



# DPC Series

Pre-compensated Load Sensing Sectional Valves

A member of



**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  
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INCORRECT USE OF THE PRODUCT.

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**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 D1WWED03A catalogue.

**Working conditions**

This catalogue shows technical specifications and diagrams measured with mineral oil of  $46 \text{ mm}^2/\text{s}$  -  $46 \text{ cSt}$  viscosity at  $40^\circ\text{C}$  -  $104^\circ\text{F}$  temperature.

		<b>DPC130</b>	<b>DPC200</b>
Nominal flow rating (open center circuit)	on inlet port with compensator @ stand-by (margin pressure)	150 l/min - $39.6 \text{ US gpm}$ @ 9 bar - $131 \text{ ps}$	260 l/min - $68.7 \text{ US gpm}$ @ 11.5 bar - $167 \text{ ps}$
	on working ports with compensator ( $Q_{in}/Q_{ut} > 10\%$ ) @ stand-by (margin pressure)	100 l/min - $26.4 \text{ US gpm}$ @ 7 bar - $102 \text{ ps}$	200 l/min - $52.8 \text{ US gpm}$ @ 7 bar - $102 \text{ ps}$
	on working ports without compensator ( $Q_{in}/Q_{ut} > 10\%$ ) @ stand-by (margin pressure)	130 l/min - $34.3 \text{ US gpm}$ @ 9 bar - $131 \text{ ps}$	240 l/min - $63.4 \text{ US gpm}$ @ 11.5 bar - $167 \text{ ps}$
Max. pressure	<b>P</b> inlet port	315 bar <sup>(2)</sup> - $4500 \text{ psi}$ <sup>(2)</sup>	350 bar <sup>(1)</sup> - $5100 \text{ psi}$ <sup>(1)</sup>
	<b>A</b> and <b>B</b> working ports	315 bar <sup>(2)</sup> - $4500 \text{ psi}$ <sup>(2)</sup>	420 bar <sup>(1)</sup> - $6100 \text{ psi}$ <sup>(1)</sup>
Back pressure (max.)	on <b>T</b> outlet port	25 bar - $363 \text{ psi}$	25 bar - $363 \text{ psi}$
	on <b>L</b> drain port	2.5 bar - $36 \text{ psi}$	2.5 bar - $36 \text{ psi}$
Standard internal leakage <b>A(B)-&gt;T</b>	$\Delta p = 100 \text{ bar} - 1450 \text{ psi}$	16 $\text{cm}^3/\text{min}$ - $0.98 \text{ in}^3/\text{min}$	20 $\text{cm}^3/\text{min}$ - $1.22 \text{ in}^3/\text{min}$
	with port valves, $\Delta p = 100 \text{ bar} - 1450 \text{ psi}$	21 $\text{cm}^3/\text{min}$ - $1.28 \text{ in}^3/\text{min}$	25 $\text{cm}^3/\text{min}$ - $1.53 \text{ in}^3/\text{min}$
Fluid			Mineral oil
Fluid temperature range	with seals NBR (BUNA-N)	from $-20^\circ\text{C}$ to $80^\circ\text{C}$ - <i>from <math>-4^\circ\text{F}</math> to <math>176^\circ\text{F}</math></i>	
	with seals FPM (VITON)	from $-20^\circ\text{C}$ to $100^\circ\text{C}$ - <i>from <math>-4^\circ\text{F}</math> to <math>212^\circ\text{F}</math></i>	
Viscosity	operating range	from 15 to 75 $\text{mm}^2/\text{s}$ - <i>from 15 to 75 cSt</i>	
	min.	12 $\text{mm}^2/\text{s}$ - $12 \text{ cSt}$	
	max.	400 $\text{mm}^2/\text{s}$ - $400 \text{ cSt}$	
Contamination level	max.	$-/18/15$ - ISO 4406 - NAS 1638 class 9	
Environmental temperature for working conditions	with mechanical devices	from $-40^\circ\text{C}$ to $60^\circ\text{C}$ - <i>from <math>-40^\circ\text{F}</math> to <math>140^\circ\text{F}</math></i>	
	with hydraulic/pneumatic devices	from $-30^\circ\text{C}$ to $60^\circ\text{C}$ - <i>from <math>-22^\circ\text{F}</math> to <math>140^\circ\text{F}</math></i>	
	with electric/electrohydraulic devices	from $-20^\circ\text{C}$ to $50^\circ\text{C}$ - <i>from <math>-4^\circ\text{F}</math> to <math>122^\circ\text{F}</math></i>	

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

**Standard threads****REFERENCE STANDARD**

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

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

<b>PORTS THREADING</b>	<b>DPC130</b>		<b>DPC200</b>		<b>Flange connection (bolts threading)</b>	<b>ISO 6162-1 type 1</b>	<b>SAE J518 code 61</b>
	<b>BSP</b>	<b>UN-UNF</b>	<b>BSP</b>	<b>UN-UNF</b>			
<b>P</b> 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)	
<b>A</b> and <b>B</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)	
<b>T</b> 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)	
<b>LS</b> Load Sensing	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)			
<b>V1</b> pilot	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)			
<b>V2</b> pilot	depends on inlet section type: see pages from 14 to 17 <sup>(5)</sup>			M14x1.5 <sup>(5)</sup>	see BSP threading	see UN-UNF threading	
<b>L</b> drain	G 1/4	7/16-20 (SAE 4)	G 1/4	7/16-20 (SAE 4)			
<b>M</b> 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 <sup>(5)</sup>: ATTENTION! V2 pilot port requires dedicated joints; please see Inlet section pages.

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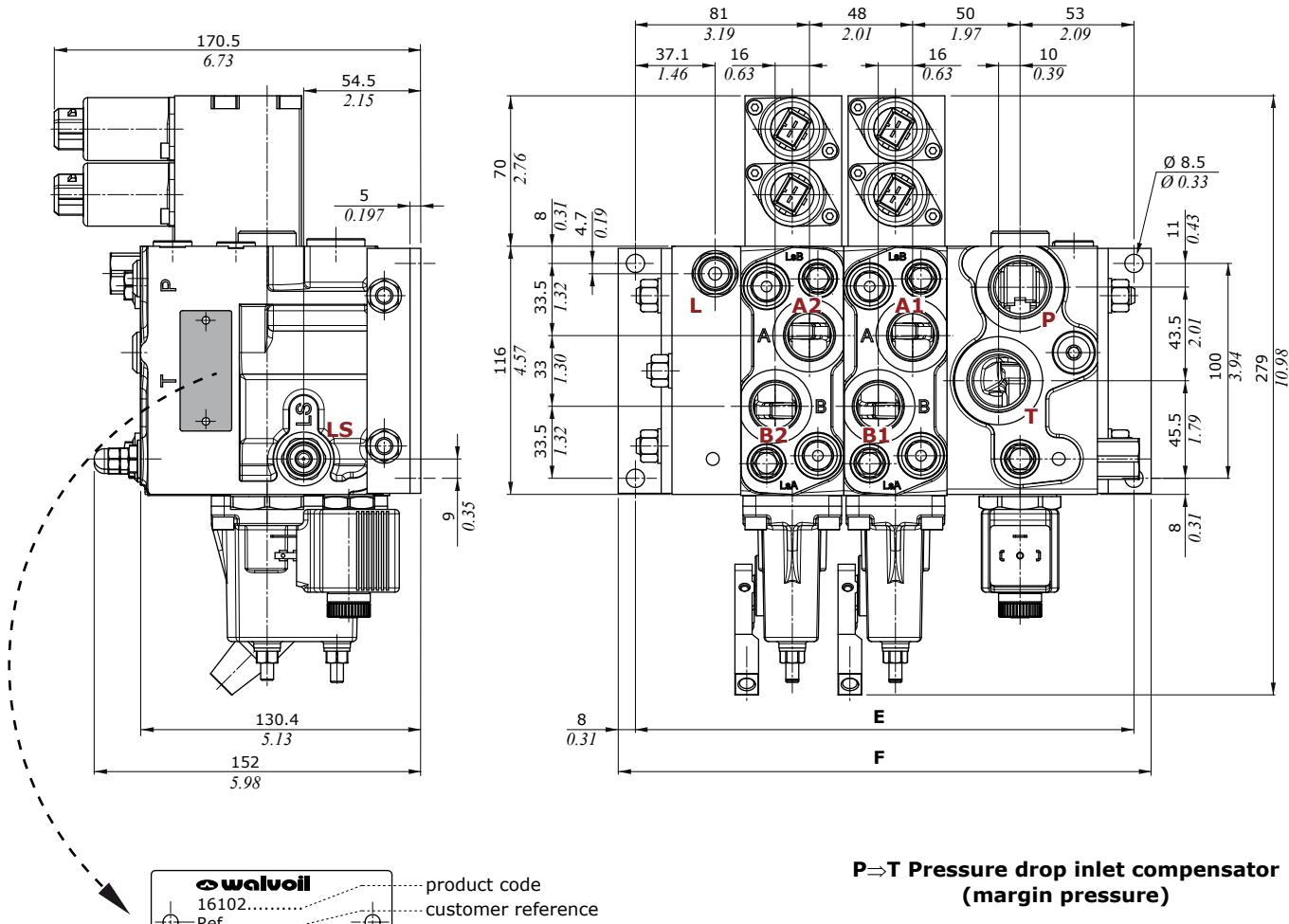
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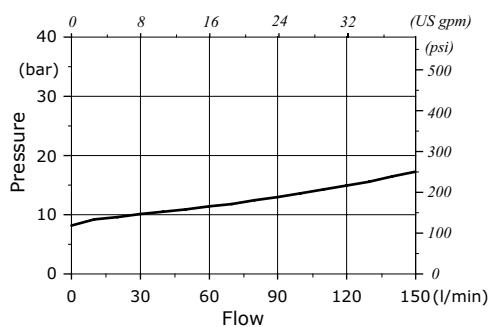
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## Dimensional data and performance

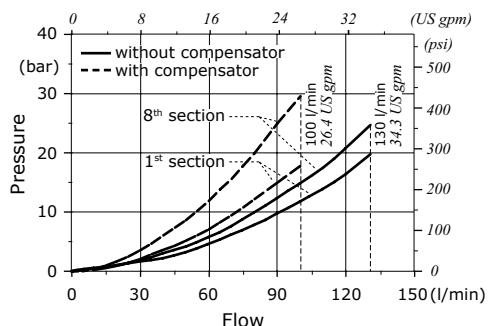


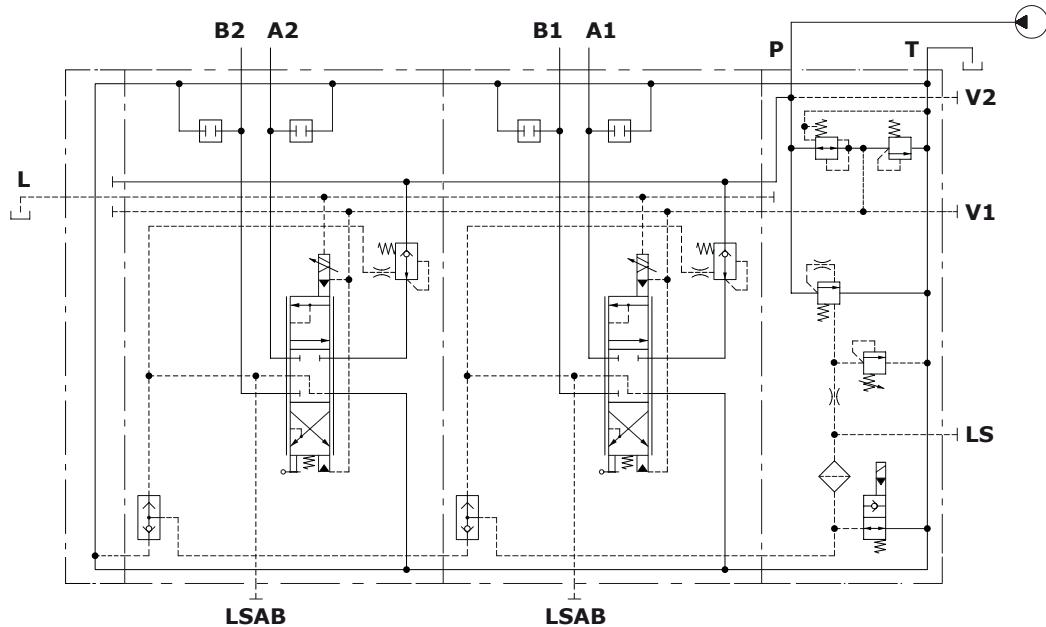
<b>Type</b>	<b>E</b>		<b>F</b>		<b>Weight</b>	
	mm	in	mm	in	Kg	lb
<b>DPC130/1</b>	184	7.24	200	7.87	12.4	27.3
<b>DPC130/2</b>	232	9.13	248	9.76	19.4	42.8
<b>DPC130/3</b>	280	11.02	296	11.65	25.3	55.8
<b>DPC130/4</b>	328	12.91	344	13.54	31.0	68.3
<b>DPC130/5</b>	376	14.80	392	15.43	36.5	80.5
<b>DPC130/6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

**P⇒T Pressure drop inlet compensator  
(margin pressure)**

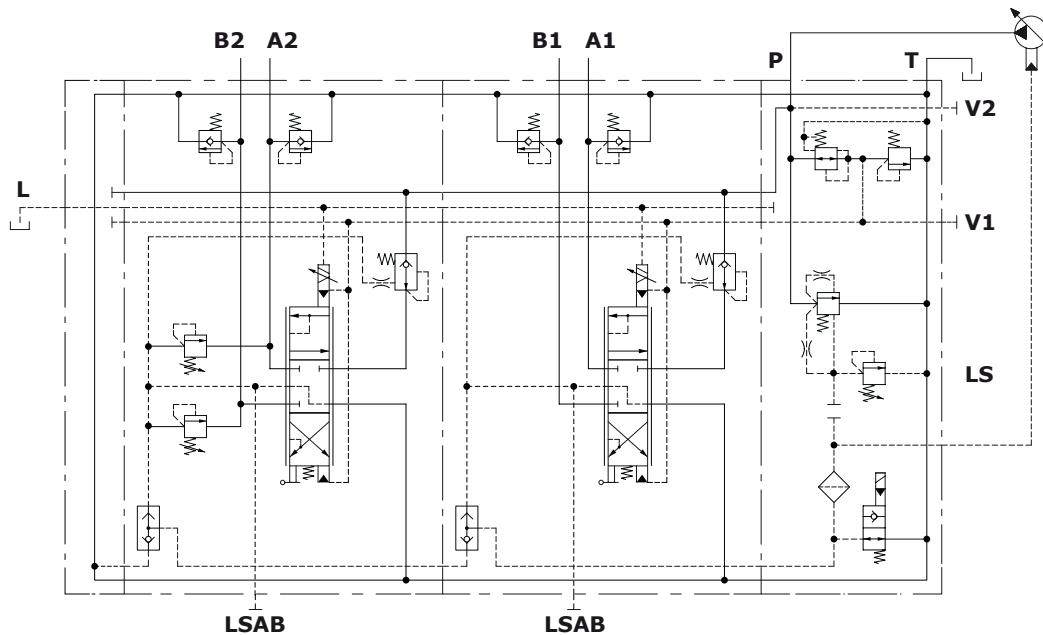


**A(B)⇒T pressure drop  
(standard spool @ max.stroke)**



**Hydraulic circuit****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 2<sup>nd</sup> section, LSAB ports, internal pilot and external drain

## Complete sections ordering codes

DPC130/2/BR21-S220-ELP/C10-1S8EZ3L1/C22-1S8EZ3L1.UTUTSTST/RF30-.....-12VDC-&lt;SB20-CVN&gt;

Valve type

1

2

2

3

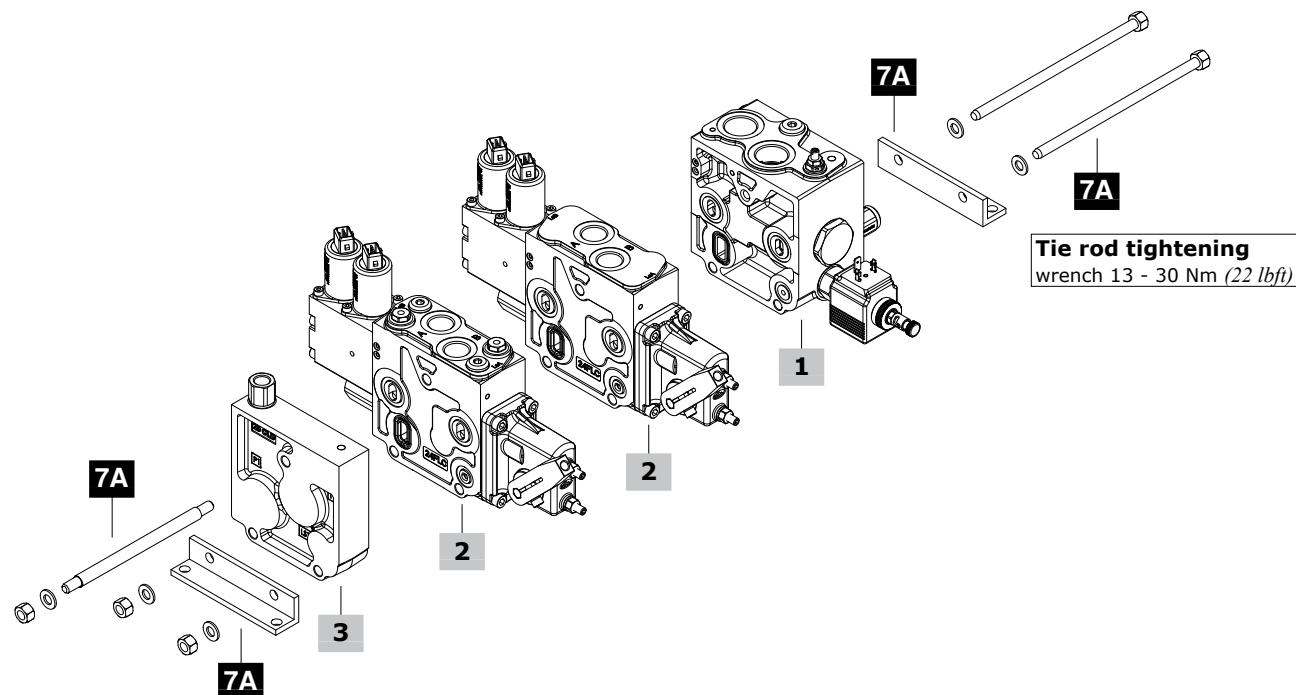
4

5

6

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

Nr. of working sections



DPC130/2/BRF21-S250/C10-1S8EZ3L1/C22-1S8EZ3L1.UTUTSTST/RF30-.....-12VDC-&lt;SB20-CVN&gt;

1

2

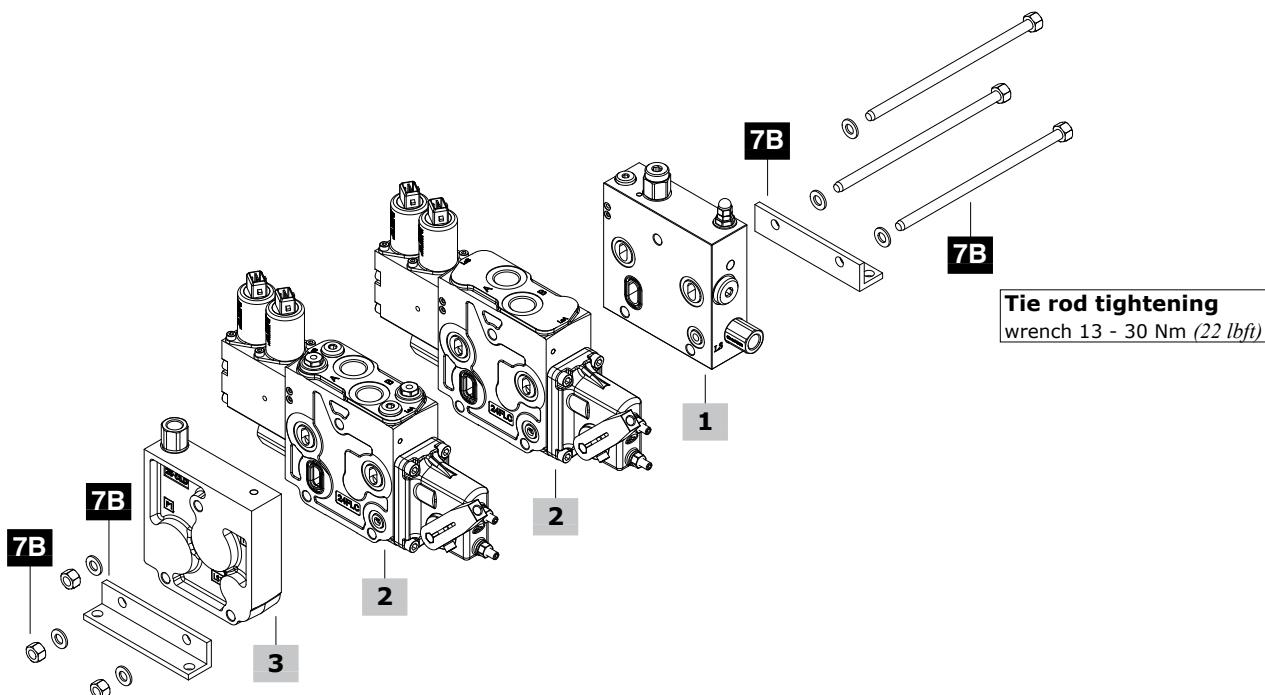
2

3

4

5

6



## Complete sections ordering codes

**1 Inlet section \*****page 12**

TYPE: <b>DPC130/BR-S200-DSK-SAE</b>	CODE: 63425H000
DESCRIPTION: With 3-way compensator, L.S. pressure relief valve, pressure reducing valve and selector for open/closed center circuit	
<b>Closed Center circuit</b>	
TYPE: <b>DPC130/BN21-S220-SAE</b>	CODE: 63422H001
DESCRIPTION: With secondary pressure control system and pressure reducing valve, with L.S. pressure relief valve.	
TYPE: <b>DPC130/BR21-S220-ELP-SAE-12VDC</b>	CODE: 63421H003
DESCRIPTION: As previous one, with pressure reducing valve, and 12VDC solenoid operated unloader valve	
TYPE: <b>DPC130/BRF21-S250-SAE</b>	CODE: 634250901
DESCRIPTION: With pressure reducing valve and L.S. pressure relief valve	
TYPE: <b>DPC130/BRSOG21(SF)-S220-ELN3-SAE-12VDC</b>	CODE: 63425H006
DESCRIPTION: Shut-off configuration, with pressure reducing valve and L.S. pressure relief valve	
TYPE: <b>DPC130/BRS21-S220-ELP-SAE-12VDC</b>	CODE: 63425H002
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	
<b>Open Center circuit</b>	
TYPE: <b>DPC130/BN11-S220-SAE</b>	CODE: 63422H002
DESCRIPTION: With 3-way compensator and L.S. pressure relief valve, without pressure reducing valve	
TYPE: <b>DPC130/BR11-S220-ELP-SAE-12VDC</b>	CODE: 63421H004
DESCRIPTION: As previous one, with pressure reducing valve, and 12VDC solenoid operated unloader valve	
TYPE: <b>DPC130/BRS11-S220-ELP-SAE-12VDC</b>	CODE: 63425H004
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-SAE-12VDC** CODE: 63411H002  
DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with lever

TYPE: **DPC130/C22-1S8EZ3TL1.UTUTSTST-SAE-12VDC**

CODE: 63411H004

DESCRIPTION: As previous one, arranged for port valves and L.S. relief valves

**Without compensator**

TYPE: **DPC130/D10-1S8EZ3TL1-SAE-12VDC** CODE: 63412H002  
DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with lever

TYPE: **DPC130/D20-1S8EZ3TL1.UTUT-SAE-12VDC**

CODE: 63412H004

DESCRIPTION: As previous one, arranged for port valves

TYPE: **DPC130/CV10-1S8EZ3TL1-SAE-12VDC** CODE: 63413H002  
DESCRIPTION: With load check valve, double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control, with lever

TYPE: **DPC130/CV22-1S8EZ3TFL1.UTUTSTST-SAE-12VDC**

CODE: 63413H004

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 49****For valve with mechanical control**

TYPE: **DPC130/RF10** CODE: 634310001

DESCRIPTION: Without ports

**For valve with hydraulic control**

TYPE: **DPC130/RF20** CODE: 634310024

DESCRIPTION: Without ports, internal drain

**For valve with electrohydraulic control**

TYPE: **DPC130/RF30-SAE** CODE: 634310003

DESCRIPTION: Without ports, L external drain

TYPE: **DPC130/RC31-SAE** CODE: 634310005

DESCRIPTION: With P1 and T1 (plugged) ports, L external drain

TYPE: **DPC130/RD31-SAE** CODE: 634310007

DESCRIPTION: With P1 and T1 ports (plugged), LS1 port, external drain L

**4 Valve threading**

Specify only 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 UN-UNF thread.

## Inlet section part ordering codes

Valve setting (bar)



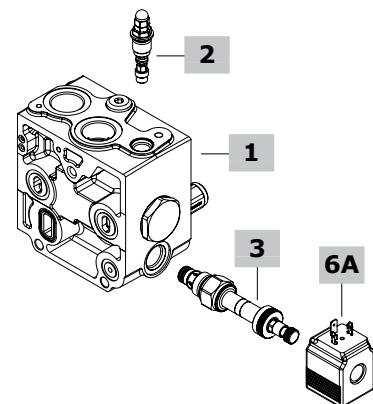
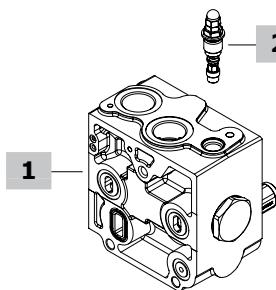
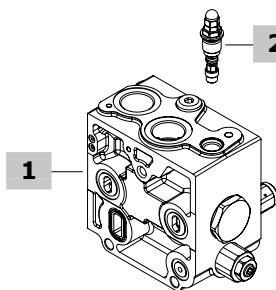
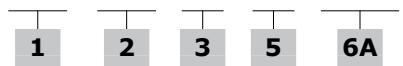
DPC130 / BR - S200 - DSK - .....



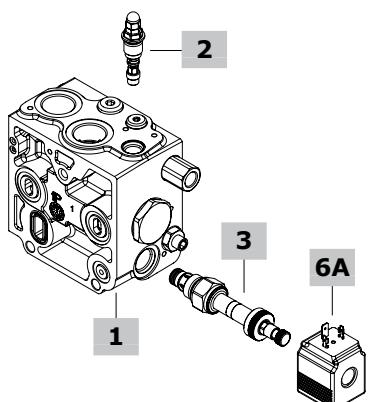
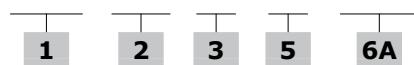
DPC130 / BN21 - S220 - .....



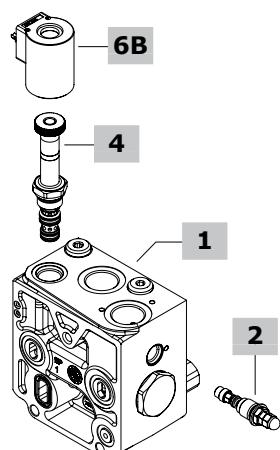
DPC130 / BR21 - S220 - ELP - ..... - 12VDC



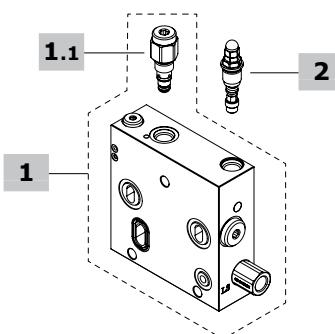
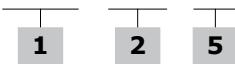
DPC130 / BRS21 - S220 - ELP - ..... - 12VDC



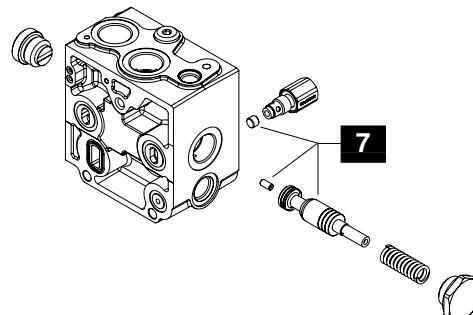
DPC130 / BRSOG21(SF) - S220 - ELN3 - ..... - 12VDC



DPC130 / BRF21 - S250 - BSP



## Circuit conversion kit



**Inlet section part ordering codes****1 Inlet section kit\*****page 14**

TYPE: <b>DPC130/BR-DSK-SAE</b>	CODE: 5FIA631750
DESCRIPTION: With compensator, pressure reducing valve and selector for open/closed center circuit.	
<b>Closed Center circuit</b>	
TYPE: <b>DPC130/BN21-SAE</b>	CODE: 5FIA631702
DESCRIPTION: With secondary pressure control system, without pressure reducing valve	
TYPE: <b>DPC130/BR21-SAE</b>	CODE: 5FIA631700
DESCRIPTION: As previous one, with pressure reducing valve	
TYPE: <b>DPC130/BRSOG21(SF)-SAE</b>	CODE: 5FIA631772G
DESCRIPTION: Shut-Off type, with secondary pressure control system and pressure reducing valve (L.S. joint without filter)	
TYPE: <b>DPC130/BRS21-SAE</b>	CODE: 5FIA631760
DESCRIPTION: Copy-Spool type, with secondary pressure control system and pressure reducing valve	
TYPE: <b>DPC130/BRF21-SAE</b>	CODE: 5FIA630706
DESCRIPTION: With pressure reducing valve	
<b>Open Center circuit</b>	
TYPE: <b>DPC130/BN11-SAE</b>	CODE: 5FIA631703
DESCRIPTION: With compensator, without pressure reducing valve	
TYPE: <b>DPC130/BR11-SAE</b>	CODE: 5FIA631701
DESCRIPTION: With compensator and pressure reducing valve	
TYPE: <b>DPC130/BRS11-SAE</b>	CODE: 5FIA631761
DESCRIPTION: Copy-Spool type, with compensator and pressure reducing valve	

**2 L.S. pressure relief valves****page 19**

Standard setting is referred to 10 l/min - 2.6 US gpm flow.		
TYPE	INITIAL	CODE
<b>LSD</b>	<b>S</b>	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)
<b>LSH</b>	<b>H</b>	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)
<b>LSZ</b>	<b>Z</b>	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)
<b>ST</b>	<b>ST</b>	5KIT126210
		Relief valve blanking plug

**3 Solenoid operated unloading valve****page 19**

Needs coil type BER: see chapter 6

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

**4 Solenoid operated Shut-off pilot valve****page 20**

Needs coil type BT: see chapter 6

TYPE	CODE	DESCRIPTION
<b>ELN3</b>	0EJ08002035	Without emergency override
<b>ELT3</b>	0EJ08002042	With screw emergency override

**5 Section threading**

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

**6A Coil**

TYPE	CODE	DESCRIPTION
<b>12VDC</b>	4SLE001200A	12VDC <b>BER</b> type coil, ISO4400 connector (for unloading valve)

For complete available coil list see page 82.

**6B Coil**

TYPE	CODE	DESCRIPTION
<b>12VDC</b>	4SL3000120	12VDC <b>BT</b> 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 section**

5KIT130301 Circuit conversion kit: from Open Center to Closed Center

5KIT130320 Circuit conversion kit: from Closed Center to Open Center

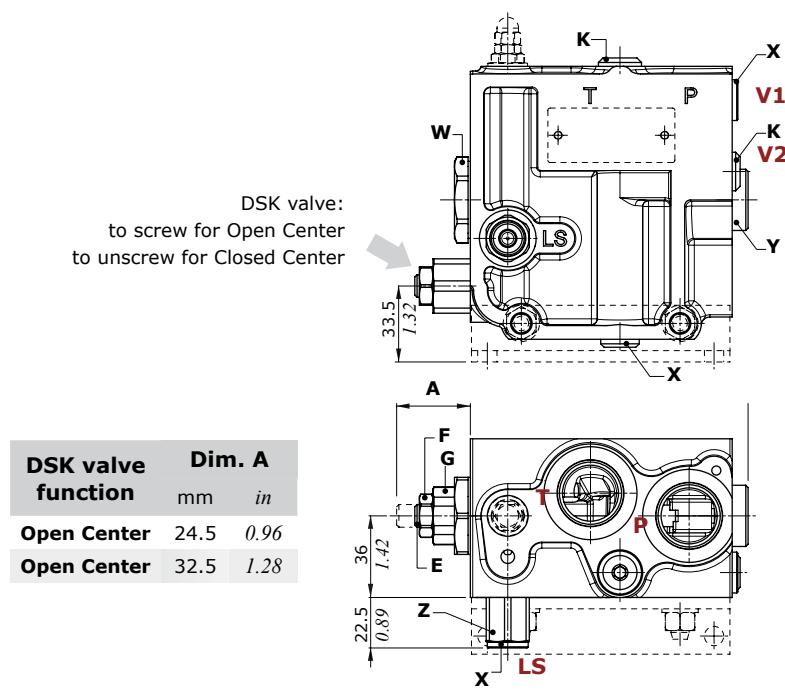
## Inlet section

### Dimensions and hydraulic circuit

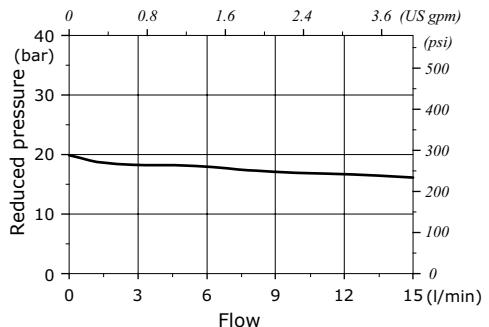
#### Example of BR-DSK inlet section

Configuration with pressure reducing valve and selector for Open/Closed center circuit.

For complete dimensions see BN type inlet section on the next page.



**Pressure reducing valve diagram**  
Reduced pressure vs. Flow



#### Auxiliary port specification

**V1** = SAE6 pilot pressure port ( $P_{max} = 30 \text{ bar} / 435 \text{ psi}$ ) for hydraulic pilot control valves feeding ( $P \Rightarrow OUT$ )

**V2** = M14x1.5 pilot pressure port for:

- electrohydraulic controls optional feeding ( $P_{max} = 315 \text{ bar} / 4600 \text{ psi}$ ) ( $P \Rightarrow IN$ ); SAE6 joint is required, code 5GIU519612
- pressure gauge connection; SAE6 joint is required, code 5GIU620331.

#### 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)

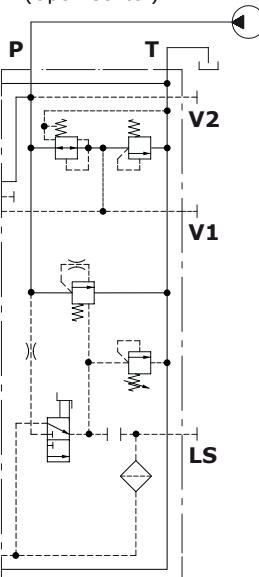
Z = wrench 19 - 24 Nm (17.7 lbft)

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)

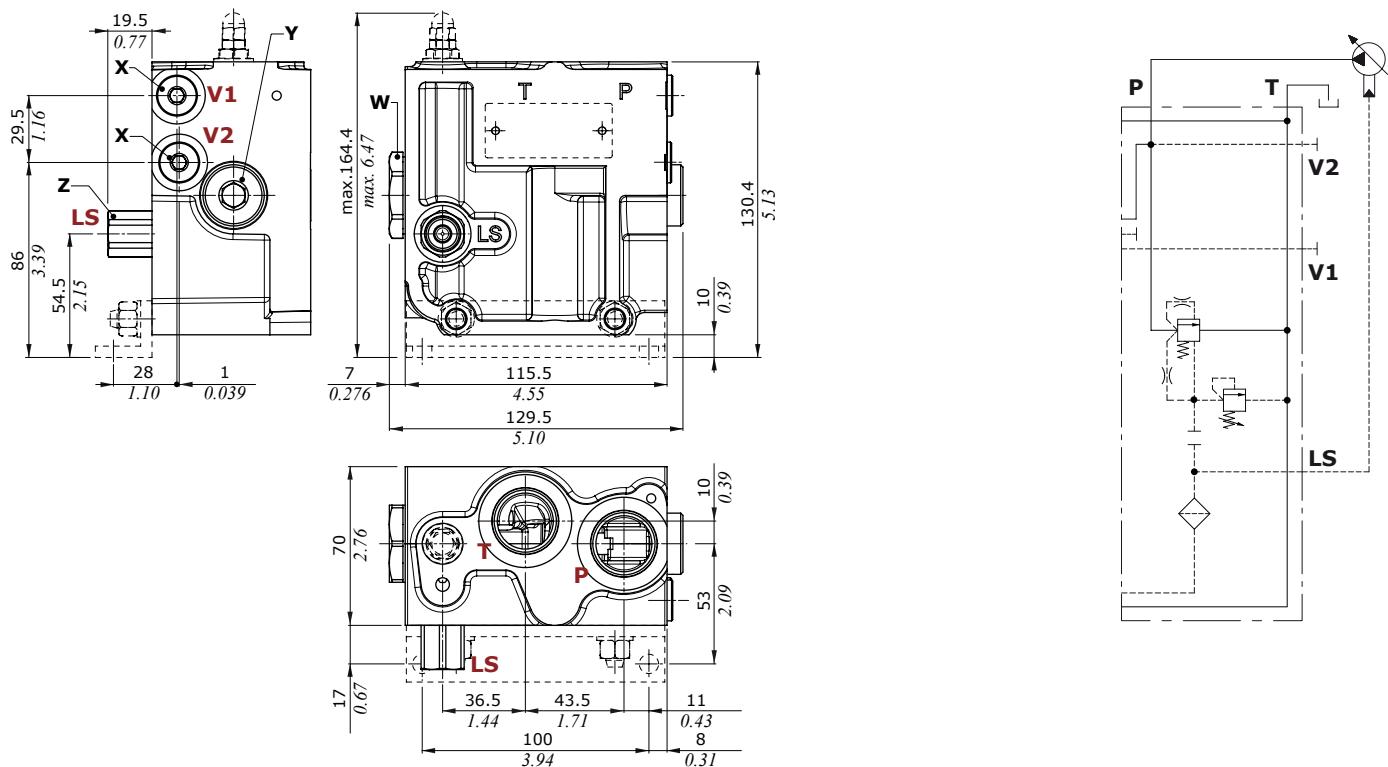


## Inlet section

## Dimensions and hydraulic circuit

## Standard inlet section for Closed Center circuit: BN21 type

Configuration without pressure reducing valve.



## Auxiliary port specification

**V1** = SAE6 pilot pressure port for electrohydraulic control feeding ( $P_{max} = 30 \text{ bar} - 435 \text{ psi}$ ) ( $P \Rightarrow IN$ )

**V2** = SAE6 pressure gauge connection

## Wrenches and tightening torque

X = allen wrench 6 - 24 Nm (17.7 lbf)

Y = allen wrench 10 - 24 Nm (17.7 lbf)

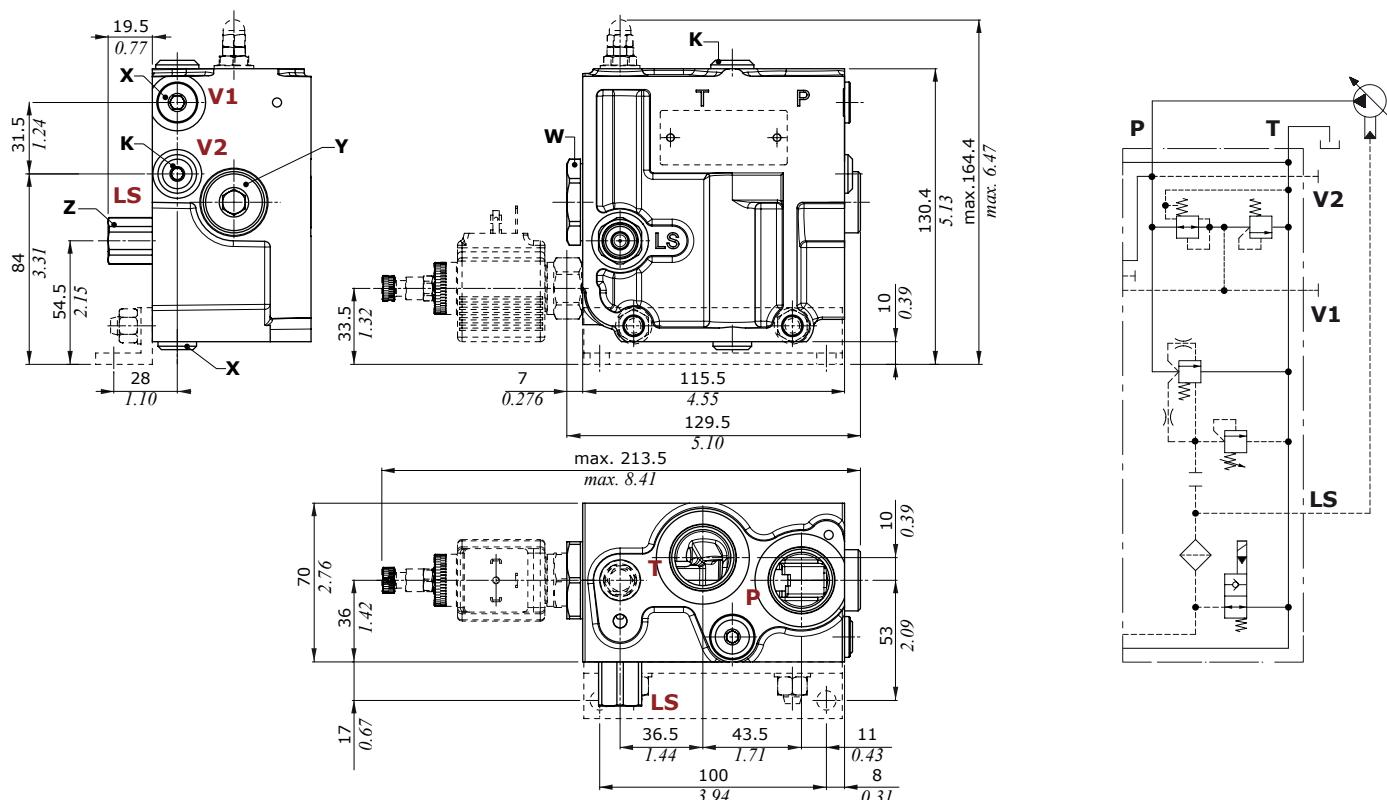
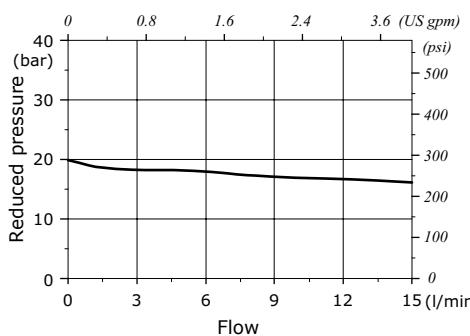
Z = wrench 19 - 24 Nm (17.7 lbf)

W = wrench 34 - 42 Nm (31 lbf)

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 with pressure 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)

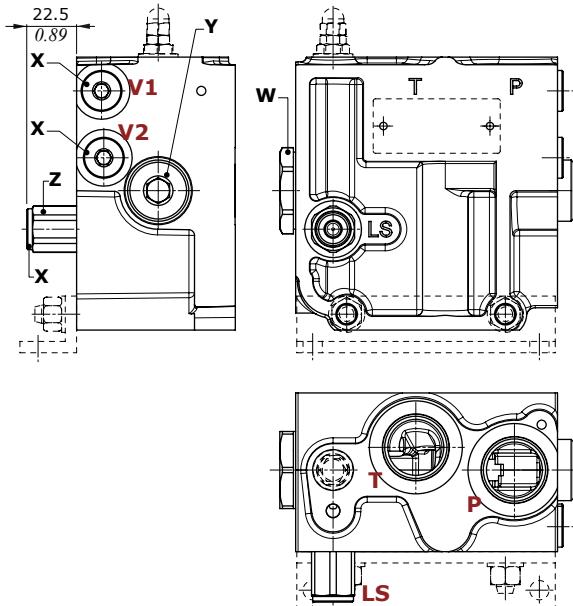
NOTE: for relief valve and solenoid valve wrench and torque please see page 21.

**Auxiliary port specification****V1** = SAE6 pilot pressure port ( $P_{max} = 30$  bar / 435 psi) for hydraulic pilot control valves feeding ( $P \Rightarrow OUT$ )**V2** = M14x1.5 pilot pressure port for:

- electrohydraulic controls optional feeding ( $P_{max} = 315$  bar / 4600 psi) ( $P \Rightarrow IN$ ); SAE6 joint is required, code 5GIU519612
- pressure gauge connection; SAE6 joint is required, code 5GIU620331.

**Inlet section****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** = SAE6 pilot pressure port for electrohydraulic control feeding ( $P_{max} = 30$  bar - 435 psi) ( $P \Rightarrow IN$ )

**V2** = SAE6 pressure gauge connection

**Wrenches and tightening torque**

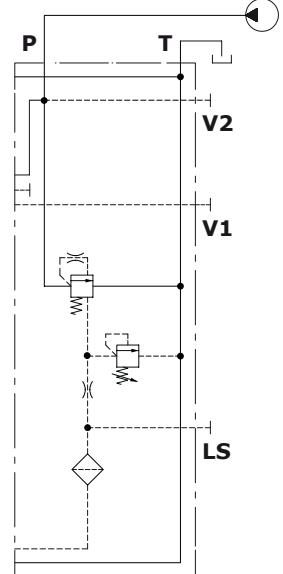
X = allen wrench 6 - 24 Nm (17.7 lbft)

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

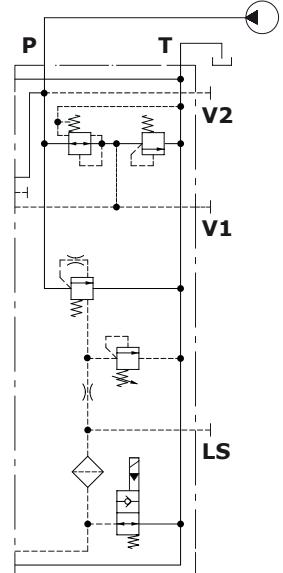
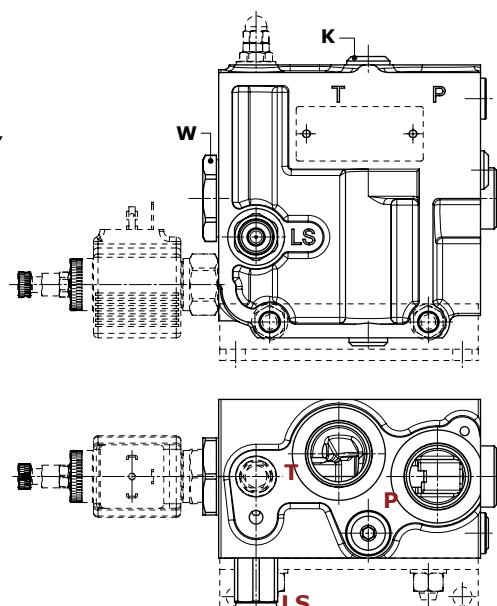
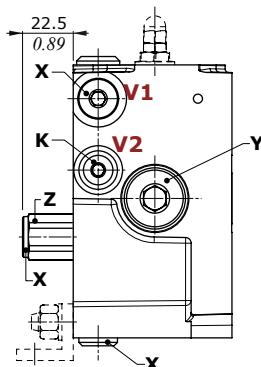
Z = wrench 19 - 24 Nm (17.7 lbft)

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 ( $P_{max} = 30$  bar - 435 psi) for hydraulic pilot control valve feeding ( $P \Rightarrow OUT$ )

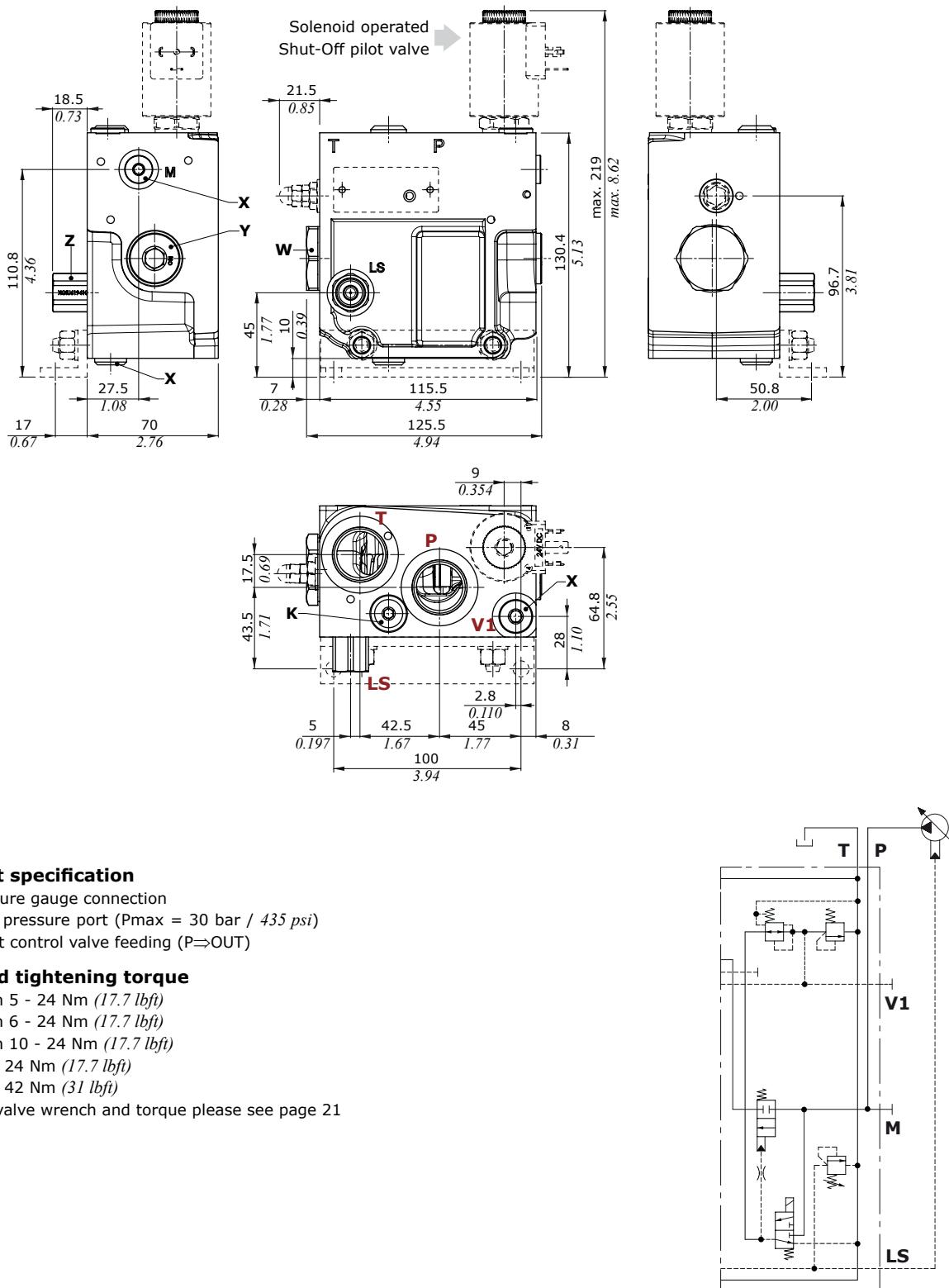
**V2** = M14x1.5 pilot pressure port for:

- electrohydraulic control optional feeding ( $P_{max} = 315$  bar - 4600 psi) ( $P \Rightarrow IN$ ); 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 = SAE6 pressure gauge connection

V1 = SAE6 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 lbf ft)

X = allen wrench 6 - 24 Nm (17.7 lbf ft)

Y = allen wrench 10 - 24 Nm (17.7 lbf ft)

Z = wrench 19 - 24 Nm (17.7 lbf ft)

W = wrench 34 - 42 Nm (31 lbf ft)

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

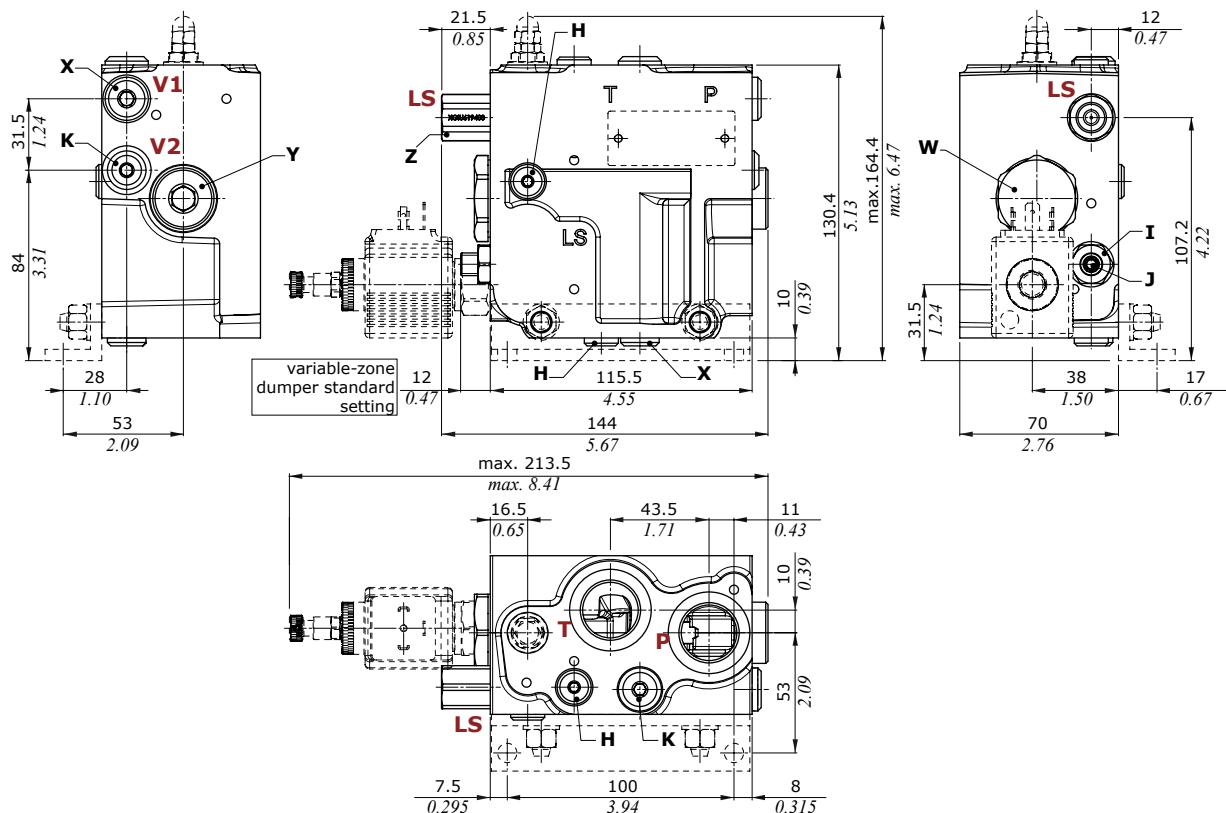
## Inlet section

## 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.



## Auxiliary port specification

**V1** = SAE6 pilot pressure port ( $P_{max} = 30 \text{ bar} - 435 \text{ psi}$ ) for hydraulic pilot control valve feeding ( $P \Rightarrow \text{OUT}$ )

**V2** = M14x1.5 pilot pressure port for:

- electrohydraulic control optional feeding ( $P_{max} = 315 \text{ bar} - 4600 \text{ psi}$ ) ( $P \Rightarrow \text{IN}$ ); SAE6 joint is required, code 5GIU519612
- pressure gauge connection; SAE6 joint, is required code 5GIU620331.

## 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)

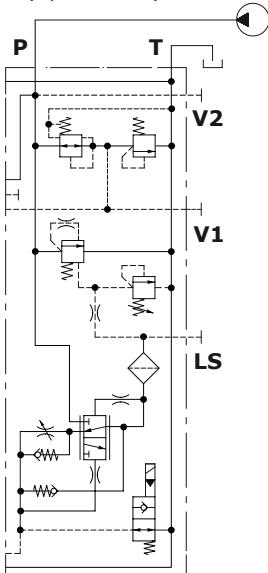
Y = allen wrench 10 - 24 Nm (17.7 lbft)

Z = wrench 19 - 24 Nm (17.7 lbft)

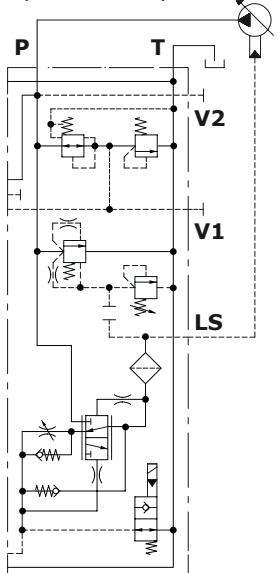
W = wrench 34 - 42 Nm (31 lbft)

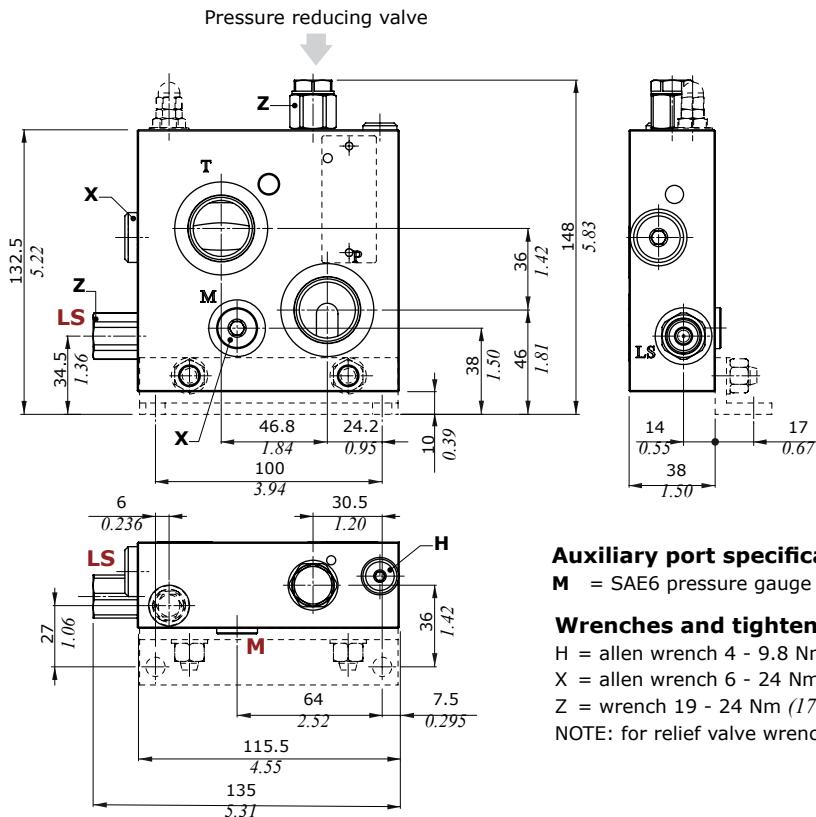
NOTE: for relief valve and solenoid valve wrench and torque please see page 21.

**BRS11 type**  
(Open Center)



**BRS21 type**  
(Closed Center)



**Inlet section****Dimensions and hydraulic circuit****Inlet section with secondary pressure control system: BRF type****Auxiliary port specification**

**M** = SAE6 pressure gauge connection

**Wrenches and tightening torque**

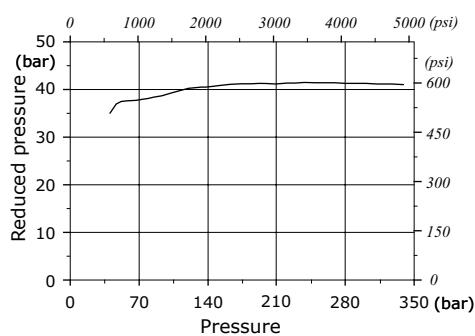
H = allen wrench 4 - 9.8 Nm (7.2 lbf)

X = allen wrench 6 - 24 Nm (17.7 lbf)

Z = wrench 19 - 24 Nm (17.7 lbf)

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

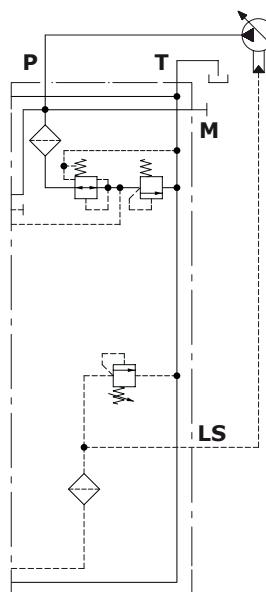
**Pressure reducing valve diagram**  
**Reduced pressure vs. Inlet pressure**

**Pressure reducing valve features**

Max. inlet pressure . . . . . : 380 bar (5550 psi)

Reduced pressure range . . . . . : from 30 to 45 bar  
(from 435 to 650 psi)

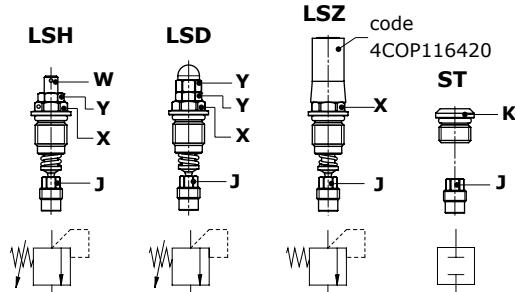
Max. back pressure . . . . . : 25 bar (363 psi)



## Inlet section

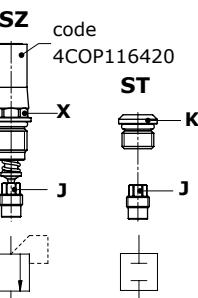
## L.S. pressure relief valve

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



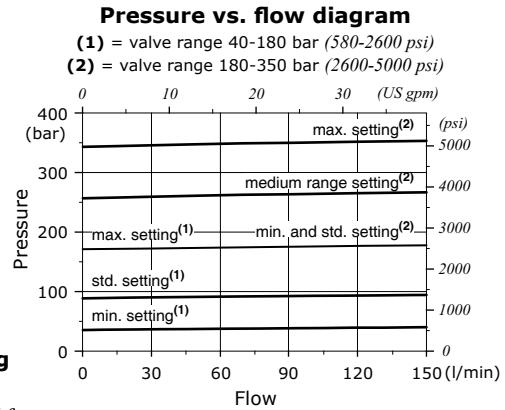
## Legenda

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



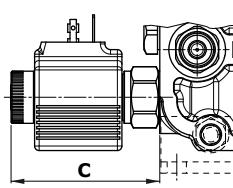
## Wrenches and tightening torques

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)

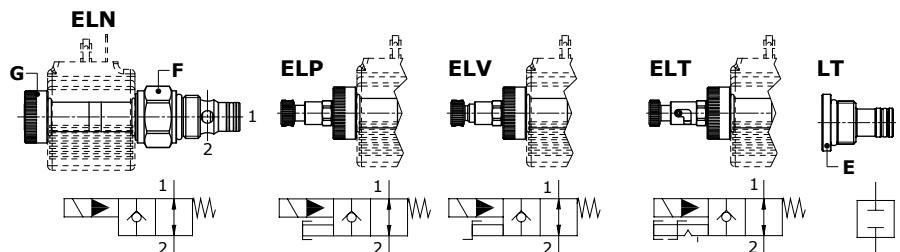


## Solenoid operated L.S. unloading valve

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 cm<sup>3</sup>/min @ 210 bar  
 (0.015 in<sup>3</sup>/min @ 3050 psi)

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

## Legenda

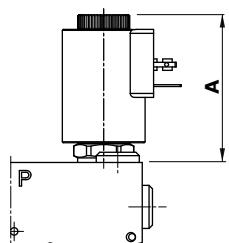
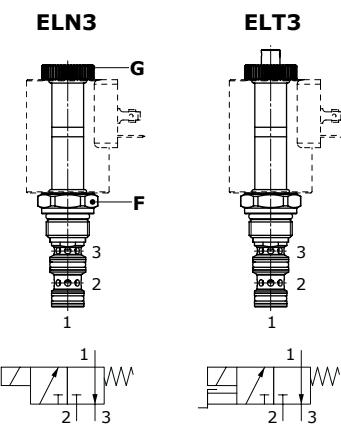
ELN: without emergency  
 ELP: push button emergency override  
 ELV: screw emergency override  
 ELT: "push&twist" emergency override  
 LT: valve blanking plug

## 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

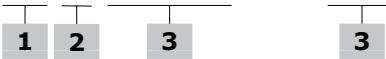
## Features

Max. flow ..... : 3 l/min (0.80 US gpm)  
 Max. pressure ..... : 350 bar (5100 psi)  
 Internal leakage ..... : 10 cm<sup>3</sup>/min @ 210 bar  
 (0.61 in<sup>3</sup>/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



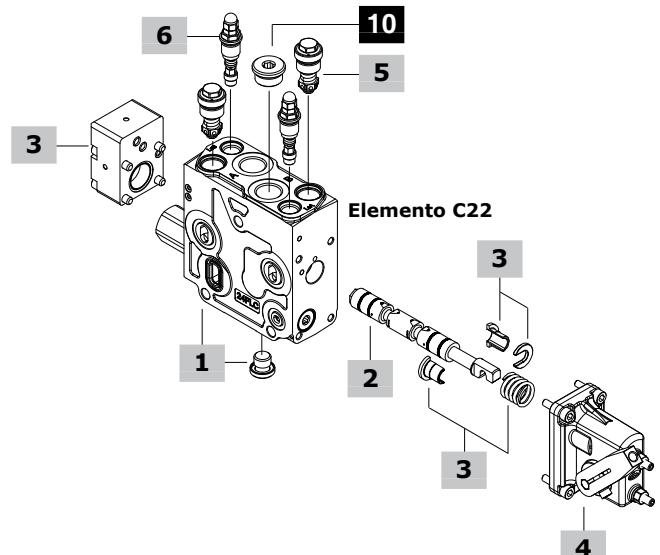
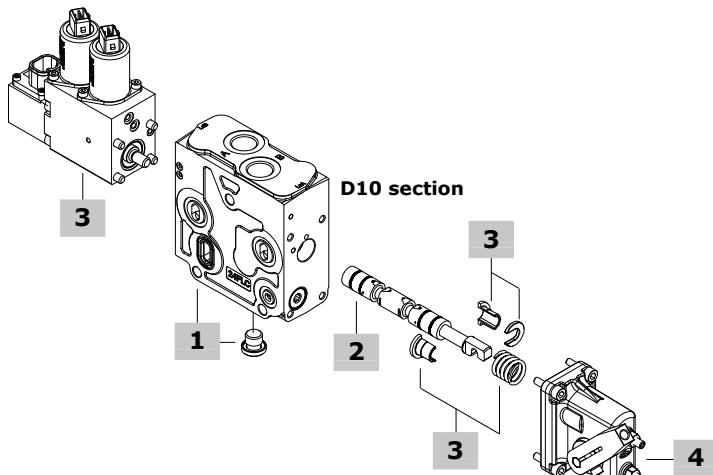
DPC130/C22-1S 8IM L 1 . U100U320 S250S250.....

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

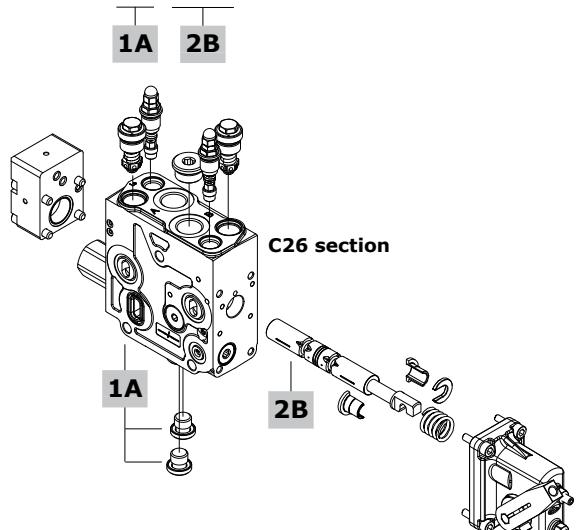
DPC130/C22-1S 8IM L 1 . U100U320 S250S250.....



Lever position: please see page 45



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

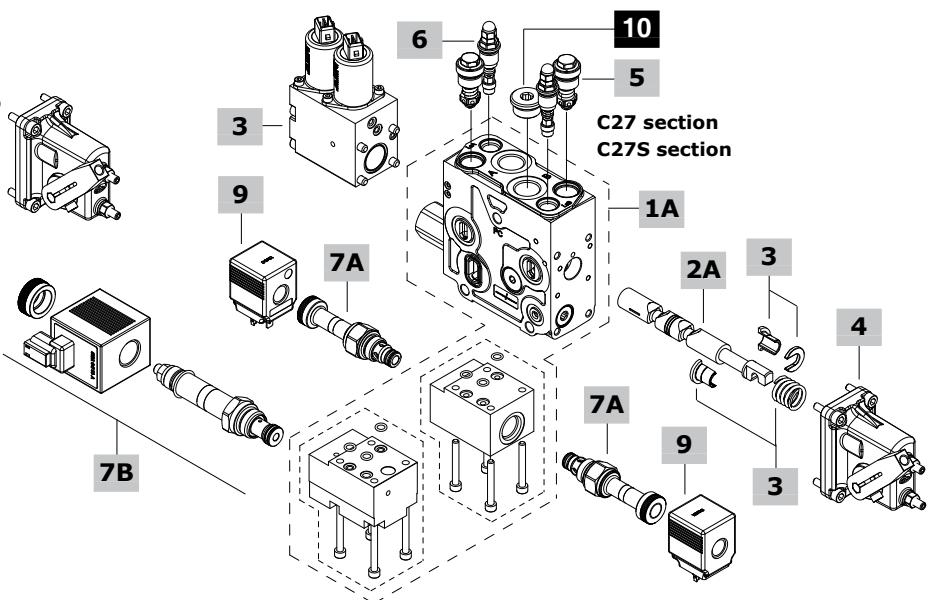
valve on A port - 1  
valve on B port - 2  
valve on A and B ports - 3

A port B port A port B port

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



Lever position: see page 45



**Working section parts ordering codes****1 Working section kit\* page 26****With compensator**

TYPE: <b>DPC130/C10-SAE</b>	CODE: 5EL6311710
DESCRIPTION: Without valve arrangement	
TYPE: <b>DPC130/C13-SAE</b>	CODE: 5EL6311713
DESCRIPTION: As previous with additional L.S. upper port	
TYPE: <b>DPC130/C20-SAE</b>	CODE: 5EL6311720
DESCRIPTION: With port valve arrangement	
TYPE: <b>DPC130/C24-SAE</b>	CODE: 5EL6311730
DESCRIPTION: As previous with additional L.S. upper port	
TYPE: <b>DPC130/C21-SAE</b>	CODE: 5EL6311721
DESCRIPTION: Arranged for port valve and one L.S. relief valve	
TYPE: <b>DPC130/C23-SAE</b>	CODE: 5EL6311723
DESCRIPTION: As previous with additional L.S. upper port	
TYPE: <b>DPC130/C22-SAE</b>	CODE: 5EL6311722
DESCRIPTION: Arranged for port valve and two L.S. relief valves	
TYPE: <b>DPC130/F10-SAE</b>	CODE: 5EL6314710
DESCRIPTION: For floating circuit, without port valve arrangement	
TYPE: <b>DPC130/F20-SAE</b>	CODE: 5EL6314720
DESCRIPTION: For floating circuit, with port valve arrangement	
TYPE: <b>DPC130/CM23-SAE</b>	CODE: 5EL6311729
DESCRIPTION: For regenerative circuit, arranged for port valve and one L.S. relief valve	

**Without compensator**

TYPE: <b>DPC130/D10-SAE</b>	CODE: 5EL6312710
DESCRIPTION: Without valve arrangement	
TYPE: <b>DPC130/D20-SAE</b>	CODE: 5EL6312720
DESCRIPTION: With port valve arrangement	
TYPE: <b>DPC130/D21-SAE</b>	CODE: 5EL6312721
DESCRIPTION: Arranged for port valve and one L.S. relief valve	
TYPE: <b>DPC130/G20-SAE</b>	CODE: 5EL6315720
DESCRIPTION: For floating circuit, with port valve arrangement	
TYPE: <b>DPC130/DM23-SAE</b>	CODE: 5EL6312750
DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve	
<b><u>Without compensator, with check valve</u></b>	
TYPE: <b>DPC130/CV10-SAE</b>	CODE: 5EL6311710A
DESCRIPTION: Without valve arrangement	
TYPE: <b>DPC130/CV13-SAE</b>	CODE: 5EL6311726
DESCRIPTION: As previous with additional L.S. upper port	
TYPE: <b>DPC130/CV20-SAE</b>	CODE: 5EL6311724
DESCRIPTION: With port valves arrangement	
TYPE: <b>DPC130/CV21-SAE</b>	CODE: 5EL6311727
DESCRIPTION: Arranged for port valves and one L.S. relief valve	
TYPE: <b>DPC130/CV23-SAE</b>	CODE: 5EL6311728
DESCRIPTION: As previous with additional L.S. upper port	
TYPE: <b>DPC130/CV22-SAE</b>	CODE: 5EL6311722A
DESCRIPTION: Arranged for port valves and two L.S. relief valves	
TYPE: <b>DPC130/FV20-SAE</b>	CODE: 5EL6314725
DESCRIPTION: For floating circuit, with port valve arrangement	
TYPE: <b>DPC130/CVM23-SAE</b>	CODE: 5EL6311750
DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve	

NOTE (\*): Codes are referred to **UN-UNF** thread.**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: <b>DPC130/C26</b>	CODE: 5EL6327000
DESCRIPTION: Arranged for port valves and two L.S. relief with independent drain	
TIPO: <b>DPC130/C27</b>	CODE: 5EL6327100
DESCRIPTION: As previous one, with lower block for L.S. signal on/off unloader valve arrangement	
TYPE: <b>DPC130/C27SA</b>	CODE: 5EL6327100B
DESCRIPTION: As type C26, with lower block for proportional unloader valve arrangement on port A L.S. signal	
TYPE: <b>DPC130/C27SB</b>	CODE: 5EL6327100C
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
<u>Double acting with A and B closed in neutral position</u>		
<b>1C</b>	3CU4010005	5 l/min (1.3 US gpm) flow
<b>1D</b>	3CU4010010	10 l/min (2.6 US gpm) flow
<b>1V</b>	3CU4010025	25 l/min (6.6 US gpm) flow
<b>1Q</b>	3CU4010040	40 l/min (10.6 US gpm) flow
<b>1S</b>	3CU4010060	60 l/min (15.9 US gpm) flow
<b>1N</b>	3CU4010080	80 l/min (21.1 US gpm) flow
<b>1PN</b>	3CU4010103	100 l/min (26.4 US gpm) flow
<u>Double acting with A and B to tank in neutral position</u>		
<b>2C</b>	3CU4024005	5 l/min (1.3 US gpm) flow
<b>2D</b>	3CU4024010	10 l/min (2.6 US gpm) flow
<b>2V</b>	3CU4024025	25 l/min (6.6 US gpm) flow
<b>2Q</b>	3CU4024040	40 l/min (10.6 US gpm) flow
<b>2S</b>	3CU4024060	60 l/min (15.9 US gpm) flow
<b>2N</b>	3CU4024080	80 l/min (21.1 US gpm) flow
<b>2P</b>	3CU4024100	100 l/min (26.4 US gpm) flow
<u>Double acting with A and B partially to tank in neutral position</u>		
<b>2HC</b>	3CU4025006	5 l/min (1.3 US gpm) flow
<b>2HD</b>	3CU4025011	10 l/min (2.6 US gpm) flow
<b>2HV</b>	3CU4025034	25 l/min (6.6 US gpm) flow
<b>2HQ</b>	3CU4025047	40 l/min (10.6 US gpm) flow
<b>2HS</b>	3CU4025061	60 l/min (15.9 US gpm) flow
<b>2HN</b>	3CU4025081	80 l/min (21.1 US gpm) flow
<b>2HP</b>	3CU4025102	100 l/min (26.4 US gpm) flow
<u>Single acting on A, B plugged: SAE10 plug is required</u>		
<b>3Q</b>	3CU4031040	40 l/min (10.6 US gpm) flow
<b>3S</b>	3CU4031060	60 l/min (15.9 US gpm) flow
<b>3N</b>	3CU4031080	80 l/min (21.1 US gpm) flow
<b>3PN</b>	3CU4031100	100 l/min (26.4 US gpm) flow
<u>Double acting with A and B closed in neutral position, 4 positions, floating in 4<sup>th</sup> pos. with spool out: F, G or FV type section and 13 type positioner or control are required</u>		
<b>5Q</b>	3CU4041040	40 l/min (10.6 US gpm) flow
<b>5S</b>	3CU4041060	60 l/min (15.9 US gpm) flow
<b>5N</b>	3CU4041080	80 l/min (21.1 US gpm) flow
<u>Double acting with A and B closed in neutral position, 3 positions, regenerative in 3<sup>rd</sup> pos. with spool out: CM, DM or CVM type section, and 8 type dedicated control, with reduced stroke, are required</u>		
<b>8F</b>	3CU4033070	50-70 l/min flow (port A-port B) (13.2-18.5 US gpm)
<u>Double acting with A and B closed in neutral position, 4 positions, regenerative in 4<sup>th</sup> pos. with spool out: CM, DM or CVM type section and dedicated 13 type positioner or control are required</u>		
<b>8Y</b>	3CU4044070	70 l/min (18.5 US gpm) flow

**Working section parts 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) flowDouble 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); control on A and B**1PCV** 3CU401P025 25 l/min (6.6 US gpm); control on A and B**1PC2D** 3CU401P010A 10 l/min (2.6 US gpm); control on B**1PC2V** 3CU401P025A 25 l/min (6.6 US gpm); control on B**1PC2Q** 3CU401P040A 40 l/min (10.6 US gpm); control on BDoppio effetto con A e B parz. a scarico in posizione centrale**2HPCD** 3CU402P010 10 l/min (2.6 US gpm); control on A and B**2HPCV** 3CU402P025 25 l/min (6.6 US gpm); control on A and B**2HPC2D** 3CU402P010A 10 l/min (2.6 US gpm); control on B**2HPC2V** 3CU402P025A 25 l/min (6.6 US gpm); control on B**2HPC2Q** 3CU402P040A 40 l/min (10.6 US gpm); control on B**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 4<sup>th</sup> position, with spring return to neutral position

NOTE (\*): This control requires modification to the standard spool:

for spool replacement see page 32.

**Proportional hydraulic controls****8IM** 5V08130870\* Range 5-15 bar (73-218 psi)

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

**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 connectorFor 3 position regenerative circuit: **type 8F spool is required****8EZ3CR-12VDC** 5V08130798 With ISO4400 connector**8EZ3CR-24VDC** 5V08130799 With ISO4400 connectorFor 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 control require modification to the standard spool:

for spool replacement 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 valveFixed 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)

**Working section parts 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
<b>LSD</b>	<b>S</b>	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)
<b>LSH</b>	<b>H</b>	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)
<b>LSZ</b>	<b>Z</b>	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)
<b>ST</b>	<b>ST</b>	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
<b>LST3T</b>	XTAP510320	Valve blanking plug

**Normally open circuit (NO)**

<b>LSTN(NA)</b>	0EC08002031	Without manual emergency
<b>LSTV(NA)</b>	0EC08002034	With screw type emergency
<b>LSTP(NA)</b>	0EC08002033	With push-button emergency
<b>LSTT(NA)</b>	0EC08002035	With "push & twist" emergency

**Normally closed circuit (NC)**

<b>LSTN(NC)</b>	0EC08002032	Without manual emergency
<b>LSTV(NC)</b>	0EC08002037	With screw type emergency
<b>LSTP(NC)</b>	0EC08002036	With pull-button emergency
<b>LSTT(NC)</b>	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
<b>MC10T/031B</b>	OMC10002019	Range from 15 to 130 bar (217 to 1890 psi), 12VDC coil, ISO4400 connector
<b>MC10T/032B</b>	OMC10002020	Range from 15 to 170 bar (217 to 2470 psi), 12VDC coil, ISO4400 connector
<b>MC10T/033B</b>	OMC10002021	Range from 15 to 210 bar (217 to 3050 psi), 12VDC coil, ISO4400 connector
<b>MC10T/034B</b>	OMC10002031	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
<b>12VDC</b>	4SLE001200A	12VDC <b>BER</b> 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

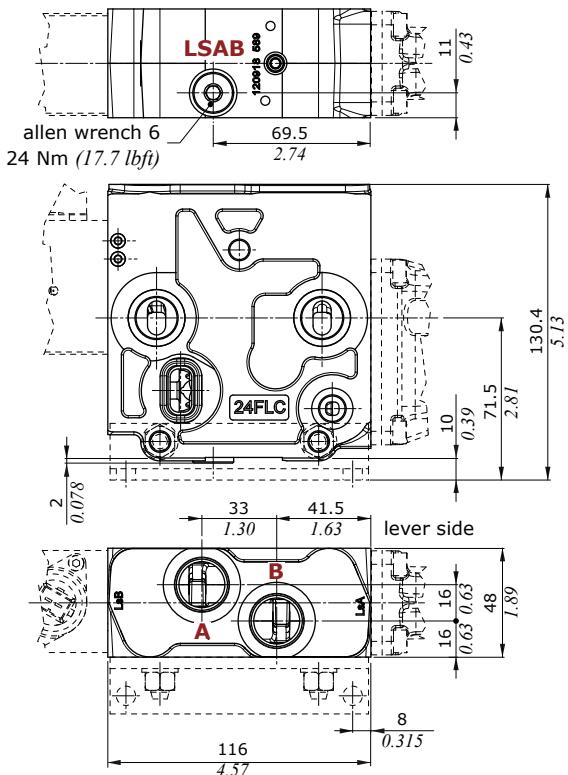
## Working section

### Dimensions and hydraulic circuit

#### Without compensator

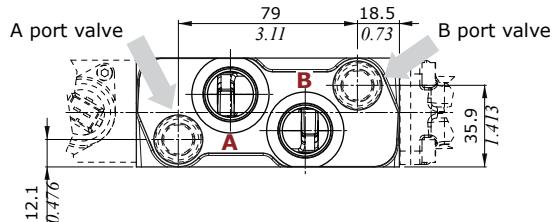
##### D10 type

without port valves arrangement



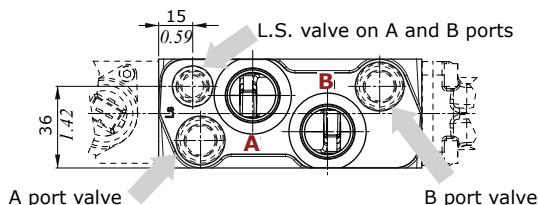
##### D20 type

with port valves arrangement

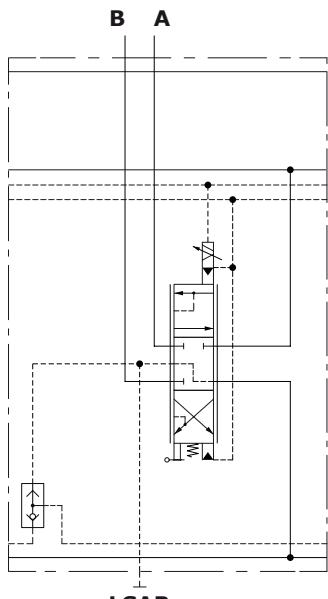


##### D21 type

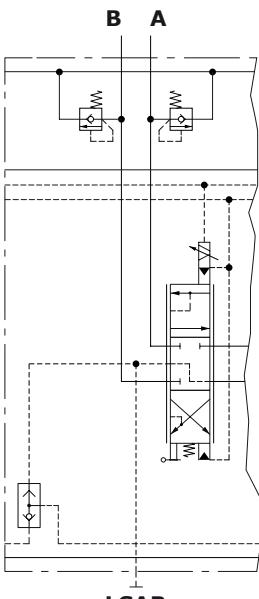
arrangement for port valves and one L.S. relief valve



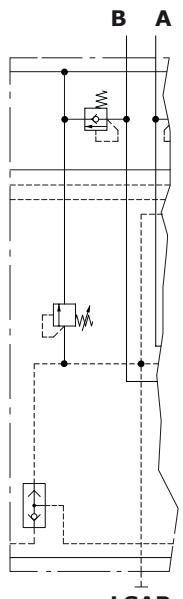
**D10 type**  
without port valve arrangement



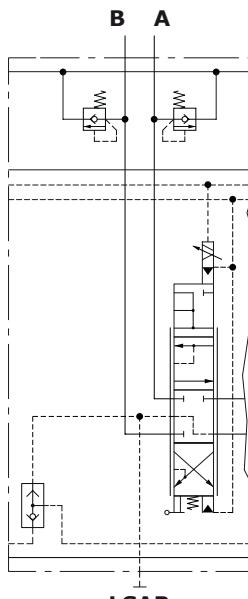
**D20 type**  
with port valve arrangement



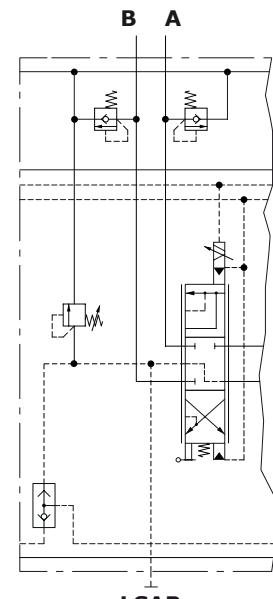
**D21 type**  
as D20, arrangement for one L.S. relief valve



**G20 type**  
as D20, for floating circuit



**DM23 type**  
as D21, for regenerative circuit



## Working section

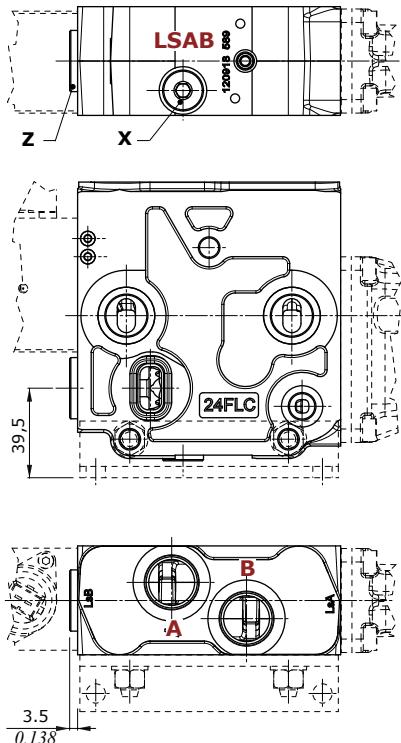
## Dimensions and hydraulic circuit

## Without compensator with check valve

The unlisted dimensions are the same of section without compensator.

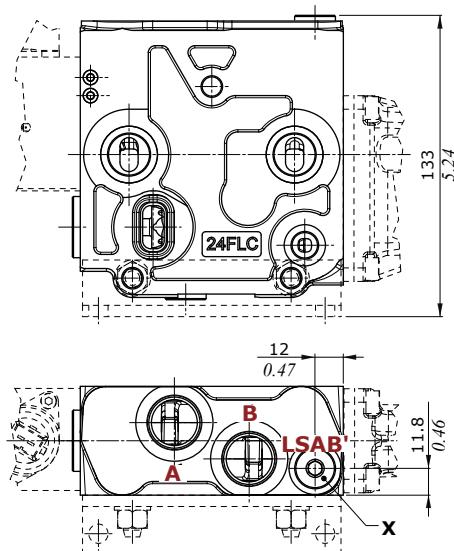
## CV10 type

without port valves arrangement

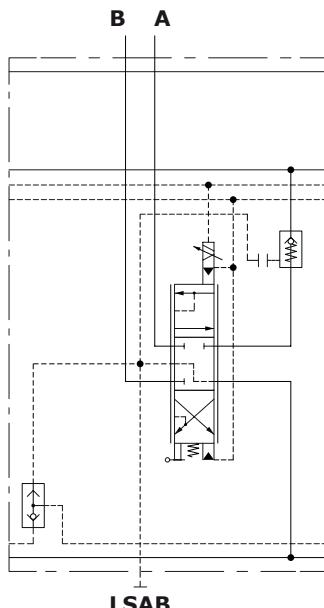


## CV13 type

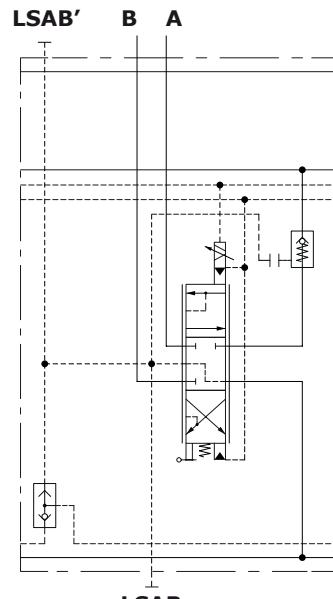
without port valves arrangement,  
with upper L.S. port



## C10 type



## C13 type



## Working section

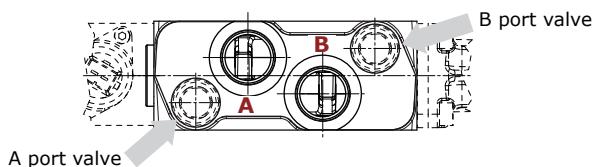
### Dimensions and hydraulic circuit

#### Without compensator with check valve

The unlisted dimensions are the same of section without compensator.

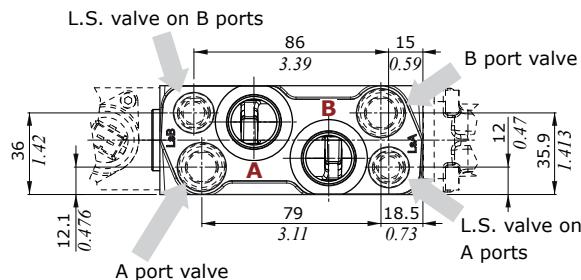
#### CV20 type

with port valves arrangement



#### CV22 type

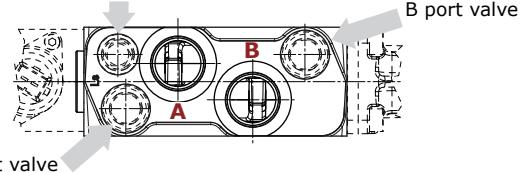
arrangement for port valves and L.S.  
relief valves



#### CV21 type

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

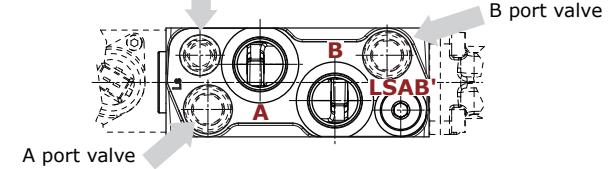
L.S. valve on A and B ports



#### CV23 type

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

L.S. valve on A and B ports



#### CV20 type

#### CV21 type

#### CV22 type

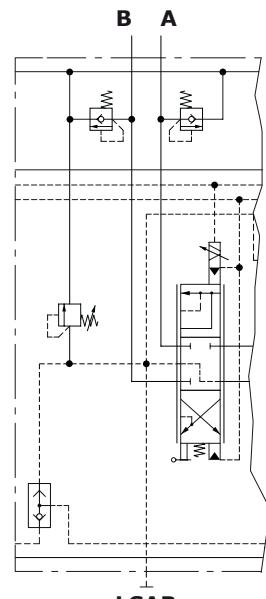
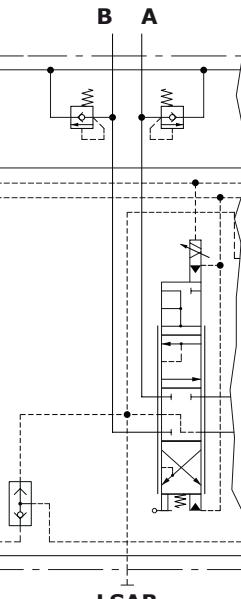
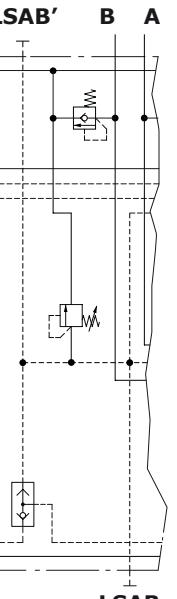
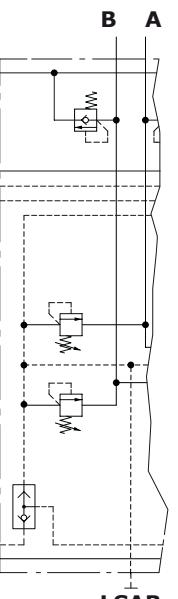
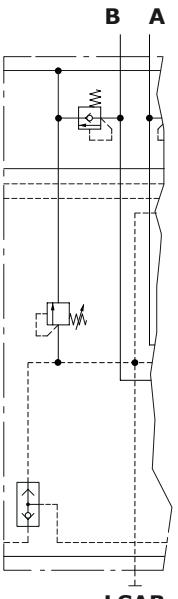
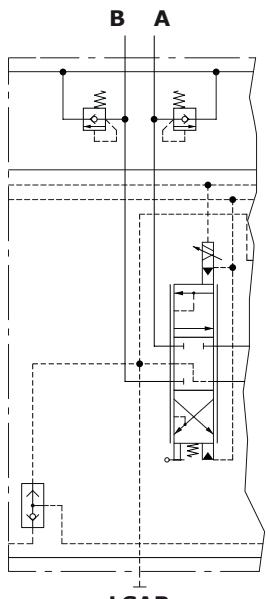
#### CV23 type

#### FV20 type

as CV20,  
for floating circuit

#### CVM23 type

as CV21,  
for regenerative circuit



## Working section

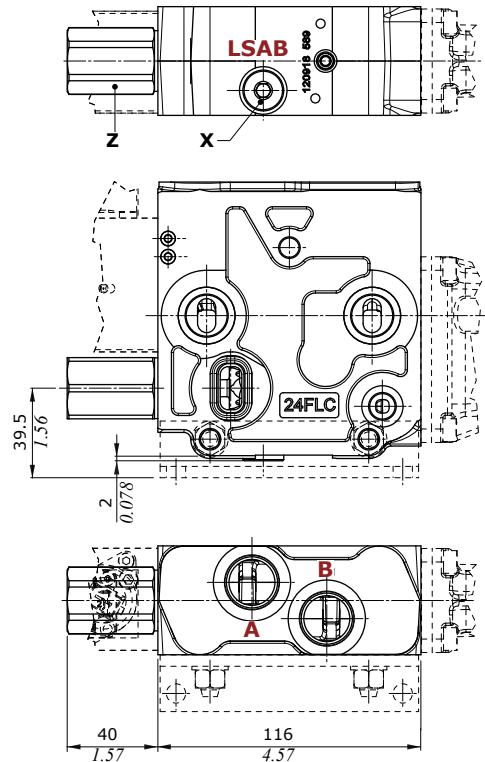
## Dimensions and hydraulic circuit

## With compensator

The unlisted dimensions are the same of previous sections.

## C10 type

without port valves arrangement

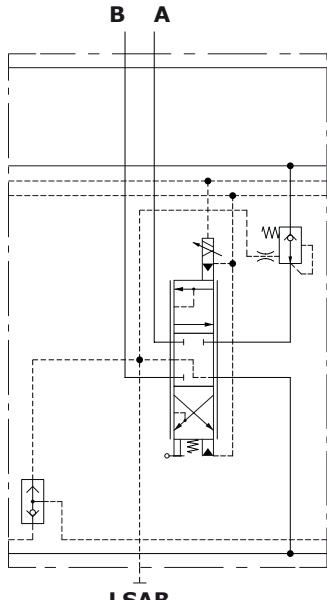


## Wrenches and tightening torque

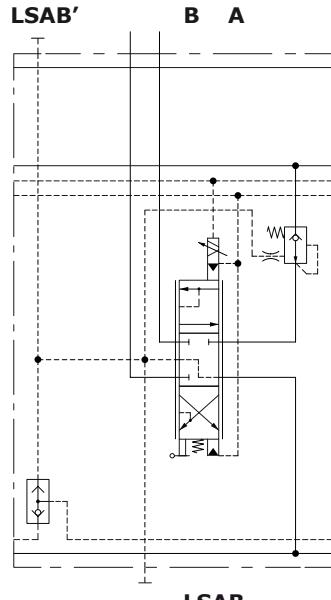
X = allen wrench 6 - 24 Nm (17.7 lbf ft)

Z = wrench 19 - 50 Nm (36.9 lbf ft)

## C10 type

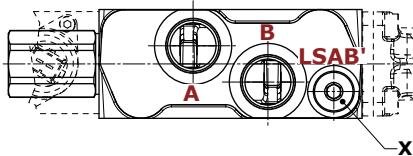


## C13 type



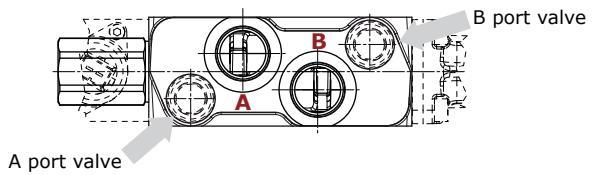
## C13 type

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



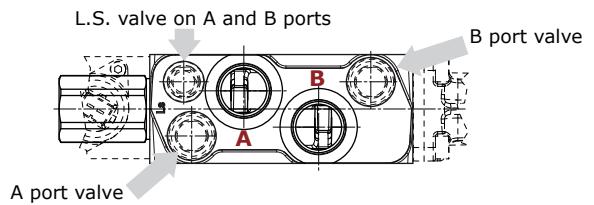
## C20 type

with port valves arrangement

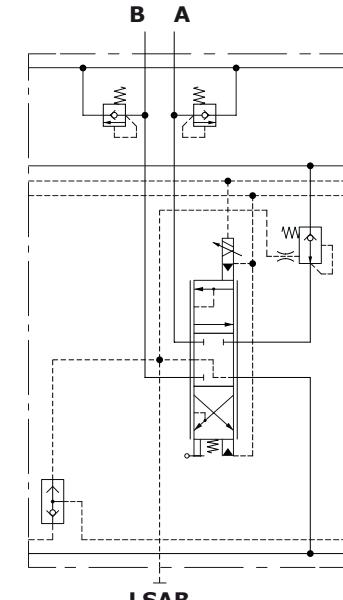


## C21 type

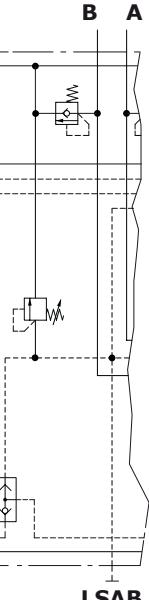
arrangement for port valves and  
one L.S. relief valve



## C20 type



## C21 type



## Working section

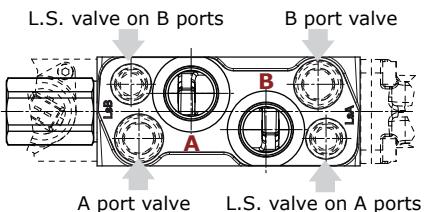
### Dimensions and hydraulic circuit

#### With compensator

The unlisted dimensions are the same of previous sections.

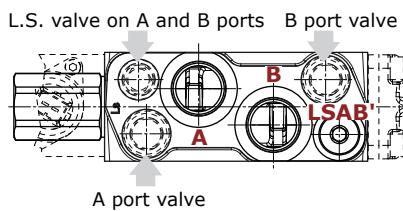
##### C22 type

arrangement for port valves and L.S.  
relief valves



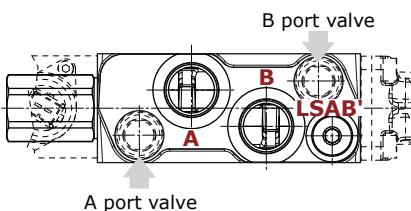
##### C23 type

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

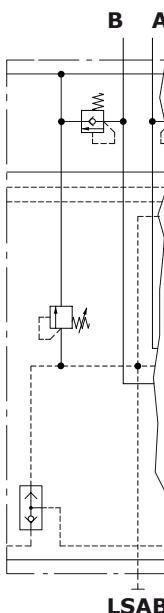


##### C24 type

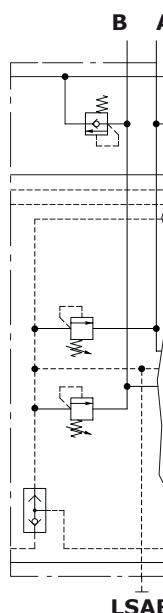
with port valves arrangement  
and upper L.S. port



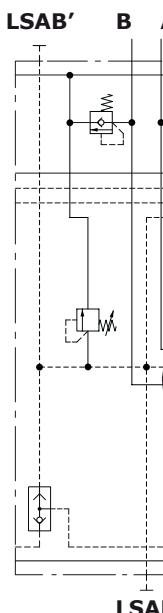
##### C21 type



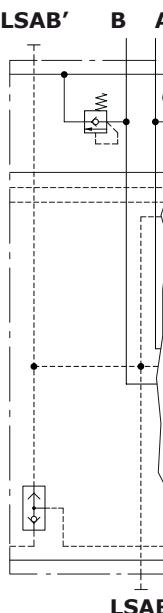
##### C22 type



##### C23 type

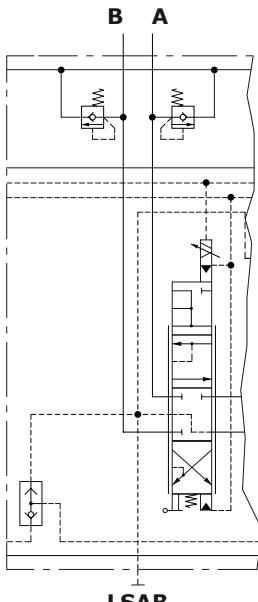


##### C24 type



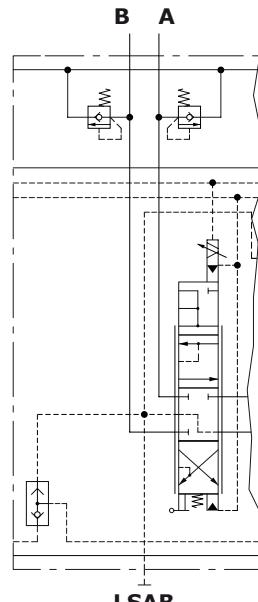
##### F10 type

as C10,  
for floating circuit



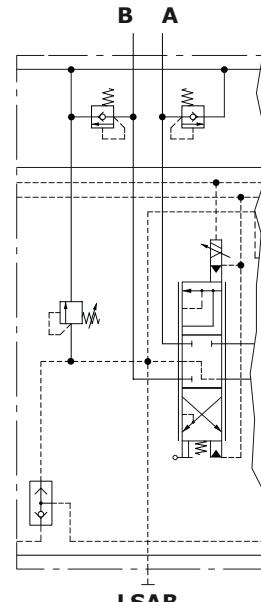
##### F20 type

as C20,  
for floating circuit



##### CM23 type

as C21,  
for regenerative circuit



## Working section

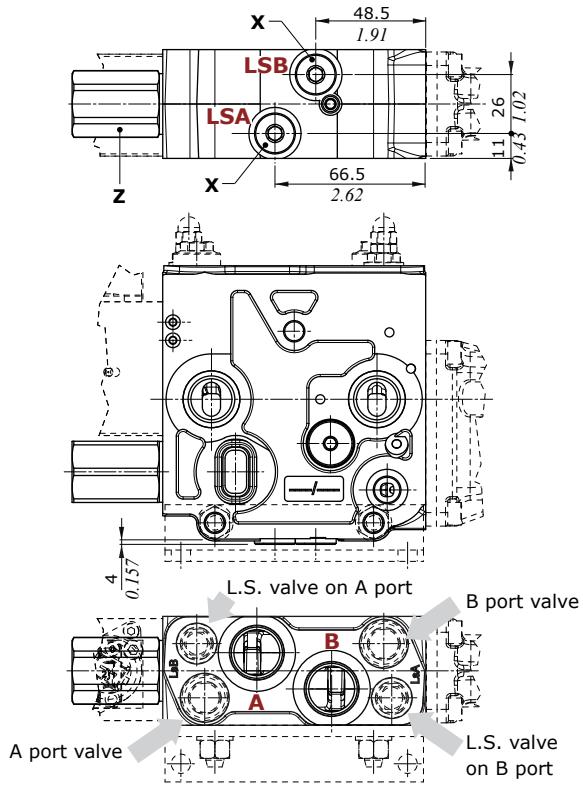
## Dimensions and hydraulic circuit

## With compensator

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

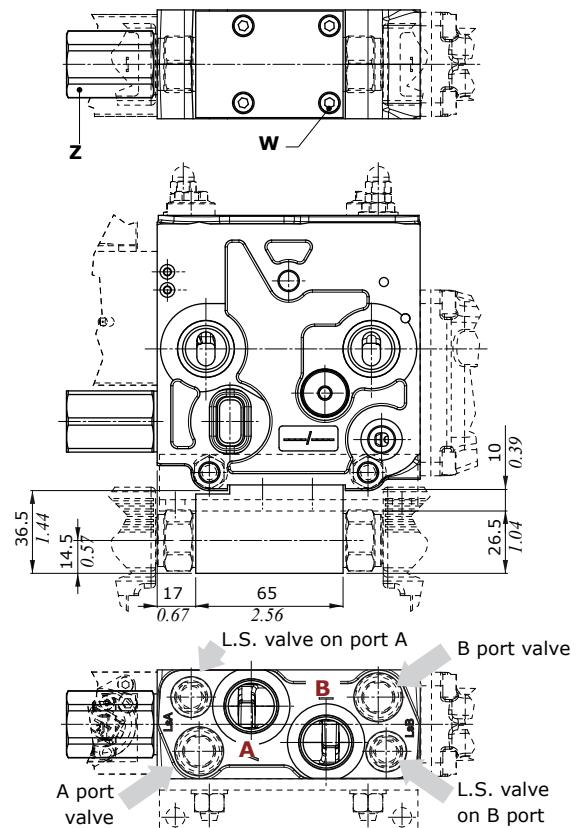
## C26 type

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

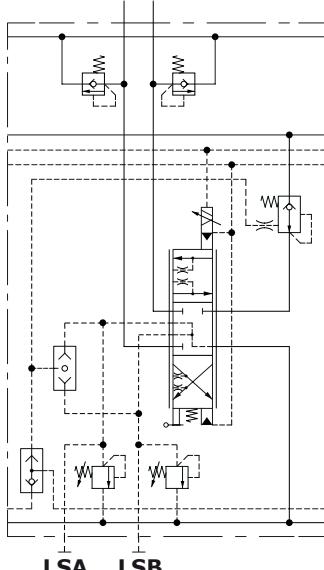


## C27 type

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

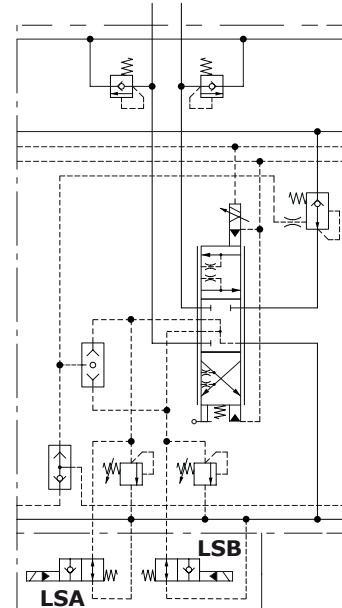


B A



## 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

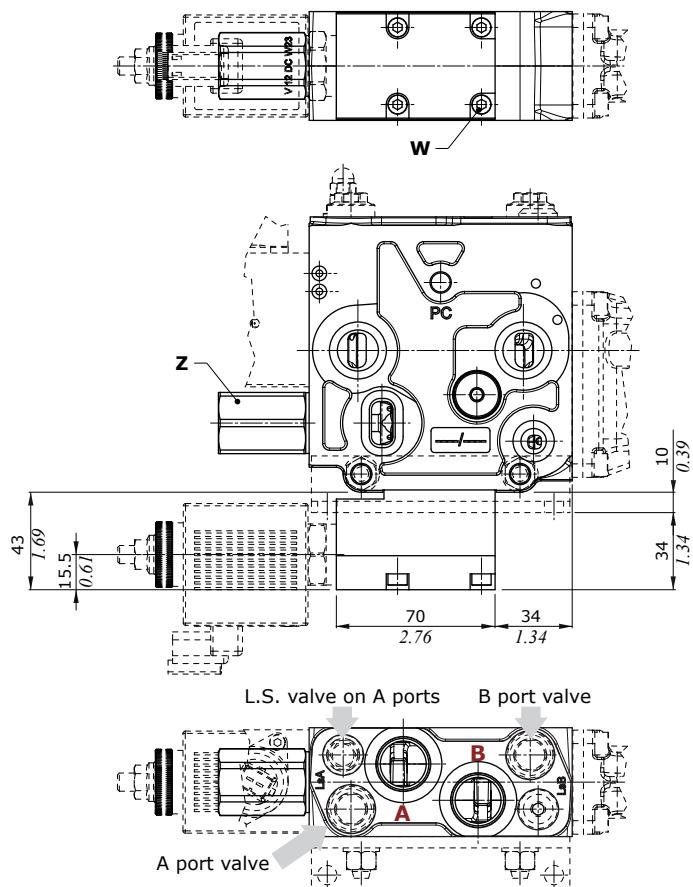
### Dimensions and hydraulic circuit

#### 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

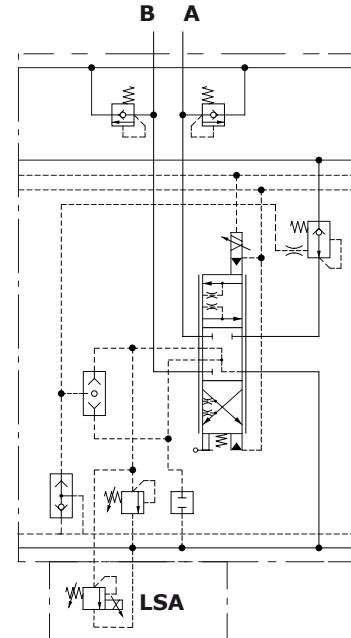
as C26 with proportional unloader  
valve arrangement on port A L.S. signal



#### Wrenches and tightening torque

Z = wrench 19 - 50 Nm (36.9 lbf)

W = allen wrench 4 - 6.6 Nm (4.9 lbf)



## Working section

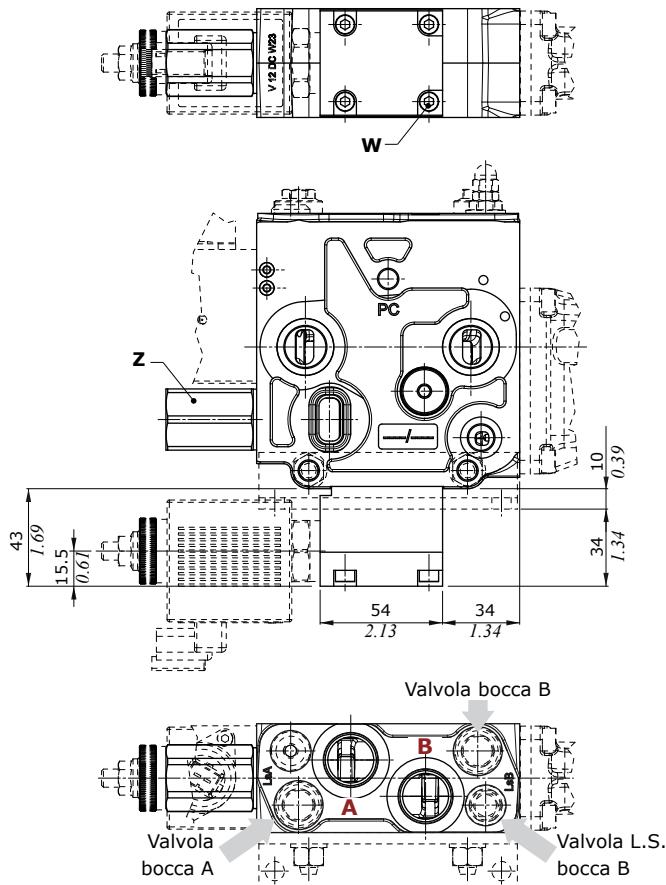
## Dimensions and hydraulic circuit

## 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.

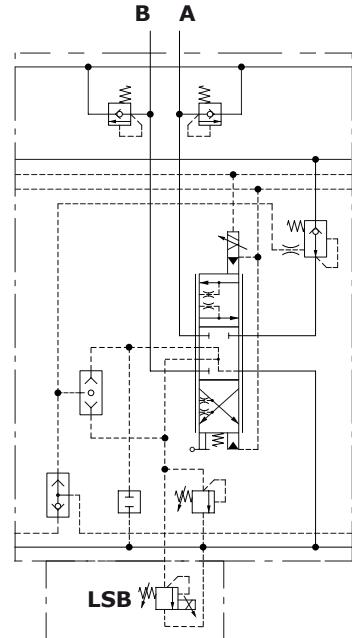
## C27B type

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)

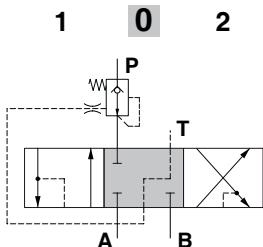


## Working section

### Standard spools

#### 1 type spool

A, B closed in neutral position

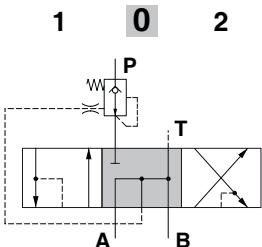


#### Spool stroke

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

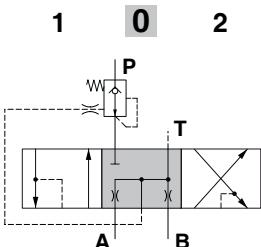


#### Spool stroke

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

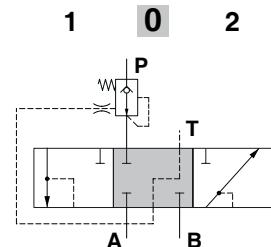


#### Spool stroke

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

#### 3 type spool

single acting on A

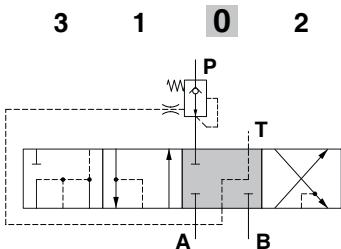


#### Spool stroke

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

#### 5 type spool

floating in 4<sup>th</sup> position (pos.3)

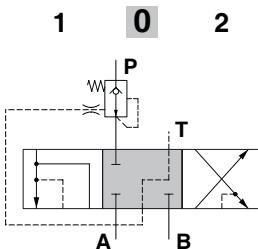


#### Spool stroke

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 2<sup>nd</sup> position (pos.1)

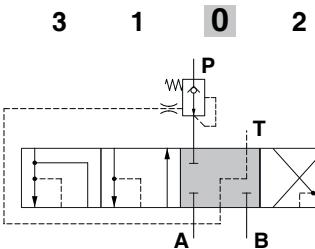


#### Spool stroke

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

#### 8Y type spool

regenerative in 4<sup>th</sup> 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

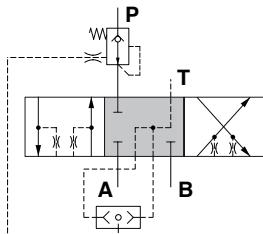
For C26, C27, C27SA, C27SB type working sections.

#### 1..A type spool

A, B closed in neutral position

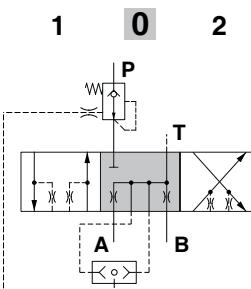
#### 2H..A type spool

A, B partially to tank in neutral position



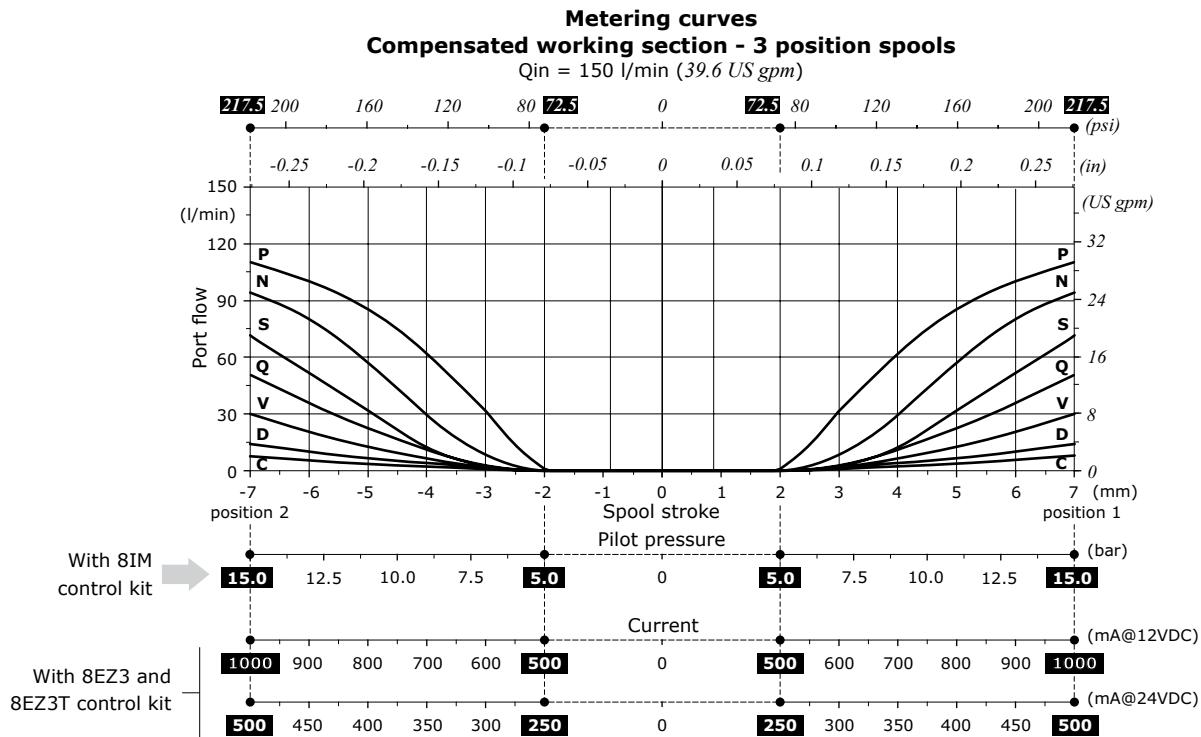
#### 2H..A type spool

A, B partially to tank in neutral position

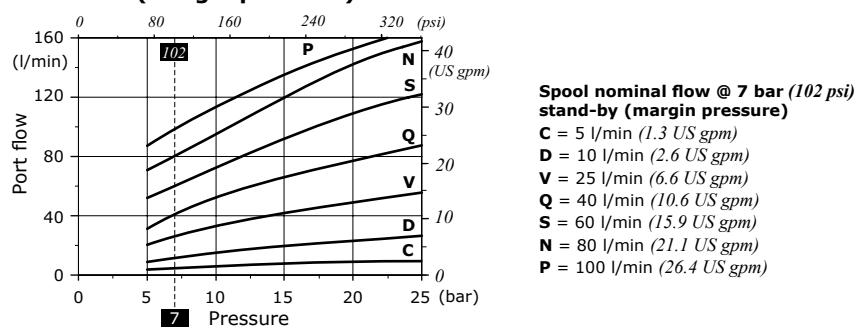


**Working section****Standard and independent spools**

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.



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



## 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  $\Delta P$  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.

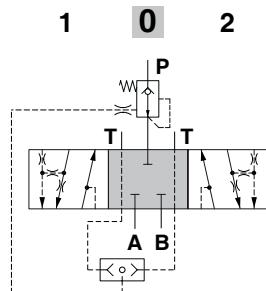
## Working section

## Pressure control spools

## Pressure control on A and B ports

## 1PC(D,V,Q) type spool

A, B closed in neutral position

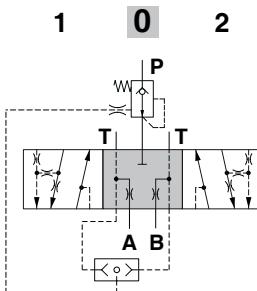


## Spool stroke

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



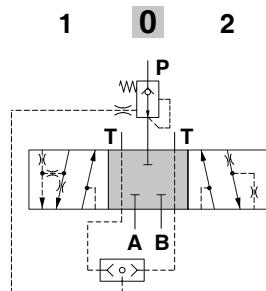
## Spool stroke

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

## Pressure control on B port

## 1PC2(D,V,Q) type spool

A, B closed in neutral position

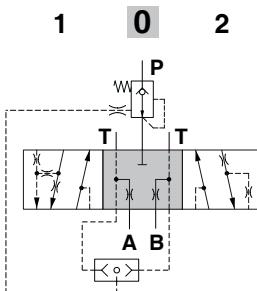


## Spool stroke

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

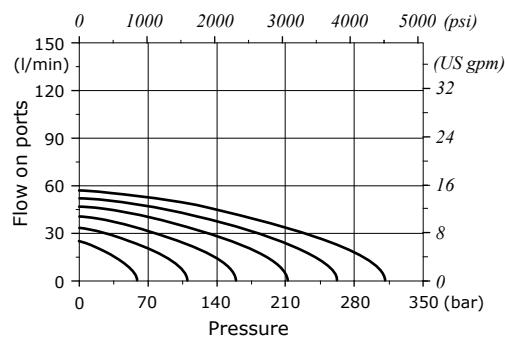
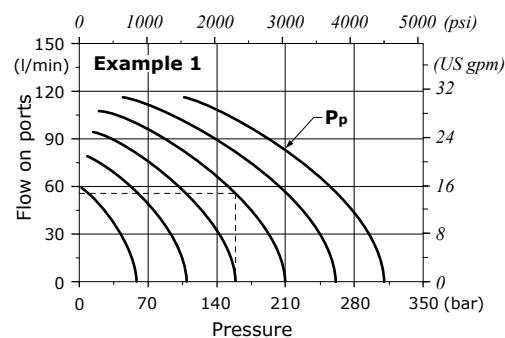
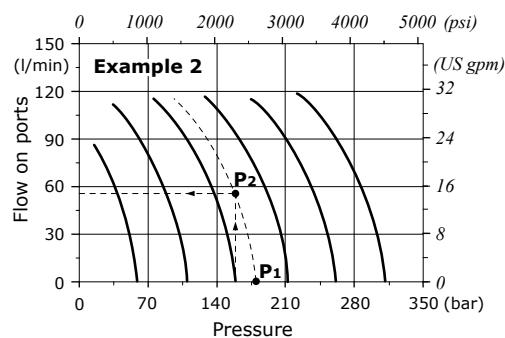
## 2HPC2(D,V,Q) type spool

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 l/min - 2.6 US gpm) spoolFlow vs Pressure curve  
Size D (25 l/min - 6.6 US gpm) spoolFlow 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 setting 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

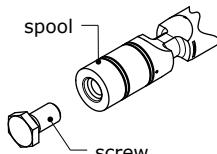
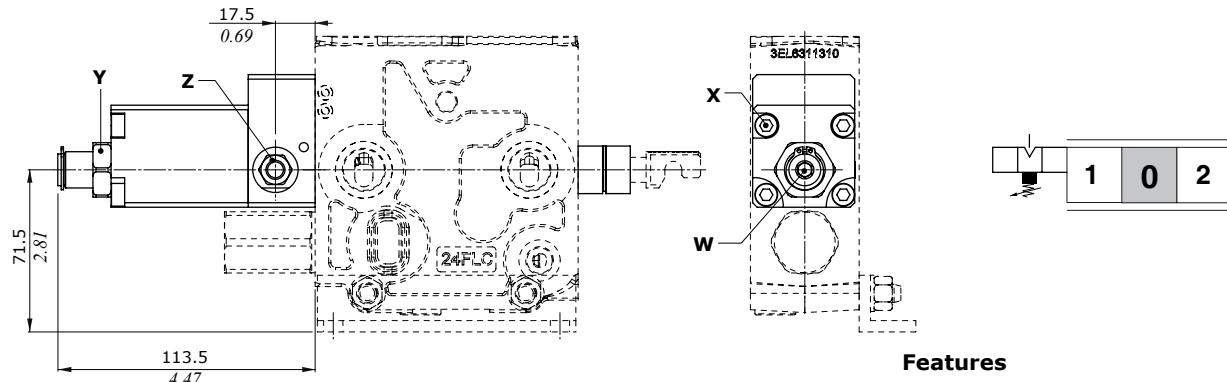
It is necessary to know the flow to port (e.g., 55 l/min - 14.5 US gpm), the setting pressure of the pressure relief valve on the L.S. signal (180 bar - 2600 psi) and the operating pressure (150 bar - 2200 psi).

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



#### 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.

#### Features

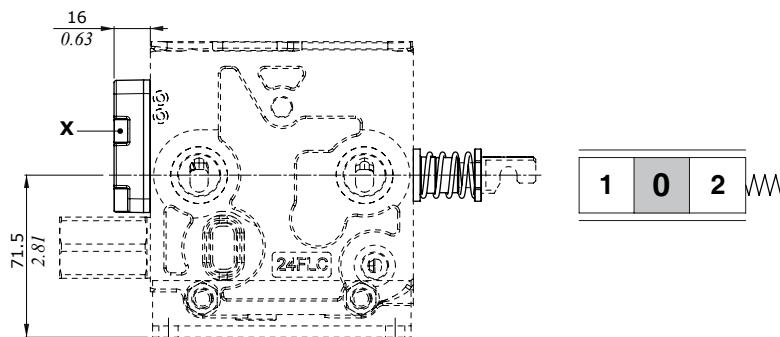
Friction load adjusting . . . : 20-150 N (4.5-34 lbf)  
Friction load std. setting . . : 100 N (22.5 lbf)  
Center tap (more than load) : 100 N (22.5 lbf)

#### 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

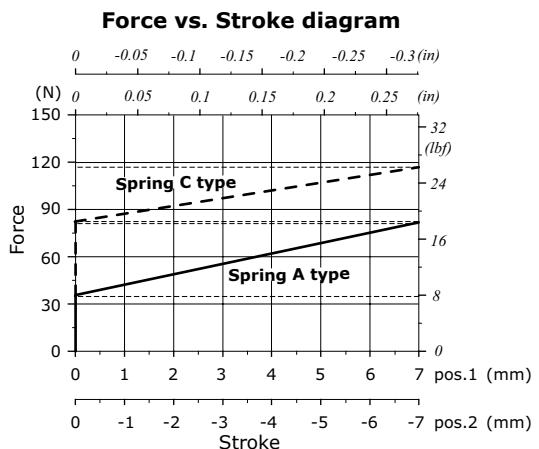
#### With spring return to neutral position: 8 type

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



#### Wrenches and tightening torque

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



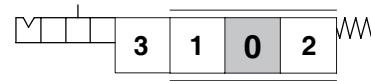
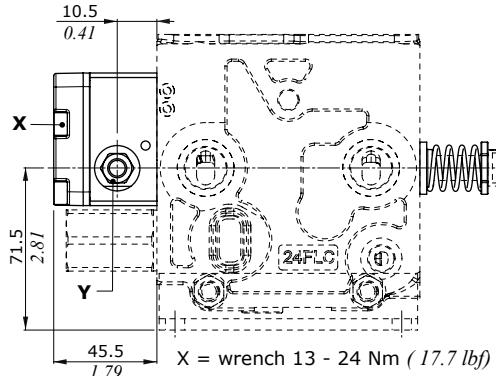
Spring A type = from 35.6 N (8 lbf) to 81.8 N (18.4 lbf)

Spring C type = from 82.3 N (18.5 lbf) to 116.8 N (26.3 lbf)

## Working section

**"A" side spool control kit****With detent in 4<sup>th</sup> position (pos.3), for floating circuit: 13 type**

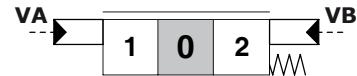
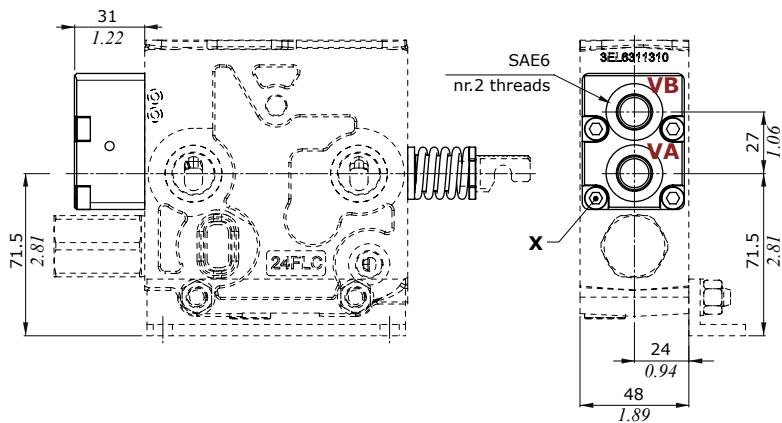
F, G or FV type working sections and floating circuit 5 type spool are requested for.

**Features**

Detent force ( $\pm 10\%$ ) . . . . . : 310 N (70 lbf)  
Release force ( $\pm 10\%$ ) . . . . . : 110 N (24.7 lbf)

**Wrenches and tightening torque**

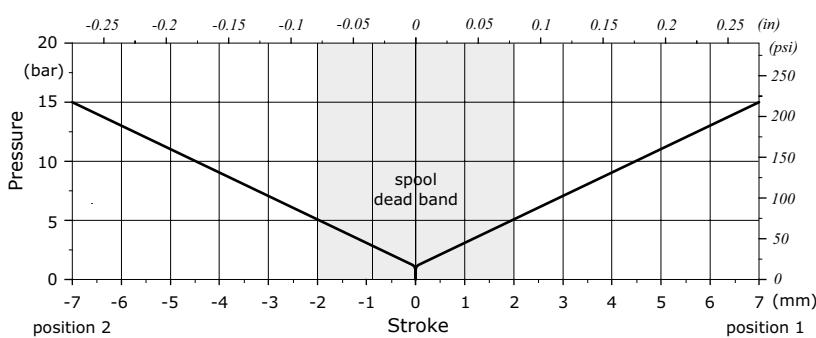
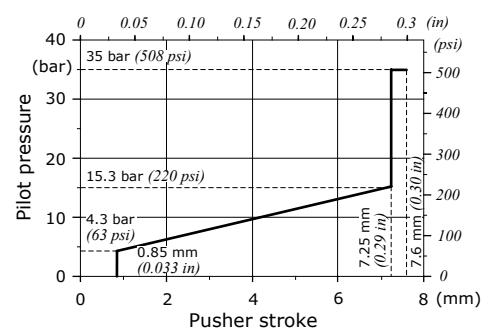
X = allen wrench 5 - 9.8 Nm (7.2 lbf)  
Y = wrench 13 - 24 Nm (17.7 lbf)

**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 mm<sup>2</sup>/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
<b>Electric specifications</b>					
Coil impedance	12 VDC 24 VDC	6.7 Ω 24.7 Ω	4.7 Ω 20.8 Ω	6.7 Ω 24.7 Ω	6.7 Ω 24.7 Ω
Max. operating current	12 VDC 24 VDC	1.79 A 0.97 A	1.50 A 0.75 A	1.79 A 0.97 A	1.79 A 0.97 A
No load current consumption	-	-	-	-	-
Hysteresis max. <sup>(1)</sup>	external drain	10%	10%	10%	10%
Time response	from 0 ⇒ 100% and from 100% ⇒ 0 of stroke	< 150 ms	< 150 ms	< 150 ms	< 150 ms
Min. flow control signal	12 VDC 24 VDC	500 mA 250 mA	500 mA 250 mA	560 mA 280 mA	220 mA 110 mA
Max. flow control signal	12 VDC 24 VDC	1000 mA 500 mA	1000 mA 500 mA	800 mA 400 mA	560 mA 280 mA
Min. Regenerative flow control signal	12 VDC 24 VDC	- -	- -	- -	1100 mA 550 mA
Max. Floating/Regenerative flow control signal	12 VDC 24 VDC	- -	- -	- -	1300 mA 650 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 insulation		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
<b>Hydraulic specifications</b>					
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.

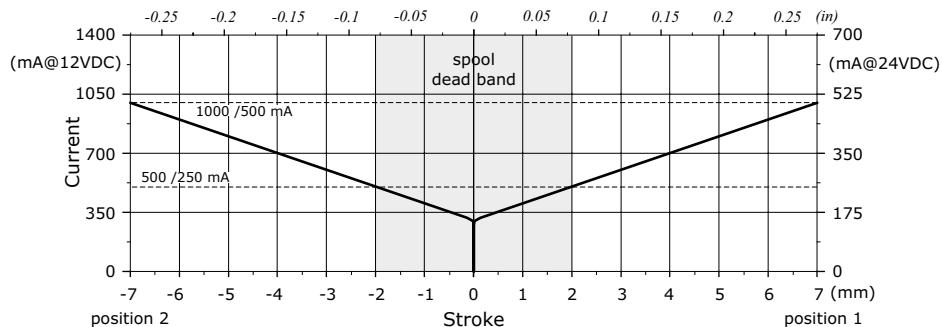
Listed electrohydraulic controls require CED400W electronic control unit; for information please contact Sales Department.

## Working section

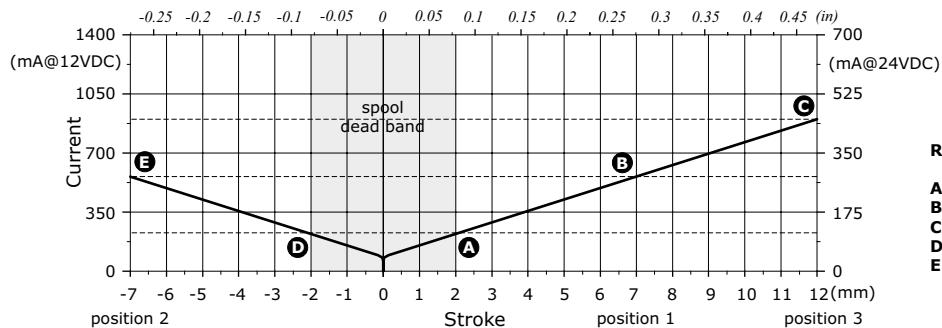
## Electrohydraulic control performance data

## Spool stroke vs. pilot current diagrams

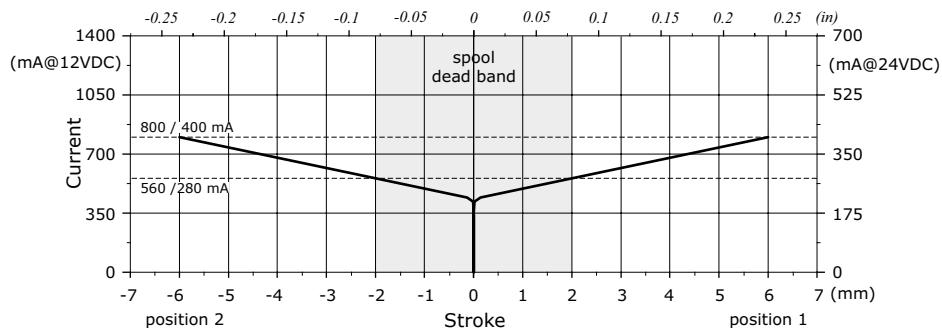
8EZ3 - 8EZ4 - 8EZ4D - 8EZ3T types



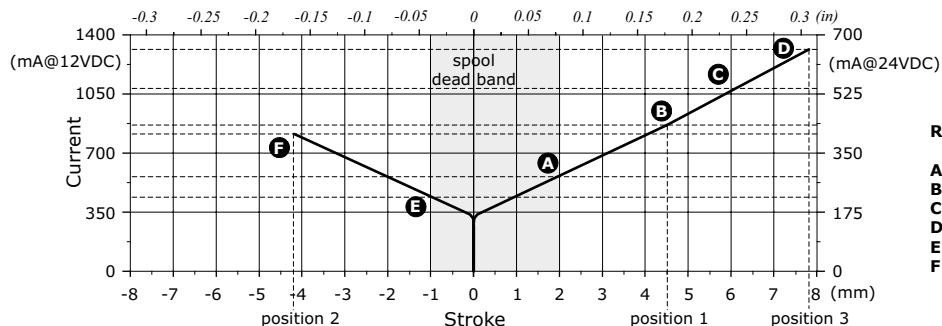
13EZ3 - 13EZ4 types: for floating circuit



8EZ3CR type: for regenerative circuit



(8Y)13EZ3 type: for regenerative circuit



## Working section

### Electrohydraulic controls: spool position sensor

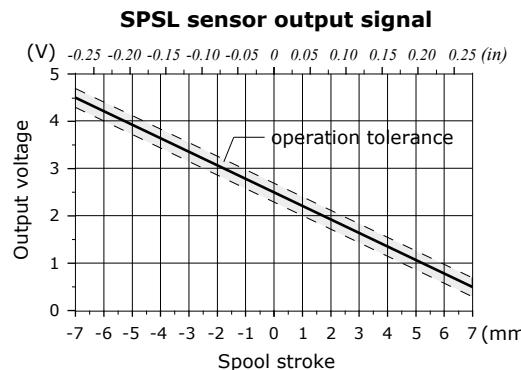
The sensor can be ordered exclusively through the electrohydraulic controls; please see page 24 for available control list.

#### SPSL sensor

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

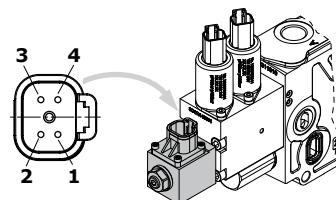
##### Working conditions

Voltage supply	5 VDC
Current absorption	< 10 mA (no load)
Mechanical life	3x10 <sup>6</sup>
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



##### Deutsch DT04-4P connector

Pin	Function
1	+ 5V
2	not connected
3	GND
4	signal OUT



Deutsch DT06-4S mating connector, code 5CON140072

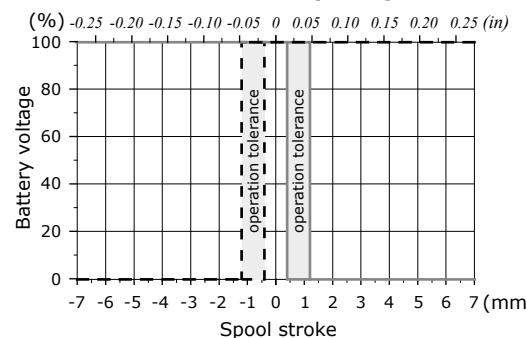
#### SPSD sensor

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

##### Working conditions

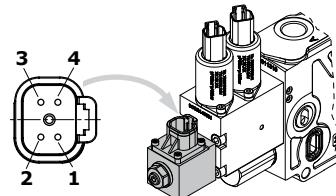
Voltage supply	from 9 to 32 VDC
Current absorption	< 10 mA (no load)
Mechanical life	3x10 <sup>6</sup>
Connector type	DT04-4P Deutsch
Weather protection	IP67 / IP69K
Working temperature	from -40°C to 105°C (from -40°F to 221°F)
Working pressure	350 bar (5100 psi)
Max. electrical stroke	±10 mm (±0.39 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

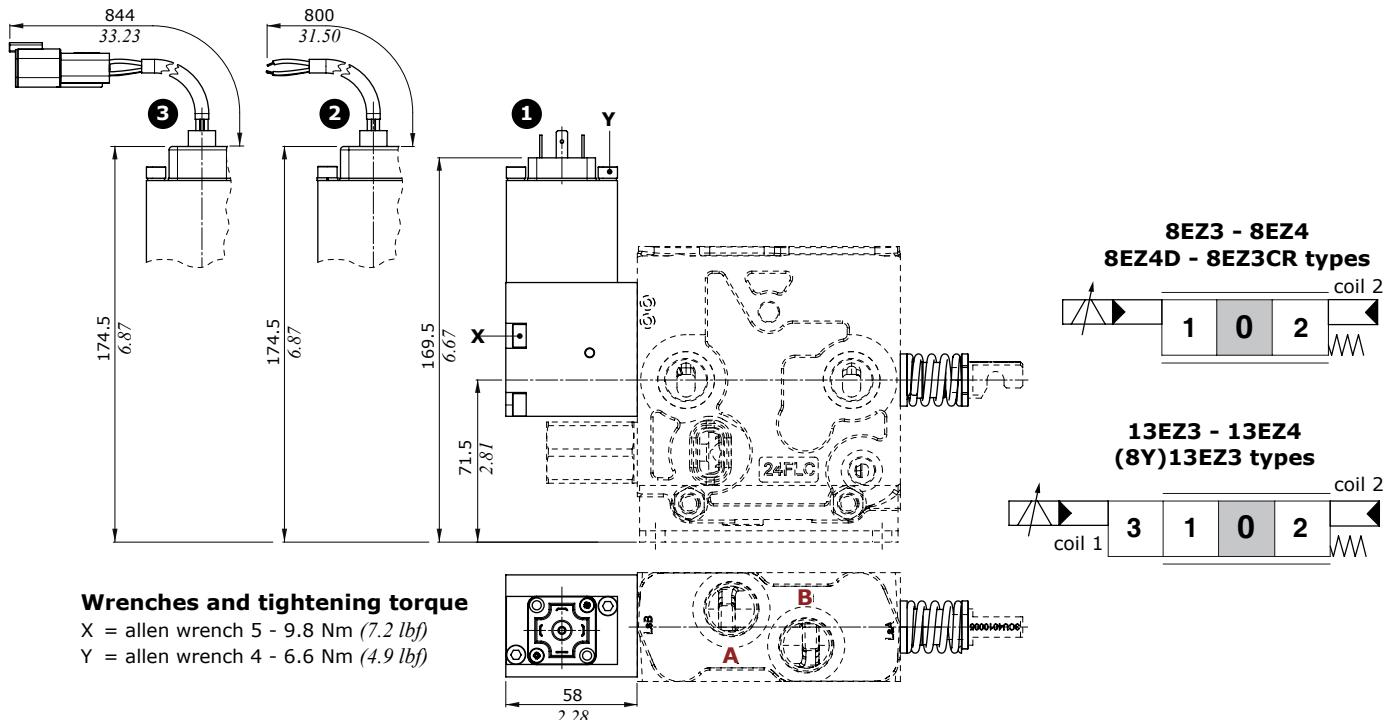
## Working section

## Electrohydraulic controls

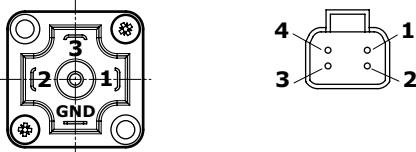
## Proportional controls; 8EZ - 13EZ types

## Control Types

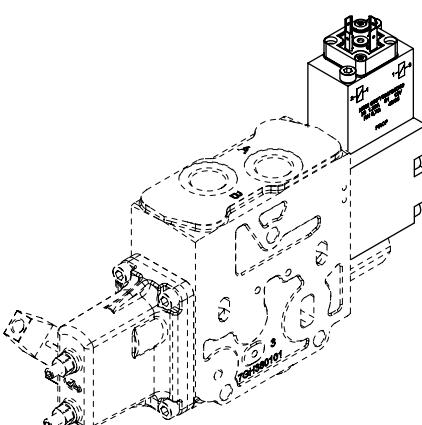
- 1** : With ISO4400 connector - mating connector code: 2X1001030  
**2** : With flying leads  
**3** : With Deutsch DTM04 connector - Deutsch DTM06 mating connector code: 5CON140025



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

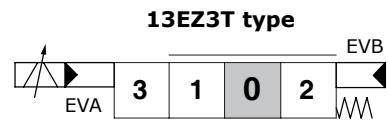
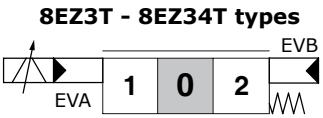
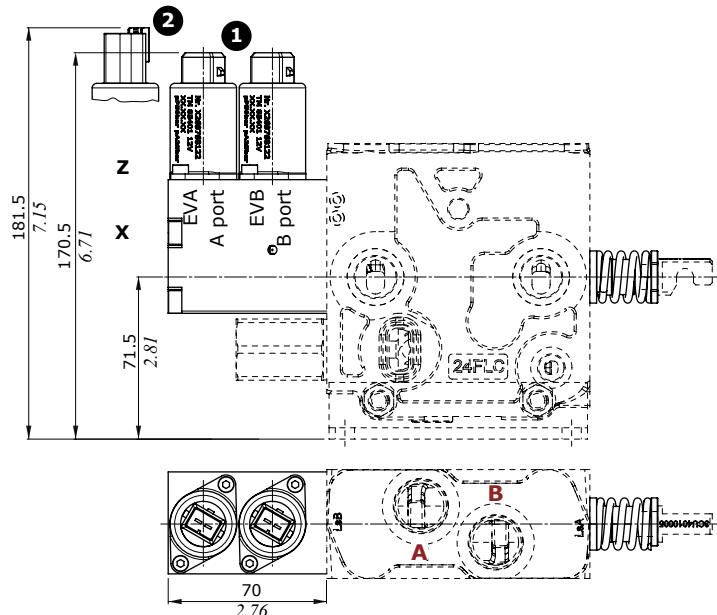
## Working section

### 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



#### Wrenches and tightening torque

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

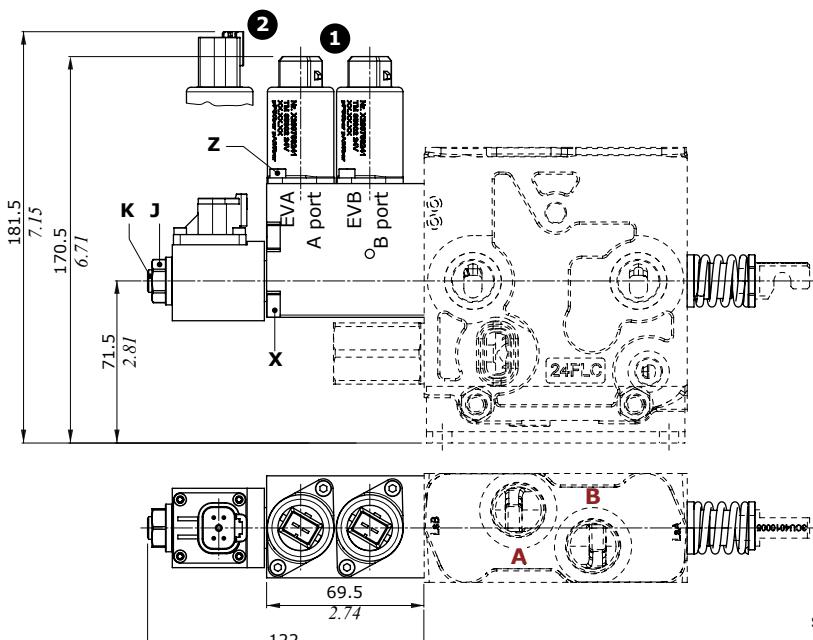
Z = allen wrench 3 - 5 Nm (3.7 lbf)

J = wrench 17 - 9.8 Nm (7.2 lbf)

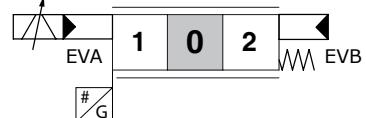
K = allen wrench 4 - 9.8 Nm (7.2 lbf)

### Proportional controls; 8EZ3TSPSD - 8EZ3TSPSL types

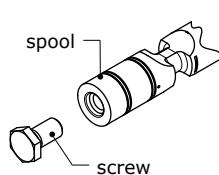
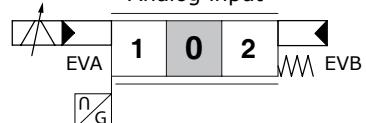
For sensor specification and features please see page 42.



#### 8EZ3TSPSD - 8EZ3T4SPSD types CANbus interface



#### 8EZ3TSPSL - 8EZ3T4SPSL types Analog input



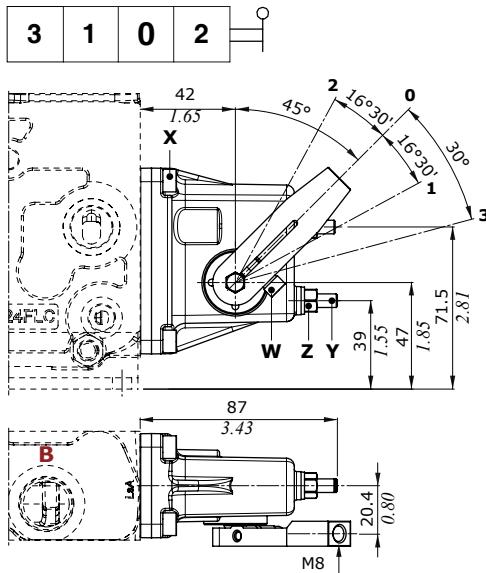
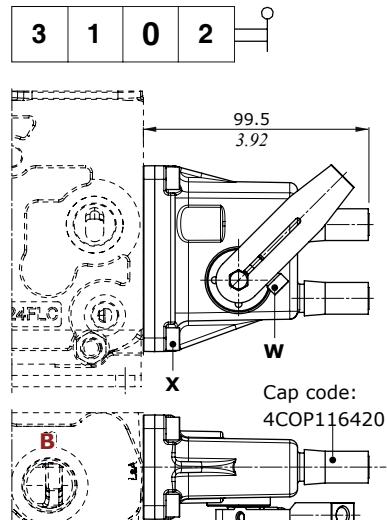
#### NOTE: spool replacement

The spool for this control is to be selected from the list on page 23-24.

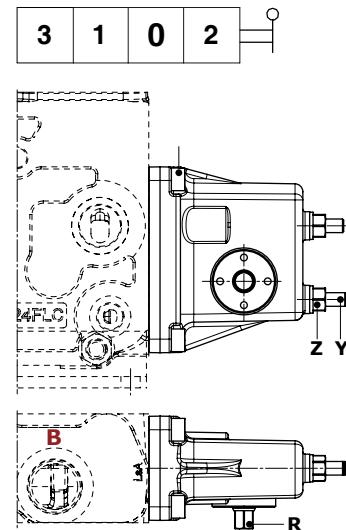
To assemble the spool remove the screw (wrench 13) on spool back and trash it.

Then clean the cavity from Loctite® residue.

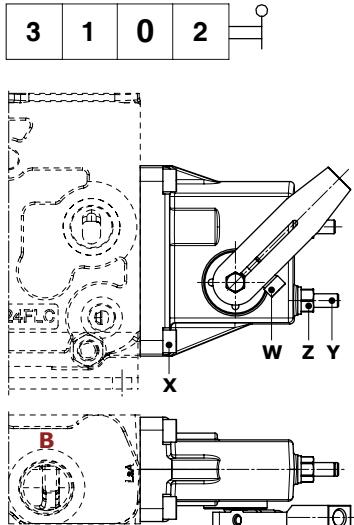
## Working section

**"B" side spool control kit****Aluminium lever box; L type****Aluminium lever box with anti-tamper caps; LZ type**

Dimensions are the same as **L** type

**Aluminium lever box, without lever; LN type**

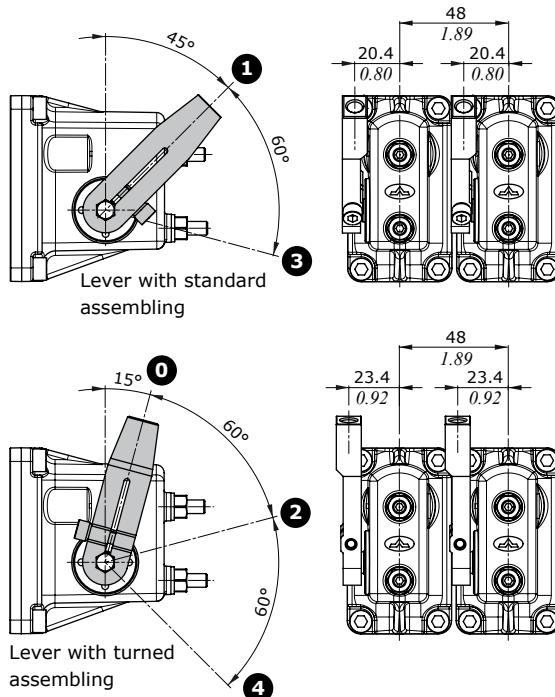
Dimensions are the same as **L** type

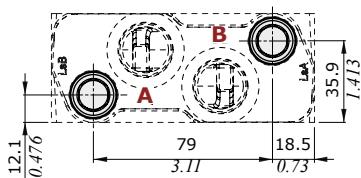
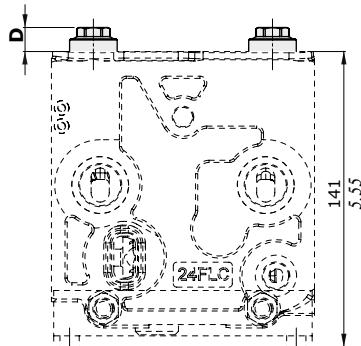
**Cast iron lever box; LG type**

Dimensions are the same as **L** type

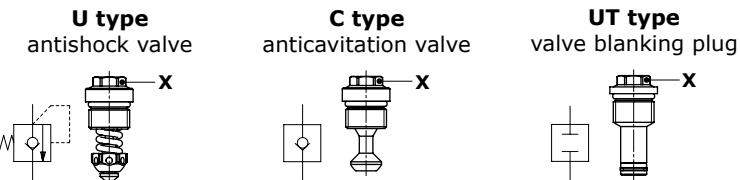
### Lever assembly position

Please see page 22 for specification in working section description

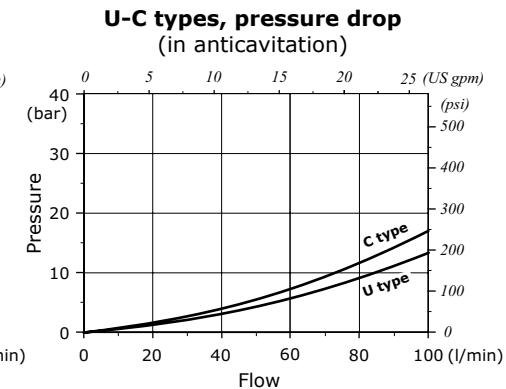
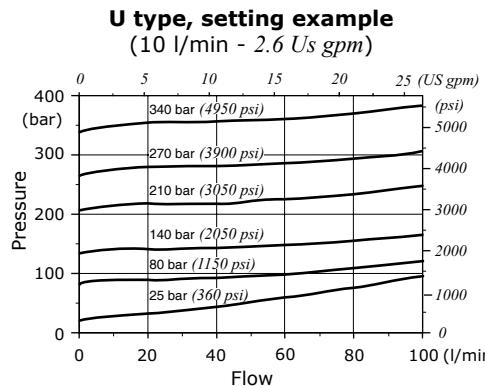
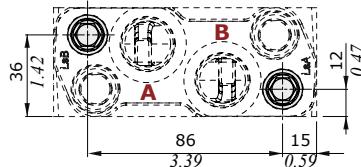
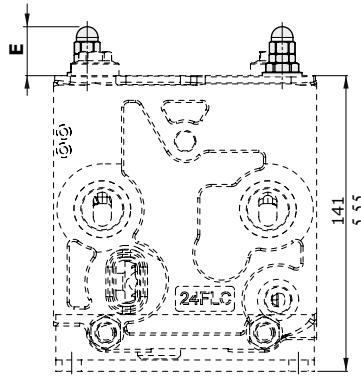


**Working section****Port valves**

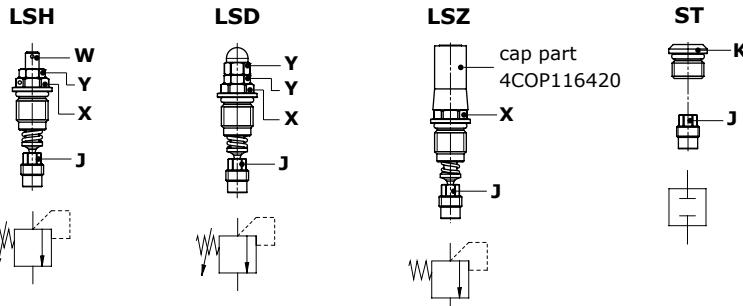
Valve type	Dim. D
mm	in
<b>U</b>	10.5 0.41
<b>C</b>	10.5 0.41
<b>UT</b>	7.5 0.30

**Wrenches and tightening torque**

X = wrench 13 - 24 Nm (17.7 lbf)

**L.S. port relief valves**

Valve type	Dim. E
mm	in
<b>LSD</b>	21.5 0.85
<b>LSH</b>	17 0.67
<b>LSZ</b>	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

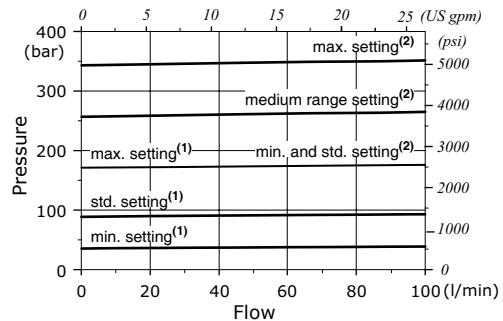
J = wrench 7 - 24 Nm (17.7 lbf)

K = allen wrench 5 - 24 Nm (17.7 lbf)

**Pressure vs. flow diagram**

(1) = valve range 40-180 bar (580-2600 psi)

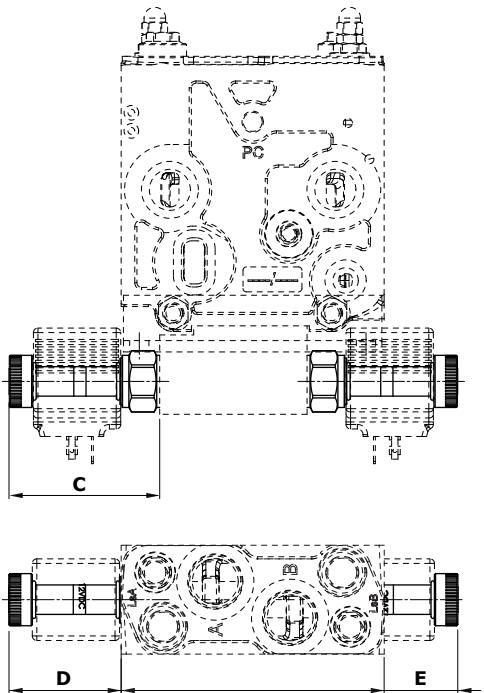
(2) = valve range 180-350 bar (2600-5000 psi)



## Working section

**Solenoid operated L.S. unloading valves**

Available only for C27 type working section.

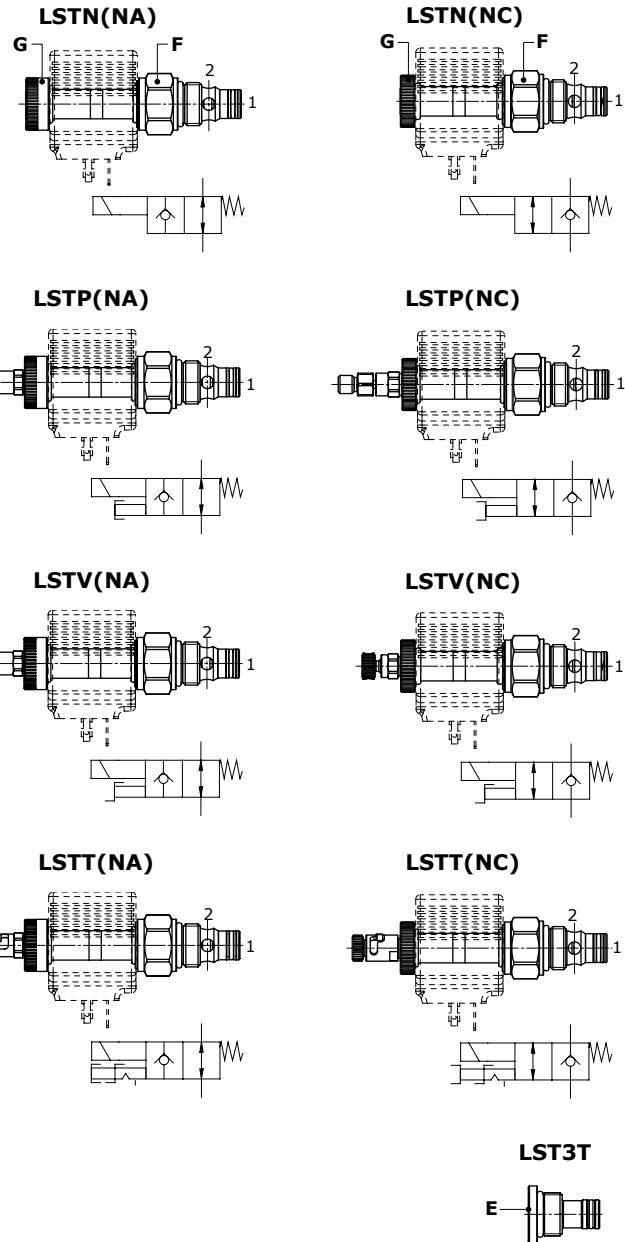


Valve type	Dimensions								
	C	D	E	mm	in	mm	in	mm	in
LSTN(NA)	66.7	2.63	49.7	1.96	34	1.34			
LSTV(NA)	89.6	3.53	69.6	2.74	56.9	2.24			
LSTP(NA)	89.6	3.53	69.6	2.74	56.9	2.24			
LSTT(NA)	92.3	3.63	72.3	2.85	59.6	2.35			
LSTN(NC)	62.8	2.47	42.8	1.69	30.1	1.19			
LSTV(NC)	77.3	3.04	57.3	2.26	44.6	1.76			
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			

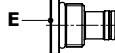
**Features**

Max. flow . . . . . : 40 l/min (10.6 US gpm)  
 Max. pressure . . . . . : 380 bar (5500 psi)  
 Internal leakage . . . . . : 0.25 cm<sup>3</sup>/min @ 210 bar  
 (0.015 in<sup>3</sup>/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)

**LST3T**

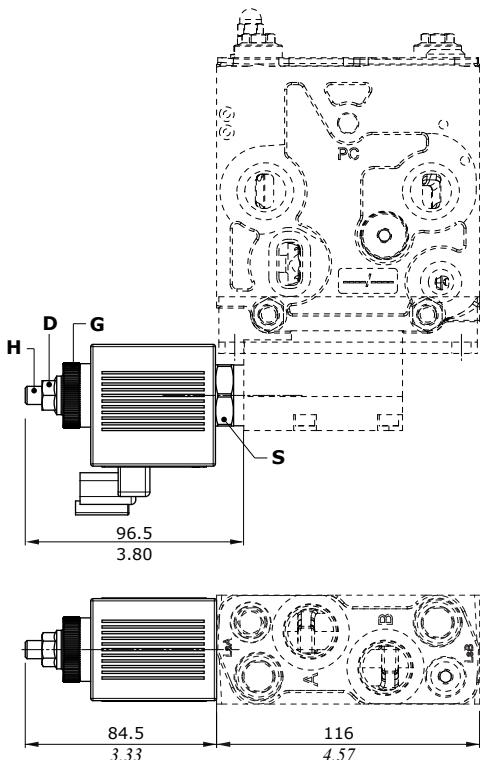
## Working section

### Proportional solenoid operated L.S. unloading valves

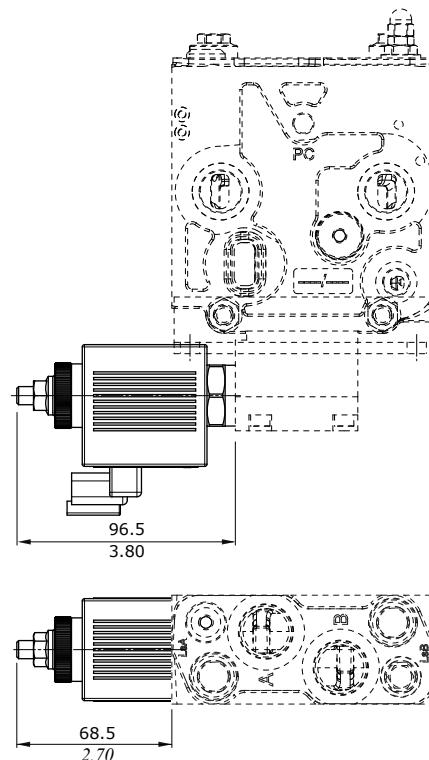
Only available on C27SA and C27SB sections.

The valve is always supplied with coil.

On C27SA section



On C27SB section



#### Wrenches and tightening torques

S = wrench 27 - 50 Nm (36.9 lb/ft)

D = wrench 13 - 15 Nm (11.1 lb/ft)

H = allen wrench 4

G = manual tightening

#### Features

Max. flow . . . . . : 3 l/min (0.79 US gpm)

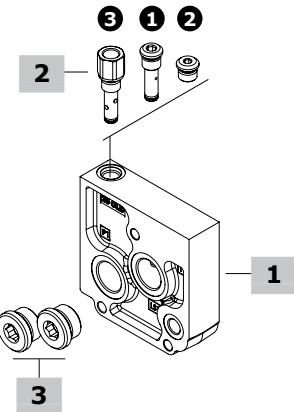
Max. pressure. . . . . : 350 bar (5100 psi)

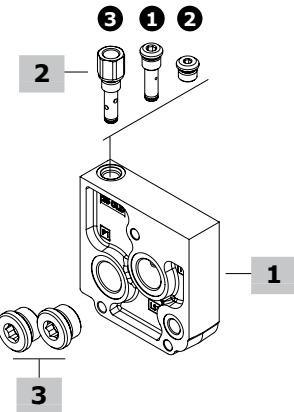
Internal leakage . . . . . : 0.25 cm<sup>3</sup>/min (0.015 in<sup>3</sup>/min)

@ 80% max pressure setting

For coil features and BOP19 type coil options please see page 83.

## Outlet section part ordering codes

DPC130/RD    3    1 - .....  


**1   Outlet section body \***

page50

TYPE	CODE	DESCRIPTION
<b>RF</b>	3FIA731000	Without ports
<b>RC-SAE</b>	3FIA731710	With P1 and T1 ports
<b>RD-SAE</b>	3FIA731720	With P1, T1 and LS1 ports

**2   Drain options**

page 50

TYPE	CODE	DESCRIPTION
<b>1</b>	XTAP517460	Internal drain; to be used with mechanical controls
<b>2</b>	XTAP217160	Internal drain; to be used with hydraulic controls
<b>3</b>	XGIU519610*	External SAE6 drain; to be used with electrohydraulic controls

**3   Ports options \***

TYPE	CODE	DESCRIPTION
<b>0</b>	-	Without ports; for RF section
<b>1</b>	3XTAP832200	SAE12 plug (nr.2); P1 and T1 ports plugged
<b>2</b>	3XTAP832200	SAE12 plug (nr.1); P1 port plugged and T1 open
<b>3</b>	3XTAP832200	SAE12 plug (nr.1); P1 port open and T1 plugged
<b>4</b>	-	P1 and T1 ports open

**4   Section threading**

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

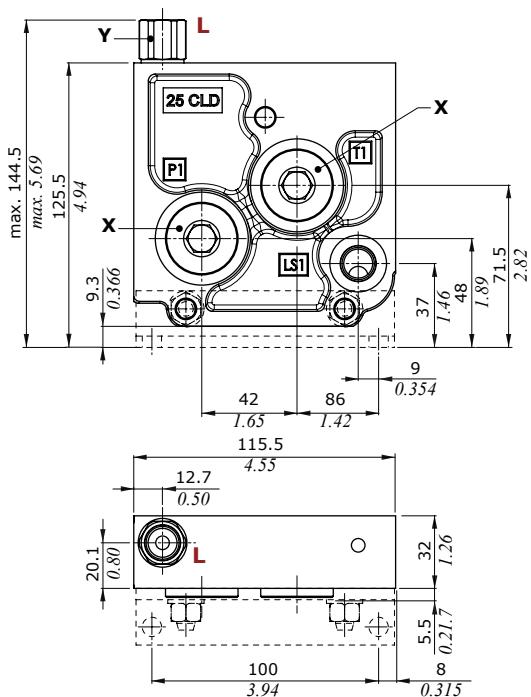
NOTE (\*): Codes are referred to **UN-UNF** thread.

## Outlet section part ordering codes

### RD31 type

With P1, T1 (plugged) and LS1 ports.

External drain

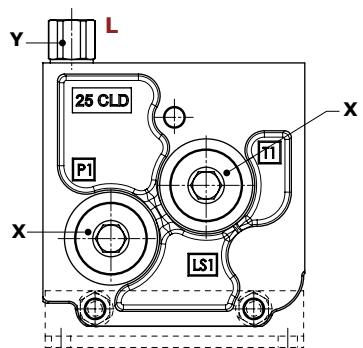


Note: Do not plug LS1 port (in case it is not used it has to be connected to tank).

### RC31 type

With P1, T1 (plugged) ports.

External drain



### Wrenches and tightening torque

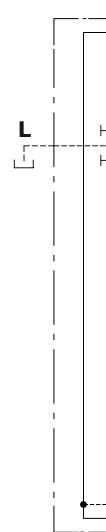
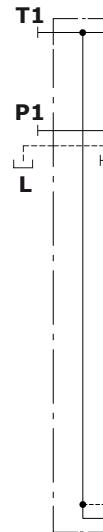
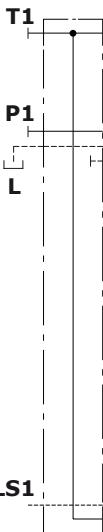
X = allen wrench 12 - 42 Nm (31 lbf)

Y = wrench 19 - 24 Nm (17.7 lbf)

### RD31 type

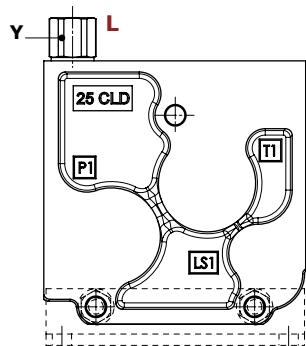
### RC31 type

### RF30 type

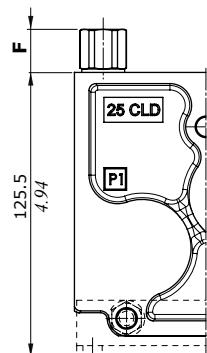


### RF30 type

Without ports, external drain



## Drain options



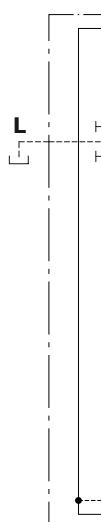
**Option 1**  
internal drain for  
mechanical controls



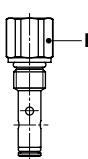
**Option 2**  
internal drain for  
hydraulic controls



**Option 1      Option 2      Option 3**



**Option 3**  
external drain for  
electrohydraulic controls



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

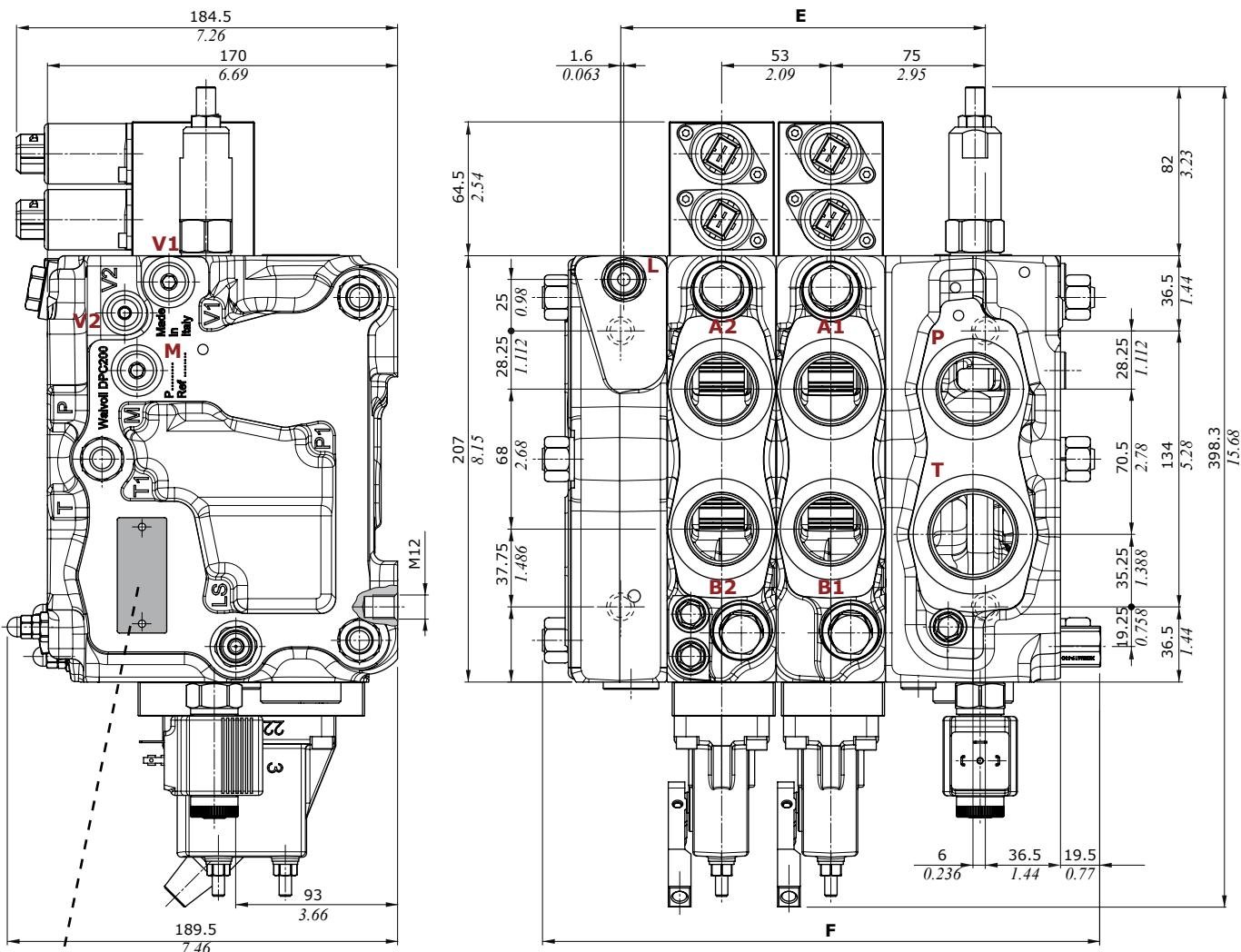
### Wrenches and tightening torque

M = allen wrench 5 - 24 Nm (17.7 lbf)

N = wrench 19 - 24 Nm (17.7 lbf)



## Dimensional data and performance

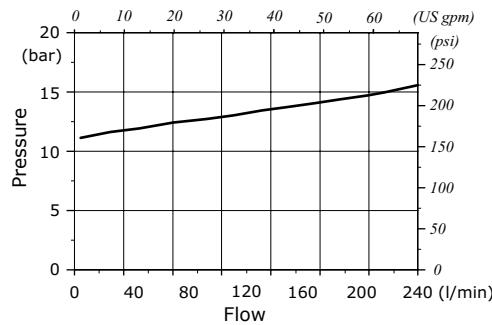


product code  
customer reference  
product name  
production allotment

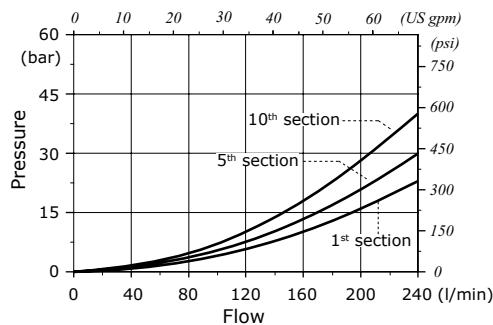
TYPE	E		F		Weight	
	mm	in	mm	in	Kg	lb
DPC200/1	124	4.88	218	8.58	39.5	87.1
DPC200/2	177	6.97	271	10.67	53.8	117
DPC200/3	230	9.06	324	12.76	68.1	150
DPC200/4	283	11.14	377	14.84	82.4	182
DPC200/5	336	13.23	430	16.93	96.7	213

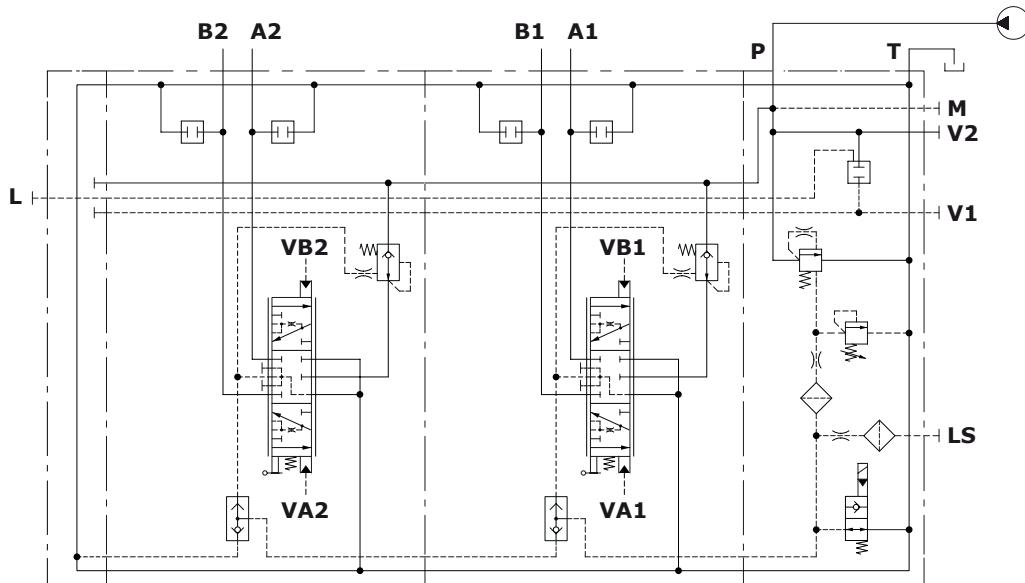
TYPE	E		F		Weight	
	mm	in	mm	in	Kg	lb
DPC200/6	389	15.31	483	19.02	111	245
DPC200/7	442	17.40	536	21.10	125	276
DPC200/8	495	19.49	589	23.19	140	308
DPC200/9	548	21.57	642	25.28	154	339
DPC200/10	601	23.66	695	27.36	168	371

P⇒T Pressure drop inlet compensator  
(margin pressure)

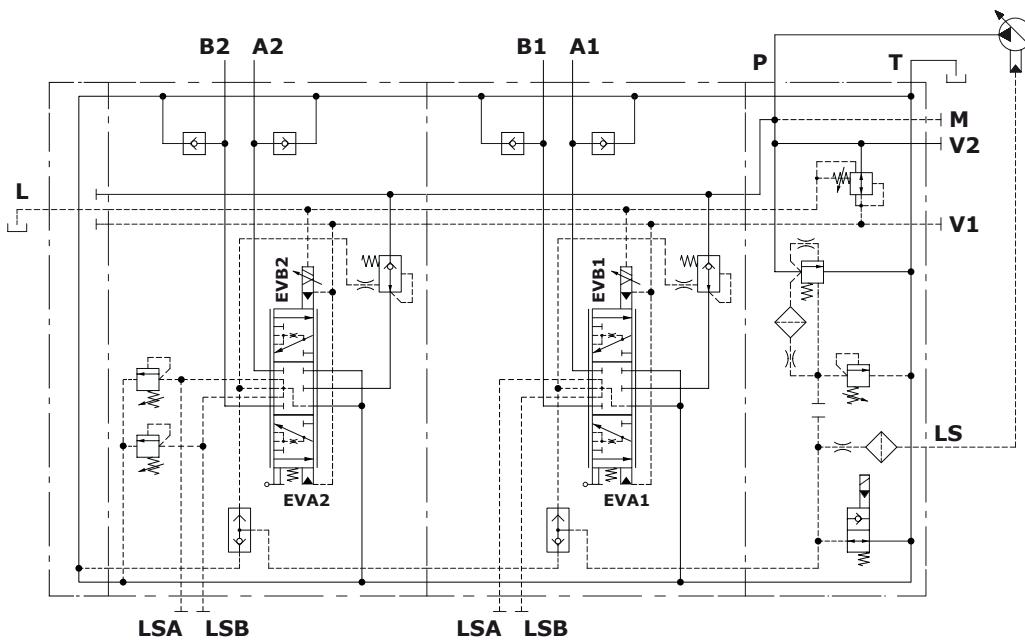


A(B)⇒T pressure drop  
(standard spool @ max.stroke)



**Hydraulic circuit****Open center configuration example**

Open center circuit and proportional hydraulic control with lever, with unloader valve and port valve arrangement

**Closed center configuration example**

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

## Complete section ordering codes

DPC200/3/ BR2-10(H220\ELP) / C10-104(200\200)-8EZ3TLG1/..... / RF30-.....-12VDC-<SB20-CVN>

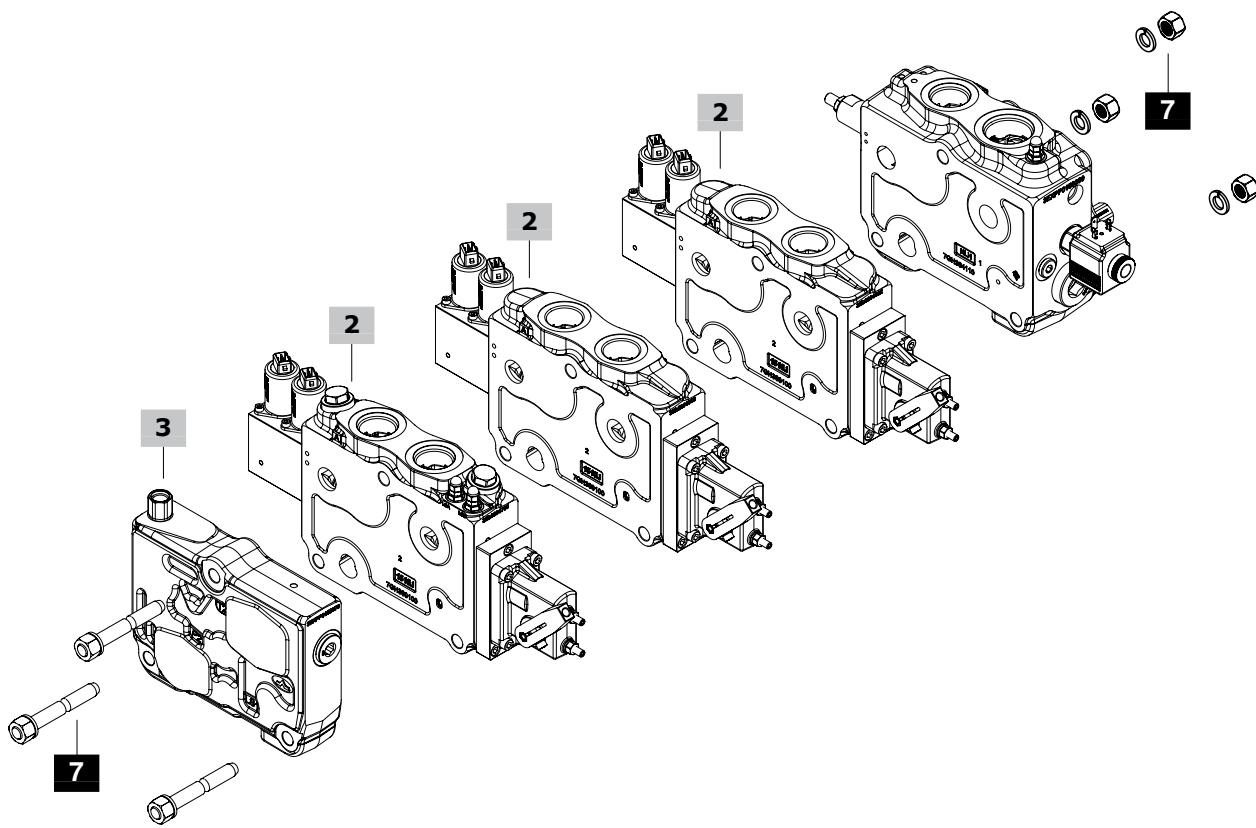
Valve type | 1

2

3 4 5 6

Nr. of working sections

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



**Tie rod tightening**

wrench 19 - 50 Nm (37 lbf)

## Complete section ordering codes

**1 Inlet section \*****page 46****Closed Center circuit****TYPE: DPC200/BR2-10(H220\ELP)-SAE-12VDC**

CODE: 638205002

DESCRIPTION: With 3-way compensator, L.S. pressure relief valve and 12VDC solenoid operated unloader valve, with P-T-LS ports open

**TYPE: DPC200/BRF2-30(H220\ELP)-SAE-12VDC**

CODE: 638205004

DESCRIPTION: Without compensator, with L.S. pressure relief valve and 12VDC solenoid operated unloader valve, with P-T-LS ports open

**Open Center circuit****TYPE: DPC200/BR1-10(H220\ELP)-SAE-12VDC**

CODE: 638205003

DESCRIPTION: With 3-way compensator, L.S. pressure relief valve and 12VDC solenoid operated unloader valve, with P-T-LS ports open

**2 Working section \*****page 52****TYPE: DPC200/C10-104(200\200)-8EZ3TLG1-SAE-12VDC**

CODE: 638105001

DESCRIPTION: With 2-way compensator, double acting spool for 200 l/min (52.8 US gpm), prop. electrohydraulic control with lever.

**TYPE: DPC200/F32-503(150\150)-8EZ3TLG1.ULTULT.STST-SAE-12VDC**

CODE: 638105002

DESCRIPTION: With 2-way compensator, floating spool for 150 l/min (39.5 US gpm), prop. electrohydraulic control with lever, arranged for "UL" size valves and L.S. relief valves, with LSA-LSB ports

**3 Outlet section \*****page 67****For valve with mechanical control****TYPE: DPC200/RF10**

CODE: 638303001

DESCRIPTION: Without ports

**For valve with hydraulic control****TYPE: DPC200/RF20**

CODE: 638303002

DESCRIPTION: Without ports, internal drain

**TYPE: DPC200/RD21-SAE**

CODE: 638305004

DESCRIPTION: With P1, T1 (plugged) and LS1 ports, internal drain

**For valve with electrohydraulic control****TYPE: DPC200/RF30-SAE**

CODE: 638305003

DESCRIPTION: Without ports, L external drain

**TYPE: DPC200/RD31-SAE**

CODE: 638305005

DESCRIPTION: With P1, T1 (plugged) and LS1 ports, L external drain

**4 Valve threading**

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

For valve with SAE J518-code 61 flange connection digit:

**FS3U(SAE).****5 Voltage**

Specify the voltage of electric devices.

**6 Pump stand-by**

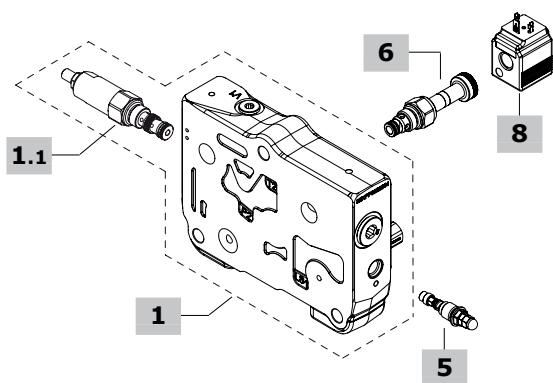
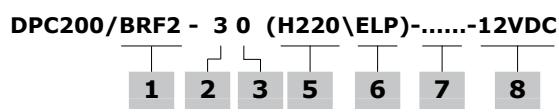
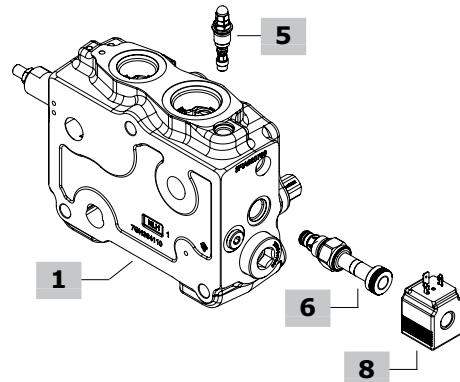
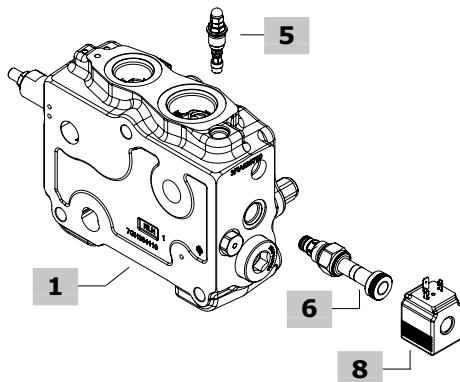
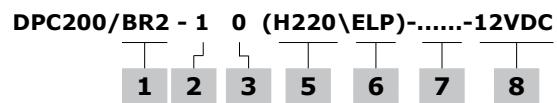
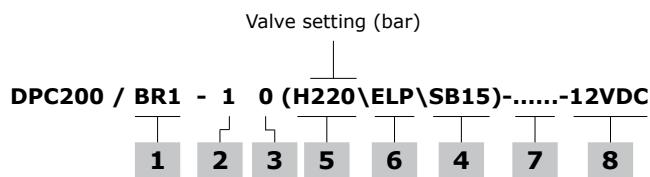
This option to be specified only if valve is configured for Closed Center circuit, without local compensation and if the value is different from 11.5 bar (167 psi)

**7 Assembling kit**

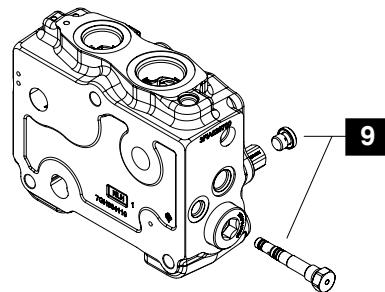
CODE	CODE	DESCRIPTION
<b>With inlet section type</b>		
<b>BR type</b>	<b>BRF type</b>	
5TIR112215	5TIR112175	For 1 working section valve
5TIR112268	5TIR112228	For 2 working section valve
5TIR112321	5TIR112281	For 3 working section valve
5TIR112374	5TIR112334	For 4 working section valve
5TIR112427	5TIR112387	For 5 working section valve
5TIR112480	5TIR112440	For 6 working section valve
5TIR112533	5TIR112493	For 7 working section valve
5TIR112586	5TIR112546	For 8 working section valve
5TIR112639	5TIR112599	For 9 working section valve
5TIR112692	5TIR112652	For 10 working section valve

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

## Inlet section part ordering codes



Circuit conversion kit



## Inlet section part ordering codes

**1 Inlet section body kit\*** page 58**Open Center circuit**

TYPE: <b>DPC200/BR1-1-SAE</b>	CODE: 5FIA620702
DESCRIPTION: With compensator and pressure reducing valve, P-T-LS ports (LS plugged), arranged for unloader valve	
TYPE: <b>DPC200/BR1-1-FS3-U(SAE)</b>	CODE: 5FIA620703
DESCRIPTION: As previous one, with SAE J518-code 61 flange connector	
TYPE: <b>DPC200/BN1-1-SAE</b>	CODE: 5FIA620709
DESCRIPTION: With compensator, P-T-LS ports (LS plugged), arranged for pressure reducing valve (seat plugged) and unloader valve	
<b><u>Closed Center circuit</u></b>	
TYPE: <b>DPC200/BR2-1-SAE</b>	CODE: 5FIA620704
DESCRIPTION: With compensator and pressure reducing valve, P-T-LS ports, arranged for unloader valve	
TYPE: <b>DPC200/BR2-1-FS3-U(SAE)</b>	CODE: 5FIA620705
DESCRIPTION: As previous one, with SAE J518-code 61 flange connection	
TYPE: <b>DPC200/BN2-1-SAE</b>	CODE: 5FIA620700
DESCRIPTION: With compensator, P-T-LS ports, arranged for pressure reducing valve (seat plugged) and unloader valve	
TYPE: <b>DPC200/BRF2-3-SAE</b>	CODE: 5FIA620706
DESCRIPTION: Without compensator, with pressure reducing valve, P-T-LS ports one, arranged for unloader valve	
TYPE: <b>DPC200/BRF2-3-FS3-U(SAE)</b>	CODE: 5FIA620707
DESCRIPTION: As previous one, with SAE J518-code 61 flange connection	
TYPE: <b>DPC200/BNF2-3-SAE</b>	CODE: 5FIA620710
DESCRIPTION: Without compensator, with P-T-LS ports, arranged for pressure reducing valve (seat plugged) and unloader valve	

**1.1 Particolari** page 60

They are included in BRF inlet section ordering code

CODE	DESCRIPTION
4AC9539900A	Pressure reducing valve, setting 32 bar (460 psi)
3XTP3535100	Pressure reducing valve blanking plug

**2 Port arrangement**

TYPE	DESCRIPTION
<b>1</b>	With upper T and P ports (for BR/BN sections)
<b>2</b>	With upper and side T and P ports (for BR/BN sections)
<b>3</b>	With side T and P ports (for BRF section)

**3 Port options**

TYPE	DESCRIPTION
<b>0</b>	P and T ports open
<b>1</b>	P port open, T port plugged

**4 Compensator stand-by**

Specify value only if it is different from the standard (11.5 bar - 16 psi): for Open Center sections

**5 L.S. relief valve** page 61

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

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

**6 Solenoid operated L.S. unloading valve** page 60

BER type coil to be used: please see chapter 9

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

**7 Section threading**

Specify threading only if it is different from BSP standard (see page 5). For valve with SAE J518-code 61 flange connection digit: **FS3-U(SAE)**.

**8 Coil**

TYPE	CODE	DESCRIPTION
<b>12VDC</b>	4SLE001200	<b>BER</b> type coil, ISO4400 conn., 12VDC

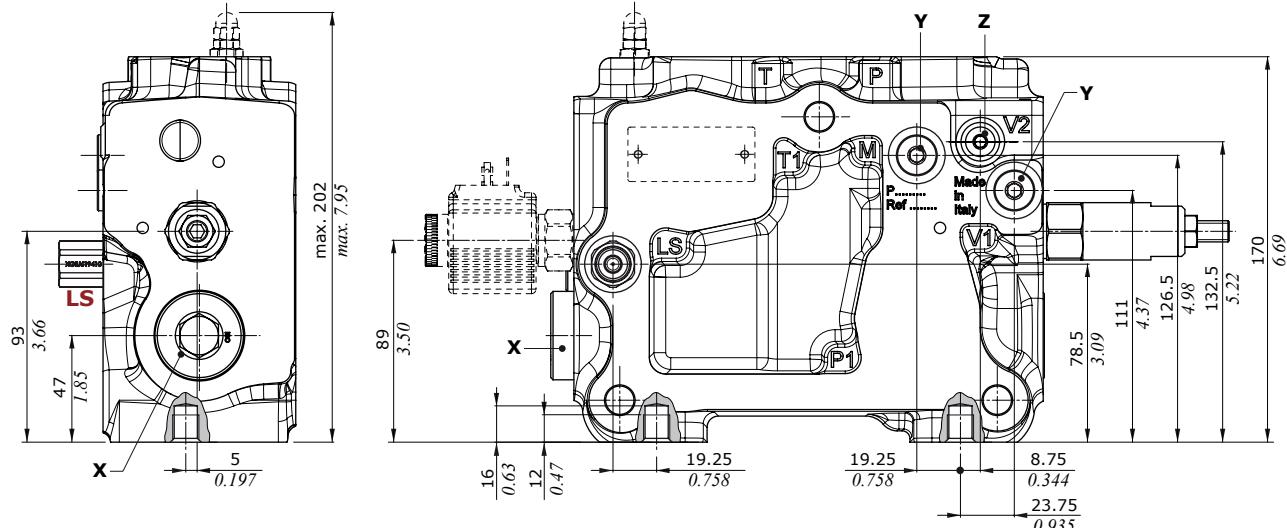
For complete available coil list please see page 82.

**9 Circuit conversion kit**

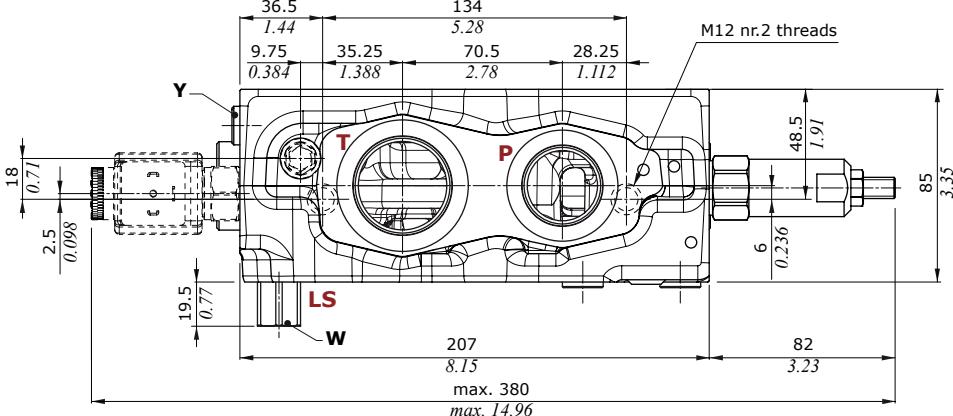
These kits are NOT available for BRF section.

CODE	DESCRIPTION
5KIT200311	For circuit conversion from Open Center to Closed Center; from BR1/BN1 to BR2/BN2 sections
5KIT200710*	Kit for circuit conversion from Closed Center to Open Center; from BR2/BN2 to BR1/BN1 sections

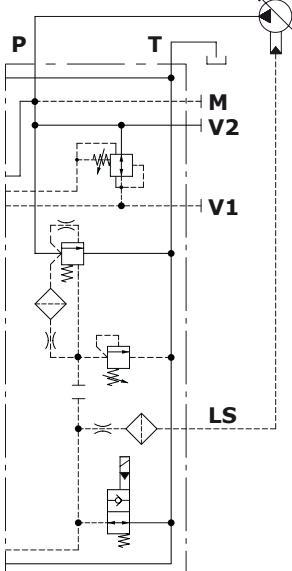
NOTE (\*): Codes are referred to **UN-UNF** thread.

**Inlet section****Dimensions and hydraulic circuit****Example of BR section type****Auxiliary port specification**

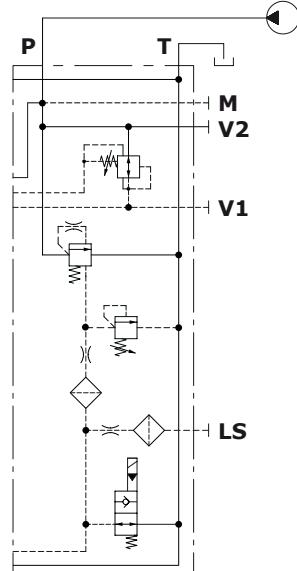
**M** = SAE6 pressure gauge connection  
**V1** = SAE6 pilot pressure port ( $P_{max} = 30$  bar - 435 psi) for hydraulic pilot control valve feeding ( $P \Rightarrow OUT$ )  
**V2** = M14x1.5 pilot pressure port for electrohydraulic control optional feeding ( $P_{max} = 315$  bar - 4600 psi) ( $P \Rightarrow IN$ ): G1/4 joint is required, code 5GIU519612.



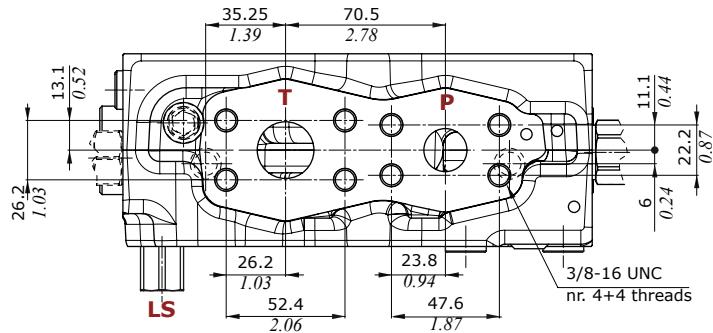
**Closed center**  
**BR2-10(H220\ELN)**  
**configuration example**



**Open center**  
**BR1-10(H220\ELN)**  
**configuration example**

**Wrenches and tightening torque**

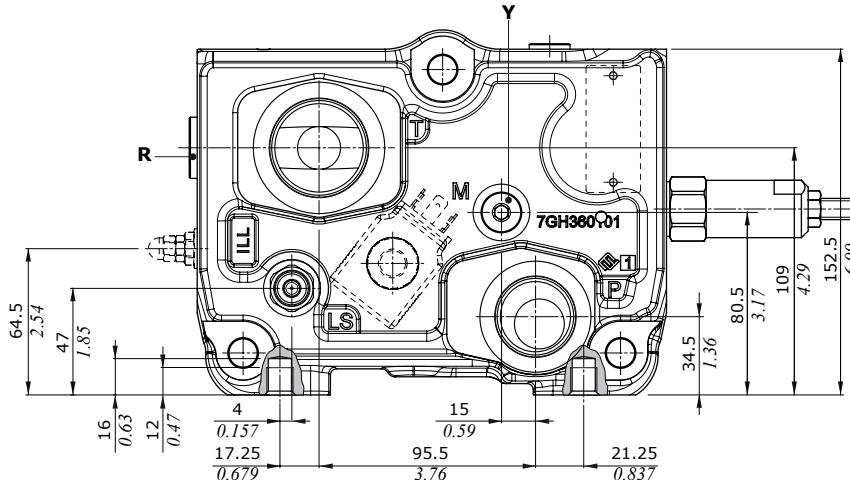
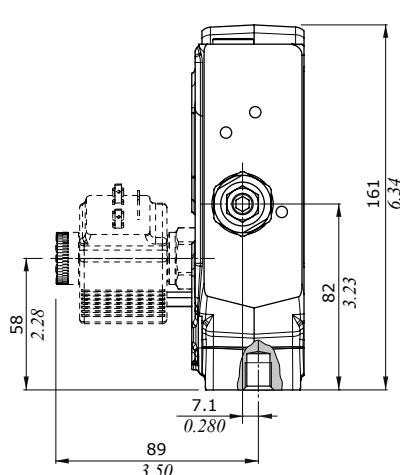
X = allen wrench 17 - 90 Nm (66 lbf ft)  
Y = allen wrench 6 - 24 Nm (17.7 lbf ft)  
Z = allen wrench 5 - 24 Nm (17.7 lbf ft)  
W = wrench 19 - 24 Nm (17.7 lbf ft)  
NOTE: for valves wrench and torque please see pages 60-61.

**FS3-U(SAE) optional connection**

## Inlet section

## Dimensions and hydraulic circuit

## Example of BRF section type

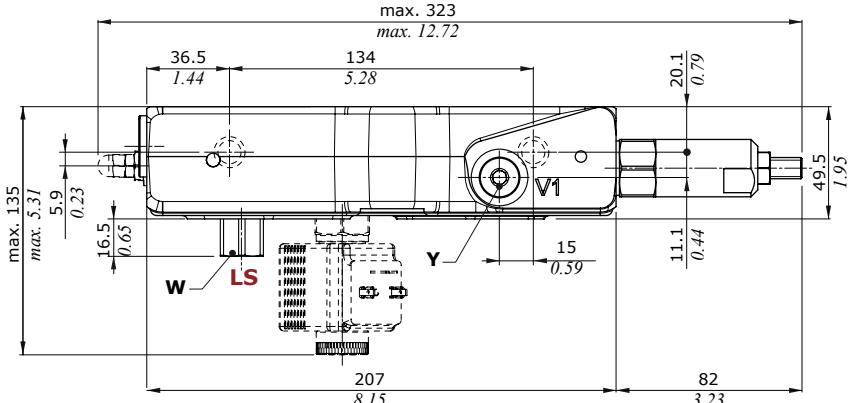


## Auxiliary port specification

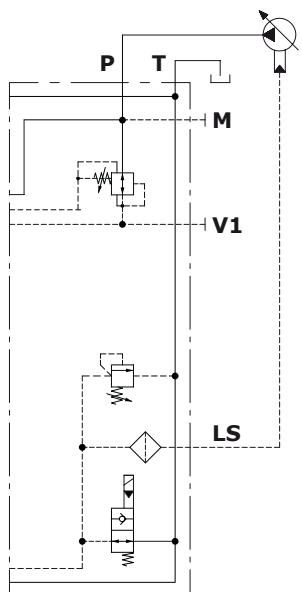
M = SAE6 pressure gauge connection  
 V1 = SAE6 pilot pressure port (Pmax = 30 bar - 435 psi) for hydraulic pilot control valve feeding (P⇒OUT)

## Wrenches and tightening torque

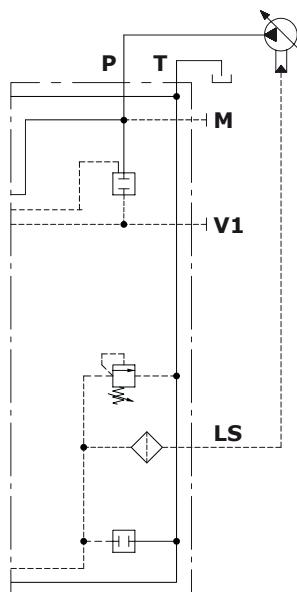
R = allen wrench 10 - 24 Nm (17.7 lbft)  
 Y = allen wrench 6 - 24 Nm (17.7 lbft)  
 W = wrench 19 - 24 Nm (17.7 lbft)  
 NOTE: for valves wrench and torque please see pages 60-61.



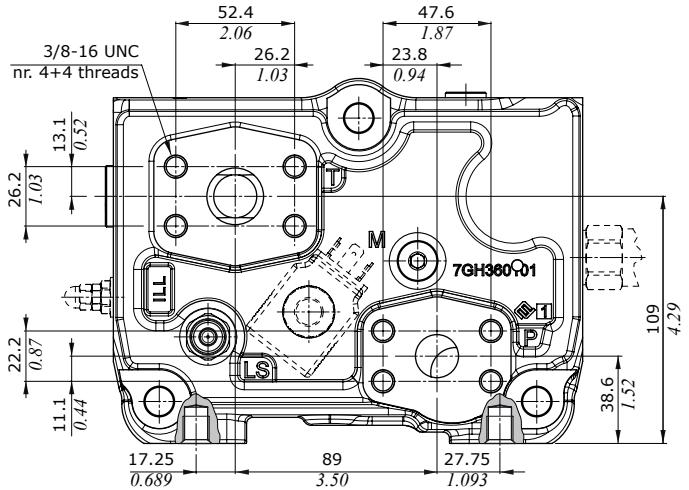
**BRF2-30(H220\ELN)**  
configuration



**BRF2-30(H220\ELT\RT)**  
configuration

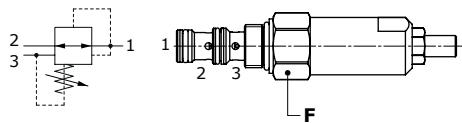


**FS3-U(SAE) optional connection**

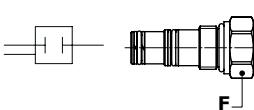
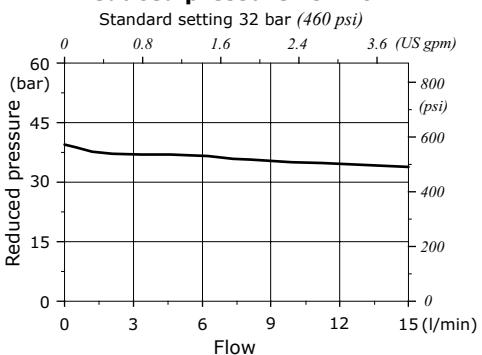


**Inlet section****Pressure reducing valve**

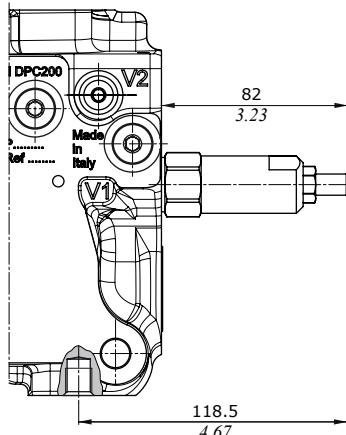
Pressure reducing valve  
code: 4AC9539900



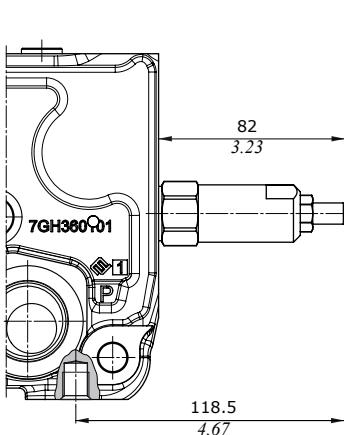
Valve blanking plug  
code: 3XTP3535100

**Reduced pressure vs. Flow**

On BR section



On BRF section

**Features**

Reduced press. range . . : from 3.5 to 35 bar  
(from 50 to 500 psi)

Max. inlet pressure . . . : 420 bar (6100 psi)

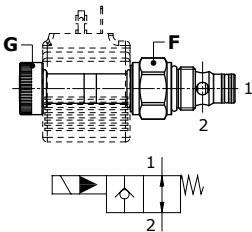
Nominal flow . . . . . : 15 l/min (4 US gpm)

**Wrenches and tightening torques**

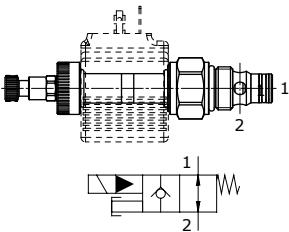
F = wrench 24 - 30 Nm (22 lbft)

**Solenoid operated L.S. unloading valve**

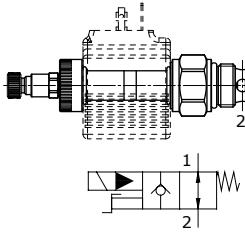
ELN



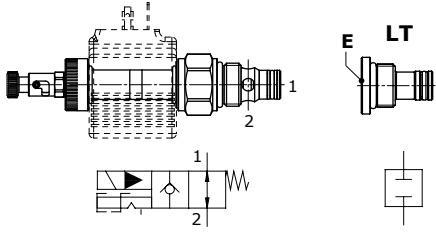
ELP



ELV



ELT

**Wrenches and tightening torques**

F = wrench 24 - 30 Nm (22 lbft)

G = manual tightening

E = wrench 10 - 24 Nm (17.7 lbft)

**Legenda**

ELN: without emergency

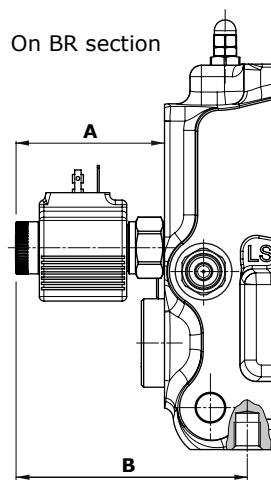
ELP: push button emergency override

ELV: screw emergency override

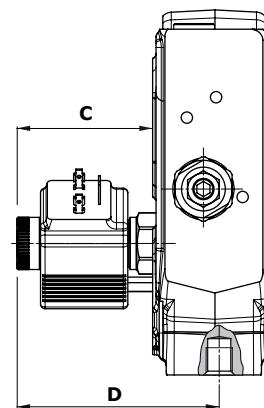
ELT: "push&twist" emergency override

LT: valve blanking plug

On BR section



On BRF section



Valve type	BR section		BRF section	
	A mm	B in	C mm	D in
ELN	65.5	2.58	102	4.02
ELP	88.5	3.48	125	4.92
ELV	88.5	3.48	125	4.92
ELT	91	3.58	127.5	5.02
	60	2.36	89	3.50
	83	3.27	112	4.41
	83	3.27	112	4.41
	85.5	3.37	114.5	4.51

**Features**

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

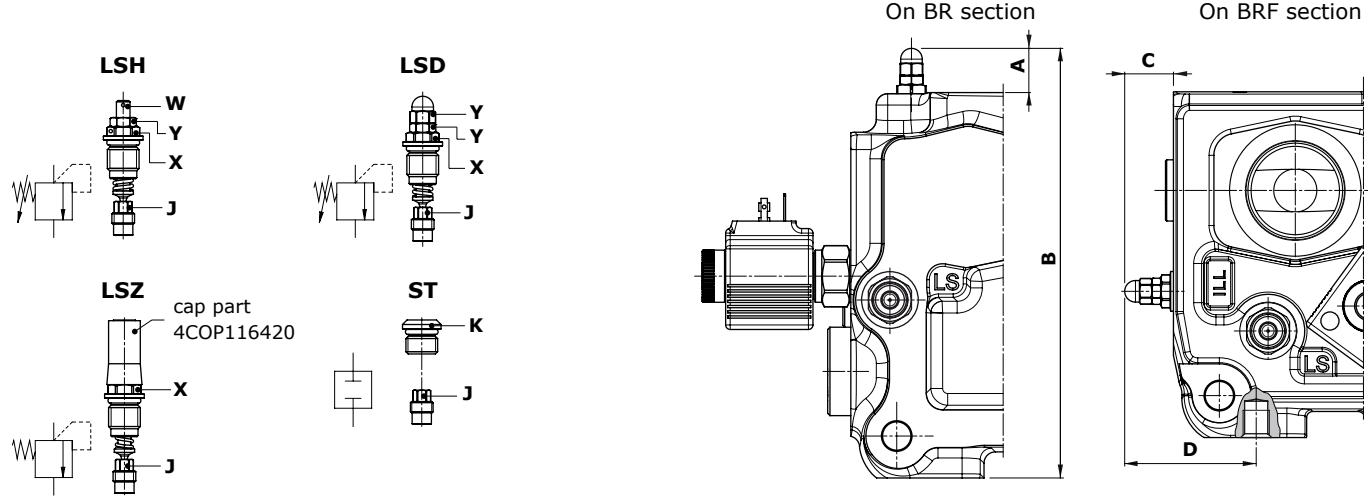
Max. pressure . . . . . : 380 bar (5500 psi)

Internal leakage . . . : 0.25 cm<sup>3</sup>/min @ 210 bar (0.015 in<sup>3</sup>/min @ 3050 psi)

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

## Inlet section

## L.S. pressure relief valve

**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)

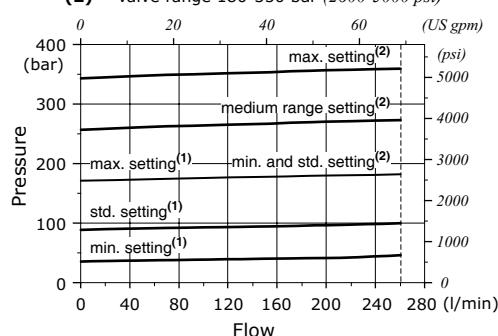
K = allen wrench 5 - 24 Nm (17.7 lbf)

Valve type	BR section		BRF section	
	A mm	B in	C mm	D in
<b>LSD</b>	19.5	0.77	189.5	7.46
<b>LSH</b>	15	0.59	185	7.28
<b>LSZ</b>	32	1.26	202	7.95

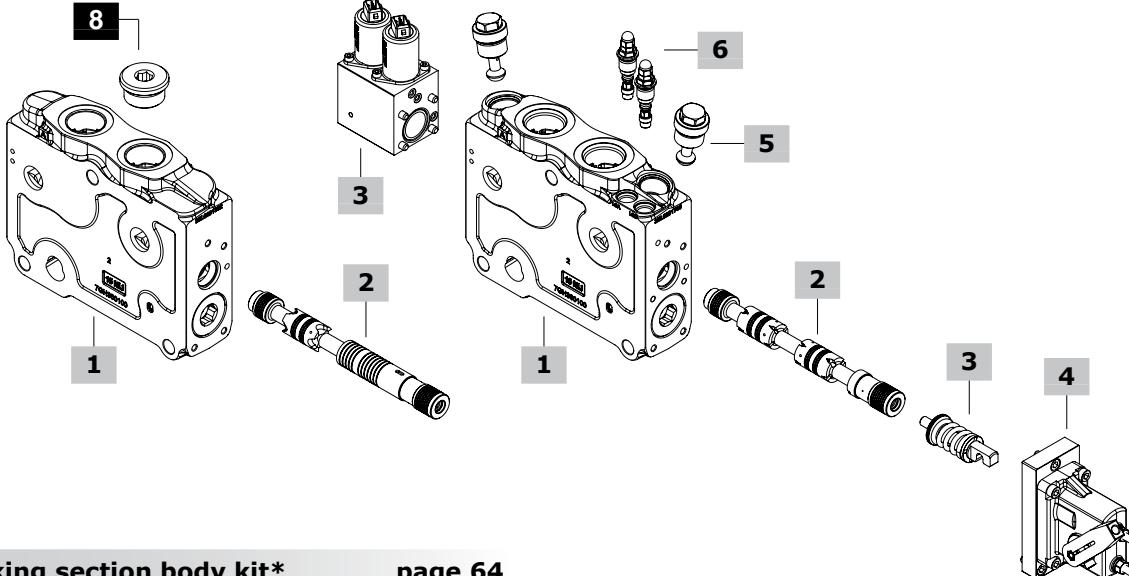
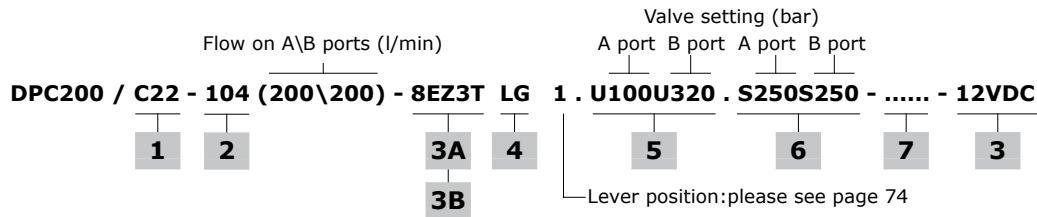
**Pressure vs. flow diagram**

(1) = valve range 40-180 bar (580-2600 psi)

(2) = valve range 180-350 bar (2600-5000 psi)



**Working section parts ordering codes**



**1 Working section body kit\*** **page 64**

**With compensator**

TYPE: **DPC200/C10-SAE**

CODE: 5EL6201710

DESCRIPTION: Without valve arrangement

TYPE: **DPC200/C10-FS3-U**

CODE: 5EL6209210U

DESCRIPTION: As previous one, with SAE J518-code 61 flange connect.

TYPE: **DPC200/C11-SAE**

CODE: 5EL6301711

DESCRIPTION: Without valve arrangement, with LSA-LSB ports

TYPE: **DPC200/C11-FS3-U(SAE)**

CODE: 5EL6209211S

DESCRIPTION: As previous one, with SAE J518-code 61 flange connect.

TYPE: **DPC200/C22-SAE**

CODE: 5EL6201722

DESCRIPTION: Arranged for "U" size valves and L.S. relief valves, with LSA-LSB ports

TYPE: **DPC200/C22-FS3-U(SAE)**

CODE: 5EL6209222S

DESCRIPTION: As previous, with SAE J518-code 61 flange connect.

TYPE: **DPC200/C32-SAE**

CODE: 5EL6201732

DESCRIPTION: Arranged for "UL" size valves and L.S. relief valves, with LSA-LSB ports

TYPE: **DPC200/C32-FS3-U(SAE)**

CODE: 5EL6209232S

DESCRIPTION: As previous one, with SAE J518-code 61 flange connect.

TYPE: **DPC200/F32-SAE**

CODE: 5EL6204732

DESCRIPTION: As C32 type, for floating circuit

TYPE: **DPC200/F32-FS3-U(SAE)**

CODE: 5EL6209232FS

DESCRIPTION: As previous one, with SAE J518-code 61 flange connect.

**Without compensator, with check valve**

TYPE: **DPC200/CV32-SAE**

CODE: 5EL6201332AS

DESCRIPTION: Arranged for "UL" size valves and L.S. relief valves, with LSA-LSB ports

TYPE: **DPC200/CV32-FS3-U(SAE)**

CODE: 5EL6209232AS

DESCRIPTION: As previous one, with SAE J518-code 61 flange connect.

TYPE: **DPC200/FV32-SAE**

CODE: 5EL6204732A

DESCRIPTION: For floating circuit, arranged for "UL" size valves and L.S. relief valves, with LSA-LSB ports

TYPE: **DPC200/FV32-FS3-U(SAE)**

CODE: 5EL6209232FAS

DESCRIPTION: As previous one, with SAE J518-code 61 flange connect.

**2 Spool**

**page 66**

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**

105	3CU4510025	25 l/min (6.6 US gpm) flow
101	3CU4510051	50 l/min (13.2 US gpm) flow
106	3CU4510075	75 l/min (19.8 US gpm) flow
102	3CU4510101	100 l/min (26.4 US gpm) flow
107	3CU4510125	125 l/min (33 US gpm) flow
103	3CU4510151	150 l/min (39.5 US gpm) flow
108	3CU4510175	175 l/min (46.2 US gpm) flow
104	3CU4510201	200 l/min (52.8 US gpm) flow

**Double acting with A and B to tank in neutral position**

205	3CU4524025	25 l/min (6.6 US gpm) flow
201	3CU4524050	50 l/min (13.2 US gpm) flow
206	3CU4524075	75 l/min (19.8 US gpm) flow
202	3CU4524100	100 l/min (26.4 US gpm) flow
207	3CU4524125	125 l/min (33 US gpm) flow
203	3CU4524150	150 l/min (39.5 US gpm) flow
208	3CU4524175	175 l/min (46.2 US gpm) flow
204	3CU4524200	200 l/min (52.8 US gpm) flow

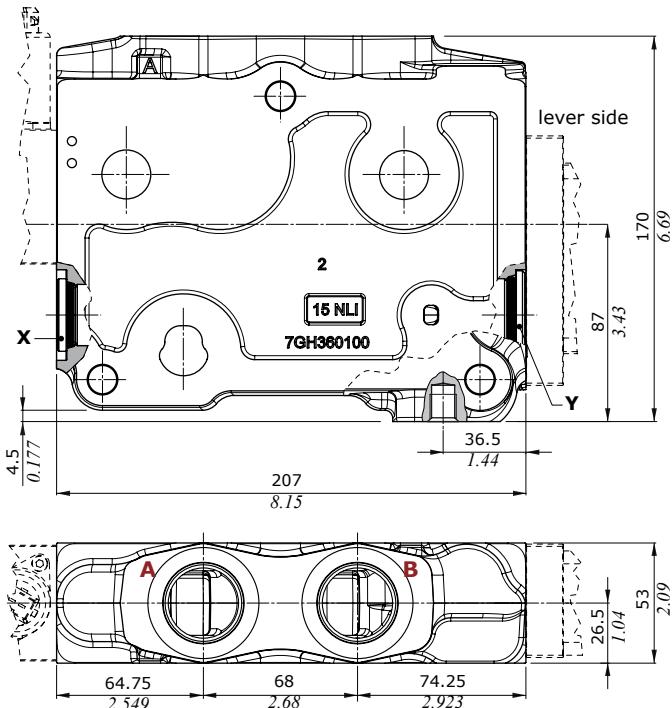
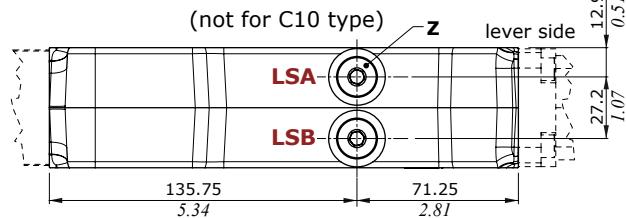
**Double acting with A and B partially to tank in neutral position**

2H05	3CU4525025	25 l/min (6.6 US gpm) flow
2H01	3CU4525050	50 l/min (13.2 US gpm) flow
2H06	3CU4525075	75 l/min (19.8 US gpm) flow
2H02	3CU4525100	100 l/min (26.4 US gpm) flow
2H07	3CU4525125	125 l/min (33 US gpm) flow
2H03	3CU4525150	150 l/min (39.5 US gpm) flow
2H08	3CU4525175	175 l/min (46.2 US gpm) flow
2H04	3CU4525200	200 l/min (52.8 US gpm) flow

..... to be continued

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

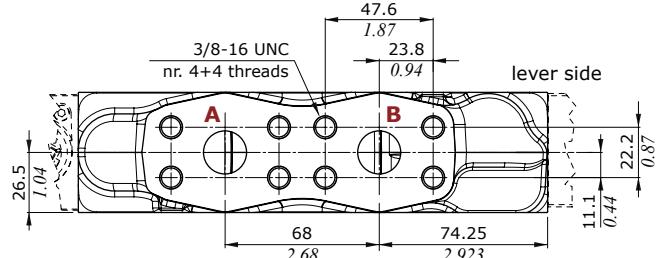


**Working section****Dimensions and hydraulic circuit****Without port valves****LS bottom port position****Wrenches and tightening torques**

X = allen wrench 12 - 90 Nm (66 lbf)

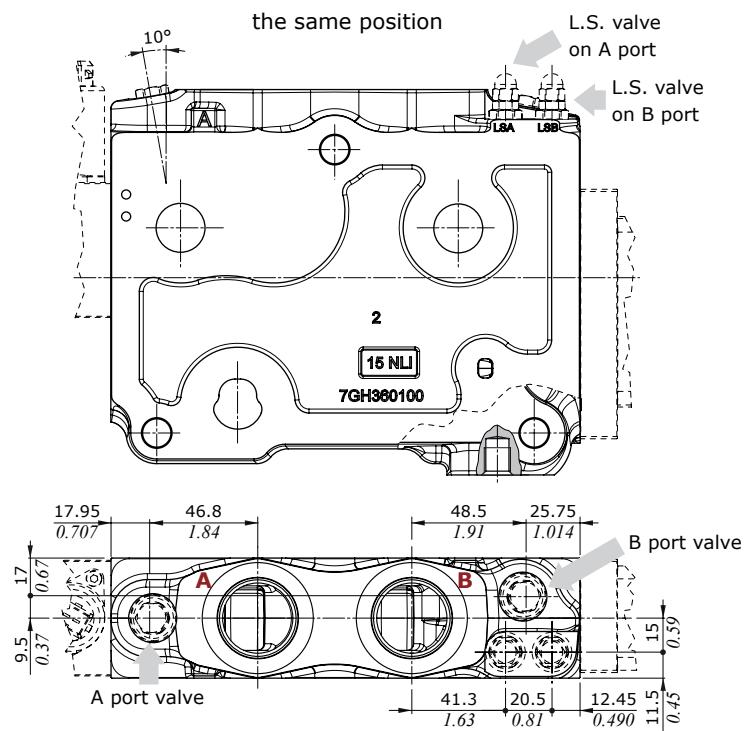
Y = allen wrench 17 - 90 Nm (66 lbf)

Z = allen wrench 6 - 24 Nm (17.7 lbf)

**FS3-U(BSP) optional connection****With port valves**

'U' and 'UL' size valves have

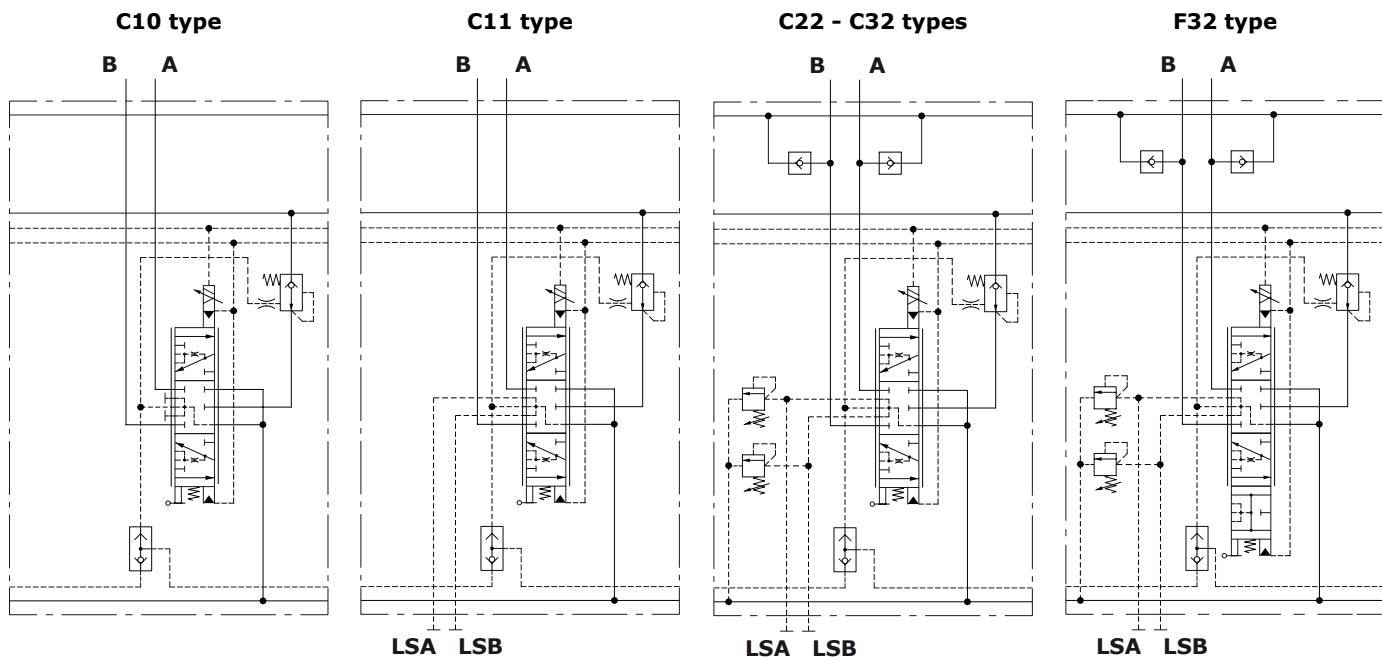
the same position



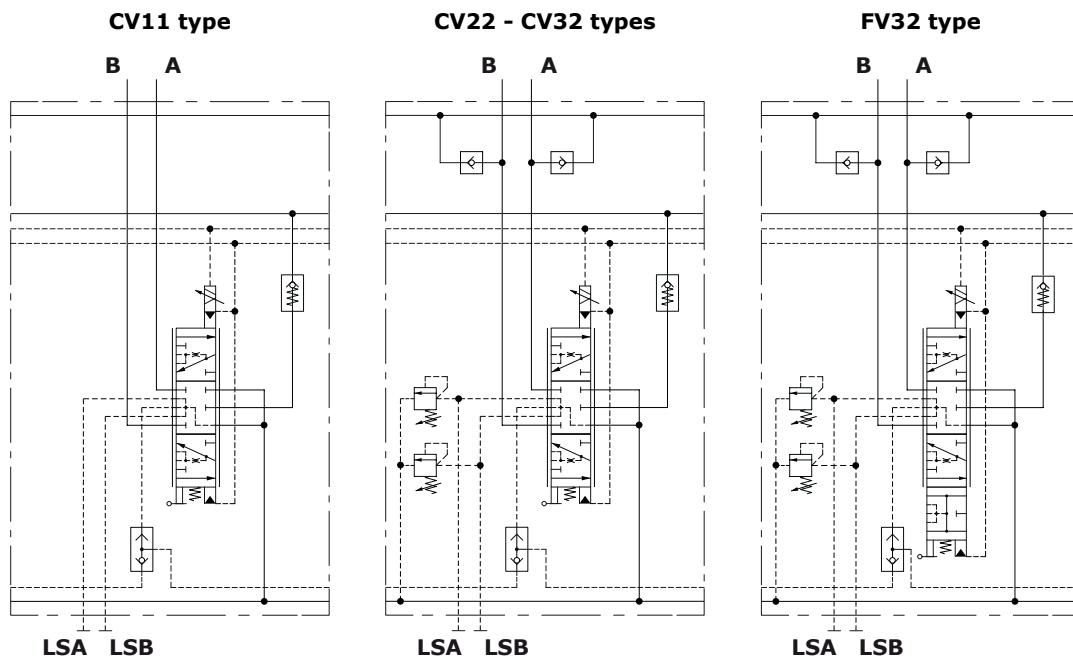
## Working section

## Dimensions and hydraulic circuit

## With compensator

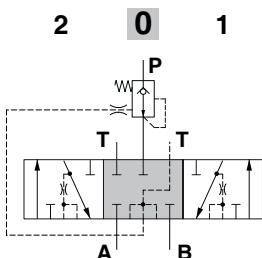


## Without compensator, with check valve



**Working section****Spools****1 type spool**

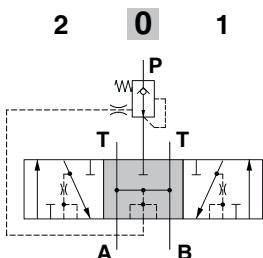
A, B closed in neutral position

**Spool stroke**

position 1: - 8 mm (- 0.31 in)  
 position 2: + 8 mm (+ 0.31 in)

**2 type spool**

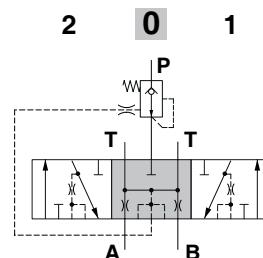
A, B open to tank in neutral pos.

**Spool stroke**

position 1: - 8 mm (- 0.31 in)  
 position 2: + 8 mm (+ 0.31 in)

**2H type spool**

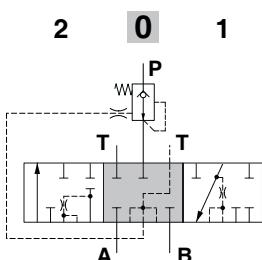
A, B partially to tank in neutral pos.

**Spool stroke**

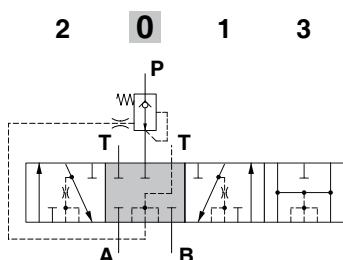
position 1: - 8 mm (- 0.31 in)  
 position 2: + 8 mm (+ 0.31 in)

**3 type spool**

single acting on A

**Spool stroke**

position 1: - 8 mm (- 0.31 in)  
 position 2: + 8 mm (+ 0.31 in)

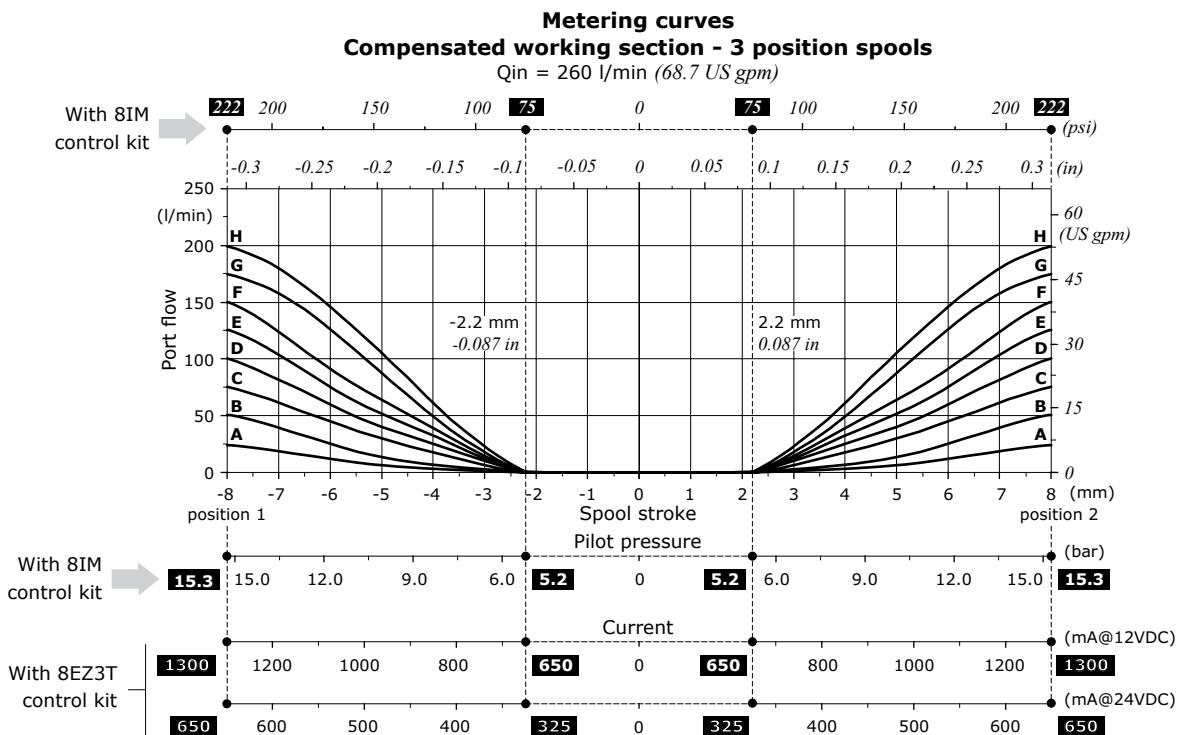
**5 type spool**floating in 4<sup>th</sup> position (pos.3)**Spool stroke**

position 1: - 8 mm (- 0.31 in)  
 position 2: + 8 mm (+ 0.31 in)  
 position 3: - 13 mm (- 0.51 in)

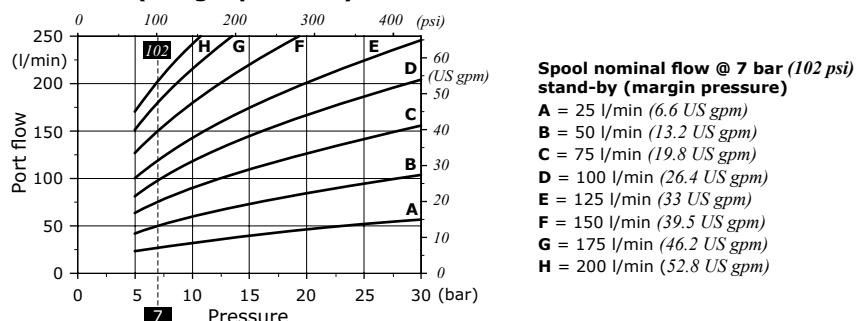
**Working section****Spools**

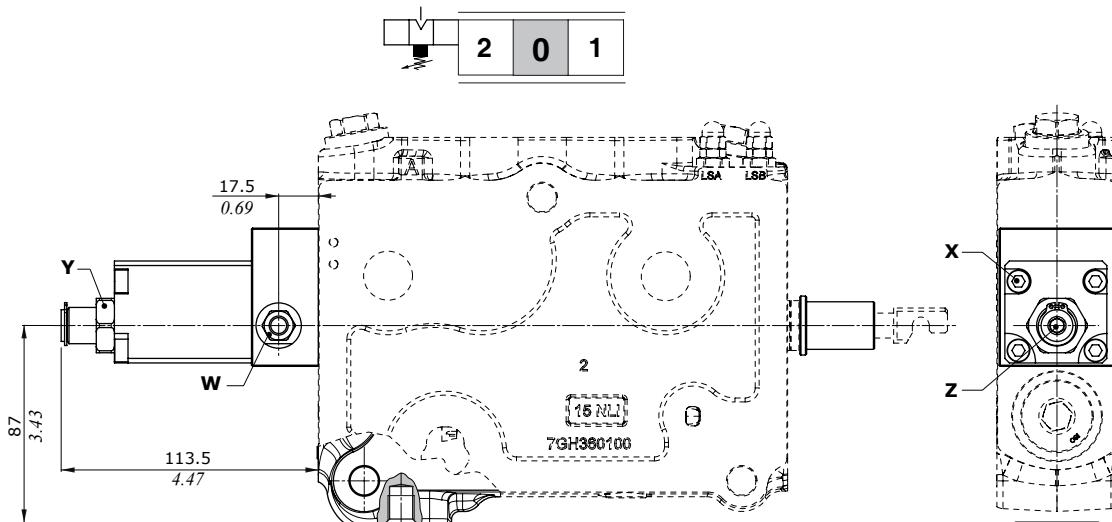
Following curves are detected with standard spools, connecting P⇒A⇒B⇒T and P⇒B⇒A⇒T ports without flow multiplication. Customized spools with backpressure or flow multiplication may require different force, pressure and pilot current for operation.

NOTE: for spools up to 120 l/min (31.7 US gpm), the effective flow on working ports may differ by 10% between the 1<sup>st</sup> an 10<sup>th</sup> section.



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

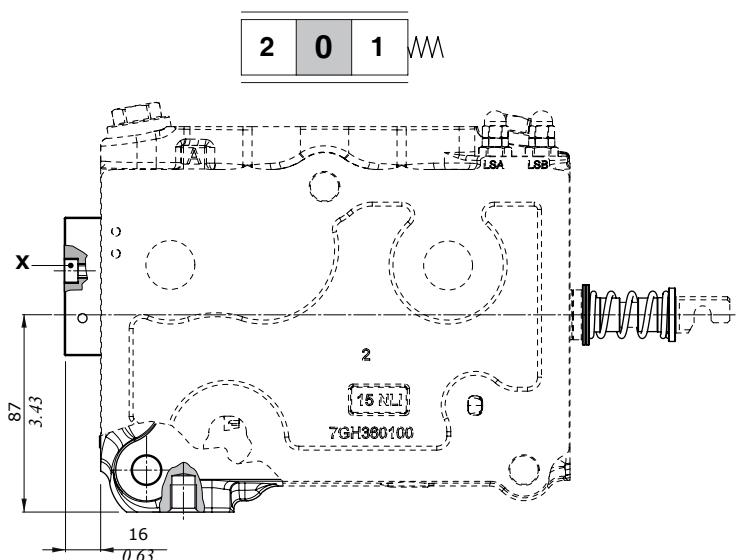


**Working section****"A" side spool control kit****With friction and center position feeling: 7FT type****Features**

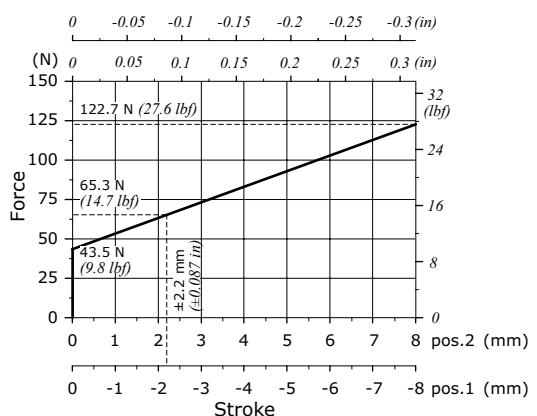
- Friction load adjusting . . . . . : 20-150 N (4.5-34 lbf)
- Friction load std. setting . . . . . : 100 N (22.5 lbf)
- Center tap (more than load) . . . . . : 100 N (22.5 lbf)

**Wrenches and tightening torques**

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

**With spring return to neutral position: 8 type****Wrenches and tightening torques**

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

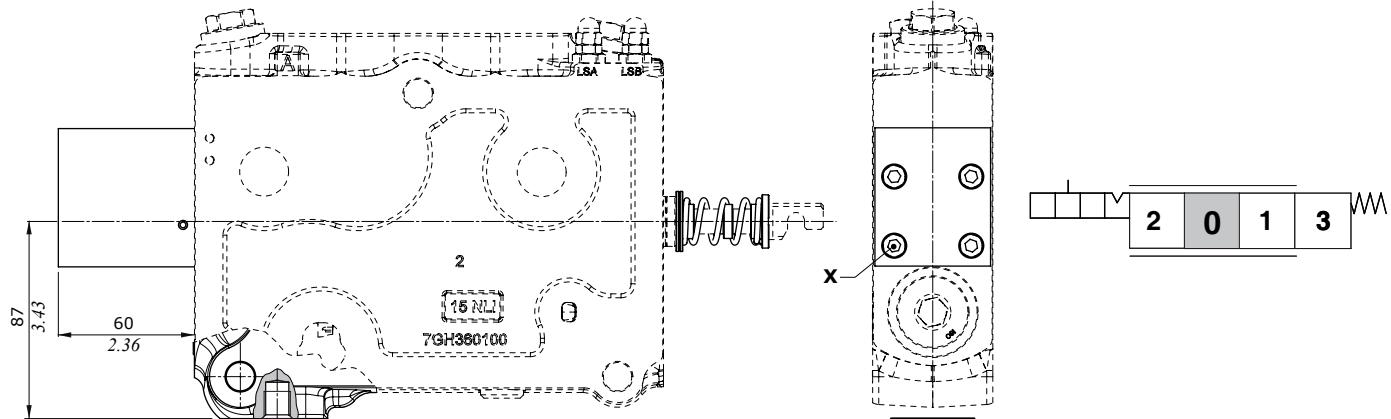
**Force vs. Stroke diagram**

## Working section

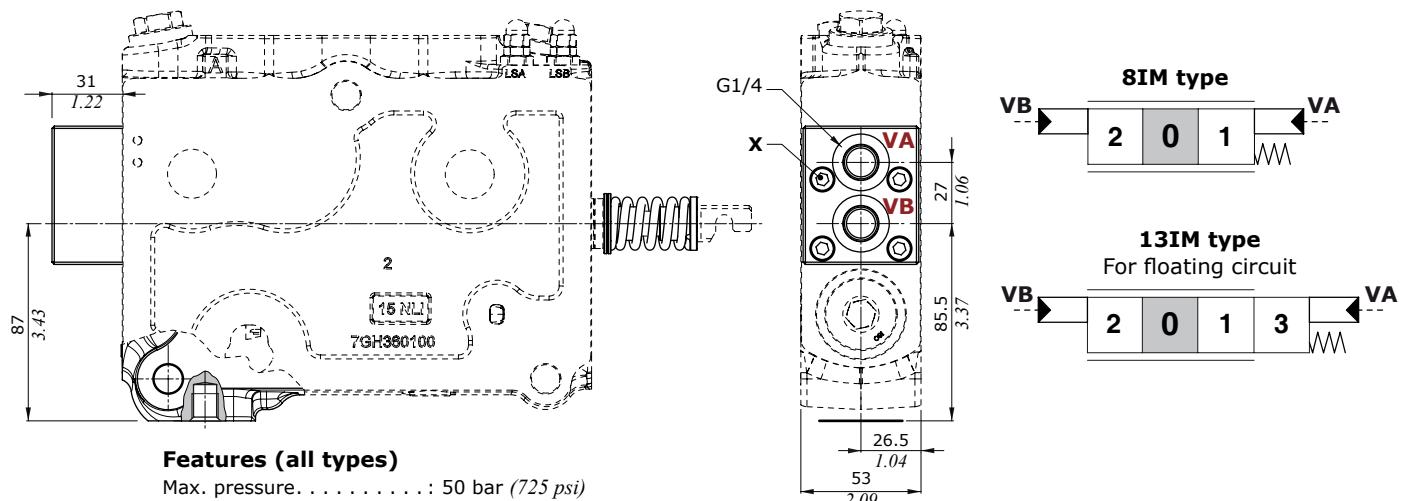
**"A" side spool control kit**

**With detent in 4<sup>th</sup> position (pos.3), for floating circuit: 13 type**

F or FV type working section and floating circuit type 5 spools are required

**Wrenches and tightening torques**

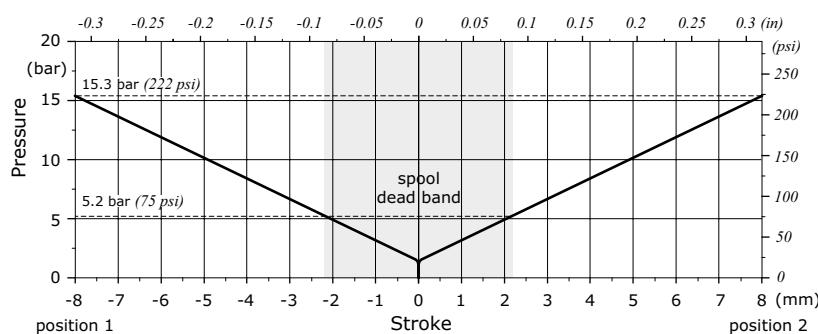
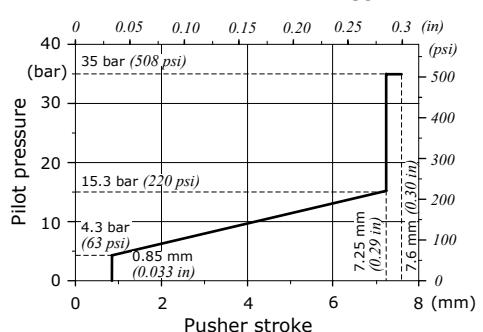
X = wrench 5 - 9.8 Nm (7.2 lbf)

**Proportional hydraulic controls****Features (all types)**

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

**Wrenches and tightening torques**

X = wrench 5 - 9.8 Nm (7.2 lbf)

**8IM type: Stroke vs. Pressure diagram****Type 8IM: suggested pressure control curve: 020 type**

**Working section****Electrohydraulic controls**

Following specifications are measured with:

- mineral oil of 46 mm<sup>2</sup>/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	Spool control type		
	8EZ3T	13EZ3T	
<b>Electric specifications</b>			
Coil impedance	12 VDC 24 VDC	4.72 Ω 20.8 Ω	4.72 Ω 20.8 Ω
Max. operating current	12 VDC 24 VDC	1.5 A 0.75 A	1.5 A 0.75 A
No load current consumption		0	0
Hysteresis max. <sup>(1)</sup>	internal drain	5% with lever	7% with lever
Time response	from 0 ⇒ 100% of stroke from 100% ⇒ 0 of stroke	< 150 ms < 80 ms	< 250 ms < 125 ms
Min. flow control signal	12 VDC 24 VDC	650 mA 325 mA	400 mA 200 mA
Max. flow control signal	12 VDC 24 VDC	1300 mA 650 mA	600 mA 300 mA
Float flow control signal	12 VDC 24 VDC	- -	850 mA 250 mA
Dither frequency	low frequency high frequency	150 Hz 150 Hz - 350 mA	150 Hz 150 Hz - 350 mA
Insertion		100%	100%
Coil insulation		Class H (180°C - 356°F)	Class H (180°C - 356°F)
Connector type		AMP JPT - Deutsch DT	AMP JPT - Deutsch DT
Weather protection (connector)		IP65 (JPT type) - IP69K (DT type)	IP65 (JPT type) - IP69K (DT type)
<b>Hydraulic specifications</b>			
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 unit; for information please contact Sales Department.

**Working section****Electrohydraulic controls without on-board electronic: spool position sensor**

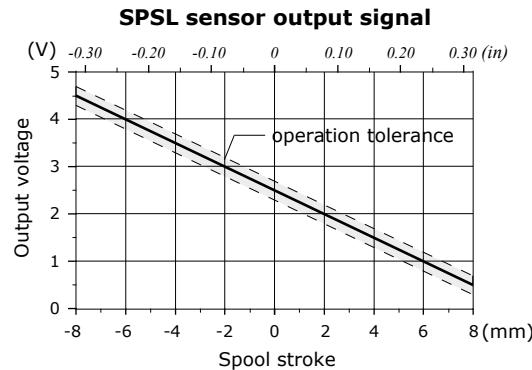
The sensor can be ordered exclusively through the electrohydraulic controls; please see page 63 for available control list.

**SPSL sensor**

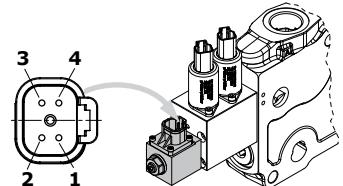
The SPSL position sensor converts the spool movements into a voltage linear signal..

**Working conditions**

Voltage supply	5 VDC
Current absorption	< 10 mA (no load)
Mechanical life	3x10 <sup>6</sup>
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

**Deutsch DT04-4P connector**

Pin	Function
1	+ 5V
2	not connected
3	GND
4	signal OUT



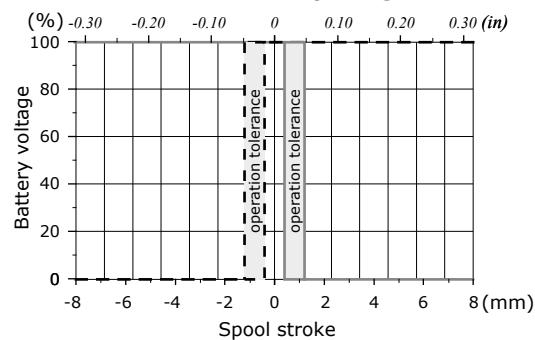
Deutsch DT06-4S mating connector, code 5CON140072

**SPSD sensor**

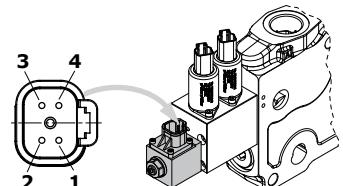
The SPSPD position sensor converts the spool movements into an electric digital signal.

**Working conditions**

Voltage supply	from 9 to 32 VDC
Current absorption	< 10 mA (no load)
Mechanical life	3x10 <sup>6</sup>
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

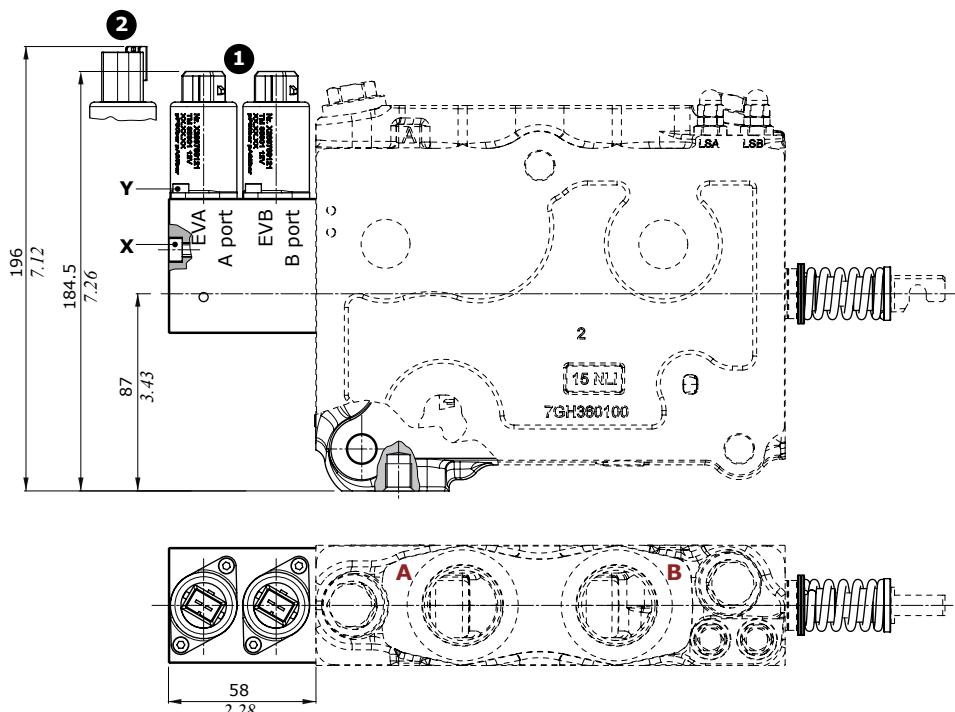
## Working section

### Electrohydraulic controls

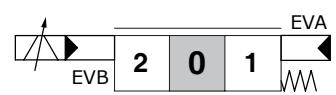
#### Proportional controls; 8EZ3T - 13EZ3T types

##### Control Types

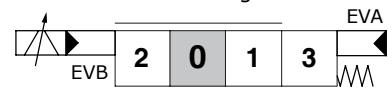
- ① : With AMP JPT connector - AMP JPT mating connector, code: 5CON003
- ② : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031



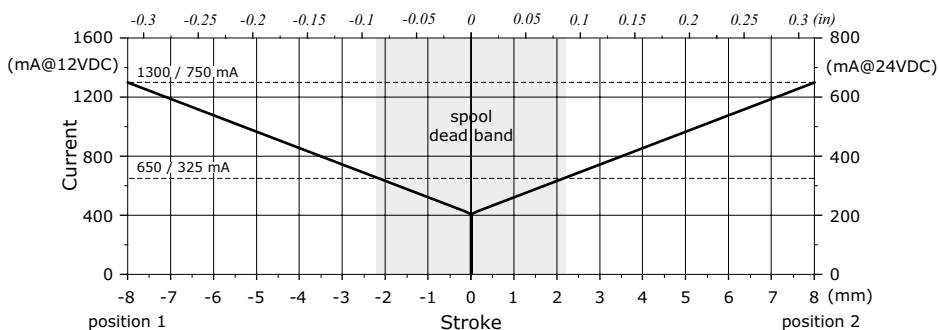
**8EZ3T - 8EZ3T4 types**



**13EZ3T - 13EZ3T4 types**  
For floating circuit



**8EZ3T type: Stroke vs. Current diagram**



## Working section

## Electrohydraulic controls

## Proportional control; 8EZ3TSPSD - 8EZ3TSPSL types

For control features see previous page, for sensor specification and features please see page 71.

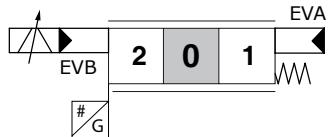
## Control Types

① : With AMP JPT connector - AMP JPT mating connector, code: 5CON003

② : With Deutsch DT04 connector - Deutsch DT06-2S mating connector code: 5CON140031

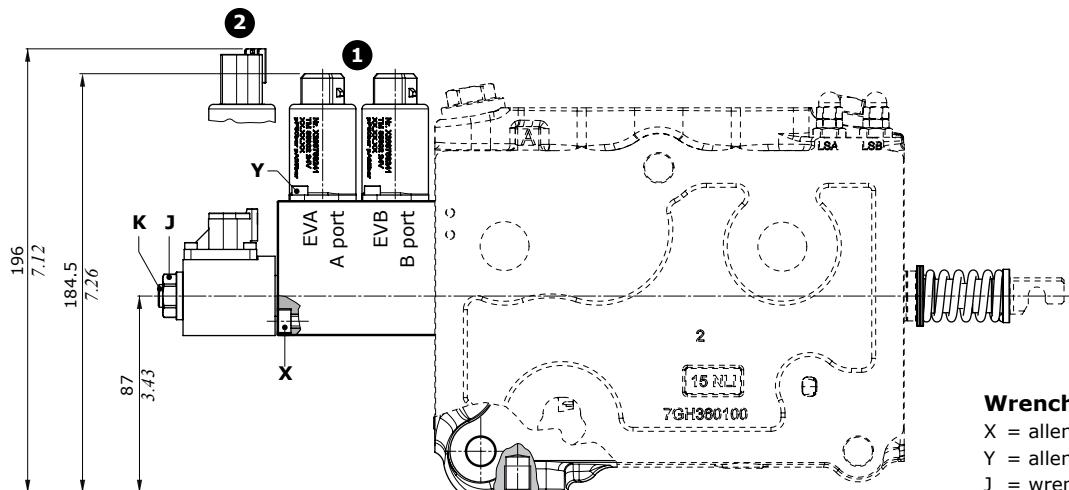
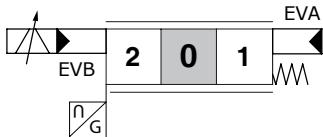
## 8EZ3TSPSD - 8EZ3T4SPSD types

CANbus interface



## 8EZ3TSPSL - 8EZ3T4SPSL types

Analog input



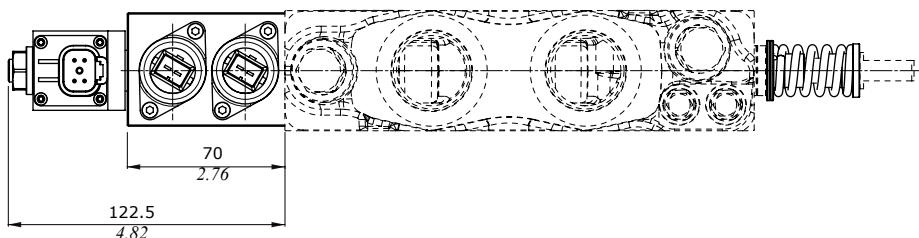
## Wrenches and tightening torques

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

Y = allen wrench 3 - 5 Nm (3.7 lbf)

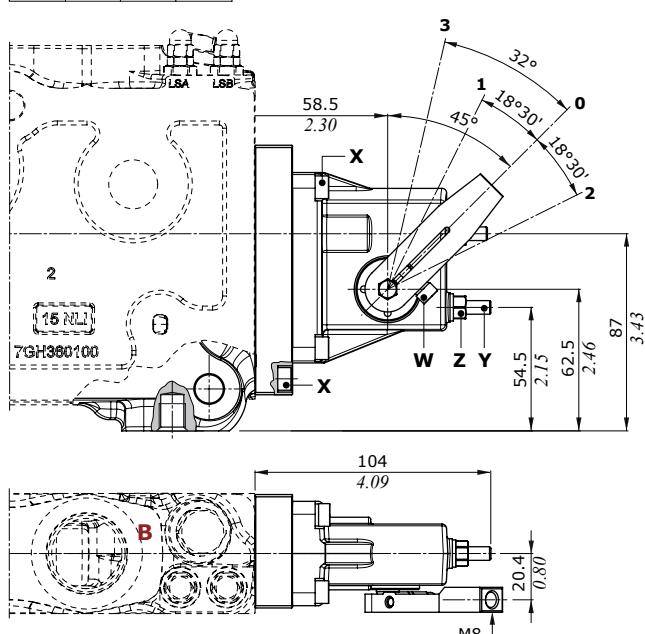
J = wrench 17 - 9.8 Nm (7.2 lbf)

K = allen wrench 4 - 9.8 Nm (7.2 lbf)



**Working section****"B" side spool control kit****Cast iron standard lever box; LG type**

2	0	1	3
---	---	---	---

**Wrenches and tightening torque**

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

Y = allen wrench 3

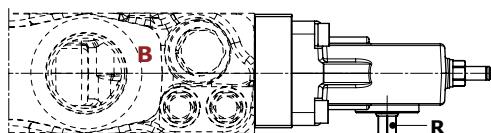
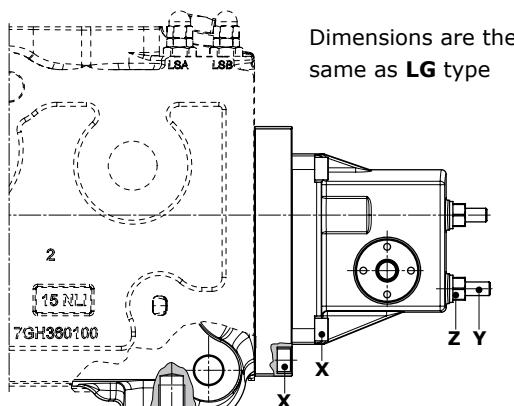
Z = wrench 10 - 9.8 Nm (7.2 lbf)

W = allen wrench 4 - 6.6 Nm (4.9 lbf)

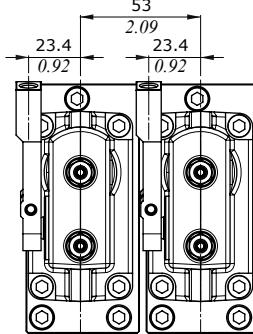
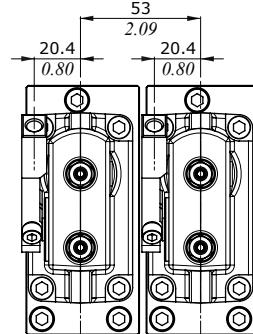
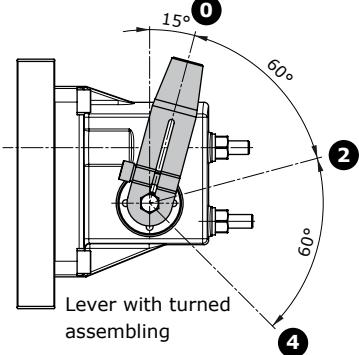
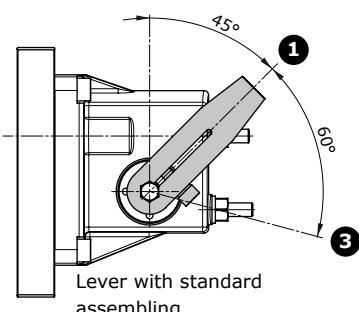
R = wrench 8

**Cast iron lever box, without lever; LGN type**

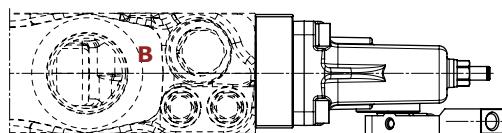
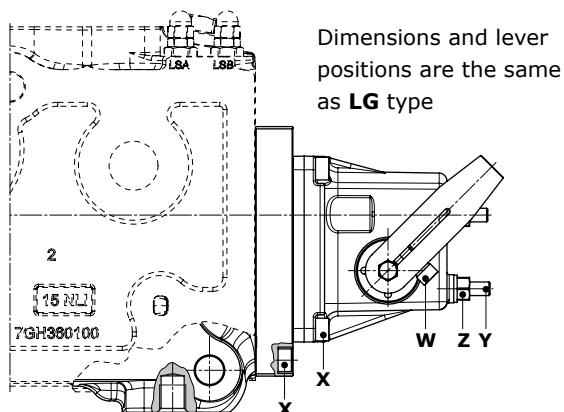
2	0	1	3
---	---	---	---

**Lever assembly position**

Please see page 62 for specification in working section description

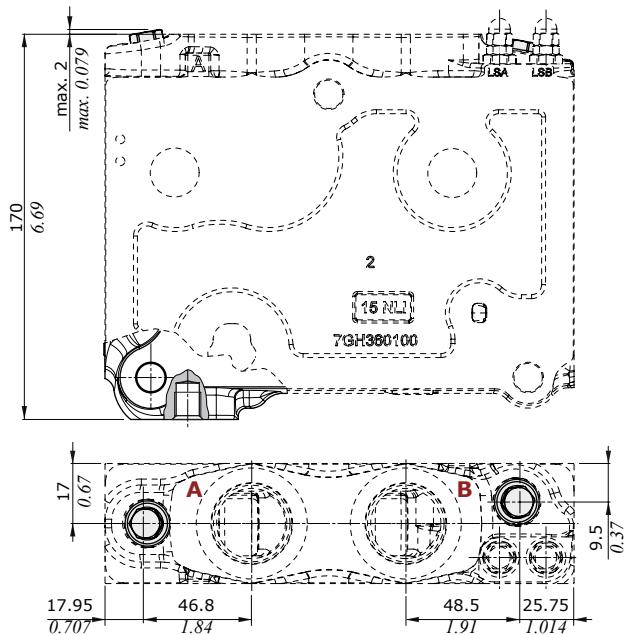
**Aluminium lever box; L type**

2	0	1	3
---	---	---	---

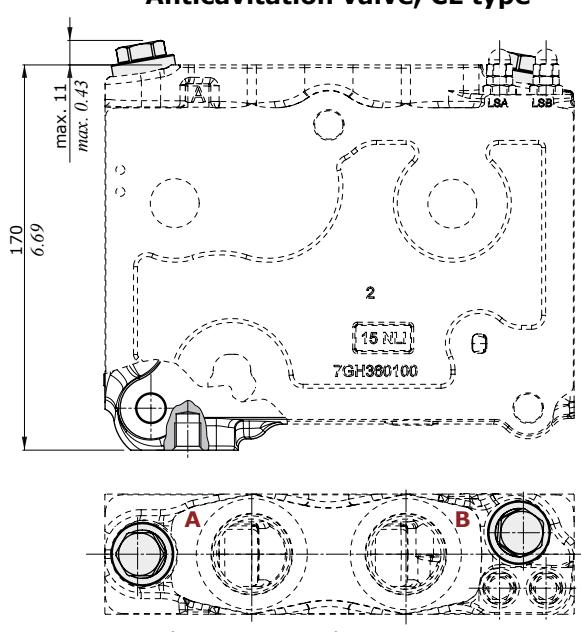
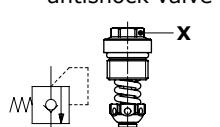
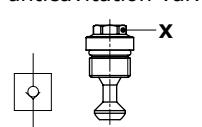
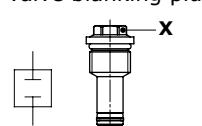
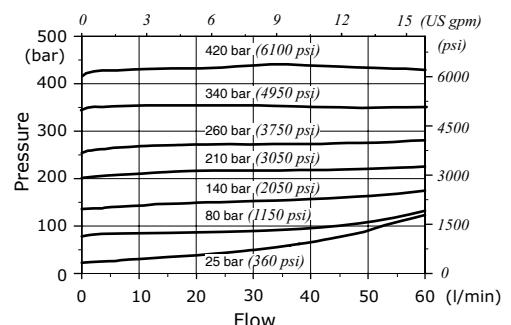
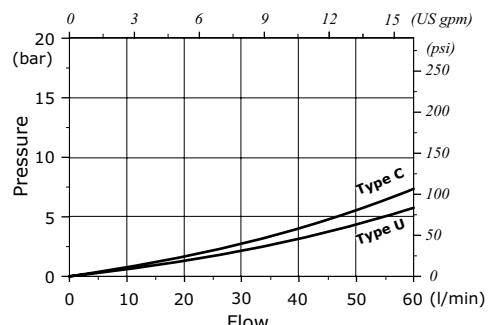
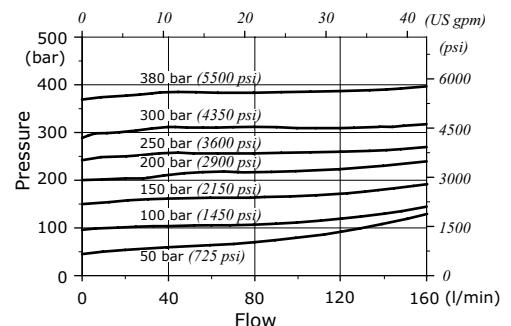
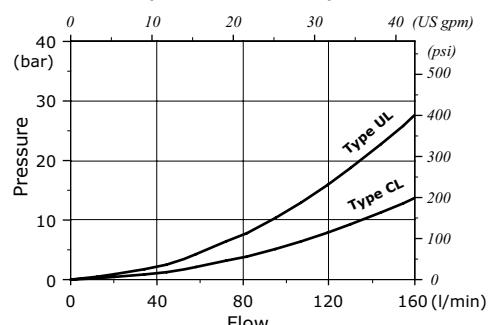


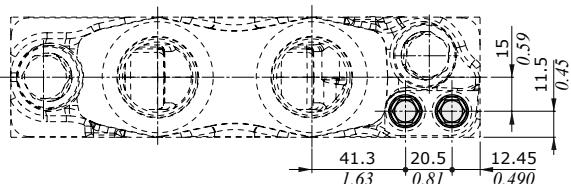
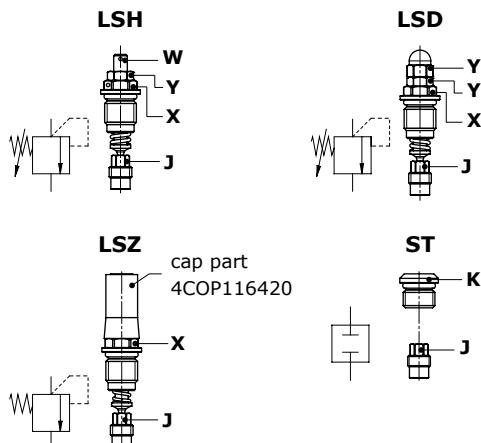
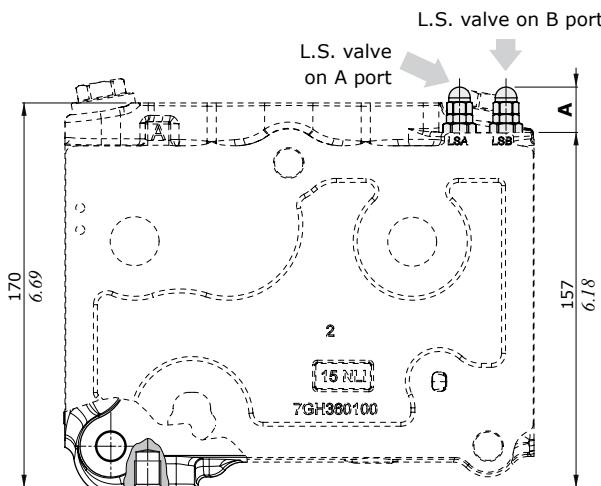
## Working section

## Port valves

**Antishock anticavitation valves, U type**  
**Anticavitation valve, C type**
**Wrenches and tightening torque**

X = wrench 13 - 24 Nm (17.7 lbf)  
Y = wrench 19 - 42 Nm (31 lbf)

**Antishock anticavitation valves with pressure relief function, UL type**  
**Anticavitation valve, CL type**
**U type**  
antishock valve**C type**  
anticavitation valve**UT type**  
valve blanking plug
**U type, setting example**  
(10 l/min - 2.6 Us gpm)

**Types U-C, pressure drop**  
(in anticavitation)

**UL type, setting example**  
(5 l/min - 1.3 Us gpm)

**UL-CL types, pressure drop**  
(in anticavitation)


**Working section****L.S. port relief valves**

Valve type	dim. A	
	mm	in
<b>LSD</b>	20	0.79
<b>LSH</b>	15.5	0.61
<b>LSZ</b>	32.5	1.28

**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

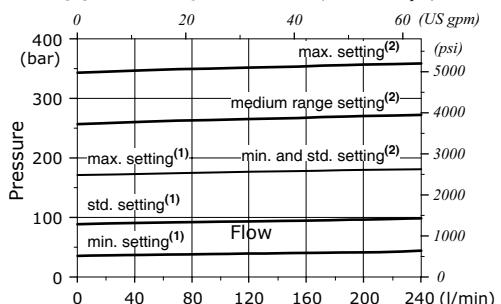
J = wrench 7 - 24 Nm (17.7 lbf)

K = allen wrench 5 - 24 Nm (17.7 lbf)

**Pressure vs. flow diagram**

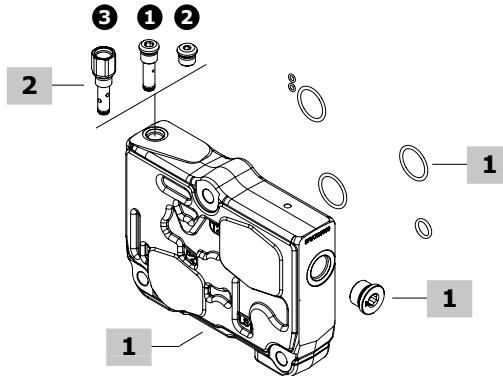
(1) = valve range 40-180 bar (580-2600 psi)

(2) = valve range 180-350 bar (2600-5000 psi)

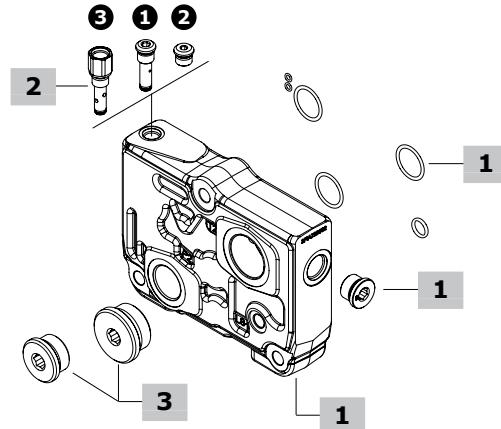


## Outlet section part ordering codes

DPC200 / RF 3 0 - .....



DPC200 / RD 3 1 - .....

**1 Outlet section\***

page 78

TYPE	CODE	DESCRIPTION
RF	5FIA720300	Without ports
RD	5FIA720702	With P1, T1 and LS1 ports
RD-FS3U(SAE)	5FIA720970	As previous one, with SAE J518-code 61 flange connection

**2 Drain options**

page 79

TYPE	CODE	DESCRIPTION
①	XTAP517460	Internal drain; to be used with mechanical controls
②	XTAP217160	Internal drain; to be used with hydraulic controls
③	XGIU519610*	External drain SAE6; to be used with electrohydraulic controls

**3 Port options\***

TYPE: 0	DESCRIPTION: Without ports (only for RF type)
TYPE: 1	DESCRIPTION: P1 and T1 ports plugged
PLUG CODE:	3XTAP838200 (SAE16) + 3XTAP848220 (SAE20)
BLIND FLANGE CODE:	4FL1066181 (3/4") + 4FL1071191 (1")
TYPE: 2	DESCRIPTION: P1 port plugged and T1 port open
PLUG CODE:	3XTAP838200 (SAE16)
BLIND FLANGE CODE:	4FL1066181 (3/4")
TYPE: 3	DESCRIPTION: P1 port open and T1 port plugged
PLUG CODE:	3XTAP848220 (SAE20)
BLIND FLANGE CODE:	FL1071191 (1")
TYPE: 4	DESCRIPTION: P and T ports open

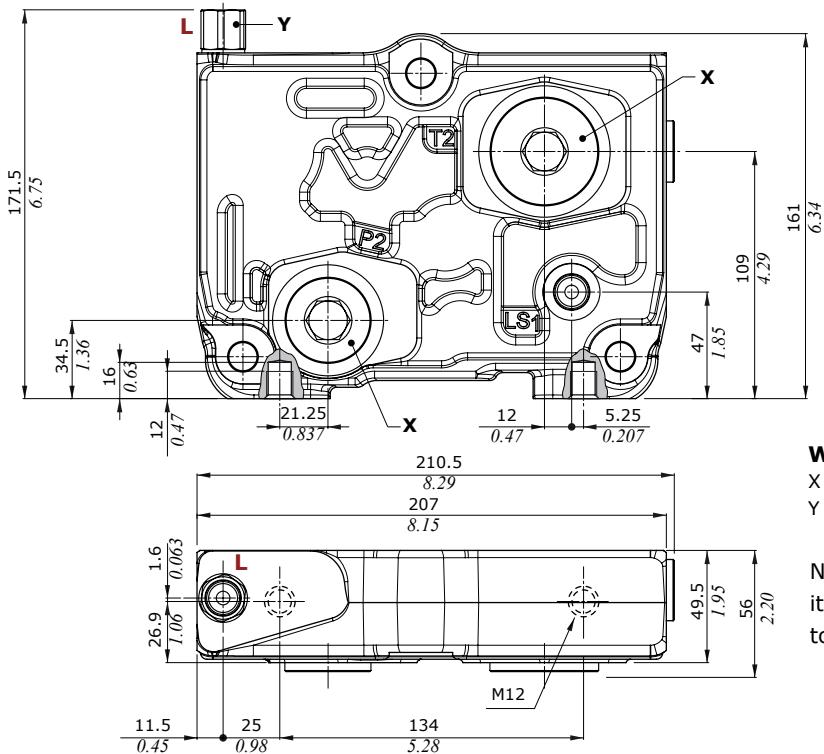
**4 Section threading**

Specify threading only if it is different from BSP standard.  
For section with SAE J518-code 61 flange connection digit:  
**FS3-U(SAE).**

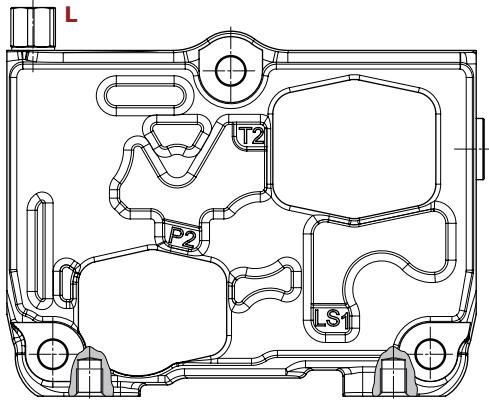
NOTE (\*): Codes are referred to **UN-UNF** thread.

**Outlet section****Dimensions and hydraulic circuit****RD31 type**

With P1, T1 (plugged) and LS1 ports; external drain

**RF30 type**

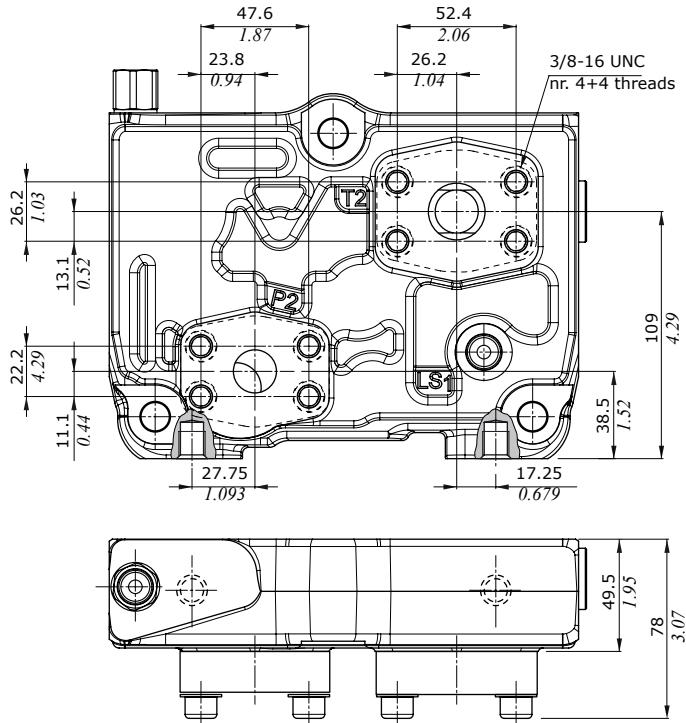
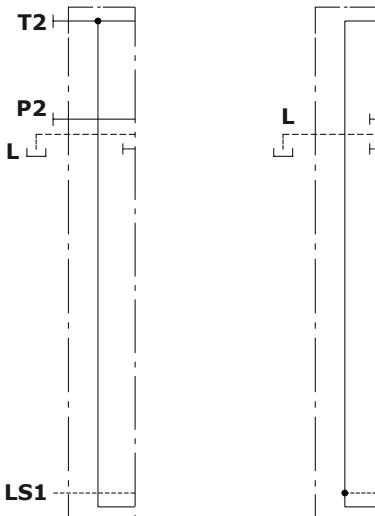
Without ports; external drain

**Wrenches and tightening torque**

X = allen wrench 17 - 42 Nm (31 lbf)

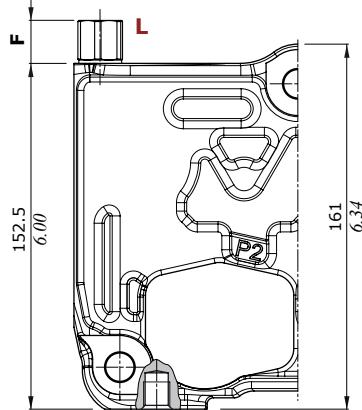
Y = wrench 19 - 24 Nm (17.7 lbf)

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

**FS3-U(SAE) optional connection****RD31 type****RF30 type**

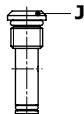
## Outlet section

## Drain options



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

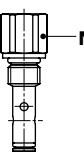
**Option 1**  
internal drain for  
mechanical controls



**Option 2**  
internal drain for  
hydraulic controls



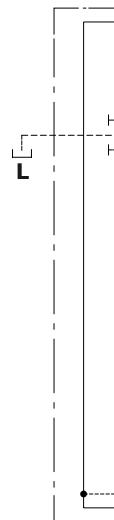
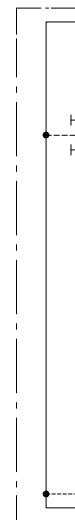
**Option 3**  
external drain for  
electrohydraulic controls



Option 1

Option 2

Option 3



## Wrenches and tightening torque

J = allen wrench 5 - 24 Nm (17.7 lbf)

M = allen wrench 6 - 24 Nm (17.7 lbf)

N = wrench 19 - 24 Nm (17.7 lbf)

### Connection between DPC Series valves

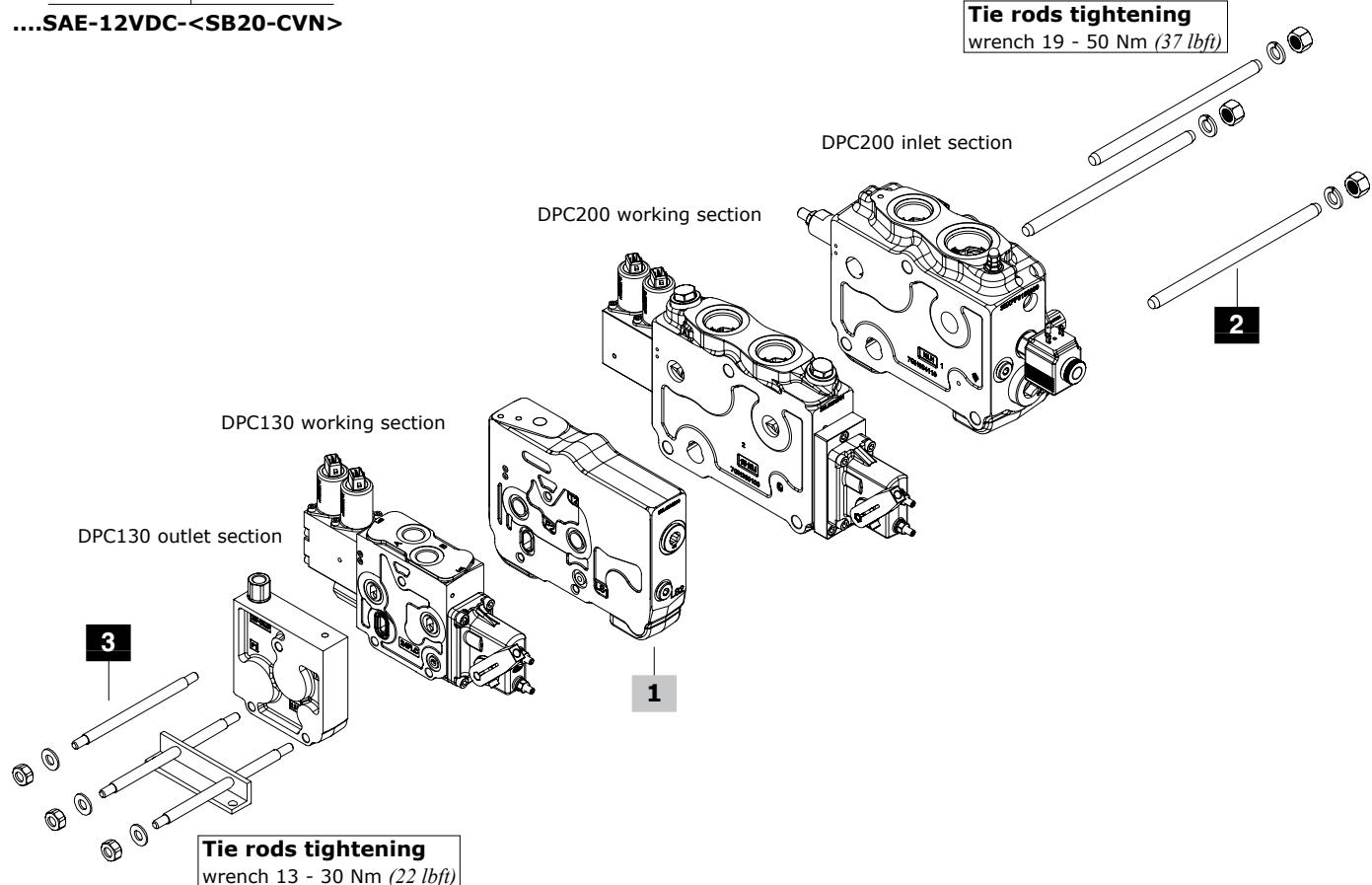
DPC200 directional valve  
 DPC130 directional valve

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**DPC200/1/BR2-10(D220\ELP)/C30-104(200\200)-8EZ3TLG1.UTUT/EIR/C10-1S8EZ3TL1/RF30/DPC130/1-.....**

Nr. of working sections      Inlet section      Working section      1      Working section      Outlet section      Nr. of working sections

directional valve common specification  
**....SAE-12VDC-<SB20-CVN>**



#### 1 Intermediate section

#### page 81

TYPE	CODE	DESCRIPTION
EIR-SAE	638405001	Section to assemble DPC200 and DPC130 in single directional valve; with LS port

**NOTE:** the maximum number of working sections should not exceed 10 units

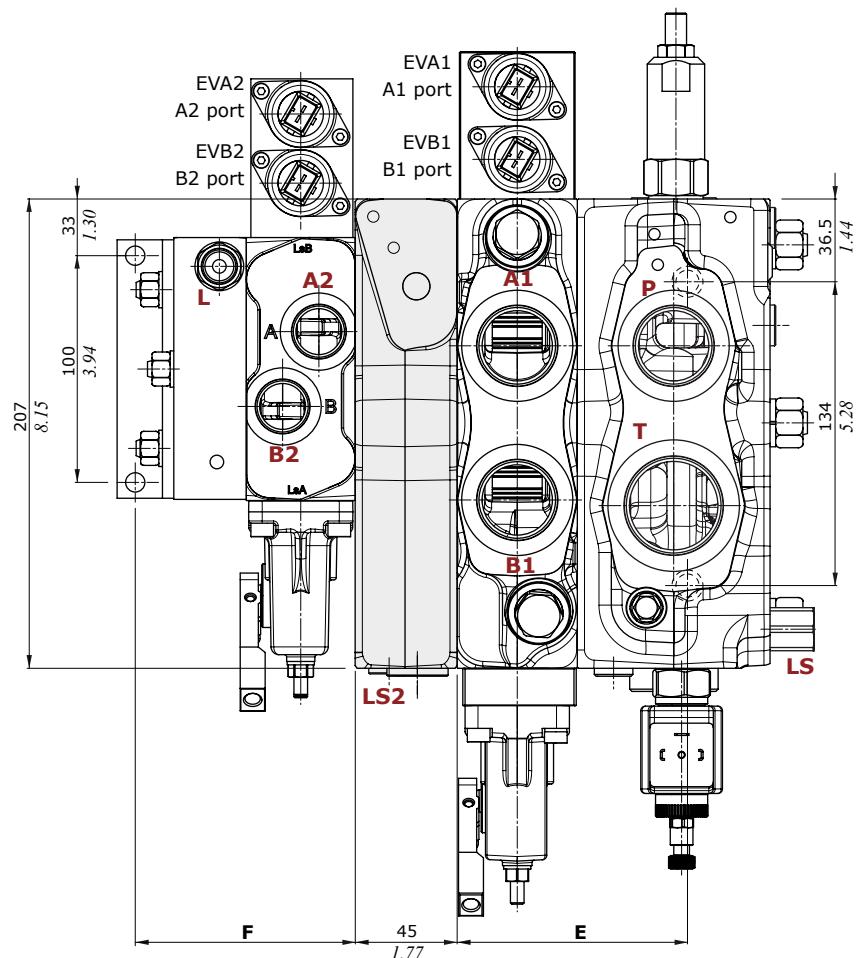
#### 2 DPC200 side assembling kit

CODE	CODE	DESCRIPTION
<b>With inlet section type</b>		
<b>BR type</b>	<b>BRF type</b>	
5TIR112180	5TIR112141	For 1 working section valve
5TIR112235	5TIR112194	For 2 working section valve
5TIR112287	5TIR112247	For 3 working section valve
5TIR112340	5TIR112300	For 4 working section valve
5TIR112393	5TIR112354	For 5 working section valve
5TIR112446	5TIR112407	For 6 working section valve
5TIR112499	5TIR112460	For 7 working section valve
5TIR112552	5TIR112512	For 8 working section valve
5TIR112605	5TIR112565	For 9 working section valve

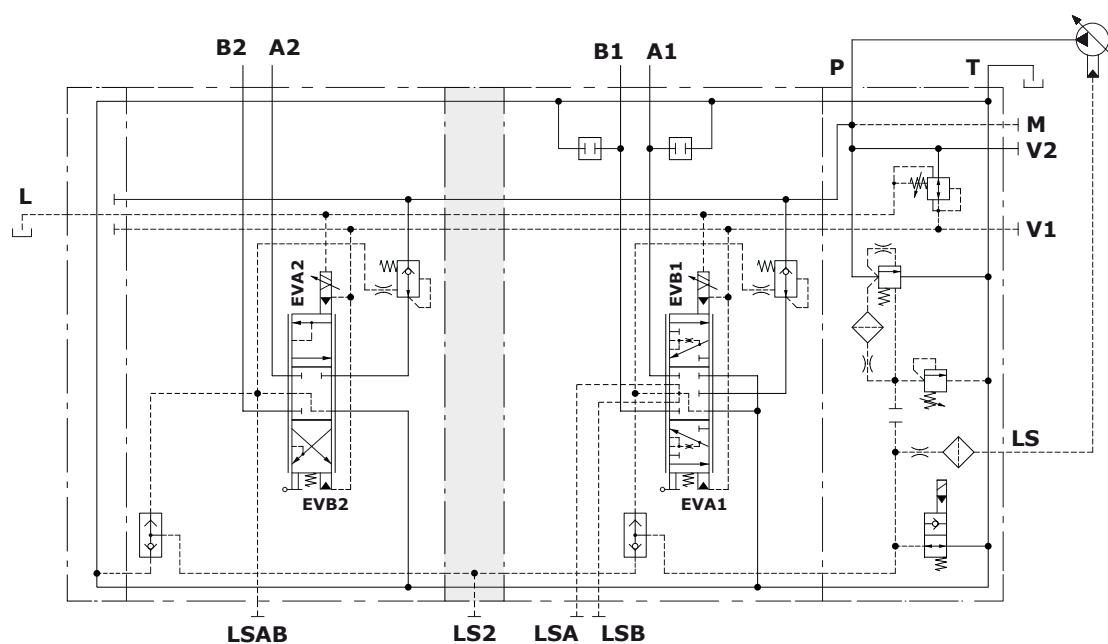
#### 3 DPC130 side assembling kit

CODE	DESCRIPTION
5TIR108112	For 1 working section valve
5TIR108160	For 2 working section valve
5TIR108208	For 3 working section valve
5TIR108256	For 4 working section valve
5TIR108304	For 5 working section valve
5TIR108352	For 6 working section valve
5TIR108400	For 7 working section valve
5TIR108448	For 8 working section valve
5TIR108496	For 9 working section valve

## Connection between DPC Series valve



Nr. of working sections	dim. E		dim. F			
	BR inlet section	BRF inlet section	mm	in	mm	in
1	101.5	4.00	73.1	2.88	97	3.82
2	151.5	6.08	126.1	4.96	145	5.71
3	207.5	8.17	179.1	7.05	193	7.60
4	260.5	10.26	232.1	9.14	241	9.49
5	313.5	12.34	285.1	11.22	289	11.38
6	366.5	14.43	338.1	13.31	337	13.27
7	419.5	16.52	391.1	15.40	385	15.16
8	472.5	18.60	444.1	17.48	433	17.05
9	525.5	20.69	497.1	19.57	481	18.94



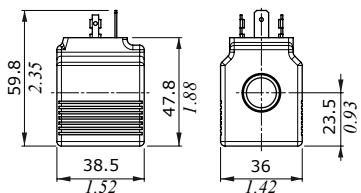
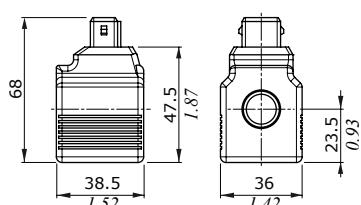
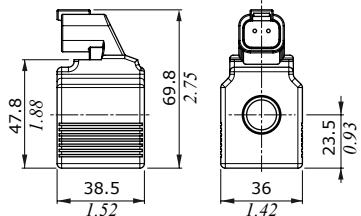
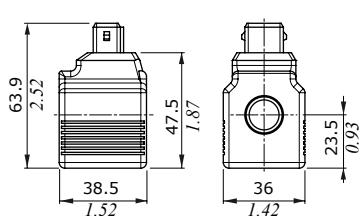
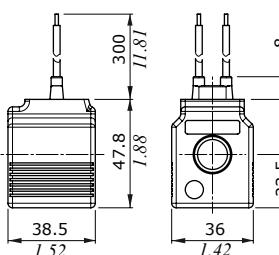
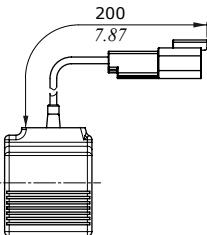
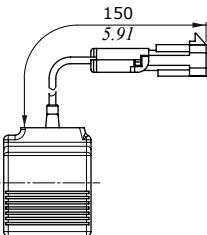
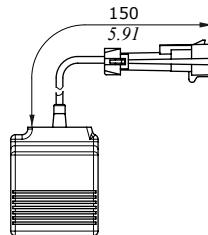
## Coils and connectors

Coil type	Voltage	Connectors					
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	Flying leads (without conn.)
	<b>10 VDC</b>	4SLE001000A	-	-	-	-	-
	<b>12 VDC</b>	4SLE001200A 4SLE001217A <sup>(3)</sup>	4SLE001201A <sup>(5)</sup> 4SLE001209A <sup>(3-4)</sup> 4SLE001202A <sup>(5)</sup> 4SLE001216A <sup>(3-5)</sup> 4SLE001206A <sup>(2)</sup>	4SLE001203A <sup>(4)</sup> 4SLE001211A <sup>(3-4)</sup>	4SLE001210A <sup>(2)</sup>	4SLE001214A <sup>(2)</sup>	4SLE001207A
	<b>14 VDC</b>	-	4SLE001400A <sup>(5)</sup> 4SLE001401A <sup>(3-5)</sup> 4SLE001402A <sup>(3-4)</sup>	4SLE001403A <sup>(3-4)</sup>	-	-	-
<b>BER</b>	<b>24 VDC</b>	4SLE002400A 4SLE002408A <sup>(3)</sup> 4SLE302400A <sup>(1)</sup>	4SLE002401A <sup>(4)</sup> 4SLE002407A <sup>(3-4)</sup> 4SLE002402A <sup>(5)</sup>	4SLE002403A <sup>(4)</sup>	-	-	4SLE002404A
	<b>28 VDC</b>	-	4SLE002802A <sup>(5)</sup>	4SLE002800A <sup>(4)</sup>	-	-	-
	<b>48 VDC</b>	4SLE004800A 4SLE304800A <sup>(1)</sup>	-	-	-	-	-
	<b>110VDC</b>	4SLE011000A 4SLE311000A <sup>(1)</sup>	-	-	-	-	-
	<b>220 VDC</b>	4SLE022000A 4SLE322000A <sup>(1)</sup>	-	-	-	-	-
<b>BQP19</b>	<b>12 VDC</b>	4SL5000126A	4SL5000125A <sup>(6)</sup>	4SL5000129A <sup>(5)</sup>	-	-	-
	<b>24 VDC</b>	4SL5000245A	4SL5000244A <sup>(6)</sup>	4SL5000248A <sup>(5)</sup>	-	-	-
<b>BT</b>	<b>10 VDC</b>	4SL3000100					
	<b>12 VDC</b>	4SL3000120 4SL3000126 <sup>(4)</sup>	4SL3000130 <sup>(6)</sup> 4SL3000134 <sup>(3-6)</sup> 4SL3000128 <sup>(2)</sup>	4SL3000122 <sup>(5)</sup> 4SL3001200 <sup>(3-5)</sup>	4SL3000124 <sup>(2)</sup>	4SL3000127 <sup>(2)</sup>	4SL300012C
	<b>24 VDC</b>	4SL3000240 4SL3030240 <sup>(1)</sup>	4SL3000249 <sup>(6)</sup> 4SL300024C <sup>(3-6)</sup>	4SL3000248 <sup>(5)</sup>	-	-	4SL3000246
	<b>26 VDC</b>	4SL3000260	-	-	-	-	-
	<b>48 VDC</b>	4SL3000480 4SL3030480 <sup>(1)</sup>	-	-	-	-	-
	<b>110 VDC</b>	4SL3001100 4SL3031100 <sup>(1)</sup>	-	-	-	-	-
	<b>220 VDC</b>	4SL3002200 4SL3032200 <sup>(1)</sup>	-	-	-	-	-
<b>Mating connectors</b>							
<b>Standard</b>		4CN1009995	5CON140031	5CON003	-	-	
<b>With rectifier</b>	<b>24VDC</b>	4CN3010240	-	-	-	-	
	<b>48VDC</b>	4CN3010480	-	-	-	-	
	<b>110VDC</b>	4CN3011100	-	-	-	-	
	<b>220VDC</b>	4CN3012200	-	-	-	-	

Notes: <sup>(1)</sup> supply with AC and use only with rectifier connector - <sup>(2)</sup> with flying leads - <sup>(3)</sup> with bidirectional diode - <sup>(5)</sup> with unidirectional diode  
<sup>(5)</sup> integrated perpendicular type - <sup>(6)</sup> integrated parallel type

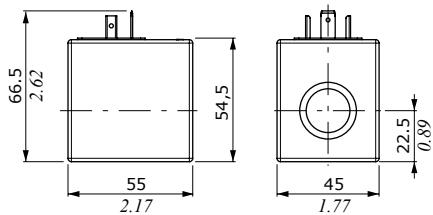
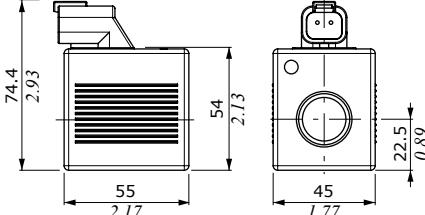
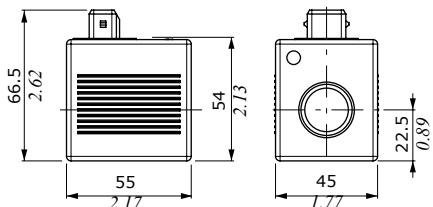
## Coils and connectors

## BER type

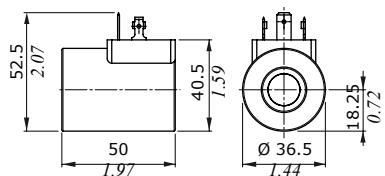
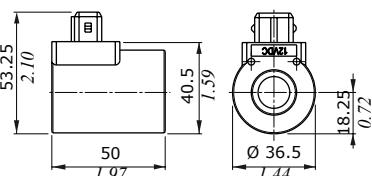
**ISO4400 connector****DEUTSCH DT04 connector**  
(perpendicular type)**DEUTSCH DT04 connector**  
(parallel type)**AMP JPT connector****Flying leads****Flying leads with  
DEUTSCH DT04 connector****Flying leads with PACKARD  
WEATHER-PACK connector****Flying leads with PACKARD  
METRI-PACK connector****Features**

Nominal voltage tolerance :  $\pm 10\%$   
 Power rating . . . . . : 19.2 W - 10/12/24/48/  
 110/220 VDC  
 : 19 W - 24/110/220 RAC  
 : 19.2 W - 48 RAC  
 Max. operating current . . . : 1.9 A - 10 VDC  
 : 1.61 A - 12 VDC  
 : 0.80 A - 24 VDC  
 : 0.40 A - 48 VDC  
 : 0.17 A - 110 VDC  
 : 0.09 A - 220 VDC  
 : 0.89 A - 24 RAC  
 : 0.45 A - 48 RAC  
 : 0.19 A - 110 RAC  
 : 0.09 A - 220 RAC  
 Coil insulation . . . . . : Class H (180°C - 356°F)  
 Weather protection . . . . . : IP65 - ISO4400  
 : IP69K - Deutsch DT  
 : IP65 - AMP JPT  
 : IP67 - Weatherpack  
 : IP67 - Metri-pack  
 Insertion . . . . . : 100%

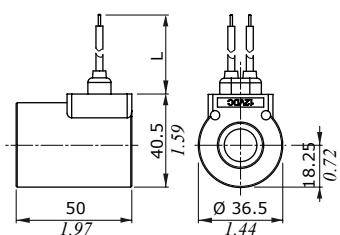
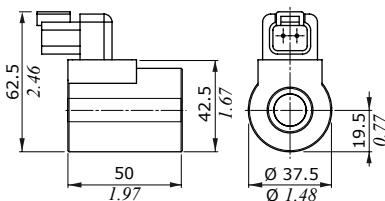
## BQP19 type

**ISO4400 connector****DEUTSCH DT04 connector****AMP JPT connector****Features**

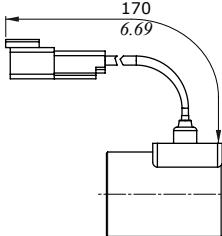
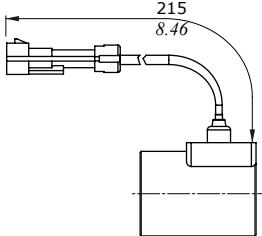
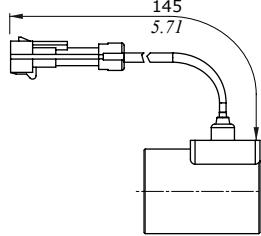
Nominal voltage tolerance :  $\pm 10\%$   
 Power rating . . . . . : 15 W @ 12 VDC  
 : 15 W @ 24 VDC  
 Max. operating current . . . : 1.25 A @ 12 VDC  
 : 0.63 A @ 24 VDC  
 Coil insulation . . . . . : Class H  
 (180°C - 356°F)  
 Weather protection . . . . . : IP65 - ISO4400  
 : IP69K - Deutsch DT  
 : IP65 - AMP JPT  
 Insertion . . . . . : 100%

**Coils and connectors****BT type****ISO4400 connector****AMP JPT connector****Features**

Nominal voltage tolerance :	$\pm 10\%$
Power rating . . . . .	: 19 W - 10 VDC : 21 W - 12/24/26 VDC : 20.3 W - 48 VDC : 17.3 W - 110 VDC : 17.7 W - 220 VDC : 19.9 W - 24 RAC : 20.7 W - 48 RAC : 20 W - 110 / 220 RAC
Max. operating current . . . . .	: 1.9 A - 10 VDC : 1.77 A - 12 VDC : 0.89 A - 24VDC : 0.84 A - 26 VDC : 0.43 A - 48 VDC : 0.16 A - 110 VDC : 0.08 A - 220 VDC : 0.93 A - 24 RAC : 0.47 A - 48 RAC : 0.18 A - 110 RAC : 0.09 A - 220 RAC
Coil insulation . . . . .	Class F (155°C - 311°F)
Weather protection . . . . .	IP65 - ISO4400 IP69K - Deutsch DT IP65 - AMP JPT IP67 - Weatherpack IP67 - Metri-pack
Insertion . . . . .	100%

**Flying leads****DEUTSCH DT04 connector**

Coil type	Dimension L	
	(mm)	(in)
12VDC	247	9.72
24VDC	307	12.09

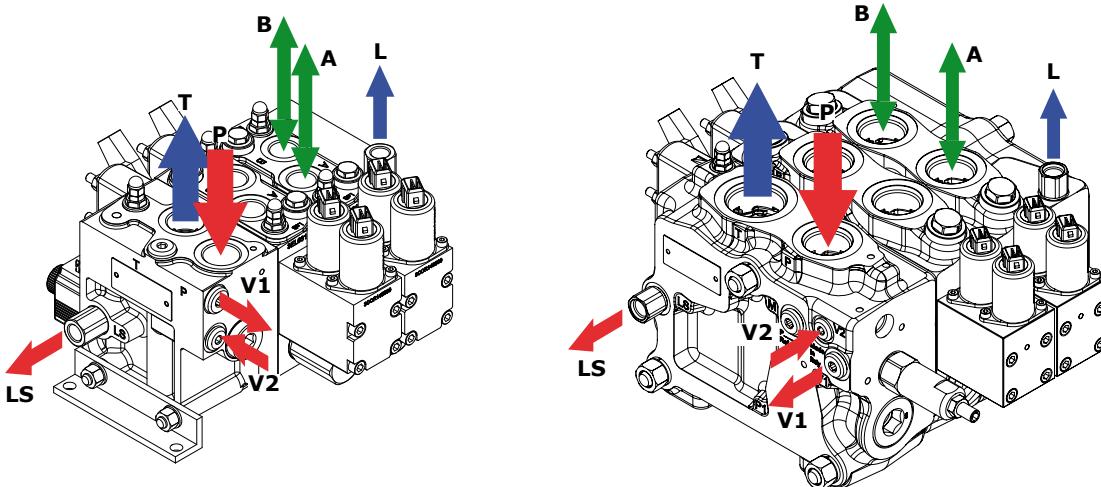
**Flying leads with DEUTSCH DT04 connector****Flying leads with PACKARD WEATHER-PACK connector****Flying leads with PACKARD METRI-PACK connector**

**Main rules**

The DPC Series valves are assembled and tested as per the technical specifications of this catalogue.

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

- the valve can be assembled in any position; in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the spool control kit, do not use high pressure washdown directly on the valve;
- prior to painting, ensure plugs on normally open ports are tightly in place.



FITTINGS TIGHTENING TORQUE - Nm / lbft						
THREAD TYPE	P inlet port	A and B workports	T outlet port	LS signal port V pilot ports*	L drain port	Hydraulic control ports
DPC130	BSP	G 3/4	G 1/2	G 3/4	G 1/4	G 1/4
	With O-Ring seal	90 / 66.4	50 / 36.9	90 / 66.4	25 / 18.4	25 / 18.4
	With copper washer	90 / 66.4	60 / 44.3	90 / 66.4	30 / 22.1	30 / 22.1
	With steel and rubber washer	70 / 51.6	60 / 44.3	70 / 51.6	16 / 11.8	16 / 11.8
	UN-UNF	1 1/16-12 (SAE 12)	7/8-14 (SAE 10)	1 1/16-12 (SAE 12)	9/16-18 (SAE 6)	9/16-18 (SAE 6)
	With O-Ring seal	95 / 70	50 / 36.9	95 / 70	30 / 22.1	30 / 22.1
DPC200	BSP	G 1	G 1	G 1-1/4	G 1/4	G 1/4
	With O-Ring seal	120 / 88.5	120 / 88.5	190 / 140	25 / 18.4	25 / 18.4
	With copper washer	120 / 88.5	120 / 88.5	190 / 140	30 / 22.1	30 / 22.1
	With steel and rubber washer	120 / 88.5	120 / 88.5	190 / 140	16 / 11.8	16 / 11.8
	UN-UNF	1 5/16-12 (SAE 16)	1 5/16-12 (SAE 16)	1 5/8-12 (SAE 20)	9/16-18 (SAE 6)	7/16-20 (SAE 4)
	With O-Ring seal	150 / 111	150 / 111	200 / 147	30 / 22.1	18 / 13.3
SAE J518 code 61		3/4 [3/8-16 UNC]	3/4 [3/8-16 UNC]	1 [3/8-16 UNC]	-	-
ISO 6162-1 type 1 [bolts threading]		DN 19 [M10]	DN 19 [M10]	DN 25 [M10]	-	-
bolts torque; min-max		28-40 / 20.7-29.5	28-40 / 20.7-29.5	37-48 / 27.3-35.4	-	-

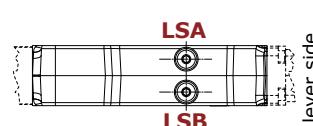
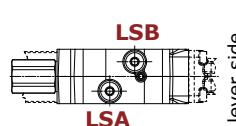
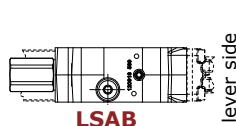
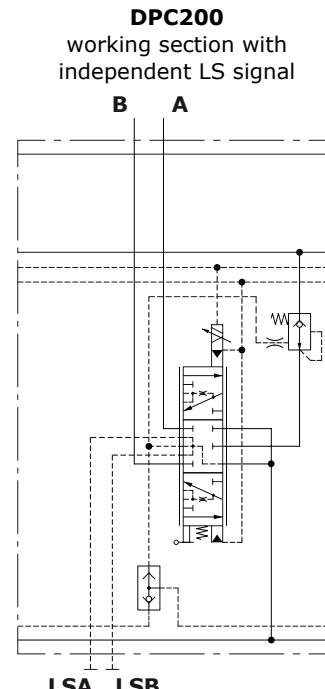
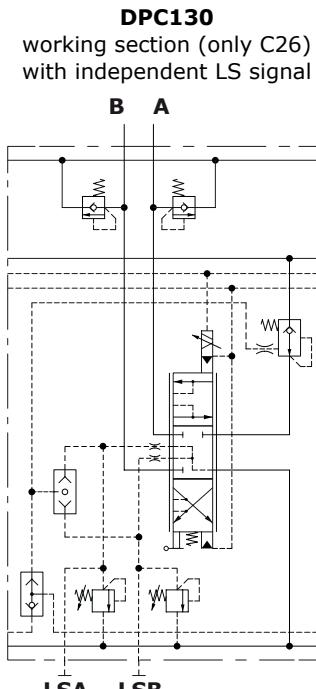
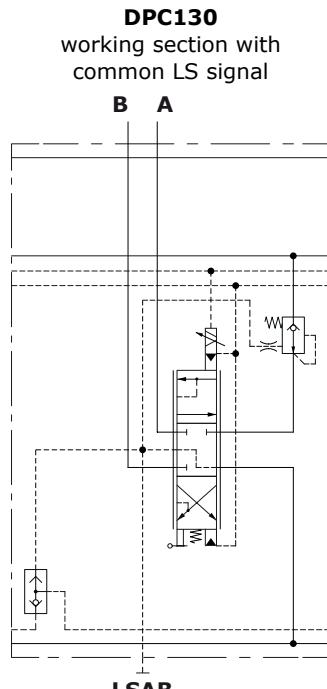
(\*) V2 port is M14x1.5 threading: tightening torque value is the same of G1/4 thread

NOTE – These torque are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish.

**Main rules**

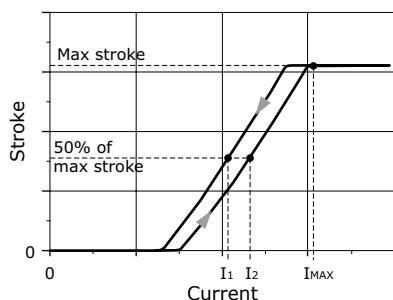
Series DPC working sections are arranged for external operation of LS signal through dedicated ports on the lower side of sections.

For the maximum permissible pipe length please contact Sales Dpt.

**Appendix A****Electrohydraulic controls: hysteresis calculation rule**

Hysteresis is calculated as difference between control currents ( $I_2 - I_1$ ), necessary to reach 50% of nominal spool stroke, referred to maximum control current  $I_{MAX}$ , necessary to reach 100% of spool stroke.

$I_2$  is determined on spool stroke increase line,  $I_1$  is determined on spool stroke decrease line.

**Example diagram for data detection**

$$\text{Hysteresis \%} = \frac{I_2 - I_1}{I_{MAX}} \times 100$$



