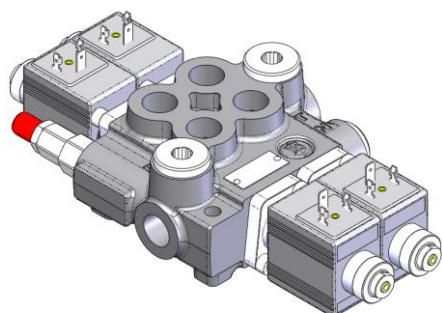
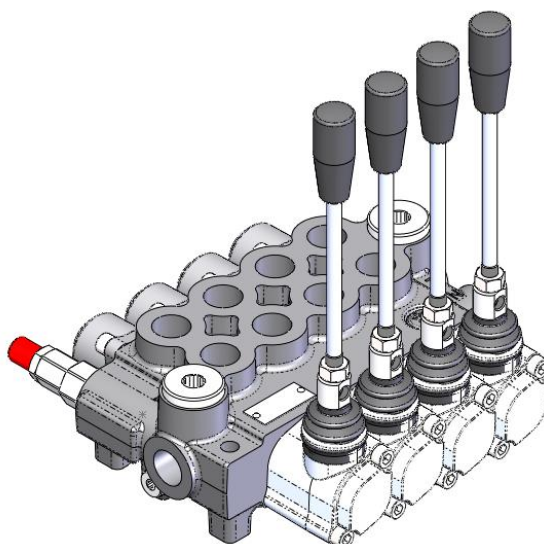
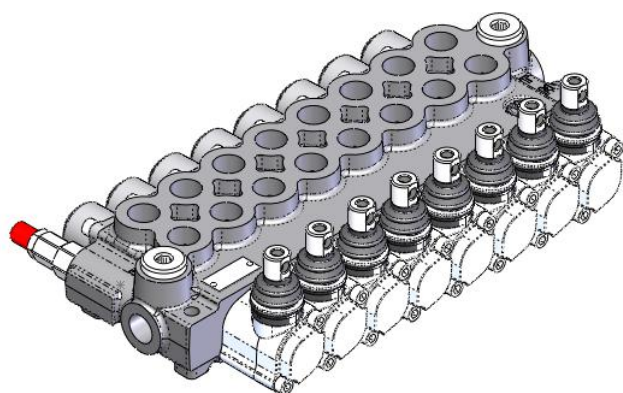
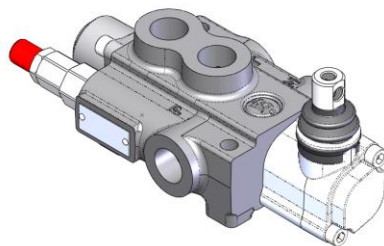
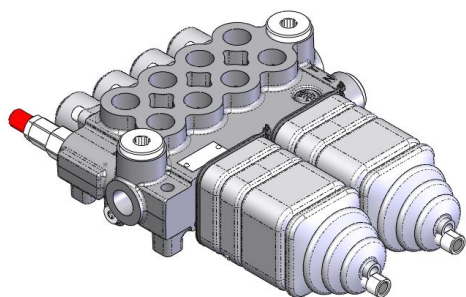


# Z50

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**Badestnost**  
hydraulic components

ТОВ "Промислова Гідравліка": <https://promhydraulic.com.ua/ua/>  
Телефонуйте: +380 (95) 670-15-32, +380 (98) 533-91-67, +380 (96) 244-48-42

**Z50**

Simple compact and heavy duty designed monoblock from 1 to 8 sections for open and closed centre hydraulic systems.

- Fitted with a main pressure relief valve and a load check valve (individual check valve per spool – maximum 4 spools).
- Available with parallel and tandem circuit (only on 2, 3 and 4 spool valves)
- Optional power beyond port for parallel and tandem circuit
- Diameter 16 mm *0.63 in* interchangeable spools.
- A wide variety of options
- Floating spools and kits, regenerative spools and kits **do not** require additional machining on the body
- Actuation – manual, pneumatic, electro-pneumatic, hydraulic, electro-hydraulic, with solenoid and remote with flexible cable spool control kits.

**Additional information**

This catalogue shows the product in the most standard configuration. For special requests please contact sales.

**WARNING!**

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

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

First edition 08-2024

**Working conditions**

|                                           |                                                                                                               |                                                                                             |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Nominal flow rating                       | 50 l/min                                                                                                      | 13.2 US gpm                                                                                 |
| Operating pressure (max.)                 | <i>parallel and tandem</i><br>315 bar                                                                         | 4600 psi                                                                                    |
| Back pressure (max.)                      | 35 bar                                                                                                        | 508 psi                                                                                     |
| Internal leakage (min.) A(B) to T         | $\Delta p = 100 \text{ bar (1450 psi)}$ fluid and valve at 40 °C (104 °F)                                     | 7 cm <sup>3</sup> /min<br>0.42 in <sup>3</sup> /min                                         |
| Hydraulic fluid                           | Mineral based oil                                                                                             |                                                                                             |
| Fluid temperature                         | <i>with NBR seals</i><br><i>with FPM (Viton) seals</i>                                                        | from -20 °C to 80 °C<br>from -20 °C to 100 °C                                               |
|                                           |                                                                                                               | <i>from -4 °F to 176 °F</i><br><i>from -4 °F to 212 °F</i>                                  |
| Viscosity                                 | <i>operating range</i><br><i>min.</i><br><i>max.</i>                                                          | from 15 to 75 mm <sup>2</sup> /s<br>12 mm <sup>2</sup> /s<br>400 mm <sup>2</sup> /s         |
|                                           |                                                                                                               | <i>from 15 to 75 cSt</i><br><i>12 cSt</i><br><i>400 cSt</i>                                 |
| Permissible degree of fluid contamination | -/19/16 - ISO 4406                                                                                            | NAS 1683 - class 10                                                                         |
| Ambient temperature                       | <i>with mechanical devices</i><br><i>with pneumatic and hydraulic devices</i><br><i>with electric devices</i> | from -40 °C to 60 °C<br>from -30 °C to 60 °C<br>from -20 °C to 50 °C                        |
|                                           |                                                                                                               | <i>from -40 °F to 140 °F</i><br><i>from -22 °F to 140 °F</i><br><i>from -4 °F to 140 °F</i> |

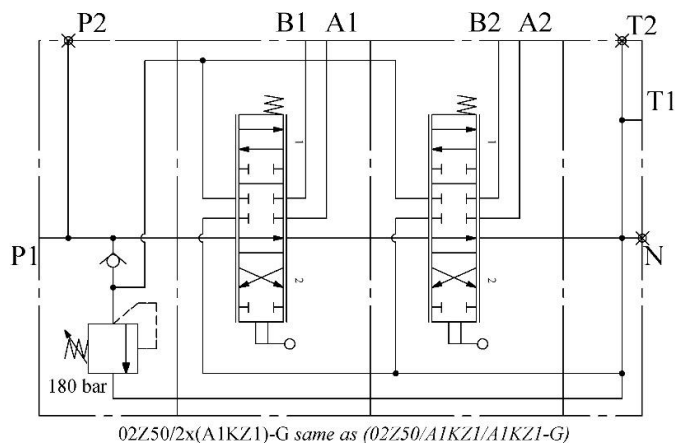
**Standard threads**

| Reference standard |                           |                   |                       |              |
|--------------------|---------------------------|-------------------|-----------------------|--------------|
|                    | BSP                       | UN-UNF            | Metric                | NPTF         |
| Thread             | ISO 228/1                 | ISO 263           | ISO 262               | Ansi B1.20.3 |
| according to       | BS 2779                   | ANSI B1.1 unified |                       |              |
| Cavity dimension   | ISO 1179                  | 11926             | 9974-1                |              |
| according to       | SAE                       | J1926             | J2244                 | J476a        |
|                    | DIN 3852-2 (Shape X or Y) |                   | 3852-1 (Shape X or Y) |              |

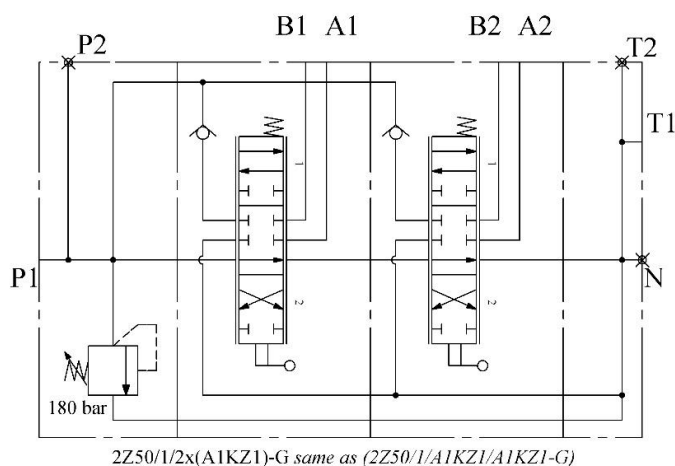
| Port threadings and codes |             |             |             |                |                |             |
|---------------------------|-------------|-------------|-------------|----------------|----------------|-------------|
| Codes:                    | G           | G38         | G12         | S              | S8             | M           |
| Main ports                | BSP         | BSP         | BSP         | UN-UNF         | UN-UNF         | Metric      |
| Inlet P and outlet T      | G1/2        | G3/8        | G1/2        | 7/8-14 (SAE10) | 3/4-16 (SAE8)  | M22x1.5     |
| Working ports A and B     | G3/8        | G3/8        | G1/2        | 3/4-16 (SAE8)  | 3/4-16 (SAE8)  | M18x1.5     |
| Control pilot ports       |             |             |             |                |                |             |
| Pneumatic                 | 1/8-27 NPTF | 1/8-27 NPTF | 1/8-27 NPTF | 1/8-27 NPTF    | 1/8-27 NPTF    | 1/8-27 NPTF |
| Hydraulic                 | G1/4        | G1/4        | G1/4        | 9/16-18 (SAE6) | 9/16-18 (SAE6) | G1/4        |

## Hydraulic circuits

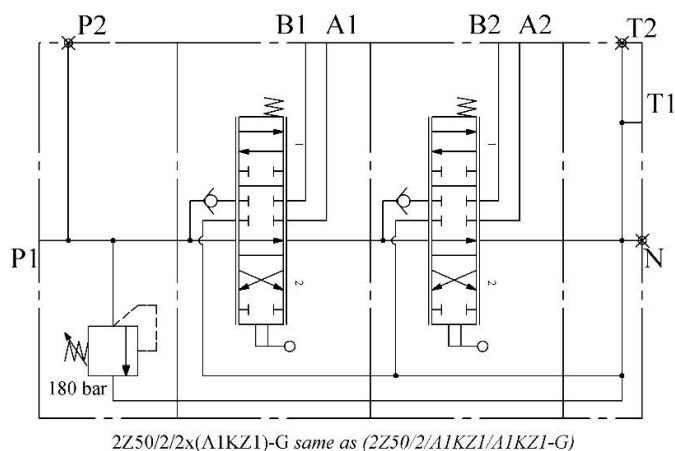
Standard configuration – parallel body, common check valve (available 1 to 8 spools)



Standard configuration – parallel body, individual check valve (available 2 to 4 spools)



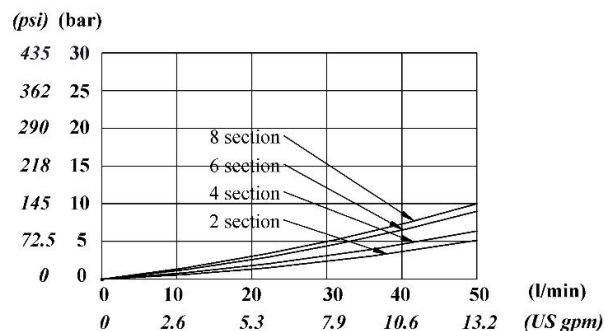
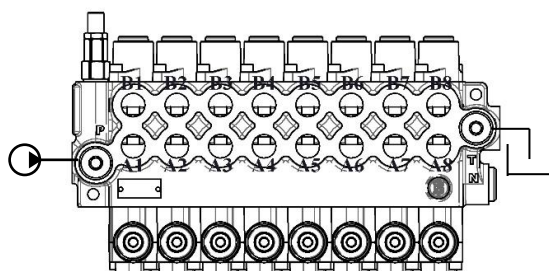
Standard configuration – tandem body, individual check valve (available 2 to 4 spools)



## Performance data

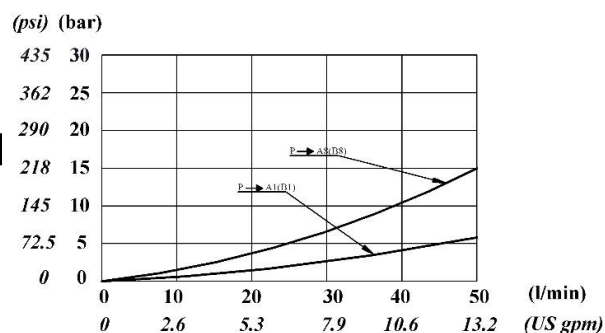
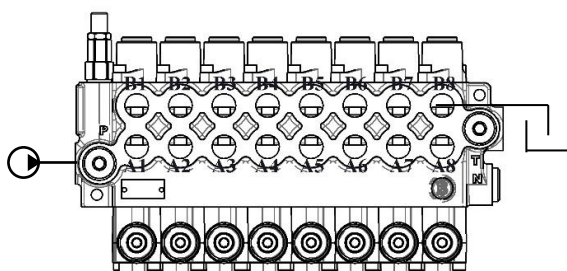
### Open centre

From side inlet to side outlet



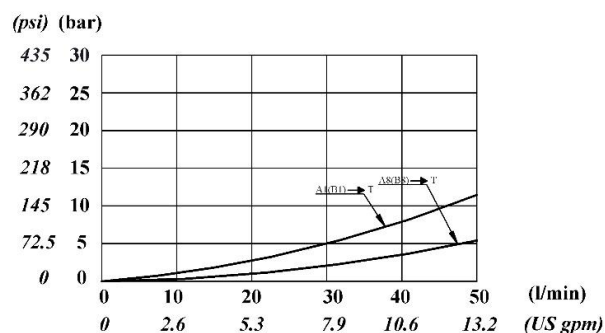
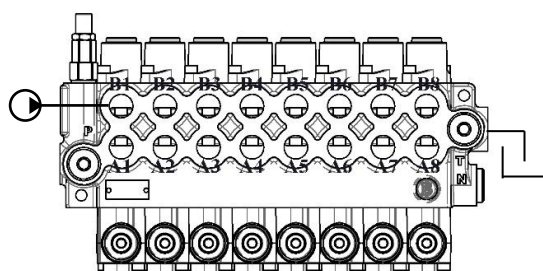
### Inlet to work port

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



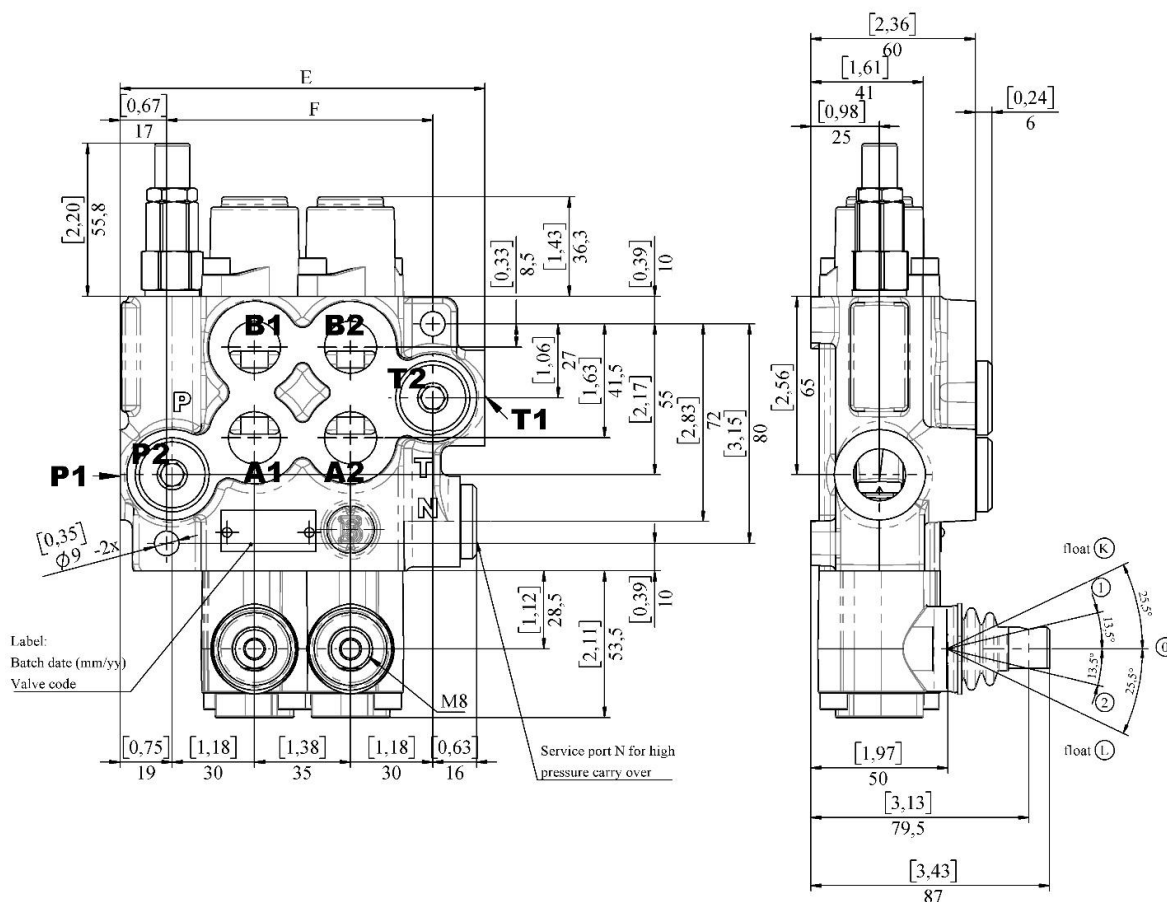
### Work port to outlet

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



## Dimensions

This drawing refers to a directional control valve with 2 working sections with common check valve (refer to next page for the body with individual check valves)

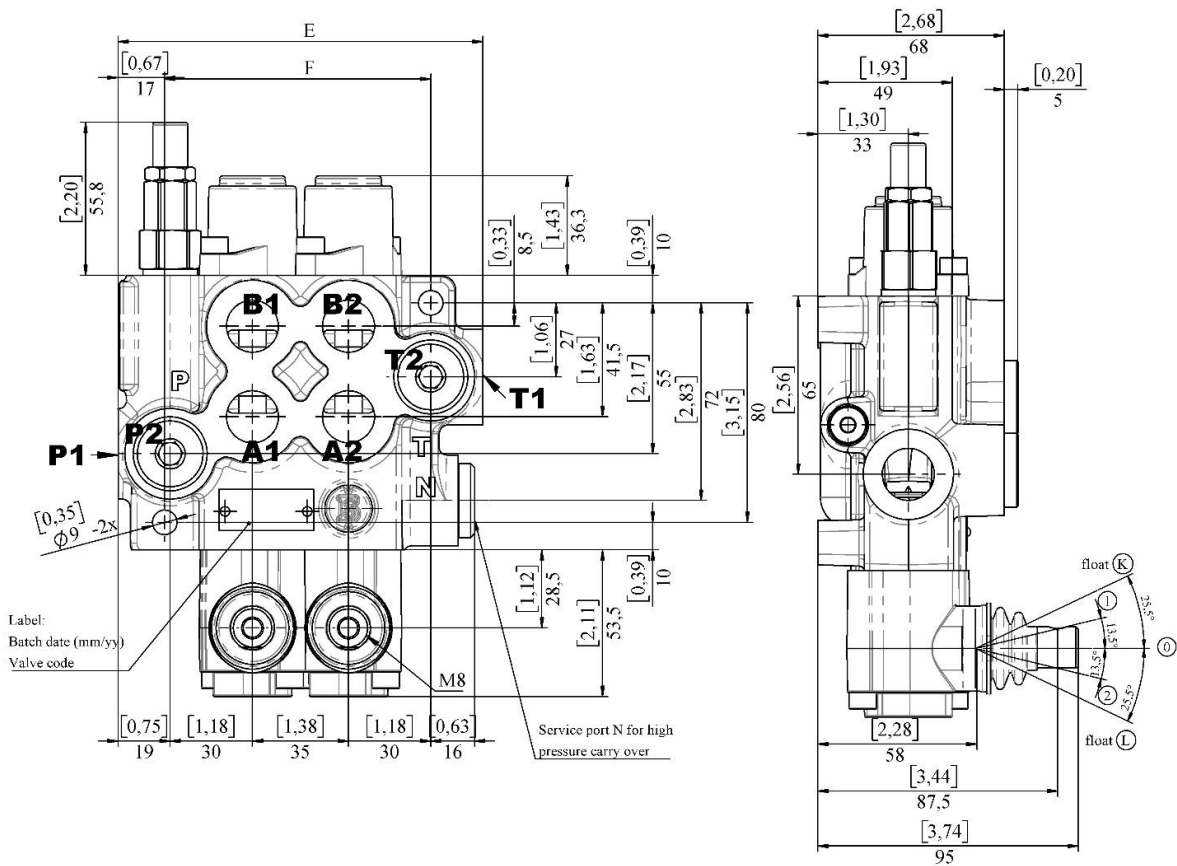


Float position L is shown just as a convention for direction, Z50 can have float- spool in **only** in right hand version – refer to page 20

| TYPE  | E   |      | F   |      | Weight |      |
|-------|-----|------|-----|------|--------|------|
|       | mm  | in   | mm  | in   | kg     | lb   |
| Z50   | 88  | 3.46 | 60  | 2.36 | 2.50   | 5.5  |
| 02Z50 | 133 | 5.24 | 97  | 3.82 | 4.10   | 9.0  |
| 03Z50 | 168 | 6.61 | 132 | 5.20 | 5.5    | 12.1 |
| 04Z50 | 203 | 7.99 | 167 | 6.6  | 6.90   | 15.2 |
| 05Z50 | 238 | 9.4  | 202 | 8.0  | 8.30   | 18.3 |
| 06Z50 | 273 | 10.7 | 237 | 9.3  | 9.70   | 21.4 |
| 07Z50 | 308 | 12.1 | 272 | 10.7 | 11.10  | 24.5 |
| 08Z50 | 343 | 13.5 | 307 | 12.1 | 12.50  | 27.6 |

Dimensions

This drawing refers to a directional control valve with 2 working sections with individual check valve per spool



Float position L is shown just as a convention for direction, Z50 can have float- spool in **only** in right hand version – refer to page 20

| TYPE | E   |      | F   |      | Weight |      |
|------|-----|------|-----|------|--------|------|
|      | mm  | in   | mm  | in   | kg     | lb   |
| 2Z50 | 133 | 5.24 | 97  | 3.82 | 4.10   | 9.0  |
| 3Z50 | 168 | 6.61 | 132 | 5.20 | 5.5    | 12.1 |
| 4Z50 | 203 | 7.99 | 167 | 6.6  | 6.90   | 15.2 |

**Order code, complete**

*First section*
*Following sections*

**02Z50 (D4-280-FV)/A 1 KZ1/A ES3-12V(C)-C2 – G - Zn**

↑

1

↑

2

↑

3

↑

4

↑

5

↑

6

↑

7

↑

8

↑

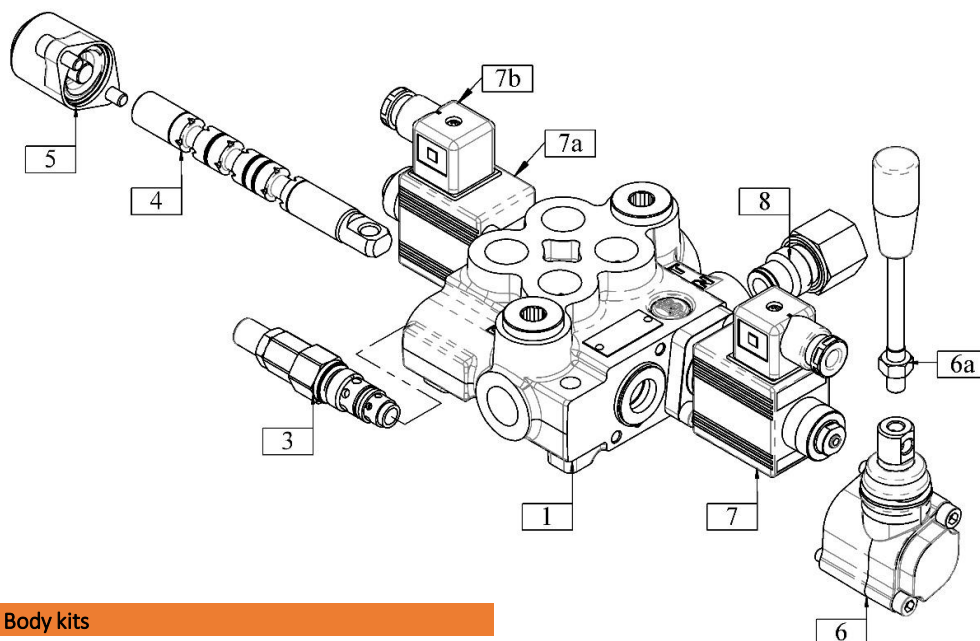
10

↑

11

*For identical sections use quantity of sections x (code of section),*

*e.g. 2x(A1KZ1)...*

**1 Body kits**

| Type    | Description                                 |
|---------|---------------------------------------------|
| Z50     | Parallel, 1 section                         |
| 02Z50   | Parallel, 2 section, common check valve     |
| 03Z50   | Parallel, 3 section, common check valve     |
| 04Z50   | Parallel, 4 section, common check valve     |
| 05Z50   | Parallel, 5 section, common check valve     |
| 06Z50   | Parallel, 6 section, common check valve     |
| 07Z50   | Parallel, 7 section, common check valve     |
| 08Z50   | Parallel, 8 section, common check valve     |
| 2Z50/1/ | Parallel, 2 section, individual load checks |
| 3Z50/1/ | Parallel, 3 section, individual load checks |
| 4Z50/1/ | Parallel, 4 section, individual load checks |
| 2Z50/2/ | Tandem, 2 section, individual load checks   |
| 3Z50/2/ | Tandem, 3 section, individual load checks   |
| 4Z50/2/ | Tandem, 4 section, individual load checks   |

**2 Position with respect to pump inlet**

|      |                                                                                       |
|------|---------------------------------------------------------------------------------------|
| omit | Left hand configuration, pump port is on the left hand side with respect to control   |
| R    | Right hand configuration, pump port is on the right hand side with respect to control |

**3 Inlet relief options**

| Type      | Description                                                                                                                 |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| omit      | Range 120-250 bar / 1740 to 3625 psi<br>standard setting at 180 bar / 2610 psi                                              |
| (D2-120)  | Range 50-120 bar / 725 to 1740 psi standard<br>setting at 120 bar / 1740 psi<br>pressure range has to be always specified   |
| (120-250) | Range 120-250 bar / 1740 to 3625 psi setting<br>other than 180 bar / 2610 psi                                               |
| (D4-220)  | Range 220-315 bar / 3190 to 4570 psi<br>standard setting at 220 bar / 3190 psi<br>pressure range has to be always specified |
| (sok)     | Without check valve                                                                                                         |
| (svp)     | Relief valve blanking plug                                                                                                  |
| (FV)      | Fixed valve setting and steel cap nut                                                                                       |

Standard setting is referred to 12 l/min flow, example for relief valve with a preset valve at 250 bar with cap nut without check valve (D4-250-sok-FV)

**Order code, continue****4 Spool options**

| Type | Description                                                                  |
|------|------------------------------------------------------------------------------|
| A    | Double acting, 3 position, with A and B closed in pos. 0                     |
| As   | Double acting, 3 position, with A and B closed in pos. 0, fine metering      |
| B    | Single acting on A, 3 positions, B plugged, requires a plug.                 |
| C    | Single acting on B, 3 positions, A plugged, requires a plug.                 |
| D    | Double acting, 3 position, with A and B opened to tank in pos. 0             |
| E    | Double acting, 3 position, B opened to tank in pos. 0                        |
| F    | Double acting, 3 position, A opened to tank in pos. 0                        |
| Dd   | Double acting, 3 position, with A and B partially open to tank in pos. 0     |
| Ed   | Double acting, 3 position, B partially opened to tank in pos. 0              |
| Fd   | Double acting, 3 position, A partially opened to tank in pos. 0              |
| M    | Double acting, 3 position, blocked by-pass channel for closed center circuit |

**Special spools for particular positioner kits**

|    |                                                                                                                        |
|----|------------------------------------------------------------------------------------------------------------------------|
| Us | Double acting, 4 positions, regenerative position in between pos. 0 and position 2, spool in                           |
| K  | Double acting, 4 positions, floating circuit in 4th position with spool out, only available in left hand configuration |
| L  | Double acting, 4 positions, floating circuit in 4th position with spool in, only available in right hand configuration |

**5 Spool positioners (side B)**

| Type   | Description                                                                 |
|--------|-----------------------------------------------------------------------------|
| 1      | With spring return in pos. 0                                                |
| 1C     | With spring return in pos. 0, soft spring                                   |
| 1Z     | With spring return in pos. 0 and pin with M8x1 male thread for dual control |
| 1rAB   | With spring return in pos. 0 and stroke adjustments both directions         |
| 1zS1   | With spring return in pos. 0 and pin with M8 male thread for dual control   |
| 1D(M6) | With spring return in pos 0 and pin with M6 female thread for dual control  |
| 1E     | With spring return in pos. 0, includes microswitch kit                      |
| 14     | Spring return in pos. 0, no microswitch kit included                        |

|                                                      |                                                                                                                     |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| 14C                                                  | Spring return in pos. 0, soft spring, no microswitch kit included                                                   |
| 4                                                    | 2 positions, with spring return in pos. 0 from pos. 2                                                               |
| 5                                                    | 2 positions, with spring return in pos. 0 from pos. 1                                                               |
| 6                                                    | 2 positions, with spring return in pos. 1 from pos. 2                                                               |
| 7                                                    | 2 positions, with spring return in pos. 2 from pos. 1                                                               |
| 7Z                                                   | 2 positions, with spring return in pos. 2 from pos. 1 and pin with M8x1 male thread for dual control                |
| 7T                                                   | 2 positions, with spring return in pos. 2 from pos. 1 with teton (push piston)                                      |
| 7D(M6)                                               | 2 positions, with spring return in pos. 2 from pos. 1, and pin with M6 female thread for dual control               |
| 7zS1                                                 | 2 positions, with spring return in pos. 2 from pos. 1 with special tie rod kit M8 for dual control                  |
| 8                                                    | Detent in positions 0, 1 and 2                                                                                      |
| 8Z                                                   | Detent in positions 0, 1 and 2, and pin with M8 male thread for dual control                                        |
| 9                                                    | Detent in positions 1 and 0                                                                                         |
| 10                                                   | Detent in positions 0 and 2                                                                                         |
| 11                                                   | Detent in positions 1 and 2                                                                                         |
| 11B                                                  | Detent in positions 1 and 2, and spring return to pos. 0                                                            |
| 2                                                    | With detent in position 1 and spring return in pos. 0                                                               |
| 3                                                    | With detent in position 2 and spring return in pos. 0                                                               |
| 1V2                                                  | With spring return in pos. 0 for flexible cable control                                                             |
| 8V2                                                  | Detent in positions 0, 1 and 2 for flexible cable control                                                           |
| 1H                                                   | Proportional hydraulic control- single side                                                                         |
| 1P                                                   | ON/OFF pneumatic control                                                                                            |
| 1EP                                                  | ON/OFF electro-pneumatic control                                                                                    |
| 1ED3                                                 | ON/OFF electro-hydraulic control                                                                                    |
| <b>Particular positioner kits for special spools</b> |                                                                                                                     |
| 17                                                   | 4 position with spring return to pos. 0 from pos. 2, soft stop at (regenerative) before pos. 2 and detent in pos. 1 |
| 12                                                   | 4 position with spring return in pos. 0 and detent in float position - only for spool L                             |
| 13                                                   | Detent in 4 positions - only for spool L                                                                            |
| 16                                                   | 4 position with spring return in pos. 0 and detent in float position - only for spool K                             |
| 15                                                   | Detent in 4 positions - only for spool K                                                                            |

**Order code, continue**

|                                                                                                                                                         |                                                                                                         |           |                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------|
| <b>6</b>                                                                                                                                                | <b>Spool controls (side A)</b>                                                                          |           |                                                                                                                       |
|                                                                                                                                                         | <i>without lever box, with plate</i>                                                                    | C2        | <i>For BSP threading - G1/2 high pressure carry-over sleeve</i>                                                       |
| KZ                                                                                                                                                      | <i>Lever box for M8</i>                                                                                 | C2(38)    | <i>For BSP threading - G3/8 high pressure carry-over sleeve</i>                                                       |
| KZ(M10)                                                                                                                                                 | <i>Lever box for M10</i>                                                                                | C2(S)     | <i>For SAE threading - SAE10 high pressure carry-over sleeve</i>                                                      |
| KZT                                                                                                                                                     | <i>Lever box for M8 with teton (push piston)</i>                                                        | C2(NPTF)  | <i>For NPTF threading - 1/2NPTF high pressure carry-over sleeve</i>                                                   |
| KI                                                                                                                                                      | <i>Lever box, collet type, horizontal Ø9 mm</i>                                                         | C2D       | <i>High pressure carry-over kit, direct connection</i>                                                                |
| KY                                                                                                                                                      | <i>Lever box, collet type, vertical Ø9 mm</i>                                                           | VRE       | <i>Back pressure valve</i>                                                                                            |
| KZ(rA)                                                                                                                                                  | <i>Lever box, with stroke limiter</i>                                                                   | <b>9</b>  | <b>Inlet outlet selection</b>                                                                                         |
| KZe                                                                                                                                                     | <i>Lever box for M8, extreme conditions</i>                                                             | omit      | <i>Side inlet, side outlet, others plugged</i>                                                                        |
| KZe(M10)                                                                                                                                                | <i>Lever box for M10, extreme conditions</i>                                                            | 22        | <i>Top inlet, top outlet, others plugged</i>                                                                          |
| <i>Adding a 0 after the first part of the code will make the execution rotated 180°, lever will face the bottom of the valve, not the ports eg. KZO</i> |                                                                                                         | 12        | <i>Side inlet, top outlet, others plugged</i>                                                                         |
| KZV                                                                                                                                                     | <i>Safety lever box, vertical configuration</i>                                                         | 21        | <i>Top inlet, side outlet, others plugged</i>                                                                         |
| KZH                                                                                                                                                     | <i>Safety lever box, horizontal configuration</i>                                                       | <b>10</b> | <b>Valve Threading - refer to page 3</b>                                                                              |
| SLP                                                                                                                                                     | <i>without lever box with dustproof plate</i>                                                           | <b>11</b> | <b>Coating and plating</b>                                                                                            |
| V1                                                                                                                                                      | <i>Flexible cable connection</i>                                                                        | omit      | <i>Valve body is phosphated, steel parts zinc plated, spools either Ni, or Cr plating (omit in valve description)</i> |
| ju+1                                                                                                                                                    | <i>Joystick lever for 2 sections with pivot above right, standard cylindrical handle</i>                | Zn        | <i>Valve body - Zinc plated</i>                                                                                       |
| ju+2                                                                                                                                                    | <i>Joystick lever for 2 sections with pivot above left, standard cylindrical handle</i>                 | BP        | <i>Painting, standard black, others optional</i>                                                                      |
| ju+3                                                                                                                                                    | <i>Joystick lever for 2 sections with pivot bottom left, standard cylindrical handle</i>                |           |                                                                                                                       |
| ju+4                                                                                                                                                    | <i>Joystick lever for 2 sections with pivot bottom right, standard cylindrical handle</i>               |           |                                                                                                                       |
| <i>Optional ball type handle (jb+...), and custom lengths</i>                                                                                           |                                                                                                         |           |                                                                                                                       |
| <b>6a</b>                                                                                                                                               | <b>Handle options</b>                                                                                   |           |                                                                                                                       |
| 1                                                                                                                                                       | <i>Depending on lever kit M8x150 or M10x170</i>                                                         |           |                                                                                                                       |
| <i>Custom lengths and bends available</i>                                                                                                               |                                                                                                         |           |                                                                                                                       |
| <b>7</b>                                                                                                                                                | <b>Complete controls</b>                                                                                |           |                                                                                                                       |
| 1ESD                                                                                                                                                    | <i>Double acting solenoid kit, standard version with lock/unlock lever kit K1</i>                       |           |                                                                                                                       |
| ES                                                                                                                                                      | <i>Single acting solenoid kits - ES3/ES2/ES1</i>                                                        |           |                                                                                                                       |
| A26                                                                                                                                                     | <i>Control with rotation (CW-CCW)</i>                                                                   |           |                                                                                                                       |
| <b>7a</b>                                                                                                                                               | <b>Coil specifications</b>                                                                              |           |                                                                                                                       |
| 12V                                                                                                                                                     | <i>12V coil, for ISO4400 connector</i>                                                                  |           |                                                                                                                       |
| 24V                                                                                                                                                     | <i>24V coil, for ISO4400 connector</i>                                                                  |           |                                                                                                                       |
| 12V(DT)                                                                                                                                                 | <i>12V coil, for Deutsch connector</i>                                                                  |           |                                                                                                                       |
| 24V(DT)                                                                                                                                                 | <i>24V coil, for Deutsch connector</i>                                                                  |           |                                                                                                                       |
| <i>Exact coil specifications follow in the catalog</i>                                                                                                  |                                                                                                         |           |                                                                                                                       |
| <b>7b</b>                                                                                                                                               | <b>Connectors</b>                                                                                       |           |                                                                                                                       |
| omit                                                                                                                                                    | <i>By default connectros are not included, except in 1ESD control and electro-pneumatic control 1EP</i> |           |                                                                                                                       |
| (C)                                                                                                                                                     | <i>Connector for the particular coil is included</i>                                                    |           |                                                                                                                       |
| <b>8</b>                                                                                                                                                | <b>Outlet port options</b>                                                                              |           |                                                                                                                       |
| omit                                                                                                                                                    | <i>BSP G1/2 plug on port N</i>                                                                          |           |                                                                                                                       |
| C                                                                                                                                                       | <i>Closed center plug</i>                                                                               |           |                                                                                                                       |

## Inlet relief options

### D4-280-sok-FV

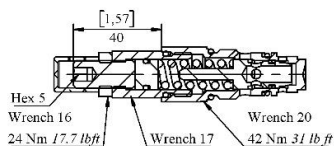
(FV) - Steel cap nut for pre-set pressure

(sok) – without load check valve

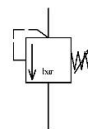
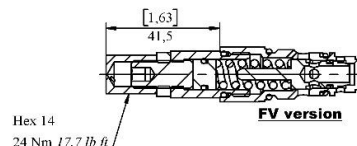
Pressure setting, if not specified – standard pressure setting per spring (p.8)

Adjustable spring type (2 and 4)

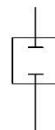
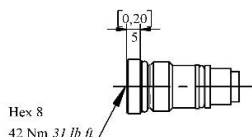
Pressure setting within the range 120-250 bar / 1740 to 3625 psi, by default uses spring no.3 and does not require to be specified in the ordering code e.g. (150)



Note: Check valve is not shown

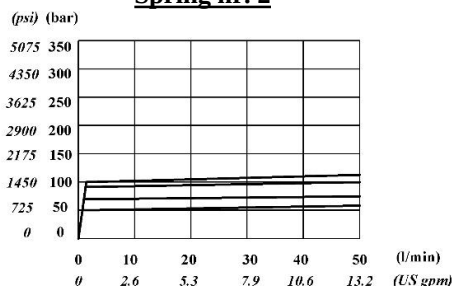


### svp– relief valve blanking plug

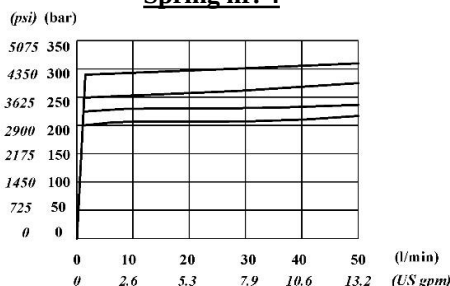


## Relief valve type “D” performance characteristics

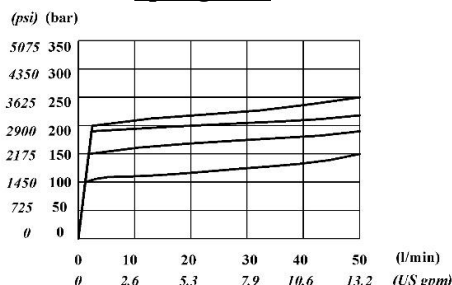
### Spring nr. 2



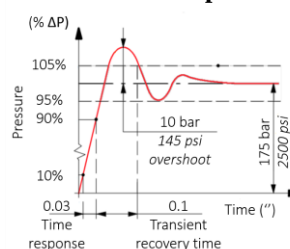
### Spring nr. 4



### Spring nr. 3

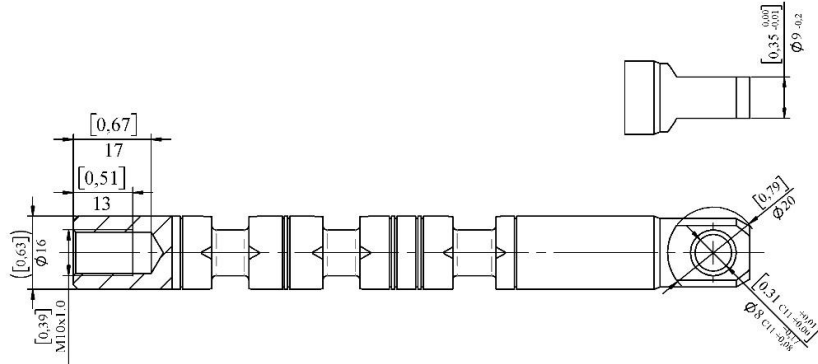


### Time response

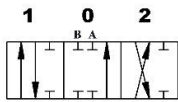


### Spool options:

Badestnost standard spool have the end shown in the drawing below.

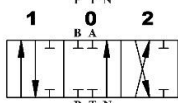
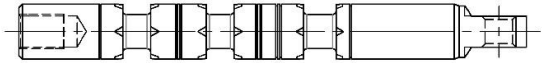


### Double acting spools



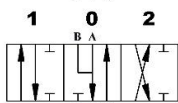
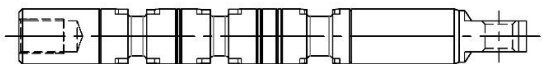
**A**

Double acting spool, work ports closed in neutral position.



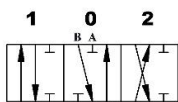
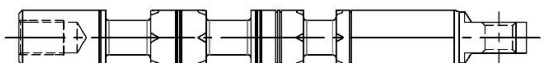
**As**

Double acting spool, high metering, work ports closed in neutral position.



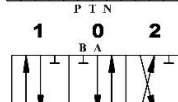
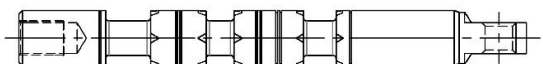
**D**

Double acting spool, work ports open to tank in neutral position.



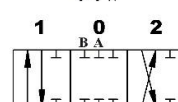
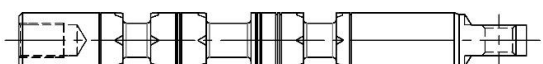
**E**

Double acting spool, work port B open to tank in neutral position.



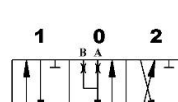
**F**

Double acting spool, work port A open to tank in neutral position.



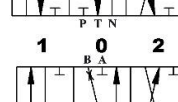
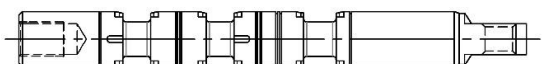
**M**

Double acting spool, closed center, work ports closed in neutral.



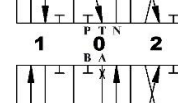
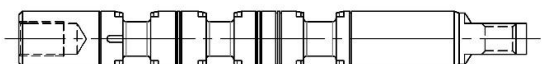
**Dd**

Double acting spool, closed center, work ports partially open to tank



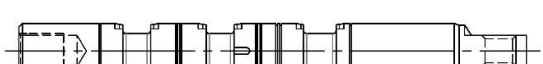
**Ed**

Double acting spool, closed center, work port B partially open to tank



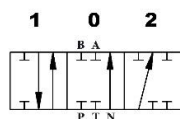
**Fd**

Double acting spool, closed center, work port A partially open to tank



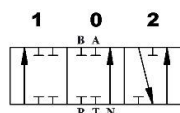
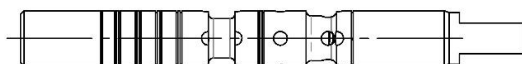
## Spool options, continue

### Single acting spools



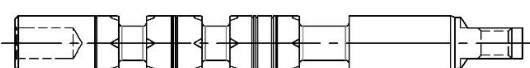
**B**

Single acting on A, 3 position, B plugged

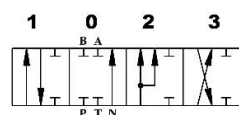


**C**

Single acting on B, 3 positions, A plugged

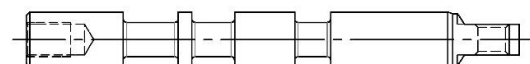


### Regenerative spools



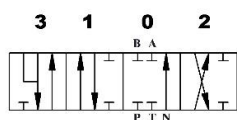
**Us**

Double acting, 4 positions, regenerative position



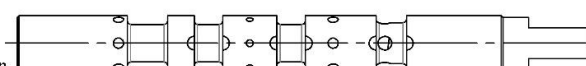
Spool U requires spool positioner - 6 or 17, and it is available to valves ONLY with left hand configuration (P on left with respect to lever control)

### Floating spools

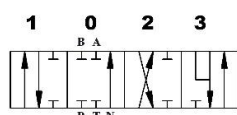


**K**

Double acting, 4 positions, floating circuit in 4th position with spool out

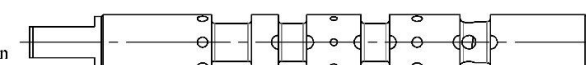


Spool K requires spool positioner - 16 or 15, and it is available to valves ONLY with left hand configuration (P on left with respect to lever control)



**L**

Double acting, 4 positions, floating circuit in 4th position with spool in



Spool L requires spool positioner - 12 or 13, and it is available to valves ONLY with "R" right hand configuration (P on right with respect to lever control)

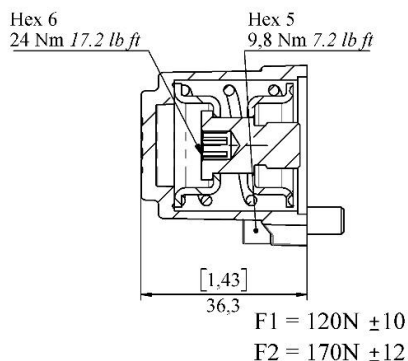
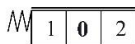
All spools have "R" version for right version of the valve, exceptions are Us, K and L.

To order right hand version of a spools, add "R" behind the spool description e.g. AR, BR, CR, etc.

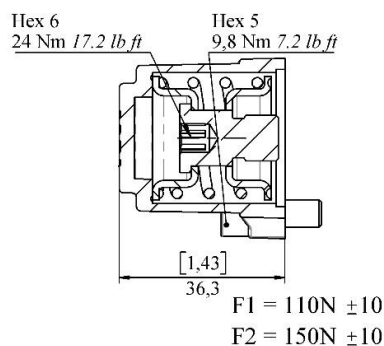
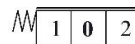
To order low leakage version of spools, add "n" behind the spool description e.g. An, Bn, Cn, etc.

## Spool positioners (B-side)

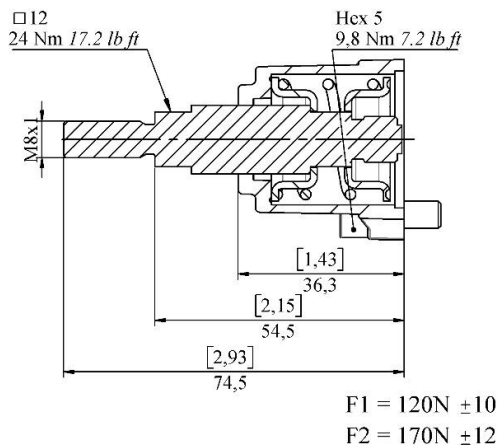
**Kit 1**



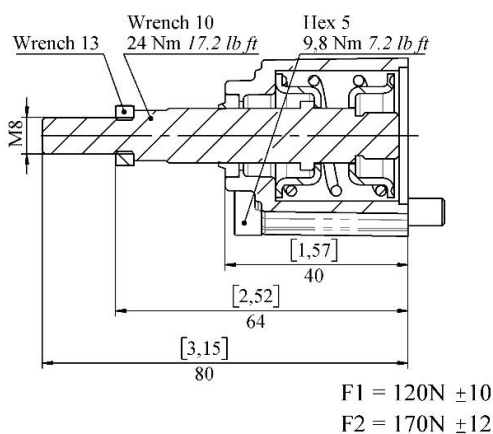
**Kit 1C**



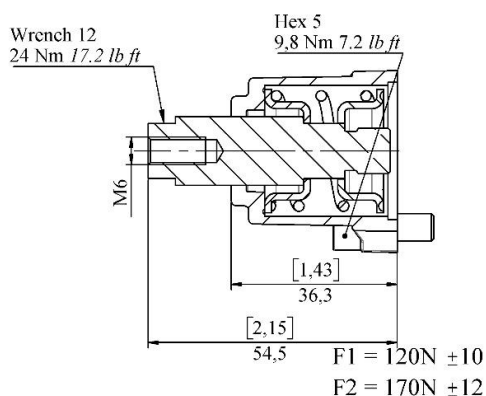
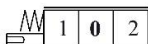
**Kit 1Z**



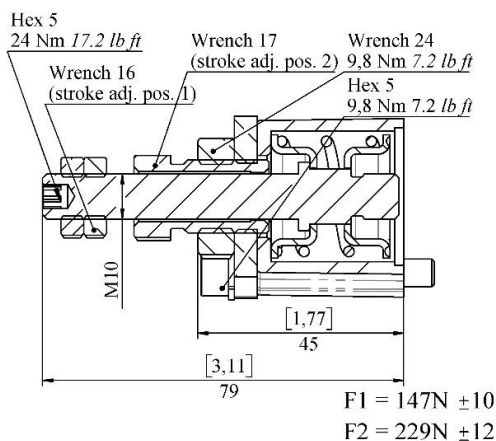
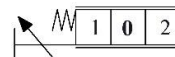
**Kit 1zS1**



**Kit 1D(M6)**

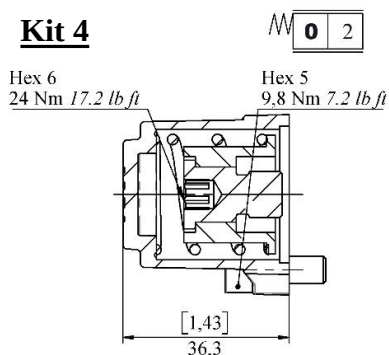


**Kit 1rAB**

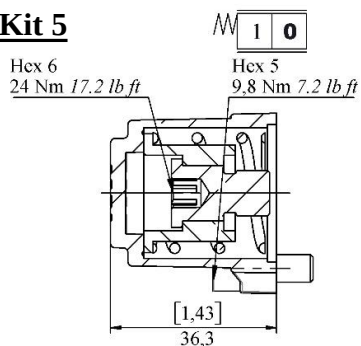


**Spool positioners (B-side)**

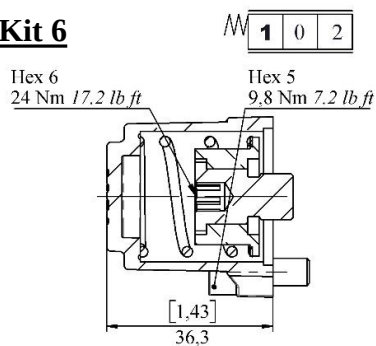
**Kit 4**



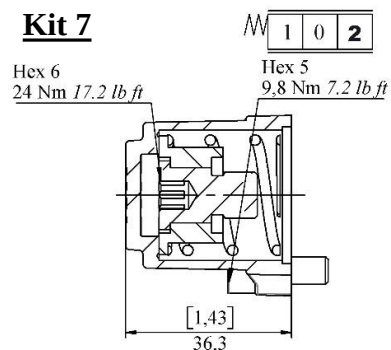
**Kit 5**



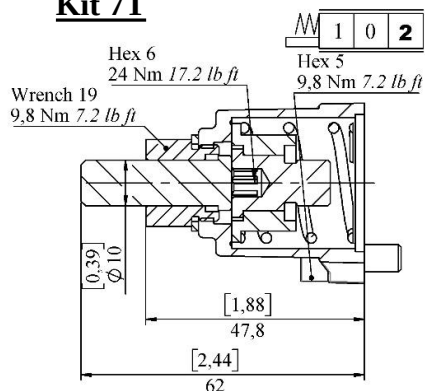
**Kit 6**



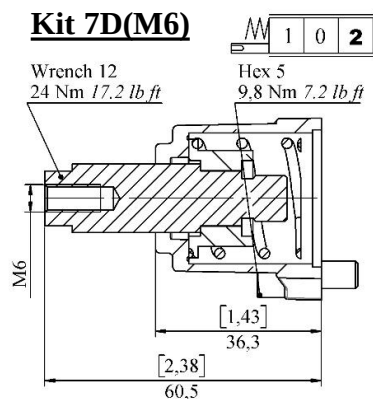
**Kit 7**

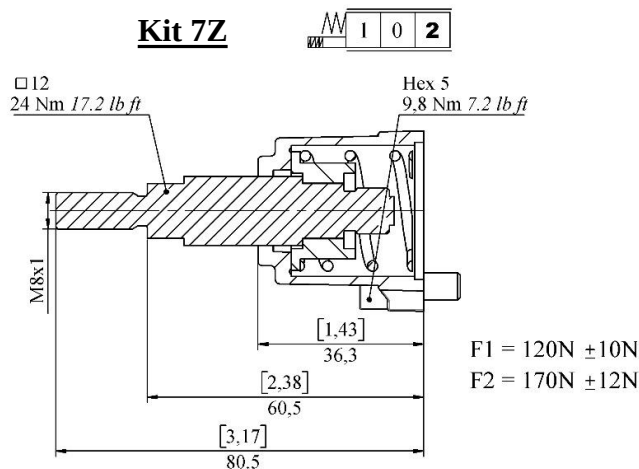
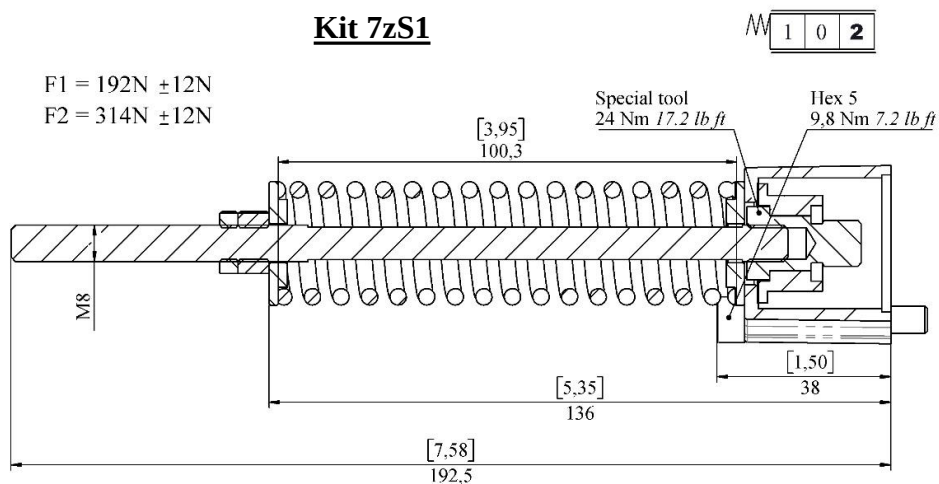
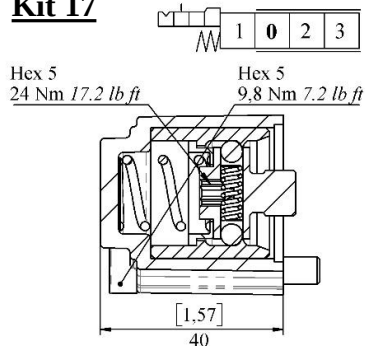
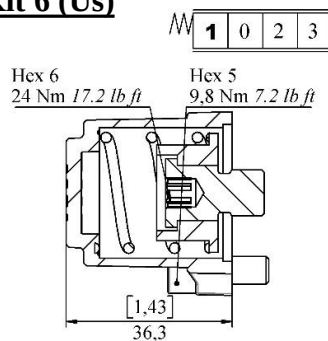


**Kit 7T**



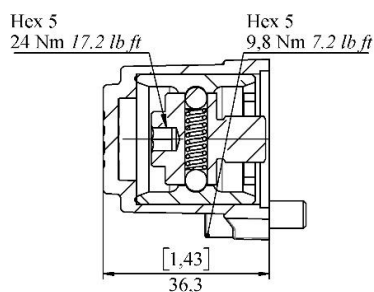
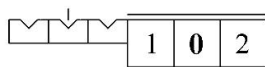
**Kit 7D(M6)**



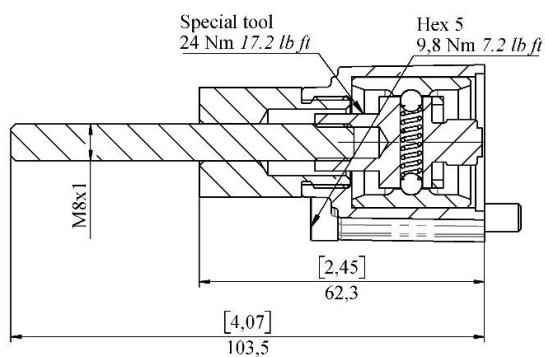
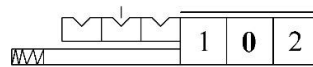
**Spool positioners (B-side)****Kit 7Z****Kit 7zS1****Particular kits for regenerative spool Us****Kit 17****Kit 6 (Us)**

**Spool positioners (B-side)**

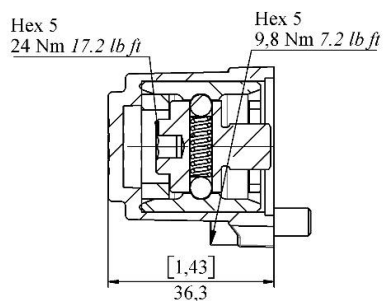
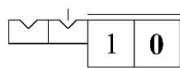
**Kit 8**



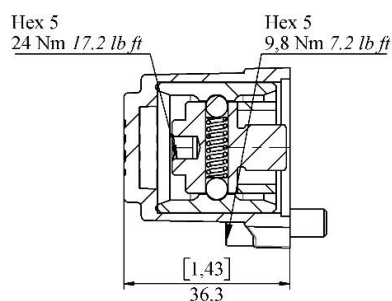
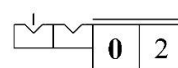
**Kit 8Z**



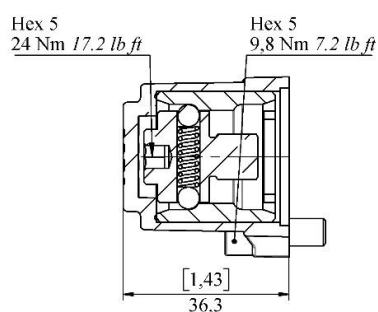
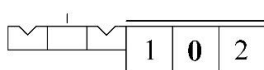
**Kit 9**



**Kit 10**

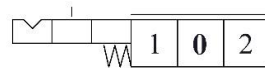
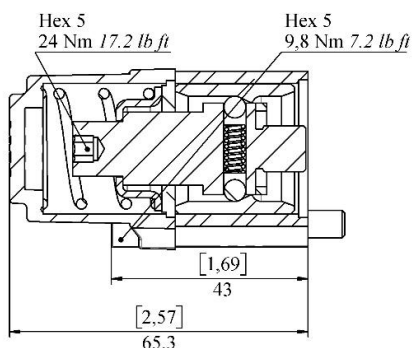


**Kit 11**

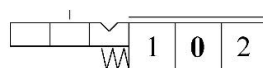
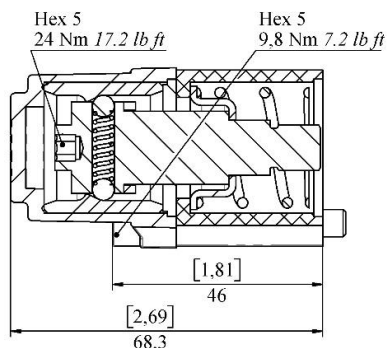


## Spool positioners (B-side)

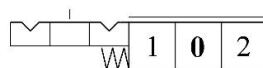
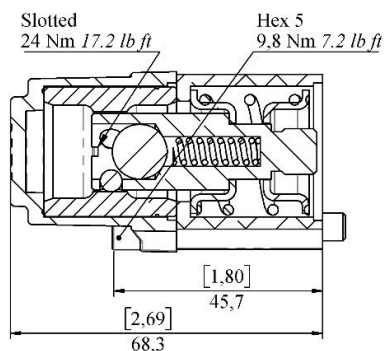
### Kit 2: 3 position, spring return from pos. 2 to pos. 0 and detent in pos. 1



### Kit 3: 3 position, spring return from pos. 1 and detent in pos. 2

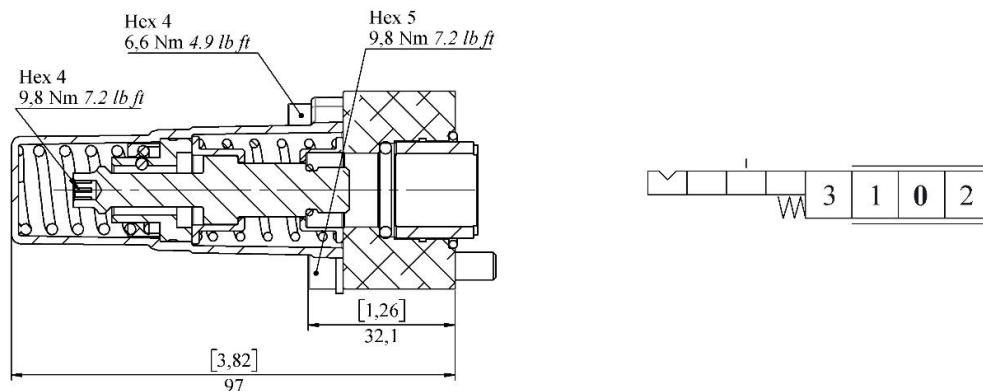


### Kit 11B: 2 position, with detent in both positions and spring return to neutral from either direction

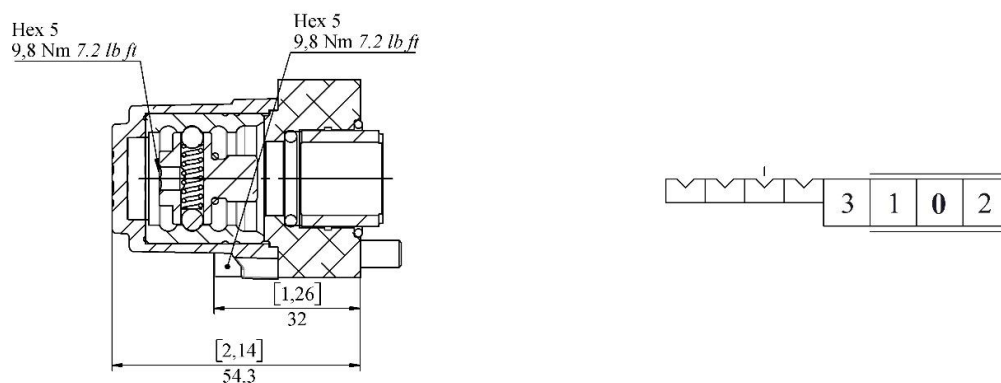


**Particular spool positioners kits for floating spool K (float when spool OUT)**

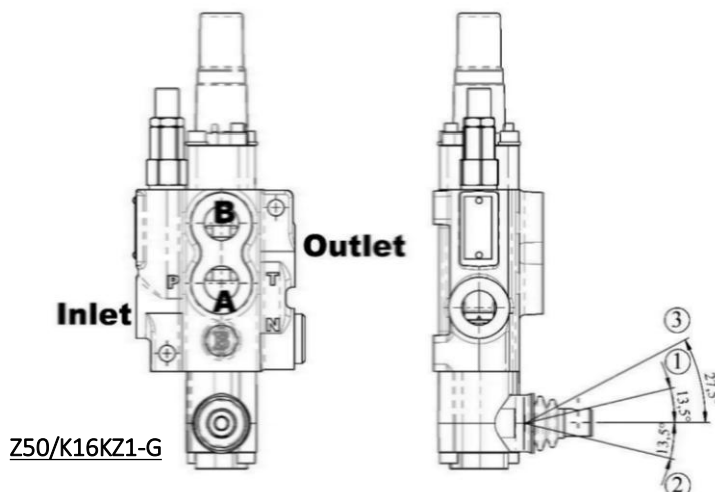
**Kit 16:** *four position, return to neutral from 1 and 2 and detent in float*



**Kit 15:** *four position detent*



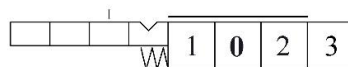
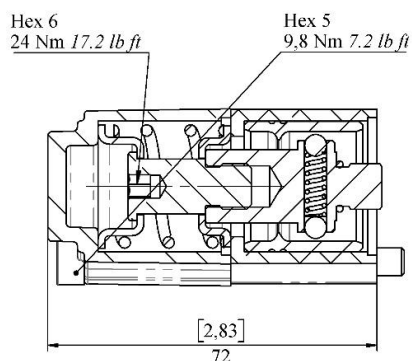
**Limitations of floating sections for Z50**



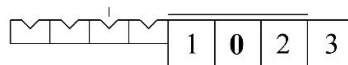
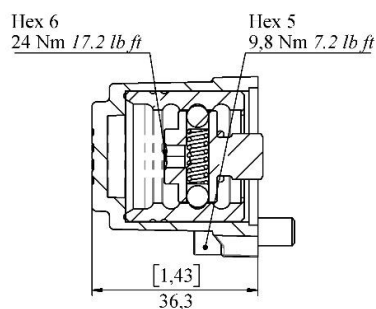
*Floating spool **OUT** (K16 and K15) can be used only on standard configuration with left inlet (with respect to the lever)*

### Particular spool positioners kits for floating spool L (float when spool IN)

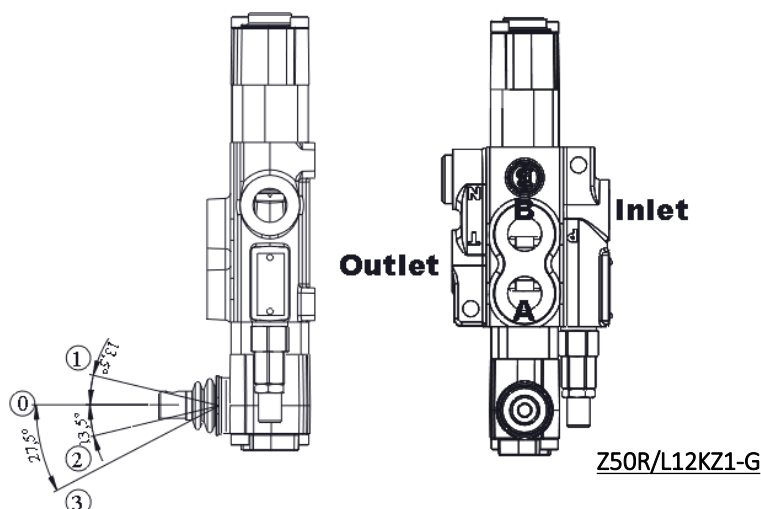
**Kit 12:** *four position, return to neutral from 1 and 2 and detent in float*



**Kit 13:** *four position detent*



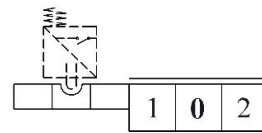
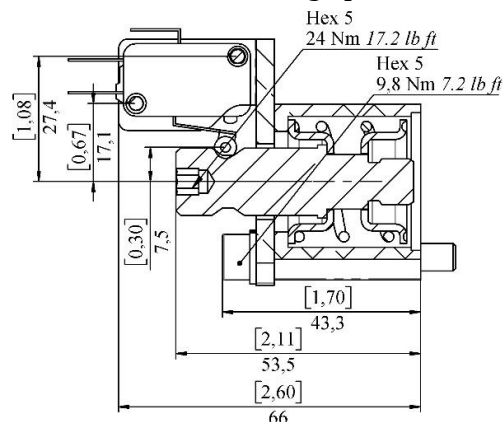
### Limitations of floating sections for Z50



*Floating spool IN (L12 and L13) can be used only on "R" configuration valve with right inlet (with respect to the lever)*

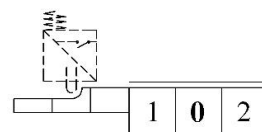
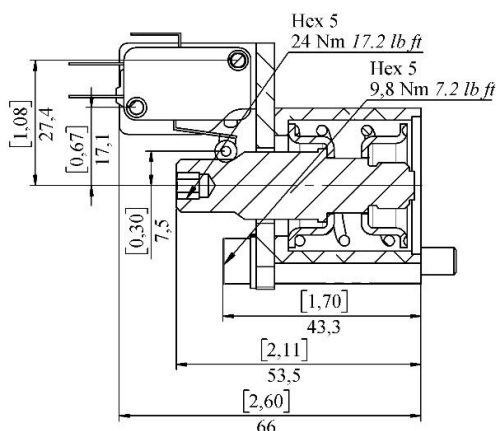
## Particular spool positioners kits for microswitch

### Kit 1E for double acting spool A or D



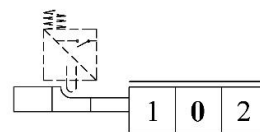
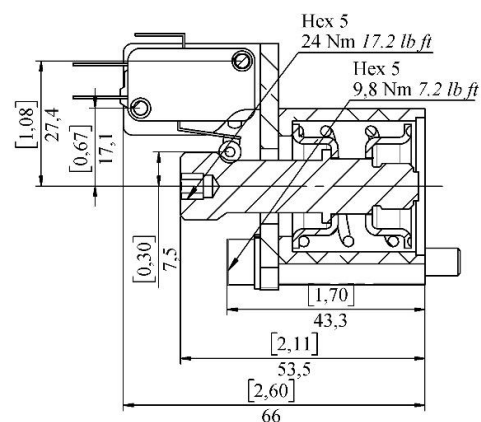
For double acting spool A

### Kit 1E for single acting spool B



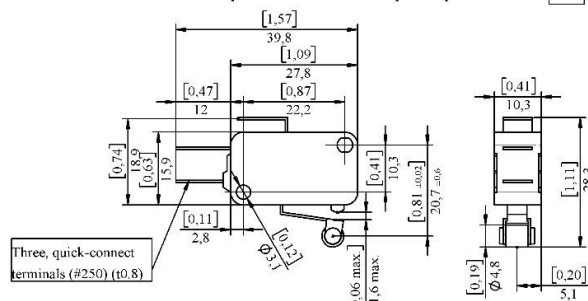
For single acting spool B

### Kit 1E for single acting spool C



For single acting spool C

Microswitch specification for spool positioner 1E

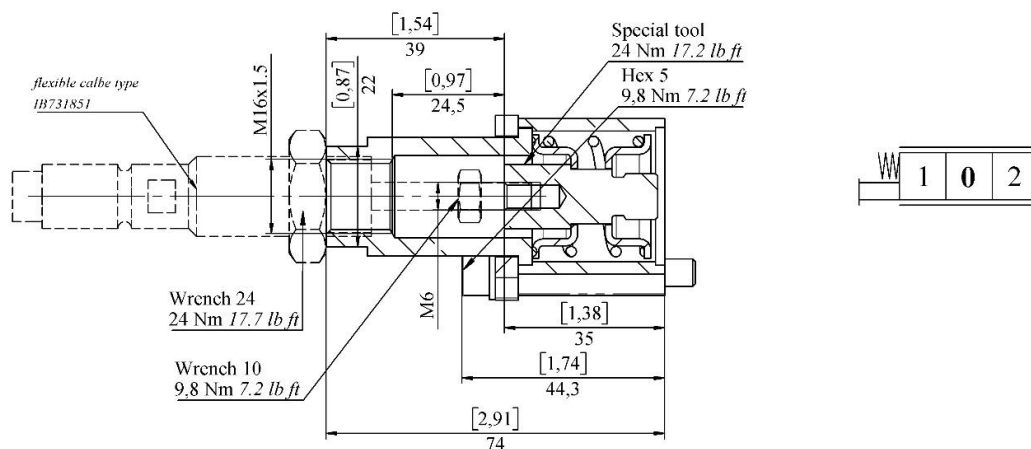


Omron code - V-165-1C5

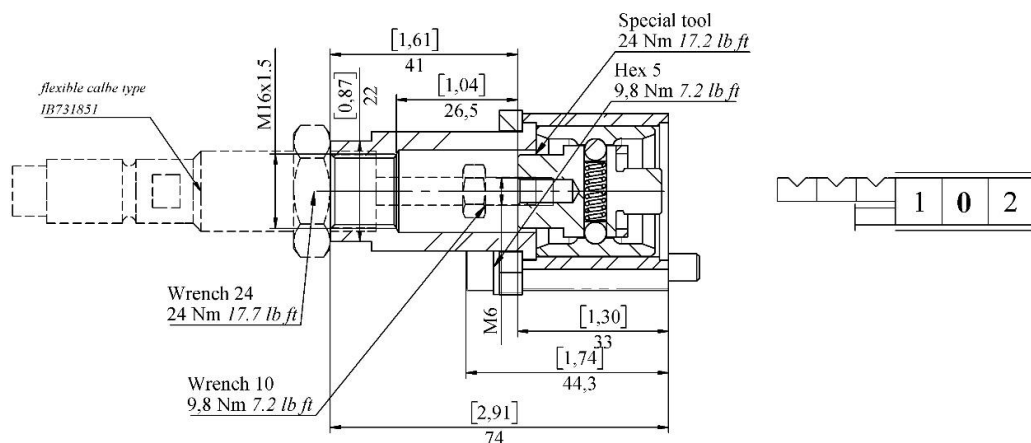
Needs a special bracket to be assembled with spool positioners

## Spool positioner for flexible cable connection (side B)

### Kit 1V2



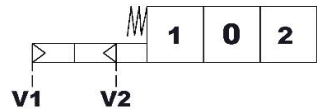
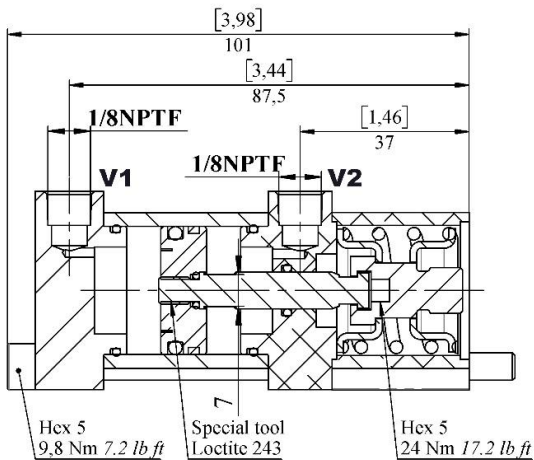
### Kit 8V2



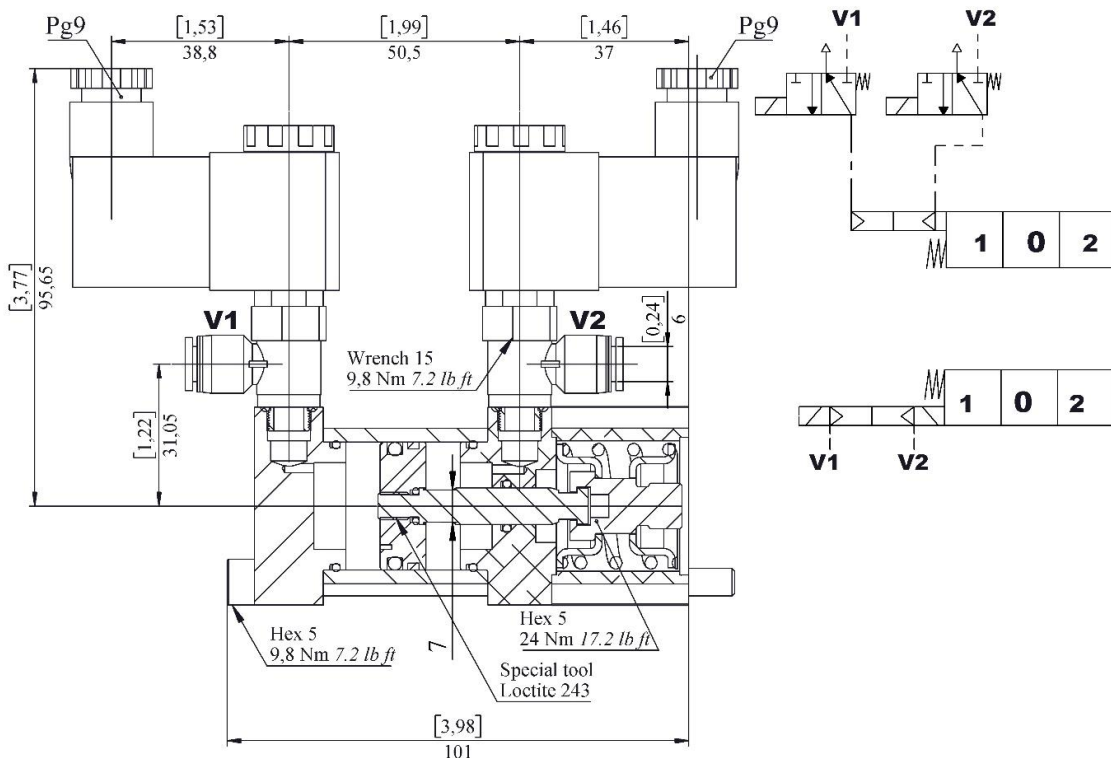
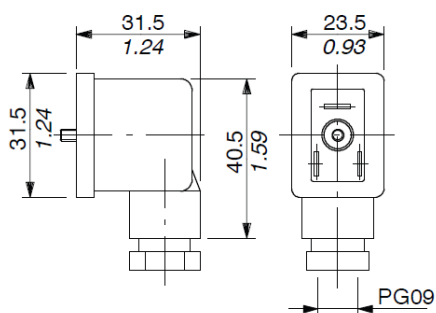
More information regarding controls, cable lengths, and ordering codes see page for flexible cable control V1 (Side A)

**ON/OFF Pneumatic kit - 1P**

*With spring return to neutral position*



| Operating features |      |                  |  |
|--------------------|------|------------------|--|
| Pilot pressure     | min  | 5,5 bar / 73 psi |  |
|                    | max. | 10 bar / 145 psi |  |

**ON/OFF Electro pneumatic kit – 1EP***With spring return to neutral position***Connector specifications:****Operating features**

|                |      |                  |
|----------------|------|------------------|
| Pilot pressure | min  | 5,5 bar / 73 psi |
|                | max. | 10 bar / 145 psi |

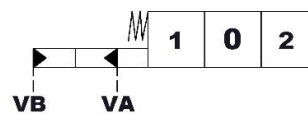
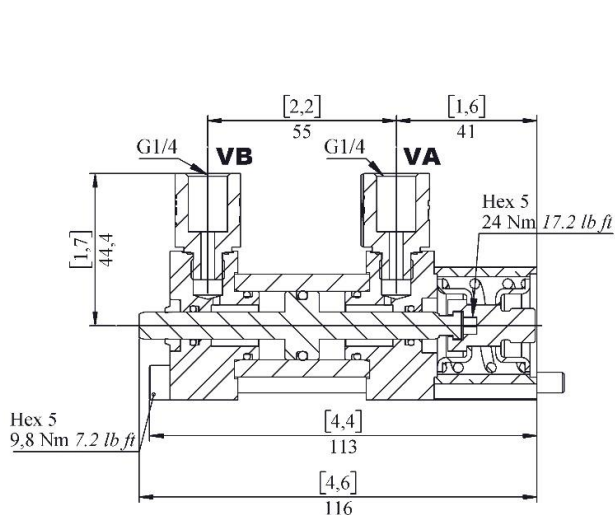
**COIL specifications**

|                           |                |
|---------------------------|----------------|
| Nominal voltage tolerance | ±10 %          |
| Power rating              | 4,8 W          |
| Nominal current           | 0,4 A - 12 VDC |
|                           | 0,2 A - 24 VDC |
| Coil insulation           | Class F        |
| Weather protection        | IP65           |
| Duty cycle                | 100%           |

*Connector is always included in 1EP control*

## **Proportional hydraulic, single side kit - H**

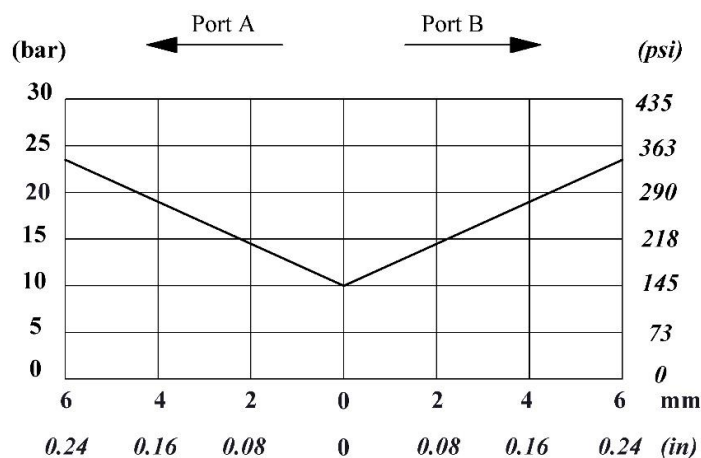
*With spring return to neutral position*

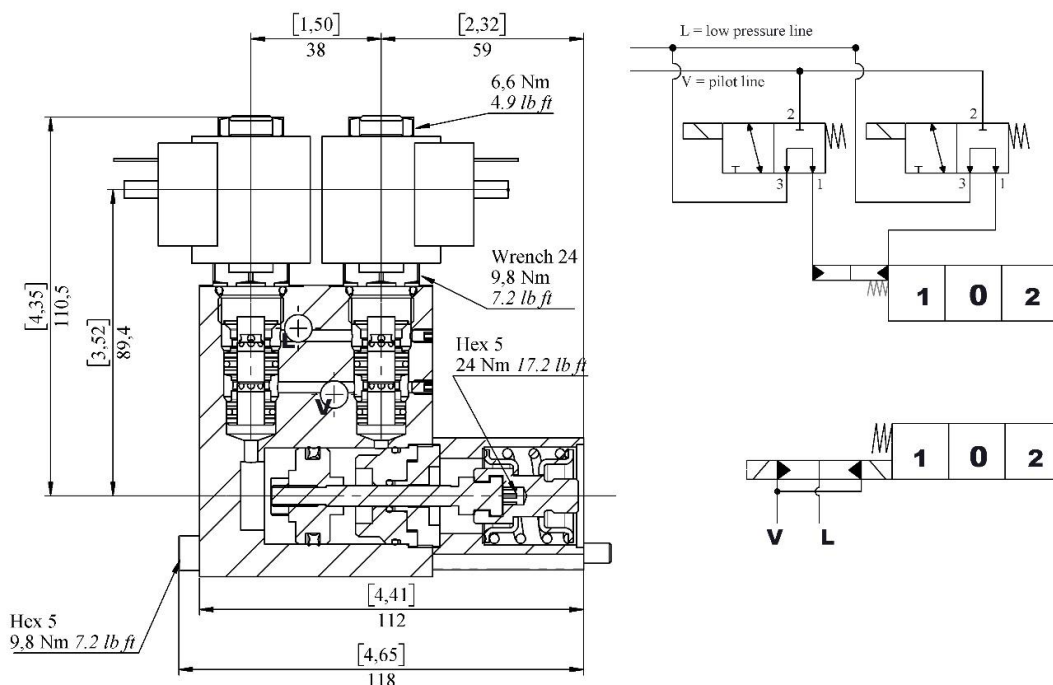


### **Operating features**

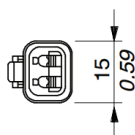
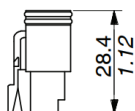
**Pilot pressure** max. 50 bar / 725 psi

### **Pilot pressure - stroke diagram**

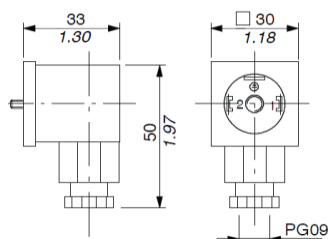


**ON/OFF electro-hydraulic kit - 1ED3***With spring return to neutral position***Connector specifications**

**2 poles, type Deutsch DT06-2S**  
**Male housing with female ends**

**Connector specifications**

**2P+T according to**  
**ISO 4400 / EN175301-803**

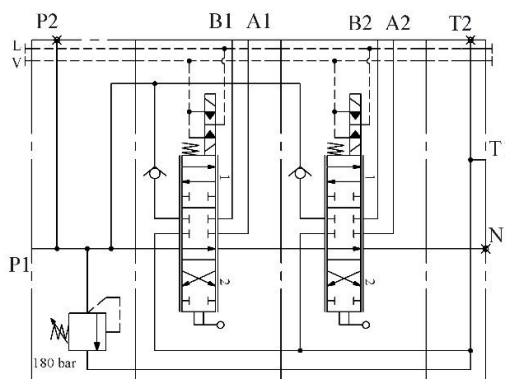
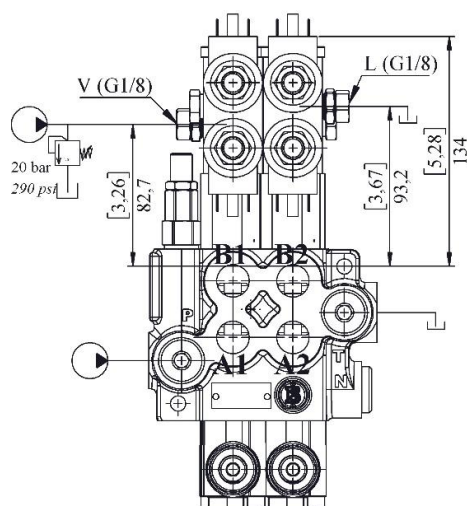
**Operating features**

|                          |      |                  |
|--------------------------|------|------------------|
| Pilot pressure           | min  | 10 bar / 145 psi |
|                          | max. | 50 bar / 725 psi |
| Back pressure on drain L | max. | 25 bar / 360 psi |

**COIL specifications**

|                           |                 |
|---------------------------|-----------------|
| Nominal voltage tolerance | ±10 %           |
| Power rating              | 21 W            |
| Nominal current           | 1,75 A - 12 VDC |
|                           | 0,87 A - 24 VDC |
| Coil insulation           | Class F         |
| Weather protection        | IP65            |
| Duty cycle                | 100%            |

## ON/OFF electro-hydraulic kit - 1ED3 with external drain

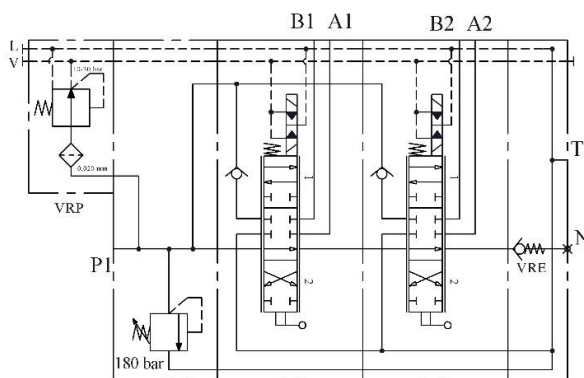
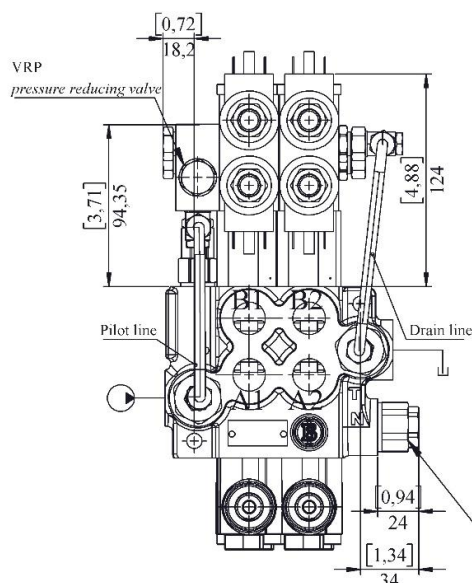


Description example:

2Z50/1/2x(A1ED3KZ1)-12V-G

## ON/OFF electro-hydraulic kit - 1ED3 with pilot and drain lines

*Kit consists of pressure reducing valve, VRP, back pressure valve VRE and pipes*

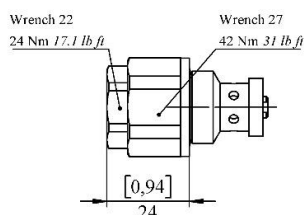


Description example:

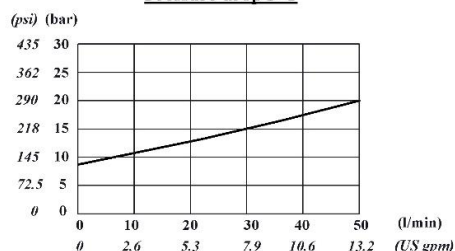
2Z50/1/VRP/2x(A1ED3KZ1)-VRE-12V-G

## Back pressure valve (VRE) specifications

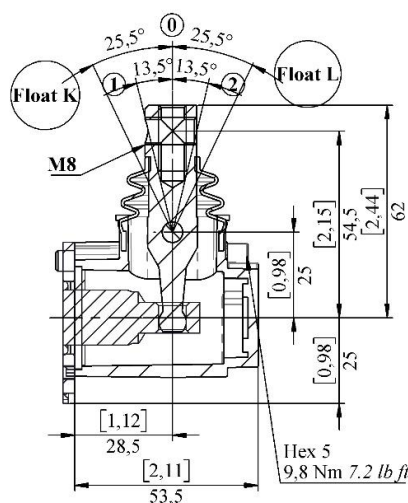
*Valve is assembled on the bypass flow port N to provide pilot pressure to the actuator*



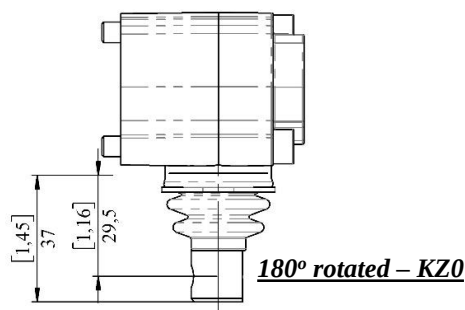
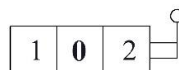
Pressure drop P-T



## Lever control (Side A) – aluminum cap, with protection booth lever pivot box



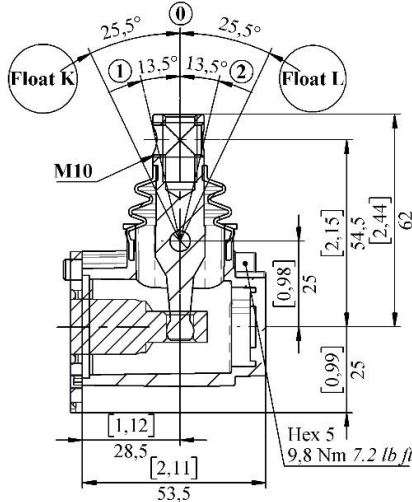
**Type KZ  
& KZe**



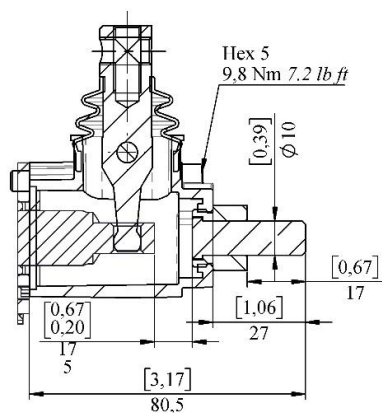
**180° rotated – KZ0**

Float L & K only available in certain configuration refer to pages – 19 & 20

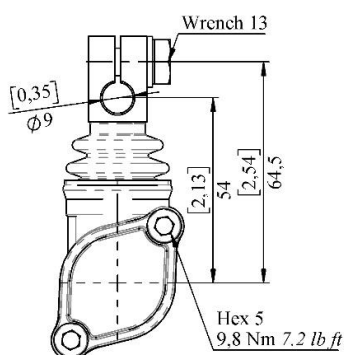
**Type KZ(M10)  
& KZe(M10)**



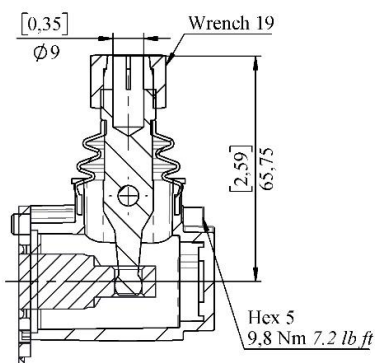
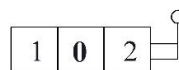
**Kit KZT**



**Type KI**



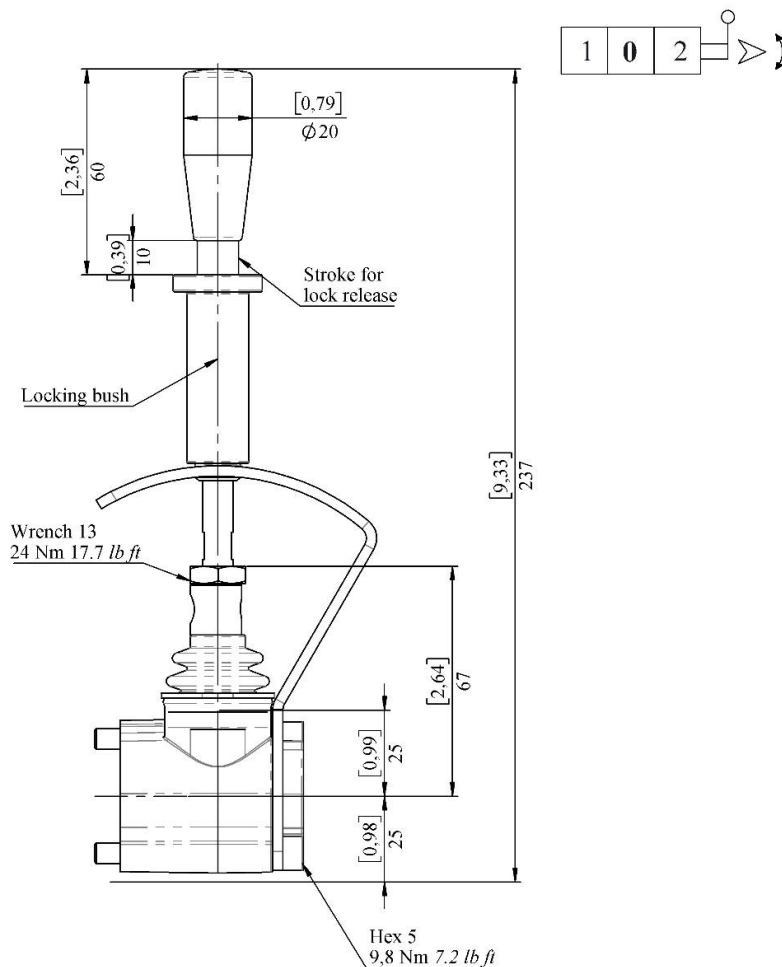
**Type KY**



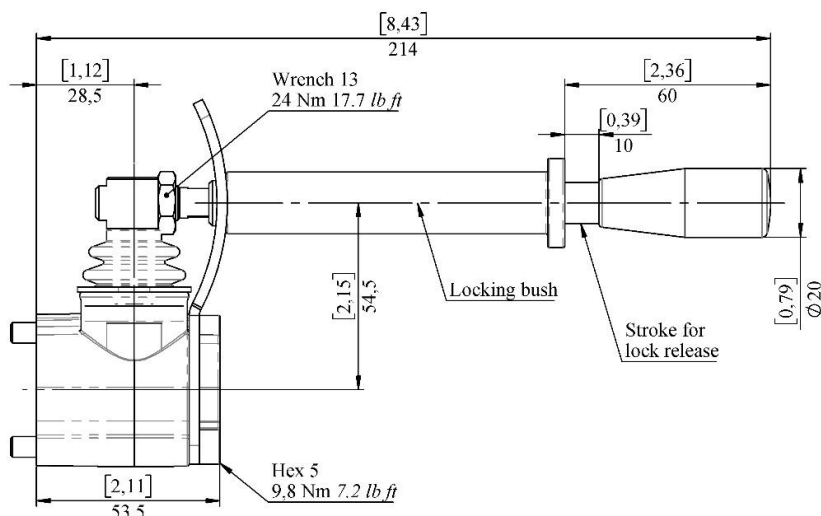
### Special lever controls (side A)

Safety levers with lock in neutral complete with hand lever; lift hand lever knob to operate.

#### Type KZV

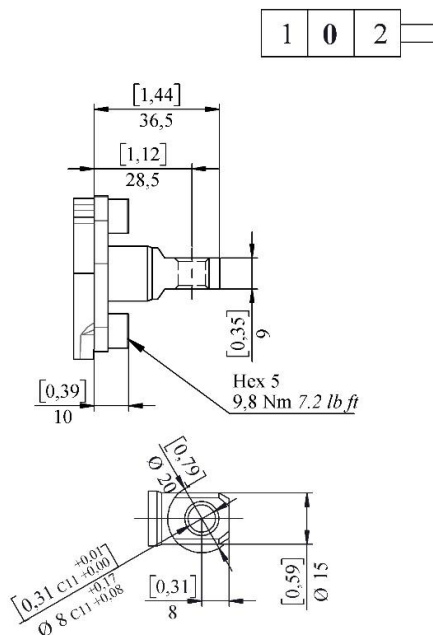
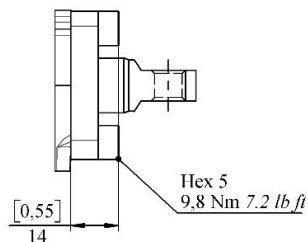


#### Type KZH



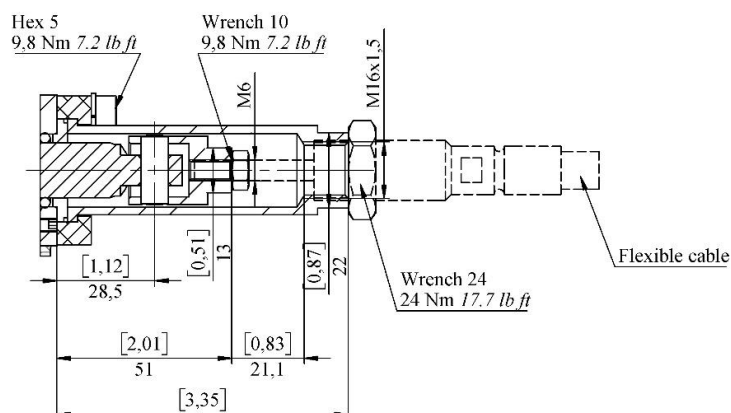
**Other control arrangements (side A)**

If in the order code side A is left blank, omit control type will be supplied:

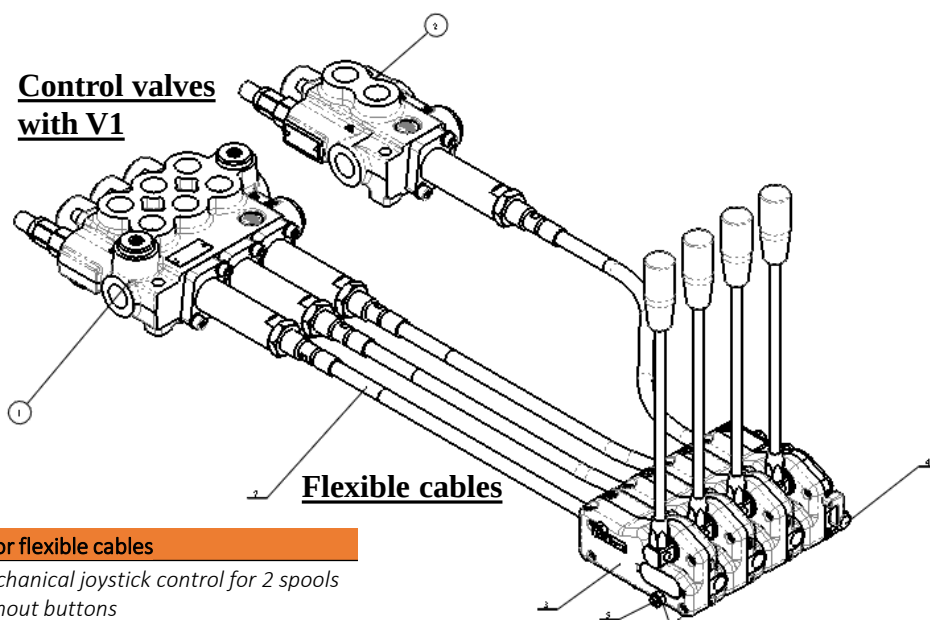
**Type SLP**

Mechanical control with dust-proof plate

## Cable remote control – V1



### Control valves with V1



### Flexible cables

#### Controls for flexible cables

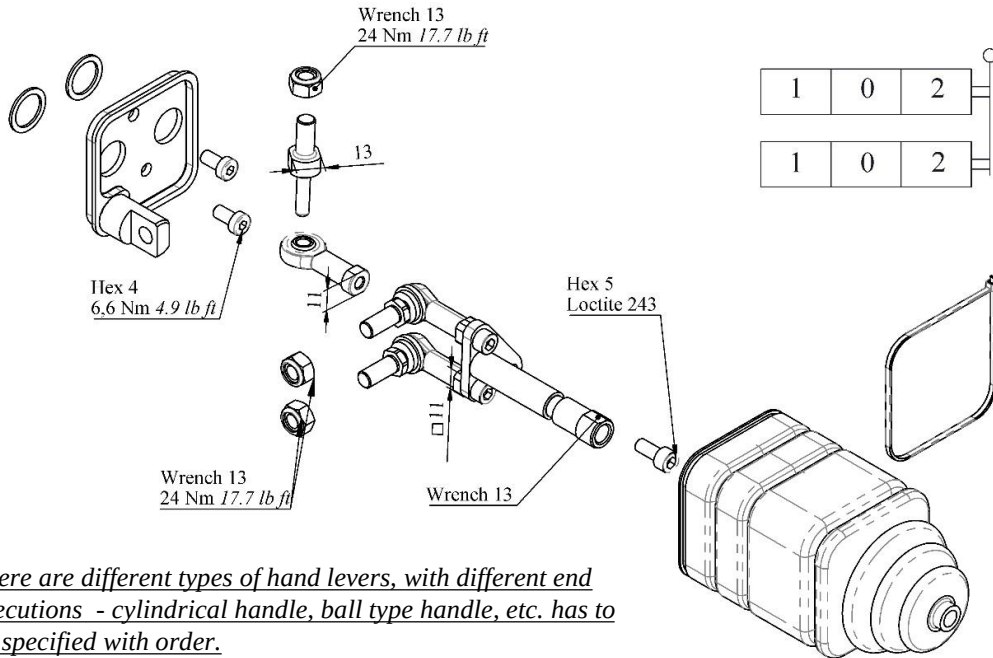
|         |                                                          |
|---------|----------------------------------------------------------|
| 3335    | Mechanical joystick control for 2 spools without buttons |
| 3375    | Mechanical joystick control for 2 spools with 1 button   |
| 6008    | Mechanical joystick control for 2 spools with 2 buttons  |
| IS 3047 | Single lever control                                     |
| IS 3076 | Single lever control with antireverse lock               |

#### Flexible cable options code + length

|           |        |
|-----------|--------|
| IT-731133 | 1.00 m |
| IT-731134 | 1.50 m |
| IT-731135 | 2.00 m |
| IT-731136 | 2.50 m |
| IT-731137 | 3.00 m |
| IT-731138 | 3.50 m |
| IT-731139 | 4.00 m |

### Remote controls

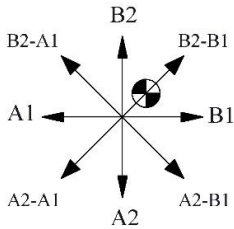
## Mechanical joystick for two section control



*There are different types of hand levers, with different end executions - cylindrical handle, ball type handle, etc. has to be specified with order.*

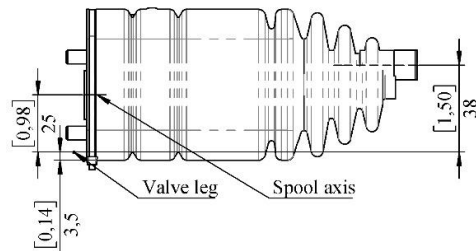
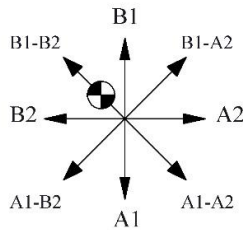
### Type j+1

*Pivot is above right*



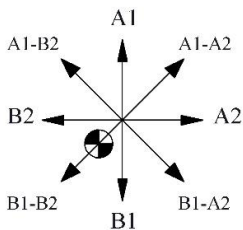
### Type j+2

*Pivot is above left*



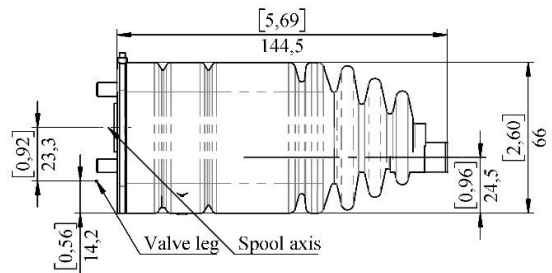
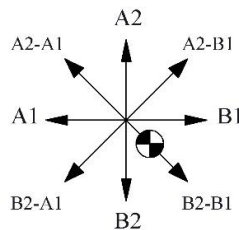
### Type j+3

*Pivot is bottom left*

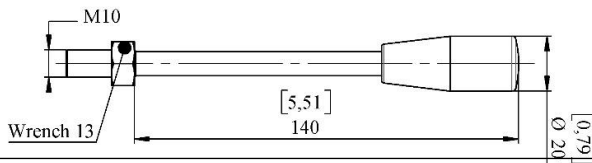


### Type j+4

*Pivot is bottom right*



## Standard hand lever dimensions



Example order code with standard lever:

02Z50/(A1A1)(ju+3)-G

alternative (same as)

02Z50/(2xA1)(ju+3)-G

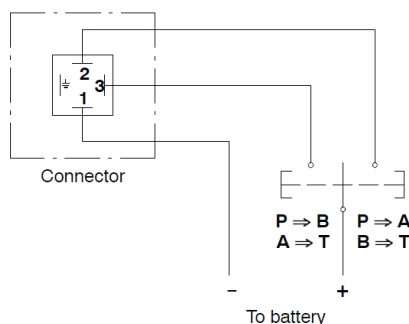
## Complete control – double acting ON/OFF solenoid control

### Complete control – 1ESDK1

Direct control by double acting solenoid with spring return to neutral position, available for 1 to 8 spools, including 2, 3, and 4 spool valve bodies with individual check valves (both parallel and tandem version).



#### Electric wiring example



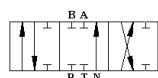
#### Operating features

Internal leakage (min.) A(B) to T min. 15 cm<sup>3</sup>/min  
 $\Delta p = 100 \text{ bar (1450 psi)}$  fluid and valve at 40 °C (104 °F) 0.91 in<sup>3</sup>/min

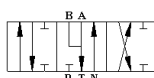
#### COIL specifications

|                           |         |
|---------------------------|---------|
| Nominal voltage tolerance | ±10 %   |
| Power rating              | 53 W    |
| Coil insulation           | Class H |
| Duty cycle                | 100%    |

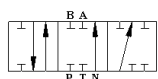
#### Available spool options



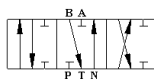
**A(1ESD)**



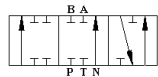
**D(1ESD)**



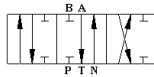
**B(1ESD)**



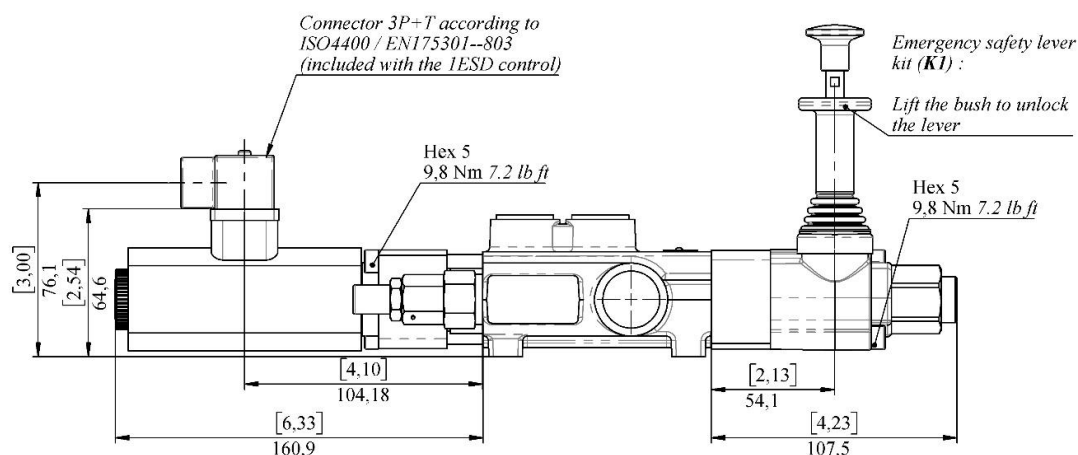
**E(1ESD)**



**C(1ESD)**



**F(1ESD)**

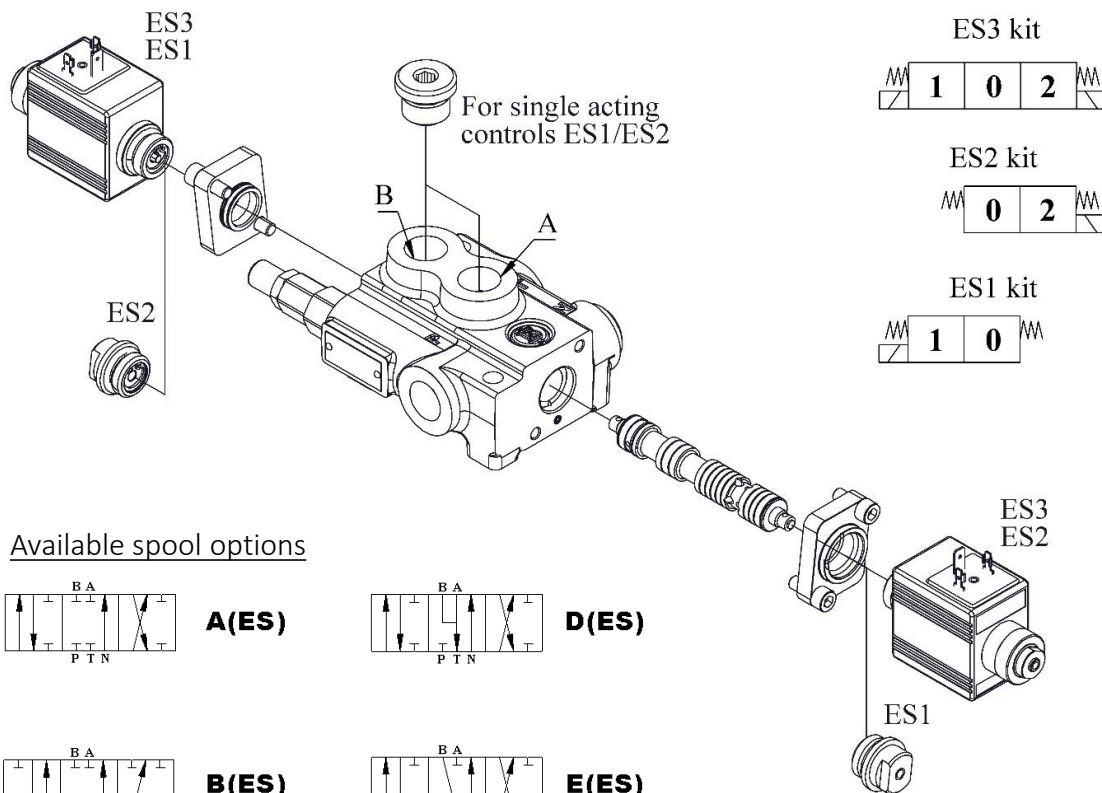


Example order code: Z50(140)/A1ESDK1-24V-G12

### Complete control – single acting ON/OFF solenoid control

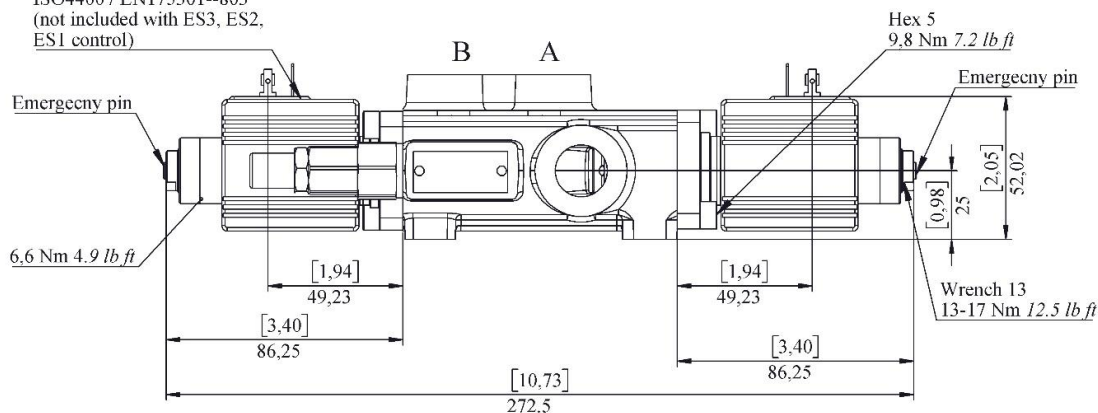
#### Complete control – ES3 / ES2 / ES1

Direct control by two single acting solenoid with spring return to neutral position (ES3) or one single acting solenoid (ES1 or 2); available for 1 to 8 spools, including 2, 3, and 3 spool valve bodies with individual check valves (both parallel and tandem version).



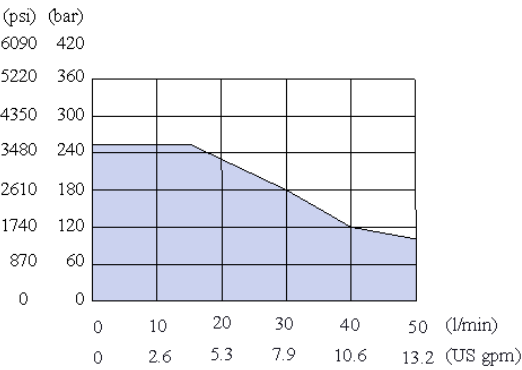
Connector 2P+T according to ISO4400 / EN175301--803 (not included with ES3, ES2, ES1 control)

Example order code: Z50/AES3-12V-G12



**Complete control – single acting ON/OFF solenoid control**

Operating conditions

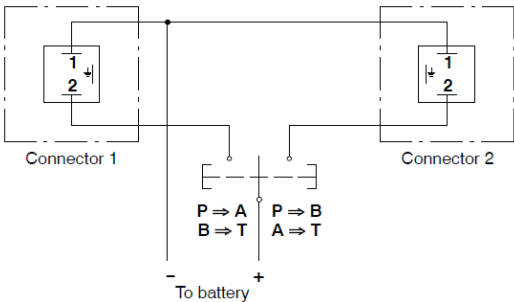


Operating features

Internal leakage (min.) A(B) to T  
 $\Delta p = 100 \text{ bar (1450 psi)}$  fluid and valve at 40 oC (104 oF)  
 min. 15 cm<sup>3</sup>/min  
 0.91 in<sup>3</sup>/min

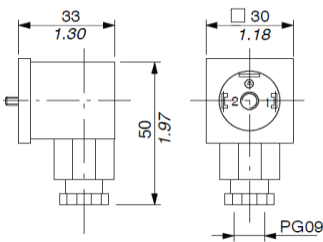
|                           |                                |
|---------------------------|--------------------------------|
| COIL specifications       |                                |
| Nominal voltage tolerance | ±10 %                          |
| Power rating              | 36 W                           |
| Current                   | 3 A - 12 VDC<br>1,5 A - 24 VDC |
| Weather protection        | IP65                           |
| Coil insulation           | Class H                        |
| Duty cycle                | 100%                           |

Electric wiring example

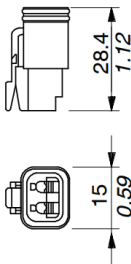


Connector specifications per type of coils available

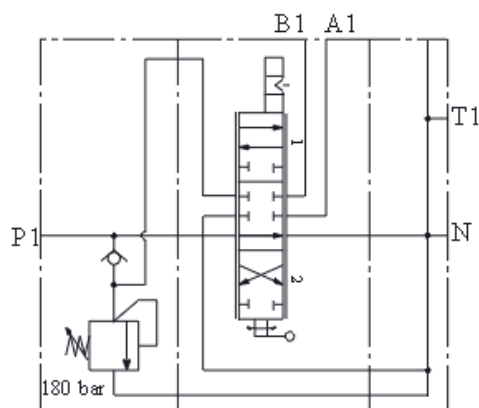
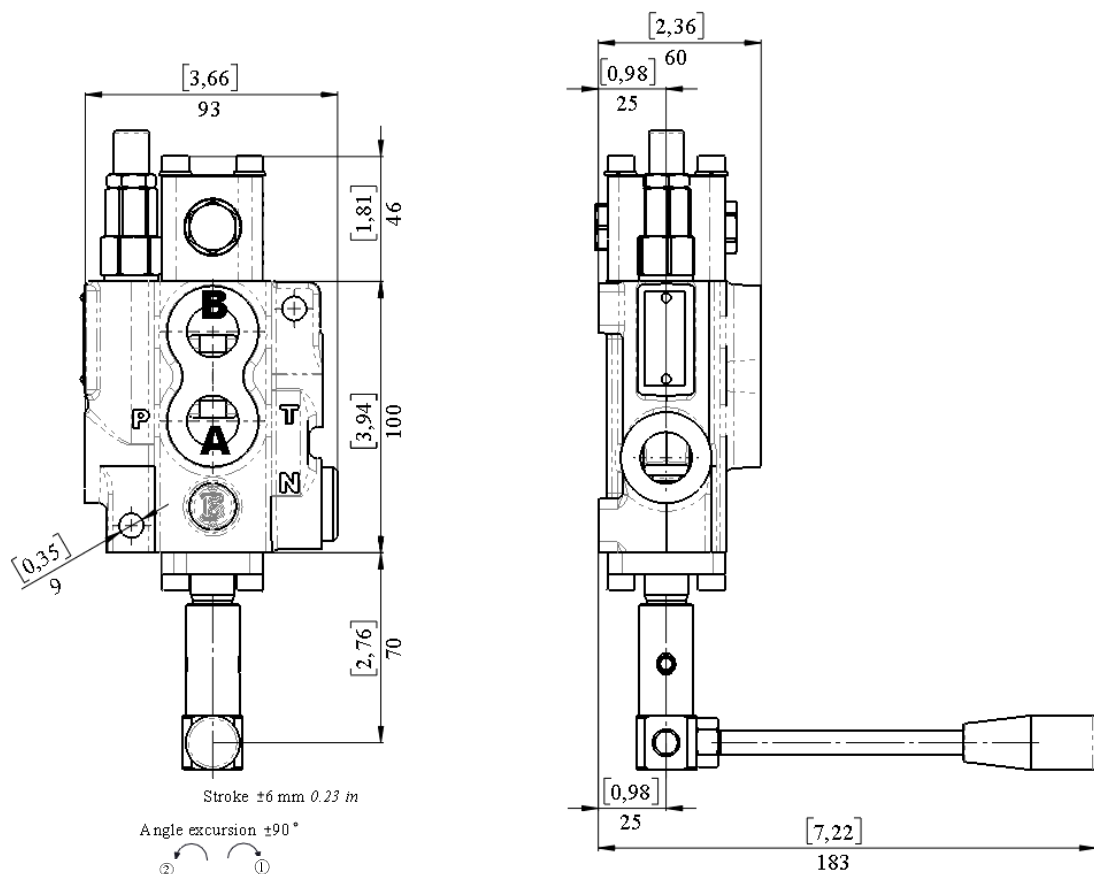
**2P+T according to  
ISO 4400 / EN175301-803**



**Connector specifications  
2 poles, type Deutsch DT06-2S  
Male housing with female ends**



### Complete control – Rotary control A26



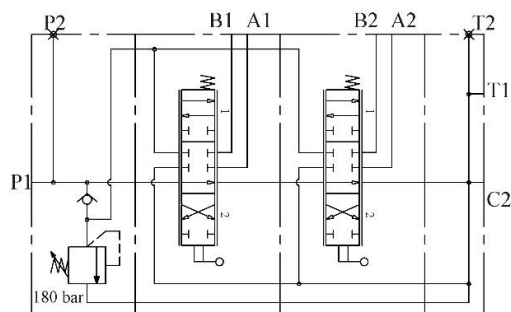
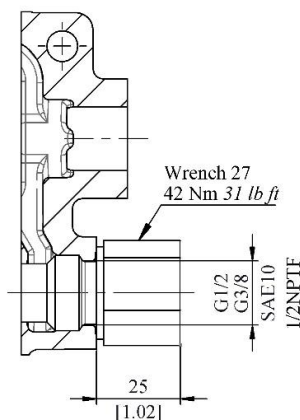
Example order code: Z50/AmL26-G

### Outlet port options

*It is possible to have open centre, closed centre and high pressure carry-over (power beyond)*

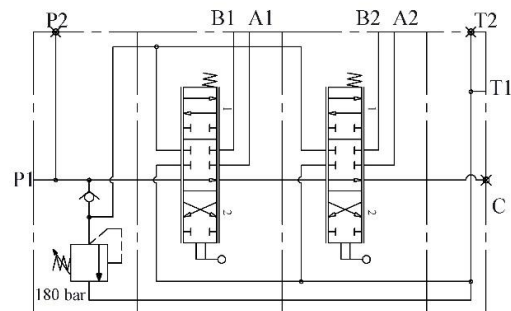
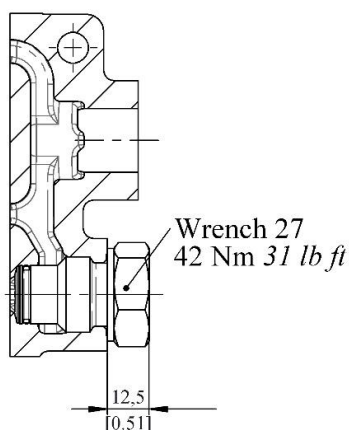
*If in the order code before the thread specification port N is plugged with standard G1/2 plug*

### C2 - with carry-over (high pressure carry over)



Example order code 02Z50/2x(A1KZ1)-C2-G

### C – closed center



Example order code: 02Z50/2x(A1KZ1)-C-G

**C2D - Direct high pressure carry-over**

