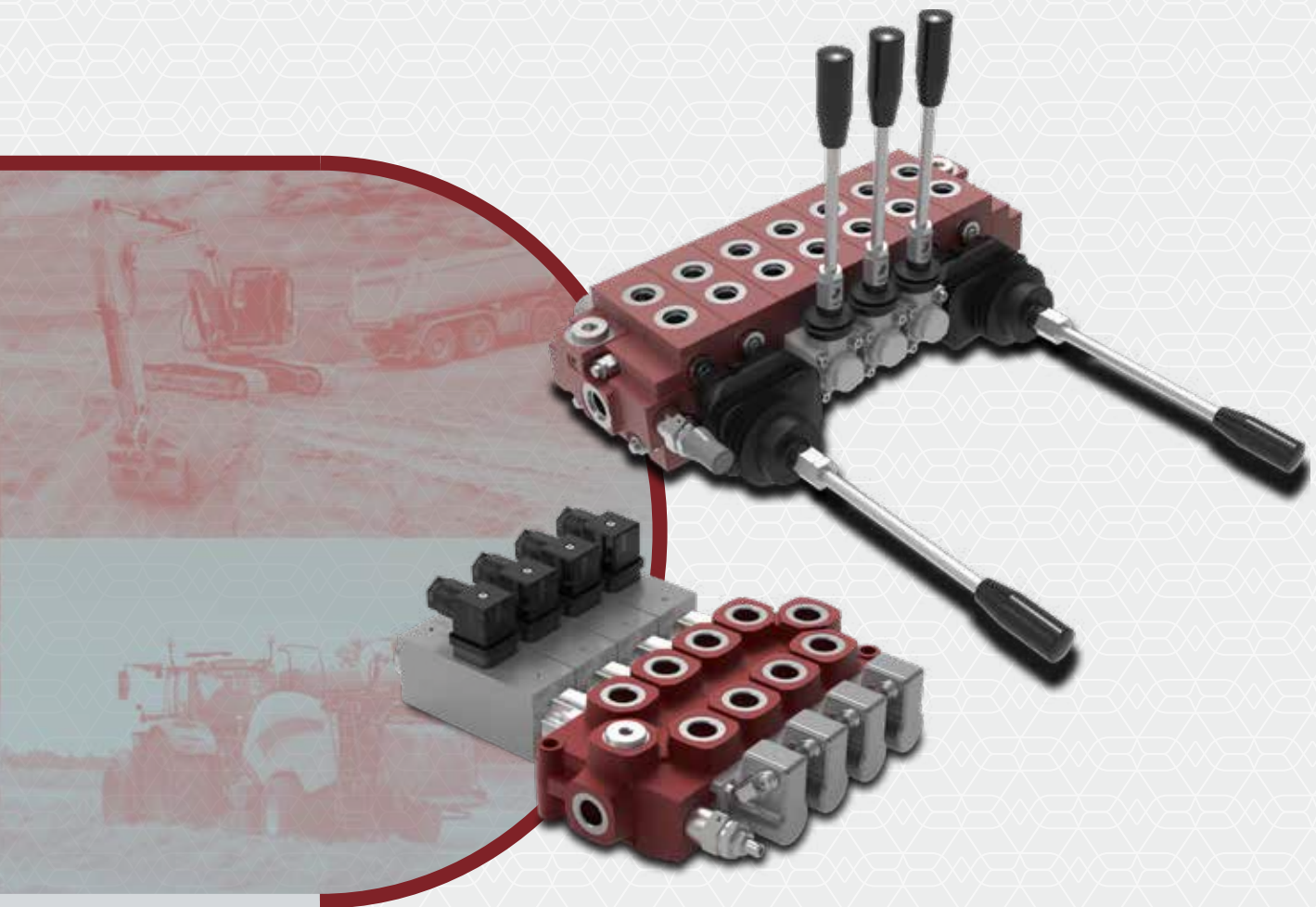


Monoblock and Sectional control valves range
Q series and GSV50



PHC



DIRECTIONAL VALVES

Features

Simple, compact and heavy duty designed monoblock/sectional valves from 1 to 10 sections

- Available with parallel, tandem or series circuit.
- For open and closed center hydraulic systems, optional carry-over port.
- Working sections with and without port valves arrangement.
- Available with manual, pneumatic, electropneumatic, hydraulic, direct solenoid and electrohydraulic on-off controls.

Additional information

This catalogue shows the product in the most standard configurations.
Please, contact Sales Dpt. for more detailed information or special request.

WARNING!

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

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

5th edition April 2025

Content

Monoblock directional control valves

- **Q35** page 5
- **Q25 - Q45** page 19
- **Q75 - Q95** page 51

Sectional directional control valves

- **Q30** page 77
- **GSV50** page 125
- **Q80** page 169
- **Q130** page 207

- **Accessories**

- Coils and connectors page 243

- **Installation and Maintenance**

- Main rules page 246



Q35

Monoblock directional valve

- Simple, compact and heavy duty designed monoblock valve
- Only one section for open center hydraulic systems
- Only mechanical controls available

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	40 l/min - (10.6 Us gpm)	
Max. pressure	300 bar (4300 psi)	
Max. back pressure on outlet T port (*)	25 bar (360 psi)	
Number sections	1	
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 -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	from -20°C to 50°C - from -4 °F to 122 °F	

NOTE - For different conditions please contact our Sales Department.

(*): On request max back pressure allowable is 180 bar (2610 psi)

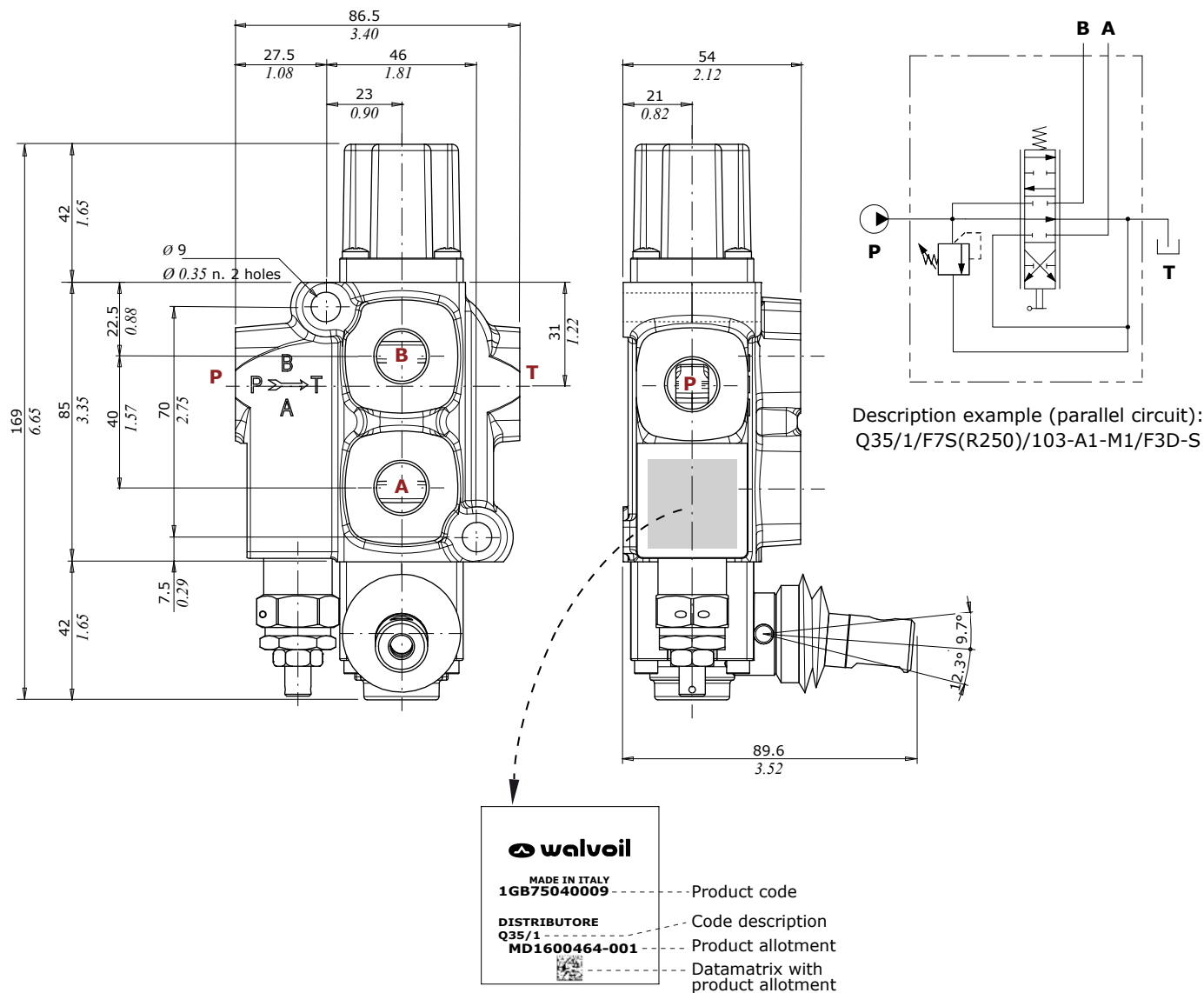
REFERENCE STANDARD

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

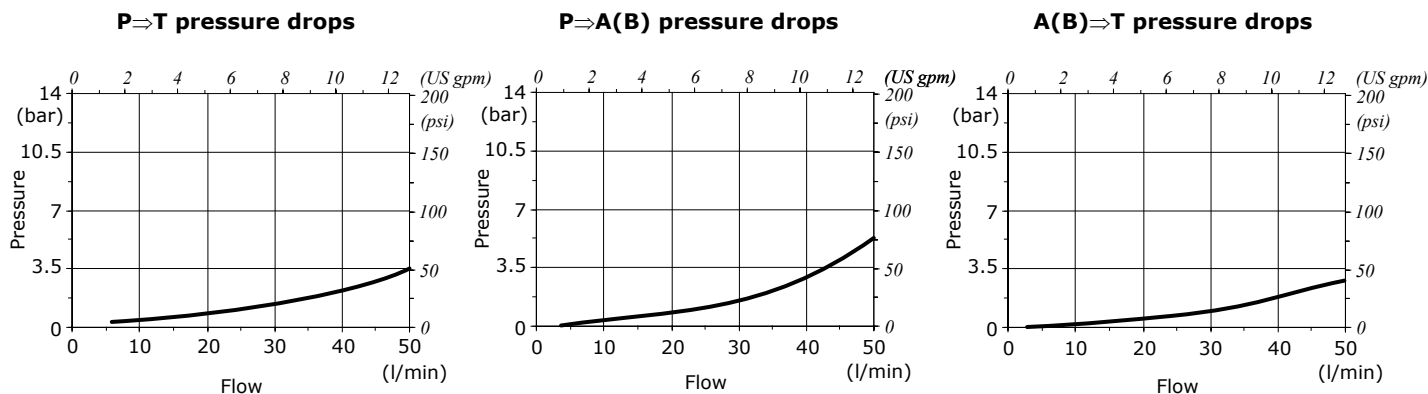
PORT THREADING

PORTS	BSP	UN-UNF
P Inlet	G 3/8	3/4-16 (SAE 8)
A and B ports	G 3/8	3/4-16 (SAE 8)
T Outlet	G 3/8	3/4-16 (SAE 8)

Dimensional data and hydraulic circuit



Performance data



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

Parts ordering codes

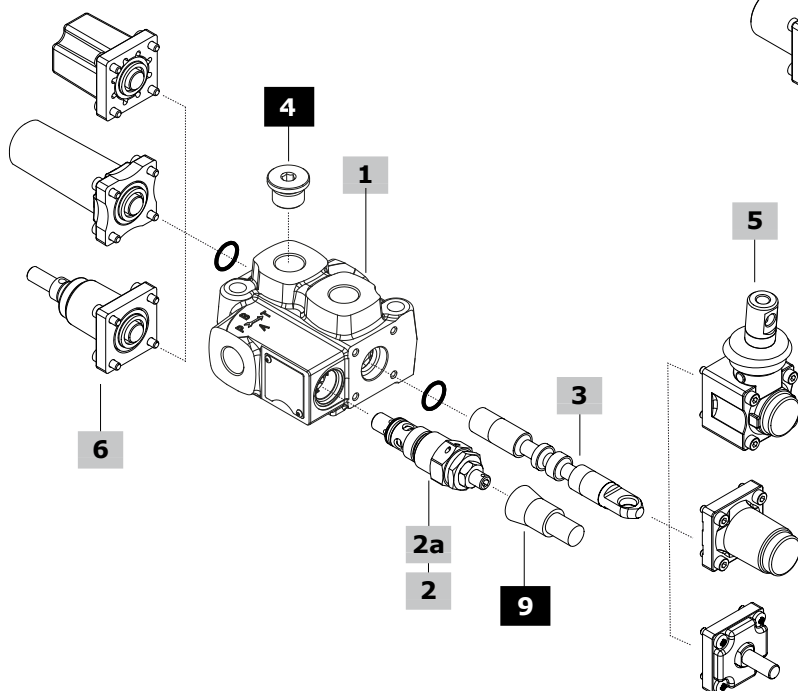
Mechanical control valve configuration example

valve setting (bar)

Q35 / 1 / F7S (R250) / 103 - A1 - M1 / F3D - S

1 2 2a 3 5 6 open center aluminium controls

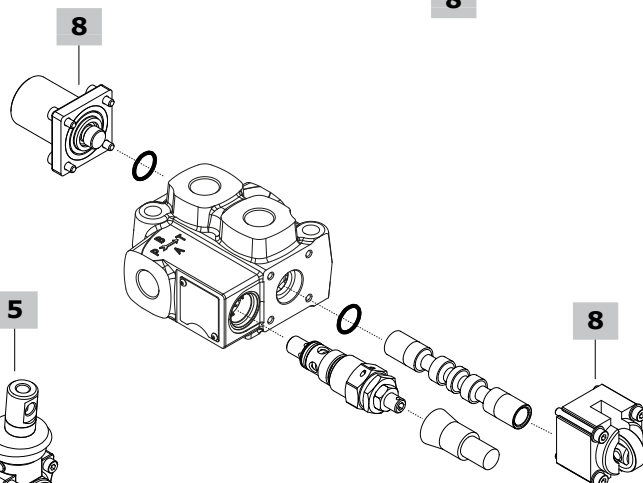
N. of section



C2/C3 complete mechanical controls valve configuration example

Q35 / 1 / F7S (R250) / 103 - C3 / F3D - S

8



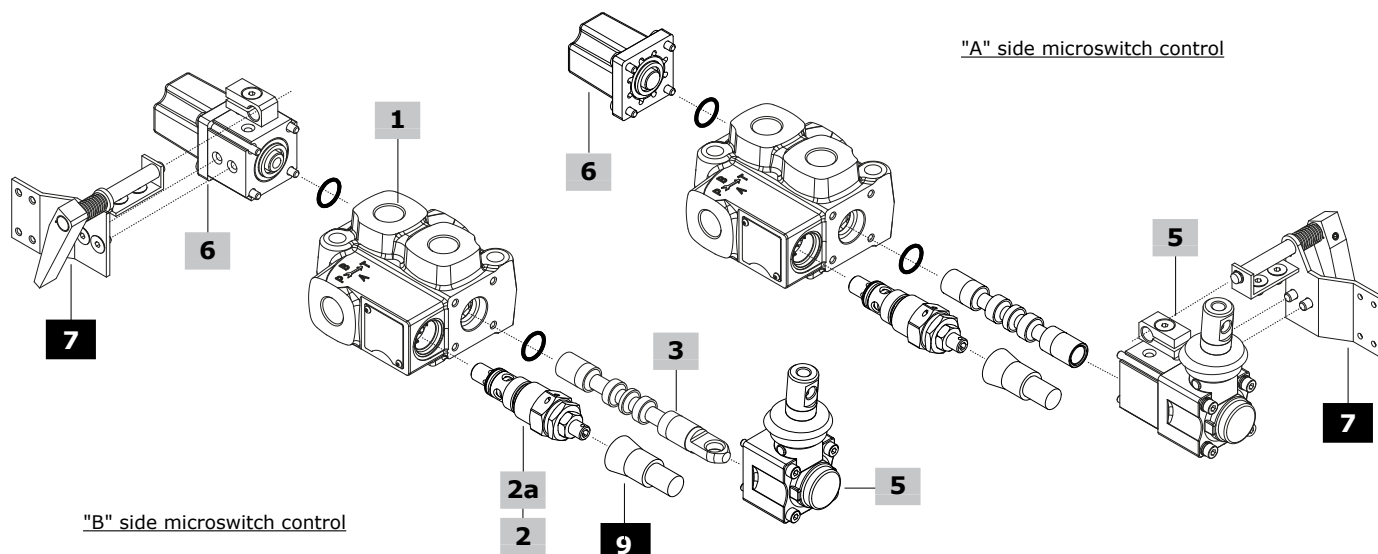
Microswitch control valve configuration example

valve setting (bar)

Q35 / 1 / F7S (R250) / 103 - A1 - M1-N1 / F3D - S **Q35 / 1 / F7S (R250) / 103 - N1-A1 - M1 / F3D - S**

1 2 2a 3 5 6 open center aluminium controls 5 6

N. of section



Parts ordering codes

1 Body kit*

The code are referred to sections with O-ring seals

TYPE	CODE	DESCRIPTION
Q35/1	5KC0600127954	1 section

2 Inlet configuration* **page 9**

TYPE	DESCRIPTION
F7S	With pressure relief valve
F8S	Without valves (pressure relief valve plugged port)

2a Main pressure relief valve **page 9**

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: Without valves (pressure relief valve plugged port)	

3 Spool **page 10**

TYPE	CODE	DESCRIPTION
Standard spools		
103	KR35103	Double acting, A and B closed in neutral pos.
	KR35103N	As previous one, negative overlap
111	KR35111	Double acting, A and B to tank in neutral pos.
101	KR35101-102	Single acting on port A.
		G3/8 plug is required, see #4
102	KR35101-102	Single acting on port B.
		G3/8 plug is required, see #4

Special spools for cam, microswitch controls and other leverless controls

103	3CUG2800600	Double acting, A and B closed in neutral pos.
111	3CUG2807300	Double acting, A and B to tank in neutral pos.

4 Plug for single acting spool*

TYPE	CODE	DESCRIPTION
-	060002792199	G3/8 plug

5 A side control **page 11**

TYPE	CODE	DESCRIPTION
------	------	-------------

For standard spools

With lever control:

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/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°

With safety lever control:

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°

Without lever control:

A8	03622A8/03	Flexible cable control arrangement
-----------	------------	------------------------------------

For types 103 and 111 special spools

With spool position microswitch:

Note: to complete the control you must use the assembly kit at #7

N1-A1	03641N1-A1/A2	Micro operation in pos. 1 and 2, with 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

5 A side control (cont.) **page 11**

TYPE	CODE	DESCRIPTION
------	------	-------------

For types 103 and 111 special spools

Without lever control:

A3	03614A3	Without lever, with cap
	03614A3/03	As previous one, with aluminium cap
A4	03617A4	M8 male thread external pin with flange
	03617A4/03	As previous one, with aluminium flange
A5⁽²⁾	03619A5	Flange with spherical spool end

6 B side control **page 15**

TYPE	CODE	DESCRIPTION
------	------	-------------

With spring return:

M1	03730M1	3 pos., spring return in neutral position
	03730M1/03	As previous one, with aluminium cap
M1-U1	03701M1-U1	As M1 type, with M8 male thread 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 male thread 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 male thread external pin
M4-U1	03704M4-U11-2	2 pos. (1-2), spring return in pos. 1, with M8 male thread external pin

With flexible cable control arrangement:

M1-U2	03715M1-U2	3 pos., spring return in neutral position
M2-U2	03716M2-U2	2 pos. (0-1), spring return in neutral position

With detent:

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

With spool position microswitch:

Note: to complete the control you must use the assembly kit at #7

M1-N1	03766M1-N1	3 pos., micro operation in pos. 1 and 2, spring return in neutral position
M1-N1A	03767M1-N1AL	As M1-N1 type, micro operation in pos. 1
M1-N1B	03768M1-N1BL	As M1-N1 type, micro operation in pos. 2
M2-N1	03769M2-N1L	2 pos. (0-1), spring return in neutral position
M3-N1	03772M3-N1L	2 pos. (0-2), spring return in neutral position

7 Microswitch assembling kit

CODE	DESCRIPTION
03650N1-01	Kit for 1 section

8 Complete controls A+B sides **page 18**

TYPE	CODE	DESCRIPTION
------	------	-------------

For types 103 and 111 special spools

C2	03792C2-C3	Cam control from position 1 to 2
C3	03792C2-C3	Cam control from position 2 to 1

9 Accessory

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

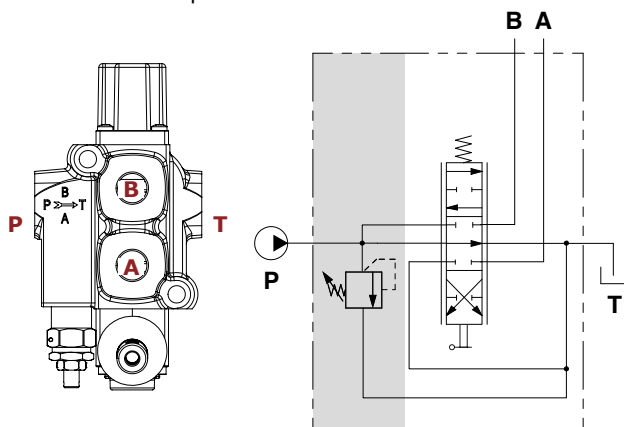
(*): Codes are referred to **BSP** thread

(¹): Always complete with lever knob

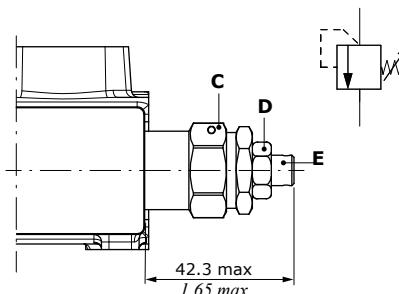
(²): To be assembled only with M4 control

Main pressure relief valve

F7S configuration With pressure relief valve



Main pressure relief valve

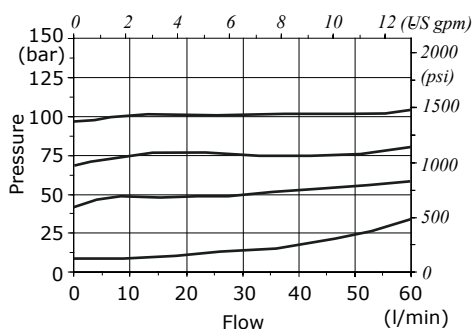


Wrenches and tightening torques

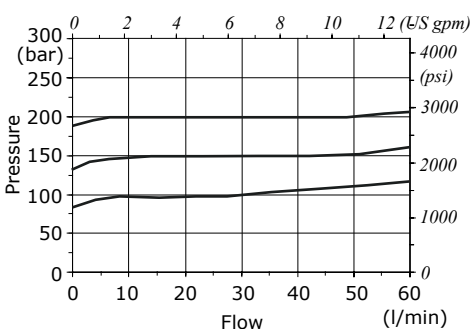
C = wrench 22 - 42 Nm (30.9 lbf ft)
D = wrench 13 - 24 Nm (17.7 lbf ft)
E = allen wrench 4

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

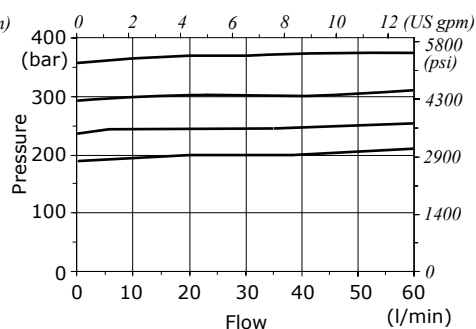
Setting example (B type spring)



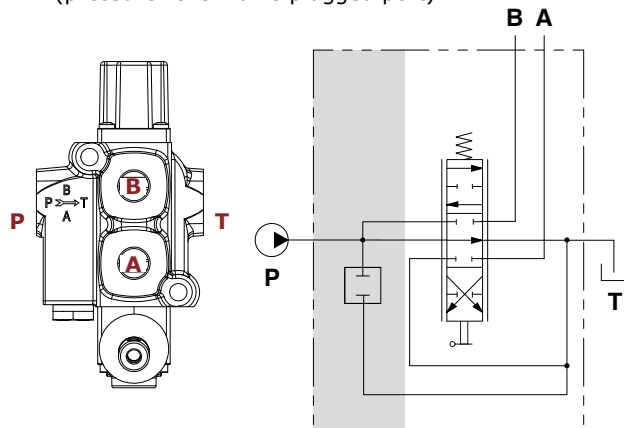
Setting example (N type spring)



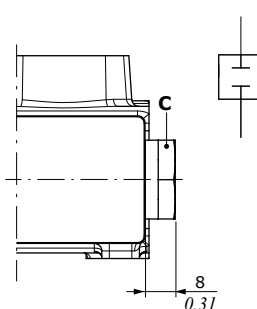
Setting example (R type spring)



F8S configuration Without valves (pressure relief valve plugged port)



Relief valve blanking plug

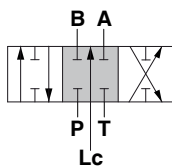


Spool

103 type

A and B closed
in neutral position

2 **0** 1

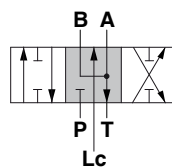
**Stroke**

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

111 type

A and B to tank
in neutral position

2 **0** 1

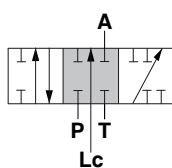
**Stroke**

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

101 type

Single acting on A,
B plugged

2 **0** 1

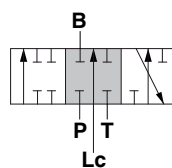
**Stroke**

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

102 type

Single acting on B,
A plugged

2 **0** 1

**Stroke**

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

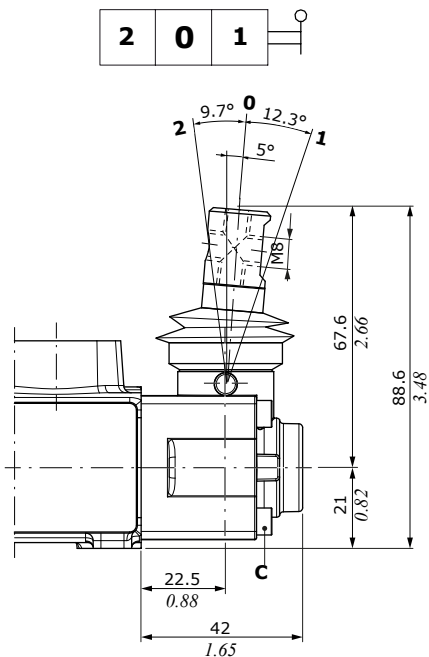
A side controls

Mechanical controls

With lever control

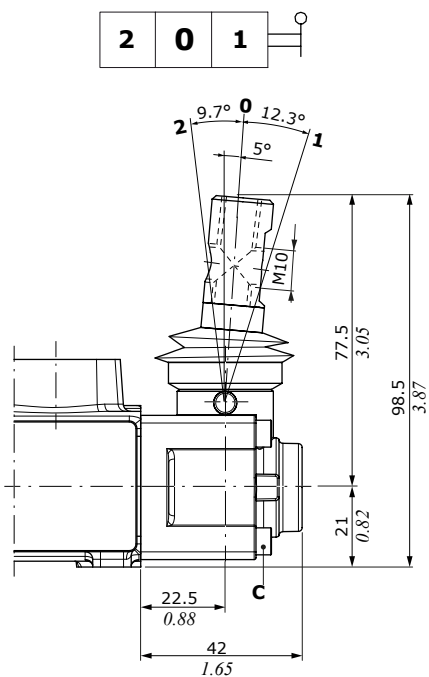
A1 type

M8 thread plastic lever box



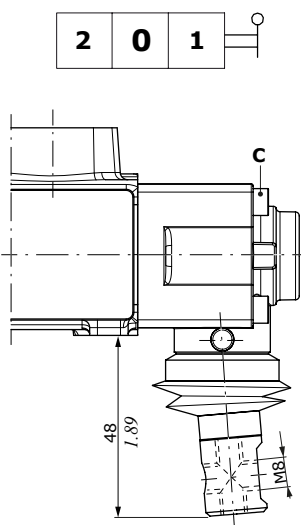
A1/PM type

M10 thread aluminium lever box



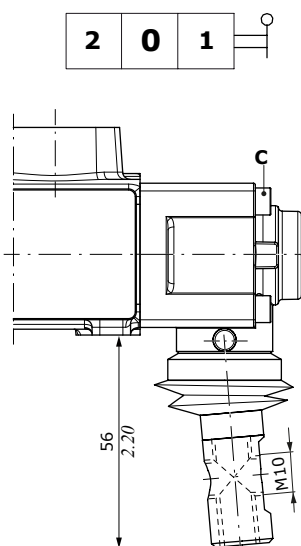
A2 type

As A1 type, rotated 180°



A2/PM type

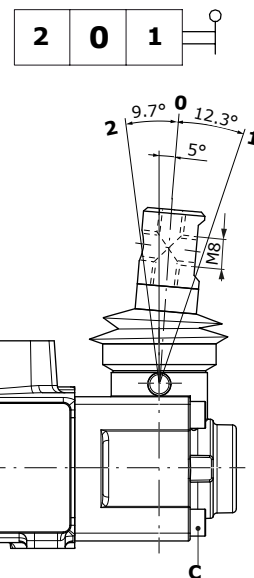
As A1/PM type, rotated 180°



A1/10 type

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

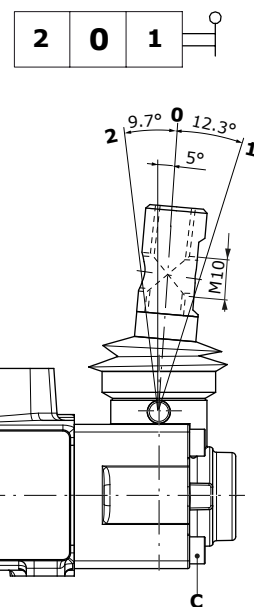
A2/10 type
As A1/10 type,
rotated 180°



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°



Wrenches and tightening torques
C = allen wrench 3 - 3 Nm (2.2 lbf ft)

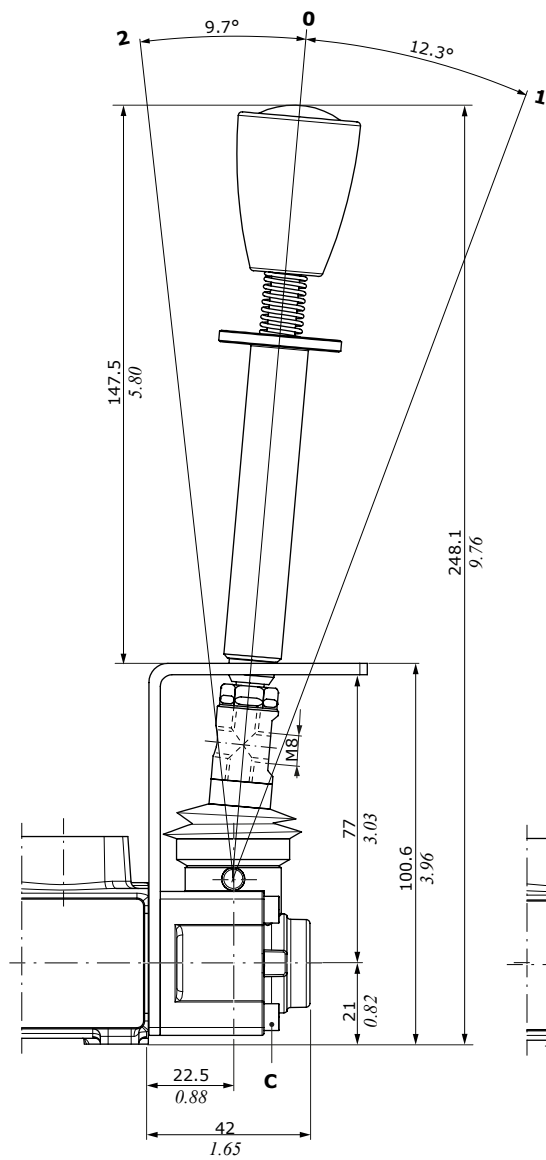
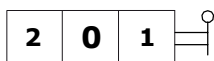
A side controls

Mechanical controls

With safety lever control

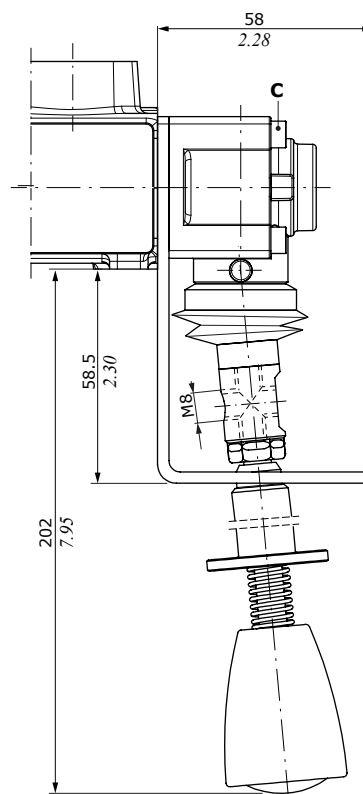
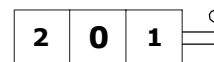
A1/S type

M8 thread, aluminium lever box



A2/S type

As A1/S type, rotated 180°



Wrenches and tightening torques

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

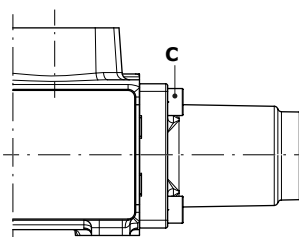
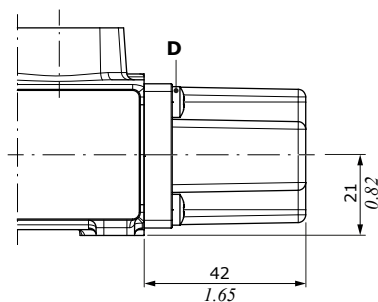
A side controls

Mechanical controls

Without lever control

A3 type

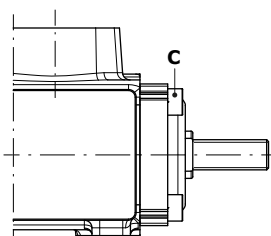
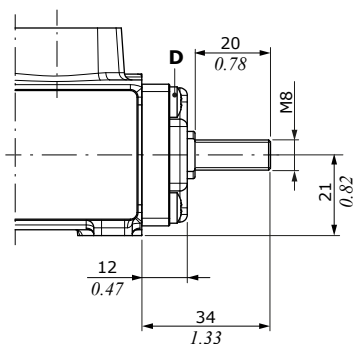
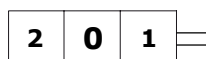
With cap.
Available with aluminium cap



With aluminium cap;
dimensions are the same of standard type

A4 type

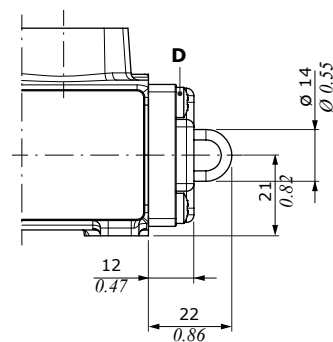
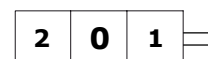
M8 male thread external pin with flange.
Available with aluminium flange



With aluminium flange;
dimensions are the same of standard type

A5 type

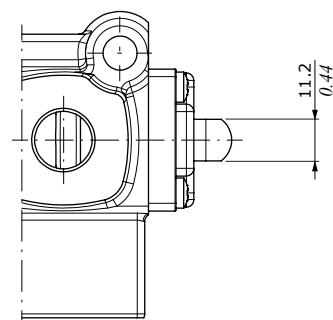
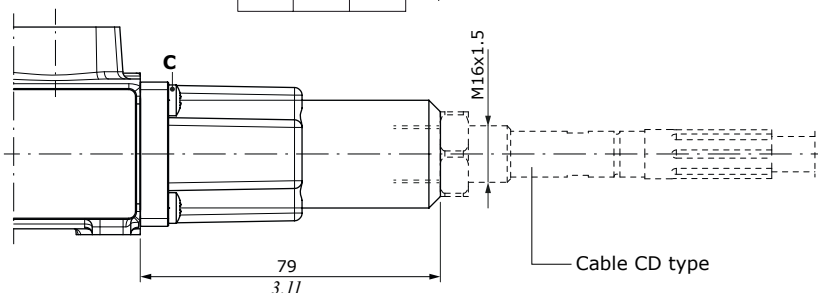
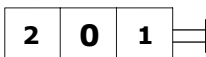
Flange with spherical spool end



With flexible cable control arrangement

A8 type

With flexible cable control
arrangement



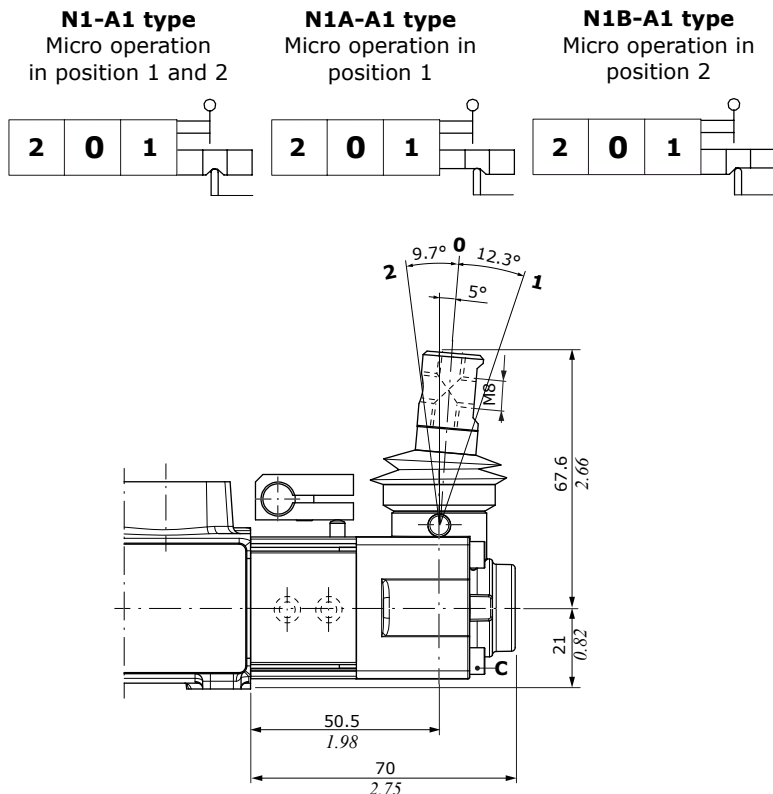
Wrenches and tightening torques

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

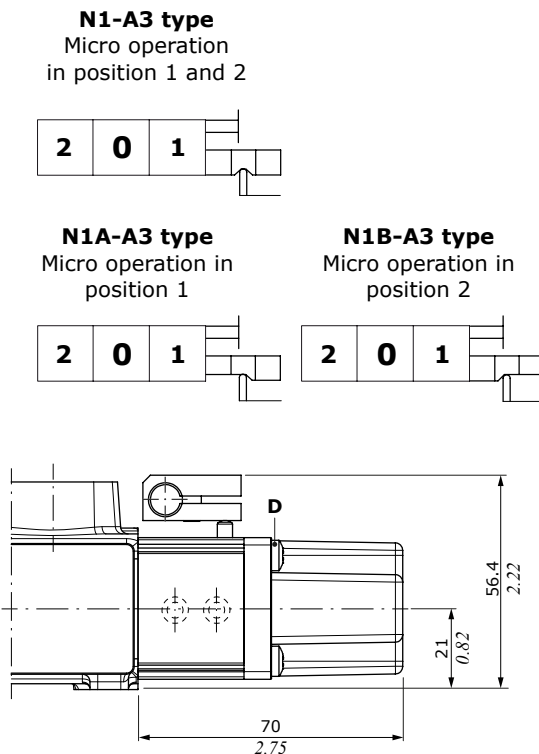
A side controls

Spool position microswitch

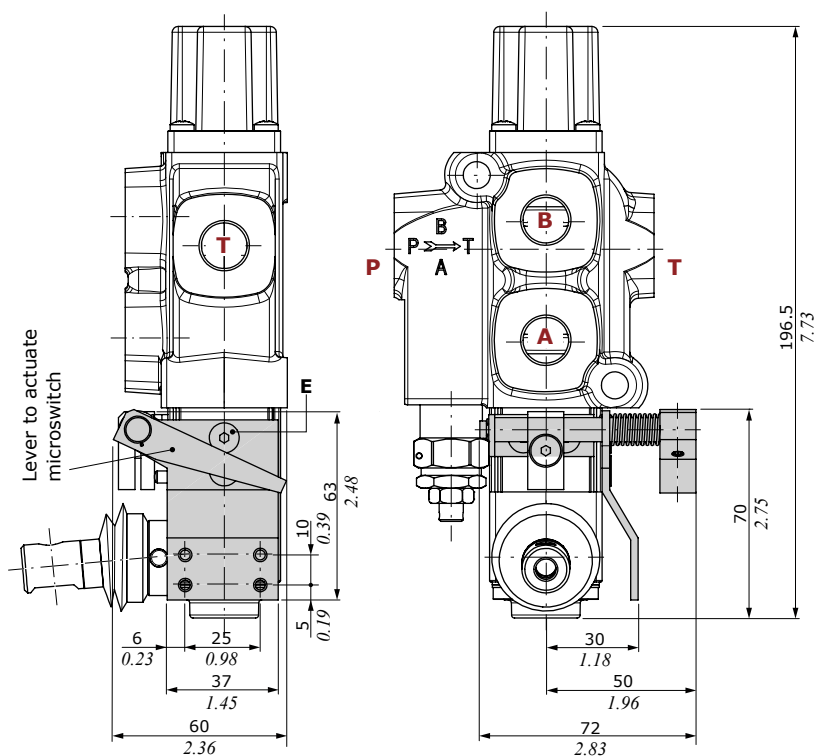
With lever control



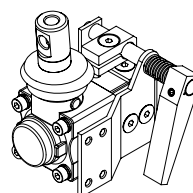
Without lever control, with cap



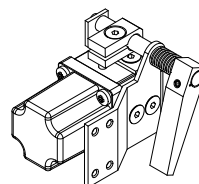
Microswitch assembly kit for 1 working section (N1-A1 type)



with lever box



with cap



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 - 6.6 Nm (4.8 lbf ft)

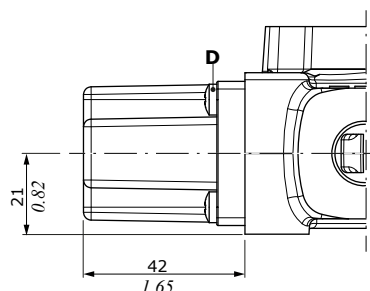
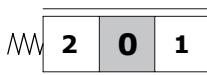
B side controls

Mechanical controls

With spring return control

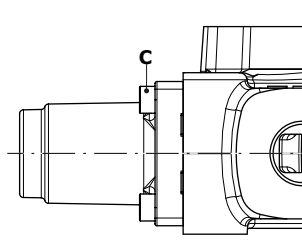
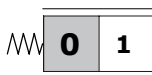
M1 type

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



M2 type

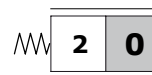
2 position (0-1), spring return
in neutral position.
Available with aluminium cap



With aluminium cap;
dimensions are the same of standard type

M3 type

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

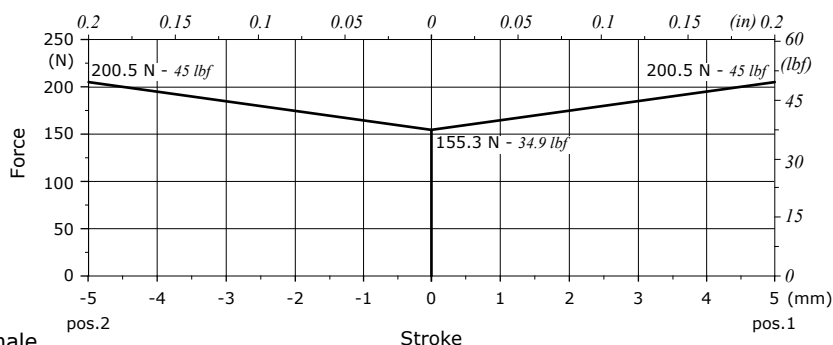


Wrenches and tightening torques

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

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

M1 control type - Force vs. Stroke diagram



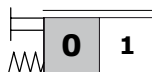
M1/U1 type

As M1 type, with M8 male
thread external pin



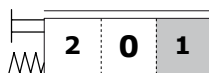
M2/U1 type

As M2 type, with M8 male
thread external pin



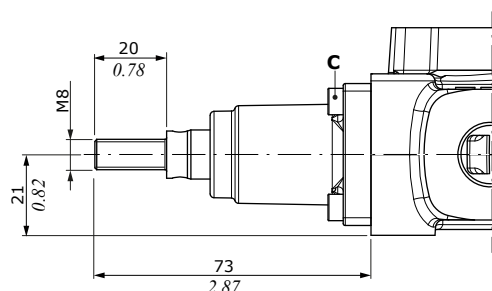
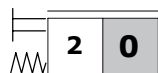
M4/U1 type

2 position (1-2), spring return
in pos. 1, with M8 male
thread external pin



M3/U1 type

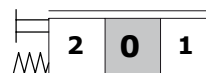
As M3 type, with M8 male
thread external pin



With flexible cable control arrangement

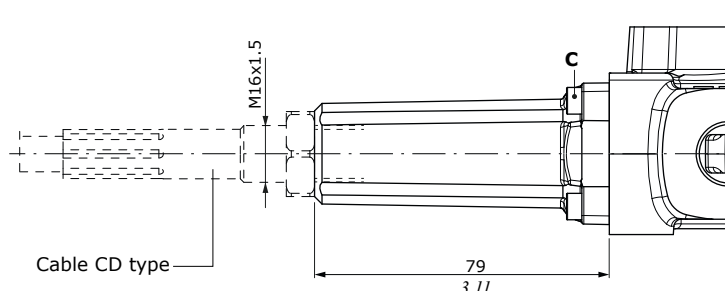
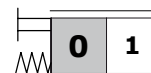
M1/U2 type

3 position, spring return
in neutral position



M2/U2 type

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



B side controls

Mechanical controls

With detent control

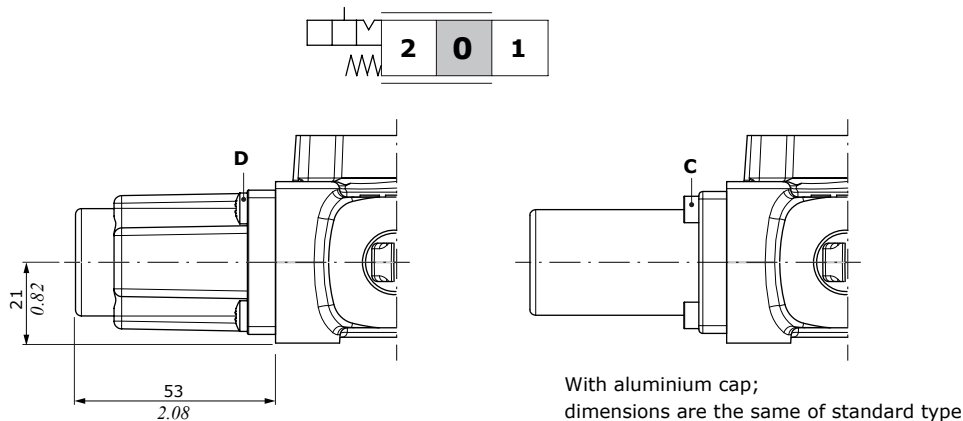
R1 type

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

Wrenches and tightening torques

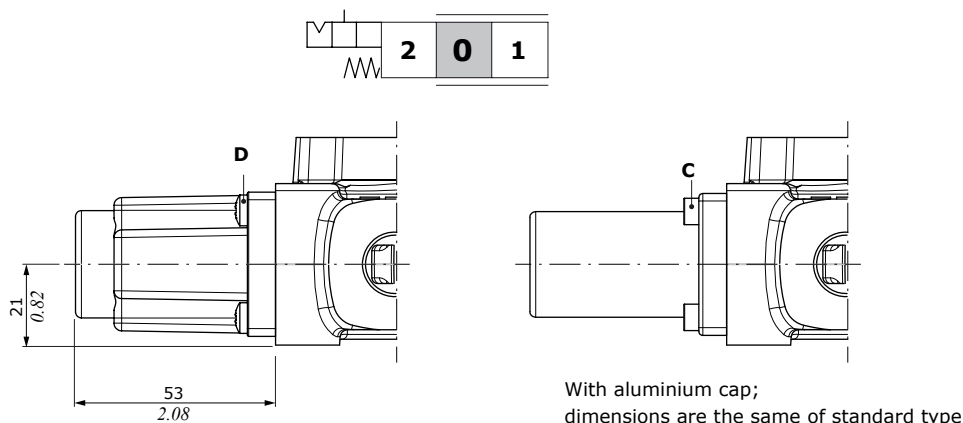
C = allen wrench 3 - 3 Nm (2.2 lbft)

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



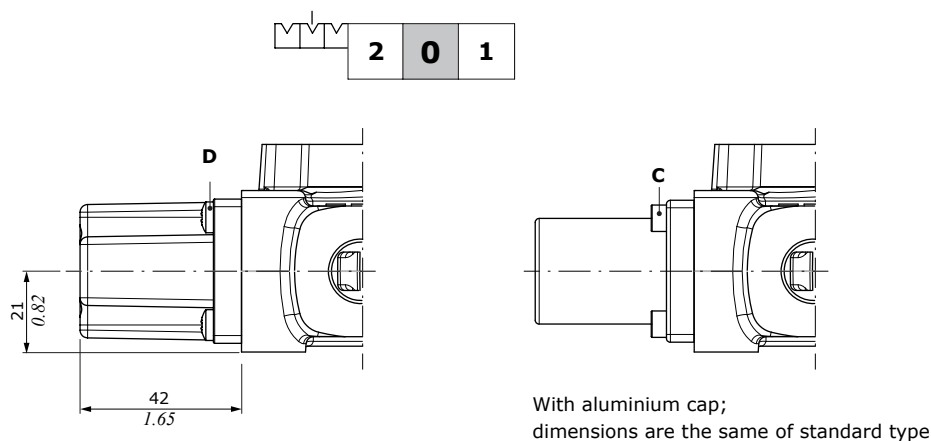
R2 type

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



R3 type

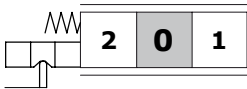
3 position, detent in all position.
Available with aluminium cap



Spool position microswitch

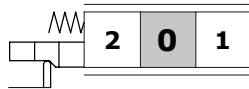
M1-N1 type

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



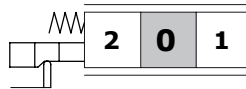
M1-N1A type

3 position, micro operation
in position 1



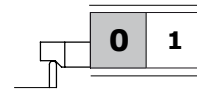
M1-N1B type

3 position, micro operation
in position 2



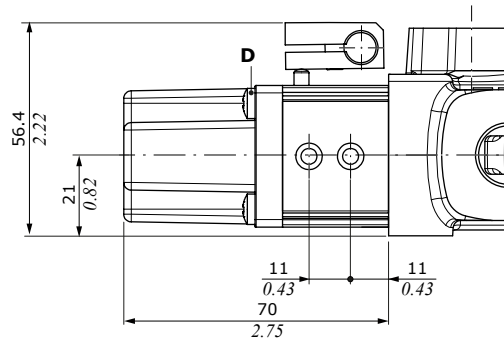
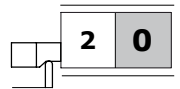
M2-N1 type

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



M3-N1 type

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

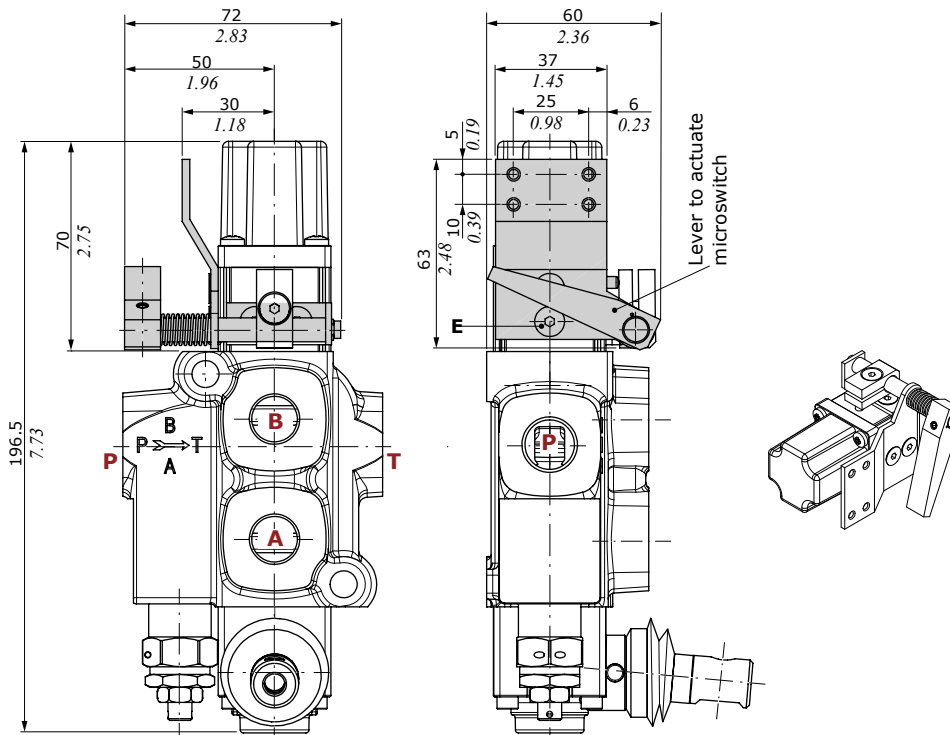


Wrenches and tightening torques

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

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

Microswitch assembly kit for 1 working section (M1-N1 type)

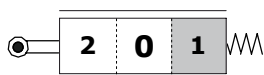


A+B side controls

With cam control

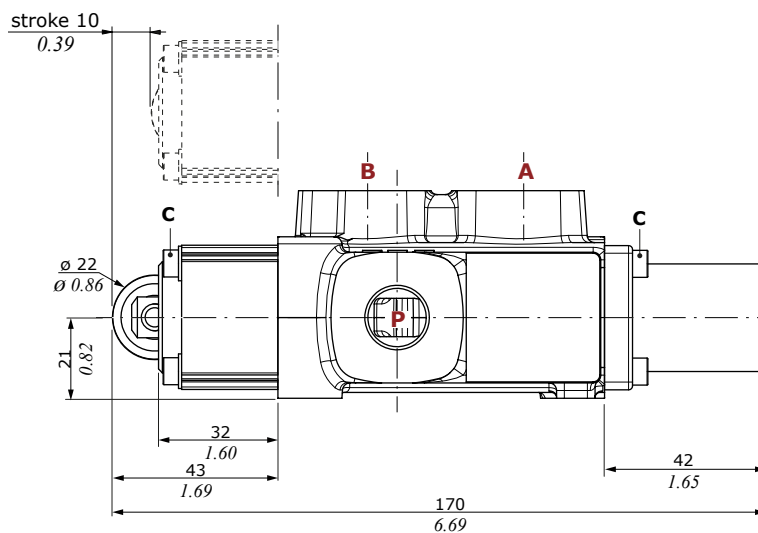
C2 type

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



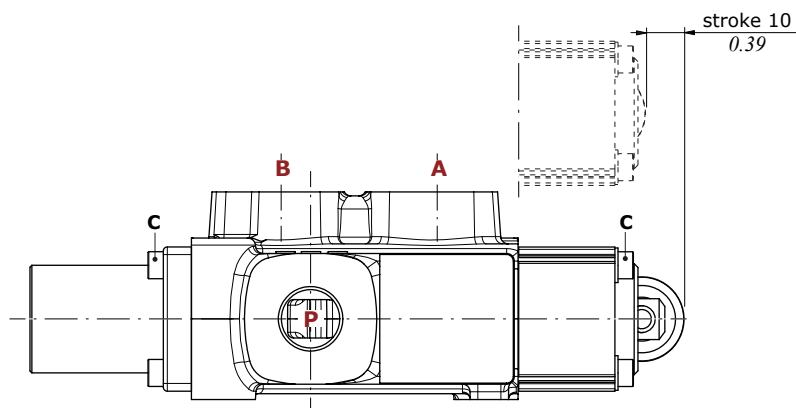
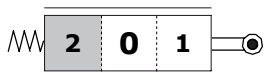
Wrenches and tightening torques

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





Q25 - Q45

Monoblock directional valves

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

Working conditions

This catalogue shows technical specifications and diagrams measured through mineral oil of 46mm²/s - 46 cSt viscosity at 40°C - 104°F temperature.

		Q25	Q45
Nominal flow rating		30 l/min - (8 Us gpm)	50 l/min - (13.2 Us gpm)
Max. pressure	from 1 up to 2 sections	max. 300 bar (4350 psi)	
	3 sections		
	from 4 up to 8 sections		
Max. back pressure on outlet T port (*)		25 bar (360 psi)	
Number sections		from 1 to 8	
Internal leakage A(B)⇒T	Δp = 100 bar (1450 psi)	4 cm³/min (0.24 in³/min)	
Fluid		Mineral oil	
Fluid temperature	with NBR (BUNA-N) seals	from -30°C to 80°C - from -22 °F to 176 °F	
Viscosity	operating range	from 10 to 400 mm²/s - from 10 to 400 cSt	
Max. contamination level		16/14/12 - ISO 4406 - NAS1638 class 6	
Ambient temperature	without electric devices	from -40°C to 60°C - from 40 °F to 140 °F	
	with electric devices	from -20°C to 50°C - from -4 °F to 122 °F	

NOTE - For different conditions please contact our Sales Department.

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

REFERENCE STANDARD

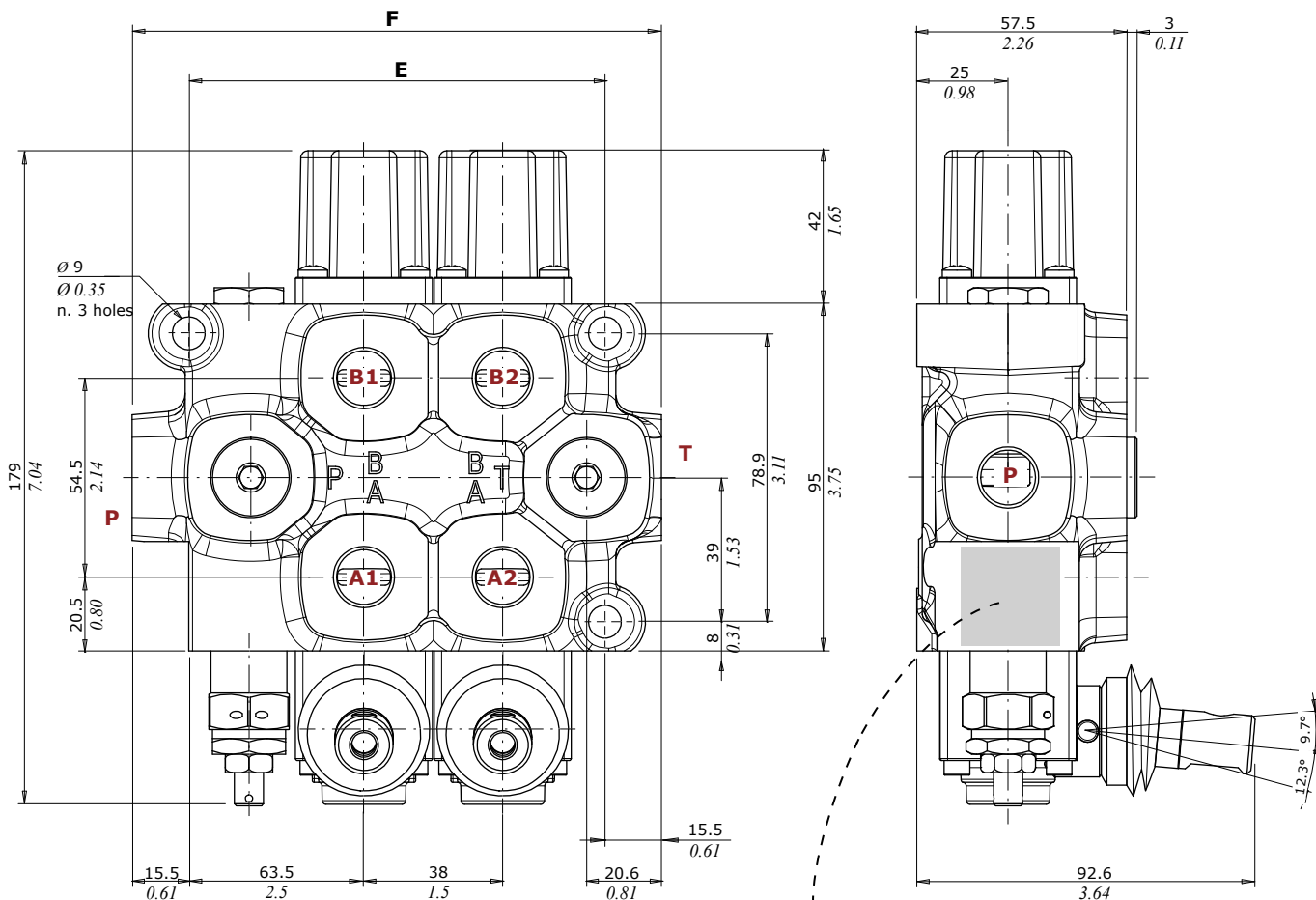
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

PORT THREADING

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

Dimensional data

The Q25 and Q45 monoblock valves, have same dimensions but different threads. See port threading on page 19. Drawing are referred to a Q25 monoblock valve.

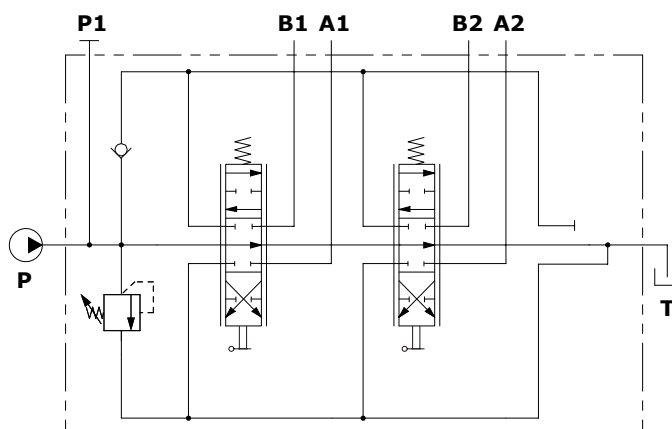


Type	E		F	
	mm	in	mm	in
Q25/1 - Q45/1	76	2.99	107	4.21
Q25/2 - Q45/2	114	4.48	145	5.70
Q25/3 - Q45/3	152	5.98	183	7.2
Q25/4 - Q45/4	190	7.48	221	8.7
Q25/5 - Q45/5	228	8.97	259	10.19
Q25/6 - Q45/6	266	10.47	297	11.69
Q25/7 - Q45/7	304	11.96	335	13.18
Q25/8 - Q45/8	342	13.46	373	14.68

MADE IN ITALY
1GB75040009 ----- Product code
DISTRIBUTORE
Q25/2 ----- Code description
MD1600464-001 ----- Product allotment
 ----- Datamatrix with product allotment

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

Hydraulic circuit

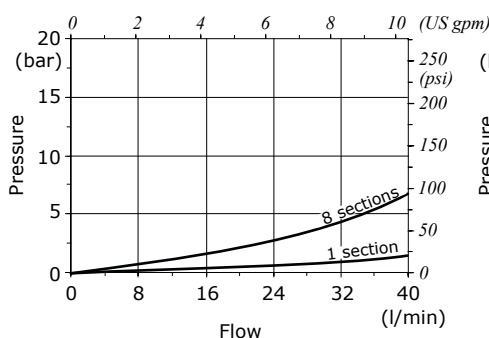


Description example (parallel circuit):
Q25/2/F1S(N250)/103-A1-M1/103-A1-M1/F3D-S
Q45/2/F1S(N250)/103-A1-M1/103-A1-M1/F3D-S

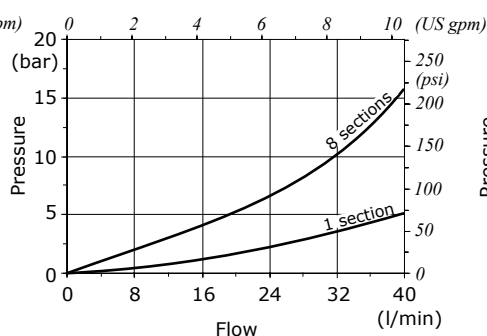
Performance data

Q25

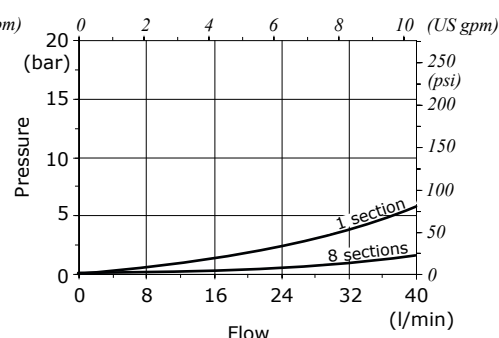
P⇒T pressure drops



P⇒A(B) pressure drops

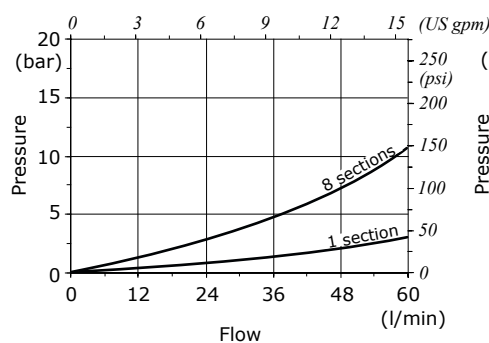


A(B)⇒T pressure drops

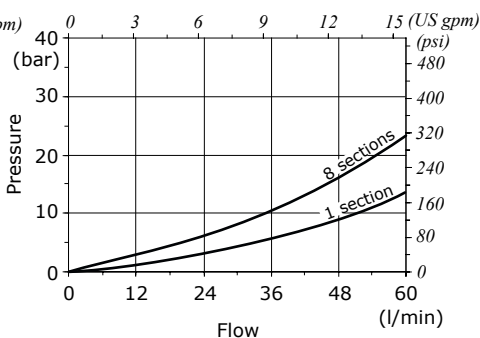


Q45

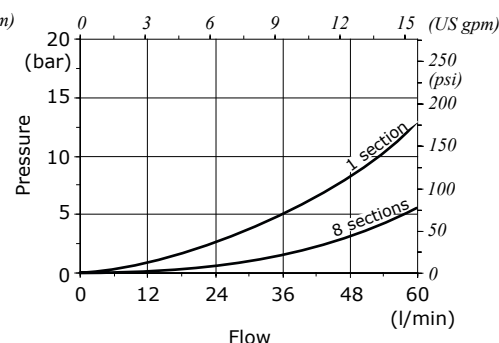
P⇒T pressure drops



P⇒A(B) pressure drops



A(B)⇒T pressure drops



Parts ordering codes

Mechanical control valve configuration example

valve setting (bar)

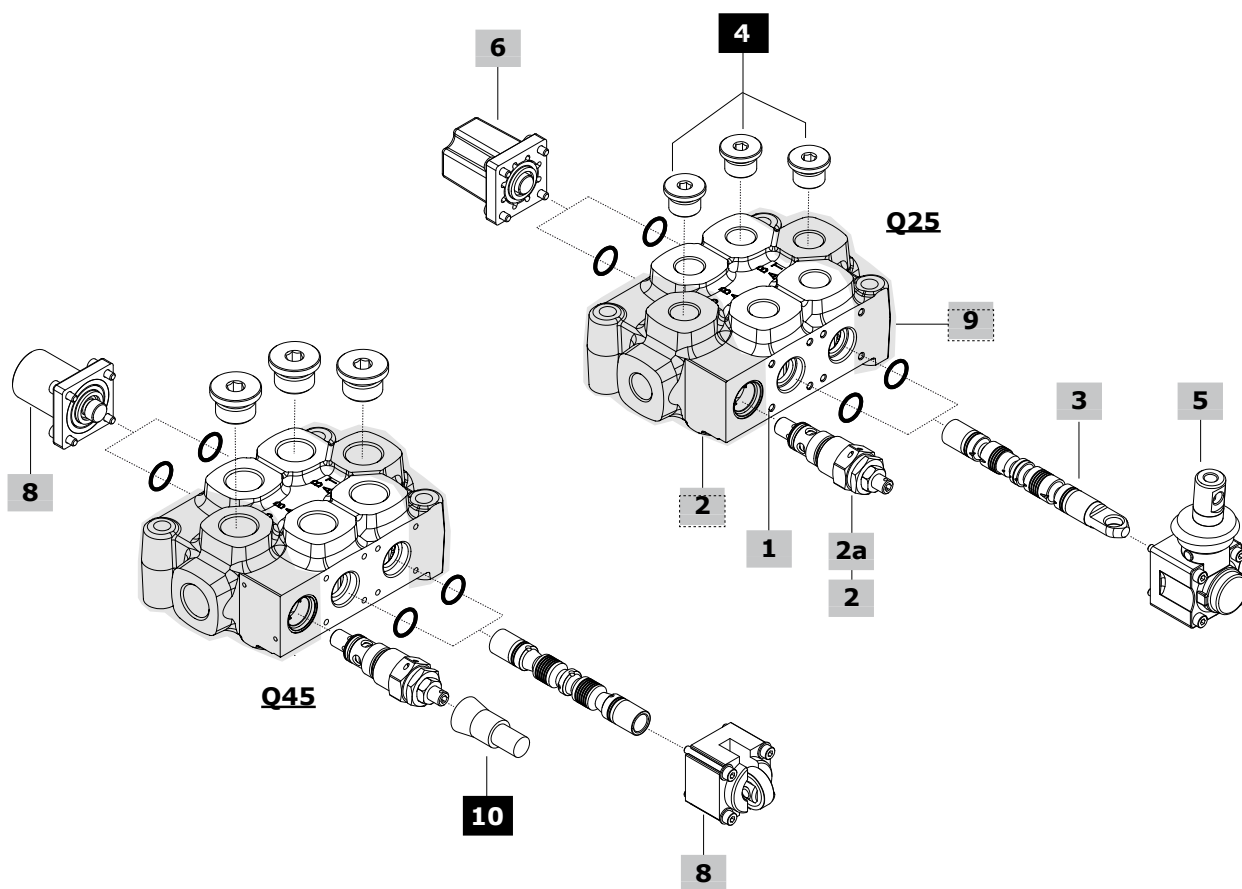
Q25 / 2 / F1S (N150) / 102 - A1 - M1 / 103 - A1 - M1 / F3D - S

1 2 2a 3 5 6 9 aluminium controls

N. of section

C2/C3 complete mechanical control valve configuration example

Q45 / 2 / F1S (N150) / 103 - C3 / 103 - C3 / F3D - S



Parts ordering codes

1 Body kit*

The codes are referred to sections with O-ring seals

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

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

2 Inlet configuration* **page 28**

TYPE	DESCRIPTION
F1S	With load check and pressure relief valves
F2S	With load check valve
F7S	With pressure relief valve
F8S	Without valves (pressure relief valve plugged port)

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

2a Main pressure relief valve **page 29**

TYPE: B	CODE: 7000352050000000
DESCRIPTION: VLP35S valve, setting range 10-100 bar (145-1450 psi)	
TYPE: N	CODE: 7000351050000000
DESCRIPTION: VLP35S valve, setting range 101-200 bar (1460-2900 psi)	
TYPE: R	CODE: 7000353050000000
DESCRIPTION: VLP35S valve, setting range 201-380 bar (2910-5500 psi)	
TYPE: -	CODE: 0600027888899
DESCRIPTION: Relief valve blanking plug	

3 Spool **page 30**

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	KR30107-108	Double acting, A to tank and B closed in neutral position
108	KR30107-108	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	3CUG3218000	Single acting on port A (3)
102	3CUG3218001	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

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

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

(¹): Always complete with lever knob

(²): To be assembled only with M4 control

3 Spool (cont.) **page 30**

TYPE	CODE	DESCRIPTION
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

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

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

5 A side control **page 31**

TYPE	CODE	DESCRIPTION
For standard spools		
With lever control:		
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°
With safety lever control:		
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°
Without lever control:		
A4/Z1	03617A4/Z1	M8 male thread external pin with flange, for 116 spool type
A6	03620A6	With flange
A6-H/Z1	03620A6-H/Z1SI	As A6 type, for 116 spool type
A8	03622A8	Flexible cable control arrangement
	03622A8/03	As previous one, with aluminium cap
A8/Z1	03622A8/Z1	As A8 type, for 116 spool type
Joystick controls for 2 section operation:		
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 and 111 special spools		
With spool position microswitch:		
Note: to complete the control you must use the assembly kit at #7		
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
Without lever control:		
A3	03614A3	Without lever, with cap
	03614A3/03	As previous one, with aluminium cap
A4	03617A4	M8 male thread external pin with flange
	03617A4/03	As previous one, with aluminium flange
A4/01	03617A4/01	M10 male thread external pin with flange
A5⁽²⁾	03619A5	Flange with spherical spool end
	03619A5/10	As previous one, with aluminium flange

Parts ordering codes

6 B side control page 39

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-B1	03753M1-B1	As M1 type, with microswitch arrangement
	03753M1-B1/03	As previous one, with aluminium cap
M1/01	03730M1/01	As M1 type, for mechanical joystick
	03730M1/01/03	As previous one, with aluminium cap
M1/02	03730M1/02	As M1 type, with stroke limiter
M1-U1	03701M1-U1	As M1 type, with M8 male thread 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 male thread 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 male thread external pin
M4	03734M41-2/03	2 pos. (1-2), spring return in position 1
	03735M42-1/03	2 pos. (2-1), spring return in position 2
M4-U1	03704M4-U11-2	As M4 type (1-2), with M8 male thread 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 type spool
	03748R8/03	As previous one, with aluminium cap
R10/Z1	03750R10/Z1	4 pos., detent in 4 th pos., for 126 type spool
	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	08743R3K	3 pos., detent in all position
	03743R3K/03	As previous one, with aluminium cap
<u>With spool position microswitch:</u>		
Note: To complete the control you must use the assembly kit at #7		
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

7 Microswitch assembling kit

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

8 Complete controls A+B sides page 45

TYPE	CODE	DESCRIPTION
For types 103 and 111 special spools		
C2	03792C2-C3	Cam control from position 1 to 2
C3	03792C2-C3	Cam control from position 2 to 1

9 Outlet configuration* page 49

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

10 Accessory

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

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

Proportional hydraulic controls valve configuration example

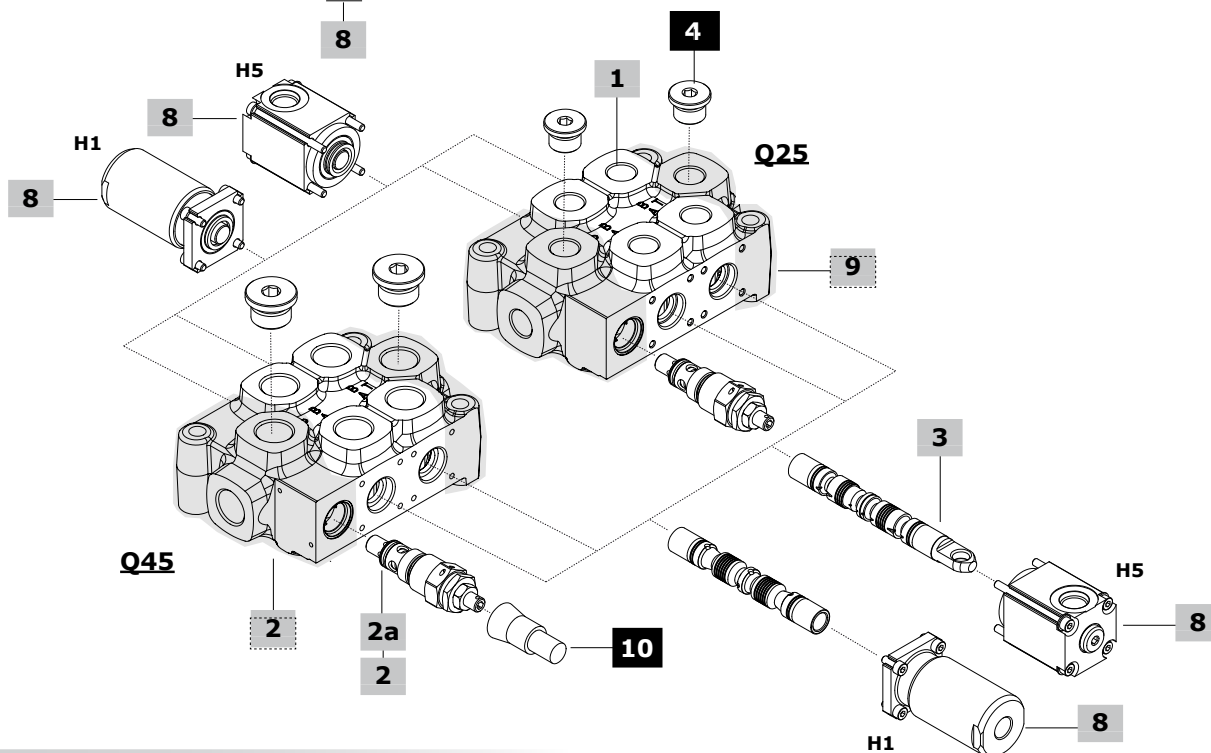
valve setting (bar)

Q25 / 2 / F1S (N150) / 103 - H5 / 103 - H5 / F3D - S

1 2 2a 3 8 9 aluminium controls

N. of section

Q45 / 2 / F1S (N150) / 103 - H1 / 103 - H1 / F3D - S

**1 Body kit***

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

H1 hydraulic control requires standard body: see #1, page 23

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

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

2 Inlet configuration* page 28

See #2, page 23

2a Main pressure relief valve page 29

See #2a, page 23

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

3 Spool page 30

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
111	060103179199	Double acting, A and B to tank in neutral position

4 Plug for P-T ports*

See #4, page 23

8 Hydraulic controls A+B sides* page 46

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

9 Outlet configuration* page 49

See #9, page 24

10 Accessory

See #10, page 24

Parts ordering codes

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

valve setting (bar)

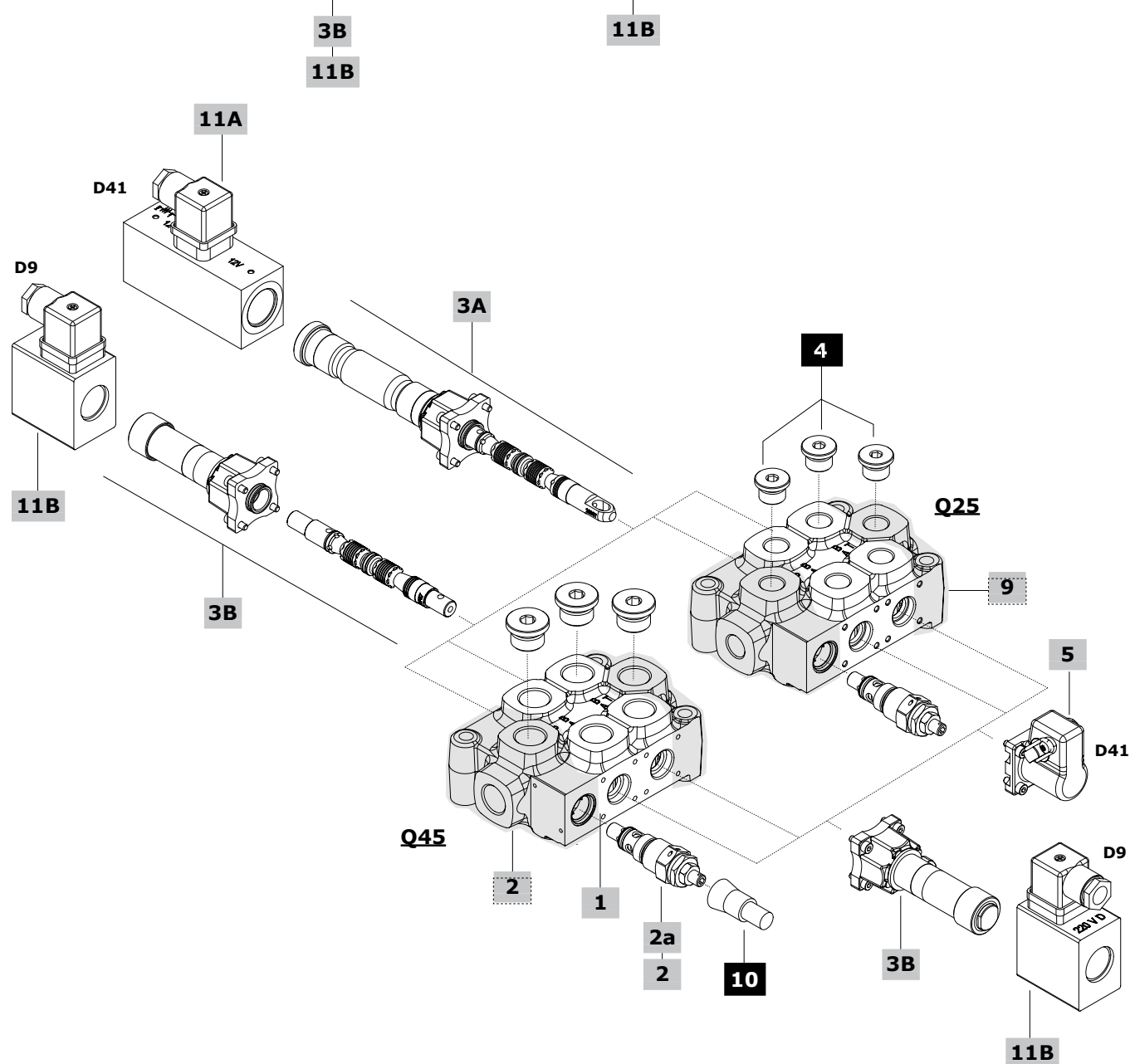
Q25 / 2 / F1S (N150) / 101 - A1 - D41 / 101 - A1 - D41 / F3D - 12VDC - S

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

N. of section 11A

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

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



1 Body kit*

TYPE	CODE	DESCRIPTION
Q25/1	5KC0600127574A	1 section
Q25/2	5KC0600127673A	2 sections
Q25/3	5KC0600129552A	3 sections
Q25/4	5KC0600129550A	4 sections
Q25/5	5KC0600129551A	5 sections
Q25/6	5KC0600129715A	6 sections
Q25/7	5KC0600130905A	7 sections
Q25/8	5KC0600131361A	8 sections
Q45/1	5KC0600127973A	1 section
Q45/2	5KC0600128051A	2 sections
Q45/3	5KC0600129676A	3 sections
Q45/4	5KC0600129677A	4 sections
Q45/5	5KC0600129678A	5 sections
Q45/6	5KC0600129876A	6 sections
Q45/7	5KC0600131148A	7 sections
Q45/8	5KC0600131620A	8 sections

2 Inlet configuration* page 28

See #2, page 23

2a Main pressure relief valve page 29

See #2a, page 23

3A D41 solenoid control page 47**One side solenoid control****For Q25 valve:**

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. G3/8 plug is required, see #4
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. G3/8 plug is required, see #4
102	X060102894199	Tube assembly with single acting spool on port B. G3/8 plug is required, see #4

For Q45 valve:

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

3B D9 solenoid control page 48**Two side solenoid control****For Q25/Q45 valves:**

TYPE	CODE	DESCRIPTION
101	X060103012699	Tube assembly with single acting spool on port A (1)
102	X060103012699	Tube assembly with single acting spool on port B (1)
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
110	X060103037699	Tube assembly with single acting spool on port B, B to tank in neutral position (1)
111	X060103000499	Tube assembly with double acting spool, A and B to tank in neutral position

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

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

See #4, page 23

5 A side control for D41 page 47

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

9 Outlet configuration* page 49

See #9, page 24

10 Accessory

See #10, page 24

11A/B Coil page 59**D41 coil****For Q25 valve:**

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

For Q45 valve:

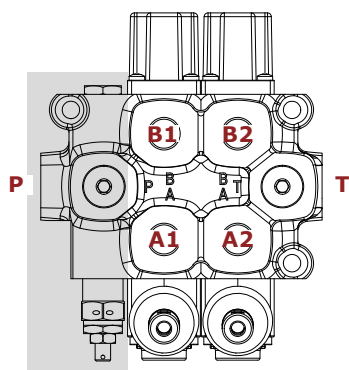
-	4SLG111200	12 VDC ISO4400 coil
-	4SLG111400	24 VDC ISO4400 coil

D9 coil**For Q25/Q45 valves:**

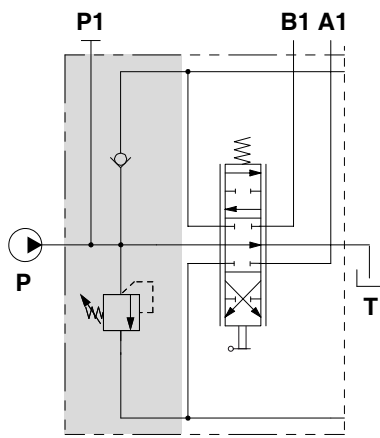
-	ZDB212	12 VDC ISO4400 coil
-	ZDB224	24 VDC ISO4400 coil

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

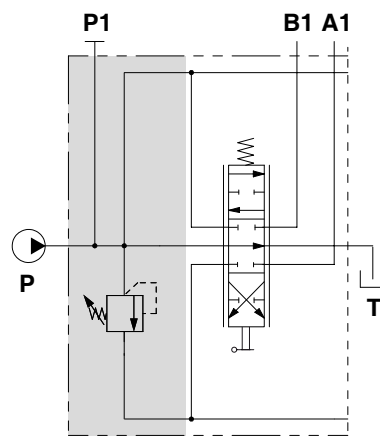
Inlet configuration



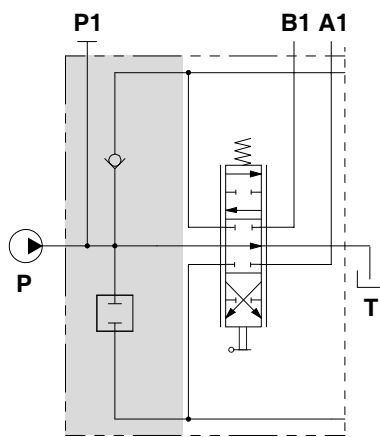
F1S configuration
With load check and pressure relief valve



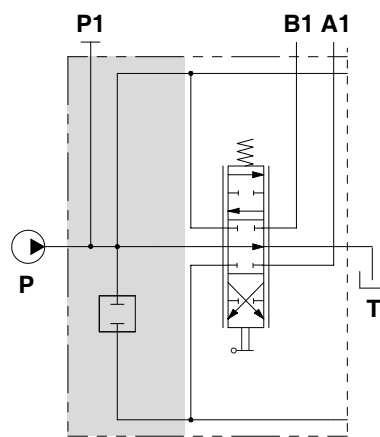
F7S configuration
With pressure relief valve



F2S configuration
With load check valve

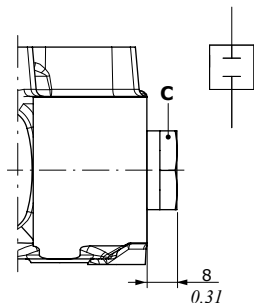


F8S configuration
Without valves
(pressure relief valve plugged port)

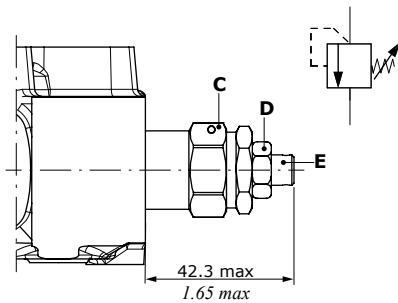


Main pressure relief valve

Relief valve blanking plug

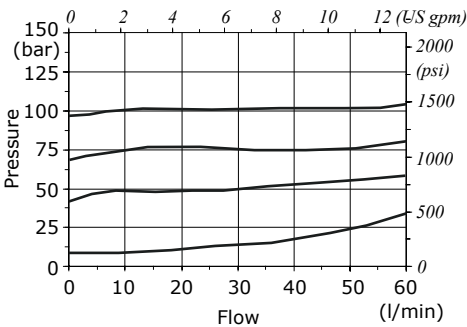


Main pressure relief valve

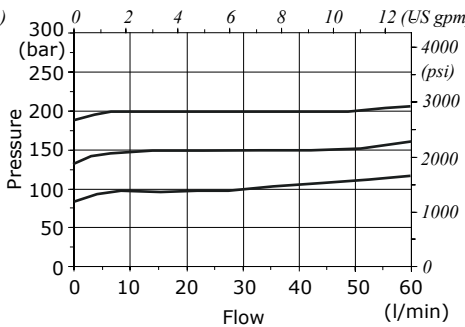


Spring type	Setting ranges (bar - psi)
B (white)	From 10 to 100 - from 145 to 1450
N (black)	From 101 to 200 - from 1460 to 2900
R (red)	From 201 to 380 - from 2910 to 5500

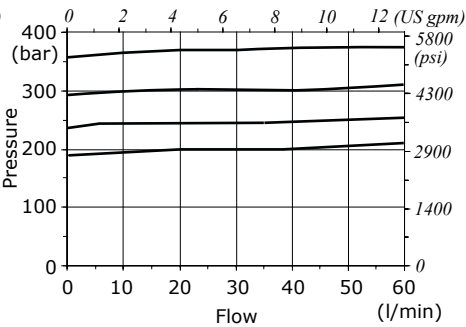
Setting example (B type spring)



Setting example (N type spring)



Setting example (R type spring)



Wrenches and tightening torques

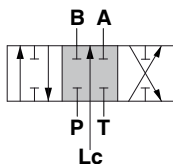
- C = wrench 22 - 42 Nm (30.9 lbf ft)
- D = wrench 13 - 24 Nm (17.7 lbf ft)
- E = allen wrench 4

Spool

103 type

A and B closed
in neutral position

2 0 1



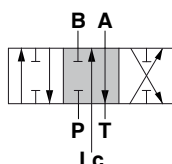
Stroke

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

107 type

A to tank, B closed
in neutral position

2 0 1



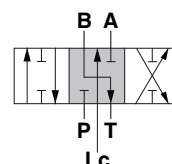
Stroke

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

108 type

B to tank, A closed
in neutral position

2 0 1



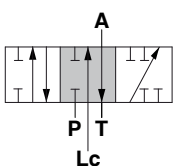
Stroke

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

109 type

A to tank in neutral position,
B plugged

2 0 1



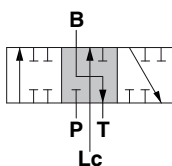
Stroke

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

110 type

B to tank in neutral position,
A plugged

2 0 1



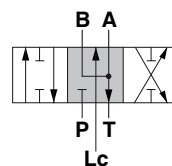
Stroke

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

111 type

A and B to tank
in neutral position

2 0 1



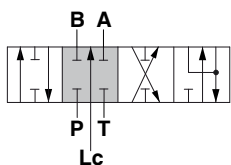
Stroke

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

116 type

With floating in the 4th position
(spool in)

2 0 1 3



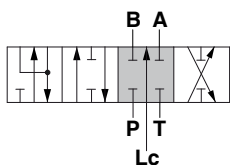
Stroke

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



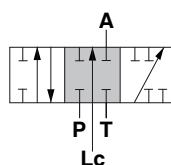
Stroke

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



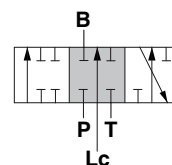
Stroke

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)

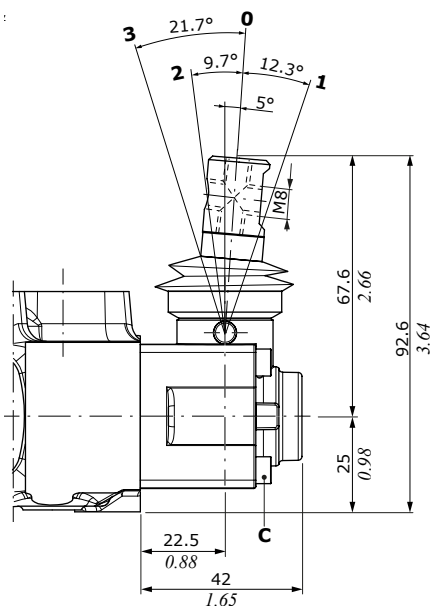
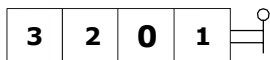
A side controls

Mechanical controls

With lever control

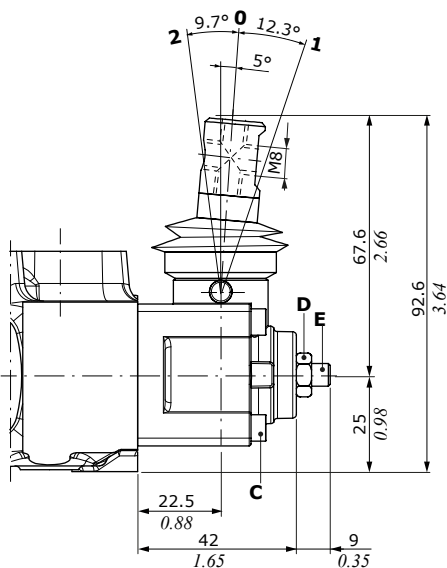
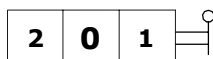
A1 type

M8 thread plastic lever box



A1/06 type

M8 thread,
with stroke limiter

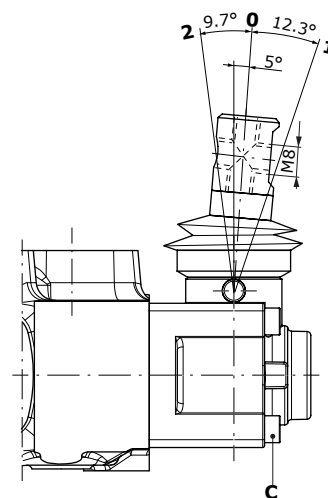
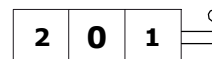


A1/10 type

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

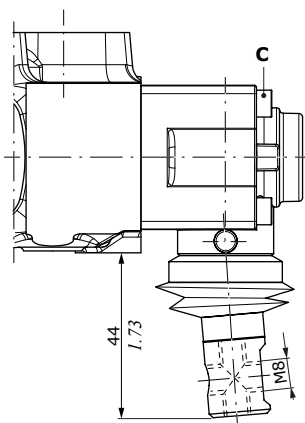
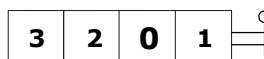
A2/10 type

As A1/10 type,
rotated 180°



A2 type

As A1 type, rotated 180°

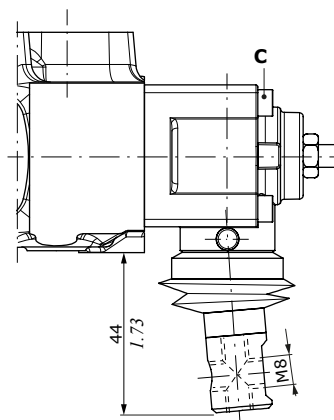
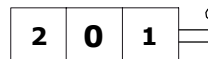


Wrenches and tightening torques

C = allen wrench 3 - 3 Nm (2.2 lbft)
D = wrench 10 - 9.8 Nm (7.2 lbft)
E = allen wrench 4 - 9.8 Nm (7.2 lbft)

A2/06 type

As A1/06 type, rotated 180°



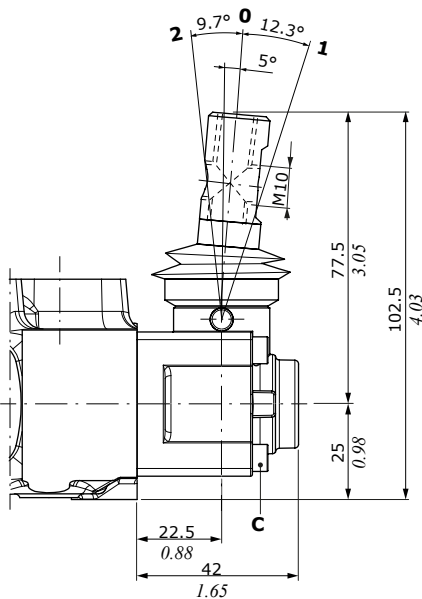
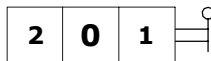
A side controls

Mechanical controls

With lever control

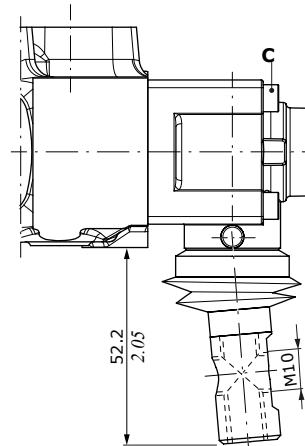
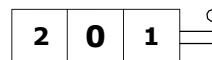
A1/PM type

M10 thread aluminium lever box



A2/PM type

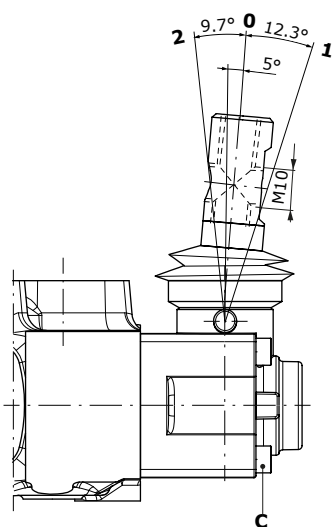
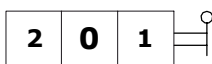
As A1/PM type, rotated 180°



A1/PMP type

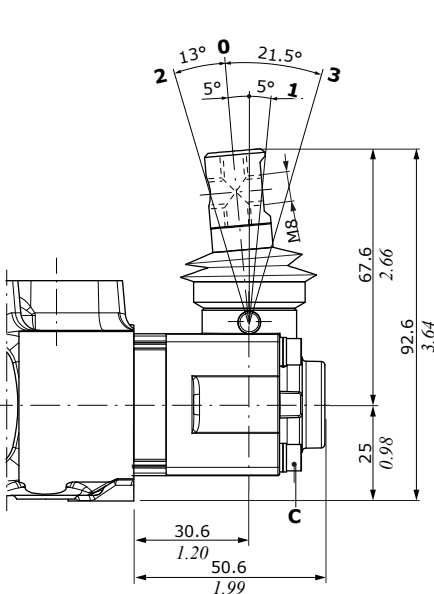
M10 thread plastic lever box.

Dimensions are the same of A1/PM type



A2/PMP type

As A1/PMP type, rotated 180°

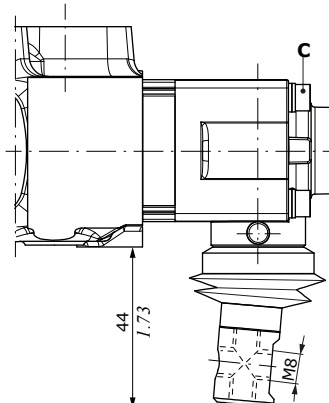
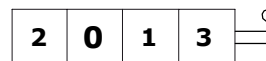


A1/Z1 type

M8 thread, for 116 floating spool type

A2/Z1 type

As A1/Z1 type, rotated 180°

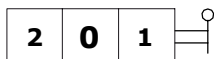


Mechanical controls

With safety lever control

A1/S type

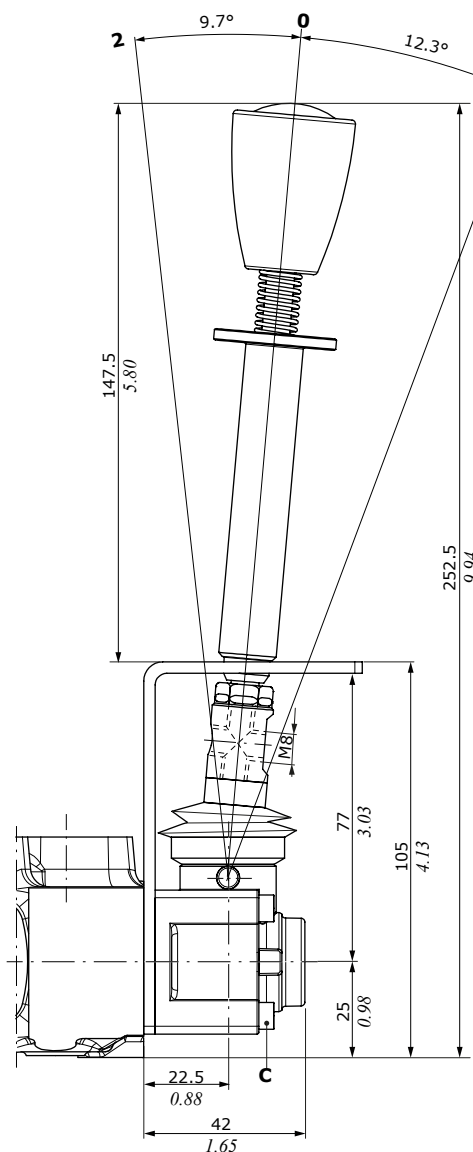
M8 thread, aluminium lever box



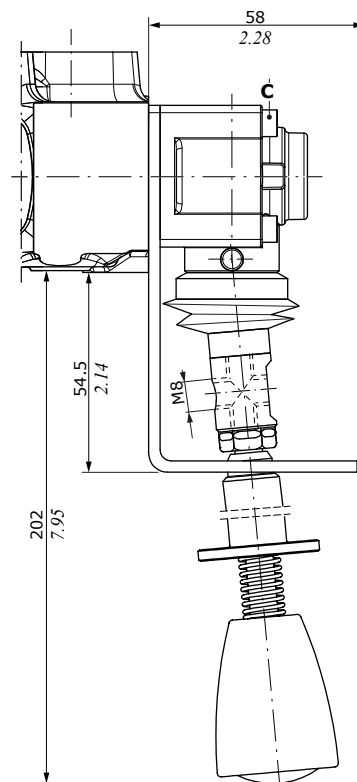
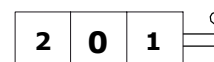
Wrenches and tightening torques

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

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



A2/S type
As A1/S type, rotated 180°

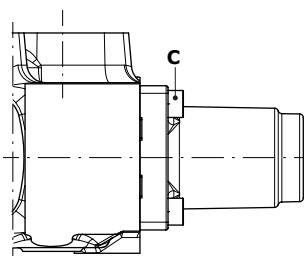
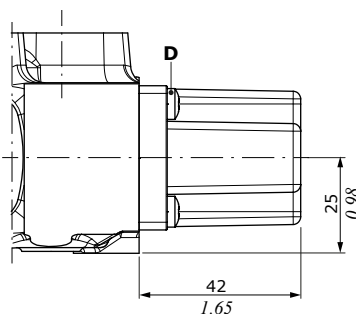
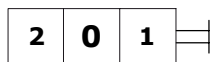


Without lever control

A3 type

With cap.

Available with aluminium cap



With aluminium cap;
dimensions are the same of standard type

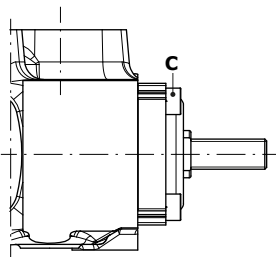
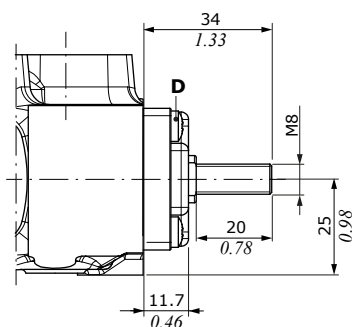
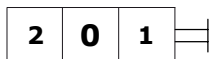
A side controls

Mechanical controls

Without lever control

A4 type

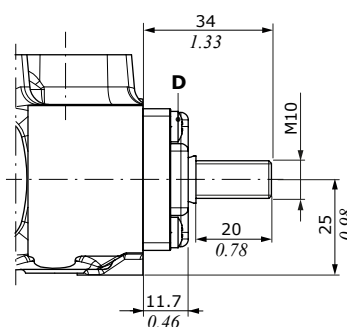
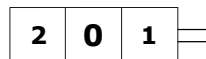
M8 male thread external pin with flange.
Available with aluminium flange



With aluminium flange;
dimensions are the same of standard type

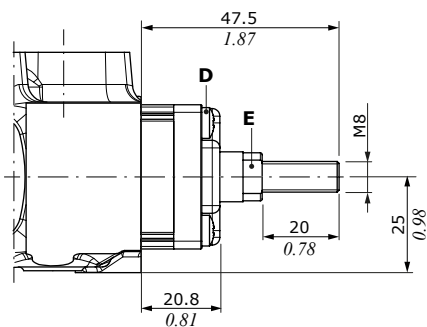
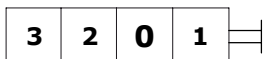
A4/01 type

M10 male thread external pin with flange



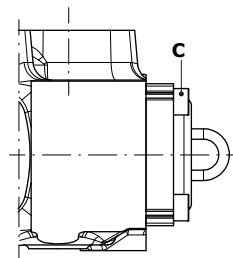
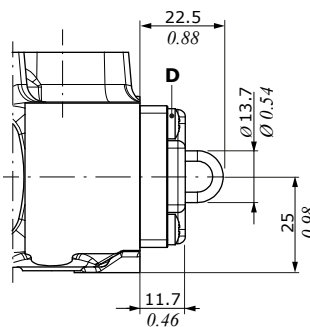
A4/Z1 type

As A4 type,
for 116 floating spool type

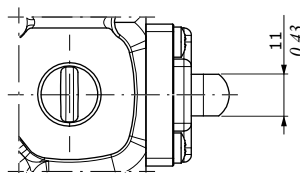


A5 type

Flange with spherical spool end.
Available with aluminium flange



With aluminium flange;
dimensions are the same of standard type



Wrenches and tightening torques

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

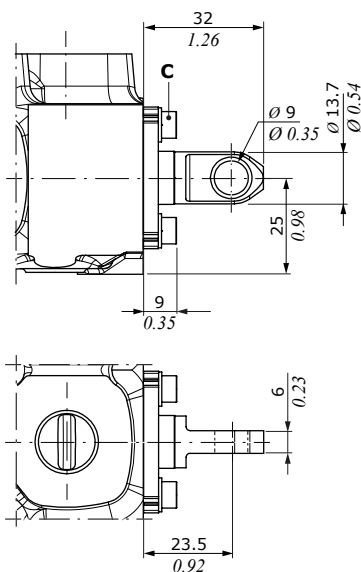
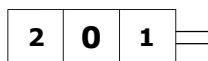
D = cross-head - 3 Nm (2.2 lbft)

E = wrench 9 - 9.8 Nm (7.2 lbft)

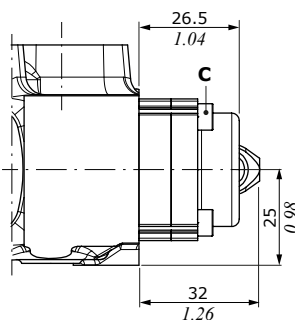
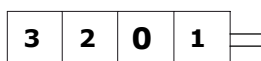
Mechanical controls

Without lever control

A6 type
With flange



A6-H/Z1 type
As A6 type,
for 116 floating spool type



Wrenches and tightening torques

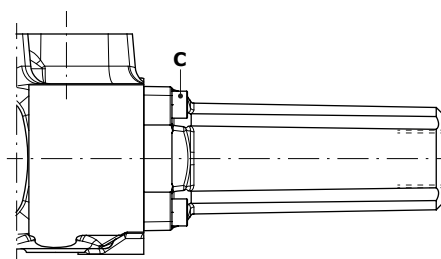
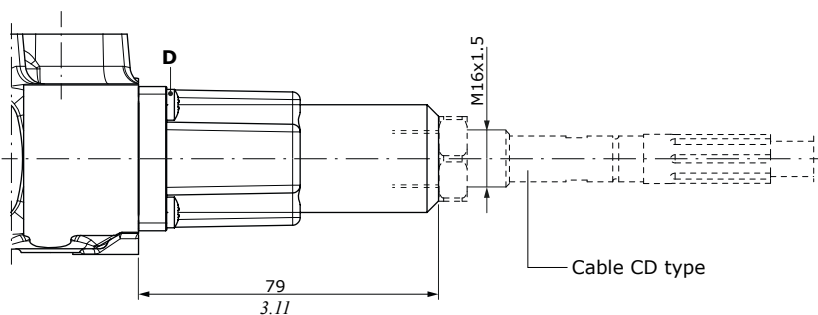
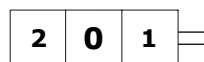
C = allen wrench 3 - 3 Nm (2.2 lbf ft)

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

A8 type

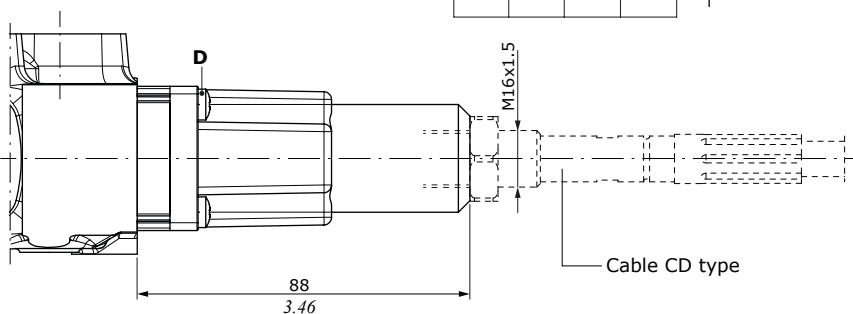
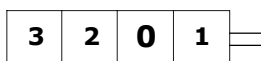
Flexible cable control arrangement.
Available with aluminium cap

With flexible cable control arrangement



With aluminium cap;
dimensions are the same of standard type

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

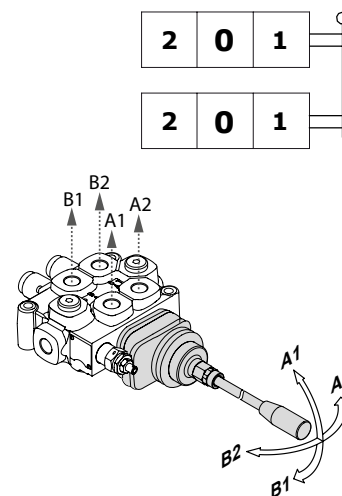
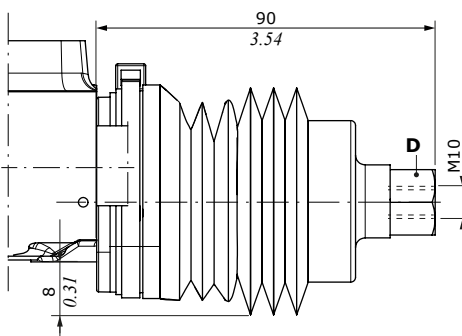
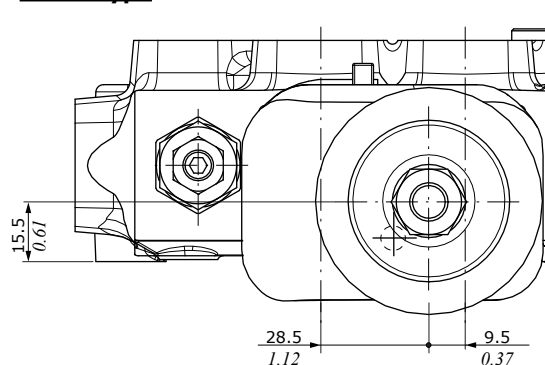


A side controls

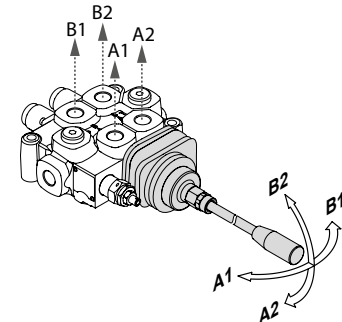
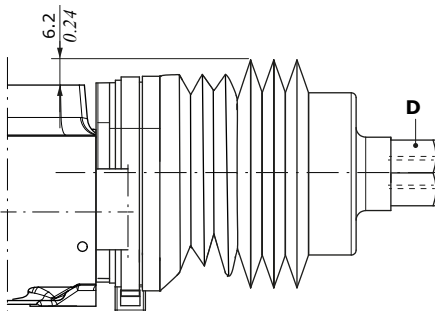
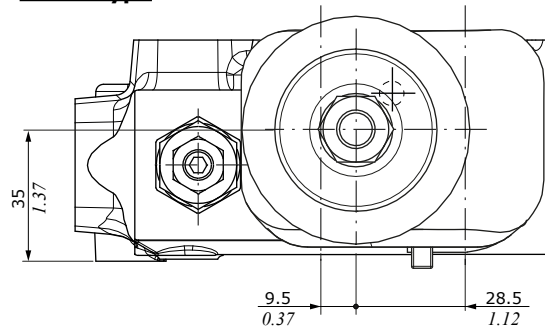
Joystick controls

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

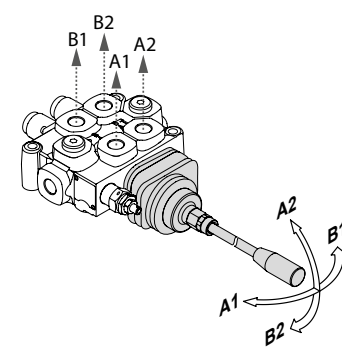
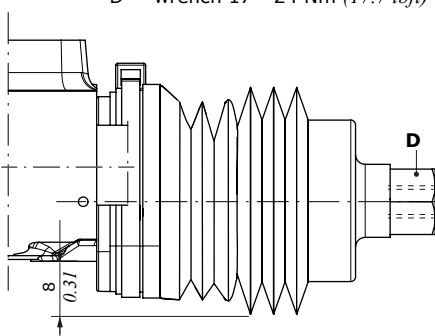
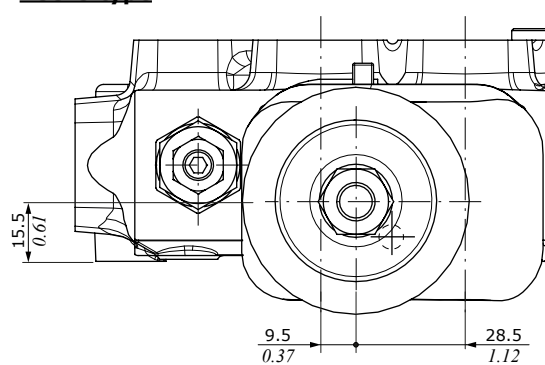
A35-1 type



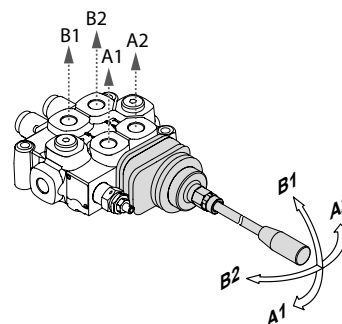
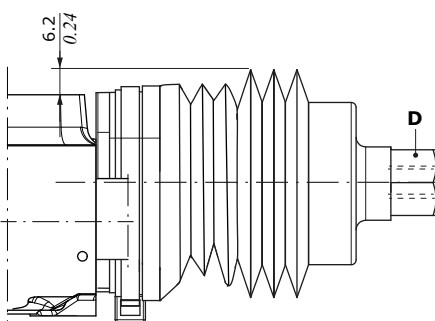
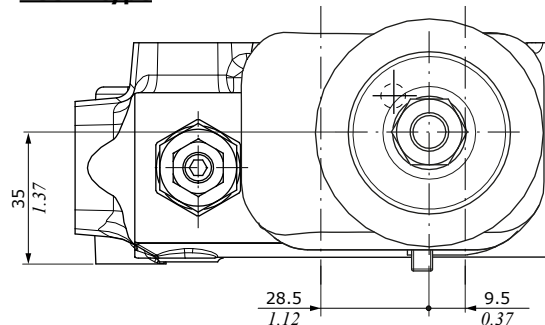
A35-2 type



A35-3 type



A35-4 type



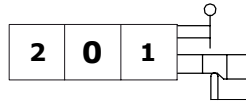
Wrenches and tightening torques
D = wrench 17 - 24 Nm (17.7 lbft)

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

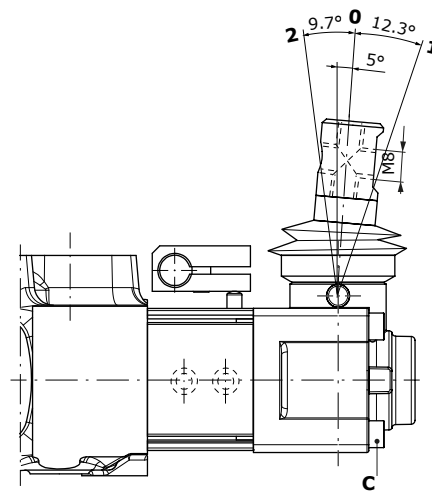
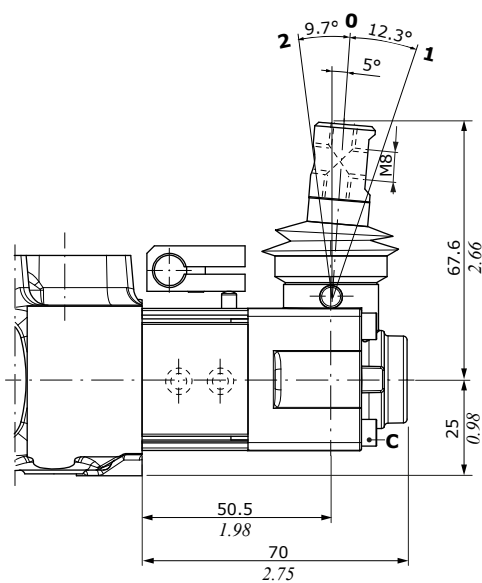
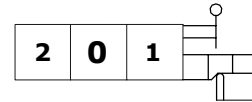
Micro operation in position 1 and 2.
Available with aluminium lever box

**N1A-A1 type**

Micro operation in
position 1

**N1B-A1 type**

Micro operation in
position 2



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

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

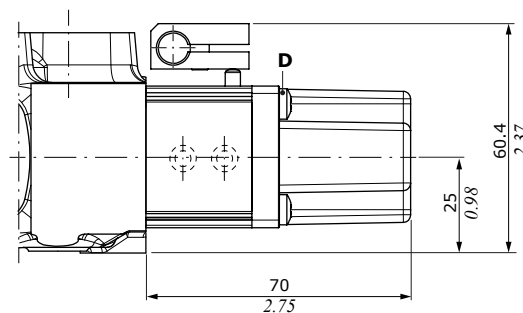
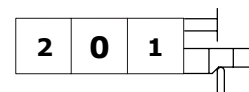
Micro operation in position
1 and 2

**N1A-A3 type**

Micro operation in
position 1

**N1B-A3 type**

Micro operation in
position 2

**Wrenches and tightening torques**

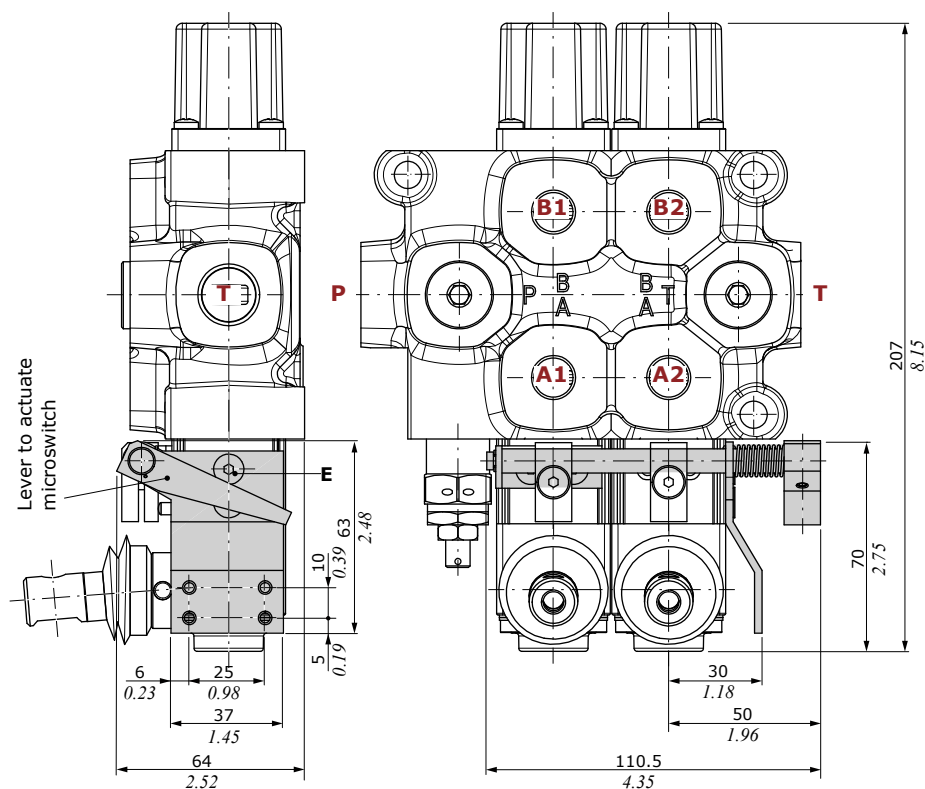
C = allen wrench 3 - 3 Nm (2.2 lbf ft)

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

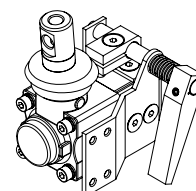
A side controls

Spool position microswitch

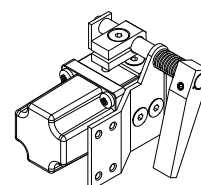
Microswitch assembly kit for 2 working section (N1-A1 type)



with cap



with lever box



Wrenches and tightening torques

E = allen wrench 3 - 6.6 Nm (4.8 lbf·ft)

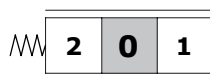
Drawing is referred to a Q25 monoblock valve.

Mechanical controls

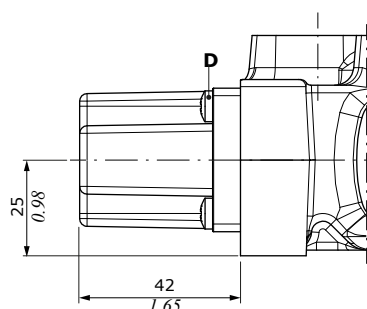
With spring return control

M1 type

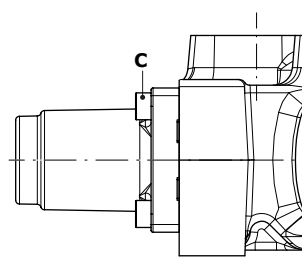
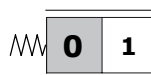
3 position, spring return
in neutral position.
Available with aluminium cap

**M1/01 type**

3 position,
for joystick control.
Available with aluminium cap

**M2 type**

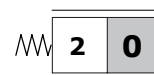
2 position (0-1), spring return
in neutral position.
Available with aluminium cap



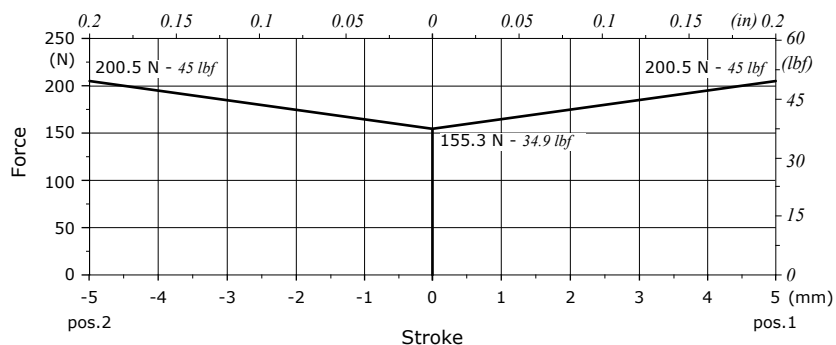
With aluminium cap;
dimensions are the same of standard type

M3 type

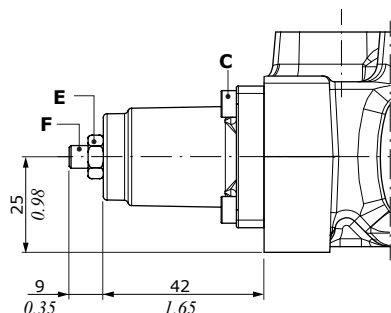
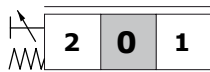
2 position (0-2), spring return
in neutral position.
Available with aluminium cap

**Wrenches and tightening torques**

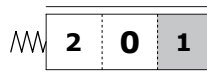
C = allen wrench 3 - 3 Nm (2.2 lbf ft)
D = cross-head - 3 Nm (2.2 lbf ft)
E = wrench 10 - 9.8 Nm (7.2 lbf ft)
F = allen wrench 4 - 9.8 Nm (7.2 lbf ft)

M1 control type - Force vs. Stroke diagram**M1/02 type**

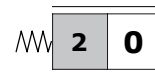
As M1 type, with stroke limiter

**M4 types**

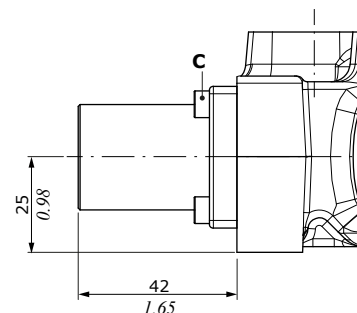
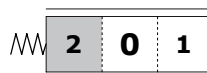
2 position (1-2),
spring return in position 1



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



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



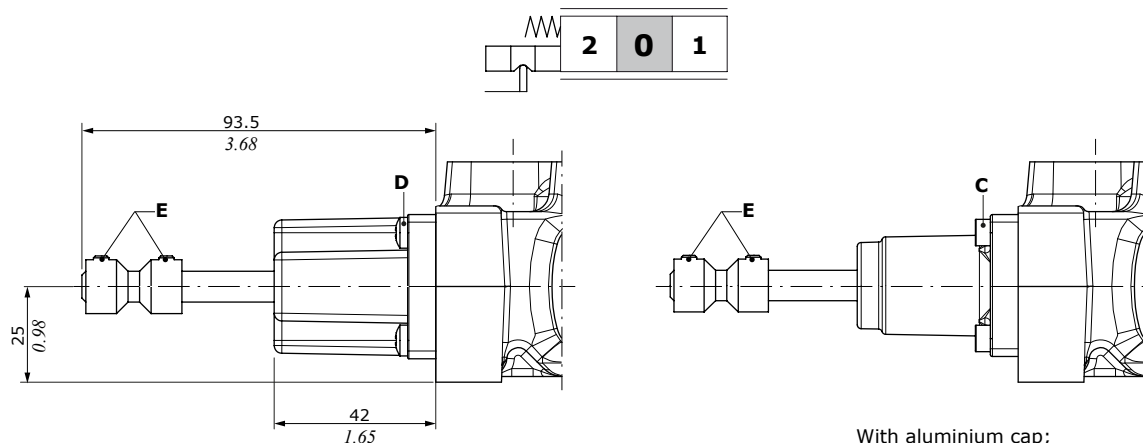
B side controls

Mechanical controls

With spring return control

M1-B1 type

3 position, microswitch arrangement.
Available with aluminium cap

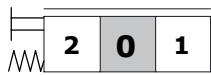


With aluminium cap;
dimensions are the same of standard type

With flexible cable control arrangement

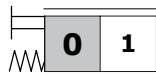
M1-U1 type

3 position, with M8 male thread external pin



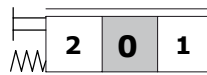
M2-U1 type

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



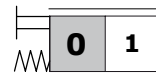
M1-U2 type

3 position, spring return in neutral position



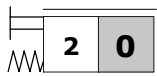
M2-U2 type

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



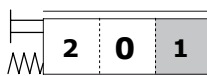
M3-U1 type

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



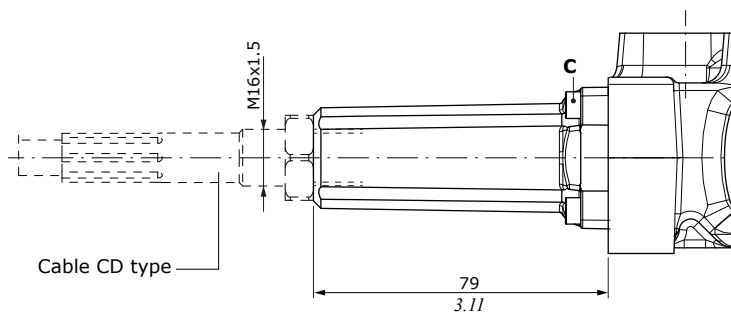
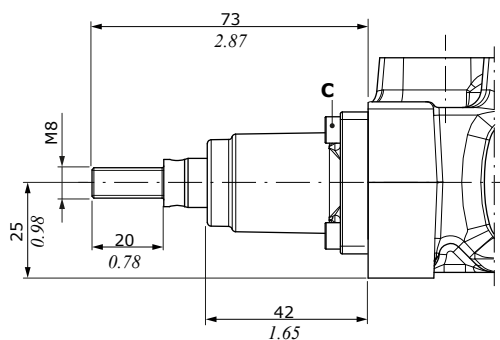
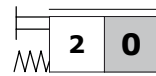
M4-U1 type

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



M3-U2 type

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



Wrenches and tightening torques

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

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

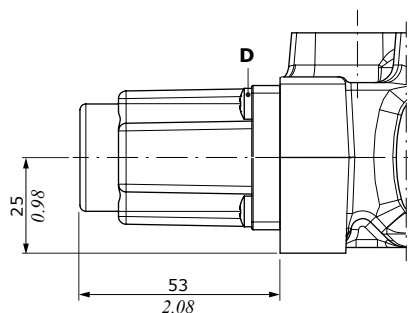
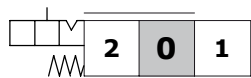
E = allen wrench 3 - 5 Nm (3.68 lbf ft)

Mechanical controls

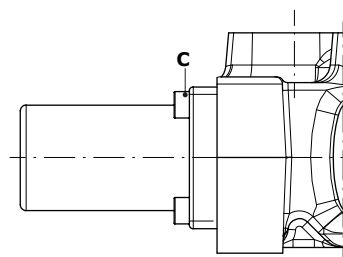
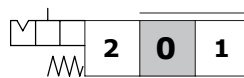
With detent control

R1 type

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

**R2 type**

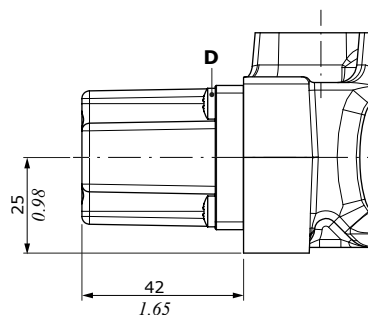
3 position, detent in position 2.
Available with aluminium cap



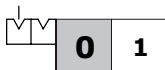
With aluminium cap;
dimensions are the same of standard type

R3 type

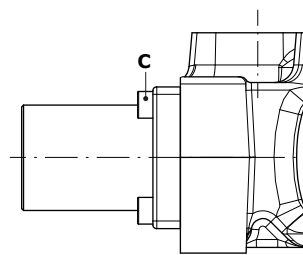
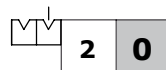
3 position,
detent in all position.
Available with aluminium cap

**R4 type**

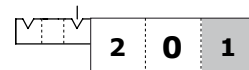
2 position,
detent in position 0-1.
Available with aluminium cap

**R5 type**

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

**R6 type**

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



With aluminium cap;
dimensions are the same of standard type

Wrenches and tightening torques

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

D = cross-head - 3 Nm (2.2 lbf·ft)

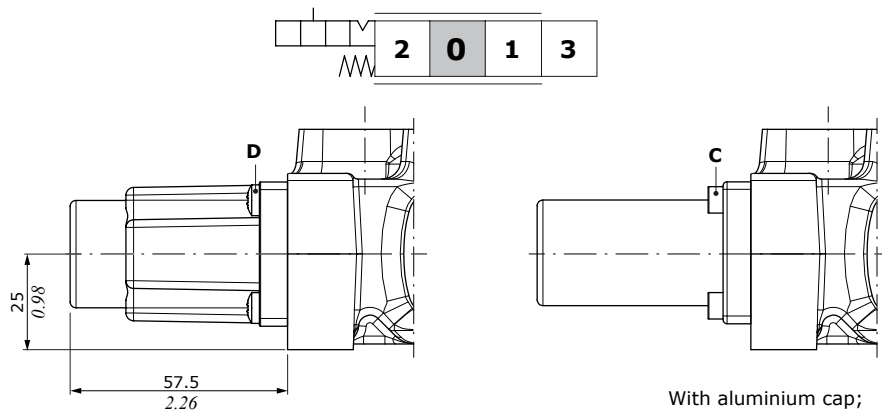
B side controls

Mechanical controls

With detent control

R8 type

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



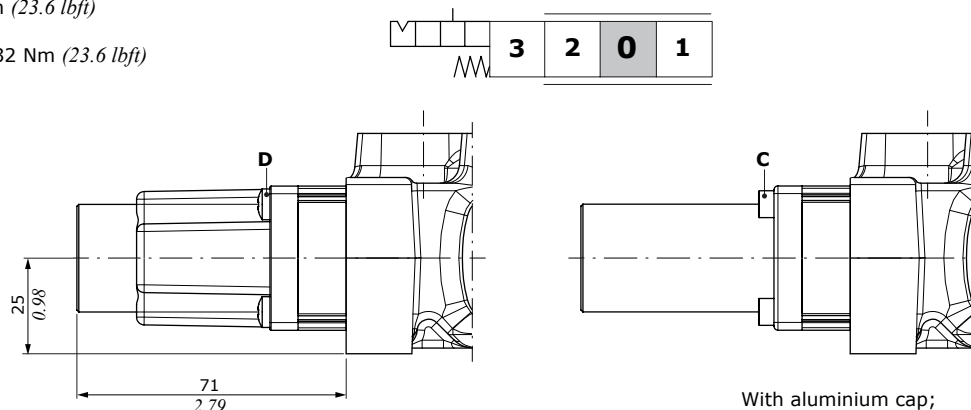
With aluminium cap;
dimensions are the same of standard type

Wrenches and tightening torques

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

R10/Z1 type

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

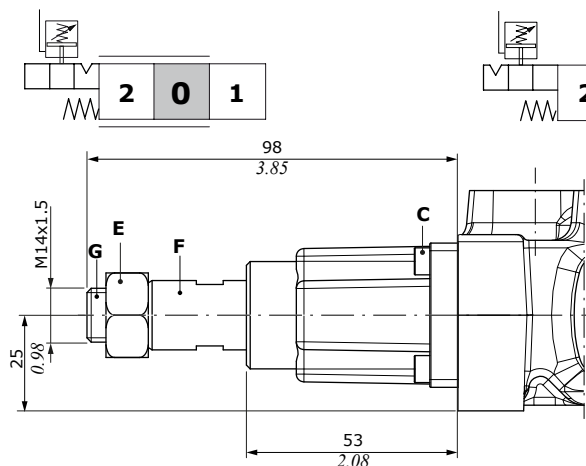


With aluminium cap;
dimensions are the same of standard type

With detent control and kick out function

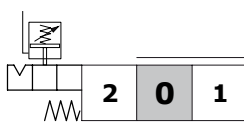
R1K type

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



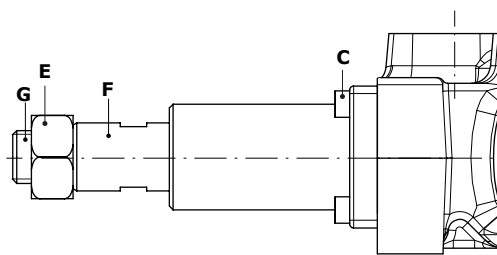
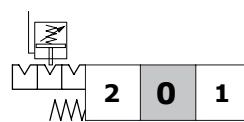
R2K type

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



R3K type

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



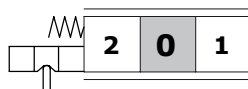
With aluminium cap;
dimensions are the same of standard type

Spool position microswitch

M1-N1 type

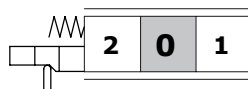
3 position, micro operation in position 1 and 2, spring return in neutral position.

Available with aluminium cap

**M1-N1A type**

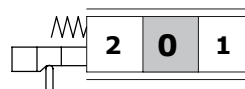
3 position, micro operation in position 1.

Available with aluminium cap

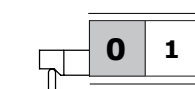
**M1-N1B type**

3 position, micro operation in position 2.

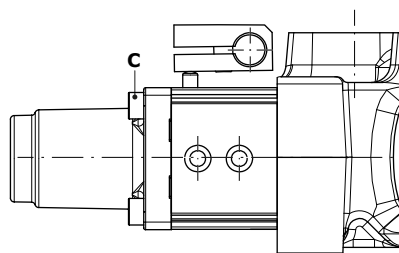
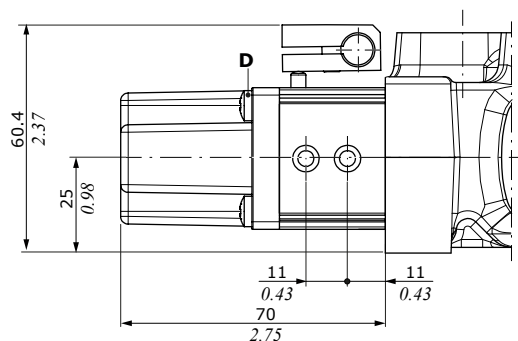
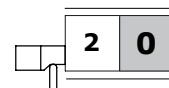
Available with aluminium cap

**M2-N1 type**

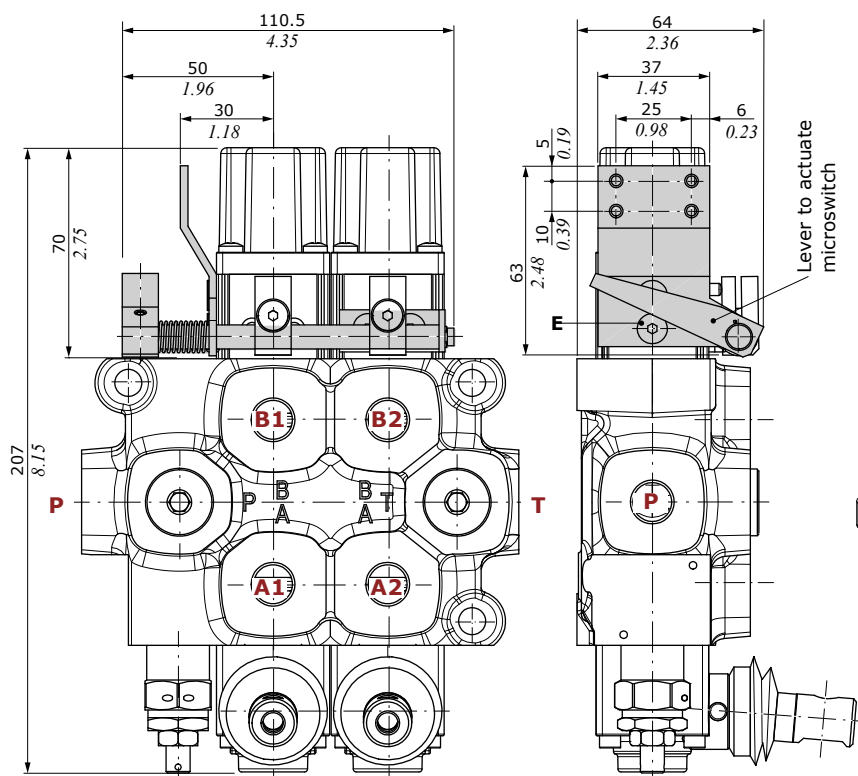
2 position (0-1) spring return in neutral position

**M3-N1 type**

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



With aluminium cap;
dimensions are the same of standard type

Microswitch assembly kit for 2 working section (M1-N1 type)**Wrenches and tightening torques**

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

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

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

Drawing is referred to a Q25 monoblock valve.

B side controls

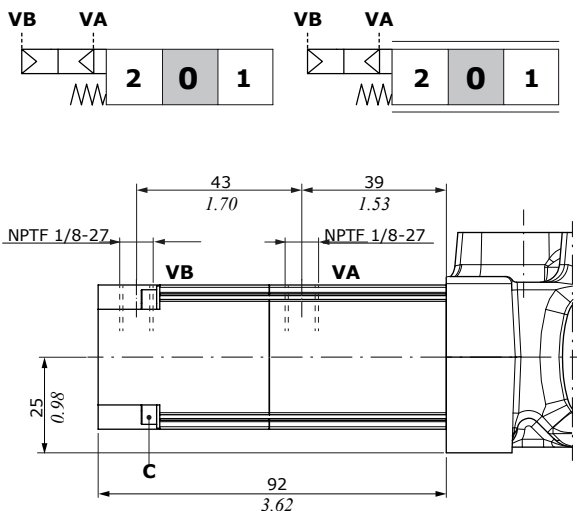
Pneumatic control

P1NW type

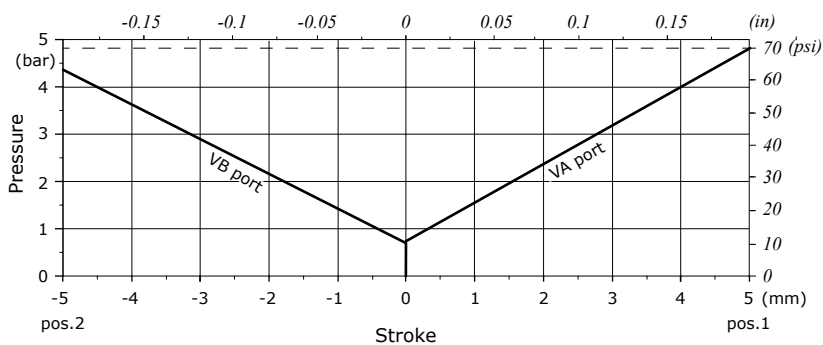
ON/OFF control

P1NPW type

Proportional control



Proportional pilot pressure curves



Operating features

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

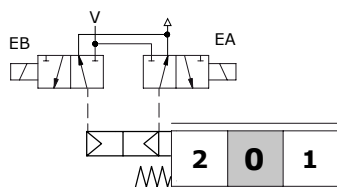
Wrenches and tightening torques

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

ON/OFF electropneumatic control

D3 type

ON/OFF control

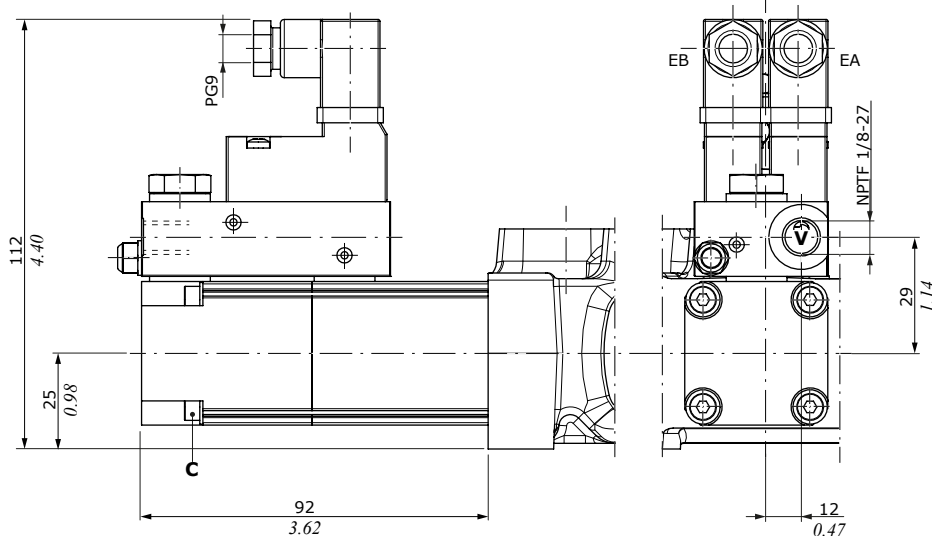


Operating features

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

COILS

Nominal voltage tolerance..... : -5% +10%
Power rating..... : 2.3 W
Nominal current..... : 12 VDC - 24VDC
Coil insulation..... : Class F
Weather protection..... : IP65
Duty cycle..... : 100%



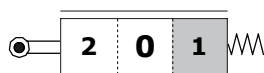
Wrenches and tightening torques

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

Cam control

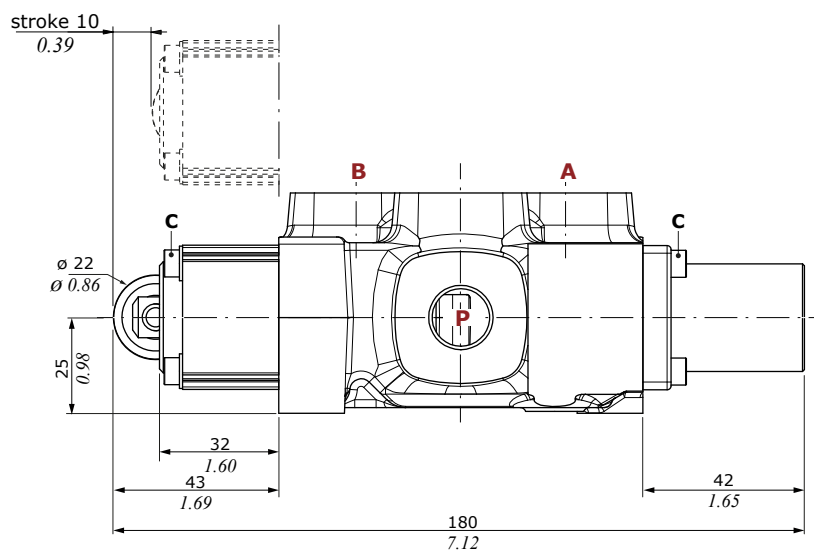
C2 type

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



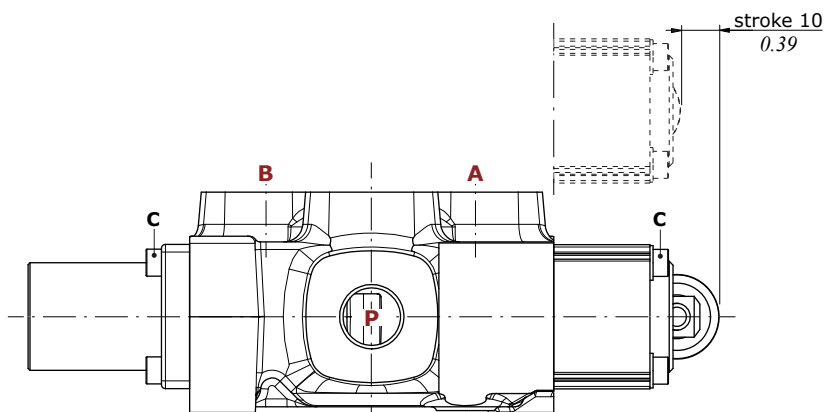
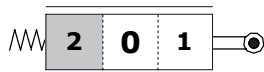
Wrenches and tightening torques

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

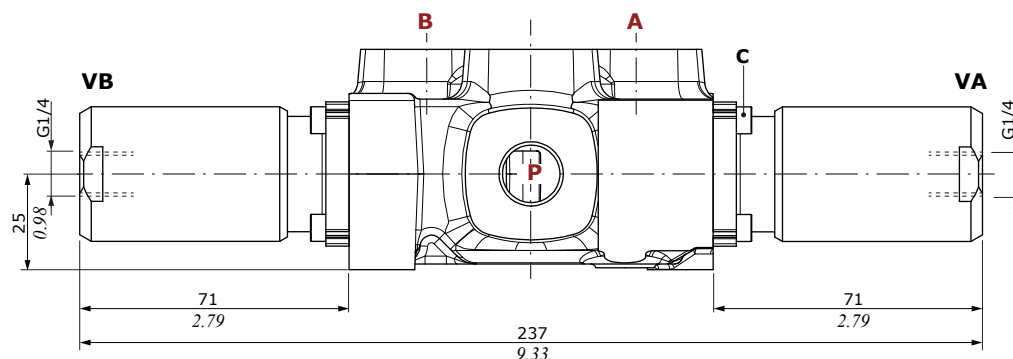
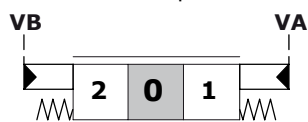


A+B side controls

Proportional hydraulic controls

H1 type

High pressure control
with side ports

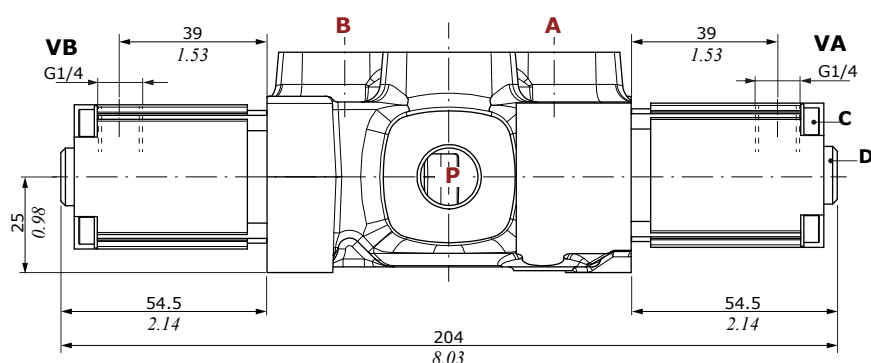
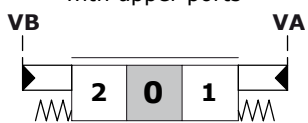


Operating features

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

H5 type

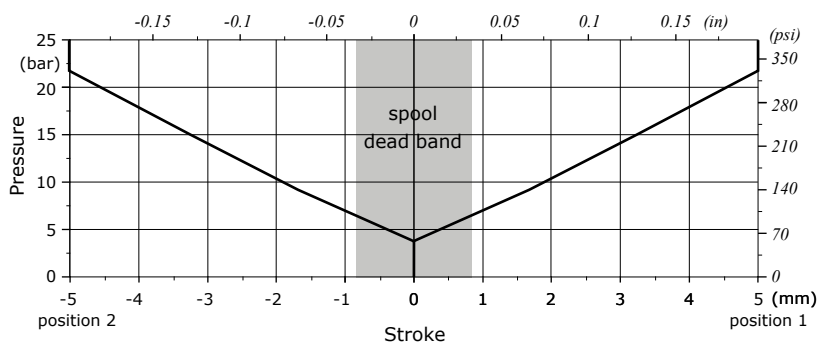
Low pressure control
with upper ports



Operating features

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

Stroke vs. Pressure diagram for H5 type control



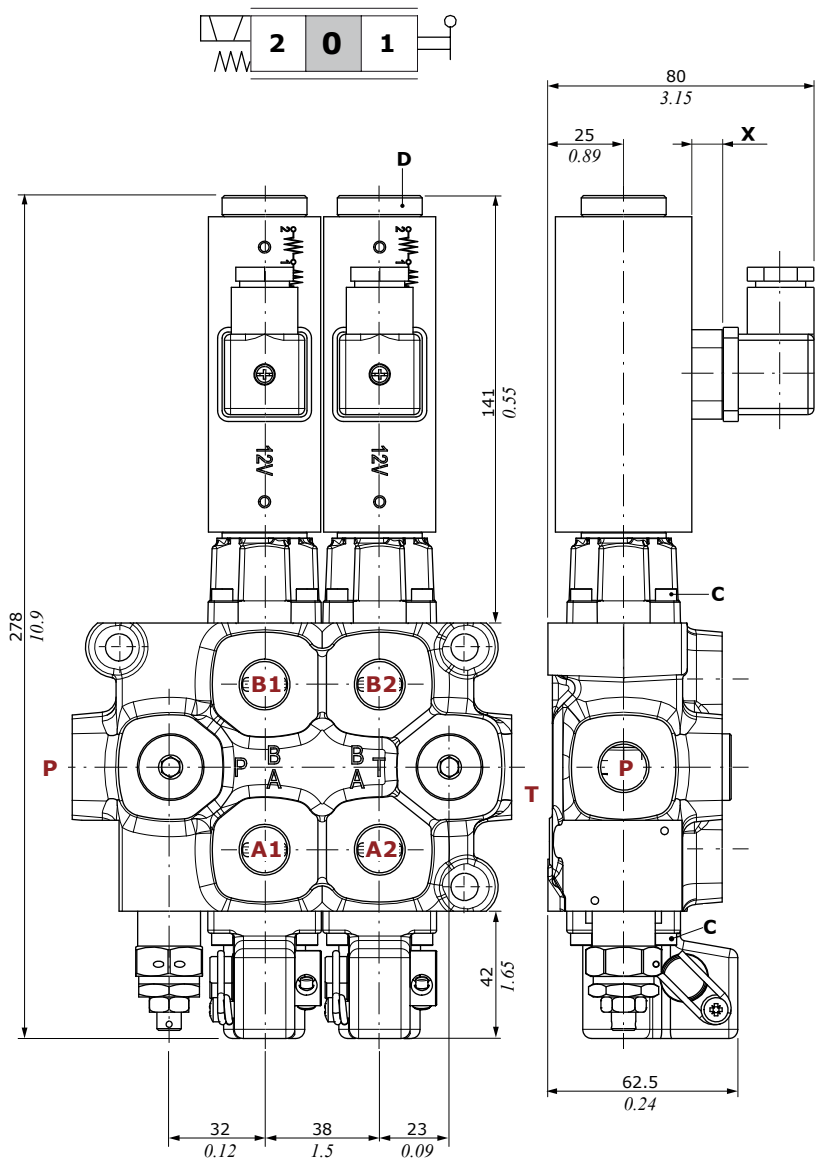
Wrenches and tightening torques

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

Direct solenoid control

D41 type: ON/OFF one side

Drawing is referred to a Q25 monoblock valve.



D41 coil

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

Connector type: ISO4400 3P+T-PG11

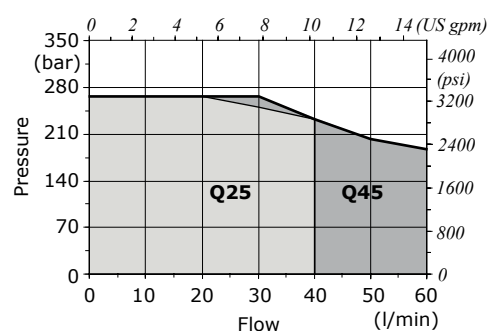
X

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

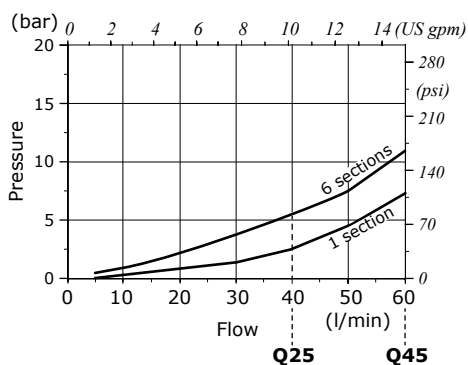
Wrenches and tightening torques

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

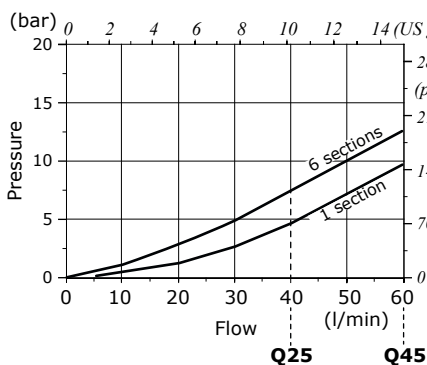
Dynamic conditions



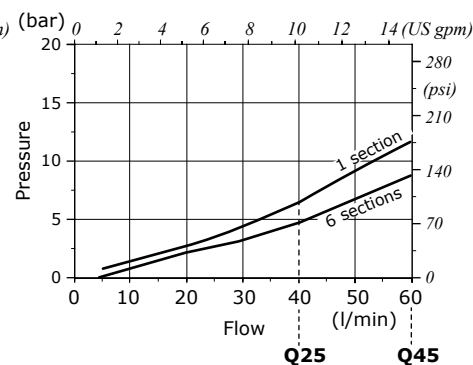
P⇒T pressure drops



P⇒A(B) pressure drops



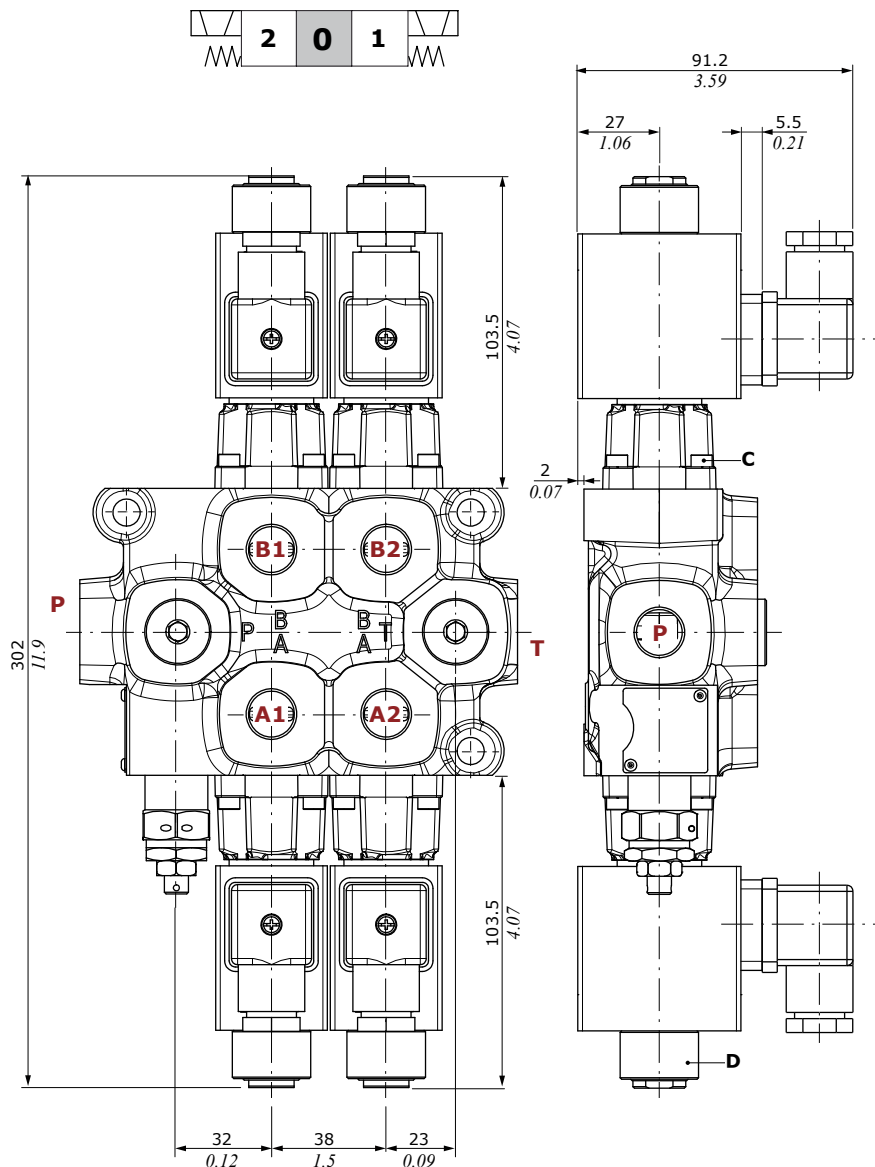
A(B)⇒T pressure drops



Direct solenoid control

D9 type: ON/OFF two side

Drawing is referred to a Q25 monoblock valve.

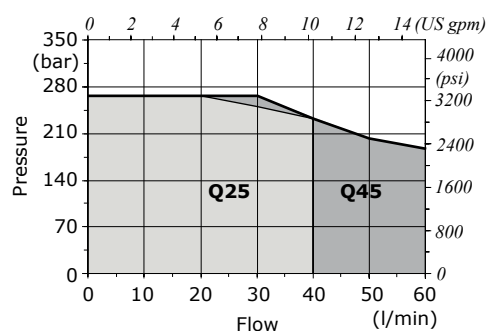


D9 coil

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

Connector type: ISO4400 3P+T-PG11

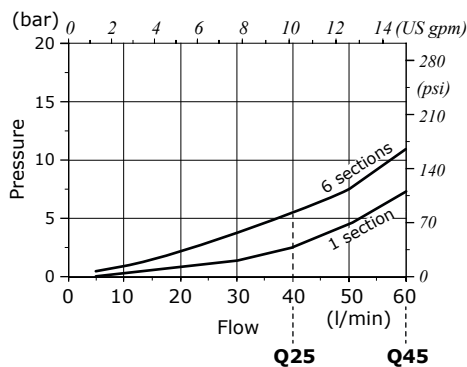
Dynamic conditions



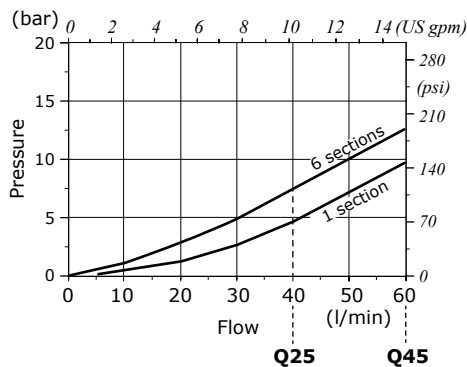
Wrenches and tightening torques

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

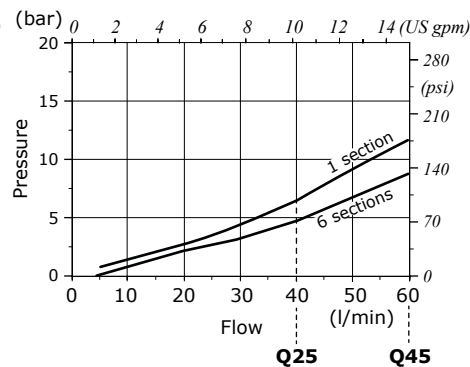
P⇒T pressure drops



P⇒A(B) pressure drops

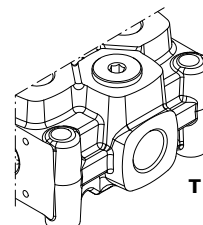
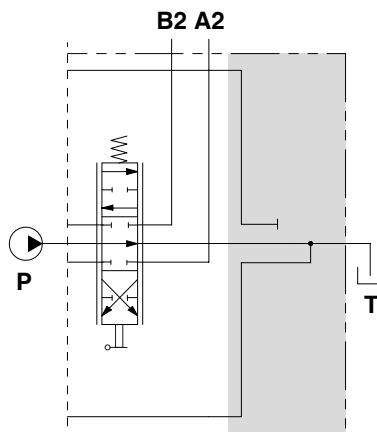
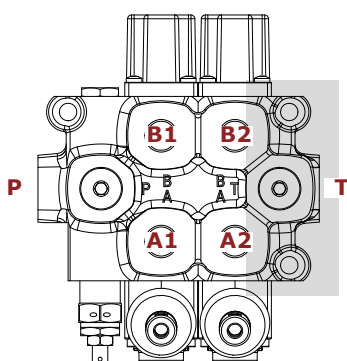


A(B)⇒T pressure drops

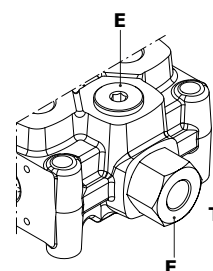
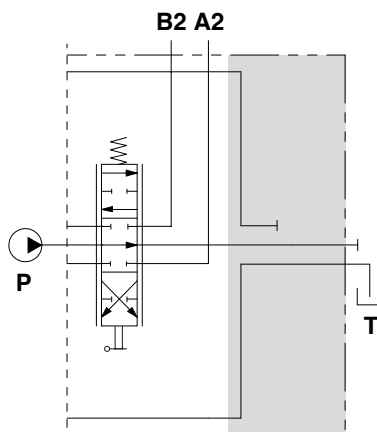
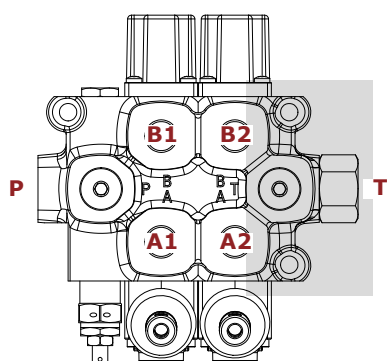


Outlet configuration

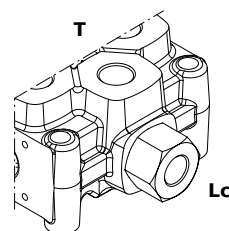
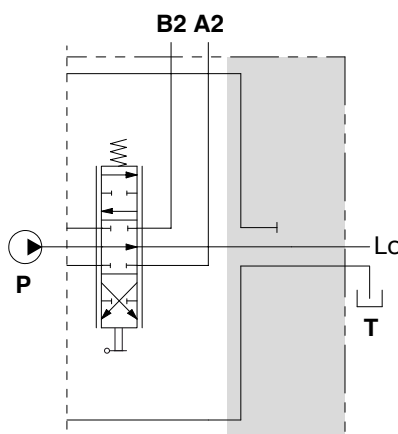
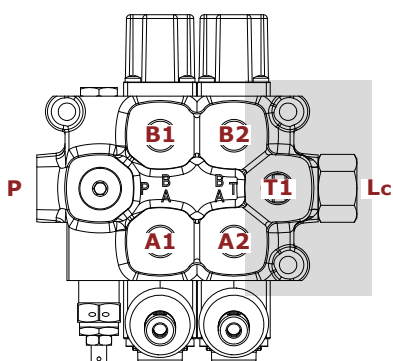
F3D configuration
Open center configuration



F16D configuration
Closed center configuration



F6D configuration
Carry-over configuration



Wrenches and tightening torques

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

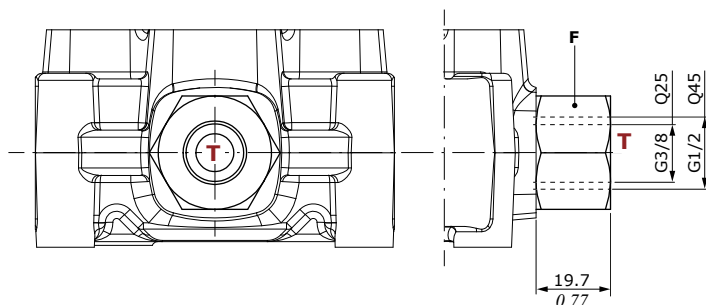
(Q45) = allen wrench 8 - 42 Nm (22 lbft)

F = wrench 30 - 42 Nm (30.9 lbft)

Outlet configuration

F6D - F16D joint dimension

Drawing is referred to a Q25 monoblock valve.



Wrenches and tightening torques

F = wrench 30 - 42 Nm (30.9 lbf·ft)



Q75 - Q95

Monoblock directional valves

- Simple, compact and heavy duty designed monoblock valve
- From 1 to 6 sections
- For open and closed center hydraulic systems, optional carry over port
- Mechanical, pneumatic, electropneumatic, hydraulic and direct solenoid controls

Working conditions

This catalogue shows technical specifications and diagrams measured through mineral oil of 46mm²/s - 46 cSt viscosity at 40°C - 104°F temperature.

	Q75	Q95
Nominal flow rating	80 l/min - (22 Us gpm)	100 l/min - (27 Us gpm)
Max. pressure	270 bar (3900 psi)	
Max. back pressure on outlet T port	25 bar (360 psi)	
Number sections	from 1 to 6	
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

NOTES - For different conditions please contact our Sales Department.

REFERENCE STANDARD

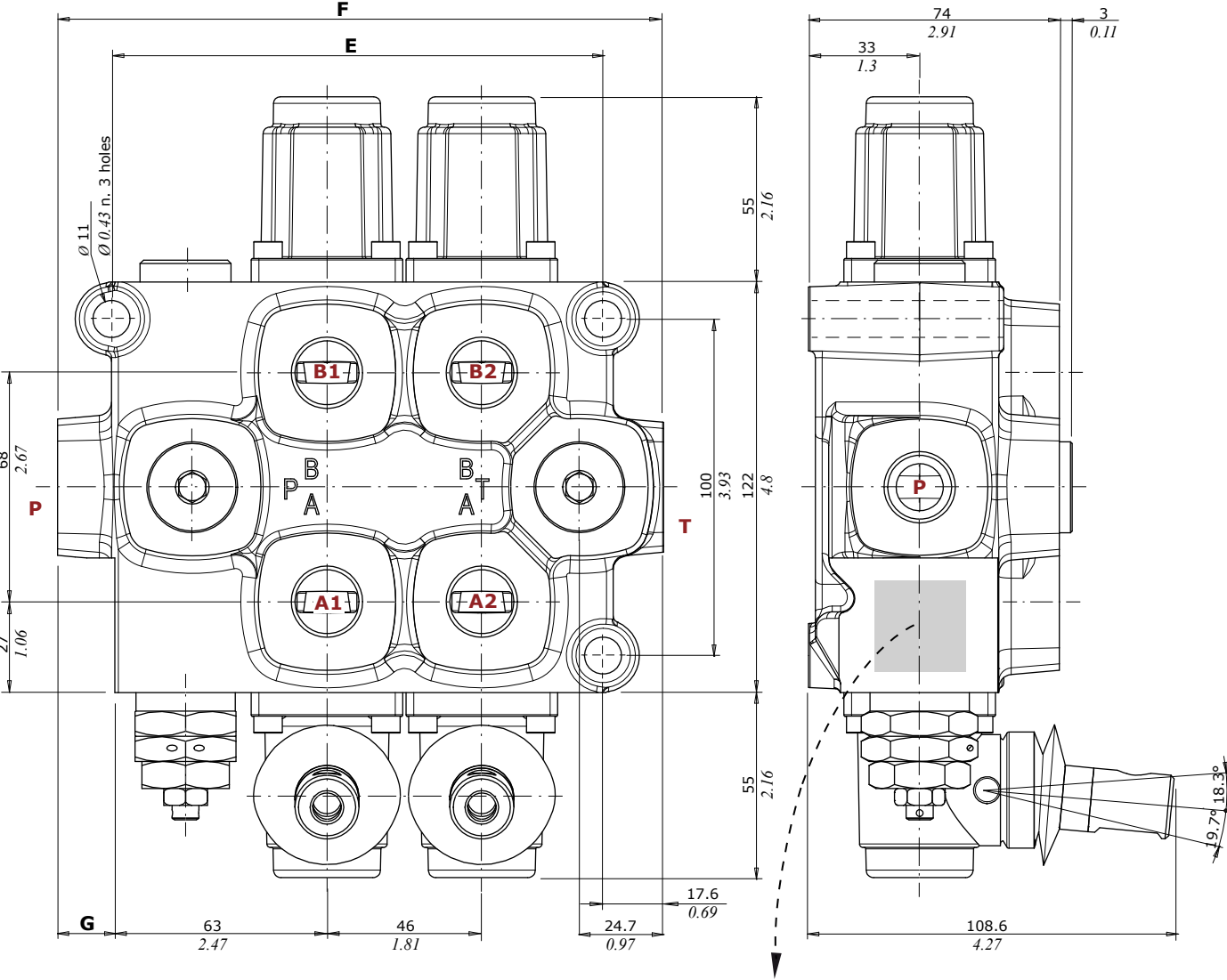
	BSP	UN-UNF
THREAD ACCORDING TO	ISO 228/1	ISO 263
	BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179
	SAE	11926
	DIN	3852-2 shape X or Y

PORT THREADING

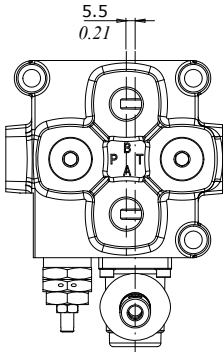
PORTS	Q75		Q95	
	BSP	UN-UNF	BSP	UN-UNF
P Inlet	G 1/2	7/8-14 (SAE 10)	G 3/4	1" 1/16-12 (SAE 12)
P1 Inlet	G 1/2	7/8-14 (SAE 10)	G 3/4	1" 1/16-12 (SAE 12)
A and B ports	G 1/2	7/8-14 (SAE 10)	G 3/4	1" 1/16-12 (SAE 12)
T Outlet	G 3/4	1" 1/16-12 (SAE 12)	G 3/4	1" 1/16-12 (SAE 12)
T1 Outlet	G 1/2	7/8-14 (SAE 10)	G 3/4	1" 1/16-12 (SAE 12)
Lc port (Carry-over plug - T port)	G 1/2	7/8-14 (SAE 10)	G 3/4	7/8-14 (SAE 10)
Hydraulic controls	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)
Pneumatic controls	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27	NPTF 1/8-27

Dimensional data

The Q75 and Q95 monoblock valves, have same dimensions but different threads. See port threading on page 51. Drawing are referred to a Q75 monoblock valve.



Directional valve with 1 section



walvoil

MADE IN ITALY

1GB75040009

DISTRIBUTORE

Q75/2

MD1600464-001

Product code

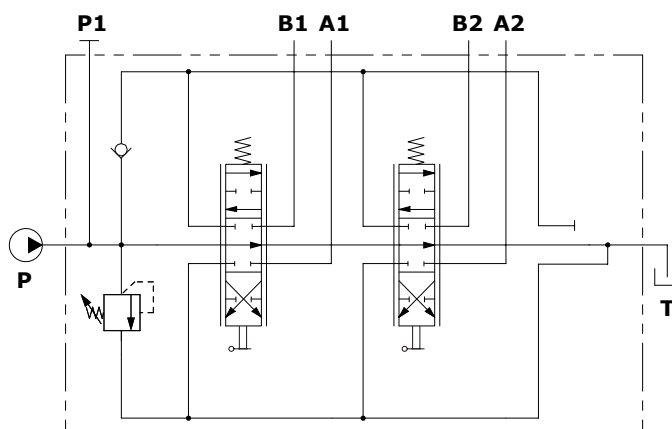
Code description

Product allotment

Datamatrix with product allotment

Type	E		F		G	
	mm	in	mm	in	mm	in
Q75/1 - Q95/1	100	3.93	134	5.27	16.5	0.65
Q75/2 - Q95/2	146	5.75	180	7.08	16.5	0.65
Q75/3 - Q95/3	192	7.56	226	8.89	16.5	0.65
Q75/4 - Q95/4	238	9.37	269	10.59	13.5	0.53
Q75/5 - Q95/5	284	11.18	315	12.4	13.5	0.53
Q75/6 - Q95/6	330	13	365	14.67	16.5	0.65

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

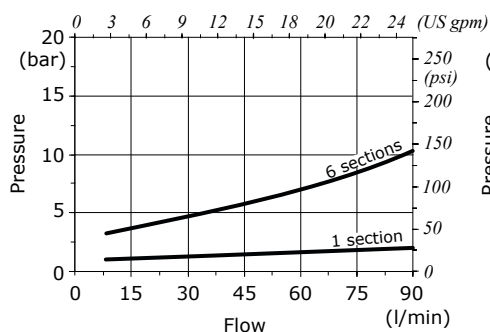


Description example (parallel circuit):
Q75/2/F1S(R250)/103-A1-M1/103-A1-M1/F3D
Q95/2/F1S(R250)/103-A1-M1/103-A1-M1/F3D

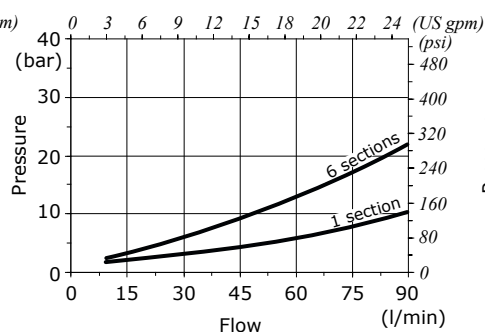
Performance data

Q75

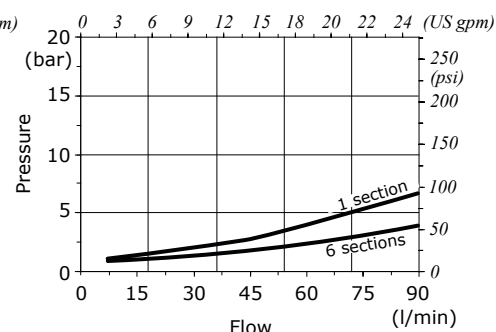
P⇒T pressure drops



P⇒A(B) pressure drops

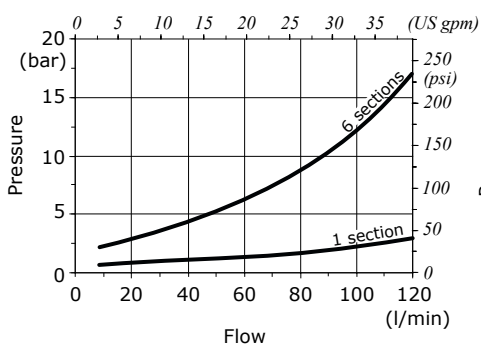


A(B)⇒T pressure drops

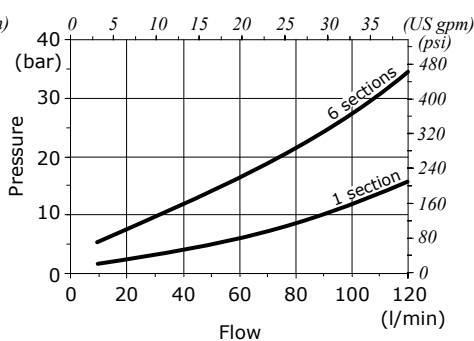


Q95

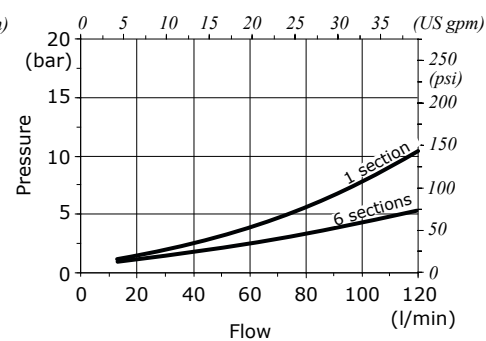
P⇒T pressure drops



P⇒A(B) pressure drops



A(B)⇒T pressure drops



Parts ordering codes

Mechanical control valve configuration example

valve setting (bar)

Q75 / 2 / F1S (N150) / 102 - A1 - M1 / 102 - A1 - M1 / F3D

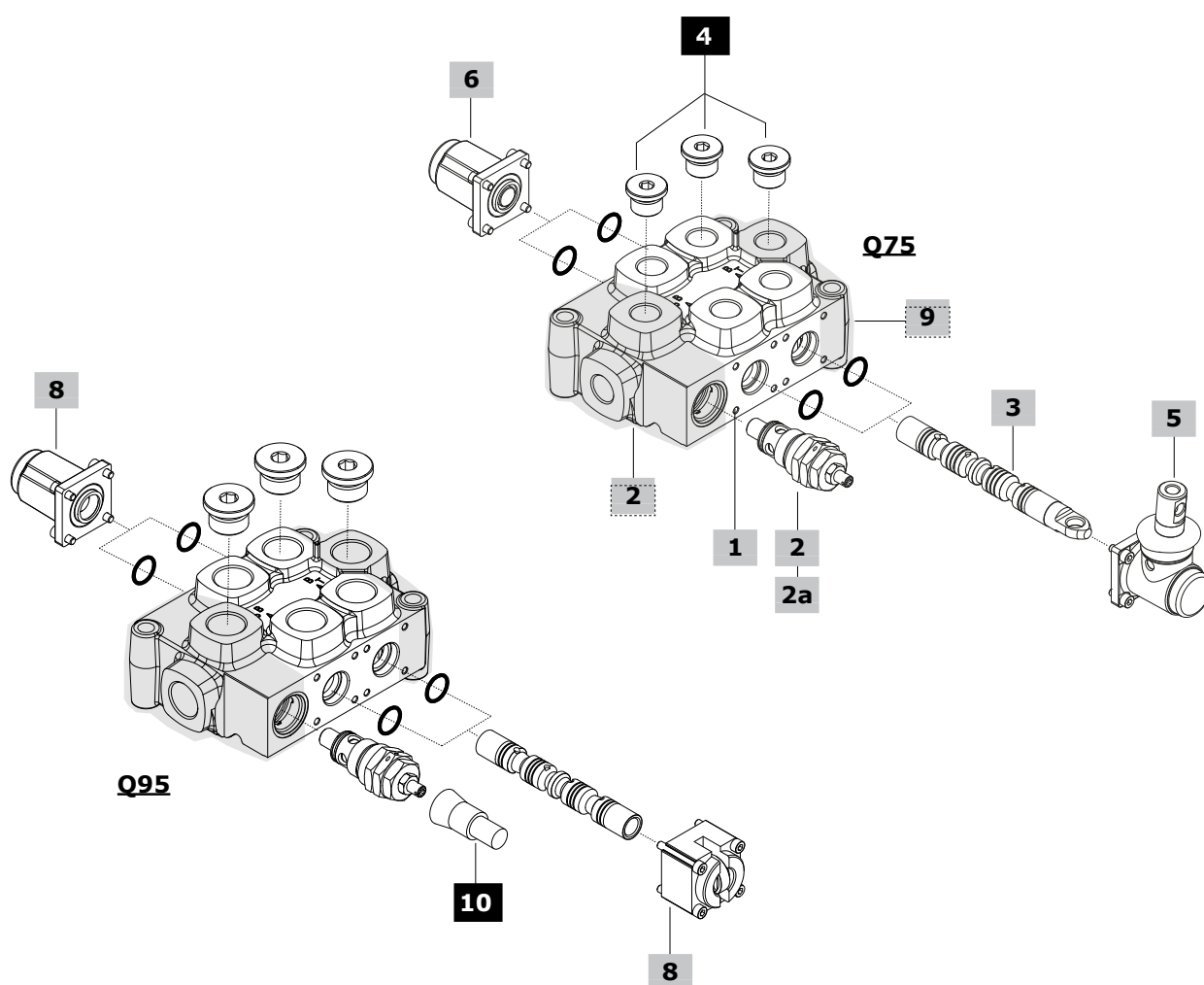
1 2 2a 3 5 6 9

N. of section

C2/C3 complete mechanical control valve configuration example

Q95 / 2 / F1S (N150) / 103 - C3 / 103 - C3 / F3D

8



Parts ordering codes

1 Body kit*

The codes are referred to sections with O-ring seals

TYPE	CODE	DESCRIPTION
Q75/1	5KC0600129549	1 section
Q75/2	5KC0600127951	2 sections
Q75/3	5KC0600132952	3 sections
Q75/4	5KC0600127953	4 sections
Q75/5	5KC0600127513	5 sections
Q75/6	5KC0600131252	6 sections

Q95/1	5KC0600129646	1 section
Q95/2	5KC0600130377	2 sections
Q95/3	5KC0600130378	3 sections
Q95/4	5KC0600132067	4 sections
Q95/5	5KC0600131717	5 sections
Q95/6	5KC0600131453	6 sections

2 Inlet configuration* page 59

TYPE	DESCRIPTION
F1S	With load check and pressure relief valves
F2S	With load check valve
F7S	With pressure relief valve
F8S	Without valves (pressure relief valve plugged port)

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

2a Main pressure relief valve page 60

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 Spool page 61

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 (3)
102	3CUG2891901	Single acting on port B (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

Note (3): Q75 valve required G1/2 plug, see #4
Q95 valve required G3/4 plug, see #4

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

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

TYPE	CODE	DESCRIPTION
-	060002792099	G1/2 plug for Q75 body kit
-	3XTAP732200	G3/4 plug for Q95 body kit

5 A side control page 62

TYPE	CODE	DESCRIPTION
------	------	-------------

For standard spools**With lever control:**

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	08610A1-2/Z1	Aluminium lever box for 116 spool type
A2/Z1	08610A1-2/Z1	As A1/Z1 type, with lever box rotated 180°

With safety lever control:

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°

Without lever control:

A6	08620A6	With flange
A8	08622A8	Flexible cable control arrangement
A8/Z1	08622A8/Z1	As A8 type, for 116 spool type

Joystick controls for 2 section operation:

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**With spool position microswitch:**

Note: To complete the control you must use the assembly kit at #7

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-A3L	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

Without lever control:

A3	08614A3	Without lever, with cap
A4	08617A4	M10 male thread external pin with flange
A5⁽²⁾	08619A5	Flange with spherical spool end

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

(¹): Always complete with lever knob

(²): To be assembled only with M4 control

Parts ordering codes

6 B side control page 67

TYPE	CODE	DESCRIPTION
<u>With spring return:</u>		
M1	08730M1	3 pos., spring return in neutral position
M1-B1	08753M1-B1	As M1 type, with microswitch arrangement
M1/O1	08730M1/O1	As M1 type, for mechanical joystick
M1/O2	08730M1/O2	As M1 type, with stroke limiter
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	08734M41-2	2 pos. (1-2), spring return in position 1
	08735M42-1	2 pos. (2-1), spring return in position 2
M4-U1	08704M4-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
<u>With detent:</u>		
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 type spool
R10/Z1	08750R10/Z1	4 pos., detent in 4 th pos., for 126 type spool
<u>With detent and kick out function:</u>		
R1K	08741R1K	3 pos., detent in position 1
	08741R1K-TS	As previous one, water-proof configuration
R2K	08742R2K	3 pos., detent in position 2
	08742R2K-TS	As previous one, water-proof configuration
R3K	08743R3K	3 pos., detent in all position
	08743R3K-TS	As previous one, water-proof configuration
<u>With spool position microswitch:</u>		
Note: to complete the control you must use the assembly kit at #7		
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 pos.
M3-N1	08772M3-N1	2 pos. (0-2), spring return in neutral pos.
<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

7 Microswitch assembling 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

8 Complete controls A+B sides page 72

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

9 Outlet configuration* page 75

TYPE	DESCRIPTION
F3D	Open center configuration: for Q75 n. 1 G1/2 plug code 060002792099, on T1 port; for Q95 n. 1 G3/4 plug code 3XTAP732200, on T1 port
F6D	Carry-over configuration: for Q75 n. 1 G1/2 joint code 060002315899, on T port; for Q95 n. 1 G3/4 joint code 060002790899, on T port
F16D	Closed center configuration: for Q75 n. 1 G1/2 plug code 060002792099, on T1 port; for Q75 n. 1 G1/2 joint code 060002530199, on T port; for Q95 n. 1 G3/4 plug code 3XTAP732200, on T1 port; for Q95 n. 1 G3/4 joint code 060003016499, on T port

10 Accessory

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

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

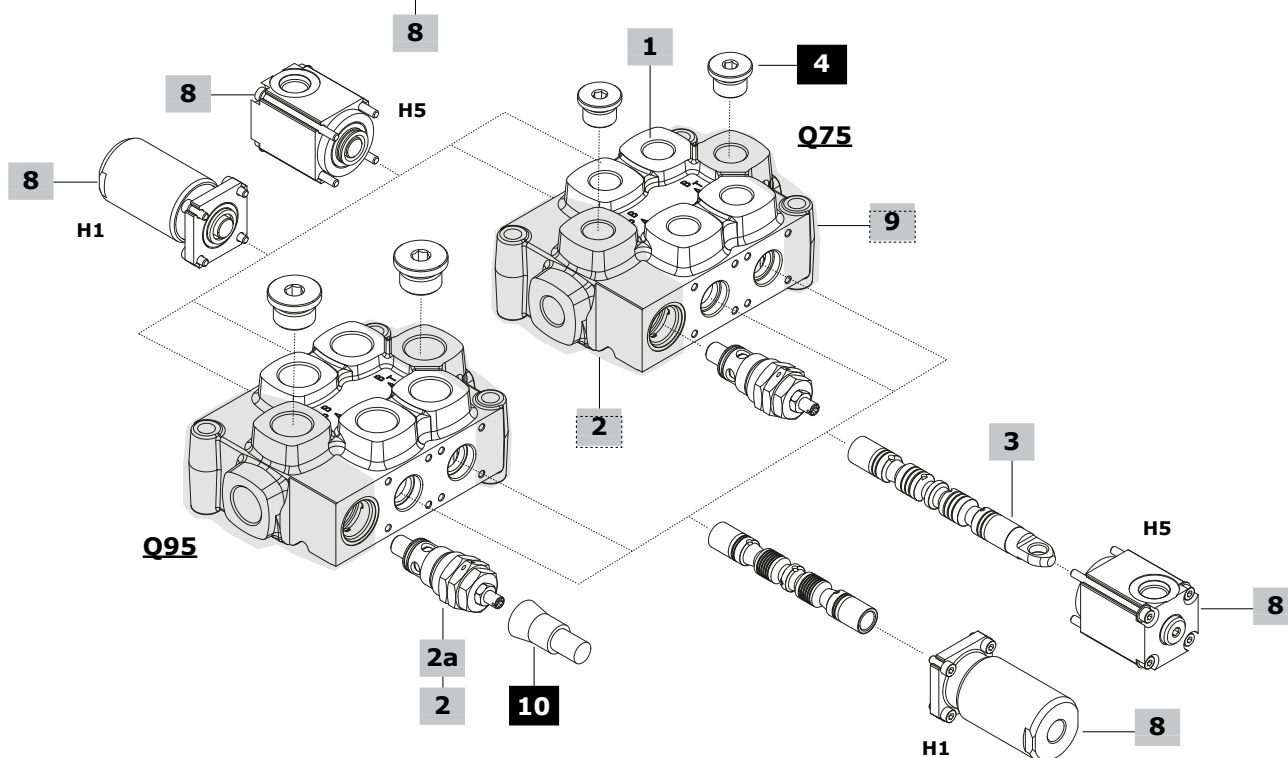
Proportional hydraulic controls valve configuration example

N. of section valve setting (bar)

Q75 / 2 / F1S (N150) / 103 - H5 / 103 - H5 / F3D

1 2 2a 3 8 9

Q95 / 2 / F1S (N150) / 103 - H1 / 103 - H1 / F3D



1 Body kit*

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

H1 hydraulic control requires standard body: see #1, page 55

TYPE	CODE	DESCRIPTION
Q75/1	5KC0600129549A	1 section
Q75/2	5KC0600127951A	2 sections
Q75/3	5KC0600127952A	3 sections
Q75/4	5KC0600127953A	4 sections
Q75/5	5KC0600127513A	5 sections
Q75/6	5KC0600131252A	6 sections

Q95/1	5KC0600129646A	1 section
Q95/2	5KC0600130377A	2 sections
Q95/3	5KC0600130378A	3 sections
Q95/4	5KC0600132067A	4 sections
Q95/5	5KC0600131717A	5 sections
Q95/6	5KC0600131453A	6 sections

2 Inlet configuration* page 59

See #2, page 55

2a Main pressure relief valve page 60

See #2a, page 55

3 Spool page 61

TYPE CODE DESCRIPTION

For H5 hydraulic control

103 060102894999 Double acting, A and B closed in neutral position

For H1 hydraulic control

103 060102879099 Double acting, A and B closed in neutral position

111 060102864199 Double acting, A and B to tank in neutral position

4 Plug for P-T ports*

See #4, page 55

8 Hydraulic controls A+B sides* page 73

TYPE CODE DESCRIPTION

H5 08785H5 Low pressure proportional type, upper ports

H1 08779H1 High pressure proportional type, side ports

9 Outlet configuration* page 75

See #9, page 56

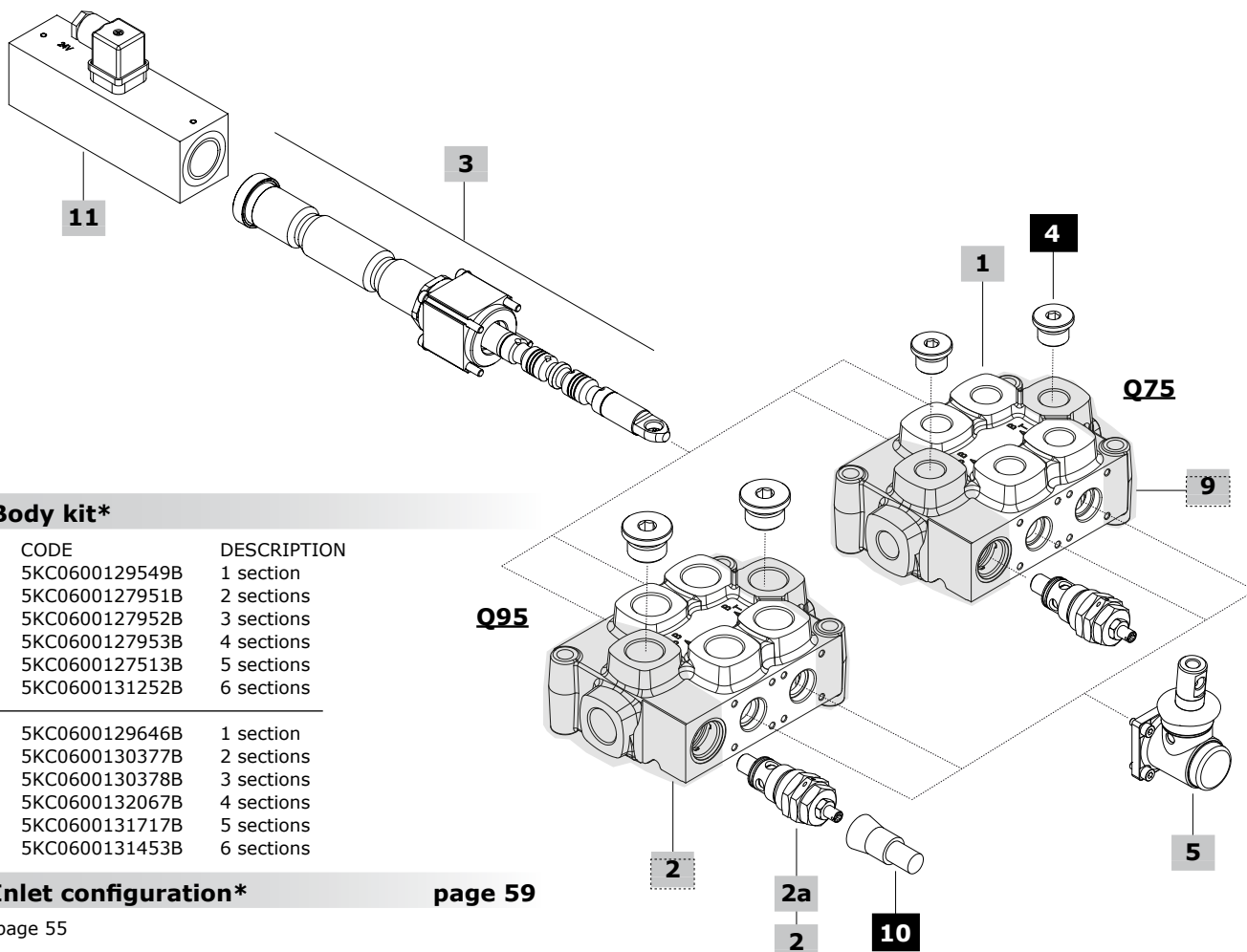
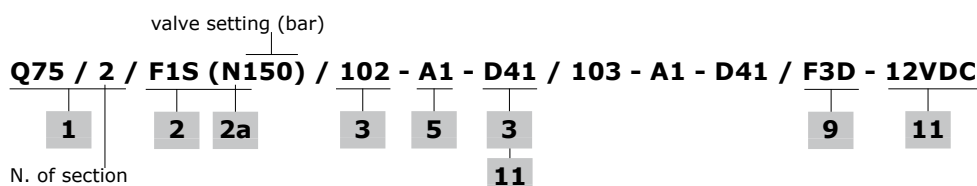
10 Accessory

See #10, page 56

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

Parts ordering codes

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



1 Body kit*

TYPE	CODE	DESCRIPTION
Q75/1	5KC0600129549B	1 section
Q75/2	5KC0600127951B	2 sections
Q75/3	5KC0600127952B	3 sections
Q75/4	5KC0600127953B	4 sections
Q75/5	5KC0600127513B	5 sections
Q75/6	5KC0600131252B	6 sections

Q95/1	5KC0600129646B	1 section
Q95/2	5KC0600130377B	2 sections
Q95/3	5KC0600130378B	3 sections
Q95/4	5KC0600132067B	4 sections
Q95/5	5KC0600131717B	5 sections
Q95/6	5KC0600131453B	6 sections

2 Inlet configuration*

page 59

See #2, page 55

2a Main pressure relief valve

page 60

See #2a, page 55

3 Solenoid control

page 74

TYPE	CODE	DESCRIPTION
103	X0601030059	Tube assembly with double acting spool, A and B closed in neutral position
111	X0601030043	Tube assembly with double acting spool, A and B to tank in neutral position
101	X0601030060A	Tube assembly with single acting spool on port A (1)
102	X0601030060B	Tube assembly with single acting spool on port B (1)

Note (1): Q75 valve required G1/2 plug, see #4
Q95 valve required G3/4 plug, see #4

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

See #4, page 55

5 A side control

page 74

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

9 Outlet configuration*

page 75

See #9, page 56

10 Accessory

See #10, page 56

11 Coil

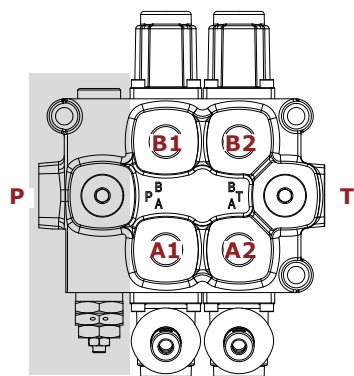
page 74

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

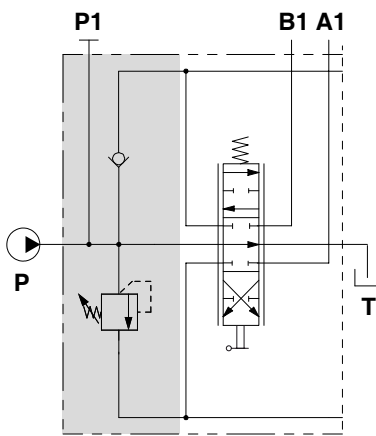
Note: The connector is included

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

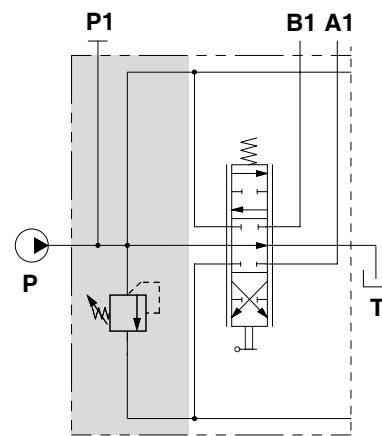
Inlet configuration



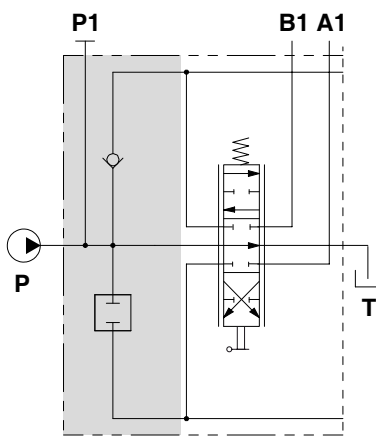
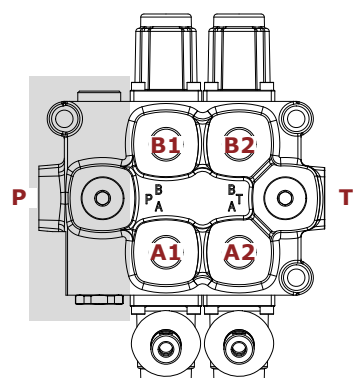
F1S configuration
With load check and pressure relief valve



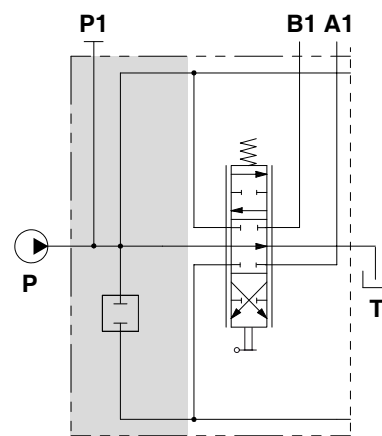
F7S configuration
With pressure relief valve



F2S configuration
With load check valve

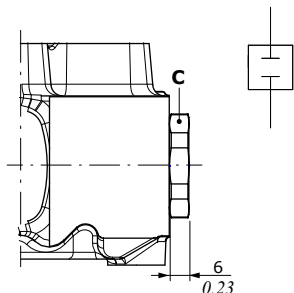


F8S configuration
Without valves
(pressure relief valve plugged port)

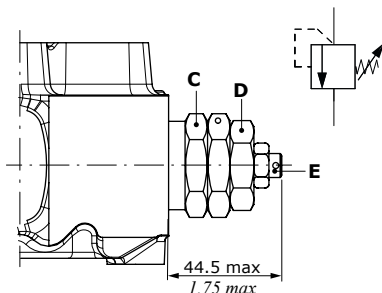


Main pressure relief valve

Relief valve blanking plug

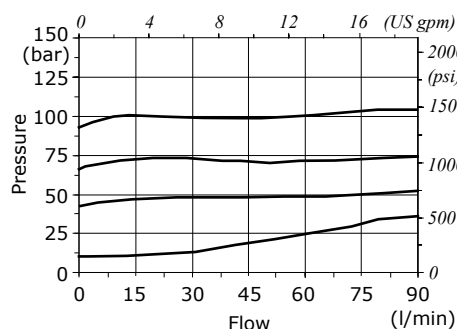


Main pressure relief valve

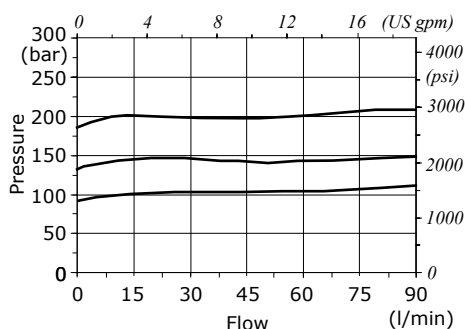


Spring type	Setting ranges (bar - psi)
B (white)	From 10 to 100 - from 145 to 1450
N (black)	From 101 to 200 - from 1460 to 2900
R (red)	From 201 to 380 - from 2910 to 5500

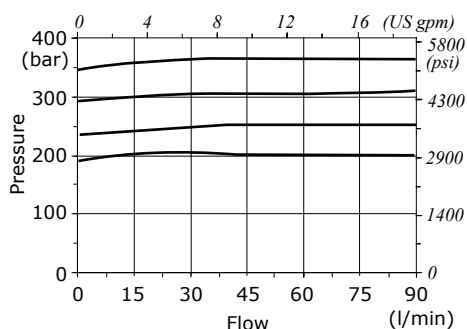
Setting example (B type spring)



Setting example (N type spring)



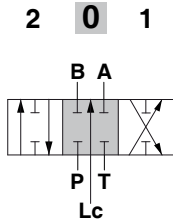
Setting example (R type spring)



Wrenches and tightening torques

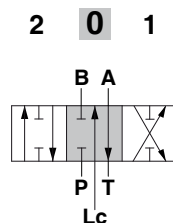
- C = wrench 30 - 80 Nm (59 lbft)
- D = wrench 26 - 42 Nm (35.2 lbft)
- E = allen wrench 4

103 type
A and B closed
in neutral position



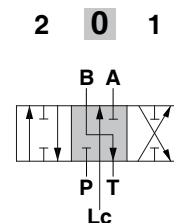
Stroke
Position 1: + 7 mm (+ 0.27 in)
Position 2: - 7 mm (- 0.27 in)

107 type
A to tank, B closed
in neutral position



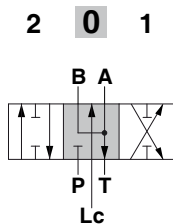
Stroke
Position 1: + 7 mm (+ 0.27 in)
Position 2: - 7 mm (- 0.27 in)

108 type
B to tank, A closed
in neutral position



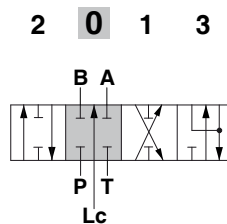
Stroke
Position 1: + 7 mm (+ 0.27 in)
Position 2: - 7 mm (- 0.27 in)

111 type
A and B to tank
in neutral position



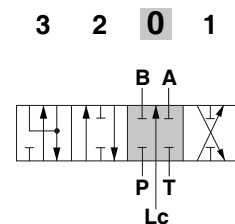
Stroke
Position 1: + 7 mm (+ 0.27 in)
Position 2: - 7 mm (- 0.27 in)

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



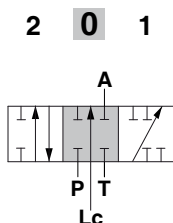
Stroke
Position 1: - 7 mm (+ 0.27 in)
Position 2: + 7 mm (+ 0.27 in)
Position 3: - 10.25 mm (- 0.40 in)

126 type
With floating in the 4th position
(spool out)



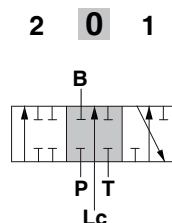
Stroke
Position 1: + 7 mm (+ 0.27 in)
Position 2: - 7 mm (+ 0.27 in)
Position 3: + 10.25 mm (- 0.40 in)

101 type
Single acting on A,
B plugged



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

102 type
Single acting on B,
A plugged



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

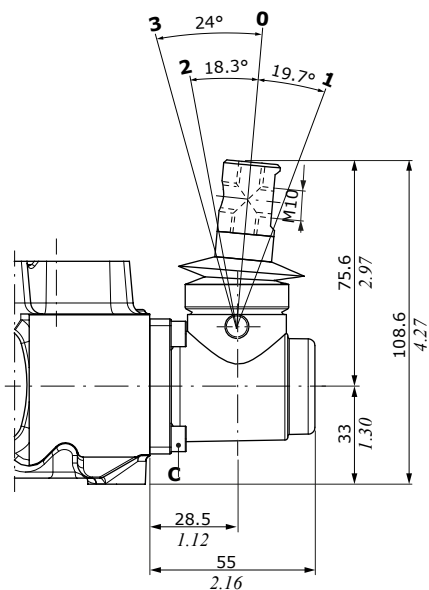
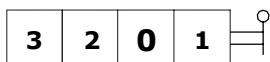
A side controls

Mechanical controls

With lever control

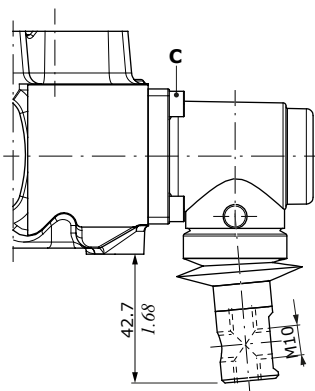
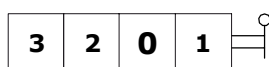
A1 type

M10 thread aluminium lever box



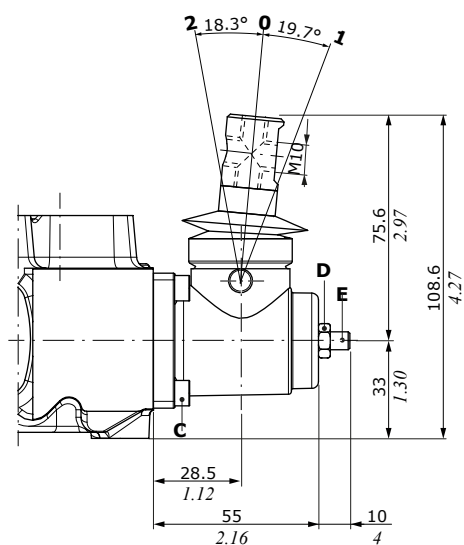
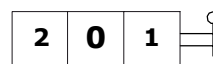
A2 type

As A1 type, rotated 180°



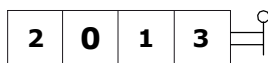
A1/06 type

M10 thread,
with stroke limiter



A1/Z1 type

M10 thread,
for 116 floating spool type



Wrenches and tightening torques

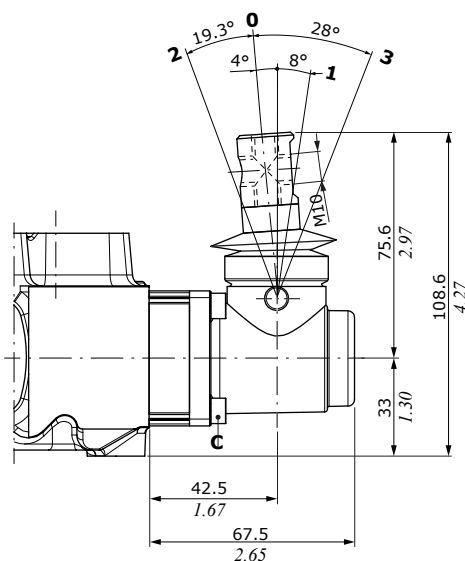
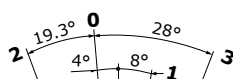
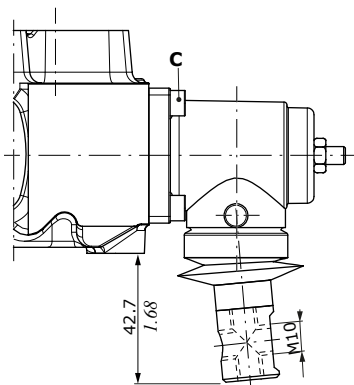
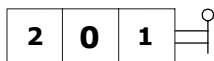
C = allen wrench 4 - 6.6 Nm (4.8 lbft)

D = wrench 10 - 9.8 Nm (7.2 lbft)

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

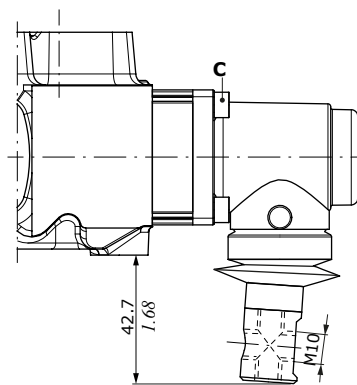
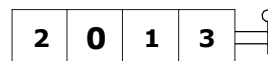
A2/06 type

As A1/06 type, rotated 180°



A2/Z1 type

As A1/Z1 type, rotated 180°

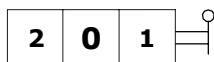


Mechanical controls

With safety lever control

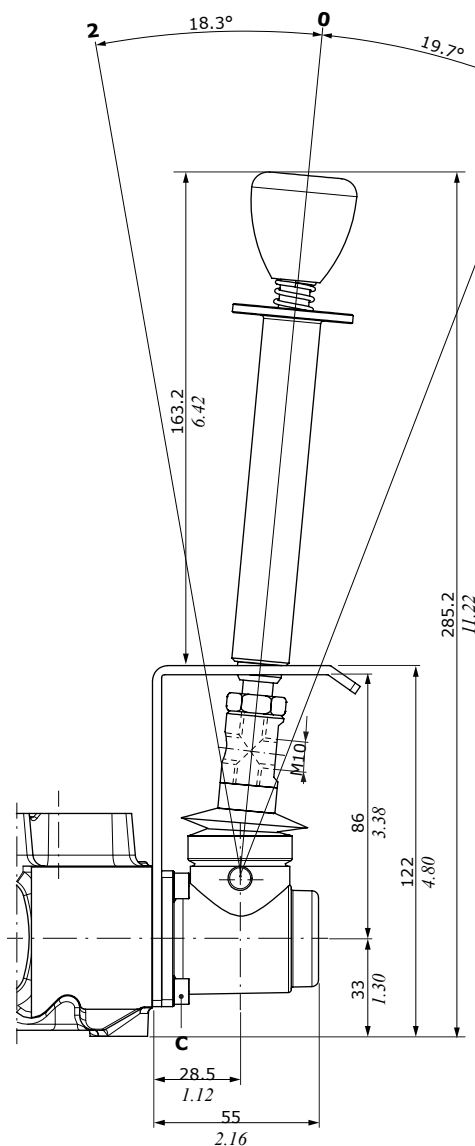
A1/S type

M10 thread, aluminium lever box



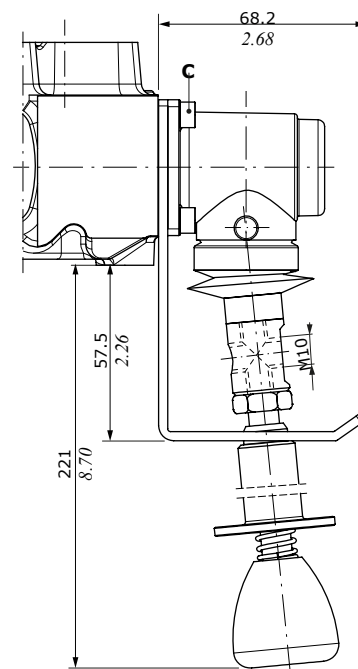
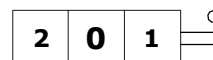
Wrenches and tightening torques

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



A2/S type

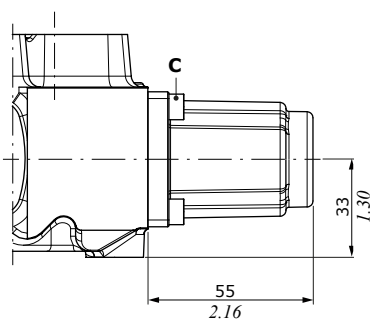
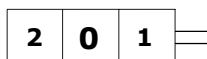
As A1/S type, rotated 180°



Without lever control

A3 type

With cap



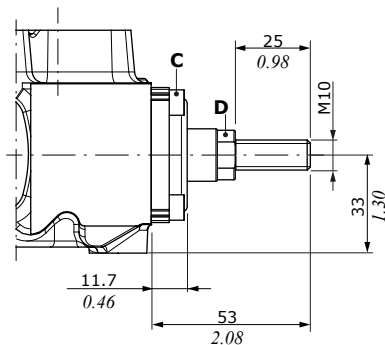
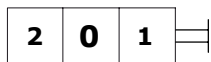
A side controls

Mechanical controls

Without lever control

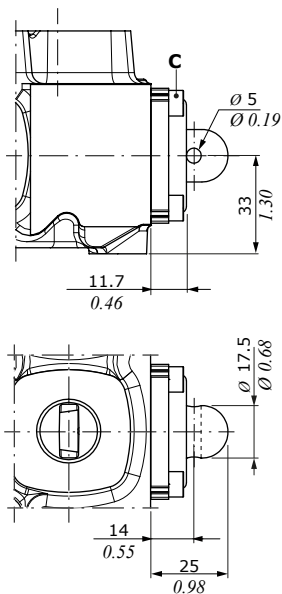
A4 type

M10 male thread
external pin with flange



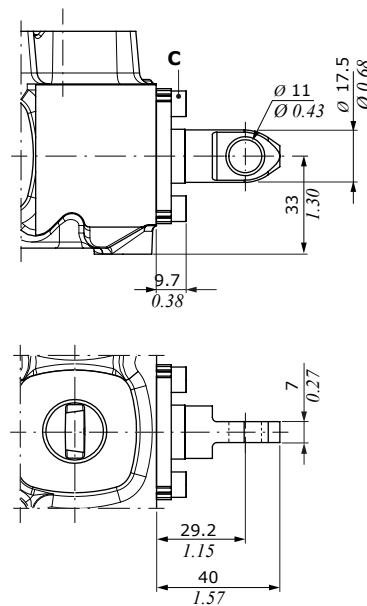
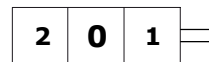
A5 type

Flange with spherical spool end



A6 type

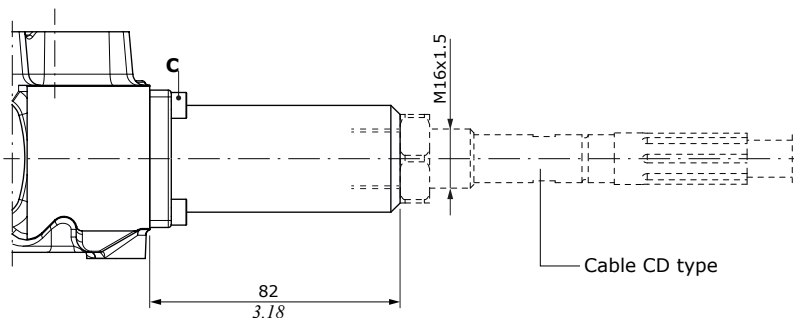
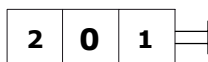
With flange



With flexible cable control arrangement

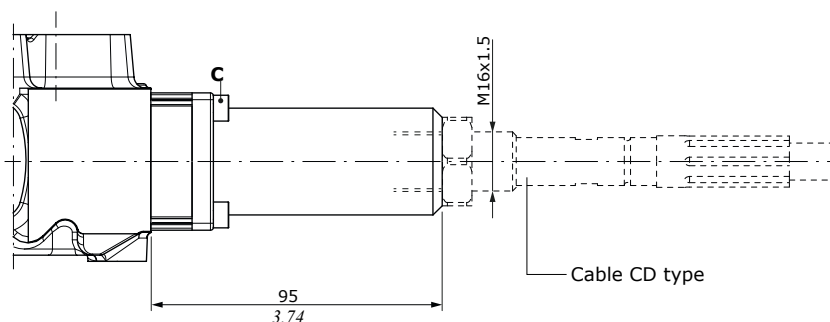
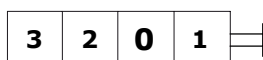
A8 type

Flexible cable control arrangement



A8/Z1 type

As A8 type,
for 116 floating spool type



Wrenches and tightening torques

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

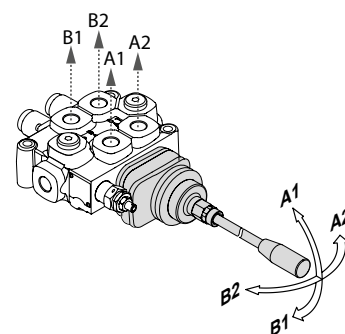
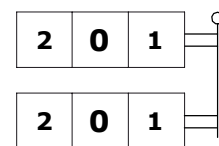
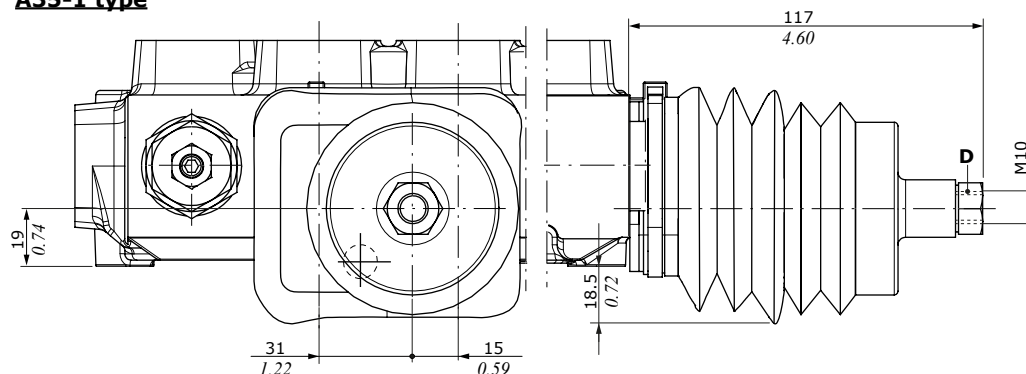
D = wrench 13 - 9.8 Nm (7.2 lbft)

A side controls

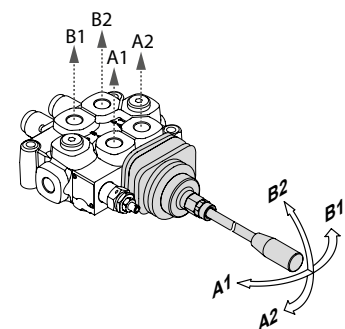
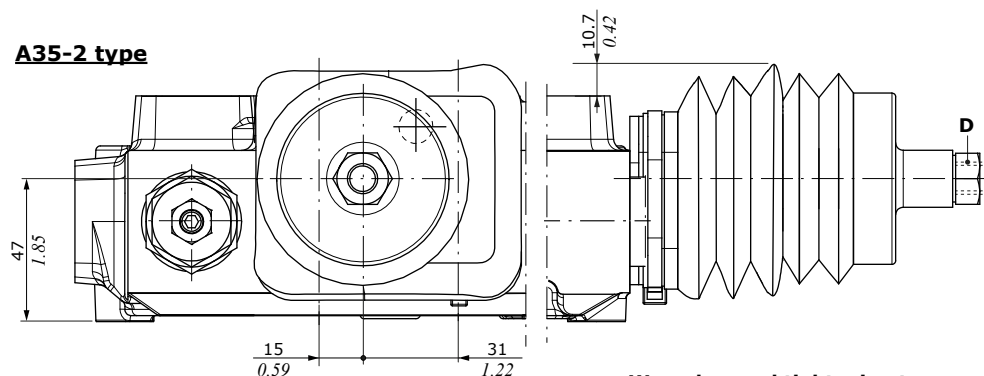
Joystick controls

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

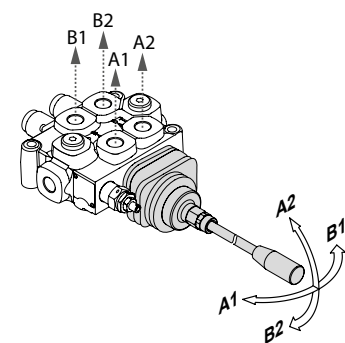
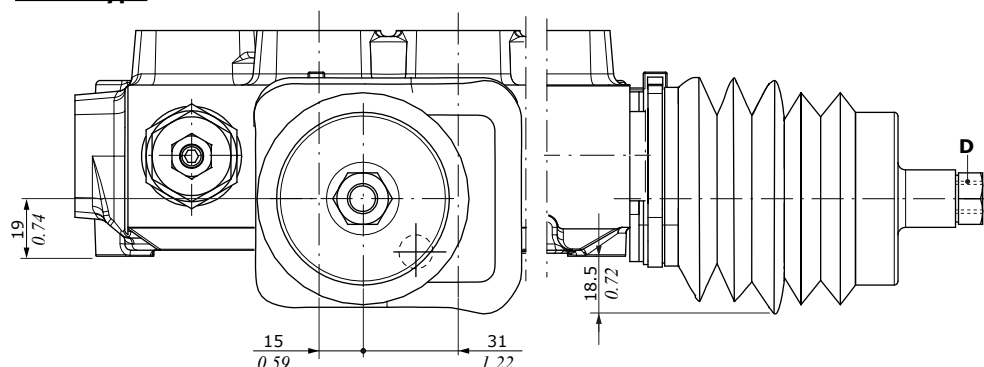
A35-1 type



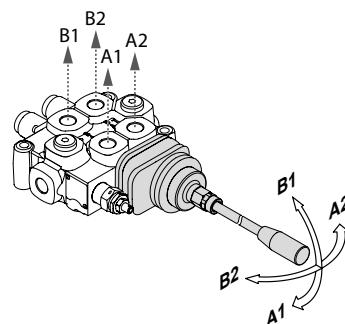
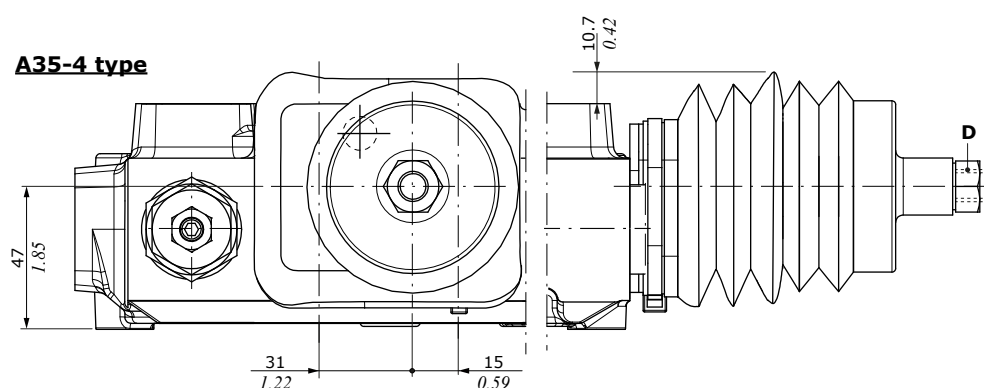
A35-2 type



A35-3 type



A35-4 type



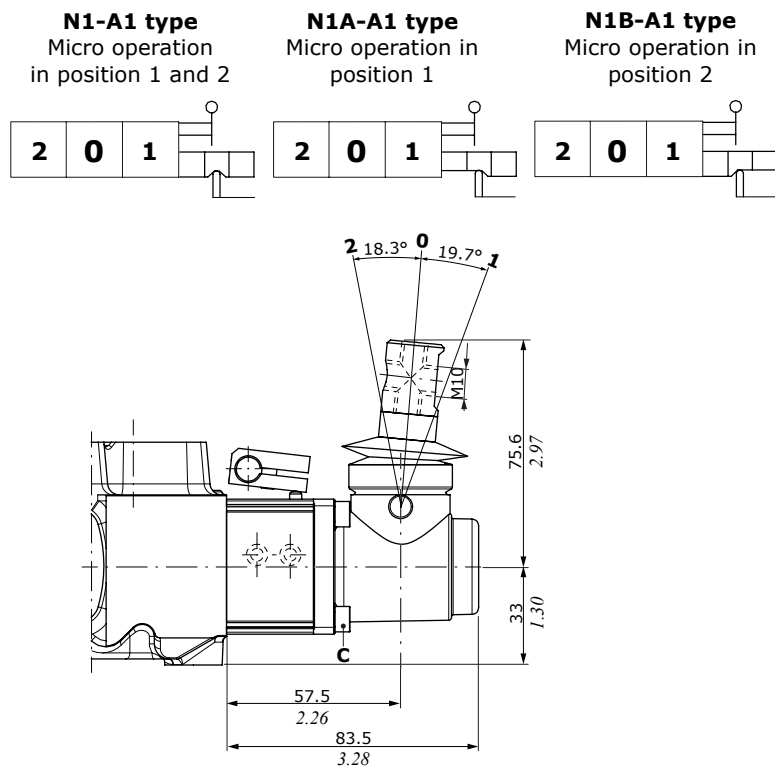
Wrenches and tightening torques

D = wrench 17 - 24 Nm (17.7 lbf ft)

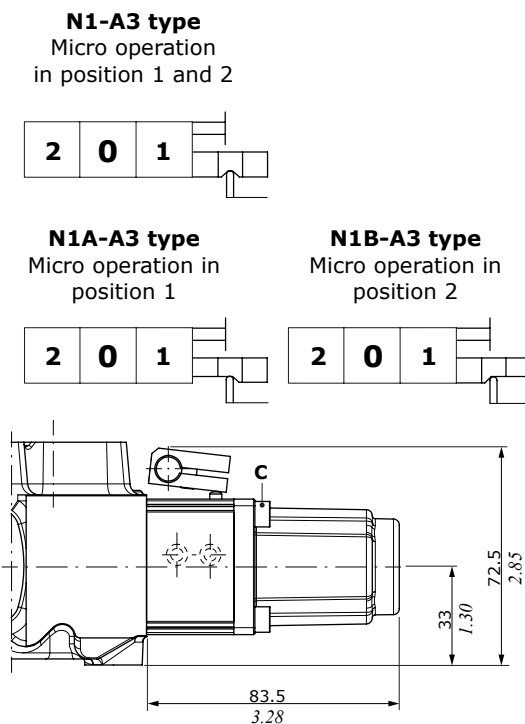
A side controls

Spool position microswitch

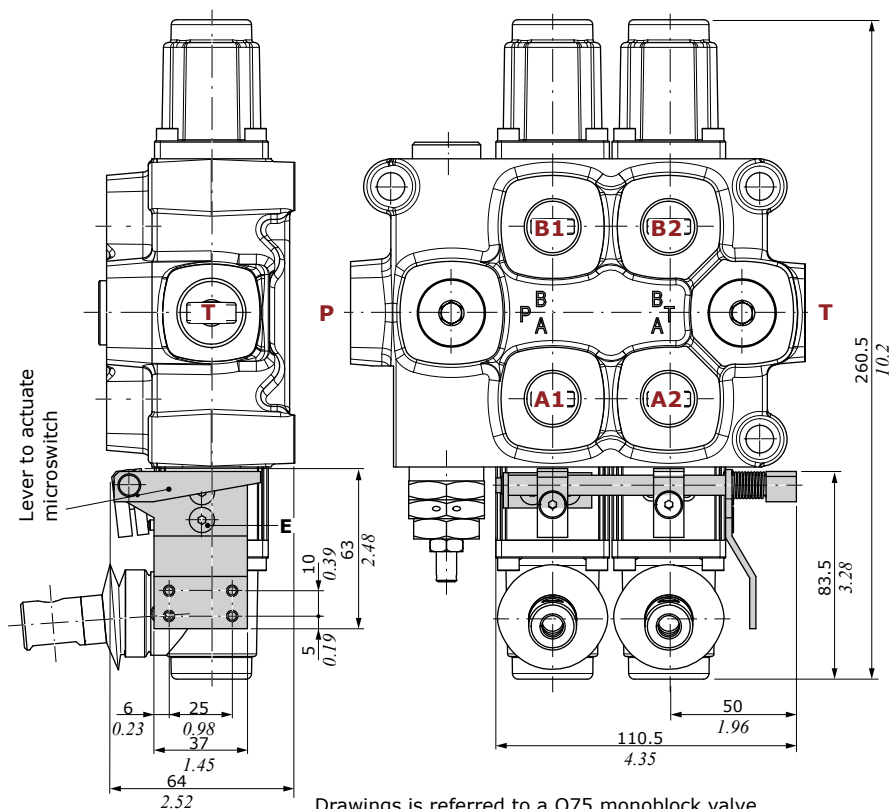
With lever control



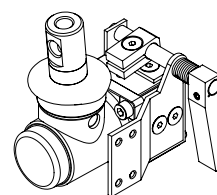
Without lever control, with cap



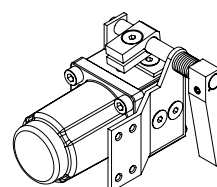
Microswitch assembly kit for 2 working section (N1-A1 type)



with lever box



with cap



Wrenches and tightening torques

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

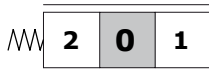
Drawings is referred to a Q75 monoblock valve.

Mechanical controls

With spring return control

M1 type

3 position, spring return
in neutral position

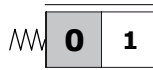


M1/01 type

3 position,
for joystick control

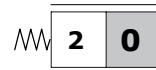
M2 type

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



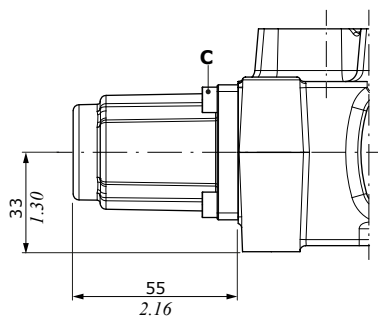
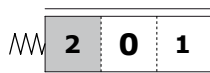
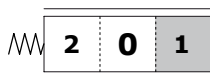
M3 type

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

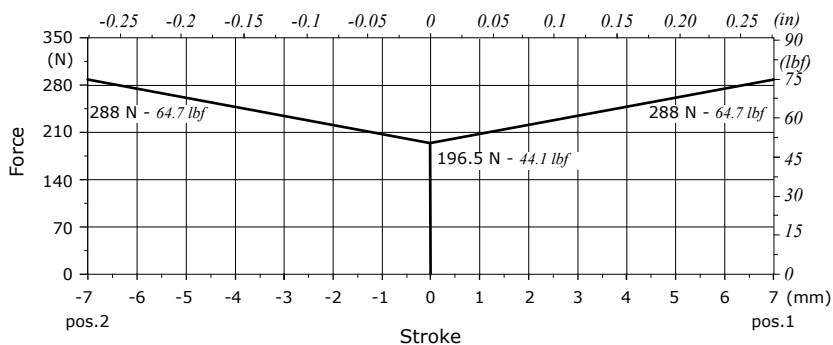


M4 types

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

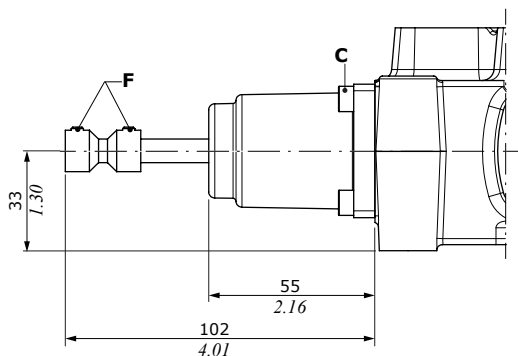
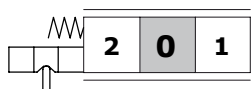


M1 control type - Force vs Stroke diagram



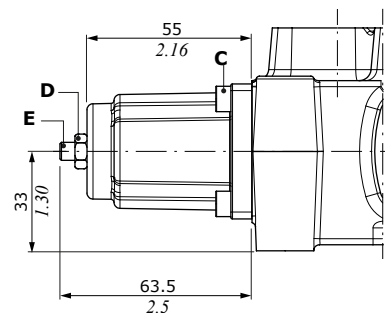
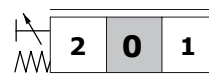
M1-B1 type

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 ft)

D = wrench 10 - 9.8 Nm (7.2 lbf ft)

E = allen wrench 4 - 9.8 Nm (7.2 lbf ft)

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

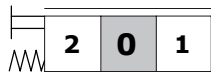
B side controls

Mechanical controls

With spring return control

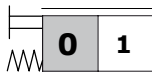
M1-U1 type

3 position, with M10 male thread external pin



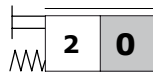
M2-U1 type

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



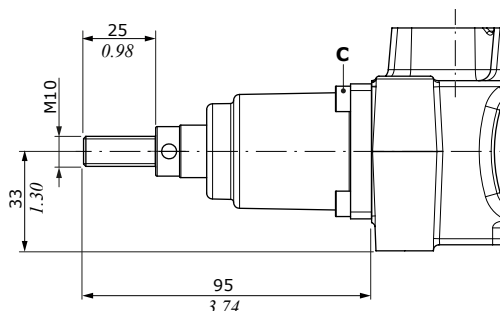
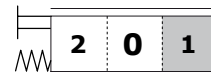
M3-U1 type

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



M4-U1 type

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



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

With flexible cable control arrangement

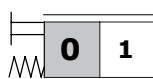
M1-U2 type

3 position, spring return in neutral position



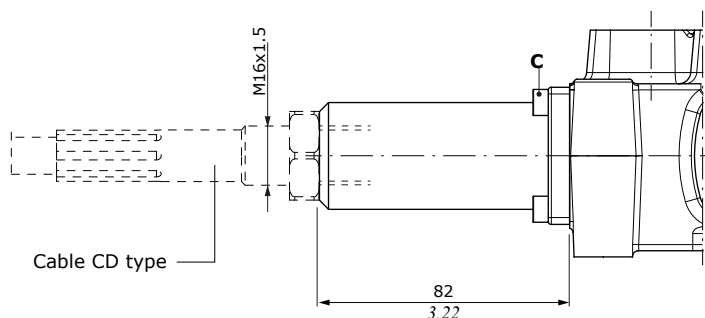
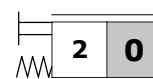
M2-U2 type

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



M3-U2 type

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



With detent control

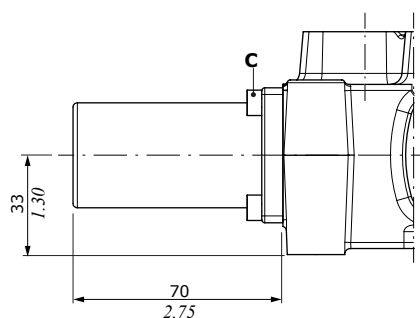
R1 type

3 position, detent in position 1



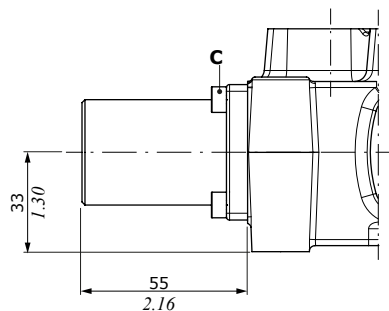
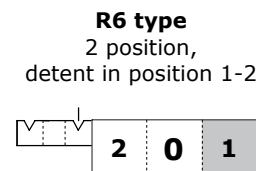
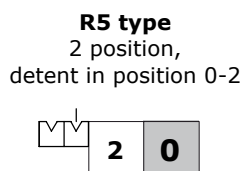
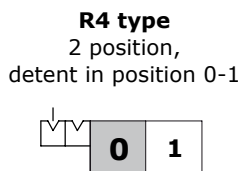
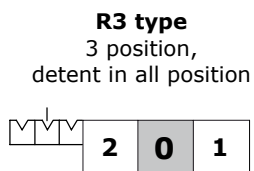
R2 type

3 position, detent in position 2



Mechanical controls

With detent control



Wrenches and tightening torques

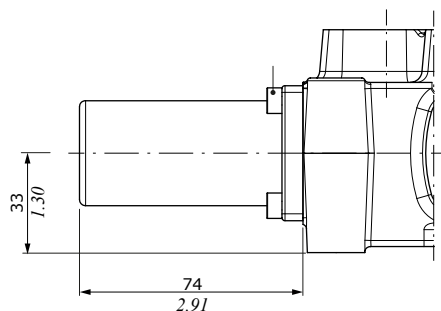
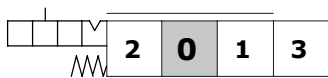
C = allen wrench 4 - 6,6 Nm (4.8 lbft)

D = wrench 30 - 42 Nm (30.9 lbft)

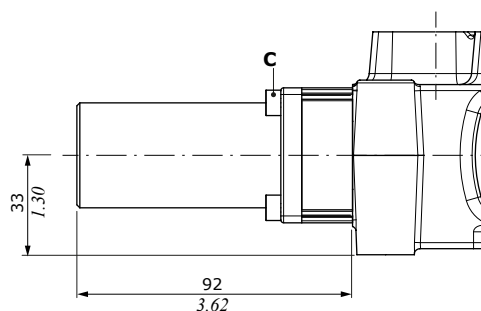
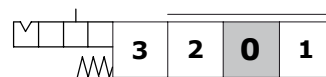
E = wrench 22

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

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

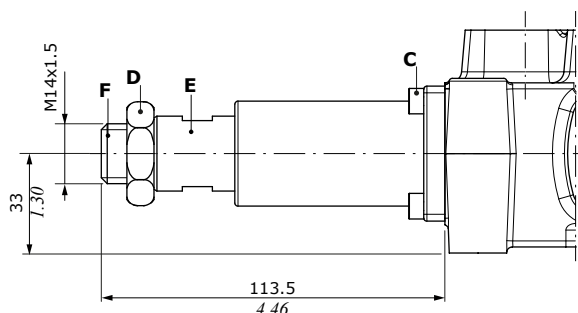
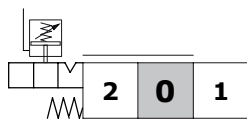


R10/Z1 type
4 position, detent in 4th position,
for 126 floating spool type

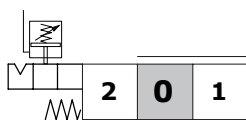


With detent control and kick out function

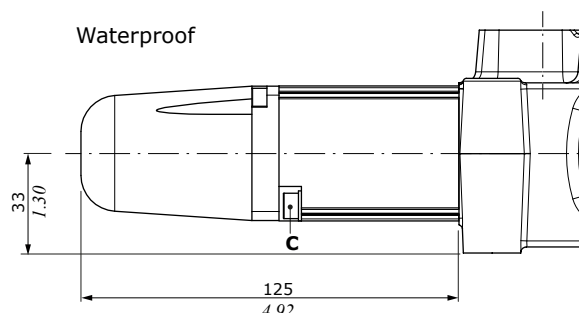
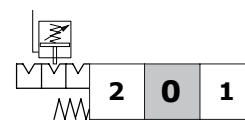
R1K type
3 position, detent in position 1.
Available with waterproof configuration



R2K type
3 position, detent in position 2.
Available with waterproof configuration



R3K type
3 position, detent in all position.
Available with waterproof configuration

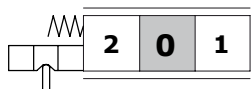


B side controls

Spool position microswitch

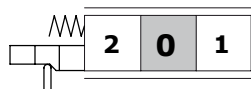
M1-N1 type

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



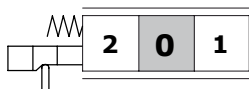
M1-N1A type

3 position, micro operation in position 1



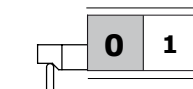
M1-N1B type

3 position, micro operation in pos. 2



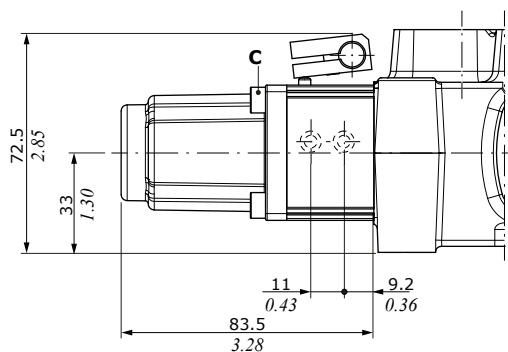
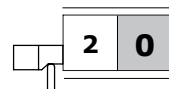
M2-N1 type

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

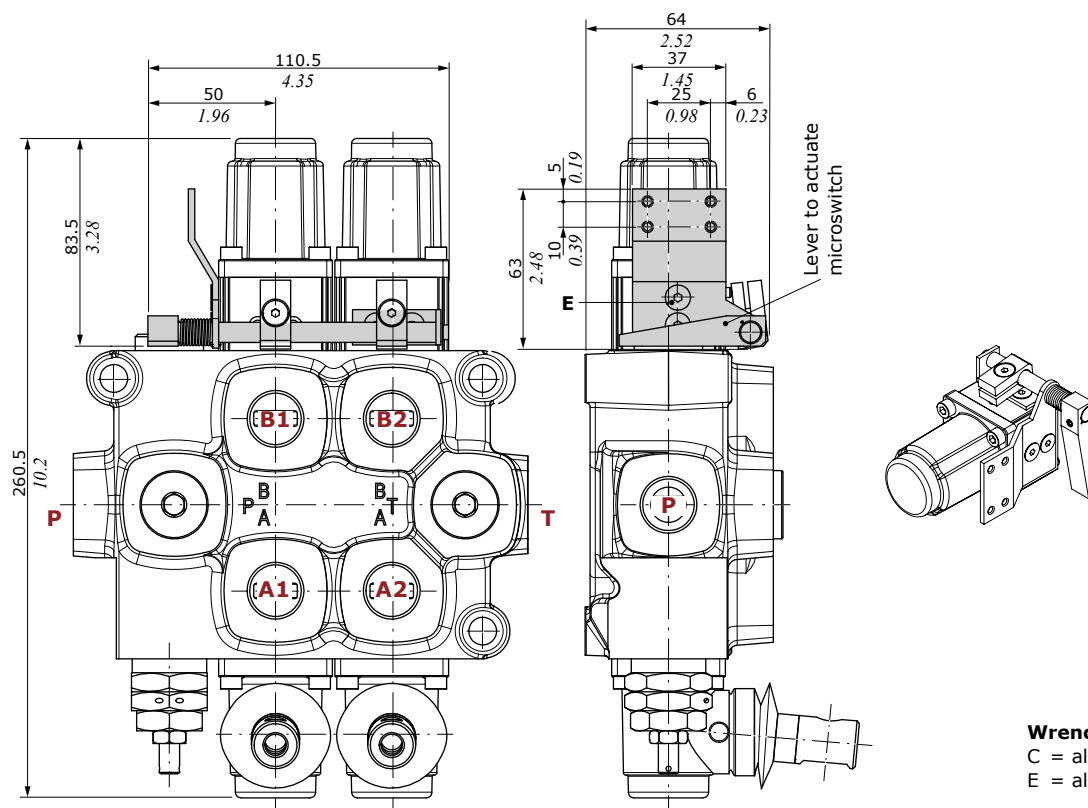


M3-N1 type

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 lbft)

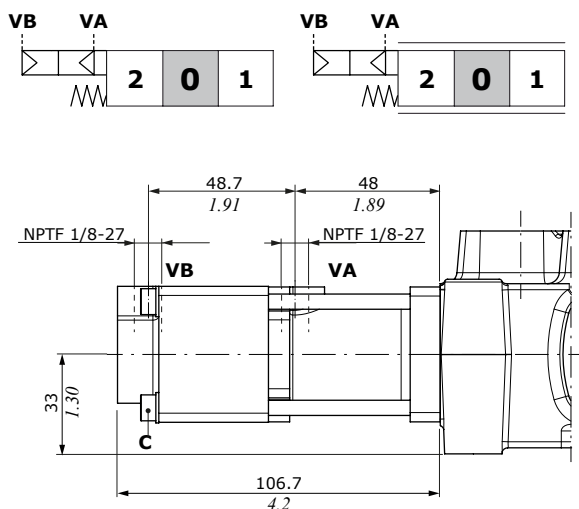
E = allen wrench 3 - 6.6 Nm (4.8 lbft)

Drawing is referred to a Q75 monoblock valve.

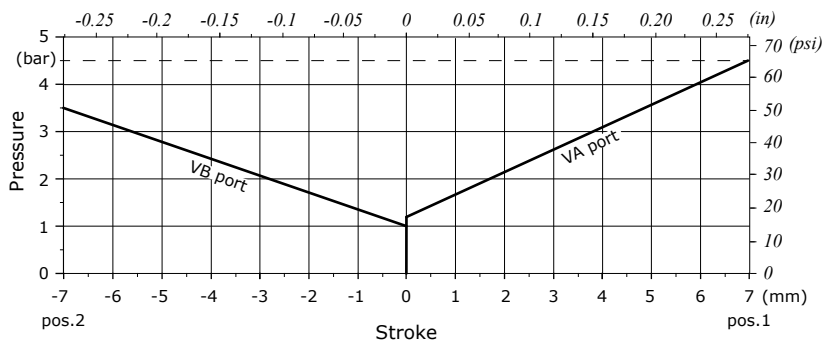
Pneumatic control

P1N type
ON/OFF control

P1NP type
Proportional control



Proportional pilot pressure curves



Operating features

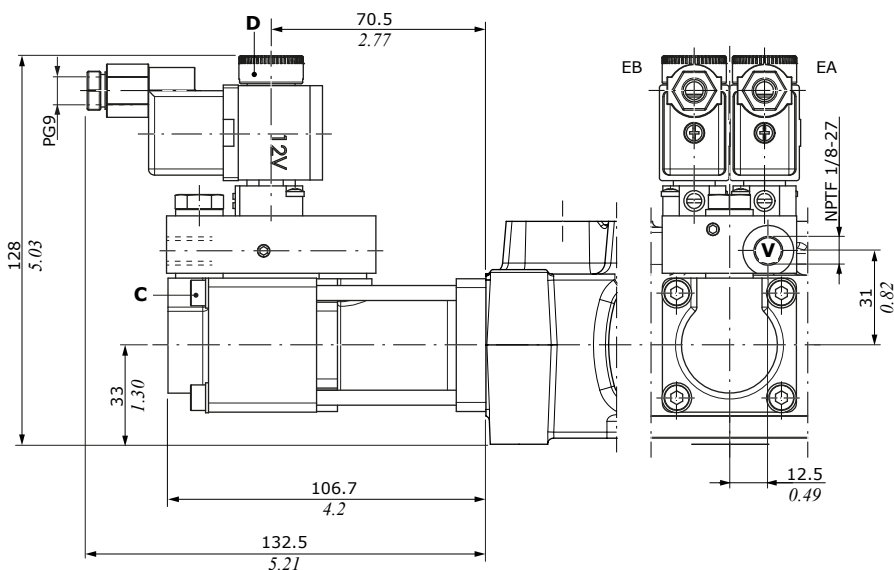
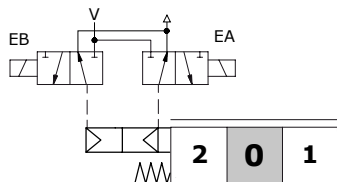
Pilot pressure..... : min. 5 bar (72.5 psi) - max. 30 bar (435 psi)
Pilot volume..... : 9 cm³/min (0.54 in³/min)

Wrenches and tightening torques

C = wrench 4 - 6.6 Nm (4.8 lbft)

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

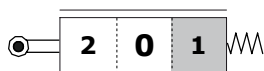
C = wrench 4 - 6.6 Nm (4.8 lbft)
D = manual tightening - 6.6 Nm (4.8 lbft)

A+B side controls

Cam control

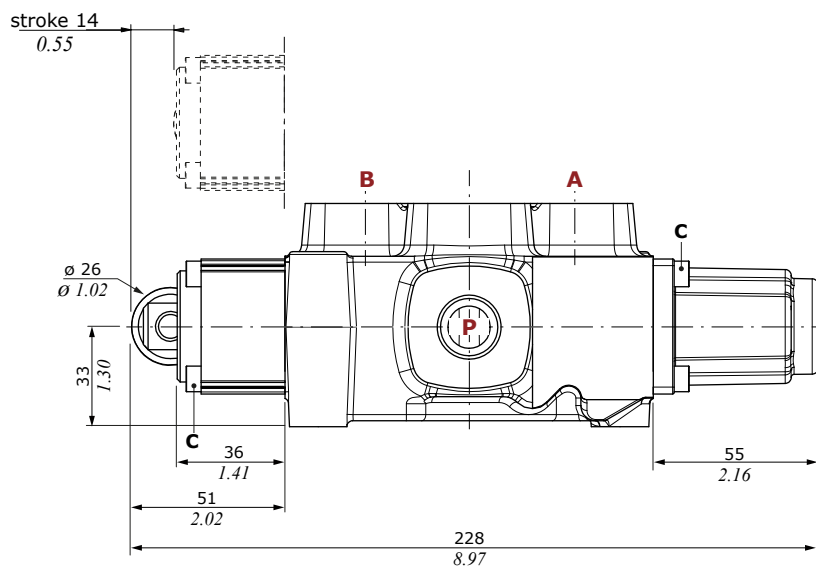
C2 type

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



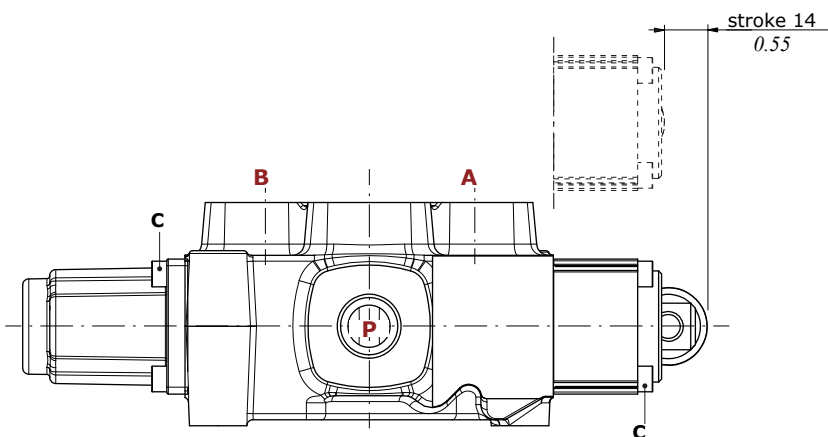
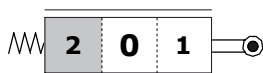
Wrenches and tightening torques

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



C3 type

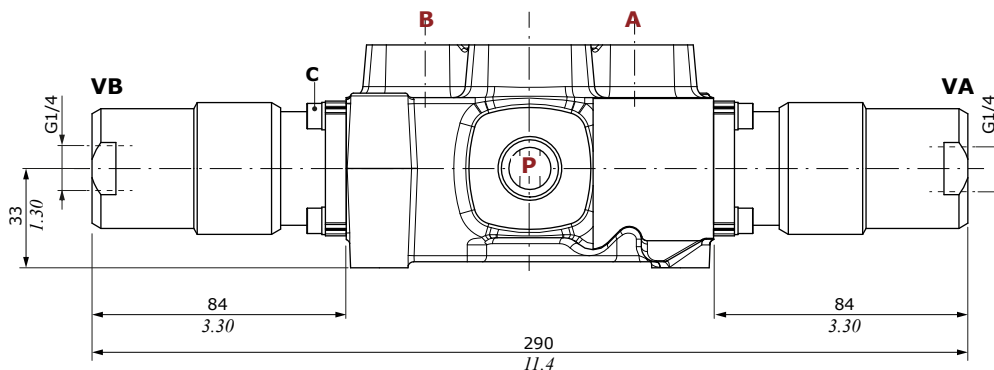
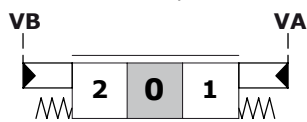
From position 2 to position 1,
spring return in position 2.
Dimensions are the same of C2 type



Proportional hydraulic controls

H1 type

High pressure control
with side ports

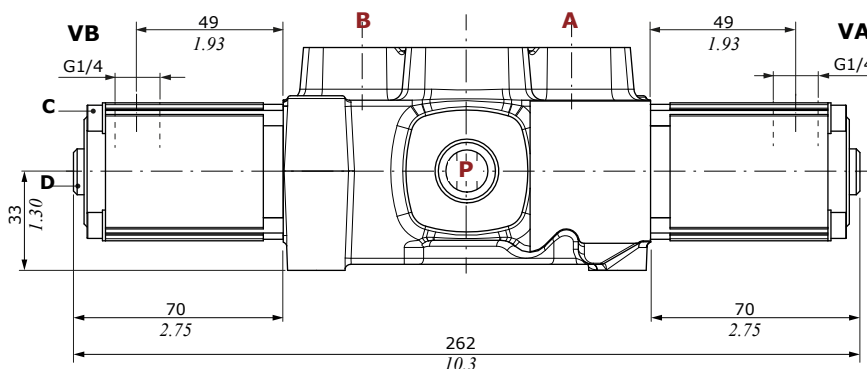
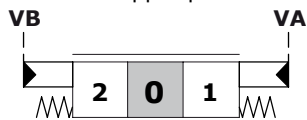


Operating features

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

H5 type

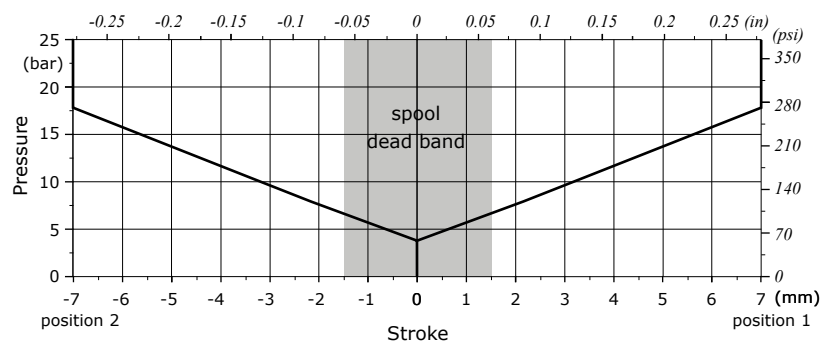
Low pressure control
with upper ports



Operating features

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

Stroke vs. Pressure diagram for H5 type control



Wrenches and tightening torques

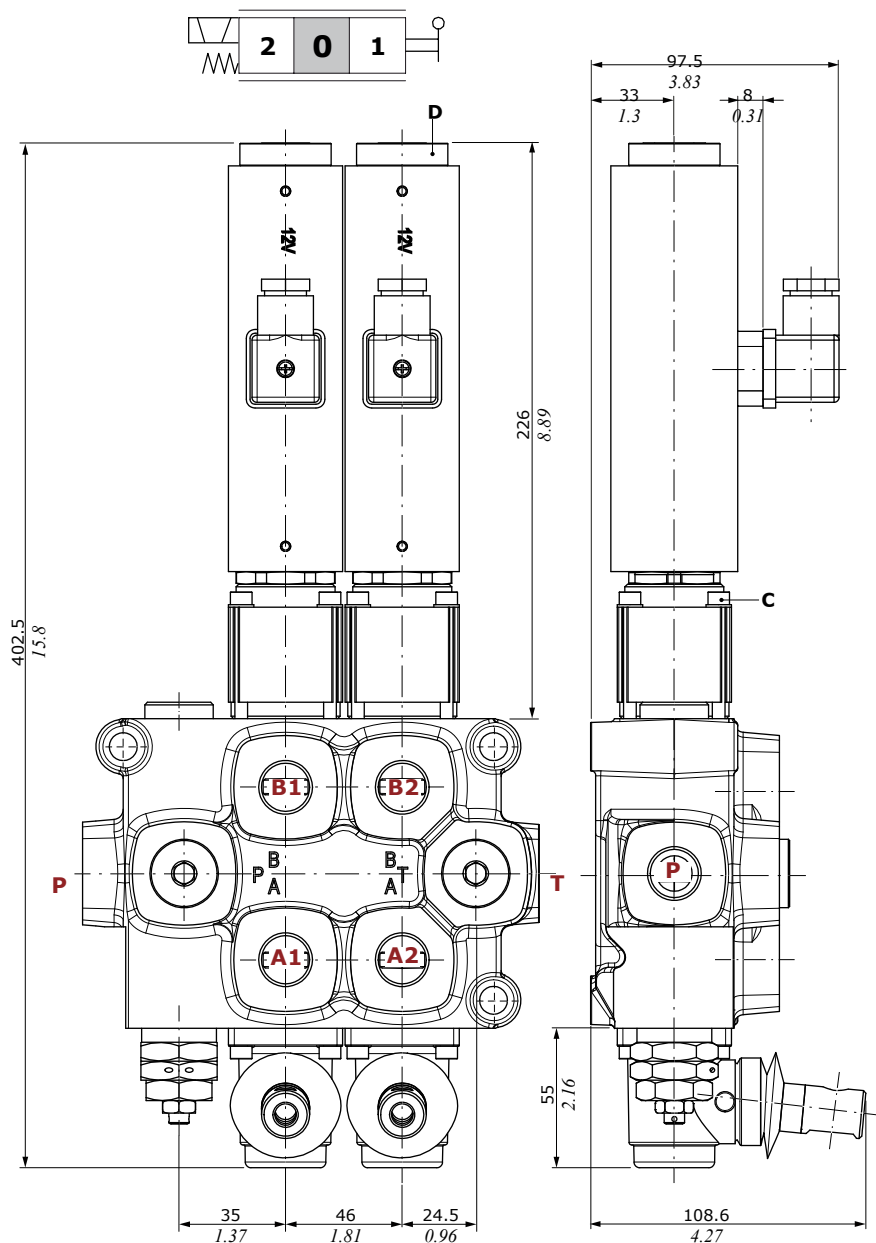
C = allen wrench 4 - 6.6 Nm (4.8 lbft)

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

Direct solenoid control

D41 type: ON/OFF one side

Drawing is referred to a Q75 monoblock valve.

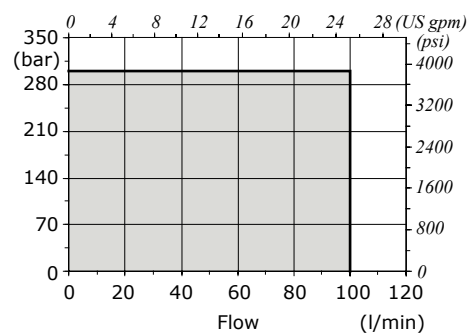


D41 coil

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

Connector type: ISO4400 3P+T-PG11

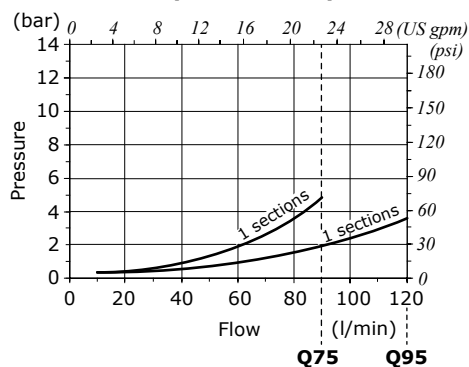
Dynamic conditions



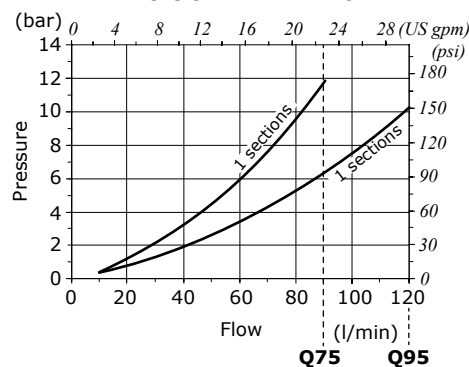
Wrenches and tightening torques

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

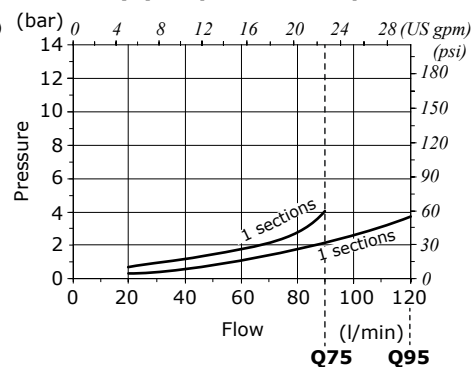
P⇒T pressure drops



P⇒A(B) pressure drops

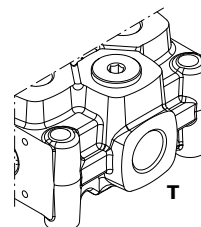
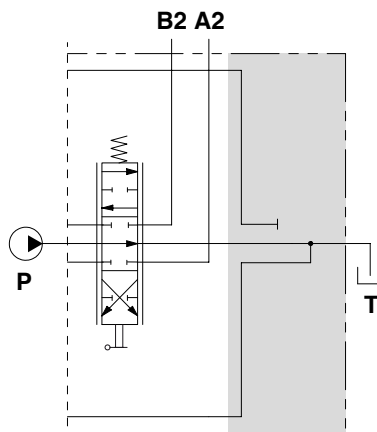
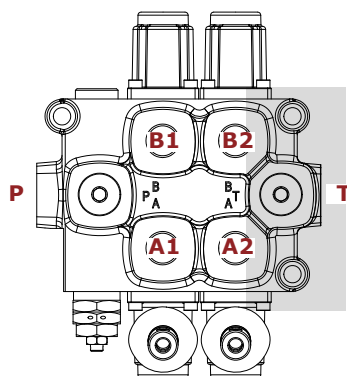


A(B)⇒T pressure drops

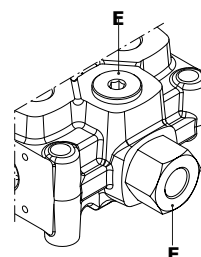
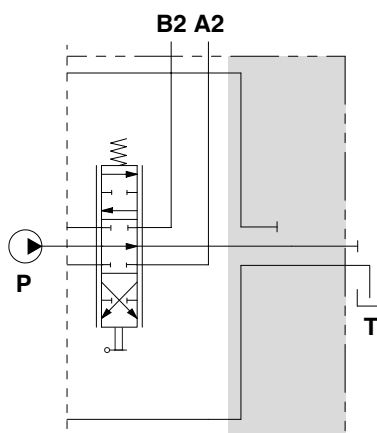
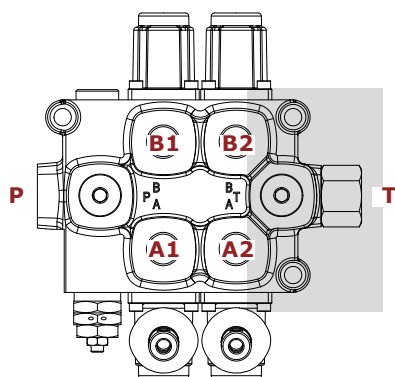


Outlet configuration

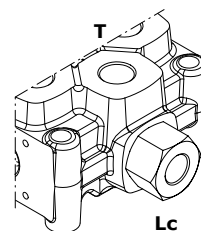
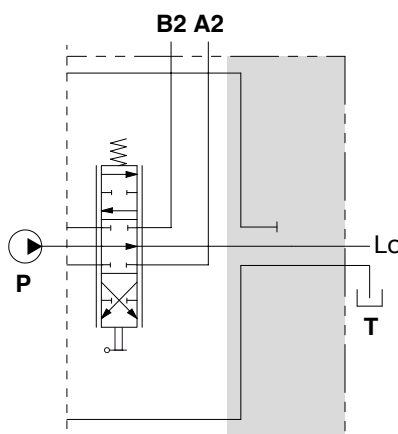
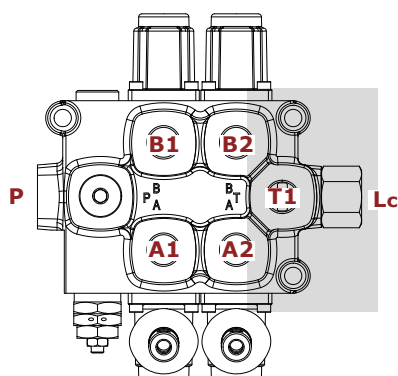
F3D configuration
Open center configuration



F16D configuration
Closed center configuration



F6D configuration
Carry-over configuration



Wrenches and tightening torques

E (Q75) = allen wrench 6 - 24 Nm (17.7 lbft)

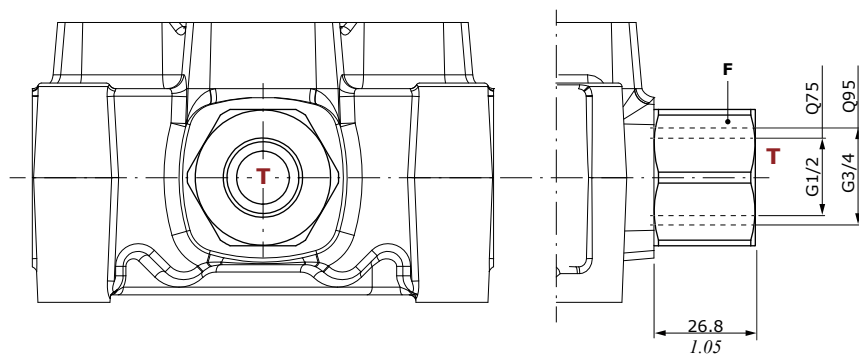
(Q95) = allen wrench 8 - 42 Nm (22 lbft)

F = wrench 36 - 80 Nm (59 lbft)

Outlet configuration

F6D - F16D joint dimension

Drawing is referred to a Q75 monoblock valve.



Wrenches and tightening torques

F = wrench 36 - 80 Nm (59 lbft)



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

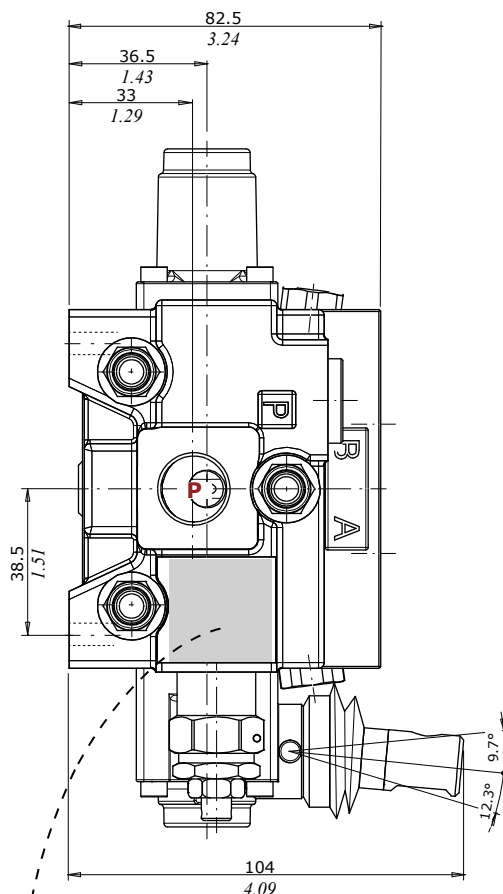
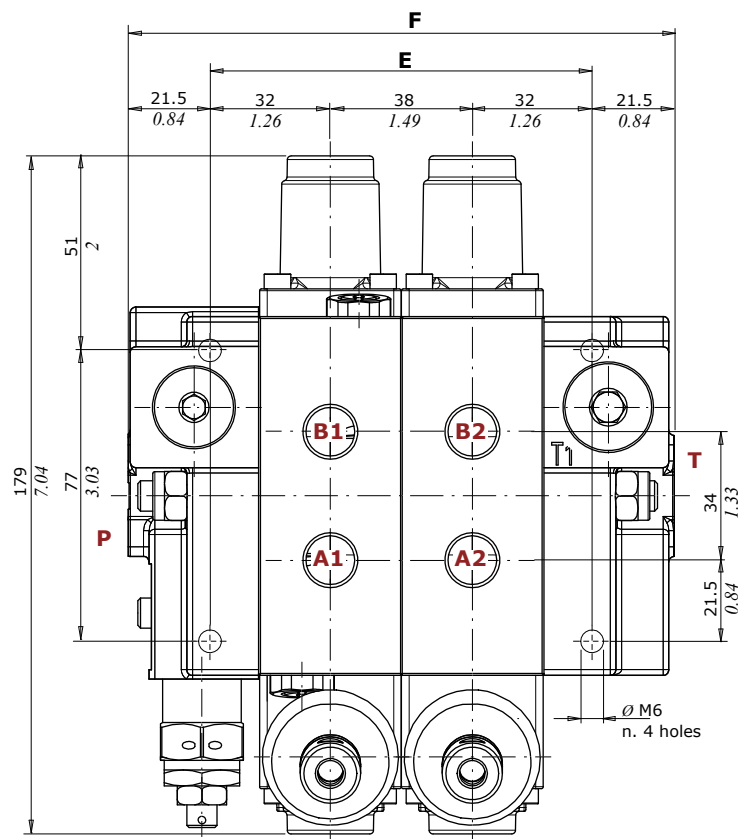
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

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*



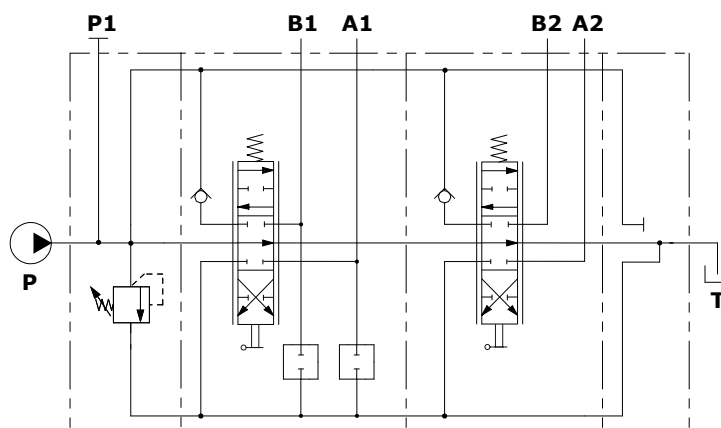
Type	E		F	
	mm	in	mm	in
Q30/1	64	2.52	107.5	4.23
Q30/2	102	4.01	145.5	5.72
Q30/3	140	5.51	183.5	7.22
Q30/4	178	7.00	221.5	8.72
Q30/5	216	8.50	259.5	10.21
Q30/6	254	10	297.5	11.71
Q30/7	292	11.50	335.5	13.20
Q30/8	330	13	373.5	14.70
Q30/9	368	14.48	411.5	16.20
Q30/10	406	15.98	449.5	17.69



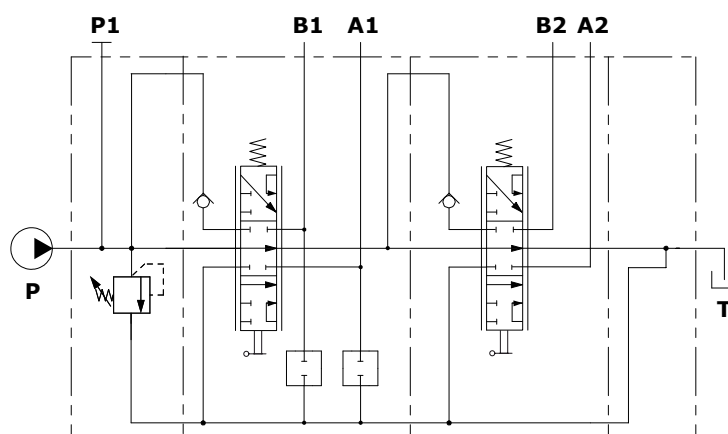
Product code
Code description
Product allotment
Datamatrix with product allotment

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

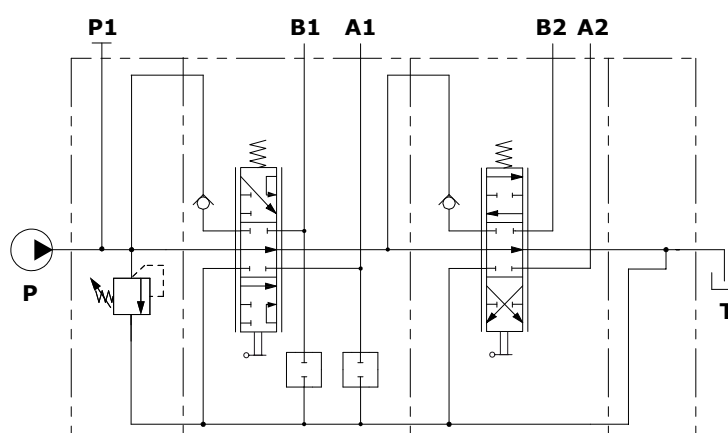
(*): For other configurations, see page 122



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



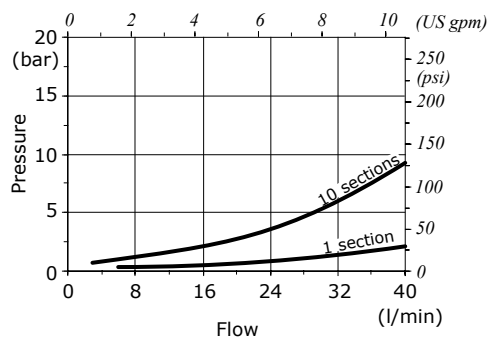
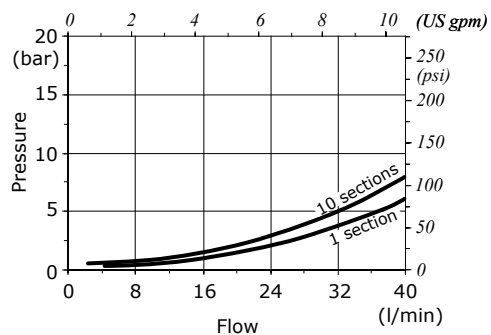
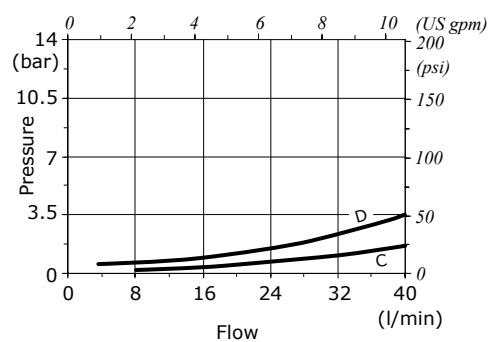
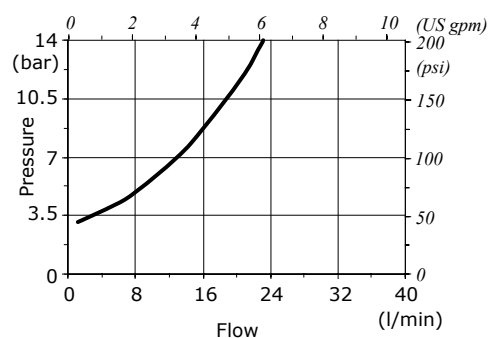
Description example (series circuit):
Q30/2/F7S(N150)/403-A1-M1.VC/403-A1-M1/F3D-S



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

Performance data

Q30

P $\Rightarrow$ T pressure drops**P $\Rightarrow$ A(B) pressure drops****A(B) $\Rightarrow$ T pressure drops****A1(B1) $\Rightarrow$ A2(B2) pressure drops
(with series circuit)****Legenda**C= 10th sectionD= 1st section

Complete section ordering codes

Valve with mechanical and hydraulic controls configuration example

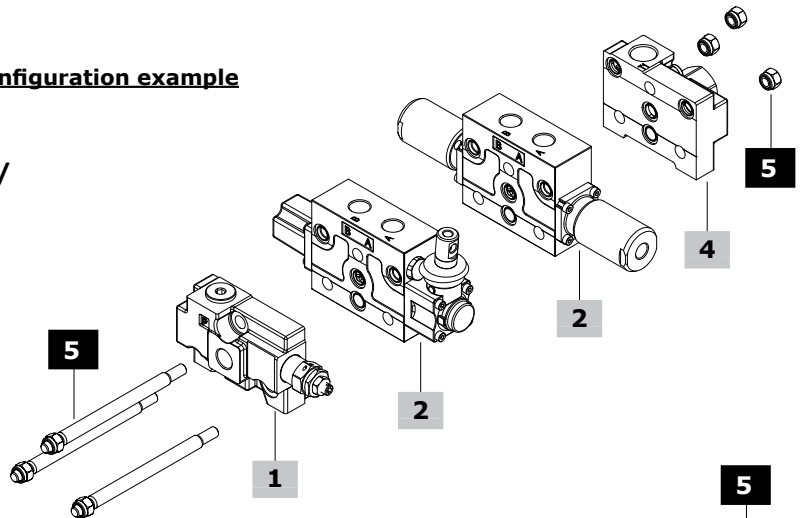
valve setting (bar)

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

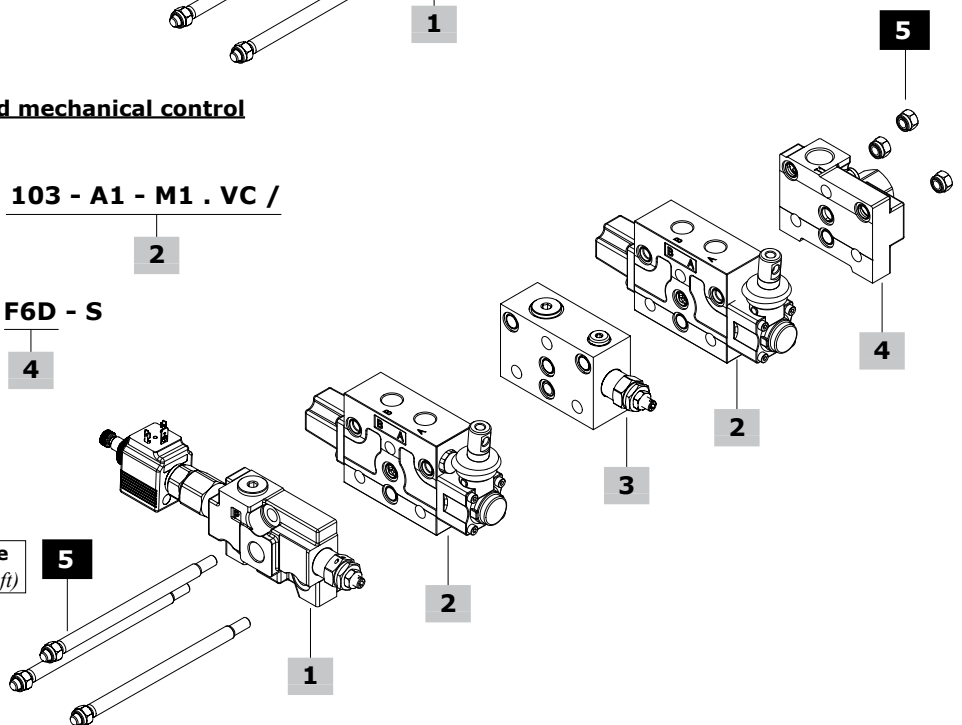
Q30 / 2 / F7SMSE(NA)-N150 / 103 - A1 - M1 . VC /

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)

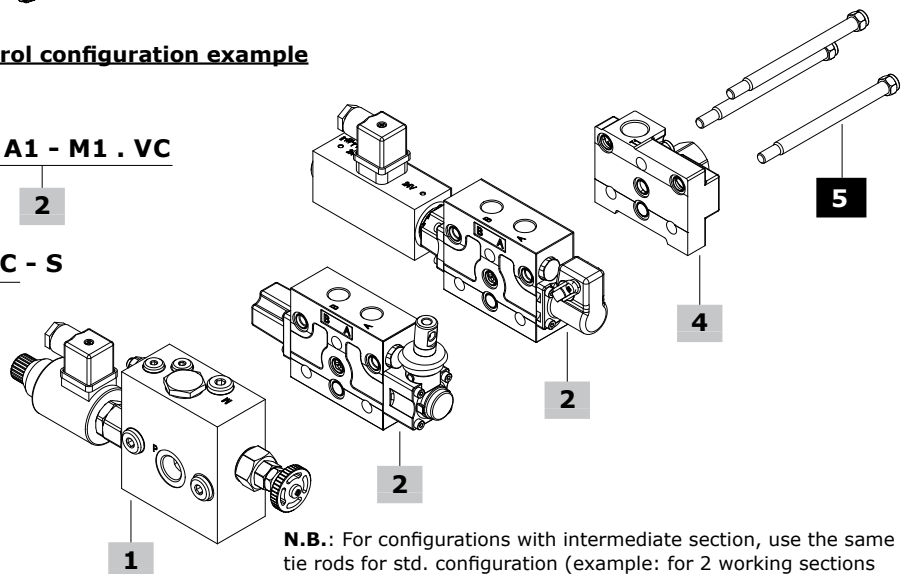


Valve with mechanical and electric control configuration example (with inlet flow regulation)

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

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

2 **4** **2**



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

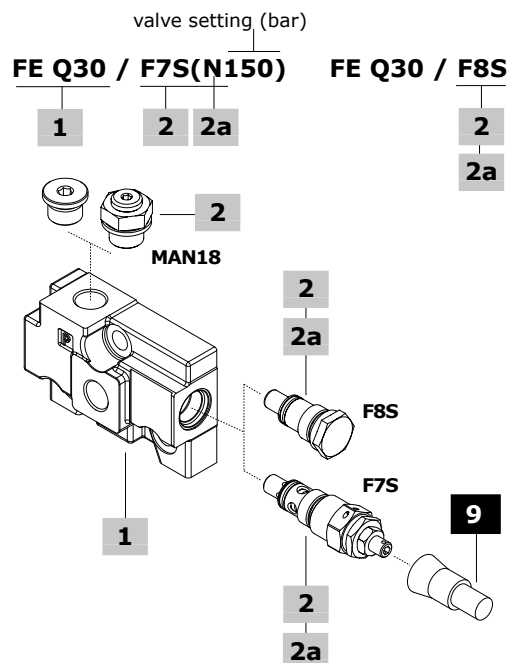
CODE	DESCRIPTION
For standard configuration	
03901TX1	For 1 section valve
03902TX2	For 2 sections valve
03903TX3	For 3 sections valve
03904TX4	For 4 sections valve
03905TX5	For 5 sections valve
03906TX6	For 6 sections valve
03907TX7	For 7 sections valve
03908TX8	For 8 sections valve
03909TX9	For 9 sections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

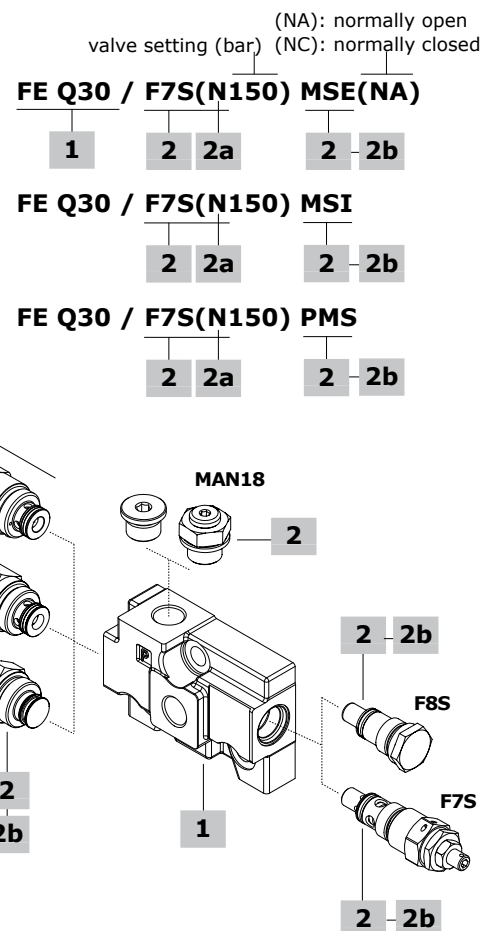
Inlet section - part ordering codes

Standard section

With relief valve:



With relief and unloader valves:



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	

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

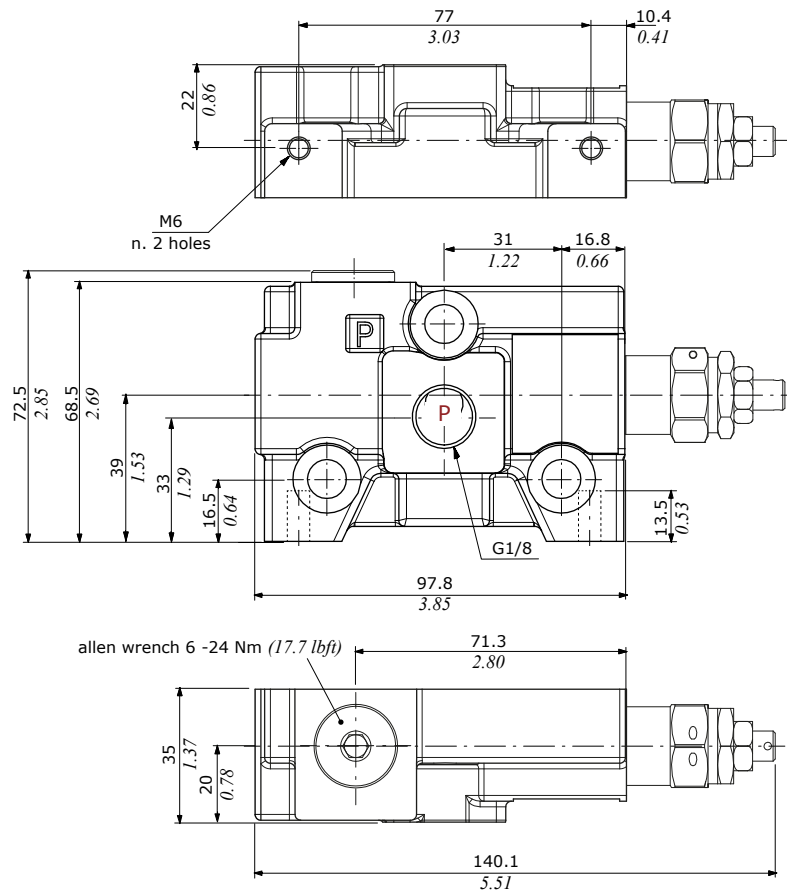
9 Accessory

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

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

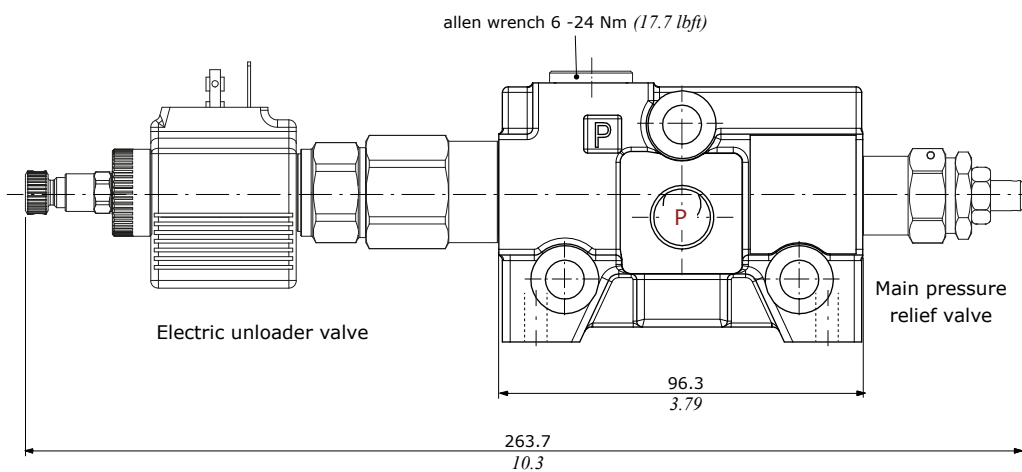
Dimensional data

With pressure relief valve



Note: For valves wrench and torque, see related pages

With relief and unloader valves



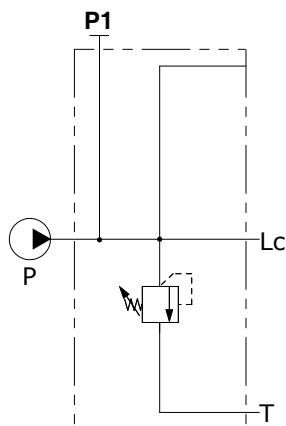
Note: For valves wrench and torque, see related pages

For other configurations, see page 88
For other dimensions, see previous configuration

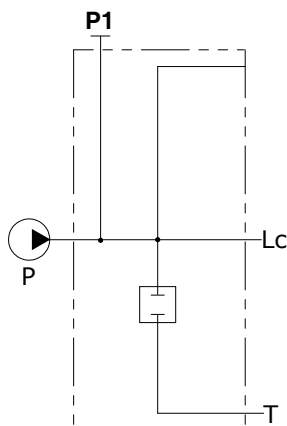
Standard inlet section

Hydraulic circuits

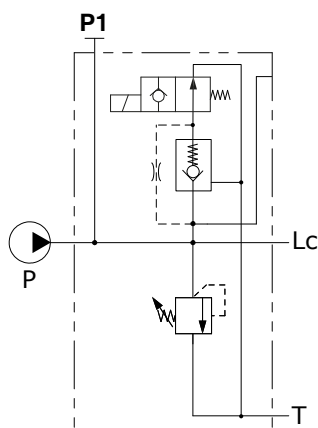
F7S configuration
With pressure relief valve



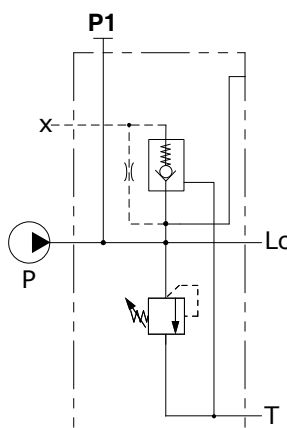
F8S configuration
Without valves
(pressure relief valve plugged port)



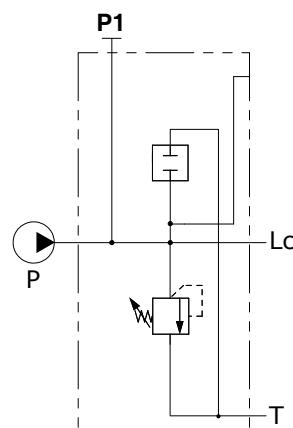
F7S-MSE(NA/NC) configuration
With pressure relief valve
and electric unloader valve



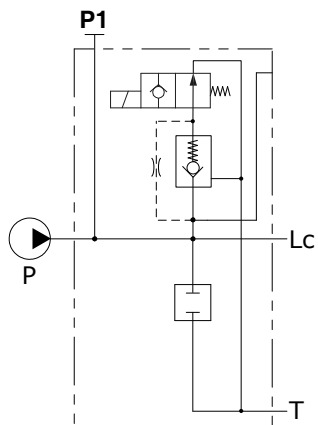
F7S-MSI configuration
With pressure relief valve
and hydraulic unloader valve



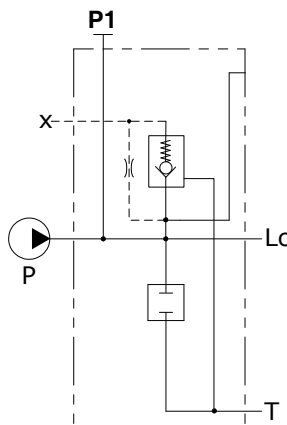
F7S-PMS configuration
With pressure relief valve
and unloader valve blanking plug



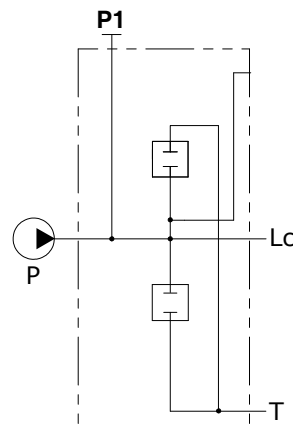
F8S-MSE(NA/NC) configuration
Without pressure relief valve
and electric unloader valve



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



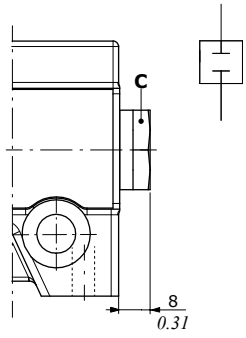
F8S-PMS configuration
Without valves (plugged ports)



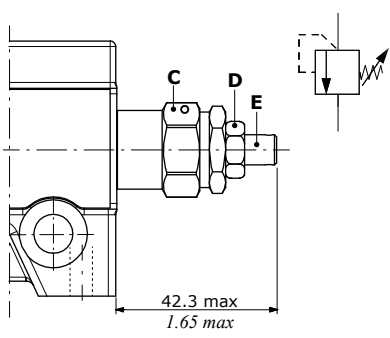
Standard inlet section

Main pressure relief valve

Relief valve blanking plug



Main pressure relief valve

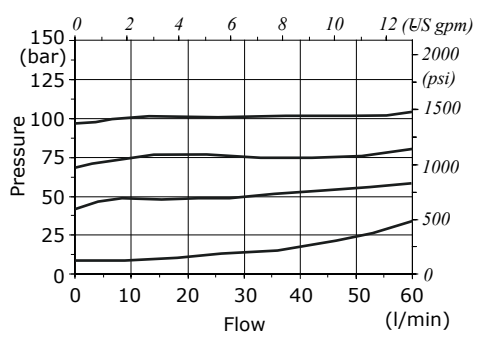


Wrenches and tightening torques

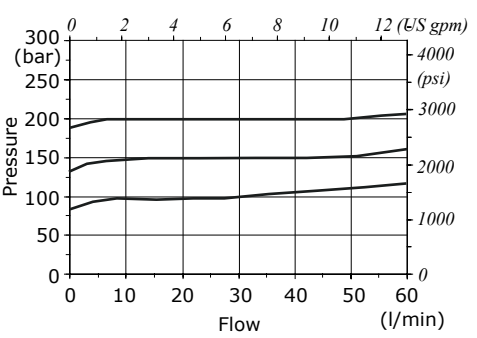
- C = wrench 22 - 42 Nm (31 lbf ft)
- D = wrench 13 - 24 Nm (17.7 lbf ft)
- E = allen wrench 4

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

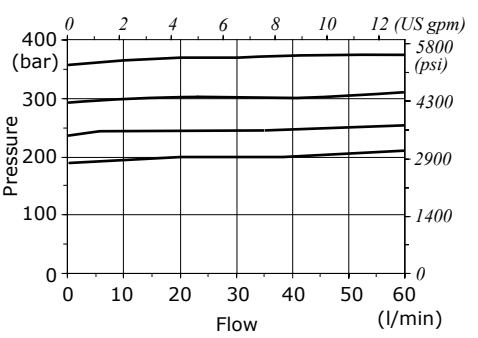
Setting example (B type spring)



Setting example (N type spring)



Setting example (R type spring)



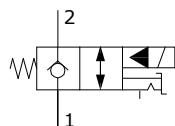
Standard inlet section

Unloader valve

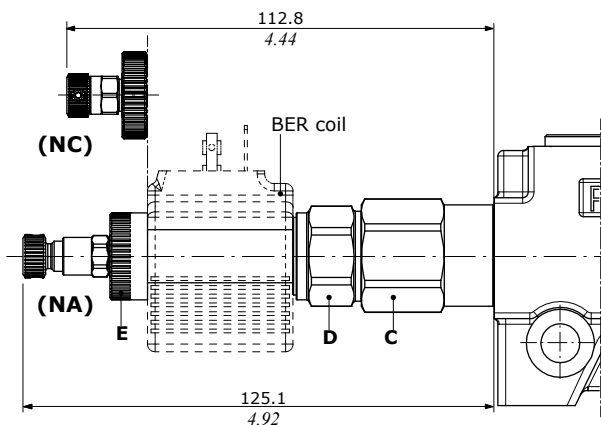
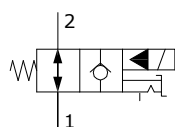
MSE type: electric control

Screw type emergency

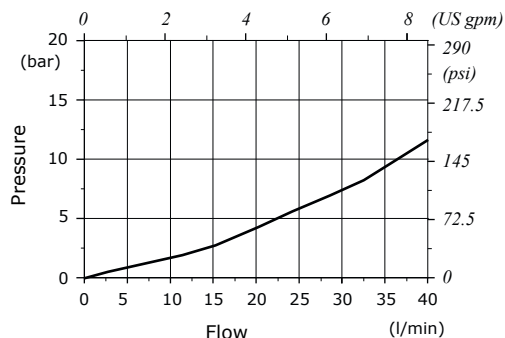
MSE(NC) type Normally closed



MSE(NA) type Normally open



Pressure drops



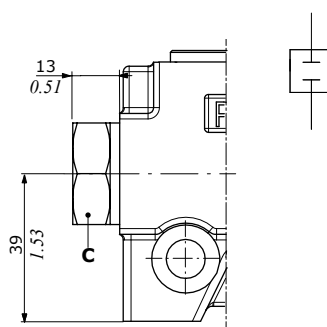
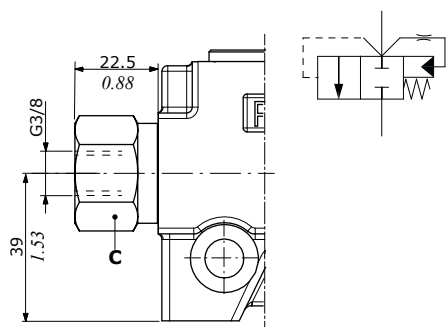
Valve features

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

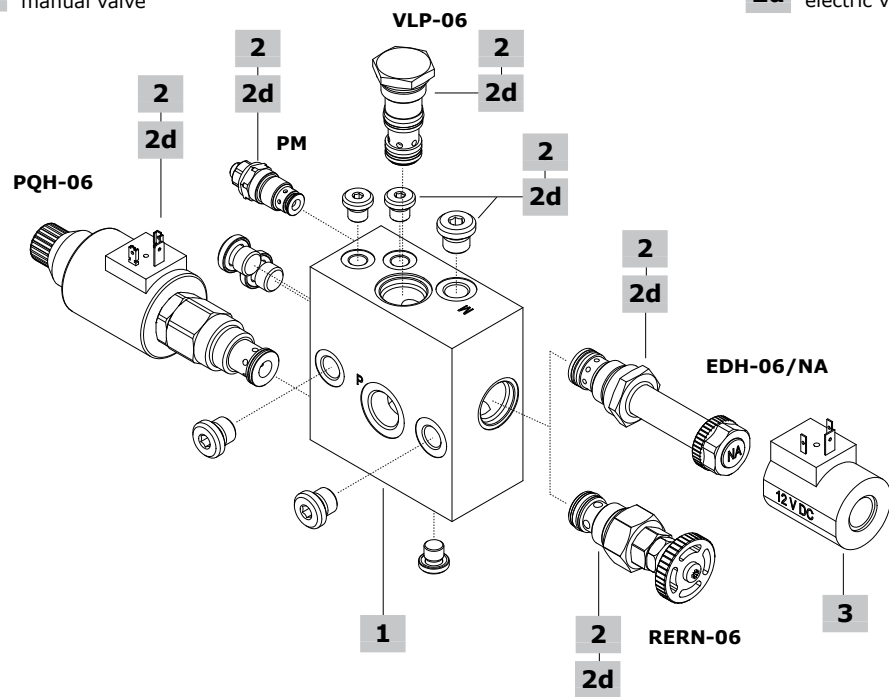
Section with flow regulator

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 2d electric valve 3



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

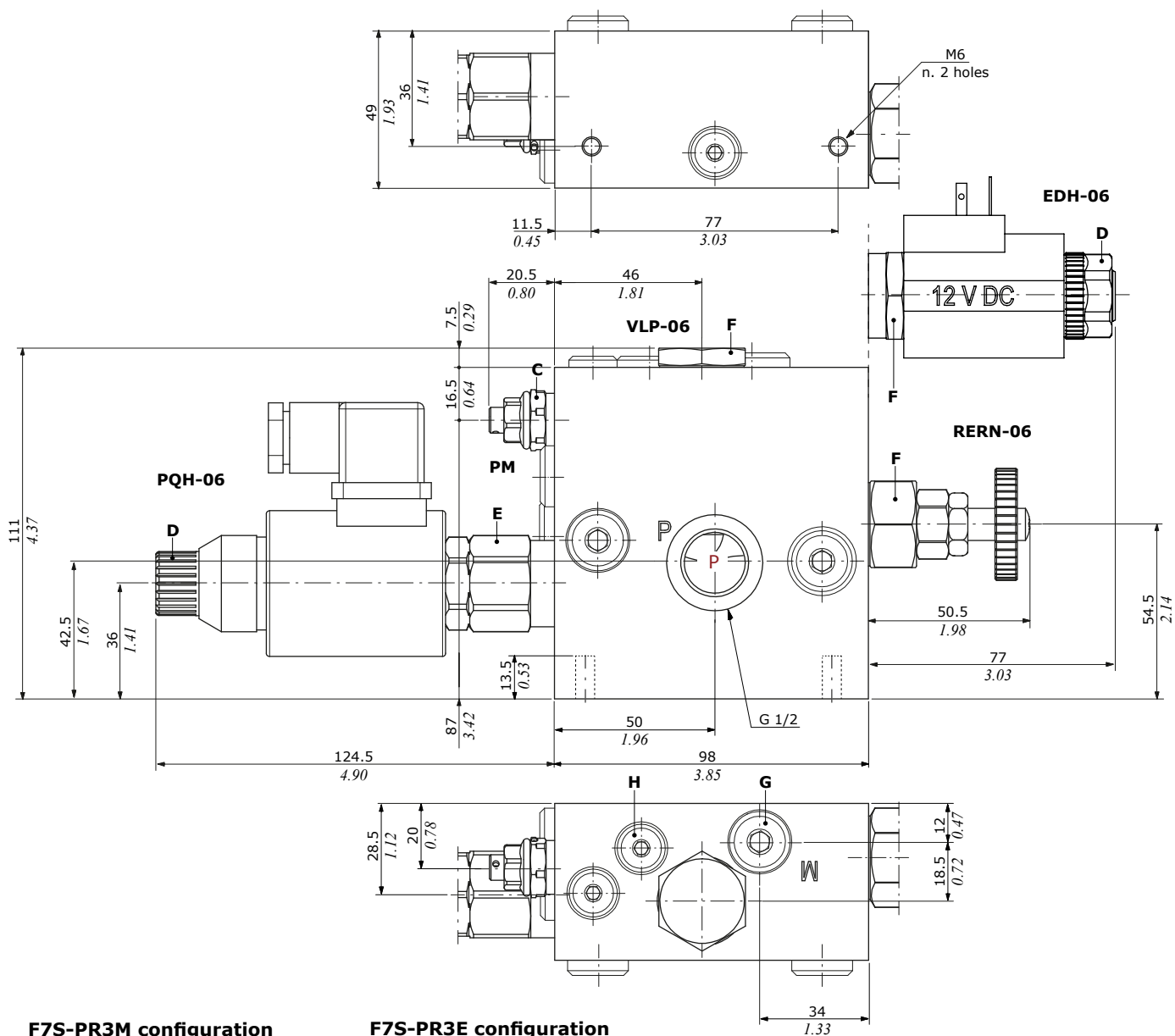
3 Coil

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

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

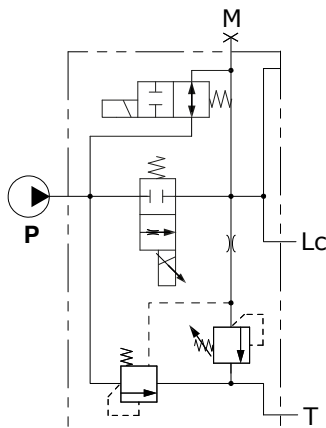
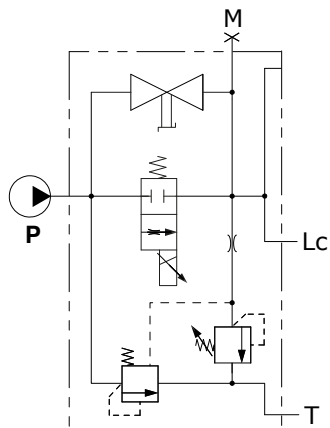
Inlet section with flow regulator

Dimensional data and hydraulic circuit



F7S-PR3M configuration
With manual unloader valve

F7S-PR3E configuration
With electric unloader valve



Wrenches and tightening torques

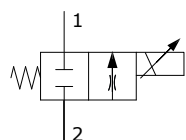
- C = wrench 17 - 30 Nm (22 lbft)
- D = manual tightening
- E = wrench 27 - 30 Nm (22 lbft)
- F = wrench 27 - 60 Nm (44.2 lbft)
- G = allen wrench 27 - 60 Nm (44.2 lbft)
- H = allen wrench 6 - 24 Nm (17.7 lbft)

Inlet section with flow regulator

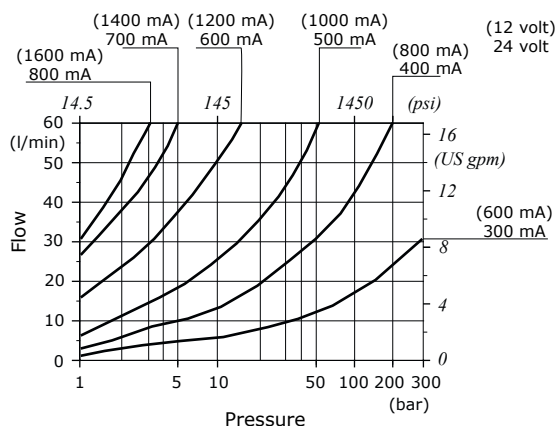
Inlet valves

PQH-06 type

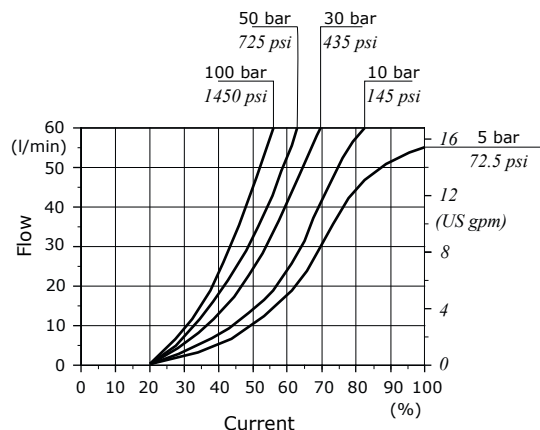
Flow control proportional pressure compensated valve, 12/24 VDC



Compensation curves



Flow control diagram

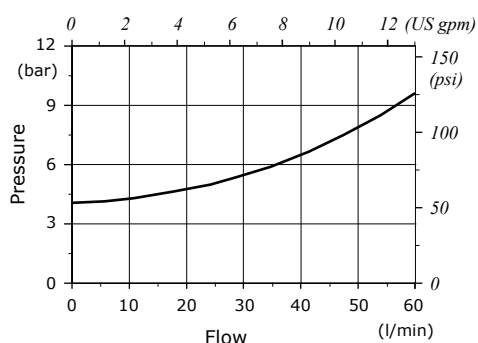
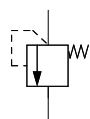
**Valve features**

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

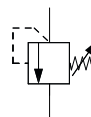
Pressure drops

**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

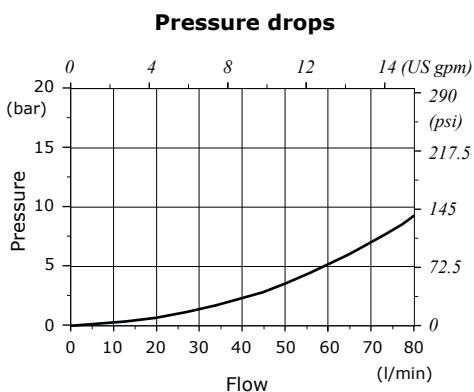
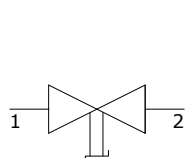


Inlet section with flow regulator

Inlet valves

RERN-06 type

Manual unloader valve

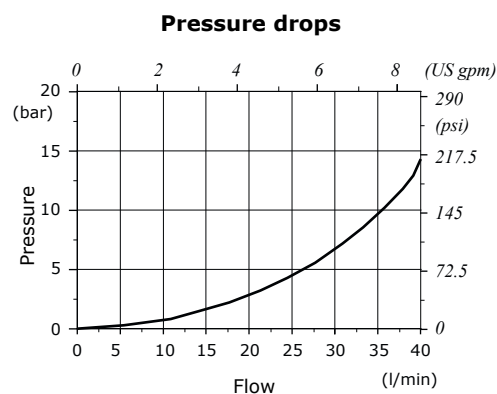
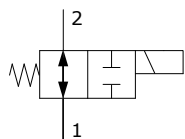


Valve features

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)

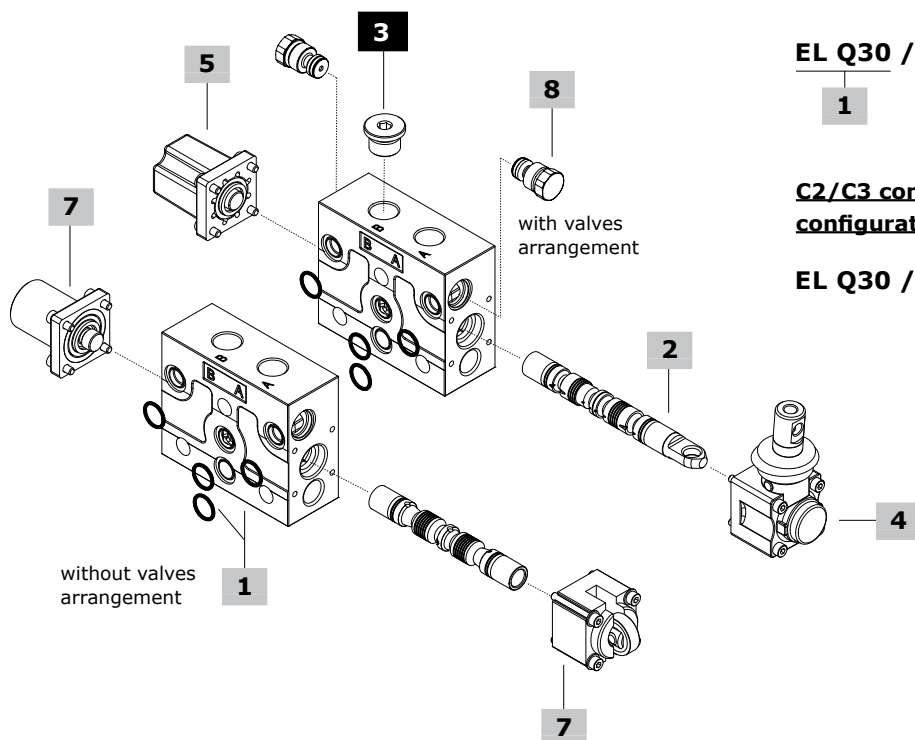
EL Q30 / 102 - A1 - M1 . V40(N)120 - S

1 2 4 5 8 aluminium controls

C2/C3 complete mechanical control configuration example:

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

7



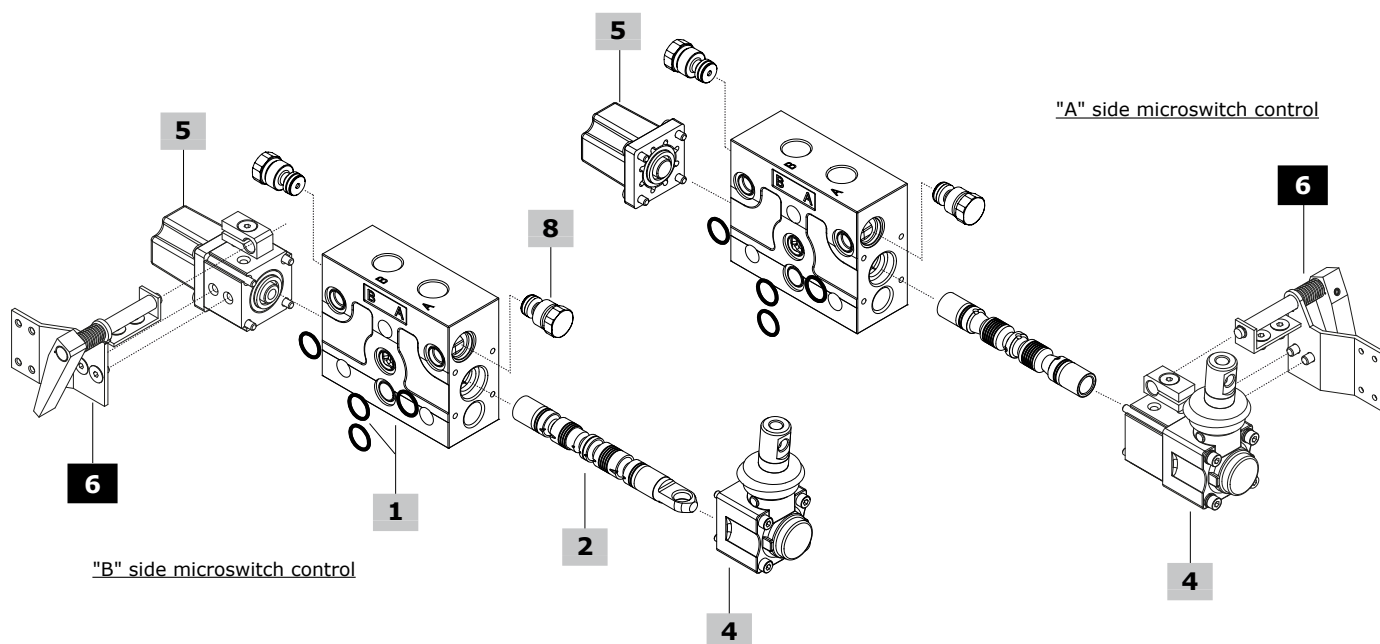
Microswitch control valve configurations example

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
106	3CUG3197800	As previous one, for kick-out control
107	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
114	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

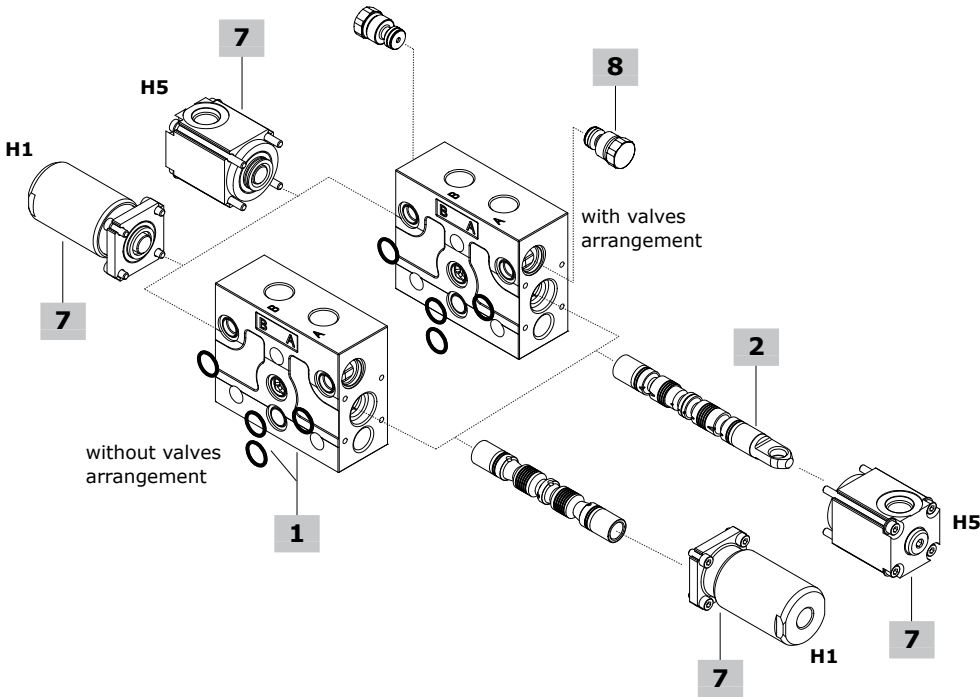
spring type and valve setting (bar)

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

1278aluminium 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

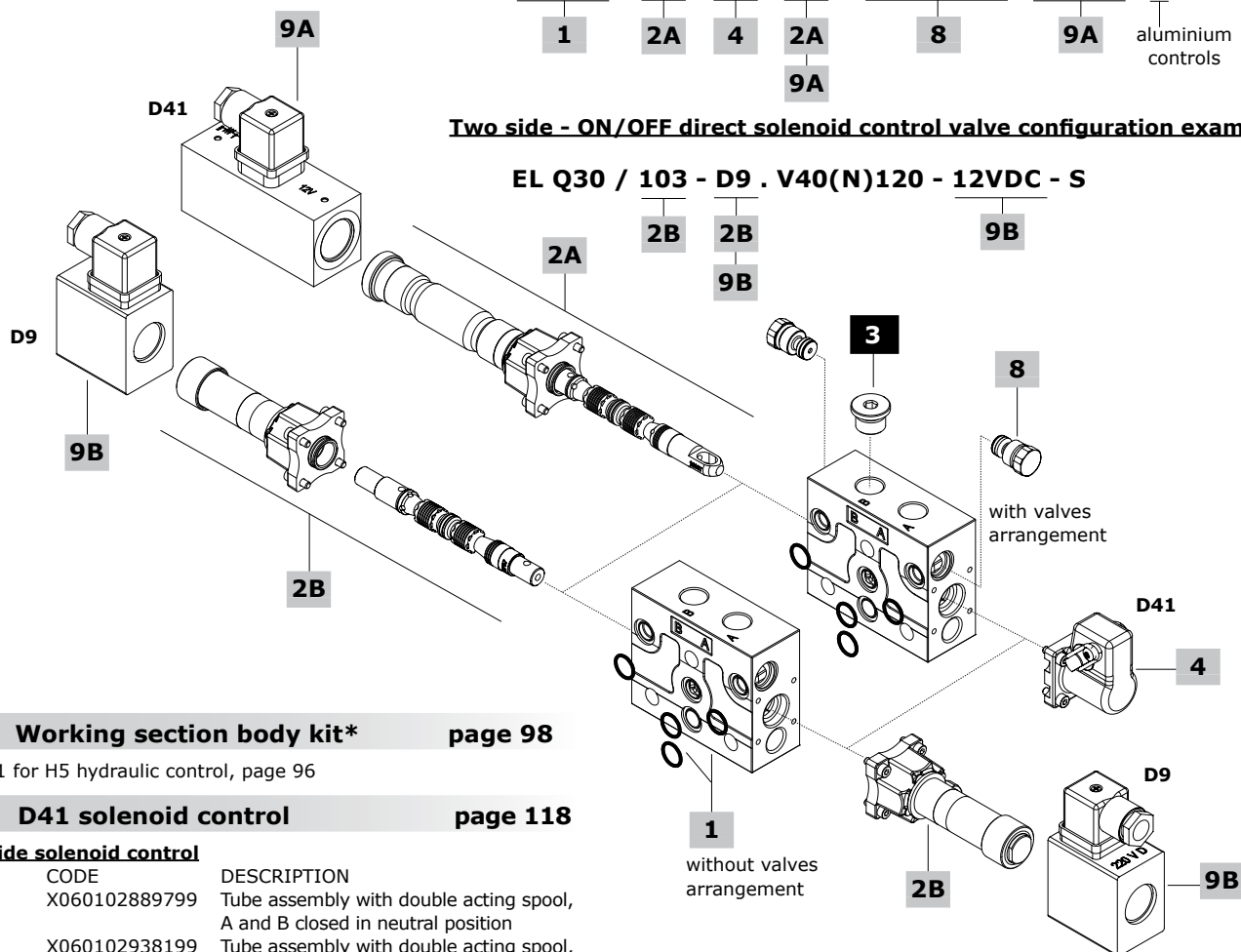
spring type and valve setting (bar)

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 118**One 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 119**Two 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 118**D41 coil**

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

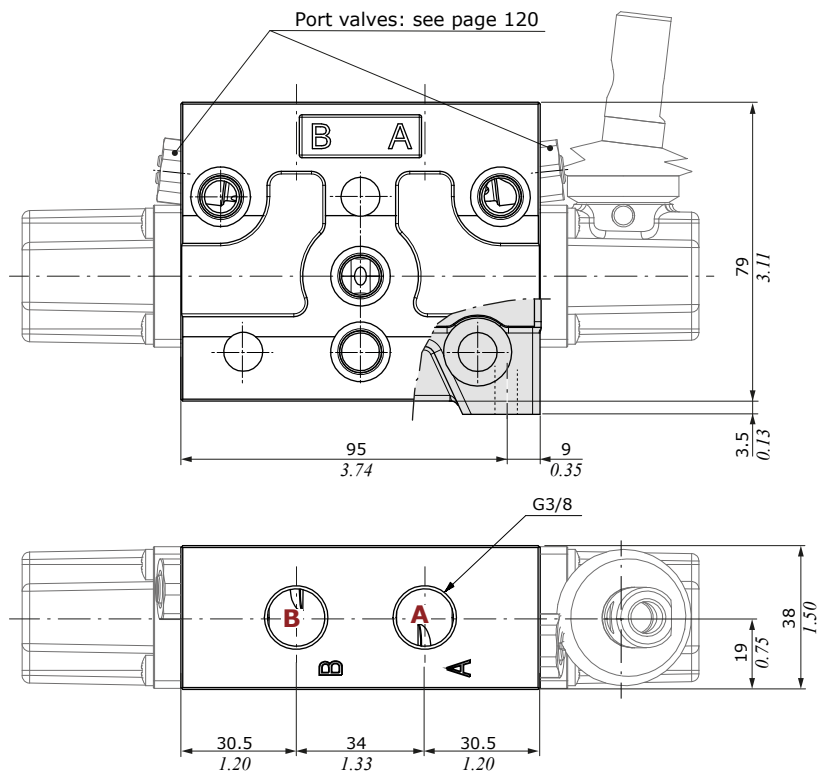
D9 coil

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

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

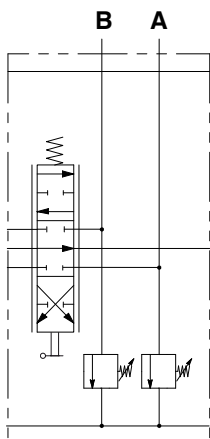
Working section

Dimensional data and hydraulic circuits



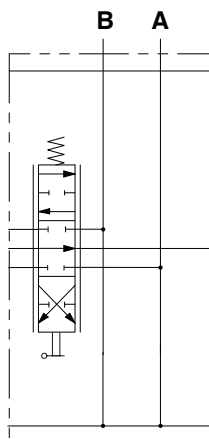
Q30.V40(N)120 configuration

Parallel circuit,
mechanical control with aux valves



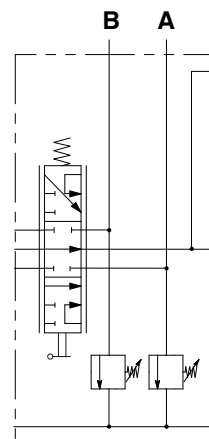
Q30 configuration

Parallel circuit,
mechanical control without aux valves



Q30.V40(N)120 configuration

Series circuit,
mechanical control with aux valves

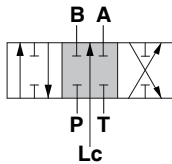


Spool

103 type

A and B closed
in neutral position

2 0 1

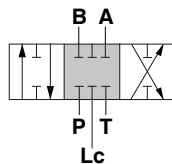
**Stroke**

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

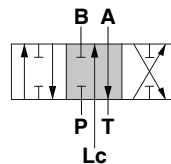
**Stroke**

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

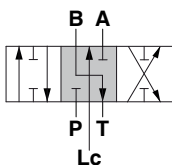
**Stroke**

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

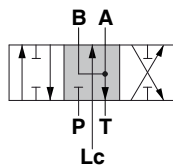
**Stroke**

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

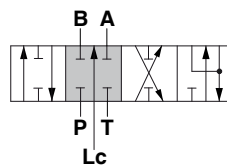
**Stroke**

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

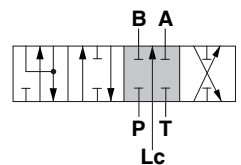
**Stroke**

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

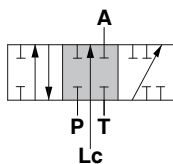
**Stroke**

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

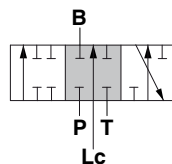
**Stroke**

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

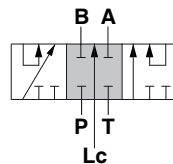
**Stroke**

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

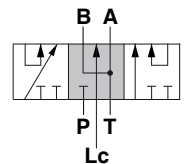
**Stroke**

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)

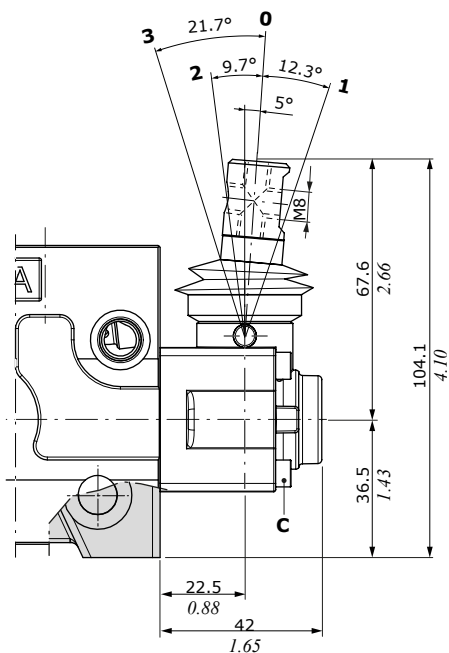
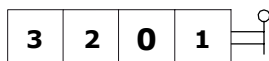
Working section

A side controls

With lever control

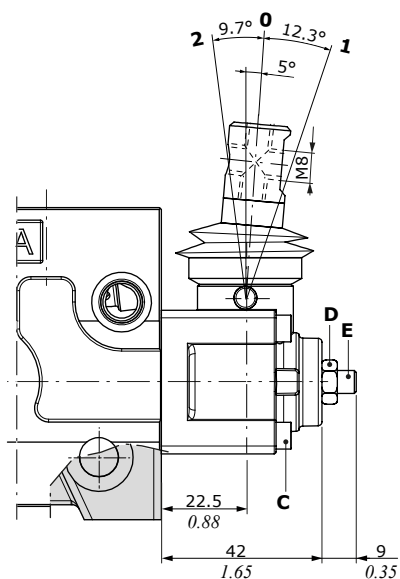
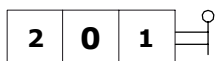
A1 type

M8 thread plastic lever box



A1/06 type

M8 thread, with stroke limiter

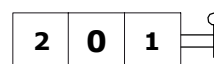


A1/10 type

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

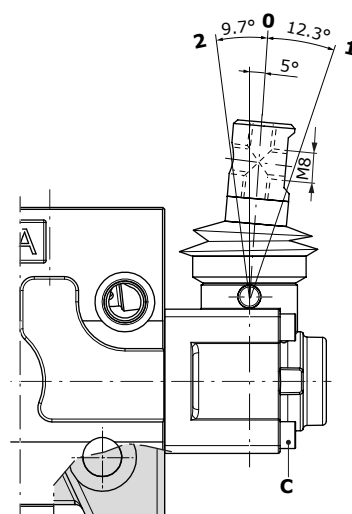
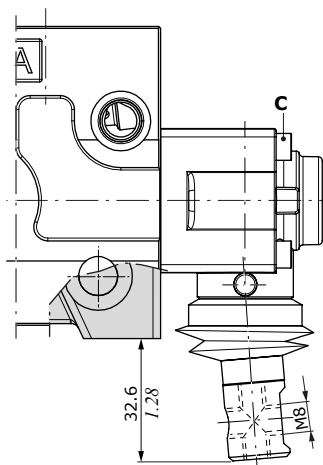
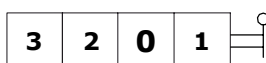
A2/10 type

As A1/10 type, rotated 180°



A2 type

As A1 type, rotated 180°

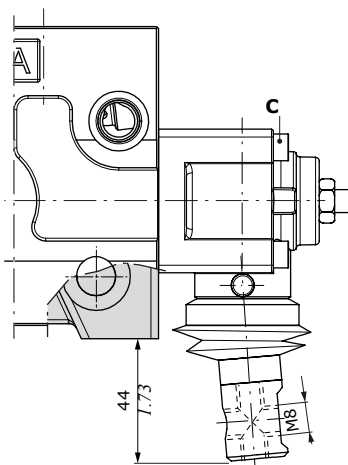
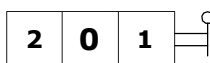


Wrenches and tightening torques

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°

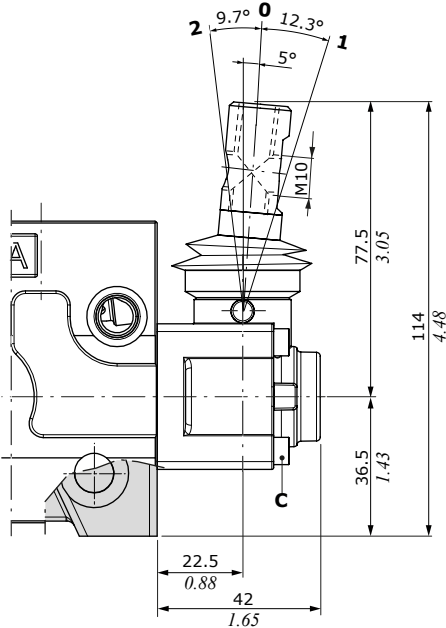
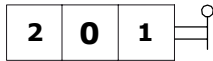


A side controls

With lever control

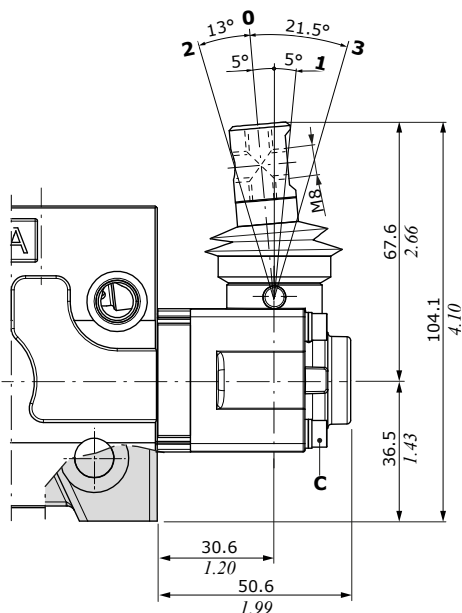
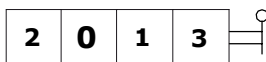
A1/PM type

M10 thread aluminium lever box



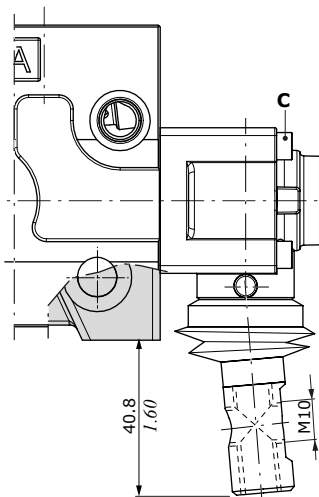
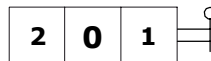
A1/Z1 type

M8 thread, for 116 floating spool type



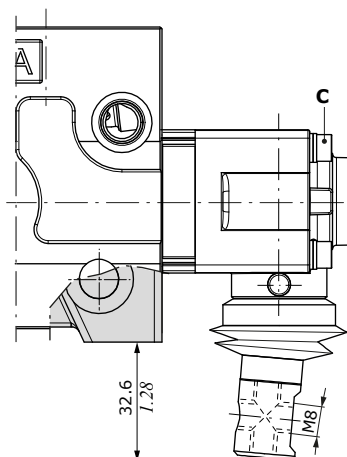
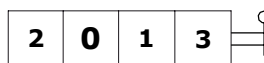
A2/PM type

As A1/PM type, rotated 180°



A2/Z1 type

As A1/Z1 type, rotated 180°



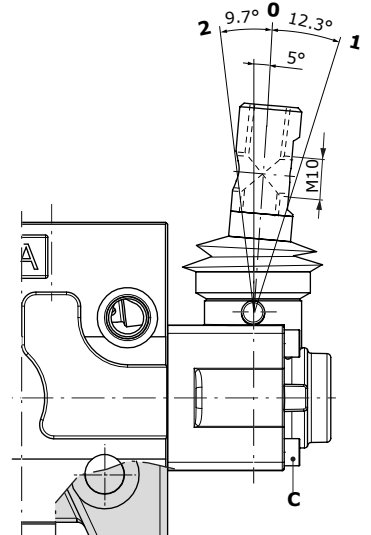
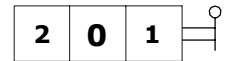
A1/PMP type

M10 thread plastic lever box.

Dimensions are the same of A1/PM type

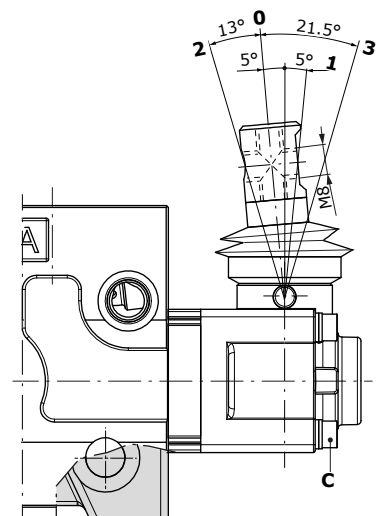
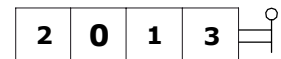
A2/PMP type

As A1/PMP type, rotated 180°



A1/Z1/10 type

As A1/Z1 type, with aluminium lever box



Wrenches and tightening torques

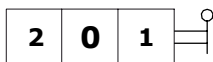
C = allen wrench 3 - 3 Nm (2.2 lbf·ft)

Working section

A side controls

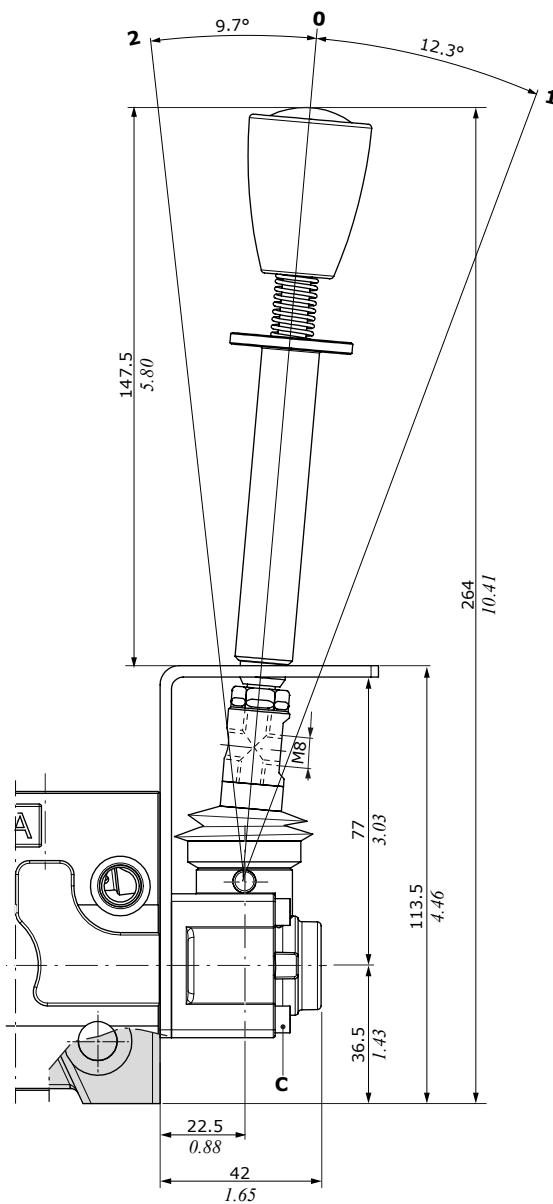
A1/S type

M8 thread, aluminium lever box



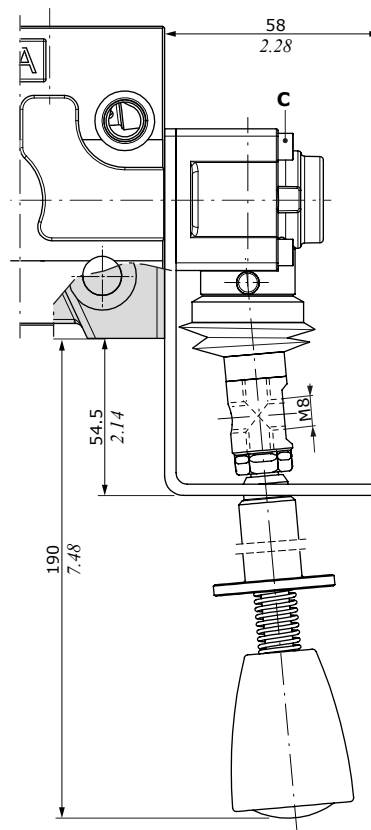
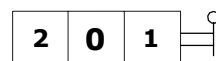
Wrenches and tightening torques

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



A2/S type

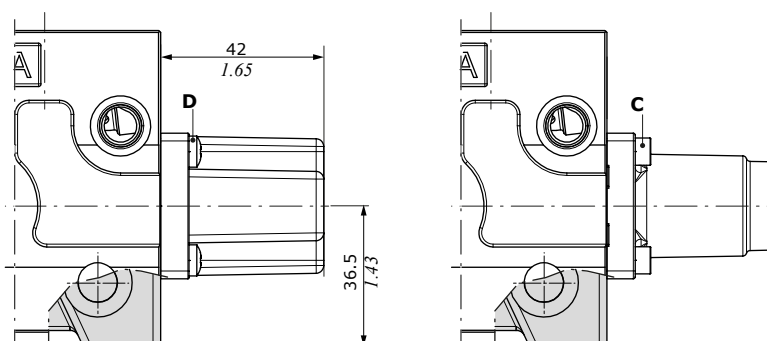
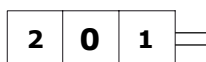
As A1/S type, rotated 180°



A side controls

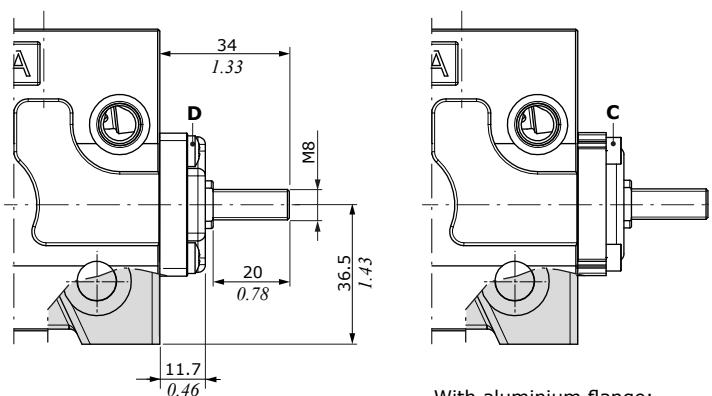
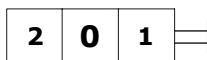
Without lever control

A3 type
With cap.
Available with aluminium cap



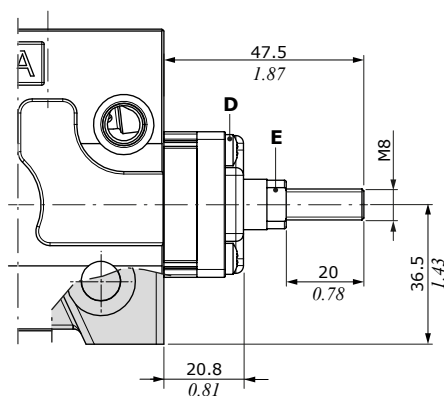
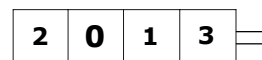
With aluminium cap;
dimensions are the same of standard type

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)

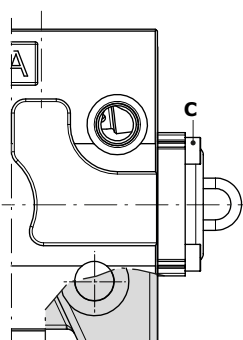
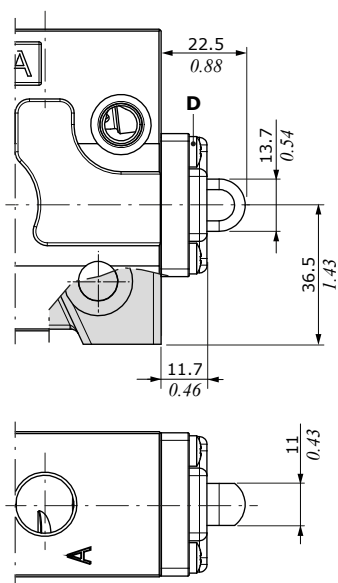
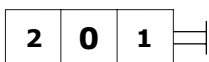
Working section

A side controls

Without lever control

A5 type

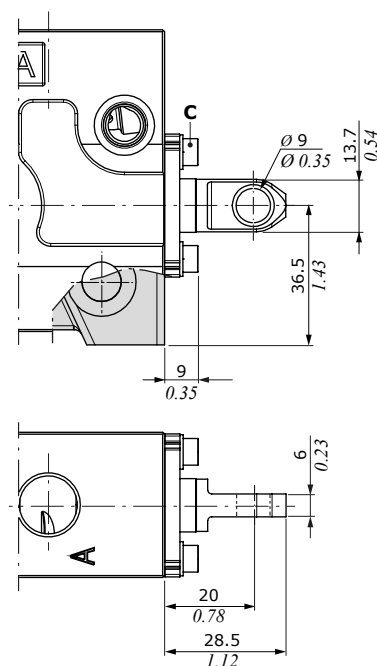
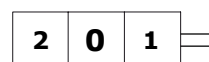
Flange with spherical spool end.
Available with aluminium flange



With aluminium flange;
dimensions are the same of
standard type

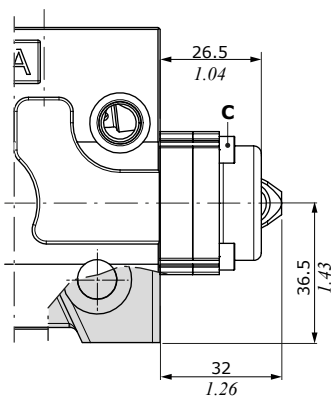
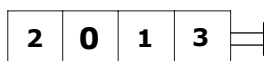
A6 type

With flange



A6-H/Z1 type

As A6 type,
for 116 floating spool type



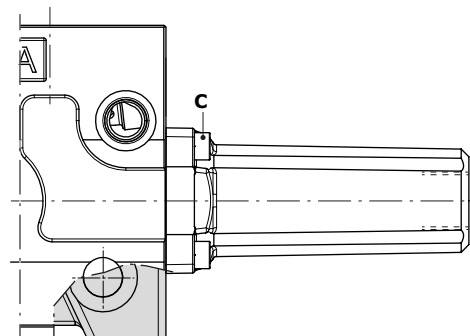
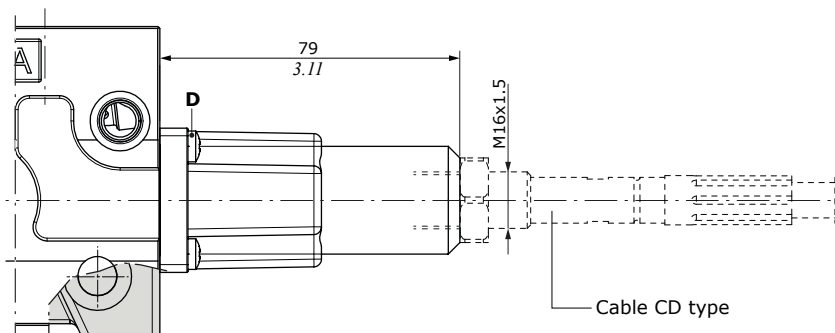
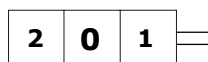
Wrenches and tightening torques

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

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

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

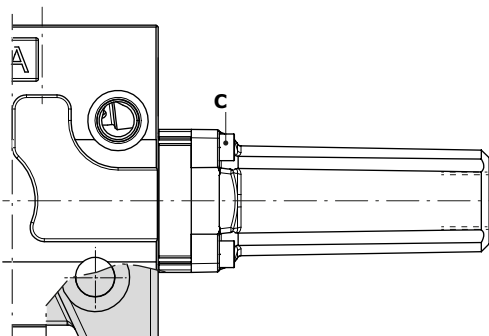
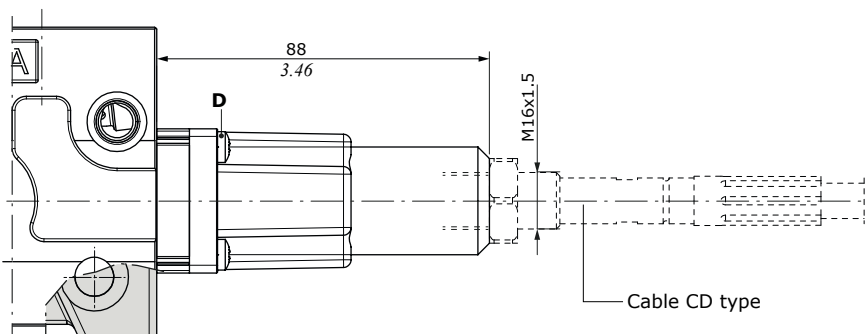
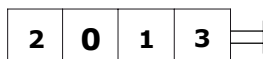
Flexible cable control arrangement.
Available with aluminium cap



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 lbf·ft)

D = cross-head - 3 Nm (2.2 lbf·ft)

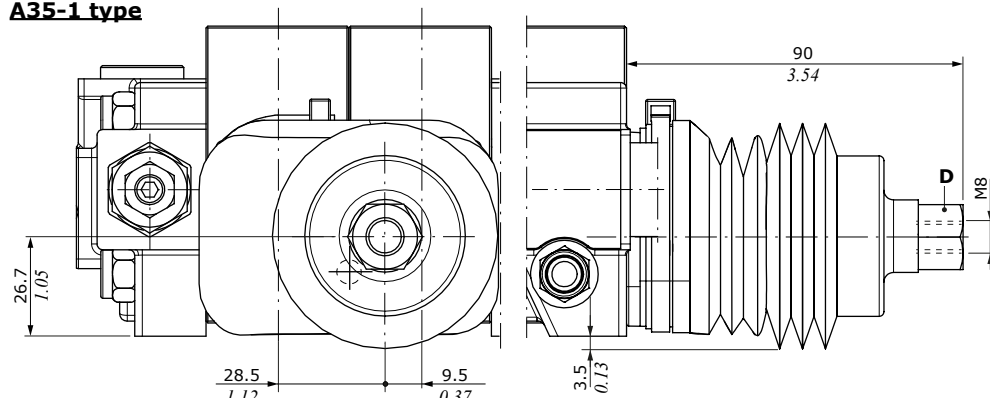
Working section

A side controls

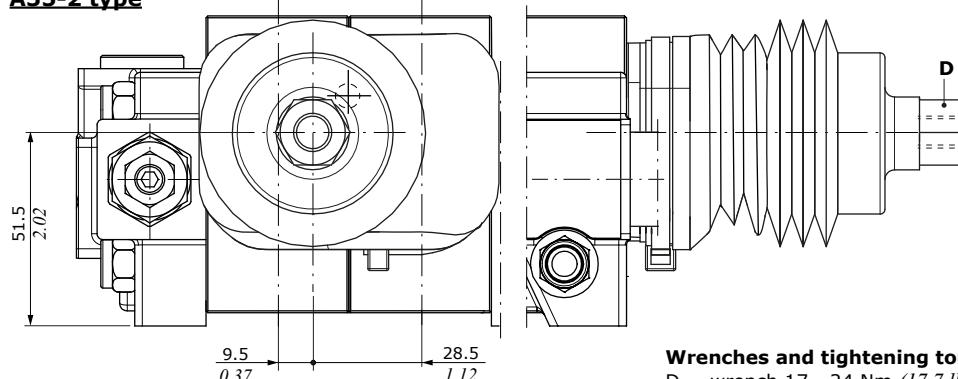
Joystick control

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

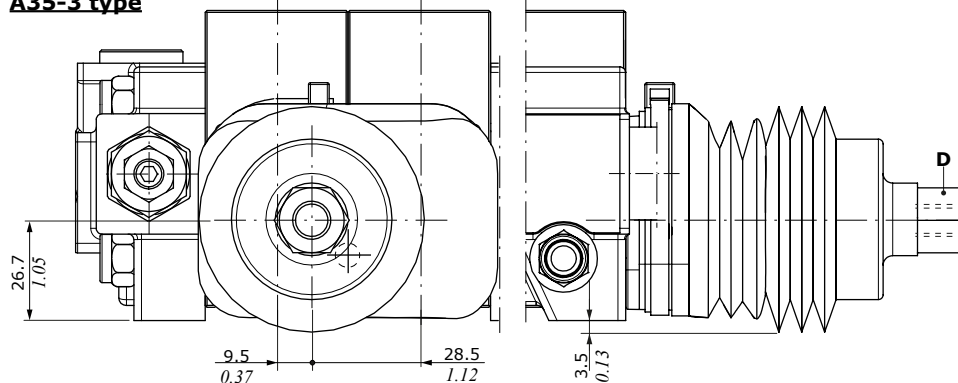
A35-1 type



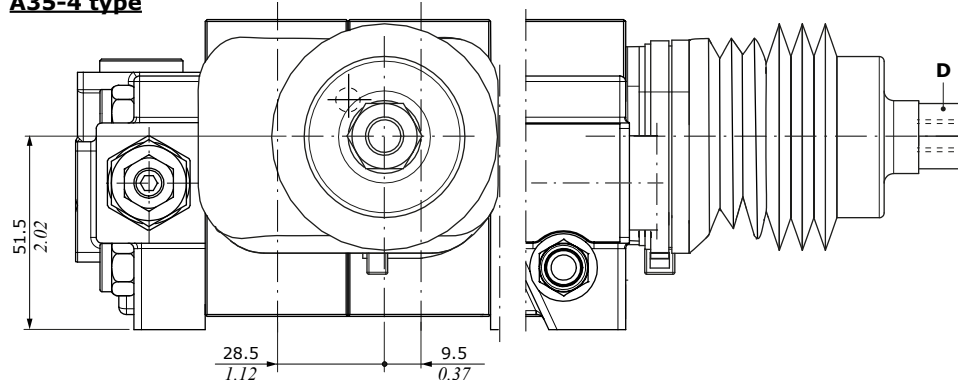
A35-2 type



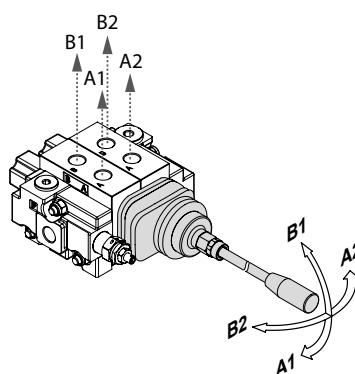
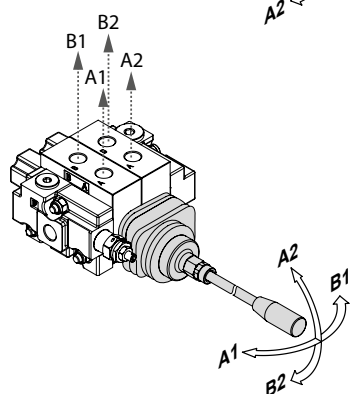
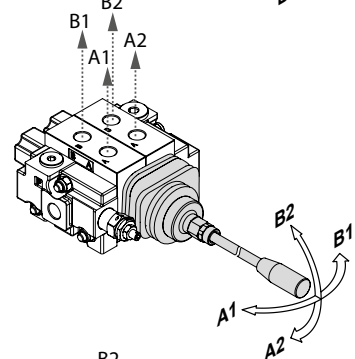
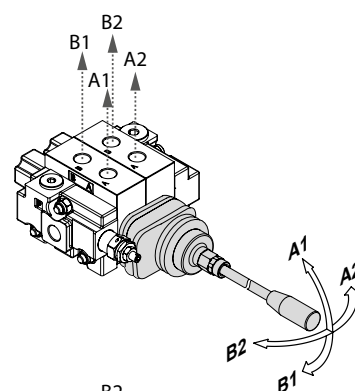
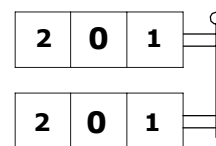
A35-3 type



A35-4 type



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



A side controls

With spool position microswitch, with lever

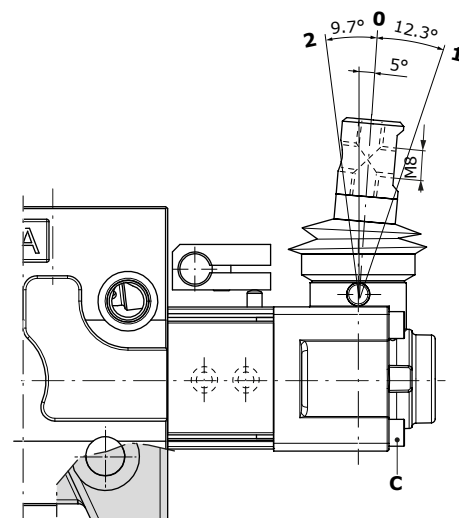
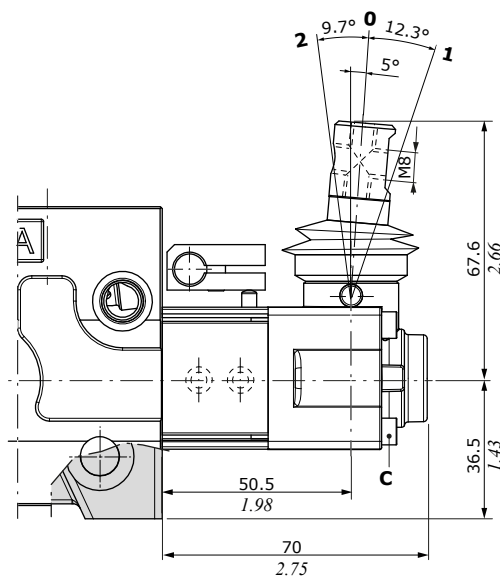
N1-A1 type
Micro operation in position 1 and 2.
Available with aluminium lever box



N1A-A1 type
Micro operation in position 1



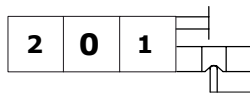
N1B-A1 type
Micro operation in position 2



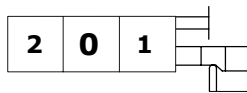
With aluminium lever box;
dimensions are the same of standard type

With spool position microswitch, with cap

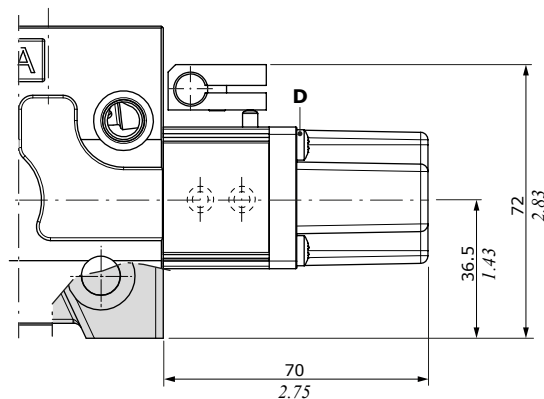
N1-A3 type
Micro operation in position 1 and 2



N1A-A3 type
Micro operation in position 1



N1B-A3 type
Micro operation in position 2



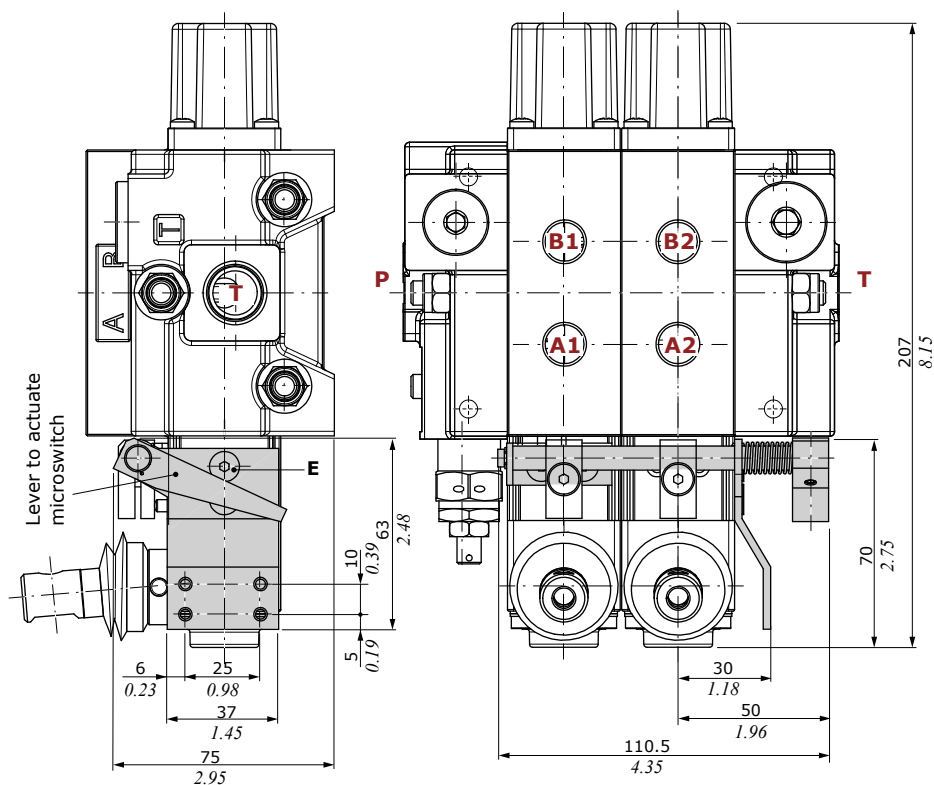
Wrenches and tightening torques
C = allen wrench 3 - 3 Nm (2.2 lbf)
D = cross-head - 3 Nm (2.2 lbf)

Working section

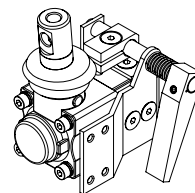
A side controls

With spool position microswitch

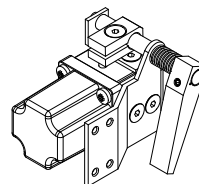
Microswitch assembly kit for 2 working section (N1-A1 type)



with cap



with lever box



Wrenches and tightening torques

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

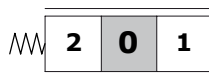
Working section

B side controls

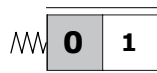
With spring return control

M1 type

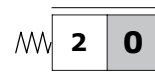
3 position, spring return
in neutral position.
Available with aluminium cap

**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

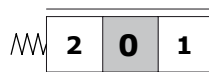
As M1 type,
for series spool

M1/06 type

As M1/05 type,
with aluminium cap

M1/07 type

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

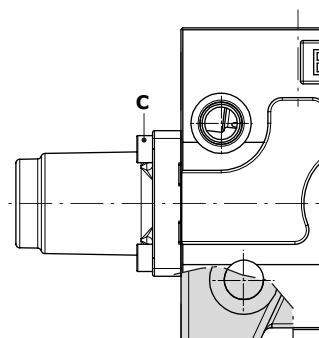
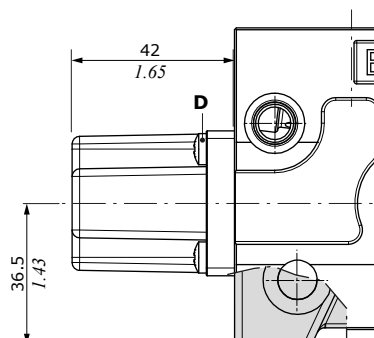
**Wrenches and tightening torques**

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

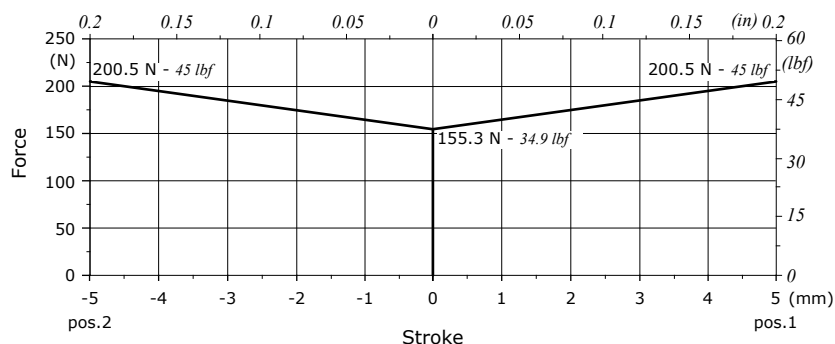
D = cross-head - 3 Nm (2.2 lbf_t)

E = wrench 10 - 9.8 Nm (7.2 lbf_t)

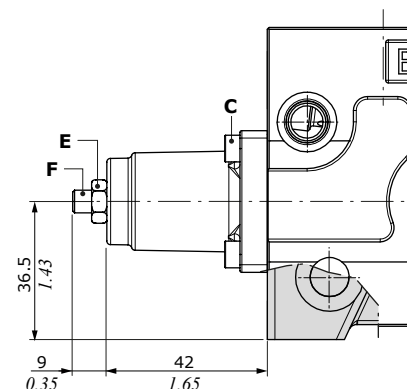
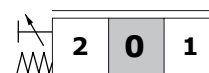
F = allen wrench 4 - 9.8 Nm (7.2 lbf_t)



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



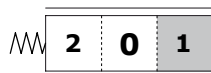
Working section

B side controls

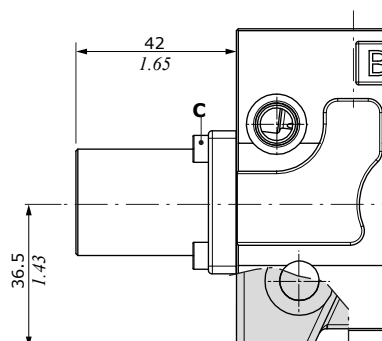
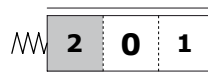
With spring return control

M4 types

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



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



Wrenches and tightening torques

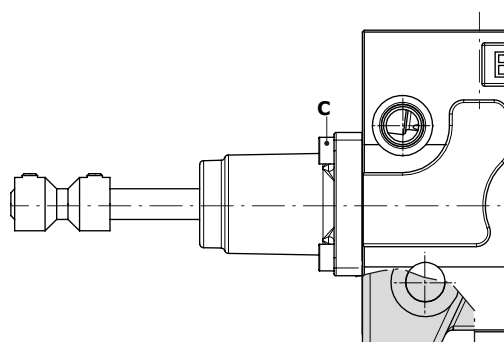
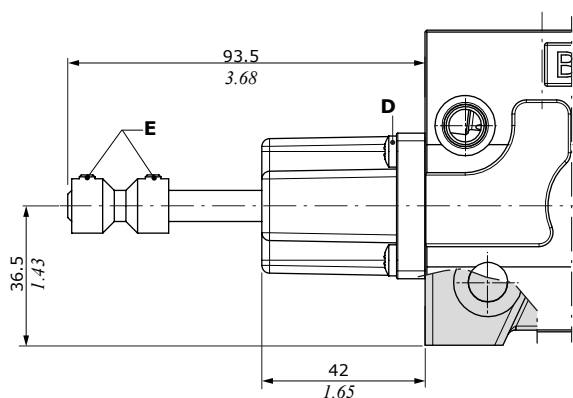
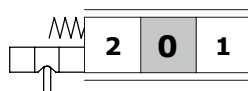
C = allen wrench 3 - 3 Nm (2.2 lbf ft)

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

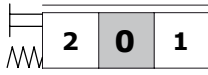
Working section

B side controls

With spring return control

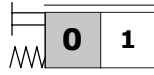
M1-U1 type

3 position, with M8 male thread external pin



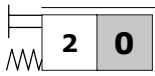
M2-U1 type

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



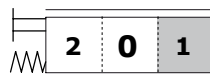
M3-U1 type

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



M4-U1 type

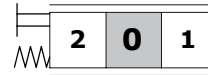
2 position (1-2), with M8 male thread external pin



With flexible cable control arrangement

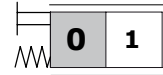
M1-U2 type

3 position, spring return in neutral position



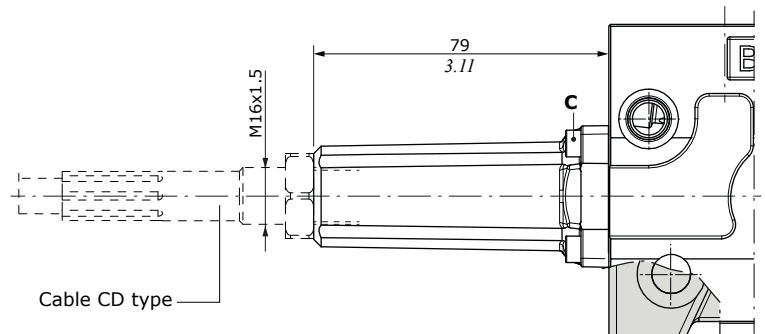
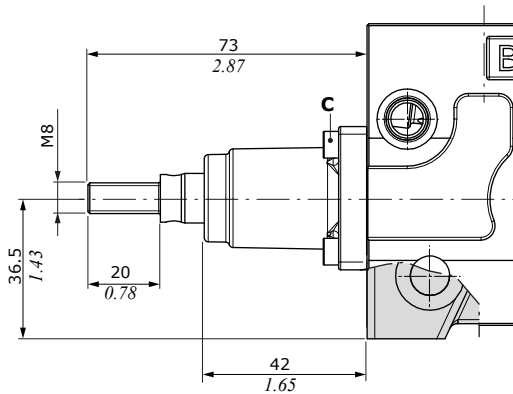
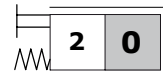
M2-U2 type

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



M3-U2 type

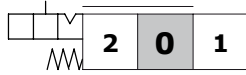
2 position (0-2), spring return in neutral position



With detent control

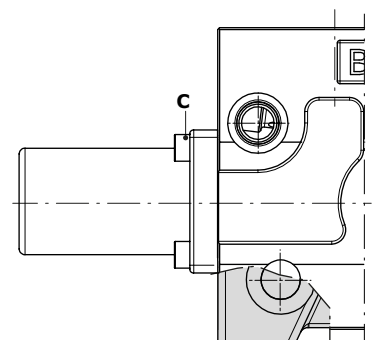
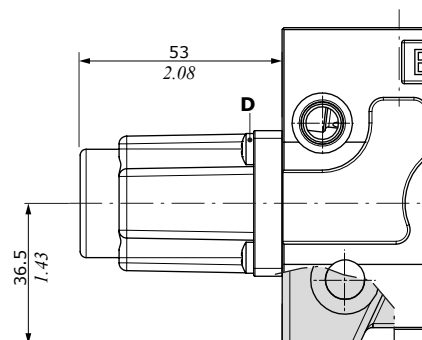
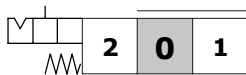
R1 type

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

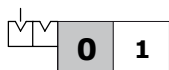
B side controls

With detent control

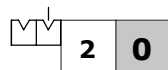
R3 type
3 position,
detent in all position.
Available with aluminium cap



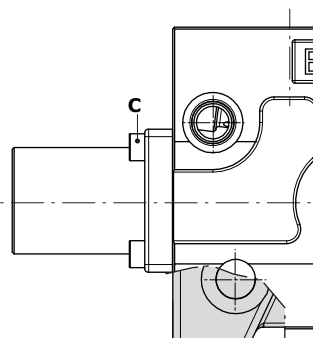
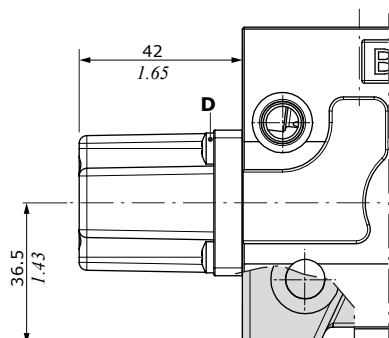
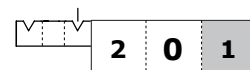
R4 type
2 position,
detent in position 0-1.
Available with aluminium cap



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



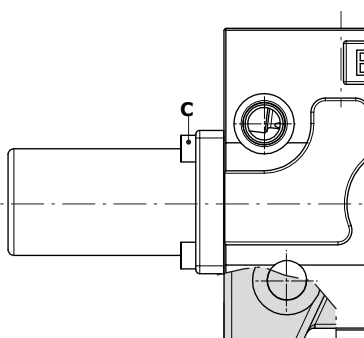
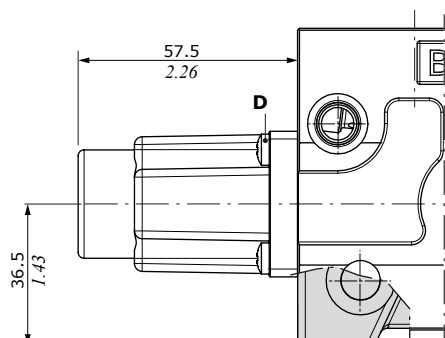
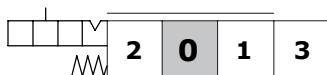
With aluminium cap;
dimensions are the same of standard type

Wrenches and tightening torques

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

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

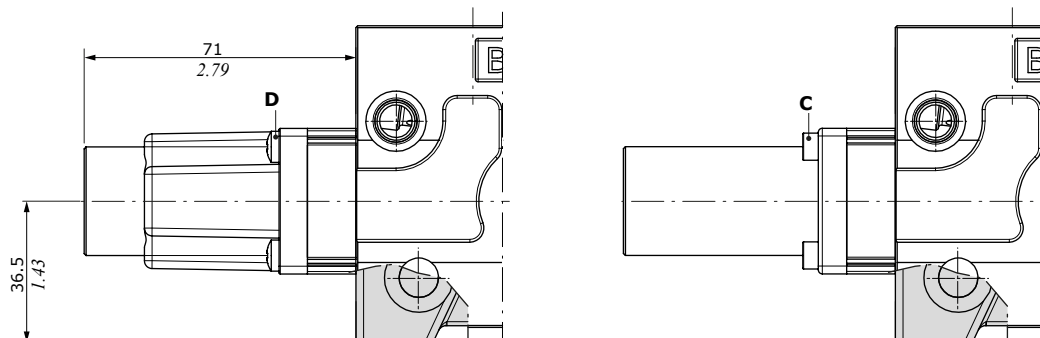
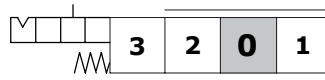
R8 type
4 position, detent in 4th position, for 116 floating spool type.
Available with aluminium cap



With aluminium cap;
dimensions are the same of standard type

B side controls**With detent control****R10/Z1 type**

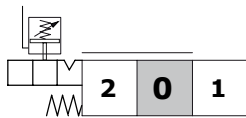
4 position, detent in 4th position, for 126 floating spool type.
Available with aluminium cap



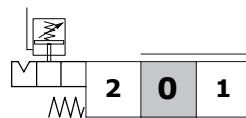
With aluminium cap;
dimensions are the same of standard type

With detent control and kick out function**R1K type**

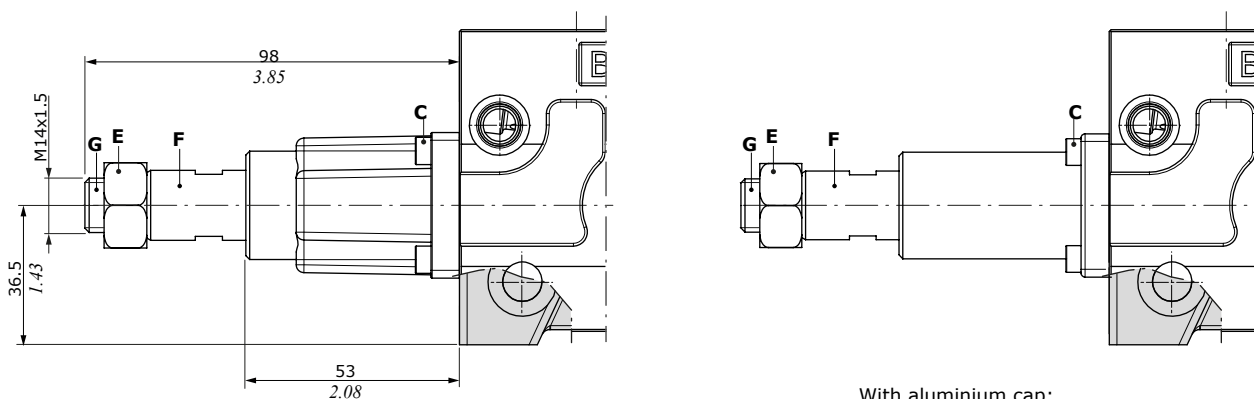
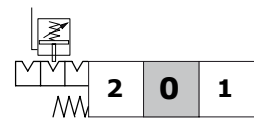
3 position, detent in position 1.
Available with aluminium cap

**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)

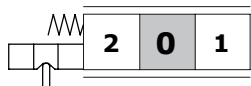
Working section

B side controls

With spool position microswitch

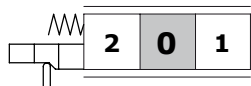
M1-N1 type

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



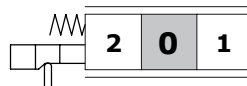
M1-N1A type

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



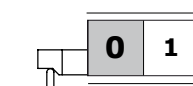
M1-N1B type

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



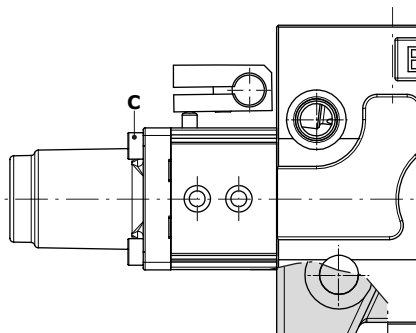
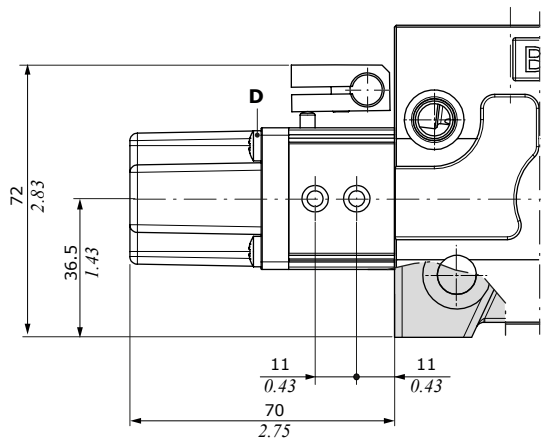
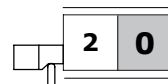
M2-N1 type

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



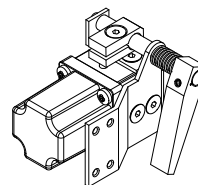
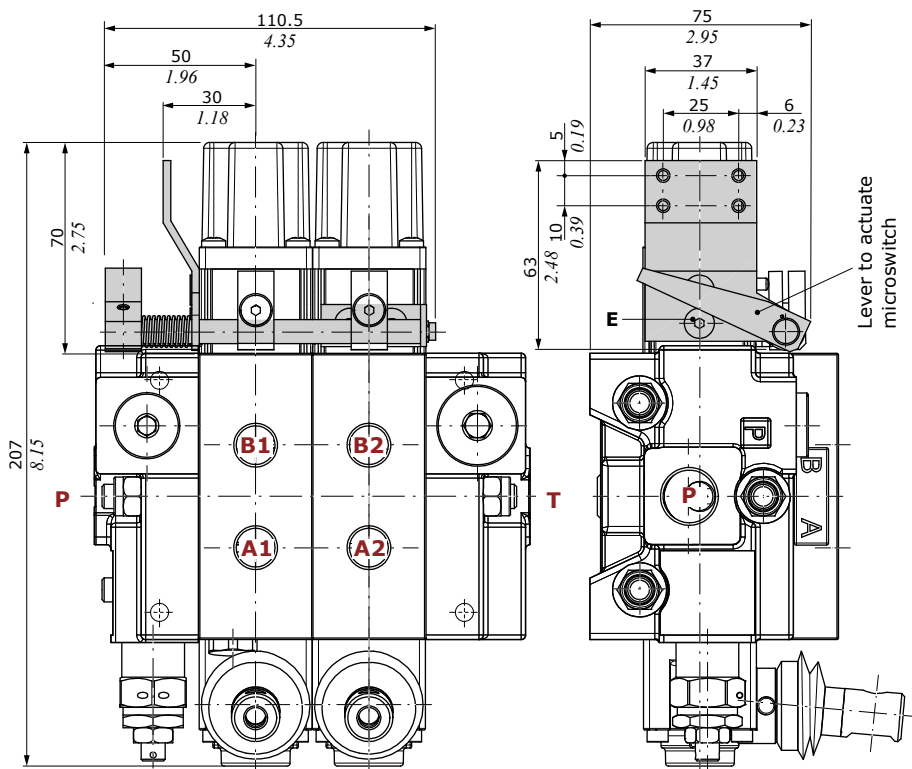
M3-N1 type

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)

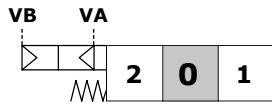
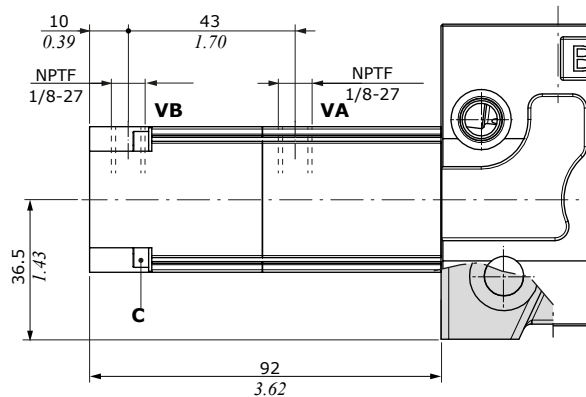
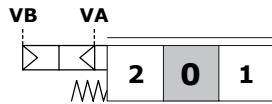


Wrenches and tightening torques

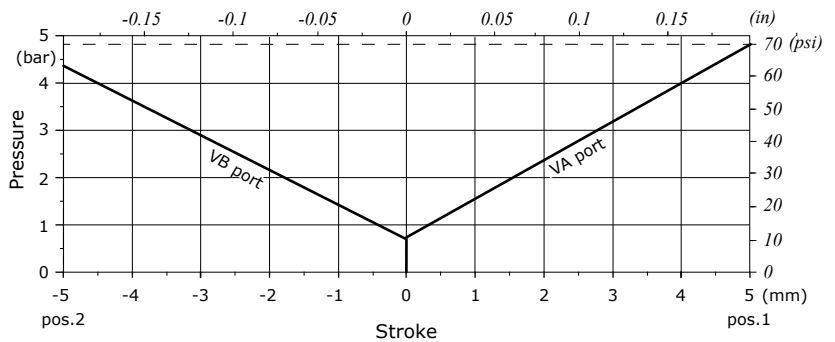
C = allen wrench 3 - 3 Nm (2.2 lbft)
D = cross-head - 3 Nm (2.2 lbft)
E = allen wrench 3 - 6.6 Nm (4.8 lbft)

B side controls

With pneumatic control

P1NW type
ON/OFF controlP1NPW type
Proportional control

Proportional pilot pressure curves



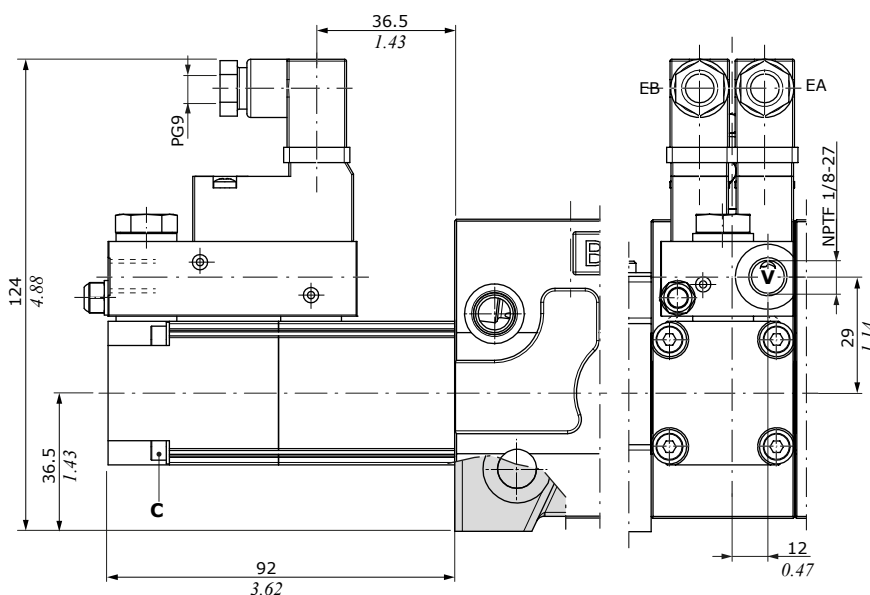
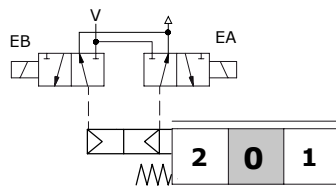
Operating features

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)

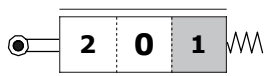
Working section

A+B side controls

With cam control

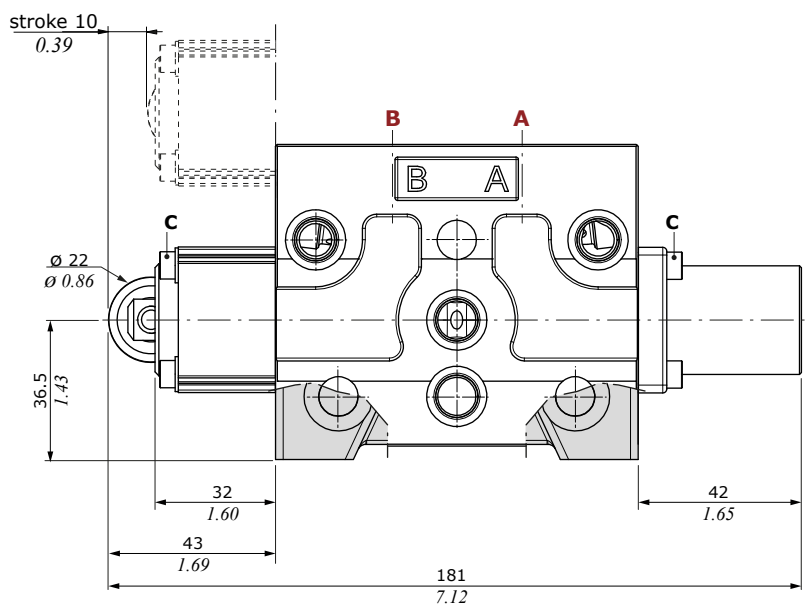
C2 type

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



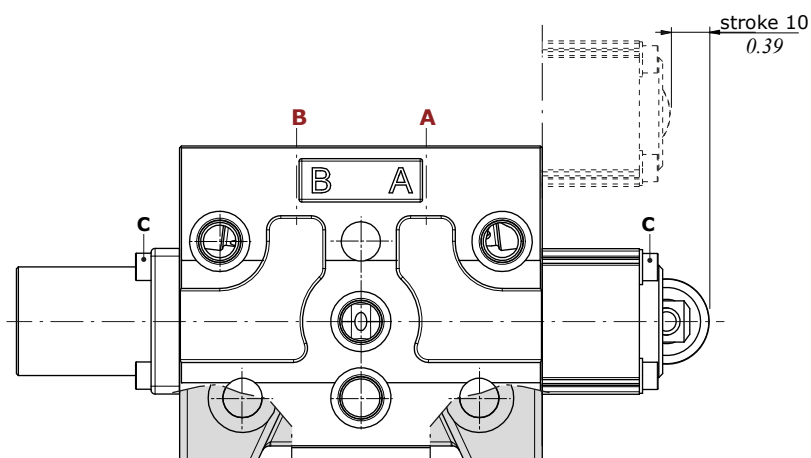
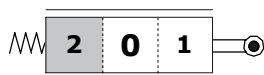
Wrenches and tightening torques

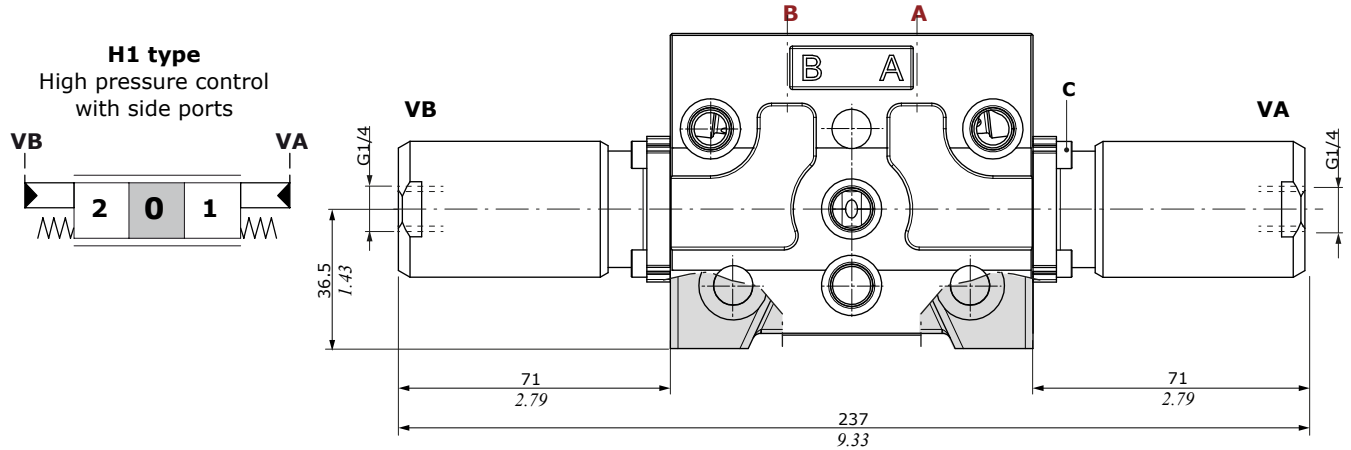
C = allen wrench 3 - 3 Nm (2.2 lbf ft)



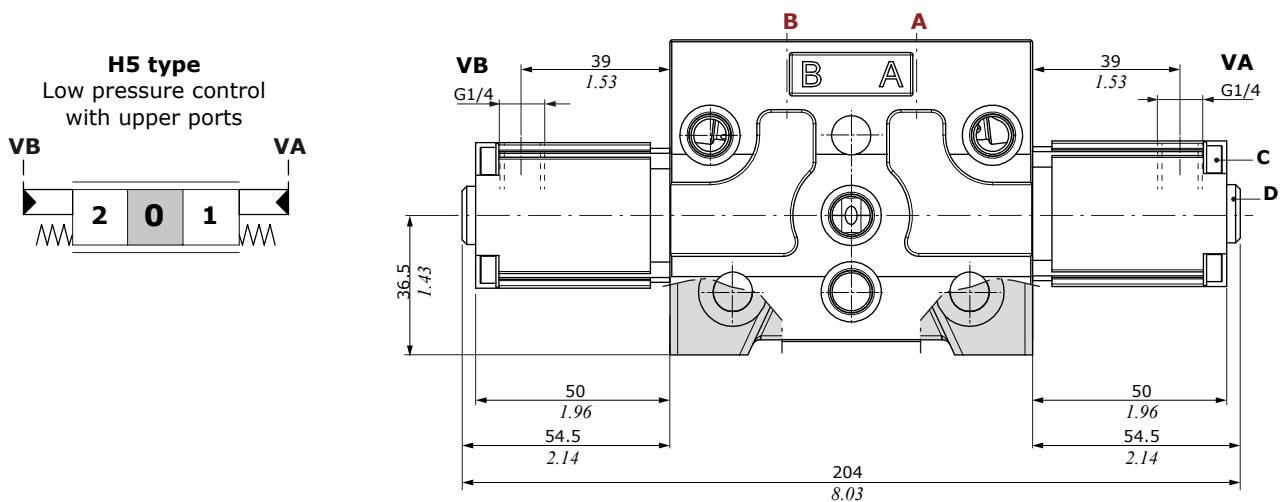
C3 type

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

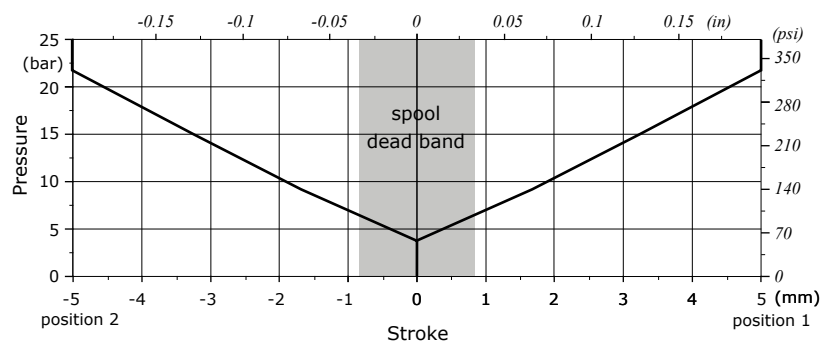


A+B side controls**With proportional hydraulic controls****Operating features**

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**

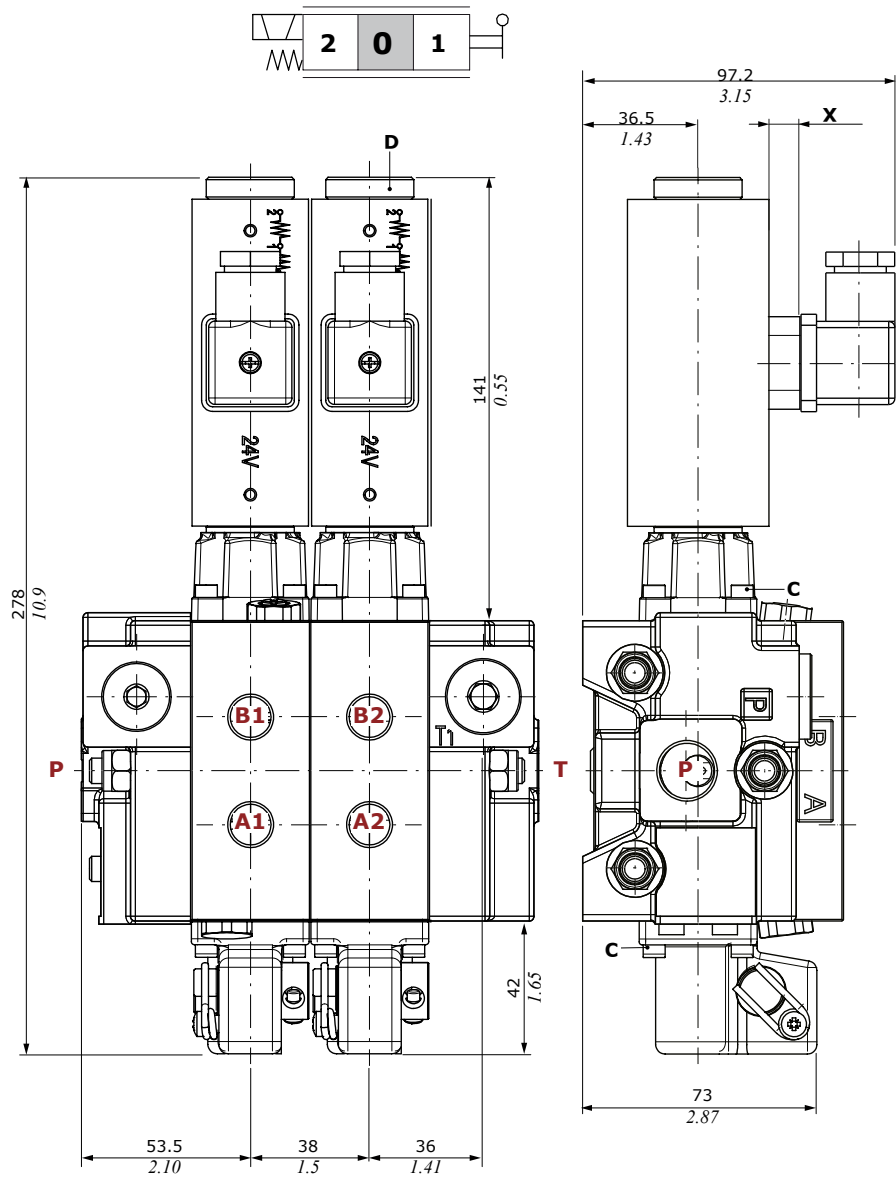
C = allen wrench 3 - 3 Nm (2.2 lbf ft)

D = allen wrench 4 - 9.8 Nm (7.2 lbf ft)

Working section

Direct solenoid control

D41 type: ON/OFF one side

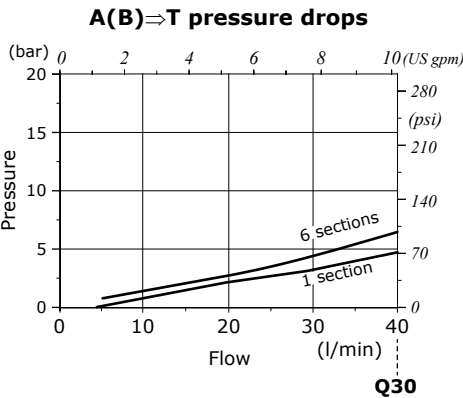
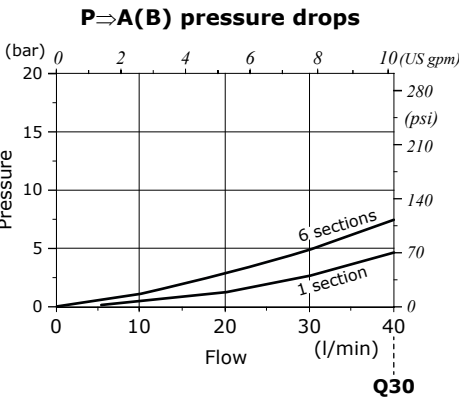
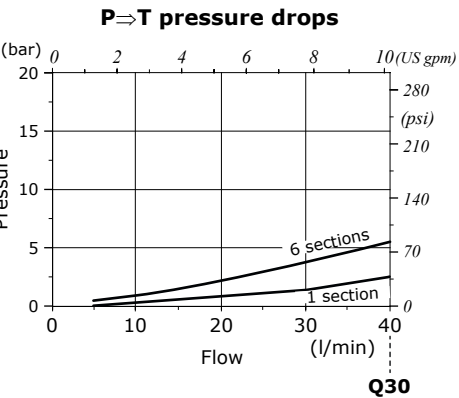
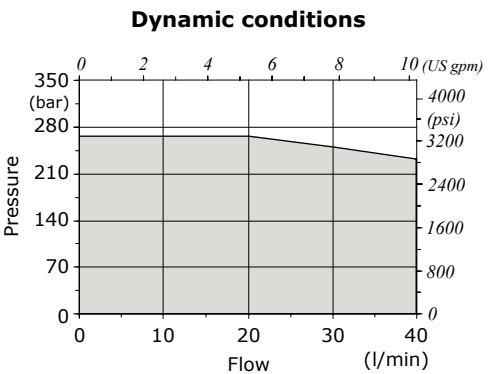


D41 coil	
Nominal voltage	12 VDC 24 VDC
Nominal voltage tolerance	±10%
Power rating	58 W
Insulance	Class H
Weather protection	IP65

Connector type: ISO4400 3P+T-PG11

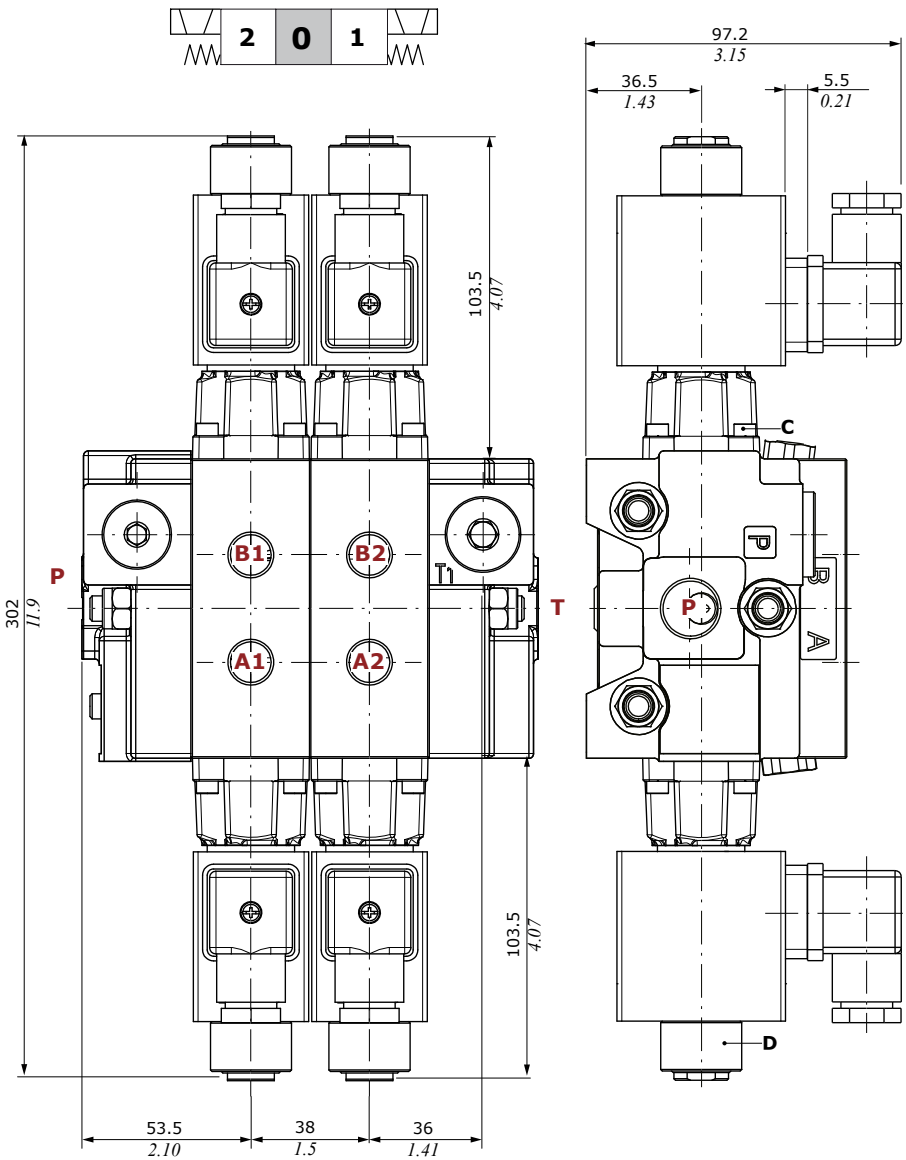
X	
coil type	mm - in
ZEB012 coil	10 - 0.39
ZEB024 coil	

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



Direct solenoid control

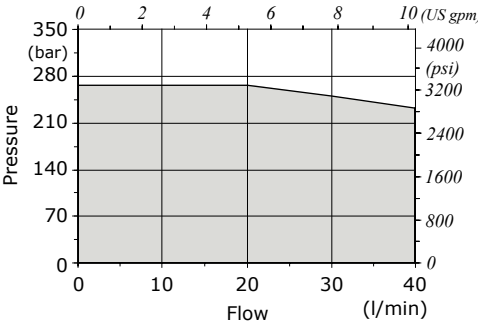
D9 type: ON/OFF two side



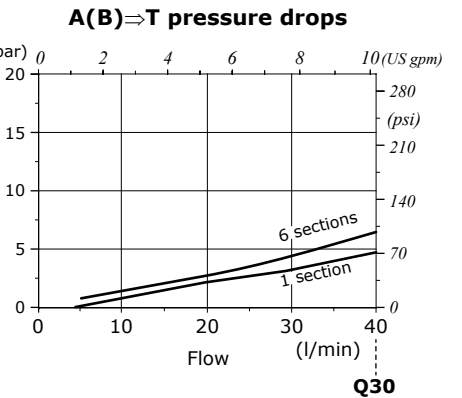
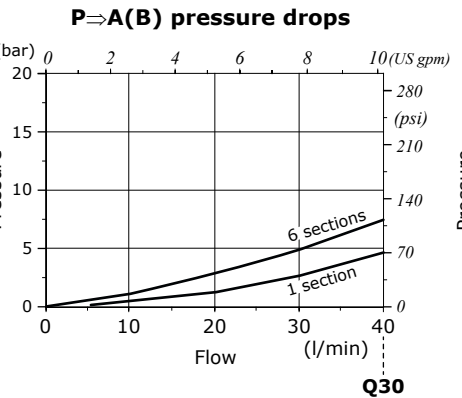
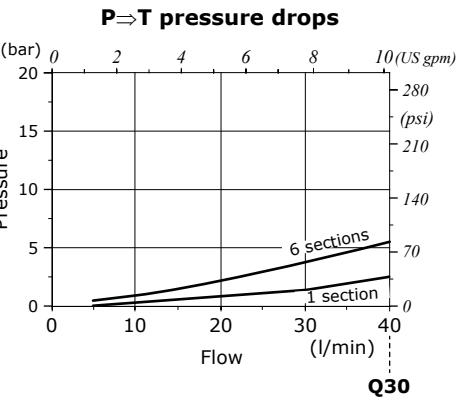
D9 coil	
Nominal voltage	12 VDC 24 VDC
Nominal voltage tolerance	±10%
Power rating	58 W
Insulation	Class H
Weather protection	IP65

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)



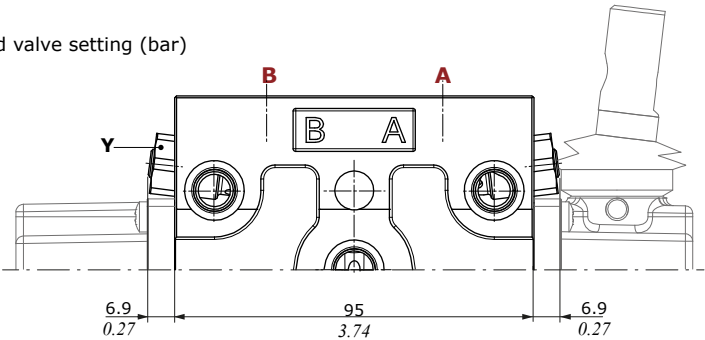
Auxiliary valve configuration

Dimensional data, hydraulic circuits and performance data

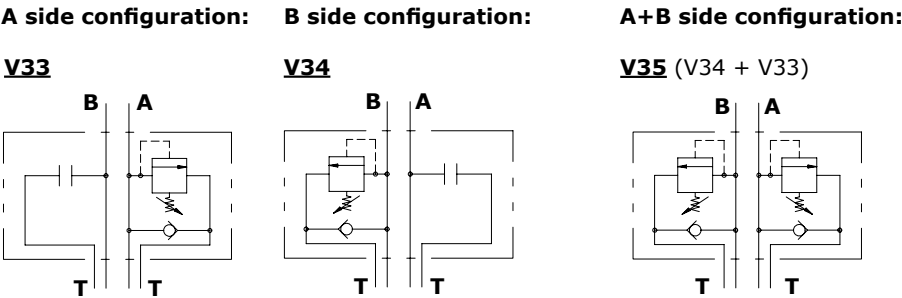
Description example

Q30 / 1 / ... / 103 - A1 - M1 - aux valve spring type and valve setting (bar)
Q30 / 1 / ... / 103 - A1 - M1 - **V32(N)120** / ...

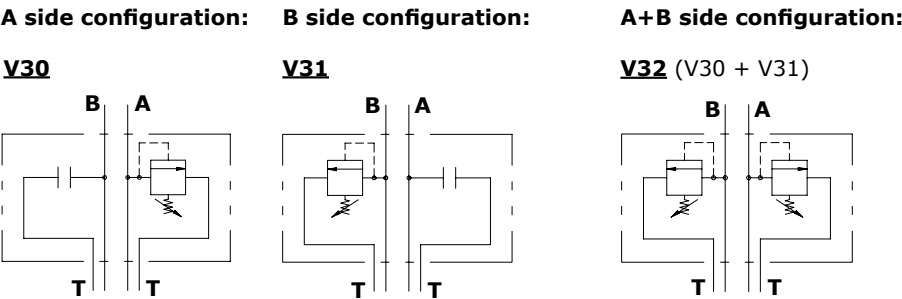
Wrenches and tightening torques
Y = wrench 16 - 20 Nm (14.7 lbf ft)



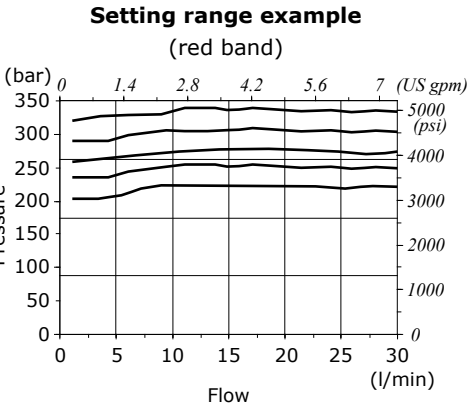
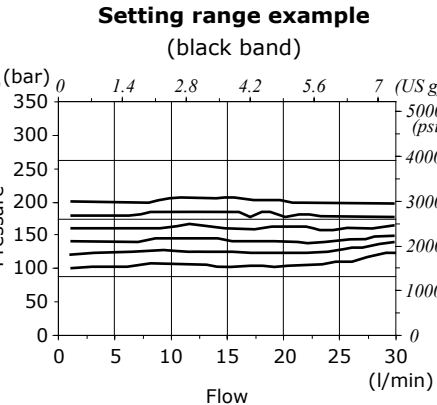
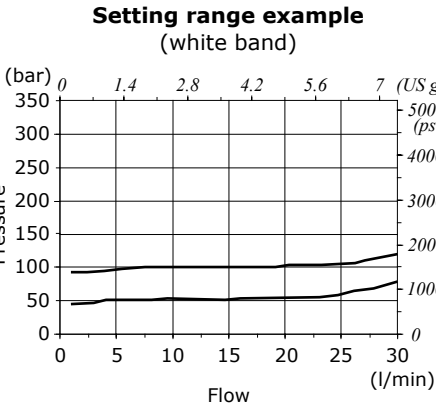
Antishock/anticavitation valve example



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

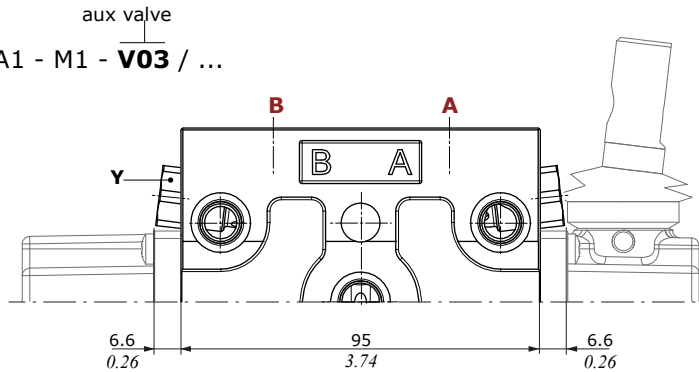


Auxiliary valve configuration

Dimensional data and hydraulic circuits

Anticavitation valve example

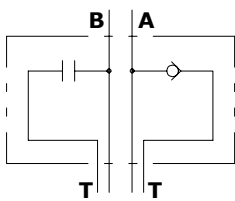
Q30 / 1 / ... / 103 - A1 - M1 - **V03** / ...



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

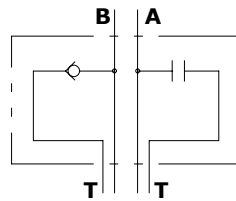
A side configuration:

V04



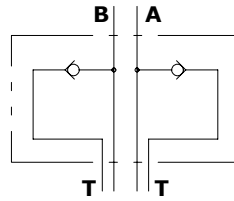
B side configuration:

V05



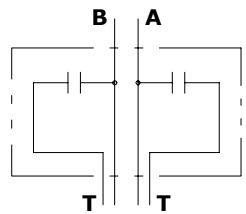
A+B side configuration:

V03 (V04 + V05)



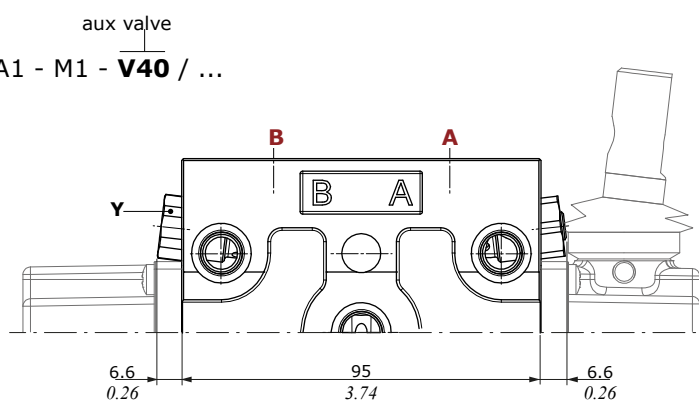
Plug valve:

VC



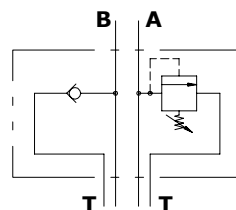
Antishock and anticavitation combining valves example

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



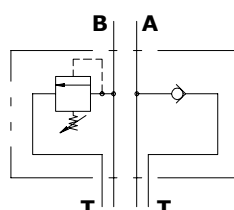
A side configuration:

V40 (V30 + V05)



B side configuration:

V41 (V31 + V04)

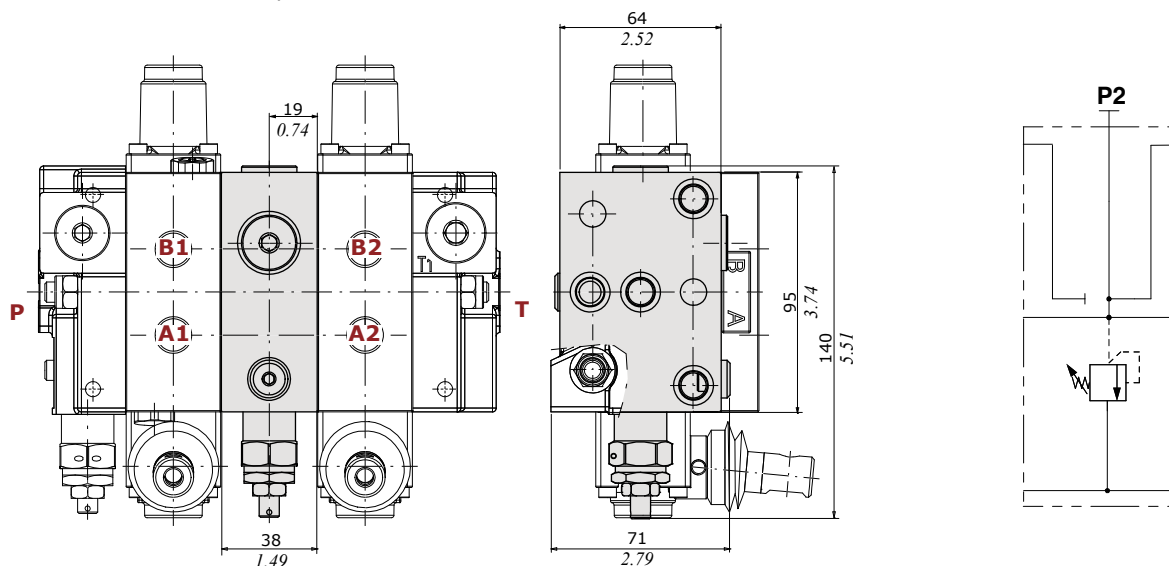


Intermediate section

Dimensional data and hydraulic circuit

E50 type

Intermediate inlet section with pressure relief valve

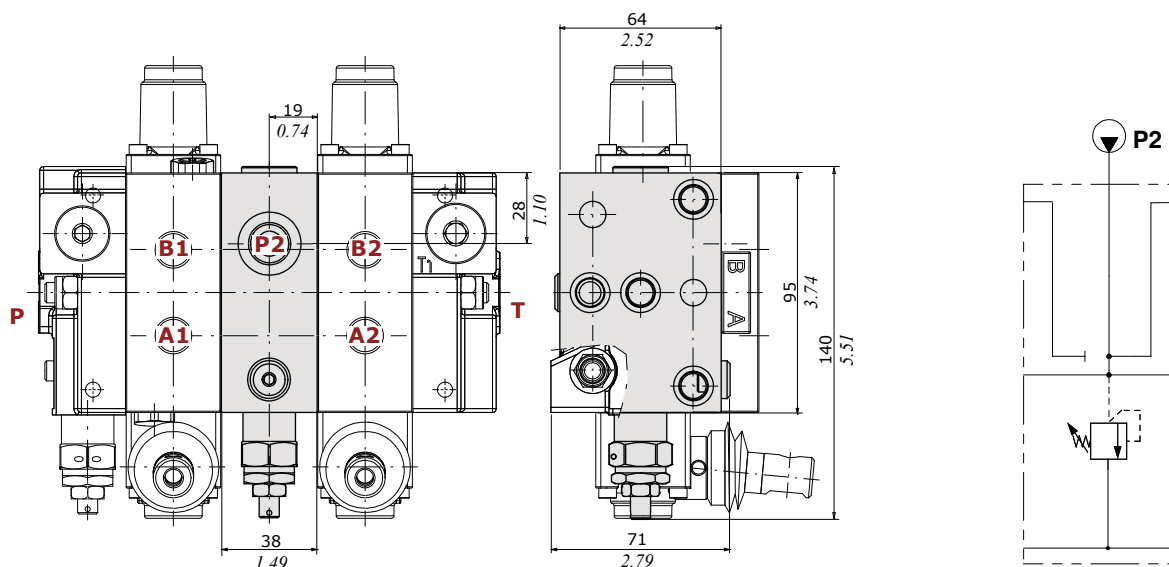


Description example: Q30/2/F7S(N150)/103-A1-M1.VC/**E50(N150)**/103-A1-M1/F3D-S

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

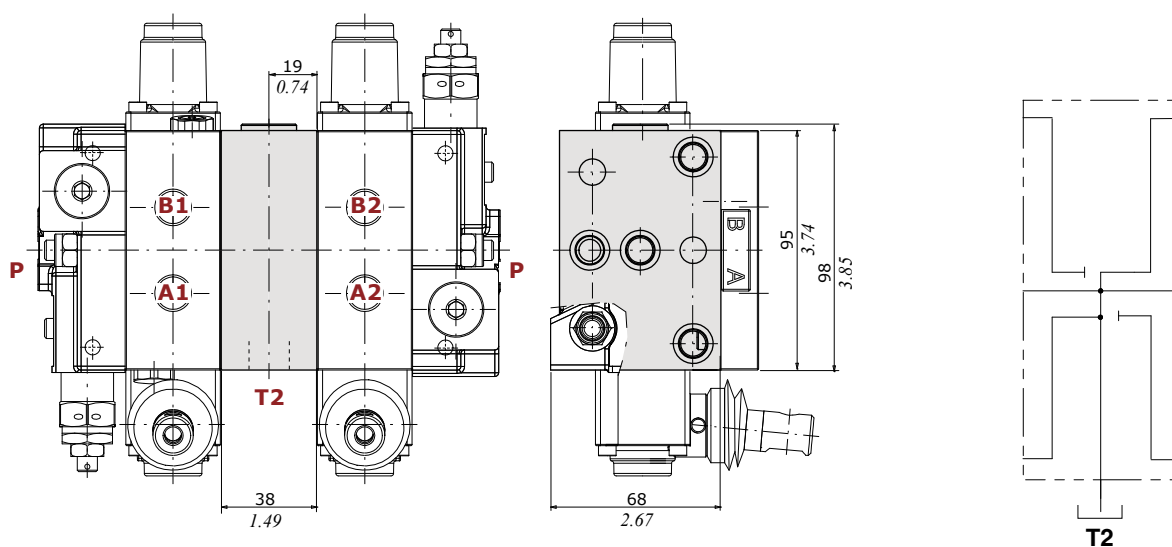
intermediate section spring type and valve setting (bar)

Intermediate section

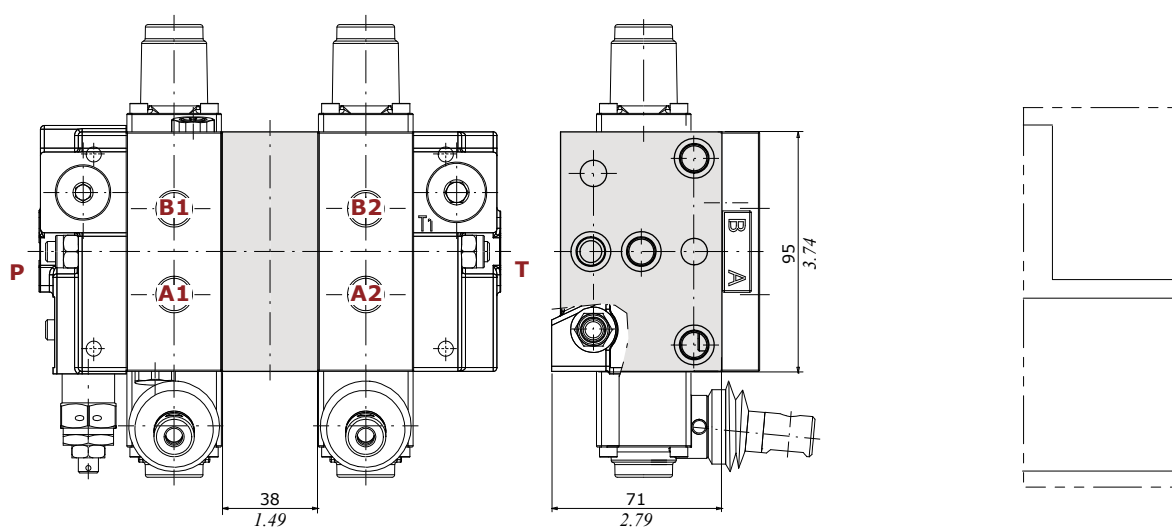
Dimensional data and hydraulic circuit

E51 type

Intermediate outlet section, T2 port open

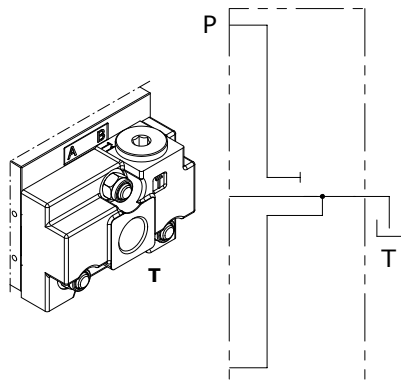
Description example: Q30/2/F7S(N150)/103-A1-M1.VC/**E51**/103-A1-M1/F3D-Sintermediate
section**E61 type**

Intermediate spacer section

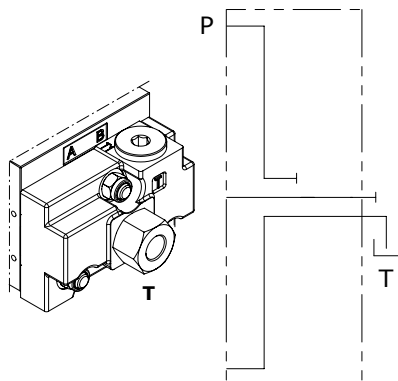
Description example: Q30/2/F7S(N150)/103-A1-M1.VC/**E61**/103-A1-M1/F3D-Sintermediate
section

Outlet section

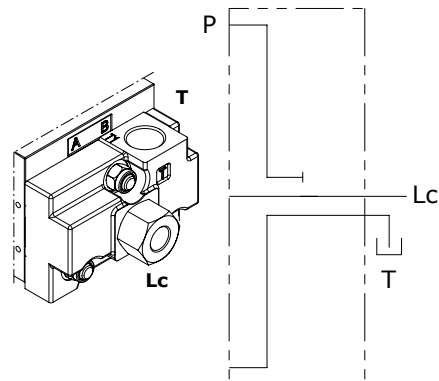
F3D configuration
Open center configuration



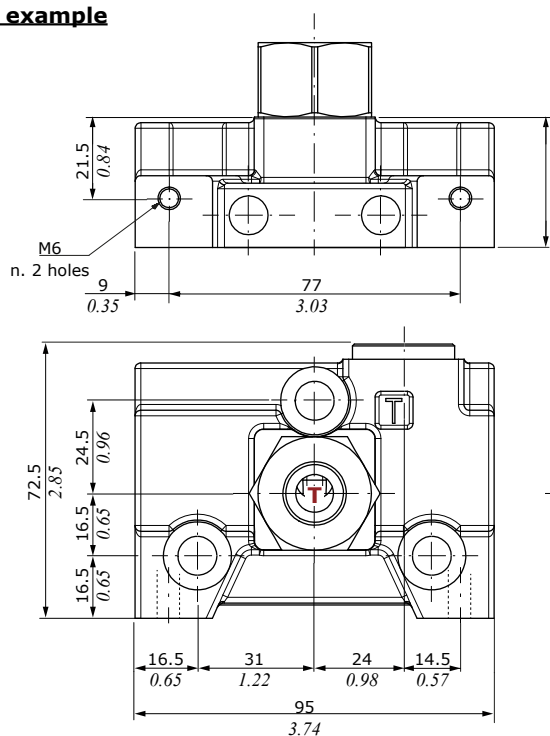
F16D configuration
Closed center configuration



F6D configuration
Carry-over configuration



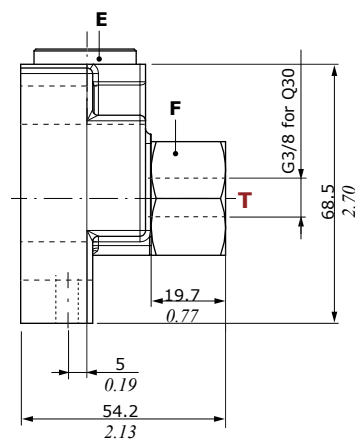
F16D configuration example



Wrenches and tightening torques

E = allen wrench 8 - 42 Nm (30.9 lbf·ft)

F = wrench 30 - 42 Nm (30.9 lbf·ft)





GSV50

Sectional directional control valve

- Available with parallel circuit
- Optional carry over port
- A wide range of antishock + anticavitation port valves
- 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		50 l/min - (13.2 Us gpm)
Max. pressure		315 bar (4550 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

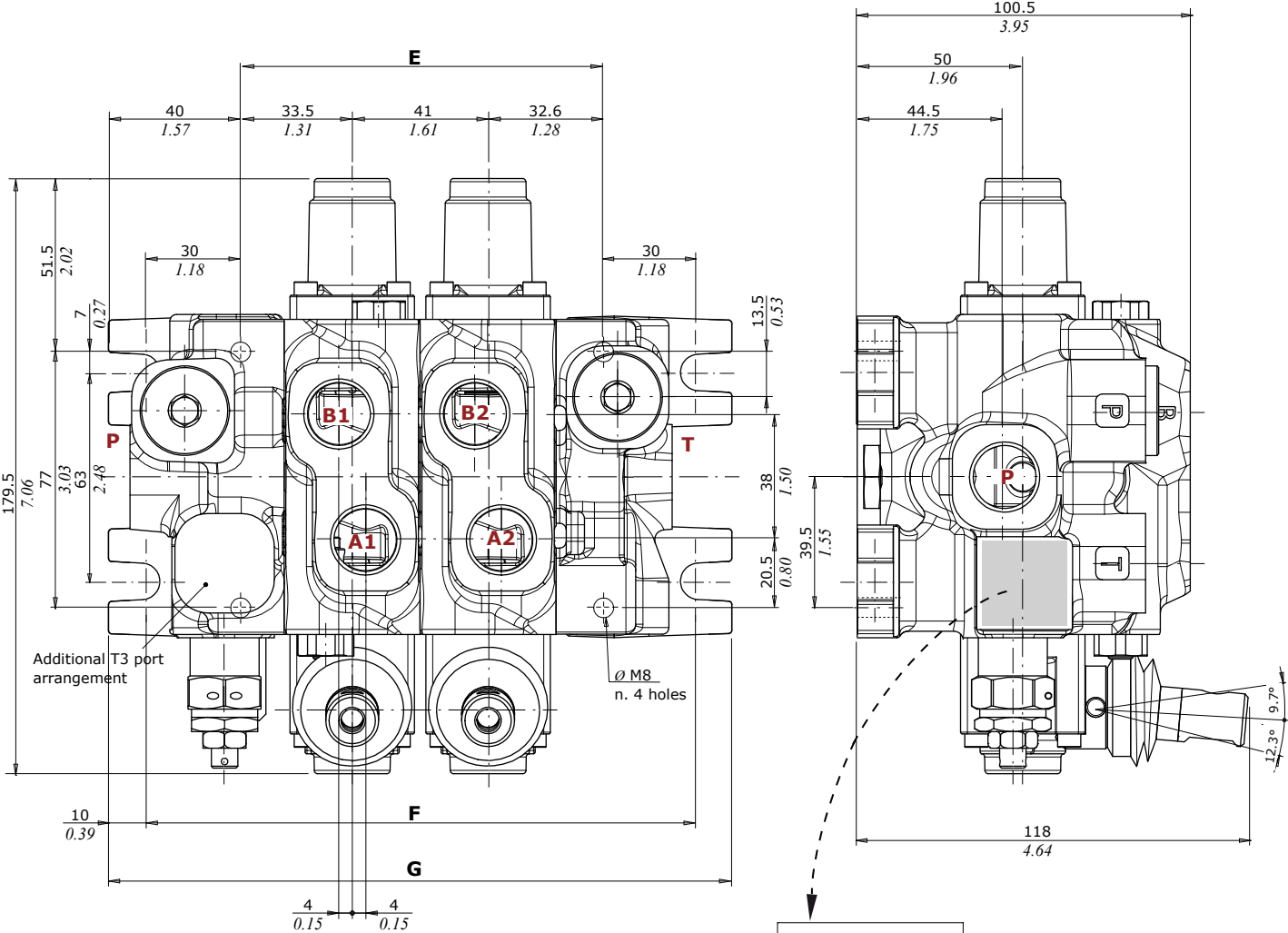
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

PORT THREADING

PORTS	BSP	UN-UNF
P Inlet	G 1/2	3/4-16 (SAE 8)
P1 Inlet	G 1/2	3/4-16 (SAE 8)
A and B ports	G 1/2	3/4-16 (SAE 8)
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		G	
	mm	in	mm	in	mm	in
GSV50/1	66.1	2.60	126	4.96	146	5.74
GSV50/2	107.1	4.21	167	6.57	187	7.36
GSV50/3	148.1	5.83	208	8.18	228	8.97
GSV50/4	189.1	7.44	249	9.80	269	10.60
GSV50/5	230.1	9.06	290	11.41	310	12.20
GSV50/6	271.1	10.67	331	13.03	351	13.81
GSV50/7	312.1	12.28	372	14.64	392	15.43
GSV50/8	353.1	13.90	413	16.25	433	17.04
GSV50/9	394.1	15.51	454	18.87	474	18.66
GSV50/10	435.1	17.12	495	19.48	515	20.27



MADE IN ITALY
1GB75040009

DISTRIBUTORE
GSV50/2
MD1600464-001



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 165

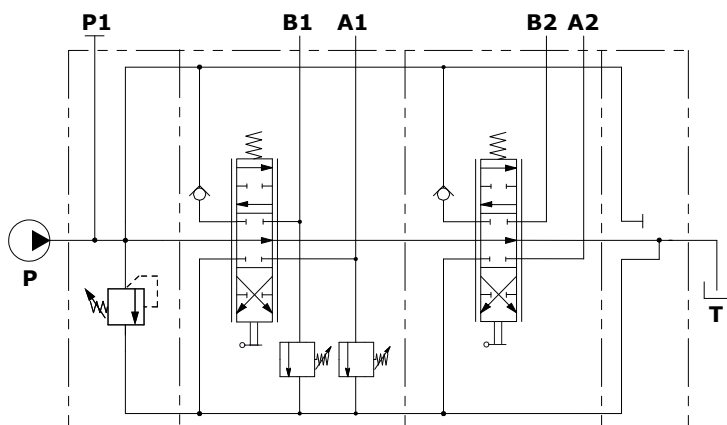
Proportional inlet section configuration*



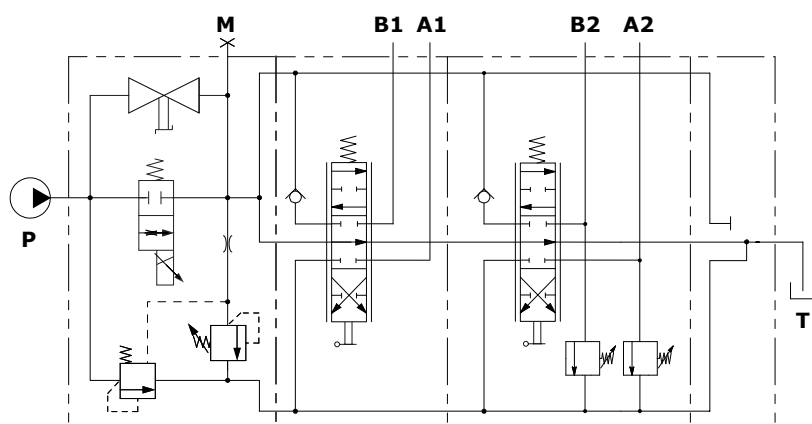
Type	E		G	
	mm	in	mm	in
GSV50/1	66.1	2.60	146.7	5.77
GSV50/2	107.1	4.21	187.7	7.38
GSV50/3	148.1	5.83	228.7	9
GSV50/4	189.1	7.44	269.7	10.61
GSV50/5	230.1	9.06	310.7	12.21
GSV50/6	271.1	10.67	351.7	13.84
GSV50/7	312.1	12.28	392.7	15.46
GSV50/8	353.1	13.90	433.7	17.07
GSV50/9	394.1	15.51	474.7	18.68
GSV50/10	435.1	17.12	515.7	20.30

D2WWEZ01E

Hydraulic circuits



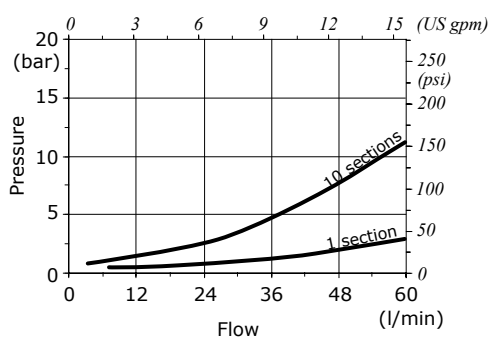
Description example (parallel circuit):
GSV50/2/F7S(N150)/
103-A1-M1.V32(N105\N105)/103-A1-M1/F3D-S



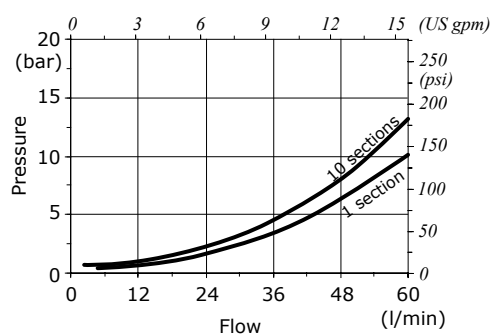
Description example (parallel circuit):
GSV50/2/F7SPRN3M(N150)-12VDC/
103-A1-M1/103-A1-M1.V32(N105\N105)/F3D-S

Performance data

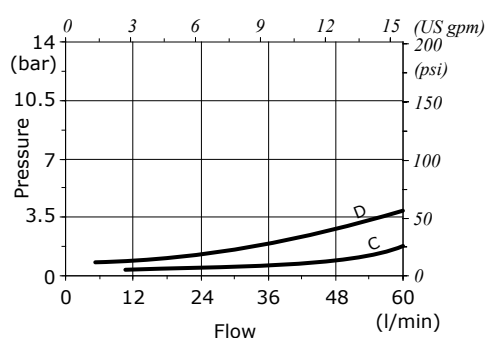
P⇒T pressure drops



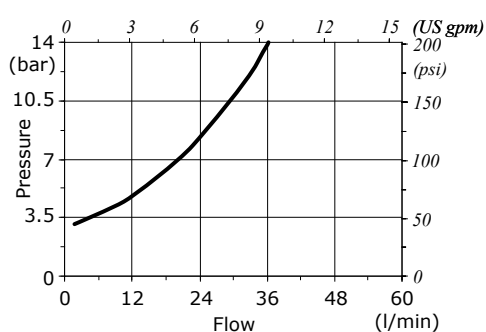
P⇒A(B) pressure drops



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

Valve with mechanical and hydraulic controls configuration example

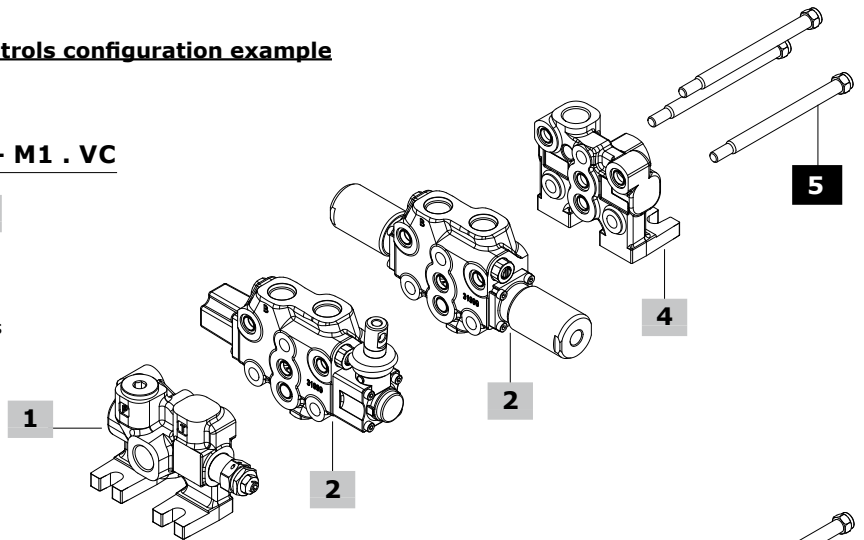
valve setting (bar)

GSV50 / 2 / F7S(N150) / 103 - A1 - M1 . VC

N. of section **1** **2**

/ 103 - H1 . VC / F6D - S

2 **4** aluminium controls



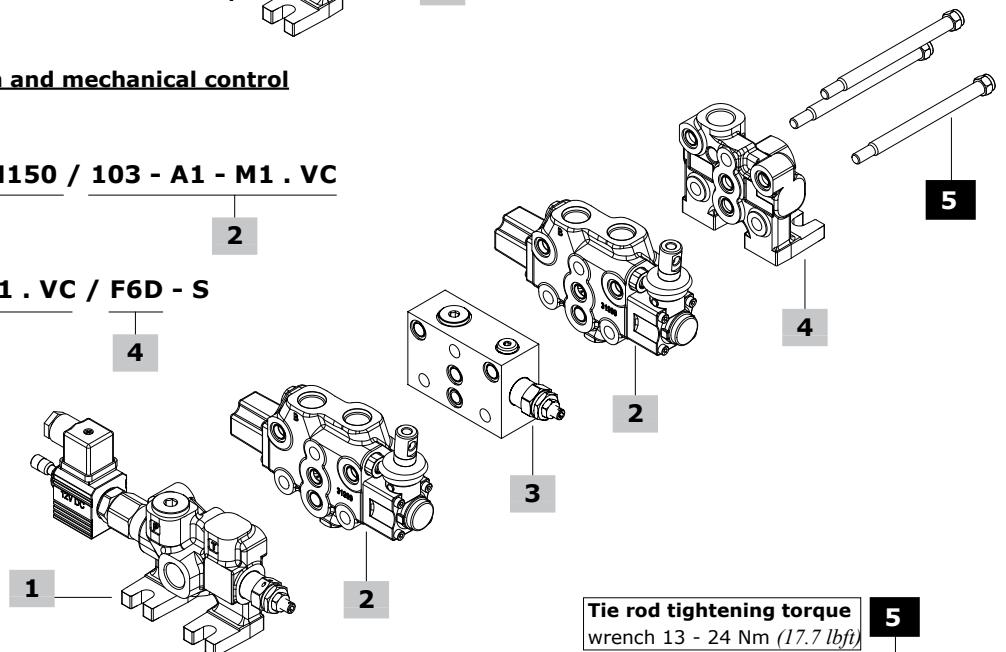
Valve with intermediate section and mechanical control configuration example

GSV50 / 2 / F7SMSE(NA)-N150 / 103 - A1 - M1 . VC

valve setting (bar) **1** **2**

/ E50(N150) / 103 - A1 - M1 . VC / F6D - S

3 **2** **4**



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

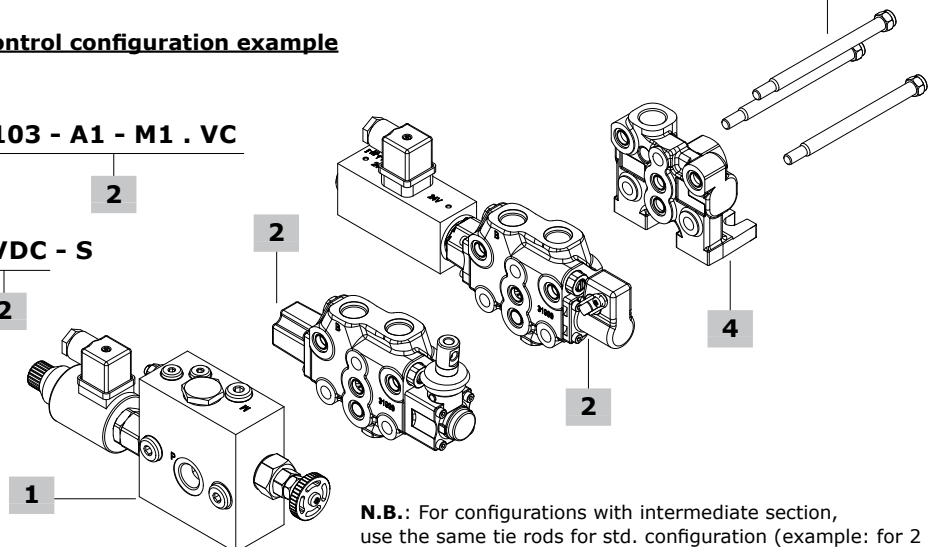
Valve with mechanical and electric control configuration example (with inlet flow regulation)

GSV50 / 2 / F7SPR3M(N150) / 103 - A1 - M1 . VC

1 **2**

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

2 **4** **2**



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 131

Standard inlet sections

TYPE: **FE-QGSV50/F7S(N150)** CODE: 05100F7S/D-N
DESCRIPTION: Side inlet open, upper inlet plugged, with pressure relief valve, setting range 101-200 bar (1460-2900 psi)

TYPE: **FE-GSV50/F8S** CODE: 05103F8S/D
DESCRIPTION: As previous one, without valves (pressure relief valve plugged port)

TYPE: **FE-GSV50/F7SMSE(NA)** CODE: 05100F7SDMS1-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: **FE-GSV50/F7SMSE(NC)** CODE: 05100F7SDMS7-N
DESCRIPTION: As previous one, with normally closed unloader valve

Inlet section with flow regulator

TYPE: **FE-GSV50/F7SPR3M(N150)** CODE: 05100F7SDPRN3M
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: **FE-GSV50/F7SPR3E(N150)-12VDC** CODE: 05100F7SDPRN3E
DESCRIPTION: As previous one, with 12VDC unloader valve

2 Working section* page 140

With mechanical controls

TYPE: **EL-GSV50/103-A1-M1.VC-S** CODE: SGLS50000
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, lever control and spring return to neutral position

TYPE: **EL-GSV50/103-A1-M1-S** CODE: SGLS50001
DESCRIPTION: As previous one, without valve arrangement

With proportional hydraulic controls

TYPE: **EL-GSV50/103-H1.VC-S** CODE: SGLS50002
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, high pressure hydraulic controls, spring return to neutral position

TYPE: **EL-GSV50/103-H1-S** CODE: SGLS50003
DESCRIPTION: As previous one, without valve arrangement

TYPE: **EL-GSV50/103-H5.VC-S** CODE: SGLS50004
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, low pressure hydraulic controls, spring return to neutral position

TYPE: **EL-GSV50/103-H5-S** CODE: SGLS50005
DESCRIPTION: As previous one, without valve arrangement

With electric solenoid controls - one side type

TYPE: **EL-GSV50/103-A1-D41.VC-12VDC-S**
CODE: SGLS50006
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, 12VDC electric direct ON/OFF control with lever

TYPE: **EL-GSV50/103-A1-D41-12VDC-S**
CODE: SGLS50007

DESCRIPTION: As previous one, without valve arrangement

With electric solenoid controls - two side type

TYPE: **EL-GSV50/103-D9.VC-12VDC-S** CODE: SGLS50008
DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, 12VDC electric direct ON/OFF control

TYPE: **EL-Q30/103-D9-12VDC-S** CODE: SGLS50009
DESCRIPTION: As previous one, without valve arrangement

3 Intermediate section page 165

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 167

TYPE: FS-GSV50-F3D	CODE: 05112F3D
DESCRIPTION: T port open, T1 port plugged. For open center circuit	
TYPE: FS-GSV50-F16D	CODE: 05116F16D
DESCRIPTION: T port open, T1 port plugged. For closed center circuit	
TYPE: FS-GSV50-F6D	CODE: 05114F6D
DESCRIPTION: Lc port and T1 port open. With joint for carry-over (HPCO) circuit	

5 Tie rod kit

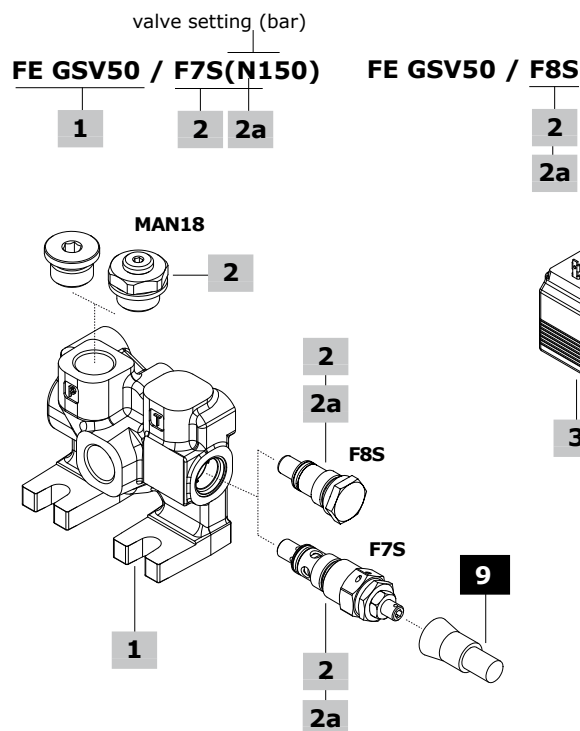
CODE	DESCRIPTION
05931TX1	For 1 section valve
05932TX2	For 2 sections valve
05933TX3	For 3 sections valve
05934TX4	For 4 sections valve
05935TX5	For 5 sections valve
05936TX6	For 6 sections valve
05937TX7	For 7 sections valve
05938TX8	For 8 sections valve
05939TX9	For 9 sections valve
05940TX10	For 10 sections valve

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

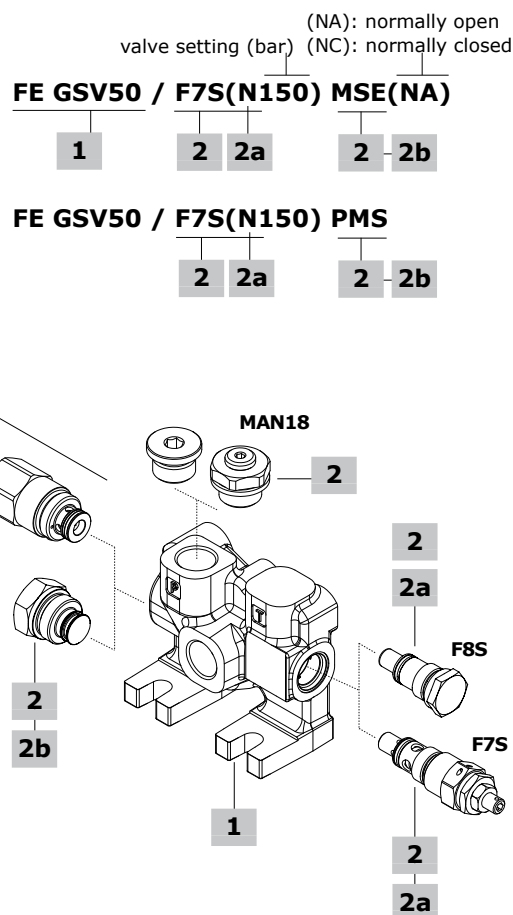
Inlet section - parts ordering codes

Standard section

With relief valve:



With relief and unloader valves:

**1 Inlet body section*** page 132

TYPE: **FE-GSV50** CODE: 060013190799
 DESCRIPTION: Side inlet port, upper inlet plugged, pressure relief valve arrangement
 TYPE: **FE-GSV50** CODE: 060013198199
 DESCRIPTION: As previous one, with unloader valve arrangement

2 Configuration coding* page 133

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-PMS	With pressure relief valve and PMS valve blanking plug
F8S-MSE	With electric unloader valve and pressure relief valve blanking plug
F8S-PMS	Without valves (plugged ports)

Note: Inlet configurations require upper P port:
 n. 1 G1/2 plug code 060002792099, or n. 1 pressure gauge arrangement code 5MAN625220

2a Main pressure relief valve page 134

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

2b Unloader inlet valve page 135

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
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

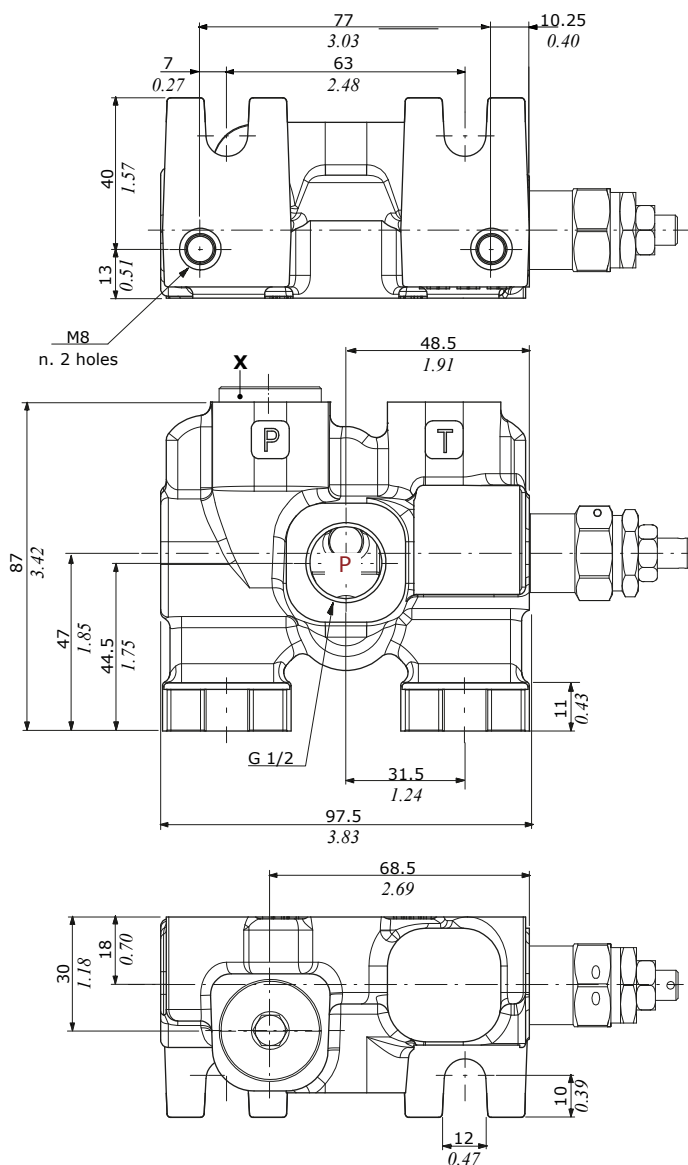
Dimensional data

With pressure relief valve

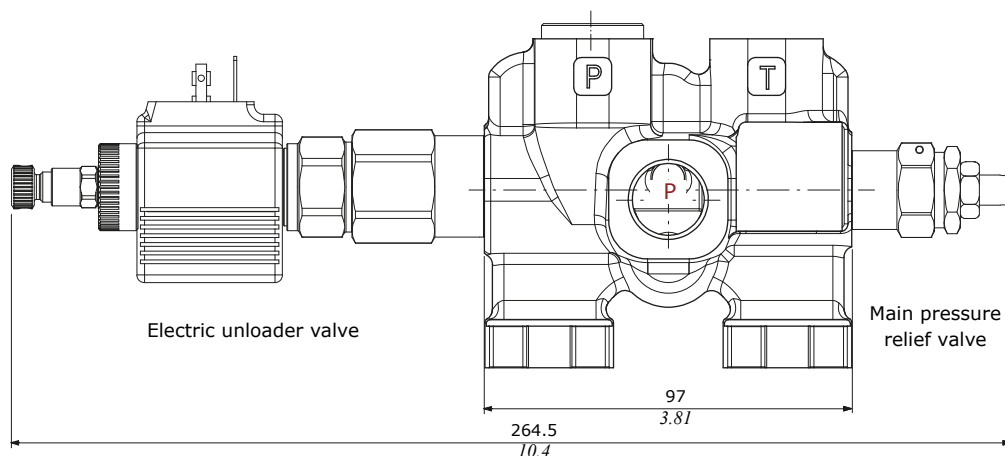
Wrenches and tightening torques

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

Note: For valves wrench and torque, see related pages



With relief and unloader valves



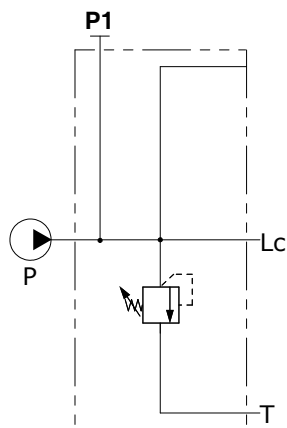
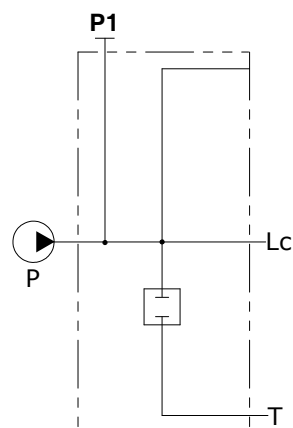
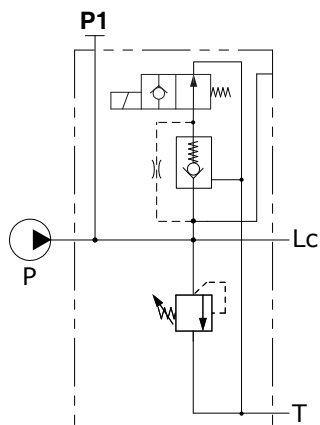
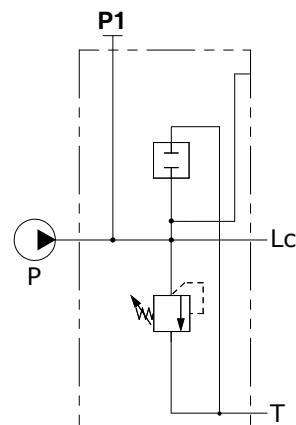
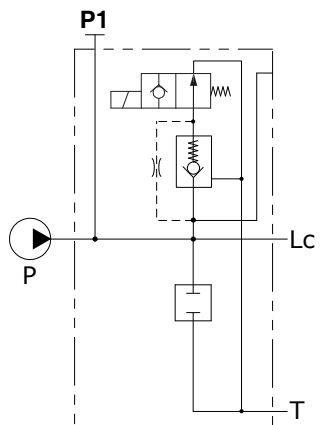
For other configurations, see page 135

For other dimensions, see previous configuration

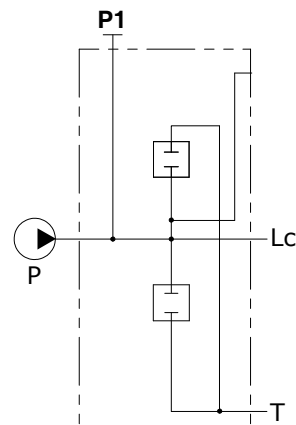
Hydraulic circuits

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-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-PMS configuration**

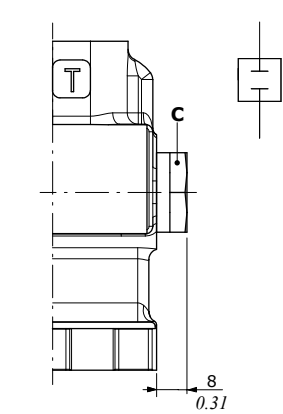
Without valves (plugged ports)



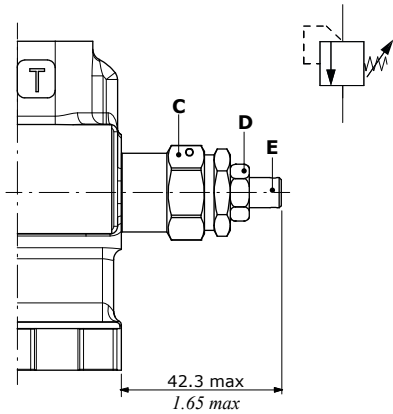
Standard inlet section

Main pressure relief valve

Relief valve blanking plug



Main pressure relief valve

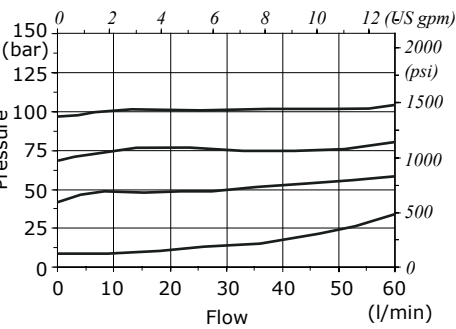


Wrenches and tightening torques

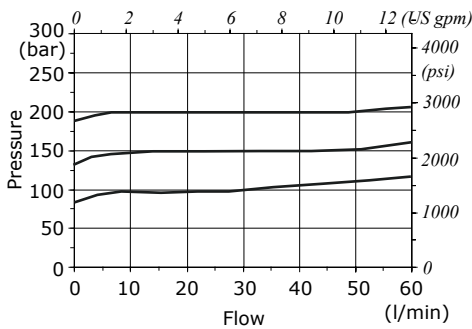
- C = wrench 22 - 42 Nm (31 lbft)
- D = wrench 13 - 24 Nm (17.7 lbft)
- E = allen wrench 4

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

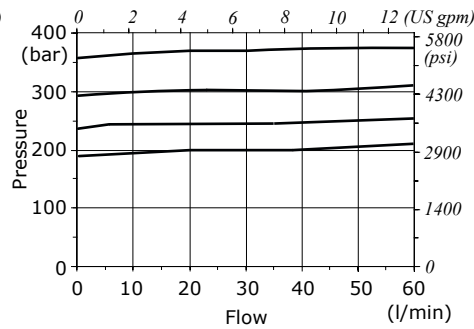
Setting example (B type spring)



Setting example (N type spring)



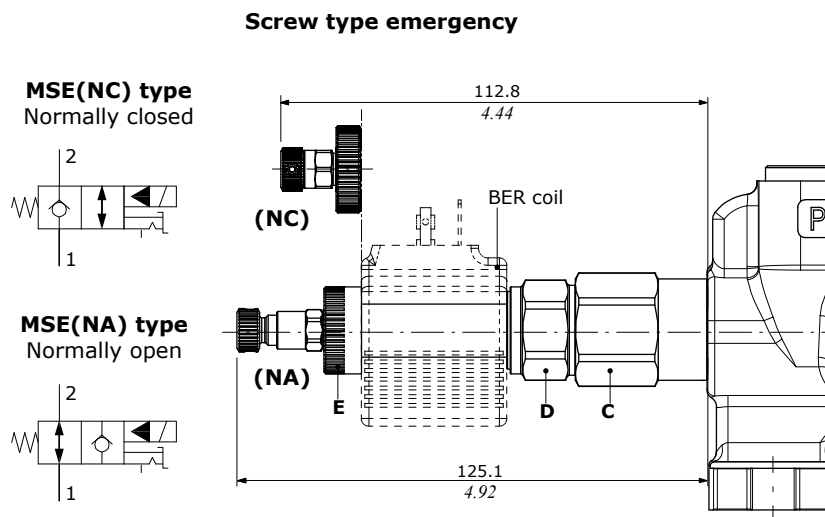
Setting example (R type spring)



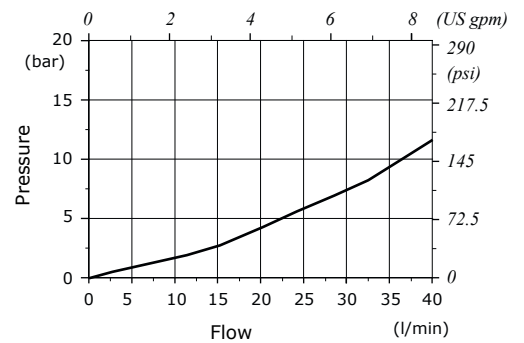
Standard inlet section

Unloader valve

MSE type: electric control



Pressure drops

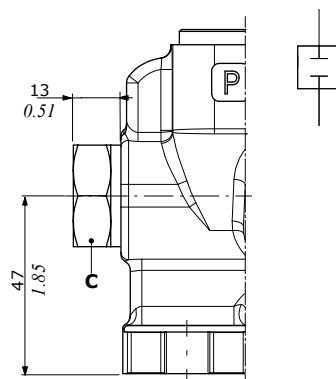


Valve features

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

PMS type: valve blanking plug



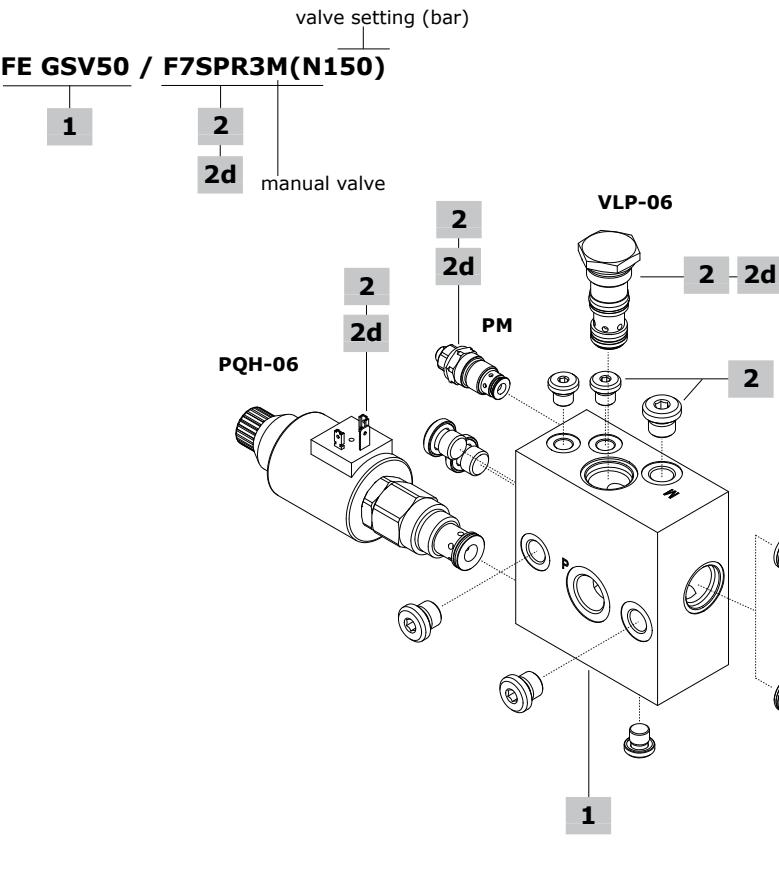
Wrenches and tightening torques

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

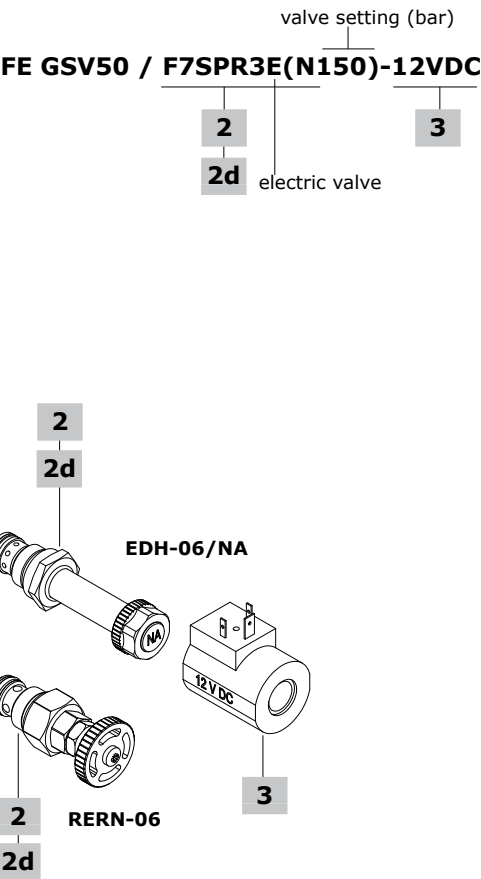
Inlet section - parts ordering codes

Section with flow regulator

With manual unloader valve:



With electric unloader valve:



1 Inlet body section* page 137

TYPE: **FE-GSV50** CODE: 060013195499
DESCRIPTION: Side inlet port, arrangement for flow control, unloader and pressure relief valve

2 Configuration coding* page 137

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 138

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

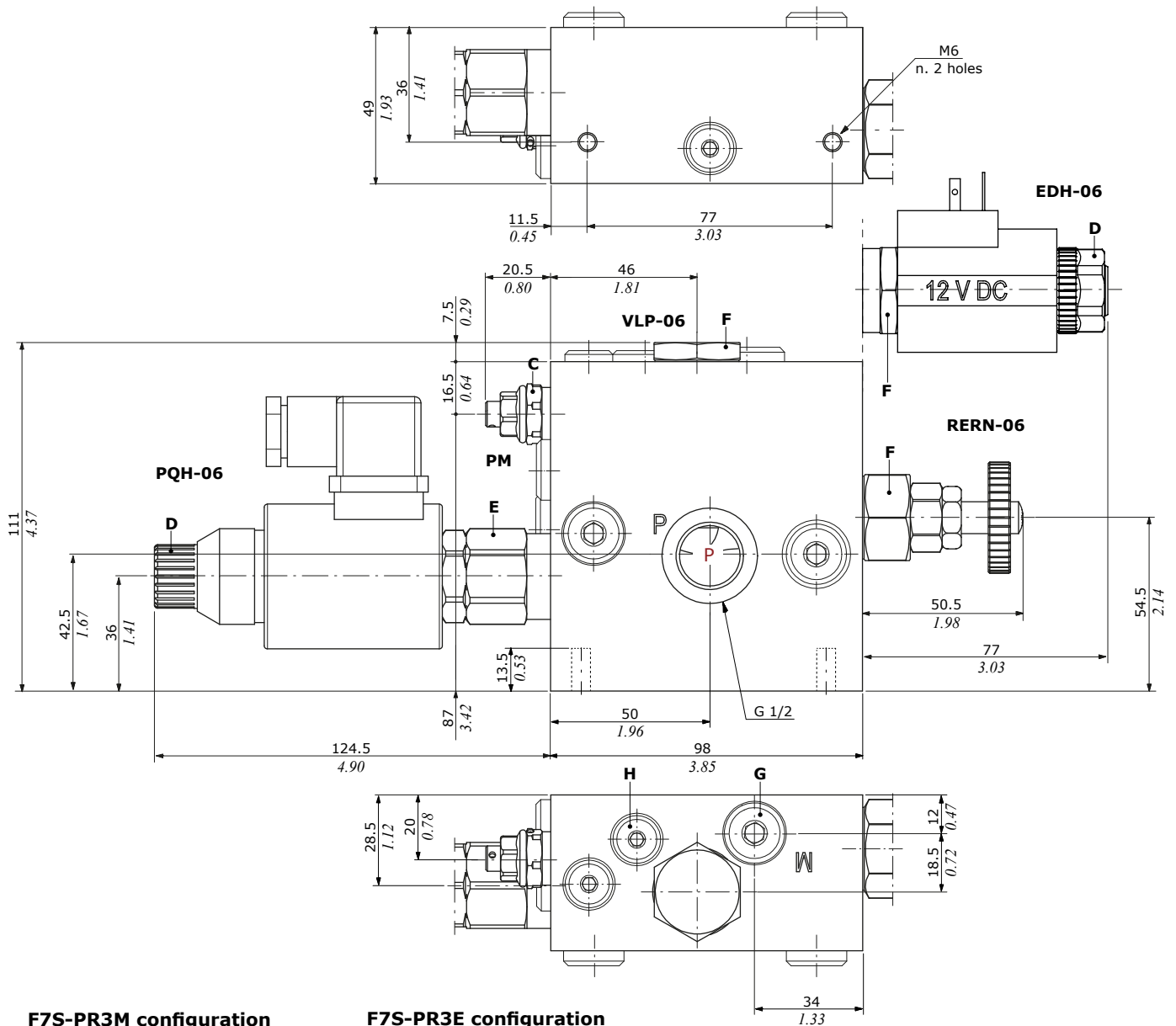
3 Coil

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

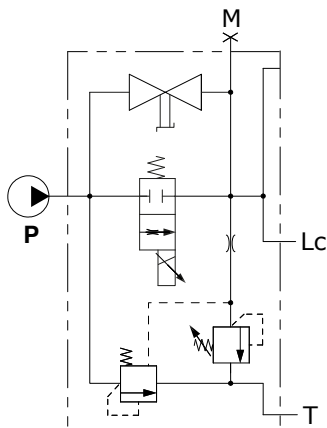
(*): Codes are referred to **BSP** thread

Inlet section with flow regulator

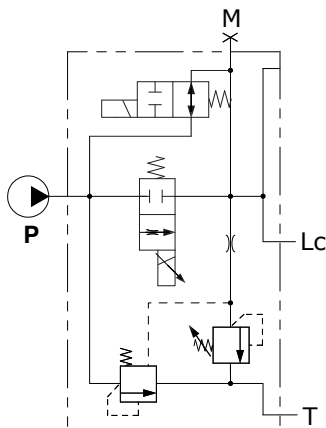
Dimensional data and hydraulic circuits



F7S-PR3M configuration
With manual unloader valve



F7S-PR3E configuration
With electric unloader valve



Wrenches and tightening torques

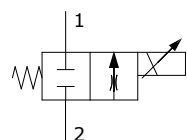
- C = wrench 17 - 30 Nm (22 lbf_t)
- D = manual tightening
- E = wrench 27 - 30 Nm (22 lbf_t)
- F = wrench 27 - 60 Nm (44.2 lbf_t)
- G = allen wrench 27 - 60 Nm (44.2 lbf_t)
- H = allen wrench 6 - 24 Nm (17.7 lbf_t)

Inlet section with flow regulator

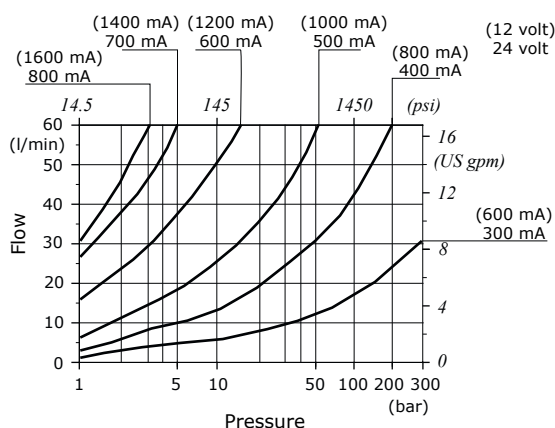
Inlet valves

PQH-06 type

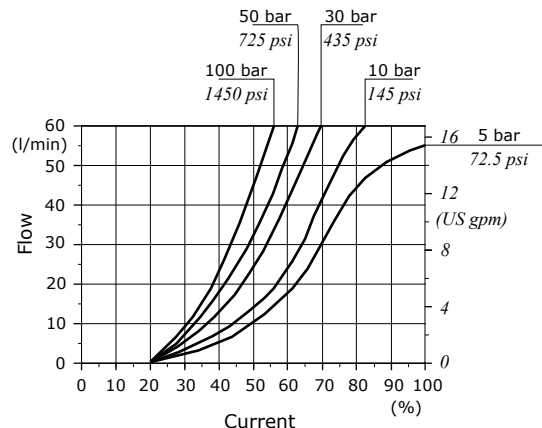
Flow control proportional pressure compensated valve, 12/24 VDC



Compensation curves



Flow control diagram



Valve features

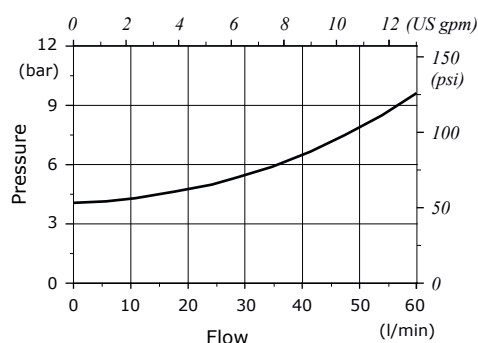
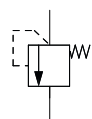
Nominal flow.....: 60 l/min (15.8 US gpm)
 Max. pressure: 310 bar (4500 psi)
 Power rating.....: 22 W
 Max. internal leakage....: 100 cm³/min @ 210 bar
 (6.10 in³/min @ 3050 psi)
 Coil insulation.....: Class F
 Voltage.....: 12/24 VDC

Note: The coil and connector is included

VLP-06 type

Pressure relief valve

Pressure drops

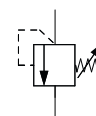


Valve features

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

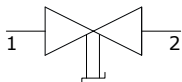


Inlet section with flow regulator

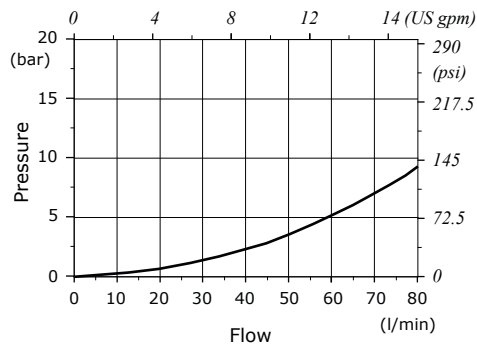
Inlet valves

RERN-06 type

Manual unloader valve



Pressure drops

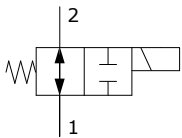


Valve features

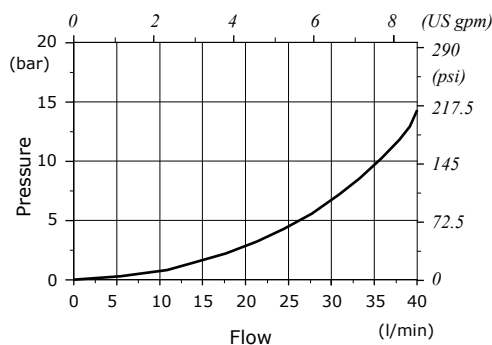
Nominal flow.....: 70 l/min (18.5 US gpm)
 Max. pressure: 315 bar (4600 psi)
 Closed valve leakage....: 0

EDH-06 type

Electric unloader valve, normally open



Pressure drops



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 136

Working section - parts ordering codes

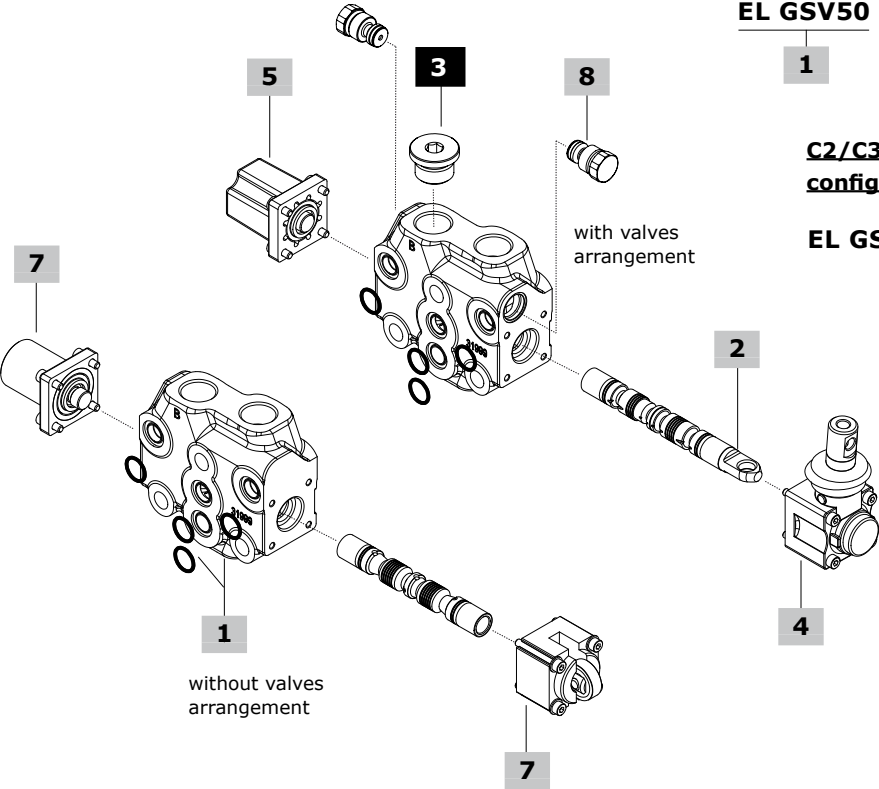
Mechanical control valve configuration example

spring type and setting valve (bar)

EL GSV50 / 102 - A1 - M1 . V40(N)120 - S
1 2 4 5 8 aluminium controls

C2/C3 complete mechanical control configuration example

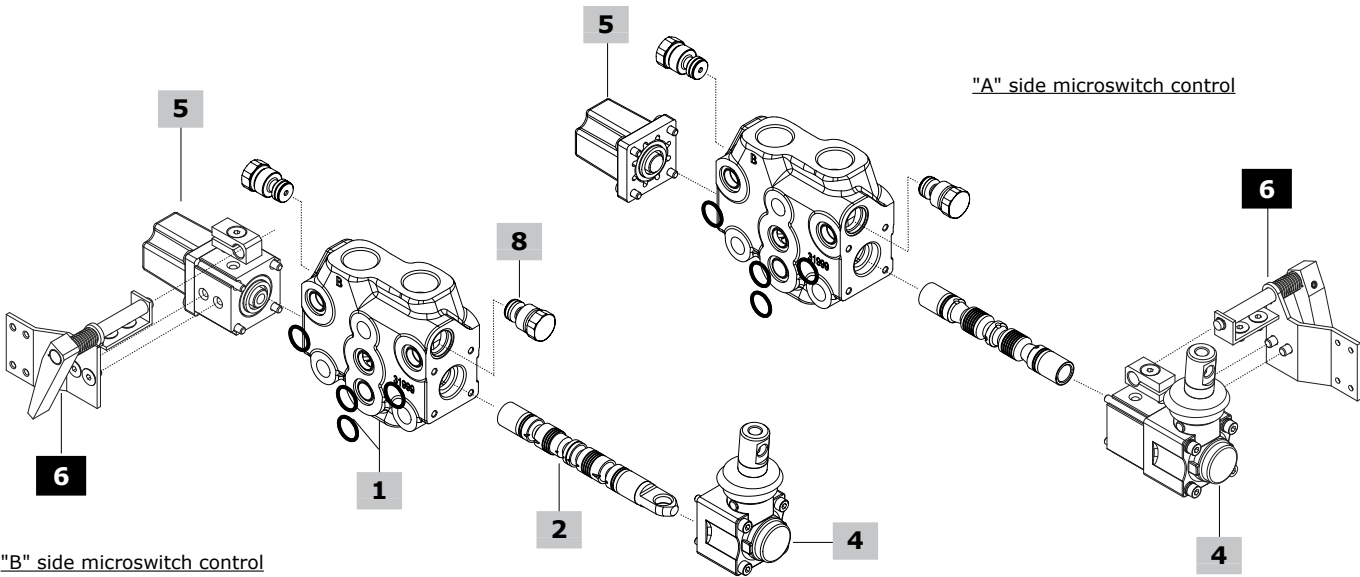
EL GSV50 / 103 - C3 . V40(N)120 - S
7



Microswitch control valve configurations example

EL GSV50 / 103 - A1 - M1-N1 . V40(N)120 - S
1 2 4 5 8 aluminium controls

EL GSV50 / 103 - N1-A1 - M1 . V40(N)120 - S
4 5



Working section - parts ordering codes

1 Working section body kit* page 145

TYPE: **EL-GSV50.VC** CODE: 5EL0600131743
 DESCRIPTION: Parallel circuit, with port valves arrangement
 TYPE: **EL-GSV50** CODE: 5EL0600131742
 DESCRIPTION: Parallel circuit, without port valves arrangement

2 Spool page 146

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	KR30107-108	Double acting, A to tank and B closed in neutral position
108	KR30107-108	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
101	3CUG3218000	Single acting on port A. G1/2 plug is required, see #3
102	3CUG3218002	Single acting on port B. G1/2 plug is required, see #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

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

3 Plug for single acting spool*

TYPE	CODE	DESCRIPTION
-	060002792099	G1/2 plug

4 A side control page 147

Note: For other control type, see Q30 valves

TYPE	CODE	DESCRIPTION
------	------	-------------

For standard spools**With lever control:**

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/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°

With safety lever control:

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°

Without lever control:

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	03622A8/03	Arrangement for flexible cable control
A8/Z1	03622A8/Z1	As A8 type, for 116 spool type

4 A side control (cont.) page 147

Note: For other control type, see Q30 valves

TYPE	CODE	DESCRIPTION
------	------	-------------

Joystick controls for 2 section operation:

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 and 111 special spools**With spool position microswitch:**

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
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

Without lever control:

A3	03614A3	Without lever, with cap
A4	03617A4	M8 thread male external pin with flange
A5⁽²⁾	03619A5	Flange with spherical spool end

5 B side control page 154

Note: For other control type, see Q30 valves

TYPE	CODE	DESCRIPTION
------	------	-------------

With spring return:

M1	03730M1	3 pos., spring return in neutral position
M1/01	03730M1/01	As M1 type, for joystick control
M1-B1	03753M1-B1	As M1 type, with microswitch arrangement
M1-U1	03701M1-U1	As M1 type, with M8 male thread external pin
M2	03732M2	2 pos. (0-1), spring return in neutral position
M2-U1	03702M2-U1	As M2 type, with M8 male thread external pin
M3	03733M3	2 pos. (0-2), spring return in neutral position
M3-U1	03703M3-U1	As M3 type, with M8 male thread 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 male thread external pin

With flexible cable control arrangement:

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

With detent:

R1	03741R1	3 pos., detent in position 1
R2	03742R2	3 pos., detent in position 2
R3	03743R3	3 pos., detent in all position
R4	03744R4	2 pos., detent in position 0-1
R5	03745R5	2 pos., detent in position 0-2
R6	03746R6	2 pos., detent in position 1-2
R8	03748R8	4 pos., detent in 4 th pos., for 116 spool type

R10/Z1	03750R10/Z1	4 pos., detent in 4 th pos., for 126 spool type
---------------	-------------	---

With detent and kick out function:

R1K	03741R1K	3 pos., detent in position 1
R2K	03742R2K	3 pos., detent in position 2
R3K	03743R3K	3 pos., detent in all position

(*) : 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 154

Note: For other control type, see Q30 valves

With spool position microswitch:

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
M1-N1A	03767M1-N1AL	As M1-N1 type, micro operation in pos. 1
M1-N1B	03768M1-N1BL	As M1-N1 type, micro operation in pos. 2
M2-N1	03769M2-N1L	2 pos. (0-1), spring return in neutral position
M3-N1	03772M3-N1L	2 pos. (0-2), spring return in neutral position

Pneumatic and electropneumatic controls:

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 159

TYPE	CODE	DESCRIPTION
For types 103 and 111 special spools		
C2	03792C2-C3	Cam control from pos. 1 to 2
C3	03792C2-C3	Cam control from pos. 2 to 1

8 Auxiliary port valve page 163

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 725 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 163

Working section - parts ordering codes

Proportional hydraulic controls valve configuration example

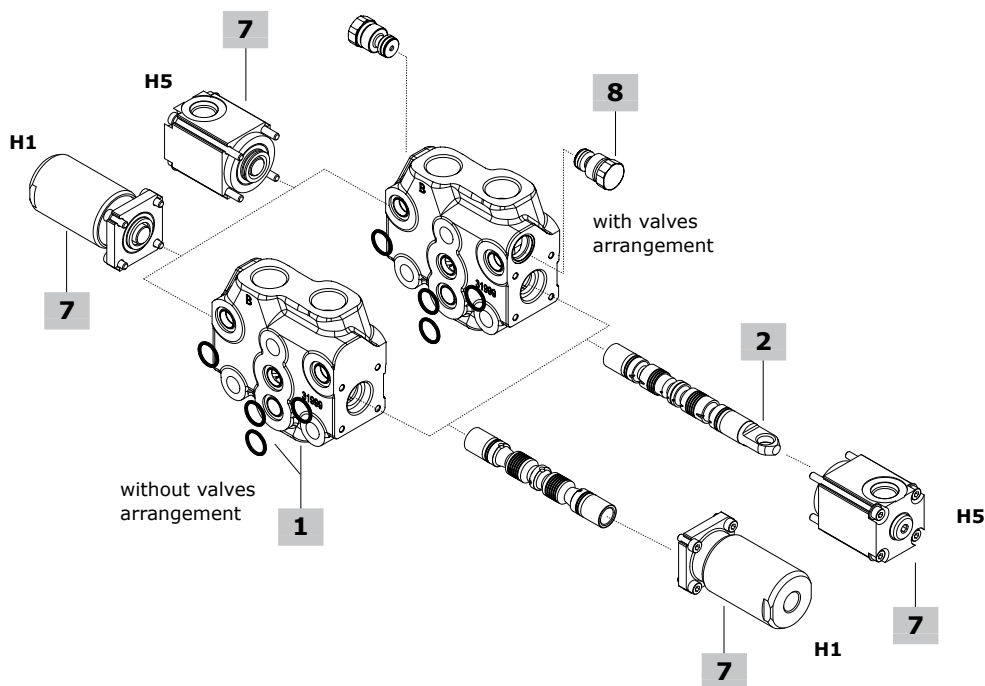
spring type and valve setting (bar)

EL GSV50 / 103 - H5 . V40(N)120 - S

1 2 7 8 aluminium controls

EL GSV50 / 103 - H1 . V40(N)120 - S

7



1 Working section body kit* page 145

The body kits listed below are for **H5** hydraulic control.
H1 hydraulic control requires standard body: see #1, page 141
 TYPE: **EL-GSV50-H5.VC** CODE: 5EL0600131743H5
 DESCRIPTION: Parallel circuit, with port valves arrangement
 TYPE: **EL-GSV50-H5** CODE: 5EL0600131742H5
 DESCRIPTION: Parallel circuit, without port valves arrangement

2 Spool page 146

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
111	060103179199	Double acting, A and B to tank in neutral position

7 Hydraulic controls A+B sides* page 160

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

8 Auxiliary port valve page 163

See #8, page 142

(*): 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 GSV50 / 103 - A1 - D41 . V40(N)120 - 12VDC - S

1

2A

4

2A

8

9A

aluminium controls

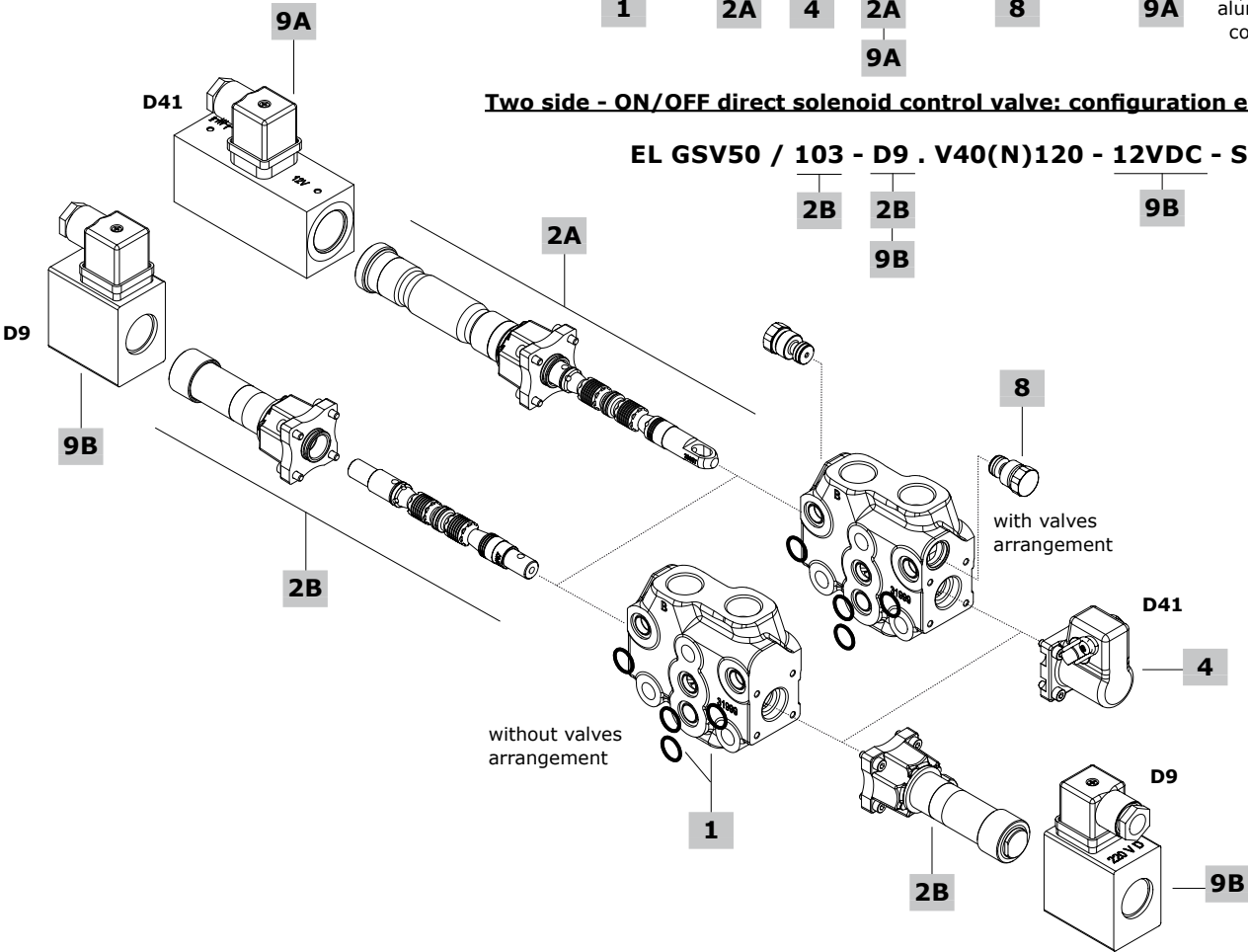
Two side - ON/OFF direct solenoid control valve: configuration example

EL GSV50 / 103 - D9 . V40(N)120 - 12VDC - S

2B

2B

9B



1 Working section body kit* page 145

See #1 for H5 hydraulic control, page 143

2A D41 solenoid control page 161

One side solenoid control		
TYPE	CODE	DESCRIPTION
103	X060102889799	Double acting, A and B closed in neutral position
107	X060102938199	Double acting, A to tank and B closed in neutral position
111	X060102894299	Double acting, A and B to tank in neutral position

2B D9 solenoid control page 162

Two side solenoid control		
TYPE	CODE	DESCRIPTION
103	X060102998299	Double acting, A and B closed in neutral position
111	X060103000499	Double acting, A and B to tank in neutral position

4 A side control for D41 page 161

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 163

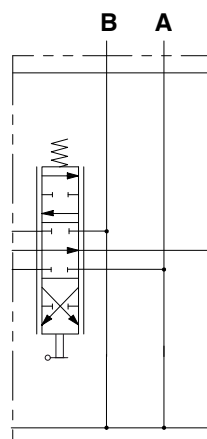
See #8, page 142

9A/B Coil page 161

D41 coil		
TYPE	CODE	DESCRIPTION
-	ZEB012	12 VDC ISO4400 coil
-	ZEB024	24 VDC ISO4400 coil
D9 coil		
-	ZDB212	12 VDC ISO4400 coil
-	ZDB224	24 VDC ISO4400 coil

Note: The connector is included

(*): Codes are referred to BSP thread



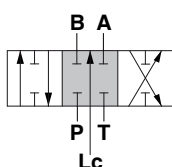
Working section

Spool

103 type

A and B closed in neutral position

2 0 1



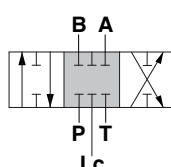
Stroke

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



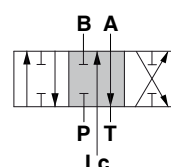
Stroke

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



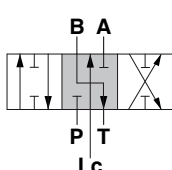
Stroke

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



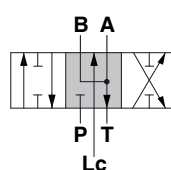
Stroke

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



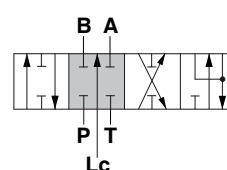
Stroke

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



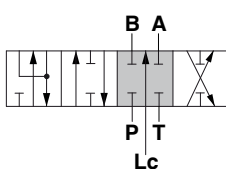
Stroke

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



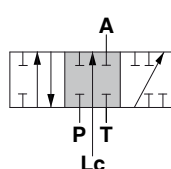
Stroke

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



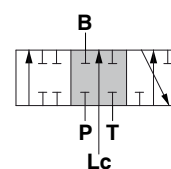
Stroke

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

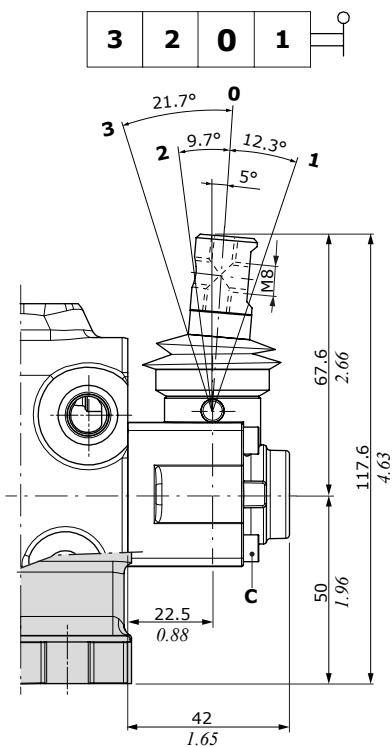
Position 1: + 5 mm (+ 0.19 in)
Position 2: - 5 mm (- 0.19 in)

A side controls

With lever control

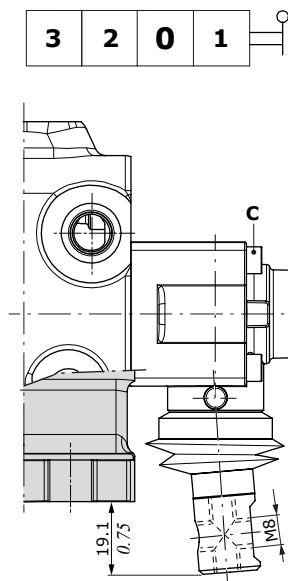
A1 type

M8 thread plastic lever box



A2 type

As A1 type, rotated 180°

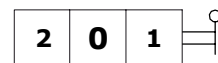


A1/10 type

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

A2/10 type

As A1/10 type,
rotated 180°



Wrenches and tightening torques

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

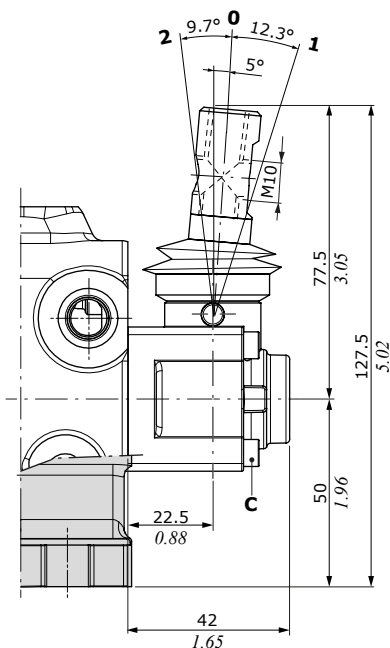
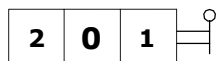
Working section

A side controls

With lever control

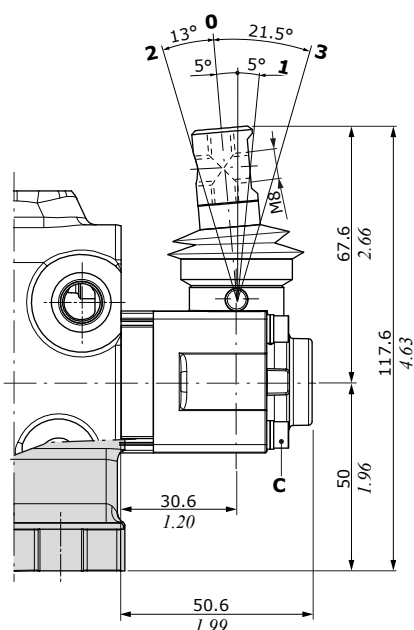
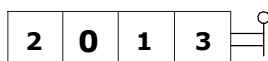
A1/PM type

M10 thread aluminium lever box



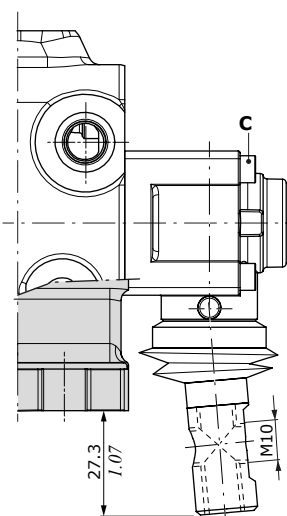
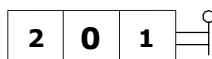
A1/Z1 type

M8 thread, for 116 floating spool type



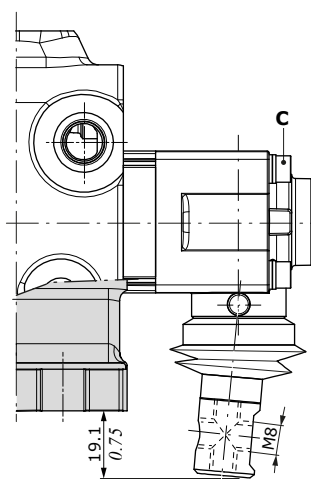
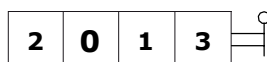
A2/PM type

As A1/PM type, rotated 180°



A2/Z1 type

As A1/Z1 type, rotated 180°



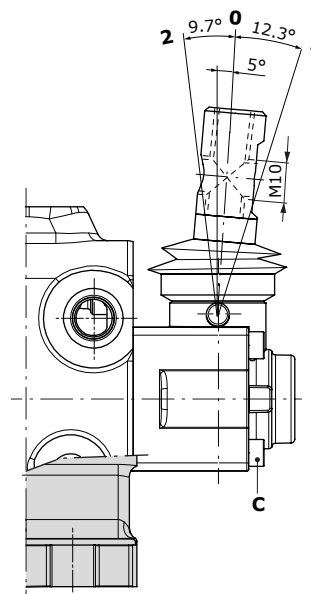
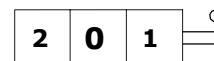
A1/PMP type

M10 thread plastic lever box.

Dimensions are the same of A1/PM type

A2/PMP type

As A1/PMP type, rotated 180°



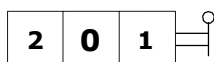
Wrenches and tightening torques

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

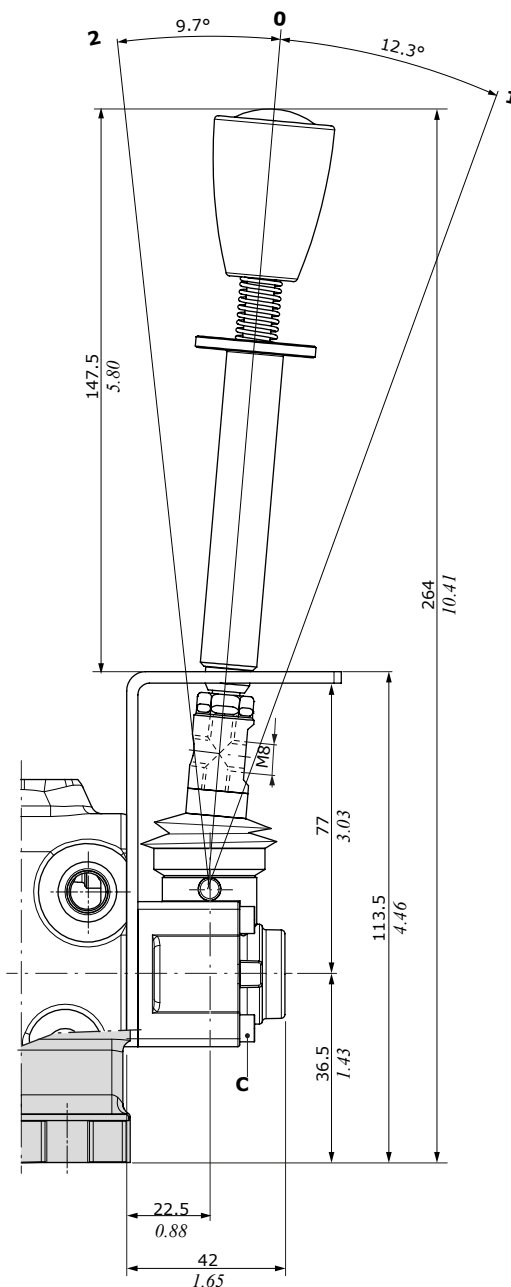
A side controls

With safety lever control

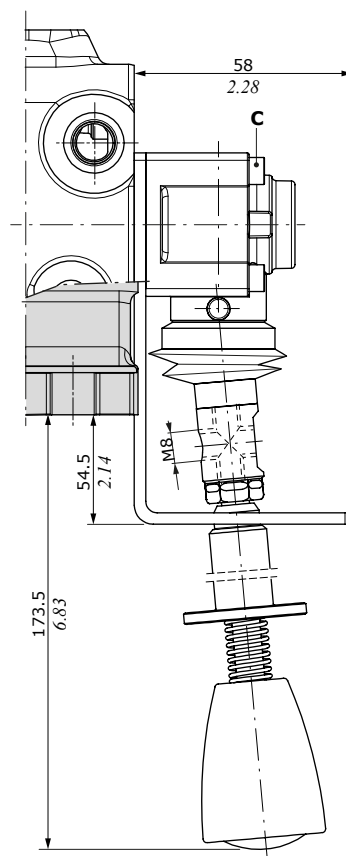
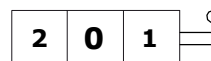
A1/S type
M8 thread, aluminium lever box



Wrenches and tightening torques
C = allen wrench 3 - 3 Nm (2.2 lbf·ft)



A2/S type
As A1/S type, rotated 180°

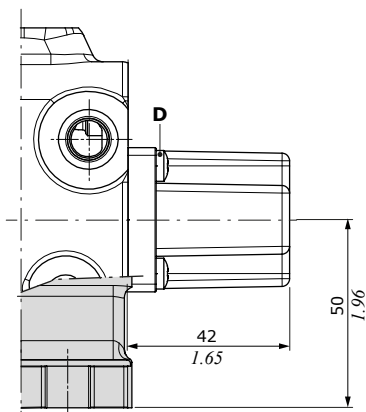
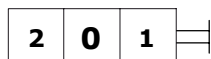


Working section

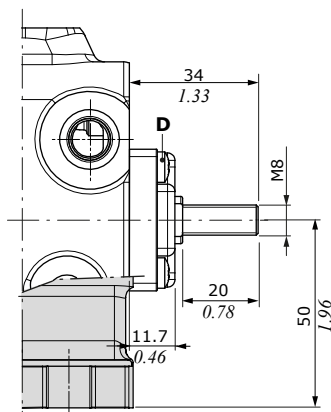
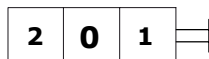
A side controls

Without lever control

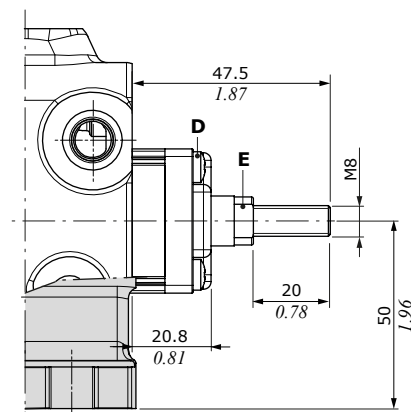
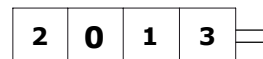
A3 type
With cap



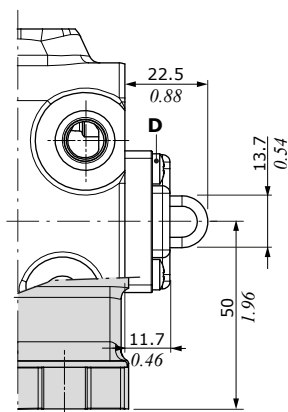
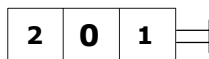
A4 type
M8 thread male external pin with flange



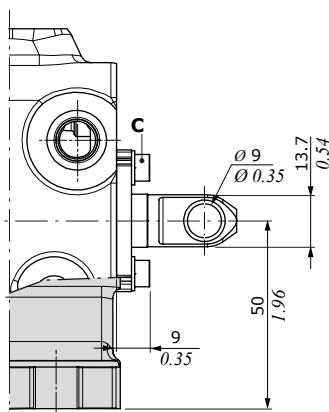
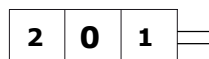
A4/Z1 type
As A4 type,
for 116 floating spool type



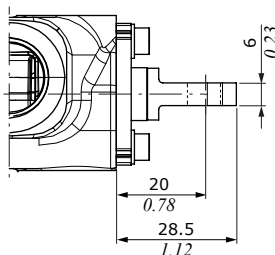
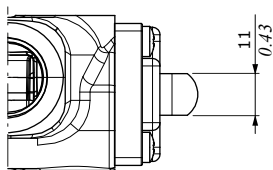
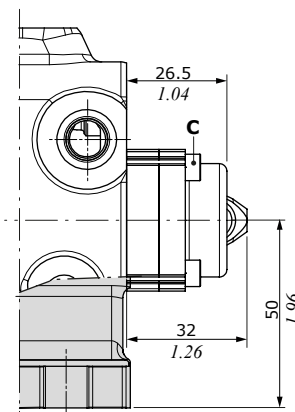
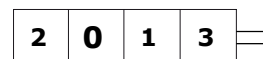
A5 type
Flange with spherical spool end



A6 type
Flange with spool eye end



A6-H/Z1 type
As A6 type, for 116 floating spool type

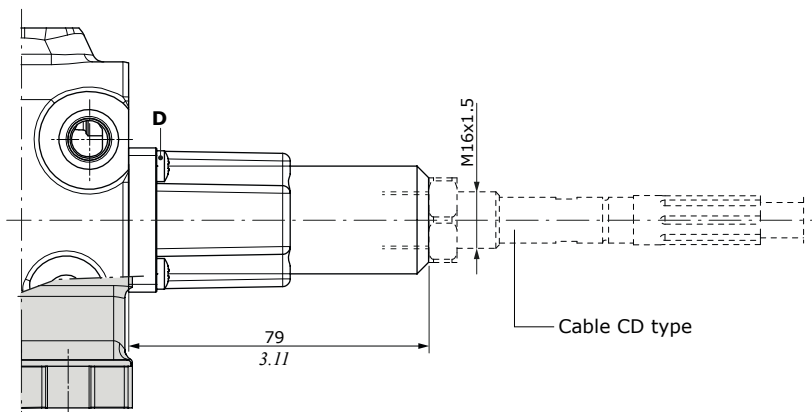
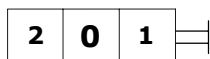


Wrenches and tightening torques

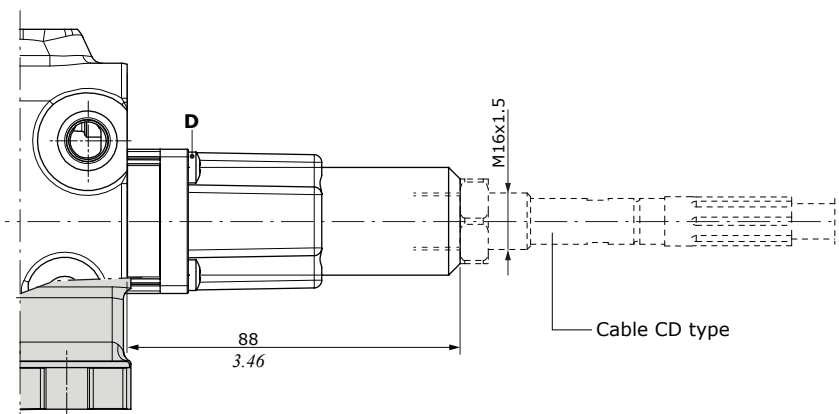
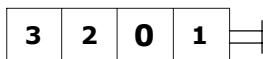
- C = allen wrench 3 - 3 Nm (2.2 lbft)
- D = cross-head - 3 Nm (2.2 lbft)
- E = wrench 9 - 9.8 Nm (7.2 lbft)

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

Flexible cable control arrangement

**A8/Z1 type**

As A8 type, for 116 floating spool type

**Wrenches and tightening torques**

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

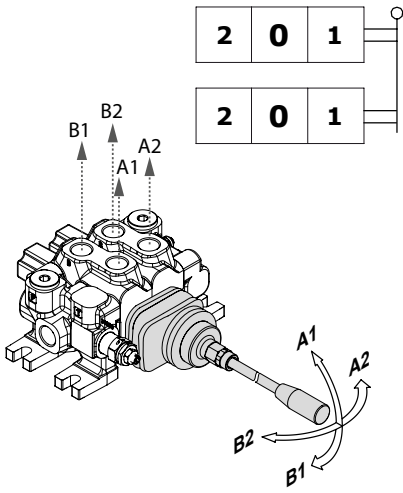
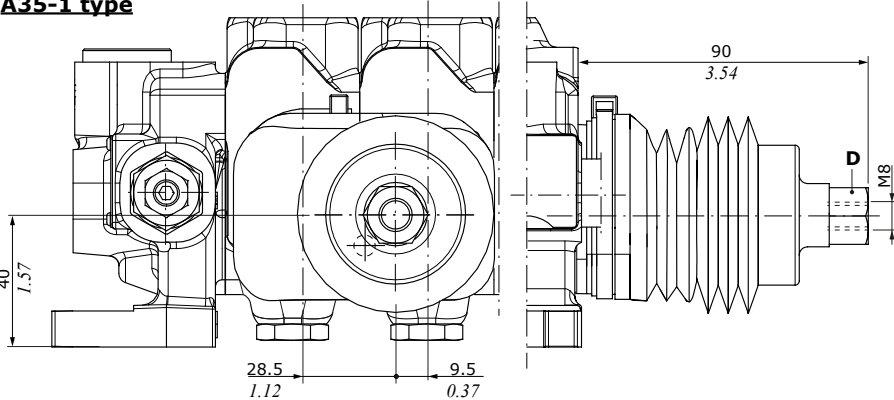
Working section

A side controls

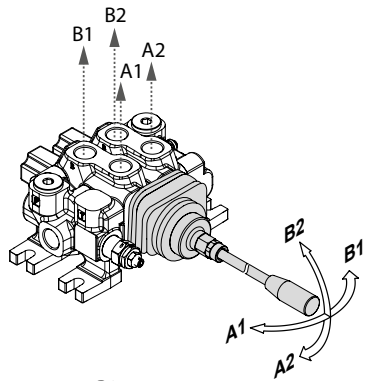
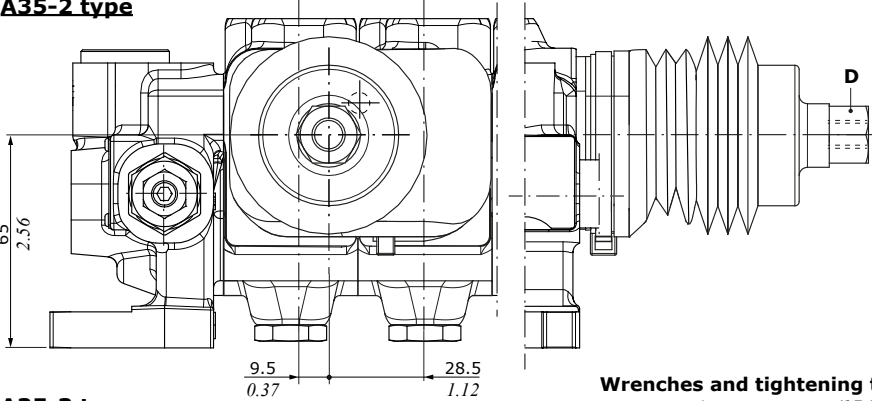
Joystick control

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

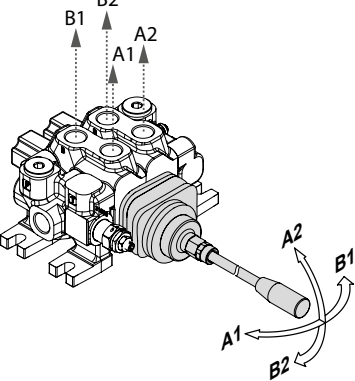
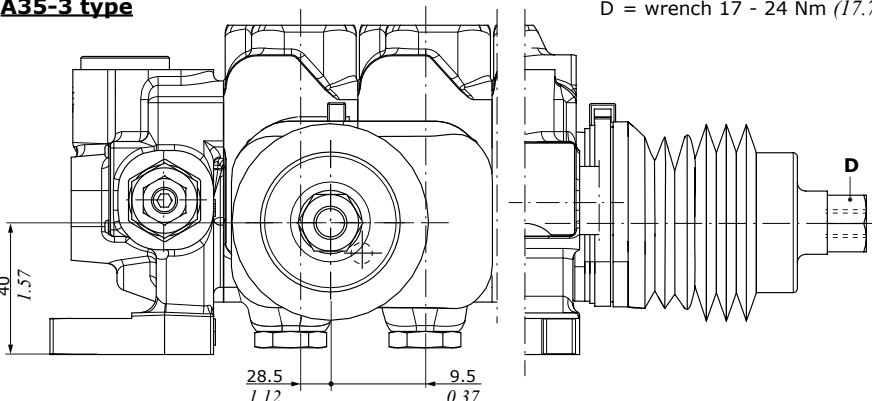
A35-1 type



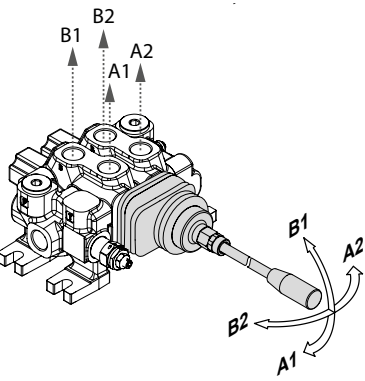
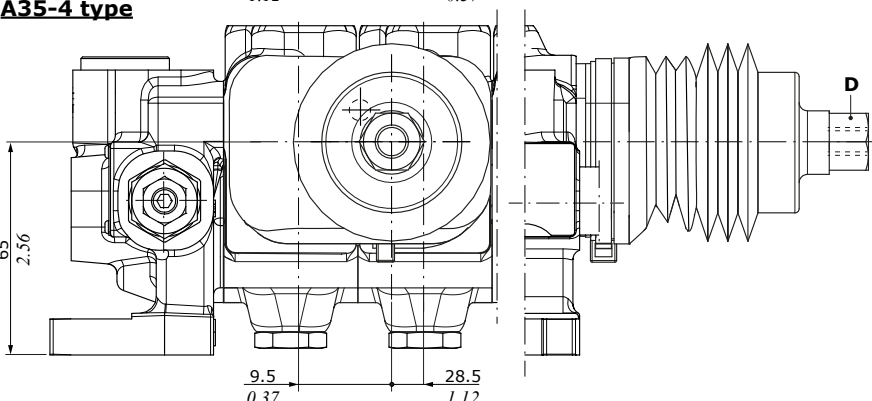
A35-2 type



A35-3 type



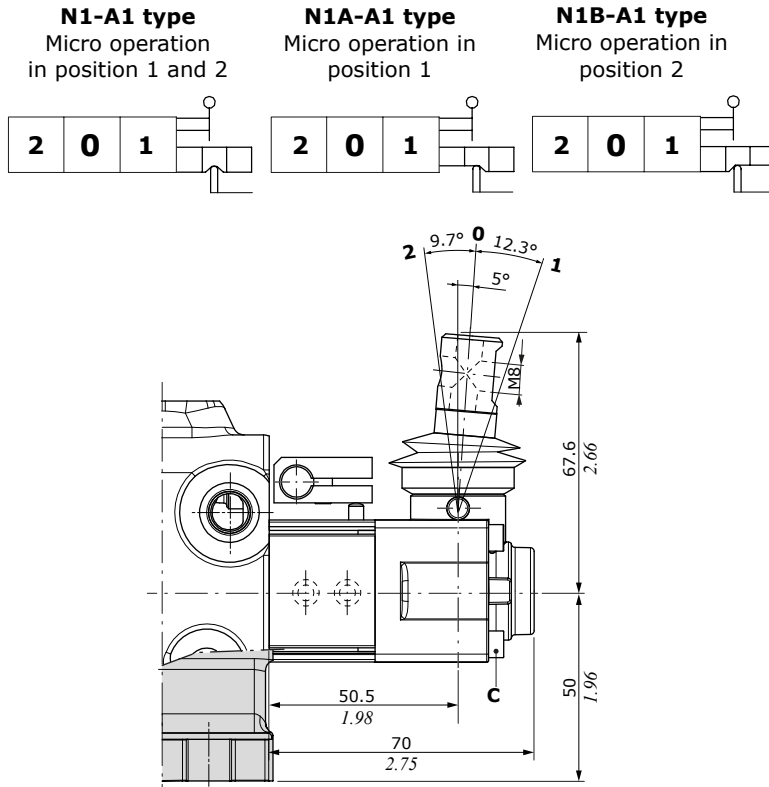
A35-4 type



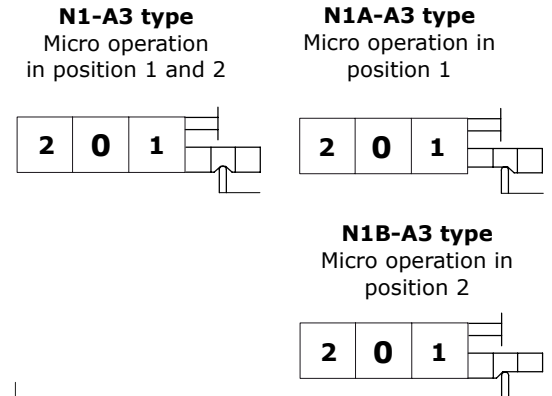
Wrenches and tightening torques
D = wrench 17 - 24 Nm (17.7 lbft)

A side controls

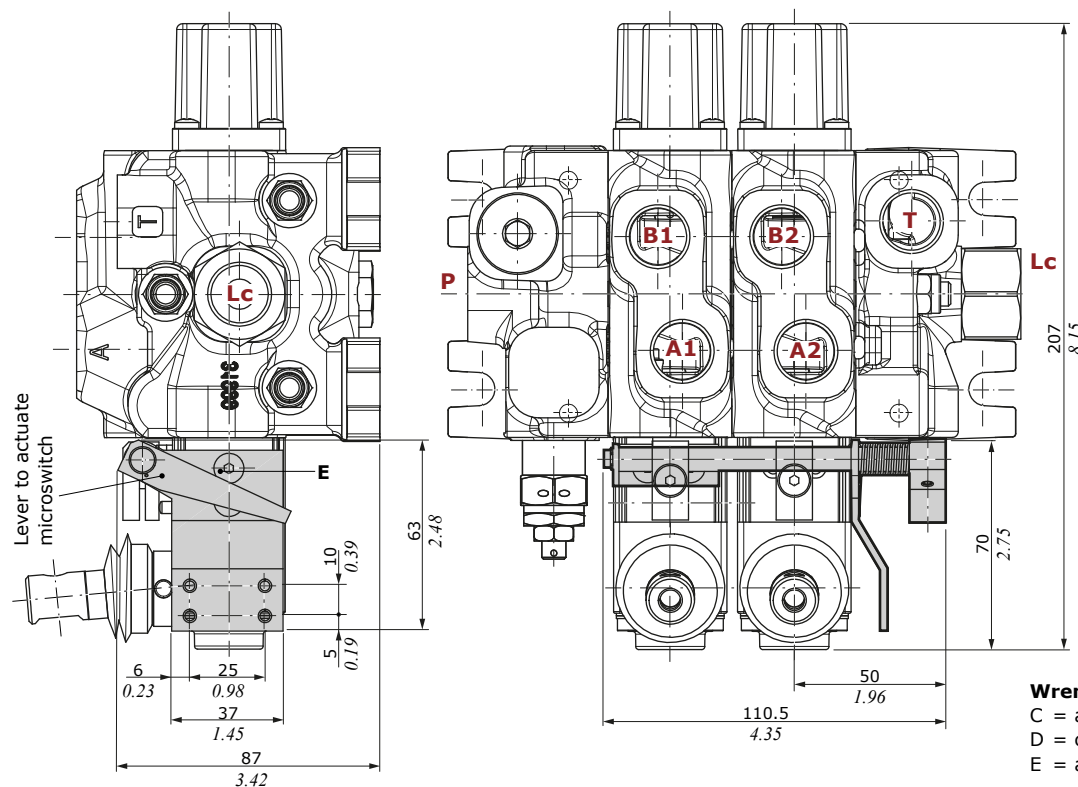
With spool position microswitch, with lever



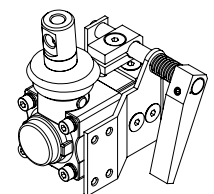
With spool position microswitch, with cap



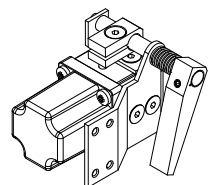
Microswitch assembly kit for 2 working section (N1-A1 type)



with lever box



with cap



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)

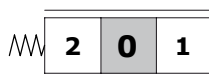
Working section

B side controls

With spring return control

M1 type

3 position, spring return
in neutral position

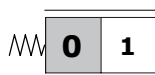


M1/01 type

As M1 type,
for joystick control

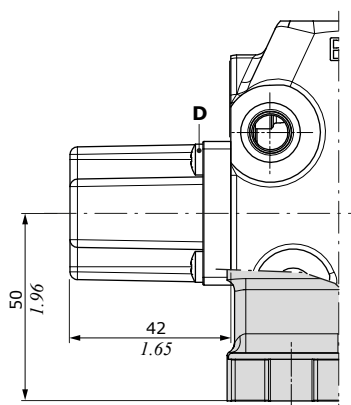
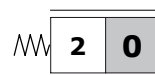
M2 type

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

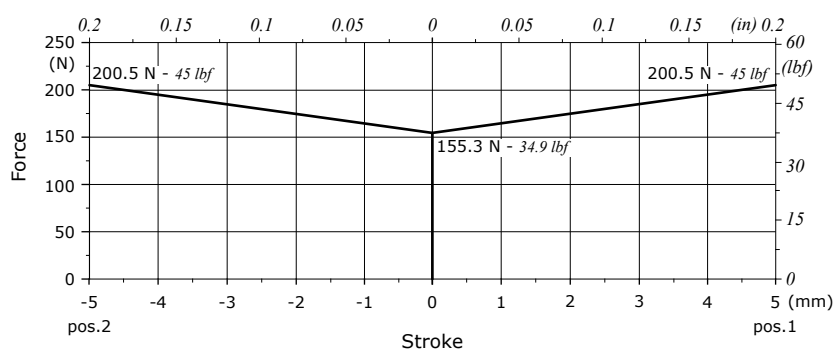


M3 type

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

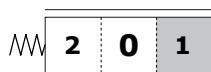


M1 control type - Force vs. Stroke diagram

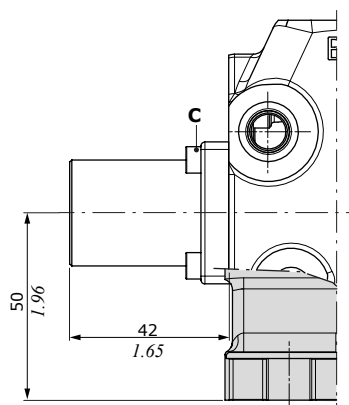
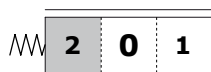


M4 types

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

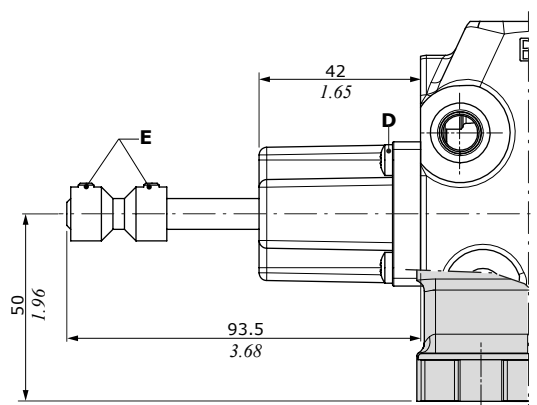
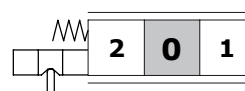


2 position (2-1),
spring return in position 2



M1-B1 type

3 position, microswitch arrangement



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)

B side controls

With spring return control

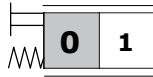
M1-U1 type

3 position, with M8 male thread external pin



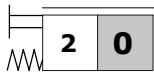
M2-U1 type

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



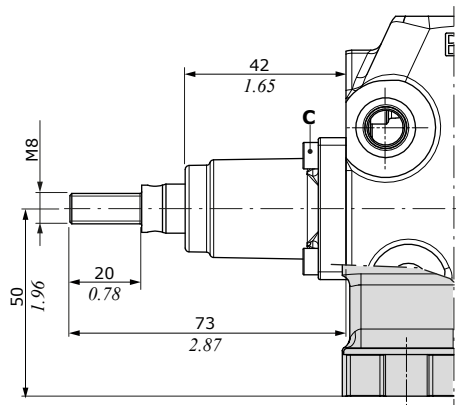
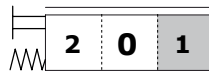
M3-U1 type

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



M4-U1 type

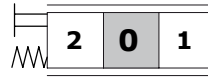
2 position (1-2), with M8 male thread external pin



With flexible cable control arrangement

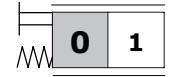
M1-U2 type

3 position, spring return in neutral position



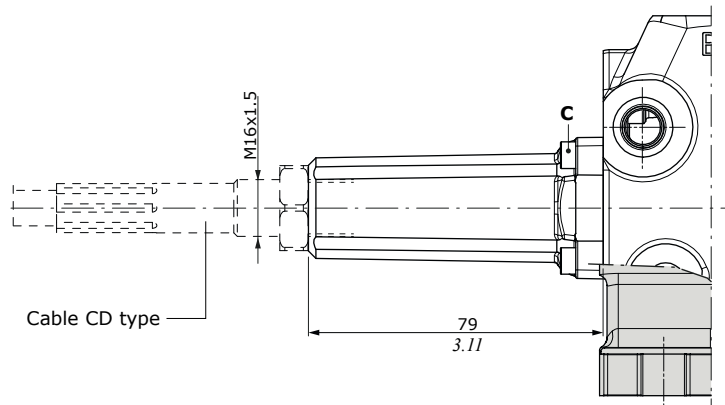
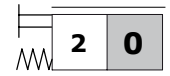
M2-U2 type

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



M3-U2 type

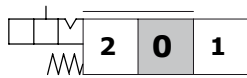
2 position (0-2), spring return in neutral position



With detent control

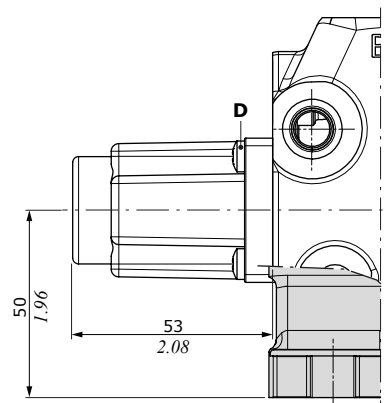
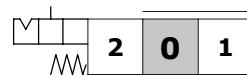
R1 type

3 position, detent in position 1



R2 type

3 position, detent in position 2



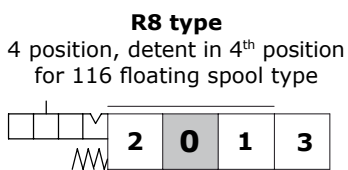
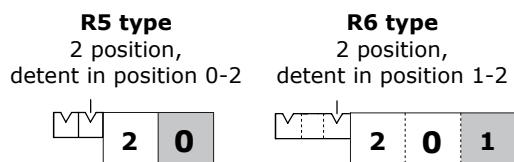
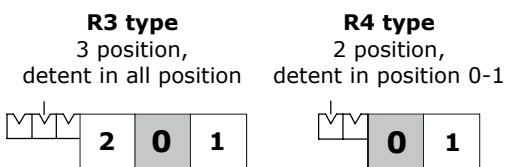
Wrenches and tightening torques

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

Working section

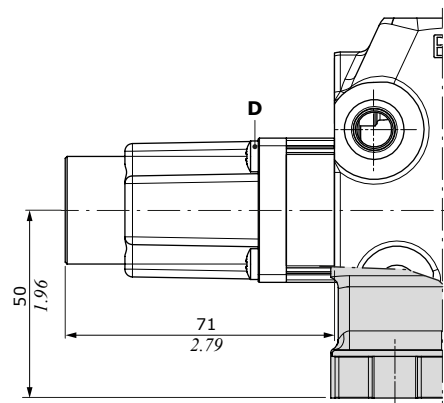
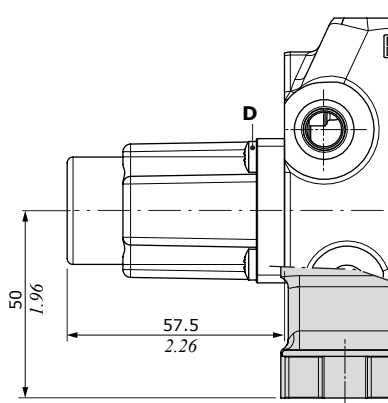
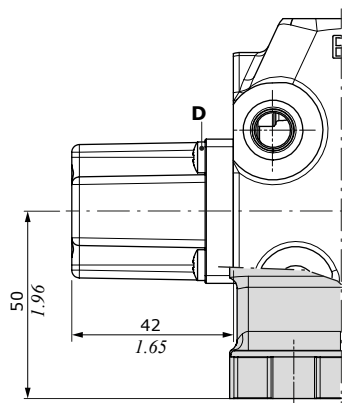
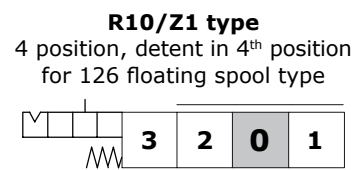
B side controls

With detent control



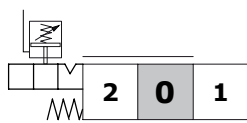
Wrenches and tightening torques

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

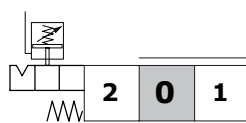


With detent control and kick out function

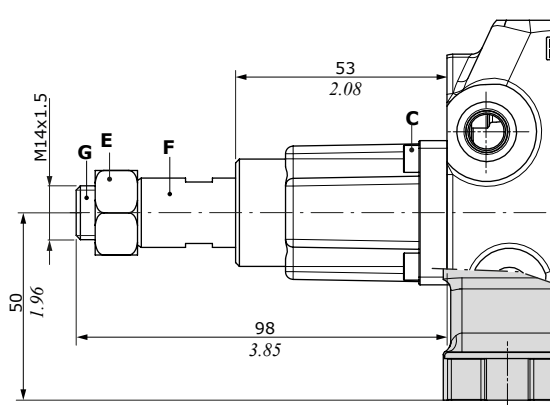
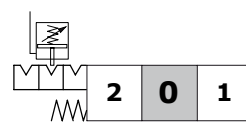
R1K type
3 position, detent in position 1



R2K type
3 position, detent in position 2



R3K type
3 position, detent in all position

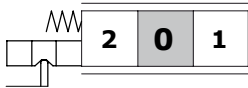


B side controls

With spool position microswitch

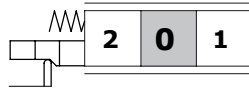
M1-N1 type

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



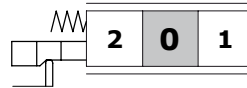
M1-N1A type

3 position, micro operation in position 1



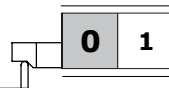
M1-N1B type

3 position, micro operation in position 2



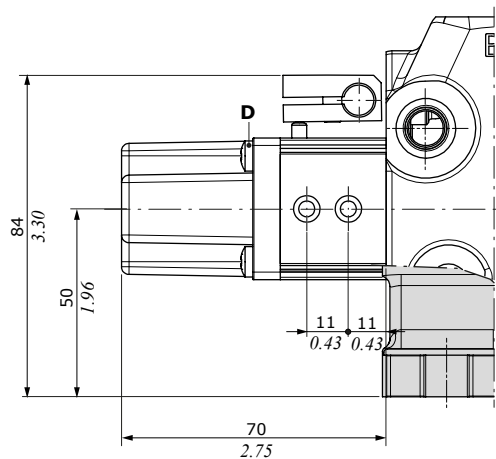
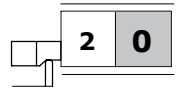
M2-N1 type

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



M3-N1 type

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

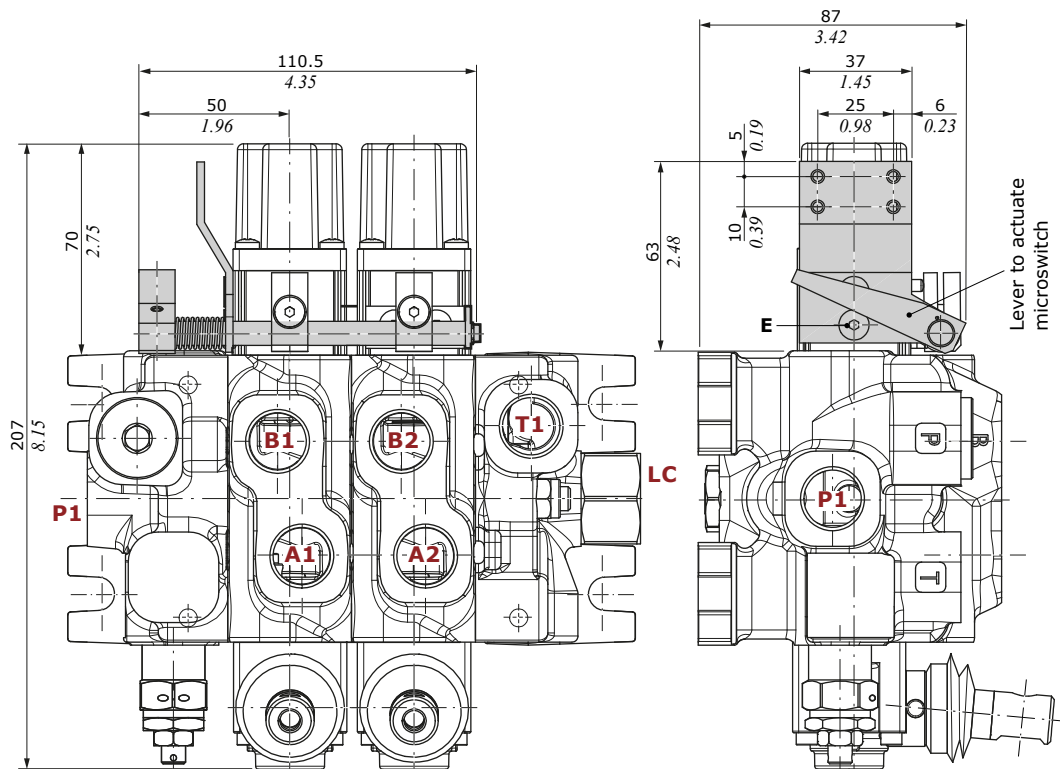


Wrenches and tightening torques

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

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

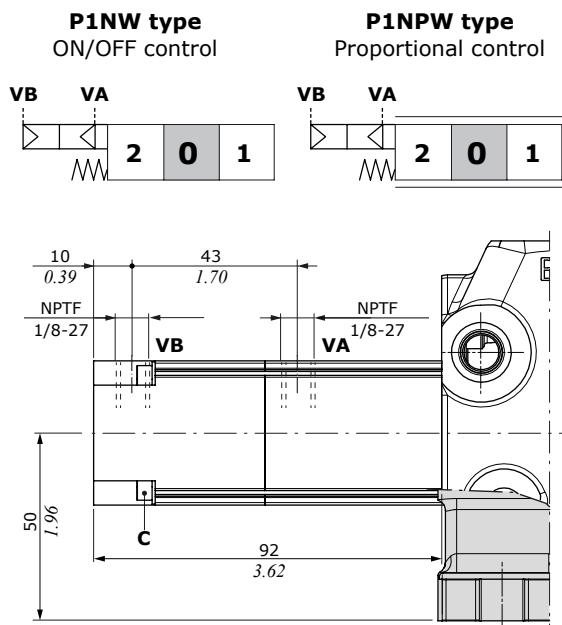
Microswitch assembly kit for 2 working section (M1-N1 type)



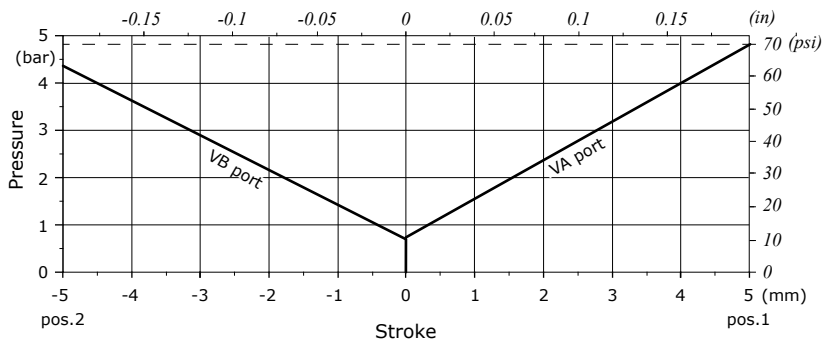
Working section

B side controls

With pneumatic control



Proportional pilot pressure curves



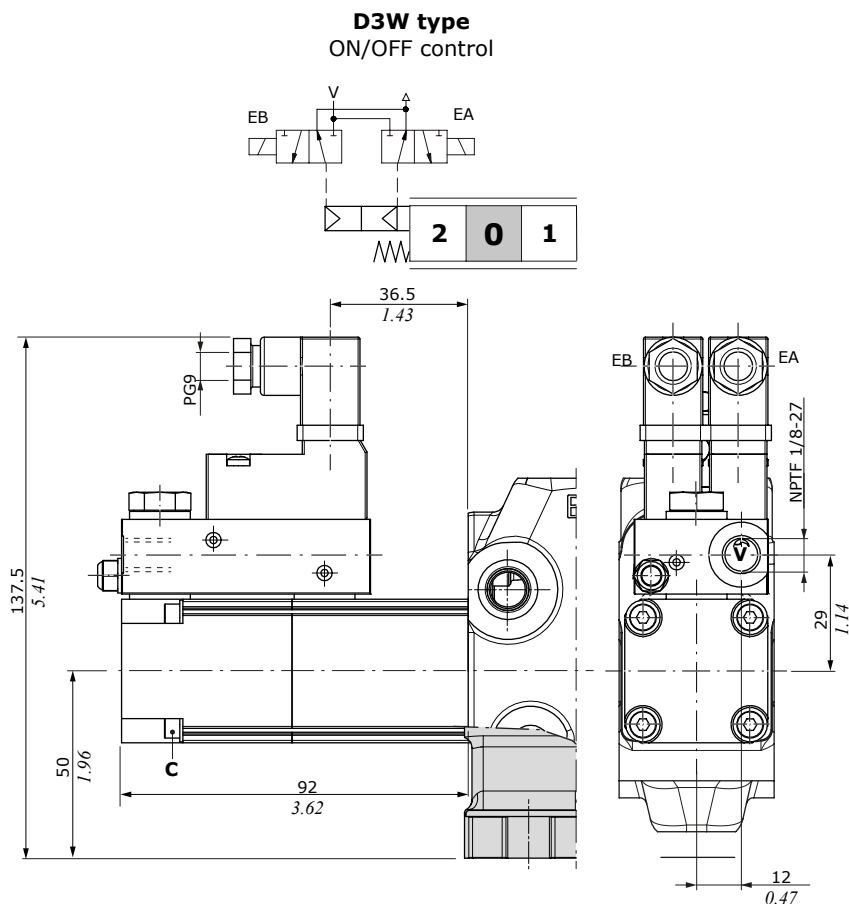
Operating features

Pilot pressure..... : min. 5 bar (72.5 psi) - max. 30 bar (435 psi)
Pilot volume..... : 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



Operating features

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

COILS

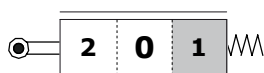
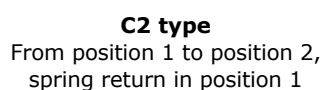
Nominal voltage tolerance..... : -5% +10%
Power rating..... : 2.3 W
Nominal current..... : 12 VDC - 24VDC
Coil insulation..... : Class F
Weather protection..... : IP65
Duty cycle..... : 100%

Wrenches and tightening torques

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

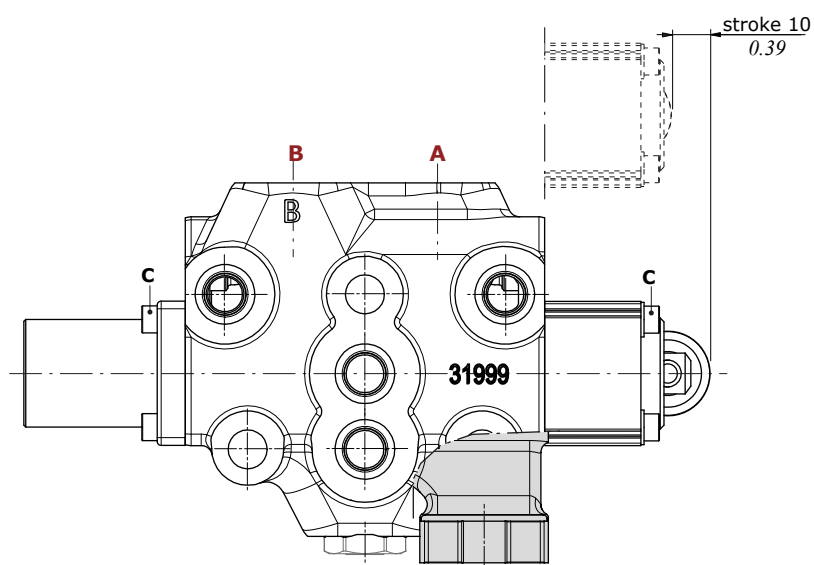
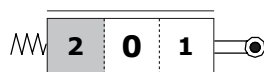
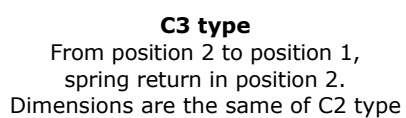
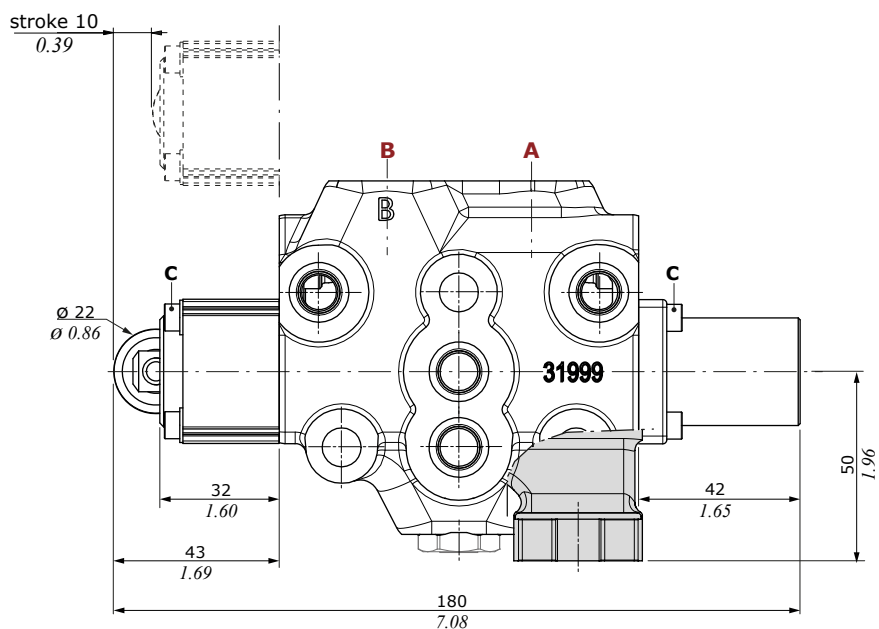
A+B side controls

With cam control



Wrenches and tightening torques

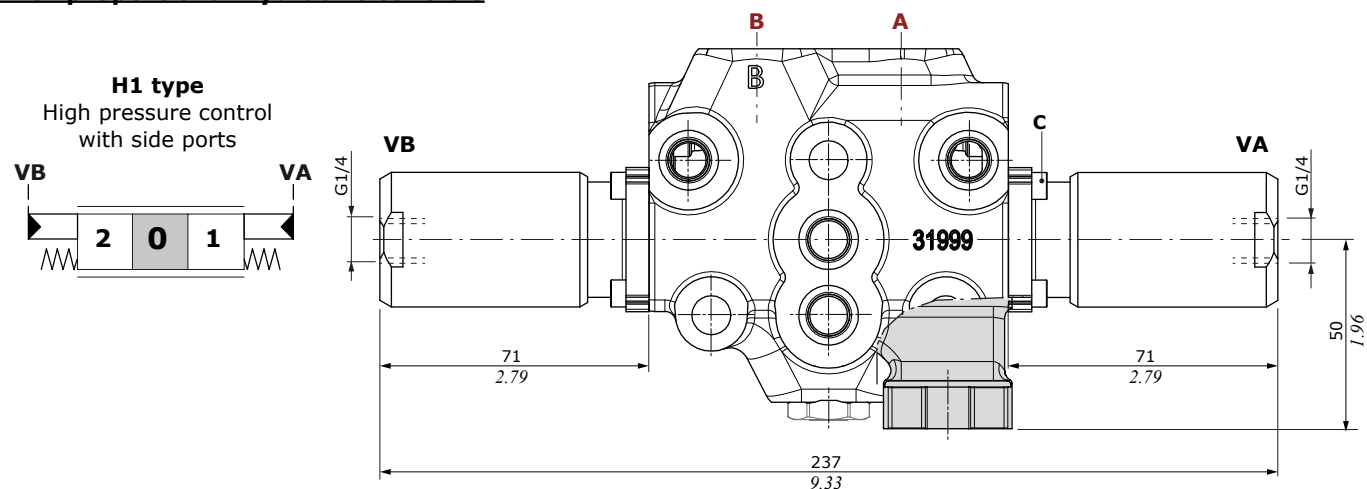
C = allen wrench 3 - 3 Nm (2.2 lbft)



Working section

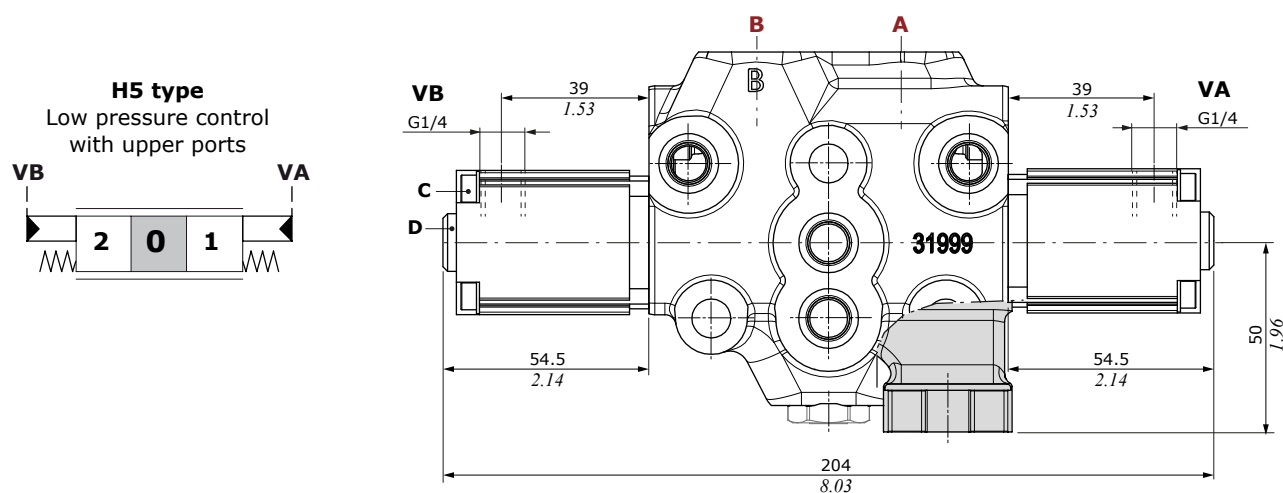
A+B side controls

With proportional hydraulic controls



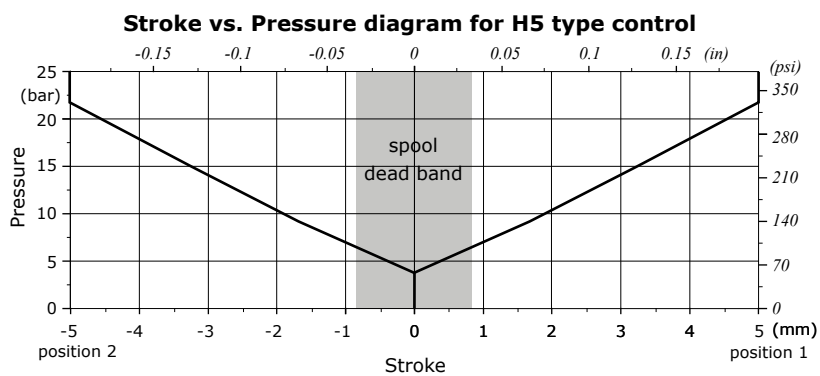
Operating features

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



Operating features

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



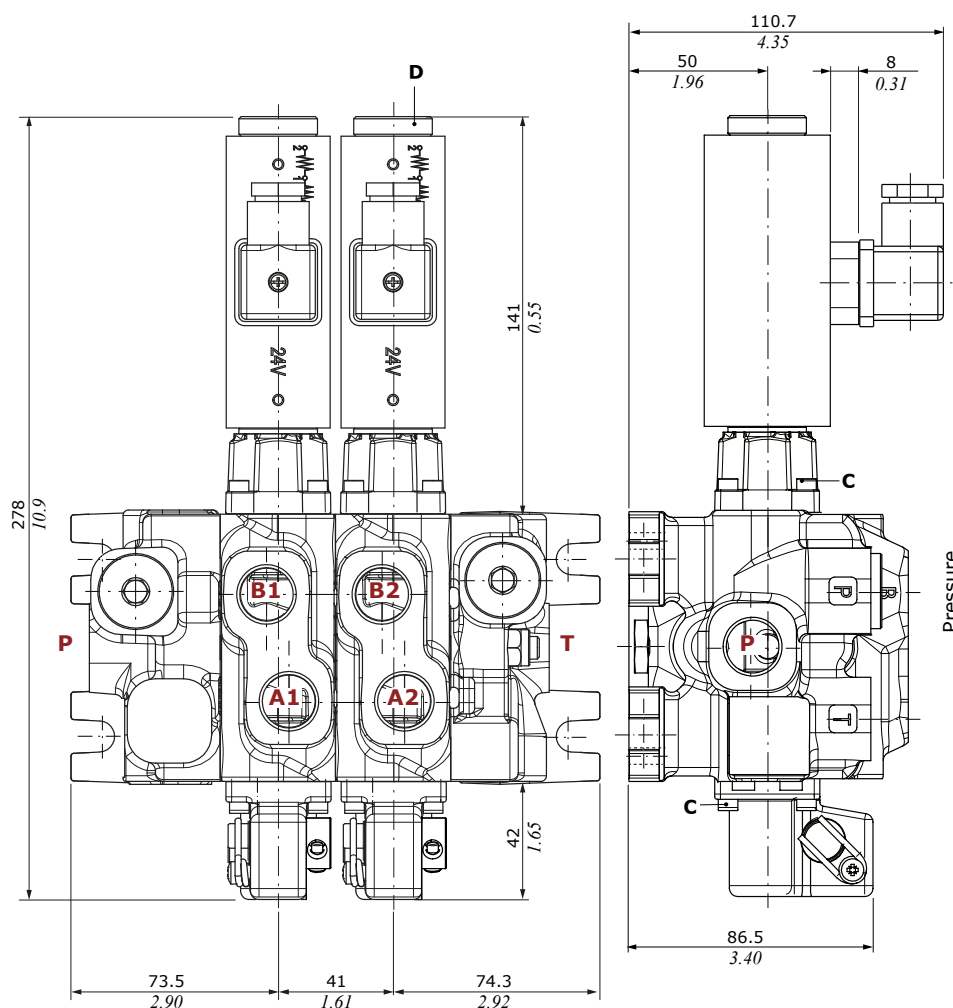
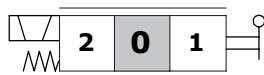
Wrenches and tightening torques

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

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

Direct solenoid control

D41 type: ON/OFF one side

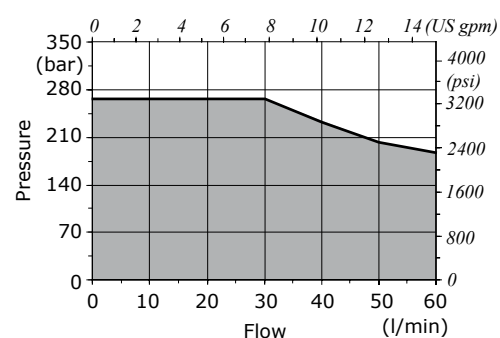


D41 coil

Nominal voltage	12 VDC 24 VDC
Nominal voltage tolerance	±10%
Power rating	52 W
Insulance	Class H
Weather protection	IP65

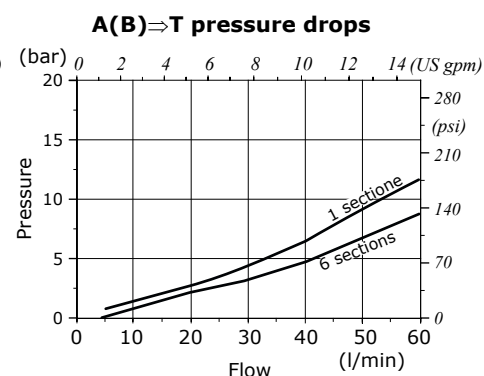
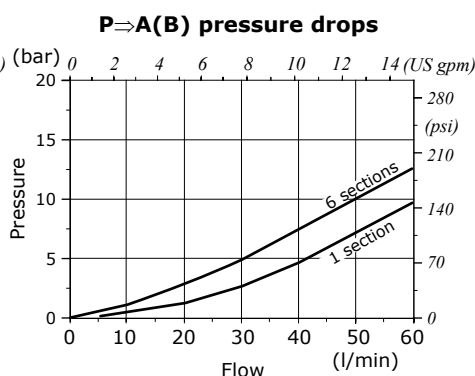
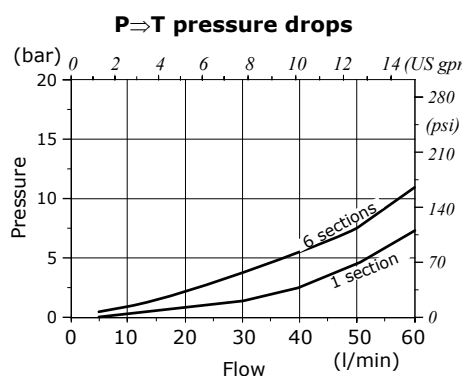
Connector type: ISO4400 3P+T-PG11

Dynamic conditions



Wrenches and tightening torques

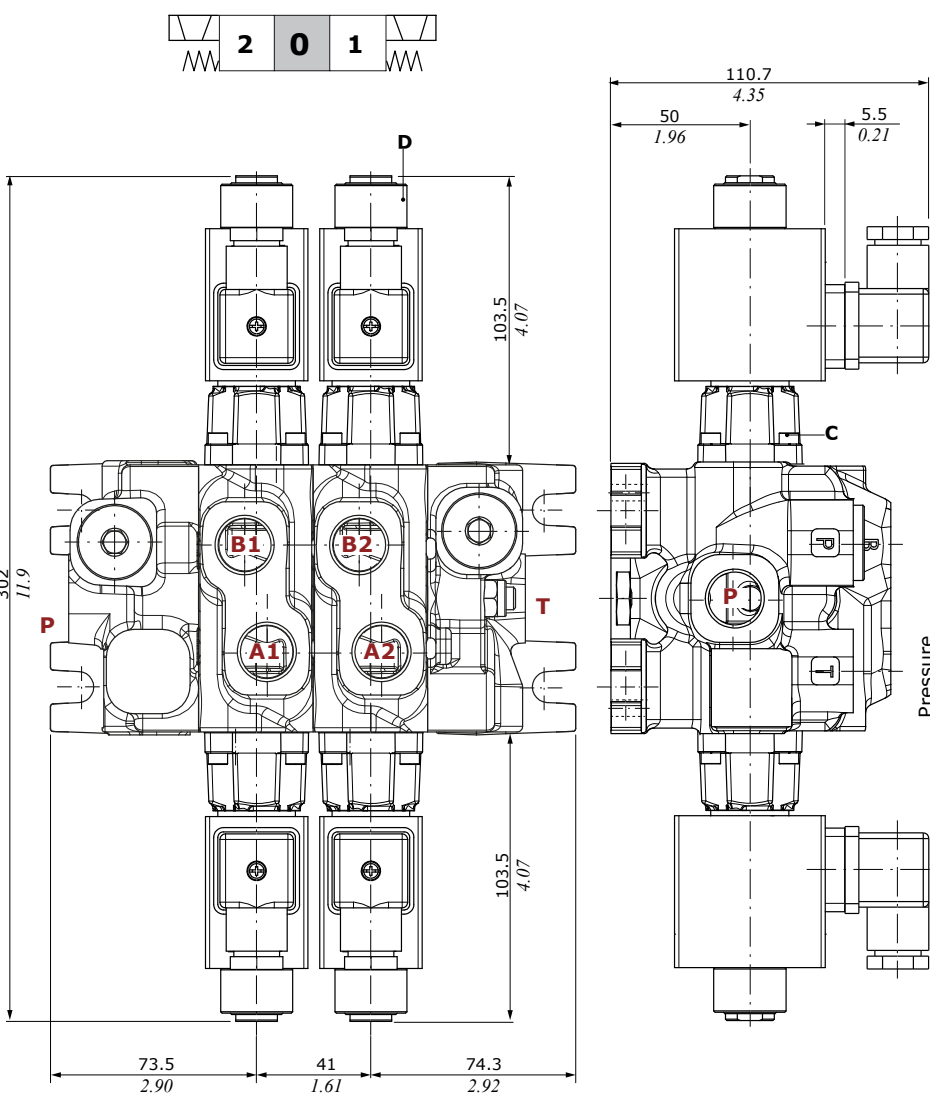
C = allen wrench 3 - 3 Nm (2.2 lbft)
 D = manual tightening - 6.6 Nm (4.8 lbft)



Working section

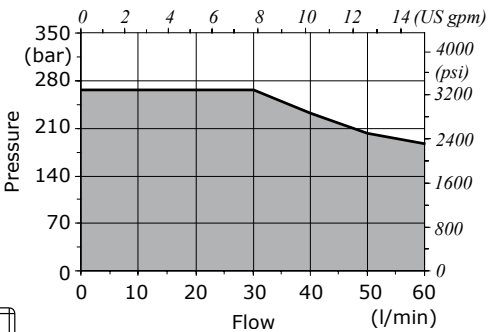
Direct solenoid control

D9 type: ON/OFF two side



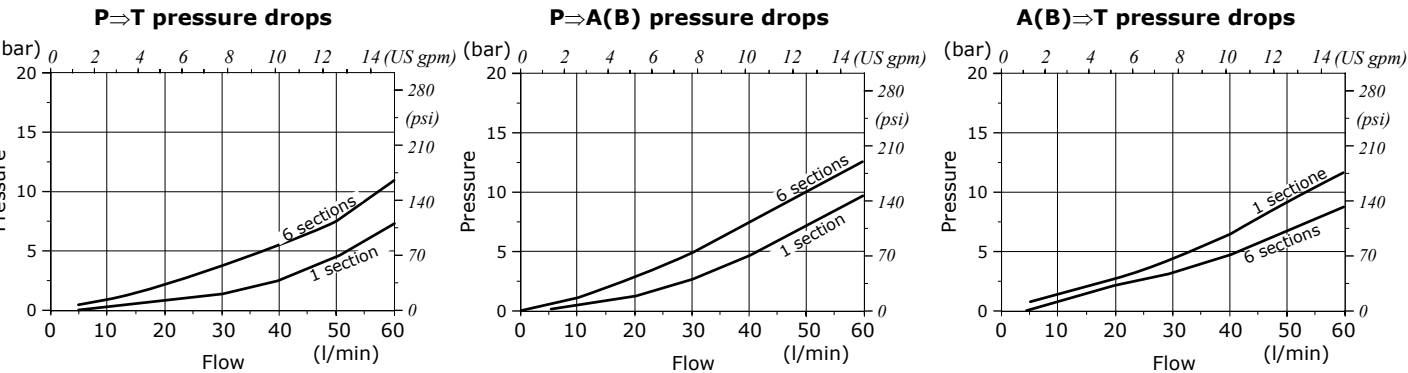
D9 coil	
Nominal voltage	12 VDC 24 VDC
Nominal voltage tolerance	±10%
Power rating	58 W
Insulance	Class H
Weather protection	IP65
Connector type: ISO4400 3P+T-PG11	

Dynamic conditions



Wrenches and tightening torques

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



Auxiliary valve configuration

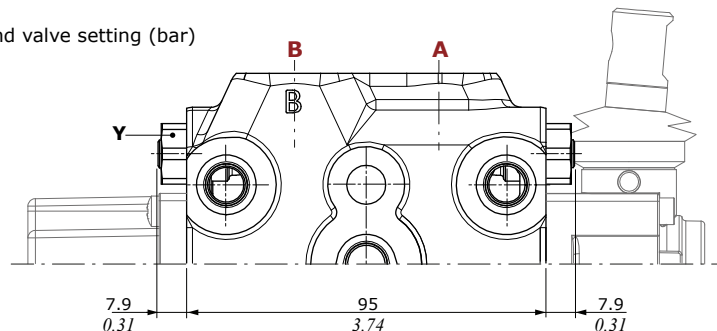
Dimensional data, hydraulic circuits and performance data

Description example

GSV50 / 1 / ... / 103 - A1 - M1 - ^{aux valve} **V32(N)120** / ... ^{spring type and valve setting (bar)}

Wrenches and tightening torques

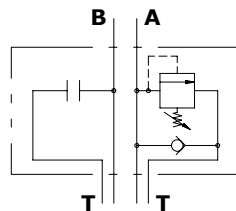
Y = wrench 16 - 20 Nm (14.7 lbf ft)



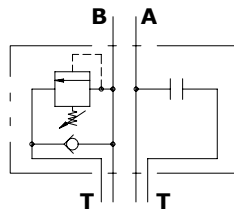
Antishock/anticavitation valve example

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

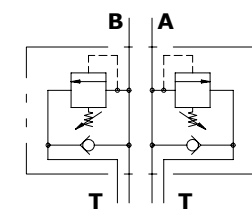
V33



V34



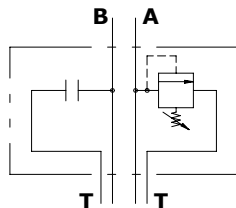
V35 (V34 + V33)



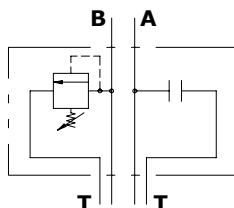
Antishock valve example

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

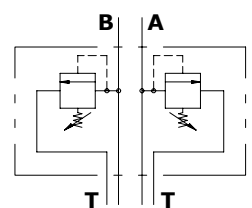
V30



V31

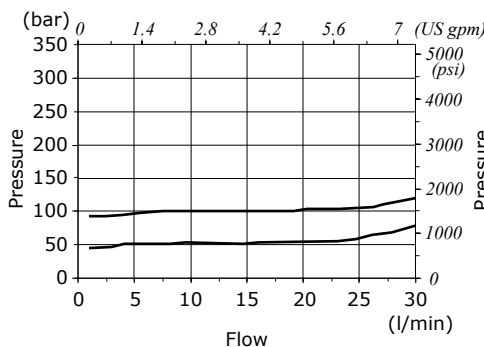


V32 (V30 + V31)

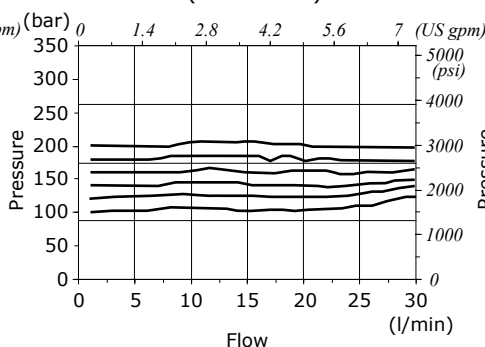


Spring type	Setting ranges (bar - psi)
B (white)	From 50 to 100 - from 725 to 1450
N (black)	From 101 to 200 - from 1460 to 2900
R (red)	From 201 to 350 - from 2910 to 5100

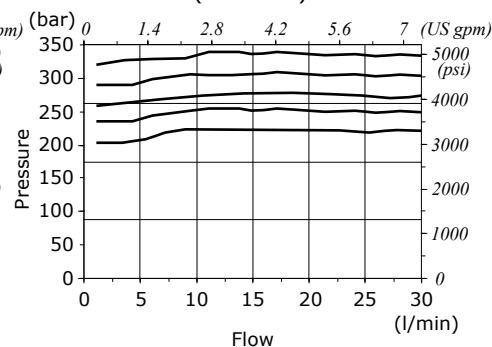
Setting range example
(white band)



Setting range example
(black band)



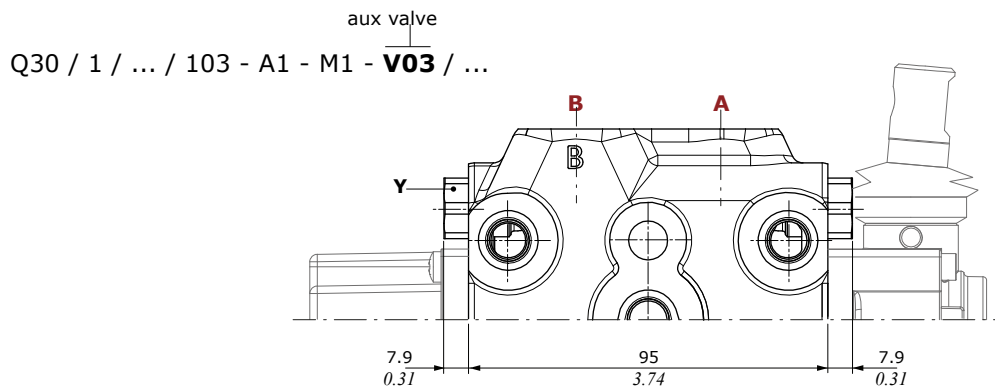
Setting range example
(red band)



Auxiliary valve configuration

Dimensional data and hydraulic circuits

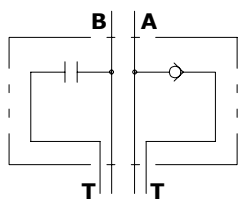
Anticavitation valve example



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

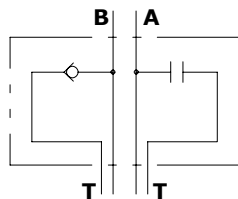
A side configuration:

V04



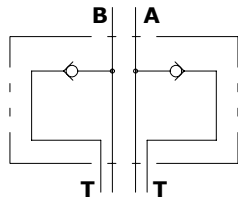
B side configuration:

V05



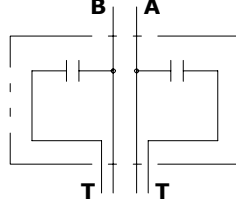
A+B side configuration:

V03 (V04 + V05)

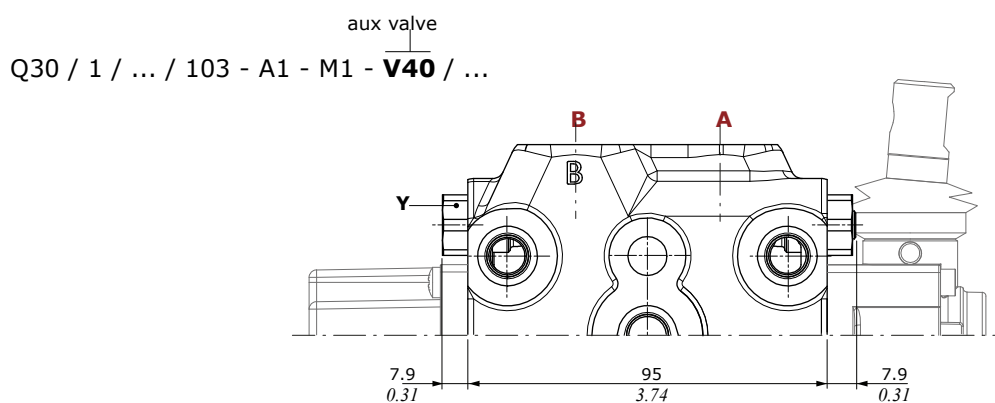


Plug valve:

VC

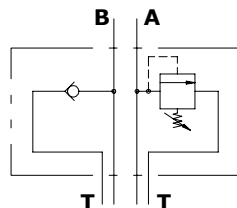


Antishock and anticavitation combining valves example



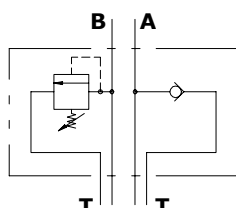
A side configuration:

V40 (V30 + V05)



B side configuration:

V41 (V31 + V04)

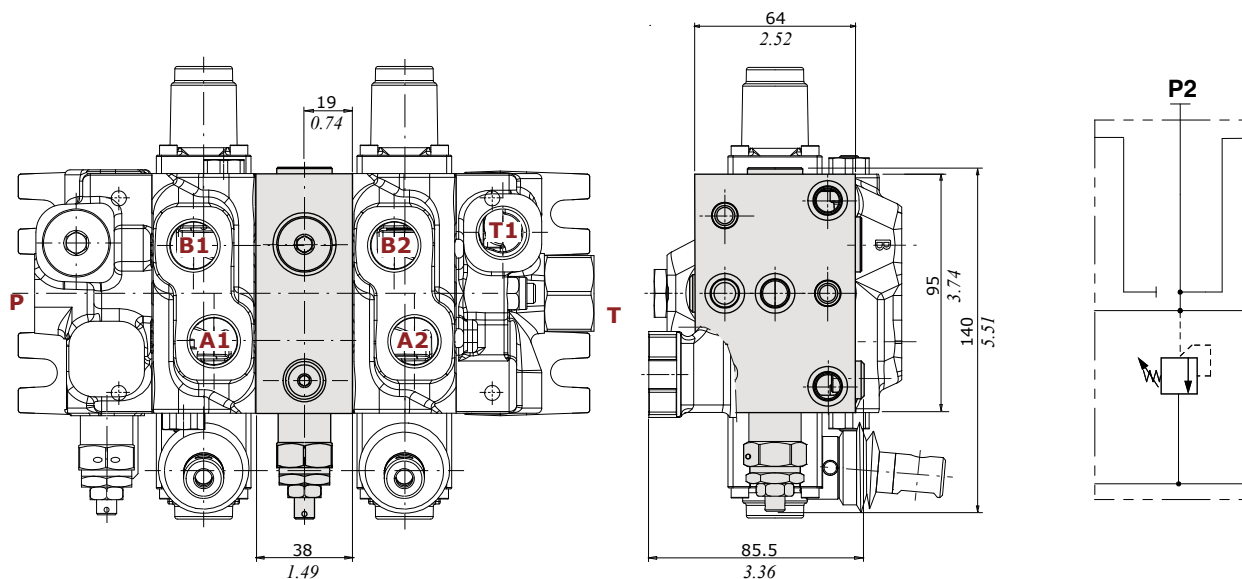


Intermediate section

Dimensional data and hydraulic circuit

E50 type

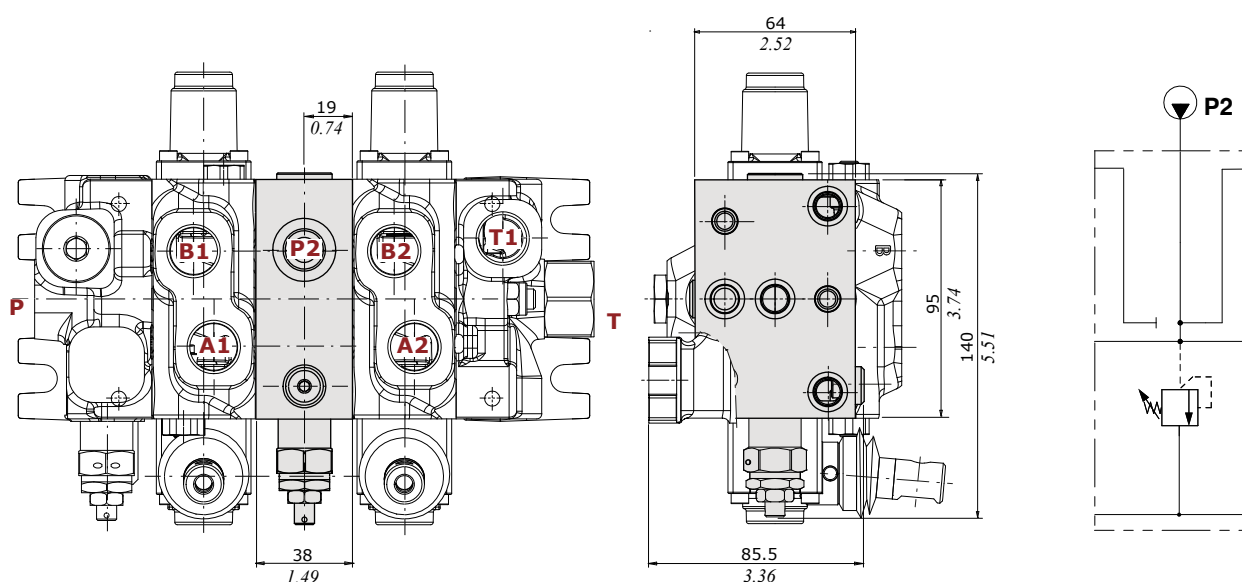
Intermediate inlet section with pressure relief valve

Description example: GSV50/2/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: GSV50/2/F7S(N150)/103-A1-M1.VC/**E53(N150)**/103-A1-M1/F3D-S

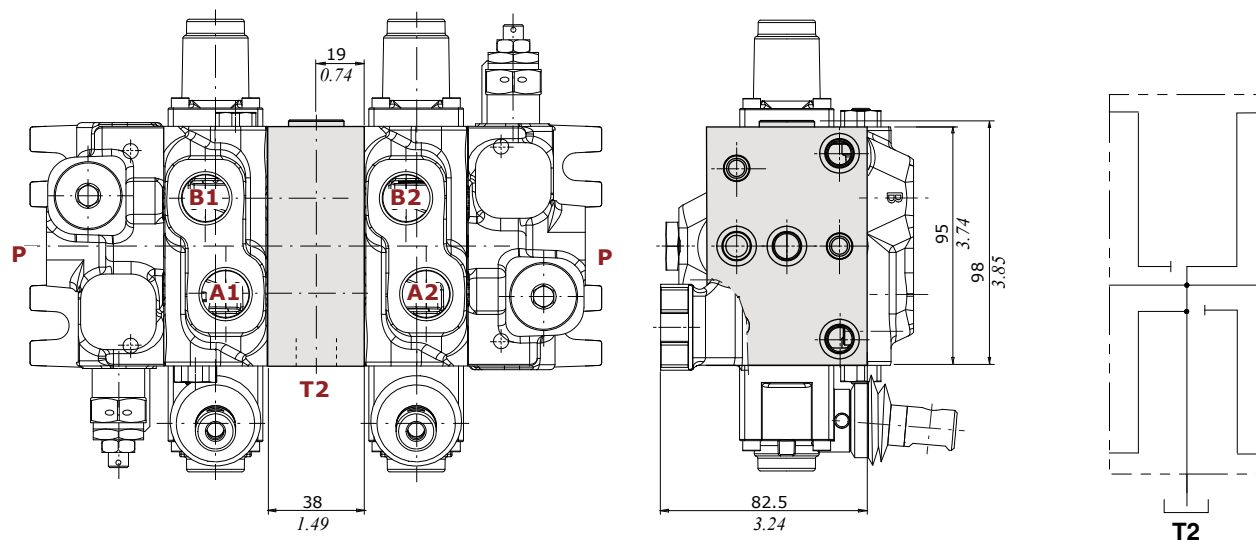
intermediate section spring type and valve setting (bar)

Intermediate section

Dimensional data and hydraulic circuit

E51 type

Intermediate outlet section, T2 port open

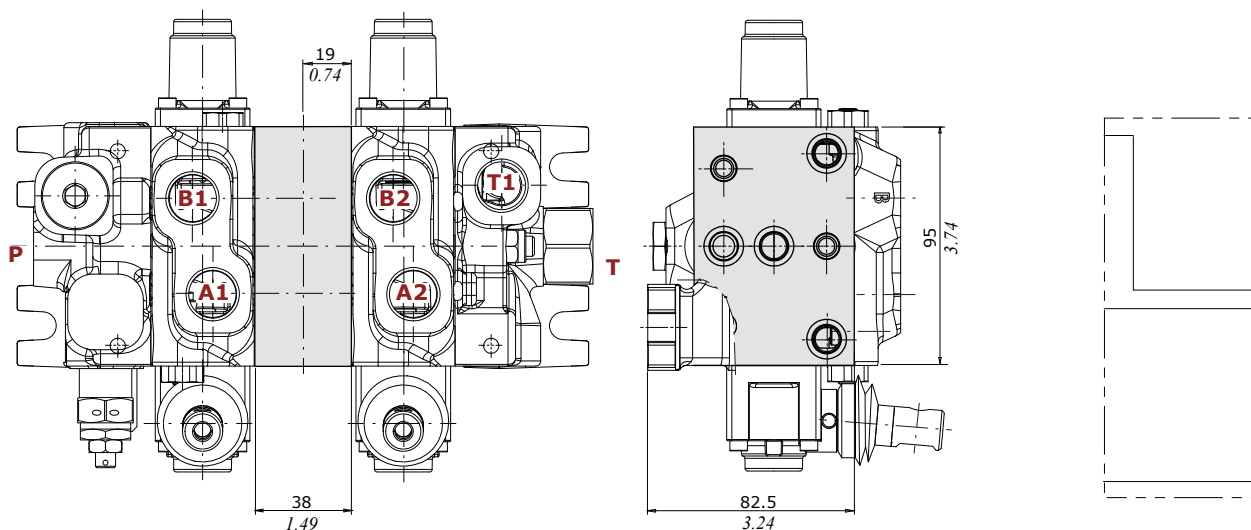


Description example: GSV50/2/F7S(N150)/103-A1-M1.VC/**E51**/103-A1-M1/F3D-S

intermediate
section

E61 type

Intermediate spacer section

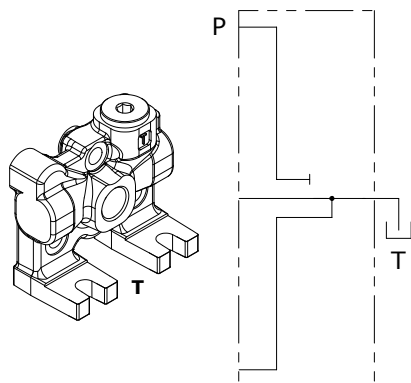


Description example: GSV50/2/F7S(N150)/103-A1-M1.VC/**E61**/103-A1-M1/F3D-S

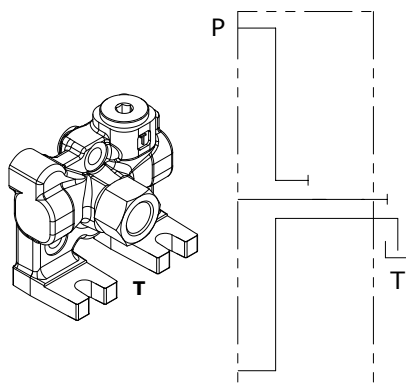
intermediate
section

Outlet section

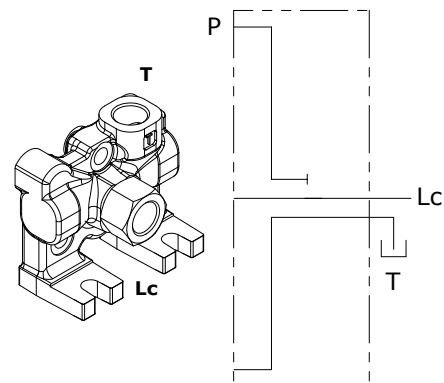
F3D configuration
Open center configuration



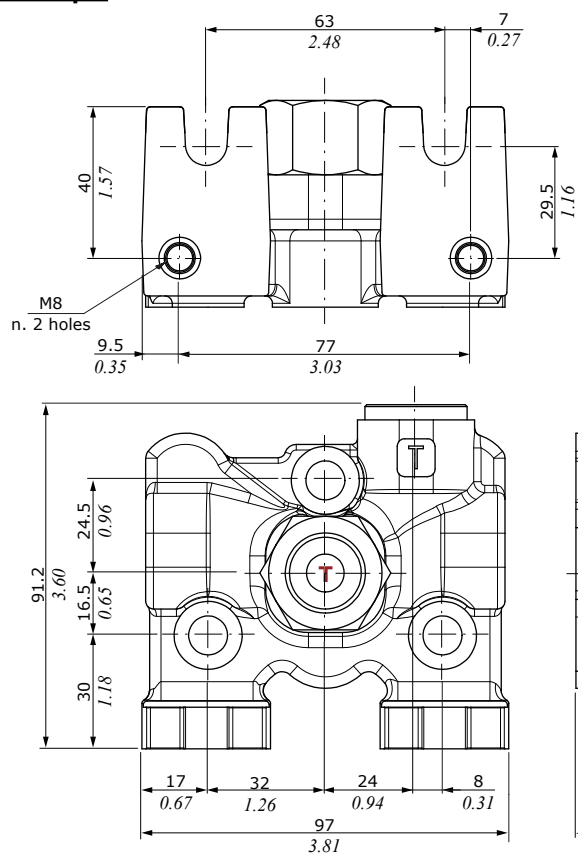
F16D configuration
Closed center configuration



F6D configuration
Carry-over configuration



F16D configuration example



Wrenches and tightening torques

E = allen wrench 8 - 42 Nm (30.9 lbft)
F = wrench 30 - 42 Nm (30.9 lbft)



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		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

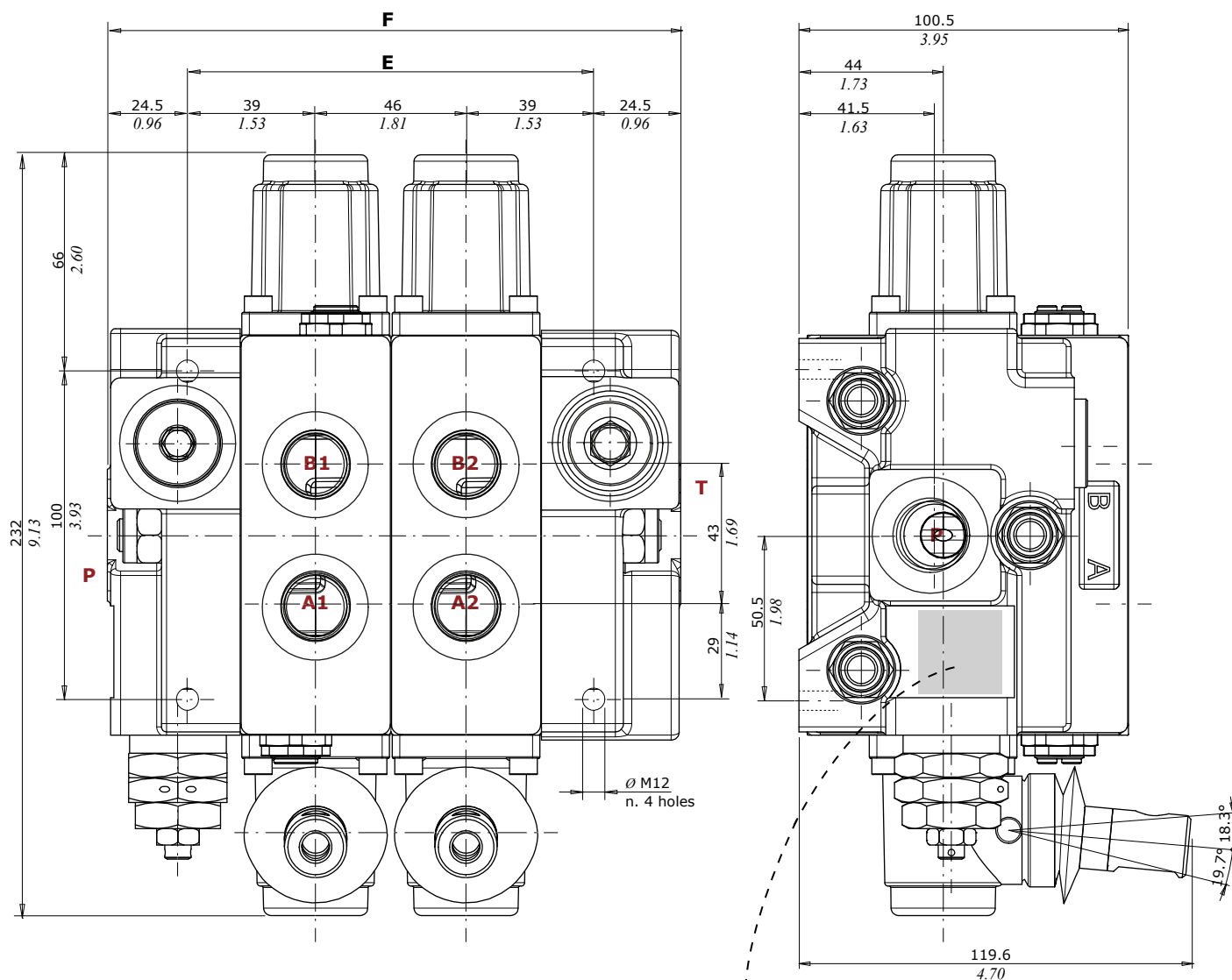
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

PORT THREADING

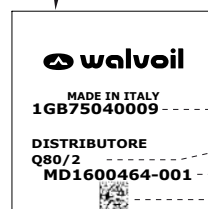
PORTS	BSP (standard)	BSP (G 3/4)	UN-UNF
P Inlet	G 1/2	G 3/4	7/8-14 (SAE 10)
P1 Inlet	G 1/2	G 3/4	7/8-14 (SAE 10)
A and B ports	G 1/2	G 3/4	3/4-16 (SAE 8)
T Outlet	G 3/4	G 3/4	1" 1/16-12 (SAE12)
T1 Outlet	G 3/4	G 3/4	7/8-14 (SAE 10)
Lc port (Carry-over plug - T port)	G 1/2-G 3/4	G 3/4	7/8-14 (SAE 10)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



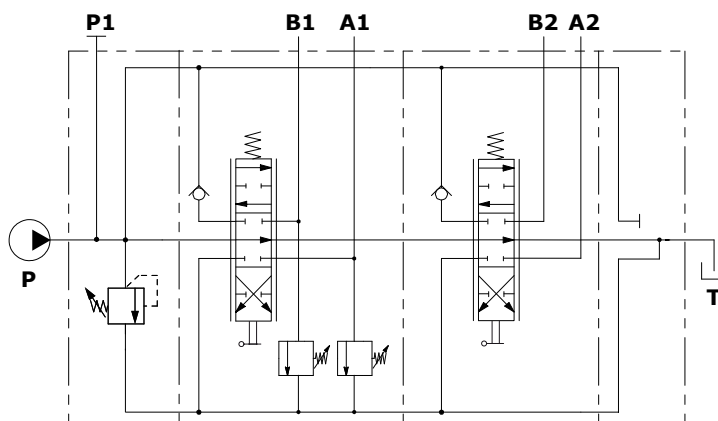
Type	E		F	
	mm	in	mm	in
Q80/1	78	3.07	127	5
Q80/2	124	4.88	173	6.81
Q80/3	170	6.69	219	8.62
Q80/4	216	8.50	265	10.43
Q80/5	262	10.31	311	12.24
Q80/6	308	12.12	357	14.05
Q80/7	354	13.93	403	15.86
Q80/8	400	15.74	449	17.67
Q80/9	446	17.56	495	19.48
Q80/10	492	19.37	541	21.3



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 203

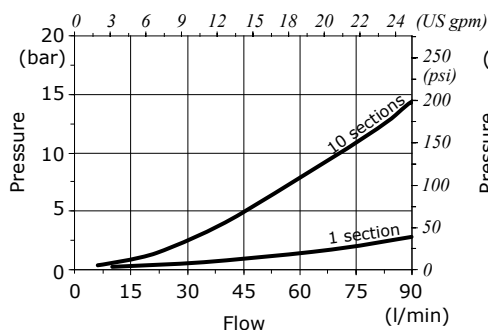
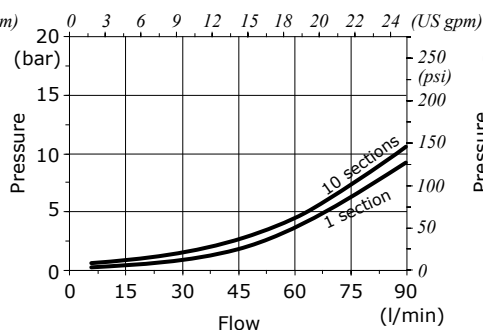
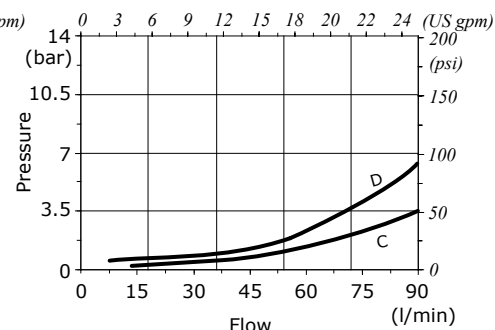
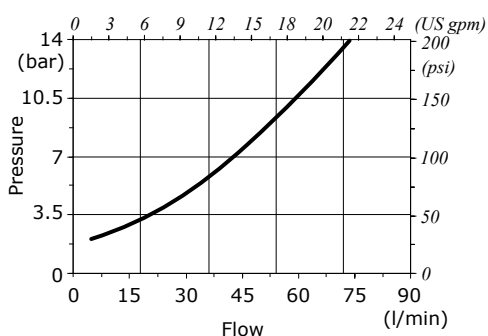
Hydraulic circuit



Description example (parallel circuit):

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

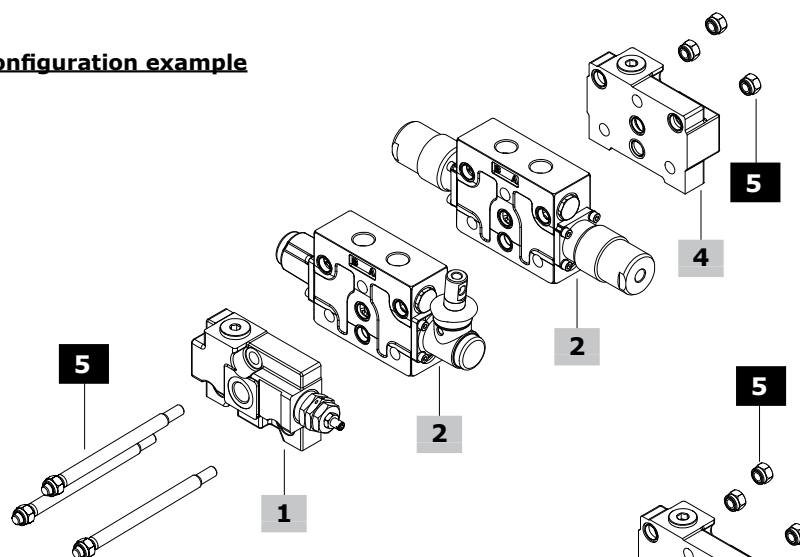
Performance data

P⇒T pressure drops**P⇒A(B) pressure drops****A(B)⇒T pressure drops****A1(B1)⇒A2(B2) pressure drops
(with series circuit)****Legenda**C= 10th section
D= 1st section

Complete section ordering codes

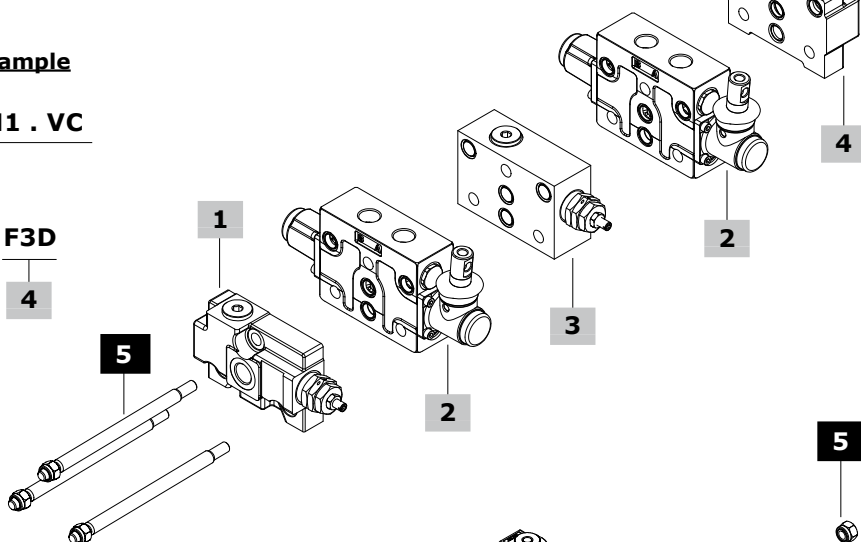
Valve with mechanical and hydraulic controls configuration example

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



Valve with intermediate section and mechanical control configuration example

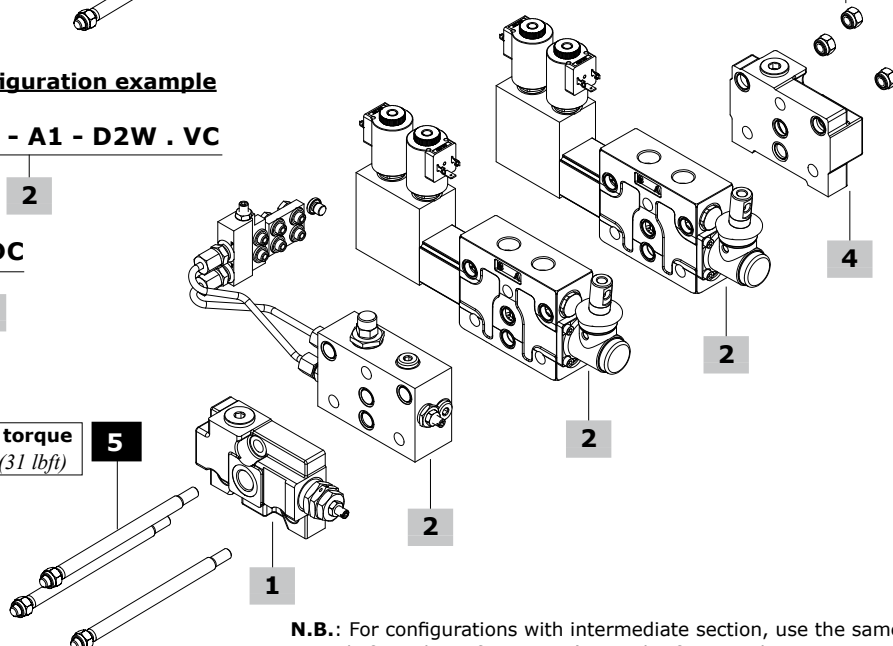
Q80 / 2 / F7S(N150) / 103 - A1 - M1 . VC
 valve setting (bar) **1** **2**
/ E50(N150) / 103 - A1 - M1 . VC / F3D
3 **2** **4**



Valve with electrohydraulic control configuration example

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

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



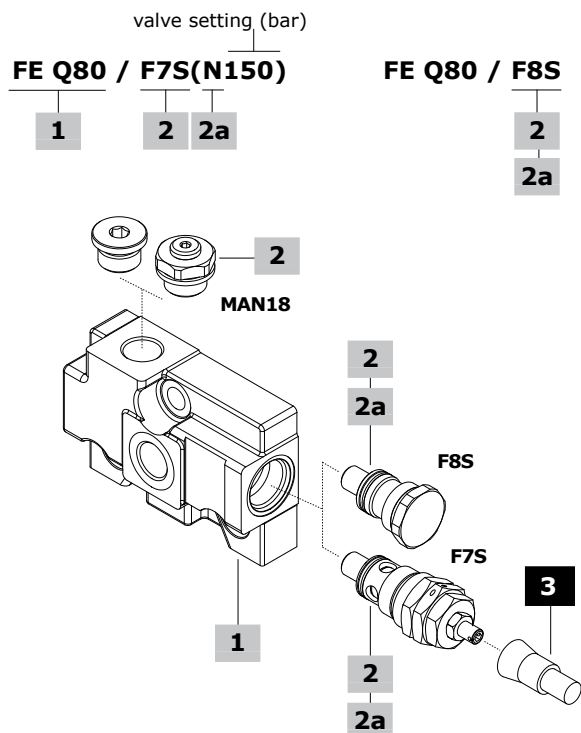
N.B.: For configurations with intermediate section, use the same tie rods for std. configuration (example: for 2 working sections + 1 intermediate section, use tie rods for 3 working sections)

Complete section ordering codes

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

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

Inlet section - parts ordering codes



1 Inlet body section* page 174

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

2 Configuration coding* page 174

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

2a Main pressure relief valve page 175

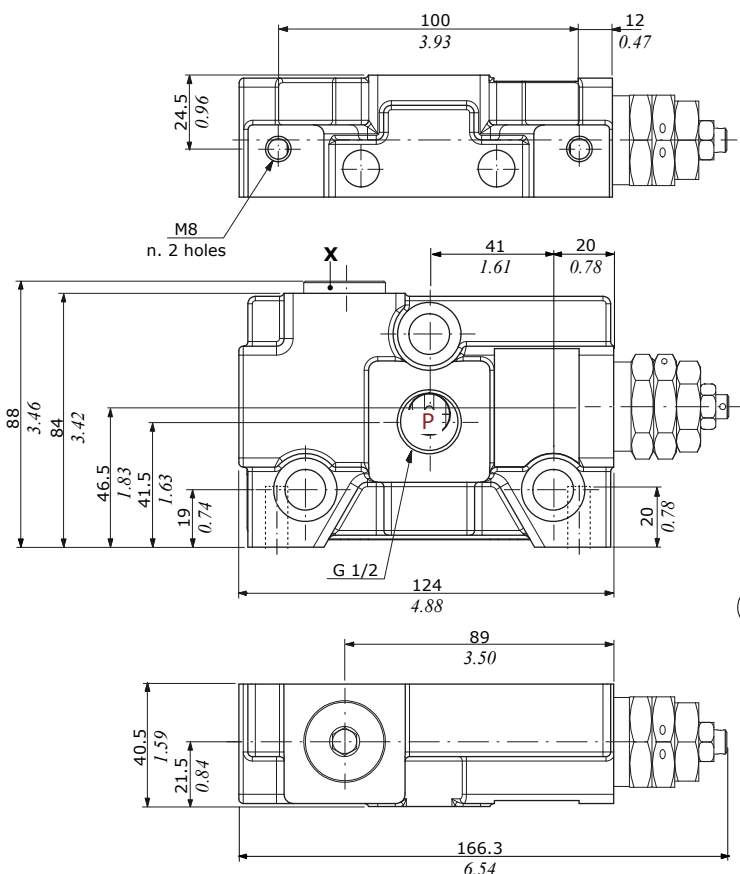
TYPE: **B** CODE: 700065205000000
DESCRIPTION: VLP65S valve, setting range 10-100 bar (145-1450 psi)
TYPE: **N** CODE: 700065105000000
DESCRIPTION: VLP65S valve, setting range 101-200 bar (1460-2900 psi)
TYPE: **R** CODE: 700065305000000
DESCRIPTION: VLP65S valve, setting range 201-380 bar (2910-5500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

3 Accessory

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

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

Dimensional data and hydraulic circuits

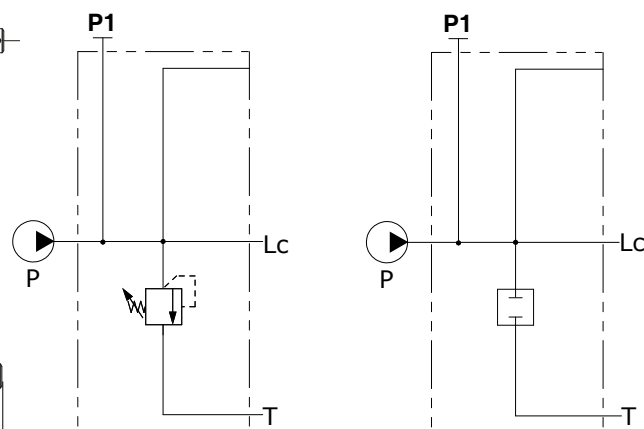


Wrenches and tightening torques

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

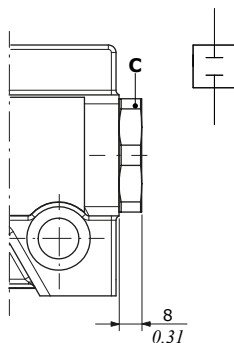
Note: For valves wrench and torque, see related pages

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

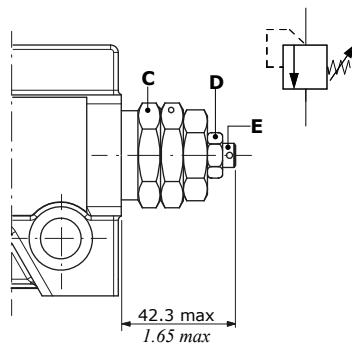


Main pressure relief valve

Relief valve blanking plug



Main pressure relief valve

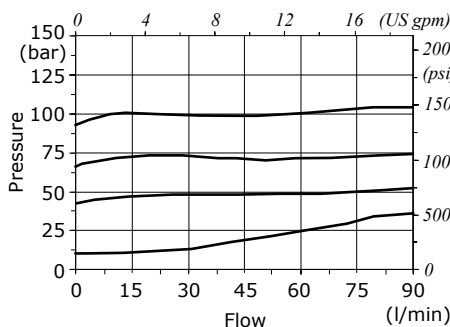


Wrenches and tightening torques

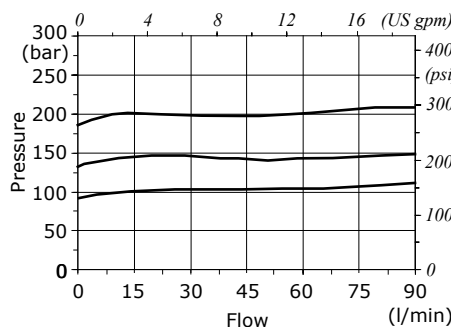
- C = wrench 30 - 80 Nm (59 lbft)
- D = wrench 13 - 24 Nm (17.7 lbft)
- E = allen wrench 4

Spring type	Setting ranges (bar - psi)
B (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

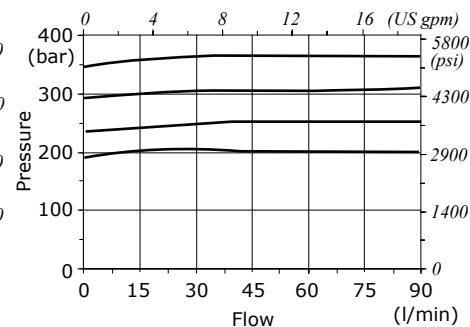
Setting example (B type spring)



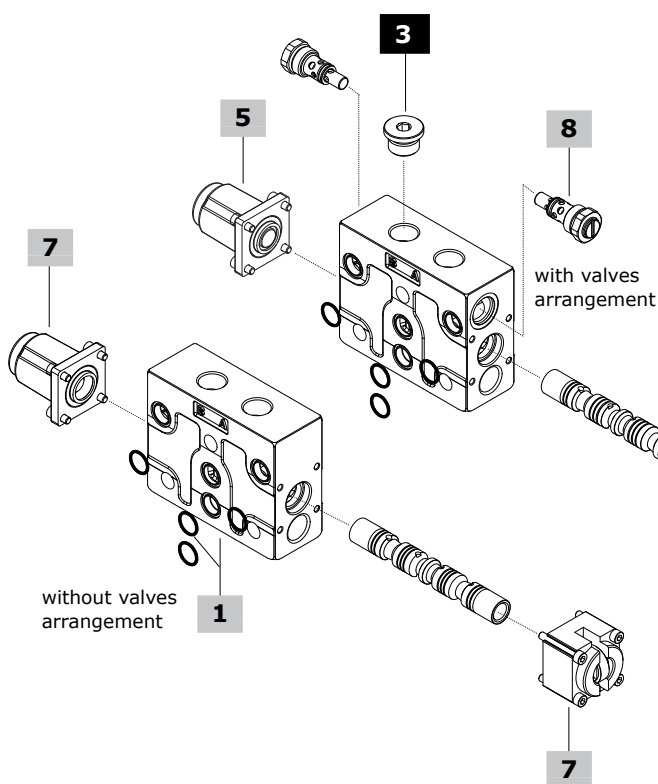
Setting example (N type spring)



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

C2/C3 complete mechanical control configuration example

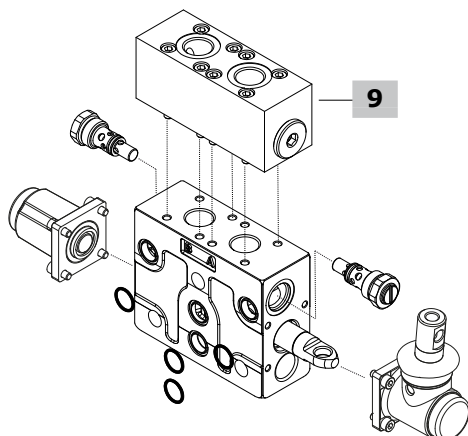
EL Q80 / 103 - C3 . V40(N)120 8

7

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

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

9



Working section - parts ordering codes

1 Working section body kit* page 182

TYPE: 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 183

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 184

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 184

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 189

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
	08735M4-2-1	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

<u>With friction:</u>		
R0	08740R0	Adjustable friction control
<u>With detent:</u>		
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

(*): Always complete with lever knob

(*): To be assembled only with M4 control

Working section - parts ordering codes

5 B side control (cont.) page 189

TYPE	CODE	DESCRIPTION
<u>With detent and kick out function:</u>		
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 195

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 200

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 201		

9 Secondary aux valves* page 202

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

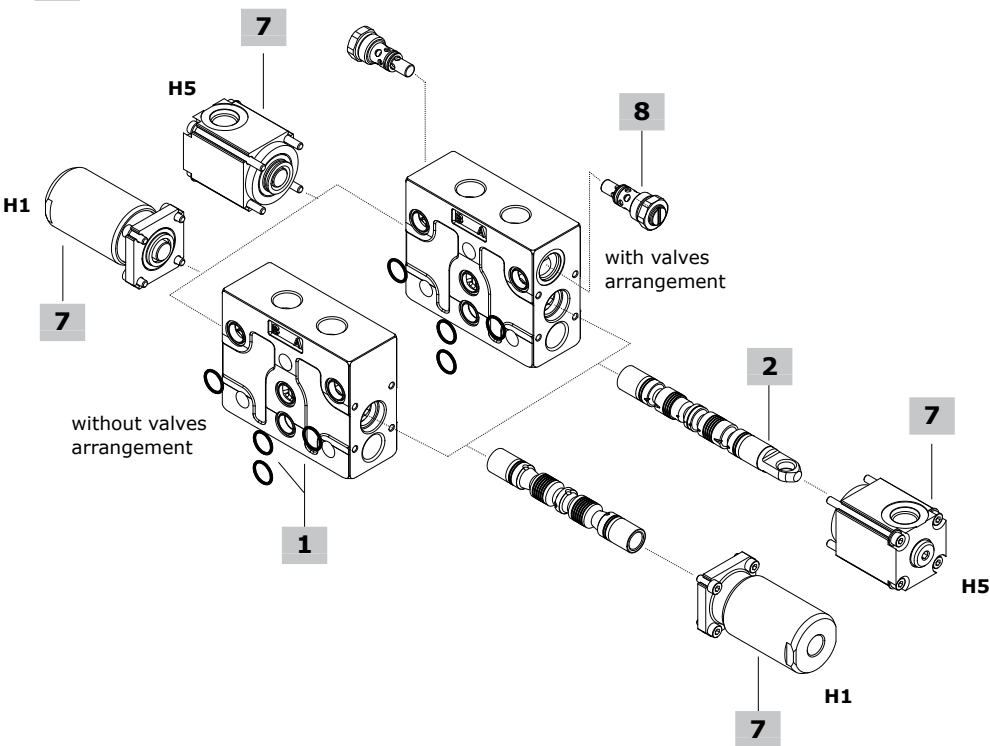
spring type and valve setting (bar)

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

1 2 7 8

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

7



1 Working section body kit* page 182

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

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

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

DESCRIPTION: Parallel circuit, with port valves arrangement

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

DESCRIPTION: Parallel circuit, without port valves arrangement

2 Spool page 183

TYPE	CODE	DESCRIPTION
For H5 hydraulic control		
103	060102894999	Double acting, A and B closed in neutral position
For H1 hydraulic control		
103	060102879199	Double acting, A and B closed in neutral position

7 Hydraulic controls A+B sides* page 196

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

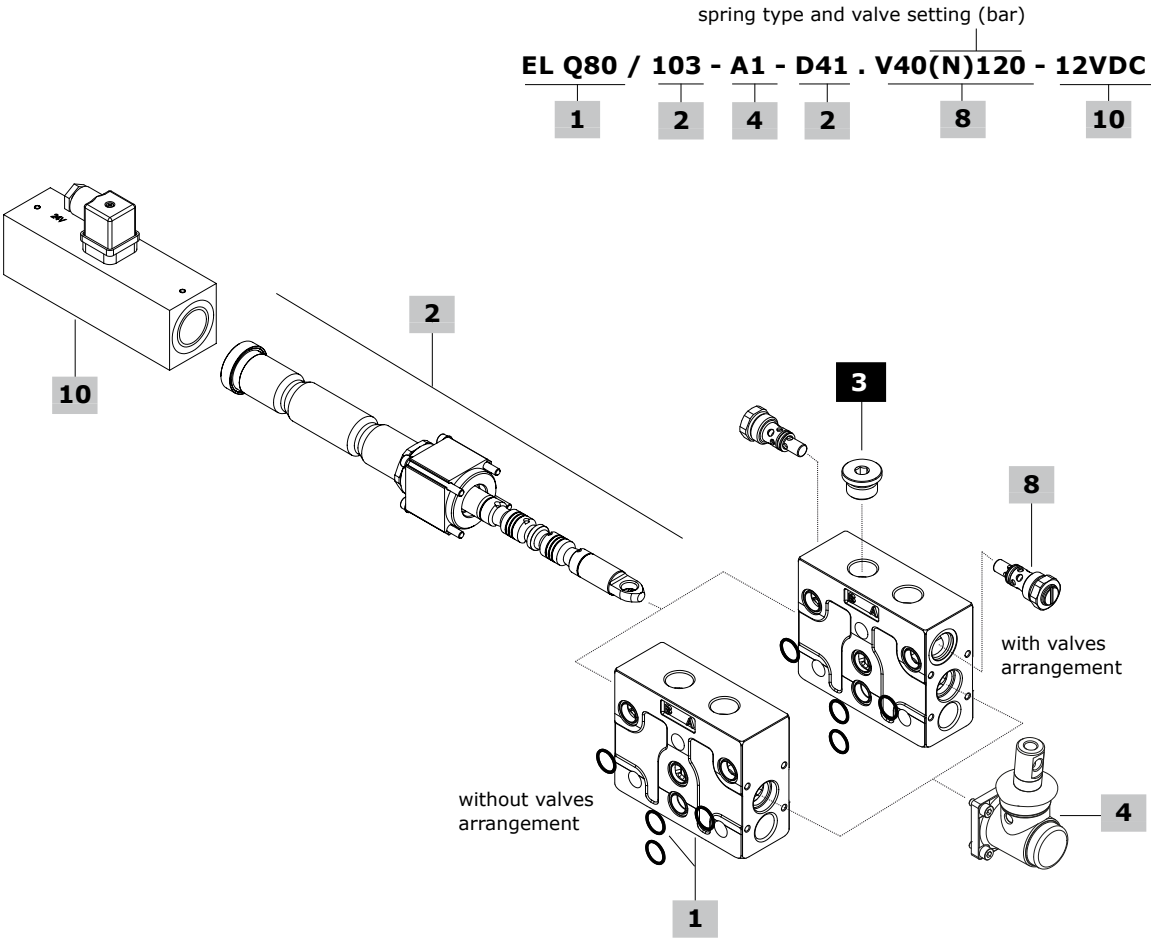
8 Auxiliary port valve page 200

See #8, page 178

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

Working section - parts ordering codes

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



1 Working section body kit* page 182

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

2 Solenoid control page 197

TYPE	CODE	DESCRIPTION
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 177

4 A side control page 197

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 200

See #8, page 178

10 Coil

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

Note: The connector is included

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

Working section - parts ordering codes

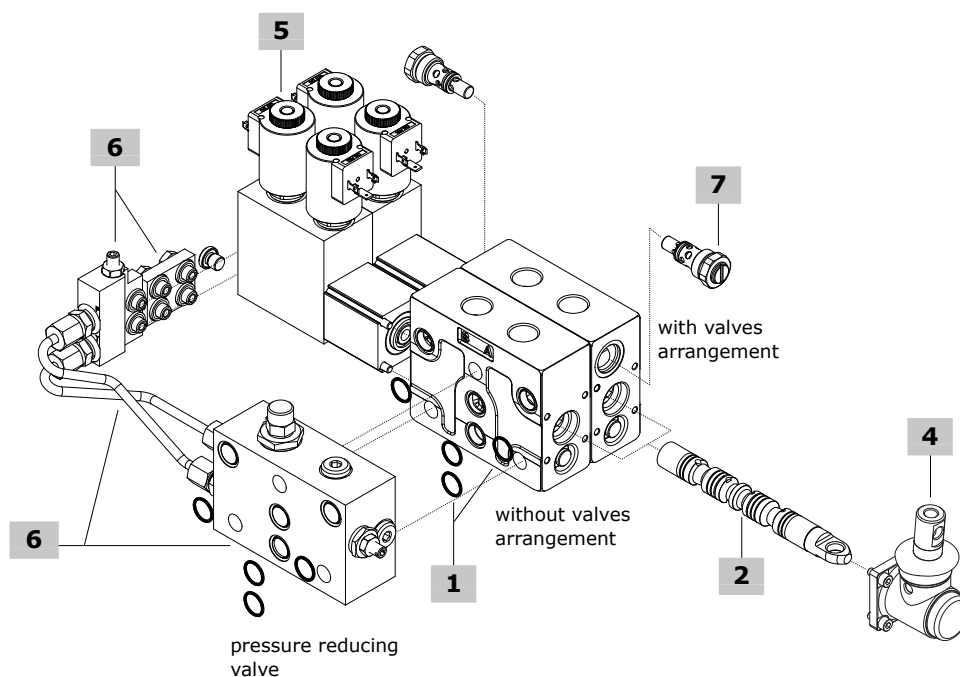
One side - ON/OFF electrohydraulic control valve configuration example

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

spring type and valve setting (bar)

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

1 6 2 4 5 7 5

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

See #1, page 177

2 Spool page 183

See #2, page 177

4 A side control page 184

See #4, page 177

5 B side electrohydraulic control page 198

TYPE	CODE	DESCRIPTION
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 243**6 Connector kit page 199**

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**

TYPE	CODE	DESCRIPTION
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 200**

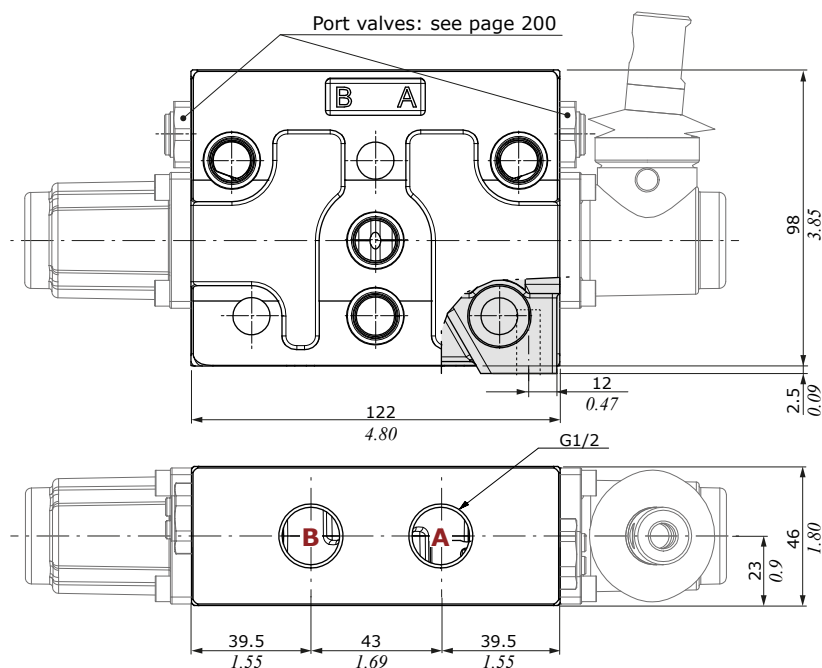
See #8, page 178

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

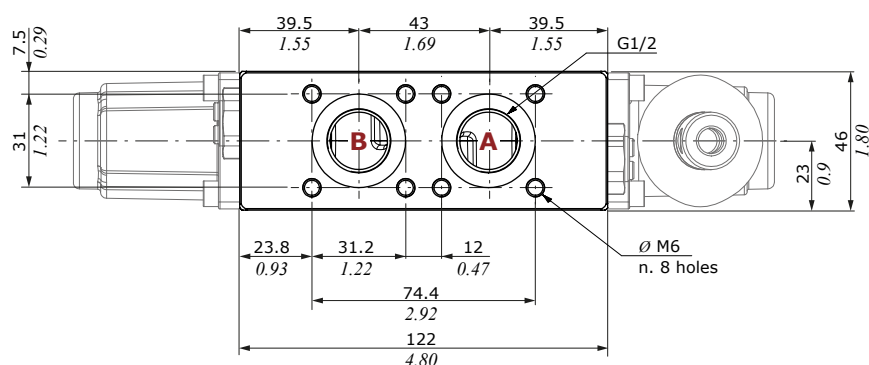
Working section

Dimensional data and hydraulic circuits

Standard working section

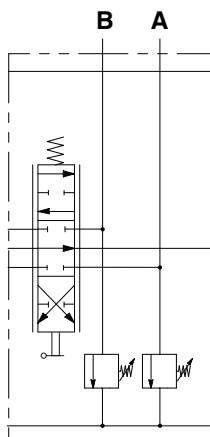


Working section for secondary aux valves block



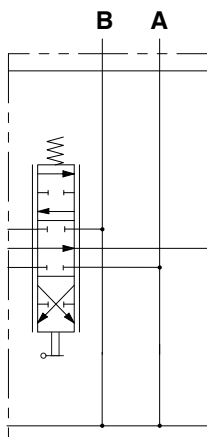
Q80.V40(N)120 configuration

Parallel circuit,
mechanical control with aux valves



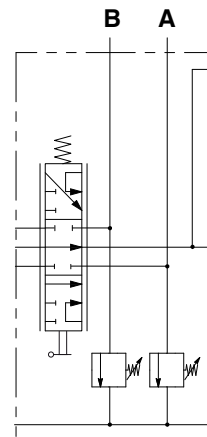
Q80 configuration

Parallel circuit,
mechanical control without aux valves



Q80.V40(N)120 configuration

Series circuit,
mechanical control with aux valves



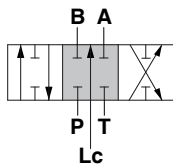
Working section

Spool

103 type

A and B closed
in neutral position

2 0 1

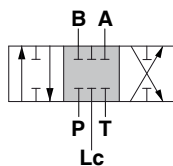
**Stroke**

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

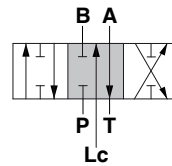
**Stroke**

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

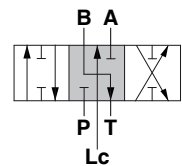
**Stroke**

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

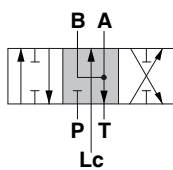
**Stroke**

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

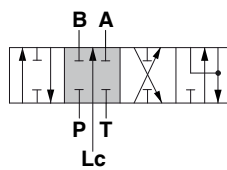
**Stroke**

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

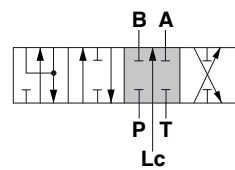
**Stroke**

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

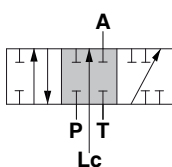
**Stroke**

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

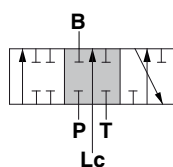
**Stroke**

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

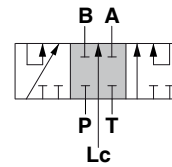
**Stroke**

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

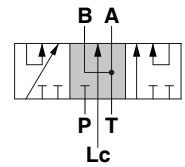
**Stroke**

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)

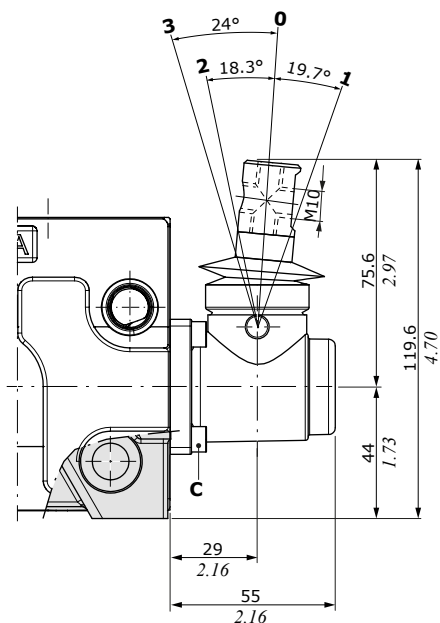
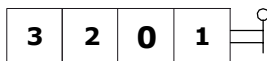
Working section

A side controls

With lever control

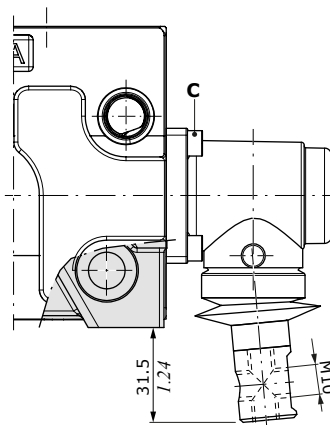
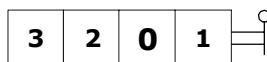
A1 type

M10 thread aluminium lever box



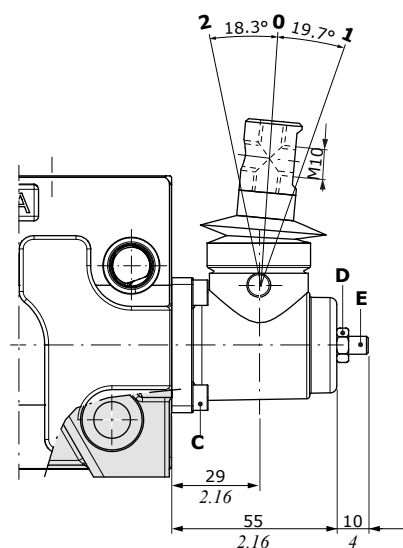
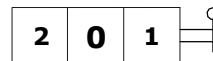
A2 type

As A1 type, rotated 180°



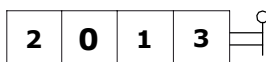
A1/06 type

M10 thread, with stroke limiter



A1/Z1 type

M10 thread, for 116 floating spool type



Wrenches and tightening torques

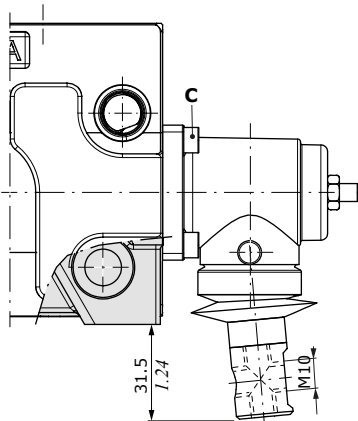
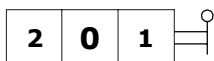
C = allen wrench 4 - 6.6 Nm (4.8 lbft)

D = wrench 10 - 9.8 Nm (7.2 lbft)

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

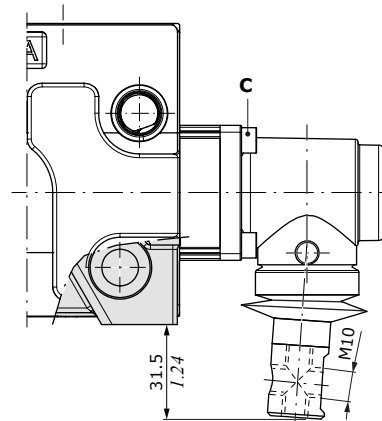
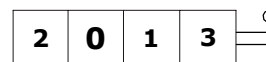
A2/06 type

As A1/06 type, rotated 180°



A2/Z1 type

As A1/Z1 type, rotated 180°

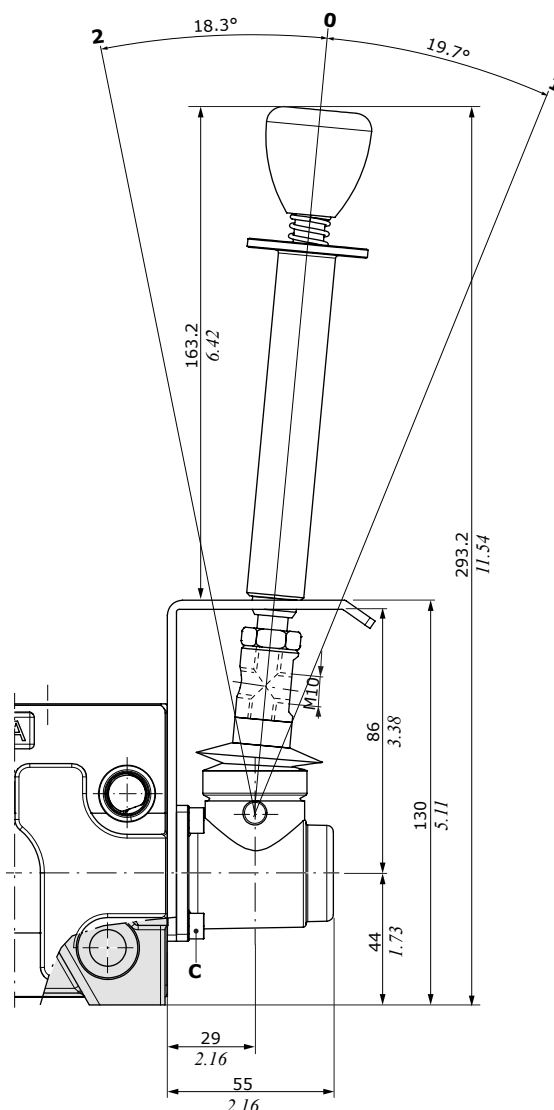
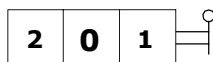


A side controls

With safety lever control

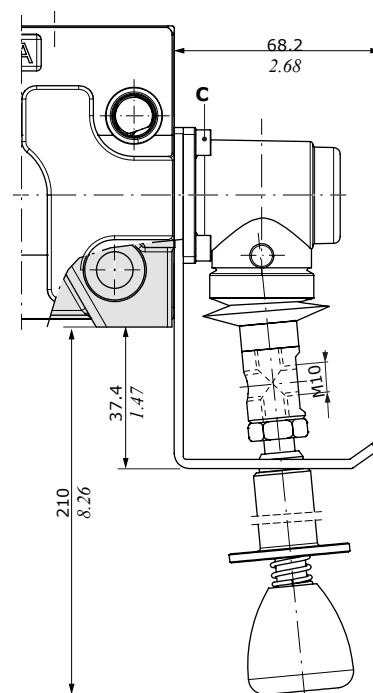
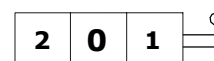
A1/S type

M10 thread, aluminium lever box



A2/S type

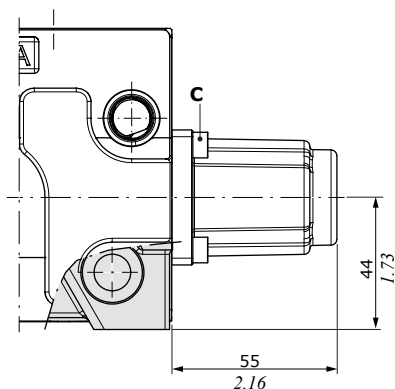
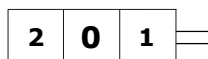
As A1/S type, rotated 180°



Without lever control

A3 type

With cap



Wrenches and tightening torques

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

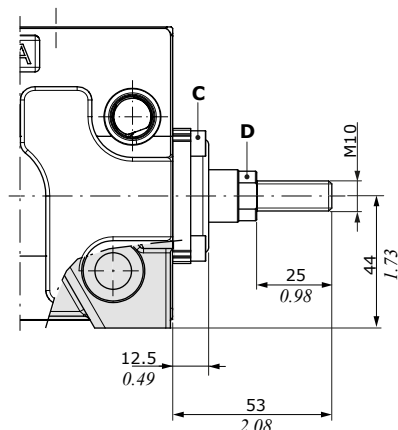
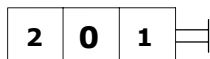
Working section

A side controls

Without lever control

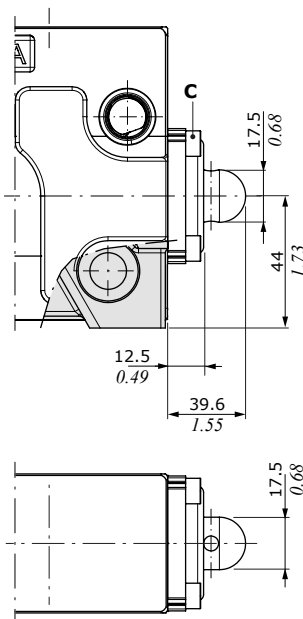
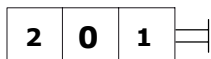
A4 type

M10 male thread external pin with flange



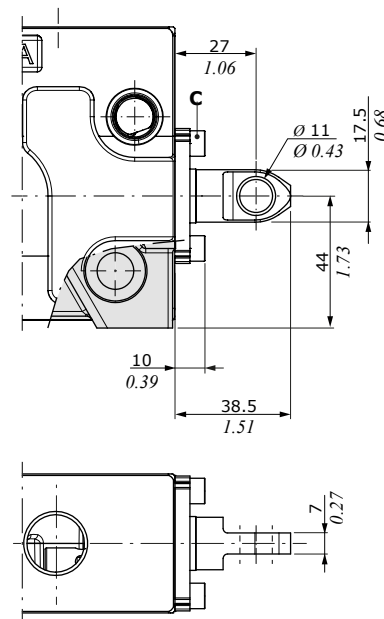
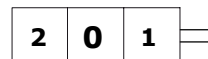
A5 type

Flange with spherical spool end



A6 type

With flange



Wrenches and tightening torques

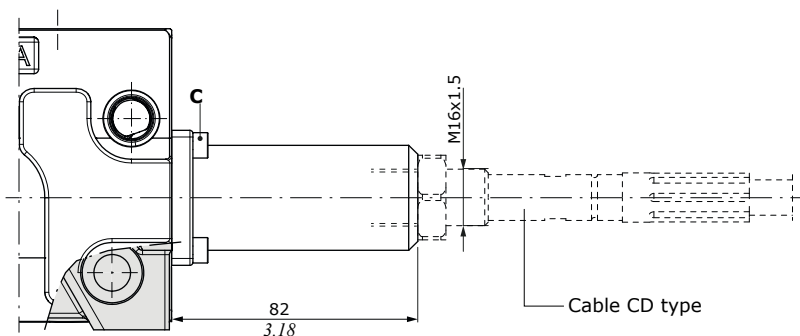
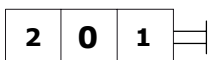
C = allen wrench 4 - 6.6 Nm (4.8 lbft)

D = wrench 13 - 9.8 Nm (7.2 lbft)

With flexible cable control arrangement

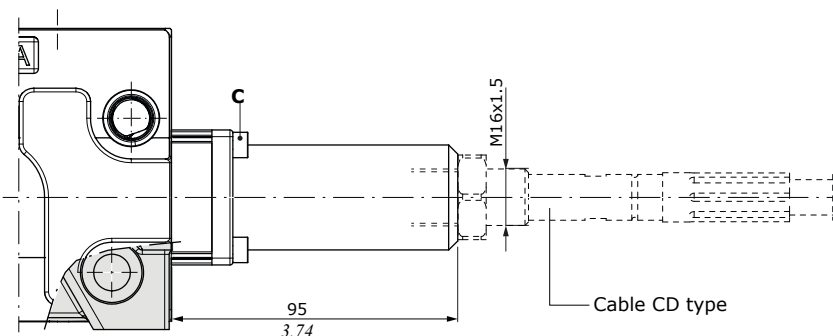
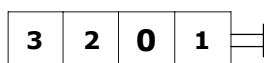
A8 type

Flexible cable control arrangement



A8/Z1 type

As A8 type, for 116 floating spool type

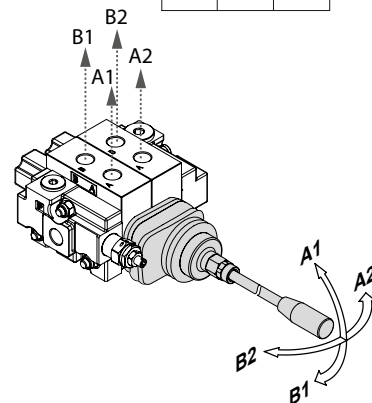
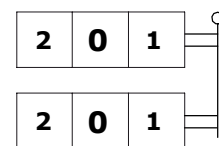
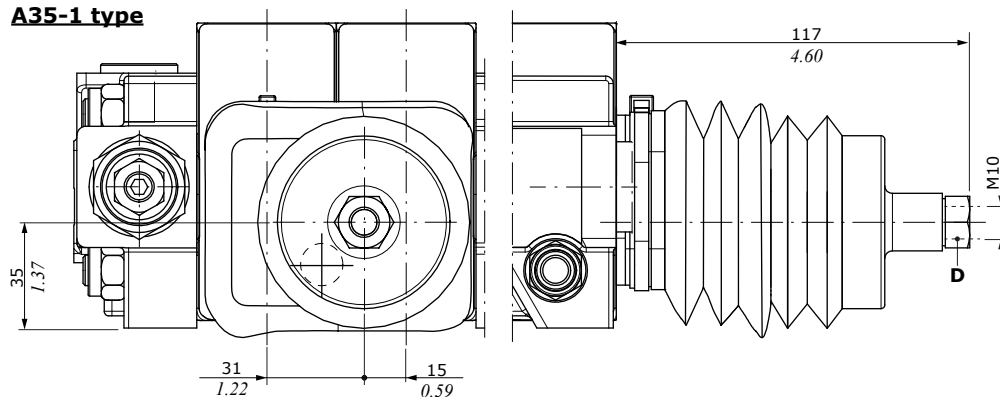


A side controls

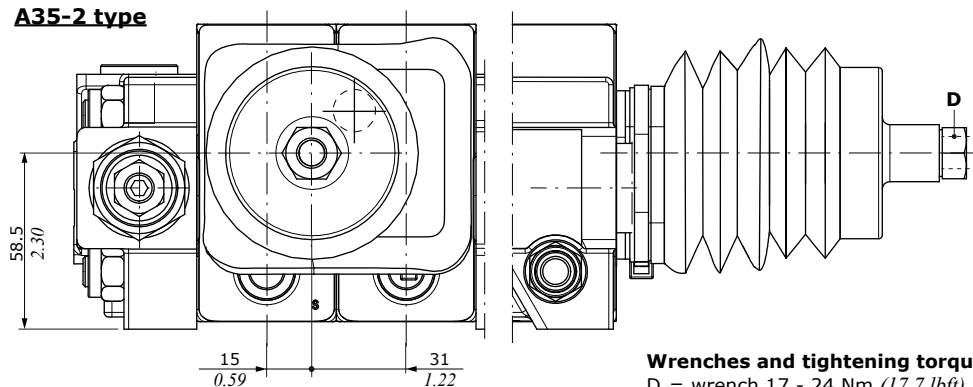
Joystick control

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

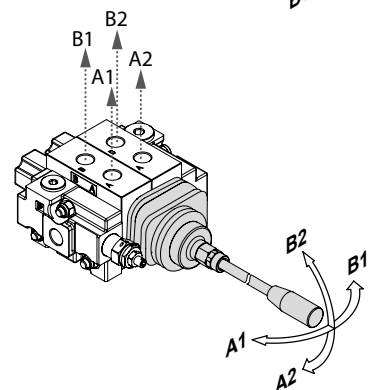
A35-1 type



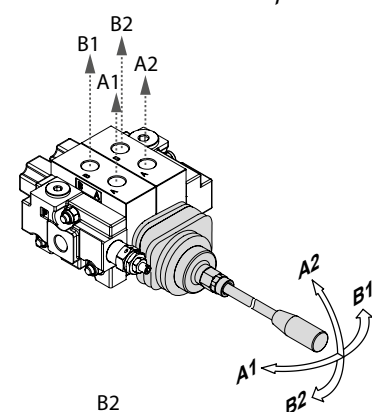
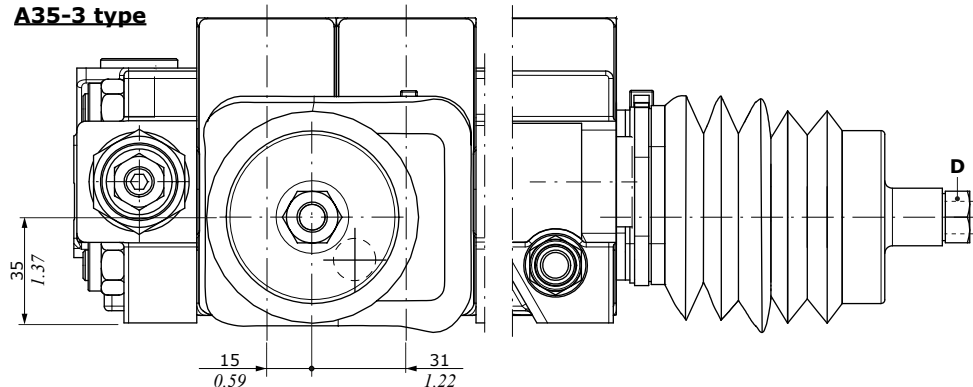
A35-2 type



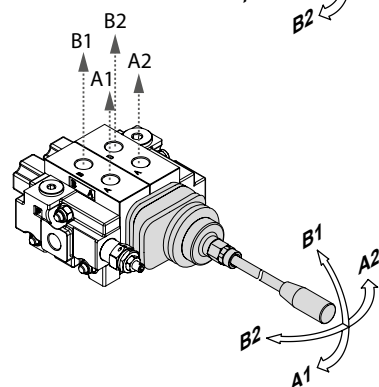
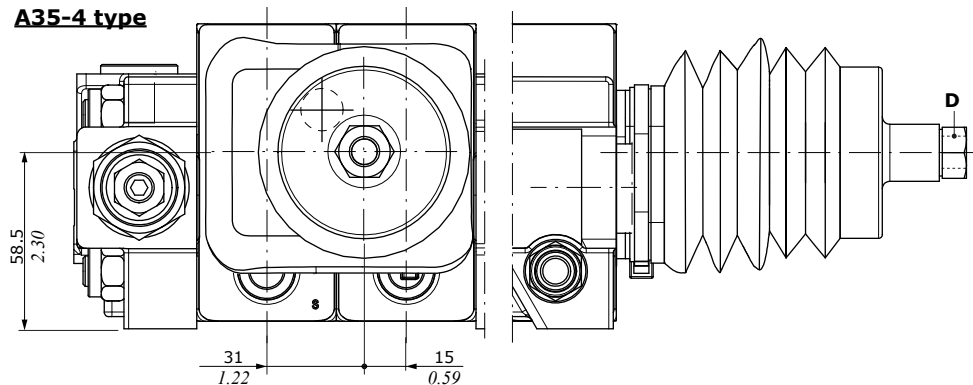
Wrenches and tightening torques
D = wrench 17 - 24 Nm (17.7 lbf)



A35-3 type



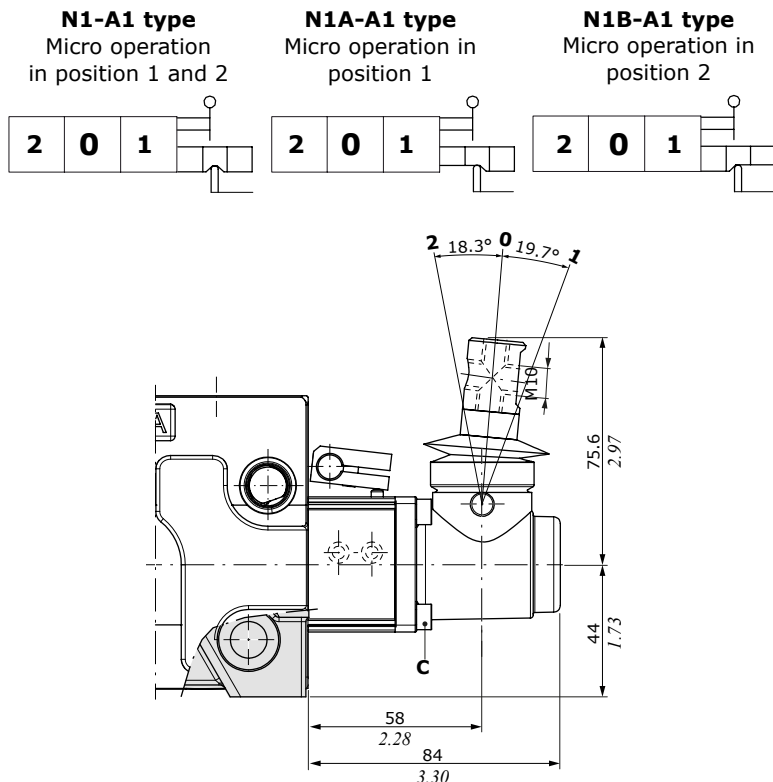
A35-4 type



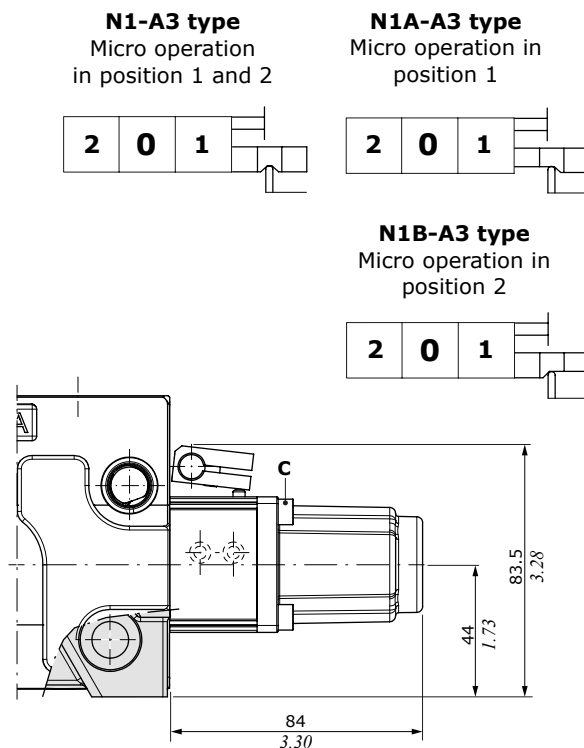
Working section

A side controls

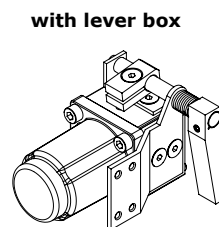
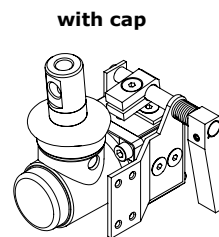
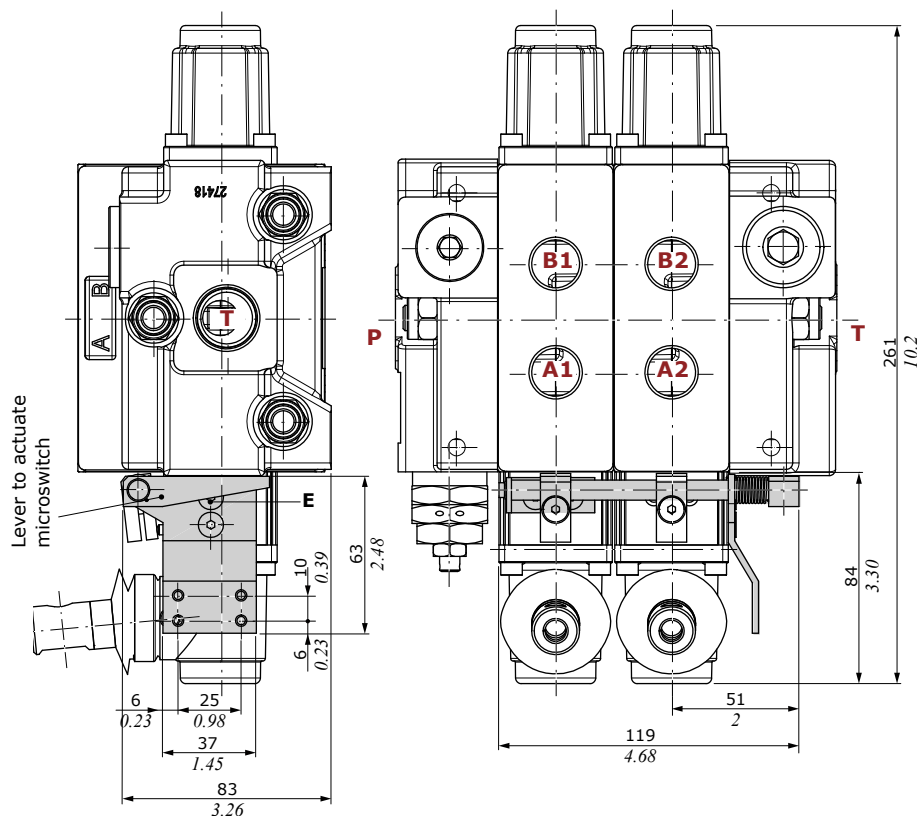
With spool position microswitch, with lever



With spool position microswitch, with cap



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



Wrenches and tightening torques

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

B side controls

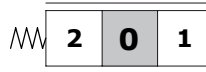
With spring return control

M1 type
3 position, spring return
in neutral position

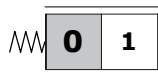
M1/01 type
As M1 type,
for joystick control

M1/05 type
As M1 type,
for series spool

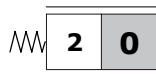
M1/07 type
As M1 type, for
joystick series spool



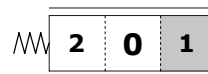
M2 type
2 position (0-1), spring return
in neutral position



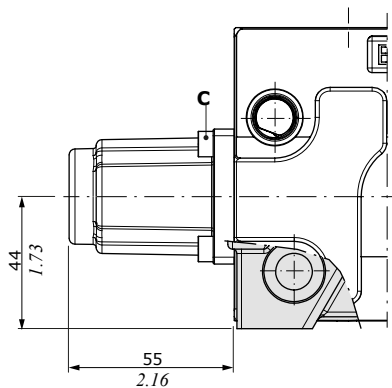
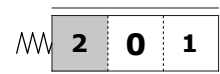
M3 type
2 position (0-2), spring return
in neutral position



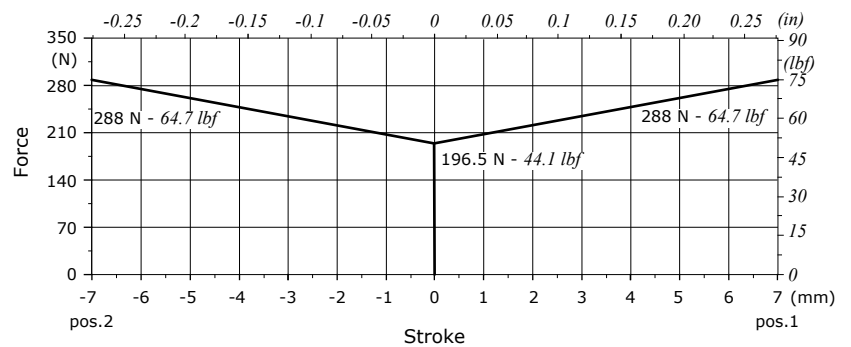
M4 types
2 position (1-2),
spring return in position 1



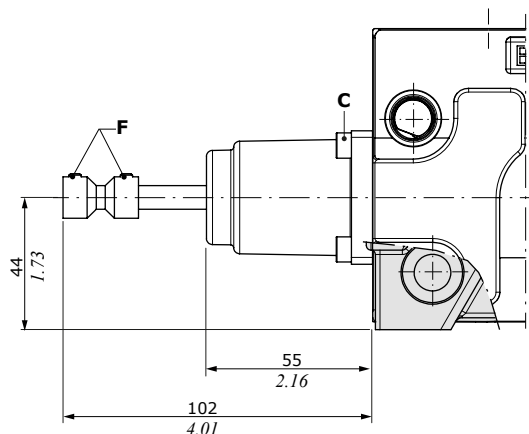
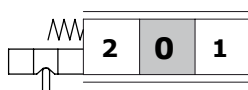
2 position (2-1),
spring return in position 2



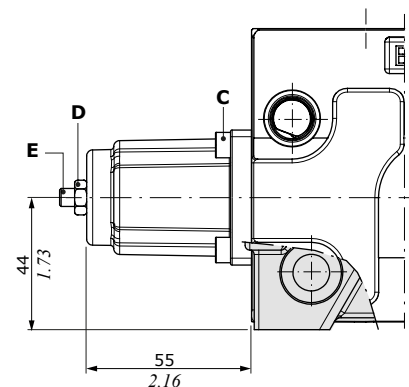
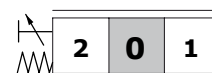
M1 control type - Force vs. Stroke diagram



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

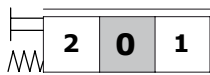
Working section

B side controls

With spring return control

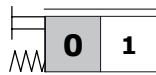
M1-U1 type

3 position, with M10 male thread external pin



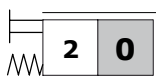
M2-U1 type

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



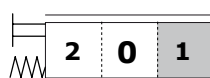
M3-U1 type

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



M4-U1 type

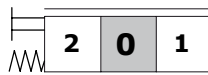
2 position (1-2), with M10 male thread external pin



With flexible cable control arrangement

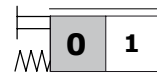
M1-U2 type

3 position, spring return in neutral position



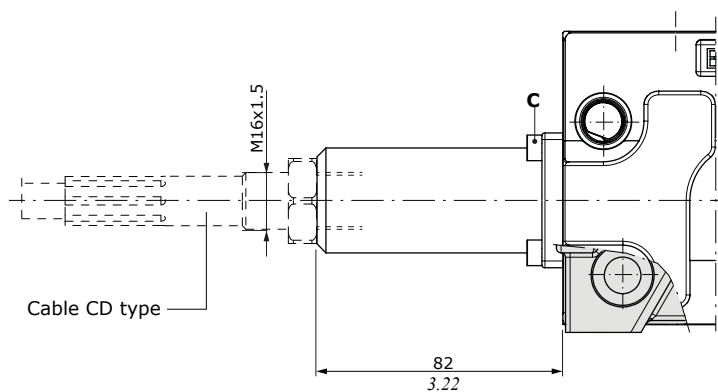
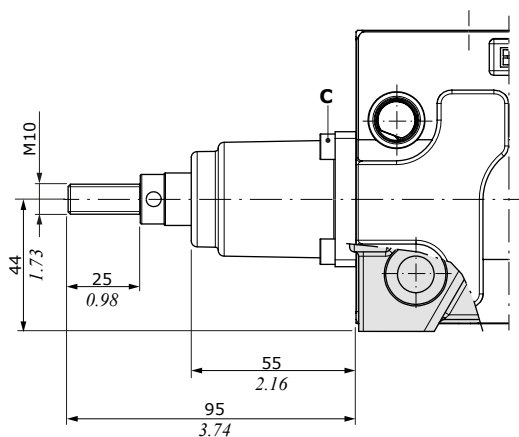
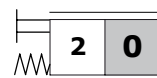
M2-U2 type

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



M3-U2 type

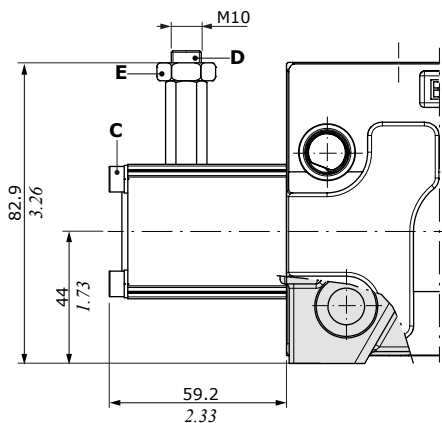
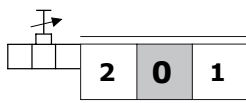
2 position (0-2), spring return in neutral position



With friction control

R0 type

Adjustable friction control



Wrenches and tightening torques

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

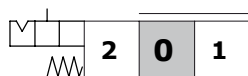
B side controls

With detent control

R1 type
3 position,
detent in position 1



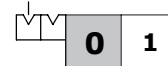
R2 type
3 position,
detent in position 2



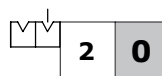
R3 type
3 position,
detent in all position



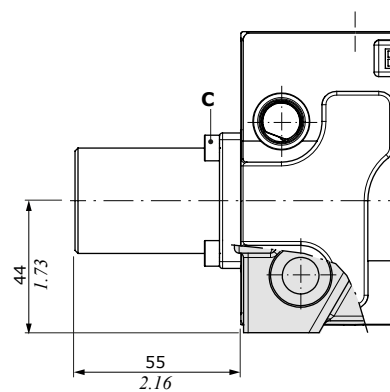
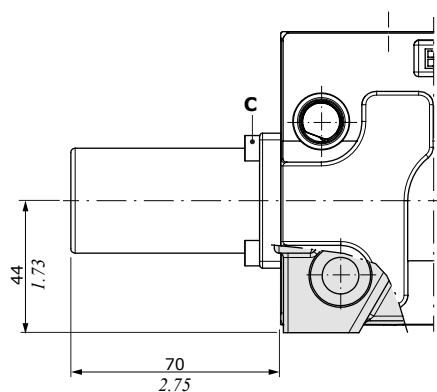
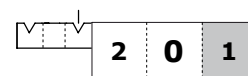
R4 type
2 position,
detent in position 0-1



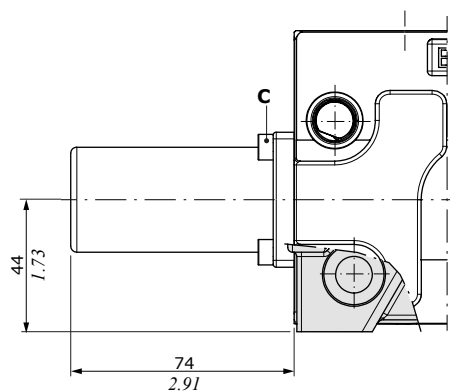
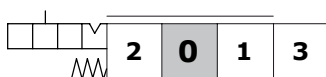
R5 type
2 position,
detent in position 0-2



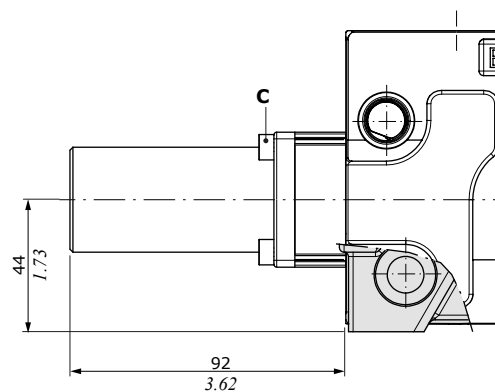
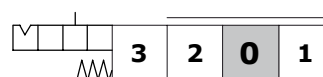
R6 type
2 position,
detent in position 1-2



R8 type
4 position, detent in 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·ft)

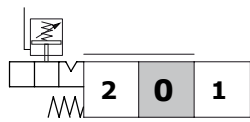
Working section

B side controls

With detent control and kick out function

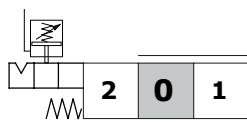
R1K type

3 position, detent in position 1



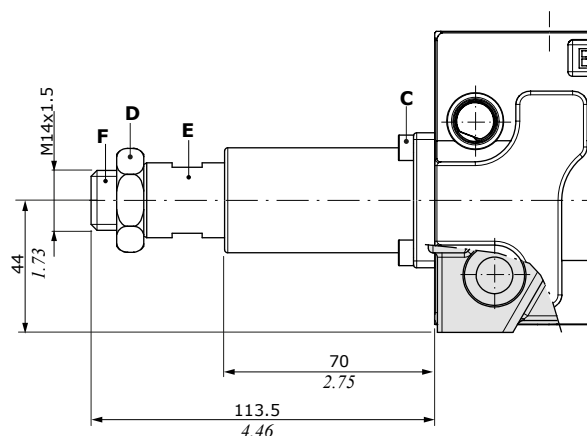
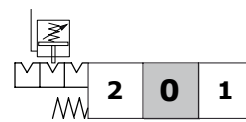
R2K type

3 position, detent in position 2



R3K type

3 position, detent in all position



Wrenches and tightening torques

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

D = wrench 30 - 42 Nm (30.9 lbft)

E = wrench 22

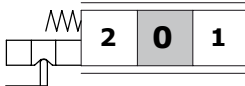
F = allen wrench 10 - 42 Nm (30.9 lbft)

B side controls

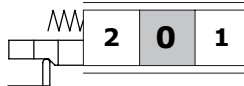
With spool position microswitch

M1-N1 type

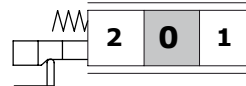
3 position, micro operation in position 1 and 2, spring return in neutral position

**M1-N1A type**

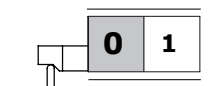
3 position, micro operation in position 1

**M1-N1B type**

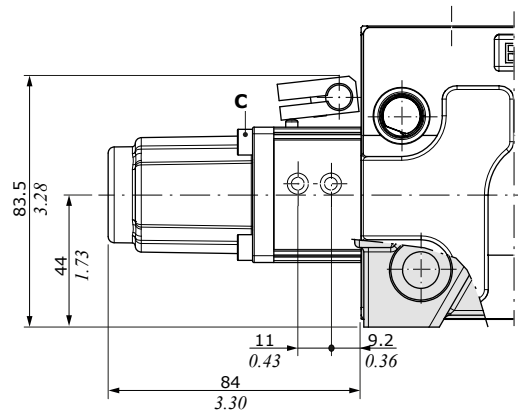
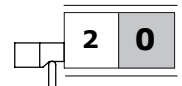
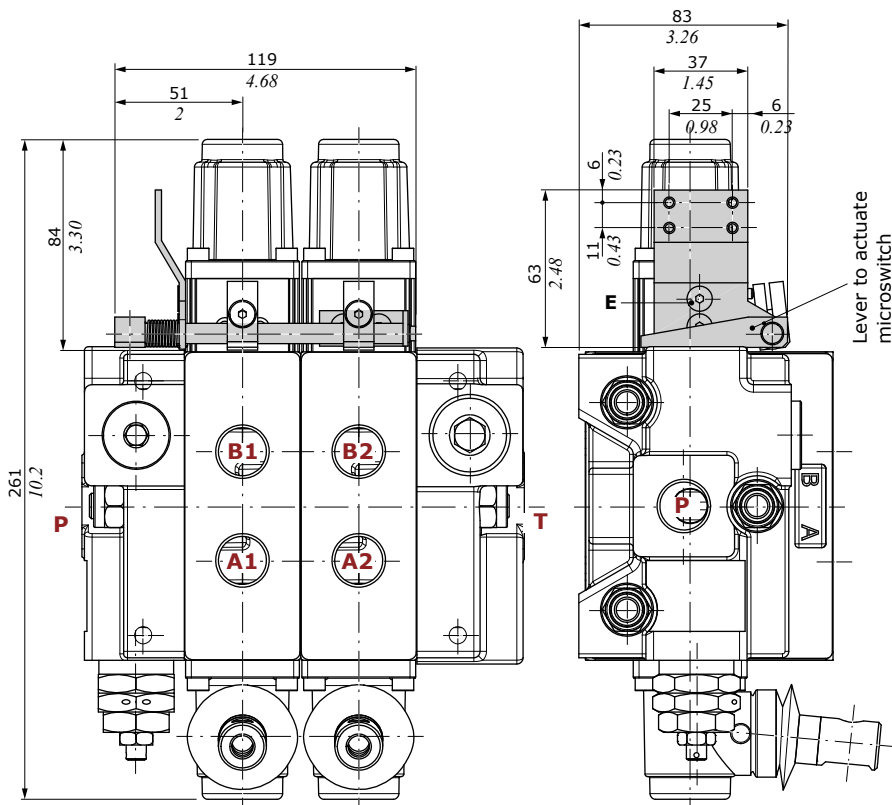
3 position, micro operation in position 2

**M2-N1 type**

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

**M3-N1 type**

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

**Microswitch assembly kit for 2 working section (M1-N1 type)****Wrenches and tightening torques**

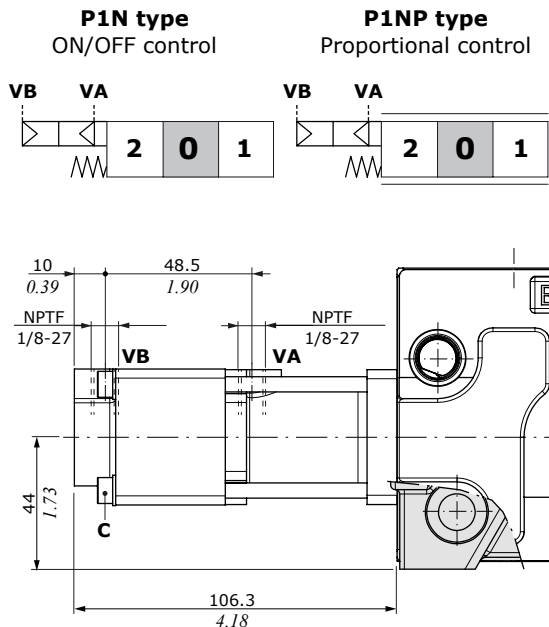
C = allen wrench 4 - 6.6 Nm (4.8 lbf_t)

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

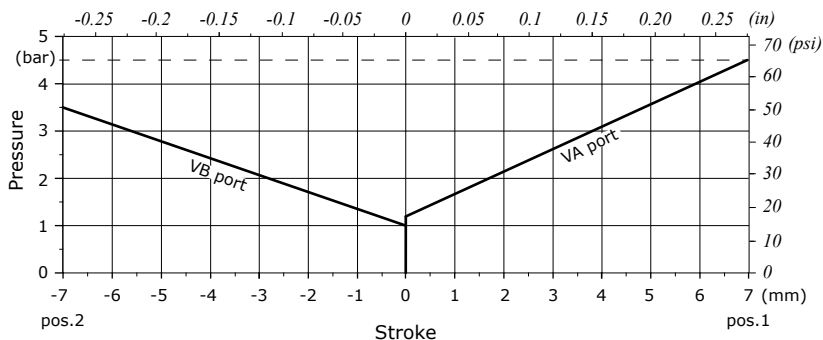
Working section

B side controls

With pneumatic control



Proportional pilot pressure curves



Operating features

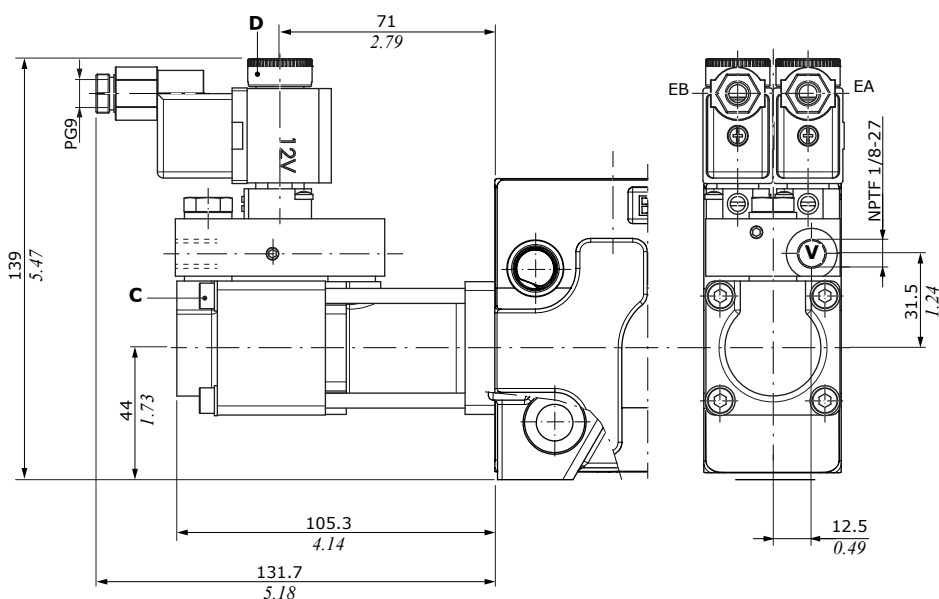
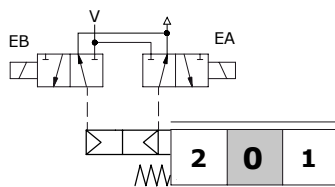
Pilot pressure.....: min. 5 bar (72.5 psi) - max. 30 bar (435 psi)
Pilot volume.....: 9 cm³/min (0.54 in³/min)

Wrenches and tightening torques

C = wrench 4 - 6.6 Nm (4.8 lbft)

With ON/OFF electropneumatic control

D3W type ON/OFF control



Operating features

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

COILS

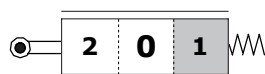
Nominal voltage tolerance.....: -5% +10%
Power rating.....: 5 W
Nominal current.....: 12 VDC - 24VDC
Coil insulation.....: Class F
Weather protection.....: IP65
Duty cycle.....: 100%

Wrenches and tightening torques

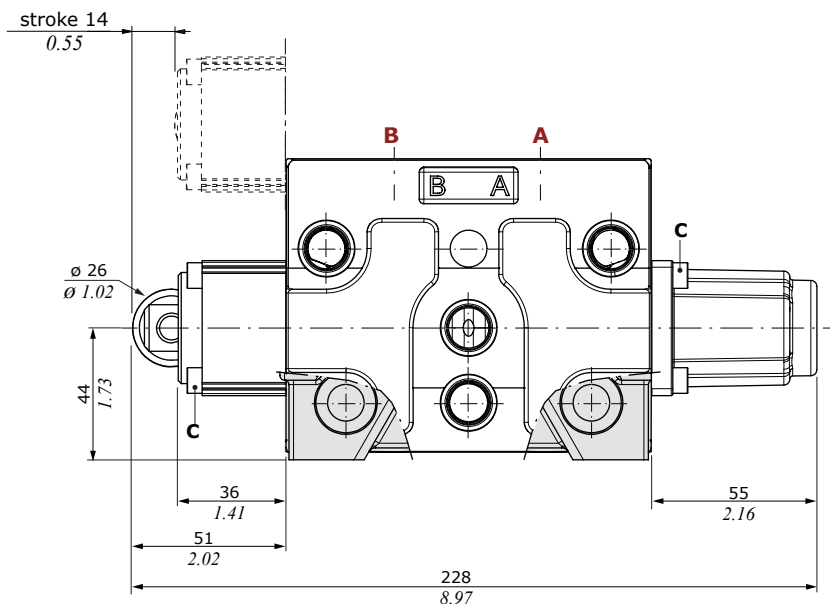
C = allen wrench 4 - 6.6 Nm (4.8 lbft)
D = manual tightening - 6.6 Nm (4.8 lbft)

A+B side controls**With cam control****C2 type**

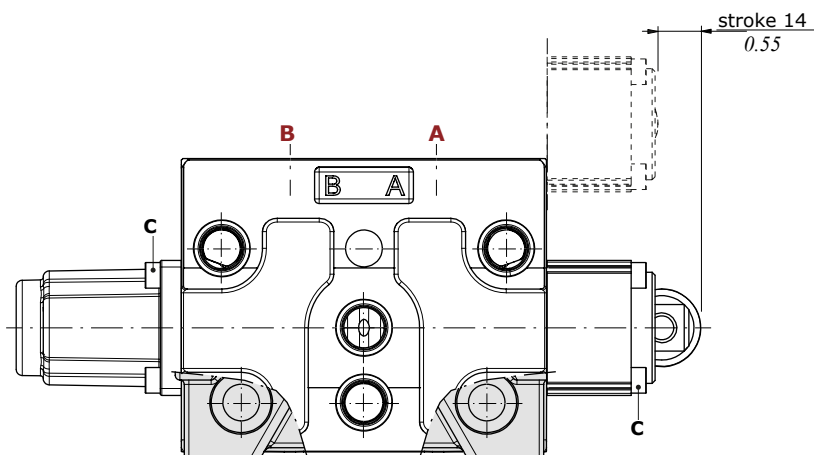
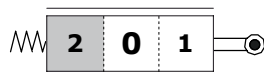
From position 1 to position 2,
spring return in position 1

**Wrenches and tightening torques**

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

**C3 type**

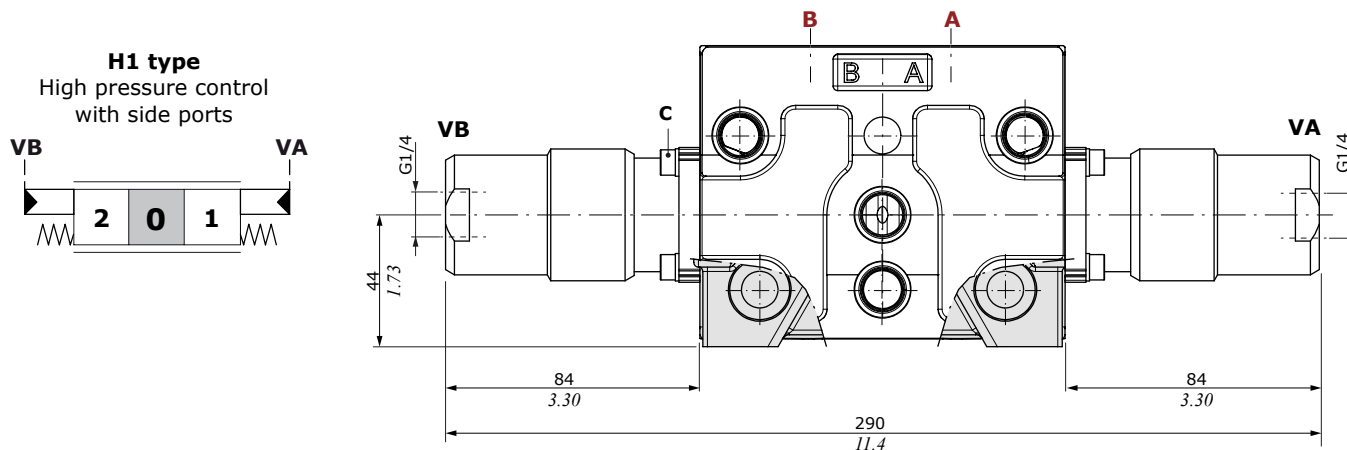
From position 2 to position 1,
spring return in position 2.
Dimensions are the same of C2 type



Working section

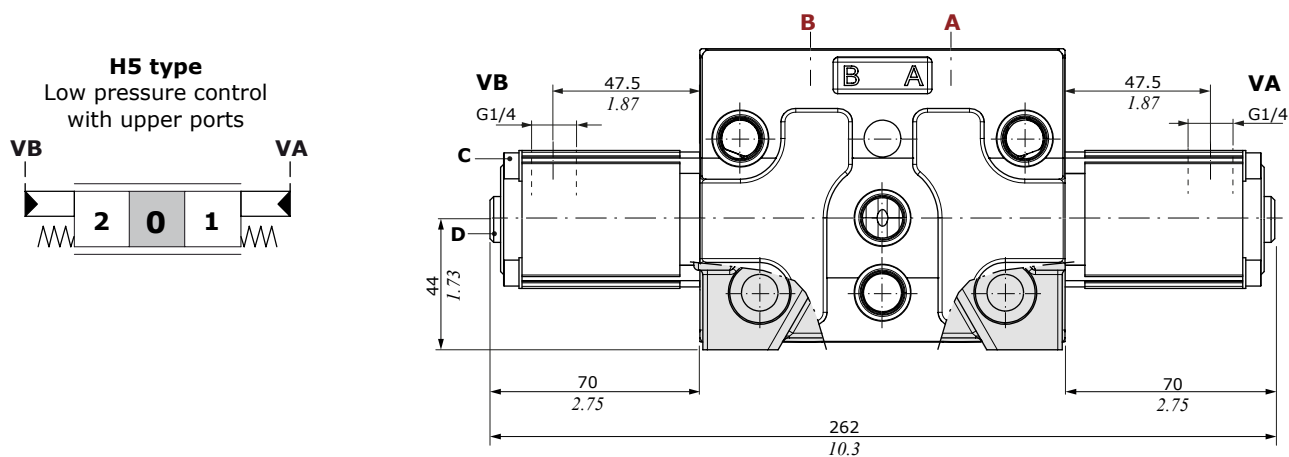
A+B side controls

With proportional hydraulic controls



Operating features

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



Operating features

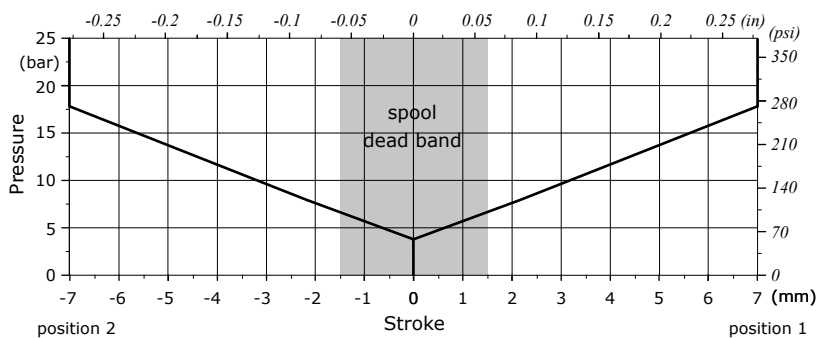
Pilot pressure..... : max. 100 bar (1450 psi)

Wrenches and tightening torques

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

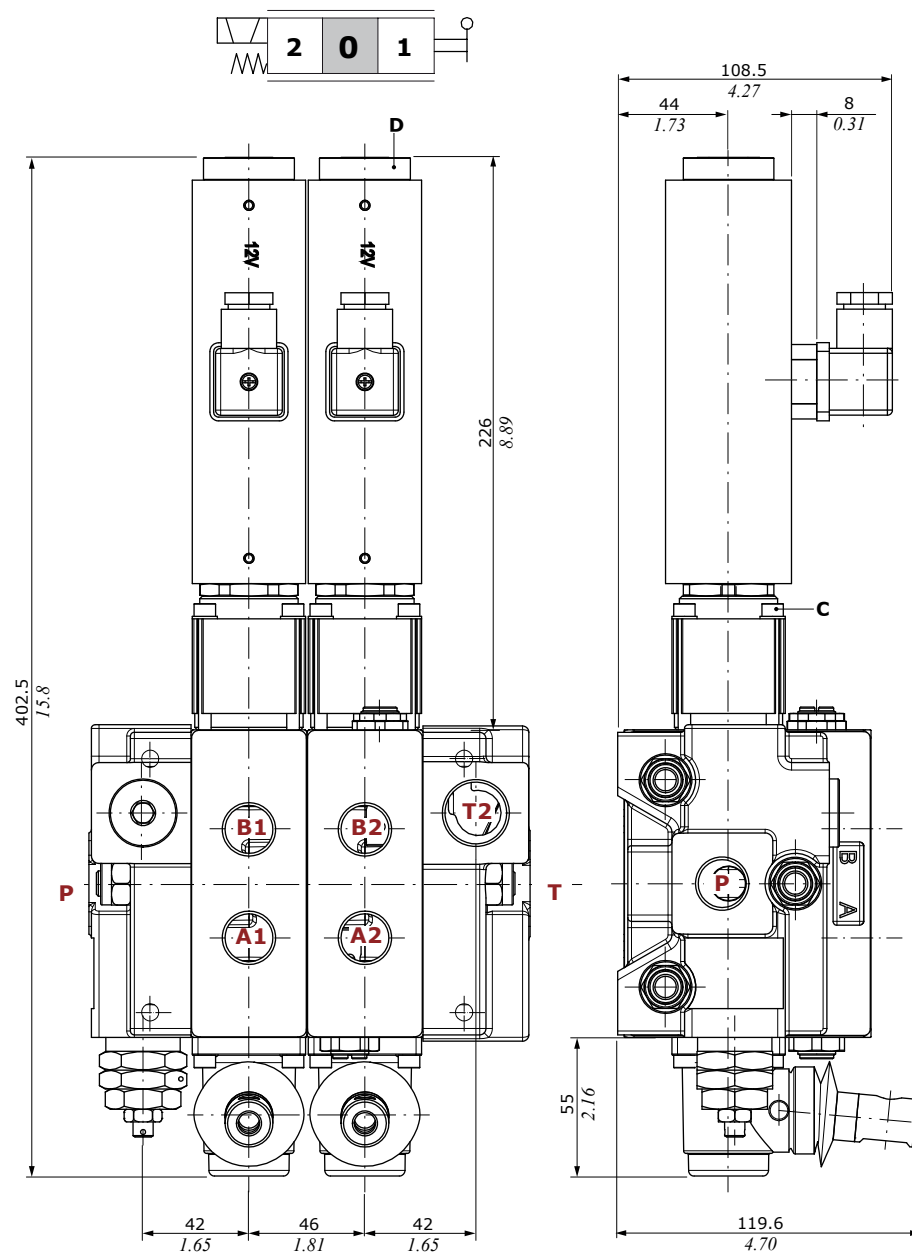
D = allen wrench 4 - 9.8 Nm (7.2 lbft)

Stroke vs. Pressure diagram for H5 type control



Direct solenoid control

D41 type: ON/OFF one side

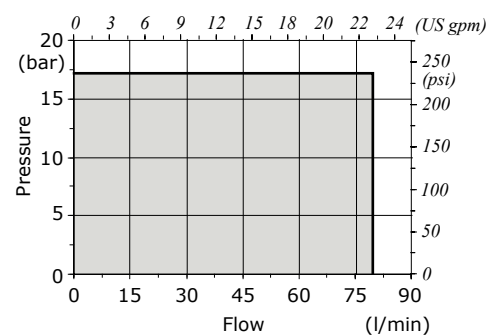


D41 coil

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

Connector type: ISO4400 3P+T-PG11

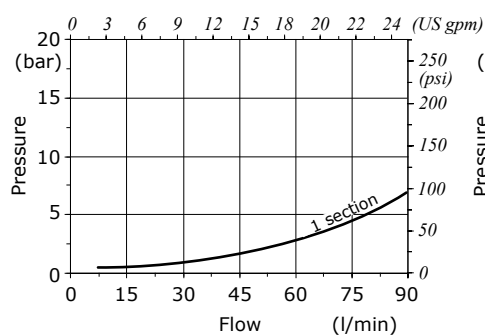
Dynamic conditions



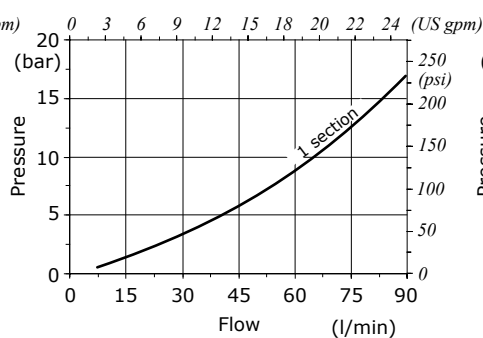
Wrenches and tightening torques

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

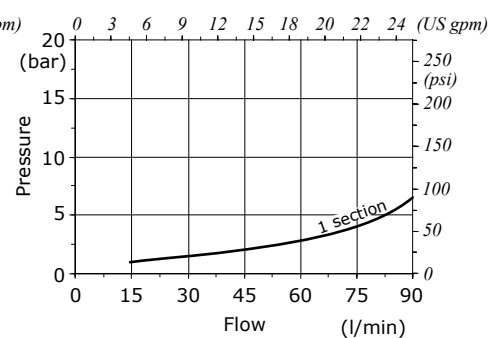
P⇒T pressure drops



P⇒A(B) pressure drops



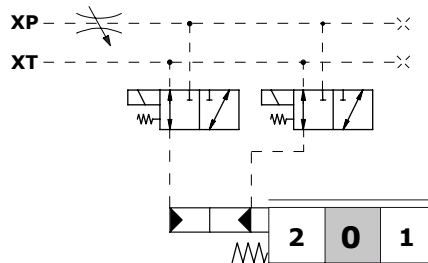
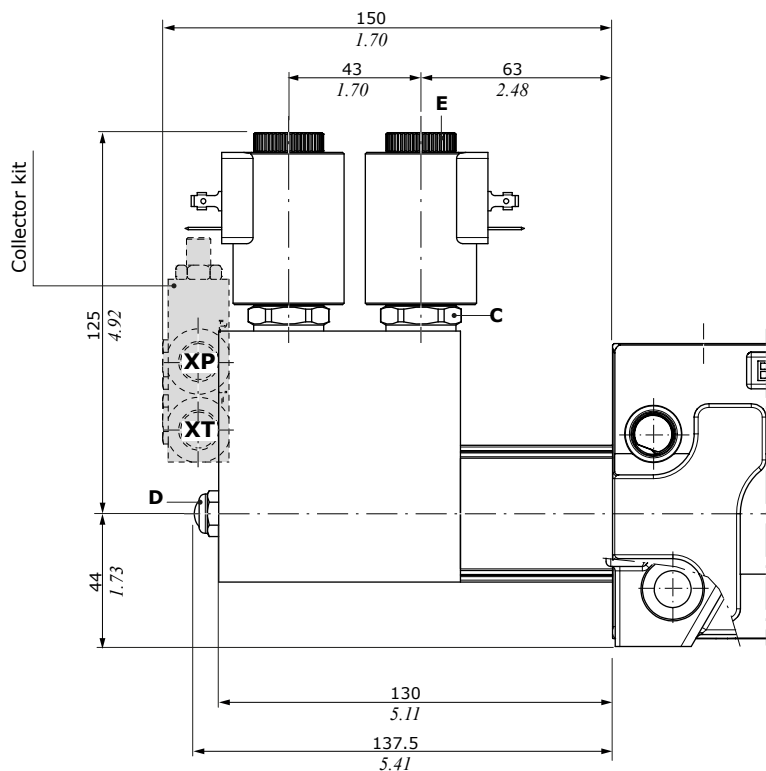
A(B)⇒T pressure drops



Working section

Electrohydraulic control

D2W type: ON/OFF one side

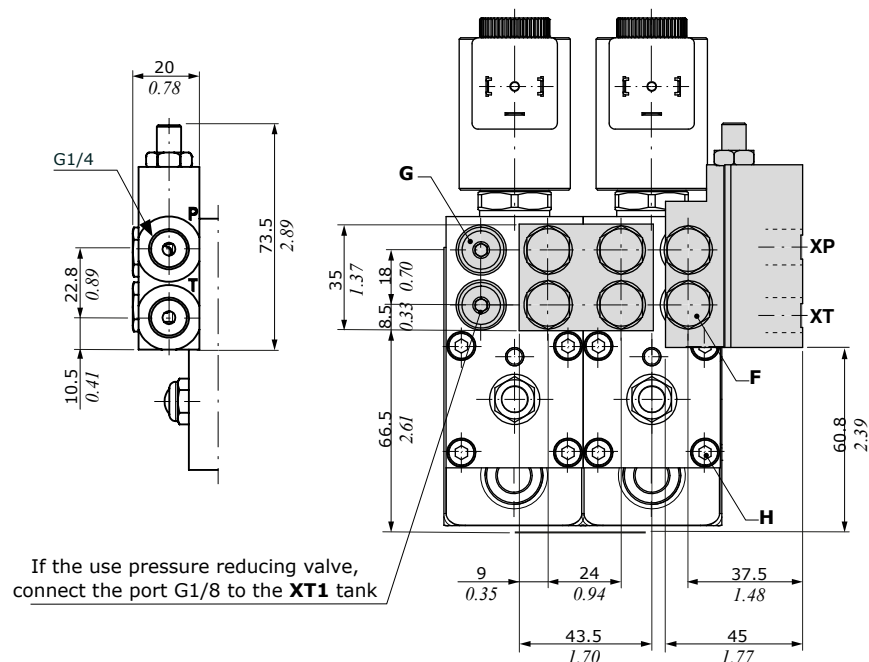


Features

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

For BT type coils and mating connectors, see page 243

KE2S connector kit



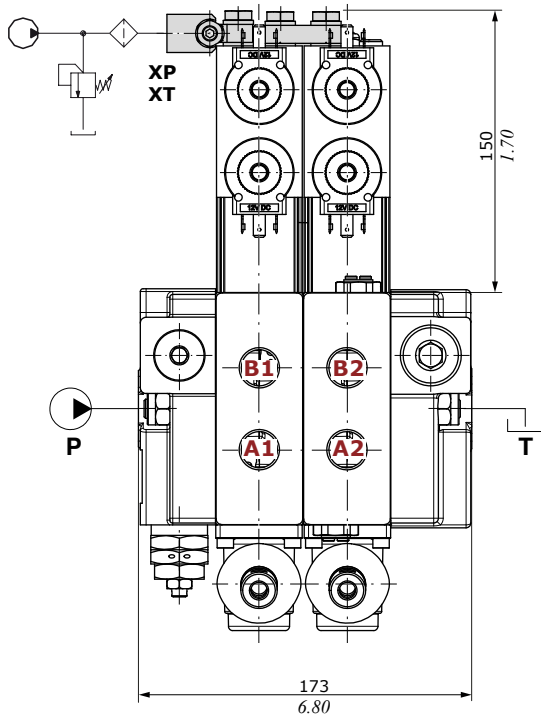
If the use pressure reducing valve, connect the port G1/8 to the XT1 tank

Wrenches and tightening torques

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

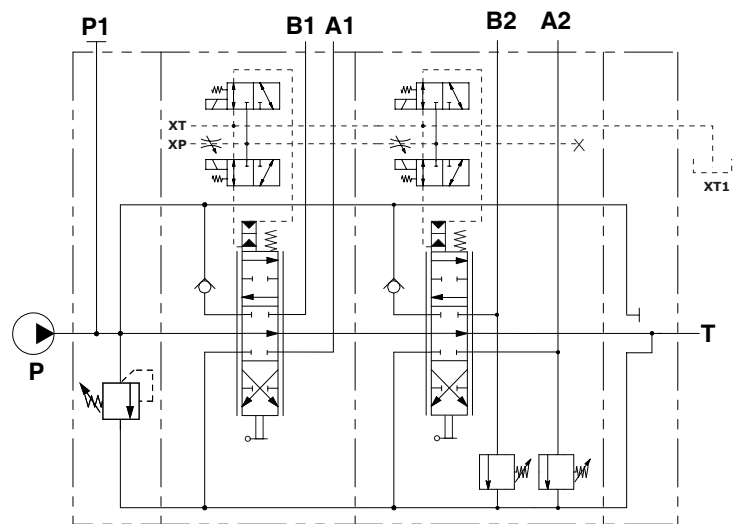
Electrohydraulic control

Connector kit for external pilot and drain



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

For other connector kit codes, see page 181

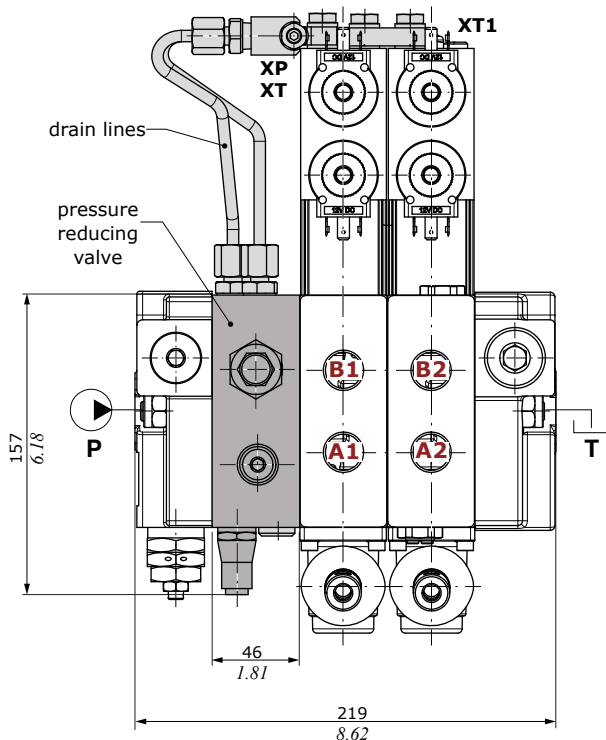


Description example:

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

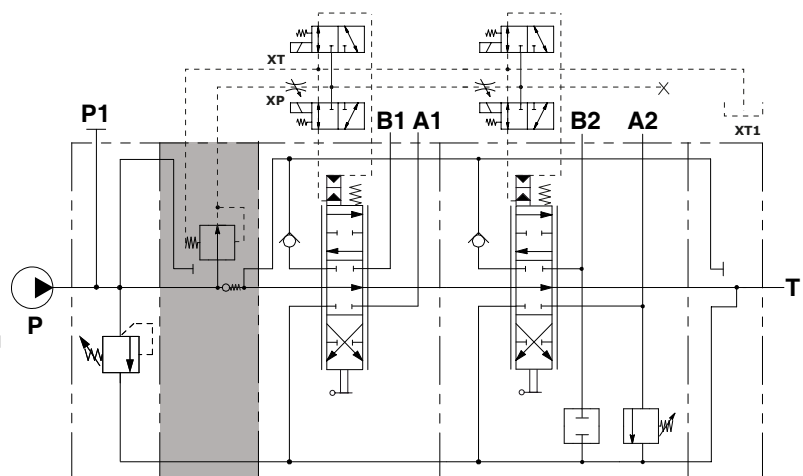
Connector kit for internal pilot and drain

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



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

For other connector kit codes, see page 181



Description example:

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

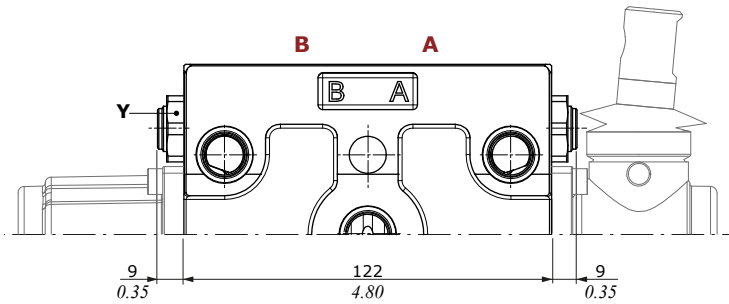
 Pressure reducing valve

Auxiliary valve configuration

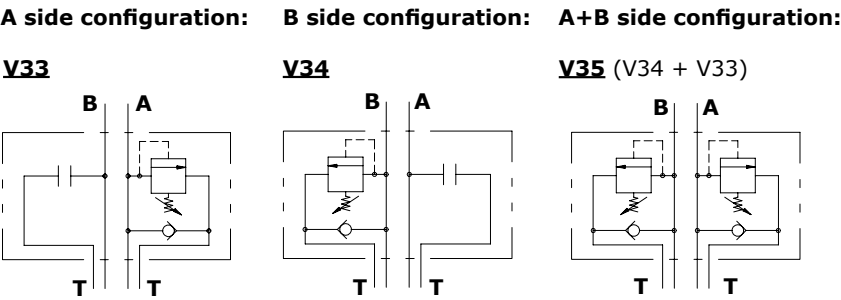
Dimensional data and hydraulic circuits

Description example

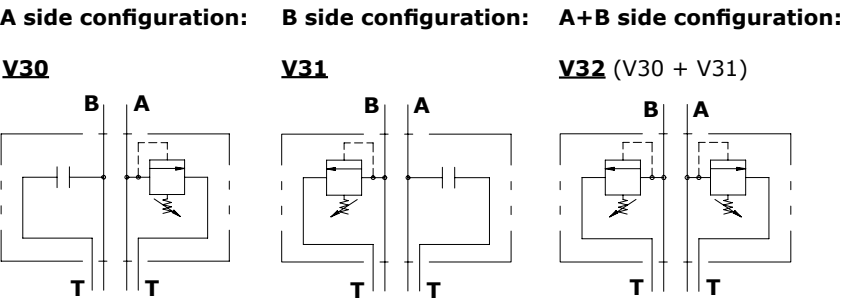
Q80 / 1 / ... / 103 - A1 - M1 - ^{aux valve} **V32(N)** ^{spring type and valve setting (bar)} **120** / ...



Antishock/anticavitation valve example



Antishock valve example



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

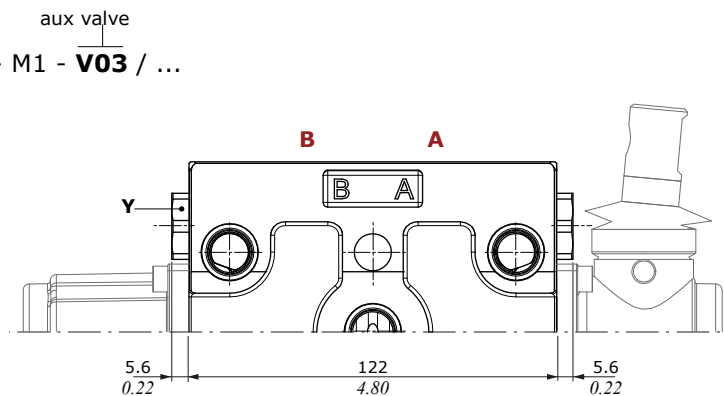
Wrenches and tightening torques
Y = wrench 22 - 42 Nm (30.9 lbf ft)

Auxiliary valve configuration

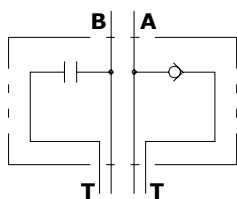
Dimensional data and hydraulic circuits

Anticavitation valve example

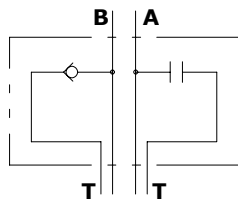
Q80 / 1 / ... / 103 - A1 - M1 - **V03** / ...



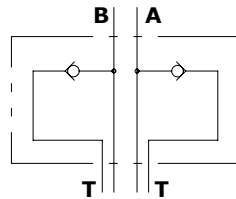
A side configuration:

V04

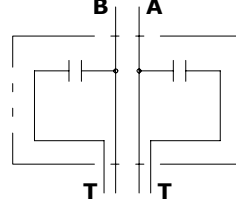
B side configuration:

V05

A+B side configuration:

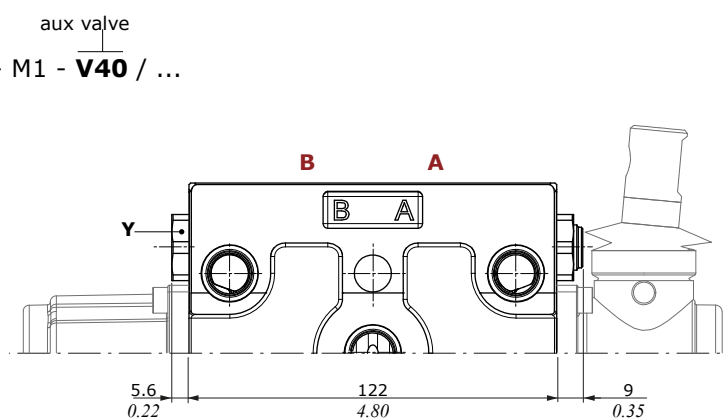
V03 (V04 + V05)

Plug valve:

VC

Antishock and anticavitation combining valves example

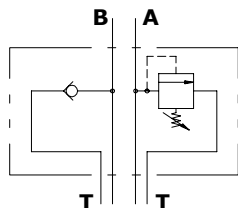
Q80 / 1 / ... / 103 - A1 - M1 - **V40** / ...



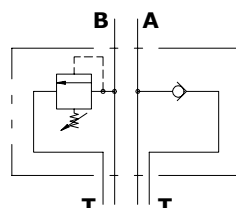
Wrenches and tightening torques

Y = wrench 22 - 42 Nm (30.9 lbft)

A side configuration:

V40 (V30 + V05)

B side configuration:

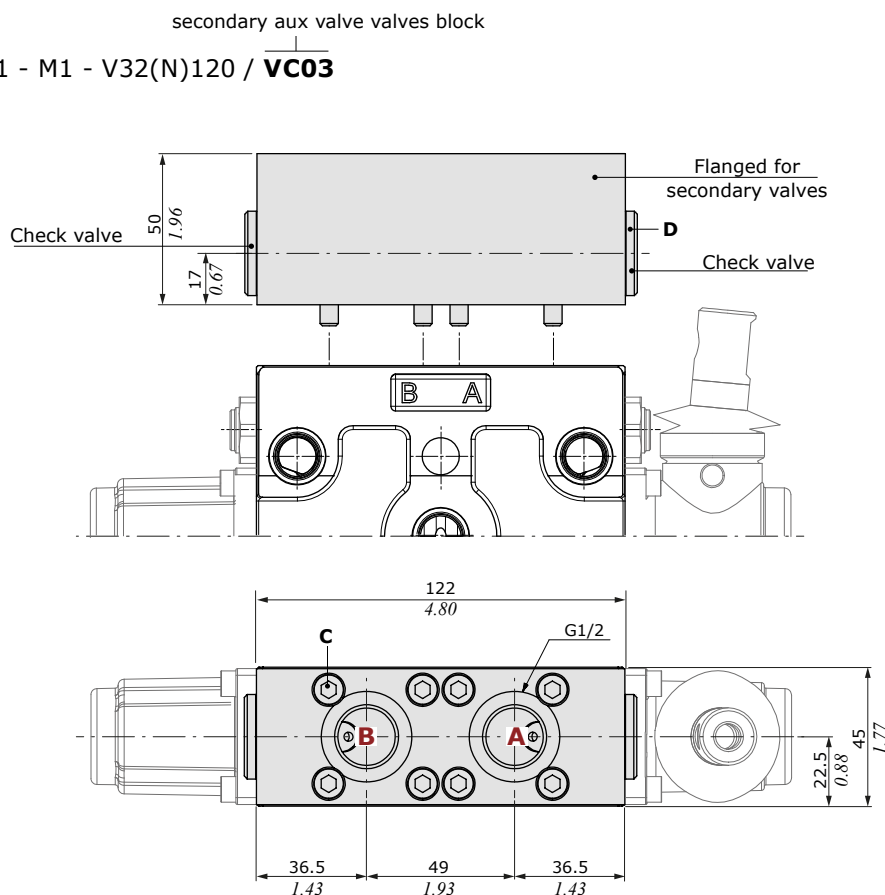
V41 (V31 + V04)

Secondary valve configuration

Dimensional data and hydraulic circuits

Description example

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



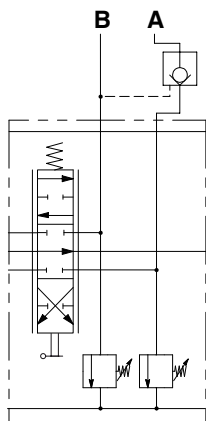
Wrenches and tightening torques

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

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

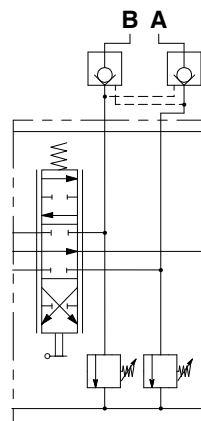
Q80.V40(N)120/VC01 configuration

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



Q80.V40(N)120/VC03 configuration

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

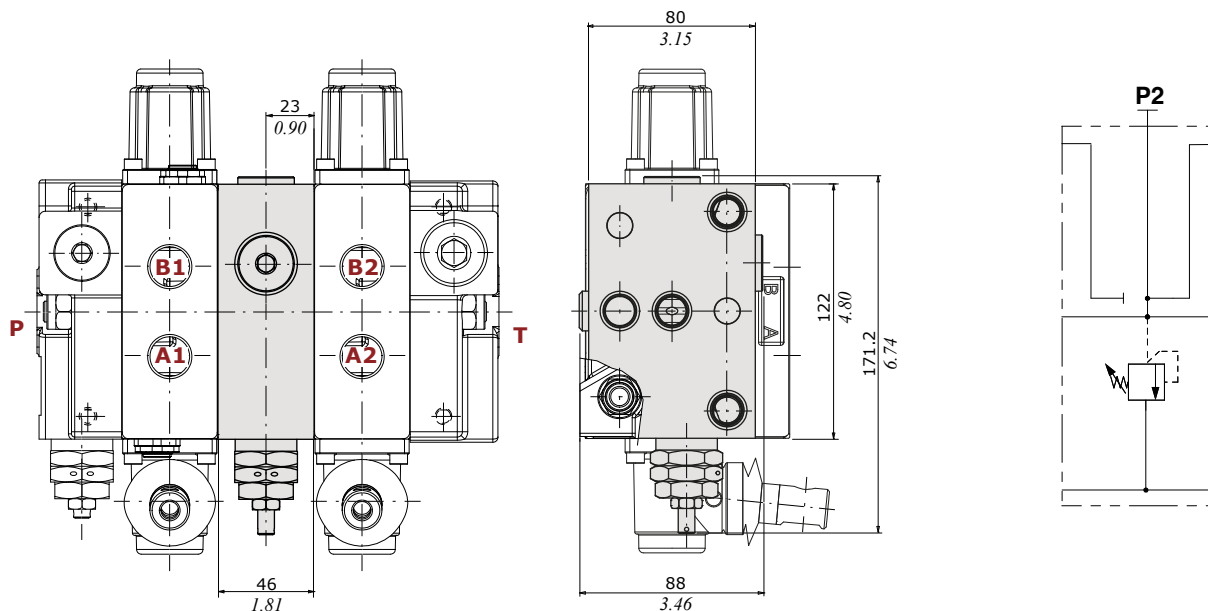


Intermediate section

Dimensional data and hydraulic circuit

E50 type

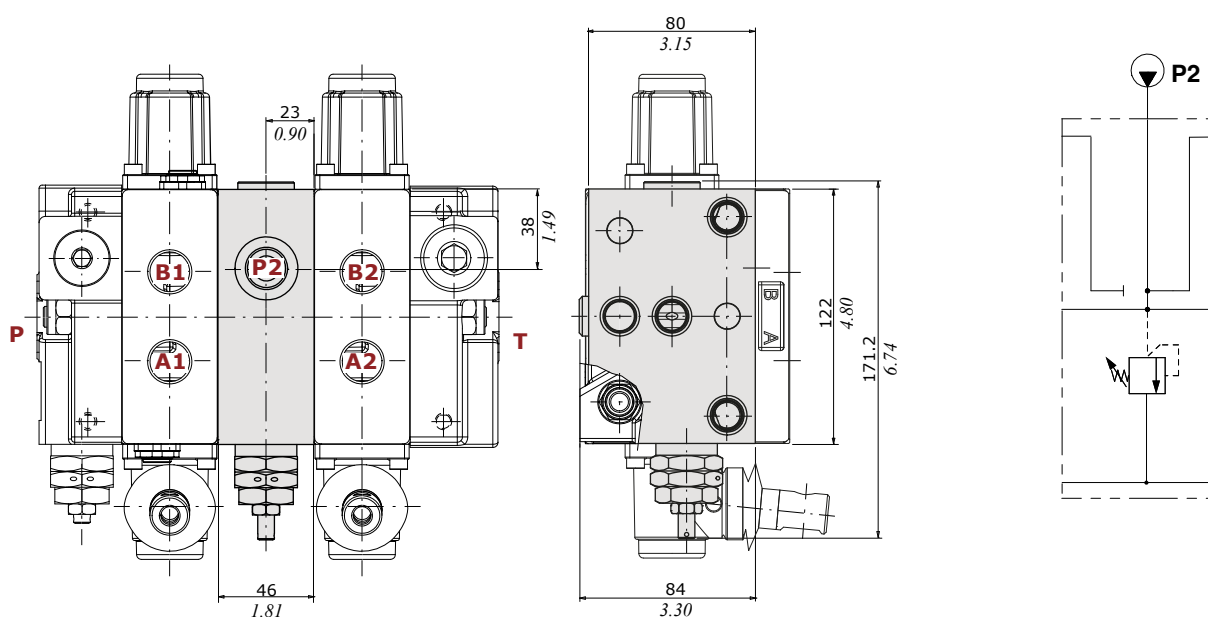
Intermediate inlet section with pressure relief valve

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

intermediate section spring type and valve setting (bar)

E53 type

Intermediate inlet section with pressure relief valve and P2 port open

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

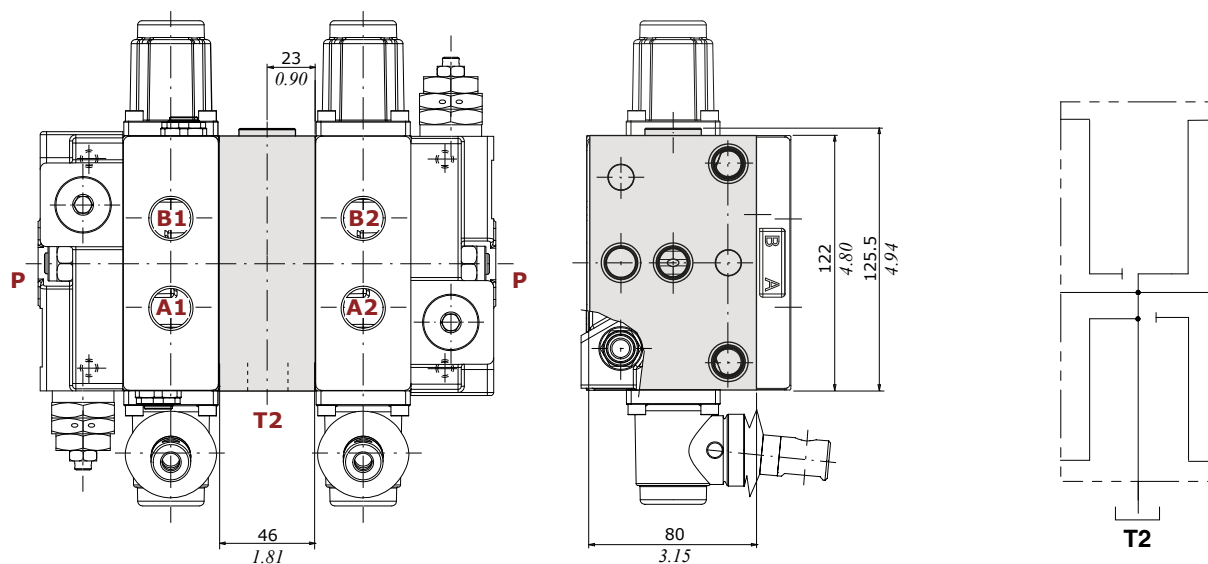
intermediate section spring type and valve setting (bar)

Intermediate section

Dimensional data and hydraulic circuit

E51 type

Intermediate outlet section, T2 port open

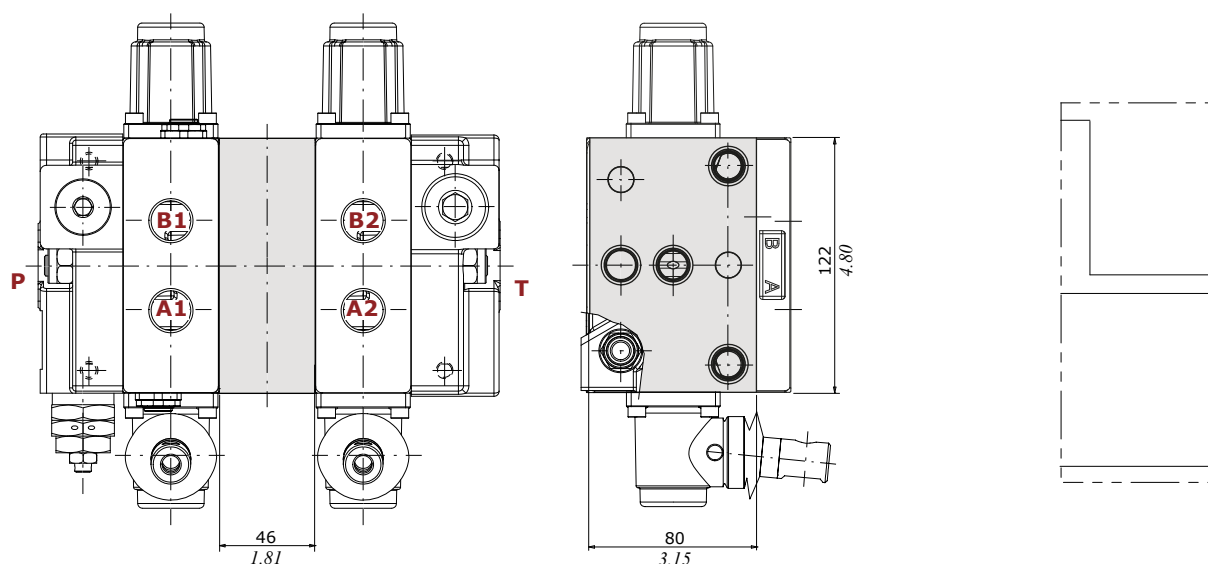


Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E51**/103-A1-M1/F3D

intermediate
section

E61 type

Intermediate spacer section

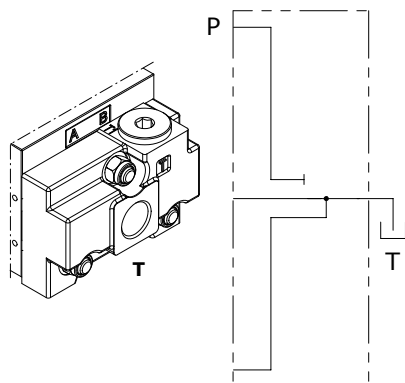


Description example: Q80/2/F7S(N150)/103-A1-M1.VC/**E61**/103-A1-M1/F3D

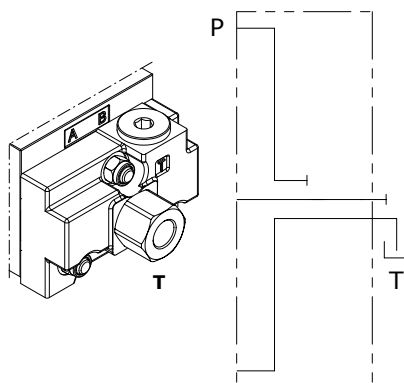
intermediate
section

Outlet section

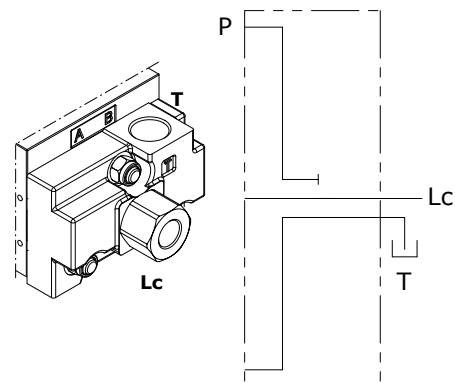
F3D configuration
Open center configuration



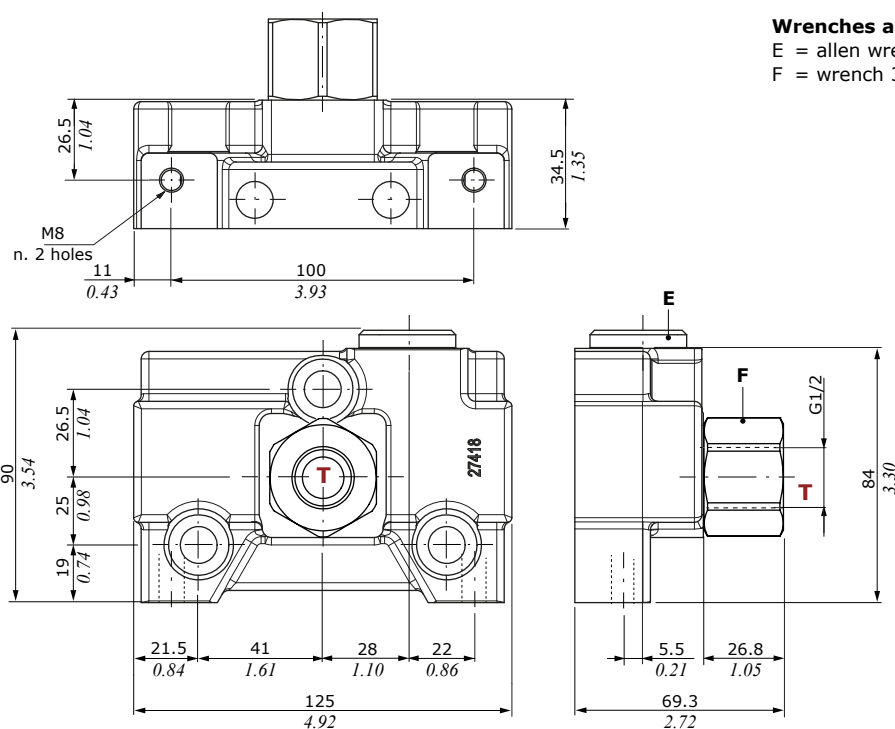
F16D configuration
Closed center configuration



F6D configuration
Carry-over configuration



F16D configuration example





Q130

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		130 l/min - (34.3 Us gpm)
Max. pressure		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)	10 cm ³ /min (0.61 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

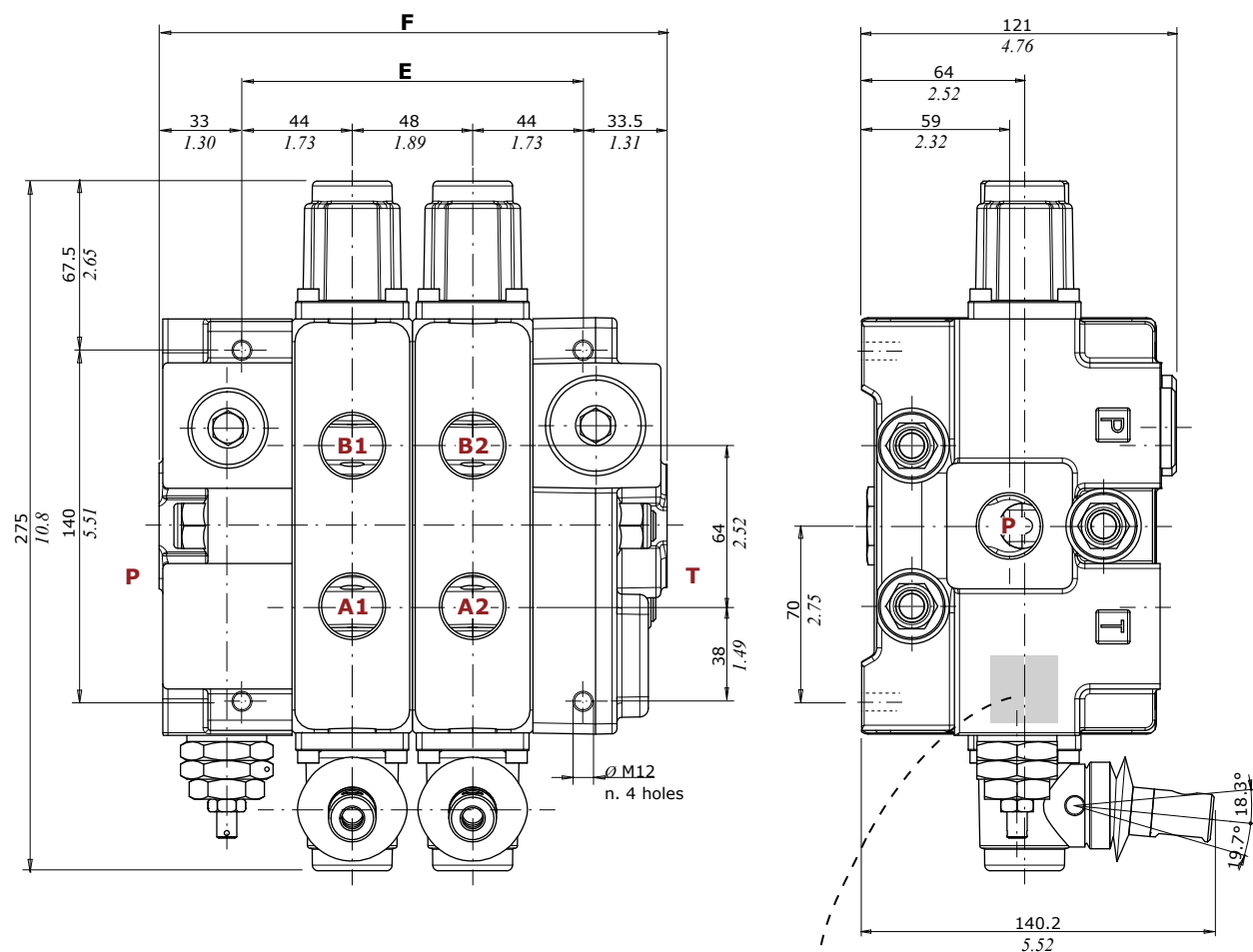
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

PORT THREADING

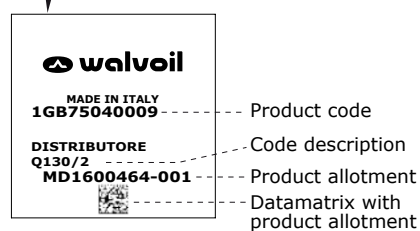
PORTS	BSP (standard)	BSP (G 1")	UN-UNF
P Inlet	G 3/4	G 1"	1" 5/16-12 (SAE16)
P1 Inlet	G 3/4	G 1"	1" 5/16-12 (SAE16)
A and B ports	G 3/4	G 1"	1" 5/16-12 (SAE16)
T Outlet	G 1"	G 1"	1" 5/16-12 (SAE16)
T1 Outlet	G 1"	G 1"	1" 5/16-12 (SAE16)
Lc port (Carry-over plug - T port)	G 3/4-G 1"	G 1"	1" 1/16-12 (SAE12)
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*



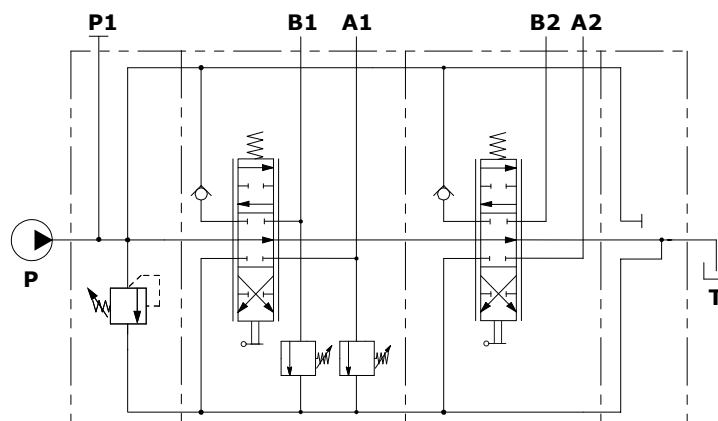
Type	E		F	
	mm	in	mm	in
Q130/1	88	3.46	154.5	6.08
Q130/2	136	5.35	202.5	7.97
Q130/3	184	7.24	250.5	9.86
Q130/4	232	9.13	298.5	11.75
Q130/5	280	11	346.5	13.64
Q130/6	328	12.91	394.5	15.53
Q130/7	376	14.80	442.5	17.42
Q130/8	424	16.70	490.5	19.31
Q130/9	472	18.58	538.5	21.20
Q130/10	520	20.47	586.5	23.09



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

(*): For other configurations, see page 240

Hydraulic circuit

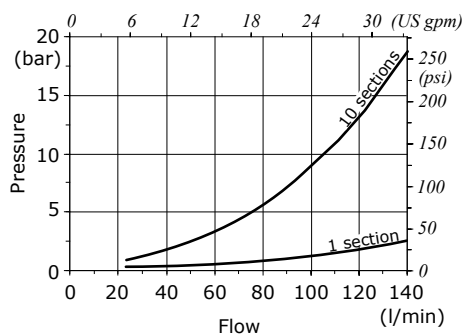


Description example (parallel circuit):

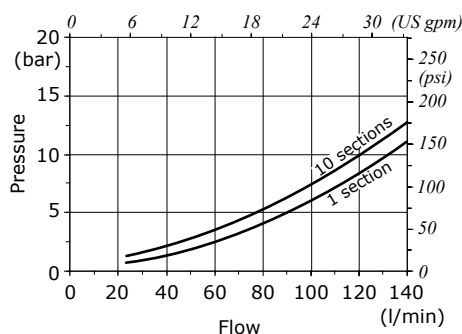
Q130/2/F7S(N150)/103-A1-M1.V32(N105\N105)/103-A1-M1/F3D

Performance data

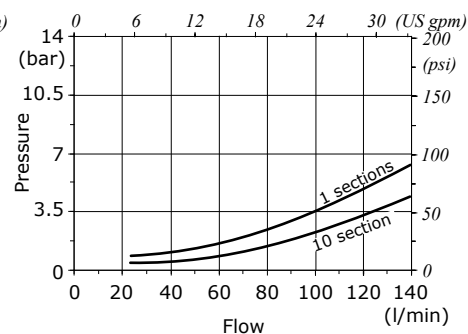
P⇒T pressure drops



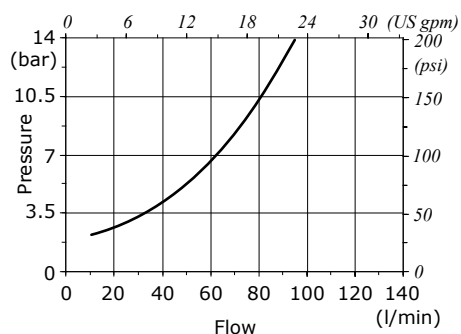
P⇒A(B) pressure drops



A(B)⇒T pressure drops



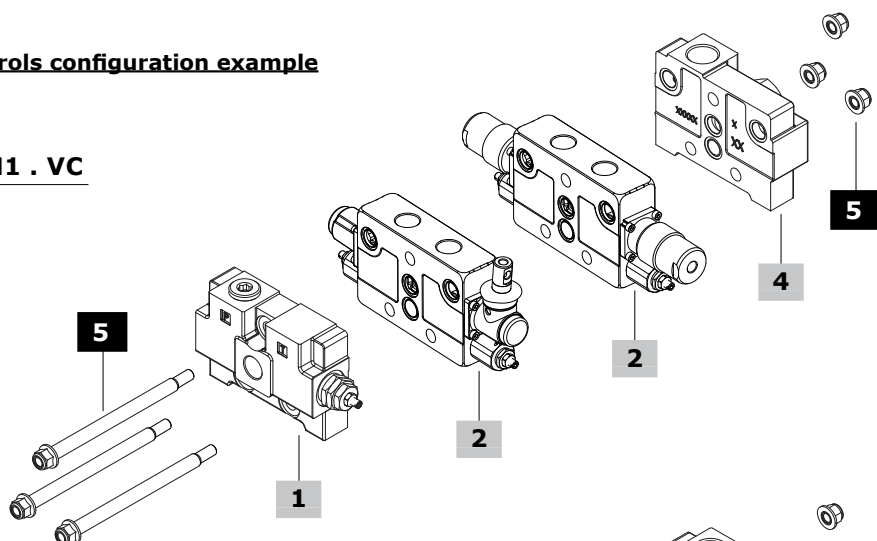
**A1(B1)⇒A2(B2) pressure drops
(with series circuit)**



Complete section ordering codes

Valve with mechanical and hydraulic controls configuration example

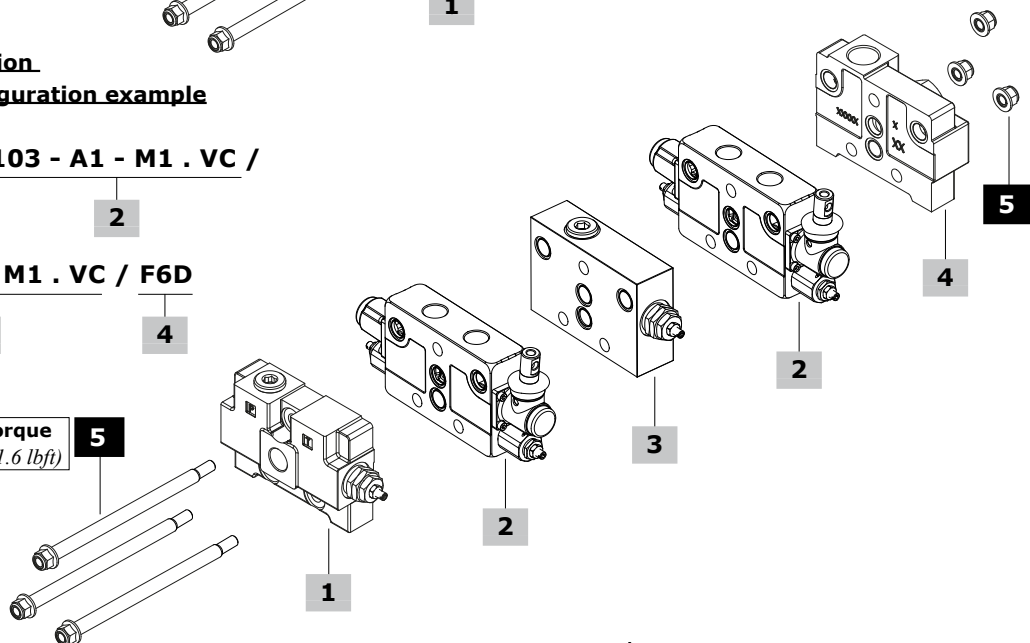
valve setting (bar)
Q130 / 2 / F7S(N150) / 103 - A1 - M1 . VC
 N. of section **1** **2**
/ 103 - H1 . VC / F6D
2 **4**



Valve with intermediate section and mechanical control configuration example

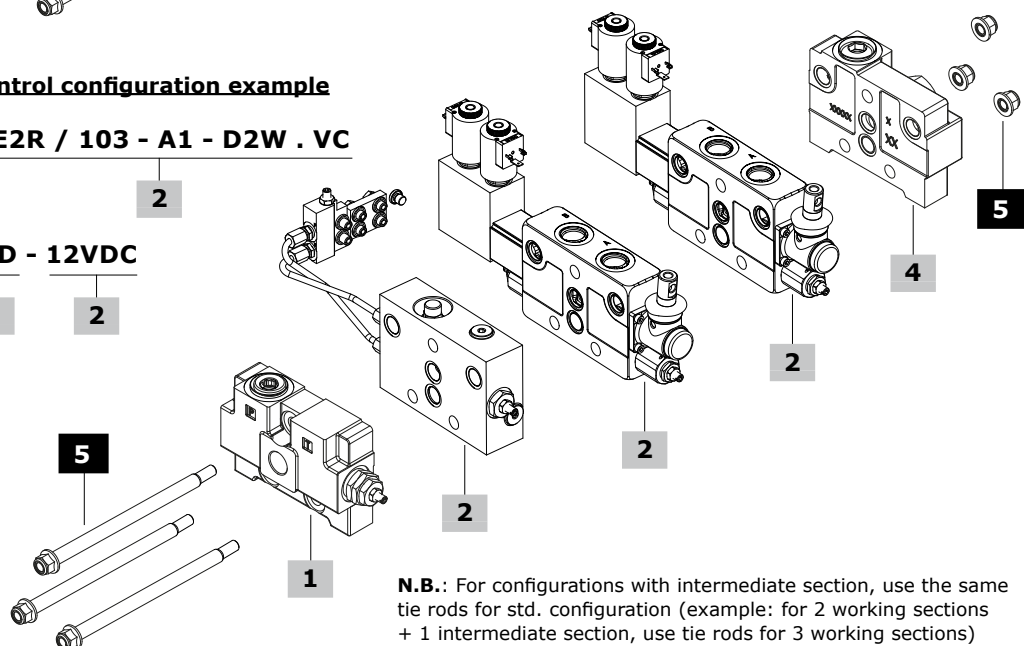
valve setting (bar)
Q130 / 2 / F7S(N150) / 103 - A1 - M1 . VC /
/ E50(N150) / 103 - A1 - M1 . VC / F6D
3 **2** **4**

Tie rod tightening torque
 wrench 18 - 70 Nm (51.6 lbf ft)



Valve with electrohydraulic control configuration example

Q130 / 2 / F7S(N150) / KE2R / 103 - A1 - D2W . VC
1 **2**
/ 103 - A1 - D2W . VC / F6D - 12VDC
2 **4** **2**



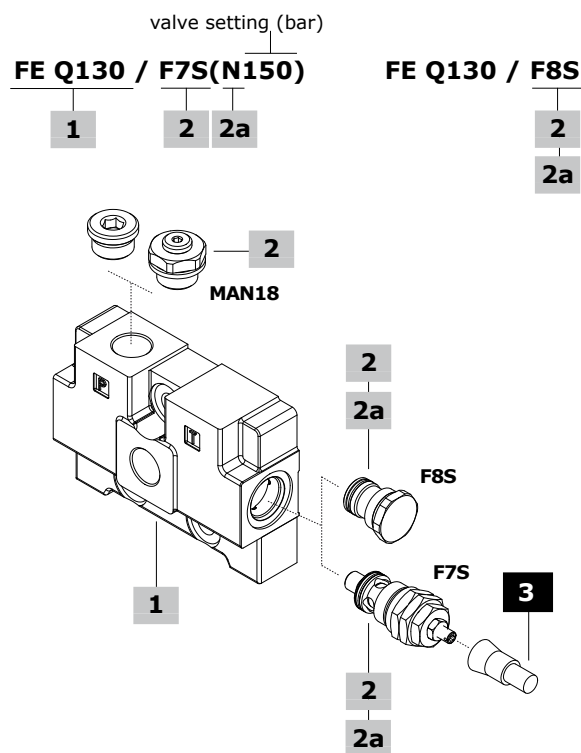
N.B.: For configurations with intermediate section, use the same tie rods for std. configuration (example: for 2 working sections + 1 intermediate section, use tie rods for 3 working sections)

Complete section ordering codes

1	Inlet section*	page 212	3	Intermediate section*	page 240
TYPE: FE-Q130/F7S(N150) CODE: 10000F7S/D-N DESCRIPTION: Side inlet open, upper inlet plugged, with pressure relief valve, setting range 101-200 bar (1460-2900 psi) TYPE: FE-Q130/F8S CODE: 10003F8S/D DESCRIPTION: As previous one, without valves (pressure relief valve plugged port)			TYPE CODE DESCRIPTION E50 10850E50-B With pressure relief valve setting range 10-100 bar (145-1450 psi) 10850E50-N As previous one, setting range 101-200 bar (1460-2900 psi) 10850E50-R As previous one, setting range 201-380 bar (2910-5500 psi) E53 10854E53-B With pressure relief valve setting range 10-100 bar (145-1450 psi) and P2 port open for 2 nd pump 10854E53-N As previous one, setting range 101-200 bar (1460-2900 psi) 10854E53-R As previous one, setting range 201-380 bar (2910-5500 psi) E51 10853E51 Intermediate outlet section, T2 port open E61 10877E61 Intermediate spacer section		
2	Working section*	page 215	4	Outlet section*	page 242
With mechanical controls TYPE: EL-Q130/103-A1-M1.VC CODE: SGL130004 DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, lever control and spring return to neutral position TYPE: EL-Q130/103-A1-M1 CODE: 100000103001000 DESCRIPTION: As previous one, without valve arrangement With proportional hydraulic controls TYPE: EL-Q130/103-H1.VC CODE: SGL130005 DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, high pressure hydraulic controls, spring return to neutral position TYPE: EL-Q130/103-H1 CODE: SGL130006 DESCRIPTION: As previous one, without valve arrangement TYPE: EL-Q130/103-H5.VC CODE: SGL130007 DESCRIPTION: Parallel circuit with valve arrangement (seat plugged), 3 positions double acting spool, low pressure hydraulic controls, spring return to neutral position TYPE: EL-Q130/103-H5 CODE: SGL130008 DESCRIPTION: As previous one, without valve arrangement With electrohydraulic ON/OFF controls - one side type TYPE: EL-Q130/KE1S/103-A1-D2W.VC -12VDC CODE: SGL130011 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-Q130/KE1S/103-A1-D2W-12VDC CODE: SGL130012 DESCRIPTION: As previous one, without valve arrangement			TYPE: FS-Q130-F3D CODE: 10012F3D DESCRIPTION: T port open, T1 port plugged. For open center circuit TYPE: FS-Q130-F16D CODE: 10016F16D DESCRIPTION: T port open, T1 port plugged. For closed center circuit TYPE: FS-Q130-F6D CODE: 10014F6D DESCRIPTION: Lc port and T1 port open. With joint for carry-over (HPCO) circuit		
5	Tie rods kit				
CODE DESCRIPTION 10901TX1 For 1 section valve 10902TX2 For 2 sections valve 10903TX3 For 3 sections valve 10904TX4 For 4 sections valve 10905TX5 For 5 sections valve 10906TX6 For 6 sections valve 10907TX7 For 7 sections valve 10908TX8 For 8 sections valve 10909TX9 For 9 sections valve 10910TX10 For 10 sections valve					

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

Inlet section - parts ordering codes



1 Inlet body section* page 213

TYPE: **FE-Q130** CODE: 060012839699
DESCRIPTION: Side inlet port, upper inlet plugged, for pressure relief valve arrangement

2 Configuration coding* page 213

TYPE	DESCRIPTION
F7S	With pressure relief valve
F8S	Without valves (pressure relief valve plugged port)

Note: Inlet configurations require upper P port:
n. 1 G3/4 plug code 3XTAP732200, or n. 1 pressure gauge arrangement code 5MAN632231

2a Main pressure relief valve page 214

TYPE	CODE	DESCRIPTION
B	700105205000000	VLP105S valve, setting range 10-100 bar (145-1450 psi)
N	700105105000000	VLP105S valve, setting range 101-200 bar (1460-2900 psi)
R	700105305000000	VLP105S valve, setting range 201-380 bar (2910-5500 psi)
-	06000468999	Relief valve blanking plug

3 Accessory

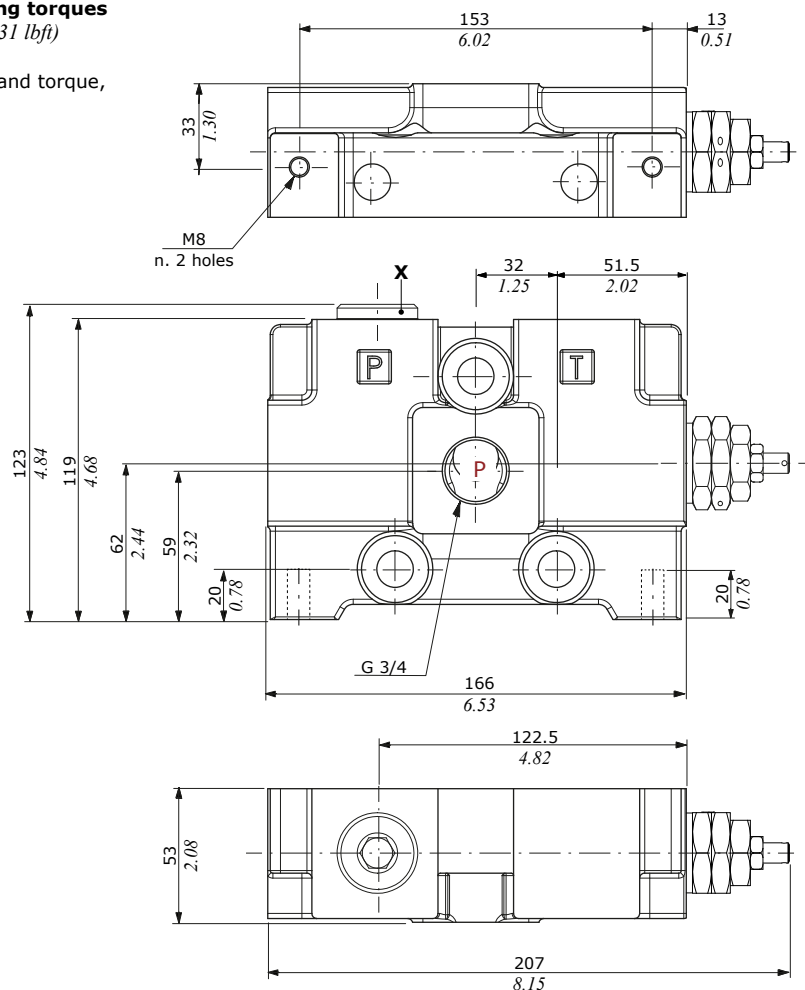
TYPE	CODE	DESCRIPTION
-	4COP120420	Antitamper cap for pressure relief valve

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

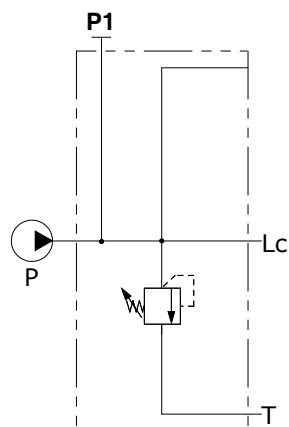
Dimensional data and hydraulic circuits

Wrenches and tightening torques

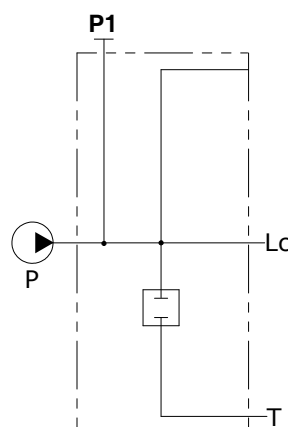
X = wrench 12 - 42 Nm (31 lbft)

Note: For valves wrench and torque, see related pages

F7S configuration
With pressure relief valve



F8S configuration
Without valves
(pressure relief valve plugged port)

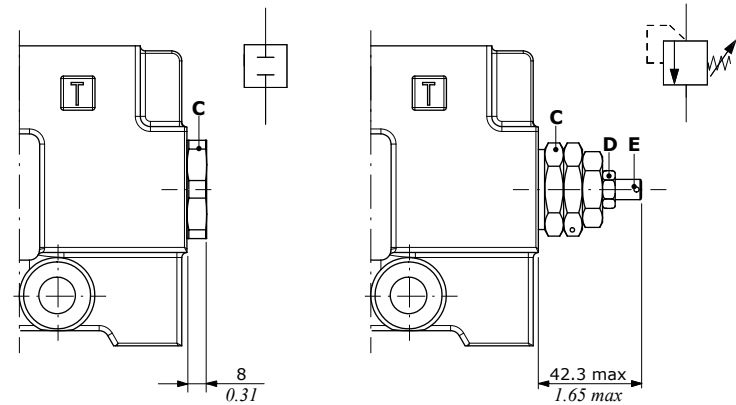


Inlet section

Main pressure relief valve

Relief valve blanking plug

Main pressure relief valve



Wrenches and tightening torques

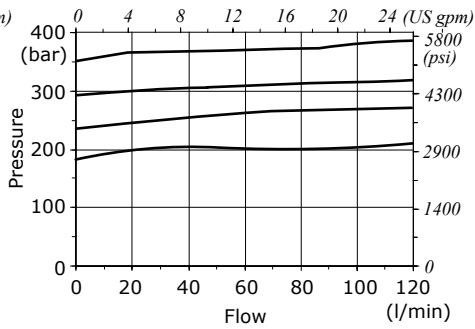
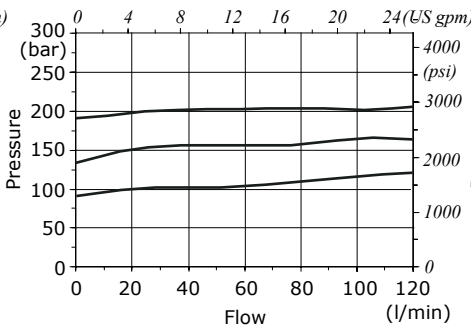
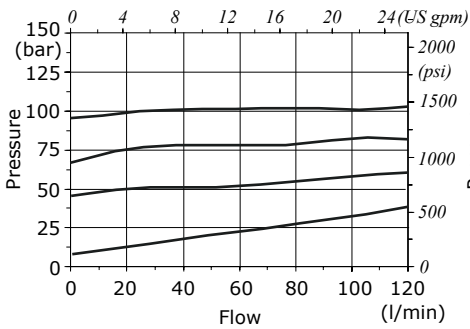
- C = wrench 32 - 80 Nm (59 lbft)
- D = wrench 13 - 24 Nm (17.7 lbft)
- E = allen wrench 4

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

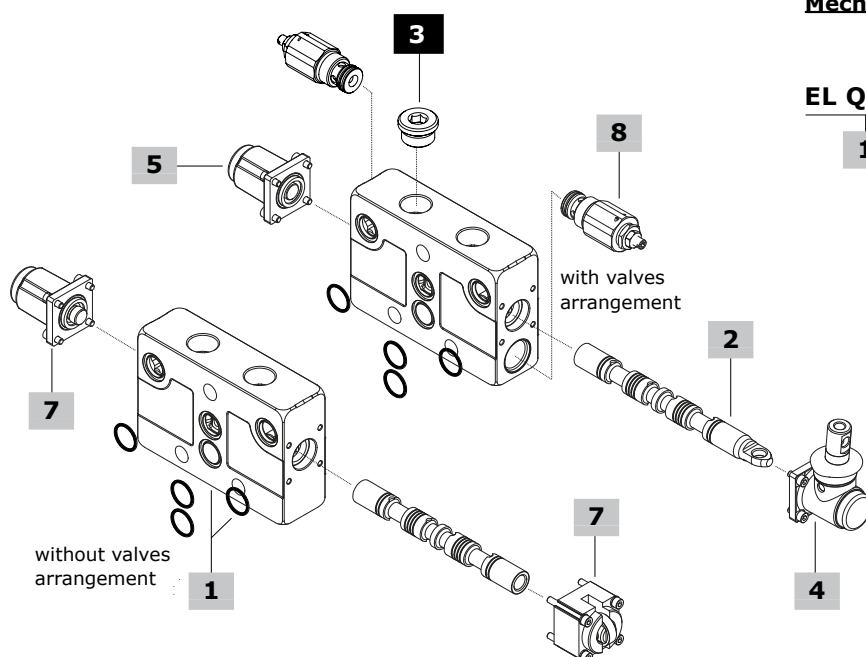
Setting example (B type spring)

Setting example (N type spring)

Setting example (R type spring)



Working section - parts ordering codes

**Mechanical control valve configuration example**

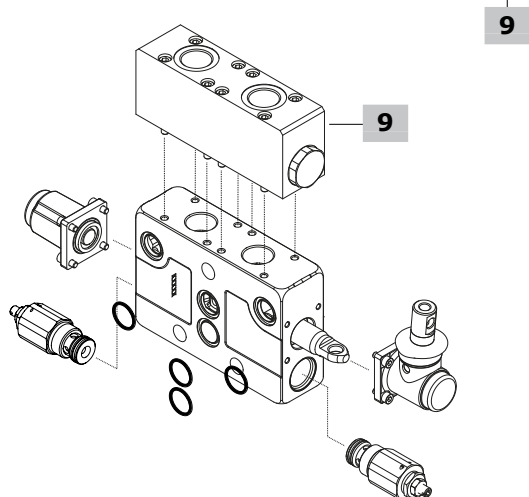
spring type and valve setting (bar)

EL Q130 / 102 - A1 - M1 . V40(N)120

1	2	4	5	8
---	---	---	---	---

C2/C3 complete mechanical control configuration example**EL Q130 / 103 - C3 . V40(N)120**

7

Mechanical control valve with arrangement for secondary aux valves block: configuration example**EL Q130 / 103 - A1 - M1 . V40(N)120 / VC03****1 Working section body kit* page 219**

TYPE: **EL-Q130.VC** CODE: 5EL0600127898
 DESCRIPTION: Parallel circuit, with port valves arrangement
 TYPE: **EL-Q130.VC.VPC** CODE: 5EL0600128894
 DESCRIPTION: Parallel circuit with port valves arrangement, for secondary aux valves block
 TYPE: **EL-Q130** CODE: 5EL0600127893
 DESCRIPTION: Parallel circuit, without port valves arrangement
 TYPE: **EL-Q130.VC** CODE: 5EL0600127896
 DESCRIPTION: Series circuit, with port valves arrangement

2 Spool page 220

TYPE	CODE	DESCRIPTION
Standard spools		
103	060102983699	Double acting, A and B closed in neutral position
	KR130103K	As previous one, for kick-out control
106	KR130106	Double acting for closed circuit
107	KR130107-108	Double acting, A to tank and B closed in neutral position
108	KR130107-108	Double acting, B to tank and A closed in neutral position
111	060102996399	Double acting, A and B to tank in neutral position
	KR103111K	As previous one, for kick-out control
101	3CUG2996000	Single acting on port A. G3/4 plug is required, see #3
102	3CUG2996001	Single acting on port B. G3/4 plug is required, see #3
116	KR130116	Double acting, with floating in the 4 th position (spool in): requires dedicated spool control
603	060103218199	Double acting, A and B closed in neutral position, for series circuit

Special spools for cam, microswitch controls and other leverless controls

103	060102996199	Double acting, A and B closed in neutral position
111	060102996299	Double acting, A and B to tank in neutral position
603	060103236499	Double acting, A and B to tank in neutral position, for series circuit

3 Plug for single acting spool*

TYPE	CODE	DESCRIPTION
-	060002800899	G3/4 plug

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

Working section - parts ordering codes

4 A side control page 221

TYPE	CODE	DESCRIPTION
For standard spools		
<u>With lever control:</u>		
A1	10600A1-A2	M10 thread aluminium lever box
A2	10600A1-A2	As A1 type, with lever box rotated 180°
A1/Z1	10610A1-A2/Z1	Aluminium lever box for 116 spool type
A2/Z1	10610A1-A2/Z1	As A1/Z1 type, with lever box rotated 180°
<u>With safety lever control:</u>		
A1/S⁽¹⁾	10624A1-A2/S	M10 thread aluminium lever box
A2/S⁽¹⁾	10624A1-A2/S	As A1/S type, with lever box rotated 180°
<u>Without lever control:</u>		
A6	10620A6	With flange
A6/Z1	10620A6/Z1	As A6 type, for 116 spool type
A6H	10620A6HH	As A6 type, with scraper
A8	10622A8	Arrangement for flexible cable control
A8/Z1	10622A8/Z1	As A8 type, for 116 spool type
<u>Joystick controls for 2 section operation:</u>		
A35/1	10637A35-12	Joystick 1 type
A35/2	10637A35-12	Joystick 2 type
A35/3	10637A35-34	Joystick 3 type
A35/4	10637A35-34	Joystick 4 type
For types 103, 111 and 603 special spools		
<u>With spool position microswitch:</u>		
Note: to complete the control you must use the assembly kit at #6		
N1-A1	10641N1-A1/A2	Micro operation in pos. 1 and 2, with lever box
N1A-A1	10642N1A-A1/A2	Micro operation in pos. 1, with lever box
N1B-A1	10643N1B-A1/A2	Micro operation in pos. 2, with lever box
N1-A3	10648N1-A3	Micro operation in pos. 1 and 2, without lever with cap
N1A-A3	10648N1A-A3	Micro operation in pos. 1, without lever with cap
N1B-A3	10648N1B-A3	Micro operation in pos. 2, without lever with cap
<u>Without lever control:</u>		
A3	10614A3	Without lever, with cap
A4	10617A4	M10 thread male external pin with flange
A5⁽²⁾	10619A5	Flange with spherical spool end

5 B side control page 228

TYPE	CODE	DESCRIPTION
<u>With spring return:</u>		
M1	10730M1	3 pos., spring return in neutral position
M1/01	10730M1/01	As M1 type, for joystick control
M1/B1	10753M1-B1	As M1 type, with microswitch arrangement
M1-U1	10701M1-U1	As M1 type, with M10 male thread external pin
M2	10732M2	2 pos. (0-1), spring return in neutral position
M2-U1	10702M2-U1	As M2 type, with M10 male thread external pin
M3	10733M3	2 pos. (0-2), spring return in neutral position
M3-U1	10702M3-U1	As M3 type, with M10 male thread external pin
M4	10735M42-1	2 pos. (2-1), spring return in position 2
<u>With flexible cable control arrangement:</u>		
M1-U2	10715M1-U2	3 pos., spring return in neutral position
M2-U2	10716M2-U2	2 pos. (0-1), spring return in neutral position
M3-U2	10717M3-U2	2 pos. (0-2), spring return in neutral position
<u>With friction:</u>		
R0	10740R0	Adjustable friction control
<u>With detent:</u>		
R1	10741R1	3 pos., detent in position 1
R2	10742R2	3 pos., detent in position 2
R3	10743R3	3 pos., detent in all position
R4	10744R4	2 pos., detent in position 0-1
R5	10745R5	2 pos., detent in position 0-2
R6	10746R6	2 pos., detent in position 1-2
R8	10748R8	4 pos., detent in 4 th pos., for 116 spool type

5 B side controls (cont.) page 228

TYPE	CODE	DESCRIPTION
<u>With detent and kick out function:</u>		
R1K	10741R1K	3 pos., detent in position 1
R2K	10742R2K	3 pos., detent in position 2
R3K	10743R3K	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	10766M1-N1	3 pos., micro operation in pos. 1 and 2, spring return in neutral position
M1-N1A	10767M1-N1A	As M1-N1 type, micro operation in pos. 1
M1-N1B	10768M1-N1B	As M1-N1 type, micro operation in pos. 2
M2-N1	10769M2-N1	2 pos. (0-1), spring return in neutral position
M3-N1	10772M3-N1	2 pos. (0-2), spring return in neutral position
<u>Pneumatic and electropneumatic controls:</u>		
P1N	10561P1-N	ON/OFF pneumatic control
P1NP	10561P1-NP	Proportional pneumatic control
D3	10591D3-O-12DC	12 VDC, ON/OFF electropneumatic control
	10592D3-O-24DC	24 VDC, ON/OFF electropneumatic control

6 Microswitch assembly kit

CODE	DESCRIPTION
10650N1-01	Kit for 1 section
10650N1-02	Kit for 2 sections
10650N1-03	Kit for 3 sections
10650N1-04	Kit for 4 sections
10650N1-05	Kit for 5 sections
10650N1-06	Kit for 6 sections
10650N1-07	Kit for 7 sections
10650N1-08	Kit for 8 sections
10650N1-09	Kit for 9 sections
10650N1-10	Kit for 10 sections

7 Complete controls A+B sides page 233

TYPE	CODE	DESCRIPTION
For types 103, 111 and 603 special spools		
C2	10792C2-C3	Cam control from pos. 1 to 2
C3	10792C2-C3	Cam control from pos. 2 to 1

8 Auxiliary port valve page 237

TYPE	CODE	DESCRIPTION
<u>Antishock valve:</u>		
V30-B	10800V30-B	Setting range: from 30 to 80 bar (from 435 to 1150 psi)
V30-N	10800V30-N	Setting range: from 81 to 200 bar (from 1170 to 2900 psi)
V30-R	10800V30-R	Setting range: from 201 to 350 bar (from 2910 to 5100 psi)
<u>Antishock/anticavitation valve:</u>		
V33-B	10803V33-B	Setting range: from 30 to 80 bar (from 435 to 1150 psi)
V33-N	10803V33-N	Setting range: from 81 to 200 bar (from 1170 to 2900 psi)
V33-R	10803V33-R	Setting range: from 201 to 350 bar (from 2910 to 5100 psi)
<u>Anticavitation valve:</u>		
V04	10808V04	Anticavitation valve
<u>Plug:</u>		
VC	060002798999	Valve blanking plug
For other configurations and positions, see page 237		

9 Secondary aux valves* page 239

TYPE	CODE	DESCRIPTION
VRP-VC01	10835V01	Single piloted check valve on A port, 250 bar (3600 psi)
VRP-VC03	10837V03	Double piloted check valve on A and B ports, 250 bar (3600 psi)

(*) 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

Proportional hydraulic controls valve configuration example

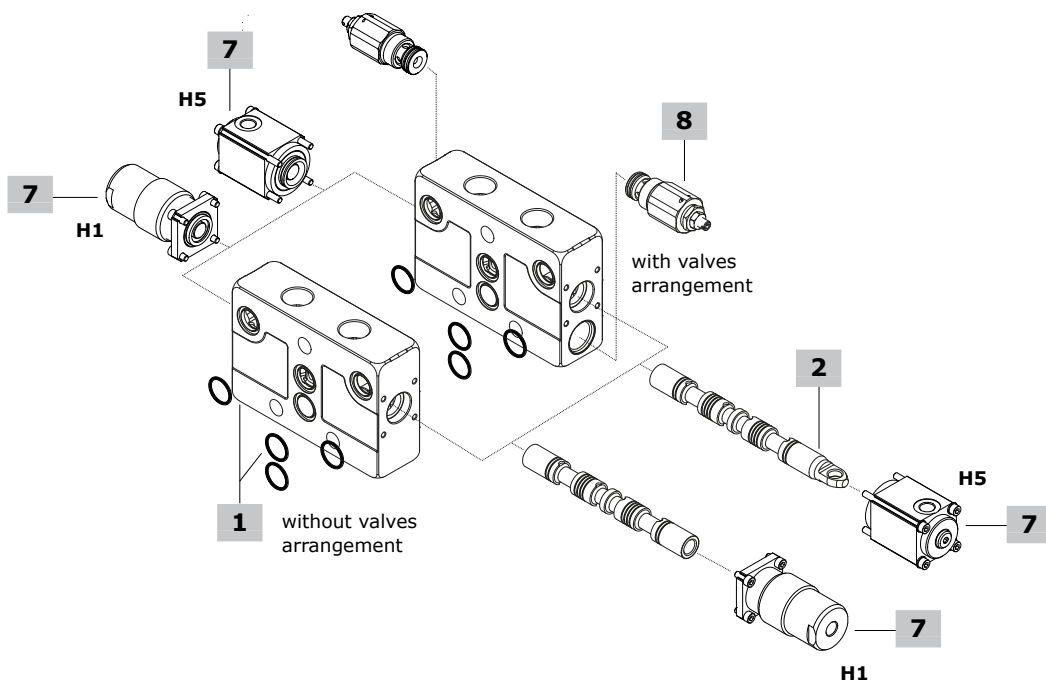
spring type and valve setting (bar)

EL Q130 / 103 - H5 . V40(N)120

1 2 7 8

EL Q130 / 103 - H1 . V40(N)120

7



1 Working section body kit* page 219

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

H1 hydraulic control requires standard body: see #1, page 215

TYPE: **EL-Q130-H5.VC** CODE: 5EL0600127898H5

DESCRIPTION: Parallel circuit, with port valves arrangement

TYPE: **EL-Q130-H5** CODE: 5EL0600127893H5

DESCRIPTION: Parallel circuit, without port valves arrangement

2 Spool page 220

TYPE	CODE	DESCRIPTION
For H5 hydraulic control		
103	060102983699	Double acting, A and B closed in neutral position
For H1 hydraulic control		
103	060102996199	Double acting, A and B closed in neutral position

7 Hydraulic controls A+B sides* page 234

TYPE	CODE	DESCRIPTION
H5	10785H5	Low pressure proportional type, upper ports
H1	10779H1	High pressure proportional type, side ports

8 Auxiliary port valve page 237

See #8, page 216

(*): 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 Q130 / KE1R / 103 - A1 - D2W . V40(N)120 - 12VDC

1

6

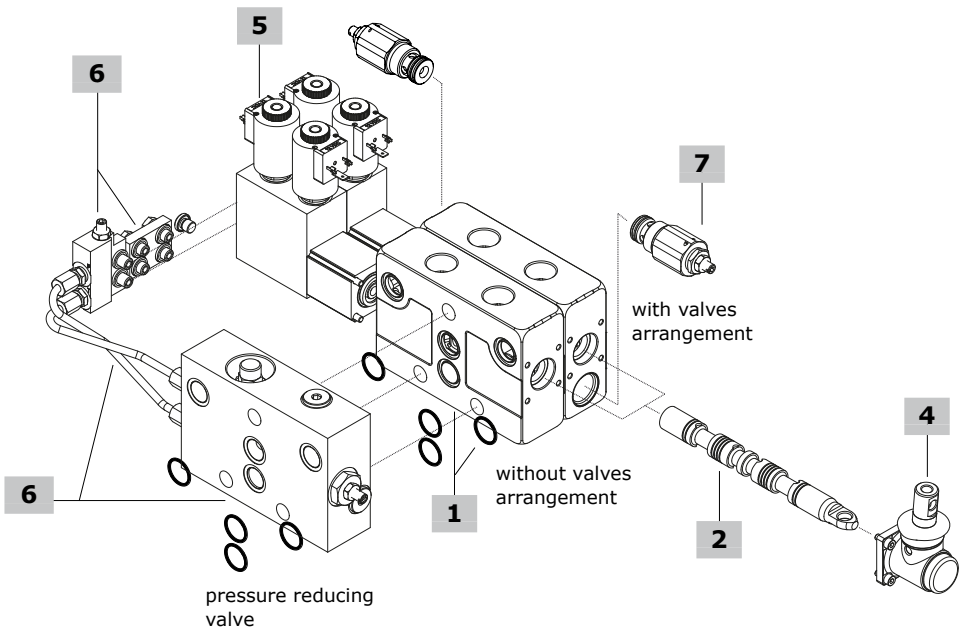
2

4

5

7

5



1 Working section body kit* page 219

See #1, page 215

2 Spool page 220

See #2, page 215

4 A side control page 221

See #4, page 216

5 B side electrohydraulic control page 235

TYPE	CODE	DESCRIPTION
D2W-12VDC	10681D2W1200	3 pos., 12VDC ON/OFF electrohydraulic control
D2W-24VDC	10681D2W2400	3 pos., 24VDC ON/OFF electrohydraulic control

Note: For BT type coils, see page 243

6 Connector kit page 236

TYPE CODE DESCRIPTION

Without pressure reducing valve

KE1S	5GKE13S010	Kit for 1 section
KE2S	5GKE13S020	Kit for 2 sections
KE3S	5GKE13S030	Kit for 3 sections
KE4S	5GKE13S040	Kit for 4 sections
KE5S	5GKE13S050	Kit for 5 sections
KE6S	5GKE13S060	Kit for 6 sections
KE7S	5GKE13S070	Kit for 7 sections
KE8S	5GKE13S080	Kit for 8 sections
KE9S	5GKE13S090	Kit for 9 sections
KE10S	5GKE13S100	Kit for 10 sections

Note: Connector kit are included collector and feeding block

With pressure reducing valve

KE1R	5GKE13R010	Kit for 1 section
KE2R	5GKE13R020	Kit for 2 sections
KE3R	5GKE13R030	Kit for 3 sections
KE4R	5GKE13R040	Kit for 4 sections
KE5R	5GKE13R050	Kit for 5 sections
KE6R	5GKE13R060	Kit for 6 sections
KE7R	5GKE13R070	Kit for 7 sections
KE8R	5GKE13R080	Kit for 8 sections
KE9R	5GKE13R090	Kit for 9 sections
KE10R	5GKE13R100	Kit for 10 sections

Note: Connector kit are included collector and feeding block, drain lines and pressure reducing valve

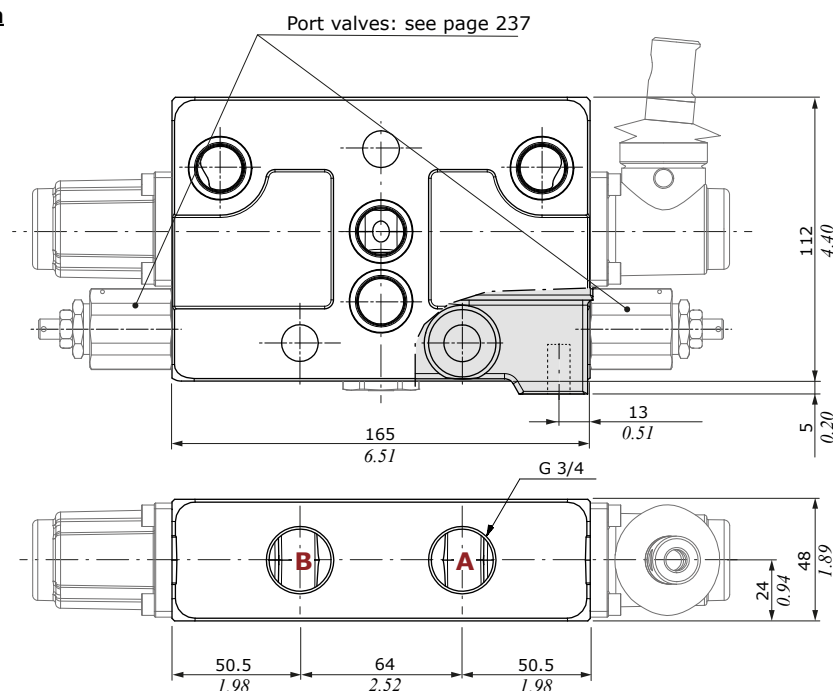
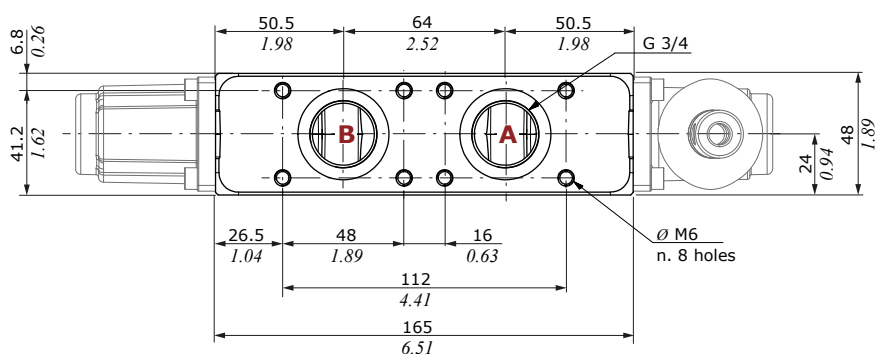
7 Auxiliary port valve page 237

See #8, page 216

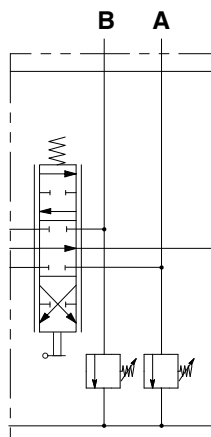
(*): Codes are referred to BSP thread

Dimensional data and hydraulic circuits

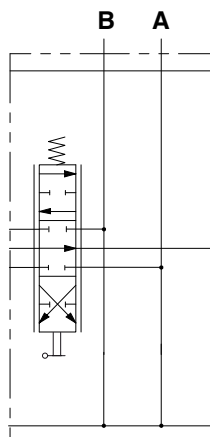
Standard working section

Working section for
secondary aux valves block

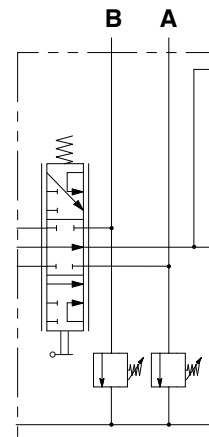
Q130.V40(N)120 configuration

Parallel circuit,
mechanical control with aux valves

Q130 configuration

Parallel circuit,
mechanical control without aux valves

Q130.V40(N)120 configuration

Series circuit,
mechanical control with aux valves

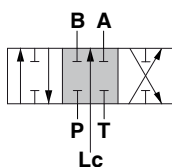
Working section

Spool

103 type

A and B closed
in neutral position

2 0 1



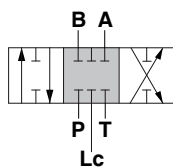
Stroke

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



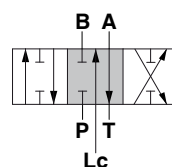
Stroke

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

107 type

A to tank, B closed
in neutral position

2 0 1



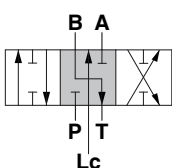
Stroke

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



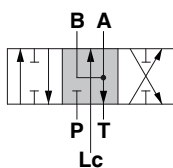
Stroke

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



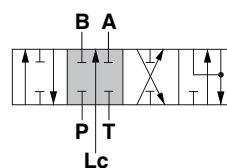
Stroke

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



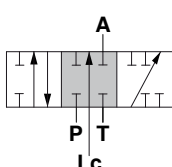
Stroke

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

101 type

Single acting on A,
B plugged

2 0 1



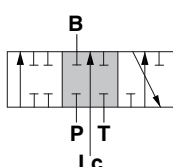
Stroke

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



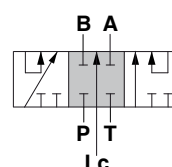
Stroke

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

603 type

A and B closed in neutral
position. For series circuit

2 0 1



Stroke

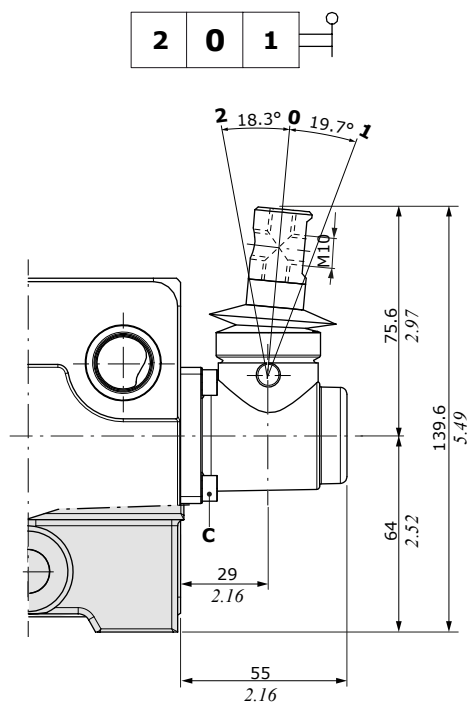
Position 1: + 7 mm (+ 0.27 in)
Position 2: - 7 mm (- 0.27 in)

A side controls

With lever control

A1 type

M10 thread aluminium lever box

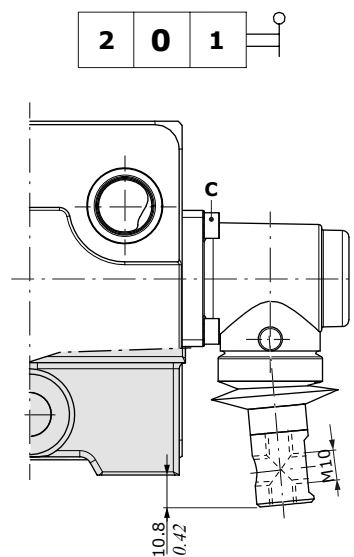


Wrenches and tightening torques

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

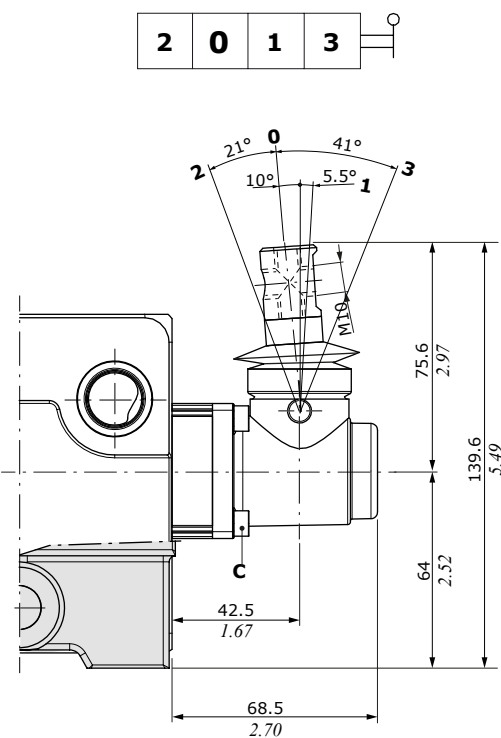
A2 type

As A1 type, rotated 180°



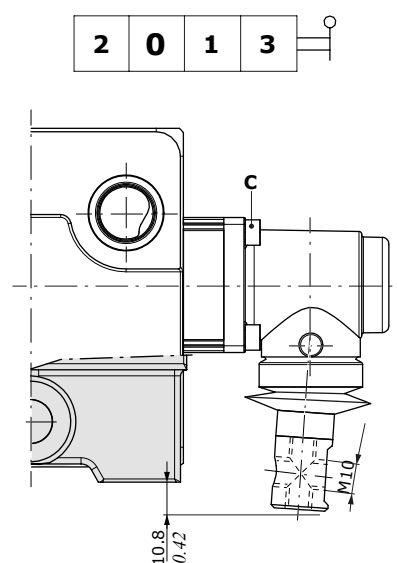
A1/Z1 type

M10 thread, for 116 floating spool type



A2/Z1 type

As A1/Z1 type, rotated 180°



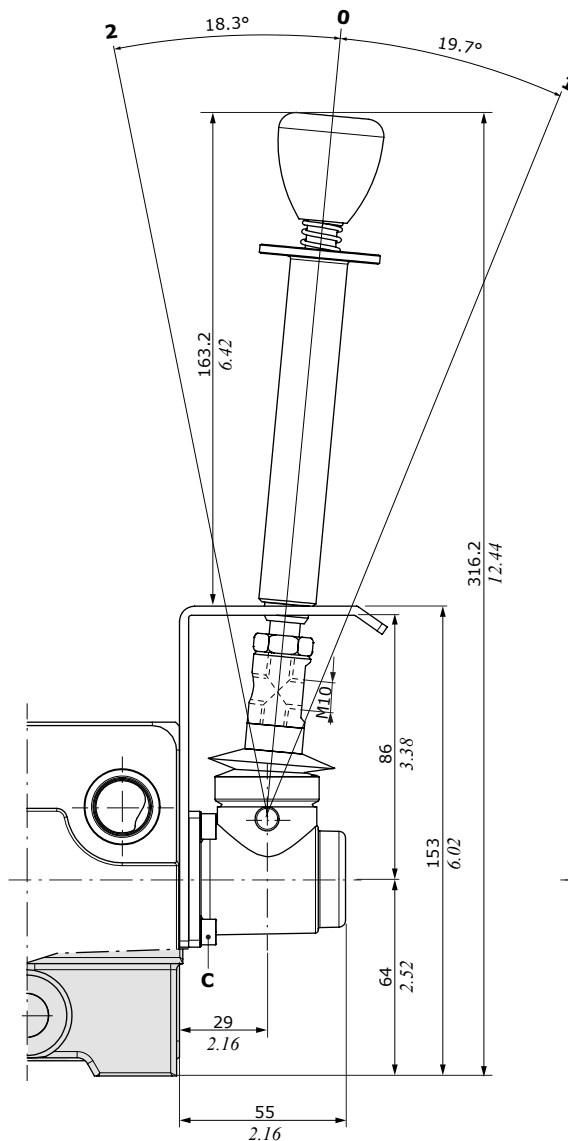
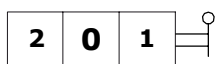
Working section

A side controls

With safety lever control

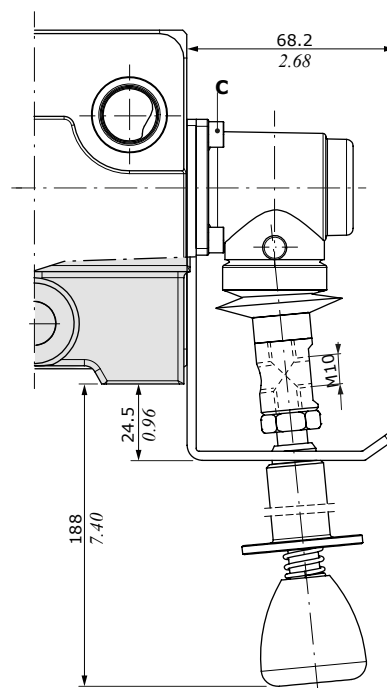
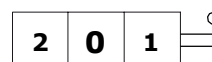
A1/S type

M10 thread, aluminium lever box



A2/S type

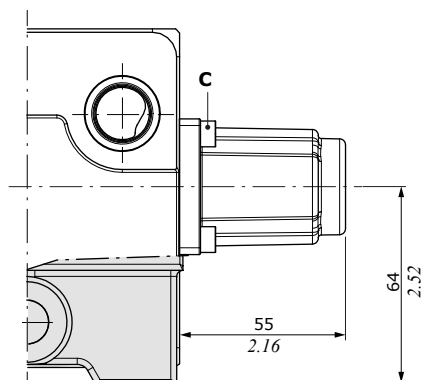
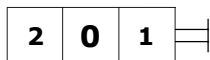
As A1/S type, rotated 180°



Without lever control

A3 type

With cap



Wrenches and tightening torques

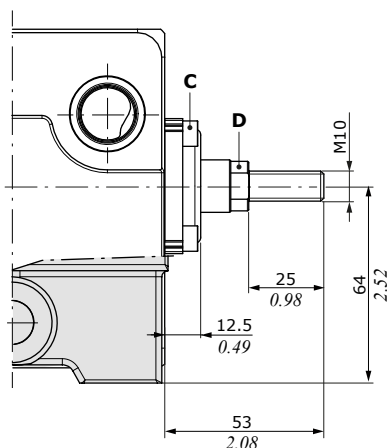
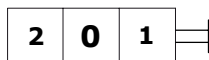
C = allen wrench 4 - 6.6 Nm (4.8 lbf ft)

A side controls

Without lever control

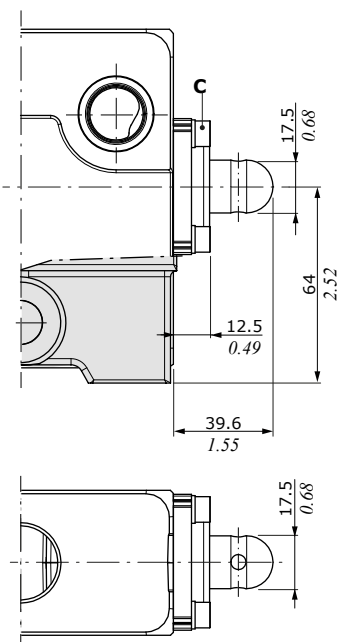
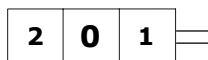
A4 type

M8 male thread external pin with flange



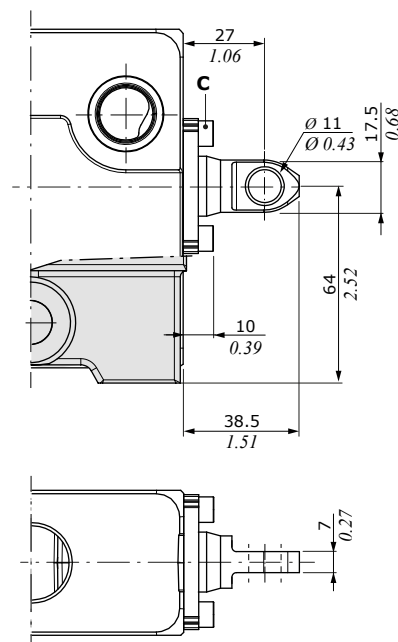
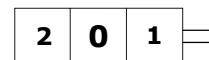
A5 type

Flange with spherical spool end

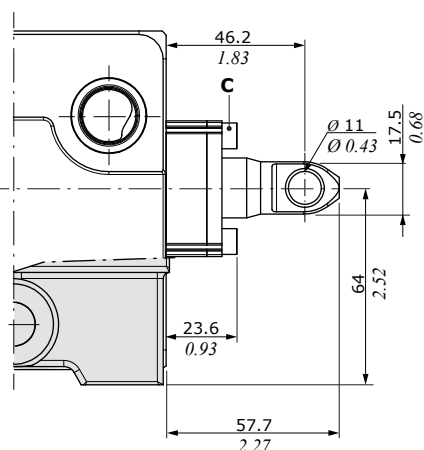
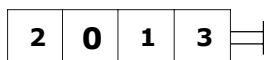


A6 type

With flange

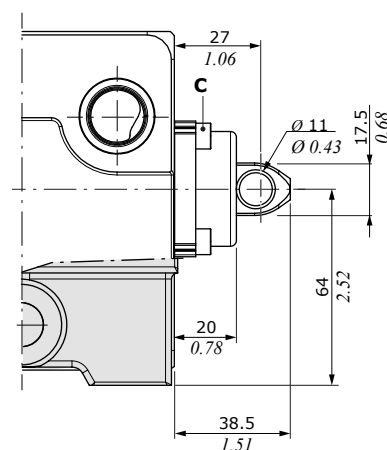
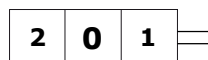


A6/Z1 type

As A6 type,
for 116 floating spool type

A6H type

As A6 type, with scraper



Wrenches and tightening torques

C = allen wrench 4 - 6.6 Nm (4.8 lbft)
D = wrench 13 - 9.8 Nm (7.2 lbft)

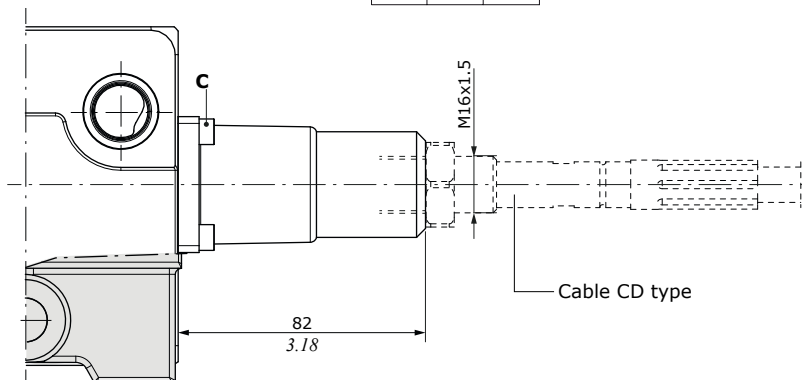
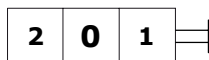
Working section

A side controls

With flexible cable control arrangement

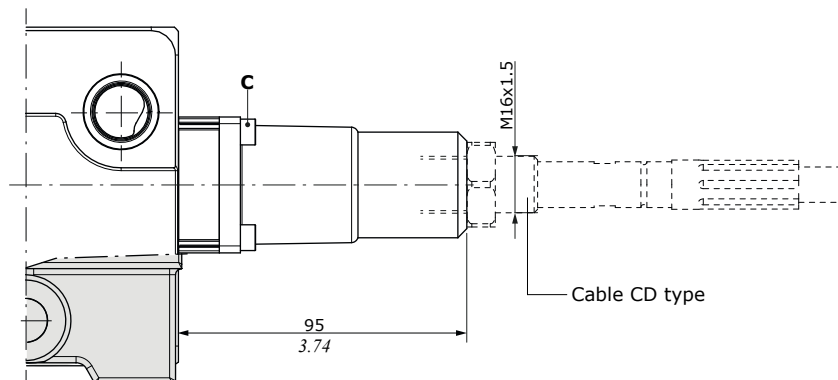
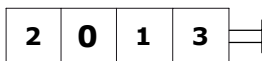
A8 type

Flexible cable control arrangement



A8/Z1 type

As A8 type,
for 116 floating spool type



Wrenches and tightening torques

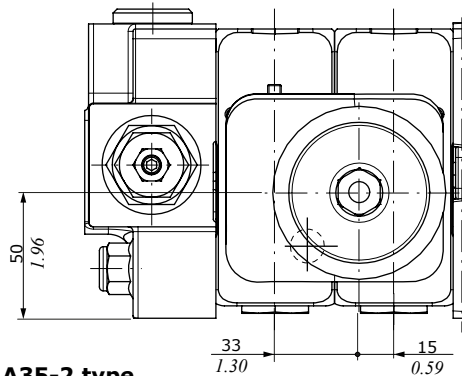
C = allen wrench 4 - 6.6 Nm (4.8 lbf ft)

A side controls

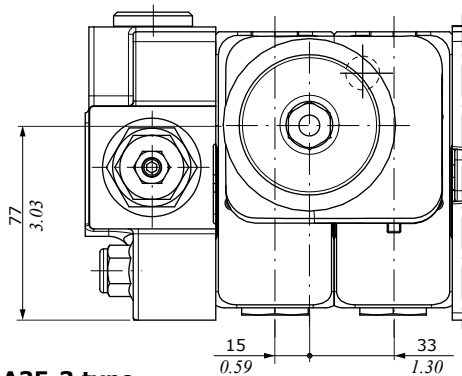
Joystick control

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

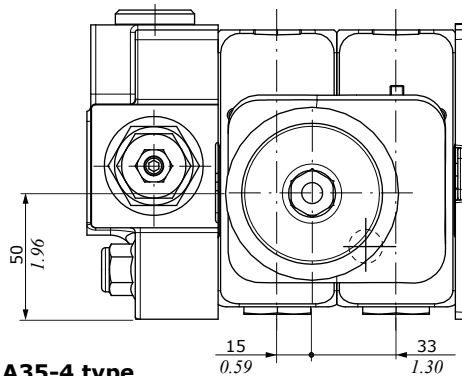
A35-1 type



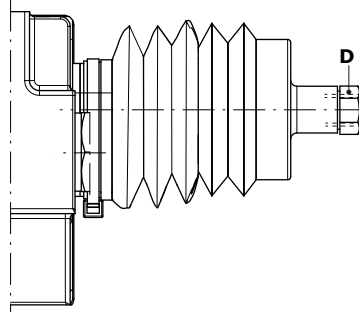
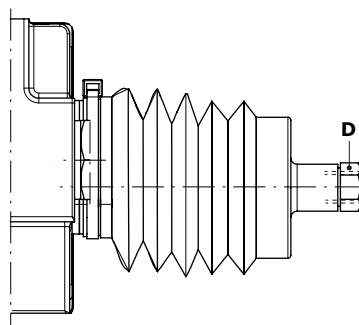
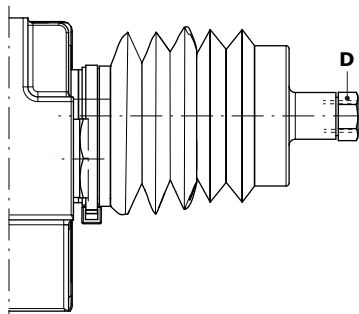
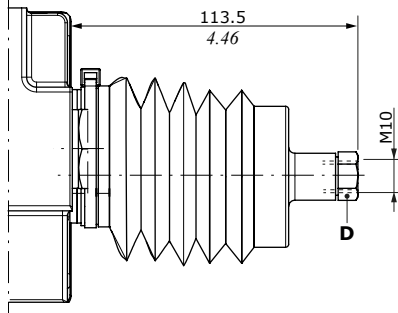
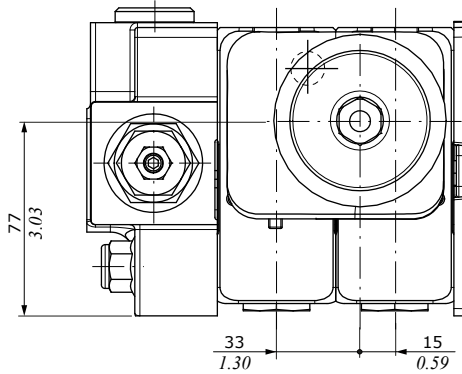
A35-2 type



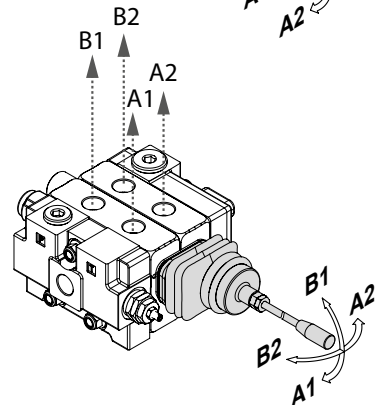
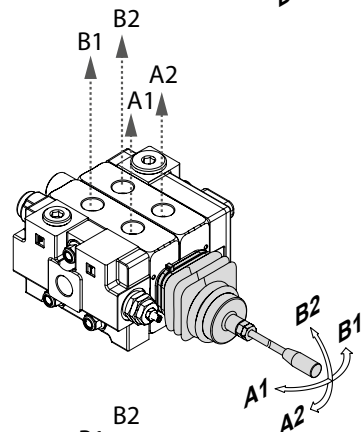
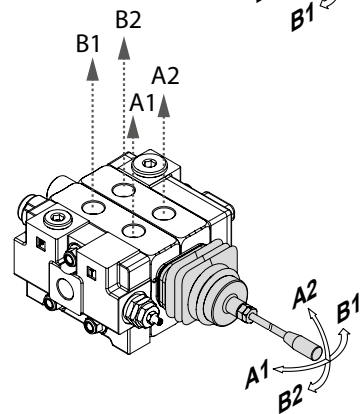
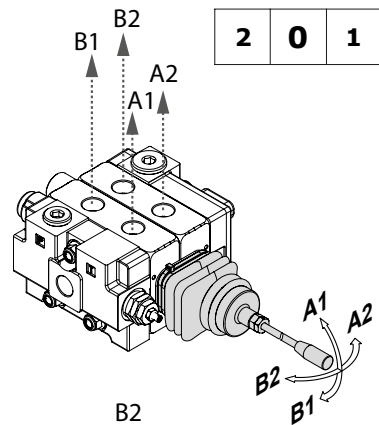
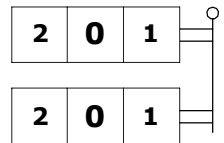
A35-3 type



A35-4 type



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



Working section

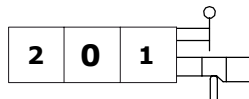
A side controls

With spool position microswitch, with lever

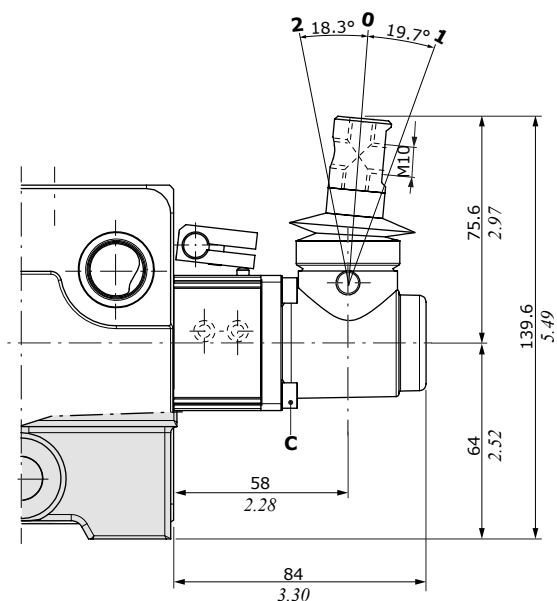
N1-A1 type
Micro operation
in position 1 and 2



N1A-A1 type
Micro operation in
position 1

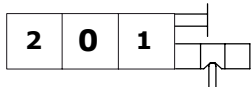


N1B-A1 type
Micro operation in
position 2

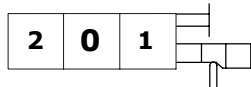


With spool position microswitch, with cap

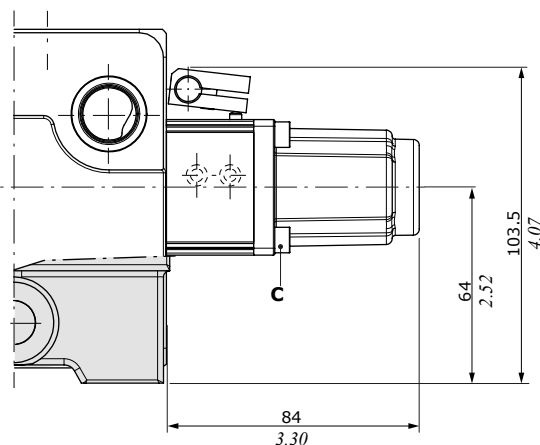
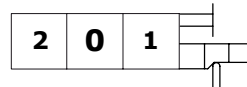
N1-A3 type
Micro operation
in position 1 and 2



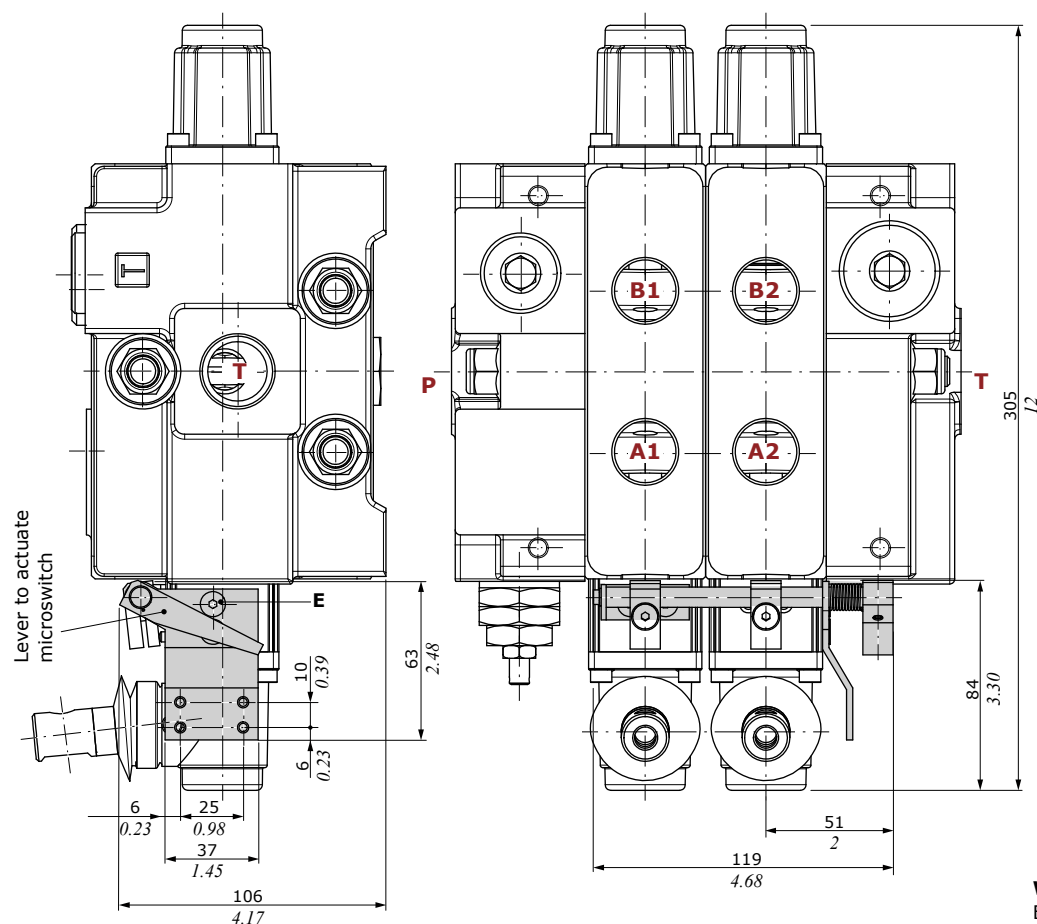
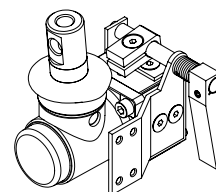
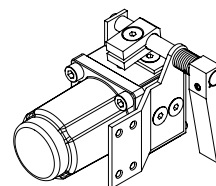
N1A-A3 type
Micro operation in
position 1



N1B-A3 type
Micro operation in
position 2



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

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 lbf)

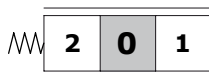
Working section

B side controls

With spring return

M1 type

3 position, spring return
in neutral position

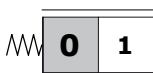


M1/01 type

As M1 type,
for joystick control

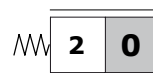
M2 type

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



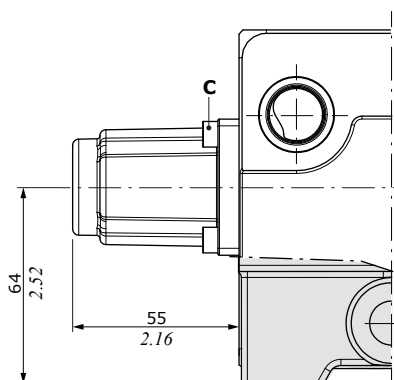
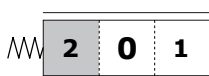
M3 type

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

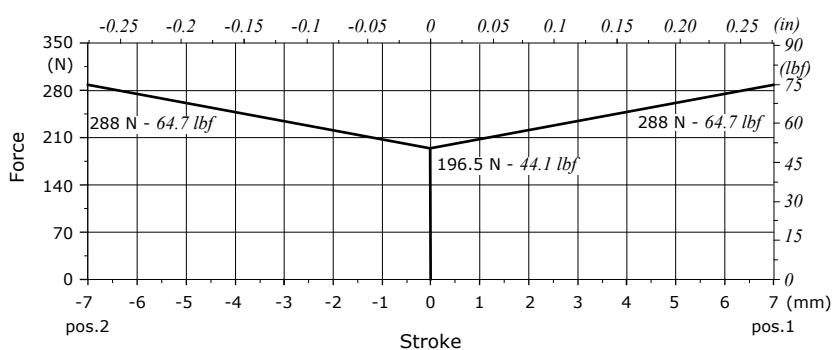


M4 type

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



M1 control type - Force vs. Stroke diagram



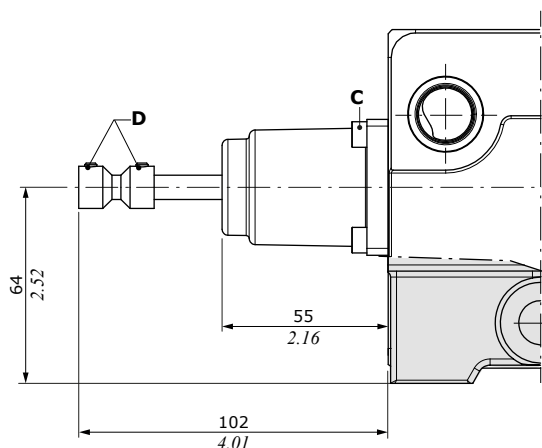
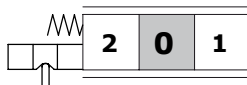
Wrenches and tightening torques

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

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

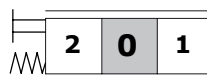
M1-B1 type

3 position, microswitch arrangement



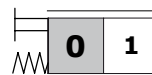
M1-U1 type

3 position, with M10 male
thread external pin



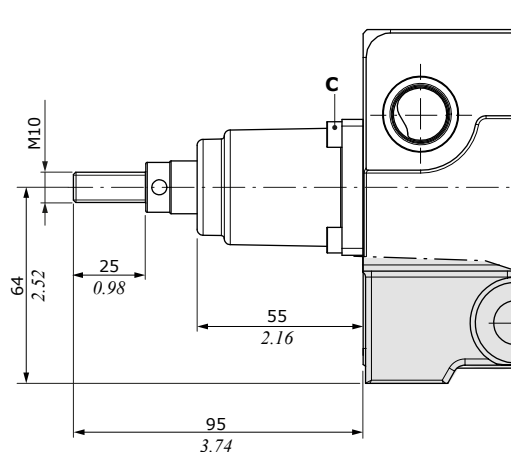
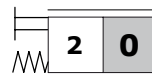
M2-U1 type

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



M3-U1 type

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



B side controls

With flexible cable control arrangement

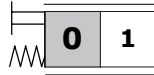
M1-U2 type

3 position, spring return
in neutral position



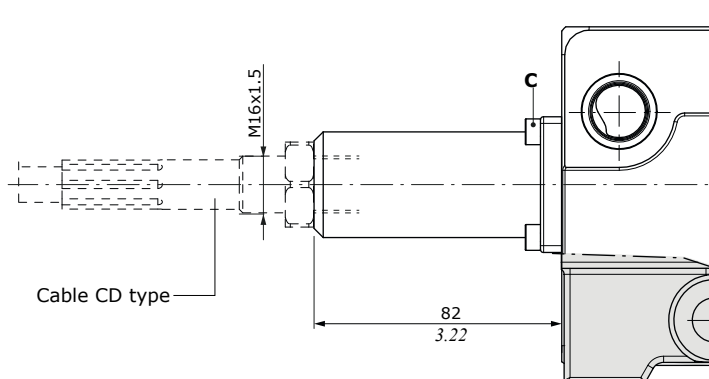
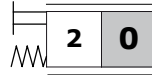
M2-U2 type

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



M3-U2 type

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



Wrenches and tightening torques

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

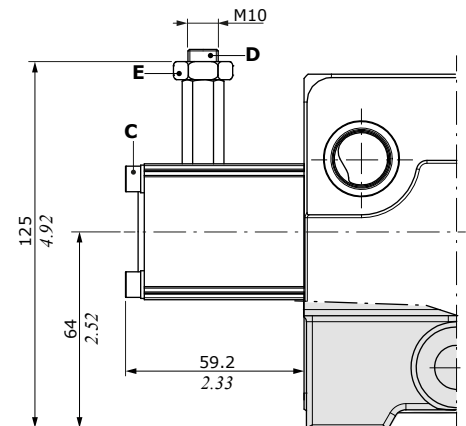
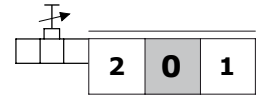
D = allen wrench 5 - 15 Nm (11.1 lbf ft)

E = wrench 17 - 9.8 Nm (7.2 lbf ft)

With friction control

R0 type

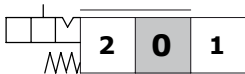
Adjustable friction control



With detent control

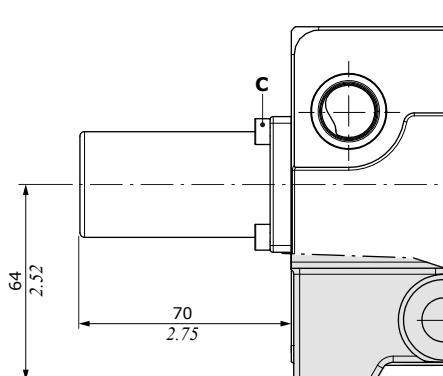
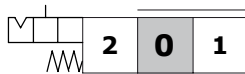
R1 type

3 position,
detent in position 1



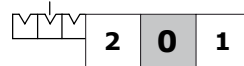
R2 type

3 position,
detent in position 2



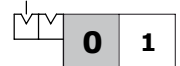
R3 type

3 position,
detent in all position



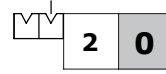
R4 type

2 position,
detent in position 0-1



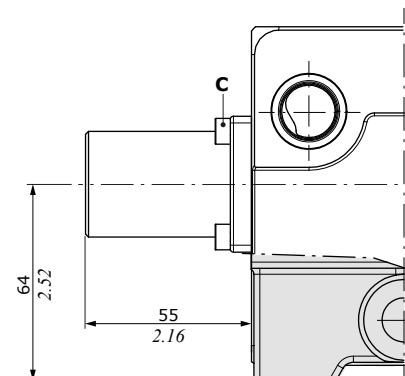
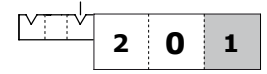
R5 type

2 position,
detent in position 0-2



R6 type

2 position,
detent in position 1-2



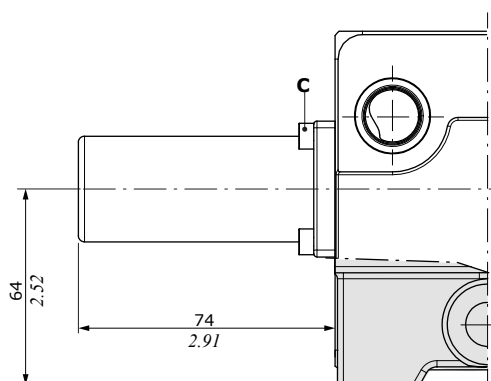
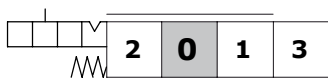
Working section

B side controls

With detent control

R8 type

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



Wrenches and tightening torques

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

D = wrench 30 - 42 Nm (30.9 lbft)

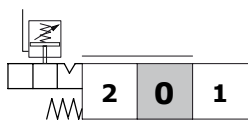
E = wrench 22

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

With detent and kick out function

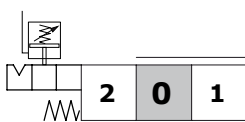
R1K type

3 position, detent in position 1



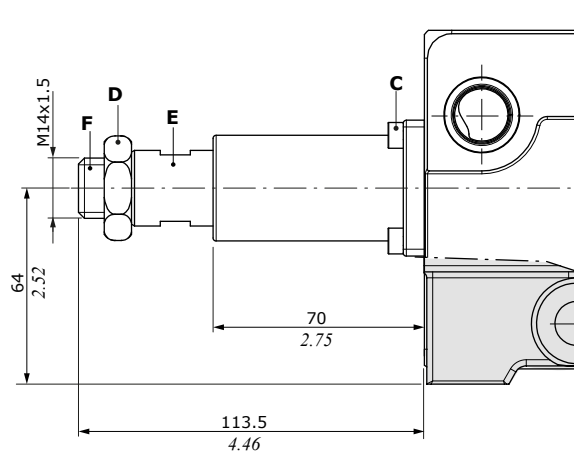
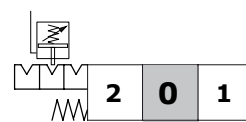
R2K type

3 position, detent in position 2



R3K type

3 position, detent in all position

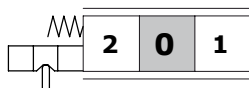


B side controls

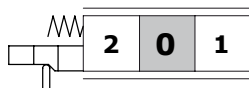
With spool position microswitch

M1-N1 type

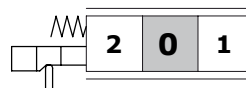
3 position, micro operation in position 1 and 2, spring return in neutral position

**M1-N1A type**

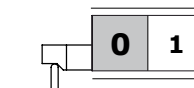
3 position, micro operation in position 1

**M1-N1B type**

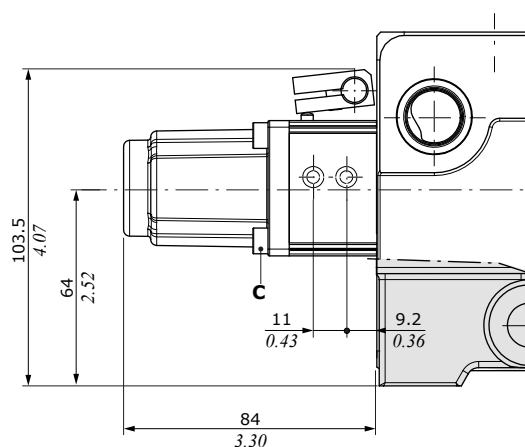
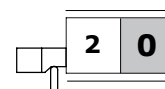
3 position, micro operation in position 2

**M2-N1 type**

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

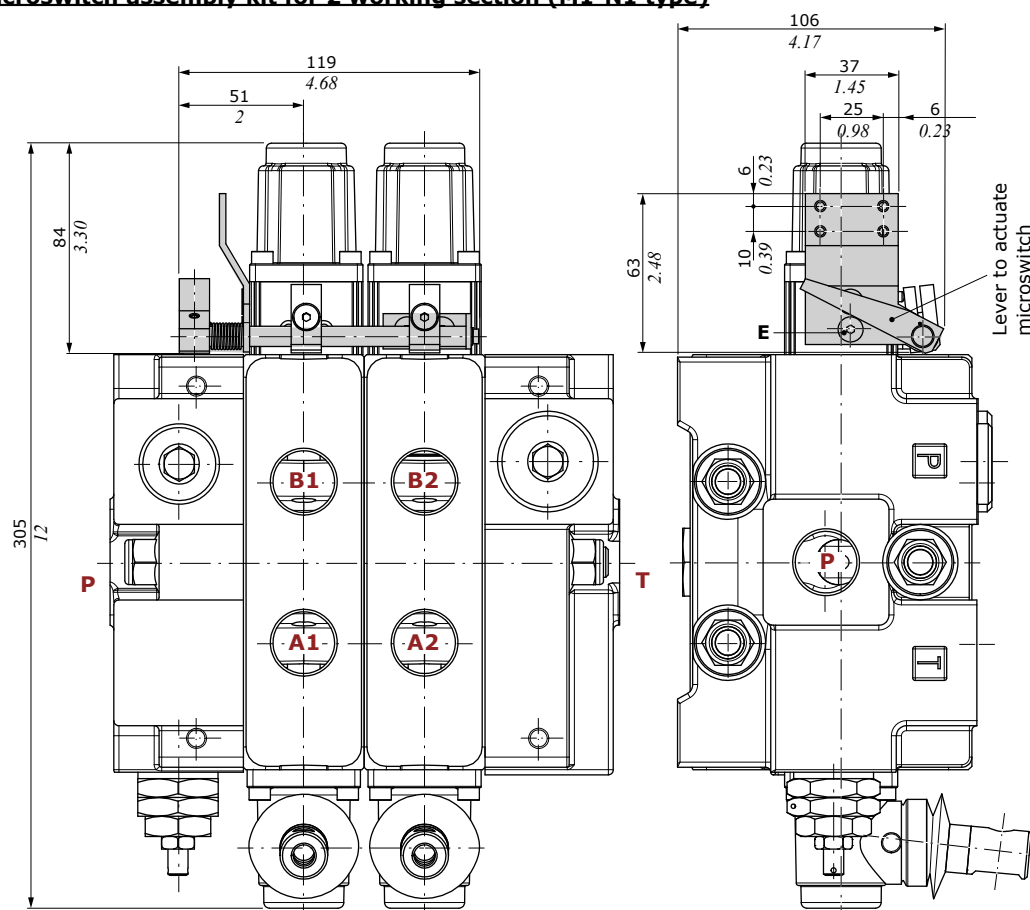
**M3-N1 type**

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

**Wrenches and tightening torques**

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

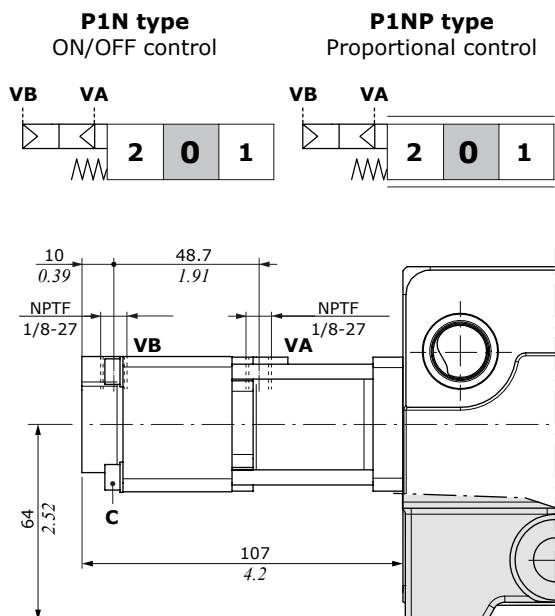
E = allen wrench 3 - 6.6 Nm (4.8 lbft)

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

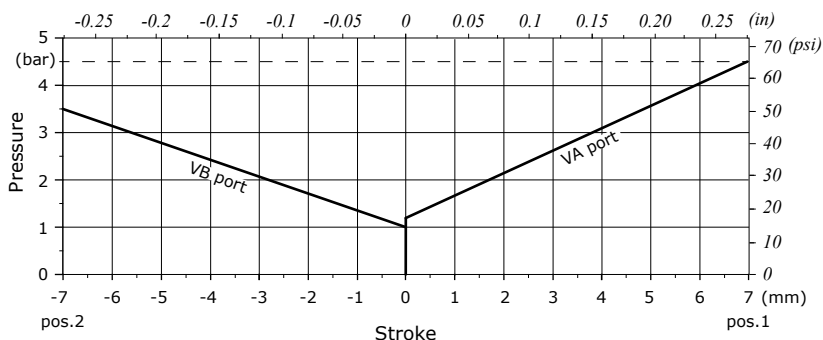
Working section

B side controls

With pneumatic control



Proportional pilot pressure curves



Operating features

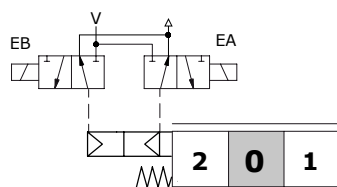
Pilot pressure..... : min. 5 bar (72.5 psi) - max. 30 bar (435 psi)
Pilot volume..... : 9 cm³/min (0.54 in³/min)

Wrenches and tightening torques

C = wrench 4 - 6.6 Nm (4.8 lbft)

With ON/OFF electropneumatic control

D3 type ON/OFF control

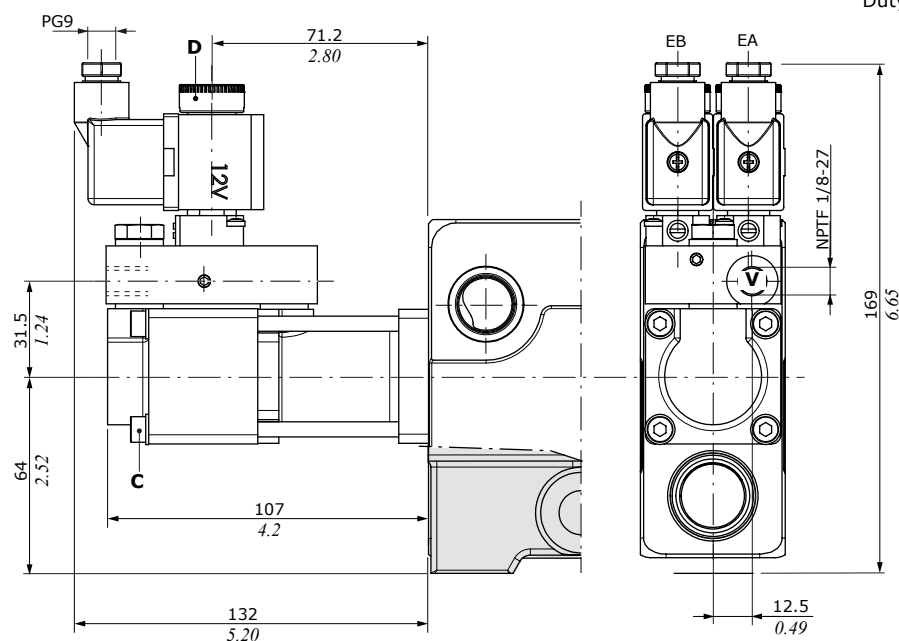


Operating features

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

COILS

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



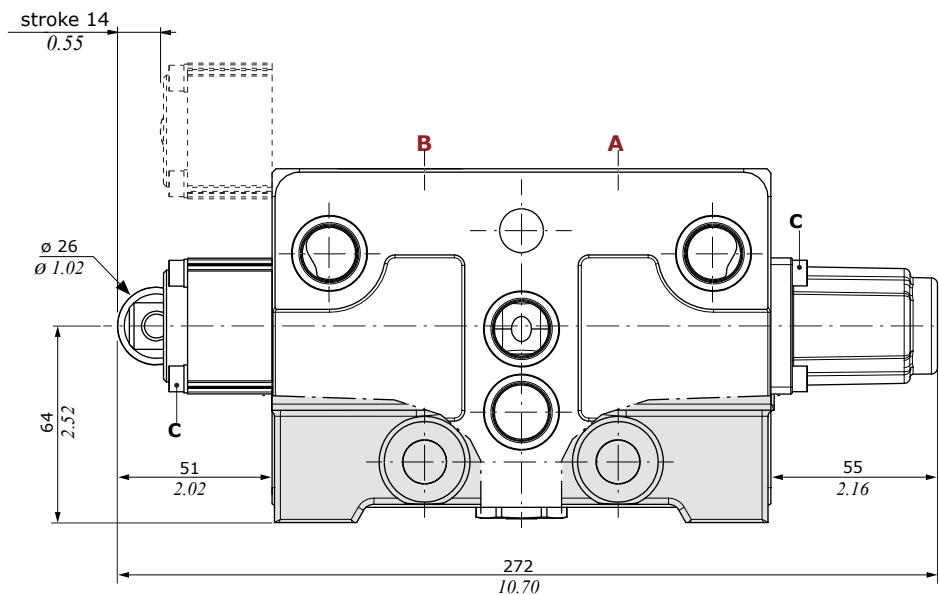
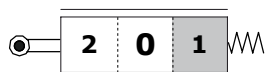
Wrenches and tightening torques

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

A+B side controls

With cam control

C2 type
From position 1 to position 2,
spring return in position 1

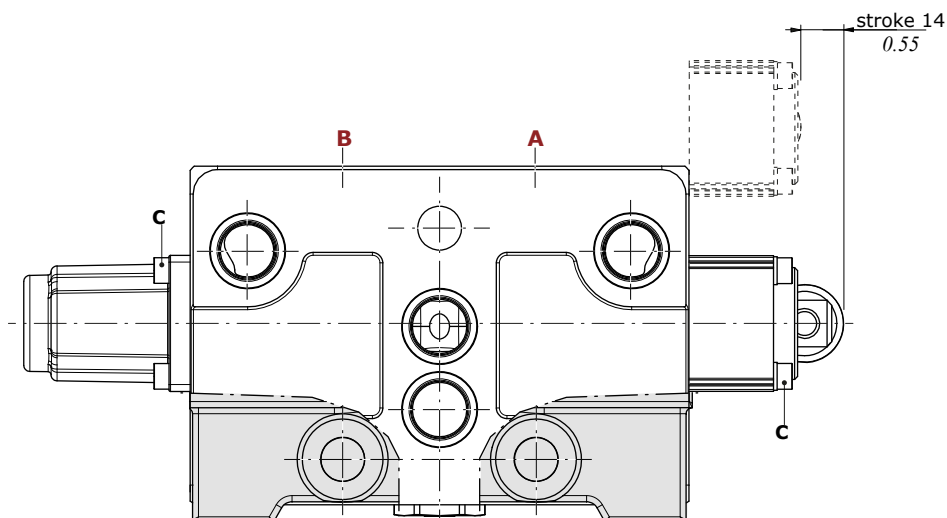
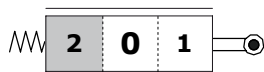


Wrenches and tightening torques

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

C3 type

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



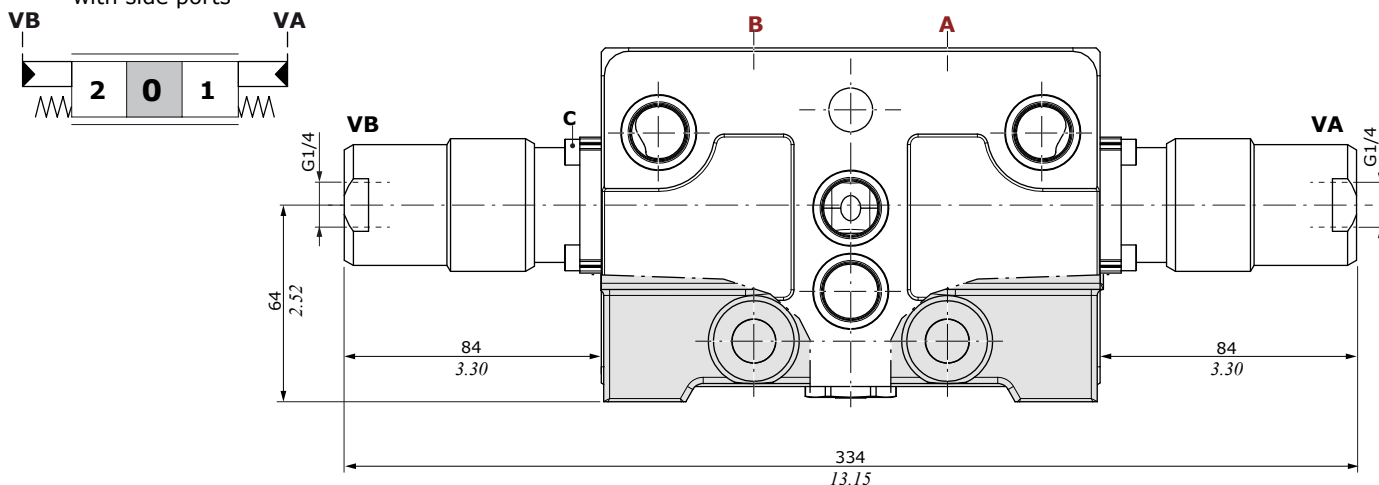
Working section

A+B side controls

With proportional hydraulic controls

H1 type

High pressure control
with side ports

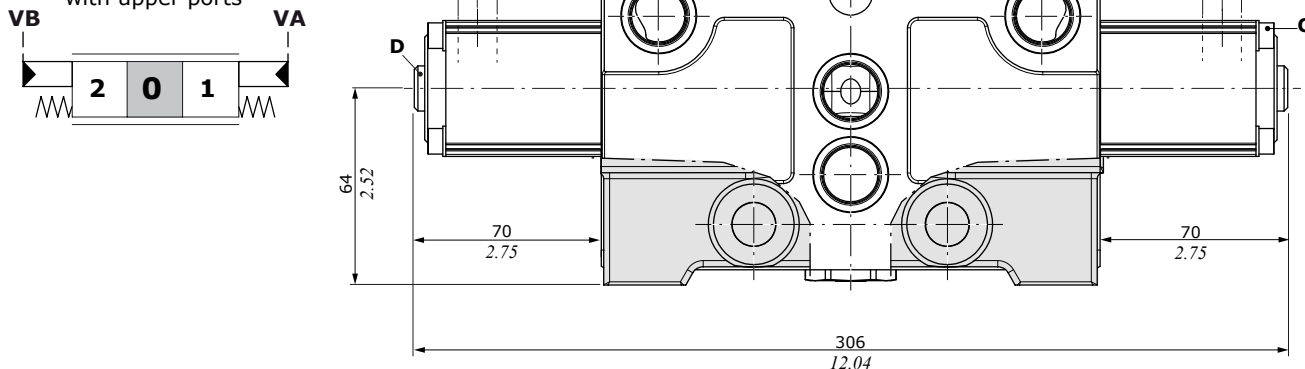


Operating features

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

H5 type

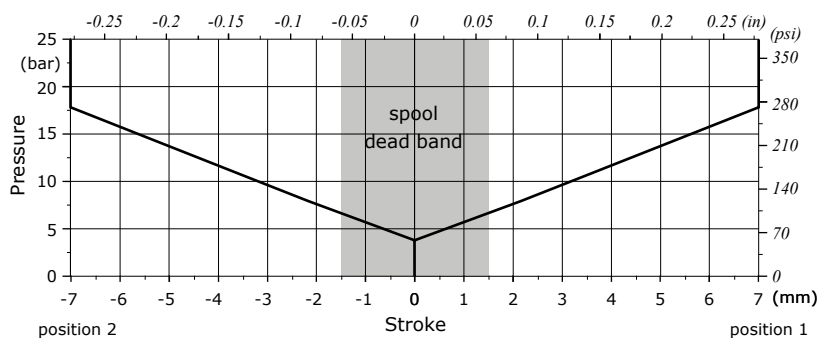
Low pressure control
with upper ports



Operating features

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

Stroke vs. Pressure diagram for H5 type control



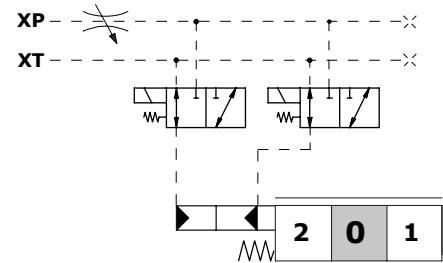
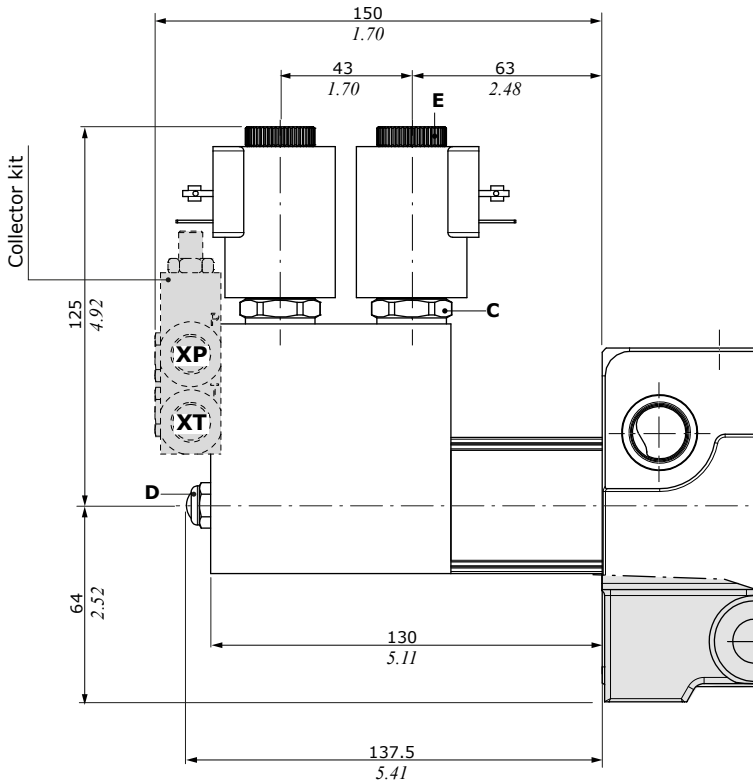
Wrenches and tightening torques

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

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

Electrohydraulic control

D2W type: ON/OFF one side

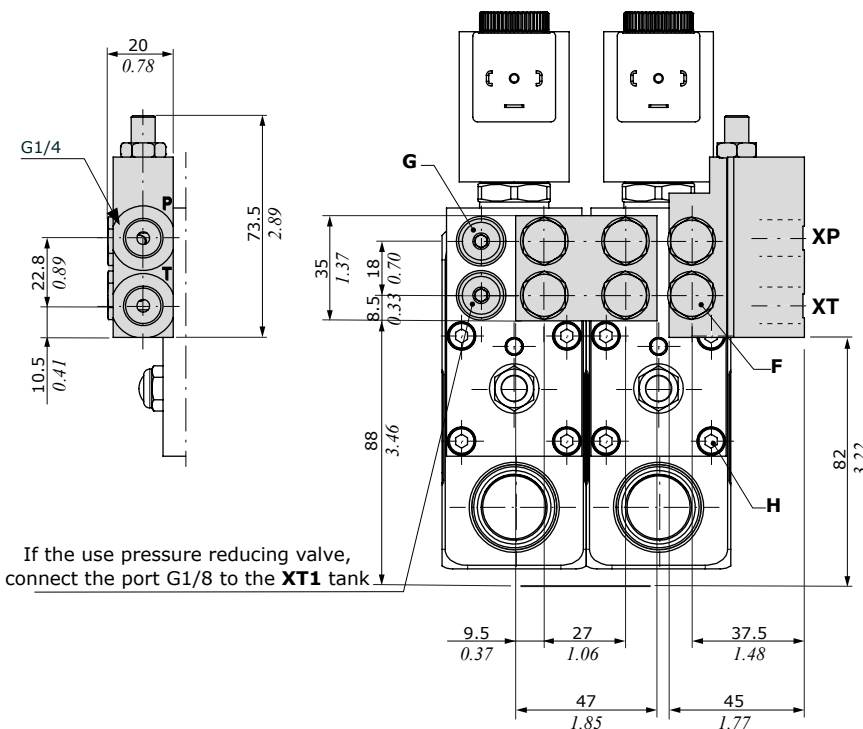


Features

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

For BT type coils and mating connectors see page 243

KE2S connector kit



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

Wrenches and tightening torques

C = wrench 24 - 30 Nm (22 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)

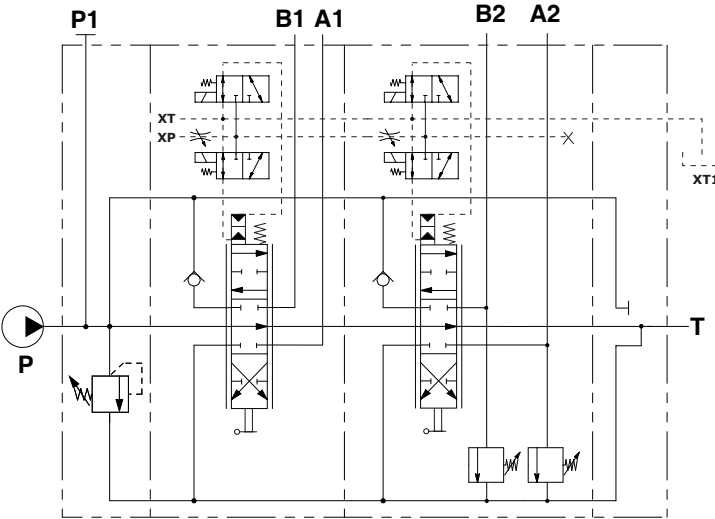
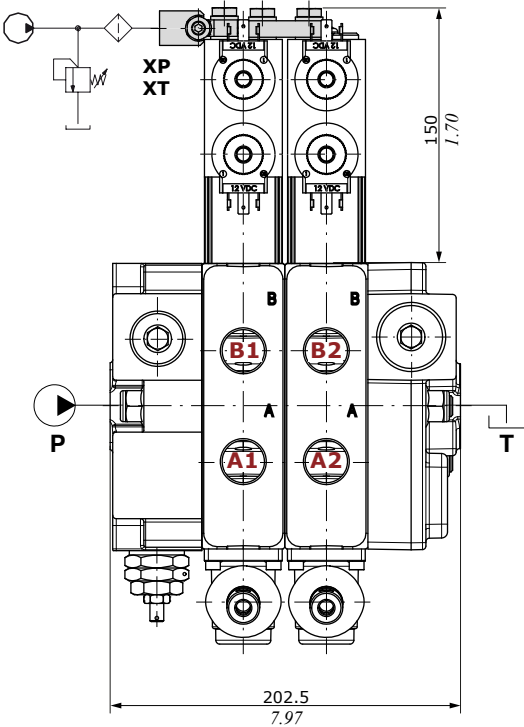
Working section

Electrohydraulic control

Connector kit for external pilot and drain

CONNECTOR KIT CODES		
Type	Code*	Description
KE2S	5GKE13S020	Kit for 2 section

For other connector kit codes, see page 218



Description example:

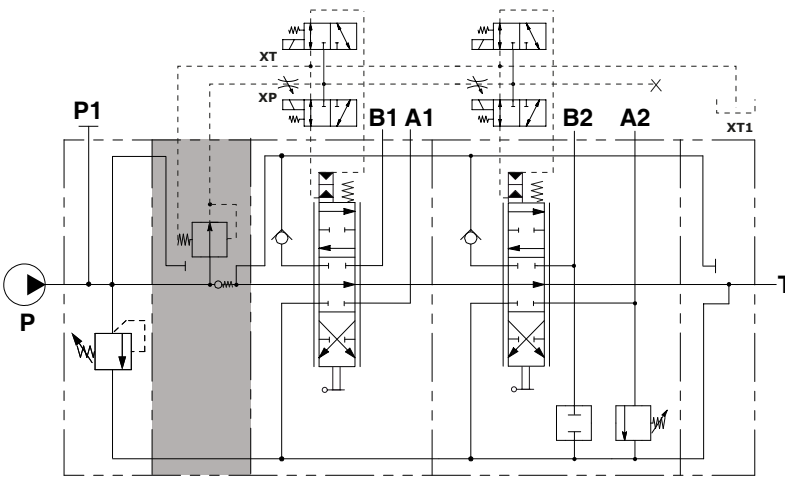
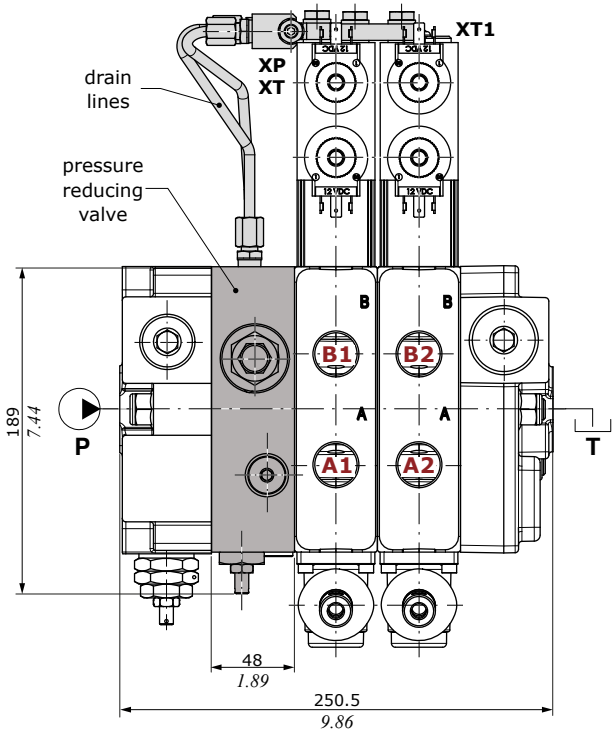
Q130/2/F7S(N120)/KE2S/103-A1-D2W.V40(N)120/
103-A1-D2W.V40(N)120/F3D-12VDC-S

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	5GKE13R020	Kit for 2 section

For other connector kit codes, see page 218



Description example:

Q130/2/F7S(N120)/KE2R/103-A1-D2W.V40(N)120/
103-A1-D2W.V40(N)120/F3D-12VDC-S

VRP pressure reducing valve

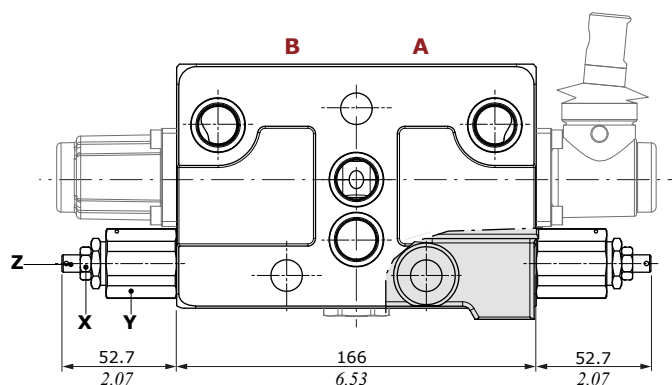
Auxiliary valve configuration

Dimensional data and hydraulic circuits

Antishock valve example

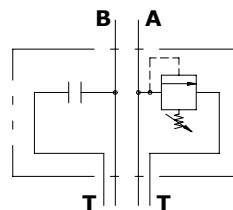
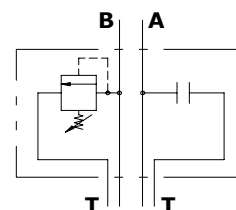
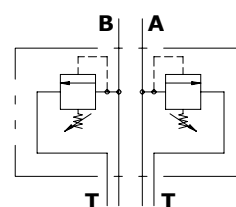
Q130 / 1 / ... / 103 - A1 - M1 - **V32(N)**120 / ...

aux valve spring type
and valve setting (bar)



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 350 - from 2910 to 5100

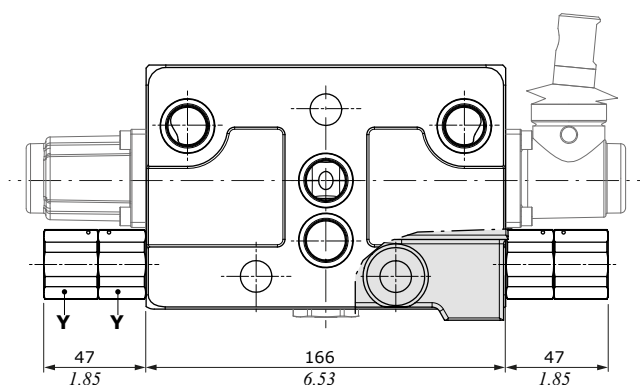
A side configuration: **B side configuration:**

V30**V31****A+B side configuration:****V32** (V30 + V31)

Antishock/anticavitation valve example

Q130 / 1 / ... / 103 - A1 - M1 - **V32(N)**120 / ...

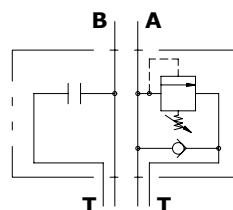
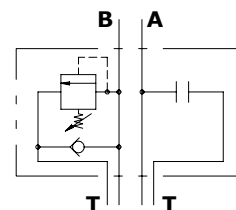
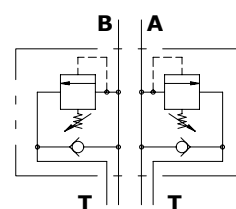
aux valve spring type
and valve setting (bar)



Wrenches and tightening torques

Y = wrench 30 - 80 Nm (59 lbf ft)
X = wrench 20 - 24 Nm (17.7 lbf ft)
Z = allen wrench 4

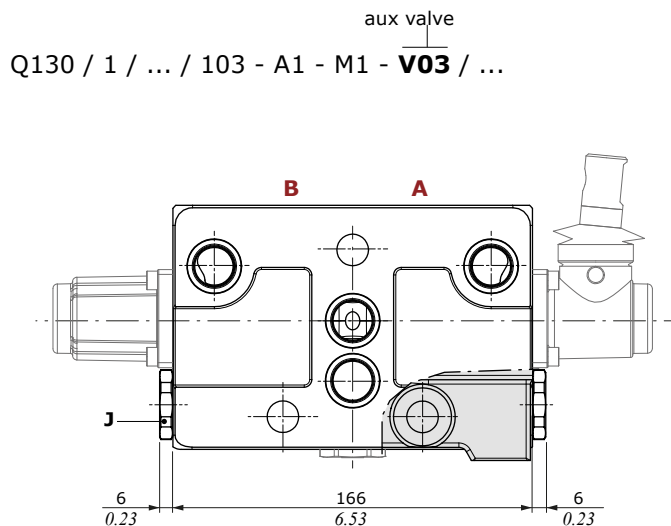
A side configuration: **B side configuration:**

V33**V34****A+B side configuration:****V35** (V34 + V33)

Auxiliary valve configuration

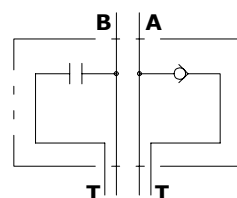
Dimensional data and hydraulic circuits

Anticavitation valve example



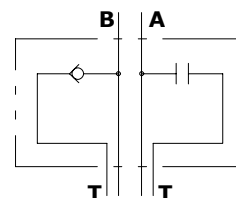
A side configuration:

V04



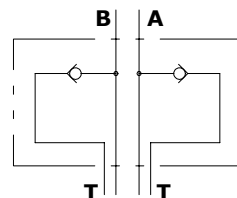
B side configuration:

V05



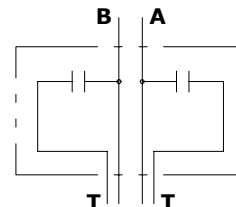
A+B side configuration:

V03 (V04 + V05)



Plug valve:

VC



Wrenches and tightening torques

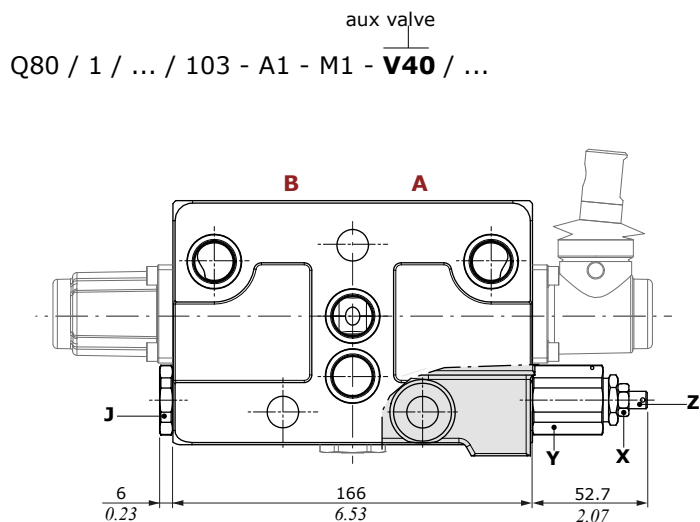
J = wrench 30 - 42 Nm (30.9 lbf·ft)

Y = wrench 30 - 80 Nm (59 lbf·ft)

X = wrench 20 - 24 Nm (17.7 lbf·ft)

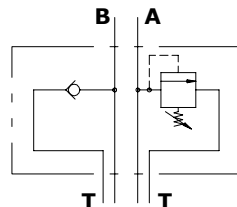
Z = allen wrench 4

Antishock and anticavitation combining valves example



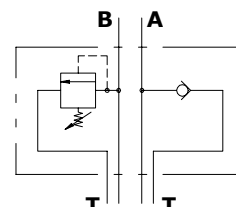
A side configuration:

V40 (V30 + V05)



B side configuration:

V41 (V31 + V04)

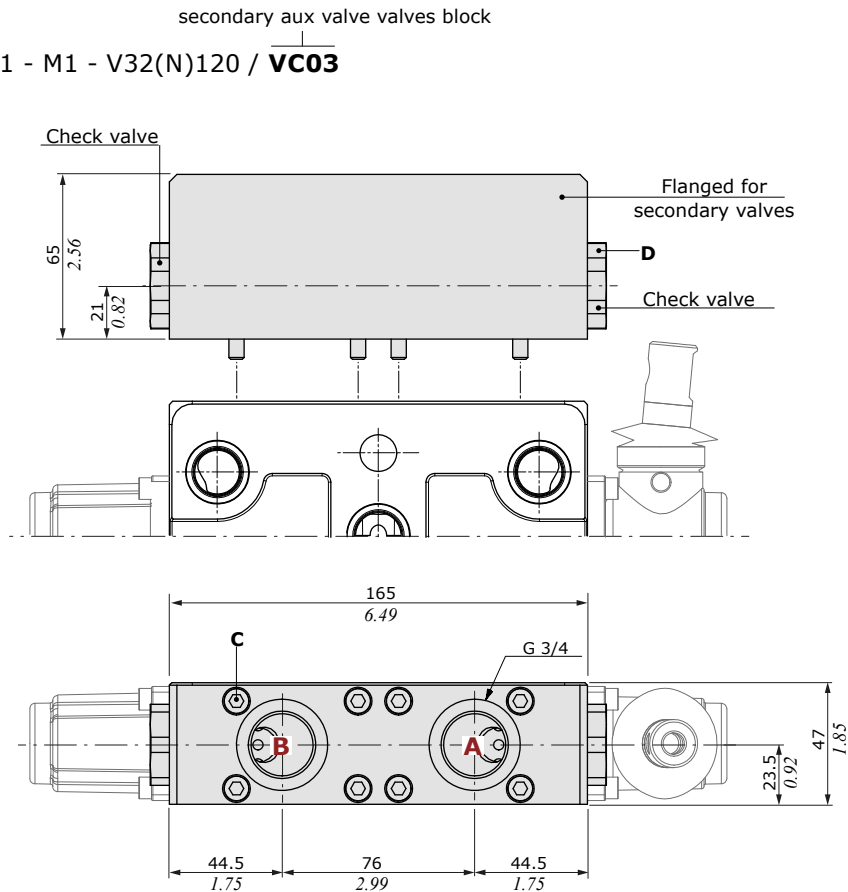


Secondary valve configuration

Dimensional data and hydraulic circuits

Description example

Q130 / 1 / ... / 103 - A1 - M1 - V32(N)120 / **VC03**



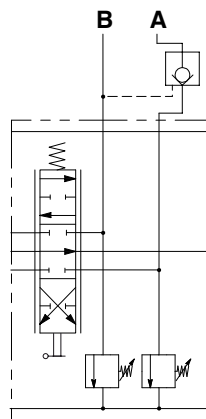
Wrenches and tightening torques

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

D = wrench 12 - 42 Nm (31 lbft)

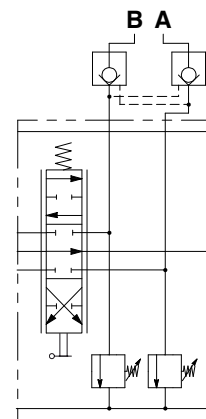
Q130.V40(N)120/VC01 configuration

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



Q130.V40(N)120/VC03 configuration

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

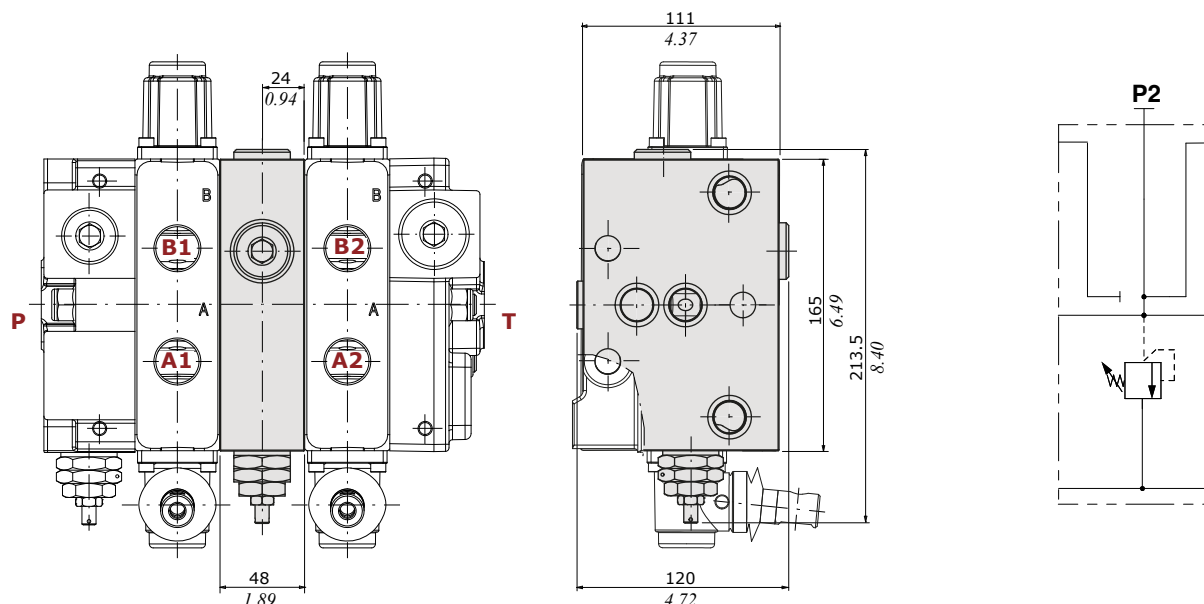


Intermediate section

Dimensional data and hydraulic circuit

E50 type

Intermediate inlet section with pressure relief valve

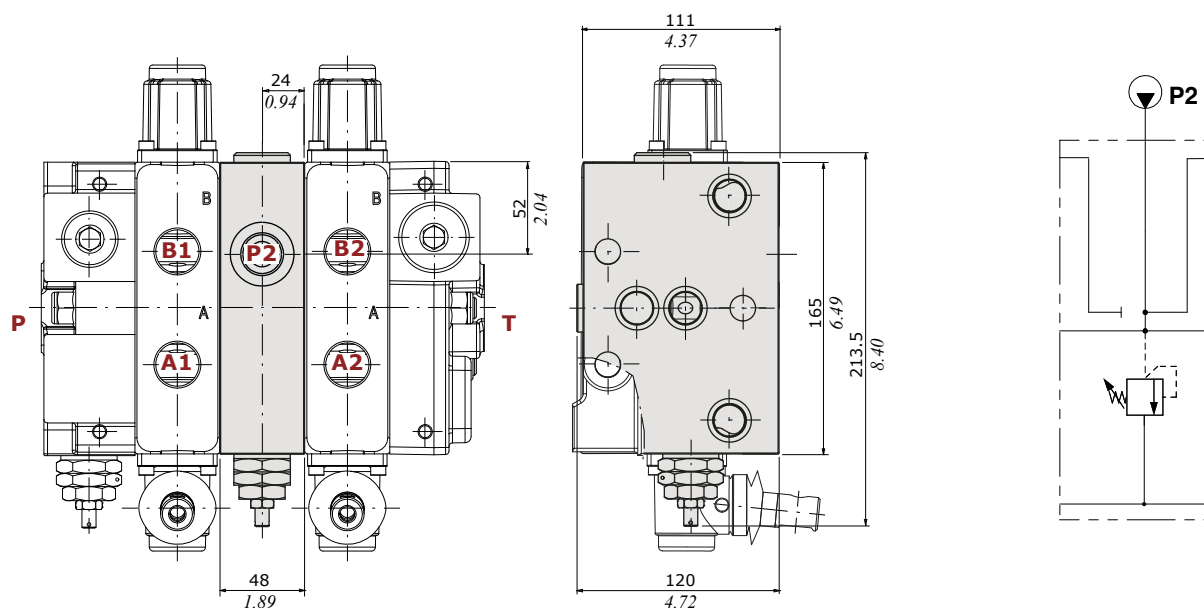


Description example: Q130/2/F7S(N150)/103-A1-M1/**E50(N150)**/103-A1-M1/F3D

intermediate section spring type and valve setting (bar)

E53 type

Intermediate inlet section with pressure relief valve and P2 port open



Description example: Q130/2/F7S(N150)/103-A1-M1/**E53(N150)**/103-A1-M1/F3D

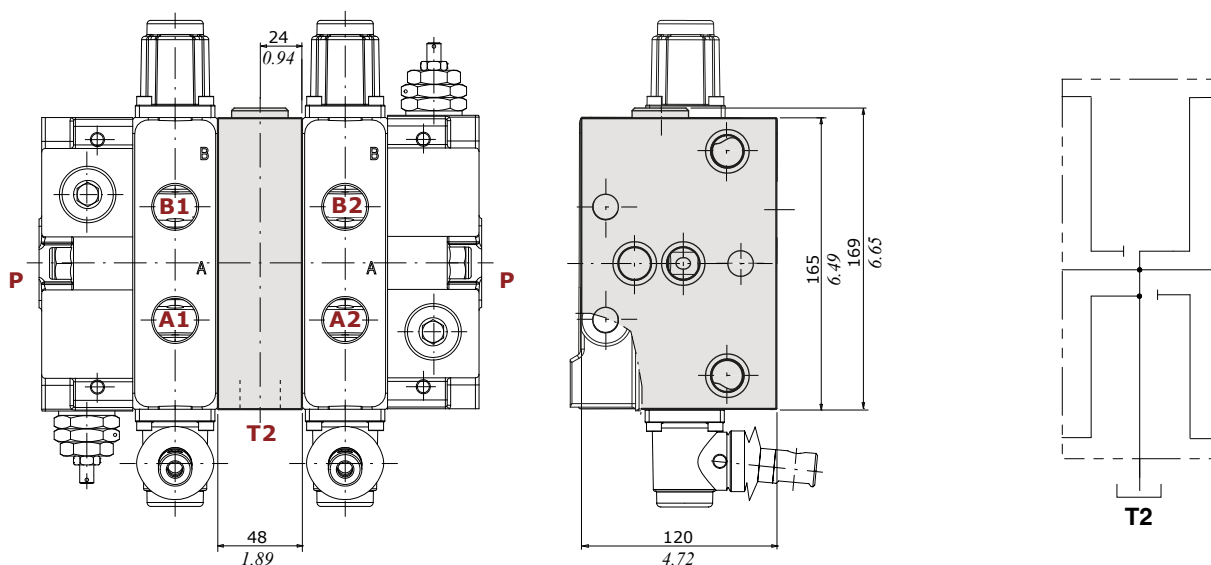
intermediate section spring type and valve setting (bar)

Intermediate section

Dimensional data and hydraulic circuit

E51 type

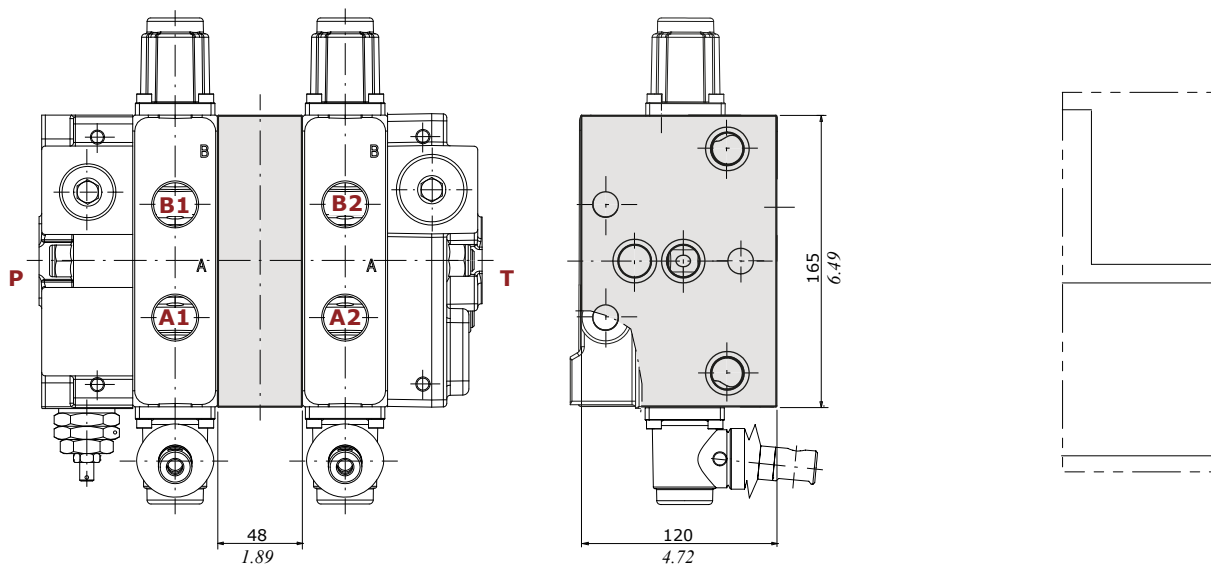
Intermediate outlet section, T2 port open


Description example: Q130/2/F7S(N150)/103-A1-M1/**E51**/103-A1-M1/F3D

intermediate
section

E61 type

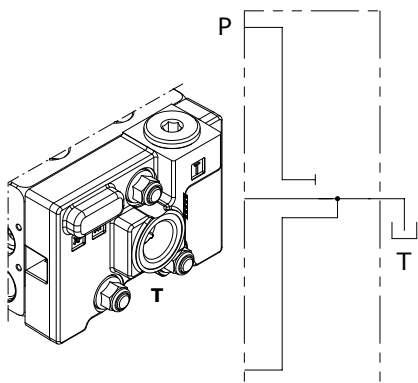
Intermediate spacer section


Description example: Q130/2/F7S(N150)/103-A1-M1/**E61**/103-A1-M1/F3D

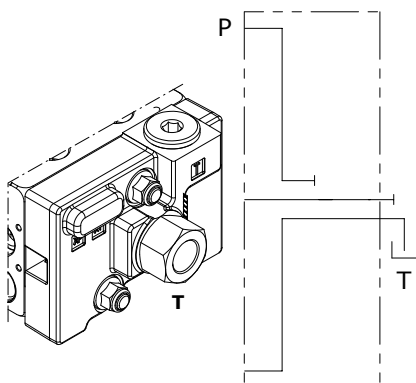
intermediate
section

Outlet section

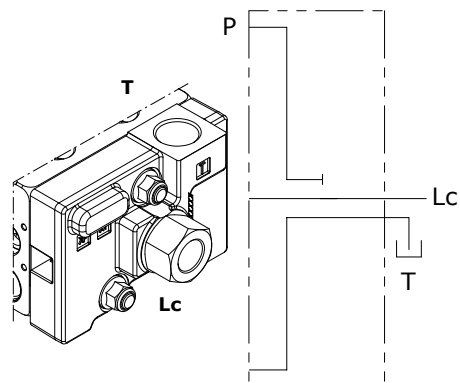
F3D configuration
Open center configuration



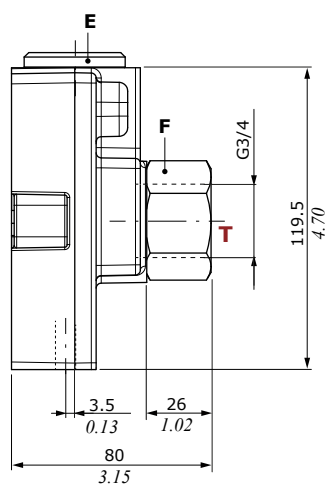
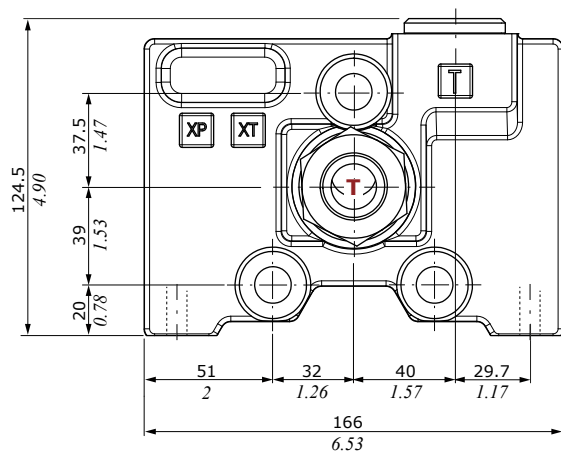
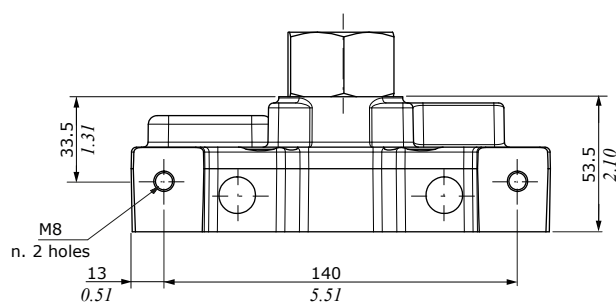
F16D configuration
Closed center configuration



F6D configuration
Carry-over configuration



F16D configuration example



Wrenches and tightening torques

E = allen wrench 12 - 42 Nm (30.9 lbf ft)
F = wrench 41 - 80 Nm (59 lbf ft)

Dimensional data and features

Coil type	Voltage	Connectors					
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	Flying leads (without conn.)
BER	10 VDC	4SLE001000A	-	-	-	-	-
	12 VDC	4SLE001200A 4SLE001217A ⁽³⁾	4SLE001201A ⁽⁵⁾ 4SLE001209A ⁽³⁻⁵⁾ 4SLE001202A ⁽⁶⁾ 4SLE001216A ⁽³⁻⁶⁾ 4SLE001206A ⁽²⁾	4SLE001203A ⁽⁵⁾ 4SLE001211A ⁽³⁻⁵⁾	4SLE001210A ⁽²⁾	4SLE001214A ⁽²⁾	4SLE001207A
	14 VDC	-	4SLE001400A ⁽⁶⁾ 4SLE001401A ⁽³⁻⁶⁾ 4SLE001402A ⁽³⁻⁵⁾	4SLE001403A ⁽³⁻⁵⁾	-	-	-
	24 VDC	4SLE002400A 4SLE002408A ⁽³⁾ 4SLE302400A ⁽¹⁾	4SLE002401A ⁽⁵⁾ 4SLE002407A ⁽³⁻⁵⁾ 4SLE002402A ⁽⁶⁾	4SLE002403A ⁽⁵⁾	-	-	4SLE002404A
	28 VDC	-	4SLE002802A ⁽⁶⁾	4SLE002800A ⁽⁵⁾	-	-	-
	48 VDC	4SLE004800A 4SLE304800A ⁽¹⁾	-	-	-	-	-
	110VDC	4SLE011000A 4SLE311000A ⁽¹⁾	-	-	-	-	-
	220 VDC	4SLE022000A 4SLE322000A ⁽¹⁾	-	-	-	-	-
	Mating connectors (For connector with rectifier see last table)	4CN1009995	5CON140031	5CON003	5CON001	5CON017	-

Coil type	Voltage	Connectors					
		ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	Flying leads (without conn.)
BT	10 VDC	4SL3000100	-	-	-	-	-
	12 VDC	4SL3000120 4SL3000126 ⁽⁴⁾	4SL3000130 ⁽⁶⁾ 4SL3000134 ⁽³⁻⁶⁾ 4SL3000128 ⁽²⁾	4SL3000122 ⁽⁵⁾ 4SL3001200 ⁽³⁻⁵⁾	4SL3000124 ⁽²⁾	4SL3000127 ⁽²⁾	4SL300012C
	24 VDC	4SL3000240 4SL3030240 ⁽¹⁾	4SL3000249 ⁽⁶⁾ 4SL300024C ⁽³⁻⁶⁾	4SL3000248 ⁽⁵⁾	-	-	4SL3000246
	26 VDC	4SL3000260	-	-	-	-	-
	48 VDC	4SL3000480 4SL3030480 ⁽¹⁾	-	-	-	-	-
	110VDC	4SL3001100 4SL3031100 ⁽¹⁾	-	-	-	-	-
	220 VDC	4SLE022000A 4SLE322000A ⁽¹⁾	-	-	-	-	-
	Mating connectors (For connector with rectifier see last table)	4CN1009995	5CON140031	5CON003	5CON001	5CON017	-

Notes: ⁽¹⁾ supply with AC and use only with rectifier connector - ⁽²⁾ with flying leads - ⁽³⁾ with bidirectional diode
⁽⁴⁾ with unidirectional diode - ⁽⁵⁾ integrated perpendicular type - ⁽⁶⁾ integrated parallel type

Voltage	ISO 4400 mating connector with rectifier	
	BER type coil	
24 VDC	4CN1010240	
48 VDC	4CN1010480	
110 VDC	4CN1011100	
220 VDC	4CN1012200	

BER type

[illegible][illegible]

Insertion : 100%

[illegible]

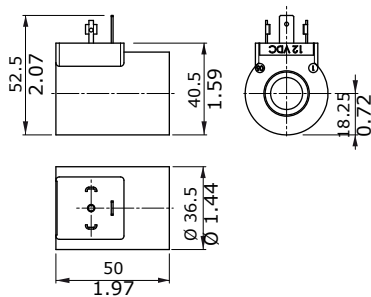
Technical drawing of the pump assembly showing dimensions: 200 mm (7.87 inches) for the total length and 43.5 mm (1.71 inches) for the pump body length.

Technical drawing of the pump assembly showing dimensions: 144 (5.67) and 41.5 (1.63).

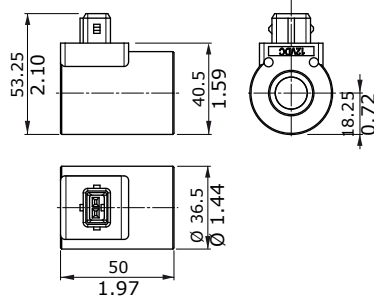
Dimensional data and features

BT type

ISO4400 connector



AMP JPT connector

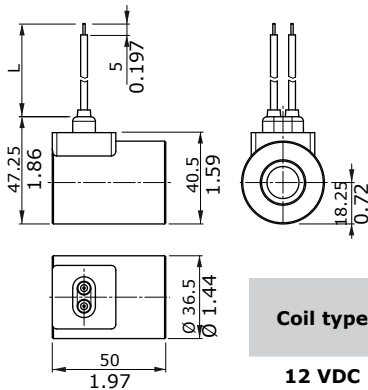
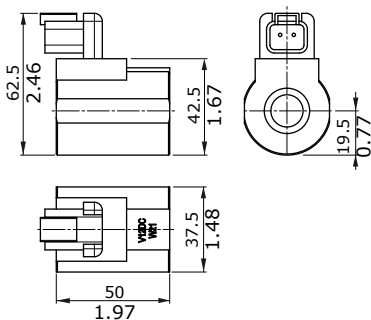


Features

- Nominal voltage tolerance : $\pm 10\%$
Power rating : 19 W - 10 VDC - 48 RAC
: 21 W - 12/24/26 VDC
: 20.3 W - 48 VDC
: 17.3 W - 110 VDC
: 17.7 W - 220 VDC
: 19.9 W - 24 RAC
: 20.7 W - 48 RAC
: 20 W - 110/220 RAC
Max. operating current . . : 1.90 A - 10 VDC
: 1.77 A - 12 VDC
: 0.89 A - 24 VDC
: 0.84 A - 26 VDC
: 0.43 A - 48 VDC
: 0.16 A - 110 VDC
: 0.08 A - 220 VDC
: 0.93 A - 24 RAC
: 0.47 A - 48 RAC
: 0.18 A - 110 RAC
: 0.09 A - 220 RAC
Coil insulation : Class F (155°C - 311°F)
Weather protection : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack
Insertion : 100%

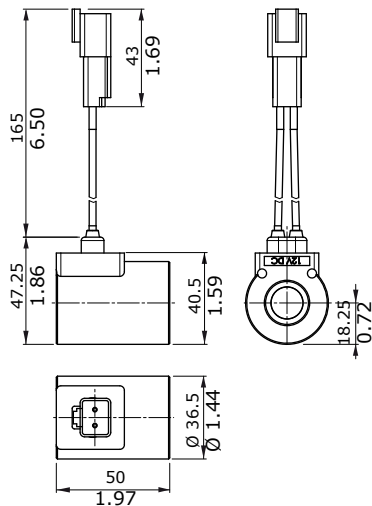
Flying leads

DEUTSCH DT04 connector
(parallel type)

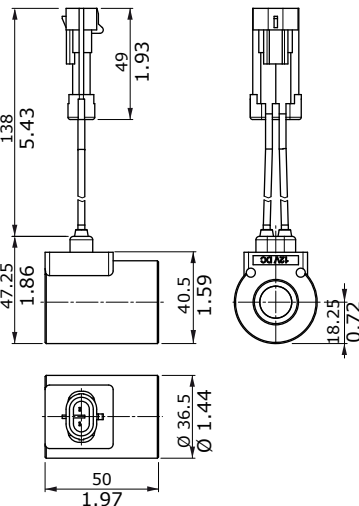


Coil type	L dimension	
	(mm)	(in)
12 VDC	240	9.45
24 VDC	600	23.62

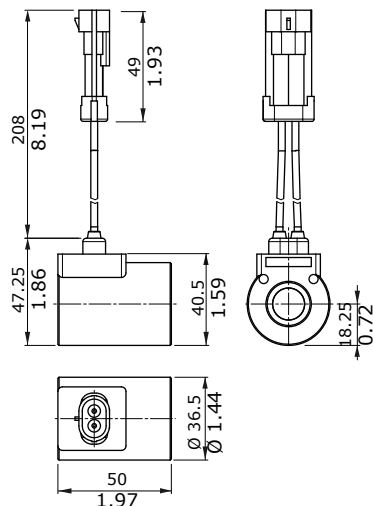
Flying leads with
DEUTSCH DT04 connector



Flying leads with PACKARD
METRI-PACK connector



Flying leads with PACKARD
WEATHER-PACK connector



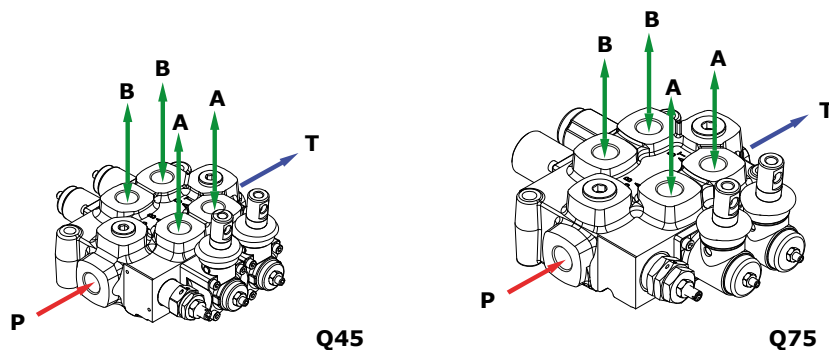
Main rules

The directional control valves range are assembled and tested as per the technical specifications of this catalogue.

Before the final installation on your equipment, please follow the recommendations below:

- the valve can be assembled in any position; in order to prevent body deformation and spool sticking mount the product on a flat surface;
- In order to prevent the possibility of water entering the spool control kit, do not use high pressure washdown directly on the valve;
- before painting, ensure plugs on normally open ports are tightly in place.

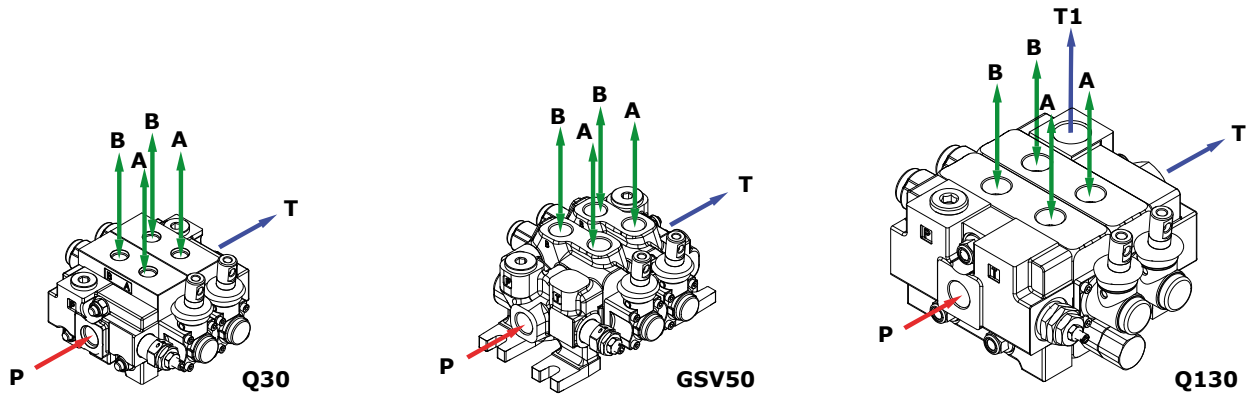
Monoblock valves



FITTING TIGHTENING TORQUE - Nm / lbft									
THREAD TYPE		P port		A and B ports		T port		Lc port	
Q35	BSP	G 3/8		G 3/8		G 3/8		-	
	With O-Ring seal	35 / 25.8		35 / 25.8		35 / 25.8		-	
	With copper washer	40 / 29.5		40 / 29.5		40 / 29.5		-	
	With steel and rubber washer	30 / 22.1		30 / 22.1		30 / 22.1		-	
	UN-UNF	3/4-16 (SAE 8)		3/4-16 (SAE 8)		3/4-16 (SAE 8)		-	
	With O-Ring seal	50 / 36.9		50 / 36.9		50 / 36.9		-	
THREAD TYPE		P and P1 ports		A and B ports		T port		T1 and Lc ports	
		Q25	Q45	Q25	Q45	Q25/Q45	Q25	Q45	
Q25 - Q45	BSP	G 3/8	G 1/2	G 3/8	G 1/2	G 1/2	G 3/8	G 1/2	
	With O-Ring seal	35 / 25.8	50 / 36.9	35 / 25.8	50 / 36.9	50 / 36.9	35 / 25.8	50 / 36.9	
	With copper washer	40 / 29.5	60 / 44.3	40 / 29.5	60 / 44.3	60 / 44.3	40 / 29.5	60 / 44.3	
	With steel and rubber washer	30 / 22.1	60 / 44.3	30 / 22.1	60 / 44.3	60 / 44.3	30 / 22.1	60 / 44.3	
	UN-UNF	9/16-18 (SAE 6)	3/4-16 (SAE 8)	9/16-18 (SAE 6)	3/4-16 (SAE 8)	7/8-14 (SAE 10)	3/4-16 (SAE 8)	3/4-16 (SAE 8)	
	With O-Ring seal	30 / 22.1	35 / 25.8	30 / 22.1	35 / 25.8	90 / 66.4	35 / 25.8	35 / 25.8	
		Q75	Q95	Q75	Q95	Q75/Q95	Q75	Q95	
Q75 - Q95	BSP	G 1/2	G 3/4	G 1/2	G 3/4	G 3/4	G 1/2	G 3/4	
	With O-Ring seal	50 / 36.9	90 / 66.4	50 / 36.9	90 / 66.4	90 / 66.4	50 / 36.9	90 / 66.4	
	With copper washer	60 / 44.3	90 / 66.4	60 / 44.3	90 / 66.4	90 / 66.4	60 / 44.3	90 / 66.4	
	With steel and rubber washer	60 / 44.3	70 / 51.6	60 / 44.3	70 / 51.6	70 / 51.6	60 / 44.3	70 / 51.6	
	UN-UNF	7/8-14 (SAE 10)	1" 1/16-12 (SAE 12)	7/8-14 (SAE 10)	1" 1/16-12 (SAE 12)	1" 1/16-12 (SAE 12)	7/8-14 (SAE 10)	1" 1/16-12 (SAE 12)	
	With O-Ring seal	90 / 66.4	95 / 70.1	90 / 66.4	95 / 70.1	95 / 70.1	90 / 66.4	95 / 70.1	

NOTE – These torques are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish.

Sectional valves



FITTING TIGHTENING TORQUE - Nm / lbft				
THREAD TYPE	P and P1 ports	A and B ports	T port	T1 and Lc ports
Q30	BSP	G 3/8	G 3/8	G 1/2
	With O-Ring seal	35 / 25.8	35 / 25.8	50 / 36.9
	With copper washer	40 / 29.5	40 / 29.5	60 / 44.3
	With steel and rubber washer	30 / 22.1	30 / 22.1	60 / 44.3
	UN-UNF	3/4-16 (SAE 8)	9/16-18 (SAE 6)	7/8-14 (SAE 10)
	With O-Ring seal	35 / 25.8	30 / 22.1	90 / 66.4
GSV50	BSP	G 1/2	G 1/2	G 1/2
	With O-Ring seal	50 / 36.9	50 / 36.9	50 / 36.9
	With copper washer	60 / 44.3	60 / 44.3	60 / 44.3
	With steel and rubber washer	60 / 44.3	60 / 44.3	60 / 44.3
	UN-UNF	3/4-16 (SAE 8)	3/4-16 (SAE 8)	7/8-14 (SAE 10)
	With O-Ring seal	35 / 25.8	35 / 25.8	90 / 66.4
Q80	BSP	G 1/2 - G 3/4	G 1/2 - G 3/4	G 3/4
	With O-Ring seal	50 / 36.9 - 90 / 66.4	50 / 36.9 - 90 / 66.4	90 / 66.4
	With copper washer	60 / 44.3 - 90 / 66.4	60 / 44.3 - 90 / 66.4	90 / 66.4
	With steel and rubber washer	60 / 44.3 - 70 / 51.6	60 / 44.3 - 70 / 51.6	70 / 51.6
	UN-UNF	7/8-14 (SAE 10)	3/4-16 (SAE 8)	1" 1/16-12 (SAE 12)
	With O-Ring seal	90 / 66.4	35 / 25.8	95 / 70.1
Q130	BSP	G 3/4 - G 1"	G 3/4 - G 1"	G 1"
	With O-Ring seal	90 / 66.4 - 100 / 73.8	90 / 66.4 - 100 / 73.8	100 / 73.8
	With copper washer	90 / 66.4 - 90 / 66.4	90 / 66.4 - 90 / 66.4	90 / 66.4
	With steel and rubber washer	70 / 51.6 - 100 / 73.8	70 / 51.6 - 100 / 73.8	100 / 73.8
	UN-UNF	1" 5/16-12 (SAE 16)	1" 5/16-12 (SAE 16)	1" 5/16-12 (SAE 16)
	With O-Ring seal	150 / 100.6	150 / 100.6	150 / 100.6

NOTE – These torques are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish.

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D2WWEZ01E
5th edition April 2025



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