walvoil

SDS180

Sectional directional control valve

TECHNICAL CATALOGUE



walvoil
FLUID POWER E|MOTION

A member of
INTERPUMP GROUP

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 range of antishock+anticavitation port valves.
- Intermediate sections for several types of circuit.
- Available manual, pneumatic, electrohydraulic, proportional hydraulic, spool control kits.
- Diameter 20 mm (*0.79 in*) interchangeable spools.

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

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.

10th edition December 2018

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Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46mm²/s *(46 cSt)* viscosity at 40°C *(104°F)* temperature.

Nominal flow rating		160 l/min	*42 US gpm*
	for series circuit	140 l/min	*37 US gpm*
Max pressure (1)		315 bar	*4600 psi*
	for series circuit	250 bar	*3600 psi*
Back pressure (max.)	T outlet port	25 bar	*360 psi*
Internal leakage (standard) A(B)⇒T	Δp = 100 bar *(1450 psi)*	5 cm³/min	*0.30 in³/min*
Fluid		Mineral based oil	
Fluid temperature	with NBR (BUNA-N) seals	from -20°C to 80°C	*from -4°F to 176°F*
	with FPM (VITON) seals	from -20°C to 100°C	*from -4°F to 212°F*
Viscosity	operating range	from 15 to 75 mm²/s	*from 15 to 75 cSt*
	min.	12 mm² /s	*12 cSt*
	max.	400 mm²/s	*400 cSt*
Max. contamination level		-/19/16 - ISO 4406	*NAS 1638 - class 10*
Ambient temperature for working conditions	with mechanical devices	from -40°C to 60°C	*from -40°F to 140°F*
	with pneumatic and hydraulic devices	from -30°C to 80°C	*from -22°F to 140°F*
	with electric devices	from -20°C to 50°C	*from -4°F to 122°F*

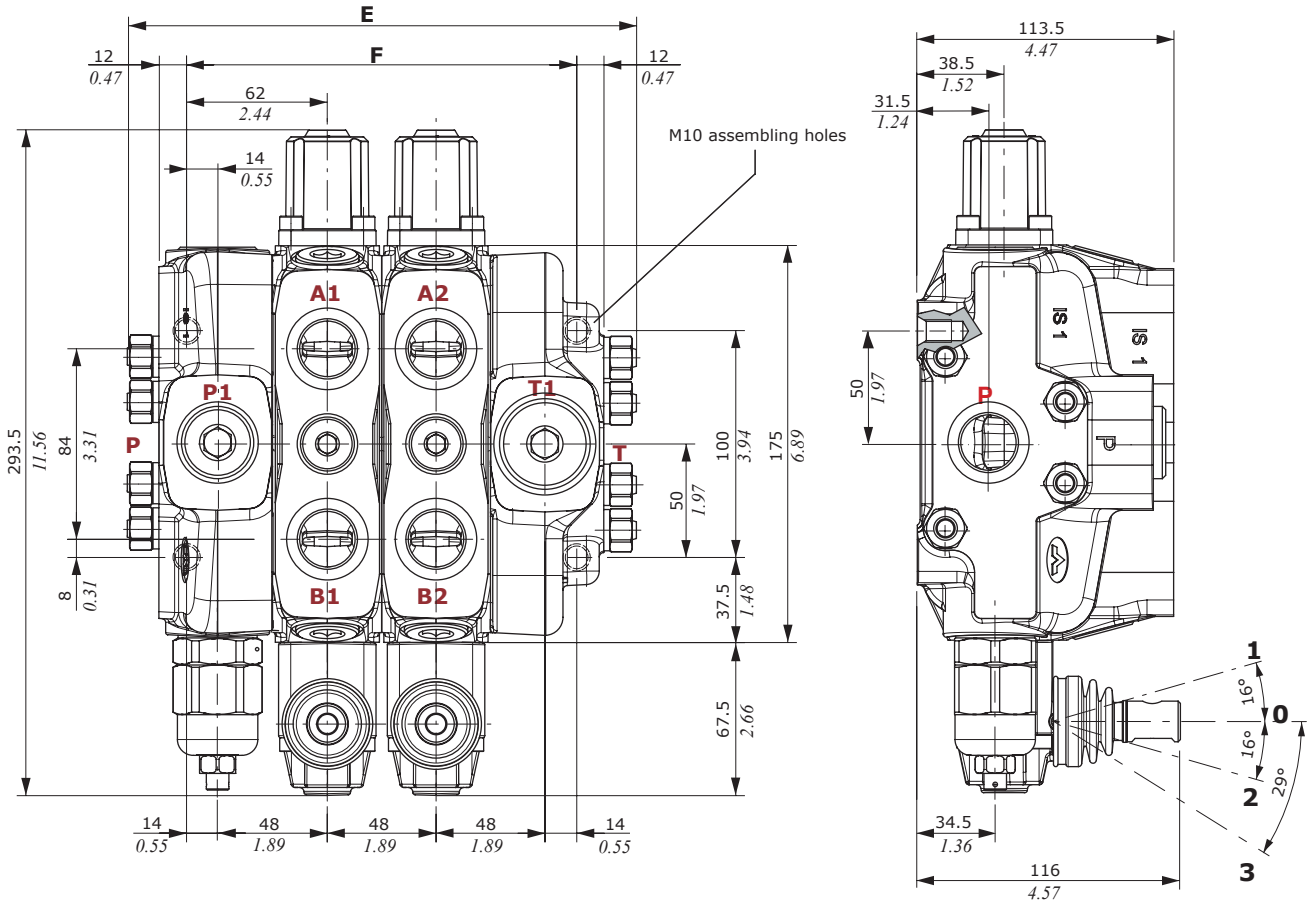
NOTE - (1) Intermittent pressure at max. 250,000 cycles with specific internal testing.

Standard threads

REFERENCE STANDARD				
		BSP	**UN-UNF**	**NPTF**
THREAD ACCORDING TO		ISO 228/1	ISO 263	ANSI B1.20.3
		BS 2779	ANSI B1.1 unified	
CAVITY DIMENSION ACCORDING TO	ISO	1179-1	11926-1	
	SAE		J1926-1	J476a
	DIN	3852-2 shape X or Y		

PORTS THREADING		
MAIN PORTS	**BSP**	**UN-UNF**
P inlet	G 3/4	1 5/16-12 (SAE 16)
A and **B** ports	G 3/4	1 1/16-12 (SAE 12)
T outlet and **C** carry-over	G 1	1 5/16-12 (SAE 16)
PILOT PORTS		
Hydraulic	G 1/4	9/16-18 (SAE 6)
Pneumatic	NPTF 1/8-27	NPTF 1/8-27

Dimensional data



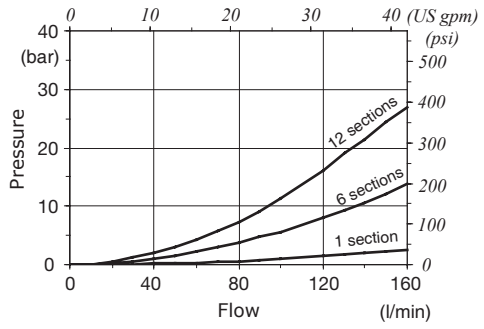
NOTE - Drawings and dimensions are referred to **BSP** thread configuration.

TYPE	E		F		Weight	
	mm	*in*	mm	*in*	Kg	*lb*
SDS180/1	176	*6.93*	124	*4.88*	13.8	*30.42*
SDS180/2	224	*8.82*	172	*6.77*	19.2	*42.33*
SDS180/3	272	*10.71*	220	*8.66*	24.6	*54.23*
SDS180/4	320	*12.60*	268	*10.55*	30	*66.14*
SDS180/5	368	*14.49*	316	*12.44*	35.4	*78.04*
SDS180/6	416	*16.38*	364	*14.33*	40.8	*89.95*

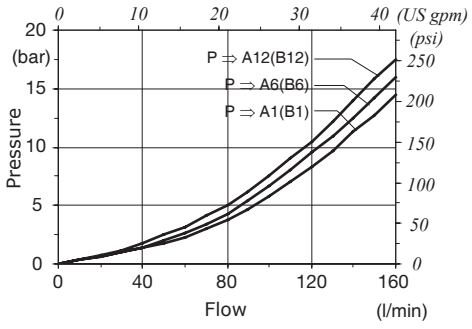
TYPE	E		F		Weight	
	mm	*in*	mm	*in*	Kg	*lb*
SDS180/7	464	*18.27*	412	*16.22*	46.2	*101.85*
SDS180/8	512	*20.16*	460	*18.11*	51.6	*113.76*
SDS180/9	560	*22.05*	508	*20.00*	57	*125.66*
SDS180/10	608	*23.94*	556	*21.89*	62.4	*137.57*
SDS180/11	656	*25.83*	604	*23.78*	67.8	*149.47*
SDS180/12	704	*27.72*	652	*25.67*	73.2	*161.38*

Performance data

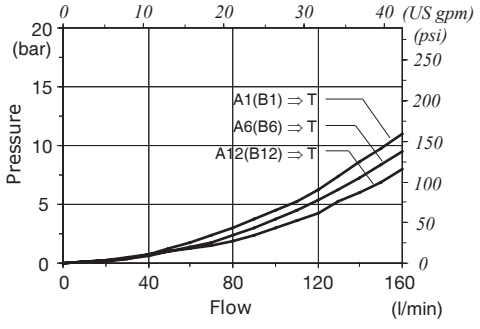
P ⇒ T pressure drop



P ⇒ A(B) pressure drop



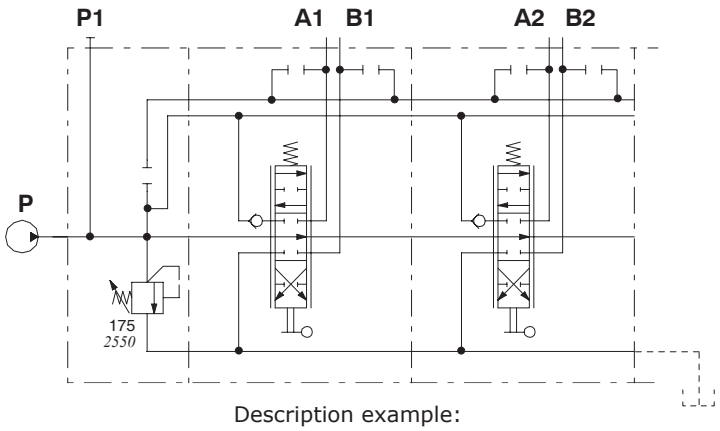
A(B) ⇒ T pressure drop



Hydraulic circuit

Parallel circuit

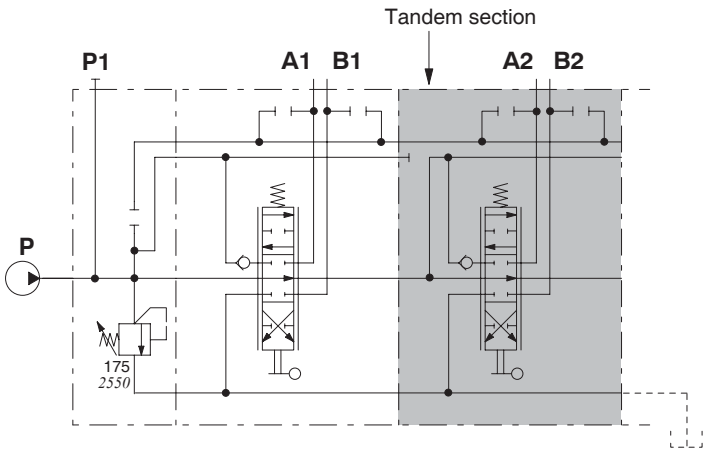
Standard configuration with open centre and side inlet and outlet.



Description example:
SDS180/2/AC(YG3–120)/18L/18L/.....

Series-parallel (tandem) circuit

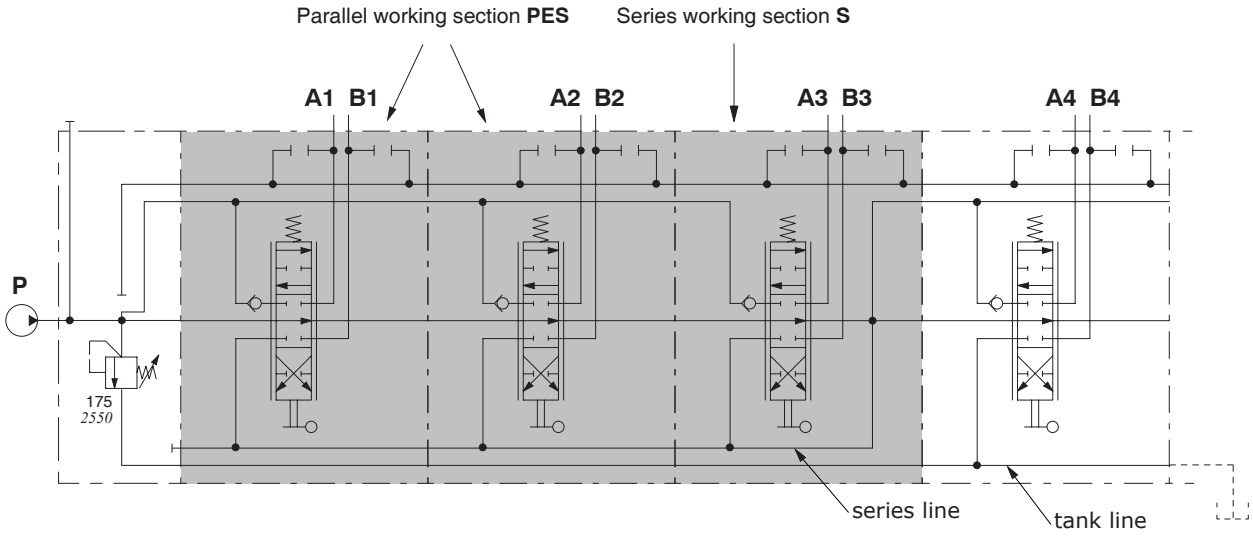
It needs a special working section kit.
Tandem section is fed from the free flow pressure line; it's excluded when an up strem section is operated.



Description example:
SDS180/2/AC(YG3–120)/18L/**SP**-18L/.....

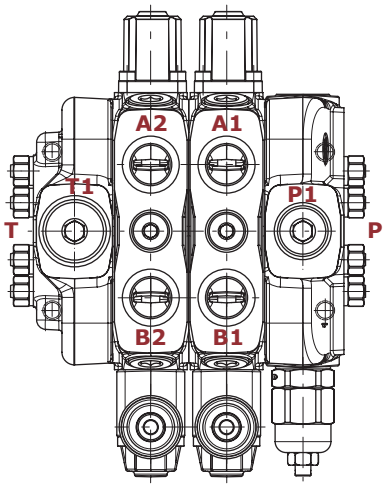
Hydraulic circuit

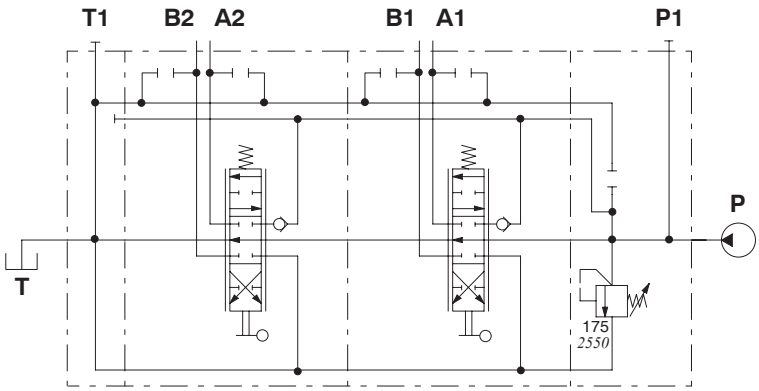
Series circuit



Description example:
SDS180/4/AC(YG3–120)/**PES**-18L/**PES**-18L/**S**-18L/18L/.....

Right inlet directional valve





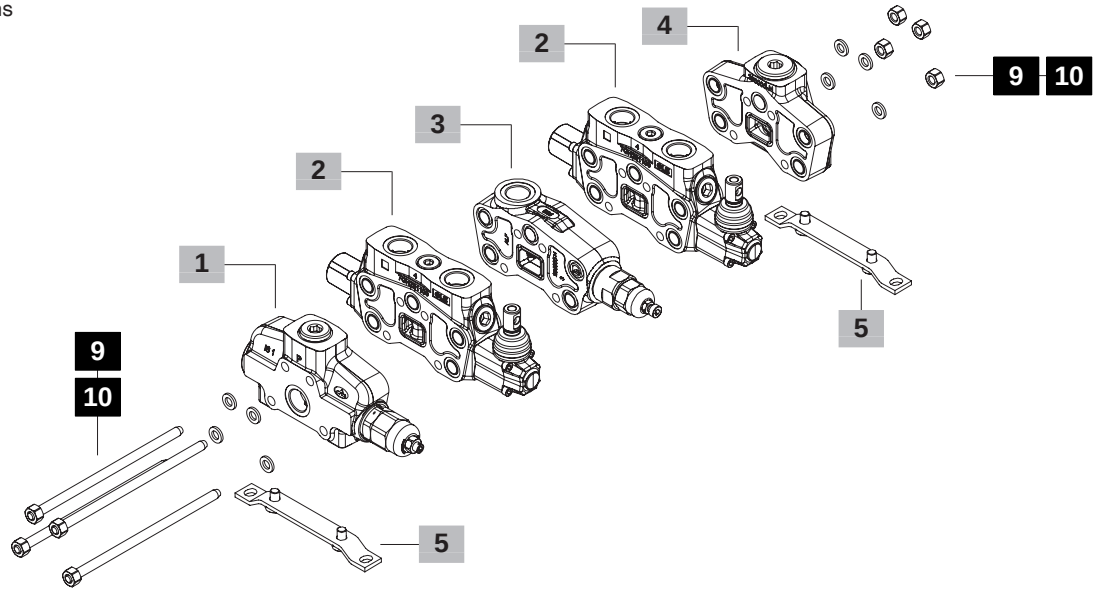
Description example:
SDS180/2/**BC**(YG3–120)/18L/18L/RC

Complete sections ordering codes

Standard configuration with side inlet and outlet

SDS180 / 2 / AC(YG3-175) / PHT-18L / EI1(YG3-180) / PHT-18L / RC - STAF

Nr. of working sections — 1 — 2 — 3 — 4 — 5



1 Inlet section * page 11

TYPE **AC(YG3-175)** CODE 618201005
DESCRIPTION With direct pressure relief valve
TYPE **AC(XG-120)** CODE 618201004
DESCRIPTION With pilot pressure relief valve
TYPE **AC(SV)** CODE 618201006
DESCRIPTION Without pressure relief valve
TYPE **AC(YG3-120)R2** CODE 618201007
DESCRIPTION With direct pressure relief valve and rotary commutator
TYPE **AC(YG3-120)R2E** CODE 618201008
DESCRIPTION With direct pressure relief valve and 12VDC electric commutator
TYPE **M(LSW-120)ELN(NC)** CODE 618201009
DESCRIPTION With flow cut-out and LS pressure relief valve
TYPE **ACD/VPD(LSZ-230/YG3-120)** CODE 618201018
DESCRIPTION With double stage pressure relief valve and priority valve
TYPE **BCHW(LSW-250)ELN(NO)-12VDC** CODE 618201029
DESCRIPTION With unloader operation spool type and LS pressure relief valve 12VDC

2 Working section * page 26

TYPE	CODE	DESCRIPTION
PHT-18L	618101097	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
RPHT-18L.U3T	618101069	Parallel circuit, prearranged for valves with fixed setting
RQHT-18L	618151001	As previous without upper predisposition for port valves
SP-18L	618105005	For series-parallel (tandem) circuit, prearranged for port valves, double acting spool with spring return, lever control
S-18L	615111001	Series circuit, double acting spool with spring return, lever control

2 Working section (continued)* page 26

TYPE	CODE	DESCRIPTION
PHT-1IM8IM	618101106	Parallel circuit, prearranged for port valves with proportional hydraulic control
PES-18L	618101031	Parallel circuit, lever control to combine with series working section (see page 7)
RPHSP-18L	618125002	As RPHT for series-parallel (tandem) circuit
RPHT-1IM8IM	618101072	Parallel circuit, prearranged for valves with fixed setting with proportional hydraulic control
RQHT-1IM8IM	618151000	As previous, without upper predisposition for port valves

3 Intermediate sections * page 61

TYPE	CODE	DESCRIPTION
EI1(YG3)	618401001	With direct pressure relief valve

4 Outlet section * page 63

TYPE	CODE	DESCRIPTION
RC	618301003	With side outlet
RD	618301002	With upper outlet
RE	618301001	With upper outlet and side carry-over sleeve
RK	618301004	With upper outlet, closed center
RV	618301009	With backpressure valve 10 bar *(145 psi)*
RV(6)	618101072	With backpressure valve 6 bar *(87 psi)*

5 Fixing brackets page 81

TYPE	CODE	DESCRIPTION
STAF	5STA125220	Brackets with assembling screws

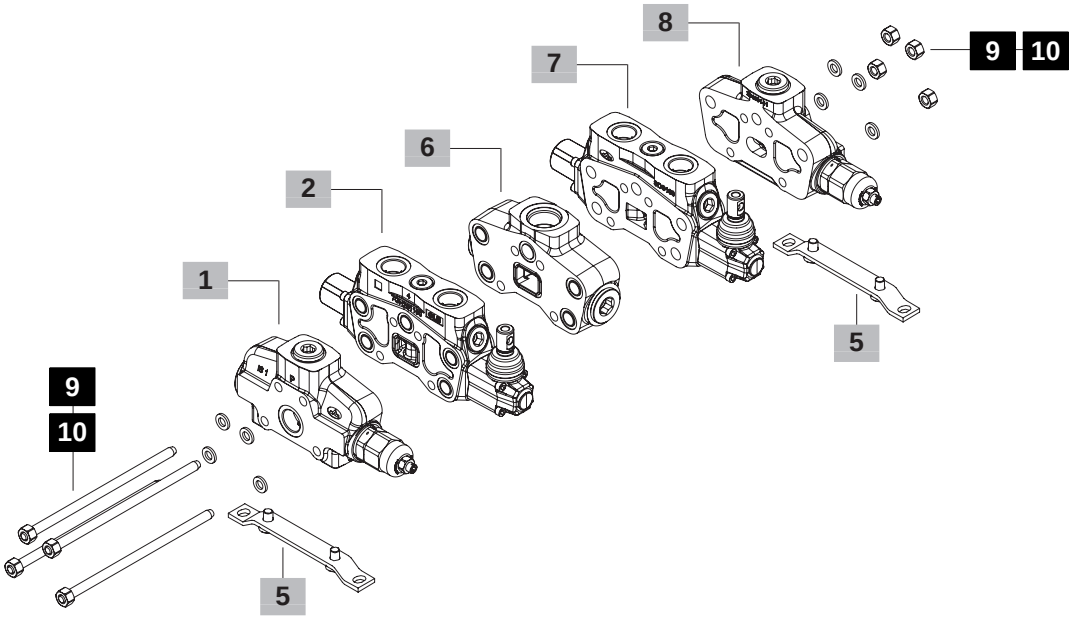
NOTE (*) – Codes are referred to **BSP** thread.

Complete sections ordering codes

Configuration with 2 side inlets and mid return manifold

SDS180 / 2 / AC(YG3-120) / PHT-18L / CS1 / PHT-ED-18L / BC(YG3-120) - STAF

Nr. of working sections: 1 | 2 | 6 | 7 | 8 | 5



6 Return manifold * page 59

TYPE	CODE	DESCRIPTION
CS1	615401010	Mid return manifold

7 Right inlet working section *

TYPE	CODE	DESCRIPTION
PHT-ED-18L	618101119	Parallel circuit, prearranged for port valves, double acting spool with spring return, lever control
SP-ED-18L	618101043	As previous with series-parallel (tandem) circuit

8 Right inlet section *

TYPE	CODE	DESCRIPTION
BC(YG3-120)	618201025	Side inlet with direct press. relief valve
BC(XG-120)	618201026	Side inlet with pilot pressure relief valve
BC(SV)	618201027	Side inlet without pressure relief valve
BD(YG3-120)	618201028	Upper inlet with direct pressure relief valve

9 Assemb. kit without intermediate section

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

10 Assemb. kit with intermediate section

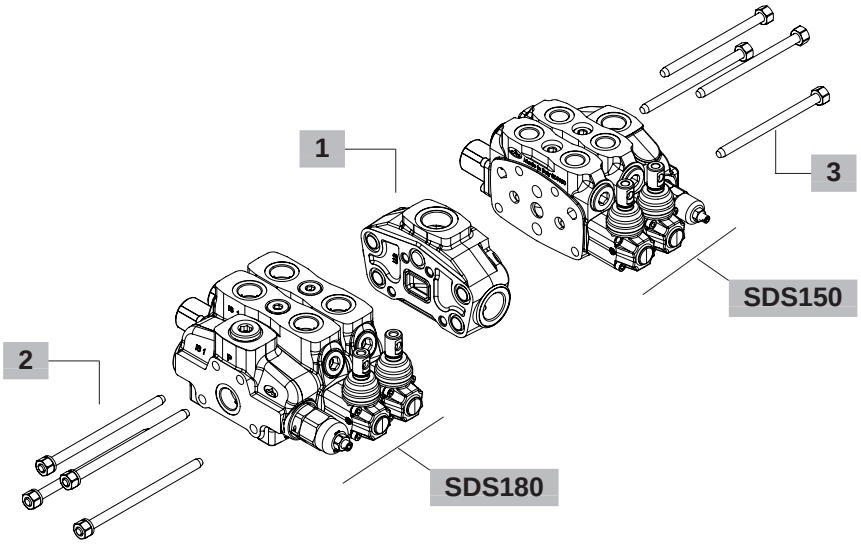
CODE	DESCRIPTION
5TIR110266	Tie rod kit for 2 working sections directional valve
5TIR110316	Tie rod kit for 3 working sections directional valve
5TIR110368	Tie rod kit for 4 working sections directional valve
5TIR110410	Tie rod kit for 5 working sections directional valve
5TIR110458	Tie rod kit for 6 working sections directional valve
5TIR110506	Tie rod kit for 7 working sections directional valve
5TIR110554	Tie rod kit for 8 working sections directional valve
5TIR110602	Tie rod kit for 9 working sections directional valve
5TIR110650	Tie rod kit for 10 working sections directional valve
5TIR110698	Tie rod kit for 11 working sections directional valve
5TIR110746	Tie rod kit for 12 working sections directional valve

NOTE (*) – Codes are referred to **BSP** thread.

Configuration with SDS180 and SDS150 valves coupling together ordering codes

SDS180/2/AC(YG3-120)/PHT-18L/PHT-18L/ CS3 /PHT-18L/PHT-18L/BC(YG3-120)/SDS150/2

1



1 Return manifold *

TYPE	CODE	DESCRIPTION
CS3	615441010	Mid return manifold

2 Assembling kit for SDS180 valve side

CODE	DESCRIPTION
5TIR4161	Tie rod kit for 1 working section directional valve
5TIR4162	Tie rod kit for 2 working sections directional valve
5TIR4163	Tie rod kit for 3 working sections directional valve
5TIR4164	Tie rod kit for 4 working sections directional valve
5TIR4165	Tie rod kit for 5 working sections directional valve
5TIR4166	Tie rod kit for 6 working sections directional valve
5TIR4167	Tie rod kit for 7 working sections directional valve
5TIR4168	Tie rod kit for 8 working sections directional valve
5TIR4169	Tie rod kit for 9 working sections directional valve
5TIR416A	Tie rod kit for 10 working sections directional valve

3 Assembling kit for SDS150 valve side

CODE	DESCRIPTION
5TIR41501	Tie rod kit for 1 working section directional valve
5TIR41502	Tie rod kit for 2 working sections directional valve
5TIR41503	Tie rod kit for 3 working sections directional valve
5TIR41504	Tie rod kit for 4 working sections directional valve

NOTE (*) – Codes are referred to **BSP** thread.

Parts ordering codes

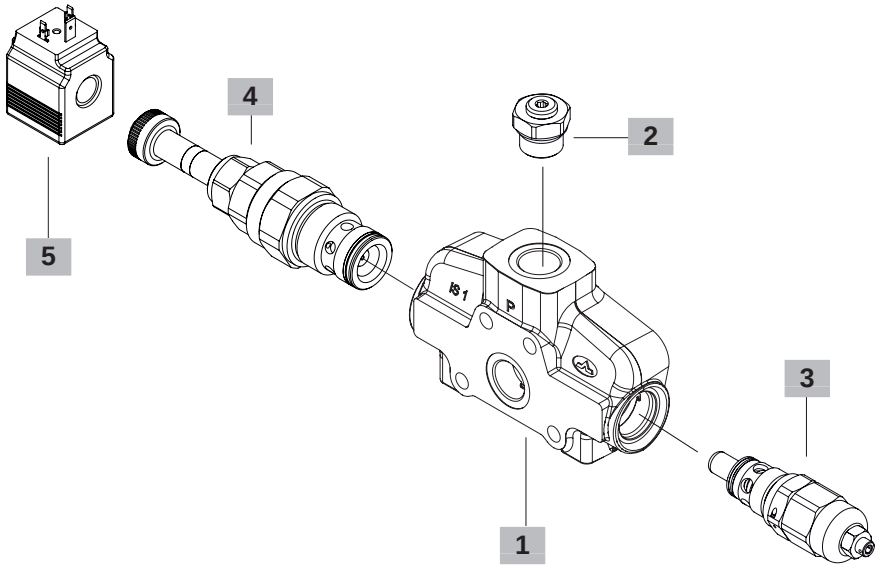
FE SDS180 / AC (YG3 - 120) ELN - MAN 14 - 12VDC

1 3 4 2 5

Pressure relief valve setting (bar)

Available configurations

AC: with side inlet, for left inlet (standard) directional valve
AD: with upper inlet, for left inlet (standard) directional valve
BC: with side inlet, for right inlet directional valve
BD: with upper inlet, for right inlet directional valve



1 Inlet cover body * page 12

CODE: 3FIA118301-H
DESCRIPTION: Standard body

2 Parts *

TYPE	CODE	DESCRIPTION
-	3XTAP732200	G3/4 plug (omitted in description)
MAN18	5MAN632230	G1/8 Pressure gauge arrangement
MAN14	5MAN632231	G1/4 Pressure gauge arrangement

3 Inlet relief valve options page 13

Standard setting is referred to 10 l/min *(2.6 US gpm)*.

SV	3XTAP535410	Relief valve blanking plug
VMP20/1 pilot operated pressure relief valve X type		
(XG-120)	X007211120	Range 60-315 bar *(870-4570 psi)* standard setting 120 bar *(1750 psi)*
(XGN-120)	XCAR120313	As previous without filter
VMD20/1 direct pressure relief valve Y type (standard)		
(YG2-80)	3XCAR120212	Range 63-125 bar *(900-1800 psi)* standard setting 80 bar *(1150 psi)*
(YG3-175)	3XCAR120213	Range 100-200 bar *(1450-2900 psi)* standard setting 175 bar *(2500 psi)*
(YG4-250)	3XCAR120214	Range 160-320 bar *(2300-4650 psi)* standard setting 250 bar *(3600 psi)*
Double stage relief valve (pilot port SAE 8)		
(XGD-205-230)	1130040408	Setting 205 and 230 bar *(2970 and 3300 psi)*

4 Inlet valve options page 15

TYPE	CODE	DESCRIPTION
-	3XTAP535410	Relief valve blanking plug (omitted in description)
F	5KIT420200	Inlet anti-cavitation valve
L	3XCAR420300	Hydraulic operated
Solenoid operated unloader valve		
ELN	YEF08002000	Without emergency
ELP	YEF08002002	Push-button emergency
ELV	YEF08002003	Screw type emergency
ELT	YEF08002004	Push and twist type with detent emergency

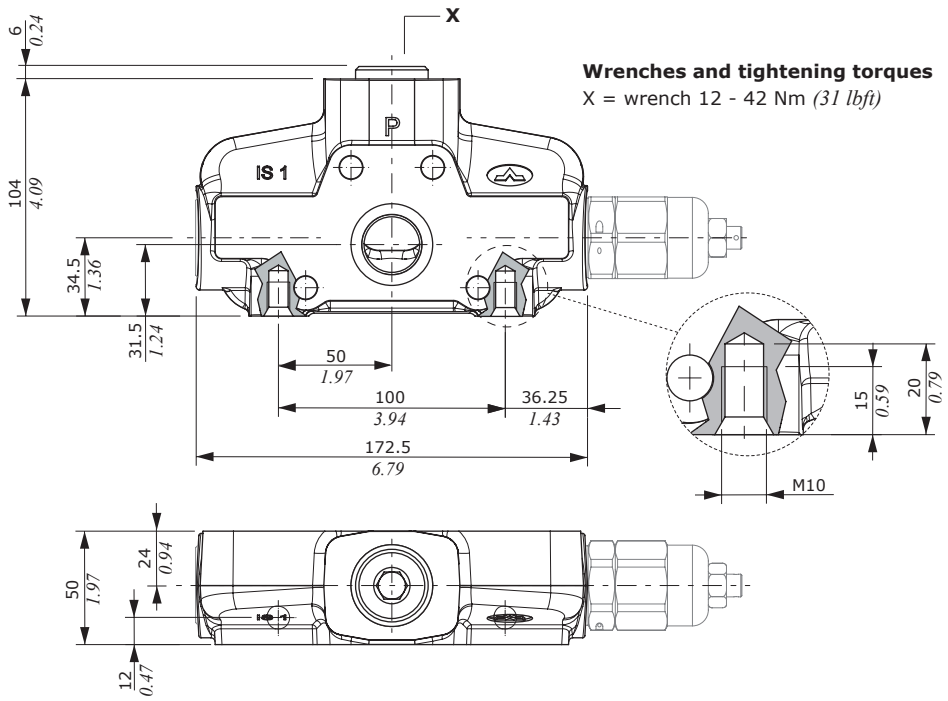
5 Coils page 79

TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	**BER** type, 12 VDC, ISO4400 connector

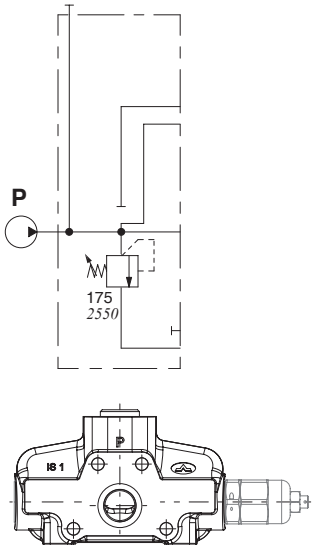
For complete available coils list see page 78

NOTE (*) – Codes are referred to **BSP** thread.

Dimensional data and hydraulic circuit

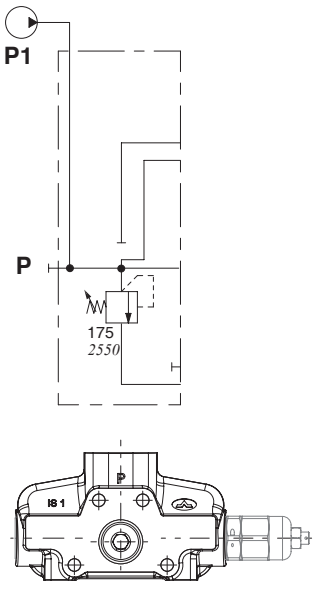


For left inlet directional valve, side port



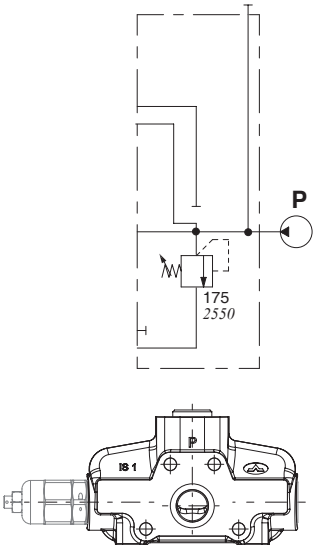
Description example:
AC(YG3–175)

For left inlet directional valve, upper port



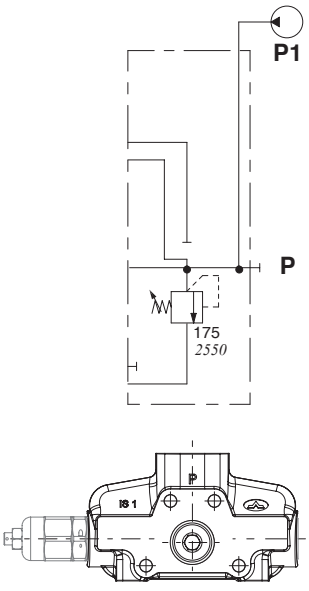
Description example:
AD(YG3–175)

For right inlet directional valve, side port



Description example:
BC(YG3–175)

For right inlet directional valve, upper port



Description example:
BD(YG3–175)

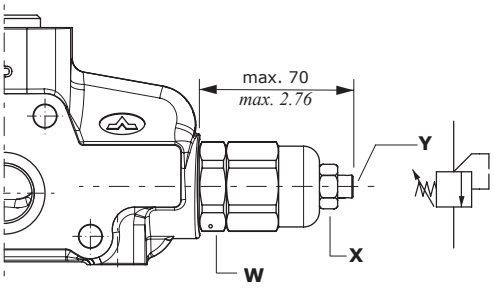
Inlet valve options

Direct overpressure relief valve

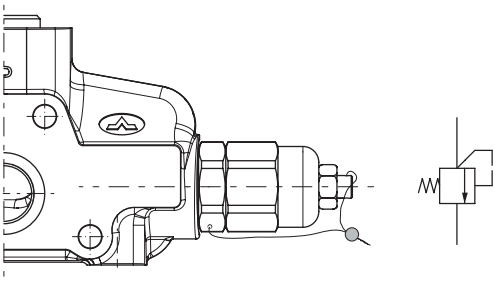
Description example: **Y G 3 - 120**

- Configuration
- Spring type
- Valve setting (bar)

Configuration **G** type: adjustable with screw



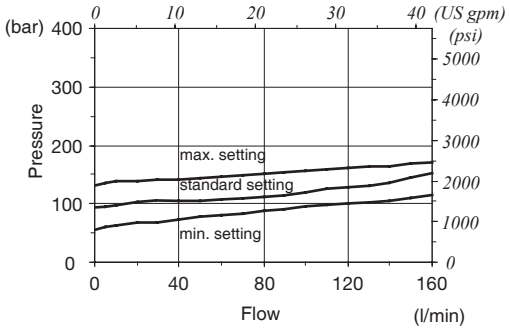
Configuration **H** type: valve set and locked



Wrenches and tightening torques
X = wrench 17 - 24 Nm *(17.7 lbft)*
Y = allen wrench 5
W = wrench 36 - 42 Nm *(31 lbft)*

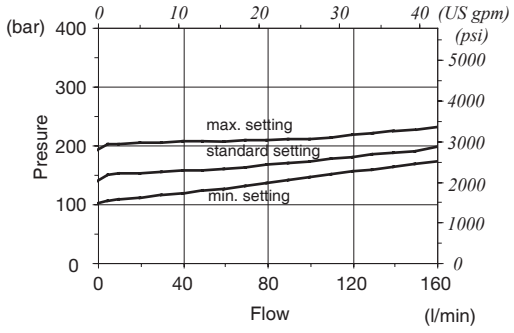
YG2 valve setting range

From 63 to 125 bar *(from 900 to 1800 psi)*



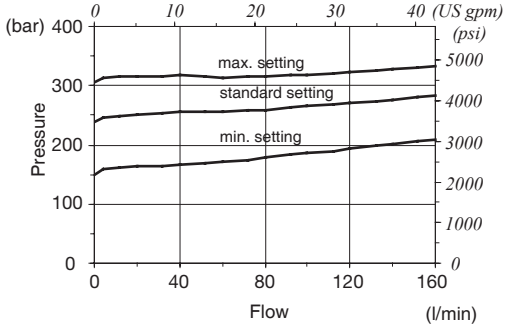
YG3 valve setting range

From 100 to 200 bar *(from 1450 to 2900 psi)*



YG4 valve setting range

From 160 to 320 bar *(from 2300 to 4650 psi)*



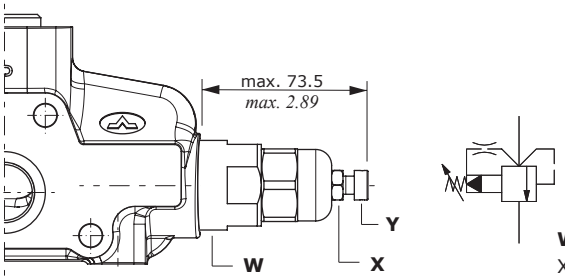
Inlet valve options

Pilot operated overpressure relief valve

Description example: **X G N - 120**

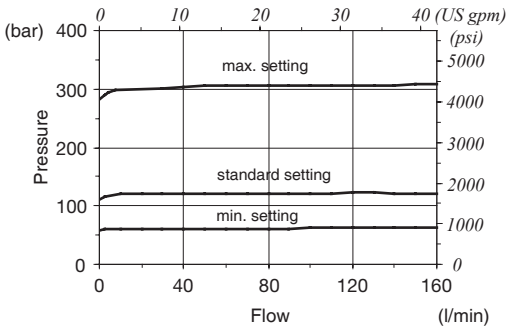
- Configuration
- Without filter
- Valve setting (bar)

Configuration **G** type: adjustable with screw



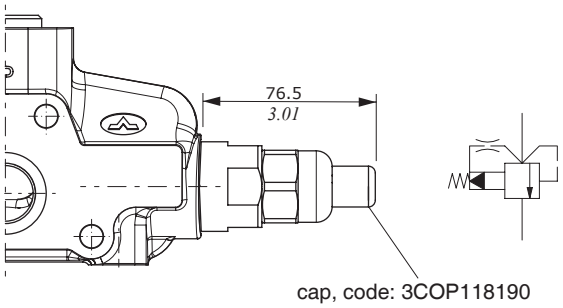
XG valve setting range

From 60 to 315 bar *(from 870 to 4570 psi)*



Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbft)*
Y = allen wrench 5
W = wrench 36 - 42 Nm *(31 lbft)*

Configuration **Z** type: valve set and locked with tamper proof cap

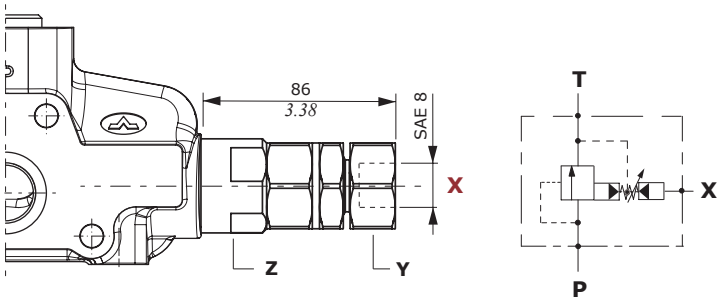


Double stage relief valve

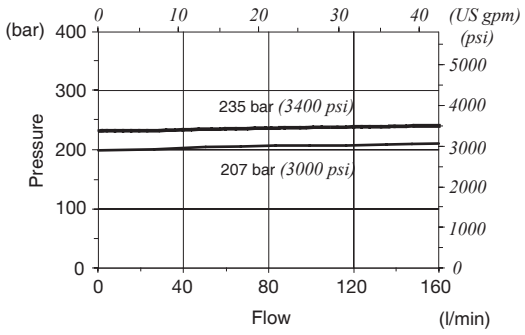
Description example: **X G D - 207-235**

- Valve setting (bar)

Wrenches and tightening torques
Z = wrench 36 - 42 Nm *(31 lbft)*
Y = allen wrench 36



XGD setting



NOTE - valve with SAE pilot; for executions with different thread contact the Sales Dpt.

Unloader valves

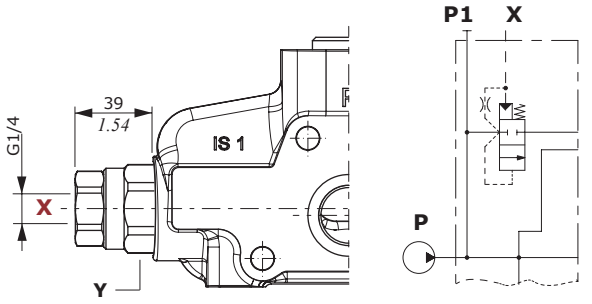
Description example: AC (YG3 - 120) **ELT** - **12VDC**

Hydraulic operated valve: **L**

Solenoid operated valve: **ELN** **ELP** **ELV** **ELT**

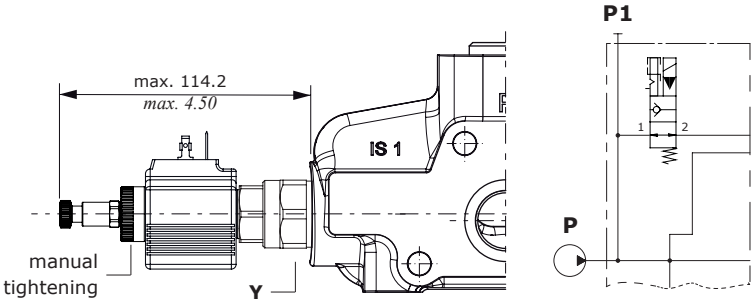
Feeding voltage: for solenoid operated

Hydraulic operated



Solenoid operated

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



Wrenches and tightening torques

Y = wrench 36 - 42 Nm *(31 lbft)*

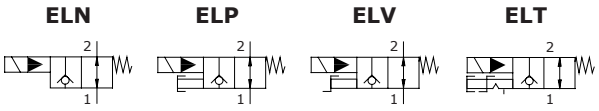
Legenda

ELN: without emergency

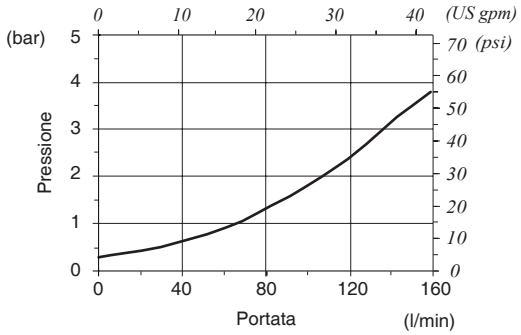
ELP: push button emergency override

ELV: screw emergency override

ELT: "push&twist" emergency override



Pressure drop valve L type on SDS180/2

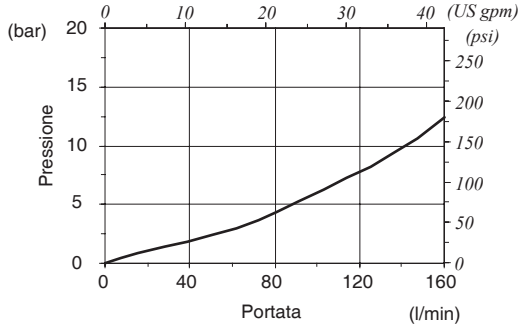


Valve L type features

Nominal flow . . . . . : 120 l/min *(31.7 US gpm)*

Internal leakage . . . . . : 10 cm³/min @ 100 bar *(0.61 in³/min @ 1450 psi)*

Pressure drop valve EL type on SDS180/2



Valve EL type features

Nominal flow . . . . . : 40 l/min *(10.6 US gpm)*

Max. pressure. . . . . : 350 bar *(5100 psi)*

Internal leakage . . . . . : 50 cm³/min @ 210 bar *(3.05 in³/min @ 3050 psi)*

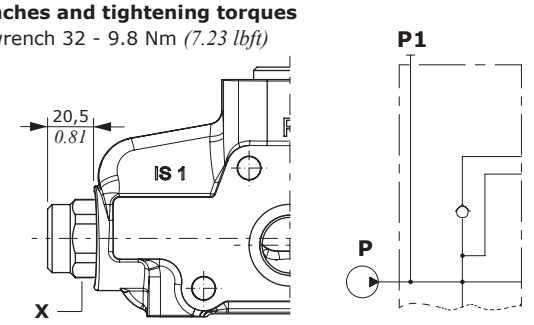
For **BER** coil see page 79

Anti-cavitation valve

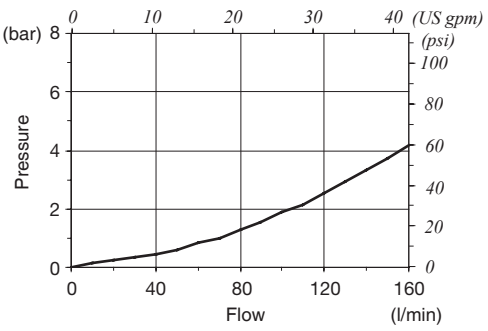
Description example: AC (YG3 - 120) **F**

Wrenches and tightening torques

X = wrench 32 - 9.8 Nm *(7.23 lbft)*



Pressure drop

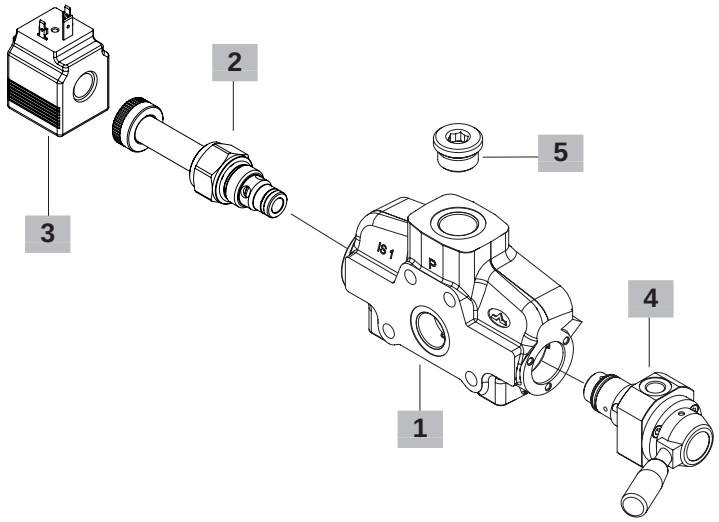


Configuration with rotary commutator

FE SDS180 / AC ELN - 12VDC - R2

1 2 3 4

Available configurations
AC: with side inlet, for left inlet (standard) directional valve
AD: with upper inlet, for left inlet (standard) directional valve
BC: with side inlet, for right inlet directional valve
BD: with upper inlet, for right inlet directional valve



1 Inlet cover body * page 17

CODE: 3FIA118311-H
DESCRIPTION: Predisposition for rotary commutator

2 Inlet valve options page 13

Standard setting is referred to 10 l/min *(2.6 US gpm)* flow.

INLET RELIEF OPTIONS

TYPE	CODE	DESCRIPTION
SV	3XTAP535410	Relief valve blanking plug
VMP20/1 pilot operated pressure relief valve X type		
(XG-120)	X007211120	Range 60-315 bar *(870-4570 psi)* standard setting 120 bar *(1750 psi)*
(XGN-120)	XCAR120313	As previous without filter
VMD20/1 direct pressure relief valve Y type (standard)		
(YG2-80)	3XCAR120212	Range 63-125 bar *(900-1800 psi)* standard setting 80 bar *(1150 psi)*
(YG3-175)	3XCAR120213	Range 100-200 bar *(1450-2900 psi)* standard setting 175 bar *(2500 psi)*
(YG4-250)	3XCAR120214	Range 160-320 bar *(2300-4650 psi)* standard setting 250 bar *(3600 psi)*
Double stage relief valve (pilot port SAE 8)		
(XGD-205-230)	1130040408	Setting 207 and 235 bar *(2970 and 3330 psi)*

INLET VALVE OPTIONS

F	5KIT420200	Inlet anti-cavitation valve
L	3XCAR420300	Hydraulic operated unloader valve
Solenoid operated unloader valve		
ELN	YEF08002000	Without emergency
ELP	YEF08002002	Push-button emergency
ELV	YEF08002003	Screw type emergency
ELT	YEF08002004	Push and twist type with detent emergency

3 Coils page 79

TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	**BER** type, 12 VDC, ISO4400 connector

For complete available coils list see page 78

4 Commutator *

TYPE	CODE	DESCRIPTION
R2	5COM416203	Rotary commutator

5 Parts *

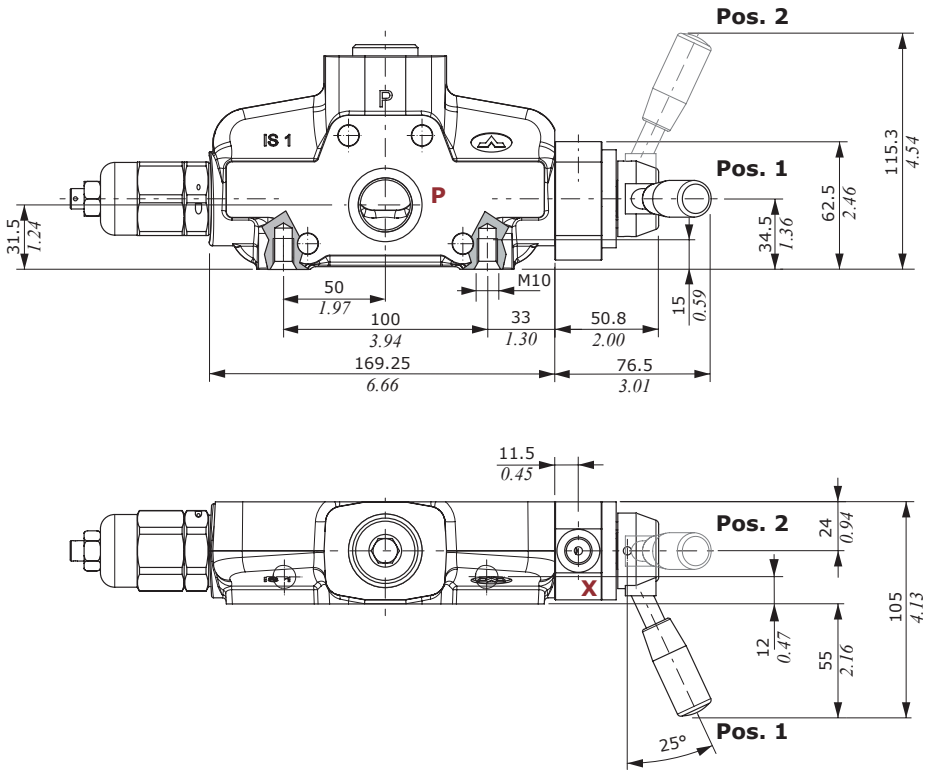
CODE	DESCRIPTION
3XTAP732200	G3/4 Plug

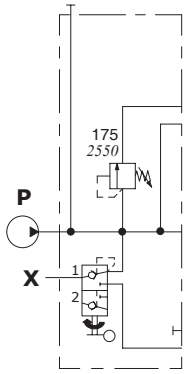
NOTE (*) – Codes are referred to **BSP** thread.

Configuration with rotary commutator

Dimensional data and hydraulic circuit

Drawing and circuit are referred to left inlet directional valve.





Rotary commutator features

Max. pressure. . . . . : 210 bar *(3050 psi)*

Internal leakage . . . . . : 3 cm³/min @ 100 bar

(0.18 in³/min @ 1450 psi)

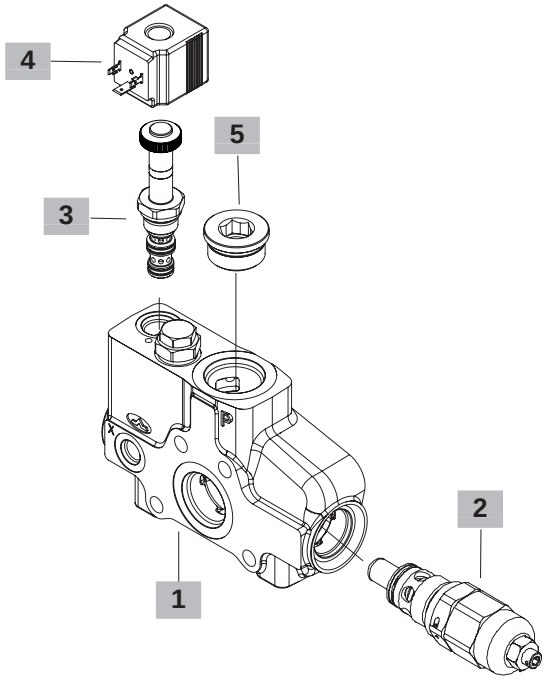
Configuration with electric commutator

FE SDS180 / AC (YG3 - 120) R2E - 12VDC

1 = AC / AD
2 = (YG3 - 120)
3 = R2E
4 = - 12VDC

Pressure relief valve setting (bar)

Available configurations
AC: with side inlet, for left inlet (standard) directional valve
AD: with upper inlet, for left inlet (standard) directional valve



1 Inlet cover body * page 19

CODE: 5FIA118361
DESCRIPTION: Predisposition for electric commutator

2 Inlet valve options page 13

Standard setting is referred to 10 l/min *(2.6 US gpm)* flow.

TYPE	CODE	DESCRIPTION
SV	3XTAP535410	Relief valve blanking plug
F	5KIT420200	Inlet anti-cavitation valve
L	3XCAR420300	Hydraulic operated unloader valve
VMP20/1 pilot operated pressure relief valve X type		
(XG-120)	X007211120	Range 60-315 bar *(870-4570 psi)* standard setting 120 bar *(1750 psi)*
(XGN-120)	XCAR120313	As previous without filter
VMD20/1 direct pressure relief valve Y type (standard)		
(YG2-80)	3XCAR120212	Range 63-125 bar *(900-1800 psi)* standard setting 80 bar *(1150 psi)*
(YG3-175)	3XCAR120213	Range 100-200 bar *(1450-2900 psi)* standard setting 175 bar *(2500 psi)*
(YG4-250)	3XCAR120214	Range 160-320 bar *(2300-4650 psi)* standard setting 250 bar *(3600 psi)*
Double stage relief valve (pilot port SAE 8)		
(XGD-205-230)	1130040408	Setting 205 and 230 bar *(2970 and 3330 psi)*

2 Inlet valve options (continued) page 15

Solenoid operated unloader valve

TYPE	CODE	DESCRIPTION
ELN	YEF08002000	Without emergency
ELP	YEF08002002	Push-button emergency
ELV	YEF08002003	Screw type emergency
ELT	YEF08002004	Push and twist type with detent emerg.

3 Electric commutator *

TYPE	CODE	DESCRIPTION
R2E	0EJ08002048	Electric commutator, ISO4400 connector

For complete available coils list see page 78

4 Coils Page 79

TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	**BER** type, 12VDC, ISO4400 connector

For complete available coils list see page 78

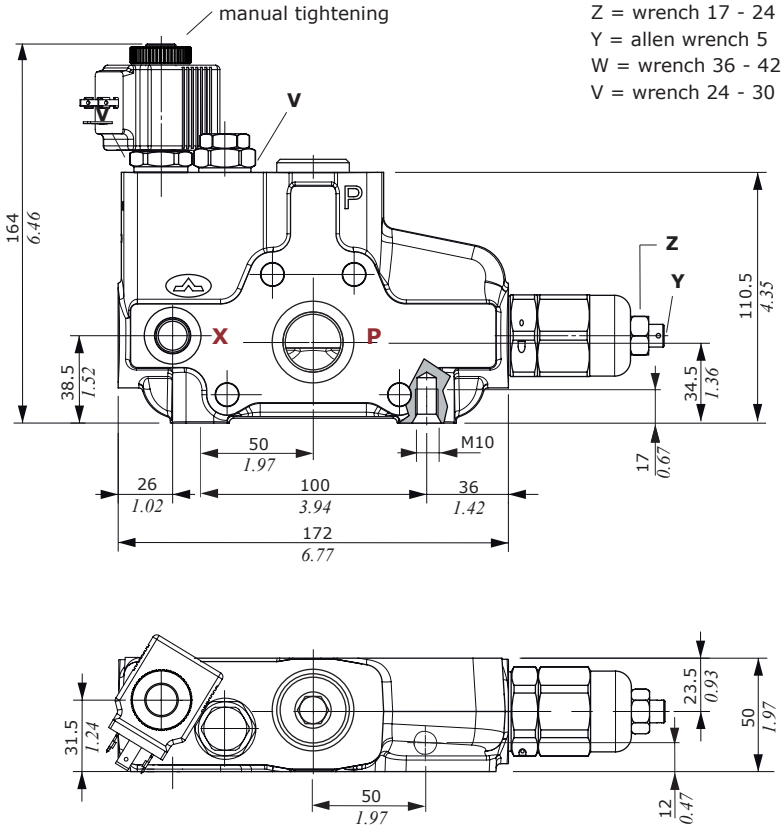
5 Parts *

CODE	DESCRIPTION
3XTAP732200	G3/4 Plug

NOTE (*) – Codes are referred to **BSP** thread.

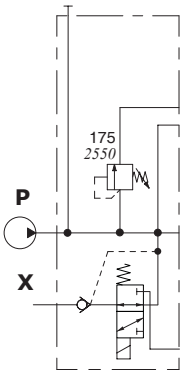
Configuration with electric commutator

Dimensional data and hydraulic circuit



Wrenches and tightening torques

Z = wrench 17 - 24 Nm *(17.7 lbft)*
Y = allen wrench 5
W = wrench 36 - 42 Nm *(31 lbft)*
V = wrench 24 - 30 Nm *(22.1 lbft)*



Electric commutator features

Max. pressure. . . . . : 250 bar *(3600 psi)*
Nominal flow . . . . . : 25 l/min *(6.6 US gpm)*
Internal leakage . . . . . : 40 cm³/min @ 210 bar
(2.44 in³/min @ 3050 psi)

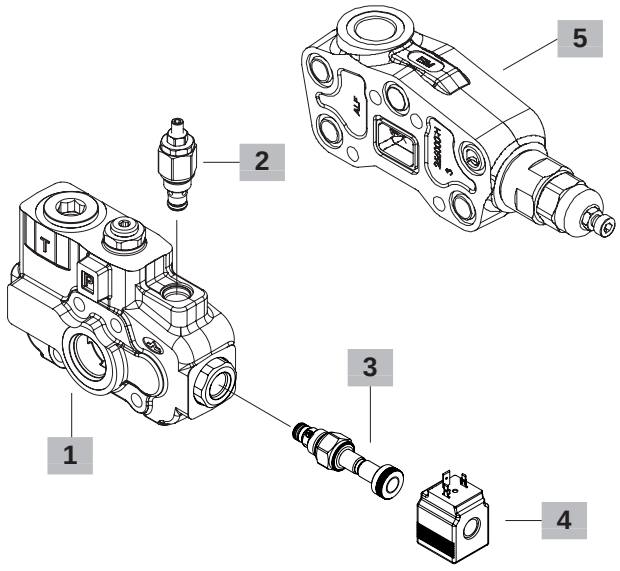
For **BER** coil see page 79

Configuration with flow cut-out

SDS180 / M (LSW - 120) — ELN(NC) - MAN 14 - 12VDC

1 2 3 1 4

Pressure relief valve setting (bar)



1 Inlet cover body * page 21

CODE: 5FIA118372
DESCRIPTION: With flow cut-out

2 Main relief valve page 21

Standard setting is referred to 10 l/min *(2.6 US gpm)* flow.

TYPE	CODE	DESCRIPTION
LSW(G2)	5KIT118110	Range 5-50 bar *(72-720 psi)* standard setting 30 bar *(400 psi)*
LSW(G3)	5KIT118111	Range 50-220 bar *(720-3200 psi)* standard setting 150 bar *(2150 psi)*
LSW(G4)	5KIT118112	Range 180-315 bar *(2600-4550 psi)* standard setting 250 bar *(3600 psi)*
SV	XTAP525320	Relief valve blanking plug

3 Unloader valve options page 21

TYPE	CODE	DESCRIPTION
ELN(NO)	0EF08002000	Without manual emergency, NO circuit
ELN(NC)	0EF08002001	Without manual emergency, NC circuit
ELT(NO)	0EF08002004	"Push&twist" manual emergency, NO circuit
ELP(NO)	0EF08002002	Push-button manual emergency, NO circuit
ELV(NO)	0EF08002003	Screw type manual emergency, NO circuit

4 Coils page 79

TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	**BER** type, 12VDC, ISO4400 connector

For complete available coils list see page 78

5 Intermediate section * page 62

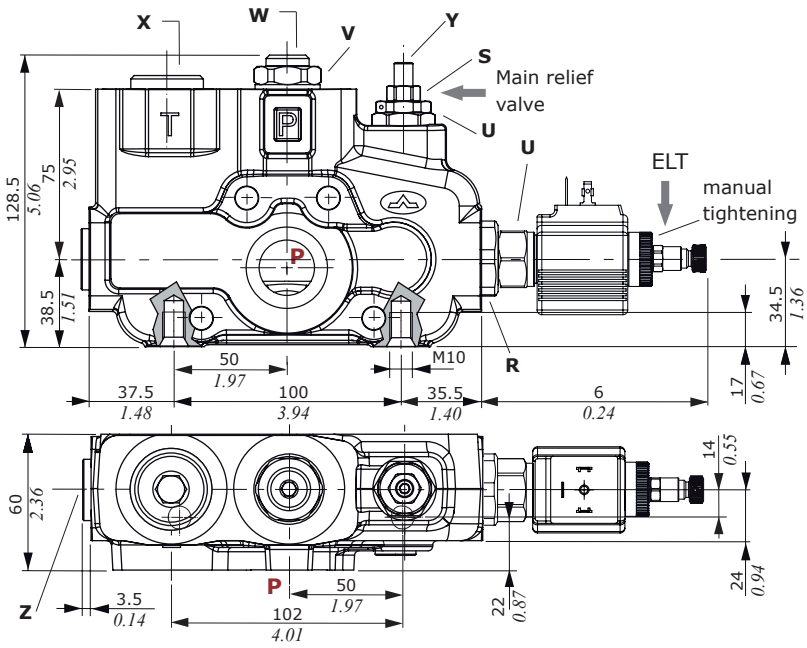
TYPE	CODE	DESCRIPTION
EIM(XG-220)	618421001	intermediate section with pressure relief valve

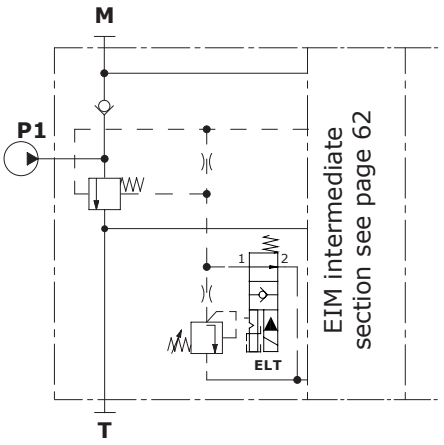
NOTE: inlet cover with flow cut-out must be **always** combined with EIM intermediate section. (See page 62).

NOTE (*) – Codes are referred to **BSP** thread.

Configuration with flow cut-out

Dimensional data and hydraulic circuit



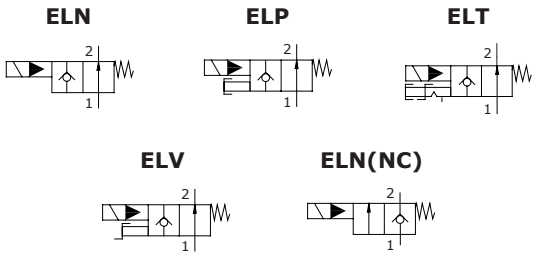


Wrenches and tightening torques

X = wrench 12 - 42 Nm *(31 lbft)*
Y = allen wrench 4
W = wrench 6 - 24 Nm *(17.7 lbft)*
Z = wrench 10 - 24 Nm *(17.7 lbft)*
V = wrench 27 - 24 Nm *(17.7 lbft)*
U = wrench 24 - 30 Nm *(22.1 lbft)*
R = wrench 32 - 42 Nm *(31 lbft)*
S = allen wrench 13

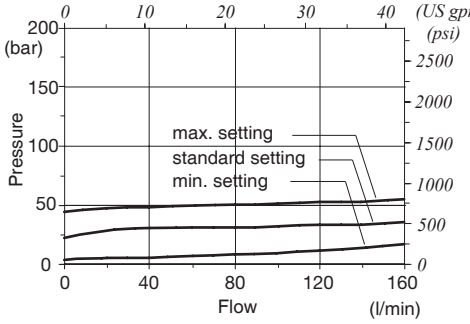
Legenda

ELN: without emergency
ELP: push button emergency override
ELV: screw emergency override
ELT: "push&twist" emergency override
ELN(NC): without emergency NC circuit



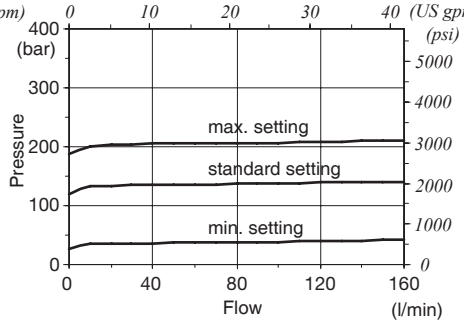
LSW(G2) main relief valve setting range

From 5 to 50 bar *(from 72 to 720 psi)*



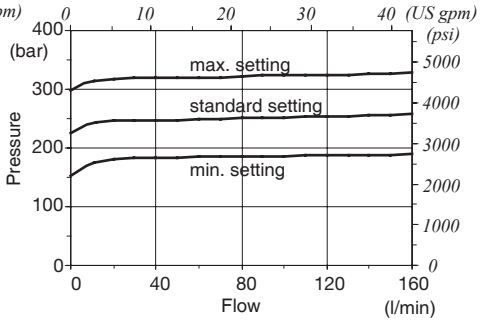
LSW(G3) main relief valve setting range

From 50 to 200 bar *(from 720 to 2900 psi)*

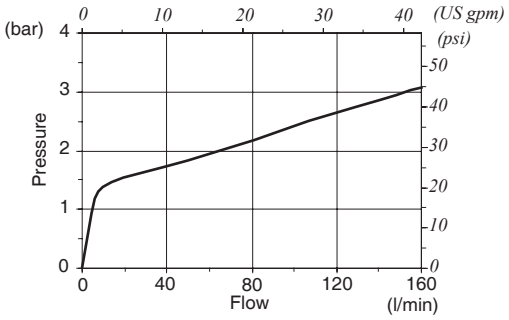


LSW(G4) main relief valve setting range

From 180 to 315 bar *(from 2600 to 4550 psi)*



Pressure drop P ⇒ T on flow cut-out



Configuration with priority valve

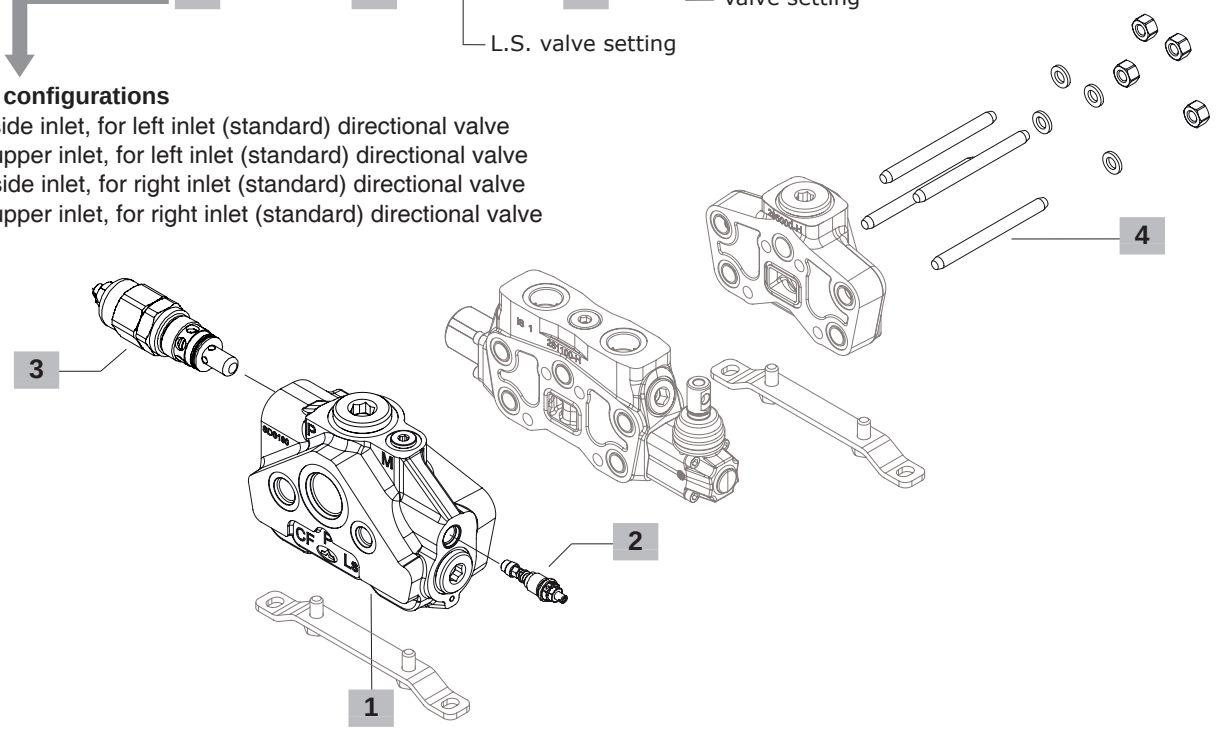
FE SDS180 / AC / VPD (LSZ - 230 \ YG3 - 120) - SAE

1 2 3 valve setting

L.S. valve setting

Available configurations

AC: with side inlet, for left inlet (standard) directional valve
AD: with upper inlet, for left inlet (standard) directional valve
BC: with side inlet, for right inlet (standard) directional valve
BD: with upper inlet, for right inlet (standard) directional valve



1 Inlet cover body * page 23

CODE: 5FIA118320
DESCRIPTION: With priority valve

2 L.S. relief valve options page 23

Standard setting is referred to 10 l/min *(2.6 US gpm)* flow.

TYPE	CODE	DESCRIPTION
LSD	XCAR126215	With blind nut, range 40-180 bar *(580-2600 psi)*, standard setting 90 bar *(1300 psi)*
	XCAR126213	As previous, range 180-350 bar *(2600-5000 psi)* standard setting 180 bar *(2600 psi)*
LSH	XCAR126216	Arranged for lead sealing, range 40-180 bar *(580-2600 psi)*, standard setting 90 bar *(1300 psi)*
	XCAR126217	As previous, range 180-350 bar *(2600-5000 psi)* standard setting 180 bar *(2600 psi)*
LSZ	XCAR126218	With tamper proof cap, range 6-115 bar *(80-1660 psi)*, standard setting 90 bar *(1300 psi)*
	XCAR126219	As previous, range 130-350 bar *(1900-5000 psi)* standard setting 180 bar *(2600 psi)*
ST	5KIT126210	Relief valve blanking plug

3 Inlet valve options page 13

Standard setting is referred to 10 l/min *(2.6 US gpm)* flow.

TYPE	CODE	DESCRIPTION
SV	3XTAP535410	Relief valve blanking plug
VMP20/1 pilot operated pressure relief valve X type		
(XG-120)	X007211120	Range 60-315 bar *(870-4570 psi)* standard setting 120 bar *(1750 psi)*
(XGN-120)	XCAR120313	As previous without filter
VMD20/1 direct pressure relief valve Y type (standard)		
(YG2-80)	3XCAR120212	Range 63-125 bar *(900-1800 psi)* standard setting 80 bar *(1150 psi)*
(YG3-175)	3XCAR120213	Range 100-200 bar *(1450-2900 psi)* standard setting 175 bar *(2500 psi)*
(YG4-250)	3XCAR120214	Range 160-320 bar *(2300-4650 psi)* standard setting 250 bar *(3600 psi)*
Double stage relief valve (pilot port SAE 8)		
(XGD-207-235)	1130040408	Setting 207 and 235 bar *(3000 and 3400 psi)*

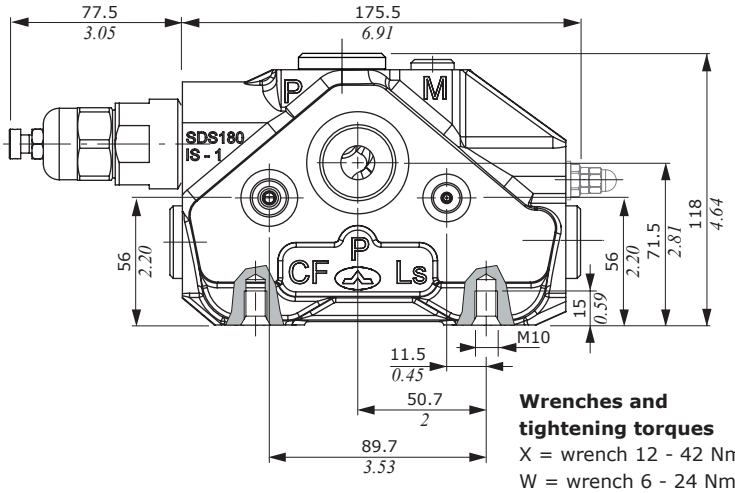
4 Assembling kit

CODE	DESCRIPTION
5TIR4161	Tie rod kit for 1 working sectional valve
5TIR4162	Tie rod kit for 2 working sectional valve
5TIR4163	Tie rod kit for 3 working sectional valve
5TIR4164	Tie rod kit for 4 working sectional valve
5TIR4165	Tie rod kit for 5 working sectional valve
5TIR4166	Tie rod kit for 6 working sectional valve
5TIR4167	Tie rod kit for 7 working sectional valve
5TIR4168	Tie rod kit for 8 working sectional valve
5TIR4169	Tie rod kit for 9 working sectional valve
5TIR416A	Tie rod kit for 10 working sectional valve

NOTE (*) – Codes are referred to **BSP** thread.

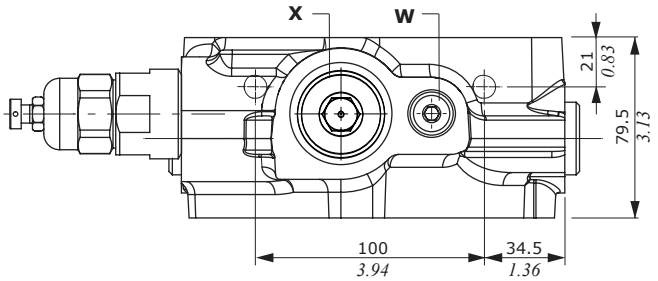
Configuration with priority valve

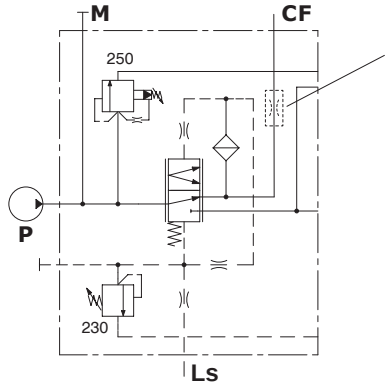
Dimensional data and hydraulic circuit



Wrenches and tightening torques

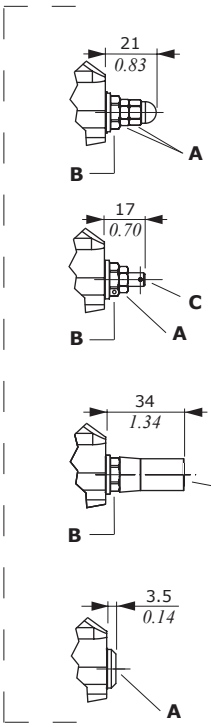
X = wrench 12 - 42 Nm *(31 lbft)*
W = wrench 6 - 24 Nm *(17.7 lbft)*
A = wrench 10 - 9.8 Nm *(7.23 lbft)*
B = wrench 13 - 42 Nm *(31 lbft)*
C = wrench 3





Grain security for flow limits available on request, code: 3VIT210100

Load Sensing pressure relief valves



LSD: with blind nut

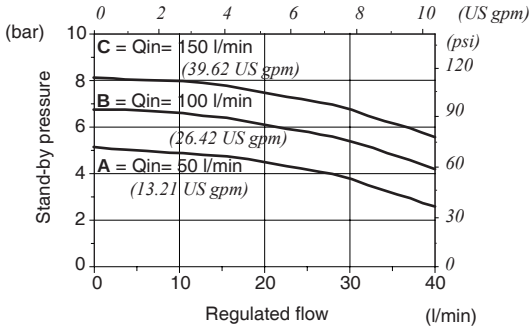
LSH: arranged for lead sealing

LSZ: with tamper proof cap

tamper proof code: 4COP116420

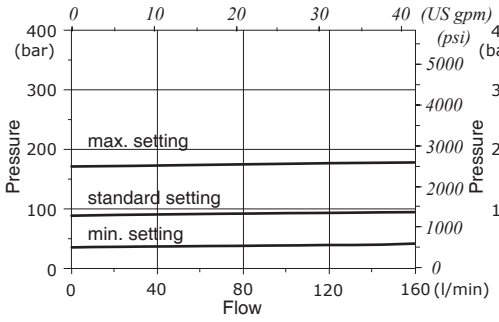
ST: valve blanking plug

Stand-by pressure vs. regulated flow for various values of inlet flow



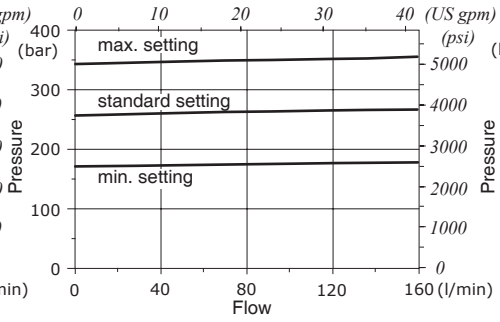
LSH, LSD valve and LSZ setting range

From 40 to 180 bar *(from 580 to 2600 psi)*



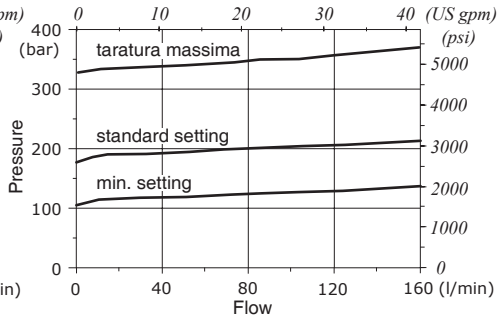
LSH and LSD valve setting range

From 180 to 350 bar *(from 2600 to 5100 psi)*



LSZ valve setting range

From 180 to 350 bar *(from 2600 to 5100 psi)*

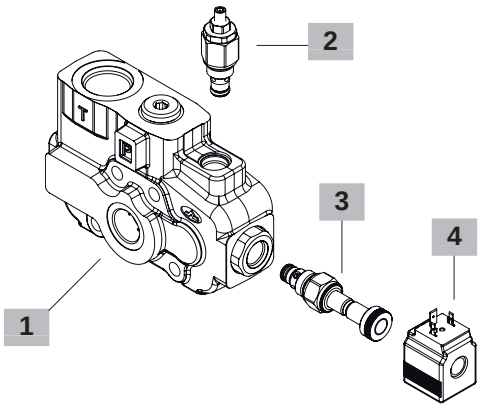


Configuration with unloader operation spool type

SDS180 / BCHW (LSW - 250) ELN(NO) - 24VDC

1 2 3 4

Pressure relief valve setting (bar)



1 Inlet cover body * page 25

CODE: 5FIA118373
DESCRIPTION: with unloader operation spool type

2 Main relief valve page 25

Standard setting is referred to 10 l/min *(2.6 US gpm)* flow.

TYPE	CODE	DESCRIPTION
LSW(G2)FC07	5KIT118120	Range 5-50 bar *(72-720 psi)* standard setting 30 bar *(400 psi)*
LSW(G3)FC07	5KIT118121	Range 50-200 bar *(720-3200 psi)* standard setting 150 bar *(2150 psi)*
LSW(G4)FC07	5KIT118122	Range 180-318 bar *(2600-4600 psi)* standard setting 250 bar *(3600 psi)*
SV	XTAP525320	Relief valve blanking plug

3 Pilot solenoid valve options page 25

TYPE	CODE	DESCRIPTION
ELN(NO)	0EF08002000	Without manual emergency, NO circuit
ELN(NC)	0EF08002001	Without manual emergency, NC circuit
ELT(NO)	0EF08002004	"Push&twist" manual emergency, NO circuit
ELP(NO)	0EF08002002	Push-button manual emergency, NO circuit
ELV(NO)	0EF08002003	Screw type manual emergency, NO circuit

4 Coils page 79

TYPE	CODE	DESCRIPTION
24VDC	4SLE002400A	**BER** type, 24VDC, ISO4400 connector

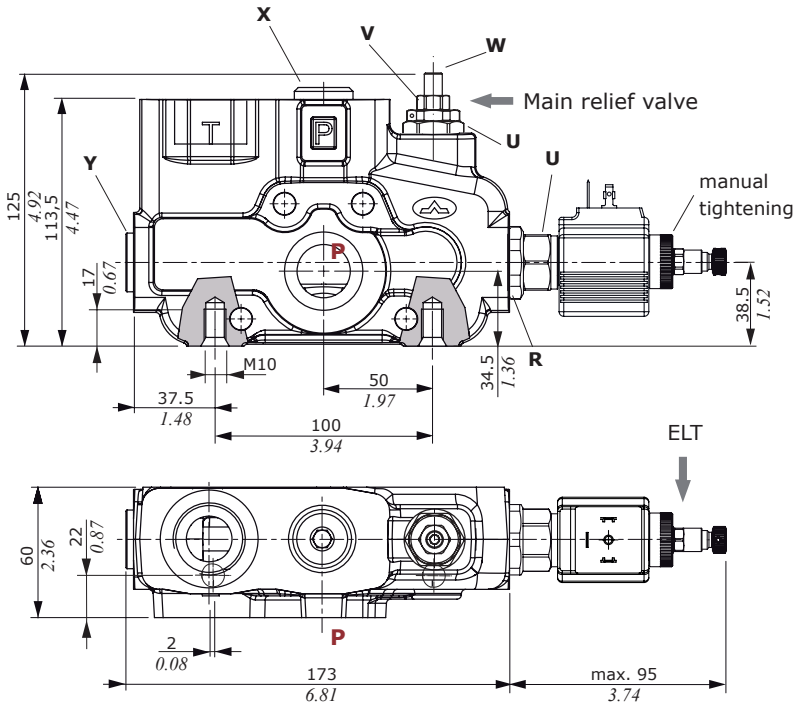
For complete available coils list see page 78

NOTE (*) – Codes are referred to **BSP** thread.

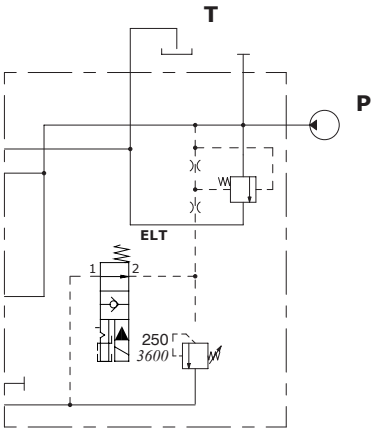
Configuration with unloader operation spool type

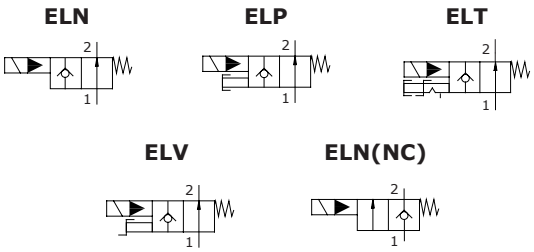
Dimensional data and hydraulic circuit

Wrenches and tightening torques
X = wrench 8 - 24 Nm *(17.7 lbft)*
Y = wrench 10 - 24 Nm *(17.7 lbft)*
W = allen wrench 4
V = wrench 13
U = wrench 24 - 30 Nm *(22.1 lbft)*
R = wrench 32 - 42 Nm *(31 lbft)*

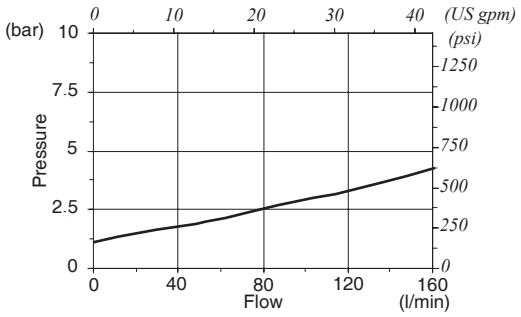


Legenda
ELN: without emergency
ELP: push button emergency override
ELV: screw emergency override
ELT: "push&twist" emergency override





Pressure drop P ⇒ T
with unloader operation spool type
on SDS 180/4



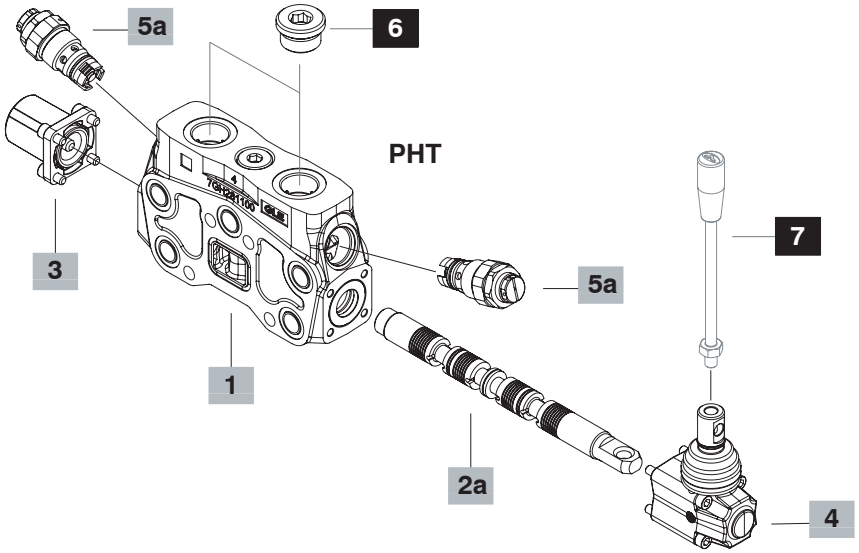
NOTE – For other valve diagrams see page 21.

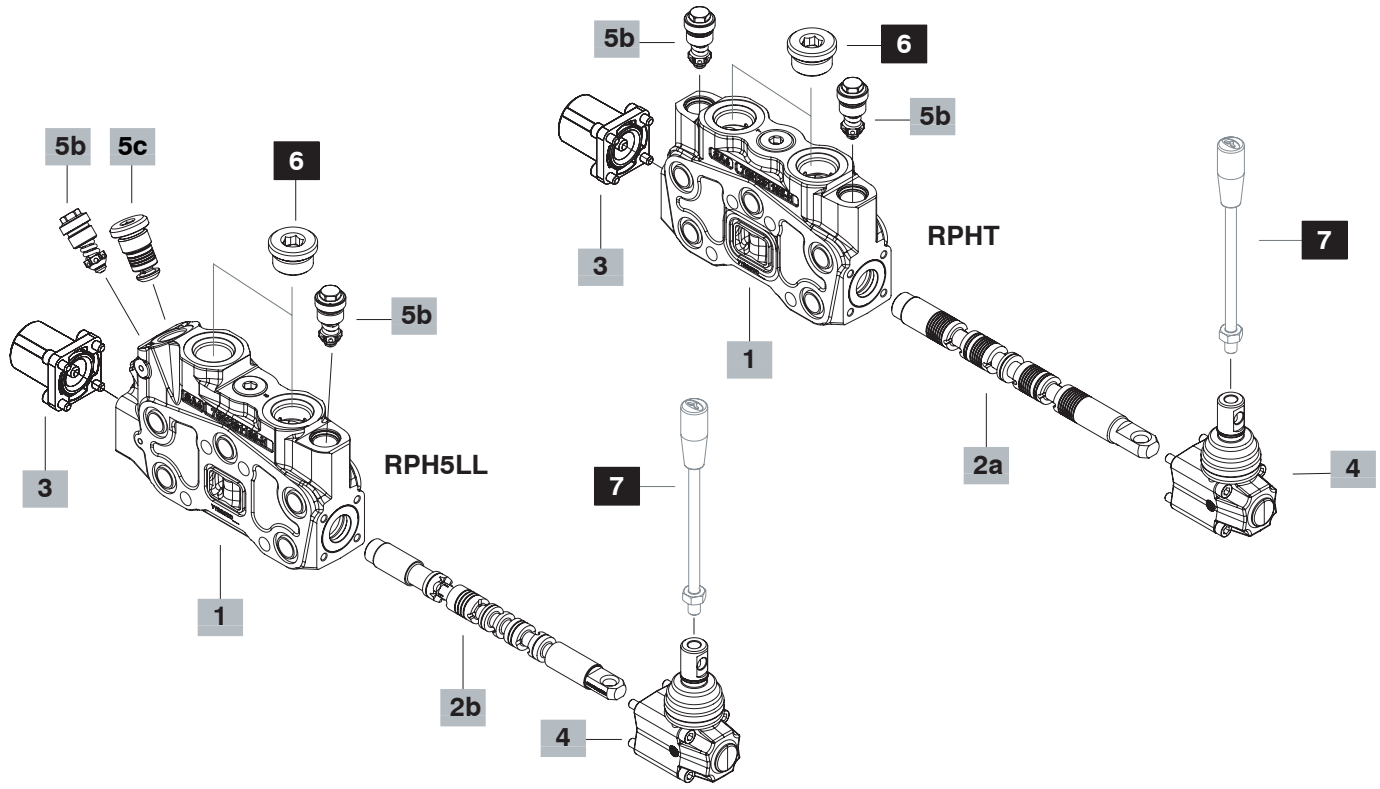
Parts ordering codes (mechanical control)

EL SDS180 / PHT - 1 8 L . P1 (G3 - 100)
1 2a 3 4 5a
Pressure relief valve setting (bar)

EL SDS180 / RPHT - 1 8 L . U (100)
1 2a 3 4 5b
Pressure relief valve fixed setting (bar)

EL SDS180 / RPH5LL - 5HFLL 8 L . U (100)
1 2b 3 4 5b
Pressure relief valve fixed setting (bar)





Parts ordering codes (mechanical control)

1 Working section kit * page 30

TYPE	CODE	DESCRIPTION
PHT	5EL1183080	For parallel circuit
RPHT	5EL1183057	For parallel circuit with upper arrangement for fixed setting port valves
RQHT	5EL1183056	For parallel circuit without upper arrangement for port valves
SP	5EL3183001	For tandem circuit
	5EL1183001A	As previous, **for 8MG..., 8PDG, 8PG, 8EPD, 8EPG spool positioners**
S	5EL2163000	For series circuit
S(MG)	5EL216300E	As previous, **for 8MG.., 8PDG, 8PG, 8EPD, 8EPG, 8IZ spool positioners**
P5	5EL1183201	For parallel circuit and floating circuit
RPH5	5EL1183250	For parallel circuit with floating circuit with upper arrangement for fixed setting port valves
PES	5EL1163000	For parallel circuit, for valve with series circuit (page 7)
PHT(MG)	5EL1183080B	As PHT, **for 8MG..., 8PDG, 8PG, 8EPD, 8EPG, 8IZ spool positioners**
RPHT(MG)	5EL1183057D	As previous with upper arrangement for fixed setting port valves
RQHT(MG)	5EL1183056D	As previous without upper arrangement for port valves
PH	5EL1183000	Regenerative control kit, **for 8CR, 9BCR-10BCR e 8EI3CR spool positioners**
PH(MG)	5EL1183000C	As previous, **for 8MG..., 8PDG, 8PG, 8EPD, 8EPG, 8IZ spool positioners**
RPHLL	5EL1183054	For parallel circuit with floating circuit with with arrangement for low leak valve **for 1TY spool type**
RPH5LL	5EL1183065	For parallel circuit with floating circuit with with arrangement for low leak valve **for 5HFLL spool type**

NOTE – **(MG)** for dedicated spool positioners, omitted in description

2a Spools page 34

TYPE	CODE	DESCRIPTION
1	3CU2510100	Double acting, 3 positions, with A and B closed in neutral position
1(11A)	3CU2510321	As previous, **need 11A spool positioner and dedicated working section kit**
1CS	3CU2510200	As type 1, sensitive type
1CSG	3CU2510250	Double acting with A and B closed in neutral position, B partially connect to tank in position1, A partially connect to tank in position 2
1CSGH	3CU2510251	As previous, sensitive 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
1D	3CU2510210	As type 1, sensitive type for flow up to 100 l/min *(26.42 USgpm)*

2a Spools (continued) page 34

TYPE	CODE	DESCRIPTION
1TX	3CU2510601	Double acting with A and B closed in neutral position, B partially connect to tank in position 1, A partially connect to tank in position 2; **needs ..HT section kit**
1TYD	3CU2510603	As previous, B with restricted connection to tank; **needs ..HT section kit**
2	3CU2525100	Double acting, 3 positions, with A and B open to tank in neutral position
2H	3CU2525225	Double acting 3 positions, with A and B partially open to tank in neutral position
3	3CU2531100	Single acting on A, 3 positions, B plugged; requires G3/4 plug
4	3CU2535100	Single acting on B, 3 positions, A plugged; requires G3/4 plug
5	3CU2541200	Double acting spool with A and B closed in neutral position, 4 positions, with spool in, floating 4th position: **need dedicated positioner kit 13MD type and working section kit P5 and RPH5 type**
8PF	3CU2561210	Double acting 3 positions, regenerative circuit in 3rd position with spool in: **need dedicated positioners kit**
8PFG	3CU2561215	Double acting 3 positions, regenerative circuit in 2nd position with spool out: **need dedicated positioners kit**

2b Low leak spools** page 34

For RPHLL and RQH5LL working section kit:

TYPE	CODE	DESCRIPTION
1TYALL	3CU2510629-H	Double acting spool, 3 positions, A and B closed in neutral position, A partially connect to tank **needs RPHLL working section kit**
1TYCLL	3CU2510628-H	Double acting spool, 3 positions, A and B closed in neutral position, A partially connect to tank **needs RPHLL working section kit**
1TYMCLL	3CU2510632-H	As 1TYALL, with A connected to tank through the notch **needs RPHLL working section kit**
5HFLL	3CU2541209-H	Double acting spool with A and B closed in neutral position,4 positions, with spool in, floating 4th position: **needs RPH5LL working section kit**

NOTE (*) – Codes are referred to **BSP** thread.
(**) For special features of the various spools please contact our Sales Dpt

Parts ordering codes (mechanical control)

3 "A" side spool positioners (cont.) page 36

TYPE	CODE	DESCRIPTION
8	5V08110000	With spring return in neutral position
8TL	5V08110310	As type 8, for flexible cable control
8F2	5V08110101	As type 8 with adjustable stroke limiter
11	5V11110000	Detent in positions neutral, 1 and 2
12	5V12110000	Detent in positions 1 and 2
15	5V15110000	2 positions, detent in positions 1 and neutral
16	5V16110000	2 positions, detent in positions 2 and neutral
9BZ	5V09110030	With detent in position 1 and spring return in neutral position
10BZ	5V10110030	With detent in position 2 and spring return in neutral position
11BZ	5V11110030	Detent in positions 1 and 2 and spring return in neutral position
8MG3(NO)(1)	5V08110050	As type 8, operation with microswitch (NO) in positions 1 and 2
8MG19/29 (NC\NC)(1)		
	5V08110080	As type 8, operation with 2 microswitch (NC) in positions 1 and 2
8RMN2	5V08416030	12 VDC with electromagnetic detent
	5V08416040	24 VDC with electromagnetic detent
8KBER	5V08710112	As type 8 and 12 VDC solenoid lock device
	5V08710124	As previous, 24 VDC
8PDG(1)	5V08110710	ON/OFF pneumatic waterproof kit
8PG(1)	5V08110708	ON/OFF pneumatic kit
8EPDG3(1)	5V08110740	12 VDC ON/OFF pneumatic waterproof kit
	5V08110738	24 VDC ON/OFF pneumatic waterproof kit
8EPG3(1)	5V08110725	12 VDC ON/OFF electro-pneumatic kit
	5V08110726	24 VDC ON/OFF electro-pneumatic kit
8EI3	5V08110320	12 VDC ON/OFF electro-hydraulic kit
	5V08110321	24 VDC ON/OFF electro-hydraulic kit
8IZ	5V08110800	Unilateral hydraulic proportional spool control kit
11A(2)	5V11510110	With detent in positions 1 and 2, automatic release in neutral position
13MD	5V13416010	4 positions, detent in 4th position with spring return in neutral position with detent pull type. **Needs spool 5 type**

Positioner kit for **8PF** and **8PFG** regenerative spools:
Overall dimensions are the same ones as those of standard controls listed above.

8CR	5V08110020	With spring return in neutral position
9BCR-10BCR	5V09110020	With detent in position 1 and spring return in neutral position
8PGCR(1)	5V08110706	ON/OFF pneumatic kit
8EPG3CR(1)	5V08110727	12 VDC electro-pneumatic kit ON/OFF
	5V08110728	24 VDC electro-pneumatic kit ON/OFF
8EI3CR	5V08110357	12 VDC electro-hydraulic kit ON/OFF
	5V08110353	24 VDC electro-hydraulic kit ON/OFF

4 "B" side options page 46

TYPE	CODE	DESCRIPTION
L	5LEV110000	Standard lever box
LF1	5LEV110101	Lever box with spool stroke limiter in position 1
LB	5LEV310000	Steel lever kit
LCB	5CLO216100	Joystick lever for 2 sections operation
LCE	5CLO216050	As previous with bronze support
SL	--	Without lever box
SLP	5COP110000	Without lever box, with dust-proof plate
TQ	5TEL110110	Flexible cable connection; for CD cables

5a Adjustable port valves page 53

Valves standard setting is referred to 10 l/min *(2.64 USgpm)* flow.

TYPE	CODE	DESCRIPTION
-	XTAP530361	Valve blanking plug (omitted in description)
C	3XCAR416100	Anti-cavitation valve
Anti-shock valve		
P(G2)	XCAR216115	Range 50-120 bar *(725-1750 psi)* standard setting 63 bar *(900 psi)*
P(G3)	XCAR216116	Range 100-250 bar *(1450-3600 psi)* standard setting 100 bar *(1450 psi)*
P(G4)	XCAR216117	Range 160-315 bar *(2300-4600 psi)* standard setting 200 bar *(2900 psi)*
Pilot hydraulic unloader valve		
PX	XCAR416301	Pilot hydraulic unloader valve
Anti-shock and anti-cavitation valve		
U(G2)	X011411099	Range 35-90 bar *(510 -1300 psi)* standard setting 60 bar *(870 psi)*
U(G3)	X011411100	Range 90-250 bar *(1300-3600 psi)* standard setting 100 bar *(1800 psi)*
U(G4)	X011411101	Range 180-350 bar *(2600-5100 psi)* standard setting 200 bar *(2900 psi)*
Pilot operated anti-shock and anti-cavitation valve		
UXW(G)	X01141B160	Range 63-315 bar *(900-4600 psi)* standard setting 160 bar *(2300 psi)*

NOTE (1) - Needs dedicated working section kit **..(MG)** type.
(2) - Needs dedicated **PHT** working section kit and **1(11A)** spool type.

Parts ordering codes (mechanical control)

5b Fixed setting port valves page 57

For RPH.. and RQH.. working section kit

TYPE	CODE	DESCRIPTION
UT	XTAP522441	Valve blanking plug
C	5KIT410000	Anticavitation valve

Fixed setting antishock and anticavitation valves:

setting is referred to 10 l/min *(2.6 US gpm)*

U025	5KIT330025	Setting 25 bar *(363 psi)*
U030	5KIT330030	Setting 30 bar *(435 psi)*
U040	5KIT330040	Setting 40 bar *(580 psi)*
U050	5KIT330050	Setting 50 bar *(725 psi)*
U063	5KIT330063	Setting 63 bar *(914 psi)*
U080	5KIT330080	Setting 80 bar *(1150 psi)*
U100	5KIT330100	Setting 100 bar *(1450 psi)*
U110	5KIT330110	Setting 110 bar *(1590 psi)*
U125	5KIT330125	Setting 125 bar *(1800 psi)*
U140	5KIT330140	Setting 140 bar *(2050 psi)*
U150	5KIT330150	Setting 150 bar *(2150 psi)*
U160	5KIT330160	Setting 160 bar *(2300 psi)*
U175	5KIT330175	Setting 175 bar *(2550 psi)*
U190	5KIT330190	Setting 190 bar *(2750 psi)*
U200	5KIT330200	Setting 200 bar *(2900 psi)*
U210	5KIT330210	Setting 210 bar *(3050 psi)*
U220	5KIT330220	Setting 220 bar *(3190 psi)*
U230	5KIT330230	Setting 230 bar *(3350 psi)*
U240	5KIT330240	Setting 240 bar *(3500 psi)*
U250	5KIT330250	Setting 250 bar *(3600 psi)*
U260	5KIT330260	Setting 260 bar *(3750 psi)*
U270	5KIT330270	Setting 270 bar *(3900 psi)*
U280	5KIT330280	Setting 280 bar *(4050 psi)*
U290	5KIT330290	Setting 290 bar *(4200 psi)*
U300	5KIT330300	Setting 300 bar *(4350 psi)*
U310	5KIT330310	Setting 310 bar *(4500 psi)*

5c Low leak valves page 57

For RPHLL and RQH5LL working section kit:

TYPE	CODE	DESCRIPTION
LL	5KIT918002	Low leak valve

6 Port plugs *

CODE	DESCRIPTION
3XTAP732200	G3/4 Plug

7 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)*

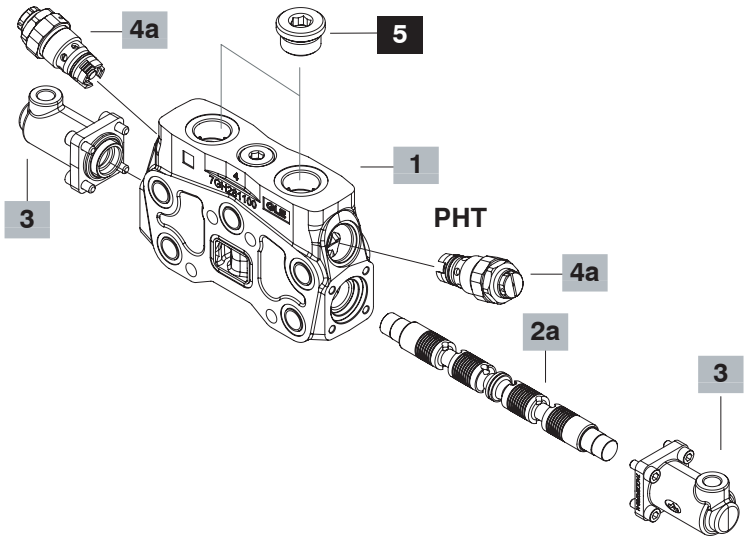
NOTE (*) – Codes are referred to **BSP** thread.

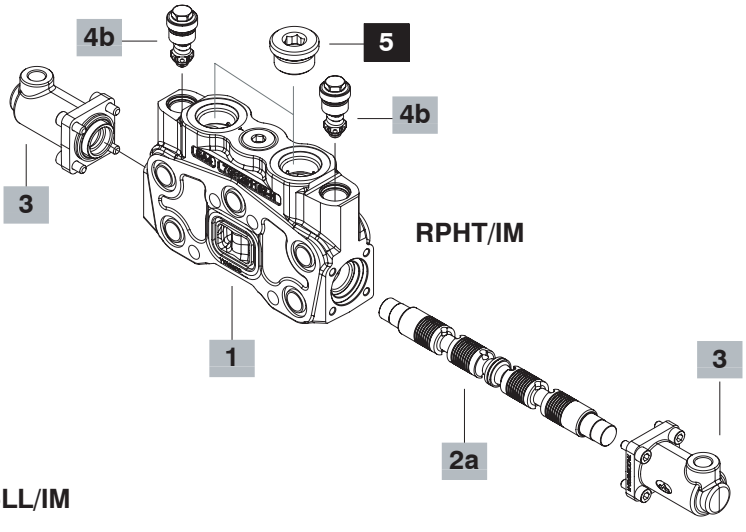
Parts ordering codes (proportional hydraulic control)

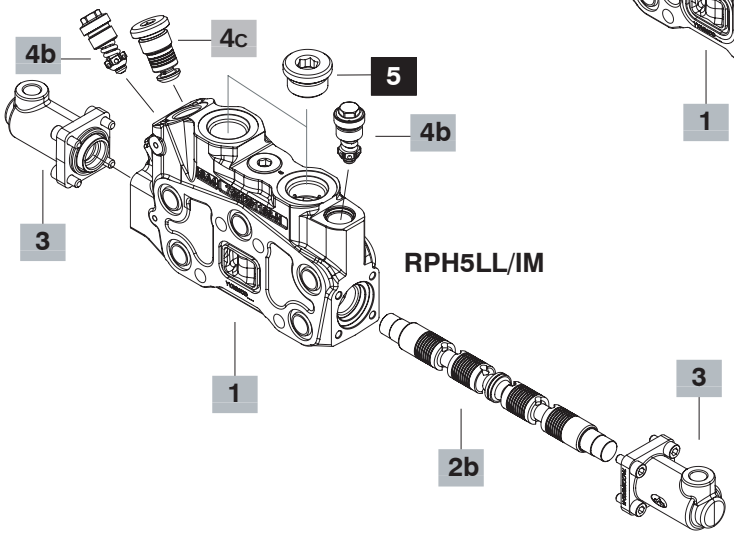
EL SDS180 / PHT - 1IM 8IMOH . U1 (G3 - 100)
1 2a 3 4a
Pressure relief valve setting (bar)

EL SDS180 / RPHT - 1IM 8IMOH . U (100)
1 2a 3 4b
Pressure relief valve fixed setting (bar)

EL SDS180 / RPH5LL - 5HFLL 8IMOH . U (100)
1 2b 3 4b
Pressure relief valve fixed setting (bar)







Parts ordering codes (proportional hydraulic control)

1 Working section kit * page 32

TYPE	CODE	DESCRIPTION
PHT(IM)	5EL1183080C	For parallel circuit with arrangement for port valves
RPHT(IM)	5EL1183057A	For parallel circuit with upper arrangement for fixed setting port valves
RQHT(IM)	5EL1183056A	As previous without upper arrangement for port valves
P5(IM)	5EL1183205A	As previuos for floating circuit: **need 5IMP spool type and 13IMP complete control**
SP(IM)	5EL3183001B	For tandem circuit
SP5(IM)	5EL3183202	As previuos for floating circuit
RPH5(IM)	5EL1183250A	For parallel circuit with floating circuit with upper arrangement for fixed setting port valves: **need 5IMP(13IMP) spool type and 13IMP complete control**
RPHSP(IM)	5EL3183059A	For tandem circuit with upper arrangement for fixed setting port valves
RQHSP(IM)	5EL3183052A	For tandem circuit without arrangement for port valves
RPHSP5(IM)	5EL3183250A	For tandem circuit with floating circuit with upper arrangement for fixed setting port valves
RPHLL(IM)	5EL1183054A	For parallel circuit and floating circuit with arrangement for load leak valve **need 1TYMLLIM spool type and 8IMOH control type**
RPH5LL(IM)	5EL1183065A	For parallel circuit with arrangement for load leak valve **need 5HFLLIM spool type and 13IMOPHCR control type**

NOTE – **(IM)** for proportional hydraulic control, omitted in description

2a Spools page 34

TYPE	CODE	DESCRIPTION
1IM	3CU2510420	Double acting with A and B closed in neutral position
1IMDA	3CU2510490	As type 1IM with descent control and load check valve without power supply on port A: **need 8IMD control type**
1AIM	3CU2522420	Double acting with A open to tank in neutral position
1BIM	3CU2522420	Double acting with B open to tank in neutral position
2HIM	3CU2525425	Double acting with A and B partially connect to tank in neutral position
2IM	3CU2525420	Double acting with A and B connect to tank in neutral position
3IM	3CU2535420	Single acting on A, B plugged
4IM	3CU2535420	Single acting on B; A plugged
5IMP	3CU2542430	Double acting spool with A and B closed in neutral position, spool out floating 4th position: **need P5(IM) working section and 13IMP control type**
1IM(8IMSP)	3CU2510491	As type 1IM: **need 8IMSPSL control type**

2b Low leak spools** page 34

For RPHLL(IM) and RQH5LL(IM) working section kit:

TYPE	CODE	DESCRIPTION
1TYMLLIM	3CU2510633-H	Double acting with A and B closed in neutral position **need RPHLL(IM) working section and 8IMOH control type**
5HFLLIM	3CU2541210-H	Double acting spool with A and B closed in neutral position **need RPH5LL(IM) working section and 13IMOPHCR control type**

3 Complete controls * page 49

Proportional Hydraulic control

TYPE	CODE	DESCRIPTION
8IMDOH	5IDR218300-H	Range 5.8-19 bar *(84-270 psi)*: **for 1IMDA spool type**
8IMOHF3	5IDR216303-H	With screws spool stroke adjusting. Range 5.8-19 bar *(84-270 psi)*
8IMOHSPSL	5IDR218012-H	With spool position sensor esecution. Range 0.8-4.2 bar *(11-60 psi)*: **need 1IM(8IMSP) spool type**
8IMOH	5IDR216300-H	Steel control. 5.8-19 bar *(84-270 psi)*
13IMPOH	5IDR216014-H	For floating circuit. Range 5.8-14 bar *(84-270 psi)*: **need P5(IM) working section and 5IMP spool type**
13IMOPHCR	5IDR216015-H	Steel control kit for floating circuit. Range 3.5-18 bar *(51-261 psi)*: **need RPH5LL(IM) working section and 5HFLLIM spool type**

4a Adjustable port valves page 53

See page 28.

4b Fixed setting port valves page 57

See page 29.

4c Low leak valve page 57

TYPE	CODE	DESCRIPTION
LL	5KIT918002	Low leak valve

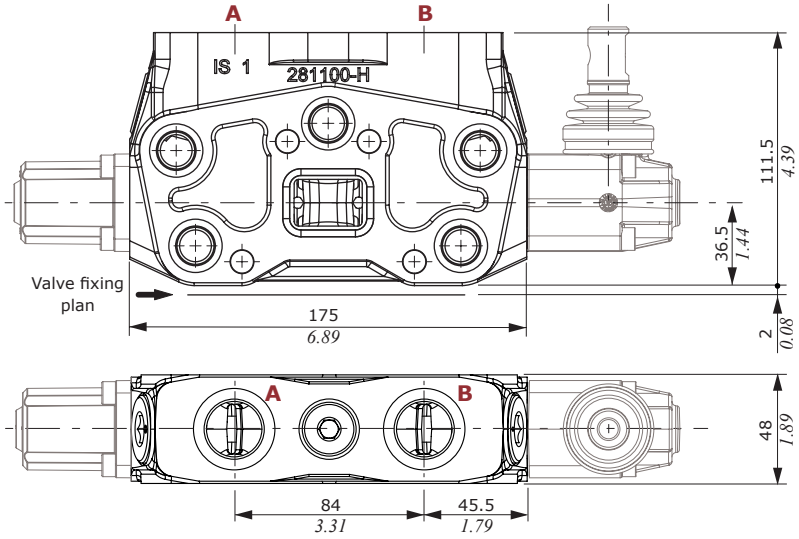
5 Port plugs *

CODE	DESCRIPTION
3XTAP732200	G3/4 Plug

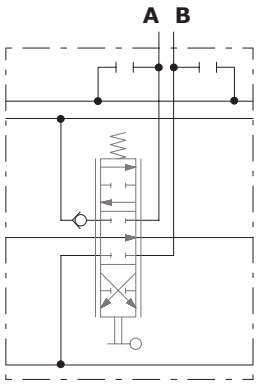
NOTE (*) – Codes are referred to **BSP** thread.

Dimensional data and hydraulic circuit

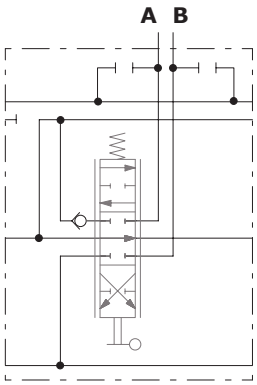
PHT type
(Dimensions are the same for P5/SP/PES/PH type)



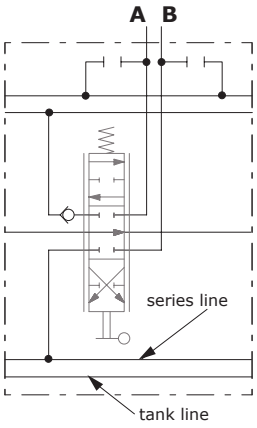
PHT type



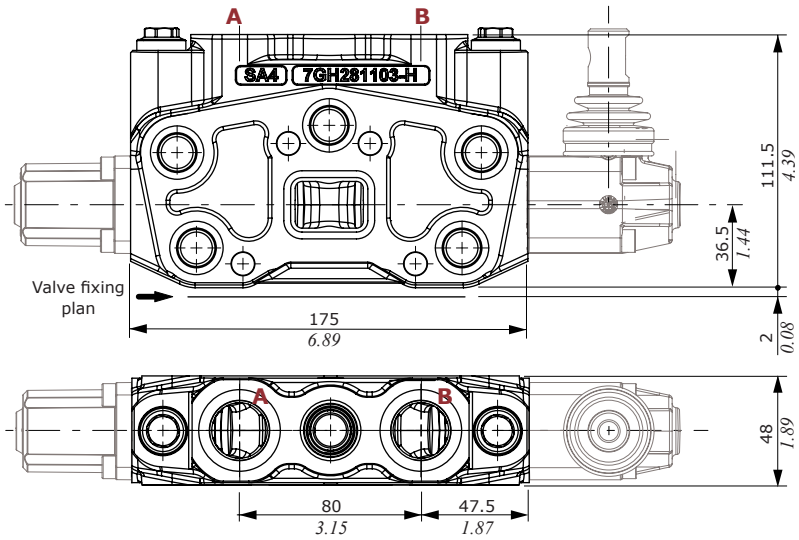
SP type



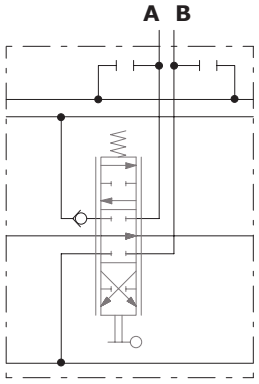
PES type



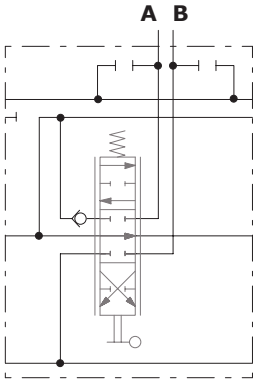
RPHT type
(Dimensions are the same for RPH5/RPHSP type)



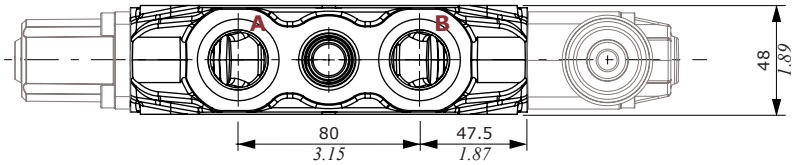
RPHT type



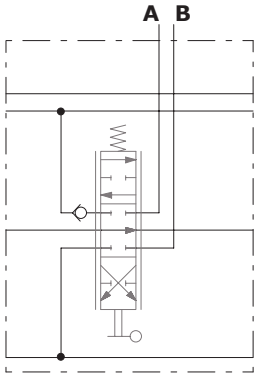
RPHSP type



RQHT type
(Dimensions are the same for RQHSP type)

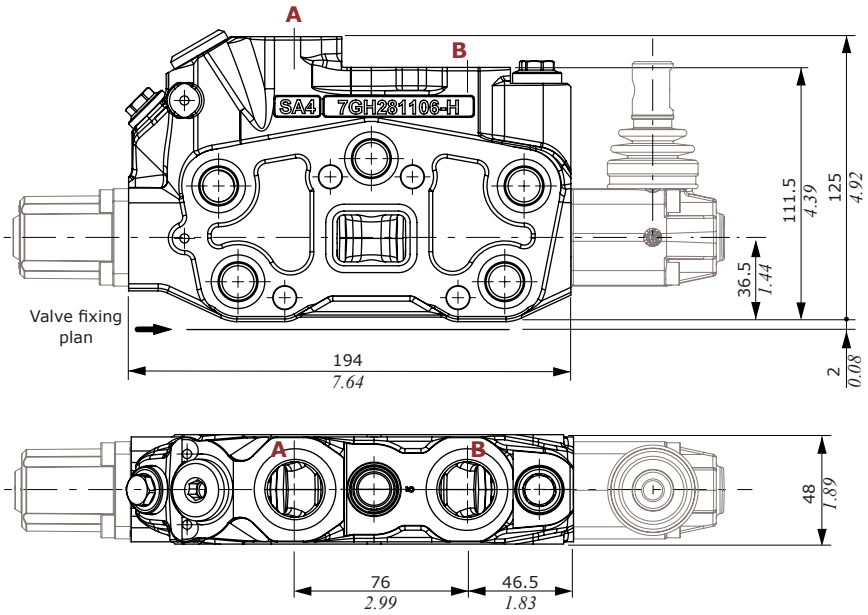


RQHT type

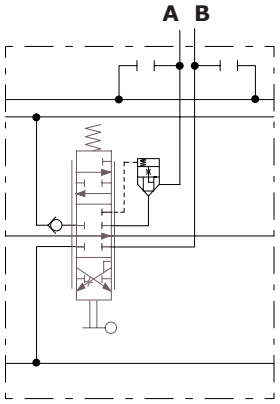


Dimensional data and hydraulic circuit

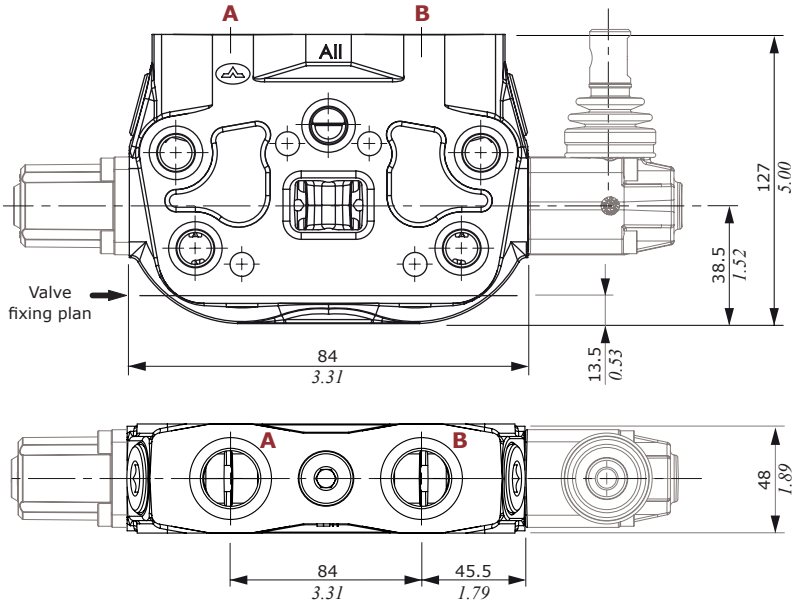
RPH5LL type
(Dimensions are the same for RPHLL type)



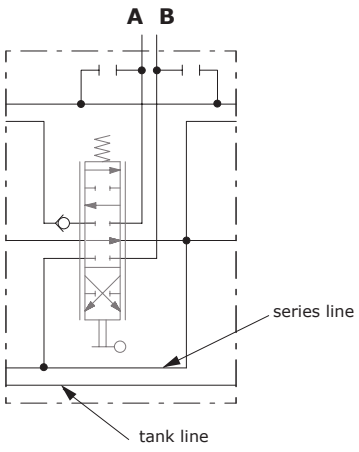
RPH5LL type



S type

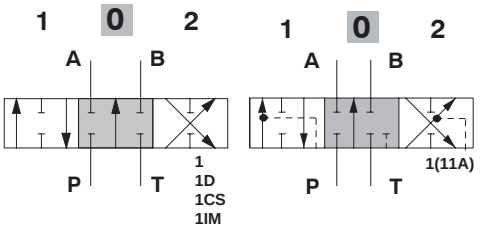


S type



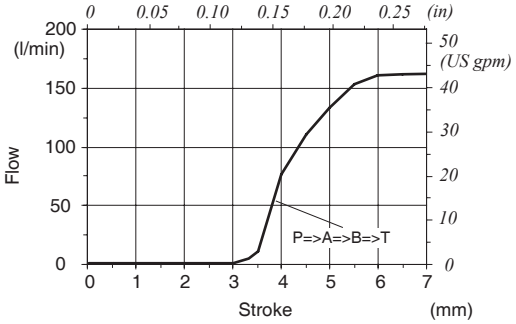
Spools

1 (1D/1CS/1[11A]/1IM) spool type
Double acting, 3 positions, with A and B closed in neutral position

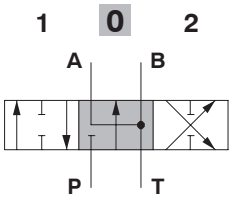


Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

Spool metering Type 1
Q_{in} = 160 l/min / *(42 US gpm)*
$P_{(on\ ports)}$ = 100 bar / *(1450 psi)*

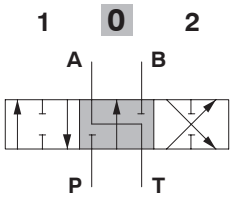


2 (2IM) spool type
Double acting, 3 positions, with A and B open to tank in neutral position



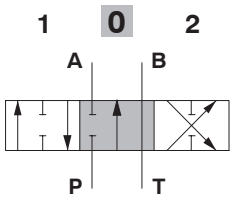
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

1A (1AIM) spool type
Double acting, 3 positions, with A open to tank in neutral position



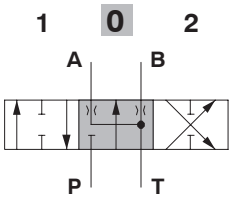
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

1B (1BIM) spool type
Double acting, 3 positions, with B open to tank in neutral position



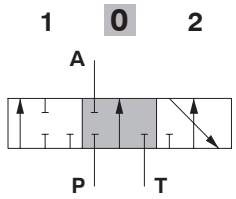
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

2HIM spool type
Double acting, 3 positions, with A and B partially open to tank in neutral position



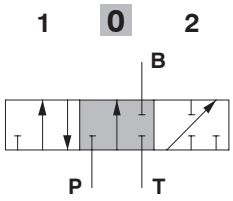
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

3 (3IM) spool type
Single acting on A, 3 positions, B plugged; requires G3/4 plug



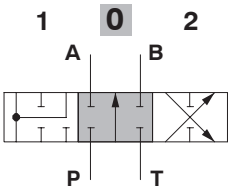
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

4 (4IM) spool type
Single acting on B, 3 positions, plugged; requires G3/4 plug



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

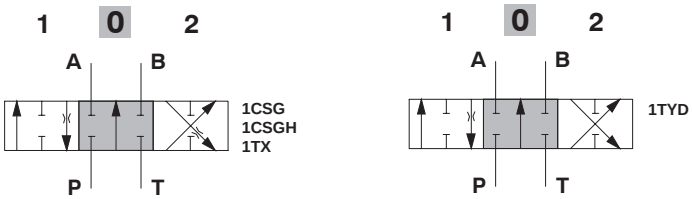
8PFG spool type
Double acting, 3 positions, regenerative circuit in 2nd position (pos.1) with spool out



Spool stroke
position 1: + 5.7 mm *(+ 0.22 in)*
position 2: - 5.7 mm *(- 0.22 in)*

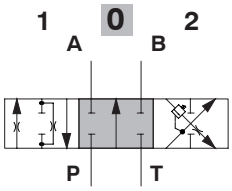
1CSG (1CSGH) spool type
Double acting with A and B closed in neutral position, B partially connect to tank in pos. 1, A partially connect to tank in pos. 2

1TX (1TYD) spool type
Double acting with A and B closed in neutral position partially connect to tank



Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

1IMDA spool type
Double acting with A and B closed in neutral position, descent control and load check valve without power supply on port A

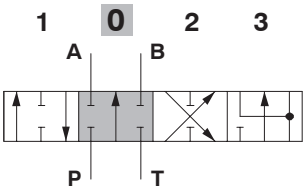


Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

Spools

5 (5IMP) and 5HFLL spool type

Double acting spool with A and B closed in neutral position, 4 positions, with spool in, floating 4th position (pos.3)

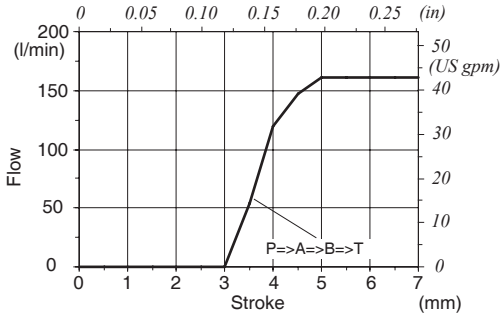


Type 5 (5IMP) Spool stroke

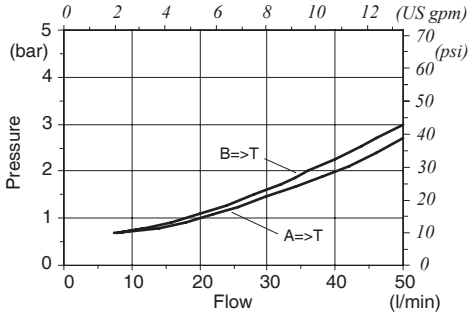
position 1: + 6 mm *(+ 0.24 in)*
position 2: - 6 mm *(- 0.24 in)*
position 3: - 12 mm *(- 0.47 in)*

Spool metering type 5

Q_{in} = 160 l/min / *(42 US gpm)*
$P_{(on\ ports)}$ = 100 bar / *(1450 psi)*

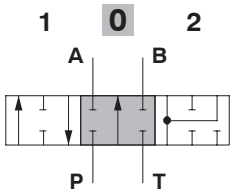


Spool pressure drop in position 3 - type 5



8PF spool type

Double acting, 3 positions, regenerative circuit in 3rd position (pos. 2) with spool in

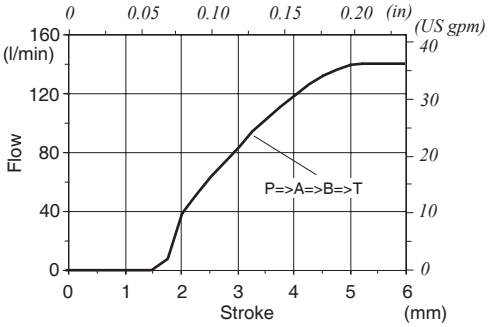


Spool stroke

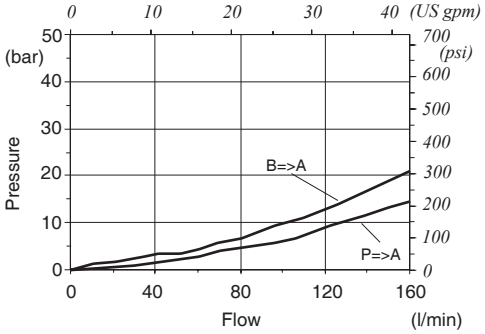
position 1: + 5.7 mm *(+ 0.22 in)*
position 2: - 5.7 mm *(- 0.22 in)*

Spool metering type 8PF

Q_{in} = 160 l/min / *(42 US gpm)*
$P_{(on\ ports)}$ = 100 bar / *(1450 psi)*



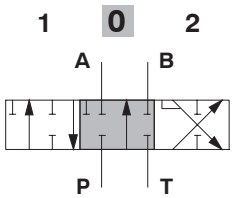
Pressure drop



Low leak spools

1TYALL-1TYCLL-1TYMLLIM spool type

Double acting, 3 positions, with A and B closed in neutral position, A partially connect to tank

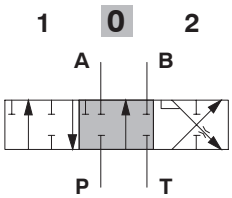


Spool stroke

position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

1TYMCLL spool type

Double acting, 3 positions, with A and B closed in neutral position, with A connected to tank through the notch

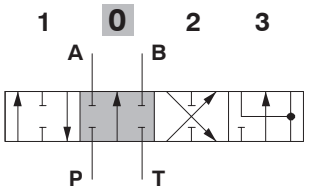


Spool stroke

position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

5HFLL-5HFLLIM spool type

Double acting spool with A and B closed in neutral position, 4 positions, with spool in, floating 4th position (pos.3)



Spool stroke

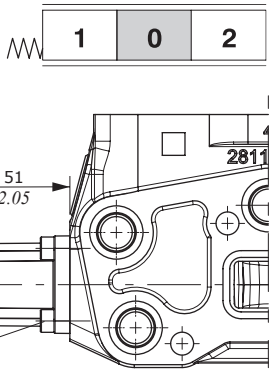
position 1: + 6.5 mm *(+ 0.25 in)*
position 2: - 6.5 mm *(- 0.25 in)*
position 3: - 12.5 mm *(- 0.49 in)*

"A" side spool positioners

With spring return

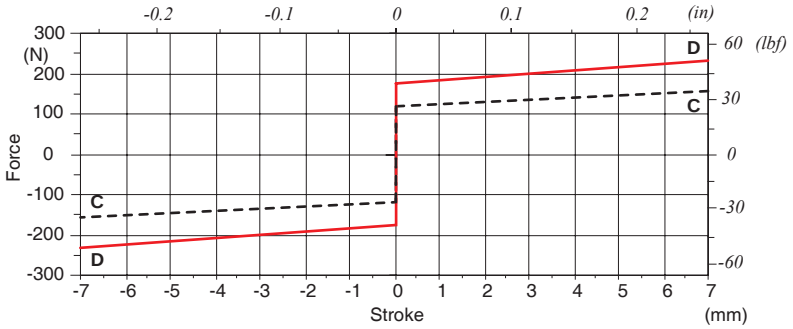
8 type

It's supplied with standard spring D type (see force-stroke diagram) and available with lighter spring C type (**8MC** code: **5V08210000**).



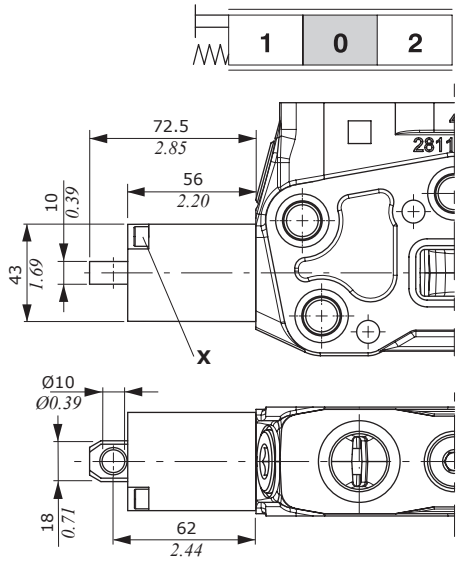
Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

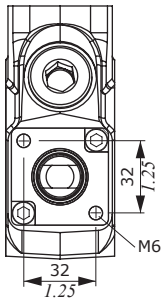
Force-stroke diagram



8TL type

As 8 type, for flexible cable control.

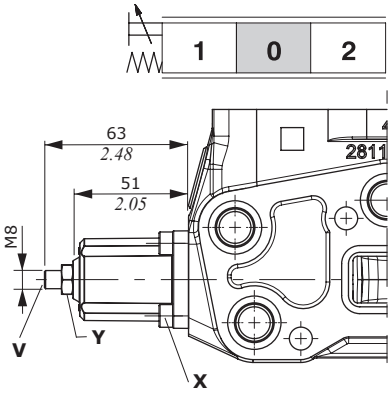




Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

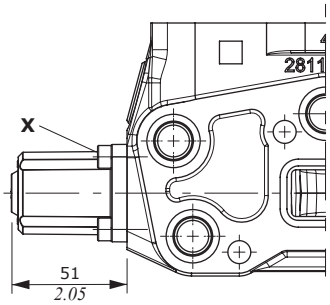
8F2 type

With spool stroke adjustment in position 2 (P ⇒ B).



Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 13 - 24 Nm *(17.7 lbft)*
Z = allen wrench 4

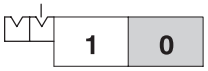
With detent



11 type
detent in positions neutral, 1 and 2



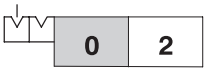
15 type
2 positions, detent in positions 1 and neutral



12 type
detent in positions 1 and 2



16 type
2 positions, detent in positions 2 and neutral



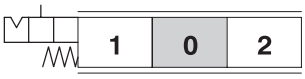
Features
Detent and release force ..... : 280 N *(63 lbf)* ±10%

Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

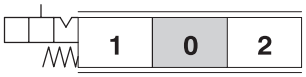
"A" side spool positioners

With detent and spring return to neutral position from either directions

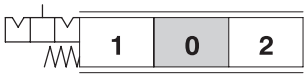
9BZ type
detent in position 1 (curve A)

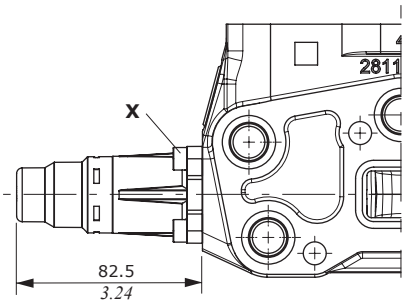


10BZ type
detent in position 2 (curve B)

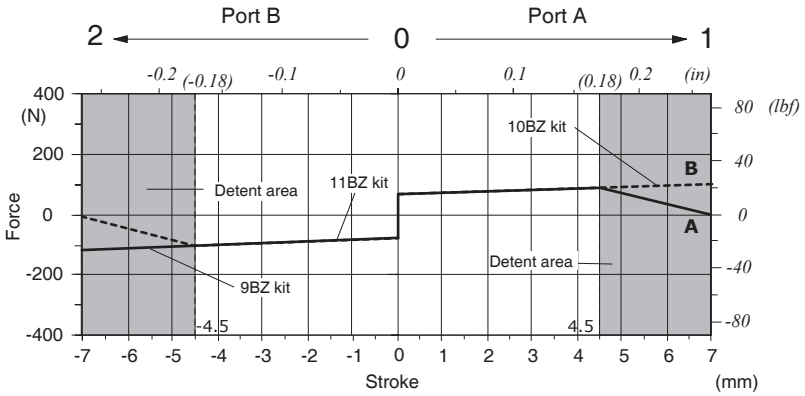


11BZ type
detent in position 1 and 2 (curves A and B)





Detent force-stroke

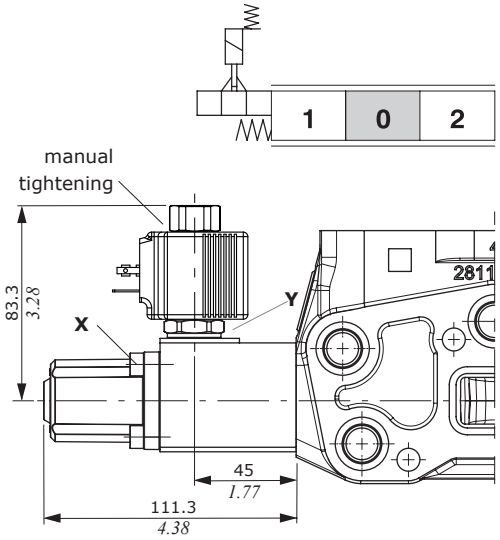


Position 1 - Detent force: 130 N *(29.2 lbf)* ± 10% / Release force: 215 N *(48.3 lbf)* ± 10%
Position 2 - Detent force: 145 N *(32.6 lbf)* ± 10% / Release force: 300 N *(67.4 lbf)* ± 10%

Wrenches and tightening torques
X = wrench 4 - 6.6 Nm *(4.87 lbft)*

Solenoid lock device 8KBER type

With spring return and spool electromechanical lock in neutral position; when coil is feeded the spool can be moved.
When combined with the UXV and PX valves, is mounted roated 180° (configuration: **8KBER180**).
it's possible to obtain further configurations with several "A" side spool positioners: contact Sales Dept.



Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 24 - 24 Nm *(17.7 lbft)*

Features
For **BER** coil and mating connectors see page 79

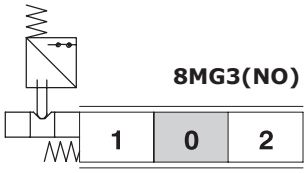
"A" side spool positioners

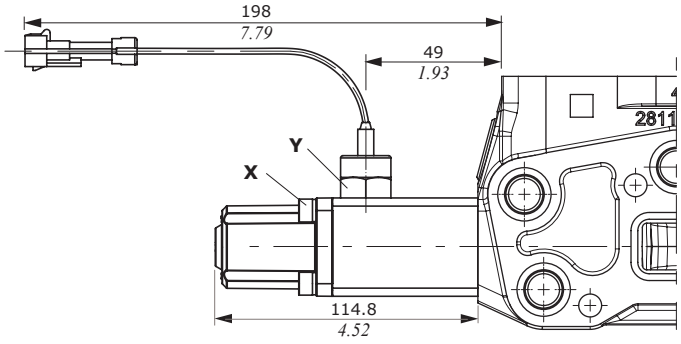
With microswitch

8MG3 type

With spring return in neutral position and microswitch operated in both directions. Also available **8MG1** (microswitch operated in position 1) and **8MG2** (microswitch operated in position 2) configurations; dimension are the same of **8MG3** configuration. It requires **MG** working section kit. See page 27.

Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 22 - 24 Nm *(17.7 lbft)*



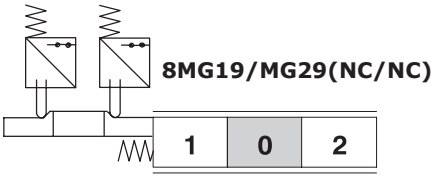


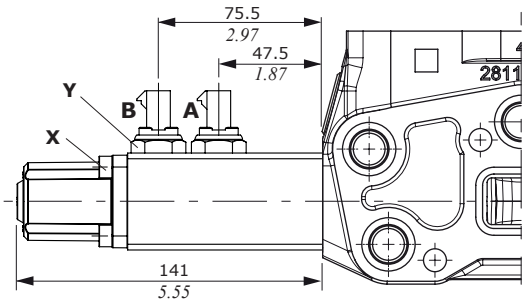
Complete controls			
	Microswitch operation		
Circuit	position 1 **8MG1**	position 2 **8MG2**	positions 1, 2 **8MG3**
(NO)	5V08110060	5V08110070	5V08110050
(NC)	/	/	5V08110053

Features
MICROSWITCH
Mechanical life ..... : 5x10^5 operations
Electrical life (resistive load) .. : 10^5 oper. – 7A / 13.5VDC
: 5x10^4 oper. – 10A / 12VDC
: 5x10^4 oper. – 3A / 28VDC
Connector ..... : Packard Weather-pack
Mating connector cod. 5CON001 not included

8MG19/MG29 type

With double microswitch in position 1 and 2.
It requires **MG** working section kit. See page 27.





Positions	A	B
1	•/•	•—•
0	•—•	•—•
2	•—•	•/•

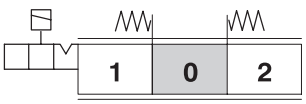
Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 22 - 24 Nm *(17.7 lbft)*

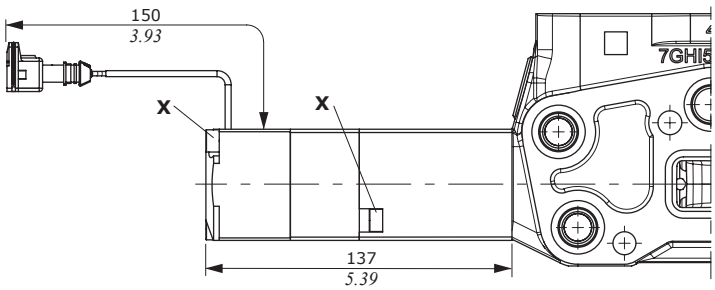
Features
MICROSWITCH
Mechanical life ..... : 5X10^5 operations
Electrical life (resistive load) .. : 10^5 oper. – 7A / 13.5VDC
: 5x10^4 oper. – 10A / 12VDC
: 5x10^4 oper. – 3A / 28VDC
Connector ..... : Packard Weather-pack
Mating connector cod. 5CON140047 not included

Dedicated parts	Type	Code
Working section kit for 8MG.. positioners	S(MG)	5EL1183201
	PHT(MG)	5EL1183080B
	RPHT(MG)	5EL1183057D
	RQHT(MG)	5EL1183056D
	PH(MG)	5EL1183000C

Electromagnetic detent 8RMN2 type

Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*





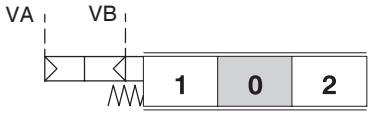
Features
Nominal voltage ..... : 12-24 VDC (± 10%)
Power rating ..... : 5.2 W
Resitance ..... : 26-29.8 Ω - 12VDC
102-118 Ω - 24VDC
Duty cycle ..... : 100%
Connector ..... : AMP JPT 2P
Unlocking force ..... : 380N *(85.4 lbf)*
Mating connector cod. W0251001 not included

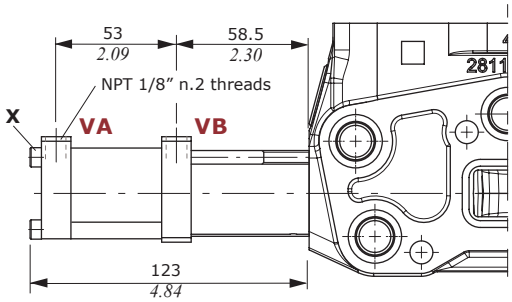
"A" side spool positioners

ON/OFF pneumatic kit and ON/OFF electro-pneumatic kit

Pneumatic: 8PG type

With spring return to neutral position. It requires **MG** working section kit. See page 27.



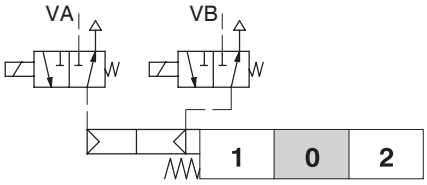


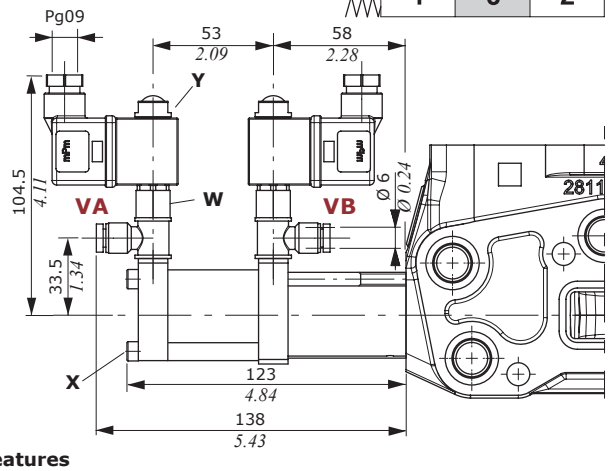
Dedicated parts	Type	Code
Working section kit for 8PG and 8EPG3 positioners	S(MG)	5EL1183201
	PHT(MG)	5EL1183080B
	RPHT(MG)	5EL1183057D
	RQHT(MG)	5EL1183056D
	PH(MG)	5EL1183000C

Electro-pneumatic: 8EPG3 type

It requires **MG** working section kit. See page 27.

Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 13 - 1.5 Nm *(1.11 lbft)*
W = wrench 15 - 6.6 Nm *(4.87 lbft)*



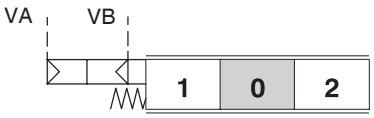


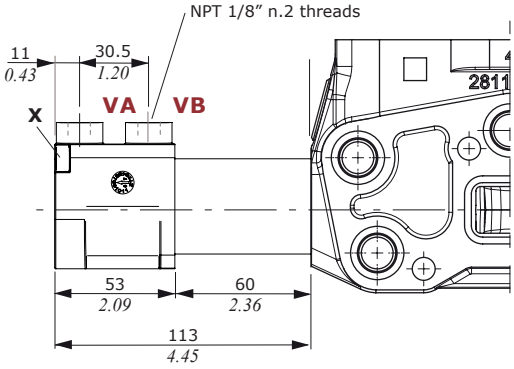
Common features
Pilot pressure.....: min. 6 bar *(min. 85 psi)*
: max. 12 bar *(min. 174 psi)*
For **BPV** coil see page 80

ON/OFF pneumatic waterproof kit and ON/OFF electro-pneumatic waterproof kit

Pneumatic: 8PDG type

It requires **MG** working section kit. See page 27.



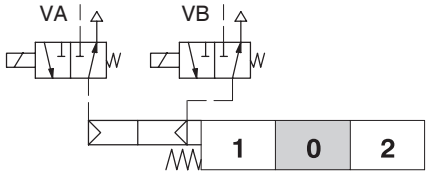


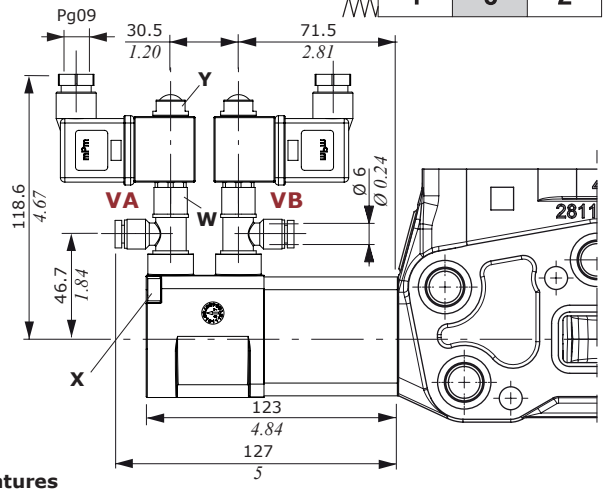
Dedicated parts	Type	Code
Working section kit for 8PDG and 8EPDG3 positioners	S(MG)	5EL1183201
	PHT(MG)	5EL1183080B
	RPHT(MG)	5EL1183057D
	RQHT(MG)	5EL1183056D
	PH(MG)	5EL1183000C

Electro-pneumatic: 8EPDG3 type

It requires **MG** working section kit. See page 27.

Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 13 - 1.5 Nm *(1.11 lbft)*
W = wrench 15 - 6.6 Nm *(4.87 lbft)*

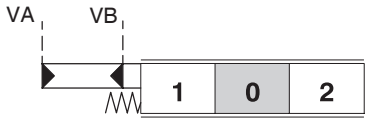


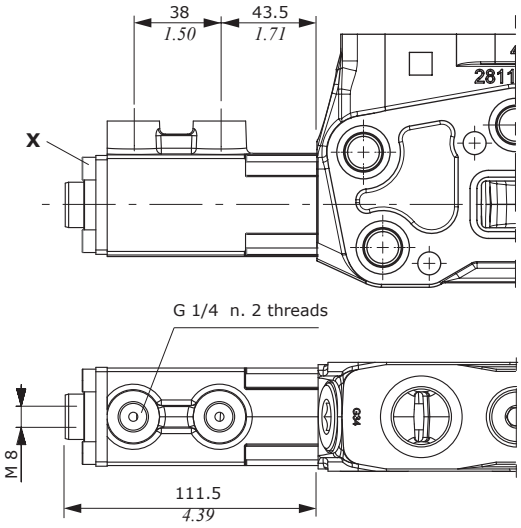


Common features
Pilot pressure..... : min. 6.5 bar *(min. 90 psi)*
: max. 12 bar *(min. 174 psi)*
For **BPV** coil see page 80

"A" side spool positioners

Unilateral hydraulic proportional spool control kit 8IZ



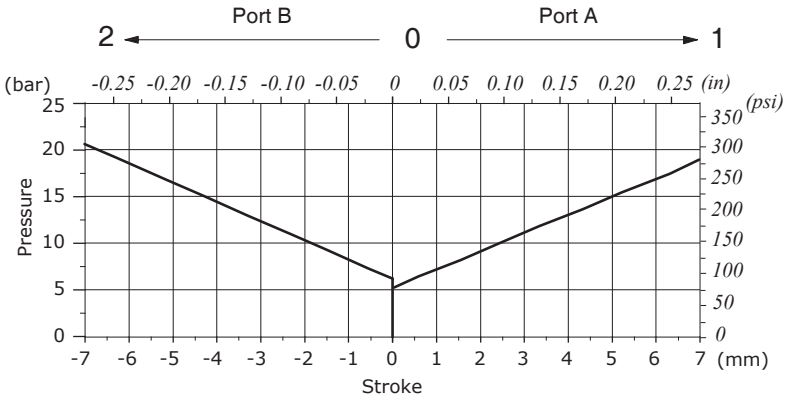


Dedicated parts	Type	Code
Working section kit for 8IZ positioner	S(MG)	5EL1183201
	PHT(MG)	5EL1183080B
	RPHT(MG)	5EL1183057D
	RQHT(MG)	5EL1183056D
	PH(MG)	5EL1183000C

Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

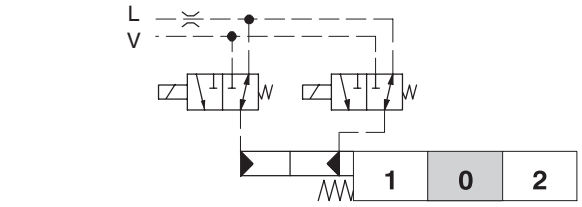
Features
adjustment range ..... : from 8 to 22 bar
(from 110 to 310 psi)

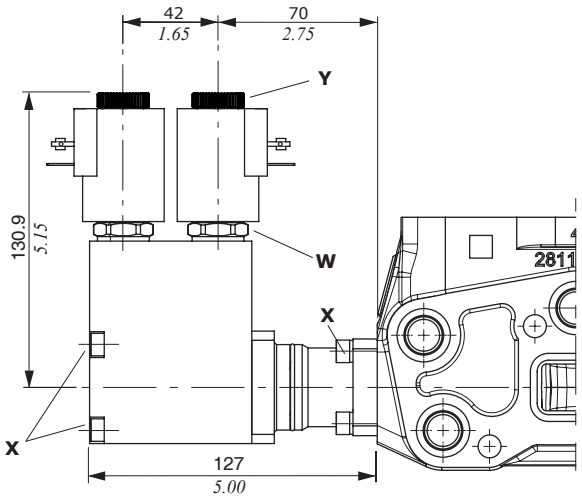
Pressure - stroke diagram



"A" side spool positioners

ON/OFF electro-hydraulic control 8EI3



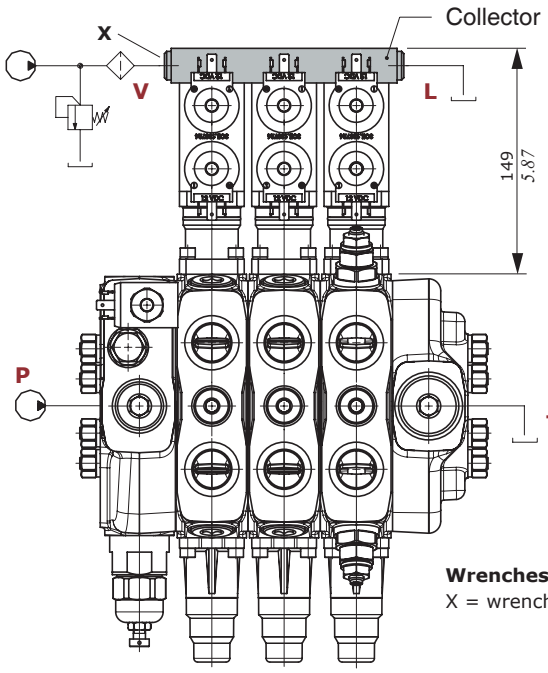


Features

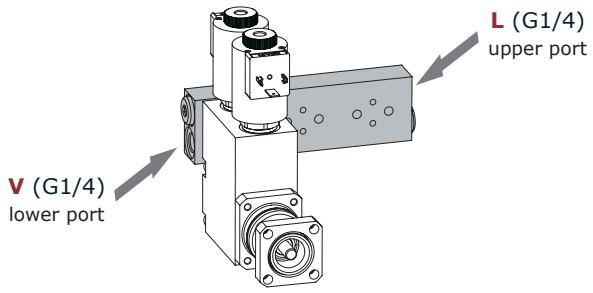
Pilot pressure..... : min. 10 bar *(145 psi)*
: max. 50 bar *(725 psi)*
Max backpressure on drain L.. : 25 bar *(360 psi)*
For **BT** coil and mating connectors see page 80

Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 21 - 6.6 Nm *(4.87 lbft)*
W = wrench 24 - 9.8 Nm *(7.23 lbft)*

Collector kit for external pilot and drain



Wrenches and tightening torques
X = wrench 6 - 24 Nm *(17.7 lbft)*



COLLECTOR KIT CODES		
Type	**Code ***	**Description**
KE1S0	5KE1S00030	Kit for one section
KE2S0	5KE2S01530	Kit for 2 sections
KE3S0	5KE3S01530	Kit for 3 sections
KE4S0	5KE4S01530	Kit for 4 sections
KE5S0	5KE5S01530	Kit for 5 sections
KE6S0	5KE6S01530	Kit for 6 sections
KE7S0	5KE7S01530	Kit for 7 sections

(*) codes are referred to BSP thread

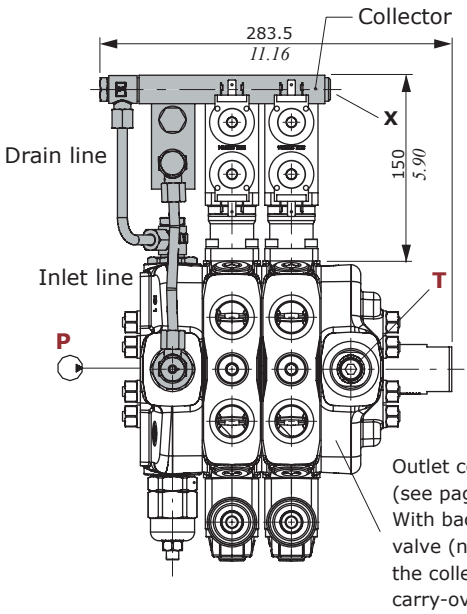
Description example:
SDS180/3/AC(XG-210)R2E/1**8EI3**SLCZ/1**8EI3**SLCZ/
18EI3SLCZ.UX3(G-230)/RC-**KE3S0–12VDC**

"A" side spool positioners

ON/OFF electro-hydraulic kit 8EI3 type

Collector kit for internal pilot and drain

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



Wrenches and tightening torques
X = wrench 6 - 24 Nm *(17.7 lbft)*

COLLECTOR KIT CODES		
Type	**Code ***	**Description**
KE1R3	5KE1R31530	Kit for one 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
KE7R3	5KE7R31530	Kit for 7 sections

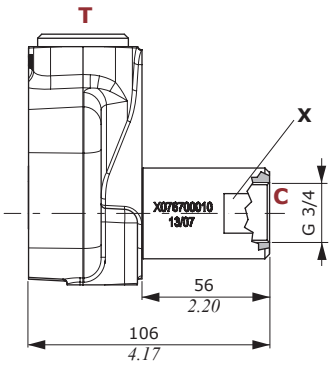
(*) codes are referred to BSP thread

Description example:
SDS180/2/AC(YG3–120)/1CS**8EI3**L/1CS**8EI3**L/
RV–KE2R3–24VDC

Features
VRP VALVE
Output pressure . . . . . : 20 bar *(290 psi)*
Max flow . . . . . : 8 l/min *(2.1 US gpm)*
Filtering . . . . . : 80 µm

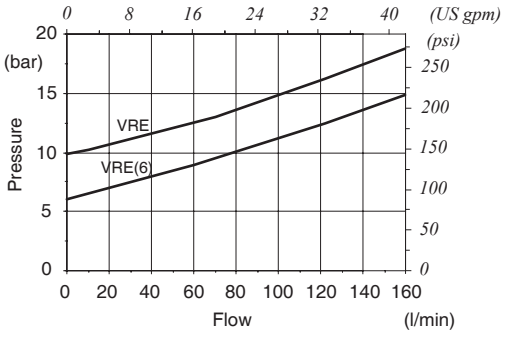
VRE backpressure valve

Valve assembled on flow through passage to provide pilot pressure to the actuator.
It's available as **VRE** (code X076700010) for inlet flow lower 80 l/min *(21.13 US gpm)* or **VRE(6)** (code X076710006) for inlet flow upper 80 l/min *(21.13 US gpm)*: see diagram.



Wrenches and tightening torques
X = wrench 36 - 42 Nm *(31 lbft)*

Pressure drop P → C

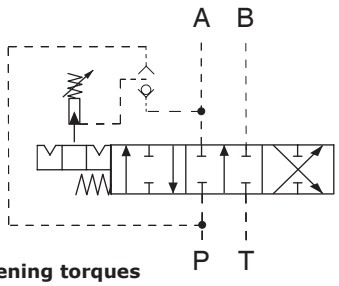


"A" side spool positioners

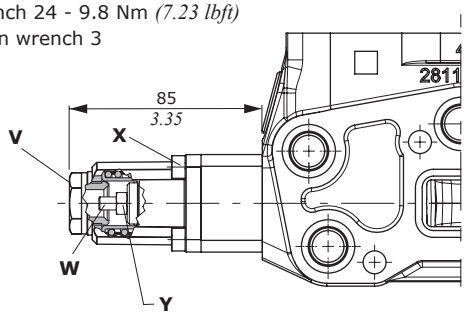
Particular positioner kits for special spools

11A

With detent in position 1 and 2, and automatic release in neutral position.
It requires **PHT** working section kit and **1(11A)**. See page 27.



Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 10- 9.8 Nm *(7.23 lbft)*
V = wrench 24 - 9.8 Nm *(7.23 lbft)*
W = allen wrench 3

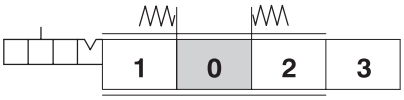


Dedicated parts	Type	Code
Spool	1(11A)	3CU2510321
Working section kit	PHT	5EL1183080

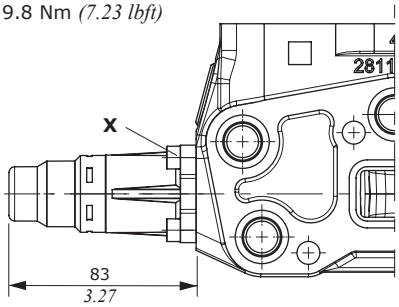
Features
Release pressure . . . . . : from 20 to 180 bar
(from 290 to 2600 psi)

13MD

Detent in 4th position with spring return in neutral position with detent spool in type.



Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

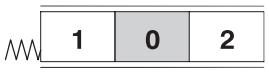


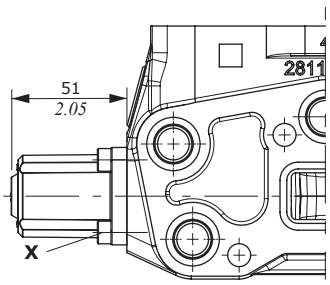
Dedicated parts	Type	Code
Spool	5	3CU2541200
Working section kit left inlet	P5	5EL1183201
Working section kit right inlet	P5ED	5EL1183260

"A" side spool positioners

Particular positioner kits for regenerative spools

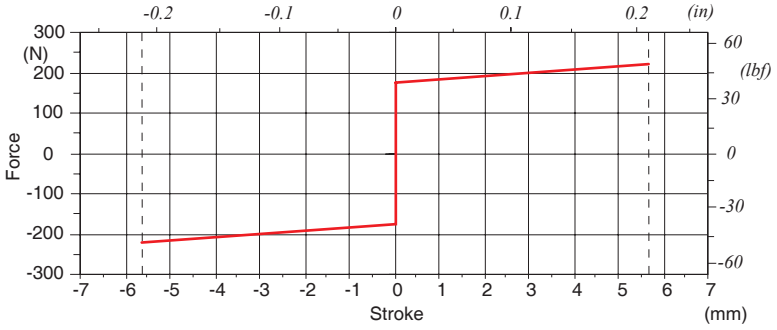
8CR type





Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

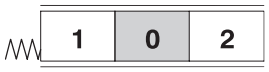
Force-stroke diagram

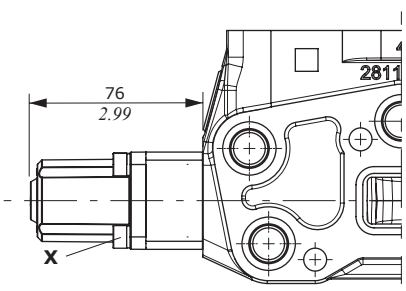


Spool stroke
position 1: + 5.7 mm *(+ 0.22 in)* - position 2: - 5.7 mm *(- 0.22 in)*

Dedicated parts	Type	Code
Spools	8PF	3CU2561210
	8PGF	3CU2561215
Working section	PH	5EL1183000

9BCR-10BCR types



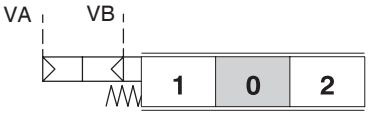


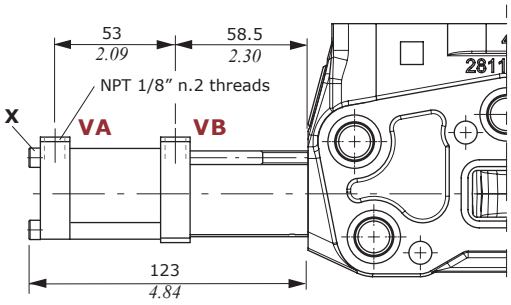
Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

Dedicated parts	Type	Code
Spools	8PF	3CU2561210
	8PGF	3CU2561215
Working section	PH	5EL1183000

8PGCR type

It requires **MG** working section kit. See page 27.





Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 13 - 1.5 Nm *(1.11 lbft)*
W = wrench 15 - 6.6 Nm *(4.87 lbft)*

Features
Pilot pressure.....: min. 6 bar *(min. 85 psi)*
: max. 12 bar *(min. 174 psi)*

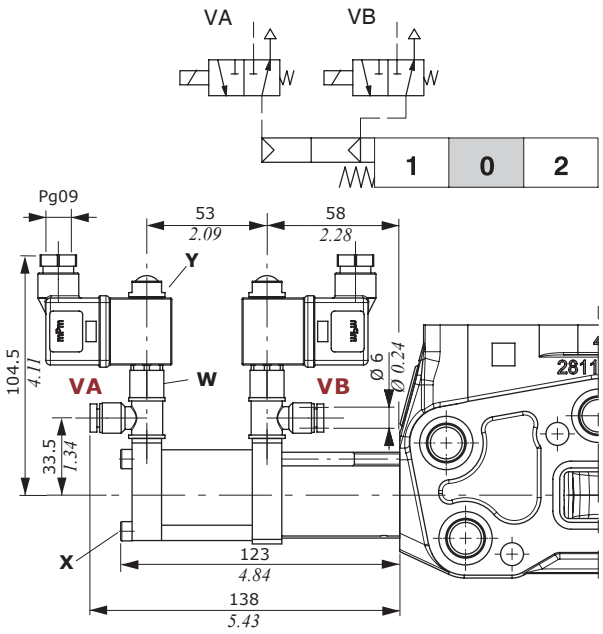
Dedicated parts	Type	Code
Spools	8PF	3CU2561210
	8PGF	3CU2561215
Working section	PH(MG)	5EL1183000C

"A" side spool positioners

Particular positioner kits for regenerative spools

8EPG3CR type

It requires **MG** working section kit. See page 27.

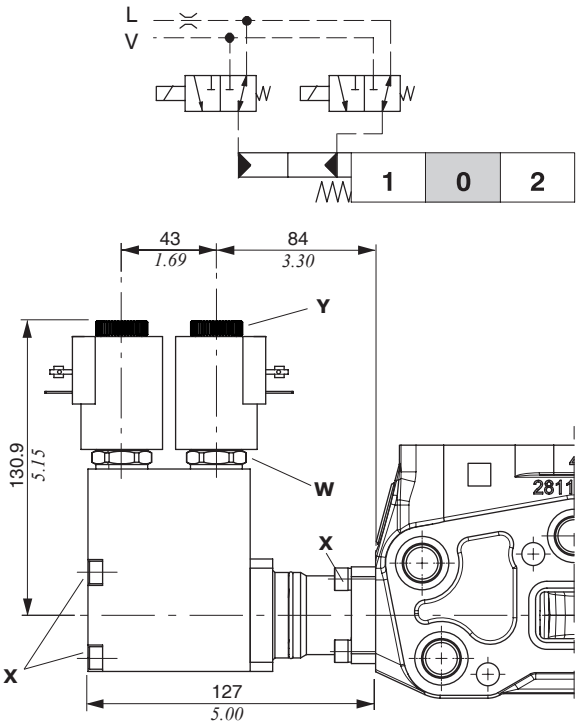


Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 13 - 1.5 Nm *(1.11 lbft)*
W = wrench 15 - 6.6 Nm *(4.87 lbft)*

Features
Pilot pressure.....: min. 6 bar *(min. 85 psi)*
: max. 12 bar *(min. 174 psi)*
For **BPV** coil see page 80

Dedicated parts	Type	Code
Spools	8PF	3CU2561210
	8PGF	3CU2561215
Working section	PH(MG)	5EL1183000C

8EI3CR type



Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 21 - 6.6 Nm *(4.87 lbft)*
W = wrench 24 - 9.8 Nm *(7.23 lbft)*

Features
Pilot pressure.....: min. 10 bar *(145 psi)*
: max. 50 bar *(725 psi)*
Max backpressure on drain L..: 25 bar *(360 psi)*
For **BT** coil and mating connectors see page 80

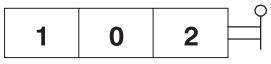
Dedicated parts	Type	Code
Spools	8PF	3CU2561210
	8PGF	3CU2561215
Working section	PH	5EL1183000

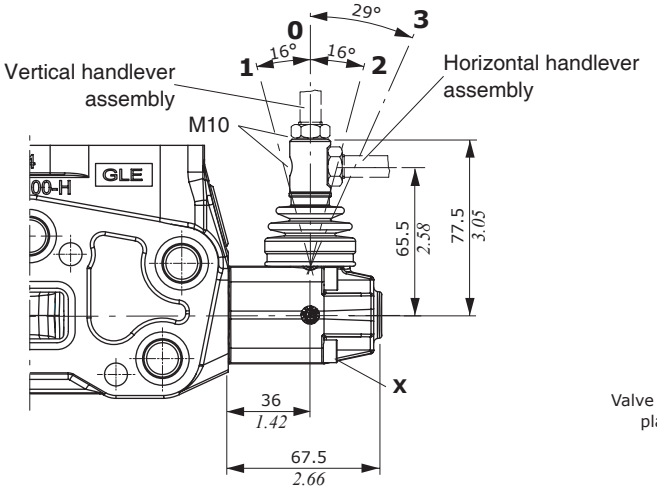
"B" side options

Lever control

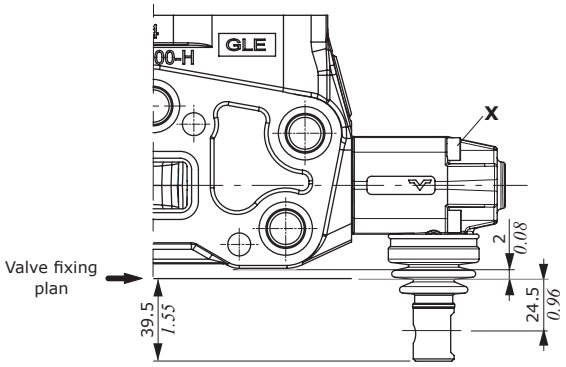
L type

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





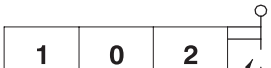
configuration L180

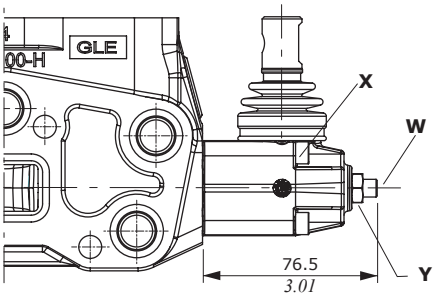


Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

LF1 type

With spool stroke adjustment in position 12 (P→A).
It can be roated 180° (configuration **LF1180**).

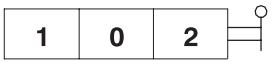




Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 13 - 24 Nm *(17.7 lbft)*
W = allen wrench 4

LB type

Steel construction, LB1 with pivot placed down and LB3 with pivot placed over.

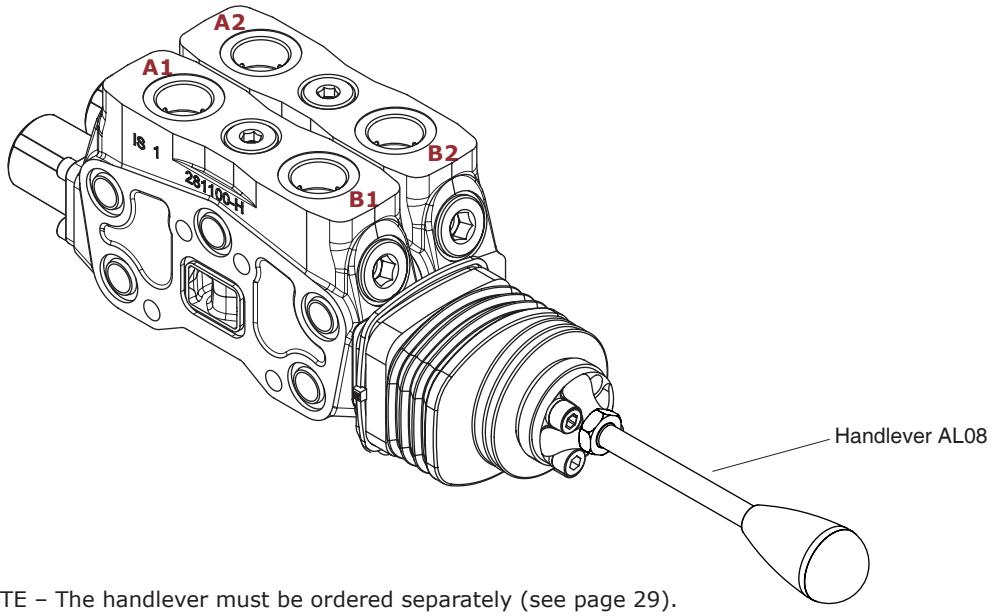


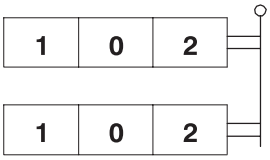
Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

NOTE – Due to limited space in case of L, LF1, LB1 or LB3 configuration the assembly of UXW and PX port valves is not possible.

"B" side options

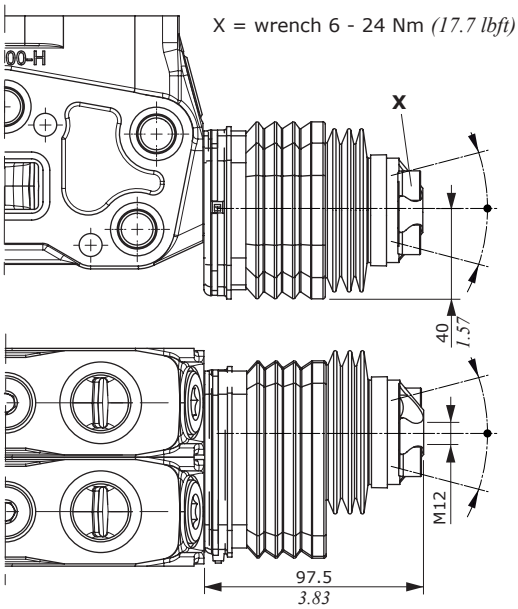
LCB and LCE mechanical joysticks for two sections control



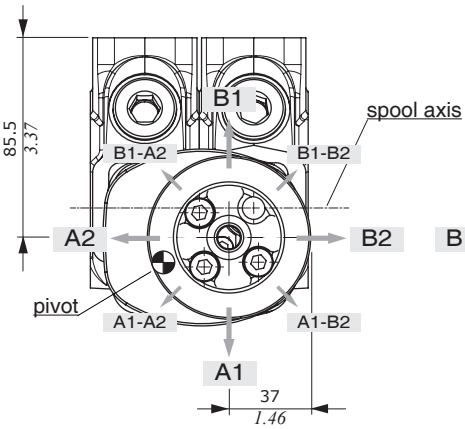


NOTE – The handlever must be ordered separately (see page 29).

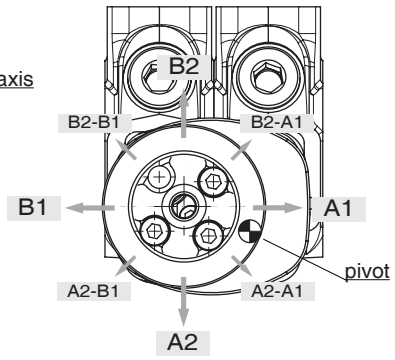
Dimensions and movement scheme for left inlet directional valve



Execution **LCB1**
pivot placed down on the left

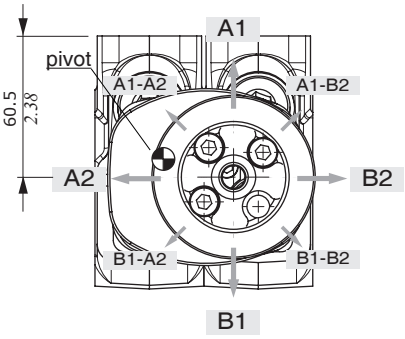


Execution **LCB2**
pivot placed down on the right

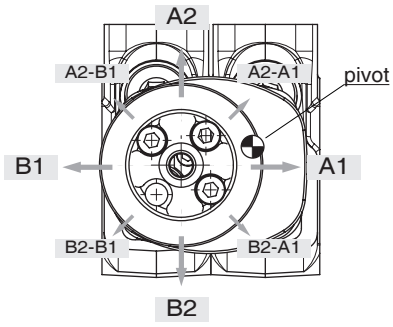


Max. working angles	Horizontal axis	Vertical axis
Single action operation	18°30′	15°30′
Single action operation with floating	not available	not available
Two section operation	18°30′	15°30′
Two section operation with floating	not available	not available

Execution **LCB3**
pivot placed above to the left



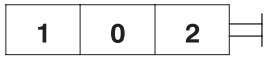
Execution **LCB4**
pivot placed above to the right

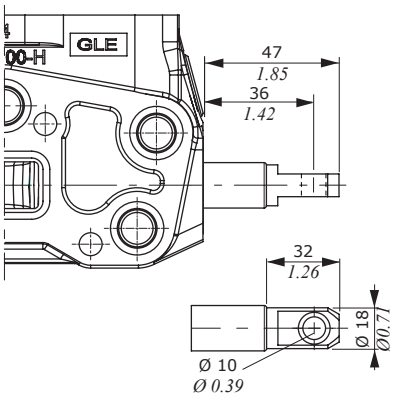


NOTE – Due to limited space in case of LCB3 or LCB4 configuration the assembly of port valves is not possible.

"B" side options

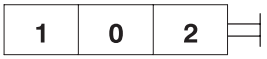
SL type

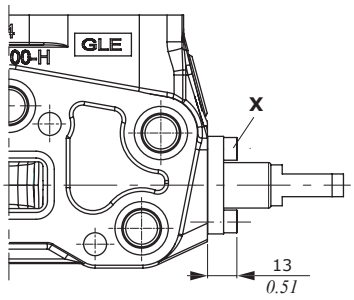




SLP type

Mechanical control with dust-proof plate kit.

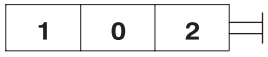


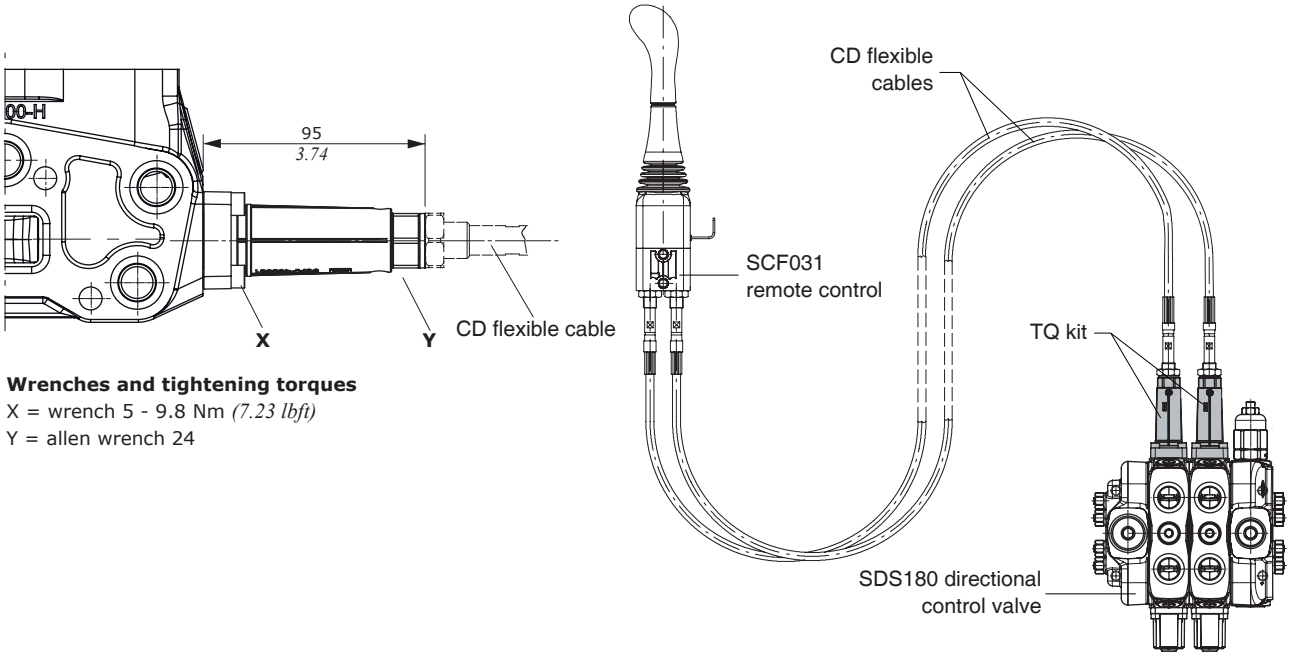


Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

TQ cable remote control kit

Prearranged for remote control with flexible cable.





Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = allen wrench 24

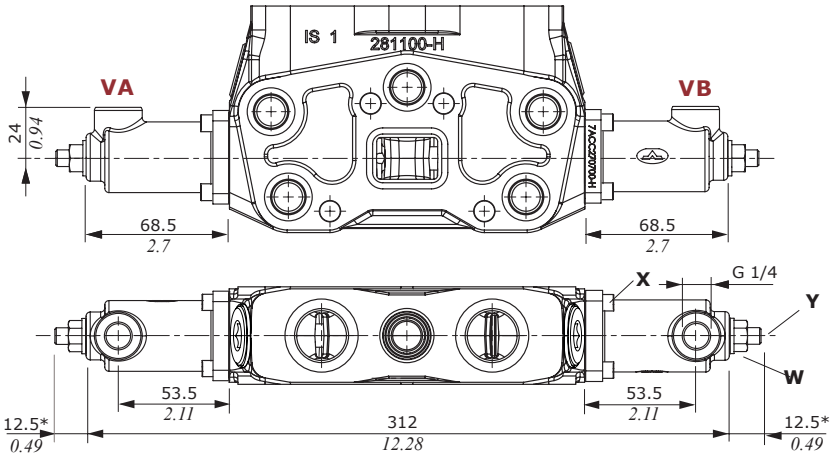
NOTE – For more information about remote cable control, require appropriate documentation cod. D1WWEF02E.

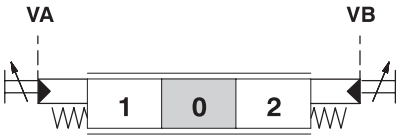
Proportional hydraulic controls

Needs dedicated spool and working section kit without spool seals. (See page 31).

8IMOHF3 type

Configuration with screws for spool stroke adjustment.





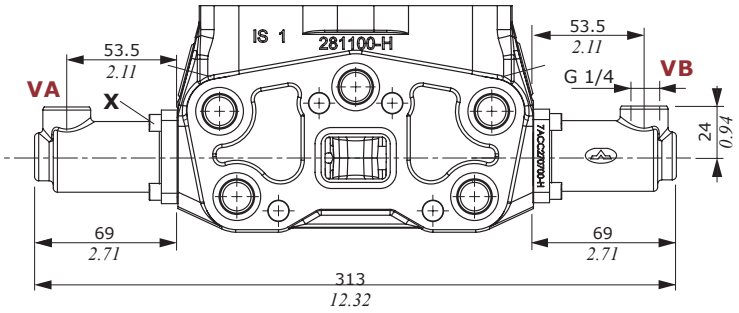
Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = allen wrench 4
W = wrench 13 - 24 Nm *(17.7 lbft)*

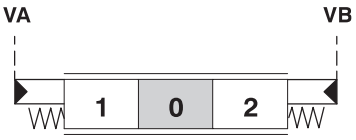
8IMOHF3 type features
Adjustment range . . . . . : from 5.8 to 19 bar
(from 84.1 to 275 psi)
see curve type 033
Pilot pressure . . . . . : max. 100 bar *(1450 psi)*

* depends on stroke setting

8IMOH type

Steel control kit.



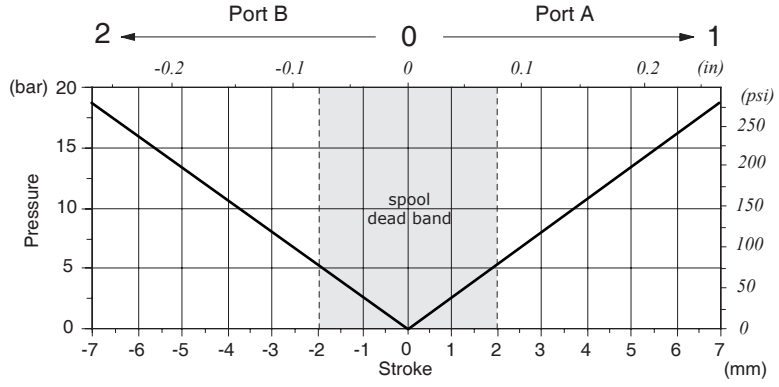


Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

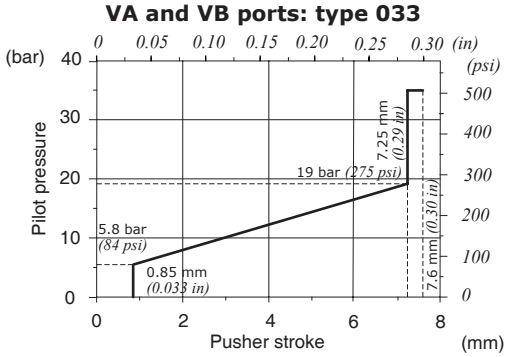
8IMOH type features
Adjustment range . . . . . : from 5.8 to 19 bar
(from 84.1 to 275 psi)
see curve type 033
Pilot pressure . . . . . : max. 50 bar *(730 psi)*

Diagrams and features of proportional hydraulic controls

Pressure - stroke diagram
(for controls represented)



Pressure control curve on VA and VB ports: type 033



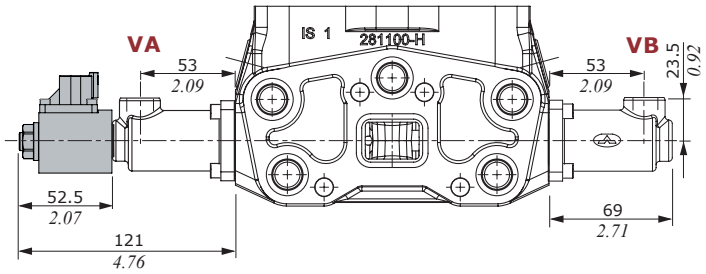
Features
Pilot pressure . . . . . : max. 100 bar *(1450 psi)*

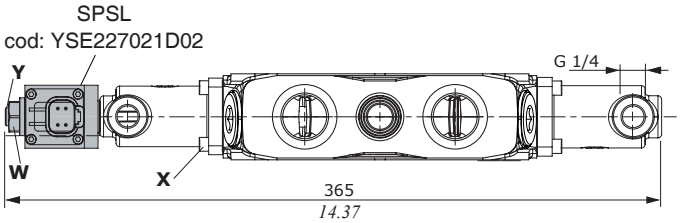
Complete controls

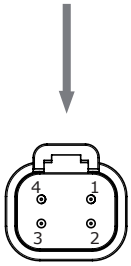
Proportional hydraulic control

8IMSPSL proportional hydraulic kit

With spool position sensor. For other features see the catalogue cod. D1WWEE01E.

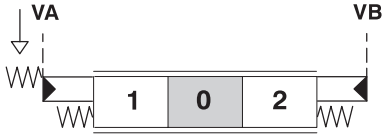






Connector PIN-OUT		
Pin	Functions	
	for 5V supply	for 8-32V supply
1	+5V	signal OUT
2	N.C.	GND
3	GND	Vb+
4	signal Out	not connected

NOTE – these drawings are not to scale with the others included in the catalog

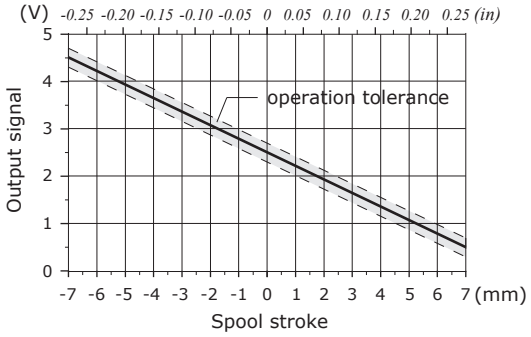


Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*
Y = wrench 17 - 9.8 Nm *(7.23 lbft)*
W = wrench 4 - 9.8 Nm *(7.23 lbft)*

Control features
Pilot pressure . . . . . : max. 100 bar *(1450 psi)*
Connector . . . . . : Deutsch DT04-4P
Mating connector cod. 5CON140072 not included

Spool position sensor features
Voltage supply range . . . . : from 9 to 32 VDC or 5 VDC
Current absorption . . . . . : <10 mA
Mechanical life . . . . . : $3x10^6$
Connector type . . . . . : Deutsch DT04-4P
Weather protection. . . . . : IP 67 - IP 69K
Working temperature . . . . : -40/+105 °C
Minimum load resistance. . : 10 KΩ
Working pressure max. . . . : 350 bar • *5100 psi*
Max. mechanical stroke . . : ± 10 mm
Max. electrical stroke. . . . : ± 10mm
Output signal
Range . . . . . : from 0.5 to 4.5 V
Linearity . . . . . : ± 5%
Spool in neutral . . . . . : 2.5 ± 0.2 V
Max current. . . . . : 1 mA
Mechanical vibrations,
shock, bumps . . . . . : IEC 68-2-6,27,29
EMC compatibility. . . . . : ISO 13766 - ISO 15982

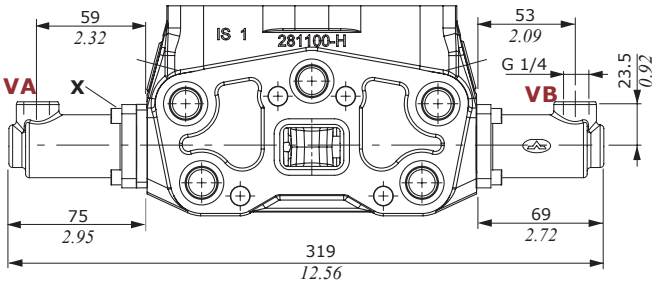
Output Voltage-spool stroke diagram

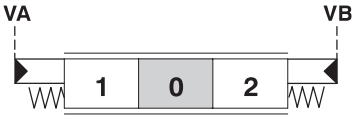


Proportional hydraulic control

8IMD proportional hydraulic kit

For descent control valve on A. Needs dedicated 1MDA spool, code: **3CU2510490**.





Features

Adjustment range . . . . . : From 5 to 20 bar *(from 72.5 to 290 psi)*

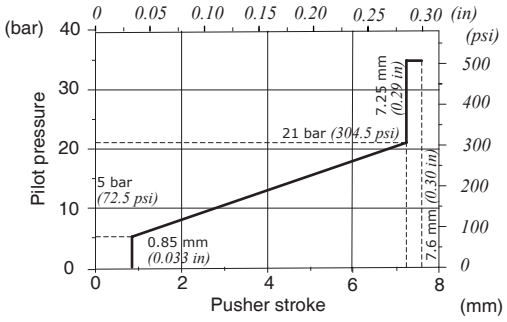
Pilot pressure . . . . . : max. 100 bar *(1450 psi)*

Wrenches and tightening torques

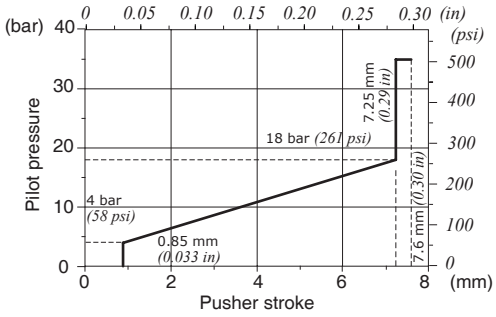
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

NOTE – these drawings are not to scale with the others included in the catalog

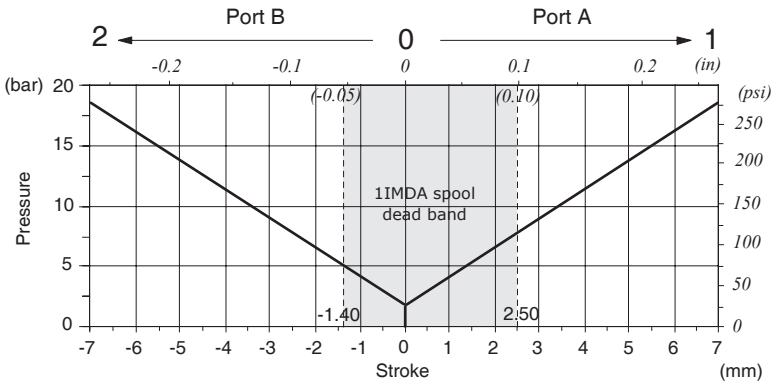
Pressure control curve on VA port: type 028



Pressure control curve on port VB: type 073



Pressure - stroke diagram



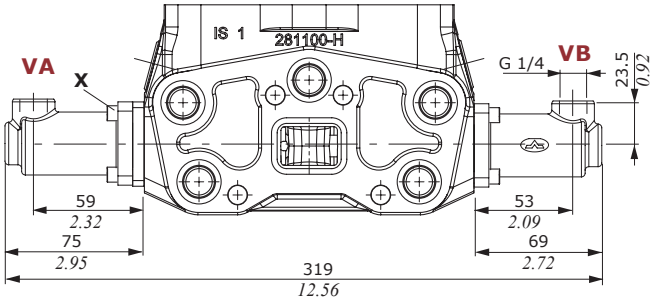
Complete controls

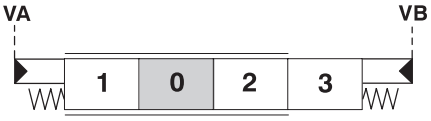
Proportional hydraulic control

13IMP and 13IMOPHCR proportional hydraulic kit

For floating circuit.

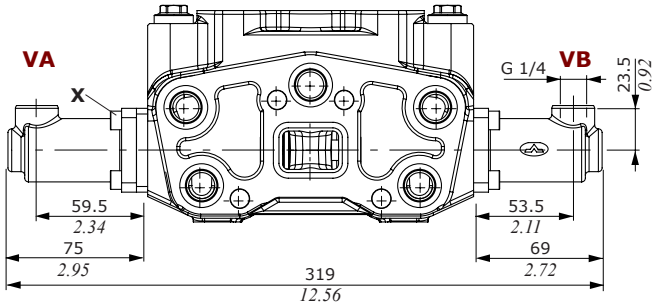
13IMP





Wrenches and tightening torques
X = wrench 5 - 9.8 Nm *(7.23 lbft)*

13IMOPHCR



NOTE – these drawings are not to scale with the others included in the catalog

Dedicated parts	13 IMP	
	Type	Code
Spool	5IMP	3CU2542430
Working section kit	P5(IMP)	5EL1183205A

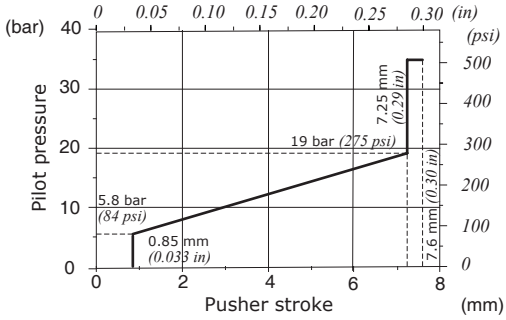
Dedicated parts	13IMOPHCR	
	Type	Code
Spool	5HFLLIM	3CU2541210-H
Working section kit	RPH5LL(IM)	5EL1183065A

Features

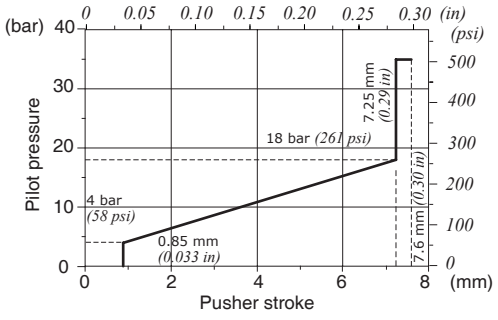
Adjustment range . . . . . : From 5 to 20 bar *(from 72.5 to 290 psi)*

Pilot pressure . . . . . : max. 100 bar *(1450 psi)*

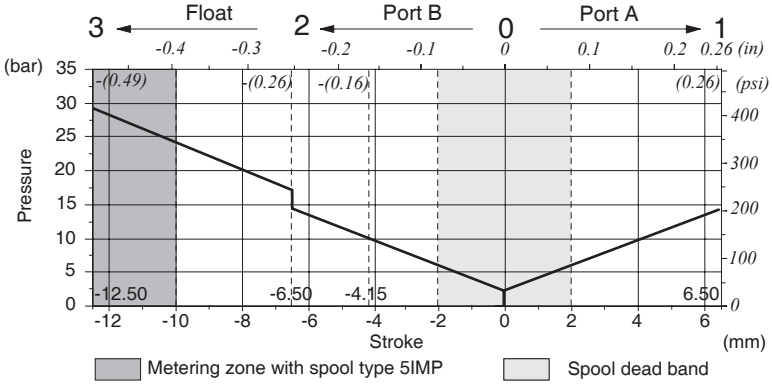
Pressure control curve on port VA: type 033



Pressure control curve on port VB: type 073



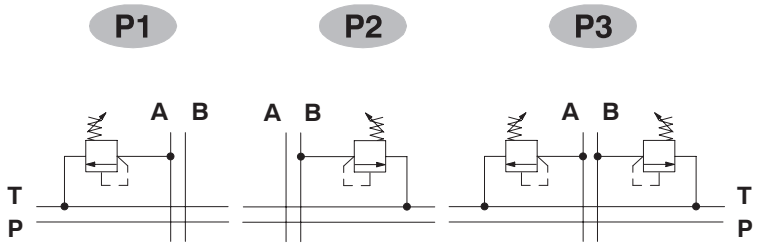
Pressure - stroke diagram



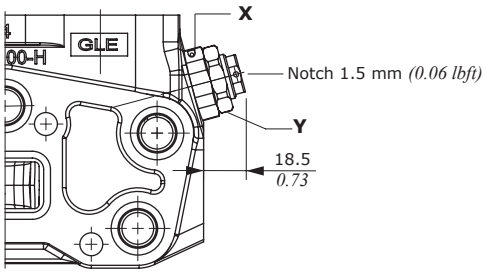
Antishock valves

P 1 (G 3 - 100)

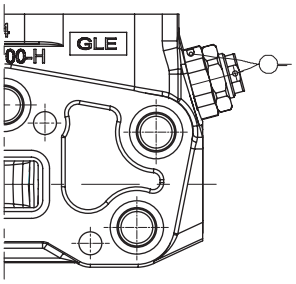
- Valve setting (bar)
- Spring type
- Configuration
  - **1** mounted on A port
  - **2** mounted on B port
  - **3** mounted on A and B ports



Configuration **G** type:
with screw



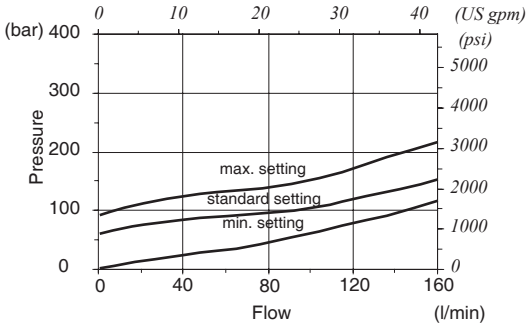
Configuration **H** type:
valve set and locked



Wrenches and tightening torques
X = wrench 30 - 42 Nm *(31 lbft)*
Y = wrench 27 - 24 Nm *(17.7 lbft)*

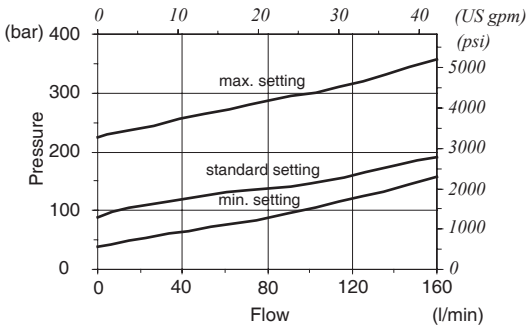
G2 setting range

From 50 to 120 bar *(from 725 to 1750 psi)*



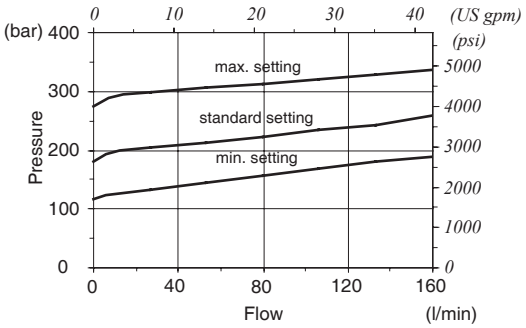
G3 setting range

From 100 to 250 bar *(from 1450 to 3600 psi)*



G4 setting range

From 160 to 315 bar *(from 2300 to 4600 psi)*

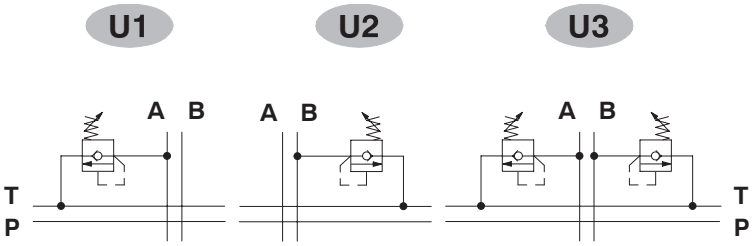


Port valves

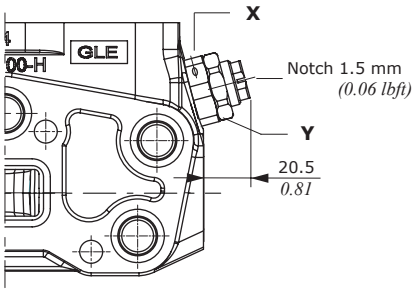
Antishock and anticavitation valves

U 1 (G 3 - 100)

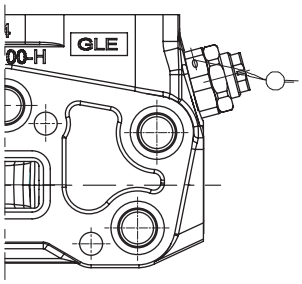
- Valve setting (bar)
- Spring type
- Configuration
  - **1** mounted on A port
  - **2** mounted on B port
  - **3** mounted on A and B ports



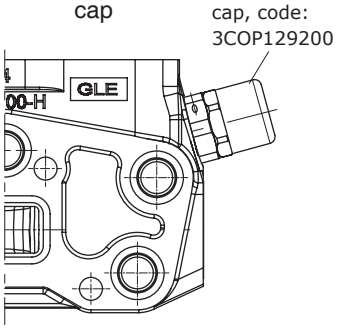
Configuration **G** type: with screw



Configuration **H** type: valve set and locked



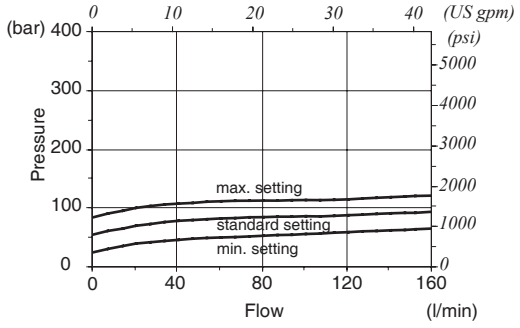
Configuration **Z** type: with tamper proof cap



Wrenches and tightening torques
X = wrench 30 - 42 Nm *(31 lbft)*
Y = wrench 27 - 24 Nm *(17.7 lbft)*

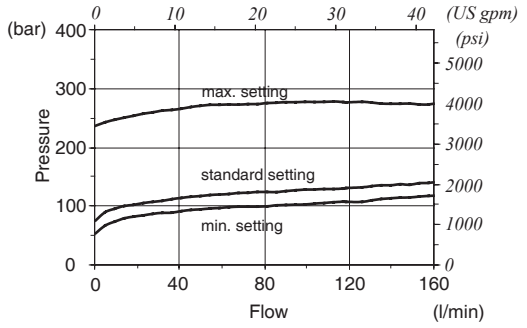
G2 setting range

From 35 to 90 bar *(from 510 to 1300 psi)*



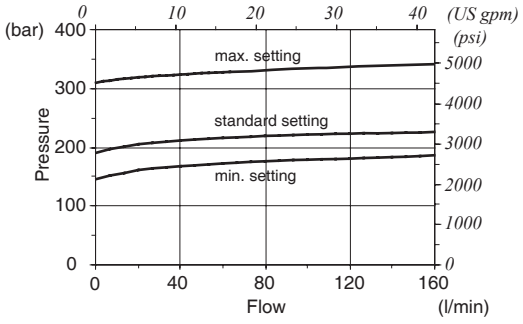
G3 setting range

From 100 to 250 bar *(from 1450 to 3600 psi)*

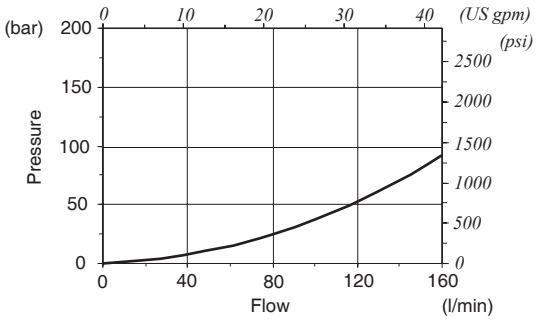


G4 setting range

From 180 to 350 bar *(from 2600 to 5100 psi)*



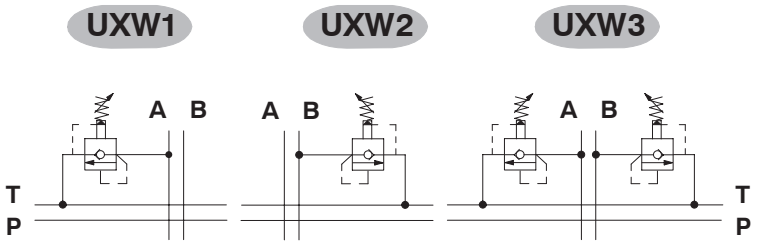
Pressure drop P ⇒ T



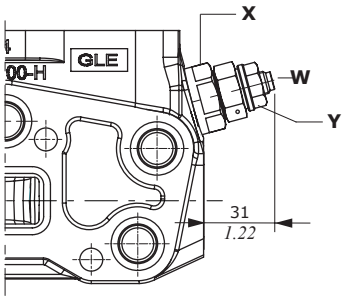
Pilot operated anti-shock and anticavitation valves

UXW 1 (G - 160)

- Pressure setting (bar)
- Configuration
  - **1** mounted on A port
  - **2** mounted on B port
  - **3** mounted on A and B ports

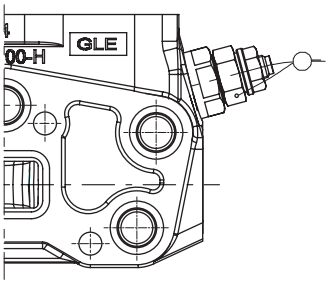


Configuration **G** type:
with screw



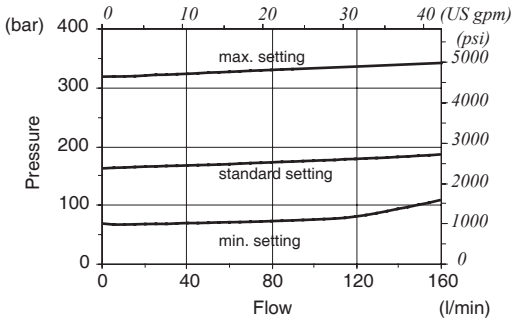
Wrenches and tightening torques
X = wrench 27 - 42 Nm *(31 lbft)*
Y = wrench 17 - 24 Nm *(17.7 lbft)*
W = allen wrench 5

Configuration **H** type:
valve set and locked

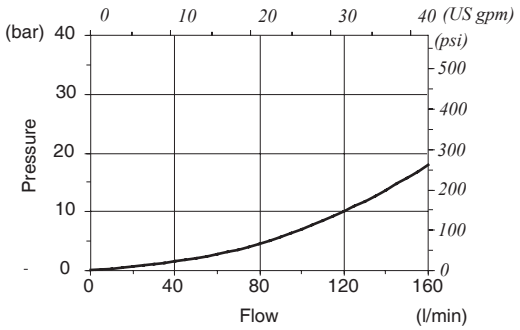


Range setting

From 63 to 315 bar *(from 900 to 4600 psi)*



Pressure drop



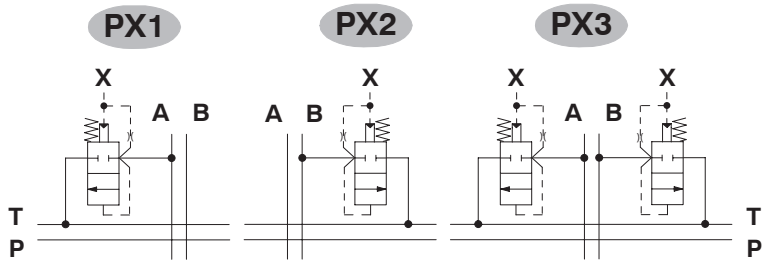
NOTE – The lever control (L type) and the solenoid lock device (8KBER type), combined with the UXV valve, are mounted roated 180° (configuration: **L180** and **8KBER180**).

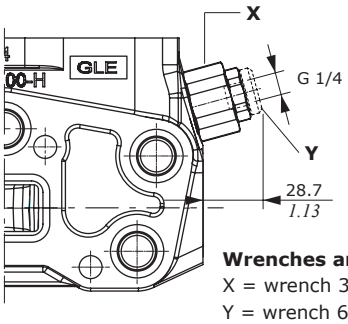
Port valves

Pilot hydraulic unloader valve

PX 1

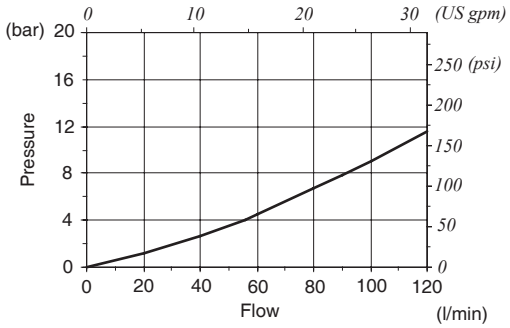
- **1** mounted on A port
- **2** mounted on B port
- **3** mounted on A and B ports





Wrenches and tightening torques
X = wrench 30 - 42 Nm *(31 lbft)*
Y = wrench 6 - 24 Nm *(17.7 lbft)*

Pressure drop P ⇒ T

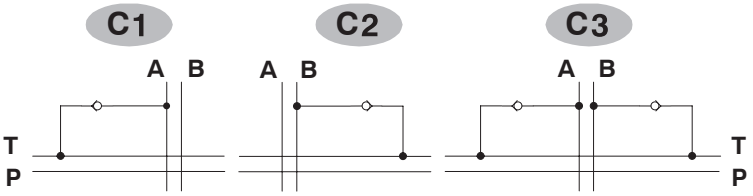


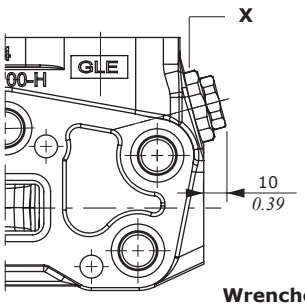
NOTE – For safety reasons the valve is supplied with blanking plug.
The lever control (L type) and the solenoid lock device (8KBER type), combined with the PX valve, are mounted roated 180° (configuration: **L180** and **8KBER180**).

Anticavitation valve

C 1

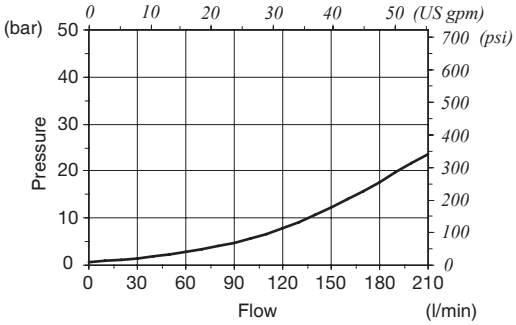
- **1** mounted on A port
- **2** mounted on B port
- **3** mounted on A and B ports



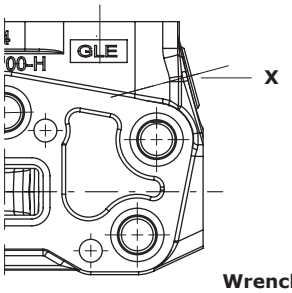


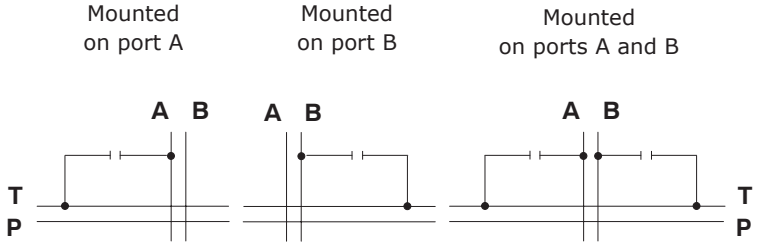
Wrenches and tightening torques
X = wrench 30 - 42 Nm *(31 lbft)*

Pressure drop



Valve blanking plug



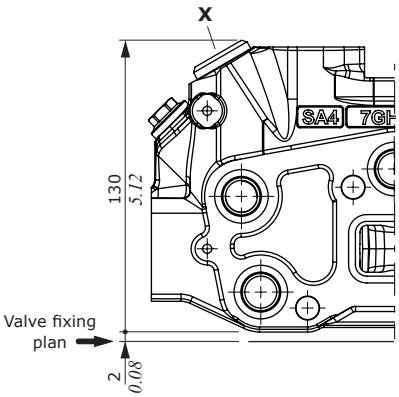


Wrenches and tightening torques
X = wrench 12 - 42 Nm *(31 lbft)*

Port valves

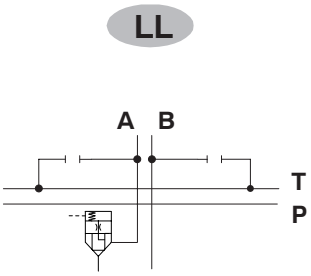
Low leak valve

For RPH5LL working port.



Wrenches and tightening torques
X = wrench 8 - 24 Nm *(17.7 lbft)*

Features
Oil leakage . . . . . : 3-4 cm³/min *(0.18-0.24 in³/min)*
With mineral oil of 46mm2/s (46 cSt) viscosity at 40°C (104°F) temperature

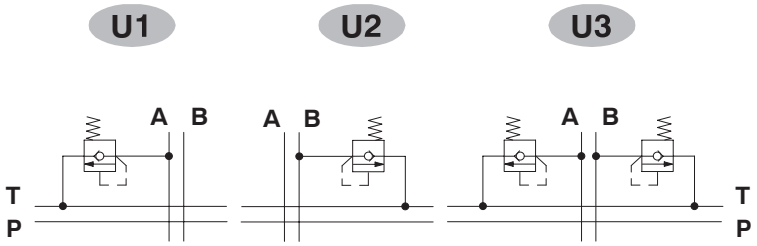


Fixed setting antishock and anticavitation valves

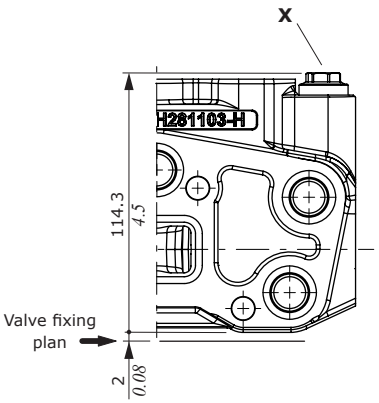
For RPH5LL, RPHT, RPH5, RPHSP, RSP5 working port.

U 1 (100)

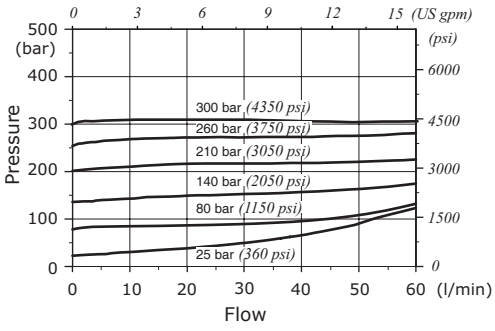
- Valve setting (bar)
- **1** mounted on A port
- **2** mounted on B port
- **3** mounted on A and B ports



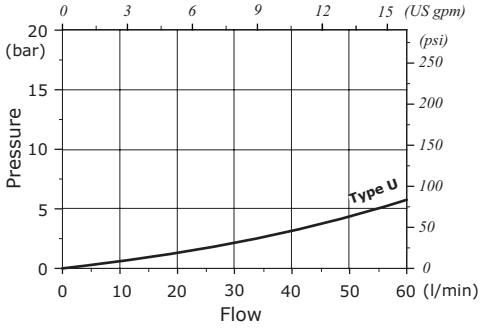
Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbft)*



Setting example
(10 l/min - *2.6 Us gpm*)



Pressure drop
(in anticavitation)



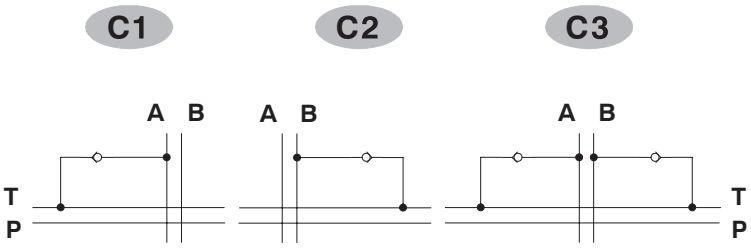
Port valves

Anticavitation valve

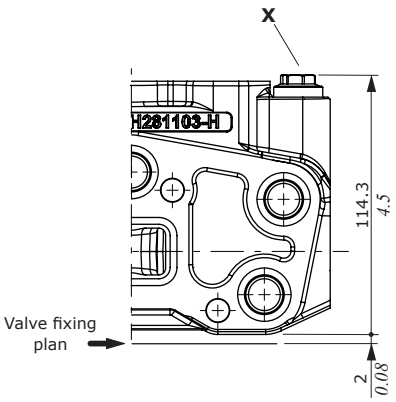
For RPH5LL, RPHT, RPH5, RPHSP, RSP5 working port.

C 1

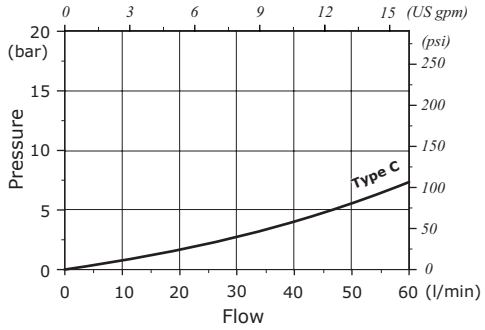
- **1** mounted on A port
- **2** mounted on B port
- **3** mounted on A and B ports



Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbft)*



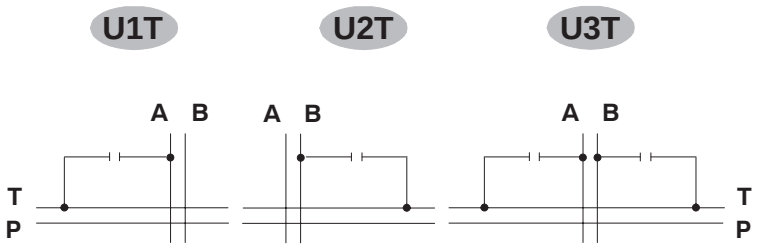
Pressure drop
(in anticavitation)



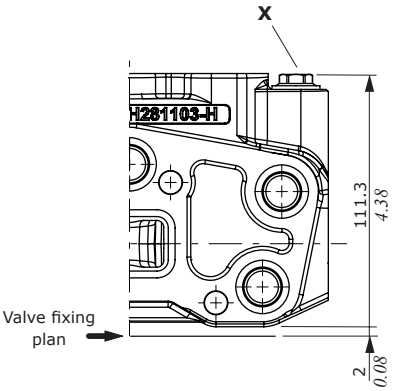
Valve blanking plug

U 3T

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

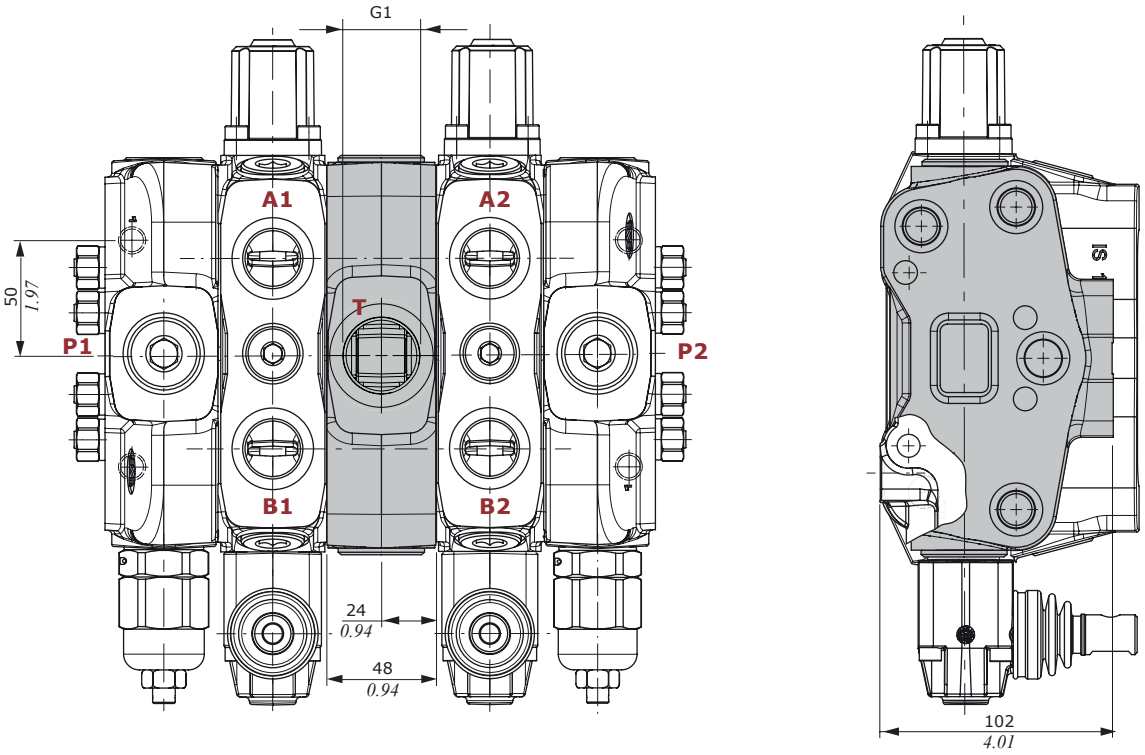


Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbft)*

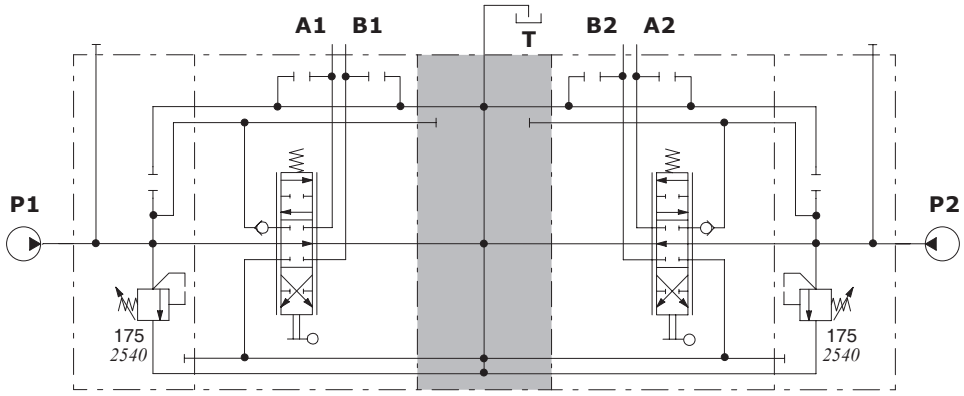


CS1 mid return manifold

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



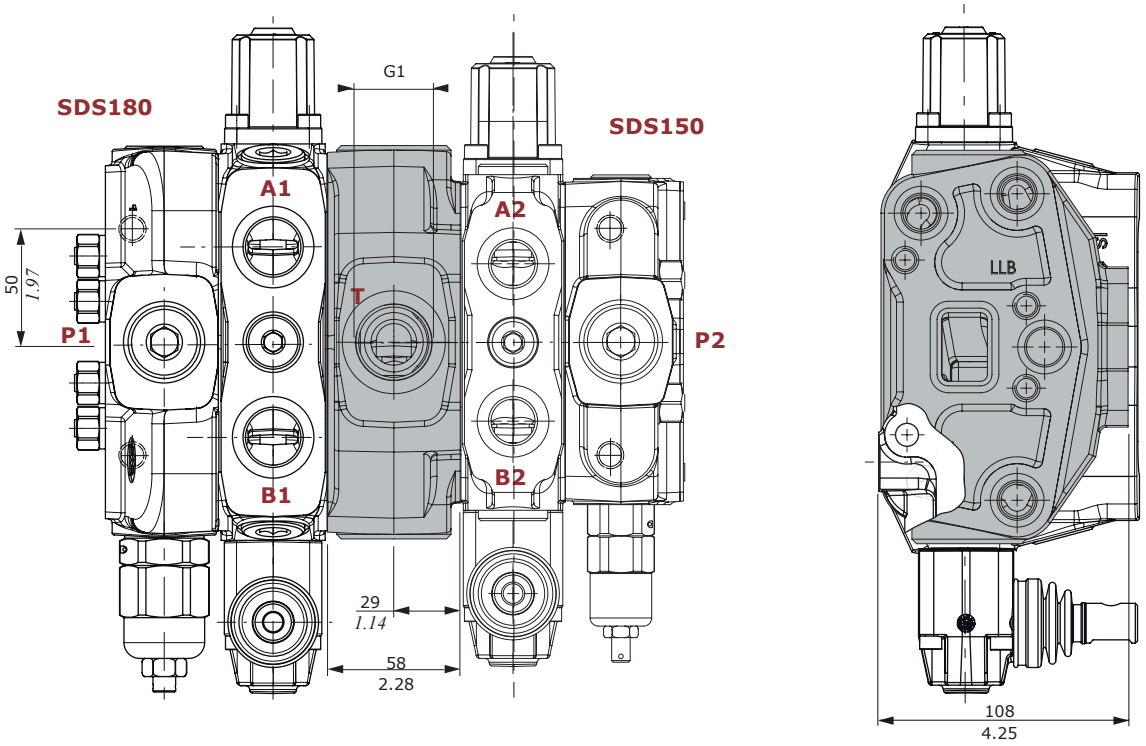
Hydraulic circuit



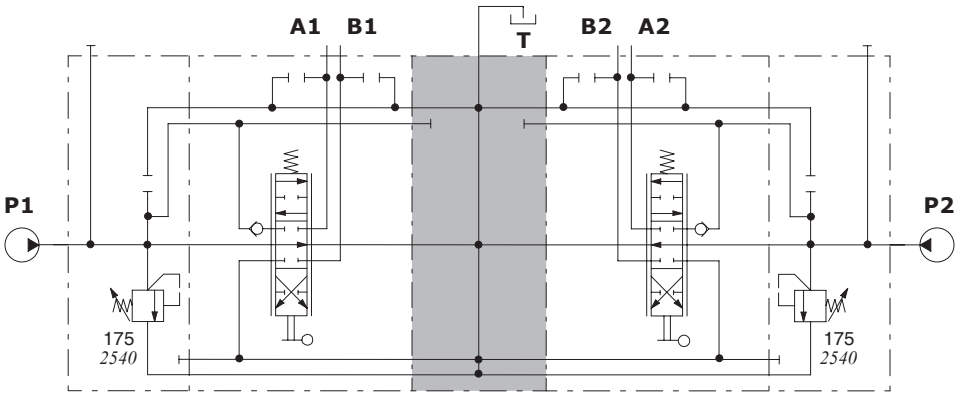
Description example:
SDS180/2/AC(YG3-175)/18L/**CS1**/ 18L/BC(YG3-175)

CS3 mid return manifold

Mid return manifolds for directional valves SDS180 with left inlet section and SDS150 with right inlet section; they allow 2 indipendent circuits with common outlet.



Hydraulic circuit

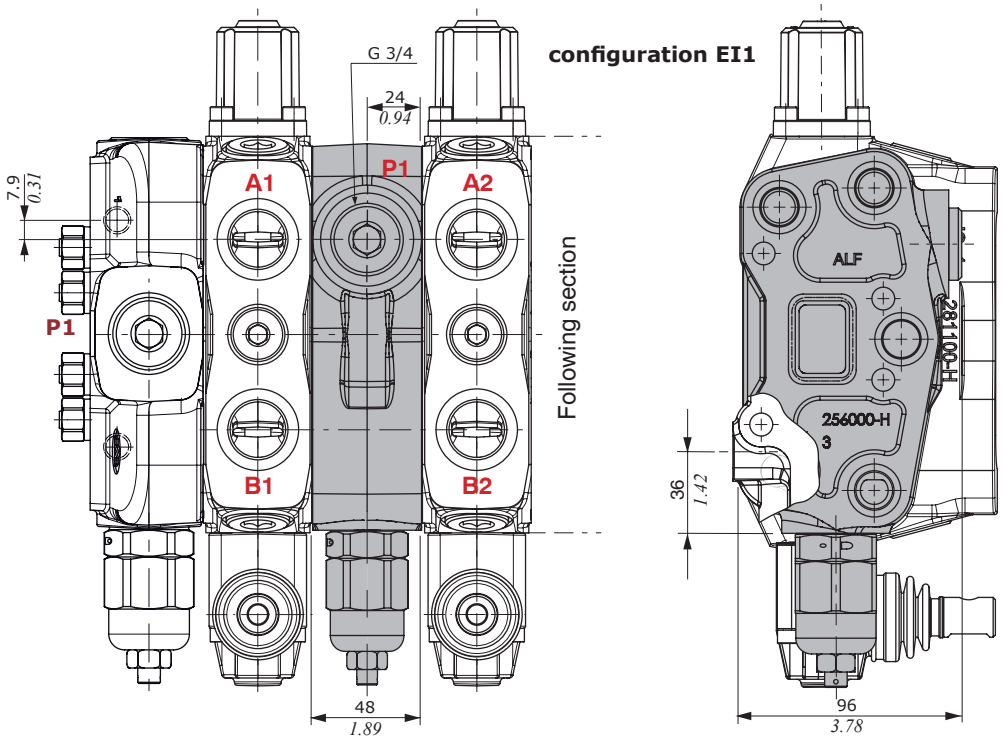


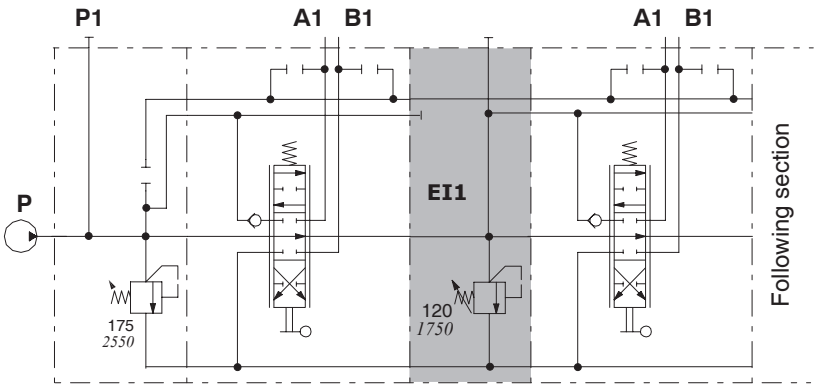
Description example:
SDS180/1/AC(YG3-175)/18L/**CS3**/18L/BC(YG3-175)/SDS150/1

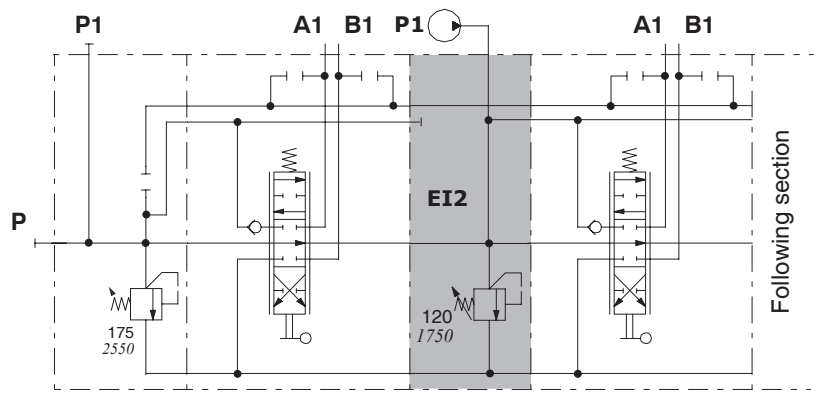
Service relief valve section

EI configuration

The operation of up stream section exclude the EI downstream section.
The pressure of the downstream sections should be adjusted at least 20 bar below the relief valve setting.
Execution EI2, without plug, is prearranged for a second inlet.

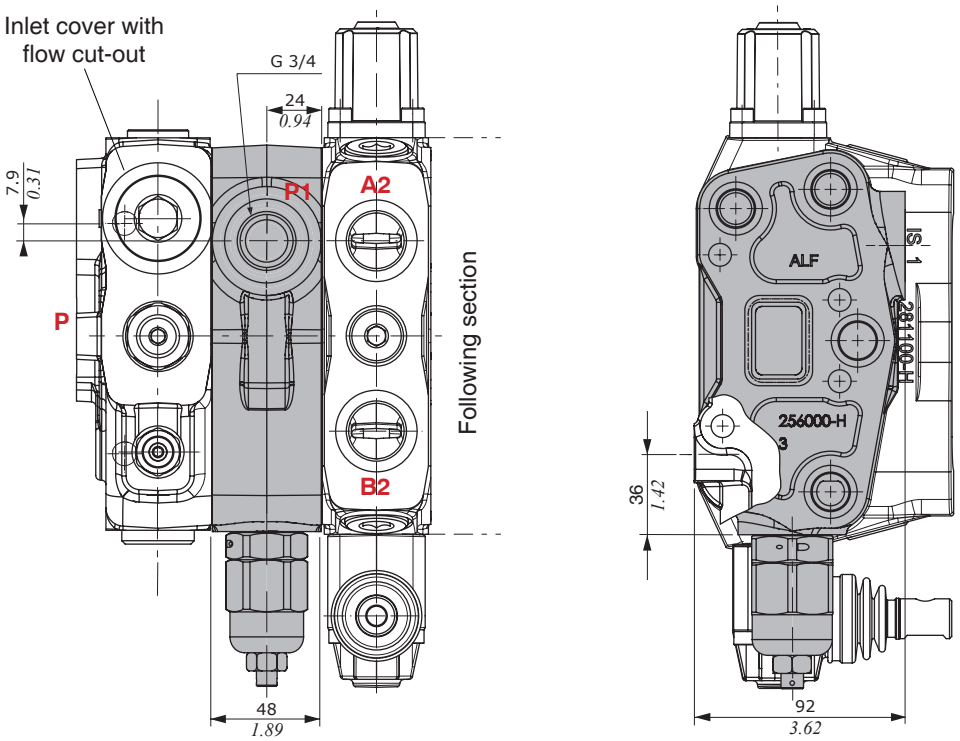


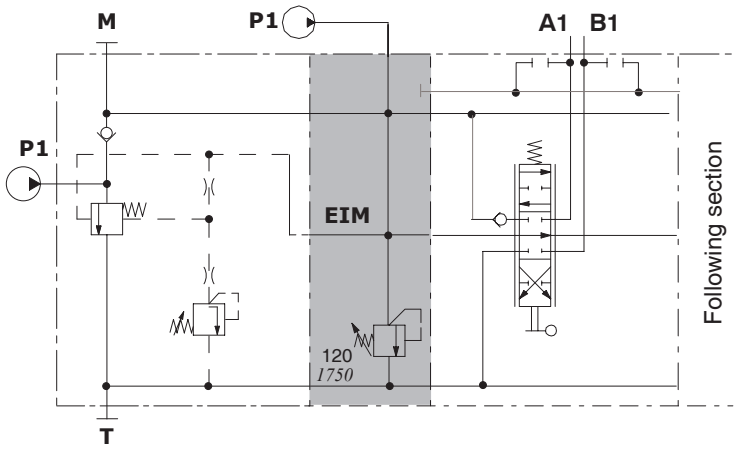




Service relief valve section

EIM configuration





NOTE – EIM intermediate section must be always assembled with inlet cover with flow cut-out. (See page 20).