



# DPC Series

Pre-compensated Load Sensing Sectional Valves

**Additional information**

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

**WARNING!**

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

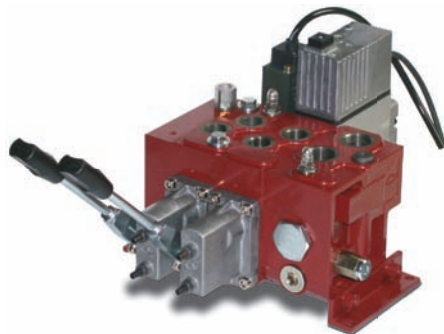
WALVOIL IS NOT RESPONSIBLE FOR ANY DAMAGE CAUSED BY AN  
INCORRECT USE OF THE PRODUCT.

3<sup>rd</sup> edition October 2012

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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 and DPC200.

**DPC130****DPC200**

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**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 using memorised movements.

**Advantages and options**

- Energy saving.
- Extension of parts 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 contact Sales Dept.

## Working conditions

This catalogue shows technical specifications and diagrams measured with mineral oil of 46 mm<sup>2</sup>/s - 46 cSt viscosity at 40°C - 104°F temperature.

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

NOTES: <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 x Max. pressure indicated - <sup>(2)</sup> Intermittent pressure at max. 250,000 cycles with specific internal testing.

## Standard threads

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

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

| PORTS<br>THREADING          | DPC130   |                    | DPC200                 |                    |                                     |                      |
|-----------------------------|--|--------------------|------------------------|--------------------|-------------------------------------|----------------------|
|                             | BSP  | UN-UNF             | BSP                    | UN-UNF             | Flange connection (bolts threading) |                      |
|                             |  |                    |                        |                    | ISO 6162-1<br>type 1                | SAE J518<br>code 61  |
| Inlet <b>P</b>              | 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)     |
| Ports <b>A</b> and <b>B</b> | G 1/2  | 7/8-14 (SAE10)     | G 1                    | 1 5/16-12 (SAE 16) | DN 19 (M10)                         | 3/4 (3/8-16 UNC)     |
| Outlet <b>T</b>             | 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)       |
| Load Sensing <b>LS</b>      | G 1/4  | 9/16-18 (SAE 6)    | G 1/4                  | 9/16-18 (SAE 6)    |                                     |                      |
| Pilot <b>V1</b>             | G 1/4  | 9/16-18 (SAE 6)    | G 1/4                  | 9/16-18 (SAE 6)    |                                     |                      |
| Pilot <b>V2</b>             | depends on inlet section type:<br>see pages from 14 to 17 <sup>(5)</sup> |                    | M14x1.5 <sup>(5)</sup> |                    | see BSP threading                   | see UN-UNF threading |
| Drain <b>L</b>              | G 1/4  | 7/16-20 (SAE 4)    | G 1/4                  | 7/16-20 (SAE 4)    |                                     |                      |
| Pressure gauge <b>M</b>     | 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)    |                                     |                      |

NOTE <sup>(5)</sup>: ATTENTION! pilot port V2 requires dedicate joints, please see Inlet section pages.

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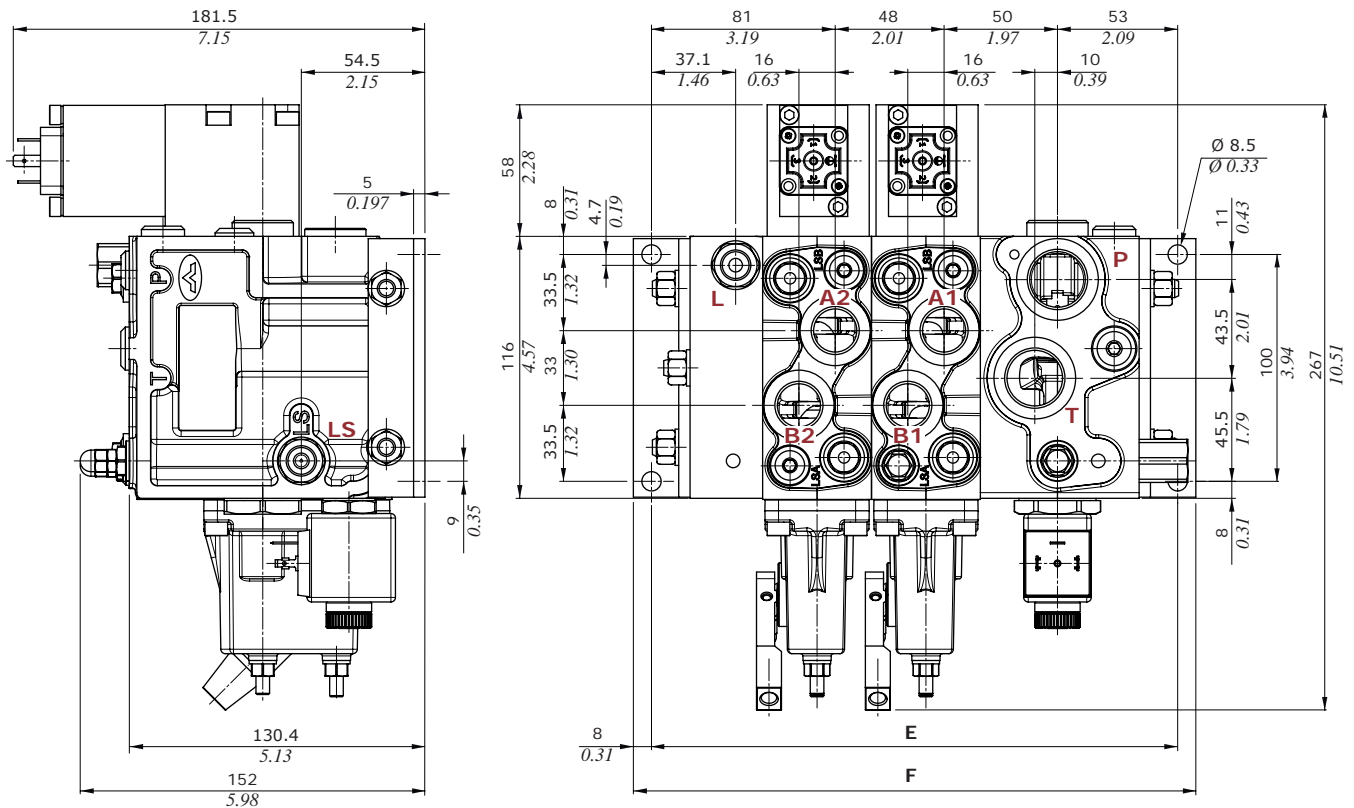
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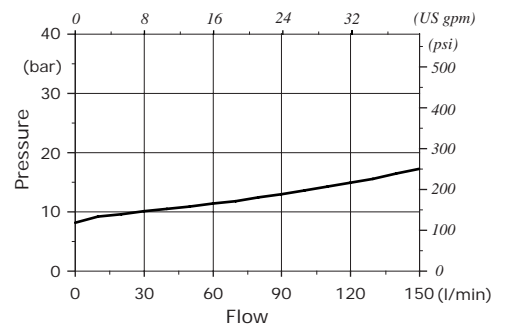
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## Dimensional data and performance

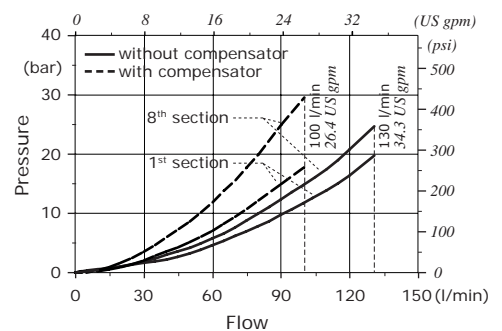


| Type      | E   |       | F   |       | Weight |       |
|-----------|-----|-------|-----|-------|--------|-------|
|           | mm  | in    | mm  | in    | Kg     | lb    |
| DPC130/1  | 184 | 7.24  | 200 | 7.87  | 12.4   | 27.3  |
| DPC130/2  | 232 | 9.13  | 248 | 9.76  | 19.4   | 42.8  |
| DPC130/3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

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

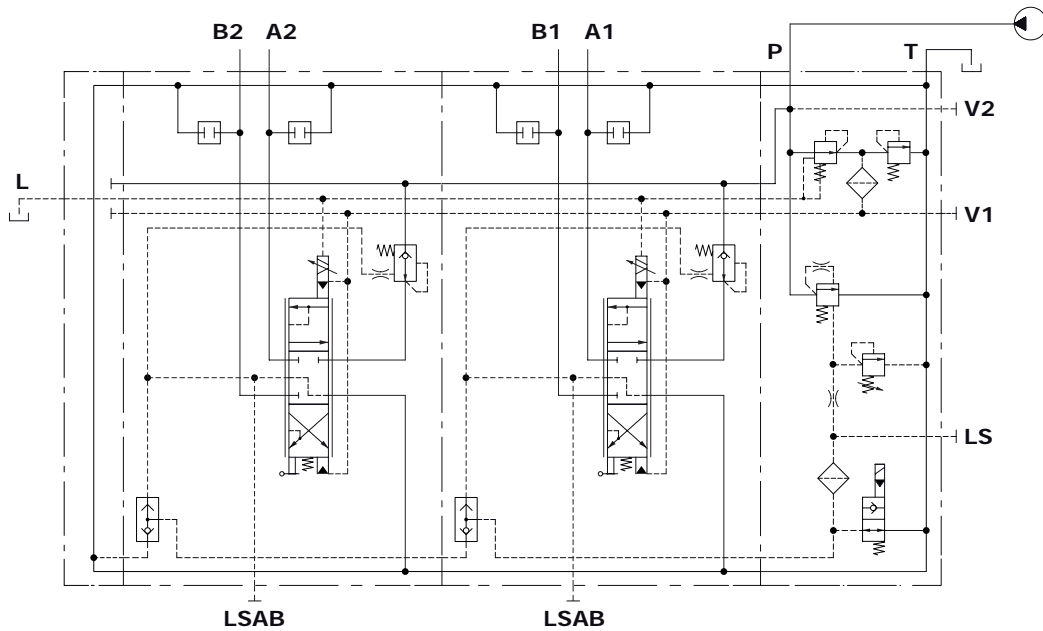


**A(B)⇒T pressure drop (standard spool @ max.stroke)**



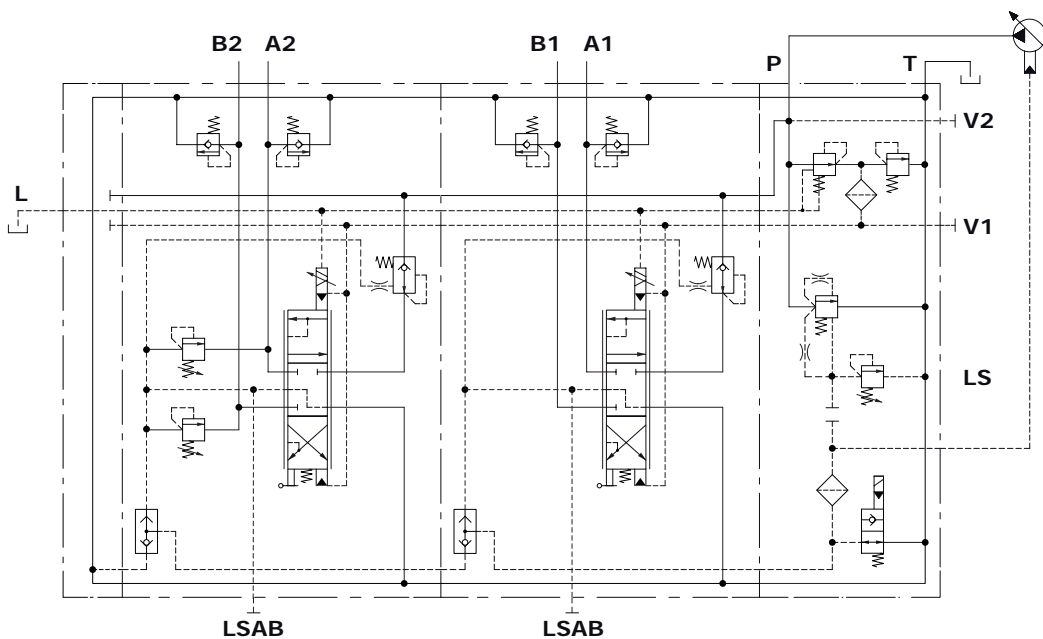


Open center configuration example



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

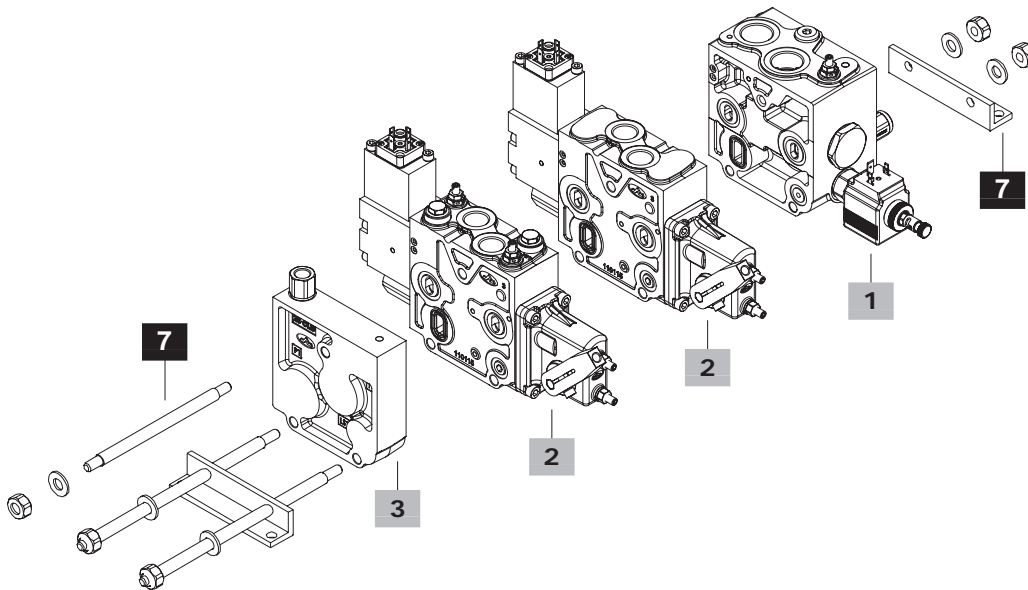
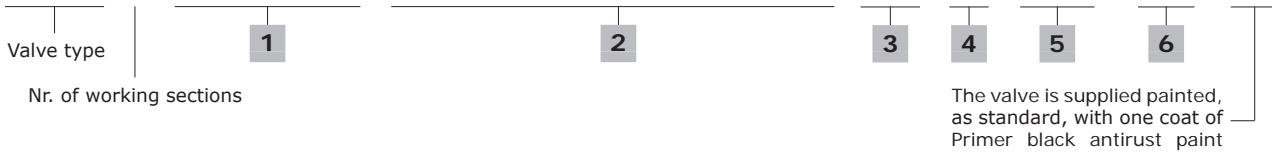
Closed center configuration example



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>th</sup> section, LSAB ports, internal pilot and external drain

## Complete sections ordering codes

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



### 1 Inlet section \*

page 12

TYPE: **DPC130/BR-S200-DSK** CODE: 634200000

DESCRIPTION: With 3-way compensator, L.S. pressure relief valve, pressure reducing valve and selector for open/closed center circuit

#### Closed Center circuit

TYPE: **DPC130/BN21-S220** CODE: 634220003

DESCRIPTION: With 3-way compensator and L.S. pressure relief valve, without pressure reducing valve

TYPE: **DPC130/BR21-S220-ELP-12VDC** CODE: 634210001

DESCRIPTION: As previous, with pressure reducing valve, and 12VDC solenoid operated unloader valve

TYPE: **DPC130/BRF21-S250** CODE: 634250900

DESCRIPTION: Without compensator, with pressure reducing valve and L.S. pressure relief valve

TYPE: **DPC130/BRSO21(SF)-S220-ELN3-12VDC** CODE: 634240003

DESCRIPTION: Shut-off configuration, with pressure reducing valve and L.S. pressure relief valve

TYPE: **DPC130/BRS21-S220-ELP-12VDC** CODE: 634230003

DESCRIPTION: Copy-Spool with dumper configuration, with 3-way compensator, pressure reducing valve, L.S. pressure relief valve and 12VDC solenoid operated unloader valve

#### Open Center circuit

TYPE: **DPC130/BN11-S220** CODE: 634220004

DESCRIPTION: With 3-way compensator and L.S. pressure relief valve, without pressure reducing valve

TYPE: **DPC130/BR11-S220-ELP-12VDC** CODE: 634210002

DESCRIPTION: As previous, with pressure reducing valve, and 12VDC solenoid operated unloader valve

TYPE: **DPC130/BRS11-S220-ELP-12VDC** CODE: 634230002

DESCRIPTION: Copy-Spool with dumper configuration, with 3-way compensator, pressure reducing valve, L.S. pressure relief valve and 12VDC solenoid operated unloader valve

## Complete sections ordering codes

**2 Working section \*** page 20**With 2-way compensator**TYPE: **DPC130/C10-1S8EZ3L1-12VDC** CODE: 634110029

DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with lever

TYPE: **DPC130/C22-1S8EZ3L1.UTUTSTST-12VDC**

CODE: 634110030

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

TYPE: **DPC130/C10-1S8ZR4FL1-12VDC** CODE: 634110031

DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with simple diagnostic and programmability, ratiometric output, with lever

TYPE: **DPC130/C22-1S8ZR4FL1.UTUTSTST-12VDC**

CODE: 634110032

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

TYPE: **DPC130/C10-1S8ZR4PL1-12VDC** CODE: 634110033

DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with simple diagnostic and programmability, absolute output, with lever

TYPE: **DPC130/C22-1S8ZR4PL1.UTUTSTST-12VDC**

CODE: 634110034

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

**Without compensator**TYPE: **DPC130/D10-1S8EZ3L1-12VDC** CODE: 634120010

DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with lever

TYPE: **DPC130/D20-1S8EZ3L1.UTUT-12VDC**

CODE: 634120011

DESCRIPTION: As previous, arranged for port valves

TYPE: **DPC130/D10-1S8ZR4FL1-12VDC** CODE: 634120012

DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with simple diagnostic and programmability, ratiometric output, with lever

TYPE: **DPC130/D20-1S8ZR4FL1.UTUT-12VDC**

CODE: 634120013

DESCRIPTION: As previous, arranged for port valves

TYPE: **DPC130/D10-1S8ZR4PL1-12VDC** CODE: 634120014

DESCRIPTION: With double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control with simple diagnostic and programmability, absolute output, with lever

TYPE: **DPC130/D20-1S8ZR4PL1.UTUT-12VDC**

CODE: 634120015

DESCRIPTION: As previous, arranged for port valves

TYPE: **DPC130/CV10-1S8EZ3L1-12VDC** CODE: 634130001

DESCRIPTION: With load check valve, double acting spool for 60 l/min (16 US gpm), proportional electrohydraulic control, with lever

TYPE: **DPC130/CV22-1S8EZ3L1.UTUTSTST-12VDC**

CODE: 634130002

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

**3 Outlet section \*** page 38**For valve with mechanical control**TYPE: **DPC130/RF10** CODE: 634310001

DESCRIPTION: Without ports

**For valve with hydraulic control**TYPE: **DPC130/RF20** CODE: 634310000

DESCRIPTION: Without ports, internal drain

**For valve with electrohydraulic control**TYPE: **DPC130/RF30** CODE: 634310002

DESCRIPTION: Without ports, external drain L

TYPE: **DPC130/RC31** CODE: 634310012

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

TYPE: **DPC130/RD31** CODE: 634310015

DESCRIPTION: With ports P1 and T1 (plugged), port LS1, 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 11.5 bar (167 psi)

**7 Assembling kit**

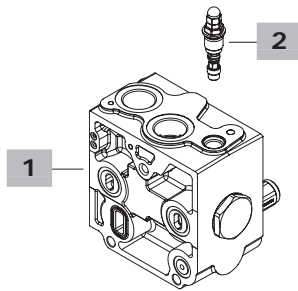
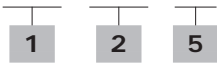
| CODE                            | CODE       | DESCRIPTION                   |
|---------------------------------|------------|-------------------------------|
| <b>With inlet sections type</b> |            |                               |
| <b>BR-BN-BRS-BRSO</b>           | <b>BRF</b> |                               |
| 5TIR108185                      | 5TIR108153 | For 1 working section valve   |
| 5TIR108232                      | 5TIR108201 | For 2 working sections valve  |
| 5TIR108281                      | 5TIR108249 | For 3 working sections valve  |
| 5TIR108328                      | 5TIR108297 | For 4 working sections valve  |
| 5TIR108376                      | 5TIR108339 | For 5 working sections valve  |
| 5TIR108425                      | 5TIR108393 | For 6 working sections valve  |
| 5TIR108472                      | 5TIR108440 | For 7 working sections valve  |
| 5TIR108520                      | 5TIR108488 | For 8 working sections valve  |
| 5TIR108568                      | 5TIR108536 | For 9 working sections valve  |
| 5TIR108616                      | 5TIR108584 | For 10 working sections valve |

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

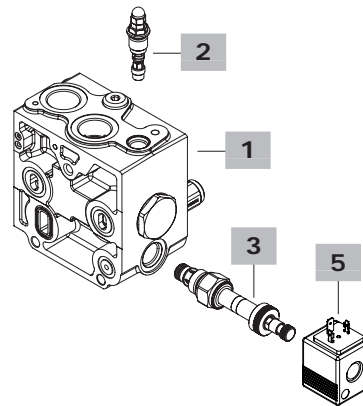
## Inlet section parts ordering codes

Valve setting (bar)

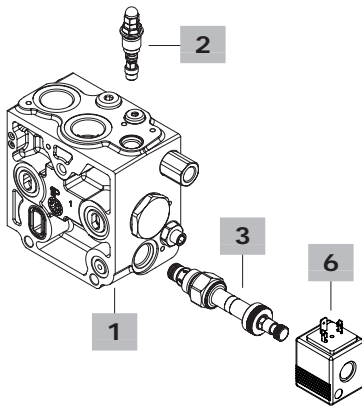
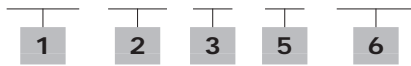
DPC130 / BN21 - S220 - .....



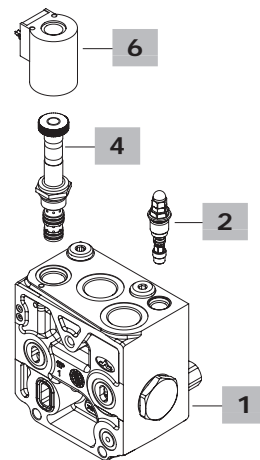
DPC130 / BR21 - S220 - ELP - ..... - 12VDC



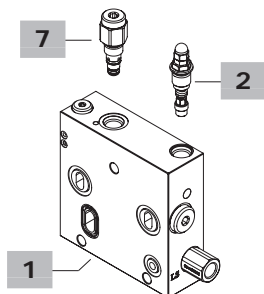
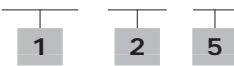
DPC130 / BRS21 - S220 - ELP - ..... - 12VDC



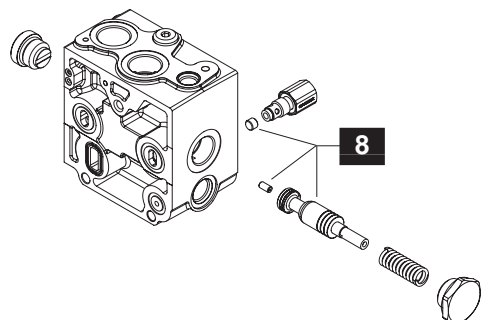
DPC130 / BR201(SF) - S220 - ELN3 - ..... - 12VDC



DPC130 / BRF21 - S250 - BSP



Circuit conversion kit



## Inlet section parts ordering codes

**1 Inlet section kit\* page 14****Open Center circuit**TYPE: **DPC130/BN11** CODE: 5FIA630303

DESCRIPTION: With compensator, without pressure reducing valve

TYPE: **DPC130/BR11** CODE: 5FIA630301

DESCRIPTION: With compensator and pressure reducing valve

TYPE: **DPC130/BRS11** CODE: 5FIA630361

DESCRIPTION: Copy-Spool type, with compensator and pressure reducing valve

**Closed Center circuit**TYPE: **DPC130/BN21** CODE: 5FIA630302

DESCRIPTION: Without compensator and pressure reducing valve

TYPE: **DPC130/BR21** CODE: 5FIA630300

DESCRIPTION: Without compensator, with pressure reducing valve

TYPE: **DPC130/BRSO21(SF)** CODE: 5FIA630371

DESCRIPTION: Shut-Off type, without compensator, with pressure reducing valve

TYPE: **DPC130/BRS21** CODE: 5FIA630360

DESCRIPTION: Copy-Spool type, without compensator, with pressure reducing valve

TYPE: **DPC130/BRF21** CODE: 5FIA630306

DESCRIPTION: Without compensator, with pressure reducing valve

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

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

| TYPE       | CODE       | DESCRIPTION  |
|------------|------------|--|
| <b>LSD</b> | XCAR126215 | With blind nut, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi          |
|            | XCAR126213 | As previous, range 180-350 bar / 2600-5100 psi std. setting 180 bar / 2600 psi           |
| <b>LSH</b> | XCAR126216 | With locked arrangement, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi |
|            | XCAR126217 | As previous, range 180-350 bar / 2600-5100 psi, std. setting 180 bar / 2600 psi          |
| <b>LSZ</b> | 5CAR126221 | With anti-tamper cap, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi    |
|            | 5CAR126219 | As previous, range 180-350 bar / 2600-5100 psi, std. setting 180 bar / 2600 psi          |
| <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>  | XTAP225320  | Unloading valve blanking plug          |

**4 Shut-Off pilot solenoid valve page 16**

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).

**6 Coil**

| TYPE         | CODE       | DESCRIPTION  |
|--------------|------------|--|
| <b>12VDC</b> | 4SLE001200 | 12VDC coil type <b>BER</b> , ISO4400 connector (for unloading valve)     |
| <b>12VDC</b> | 4SL3000120 | 12VDC coil type <b>BT</b> , ISO4400 connector (for Shut-Off pilot valve) |

For complete available coils list see page 68.

**7 Pressure reducing valve page 18**

| CODE       | DESCRIPTION                                   |
|------------|---|
| X219740033 | Pressure reducing valve for BRF inlet section |

**8 Circuit conversion kit**

These kits are available only for BN and BR sections; not for BRS, BRSO and BRF sections.

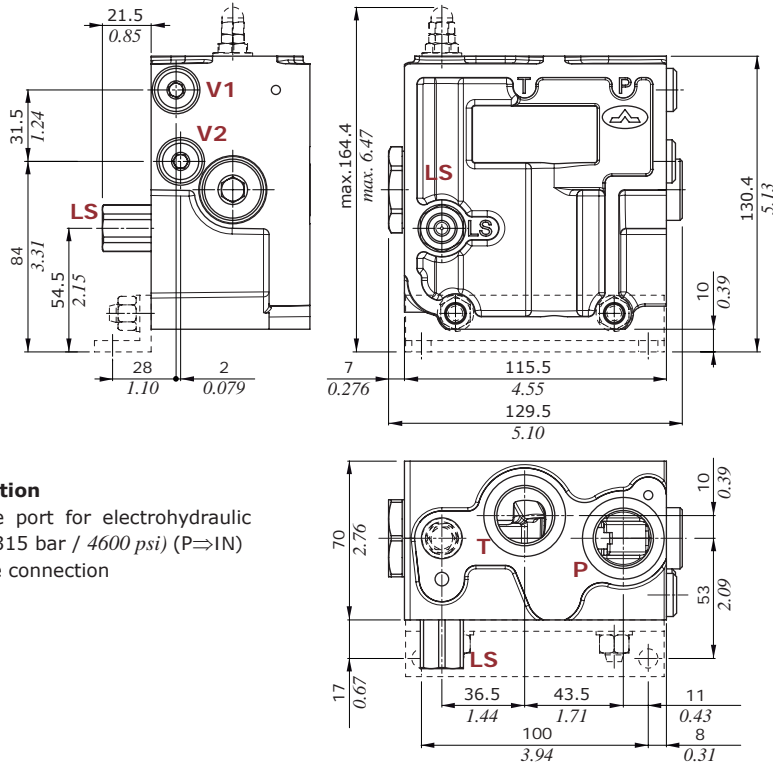
| CODE       | DESCRIPTION  |
|------------|--|
| 5KIT130300 | Kit for circuit conversion from Open Center to Closed Center |
| 5KIT130310 | Kit for circuit conversion from Closed Center to Open Center |

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

## Inlet section

### Dimensions and hydraulic circuit

#### Example of BN section

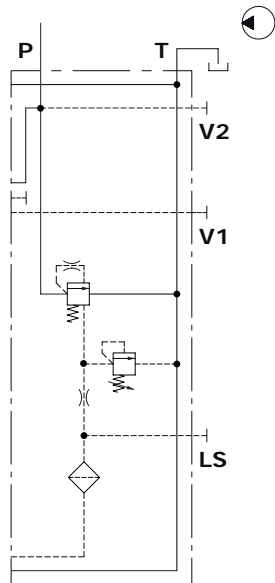


#### Auxiliary ports specification

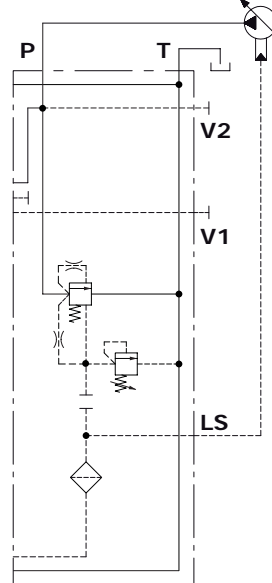
**V1** = G1/4 pilot pressure port for electrohydraulic controls feeding ( $P_{max} = 315 \text{ bar} / 4600 \text{ psi}$ ) ( $P \Rightarrow IN$ )

**V2** = G1/4 pressure gauge connection

BN11 type

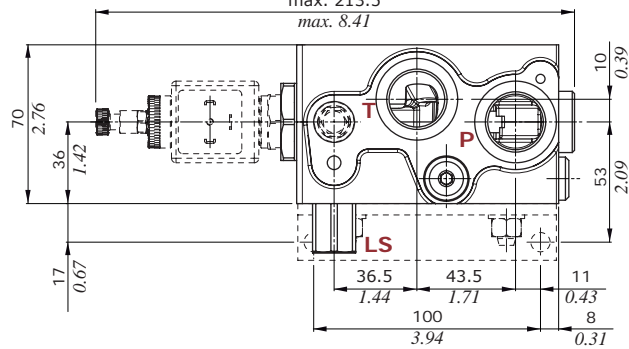
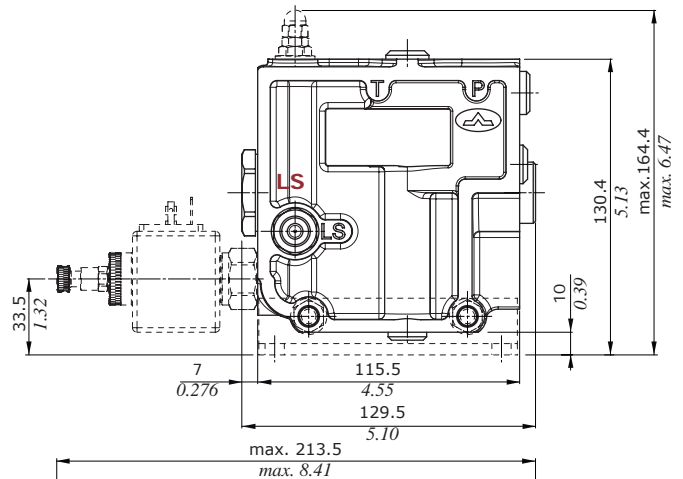
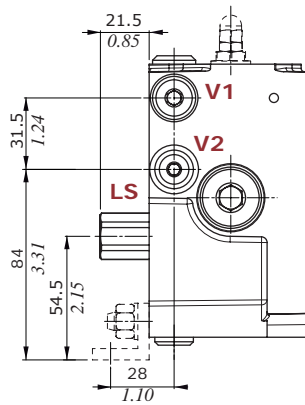


BN21 type



Dimensions and hydraulic circuit

Example of BR section

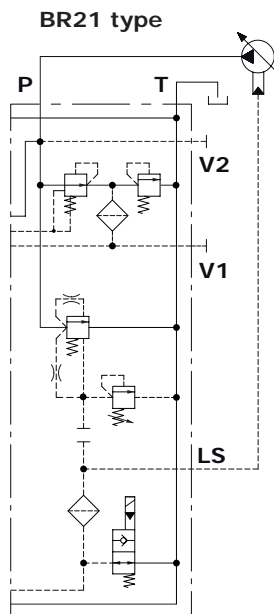
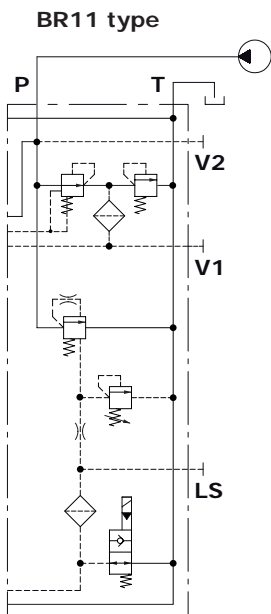


Auxiliary ports specification

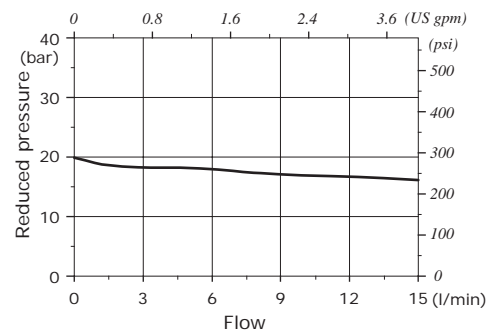
V1 = G1/4 pilot pressure port (Pmax = 30 bar / 435 psi) for hydraulic pilot control valves feeding (P→OUT)

V2 = M14x1.5 pilot pressure port for:

- electrohydraulic controls optional feeding (Pmax = 315 bar / 4600 psi) (P→IN); needs G1/4 joint, code 5GIU519611
- pressure gauge connection; needs G1/4 joint, code 5GIU620330.



Pressure reducing valve diagram  
Reduced pressure vs. Flow

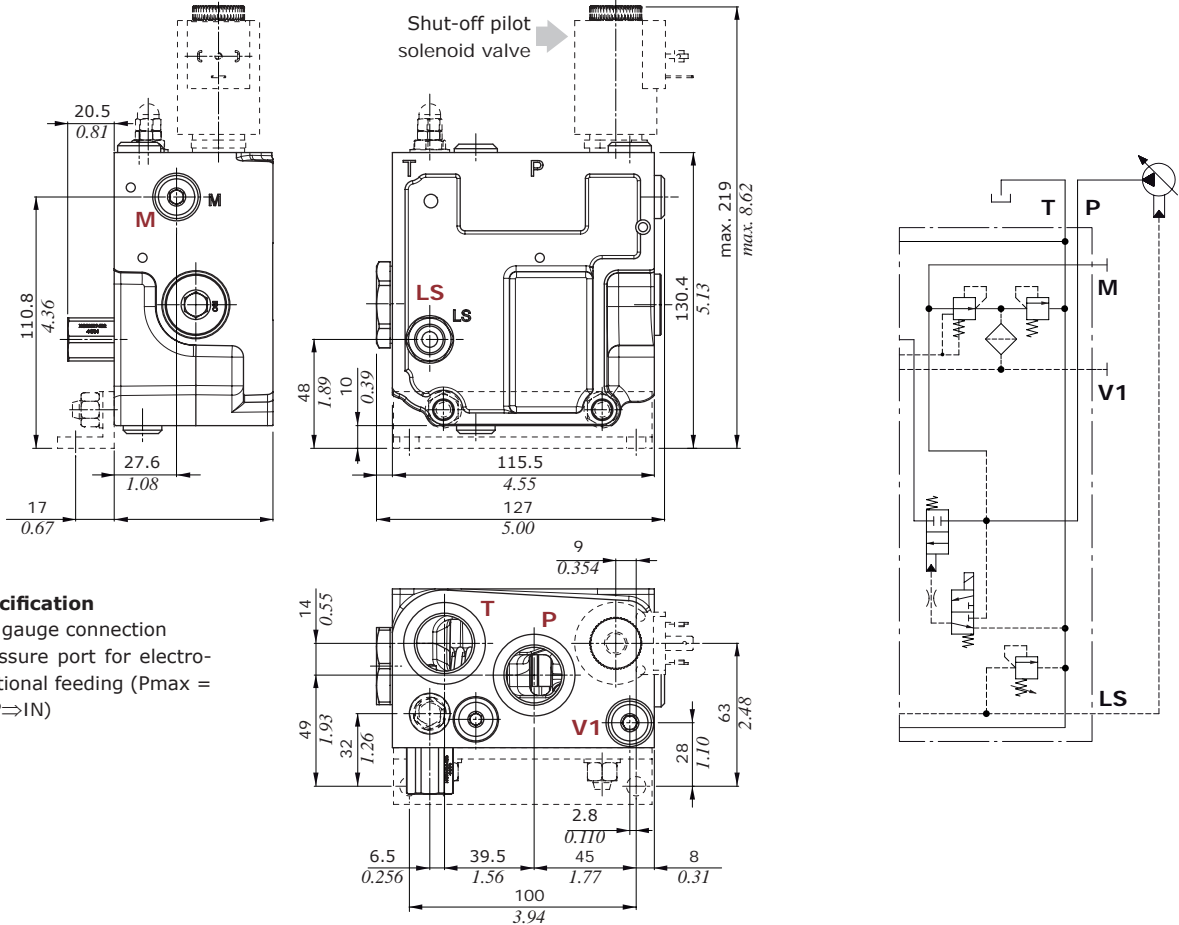


## Inlet section

### Dimensions and hydraulic circuit

#### Example of BRSO21 section

For pressure reducing valve features, see page 15

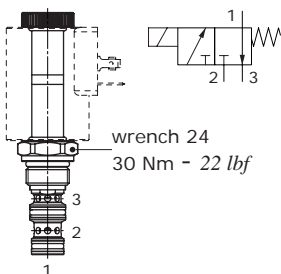


#### Auxiliary ports specification

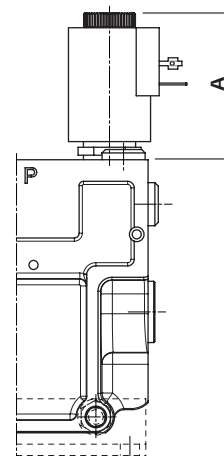
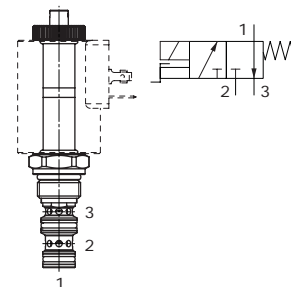
**M** = G1/4 pressure gauge connection

**V1** = G1/4 pilot pressure port for electro-hydraulic controls optional feeding (Pmax = 315 bar / 4600 psi) (P→IN)

#### Pilot solenoid valve type ELN3 without emergency



#### Pilot solenoid valve type ELT3 screw type emergency



#### 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 options see coil **BT** at page 68.

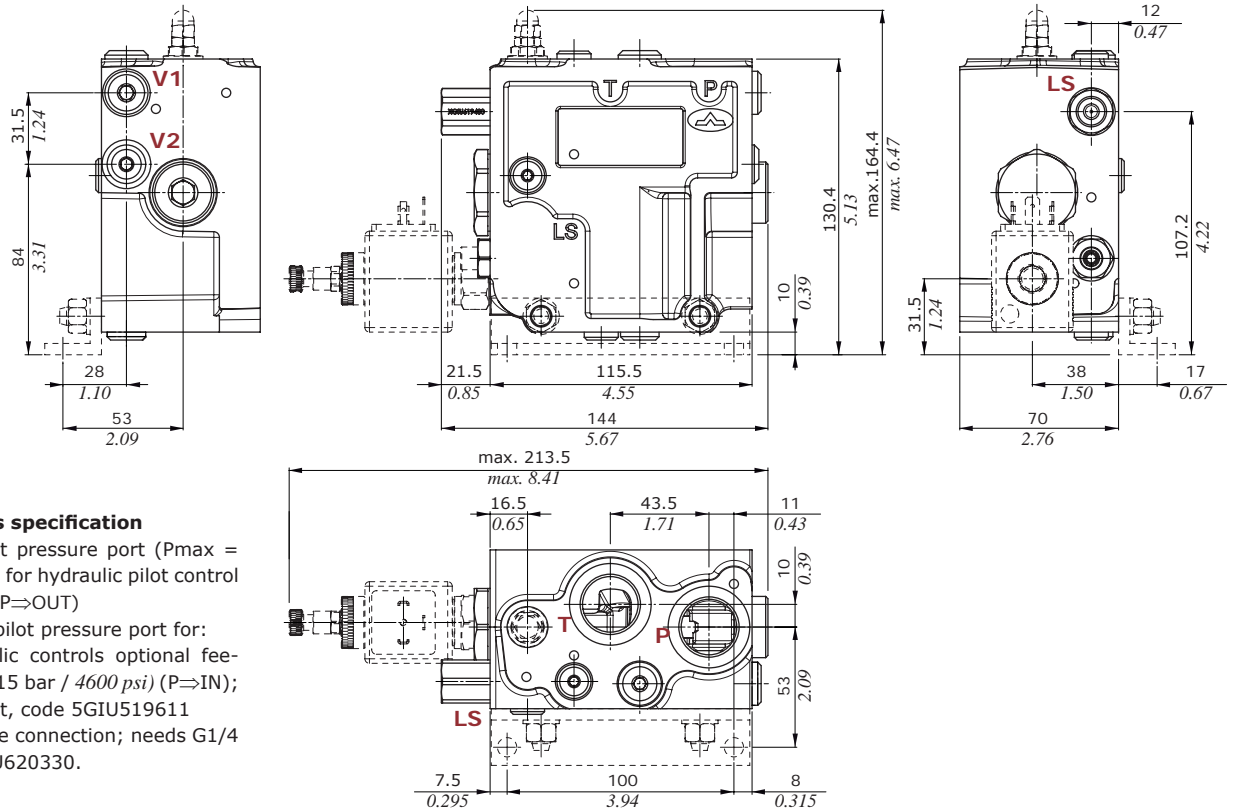
| Valve type | Dim. A |      |
|------------|--------|------|
|            | mm     | in   |
| ELN3       | 65.5   | 2.58 |
| ELT3       | 88.5   | 3.48 |



Dimensions and hydraulic circuit

Example of BRS section

For pressure reducing valve features, see page 15

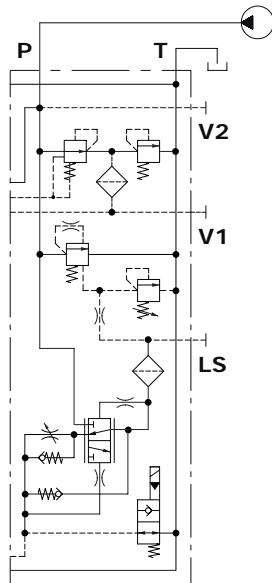


Auxiliary ports specification

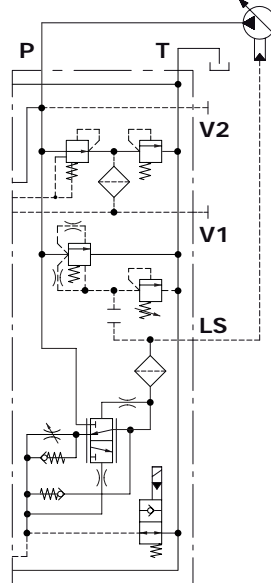
**V1** = G1/4 pilot pressure port (Pmax = 30 bar / 435 psi) for hydraulic pilot control valves feeding (P⇒OUT)

**V2** = M14x1.5 pilot pressure port for:  
 - electrohydraulic controls optional feeding (Pmax = 315 bar / 4600 psi) (P⇒IN); needs G1/4 joint, code 5GIU519611  
 - pressure gauge connection; needs G1/4 joint, code 5GIU620330.

BRS011 type



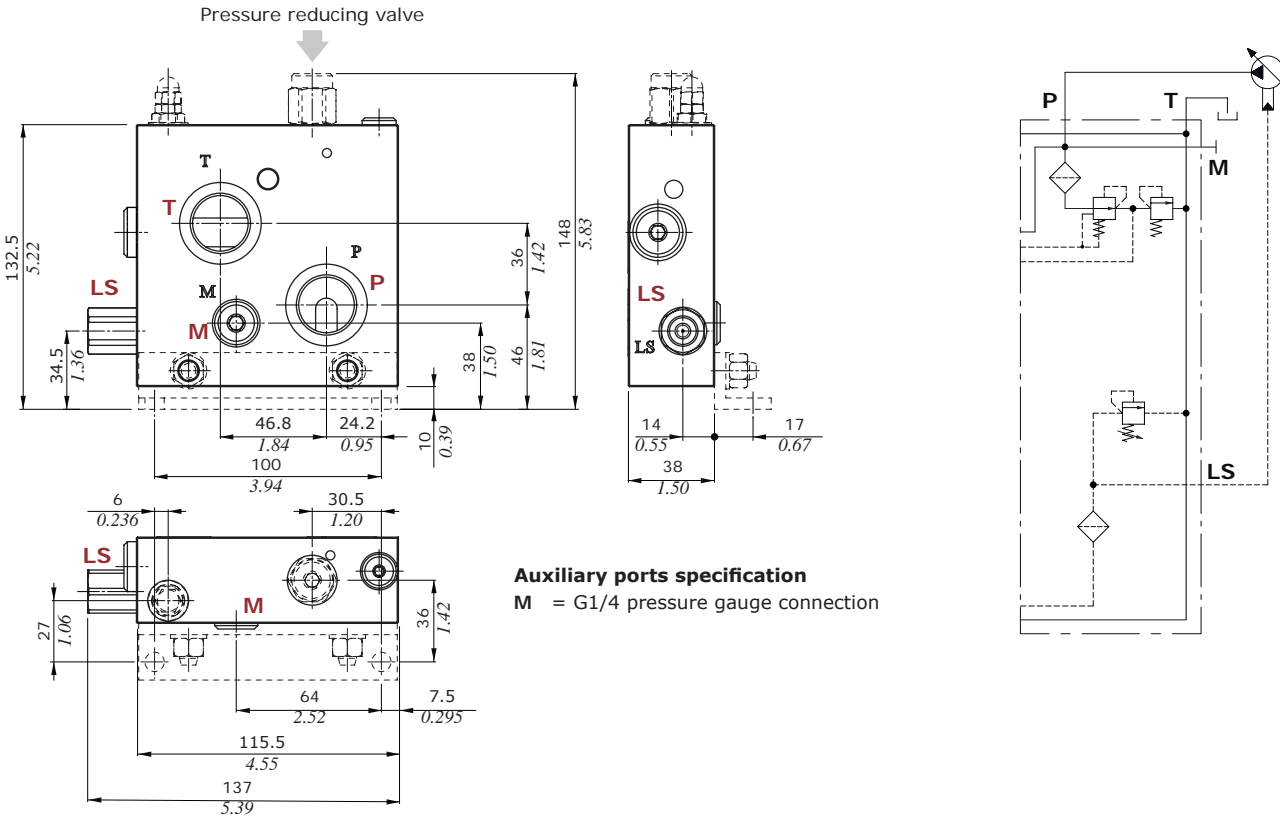
BRS021 type



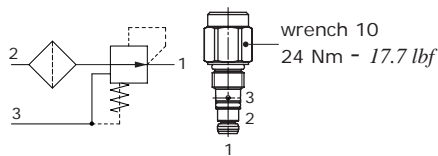
## Inlet section

### Dimensions and hydraulic circuit

#### Example of BRS section



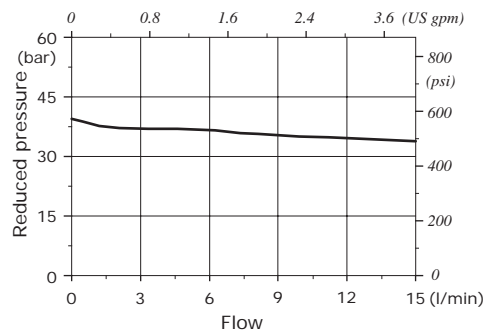
#### Pressure reducing valve



#### Features

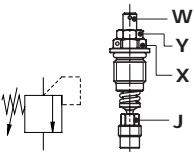
- Reduced press. range . . : from 3.5 to 35 bar  
 : from 50 to 500 psi
- Max. inlet pressure . . . : 380 bar - 5500 psi
- Nominal flow . . . . . : 15 l/min - 4 US gpm

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

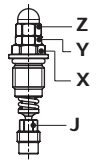


L.S. pressure relief valve

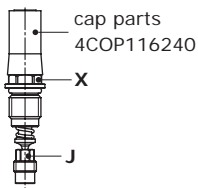
**Type LSH**  
with lock arrangement



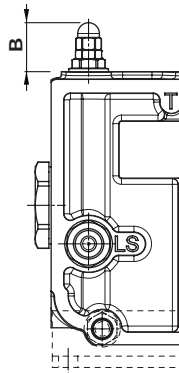
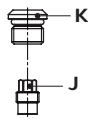
**Type LSD**  
with blind nut



**Type LSZ**  
with anti-tamper cap



**Type ST**  
valve blanking plug

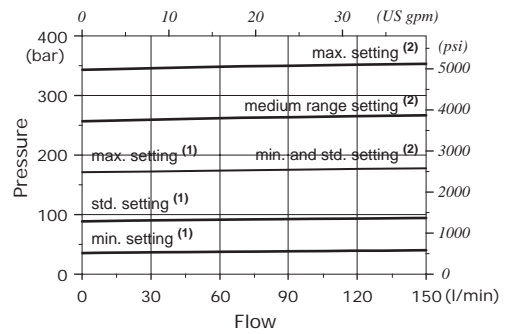


- X = wrench 13 / 42 Nm - 31 lbf
- Y = wrench 10 / 9.8 Nm - 7.2 lbf
- W = allen wrench 3
- Z = wrench 10 / 9.8 Nm - 7.2 lbf
- J = wrench 7 / 24 Nm - 17.7 lbf
- K = allen wrench 5 / 24 Nm - 17.7 lbf

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

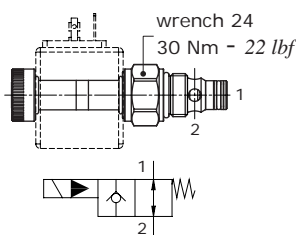
**Pressure vs. flow diagram**

(1) = valve range 40-180 bar (580-2600 psi)  
(2) = valve range 180-350 bar (2600-5000 psi)

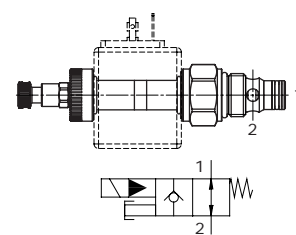


Solenoid operated unloading valve

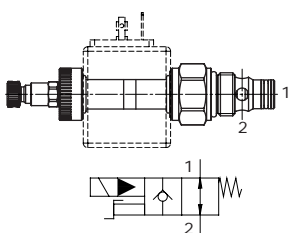
**Type ELN:** without emergency



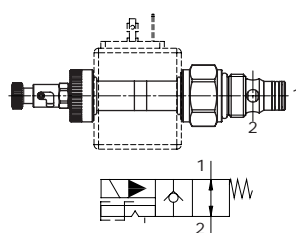
**Type ELP:** push button type



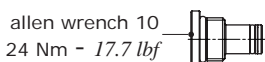
**Type ELV:** screw type



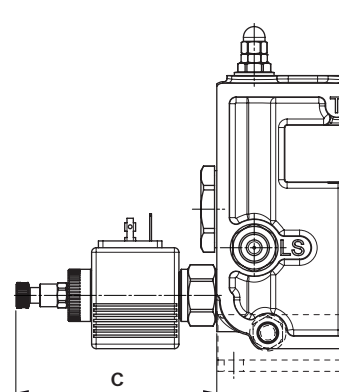
**Type ELT:** "push & twist" type



**LT:** valve blanking plug



On BR and BRS section

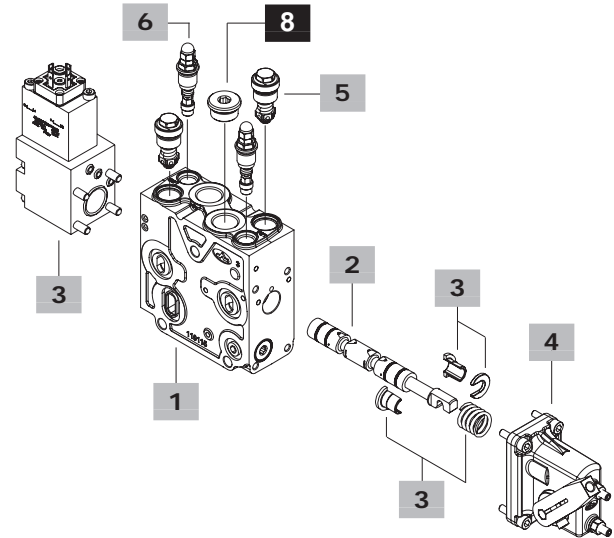
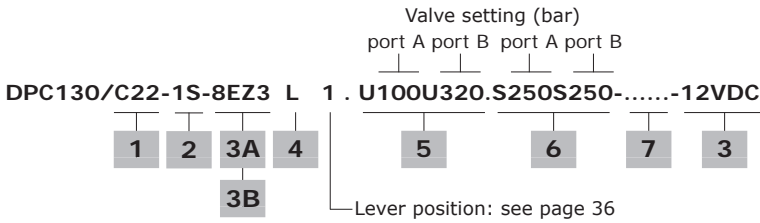


| Valve type | Dim. C |      |
|------------|--------|------|
|            | mm     | in   |
| ELN        | 65.5   | 2.58 |
| ELP        | 88.5   | 3.48 |
| ELV        | 88.5   | 3.48 |
| ELT        | 91     | 3.58 |

**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 options see coil **BER** at page 68.

## Working and outlet section parts ordering codes



### 1 Working section kit\* page 22

#### With compensator

|   |                   |
|---|-------------------|
| TYPE: <b>DPC130/C10</b>   | CODE: 5EL6301310  |
| DESCRIPTION: Without valves arrangement   |                   |
| TYPE: <b>DPC130/C13</b>   | CODE: 5EL6301313  |
| DESCRIPTION: As previous with additional upper L.S. port                                  |                   |
| TYPE: <b>DPC130/C20</b>   | CODE: 5EL6301320  |
| DESCRIPTION: With port valves arrangement   |                   |
| TYPE: <b>DPC130/C24</b>   | CODE: 5EL6301330  |
| DESCRIPTION: As previous with additional upper L.S. port                                  |                   |
| TYPE: <b>DPC130/C21</b>   | CODE: 5EL6301321  |
| DESCRIPTION: Arranged for port valves and one L.S. relief valve                           |                   |
| TYPE: <b>DPC130/C23</b>   | CODE: 5EL6301323  |
| DESCRIPTION: As previous with additional upper L.S. port                                  |                   |
| TYPE: <b>DPC200/C22</b>   | CODE: 5EL6301322  |
| DESCRIPTION: Arranged for port valves and two L.S. relief valves                          |                   |
| TYPE: <b>DPC130/F10</b>   | CODE: 5EL6304310  |
| DESCRIPTION: For floating circuit, without port valves arrangement                        |                   |
| TYPE: <b>DPC130/F20</b>   | CODE: 5EL6304320  |
| DESCRIPTION: For floating circuit, with port valves arrangement                           |                   |
| TYPE: <b>DPC130/CM23</b>  | CODE: 5EL6301325A |
| DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve |                   |

#### Without compensator

|   |                  |
|---|------------------|
| TYPE: <b>DPC130/D10</b>   | CODE: 5EL6302310 |
| DESCRIPTION: Without valves arrangement   |                  |
| TYPE: <b>DPC130/D20</b>   | CODE: 5EL6302320 |
| DESCRIPTION: With port valves arrangement   |                  |
| TYPE: <b>DPC130/D21</b>   | CODE: 5EL6302321 |
| DESCRIPTION: Arranged for port valves and one L.S. relief valve                           |                  |
| TYPE: <b>DPC130/G20</b>   | CODE: 5EL6305320 |
| DESCRIPTION: For floating circuit, with port valves arrangement                           |                  |
| TYPE: <b>DPC130/DM23</b>  | CODE: 5EL6302350 |
| DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve |                  |

#### Without compensator, with check valve

|   |                  |
|---|------------------|
| TYPE: <b>DPC130/CV10</b>  | CODE: 5EL6301316 |
| DESCRIPTION: Without valves arrangement   |                  |
| TYPE: <b>DPC130/CV13</b>  | CODE: 5EL6301314 |
| DESCRIPTION: As previous with additional upper L.S. port                                  |                  |
| TYPE: <b>DPC130/CV20</b>  | CODE: 5EL6301324 |
| DESCRIPTION: With port valves arrangement   |                  |
| TYPE: <b>DPC130/CV21</b>  | CODE: 5EL6301326 |
| DESCRIPTION: Arranged for port valves and one L.S. relief valve                           |                  |
| TYPE: <b>DPC130/CV23</b>  | CODE: 5EL6301328 |
| DESCRIPTION: As previous with additional upper L.S. port                                  |                  |
| TYPE: <b>DPC200/CV22</b>  | CODE: 5EL6301327 |
| DESCRIPTION: Arranged for port valves and two L.S. relief valves                          |                  |
| TYPE: <b>DPC130/FV20</b>  | CODE: 5EL6304325 |
| DESCRIPTION: For floating circuit, with port valves arrangement                           |                  |
| TYPE: <b>DPC130/CVM23</b>   | CODE: 5EL6301350 |
| DESCRIPTION: For regenerative circuit, arranged for port valves and one L.S. relief valve |                  |

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

### 2 Spool page 25

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

#### Double acting with A and B closed in neutral position

| TYPE      | CODE       | DESCRIPTION                  |
|-----------|------------|------------------------------|
| <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>1P</b> | 3CU4010100 | 100 l/min (26.4 US gpm) flow |

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

|           |            |                              |
|-----------|------------|------------------------------|
| <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 |

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

|            |            |                              |
|------------|------------|------------------------------|
| <b>2HC</b> | 3CU4025005 | 5 l/min (1.3 US gpm) flow    |
| <b>2HD</b> | 3CU4025010 | 10 l/min (2.6 US gpm) flow   |
| <b>2HV</b> | 3CU4025025 | 25 l/min (6.6 US gpm) flow   |
| <b>2HQ</b> | 3CU4025040 | 40 l/min (10.6 US gpm) flow  |
| <b>2HS</b> | 3CU4025060 | 60 l/min (15.9 US gpm) flow  |
| <b>2HN</b> | 3CU4025080 | 80 l/min (21.1 US gpm) flow  |
| <b>2HP</b> | 3CU4025100 | 100 l/min (26.4 US gpm) flow |

#### Single acting on A, B plugged: needs G1/2 plug

|           |            |                              |
|-----------|------------|------------------------------|
| <b>3V</b> | 3CU4031025 | 25 l/min (6.6 US gpm) flow   |
| <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>3P</b> | 3CU4031100 | 100 l/min (26.4 US gpm) flow |

#### Double acting with A and B closed in neutral position, 4

#### positions, floating in 4<sup>th</sup> pos. with spool out: needs sections

#### type F, G or FV, positioner and controls type 13

|           |            |                             |
|-----------|------------|-----------------------------|
| <b>5V</b> | 3CU4041025 | 25 l/min (6.6 US gpm) flow  |
| <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 |

Working and outlet section parts ordering codes

**2 Spool (continued) page 25**

**Double acting with A and B closed in neutral position, 3 positions, regenerative in 3<sup>rd</sup> pos. with spool out: needs sections type CM, DM or CVM, dedicated controls type 8 with reduced stroke**

**8F** 3CU4033070 50-70 l/min flow (port A-port B) (13.2-18.5 US gpm)

**Double acting with A and B closed in neutral position, 4 positions, regenerative in 4<sup>th</sup> pos. with spool out: needs sections type CM, DM or CVM, dedicated controls type 13**

**8Y** 3CU4044070 70 l/min (18.5 US gpm) flow

**3B Electrohydraulic controls**

TYPE CODE DESCRIPTION

**Proportional controls without on-board electronic..... page 29**

Standard type

**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

Standard type, for floating circuit (spool type 5)

**13EZ3-12VDC** 5V13130780 With ISO4400 connector

**13EZ3-24VDC** 5V13130781 With ISO4400 connector

Standard type, for 3 positions regenerative circuit (spool type 8F)

**8EZ3CR-12VDC** 5V08130798 With ISO4400 connector

**8EZ3CR-24VDC** 5V08130799 With ISO4400 connector

Standard type, for 4 positions regenerative circuit (spool type 8Y)

**13EZ3-12VDC** 5V13130783 With ISO4400 connector

**13EZ3-24VDC** 5V13130784 With ISO4400 connector

With integrated connectors

**8EZ3T-12VDC** 5V08130874 With AMP connector

**8EZ3T-24VDC** 5V08130875 With AMP connector

**8EZ34-12VDC** 5V08130872 With Deutsch connector

**8EZ4-24VDC** 5V08130873 With Deutsch connector

**Proportional controls with on-board electronic..... page 33**

With absolute output signal (0.5-4.5 V)

**8ZW3F-12VDC** 5V0814090A With flying leads

**8ZW3F-24VDC** 5V0814091A With flying leads

**8ZW3FD-12VDC** 5V0814090D With Deutsch connector

**8ZW3FD-24VDC** 5V0814091D With Deutsch connector

With ratiometric output signal (25%-75% Vbb)

**8ZW3P-12VDC** 5V08140902 With flying leads

**8ZW3P-24VDC** 5V08140910 With flying leads

**8ZW3PD-12VDC** 5V08140905 With Deutsch connector

**8ZW3PD-24VDC** 5V08140913 With Deutsch connector

With feedback and absolute output signal (0.5-4.5 V)

**8ZR4F-12VDC** 5V0813090A With flying leads

**8ZR4F-24VDC** 5V0813091A With flying leads

**8ZR4FD-12VDC** 5V0813090D With Deutsch connector

**8ZR4FD-24VDC** 5V0813091D With Deutsch connector

With feedback and ratiometric output signal (25%-75% Vbb)

**8ZR4P-12VDC** 5V08130902 With flying leads

**8ZR4P-24VDC** 5V08130910 With flying leads

**8ZR4PD-12VDC** 5V08130905 With Deutsch connector

**8ZR4PD-24VDC** 5V08130913 With Deutsch connector

**3A "A" side spool control kit page 27**

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 (spool type 5), 4 pos., detent in 4<sup>th</sup> position, with spring return to neutral position

**Proportional hydraulic controls**

**81M** 5V08130780 Range 5-15 bar (73-218 psi)

**4 "B" side spool control kit page 36**

TYPE CODE DESCRIPTION

**L** 5LEV130712 Aluminium lever box

**LN** 5LEV130701 Aluminium lever box, without lever

**LZ** 5LEV130731 Aluminium lever box, with anti-tamper screw caps

**LG** 5LEV130806 Cast iron lever box

**5 Port valves page 37**

TYPE CODE DESCRIPTION

**UT** XTAP522442 Valve blanking plug

**C** 5KIT410000 Anticavitation valve

**Fixed setting antishock and anticavitation valves: setting is referred to 10 l/min (2.6 US gpm)**

TYPE: **U 100** CODE: 5KIT330 100

└ setting (bar) └ setting (bar)

SETTING:

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

**6 L.S. port relief valves page 37**

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

TYPE CODE DESCRIPTION

**LSD** XCAR126215 With blind nut, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi

XCAR126213 As previous, range 180-350 bar / 2600-5100 psi std. setting 180 bar / 2600 psi

**LSH** XCAR126216 With locked arrangement, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi

XCAR126217 As previous, range 180-350 bar / 2600-5100 psi, std. setting 180 bar / 2600 psi

**LSZ** 5CAR126221 With anti-tamper cap, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi

5CAR126219 As previous, range 180-350 bar / 2600-5100 psi, std. setting 180 bar / 2600 psi

**ST** 5KIT126210 Relief valve blanking plug

**7 Section threading**

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

**8 Plug for single acting spool\***

CODE DESCRIPTION

3XTAP727180 G1/2 plug

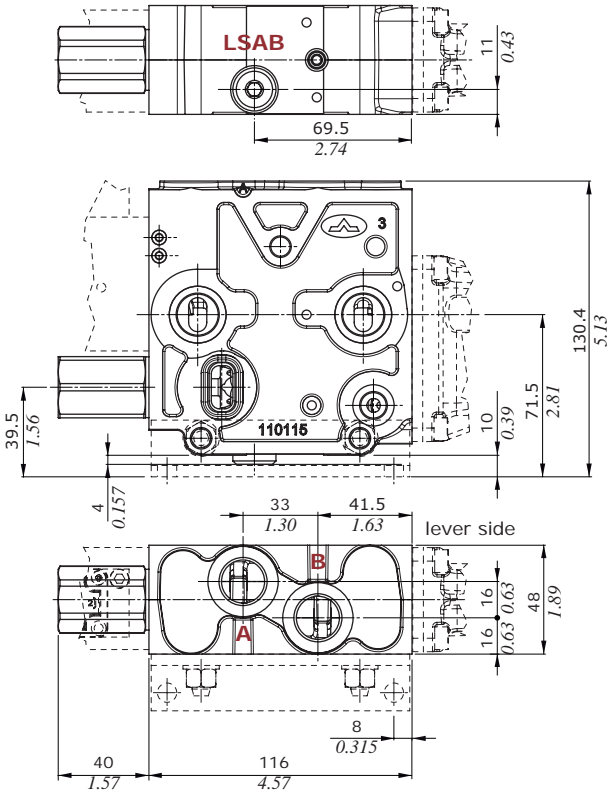
NOTE (\*): Codes are referred to **BSP** thread.

Working section

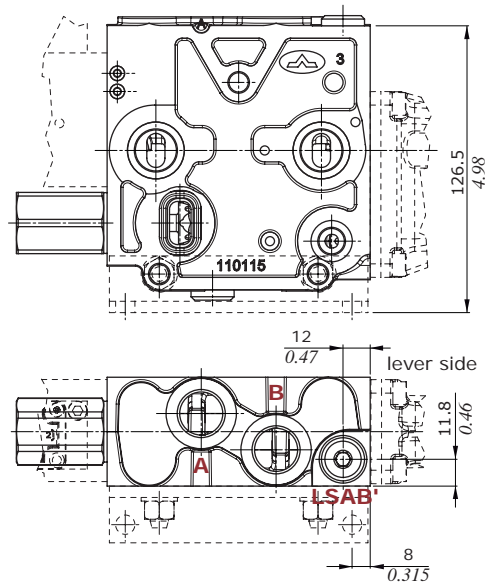
Dimensions and hydraulic circuit

With compensator

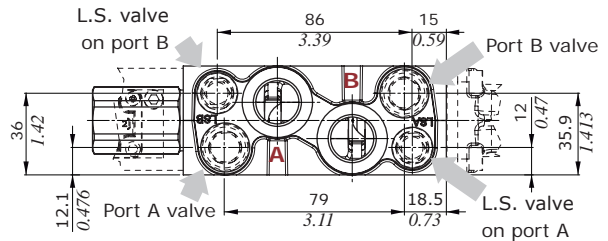
Type C10  
without port valves



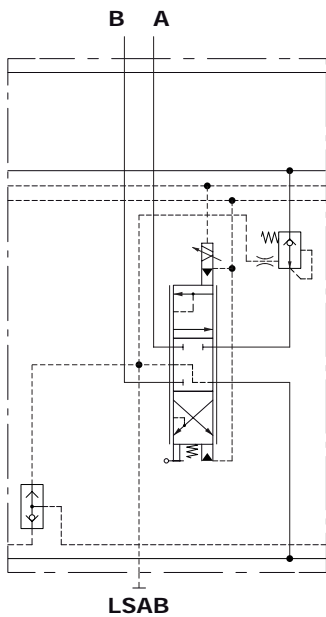
Type C13  
without port valves with upper L.S. port



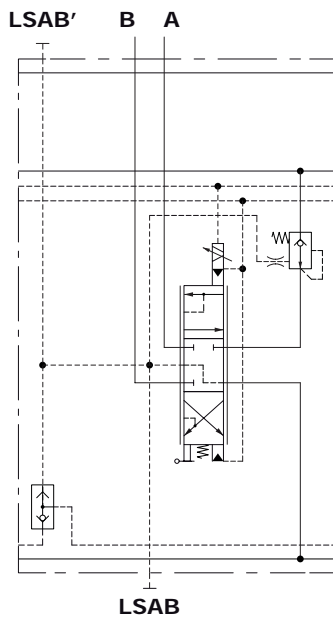
Type C22  
with arrangement for port valves and L.S. relief valve



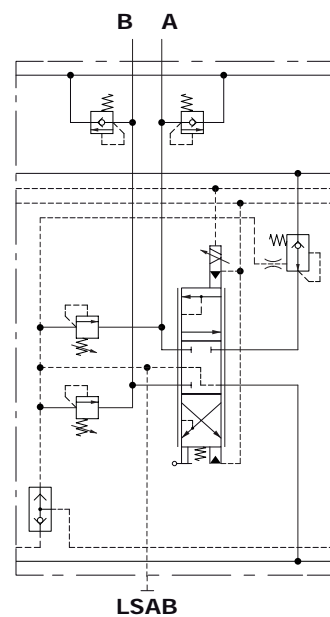
Type C10



Type C13



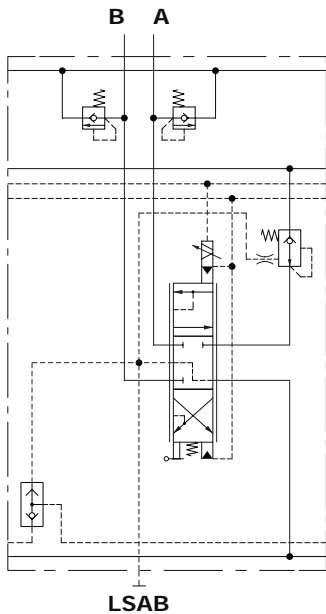
Type C22



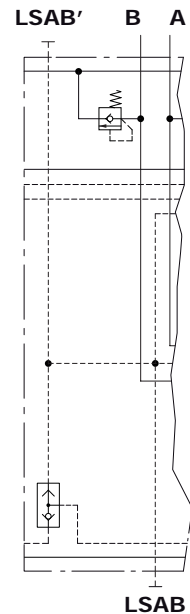
Dimensions and hydraulic circuit

With compensator

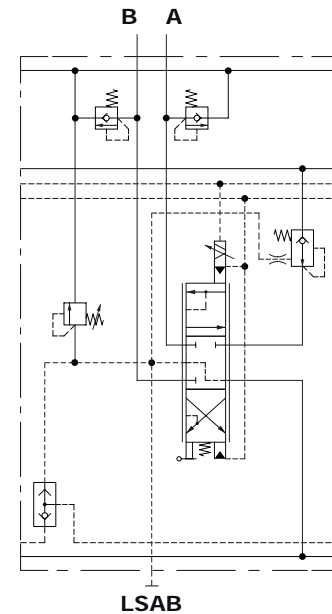
**Type C20**  
with port valves arrangement



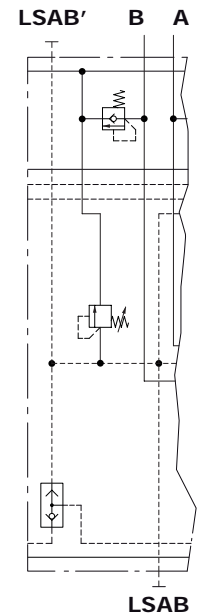
**Type C24**  
As type C20 with upper L.S. port



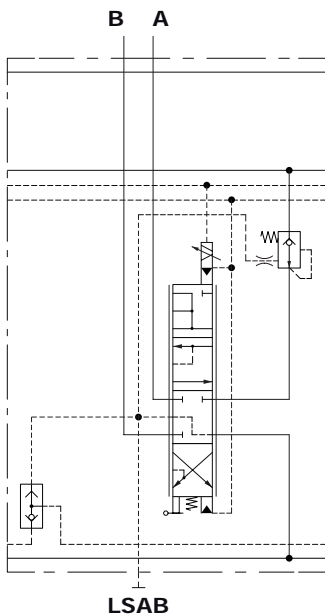
**Type C21**  
with arrangement for port valves and one L.S. relief valve



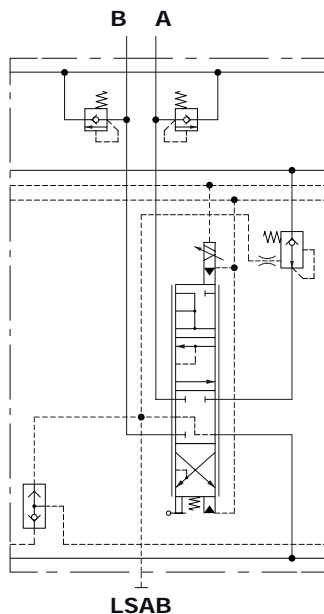
**Type C23**  
As type C21 with upper L.S. port



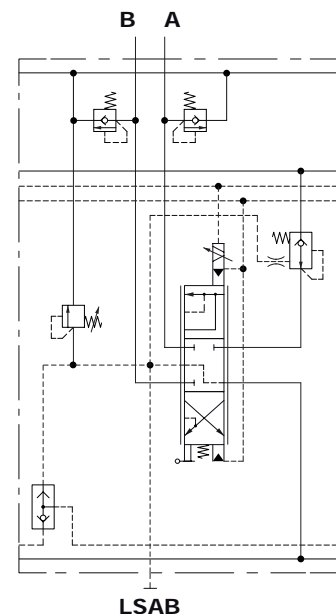
**Type F10**  
for floating circuit without port valves arrangement



**Type F20**  
for floating circuit with port valves arrangement



**Type CM23**  
for regenerative circuit with arrangement for port valves and one L.S. relief valve

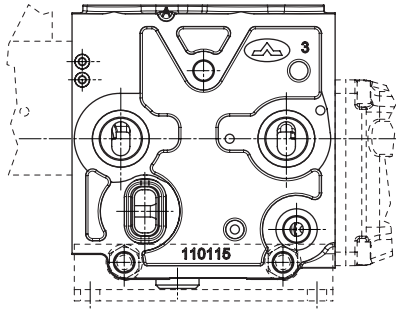


Working section

Dimensions and hydraulic circuit

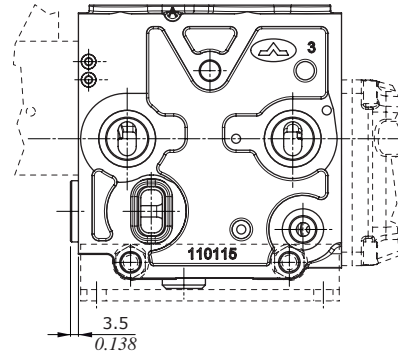
Without compensator

Dimensions are the same of types with compensator.  
See page 20 for section configuration list, and pages 22-23 for circuit representation.



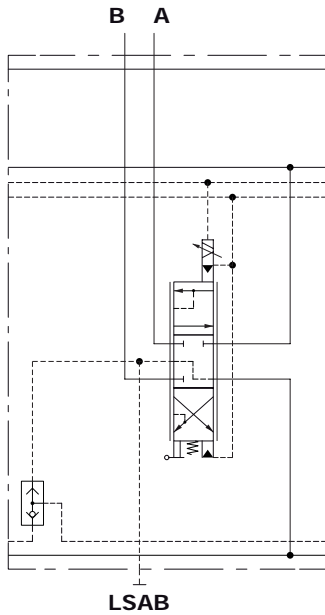
Without compensator, with check valve

Dimensions are the same of types with compensator.  
See page 20 for section configuration list, and pages 22-23 for circuit representation.



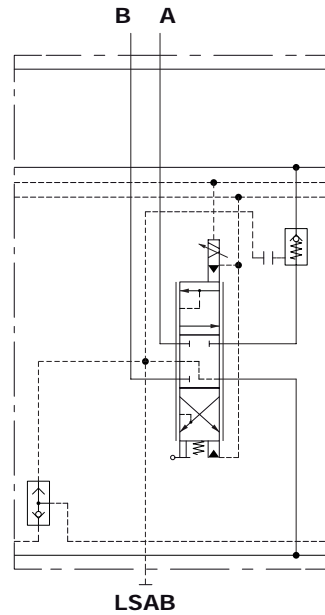
Type D10

without port valves arrangement



Type CV10

without port valves arrangement

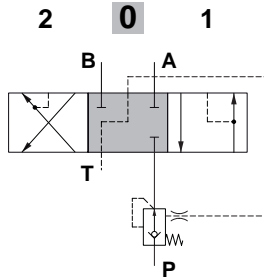




Spools

**Spool type 1**

A, B closed in neutral position

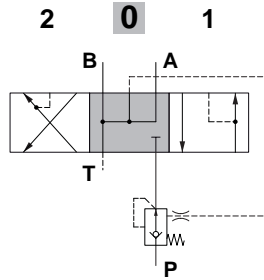


**Spool stroke**

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

**Spool type 2**

A, B open to tank in neutral pos.

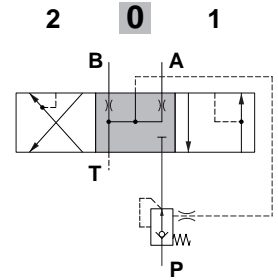


**Spool stroke**

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

**Spool type 2H**

A, B partially to tank in neutral pos.

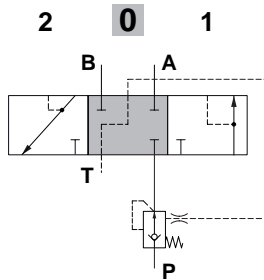


**Spool stroke**

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

**Spool type 3**

single acting on A

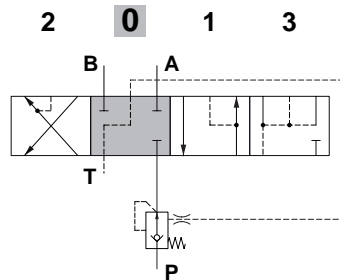


**Spool stroke**

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

**Spool type 5**

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

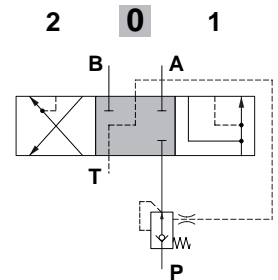


**Spool stroke**

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

**Spool type 8F**

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

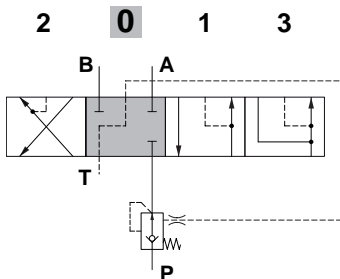


**Spool stroke**

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

**Spool type 8Y**

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



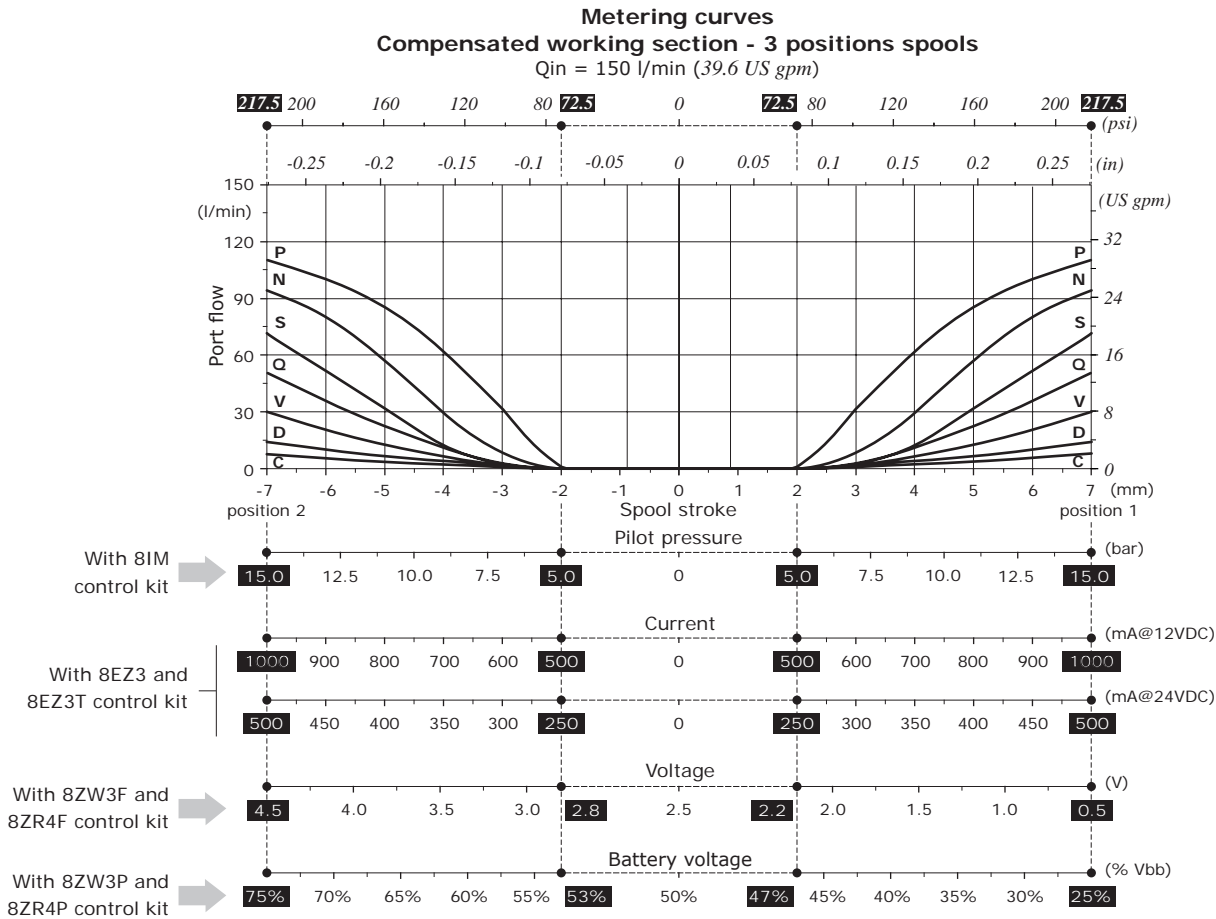
**Spool stroke**

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

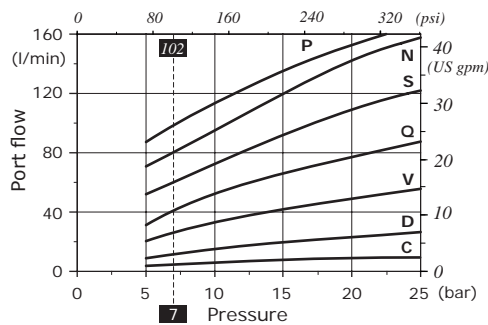
Working section

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.



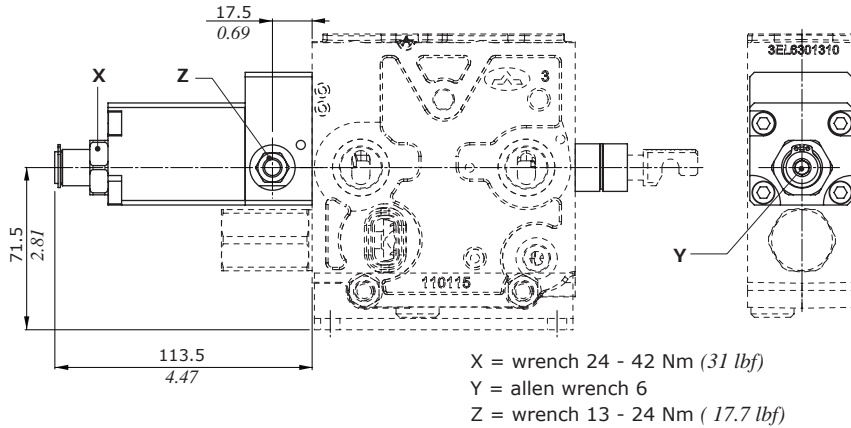
**Non-compensated working section**  
**Spool flow vs. Stand-by pressure**  
**(margin pressure)**



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

"A" side spool control kit

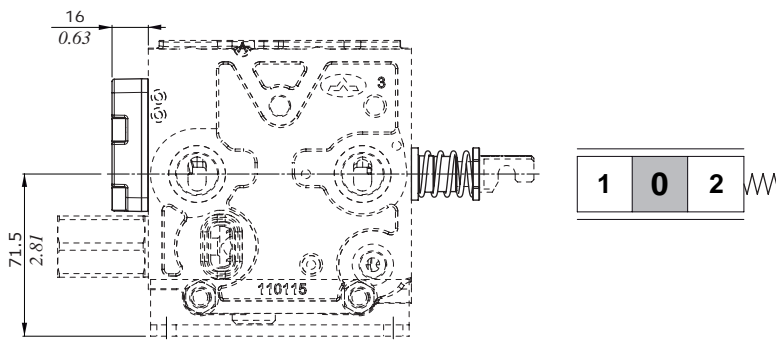
With friction and center position feeling: type 7FT



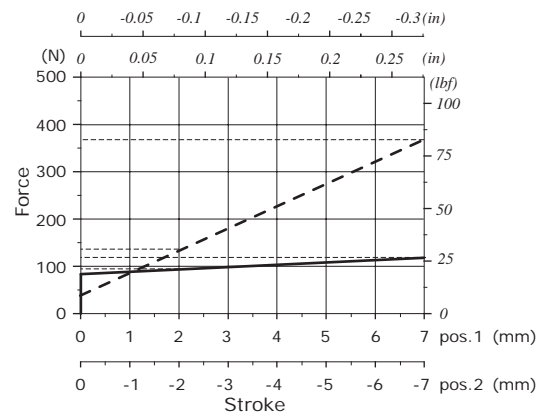
Features

- 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)

With spring return to neutral position: type 8



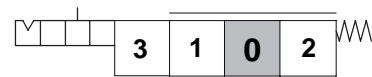
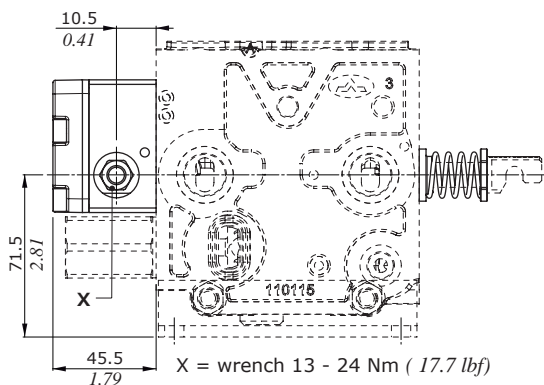
Force vs. Stroke diagram



- = 93.4 N @ 2 mm (21 lbf @ 0.079 in)  
 118 N @ 7 mm (26.5 lbf @ 0.28 in)
- - = 132 N @ 2 mm (29.6 lbf @ 0.079 in)  
 368 N @ 7 mm (82.7 lbf @ 0.28 in)

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

Need working sections type F, G or FV and floating circuit spools type 5.



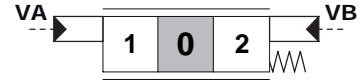
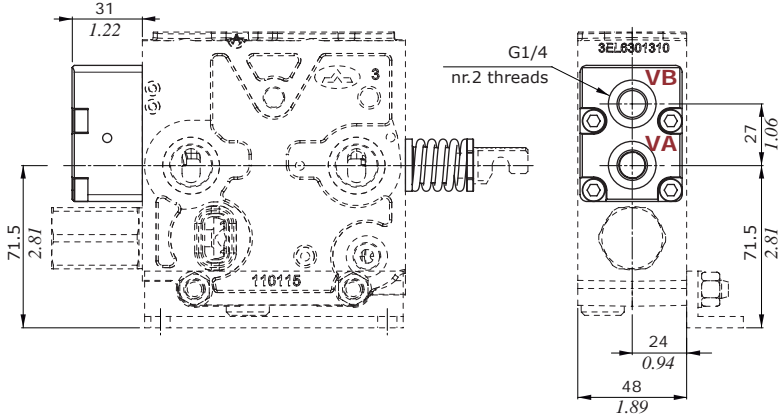
Features

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

Working section

"A" side spool control kit

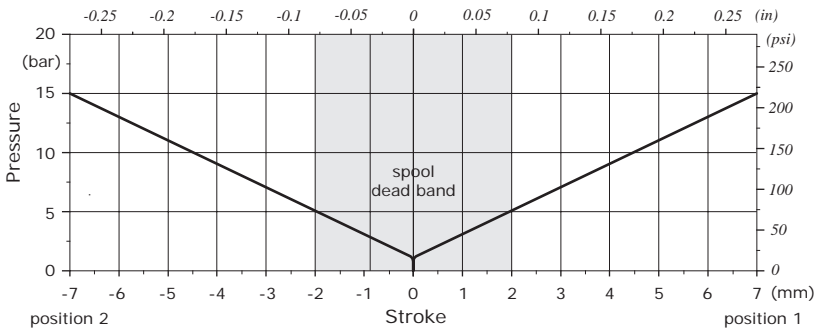
Proportional hydraulic controls



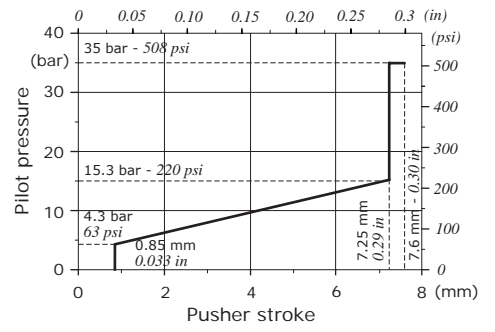
Features

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

Stroke vs. Pressure diagram



Suggested pressure control curve: type 020



### Electrohydraulic controls: without on-board electronic

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 tolerance ± 10%.

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

Note (1) For the calculation rules see "Appendix A" on page 71.

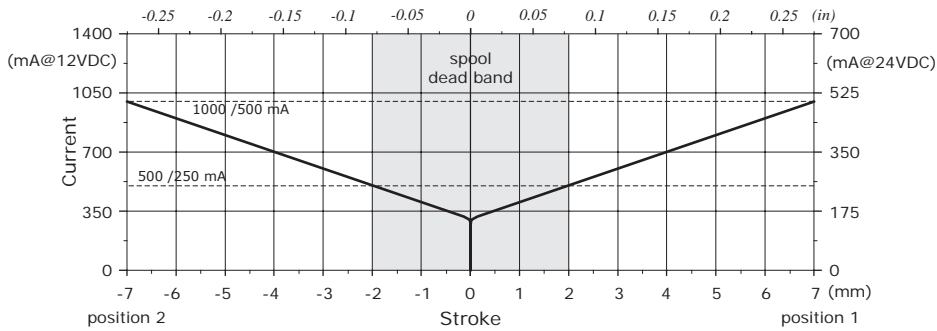
Listed electrohydraulic controls need CED100X or CED400X electronic control unit; for information contact Sales Department.

Working section

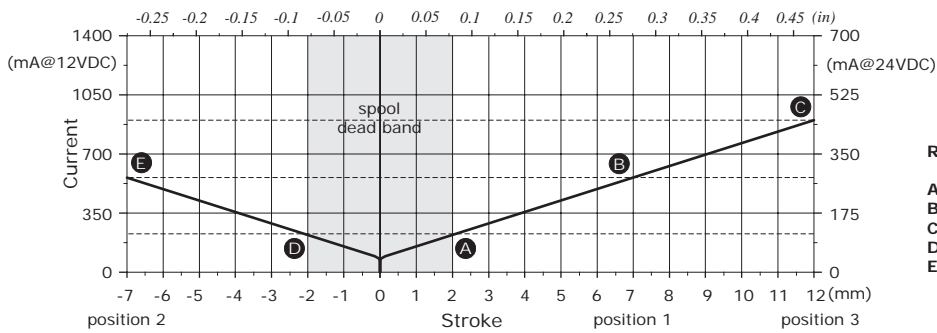
Electrohydraulic controls: without on-board electronic

Spool stroke vs. pilot current diagrams

Types 8EZ3 - 8EZ4 - 8EZ4D - 8EZ3T

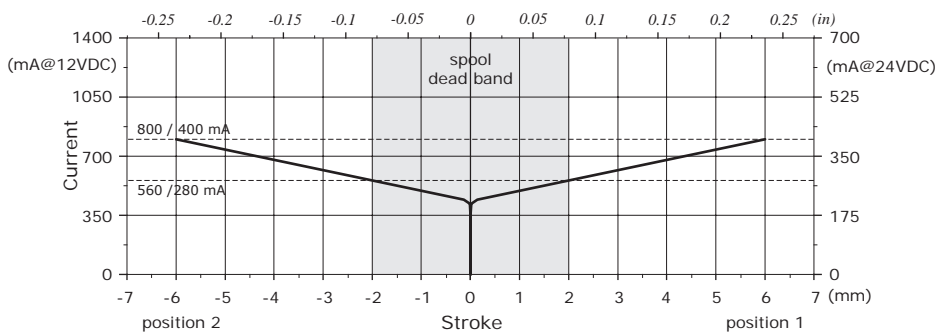


Types 13EZ3 - 13EZ4: for floating circuit

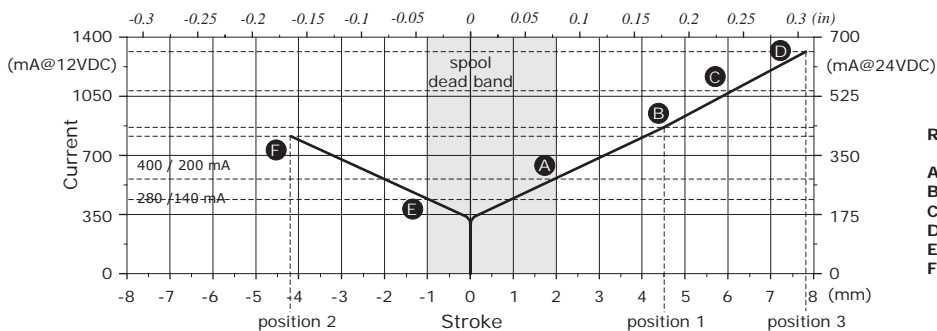


| Ref. | Current (mA) |       | Stroke<br>mm (in) |
|------|--------------|-------|-------------------|
|      | 12VDC        | 24VDC |                   |
| A    | 220          | 110   | 2 (0.079)         |
| B    | 560          | 280   | 7 (0.276)         |
| C    | 900          | 450   | 12 (0.472)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

Type 8EZ3CR: for regenerative circuit



Type (8Y)13EZ3: for regenerative circuit



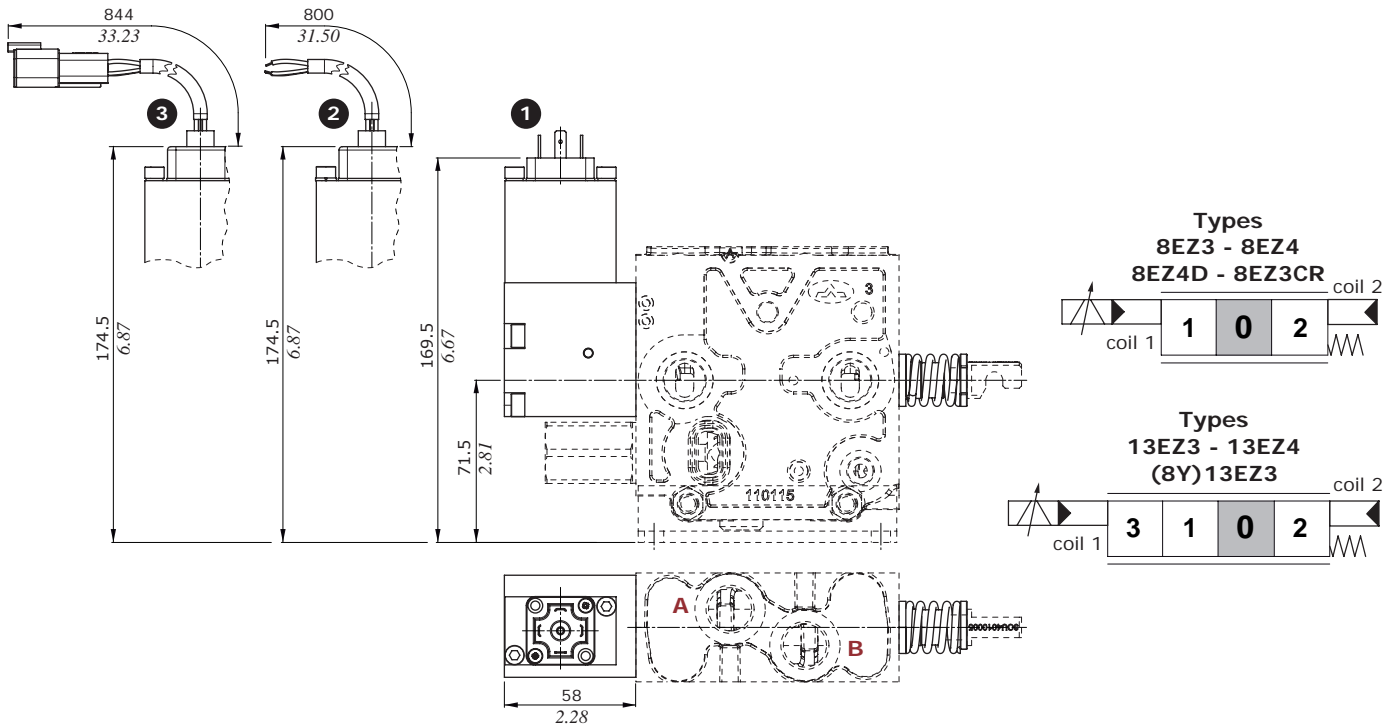
| Ref. | Current (mA) |       | Stroke<br>mm (in) |
|------|--------------|-------|-------------------|
|      | 12VDC        | 24VDC |                   |
| A    | 560          | 280   | 2 (0.079)         |
| B    | 850          | 425   | 4.5 (0.177)       |
| C    | 1100         | 550   | 6 (0.236)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

Electrohydraulic controls: without on-board electronic

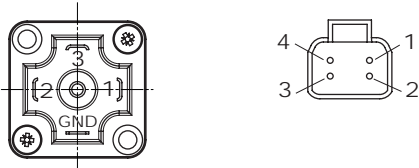
Proportional controls, types 8EZ - 13EZ

Control Types

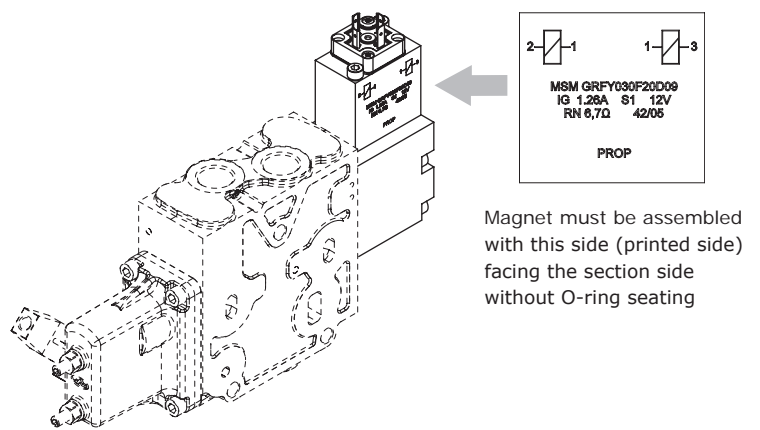
- 1 : With ISO4400 connector - mating connector code: 2X1001030
- 2 : With flying leads
- 3 : With Deutsch DTM04 connector - mating connector Deutsch DTM06 code: 5CON140025



ISO4400 connector    Deutsch DTM04 connector



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



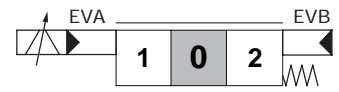
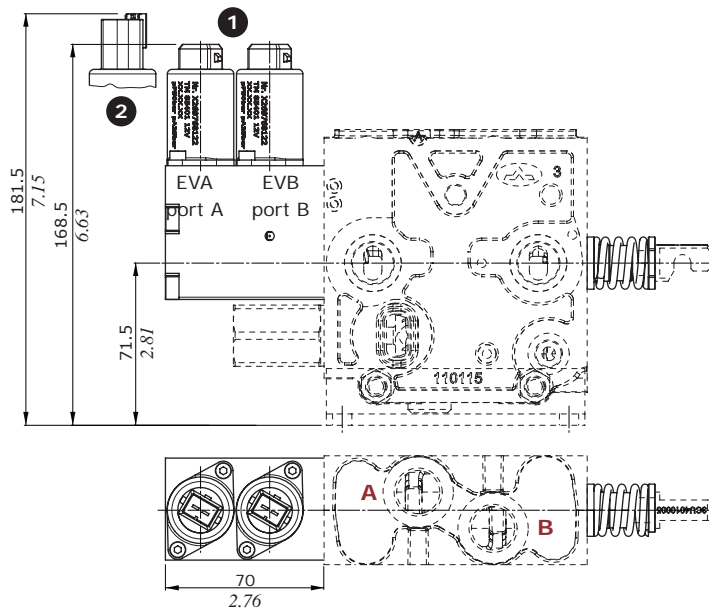
## Working section

### Electrohydraulic controls: without on-board electronic

#### Proportional control type 8EZ3T

##### Control Types

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





### Electrohydraulic controls: with on-board electronic

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 tolerance ± 10%.

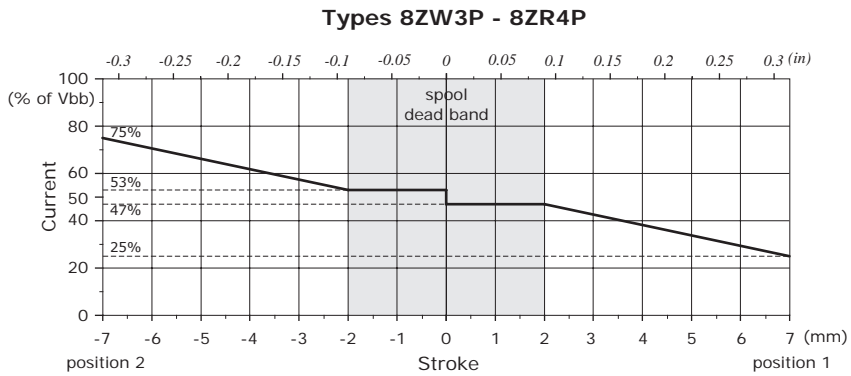
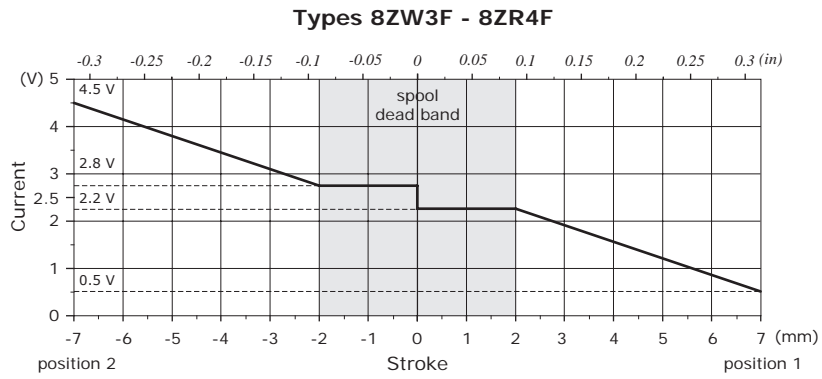
| Specifications                  |   | Spool control type         |              |                            |              |
|---------------------------------|---|----------------------------|--------------|----------------------------|--------------|
|                                 |   | 8ZW3F                      | 8ZW3P        | 8ZR4F                      | 8ZR4P        |
| <b>Electric specifications</b>  |   |                            |              |                            |              |
| Coil impedance                  | 12 VDC  | -                          | -            | -                          | -            |
|                                 | 24 VDC  | -                          | -            | -                          | -            |
| Max. operating current          | 12 VDC  | -                          | -            | -                          | -            |
|                                 | 24 VDC  | -                          | -            | -                          | -            |
| No load current consumption     |   | < 150 mA                   | < 150 mA     | < 150 mA                   | < 150 mA     |
| Hysteresis max. <sup>(1)</sup>  | external drain                                  | 10%                        | 10%          | < 1%                       | < 1%         |
| Time response                   | from 0 ⇒ 100% and<br>from 100% ⇒ 0 of<br>stroke | < 150 ms                   | < 150 ms     | < 150 ms                   | < 150 ms     |
| Min. flow control signal        | 12 VDC  | 2.2 V (port A)             | 47% (port A) | 2.2 V (port A)             | 47% (port A) |
|                                 | 24 VDC  | 2.7 V (port B)             | 53% (port B) | 2.7 V (port B)             | 53% (port B) |
| Max. flow control signal        | 12 VDC  | 0.5 V (port A)             | 25% (port A) | 0.5 V (port A)             | 25% (port A) |
|                                 | 24 VDC  | 4.5 V (port B)             | 75% (port B) | 4.5 V (port B)             | 75% (port B) |
| Float flow control signal       | 12 VDC  | -                          | -            | -                          | -            |
|                                 | 24 VDC  | -                          | -            | -                          | -            |
| Dither frequency                | high frequency                                  | -                          | -            | -                          | -            |
| Insertion                       |   | 100%                       |              | 100%                       |              |
| Coil insulation                 |   | Class F (155°C - 311°F)    |              | Class F (155°C - 311°F)    |              |
| Connector type                  |   | Flying leads - Deutsch DTM |              | Flying leads - Deutsch DTM |              |
| Weather protection (connector)  |   | IP69K (type DTM)           |              | IP69K (type DTM)           |              |
| <b>Hydraulic specifications</b> |   |                            |              |                            |              |
| Max. pressure                   |   | 50 bar (725 psi)           |              | 50 bar (725 psi)           |              |
| Max. back pressure              |   | 2.5 bar (36 psi)           |              | 2.5 bar (36 psi)           |              |

Note (1) For the calculation rules see "Appendix A" on page 71.

Working section

Electrohydraulic controls: with on-board electronic

Spool stroke vs. pilot current diagrams

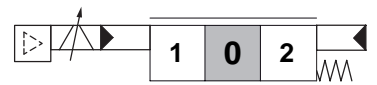
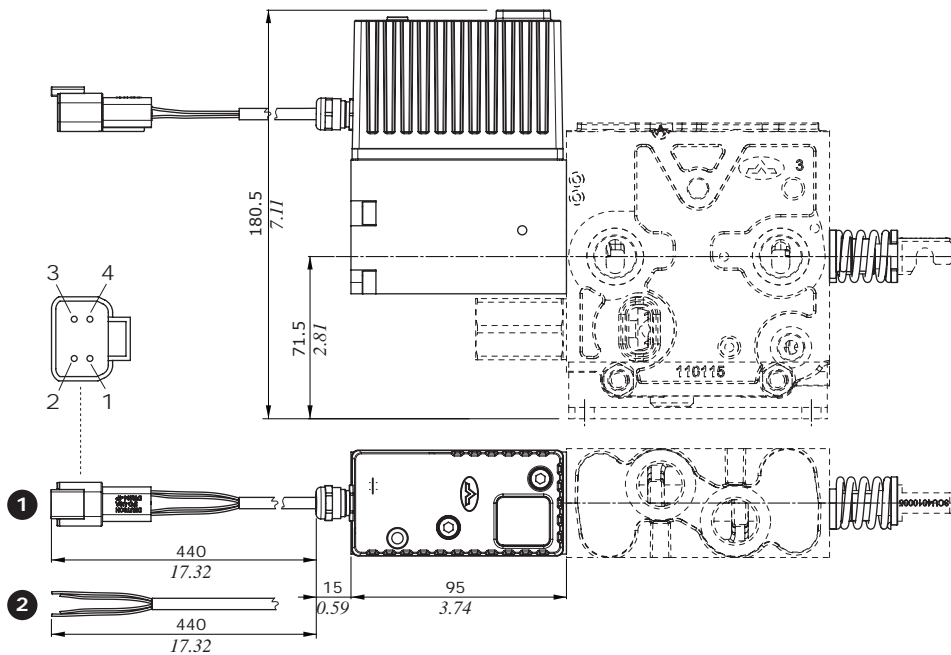


Electrohydraulic controls: with on-board electronic

Proportional controls type 8ZW3 (all configurations)

Control Types

- 1 : With Deutsch DTM04 connector - mating connector Deutsch DTM06 code: 5CON140025
- 2 : With flying leads

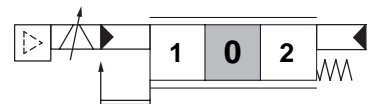
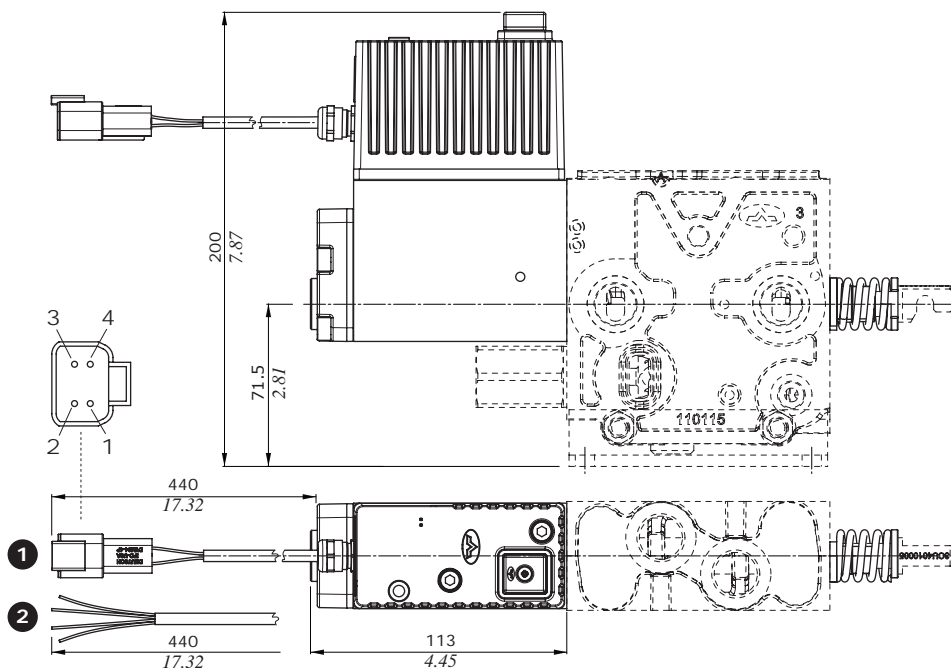


| Pin | Wire colour | Function          |
|-----|-------------|-------------------|
| 1   | white       | RS232 RX joystick |
| 2   | brown       | Vbb               |
| 3   | yellow      | GND               |
| 4   | green       | RS232 TX          |

Proportional controls type 8ZR4 with feedback (all configurations)

Control Types

- 1 : With Deutsch DTM04 connector - mating connector Deutsch DTM06 code: 5CON140025
- 2 : With flying leads

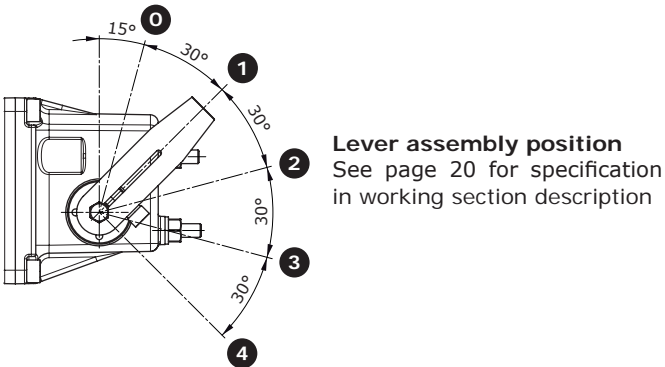
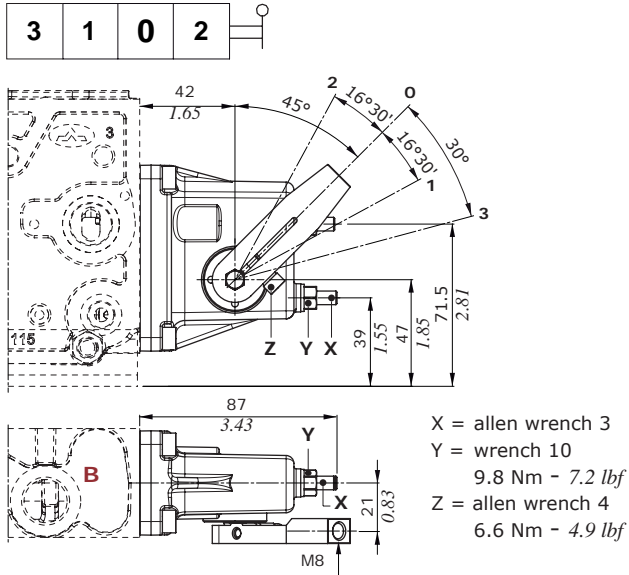


| Pin | Wire colour | Function |
|-----|-------------|----------|
| 1   | white       | Joystick |
| 2   | brown       | Vbb      |
| 3   | yellow      | GND      |
| 4   | green       | Alarm    |

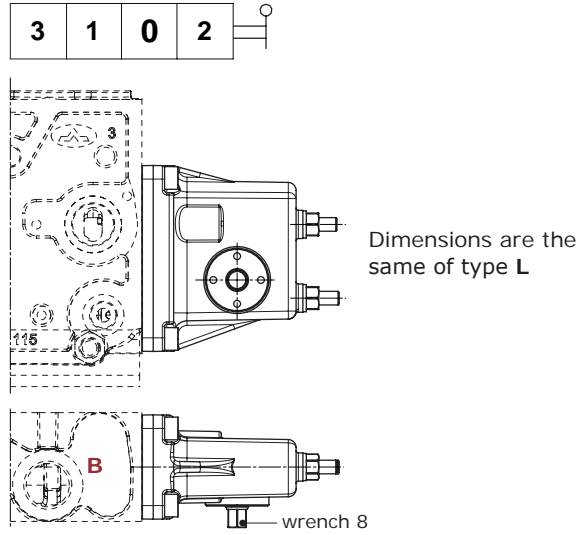
Working section

"B" side spool control kit

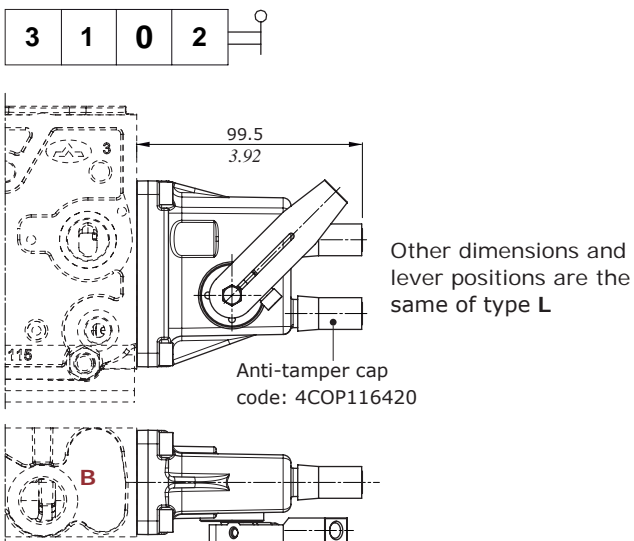
Aluminium lever box; type L



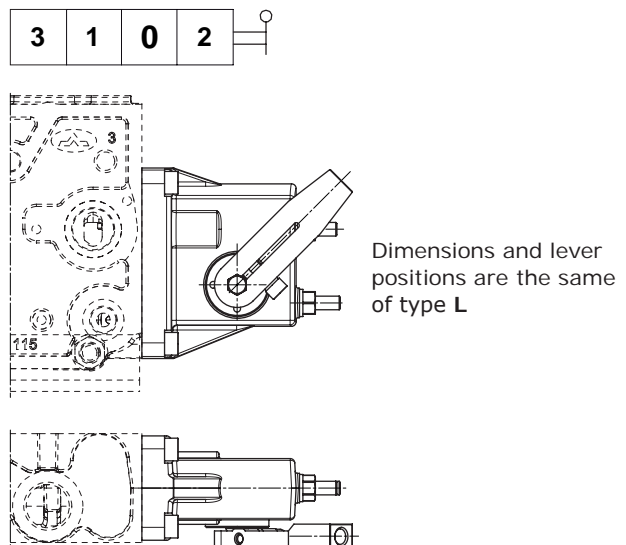
Aluminium lever box, without lever; type LN



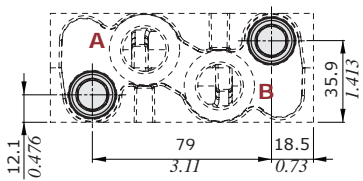
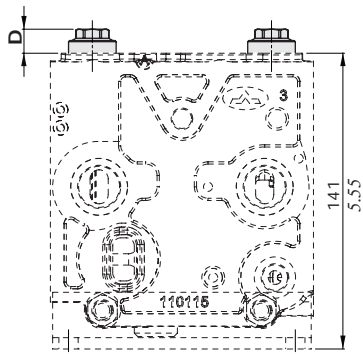
Alum. lever box, with anti-tamper cap; type LZ



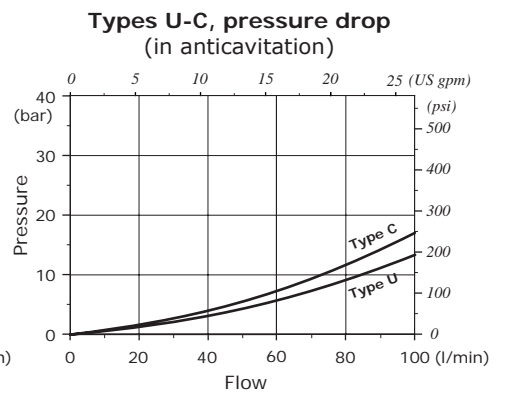
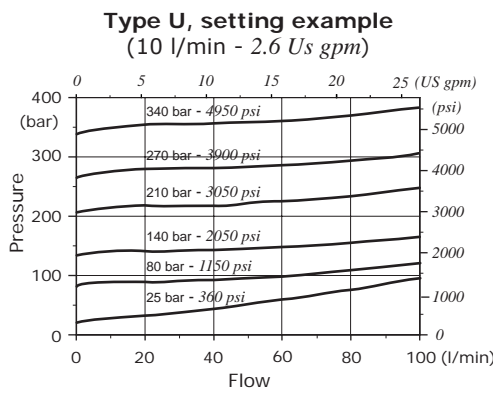
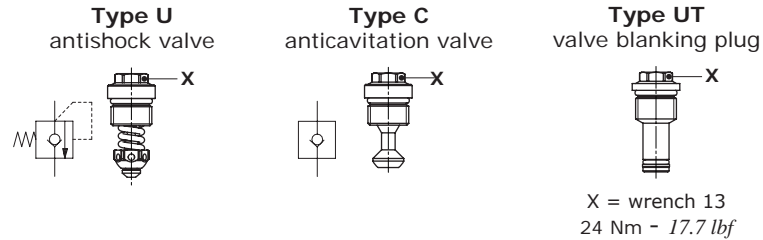
Cast iron lever box; type LG



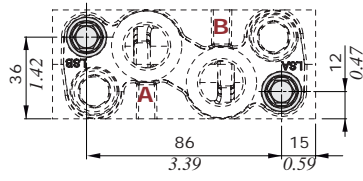
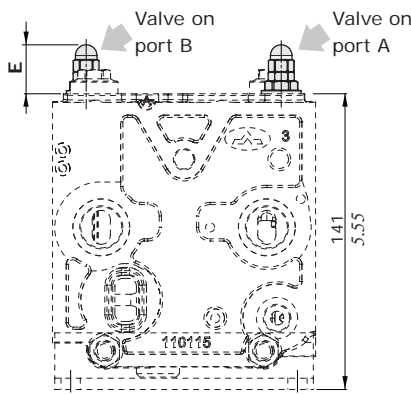
Port valves



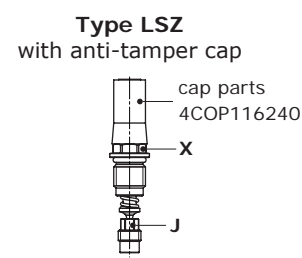
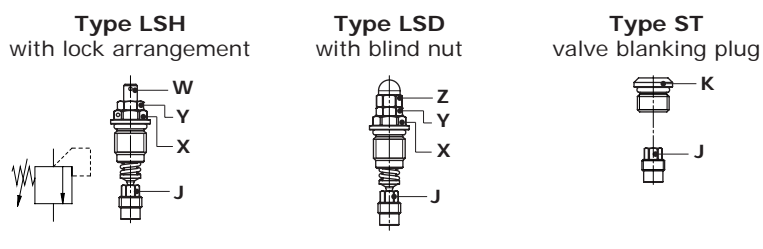
| Valve type | Dim. D | mm   | in |
|------------|--------|------|----|
| U          | 10.5   | 0.41 |    |
| C          | 10.5   | 0.41 |    |
| UT         | 7.5    | 0.30 |    |



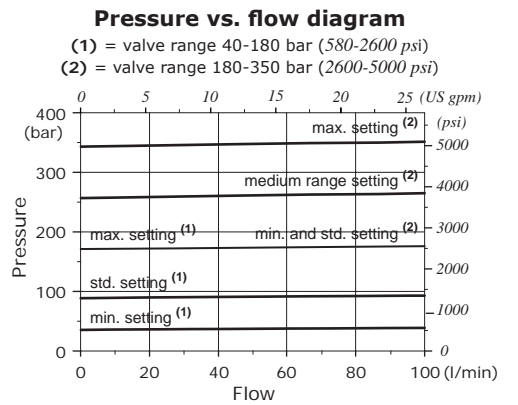
L.S. port relief valves



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

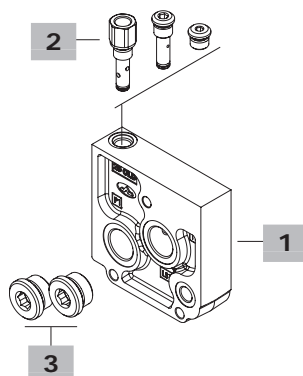


X = wrench 13 / 42 Nm - 31 lbf  
 Y = wrench 10 / 9.8 Nm - 7.2 lbf  
 W = allen wrench 3  
 Z = wrench 10 / 9.8 Nm - 7.2 lbf  
 J = wrench 7 / 24 Nm - 17.7 lbf  
 K = allen wrench 5 / 24 Nm - 17.7 lbf



## Outlet section parts ordering codes

DPC130/RD 3 1 - .....



### 1 Outlet section body \* page 39 .

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

### 2 Drain options page 39

| TYPE | CODE        | DESCRIPTION  |
|------|-------------|--|
| 1    | XTAP517460  | Internal drain; to use with mechanical controls    |
| 2    | XTAP217160  | Internal drain; to use with hydraulic controls     |
| 3    | XCAR119611* | External drain G1/4; for electrohydraulic controls |

### 3 Ports options \*

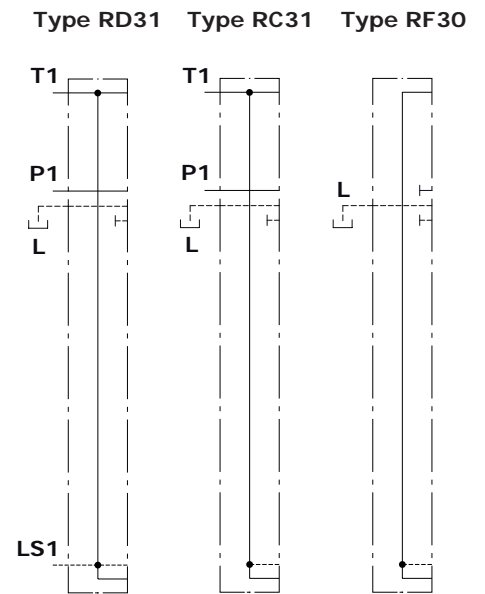
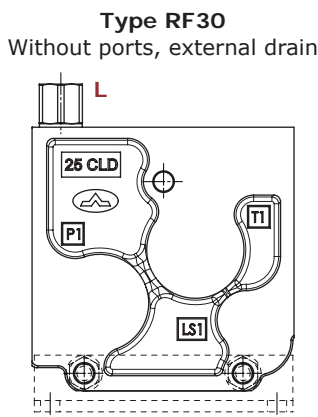
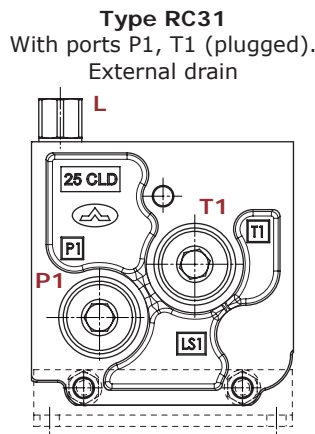
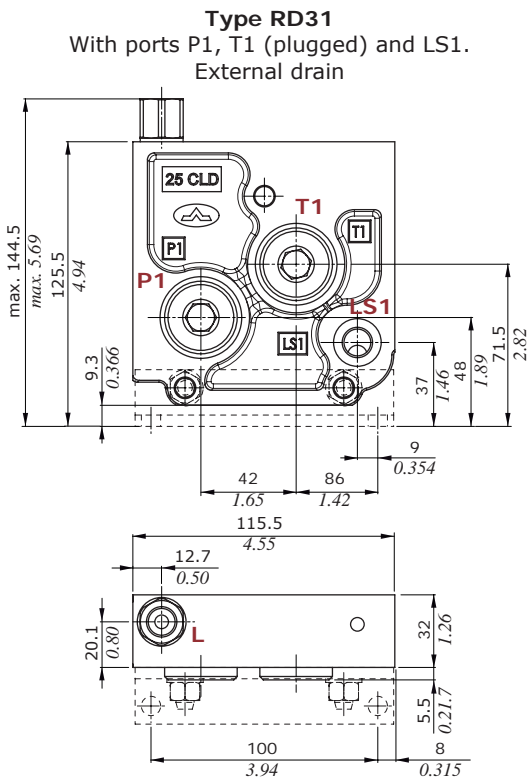
| TYPE | CODE        | DESCRIPTION                                   |
|------|-------------|---|
| 0    | -           | Without ports; for RF section                 |
| 1    | 3XTAP732200 | G3/4 plug (nr.2); ports P1 and T1 pluggd      |
| 2    | 3XTAP732200 | G3/4 plug (nr.1); port P1 plugged and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

### 4 Section threading

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

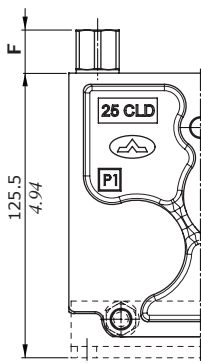
NOTE (\*): Codes are referred to **BSP** thread.

Dimensions and hydraulic circuit



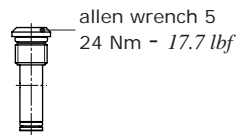
Note: The port LS1 must not be plugged (in case it's not used it has to be connected to tank).

Drain options

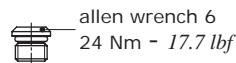


| Option | Dim. F |       |
|--------|--------|-------|
|        | mm     | in    |
| 1      | 3.5    | 0.138 |
| 2      | 3.5    | 0.138 |
| 3      | 19     | 0.75  |

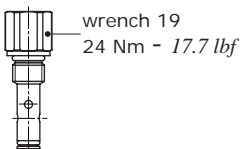
**Option 1**  
internal drain for  
mechanical controls



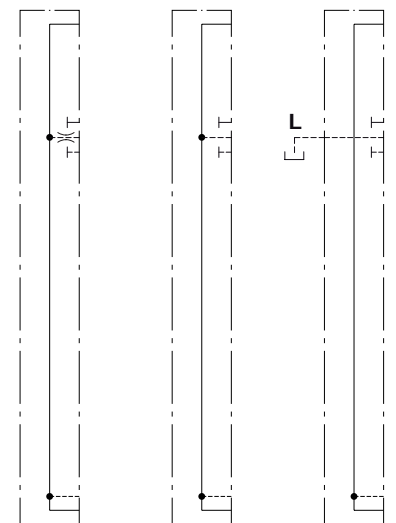
**Option 2**  
internal drain for  
hydraulic controls



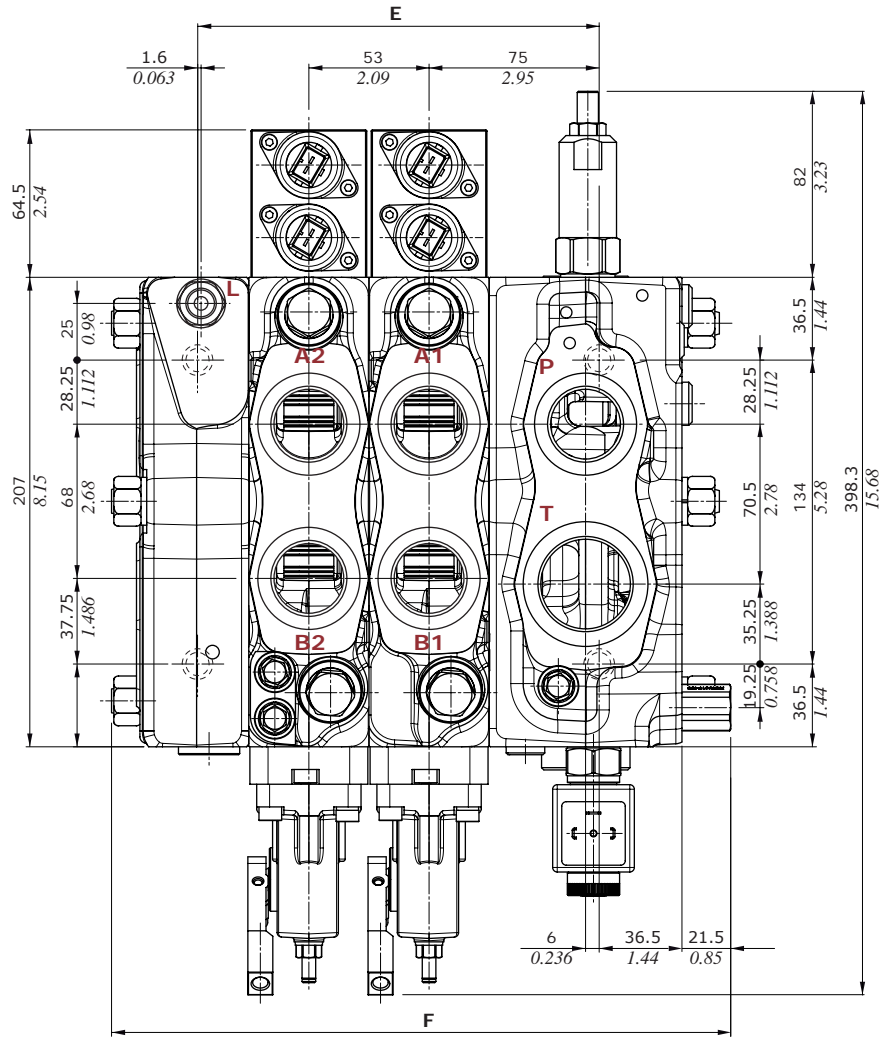
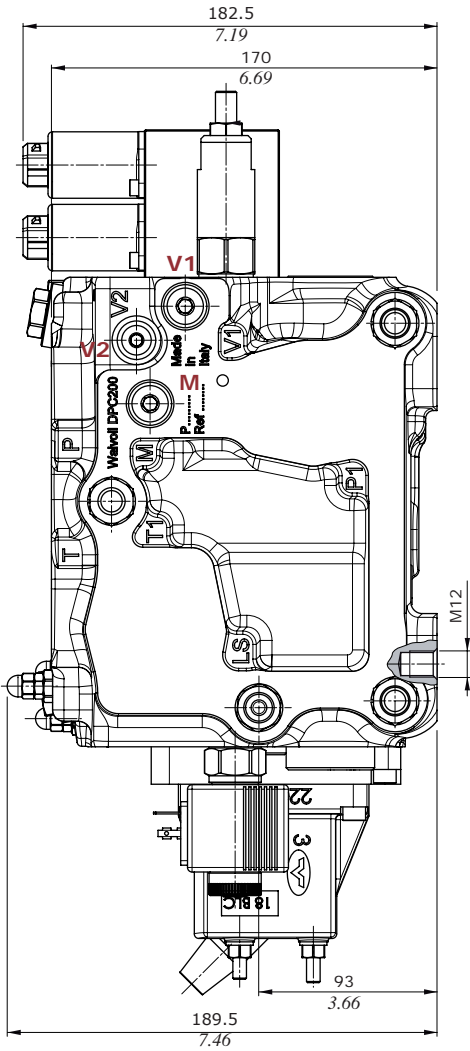
**Option 3**  
external drain for  
electrohydraulic controls



Option 1    Option 2    Option 3



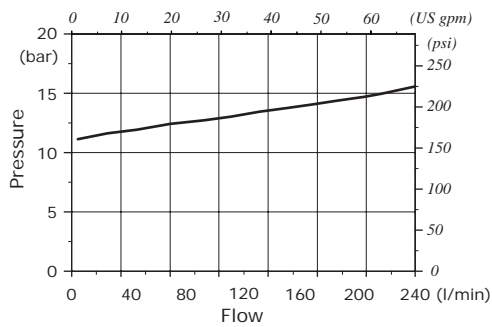
## Dimensional data and performance



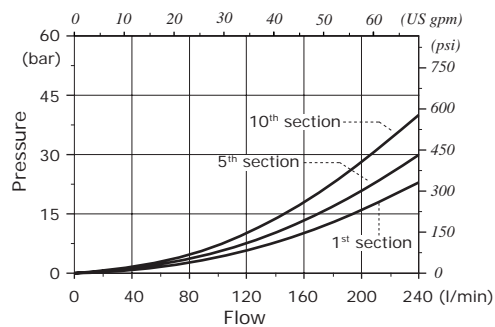
| TYPE     | E   |       | F   |       | Weight |      |
|----------|-----|-------|-----|-------|--------|------|
|          | mm  | in    | mm  | in    | Kg     | lb   |
| DPC200/1 | 177 | 6.97  | 220 | 8.66  | 39.5   | 87.1 |
| DPC200/2 | 230 | 9.06  | 273 | 10.75 | 53.8   | 117  |
| DPC200/3 | 283 | 11.14 | 326 | 12.83 | 68.1   | 150  |
| DPC200/4 | 336 | 13.23 | 379 | 14.92 | 82.4   | 182  |
| DPC200/5 | 389 | 15.31 | 432 | 17.01 | 96.7   | 213  |

| TYPE      | E   |       | F   |       | Weight |     |
|-----------|-----|-------|-----|-------|--------|-----|
|           | mm  | in    | mm  | in    | Kg     | lb  |
| DPC200/6  | 442 | 17.40 | 485 | 19.09 | 111    | 245 |
| DPC200/7  | 495 | 19.49 | 538 | 21.18 | 125    | 276 |
| DPC200/8  | 548 | 21.57 | 591 | 23.27 | 140    | 308 |
| DPC200/9  | 601 | 23.66 | 644 | 25.35 | 154    | 339 |
| DPC200/10 | 654 | 25.75 | 697 | 27.44 | 168    | 371 |

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

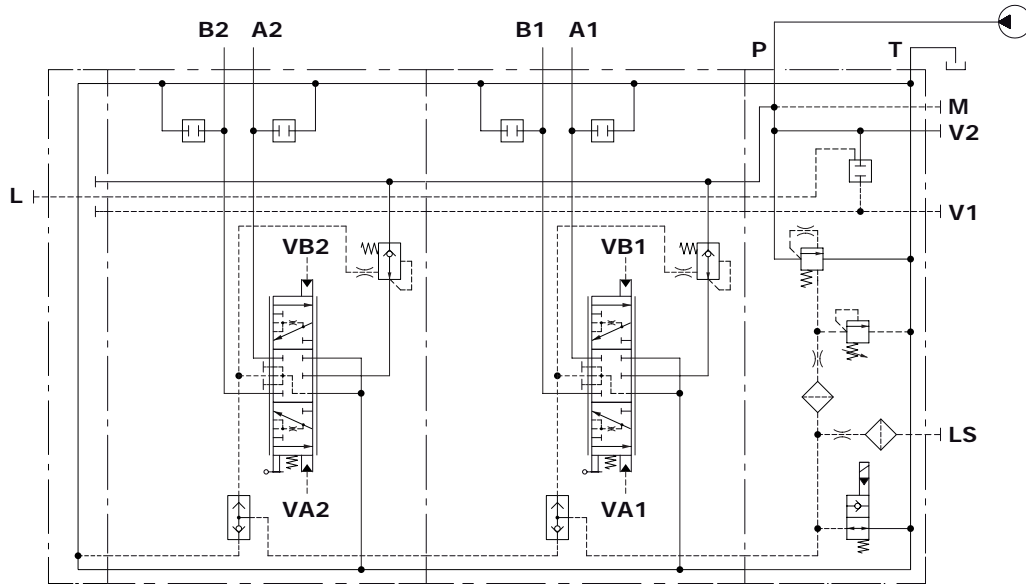


**A(B)⇒T pressure drop (standard spool @ max.stroke)**



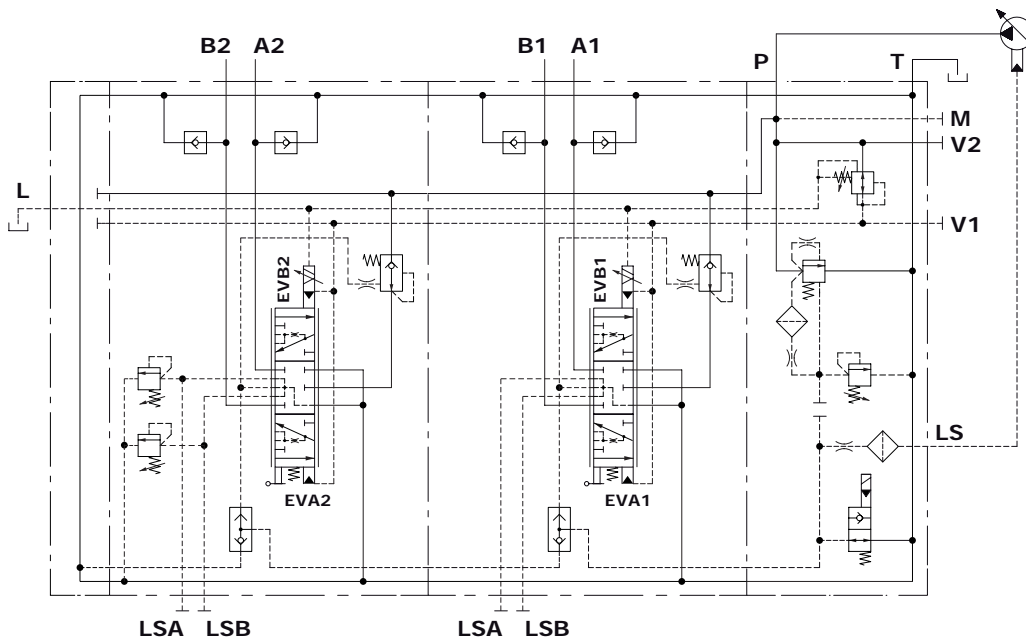


Open center configuration example



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

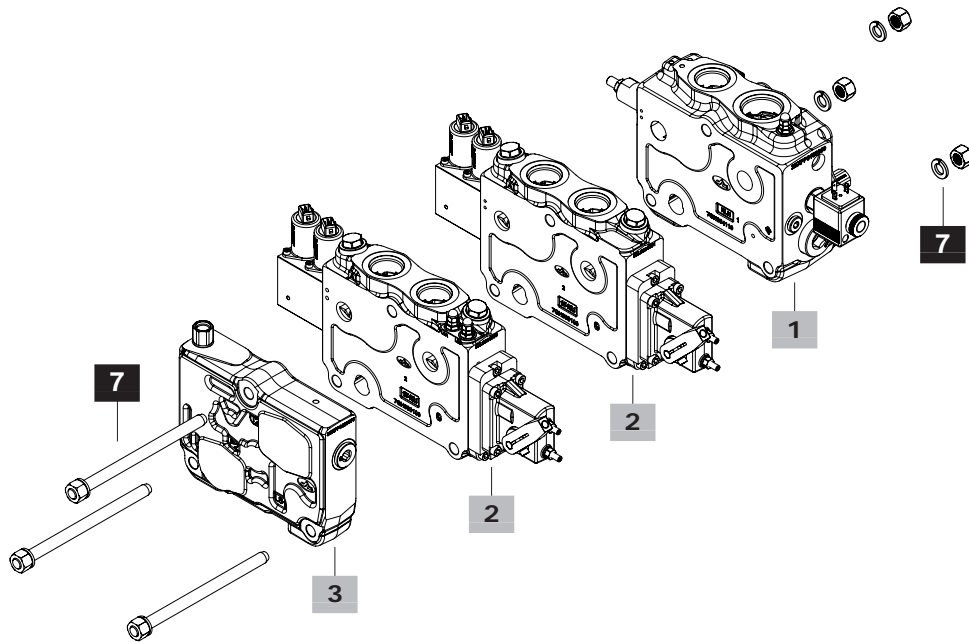
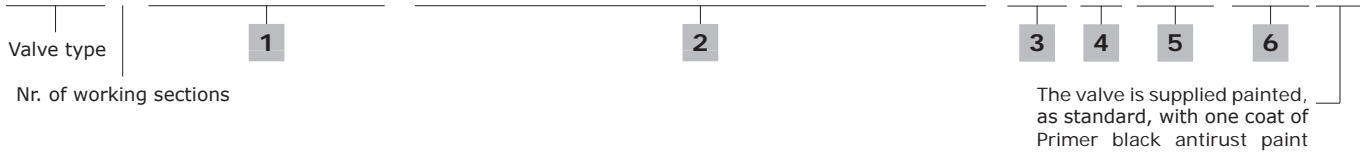
Closed center configuration example



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>th</sup> section, LSA and LSB ports, internal pilot and external drain

## Complete sections ordering codes

DPC200/2/ BR2-10(H220\ELP) / C21-104(200\200)-8EZ3TLG1.U100U320 /..... / RF30-.....-12VDC-<SB20-CVN>



**1 Inlet section \*** page 44**Closed Center circuit**

TYPE: **DPC200/BR2-10(H220\ELP)-12VDC** CODE: 638203001  
 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)-12VDC** CODE: 638203002  
 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)-12VDC** CODE: 638203003  
 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 50

TYPE: **DPC200/C10-104(200\200)-8EZ3TLG1-12VDC**  
 CODE: 638103001

DESCRIPTION: With 2-way compensator, double acting spool for

200 l/min (52.8 US gpm), prop. electrohydraulic control with lever.

TYPE: **DPC200/F32-504(200\200)-8EZ3TLG1.ULTULT.STST-12VDC**  
 CODE: 638103002

DESCRIPTION: With 2-way compensator, floating spool for 200 l/min (52.8 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 63**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** CODE: 638303004

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

**For valve with electrohydraulic control**

TYPE: **DPC200/RF30** CODE: 638303003

DESCRIPTION: Without ports, external drain L

TYPE: **DPC200/RD31** CODE: 638303005

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

**4 Valve threading**

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

For valve with ISO 6162-1 type 1 flange connection digit: **FS3-M(BSP)**.

**5 Voltage**

Specify the voltage of electric devices.

**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 11.5 bar (167 psi)

**7 Assembling kit**

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

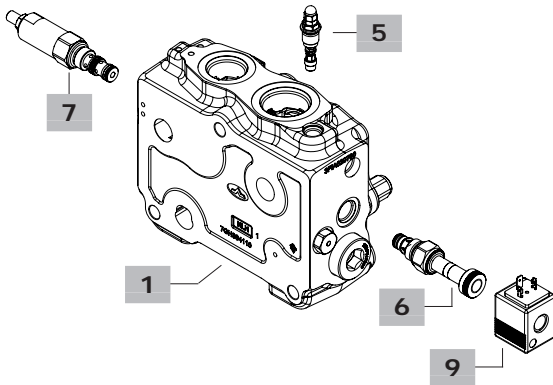
NOTE (\*): Codes are referred to **BSP** thread.

## Inlet section parts ordering codes

Valve setting (bar)

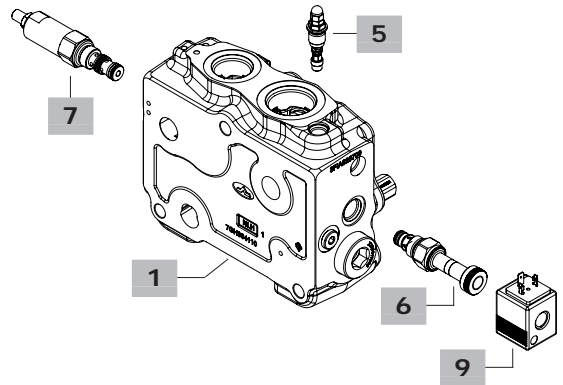
DPC200 / BR1 - 1 0 (H220\ELP\.....\SB15)-.....-12VDC

1 2 3 5 6 7 4 8 9



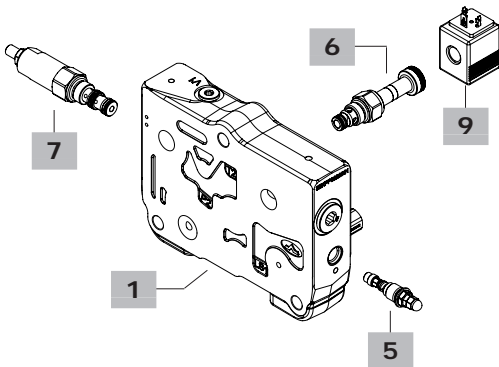
DPC200/BR2 - 1 0 (H220\ELP\.....)-.....-12VDC

1 2 3 5 6 7 8 9

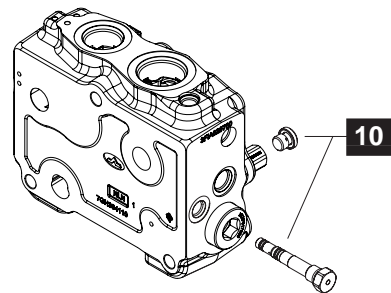


DPC200/BRF2 - 3 0 (H220\ELP\.....)-.....-12VDC

1 2 3 5 6 7 8 9



Circuit conversion kit



## Inlet section parts ordering codes

**1 Inlet section body kit\* page 46****Open Center circuit**

TYPE: **DPC200/BR1-1** CODE: 5FIA620302  
 DESCRIPTION: With compensator, pressure reducing valve arrangement, P-T-LS ports (LS plugged), arranged for unloader valve  
 TYPE: **DPC200/BR1-1-FS3-M(BSP)** CODE: 5FIA620303  
 DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connector

**Closed Center circuit**

TYPE: **DPC200/BR2-1** CODE: 5FIA620304  
 DESCRIPTION: With compensator, pressure reducing valve arrangement, P-T-LS ports, arranged for unloader valve  
 TYPE: **DPC200/BR2-1-FS3-M(BSP)** CODE: 5FIA620305  
 DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.  
 TYPE: **DPC200/BRF2-3** CODE: 5FIA620306  
 DESCRIPTION: Without compensator, with pressure reducing valve arrangement, P-T-LS ports, arranged for unloader valve  
 TYPE: **DPC200/BRF2-3-FS3-M(BSP)** CODE: 5FIA620307  
 DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.

**2 Port arrangement**

| TYPE | DESCRIPTION                               |
|------|---|
| 1    | With upper T and P ports (for section BR) |
| 3    | With side T and P ports (for section BRF) |

**3 Port options**

| TYPE | DESCRIPTION                 |
|------|-----------------------------|
| 0    | Ports P and T open          |
| 1    | Port P open, port T plugged |

**4 Compensator stanb-by**

Specify value only if it's different from the standard (11.5 bar / 167 psi): for Open Center sections

**5 L.S. relief valve page 49**

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

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

**6 Solenoid operated unloading valve page 48**

Needs coil type BER: 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>  | XTAP225320  | Unloading valve blanking plug          |

**7 Pressure reducing valve page 48**

| TYPE      | CODE        | DESCRIPTION                               |
|-----------|-------------|---|
| -         | 4AC9539900  | Pressure reducing valve, 32 bar / 464 psi |
| <b>RT</b> | 3XTP3535100 | Valve blanking plug (SAE 08/3)            |

**8 Section threading**

Specify threading only if it is different from BSP standard.  
 For section with ISO 6162-1 type 1 flange connection digit: **FS3-M(BSP)**.

**9 Coil**

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

For complete available coils list see page 68.

**10 Circuit conversion kit**

These kits are available only for BR section; not for BRF section.

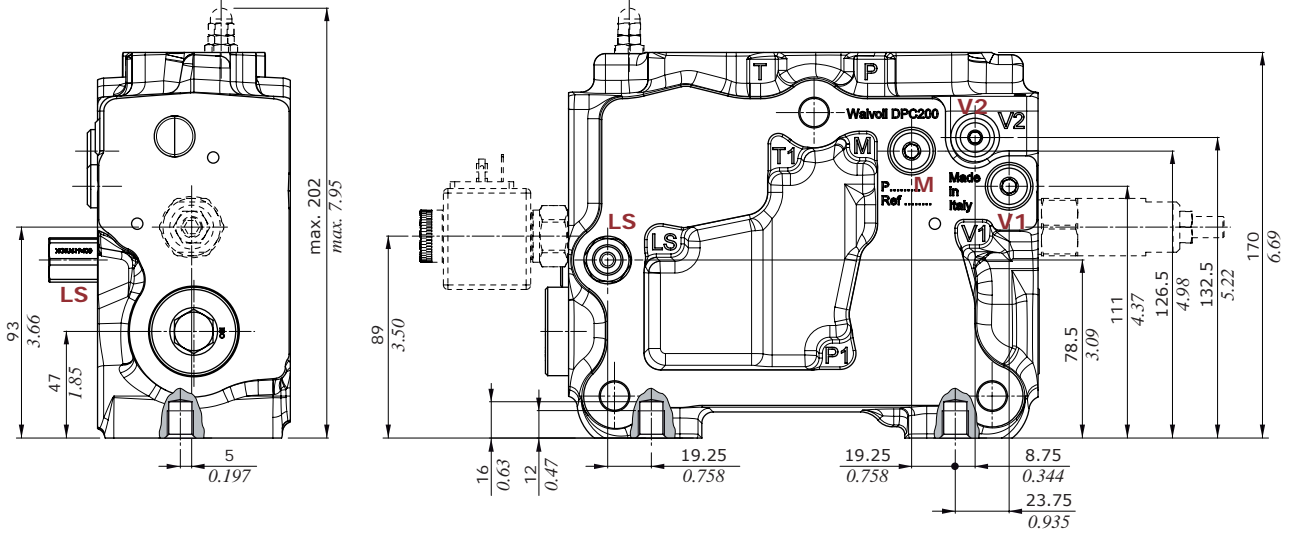
| CODE        | DESCRIPTION  |
|-------------|--|
| XSTR117790  | For circuit conversion from Open Center to Closed Center     |
| 5KIT200310* | Kit for circuit conversion from Closed Center to Open Center |

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

## Inlet section

### Dimensions and hydraulic circuit

#### Example of BR section type

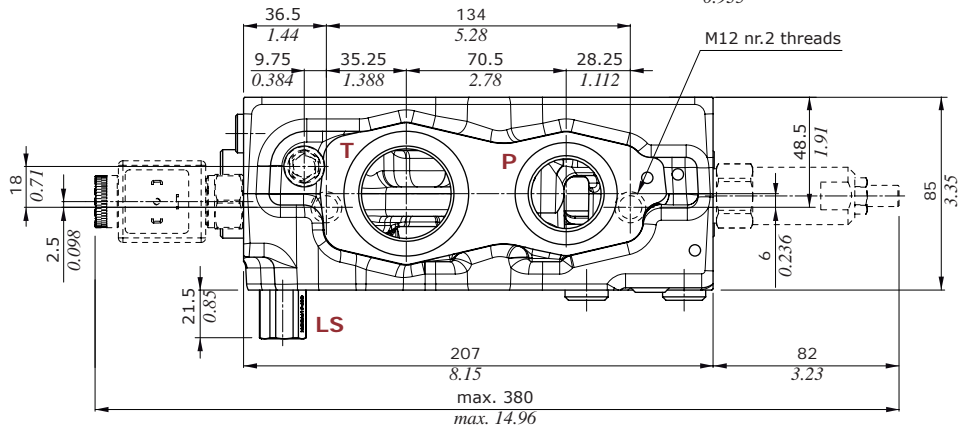


#### Auxiliary ports specification

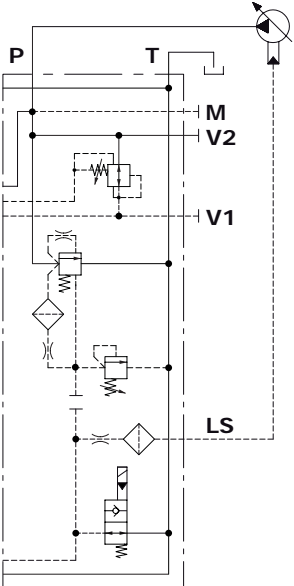
**M** = G1/4 pressure gauge connection

**V1** = G1/4 pilot pressure port (Pmax = 30 bar / 435 psi) for hydraulic pilot control valves feeding (P⇒OUT)

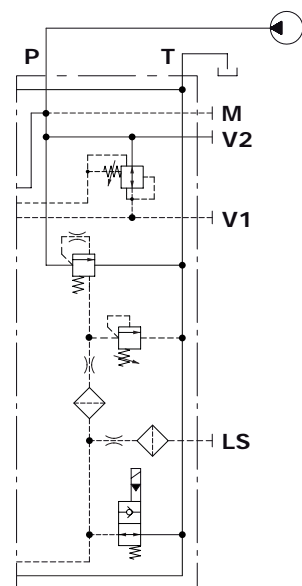
**V2** = M14x1.5 pilot pressure port for electrohydraulic controls optional feeding (Pmax = 315 bar / 4600 psi) (P⇒IN): needs G1/4 joint, code 5GIU519611.



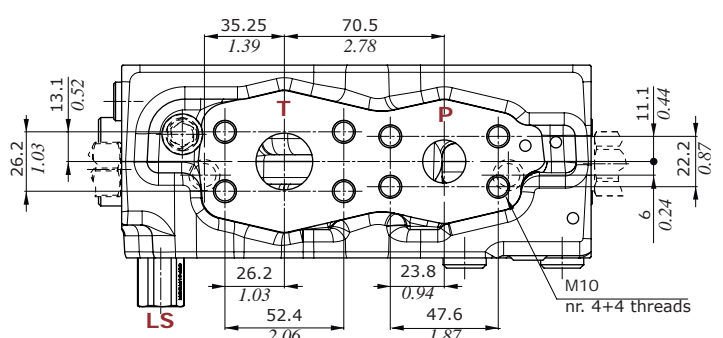
#### Closed center configuration example BR2-10(H220\ELN)



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

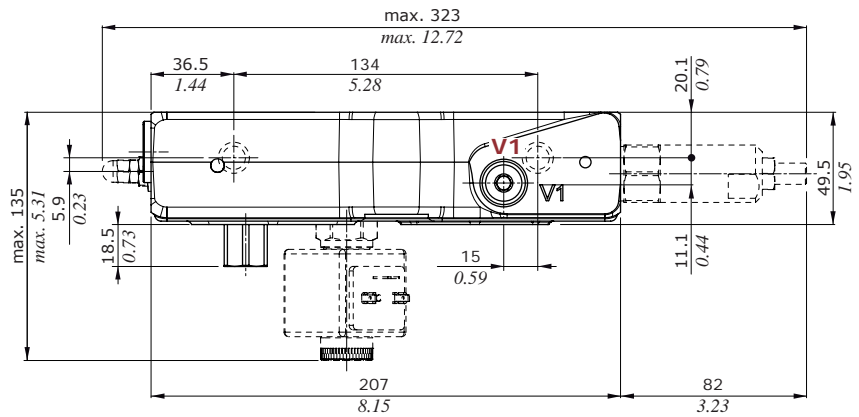
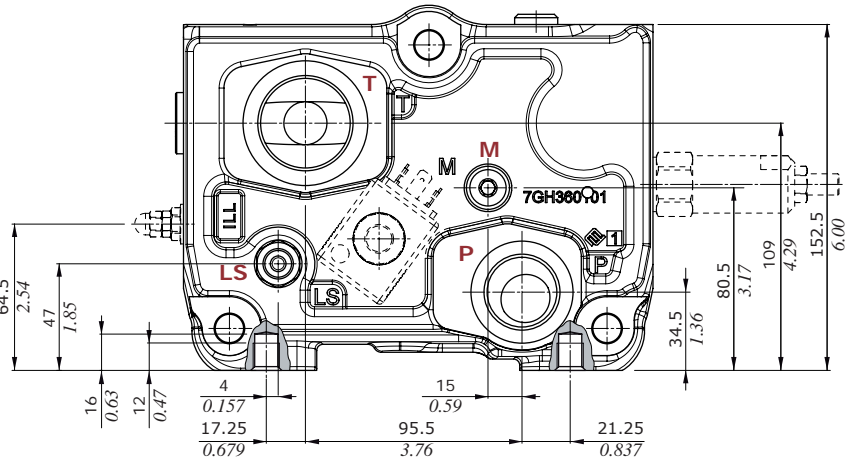
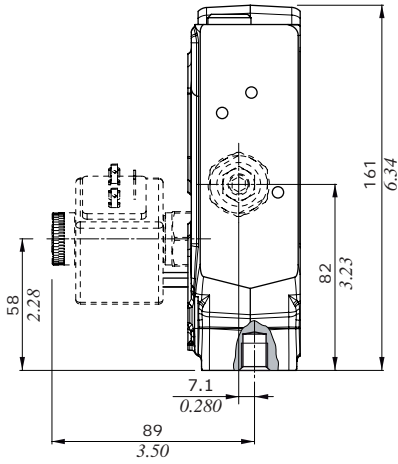


#### FS3-M(BSP) optional connection



Dimensions and hydraulic circuit

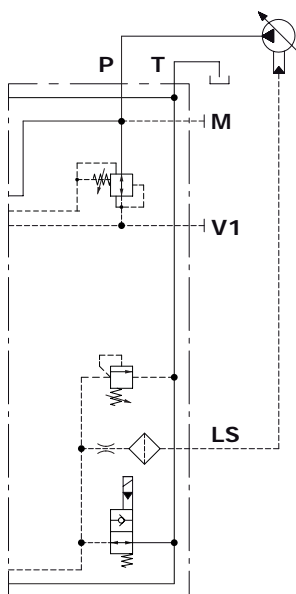
Example of BRF section type



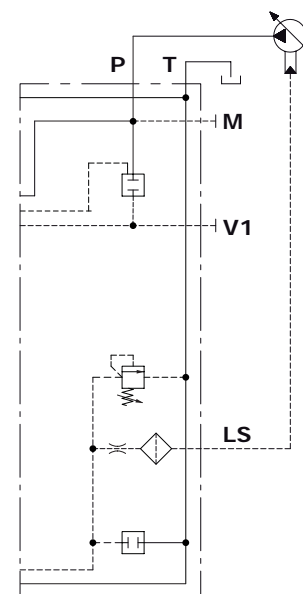
Auxiliary ports specification

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

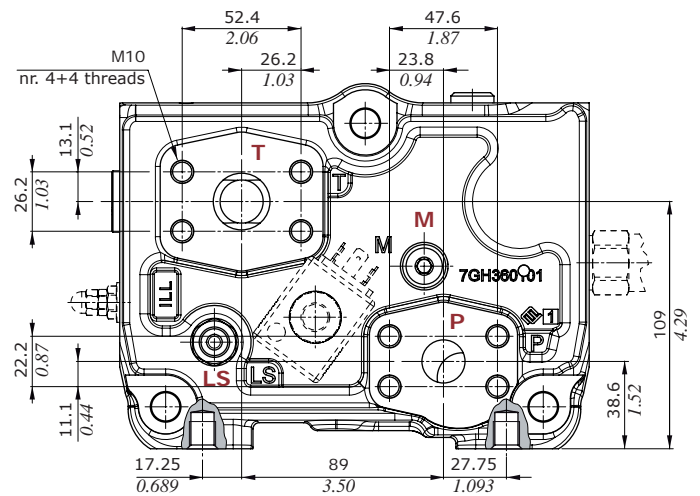
Configuration BRF2-30(H220\ELN)



Configuration BRF2-30(H220\ELT\RT)

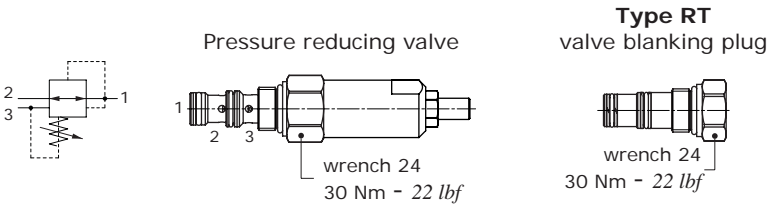


FS3-M(BSP) optional connection

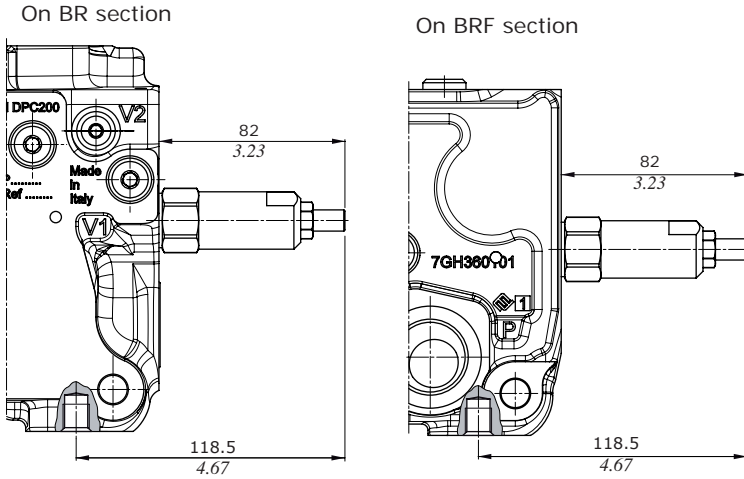
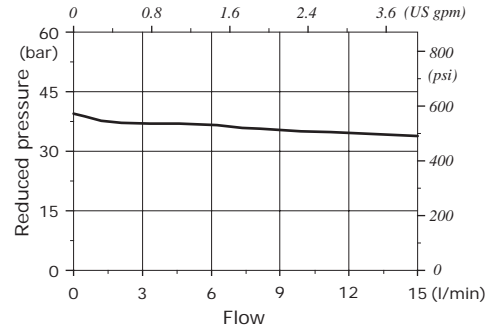


Inlet section

Pressure reducing valve



Reduced pressure vs. Flow



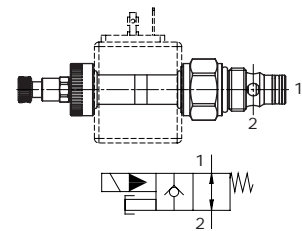
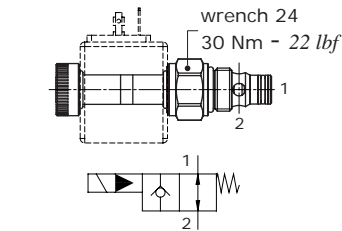
Features

- 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

Solenoid operated unloading valve

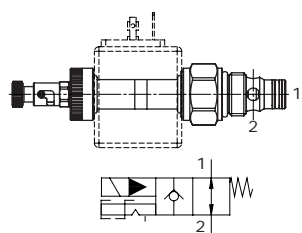
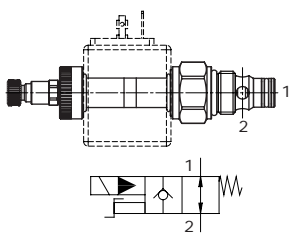
Type ELN: without emergency

Type ELP: push button type



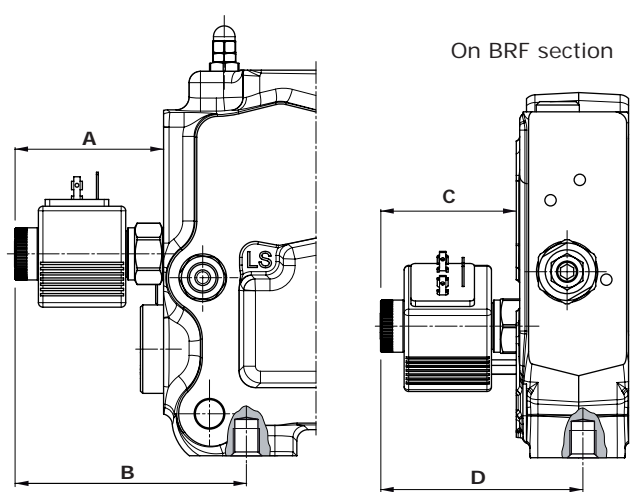
Type ELV: screw type

Type ELT: "push & twist" type

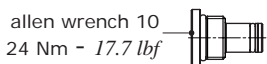


On BR section

On BRF section



LT: valve blanking plug



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

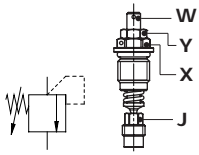
For coil features and options see coil **BER** at page 68.

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

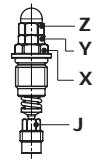


L.S. pressure relief valve

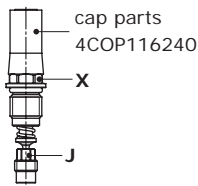
**Type LSH**  
with lock arrangement



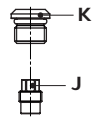
**Type LSD**  
with blind nut



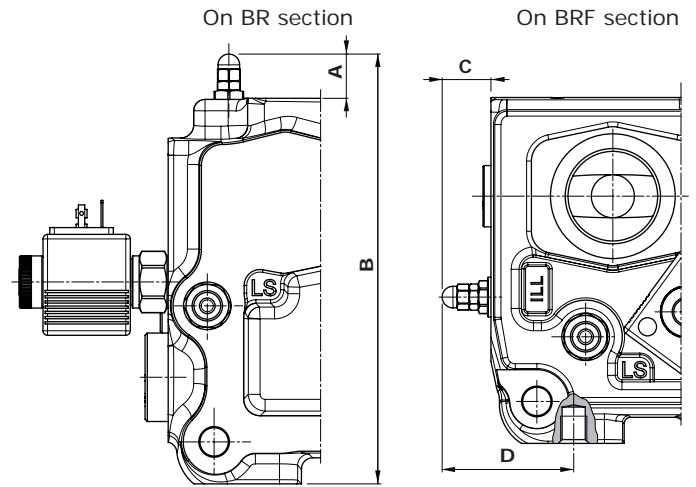
**Type LSZ**  
with anti-tamper cap



**Type ST**  
valve blanking plug



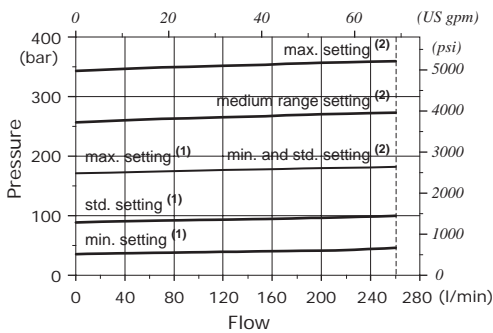
- X = wrench 13 / 42 Nm - 31 lbf
- Y = wrench 10 / 9.8 Nm - 7.2 lbf
- W = allen wrench 3
- Z = wrench 10 / 9.8 Nm - 7.2 lbf
- J = wrench 7 / 24 Nm - 17.7 lbf
- K = allen wrench 5 / 24 Nm - 17.7 lbf



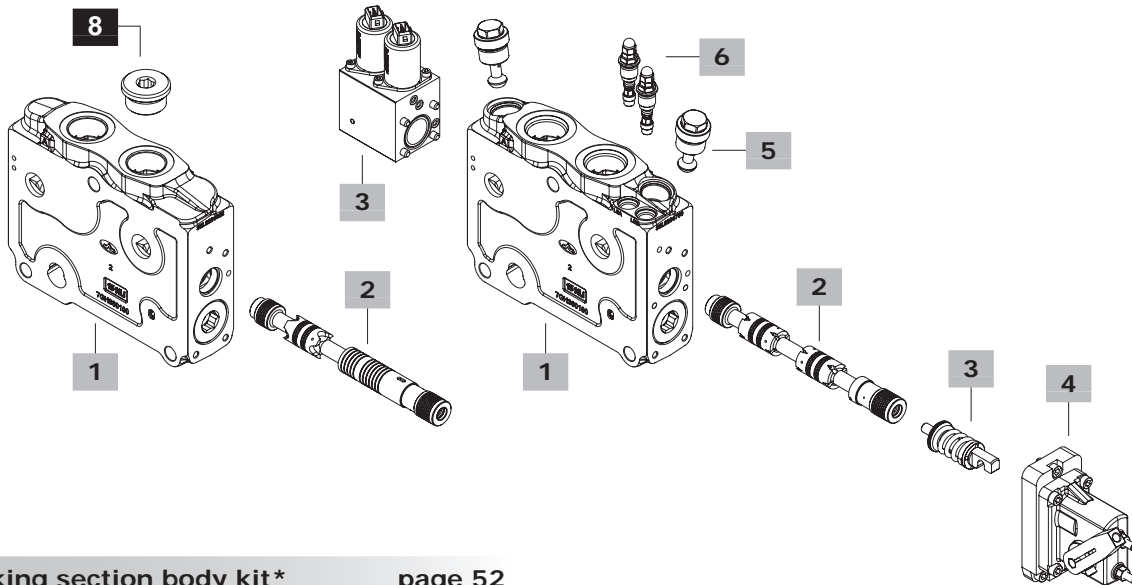
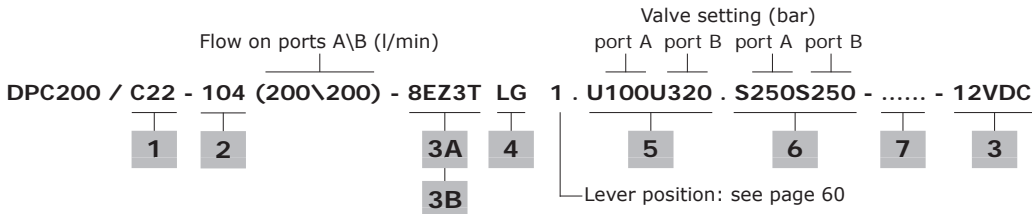
| Valve type | BR section |      |       |      | BRF section |      |      |      |
|------------|------------|------|-------|------|-------------|------|------|------|
|            | A          |      | B     |      | C           |      | D    |      |
|            | mm         | in   | mm    | in   | mm          | in   | mm   | in   |
| LSD        | 19.5       | 0.77 | 189.5 | 7.46 | 21.5        | 0.85 | 58   | 2.28 |
| LSH        | 15         | 0.59 | 185   | 7.28 | 16          | 0.63 | 52.5 | 2.07 |
| LSZ        | 32         | 1.26 | 202   | 7.95 | 34          | 1.34 | 70.5 | 2.78 |

**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 52**

- With compensator**
- TYPE: **DPC200/C10** CODE: 5EL6201310  
DESCRIPTION: Without valves arrangement
- TYPE: **DPC200/C10-FS3-M** CODE: 5EL6209210  
DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.
- TYPE: **DPC200/C11** CODE: 5EL6201311  
DESCRIPTION: Without valves arrangement, with LSA-LSB ports
- TYPE: **DPC200/C11-FS3-M(BSP)** CODE: 5EL6209211  
DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.
- TYPE: **DPC200/C22** CODE: 5EL6201322  
DESCRIPTION: Arranged for "U" size valves and L.S. relief valves, with LSA-LSB ports
- TYPE: **DPC200/C22-FS3-M(BSP)** CODE: 5EL6209222  
DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.
- TYPE: **DPC200/C32** CODE: 5EL6201332  
DESCRIPTION: Arranged for "UL" size valves and L.S. relief valves, with LSA-LSB ports
- TYPE: **DPC200/C32-FS3-M(BSP)** CODE: 5EL6209232  
DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.
- TYPE: **DPC200/F32** CODE: 5EL6204332  
DESCRIPTION: As Type C32, for floating circuit
- TYPE: **DPC200/F32-FS3-M(BSP)** CODE: 5EL6209232F  
DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.
- Without compensator, with check valve**
- TYPE: **DPC200/CV32** CODE: 5EL6201332A  
DESCRIPTION: Arranged for "UL" size valves and L.S. relief valves, with LSA-LSB ports
- TYPE: **DPC200/CV32-FS3-M(BSP)** CODE: 5EL6209232A  
DESCRIPTION: As previous, with ISO 6162-1 type 1 flange connect.
- TYPE: **DPC200/FV32** CODE: 5EL6204332A  
DESCRIPTION: For floating circuit, arranged for "UL" size valves and L.S. relief valves, with LSA-LSB ports
- TYPE: **DPC200/FV32-FS3-M(BSP)** CODE: 5EL6209232FA  
DESCRIPTION: As previous, with ISO 6162-1 type 11 flange connect.

**2 Spool page 54**

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

| TYPE  | CODE       | DESCRIPTION                  |
|---|------------|------------------------------|
| <b>Double acting with A and B closed in neutral position</b>            |            |                              |
| 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 |
| <b>Double acting with A and B to tank in neutral position</b>           |            |                              |
| 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 |
| <b>Double acting with A and B partially to tank in neutral position</b> |            |                              |
| 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 |

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

## Working section parts ordering codes

**2 Spool (continued) page 54**

| TYPE  | CODE       | DESCRIPTION                  |
|---|------------|------------------------------|
| <b>Single acting on A, B plugged: needs G1 plug</b> |            |                              |
| 305   | 3CU4530025 | 25 l/min (6.6 US gpm) flow   |
| 301   | 3CU4530050 | 50 l/min (13.2 US gpm) flow  |
| 306   | 3CU4530075 | 75 l/min (19.8 US gpm) flow  |
| 302   | 3CU4530100 | 100 l/min (26.4 US gpm) flow |
| 307   | 3CU4530125 | 125 l/min (33 US gpm) flow   |
| 303   | 3CU4530150 | 150 l/min (39.5 US gpm) flow |
| 308   | 3CU4530175 | 175 l/min (46.2 US gpm) flow |
| 304   | 3CU4530200 | 200 l/min (52.8 US gpm) flow |

**Double acting with A and B closed in neutral position. 4 positions, floating in 4<sup>th</sup> pos., spool in: needs working section type F or FV, positioner and controls type 13**

| TYPE | CODE       | DESCRIPTION                  |
|------|------------|------------------------------|
| 501  | 3CU4541050 | 50 l/min (13.2 US gpm) flow  |
| 502  | 3CU4541100 | 100 l/min (26.4 US gpm) flow |
| 503  | 3CU4541150 | 150 l/min (39.5 US gpm) flow |
| 504  | 3CU4541200 | 200 l/min (52.8 US gpm) flow |

**3A "A" side spool control kit page 56**

| TYPE                          | CODE       | DESCRIPTION   |
|-------------------------------|------------|---|
| <b>Mechanical positioners</b> |            |   |
| 7FT                           | 5V07200000 | With friction and center position feeling   |
| 8                             | 5V08200000 | 3 position, spring return to neutral position   |
| 13                            | 5V13200000 | For floating circuit (spool type 5), 4 pos., detent in 4 <sup>th</sup> position, with spring return to neutral pos. |

**Proportional hydraulic controls**

| TYPE | CODE       | DESCRIPTION  |
|------|------------|--|
| 8IM  | 5V08200801 | Range from 5.2 to 15.3 bar (75 to 222 psi)   |
| 13IM | 5V13200800 | For floating circuit (spool type 5), range 2.5 to 7 bar (75 to 222 psi), floating 11 bar (160 psi) |

**3B Electrohydraulic controls page 58**

| TYPE                                | CODE       | DESCRIPTION            |
|-------------------------------------|------------|------------------------|
| 8EZ3T-12VDC                         | 5V08200721 | With AMP connector     |
| 8EZ3T-24VDC                         | 5V08200741 | With AMP connector     |
| 8EZ34T-12VDC                        | 5V08200722 | With Deutsch connector |
| 8EZ34T-24VDC                        | 5V08200742 | With Deutsch connector |
| For floating circuit (spool type 5) |            |                        |
| 13EZ3T-12VDC                        | 5V13200721 | With AMP connector     |
| 13EZ3T-24VDC                        | 5V13200741 | With AMP connector     |
| 13EZ34T-12VDC                       | 5V13200722 | With Deutsch connector |
| 13EZ34T-24VDC                       | 5V13200742 | With Deutsch connector |

**4 "B" side spool control kit page 60**

| TYPE | CODE       | DESCRIPTION                        |
|------|------------|------------------------------------|
| LG   | 5LEV200802 | Cast iron lever box                |
| LGN  | 5LEV200801 | Cast iron lever box, without lever |
| L    | 5LEV200701 | Aluminium lever box                |

**5 Port valves page 61**

| TYPE   | CODE               | DESCRIPTION                         |
|--|--------------------|-------------------------------------|
| <b>"U" size valves</b>   |                    |                                     |
| UT   | XTAP522442         | Valve blanking plug                 |
| C  | 5KIT410000         | Anticavitation valve (for U cavity) |
| <b>Fixed setting antishock and anticavitation valves: setting is referred to 10 l/min (2.6 US gpm)</b> |                    |                                     |
| 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)                  |

**"UL" size valves**

| TYPE  | CODE                | DESCRIPTION                          |
|---|---------------------|--------------------------------------|
| ULT   | XTAP528520          | Valve blanking plug                  |
| CL  | 5KIT409000          | Anticavitation valve (for UL cavity) |
| <b>Fixed setting antishock and anticavitation valves with pressure relief function: setting is referred to 5 l/min (1.3 US gpm)</b> |                     |                                      |
| TYPE: UL 100  | CODE: 5KIT340 100 L |                                      |
| └ setting (bar)   | └ setting (bar)     |                                      |
| SETTING:  |                     |                                      |
| 50 bar (725 psi)  | 70 bar (1010 psi)   | 80 bar (1150 psi)                    |
| 100 bar (1450 psi)  | 120 bar (1750 psi)  | 130 bar (1900 psi)                   |
| 140 bar (2050 psi)  | 150 bar (2150 psi)  | 160 bar (2300 psi)                   |
| 170 bar (2450 psi)  | 180 bar (2600 psi)  | 190 bar (2750 psi)                   |
| 200 bar (2900 psi)  | 210 bar (3050 psi)  | 220 bar (3200 psi)                   |
| 250 bar (3600 psi)  | 270 bar (3900 psi)  | 300 bar (4350 psi)                   |
| 320 bar (4650 psi)  | 350 bar (5050 psi)  | 370 bar (5350 psi)                   |
| 380 bar (5500 psi)  |                     |                                      |

**6 L.S. port relief valves page 62**

| TYPE  | CODE       | DESCRIPTION  |
|---|------------|--|
| Standard setting is referred to 10 l/min - 2.6 US gpm flow. |            |  |
| LSD   | XCAR126215 | With blind nut, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi          |
|   | XCAR126213 | As previous, range 180-350 bar / 2600-5100 psi std. setting 180 bar / 2600 psi           |
| LSH   | XCAR126216 | With locked arrangement, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi |
|   | XCAR126217 | As previous, range 180-350 bar / 2600-5100 psi, std. setting 180 bar / 2600 psi          |
| LSZ   | 5CAR126221 | With anti-tamper cap, range 40-180 bar / 580-2600 psi, std. setting 90 bar / 1300 psi    |
|   | 5CAR126219 | As previous, range 180-350 bar / 2600-5100 psi, std. setting 180 bar / 2600 psi          |
| ST  | 5KIT126210 | Relief valve blanking plug   |

**7 Section threading**

Specify threading only if it is different from BSP standard. For section with ISO 6162-1 type 1 flange connection digit: **FS3-M(BSP)**, only **FS3-M** for type **C10**

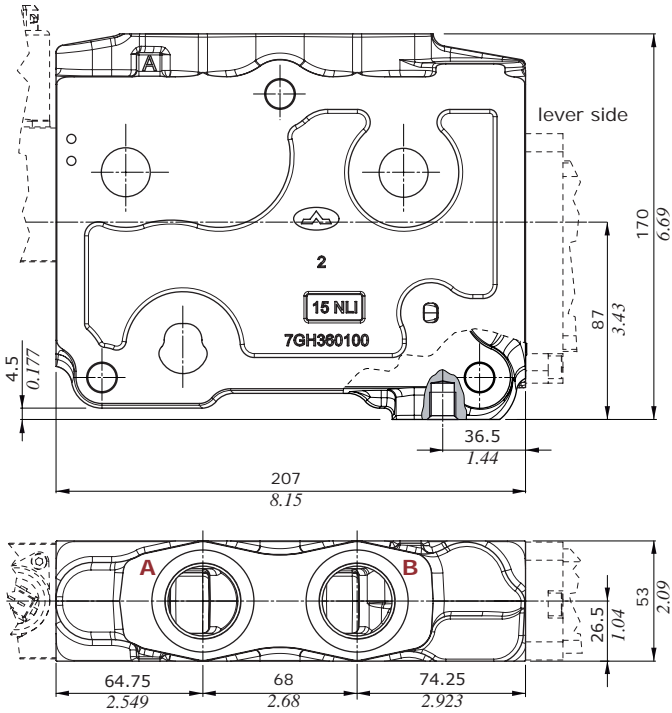
**8 Plug for single acting spool\***

| CODE        | DESCRIPTION       |
|-------------|-------------------|
| 3XTAP740210 | G1 plug           |
| 4FL1066180  | DN19 blind flange |

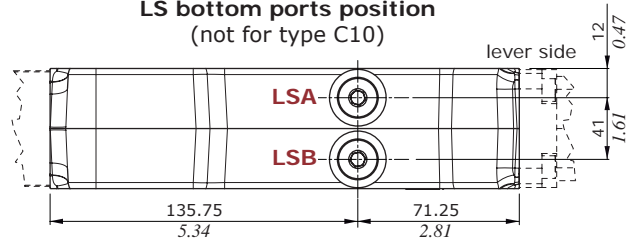
Working section

Dimensions and hydraulic circuit

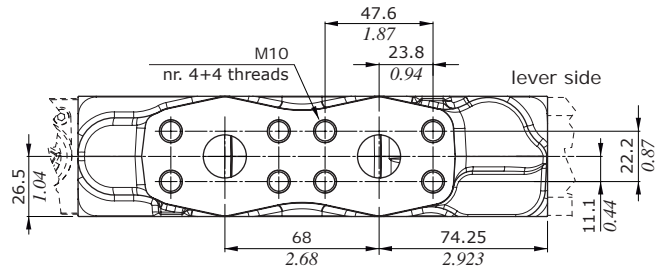
Without port valves



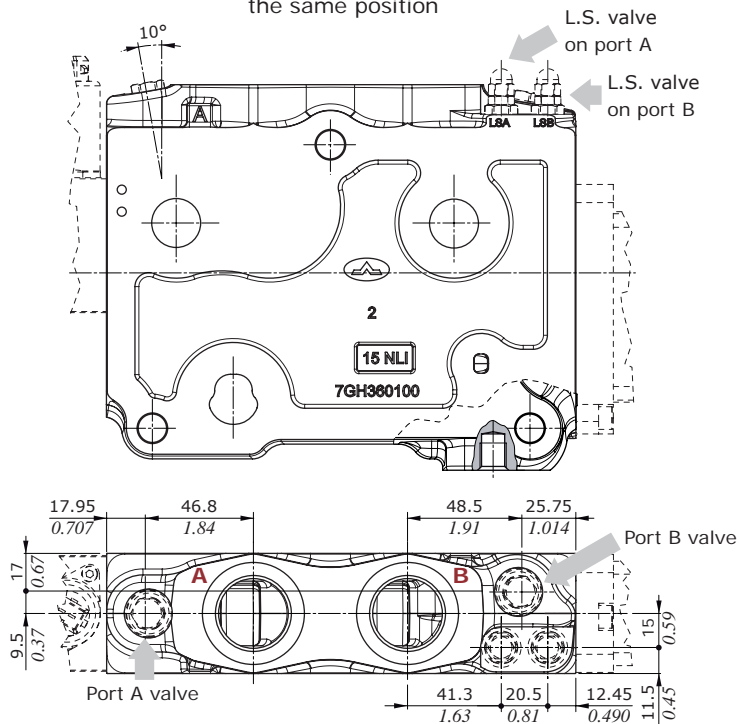
LS bottom ports position (not for type C10)



FS3-M(BSP) optional connection

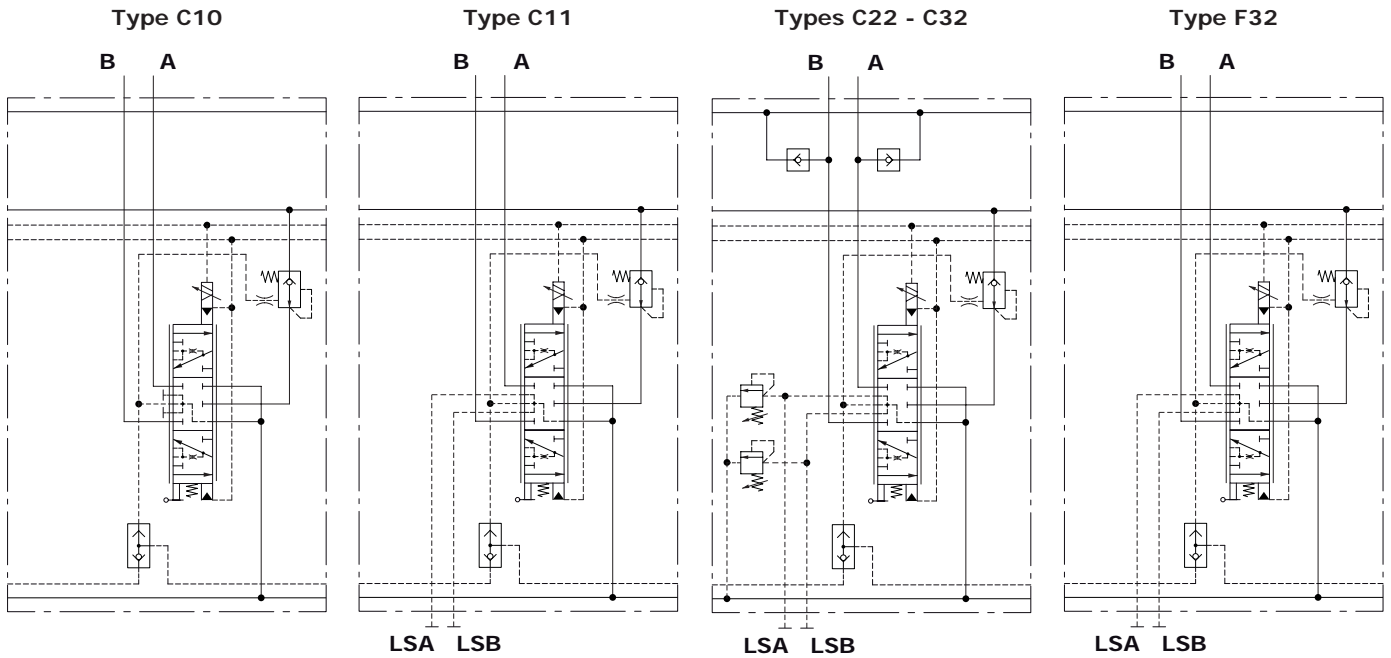


With port valves  
"U" and "UL" size valves have the same position

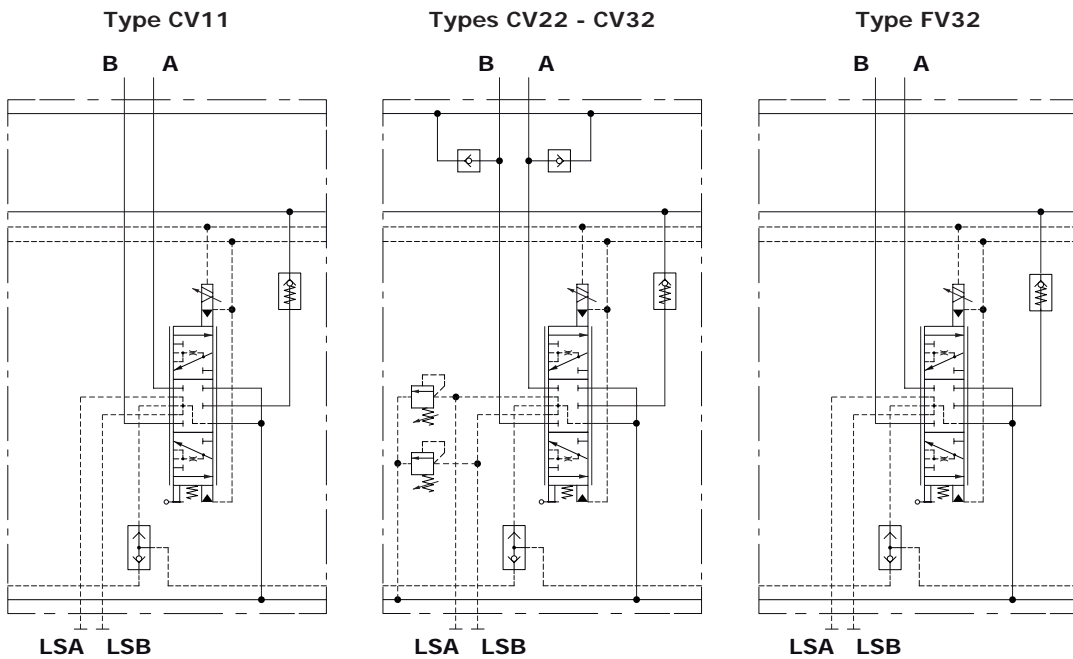


Dimensions and hydraulic circuit

With compensator



Without compensator, with check valve

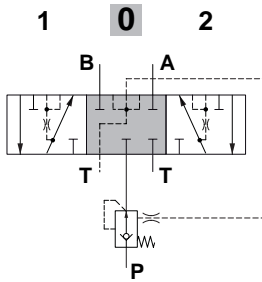


Working section

Spools

**Spool type 1**

A, B closed in neutral position

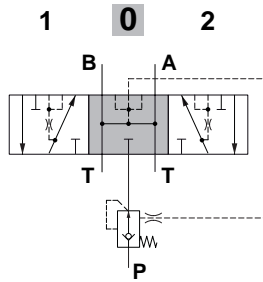


**Spool stroke**

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

**Spool type 2**

A, B open to tank in neutral pos.

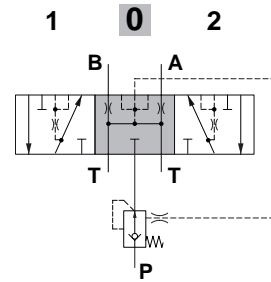


**Spool stroke**

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

**Spool type 2H**

A, B partially to tank in neutral pos.

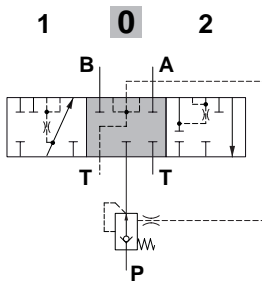


**Spool stroke**

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

**Spool type 3**

single acting on A

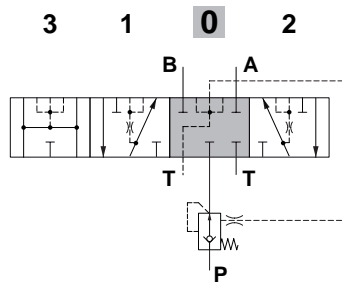


**Spool stroke**

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

**Spool type 5**

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



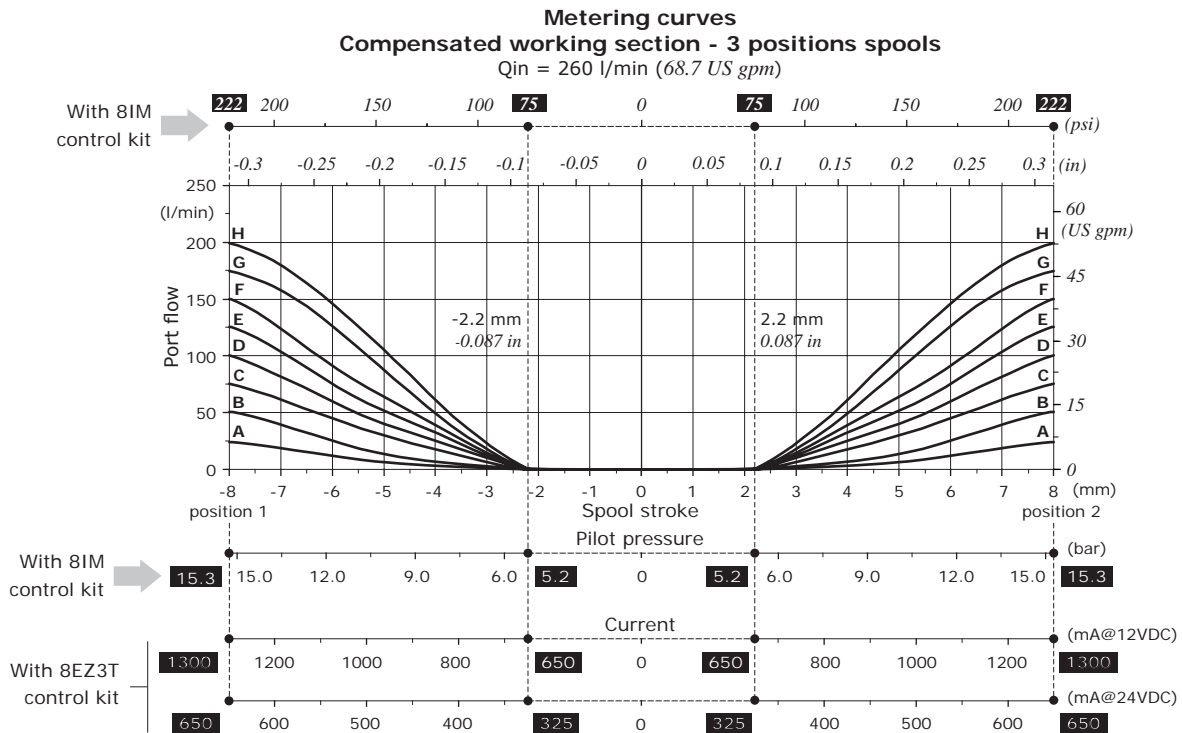
**Spool stroke**

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

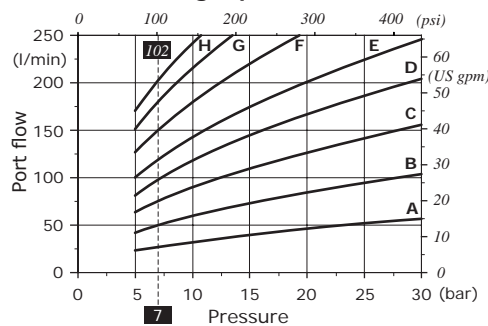
Spools

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>h</sup> section.



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

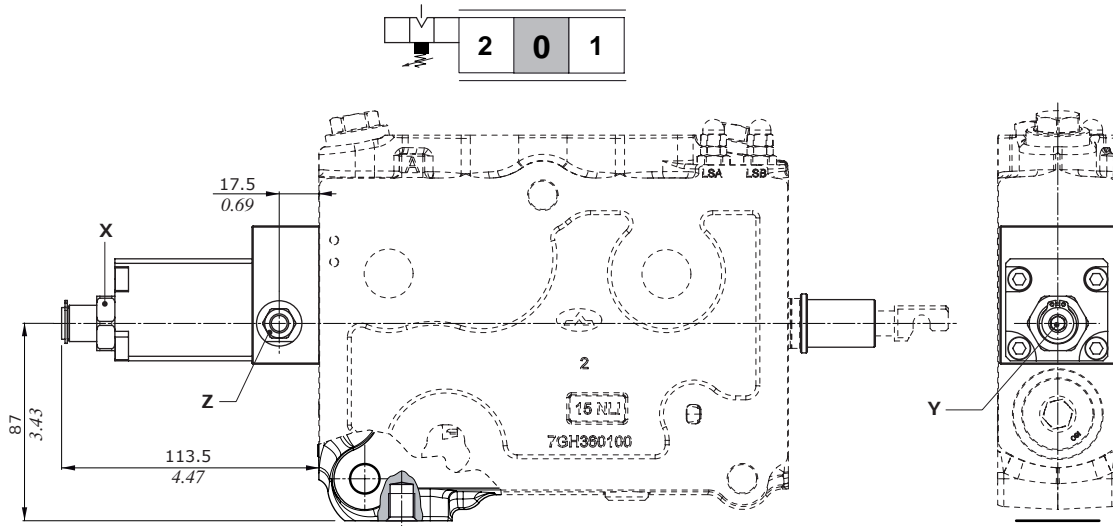


- Spool nominal flow @ 7 bar (102 psi) stand-by (margin pressure)**
- A = 25 l/min (6.6 US gpm)
  - B = 50 l/min (13.2 US gpm)
  - C = 75 l/min (19.8 US gpm)
  - D = 100 l/min (26.4 US gpm)
  - E = 125 l/min (33 US gpm)
  - F = 150 l/min (39.5 US gpm)
  - G = 175 l/min (46.2 US gpm)
  - H = 200 l/min (52.8 US gpm)

Working section

"A" side spool control kit

With friction and center position feeling: type 7FT

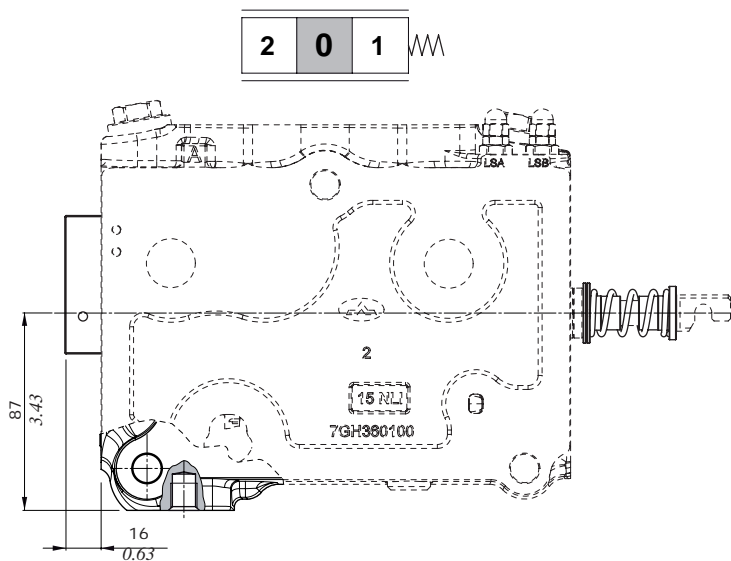


Features

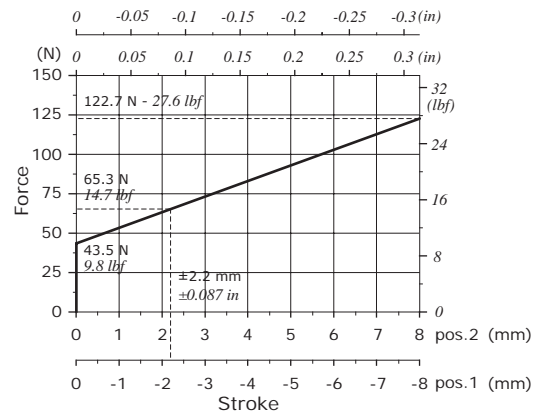
Friction load adjusting . . . . . 20-150 N (4.5-34 lbf)  
 Friction load std. setting . . . . . 100 N (22.5 lbf)  
 Center tap (more than load). . . . 100 N (22.5 lbf)

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

With spring return to neutral position: type 8



Force vs. Stroke diagram

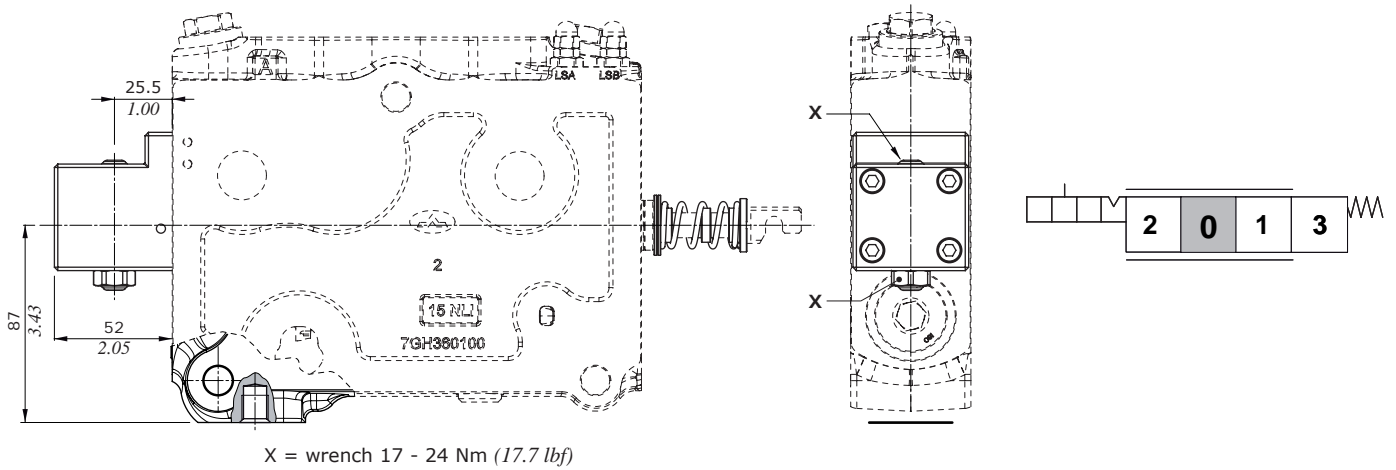




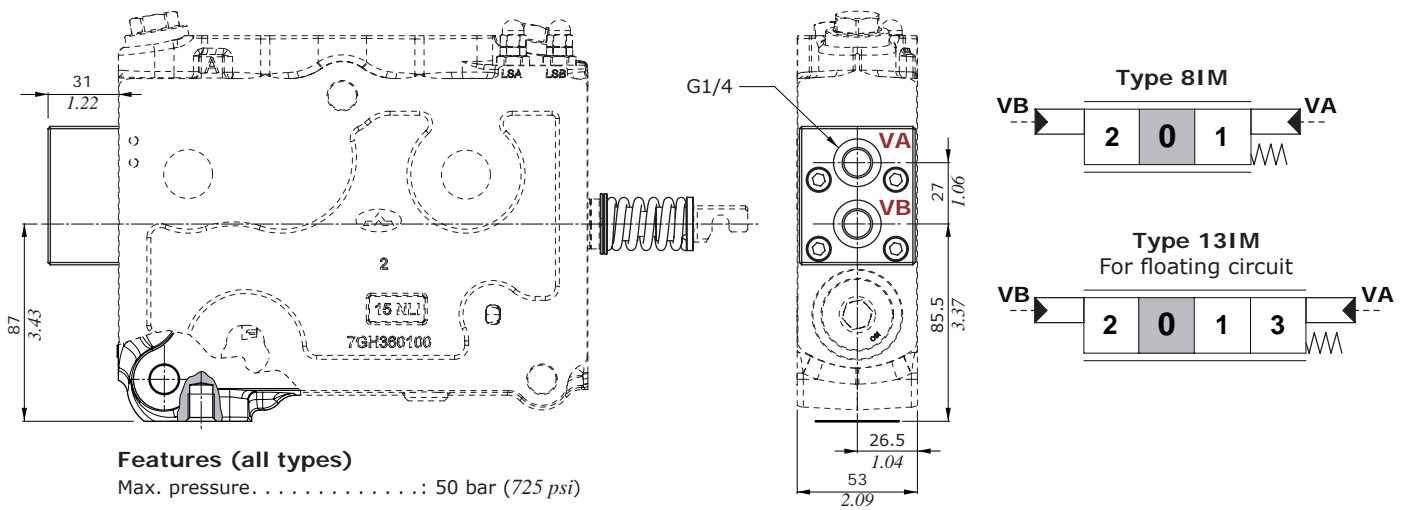
"A" side spool control kit

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

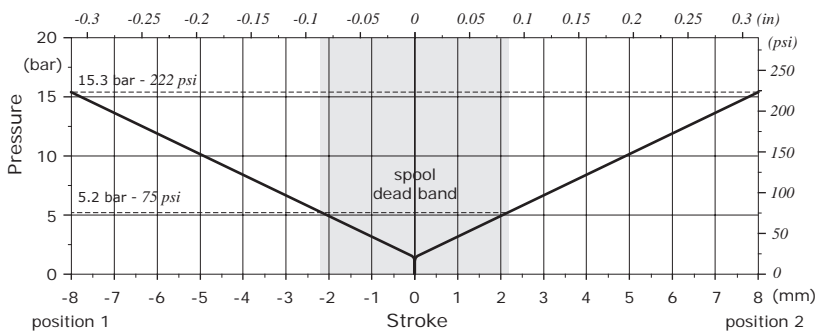
Need working section type F or FV and floating circuit spools type 5.



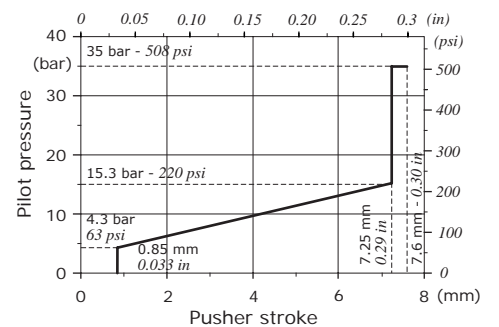
Proportional hydraulic controls



Type 81M: Stroke vs. Pressure diagram



Type 81M: suggested pressure control curve: type 020



## 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 tolerance ± 10%.

| Specifications                  |                         | Spool control type                |                                   |
|---------------------------------|-------------------------|-----------------------------------|-----------------------------------|
|                                 |                         | 8EZ3                              | 13EZ3                             |
| <b>Electric specifications</b>  |                         |                                   |                                   |
| Coil impedance                  | 12 VDC                  | 4.72 Ω                            | 4.72 Ω                            |
|                                 | 24 VDC                  | 20.8 Ω                            | 20.8 Ω                            |
| Max. operating current          | 12 VDC                  | 1.5 A                             | 1.5 A                             |
|                                 | 24 VDC                  | 0.75 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 | < 150 ms                          | < 250 ms                          |
|                                 | from 100% ⇒ 0 of stroke | < 80 ms                           | < 125 ms                          |
| Min. flow control signal        | 12 VDC                  | 650 mA                            | 400 mA                            |
|                                 | 24 VDC                  | 325 mA                            | 200 mA                            |
| Max. flow control signal        | 12 VDC                  | 1300 mA                           | 600 mA                            |
|                                 | 24 VDC                  | 650 mA                            | 300 mA                            |
| Float flow control signal       | 12 VDC                  | -                                 | 850 mA                            |
|                                 | 24 VDC                  | -                                 | 250 mA                            |
| Dither frequency                | low frequency           | 150 Hz                            | 150 Hz                            |
|                                 | high frequency          | 150 Hz - 350 mA                   | 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 (type JPT) - IP69K (type DT) | IP65 (type JPT) - IP69K (type DT) |
| <b>Hydraulic specifications</b> |                         |                                   |                                   |
| Max. pressure                   |                         | 50 bar (725 psi)                  | 50 bar (725 psi)                  |
| Max. back pressure              |                         | 5 bar (72.5 psi)                  | 5 bar (72.5 psi)                  |

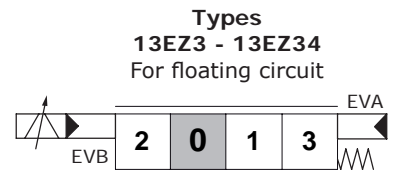
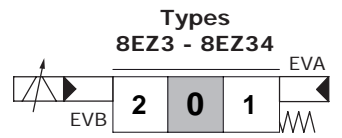
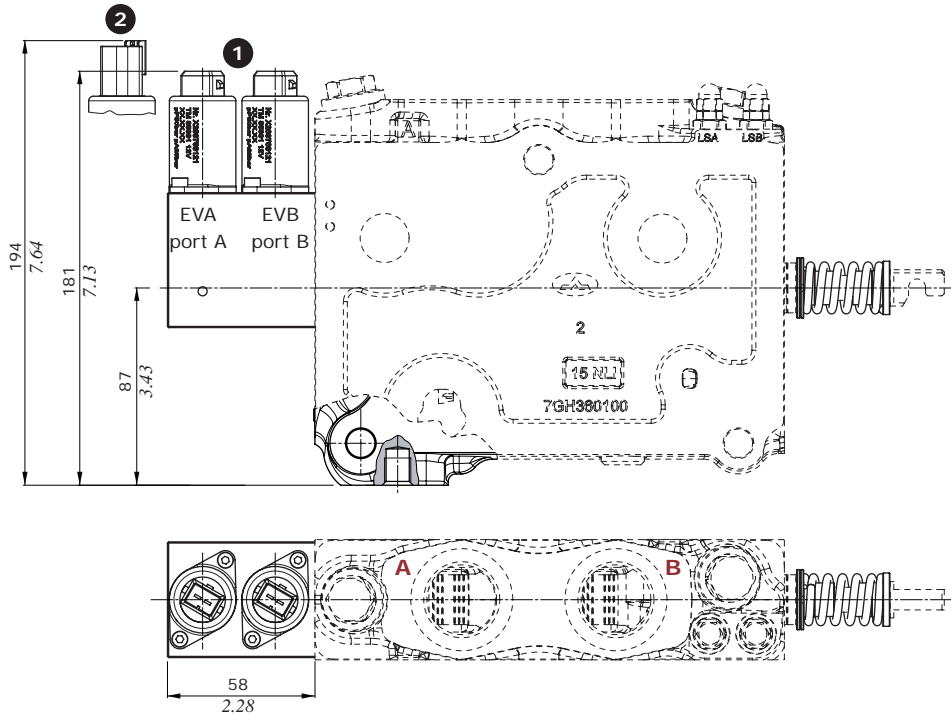
Note (1) for the calculation rules see "Appendix A" on page 71.

Listed electrohydraulic controls need CED100X or CED400X electronic unit; for information contact Sales Department.

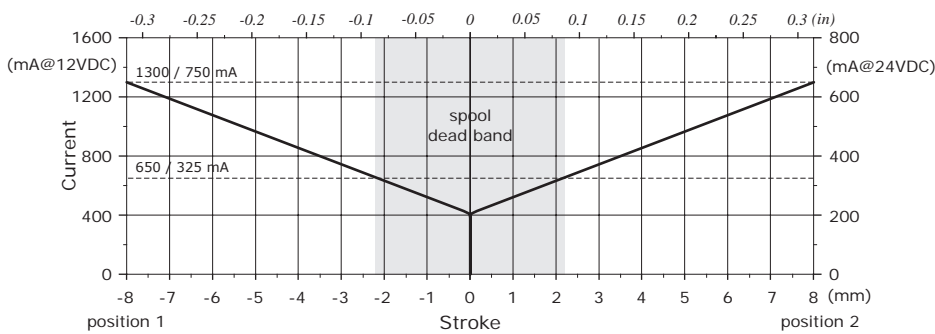
Electrohydraulic controls

Control Types

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



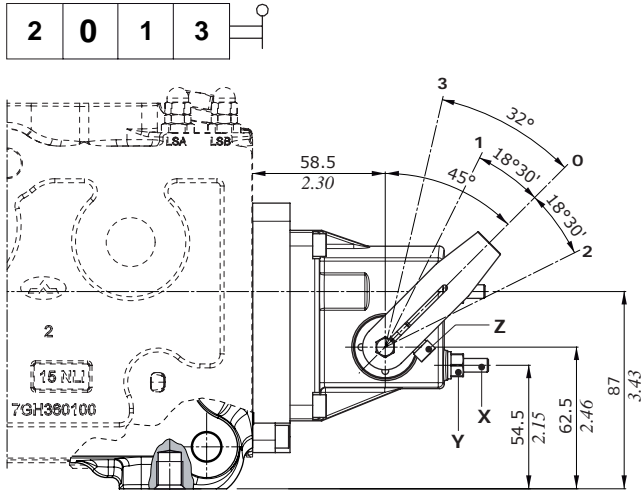
Types 8EZ3: Stroke vs. Current diagram



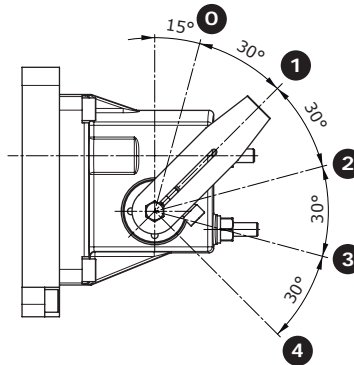
Working section

"B" side spool control kit

Cast iron standard lever box; type LG

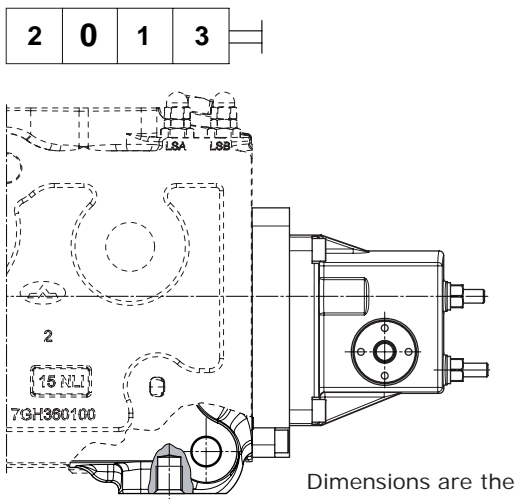


**Lever assembly position**  
See page 50 for specification  
in working section description



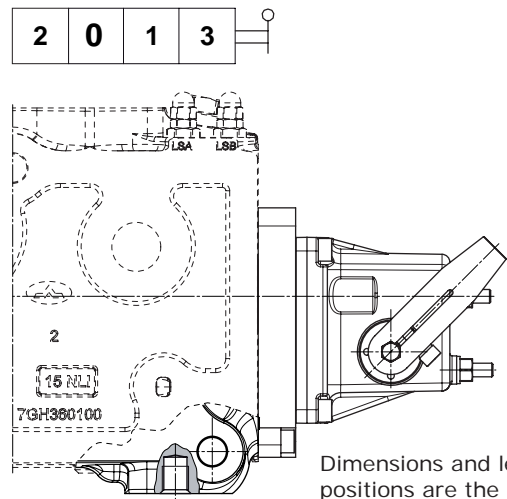
- X = allen wrench 3
- Y = wrench 10 / 9.8 Nm - 7.2 lbf
- Z = allen wrench 4 / 6.6 Nm - 4.9 lbf

Cast iron lever box, without lever; type LGN



Dimensions are the same of type LG

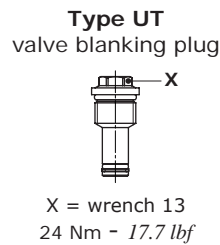
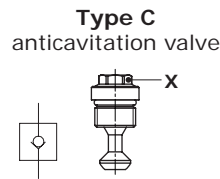
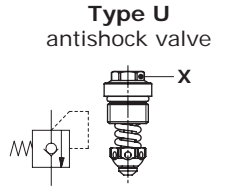
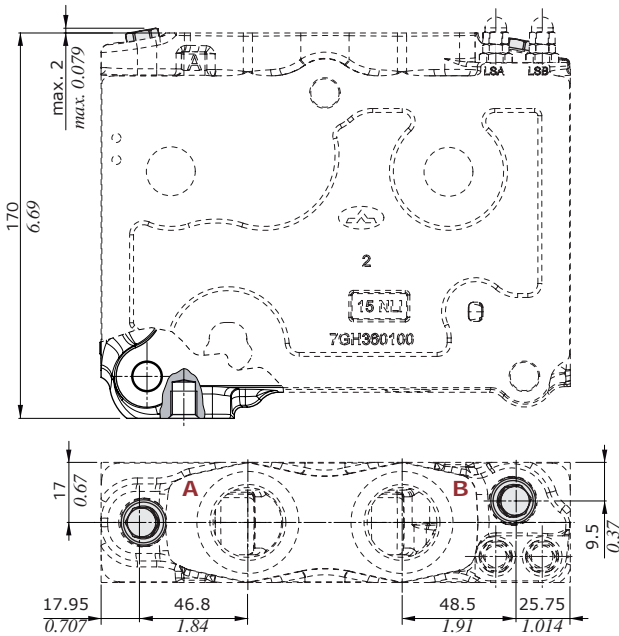
Aluminium lever box; type L



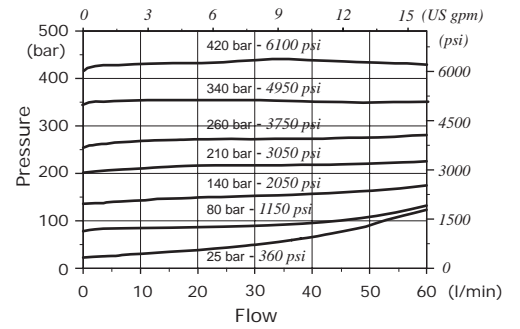
Dimensions and lever positions are the same of type LG

Port valves

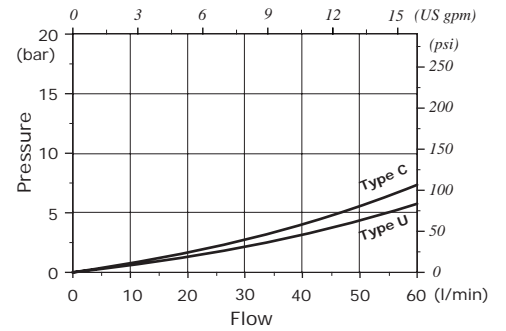
Antishock anticavitation valves, type U  
Anticavitation valve, type C



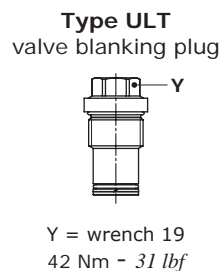
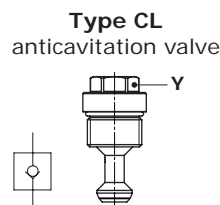
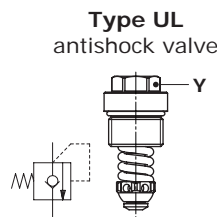
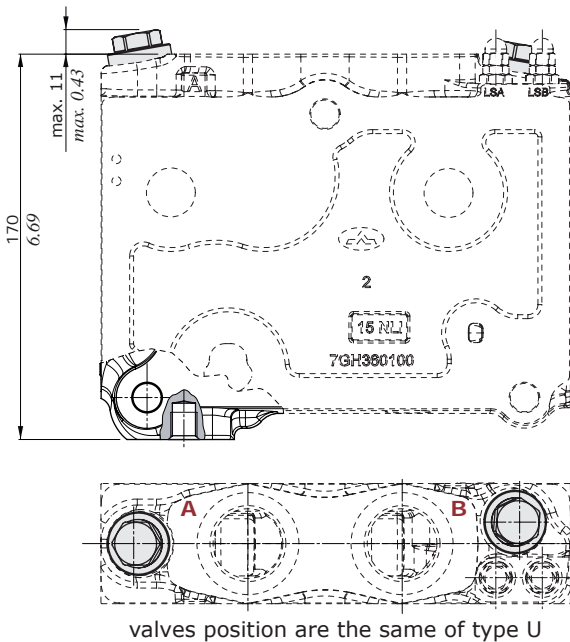
**Type U, setting example**  
(10 l/min - 2.6 Us gpm)



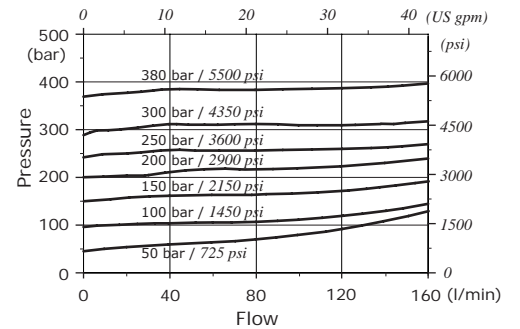
**Types U-C, pressure drop**  
(in anticavitation)



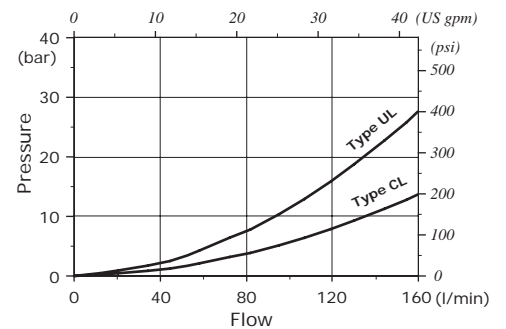
Antishock anticavitation valves with  
pressure relief function, type UL  
Anticavitation valve, type CL



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

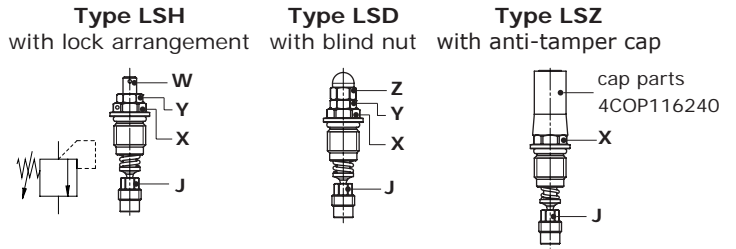
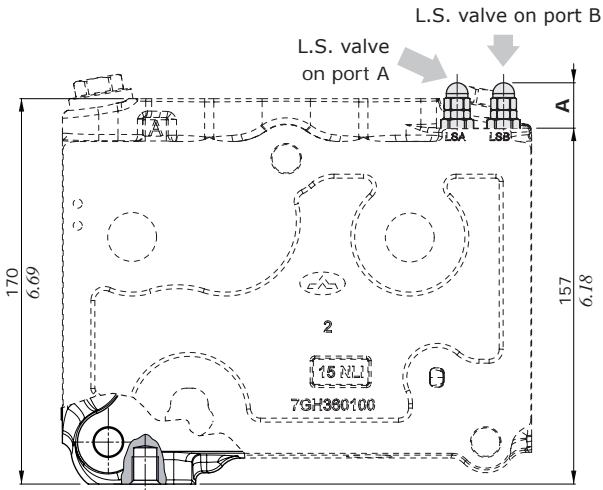


**Types UL-CL, pressure drop**  
(in anticavitation)

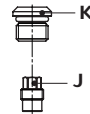


Working section

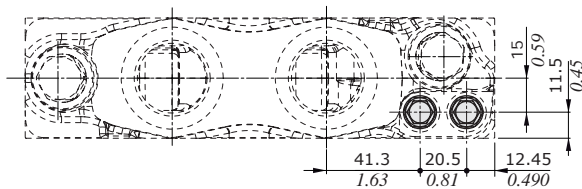
L.S. port relief valves



Type ST valve blanking plug



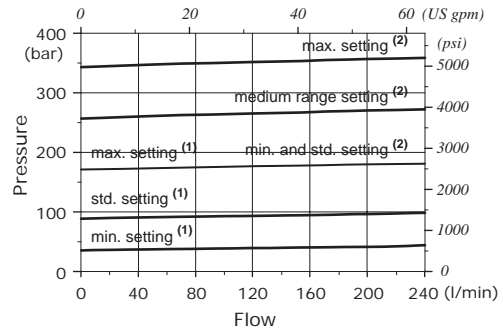
- X = wrench 13 / 42 Nm - 31 lbf
- Y = wrench 10 / 9.8 Nm - 7.2 lbf
- W = allen wrench 3
- Z = wrench 10 / 9.8 Nm - 7.2 lbf
- J = wrench 7 / 24 Nm - 17.7 lbf
- K = allen wrench 5 / 24 Nm - 17.7 lbf



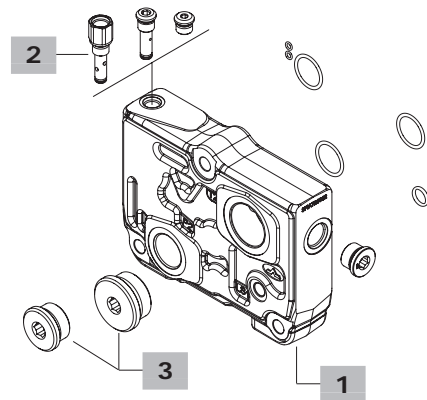
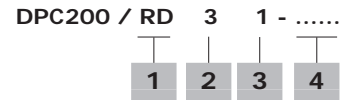
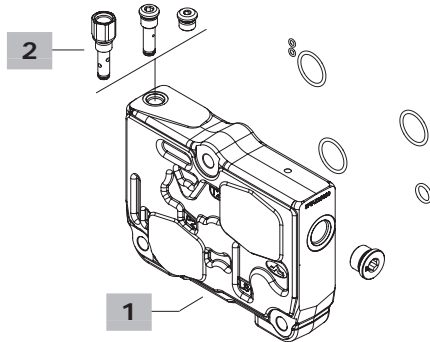
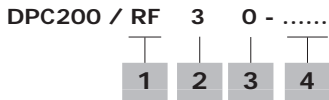
| Valve type | dim. A |      |
|------------|--------|------|
|            | mm     | in   |
| LSD        | 20     | 0.79 |
| LSH        | 15.5   | 0.61 |
| LSZ        | 32.5   | 1.28 |

Pressure vs. flow diagram

- (1) = valve range 40-180 bar (580-2600 psi)
- (2) = valve range 180-350 bar (2600-5000 psi)



Outlet section parts ordering codes



**1 Outlet section\*** page 64

| TYPE          | CODE       | DESCRIPTION   |
|---------------|------------|---|
| RF            | 3FIA720300 | Without ports   |
| RD            | 3FIA720302 | With P1, T1 and LS1 ports                             |
| RD-FS3-M(BSP) | 3FIA720901 | As previous, with ISO 6162-1 type 1 flange connection |

**2 Drain options** page 65

| TYPE | CODE        | DESCRIPTION  |
|------|-------------|--|
| 1    | XTAP517460  | Internal drain; to use with mechanical controls    |
| 2    | XTAP217160  | Internal drain; to use with hydraulic controls     |
| 3    | XCAR119611* | External drain G1/4; for electrohydraulic controls |

**3 Port options\***

|         |   |
|---------|---|
| TYPE: 0 | DESCRIPTION: Without ports (only for RF type)   |
| TYPE: 1 | DESCRIPTION: Ports P1 and T1 plugged<br>PLUG CODE: 3XTAP740210 (G1) + XTAP750240 (G1-1/4)<br>BLIND FLANGE CODE: 4FL1066180 (DN19) + 4FL1071190 (DN25) |
| TYPE: 2 | DESCRIPTION: Port P1 plugged and T1 open<br>PLUG CODE: 3XTAP740210 (G1)<br>BLIND FLANGE CODE: 4FL1066180 (DN19)                                       |
| TYPE: 3 | DESCRIPTION: Port P1 open and T1 plugged<br>PLUG CODE: XTAP750240 (G1-1/4)<br>BLIND FLANGE CODE: 4FL1071190 (DN25)                                    |
| TYPE: 4 | DESCRIPTION: Ports P and T open   |

**4 Section threading**

Specify threading only if it is different from BSP standard. For section with ISO 6162-1 type 1 flange connection digit: **FS3-M(BSP)**.

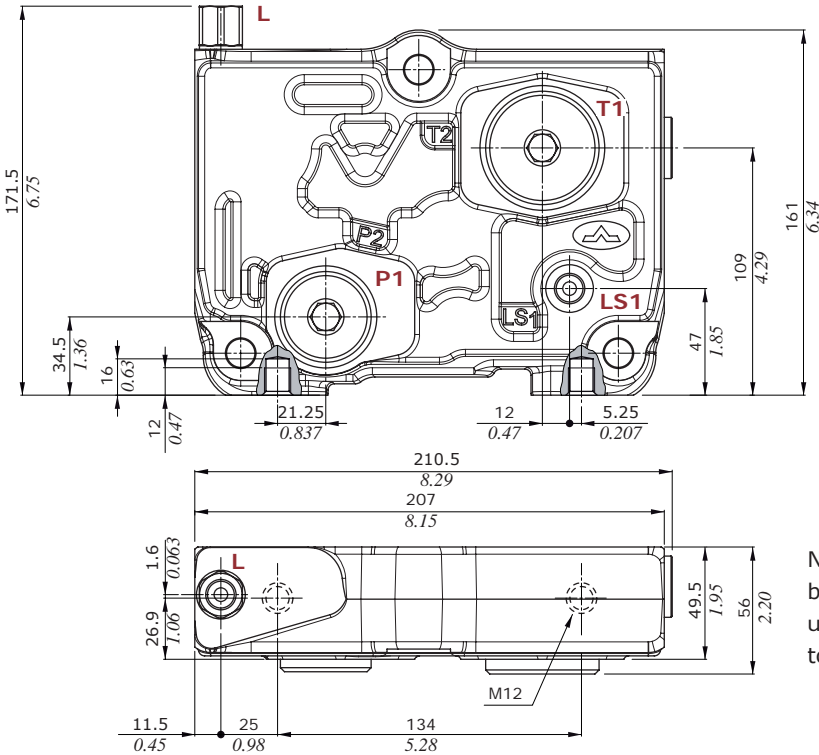
NOTE (\*): Codes are referred to **BSP** thread.

Outlet section

Dimensions and hydraulic circuit

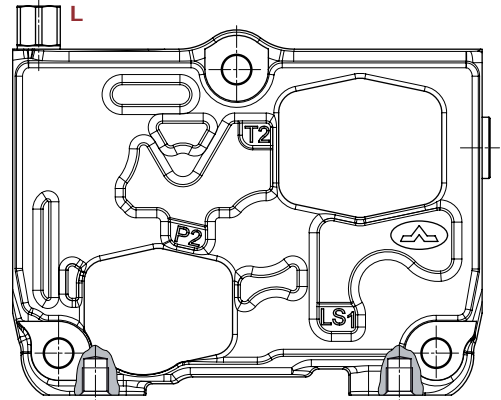
**Type RD31**

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



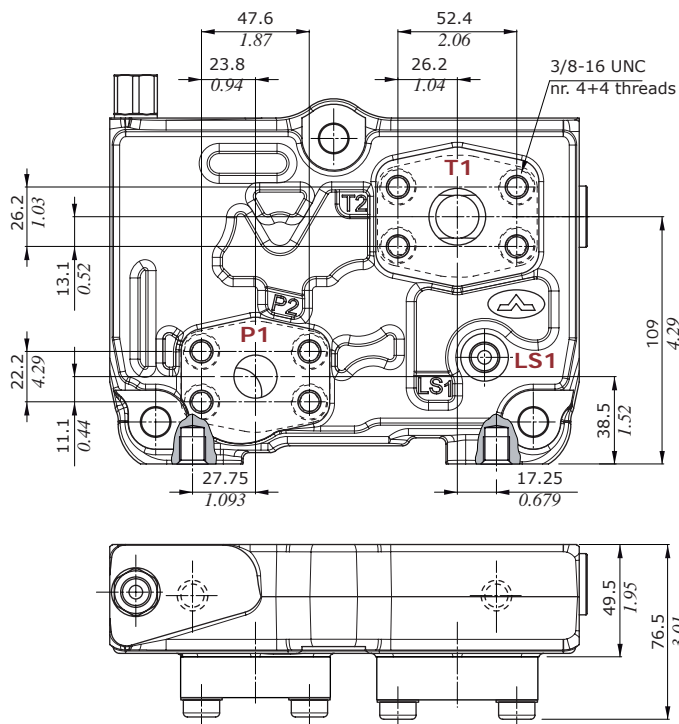
**Type RF30**

Without ports; external drain



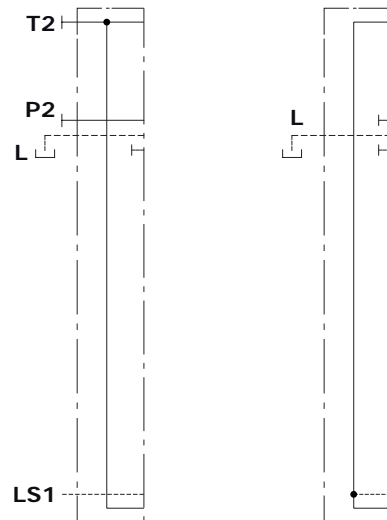
Note: The port LS1 must not be plugged (in case it's not used it has to be connected to tank).

**FS3-M(BSP) optional connection**



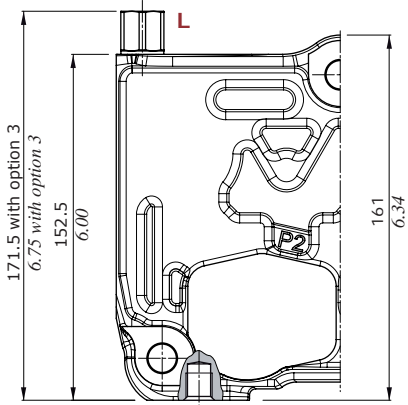
**Type RF31**

**Type RF30**

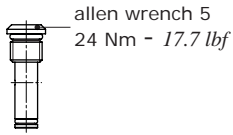




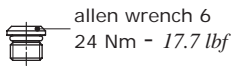
Drain options



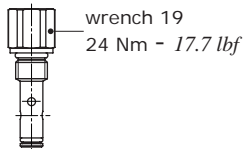
**Option 1**  
internal drain for  
mechanical controls



**Option 2**  
internal drain for  
hydraulic controls



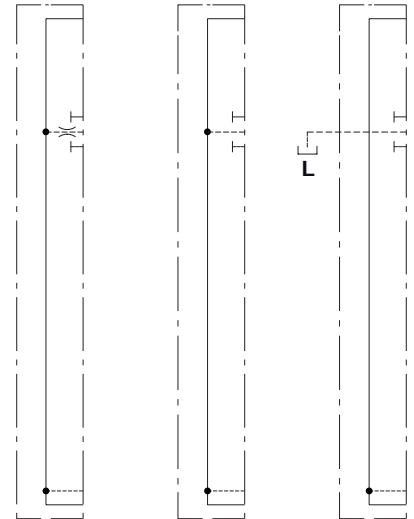
**Option 3**  
external drain for  
electrohydraulic controls



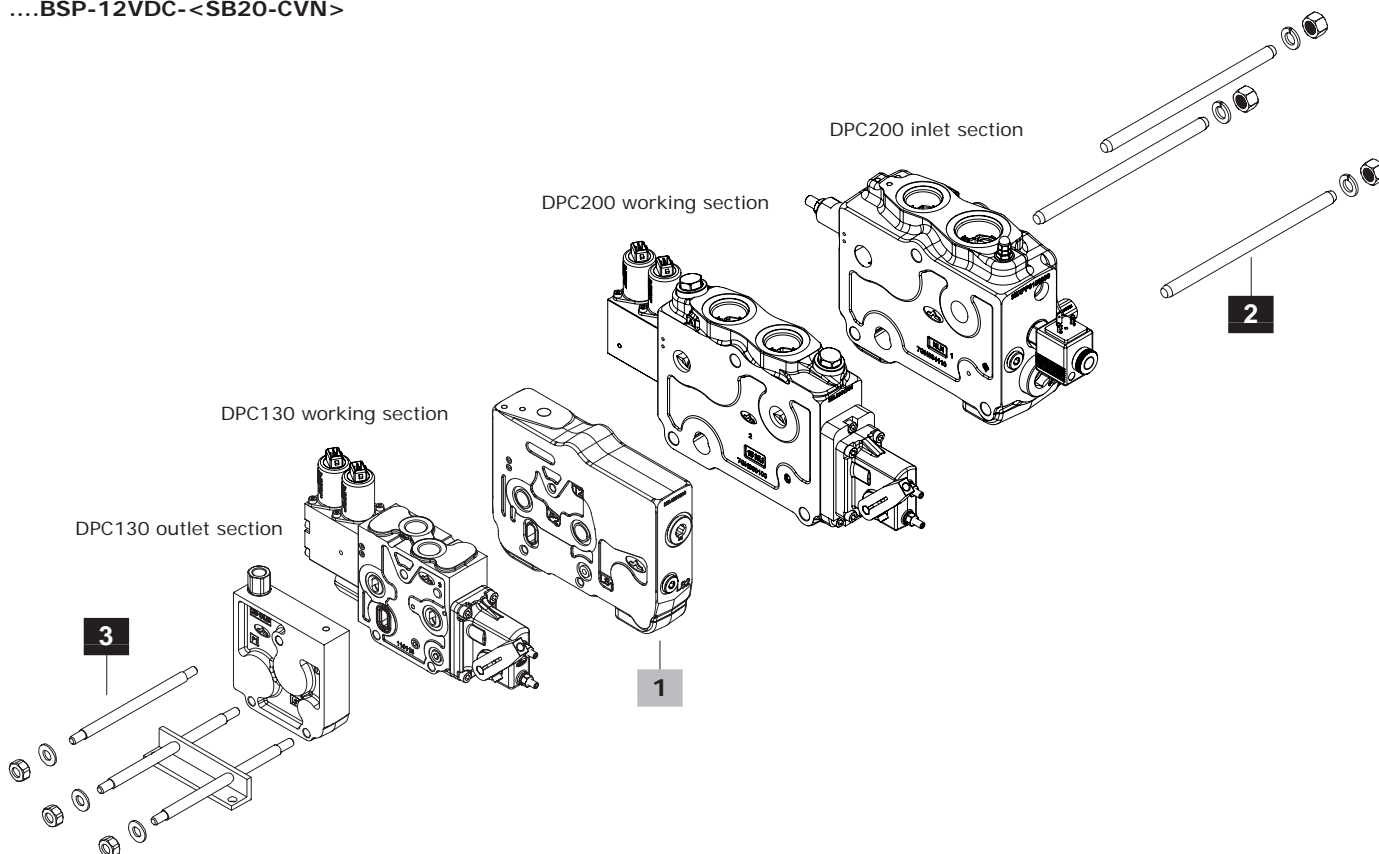
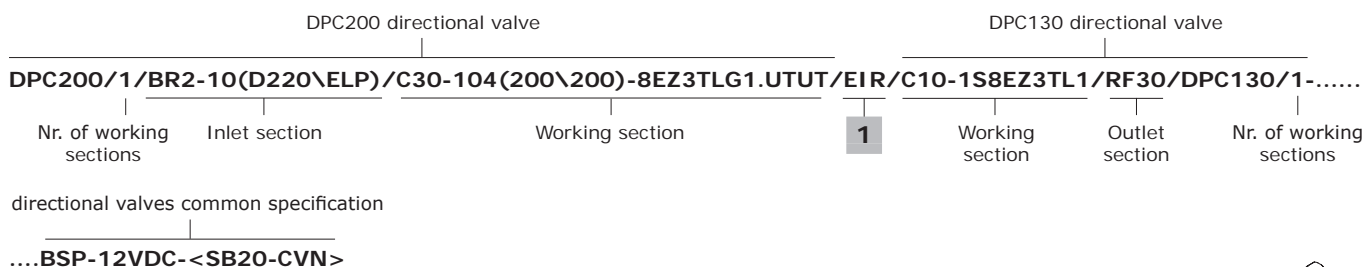
Option 1

Option 2

Option 3



## Connection between DPC Series valves



### **1** Intermediate section page 68

| TYPE | CODE      | DESCRIPTION   |
|------|-----------|---|
| EIR  | 638403001 | Section for assembling of DPC200 and DPC130 in single directional valve; with LS port |

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

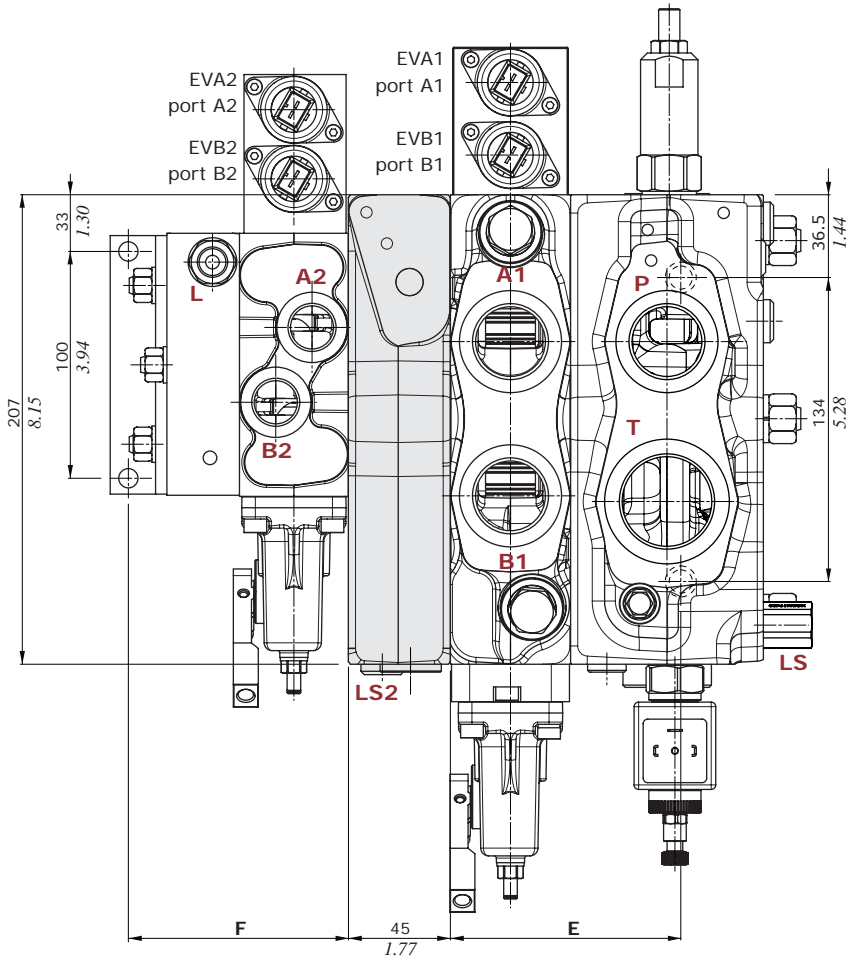
### **2** DPC200 side assembling kit

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

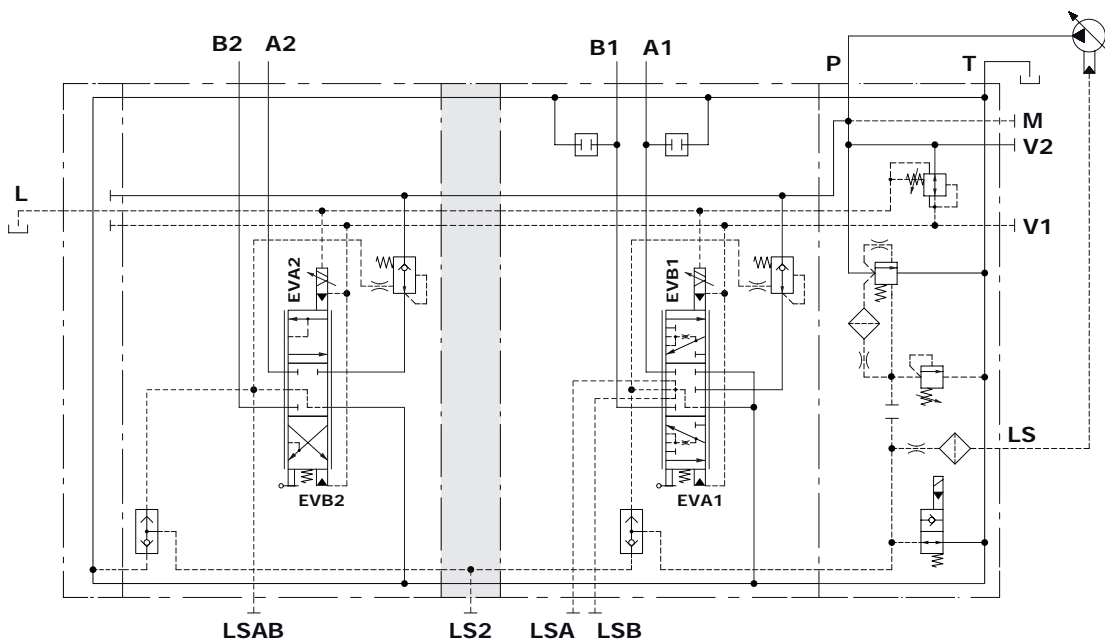
### **3** DPC130 side assembling kit

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

Connection between DPC Series valve



| Nr. of working sections | dim. E           |       |                   |       | dim. F |       |
|-------------------------|------------------|-------|-------------------|-------|--------|-------|
|                         | BR inlet section |       | BRF inlet section |       | mm     | in    |
|                         | 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 |

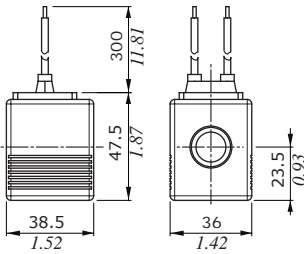




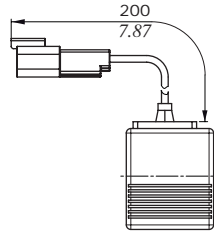
Coils and connectors

Type BER

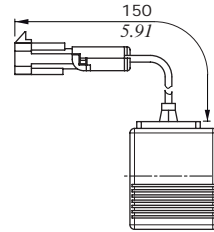
Flying leads



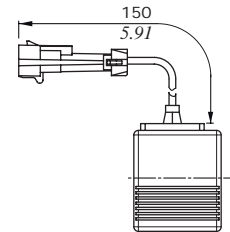
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector

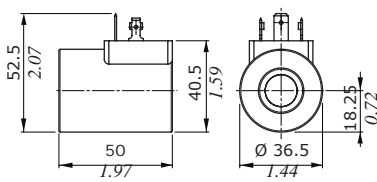


Flying leads with PACKARD METRI-PACK connector

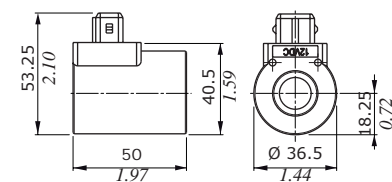


Type BT

ISO4400 connector



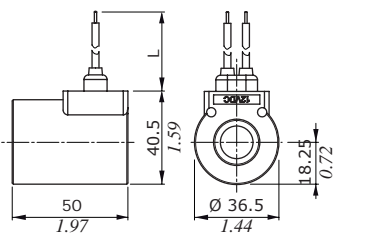
AMP JPT connector



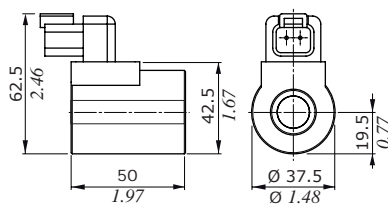
Features

- 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

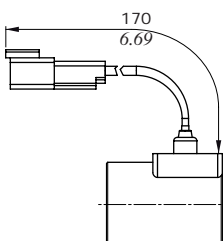


DEUTSCH DT04 connector

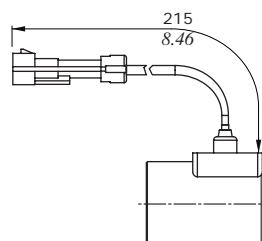


| Coil type | Dimension L |       |
|-----------|-------------|-------|
|           | (mm)        | (in)  |
| 12VDC     | 247         | 9.72  |
| 24VDC     | 307         | 12.09 |

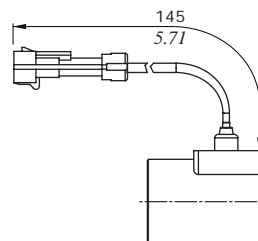
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector



Flying leads with PACKARD METRI-PACK connector

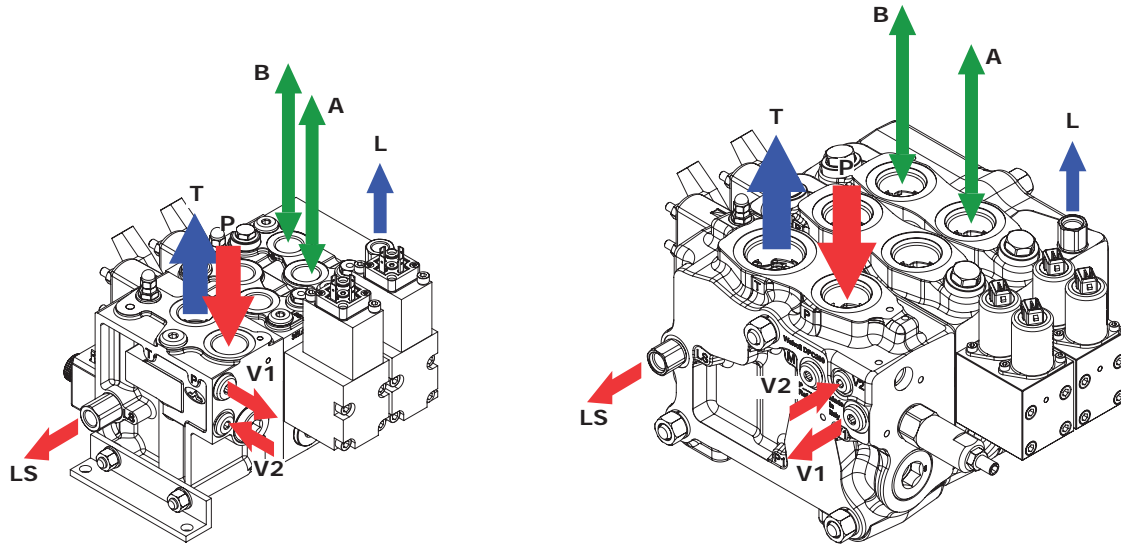


## Installation and maintenance

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

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

- the valve can be assembled in any position; in order to prevent 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 wash down 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<br>V pilot ports* | L drain port       | Hydraulic control ports |                    |
|--|---------------------------------|---------------------------------|-------------------------------|----------------------------------|--------------------|-------------------------|--------------------|
| <b>DPC130</b>  | 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               | 25 / 18.4          |
|  | With copper washer              | 90 / 66.4                       | 60 / 44.3                     | 90 / 66.4                        | 30 / 22.1          | 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               | 16 / 11.8          |
|  | UN-UNF                          | 1 1/16-12<br>(SAE 12)           | 7/8-14<br>(SAE 10)            | 1 1/16-12<br>(SAE 12)            | 9/16-18<br>(SAE 6) | 9/16-18<br>(SAE 6)      | 9/16-18<br>(SAE 6) |
| With O-Ring seal   | 95 / 70                         | 50 / 36.9                       | 95 / 70                       | 30 / 22.1                        | 30 / 22.1          | 30 / 22.1               |                    |
| <b>DPC200</b>  | 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               | 25 / 18.4          |
|  | With copper washer              | 120 / 88.5                      | 120 / 88.5                    | 190 / 140                        | 30 / 22.1          | 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               | 16 / 11.8          |
|  | UN-UNF                          | 1 5/16-12<br>(SAE 16)           | 1 5/16-12<br>(SAE 16)         | 1 5/8-12<br>(SAE 20)             | 9/16-18<br>(SAE 6) | 9/16-18<br>(SAE 6)      | 7/16-20<br>(SAE 4) |
| With O-Ring seal   | 150 / 111                       | 150 / 111                       | 200 / 147                     | 30 / 22.1                        | 30 / 22.1          | 18 / 13.3               |                    |
| SAE J518 code 61<br>ISO 6162-1 type 1<br>[bolts threading] | 3/4 [3/8-16 UNC]<br>DN 19 [M10] | 3/4 [3/8-16 UNC]<br>DN 19 [M10] | 1 [3/8-16 UNC]<br>DN 25 [M10] | -                                | -                  | -                       |                    |
|  | 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

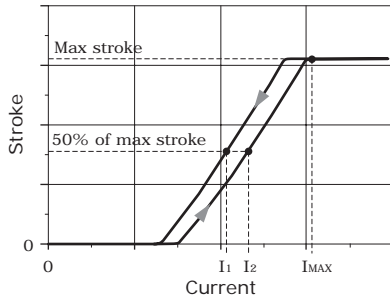
NOTE – These torque are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish.

**Electrohydraulic controls: hysteresis calculation rule**

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



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

3<sup>rd</sup> edition October 2012

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