secondary direct operated pressure relief valve



Outlet cover



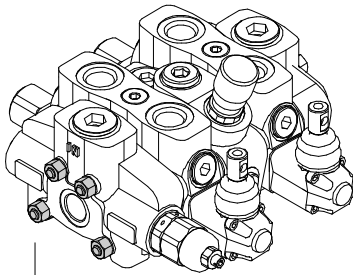
TYPE	CODE	DESCRIPTION
RC	615300114	Side outlet
RD	615300113	Top outlet
RE	615300111	Top outlet with carry-over
RK	615300115	Top outlet with closed centre



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

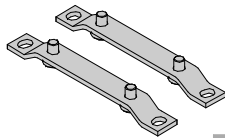
SD16

Assembling parts



1.

M10 nut - wrench 17



2.

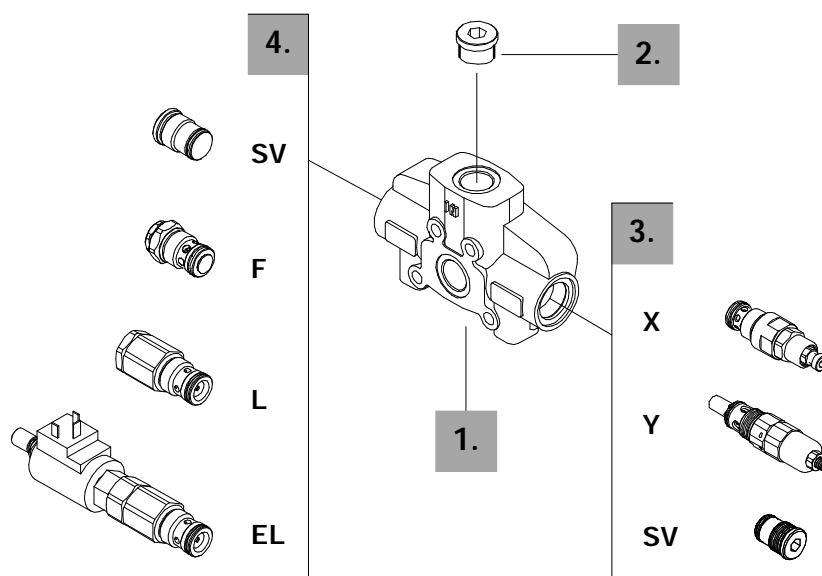
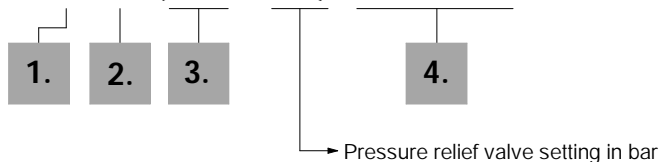
PART	CODE	DESCRIPTION
1.	5TIR110170	Tie rod kit for 1 section valve
	5TIR110218	Tie rod kit for 2 sections valve
	5TIR110266	Tie rod kit for 3 sections valve
	5TIR110316	Tie rod kit for 4 sections valve
	5TIR110368	Tie rod kit for 5 sections valve
	5TIR110410	Tie rod kit for 6 sections valve
	5TIR110458	Tie rod kit for 7 sections valve
	5TIR110506	Tie rod kit for 8 sections valve
	5TIR110554	Tie rod kit for 9 sections valve
	5TIR110602	Tie rod kit for 10 sections valve
	5TIR110650	Tie rod kit for 11 sections valve
	5TIR110698	Tie rod kit for 12 sections valve

Tie rod tightening torque 40 Nm (29.6 lbf^t)

2.	5STA125220	Brakets kit
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Description example:

FE SD16 / A C (YG3 - 175) EL-12VDC *

**1. Inlet cover body ***

CODE	DESCRIPTION
3FIA116300	AC-AD type body

2. Inlet port selection *

CODE	DESCRIPTION
3XTAP732200	G3/4 plug (n.1 plug required)

3. Inlet relief options

TYPE	CODE	DESCRIPTION
<u>VMP20/1 pilot operated pressure relief valve type X</u>		
(XG-120)	X007211120	Range 25 to 315 bar / 360 to 4600 psi standard setting 120 bar / 1750 psi
<u>VMD20/1 direct pressure relief valve type Y (standard)</u>		
(YG2-120)	3XCAR120212	Range 80 to 160 bar / 1160 to 2300 psi standard setting 120 bar / 1750 psi
(YG3-175)	3XCAR120213	Range 125 to 250 bar / 1800 to 3600 psi standard setting 175 bar / 2500 psi

Standard setting is referred to 10 l/min flow.

SV 3XTAP535410 Relief valve blanking plug

4. Inlet valves options

TYPE	CODE	DESCRIPTION
F	5KIT420200	Inlet anti-cavitation valve
L	3XCAR420300	Hydraulic pilot unloader valve (FC1.5)
EL	YCAR420305	12 VDC electromagnetic controlled unloader valve
	YCAR420310	24 VDC electromagnetic controlled unloader valve
SV	3XTAP535410	Relief valve blanking plug -

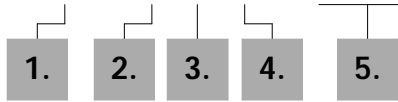
NOTE (*) - Items are referred to **BSP** thread.

SD16

Working section options

Description example:

EL SD16 / 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.

→ Port relief valve setting in bar

1. Working section kits *

TYPE	CODE	DESCRIPTION
P	5EL1163000	Parallel
S	5EL2163000	Series
SP	5EL3163000	Tandem

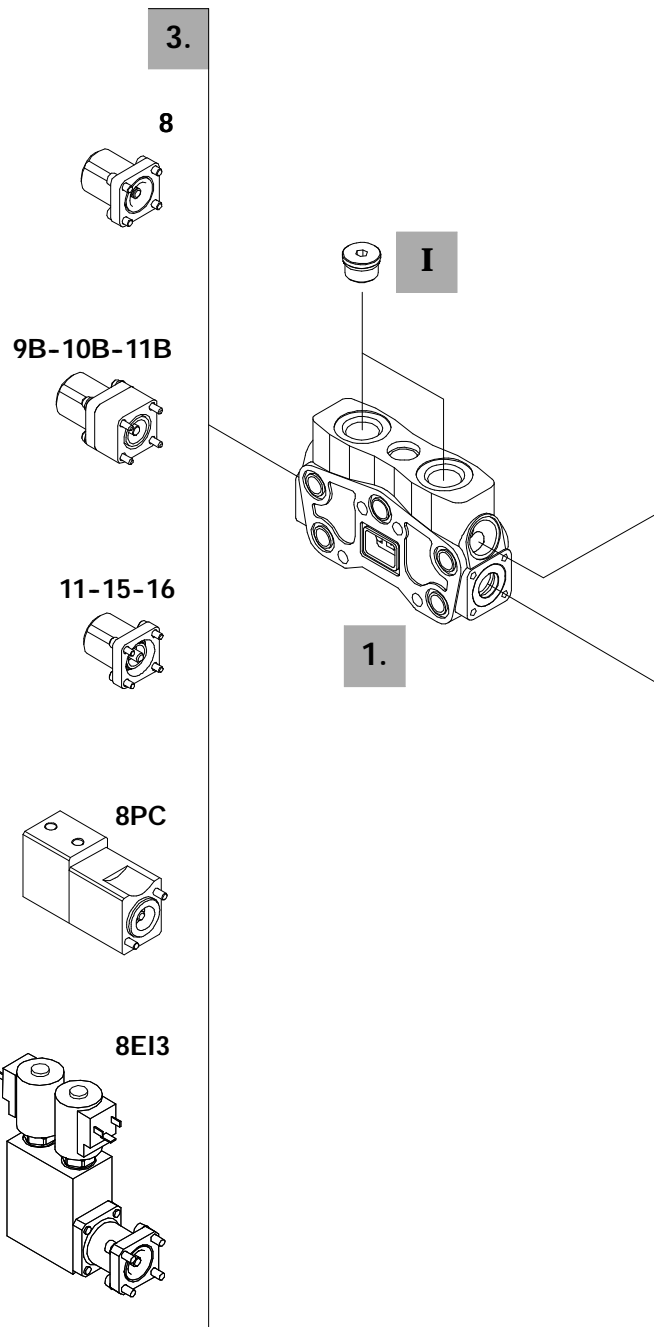
Include boby, seals, rings and load check valve.

2. Spool options

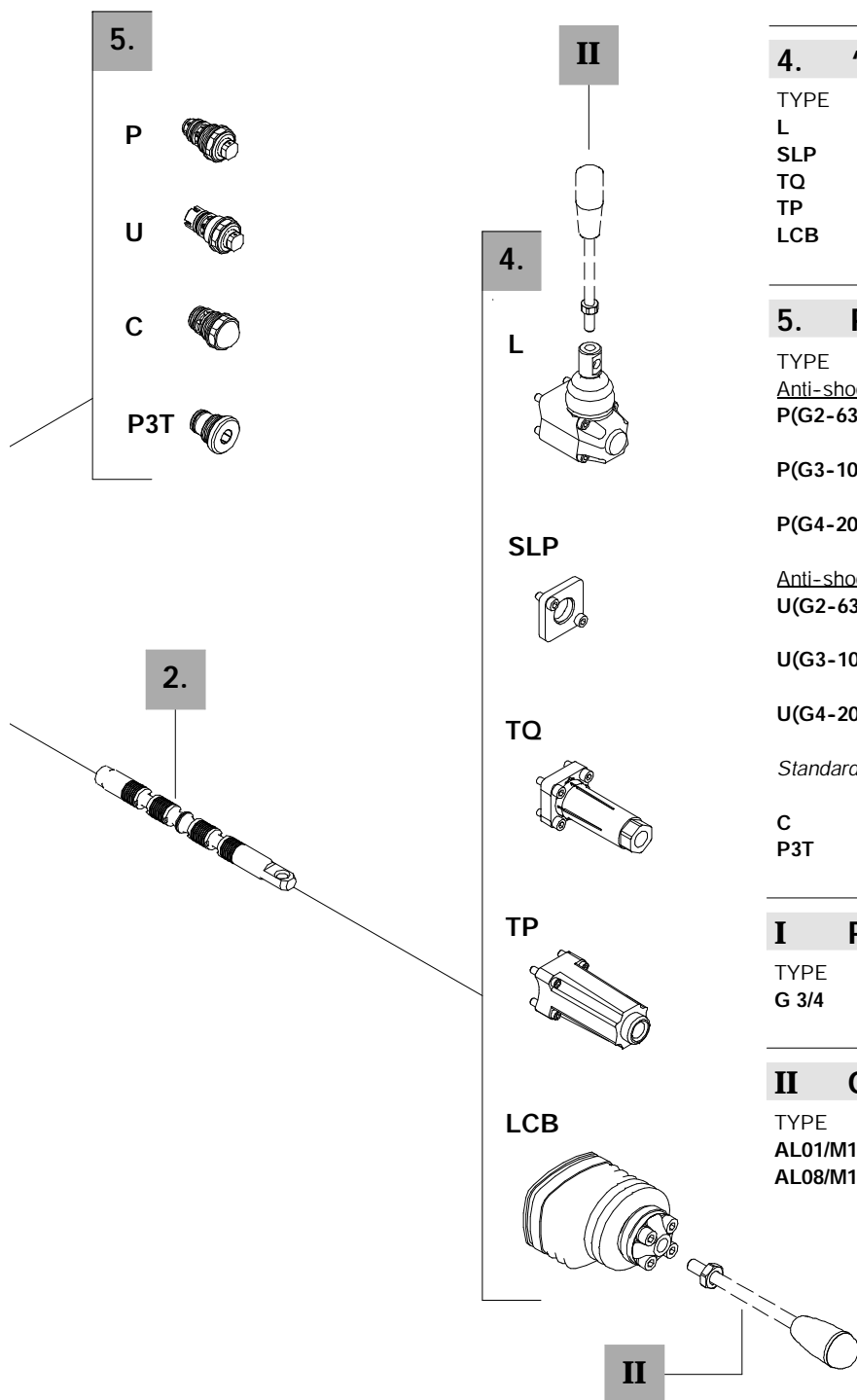
TYPE	CODE	CIRCUIT DESCRIPTION
1	3CU2510100	Double acting, 3 positions, with A and B closed in neutral position
1CS	3CU2510200	Double acting, 3 positions, with A and B closed in neutral position, metering type
1A	3CU2521100	Double acting, 3 positions, with A open to tank in neutral position
1B	3CU2522100	Double acting, 3 positions, with B open to tank in neutral position
2	3CU2525100	Double acting, 3 positions, with A and B open to tank in neutral position
3	3CU2531100	Single acting on A, 3 positions, B plugged; requires G3/4 plug (see part I)
4	3CU2535100	Single acting on B, 3 positions, A plugged; requires G3/4 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 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



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	5CLO216100	Mechanical joystick

5. Port relief options

TYPE	CODE	DESCRIPTION
<u>Anti-shock valve</u>		
P(G2-63)	XCAR216115	Range 63 to 125 bar / from 900 to 1800 psi standard setting 63 bar / 900 psi
P(G3-100)	XCAR216116	Range 100 to 250 bar / from 1450 to 3600 psi standard setting 100 bar / 1450 psi
P(G4-200)	XCAR216117	Range 200 to 315 bar / from 2900 to 4600 psi standard setting 200 bar / 290 psi
<u>Anti-shock and anti-cavitation valve</u>		
U(G2-63)	XCAR316112	Range 63 to 125 bar / from 900 to 1800 psi standard setting 63 bar / 900 psi
U(G3-100)	XCAR316113	Range 100 to 250 bar / from 1450 to 3600 psi standard setting 100 bar / 1450 psi
U(G4-200)	XCAR316114	Range 200 to 315 bar / from 2900 to 4600 psi standard setting 200 bar / 2900 psi
Standard setting is referred to 10 l/min flow.		
C	3XCAR416100	Anti-cavitation
P3T	3XTAP528360	A and B ports valve blanking plugs

I Port plug *

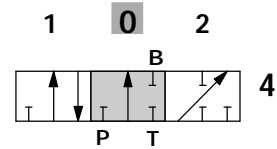
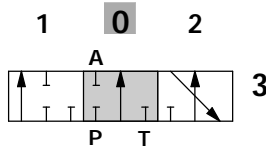
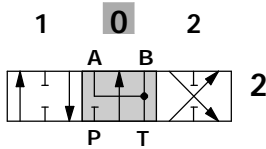
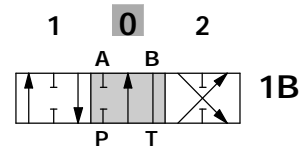
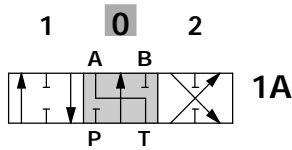
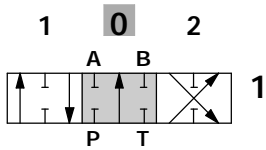
TYPE	CODE	DESCRIPTION
G 3/4	3XTAP732200	Plug for single acting spool

II Optional handlevers

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

For special configurations see pages 13 and 14

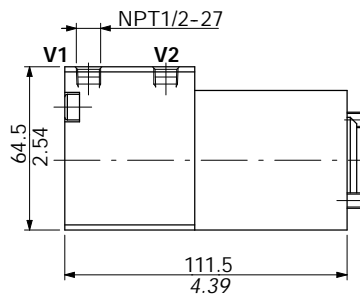
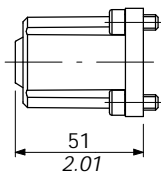
Spools options



"B" port plugged

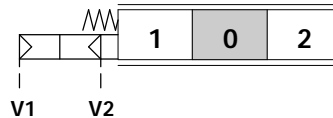
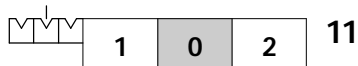
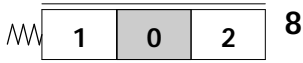
"A" port plugged

"A" side spool positioners



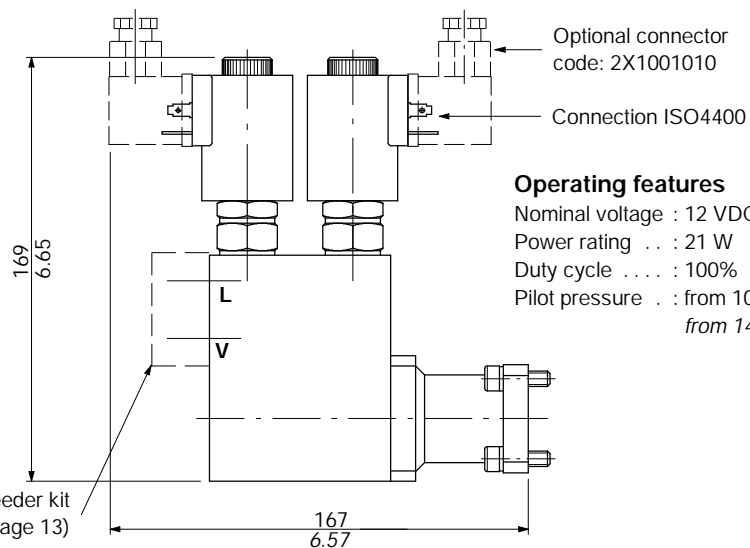
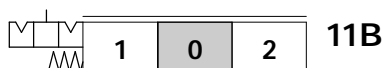
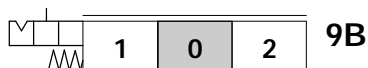
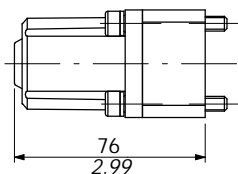
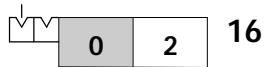
Operating features

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

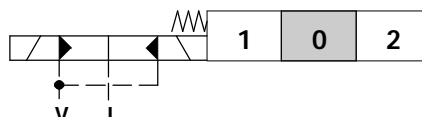
Proportional pneumatic kit



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

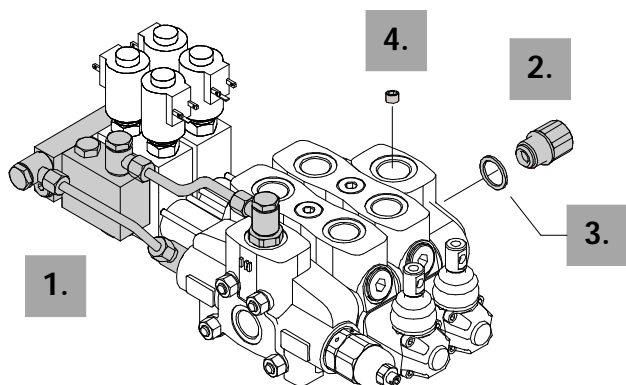
Feeder kit
(see page 13)



8E13

ON/OFF electro-hydraulic kit

Electro-hydraulic feeder kit



PART	TYPE	CODE	DESCRIPTION
1.	KE1R3	5KE1R31530	kit for 1 section
	KE2R3	5KE2R31530	kit for 2 sections
	KE3R3	5KE3R31530	kit for 3 sections
	KE4R3	5KE4R31530	kit for 4 sections
	KE5R3	5KE5R31530	kit for 5 sections
	KE6R3	5KE6R31530	kit for 6 sections
2.	VRE	3XGIU641640	G 3/4 back-pressure valve (carry-over configuration)
3.		4RON433934	G 1 washer
4.	RE	4TAP318010	M18x1.5 plug

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

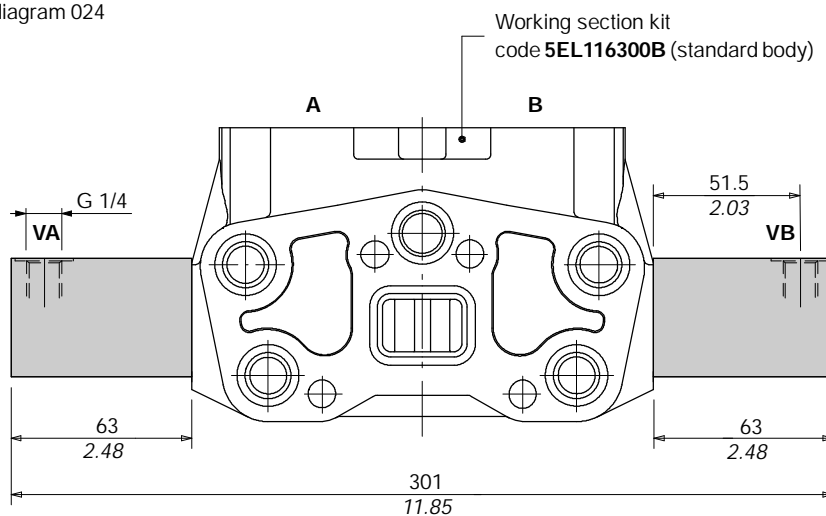
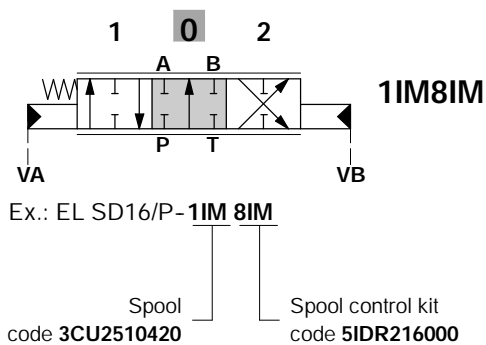
Special configurations

Hydraulic spool control

Operating features

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

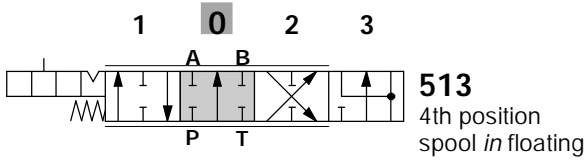
Max.pilot pressure : 100 bar / 1450 psi



SD16

Special configuration

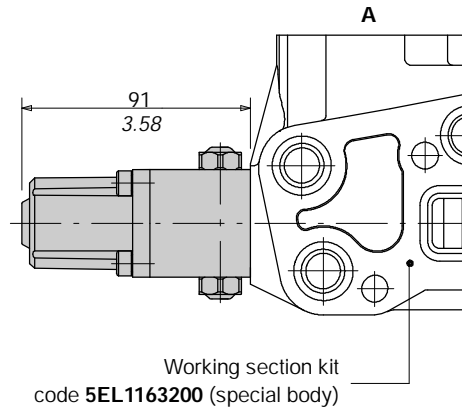
4th position floating circuit



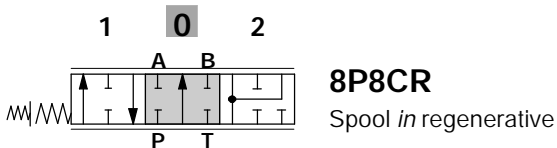
Ex.: EL SD16/P-5 13...

Spool
code **3CU2541100**

Spool control kit
code **5V13116000**



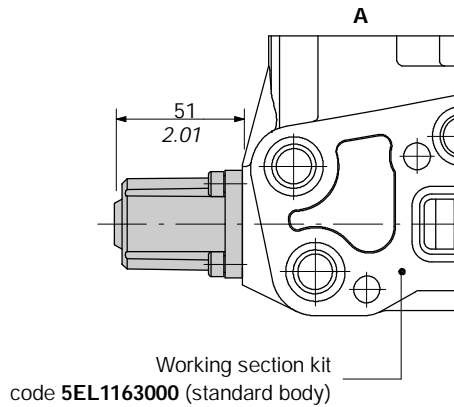
Regenerative circuit



Ex.: EL SD16/P-8P 8CR...

Spool
code **3CU2561210**

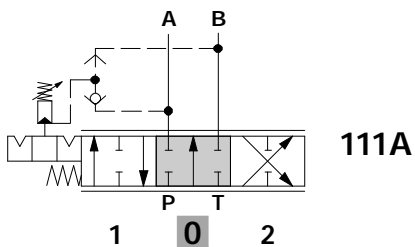
Spool control kit
code **5V08110020**



Fixed double acting kick-out spool control

Operating features

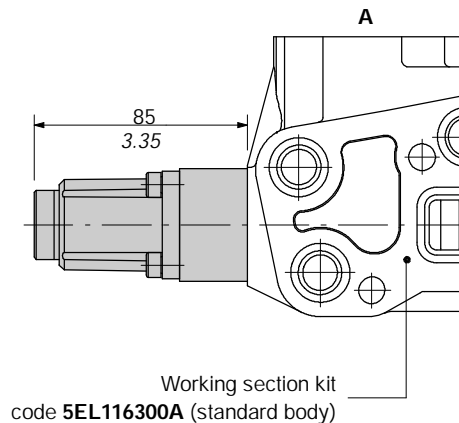
Kick-out pressure range . . . : from 20 to 125 bar
: from 290 to 1800 psi
Kick-out standard pressure . . : 100 bar / 1450 psi



Ex.: EL SD16/P-1 11A(100)...

Spool
code **3CU2510321**

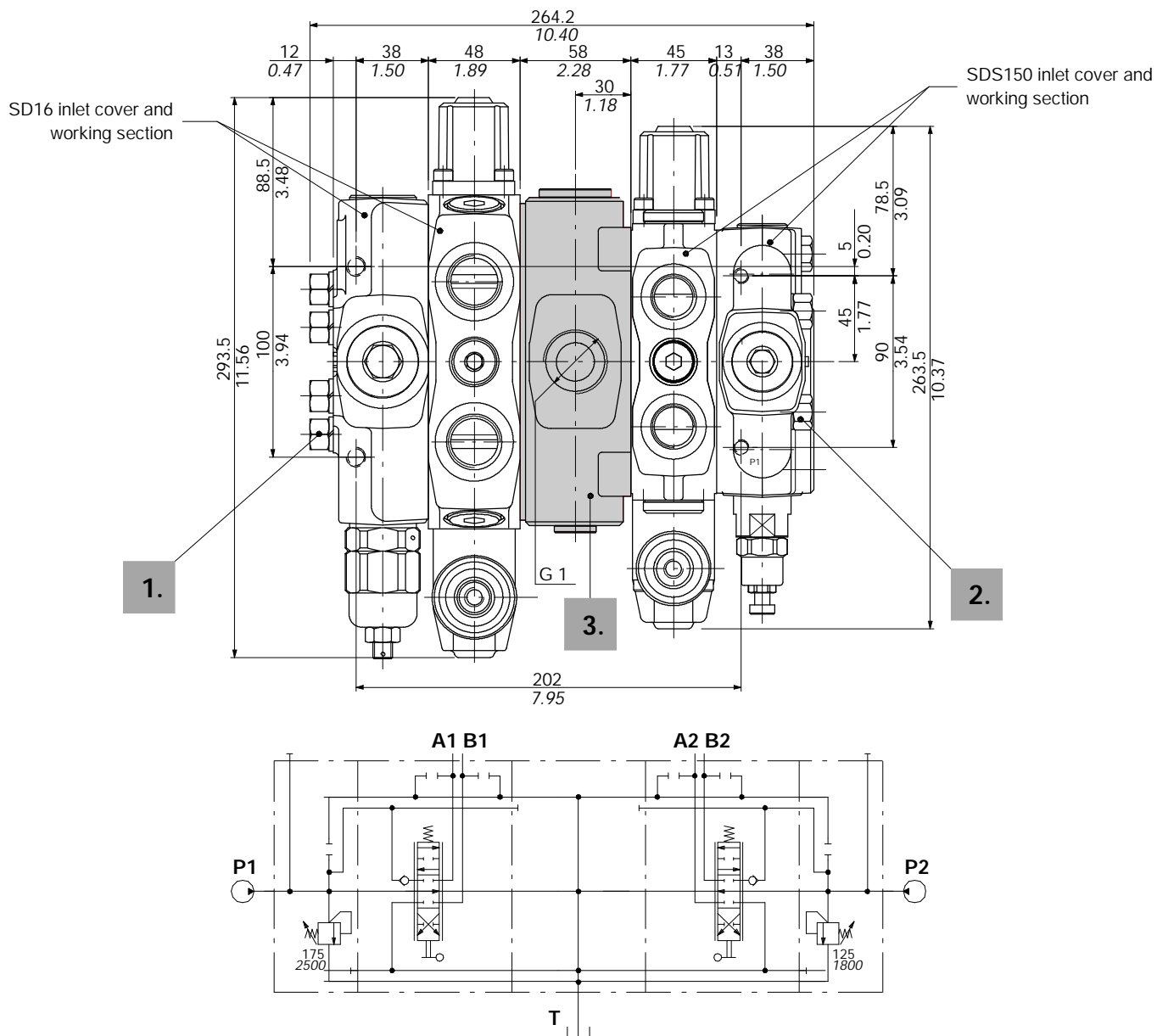
Spool control kit
code **5V11510100**



CS3

Mid return manifold.

To assemble different sizes of valve. Tie rods are special. Available combination SD16 / SDS150.



Description example: SD16/1/AC(YG3-175)/18L/CS3/18L/BC(XG-125)/SDS150/1

1. Tie rod kits for SD16

CODE	DESCRIPTION
5TIR4161	Kit for 1 section
5TIR4162	Kit for 2 sections
5TIR4163	Kit for 3 sections
5TIR4164	Kit for 4 sections

2. Tie rod kits for SDS150

CODE	DESCRIPTION
5TIR41501	Kit for 1 section
5TIR41502	Kit for 2 sections
5TIR41503	Kit for 3 sections
5TIR41504	Kit for 4 sections

3. Intermediate sections *

CODE	DESCRIPTION
615441010	Mid return manifold section

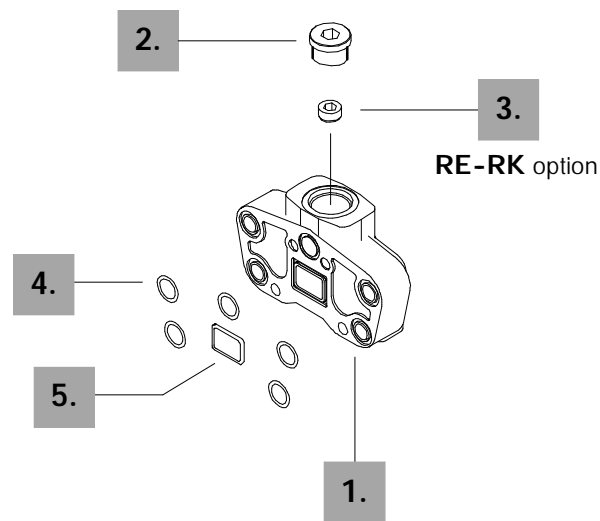
NOTE (*) - Code are referred to **BSP** thread.

SD16

Outlet cover options

Description example:

FS SD16 / RC *



Outlet section parts

PART	CODE	QTY	DESCRIPTION
1.	3FIA216300	1	Outlet section body *
2.	3XTAP732200	1	G3/4 plug *
4.	4GUA118726	5	18.72x2.62 NBR 70 SH O-Ring seal
5.	4GUA134626	1	34.60x2.62 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

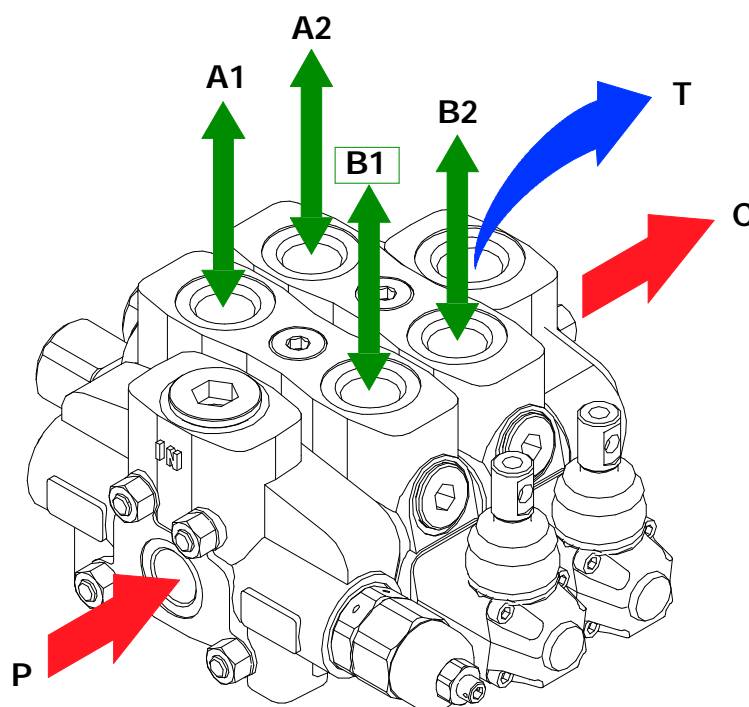
NOTE (*) - Items are referred to **BSP** thread.

Installation and maintenance

The SD16 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 port	A and B ports	T and C ports
BSP (ISO 228/1)	G 3/4	G 3/4	G 1
With O-Ring seal	70 / 51.6	70 / 51.6	100 / 73.7
With copper washer	70 / 51.6	70 / 51.6	90 / 66.3
With steel and rubber washer	70 / 51.6	70 / 51.6	100 / 73.7
UN-UNF (ISO 11926-1)	1 5/16-12 UN-2B (SAE 16)	1 1/16-12 UN-2B (SAE 12)	1 5/16-12 UN-2B (SAE 16)
With O-Ring seal	150 / 110.6	95 / 70	150 / 110.6

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

SD16

Notes

The SD16 valve can be supplied with one coat of opaque black paint (**CVN** configuration).

Example of specification: SD16/2/AC(YG3-175)/18L/18L/RC-<**CVN**>

NOTE - *For different color consult Customer Service.*



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