



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 46mm²/s - 46 cSt viscosity at 40°C - 104°F temperature.

Nominal flow rating		80 l/min - (21.1 Us gpm)
Max. pressure	from 1 up to 3 sections	350 bar (5070 psi)
	from 4 up to 6 sections	320 bar (4650 psi)
	from 7 up to 10 sections	300 bar (4350 psi)
Max. back pressure on outlet T port		25 bar (360 psi)
Number sections		from 1 to 10
Internal leakage A(B)⇒T	Δp = 100 bar (1450 psi)	6 cm ³ /min (0.36 in ³ /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 ² /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

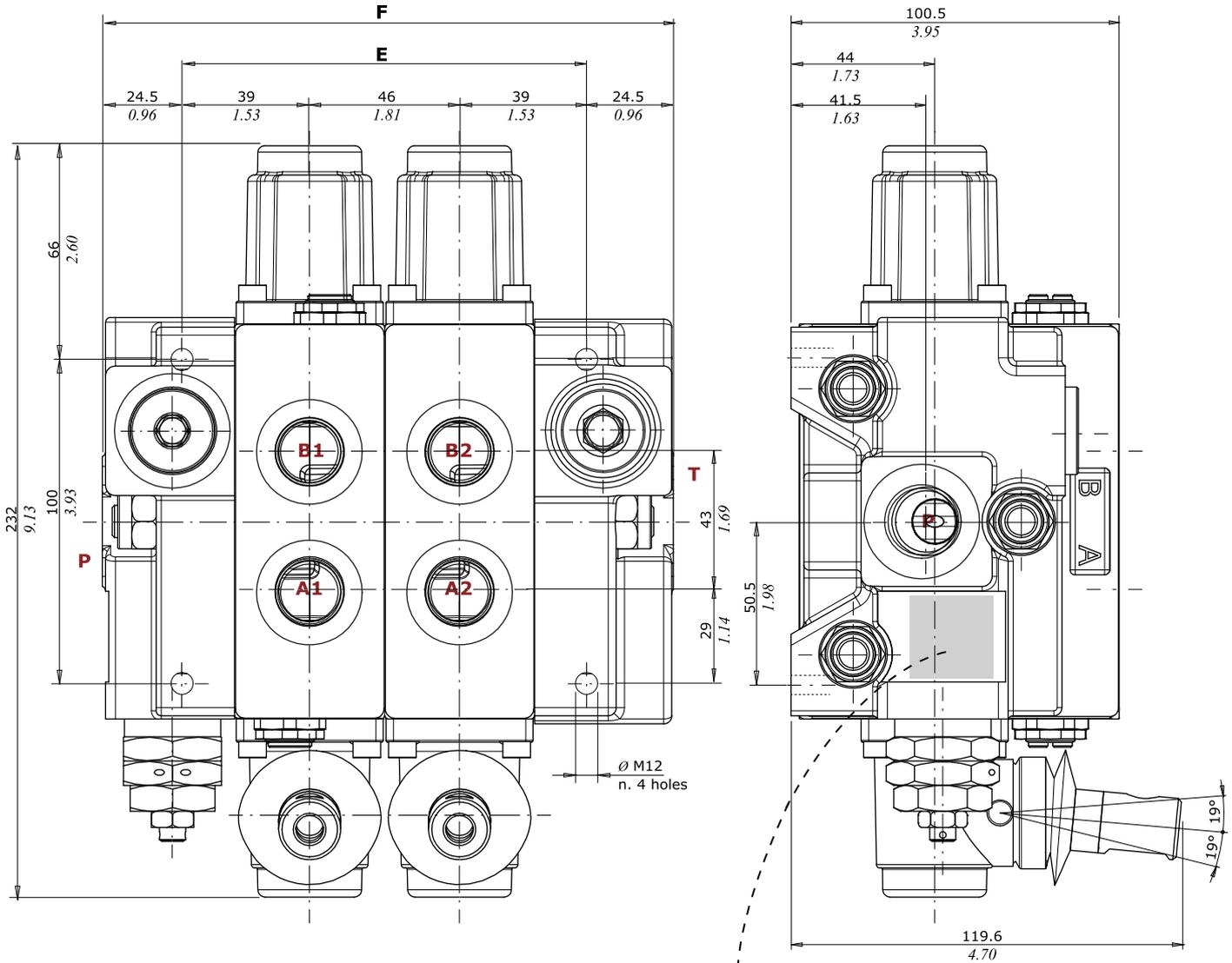
	BSP	UN-UNF
THREAD ACCORDING TO	ISO 228/1	ISO 263
	BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	11926
	SAE	J11926
	DIN	3852-2 shape X or Y

PORT THREADING

PORTS	BSP (standard)	BSP (G 3/4)	UN-UNF
P Inlet	G 1/2	G 3/4	7/8-14 (SAE 10)
P1 Inlet	G 1/2	G 3/4	7/8-14 (SAE 10)
A and B ports	G 1/2	G 3/4	3/4-16 (SAE 8)
T Outlet	G 3/4	G 3/4	1" 1/16-12 (SAE12)
T1 Outlet	G 3/4	G 3/4	7/8-14 (SAE 10)
Lc 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*



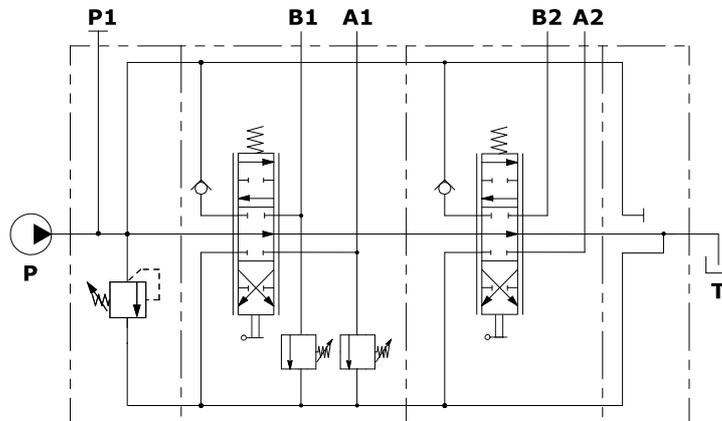
Type	E		F	
	mm	in	mm	in
Q80/1	78	3.07	127	5
Q80/2	124	4.88	173	6.81
Q80/3	170	6.69	219	8.62
Q80/4	216	8.50	265	10.43
Q80/5	262	10.31	311	12.24
Q80/6	308	12.12	357	14.05
Q80/7	354	13.93	403	15.86
Q80/8	400	15.74	449	17.67
Q80/9	446	17.56	495	19.48
Q80/10	492	19.37	541	21.3



- 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 217

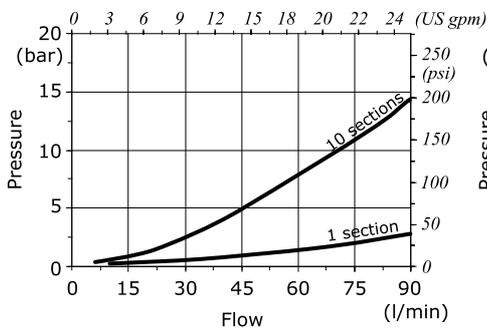
Hydraulic circuit



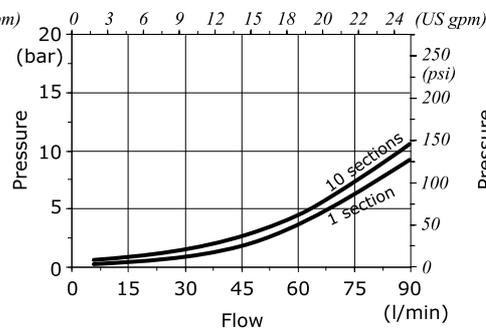
Description example (parallel circuit):
 Q80/2/F7S(N150)/103-A1-M1.V32(N105\N105)/103-A1-M1/F3D

Performance data

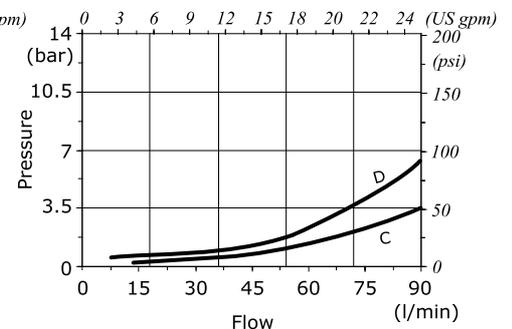
P⇒T pressure drops



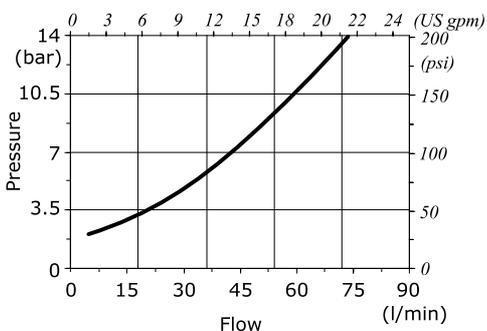
P⇒A(B) pressure drops



A(B)⇒T pressure drops



A1(B1)⇒A2(B2) pressure drops
 (with series circuit)



Legenda

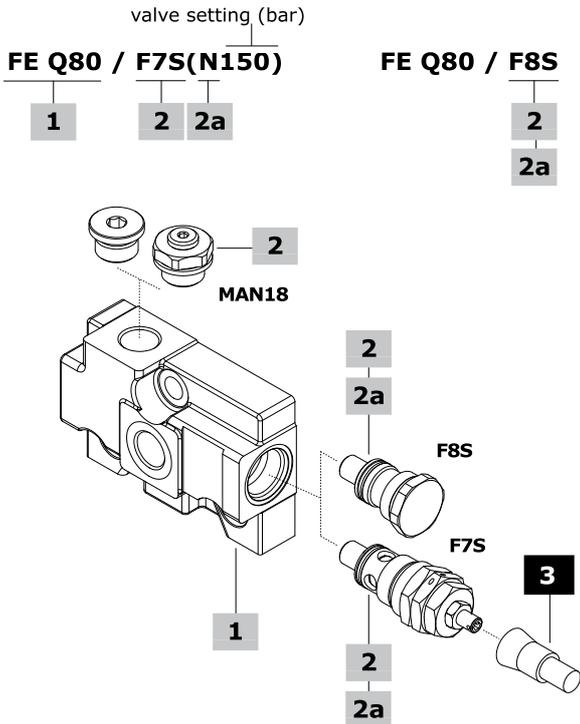
- C= 10th section
- D= 1st section

Complete section ordering codes

<p>1 Inlet section* page 188</p> <p>TYPE: FE-Q80/F7S(N150) CODE: 08000F7S/D-N DESCRIPTION: Side inlet open, upper inlet plugged, with pressure relief valve, setting range 101-200 bar (1460-2900 psi) TYPE: FE-Q80/F8S CODE: 08003F8S/D DESCRIPTION: As previous one, without valves (pressure relief valve plugged port)</p>	<p>3 Intermediate section* page 217</p> <table border="0"> <thead> <tr> <th>TYPE</th> <th>CODE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>E50</td> <td>08850E50-B</td> <td>With pressure relief valve setting range 10-100 bar (145-1450 psi)</td> </tr> <tr> <td></td> <td>08850E50-N</td> <td>As previous one, setting range 101-200 bar (1460-2900 psi)</td> </tr> <tr> <td></td> <td>08850E50-R</td> <td>As previous one, setting range 201-380 bar (2910-5500 psi)</td> </tr> <tr> <td>E53</td> <td>08854E53-B</td> <td>With pressure relief valve setting range 10-100 bar (145-1450 psi) and P2 port open for 2nd pump</td> </tr> <tr> <td></td> <td>08854E53-N</td> <td>As previous one, setting range 101-200 bar (1460-2900 psi)</td> </tr> <tr> <td></td> <td>08854E53-R</td> <td>As previous one, setting range 201-380 bar (2910-5500 psi)</td> </tr> <tr> <td>E51</td> <td>08853E51</td> <td>Intermediate outlet section, T2 port open</td> </tr> <tr> <td>E61</td> <td>08877E61</td> <td>Intermediate spacer section</td> </tr> </tbody> </table>	TYPE	CODE	DESCRIPTION	E50	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)	E53	08854E53-B	With pressure relief valve setting range 10-100 bar (145-1450 psi) and P2 port open for 2 nd 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)	E51	08853E51	Intermediate outlet section, T2 port open	E61	08877E61	Intermediate spacer section
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E61	08877E61	Intermediate spacer section																										
<p>2 Working section* page 190</p> <p>With mechanical controls TYPE: EL-Q80/103-A1-M1.VC CODE: SGL800007 DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, lever control and spring return to neutral position TYPE: EL-Q80/103-A1-M1 CODE: 080000103001000 DESCRIPTION: As previous one, without valve arrangement With proportional hydraulic controls TYPE: EL-Q80/103-H1.VC 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: EL-Q80/103-H1 CODE: SGL800009 DESCRIPTION: As previous one, without valve arrangement TYPE: EL-Q80/103-H5.VC 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: EL-Q80/103-H5 CODE: SGL800012 DESCRIPTION: As previous one, without valve arrangement With electric solenoid controls - one side type TYPE: EL-Q80/103-A1-D41.VC-12VDC CODE: SGL800010 DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, 12VDC electric direct ON/OFF control with lever TYPE: EL-Q80/103-A1-D41-12VDC CODE: SGL800013 DESCRIPTION: As previous one, without valve arrangement With electrohydraulic ON/OFF controls - one side type TYPE: EL-Q80/KE1S/103-A1-D2W.VC -12VDC 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: EL-Q80/KE1S/103-A1-D2W-12VDC CODE: SGL800015 DESCRIPTION: As previous one, without valve arrangement</p>	<p>4 Outlet section* page 219</p> <table border="0"> <tbody> <tr> <td>TYPE: FS-Q80-F3D</td> <td>CODE: 08012F3D</td> </tr> <tr> <td colspan="2">DESCRIPTION: T port open, T1 port plugged. For open center circuit</td> </tr> <tr> <td>TYPE: FS-Q80-F16D</td> <td>CODE: 08016F16D</td> </tr> <tr> <td colspan="2">DESCRIPTION: T port open, T1 port plugged. For closed center circuit</td> </tr> <tr> <td>TYPE: FS-Q80-F6D</td> <td>CODE: 08014F6D</td> </tr> <tr> <td colspan="2">DESCRIPTION: Lc port and T1 port open. With joint for carry-over (HPCO) circuit</td> </tr> </tbody> </table>	TYPE: FS-Q80-F3D	CODE: 08012F3D	DESCRIPTION: T port open, T1 port plugged. For open center circuit		TYPE: FS-Q80-F16D	CODE: 08016F16D	DESCRIPTION: T port open, T1 port plugged. For closed center circuit		TYPE: FS-Q80-F6D	CODE: 08014F6D	DESCRIPTION: Lc port and T1 port open. With joint for carry-over (HPCO) circuit																
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(*): Codes are referred to **BSP** thread

Inlet section - parts ordering codes



1 Inlet body section* page 188

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

2 Configuration coding* page 188

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 189

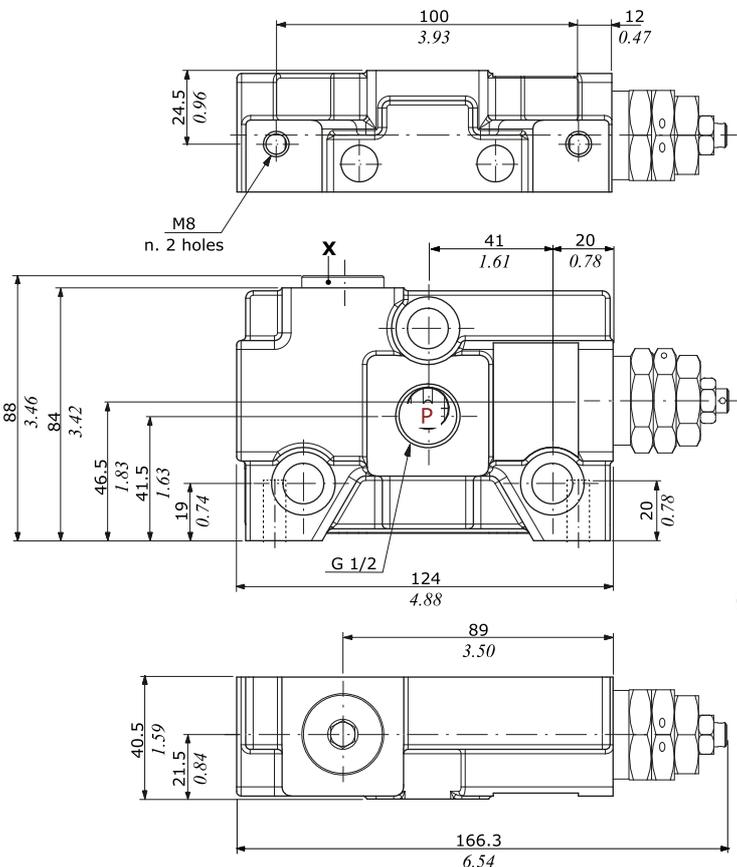
TYPE: **B** CODE: 700065205000000
 DESCRIPTION: VLP65S valve, setting range 10-100 bar (145-1450 psi)
 TYPE: **N** CODE: 700065105000000
 DESCRIPTION: VLP65S valve, setting range 101-200 bar (1460-2900 psi)
 TYPE: **R** CODE: 700065305000000
 DESCRIPTION: VLP65S valve, setting range 201-380 bar (2910-5500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

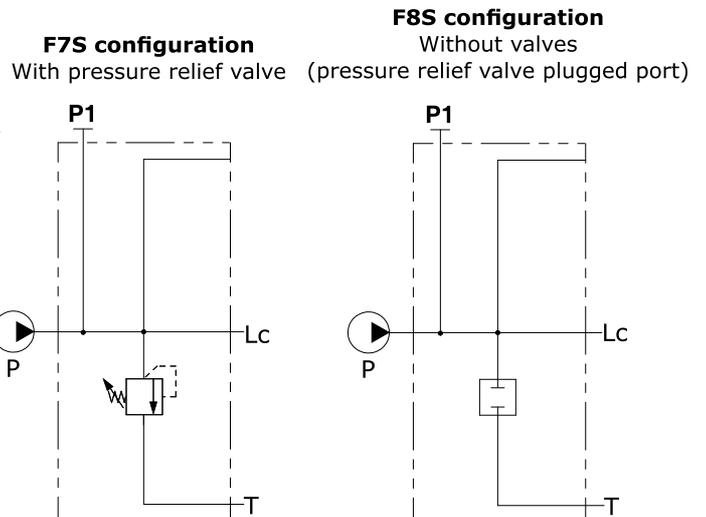
Dimensional data and hydraulic circuits



Wrenches and tightening torques

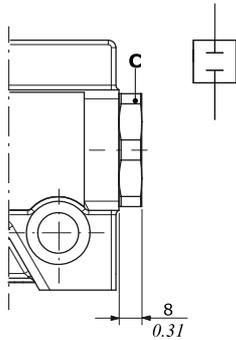
X = allen wrench 8 - 42 Nm (31 lbf_t)

Note: For valves wrench and torque, see related pages

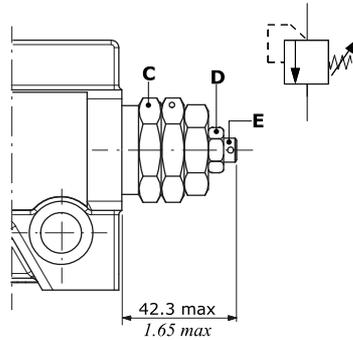


Main pressure relief valve

Relief valve blanking plug



Main pressure relief valve

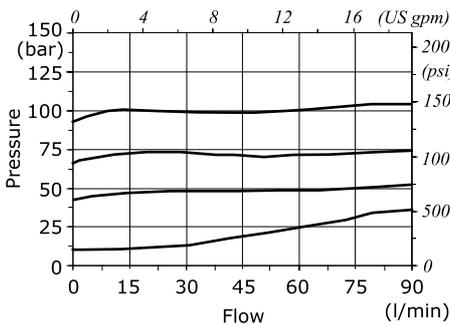


Wrenches and tightening torques

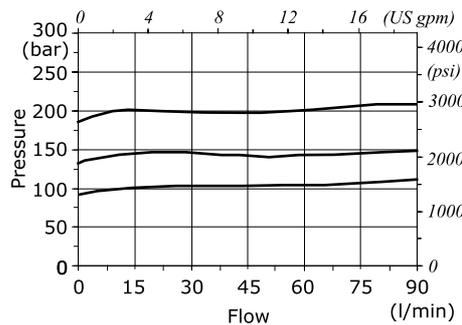
- C = wrench 30 - 80 Nm (59 lbft)
- D = wrench 13 - 24 Nm (17.7 lbft)
- E = allen wrench 4

Spring type	Setting ranges (bar - psi)
B (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

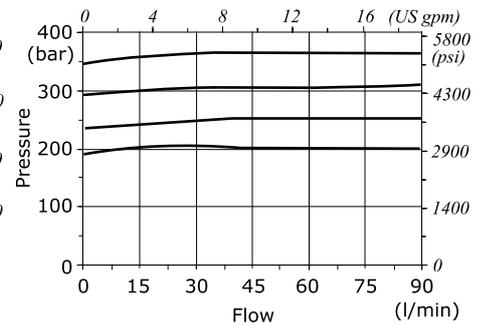
Setting example (B type spring)



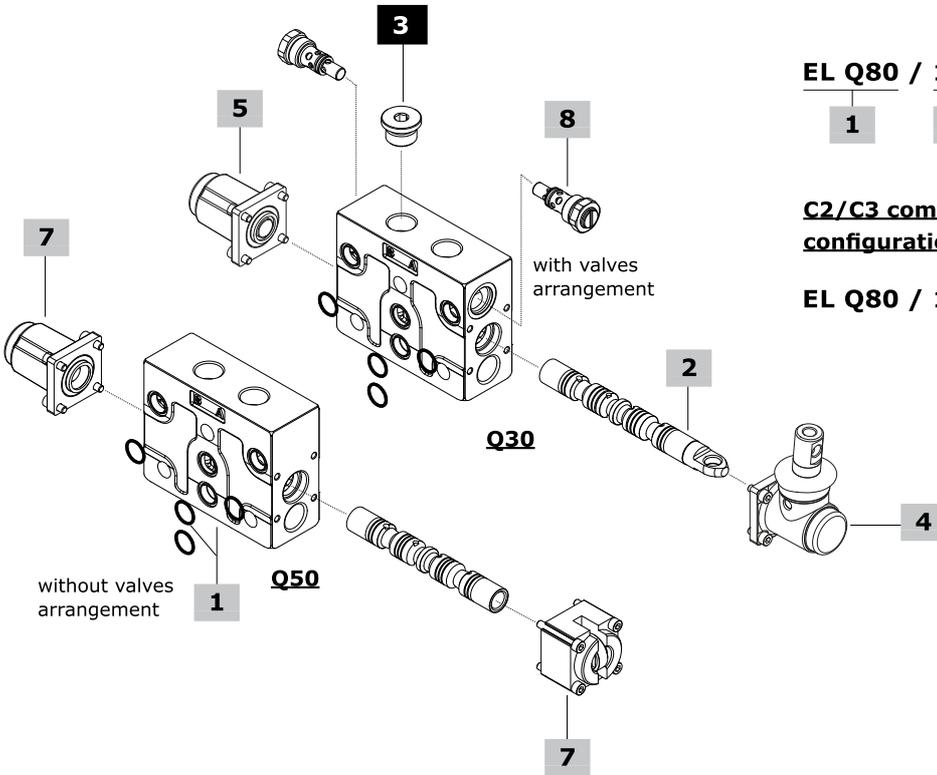
Setting example (N type spring)



Setting example (R type spring)



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
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C2/C3 complete mechanical control configuration example

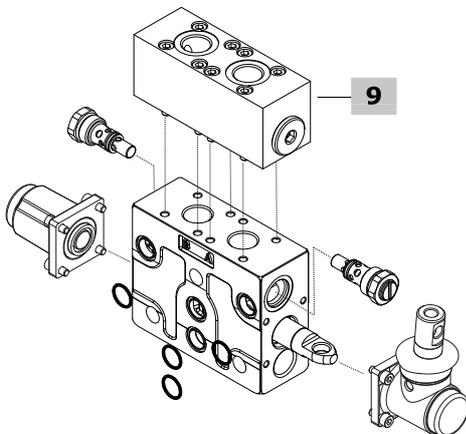
EL Q80 / 103 - C3 . V40(N)120 8

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 196

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

2 Spool page 197

TYPE	CODE	DESCRIPTION
Standard spools		
103	060102894999	Double acting, A and B closed in neutral position
	3CUG3051600	As previous one, for kick-out control
106	KR80106	Double acting for closed circuit
107	KR80107-108	Double acting, A to tank and B closed in neutral position
108	KR80107-108	Double acting, B to tank and A closed in neutral position
111	060102996799	Double acting, A and B to tank in neutral position
114	KR80114	Double acting, A and B to tank in neutral position, for closed circuit
101	3CUG2891900	Single acting on port A. G1/2 plug is required, see #3
102	3CUG2891901	Single acting on port B. G1/2 plug is required, see #3
116	3CUG2897800	Double acting, with floating in the 4 th position (spool in): requires dedicated spool control
126	3CUG2897801	Double acting, with floating in the 4 th position (spool out): requires dedicated spool control
403	KR80403	Double acting, A and B closed in neutral position, for series circuit
411	KR80411	Double acting, A and B to tank in neutral position, for series circuit
Special spools for cam, microswitch controls and other leverless controls		
103	060102879199	Double acting, A and B closed in neutral position
111	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 198

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

4 A side control (cont.) page 198

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

5 B side control page 203

TYPE	CODE	DESCRIPTION
<u>With spring return:</u>		
M1	08730M1	3 pos., spring return in neutral position
M1/01	08730M1/01	As M1 type, for joystick control
M1/02	08730M1/02	As M1 type, with stroke limiter
M1/05	08730M1/05	As M1 type, for series spool
M1/07	08730M1/07	As M1 type, for joystick control with series spool
M1-B1	08753M1-B1	As M1 type, with microswitch arrangement
M1-U1	08701M1-U1	As M1 type, with M10 male thread external pin
M2	08732M2	2 pos. (0-1), spring return in neutral position
M2-U1	08702M2-U1	As M2 type, with M10 male thread external pin
M3	08733M3	2 pos. (0-2), spring return in neutral position
M3-U1	08703M3-U1	As M3 type, with M10 male thread external pin
M4	08734M4-1-2	2 pos. (1-2), spring return in position 1
	08735M42-1	2 pos. (2-1), spring return in position 2
M4-U1	08734M4-U11-2	As M4 type (1-2), with M10 male thread external pin
<u>With flexible cable control arrangement:</u>		
M1-U2	08715M1-U2	3 pos., spring return in neutral position
M2-U2	08716M2-U2	2 pos. (0-1), spring return in neutral position
M3-U2	08717M3-U2	2 pos. (0-2), spring return in neutral position

With friction:

R0 08740R0 Adjustable friction control

With detent:

R1	08741R1	3 pos., detent in position 1
R2	08742R2	3 pos., detent in position 2
R3	08743R3	3 pos., detent in all position
R4	08744R4	2 pos., detent in position 0-1
R5	08745R5	2 pos., detent in position 0-2
R6	08746R6	2 pos., detent in position 1-2
R8	08748R8	4 pos., detent in 4 th pos., for 116 spool type
R10/Z1	08750R10/Z1	4 pos., detent in 4 th pos., for 126 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 203

TYPE	CODE	DESCRIPTION
<u>With detent and kick out function:</u>		
R1K	08741R1K	3 pos., detent in position 1
R2K	08742R2K	3 pos., detent in position 2
R3K	08743R3K	3 pos., detent in all position
<u>With spool position microswitch:</u>		
Note: To complete the control you must use the assembly kit at #6		
M1-N1	08766M1-N1	3 pos., micro operation in pos. 1 and 2, spring return in neutral position
M1-N1A	08767M1-N1A	As M1-N1 type, micro operation in pos. 1
M1-N1B	08768M1-N1B	As M1-N1 type, micro operation in pos. 2
M2-N1	08769M2-N1	2 pos. (0-1), spring return in neutral position
M3-N1	08772M3-N1	2 pos. (0-2), spring return in neutral position
<u>Pneumatic and electropneumatic controls:</u>		
P1N	08561P1-N	ON/OFF pneumatic control
P1NP	08561P1-NP	Proportional pneumatic control
D3	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 209

TYPE	CODE	DESCRIPTION
For types 103 and 111 spools		
C2	08792C2-C3	Cam control from pos. 1 to 2
C3	08792C2-C3	Cam control from pos. 2 to 1

8 Auxiliary port valve page 214

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

For other configurations and positions, see page 215

9 Secondary aux valves* page 216

TYPE	CODE	DESCRIPTION
VRP-VC01	08835V01C	Single piloted check valve on A port, 250 bar (3600 psi)
VRP-VC03	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

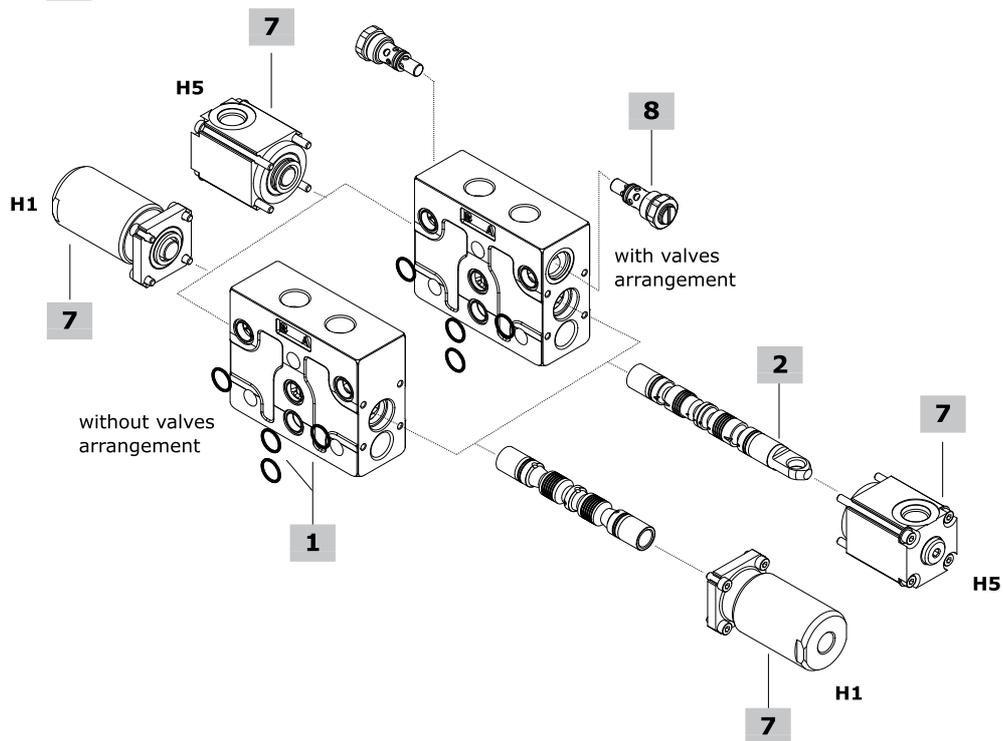
Proportional hydraulic controls valve configuration example

spring type and valve setting (bar)

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



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



1 Working section body kit* page 196

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

H1 hydraulic control requires standard body: see #1, page 191

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 197

TYPE	CODE	DESCRIPTION
For H5 hydraulic control		
103	060102894999	Double acting, A and B closed in neutral position

TYPE	CODE	DESCRIPTION
For H1 hydraulic control		
103	060102879199	Double acting, A and B closed in neutral position

7 Hydraulic controls A+B sides* page 210

TYPE	CODE	DESCRIPTION
H5	08785H5	Low pressure proportional type, upper ports
H1	08779H1	High pressure proportional type, side ports

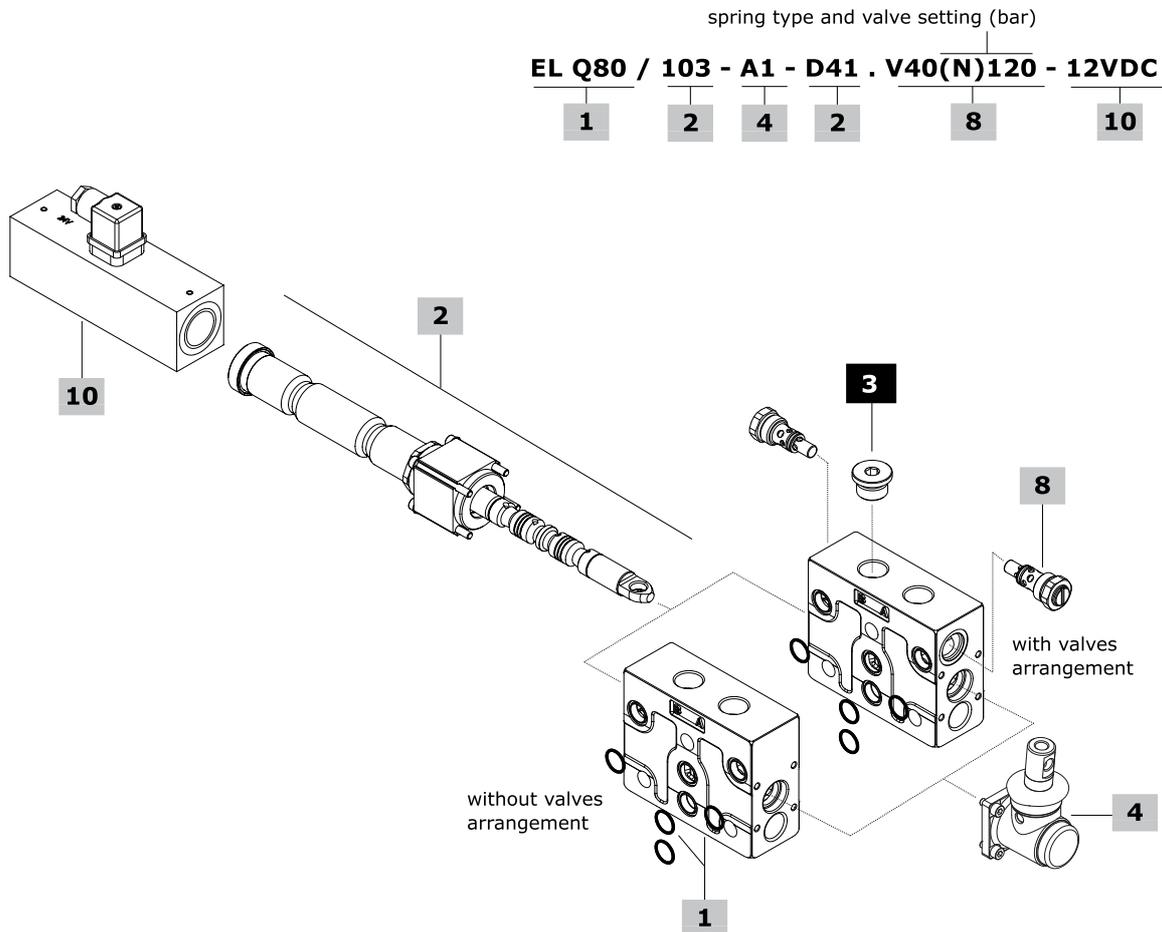
8 Auxiliary port valve page 214

See #8, page 192

(*): 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 196

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 211

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

3 Plug for single acting spool*

See #3, page 191

4 A side control page 211

TYPE	CODE	DESCRIPTION
A1	08600A1-A2	M10 thread aluminium lever box
A2	08600A1-A2	As A1 type, with lever box rotated 180°

8 Auxiliary port valve page 214

See #8, page 192

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

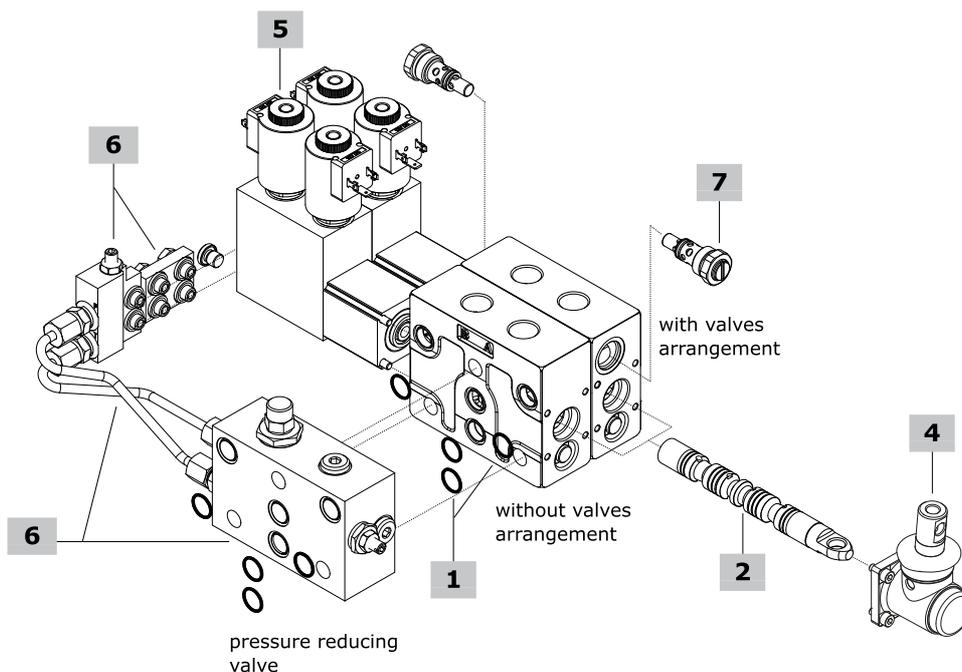
Working section - parts ordering codes

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 196

See #1, page 191

2 Spool page 197

See #2, page 191

4 A side control page 198

See #4, page 191

5 B side electrohydraulic control page 212

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

Note: For BT type coils, see page 257

6 Connector kit page 213

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

Note: Connector kit are included collector and feeding block

With pressure reducing valve

KE1R	5GKE08R010	Kit for 1 section
KE2R	5GKE08R020	Kit for 2 sections
KE3R	5GKE08R030	Kit for 3 sections
KE4R	5GKE08R040	Kit for 4 sections
KE5R	5GKE08R050	Kit for 5 sections
KE6R	5GKE08R060	Kit for 6 sections
KE7R	5GKE08R070	Kit for 7 sections
KE8R	5GKE08R080	Kit for 8 sections
KE9R	5GKE08R090	Kit for 9 sections
KE10R	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 214

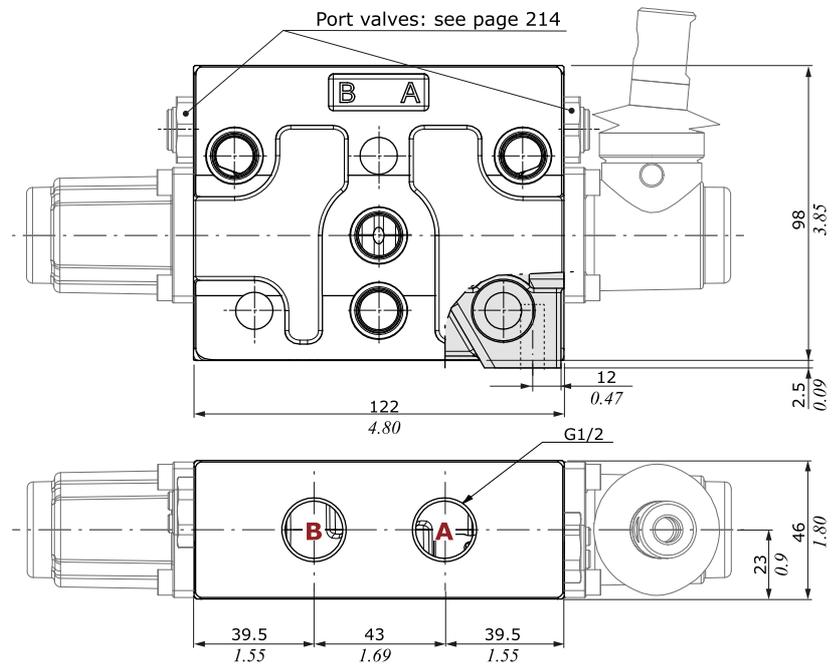
See #8, page 192

(*): Codes are referred to BSP thread

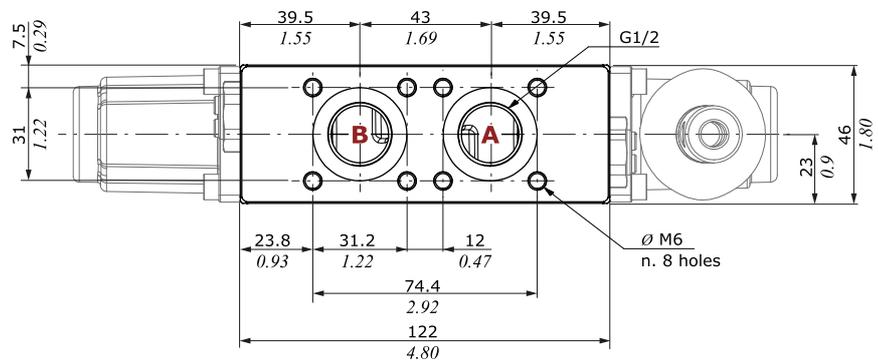
Working section

Dimensional data and hydraulic circuits

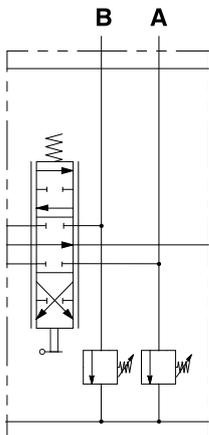
Standard working section



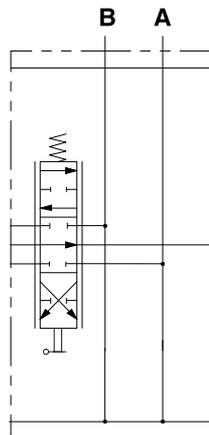
Working section for secondary aux valves block



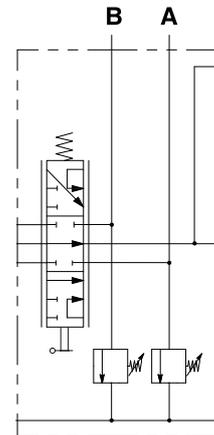
Q80.V40(N)120 configuration
Parallel circuit,
mechanical control with aux valves



Q80 configuration
Parallel circuit,
mechanical control without aux valves



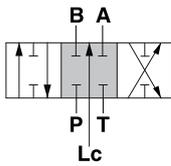
Q80.V40(N)120 configuration
Series circuit,
mechanical control with aux valves



Spool

103 type
A and B closed
in neutral position

2 0 1

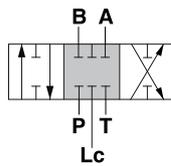


Stroke

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

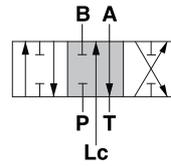


Stroke

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

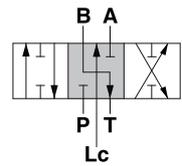


Stroke

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

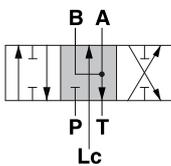


Stroke

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

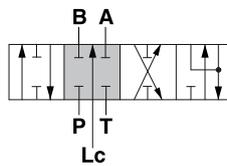


Stroke

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

116 type
With floating in the 4th position
(spool in)

2 0 1 3

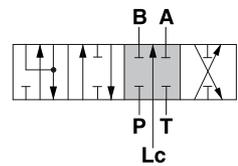


Stroke

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 4th position
(spool out)

3 2 0 1

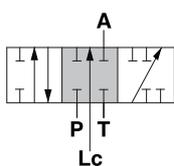


Stroke

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

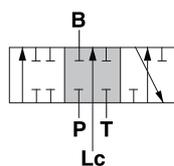


Stroke

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

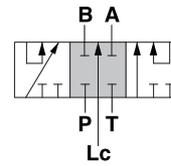


Stroke

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

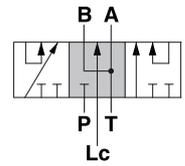


Stroke

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)

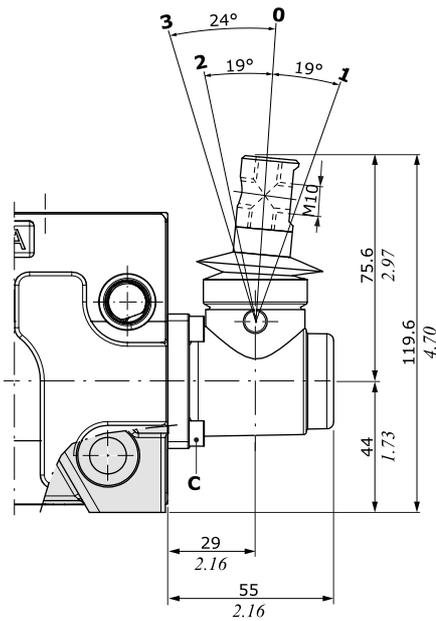
Working section

A side controls

With lever control

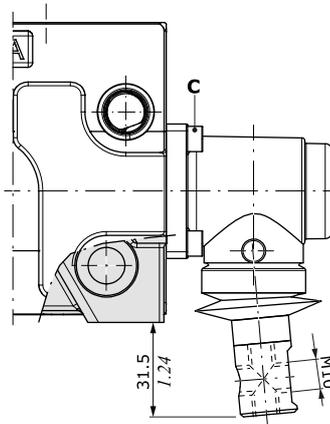
A1 type

M10 thread aluminium lever box



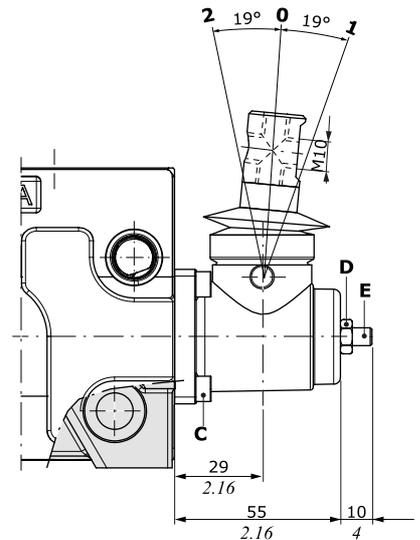
A2 type

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

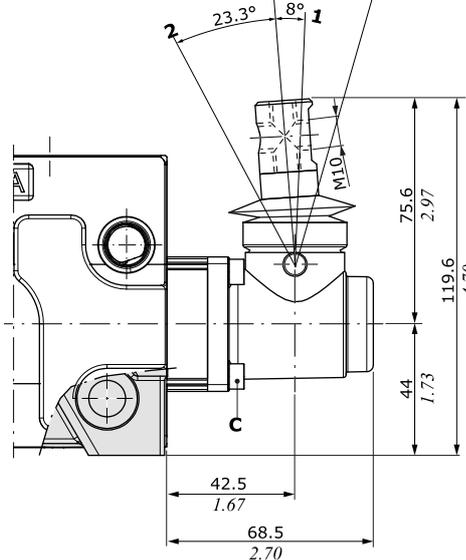
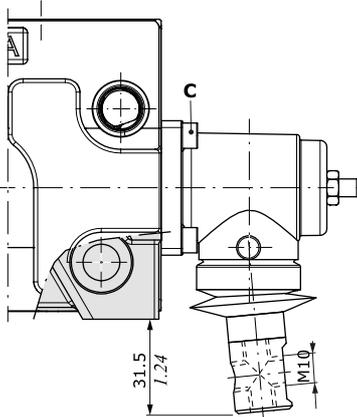
C = allen wrench 4 - 6.6 Nm (4.8 lbf_t)

D = wrench 10 - 9.8 Nm (7.2 lbf_t)

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

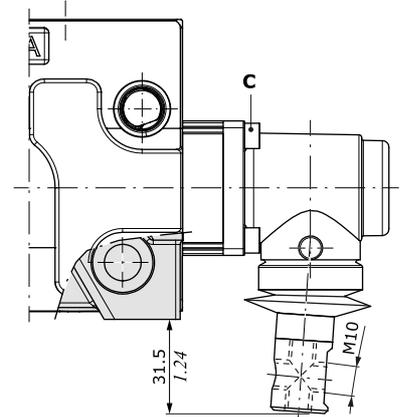
A2/06 type

As A1/06 type, rotated 180°



A2/Z1 type

As A1/Z1 type, rotated 180°

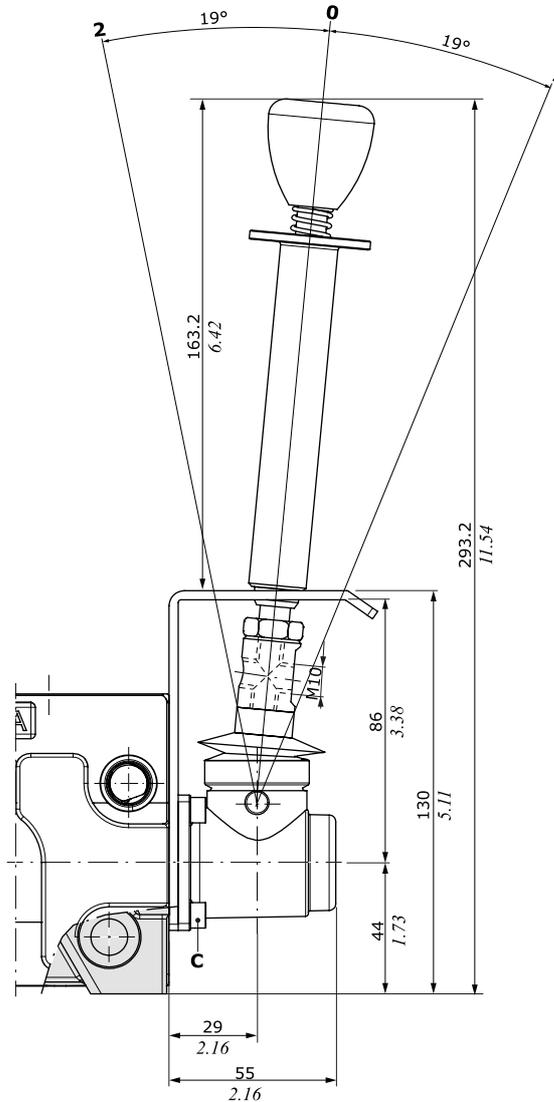


A side controls

With safety lever control

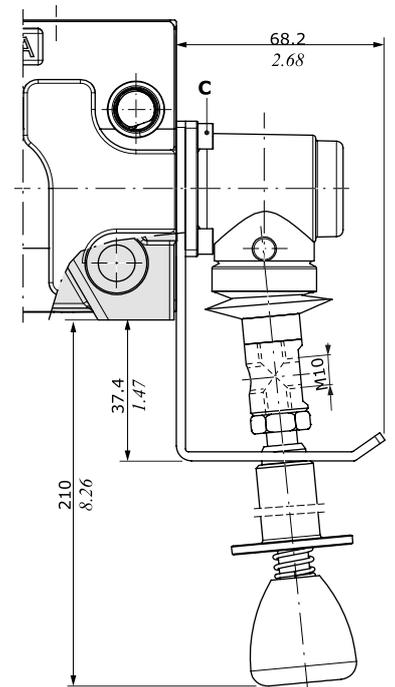
A1/S type

M10 thread, aluminium lever box



A2/S type

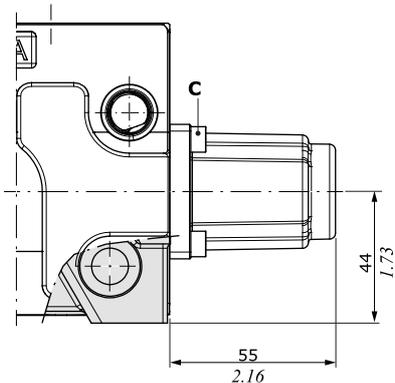
As A1/S type, rotated 180°



Without lever control

A3 type

With cap



Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm (4.8 lbft)

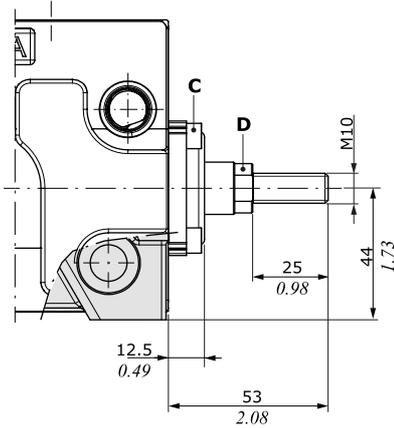
Working section

A side controls

Without lever control

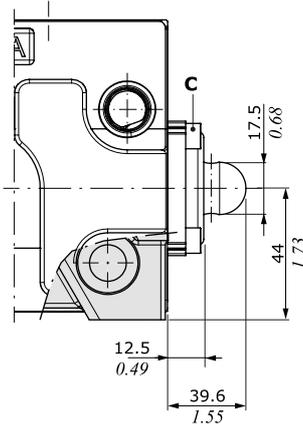
A4 type

M10 male thread external pin with flange



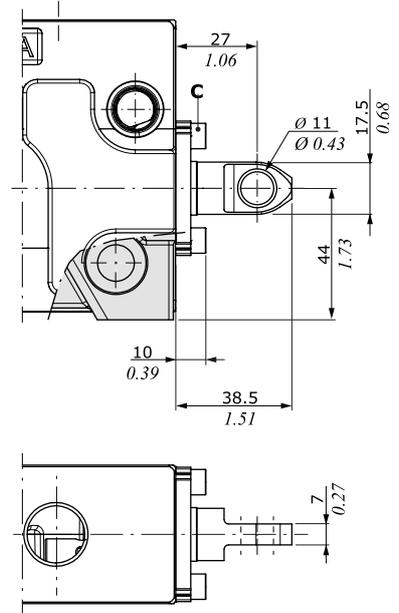
A5 type

Flange with spherical spool end



A6 type

With flange



Wrenches and tightening torques

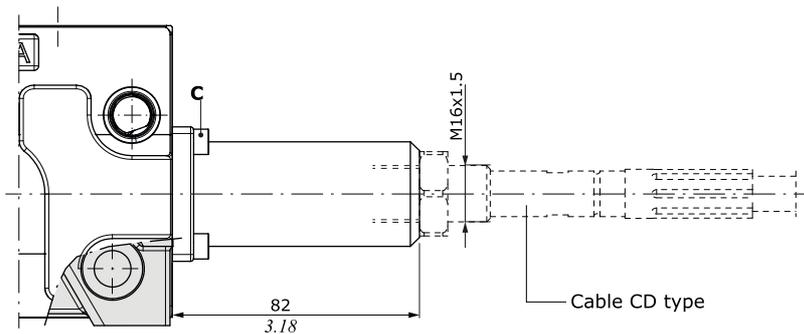
C = allen wrench 4 - 6.6 Nm (4.8 lbf^t)

D = wrench 13 - 9.8 Nm (7.2 lbf^t)

With flexible cable control arrangement

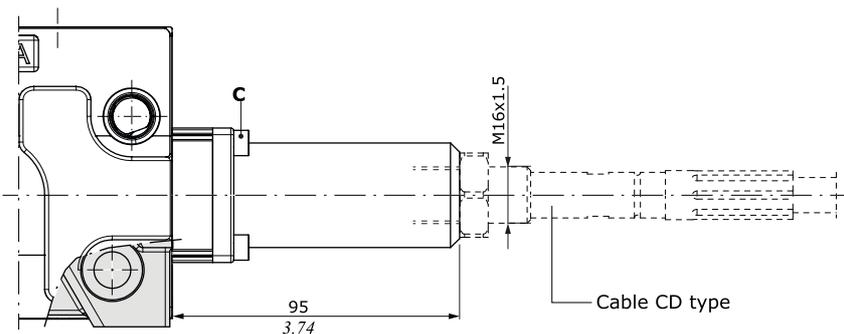
A8 type

Flexible cable control arrangement



A8/Z1 type

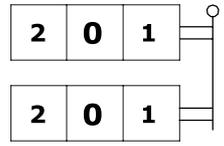
As A8 type, for 116 floating spool type



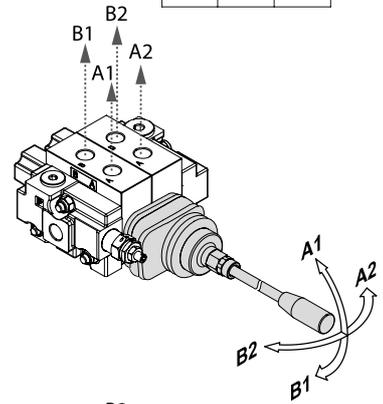
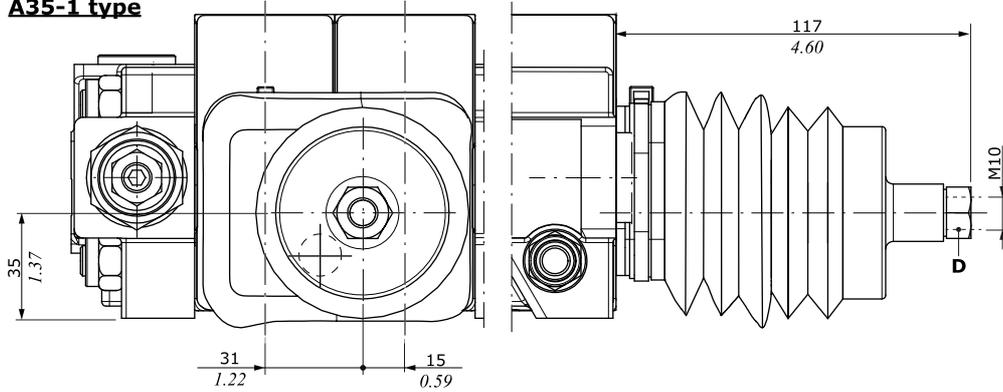
A side controls

Joystick control

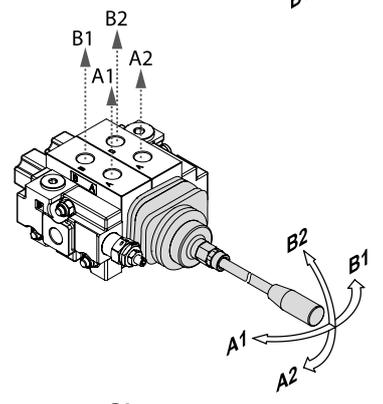
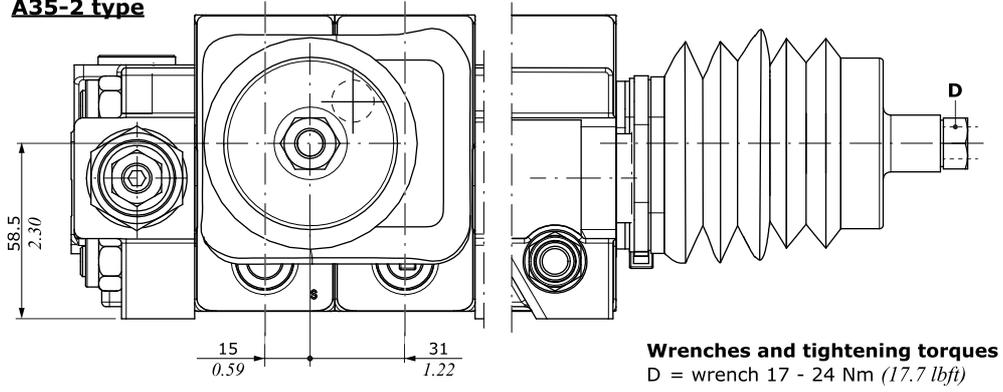
For operating the joystick control in the floating position, contact Sales Department.



A35-1 type

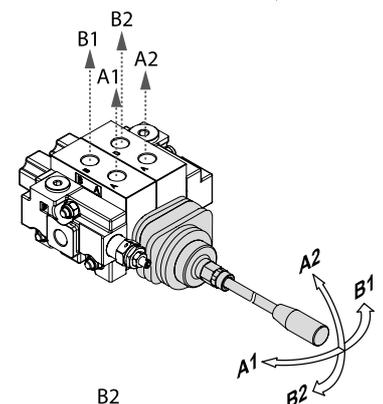
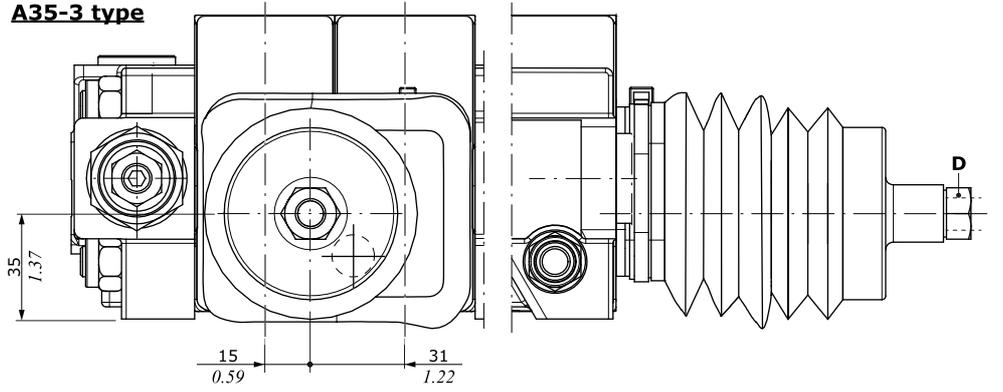


A35-2 type

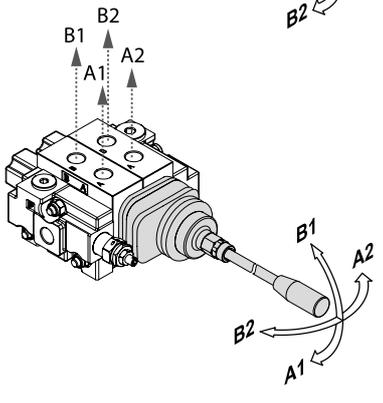
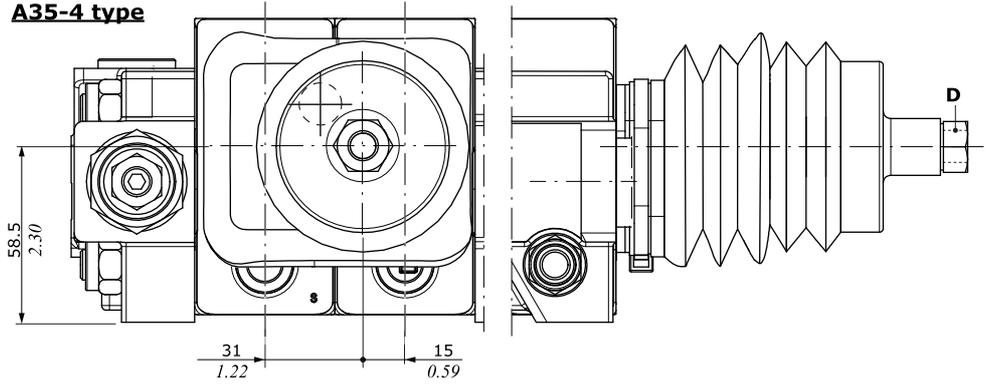


Wrenches and tightening torques
D = wrench 17 - 24 Nm (17.7 lbf_t)

A35-3 type



A35-4 type

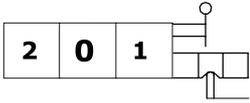


Working section

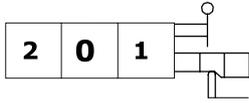
A side controls

With spool position microswitch, with lever

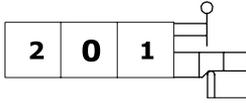
N1-A1 type
Micro operation
in position 1 and 2



N1A-A1 type
Micro operation in
position 1

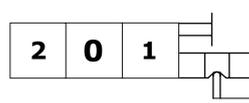


N1B-A1 type
Micro operation in
position 2

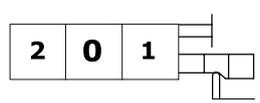


With spool position microswitch, with cap

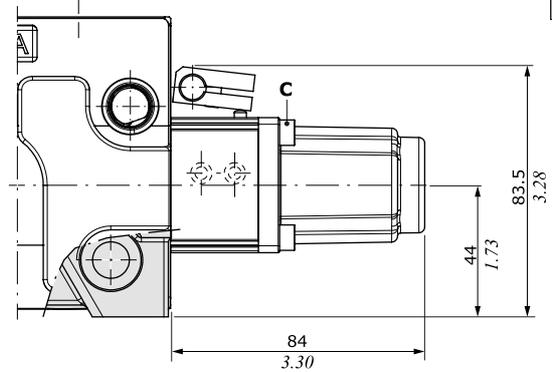
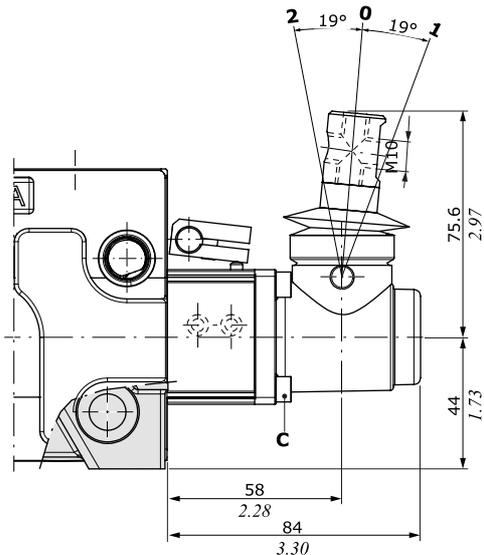
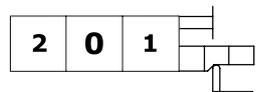
N1-A3 type
Micro operation
in position 1 and 2



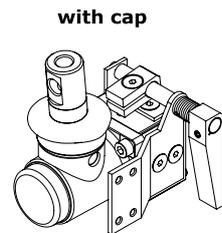
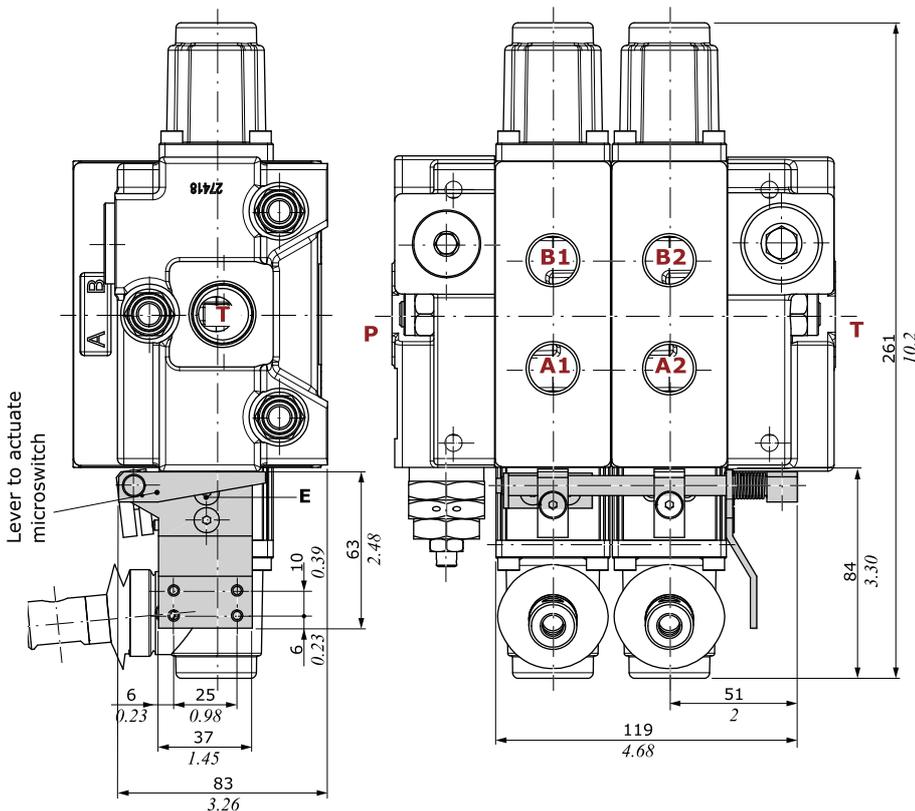
N1A-A3 type
Micro operation in
position 1



N1B-A3 type
Micro operation in
position 2



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)

B side controls

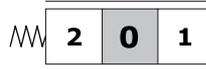
With spring return control

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

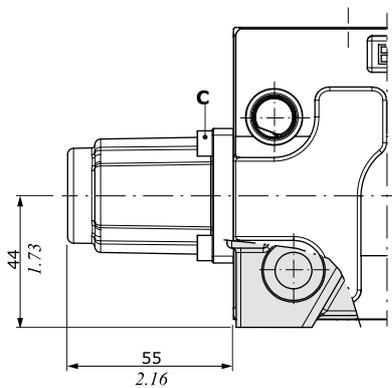
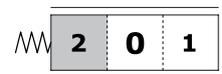
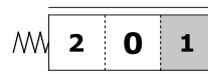
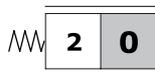
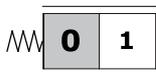


M2 type
2 position (0-1), spring return
in neutral position

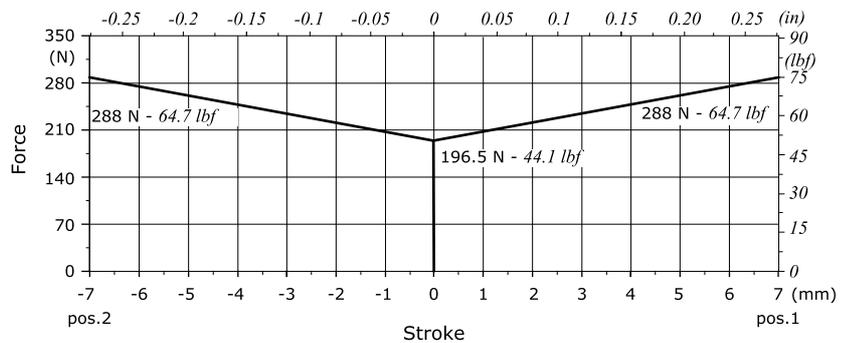
M3 type
2 position (0-2), spring return
in neutral position

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

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

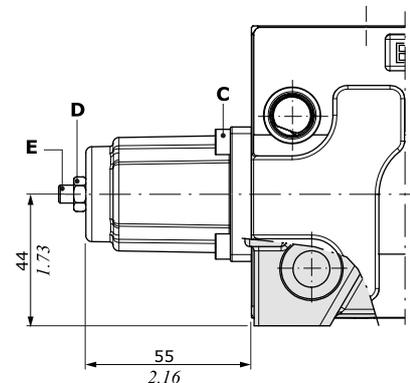
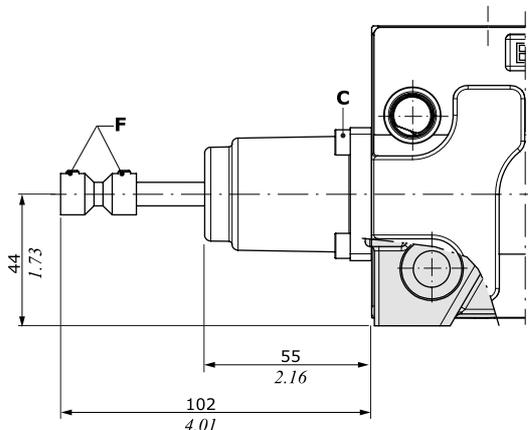
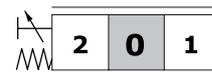
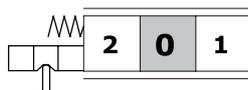


M1 control type - Force vs. Stroke diagram



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 lbf_t)
 D = wrench 10 - 9.8 Nm (7.2 lbf_t)
 E = allen wrench 4 - 9.8 Nm (7.2 lbf_t)
 F = allen wrench 3 - 5 Nm (3.68 lbf_t)

Working section

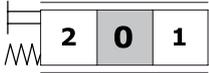
B side controls

With spring return control

With flexible cable control arrangement

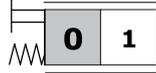
M1-U1 type

3 position, with M10 male thread external pin



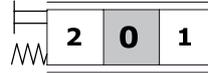
M2-U1 type

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



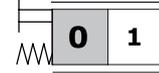
M1-U2 type

3 position, spring return in neutral position



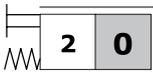
M2-U2 type

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



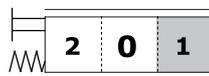
M3-U1 type

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



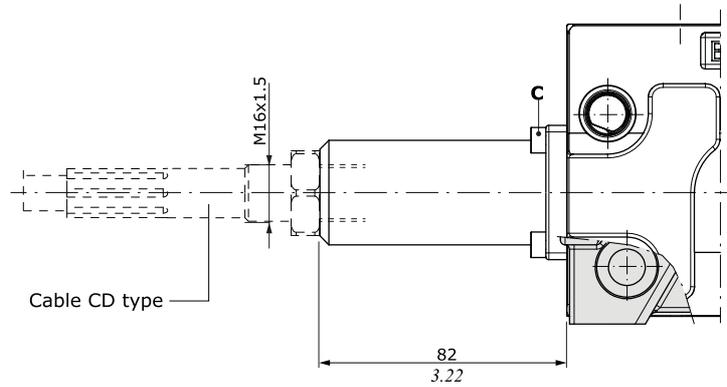
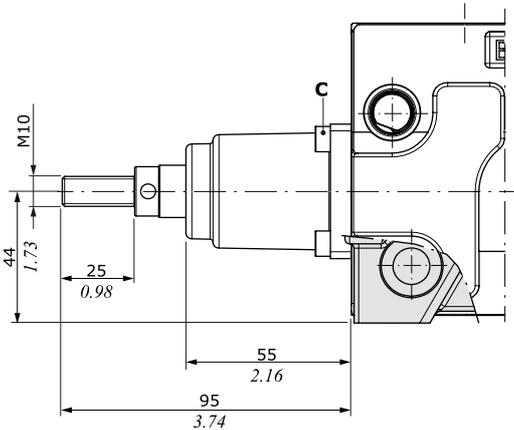
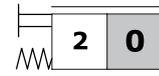
M4-U1 type

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



M3-U2 type

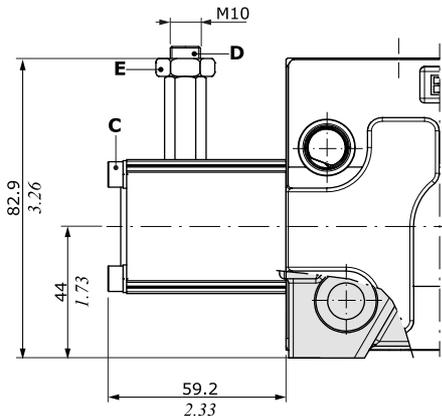
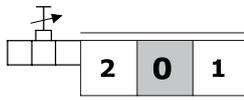
2 position (0-2), spring return in neutral position



With friction control

R0 type

Adjustable friction control



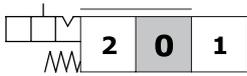
Wrenches and tightening torques

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

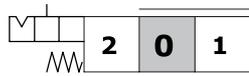
B side controls

With detent control

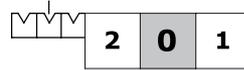
R1 type
3 position,
detent in position 1



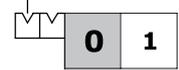
R2 type
3 position,
detent in position 2



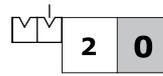
R3 type
3 position,
detent in all position



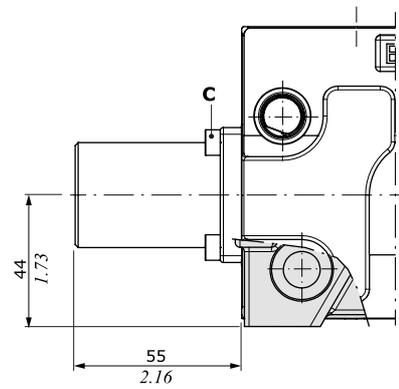
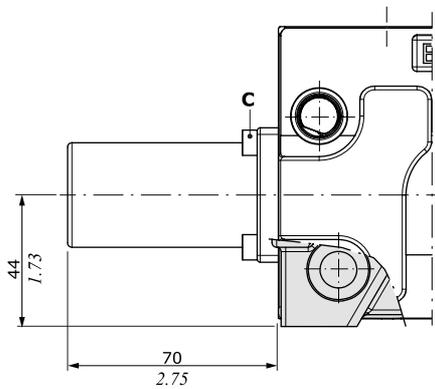
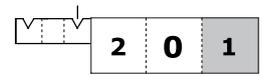
R4 type
2 position,
detent in position 0-1



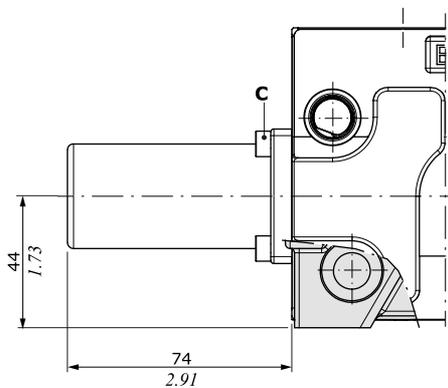
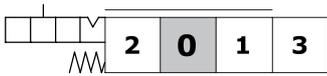
R5 type
2 position,
detent in position 0-2



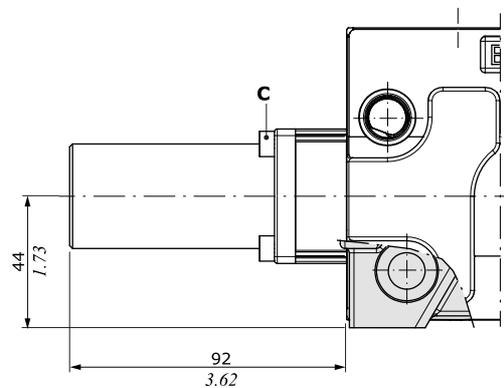
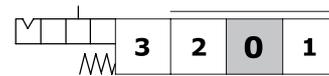
R6 type
2 position,
detent in position 1-2



R8 type
4 position, detent in 4th position,
for 116 floating spool type



R10/Z1 type
4 position, detent in 4th position,
for 126 floating spool type



Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm (4.8 lbf^t)

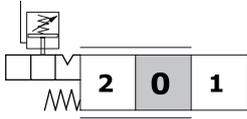
Working section

B side controls

With detent control and kick out function

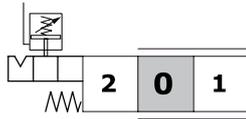
R1K type

3 position, detent in position 1



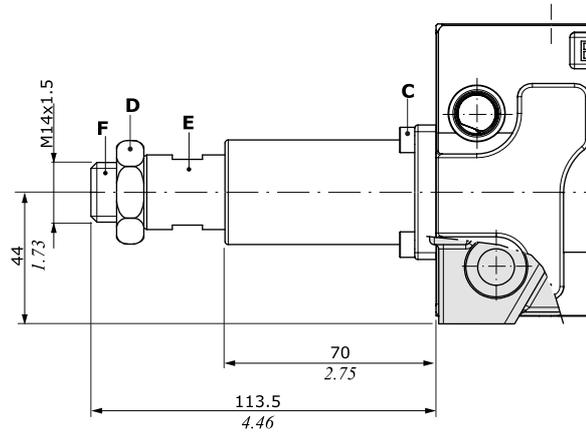
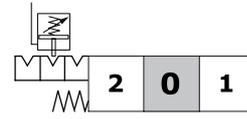
R2K type

3 position, detent in position 2



R3K type

3 position, detent in all position



Wrenches and tightening torques

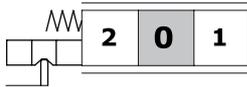
- C = allen wrench 4 - 6.6 Nm (4.8 lbf^t)
- D = wrench 30 - 42 Nm (30.9 lbf^t)
- E = wrench 22
- F = allen wrench 10 - 42 Nm (30.9 lbf^t)

B side controls

With spool position microswitch

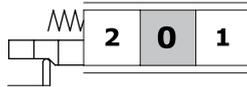
M1-N1 type

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



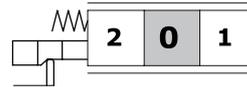
M1-N1A type

3 position, micro operation in position 1



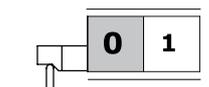
M1-N1B type

3 position, micro operation in position 2



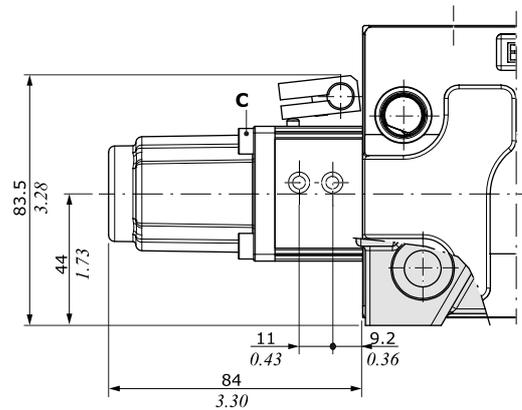
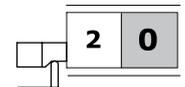
M2-N1 type

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

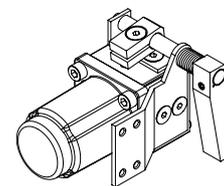
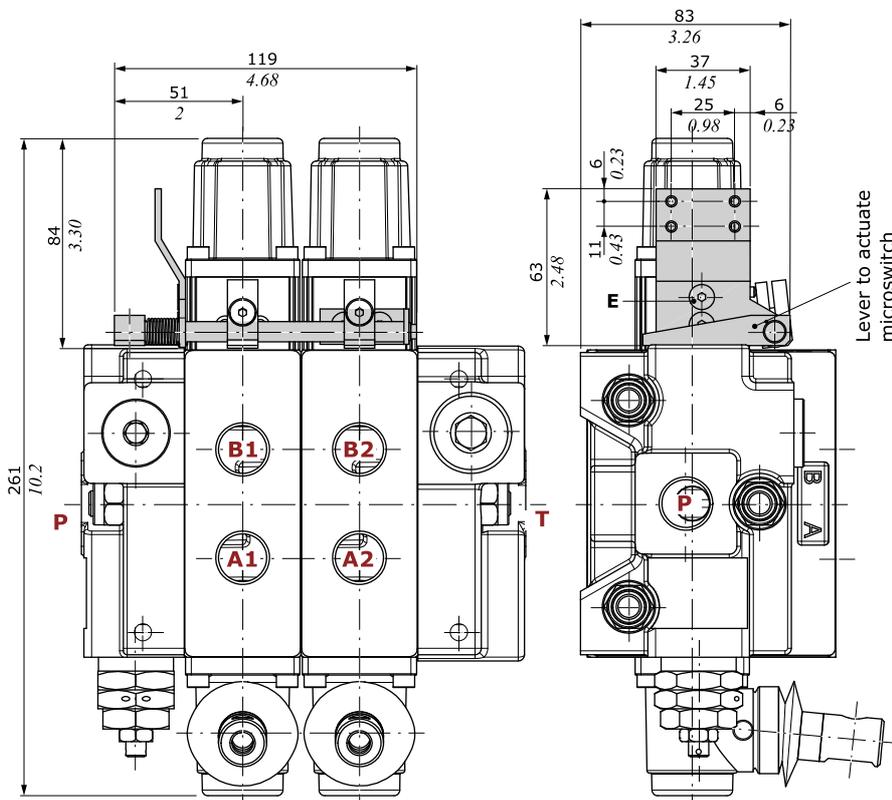


M3-N1 type

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



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



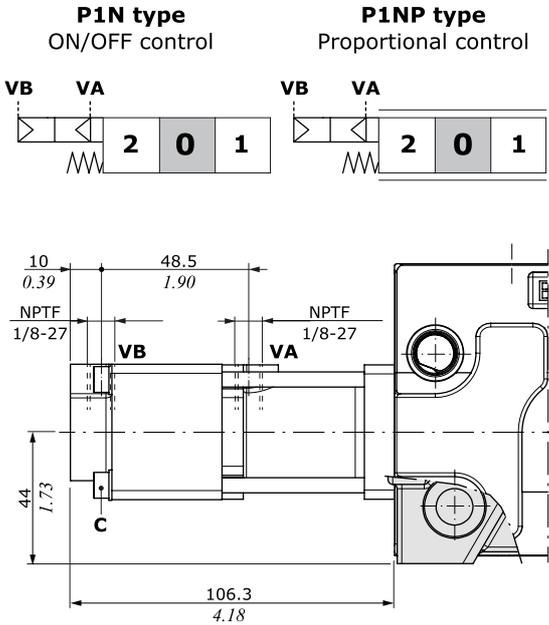
Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbf^t)
E = allen wrench 3 - 6.6 Nm (4.8 lbf^t)

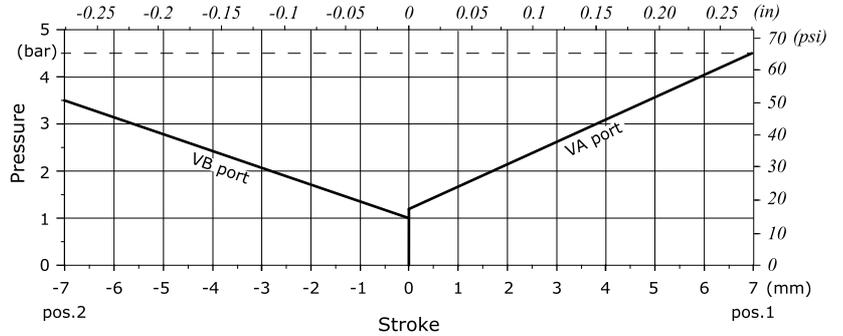
Working section

B side controls

With pneumatic control



Proportional pilot pressure curves



Operating features

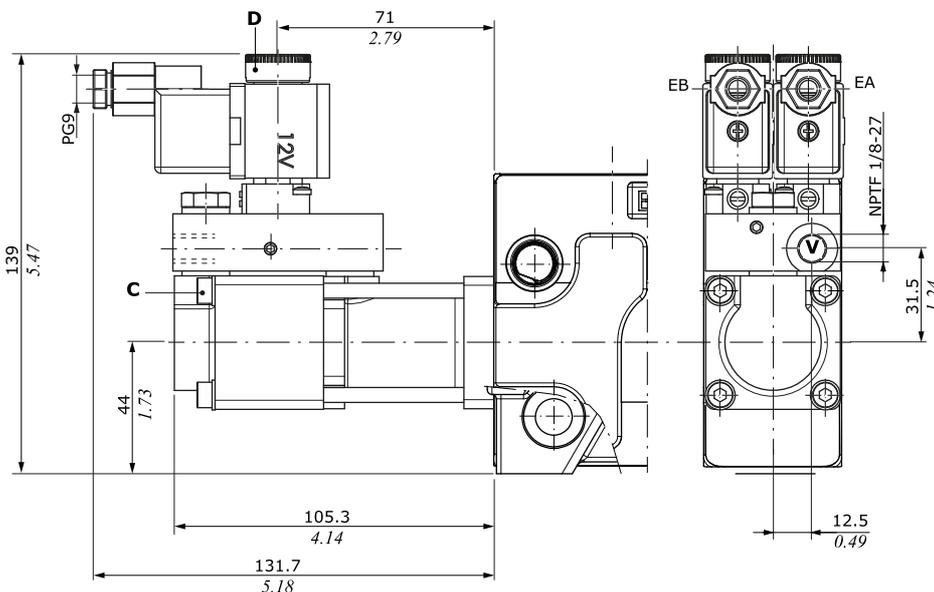
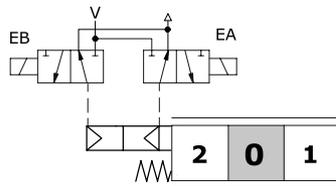
Pilot pressure..... : min. 5 bar (72.5 psi) - max. 30 bar (435 psi)
 Pilot volume..... : 9 cm³/min (0.54 in³/min)

Wrenches and tightening torques

C = wrench 4 - 6.6 Nm (4.8 lbf^t)

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

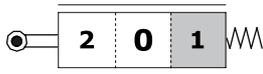
C = allen wrench 4 - 6.6 Nm (4.8 lbf^t)
 D = manual tightening - 6.6 Nm (4.8 lbf^t)

A+B side controls

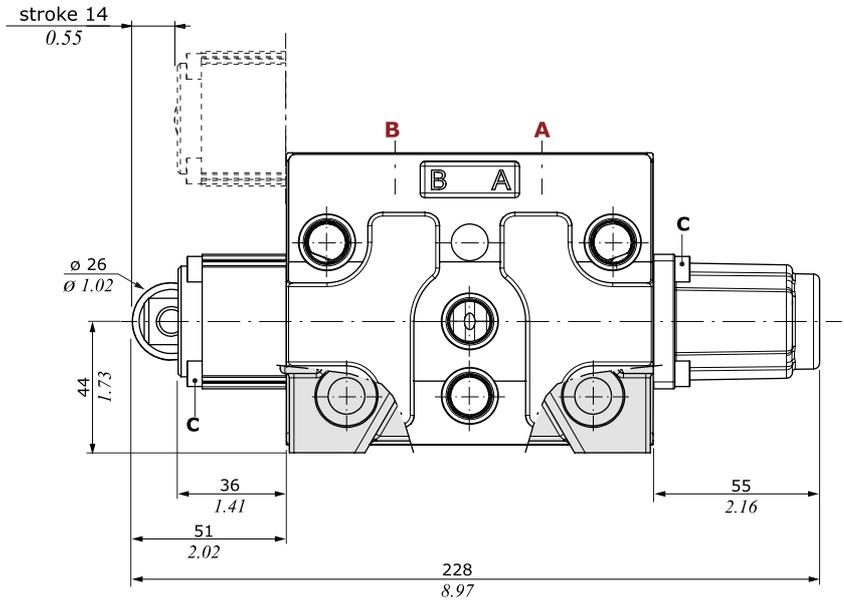
With cam control

C2 type

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

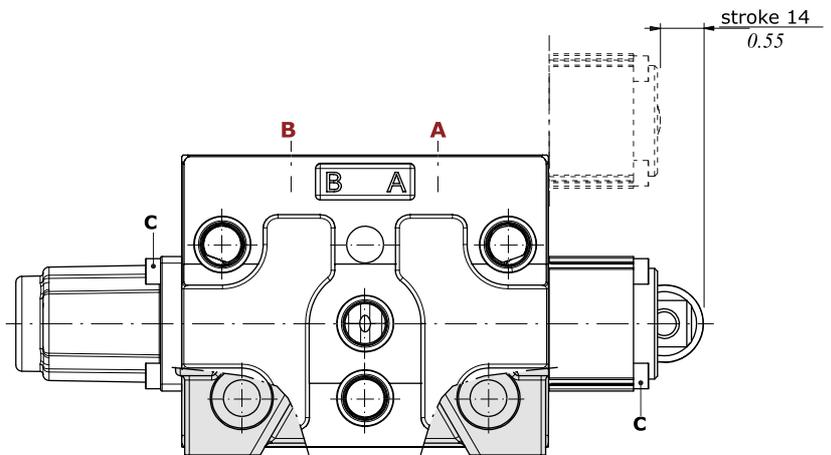
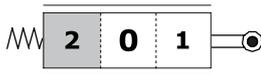


Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm (4.8 lbf_t)



C3 type

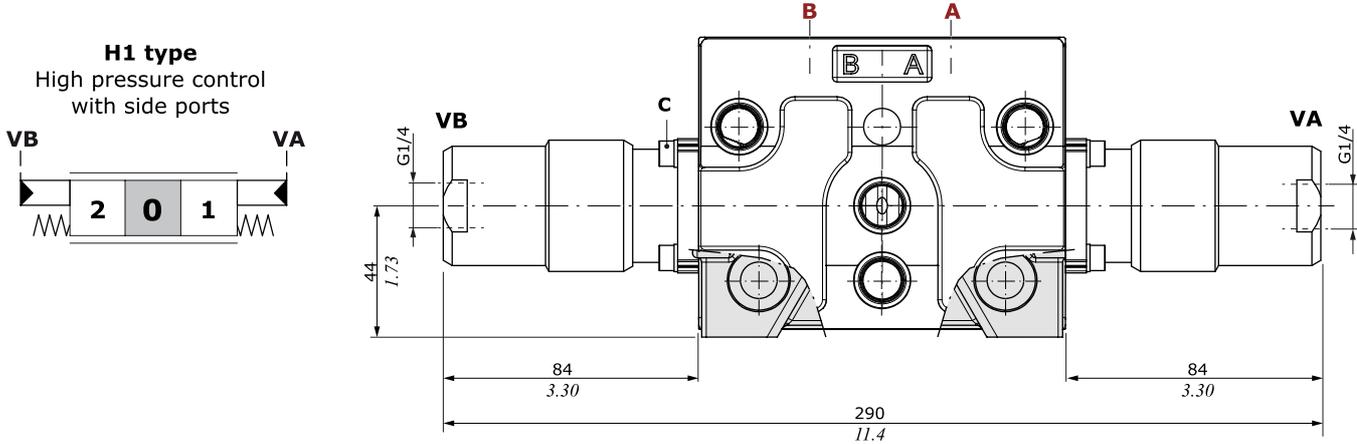
From position 2 to position 1,
spring return in position 2.
Dimensions are the same of C2 type



Working section

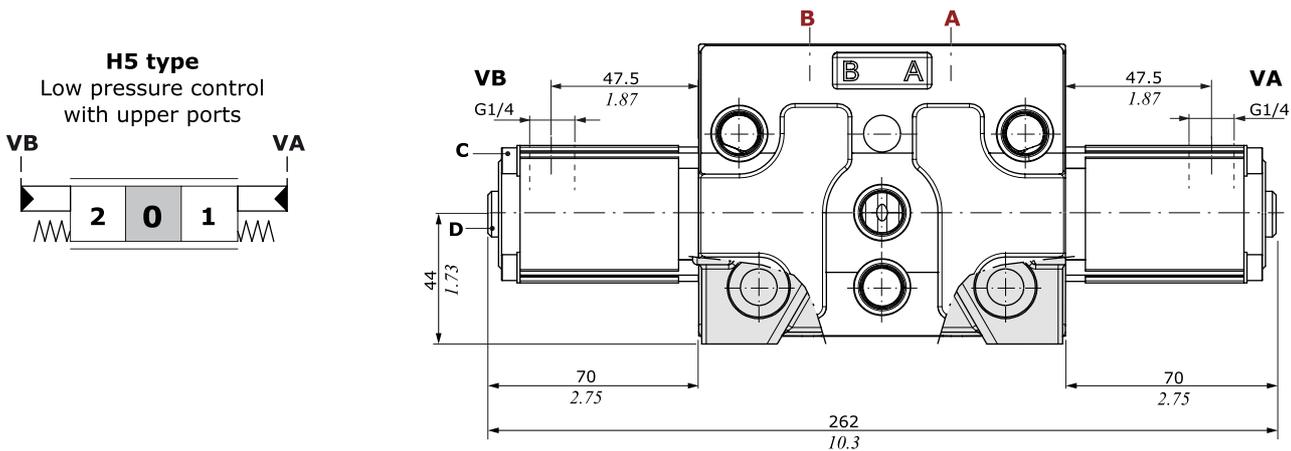
A+B side controls

With proportional hydraulic controls



Operating features

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



Operating features

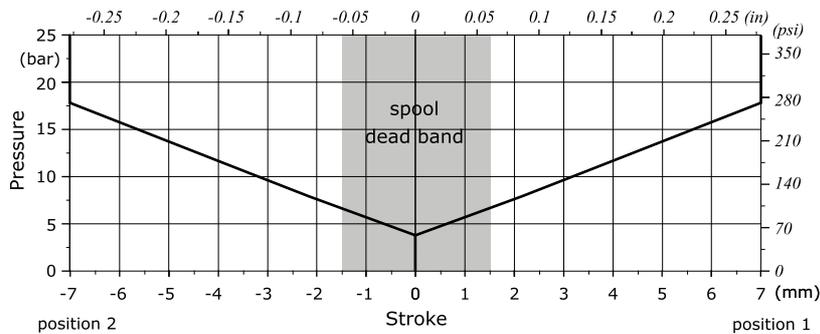
Pilot pressure..... : max. 100 bar (1450 psi)

Wrenches and tightening torques

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

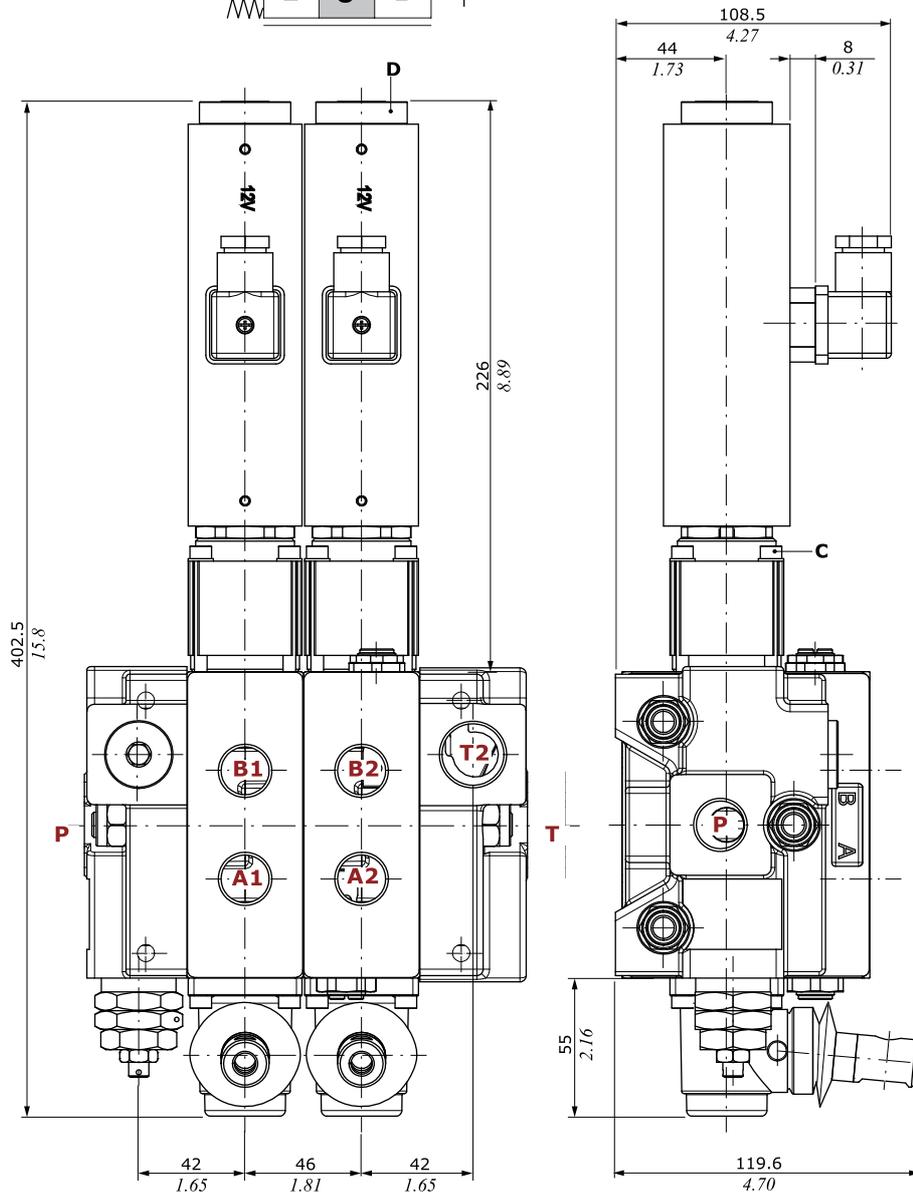
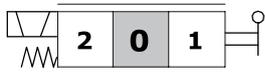
D = allen wrench 4 - 9.8 Nm (7.2 lbft)

Stroke vs. Pressure diagram for H5 type control



Direct solenoid control

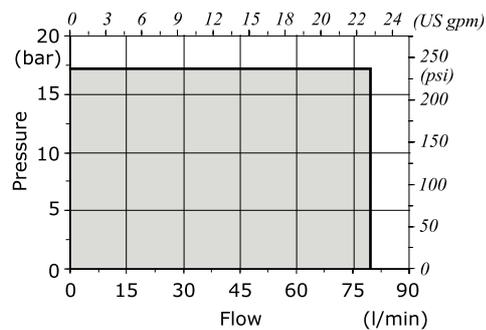
D41 type: ON/OFF one side



D41 coil	
Nominal voltage	12 VDC 24 VDC
Nominal voltage tolerance	±10%
Power rating	80 W
Insulation	Class H
Weather protection	IP65

Connector type: ISO4400 3P+T-PG11

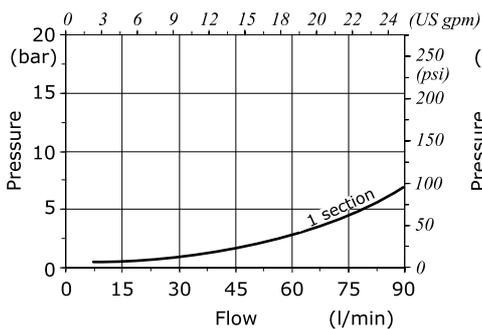
Dynamic conditions



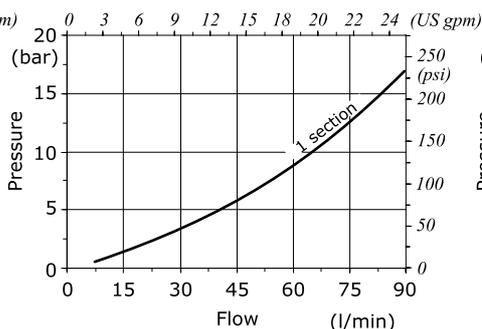
Wrenches and tightening torques

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

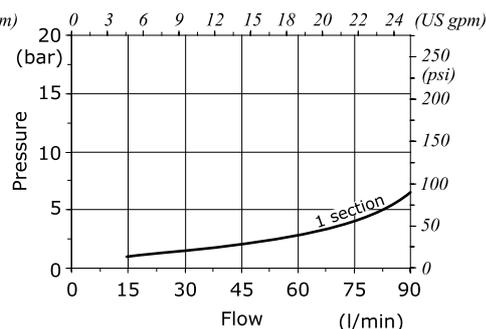
P⇒T pressure drops



P⇒A(B) pressure drops



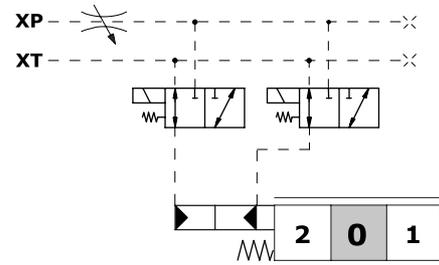
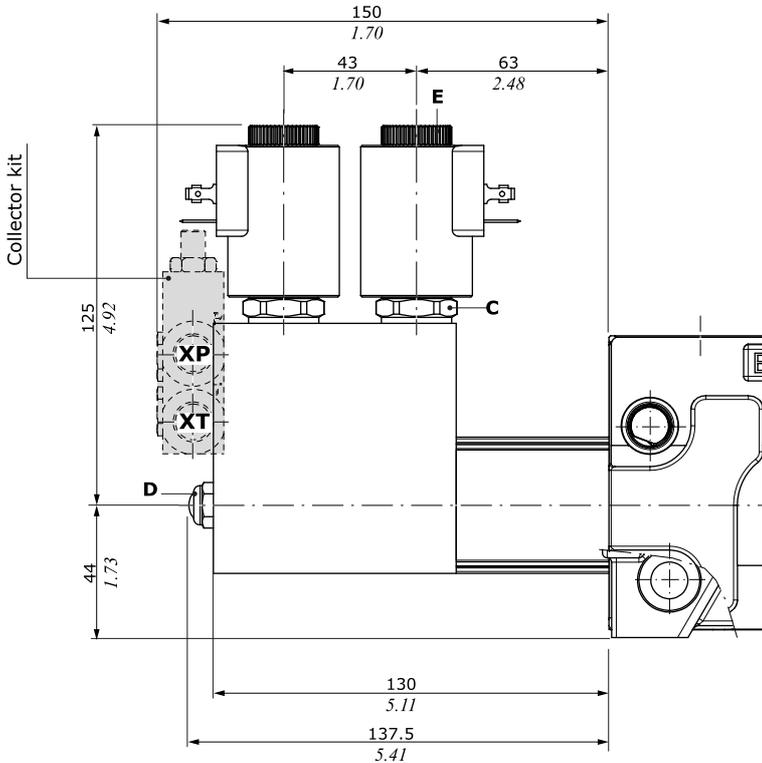
A(B)⇒T pressure drops



Working section

Electrohydraulic control

D2W type: ON/OFF one side

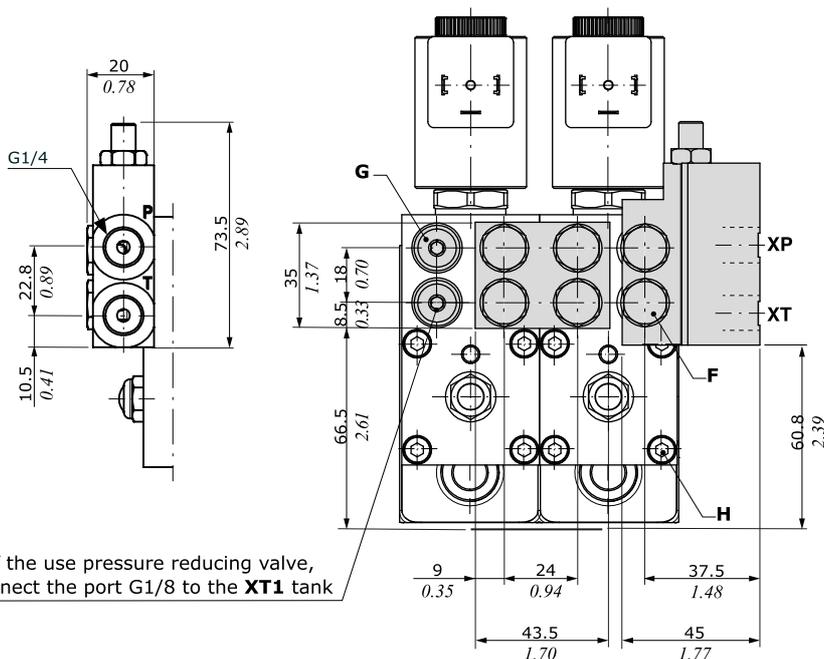


Features

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 257

KE2S connector kit



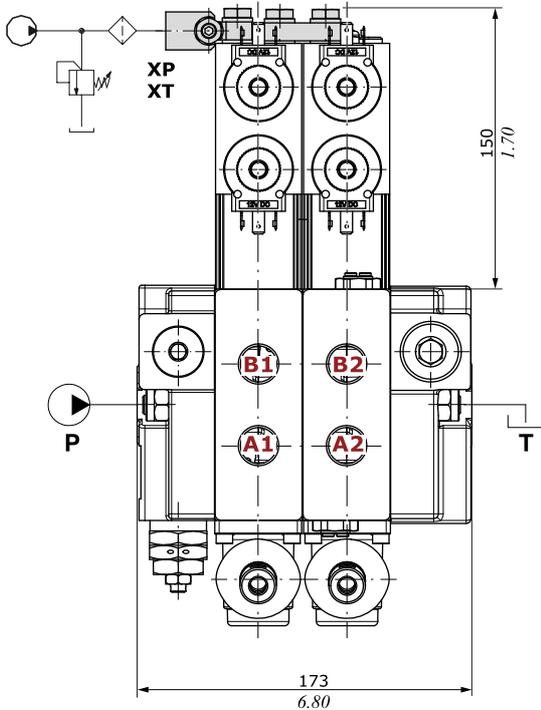
If the use pressure reducing valve, connect the port G1/8 to the **XT1** tank

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)

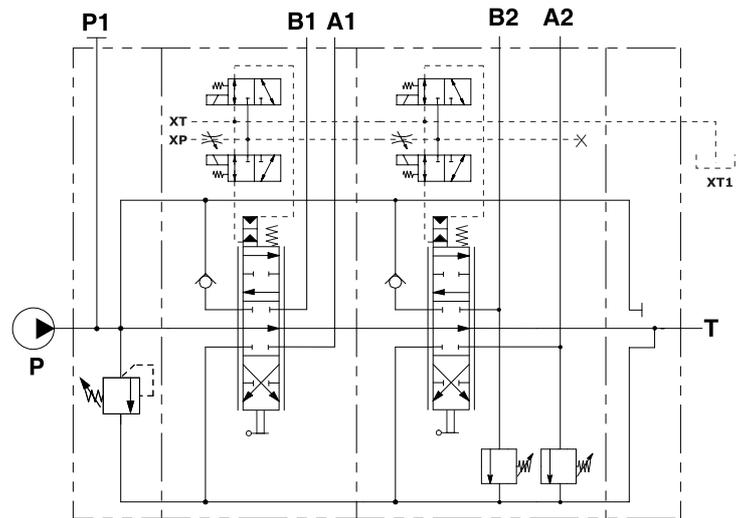
Electrohydraulic control

Connector kit for external pilot and drain



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

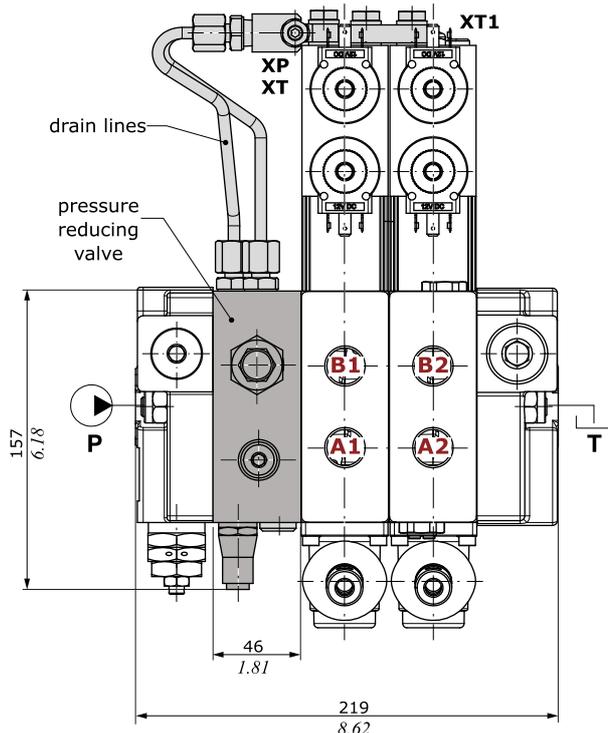
For other connector kit codes, see page 195



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

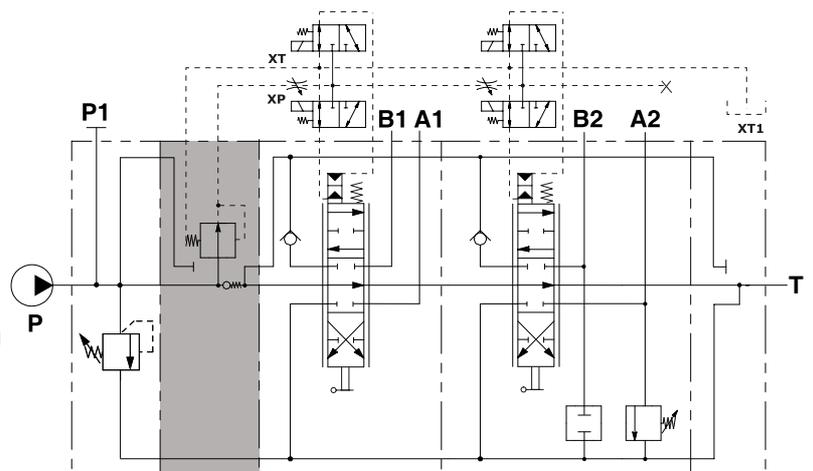
Connector kit for internal pilot and drain

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 195



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

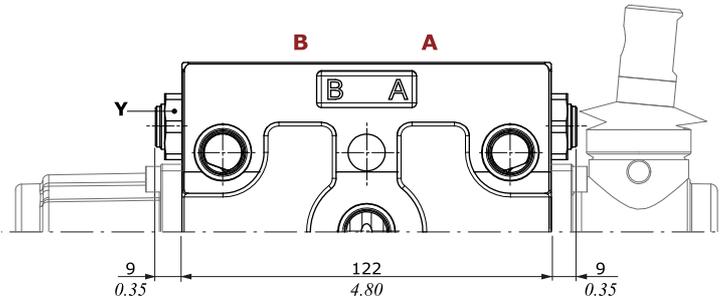
Auxiliary valve configuration

Dimensional data and hydraulic circuits

Description example

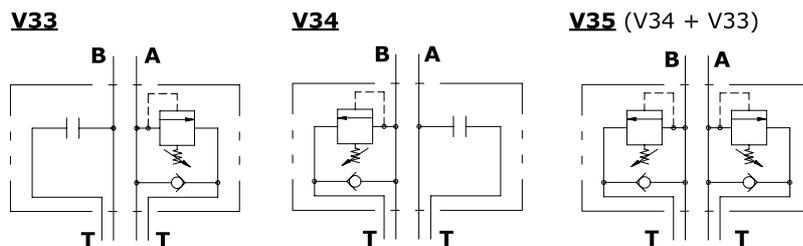
Q80 / 1 / ... / 103 - A1 - M1 - **V32(N)120** / ...

aux valve spring type and valve setting (bar)



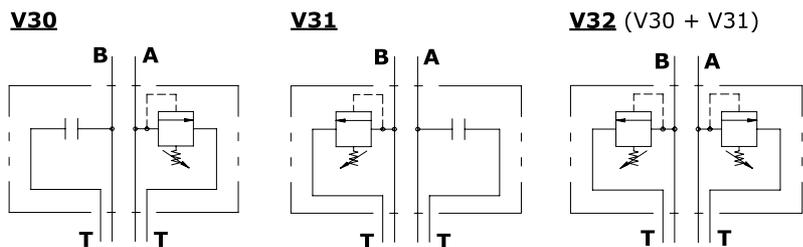
Antishock/anticavitation valve example

A side configuration: **B side configuration:** **A+B side configuration:**



Antishock valve example

A side configuration: **B side configuration:** **A+B side configuration:**



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

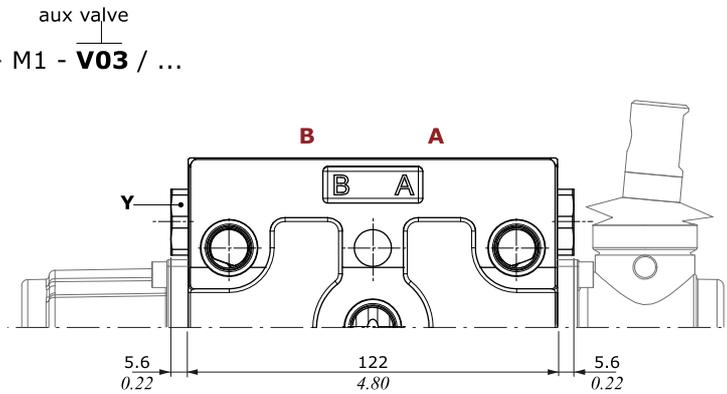
Y = wrench 22 - 42 Nm (30.9 lbf_t)

Auxiliary valve configuration

Dimensional data and hydraulic circuits

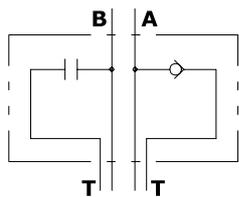
Anticavitation valve example

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



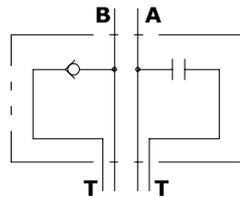
A side configuration:

V04



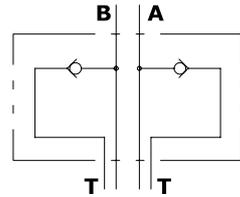
B side configuration:

V05



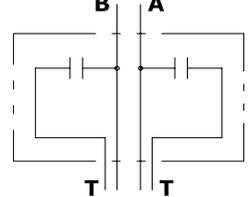
A+B side configuration:

V03 (V04 + V05)



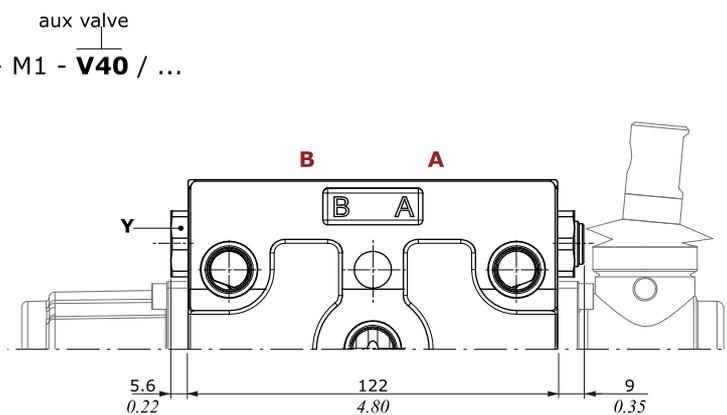
Plug valve:

VC



Antishock and anticavitation combining valves example

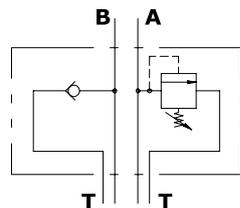
Q80 / 1 / ... / 103 - A1 - M1 - **V40** / ...



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

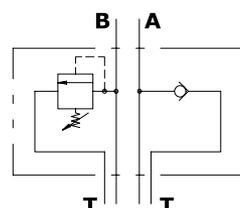
A side configuration:

V40 (V30 + V05)



B side configuration:

V41 (V31 + V04)

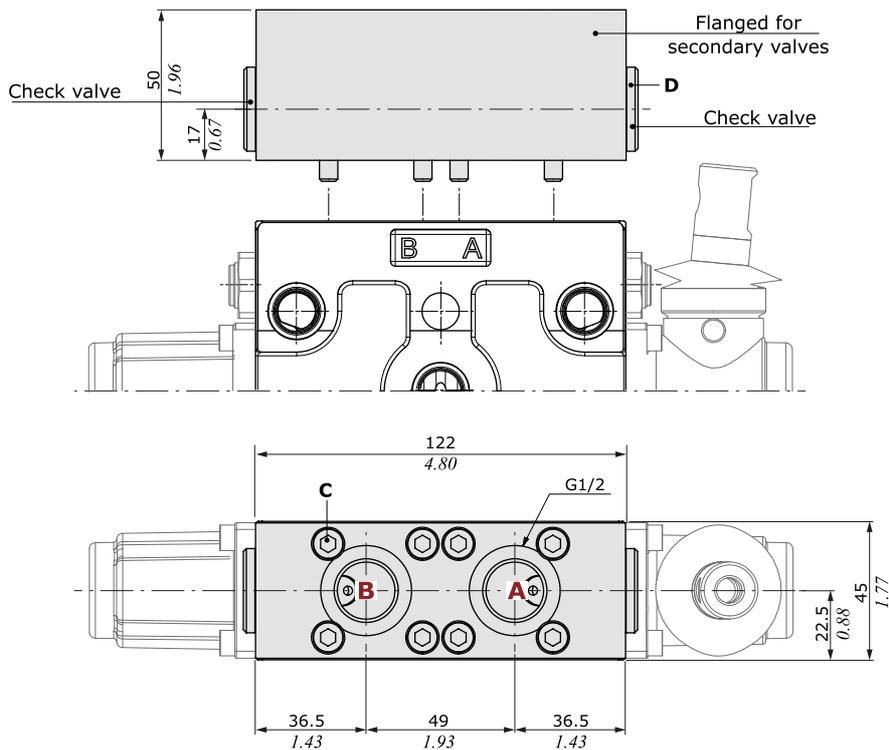


Secondary valve configuration

Dimensional data and hydraulic circuits

Description example

Q80 / 1 / ... / 103 - A1 - M1 - V32(N)120 / **VC03**
secondary aux valve valves block

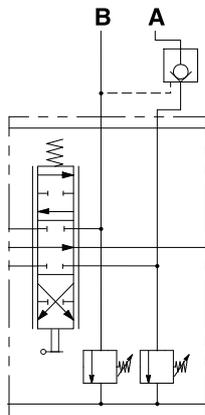


Wrenches and tightening torques

C = allen wrench 5 - 9.8 Nm (7.2 lbf ft)
 D = allen wrench 8 - 60 Nm (44.2 lbf ft)

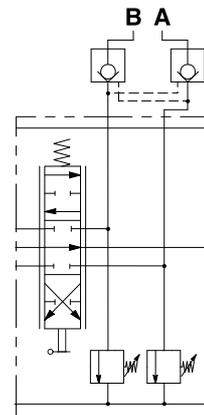
Q80.V40(N)120/VC01 configuration

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



Q80.V40(N)120/VC03 configuration

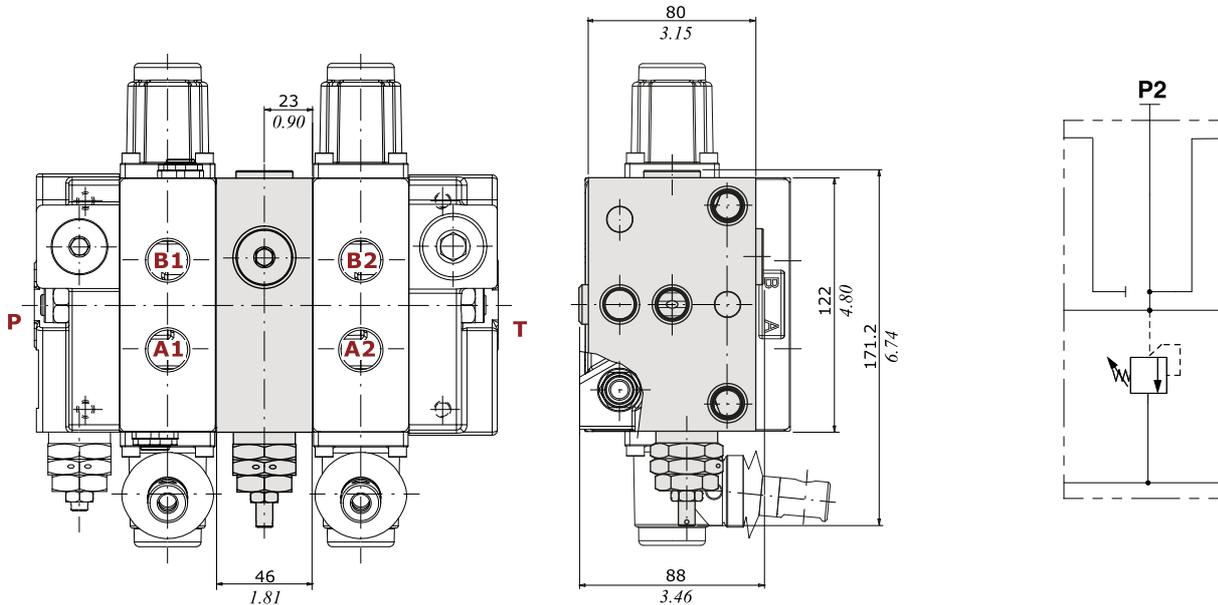
Parallel circuit, mechanical control with aux valves and flanged for double piloted check valve on A and B ports



Dimensional data and hydraulic circuit

E50 type

Intermediate inlet section with pressure relief valve

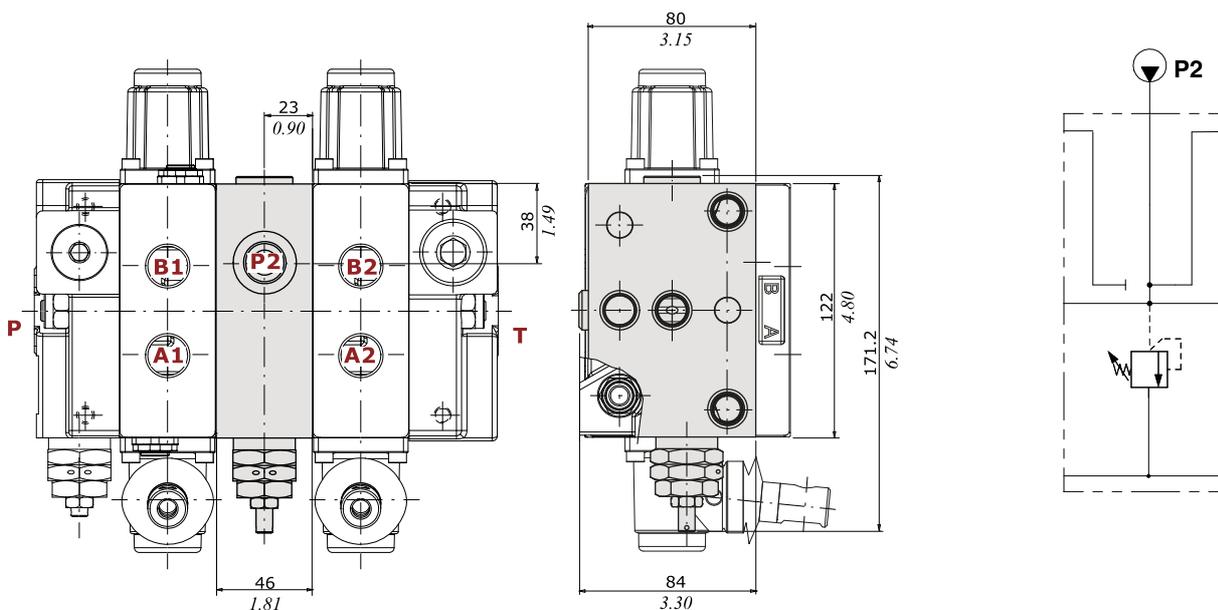


Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E50(N150)**/103-A1-M1/F3D

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

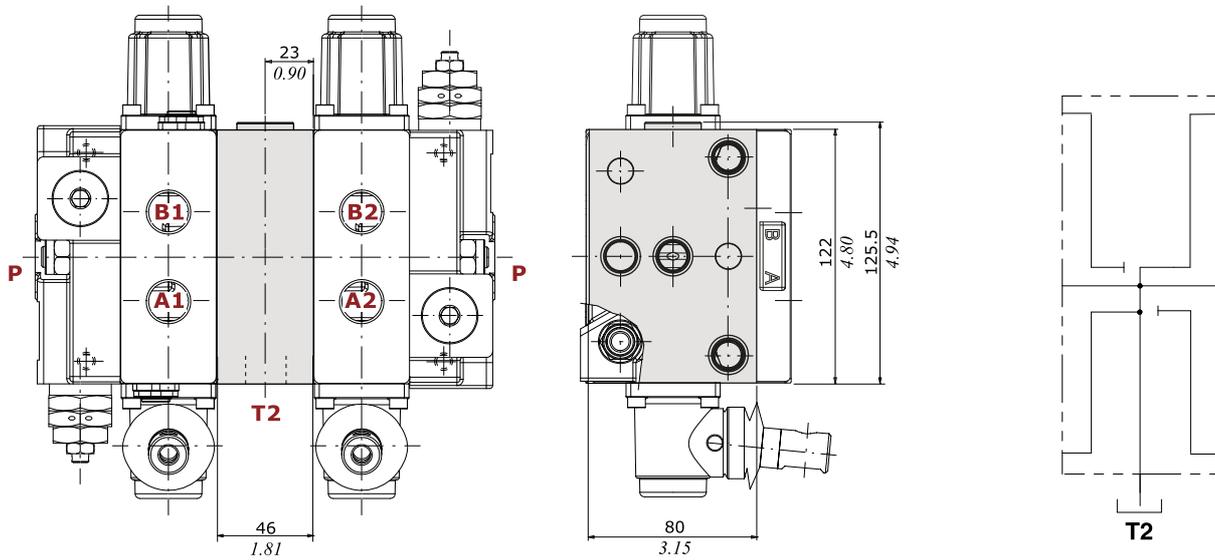
intermediate section spring type and valve setting (bar)

Intermediate section

Dimensional data and hydraulic circuit

E51 type

Intermediate outlet section, T2 port open

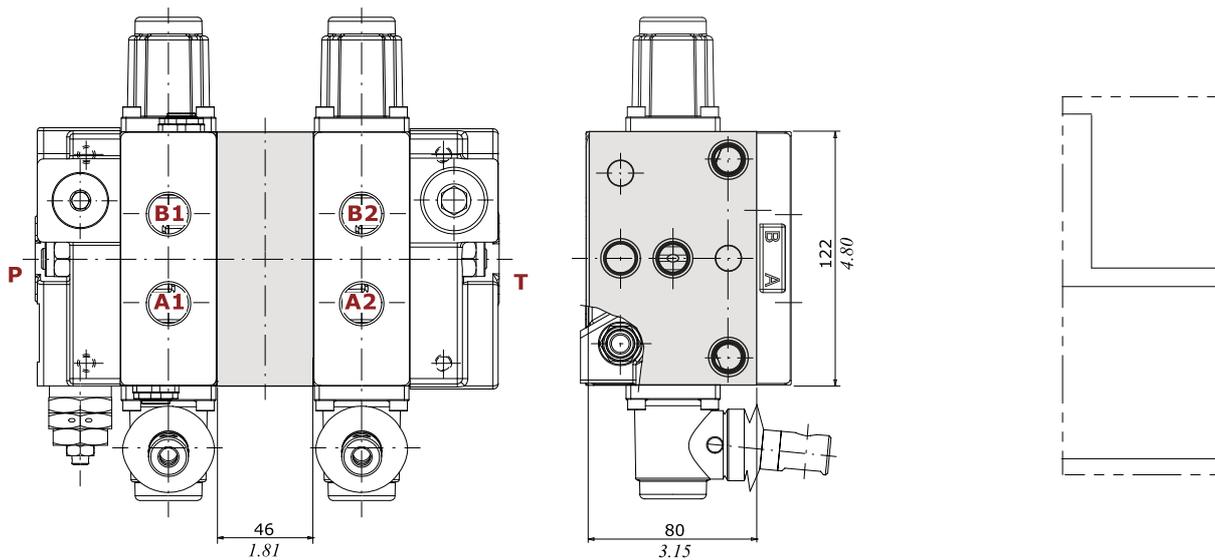


Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E51**/103-A1-M1/F3D

intermediate section

E61 type

Intermediate spacer section

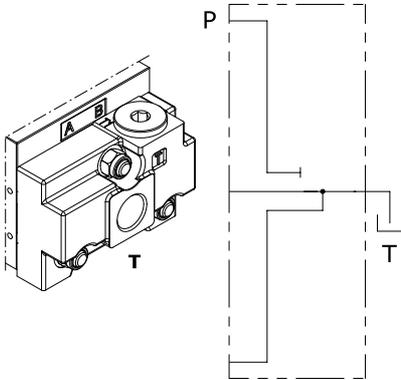


Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E61**/103-A1-M1/F3D

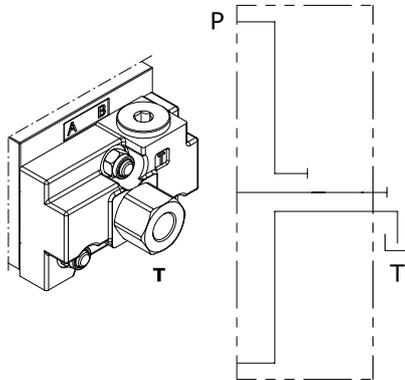
intermediate section

Outlet section

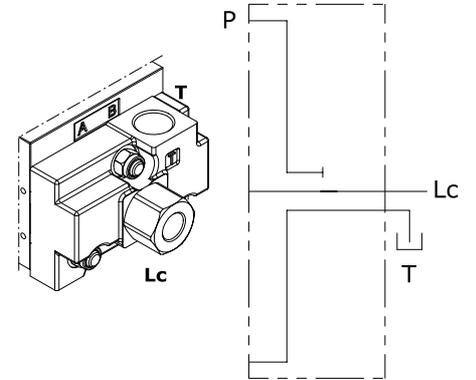
F3D configuration
Open center configuration



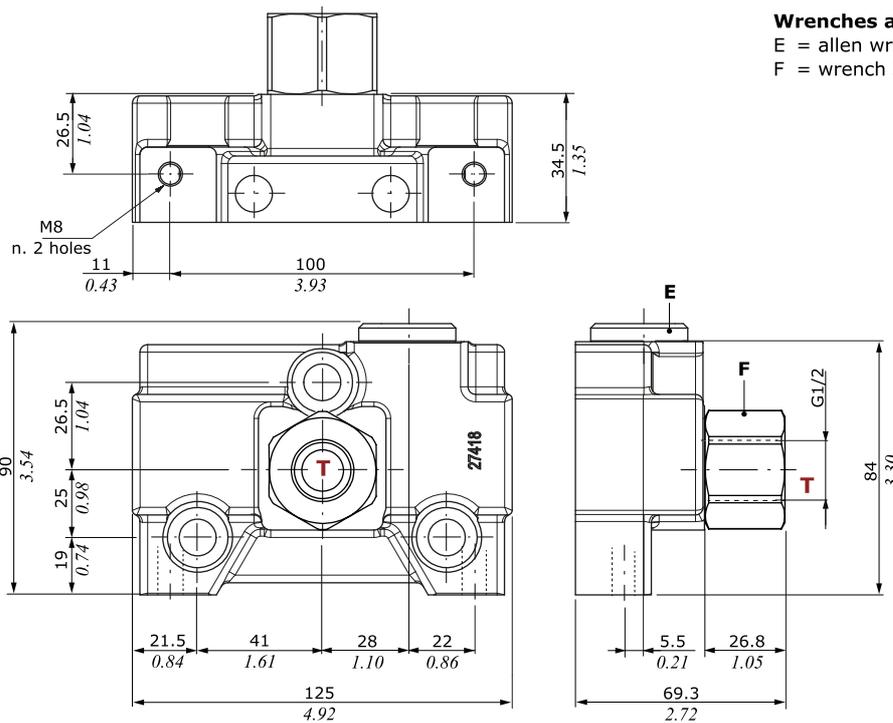
F16D configuration
Closed center configuration



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)