



Q30

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
- Mechanical, pneumatic, electropneumatic, hydraulic and direct solenoid 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		30 l/min - (8 Us gpm)
Max. pressure	parallel circuit	315 bar (4600 psi)
	series circuit	210 bar (3050 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)	5 cm ³ /min (0.30 in ³ /min)
Fluid		Mineral oil
Fluid temperature	with NBR (BUNA-N) seals	from -20°C to 80°C - from -4 °F to 176 °F
Viscosity	operating range	from 12 to 400 mm ² /s - from 12 to 400 cSt
Max. contamination level		-/19/16 - ISO 4406 - NAS1638 class 6
Ambient temperature	with pneumatic and hydraulic devices	from -30°C to 60°C - from -22 °F to 140 °F
	without electric devices	from -40°C to 60°C - from 40 °F to 140 °F
	with electric devices	from -20°C to 50°C - from -4 °F to 122 °F

NOTE - For different conditions please contact our Sales Department.

REFERENCE STANDARD

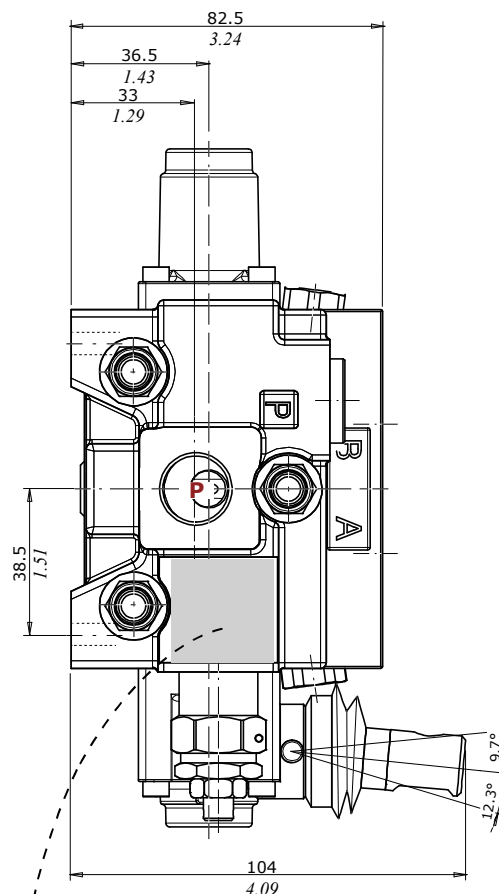
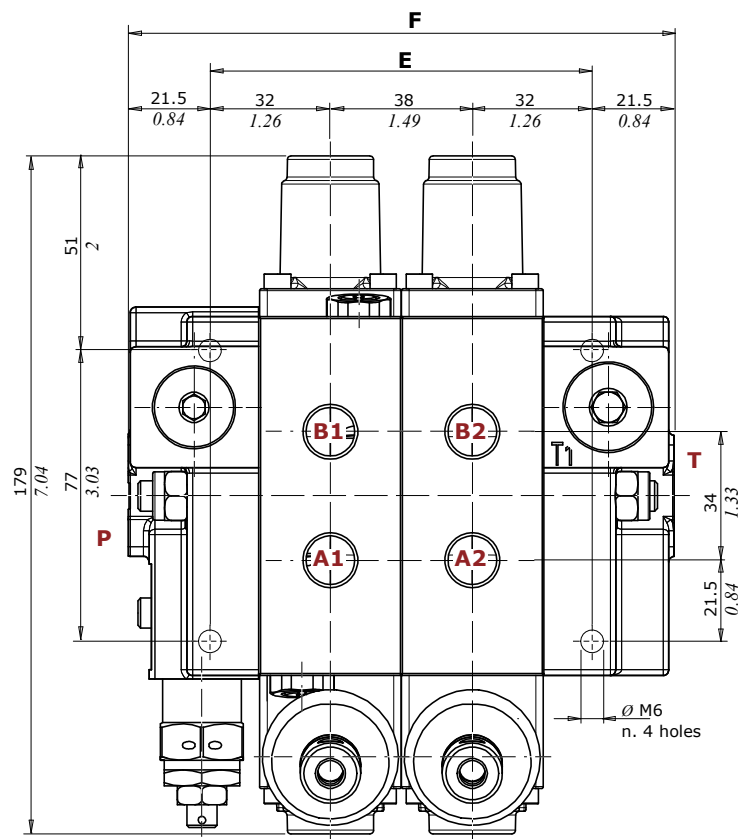
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

PORT THREADING

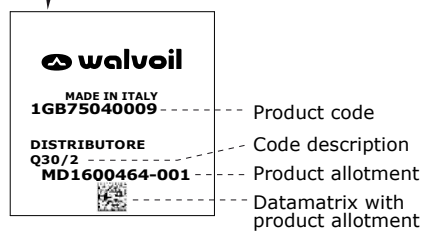
	BSP	UN-UNF
P Inlet	G 3/8	3/4-16 (SAE 8)
P1 Inlet	G 3/8	3/4-16 (SAE 8)
A and B ports	G 3/8	9/16-18 (SAE 6)
T Outlet	G 1/2	7/8-14 (SAE 10)
T1 Outlet	G 1/2	3/4-16 (SAE 8)
Lc port (Carry-over plug - T port)	G 3/8-G 1/2	3/4-16 (SAE 8) - 7/8-14 (SAE 10)
Hydraulic controls	G 1/4	9/16-18 (SAE 6)
Pneumatic controls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

Dimensional data

Standard configuration*

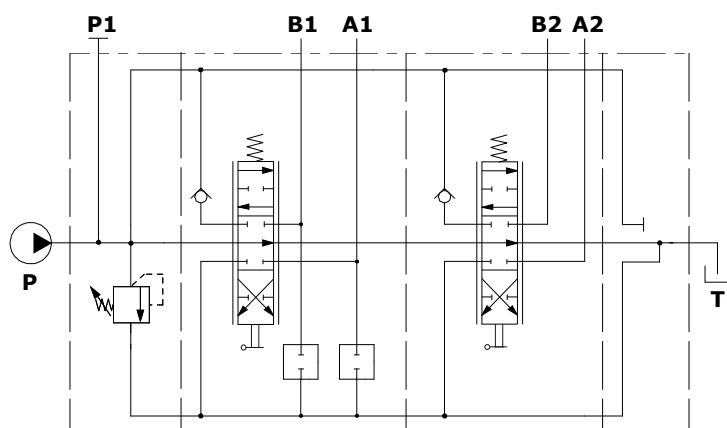


Type	E		F	
	mm	in	mm	in
Q30/1	64	2.52	107.5	4.23
Q30/2	102	4.01	145.5	5.72
Q30/3	140	5.51	183.5	7.22
Q30/4	178	7.00	221.5	8.72
Q30/5	216	8.50	259.5	10.21
Q30/6	254	10	297.5	11.71
Q30/7	292	11.50	335.5	13.20
Q30/8	330	13	373.5	14.70
Q30/9	368	14.48	411.5	16.20
Q30/10	406	15.98	449.5	17.69

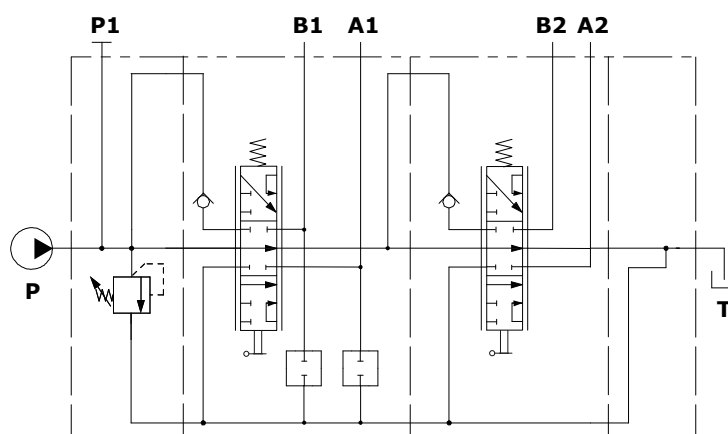


NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.

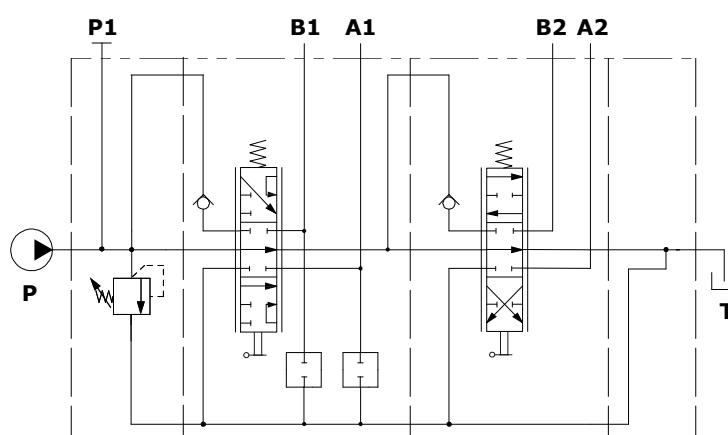
(*): For other configurations, see page 122



Description example (parallel circuit):
Q30/2/F7S(N150)/103-A1-M1.VC/103-A1-M1/F3D-S



Description example (series circuit):
Q30/2/F7S(N150)/403-A1-M1.VC/403-A1-M1/F3D-S

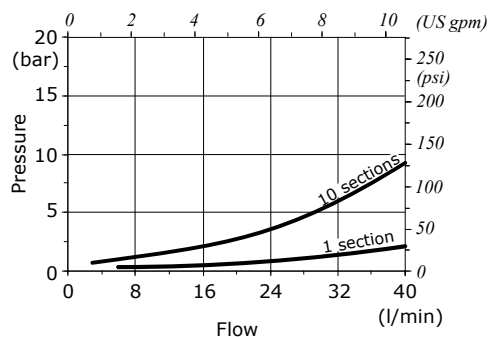


Description example (serie/parallel circuit):
Q30/2/F7S(N150)/403-A1-M1.VC/103-A1-M1/F3D-S

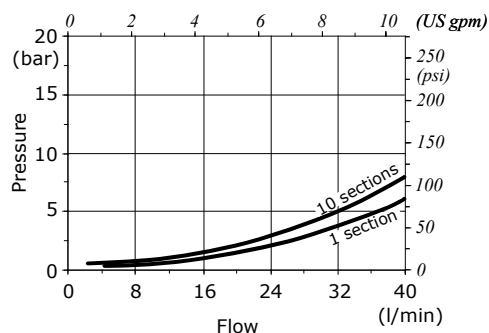
Performance data

Q30

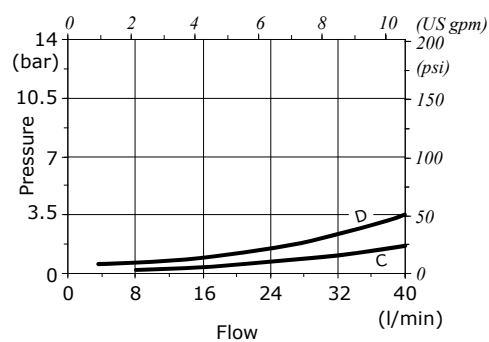
P⇒T pressure drops



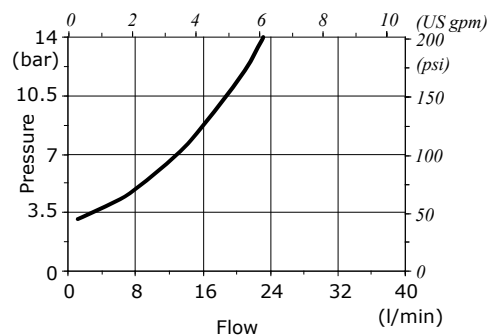
P⇒A(B) pressure drops



A(B)⇒T pressure drops



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



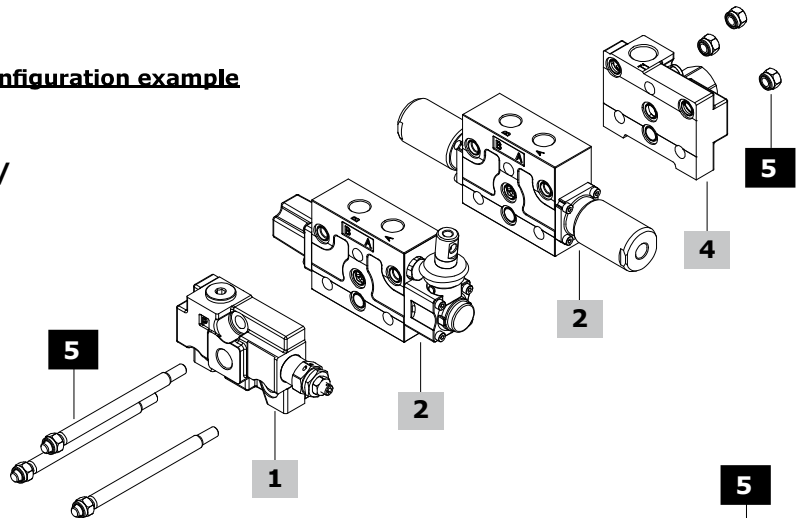
Legenda

C= 10th section
D= 1st section

Complete section ordering codes

Valve with mechanical and hydraulic controls configuration example

valve setting (bar)
Q30 / 2 / F7S(N150) / 103 - A1 - M1 . VC /
 N. of section **1** **2**
/ 103 - H1 / F6D - S
2 **4** aluminium controls

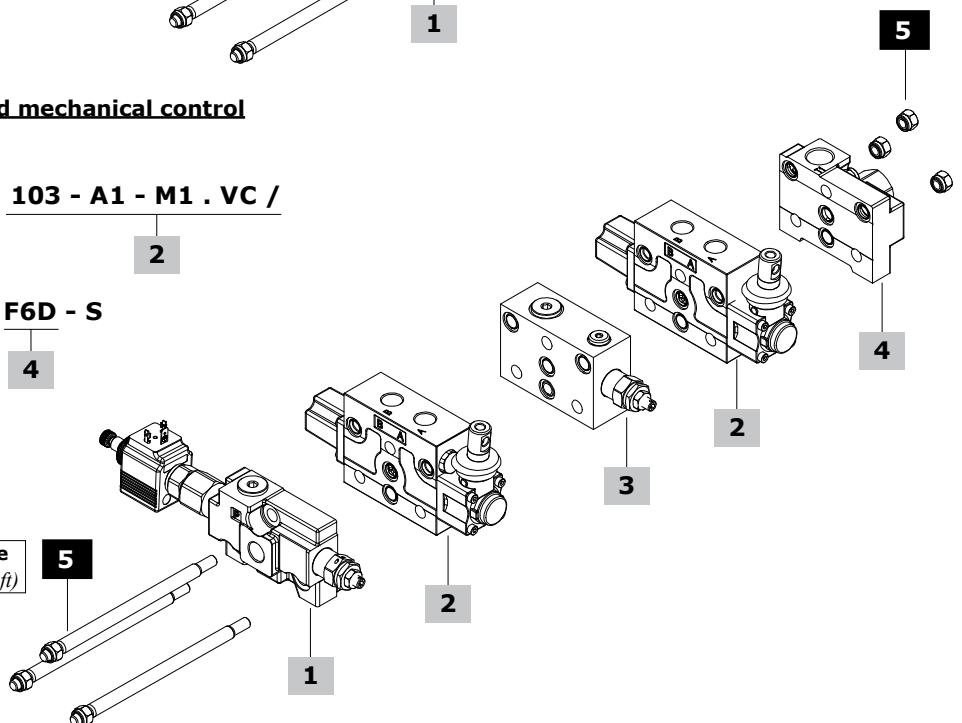


Valve with intermediate section and mechanical control configuration example

Q30 / 2 / F7SMSE(NA)-N150 / 103 - A1 - M1 . VC /

valve setting (bar) **1** **2**
/ E50(N150) / 103 - A1 - M1 / F6D - S
3 **2** **4**

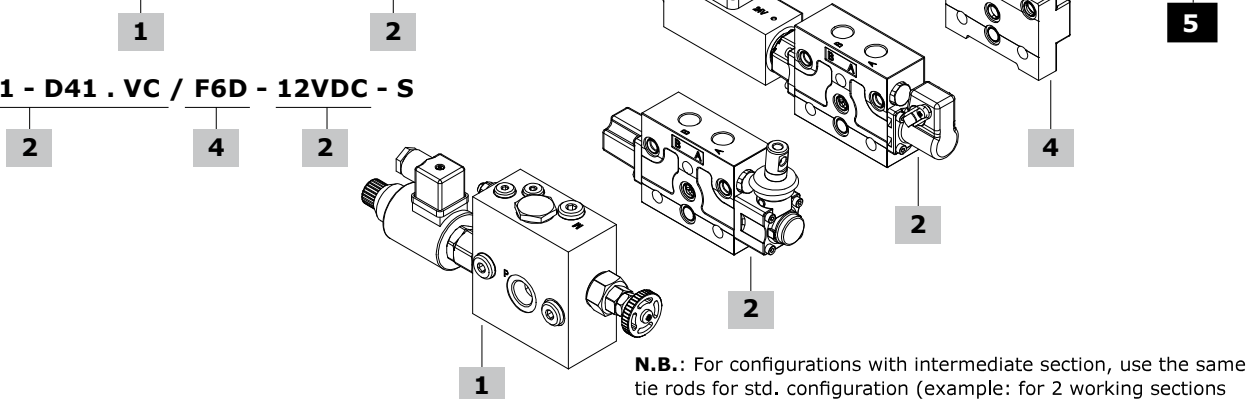
Tie rod tightening torque
 wrench 13 - 24 Nm (17.7 lbf ft)



Valve with mechanical and electric control configuration example (with inlet flow regulation)

Q30 / 2 / F7SPR3M(N150) / 103 - A1 - M1 . VC

/ 103 - A1 - D41 . VC / F6D - 12VDC - S



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

Complete section ordering codes

1 Inlet section* page 84**Standard inlet section**

TYPE	CODE
FE-Q30/F7S(N150)	03000F7S/D-N
DESCRIPTION: Side inlet open, upper inlet plugged, with pressure relief valve, setting range 101-200 bar (1460-2900 psi)	
TYPE	CODE
FE-Q30/F8S	03003F8S/D
DESCRIPTION: As previous one, without valves (pressure relief valve plugged port)	
TYPE	CODE
FE-Q30/F7SMSE(NA)	03000F7SDMS1-N
DESCRIPTION: Side inlet open, upper inlet plugged, with pressure relief valve setting range 101-200 bar (1460-2900 psi), 12VDC normally open unloader valve	
TYPE	CODE
FE-Q30/F7SMSE(NC)	03000F7SDMS7-N
DESCRIPTION: As previous one, with normally closed unloader valve	
TYPE	CODE
FE-Q30/F7SMSI	03000F7SDMSI-N
DESCRIPTION: Side inlet open, upper inlet plugged, with pressure relief valve setting range 101-200 bar (1460-2900 psi), and hydraulic unloader valve	
Inlet section with flow regulator	
TYPE	CODE
FE-Q30/F7SPR3M(N150)	03000F7SDPRN3M
DESCRIPTION: Side inlet open, 12 VDC proportional flow control valve, pressure relief valve setting range 101-200 bar (1460-2900 psi), manual unloader valve	
TYPE	CODE
FE-Q30/F7SPR3E(N150)-12VDC	03000F7SDPRN3E
DESCRIPTION: As previous one, with 12VDC unloader valve	

2 Working section* page 93**With mechanical controls**

TYPE	CODE
EL-Q30/103-A1-M1.VC-S	SGL300025
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, lever control and spring return to neutral position	
TYPE	CODE
EL-Q30/103-A1-M1-S	030000103001000
DESCRIPTION: As previous one, without valve arrangement	
With proportional hydraulic controls	
TYPE	CODE
EL-Q30/103-H1.VC-S	SGL300008
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, high pressure hydraulic controls, spring return to neutral position	
TYPE	CODE
EL-Q30/103-H1-S	SGL300009
DESCRIPTION: As previous one, without valve arrangement	
TYPE	CODE
EL-Q30/103-H5.VC-S	SGL300012
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, low pressure hydraulic controls, spring return to neutral position	
TYPE	CODE
EL-Q30/103-H5-S	SGL300013
DESCRIPTION: As previous one, without valve arrangement	
With electric solenoid controls - one side type	
TYPE	CODE
EL-Q30/103-A1-D41.VC-12VDC-S	SGL300019
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, 12VDC electric direct ON/OFF control with lever	
TYPE	CODE
EL-Q30/103-A1-D41-12VDC-S	030000103098000
DESCRIPTION: As previous one, without valve arrangement	
With electric solenoid controls - two side type	
TYPE	CODE
EL-Q30/103-D9.VC-12VDC-S	SGL300024
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, 12VDC electric direct ON/OFF control	
TYPE	CODE
EL-Q30/103-D9-12VDC-S	SGL300016
DESCRIPTION: As previous one, without valve arrangement	

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

Complete section ordering codes

3 Intermediate section page 122

TYPE	CODE	DESCRIPTION
E50	03850E50-B	With pressure relief valve, setting range 10-100 bar (145-1450 psi)
	03850E50-N	As previous one, setting range 101-200 bar (1460-2900 psi)
	03850E50-R	As previous one, setting range 201-380 bar (2910-5500 psi)
E53	03854E53-B	With pressure relief valve, setting range 10-100 bar (145-1450 psi) and P2 port open for 2 nd pump
	03854E53-N	As previous one, setting range 101-200 bar (1460-2900 psi)
	03854E53-R	As previous one, setting range 201-380 bar (2910-5500 psi)
E51	03853E51	Intermediate outlet section, T2 port open
E61	03885E61	Intermediate spacer section

4 Outlet section* page 124

TYPE	CODE
FS-Q30	03012F3D
DESCRIPTION: T port open, T1 port plugged. For open center circuit	
TYPE	CODE
FS-Q30-F16D	03016F16D
DESCRIPTION: T port open, T1 port plugged. For closed center circuit	
TYPE	CODE
FS-Q30-F6D	03014F6D
DESCRIPTION: Lc port and T1 port open. With joint for carry-over (HPCO) circuit	

5 Tie rod kit

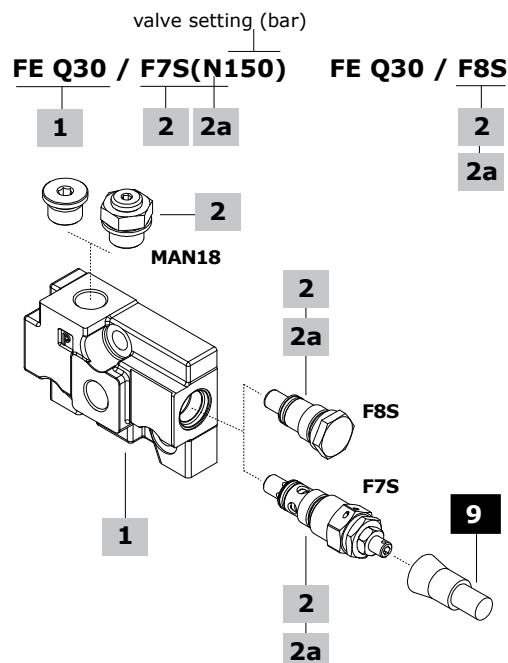
CODE	DESCRIPTION
For standard configuration	
03901TX1	For 1 section valve
03902TX2	For 2 sections valve
03903TX3	For 3 sections valve
03904TX4	For 4 sections valve
03905TX5	For 5 sections valve
03906TX6	For 6 sections valve
03907TX7	For 7 sections valve
03908TX8	For 8 sections valve
03909TX9	For 9 sections valve
03910TX10	For 10 sections valve
For flow regulator configuration	
03901TX1	For 1 section valve
03902TX2	For 2 sections valve
03903TX3	For 3 sections valve
03904TX4	For 4 sections valve
03905TX5	For 5 sections valve
03906TX6	For 6 sections valve
03907TX7	For 7 sections valve
03908TX8	For 8 sections valve
03909TX9	For 9 sections valve
03910TX10	For 10 sections valve

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

Inlet section - part ordering codes

Standard section

With relief valve:

**1 Inlet body section*** page 85

TYPE	CODE
FE-Q30	060012741599
DESCRIPTION: Side inlet port, upper inlet plugged, pressure relief valve arrangement	
TYPE	CODE
FE-Q30	060012979299
DESCRIPTION: As previous one, with unloader valve arrangement	

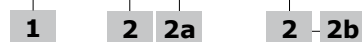
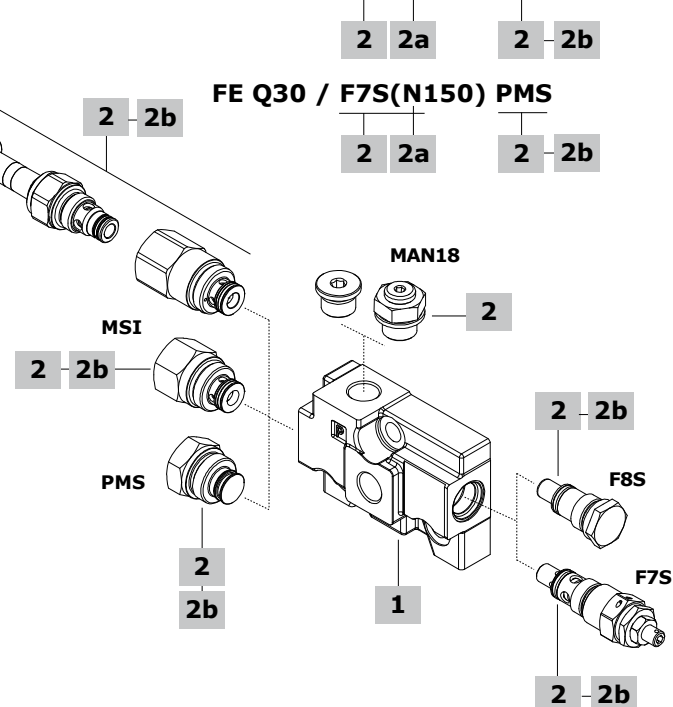
2 Configuration coding* page 86

TYPE	DESCRIPTION
F7S	With pressure relief valve
F8S	Without valves (pressure relief valve plugged port)
F7S-MSE	With pressure relief valve and electric unloader valve
F7S-MSI	With pressure relief valve and hydraulic unloader valve
F7S-PMS	With pressure relief valve and PMS valve blanking plug
F8S-MSE	With electric unloader valve and pressure relief valve blanking plug
F8S-MSI	With hydraulic unloader valve and pressure relief valve blanking plug
F8S-PMS	Without valves (plugged ports)
Note: Inlet configurations require upper P port: for Q30 n. 1 G3/8 plug code 060002792199, or n. 1 pressure gauge arrangement code 5MAN621200;	

2a Main pressure relief valve page 87

TYPE: B	CODE: 700035205000000
DESCRIPTION: VLP35S valve, setting range 10-100 bar (145-1450 psi)	
TYPE: N	CODE: 700035105000000
DESCRIPTION: VLP35S valve, setting range 101-200 bar (1460-2900 psi)	
TYPE: R	CODE: 700035305000000
DESCRIPTION: VLP35S valve, setting range 201-380 bar (2910-5500 psi)	
TYPE: -	CODE: 060002788899
DESCRIPTION: Relief valve blanking plug	

With relief and unloader valves:

(NA): normally open
valve setting (bar) (NC): normally closed**FE Q30 / F7S(N150) MSE(NA)****FE Q30 / F7S(N150) MSI****FE Q30 / F7S(N150) PMS****2b Unloader inlet valve** page 88

TYPE	CODE	DESCRIPTION
MSE(NA)	0EF08002003	Electric unloader valve, normally open, screw type emergency. It requires MSE assembly joint
MSE(NC)	0EF08002006	Electric unloader valve, normally closed, screw type emergency. It requires MSE assembly joint
-	060002997299	Assembling joint for MSE valves
MSI	03839MSI	Hydraulic unloader valve
PMS	060002978899	Valve blanking plug

3 Coil

TYPE	CODE	DESCRIPTION
For MSE valves		
BER	4SLE001200A	12 VDC ISO4400 coil
	4SLE002400A	24 VDC ISO4400 coil

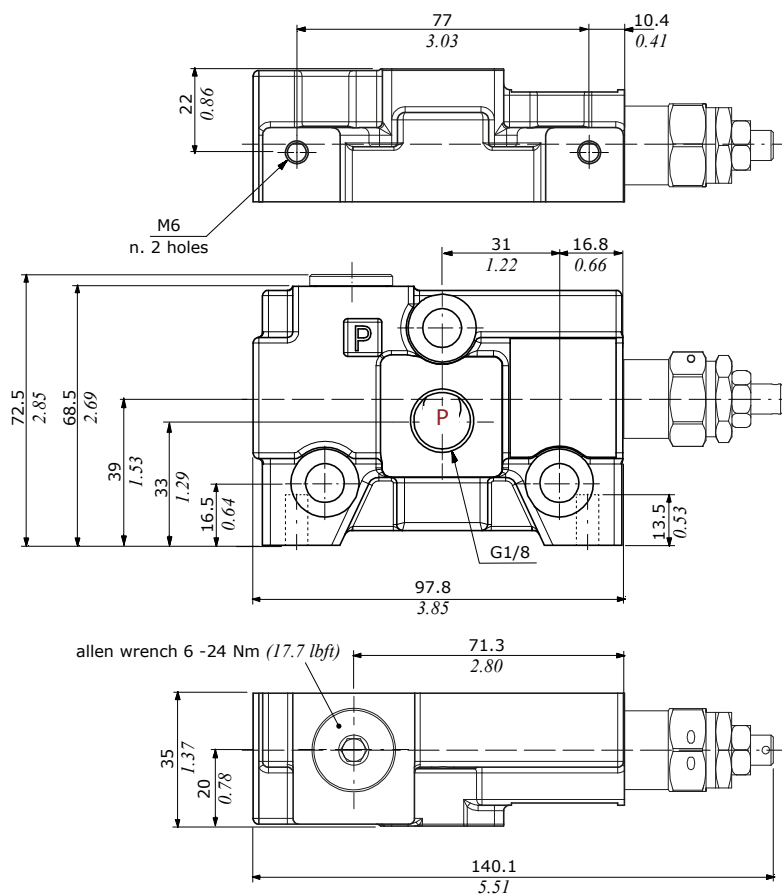
Note: For **BER** type coils, see page 243**9 Accessory**

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

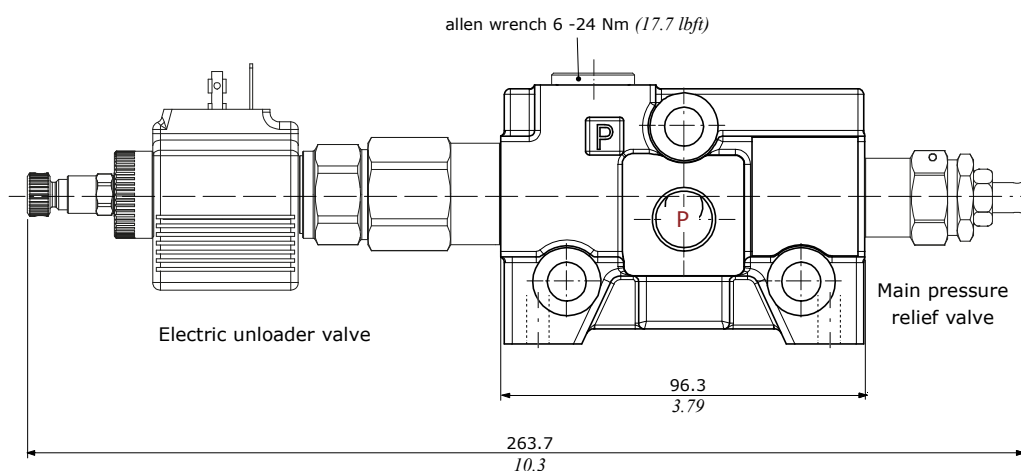
(*): Codes are referred to **BSP** thread

Standard inlet section

Dimensional data

With pressure relief valve

Note: For valves wrench and torque, see related pages

With relief and unloader valves

Note: For valves wrench and torque, see related pages

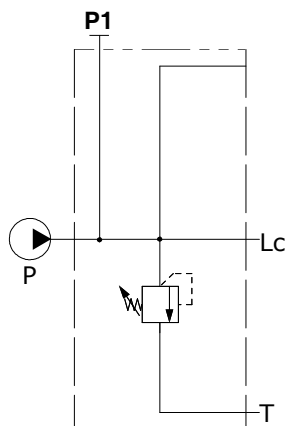
For other configurations, see page 88

For other dimensions, see previous configuration

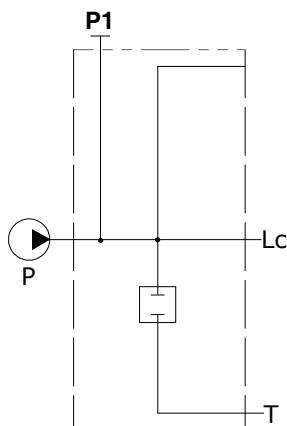
Standard inlet section

Hydraulic circuits

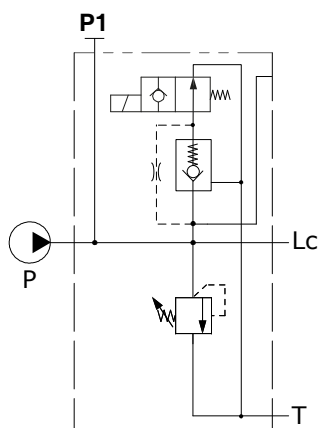
F7S configuration
With pressure relief valve



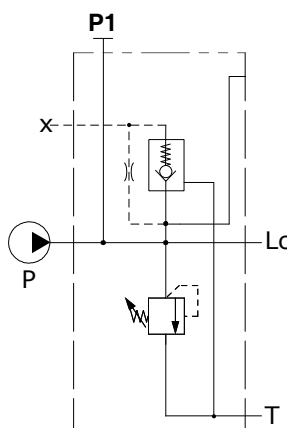
F8S configuration
Without valves
(pressure relief valve plugged port)



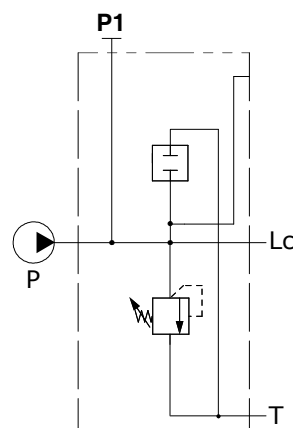
F7S-MSE(NA/NC) configuration
With pressure relief valve
and electric unloader valve



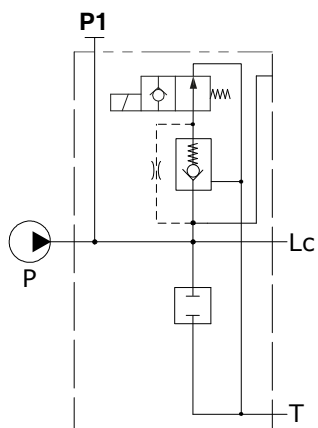
F7S-MSI configuration
With pressure relief valve
and hydraulic unloader valve



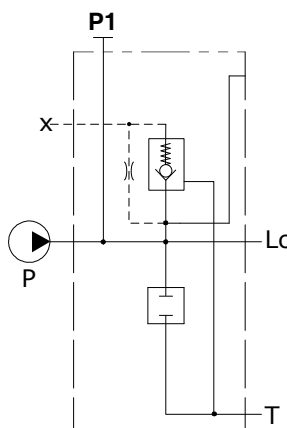
F7S-PMS configuration
With pressure relief valve
and unloader valve blanking plug



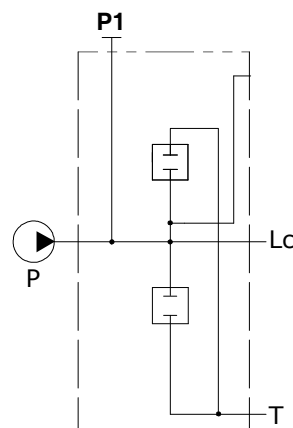
F8S-MSE(NA/NC) configuration
Without pressure relief valve
and electric unloader valve



F8S-MSI configuration
Without pressure relief valve
and hydraulic unloader valve



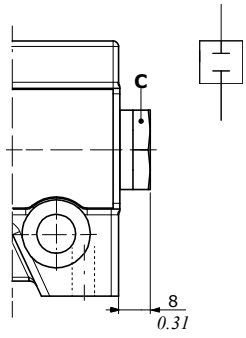
F8S-PMS configuration
Without valves (plugged ports)



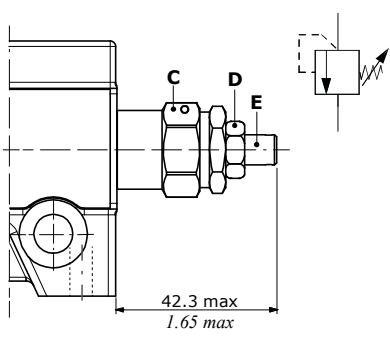
Standard inlet section

Main pressure relief valve

Relief valve blanking plug



Main pressure relief valve

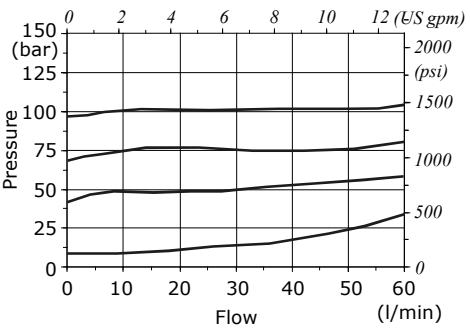


Wrenches and tightening torques

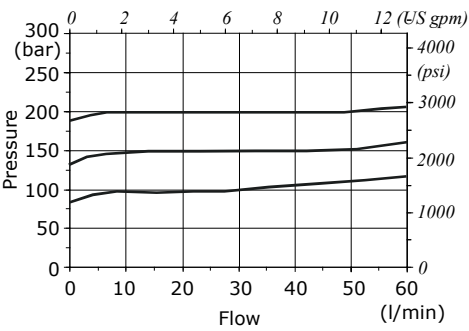
- C = wrench 22 - 42 Nm (31 lbf ft)
- D = wrench 13 - 24 Nm (17.7 lbf ft)
- E = allen wrench 4

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

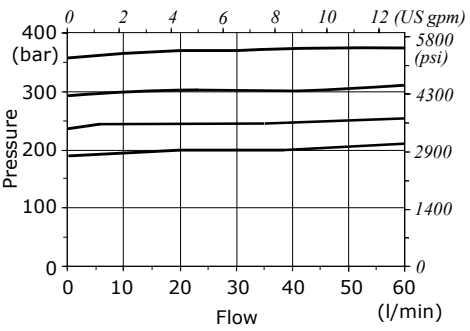
Setting example (B type spring)



Setting example (N type spring)



Setting example (R type spring)



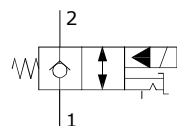
Standard inlet section

Unloader valve

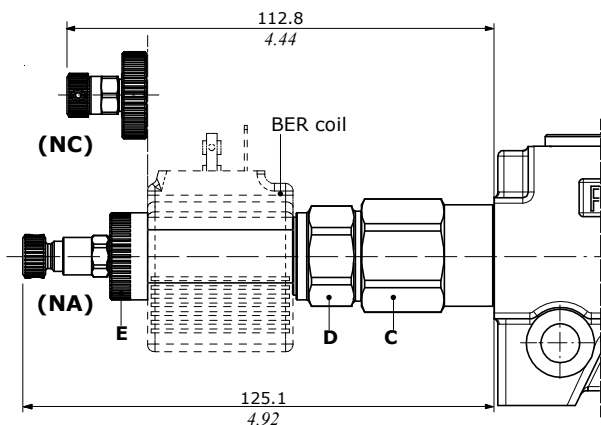
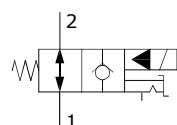
MSE type: electric control

Screw type emergency

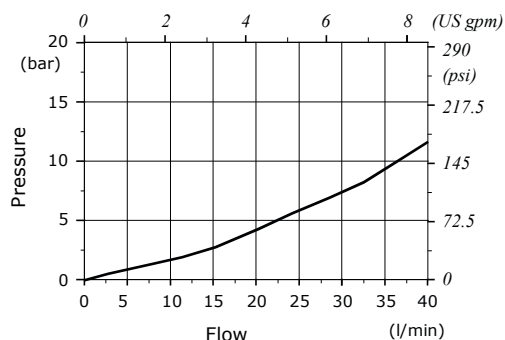
MSE(NC) type Normally closed



MSE(NA) type Normally open



Pressure drops



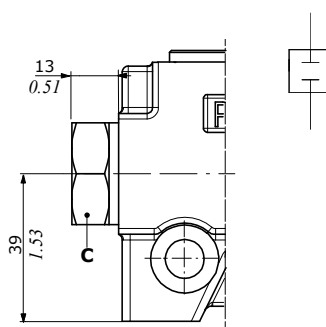
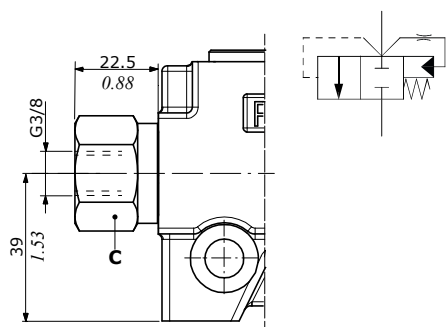
Valve features

Nominal flow.....: 40 l/min (10.5 US gpm)
 Max. pressure: 380 bar (5500 psi)
 Max. internal leakage....: 0,50 cm³/min @ 210 bar
 (0.030 in³/min @ 3050 psi)

For BER type coils see page 243

MSI type: hydraulic control

PMS type: valve blanking plug



Wrenches and tightening torques

C = wrench 27 - 42 Nm (30.9 lbft)
 D = wrench 24 - 30 Nm (22.1 lbft)
 E = manual tightening

Inlet section - parts ordering codes

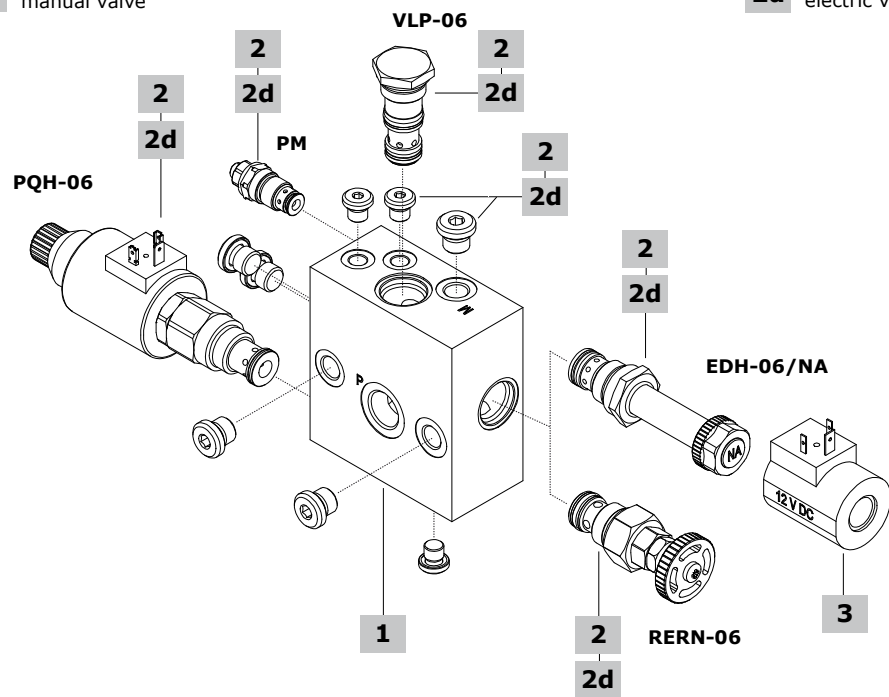
Section with flow regulator

With manual unloader valve:

valve setting (bar)
FE Q30 / F7SPR3M(N150)
 1 2 2d
 manual valve

With electric unloader valve:

valve setting (bar)
FE Q30 / F7SPR3E(N150)-12VDC
 2 3
 2d electric valve



1 Inlet body section* page 90

TYPE: **FE-Q30** CODE: 060013195499
 DESCRIPTION: Side inlet port, arrangement for flow control, unloader and pressure relief valve

2 Configuration coding* page 90

TYPE	DESCRIPTION
F7S-PR3M	With pressure relief valve, proportional flow control valve and manual unloader valve
F7S-PR3E	With pressure relief valve, proportional flow control valve and electric unloader valve, normally open

Note: Inlet configurations require:
 n. 5 G1/4 plugs code 3XTAP719150
 n. 3 G1/8 plugs code 3TP5110900

2d Inlet valves page 91

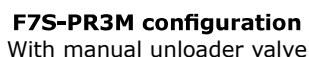
TYPE	CODE	DESCRIPTION
PQH-06	950208506010000	Flow control pressure compensated proportional valve, 12 VDC, coil included
	950208506010001	Flow control pressure compensated proportional valve, 24 VDC, coil included
PM	03800V30PM-N	Antishock valve
VLP-06	950209906010000	Pressure relief valve
RERN-06	955845060010000	Manual unloader valve
EDH-06/NA	950210600000000	Electric unloader valve, normally open

3 Coil

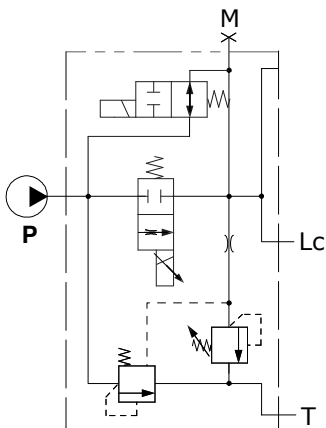
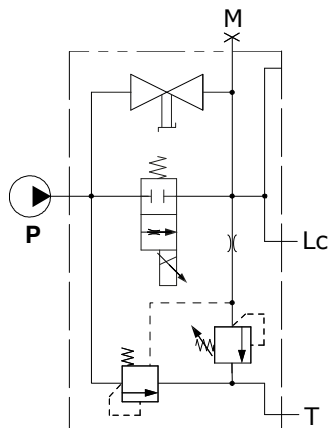
TYPE	CODE	DESCRIPTION
For EDH-06 valve		
A	954250000601200	12 VDC ISO4400 coil
	954250000602400	24 VDC ISO4400 coil

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

Dimensional data and hydraulic circuit



F7S-PR3E configuration
With electric unloader valve



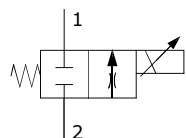
C = wrench 17 - 30 Nm (22 *lbf*ft)
D = manual tightening
E = wrench 27 - 30 Nm (22 *lbf*ft)
F = wrench 27 - 60 Nm (44.2 *lbf*ft)
G = allen wrench 27 - 60 Nm (44.2 *lbf*ft)
H = allen wrench 6 - 24 Nm (17.7 *lbf*ft)

Inlet section with flow regulator

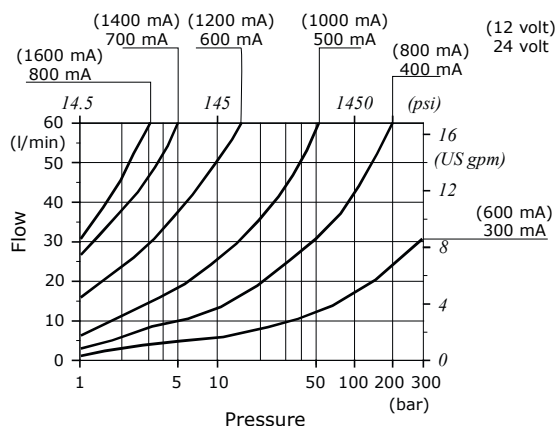
Inlet valves

PQH-06 type

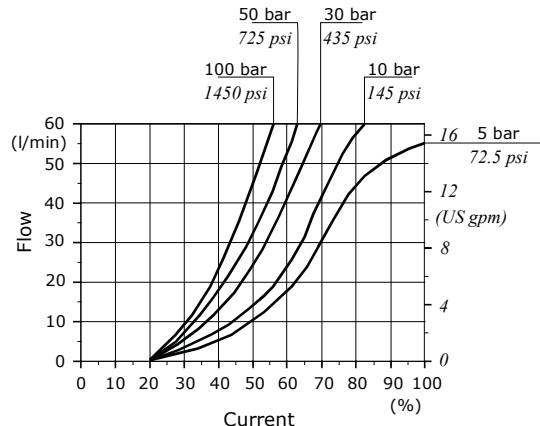
Flow control proportional pressure compensated valve, 12/24 VDC



Compensation curves



Flow control diagram

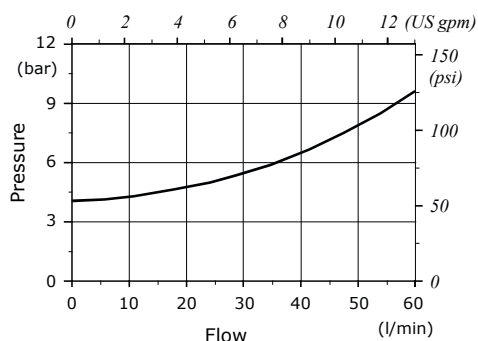
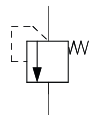
**Valve features**

Nominal flow.....: 60 l/min (15.8 US gpm)
 Max. pressure: 310 bar (4500 psi)
 Power rating.....: 22 W
 Max. internal leakage...: 100 cm³/min @ 210 bar
 (6.10 in³/min @ 3050 psi)
 Coil insulation.....: Class F
 Voltage.....: 12/24 VDC

Note: The coil and connector is included**VLP-06 type**

Pressure relief valve

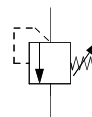
Pressure drops

**Valve features**

Nominal flow.....: 60 l/min (15.8 US gpm)
 Max. pressure: 350 bar (5070 psi)
 Opening start pressure.....: 4 bar (58 psi)

PM type

Antishock valve

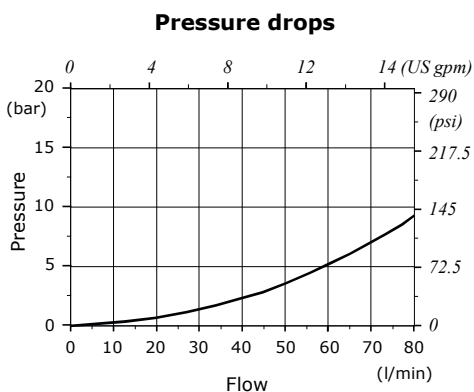
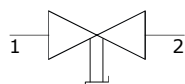


Inlet section with flow regulator

Inlet valves

RERN-06 type

Manual unloader valve

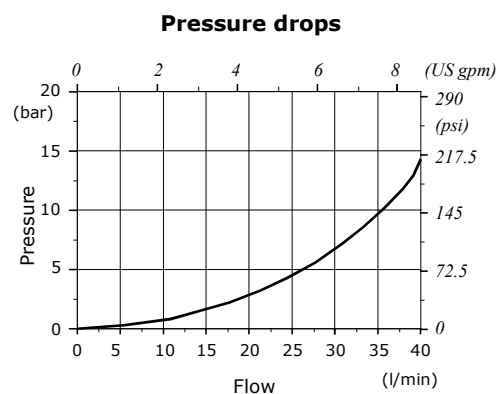
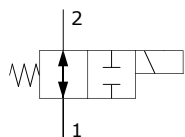


Valve features

Nominal flow.....: 70 l/min (18.5 US gpm)
 Max. pressure: 315 bar (4600 psi)
 Closed valve leakage....: 0

EDH-06 type

Electric unloader valve, normally open



Valve features

Nominal flow.....: 35 l/min (9.24 US gpm)
 Max. pressure: 310 bar (4500 psi)
 Max. internal leakage...: 50 cm³/min @ 210 bar
 (3.05 in³/min @ 3050 psi)

Coil **A** type: To be order separately, see #3 page 89

Working section - parts ordering codes

Mechanical control valve configuration example

spring type and valve setting (bar)

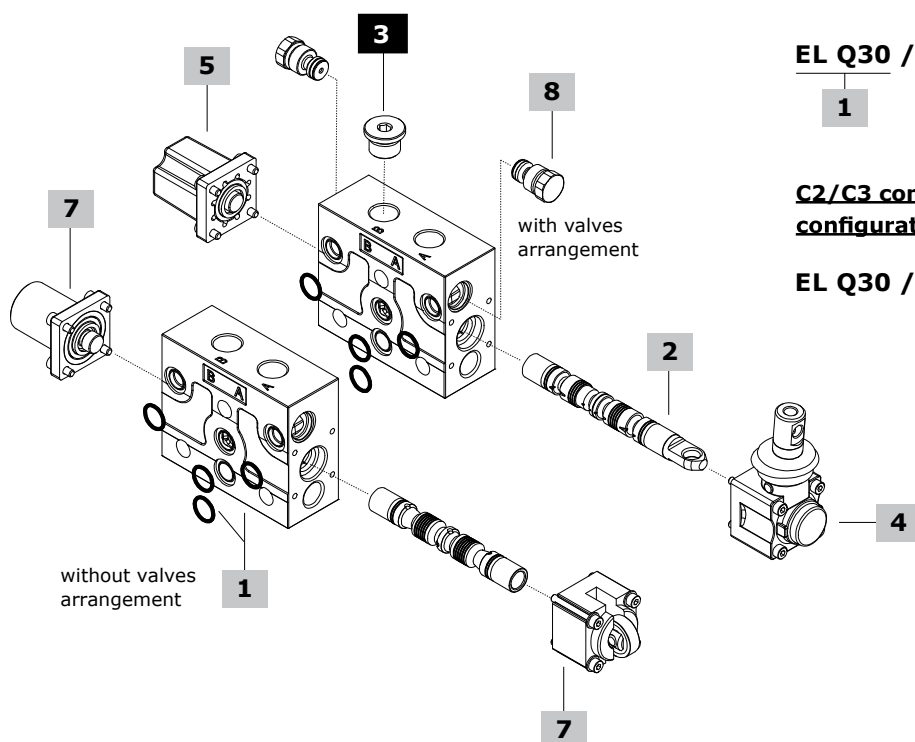
EL Q30 / 102 - A1 - M1 . V40(N)120 - S

1 2 4 5 8 aluminium controls

C2/C3 complete mechanical control configuration example:

EL Q30 / 103 - C3 . V40(N)120 - S

7



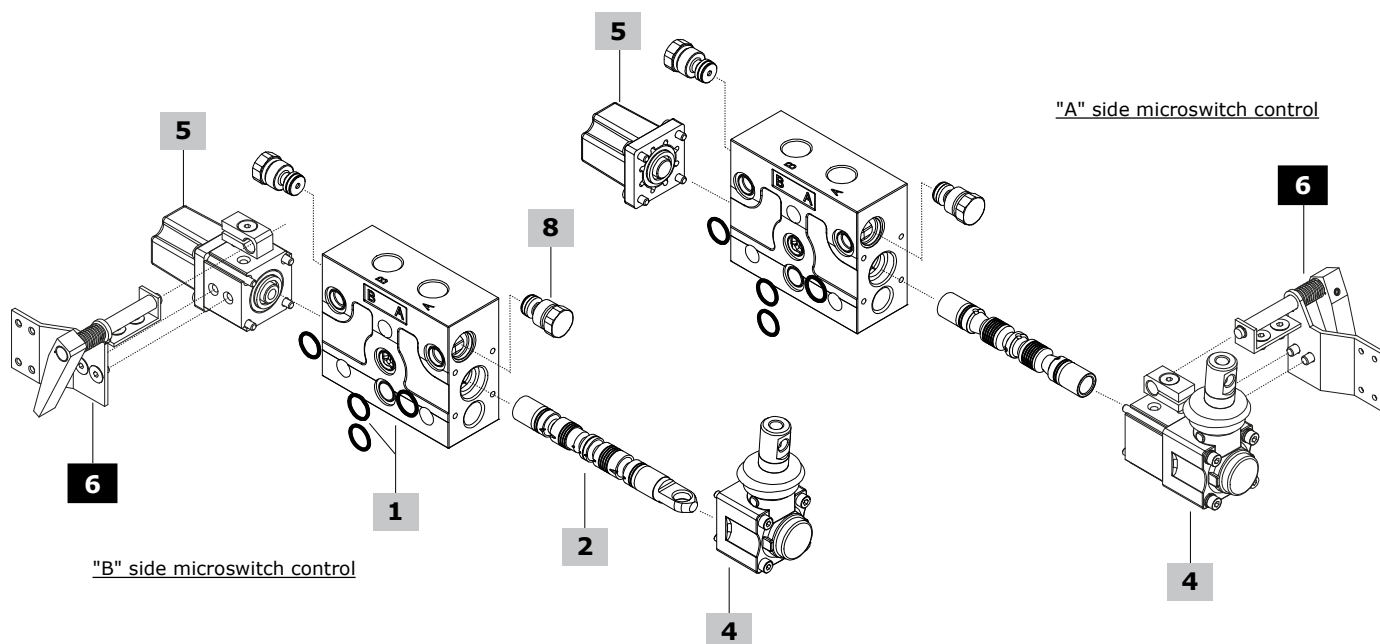
Microswitch control valve configurations example

EL Q30 / 103 - A1 - M1-N1 . V40(N)120 - S

1 2 4 5 8 aluminium controls

EL Q30 / 103 - N1-A1 - M1 . V40(N)120 - S

4 5



Working section - parts ordering codes

1 Working section body kit* page 98

TYPE	CODE
EL-Q30.VC	5EL0600128432
DESCRIPTION: Parallel circuit, with port valves arrangement	
TYPE	CODE
EL-Q30	5EL0600127900
DESCRIPTION: Parallel circuit, without port valves arrangement	
TYPE	CODE
EL-Q30.VC	5EL0600128434
DESCRIPTION: Series circuit, with port valves arrangement	

2 Spool page 99

TYPE	CODE	DESCRIPTION
Standard spools		
103	060103179499	Double acting, A and B closed in neutral position
	3CUG3197800	As previous one, for kick-out control
106	KR30106	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	060103179599	Double acting, A and B to tank in neutral position
	KR30111K	As previous one, for kick-out control
114	KR30114	Double acting, A and B to tank in neutral position, for closed circuit
101	3CUG32188000	Single acting on port A (3)
102	3CUG3218002	Single acting on port B (3)
116	3CUG3179200	Double acting, with floating in the 4 th position (spool in): requires dedicated spool control
126	3CUG3179201	Double acting, with floating in the 4 th position (spool out): requires dedicated spool control
403	5CUG2895202	Double acting, A and B closed in neutral position, for series circuit
411	5CUG2895402	Double acting, A and B to tank in neutral position, for series circuit
Note (3): Q30 valve required G3/8 plug, see #3		
Special spools for cam, microswitch controls and other leverless controls		
103	060103179099	Double acting, A and B closed in neutral position
111	060103179199	Double acting, A and B to tank in neutral position
403	5CUG2895203	Double acting, A and B closed in neutral position, for series circuit
411	5CUG2895403	Double acting, A and B to tank in neutral position, for series circuit

3 Plug for single acting spool*

TYPE	CODE	DESCRIPTION
-	060002792199	G3/8 plug

4 A side control page 100

TYPE	CODE	DESCRIPTION
For standard spools		
<u>With lever control:</u>		
A1	03600A1-A2	M8 thread plastic lever box
A2	03600A1-A2	As A1 type, with lever box rotated 180°
A1/10	03610A1-A2/10	M8 thread aluminium lever box
A2/10	03610A1-A2/10	As A1/10 type, with lever box rotated 180°
A1/06	03606A1-A2/06	Aluminium lever box, with stroke limiter
A2/06	03606A1-A2/06	As A1/06 type, with lever box rotated 180°
A1/PM	03610A1-A2/PM	M10 thread aluminium lever box
A2/PM	03610A1-A2/PM	As A1/PM type, with lever box rotated 180°
A1/PMP	03610A1-A2/PMP	M10 thread plastic lever box
A2/PMP	03610A1-A2/PMP	As A1/PMP type, with lever box rotated 180°
A1/Z1	03610A1-A2/Z1	Plastic lever box, for 116 spool type
A2/Z1	03610A1-A2/Z1	As A1/Z1 type, with lever box rotated 180°
A1/Z1/10	03610A1-2/10Z1	As A1/Z1 type, with aluminium lever box
<u>With safety lever control:</u>		
A1/S⁽¹⁾	03624A1-A2/S	M8 thread aluminium lever box
A2/S⁽¹⁾	03624A1-A2/S	As A1/S type, with lever box rotated 180°
<u>Without lever control:</u>		
A4/Z1	03617A4/Z1	As A4 type, for 116 spool type
A6	03620A6	With flange
A6-H/Z1	03620A6-H/Z1SI	As A6 type, for 116 spool type
A8	03622A8	Arrangement for flexible cable control
	03622A8/03	As previous one, with aluminium cap
A8/Z1	03622A8/Z1	As A8 type, for 116 spool type
	03622A8/Z1/10	As previous one, with aluminium cap
<u>Joystick controls for 2 section operation:</u>		
A35/1	03640A35-12	Joystick 1 type
A35/2	03640A35-12	Joystick 2 type
A35/3	03640A35-34	Joystick 3 type
A35/4	03640A35-34	Joystick 4 type
For types 103, 111, 403 e 411 special spools		
<u>With spool position microswitch:</u>		
Note: To complete the control you must use the assembly kit at #6		
N1-A1	03641N1-A1/A2	Micro operation in pos. 1 and 2, with lever box
	03641N1-A1/10	As previous one, with aluminium lever box
N1A-A1	03642N1A-A1/A2	Micro operation in pos. 1, with lever box
N1B-A1	03643N1BA1/A2L	Micro operation in pos. 2, with lever box
N1-A3	03648N1-A3L	Micro operation in pos. 1 and 2, without lever with cap
N1A-A3	03648N1A-A3L	Micro operation in pos. 1, without lever with cap
N1B-A3	03648N1B-A3L	Micro operation in pos. 2, without lever with cap
<u>Without lever control:</u>		
A3	03614A3	Without lever, with cap
	03614A3/03	As previous one, with aluminium cap
A4	03617A4	M8 thread male external pin with flange
	03617A4/03	As previous one, with aluminium flange
A5⁽²⁾	03619A5	Flange with spherical spool end
	03619A5/10	As previous one, with aluminium flange

(*) : 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 page 109

TYPE	CODE	DESCRIPTION
<u>With spring return:</u>		
M1	03730M1	3 pos., spring return in neutral position
	03730M1/03	As previous one, with aluminium cap
M1/01	03730M1/01	As M1 type, for joystick control
	03730M1/01/03	As previous one, with aluminium cap
M1/02	03730M1/02	As M1 type, with stroke limiter
M1/05	03730M1/05	As M1 type, for series spool
M1/06	03730M1/06	As M1/05 type, with aluminium cap
M1/07	03730M1/07	As M1 type, for joystick control with series spool
	03730M1/07/03	As previous one, with aluminium cap
M1-B1	03753M1-B1	As M1 type, with microswitch arrangement
	03753M1-B1/03	As previous one, with aluminium cap
M1-U1	03701M1-U1	As M1 type, with M8 thread male external pin
M2	03732M2	2 pos. (0-1), spring return in neutral position
	03732M2/03	As previous one, with aluminium cap
M2-U1	03702M2-U1	As M2 type, with M8 thread male external pin
M3	03733M3	2 pos. (0-2), spring return in neutral position
	03733M3/03	As previous one, with aluminium cap
M3-U1	03703M3-U1	As M3 type, with M8 thread male external pin
M4	03734M4-2	2 pos. (1-2), spring return in position 1
	03735M4-2-1	2 pos. (2-1), spring return in position 2
M4-U1	03704M4-U11-2	As M4 type (1-2), with M8 thread male external pin
<u>With flexible cable control arrangement:</u>		
M1-U2	03715M1-U2	3 pos., spring return in neutral position
M2-U2	03716M2-U2	2 pos. (0-1), spring return in neutral position
M3-U2	03717M3-U2	2 pos. (0-2), spring return in neutral position
<u>With detent:</u>		
R1	03741R1	3 pos., detent in position 1
	03741R1/03	As previous one, with aluminium cap
R2	03742R2	3 pos., detent in position 2
	03742R2/03	As previous one, with aluminium cap
R3	03743R3	3 pos., detent in all position
	03743R3/03	As previous one, with aluminium cap
R4	03744R4	2 pos., detent in position 0-1
	03744R4/03	As previous one, with aluminium cap
R5	03745R5	2 pos., detent in position 0-2
	03745R5/03	As previous one, with aluminium cap
R6	03746R6	2 pos., detent in position 1-2
	03746R6/03	As previous one, with aluminium cap
R8	03748R8	4 pos., detent in 4 th pos., for 116 spool type
	03748R8/03	As previous one, with aluminium cap
R10/Z1	03750R10/Z1	4 pos., detent in 4 th pos., for 126 spool type
	03750R10/Z1/03	As previous one, with aluminium cap
<u>With detent and kick out function:</u>		
R1K	03741R1K	3 pos., detent in position 1
	03741R1K/03	As previous one, with aluminium cap
R2K	03742R2K	3 pos., detent in position 2
	03742R2K/03	As previous one, with aluminium cap
R3K	03743R3K	3 pos., detent in all position
	03743R3K/03	As previous one, with aluminium cap

5 B side control (cont.) page 109

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

6 Microswitch assembly 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
03650N1-09	Kit for 9 sections
03650N1-10	Kit for 10 sections

7 Complete controls A+B sides page 116

TYPE	CODE	DESCRIPTION
<u>For types 103, 111, 403, 411 special spools</u>		
C2	03792C2-C3	Cam control from position 1 to 2
C3	03792C2-C3	Cam control from position 2 to 1

8 Auxiliary port valve page 120

TYPE	CODE	DESCRIPTION
<u>Antishock valve:</u>		
V30-B	0380FV30-B	Setting range: from 50 to 100 bar (from 725 to 1450 psi)
V30-N	0380FV30-N	Setting range: from 101 to 200 bar (from 1460 to 2900 psi)
V30-R	0380FV30-R	Setting range: from 201 to 350 bar (from 2910 to 5100 psi)
<u>Antishock/anticavitation valve:</u>		
V33-B	0380FV33-B	Setting range: from 50 to 100 bar (from 145 to 1450 psi)
V33-N	0380FV33-N	Setting range: from 101 to 200 bar (from 1460 to 2900 psi)
V33-R	0380FV33-R	Setting range: from 201 to 350 bar (from 2910 to 5100 psi)
<u>Anticavitation valve:</u>		
V04	03808V04	Anticavitation valve
<u>Plug:</u>		
VC	060002846099	Valve blanking plug
For other configurations and positions, see page 120		

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

Working section - parts ordering codes

Proportional hydraulic controls valve configuration example

spring type and valve setting (bar)

EL Q30 / 103 - H5 . V40(N)120 - S

1

2

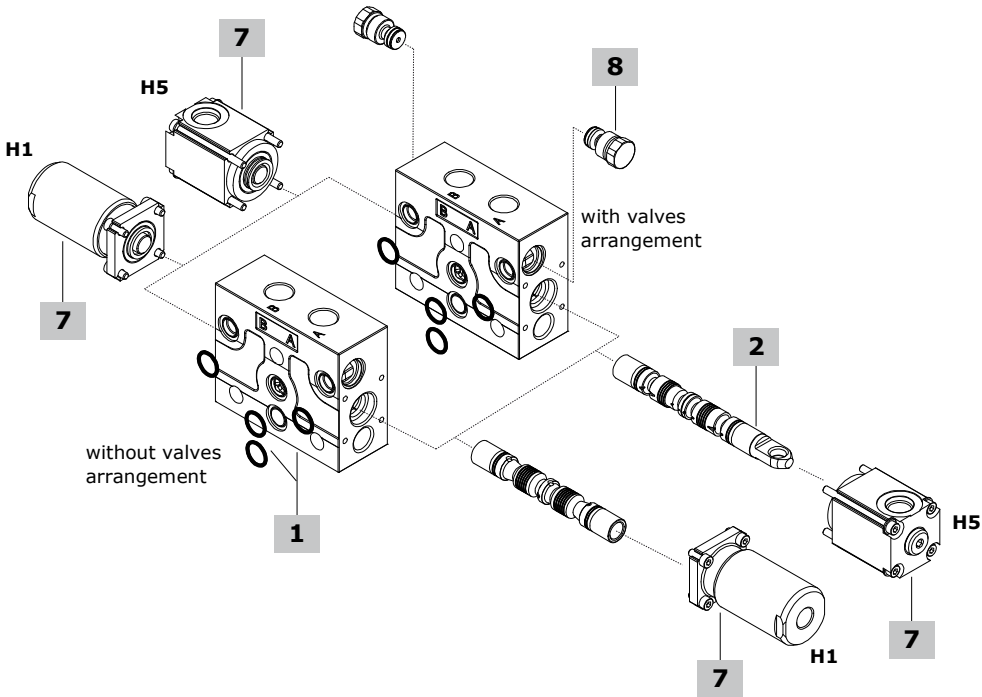
7

8

aluminium controls

EL Q30 / 103 - H1 . V40(N)120 - S

7



1 Working section body kit* page 98

The body kits listed below are for **H5** hydraulic control.
H1 hydraulic control requires standard body: see #1, page 94

TYPE	CODE
EL-Q30-H5.VC	5EL0600128432H5
DESCRIPTION: Parallel circuit, with port valves arrangement	
TYPE	CODE
EL-Q30-H5	5EL0600127900H5
DESCRIPTION: Parallel circuit, without port valves arrangement	

2 Spool page 99

TYPE	CODE	DESCRIPTION
For H5 hydraulic control		
103	060103179499	Double acting, A and B closed in neutral position
For H1 hydraulic control		
103	060103179099	Double acting, A and B closed in neutral position

7 Hydraulic controls A+B sides* page 117

TYPE	CODE	DESCRIPTION
H5	03785H5	Low pressure proportional type, upper ports
H1	03779H1	High pressure proportional type, side ports

8 Auxiliary port valve page 120

See #8, page 95

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

Working section - parts ordering codes

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

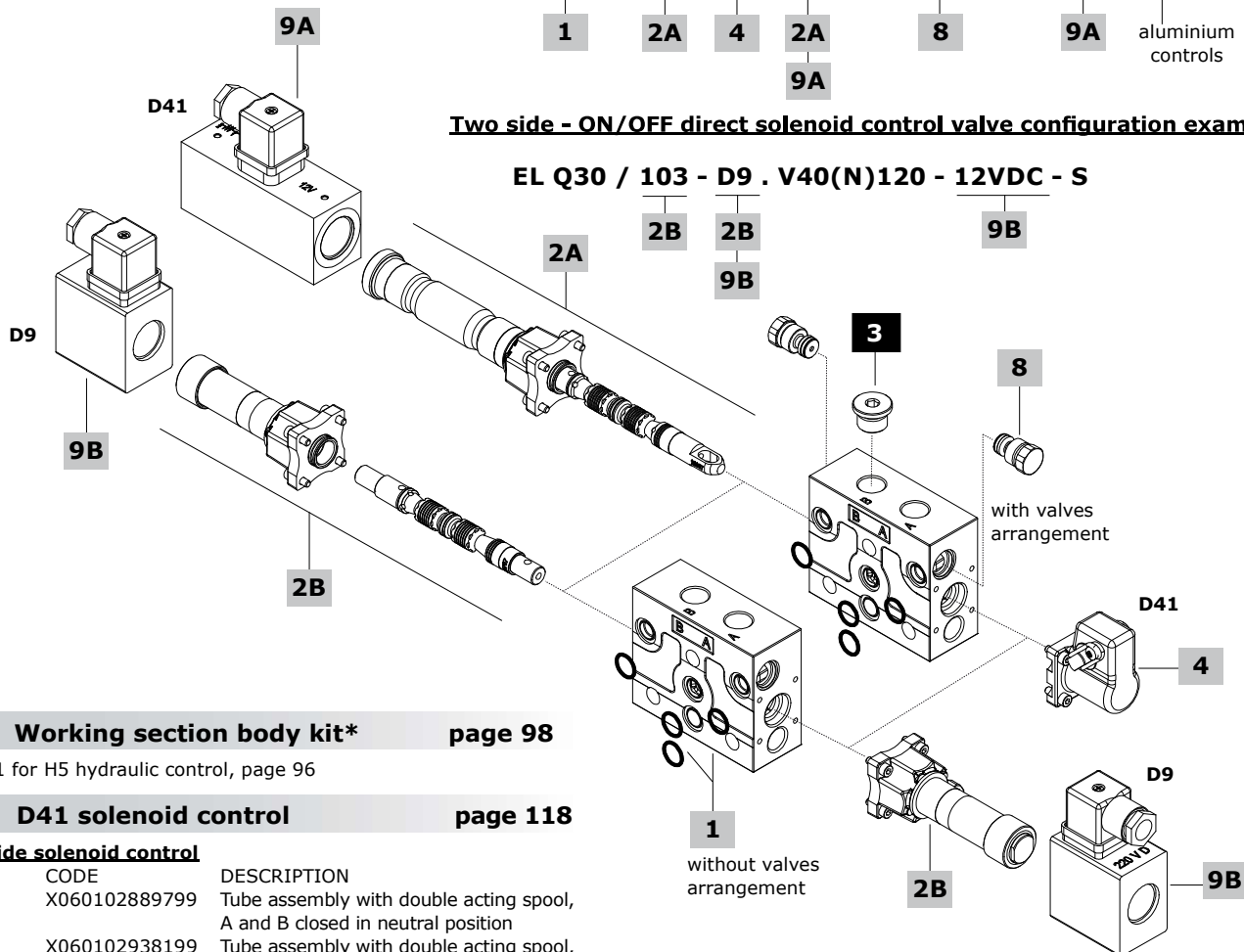
spring type and valve setting (bar)

EL Q30 / 103 - A1 - D41 . V40(N)120 - 12VDC - S

1
2A
4
2A
8
9A
aluminium controls

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

EL Q30 / 103 - D9 . V40(N)120 - 12VDC - S

**1 Working section body kit* page 98**

See #1 for H5 hydraulic control, page 96

2A D41 solenoid control page 118One side solenoid control

TYPE	CODE	DESCRIPTION
103	X060102889799	Tube assembly with double acting spool, A and B closed in neutral position
107	X060102938199	Tube assembly with double acting spool, A to tank and B closed in neutral position
108	X060102937199	Tube assembly with double acting spool, B to tank and A closed in neutral position
109	X060102952699	Tube assembly with single acting spool on port A, A to tank in neutral position (1)
111	X060102894299	Tube assembly with double acting spool, A and B to tank in neutral position
101	X060102905099	Tube assembly with single acting spool on port A (1)
102	X060102894199	Tube assembly with single acting spool on port B (1)

2B D9 solenoid control page 119Two side solenoid control

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

Note (1): Q30 valve required G3/8 plug, see #3**3 Plug for single acting spool***

See #3, page 94

4 A side control for D41 page 118

TYPE	CODE	DESCRIPTION
A1	060003236899	M8 thread cast iron lever box
A2	060003236899	As A1 type, with lever box rotated 180°

8 Auxiliary port valve page 120

See #8, page 95

9A/B Coil page 118D41 coil

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

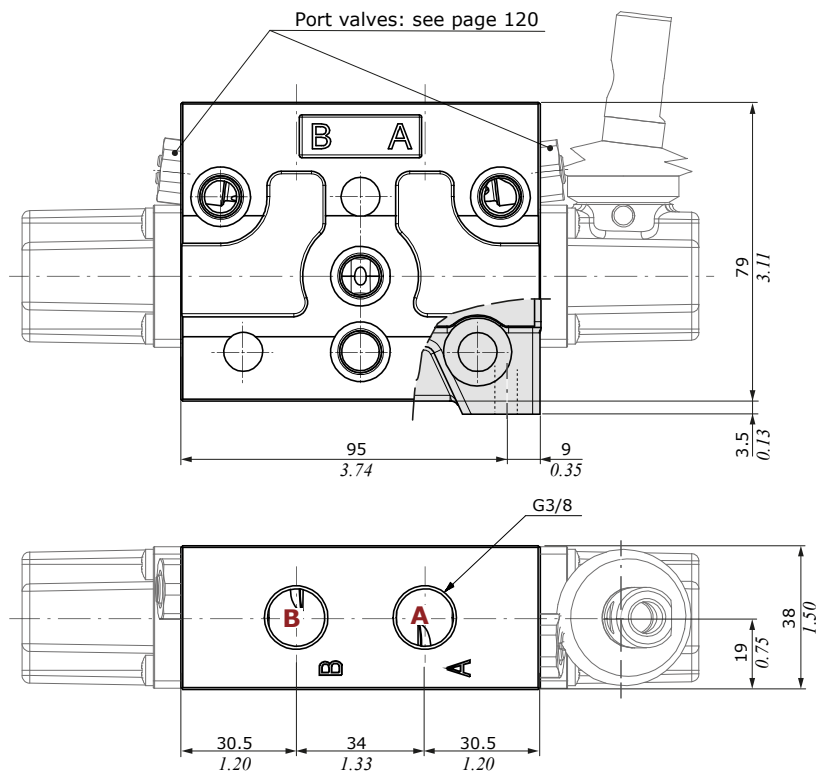
D9 coil

TYPE	CODE	DESCRIPTION
-	ZDB212	12 VDC ISO4400 coil
-	ZDB224	24 VDC ISO4400 coil

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

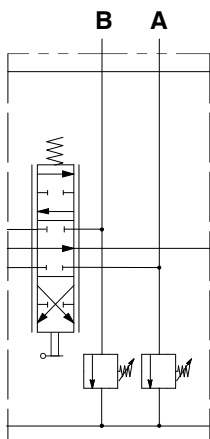
Working section

Dimensional data and hydraulic circuits



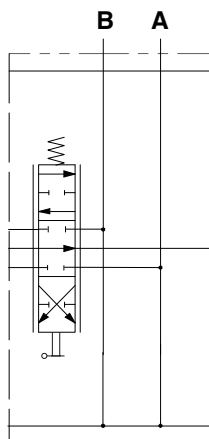
Q30.V40(N)120 configuration

Parallel circuit,
mechanical control with aux valves



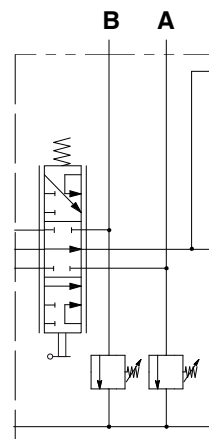
Q30 configuration

Parallel circuit,
mechanical control without aux valves



Q30.V40(N)120 configuration

Series circuit,
mechanical control with aux valves

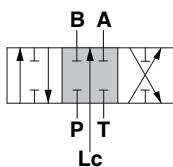


Spool

103 type

A and B closed
in neutral position

2 0 1

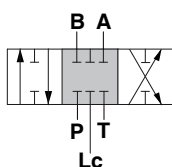
**Stroke**

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

106 type

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

2 0 1

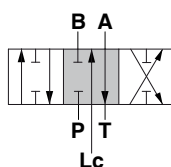
**Stroke**

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

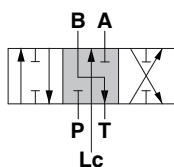
**Stroke**

Position 1: + 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

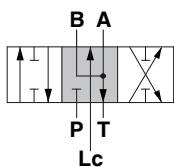
**Stroke**

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

111 type

A and B to tank
in neutral position

2 0 1

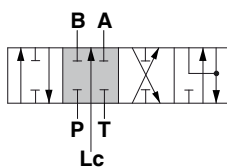
**Stroke**

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

116 type

With floating in the 4th position
(spool in)

2 0 1 3

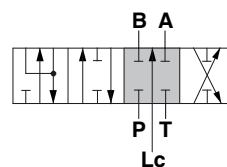
**Stroke**

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 4th position
(spool out)

3 2 0 1

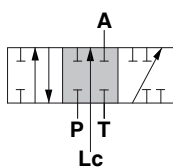
**Stroke**

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

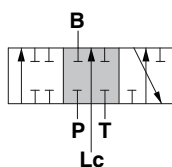
**Stroke**

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

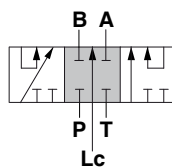
**Stroke**

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

403 type

A and B closed in neutral
position for serie circuit

2 0 1

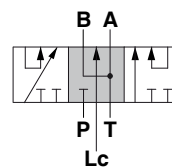
**Stroke**

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

411 type

A and B to tank in neutral
position for serie circuit

2 0 1

**Stroke**

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

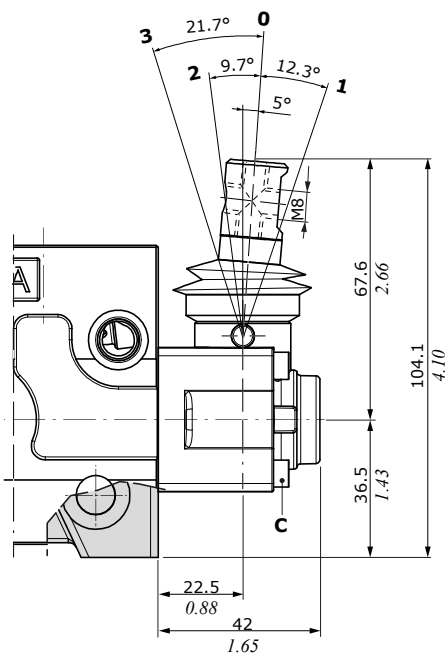
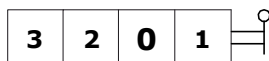
Working section

A side controls

With lever control

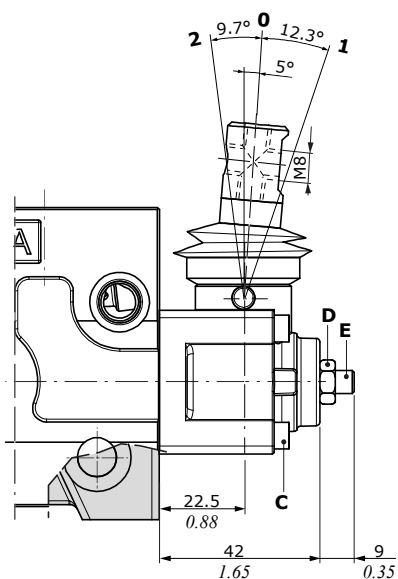
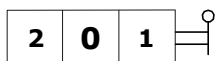
A1 type

M8 thread plastic lever box



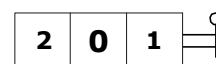
A1/06 type

M8 thread, with stroke limiter



A1/10 type

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

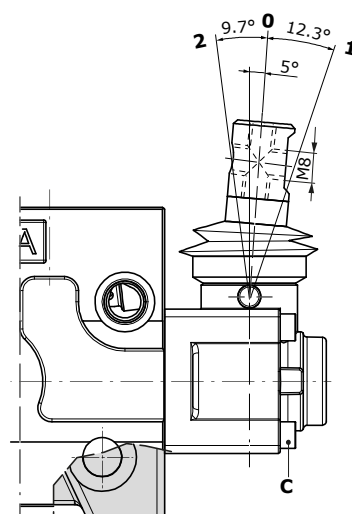
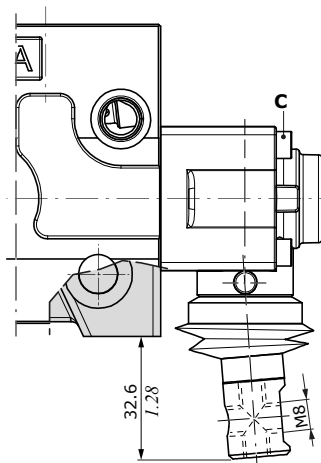
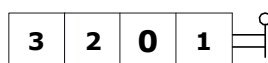


A2/10 type

As A1/10 type, rotated 180°

A2 type

As A1 type, rotated 180°

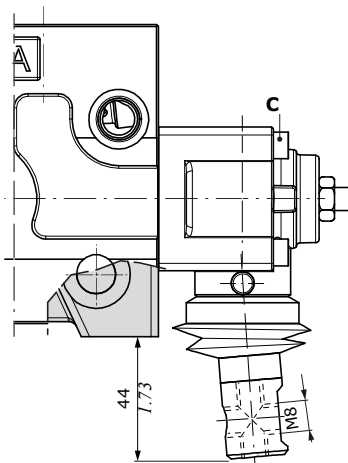
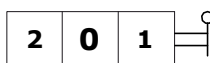


Wrenches and tightening torques

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°



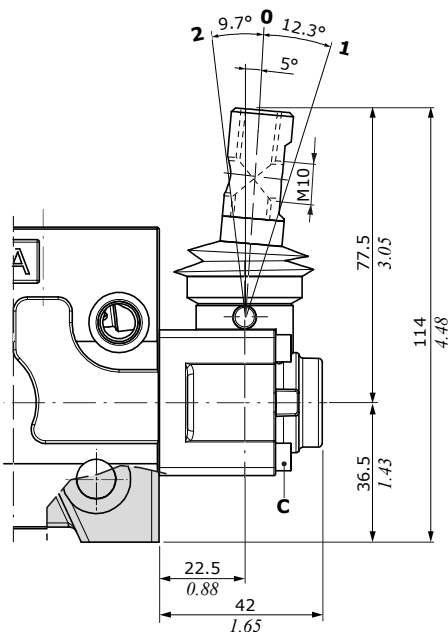
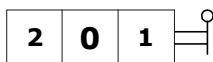
Working section

A side controls

With lever control

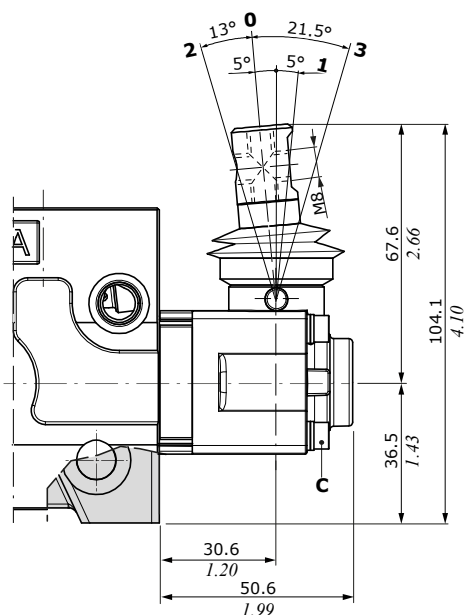
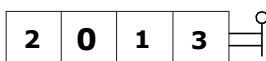
A1/PM type

M10 thread aluminium lever box



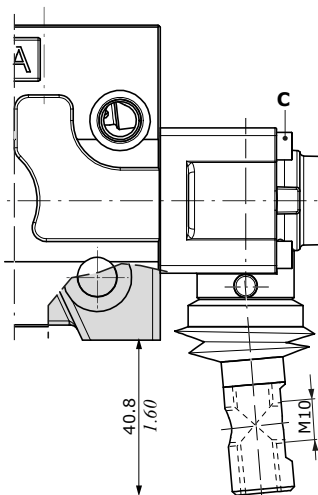
A1/Z1 type

M8 thread, for 116 floating spool type



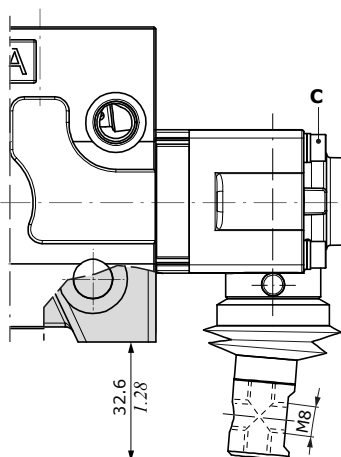
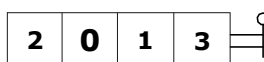
A2/PM type

As A1/PM type, rotated 180°



A2/Z1 type

As A1/Z1 type, rotated 180°



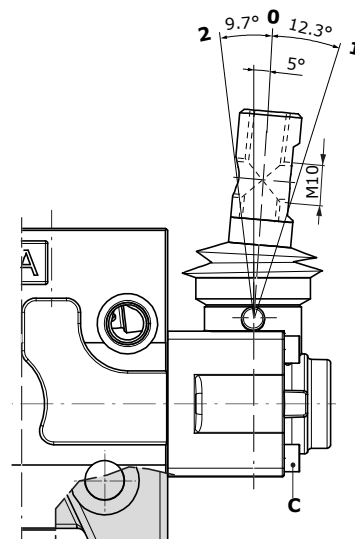
A1/PMP type

M10 thread plastic lever box.

Dimensions are the same of A1/PM type

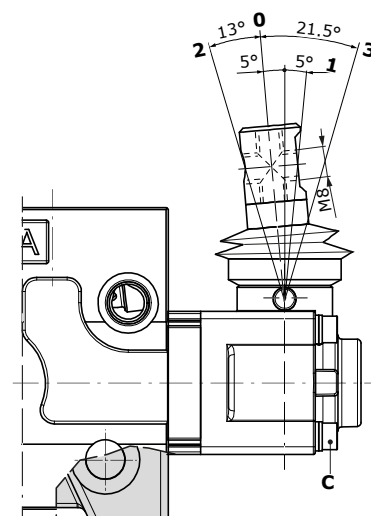
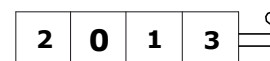
A2/PMP type

As A1/PMP type, rotated 180°



A1/Z1/10 type

As A1/Z1 type, with aluminium lever box



Wrenches and tightening torques

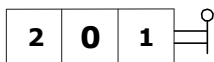
C = allen wrench 3 - 3 Nm (2.2 lbf ft)

Working section

A side controls

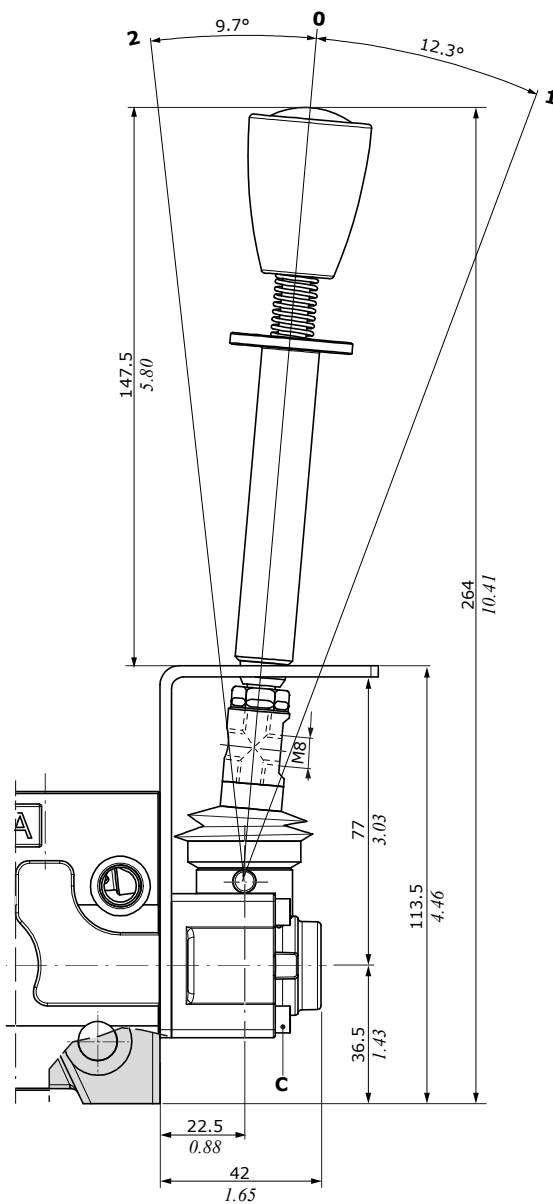
A1/S type

M8 thread, aluminium lever box



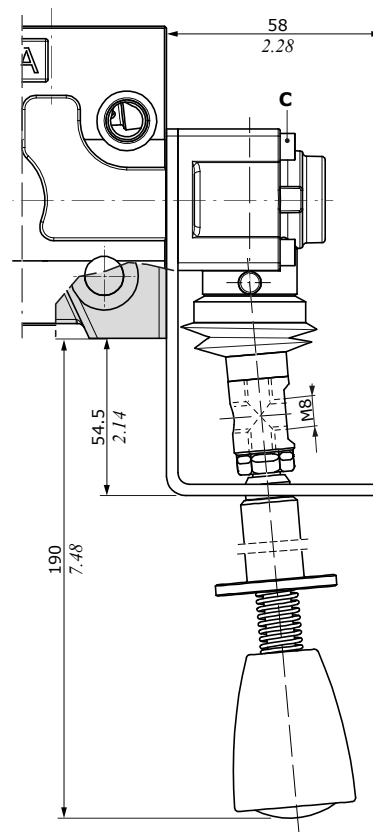
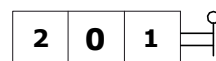
Wrenches and tightening torques

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



A2/S type

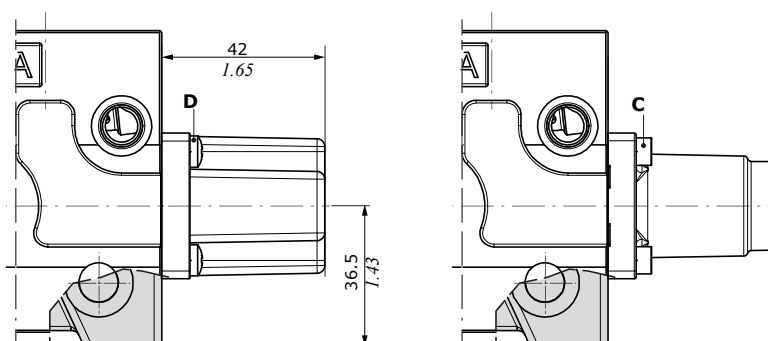
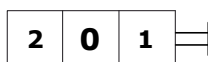
As A1/S type, rotated 180°



A side controls

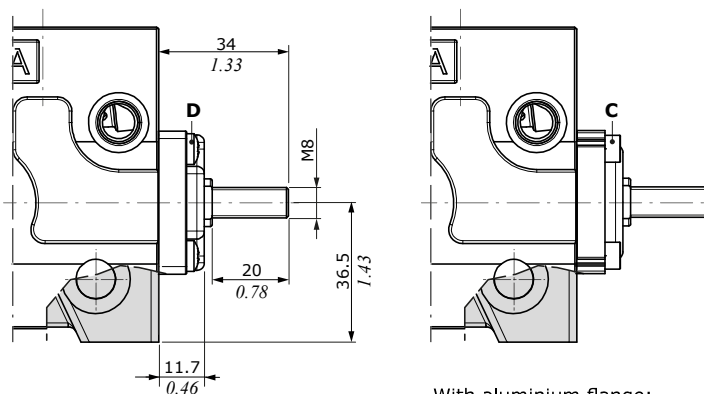
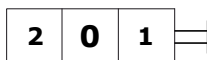
Without lever control

A3 type
With cap.
Available with aluminium cap



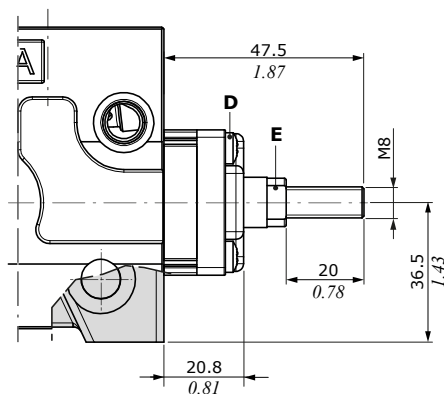
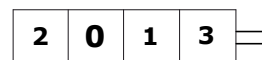
With aluminium cap;
dimensions are the same of standard type

A4 type
M8 male thread external pin with flange.
Available with aluminium flange



With aluminium flange;
dimensions are the same of
standard type

A4/Z1 type
As A4 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)

E = wrench 9 - 9.8 Nm (7.2 lbft)

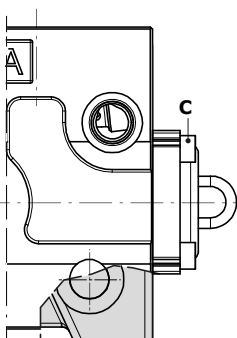
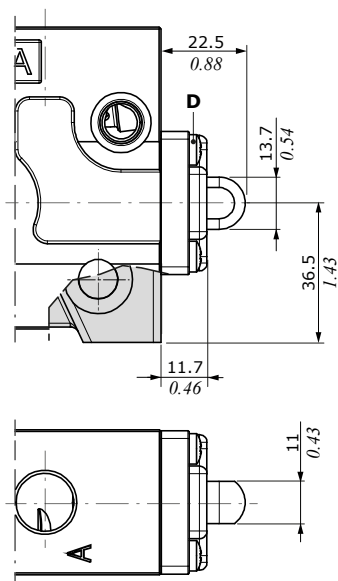
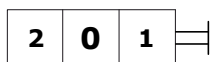
Working section

A side controls

Without lever control

A5 type

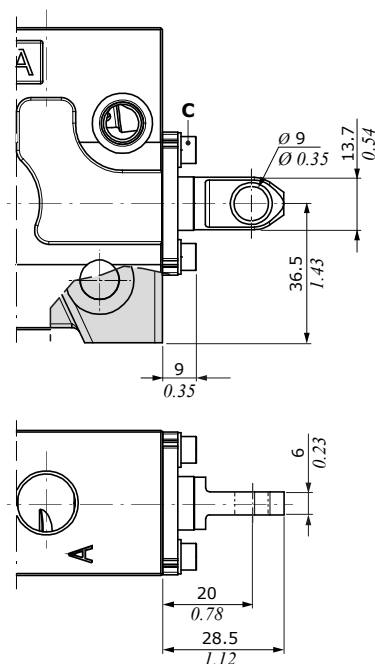
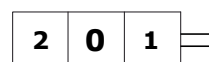
Flange with spherical spool end.
Available with aluminium flange



With aluminium flange;
dimensions are the same of
standard type

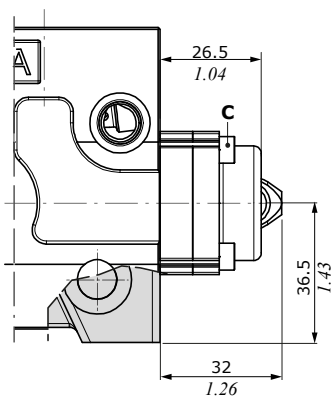
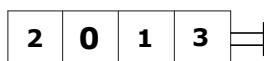
A6 type

With flange



A6-H/Z1 type

As A6 type,
for 116 floating spool type



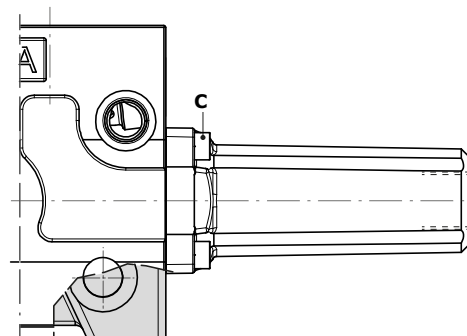
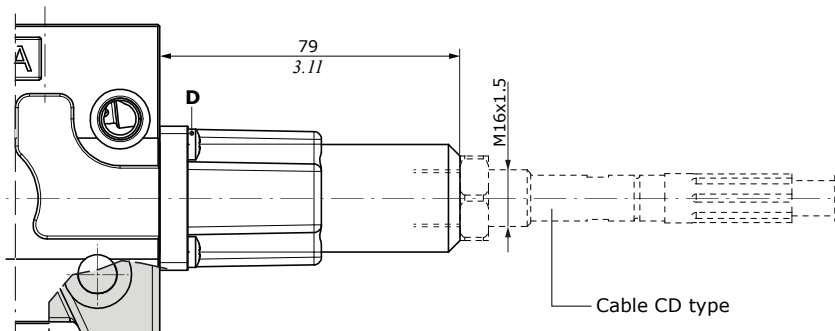
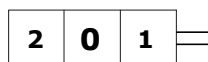
Wrenches and tightening torques

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

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

A side controls**With flexible cable control arrangement****A8 type**

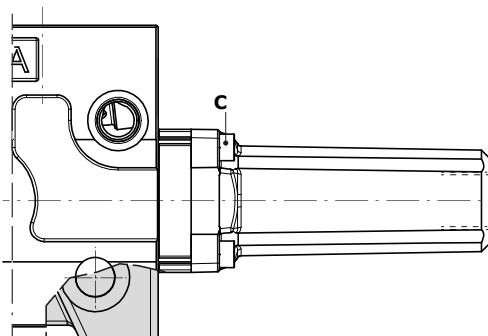
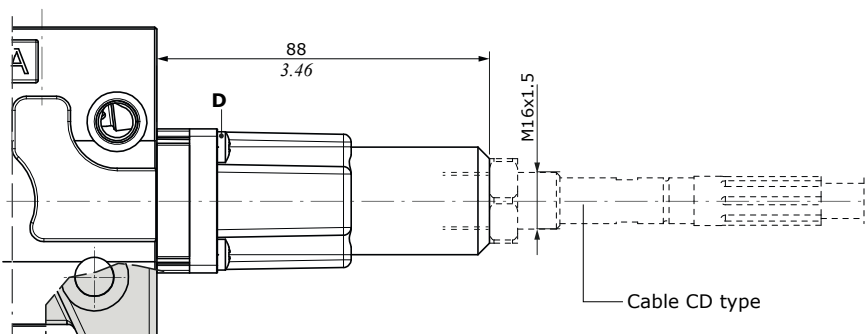
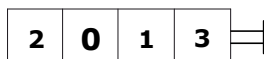
Flexible cable control arrangement.
Available with aluminium cap



With aluminium cap;
dimensions are the same of standard type

A8/Z1 type

As A8 type, 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)

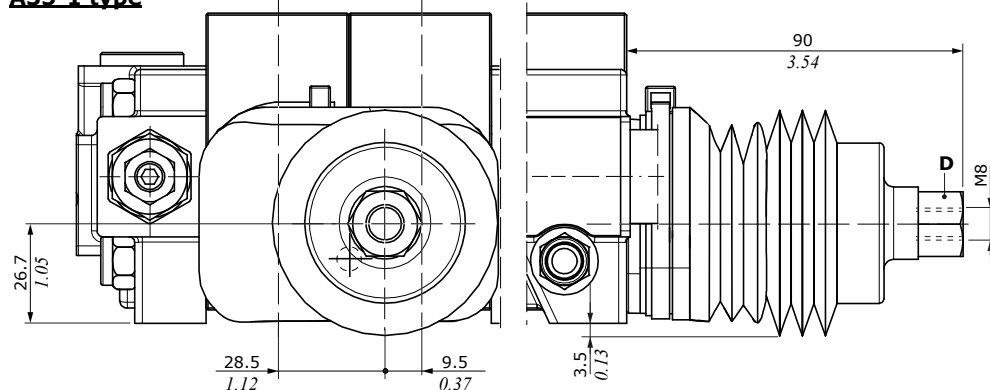
Working section

A side controls

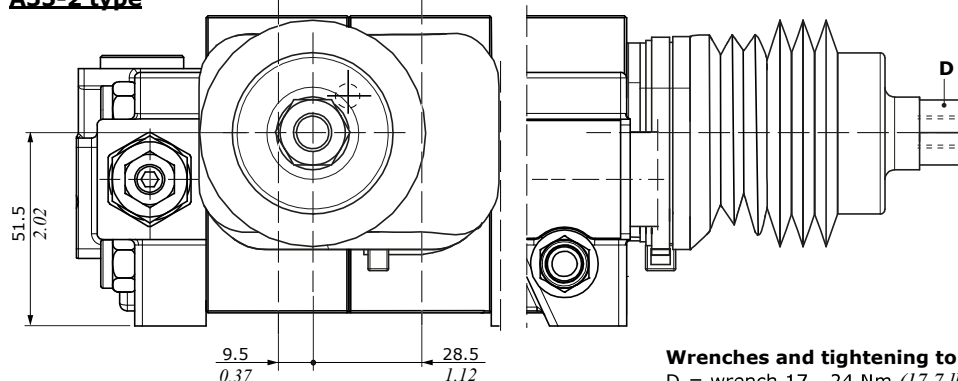
Joystick control

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

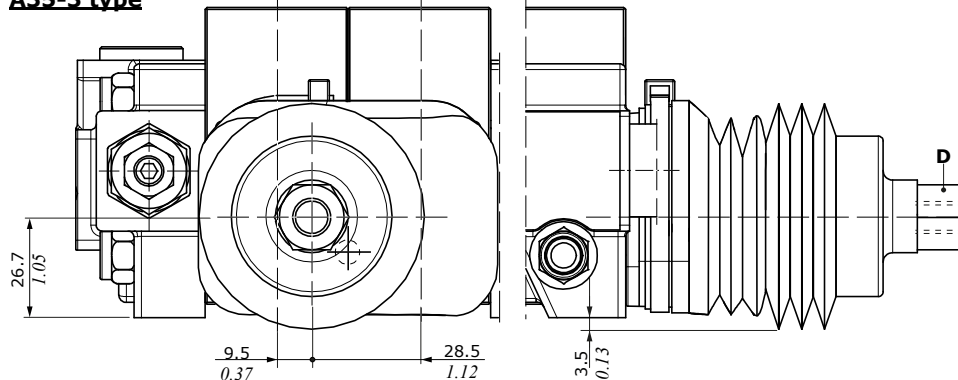
A35-1 type



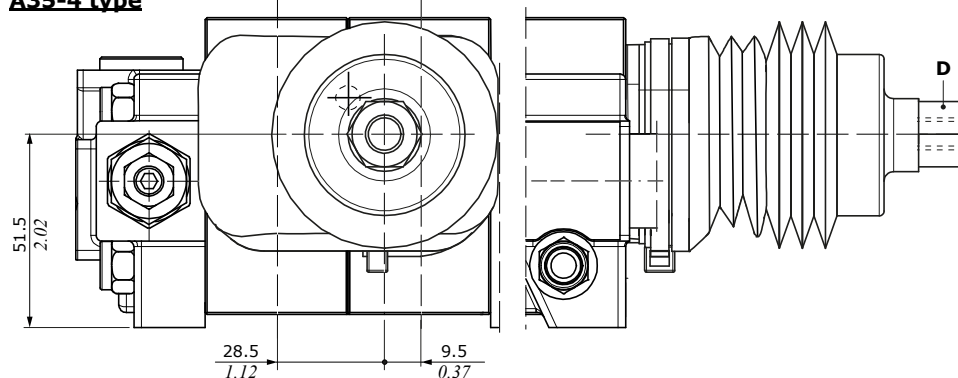
A35-2 type



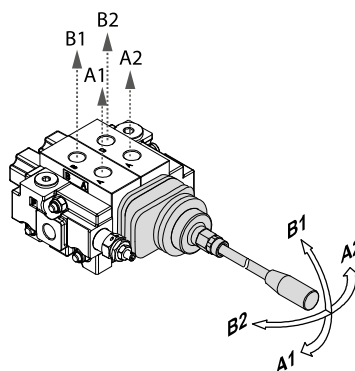
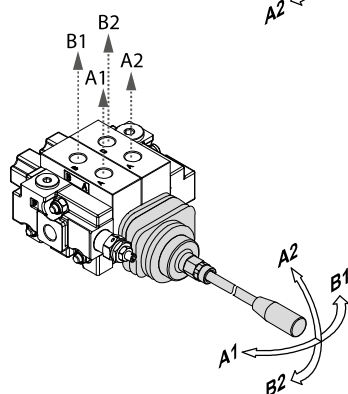
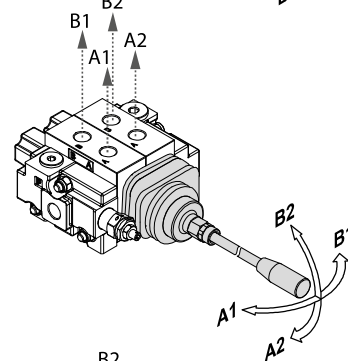
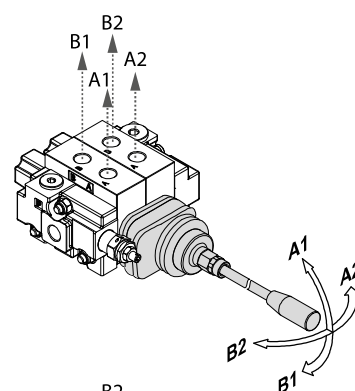
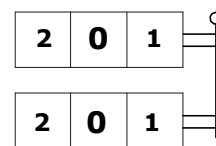
A35-3 type



A35-4 type



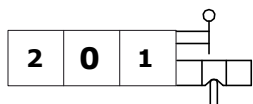
Wrenches and tightening torques
D = wrench 17 - 24 Nm (17.7 lbft)



A side controls

With spool position microswitch, with lever**N1-A1 type**

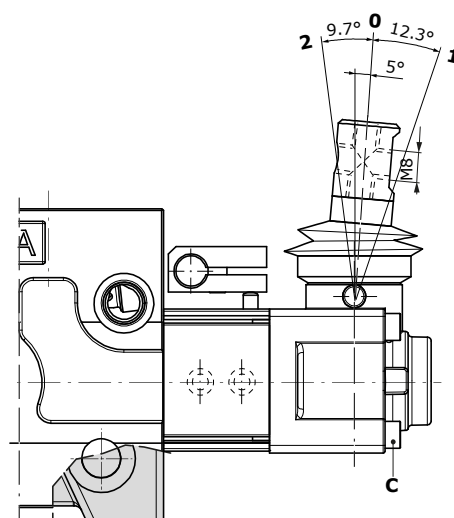
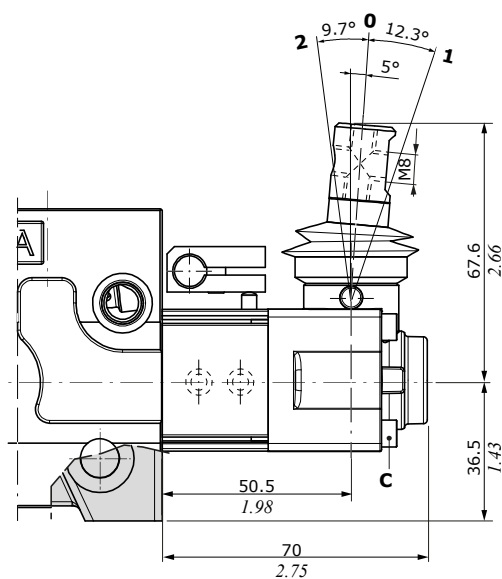
Micro operation in position 1 and 2.
Available with aluminium lever box

**N1A-A1 type**

Micro operation in
position 1

**N1B-A1 type**

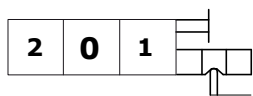
Micro operation in
position 2



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

With spool position microswitch, with cap**N1-A3 type**

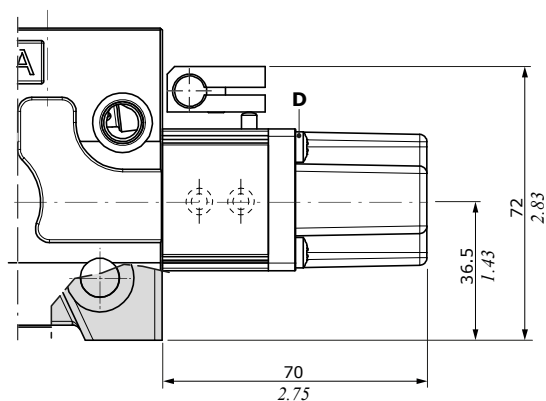
Micro operation in position
1 and 2

**N1A-A3 type**

Micro operation in
position 1

**N1B-A3 type**

Micro operation in
position 2

**Wrenches and tightening torques**

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

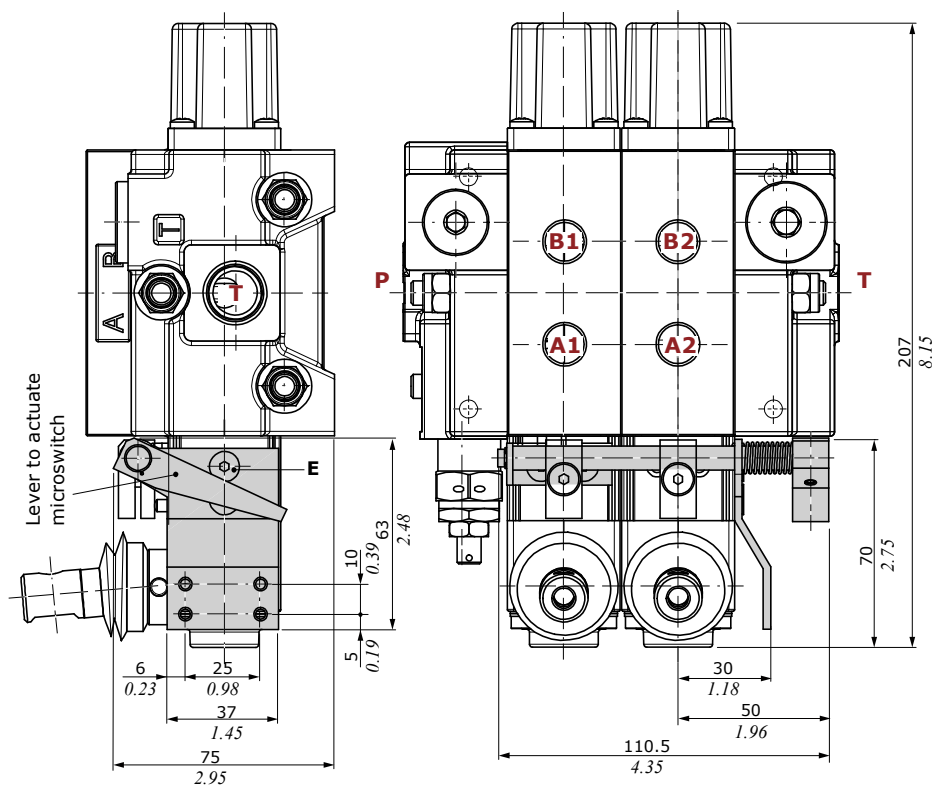
D = cross-head - 3 Nm (2.2 lbf ft)

Working section

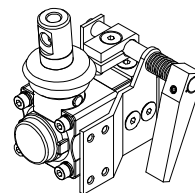
A side controls

With spool position microswitch

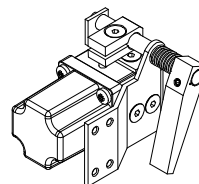
Microswitch assembly kit for 2 working section (N1-A1 type)



with cap



with lever box



Wrenches and tightening torques

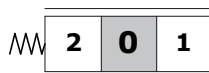
E = allen wrench 3 - 6.6 Nm (4.8 lbft)

B side controls

With spring return control

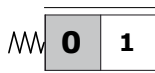
M1 type

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



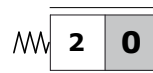
M2 type

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



M3 type

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



M1/01 type

As M1 type,
for joystick control.
Available with aluminium cap

M1/05 type

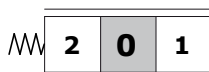
As M1 type,
for series spool

M1/06 type

As M1/05 type,
with aluminium cap

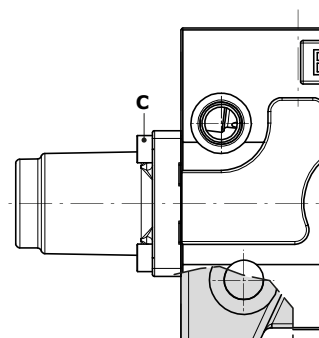
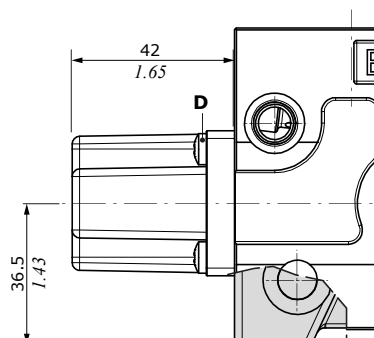
M1/07 type

As M1 type, for
joystick series spool.
Available with aluminium cap



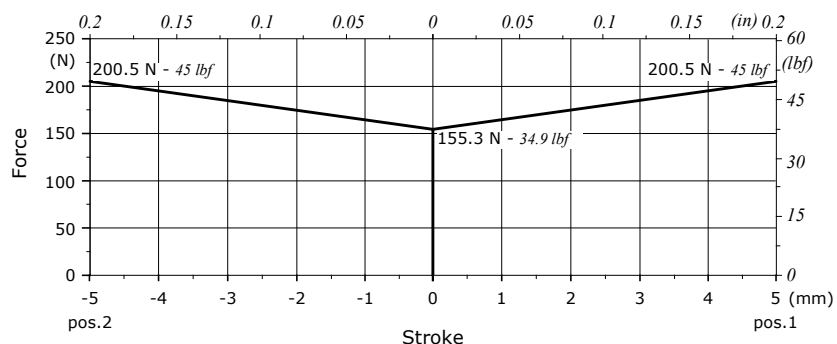
Wrenches and tightening torques

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)



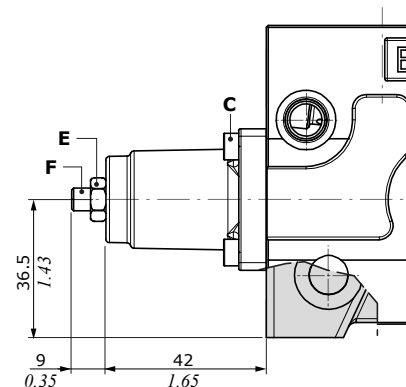
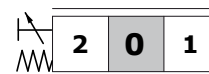
With aluminium cap;
dimensions are the same of standard type

M1 control type - Force vs. Stroke diagram



M1/02 type

As M1 type, with stroke limiter



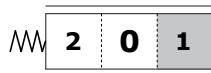
Working section

B side controls

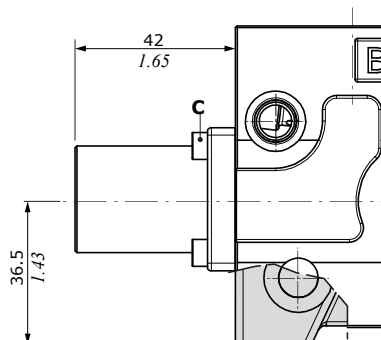
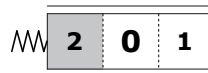
With spring return control

M4 types

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



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



Wrenches and tightening torques

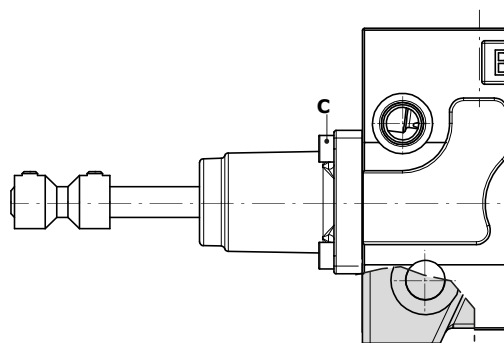
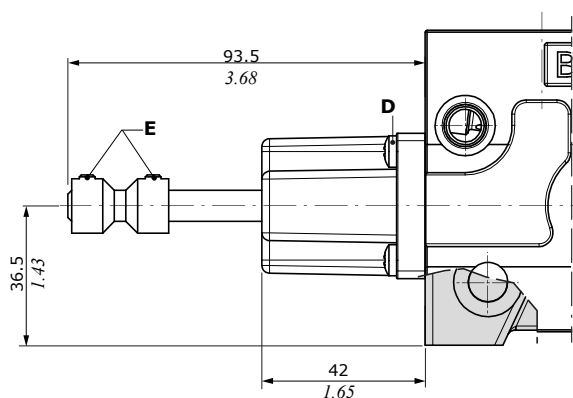
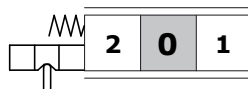
C = allen wrench 3 - 3 Nm (2.2 lbf ft)

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

E = allen wrench 3 - 5 Nm (3.68 lbf ft)

M1-B1 type

3 position, microswitch arrangement.
Available with aluminium cap



With aluminium cap;
dimensions are the same of standard type

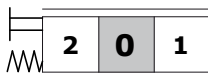
Working section

B side controls

With spring return control

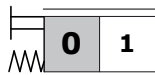
M1-U1 type

3 position, with M8 male thread external pin



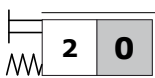
M2-U1 type

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



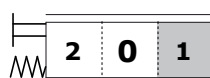
M3-U1 type

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



M4-U1 type

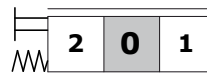
2 position (1-2), with M8 male thread external pin



With flexible cable control arrangement

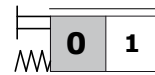
M1-U2 type

3 position, spring return in neutral position



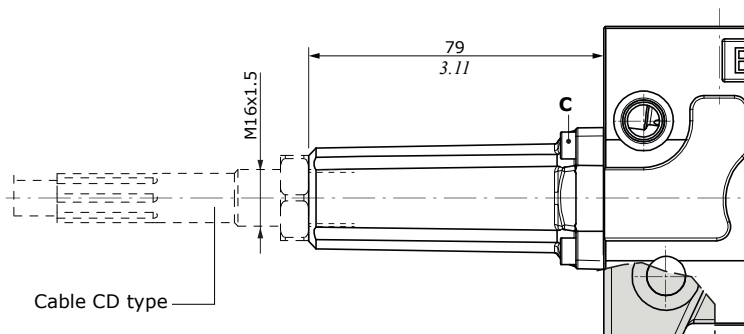
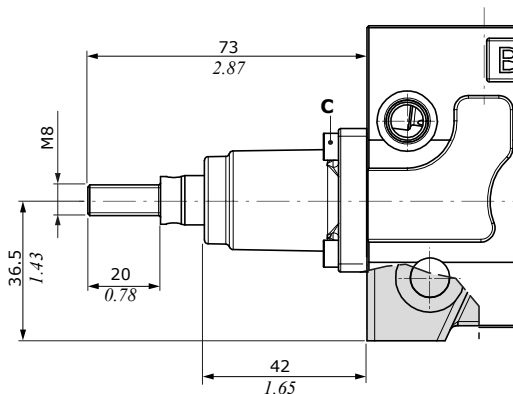
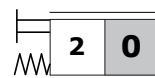
M2-U2 type

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



M3-U2 type

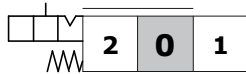
2 position (0-2), spring return in neutral position



With detent control

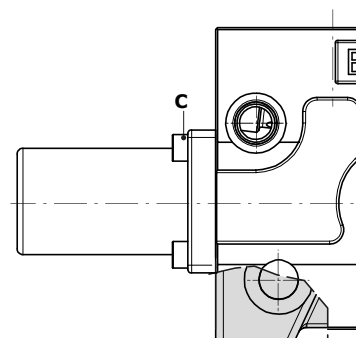
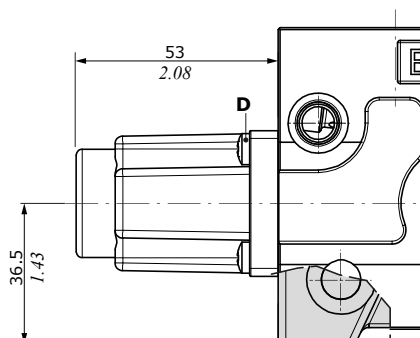
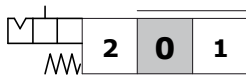
R1 type

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

Wrenches and tightening torques

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

Working section

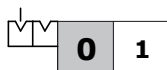
B side controls

With detent control

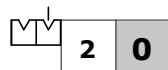
R3 type
3 position,
detent in all position.
Available with aluminium cap



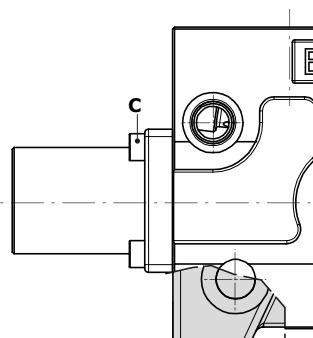
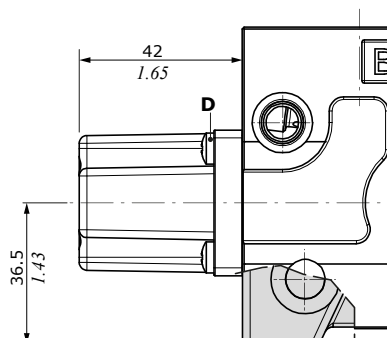
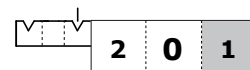
R4 type
2 position,
detent in position 0-1.
Available with aluminium cap



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



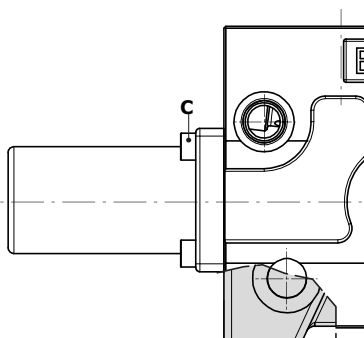
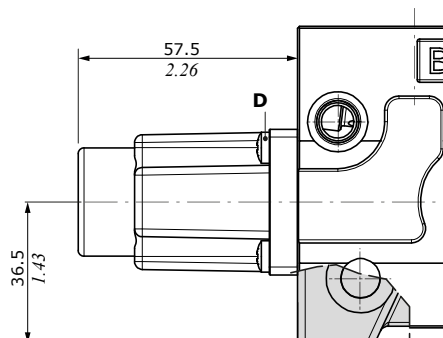
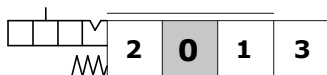
With aluminium cap;
dimensions are the same of standard type

Wrenches and tightening torques

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

D = cross-head - 3 Nm (2.2 lbf^t)

R8 type
4 position, detent in 4th position, for 116 floating spool type.
Available with aluminium cap



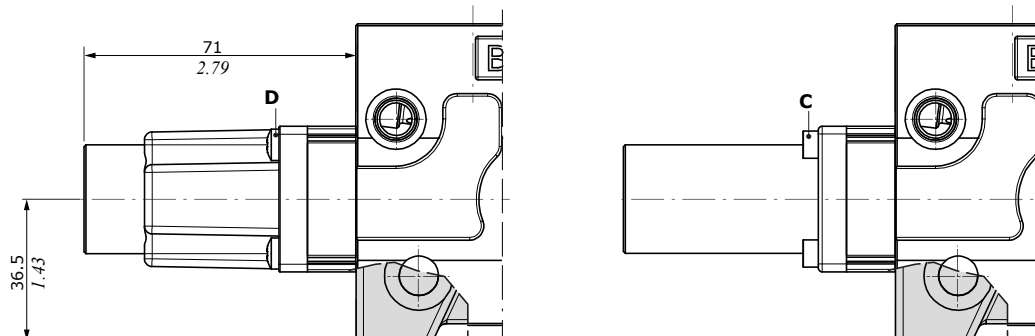
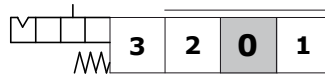
With aluminium cap;
dimensions are the same of standard type

B side controls

With detent control

R10/Z1 type

4 position, detent in 4th position, for 126 floating spool type.
Available with aluminium cap

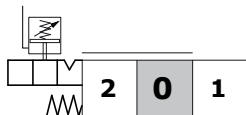


With aluminium cap;
dimensions are the same of standard type

With detent control and kick out function

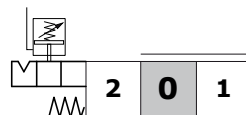
R1K type

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



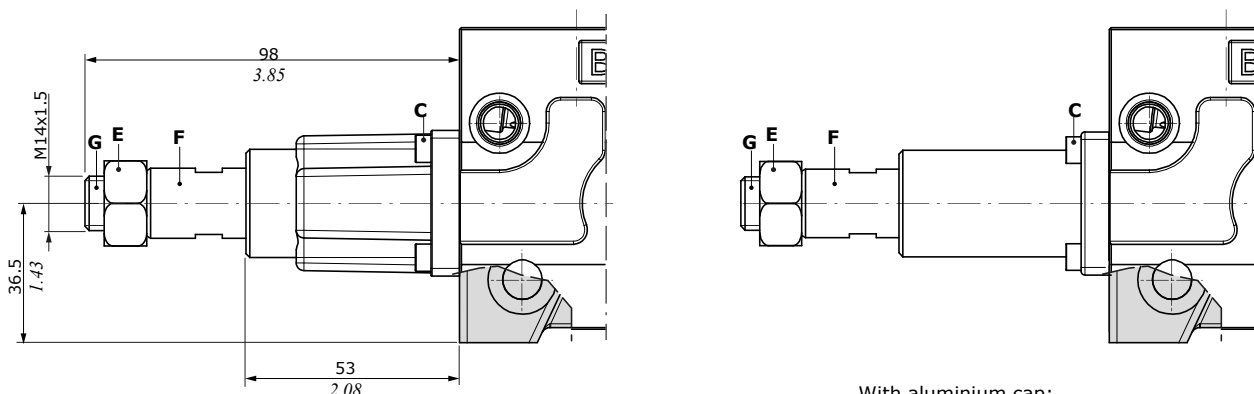
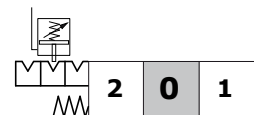
R2K type

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

Wrenches and tightening torques

- C = allen wrench 3 - 3 Nm (2.2 lbf·ft)
- D = cross-head - 3 Nm (2.2 lbf·ft)
- E = wrench 22 - 32 Nm (23.6 lbf·ft)
- F = wrench 16
- G = allen wrench 10 - 32 Nm (23.6 lbf·ft)

Working section

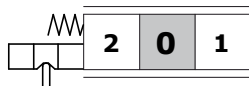
B side controls

With spool position microswitch

M1-N1 type

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

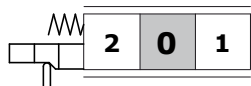
Available with aluminium cap



M1-N1A type

3 position, micro operation in position 1.

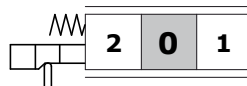
Available with aluminium cap



M1-N1B type

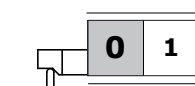
3 position, micro operation in position 2.

Available with aluminium cap



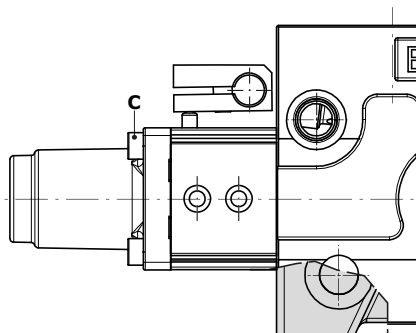
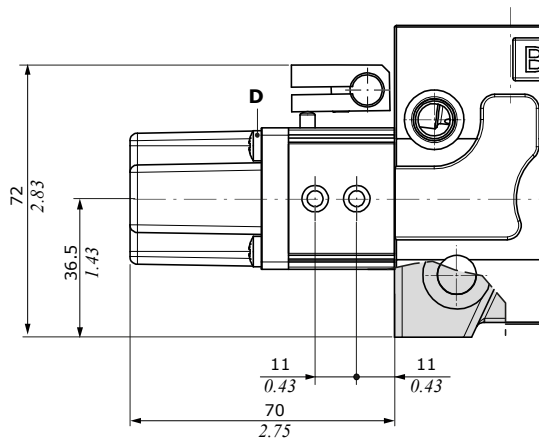
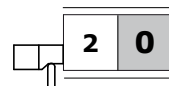
M2-N1 type

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



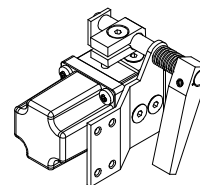
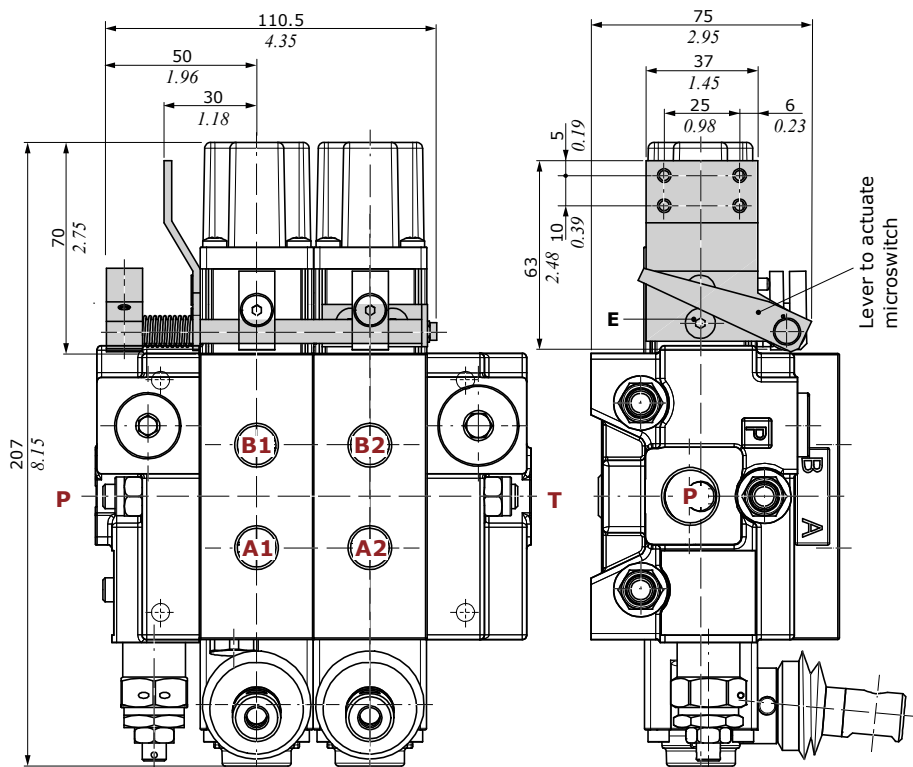
M3-N1 type

2 pos. (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)



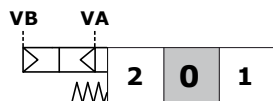
Wrenches and tightening torques

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)

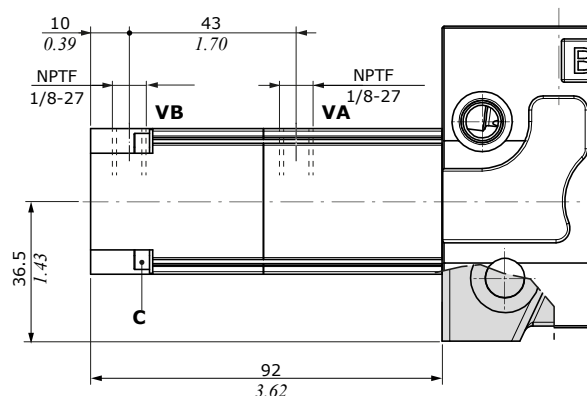
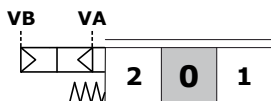
B side controls

With pneumatic control

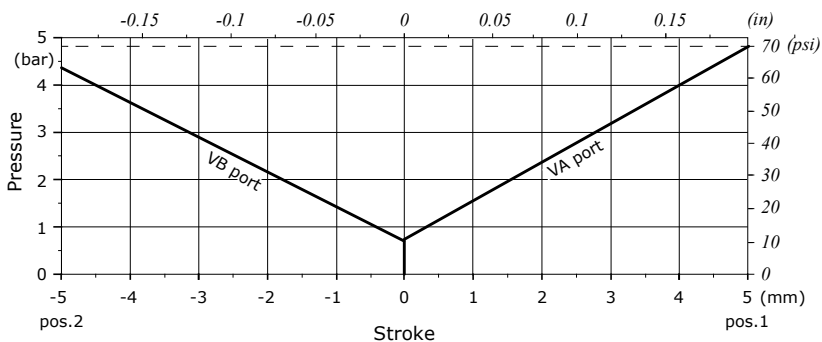
P1NW type ON/OFF control



P1NPW type Proportional control



Proportional pilot pressure curves



Operating features

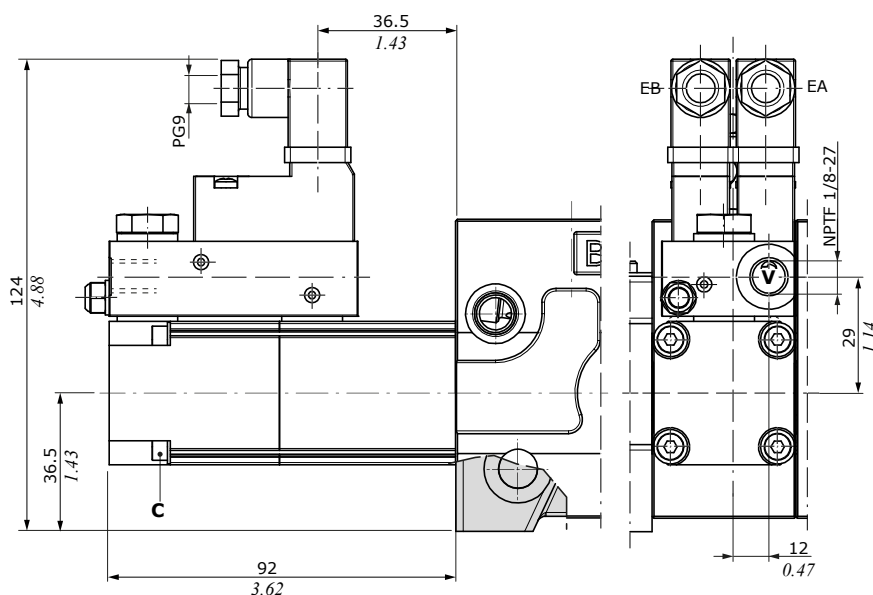
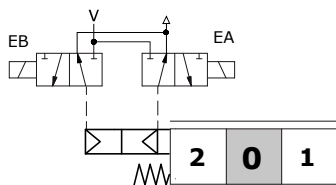
Pilot pressure..... : min. 5 bar (72.5 psi) - max. 30 bar (435 psi)
Pilot volume..... : 4 cm³/min (0.24 in³/min)

Wrenches and tightening torques

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

With 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 lbft)

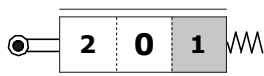
Working section

A+B side controls

With cam control

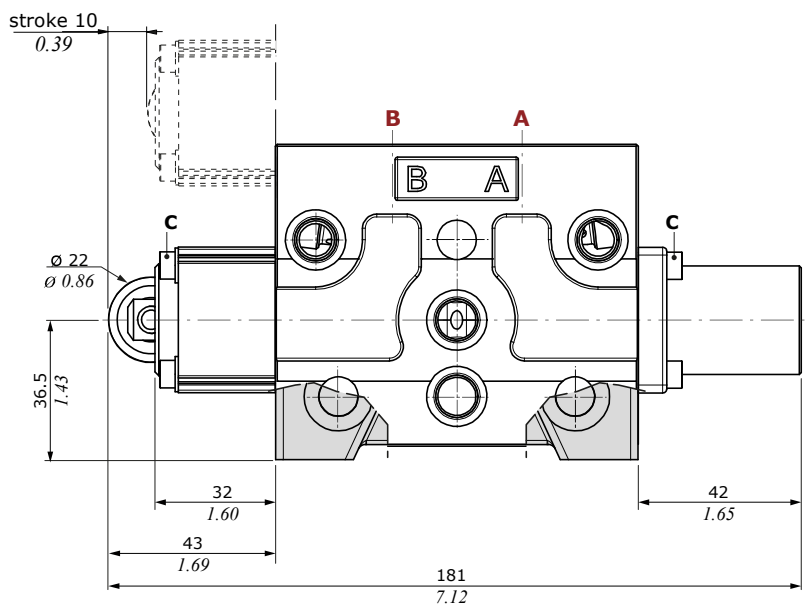
C2 type

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



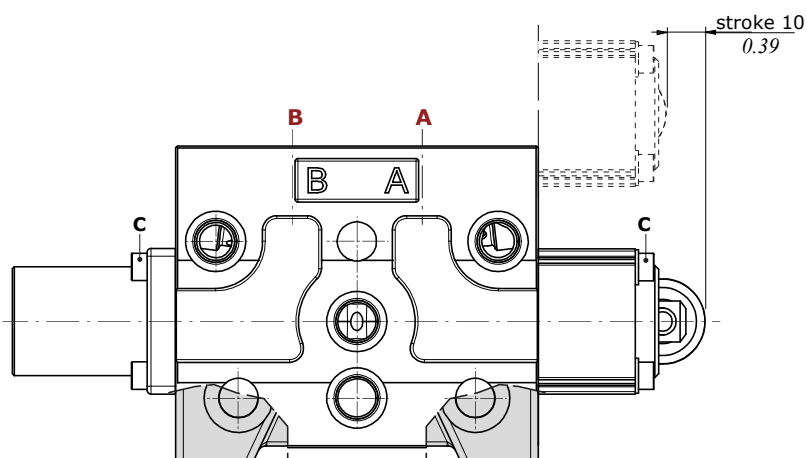
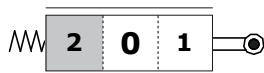
Wrenches and tightening torques

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



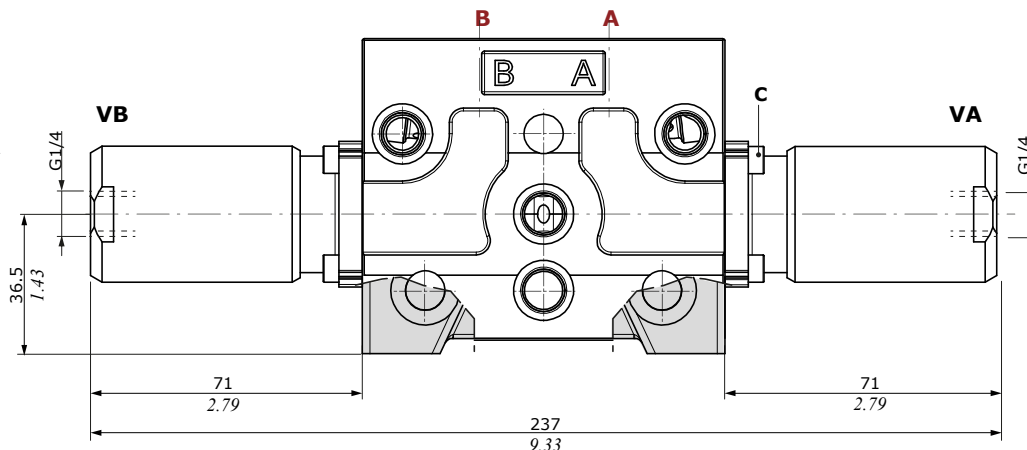
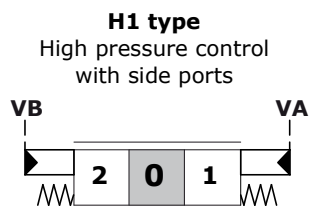
C3 type

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



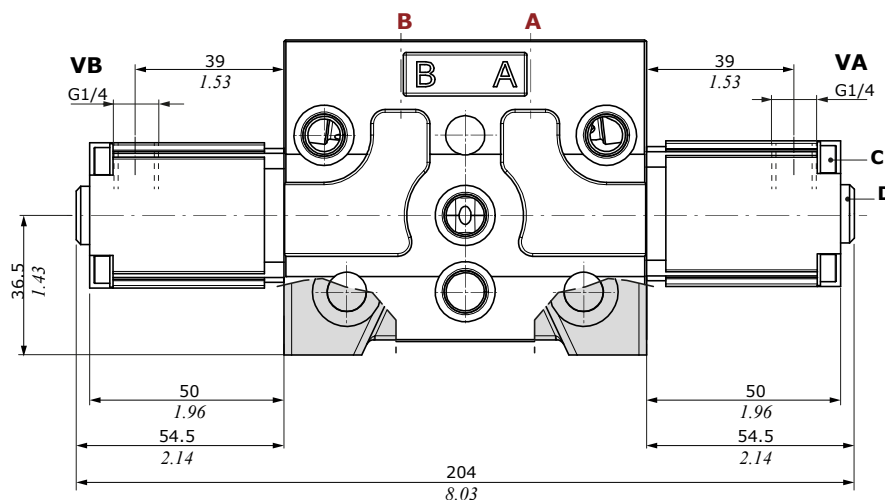
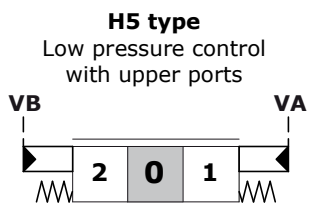
A+B side controls

With proportional hydraulic controls



Operating features

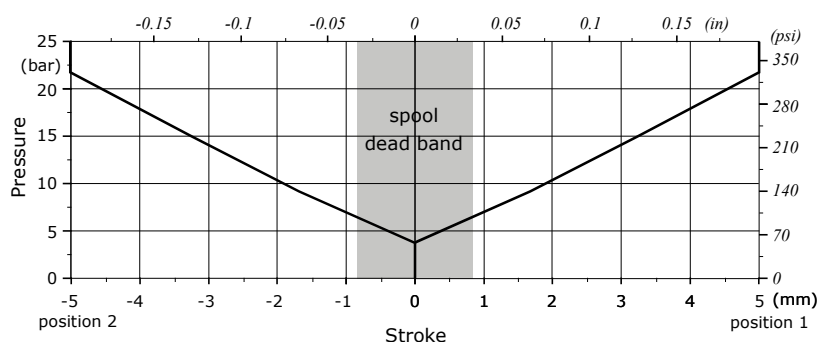
Pilot pressure..... : min. 16 bar (232 psi) - max. 350 bar (5070 psi)



Operating features

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

Stroke vs. Pressure diagram for H5 type control



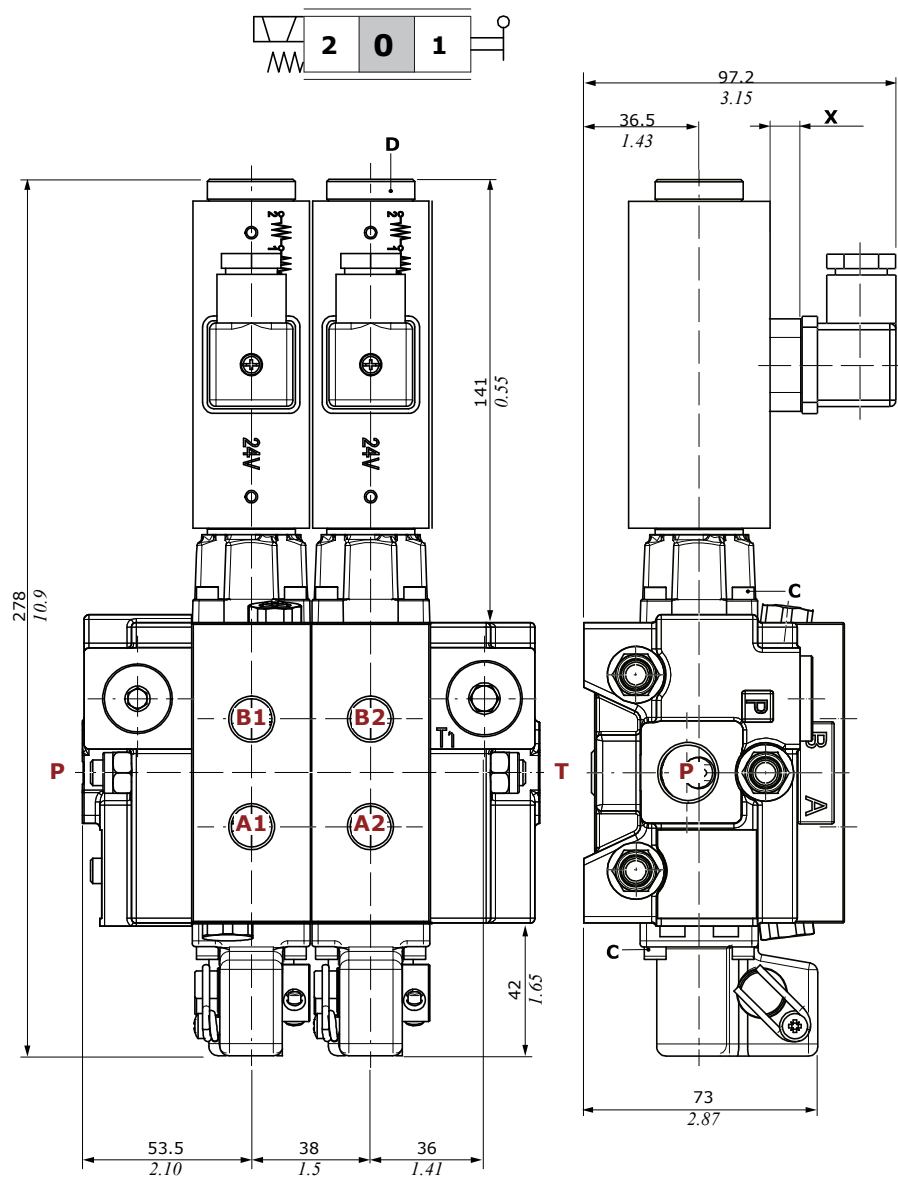
Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbft)
D = allen wrench 4 - 9.8 Nm (7.2 lbft)

Working section

Direct solenoid control

D41 type: ON/OFF one side



D41 coil

Nominal voltage	12 VDC 24 VDC
Nominal voltage tolerance	±10%
Power rating	58 W
Insulance	Class H
Weather protection	IP65

Connector type: ISO4400 3P+T-PG11

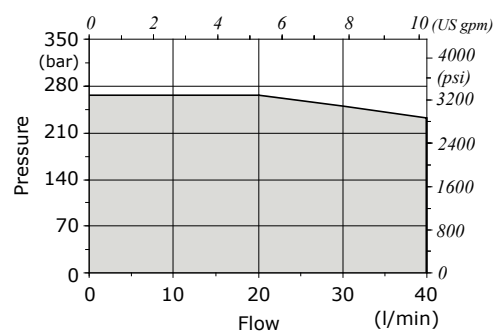
X

coil type	mm - in
ZEB012 coil	10 - 0.39
ZEB024 coil	

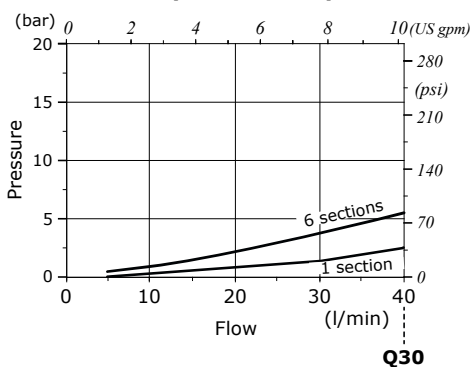
Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbf)
D = manual tightening - 6.6 Nm (7.2 lbf)

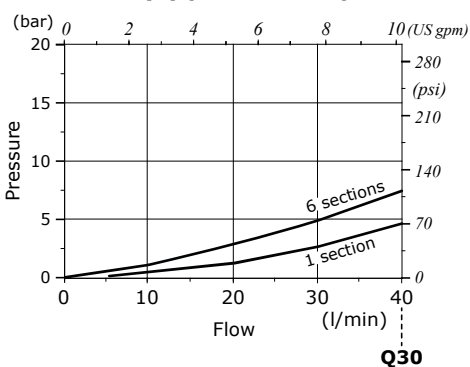
Dynamic conditions



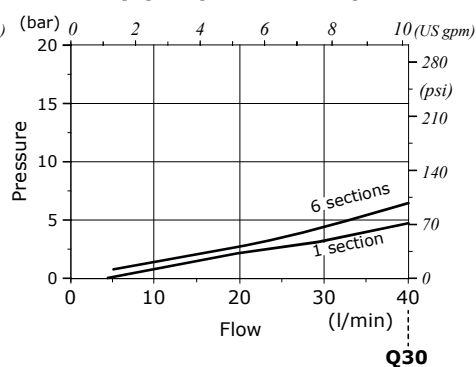
P⇒T pressure drops



P⇒A(B) pressure drops

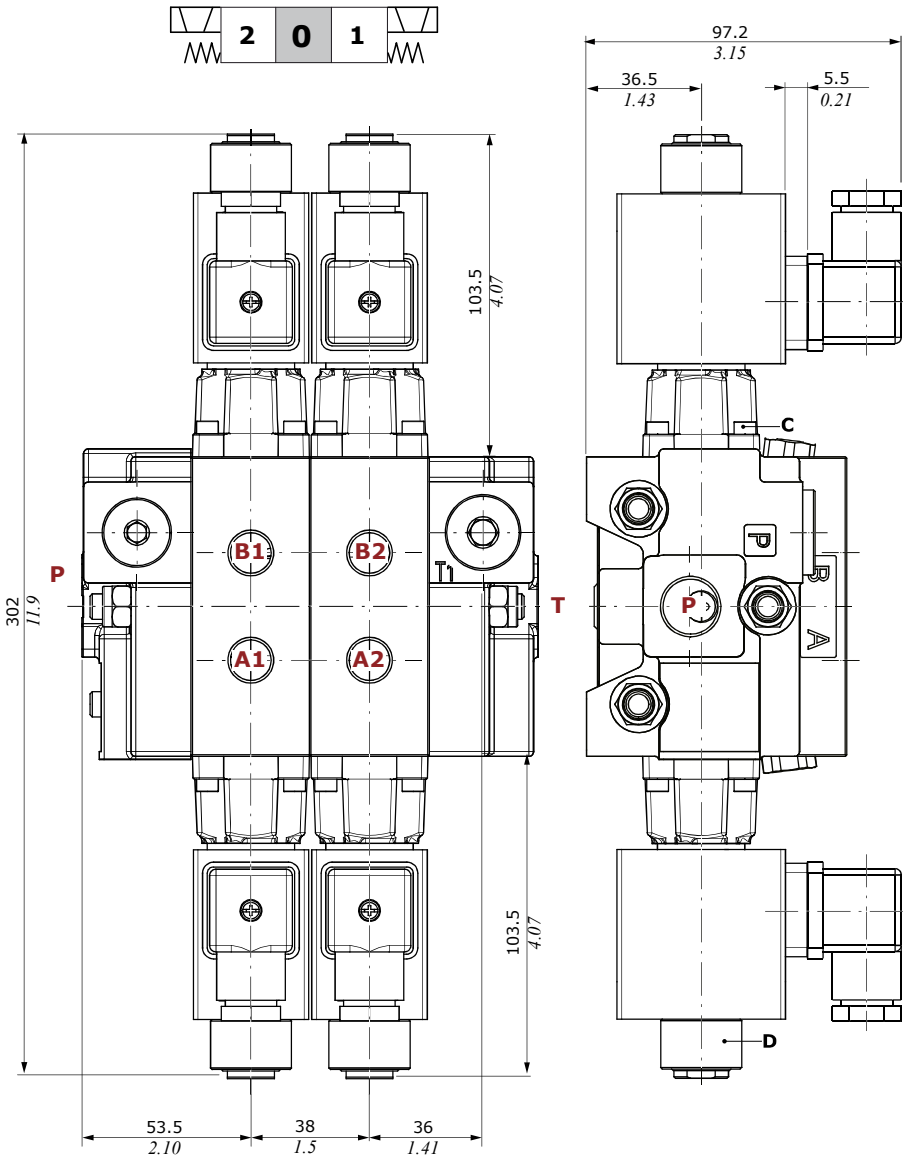


A(B)⇒T pressure drops



Direct solenoid control

D9 type: ON/OFF two side

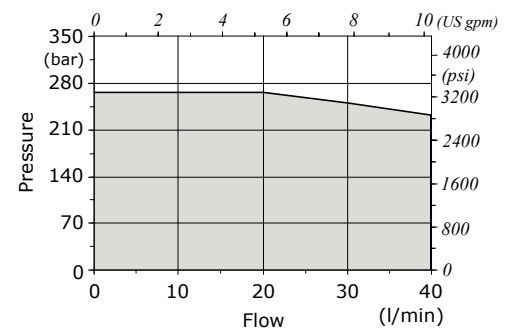


D9 coil

Nominal voltage	12 VDC 24 VDC
Nominal voltage tolerance	±10%
Power rating	58 W
Insulance	Class H
Weather protection	IP65

Connector type: ISO4400 3P+T-PG11

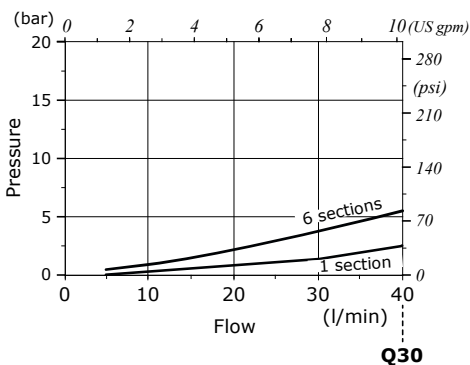
Dynamic conditions



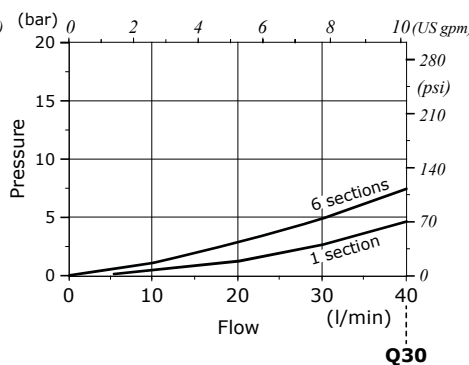
Wrenches and tightening torques

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

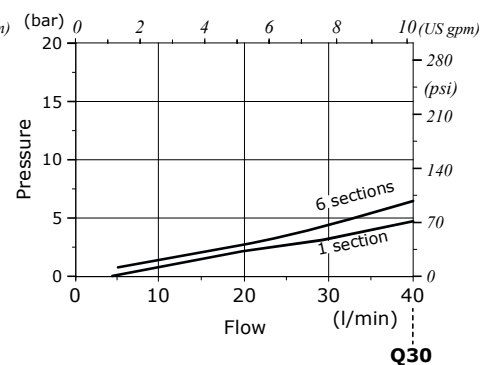
P⇒T pressure drops



P⇒A(B) pressure drops



A(B)⇒T pressure drops



Auxiliary valve configuration

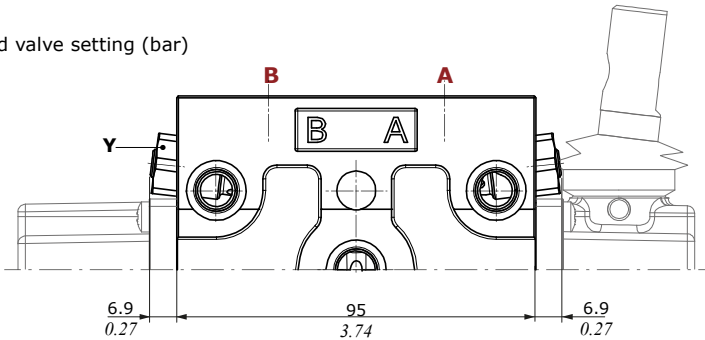
Dimensional data, hydraulic circuits and performance data

Description example

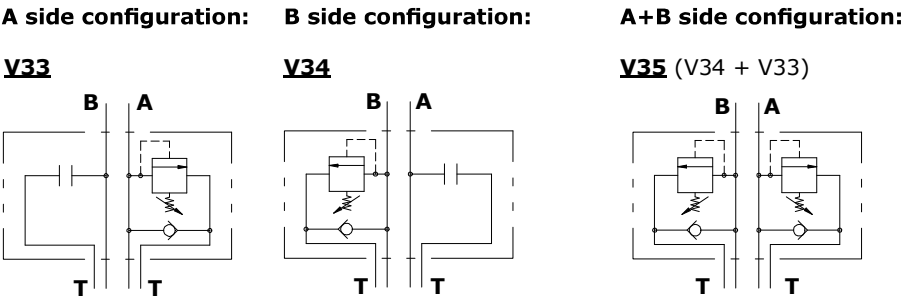
Q30 / 1 / ... / 103 - A1 - M1 - **V32(N)120** / ...

aux valve spring type and valve setting (bar)

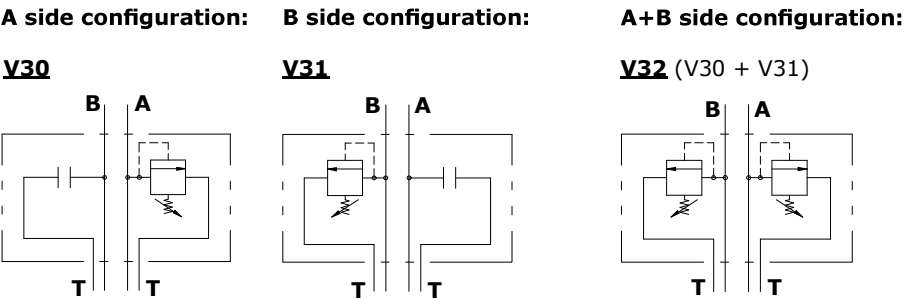
Wrenches and tightening torques
Y = wrench 16 - 20 Nm (14.7 lbf^t)



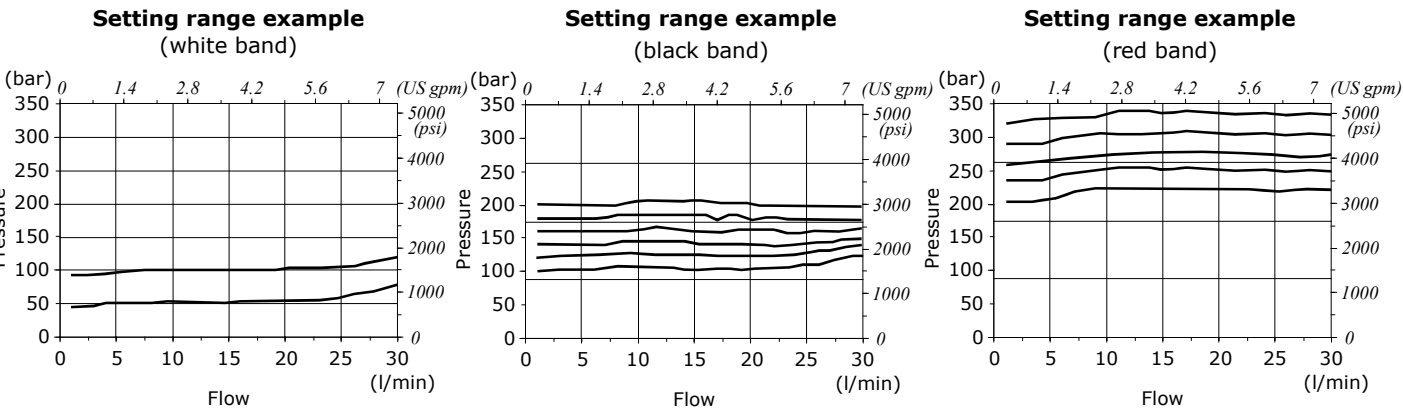
Antishock/anticavitation valve example



Antishock valve example



Spring type	Setting ranges (bar - psi)
B (white)	From 50 to 100 - from 725 to 1450
N (black)	From 101 to 200 - from 1460 to 2900
R (red)	From 201 to 350 - from 2910 to 5100

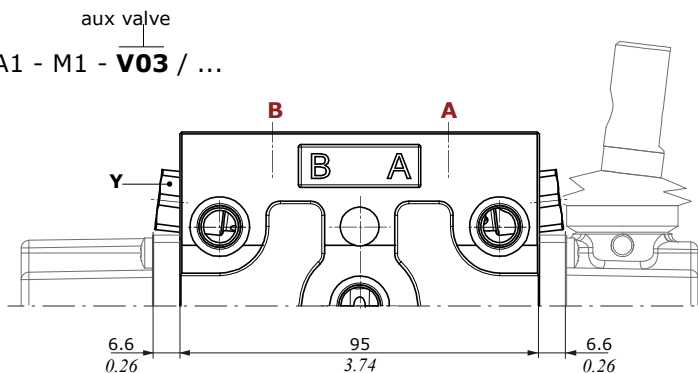


Auxiliary valve configuration

Dimensional data and hydraulic circuits

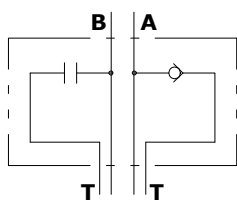
Anticavitation valve example

Q30 / 1 / ... / 103 - A1 - M1 - **V03** / ...

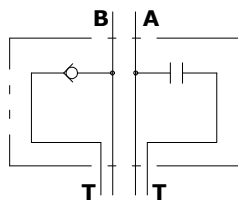


Wrenches and tightening torques
Y = wrench 16 - 20 Nm (14.7 lbf ft)

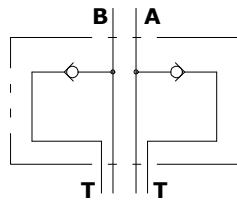
A side configuration:

V04

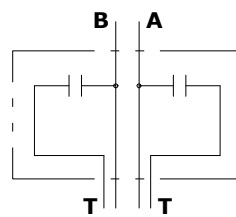
B side configuration:

V05

A+B side configuration:

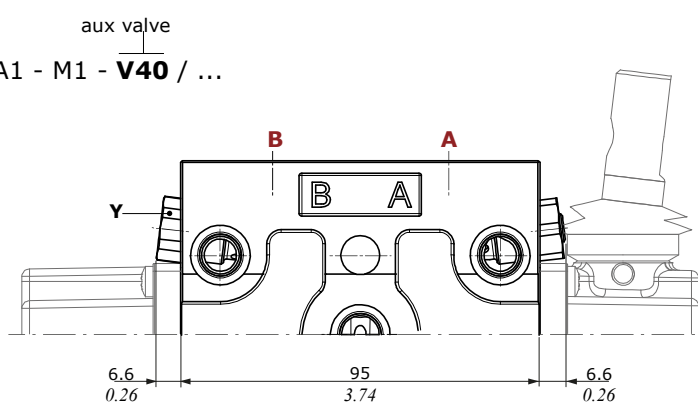
V03 (V04 + V05)

Plug valve:

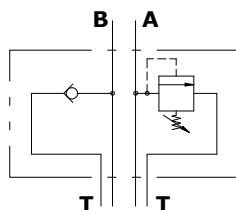
VC

Antishock and anticavitation combining valves example

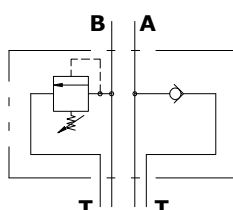
Q30 / 1 / ... / 103 - A1 - M1 - **V40** / ...



A side configuration:

V40 (V30 + V05)

B side configuration:

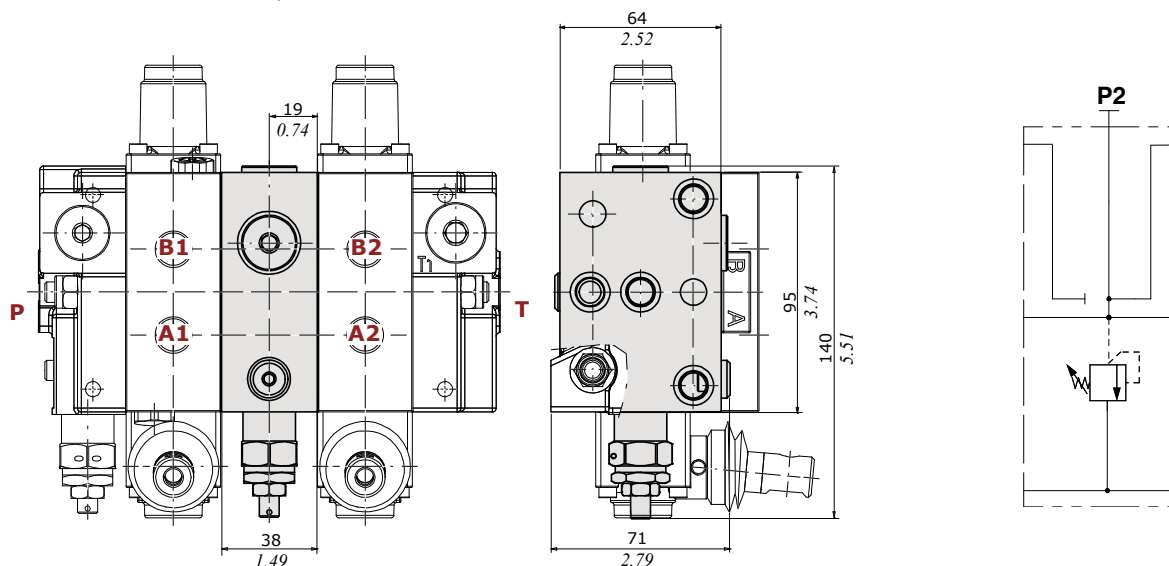
V41 (V31 + V04)

Intermediate section

Dimensional data and hydraulic circuit

E50 type

Intermediate inlet section with pressure relief valve

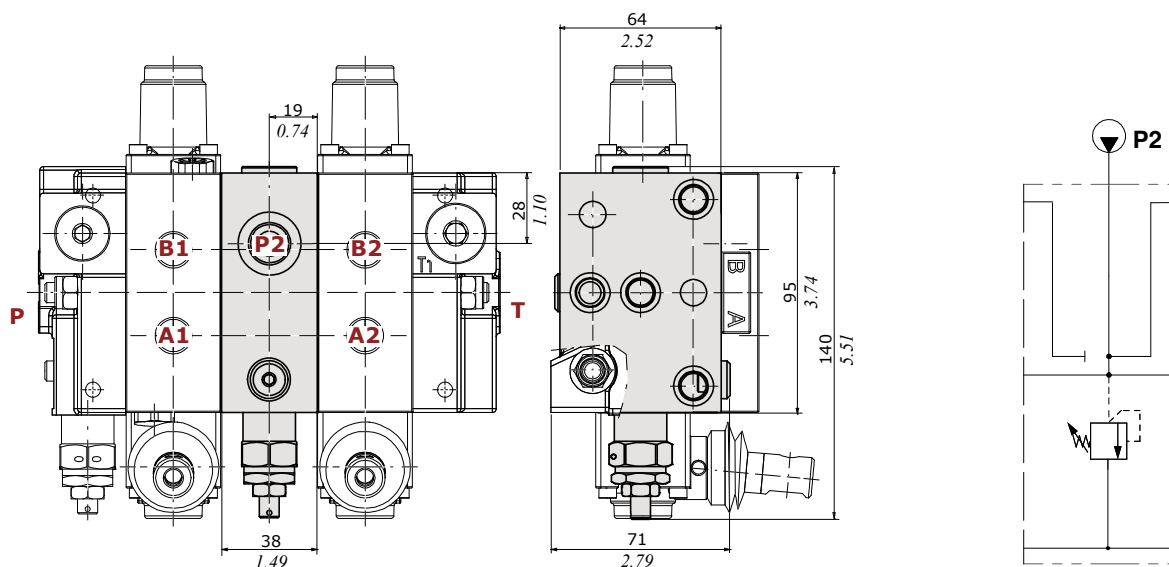


Description example: Q30/2/F7S(N150)/103-A1-M1.VC/**E50(N150)**/103-A1-M1/F3D-S

intermediate section spring type and valve setting (bar)

E53 type

Intermediate inlet section with pressure relief valve and P2 port open



Description example: Q30/2/F7S(N150)/103-A1-M1.VC/**E53(N150)**/103-A1-M1/F3D-S

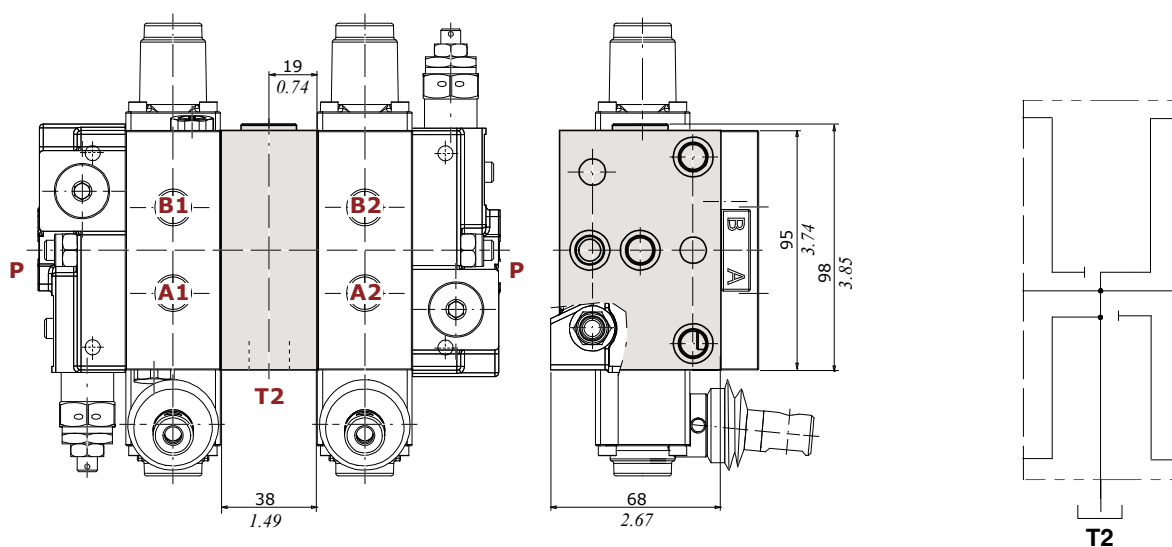
intermediate section spring type and valve setting (bar)

Intermediate section

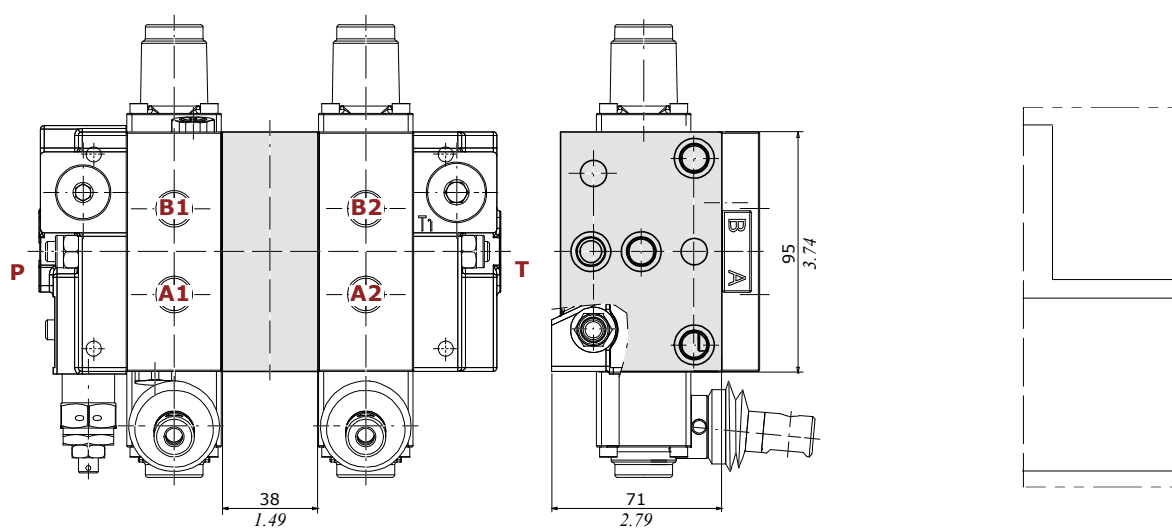
Dimensional data and hydraulic circuit

E51 type

Intermediate outlet section, T2 port open

Description example: Q30/2/F7S(N150)/103-A1-M1.VC/**E51**/103-A1-M1/F3D-Sintermediate
section**E61 type**

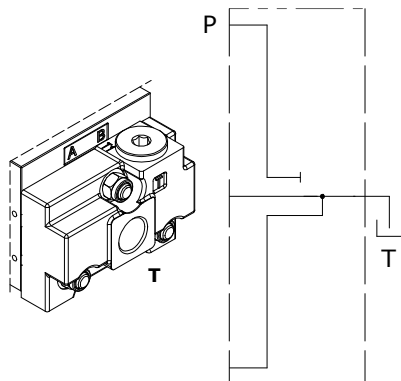
Intermediate spacer section

Description example: Q30/2/F7S(N150)/103-A1-M1.VC/**E61**/103-A1-M1/F3D-Sintermediate
section

Outlet section

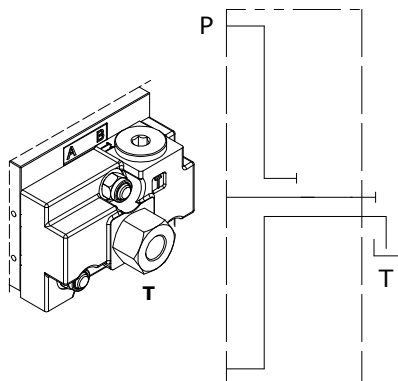
F3D configuration

Open center configuration



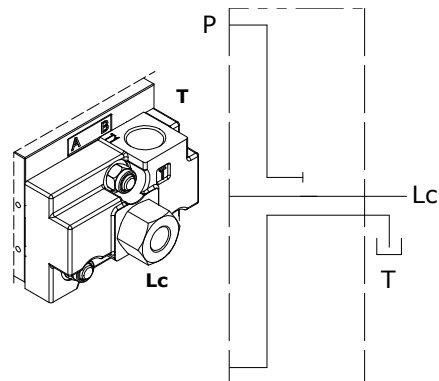
F16D configuration

Closed center configuration

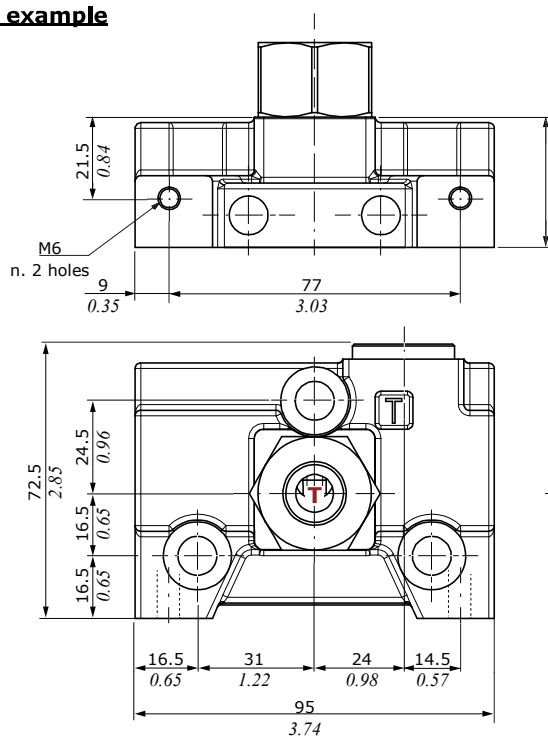


F6D configuration

Carry-over configuration



F16D configuration example



Wrenches and tightening torques

E = allen wrench 8 - 42 Nm (30.9 lbft)

F = wrench 30 - 42 Nm (30.9 lbft)

