

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

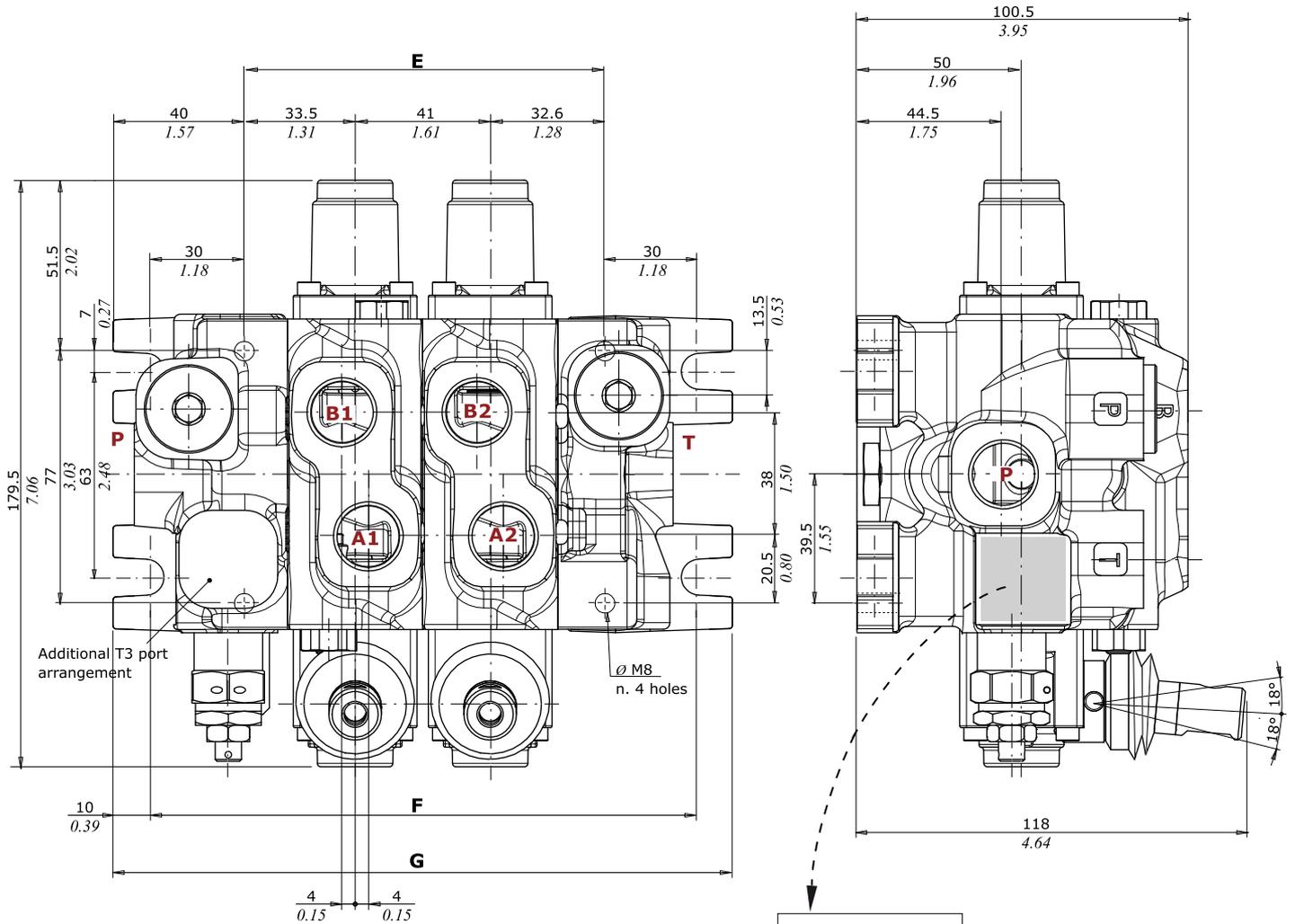
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

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

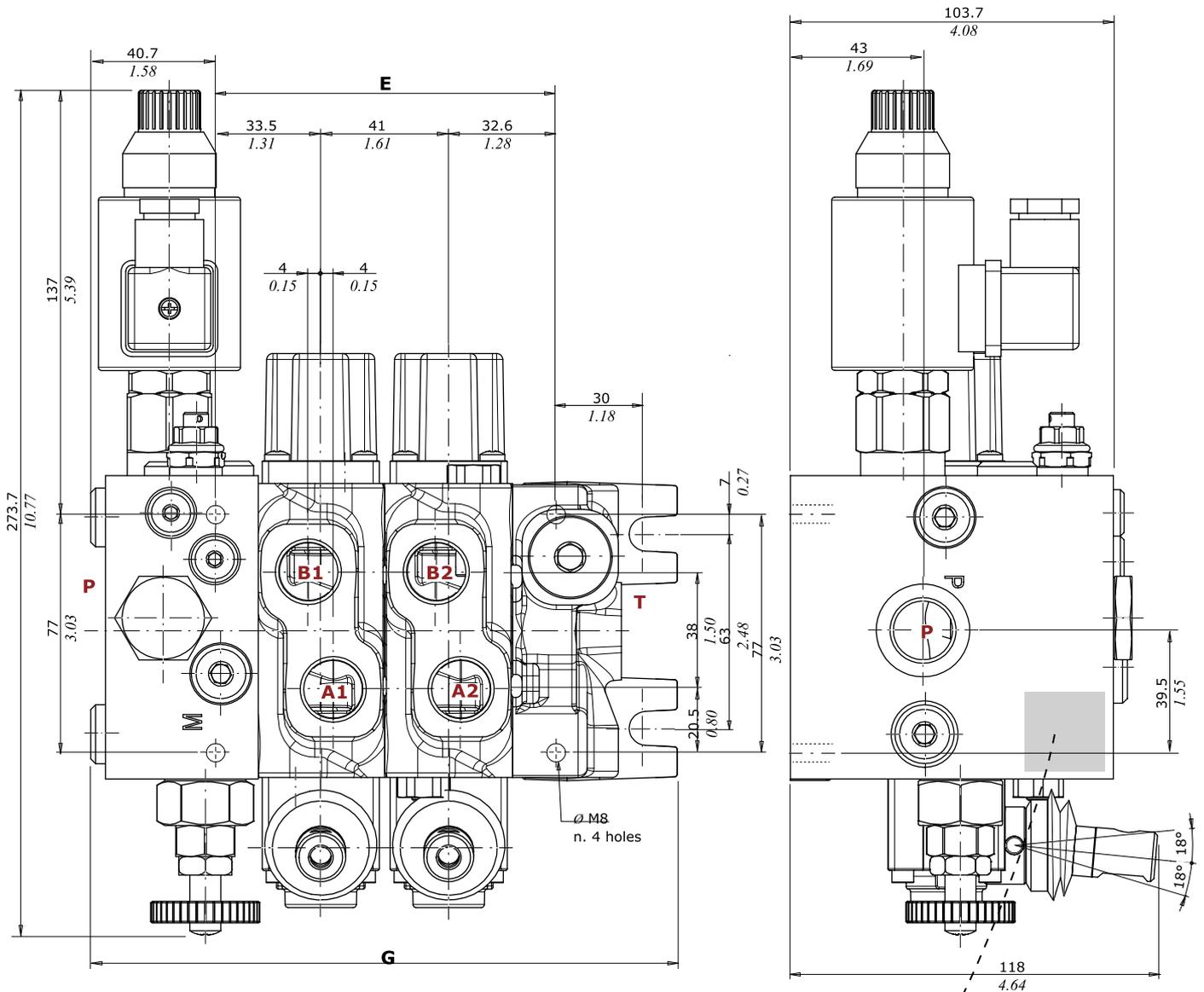
Standard configuration*



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

NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.
 (*): For other configurations, see page 179

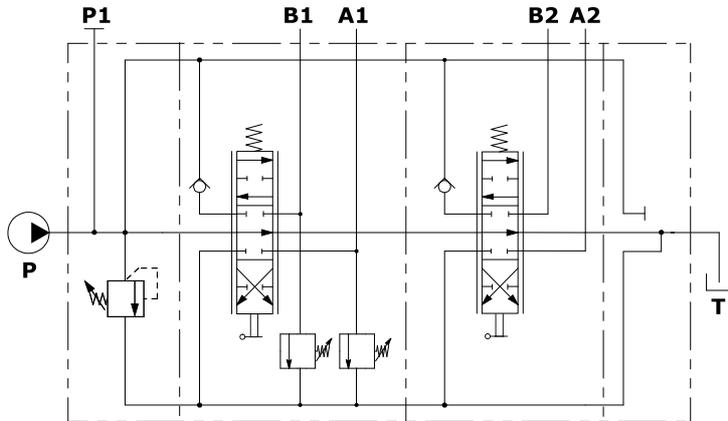
Proportional inlet section configuration*



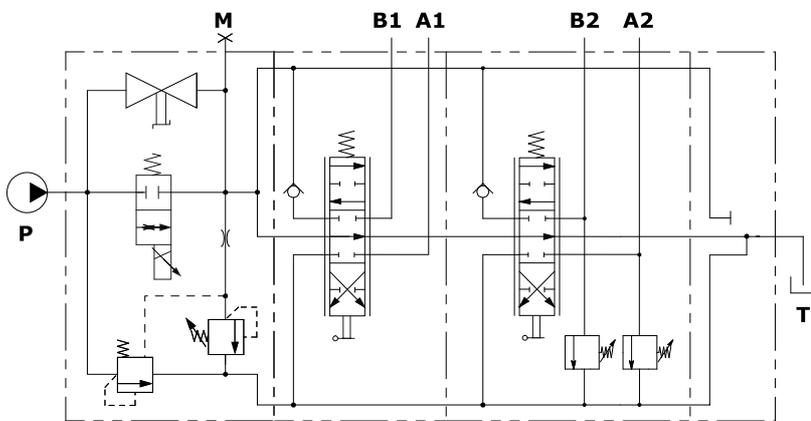
Type	E		G	
	mm	in	mm	in
GSV50/1	66.1	2.60	146.7	5.77
GSV50/2	107.1	4.21	187.7	7.38
GSV50/3	148.1	5.83	228.7	9
GSV50/4	189.1	7.44	269.7	10.61
GSV50/5	230.1	9.06	310.7	12.21
GSV50/6	271.1	10.67	351.7	13.84
GSV50/7	312.1	12.28	392.7	15.46
GSV50/8	353.1	13.90	433.7	17.07
GSV50/9	394.1	15.51	474.7	18.68
GSV50/10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

NOTE: Drawings and dimensions are referred to a **BSP** threading configuration.
 (*): For other configurations, see page 179

Hydraulic circuits



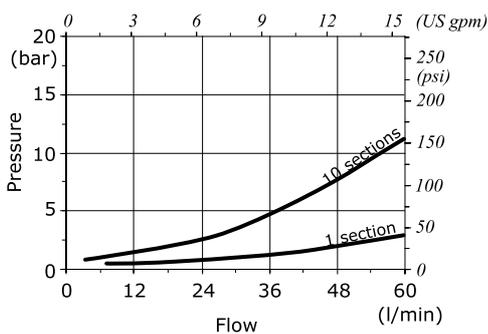
Description example (parallel circuit):
 GSV50/2/F7S(N150)/
 103-A1-M1.V32(N105\N105)/103-A1-M1/F3D-S



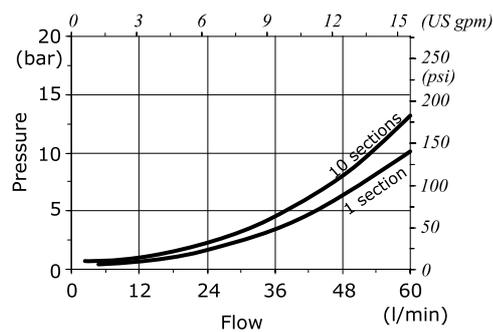
Description example (parallel circuit):
 GSV50/2/F7SPRN3M(N150)-12VDC/
 103-A1-M1/103-A1-M1.V32(N105\N105)/F3D-S

Performance data

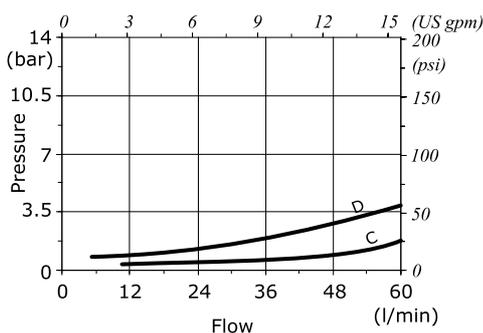
P⇒T pressure drops



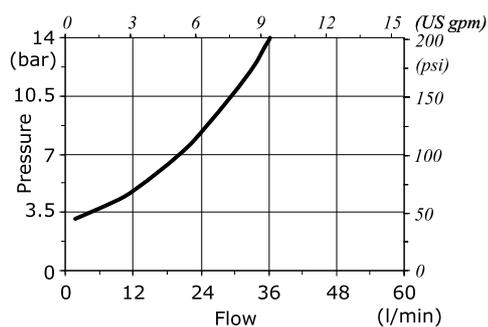
P⇒A(B) pressure drops



A(B)⇒T pressure drops



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



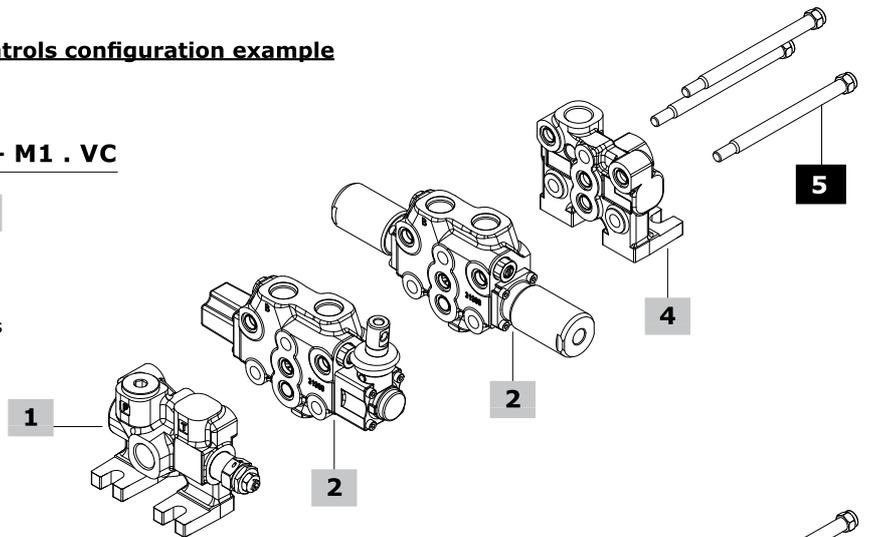
Legenda

C= 10th section
 D= 1st section

Complete section ordering codes

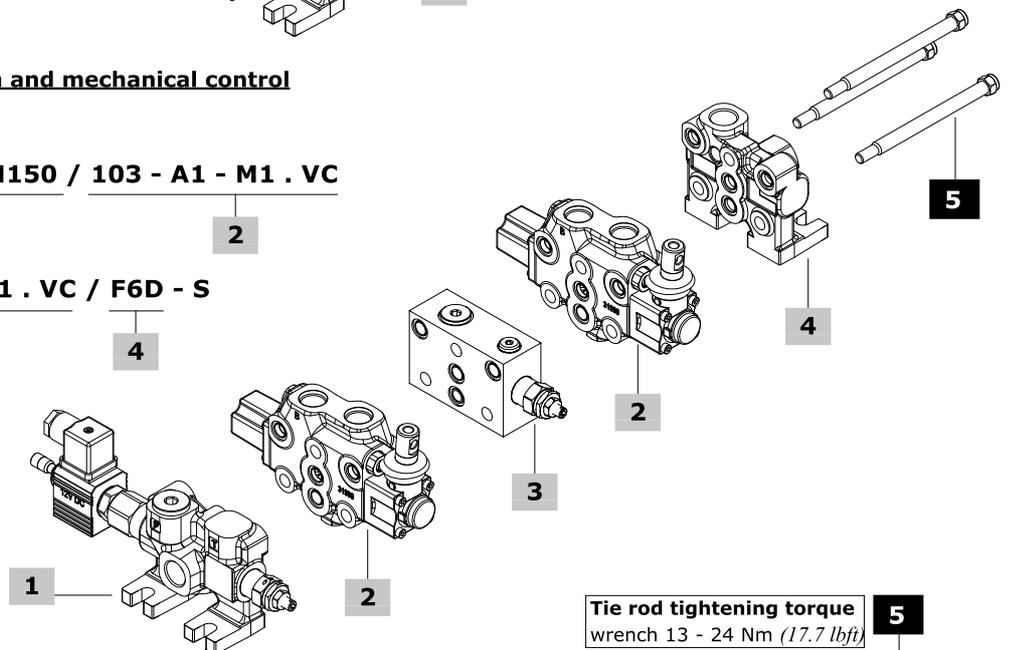
Valve with mechanical and hydraulic controls configuration example

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



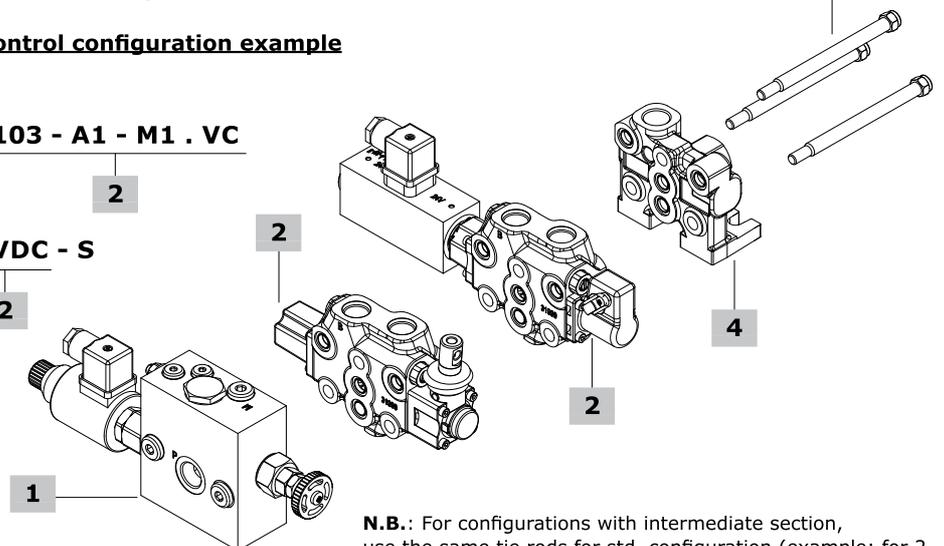
Valve with intermediate section and mechanical control configuration example

valve setting (bar)
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**



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 145

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 154

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 179

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 2nd 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 181

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

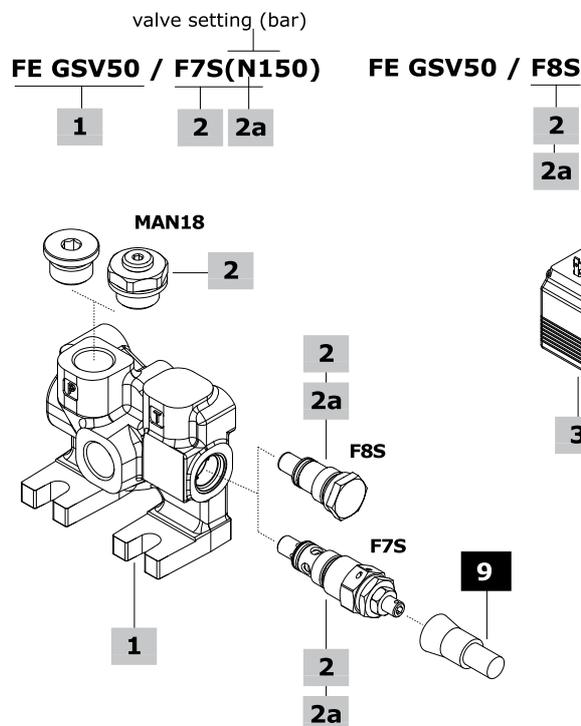
CODE	DESCRIPTION
05931TX1	For 1 section valve
05932TX2	For 2 sections valve
05933TX3	For 3 sections valve
05934TX4	For 4 sections valve
05935TX5	For 5 sections valve
05936TX6	For 6 sections valve
05937TX7	For 7 sections valve
05938TX8	For 8 sections valve
05939TX9	For 9 sections valve
05940TX10	For 10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

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

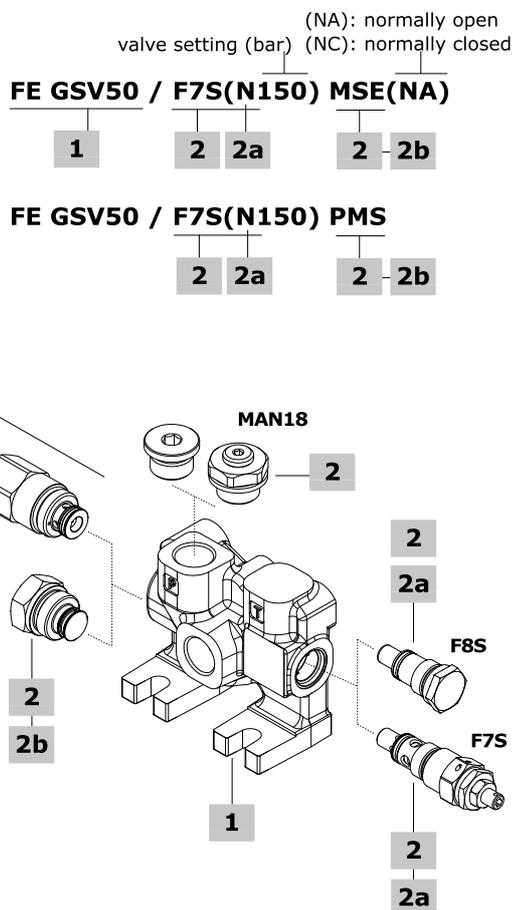
Inlet section - parts ordering codes

Standard section

With relief valve:



With relief and unloader valves:



1 Inlet body section* page 146

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 147

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 148

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 149

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 257

9 Accessory

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

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

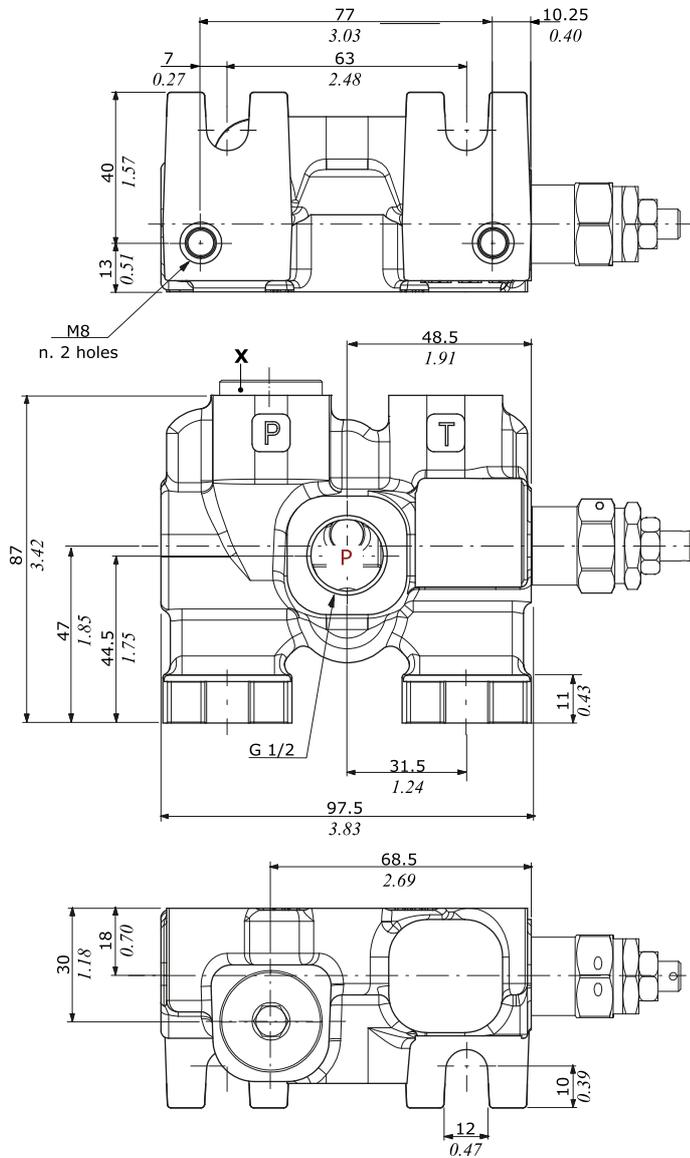
Standard inlet section

Dimensional data

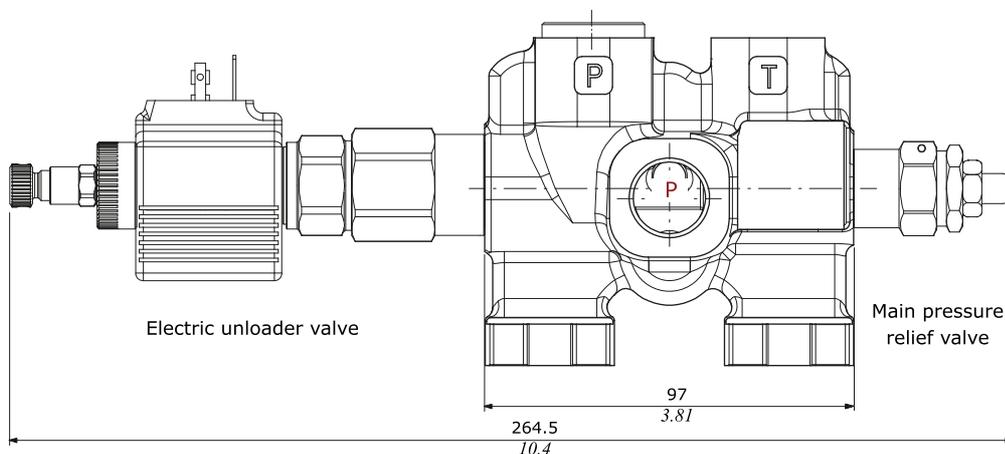
With pressure relief valve

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

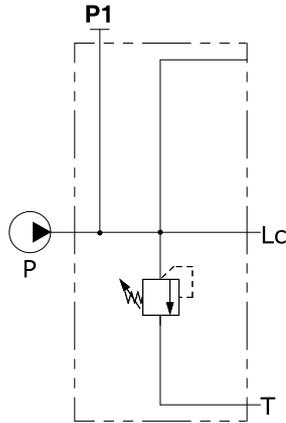


For other configurations, see page 149

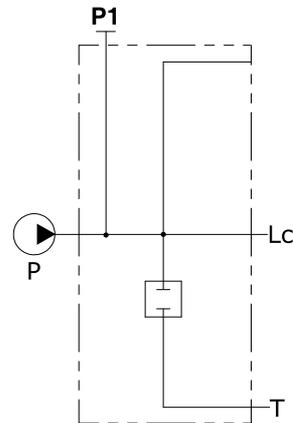
For other dimensions, see previous configuration

Hydraulic circuits

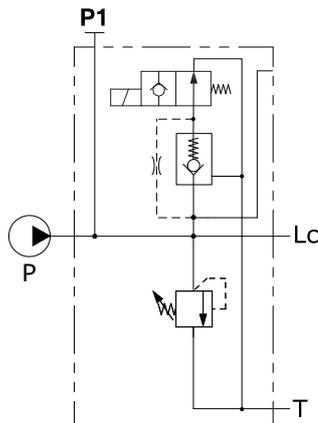
F7S configuration
With pressure relief valve



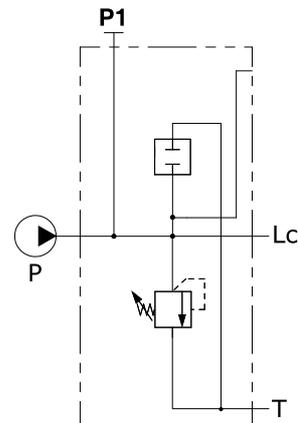
F8S configuration
Without valves
(pressure relief valve plugged port)



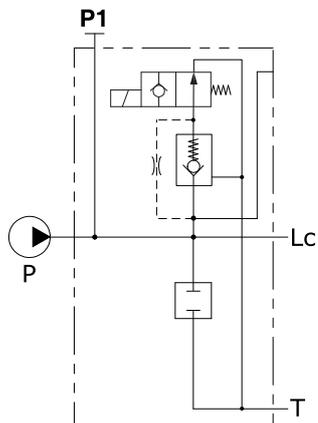
F7S-MSE(NA/NC) configuration
With pressure relief valve
and electric unloader valve



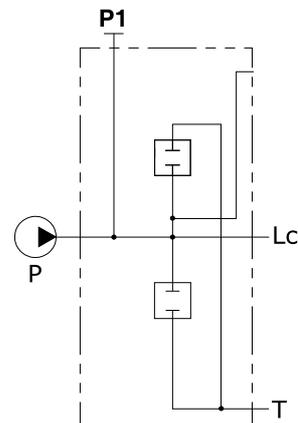
F7S-PMS configuration
With pressure relief valve
and unloader valve blanking plug



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



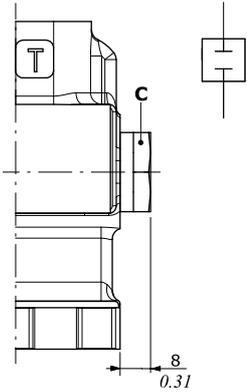
F8S-PMS configuration
Without valves (plugged ports)



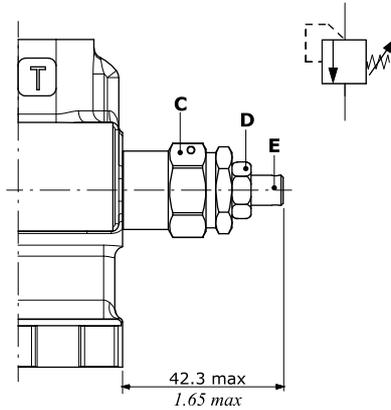
Standard inlet section

Main pressure relief valve

Relief valve blanking plug



Main pressure relief valve

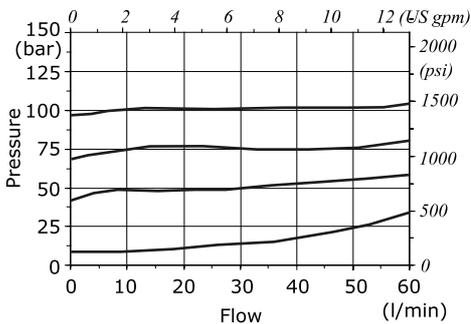


Wrenches and tightening torques

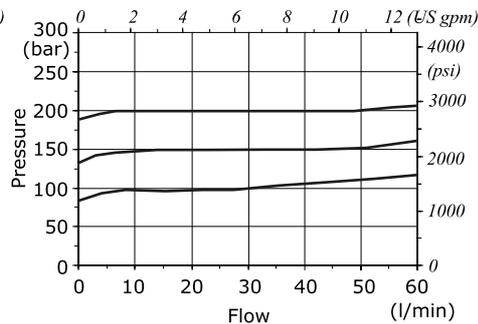
- C = wrench 22 - 42 Nm (31 lbf_t)
- D = wrench 13 - 24 Nm (17.7 lbf_t)
- E = allen wrench 4

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

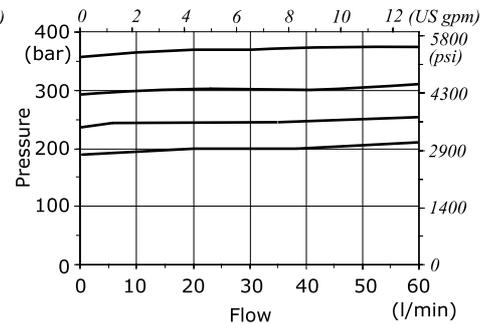
Setting example (B type spring)



Setting example (N type spring)



Setting example (R type spring)

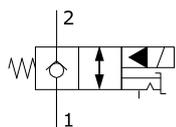


Unloader valve

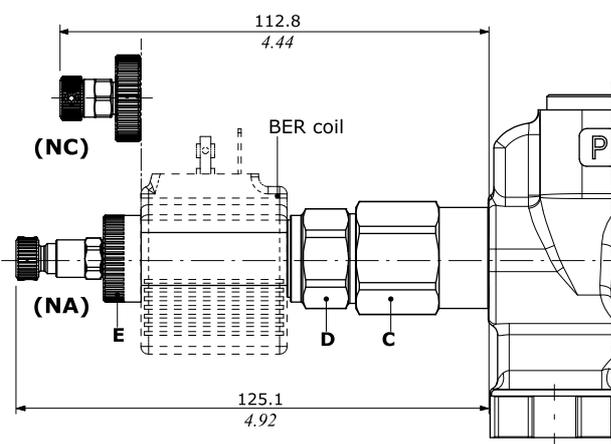
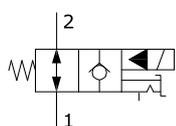
MSE type: electric control

Screw type emergency

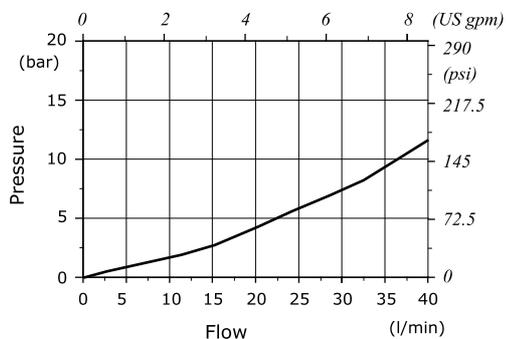
MSE(NC) type
Normally closed



MSE(NA) type
Normally open



Pressure drops

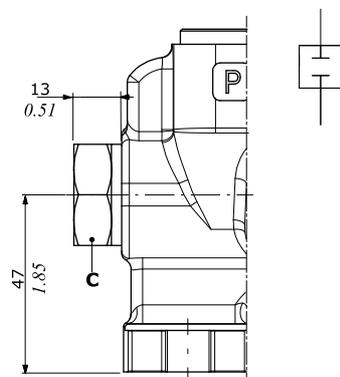


Valve features

- 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 257

PMS type: valve blanking plug



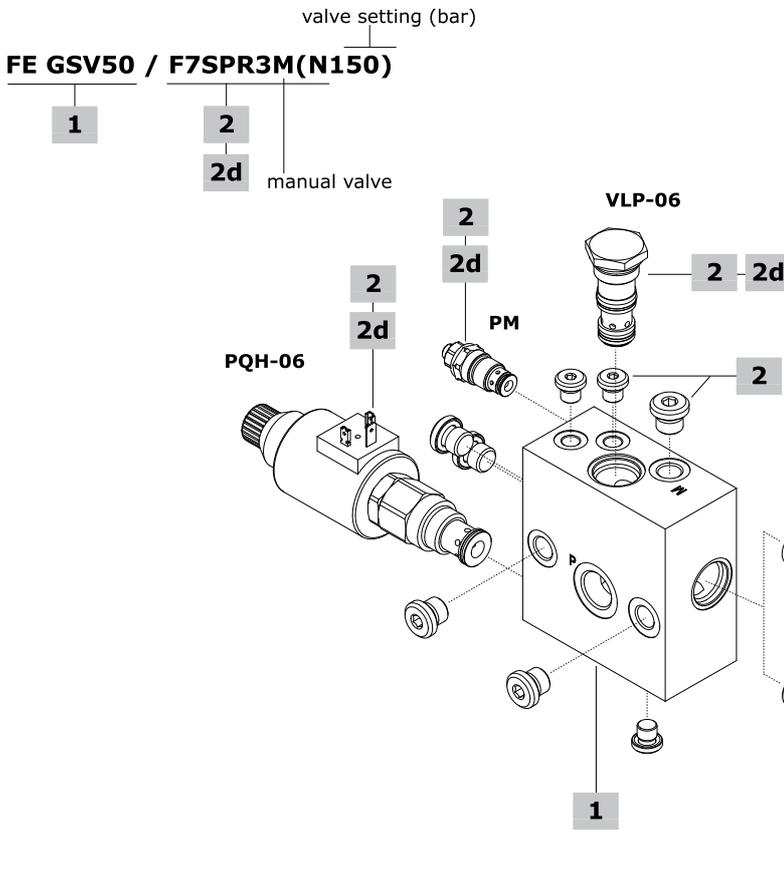
Wrenches and tightening torques

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

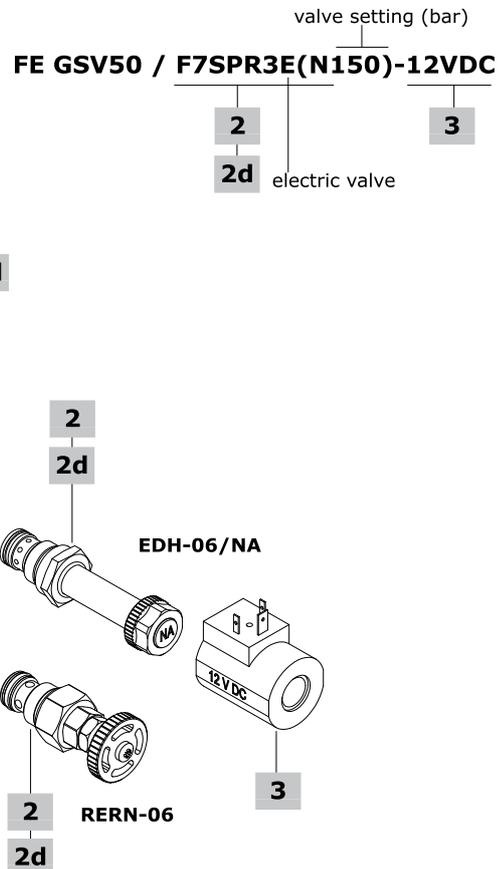
Inlet section - parts ordering codes

Section with flow regulator

With manual unloader valve:



With electric unloader valve:



1 Inlet body section* page 151

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

2 Configuration coding* page 151

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 152

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

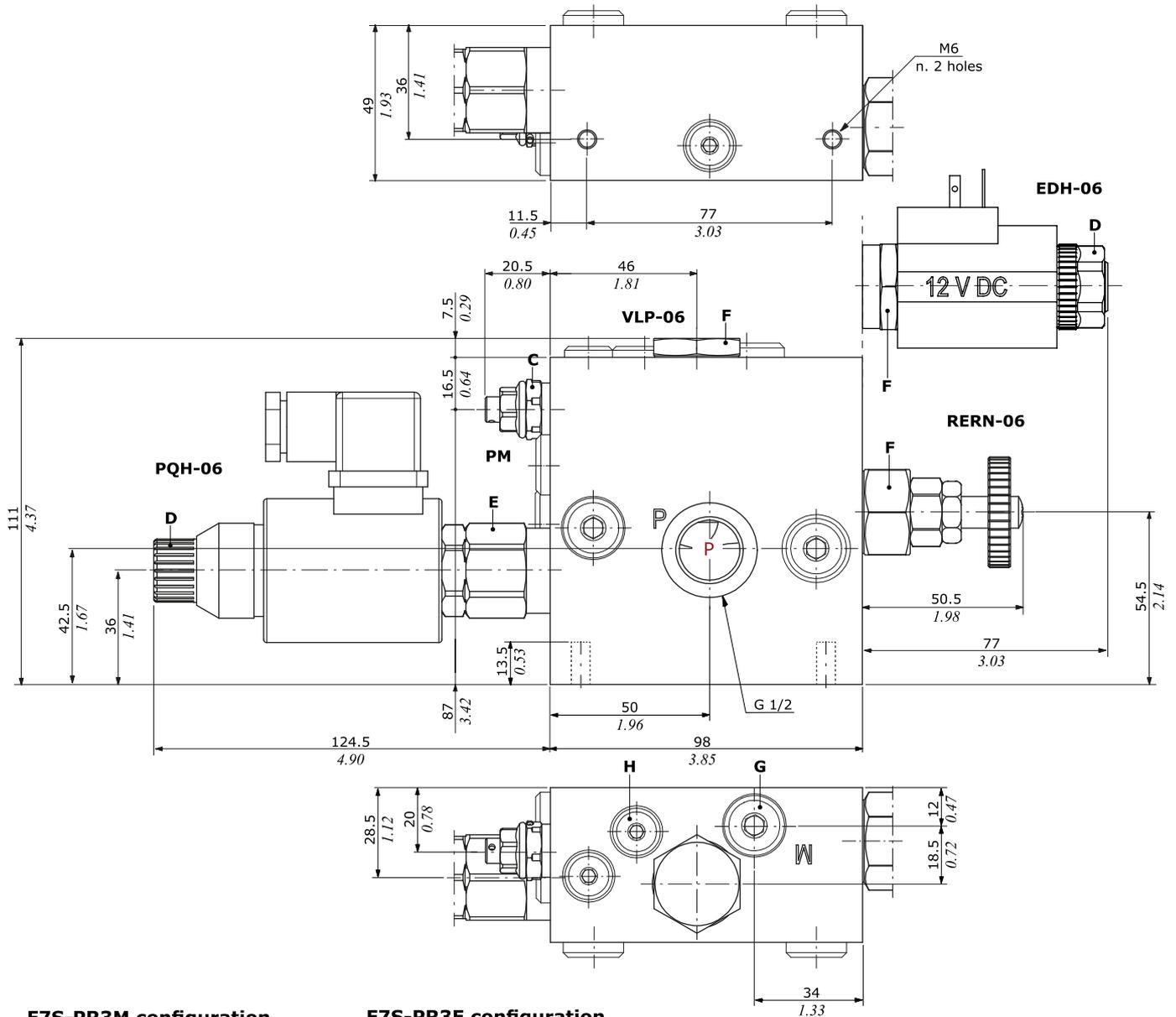
3 Coil

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

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

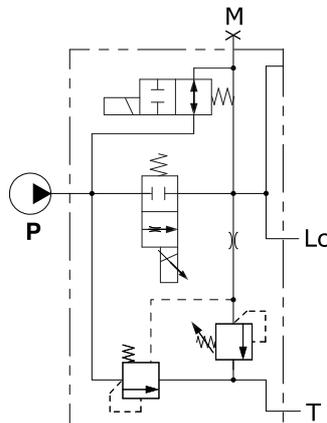
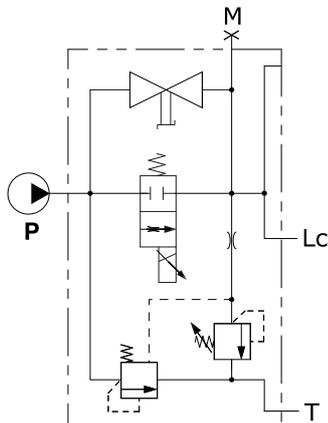
Inlet section with flow regulator

Dimensional data and hydraulic circuits



F7S-PR3M configuration
With manual unloader valve

F7S-PR3E configuration
With electric unloader valve



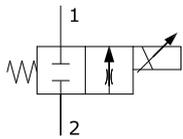
- Wrenches and tightening torques**
- C = wrench 17 - 30 Nm (22 lbf)
 - D = manual tightening
 - E = wrench 27 - 30 Nm (22 lbf)
 - F = wrench 27 - 60 Nm (44.2 lbf)
 - G = allen wrench 27 - 60 Nm (44.2 lbf)
 - H = allen wrench 6 - 24 Nm (17.7 lbf)

Inlet section with flow regulator

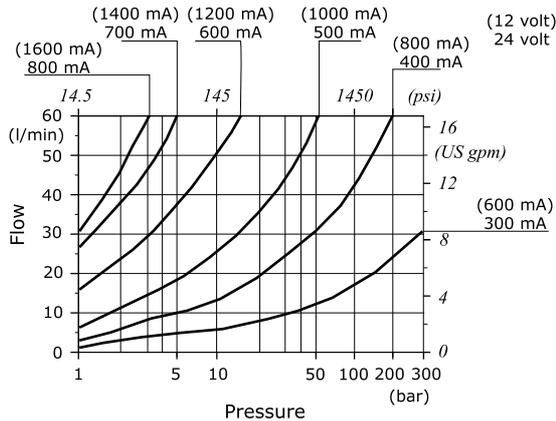
Inlet valves

PQH-06 type

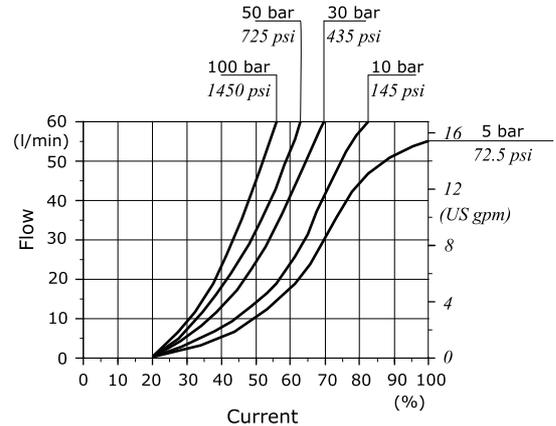
Flow control proportional pressure compensated valve, 12/24 VDC



Compensation curves



Flow control diagram



Valve features

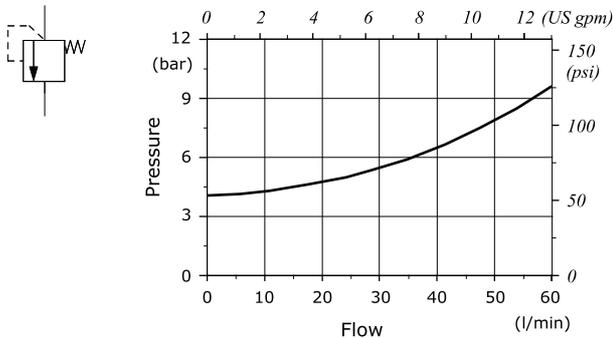
- Nominal flow.....: 60 l/min (15.8 US gpm)
- Max. pressure: 310 bar (4500 psi)
- Power rating.....: 22 W
- Max. internal leakage...: 100 cm³/min @ 210 bar (6.10 in³/min @ 3050 psi)
- Coil insulation.....: Class F
- Voltage.....: 12/24 VDC

Note: The coil and connector is included

VLP-06 type

Pressure relief valve

Pressure drops

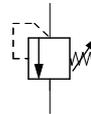


Valve features

- 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

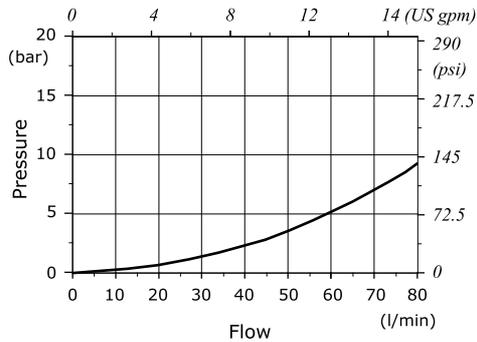
Inlet valves

RERN-06 type

Manual unloader valve



Pressure drops

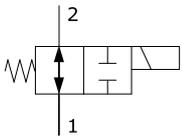


Valve features

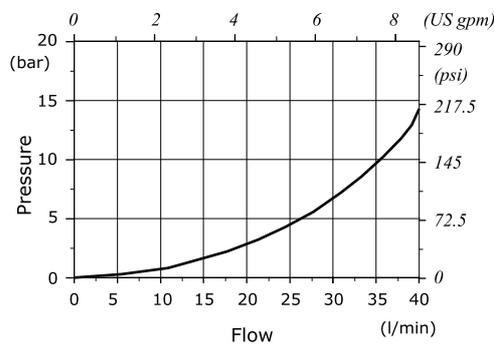
Nominal flow.....: 70 l/min (18.5 US gpm)
 Max. pressure: 315 bar (4600 psi)
 Closed valve leakage....: 0

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 150

Working section - parts ordering codes

Mechanical control valve configuration example

spring type and setting valve (bar)

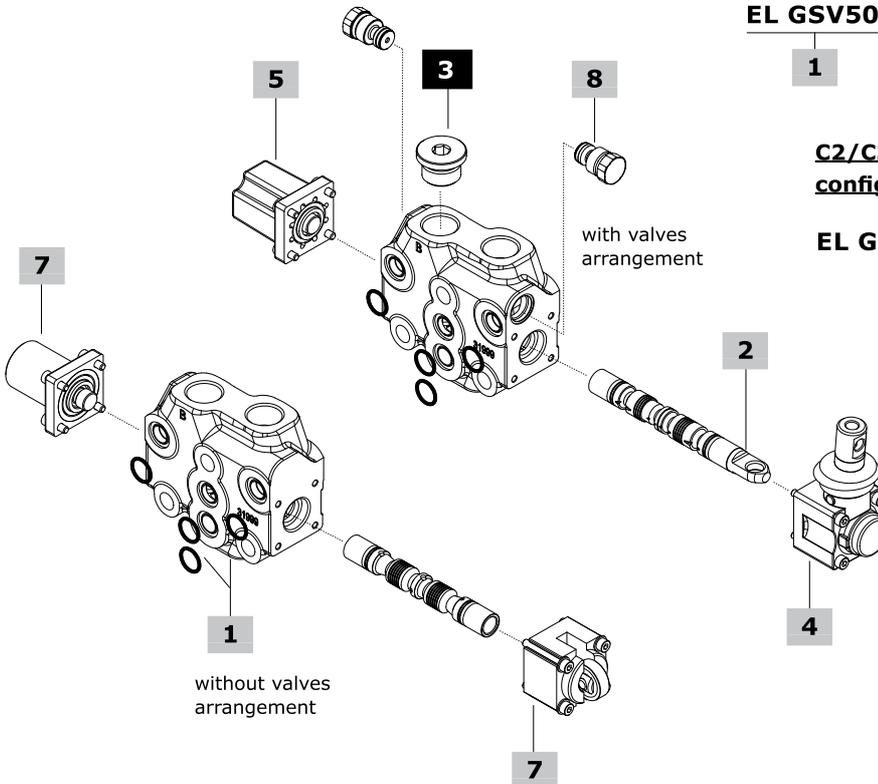
EL GSV50 / 102 - A1 - M1 . V40(N)120 - S

1 2 4 5 8 aluminium controls

C2/C3 complete mechanical control configuration example

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

7



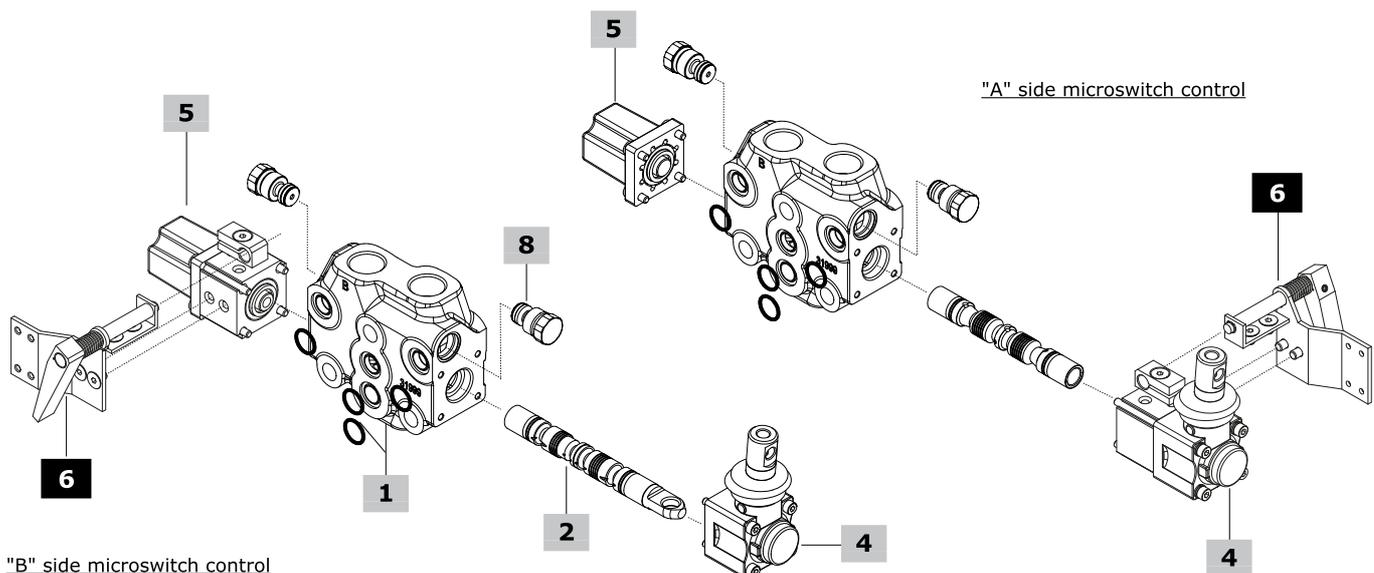
Microswitch control valve configurations example

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 159

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 160

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 161

Note: For other control type, see Q30/Q50 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 161

Note: For other control type, see Q30/Q50 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 168

Note: For other control type, see Q30/Q50 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	03734M4-1-2	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 168

Note: For other control type, see Q30/Q50 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 173

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 177

TYPE	CODE	DESCRIPTION
<u>Antishock valve:</u>		
V30-B	0380FV30-B	Setting range: from 50 to 80 bar <i>(from 725 to 1150 psi)</i>
V30-N	0380FV30-N	Setting range: from 81 to 200 bar <i>(from 1170 to 2900 psi)</i>
V30-R	0380FV30-R	Setting range: from 201 to 350 bar <i>(from 2910 to 5100 psi)</i>
<u>Antishock/anticavitation valve:</u>		
V33-B	0380FV33-B	Setting range: from 50 to 80 bar <i>(from 725 to 1150 psi)</i>
V33-N	0380FV33-N	Setting range: from 81 to 200 bar <i>(from 1170 to 2900 psi)</i>
V33-R	0380FV33-R	Setting range: from 201 to 350 bar <i>(from 2910 to 5100 psi)</i>
<u>Anticavitation valve:</u>		
V04	03808V04	Anticavitation valve
<u>Plug:</u>		
VC	060002846099	Valve blanking plug

For other configurations and positions, see page 177

Working section - parts ordering codes

Proportional hydraulic controls valve configuration example

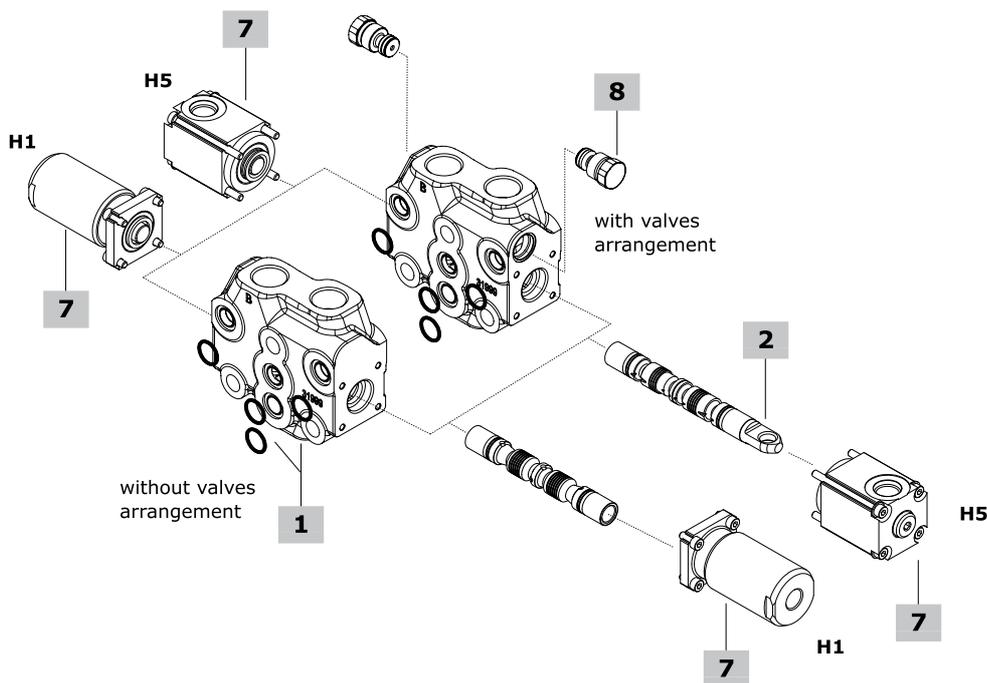
spring type and valve setting (bar)

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 159

The body kits listed below are for **H5** hydraulic control.
H1 hydraulic control requires standard body: see #1, page 155
 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 160

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 174

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

8 Auxiliary port valve page 177

See #8, page 156

(*): 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)

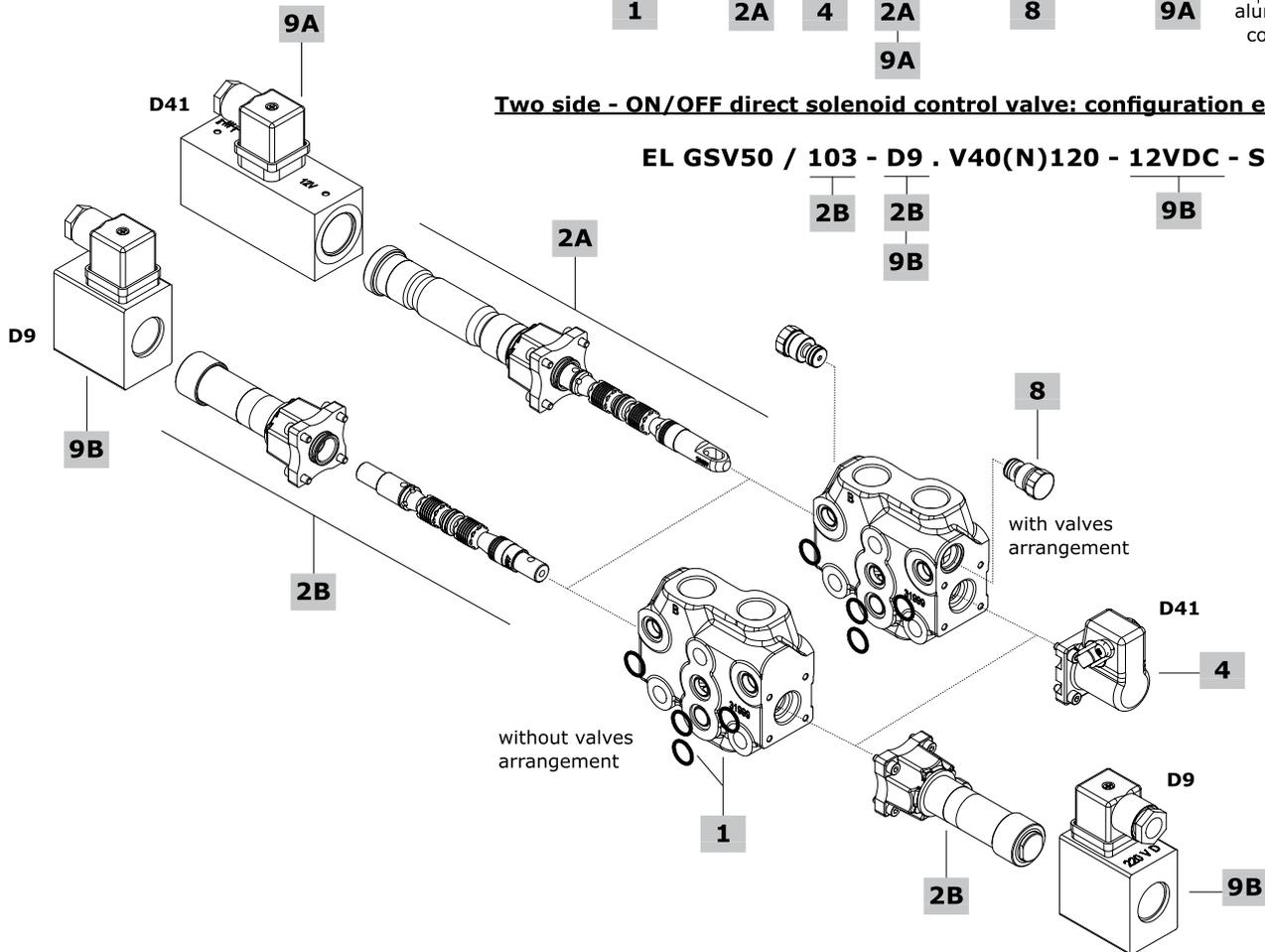
EL GSV50 / 103 - A1 - D41 . V40(N)120 - 12VDC - S

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 159

See #1 for H5 hydraulic control, page 157

2A D41 solenoid control page 175

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 176

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 175

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 177

See #8, page 156

9A/B Coil page 175

D41 coil

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

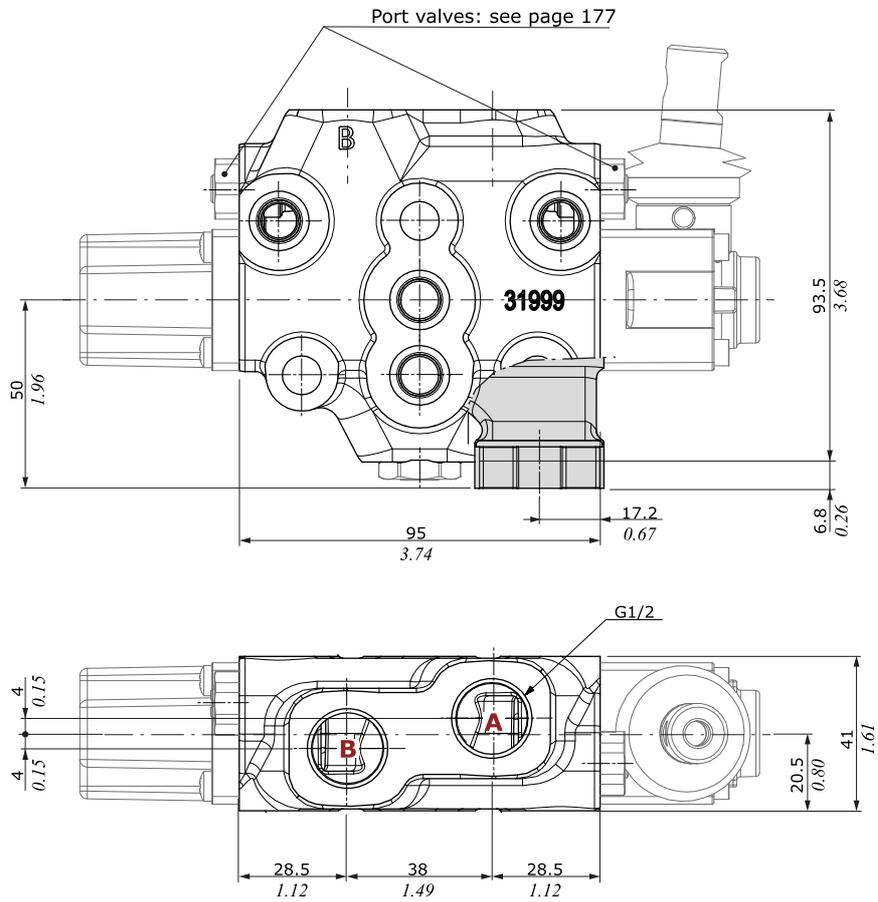
D9 coil

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

Note: The connector is included

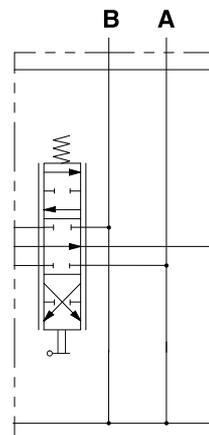
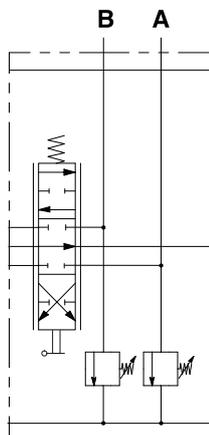
(*): Codes are referred to **BSP** thread

Dimensional data and hydraulic circuits



GSV50.V40(N)120 configuration
Parallel circuit, mechanical control with aux valves

GSV50 configuration
Parallel circuit, mechanical control without aux valves



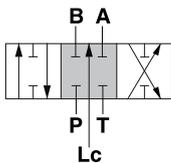
Working section

Spool

103 type

A and B closed
in neutral position

2 0 1



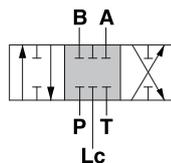
Stroke

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



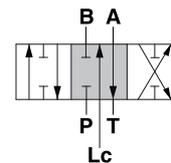
Stroke

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



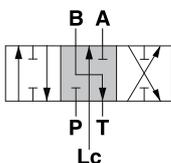
Stroke

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



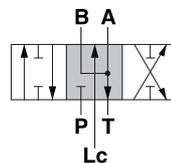
Stroke

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



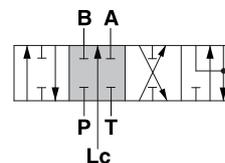
Stroke

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



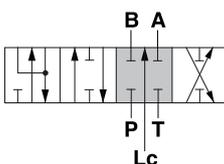
Stroke

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



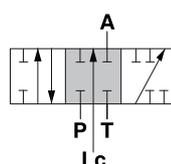
Stroke

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



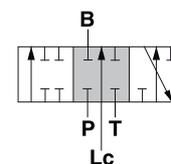
Stroke

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

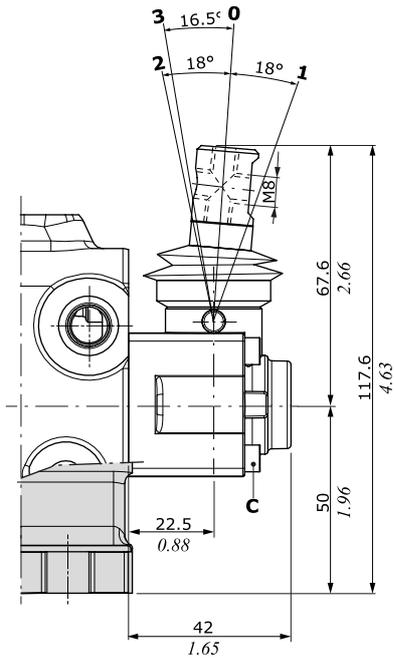
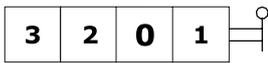
Position 1: + 5 mm (+ 0.19 in)
Position 2: - 5 mm (- 0.19 in)

A side controls

With lever control

A1 type

M8 thread plastic lever box



A1/10 type

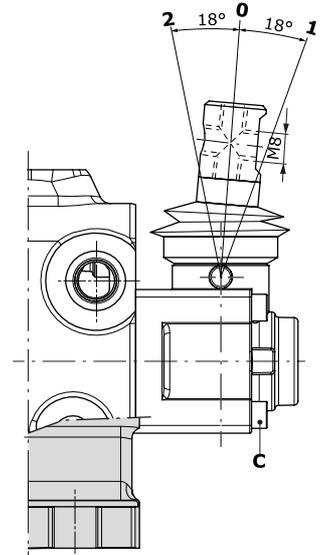
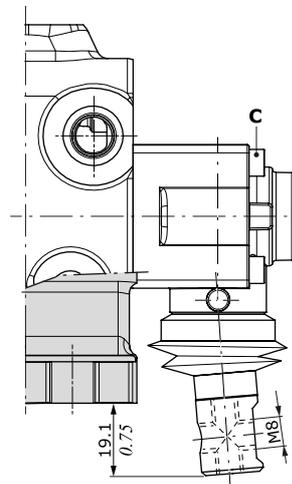
M8 thread aluminium lever box.
Dimensions are the same of A1 type

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 lbf_t)

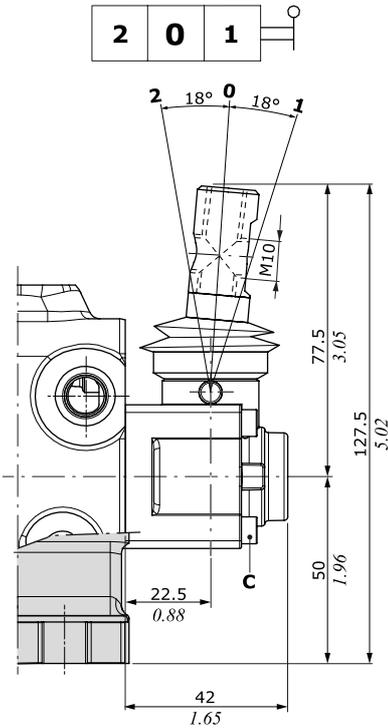
Working section

A side controls

With lever control

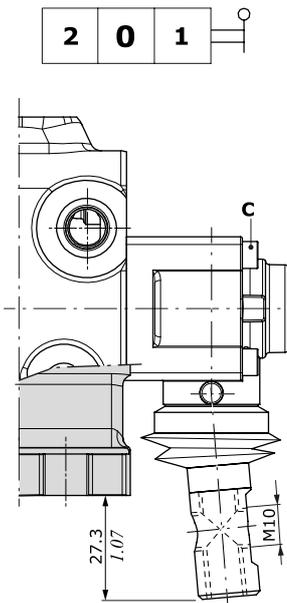
A1/PM type

M10 thread aluminium lever box



A2/PM type

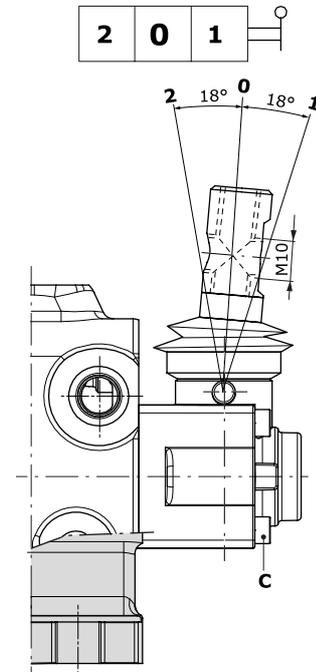
As A1/PM type, rotated 180°



A1/PMP type

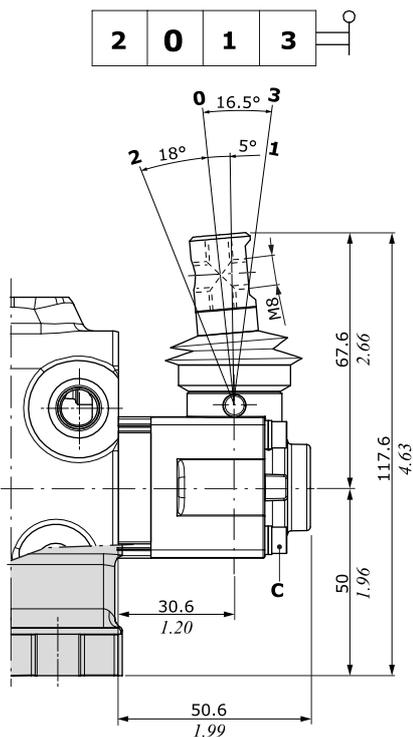
M10 thread plastic lever box. Dimensions are the same of A1/PM type

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



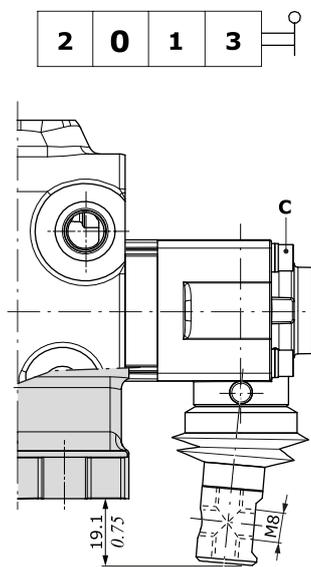
A1/Z1 type

M8 thread, for 116 floating spool type



A2/Z1 type

As A1/Z1 type, rotated 180°



Wrenches and tightening torques

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

A side controls

With safety lever control

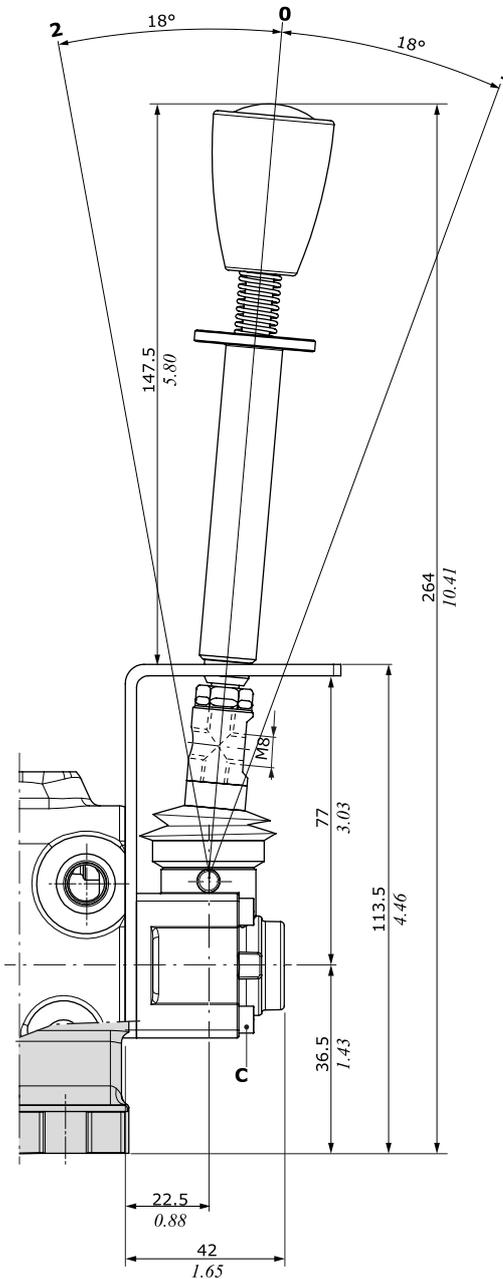
A1/S type

M8 thread, aluminium lever box

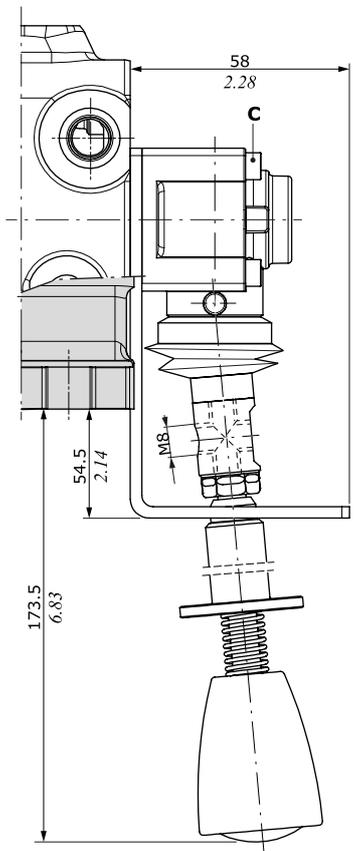


Wrenches and tightening torques

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



A2/S type
As A1/S type, rotated 180°

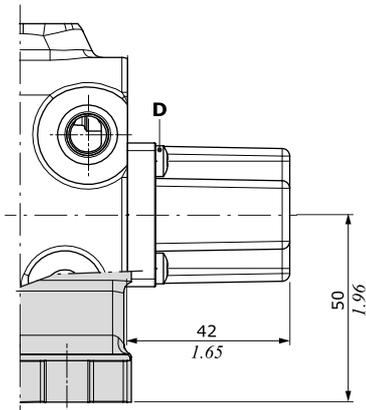


Working section

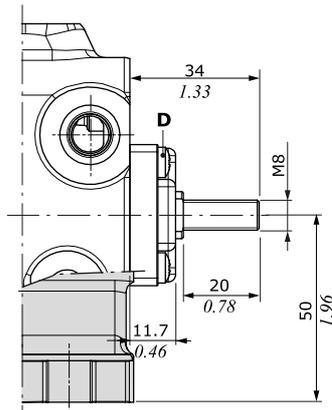
A side controls

Without lever control

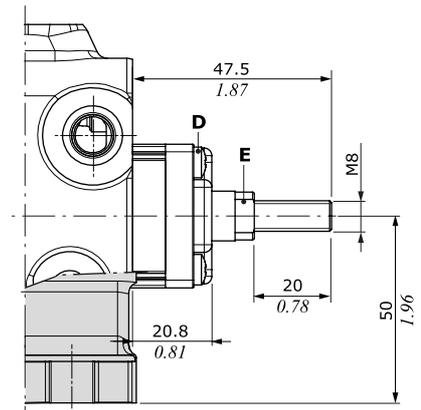
A3 type
With cap



A4 type
M8 thread male external pin with flange

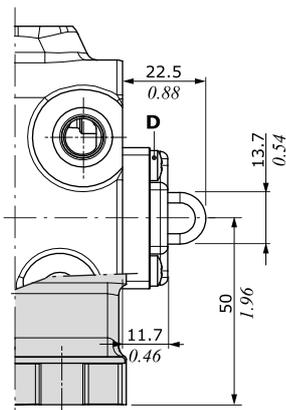


A4/Z1 type
As A4 type,
for 116 floating spool type



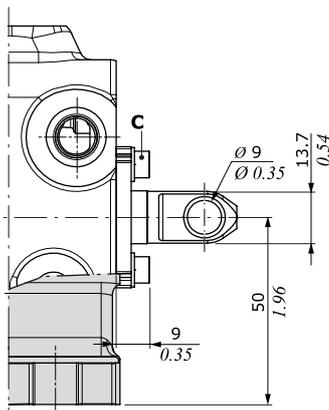
A5 type

Flange with spherical spool end



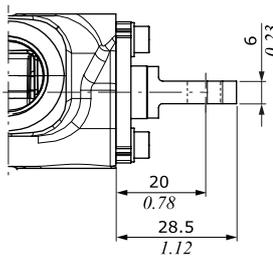
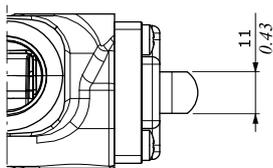
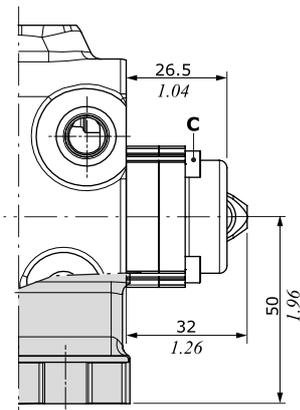
A6 type

Flange with spool eye end



A6-H/Z1 type

As A6 type, for 116 floating spool type



Wrenches and tightening torques

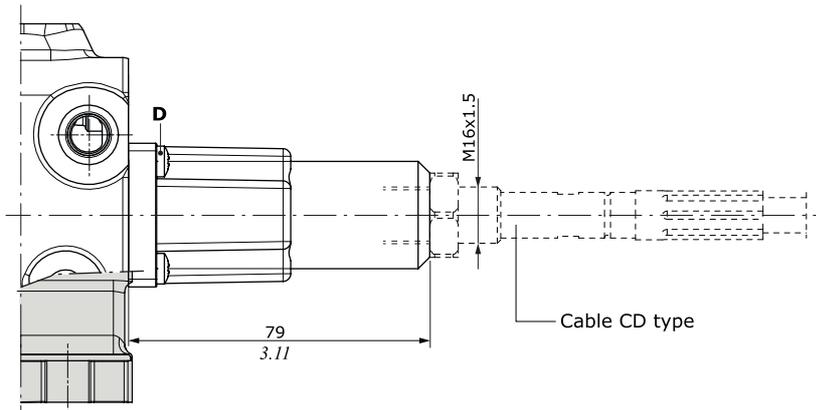
- C = allen wrench 3 - 3 Nm (2.2 lbft)
- D = cross-head - 3 Nm (2.2 lbft)
- E = wrench 9 - 9.8 Nm (7.2 lbft)

A side controls

With flexible cable control arrangement

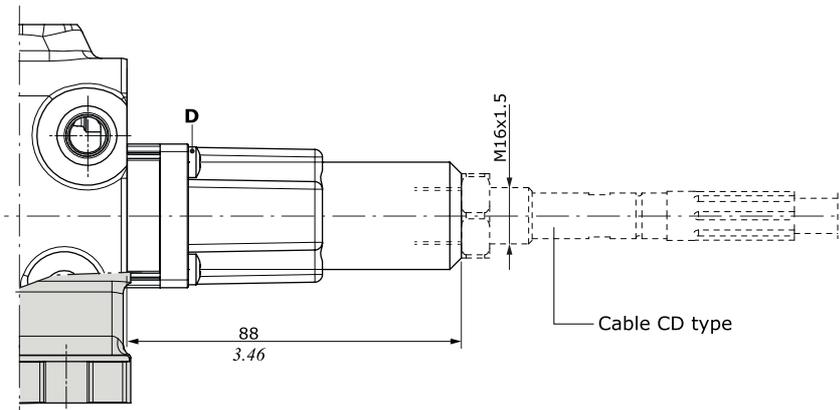
A8 type

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^t)

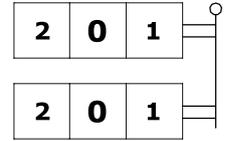
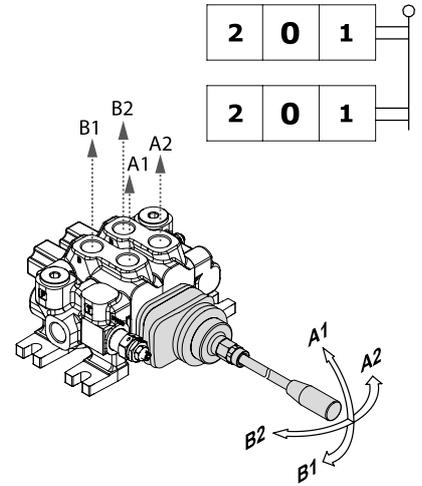
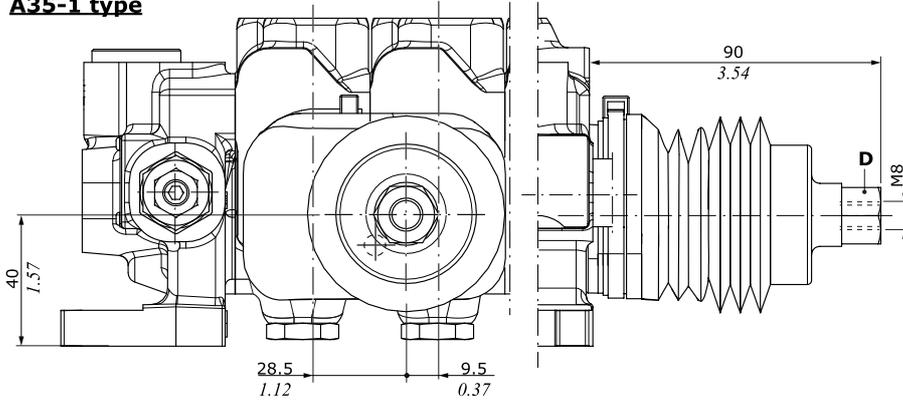
Working section

A side controls

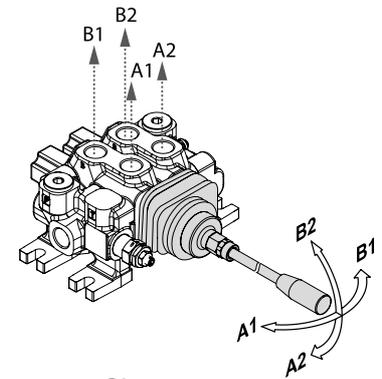
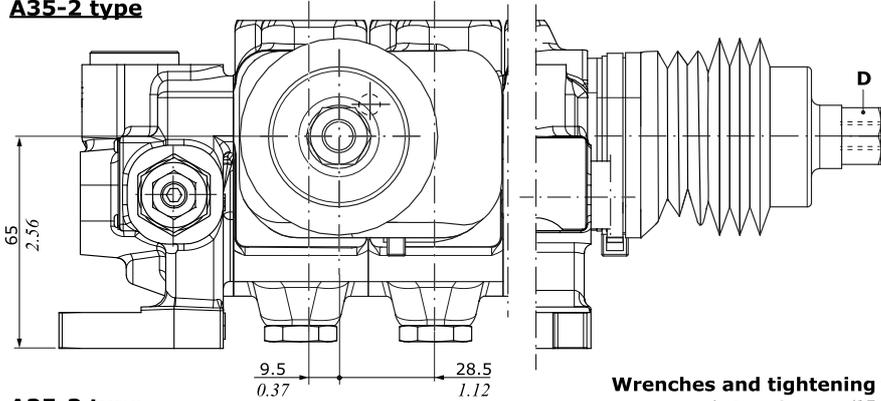
Joystick control

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

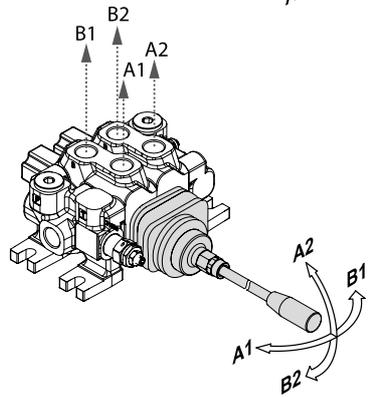
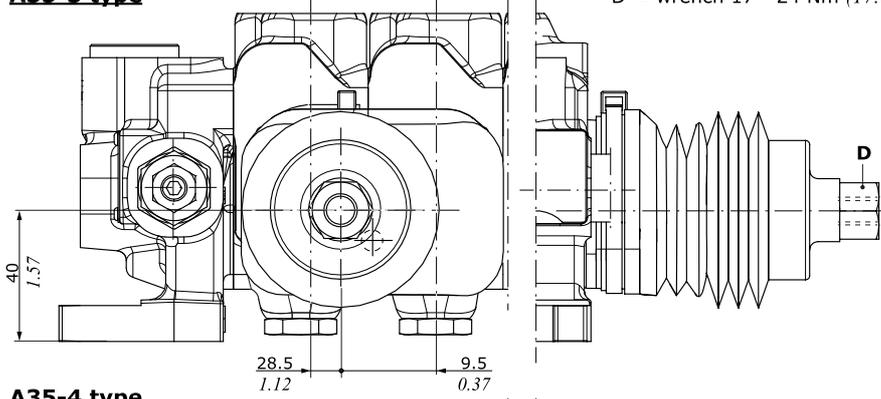
A35-1 type



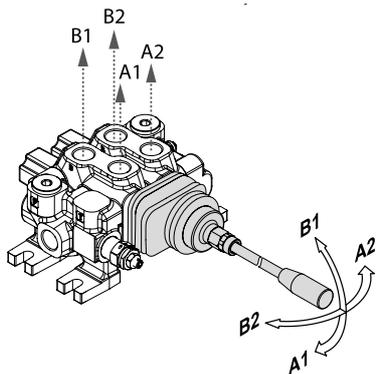
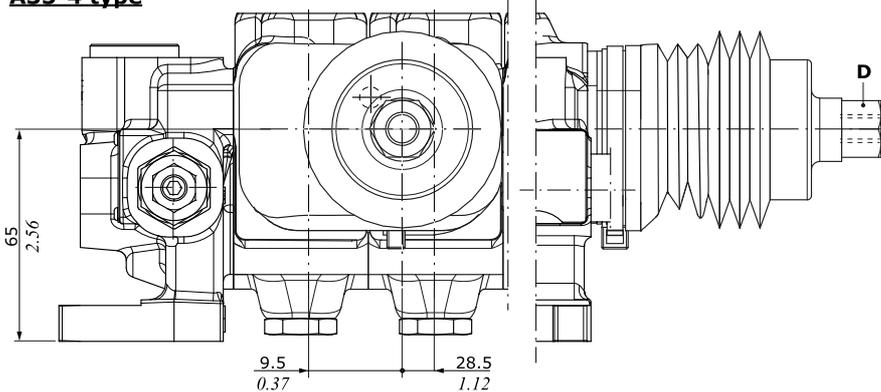
A35-2 type



A35-3 type



A35-4 type

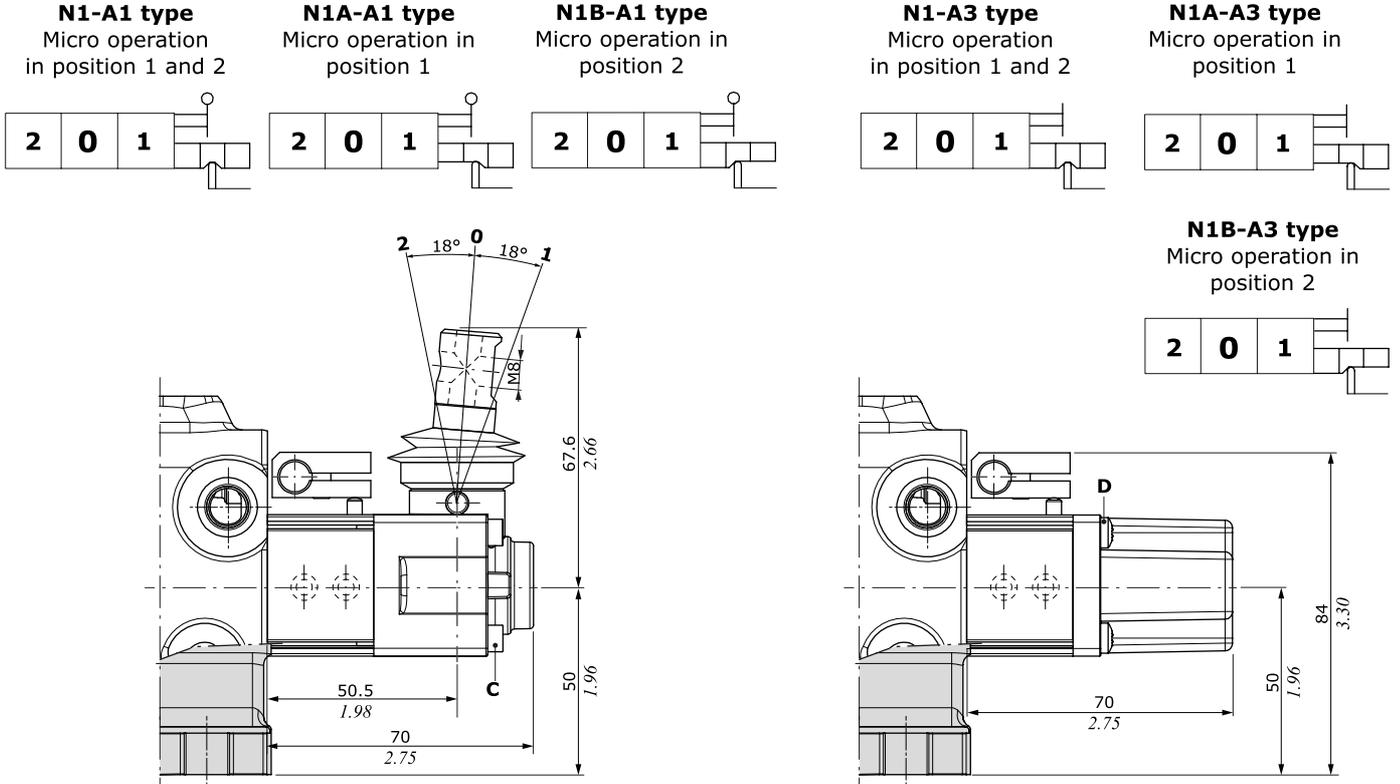


Wrenches and tightening torques
D = wrench 17 - 24 Nm (17.7 lbft)

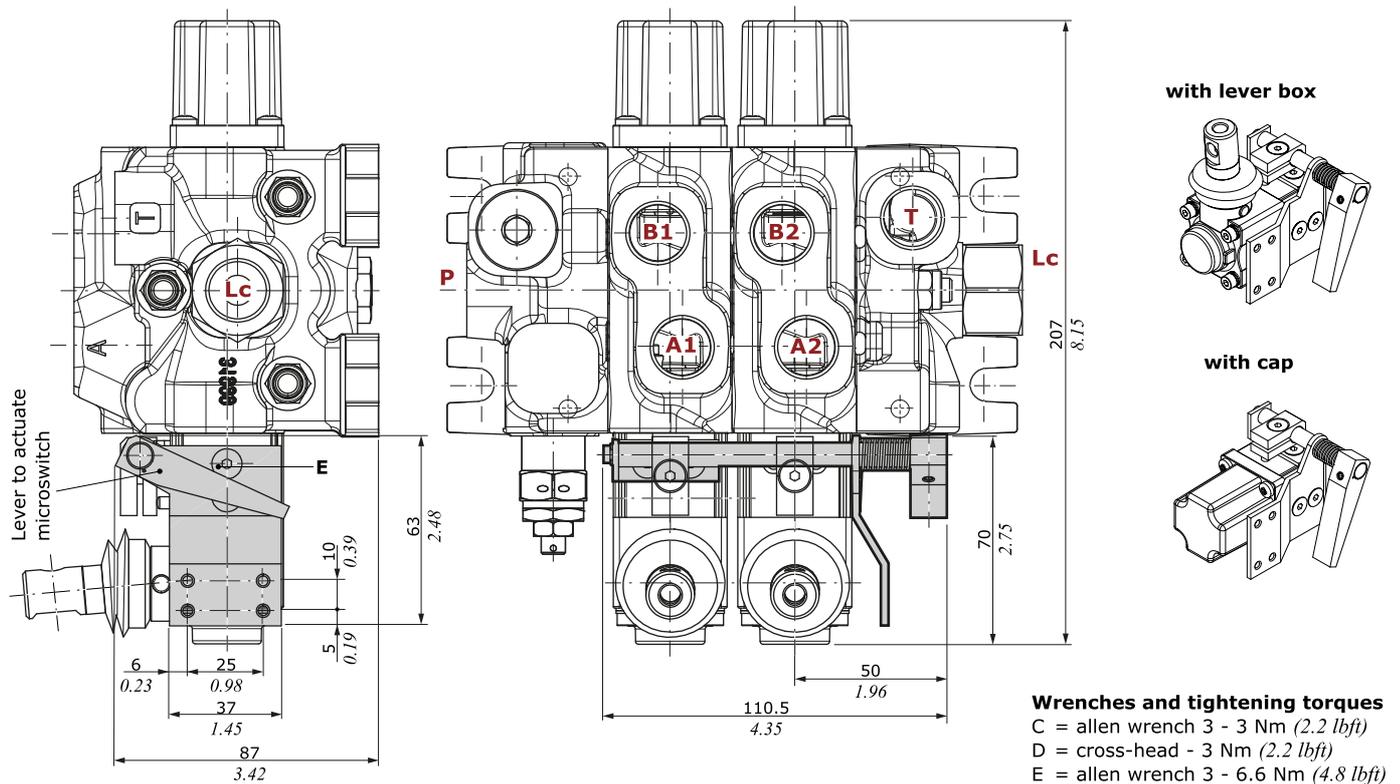
A side controls

With spool position microswitch, with lever

With spool position microswitch, with cap



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



Working section

B side controls

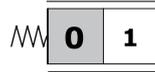
With spring return control

M1 type
3 position, spring return
in neutral position

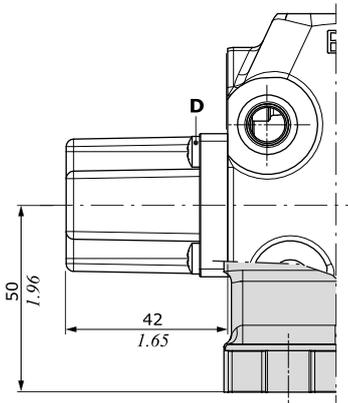


M1/01 type
As M1 type,
for joystick control

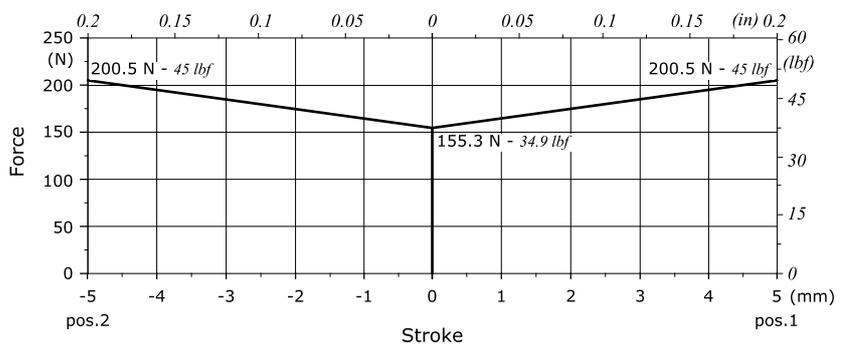
M2 type
2 position (0-1), spring return
in neutral position



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



M1 control type - Force vs. Stroke diagram

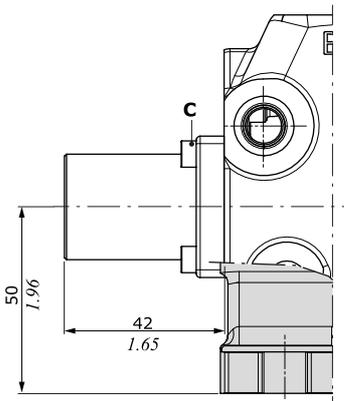


M4 types

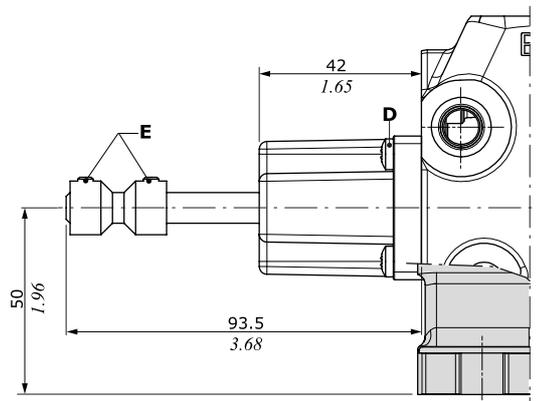
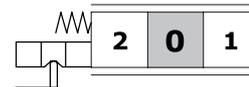
2 position (1-2),
spring return in position 1



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



M1-B1 type
3 position, microswitch arrangement



Wrenches and tightening torques

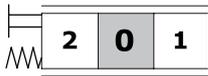
- C = allen wrench 3 - 3 Nm (2.2 lbf_t)
- D = cross-head - 3 Nm (2.2 lbf_t)
- E = allen wrench 3 - 5 Nm (3.68 lbf_t)

B side controls

With spring return control

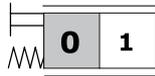
M1-U1 type

3 position, with M8 male thread external pin



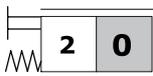
M2-U1 type

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



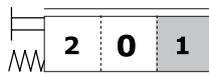
M3-U1 type

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



M4-U1 type

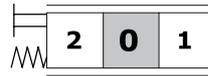
2 position (1-2), with M8 male thread external pin



With flexible cable control arrangement

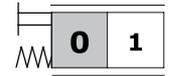
M1-U2 type

3 position, spring return in neutral position



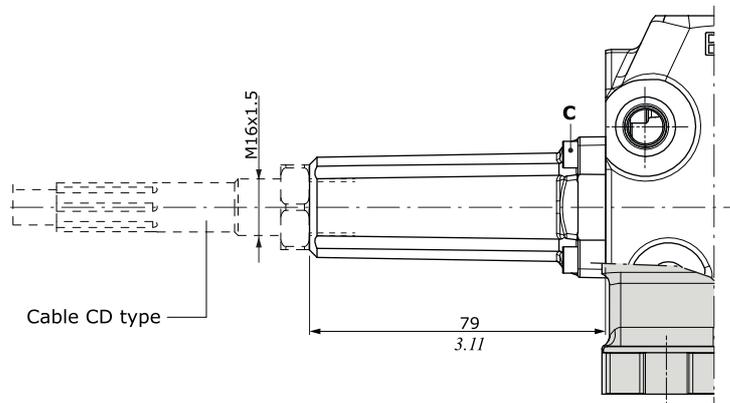
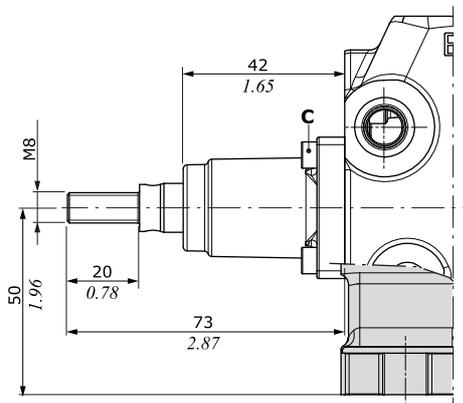
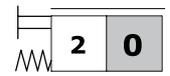
M2-U2 type

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



M3-U2 type

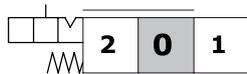
2 position (0-2), spring return in neutral position



With detent control

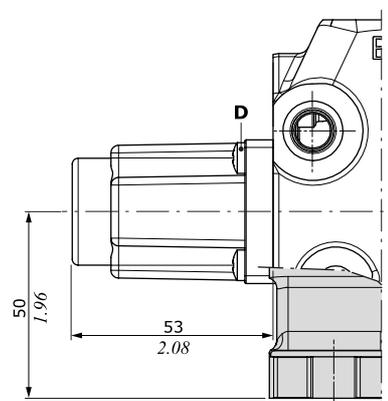
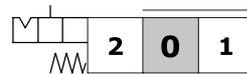
R1 type

3 position, detent in position 1



R2 type

3 position, detent in position 2



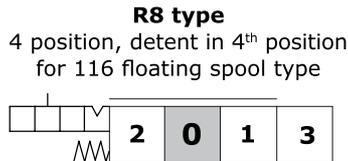
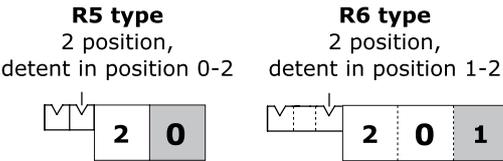
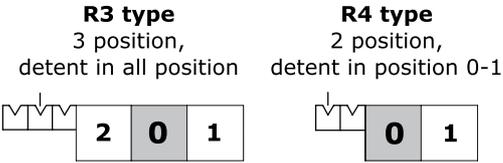
Wrenches and tightening torques

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

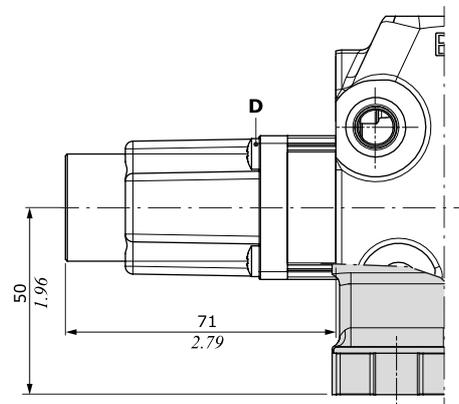
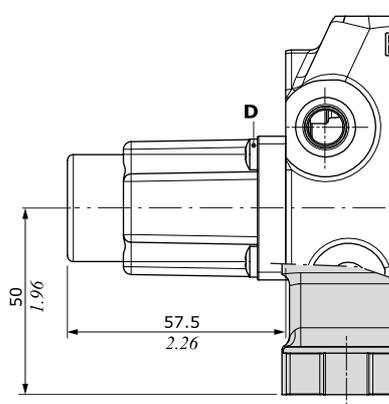
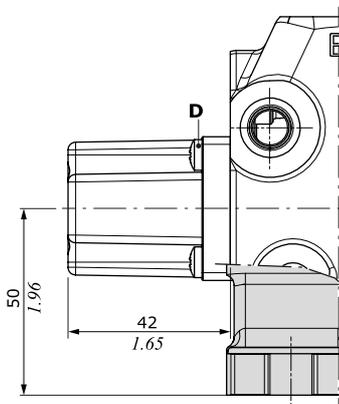
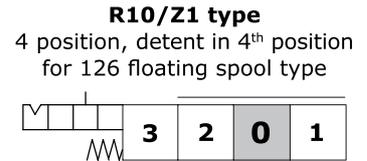
Working section

B side controls

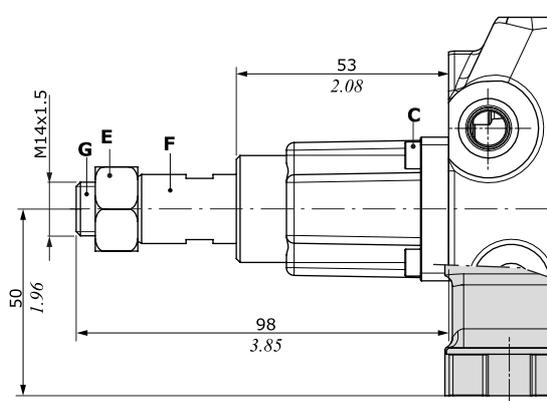
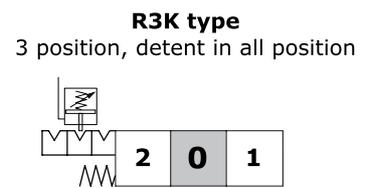
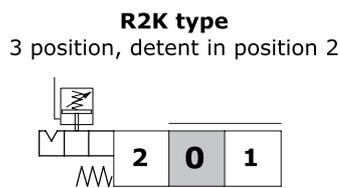
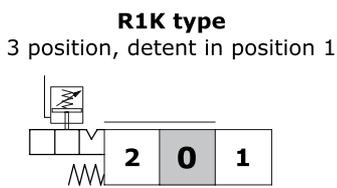
With detent control



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



With detent control and kick out function

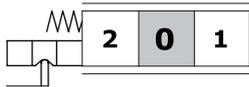


B side controls

With spool position microswitch

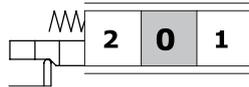
M1-N1 type

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



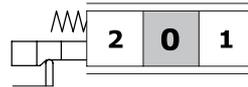
M1-N1A type

3 position, micro operation in position 1



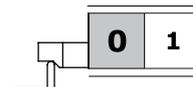
M1-N1B type

3 position, micro operation in position 2



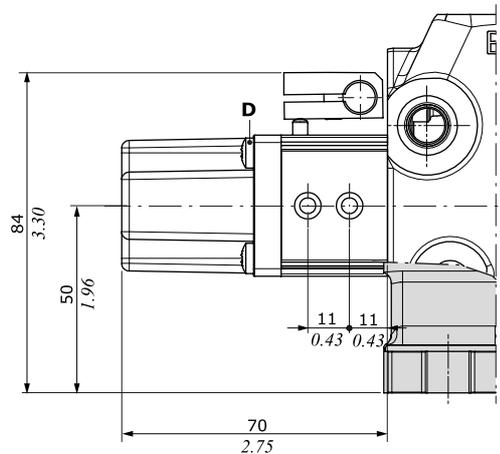
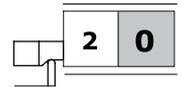
M2-N1 type

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



M3-N1 type

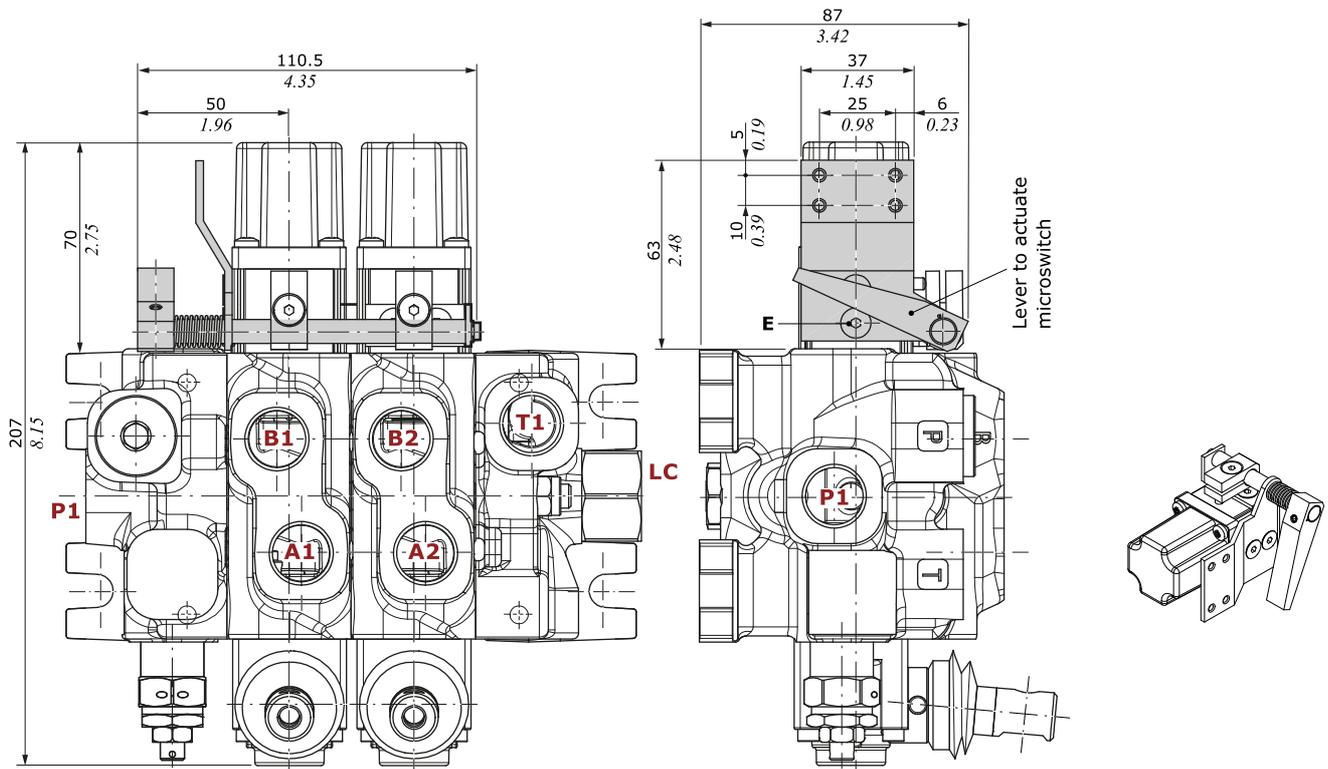
2 position (0-2), spring return in neutral position



Wrenches and tightening torques

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

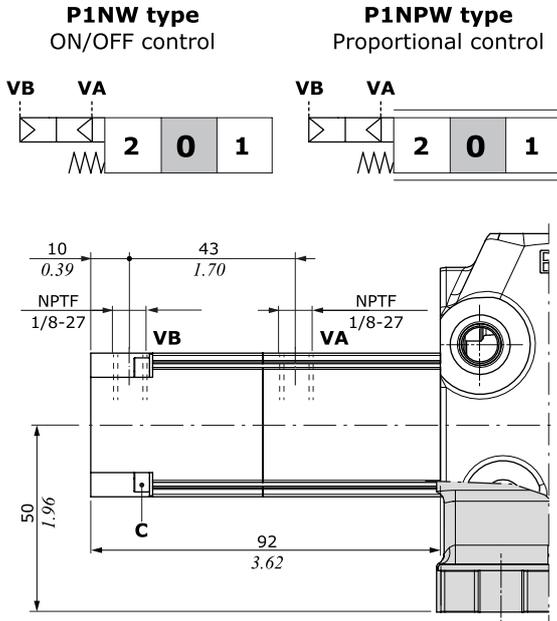
Microswitch assembly kit for 2 working section (M1-N1 type)



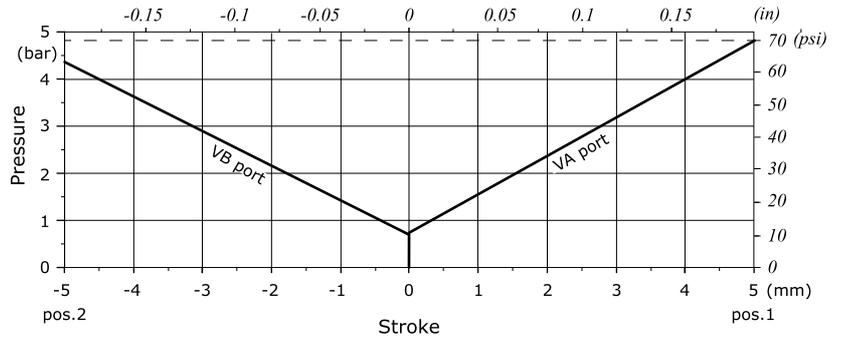
Working section

B side controls

With pneumatic control



Proportional pilot pressure curves



Operating features

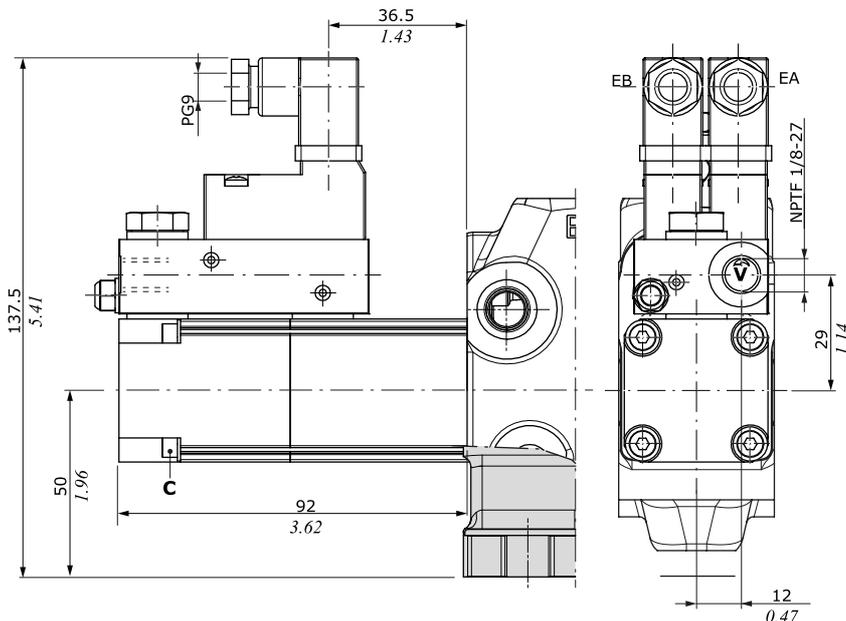
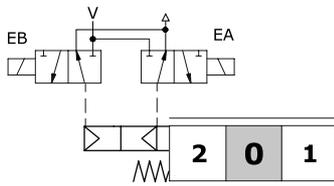
Pilot pressure..... : min. 5 bar (72.5 psi) - max. 30 bar (435 psi)
 Pilot volume..... : 4 cm³/min (0.24 in³/min)

Wrenches and tightening torques

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

With ON/OFF electropneumatic control

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

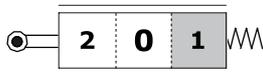
Wrenches and tightening torques

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

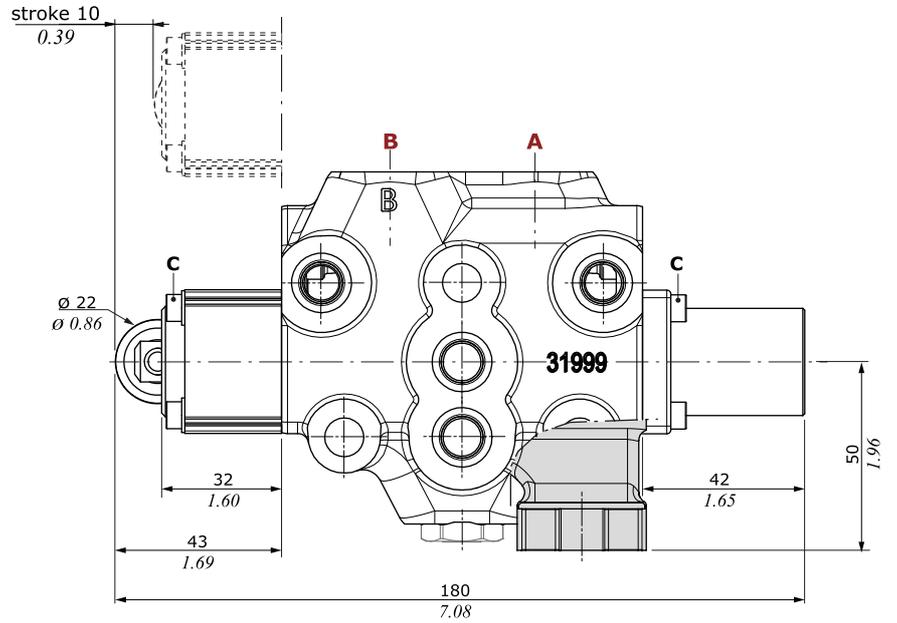
A+B side controls

With cam control

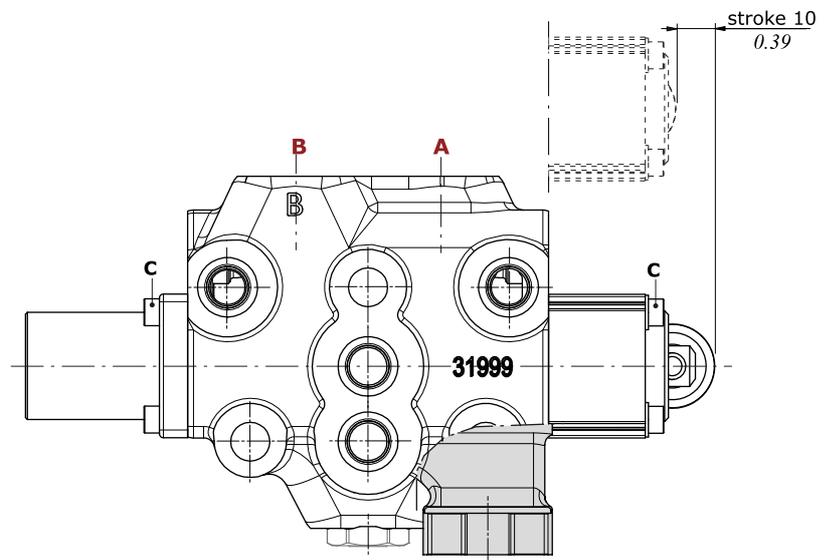
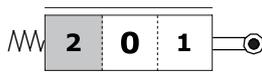
C2 type
From position 1 to position 2,
spring return in position 1



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



C3 type
From position 2 to position 1,
spring return in position 2.
Dimensions are the same of C2 type

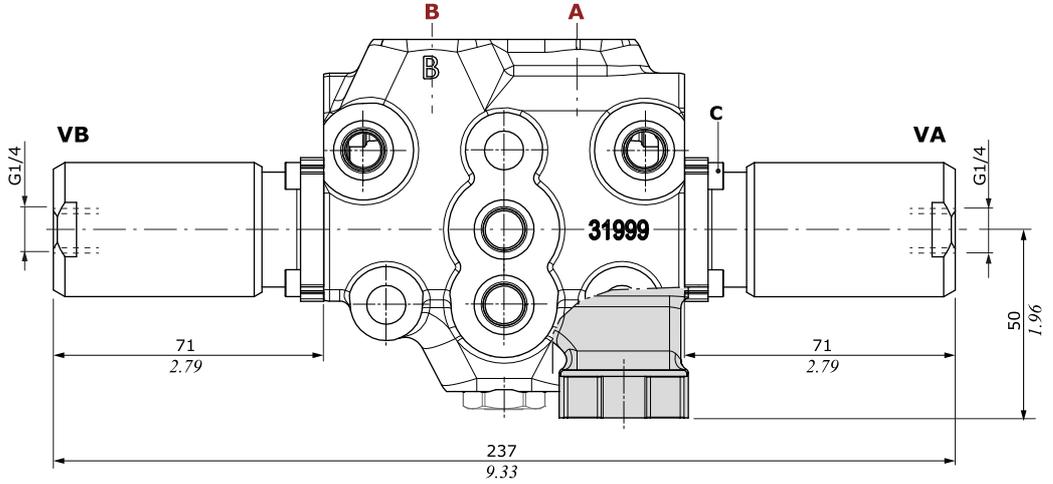
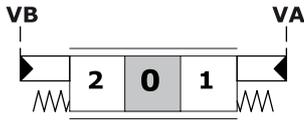


Working section

A+B side controls

With proportional hydraulic controls

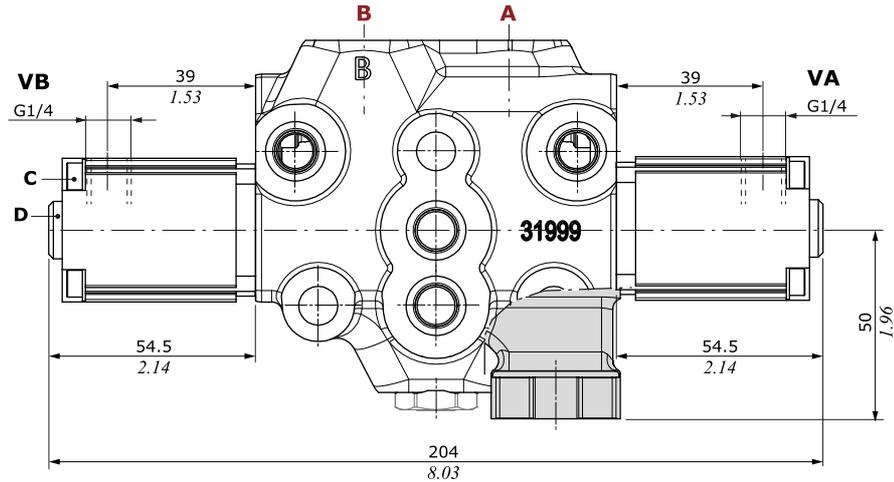
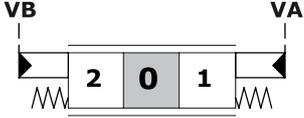
H1 type
High pressure control
with side ports



Operating features

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

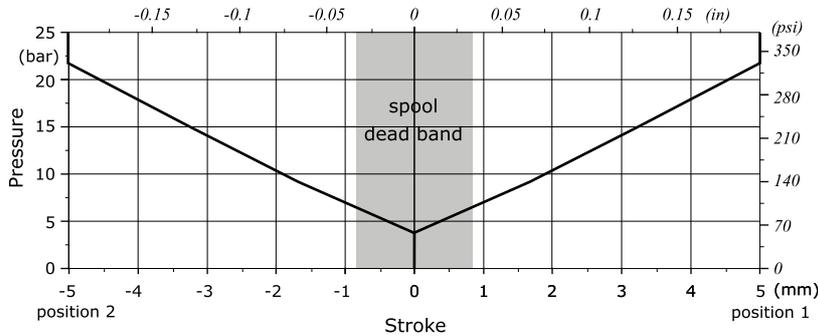
H5 type
Low pressure control
with upper ports



Operating features

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

Stroke vs. Pressure diagram for H5 type control

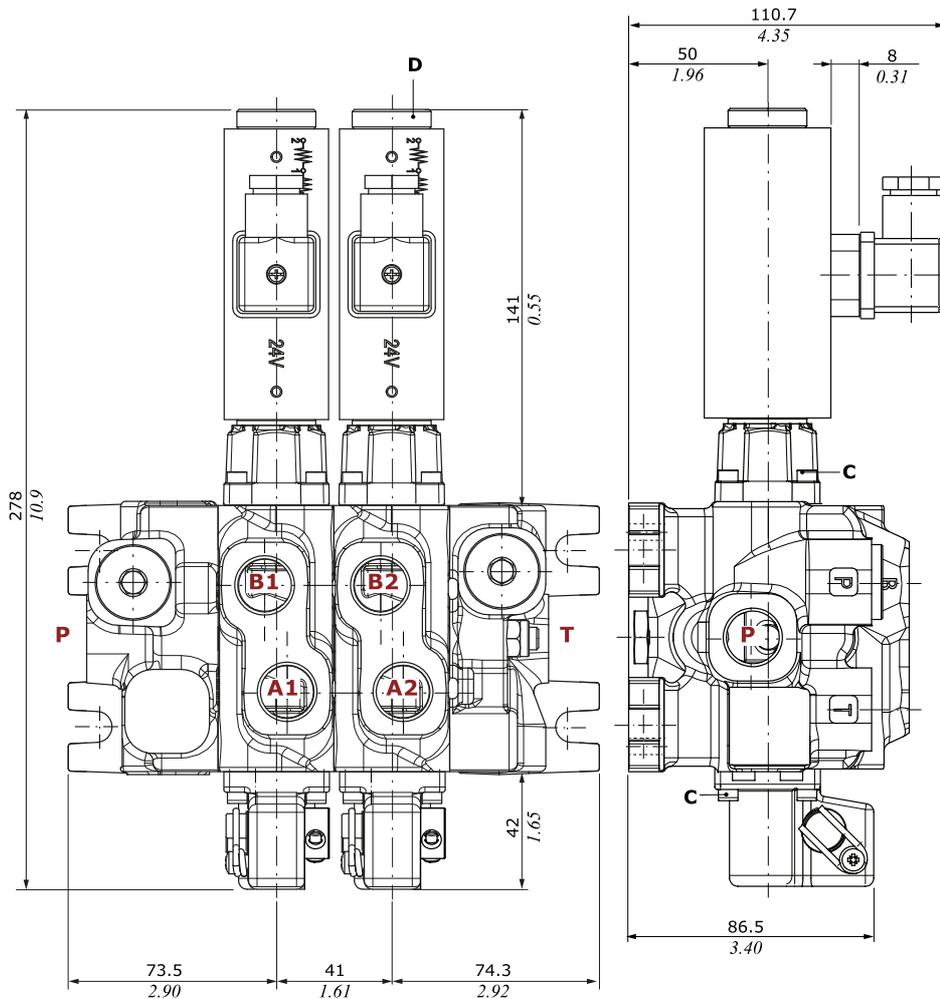
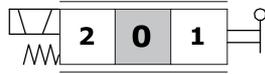


Wrenches and tightening torques

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

Direct solenoid control

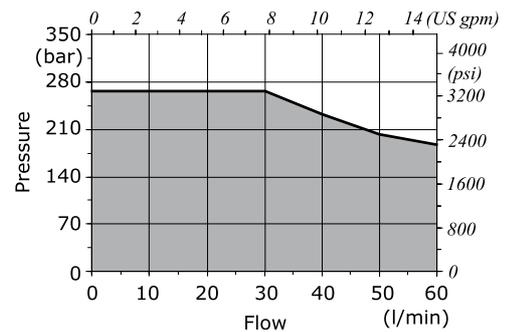
D41 type: ON/OFF one side



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

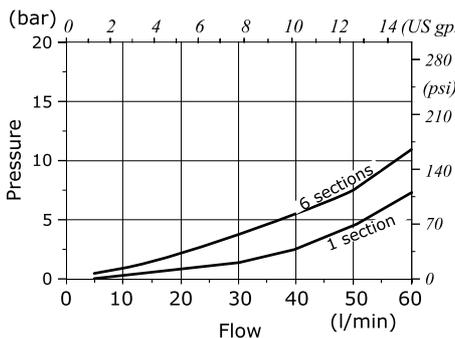
Dynamic conditions



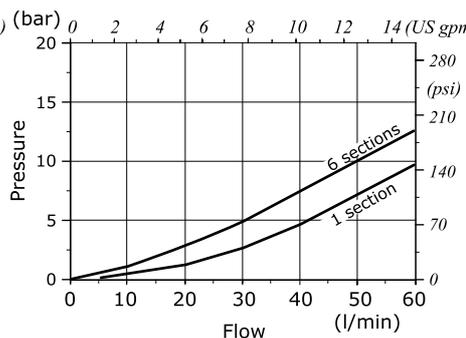
Wrenches and tightening torques

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

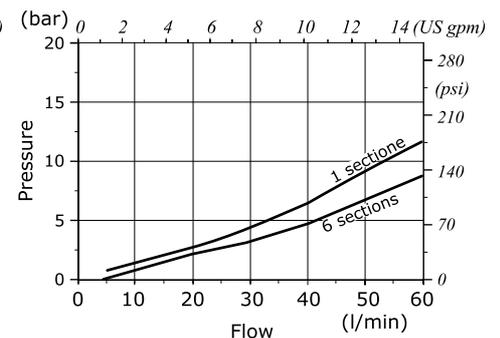
P⇒T pressure drops



P⇒A(B) pressure drops



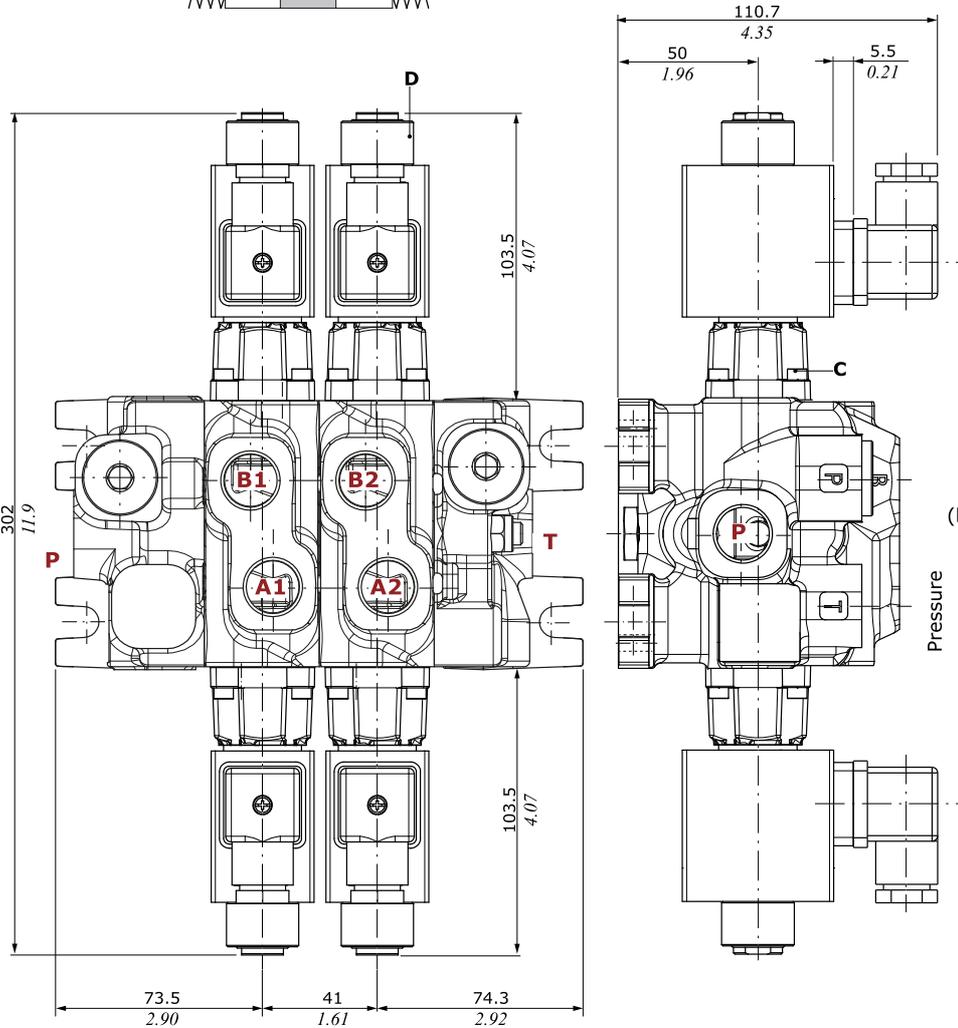
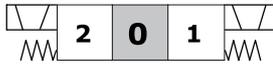
A(B)⇒T pressure drops



Working section

Direct solenoid control

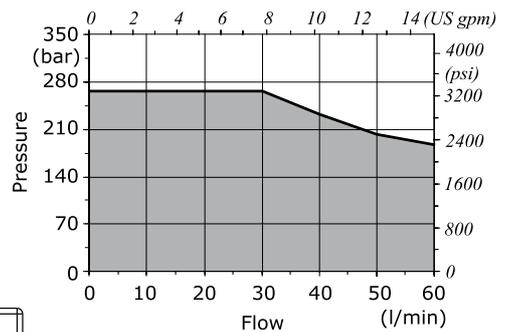
D9 type: ON/OFF two side



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

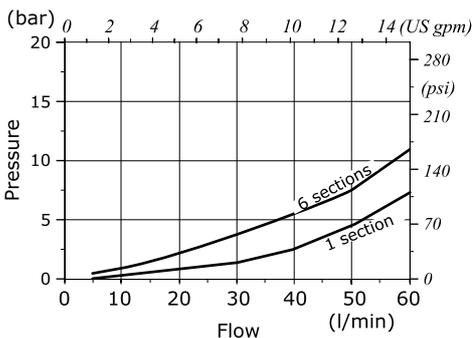
Dynamic conditions



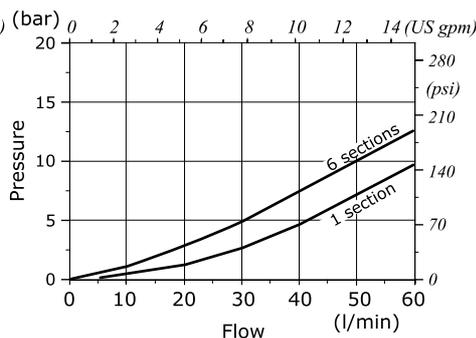
Wrenches and tightening torques

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

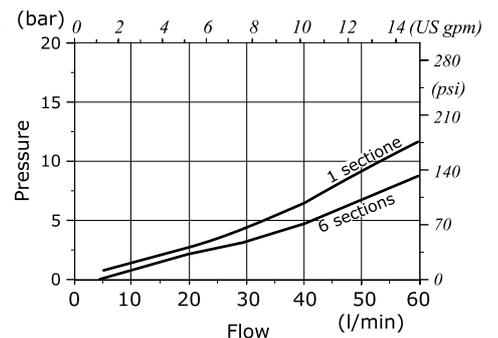
P⇒T pressure drops



P⇒A(B) pressure drops



A(B)⇒T pressure drops



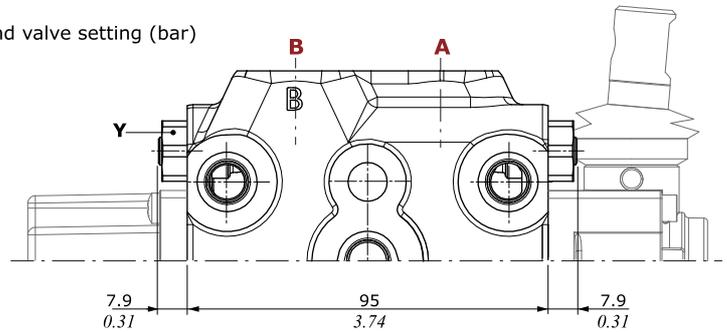
Auxiliary valve configuration

Dimensional data, hydraulic circuits and performance data

Description example

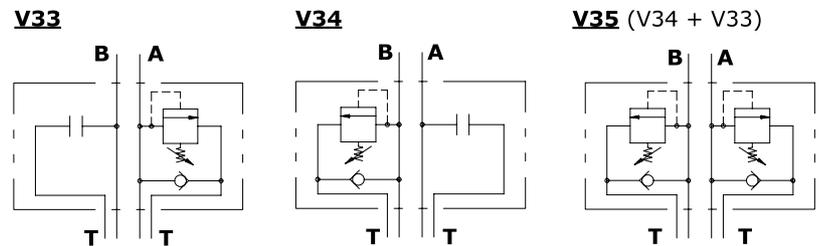
GSV50 / 1 / ... / 103 - A1 - M1 - ^{aux valve} **V32(N)120** / ... ^{spring type and valve setting (bar)}

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



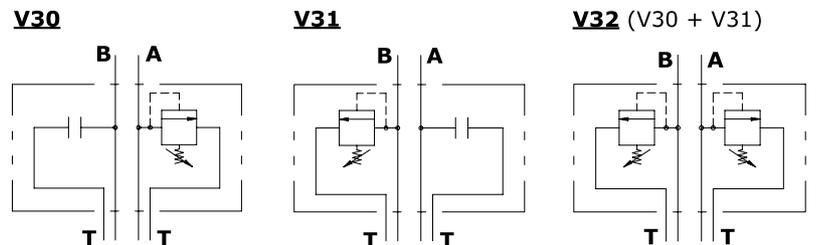
Antishock/anticavitation valve example

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



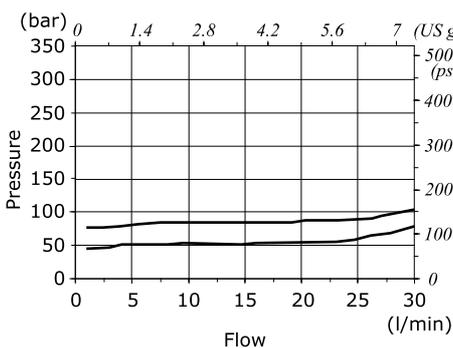
Antishock valve example

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

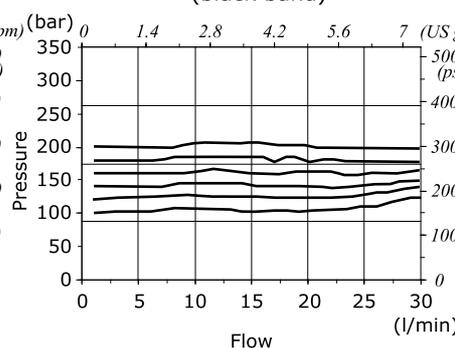


Spring type	Setting ranges (bar - psi)
B (white)	From 50 to 80 - from 725 to 1150
N (black)	From 81 to 200 - from 1170 to 2900
R (red)	From 201 to 350 - from 2910 to 5100

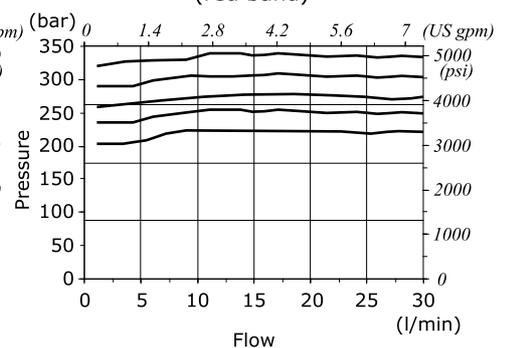
Setting range example (white band)



Setting range example (black band)



Setting range example (red band)

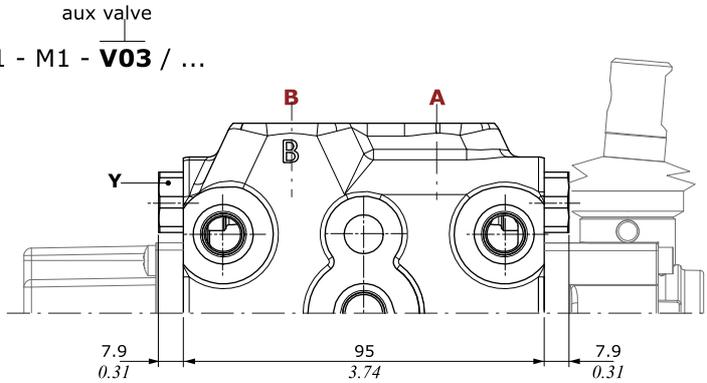


Auxiliary valve configuration

Dimensional data and hydraulic circuits

Anticavitation valve example

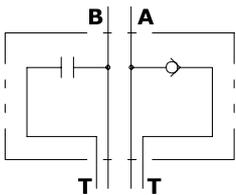
Q30 / 1 / ... / 103 - A1 - M1 - **V03** / ...



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

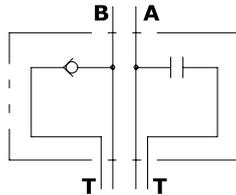
A side configuration:

V04



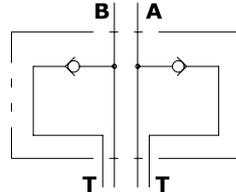
B side configuration:

V05



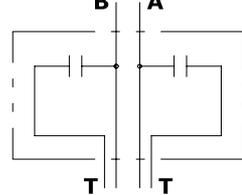
A+B side configuration:

V03 (V04 + V05)



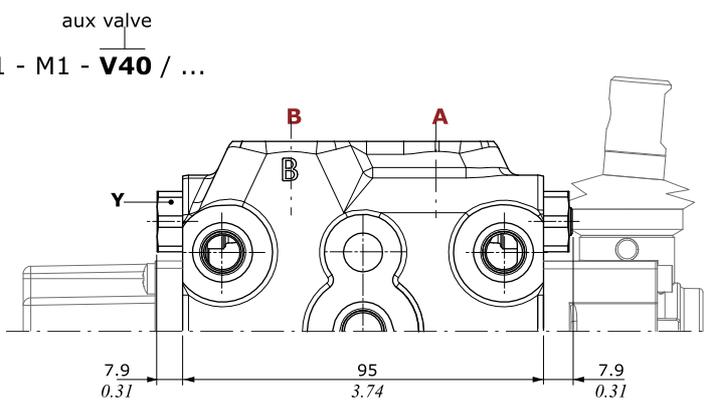
Plug valve:

VC



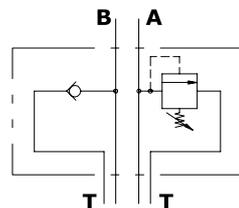
Antishock and anticavitation combining valves example

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



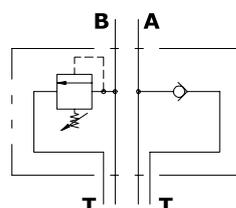
A side configuration:

V40 (V30 + V05)



B side configuration:

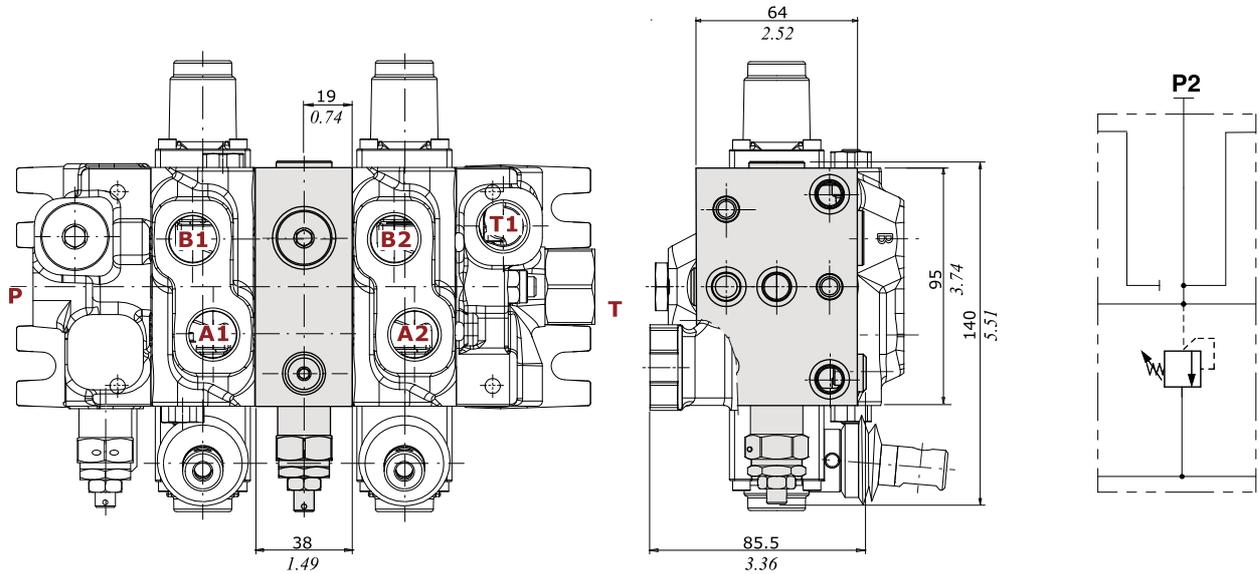
V41 (V31 + V04)



Dimensional data and hydraulic circuit

E50 type

Intermediate inlet section with pressure relief valve

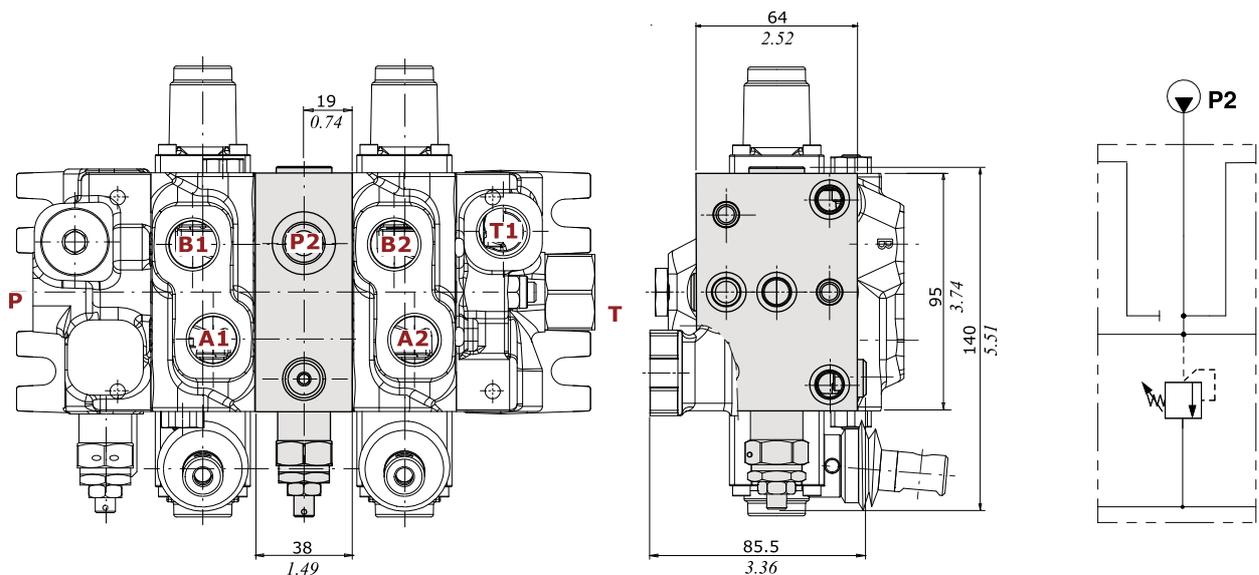


Description example: GSV50/2/F7S(N150)/103-A1-M1.VC/**E50(N150)**/103-A1-M1/F3D-S

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

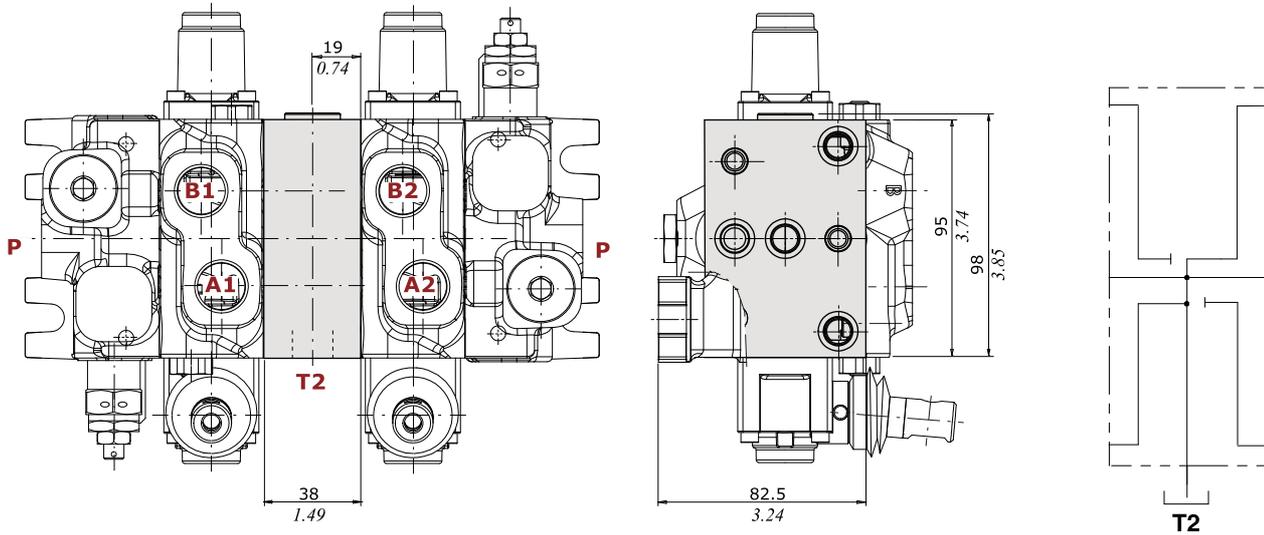
intermediate section spring type and valve setting (bar)

Intermediate section

Dimensional data and hydraulic circuit

E51 type

Intermediate outlet section, T2 port open

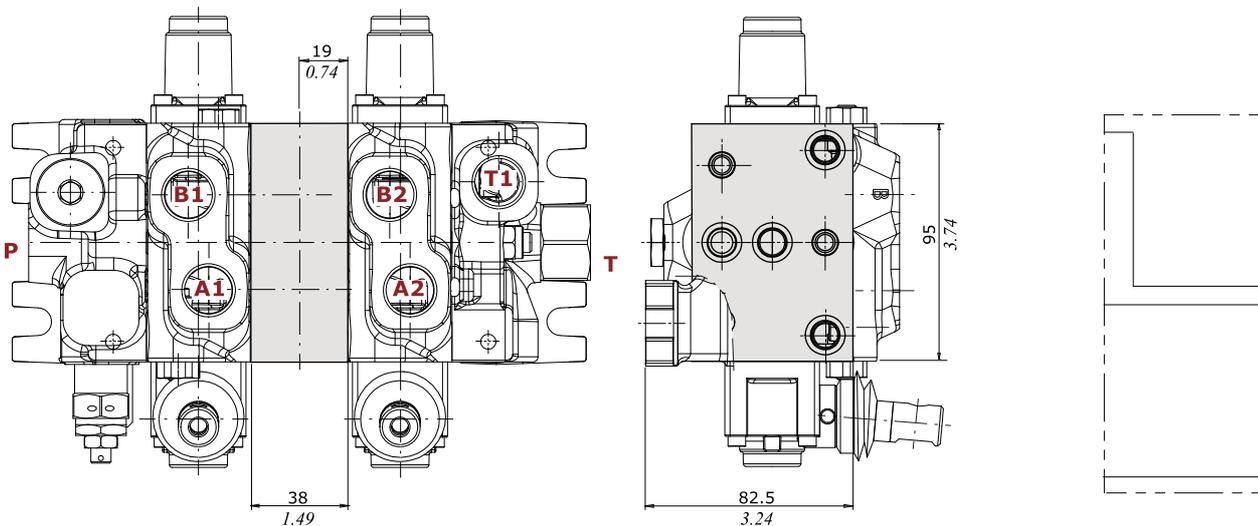


Description example: GSV50/2/F7S(N150)/103-A1-M1.VC/**E51**/103-A1-M1/F3D-S

intermediate section

E61 type

Intermediate spacer section

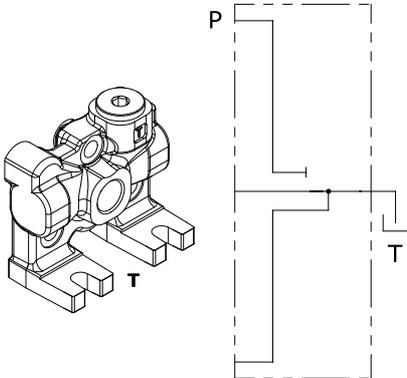


Description example: GSV50/2/F7S(N150)/103-A1-M1.VC/**E61**/103-A1-M1/F3D-S

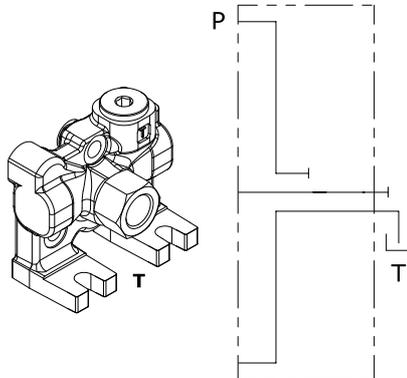
intermediate section

Outlet section

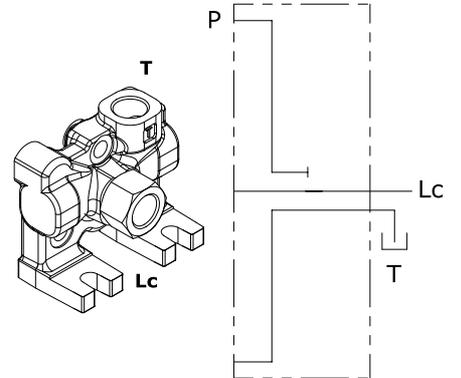
F3D configuration
Open center configuration



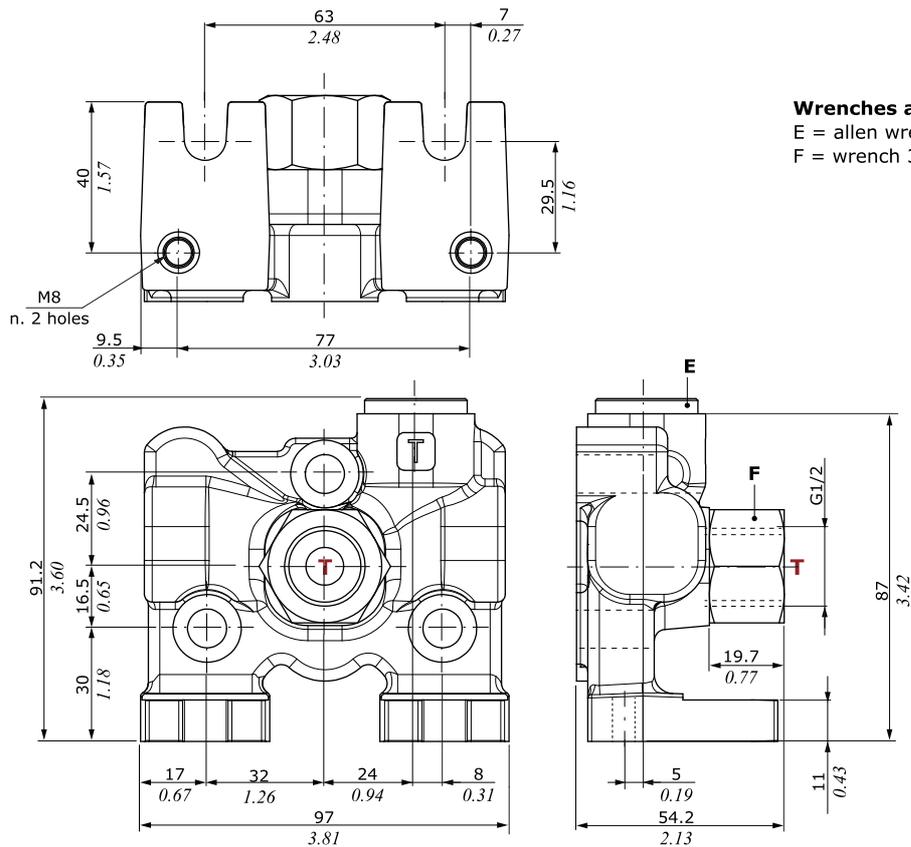
F16D configuration
Closed center configuration



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)