



## Q80

### Sectional directional control valve

- Available with parallel, tandem or series circuit
- Optional carry over port
- A wide range of antishock + anticavitation port valves
- Intermediate sections for several types of circuit
- Manual, pneumatic, electropneumatic, hydraulic, direct solenoid and electrohydraulic on-off controls

#### Working conditions

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

|                                            |                          |                                                        |
|--------------------------------------------|--------------------------|--------------------------------------------------------|
| Nominal flow rating                        |                          | 80 l/min - (21.1 Us gpm)                               |
| Max. pressure                              |                          | 300 bar (4350 psi)                                     |
| Max. back pressure on outlet <b>T</b> port |                          | 25 bar (360 psi)                                       |
| Number sections                            |                          | from 1 to 10                                           |
| Internal leakage A(B)⇒T                    | Δp = 100 bar (1450 psi)  | 6 cm <sup>3</sup> /min (0.36 in <sup>3</sup> /min)     |
| Fluid                                      |                          | Mineral oil                                            |
| Fluid temperature                          | with NBR (BUNA-N) seals  | from -30°C to 80°C - from -22 °F to 176 °F             |
| Viscosity                                  | operating range          | from 10 to 400 mm <sup>2</sup> /s - from 10 to 400 cSt |
| Max. contamination level                   |                          | 16/14/12 - ISO 4406 - NAS1638 class 6                  |
| Ambient temperature                        | without electric devices | from -40°C to 60°C - from 40 °F to 140 °F              |
|                                            | with electric devices    | from -20°C to 50°C - from -4 °F to 122 °F              |

NOTE - For different conditions please contact our Sales Department.

#### REFERENCE STANDARD

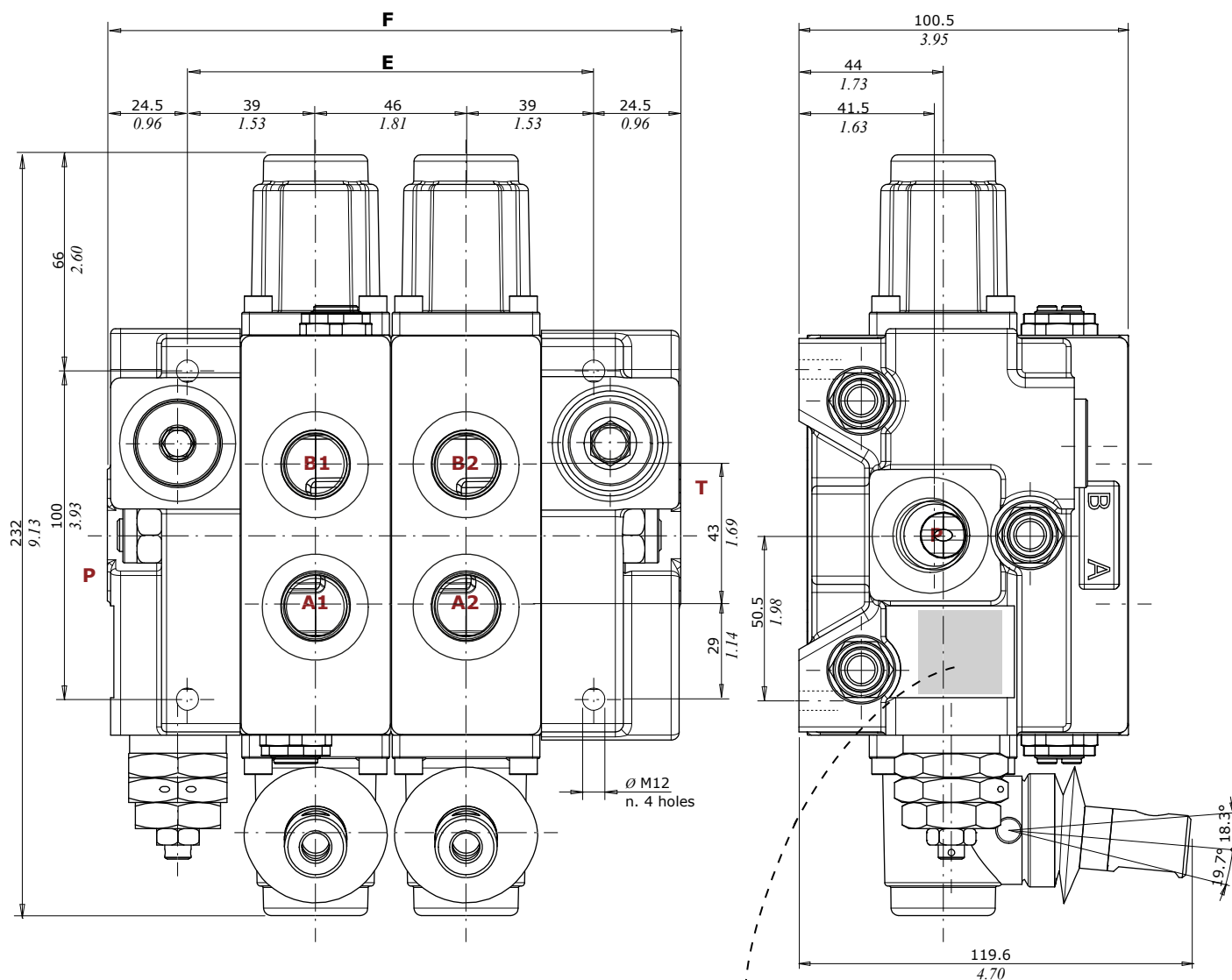
|                               |     | BSP                 | UN-UNF            |
|-------------------------------|-----|---------------------|-------------------|
| THREAD ACCORDING TO           |     | ISO 228/1           | ISO 263           |
|                               |     | BS 2779             | ANSI B1.1 unified |
| CAVITY DIMENSION ACCORDING TO | ISO | 1179                | 11926             |
|                               | SAE |                     | J11926            |
|                               | DIN | 3852-2 shape X or Y |                   |

#### PORT THREADING

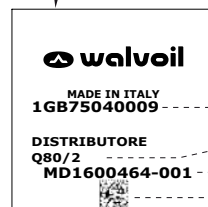
| PORTS                                     | BSP (standard) | BSP (G 3/4) | UN-UNF             |
|-------------------------------------------|----------------|-------------|--------------------|
| <b>P</b> Inlet                            | G 1/2          | G 3/4       | 7/8-14 (SAE 10)    |
| <b>P1</b> Inlet                           | G 1/2          | G 3/4       | 7/8-14 (SAE 10)    |
| <b>A</b> and <b>B</b> ports               | G 1/2          | G 3/4       | 3/4-16 (SAE 8)     |
| <b>T</b> Outlet                           | G 3/4          | G 3/4       | 1" 1/16-12 (SAE12) |
| <b>T1</b> Outlet                          | G 3/4          | G 3/4       | 7/8-14 (SAE 10)    |
| <b>Lc</b> port (Carry-over plug - T port) | G 1/2-G 3/4    | G 3/4       | 7/8-14 (SAE 10)    |
| Hydraulic controls                        | G 1/4          | G 3/4       | 9/16-18 (SAE 6)    |
| Pneumatic controls                        | NPTF 1/8-27    | NPTF 1/8-27 | NPTF 1/8-27        |

### Dimensional data

#### Standard configuration\*



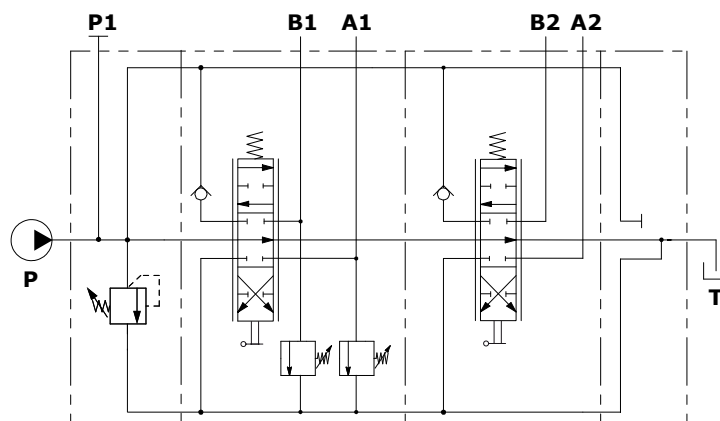
| Type   | E   |       | F   |       |
|--------|-----|-------|-----|-------|
|        | mm  | in    | mm  | in    |
| Q80/1  | 78  | 3.07  | 127 | 5     |
| Q80/2  | 124 | 4.88  | 173 | 6.81  |
| Q80/3  | 170 | 6.69  | 219 | 8.62  |
| Q80/4  | 216 | 8.50  | 265 | 10.43 |
| Q80/5  | 262 | 10.31 | 311 | 12.24 |
| Q80/6  | 308 | 12.12 | 357 | 14.05 |
| Q80/7  | 354 | 13.93 | 403 | 15.86 |
| Q80/8  | 400 | 15.74 | 449 | 17.67 |
| Q80/9  | 446 | 17.56 | 495 | 19.48 |
| Q80/10 | 492 | 19.37 | 541 | 21.3  |



Product code  
Code description  
Product allotment  
Datamatrix with product allotment

NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.  
(\*): For other configurations, see page 203

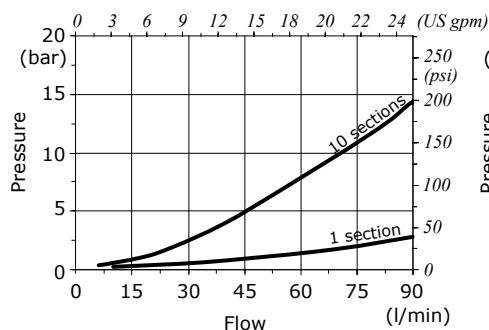
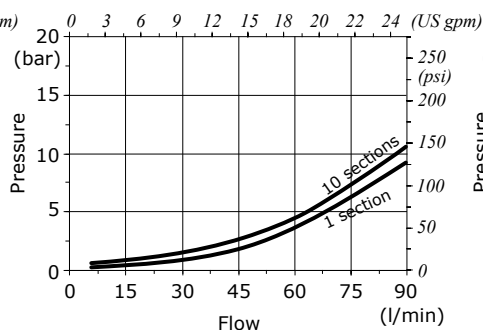
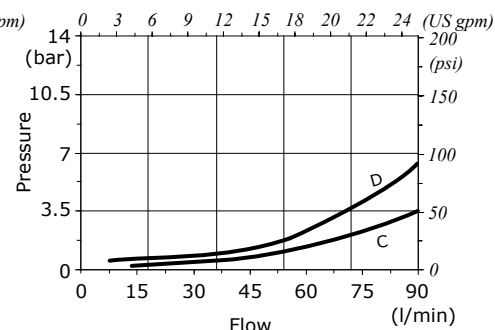
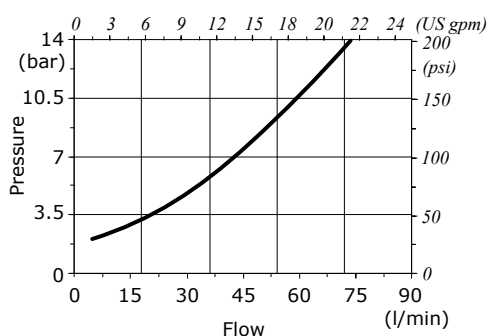
## Hydraulic circuit



Description example (parallel circuit):

Q80/2/F7S(N150)/103-A1-M1.V32(N105\N105)/103-A1-M1/F3D

## Performance data

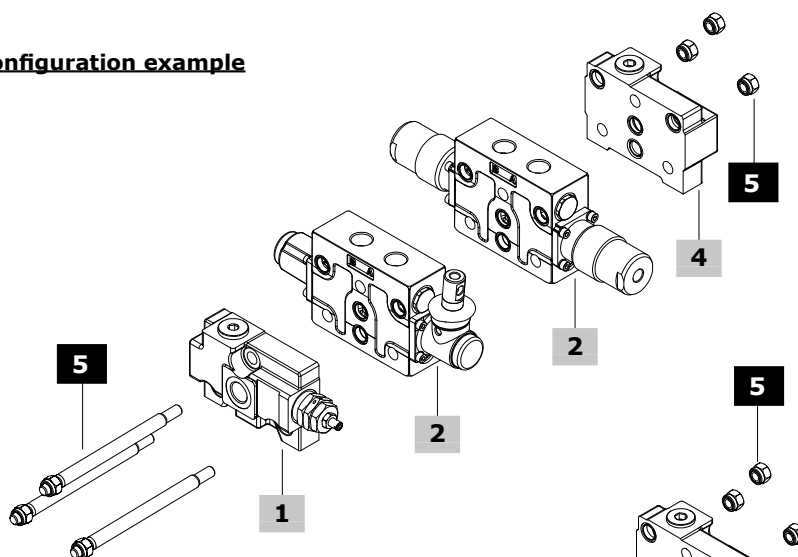
**P⇒T pressure drops****P⇒A(B) pressure drops****A(B)⇒T pressure drops****A1(B1)⇒A2(B2) pressure drops  
(with series circuit)****Legenda**

C= 10<sup>th</sup> section  
D= 1<sup>st</sup> section

### Complete section ordering codes

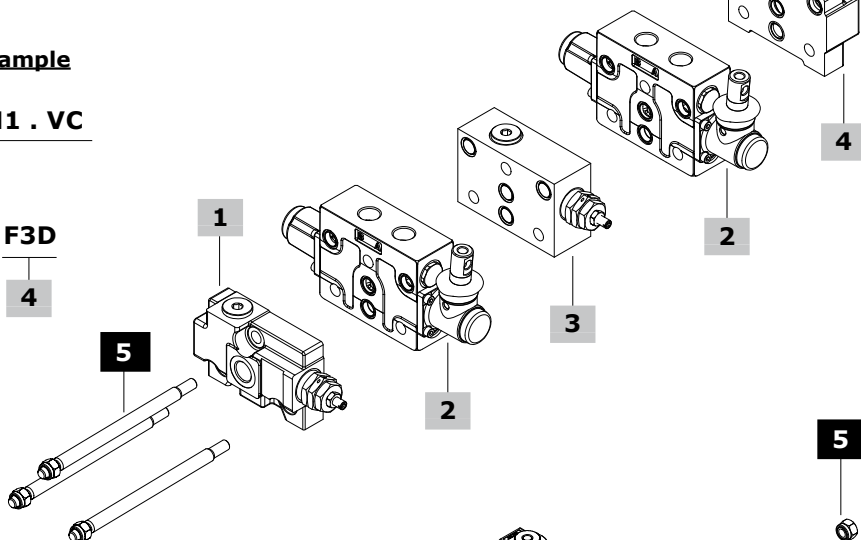
#### Valve with mechanical and hydraulic controls configuration example

valve setting (bar)  
**Q80 / 2 / F7S(N150) / 103 - A1 - M1 . VC**  
 N. of section **1** **2**  
**/ 103 - H1 . VC / F3D**  
**2** **4**



#### Valve with intermediate section and mechanical control configuration example

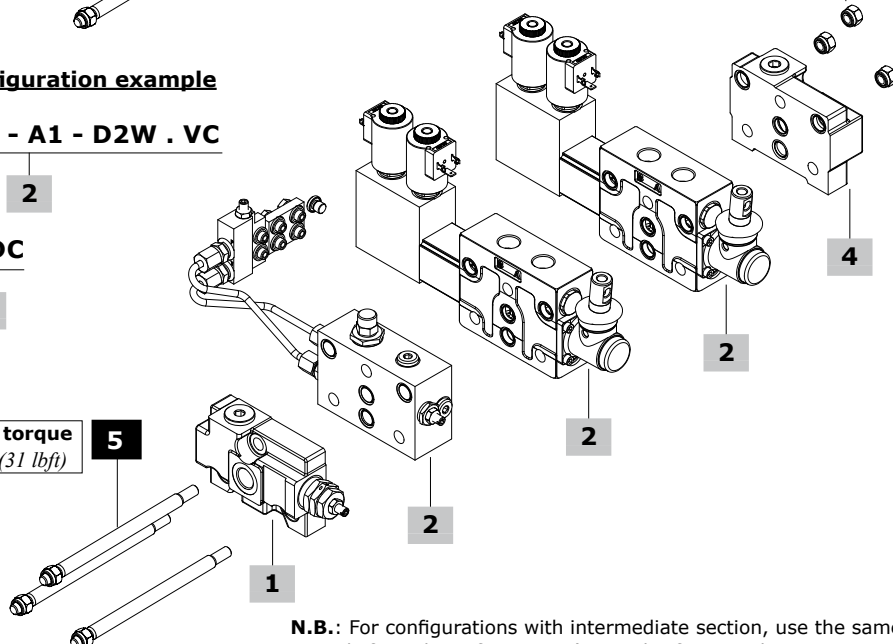
**Q80 / 2 / F7S(N150) / 103 - A1 - M1 . VC**  
 valve setting (bar) **1** **2**  
**/ E50(N150) / 103 - A1 - M1 . VC / F3D**  
**3** **2** **4**



#### Valve with electrohydraulic control configuration example

**Q80 / 2 / F7S(N150) / KE2R / 103 - A1 - D2W . VC**  
**1** **2**  
**/ 103 - A1 - D2W . VC / F3D - 12VDC**  
**2** **4** **2**

**Tie rod tightening torque**  
 wrench 17 - 42 Nm (31 lbf ft)



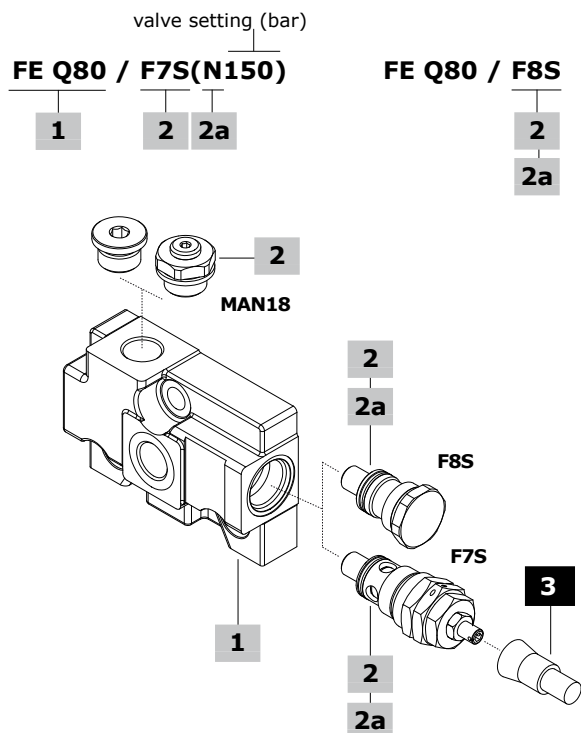
**N.B.:** For configurations with intermediate section, use the same tie rods for std. configuration (example: for 2 working sections + 1 intermediate section, use tie rods for 3 working sections)

## Complete section ordering codes

| 1                                                                                                                                                                                                                                   | Inlet section*        | page 174                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------|
| TYPE: <b>FE-Q80/F7S(N150)</b>                                                                                                                                                                                                       | CODE: 08000F7S/D-N    |                                                                                                              |
| DESCRIPTION: Side inlet open, upper inlet plugged, with pressure relief valve, setting range 101-200 bar (1460-2900 psi)                                                                                                            |                       |                                                                                                              |
| TYPE: <b>FE-Q80/F8S</b>                                                                                                                                                                                                             | CODE: 08003F8S/D      |                                                                                                              |
| DESCRIPTION: As previous one, without valves (pressure relief valve plugged port)                                                                                                                                                   |                       |                                                                                                              |
| 2                                                                                                                                                                                                                                   | Working section*      | page 176                                                                                                     |
| <b>With mechanical controls</b>                                                                                                                                                                                                     |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-A1-M1.VC</b>                                                                                                                                                                                                    | CODE: SGL800007       |                                                                                                              |
| DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, lever control and spring return to neutral position                                                                           |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-A1-M1</b>                                                                                                                                                                                                       | CODE: 080000103001000 |                                                                                                              |
| DESCRIPTION: As previous one, without valve arrangement                                                                                                                                                                             |                       |                                                                                                              |
| <b>With proportional hydraulic controls</b>                                                                                                                                                                                         |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-H1.VC</b>                                                                                                                                                                                                       | CODE: SGL800008       |                                                                                                              |
| DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, high pressure hydraulic controls, spring return to neutral position                                                           |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-H1</b>                                                                                                                                                                                                          | CODE: SGL800009       |                                                                                                              |
| DESCRIPTION: As previous one, without valve arrangement                                                                                                                                                                             |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-H5.VC</b>                                                                                                                                                                                                       | CODE: SGL800011       |                                                                                                              |
| DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, low pressure hydraulic controls, spring return to neutral position                                                            |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-H5</b>                                                                                                                                                                                                          | CODE: SGL800012       |                                                                                                              |
| DESCRIPTION: As previous one, without valve arrangement                                                                                                                                                                             |                       |                                                                                                              |
| <b>With electric solenoid controls - one side type</b>                                                                                                                                                                              |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-A1-D41.VC-12VDC</b>                                                                                                                                                                                             | CODE: SGL800010       |                                                                                                              |
| DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, 12VDC electric direct ON/OFF control with lever                                                                               |                       |                                                                                                              |
| TYPE: <b>EL-Q80/103-A1-D41-12VDC</b>                                                                                                                                                                                                | CODE: SGL800013       |                                                                                                              |
| DESCRIPTION: As previous one, without valve arrangement                                                                                                                                                                             |                       |                                                                                                              |
| <b>With electrohydraulic ON/OFF controls - one side type</b>                                                                                                                                                                        |                       |                                                                                                              |
| TYPE: <b>EL-Q80/KE1S/103-A1-D2W.VC-12VDC</b>                                                                                                                                                                                        | CODE: SGL800014       |                                                                                                              |
| DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, 12VDC one-side electrohydraulic ON/OFF control, internal pilot and drain, lever control and spring return to neutral position |                       |                                                                                                              |
| TYPE: <b>EL-Q80/KE1S/103-A1-D2W-12VDC</b>                                                                                                                                                                                           | CODE: SGL800015       |                                                                                                              |
| DESCRIPTION: As previous one, without valve arrangement                                                                                                                                                                             |                       |                                                                                                              |
| 3                                                                                                                                                                                                                                   | Intermediate section* | page 203                                                                                                     |
| TYPE                                                                                                                                                                                                                                | CODE                  | DESCRIPTION                                                                                                  |
| <b>E50</b>                                                                                                                                                                                                                          | 08850E50-B            | With pressure relief valve setting range 10-100 bar (145-1450 psi)                                           |
|                                                                                                                                                                                                                                     | 08850E50-N            | As previous one, setting range 101-200 bar (1460-2900 psi)                                                   |
|                                                                                                                                                                                                                                     | 08850E50-R            | As previous one, setting range 201-380 bar (2910-5500 psi)                                                   |
| <b>E53</b>                                                                                                                                                                                                                          | 08854E53-B            | With pressure relief valve setting range 10-100 bar (145-1450 psi) and P2 port open for 2 <sup>nd</sup> pump |
|                                                                                                                                                                                                                                     | 08854E53-N            | As previous one, setting range 101-200 bar (1460-2900 psi)                                                   |
|                                                                                                                                                                                                                                     | 08854E53-R            | As previous one, setting range 201-380 bar (2910-5500 psi)                                                   |
| <b>E51</b>                                                                                                                                                                                                                          | 08853E51              | Intermediate outlet section, T2 port open                                                                    |
| <b>E61</b>                                                                                                                                                                                                                          | 08877E61              | Intermediate spacer section                                                                                  |
| 4                                                                                                                                                                                                                                   | Outlet section*       | page 205                                                                                                     |
| TYPE: <b>FS-Q80-F3D</b>                                                                                                                                                                                                             | CODE: 08012F3D        |                                                                                                              |
| DESCRIPTION: T port open, T1 port plugged. For open center circuit                                                                                                                                                                  |                       |                                                                                                              |
| TYPE: <b>FS-Q80-F16D</b>                                                                                                                                                                                                            | CODE: 08016F16D       |                                                                                                              |
| DESCRIPTION: T port open, T1 port plugged. For closed center circuit                                                                                                                                                                |                       |                                                                                                              |
| TYPE: <b>FS-Q80-F6D</b>                                                                                                                                                                                                             | CODE: 08014F6D        |                                                                                                              |
| DESCRIPTION: Lc port and T1 port open. With joint for carry-over (HPCO) circuit                                                                                                                                                     |                       |                                                                                                              |
| 5                                                                                                                                                                                                                                   | Tie rod kit           |                                                                                                              |
| CODE                                                                                                                                                                                                                                | DESCRIPTION           |                                                                                                              |
| 08901TX1                                                                                                                                                                                                                            | For 1 section valve   |                                                                                                              |
| 08902TX2                                                                                                                                                                                                                            | For 2 sections valve  |                                                                                                              |
| 08903TX3                                                                                                                                                                                                                            | For 3 sections valve  |                                                                                                              |
| 08904TX4                                                                                                                                                                                                                            | For 4 sections valve  |                                                                                                              |
| 08905TX5                                                                                                                                                                                                                            | For 5 sections valve  |                                                                                                              |
| 08906TX6                                                                                                                                                                                                                            | For 6 sections valve  |                                                                                                              |
| 08907TX7                                                                                                                                                                                                                            | For 7 sections valve  |                                                                                                              |
| 08908TX8                                                                                                                                                                                                                            | For 8 sections valve  |                                                                                                              |
| 08909TX9                                                                                                                                                                                                                            | For 9 sections valve  |                                                                                                              |
| 08910TX10                                                                                                                                                                                                                           | For 10 sections valve |                                                                                                              |

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

### Inlet section - parts ordering codes



#### 1 Inlet body section\* page 174

TYPE: **FE-Q80** CODE: 060012741799  
DESCRIPTION: Side inlet port, upper inlet plugged, pressure relief valve arrangement

#### 2 Configuration coding\* page 174

TYPE DESCRIPTION  
**F7S** With pressure relief valve  
**F8S** Without valves (pressure relief valve plugged port)  
**Note:** Inlet configurations require upper P port:  
n. 1 G1/2 plug code 060002792099, or n. 1 pressure gauge arrangement code 5MAN627240

#### 2a Main pressure relief valve page 175

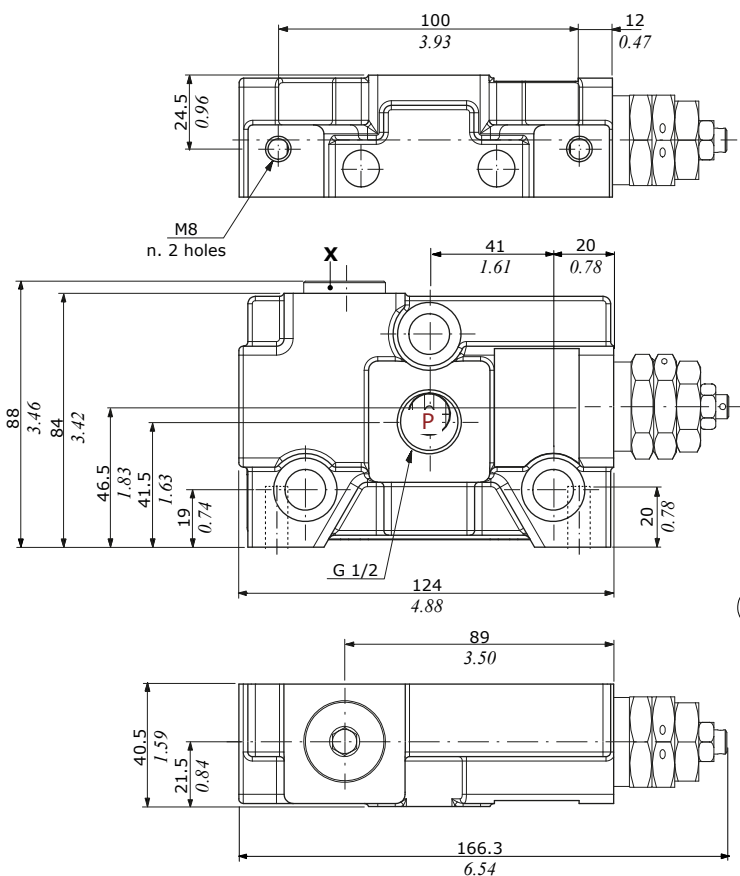
TYPE: **B** CODE: 700065205000000  
DESCRIPTION: VLP65S valve, setting range 10-100 bar (145-1450 psi)  
TYPE: **N** CODE: 700065105000000  
DESCRIPTION: VLP65S valve, setting range 101-200 bar (1460-2900 psi)  
TYPE: **R** CODE: 700065305000000  
DESCRIPTION: VLP65S valve, setting range 201-380 bar (2910-5500 psi)  
TYPE: **-** CODE: 060002788999  
DESCRIPTION: Relief valve blanking plug

#### 3 Accessory

| TYPE | CODE       | DESCRIPTION                              |
|------|------------|------------------------------------------|
| -    | 4COP120420 | Antitamper cap for pressure relief valve |

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

### Dimensional data and hydraulic circuits

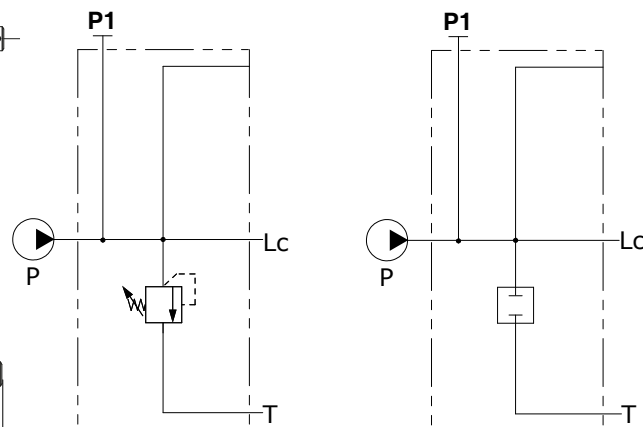


#### Wrenches and tightening torques

X = allen wrench 8 - 42 Nm (31 lbf ft)

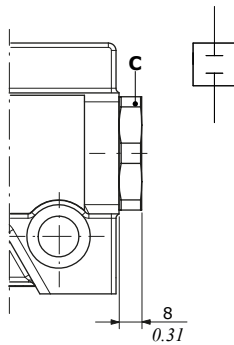
**Note:** For valves wrench and torque, see related pages

**F7S configuration** With pressure relief valve  
**F8S configuration** Without valves (pressure relief valve plugged port)

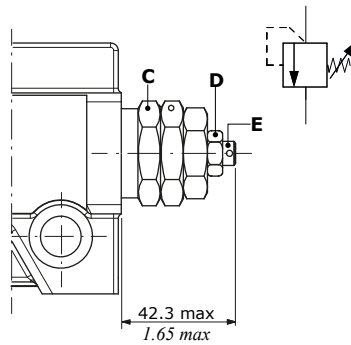


**Main pressure relief valve**

**Relief valve blanking plug**



**Main pressure relief valve**

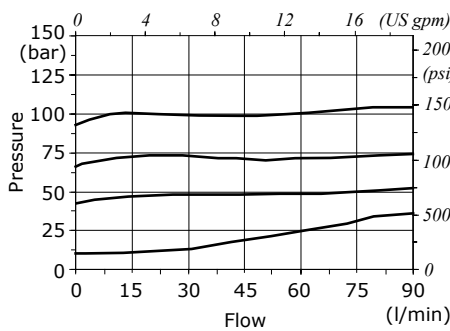


**Wrenches and tightening torques**

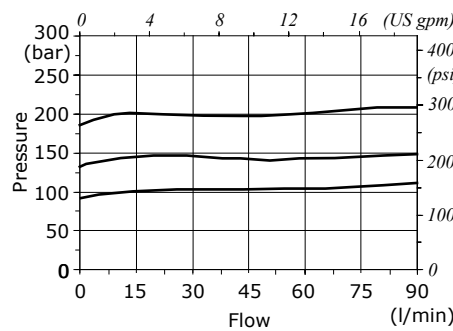
- C = wrench 30 - 80 Nm (59 lbft)
- D = wrench 13 - 24 Nm (17.7 lbft)
- E = allen wrench 4

| Spring type      | Setting ranges (bar - psi)          |
|------------------|-------------------------------------|
| <b>B</b> (white) | From 10 to 100 - from 145 to 1450   |
| <b>N</b> (black) | From 101 to 200 - from 1460 to 2900 |
| <b>R</b> (red)   | From 201 to 380 - from 2910 to 5500 |

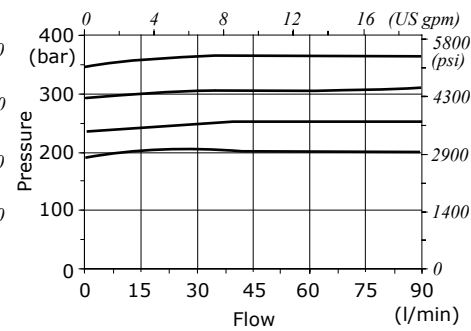
**Setting example (B type spring)**



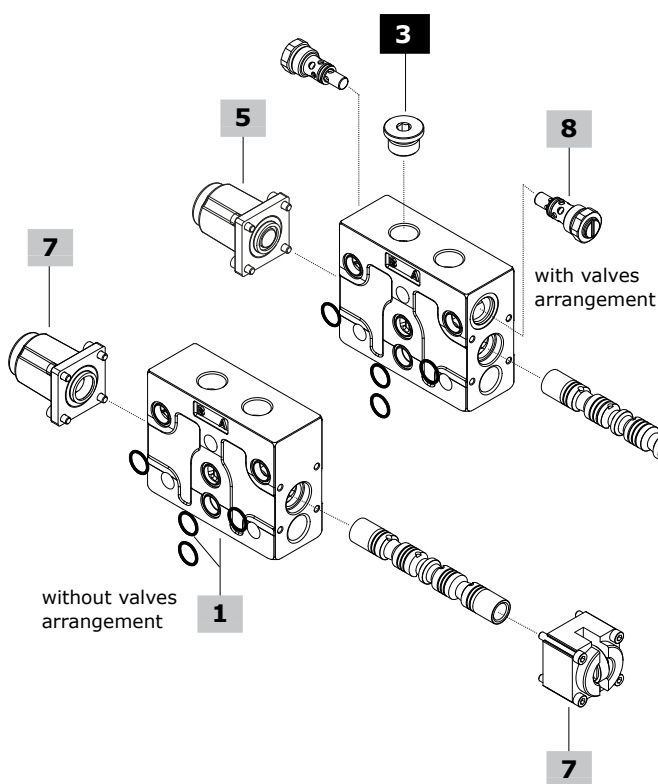
**Setting example (N type spring)**



**Setting example (R type spring)**



### Working section - parts ordering codes



#### Mechanical control valve configuration example

spring type and valve setting (bar)

EL Q80 / 102 - A1 - M1 . V40(N)120

1 2 4 5 8

#### C2/C3 complete mechanical control configuration example

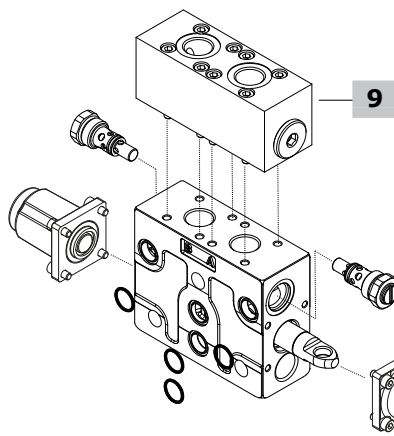
EL Q80 / 103 - C3 . V40(N)120 8

7

#### Mechanical control valve with arrangement for secondary aux valves block: configuration example

EL Q80 / 103 - A1 - M1 . V40(N)120 / VC03

9



## Working section - parts ordering codes

**1 Working section body kit\* page 182**

|                                                                                            |                     |
|--------------------------------------------------------------------------------------------|---------------------|
| TYPE: <b>EL-Q80.VC</b>                                                                     | CODE: 5EL0600127860 |
| DESCRIPTION: Parallel circuit, with port valves arrangement                                |                     |
| TYPE: <b>EL-Q80</b>                                                                        | CODE: 5EL0600127723 |
| DESCRIPTION: Parallel circuit, without port valves arrangement                             |                     |
| TYPE: <b>EL-Q80.VC.VPC</b>                                                                 | CODE: 5EL0600128363 |
| DESCRIPTION: Parallel circuit with port valves arrangement, for secondary aux valves block |                     |
| TYPE: <b>EL-Q80.VC</b>                                                                     | CODE: 5EL0600127563 |
| DESCRIPTION: Series circuit, with port valves arrangement                                  |                     |

**2 Spool page 183**

| TYPE                                                                             | CODE         | DESCRIPTION                                                                                                |
|----------------------------------------------------------------------------------|--------------|------------------------------------------------------------------------------------------------------------|
| <b>Standard spools</b>                                                           |              |                                                                                                            |
| <b>103</b>                                                                       | 060102894999 | Double acting, A and B closed in neutral position                                                          |
|                                                                                  | 3CUG3051600  | As previous one, for <b>kick-out</b> control                                                               |
| <b>106</b>                                                                       | KR80106      | Double acting for closed circuit                                                                           |
| <b>107</b>                                                                       | KR80107-108  | Double acting, A to tank and B closed in neutral position                                                  |
| <b>108</b>                                                                       | KR80107-108  | Double acting, B to tank and A closed in neutral position                                                  |
| <b>111</b>                                                                       | 060102996799 | Double acting, A and B to tank in neutral position                                                         |
| <b>114</b>                                                                       | KR80114      | Double acting, A and B to tank in neutral position, for closed circuit                                     |
| <b>101</b>                                                                       | 3CUG2891900  | Single acting on port A.<br>G1/2 plug is required, see #3                                                  |
| <b>102</b>                                                                       | 3CUG2891901  | Single acting on port B.<br>G1/2 plug is required, see #3                                                  |
| <b>116</b>                                                                       | 3CUG2897800  | Double acting, with floating in the 4 <sup>th</sup> position (spool in): requires dedicated spool control  |
| <b>126</b>                                                                       | 3CUG2897801  | Double acting, with floating in the 4 <sup>th</sup> position (spool out): requires dedicated spool control |
| <b>403</b>                                                                       | KR80403      | Double acting, A and B closed in neutral position, for series circuit                                      |
| <b>411</b>                                                                       | KR80411      | Double acting, A and B to tank in neutral position, for series circuit                                     |
| <b>Special spools for cam, microswitch controls and other leverless controls</b> |              |                                                                                                            |
| <b>103</b>                                                                       | 060102879199 | Double acting, A and B closed in neutral position                                                          |
| <b>111</b>                                                                       | 060102864199 | Double acting, A and B to tank in neutral position                                                         |

**3 Plug for single acting spool\***

| TYPE | CODE         | DESCRIPTION |
|------|--------------|-------------|
| -    | 060002792099 | G1/2 plug   |

**4 A side control page 184**

| TYPE                              | CODE          | DESCRIPTION                                   |
|-----------------------------------|---------------|-----------------------------------------------|
| <b>For standard spools</b>        |               |                                               |
| <u>With lever control:</u>        |               |                                               |
| <b>A1</b>                         | 08600A1-A2    | M10 thread aluminium lever box                |
| <b>A2</b>                         | 08600A1-A2    | As A1 type, with lever box rotated 180°       |
| <b>A1/06</b>                      | 08606A1-A2/06 | Aluminium lever box with stroke limiter       |
| <b>A2/06</b>                      | 08606A1-A2/06 | As A1/06 type, with lever box rotated 180°    |
| <b>A1/Z1</b>                      | 08610A1-A2/Z1 | Aluminium lever box for <b>116</b> spool type |
| <b>A2/Z1</b>                      | 08610A1-A2/Z1 | As A1/Z1 type, with lever box rotated 180°    |
| <u>With safety lever control:</u> |               |                                               |
| <b>A1/S<sup>(1)</sup></b>         | 08624A1-A2/S  | M10 thread aluminium lever box                |
| <b>A2/S<sup>(1)</sup></b>         | 08624A1-A2/S  | As A1/S type, with lever box rotated 180°     |
| <u>Without lever control:</u>     |               |                                               |
| <b>A6</b>                         | 08620A6       | With flange                                   |
| <b>A8</b>                         | 08622A8       | Arrangement for flexible cable control        |
| <b>A8/Z1</b>                      | 08622A8/Z1    | As A8 type, for <b>116</b> spool type         |

**4 A side control (cont.) page 184**

| TYPE                                                                     | CODE           | DESCRIPTION                                             |
|--------------------------------------------------------------------------|----------------|---------------------------------------------------------|
| <u>Joystick controls for 2 section operation:</u>                        |                |                                                         |
| <b>A35/1</b>                                                             | 08637A35-12    | Joystick 1 type                                         |
| <b>A35/2</b>                                                             | 08637A35-12    | Joystick 2 type                                         |
| <b>A35/3</b>                                                             | 08637A35-34    | Joystick 3 type                                         |
| <b>A35/4</b>                                                             | 08637A35-34    | Joystick 4 type                                         |
| <b>For types 103 and 111 special spools</b>                              |                |                                                         |
| <u>With spool position microswitch:</u>                                  |                |                                                         |
| <b>Note:</b> to complete the control you must use the assembly kit at #6 |                |                                                         |
| <b>N1-A1</b>                                                             | 08641N1-A1/A2  | Micro operation in pos. 1 and 2, with lever box         |
| <b>N1A-A1</b>                                                            | 08642N1A-A1/A2 | Micro operation in pos. 1, with lever box               |
| <b>N1B-A1</b>                                                            | 08643N1B-A1/A2 | Micro operation in pos. 2, with lever box               |
| <b>N1-A3</b>                                                             | 08648N1-A3     | Micro operation in pos. 1 and 2, without lever with cap |
| <b>N1A-A3</b>                                                            | 08648N1A-A3    | Micro operation in pos. 1, without lever with cap       |
| <b>N1B-A3</b>                                                            | 08648N1B-A3    | Micro operation in pos. 2, without lever with cap       |
| <u>Without lever control:</u>                                            |                |                                                         |
| <b>A3</b>                                                                | 08614A3        | Without lever, with cap                                 |
| <b>A4</b>                                                                | 08617A4        | M10 thread male external pin with flange                |
| <b>A5<sup>(2)</sup></b>                                                  | 08619A5        | Flange with spherical spool end                         |

**5 B side control page 189**

| TYPE                                            | CODE          | DESCRIPTION                                         |
|-------------------------------------------------|---------------|-----------------------------------------------------|
| <u>With spring return:</u>                      |               |                                                     |
| <b>M1</b>                                       | 08730M1       | 3 pos., spring return in neutral position           |
| <b>M1/01</b>                                    | 08730M1/01    | As M1 type, for joystick control                    |
| <b>M1/02</b>                                    | 08730M1/02    | As M1 type, with stroke limiter                     |
| <b>M1/05</b>                                    | 08730M1/05    | As M1 type, for series spool                        |
| <b>M1/07</b>                                    | 08730M1/07    | As M1 type, for joystick control with series spool  |
| <b>M1-B1</b>                                    | 08753M1-B1    | As M1 type, with microswitch arrangement            |
| <b>M1-U1</b>                                    | 08701M1-U1    | As M1 type, with M10 male thread external pin       |
| <b>M2</b>                                       | 08732M2       | 2 pos. (0-1), spring return in neutral position     |
| <b>M2-U1</b>                                    | 08702M2-U1    | As M2 type, with M10 male thread external pin       |
| <b>M3</b>                                       | 08733M3       | 2 pos. (0-2), spring return in neutral position     |
| <b>M3-U1</b>                                    | 08703M3-U1    | As M3 type, with M10 male thread external pin       |
| <b>M4</b>                                       | 08734M4-1-2   | 2 pos. (1-2), spring return in position 1           |
|                                                 | 08735M4-2-1   | 2 pos. (2-1), spring return in position 2           |
| <b>M4-U1</b>                                    | 08734M4-U11-2 | As M4 type (1-2), with M10 male thread external pin |
| <u>With flexible cable control arrangement:</u> |               |                                                     |
| <b>M1-U2</b>                                    | 08715M1-U2    | 3 pos., spring return in neutral position           |
| <b>M2-U2</b>                                    | 08716M2-U2    | 2 pos. (0-1), spring return in neutral position     |
| <b>M3-U2</b>                                    | 08717M3-U2    | 2 pos. (0-2), spring return in neutral position     |

|                       |             |                                                                   |
|-----------------------|-------------|-------------------------------------------------------------------|
| <u>With friction:</u> |             |                                                                   |
| <b>R0</b>             | 08740R0     | Adjustable friction control                                       |
| <u>With detent:</u>   |             |                                                                   |
| <b>R1</b>             | 08741R1     | 3 pos., detent in position 1                                      |
| <b>R2</b>             | 08742R2     | 3 pos., detent in position 2                                      |
| <b>R3</b>             | 08743R3     | 3 pos., detent in all position                                    |
| <b>R4</b>             | 08744R4     | 2 pos., detent in position 0-1                                    |
| <b>R5</b>             | 08745R5     | 2 pos., detent in position 0-2                                    |
| <b>R6</b>             | 08746R6     | 2 pos., detent in position 1-2                                    |
| <b>R8</b>             | 08748R8     | 4 pos., detent in 4 <sup>th</sup> pos., for <b>116</b> spool type |
| <b>R10/Z1</b>         | 08750R10/Z1 | 4 pos., detent in 4 <sup>th</sup> pos., for <b>126</b> spool type |

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

(1): Always complete with lever knob

(2): To be assembled only with M4 control

## Working section - parts ordering codes

**5 B side control (cont.) page 189**

| TYPE                                                                     | CODE           | DESCRIPTION                                                                |
|--------------------------------------------------------------------------|----------------|----------------------------------------------------------------------------|
| <u>With detent and kick out function:</u>                                |                |                                                                            |
| <b>R1K</b>                                                               | 08741R1K       | 3 pos., detent in position 1                                               |
| <b>R2K</b>                                                               | 08742R2K       | 3 pos., detent in position 2                                               |
| <b>R3K</b>                                                               | 08743R3K       | 3 pos., detent in all position                                             |
| <u>With spool position microswitch:</u>                                  |                |                                                                            |
| <b>Note:</b> To complete the control you must use the assembly kit at #6 |                |                                                                            |
| <b>M1-N1</b>                                                             | 08766M1-N1     | 3 pos., micro operation in pos. 1 and 2, spring return in neutral position |
| <b>M1-N1A</b>                                                            | 08767M1-N1A    | As M1-N1 type, micro operation in pos. 1                                   |
| <b>M1-N1B</b>                                                            | 08768M1-N1B    | As M1-N1 type, micro operation in pos. 2                                   |
| <b>M2-N1</b>                                                             | 08769M2-N1     | 2 pos. (0-1), spring return in neutral position                            |
| <b>M3-N1</b>                                                             | 08772M3-N1     | 2 pos. (0-2), spring return in neutral position                            |
| <u>Pneumatic and electropneumatic controls:</u>                          |                |                                                                            |
| <b>P1N</b>                                                               | 08561P1-N      | ON/OFF pneumatic control                                                   |
| <b>P1NP</b>                                                              | 08561P1-NP     | Proportional pneumatic control                                             |
| <b>D3</b>                                                                | 08591D3-V-12DC | 12 VDC, ON/OFF electropneumatic control                                    |
|                                                                          | 08592D3-V-24DC | 24 VDC, ON/OFF electropneumatic control                                    |

**6 Microswitch assembly kit**

| CODE       | DESCRIPTION         |
|------------|---------------------|
| 08650N1-01 | Kit for 1 section   |
| 08650N1-02 | Kit for 2 sections  |
| 08650N1-03 | Kit for 3 sections  |
| 08650N1-04 | Kit for 4 sections  |
| 08650N1-05 | Kit for 5 sections  |
| 08650N1-06 | Kit for 6 sections  |
| 08650N1-07 | Kit for 7 sections  |
| 08650N1-08 | Kit for 8 sections  |
| 08650N1-09 | Kit for 9 sections  |
| 08650N1-10 | Kit for 10 sections |

**7 Complete controls A+B sides page 195**

| TYPE                                | CODE       | DESCRIPTION                  |
|-------------------------------------|------------|------------------------------|
| <u>For types 103 and 111 spools</u> |            |                              |
| <b>C2</b>                           | 08792C2-C3 | Cam control from pos. 1 to 2 |
| <b>C3</b>                           | 08792C2-C3 | Cam control from pos. 2 to 1 |

**8 Auxiliary port valve page 200**

| TYPE                                                 | CODE         | DESCRIPTION                                                   |
|------------------------------------------------------|--------------|---------------------------------------------------------------|
| <u>Antishock valve:</u>                              |              |                                                               |
| <b>V30-B</b>                                         | 08800V30-B   | Setting range: from 30 to 80 bar<br>(from 435 to 1150 psi)    |
| <b>V30-N</b>                                         | 08800V30-N   | Setting range: from 81 to 200 bar<br>(from 1170 to 2900 psi)  |
| <b>V30-R</b>                                         | 08800V30-R   | Setting range: from 201 to 370 bar<br>(from 2910 to 5400 psi) |
| <u>Antishock/anticavitation valve:</u>               |              |                                                               |
| <b>V33-B</b>                                         | 08803V33-B   | Setting range: from 30 to 80 bar<br>(from 435 to 1150 psi)    |
| <b>V33-N</b>                                         | 08803V33-N   | Setting range: from 81 to 200 bar<br>(from 1170 to 2900 psi)  |
| <b>V33-R</b>                                         | 08803V33-R   | Setting range: from 201 to 370 bar<br>(from 2910 to 5400 psi) |
| <u>Anticavitation valve:</u>                         |              |                                                               |
| <b>V04</b>                                           | 08808V04     | Anticavitation valve                                          |
| <u>Plug:</u>                                         |              |                                                               |
| <b>VC</b>                                            | 060002758699 | Valve blanking plug                                           |
| For other configurations and positions, see page 201 |              |                                                               |

**9 Secondary aux valves\* page 202**

| TYPE            | CODE      | DESCRIPTION                                                     |
|-----------------|-----------|-----------------------------------------------------------------|
| <b>VRP-VC01</b> | 08835V01C | Single piloted check valve on A port, 250 bar (3600 psi)        |
| <b>VRP-VC03</b> | 08837V03C | Double piloted check valve on A and B ports, 250 bar (3600 psi) |

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

**Working section - parts ordering codes**

**Proportional hydraulic controls valve configuration example**

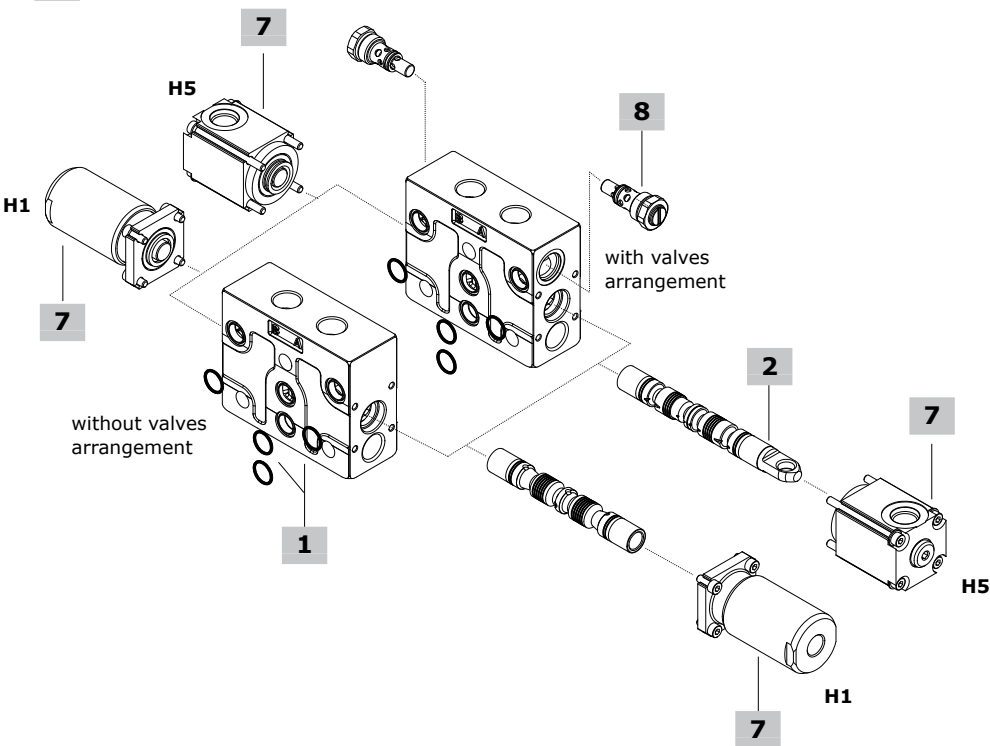
spring type and valve setting (bar)

**EL Q80 / 103 - H5 . V40(N)120**

**1 2 7 8**

**EL Q80 / 103 - H1 . V40(N)120**

**7**



**1 Working section body kit\* page 182**

The body kits listed below are for **H5** hydraulic control.

**H1** hydraulic control requires standard body: see #1, page 177

TYPE: **EL-Q80-H5.VC** CODE: 5EL0600127860H5

DESCRIPTION: Parallel circuit, with port valves arrangement

TYPE: **EL-Q80-H5** CODE: 5EL0600127723H5

DESCRIPTION: Parallel circuit, without port valves arrangement

**2 Spool page 183**

| TYPE                            | CODE         | DESCRIPTION                                       |
|---------------------------------|--------------|---------------------------------------------------|
| <b>For H5 hydraulic control</b> |              |                                                   |
| <b>103</b>                      | 060102894999 | Double acting, A and B closed in neutral position |
| <b>For H1 hydraulic control</b> |              |                                                   |
| <b>103</b>                      | 060102879199 | Double acting, A and B closed in neutral position |

**7 Hydraulic controls A+B sides\* page 196**

| TYPE      | CODE    | DESCRIPTION                                 |
|-----------|---------|---------------------------------------------|
| <b>H5</b> | 08785H5 | Low pressure proportional type, upper ports |
| <b>H1</b> | 08779H1 | High pressure proportional type, side ports |

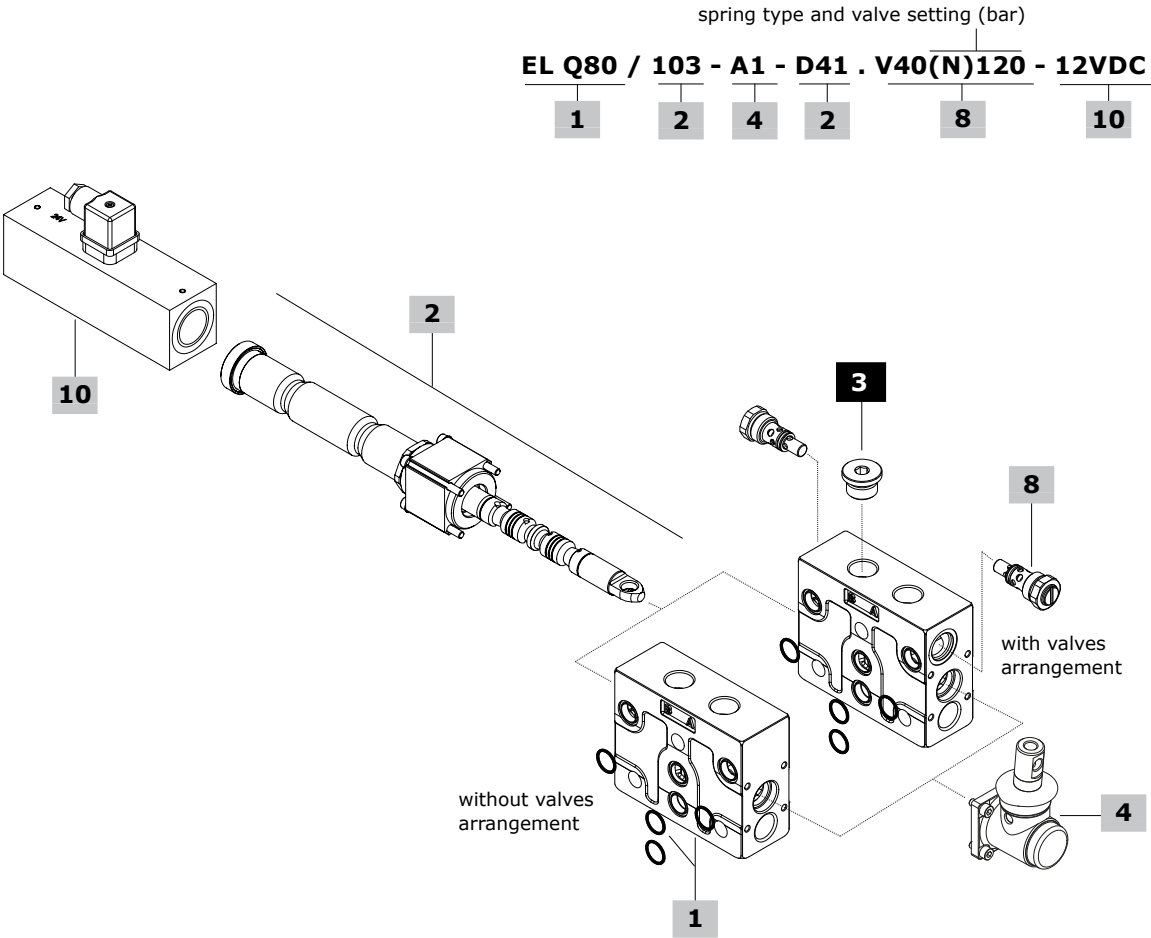
**8 Auxiliary port valve page 200**

See #8, page 178

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

Working section - parts ordering codes

One side - ON/OFF direct solenoid control valve: configuration example



**1 Working section body kit\* page 182**

TYPE: **EL-Q80.VC** CODE: 5EL0600127860D41  
DESCRIPTION: Parallel circuit, with port valves arrangement  
TYPE: **EL-Q80** CODE: 5EL0600127723D41  
DESCRIPTION: Parallel circuit, without port valves arrangement

**2 Solenoid control page 197**

| TYPE       | CODE         | DESCRIPTION                                               |
|------------|--------------|-----------------------------------------------------------|
| <b>103</b> | X0601030059  | Double acting, A and B closed in neutral position         |
| <b>111</b> | X0601030043  | Double acting, A and B to tank in neutral position        |
| <b>101</b> | X0601030060A | Single acting on port A.<br>G1/2 plug is required, see #3 |
| <b>102</b> | X0601030060B | Single acting on port B.<br>G1/2 plug is required, see #3 |

**3 Plug for single acting spool\***

See #3, page 177

**4 A side control page 197**

| TYPE      | CODE       | DESCRIPTION                             |
|-----------|------------|-----------------------------------------|
| <b>A1</b> | 08600A1-A2 | M10 thread aluminium lever box          |
| <b>A2</b> | 08600A1-A2 | As A1 type, with lever box rotated 180° |

**8 Auxiliary port valve page 200**

See #8, page 178

**10 Coil**

| TYPE | CODE   | DESCRIPTION         |
|------|--------|---------------------|
| -    | ZEB112 | 12 VDC ISO4400 coil |
| -    | ZEB124 | 24 VDC ISO4400 coil |

**Note:** The connector is included

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

## Working section - parts ordering codes

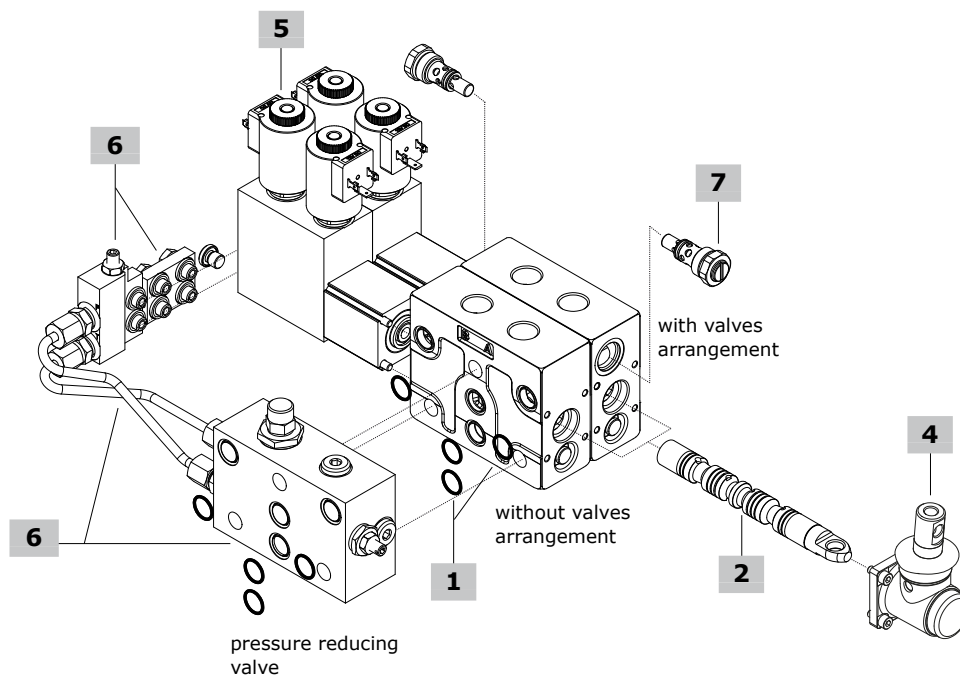
One side - ON/OFF electrohydraulic control valve configuration example

R = with pressure reducing valve  
S = without pressure reducing valve

spring type and valve setting (bar)

**EL Q80 / KE2R / 103 - A1 - D2W . V40(N)120 - 12VDC**

1 6 2 4 5 7 5

**1 Working section body kit\* page 182**

See #1, page 177

**2 Spool page 183**

See #2, page 177

**4 A side control page 184**

See #4, page 177

**5 B side electrohydraulic control page 198**

| TYPE             | CODE         | DESCRIPTION                                   |
|------------------|--------------|-----------------------------------------------|
| <b>D2W-12VDC</b> | 08681D2W1200 | 3 pos., 12VDC ON/OFF electrohydraulic control |
| <b>D2W-24VDC</b> | 08681D2W2400 | 3 pos., 24VDC ON/OFF electrohydraulic control |

**Note:** For BT type coils, see page 243**6 Connector kit page 199**

| TYPE                                   | CODE       | DESCRIPTION         |
|----------------------------------------|------------|---------------------|
| <b>Without pressure reducing valve</b> |            |                     |
| <b>KE1S</b>                            | 5GKE08S010 | Kit for 1 section   |
| <b>KE2S</b>                            | 5GKE08S020 | Kit for 2 sections  |
| <b>KE3S</b>                            | 5GKE08S030 | Kit for 3 sections  |
| <b>KE4S</b>                            | 5GKE08S040 | Kit for 4 sections  |
| <b>KE5S</b>                            | 5GKE08S050 | Kit for 5 sections  |
| <b>KE6S</b>                            | 5GKE08S060 | Kit for 6 sections  |
| <b>KE7S</b>                            | 5GKE08S070 | Kit for 7 sections  |
| <b>KE8S</b>                            | 5GKE08S080 | Kit for 8 sections  |
| <b>KE9S</b>                            | 5GKE08S090 | Kit for 9 sections  |
| <b>KE10S</b>                           | 5GKE08S100 | Kit for 10 sections |

**Note:** Connector kit are included collector and feeding block**With pressure reducing valve**

| TYPE         | CODE       | DESCRIPTION         |
|--------------|------------|---------------------|
| <b>KE1R</b>  | 5GKE08R010 | Kit for 1 section   |
| <b>KE2R</b>  | 5GKE08R020 | Kit for 2 sections  |
| <b>KE3R</b>  | 5GKE08R030 | Kit for 3 sections  |
| <b>KE4R</b>  | 5GKE08R040 | Kit for 4 sections  |
| <b>KE5R</b>  | 5GKE08R050 | Kit for 5 sections  |
| <b>KE6R</b>  | 5GKE08R060 | Kit for 6 sections  |
| <b>KE7R</b>  | 5GKE08R070 | Kit for 7 sections  |
| <b>KE8R</b>  | 5GKE08R080 | Kit for 8 sections  |
| <b>KE9R</b>  | 5GKE08R090 | Kit for 9 sections  |
| <b>KE10R</b> | 5GKE08R100 | Kit for 10 sections |

**Note:** Connector kit are included collector and feeding block, drain lines and pressure reducing valve**7 Auxiliary port valve page 200**

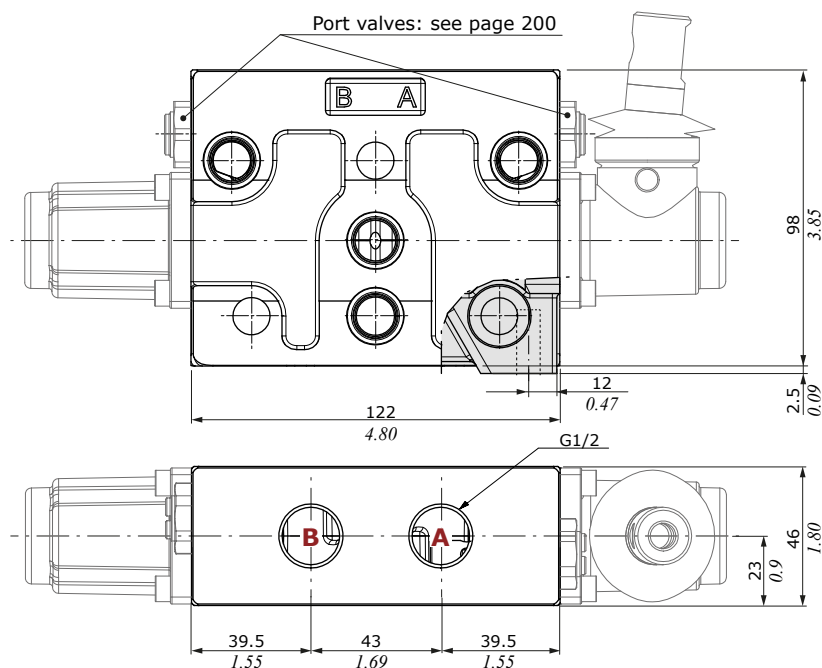
See #8, page 178

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

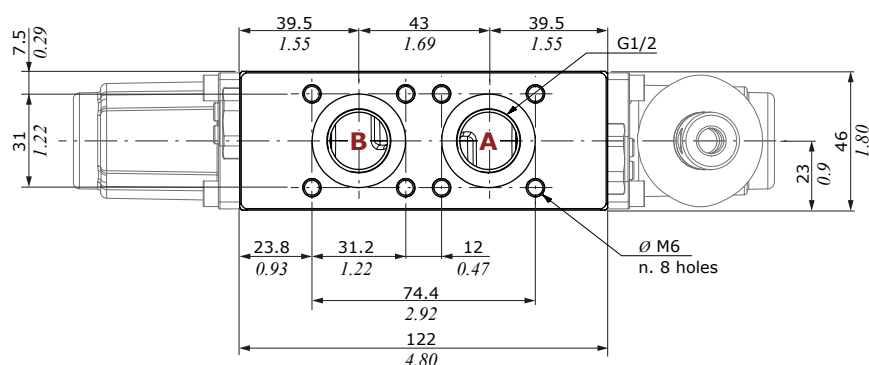
### Working section

#### Dimensional data and hydraulic circuits

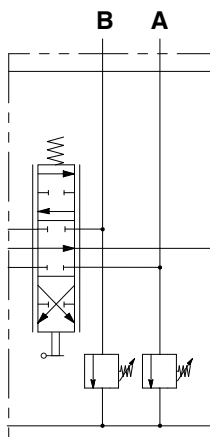
##### Standard working section



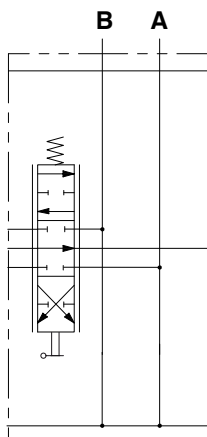
##### Working section for secondary aux valves block



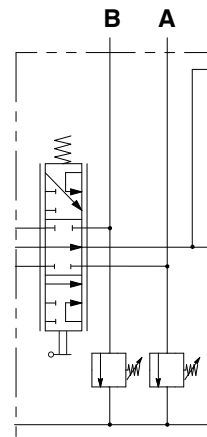
**Q80.V40(N)120 configuration**  
Parallel circuit,  
mechanical control with aux valves



**Q80 configuration**  
Parallel circuit,  
mechanical control without aux valves



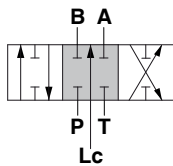
**Q80.V40(N)120 configuration**  
Series circuit,  
mechanical control with aux valves



## Spool

**103 type**  
A and B closed  
in neutral position

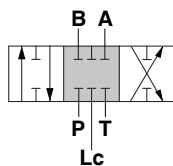
2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

**106 type**  
A, B and Lc closed in  
neutral position. For closed center

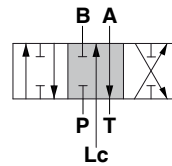
2 0 1

**Stroke**

Position 1: + 5 mm (+ 0.19 in)  
Position 2: - 5 mm (- 0.19 in)

**107 type**  
A to tank, B closed  
in neutral position

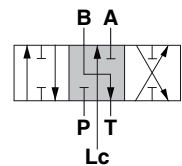
2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

**108 type**  
B to tank, A closed  
in neutral position

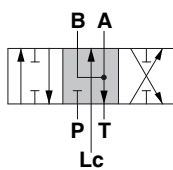
2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

**111 type**  
A and B to tank  
in neutral position

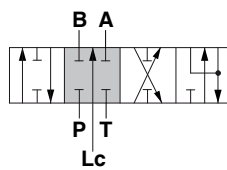
2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

**116 type**  
With floating in the 4<sup>th</sup> position  
(spool in)

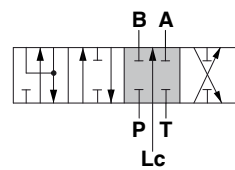
2 0 1 3

**Stroke**

Position 1: - 4.5 mm (- 0.17 in)  
Position 2: + 7 mm (+ 0.27 in)  
Position 3: - 10.25 mm (- 0.40 in)

**126 type**  
With floating in the 4<sup>th</sup> position  
(spool out)

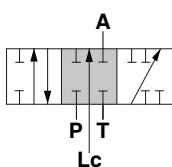
3 2 0 1

**Stroke**

Position 1: + 4.5 mm (+ 0.17 in)  
Position 2: - 7 mm (- 0.27 in)  
Position 3: + 10.25 mm (+ 0.40 in)

**101 type**  
Single acting on A,  
B plugged

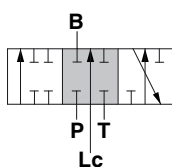
2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

**102 type**  
Single acting on B,  
A plugged

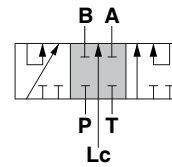
2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

**403 type**  
A and B closed in neutral  
position. For series circuit

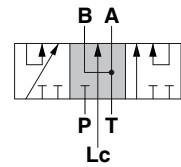
2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

**411 type**  
A and B to tank in neutral  
position. For series circuit

2 0 1

**Stroke**

Position 1: + 7 mm (+ 0.27 in)  
Position 2: - 7 mm (- 0.27 in)

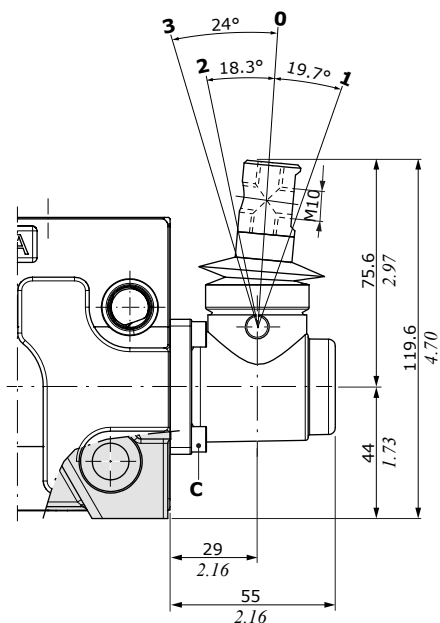
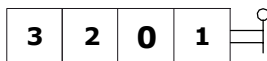
### Working section

#### A side controls

#### With lever control

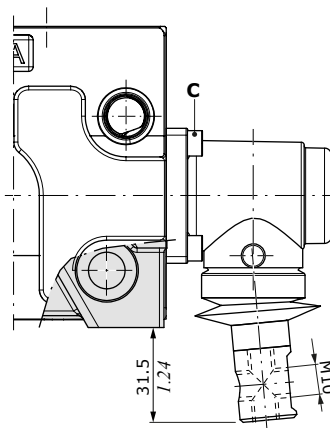
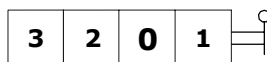
##### A1 type

M10 thread aluminium lever box



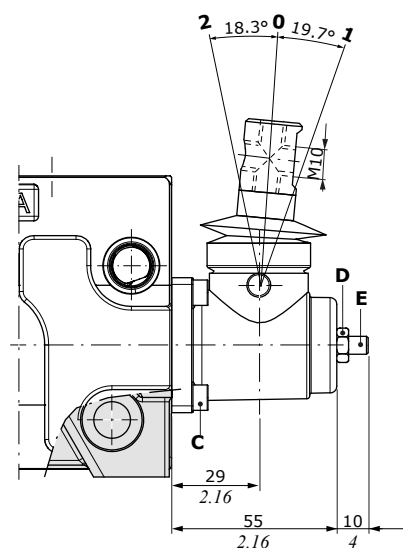
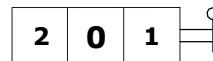
##### A2 type

As A1 type, rotated 180°



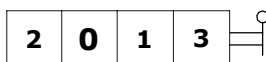
##### A1/06 type

M10 thread, with stroke limiter



##### A1/Z1 type

M10 thread, for 116 floating spool type



##### Wrenches and tightening torques

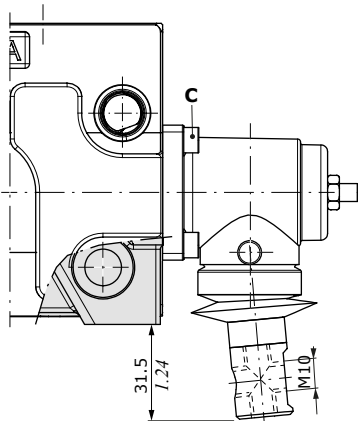
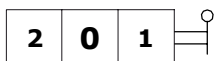
C = allen wrench 4 - 6.6 Nm (4.8 lbft)

D = wrench 10 - 9.8 Nm (7.2 lbft)

E = allen wrench 4 - 9.8 Nm (7.2 lbft)

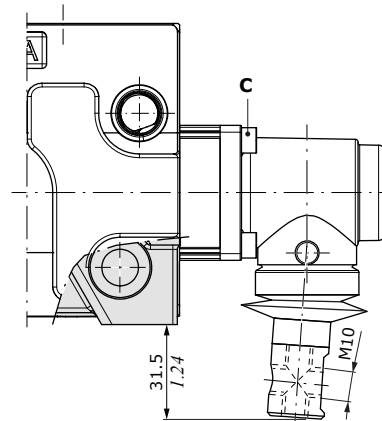
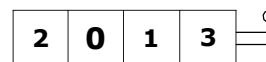
##### A2/06 type

As A1/06 type, rotated 180°



##### A2/Z1 type

As A1/Z1 type, rotated 180°

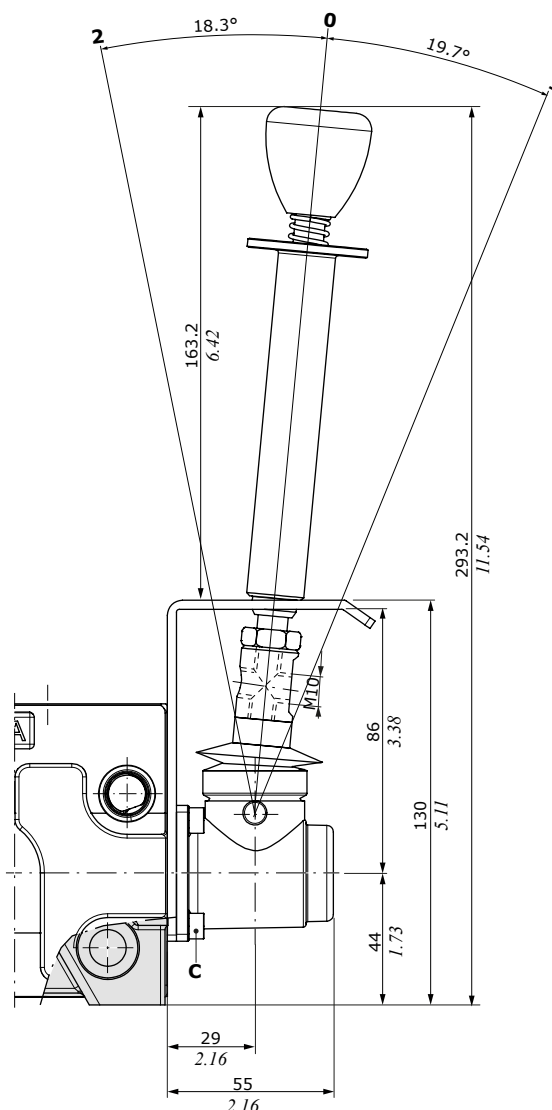
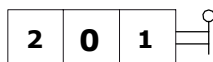


## A side controls

### With safety lever control

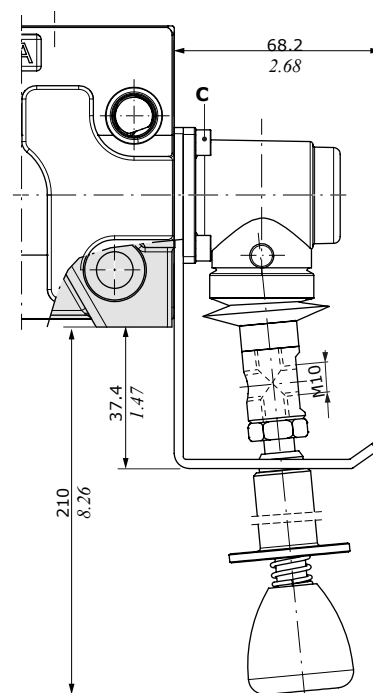
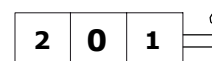
#### A1/S type

M10 thread, aluminium lever box



#### A2/S type

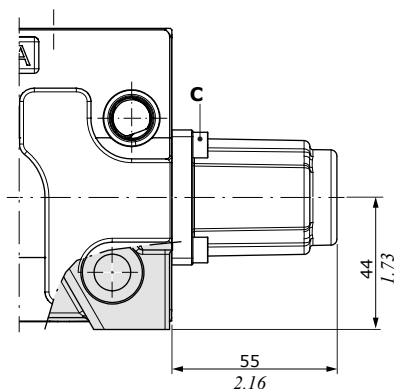
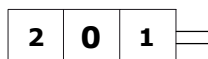
As A1/S type, rotated 180°



### Without lever control

#### A3 type

With cap



### Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)

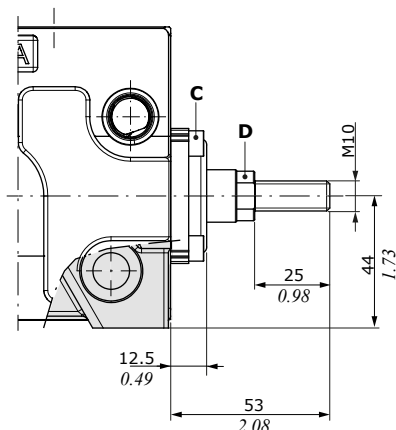
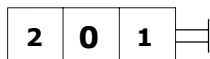
### Working section

#### A side controls

#### Without lever control

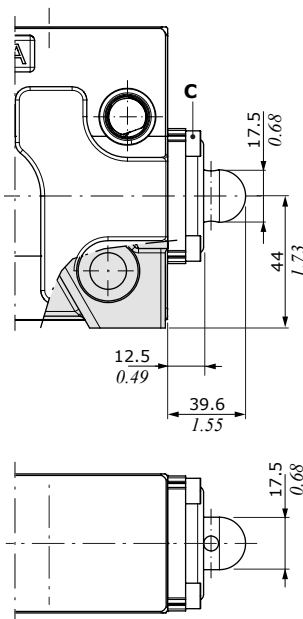
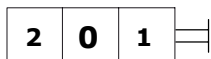
##### A4 type

M10 male thread external pin with flange



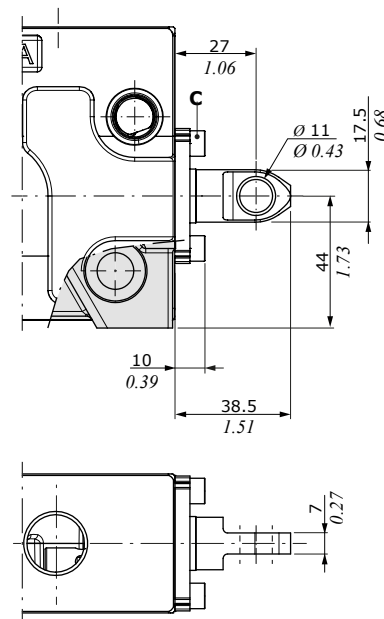
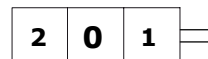
##### A5 type

Flange with spherical spool end



##### A6 type

With flange



#### Wrenches and tightening torques

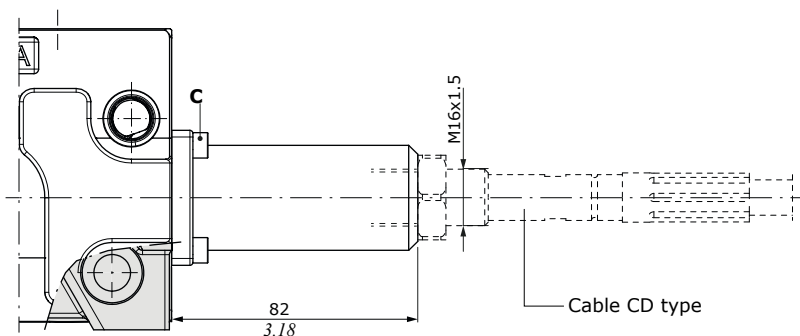
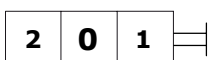
C = allen wrench 4 - 6.6 Nm (4.8 lbft)

D = wrench 13 - 9.8 Nm (7.2 lbft)

#### With flexible cable control arrangement

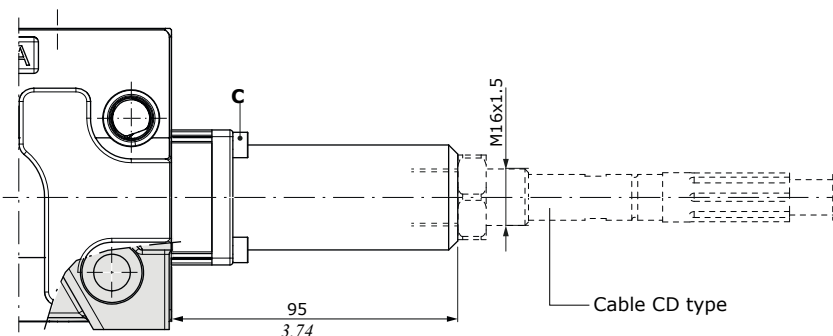
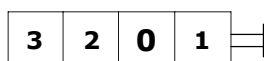
##### A8 type

Flexible cable control arrangement



##### A8/Z1 type

As A8 type, for 116 floating spool type

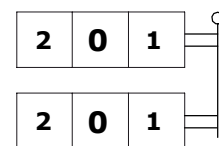
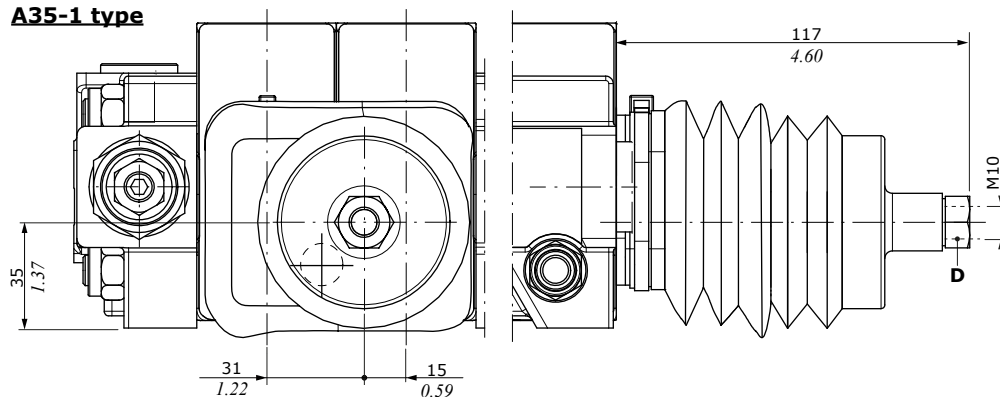


## A side controls

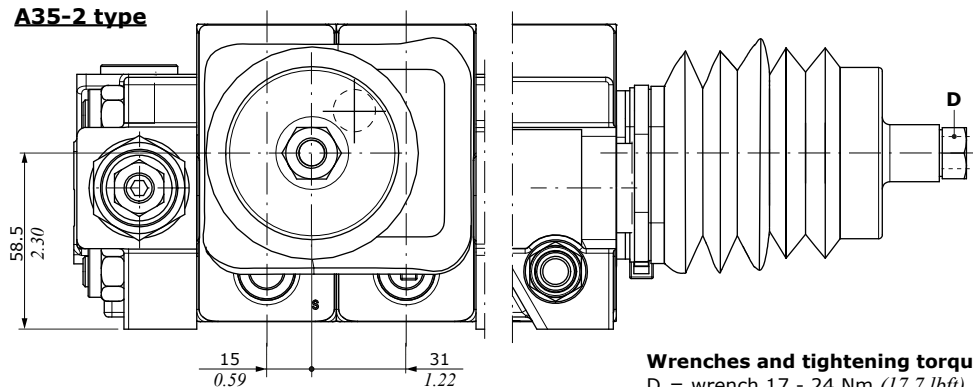
## Joystick control

For operating the joystick control in the floating position, contact Sales Department.

## A35-1 type

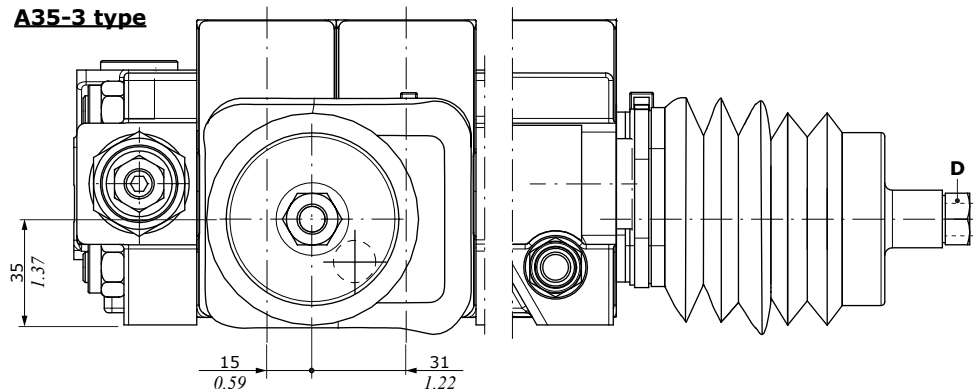


## A35-2 type

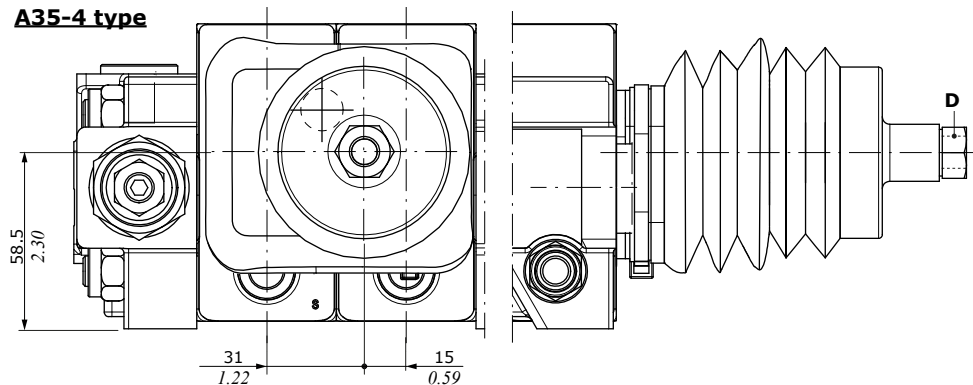


**Wrenches and tightening torques**  
D = wrench 17 - 24 Nm (17.7 lbf)

## A35-3 type



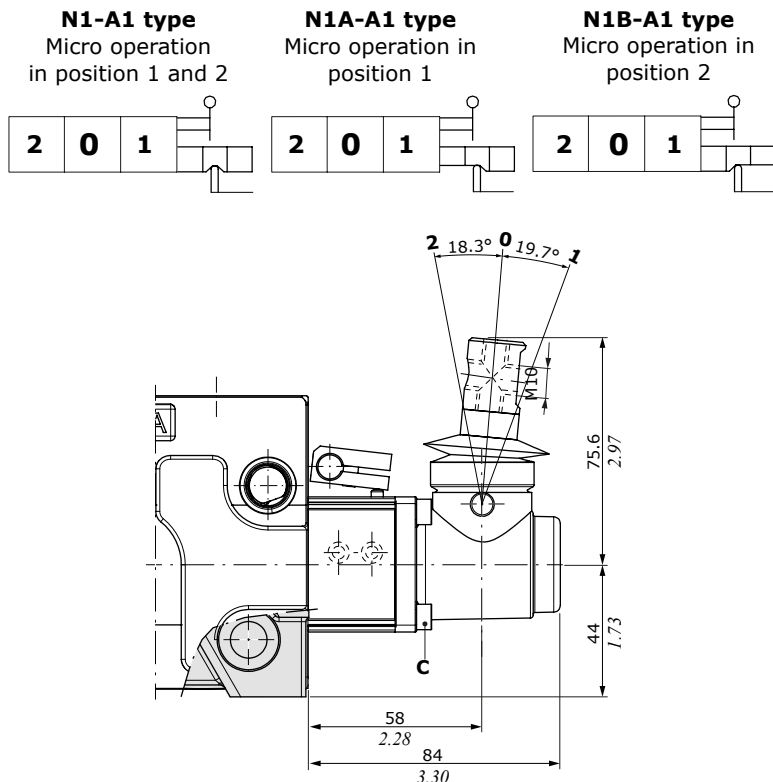
## A35-4 type



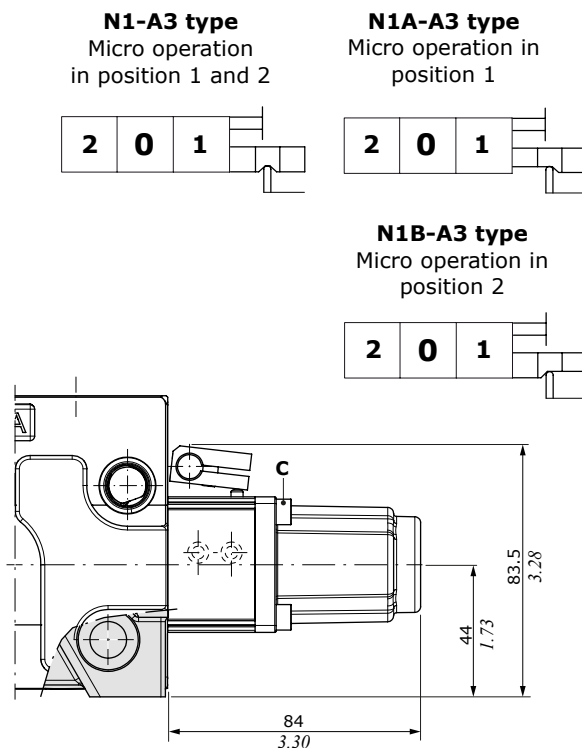
### Working section

#### A side controls

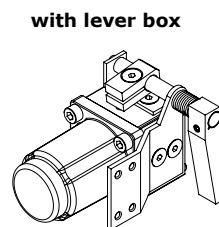
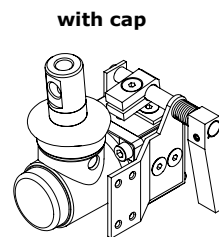
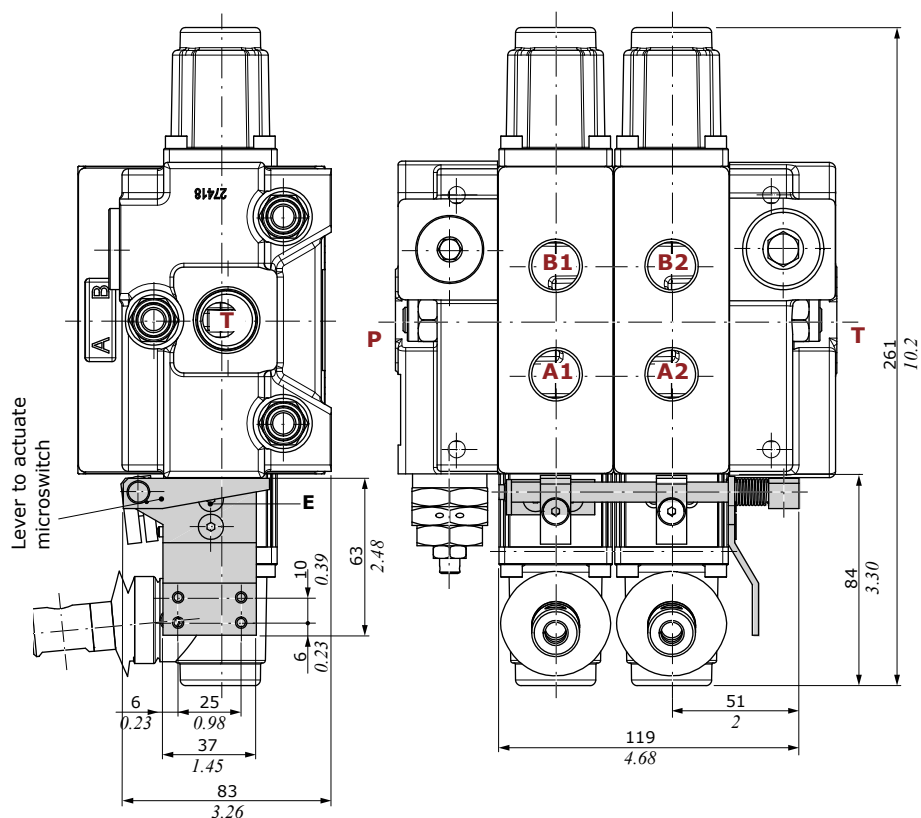
##### With spool position microswitch, with lever



##### With spool position microswitch, with cap



##### Microswitch assembly kit for 2 working section (N1-A1 type)



##### Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)  
E = allen wrench 3 - 6.6 Nm (4.8 lbft)

## Working section

## B side controls

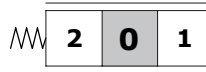
## With spring return control

**M1 type**  
3 position, spring return  
in neutral position

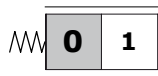
**M1/01 type**  
As M1 type,  
for joystick control

**M1/05 type**  
As M1 type,  
for series spool

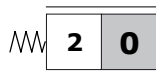
**M1/07 type**  
As M1 type, for  
joystick series spool



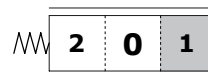
**M2 type**  
2 position (0-1), spring return  
in neutral position



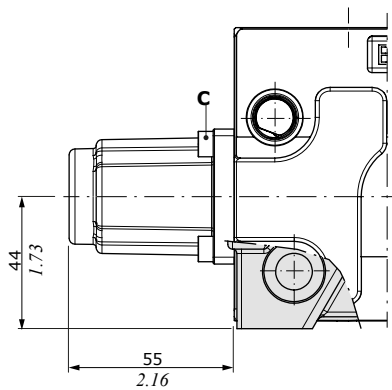
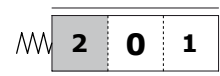
**M3 type**  
2 position (0-2), spring return  
in neutral position



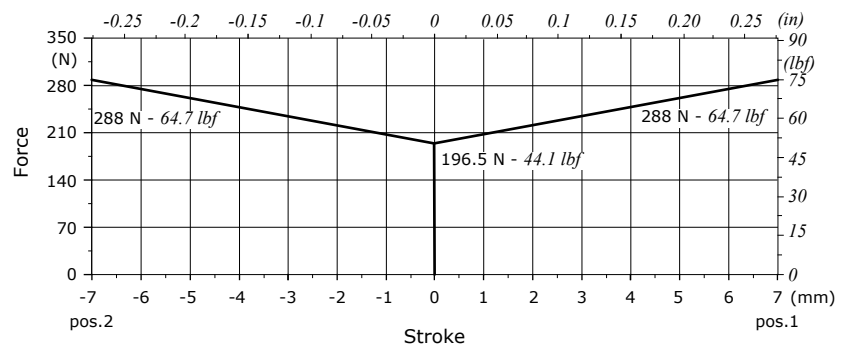
**M4 types**  
2 position (1-2),  
spring return in position 1



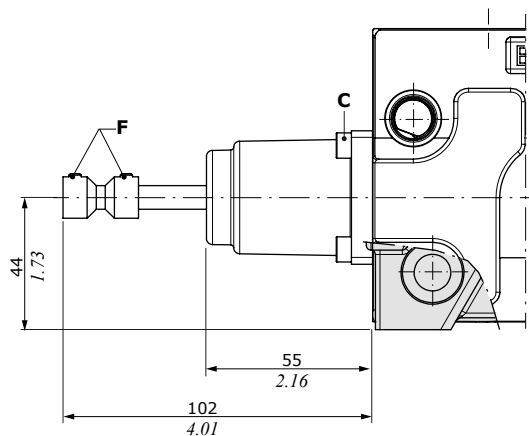
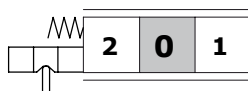
2 position (2-1),  
spring return in position 2



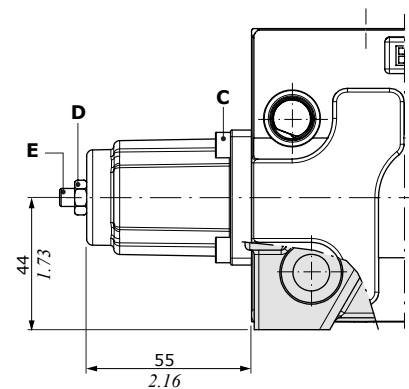
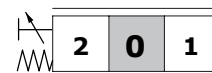
M1 control type - Force vs. Stroke diagram



**M1-B1 type**  
3 position, microswitch arrangement



**M1/02 type**  
As M1 type, with stroke limiter



## Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)

D = wrench 10 - 9.8 Nm (7.2 lbft)

E = allen wrench 4 - 9.8 Nm (7.2 lbft)

F = allen wrench 3 - 5 Nm (3.68 lbft)

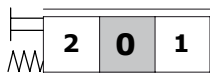
### Working section

#### B side controls

##### With spring return control

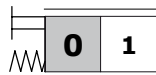
###### M1-U1 type

3 position, with M10 male thread external pin



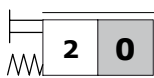
###### M2-U1 type

2 position (0-1), with M10 male thread external pin



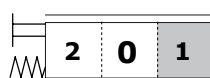
###### M3-U1 type

2 position (0-2), with M10 male thread external pin



###### M4-U1 type

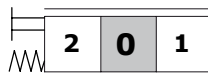
2 position (1-2), with M10 male thread external pin



##### With flexible cable control arrangement

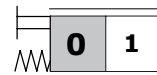
###### M1-U2 type

3 position, spring return in neutral position



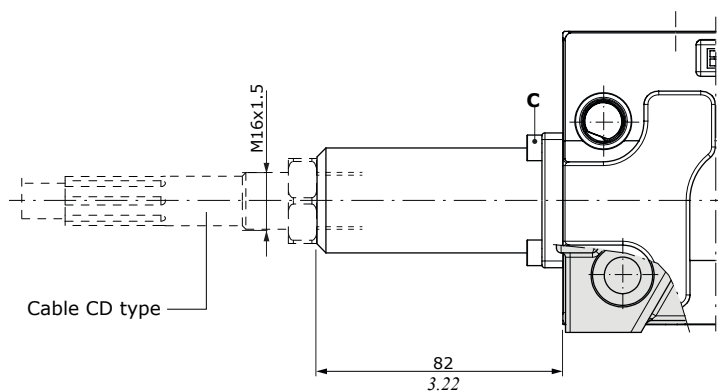
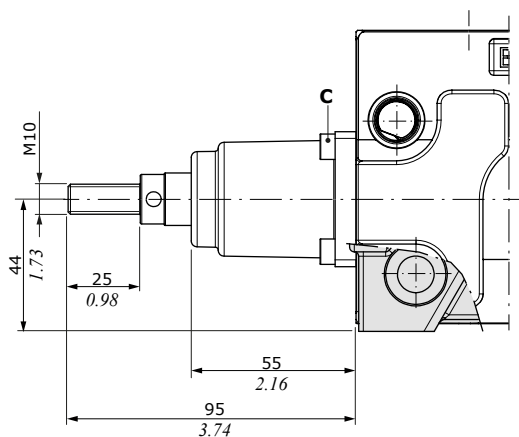
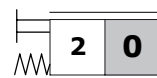
###### M2-U2 type

2 position (0-1), spring return in neutral position



###### M3-U2 type

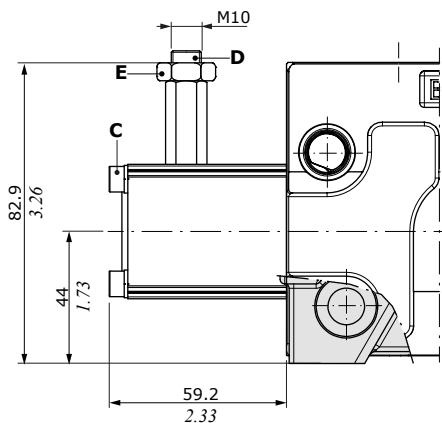
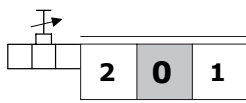
2 position (0-2), spring return in neutral position



##### With friction control

###### R0 type

Adjustable friction control



##### Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)  
D = allen wrench 5 - 15 Nm (11.1 lbft)  
E = wrench 17 - 9.8 Nm (7.2 lbft)

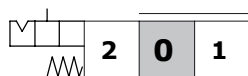
## B side controls

## With detent control

**R1 type**  
3 position,  
detent in position 1



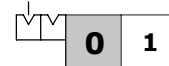
**R2 type**  
3 position,  
detent in position 2



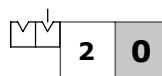
**R3 type**  
3 position,  
detent in all position



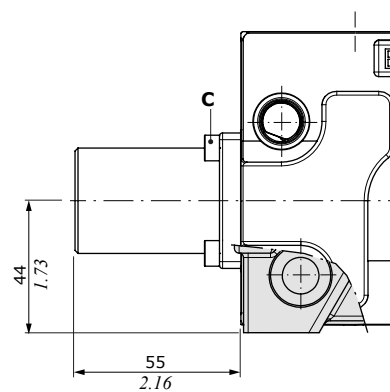
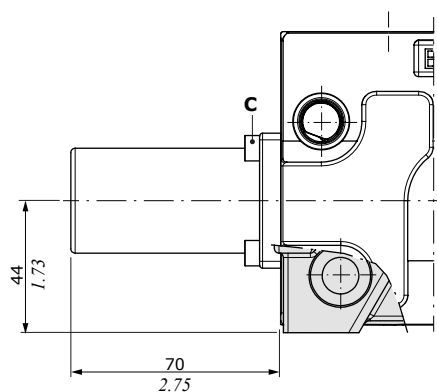
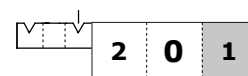
**R4 type**  
2 position,  
detent in position 0-1



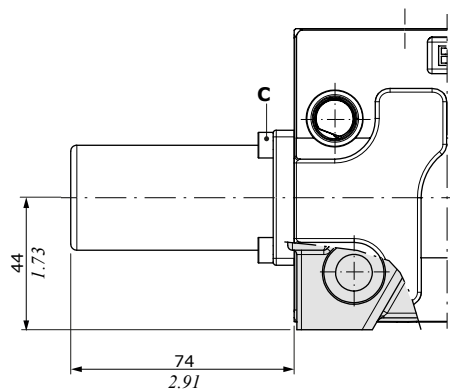
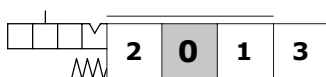
**R5 type**  
2 position,  
detent in position 0-2



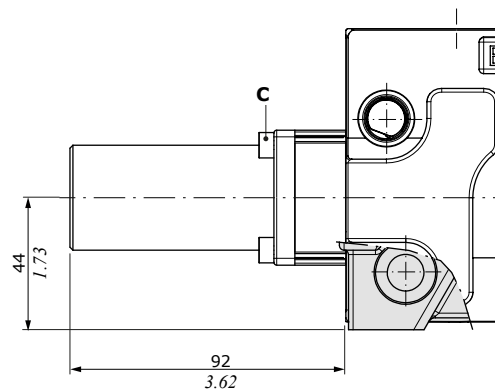
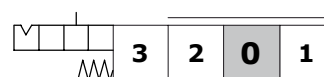
**R6 type**  
2 position,  
detent in position 1-2



**R8 type**  
4 position, detent in 4<sup>th</sup> position,  
for 116 floating spool type



**R10/Z1 type**  
4 position, detent in 4<sup>th</sup> position,  
for 126 floating spool type



**Wrenches and tightening torques**  
C = allen wrench 4 - 6.6 Nm (4.8 lbf·ft)

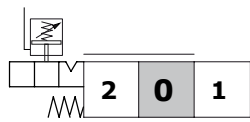
## Working section

## B side controls

## With detent control and kick out function

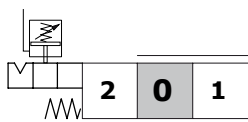
## R1K type

3 position, detent in position 1



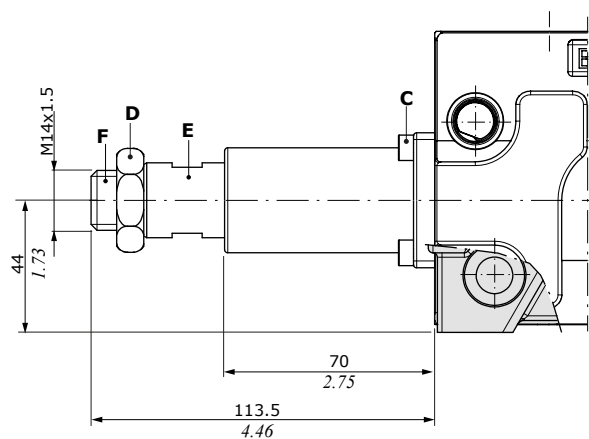
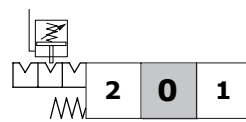
## R2K type

3 position, detent in position 2



## R3K type

3 position, detent in all position



## Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)

D = wrench 30 - 42 Nm (30.9 lbft)

E = wrench 22

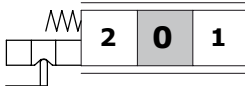
F = allen wrench 10 - 42 Nm (30.9 lbft)

## B side controls

### With spool position microswitch

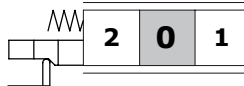
#### M1-N1 type

3 position, micro operation in position 1 and 2, spring return in neutral position



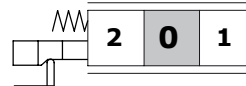
#### M1-N1A type

3 position, micro operation in position 1



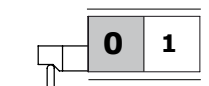
#### M1-N1B type

3 position, micro operation in position 2



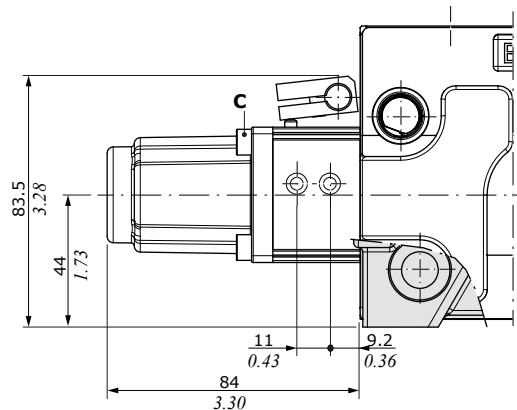
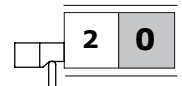
#### M2-N1 type

2 position (0-1), spring return in neutral position

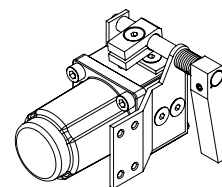
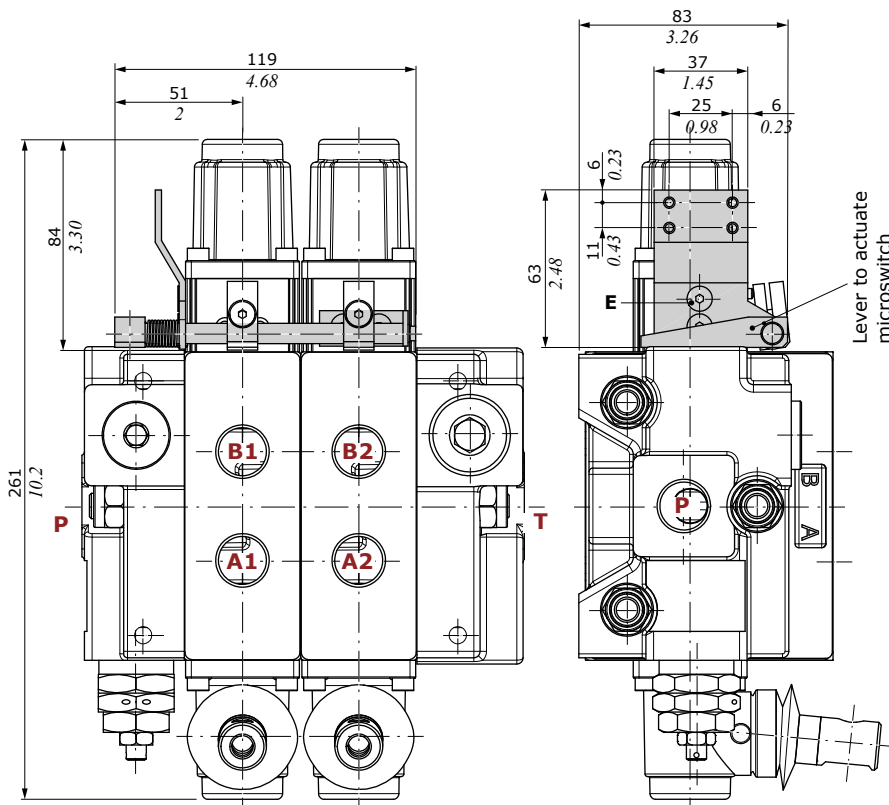


#### M3-N1 type

2 position (0-2), spring return in neutral position



### Microswitch assembly kit for 2 working section (M1-N1 type)



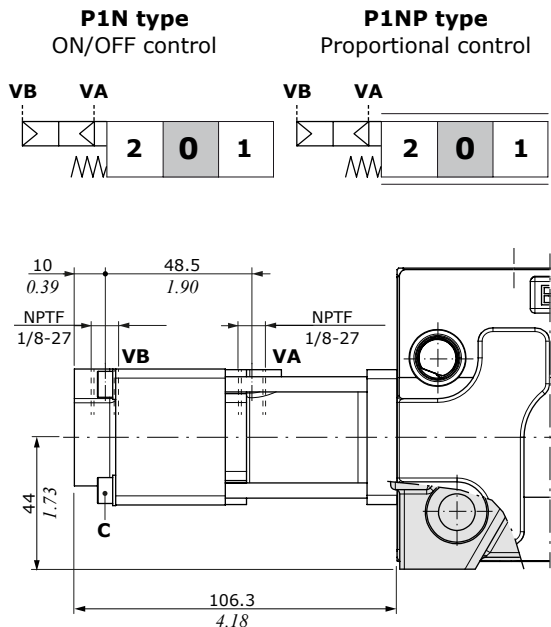
#### Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbf<sub>t</sub>)  
E = allen wrench 3 - 6.6 Nm (4.8 lbf<sub>t</sub>)

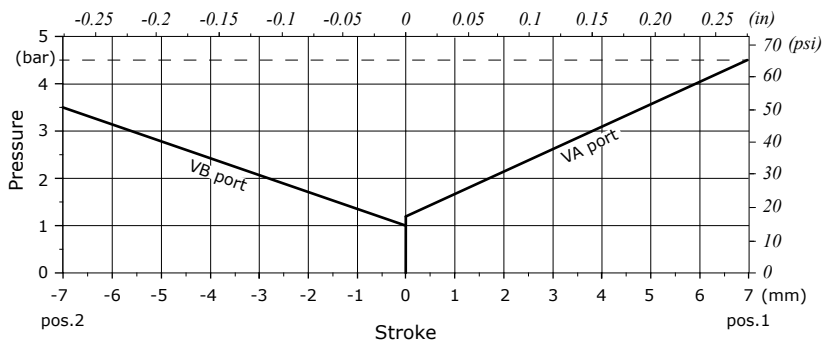
### Working section

#### B side controls

#### With pneumatic control



#### Proportional pilot pressure curves



#### Operating features

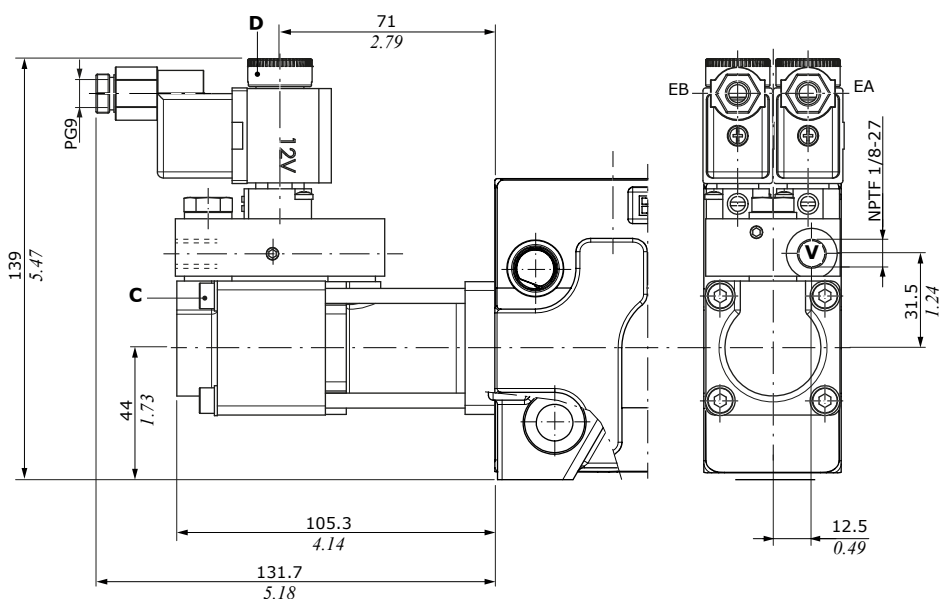
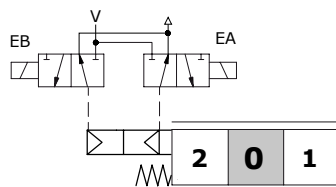
Pilot pressure.....: min. 5 bar (72.5 psi) - max. 30 bar (435 psi)  
Pilot volume.....: 9 cm<sup>3</sup>/min (0.54 in<sup>3</sup>/min)

#### Wrenches and tightening torques

C = wrench 4 - 6.6 Nm (4.8 lbft)

#### With ON/OFF electropneumatic control

#### D3W type ON/OFF control



#### Operating features

Pilot pressure.....: min. 1 bar (14.5 psi)  
max. 10 bar (145 psi)

#### COILS

Nominal voltage tolerance.....: -5% +10%  
Power rating.....: 5 W  
Nominal current.....: 12 VDC - 24VDC  
Coil insulation.....: Class F  
Weather protection.....: IP65  
Duty cycle.....: 100%

#### Wrenches and tightening torques

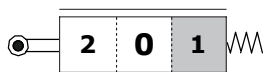
C = allen wrench 4 - 6.6 Nm (4.8 lbft)  
D = manual tightening - 6.6 Nm (4.8 lbft)

# A+B side controls

## With cam control

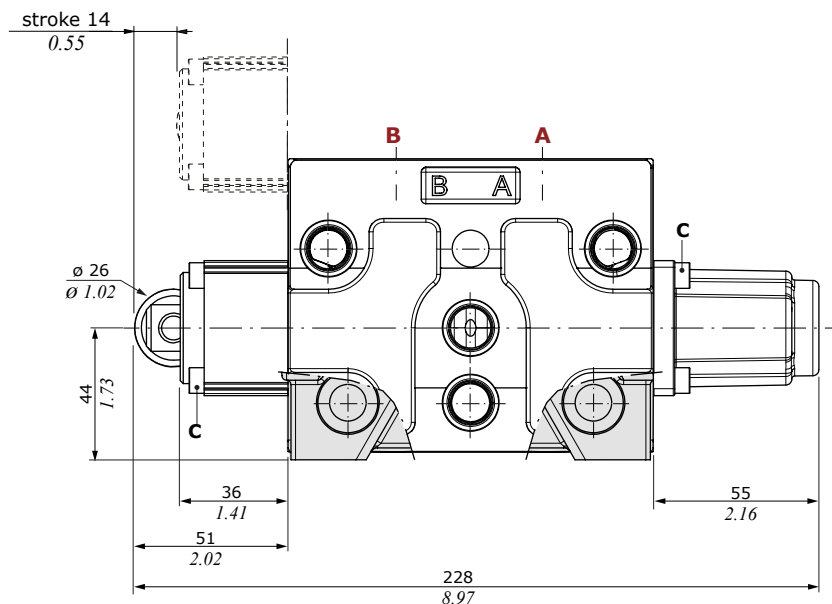
### C2 type

From position 1 to position 2,  
spring return in position 1



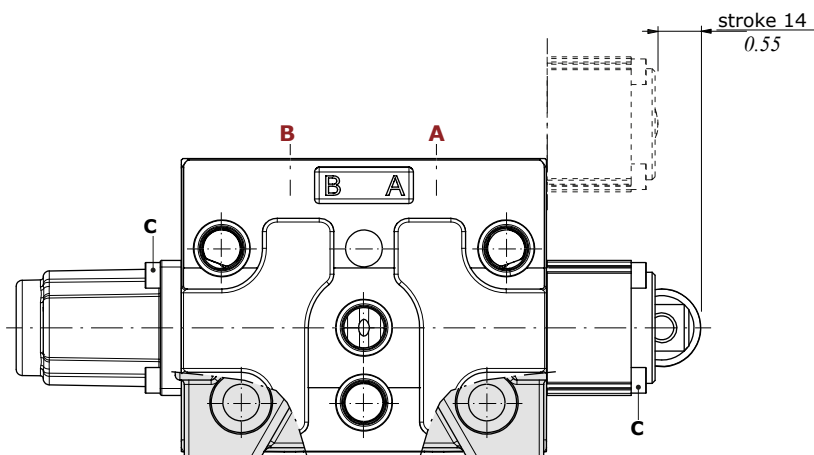
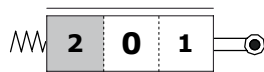
### Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbf·ft)



### C3 type

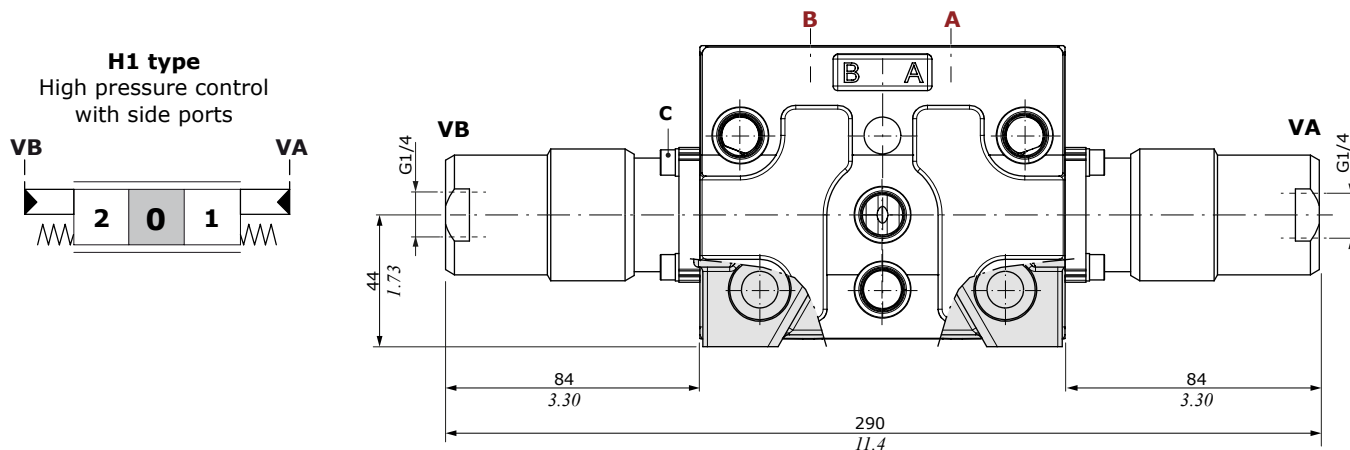
From position 2 to position 1,  
spring return in position 2.  
Dimensions are the same of C2 type



### Working section

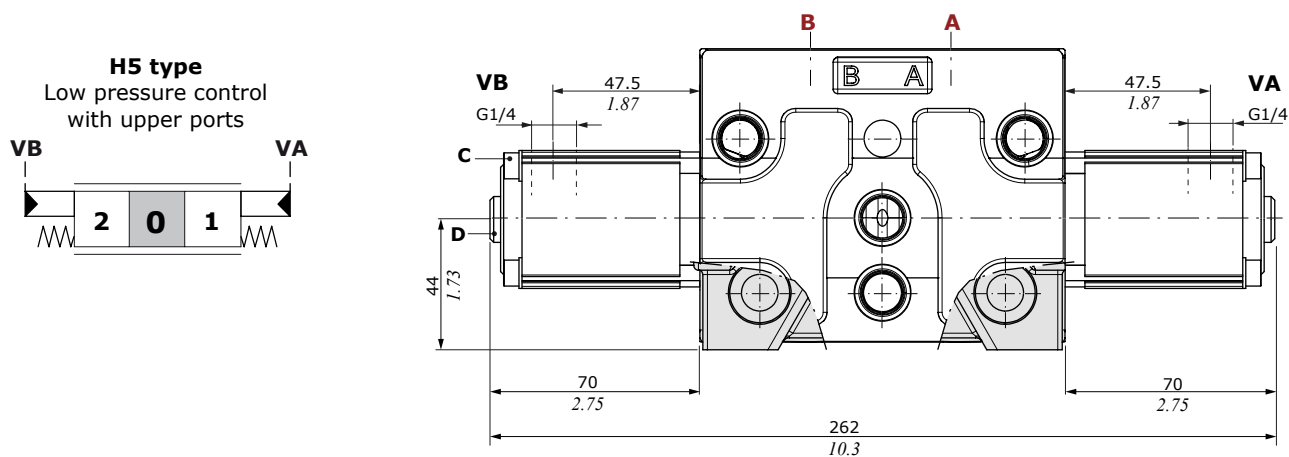
#### A+B side controls

#### With proportional hydraulic controls



#### Operating features

Pilot pressure..... : min. 16 bar (232 psi) - max. 350 bar (5070 psi)



#### Operating features

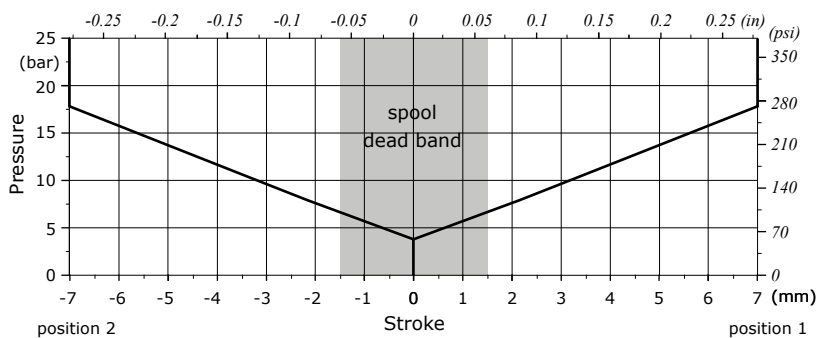
Pilot pressure..... : max. 100 bar (1450 psi)

#### Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)

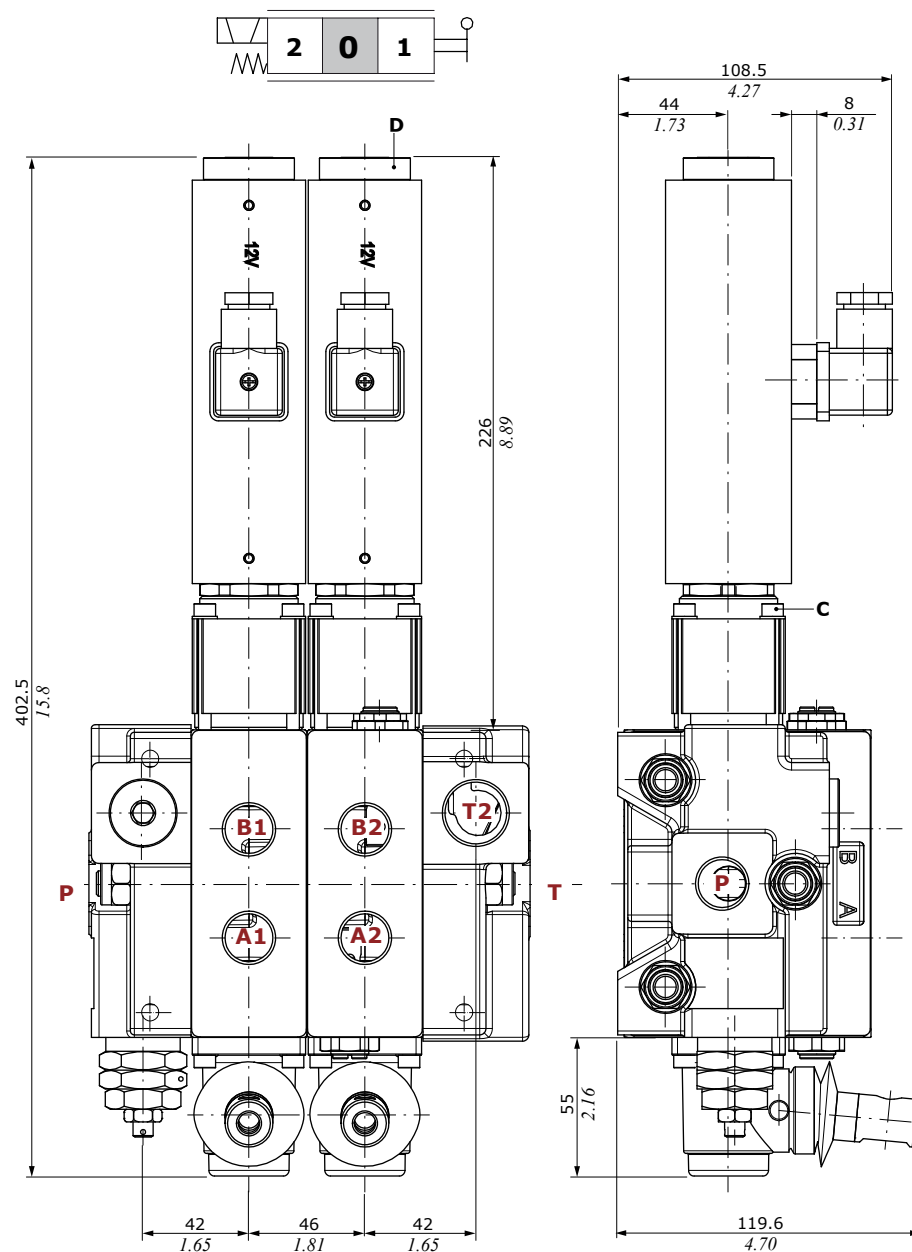
D = allen wrench 4 - 9.8 Nm (7.2 lbft)

#### Stroke vs. Pressure diagram for H5 type control



## Direct solenoid control

## D41 type: ON/OFF one side

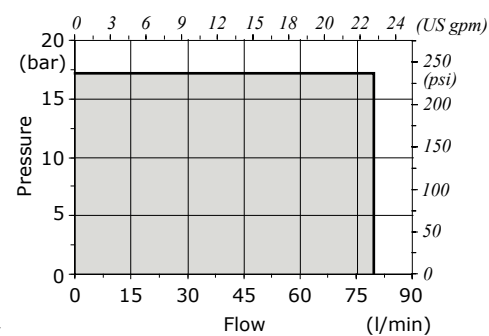


## D41 coil

|                           |                  |
|---------------------------|------------------|
| Nominal voltage           | 12 VDC<br>24 VDC |
| Nominal voltage tolerance | ±10%             |
| Power rating              | 80 W             |
| Insulation                | Class H          |
| Weather protection        | IP65             |

Connector type: ISO4400 3P+T-PG11

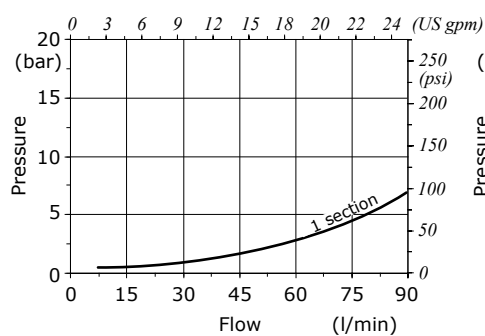
## Dynamic conditions



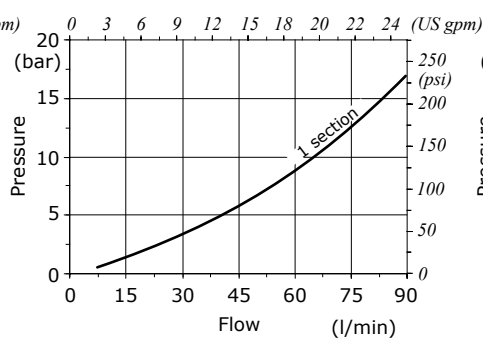
## Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)  
D = manual tightening - 6.6 Nm (4.8 lbft)

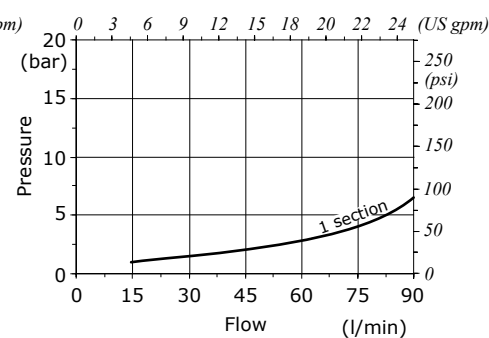
## P→T pressure drops



## P→A(B) pressure drops



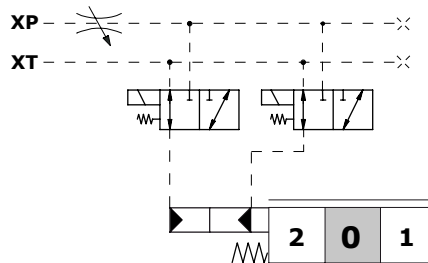
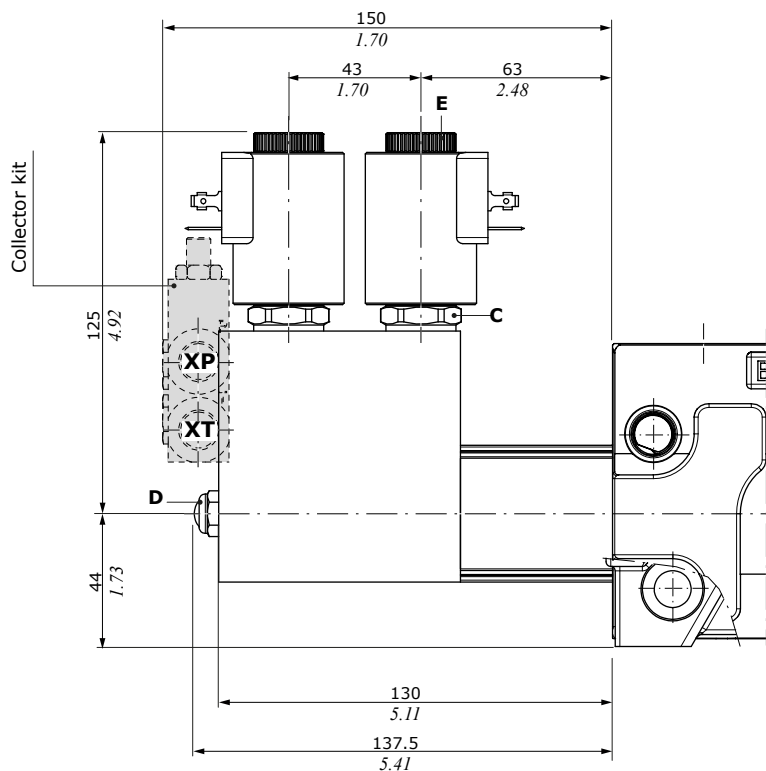
## A(B)→T pressure drops



### Working section

#### Electrohydraulic control

#### D2W type: ON/OFF one side

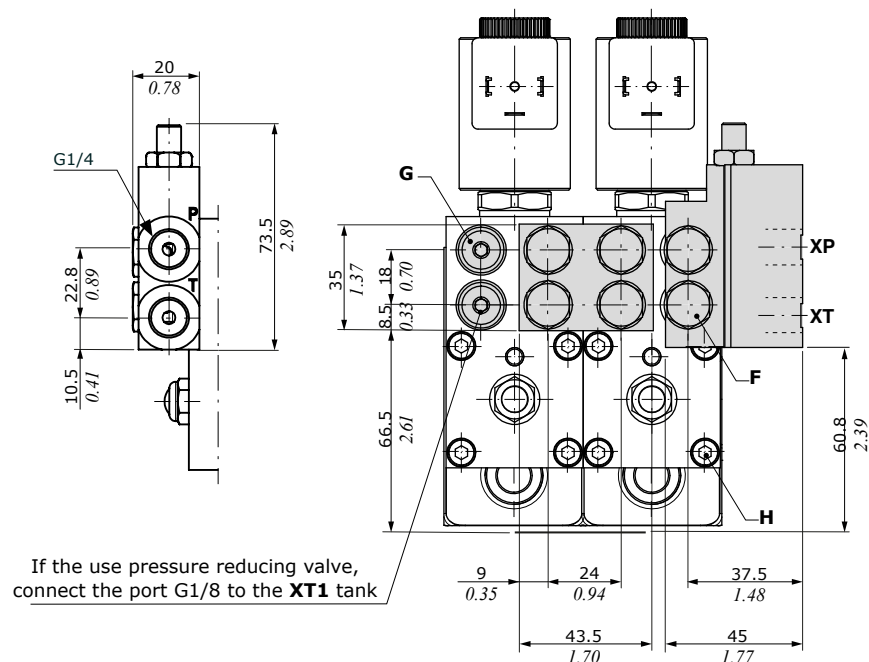


#### Features

Pilot pressure on XP..... : min. 20 bar (290 psi)  
: max. 35 bar (500 psi)  
Max backpressure on XT..... : 4 bar (58 psi)

For BT type coils and mating connectors, see page 243

#### KE2S connector kit



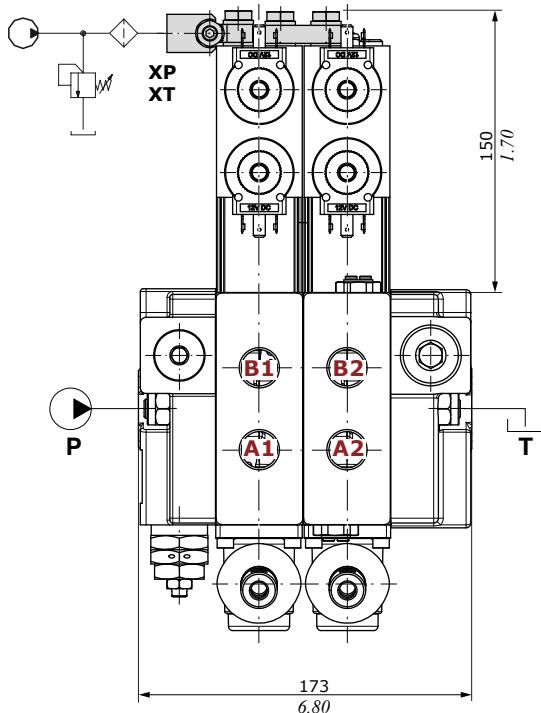
If the use pressure reducing valve, connect the port G1/8 to the XT1 tank

#### Wrenches and tightening torques

C = wrench 24 - 30 Nm (22.1 lbft)  
D = wrench 13 - 9 Nm (6.6 lbft)  
E = wrench 6.6 - 9.8 Nm (7.2 lbft)  
F = wrench 14 - 24 Nm (17.7 lbft)  
G = allen wrench 4 - 9.8 Nm (6.6 lbft)  
H = allen wrench 4 - 3 Nm (2.2 lbft)

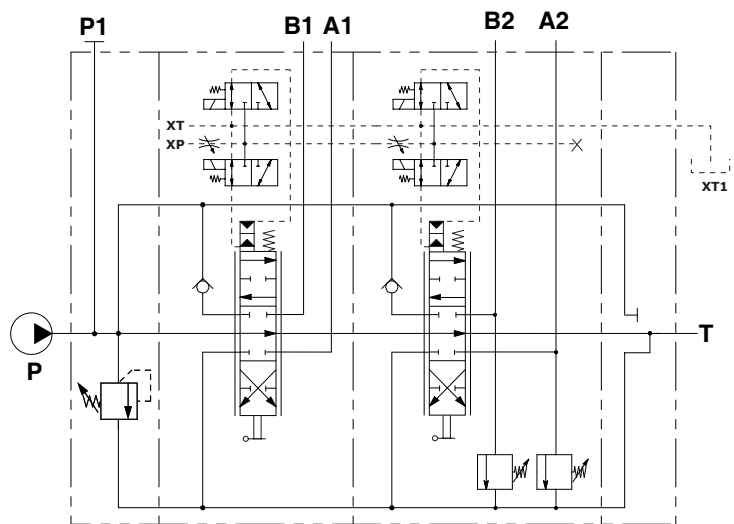
**Electrohydraulic control**

**Connector kit for external pilot and drain**



| CONNECTOR KIT CODES |            |                   |
|---------------------|------------|-------------------|
| Type                | Code*      | Description       |
| KE2S                | 5GKE08S020 | Kit for 2 section |

For other connector kit codes, see page 181

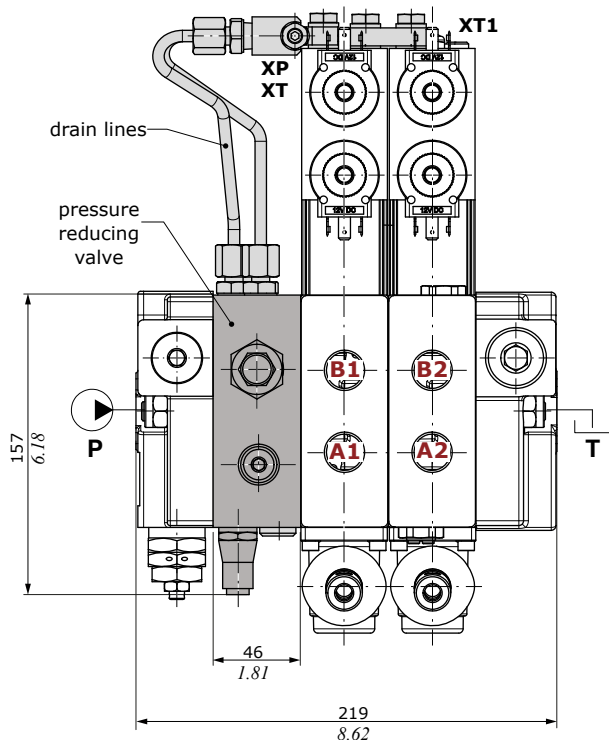


Description example:

Q80/2/F7S(N120)/**KE2S**/103-A1-**D2W**.V40(N)120/  
103-A1-**D2W**.V40(N)120/F3D-12VDC-S

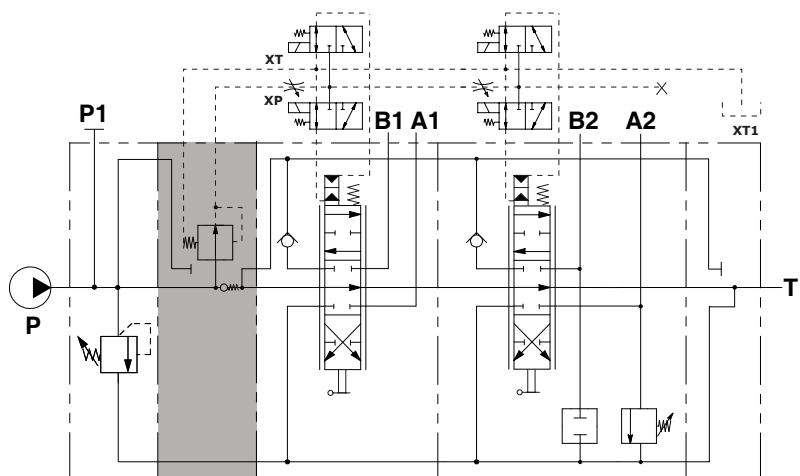
**Connector kit for internal pilot and drain**

The kit is made of collector, pressure reducing valve and drain lines.



| CONNECTOR KIT CODES |            |                   |
|---------------------|------------|-------------------|
| Type                | Code*      | Description       |
| KE2R                | 5GKE08R020 | Kit for 2 section |

For other connector kit codes, see page 181



Description example:

Q80/2/F7S(N120)/**KE2R**/103-A1-**D2W**.V40(N)120/  
103-A1-**D2W**.V40(N)120/F3D-12VDC-S

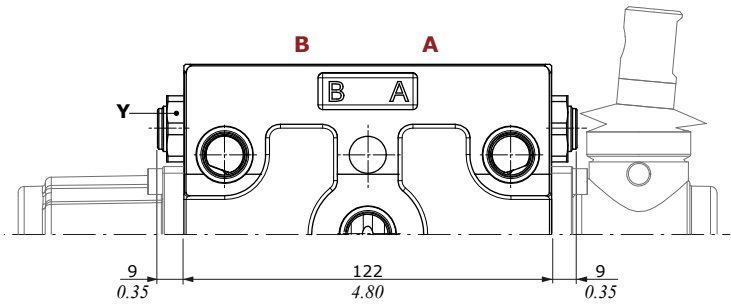
 Pressure reducing valve

Auxiliary valve configuration

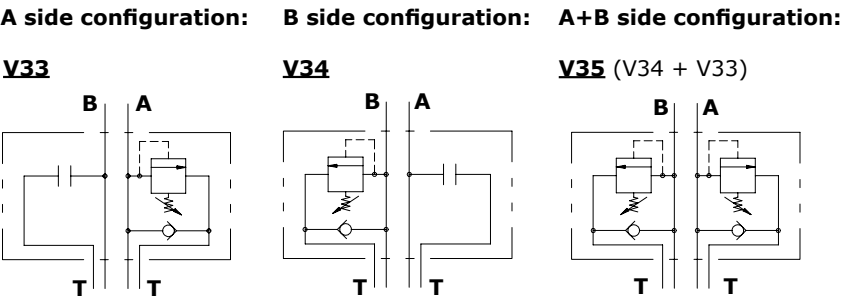
Dimensional data and hydraulic circuits

Description example

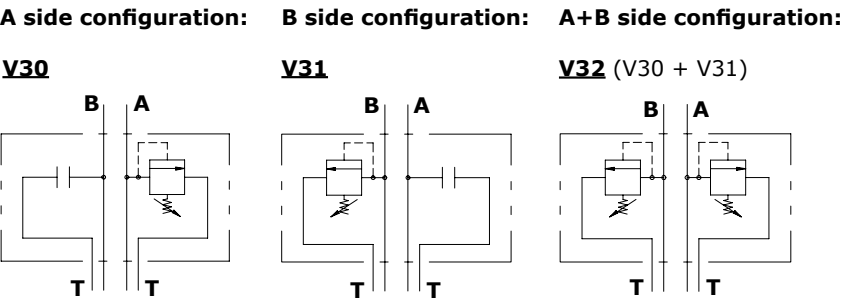
Q80 / 1 / ... / 103 - A1 - M1 - <sup>aux valve</sup> **V32(N)** <sup>spring type and valve setting (bar)</sup> **120** / ...



Antishock/anticavitation valve example



Antishock valve example



| Spring type | Setting ranges (bar - psi)          |
|-------------|-------------------------------------|
| B (white)   | From 30 to 80 - from 435 to 1150    |
| N (black)   | From 81 to 200 - from 1170 to 2900  |
| R (red)     | From 201 to 370 - from 2910 to 5400 |

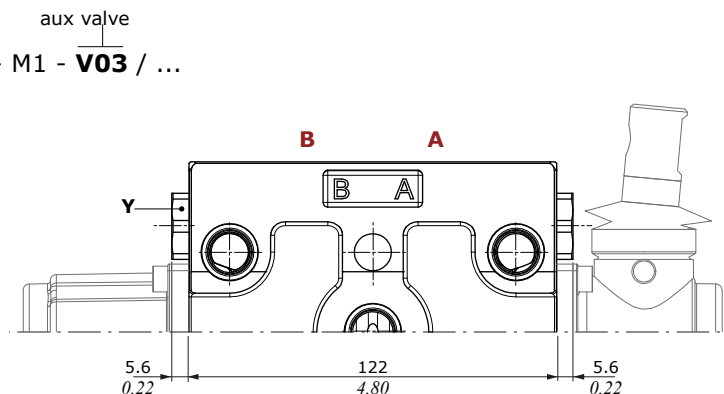
Wrenches and tightening torques  
Y = wrench 22 - 42 Nm (30.9 lbf ft)

## Auxiliary valve configuration

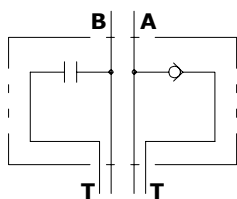
## Dimensional data and hydraulic circuits

## Anticavitation valve example

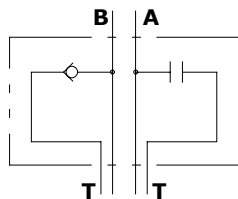
Q80 / 1 / ... / 103 - A1 - M1 - **V03** / ...



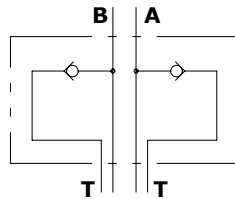
A side configuration:

**V04**

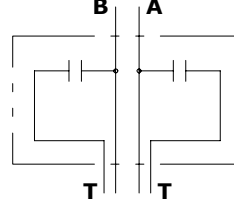
B side configuration:

**V05**

A+B side configuration:

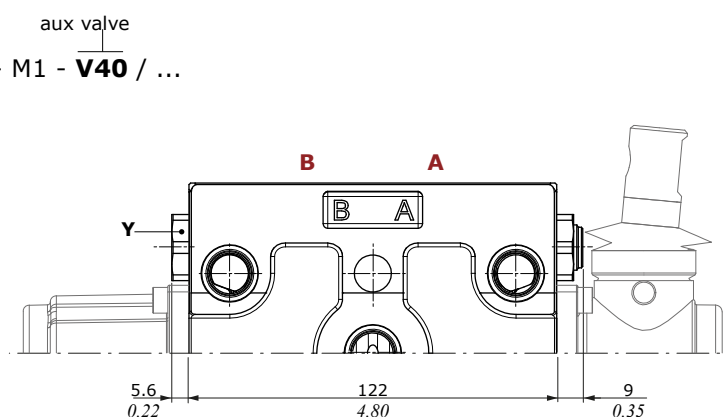
**V03** (V04 + V05)

Plug valve:

**VC**

## Antishock and anticavitation combining valves example

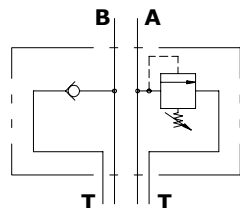
Q80 / 1 / ... / 103 - A1 - M1 - **V40** / ...



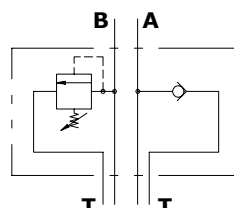
Wrenches and tightening torques

Y = wrench 22 - 42 Nm (30.9 lbft)

A side configuration:

**V40** (V30 + V05)

B side configuration:

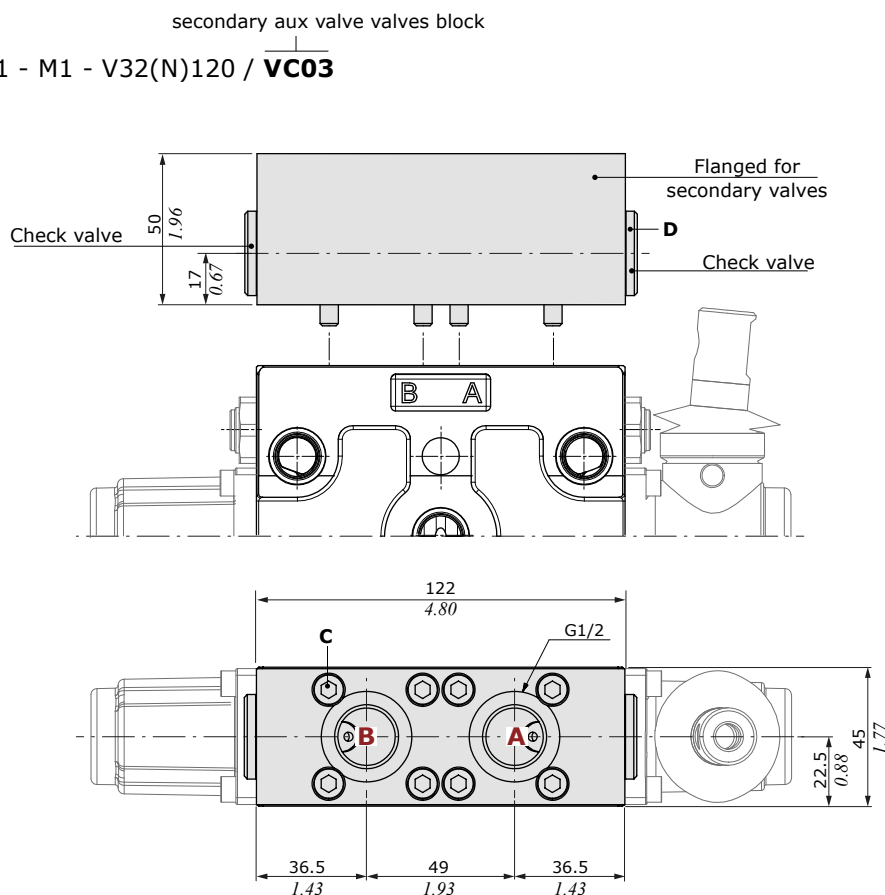
**V41** (V31 + V04)

### Secondary valve configuration

#### Dimensional data and hydraulic circuits

##### Description example

Q80 / 1 / ... / 103 - A1 - M1 - V32(N)120 / **VC03**



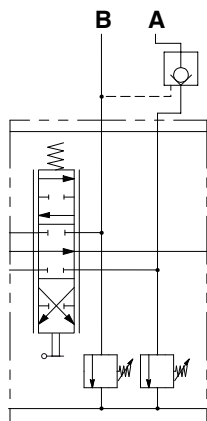
##### Wrenches and tightening torques

C = allen wrench 5 - 9.8 Nm (7.2 lbft)

D = allen wrench 8 - 60 Nm (44.2 lbft)

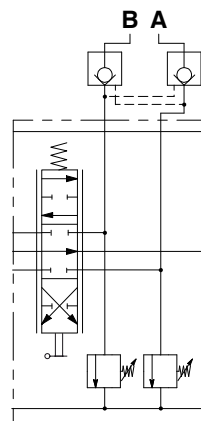
##### Q80.V40(N)120/VC01 configuration

Parallel circuit, mechanical control with aux valves and flanged for single piloted check valve on A port



##### Q80.V40(N)120/VC03 configuration

Parallel circuit, mechanical control with aux valves and flanged for double piloted check valve on A and B ports

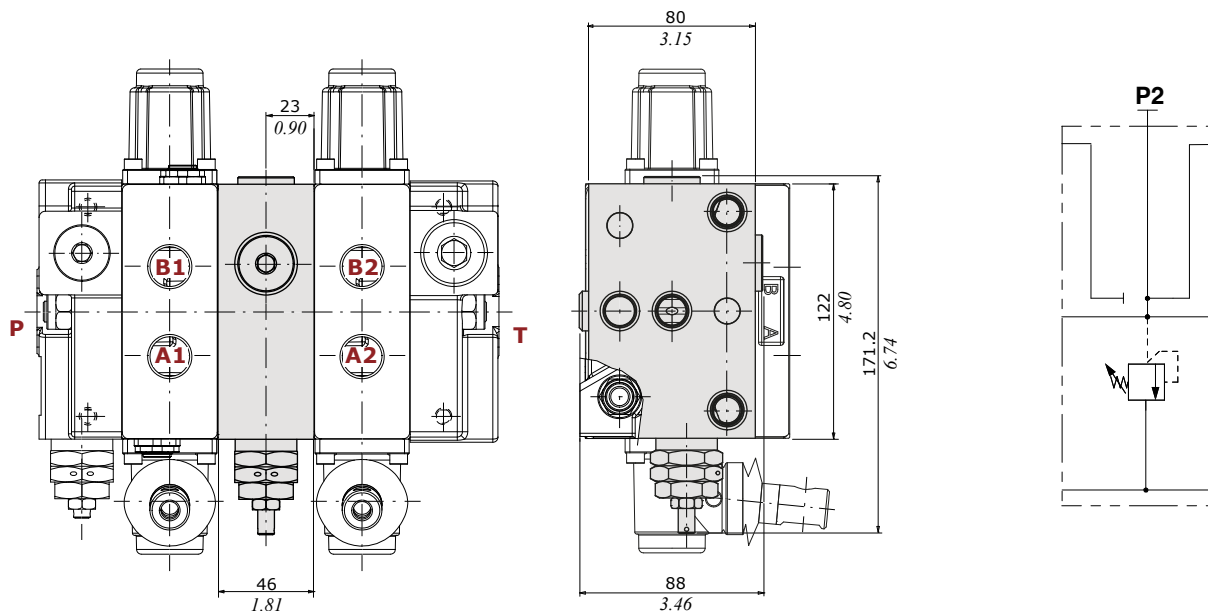


## Intermediate section

## Dimensional data and hydraulic circuit

**E50 type**

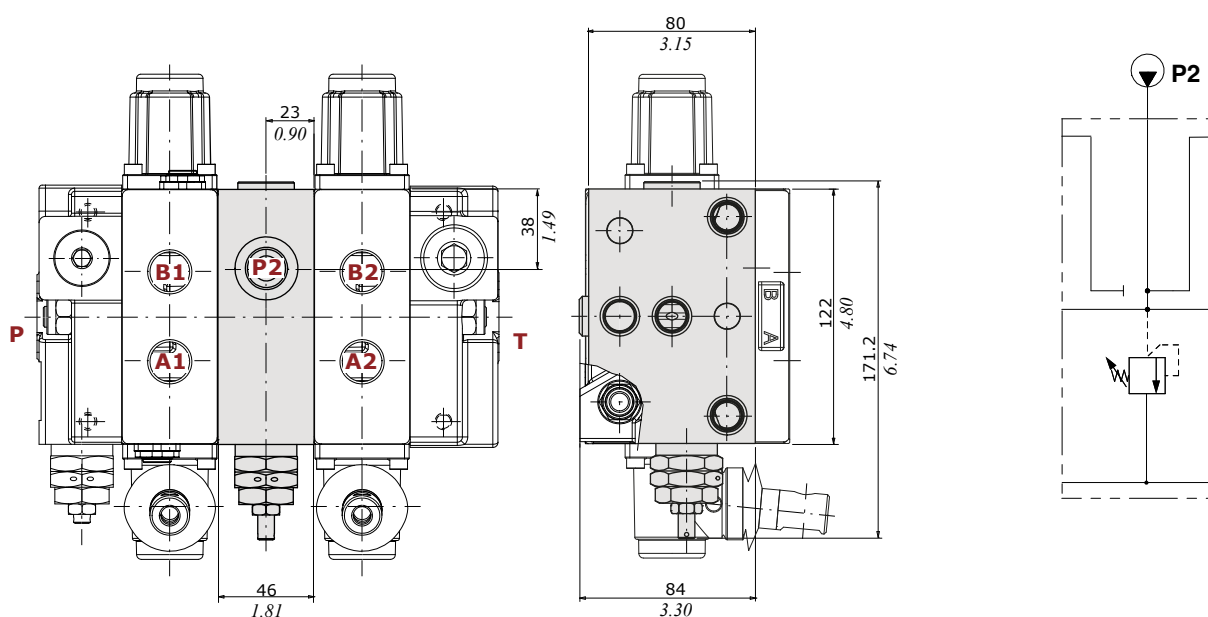
Intermediate inlet section with pressure relief valve

Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E50(N150)**/103-A1-M1/F3D

intermediate section spring type and valve setting (bar)

**E53 type**

Intermediate inlet section with pressure relief valve and P2 port open

Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E53(N150)**/103-A1-M1/F3D

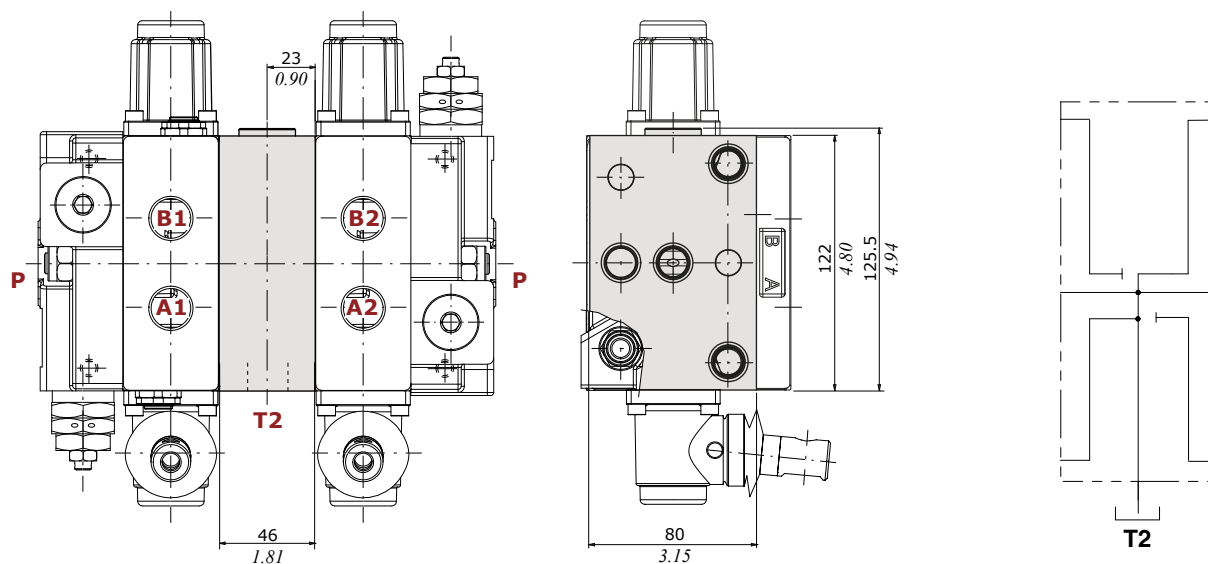
intermediate section spring type and valve setting (bar)

### Intermediate section

#### Dimensional data and hydraulic circuit

##### E51 type

Intermediate outlet section, T2 port open

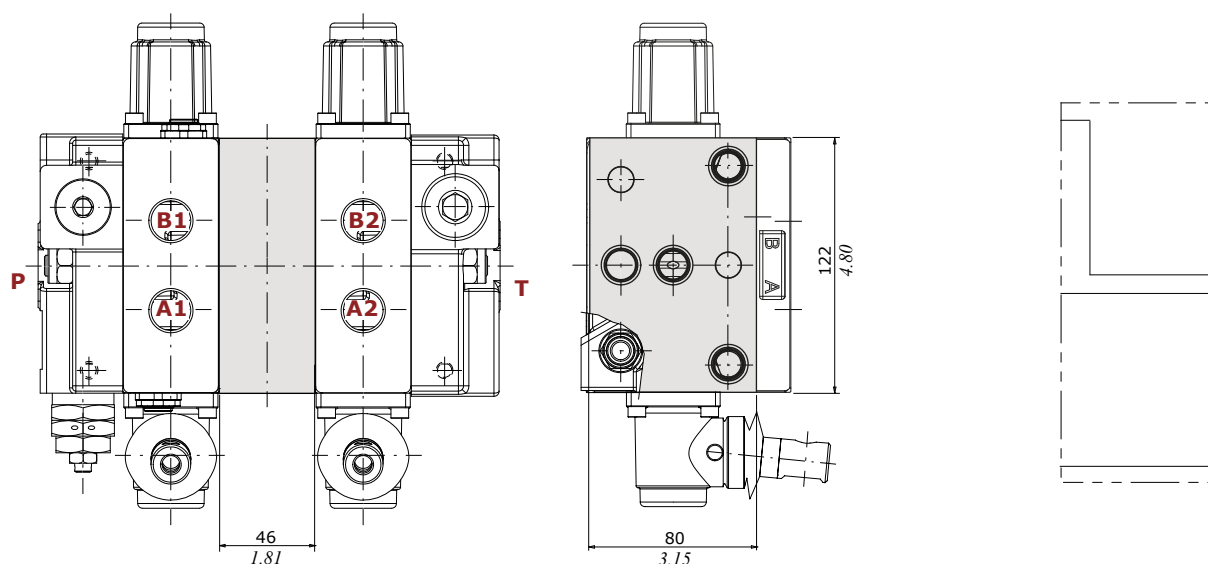


Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E51**/103-A1-M1/F3D

intermediate  
section

##### E61 type

Intermediate spacer section

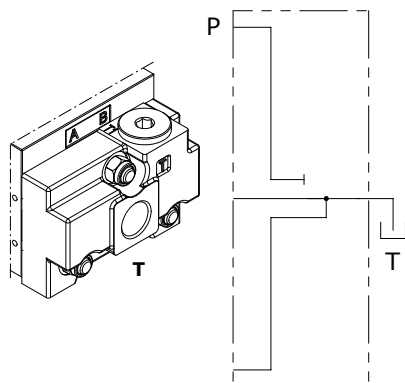


Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E61**/103-A1-M1/F3D

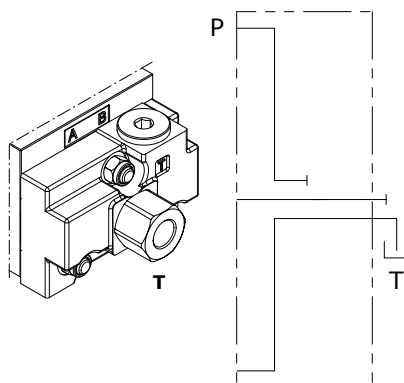
intermediate  
section

# Outlet section

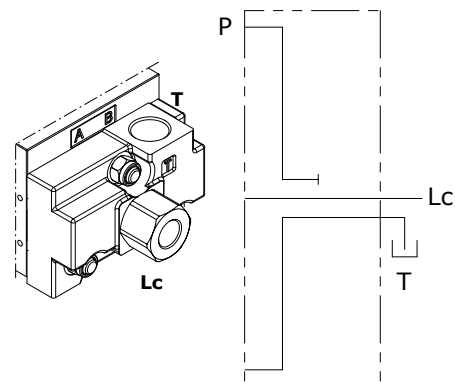
**F3D configuration**  
Open center configuration



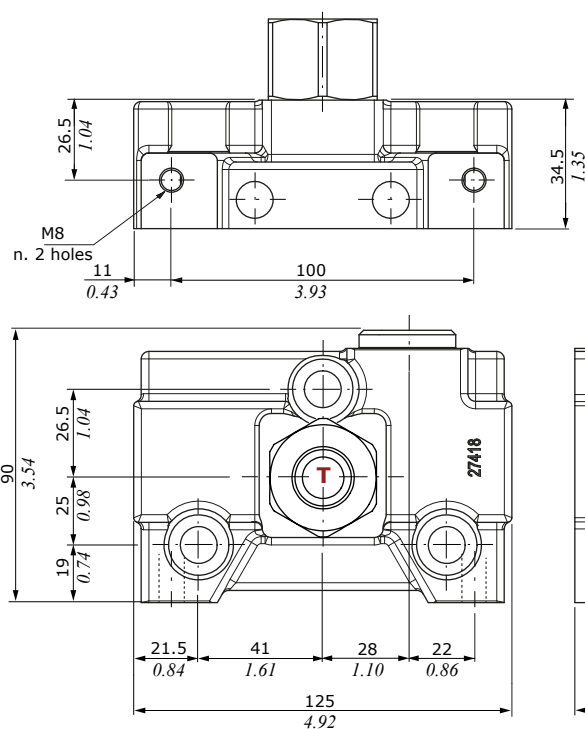
**F16D configuration**  
Closed center configuration



**F6D configuration**  
Carry-over configuration



## F16D configuration example



## Wrenches and tightening torques

E = allen wrench 12 - 42 Nm (30.9 lbft)

F = wrench 36 - 80 Nm (59 lbft)