walvoil

DPC Series

Pre-compensated Load Sensing sectional valves

TECHNICAL CATALOGUE



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

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

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

8th edition December 2019

The DPC Series

The DPC Series is a family of open/closed center pre-pressure compensated sectional valves designed specifically for Mobile Applications. The DPC series provides exceptional controllability, efficiency and flexibility for applications requiring up to 240 l/min (*63.4 US gpm*) flow rate. DPC Series is available in two different sizes: DPC130 (DPC130X) and DPC200.



DPC130



DPC130X



DPC200

The Load Sensing technology

Thanks to the use of specially designed pumps and control valves, the Load Sensing principle can be considered the most comprehensive means of creating a flexible hydraulic circuit that can adapt to the various operating conditions demanded by users.
The main feature of this principle is that the flow rate to the user is proportional to the spool position under any operating condition, regardless of the resistance encountered by the user (pressure) and the number of levers activated (exceeding the pump's total flow rate, a condition here in after defined as saturation, is the only limitation).
Therefore, with the LS systems, there is a specific correspondence between the position of the control lever and the movement speed of the user, cylinder or hydraulic motor. This feature is particularly useful in the hydraulic handling machine sector (excavators, cranes, loaders, agricultural and forestry machinery) in which each movement phase has specific sequences that the operator must control by using memorised movements.

Advantages and options

- Energy saving.
- Extension of part service life.
- Lower energy dissipation.
- Noise reduction.
- Available to create a single-pump circuit (compared with the use of multiple-pump circuits in which each pump is dedicated to different actuators to be operated simultaneously).

Real energy savings can be obtained above all when the DPC directional valves operate together with variable displacement Load Sensing pumps. When the DPC valve is utilised with fixed displacement pumps, the previously mentioned movement independence and repeatability features are guaranteed, but energy savings will be limited.
For special options please contact Sales Dept.

The ATEX version

The DPC130X is the DPC Series new valve built according to the ATEX directive for safe use in classified areas, with inflammable and potentially explosive materials.
Hydraulic features and performance remain the same of the DPC130 standard valve.
For more informations see code D1WWED03E catalogue.

Working conditions

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

		DPC130	DPC200
Nominal flow rating (open center circuit)	on inlet port with compensator @ stand-by (margin pressure)	150 l/min - *39.6 US gpm* @ 9 bar - *131 ps*	260 l/min - *68.7 US gpm* @ 11.5 bar - *167 ps*
	on working ports with compensator (Qin/Qut>10%) @ stand-by (margin pressure)	100 l/min - *26.4 US gpm* @ 7 bar - *102 ps*	200 l/min - *52.8 US gpm* @ 7 bar - *102 ps*
	on working ports without compensator (Qin/Qut>10%) @ stand-by (margin pressure)	130 l/min - *34.3US gpm* @ 9 bar - *131 ps*	240 l/min - *63.4 US gpm* @ 11.5 bar - *167 ps*
Max. pressure	**P** inlet port	315 bar (²) - *4500 psi* (²)	350 bar (¹) - *5100 psi* (¹)
	A and **B** working ports	315 bar (²) - *4500 psi* (²)	420 bar (¹) - *6100 psi* (¹)
Back pressure (max.)	on **T** outlet port	25 bar - *363 psi*	25 bar - *363 psi*
	on **L** drain port	2.5 bar - *36 psi*	2.5 bar - *36 psi*
Standard internal leakage A(B)->T	Δp=100 bar - *1450 psi*	16 cm³/min - *0.98 in³/min*	20 cm³/min - *1.22 in³/min*
	with port valves, Δp=100 bar - *1450 psi*	21 cm³/min - *1.28 in³/min*	25 cm³/min - *1.53 in³/min*
Fluid		Mineral oil	
Fluid temperature range	with seals NBR (BUNA-N)	from -20°C to 80°C - *from -4°F to 176°F*	
	with seals FPM (VITON)	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*	
Contamination level	max.	-/18/15 - ISO 4406 - *NAS 1638 class 9*	
Environmental temperature for working conditions	with mechanical devices	from -40°C to 60°C - *from -40°F to 140°F*	
	with hydraulic/pneumatic devices	from -30°C to 60°C - *from -22°F to 140°F*	
	with electric/electrohydraulic devices	from -20°C to 50°C - *from -4°F to 122°F*	

NOTES: (¹) According to NFPA T 2.6.1., fatigue rating verified for 1 million cycles on 6 sample valves with test Pressure = 1.23 x Max. pressure indicated - (²) According to NFPA T 2.6.1., fatigue rating verified for 1 million cycles on 8 sample valves with test Pressure = 1.104 x Max. pressure indicated.

Standard threads

REFERENCE STANDARD		BSP	UN-UNF	NPTF	Flange connection
THREAD ACCORDING TO		ISO 228/1 BS 2779	ISO 263 ANSI B1.1 unified	ANSI B1.20.3	ISO 6162 SAE J518
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926		
	SAE		J1926	J476a	SAE J518 code 61 (3)
	DIN	3852-2, X or Y shape			ISO 6162-1 (4)

NOTES (3): Standard pressure series - (4): For pressure up to 350 bar (*5100 psi*)

PORTS THREADING	DPC130		DPC200			
	BSP	UN-UNF	BSP	UN-UNF	Flange connection (bolts threading)	
					ISO 6162-1 type 1	SAE J518 code 61
P inlet	G 3/4	1 1/16-12 (SAE 12)	G 1	1 5/16-12 (SAE 16)	DN 19 (M10)	3/4 (3/8-16 UNC)
A and **B** ports	G 1/2	7/8-14 (SAE10)	G 1	1 5/16-12 (SAE 16)	DN 19 (M10)	3/4 (3/8-16 UNC)
T outlet	G 3/4	1 1/16-12 (SAE 12)	G 1-1/4	1 5/8-12 (SAE 20)	DN 25 (M10)	1 (3/8-16 UNC)
LS Load Sensing	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)		
V1 pilot	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)		
V2 pilot	depends on inlet section type: see pages from 14 to 17 (5)		M14x1.5 (5)		see BSP threading	see UN-UNF threading
L drain	G 1/4	7/16-20 (SAE 4)	G 1/4	7/16-20 (SAE 4)		
M pressure gauge	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)		
Hydraulic control ports	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)		

NOTES (5): ATTENTION! V2 pilot port requires dedicated joints; please see Inlet section pages.

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DPC200

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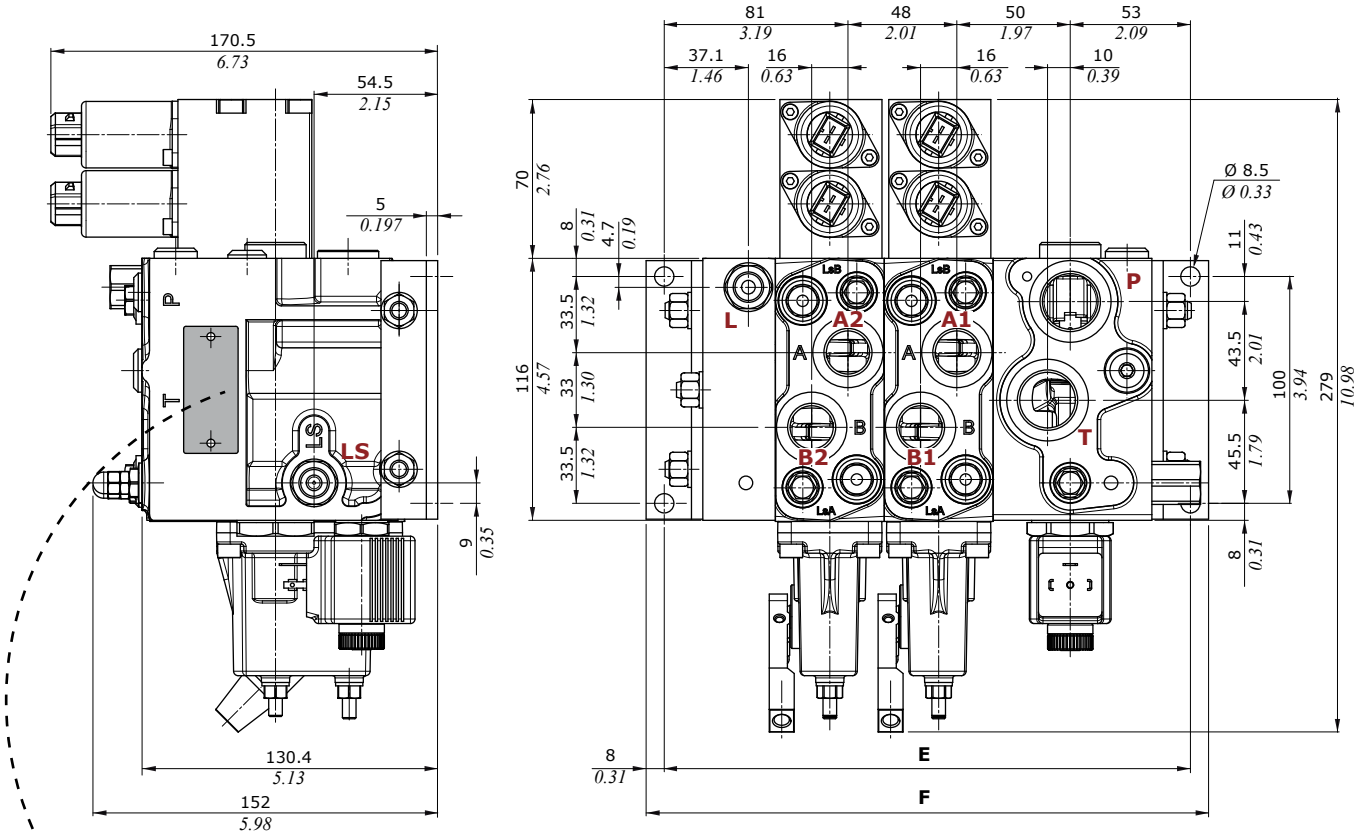
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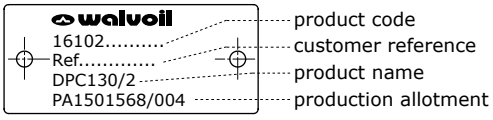
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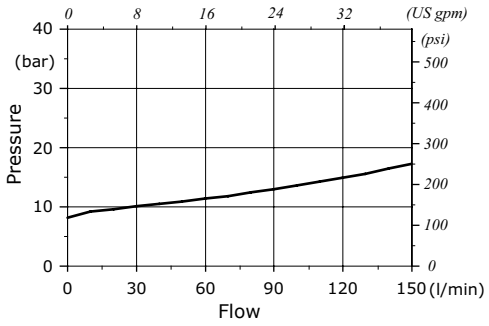
Dimensional data and performance



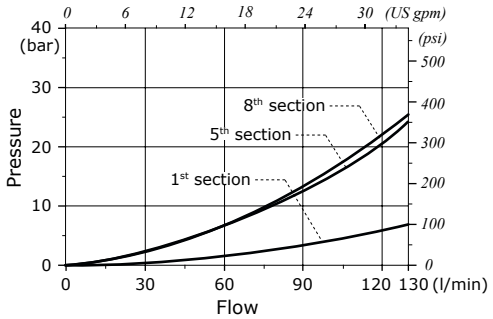


Type	E		F		Weight	
	mm	*in*	mm	*in*	Kg	*lb*
DPC130/1	184	*7.24*	200	*7.87*	12.4	*27.3*
DPC130/2	232	*9.13*	248	*9.76*	19.4	*42.8*
DPC130/3	280	*11.02*	296	*11.65*	25.3	*55.8*
DPC130/4	328	*12.91*	344	*13.54*	31.0	*68.3*
DPC130/5	376	*14.80*	392	*15.43*	36.5	*80.5*
DPC130/6	424	*16.69*	440	*17.32*	42.6	*93.9*
DPC130/7	472	*18.58*	488	*19.21*	48.7	*107.0*
DPC130/8	520	*20.47*	536	*21.10*	54.8	*121.0*
DPC130/9	568	*22.36*	584	*22.99*	60.9	*134.0*
DPC130/10	616	*24.25*	632	*24.88*	67.0	*148.0*

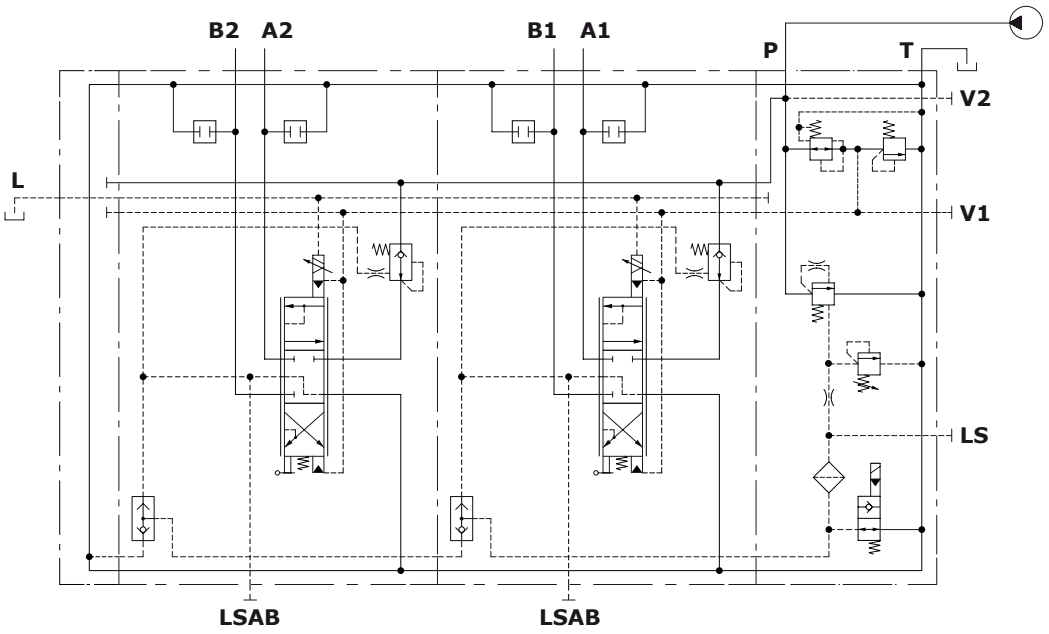
P⇒T Pressure drop inlet compensator (margin pressure)



A(B)⇒T pressure drop (1PN standard spool @ max.stroke)

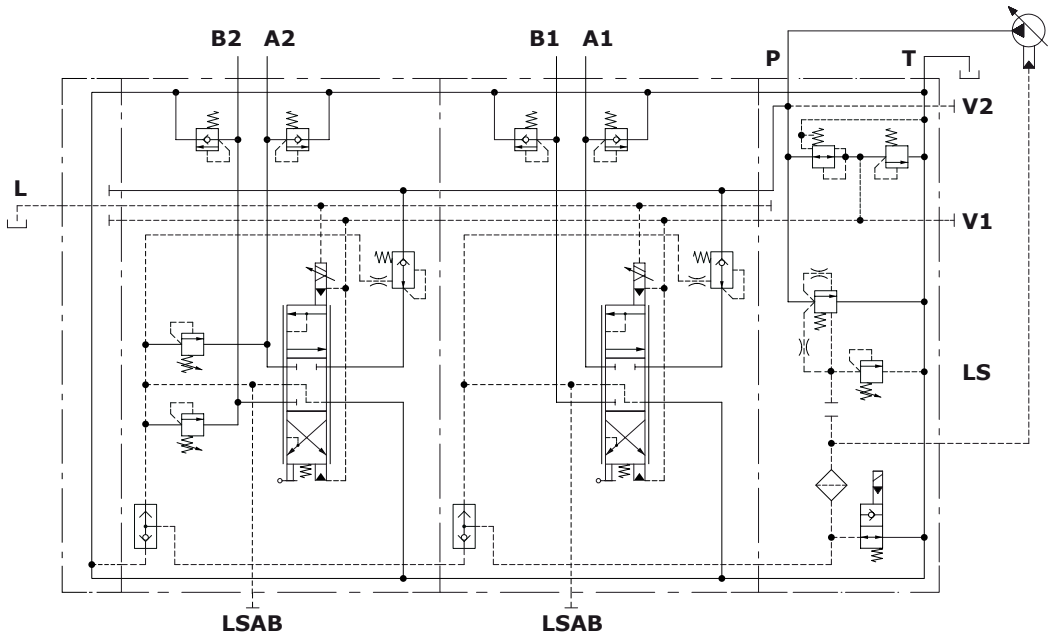


Open center configuration example



Open center circuit and one-side proportional electrohydraulic control with lever, with unloader valve and pressure reducing valve, port valve arrangement on all ports, LSAB port, internal pilot and external drain

Closed center configuration example



Closed center circuit and one-side proportional electrohydraulic control with lever, with unloader valve and pressure reducing valve, antishock and anticavitation valves on all ports, L.S. relief valves on 2nd section, LSAB ports, internal pilot and external drain

Complete section ordering codes

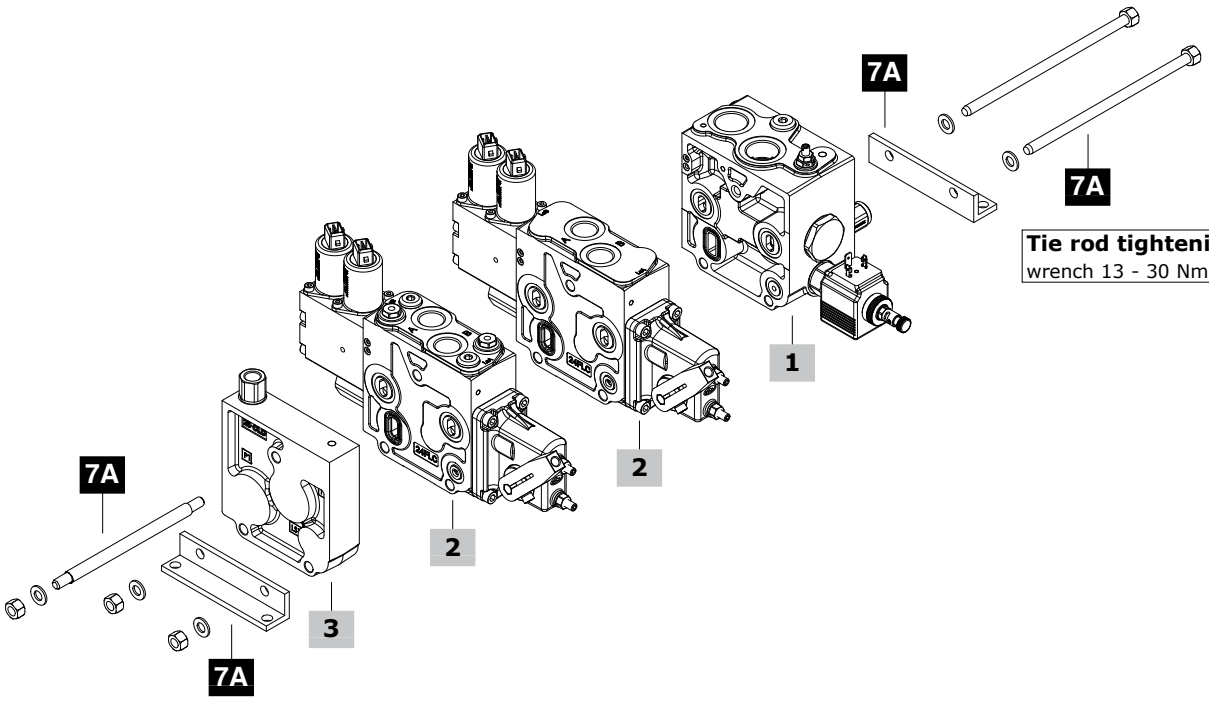
DPC130/2/BR21-S220-ELP/C10-1S8EZ3L1/C22-1S8EZ3L1.UTUTSTST/RF30-.....-12VDC-<SB20-CVN>

Valve type

Nr. of working sections

1 2 2 3 4 5 6

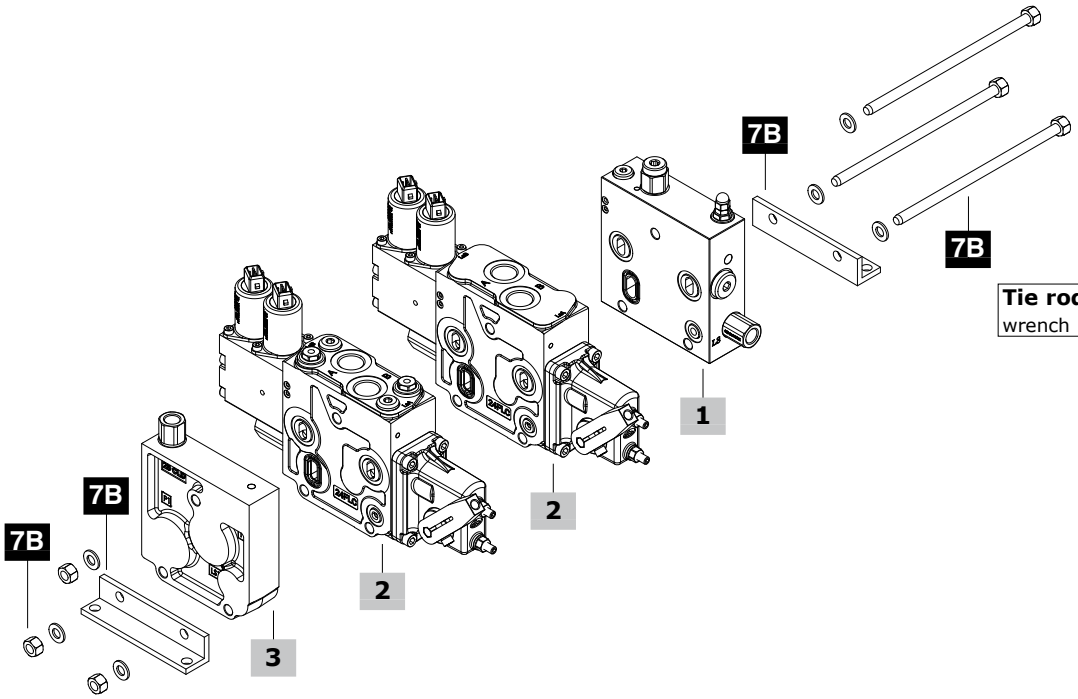
The valve is supplied painted, as standard, with one coat of Primer black antirust paint



Tie rod tightening
wrench 13 - 30 Nm *(22 lbft)*

DPC130/2/BRF21-S250/C10-1S8EZ3L1/C22-1S8EZ3L1.UTUTSTST/RF30-.....-12VDC-<SB20-CVN>

1 2 2 3 4 5 6



Tie rod tightening
wrench 13 - 30 Nm *(22 lbft)*

Complete section ordering codes

1 Inlet section * page 12

TYPE: **DPC130/BR-S200-DSK** CODE: 63420H000
DESCRIPTION: With 3-way compensator, L.S. pressure relief valve, pressure reducing valve and selector for open/closed center circuit

Closed Center circuit

TYPE: **DPC130/BN21-S220** CODE: 63422H003
DESCRIPTION: With secondary pressure control system and pressure reducing valve, with L.S. pressure relief valve.
TYPE: **DPC130/BR21-S220-ELP-12VDC** CODE: 63421H001
DESCRIPTION: As previous one, with pressure reducing valve, and 12VDC solenoid operated unloader valve
TYPE: **DPC130/BRF21-S250** CODE: 634250900
DESCRIPTION: With pressure reducing valve and L.S. pressure relief valve
TYPE: **DPC130/BRSOG21(SF)-S220-ELN3-12VDC** CODE: 63424H005
DESCRIPTION: Shut-off configuration, with pressure reducing valve and L.S. pressure relief valve
TYPE: **DPC130/BRS21-S220-ELP-12VDC** CODE: 63423H003
DESCRIPTION: Copy-Spool with dumper configuration, with secondary pressure control system, with pressure reducing valve, L.S. pressure relief valve and 12VDC solenoid operated unloader valve

Open Center circuit

TYPE: **DPC130/BN11-S220** CODE: 63422H004
DESCRIPTION: With 3-way compensator and L.S. pressure relief valve, without pressure reducing valve
TYPE: **DPC130/BR11-S220-ELP-12VDC** CODE: 63421H002
DESCRIPTION: As previous one, with pressure reducing valve, and 12VDC solenoid operated unloader valve
TYPE: **DPC130/BRS11-S220-ELP-12VDC** CODE: 63423H002
DESCRIPTION: Copy-Spool with dumper configuration, with 3-way compensator, pressure reducing valve, L.S. pressure relief valve and 12VDC solenoid operated unloader valve

2 Working section * page 22

With 2-way compensator

TYPE: **DPC130/C10-1S8EZ3TL1-12VDC** CODE: 63411H001
DESCRIPTION: With double acting spool for 60 l/min *(16 US gpm)*, proportional electrohydraulic control with lever
TYPE: **DPC130/C22-1S8EZ3TL1.UTUTSTST-12VDC**
CODE: 63411H003
DESCRIPTION: As previous one, arranged for port valves and L.S. relief valves

Without compensator

TYPE: **DPC130/D10-1S8EZ3TL1-12VDC** CODE: 63412H001
DESCRIPTION: With double acting spool for 60 l/min *(16 US gpm)*, proportional electrohydraulic control with lever
TYPE: **DPC130/D20-1S8EZ3TL1.UTUT-12VDC**
CODE: 63412H003
DESCRIPTION: As previous one, arranged for port valves
TYPE: **DPC130/CV10-1S8EZ3TL1-12VDC** CODE: 63413H001
DESCRIPTION: With load check valve, double acting spool for 60 l/min *(16 US gpm)*, proportional electrohydraulic control, with lever
TYPE: **DPC130/CV22-1S8EZ3TL1.UTUTSTST-12VDC**
CODE: 63413H003
DESCRIPTION: With load check valve, double acting spool for 60 l/min *(16 US gpm)*, proportional electrohydraulic control with lever, arranged for port valves and L.S. relief valves

3 Outlet section * page 42

For valve with mechanical control

TYPE: **DPC130/RF10** CODE: 634310001
DESCRIPTION: Without ports

For valve with hydraulic control

TYPE: **DPC130/RF20** CODE: 634310000
DESCRIPTION: Without ports, internal drain

For valve with electrohydraulic control

TYPE: **DPC130/RF30** CODE: 634310002
DESCRIPTION: Without ports, L external drain
TYPE: **DPC130/RC31** CODE: 634310012
DESCRIPTION: With P1 and T1 ports (plugged), L external drain
TYPE: **DPC130/RD31** CODE: 634310015
DESCRIPTION: With P1 and T1 ports (plugged), LS1 port, L external drain

4 Valve threading

Only specify if it is different from BSP standard (see page 5).

5 Voltage

Specify the voltage of electric device

6 Pump stand-by

This option must be specified only if valve is configured for Closed Center circuit, without local compensation and if the value is different from 9 bar (*131 psi*)

7A Assembling kit

For valve with BR-BN-BRS-BRSO inlet sections

CODE	DESCRIPTION
5TIR108185	For 1 working section valve
5TIR108232	For 2 working sections valve
5TIR108281	For 3 working sections valve
5TIR108328	For 4 working sections valve
5TIR108376	For 5 working sections valve
5TIR108425	For 6 working sections valve
5TIR108472	For 7 working sections valve
5TIR108520	For 8 working sections valve
5TIR108568	For 9 working sections valve
5TIR108616	For 10 working sections valve

7B Assembling kit

For valve with BRF inlet section

CODE	DESCRIPTION
5TIR108153	For 1 working section valve
5TIR108201	For 2 working sections valve
5TIR108249	For 3 working sections valve
5TIR108297	For 4 working sections valve
5TIR108339	For 5 working sections valve
5TIR108393	For 6 working sections valve
5TIR108440	For 7 working sections valve
5TIR108488	For 8 working sections valve
5TIR108536	For 9 working sections valve
5TIR108584	For 10 working sections valve

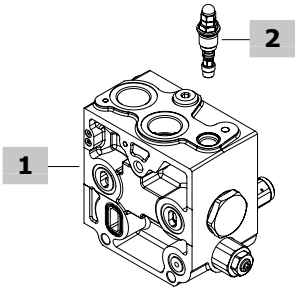
NOTE (*): *Codes are referred to **BSP** thread.*

Inlet section part ordering codes

Valve setting (bar)

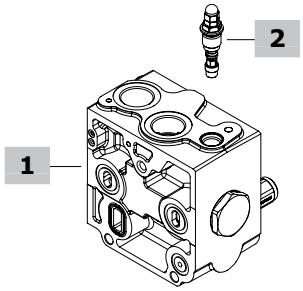
DPC130 / BR - S200 - DSK -.....

1	2	1	5



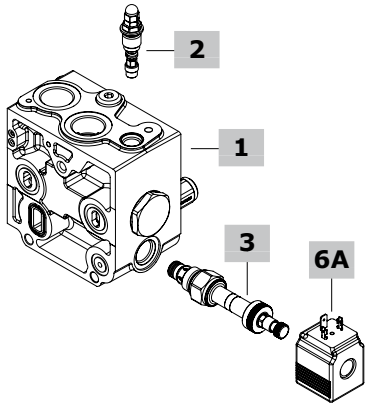
DPC130 / BN21 - S220 - .....

1	2	5



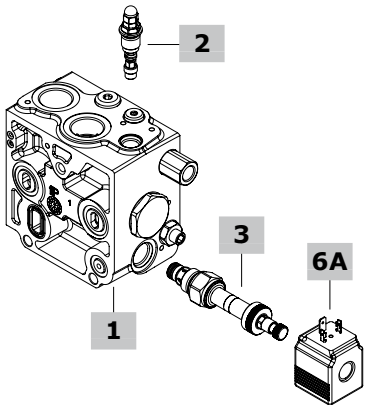
DPC130 / BR21 - S220 - ELP - ..... - 12VDC

1	2	3	5	6A



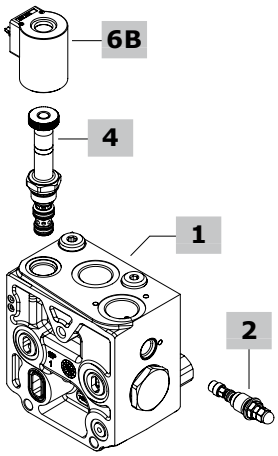
DPC130 / BRS21 - S220 - ELP - ..... - 12VDC

1	2	3	5	6A



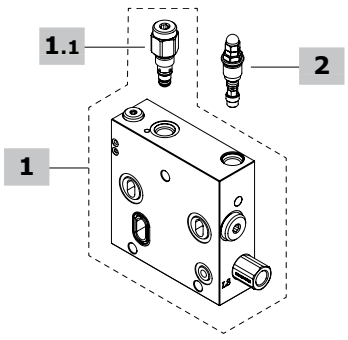
DPC130 / BRSOG21(SF) - S220 - ELN3 - ..... - 12VDC

1	2	4	5	6B

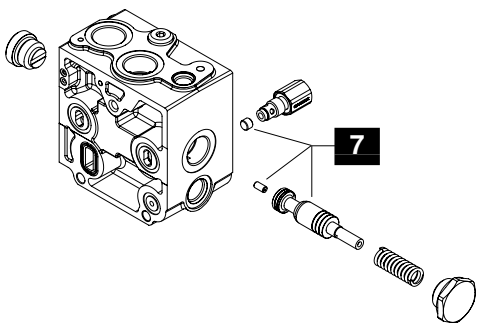


DPC130 / BRF21 - S250 - BSP

1	2	5



Circuit conversion kit



Inlet section part ordering codes

1 Inlet section kit* page 14

TYPE: **DPC130/BR-DSK** CODE: 5FIA631350
DESCRIPTION: With compensator, pressure reducing valve and selector for open/closed center circuit

Closed Center circuit

TYPE: **DPC130/BN21** CODE: 5FIA631302
DESCRIPTION: With secondary pressure control system, without pressure reducing valve

TYPE: **DPC130/BR21** CODE: 5FIA631300
DESCRIPTION: As previous one, with pressure reducing valve

TYPE: **DPC130/BRSOG21(SF)** CODE: 5FIA631374G
DESCRIPTION: Shut-Off type, with secondary pressure control system and pressure reducing valve (L.S. joint without filter)

TYPE: **DPC130/BRS21** CODE: 5FIA631360
DESCRIPTION: Copy-Spool type, with secondary pressure control system and pressure reducing valve

TYPE: **DPC130/BRF21** CODE: 5FIA630306
DESCRIPTION: With pressure reducing valve

Open Center circuit

TYPE: **DPC130/BN11** CODE: 5FIA631303
DESCRIPTION: With compensator, without pressure reducing valve

TYPE: **DPC130/BR11** CODE: 5FIA631301
DESCRIPTION: With compensator and pressure reducing valve

TYPE: **DPC130/BRS11** CODE: 5FIA631361
DESCRIPTION: Copy-Spool type, with compensator and pressure reducing valve

1.1 Parts page 20

They are included in BRF inlet section ordering code

CODE	DESCRIPTION
X219740035	Pressure reducing valve
XTAP418350	Pressure reducing valve blanking plug

2 L.S. pressure relief valves page 21

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

TYPE	INITIAL	CODE	DESCRIPTION
LSD	**S**	XCAR126215	With blind nut, range 40-180 bar *(580-2600 psi)*, std. setting 90 bar *(1300 psi)*
		XCAR126213	As previous one, range 180-350 bar *(2600-5100 psi)*, std. setting 180 bar *(2600 psi)*
LSH	**H**	XCAR126216	With locked arrangement, range 40-180 bar *(580-2600 psi)*, std. setting 90 bar *(1300 psi)*
		XCAR126217	As previous one, range 180-350 bar *(2600-5100 psi)*, std. setting 180 bar *(2600 psi)*
LSZ	**Z**	5CAR126221	With anti-tamper cap, range 40-180 bar *(580-2600 psi)*, std. setting 90 bar *(1300 psi)*
		5CAR126219	As previous one, range 180-350 bar *(2600-5100 psi)*, std. setting 180 bar *(2600 psi)*
ST	**ST**	5KIT126210	Relief valve blanking plug

3 Solenoid operated L.S. unloading valve page 21

BER type coil is required: see chapter 6

TYPE	CODE	DESCRIPTION
ELN	0EC08002031	Without emergency override
ELP	0EC08002033	With push-button emergency override
ELT	0EC08002035	With "twist & push" emergency override
ELV	0EC08002034	With screw type emergency override
LT	XTAP510320	Unloading valve blanking plug

4 Solenoid operated Shut-off pilot valve page 21

BT type coil is required: see chapter 6

TYPE	CODE	DESCRIPTION
ELN3	0EJ08002035	Without emergency override
ELT3	0EJ08002042	With screw emergency override

5 Section threading

Only specify if it is different from BSP standard (see page 5).

6A Coil

TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	12VDC **BER** type coil**,** ISO4400 connector (for unloading valve)

For complete available coil list see page 82.

6B Coil

TYPE	CODE	DESCRIPTION
12VDC	4SL3000120	12VDC **BT** type coil**,** ISO4400 connector (for Shut-Off pilot valve)

For complete available coil list see page 82.

7 Circuit conversion kit

CODE	DESCRIPTION
For BR and BN inlet sections	
5KIT130300	Circuit conversion kit: from Open Center to Closed Center
5KIT130310	Circuit conversion kit: from Closed Center to Open Center
For BRS inlet inlet section	
5KIT130301	Circuit conversion kit: from Open Center to Closed Center
5KIT130320	Circuit conversion kit: from Closed Center to Open Center

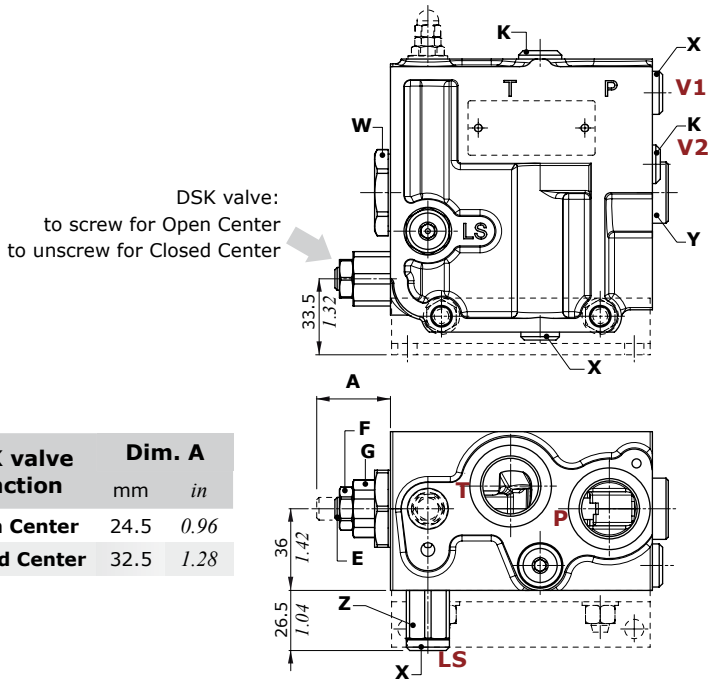
NOTE (*): *Codes are referred to **BSP** thread*.

Inlet section

Dimensions and hydraulic circuit

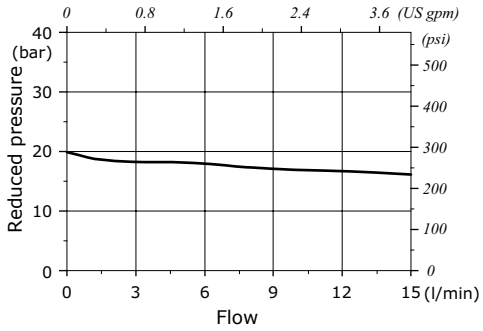
Example of BR-DSK inlet section

Configuration with pressure redicing valve and selector for Open/Closed center circuit.
For complete dimensions see BN type inlet section on the next page.



DSK valve function	Dim. A	
	mm	*in*
Open Center	24.5	*0.96*
Closed Center	32.5	*1.28*

Pressure reducing valve diagram
Reduced pressure vs. Flow



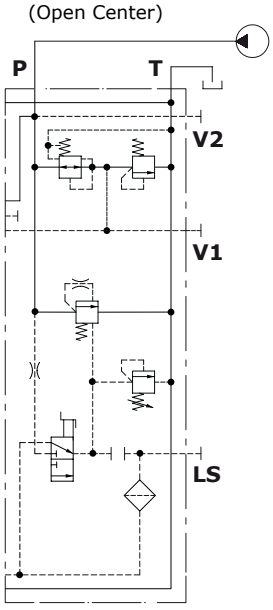
Auxiliary port specification

V1 = G1/4 pilot pressure port (Pmax = 30 bar - *435 psi*) for hydraulic pilot control valve feeding (P⇒OUT)
V2 = M14x1.5 pilot pressure port for:
- electrohydraulic control optional feeding (Pmax = 315 bar - *4600 psi)* (P⇒IN); G1/4 joint is required, code 5GIU519611
- pressure gauge connection; G1/4 joint is required, code 5GIU620330.

Wrenches and tightening torque

E = allen wrench 4
F = wrench 17 - 24 Nm *(17.7 lbft)*
G = wrench 24 - 42 Nm *(31 lbft)*
K = allen wrench 5 - 24 Nm *(17.7 lbft)*
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = allen wrench 10 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 24 Nm *(17.7 lbft)*
W = wrench 34 - 42 Nm *(31 lbft)*
NOTE: for relief valve and solenoid valve wrench and torque please see page 21.

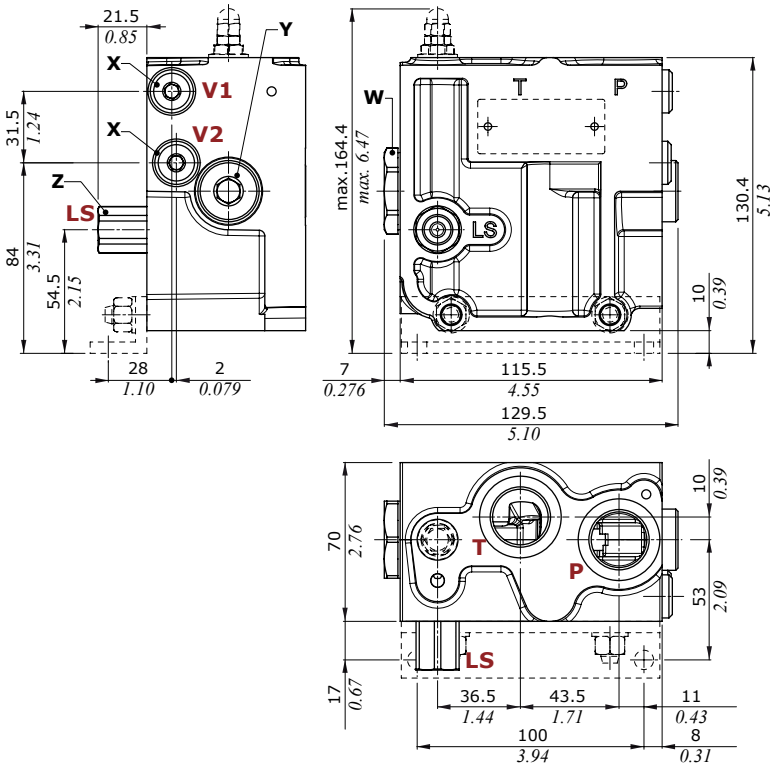
BR-DSK type
(Open Center)

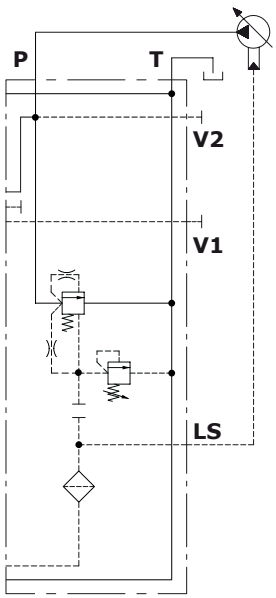


Dimensions and hydraulic circuit

Standard inlet section for Closed Center circuit: BN21 type

Configuration without pressure reducing valve.





Auxiliary port specification

V1 = G1/4 pilot pressure port for electrohydraulic control feeding (Pmax = 30 bar - *435 psi)* (P⇒IN)

V2 = G1/4 pressure gauge connection

Wrenches and tightening torque

X = allen wrench 6 - 24 Nm *(17.7 lbft)*

Y = allen wrench 10 - 24 Nm *(17.7 lbft)*

Z = wrench 19 - 24 Nm *(17.7 lbft)*

W = wrench 34 - 42 Nm *(31 lbft)*

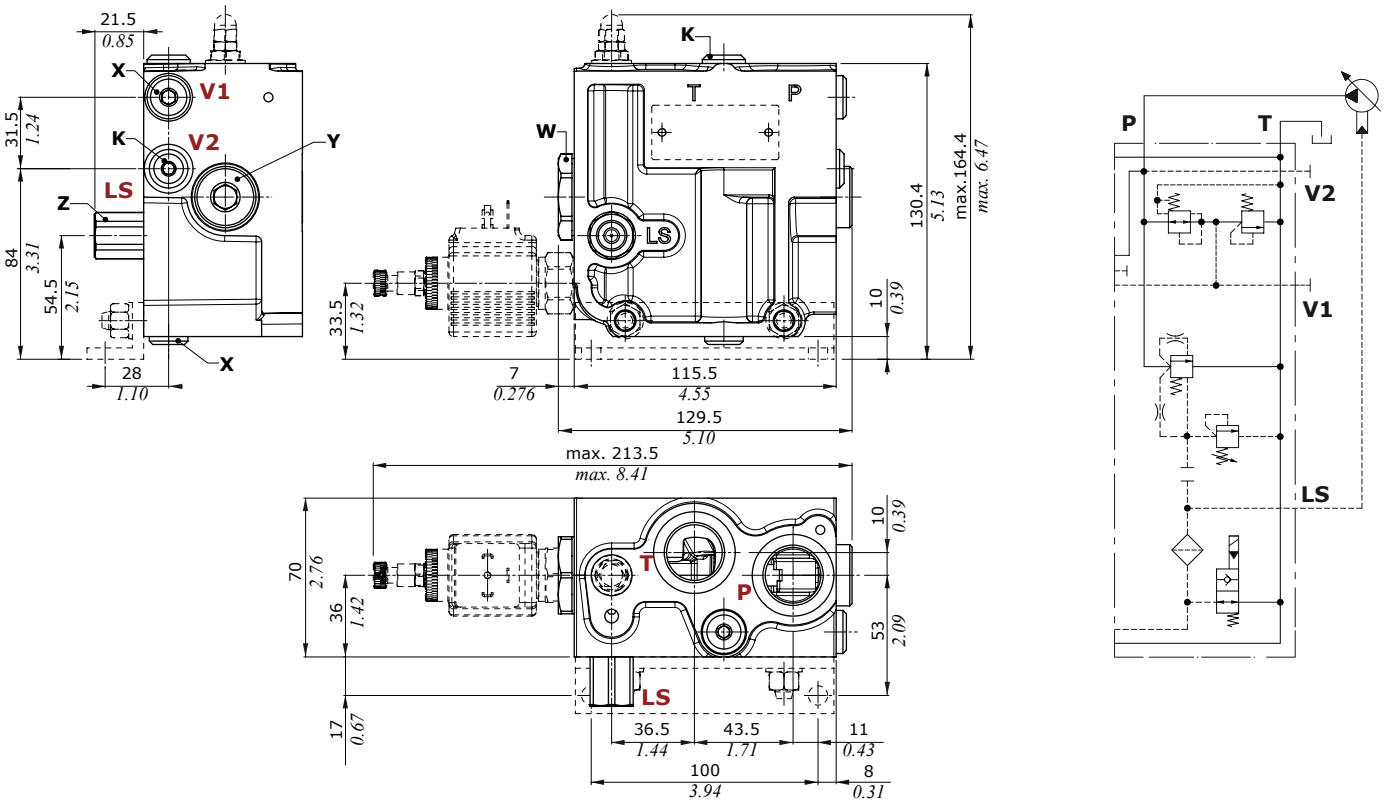
NOTE: for relief valve wrench and torque please see page 21

Inlet section

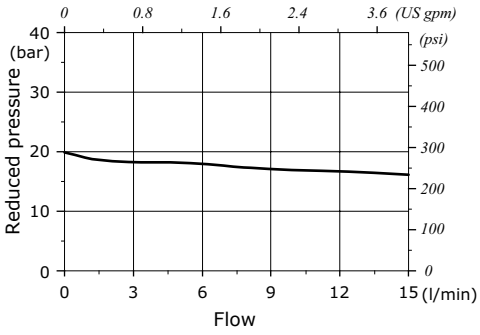
Dimensions and hydraulic circuit

Standard inlet section for Closed Center circuit: BR21 type

Configuration withpressure reducing valve.



Pressure reducing valve diagram
Reduced pressure vs. Flow



Wrenches and tightening torque

E = allen wrench 4
F = wrench 17 - 24 Nm *(17.7 lbft)*
G = wrench 24 - 42 Nm *(31 lbft)*
K = allen wrench 5 - 24 Nm *(17.7 lbft)*
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = allen wrench 10 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 24 Nm *(17.7 lbft)*
W = wrench 34 - 42 Nm *(31 lbft)*
NOTE: for relief valve and solenoid valve wrench and torque please see page 21.

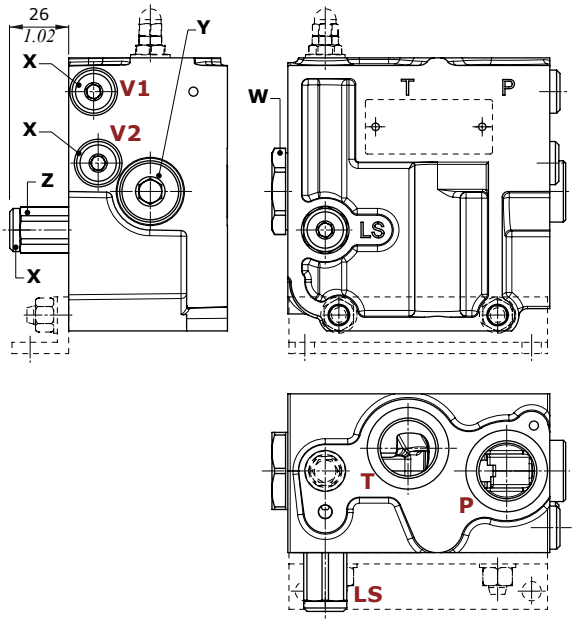
Auxiliary port specification

V1 = G1/4 pilot pressure port (Pmax = 30 bar - *435 psi*) for hydraulic pilot control valve feeding (P⇒OUT)
V2 = M14x1.5 pilot pressure port for:
- electrohydraulic control optional feeding (Pmax = 315 bar *4600 psi)* (P⇒IN); G1/4 joint is required, code 5GIU519611
- pressure gauge connection; G1/4 joint is required, code 5GIU620330.

Dimensions and hydraulic circuit

Standard inlet section for Open Center circuit: BN11 type

Configuration without pressure reducing valve: dimensions are the same of BN21 type



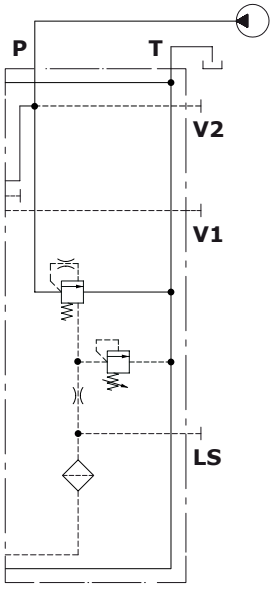
Auxiliary port specification

V1 = G1/4 pilot pressure port for electrohydraulic control feeding (Pmax = 30 bar - *435 psi)* (P⇒IN)

V2 = G1/4 pressure gauge connection

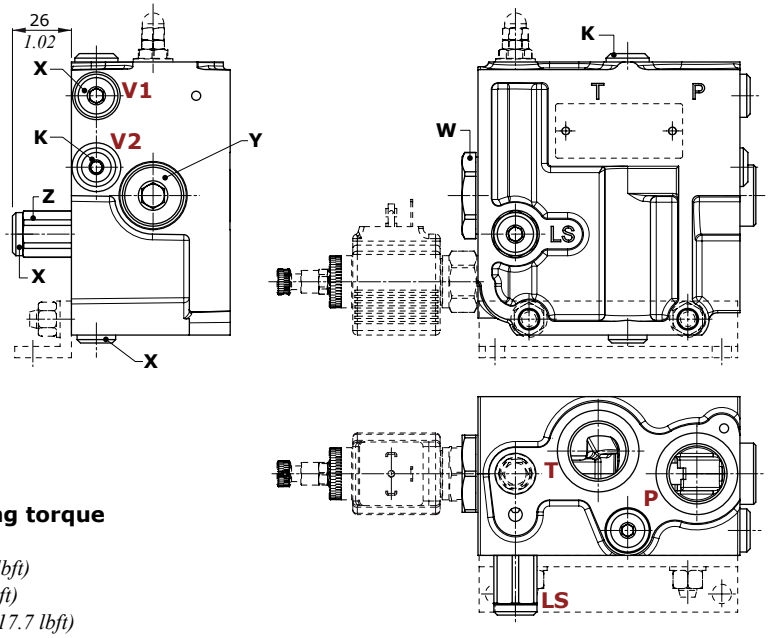
Wrenches and tightening torque

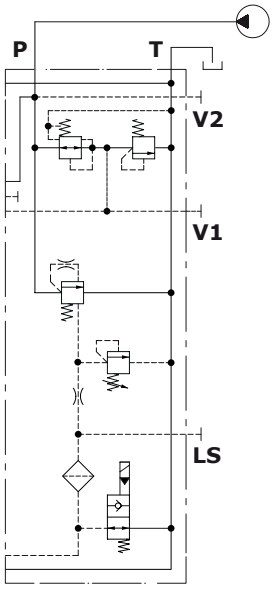
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = allen wrench 10 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 24 Nm *(17.7 lbft)*
W = wrench 34 - 42 Nm *(31 lbft)*
NOTE: for relief valve wrench and torque please see page 21



Standard inlet section for Open Center circuit: BR11 type

Configuration with pressure reducing valve: dimensions are the same of BR21 type





Wrenches and tightening torque

E = allen wrench 4
F = wrench 17 - 24 Nm *(17.7 lbft)*
G = wrench 24 - 42 Nm *(31 lbft)*
K = allen wrench 5 - 24 Nm *(17.7 lbft)*
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = allen wrench 10 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 24 Nm *(17.7 lbft)*
W = wrench 34 - 42 Nm *(31 lbft)*
NOTE: for relief valve and solenoid valve wrench and torque please see page 21.

Auxiliary port specification

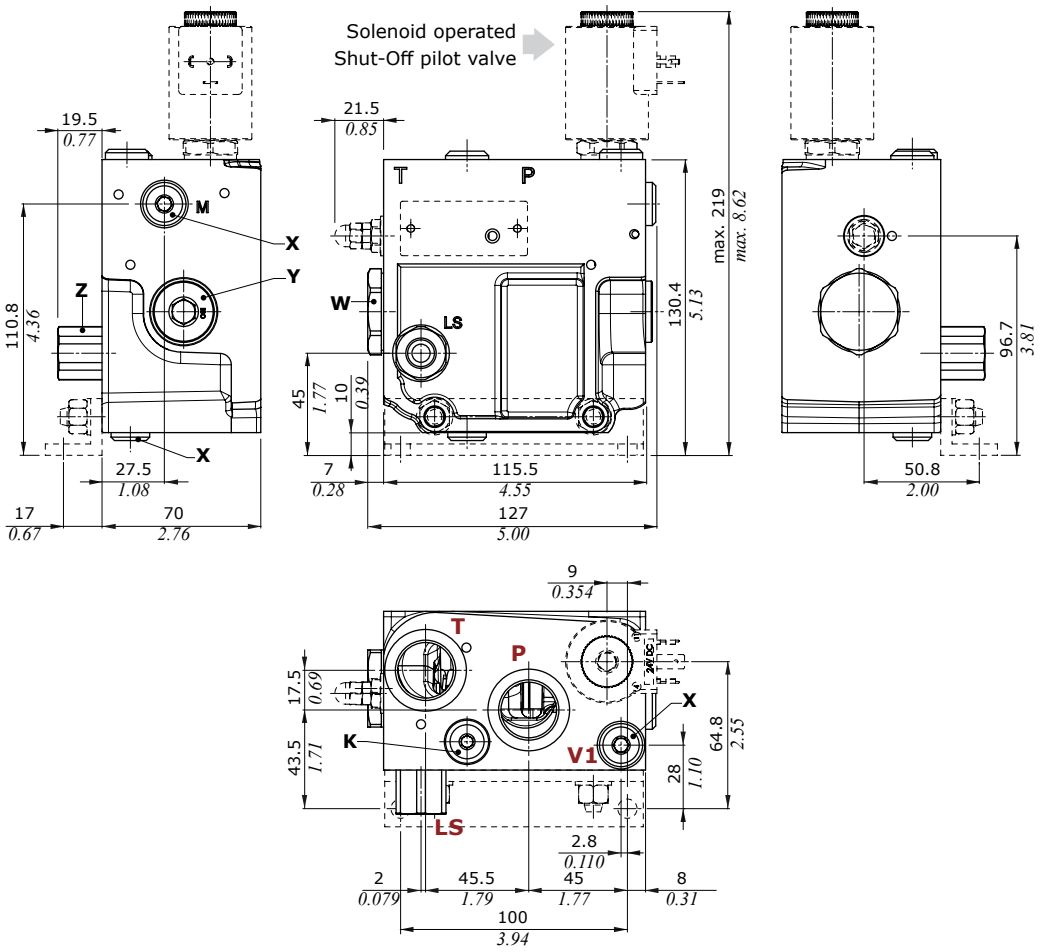
V1 = G1/4 pilot pressure port (Pmax = 30 bar - *435 psi*) for hydraulic pilot control valve feeding (P⇒OUT)
V2 = M14x1.5 pilot pressure port for:
- electrohydraulic control optional feeding (Pmax = 315 bar - *4600 psi)* (P⇒IN); G1/4 joint is required, code 5GIU519611
- pressure gauge connection; G1/4 joint is required, code 5GIU620330.

Inlet section

Dimensions and hydraulic circuit

Inlet section with Shut-Off function: BRSOG21 type

For pressure reducing valve features, please see page 16.

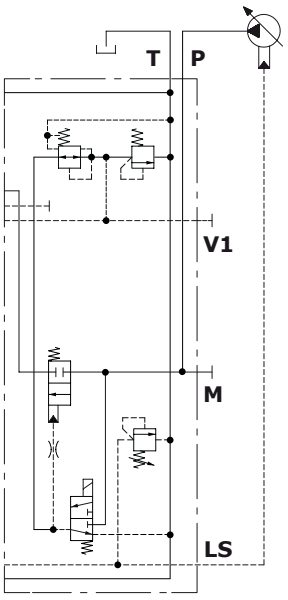


Auxiliary port specification

M = G1/4 pressure gauge connection
V1 = G1/4 pilot pressure port (Pmax = 30 bar - *435 psi*) for hydraulic pilot control valve feeding (P⇒OUT)

Wrenches and tightening torque

K = allen wrench 5 - 24 Nm *(17.7 lbft)*
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = allen wrench 10 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 24 Nm *(17.7 lbft)*
W = wrench 34 - 42 Nm *(31 lbft)*
NOTE: for relief valve wrench and torque please see page 21

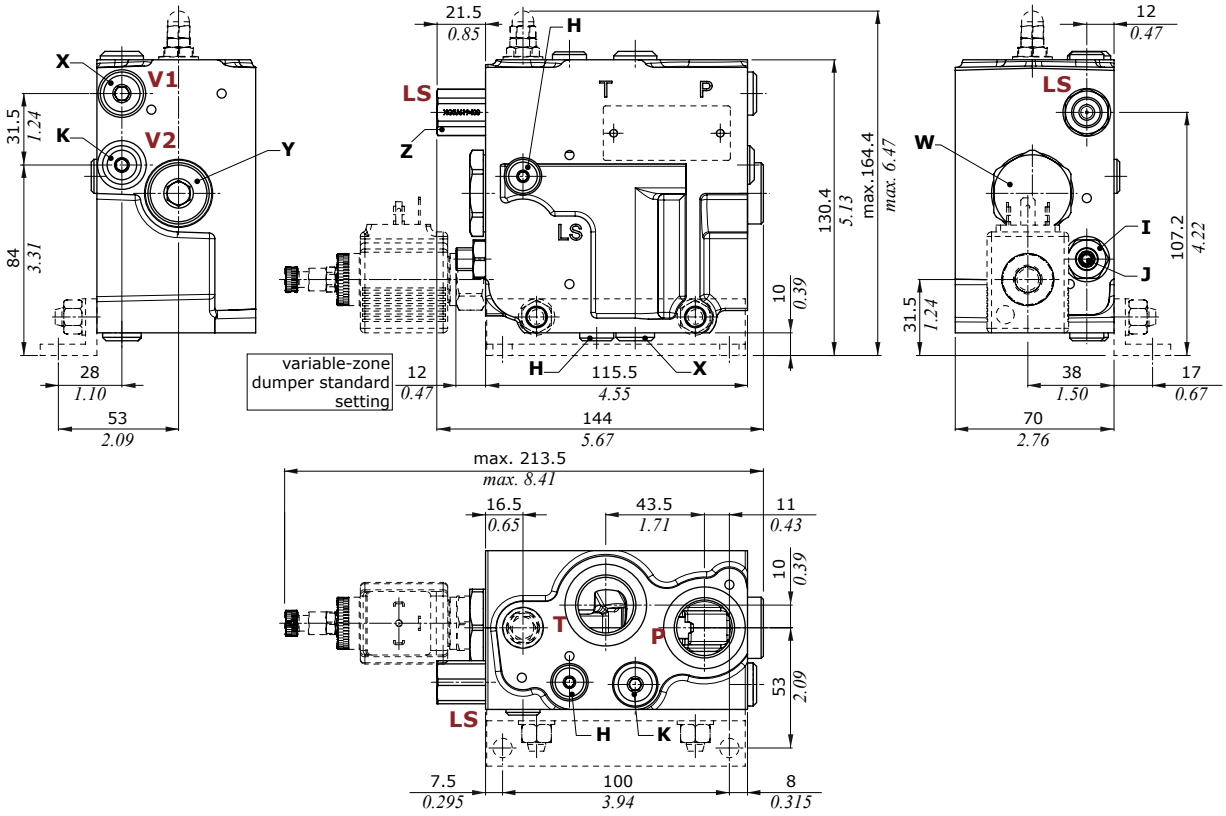


Dimensions and hydraulic circuit

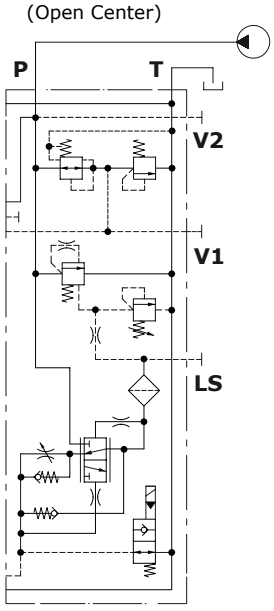
Inlet section with Copy Spool function: BRS type

Configuration with variable-zone damper.

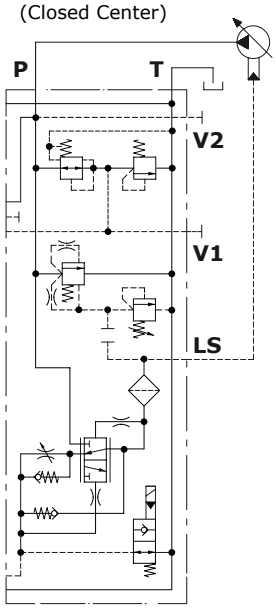
For pressure reducing valve features, please see page 16.



BRS11 type
(Open Center)



BRS21 type
(Closed Center)



Auxiliary port specification

V1 = G1/4 pilot pressure port (Pmax = 30 bar - *435 psi*) for hydraulic pilot control valve feeding (P⇒OUT)
V2 = M14x1.5 pilot pressure port for:
- electrohydraulic controls optional feeding (Pmax = 315 bar - *4600 psi)* (P⇒IN); G1/4 joint is required, code 5GIU519611
- pressure gauge connection; G1/4 joint is required, code 5GIU620330.

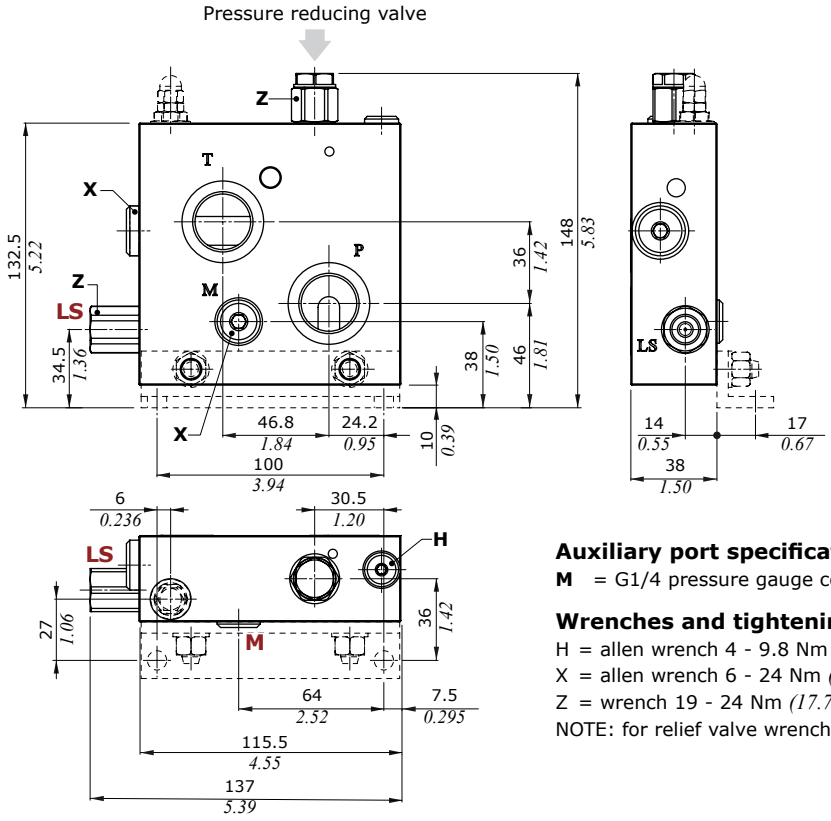
Wrenches and tightening torque

I = wrench 17 - 24 Nm *(17.7 lbft)*
H = allen wrench 4 - 9.8 Nm *(7.2 lbft)*
J = allen wrench 6
K = allen wrench 5 - 24 Nm *(17.7 lbft)*
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Y = allen wrench 10 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 24 Nm *(17.7 lbft)*
W = wrench 34 - 42 Nm *(31 lbft)*
NOTE: for relief valve and solenoid valve wrench and torque please see page 21.

Inlet section

Dimensions and hydraulic circuit

Inlet section with secondary pressure control system: BRF type



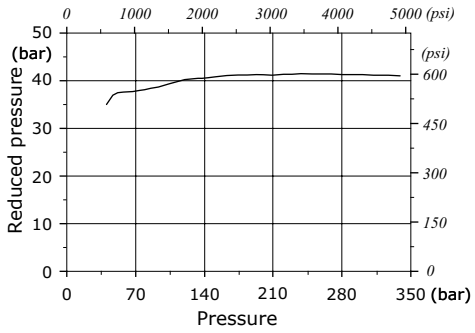
Auxiliary port specification

M = G1/4 pressure gauge connection

Wrenches and tightening torque

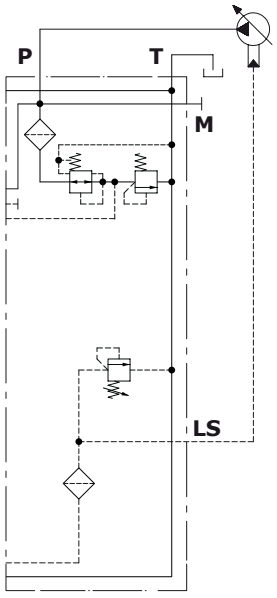
H = allen wrench 4 - 9.8 Nm *(7.2 lbft)*
X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 24 Nm *(17.7 lbft)*
NOTE: for relief valve wrench and torque please see page 21.

Pressure reducing valve diagram
Reduced pressure vs. Inlet pressure

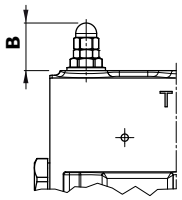


Pressure reducing valve features

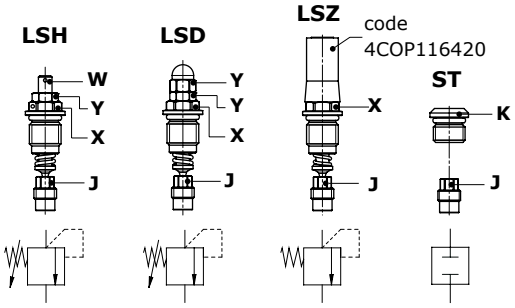
Max. inlet pressure . . . . . : 380 bar *(5550 psi)*
Reduced presure range . . . : from 30 to 45 bar
(from 435 to 650 psi)
Max. back pressure . . . . . : 25 bar *(363 psi)*



L.S. pressure relief valve



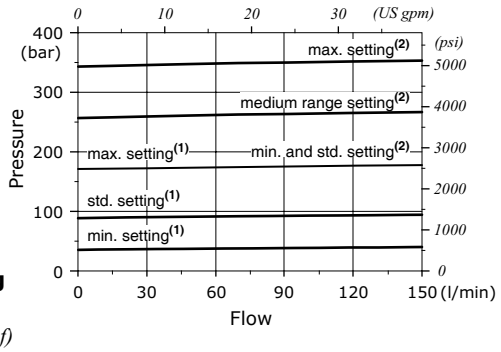
Valve type	Dim. B mm	*in*
LSD	21.5	*0.85*
LSH	17	*0.67*
LSZ	34	*1.34*



Legenda
LSH: with lock arrangement
LSD: with blind nut
LSZ: with anti-tamper cap
ST: valve blanking plug

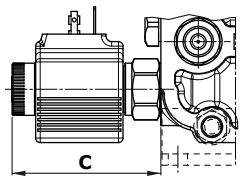
Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbf)*
Y = wrench 10 - 9.8 Nm *(7.2 lbf)*
W = allen wrench 3
J = wrench 7 - 24 Nm *(17.7 lbf)*
K = allen wrench 5 - 24 Nm *(17.7 lbf)*

Pressure vs. flow diagram
(1) = valve range 40-180 bar *(580-2600 psi)*
(2) = valve range 180-350 bar *(2600-5000 psi)*

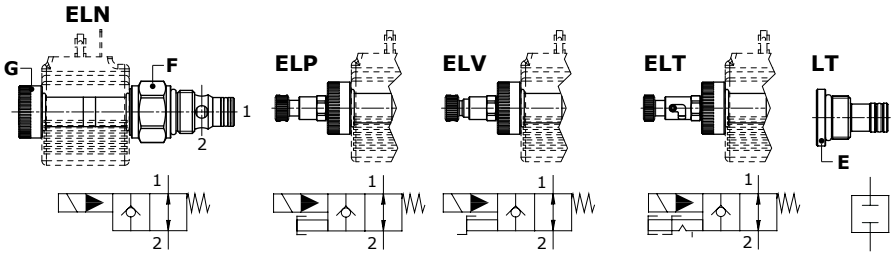


Solenoid operated L.S. unloading valve

Available on BR and BRS inlet sections.



Valve type	Dim. C mm	*in*
ELN	65.5	*2.58*
ELP	88.5	*3.48*
ELV	88.5	*3.48*
ELT	91	*3.58*



Features
Max. flow . . . . . : 40 l/min *(10.6 US gpm)*
Max. pressure. . . . . : 380 bar *(5500 psi)*
Internal leakage . . . . . : 0.25 cm³/min @ 210 bar *(0.015 in³/min @ 3050 psi)*

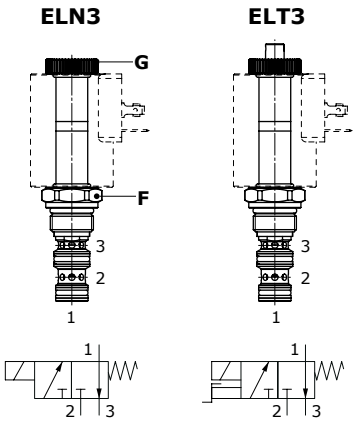
For coil features and **BER** type coil options please see page 83.

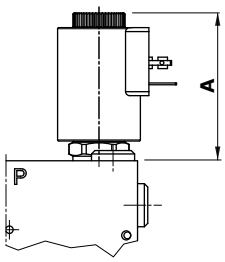
Legenda
ELN: without emergency
ELP: push button emergency override
ELV: screw emergency override
ELT: "push&twist" emergency override
LT: valve blanking plug

Wrenches and tightening torques
F = wrench 24 - 30 Nm *(22 lbf)*
G = manual tightening
E = wrench 10 - 24 Nm *(17.7 lbf)*

Solenoid operated Shut-Off pilot valve

Available on BRSO inlet section





Valve type	Dim. A mm	*in*
ELN3	65.5	*2.58*
ELT3	88.5	*3.48*

Legenda
ELN3: without emergency
ELT3: screw emergency override

Wrenches and tightening torques
F = wrench 24 - 30 Nm *(22 lbf)*
G = manual tightening

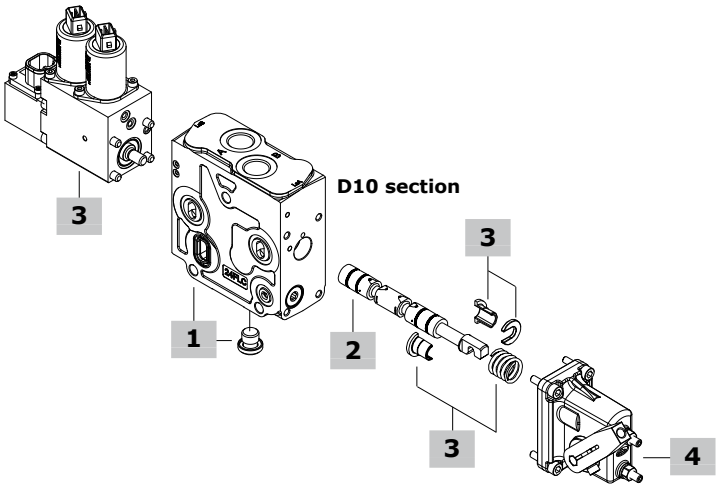
Features
Max. flow . . . . . : 3 l/min *(0.80 US gpm)*
Max. pressure. . . . . : 350 bar *(5100 psi)*
Internal leakage . . . . . : 10 cm³/min @ 210 bar *(0.61 in³/min @ 3050 psi)*

For coil features and **BT** type coil options please see page 84.

Working section part ordering codes

DPC130/D10-1N 8EZ3TSPSD L1 -...-12VDC

1 2 3 3

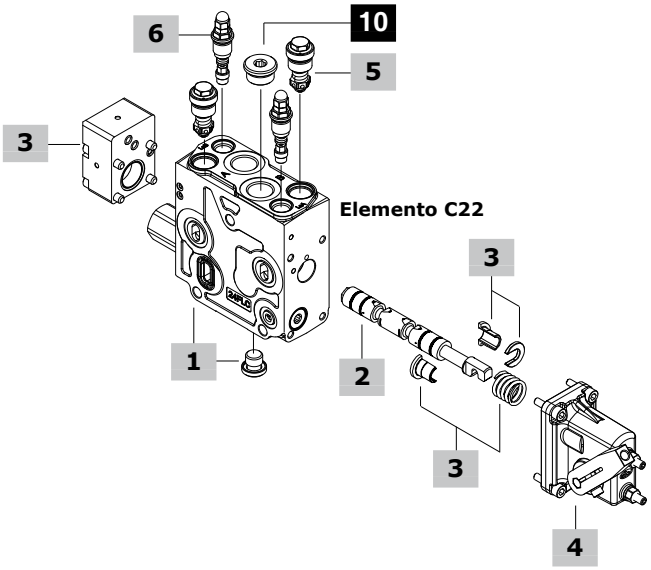


Valve setting (bar) A port B port A port B port

DPC130/C22-1S 8IM L 1 . U100U320 S250S250-.....

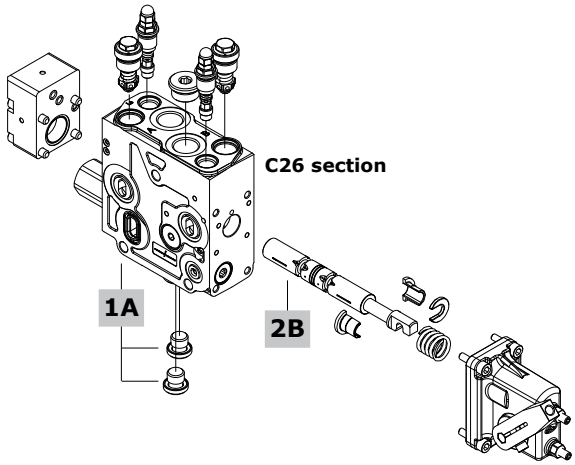
1 2 3 4 5 6 7

Lever position: please see page 45



DPC130/C26-1PC2D 8IML1.U100U320S250S250-...

1A 2B



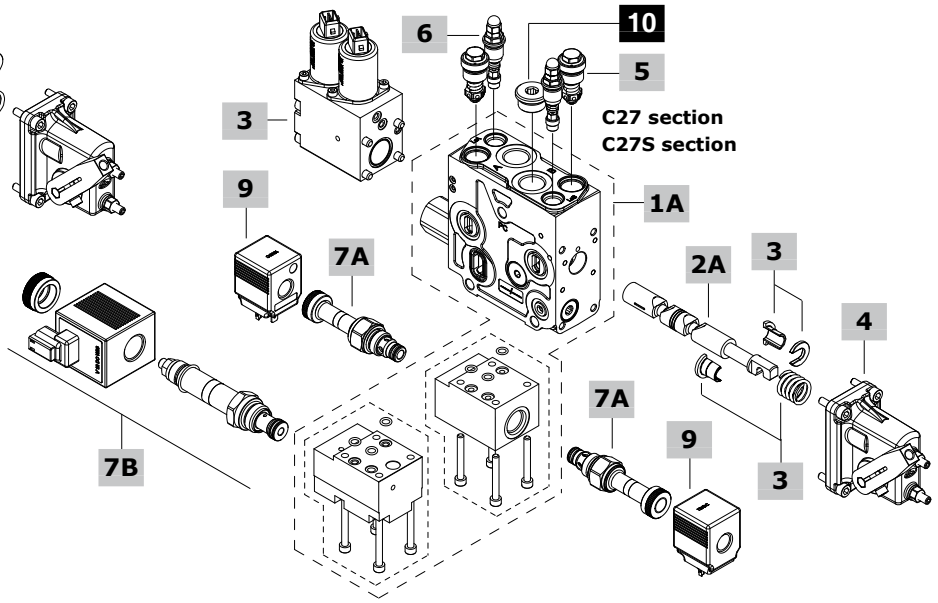
valve on A port - **1**
valve on B port - **2**
valve on A and B ports - **3**

A port B port A port B port

DPC130/C27-1NA 8EZ3T L 1.U100U320 S250S250.LSTN3-...-12VDC

1A 2A 3 4 5 6 7A 8 3 9

Lever position: see page 45



Working section part ordering codes

1 Working section kit* page 26

Without compensator

TYPE: **DPC130/D10** CODE: 5EL6312310
DESCRIPTION: Without valve arrangement
TYPE: **DPC130/D20** CODE: 5EL6312320
DESCRIPTION: With port valve arrangement
TYPE: **DPC130/D21** CODE: 5EL6312321
DESCRIPTION: Arranged for port valves and one L.S. relief valve
TYPE: **DPC130/G20** CODE: 5EL6315320
DESCRIPTION: For floating circuit, with port valve arrangement
TYPE: **DPC130/DM23** CODE: 5EL6312350
DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve

Without compensator, with check valve

TYPE: **DPC130/CV10** CODE: 5EL6311310B
DESCRIPTION: Without valve arrangement
TYPE: **DPC130/CV13** CODE: 5EL6311313A
DESCRIPTION: As previous one with additional L.S. upper port
TYPE: **DPC130/CV20** CODE: 5EL6311320B
DESCRIPTION: With port valve arrangement
TYPE: **DPC130/CV21** CODE: 5EL6311321D
DESCRIPTION: Arranged for port valves and one L.S. relief valve
TYPE: **DPC130/CV23** CODE: 5EL6311323A
DESCRIPTION: As previous one with additional L.S. upper port
TYPE: **DPC130/CV22** CODE: 5EL6311322A
DESCRIPTION: Arranged for port valves and two L.S. relief valves
TYPE: **DPC130/FV20** CODE: 5EL6314320B
DESCRIPTION: For floating circuit, with port valve arrangement
TYPE: **DPC130/CVM23** CODE: 5EL6311325B
DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve

With compensator

TYPE: **DPC130/C10** CODE: 5EL6311310
DESCRIPTION: Without valve arrangement
TYPE: **DPC130/C13** CODE: 5EL6311313
DESCRIPTION: As previous one with additional L.S. upper port
TYPE: **DPC130/C20** CODE: 5EL6311320
DESCRIPTION: With port valve arrangement
TYPE: **DPC130/C24** CODE: 5EL6311324A
DESCRIPTION: As previous one with additional L.S. upper port
TYPE: **DPC130/C21** CODE: 5EL6311321
DESCRIPTION: Arranged for port valves and one L.S. relief valve
TYPE: **DPC130/C23** CODE: 5EL6311323
DESCRIPTION: As previous one with additional L.S. upper port
TYPE: **DPC130/C22** CODE: 5EL6311322
DESCRIPTION: Arranged for port valves and two L.S. relief valves
TYPE: **DPC130/F10** CODE: 5EL6314310
DESCRIPTION: For floating circuit, without port valve arrangement
TYPE: **DPC130/F20** CODE: 5EL6314320
DESCRIPTION: For floating circuit, with port valve arrangement
TYPE: **DPC130/CM23** CODE: 5EL6311325A
DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve

1A Special working section kit* page 31

Sections with compensator, arranged for L.S. relief with independent drain and pressure control spools
Dedicated spools are requested (see chapter 2A and 2B)
TYPE: **DPC130/C26** CODE: 5EL6323000
DESCRIPTION: Arranged for port valves and two L.S. relief with independent drain
TYPE: **DPC130/C27** CODE: 5EL6323100
DESCRIPTION: As previous one, with lower block for L.S. signal on/off unloader valve arrangement4
TYPE: **DPC130/C27SA** CODE: 5EL6323100A
DESCRIPTION: As type C26, with lower block for proportional unloader valve arrangement on port A L.S. signal
TYPE: **DPC130/C27SB** CODE: 5ELXXXXXXX
DESCRIPTION: As type C26, with lower block for proportional unloader valve arrangement on port B L.S. signal

2 Standard spool page 34

Flow is referred to 7 bar *(102 psi)* stand-by (margin pressure)

TYPE	CODE	DESCRIPTION
Double acting with A and B closed in neutral position		
1C	3CU4010005	5 l/min *(1.3 US gpm)* flow
1D	3CU4010010	10 l/min *(2.6 US gpm)* flow
1V	3CU4010025	25 l/min *(6.6 US gpm)* flow
1Q	3CU4010040	40 l/min *(10.6 US gpm)* flow
1S	3CU4010060	60 l/min *(15.9 US gpm)* flow
1N	3CU4010080	80 l/min *(21.1 US gpm)* flow
1PN	3CU4010103	100 l/min *(26.4 US gpm)* flow
Double acting with A and B to tank in neutral position		
2C	3CU4024005	5 l/min *(1.3 US gpm)* flow
2D	3CU4024010	10 l/min *(2.6 US gpm)* flow
2V	3CU4024025	25 l/min *(6.6 US gpm)* flow
2Q	3CU4024040	40 l/min *(10.6 US gpm)* flow
2S	3CU4024060	60 l/min *(15.9 US gpm)* flow
2N	3CU4024080	80 l/min *(21.1 US gpm)* flow
2P	3CU4024100	100 l/min *(26.4 US gpm)* flow
Double acting with A and B partially to tank in neutral position		
2HC	3CU4025006	5 l/min *(1.3 US gpm)* flow
2HD	3CU4025011	10 l/min *(2.6 US gpm)* flow
2HV	3CU4025034	25 l/min *(6.6 US gpm)* flow
2HQ	3CU4025047	40 l/min *(10.6 US gpm)* flow
2HS	3CU4025061	60 l/min *(15.9 US gpm)* flow
2HN	3CU4025081	80 l/min *(21.1 US gpm)* flow
2HP	3CU4025102	100 l/min *(26.4 US gpm)* flow
Single acting on A, B plugged: G1/2 plug is required		
3Q	3CU4031040	40 l/min *(10.6 US gpm)* flow
3S	3CU4031060	60 l/min *(15.9 US gpm)* flow
3N	3CU4031080	80 l/min *(21.1 US gpm)* flow
3PN	3CU4031100	100 l/min *(26.4 US gpm)* flow
Double acting with A and B closed in neutral position, 4 positions, floating in 4th pos. with spool out: **F, G or FV type section and 13 type positioner or control are required**		
5Q	3CU4041040	40 l/min *(10.6 US gpm)* flow
5S	3CU4041060	60 l/min *(15.9 US gpm)* flow
5N	3CU4041080	80 l/min *(21.1 US gpm)* flow
Double acting with A and B closed in neutral position, 3 positions, regenerative in 3rd pos. with spool out: **CM, DM or CVM type section, and 8 type dedicated control, with reduced stroke, are required**		
8F	3CU4033070	50-70 l/min flow (port A-port B) *(13.2-18.5 US gpm)*
Double acting with A and B closed in neutral position, 4 positions, regenerative in 4th pos. with spool out: **CM, DM or CVM type section and dedicated 13 type positioner or control are required**		
8Y	3CU4044070	70 l/min *(18.5 US gpm)* flow

Working section part ordering codes

2A Spool for independent drain page 34

Only for C26 - C27 - C27S type working sections

Flow is referred to 7 bar *(102 psi)* stand-by (margin pressure)

TYPE	CODE	DESCRIPTION
Double acting with A and B closed in neutral position		
1VA	3CU4010025A	25 l/min *(6.6 US gpm)* flow
1QA	3CU4010040A	40 l/min *(10.6 US gpm)* flow
1SA	3CU4010060A	60 l/min *(15.9 US gpm)* flow
1NA	3CU4010080A	80 l/min *(21.1 US gpm)* flow
Double acting with A and B partially to tank in neutral position		
2HV	3CU4025034A	25 l/min *(6.6 US gpm)* flow
2HQ	3CU4025047A	40 l/min *(10.6 US gpm)* flow
2HN	3CU4025081A	80 l/min *(21.1 US gpm)* flow

2B Pressure control spool page 36

Only for C26 - C27 type working section

Flow is referred to 7 bar *(102 psi)* stand-by (margin pressure)

TYPE	CODE	DESCRIPTION
Doppio effetto con A e B chiusi in posizione centrale		
1PCD	3CU401P010	10 l/min *(2.6 US gpm)*; pressure control on A and B
1PCV	3CU401P025	As previous one, for 25 l/min *(6.6 US gpm)*
1PC2D	3CU401P010A	10 l/min *(2.6 US gpm)*; pressure control on A and flow control on B
1PC2V	3CU401P025A	As previous one, for 25 l/min *(6.6 US gpm)*
1PC2Q	3CU401P040A	As previous one, for 40 l/min *(10.6 US gpm)*
Doppio effetto con A e B parz. a scarico in posizione centrale		
2HPCD	3CU402P010	10 l/min *(2.6 US gpm)*; pressure control on A and B
2HPCV	3CU402P025	As previous one, for 25 l/min *(6.6 US gpm)*
2HPC2D	3CU402P010A	10 l/min *(2.6 US gpm)*; pressure control on A and flow control on B
2HPC2V	3CU402P025A	As previous one, for 25 l/min *(6.6 US gpm)*
2HPC2Q	3CU402P040A	As previous one, for 40 l/min *(10.6 US gpm)*

3 "A" side spool control kit page 38

TYPE	CODE	DESCRIPTION
Mechanical positioners		
7FT#	5V07130000	With friction and center pos. feeling
8	5V08130000	3 position, spring return to neutral position
13	5V13130000	For floating circuit (**type 5 spool**), 4 pos., detent in 4th position, with spring return to neutral position

NOTE (#): *This control requires modification to the standard spool: for spool replacement please see page 32.*

Proportional hydraulic controls

8IM	5V08130800*	Range 5-15 bar *(73-218 psi)*

3A Electrohydraulic controls page 40

TYPE	CODE	DESCRIPTION
Standard types		
8EZ3-12VDC	5V08130780	With ISO4400 connector
8EZ3-24VDC	5V08130781	With ISO4400 connector
8EZ4-12VDC	5V08130880	With flying leads
8EZ4-24VDC	5V08130881	With flying leads
8EZ4D-12VDC	5V08130886	With Deutsch connector
8EZ4D-24VDC	5V08130887	With Deutsch connector
8EZ3T-12VDC	5V08130874	With AMP integrated conn.
8EZ3T-24VDC	5V08130875	With AMP integrated conn.
8EZ3T4-12VDC	5V08130872	With Deutsch integrated conn.
8EZ3T4-24VDC	5V08130873	With Deutsch integrated conn.
With digital spool position sensor#		
8EZ3TSPSD-12VDC	5V0813087A	With AMP integrated connector
8EZ3TSPSD-24VDC	5V08130876	With AMP integrated connector
8EZ3T4SPSD-12VDC	5V0813087C	With Deutsch integrated conn.
8EZ3T4SPSD-24VDC	5V0813087D	With Deutsch integrated conn.
With analog spool position sensor#		
8EZ3TSPSL-12VDC	5V0813087B	With AMP integrated connector
8EZ3TSPSL-24VDC	5V08130878	With AMP integrated connector
8EZ3T4SPSL-12VDC	5V0813087E	With Deutsch integrated conn.
8EZ3T4SPSL-24VDC	5V0813087F	With Deutsch integrated conn.
For floating circuit: **type 5 spool is required**		
13EZ3-12VDC	5V13130780	With ISO4400 connector
13EZ3-24VDC	5V13130781	With ISO4400 connector
For 3 position regenerative circuit: **type 8F spool is required**		
8EZ3CR-12VDC	5V08130798	With ISO4400 connector
8EZ3CR-24VDC	5V08130799	With ISO4400 connector
For 4 position regenerative circuit: **type 8Y spool is required**		
13EZ3-12VDC	5V13130783	With ISO4400 connector
13EZ3-24VDC	5V13130784	With ISO4400 connector
13EZ3T-12VDC	5V13130786	With AMP integrated connector
13EZ3T-24VDC	5V13130785	With AMP integrated connector

NOTE (#): *These controls require modification to the standard spool: for spool replacement please see page 38.*

4 "B" side spool control kit page 45

TYPE	CODE	DESCRIPTION
L	5LEV130712	Aluminium lever box
LN	5LEV130701	As previous one, without lever
LZ	5LEV130731	As L type, with anti-tamper screw caps
LG	5LEV130806	Cast iron lever box

5 Port valves page 46

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)*

TYPE: **U 100** CODE: 5KIT330 100
└setting (bar) └setting (bar)

SETTING:

50 bar *(725 psi)*	63 bar *(914 psi)*	80 bar *(1150 psi)*	100 bar *(1450 psi)*
110 bar *(1590 psi)*	125 bar *(1800 psi)*	140 bar *(2050 psi)*	150 bar *(2150 psi)*
160 bar *(2300 psi)*	175 bar *(2550 psi)*	190 bar *(2750 psi)*	200 bar *(2900 psi)*
210 bar *(3050 psi)*	230 bar *(3350 psi)*	240 bar *(3500 psi)*	250 bar *(3600 psi)*
260 bar *(3750 psi)*	270 bar *(3900 psi)*	280 bar *(4050 psi)*	290 bar *(4200 psi)*
300 bar *(4350 psi)*	310 bar *(4500 psi)*	320 bar *(4650 psi)*	340 bar *(4950 psi)*
360 bar *(5200 psi)*	400 bar *(5800 psi)*	420 bar *(6100 psi)*	

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

Working section part ordering codes

6 L.S. port relief valves page 46

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

TYPE	ID	CODE	DESCRIPTION
LSD	**S**	XCAR126215	With blind nut, range 40-180 bar *(580-2600 psi),* standard setting 90 bar *(1300 psi)*
		XCAR126213	Range 180-350 bar *(2600-5100 psi),* standard setting 180 bar *(2600 psi)*
LSH	**H**	XCAR126216	With locked arrangement, range 40-180 bar *(580-2600 psi),* std setting 90 bar *(1300 psi)*
		XCAR126217	Range 180-350 bar *(2600-5100 psi),* standard setting 180 bar *(2600 psi)*
LSZ	**Z**	5CAR126221	With anti-tamper cap, range 40-180 bar *(580-2600 psi),* std setting 90 bar *(1300 psi)*
		5CAR126219	Range 180-350 bar *(2600-5100 psi),* standard setting 180 bar *(2600 psi)*
ST	**ST**	5KIT126210	Relief valve blanking plug

7A Solenoid operated L.S. unloading valve page 47

On/off type for C27 section

BER coil is required: see chapter 9

TYPE	CODE	DESCRIPTION
LST3T	XTAP510320	Valve blanking plug
Normally open circuit (NO)		
LSTN(NA)	0EC08002031	Without manual emergency
LSTV(NA)	0EC08002034	With screw type emergency
LSTP(NA)	0EC08002033	With push-button emergency
LSTT(NA)	0EC08002035	With "push & twist" emergency
Normally closed circuit (NC)		
LSTN(NC)	0EC08002032	Without manual emergency
LSTV(NC)	0EC08002037	With screw type emergency
LSTP(NC)	0EC08002036	With pull-button emergency
LSTT(NC)	0EC08002038	With "pull & twist" emergency

7B Solenoid operated L.S. unloading valve page 48

Proportional type for C27SA - C27SB sections

Valvole ordering code is inclusive of coil

TYPE	CODE	DESCRIPTION
MC10T/031B	0MC10002019	Range from 15 to 130 bar *(217 to 1890 psi)*, 12VDC coil, ISO4400 connector
MC10T/032B	0MC10002020	Range from 15 to 170 bar *(217 to 2470 psi)*, 12VDC coil, ISO4400 connector
MC10T/033B	0MC10002021	Range from 15 to 210 bar *(217 to 3050 psi)*, 12VDC coil, ISO4400 connector
MC10T/034B	0MC10002031	Range from 15 to 280 bar *(217 to 4050 psi)*, 12VDC coil, Deutsch DT04 connector

8 Section threading

Only specify if it is different from BSP standard (see page 5).

9 Coil

TYPE	CODE	DESCRIPTION
12VDC	4SLE001200A	12VDC **BER** type coil, ISO4400 connector (for unloading valve)

For complete available coil list please see page 82.

10 Plug for single acting spool*

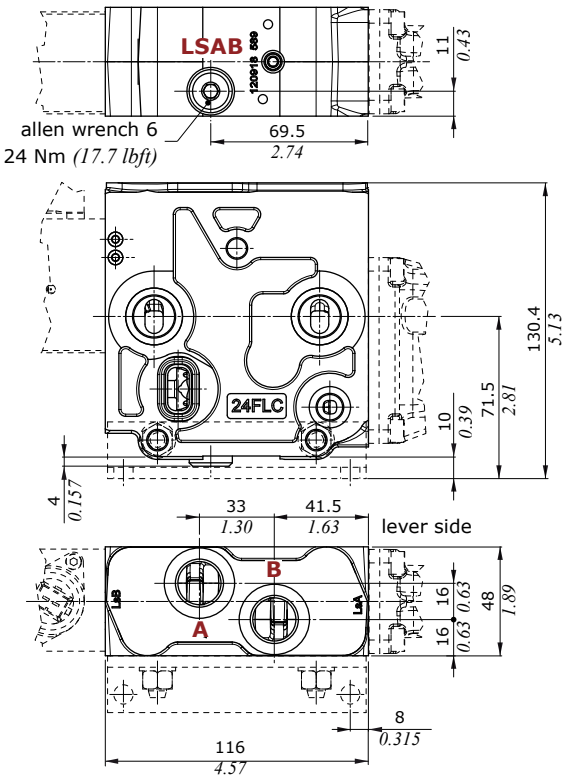
CODE	DESCRIPTION
3XTAP727180	G1/2 plug

Working section

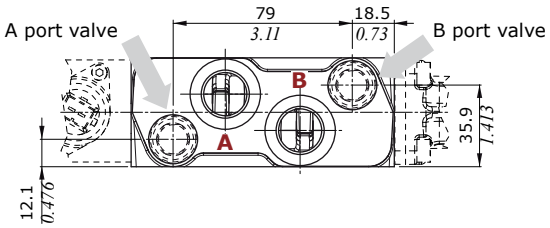
Dimensions and hydraulic circuit

Without compensator

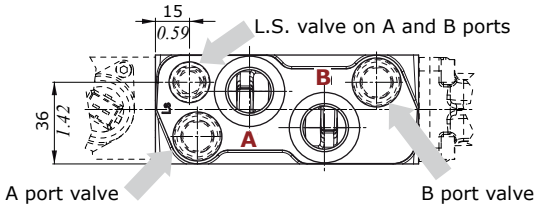
D10 tyoe
without port valves arrangement



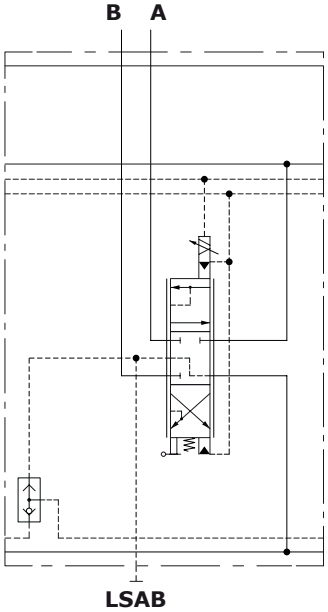
D20 typr
with port valves arrangement



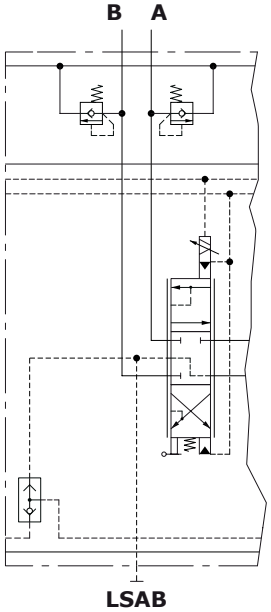
D21 type
arrangement for port valves and one L.S. relief valve



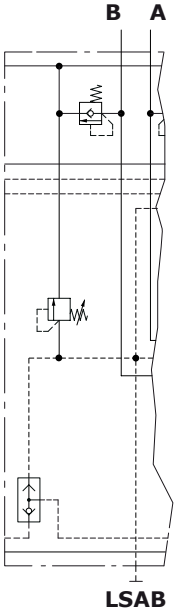
D10 type
without port valve arrangement



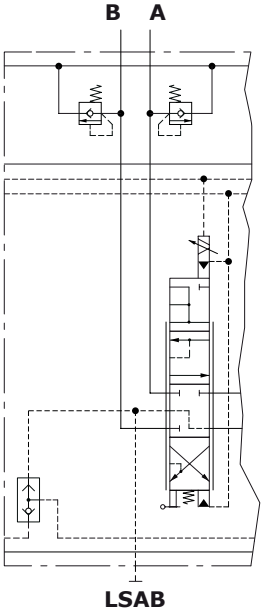
D20 type
with port valve arrangement



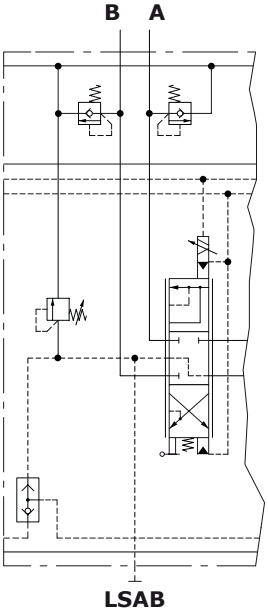
D21 type
as D20, arrangement for one L.S. relief valve



G20 type
as D20, for floating circuit



DM23 type
as D21, for regenrative circuit



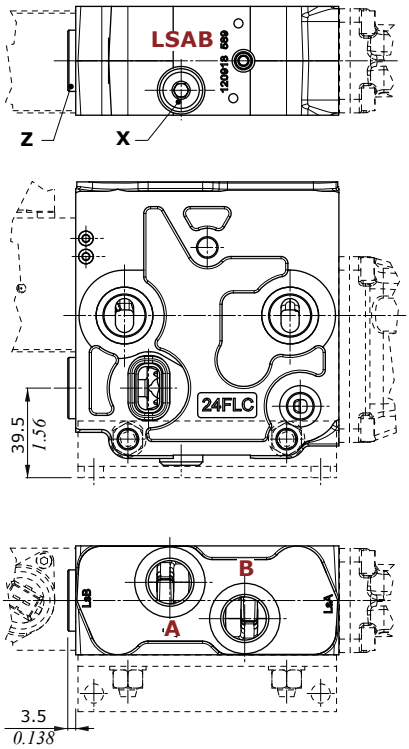
Dimensions and hydraulic circuit

Without compensator with check valve

The unlisted dimensions are the same of section without compensator.

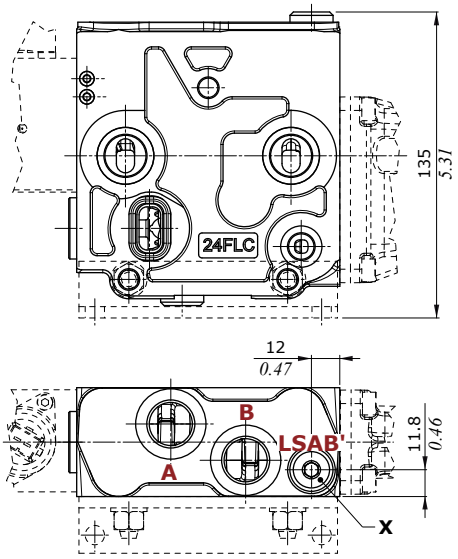
CV10 type

without port valves arrangement



CV13 type

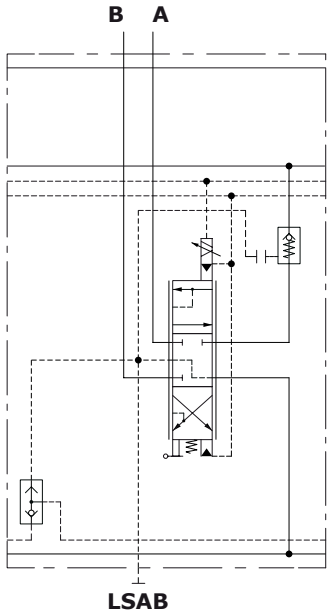
without port valves arrangement,
with upper L.S. port



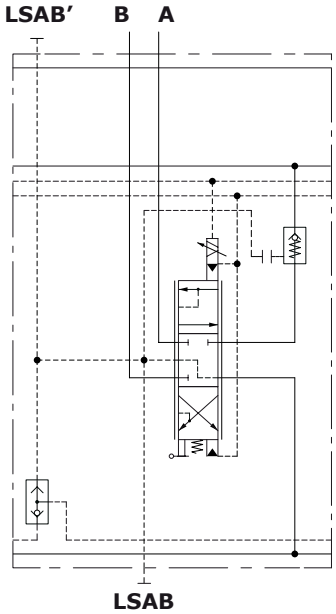
Wrenches and tightening torque

X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Z = allen wrench 10 - 24 Nm *(17.7 lbft)*

C10 type



C13 type



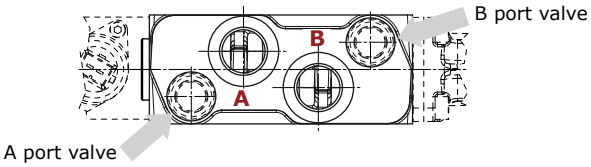
Working section

Dimensions and hydraulic circuit

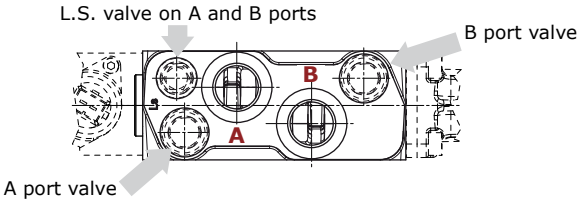
Wihout compensator with check valve

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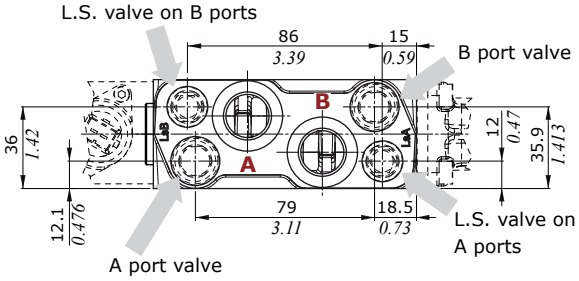
CV20 type
with port valves arrangement



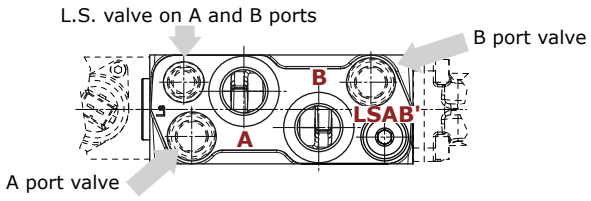
CV21 type
arrangement for port valves and one L.S. relief valve



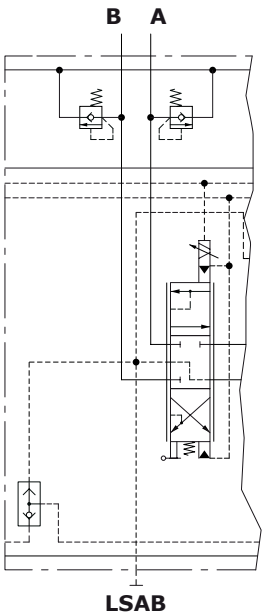
CV22 type
arrangement for port valves and L.S. relief valves



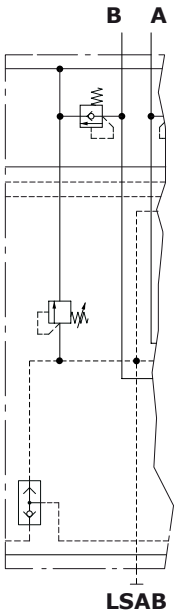
CV23 type
arrangement for port valves and one L.S. relief valve, with upper L.S. port



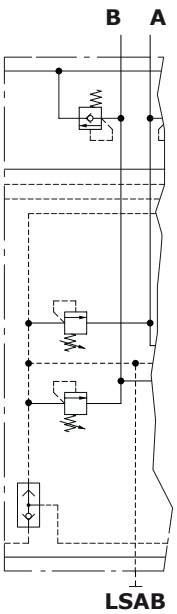
CV20 type



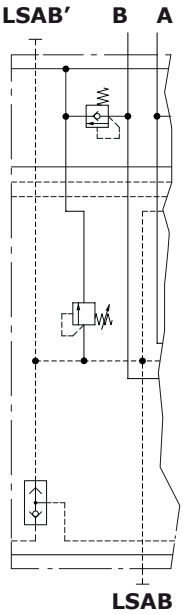
CV21 type



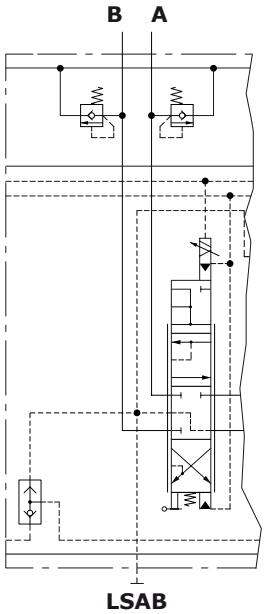
CV22 type



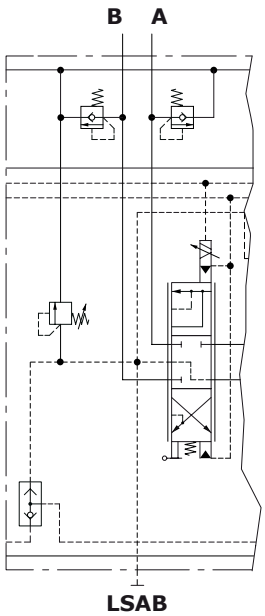
CV23 type



FV20 type
as CV20,
for floating circuit



CVM23 type
as CV21,
for regenrative circuit

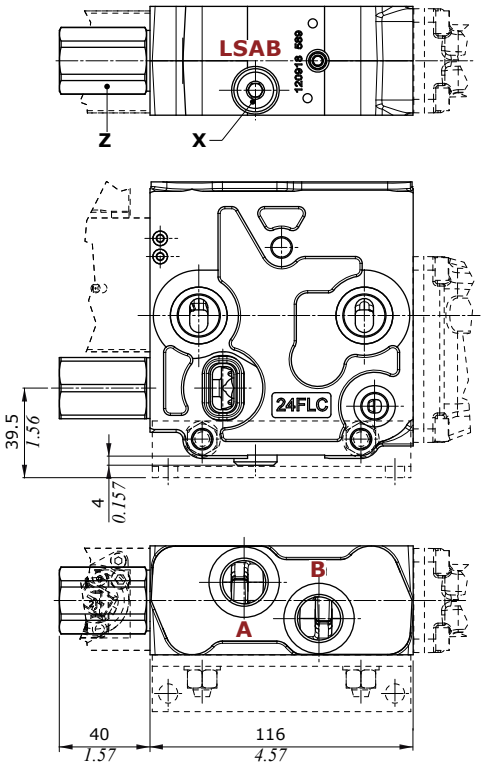


Dimensions and hydraulic circuit

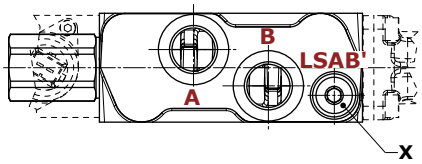
With compensator

The unlisted dimensions are the same of previous sections.

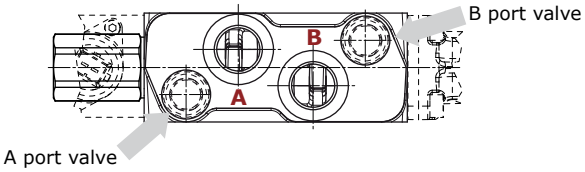
C10 type
without port valves arrangement



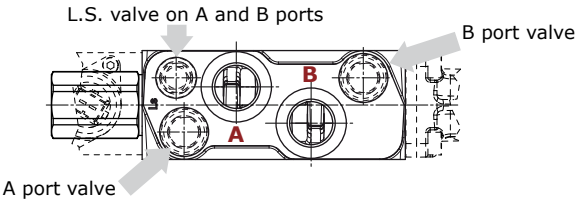
C13 type
without port valves arrangement,
with upper L.S. port



C20 type
with port valves arrangement



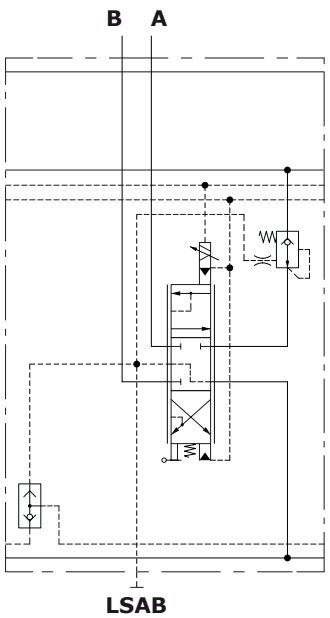
C21 type
arrangement for port valves and
one L.S. relief valve



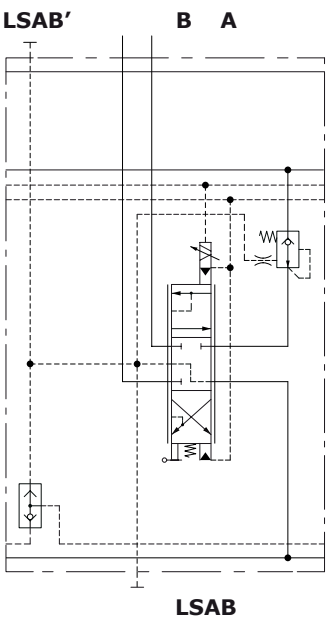
Wrenches and tightening torque

X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 50 Nm *(36.9 lbft)*

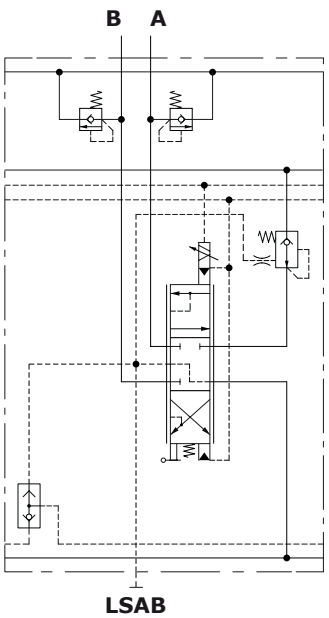
C10 type



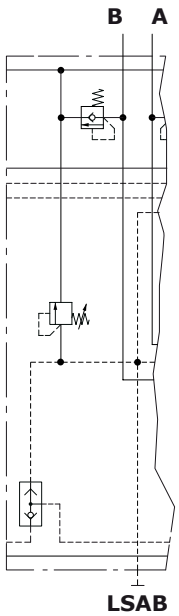
C13 type



C20 type



C21 type



Working section

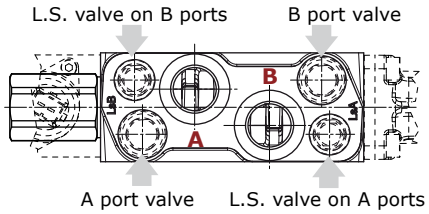
Dimensions and hydraulic circuit

With compensator

The unlisted dimensions are the same of previous sections.

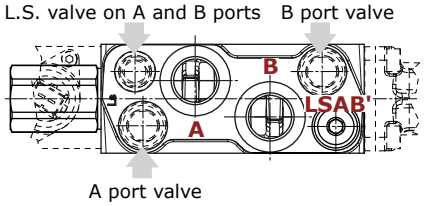
C22 type

arrangement for port valves and L.S. relief valves



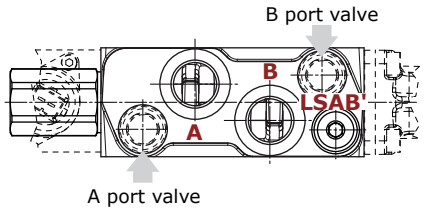
C23 type

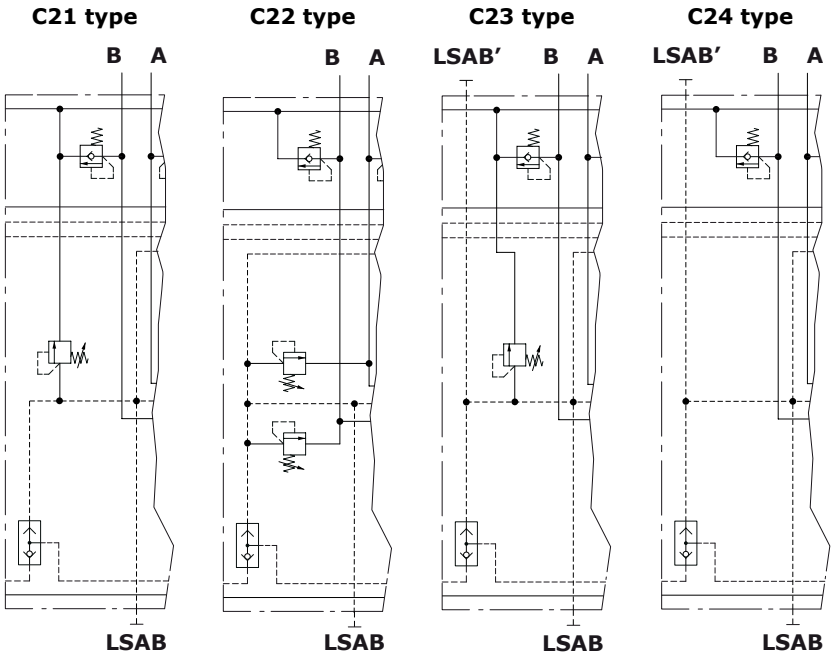
arrangement for port valves and one L.S. relief valve, with upper L.S. port



C24 type

with port valves arrangement and upper L.S. port

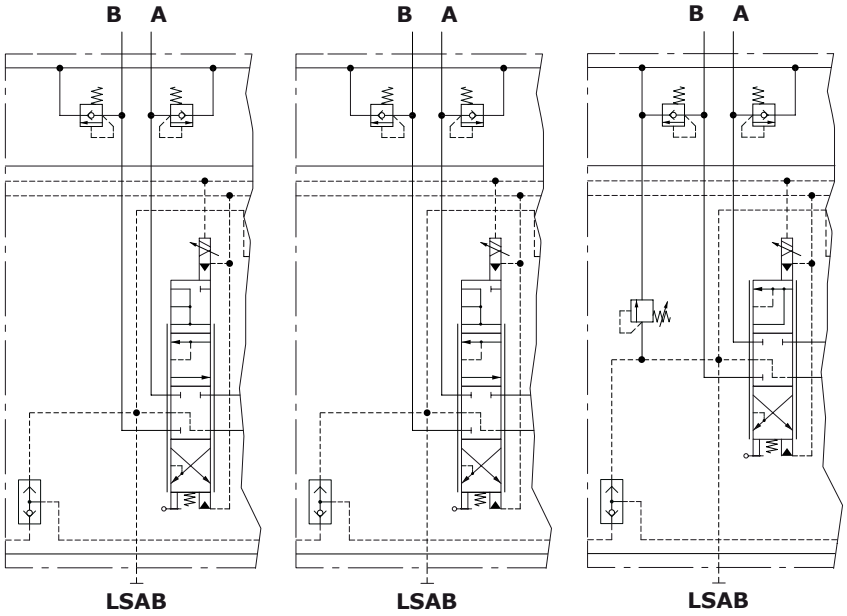




F10 type
as C10,
for floating circuit

F20 type
as C20,
for floating circuit

CM23 type
as C21,
for regenrative circuit



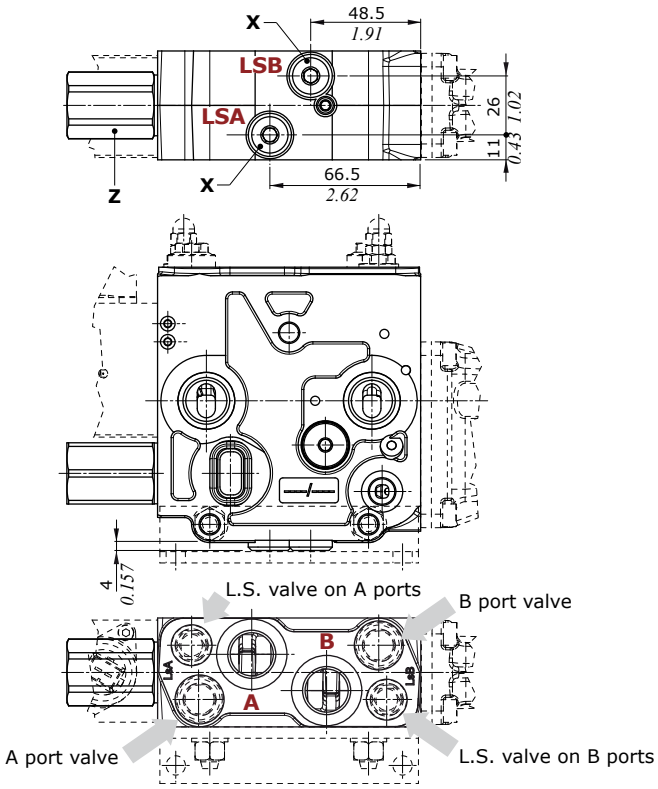
Dimensions and hydraulic circuit

With compensator

Special sections with L.S.signal independent drain; to be use with dedicated spools or pressure control spools.
The unlisted dimensions are the same of previous sections.

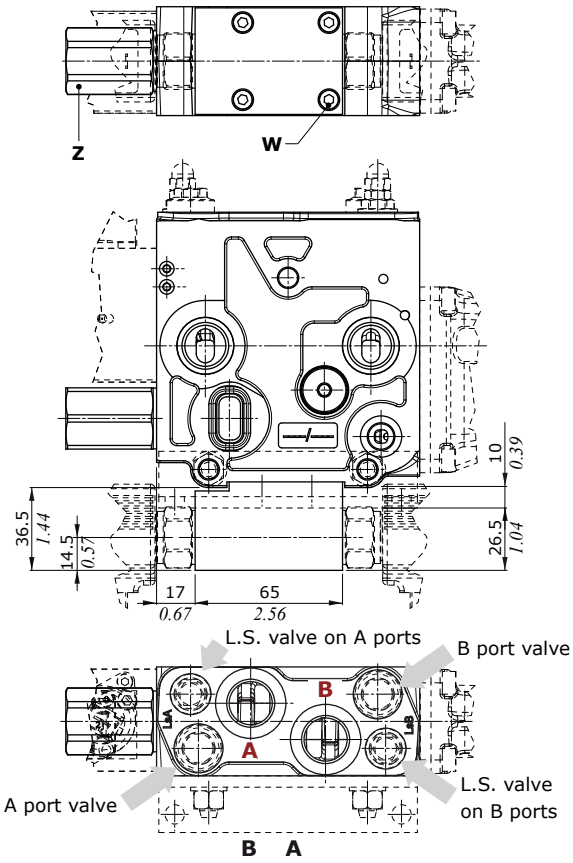
C26 type

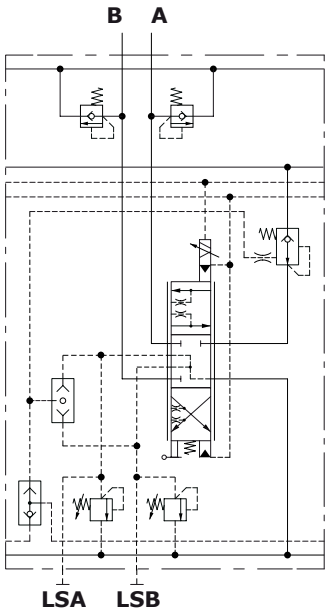
arrangement for port valves and L.S. relief valves with independent drain



C27 type

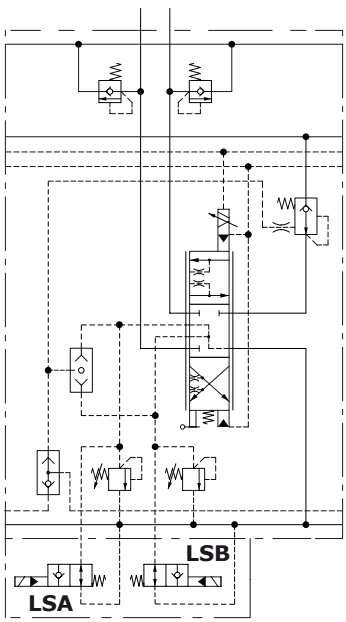
as C26 with arrangement for L.S. signal on/off unloader valves





Wrenches and tightening torque

X = allen wrench 6 - 24 Nm *(17.7 lbft)*
Z = wrench 19 - 50 Nm *(36.9 lbft)*
W = allen wrench 4 - 6.6 Nm *(4.9 lbft)*



Working section

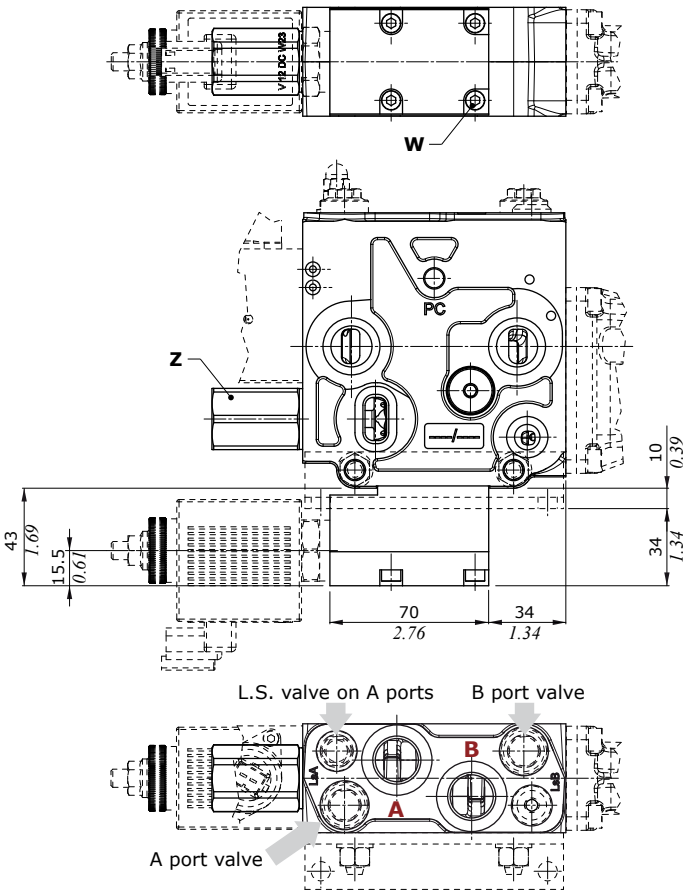
Dimensions and hydraulic circuit

With compensator

Special sections with L.S.signal independent drain; to be use with dedicated spools or pressure control spools.
The unlisted dimensions are the same of previous sections.

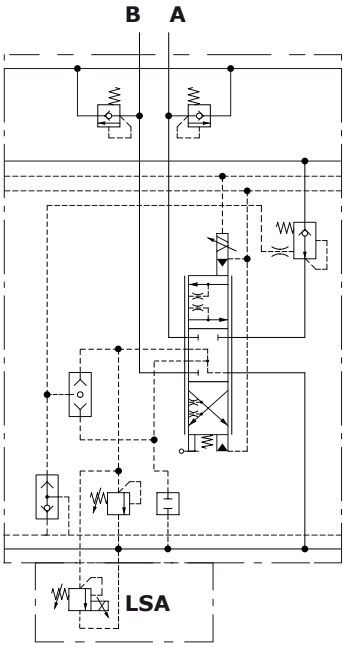
C27A type

as C26 with proportional unloader
valve arrangement on port A L.S. signal



Wrenches and tightening torque

Z = wrench 19 - 50 Nm *(36.9 lbft)*
W = allen wrench 4 - 6.6 Nm *(4.9 lbft)*



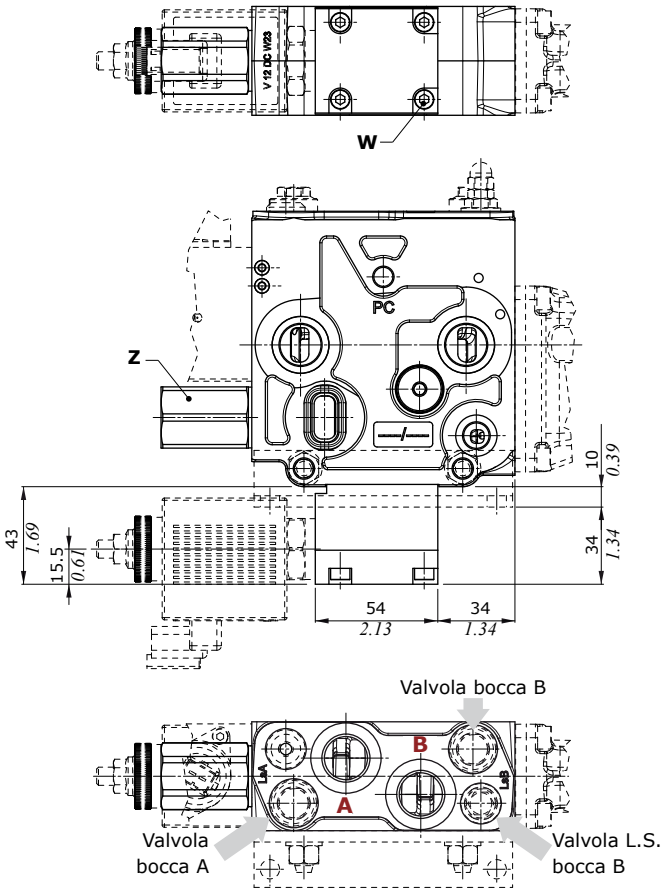
Dimensions and hydraulic circuit

With compensator

Special sections with L.S.signal independent drain; to be use with dedicated spools or pressure control spools.
The unlisted dimensions are the same of previous sections.

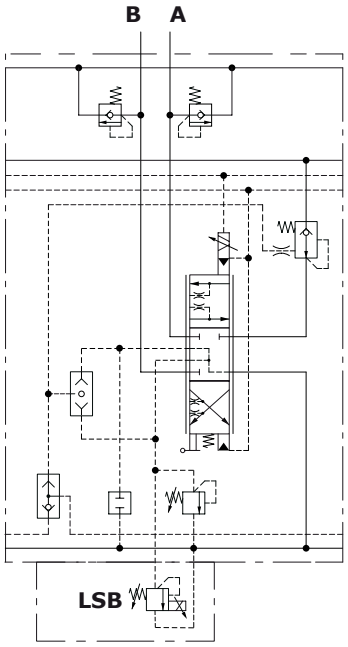
C27B type

as C26 with proportional unloader
valve arrangement on port B L.S. signal



Wrenches and tightening torque

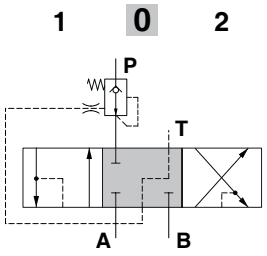
Z = wrench 19 - 50 Nm *(36.9 lbft)*
W = allen wrench 4 - 6.6 Nm *(4.9 lbft)*



Working section

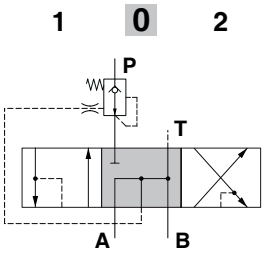
Standard spools

1 type spool
A, B closed in neutral position



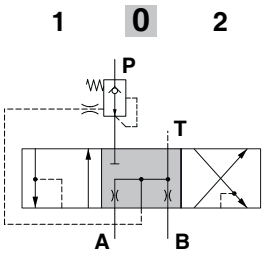
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

2 type spool
A, B open to tank in neutral position



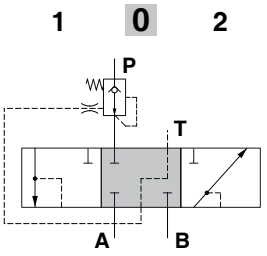
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

2H type spool
A, B partially to tank in neutral position



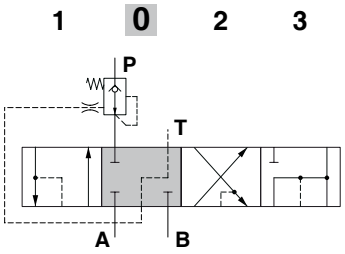
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

3 type spool
single acting on A



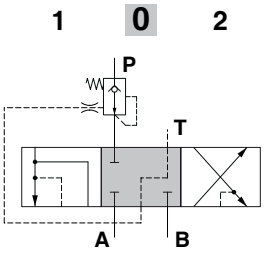
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

5 type spool
floating in 4th position (pos.3)



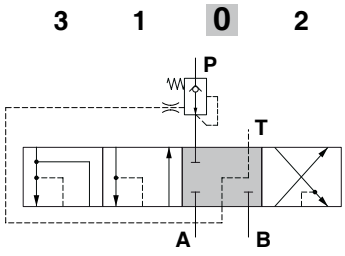
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*
position 3: - 12 mm *(- 0.47 in)*

8F type spool
regenerative in 2nd position (pos.1)



Spool stroke
position 1: + 6 mm *(+ 0.24 in)*
position 2: - 6 mm *(- 0.24 in)*

8Y type spool
regenerative in 4th position (pos.3)

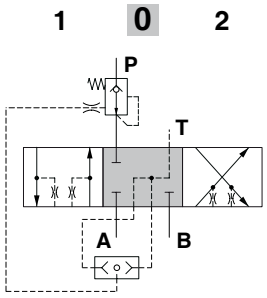


Spool stroke
position 1: + 4.5 mm *(+ 0.18 in)*
position 2: - 4.2 mm *(- 0.17 in)*
position 3: + 7.8 mm *(+ 0.31 in)*

Spools for independent drain

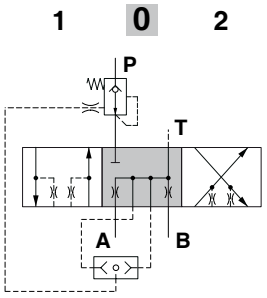
For C26, C27, C27SA, C27SB type working sections.

1..A type spool
A, B closed in neutral position



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

2H..A type spool
A, B partially to tank in neutral position

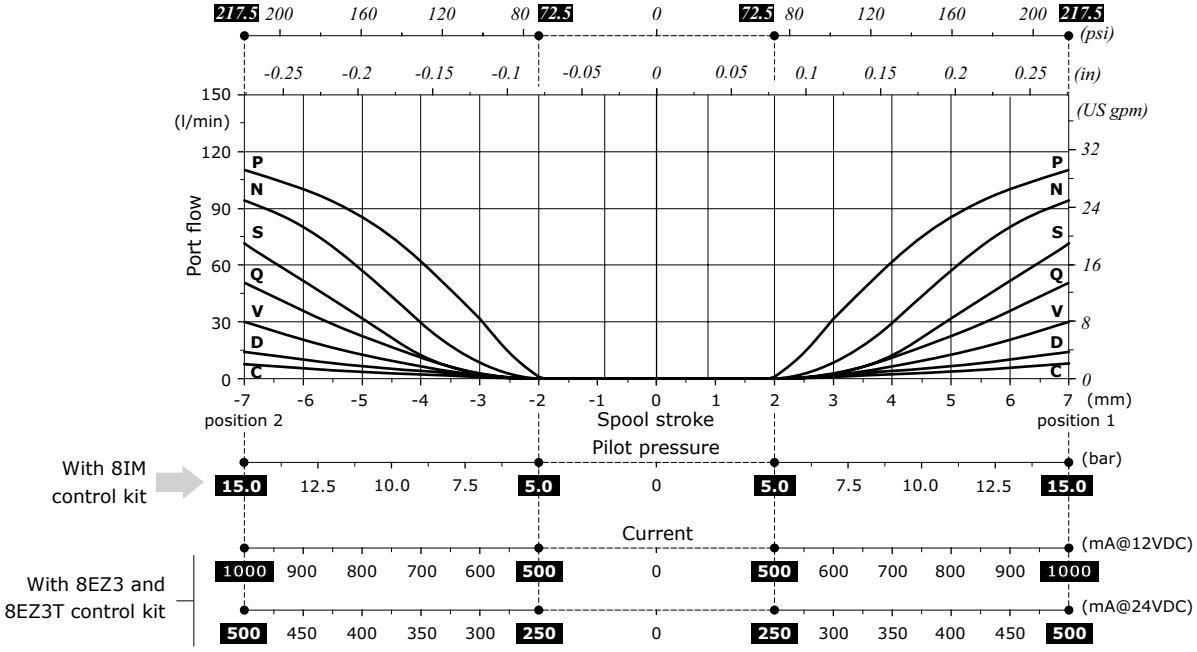


Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

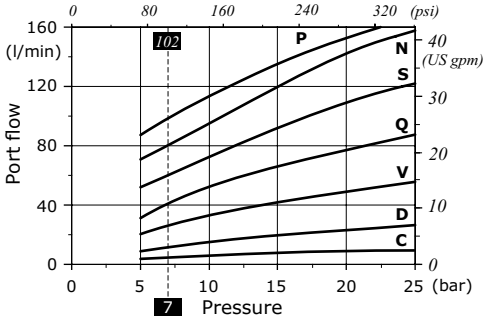
Standard and independent drain spools

Following curves are detected with standard spools, connecting P⇒A⇒B⇒T and P⇒B⇒A⇒T ports without flow multiplication. Customized spools with backpressure or flow multiplication may require different force, pressure and pilot current for operation.

Metering curves
Compensated working section - 3 position spools
Qin = 150 l/min (*39.6 US gpm*)



Non-compensated working section
Spool flow vs. Stand-by pressure (margin pressure)



Spool nominal flow @ 7 bar *(102 psi)* stand-by (margin pressure)
C = 5 l/min *(1.3 US gpm)*
D = 10 l/min *(2.6 US gpm)*
V = 25 l/min *(6.6 US gpm)*
Q = 40 l/min *(10.6 US gpm)*
S = 60 l/min *(15.9 US gpm)*
N = 80 l/min *(21.1 US gpm)*
P = 100 l/min *(26.4 US gpm)*

Working section

Pressure control spools

Introduction

The instability of the Load Sensing systems in certain applications, with 1/2 - 2 Hz frequency load oscillations, can cause serious operation control issues.
Critical applications are generally due to operations with a major inertia torque and/or functions with controlled secondary pressure components (counterbalance valves).
For example:
• rotation function
• main crane lifting/descent function.

Features

The pressure control spools are designed in such a way that the stroke controls the pump pressure.
The spool must be actuated until the pump pressure slightly exceeds the load pressure before the work function is applied. If the spool is kept in this position, the pump pressure will remain constant, even in case of load pressure changes, thus ensuring system stability.
Use of the pressure control spool, means as well:
• both the fluid flow and the dead band depend on the load
• a flow proportional to the ΔP between the L.S. signal and the load on the port, which does not remain constant will be dispensed.
• the pressure drop through the main spool is due to vary (energy consumption).
Because of these factors, the pressure control spools must only be used when load instability issues are ascertained and in those applications where constant pressure is required such as Drilling Machines.

Application

The pressure control spools should only be used when load stability problems exist, as could occur during lifting/descent and rotation (with cylinders) operations of a crane.
For the lifting/descent operation a "single" type pressure control spool is best used. This type of spool is designed for normal flow control on the port used for lifting, and for pressure control on the port connected to the pilot signal of the counterbalance valve.
An independent load lifting movement is thus obtained, as well as a dropping function which is stable but dependent on the load.
In the rotation function, the load pressure is usually constant, irrespective of the fact whether the crane is loaded or not, and a spool must therefore be used with pressure control function on both ports A and B.
In both cases a working section with pressure compensator is required (C26 or C27 types).
Always make a point of using the L.S. pressure relief valves, which not only ensure individual pressure limitation but also allow adjusting the max flow to ports.
Any anti-shock valves must be set to 20% higher than the setting values of the L.S. pressure relief valves.

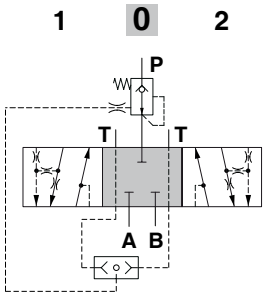
Limitation

The use of the pressure control spools therefore allows limiting oscillations and obtaining smooth and precise control of the function with the following limitations:
• the "non-adjustment" stroke of the spool (dead band) will depend on load conditions
• the working section of the control valve will lose the "load independent" characteristic
• pump pressure could exceed load pressure.

Pressure control spools

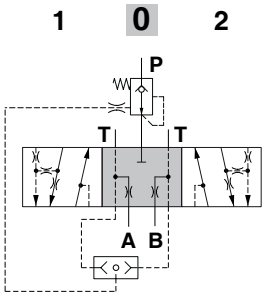
Pressure control on A and B ports

1PC(D,V,Q) type spool
A, B closed in neutral position



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

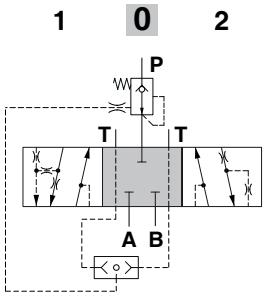
2HPC(D,V,Q) type spool
A, B partially to tank in neutral position



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

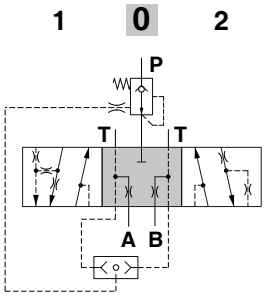
Pressure control on A port, flow control on B port

1PC2(D,V,Q) type spool
A, B closed in neutral position



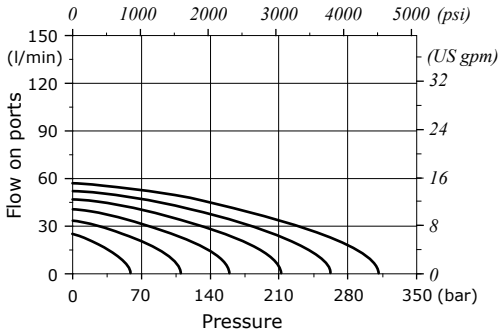
Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

2HPC2(D,V,Q) type spool
A, B partially to tank in neutral position

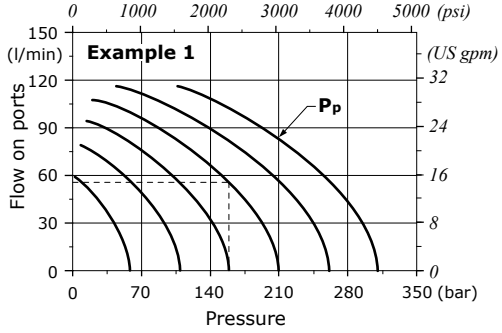


Spool stroke
position 1: + 7 mm *(+ 0.28 in)*
position 2: - 7 mm *(- 0.28 in)*

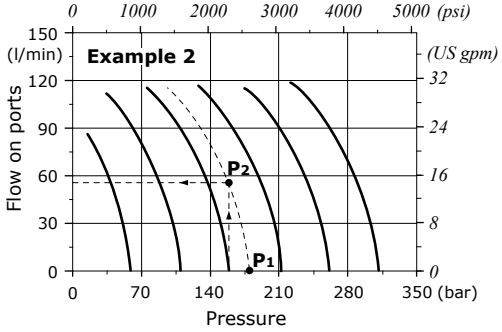
Flow vs Pressure curve
Size V (10 lmin - *2.6 US gpm*) spool



Flow vs Pressure curve
Size D (25 l/min - *6.6 US gpm*) spool



Flow vs Pressure curve
Size Q (40/lmin - *10.6 US gpm*) spool



Sizing

Example 1: how to determine the flow to ports

To know the flow to ports of a spool of known size, you need to know the seting pressure of the valve on the L.S. signal as well as the operating pressure.

As shown in the example, the spool is size D (25 l/min in flow control), the valve on the LS signal is calibrated at 210 bar - *3050 psi* (zero flow to port with such load). Following the third parabola of the operating curve, it can be seen that with a load of 150 bar - *2200 psi* we have 55 l/min - *14.5 US gpm* on port.

Example 2: how to determine the spool size

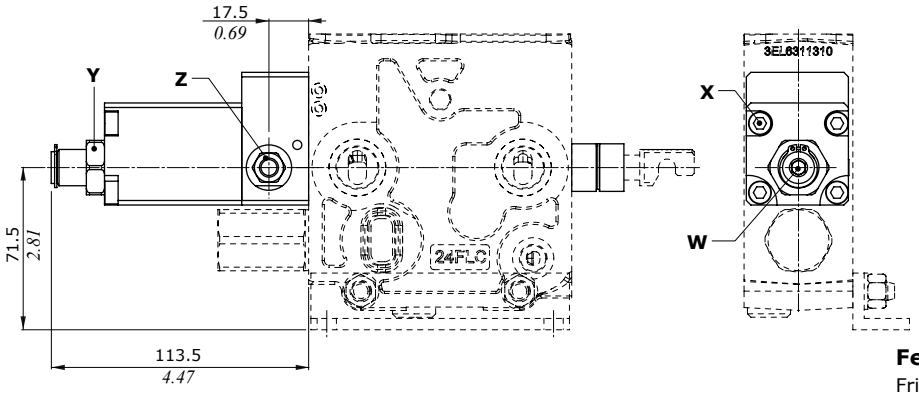
It is necessary to know the flow to port (e.g., 55 l/min - *14.5 US gpm*), the setting pressure of the pressure relief valve on the L.S. signal (180 bar - *2600 psi*) and the operating pressure (150 bar - *2200 psi*).

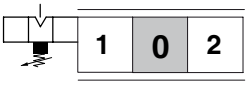
Tracing the parabolas parallel to those entered in the characteristic curve graphs, in the spool type Q we obtain a curve that crosses the required points: 55 l/min at 150 bar - *14.5 US gpm* and 0 l/min - *US gpm* at 180 bar - *2600 psi*.

Working section

"A" side spool control kit

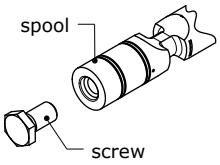
With friction and center position feeling: 7FT type





Features

Friction load adjusting . . . . : 20-150 N *(4.5-34 lbf)*
Friction load std. setting . . : 100 N *(22.5 lbf)*
Center tap (more than load) : 100 N *(22.5 lbf)*



NOTE: spool replacement

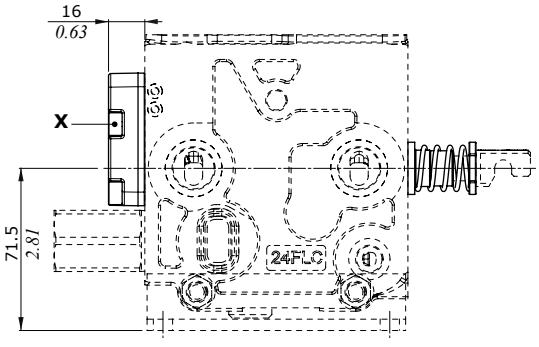
The spool for this control is to be selected from the list on page 23-24.
To assemble the spool remove the screw (wrench 13) on spool back and trash it. Then clean the cavity from Loctite® residue.

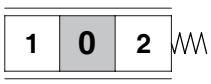
Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm *(7.2 lbf)*
Y = wrench 24 - 42 Nm *(31 lbf)*
Z = wrench 13 - 24 Nm *(17.7 lbf)*
W = allen wrench 6

With spring return to neutral position: 8 type

It is supplied with standard spring A type (see force-stroke diagram); available with stronger spring C type (8MC code: 5V08230000).

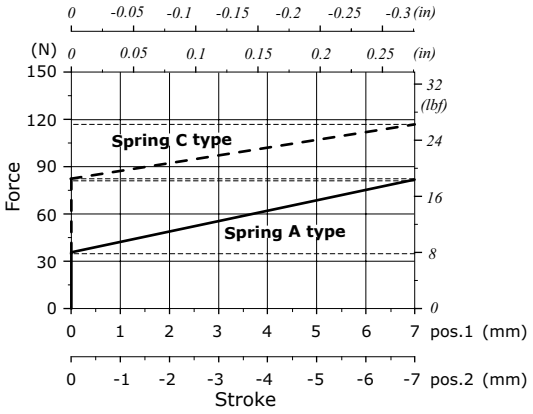




Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm *(7.2 lbf)*

Force vs. Stroke diagram

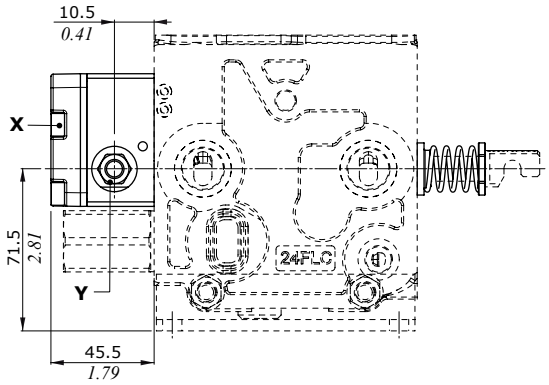


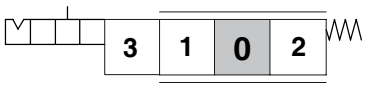
Spring **A** type = from 35.6 N *(8 lbf)* to 81.8 N *(18.4 lbf)*
Spring **C** type = from 82.3 N *(18.5 lbf)* to 116.8 N *(26.3 lbf)*

"A" side spool control kit

With detent in 4th position (pos.3), for floating circuit: 13 type

F, G or FV type working sections and floating circuit 5 type spool are requested for.





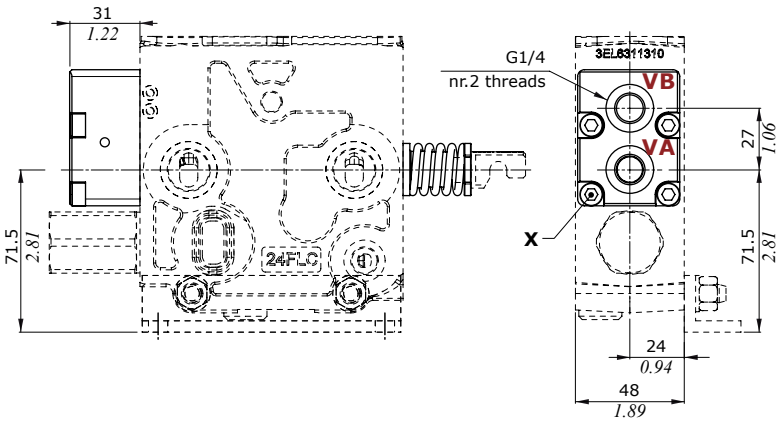
Features

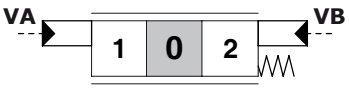
Detent force (±10%). . . . . : 310 N *(70 lbf)*
Release force (±10%) . . . . : 110 N *(24.7 lbf)*

Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm *(7.2 lbf)*
Y = wrench 13 - 24 Nm *(17.7 lbf)*

Proportional hydraulic controls





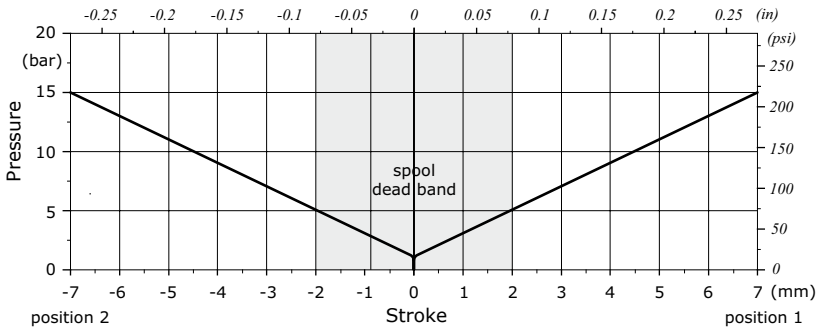
Features

Max. pressure. . . . . : 50 bar *(725 psi)*

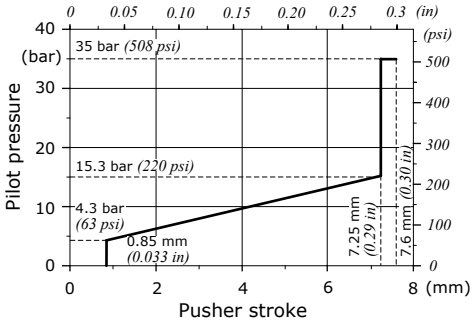
Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm *(7.2 lbf)*
Y = wrench 13 - 24 Nm *(17.7 lbf)*

Stroke vs. Pressure diagram



Suggested pressure control curve: 020 type



Working section

Electrohydraulic control performance data

Following specifications are measured with:
- mineral oil of 46 mm²/s *(46 cSt)* viscosity at 40°C *(104°F)* temperature,
- 20°C *(60°F)* environmental temperature,
- standard spools, connecting P⇒A⇒B⇒T ports without flow multiplication,
- 12 VDC and 24 VDC nominal voltage with ± 10% tolerance.

Specifications		Standard spool control type		Regenerative spool control type		Floating spool control type
		8EZ3	8EZ3T	8EZ3CR	(8Y)13EZ3	13EZ3
Electric specifications						
Coil impedance	12 VDC	6.7 Ω	4.7 Ω	6.7 Ω	6.7 Ω	6.7 Ω
	24 VDC	24.7 Ω	20.8 Ω	24.7 Ω	24.7 Ω	24.7 Ω
Max. operating current	12 VDC	1.79 A	1.50 A	1.79 A	1.79 A	1.79 A
	24 VDC	0.97 A	0.75 A	0.97 A	0.97 A	0.97 A
No load current consumption		-	-	-	-	-
Hysteresis max. (1)	external drain	10%	10%	10%	10%	10%
Time response	from 0 ⇒ 100% and from 100% ⇒ 0 of stroke	< 150 ms	< 150 ms	< 150 ms	< 150 ms	< 150 ms
Min. flow control signal	12 VDC	500 mA	500 mA	560 mA	560 mA	220 mA
	24 VDC	250 mA	250 mA	280 mA	280 mA	110 mA
Max. flow control signal	12 VDC	1000 mA	1000 mA	800 mA	800 mA	560 mA
	24 VDC	500 mA	500 mA	400 mA	400 mA	280 mA
Min. Regenerative flow control signal	12 VDC	-	-	-	1100 mA	-
	24 VDC	-	-	-	550 mA	-
Max. Floating/ Regenerative flow control signal	12 VDC	-	-	-	1300 mA	900 mA
	24 VDC	-	-	-	650 mA	450 mA
Dither frequency	high frequency	150 Hz (200 mA)	100 Hz (200 mA)	150 Hz (200 mA)		150 Hz (200 mA)
Insertion		100%		100%		100%
Coil insulance		Class F (155°C - *311°F*)	Class H (180°C - *356°F*)	Class F (155°C - *311°F*)		Class F (155°C - *311°F*)
Connector type		ISO4400 Flying leads Deutsch DTM	AMP JPT Deutsch DT	ISO4400		ISO4400
Weather protection (connector)		IP65 (ISO4400 type) IP69K (DTM type)	IP65 (JPT type) IP69K (DT type)	IP65		IP65
Hydraulic specifications						
Max. pressure		50 bar *(725 psi)*		50 bar *(725 psi)*		
Max. back pressure on drain		2.5 bar *(36 psi)*		2.5 bar *(36 psi)*		

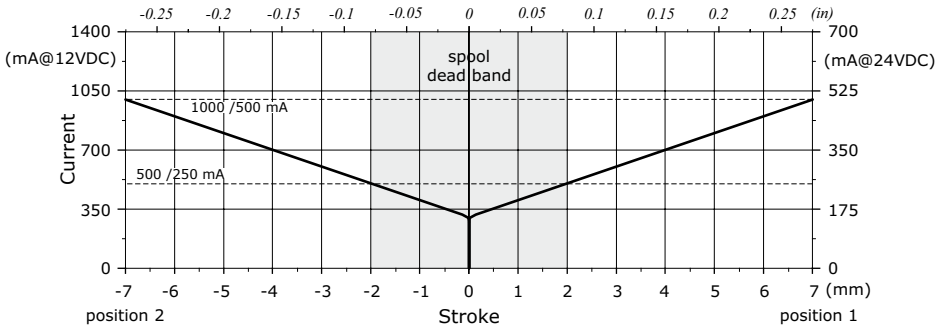
Note (1) For the calculation rules please see "Appendix A" on page 86.

Listed electrohydraulic controls require CED400W electronic control unit; for information please contact Sales Department.

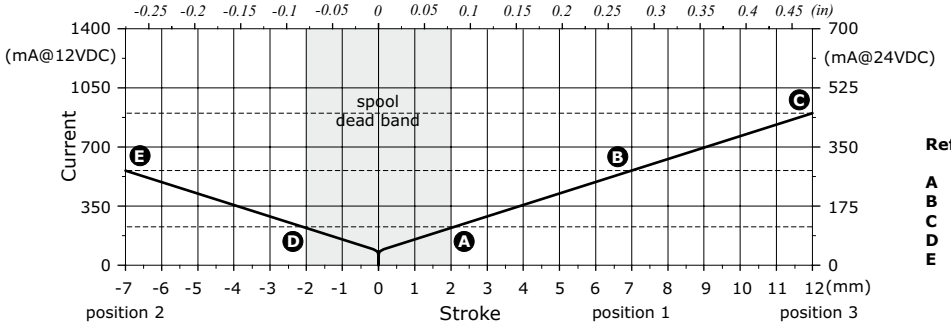
Electrohydraulic control performance data

Spool stroke vs. pilot current diagrams

8EZ3 - 8EZ4 - 8EZ4D - 8EZ3T types

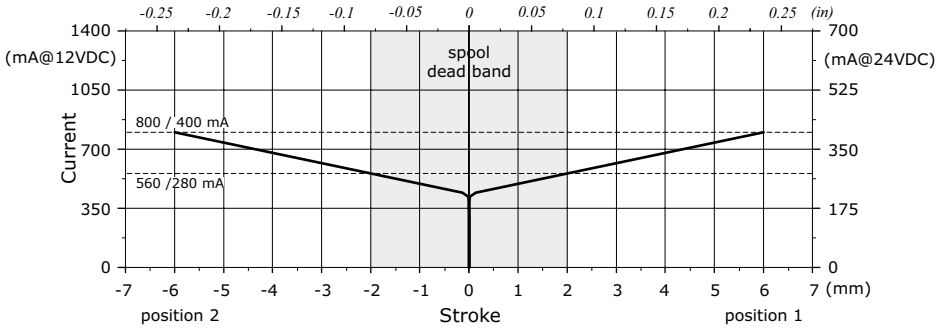


13EZ3 - 13EZ4 types: for floating circuit

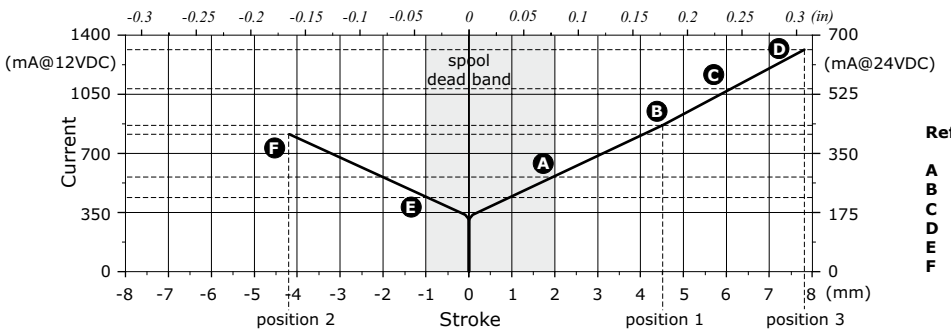


Ref.	Current (mA) 12VDC	24VDC	Stroke mm *(in)*
A	220	110	2 *(0.079)*
B	560	280	7 *(0.276)*
C	900	450	12 *(0.472)*
D	220	110	-2 *(-0.079)*
E	560	280	-7 *(-0.276)*

8EZ3CR type: for regenerative circuit



(8Y)13EZ3 type: for regenerative circuit



Ref.	Current (mA) 12VDC	24VDC	Stroke mm *(in)*
A	560	280	2 *(0.079)*
B	850	425	4.5 *(0.177)*
C	1100	550	6 *(0.236)*
D	1300	650	7.8 *(0.307)*
E	440	210	-1 *(-0.039)*
F	800	405	-4.2 *(-0.165)*

Working section

Electrohydraulic controls: spool position sensor

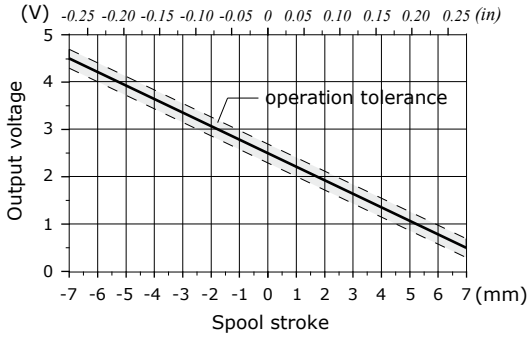
The sensor can be ordered exclusively through the electrohydraulic controls; please see page 24 for available control list.

SPSL sensor

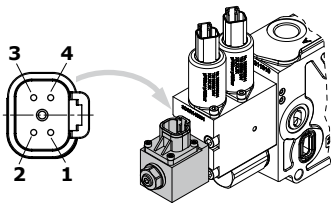
The SPSL position sensor converts the spool movements into a voltage linear signal.

Working conditions		
Voltage supply		5 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10⁶
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C *(from -40°F to 221°F)*
Working pressure		350 bar *(5100 psi)*
Max. electrical stroke		±10 mm *(±0.39 in)*
Max. mechanical stroke		±10 mm *(±0.39 in)*
Output signal	range	from 0.5 to 4.5 V
	linearity	± 5%
	spool in neutral	2.5 ± 0.2 V
	max. current	1 mA
EMC compatibility		ISO 13766 / ISO 14982
Mechanical vibrations, shock, bumps		IEC 68-2-6,-27,-29

SPSL sensor output signal



Deutsch DT04-4P connector	
Pin	**Function**
1	+ 5V
2	not connected
3	GND
4	signal OUT



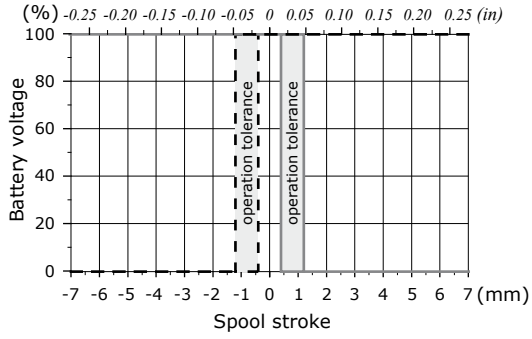
Deutsch DT06-4S mating connector, code 5CON140072

SPSD sensor

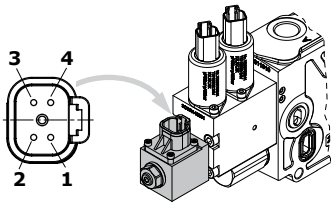
The SPSD position sensor converts the spool movements into an electric digital signal.

Working conditions		
Voltage supply		from 9 to 32 VDC
Current absorption		< 10 mA (no load)
Mechanical life		3x10⁶
Connector type		DT04-4P Deutsch
Weather protection		IP67 / IP69K
Working temperature		from -40°C to 105°C *(from -40°F to 221°F)*
Working pressure		350 bar *(5100 psi)*
Max. electrical stroke		±10 mm *(±0.39 in)*
Max. mechanical stroke		±10 mm *(±0.39 in)*
Output signal	type	PNP
	max. current	6 mA
EMC compatibility		ISO 13766 / ISO 14982
Mechanical vibrations, shock, bumps		IEC 68-2-6,-27,-29

SPSD sensor output signal



Deutsch DT04-4P connector	
Pin	**Function**
1	Out A
2	GND
3	VB +
4	Out B



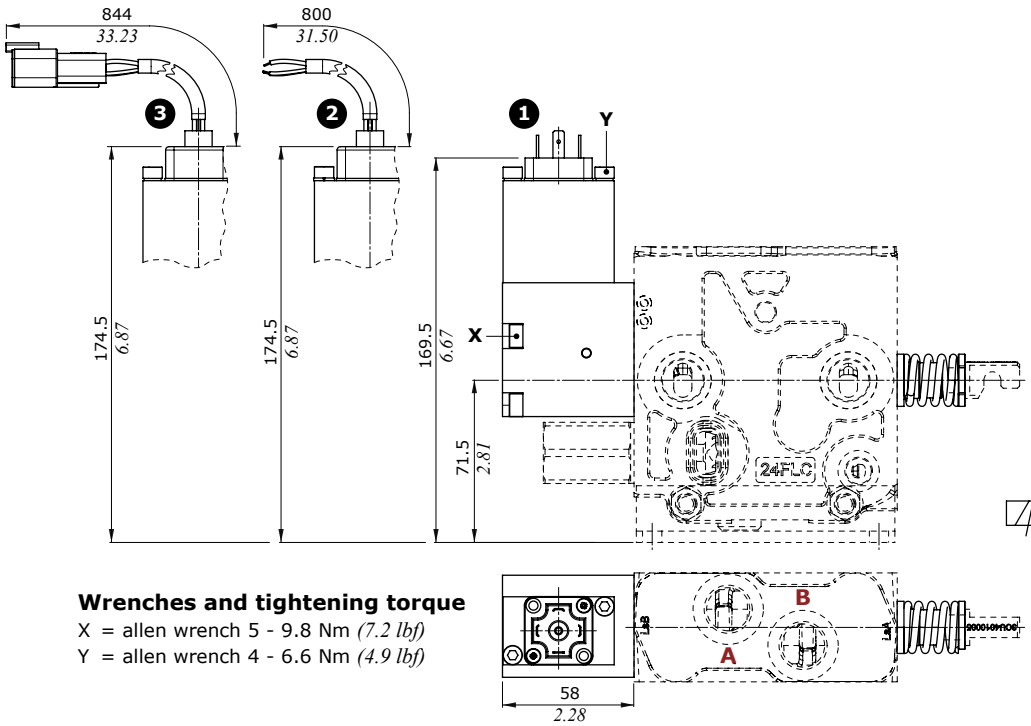
Deutsch DT06-4S mating connector, code 5CON140072

Electrohydraulic controls

Proportional controls; 8EZ - 13EZ types

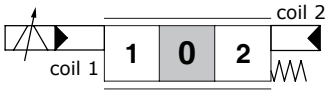
Control Types

❶ : With ISO4400 connector - mating connector code: 2X1001030
❷ : With flying leads
❸ : With Deutsch DTM04 connector - Deutsch DTM06 mating connector code: 5CON140025

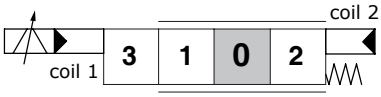


Wrenches and tightening torque
X = allen wrench 5 - 9.8 Nm *(7.2 lbf)*
Y = allen wrench 4 - 6.6 Nm *(4.9 lbf)*

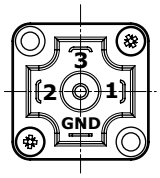
8EZ3 - 8EZ4
8EZ4D - 8EZ3CR types



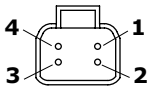
13EZ3 - 13EZ4
(8Y)13EZ3 types



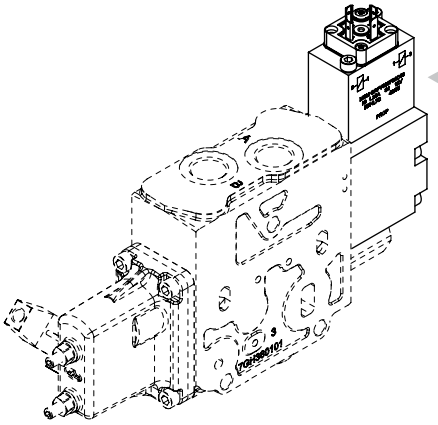
ISO4400 connector

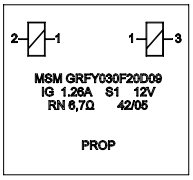


Deutsch DTM04 connector



Connectors pin	Wire colour	Function
1	**blue**	common (-)
2	**red**	Coil 2 - B port
3	**green**	Coil 1 - A port
4	**-**	Plugged





Magnet is to be assembled with this side (printed side) facing the section side without O-ring seating

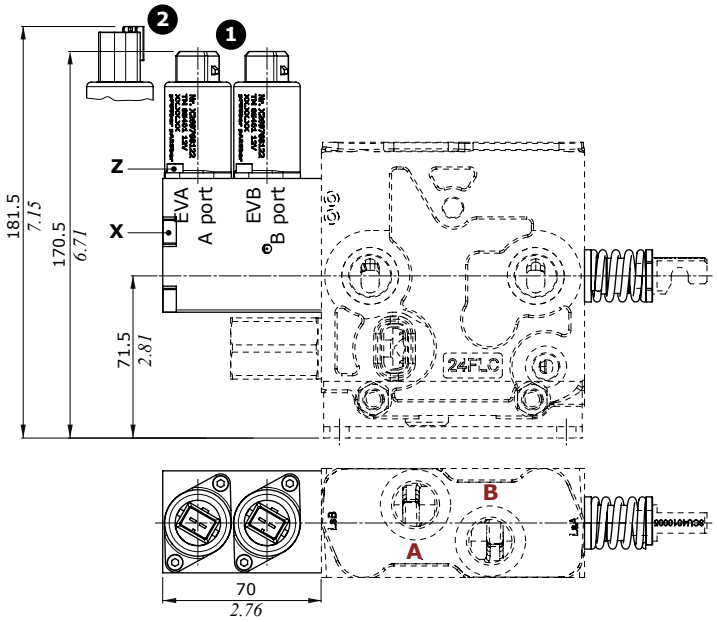
Working section

Electrohydraulic controls

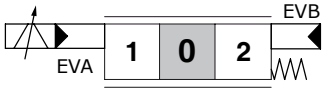
Control Types

1 : With AMP JPT connector - AMP JPT mating connector, code: 5CON003
2 : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

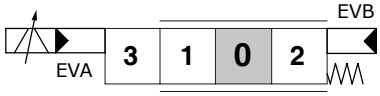
Proportional controls; 8EZ3T - 13EZ3T types



8EZ3T - 8EZ34T types



13EZ3T type

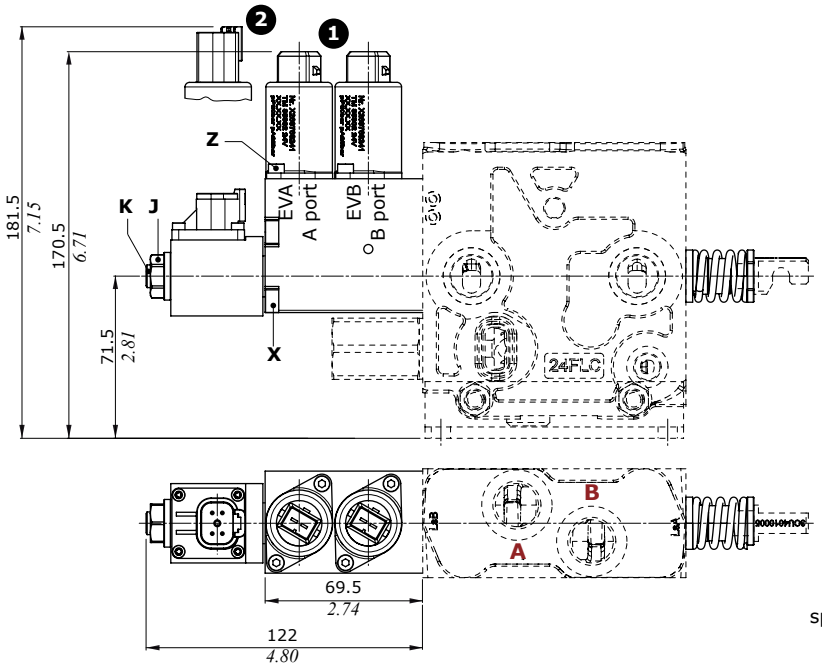


Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm *(7.2 lbf)*
Z = allen wrench 3 - 5 Nm *(3.7 lbf)*
J = wrench 17 - 9.8 Nm *(7.2 lbf)*
K = allen wrench 4 - 9.8 Nm *(7.2 lbf)*

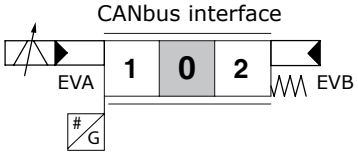
Proportional controls; 8EZ3TSPSD - 8EZ3TSPSL types

For sensor specification and features please see page 42.



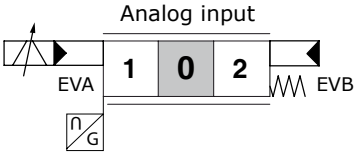
8EZ3TSPSD - 8EZ3T4SPSD types

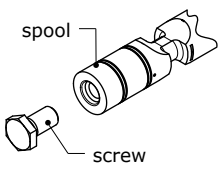
CANbus interface



8EZ3TSPSL - 8EZ3T4SPSL types

Analog input





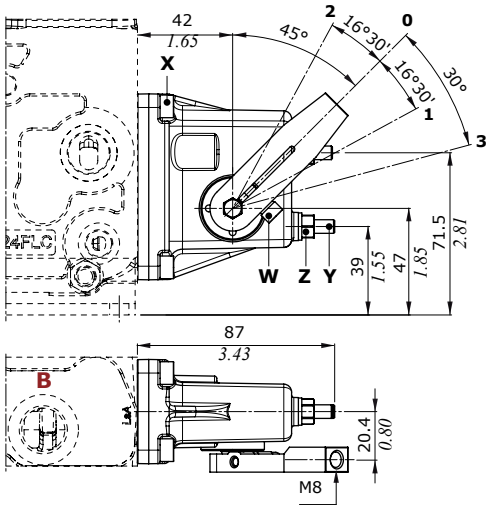
NOTE: spool replacement

The spool for this control is to be selected from the list on page 23-24.
To assemble the spool remove the screw (wrench 13) on spool back and trash it.
Then clean the cavity from Loctite® residue.

"B" side spool control kit

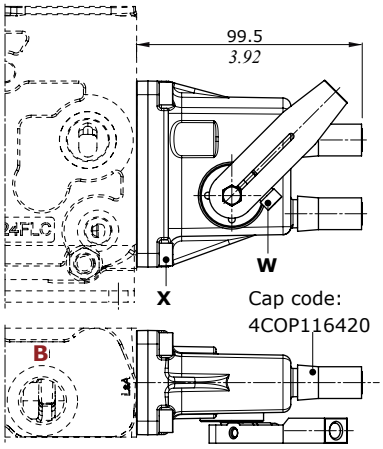
Aluminium lever box; L type

3	1	0	2



Aluminium lever box with anti-tamper caps; LZ type

3	1	0	2

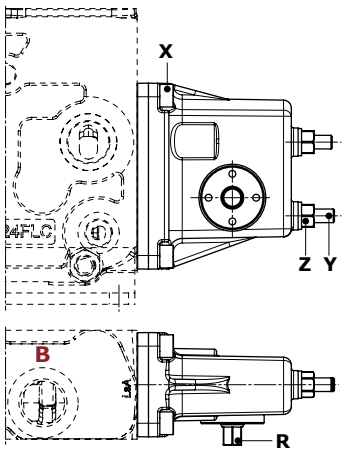


Cap code:
4COP116420

Dimensions are the same as **L** type

Aluminium lever box, without lever; LN type

3	1	0	2



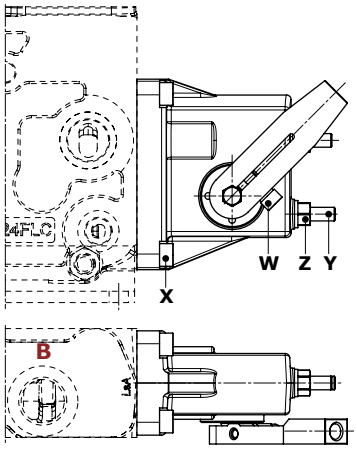
Dimensions are the same as **L** type

Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm *(7.2 lbf)*
Y = allen wrench 3
Z = wrench 10 - 9.8 Nm *(7.2 lbf)*
W = allen wrench 4 - 6.6 Nm *(4.9 lbf)*
R = wrench 8

Cast iron lever box; LG type

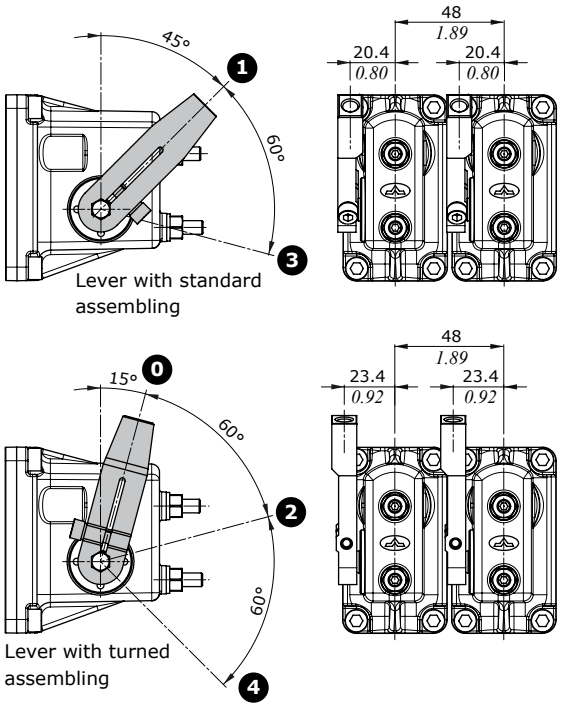
3	1	0	2



Dimensions are the same as **L** type

Lever assembly position

Please see page 22 for specification in working section description

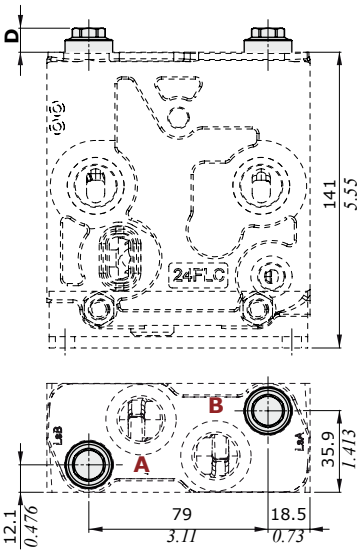


Lever with standard assembling

Lever with turned assembling

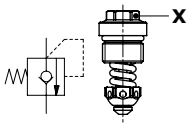
Working section

Port valves

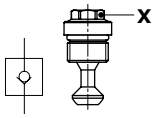


Valve type	Dim. D	
	mm	*in*
U	10.5	*0.41*
C	10.5	*0.41*
UT	7.5	*0.30*

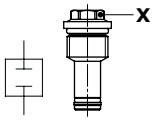
U type
antishock valve



C type
anticavitation valve

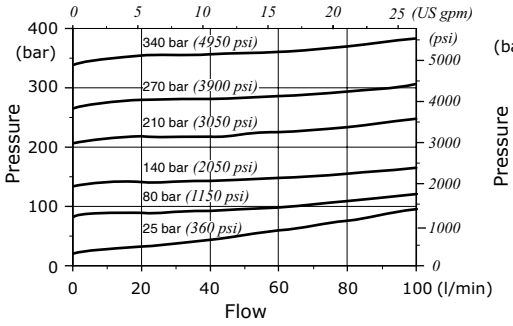


UT type
valve blanking plug

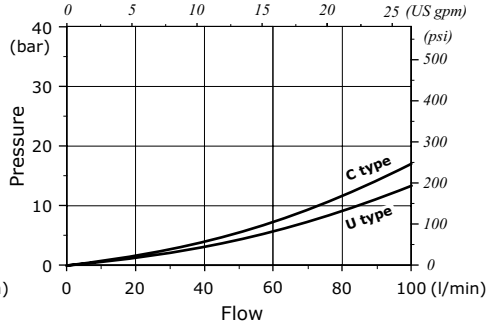


Wrenches and tightening torque
X = wrench 13 - 24 Nm *(17.7 lbf)*

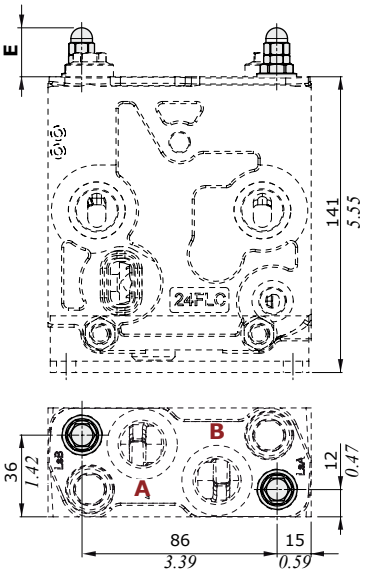
U type, setting example
(10 l/min - *2.6 Us gpm*)



U-C types, pressure drop
(in anticavitation)

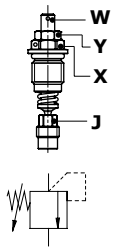


L.S. port relief valves

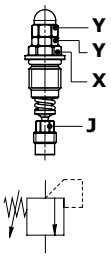


Valve type	Dim. E	
	mm	*in*
LSD	21.5	*0.85*
LSH	17	*0.67*
LSZ	34	*1.34*

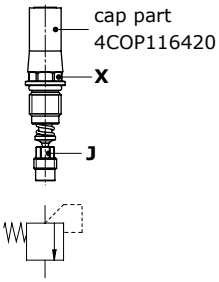
LSH



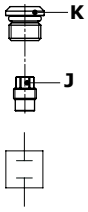
LSD



LSZ



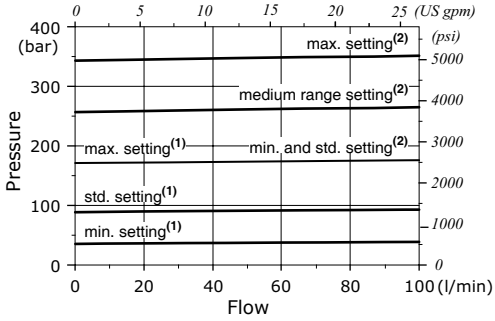
ST



Legenda
LSH: with lock arrangement
LSD: with blind nut
LSZ: with anti-tamper cap
ST: valve blanking plug

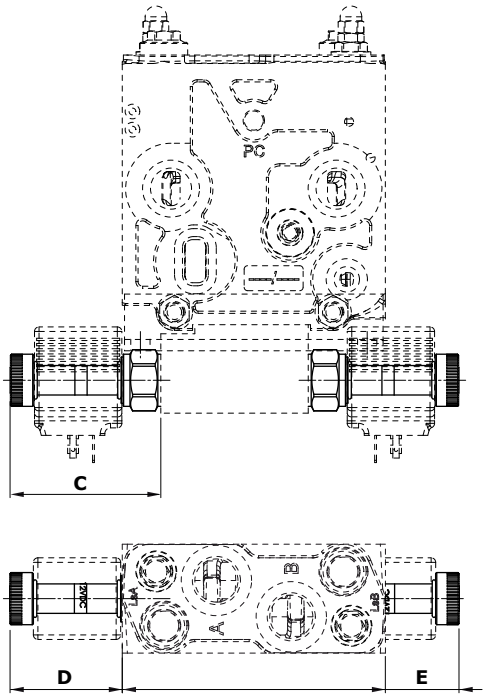
Wrenches and tightening torques
X = wrench 13 - 24 Nm *(17.7 lbf)*
Y = wrench 10 - 9.8 Nm *(7.2 lbf)*
W = allen wrench 3
J = wrench 7 - 24 Nm *(17.7 lbf)*
K = allen wrench 5 - 24 Nm *(17.7 lbf)*

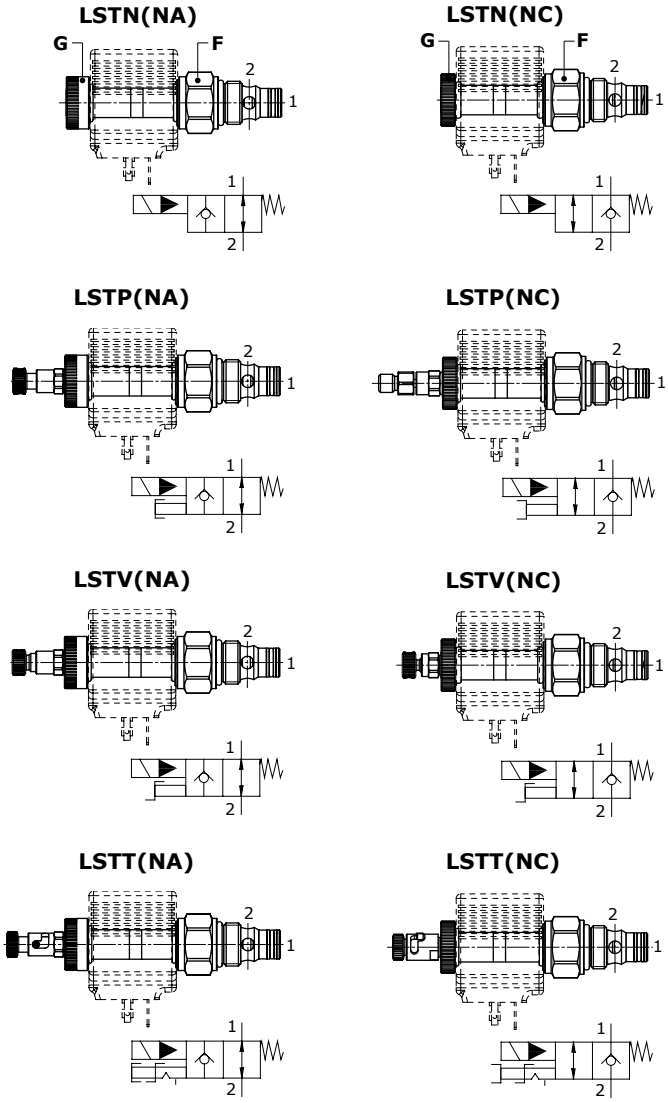
Pressure vs. flow diagram
(1) = valve range 40-180 bar *(580-2600 psi)*
(2) = valve range 180-350 bar *(2600-5000 psi)*



On/off solenoid operated L.S. unloading valves

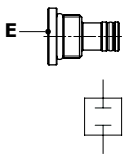
Available only for C27 type working section.





Valve type	Dimensions					
	C		D		E	
	mm	*in*	mm	*in*	mm	*in*
LSTN(NA)	66.7	*2.63*	49.7	*1.96*	34	*1.34*
LSTV(NA)	89.6	*3.53*	69.6	*2.74*	56.9	*2.24*
LSTP(NA)	89.6	*3.53*	69.6	*2.74*	56.9	*2.24*
LSTT(NA)	92.3	*3.63*	72.3	*2.85*	59.6	*2.35*
LSTN(NC)	62.8	*2.47*	42.8	*1.69*	30.1	*1.19*
LSTV(NC)	77.3	*3.04*	57.3	*2.26*	44.6	*1.76*
LSTP(NC)	90.8	*3.57*	70.8	*2.79*	58.1	*2.29*
LSTT(NC)	83.3	*3.28*	63.3	*2.49*	50.6	*1.99*

LST3T



Features

Max. flow . . . . . : 40 l/min *(10.6 US gpm)*
Max. pressure. . . . . : 380 bar *(5500 psi)*
Internal leakage . . . . . : 0.25 cm³/min @ 210 bar
(0.015 in³/min @ 3050 psi)

For coil features and **BER** type coil options please see page 83.

Legenda

LSTN(NA): without emergency
LSTP(NA): push button emergency override
LSTV(NA): screw emergency override
LSTT(NA): "push&twist" emergency override
LSTN(NC): without emergency
LSTP(NC): pull button emergency override
LSTV(NC): screw emergency override
LSTT(NC): "pull&twist" emergency override
LST3T: valve blanking plug (both valve seats)

Wrenches and tightening torques

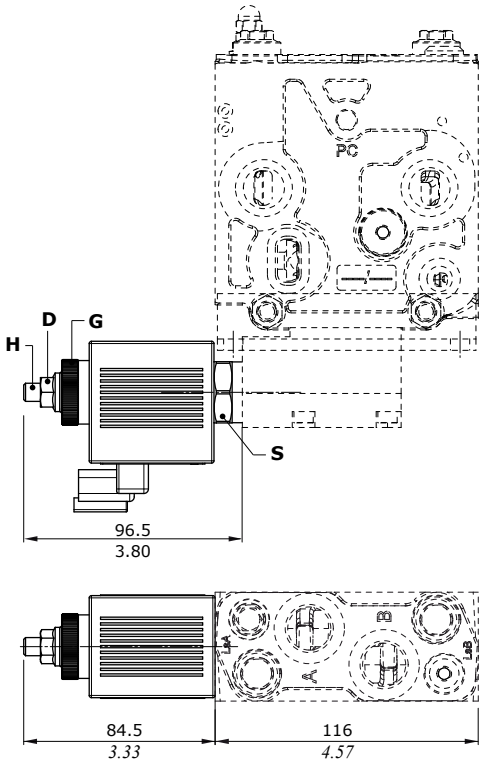
F = wrench 24 - 30 Nm *(22 lbf)*
G = manual tightening
E = wrench 10 - 24 Nm *(17.7 lbf)*

Working section

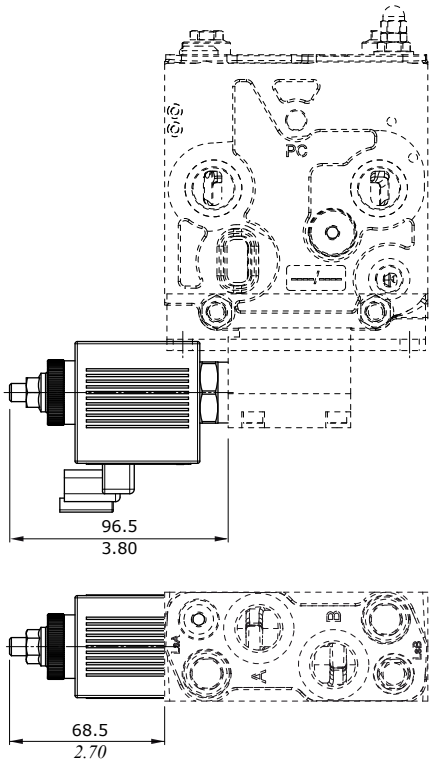
Proportional solenoid operated L.S. unloading valves

Only available on C27SA and C27SB sections.
The valve is always supplied with coil.

On C27SA section



On C27SB section



Wrenches and tightening torques
S = wrench 27 - 50 Nm *(36.9 lbft)*
D = wrench 13 - 15 Nm *(11.1 lbft)*
H = allen wrench 4
G = manual tightening

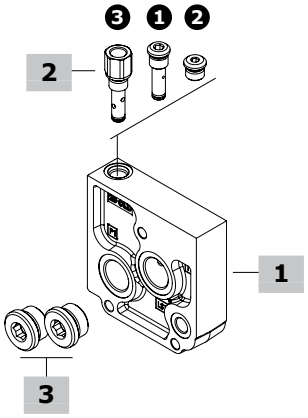
Features
Max. flow . . . . . : 3 l/min *(0.79 US gpm)*
Max. pressure. . . . . : 350 bar *(5100 psi)*
Internal leakage . . . . . : 0.25 cm³/min *(0.015 in³/min)*
@ 80% max pressure setting

For coil features and **BQP19** type coil options please see page 83.

Outlet section part ordering codes

DPC130/RD 3 1 - .....

1 2 3 4



1 Outlet section body * page 51

TYPE	CODE	DESCRIPTION
RF	3FIA731000	Without ports
RC	3FIA731310	With P1 and T1 ports
RD	3FIA731320	With P1, T1 and LS1 ports

2 Drain options page 51

TYPE	CODE	DESCRIPTION
❶	XTAP517460	Internal drain; to be used with mechanical controls
❷	XTAP217160	Internal drain; to be used with hydraulic controls
❸	XCAR119611*	External G1/4 drain; to be used with electrohydralic controls

3 Ports options *

TYPE	CODE	DESCRIPTION
0	-	Without ports; for RF section
1	3XTAP732200	G3/4 plug (nr.2); P1 and T1 ports plugged
2	3XTAP732200	G3/4 plug (nr.1); P1 port plugged and T1 open
3	3XTAP732200	G3/4 plug (nr.1); port P1 open and T1 plugged
4	-	P1 and T1 ports open

4 Section threading

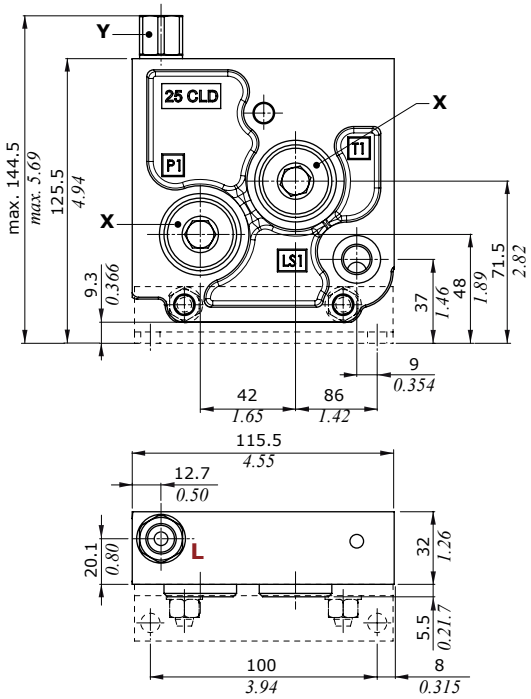
Specify only if it is different from BSP standard (see page 5).

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

Outlet section

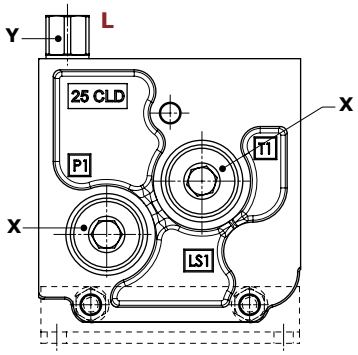
Dimensions and hydraulic circuit

RD31 type
With P1, T1 (plugged) and LS1 ports.
External drain

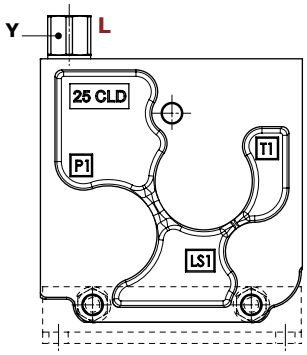


Note: Do not plug LS1 port (in case it is not used it has to be connected to tank).

RC31 type
With P1, T1 (plugged) ports.
External drain

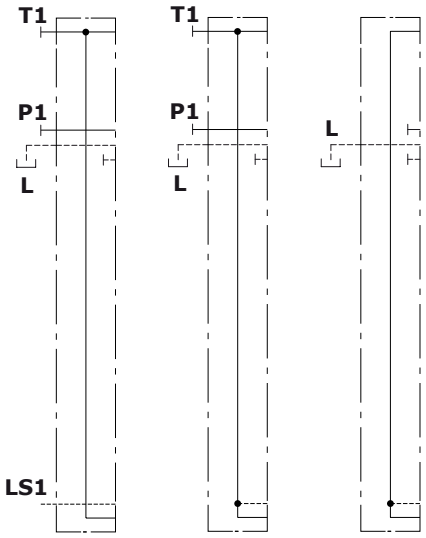


RF30 type
Without ports, external drain

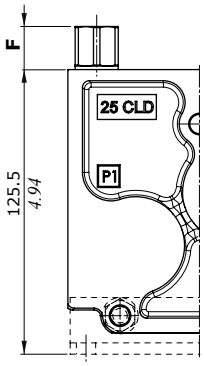


Wrenches and tightening torque
X = allen wrench 12 - 42 Nm (*31 lbf*)
Y = wrench 19 - 24 Nm (*17.7 lbf*)

RD31 type **RC31 type** **RF30 type**

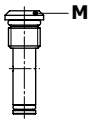


Drain options



Option	Dim. F	
	mm	*in*
1	3.5	*0.138*
2	3.5	*0.138*
3	19	*0.75*

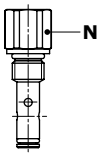
Option ❶
internal drain for
mechanical controls



Option ❷
internal drain for
hydraulic controls



Option ❸
external drain for
electrohydraulic controls



Wrenches and tightening torque
M = allen wrench 5 - 24 Nm (*17.7 lbf*)
N = wrench 19 - 24 Nm (*17.7 lbf*)

Option 1 **Option 2** **Option 3**

