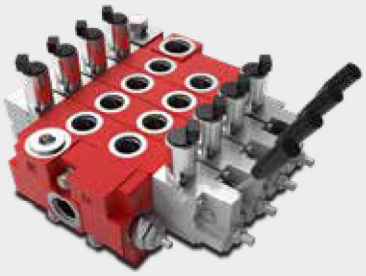


Q130

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	from 1 up to 3 sections	370 bar *(5450 psi)*
	from 4 up to 6 sections	350 bar *(5070 psi)*
	from 7 up to 10 sections	325 bar *(4710 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 cm³/min *(0.61 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.

REFERENCE STANDARD

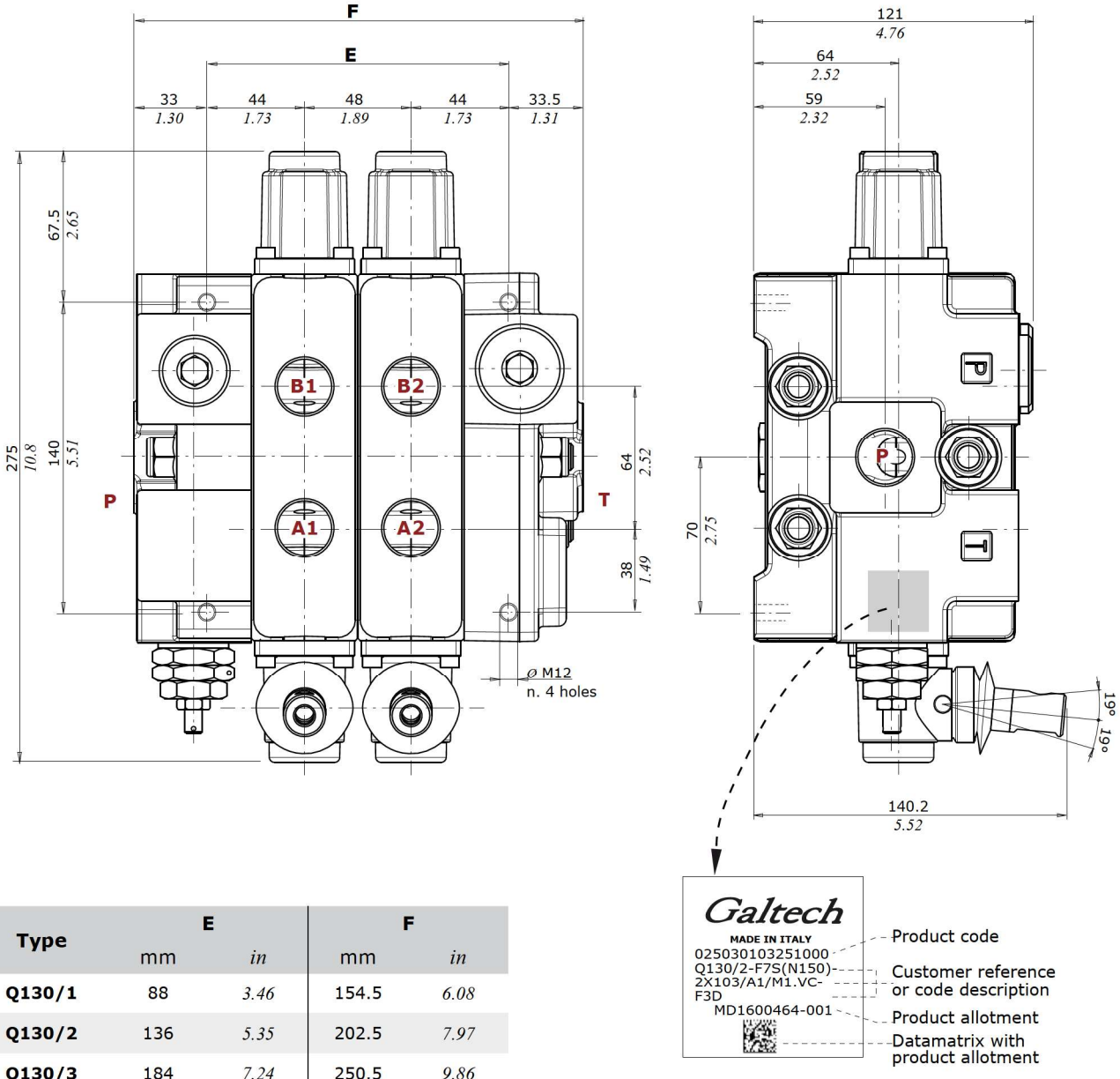
		BSP	UN-UNF
THREAD ACCORDING TO		ISO 228/1	ISO 263
		BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179	11926
	SAE		J11926
	DIN	3852-2 shape X or Y	

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

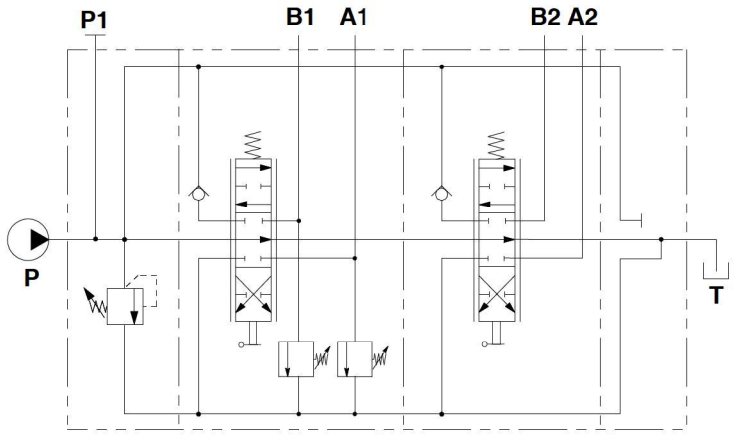
Standard configuration*



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 254

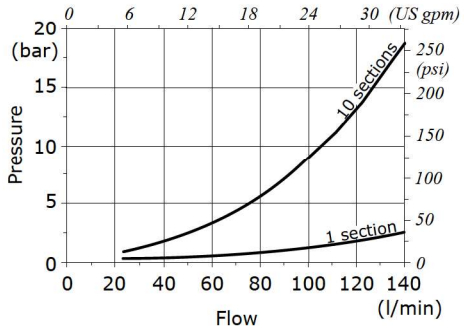
Hydraulic circuit



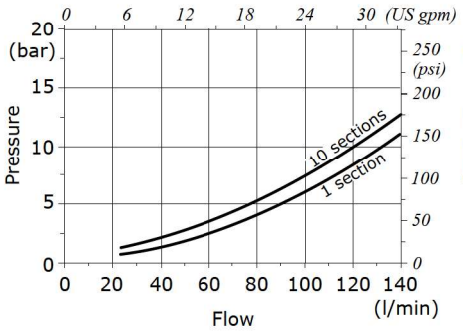
Description example (parallel circuit):
Q130/2/F7S(N150)/103-A1-M1.V32(N105\N105)/103-A1-M1/F3D

Performance data

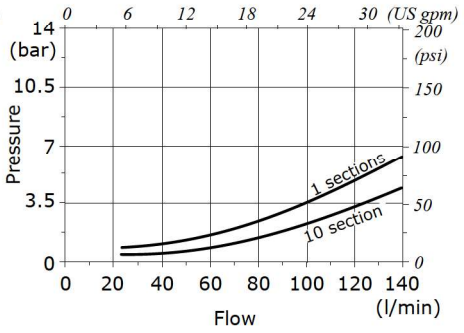
P⇒T pressure drops



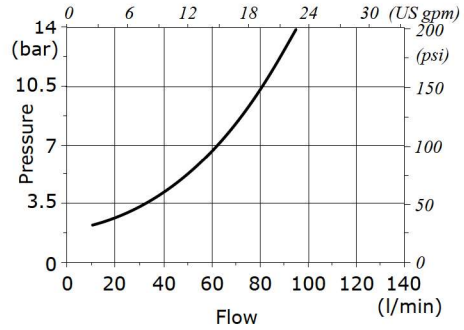
P⇒A(B) pressure drops



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

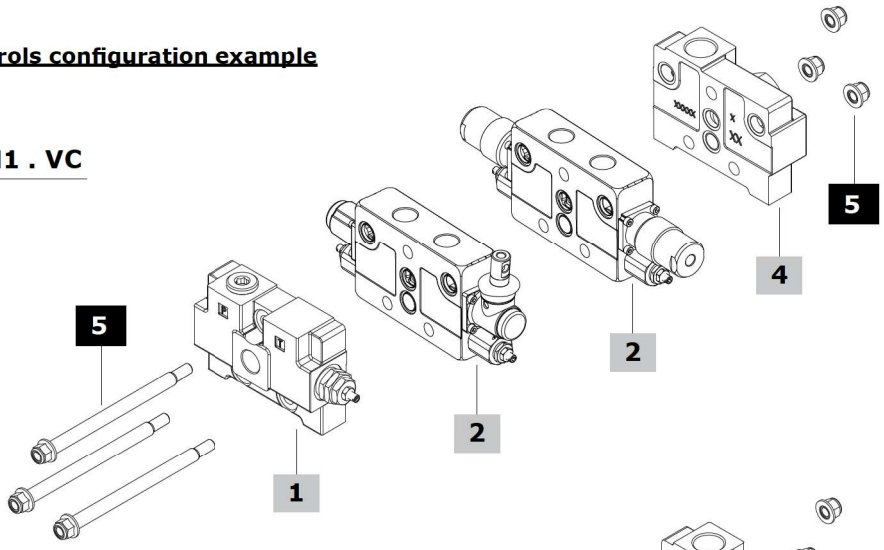
valve setting (bar)

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

Q130 / 2 / F7S(N150) / 103 - A1 - M1 . VC /

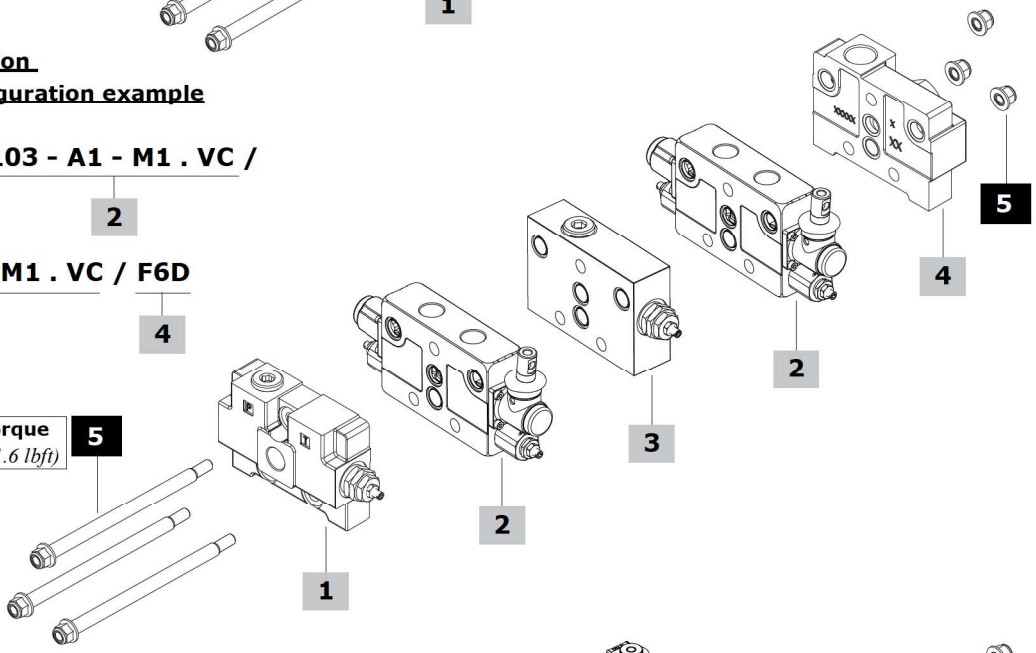
1 — 2

valve setting (bar)

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

3 — 2 — 4

Tie rod tightening torque
wrench 18 - 70 Nm *(51.6 lbft)* — 5



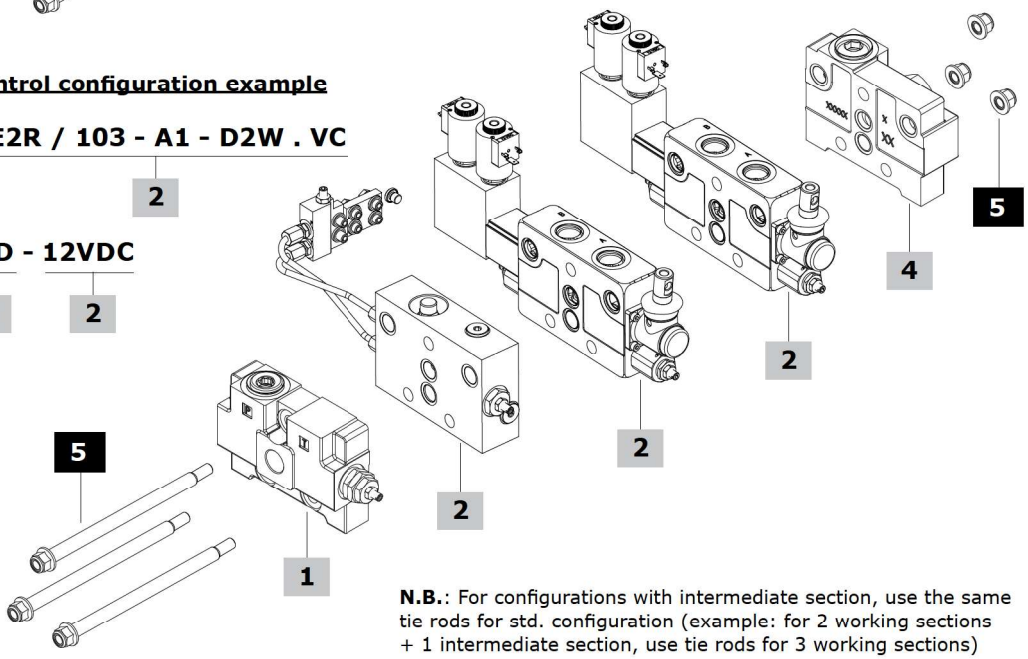
Valve with electrohydraulic control configuration example

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 226

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)

2 Working section* page 229

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, withouth 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, withouth 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, withouth 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, withouth valve arrangement

3 Intermediate section* page 254

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 2nd 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

4 Outlet section* page 256

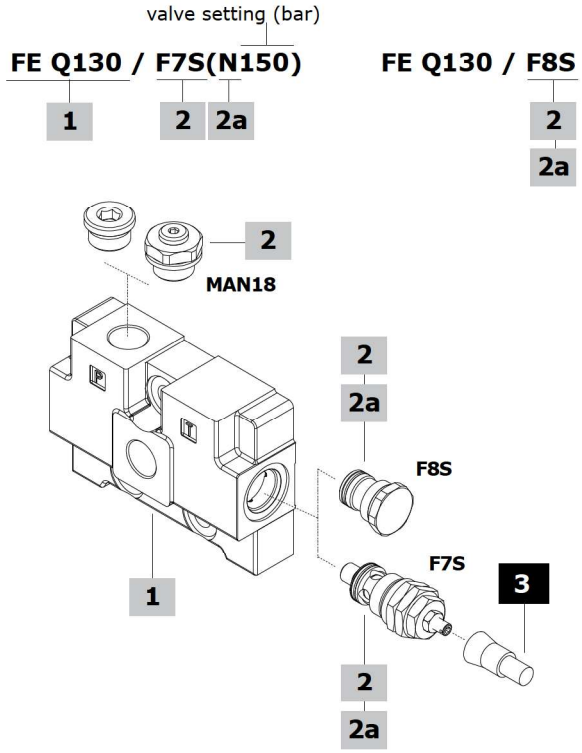
TYPE: **FS-Q130-F3D** CODE: 10012F3D
DESCRIPTION: T port open, T1 port plugged. For open center circuit
TYPE: **FS-Q130-F16D** CODE: 10016F16D
DESCRIPTION: T port open, T1 port plugged. For closed center circuit
TYPE: **FS-Q130-F6D** CODE: 10014F6D
DESCRIPTION: Lc port and T1 port open. With joint for 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 227

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

2 Configuration coding* page 227

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 228

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

3 Accessory

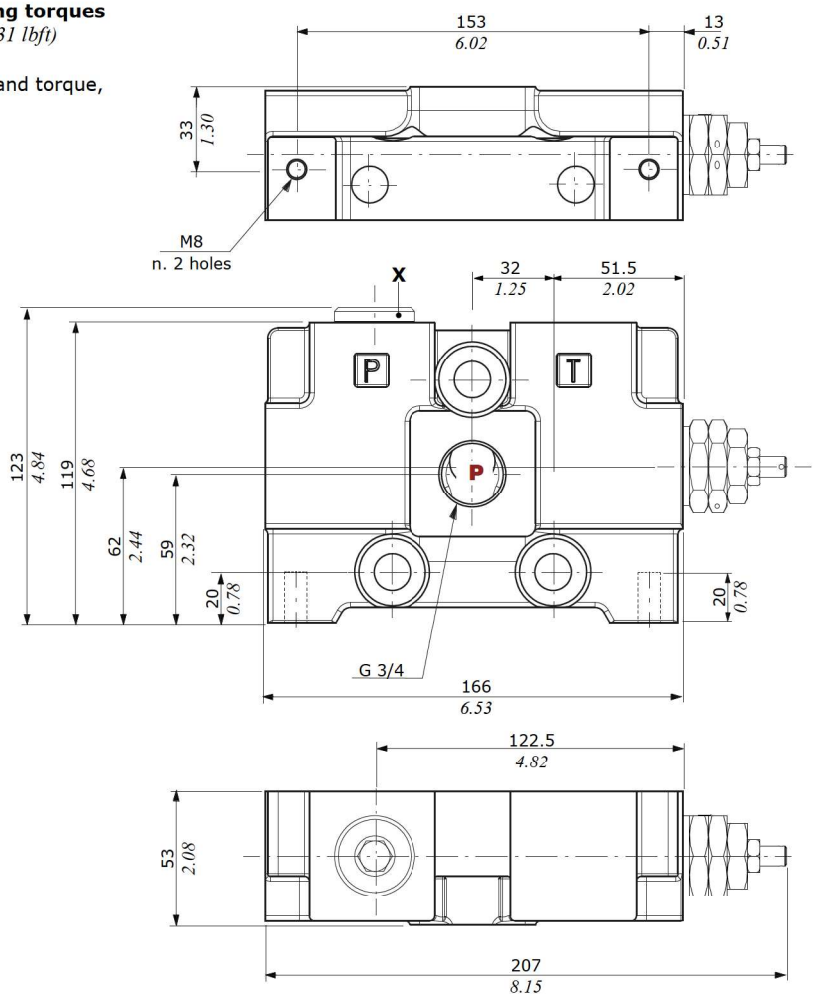
TYPE	CODE	DESCRIPTION
-	4COP120420	Antitamper cap for pressure relief valve

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

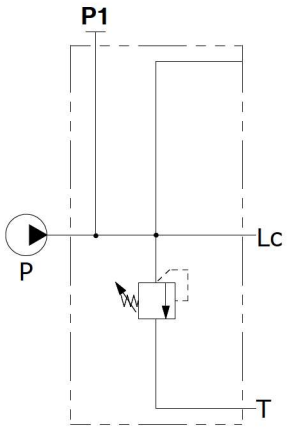
Dimensional data and hydraulic circuits

Wrenches and tightening torques
X = wrench 12 - 42 Nm *(31 lbft)*

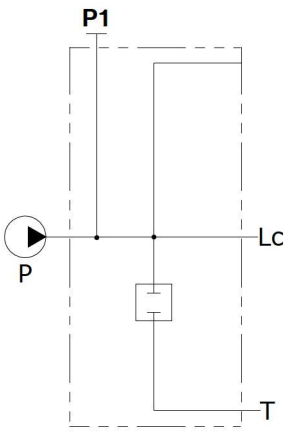
Note: For valves wrench and torque, see related pages



F7S configuration
With pressure relief valve



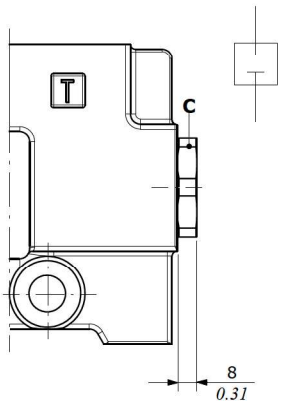
F8S configuration
Without valves
(pressure relief valve plugged port)



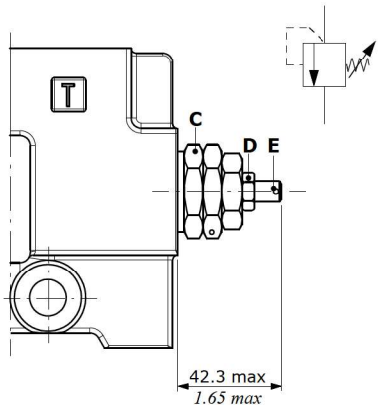
Inlet section

Main pressure relief valve

Relief valve blanking plug



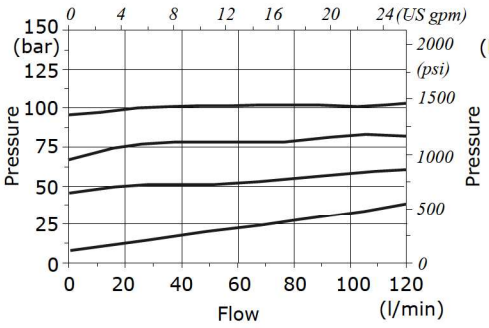
Main pressure relief valve



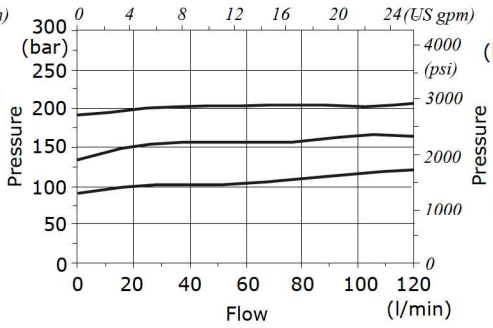
Wrenches and tightening torques
C = wrench 32 - 80 Nm *(59 lbft)*
D = wrench 13 - 24 Nm *(17.7 lbft)*
E = allen wrench 4

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*

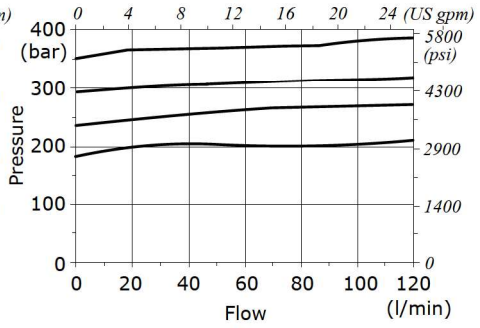
Setting example (B type spring)



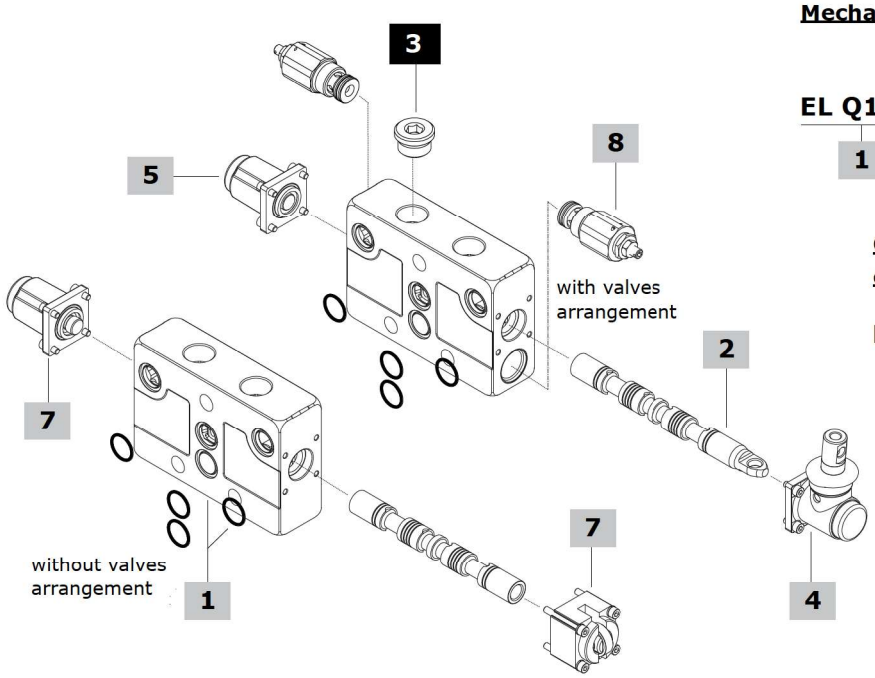
Setting example (N type spring)



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

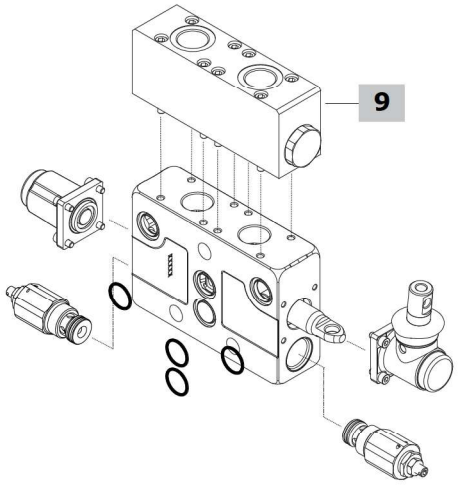
EL Q130 / 103 - C3 . V40(N)120

7

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

EL Q130 / 103 - A1 - M1 . V40(N)120 / VC03

9



1 Working section body kit* page 233

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 234

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 4th 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 235

TYPE	CODE	DESCRIPTION
For standard spools		
With lever control:		
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°
With safety lever control:		
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°
Without lever control:		
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
Joystick controls for 2 section operation:		
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		
With spool position microswitch:		
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
Without lever control:		
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 242

TYPE	CODE	DESCRIPTION
With spring return:		
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
With flexible cable control arrangement:		
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
With friction:		
R0	10740R0	Adjustable friction control
With detent:		
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 4th pos., for **116** spool type

5 B side controls (cont.) page 242

TYPE	CODE	DESCRIPTION
With detent and kick out function:		
R1K	10741R1K	3 pos., detent in position 1
R2K	10742R2K	3 pos., detent in position 2
R3K	10743R3K	3 pos., detent in all position
With spool position microswitch:		
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
Pneumatic and electropneumatic controls:		
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 247

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 251

TYPE	CODE	DESCRIPTION
Antishock valve:		
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)*
Antishock/anticavitation valve:		
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)*
Anticavitation valve:		
V04	10808V04	Anticavitation valve
Plug:		
VC	060002798999	Valve blanking plug

For other configurations and positions, see page 251

9 Secondary aux valves* page 253

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

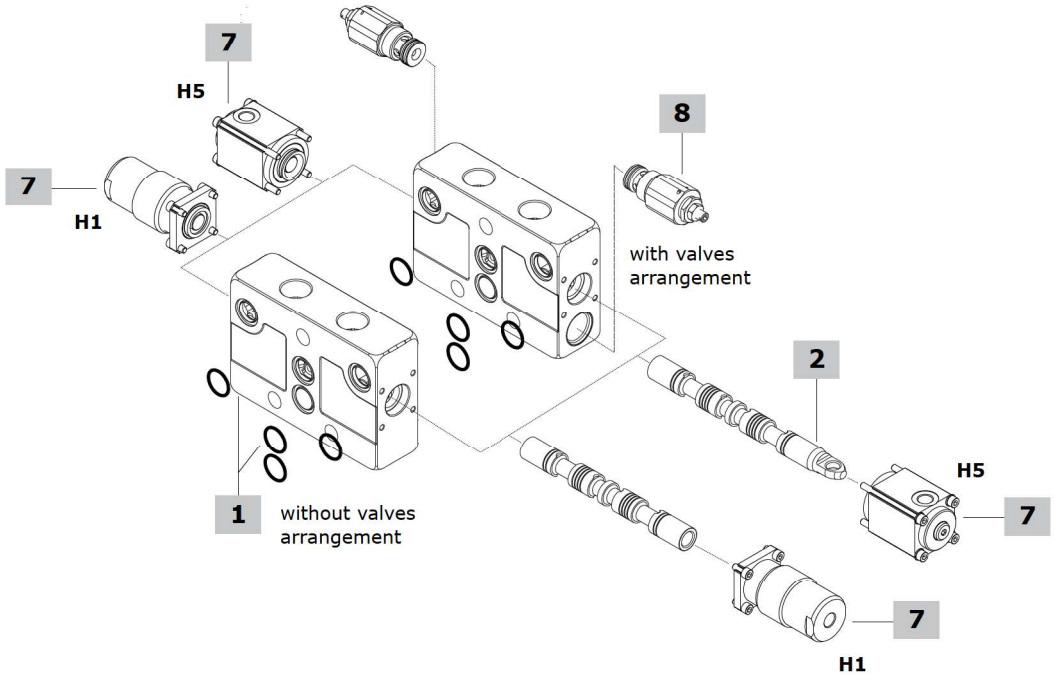
spring type and valve setting (bar)

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 233

The body kits listed below are for **H5** hydraulic control.
H1 hydraulic control requires standard body: see #1, page 229

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 234

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 248

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

8 Auxiliary port valve page 251

See #8, page 230

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

Working section - parts ordering codes

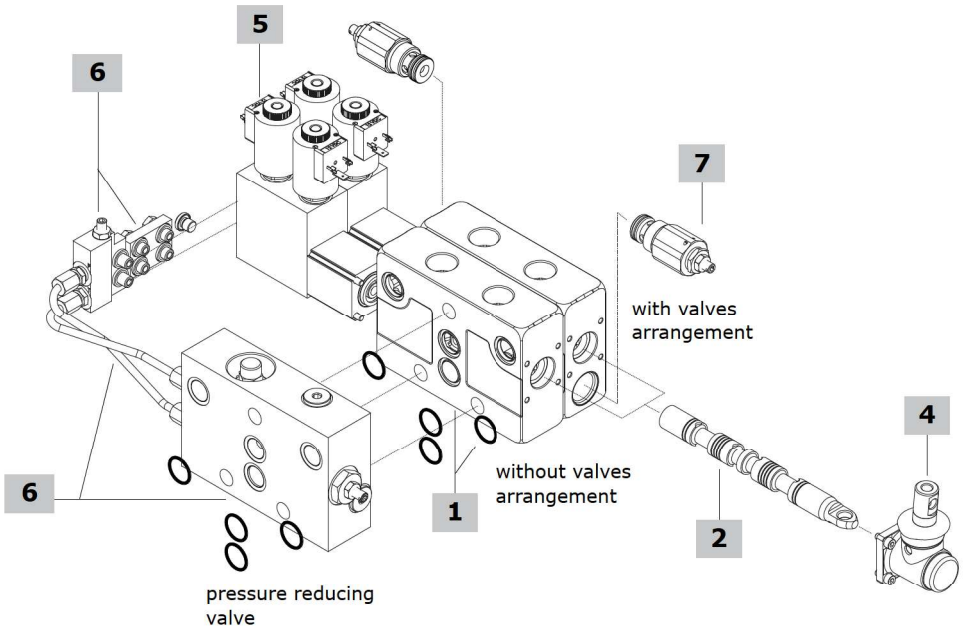
One side - ON/OFF electrohydraulic control valve configuration example

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 233

See #1, page 229

2 Spool page 234

See #2, page 229

4 A side control page 235

See #4, page 230

5 B side electrohydraulic control page 249

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 257

6 Connector kit page 250

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

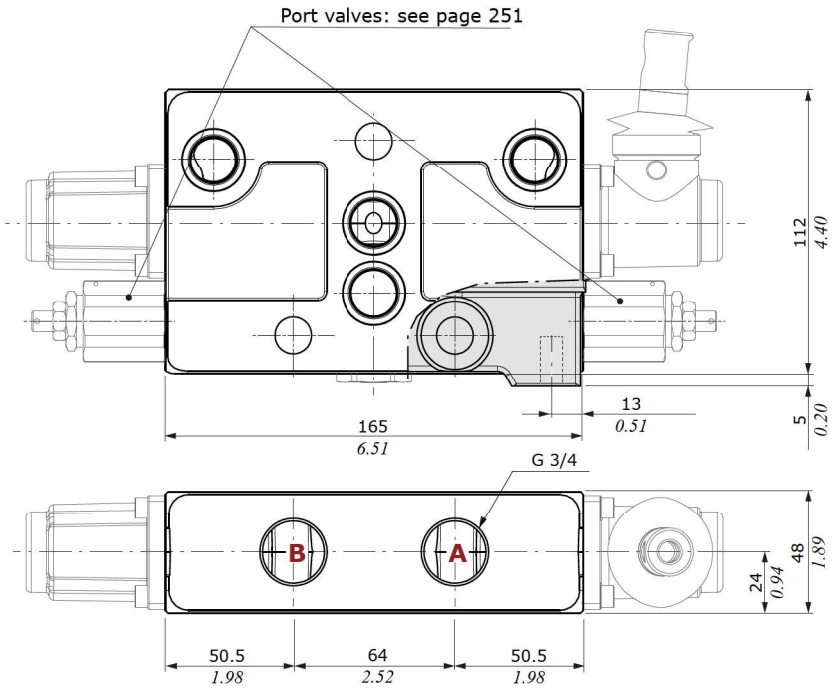
7 Auxiliary port valve page 251

See #8, page 230

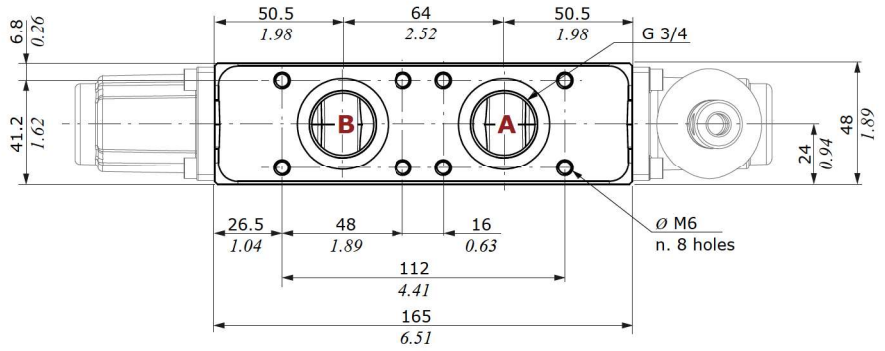
(*): Codes are referred to **BSP** thread

Dimensional data and hydraulic circuits

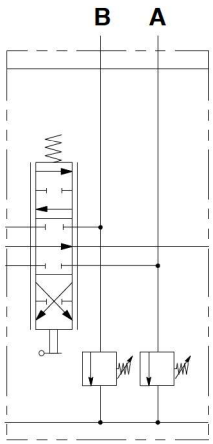
Standard working section



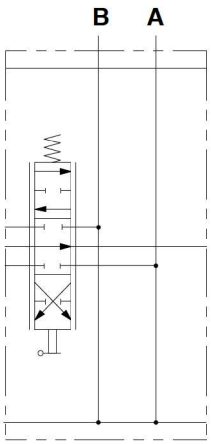
Working section for secondary aux valves block



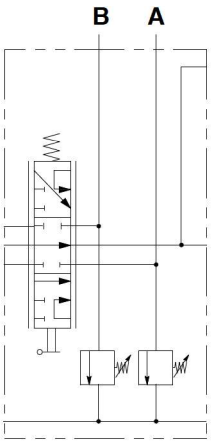
Q130.V40(N)120 configuration
Parallel circuit,
mechanical control with aux valves



Q130 configuration
Parallel circuit,
mechanical control without aux valves



Q130.V40(N)120 configuration
Series circuit,
mechanical control with aux valves

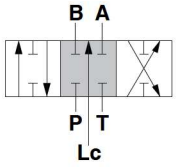


Working section

Spool

103 type
A and B closed
in neutral position

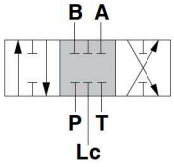
2 0 1



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

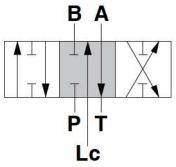
2 0 1



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

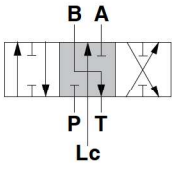
2 0 1



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

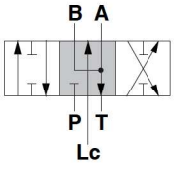
2 0 1



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

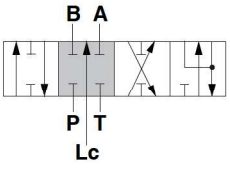
2 0 1



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)

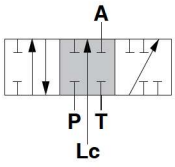
2 0 1 3



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

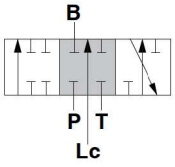
2 0 1



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

102 type
Single acting on B,
A plugged

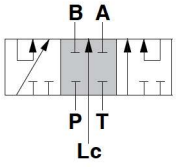
2 0 1



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

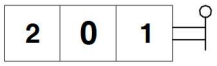


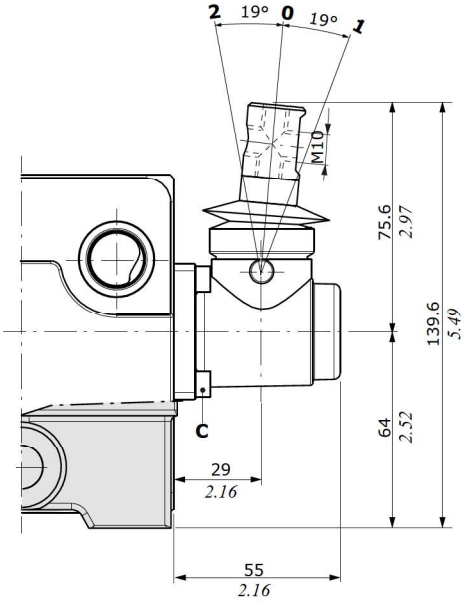
Stroke
Position 1: + 7 mm *(+ 0.27 in)*
Position 2: - 7 mm *(- 0.27 in)*

A side controls

With lever control

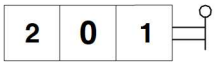
A1 type
M10 thread aluminium lever box

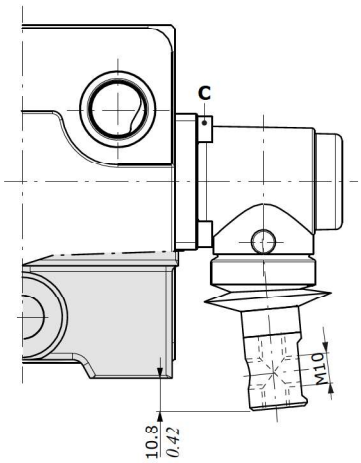




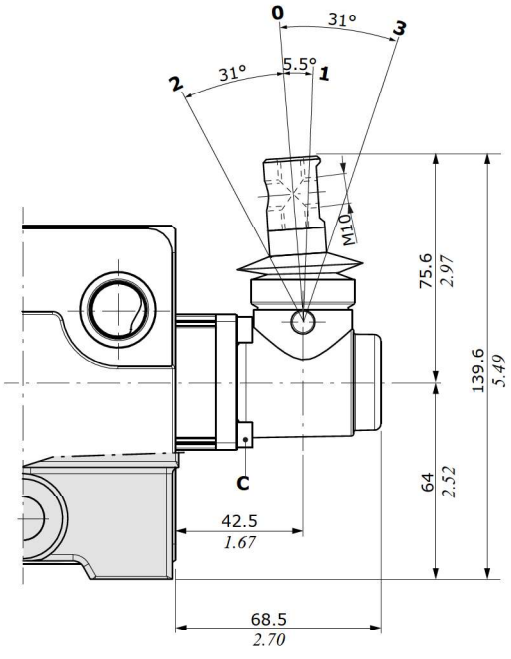
Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*

A2 type
As A1 type, rotated 180°

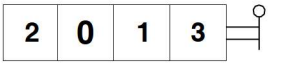


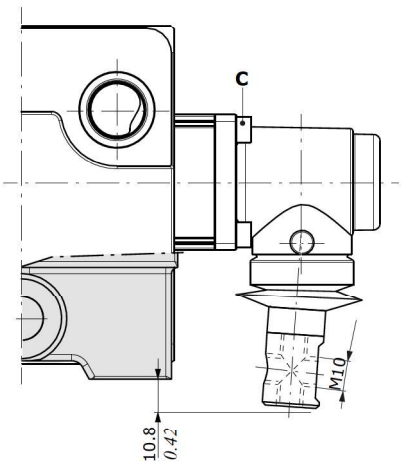


A1/Z1 type
M10 thread, for 116 floating spool type



A2/Z1 type
As A1/Z1 type, rotated 180°





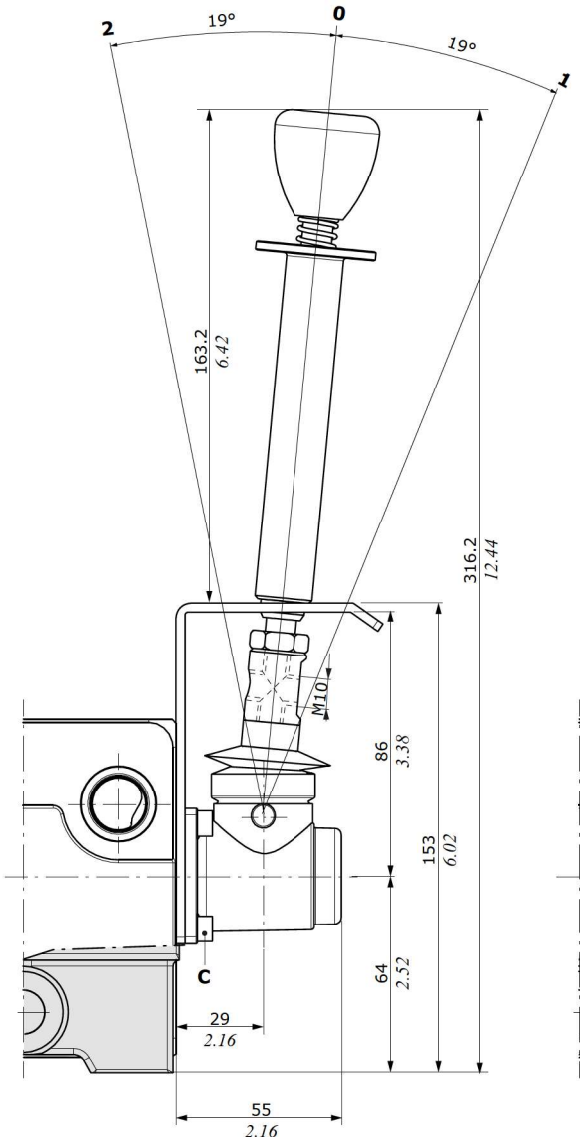
Working section

A side controls

With safety lever control

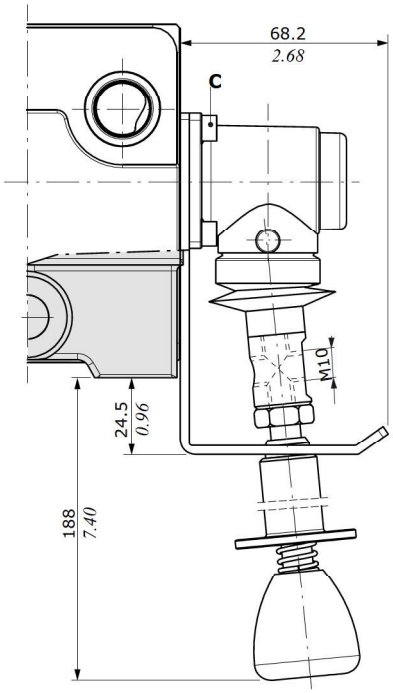
A1/S type
M10 thread, aluminium lever box

2	0	1



A2/S type
As A1/S type, rotated 180°

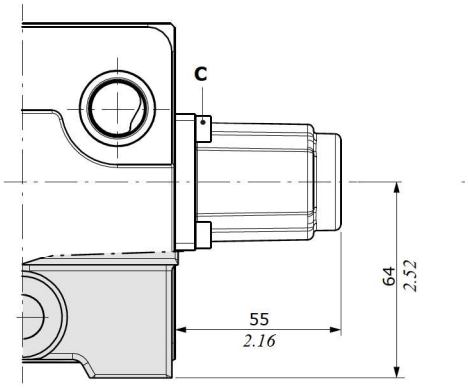
2	0	1



Without lever control

A3 type
With cap

2	0	1



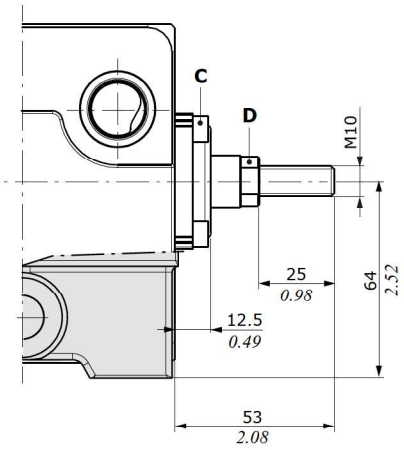
Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbf)*

A side controls

Without lever control

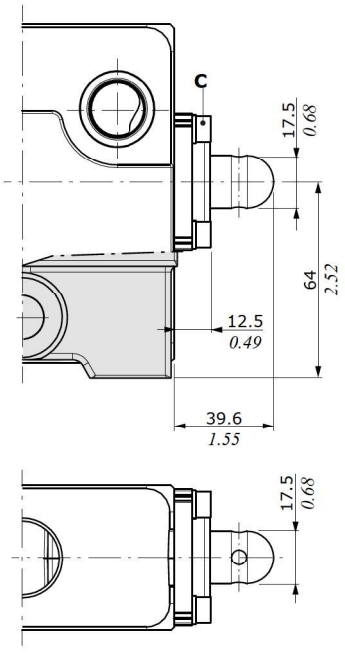
A4 type
M8 male thread external pin with flange

2	0	1



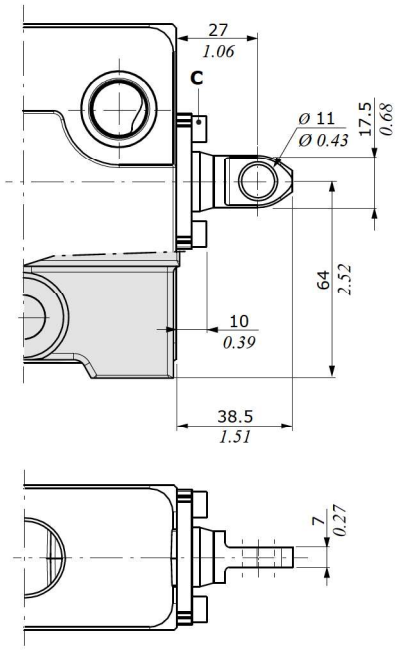
A5 type
Flange with spherical spool end

2	0	1



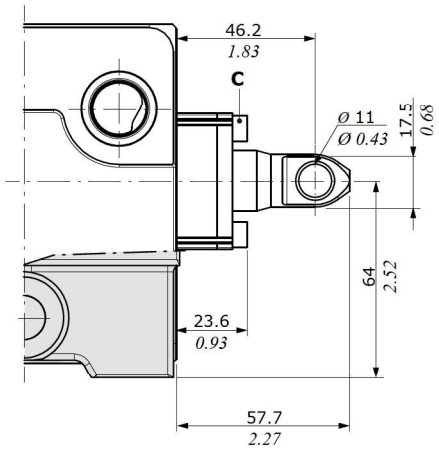
A6 type
With flange

2	0	1



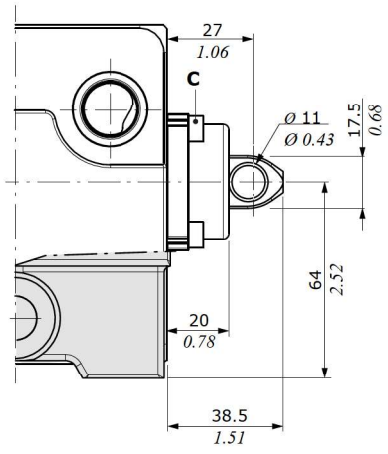
A6/Z1 type
As A6 type,
for 116 floating spool type

2	0	1	3



A6H type
As A6 type, with scraper

2	0	1



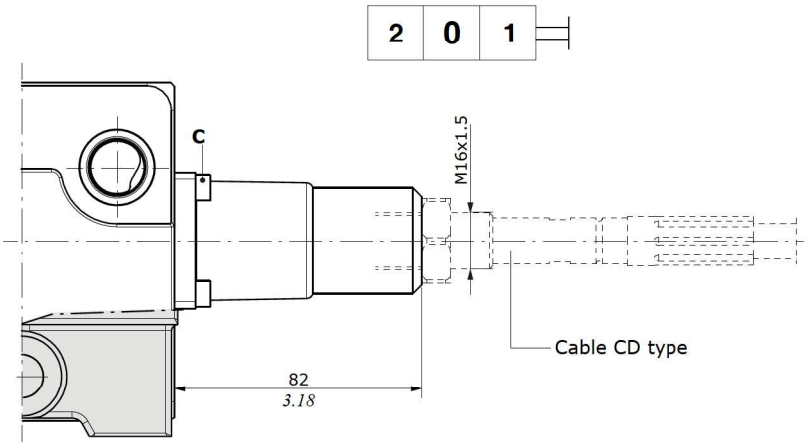
Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*
D = wrench 13 - 9.8 Nm *(7.2 lbft)*

Working section

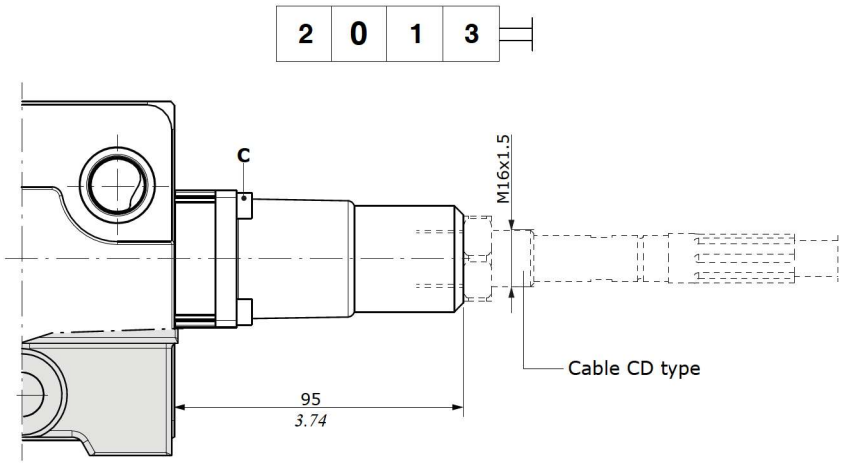
A side controls

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 lbft)*

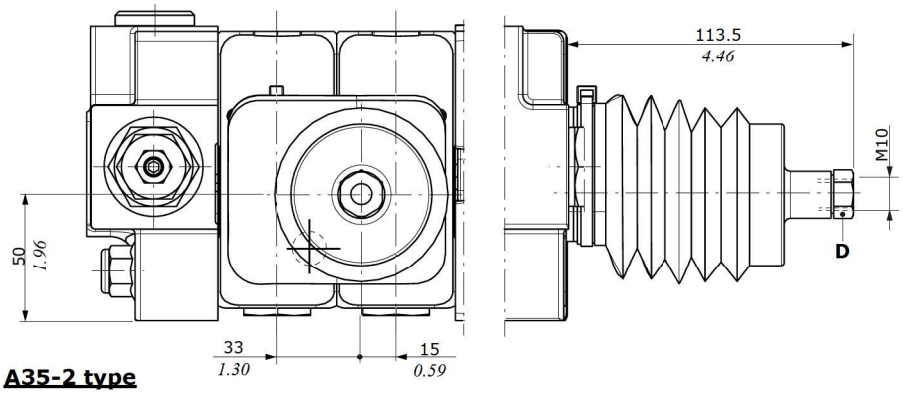
A side controls

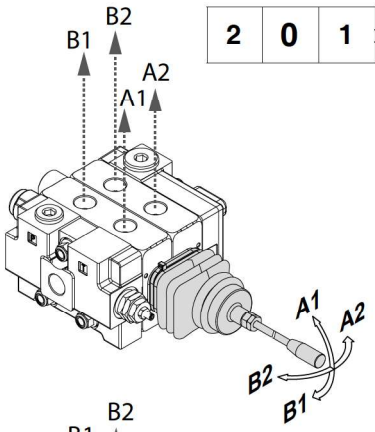
Joystick control

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

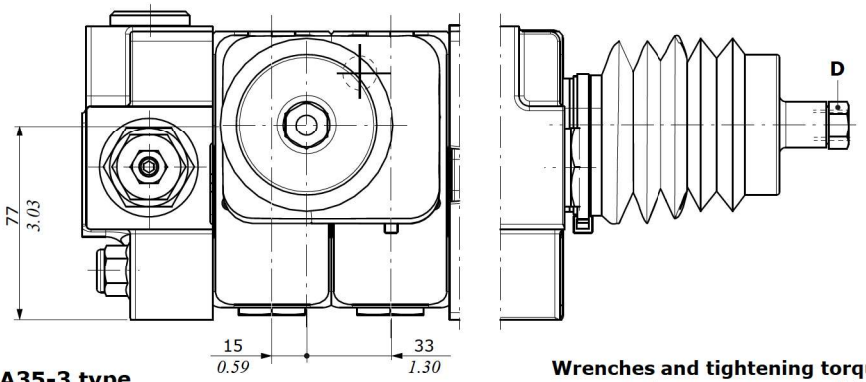
2	0	1
2	0	1

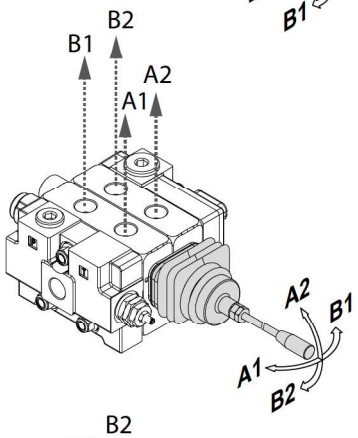
A35-1 type





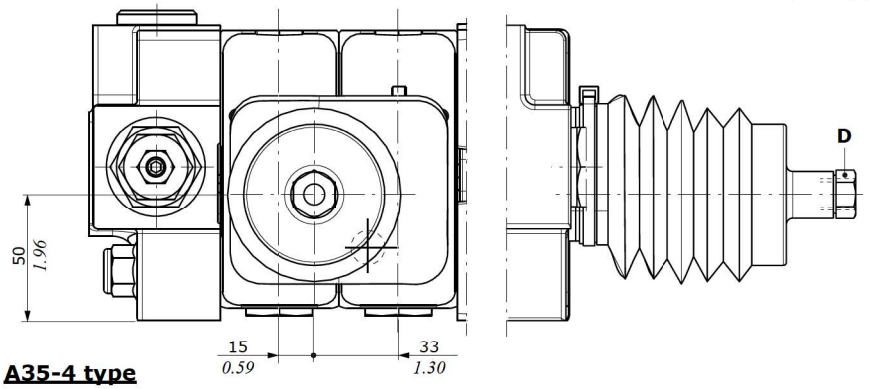
A35-2 type

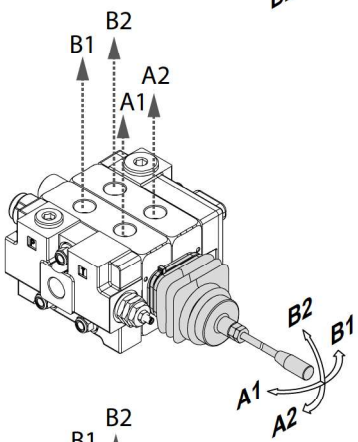




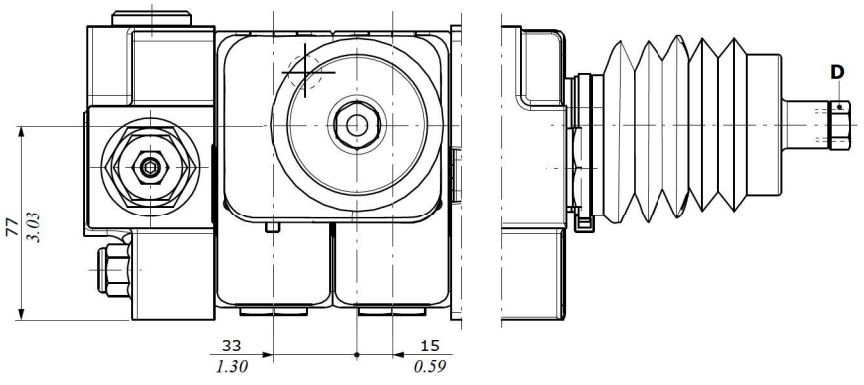
A35-3 type

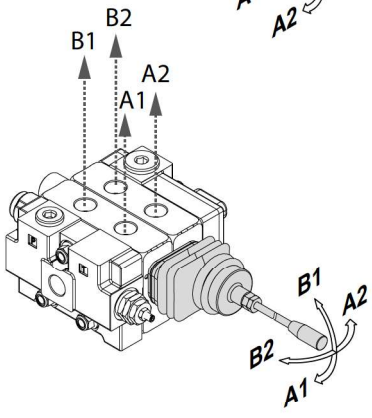
Wrenches and tightening torques
D = wrench 17 - 24 Nm *(17.7 lbft)*





A35-4 type



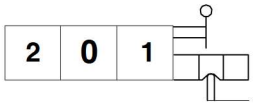


Working section

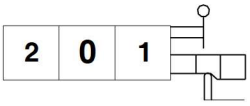
A side controls

With spool position microswitch, with lever

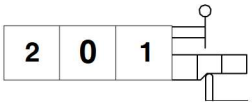
N1-A1 type
Micro operation
in position 1 and 2

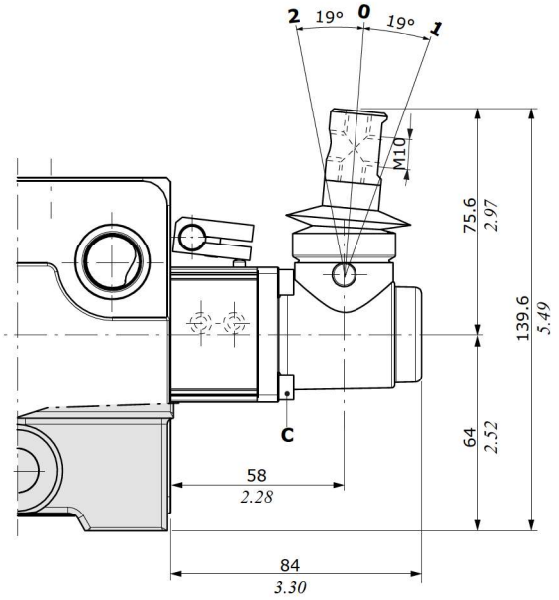


N1A-A1 type
Micro operation in
position 1



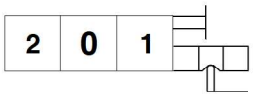
N1B-A1 type
Micro operation in
position 2



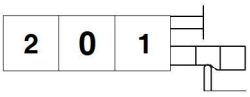


With spool position microswitch, with cap

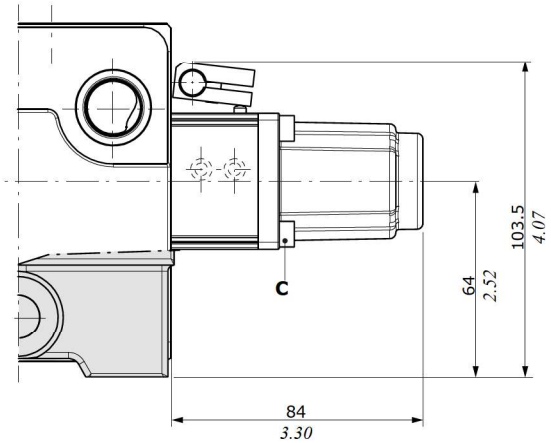
N1-A3 type
Micro operation
in position 1 and 2



N1A-A3 type
Micro operation in
position 1



N1B-A3 type
Micro operation in
position 2

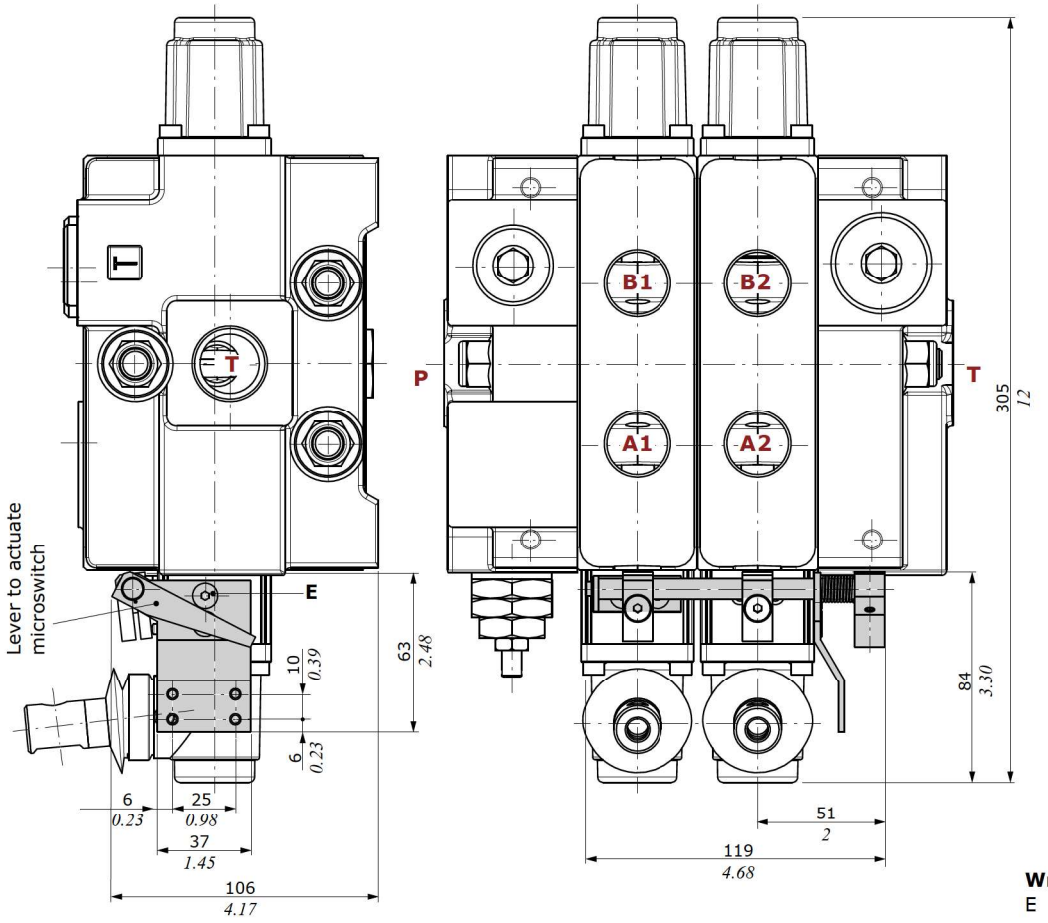


Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*

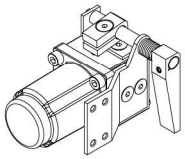
A side controls

With spool position microswitch

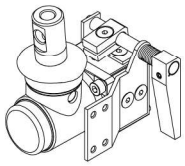
Microswitch assembly kit for 2 working section (N1-A1 type)



with cap



with lever box



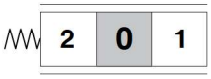
Wrenches and tightening torques
E = allen wrench 3 - 6.6 Nm *(4.8 lbft)*

Working section

B side controls

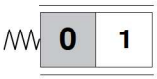
With spring return

M1 type
3 position, spring return in neutral position

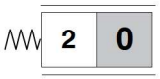


M1/01 type
As M1 type, for joystick control

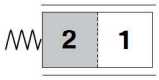
M2 type
2 position (0-1), spring return in neutral position

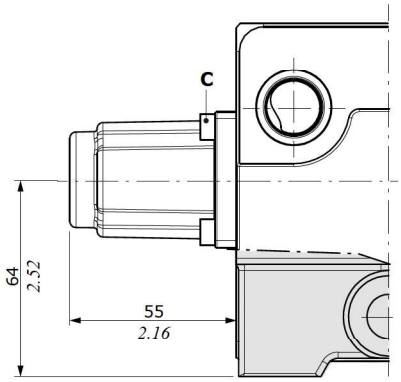


M3 type
2 position (0-2), spring return in neutral position

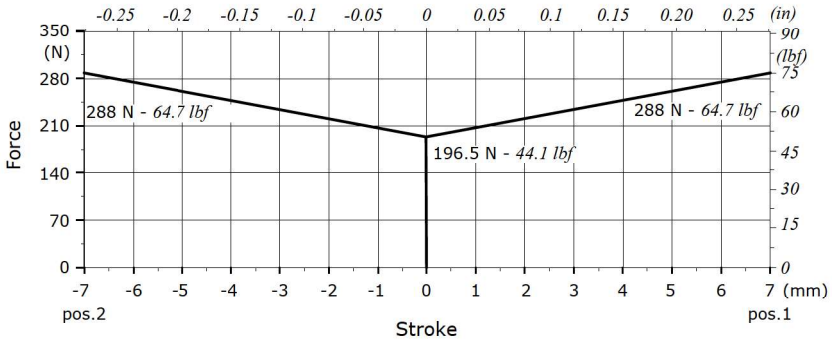


M4 type
2 position (2-1), spring return in position 2



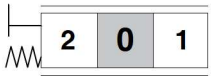


M1 control type - Force vs. Stroke diagram

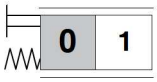


Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*
D = allen wrench 3 - 5 Nm *(3.68 lbft)*

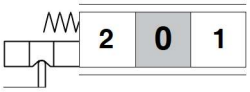
M1-U1 type
3 position, with M10 male thread external pin

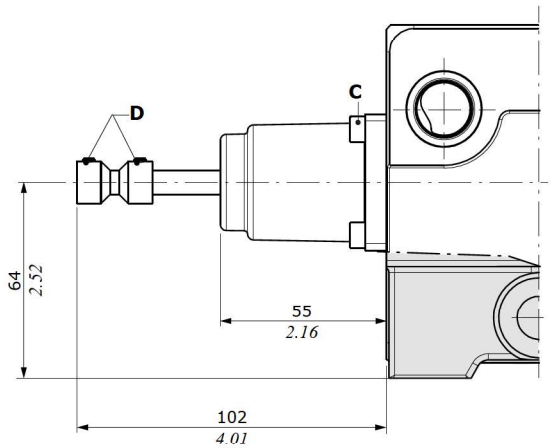


M2-U1 type
2 position (0-1), with M10 male thread external pin

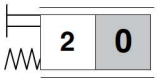


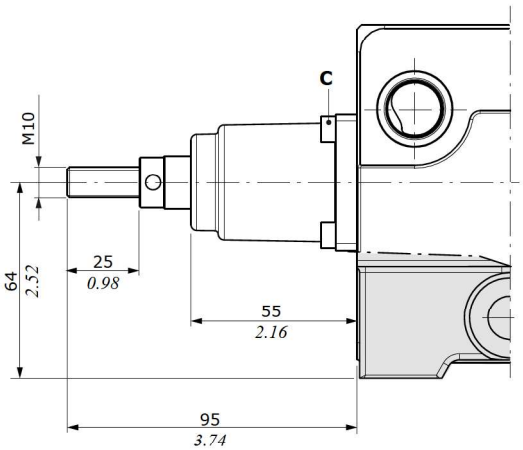
M1-B1 type
3 position, microswitch arrangement





M3-U1 type
2 position (0-2), with M10 male thread external pin



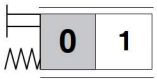


B side controls

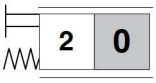
With flexible cable control arrangement

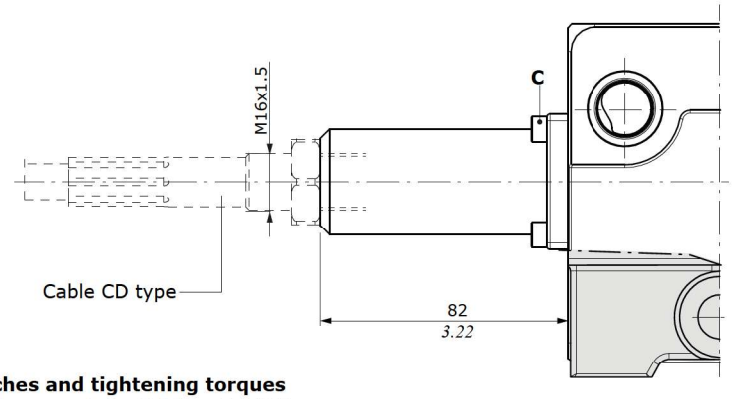
M1-U2 type
3 position, spring return in neutral position

M2-U2 type
2 position (0-1), spring return in neutral position



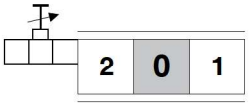
M3-U2 type
2 position (0-2), spring return in neutral position

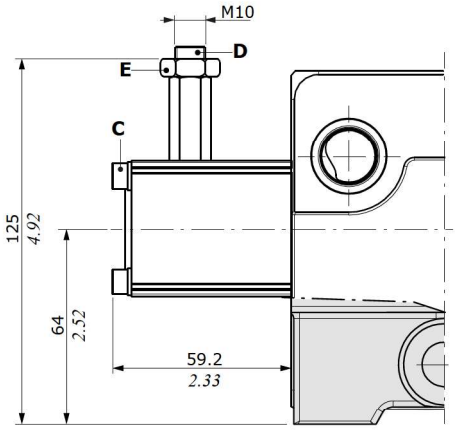




With friction control

R0 type
Adjustable friction control

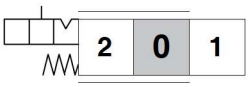




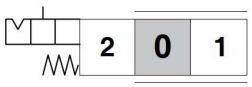
Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*
D = allen wrench 5 - 15 Nm *(11.1 lbft)*
E = wrench 17 - 9.8 Nm *(7.2 lbft)*

With detent control

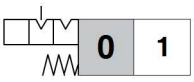
R1 type
3 position, detent in position 1



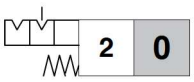
R2 type
3 position, detent in position 2



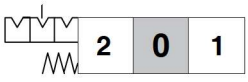
R4 type
2 position, detent in position 0-1



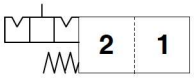
R5 type
2 position, detent in position 0-2

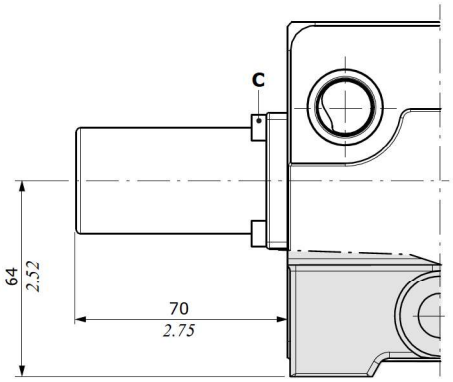


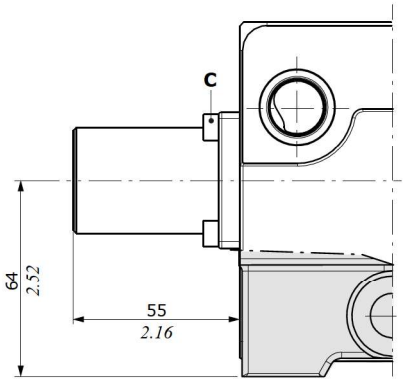
R3 type
3 position, detent in all position



R6 type
2 position, detent in position 1-2





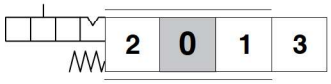


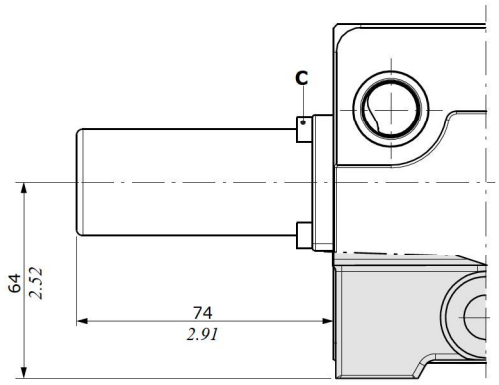
Working section

B side controls

With detent control

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

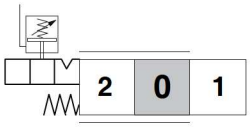




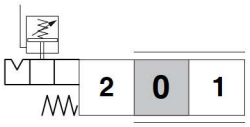
Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*
D = wrench 30 - 42 Nm *(30.9 lbft)*
E = wrench 22
F = allen wrench 10 - 42 Nm *(30.9 lbft)*

With detent and kick out function

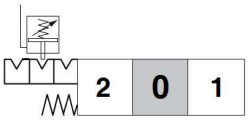
R1K type
3 position, detent in position 1

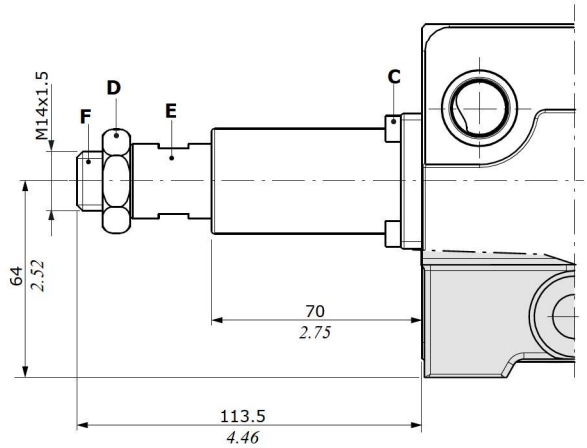


R2K type
3 position, detent in position 2



R3K type
3 position, detent in all position

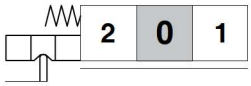




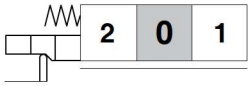
B side controls

With spool position microswitch

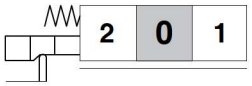
M1-N1 type
3 position, micro operation in position 1 and 2, spring return in neutral position



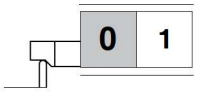
M1-N1A type
3 position, micro operation in position 1



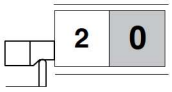
M1-N1B type
3 position, micro operation in position 2

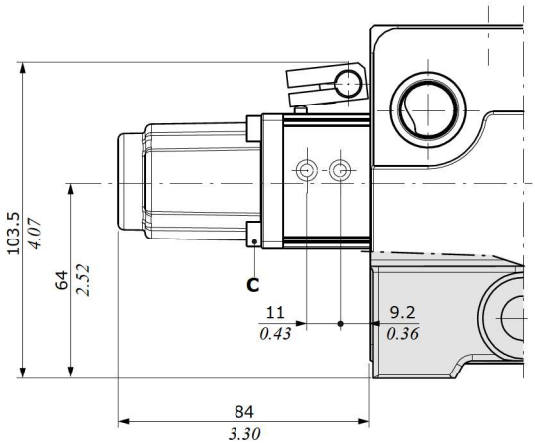


M2-N1 type
2 position (0-1), spring return in neutral position



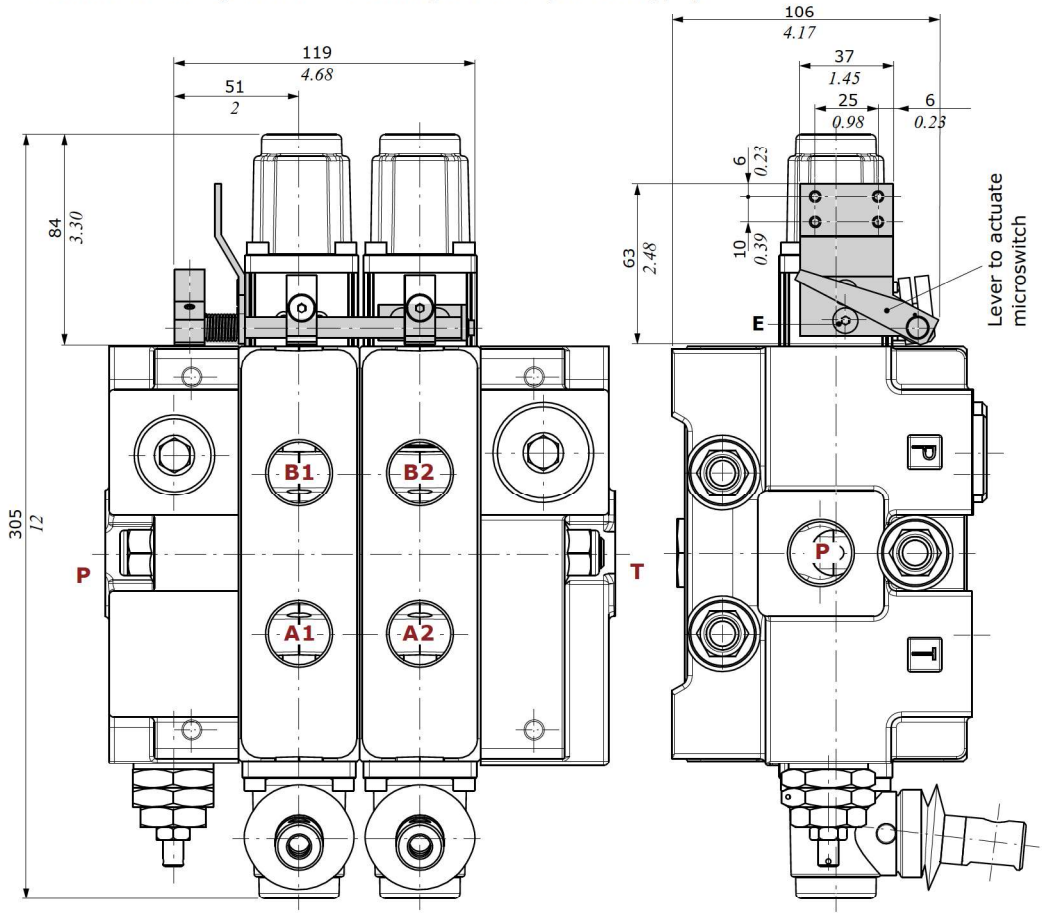
M3-N1 type
2 position (0-2), spring return in neutral position

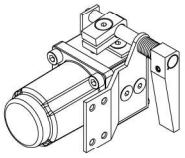




Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*
E = allen wrench 3 - 6.6 Nm *(4.8 lbft)*

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



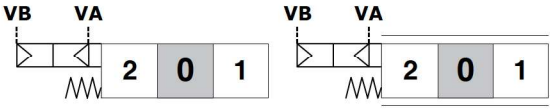


Working section

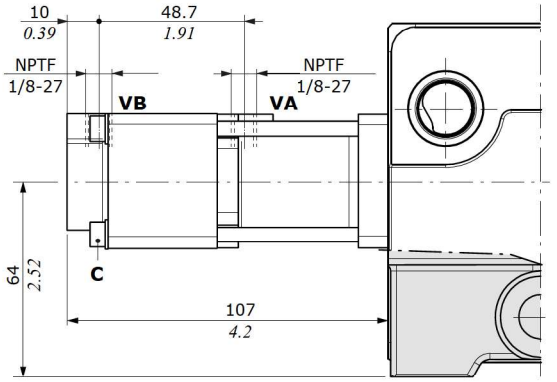
B side controls

With pneumatic control

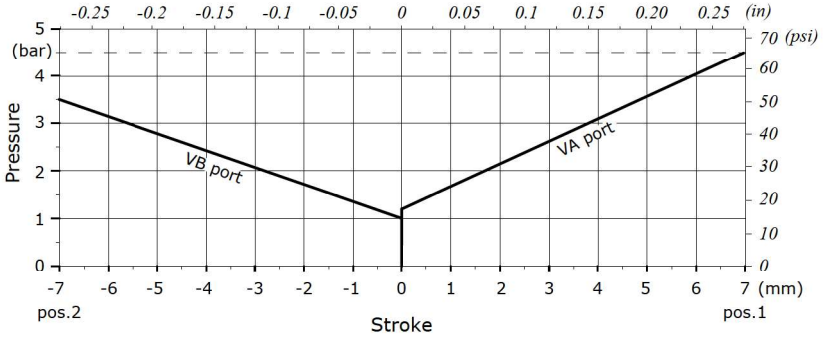
P1N type
ON/OFF control



P1NP type
Proportional control



Proportional pilot pressure curves

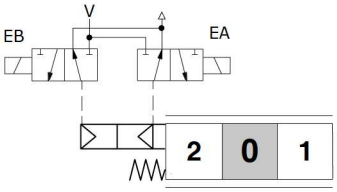


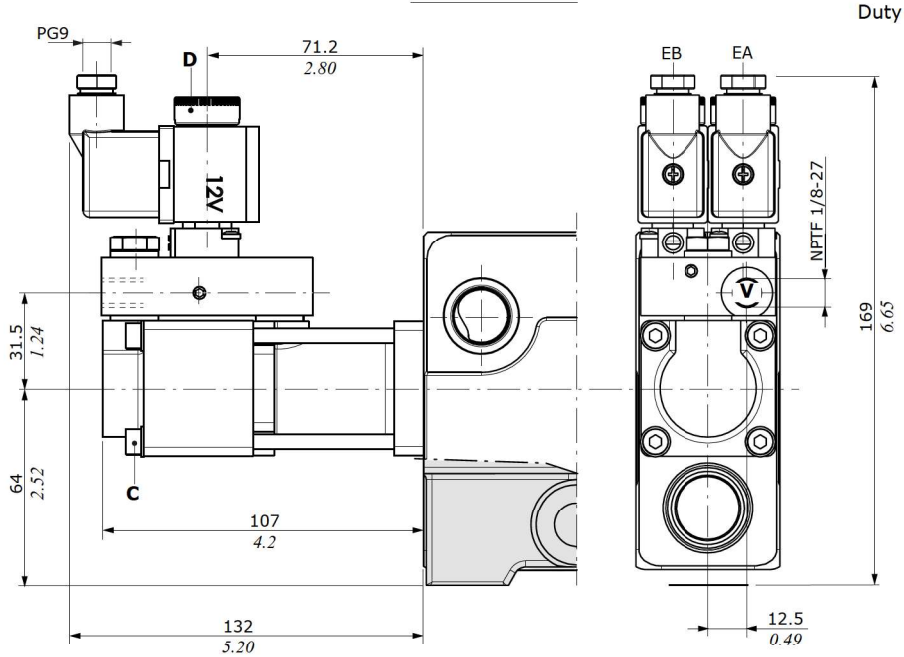
Operating features
Pilot pressure..... : min. 5 bar *(72.5 psi)* - max. 30 bar *(435 psi)*
Pilot volume..... : 9 cm³/min *(0.54 in³/min)*

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

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)*

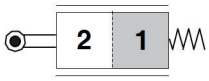
COILS
Nominal voltage tollerance....: -5% +10%
Power rating..... : 5 W
Nominal current..... : 12 VDC – 24VDC
Coil insulation..... : Class F
Weather protection..... : IP65
Duty cicle..... : 100%

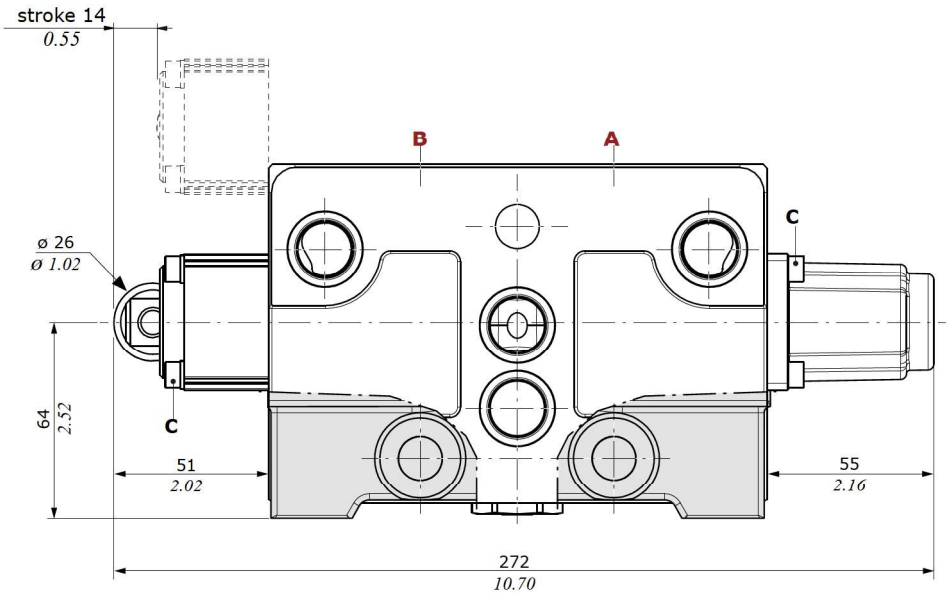
Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*
D = manual tightening - 6.6 Nm *(4.8 lbft)*

A+B side controls

With cam control

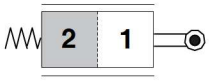
C2 type
From position 1 to position 2,
spring return in position 1

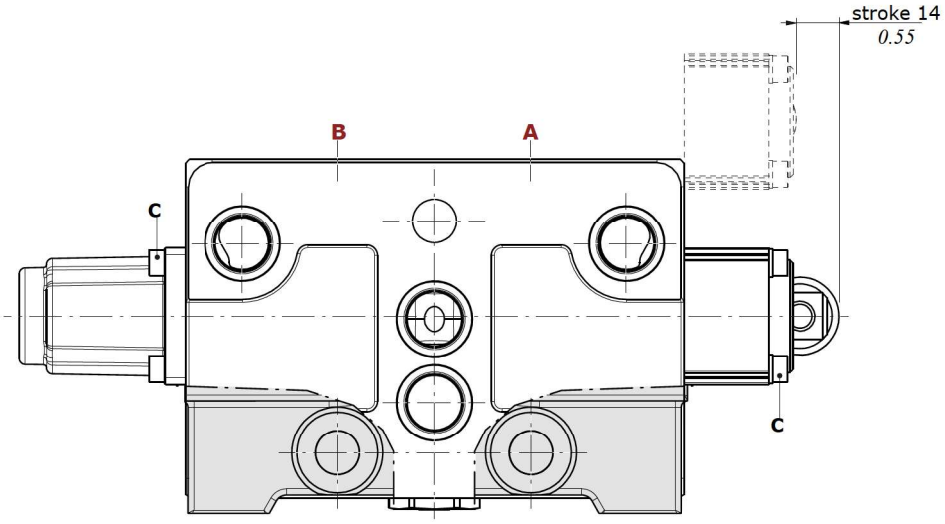




Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*

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



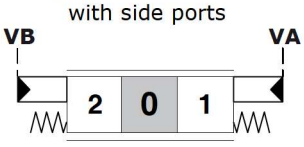


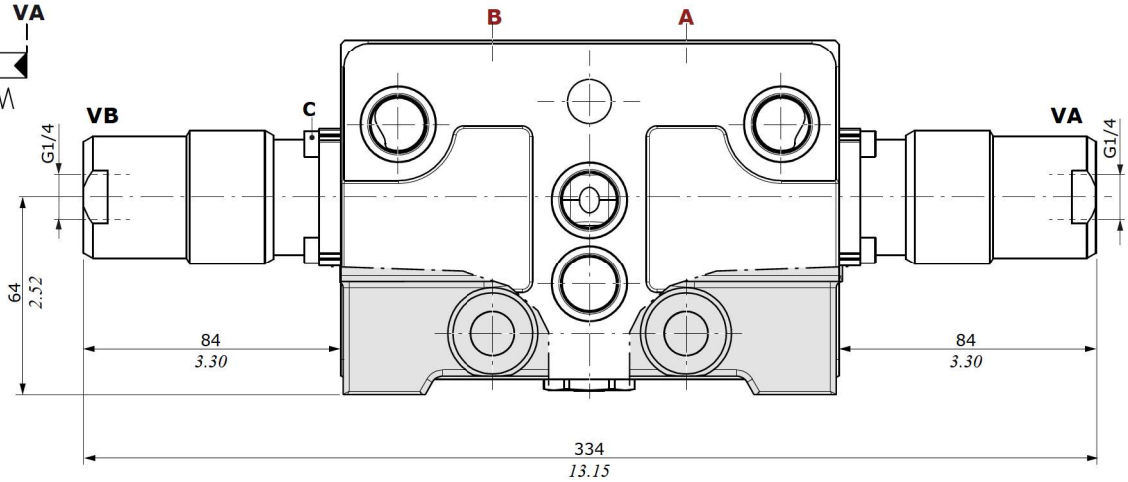
Working section

A+B side controls

With proportional hydraulic controls

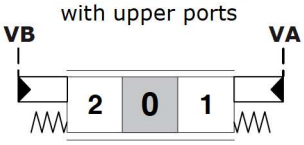
H1 type
High pressure control
with side ports

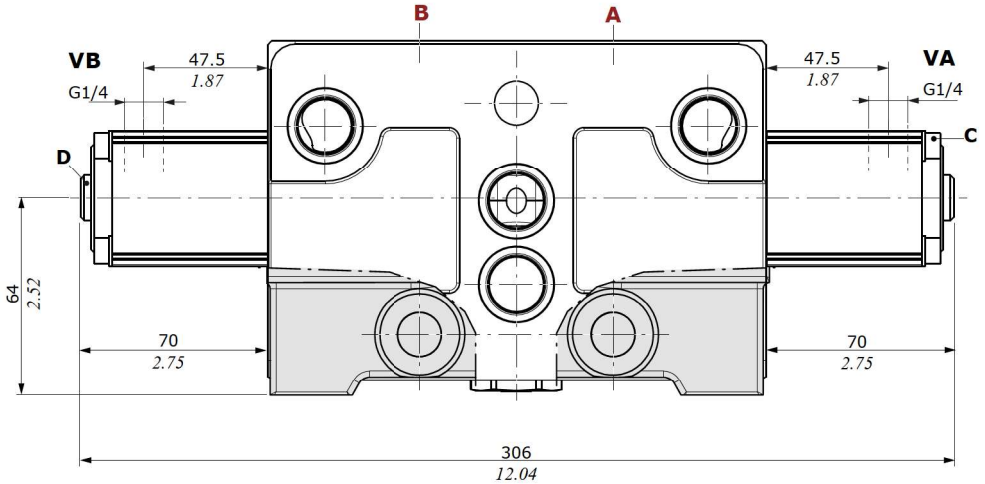




Operating features
Pilot pressure..... : min. 16 bar *(232 psi)* - max. 350 bar *(5070 psi)*

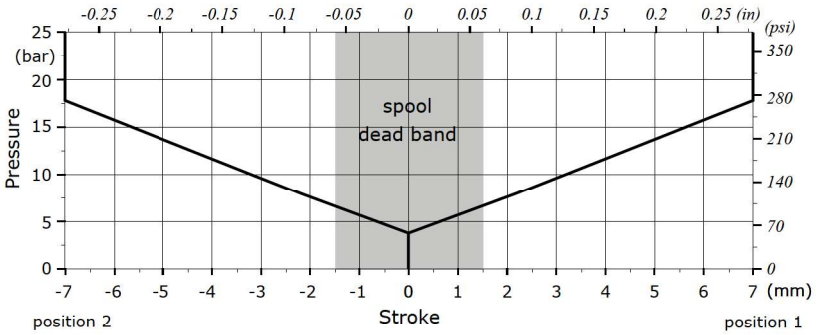
H5 type
Low pressure control
with upper ports





Operating features
Pilot pressure..... : max. 100 bar *(1450 psi)*

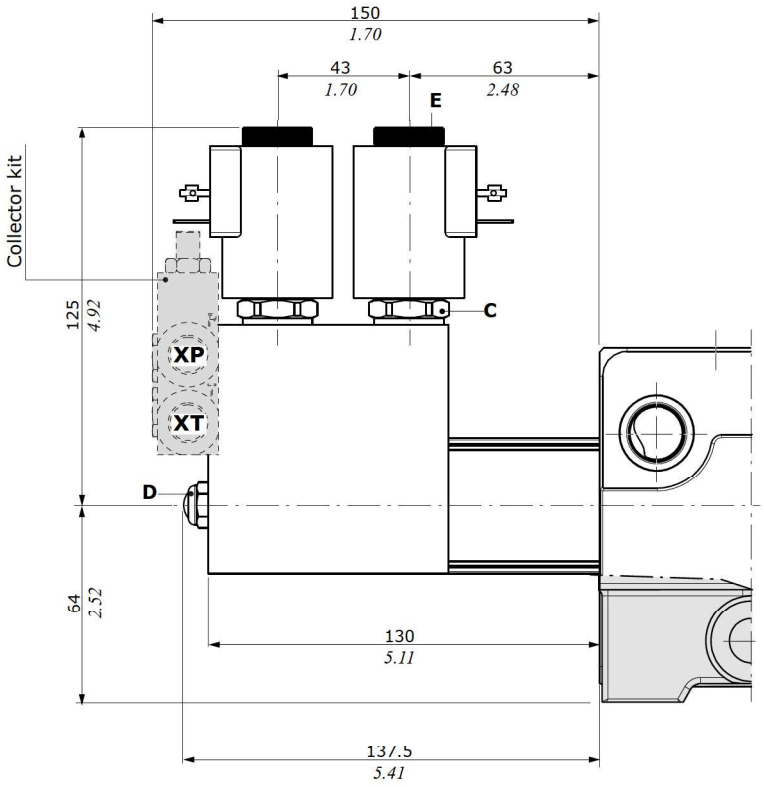
Stroke vs. Pressure diagram for H5 type control

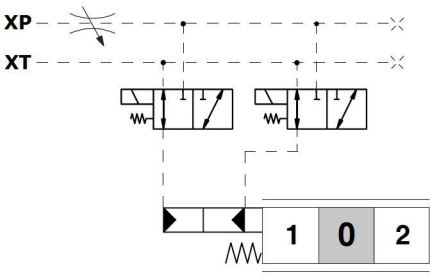


Wrenches and tightening torques
C = allen wrench 4 - 6.6 Nm *(4.8 lbft)*
D = allen wrench 4 - 9.8 Nm *(7.2 lbft)*

Electrohydraulic control

D2W type: ON/OFF one side



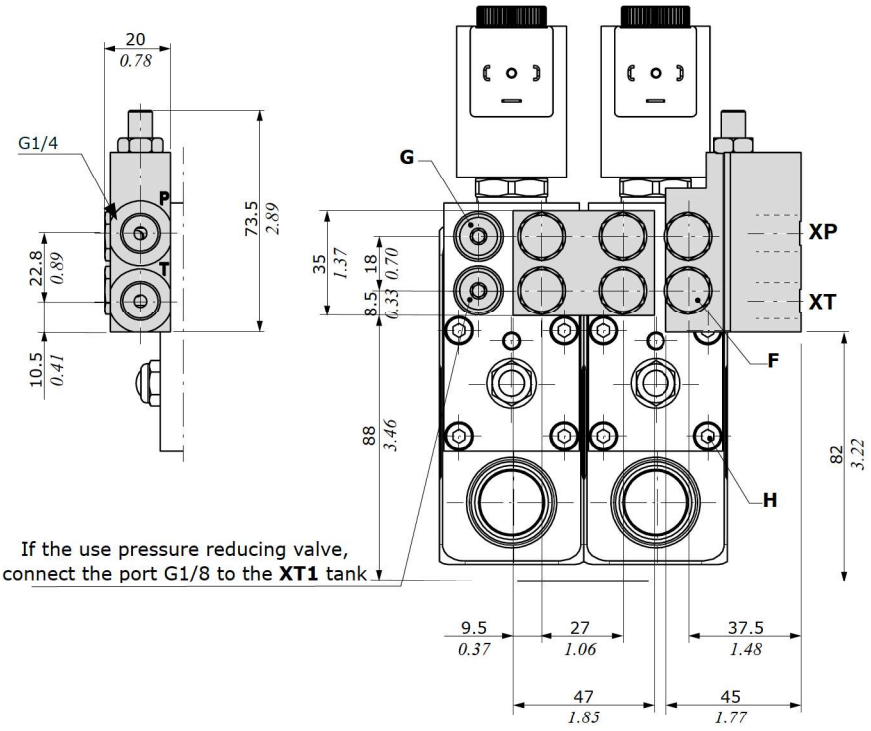


Features

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 257

KE2S connector kit



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

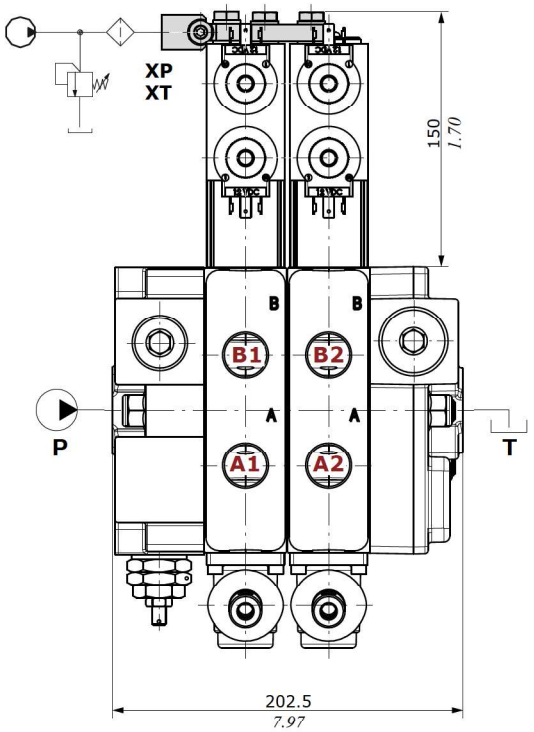
Wrenches and tightening torques

C = wrench 24 - 30 Nm *(22 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

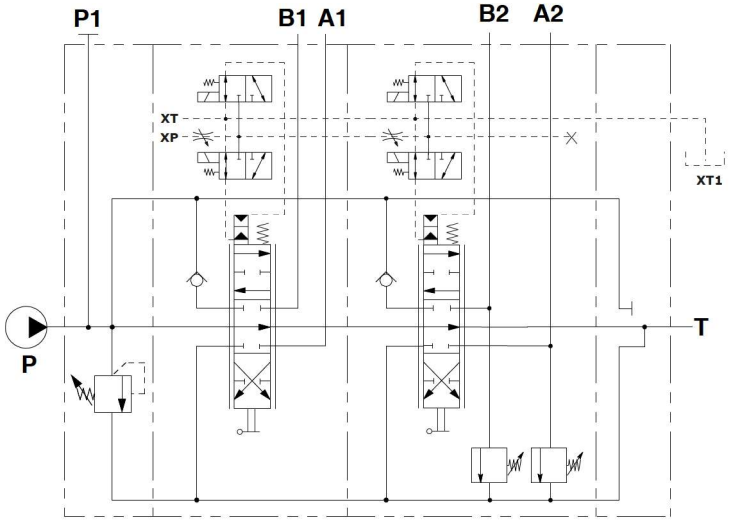
Electrohydraulic control

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 232



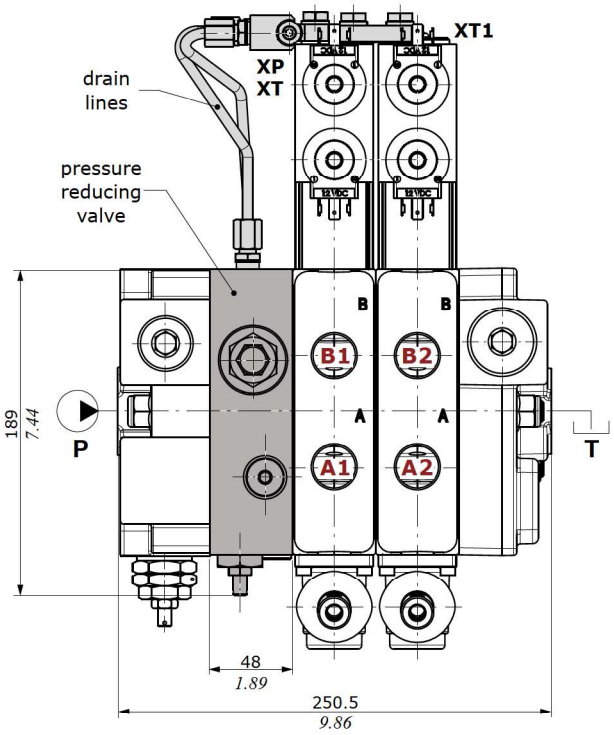
Description example:
Q130/2/F7S(N120)/**KE2S**/103-A1-**D2W**.V40(N)120/
103-A1-**D2W**.V40(N)120/F3D-12VDC-S

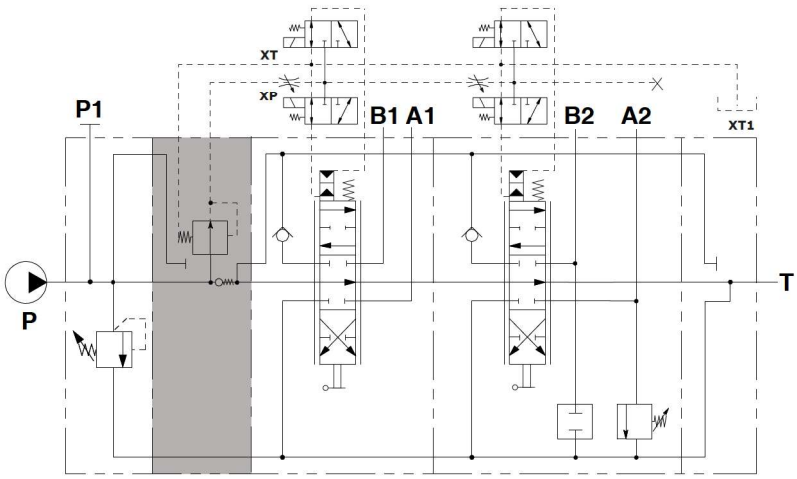
Connector kit for internal pilot and drain

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 232





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

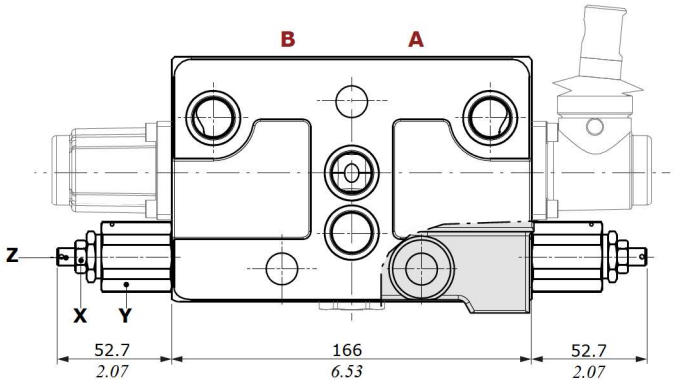
Auxiliary valve configuration

Dimensional data and hydraulic circuits

Antishock valve example

spring type
aux valve and valve setting (bar)

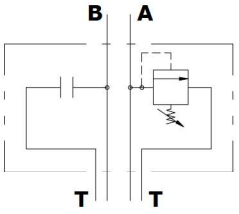
Q130 / 1 / ... / 103 - A1 - M1 - **V32(N)120** / ...



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*

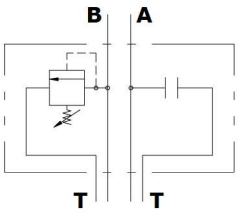
A side configuration:

V30



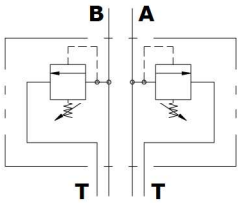
B side configuration:

V31



A+B side configuration:

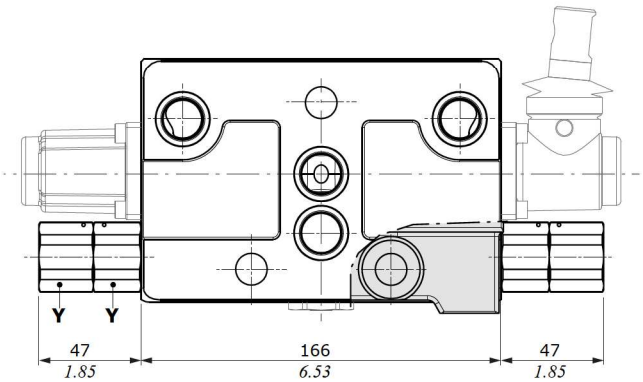
V32 (V30 + V31)



Antishock/anticavitation valve example

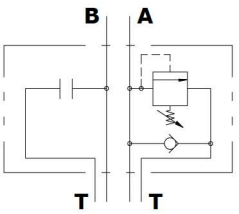
spring type
aux valve and valve setting (bar)

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



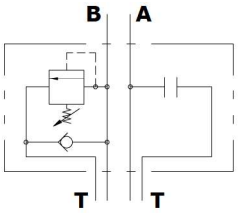
A side configuration:

V33



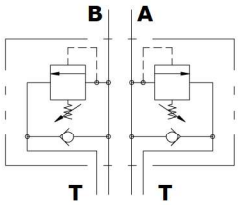
B side configuration:

V34



A+B side configuration:

V35 (V34 + V33)



Wrenches and tightening torques
Y = wrench 30 - 80 Nm *(59 lbft)*
X = wrench 20 - 24 Nm *(17.7 lbft)*
Z = allen wrench 4

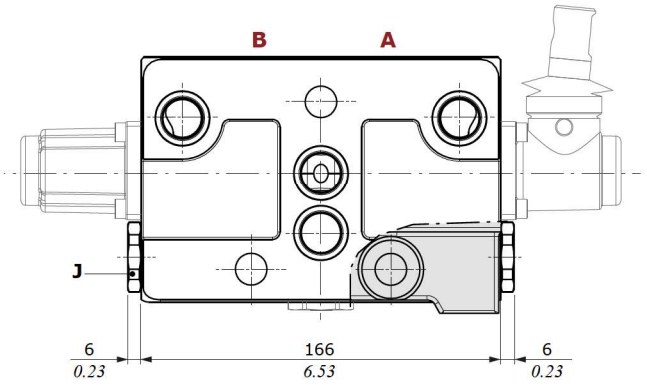
Auxiliary valve configuration

Dimensional data and hydraulic circuits

Anticavitation valve example

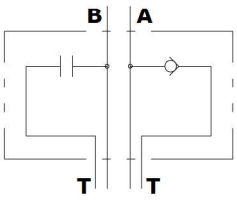
aux valve

Q130 / 1 / ... / 103 - A1 - M1 - **V03** / ...



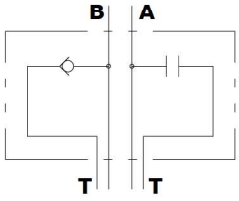
A side configuration:

V04



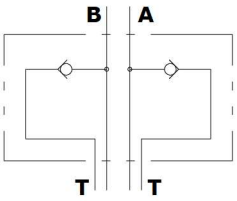
B side configuration:

V05



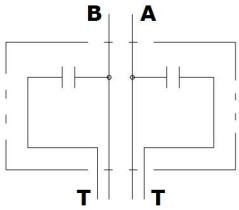
A+B side configuration:

V03 (V04 + V05)



Plug valve:

VC

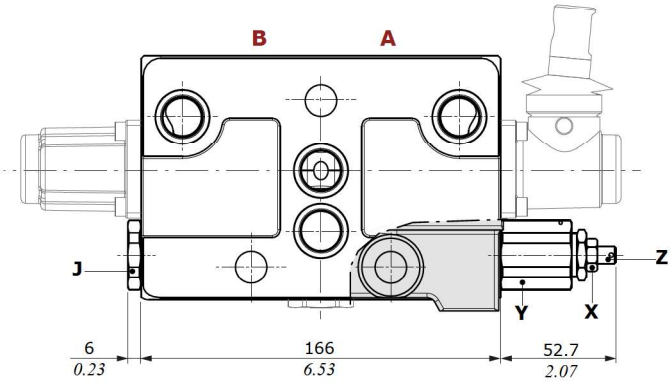


Wrenches and tightening torques
J = wrench 30 - 42 Nm *(30.9 lbft)*
Y = wrench 30 - 80 Nm *(59 lbft)*
X = wrench 20 - 24 Nm *(17.7 lbft)*
Z = allen wrench 4

Antishock and anticavitation combining valves example

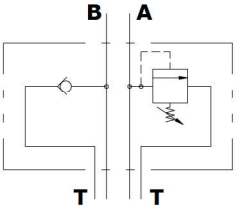
aux valve

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



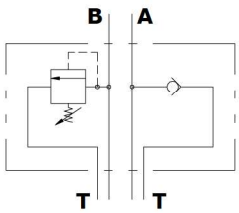
A side configuration:

V40 (V30 + V05)



B side configuration:

V41 (V31 + V04)



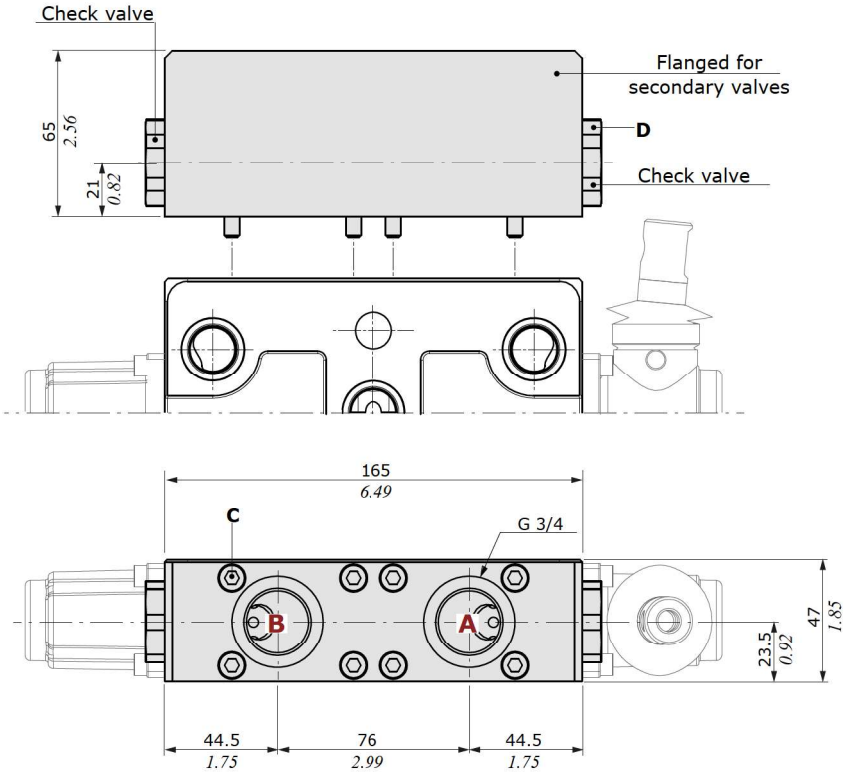
Secondary valve configuration

Dimensional data and hydraulic circuits

Description example

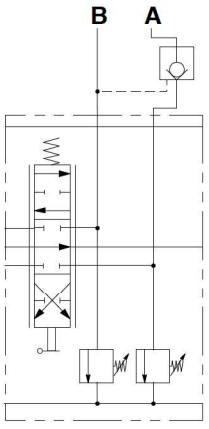
secondary aux valve valves block

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

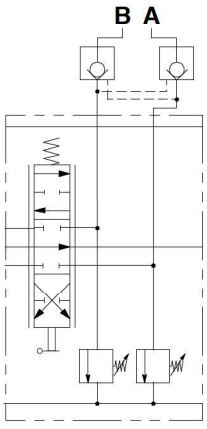


Wrenches and tightening torques
C = allen wrench 5 - 9.8 Nm *(7.2 lbft)*
D = wrench 12 - 42 Nm *(31 lbft)*

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

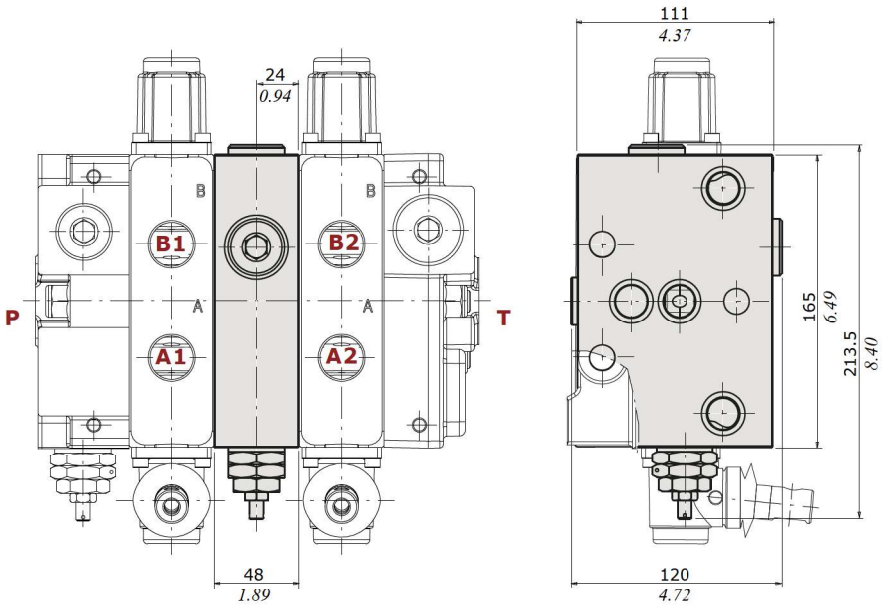


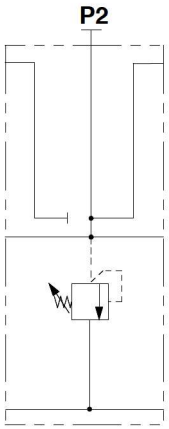
Intermediate section

Dimensional data and hydraulic circuit

E50 type

Intermediate inlet section with pressure relief valve



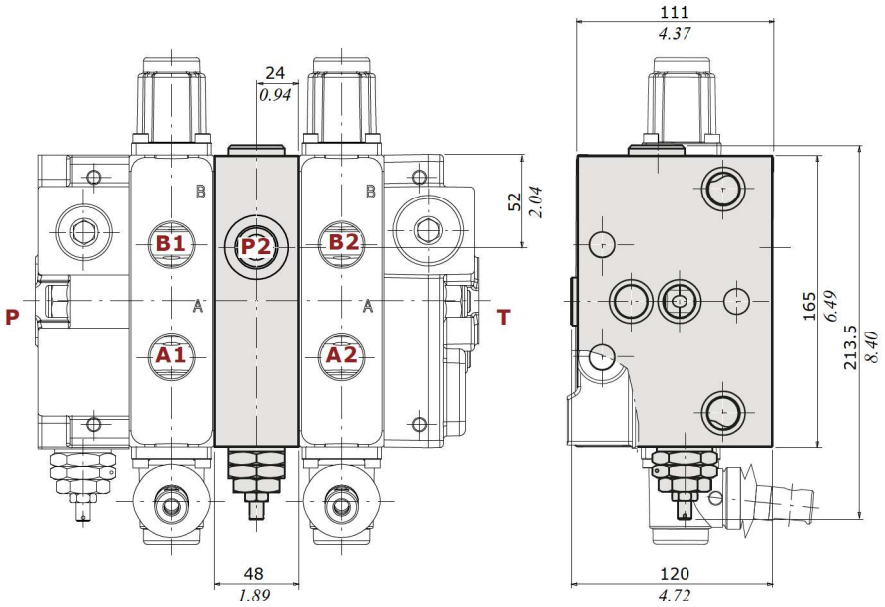


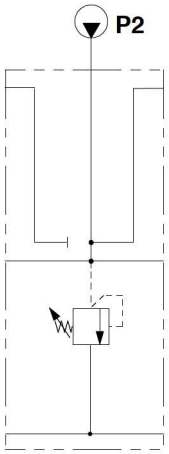
Description example: Q130/2/F7S(N150)/103-A1-M1/**E50(N150)**/103-A1-M1/F3D

intermediate section — spring type and valve setting (bar)

E53 type

Intermediate inlet section with pressure relief valve and P2 port open





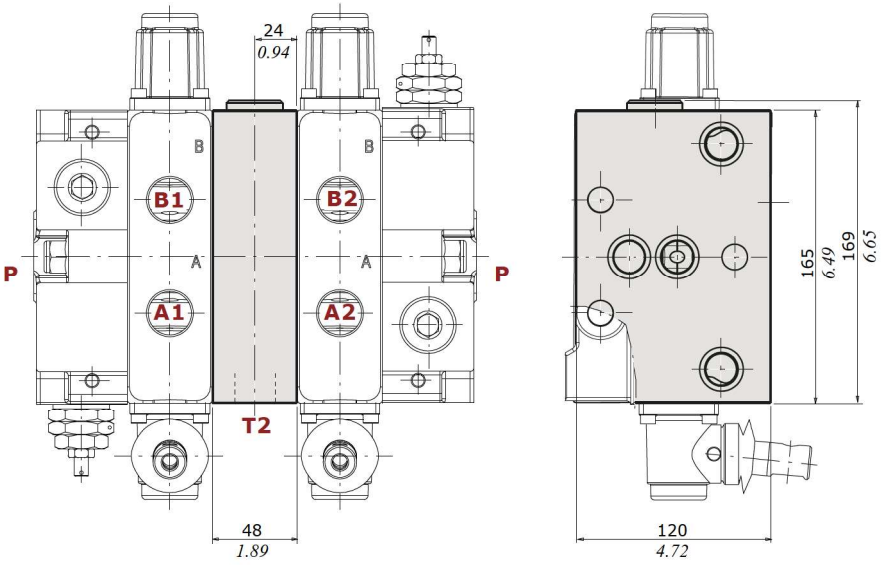
Description example: Q130/2/F7S(N150)/103-A1-M1/**E53(N150)**/103-A1-M1/F3D

intermediate section — spring type and valve setting (bar)

Dimensional data and hydraulic circuit

E51 type

Intermediate outlet section, T2 port open

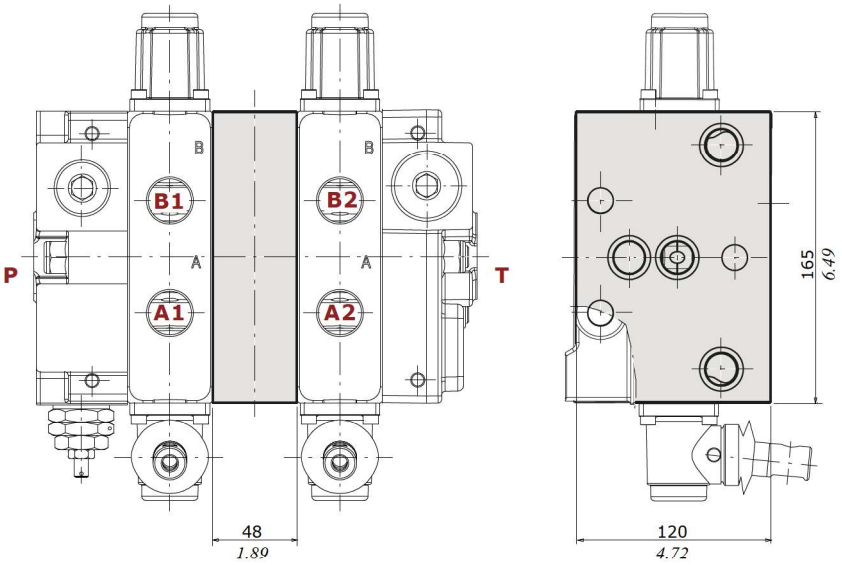


Description example: Q130/2/F7S(N150)/103-A1-M1/**E51**/103-A1-M1/F3D

intermediate section

E61 type

Intermediate spacer section

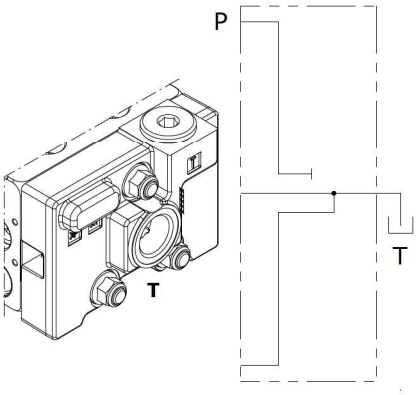


Description example: Q130/2/F7S(N150)/103-A1-M1/**E61**/103-A1-M1/F3D

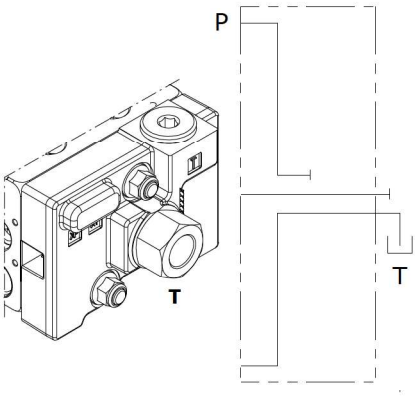
intermediate section

Outlet section

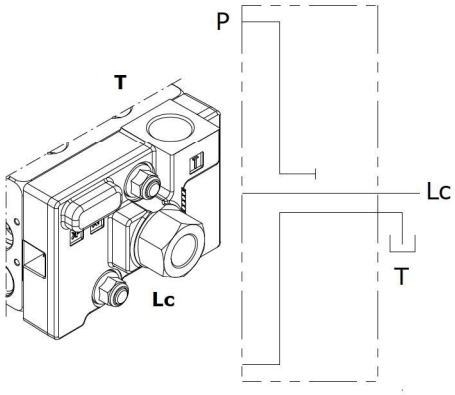
F3D configuration
Open center configuration



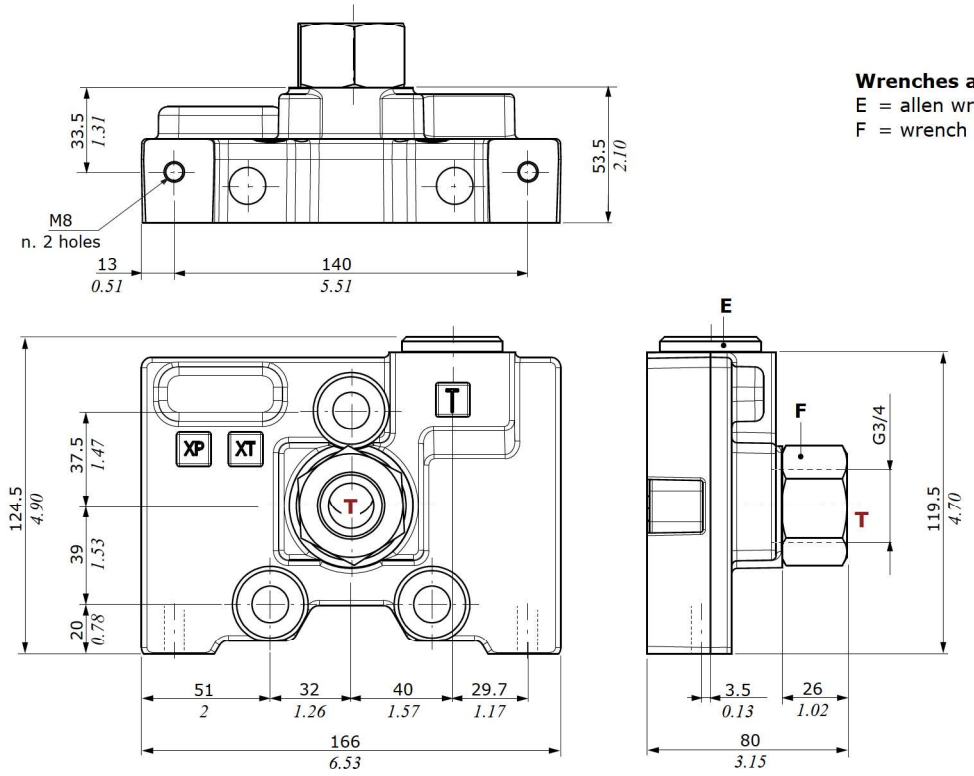
F16D configuration
Closed center configuration



F6D configuration
Carry-over configuration



F16D configuration example



Wrenches and tightening torques
E = allen wrench 12 - 42 Nm *(30.9 lbft)*
F = wrench 41 - 80 Nm *(59 lbft)*

Coils and connectors

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

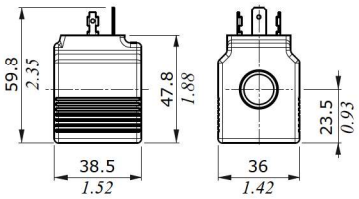
Voltage	ISO 4400 mating connector with rectifier
	BER type coil
24 VDC	4CN1010240
48 VDC	4CN1010480
110 VDC	4CN1011100
220 VDC	4CN1012200

Coils and connectors

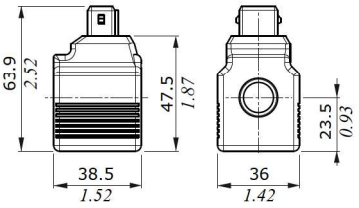
Dimensional data and features

BER type

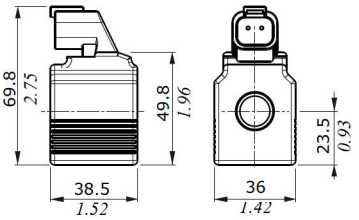
ISO4400 connector



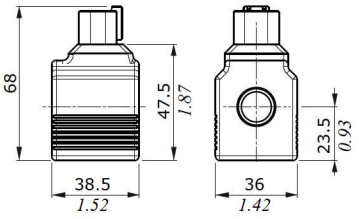
AMP JPT connector



DEUTSCH DT04 connector
(parallel type)



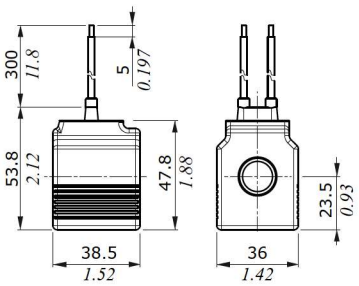
DEUTSCH DT04 connector
(perpendicular type)

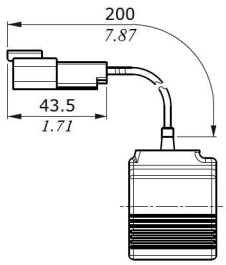


Features

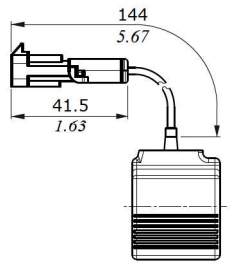
Nominal voltage tolerance : ±10%
Power rating . . . . . : 19.2 W - 12/24 VDC - 48 RAC
: 19.1 W - 28 VDC
: 19 W - 10/14/48/110/220 VDC
24/110/220 RAC
Max. operating current . . : 1.90 A - 10 VDC
: 1.60 A - 12 VDC
: 1.36 A - 14 VDC
: 0.80 A - 24 VDC
: 0.68 A - 28 VDC
: 0.40 A - 48 VDC
: 0.17 A - 110 VDC
: 0.09 A - 220 VDC
: 0.89 A - 24 RAC
: 0.45 A - 48 RAC
: 0.19 A - 110 RAC
: 0.09 A - 220 RAC
Coil insulance . . . . . : Class H (180°C - *356°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack
Insertion . . . . . : 100%

Flying leads with DEUTSCH DT04 connector

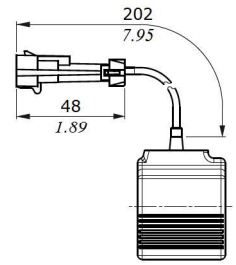




Flying leads with PACKARD WEATHER-PACK connector



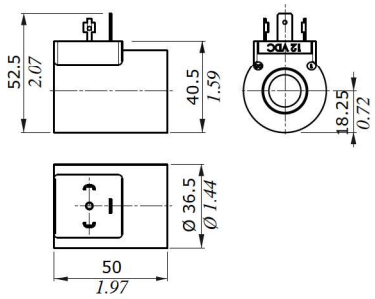
Flying leads with PACKARD METRI-PACK connector



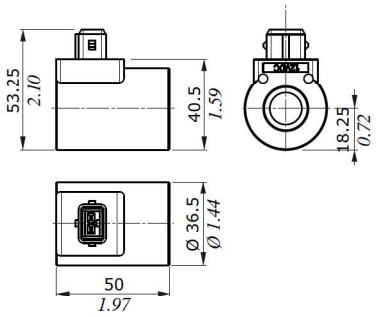
Dimensional data and features

BT type

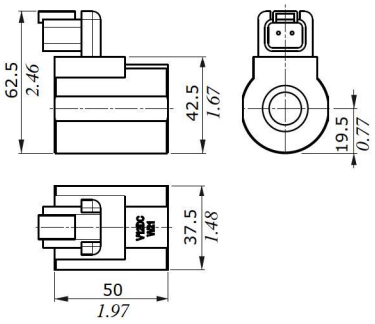
ISO4400 connector



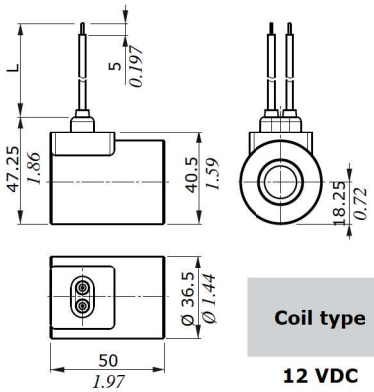
AMP JPT connector



DEUTSCH DT04 connector
(parallel type)



Flying leads

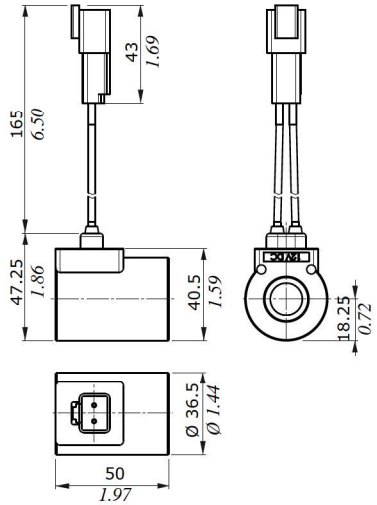


Features

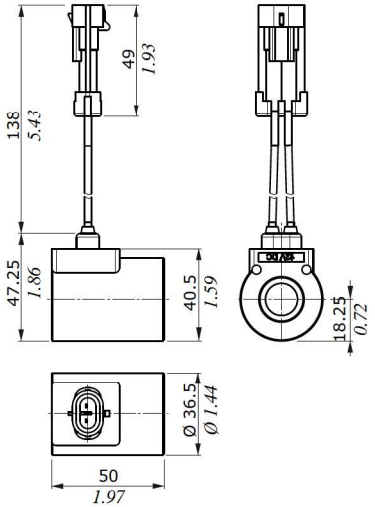
Nominal voltage tolerance : ±10%
Power rating . . . . . : 19 W - 10 VDC - 48 RAC
: 21 W - 12/24/26 VDC
: 20.3 W - 48 VDC
: 17.3 W - 110 VDC
: 17.7 W - 220 VDC
: 19.9 W - 24 RAC
: 20.7 W - 48 RAC
: 20 W - 110/220 RAC
Max. operating current . . : 1.90 A - 10 VDC
: 1.77 A - 12 VDC
: 0.89 A - 24 VDC
: 0.84 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 insulance . . . . . : Class F (155°C - *311°F*)
Weather protection . . . . . : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack
Insertion . . . . . : 100%

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

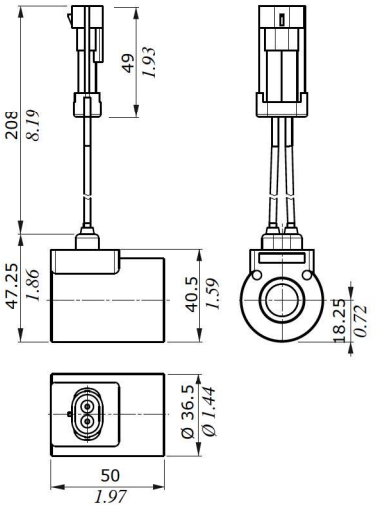
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD METRI-PACK connector



Flying leads with PACKARD WEATHER-PACK connector

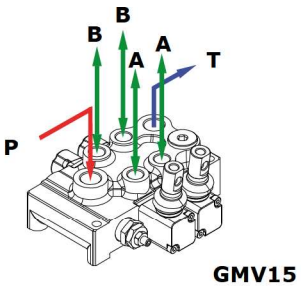


Main rules

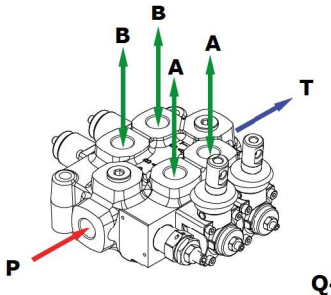
The directional control valves range are assembled and tested as per the technical specifications of this catalogue.
Before the final installation on your equipment, please follow the recommendations below:

- 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.

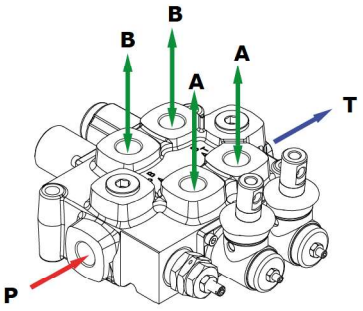
Monoblock valves



GMV15



Q45



Q75

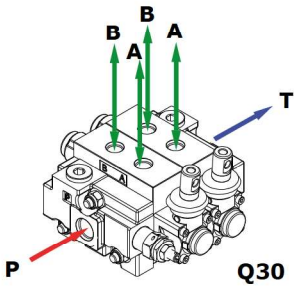
FITTING TIGHTENING TORQUE - Nm / *lbft*				
THREAD TYPE	**P port**	**A and B ports**	**T port**	**Lc port**
Q35 BSP	G 3/8	G 3/8	G 3/8	-
With O-Ring seal	35 / *25.8*	35 / *25.8*	35 / *25.8*	-
With copper washer	40 / *29.5*	40 / *29.5*	40 / *29.5*	-
With steel and rubber washer	30 / *22.1*	30 / *22.1*	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*	-
GMV15 BSP	G 3/8	G 1/4	G 3/8	G 3/8
With O-Ring seal	35 / *25.8*	25 / *18.4*	35 / *25.8*	35 / *25.8*
With copper washer	40 / *29.5*	30 / *22.1*	40 / *29.5*	40 / *29.5*
With steel and rubber washer	30 / *22.1*	16 / *11.8*	30 / *22.1*	30 / *22.1*
UN-UNF	3/4-16 (SAE 8)	9/16-18 (SAE 6)	3/4-16 (SAE 8)	3/4-16 (SAE 8)
With O-Ring seal	35 / *25.8*	30 / *22.1*	35 / *25.8*	35 / *25.8*

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*

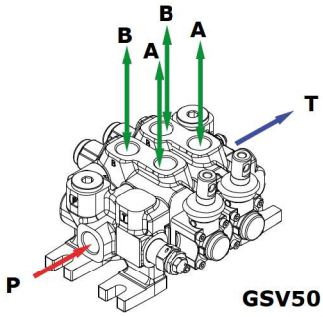
NOTE – These torques are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finish.

Main rules

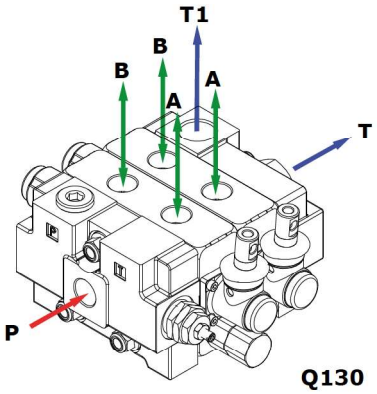
Sectional valves



Q30



GSV50



Q130

		FITTING TIGHTENING TORQUE - Nm / *lbft*					
THREAD TYPE		P and P1 ports		A and B ports		T port	T1 and Lc ports
		Q30	Q50	Q30	Q50	Q30/Q50	Q30/ Q50
Q30 - Q50	BSP	G 3/8	G 1/2	G 3/8	G 1/2	G 1/2	G 1/2
	With O-Ring seal	35 / *25.8*	50 / *36.9*	35 / *25.8*	50 / *36.9*	50 / *36.9*	50 / *36.9*
	With copper washer	40 / *29.5*	60 / *44.3*	40 / *29.5*	60 / *44.3*	60 / *44.3*	60 / *44.3*
	With steel and rubber washer	30 / *22.1*	60 / *44.3*	30 / *22.1*	60 / *44.3*	60 / *44.3*	60 / *44.3*
	UN-UNF	3/4-16 (SAE 8)	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)
	With O-Ring seal	35 / *25.8*	35 / *25.8*	30 / *22.1*	35 / *25.8*	90 / *66.4*	35 / *25.8*
GSV50	BSP	G 1/2		G 1/2		G 1/2	G 1/2
	With O-Ring seal	50 / *36.9*		50 / *36.9*		50 / *36.9*	50 / *36.9*
	With copper washer	60 / *44.3*		60 / *44.3*		60 / *44.3*	60 / *44.3*
	With steel and rubber washer	60 / *44.3*		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)	3/4-16 (SAE 8)
	With O-Ring seal	35 / *25.8*		35 / *25.8*		90 / *66.4*	35 / *25.8*
Q80	BSP	G 1/2 - G 3/4		G 1/2 - G 3/4		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*	90 / *66.4*
	With copper washer	60 / *44.3* - 90 / *66.4*		60 / *44.3* - 90 / *66.4*		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*	70 / *51.6*
	UN-UNF	7/8-14 (SAE 10)		3/4-16 (SAE 8)		1" 1/16-12 (SAE 12)	7/8-14 (SAE 10)
	With O-Ring seal	90 / *66.4*		35 / *25.8*		95 / *70.1*	90 / *66.4*
Q130	BSP	G 3/4 - G 1"		G 3/4 - G 1"		G 1"	G 1"
	With O-Ring seal	90 / *66.4* - 100 / *73.8*		90 / *66.4* - 100 / 73.8		100 / *73.8*	100 / *73.8*
	With copper washer	90 / *66.4* - 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*	100 / *73.8*
	UN-UNF	1" 5/16-12 (SAE 16)		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*	150 / *100.6*

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