



## Q25 - Q45

### Monoblock directional valves

- Simple, compact and heavy duty designed monoblock valve
- From 1 to 8 sections
- For open and closed center hydraulic systems, optional carry over port
- Mechanical, pneumatic, electropneumatic, hydraulic and direct solenoid 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.

|                                         |                          | Q25                                        | Q45                      |
|-----------------------------------------|--------------------------|--------------------------------------------|--------------------------|
| Nominal flow rating                     |                          | 30 l/min - (8 Us gpm)                      | 50 l/min - (13.2 Us gpm) |
| Max. pressure                           | from 1 up to 2 sections  | max. 300 bar (4350 psi)                    |                          |
|                                         | 3 sections               |                                            |                          |
|                                         | from 4 up to 8 sections  |                                            |                          |
| Max. back pressure on outlet T port (*) |                          | 25 bar (360 psi)                           |                          |
| Number sections                         |                          | from 1 to 8                                |                          |
| Internal leakage A(B)⇒T                 | Δp = 100 bar (1450 psi)  | 4 cm³/min (0.24 in³/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 mm²/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.

(\*): On request for 1 or 2 section monoblock valve only, max back pressure allowable is 180 bar (2610 psi)

#### REFERENCE STANDARD

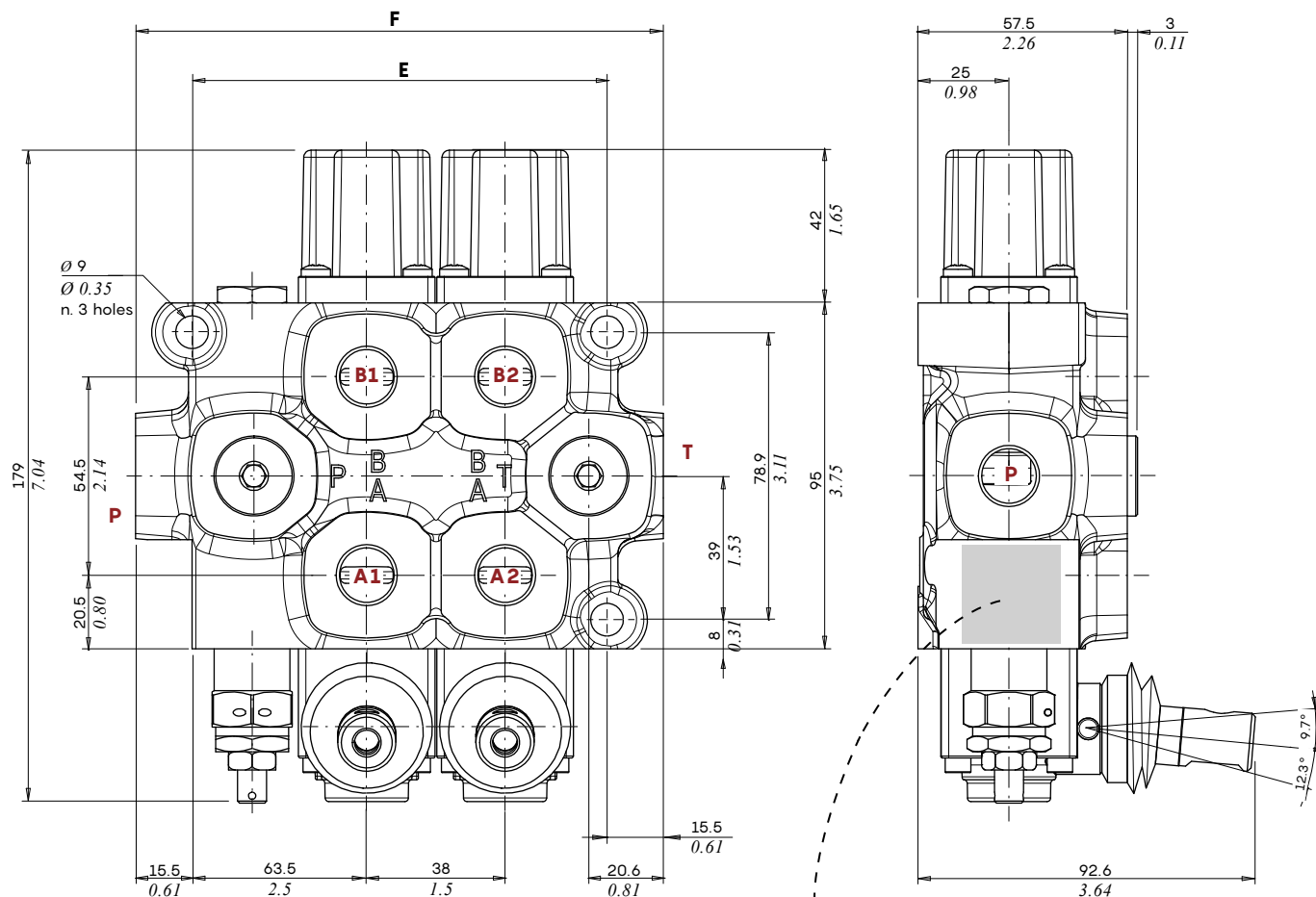
|                               |     | BSP                 | UN-UNF            |
|-------------------------------|-----|---------------------|-------------------|
| THREAD ACCORDING TO           |     | ISO 228/1           | ISO 263           |
|                               |     | BS 2779       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

#### PORT THREADING

| PORTS                              | Q25         |                 | Q45         |                 |
|------------------------------------|-------------|-----------------|-------------|-----------------|
|                                    | BSP         | UN-UNF          | BSP         | UN-UNF          |
| P Inlet                            | G 3/8       | 9/16-18 (SAE 6) | G 1/2       | 3/4-16 (SAE 8)  |
| P1 Inlet                           | G 3/8       | 9/16-18 (SAE 6) | G 1/2       | 3/4-16 (SAE 8)  |
| A and B ports                      | G 3/8       | 9/16-18 (SAE 6) | G 1/2       | 3/4-16 (SAE 8)  |
| T Outlet                           | G 1/2       | 7/8-14 (SAE 10) | G 1/2       | 7/8-14 (SAE 10) |
| T1 Outlet                          | G 3/8       | 9/16-18 (SAE 6) | G 1/2       | 3/4-16 (SAE 8)  |
| Lc port (Carry-over plug - T port) | G 3/8       | 3/4-16 (SAE 8)  | G 1/2       | 3/4-16 (SAE 8)  |
| Hydraulic controls                 | G 1/4       | 9/16-18 (SAE 6) | G 1/4       | 9/16-18 (SAE 6) |
| Pneumatic controls                 | NPTF 1/8-27 | NPTF 1/8-27     | NPTF 1/8-27 | NPTF 1/8-27     |

### Dimensional data

The Q25 and Q45 monoblock valves, have same dimensions but different threads. See port threading on page 5. Drawing are referred to a Q25 monoblock valve.



| Type          | E   |       | F   |       |
|---------------|-----|-------|-----|-------|
|               | mm  | in    | mm  | in    |
| Q25/1 - Q45/1 | 76  | 2.99  | 107 | 4.21  |
| Q25/2 - Q45/2 | 114 | 4.48  | 145 | 5.70  |
| Q25/3 - Q45/3 | 152 | 5.98  | 183 | 7.2   |
| Q25/4 - Q45/4 | 190 | 7.48  | 221 | 8.7   |
| Q25/5 - Q45/5 | 228 | 8.97  | 259 | 10.19 |
| Q25/6 - Q45/6 | 266 | 10.47 | 297 | 11.69 |
| Q25/7 - Q45/7 | 304 | 11.96 | 335 | 13.18 |
| Q25/8 - Q45/8 | 342 | 13.46 | 373 | 14.68 |

MADE IN ITALY  
**1GB75040009**

DISTRIBUTORE  
Q25/2  
**MD1600464-001**

Product code

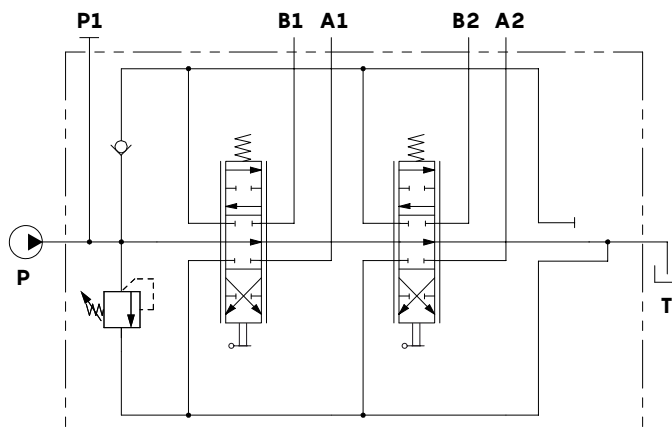
Code description

Product allotment

Datamatrix with product allotment

NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.

Hydraulic circuit

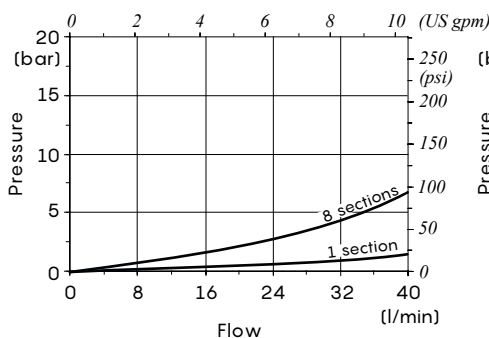


Description example (parallel circuit):  
 Q25/2/F1S(N250)/103-A1-M1/103-A1-M1/F3D-S  
 Q45/2/F1S(N250)/103-A1-M1/103-A1-M1/F3D-S

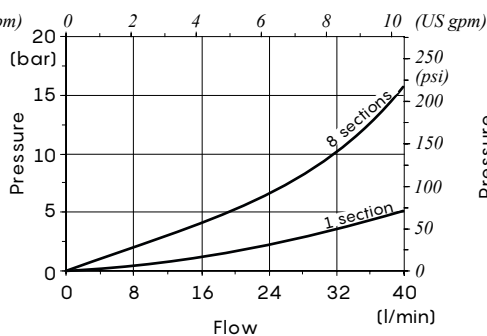
Performance data

Q25

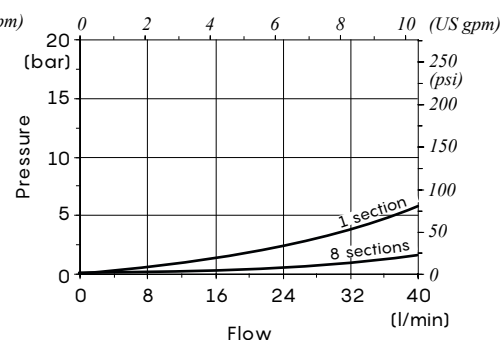
P⇒T pressure drops



P⇒A(B) pressure drops

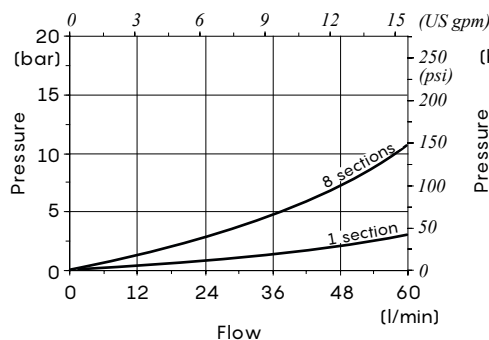


A(B)⇒T pressure drops

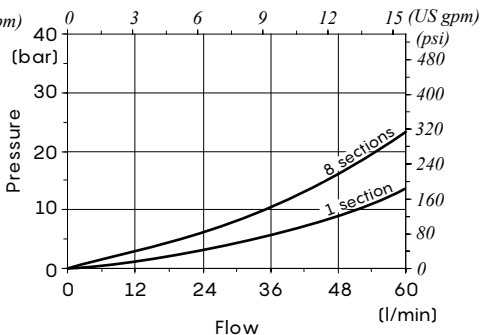


Q45

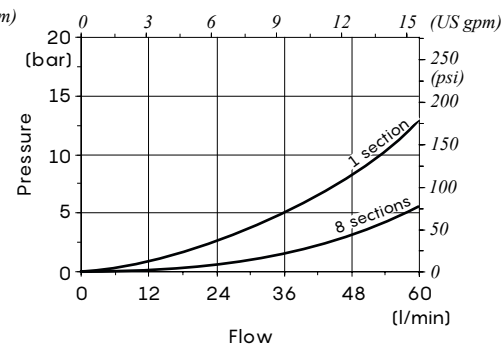
P⇒T pressure drops



P⇒A(B) pressure drops



A(B)⇒T pressure drops



### Parts ordering codes

#### Mechanical control valve configuration example

valve setting (bar)

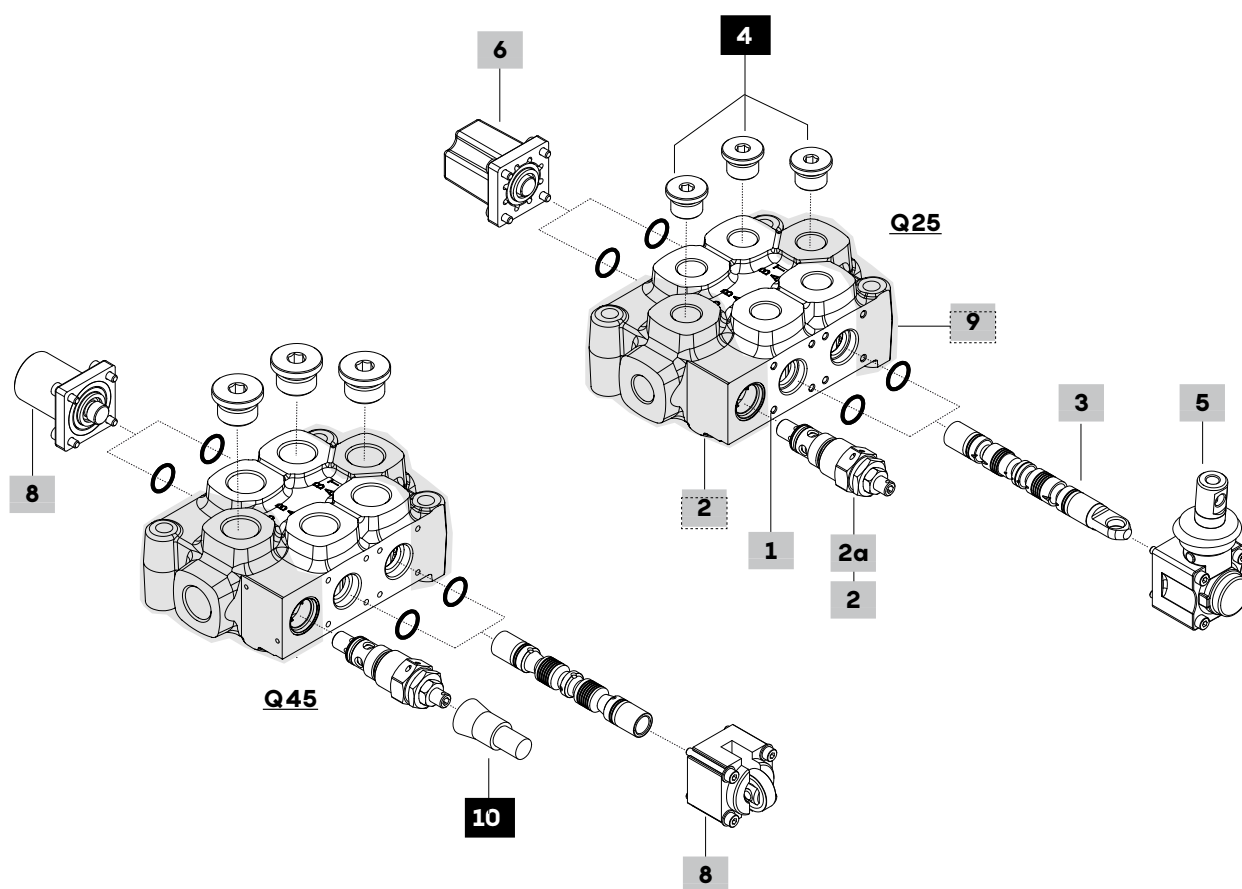
**Q25 / 2 / F1S (N150) / 102 – A1 – M1 / 103 – A1 – M1 / F3D – S**

1 2 2a 3 5 6 9 aluminium controls

N. of section

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

**Q45 / 2 / F1S (N150) / 103 – C3 / 103 – C3 / F3D – S**



## Parts ordering codes

**1 Body kit\***

The codes are referred to sections with O-ring seals

| TYPE         | CODE          | DESCRIPTION |
|--------------|---------------|-------------|
| <b>Q25/1</b> | 5KC0600127574 | 1 section   |
| <b>Q25/2</b> | 5KC0600127673 | 2 sections  |
| <b>Q25/3</b> | 5KC0600129552 | 3 sections  |
| <b>Q25/4</b> | 5KC0600129550 | 4 sections  |
| <b>Q25/5</b> | 5KC0600129551 | 5 sections  |
| <b>Q25/6</b> | 5KC0600129715 | 6 sections  |
| <b>Q25/7</b> | 5KC0600130905 | 7 sections  |
| <b>Q25/8</b> | 5KC0600131361 | 8 sections  |

|              |               |            |
|--------------|---------------|------------|
| <b>Q45/1</b> | 5KC0600127973 | 1 section  |
| <b>Q45/2</b> | 5KC0600128051 | 2 sections |
| <b>Q45/3</b> | 5KC0600129676 | 3 sections |
| <b>Q45/4</b> | 5KC0600129677 | 4 sections |
| <b>Q45/5</b> | 5KC0600129678 | 5 sections |
| <b>Q45/6</b> | 5KC0600129876 | 6 sections |
| <b>Q45/7</b> | 5KC0600131148 | 7 sections |
| <b>Q45/8</b> | 5KC0600131620 | 8 sections |

**2 Inlet configuration\*** page 14

| TYPE       | DESCRIPTION                                         |
|------------|-----------------------------------------------------|
| <b>F1S</b> | With load check and pressure relief valves          |
| <b>F2S</b> | With load check valve                               |
| <b>F7S</b> | With pressure relief valve                          |
| <b>F8S</b> | Without valves (pressure relief valve plugged port) |

**Note:** Inlet configurations require upper P port plugged: see #4

**2a Main pressure relief valve** page 15

|                                                                      |                        |
|----------------------------------------------------------------------|------------------------|
| TYPE: <b>B</b>                                                       | CODE: 7000352050000000 |
| DESCRIPTION: VLP35S valve, setting range 10–100 bar (145–1450 psi)   |                        |
| TYPE: <b>N</b>                                                       | CODE: 7000351050000000 |
| DESCRIPTION: VLP35S valve, setting range 101–200 bar (1460–2900 psi) |                        |
| TYPE: <b>R</b>                                                       | CODE: 7000353050000000 |
| DESCRIPTION: VLP35S valve, setting range 201–380 bar (2910–5500 psi) |                        |
| TYPE: <b>-</b>                                                       | CODE: 060002788899     |
| DESCRIPTION: Relief valve blanking plug                              |                        |

**3 Spool** page 16

| TYPE                   | CODE         | DESCRIPTION                                                                                                |
|------------------------|--------------|------------------------------------------------------------------------------------------------------------|
| <b>Standard spools</b> |              |                                                                                                            |
| <b>103</b>             | 060103179499 | Double acting, A and B closed in neutral position                                                          |
|                        | 3CUG3197800  | As previous one, for <b>kick-out</b> control                                                               |
| <b>106</b>             | KR30106      | Double acting, for closed circuit                                                                          |
| <b>107</b>             | KR30107-108  | Double acting, A to tank and B closed in neutral position                                                  |
| <b>108</b>             | KR30107-108  | Double acting, B to tank and A closed in neutral position                                                  |
| <b>111</b>             | 060103179599 | Double acting, A and B to tank in neutral position                                                         |
|                        | KR30111K     | As previous one, for <b>kick-out</b> control                                                               |
| <b>114</b>             | KR30114      | Double acting, A and B to tank in neutral position, for closed circuit                                     |
| <b>101</b>             | 3CUG3218000  | Single acting on port A (3)                                                                                |
| <b>102</b>             | 3CUG3218001  | Single acting on port B (3)                                                                                |
| <b>116</b>             | 3CUG3179200  | Double acting, with floating in the 4 <sup>th</sup> position (spool in): requires dedicated spool control  |
| <b>126</b>             | 3CUG3179201  | Double acting, with floating in the 4 <sup>th</sup> position (spool out): requires dedicated spool control |

**Note (3):** Q25 valve required G3/8 plug, see #4  
Q45 valve required G1/2 plug, see #4

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

(<sup>1</sup>): Always complete with lever knob

(<sup>2</sup>): To be assembled only with M4 control

**3 Spool (cont.)** page 17

| TYPE                                                                             | CODE         | DESCRIPTION                                        |
|----------------------------------------------------------------------------------|--------------|----------------------------------------------------|
| <b>Special spools for cam, microswitch controls and other leverless controls</b> |              |                                                    |
| <b>103</b>                                                                       | 060103179099 | Double acting, A and B closed in neutral position  |
| <b>111</b>                                                                       | 060103179199 | Double acting, A and B to tank in neutral position |

**4 Plug for single acting spool or P-T ports\***

| TYPE | CODE         | DESCRIPTION             |
|------|--------------|-------------------------|
| -    | 060002792199 | G3/8 plug for Q25 valve |
| -    | 060002792099 | G1/2 plug for Q45 valve |

**5 A side control** page 31

| TYPE                                                                     | CODE           | DESCRIPTION                                                        |
|--------------------------------------------------------------------------|----------------|--------------------------------------------------------------------|
| <b>For standard spools</b>                                               |                |                                                                    |
| <u>With lever control:</u>                                               |                |                                                                    |
| <b>A1</b>                                                                | 03600A1-A2     | M8 thread plastic lever box                                        |
| <b>A2</b>                                                                | 03600A1-A2     | As A1 type, with lever box rotated 180°                            |
| <b>A1/10</b>                                                             | 03610A1-A2/10  | M8 thread aluminium lever box                                      |
| <b>A2/10</b>                                                             | 03610A1-A2/10  | As A1/10 type, with lever box rotated 180°                         |
| <b>A1/06</b>                                                             | 03606A1-A2/06  | Aluminium lever box with stroke limiter                            |
| <b>A2/06</b>                                                             | 03606A1-A2/06  | As A1/06 type, with lever box rotated 180°                         |
| <b>A1/PM</b>                                                             | 03610A1-A2/PM  | M10 thread aluminium lever box                                     |
| <b>A2/PM</b>                                                             | 03610A1-A2/PM  | As A1/PM type, with lever box rotated 180°                         |
| <b>A1/PMP</b>                                                            | 03610A1-A2/PMP | M10 thread plastic lever box                                       |
| <b>A2/PMP</b>                                                            | 03610A1-A2/PMP | As A1/PMP type, with lever box rotated 180°                        |
| <b>A1/Z1</b>                                                             | 03610A1-A2/Z1  | Plastic lever box for <b>116</b> spool type                        |
| <b>A2/Z1</b>                                                             | 03610A1-A2/Z1  | As A1/Z1 type, with lever box rotated 180°                         |
| <u>With safety lever control:</u>                                        |                |                                                                    |
| <b>A1/S<sup>(1)</sup></b>                                                | 03624A1-A2/S   | M8 thread aluminium lever box                                      |
| <b>A2/S<sup>(1)</sup></b>                                                | 03624A1-A2/S   | As A1/S type, with lever box rotated 180°                          |
| <u>Without lever control:</u>                                            |                |                                                                    |
| <b>A4/Z1</b>                                                             | 03617A4/Z1     | M8 male thread external pin with flange, for <b>116</b> spool type |
| <b>A6</b>                                                                | 03620A6        | With flange                                                        |
| <b>A6-H/Z1</b>                                                           | 03620A6-H/Z1SI | As A6 type, for <b>116</b> spool type                              |
| <b>A8</b>                                                                | 03622A8        | Flexible cable control arrangement                                 |
|                                                                          | 03622A8/03     | As previous one, with aluminium cap                                |
| <b>A8/Z1</b>                                                             | 03622A8/Z1     | As A8 type, for <b>116</b> spool type                              |
| <u>Joystick controls for 2 section operation:</u>                        |                |                                                                    |
| <b>A35/1</b>                                                             | 03640A35-12    | Joystick 1 type                                                    |
| <b>A35/2</b>                                                             | 03640A35-12    | Joystick 2 type                                                    |
| <b>A35/3</b>                                                             | 03640A35-34    | Joystick 3 type                                                    |
| <b>A35/4</b>                                                             | 03640A35-34    | 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 #7 |                |                                                                    |
| <b>N1-A1</b>                                                             | 03641N1-A1/A2  | Micro operation in pos. 1 and 2, with lever box                    |
|                                                                          | 03641N1-A1/10  | As previous one, with aluminium lever box                          |
| <b>N1A-A1</b>                                                            | 03642N1A-A1/A2 | Micro operation in pos. 1, with lever box                          |
| <b>N1B-A1</b>                                                            | 03643N1BA1/A2L | Micro operation in pos. 2, with lever box                          |
| <b>N1-A3</b>                                                             | 03648N1-A3L    | Micro operation in pos. 1 and 2, without lever with cap            |
| <b>N1A-A3</b>                                                            | 03648N1A-A3L   | Micro operation in pos. 1, without lever with cap                  |
| <b>N1B-A3</b>                                                            | 03648N1B-A3L   | Micro operation in pos. 2, without lever with cap                  |
| <u>Without lever control:</u>                                            |                |                                                                    |
| <b>A3</b>                                                                | 03614A3        | Without lever, with cap                                            |
|                                                                          | 03614A3/03     | As previous one, with aluminium cap                                |
| <b>A4</b>                                                                | 03617A4        | M8 male thread external pin with flange                            |
|                                                                          | 03617A4/03     | As previous one, with aluminium flange                             |
| <b>A4/01</b>                                                             | 03617A4/01     | M10 male thread external pin with flange                           |
| <b>A5<sup>(2)</sup></b>                                                  | 03619A5        | Flange with spherical spool end                                    |
|                                                                          | 03619A5/10     | As previous one, with aluminium flange                             |

## Parts ordering codes

| 6                                               | B side control | page 25                                                           |
|-------------------------------------------------|----------------|-------------------------------------------------------------------|
| TYPE                                            | CODE           | DESCRIPTION                                                       |
| <u>With spring return:</u>                      |                |                                                                   |
| <b>M1</b>                                       | 03730M1        | 3 pos., spring return in neutral position                         |
|                                                 | 03730M1/03     | As previous one, with aluminium cap                               |
| <b>M1-B1</b>                                    | 03753M1-B1     | As M1 type, with microswitch arrangement                          |
|                                                 | 03753M1-B1/03  | As previous one, with aluminium cap                               |
| <b>M1/01</b>                                    | 03730M1/01     | As M1 type, for mechanical joystick                               |
|                                                 | 03730M1/01/03  | As previous one, with aluminium cap                               |
| <b>M1/02</b>                                    | 03730M1/02     | As M1 type, with stroke limiter                                   |
| <b>M1-U1</b>                                    | 03701M1-U1     | As M1 type, with M8 male thread external pin                      |
| <b>M2</b>                                       | 03732M2        | 2 pos. (0-1), spring return in neutral pos.                       |
|                                                 | 03732M2/03     | As previous one, with aluminium cap                               |
| <b>M2-U1</b>                                    | 03702M2-U1     | As M2 type, with M8 male thread external pin                      |
| <b>M3</b>                                       | 03733M3        | 2 pos. (0-2), spring return in neutral pos.                       |
|                                                 | 03733M3/03     | As previous one, with aluminium cap                               |
| <b>M3-U1</b>                                    | 03703M3-U1     | As M3 type, with M8 male thread external pin                      |
| <b>M4</b>                                       | 03734M41-2/03  | 2 pos. (1-2), spring return in position 1                         |
|                                                 | 03735M42-1/03  | 2 pos. (2-1), spring return in position 2                         |
| <b>M4-U1</b>                                    | 03704M4-U11-2  | As M4 type (1-2), with M8 male thread external pin                |
| <u>With flexible cable control arrangement:</u> |                |                                                                   |
| <b>M1-U2</b>                                    | 03715M1-U2     | 3 pos., spring return in neutral position                         |
| <b>M2-U2</b>                                    | 03716M2-U2     | 2 pos. (0-1), spring return in neutral pos.                       |
| <b>M3-U2</b>                                    | 03717M3-U2     | 2 pos. (0-2), spring return in neutral pos.                       |
| <u>With detent:</u>                             |                |                                                                   |
| <b>R1</b>                                       | 03741R1        | 3 pos., detent in position 1                                      |
|                                                 | 03741R1/03     | As previous one, with aluminium cap                               |
| <b>R2</b>                                       | 03742R2        | 3 pos., detent in position 2                                      |
|                                                 | 03742R2/03     | As previous one, with aluminium cap                               |
| <b>R3</b>                                       | 03743R3        | 3 pos., detent in all position                                    |
|                                                 | 03743R3/03     | As previous one, with aluminium cap                               |
| <b>R4</b>                                       | 03744R4        | 2 pos., detent in position 0-1                                    |
|                                                 | 03744R4/03     | As previous one, with aluminium cap                               |
| <b>R5</b>                                       | 03745R5        | 2 pos., detent in position 0-2                                    |
|                                                 | 03745R5/03     | As previous one, with aluminium cap                               |
| <b>R6</b>                                       | 03746R6        | 2 pos., detent in position 1-2                                    |
|                                                 | 03746R6/03     | As previous one, with aluminium cap                               |
| <b>R8</b>                                       | 03748R8        | 4 pos., detent in 4 <sup>th</sup> pos., for <b>116</b> type spool |
|                                                 | 03748R8/03     | As previous one, with aluminium cap                               |
| <b>R10/Z1</b>                                   | 03750R10/Z1    | 4 pos., detent in 4 <sup>th</sup> pos., for <b>126</b> type spool |
|                                                 | 03750R10/Z1/03 | As previous one, with aluminium cap                               |
| <u>With detent and kick out function:</u>       |                |                                                                   |
| <b>R1K</b>                                      | 03741R1K       | 3 pos., detent in position 1                                      |
|                                                 | 03741R1K/03    | As previous one, with aluminium cap                               |
| <b>R2K</b>                                      | 03742R2K       | 3 pos., detent in position 2                                      |
|                                                 | 03742R2K/03    | As previous one, with aluminium cap                               |
| <b>R3K</b>                                      | 08743R3K       | 3 pos., detent in all position                                    |
|                                                 | 03743R3K/03    | As previous one, with aluminium cap                               |

| 6                                                                        | B side control (cont.) | page 25                                                                    |
|--------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------------|
| TYPE                                                                     | CODE                   | DESCRIPTION                                                                |
| <u>With spool position microswitch:</u>                                  |                        |                                                                            |
| <b>Note:</b> To complete the control you must use the assembly kit at #7 |                        |                                                                            |
| <b>M1-N1</b>                                                             | 03766M1-N1             | 3 pos., micro operation in pos. 1 and 2, spring return in neutral position |
|                                                                          | 03766M1-N1/03          | As previous one, with aluminium lever box                                  |
| <b>M1-N1A</b>                                                            | 03767M1-N1AL           | As M1-N1 type, micro operation in pos. 1                                   |
|                                                                          | 03767M1-N1AL/3         | As previous one, with aluminium cap                                        |
| <b>M1-N1B</b>                                                            | 03768M1-N1BL           | As M1-N1 type, micro operation in pos. 2                                   |
|                                                                          | 03768M1-N1BL/3         | As previous one, with aluminium cap                                        |
| <b>M2-N1</b>                                                             | 03769M2-N1L            | 2 pos. (0-1), spring return in neutral pos.                                |
| <b>M3-N1</b>                                                             | 03772M3-N1L            | 2 pos. (0-2), spring return in neutral pos.                                |
| <u>Pneumatic and electropneumatic controls:</u>                          |                        |                                                                            |
| <b>P1NW</b>                                                              | 03661P1-NW             | ON/OFF pneumatic control                                                   |
| <b>P1NPW</b>                                                             | 03661P1-NPW            | Proportional pneumatic control                                             |
| <b>D3W</b>                                                               | 03691D3-F-12DC         | 12 VDC, ON/OFF electropneumatic control                                    |
|                                                                          | 03692D3-F-24DC         | 24 VDC, ON/OFF electropneumatic control                                    |

## 7 Microswitch assembling kit

| CODE       | DESCRIPTION        |
|------------|--------------------|
| 03650N1-01 | Kit for 1 section  |
| 03650N1-02 | Kit for 2 sections |
| 03650N1-03 | Kit for 3 sections |
| 03650N1-04 | Kit for 4 sections |
| 03650N1-05 | Kit for 5 sections |
| 03650N1-06 | Kit for 6 sections |
| 03650N1-07 | Kit for 7 sections |
| 03650N1-08 | Kit for 8 sections |

## 8 Complete controls A+B sides page 31

| TYPE                                        | CODE       | DESCRIPTION                      |
|---------------------------------------------|------------|----------------------------------|
| <u>For types 103 and 111 special spools</u> |            |                                  |
| <b>C2</b>                                   | 03792C2-C3 | Cam control from position 1 to 2 |
| <b>C3</b>                                   | 03792C2-C3 | Cam control from position 2 to 1 |

## 9 Outlet configuration\* page 35

| TYPE        | DESCRIPTION                                                                                                                                                                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>F3D</b>  | Open center configuration:<br>for Q25 valve, n. 1 G3/8 plug code 060002792199, on T1 port;<br>for Q45 valve, n. 1 G1/2 plug code 060002792099, on T1 port                                                                                                   |
| <b>F6D</b>  | Carry-over configuration:<br>for Q25 valve, n. 1 G3/8 joint code 060002278399, on T port;<br>for Q45 valve, n. 1 G1/2 joint code 060002564799, on T port                                                                                                    |
| <b>F16D</b> | Closed center configuration:<br>for Q25 valve, n. 1 G3/8 plug code 060002792199 on T1 port and n. 1 G3/8 joint code 060002530099, on T port;<br>for Q45 valve, n. 1 G1/2 plug code 060002792099 on T1 port and n. 1 G1/2 joint code 060002997699, on T port |

## 10 Accessories

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

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

**Proportional hydraulic controls valve configuration example**

valve setting (bar)

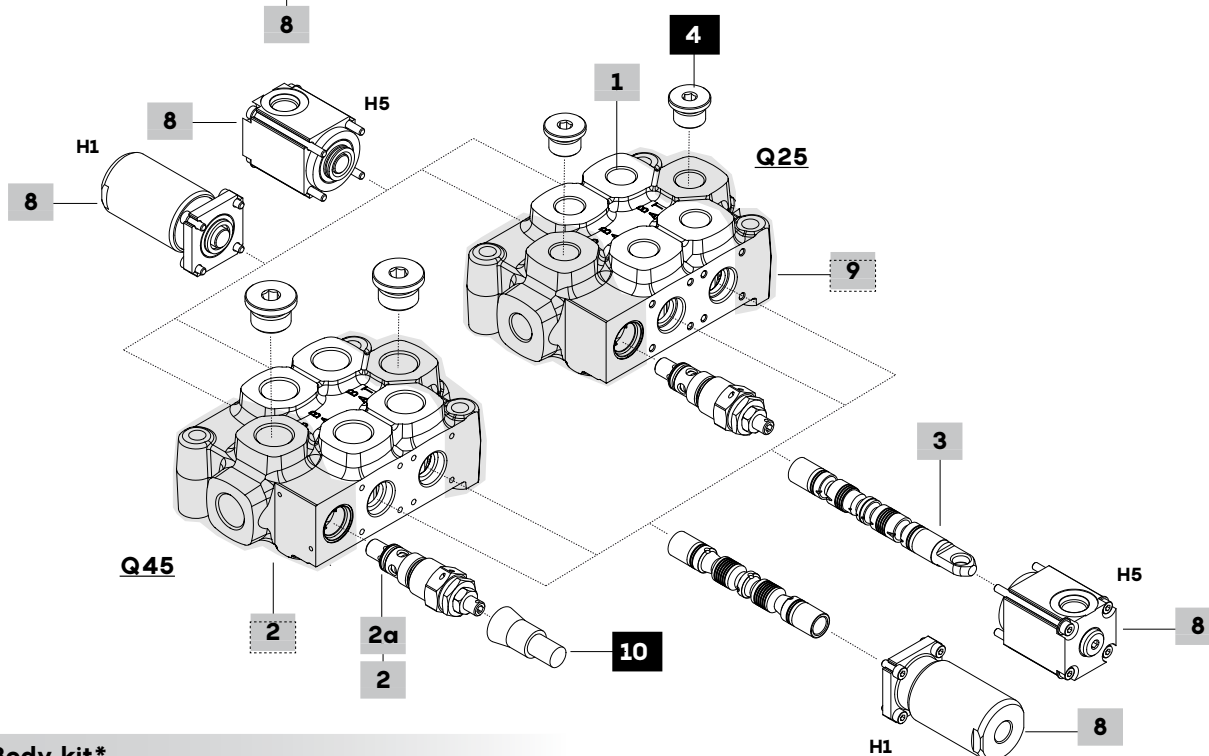
**Q25 / 2 / F1S (N150) / 103 – H5 / 103 – H5 / F3D – S**

1 2 2a 3 8 9 aluminium controls

N. of section

**Q45 / 2 / F1S (N150) / 103 – H1 / 103 – H1 / F3D – S**

8

**1 Body kit\***

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

**H1** hydraulic control requires standard body: see #1, page 9

| TYPE         | CODE           | DESCRIPTION |
|--------------|----------------|-------------|
| <b>Q25/1</b> | 5KC0600127574A | 1 section   |
| <b>Q25/2</b> | 5KC0600127673A | 2 sections  |
| <b>Q25/3</b> | 5KC0600129552A | 3 sections  |
| <b>Q25/4</b> | 5KC0600129550A | 4 sections  |
| <b>Q25/5</b> | 5KC0600129551A | 5 sections  |
| <b>Q25/6</b> | 5KC0600129715A | 6 sections  |
| <b>Q25/7</b> | 5KC0600130905A | 7 sections  |
| <b>Q25/8</b> | 5KC0600131361A | 8 sections  |

|              |                |            |
|--------------|----------------|------------|
| <b>Q45/1</b> | 5KC0600127973A | 1 section  |
| <b>Q45/2</b> | 5KC0600128051A | 2 sections |
| <b>Q45/3</b> | 5KC0600129676A | 3 sections |
| <b>Q45/4</b> | 5KC0600129677A | 4 sections |
| <b>Q45/5</b> | 5KC0600129678A | 5 sections |
| <b>Q45/6</b> | 5KC0600129876A | 6 sections |
| <b>Q45/7</b> | 5KC0600131148A | 7 sections |
| <b>Q45/8</b> | 5KC0600131620A | 8 sections |

**2 Inlet configuration\*** page 14

See #2, page 9

**2a Main pressure relief valve** page 15

See #2a, page 9

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

**3 Spool** page 16

| TYPE                            | CODE         | DESCRIPTION                                        |
|---------------------------------|--------------|----------------------------------------------------|
| <b>For H5 hydraulic control</b> |              |                                                    |
| <b>103</b>                      | 060103179499 | Double acting, A and B closed in neutral position  |
| <b>For H1 hydraulic control</b> |              |                                                    |
| <b>103</b>                      | 060103179099 | Double acting, A and B closed in neutral position  |
| <b>111</b>                      | 060103179199 | Double acting, A and B to tank in neutral position |

**4 Plug for P-T ports\***

See #4, page 9

**8 Hydraulic controls A+B sides\*** page 32

| TYPE      | CODE    | DESCRIPTION                                 |
|-----------|---------|---------------------------------------------|
| <b>H5</b> | 03785H5 | Low pressure proportional type, upper ports |
| <b>H1</b> | 03779H1 | High pressure proportional type, side ports |

**9 Outlet configuration\*** page 35

See #9, page 10

**10 Accessories**

See #10, page 10

### Parts ordering codes

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

valve setting (bar)

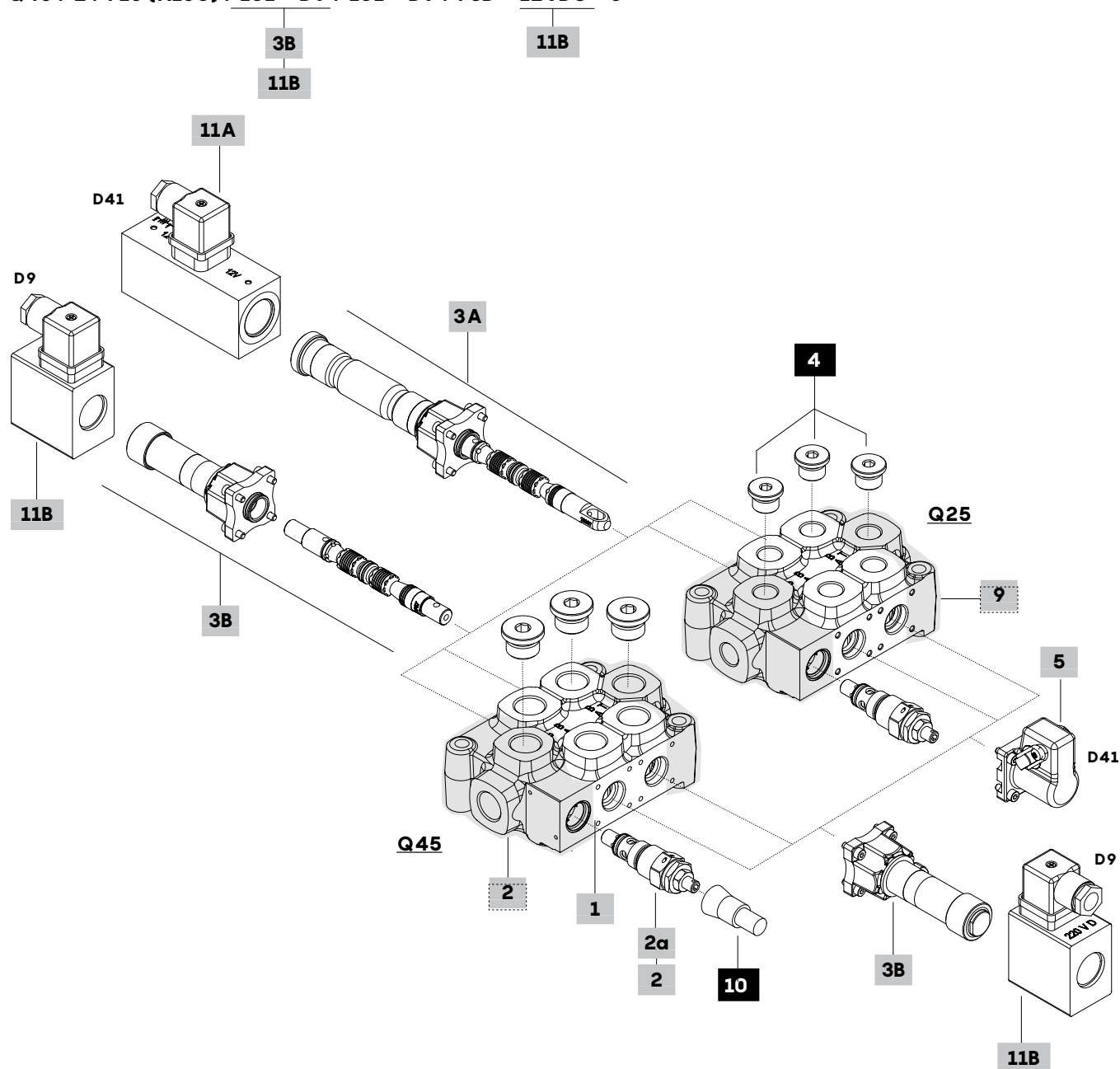
**Q25 / 2 / F1S (N150) / 101 - A1 - D41 / 101 - A1 - D41 / F3D - 12VDC - S**

1 2 2a 3A 5 3A 9 11A aluminium controls

N. of section 11A

#### Two side - ON/OFF direct solenoid control valve configuration example

**Q45 / 2 / F1S (N150) / 101 - D9 / 101 - D9 / F3D - 12VDC - S**



**1 Body kit\***

| TYPE         | CODE           | DESCRIPTION |
|--------------|----------------|-------------|
| <b>Q25/1</b> | 5KC0600127574A | 1 section   |
| <b>Q25/2</b> | 5KC0600127673A | 2 sections  |
| <b>Q25/3</b> | 5KC0600129552A | 3 sections  |
| <b>Q25/4</b> | 5KC0600129550A | 4 sections  |
| <b>Q25/5</b> | 5KC0600129551A | 5 sections  |
| <b>Q25/6</b> | 5KC0600129715A | 6 sections  |
| <b>Q25/7</b> | 5KC0600130905A | 7 sections  |
| <b>Q25/8</b> | 5KC0600131361A | 8 sections  |

|              |                |            |
|--------------|----------------|------------|
| <b>Q45/1</b> | 5KC0600127973A | 1 section  |
| <b>Q45/2</b> | 5KC0600128051A | 2 sections |
| <b>Q45/3</b> | 5KC0600129676A | 3 sections |
| <b>Q45/4</b> | 5KC0600129677A | 4 sections |
| <b>Q45/5</b> | 5KC0600129678A | 5 sections |
| <b>Q45/6</b> | 5KC0600129876A | 6 sections |
| <b>Q45/7</b> | 5KC0600131148A | 7 sections |
| <b>Q45/8</b> | 5KC0600131620A | 8 sections |

**2 Inlet configuration\* page 14**

See #2, page 9

**2a Main pressure relief valve page 15**

See #2a, page 9

**3A D41 solenoid control page 33****One side solenoid control**

For Q25 valve:

| TYPE       | CODE          | DESCRIPTION                                                                                                    |
|------------|---------------|----------------------------------------------------------------------------------------------------------------|
| <b>103</b> | X060102889799 | Tube assembly with double acting spool, A and B closed in neutral position                                     |
| <b>107</b> | X060102938199 | Tube assembly with double acting spool, A to tank and B closed in neutral position                             |
| <b>108</b> | X060102937199 | Tube assembly with double acting spool, B to tank and A closed in neutral position                             |
| <b>109</b> | X060102952699 | Tube assembly with single acting spool on port A, A to tank in neutral position. G3/8 plug is required, see #4 |
| <b>111</b> | X060102894299 | Tube assembly with double acting spool, A and B to tank in neutral pos.                                        |
| <b>101</b> | X060102905099 | Tube assembly with single acting spool on port A. G3/8 plug is required, see #4                                |
| <b>102</b> | X060102894199 | Tube assembly with single acting spool on port B. G3/8 plug is required, see #4                                |

For Q45 valve:

|            |               |                                                                                                                |
|------------|---------------|----------------------------------------------------------------------------------------------------------------|
| <b>103</b> | X060102889700 | Tube assembly with double acting spool, A and B closed in neutral pos.                                         |
| <b>107</b> | X060102938100 | Tube assembly with double acting spool, A to tank and B closed in neutral position                             |
| <b>108</b> | X060102937100 | Tube assembly with double acting spool, B to tank and A closed in neutral position                             |
| <b>109</b> | X060102952600 | Tube assembly with single acting spool on port A, A to tank in neutral position. G1/2 plug is required, see #4 |
| <b>111</b> | X060102894200 | Tube assembly with double acting spool, A and B to tank in neutral position                                    |
| <b>101</b> | X060102905000 | Tube assembly with single acting spool on port A. G1/2 plug is required, see #4                                |
| <b>102</b> | X060102894100 | Tube assembly with single acting spool on port B. G1/2 plug is required, see #4                                |

**3B D9 solenoid control page 34****Two side solenoid control**

For Q25/Q45 valves:

| TYPE       | CODE          | DESCRIPTION                                                                         |
|------------|---------------|-------------------------------------------------------------------------------------|
| <b>101</b> | X060103012699 | Tube assembly with single acting spool on port A (1)                                |
| <b>102</b> | X060103012699 | Tube assembly with single acting spool on port B (1)                                |
| <b>103</b> | X060102998299 | Tube assembly with double acting spool, A and B closed in neutral position          |
| <b>108</b> | X060103070799 | Tube assembly with double acting spool, B to tank and A closed in neutral position  |
| <b>110</b> | X060103037699 | Tube assembly with single acting spool on port B, B to tank in neutral position (1) |
| <b>111</b> | X060103000499 | Tube assembly with double acting spool, A and B to tank in neutral position         |

**Note (1):** Q25 valve required G3/8 plug, see #4  
Q45 valve required G1/2 plug, see #4

**4 Plug for single acting spool or P-T ports\***

See #4, page 9

**5 A side control for D41 page 33**

| TYPE      | CODE         | DESCRIPTION                             |
|-----------|--------------|-----------------------------------------|
| <b>A1</b> | 060003236899 | M8 thread cast iron lever box           |
| <b>A2</b> | 060003236899 | As A1 type, with lever box rotated 180° |

**9 Outlet configuration\* page 35**

See #9, page 10

**10 Accessories**

See #10, page 10

**11A/B Coil page 33****D41 coil**

For Q25 valve:

| TYPE | CODE   | DESCRIPTION         |
|------|--------|---------------------|
| -    | ZEB012 | 12 VDC ISO4400 coil |
| -    | ZEB024 | 24 VDC ISO4400 coil |

For Q45 valve:

|   |            |                     |
|---|------------|---------------------|
| - | 4SLG111200 | 12 VDC ISO4400 coil |
| - | 4SLG111400 | 24 VDC ISO4400 coil |

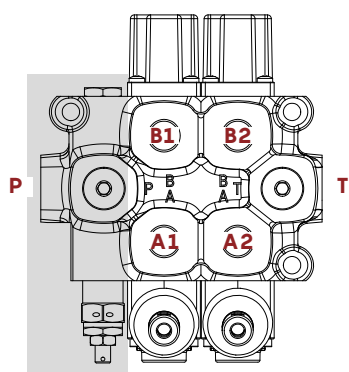
**D9 coil**

For Q25/Q45 valves:

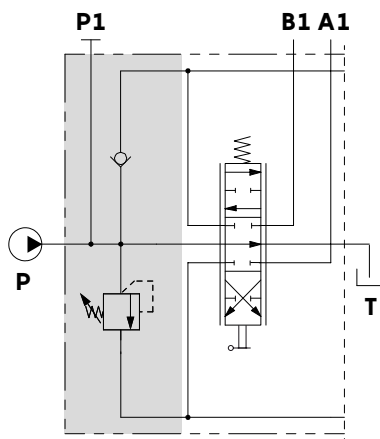
|   |        |                     |
|---|--------|---------------------|
| - | ZDB212 | 12 VDC ISO4400 coil |
| - | ZDB224 | 24 VDC ISO4400 coil |

**Note:** The connector is included(\*): Codes are referred to **BSP** thread

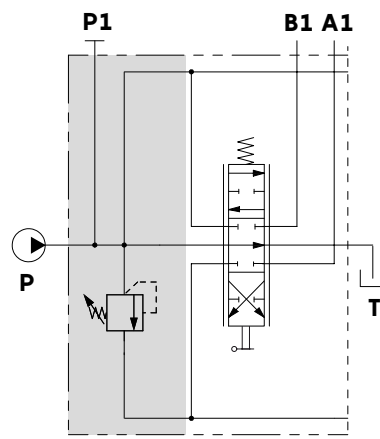
## Inlet configuration



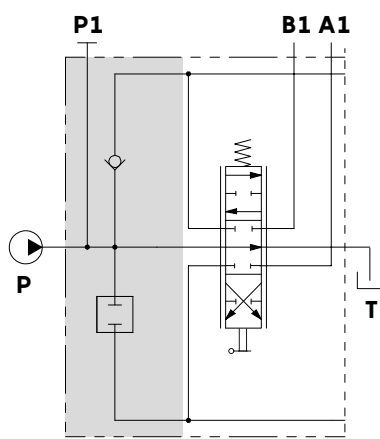
**F1S configuration**  
With load check and pressure relief valve



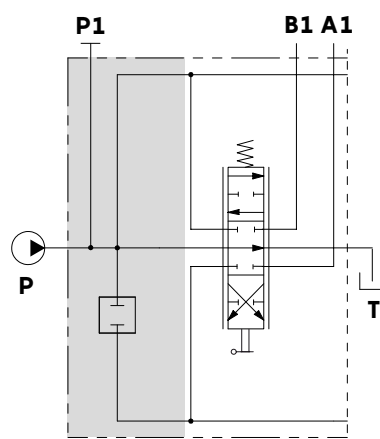
**F7S configuration**  
With pressure relief valve



**F2S configuration**  
With load check valve

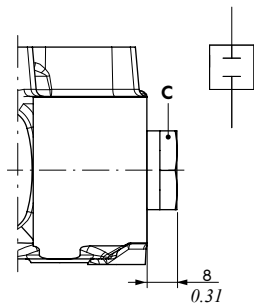


**F8S configuration**  
Without valves  
(pressure relief valve plugged port)

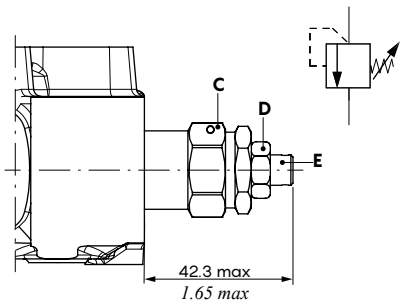


Main pressure relief valve

Relief valve blanking plug

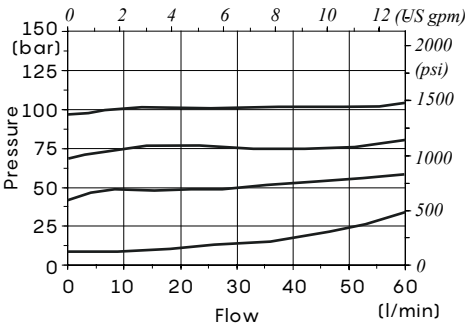


Main pressure relief valve

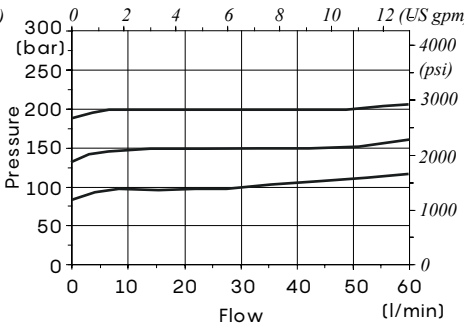


| Spring type | Setting ranges (bar - psi)          |
|-------------|-------------------------------------|
| B (white)   | From 10 to 100 - from 145 to 1450   |
| N (black)   | From 101 to 200 - from 1460 to 2900 |
| R (red)     | From 201 to 380 - from 2910 to 5500 |

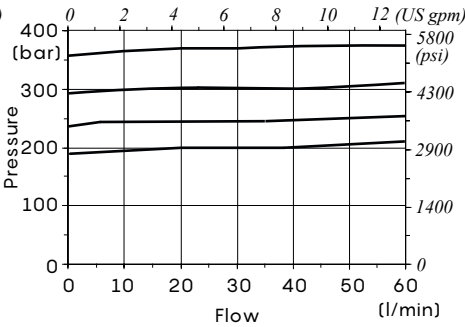
Setting example (B type spring)



Setting example (N type spring)



Setting example (R type spring)



Wrenches and tightening torques

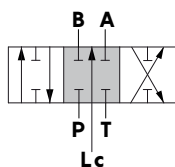
- C = wrench 22 – 42 Nm (30.9 lbf ft)
- D = wrench 13 – 24 Nm (17.7 lbf ft)
- E = allen wrench 4

## Spool

### 103 type

A and B closed  
in neutral position

2 0 1



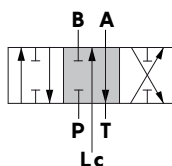
#### Stroke

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



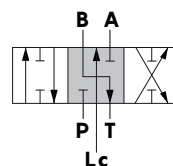
#### Stroke

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

### 108 type

B to tank, A closed  
in neutral position

2 0 1



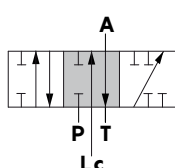
#### Stroke

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

### 109 type

A to tank in neutral position,  
B plugged

2 0 1



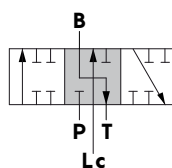
#### Stroke

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

### 110 type

B to tank in neutral position,  
A plugged

2 0 1



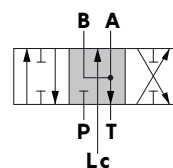
#### Stroke

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

### 111 type

A and B to tank  
in neutral position

2 0 1



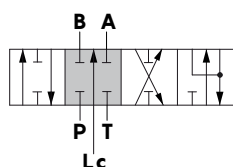
#### Stroke

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

### 116 type

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

2 0 1 3



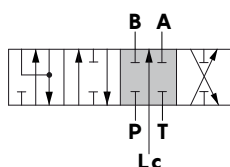
#### Stroke

Position 1: - 4 mm (- 0.15 in)  
Position 2: + 5 mm (+ 0.19 in)  
Position 3: - 8.6 mm (- 0.33 in)

### 126 type

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

3 2 0 1



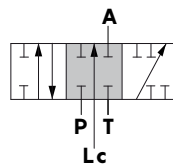
#### Stroke

Position 1: + 4 mm (+ 0.15 in)  
Position 2: - 5 mm (- 0.19 in)  
Position 3: + 8.6 mm (- 0.33 in)

### 101 type

Single acting on A,  
B plugged

2 0 1



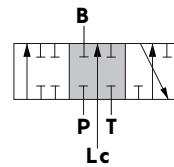
#### Stroke

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

### 102 type

Single acting on B,  
A plugged

2 0 1



#### Stroke

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

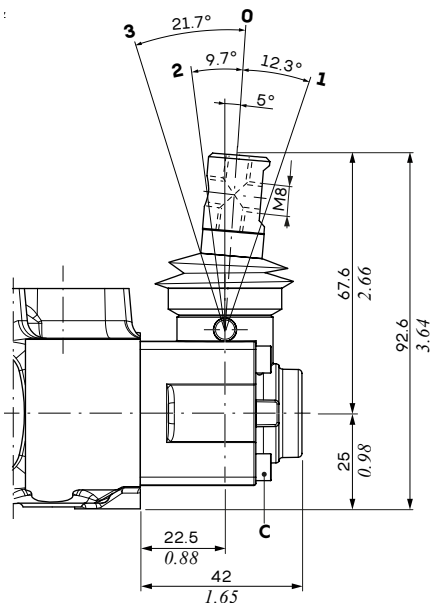
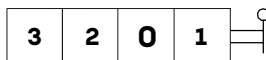
# A side controls

## Mechanical controls

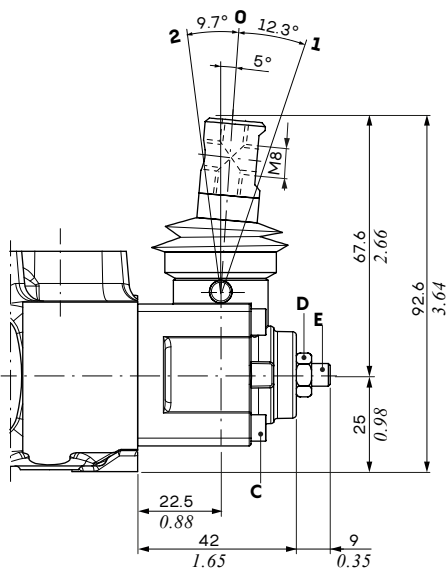
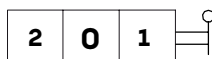
### With lever control

#### A1 type

M8 thread plastic lever box



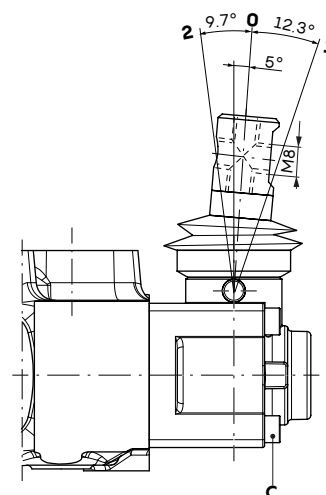
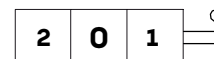
#### A1/06 type

M8 thread,  
with stroke limiter


#### A1/10 type

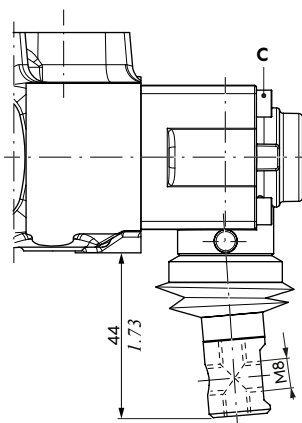
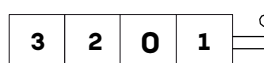
M8 thread aluminium lever box.  
Dimensions are the same  
of A1 type

#### A2/10 type

As A1/10 type,  
rotated 180°


#### A2 type

As A1 type, rotated 180°



#### Wrenches and tightening torques

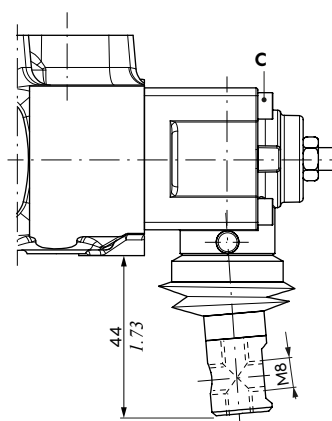
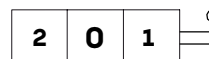
C = allen wrench 3 – 3 Nm (2.2 lbft)

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°



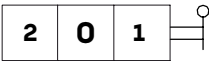
A side controls

Mechanical controls

With lever control

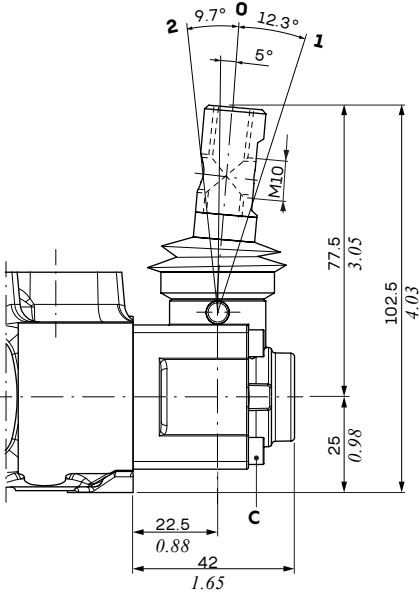
A1/PM type

M10 thread aluminium lever box



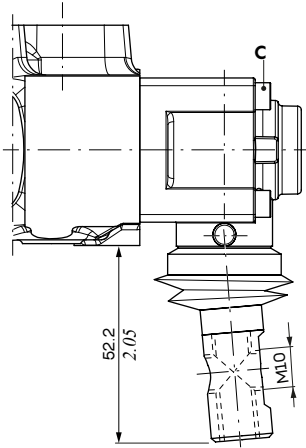
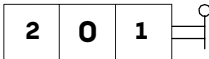
Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbf ft)



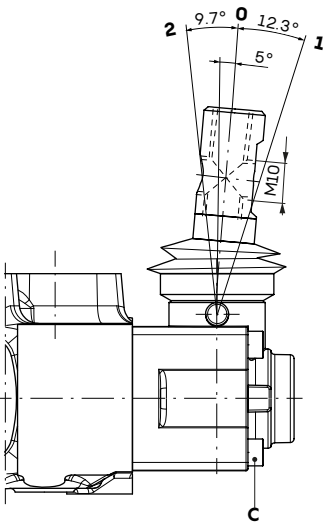
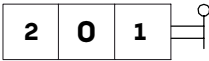
A2/PM type

As A1/PM type, rotated 180°



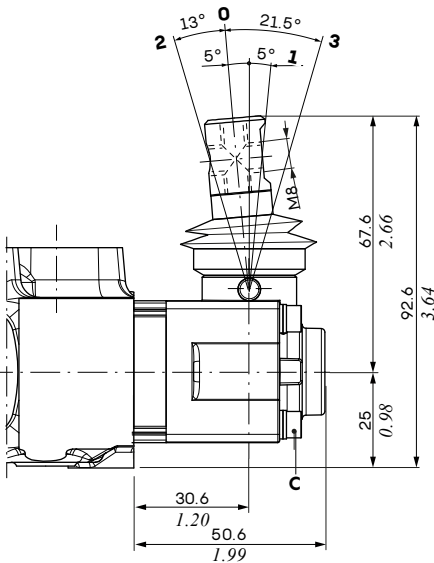
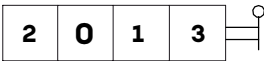
A1/PMP type

M10 thread plastic lever box. Dimensions are the same of A1/PM type



A2/PMP type

As A1/PMP type, rotated 180°

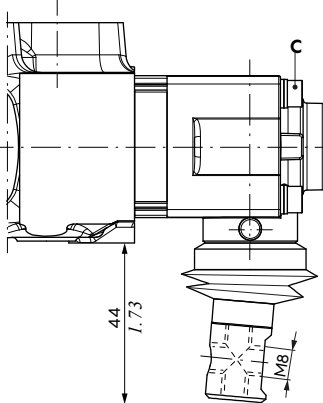
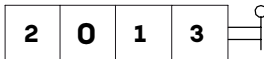


A1/Z1 type

M8 thread, for 116 floating spool type

A2/Z1 type

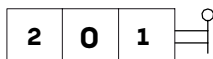
As A1/Z1 type, rotated 180°



## Mechanical controls

### With safety lever control

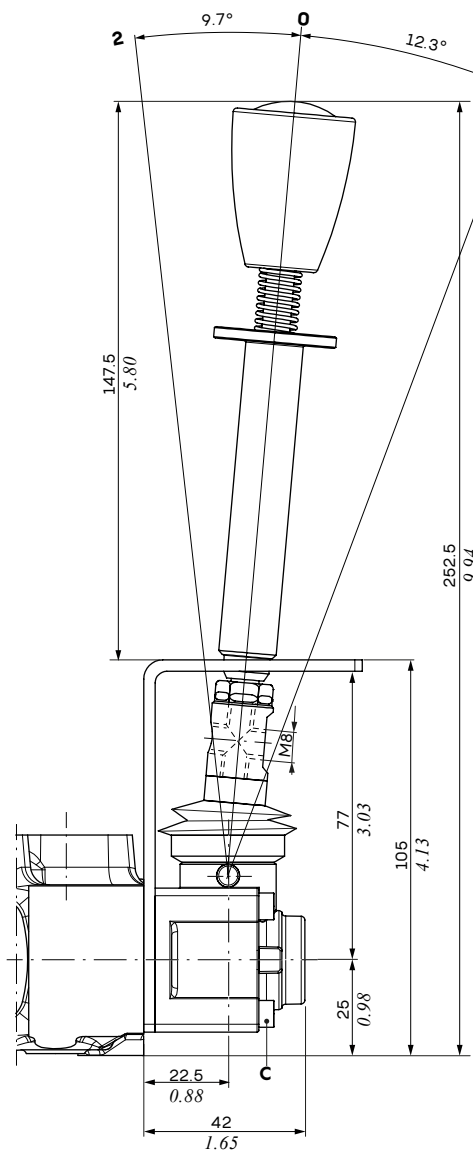
**A1/S type**  
M8 thread, aluminium lever box



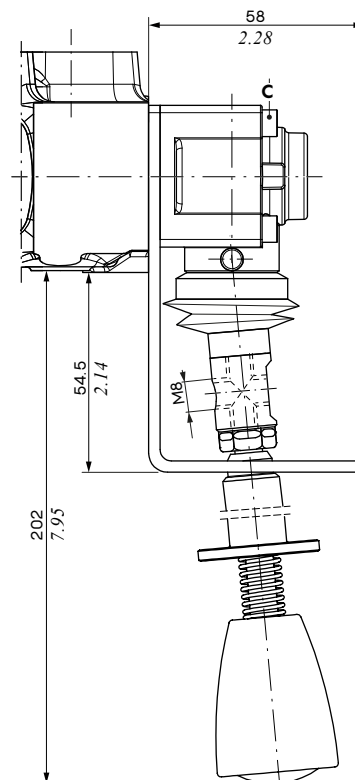
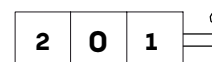
### Wrenches and tightening torques

C = allen wrench 3 – 3 Nm (2.2 lbf ft)

D = cross-head – 3 Nm (2.2 lbf ft)

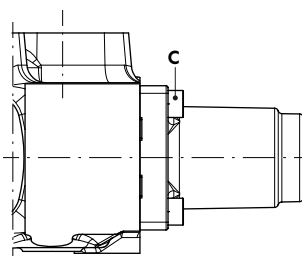
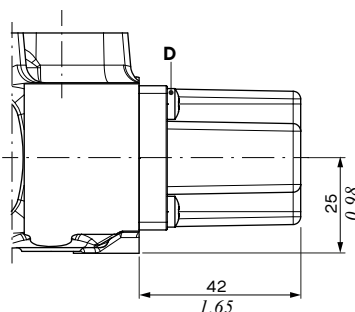
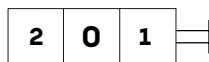


**A2/S type**  
As A1/S type, rotated 180°



### Without lever control

**A3 type**  
With cap.  
Available with aluminium cap



With aluminium cap;  
dimensions are the same of standard type

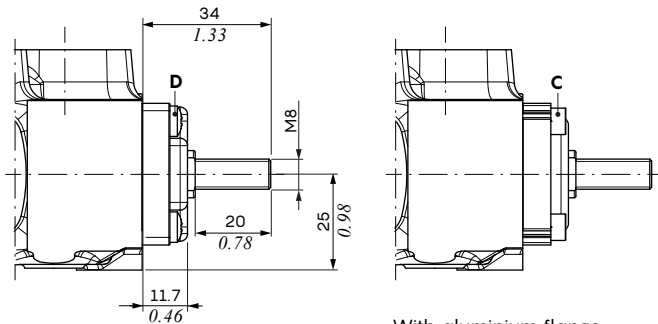
## A side controls

### Mechanical controls

#### Without lever control

##### A4 type

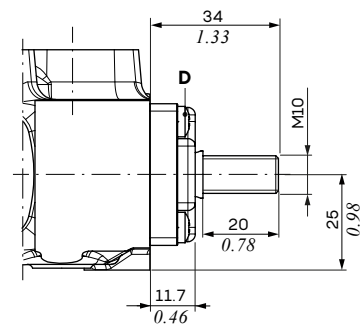
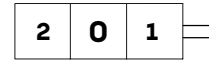
M8 male thread external pin with flange.  
Available with aluminium flange



With aluminium flange;  
dimensions are the same of standard type

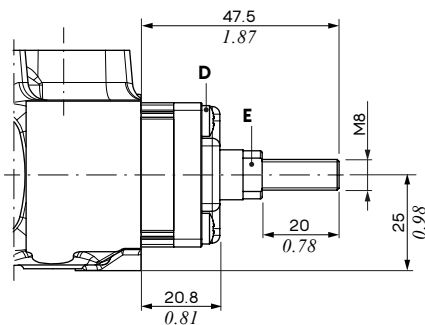
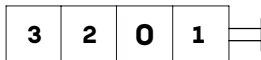
##### A4/01 type

M10 male thread external pin with flange



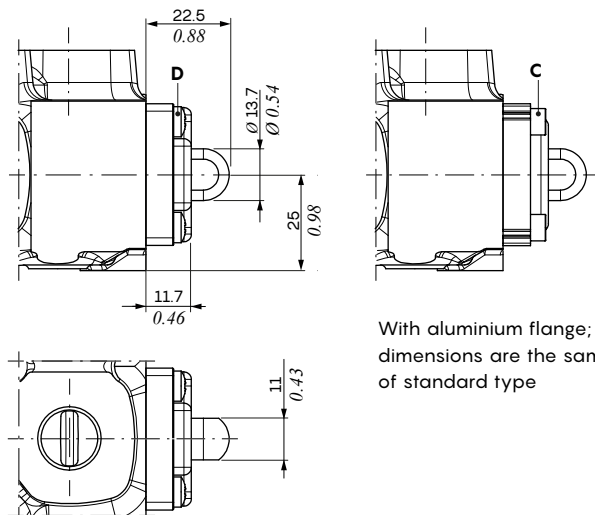
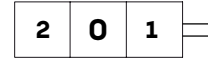
##### A4/Z1 type

As A4 type,  
for 116 floating spool type



##### A5 type

Flange with spherical spool end.  
Available with aluminium flange



With aluminium flange;  
dimensions are the same  
of standard type

#### Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbft)

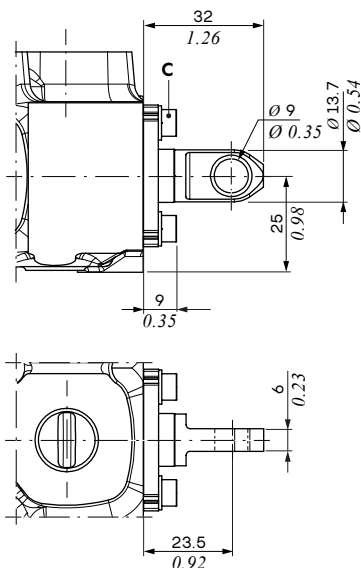
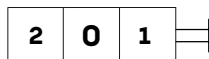
D = cross-head - 3 Nm (2.2 lbft)

E = wrench 9 - 9.8 Nm (7.2 lbft)

## Mechanical controls

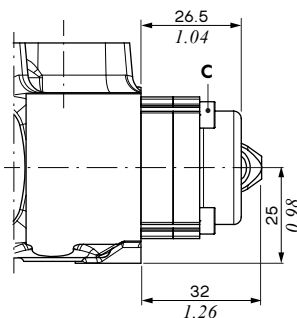
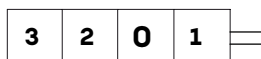
### Without lever control

**A6 type**  
With flange



**A6-H/Z1 type**

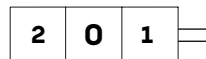
As A6 type,  
for 116 floating spool type



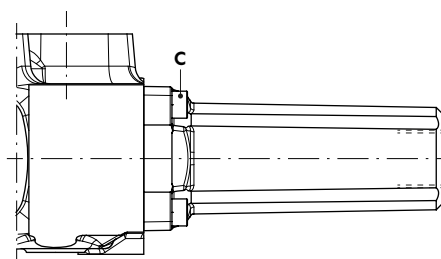
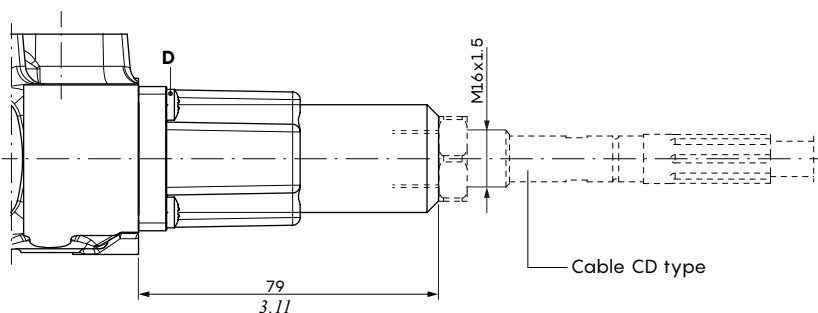
**Wrenches and tightening torques**  
C = allen wrench 3 – 3 Nm (2.2 lbft)  
D = cross-head – 3 Nm (2.2 lbft)

**A8 type**

Flexible cable control arrangement.  
Available with aluminium cap

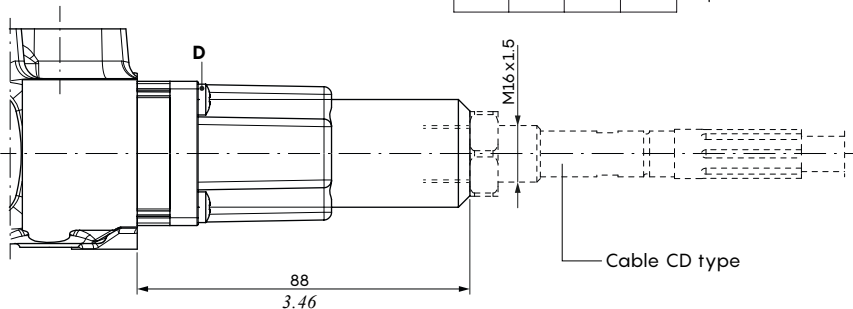
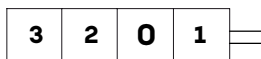


### With flexible cable control arrangement



With aluminium cap;  
dimensions are the same of standard type

**A8/Z1 type**  
As A8 type,  
for 116 floating spool type

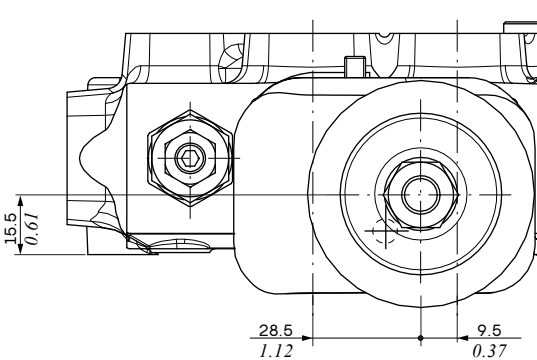


A side controls

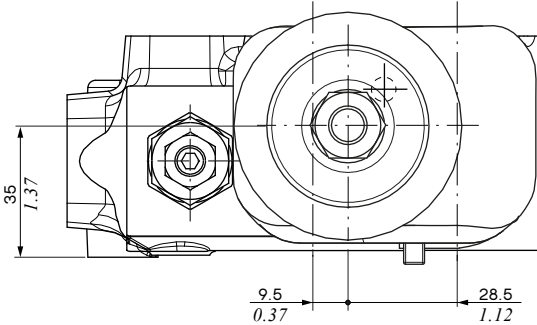
Joystick controls

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

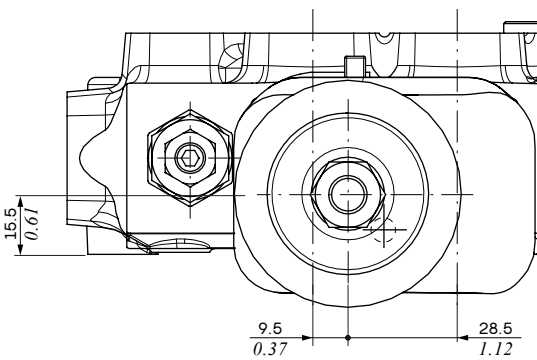
A35-1 type



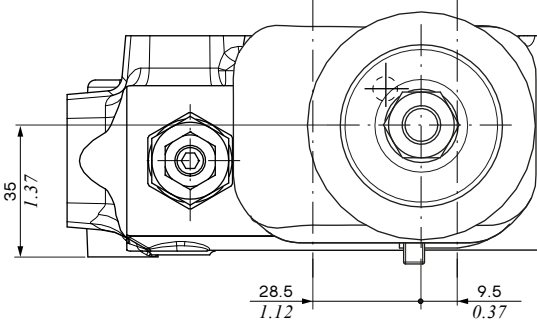
A35-2 type



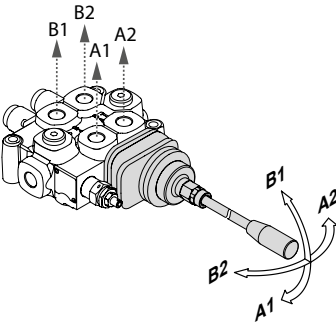
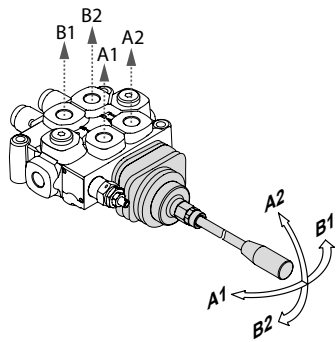
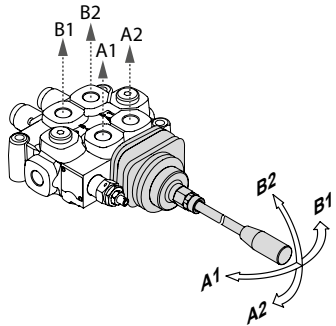
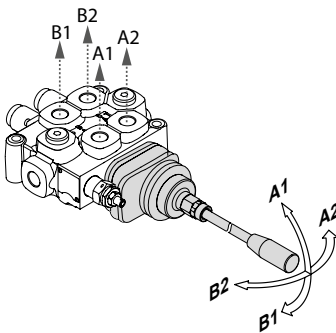
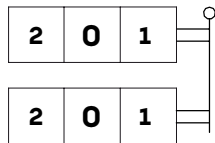
A35-3 type



A35-4 type



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



**Spool position microswitch****With lever control****N1-A1 type**

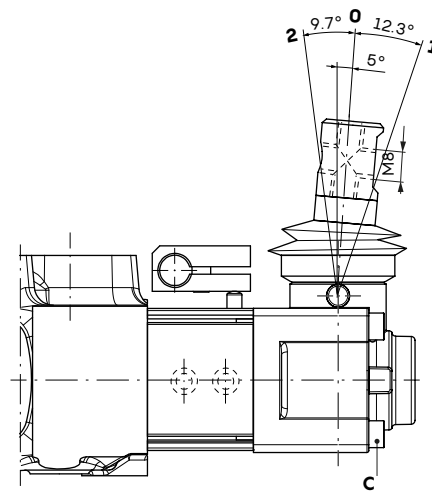
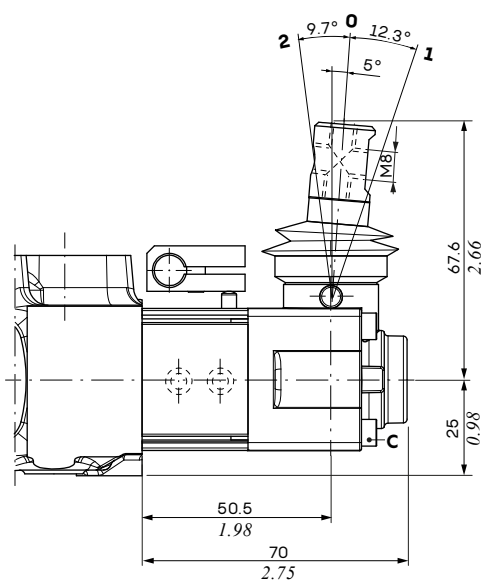
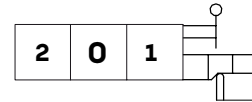
Micro operation in position 1 and 2.  
Available with aluminium lever box

**N1A-A1 type**

Micro operation in  
position 1

**N1B-A1 type**

Micro operation in  
position 2



With aluminium lever box;  
dimensions are the same of standard type

**Without lever control, with cap****N1-A3 type**

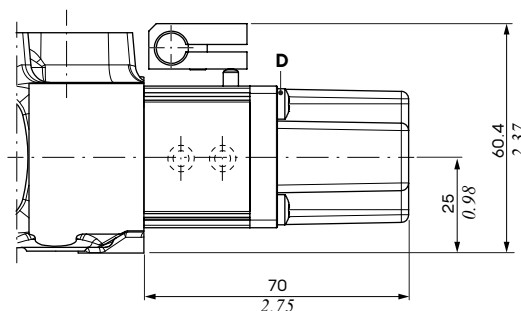
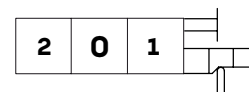
Micro operation in position  
1 and 2

**N1A-A3 type**

Micro operation in  
position 1

**N1B-A3 type**

Micro operation in  
position 2

**Wrenches and tightening torques**

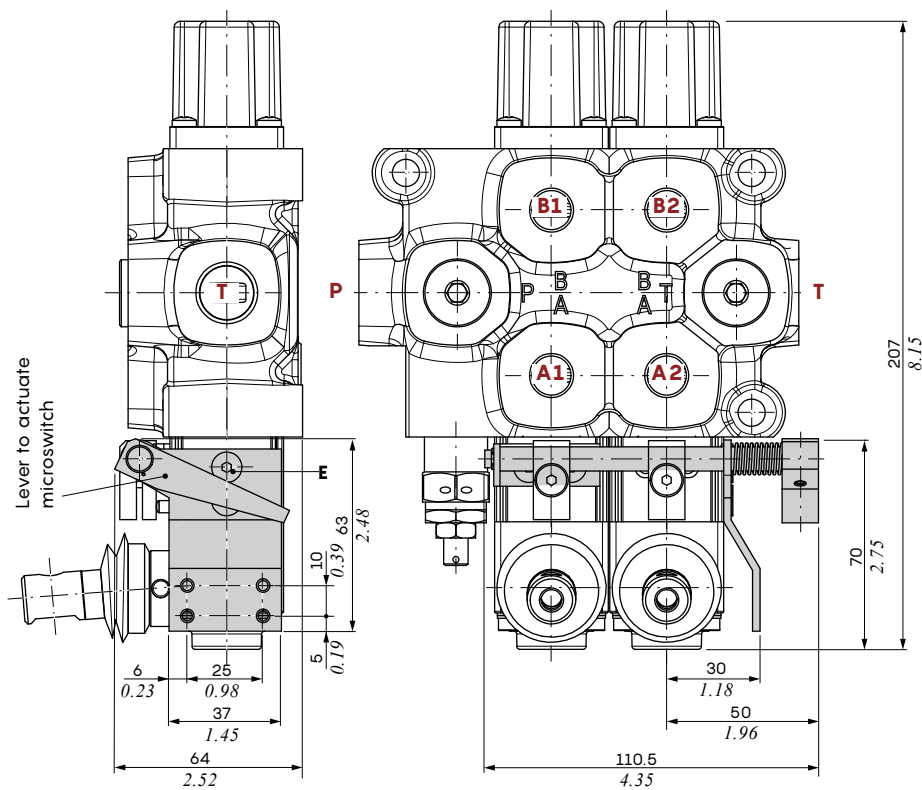
C = allen wrench 3 - 3 Nm (2.2 lbft)

D = cross-head - 3 Nm (2.2 lbft)

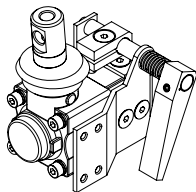
A side controls

Spool position microswitch

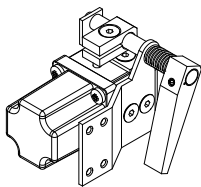
Microswitch assembly kit for 2 working section (N1-A1 type)



with cap



with lever box



**Wrenches and tightening torques**  
E = allen wrench 3 - 6.6 Nm (4.8 lbft)

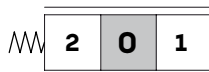
Drawing is referred to a Q25 monoblock valve.

## Mechanical controls

### With spring return control

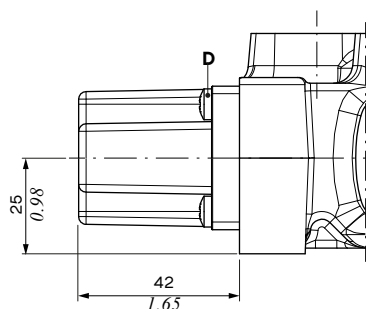
#### M1 type

3 position, spring return  
in neutral position.  
Available with aluminium cap



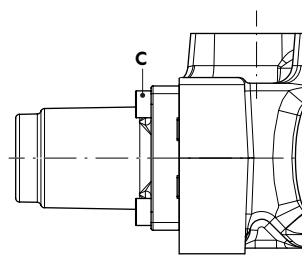
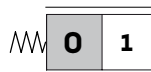
#### M1/01 type

3 position,  
for joystick control.  
Available with aluminium cap



#### M2 type

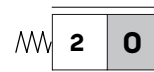
2 position (0-1), spring return  
in neutral position.  
Available with aluminium cap



With aluminium cap;  
dimensions are the same of standard type

#### M3 type

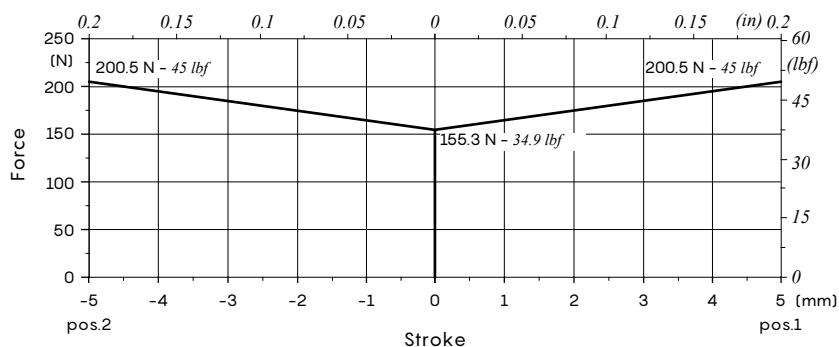
2 position (0-2), spring return  
in neutral position.  
Available with aluminium cap



#### Wrenches and tightening torques

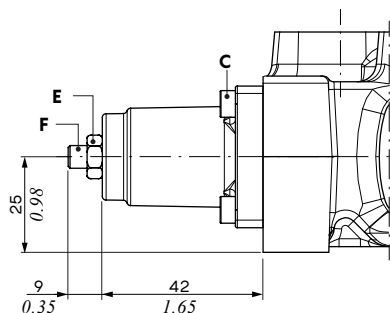
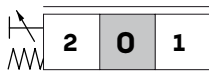
C = allen wrench 3 - 3 Nm (2.2 lbf)  
D = cross-head - 3 Nm (2.2 lbf)  
E = wrench 10 - 9.8 Nm (7.2 lbf)  
F = allen wrench 4 - 9.8 Nm (7.2 lbf)

#### M1 control type – Force vs. Stroke diagram



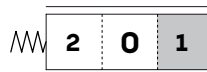
#### M1/02 type

As M1 type, with stroke limiter

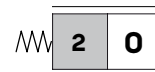


#### M4 types

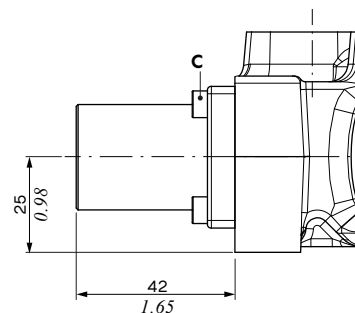
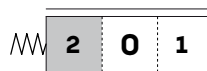
2 position (1-2),  
spring return in position 1



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



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



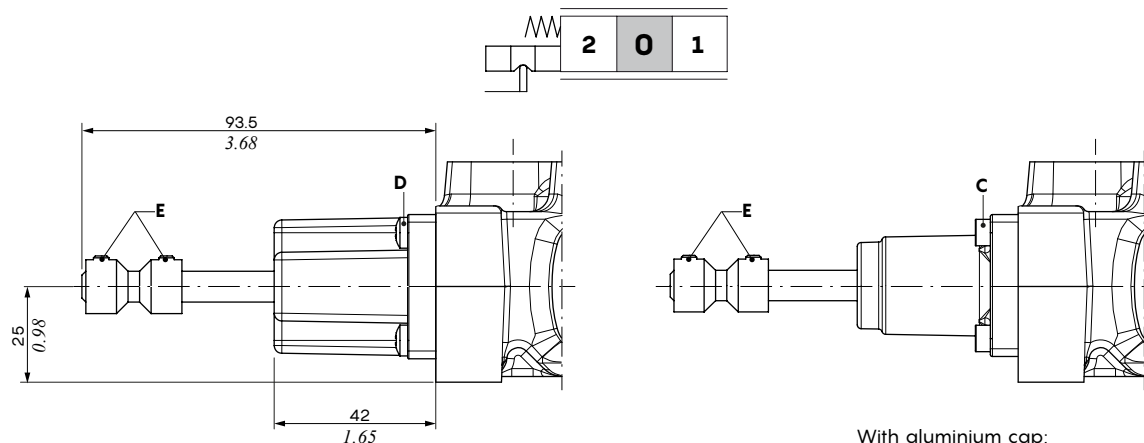
## B side controls

### Mechanical controls

#### With spring return control

##### M1-B1 type

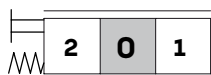
3 position, microswitch arrangement.  
Available with aluminium cap



#### With flexible cable control arrangement

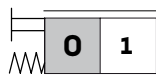
##### M1-U1 type

3 position, with M8 male thread external pin



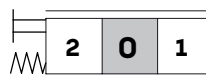
##### M2-U1 type

2 position (0-1), with M8 male thread external pin



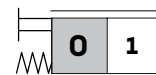
##### M1-U2 type

3 position, spring return in neutral position



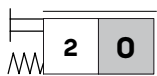
##### M2-U2 type

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



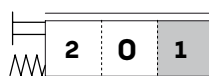
##### M3-U1 type

2 position (0-2), with M8 male thread external pin



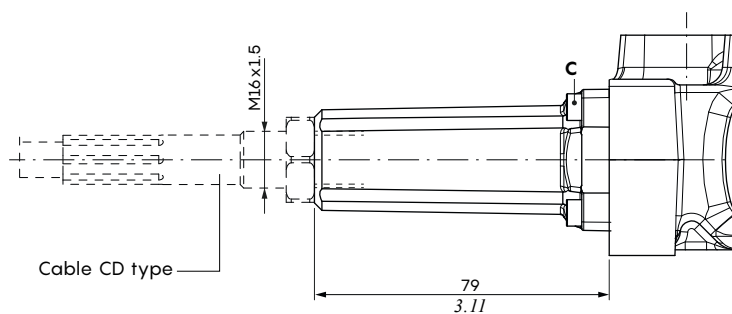
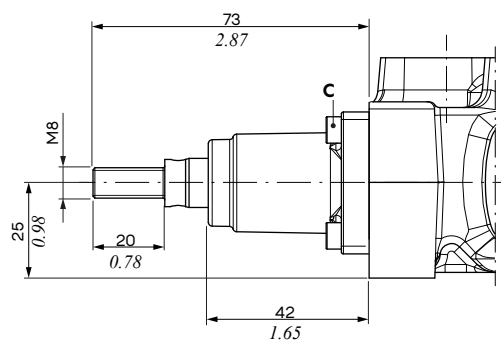
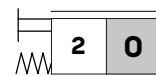
##### M4-U1 type

2 position (1-2), with M8 male thread external pin



##### M3-U2 type

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



#### Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbft)

D = cross-head - 3 Nm (2.2 lbft)

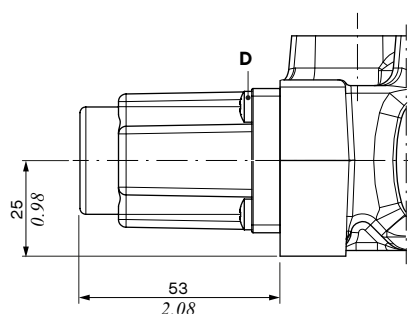
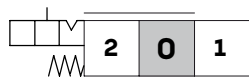
E = allen wrench 3 - 5 Nm (3.68 lbft)

## Mechanical controls

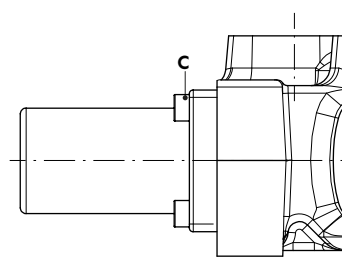
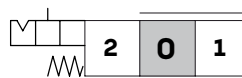
## With detent control

**R1 type**

3 position, detent in position 1.  
Available with aluminium cap

**R2 type**

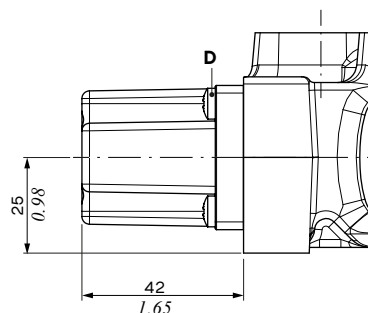
3 position, detent in position 2.  
Available with aluminium cap



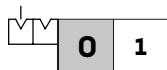
With aluminium cap;  
dimensions are the same of standard type

**R3 type**

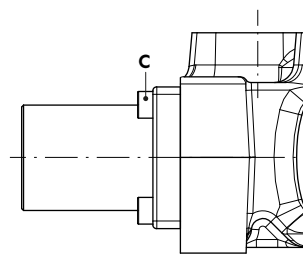
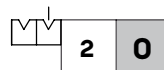
3 position,  
detent in all position.  
Available with aluminium cap

**R4 type**

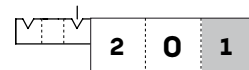
2 position,  
detent in position 0-1.  
Available with aluminium cap

**R5 type**

2 position,  
detent in position 0-2.  
Available with aluminium cap

**R6 type**

2 position,  
detent in position 1-2.  
Available with aluminium cap



With aluminium cap;  
dimensions are the same of standard type

**Wrenches and tightening torques**

C = allen wrench 3 - 3 Nm (2.2 lbf ft)

D = cross-head - 3 Nm (2.2 lbf ft)

## B side controls

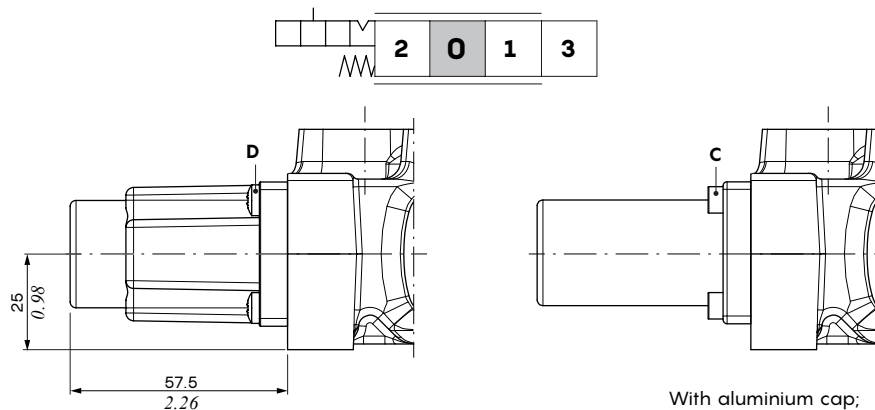
### Mechanical controls

#### With detent control

##### R8 type

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

Available with aluminium cap



With aluminium cap;  
dimensions are the same of standard type

#### Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbft)

D = cross-head - 3 Nm (2.2 lbft)

E = wrench 22 - 32 Nm (23.6 lbft)

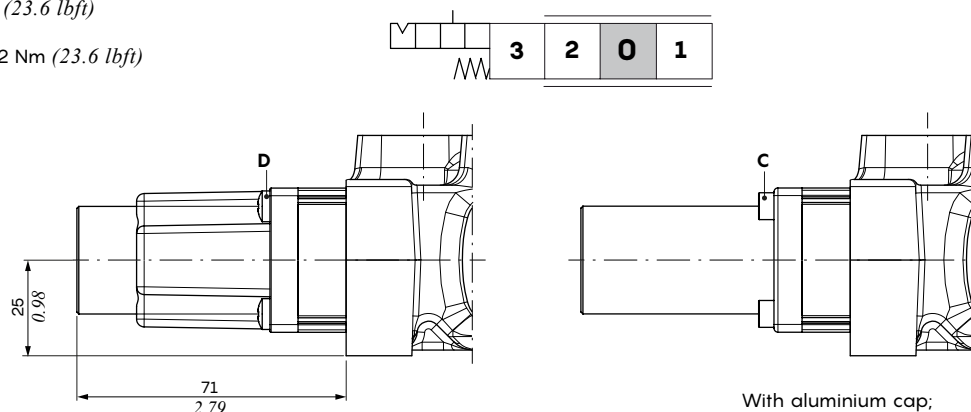
F = wrench 16

G = allen wrench 10 - 32 Nm (23.6 lbft)

##### R10/Z1 type

4 position, detent in 4<sup>th</sup> position, for 126 floating spool type.

Available with aluminium cap



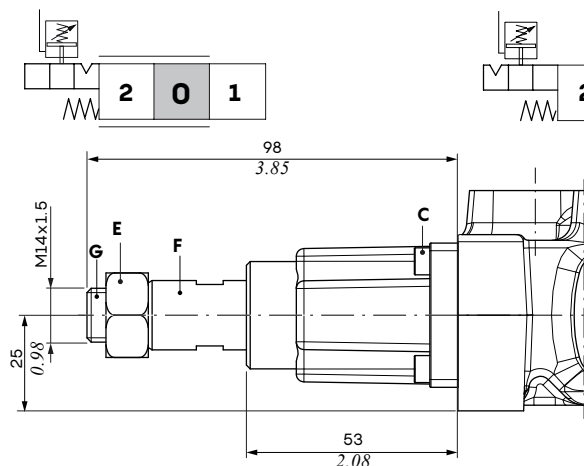
With aluminium cap;  
dimensions are the same of standard type

#### With detent control and kick out function

##### R1K type

3 position, detent in position 1.

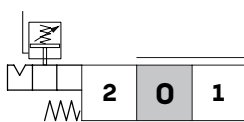
Available with aluminium cap



##### R2K type

3 position, detent in position 2.

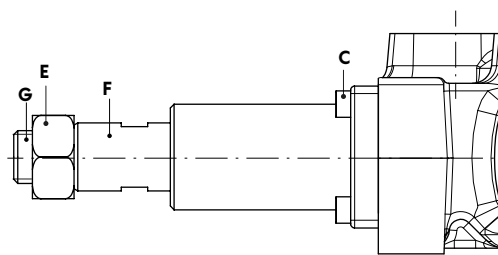
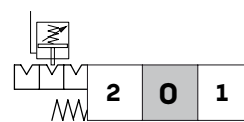
Available with aluminium cap



##### R3K type

3 position, detent in all position.

Available with aluminium cap

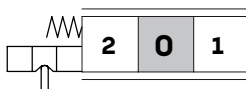


With aluminium cap;  
dimensions are the same of standard type

Spool position microswitch

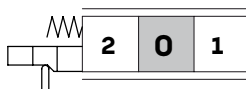
**M1-N1 type**

3 position, micro operation in position 1 and 2, spring return in neutral position.  
Available with aluminium cap



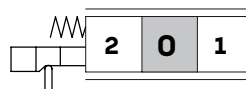
**M1-N1A type**

3 position, micro operation in position 1.  
Available with aluminium cap



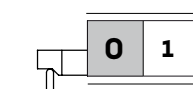
**M1-N1B type**

3 position, micro operation in position 2.  
Available with aluminium cap



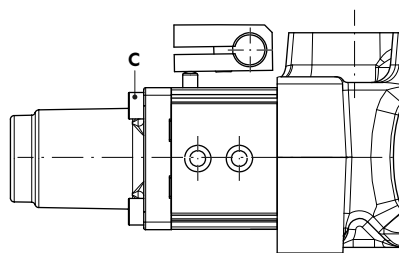
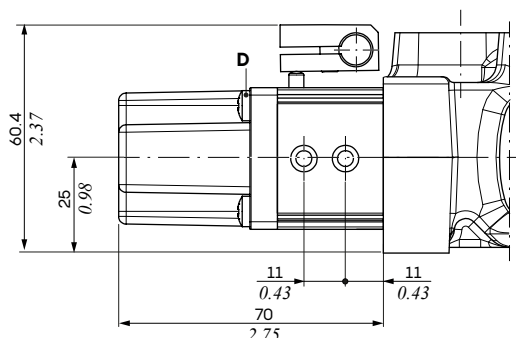
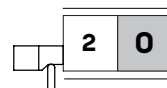
**M2-N1 type**

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



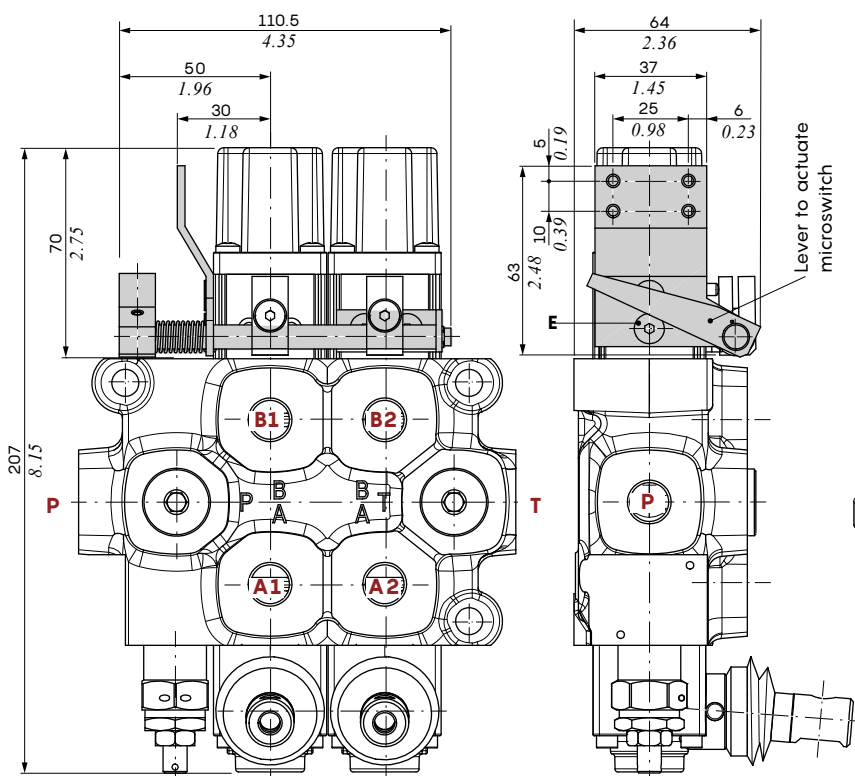
**M3-N1 type**

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



With aluminium cap;  
dimensions are the same of standard type

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



**Wrenches and tightening torques**

C = allen wrench 3 - 3 Nm (2.2 lbft)  
D = cross-head - 3 Nm (2.2 lbft)  
E = allen wrench 3 - 6.6 Nm (4.8 lbft)

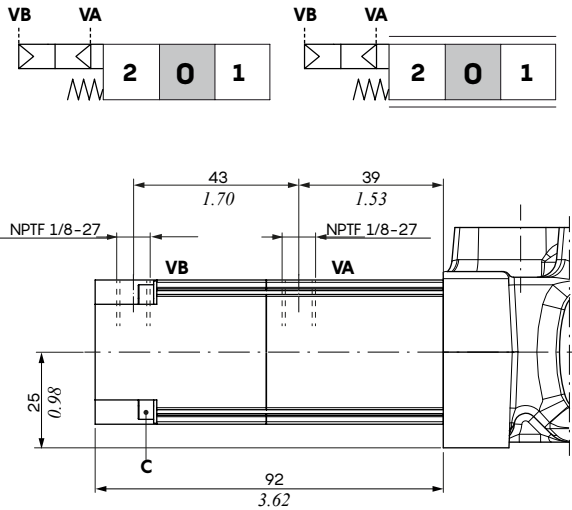
Drawing is referred to a Q25 monoblock valve.

## B side controls

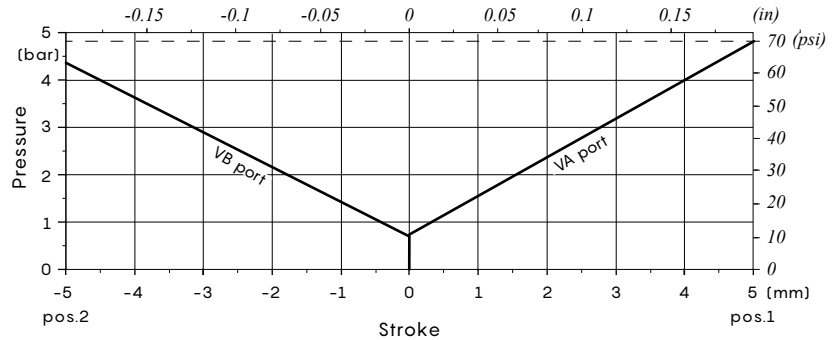
### Pneumatic control

#### P1NW type ON/OFF control

#### P1NPW type Proportional control



#### Proportional pilot pressure curves



#### Operating features

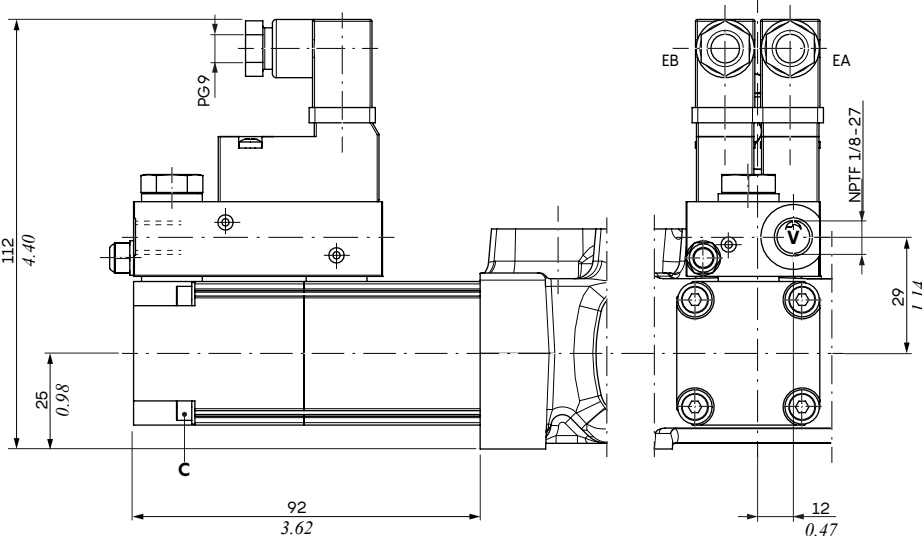
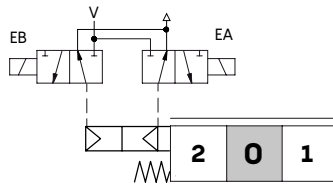
Pilot pressure.....: min. 5 bar (72.5 psi) - max. 30 bar (435 psi)  
Pilot volume.....: 4 cm<sup>3</sup>/min (0.24 in<sup>3</sup>/min)

#### Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbf)

### ON/OFF electropneumatic control

#### D3 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.....: 2.3 W  
Nominal current.....: 12 VDC - 24VDC  
Coil insulation.....: Class F  
Weather protection.....: IP65  
Duty cycle.....: 100%

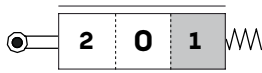
#### Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbf)

## Cam control

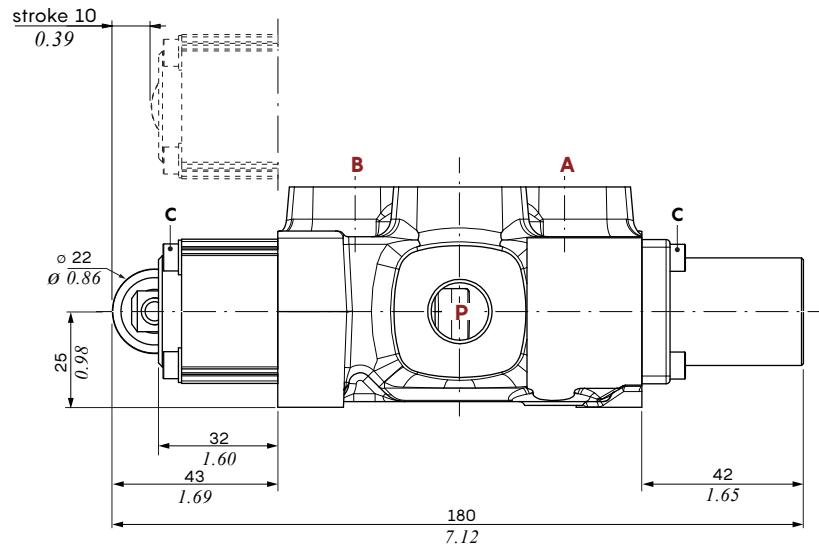
### C2 type

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



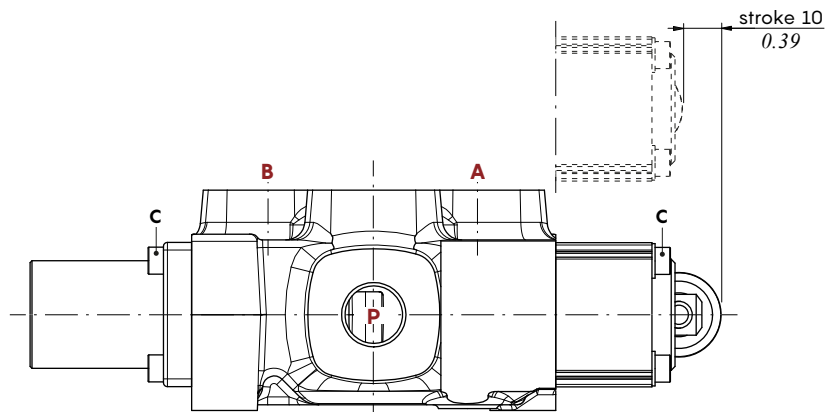
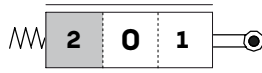
### Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbft)



### C3 type

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

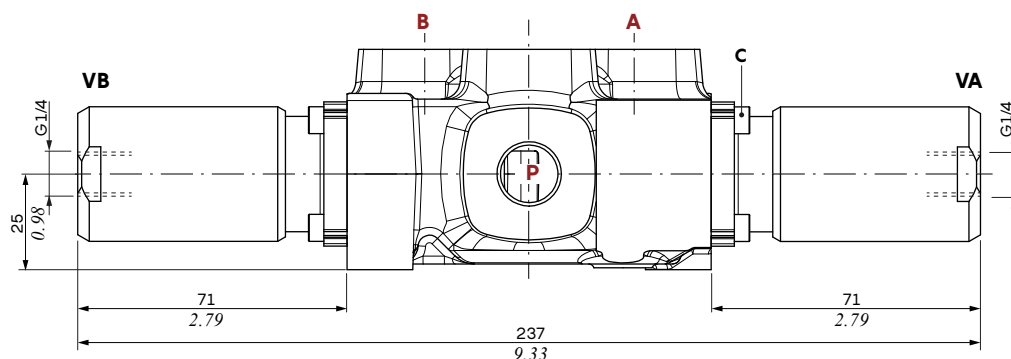
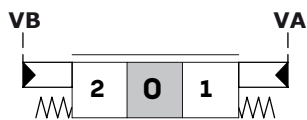


## A+B side controls

### Proportional hydraulic controls

#### H1 type

High pressure control  
with side ports

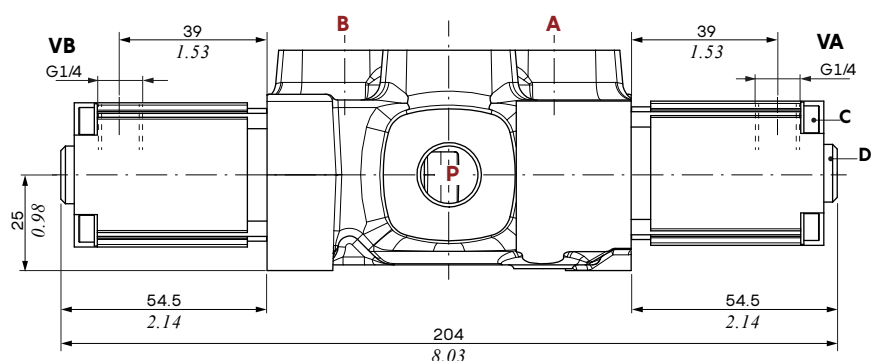
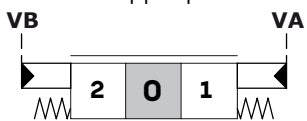


#### Operating features

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

#### H5 type

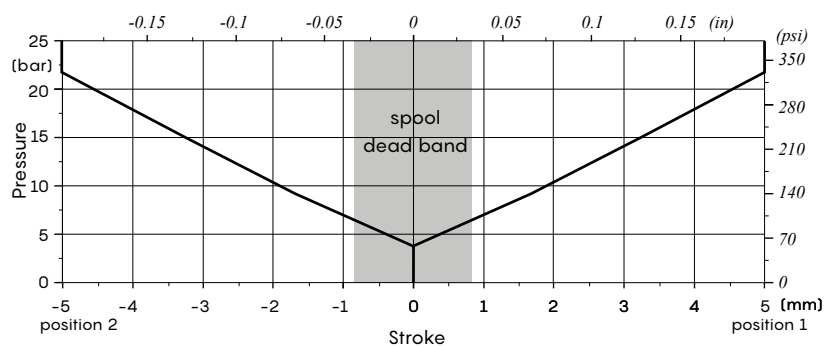
Low pressure control  
with upper ports



#### Operating features

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

Stroke vs. Pressure diagram for H5 type control



#### Wrenches and tightening torques

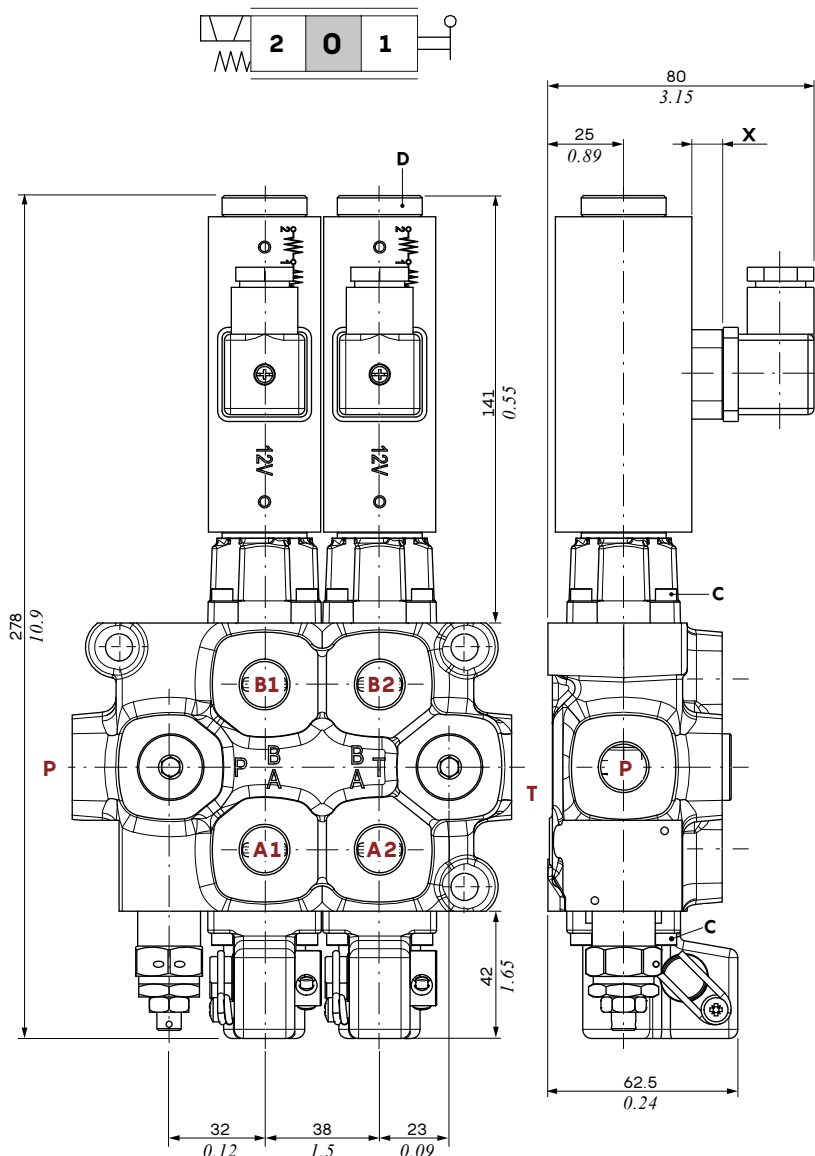
C = allen wrench 3 - 3 Nm (2.2 lbft)

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

## Direct solenoid control

## D41 type: ON/OFF one side

Drawing is referred to a Q25 monoblock valve.



## D41 coil

|                           | Q25     | Q45    |
|---------------------------|---------|--------|
| Nominal voltage           | 12 VDC  | 24 VDC |
| Nominal voltage tolerance | ±10%    |        |
| Power rating              | 58 W    | 52 W   |
| Insulance                 | Class H |        |
| Weather protection        | IP65    |        |

Connector type: ISO4400 3P+T-PG11

## X

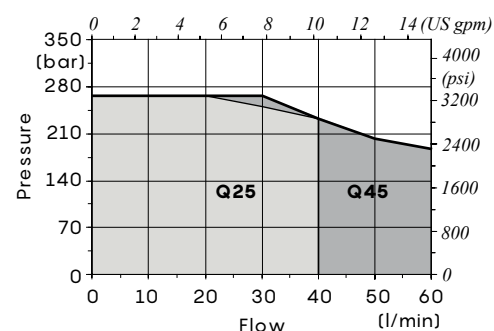
|     | Coil type       | mm - in   |
|-----|-----------------|-----------|
| Q25 | ZEB012 coil     | 10 - 0.39 |
|     | ZEB024 coil     |           |
| Q45 | 4SLG111200 coil | 8 - 0.31  |
|     | 4SLG111200 coil |           |

## Wrenches and tightening torques

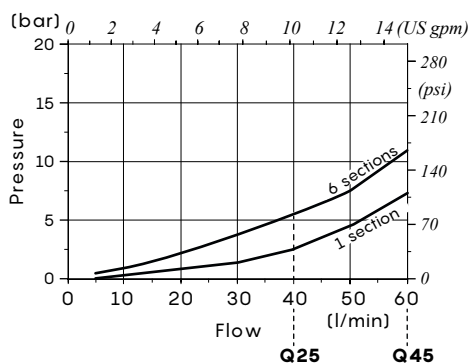
C = allen wrench 3 - 3 Nm (2.2 lbft)

D = manual tightening - 6.6 Nm (7.2 lbft)

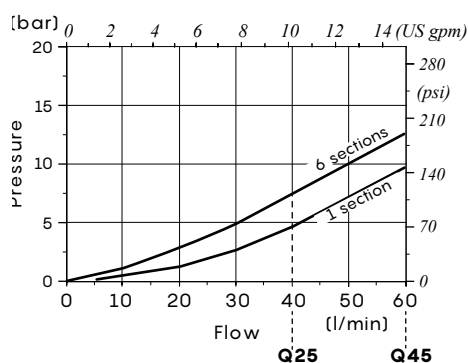
## Dynamic conditions



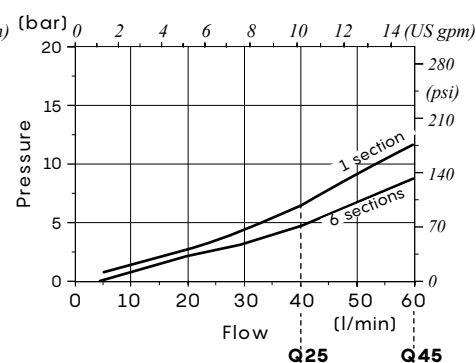
## P⇒T pressure drops



## P⇒A(B) pressure drops



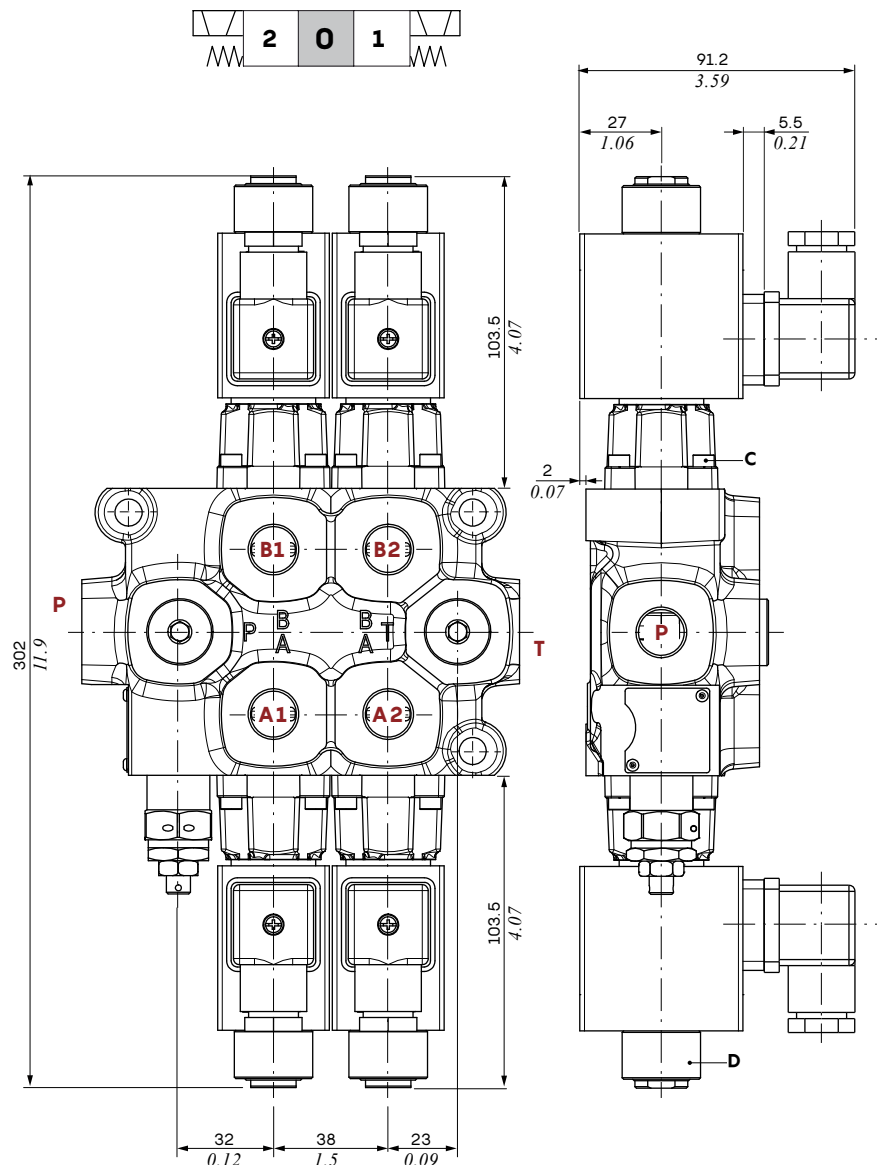
## A(B)⇒T pressure drops



### Direct solenoid control

#### D9 type: ON/OFF two side

Drawing is referred to a Q25 monoblock valve.

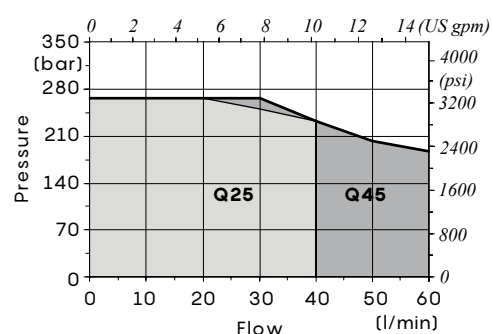


#### D9 coil

|                           |                  |
|---------------------------|------------------|
| Nominal voltage           | 12 VDC<br>24 VDC |
| Nominal voltage tolerance | ±10%             |
| Power rating              | 58 W             |
| Insulance                 | Class H          |
| Weather protection        | IP65             |

Connector type: ISO4400 3P+T-PG11

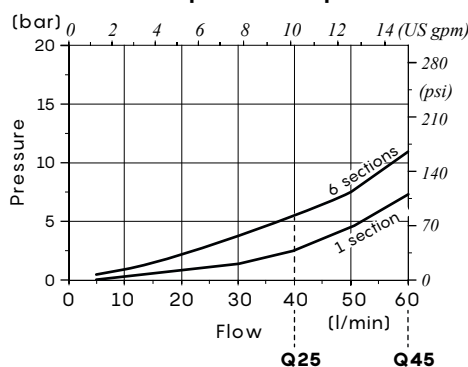
#### Dynamic conditions



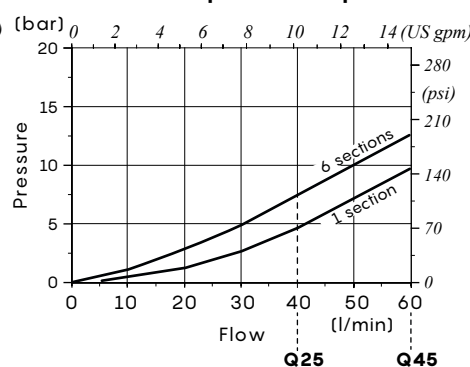
#### Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbft)  
D = manual tightening - 6.6 Nm (4.8 lbft)

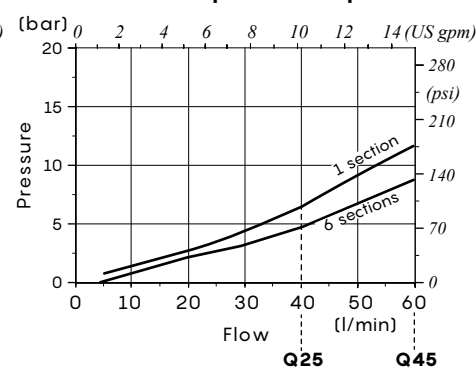
#### P⇒T pressure drops



#### P⇒A(B) pressure drops

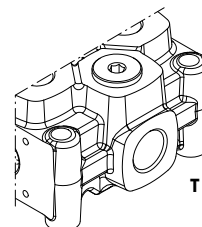
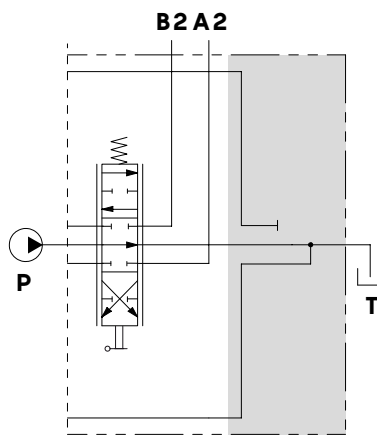
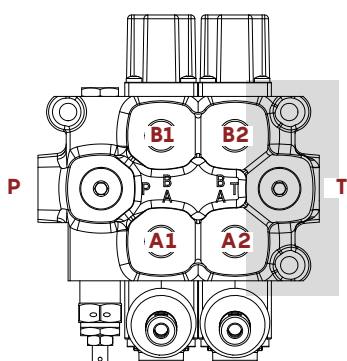


#### A(B)⇒T pressure drops

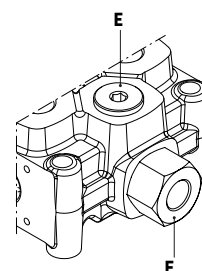
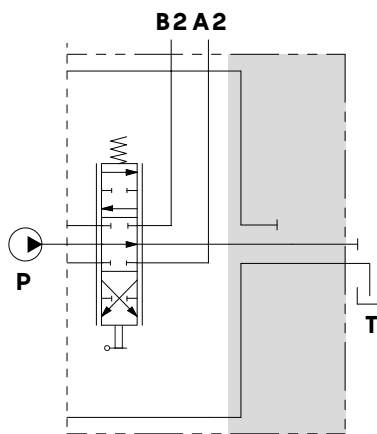
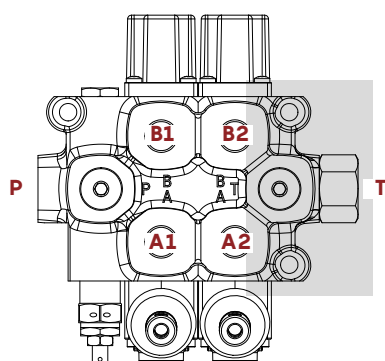


# Outlet configuration

**F3D configuration**  
Open center configuration



**F16D configuration**  
Closed center configuration



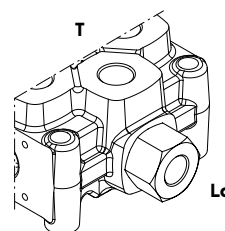
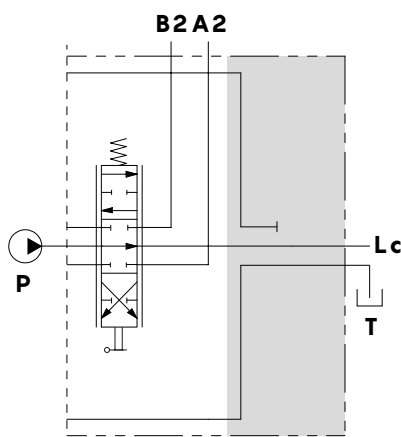
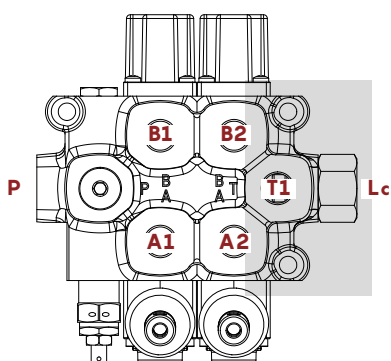
## Wrenches and tightening torques

E (Q25) = allen wrench 6 - 24 Nm (17.7 lbft)

(Q45) = allen wrench 8 - 42 Nm (22 lbft)

F = wrench 30 - 42 Nm (30.9 lbft)

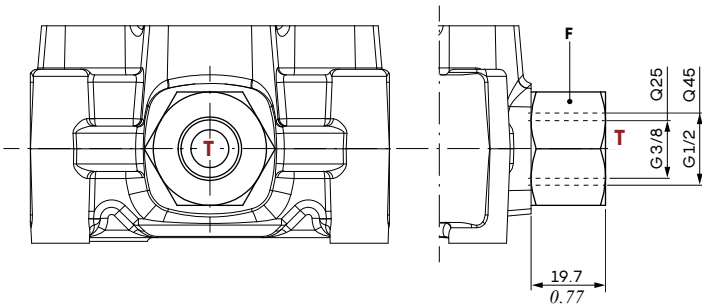
**F6D configuration**  
Carry-over configuration



Outlet configuration

F6D – F16D joint dimension

Drawing is referred to a Q25 monoblock valve.



Wrenches and tightening torques  
F = wrench 30 - 42 Nm (30.9 lbf·ft)