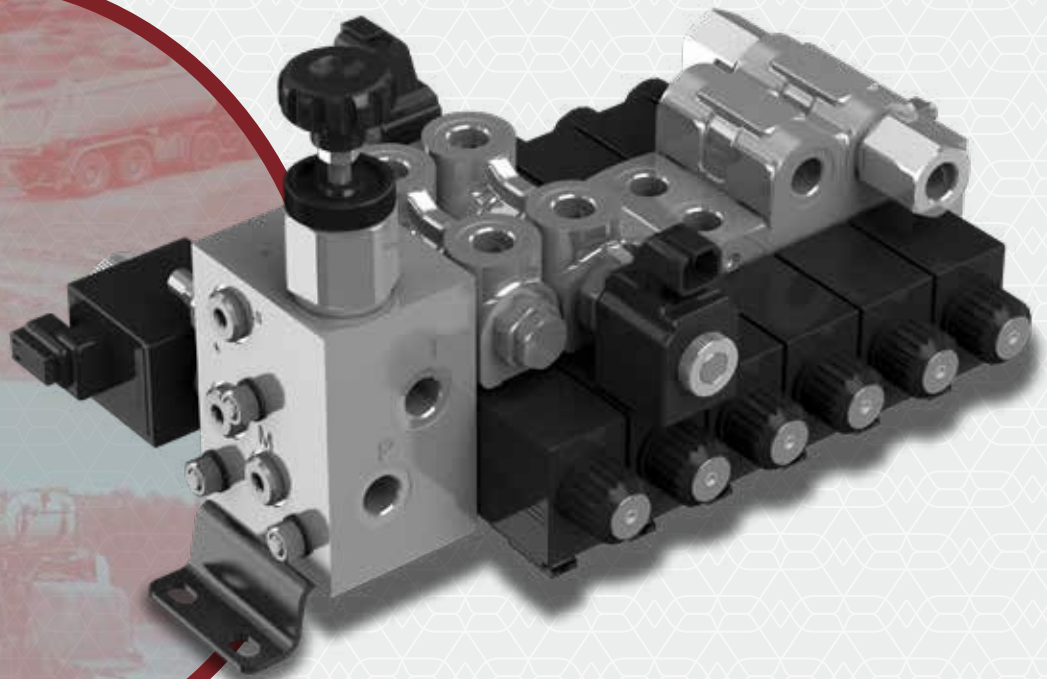


SDE030 – SDE060

Bankable solenoid valves



COMPACT HYDRAULICS

General informations

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

SDE030

- Aluminium alloy inlet sections, available in several configurations.
- Cast iron working sections
- Different types of spools.
- Optional check valves on workports.
- Available for parallel circuit.
- On/off solenoid controls.
- Emergency handlever available.

SDE060

- Steel inlet sections, available in several configurations.
- Cast iron working sections
- Different types of spools.
- Different options to be flanged on the workports side
- Available for parallel and series circuits.
- On/off solenoid controls.
- Emergency handlever available.

Additional information

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

WARNING!

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

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

1st edition November 2024

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SDE030

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SDE060

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Working conditions

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

		SDE030	SDE060
Nominal flow rating		30 l/min - 7.9 US gpm	30 l/min - 60 l/min 7.9 US gpm - 15.8 US gpm
Operating pressure (max.)	<i>parallel circuit</i>	250 bar - 3600 psi	315 bar - 4600 psi
	<i>series circuit</i>	-	210 bar - 3050 psi
Back pressure (max.)	<i>outlet port T</i>	210 bar - 3050 psi	
	<i>outlet port T, with lever control</i>	30 bar - 435 psi	
Internal leakage (max.) A(B)⇒T	$\Delta p = 100 \text{ bar} - 1450 \text{ psi}$ fluid and valve at 40°C - 104°F	30 cm ³ /min - 0.85 in ³ /min	
Fluid		Mineral based oil	
Fluid temperature	<i>with NBR (BUNA-N) seals</i>	from -20°C to 80°C - from -4°F to 176°F	
	<i>with FPM (VITON) seals</i>	from -20°C to 100°C - from -4°F to 212°F	
Viscosity	<i>operating range</i>	from 15 to 75 mm ² /s - from 15 to 75 cSt	
	<i>min.</i>	12 mm ² /s - 12 cSt	
	<i>max.</i>	400 mm ² /s - 400 cSt	
Max. contamination level		-/19/16 - ISO 4406 - NAS 1638 - class 10	
Ambient temperature for working conditions		from -20°C to 50°C - from -4°F to 122°F	

NOTE - For different conditions please contact Sales Dpt.

Standard threads

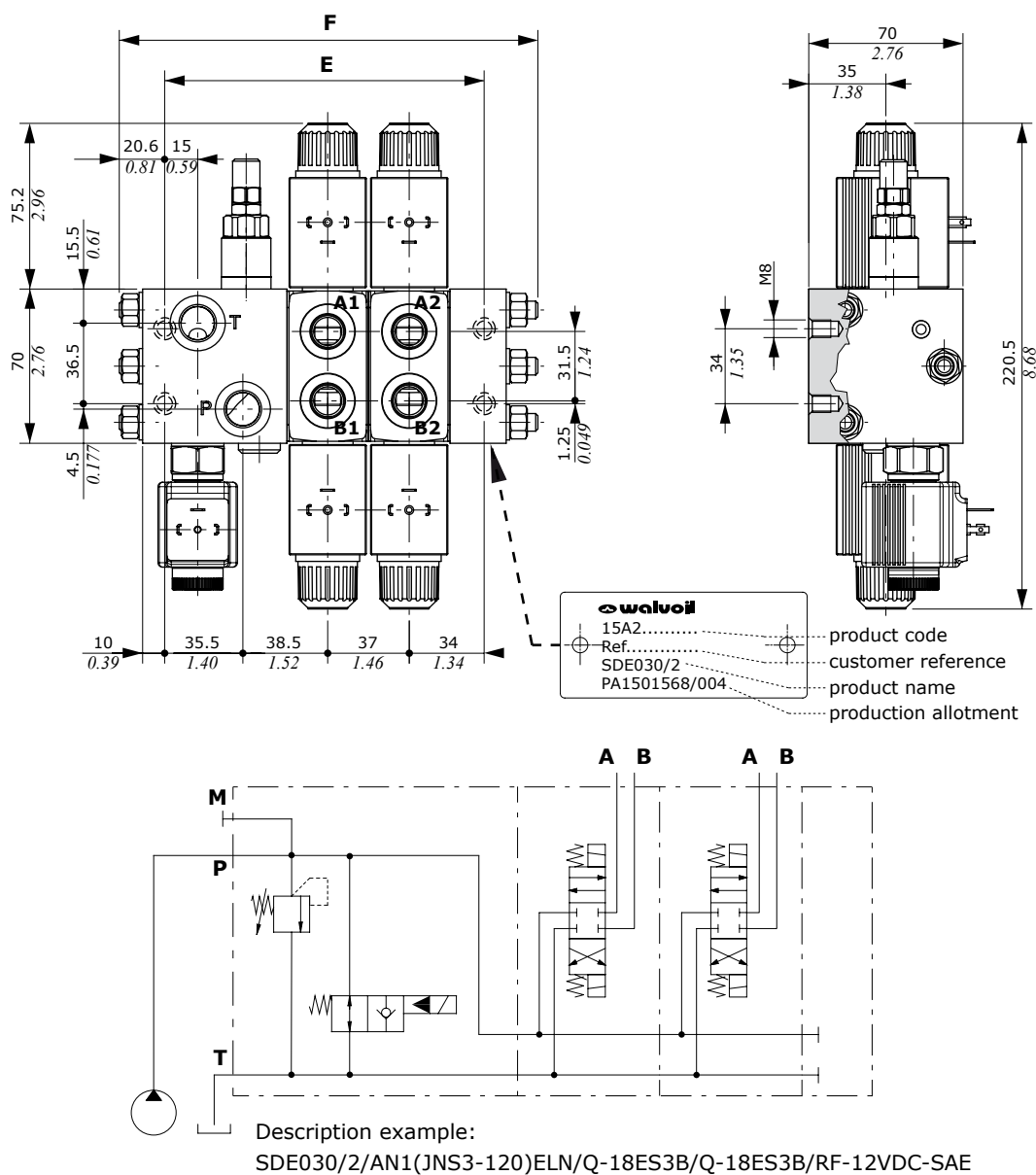
REFERENCE STANDARD		
THREAD ACCORDING TO	BSP	UN-UNF
	ISO 228/1	ISO 263
	BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	1179
	SAE	11926
	DIN	3852-2 shape X or Y

PORT THREADING	SDE030		SDE060			
			30 l/min (7.9 US gpm) sections		60 l/min (15.8 US gpm) sections	
	BSP	UN-UNF	BSP	UN-UNF	BSP	UN-UNF
Inlet P and outlet T	G 3/8	3/4-16 (SAE 8)	G 3/8	3/4-16 (SAE 8)	G 1/2	3/4-16 (SAE 8)
Working ports A and B	G 3/8	9/16-18 (SAE 6)	G 3/8	9/16-18 (SAE 6)	G 3/8	9/16-18 (SAE 6)
					G 1/2*	3/4-16 (SAE 8)*
Port M	G 1/4	9/16-18 (SAE 6)	G 1/4	7/16-20 (SAE 4) 9/16-18 (SAE 6)**	G 1/4	7/16-20 (SAE 4) 9/16-18 (SAE 6)**
Port LS	G 1/4	9/16-18 (SAE 6)	G 1/4	9/16-18 (SAE 6)	/	/

NOTE (*) Optional thread - (**) Only for type N inlet section

Dimensions

This drawing is referred to directional valve with 2 working sections and AN1 type inlet section.



TYPE	AN type inlet section				AN1 type inlet section (see drawing)						AN2-AN6-AN7 type inlet sections			
	E		F		E		F		Weight		E		F	
	mm	in	mm	in	mm	in	mm	in	Kg	lb	mm	in	mm	in
SDE030/1	71	2.80	116	4.57	108	4.25	153	6.02	3.80	8.38	108	4.25	153	6.02
SDE030/2	108	4.25	153	6.02	145	5.71	190	7.48	5.99	13.21	145	5.71	190	7.48
SDE030/3	145	5.71	190	7.48	182	7.17	227	8.94	8.10	17.86	182	7.17	227	8.94
SDE030/4	182	7.17	227	8.94	279	10.98	264	10.39	10.22	22.53	279	8.62	264	10.39
SDE030/5	219	8.62	264	10.39	256	10.08	301	11.85	12.33	27.18	256	10.08	301	11.85
SDE030/6	256	10.08	301	11.85	293	11.54	338	13.31	14.44	31.83	293	11.54	338	13.31
SDE030/7	293	11.54	338	13.31	330	12.99	375	14.76	16.56	36.51	330	12.99	375	14.76
SDE030/8	330	12.99	375	14.76	367	14.45	412	16.22	18.67	41.16	367	14.45	412	16.22
SDE030/9	367	14.45	412	16.22	404	15.91	449	17.68	20.78	45.81	404	15.91	449	17.68
SDE030/10	404	15.91	449	17.68	441	17.36	486	19.13	22.89	50.46	441	17.36	486	19.13

Complete section ordering codes

SDE030/4/ AN1(JNS3-120)ELN / Q-18ES3B / Q-18ES3B / QL-18ES3B /

Nr. of working
sections

1

2

2

2

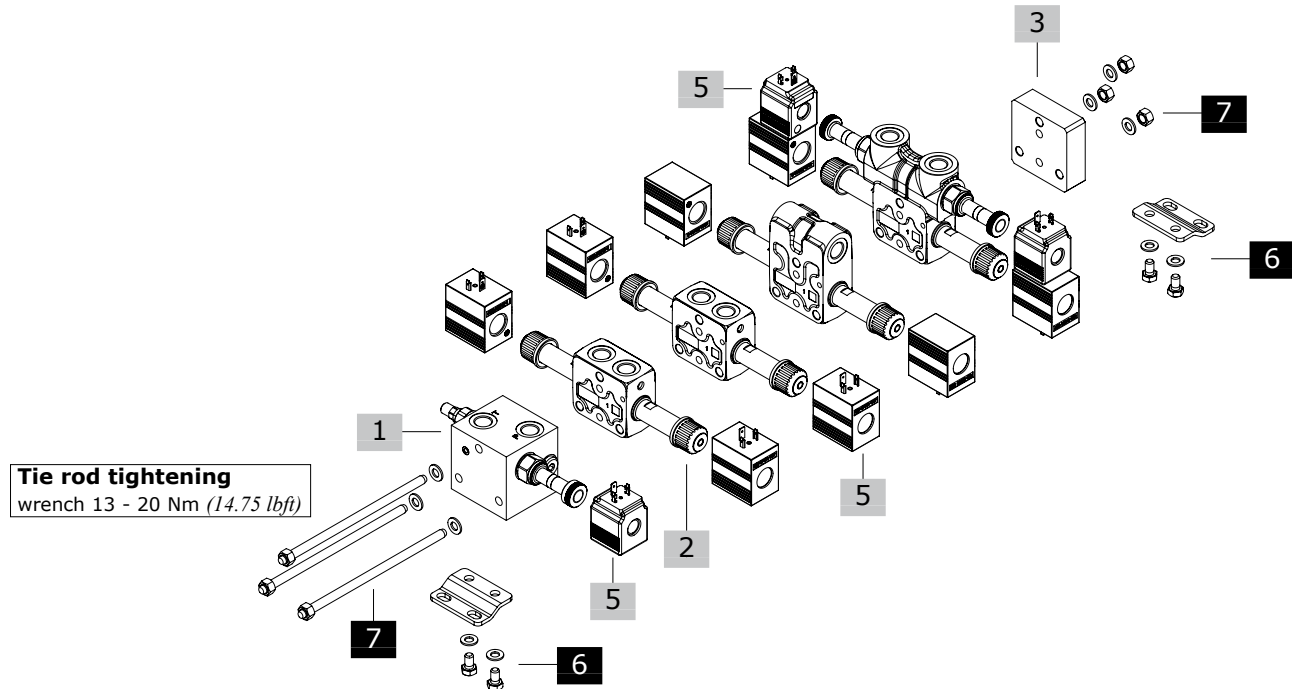
QBPE-18ES3B.BPEN(NC)3 / RF - SAE - 12VDC

2

3

4

5



Complete section ordering codes

1 Complete inlet section * **page 10**

Section bodies are aluminium alloy made

TYPE: AN-SAE	CODE: 6192G7000
DESCRIPTION: Without valves arrangement, P and T ports open	
TYPE: ANP-SAE	CODE: 6192G7001
DESCRIPTION: As AN, port P open and T plugged	
TYPE: ANT-SAE	CODE: 6192G7002
DESCRIPTION: As AN, port P plugged and T open	
TYPE: ANS-SAE	CODE: 6192G7003
DESCRIPTION: As AN, ports P and T plugged	
TYPE: AN1(JNS3-120)ELN-WC-SAE	CODE: Y61S3A7000
DESCRIPTION: Relief and unloader valves arrangement, P and T ports open	
TYPE: AN1P(JNS3-120)ELN-WC-SAE	CODE: Y61S3A7002
DESCRIPTION: As AN1, port P open and T plugged	
TYPE: AN2/PPXN1(JNS3-120)ELN-WC-SAE	CODE: Y61S3A7001
DESCRIPTION: Relief, unloader and flow control valves arrangement, P and T ports open	
TYPE: AN2P/PPXN1(JNS3-120)ELN-WC-SAE	CODE: Y61S3A7005
DESCRIPTION: As AN2, port P open and T plugged	
TYPE: AN6/EEXL1(VMP02TR-220)-SB10RC(C3)-WC-SAE	CODE: Y61S3A7006
DESCRIPTION: With pressure relief valve and flow control valve, for Open Center circuit, compensator with 10 bar (145 psi) stand-by, P and T ports open	
TYPE: AN7/EEEXN1(VMP02TR-200)-SB10RCV(C3)-WC-SAE	CODE: Y61S3A7007
DESCRIPTION: As previous one, compensator with handwheel actuation for Open to Closed Center switching, P and T ports open.	
TYPE: AN11/EEEXN1(VMP02TR-200)-SB10RCV(C3)-WC-SAE	CODE: Y61S3A307008
DESCRIPTION: With pressure relief valve and flow control valve, for Closed Center Circuit with compensator blanking plug, P and T ports open.	
TYPE: AN14/EEXL1(VMP02TR-250)SB10RC(C3)-ELN-WC-SAE	CODE: Y61S3A7011
DESCRIPTION: With pressure relief valve, flow control valve and electric solenoid operated unloading valve on LS, for Open Center circuit, compensator with 10 bar (145 psi) stand-by, P and T ports open	
TYPE: AN15/EEEXN1(VMP02TR-250)-SB10RCV(C3)-ELN-WC-SAE	CODE: Y61S3A7010
DESCRIPTION: As previous one, compensator with handwheel actuation for Open to Closed Center switching, P and T ports open.	
TYPE: AN16/EEEXN1(VMP02TR-250)-CL-ELN-WC-SAE	CODE: Y61S3A7012
DESCRIPTION: With pressure relief valve and flow control valve, for Closed Center Circuit with compensator blanking plug, P and T ports open.	

2 Complete working section * **page 17**

Section bodies are cast iron made

TYPE: Q-18ES3B-WC-SAE	CODE: Y63S3A7001
DESCRIPTION: Parallel circuit, type 1 double acting spool	
TYPE: Q-28ES3B-WC-SAE	CODE: Y63S3A7006
DESCRIPTION: Parallel circuit, type 2 double acting spool	
TYPE: QBP-18ES3B.BPC3-WC-SAE	CODE: Y63S3A7002
DESCRIPTION: Parallel circuit, type 1 double acting spool, check valves on workports	
TYPE: QBPE-18ES3B.BPEN(NC)3-WC-SAE	CODE: Y63S3A7005
DESCRIPTION: Parallel circuit, type 1 double acting spool, solenoid operated check valves on workports	
TYPE: PFL3(150)-18ES3B-WC-SAE	CODE: Y63S3A7011
DESCRIPTION: Parallel circuit, type 1 double acting spool and side relief valve with 150 bar (2175 psi)	
TYPE: QL-18ES3B-WC-SAE	CODE: Y63S3A7004
DESCRIPTION: Parallel circuit, side workports, type 1 double acting spool	
TYPE: QBPL-18ES3B.BPA3-WC-SAE	CODE: Y63S3A7003
DESCRIPTION: As previous one with check valves on workports	

3 Complete outlet section* **page 27**

Section bodies are aluminium alloy made

TYPE	CODE	DESCRIPTION
RF	3FIA203000	Without ports
RS-SAE	6193A5200	P and T ports plugged
RP-SAE	6193A5100	P port open and T port plugged
RT-SAE	6193A5000	T port open and P port plugged

4 Valve threading

Specify threading always when it is different from BSP standard (see page 4).

5 Coils **page 62**

Coils voltage specification; for list of available coils see pages of related sections

6 Fixing bracket **page 65**

TYPE	CODE	DESCRIPTION
STAF	5STA148065	Brackets with fixing screws

7 Assembling kit

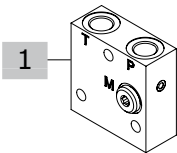
CODE	DESCRIPTION	CODE	DESCRIPTION
For AN inlet sections			
5TIR108116	For 1 section valve	5TIR108305	For 6 sections valve
5TIR108154	For 2 sections valve	5TIR108341	For 7 sections valve
5TIR108194	For 3 sections valve	5TIR108377	For 8 sections valve
5TIR108227	For 4 sections valve	5TIR108412	For 9 sections valve
5TIR108264	For 5 sections valve	5TIR108449	For 10 sections valve
For AN1-AN2-AN6-AN7-AN14-AN15-AN16 inlet sections			
5TIR108154	For 1 section valve	5TIR108341	For 6 sections valve
5TIR108194	For 2 sections valve	5TIR108377	For 7 sections valve
5TIR108227	For 3 sections valve	5TIR108412	For 8 sections valve
5TIR108264	For 4 sections valve	5TIR108449	For 9 sections valve
5TIR108305	For 5 sections valve	5TIR108486	For 10 sections valve

NOTE (*) – Codes are referred to **UN-UNF** thread.

Inlet section: part ordering codes

SDE030/AN-SAE

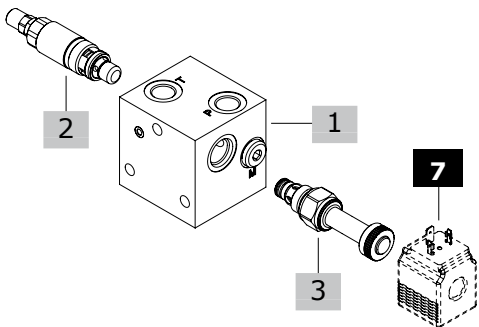
1 6



SDE030/AN1(JNS3-120)ELN-WC-SAE

Valve setting (bar) Without coil

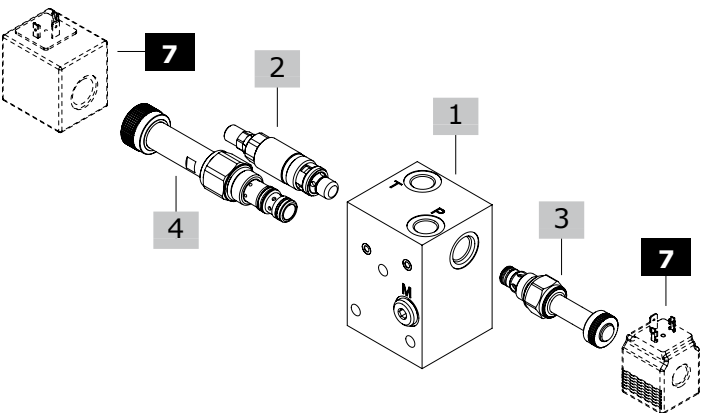
1 2 3 6



SDE030/AN2/PPXN1(JNS3-120)ELN-WC-SAE

Valve setting (bar) Without coil

1 4 2 3 6



SDE030/AN14/EEXL1(VMP02TS-150)

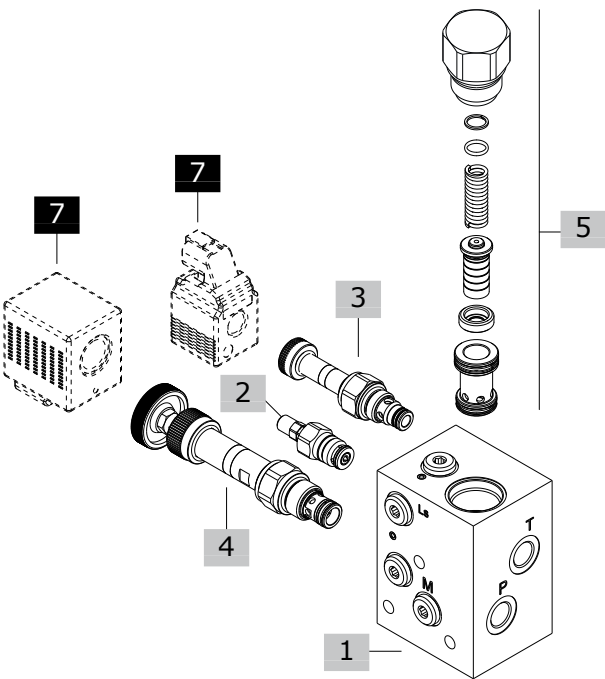
Valve setting (bar)

1 4 2

SB10RC(C3)-ELN-WC-SAE

5 3 6

Without coil



Inlet section: part ordering codes

1 Inlet section body kit * page 10

Section bodies are aluminium alloy made

TYPE	CODE	DESCRIPTION
AN-SAE	5FIA109703	Without valves arrangement, P and T ports open
ANP-SAE	5FIA109703PT	As AN, port P open and T plugged
ANT-SAE	5FIA109703PT	As AN, port P plugged and T open
ANS-SAE	5FIA109703S	As AN, ports P and T plugged
AN1-SAE	5FIA109700	Relief and unloader valves arrangement, P and T ports open
AN1P-SAE	5FIA109700P	As AN1, port P open and T plugged
AN2-SAE	5FIA109702	Relief, unloader and flow control valves arrangement, P and T open ports
AN2P-SAE	5FIA109702P	As AN2, port P open and T plugged
AN6-SAE	5FIA109701	For Open Center, relief and flow control valves arrangement, compensator, LS port plugged, P and T ports open
AN7/AN11-SAE	5FIA109704	As AN6, for Closed Center, with LS port open
AN14-SAE	5FIA109706	For Open Center, relief and flow control valves arrangement, electric solenoid operated unloading valve on LS, compensator, LS port plugged, P and T ports open
AN15/AN16-SAE	5FIA109706A	As AN14, for Closed Center, with LS port open

2 Main relief valve page 14

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

For sections AN1-AN2 type

Valve standard setting is referred to 10 l/min (2.6 US gpm) flow, considering the valve mounted on inlet section.

(JNS2-63)	5KIT105570	Range 40-63 bar (580-900 psi) std setting 63 bar (900 psi)
(JNS3-120)	5KIT105571	Range 50-200 bar (725-2900 psi) std setting 120 bar (1750 psi)
(JNS4-220)	5KIT105572	Range 160-315 bar (2300-4600 psi) std setting 220 bar (3200 psi)
(JNH2-63)	5KIT105517	As type JNS2, set and locked
(JNH3-120)	5KIT105516	As type JNS3, set and locked
(JNH4-220)	5KIT105515	As type JNS4, set and locked
(JNZT2-63)	5KIT105562	As type JNS2, anti-tampering type
(JNZT3-120)	5KIT105563	As type JNS3, anti-tampering type
(JNZT4-220)	5KIT105564	As type JNS4, anti-tampering type
SV	XTAP623282	Relief valve blanking plug

For sections AN6-AN7-AN11-AN14-AN15-AN16 type

Valve standard setting is referred to 1 l/min (0.26 US gpm) flow, considering the valve mounted on inlet section.

(VMP02TV-50)	1100000120	Range 5-80 bar (73-1160 psi) std setting 50 bar (725 psi)
(VMP02TS-150)	1100000113	Range 50-220 bar (725-3200 psi) std setting 150 bar (2200 psi)
(VMP02TR-250)	1100000119	Range 180-350 bar (2600-5100 psi) std setting 250 bar (3600 psi)

3 Solenoid operated unloading valve page 15

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

For sections AN1-AN2 type

ELN	0EC08002031	Without emergency actuation
ELV	0EC08002034	With screw type emergency actuation
ELP	0EC08002033	With push-button emergency actuation
ELT	0EC08002035	With "twist & push" emergency actuation
LT	XTAP510320	Unloading valve blanking plug

For sections AN14-AN15-AN16 type

ELN	0EC08002031	On LS signal without emergency actuation
------------	-------------	--

4 Flow control valve page 15

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

For sections AN1-AN2 type

PPAL1	OPP10002000	Hand-wheel setting type
PPAV1	OPP10002005	Screw setting type
PPXN1	OPP10002031	Solenoid operated, without emergency
PPXV1	OPP10002033	Solenoid operated, screw emergency
PPXL1	OPP10002035	Solenoid operated, hand-wheel emergency
LT	3XTP3545700	Flow control valve blanking plug

For sections AN6-AN7-AN11-AN14-AN15-AN16 type

EEXN1	0EE10002009	Solenoid operated, without emergency
EEXL1	0EE10002008	Solenoid operated, hand-wheel emergency

5 Compensator kit page 16

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

For section AN6-AN7-AN14-AN15 type

SB10RCV(C3)	5KT6200227	With 10 bar (145 psi) stand-by, hand-wheel actuation for Open Center to Closed Center switching
SB10RC(C3)	5KT6200222	With 10 bar (145 psi) stand-by, for Open Center circuit

For section AN11-AN16 type

CL	X451810000	Compensator blanking plug, for Closed Center circuit
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6 Section threading

Specify threading always when it is different from BSP standard (see page 4).

7 Optional coil pag. 62

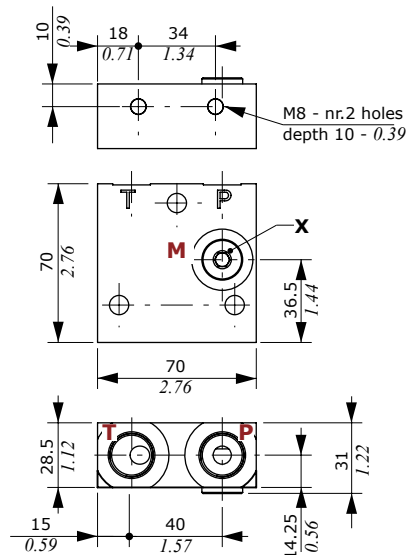
For list of available coils see pages of related section.

NOTE (*) – Codes are referred to **UN-UNF** thread.

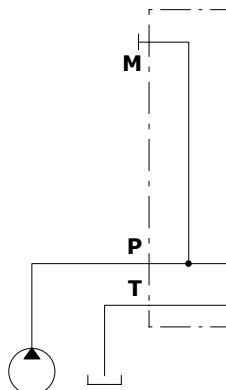
Inlet section: dimension and hydraulic circuit

AN inlet sections

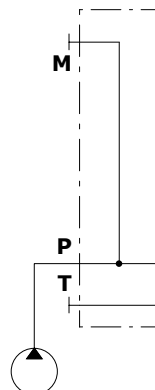
**AN type
with P and T ports open**



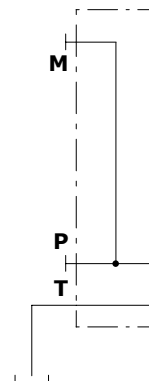
**AN type
P and T ports open**



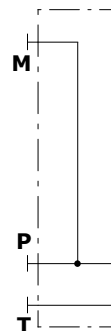
**ANP type
P port open and
T port plugged**



**ANT type
P port plugged
and T port open**



**ANS type
P and T ports
plugged**

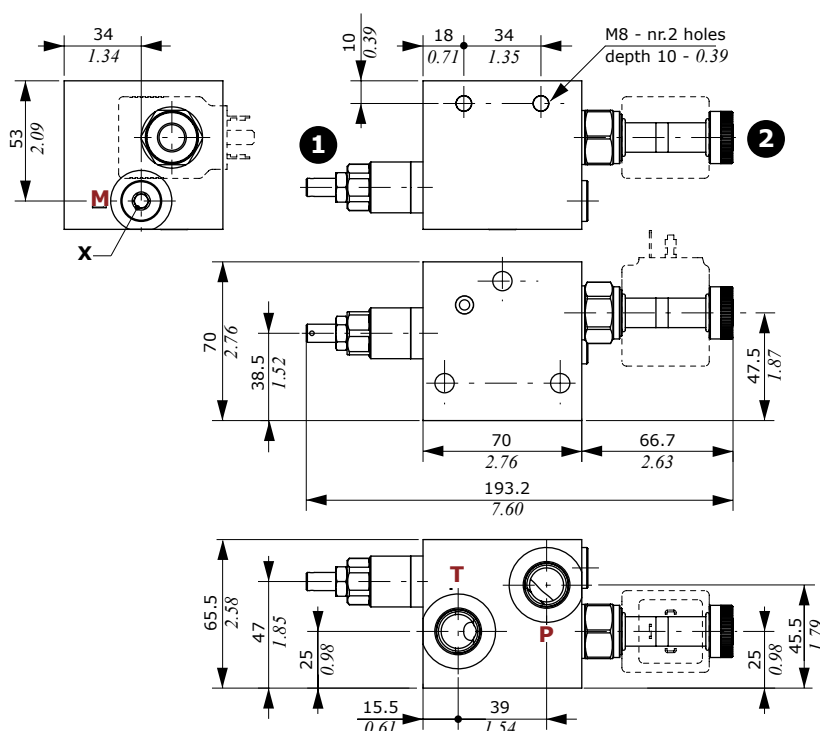


Wrenches and tightening torque

X = allen wrench 6 - 24 Nm (17.7 lbf_t)

AN1 inlet sections

AN1 type with P and T ports open



Wrenches and tightening torque

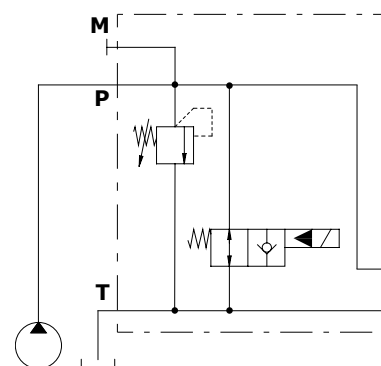
X = allen wrench 6 - 24 Nm (17.7 lbf_t)

NOTE: for valve wrench and torque see pages 14 and 15.

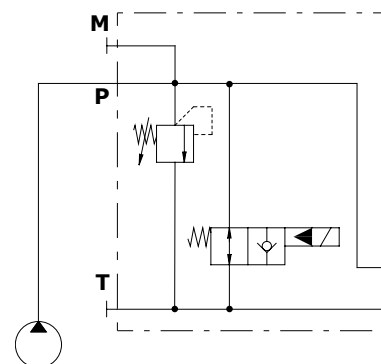
Legenda

- 1: Pressure relief valve
- 2: Solenoid operated unloading valve

**AN1 types
P and T ports open**



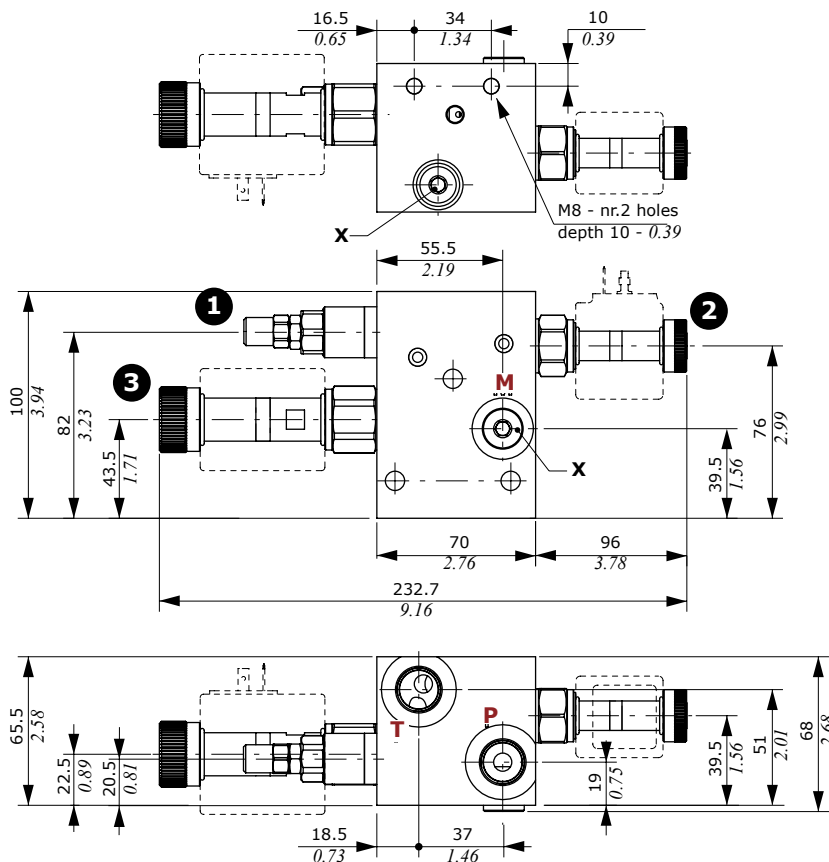
**AN1P types
P port open and T port plugged**



Inlet section: dimension and hydraulic circuit

AN2 inlet sections

AN2 type with P and T ports open



Legenda

- 1: Pressure relief valve
- 2: Solenoid operated unloading valve
- 3: Pressure compensated flow control valve

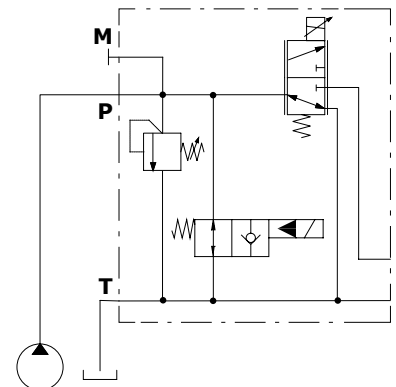
Wrenches and tightening torque

X = allen wrench 6 - 24 Nm (17.7 lbf·ft)

NOTE: for valve wrench and torque see pages 14 and 15.

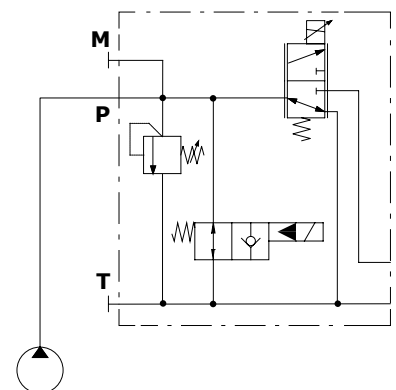
AN2 types

P and T ports open



AN2P types

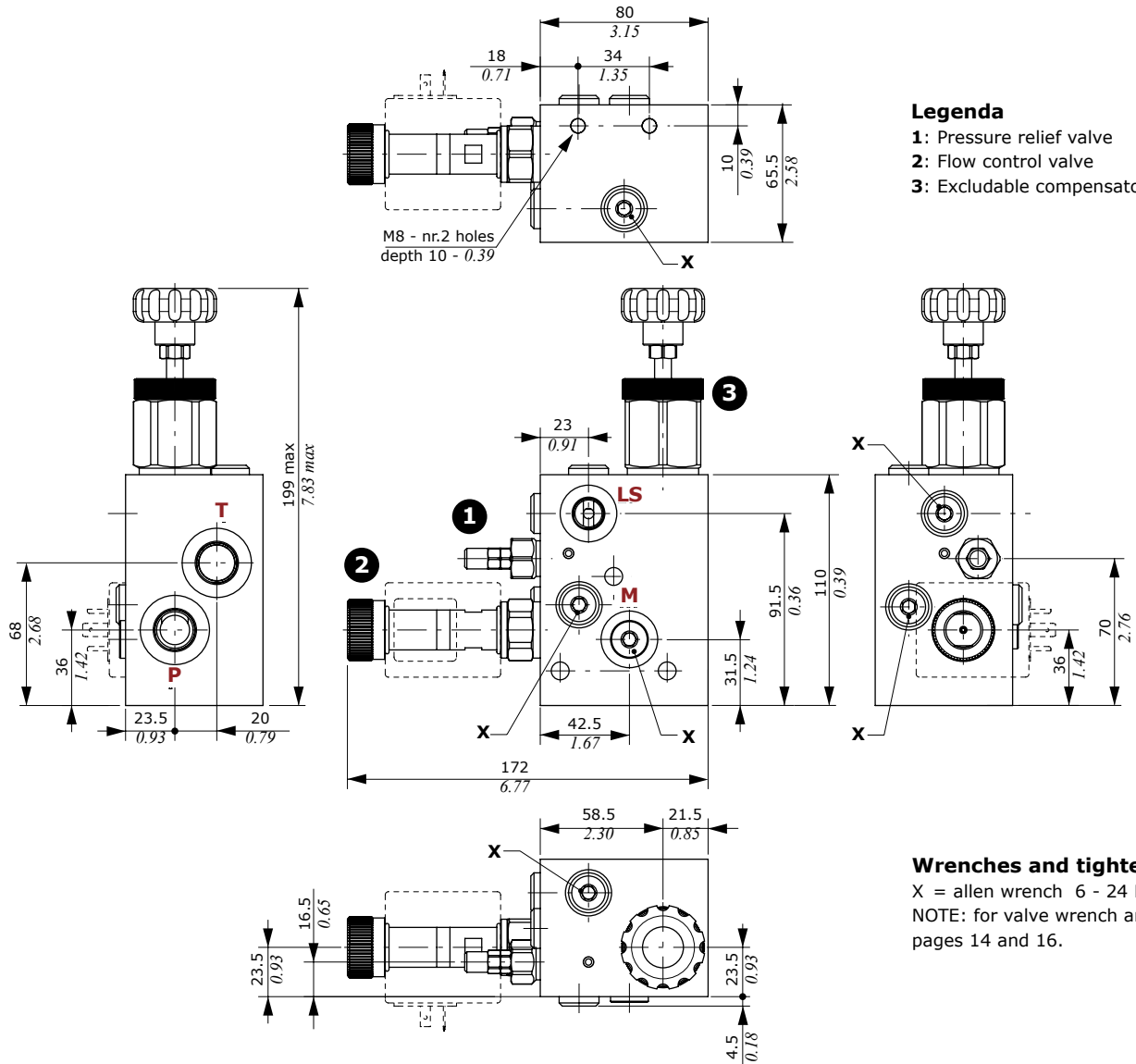
P port open and T port plugged



Inlet section: dimension and hydraulic circuit

AN6-AN7-AN11 inlet sections

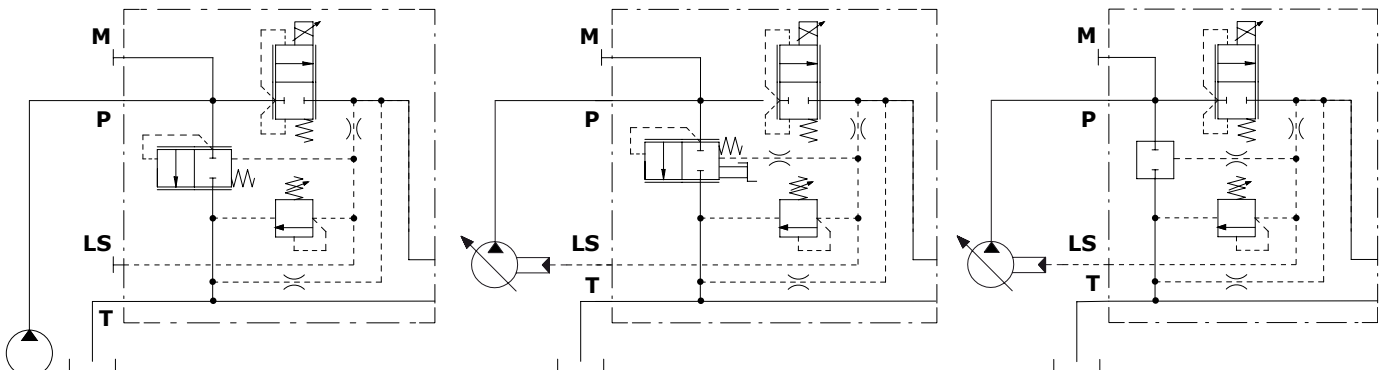
AN7 type; configuration for Open and Closed Center



AN6 type
for Open Center circuit

AN7 type
for Closed and Open Center circuits

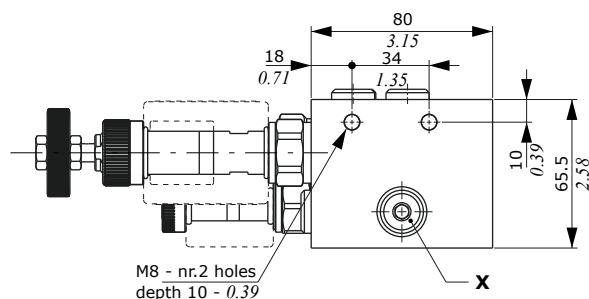
AN11 type
for Closed Center circuit



Inlet section: dimension and hydraulic circuit

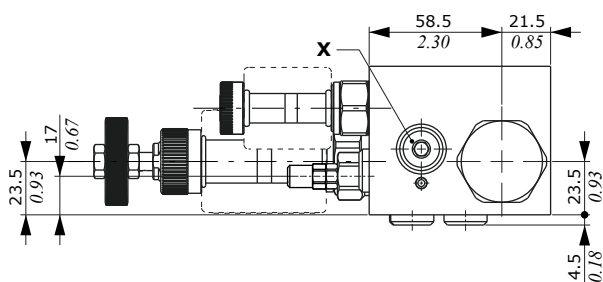
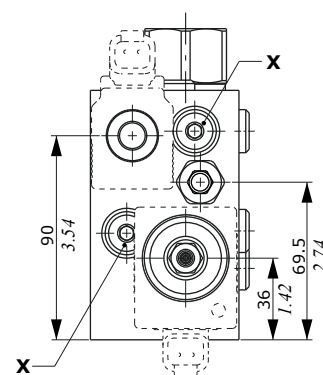
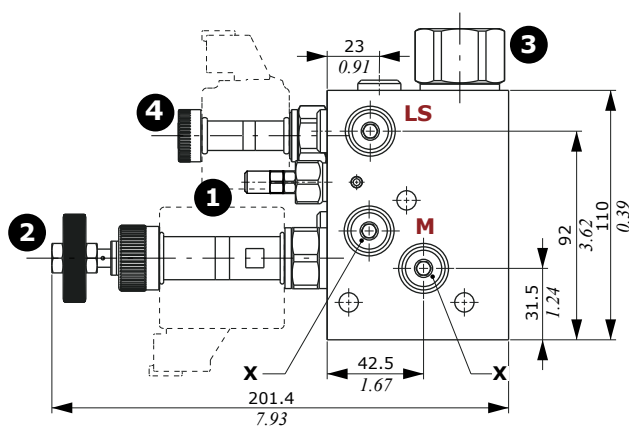
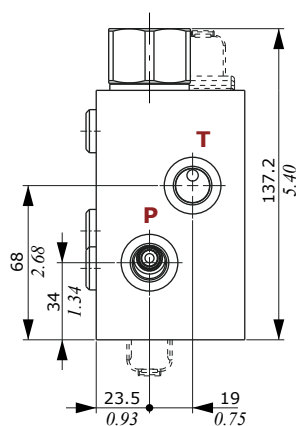
AN14-AN15-AN16 inlet sections

AN14 type; configuration for Open Center



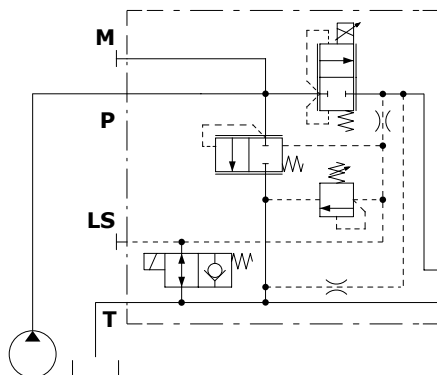
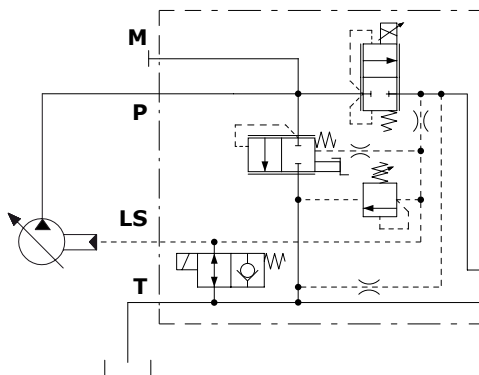
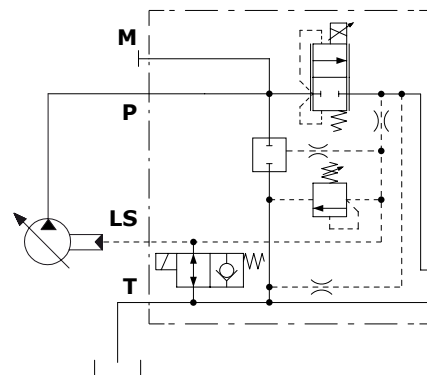
Legenda

- 1: Pressure relief valve
- 2: Flow control valve
- 3: Compensator
- 4: Solenoid operated unloading valve LS



Wrenches and tightening torque

X = allen wrench 6 - 24 Nm (17.7 lbf·ft)
NOTE: for valve wrench and torque see pages 14 and 16.

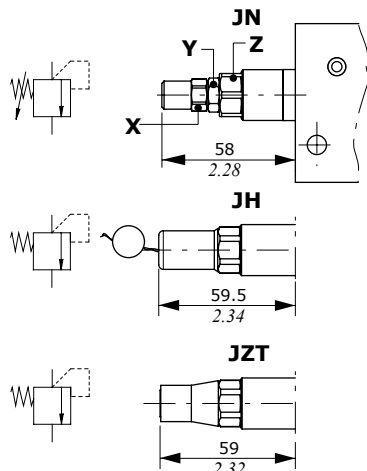
AN14 type
for Open Center circuitAN15 type
for Closed and Open Center circuitsAN16 type
for Closed Center circuit

Inlet section: options

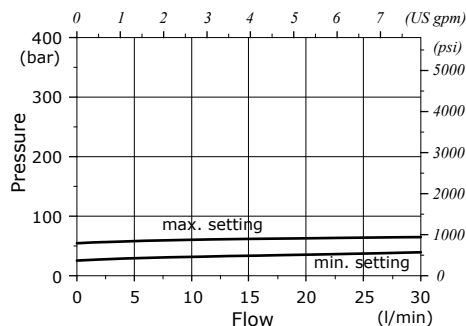
Main relief valve

For sections AN1 and AN2 type

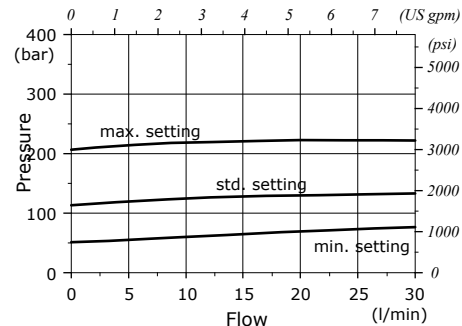
Setting types



Setting range: JNS2 type



Setting range: JNS3 type



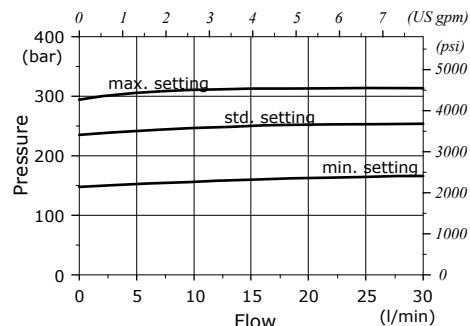
Legenda

JN: Adjustment locking nut
(nut code 3COP117260)
JH: valve set and locked
(cap code 3COP117260)
JZT: valve set and locked
(cap code 4COP120420)

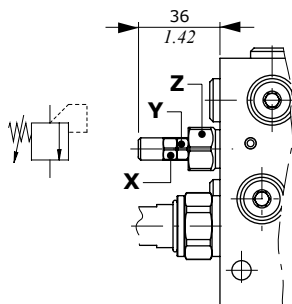
Wrenches and tightening torque

X = wrench 13 - 6.6 Nm (4.9 lbft)
Y = wrench 13 - 24 Nm (17.7 lbft)
Z = wrench 19 - 24 Nm (17.7 lbft)

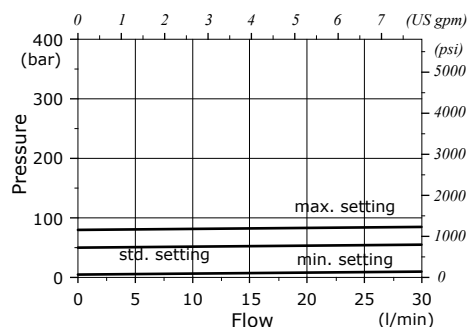
Setting range: JNS4 type



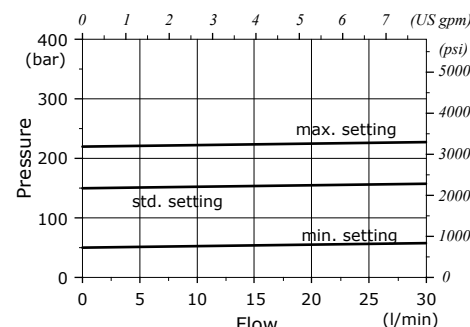
For sections AN6, AN7, AN11, AN14, AN15 and AN16 type



Setting range: VMP02TV type



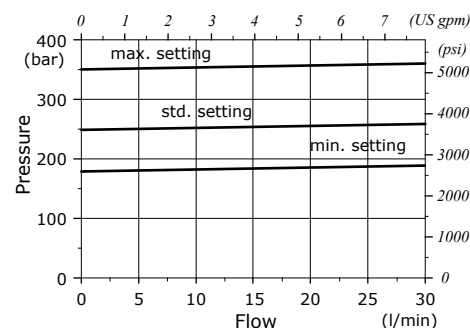
Setting range: VMP02TS type



Wrenches and tightening torque

X = wrench 10
Y = wrench 10 - 6.6 Nm (4.9 lbft)
Z = wrench 19 - 24 Nm (17.7 lbft)

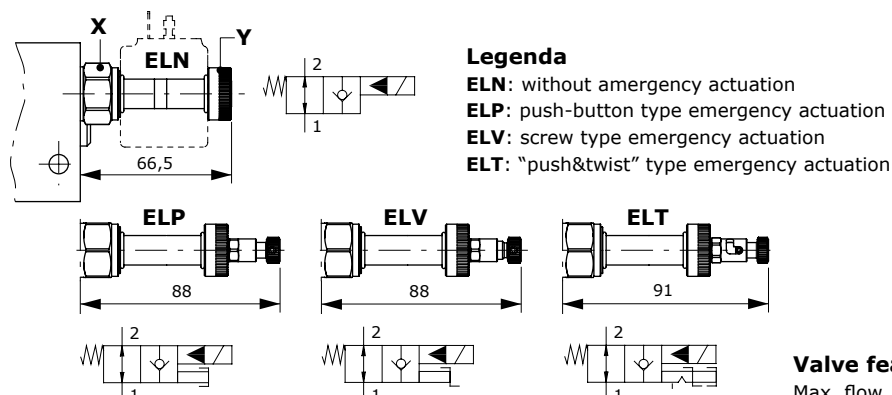
Setting range: VMP02TR type



Inlet section: options

Unloading valve

For sections AN1-AN2 type and on LS signal for sections AN14-AN15-AN16

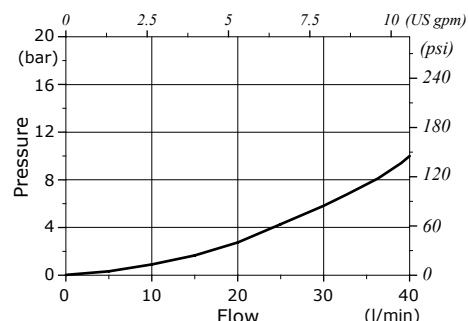


Wrenches and tightening torque

X = wrench 24 - 30 Nm (22 lbft)

Y = 5 Nm (3.7 lbft)

Pressure drop diagram



Valve features

Max. flow 40 l/min (10.6 US gpm)

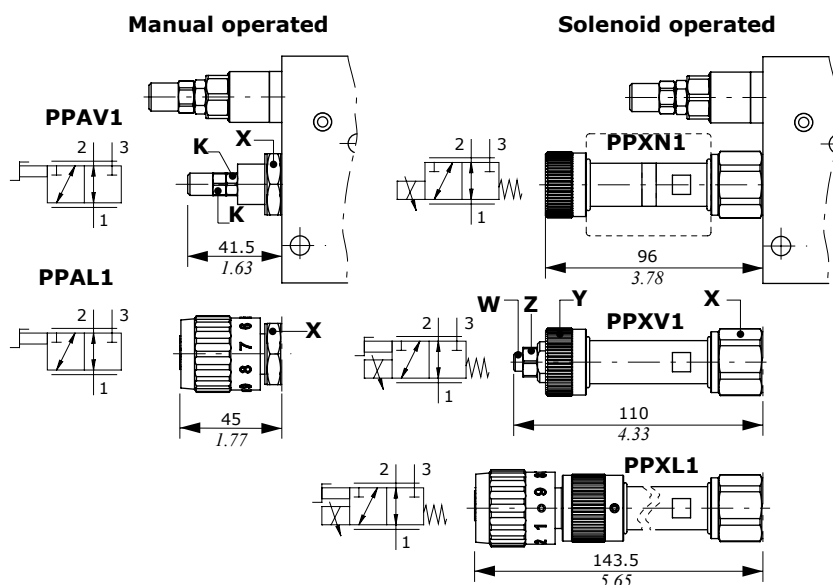
Max. pressure 380 bar (5500 psi)

Internal leakage 0.25 cm³/min @ 210 bar
(0.015 in³/min @ 3050 psi)

For coil features and options see **BER** coil on pages 62 and 63.

Pressure compensated flow control valve

For section AN2 type



Legenda

PPAV1: screw setting type

PPAL1: hand-wheel setting type

PPXN1: without emergency actuation

PPXV1: screw type emergency actuation

PPXL1: hand-wheel emergency actuation

Wrenches and tightening torque

K = wrench 10 - 6.6 Nm (4.9 lbft)

X = wrench 27 - 50 Nm (37 lbft)

Y = 5 Nm (3.7 lbft)

W = allen wrench 4

Z = wrench 8 - 15 Nm (11 lbft)

Valve features

Max. inlet flow 50 l/min (13.2 US gpm)

Max. regulated flow 30 l/min (7.9 US gpm)

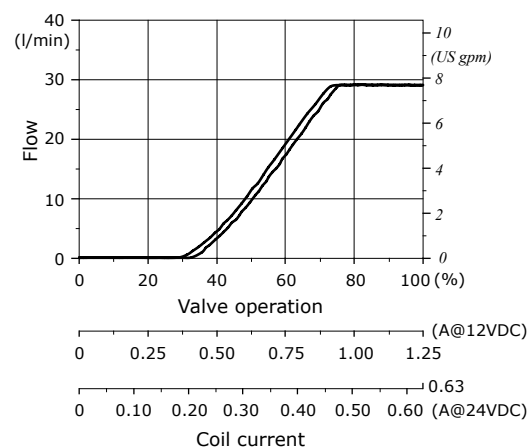
Inlet flow (PPX types) regulated flow +5%

Max. pressure 350 bar (5100 psi) - PPA types / 315 bar (4600 psi) - PPX types

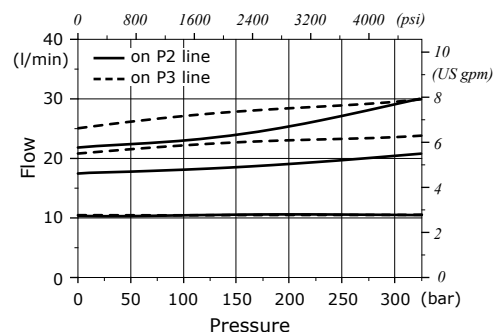
Internal leakage (PPX types) : 150 cm³/min @ 210 bar (9.1 in³/min @ 3050 psi)

For coil features and options see **BQP19** or **BH** coils on pages 62 and 63.

Flow regulation diagram



Flow vs. Pressure diagram

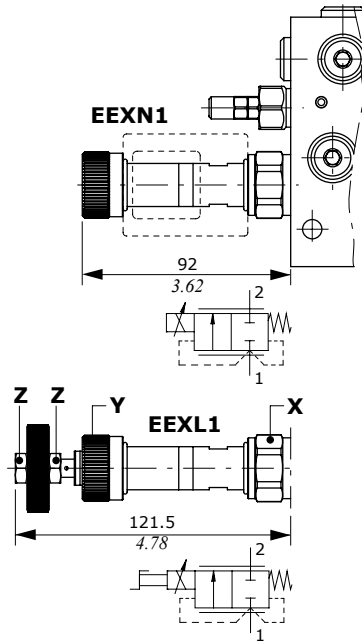


Inlet section: options

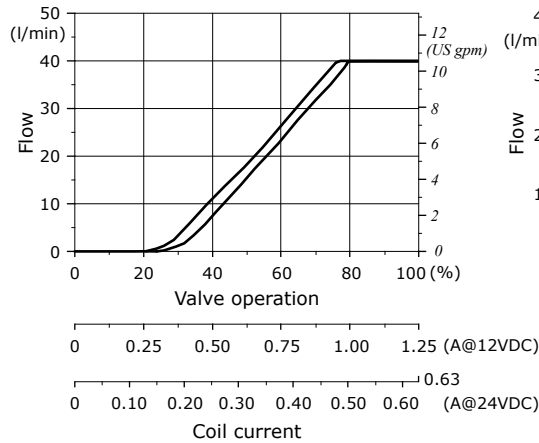
Pressure compensated flow control valve

For sections AN6-AN7-AN11-AN14-AN15-AN16 type

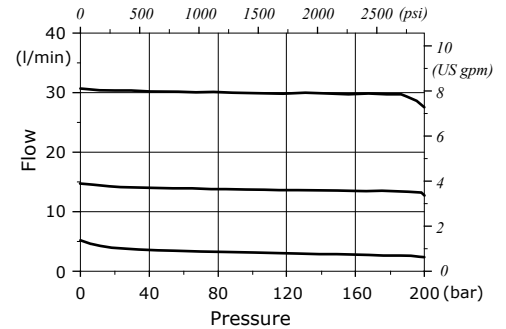
Curves are measured using the standard compensator mounted on section, with 10 bar (145 psi) stand-by.



Flow regulation diagram



Flow vs. Pressure diagram



Legenda

EEXN1: without emergency actuation

EEXL1: hand-wheel emergency actuation

Wrenches and tightening torque

K = wrench 10 - 6.6 Nm (4.9 lbft)

X = wrench 27 - 50 Nm (37 lbft)

Y = 5 Nm (3.7 lbft)

Z = wrench 13 - 9.8 Nm (7.2 lbft)

Valve features

Max. flow 40 l/min (10.6 US gpm)

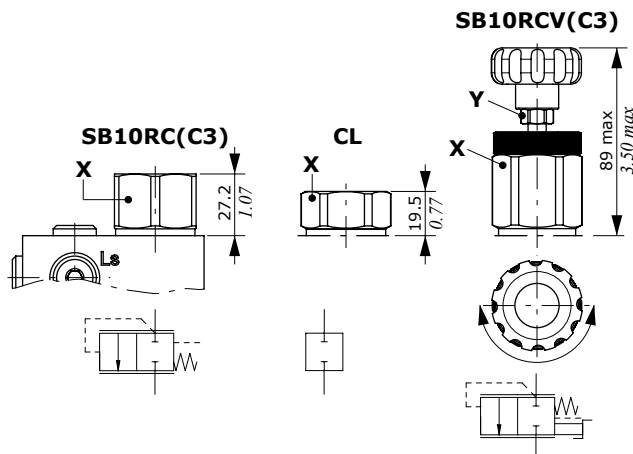
Max. pressure 300 bar (5500 psi)

Internal leakages 150 cm³/min @ 150 bar
(9.1 in³/min @ 2175 psi)

For coil features and options see **BQP19** or **BH** coils on pages 62 and 63.

Compensator kit

For sections AN6-AN7-AN11-AN14-AN15-AN16 type



Legenda

SB10RC(C3): compensator with 10 bar (145 psi) stand-by, for Open Center circuit

CL: compensator blanking plug, for Closed Center circuit (for AN11 type)

SB10RCV(C3): compensator with 10 bar (145 psi) stand-by, hand-wheel actuation for Open Center to Closed Center circuit switching

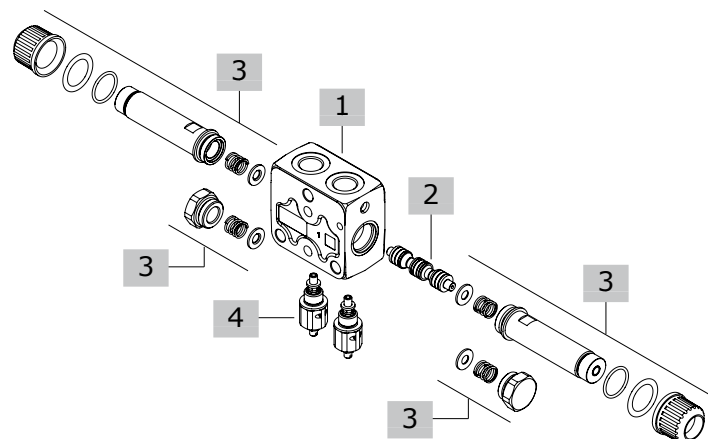
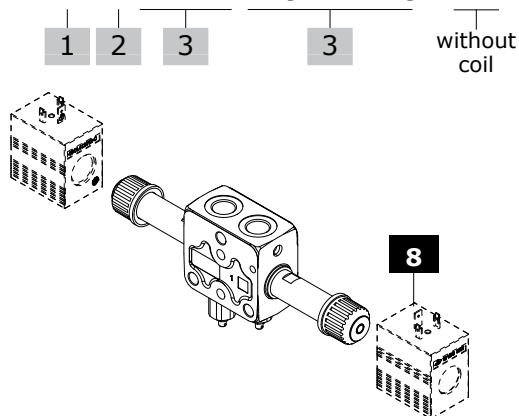
Wrenches and tightening torque

X = wrench 36 - 42 Nm (31 lbft)

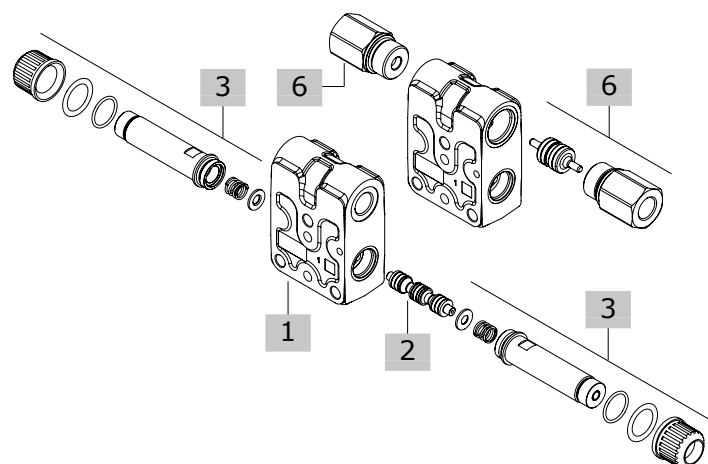
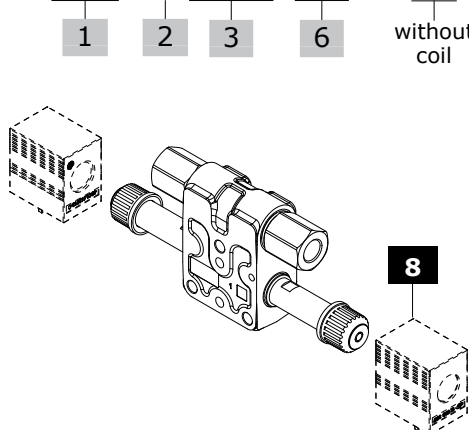
Y = wrench 13 - 6.6 Nm (4.9 lbft)

Working section: part ordering codes

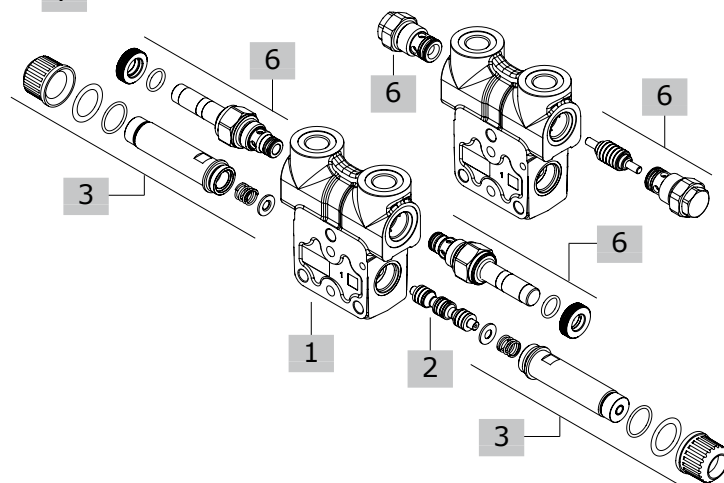
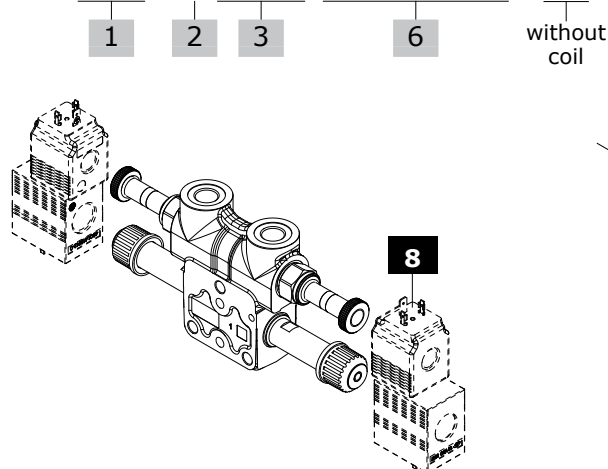
Valve setting (bar) —
SDE030/P - 1 8ES3B.P3(G3-100) - WC - SAE



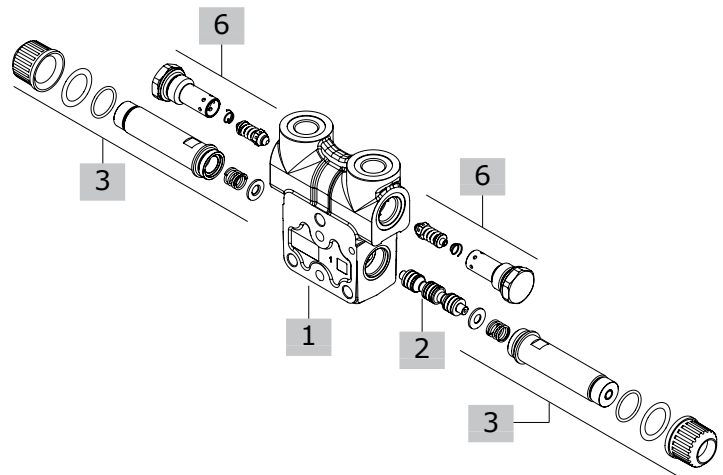
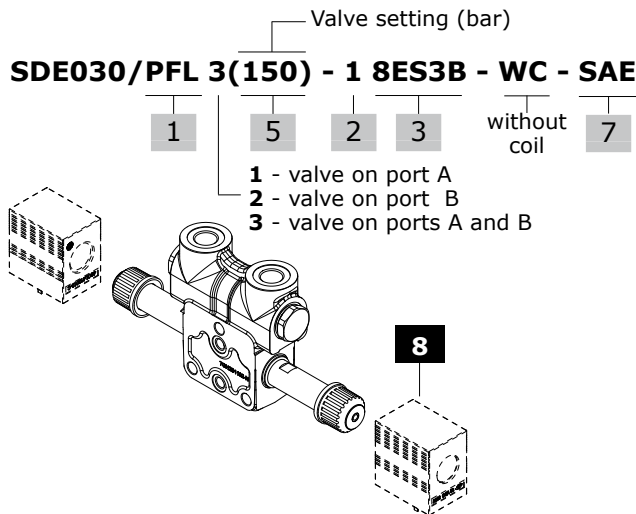
valve on port A - 1
 valve on port B - 2
 valve on ports A and B - 3
SDE030/QBPL - 1 8ES3B.BPA 3 - WC - SAE



valve on port A - 1
 valve on port B - 2
 valve on ports A and B - 3
SDE030/QBPE - 1 8ES3B.QBPEN3(NC) - WC - SAE



Working section: part ordering codes

**1 Working section body kit *** page 19

Section bodies are cast iron made

TYPE CODE DESCRIPTION

Working sections with upper ports**Q-SAE** 5EL1097000 Parallel type, lower port relief valve arrangement**P-SAE** 5EL1097005 As type Q, lower port relief valve arrangement**QBP-SAE** 5EL1097003 As type Q with check valve arrangement**QBPE-SAE** 5EL1097004 As type Q with solenoid operated check valve arrangement**PFL-SAE** 5EL1093006 As type Q, side port relief valve arrangement**Working sections with side ports****QL-SAE** 5EL1097002 Parallel type,**QBPL-SAE** 5EL1097001 As type QL with check valve arrangement**2 Spool** page 21

TYPE CODE DESCRIPTION

For ON/OFF solenoid control**1** 3CU9010102 Double acting, A and B closed in neutral pos.**1A** 3CU9010103 Double acting, A to tank in neutral pos. For connect B to tank (type **1B**) is necessary to turn the spool**2** 3CU9025100 Double acting, A and B to tank in neutral pos.**2H** 3CU9025225 Double acting, A and B partially to tank in neutral position**For ON/OFF solenoid control with emergency lever operation****1LHD** 3CU9010300 As type 1**1ALHD** 3CU9010303 As type 1A**2LHD** 3CU9020300 As type 2**2HLHD** 3CU9020310 As type 2H**3 On/off solenoid control** page 22

TYPE CODE DESCRIPTION

8ES1B 5CAN08E114C Single acting on port A**8ES2B** 5CAN08E114C Single acting on port B**8ES3B** 5CAN08E115C Double acting**8ES3BLHD** 5CAN08E315 Double acting with emergency lever operation: **needs dedicated spools****4 Lower port relief valves** page 24

Standard setting is referred to 10 l/min (2.6 US gpm) flow.

TYPE CODE DESCRIPTION

P(G3-100) 5KIT060000 From 50 to 200 bar (725 to 2900 psi), standard setting 100 bar (1450 psi)**P(G4-200)** 5KIT060001 From 200 to 315 bar (2900 to 4600 psi), standard setting 200 bar (2900 psi)**P3T** 5KIT060100 A and B ports valve blanking plugsNOTE (*) - Codes are referred to **UN-UNF** thread.**5 Side port relief valve** page 24

The codes are referred to parts with FPM o-ring seals

TYPE CODE DESCRIPTION

PT 5TAP324460 Valve blanking plug**Fixed setting antishock valves:**

setting is referred to 10 l/min (2.6 US gpm)

TYPE: **P 100** CODE: 5KIT308 100 A

setting (bar) setting (bar)

SETTING:

40 bar (580 psi) 50 bar (725 psi) 60 bar (870 psi)

80 bar (1150 psi) 100 bar (1450 psi) 120 bar (1750 psi)

130 bar (1900 psi) 140 bar (2050 psi) 150 bar (2150 psi)

165 bar (2400 psi) 175 bar (2550 psi) 185 bar (2700 psi)

200 bar (2900 psi) 210 bar (3050 psi) 220 bar (3200 psi)

235 bar (3400 psi) 250 bar (3600 psi)

6 Check valve page 25

TYPE CODE DESCRIPTION

For arranged sections with upper ports, QBP type**BPC3** 5KIT430030 Valves kit for A and B ports**BPC1-BPC2** 5KIT430012 Valve kit por single port**For arranged sections with upper ports, QBPE type****TBP** 3XTAP822150 Valve blanking plug**Normally closed circuit (NC)****BPEN(NC)** 0EC08002032 Without manual emergency**BPEV(NC)** 0EC08002037 With screw type emergency**BPEP(NC)** 0EC08002036 With pull-button emergency**BPET(NC)** 0EC08002038 With "pull & twist" emergency**Normally open circuit (NO)****BPEN(NA)** 0EC08002031 Without manual emergency**BPEV(NA)** 0EC08002034 With screw type emergency**BPEP(NA)** 0EC08002033 With push-button emergency**BPET(NA)** 0EC08002035 With "push & twist" emergency**For arranged sections with side ports, QBPL type****BPA3-SAE** 5KIT430230 Valves kit for A and B ports**BPA1-BPA2-SAE** 5KIT430212 Valve kit for single port**7 Section threading**

Specify threading always when it is different from BSP standard (see page 4).

8 Optional coils page 62

For list of available coils see pages of related section.

9 Protective bellow page 23

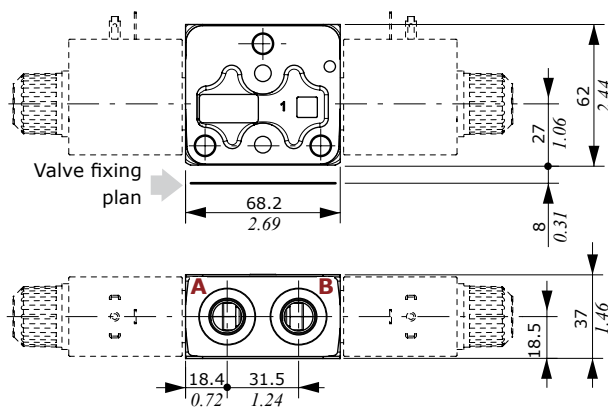
TYPE CODE DESCRIPTION

- 4ACC512-C Cap for solenoid ring nut D12C

Dimension and hydraulic circuit

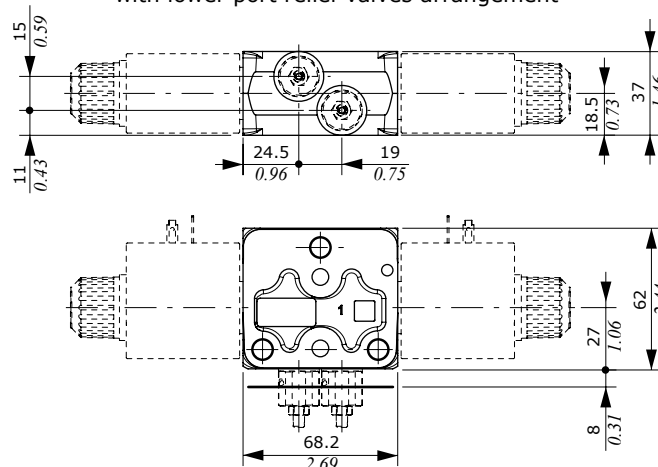
Working section Q type with upper ports

Q type

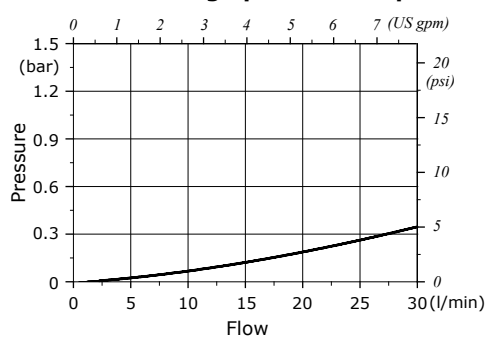


P type

with lower port relief valves arrangement

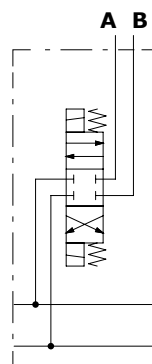


Flow through pressure drop



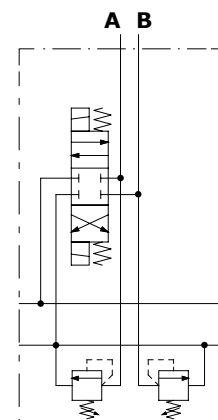
Q type example

(with spool 1)



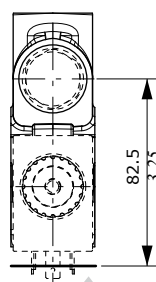
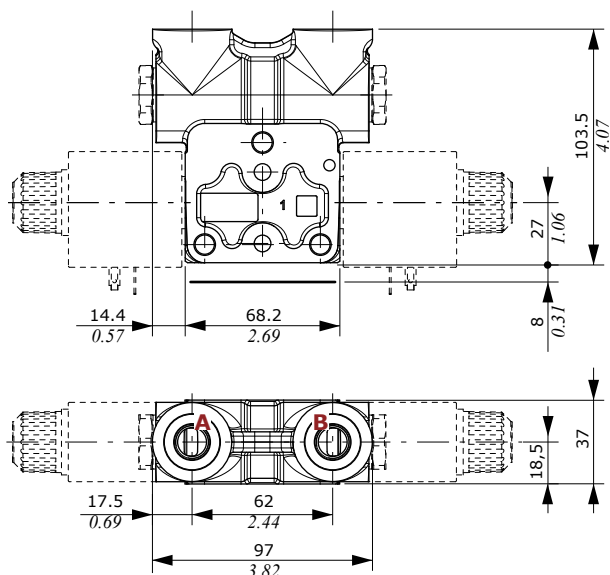
P type example

(with spool 1)



PFL type

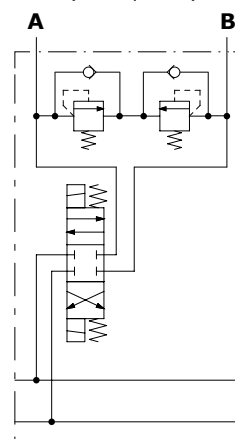
with side port relief valves arrangement



Valve fixing plan

PFL type example

(with spool 1)

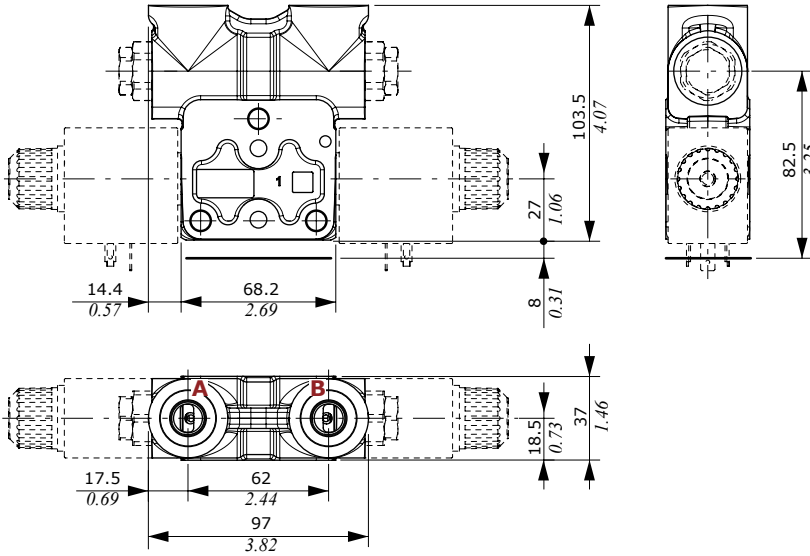


Working section

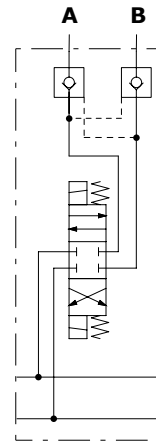
Dimension and hydraulic circuit

Working section with side ports

QBP - QBPE types
with check valve arrangement

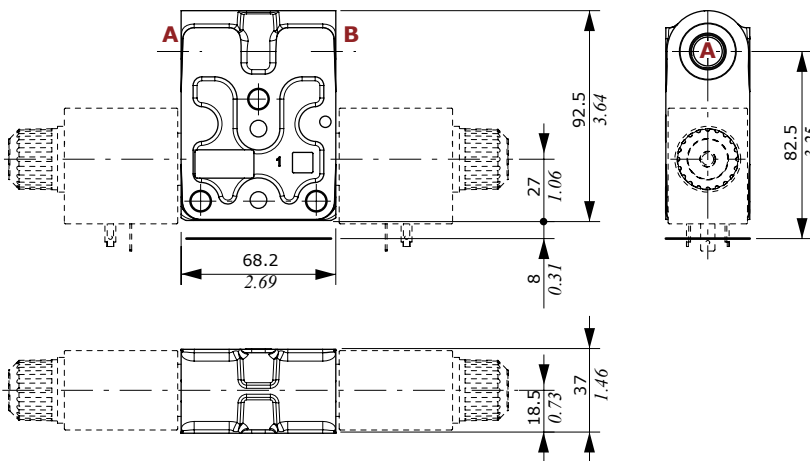


QBP type example
(with spool 1)

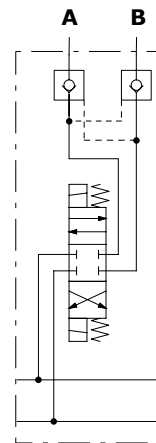


Working section with side ports

QL - QBPL types
with or without check valves arrangement



QBPL type example
(with spool 1)

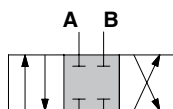


Valve fixing plan

Spools

Types 1-1LHDDouble acting, A and B closed
in neutral position

1 0 2



P T

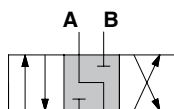
Stroke

position 1: + 3 mm (+ 0.12 in)

position 2: - 3 mm (- 0.12 in)

Types 1A-1ALHDDouble acting, A to tank in
neutral position

1 0 2



P T

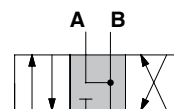
Stroke

position 1: + 3 mm (+ 0.12 in)

position 2: - 3 mm (- 0.12 in)

Types 2-2LHDDouble acting, A and B to tank
in neutral position

1 0 2



P T

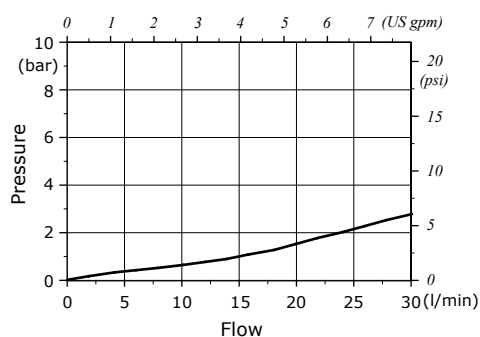
Stroke

position 1: + 3 mm (+ 0.12 in)

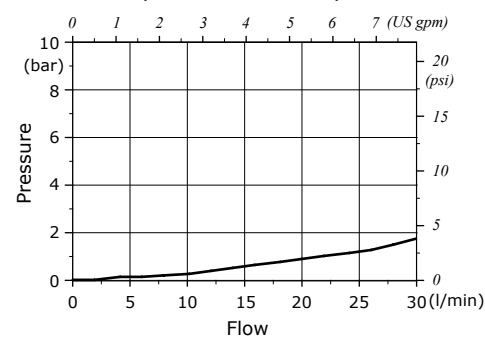
position 2: - 3 mm (- 0.12 in)

P⇒port - port⇒T pressure drops

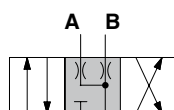
(curves are matched)

**P⇒port - port⇒T pressure drops**

(curves are matched)

**Types 2H-2HLHD**Double acting, A and B partially to
tank in neutral position

1 0 2



P T

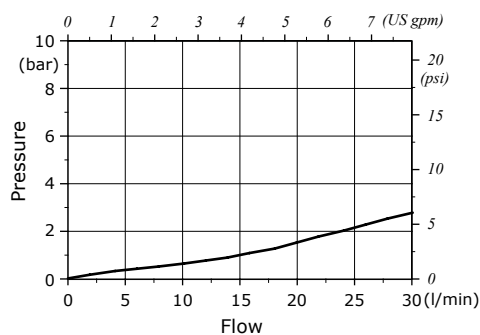
Stroke

position 1: + 3 mm (+ 0.12 in)

position 2: - 3 mm (- 0.12 in)

P⇒port - port⇒T pressure drops

(curves are matched)

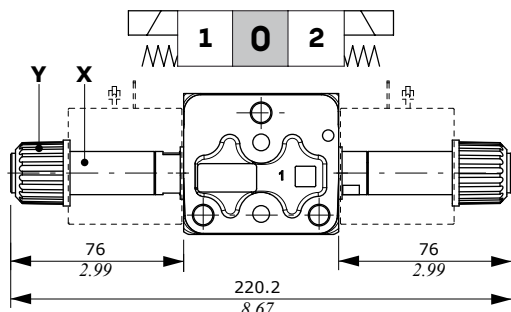


Working section

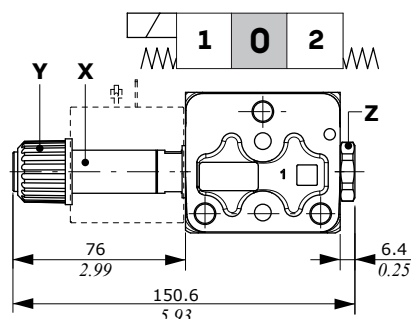
On/off solenoid control: 8ES3B - 8ES1B - 8ES2B types

When the section is configured with check valves, the coils on control must be rotated 180°.

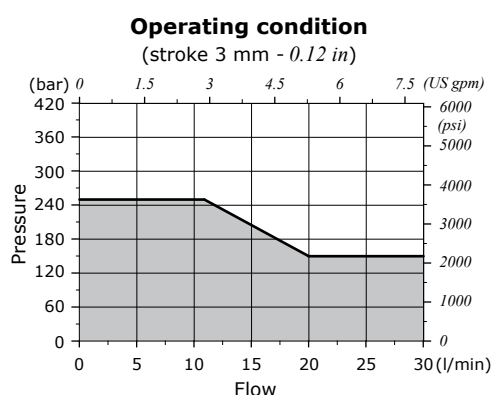
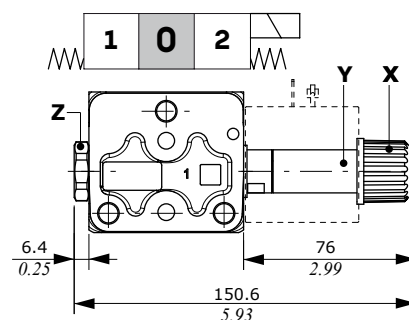
8ES3B: double acting control kit



8ES1B: single acting on A control kit



8ES2B: single acting on B control kit



Wrenches and tightening torque

X = wrench 17 - 24 Nm (17.7 lbft)
Y = 6.6 Nm (4.9 lbft)
Z = wrench 24 - 24 Nm (17.7 lbft)

For coil features and options see **D12C** coil on pages 62 and 64.

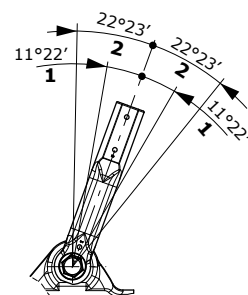
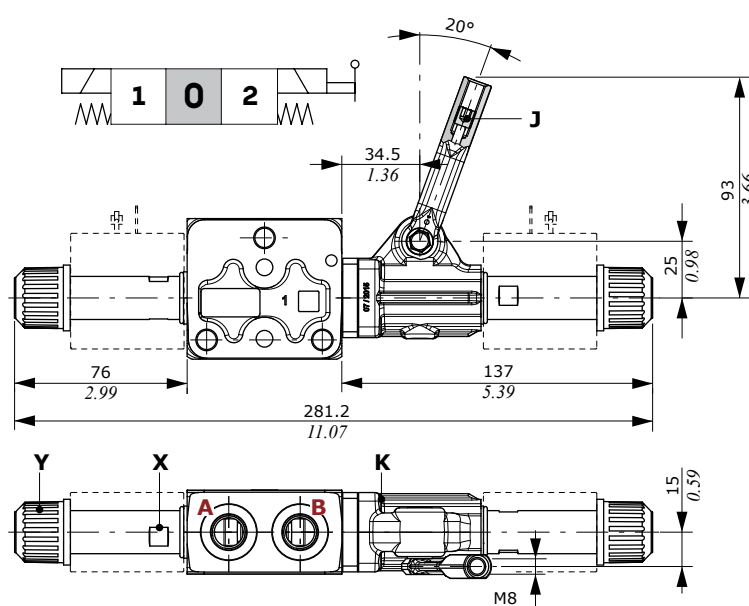
On/off solenoid control with lever: 8ES3BLHD type

When the section is configured with side ports or with check valves, control and coils must be rotated 180°.

If the section is configured with solenoid check valves the control can't be used.

The control needs dedicated spools: see page 17 for list.

IMPORTANT: lever to be used only for emergency operation, not for continuative use.



1: idle stroke angles
2: total operation angles

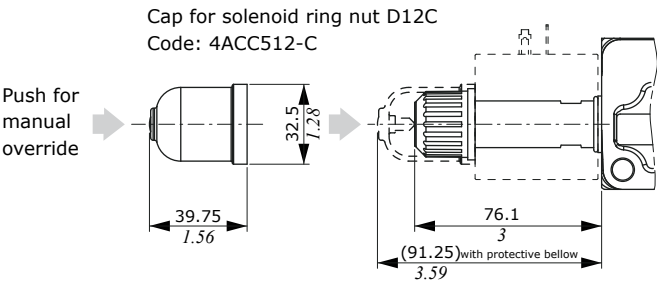
Wrenches and tightening torque

J = wrench 4 - 9.8 Nm (7.2 lbft)
K = allen wrench 4 - 6.6 Nm (4.9 lbft)
X = wrench 17 - 24 Nm (17.7 lbft)
Y = 6.6 Nm (4.9 lbft)

Control features

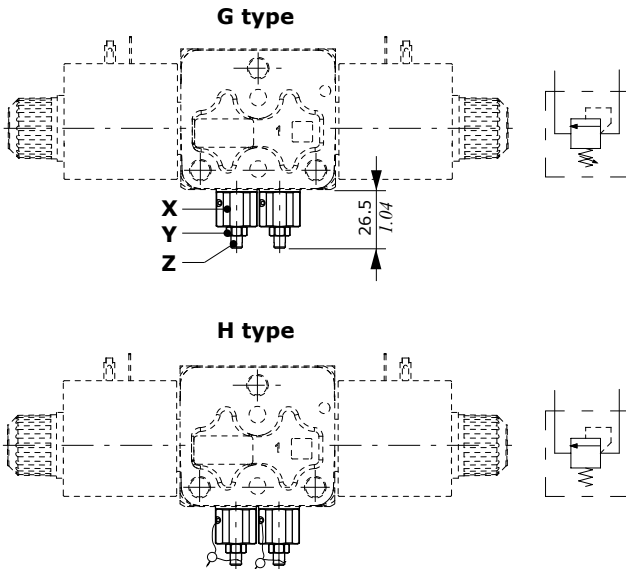
Max. back pressure on T.: 30 bar (435 psi)
For coil features and options see **D12C** coil on pages 62 and 64.

Protective bellow



Working section

Lower port relief valves



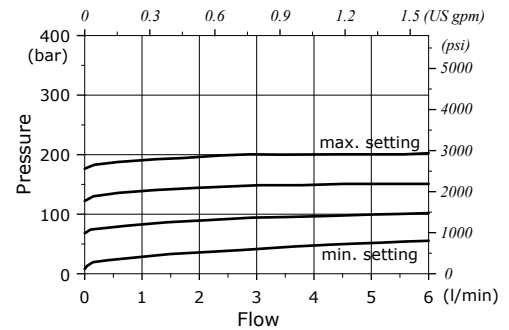
Legenda

G: screw setting type
H: valve set and locked

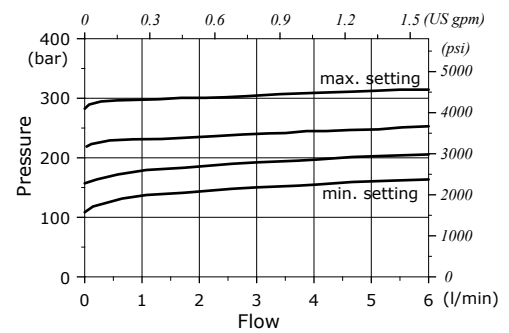
Wrenches and tightening torque

X = wrench 17 - 24 Nm (17.7 lbf ft)
 Y = wrench 8 - 6.6 Nm (4.9 lbf ft)
 Z = allen wrench 2.5

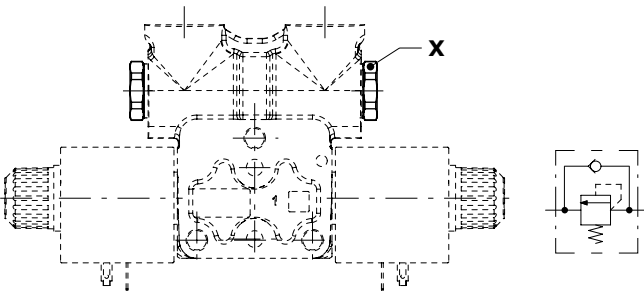
Setting range: G3 type



Setting range: G4 type



Side port relief valves

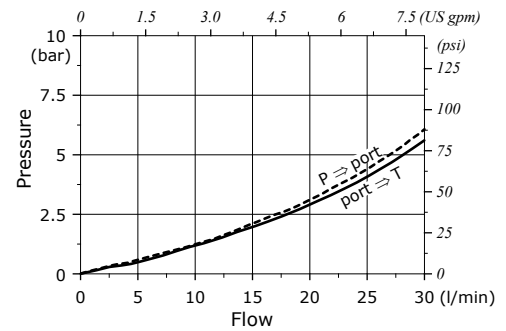


Wrenches and tightening torque

X = wrench 24 - 42 Nm (31 lbf ft)

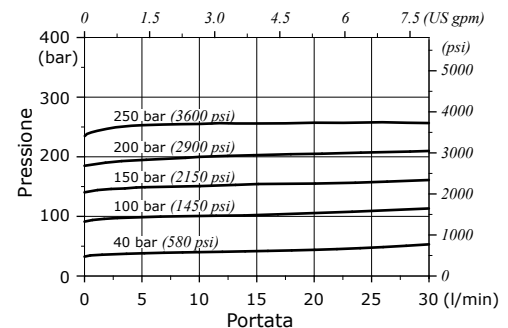
Pressure drop

(working section included)



Setting example

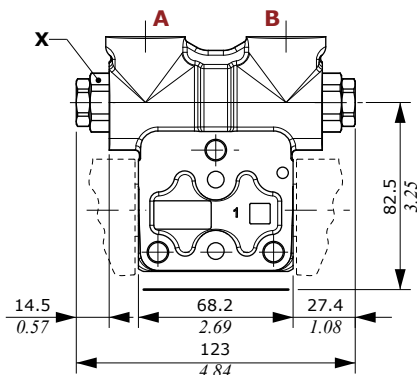
(10 l/min - 2.6 US gpm)



Check valves

When the section is configured with check valves, the coils on control must be rotated 180°.

For sections with upper ports

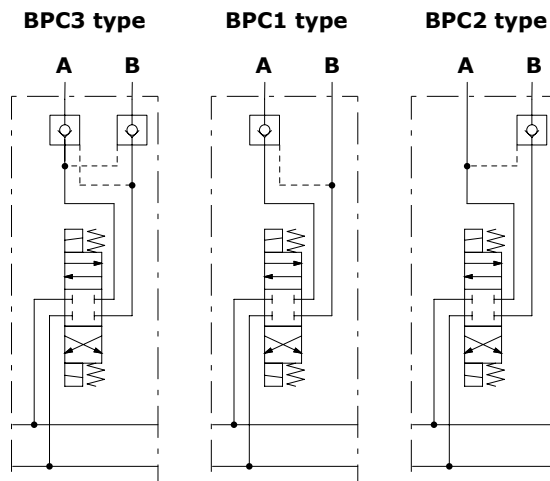


Wrenches and tightening torque

X = wrench 24 - 42 Nm (31 lbft)

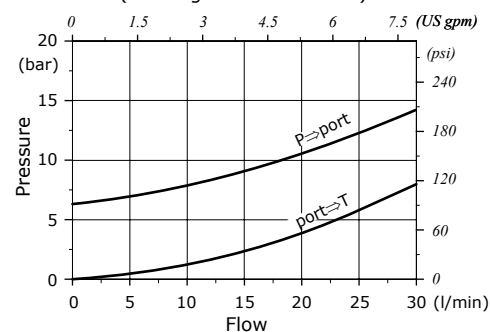
Parts ordering codes

TYPE	CODE	DESCRIPTION
BP	1300020402	Check valve
TBP	XTAP627260	Valve blanking plug
-	3PIS214480	Piston

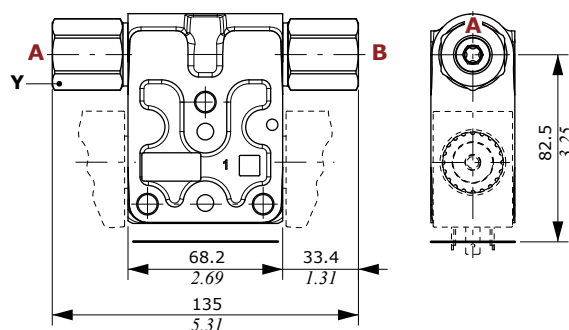


Pressure drop diagram

(working section included)



For sections with side ports



Wrenches and tightening torque

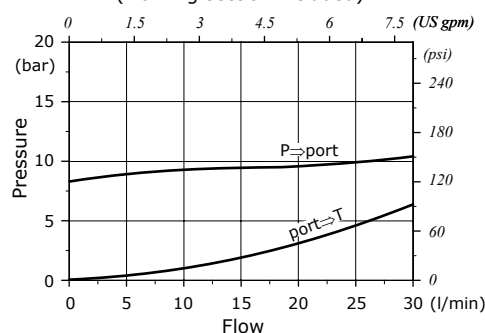
X = wrench 28 - 50 Nm (37 lbft)

Parts ordering codes

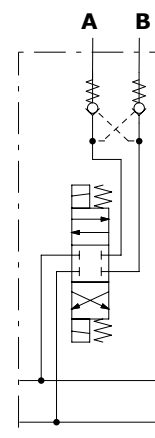
TYPE	CODE	DESCRIPTION
BPA	3XCA0422802	Check valve
-	3PIS3180460	Piston

Pressure drop diagram

(working section included)



BPA3 type



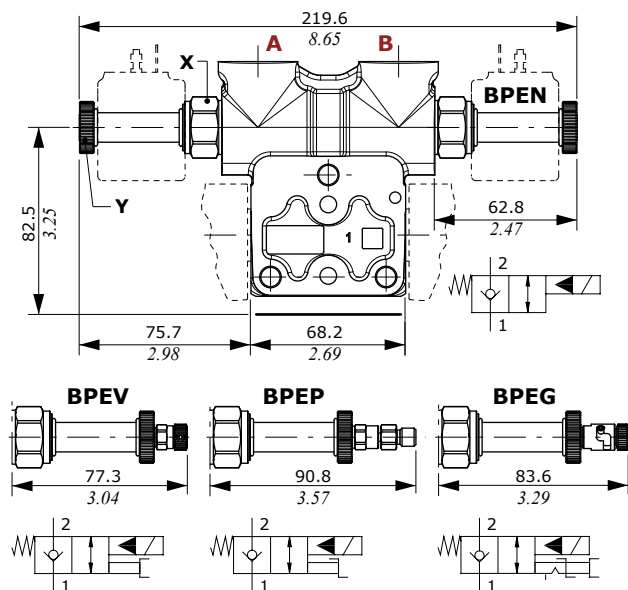
Working section

Solenoid operated check valves

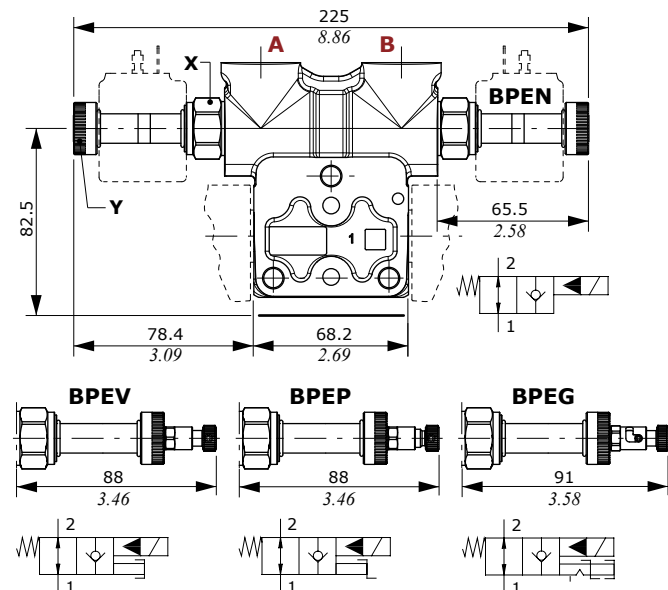
When the section is configured with check valves, the coils on control must be rotated 180°.

For sections with upper ports

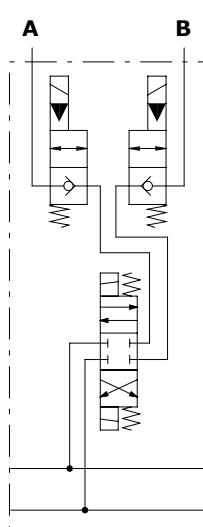
BPE(NC) type: normally closed circuit



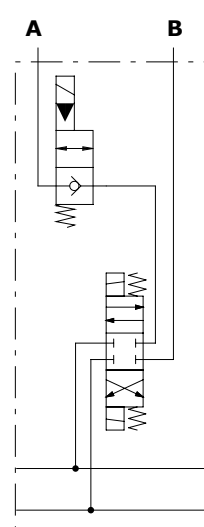
BPE(NA) type: normally open circuit



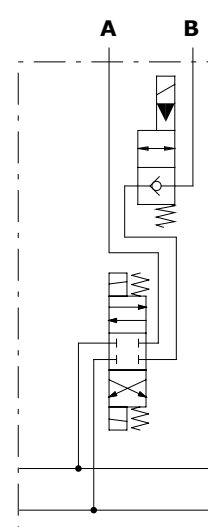
BPEN3(NC) type



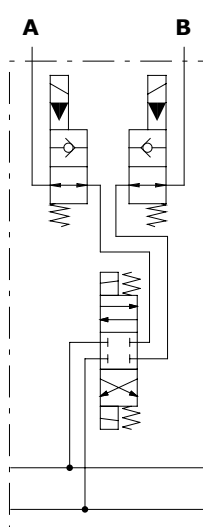
BPEN1(NC) type



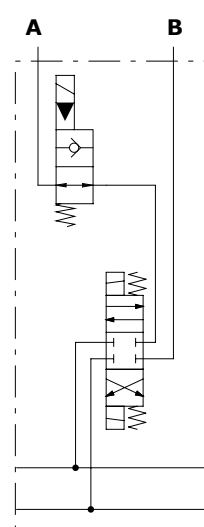
BPEN2(NC) type



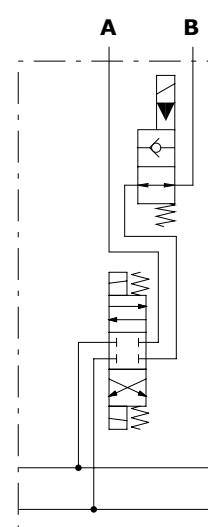
BPEN3(NA) type



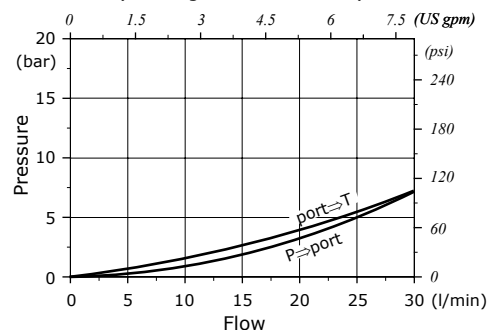
BPEN1(NA) type



BPEN2(NA) type



Pressure drop diagram (working section included)



Wrenches and tightening torque

X = wrench 24 - 30 Nm (22 lbf)

Y = 5 Nm (3.7 lbf)

Legenda

BPEN: without emergency actuation

BPEP: push-button type emergency actuation

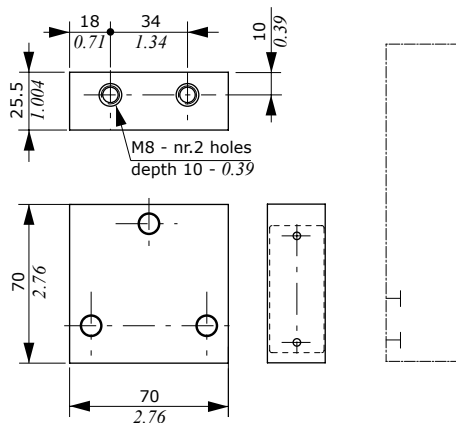
BPEV: screw type emergency actuation

BPET: "push&twist" type emergency actuation

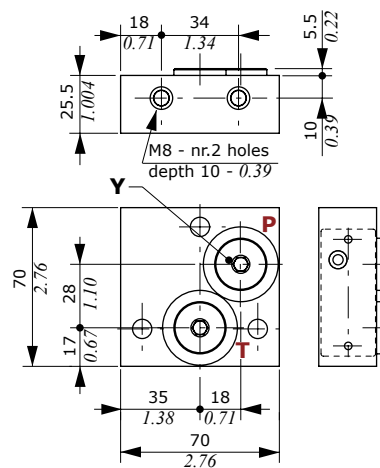
Dimensions and hydraulic circuit

Without port arrangement

RF type



With port arrangement

RS - RP - RT types
drawing shows RS type

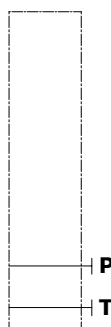
Wrenches and tightening torque

X = allen wrench 8 - 24 Nm (17.7 lbft)

Y = allen wrench 6 - 24 Nm (17.7 lbft)

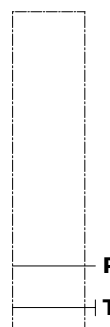
RS type

P and T ports plugged



RP type

P open, T plugged



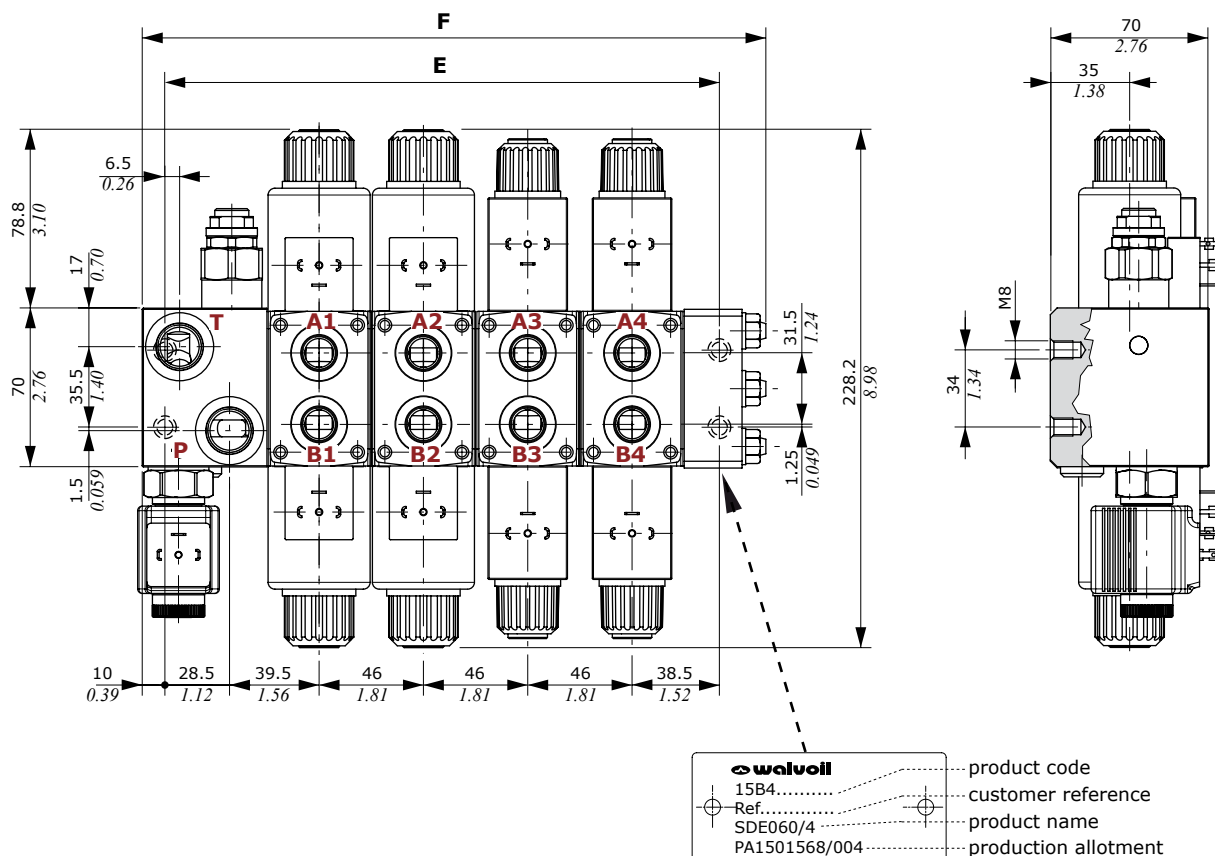
RT type

T open, P plugged



Dimensional data

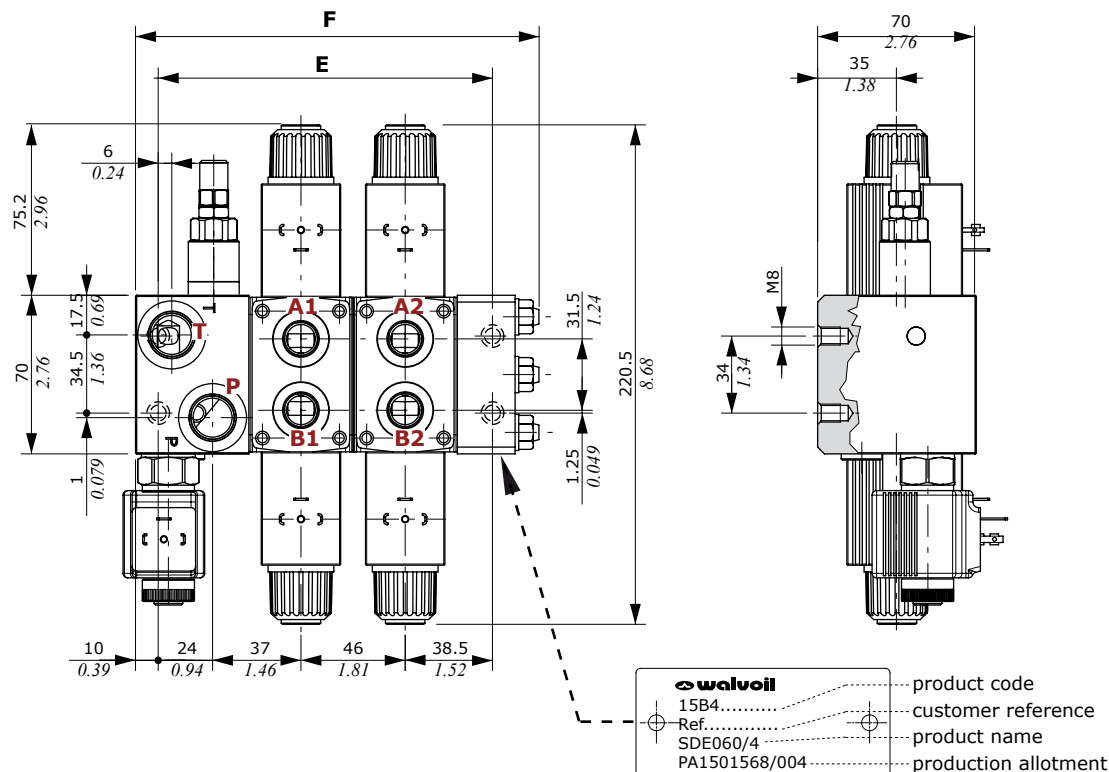
This drawing is referred to directional valve with mixed working sections (2 sections up 60 to l/min-15.8 US gpm and 2 sections up to 30 l/min-7.9 US gpm), and AN1 type inlet section.



TYPE	AN type inlet section				AN1 type inlet section (see drawing)				Weight		AN2 type inlet section			
	E		F		E		F		Kg	lb	E		F	
	mm	in	mm	in	mm	in	mm	in			mm	in	mm	in
SDE060/1	83.5	3.26	116.5	4.59	106.5	4.19	139.5	5.49	5.08	11.20	137	5.12	170	6.69
SDE060/2	129.5	5.10	162.5	6.40	152.5	6.00	185.5	7.30	7.43	16.38	183	7.21	216	8.50
SDE060/3	175.5	6.91	208.5	8.21	198.5	7.82	231.5	9.11	9.78	21.56	229	9.02	262	10.31
SDE060/4	221.5	8.72	254.5	10.02	244.5	9.63	277.5	10.93	12.13	26.74	275	10.83	308	12.13
SDE060/5	267.5	10.53	300.5	11.83	290.5	11.44	323.5	12.74	14.48	31.92	321	12.64	354	13.94
SDE060/6	313.5	12.34	346.5	13.64	336.5	13.26	369.5	14.55	16.83	37.10	367	14.45	400	15.75
SDE060/7	359.5	14.15	392.5	15.45	382.5	15.06	415.5	16.36	19.18	42.28	413	16.26	446	17.56
SDE060/8	405.5	15.96	438.5	17.26	428.5	16.87	461.5	18.17	21.53	47.47	459	18.07	492	19.37
SDE060/9	451.5	17.78	484.5	19.07	474.5	18.68	507.5	19.98	23.88	52.65	505	19.88	538	21.18
SDE060/10	497.5	19.59	530.5	20.89	520.5	20.49	553.5	21.79	26.23	57.83	551	21.69	584	22.99

Dimensional data

This drawing is referred to directional valve with all working sections up to 30 l/min (*up to 7.9 US gpm*), and N1B type inlet section.



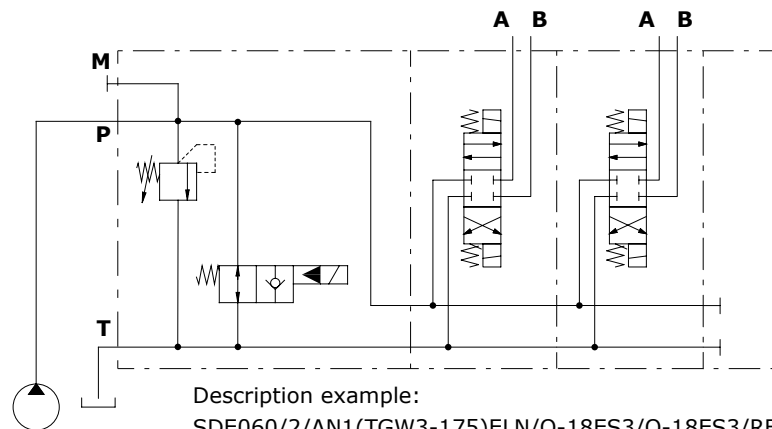
TYPE	ANB type inlet section				AN1B type inlet section (see drawing)				Weight	
	E		F		E		F		Kg	lb
	mm	in	mm	in	mm	in	mm	in		
SDE060/1	83.5	3.26	116.5	4.59	103.5	4.07	136.5	5.37	4.58	10.10
SDE060/2	129.5	5.10	162.5	6.40	149.5	5.89	182.5	7.19	6.61	14.57
SDE060/3	175.5	6.91	208.5	8.21	195.5	7.70	228.5	9.00	8.64	19.05
SDE060/4	221.5	8.72	254.5	10.02	241.5	9.51	274.5	10.81	10.67	23.52
SDE060/5	267.5	10.53	300.5	11.83	287.5	11.32	320.5	12.62	12.70	28.00
SDE060/6	313.5	12.34	346.5	13.64	333.5	13.13	366.5	14.43	14.73	32.47
SDE060/7	359.5	14.15	392.5	15.45	379.5	14.94	412.5	16.24	16.76	36.95
SDE060/8	405.5	15.96	438.5	17.26	425.5	16.75	458.5	18.05	18.79	41.42
SDE060/9	451.5	17.78	484.5	19.07	471.5	18.56	504.5	19.86	20.82	45.90
SDE060/10	497.5	19.59	530.5	20.89	517.5	20.37	550.5	21.67	22.85	50.38

TYPE	AN2B type inlet section				AN6B-AN7B type inlet sections			
	E		F		E		F	
	mm	in	mm	in	mm	in	mm	in
SDE060/1	128	5.04	161	6.34	120.5	4.74	153.5	6.04
SDE060/2	174	6.85	207	8.15	166.5	6.56	199.5	7.85
SDE060/3	220	8.66	253	9.96	212.5	8.37	245.5	9.67
SDE060/4	266	10.47	299	11.77	258.5	10.18	291.5	11.48
SDE060/5	312	12.28	345	13.58	304.5	11.99	337.5	13.29
SDE060/6	358	14.09	391	15.39	350.5	13.80	383.5	15.10
SDE060/7	404	15.91	437	17.20	396.5	15.61	429.5	16.91
SDE060/8	450	17.72	483	19.02	442.5	17.42	475.5	18.72
SDE060/9	496	19.53	529	20.83	488.5	19.23	521.5	20.53
SDE060/10	542	21.34	575	22.64	534.5	21.04	567.5	22.34

Parallel circuit

A parallel circuit can be composed using P or Q working sections.

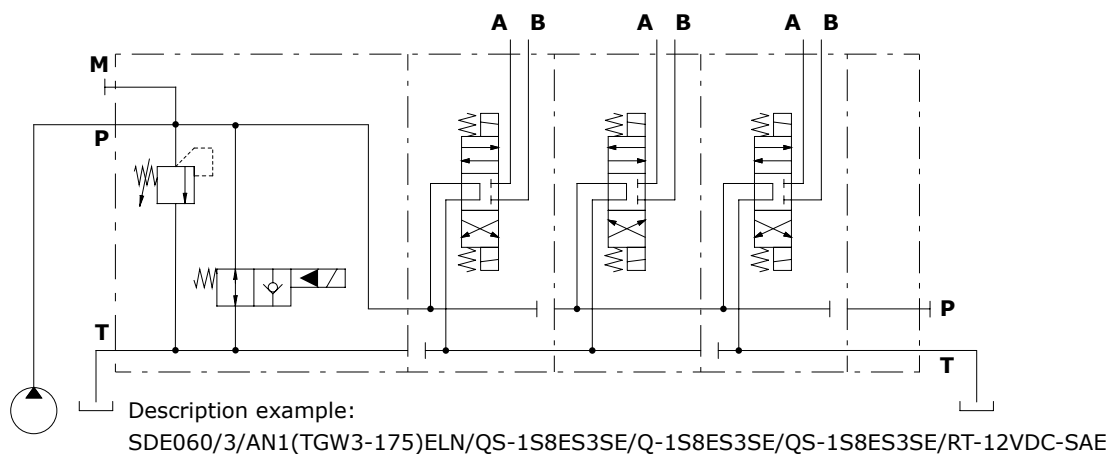
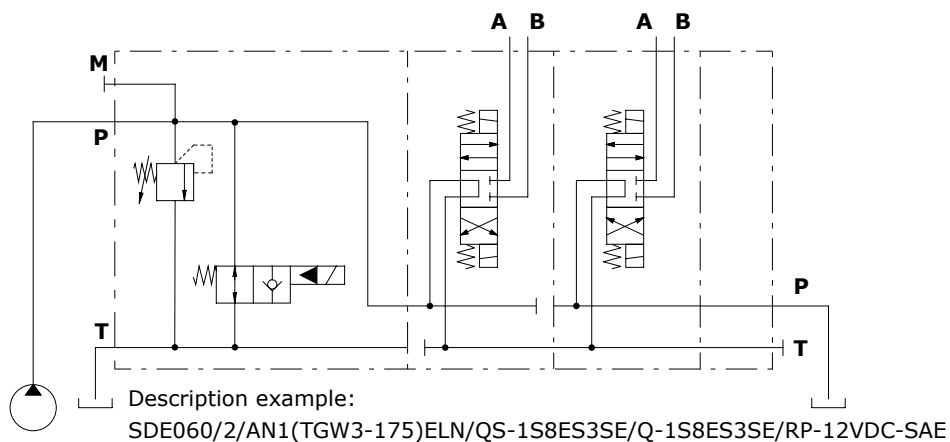
The outlet section can be with or without port arrangement.

**Series circuit: only for 60 l/min (15.8 US gpm) sections**

The series circuit is composed using alternately QS and Q working sections, both with 1S series spool.

The circuit starts always with QS working section.

The outlet section depends on total number of working sections: if it is even, the outlet section must have P port open, if it is odd, the outlet section must have T port open.



Complete section ordering codes

SDE060/4/AN1(TGW3-120)ELN/Q-18ES3/Q-18ES3.BPEN3/Q-18ES3B/

Nr. of working sections

1

2

2

4

2

Q-18ES3B.PS3(DC3-100)/RF-SAE-12VDC

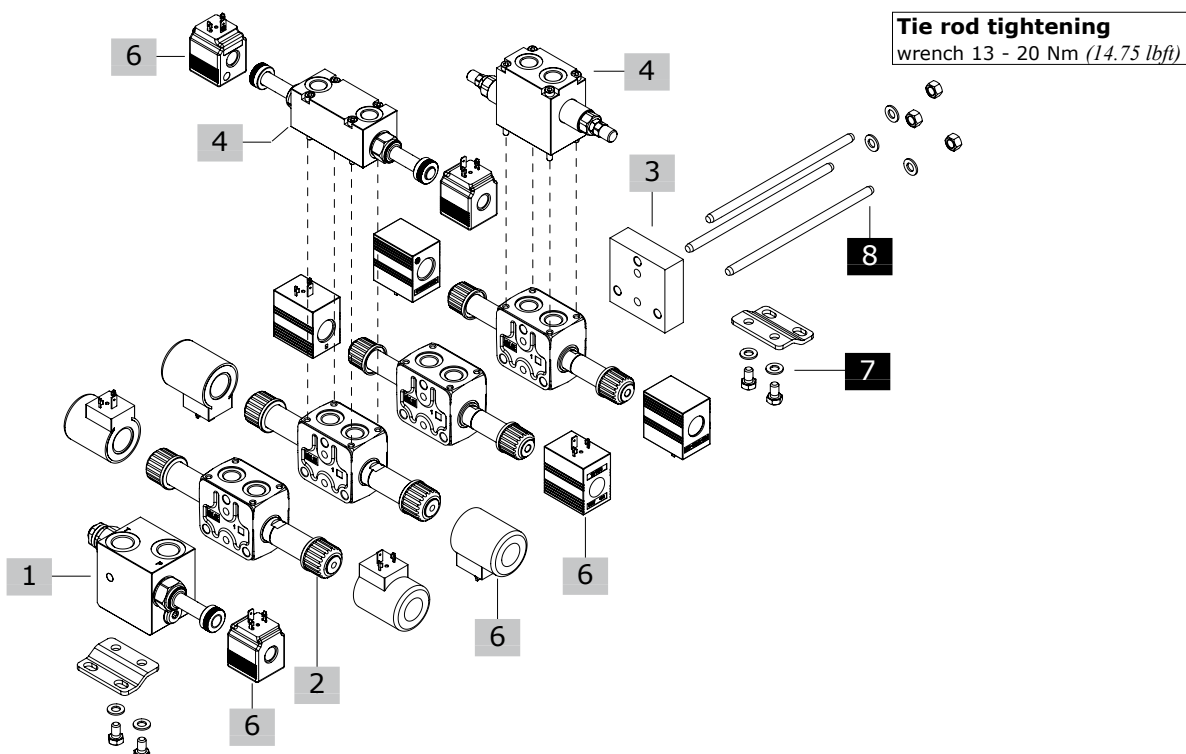
2

4

3

5

6



SDE060/2/AN1B(JNS3-120)ELN/Q-18ES3B/Q-18ES3B.PS3(DC3-100)/RF-SAE-12VDC

Nr. of working sections

1

2

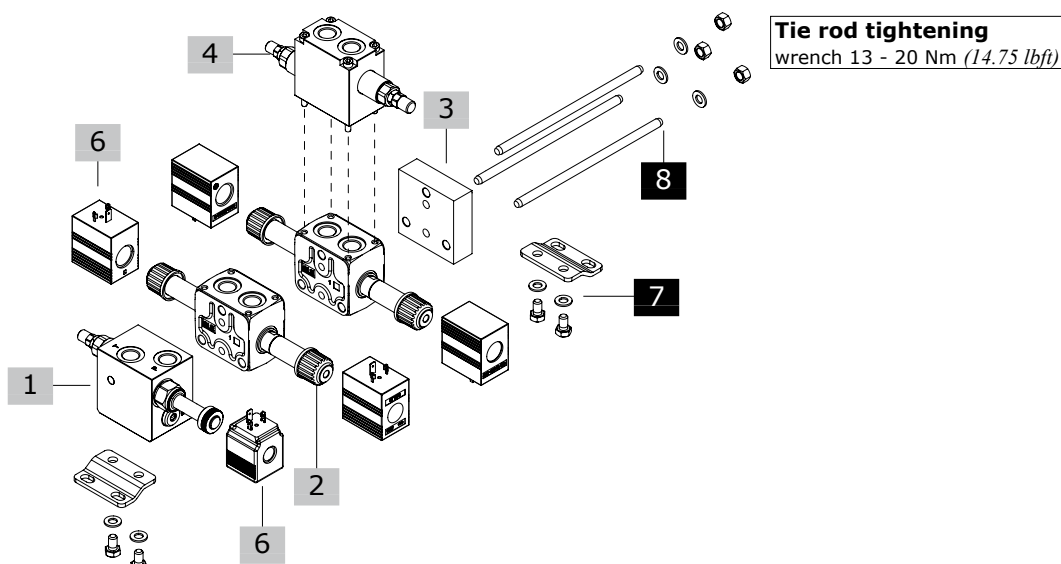
2

4

3

5

6



Complete section ordering codes

1 Complete inlet section * **page 34**

Section bodies are steel made

TYPE: **AN-SAE** CODE: 5FIA103706
 DESCRIPTION: Without valves arrangement, SAE8 ports, P and T open

TYPE: **ANP-SAE** CODE: 5FIA103702
 DESCRIPTION: As type AN, port P open and T plugged

TYPE: **ANT-SAE** CODE: 5FIA103702
 DESCRIPTION: As type AN, port P plugged and T open

TYPE: **ANS-SAE** CODE: 5FIA103705
 DESCRIPTION: As type AN, ports P and T plugged

TYPE: **AN1(TGW3-175)ELN-WC-SAE** CODE: Y61S607000
 DESCRIPTION: With pressure relief valve and solenoid operated unloading valve, SAE8 ports, P and T open

TYPE: **AN1P(TGW3-175)ELN-WC-SAE** CODE: Y61S607003
 DESCRIPTION: As type AN1 port P open and T plugged

TYPE: **AN2/PPXN1(TGW3-175)ELN-WC-SAE** CODE: Y61S607001
 DESCRIPTION: With pressure relief valve, solenoid operated unloading valve and pressure compensated flow control valve, SAE8 ports, P and T open

TYPE: **AN2P/PPXN1(TGW3-175)ELN-WC-SAE** CODE: Y61S607006
 DESCRIPTION: As type AN2, port P open and T plugged

TYPE: **AN6/EEXL1(VMP02TR-220)-SB7RC(C5)-WC-SAE** CODE: Y61S607010
 DESCRIPTION: With pressure relief valve and flow control valve, for Open Center circuit, compensator with 7 bar (100 psi) stand-by, SAE8 ports, P and T open

TYPE: **AN7/EEFN1(VMP02TR-200)-SB7RCV(C5)-WC-SAE** CODE: Y61S607011
 DESCRIPTION: As AN6, compensator with handwheel actuation for Open to Closed Center switching, SAE8 ports P and T open

TYPE: **AN11-EEFN1(VMP02TR-200)-CL-WC-SAE** CODE: Y61S607008
 DESCRIPTION: As AN6, for Closed Center circuit, compensator blanking plug, SAE8 ports P and T open

TYPE: **AN1B(JNS3-120)ELN-WC-SAE** CODE: Y61S307000
 DESCRIPTION: As AN1 type, SAE8 ports, up to 30 l/min (7.9 US gpm)

TYPE: **AN1PB(JNS3-120)ELN-WC-SAE** CODE: Y61S307002
 DESCRIPTION: As AN1P type, SAE8 ports, up to 30 l/min (7.9 US gpm)

TYPE: **AN2B/PPXN1(JNS3-120)ELN-WC-SAE** CODE: Y61S307001
 DESCRIPTION: As AN2 type, SAE8 ports, up to 30 l/min (7.9 US gpm)

TYPE: **AN2PB/PPXN1(JNS3-120)ELN-WC-SAE** CODE: Y61S307005
 DESCRIPTION: As AN2P type, SAE8 ports, up to 30 l/min (7.9 US gpm)

TYPE: **AN6B/EEXL1(VMP02TR-220)-SB10RC(C3)-WC-SAE** CODE: Y61S307006
 DESCRIPTION: As AN6 type, compensator with 10 bar (145 psi) stand-by, up to 30 l/min (7.9 US gpm)

TYPE: **AN7B/EEFN1(VMP02TR-200)-SB10RCV(C3)-WC-SAE** CODE: Y61S307007
 DESCRIPTION: As AN6B, compensator with handwheel actuation for Open to Closed Center switching, SAE8 ports P and T open, up to 30 l/min (7.9 US gpm)

TYPE: **AN11B-EEFN1(VMP02TR-200)-CL-WC-SAE** CODE: Y61S307008
 DESCRIPTION: As AN6B, for Closed Center circuit, compensator blanking plug, SAE8 ports P and T open, up to 30 l/min (7.9 US gpm)

2 Complete working section * **page 48**

Section bodies are cast iron made

Sections are arranged for flangeable valve blocks

TYPE	CODE	DESCRIPTION
Q-18ES3-WC-SAE	Y63S607001C	Parallel circuit, SAE6 ports, type 1 double acting spool
Q-28ES3-WC-SAE	Y63S607002C	Parallel circuit, SAE6 ports, type 2 double acting spool
QS-1S8ES3SE-WC-SAE	Y63S607003C	Series circuit, SAE6 ports, type 1S double acting series spool
Q-1S8ES3SE-WC-SAE	Y63S607005C	Parallel circuit, SAE6 ports, type 1S double acting series spool: placed after QS series section only
Q-18ES3B-WC-SAE	Y63S307001C	As previous, one up to 30 l/min (7.9 US gpm)
Q-28ES3B-WC-SAE	Y63S307002C	As previous, one up to 30 l/min (7.9 US gpm)

3 Complete outlet section* **page 61**

Unless otherwise stated, outlet section bodies are steel made.

TYPE	CODE	DESCRIPTION
RF	3FIA203000	Without ports, aluminium alloy body, up to 30 l/min (7.9 US gpm) and 60 l/min (15.8 US gpm)
RS-SAE	619305200	With SAE8 ports, P and T plugged
RP-SAE	619305100	With SAE8 ports, P open and T plugged
RT-SAE	619305000	With SAE8 ports, T open and P plugged

4 Complete flangeable valve block

Antishock valvespage 55

Check valvespage 56

Solenoid operated check valves (without coils)page 57

Single counterbalance valvespage 59

Double counterbalance valvespage 59

5 Valve threading

Specify threading always when it is different from BSP standard (see page 4).

6 Coils **page 62**

Coils voltage specification; for list of available coils see pages of related sections

7 Fixing bracket **page 65**

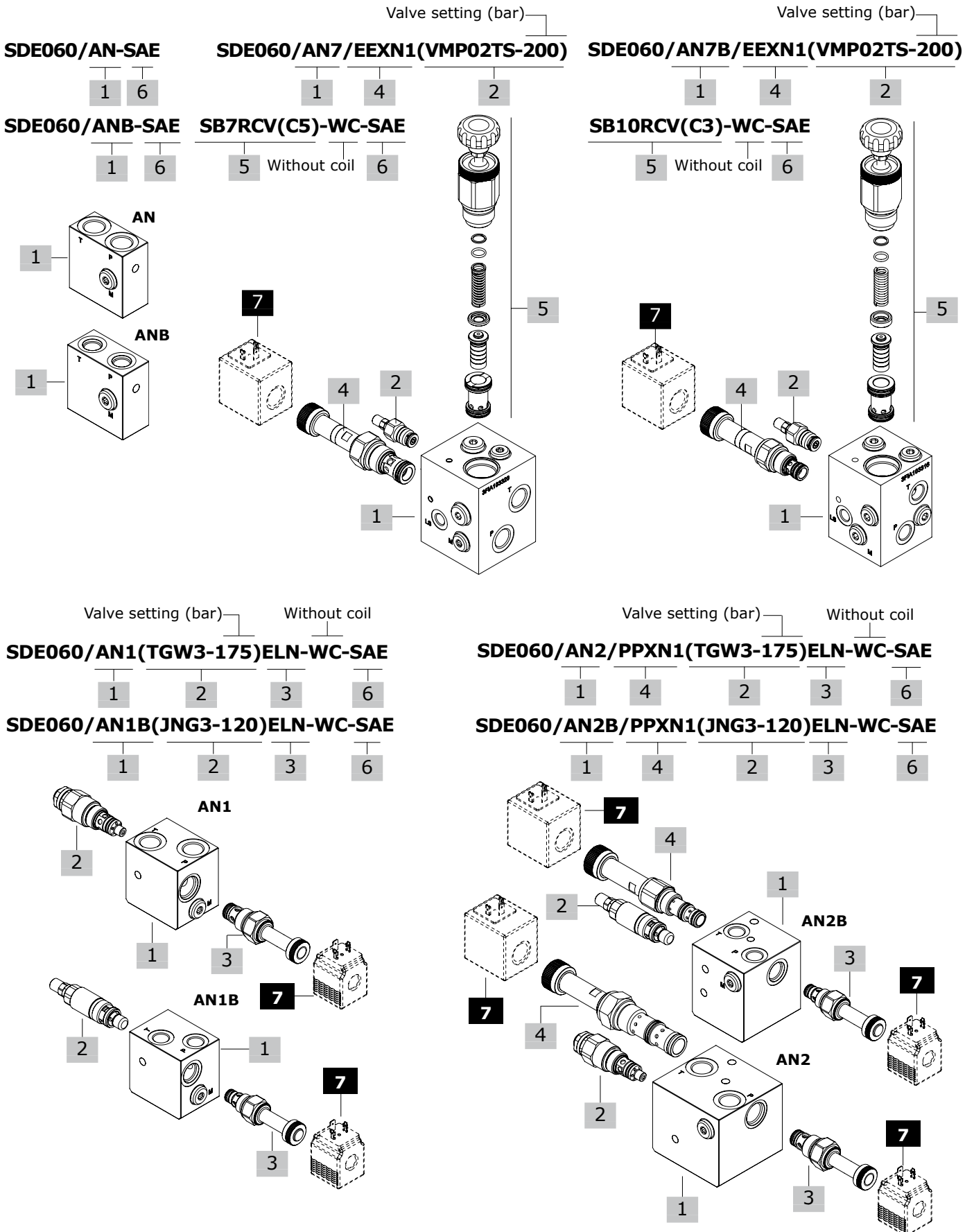
TYPE	CODE	DESCRIPTION
STAF	5STA148065	Brackets with fixing screws

8 Assembling kit

CODE	DESCRIPTION	CODE	DESCRIPTION
5TIR108099	For 1 section valve	5TIR108329	For 6 sections valve
5TIR108144	For 2 sections valve	5TIR108375	For 7 sections valve
5TIR108191	For 3 sections valve	5TIR108420	For 8 sections valve
5TIR108236	For 4 sections valve	5TIR108466	For 9 sections valve
5TIR108282	For 5 sections valve	5TIR108512	For 10 sections valve

NOTE (*) – Codes are referred to **UN-UNF** thread.

Inlet section: part ordering codes



Inlet section: part ordering codes

1 Inlet section body kit * page 36

Section bodies are steel made

TYPE	CODE	DESCRIPTION
AN-SAE	5FIA103706	Without valves arrangement, SAE8 ports, P and T open
ANP-SAE	5FIA103702	As AN, port P open and T plugged
ANT-SAE	5FIA103702	As AN, port P plugged and T open
ANS-SAE	5FIA103705	As AN, ports P and T plugged
AN1-SAE	5FIA103703	Relief and unloader valves arrangement, SAE8 ports, P and T open
AN1P-SAE	5FIA103709	As previous one, port P open and T plugged
AN2-SAE	5FIA103704	Relief, unloader and flow control valves arrangement, SAE8 ports, P and T open
AN2P-SAE	5FIA103710	As previous one, port P open and T plugged
AN6-SAE	5FIA103720	For Open Center, relief and flow control valves arrangement, compensator, LS port plugged, SAE8 ports, P and T open
AN7/AN11-SAE	5FIA103720A	As AN6, for Closed Center, with LS port open
AN1B-SAE	5FIA103700	As AN1, up to 30 l/min (7.9 US gpm)
AN1PB-SAE	5FIA103707	As AN1P, up to 30 l/min (7.9 US gpm)
AN2B-SAE	5FIA103701	As AN2, up to 30 l/min (7.9 US gpm)
AN2PB-SAE	5FIA103708	As AN2P, up to 30 l/min (7.9 US gpm)
AN6B-SAE	5FIA103716	For Open Center, relief and flow control valves arrangement, compensator, LS port plugged, SAE8 ports, P and T open, up to 30 l/min (7.9 US gpm)
AN7B/AN11B-SAE	5FIA103717	As AN6B, for Closed Center, with LS port open, up to 30 l/min (7.9 US gpm)

2 Main relief valve page 41

TYPE	CODE	DESCRIPTION
For sections AN1-AN2 type		
Valve standard setting is referred to 5 l/min (1.3 US gpm) flow.		
(TGW2-80)	OMC10002023	Range 10-120 bar (145-1750 psi) std setting 80 bar (1160 psi)
(TGW3-175)	OMC10002024	Range 40-200 bar (580-2900 psi) std setting 175 bar (2550 psi)
(TGW4-250)	OMC10002025	Range 200-350 bar (2900-5100 psi) std setting 250 bar (3600 psi)
SV	XTAP526360	Relief valve blanking plug
For sections AN1B-AN2B type		
Valve standard setting is referred to 10 l/min (2.6 US gpm) flow, considering the valve mounted on inlet section.		
(JNS2-63)	5KIT105570	Range 40-63 bar (580-900 psi) std setting 63 bar (900 psi)
(JNS3-120)	5KIT105571	Range 50-200 bar (725-2900 psi) std setting 120 bar (1750 psi)
(JNS4-220)	5KIT105572	Range 160-315 bar (2300-4600 psi) std setting 220 bar (3200 psi)
(JNH2-63)	5KIT105517	As type JNS2, set and locked
(JNH3-120)	5KIT105516	As type JNS3, set and locked
(JNH4-220)	5KIT105515	As type JNS4, set and locked
(JNZT2-63)	5KIT105562	As type JNS2, anti-tampering type
(JNZT3-120)	5KIT105563	As type JNS3, anti-tampering type
(JNZT4-220)	5KIT105564	As type JNS4, anti-tampering type
SV	XTAP623282	Relief valve blanking plug
For sections AN6-AN7-AN6B-AN7B-AN11-AN11B type		
Valve standard setting is referred to 1 l/min (0.26 US gpm) flow, considering the valve mounted on inlet section.		
(VMP02TV-50)	1100000120	Range 5-80 bar (73-1160 psi) std setting 50 bar (725 psi)
(VMP02TS-150)	1100000113	Range 50-220 bar (725-3200 psi) std setting 150 bar (2200 psi)
(VMP02TR-250)	1100000119	Range 180-350 bar (2600-5100 psi) std setting 250 bar (3600 psi)

3 Solenoid operated unloading valve page 43

TYPE	CODE	DESCRIPTION
For sections AN1-AN2 type		
ELN	0EC10002012	Without emergency override
ELV	0EC10002015	With screw type emergency override
ELP	0EC10002014	With push-button emergency override
ELT	0EC10002016	With "twist & push" emergency override
LT	XTAP327460	Unloading valve blanking plug
For sections AN1B-AN2B type		
ELN	0EC08002031	Without emergency actuation
ELV	0EC08002034	With screw type emergency actuation
ELP	0EC08002033	With push-button emergency actuation
ELT	0EC08002035	With "twist & push" emergency actuation
LT	XTAP510320	Unloading valve blanking plug

4 Flow control valve page 44

TYPE	CODE	DESCRIPTION
For sections AN1-AN2 type		
PPAL1	OPP12002000	Hand-wheel setting type
PPAV1	OPP12002004	Screw setting type
PPXN1	OPP12002037	Solenoid operated, without emergency
PPXV1	OPP12002039	Solenoid operated, screw emergency
PPXL1	OPP12002041	Solenoid operated, hand-wheel emergency
LT	3XTP3558200	Flow control valve blanking plug
For sections AN1B-AN2B type		
PPAL1	OPP10002000	Hand-wheel setting type
PPAV1	OPP10002005	Screw setting type
PPXN1	OPP10002031	Solenoid operated, without emergency
PPXV1	OPP10002033	Solenoid operated, screw emergency
PPXL1	OPP10002035	Solenoid operated, hand-wheel emergency
LT	3XTP3545700	Flow control valve blanking plug
For sections AN6-AN7-AN11 type		
EEXN1	0EE12002007	Solenoid operated, without emergency
EEXL1	0EE12002009	Solenoid operated, hand-wheel emergency
For sections AN6B-AN7B-AN11B type		
EEXN1	0EE10002009	Solenoid operated, without emergency
EEXL1	0EE10002008	Solenoid operated, hand-wheel emergency

5 Compensator kit page 46

TYPE	CODE	DESCRIPTION
For section type AN6		
SB7RC(C5)	5KT6200230	With 7 bar (100 psi) stand-by, for Open Center circuit
For section type AN7		
SB7RCV(C5)	5KT6200231	With 7 bar (100 psi) stand-by, hand-wheel actuation for Open Center to Closed Center switching
For section type AN6B		
SB10RC(C3)	5KT6200222	With 10 bar (145 psi) stand-by, for Open Center circuit
For section type AN7B		
SB10RCV(C3)	5KT6200227	With 10 bar (145 psi) stand-by, hand-wheel actuation for Open Center to Closed Center switching
For section type AN11-AN11B		
CL	X451810000	Compensator blanking plug, for Closed Center circuit

6 Section threading

Specify threading always when it is different from BSP standard (see page 4).

7 Optional coil page 62

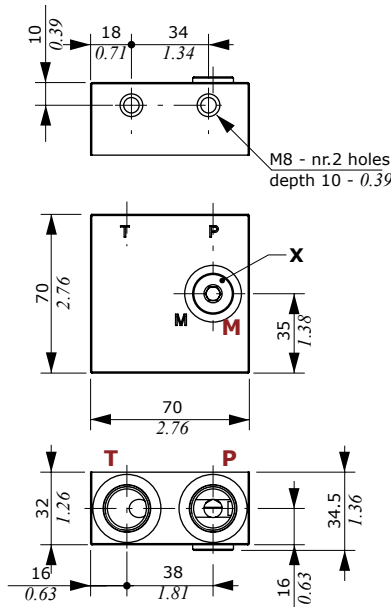
For list of available coils see pages of related section.

NOTE (*) – Codes are referred to **UN-UNF** thread.

Inlet section: dimension and hydraulic circuit

AN inlet section

AN type
with P and T ports open

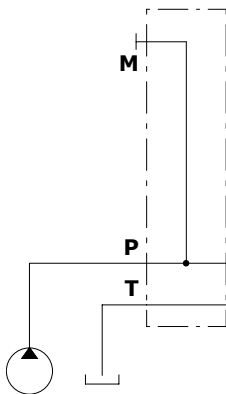


Wrenches and tightening torque

X = allen wrench 6 - 24 Nm (17.7 lbf_t)

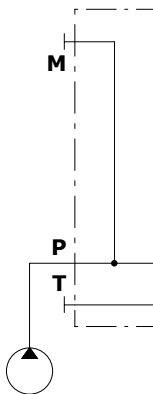
AN-ANB type

P and T ports open



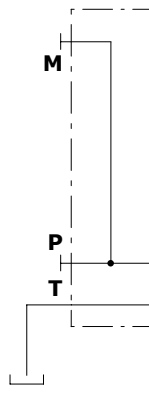
ANP-ANPB type

P port open and T port plugged



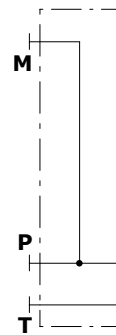
ANT-ANTB type

P port plugged and T port open



ANS-ANSB type

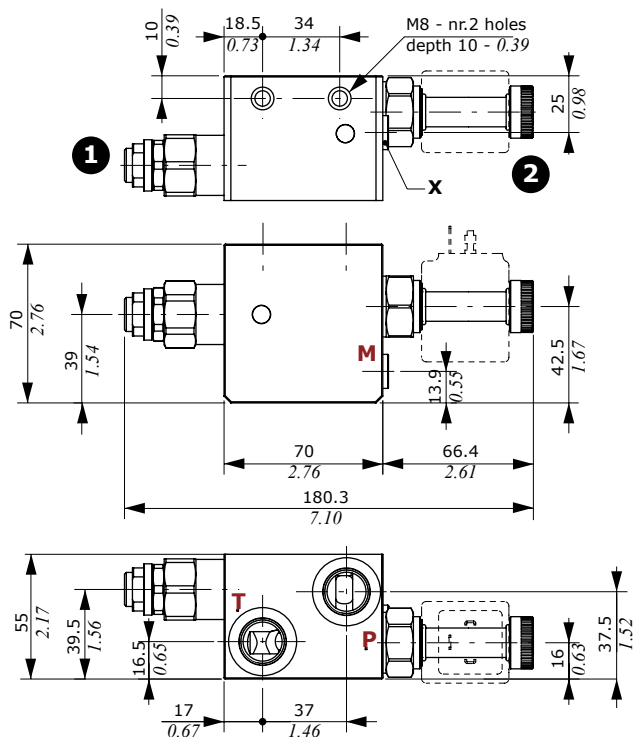
P and T ports plugged



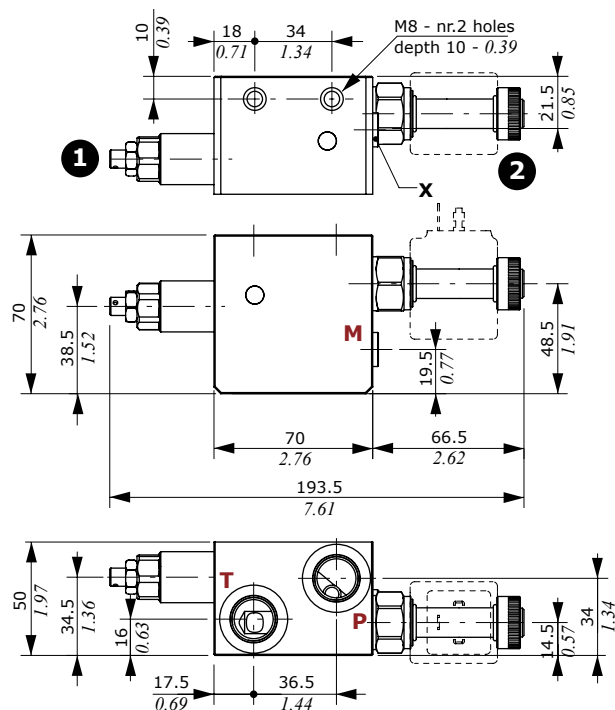
Inlet section: dimension and hydraulic circuit

AN1-AN1B inlet sections

AN1 type with P and T ports open



AN1B type with P and T ports open



Legenda

- 1: Pressure relief valve
- 2: Solenoid operated unloading valve

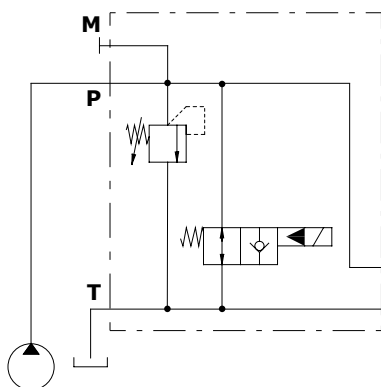
Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm (7.2 lbf)

NOTE: for valve wrench and torque see pages 41 and 43.

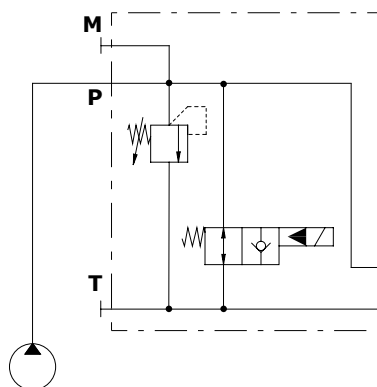
AN1-AN1B types

P and T ports open



AN1P-AN1PB types

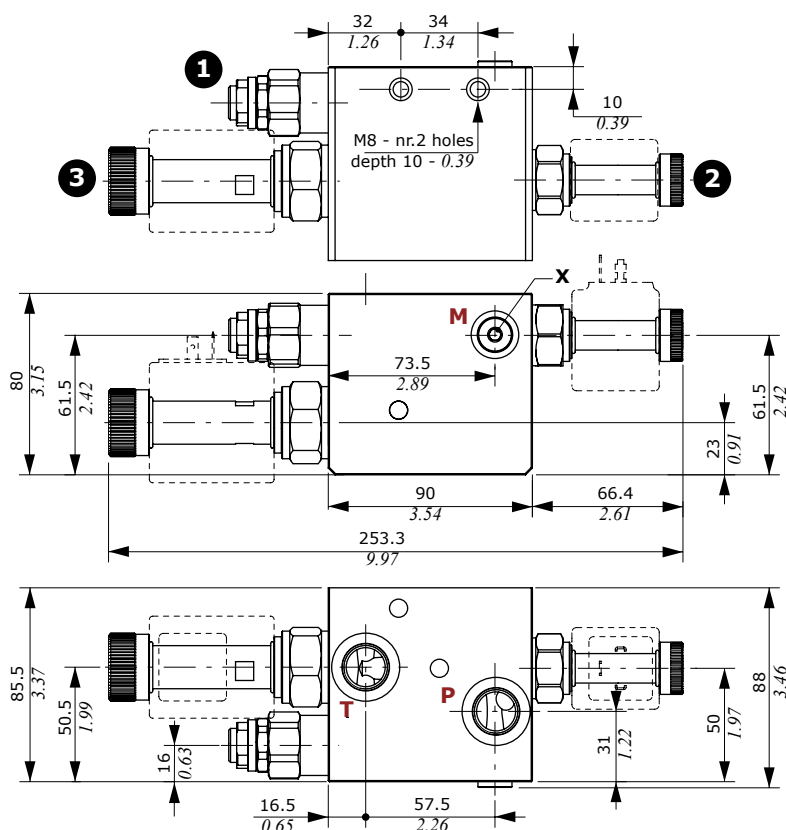
P port open and T port plugged



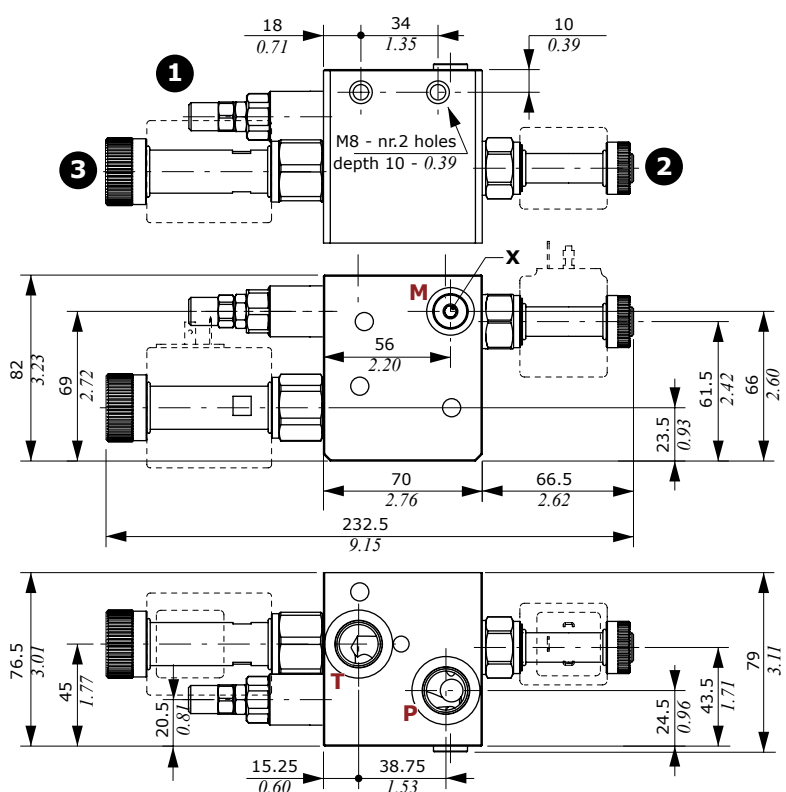
Inlet section: dimension and hydraulic circuit

AN2-AN2B inlet sections

AN2 type with P and T ports open



AN2B type with P and T ports open



Legenda

- 1: Pressure relief valve
- 2: Solenoid operated unloading valve
- 3: Pressure compensated flow control valve

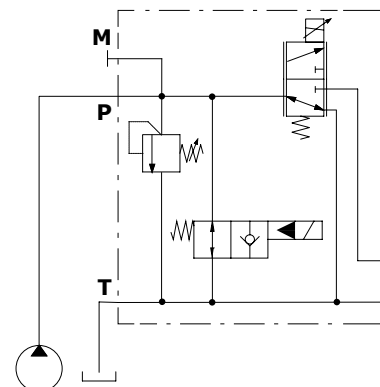
Wrenches and tightening torque

X = allen wrench 5 - 9.8 Nm (7.2 lbf)

NOTE: for valve wrench and torque see pages from 41 to 47.

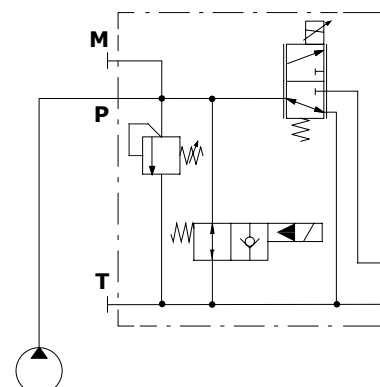
AN2-AN2B types

P and T ports open



AN2P-AN2PB types

P port open and T port plugged



Inlet section: dimension and hydraulic circuit

AN6-AN7-AN11 inlet sections

AN7 type; configuration for Open and Closed Center

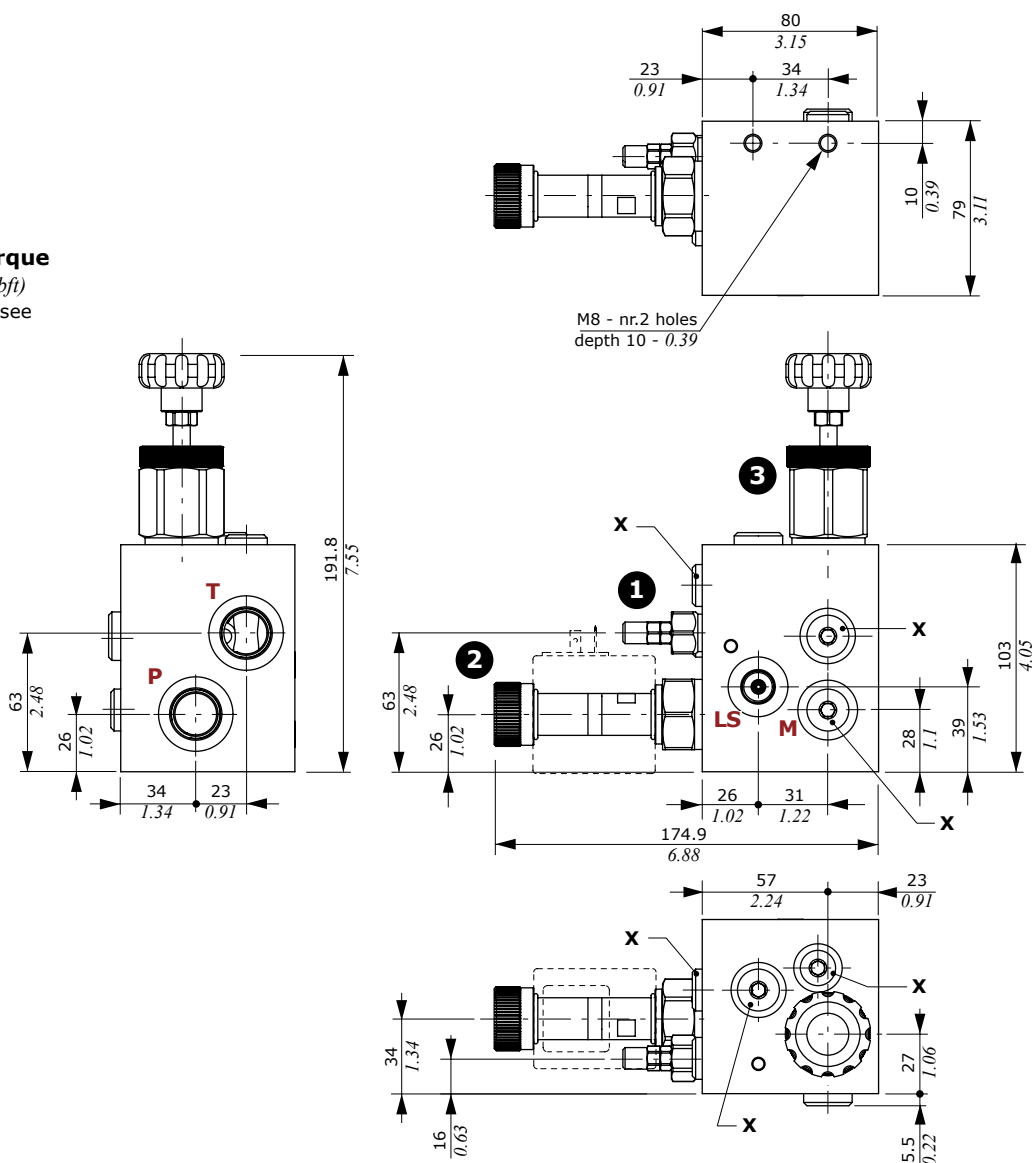
Legenda

- 1: Pressure relief valve
- 2: Flow control valve
- 3: Excludable compensator

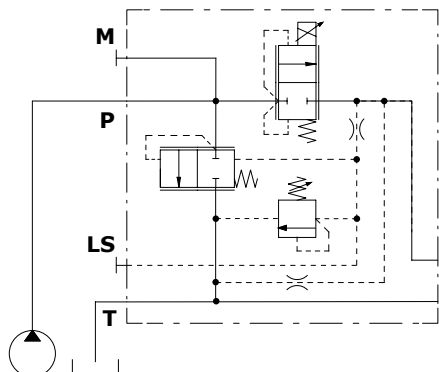
Wrenches and tightening torque

X = allen wrench 6 - 24 Nm (17.7 lbf·ft)

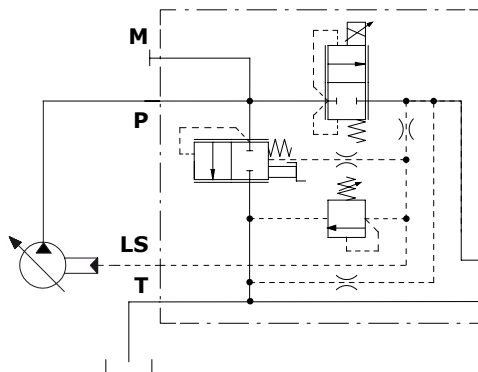
NOTE: for valve wrench and torque see pages 42 and 46.



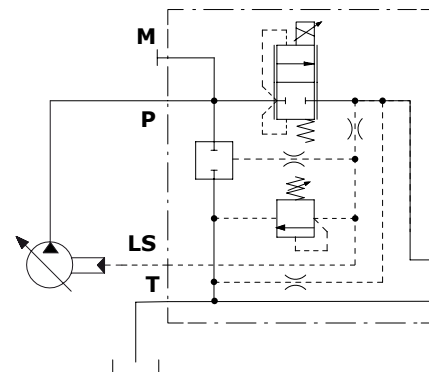
AN6 type
for Open Center circuit



AN7 type
for Closed and Open Center circuits



AN11 type
for Closed Center circuit



Inlet section: dimension and hydraulic circuit

AN6B-AN7B-AN11B inlet sections

AN7B type; configuration for Open and Closed Center

Legenda

- 1: Pressure relief valve
- 2: Flow control valve
- 3: Excludable compensator

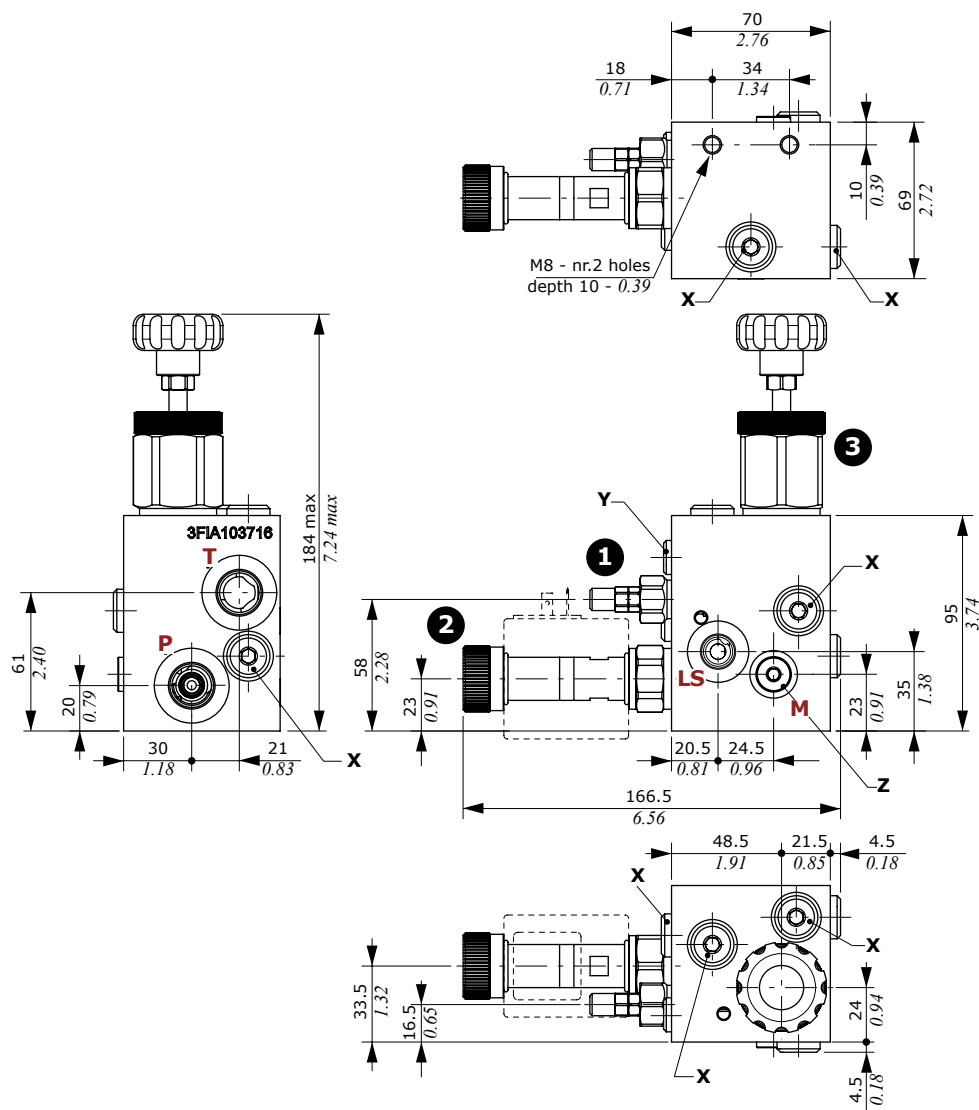
Wrenches and tightening torque

X = allen wrench 6 - 24 Nm (17.7 lbf)

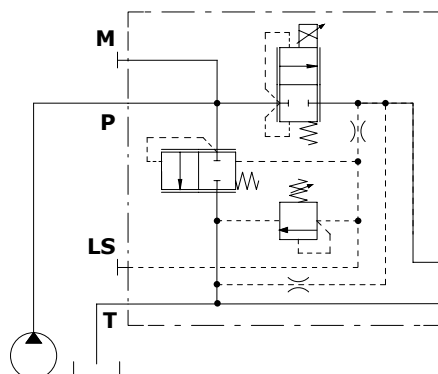
Y = allen wrench 4 - 9.8 Nm (7.2 lbf)

Z = allen wrench 5 - 9.8 Nm (7.2 lbf)

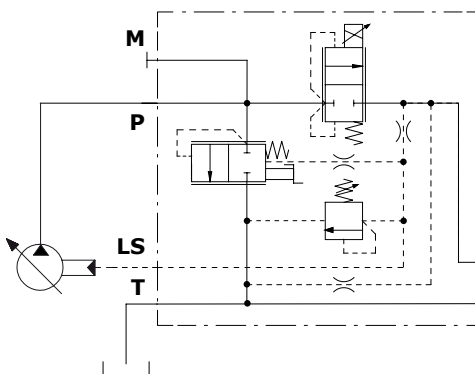
NOTE: for valve wrench and torque see pages 42 and 47.



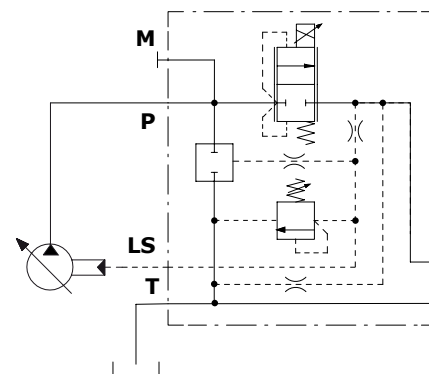
AN6B type
for Open Center circuit



AN7B type
for Closed and Open Center circuits



AN11B type
for Closed Center circuit

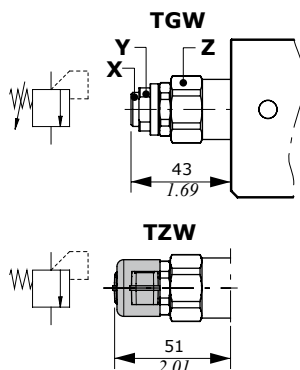


Inlet section: options

Main relief valve

For sections AN1 and AN2 type

Setting types



Legenda

TGW: screw setting type

TZW: with anti-tampering cap

(cap code 4COP126300, nr. 2 pcs)

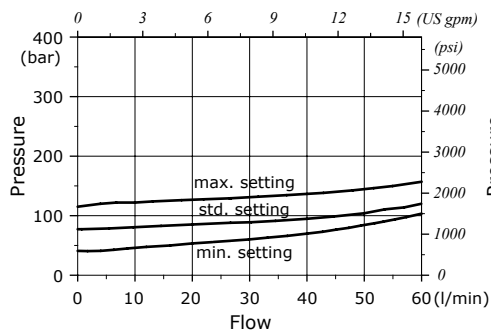
Wrenches and tightening torque

X = allen wrench 5

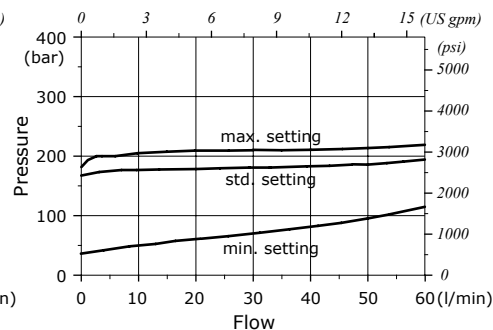
Y = wrench 19 - 20 Nm (14.8 lbft)

Z = wrench 27 - 50 Nm (37 lbft)

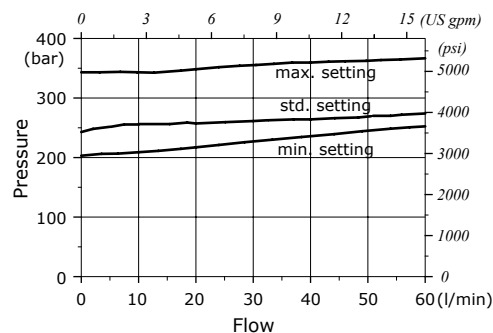
Setting range: TGW2 type



Setting range: TGW3 type

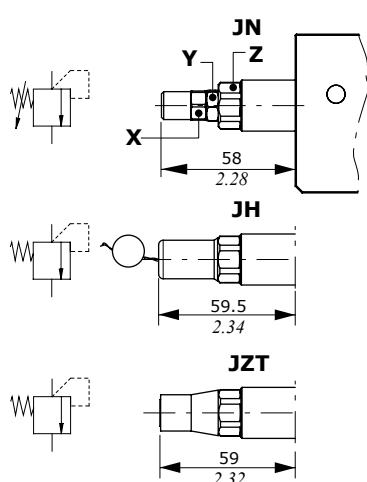


Setting range: TGW4 type

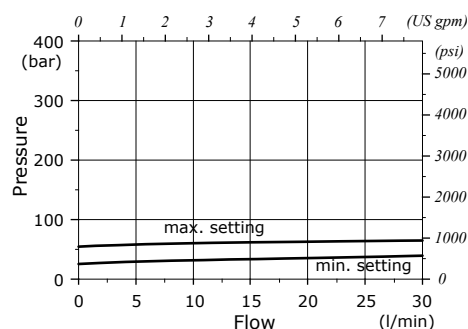


For sections AN1B and AN2B type

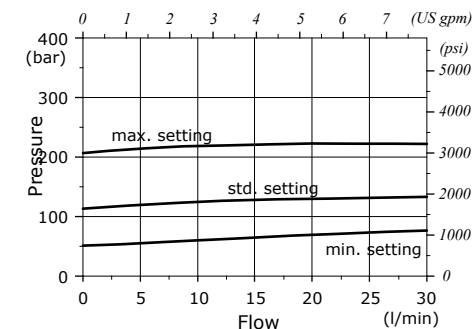
Setting types



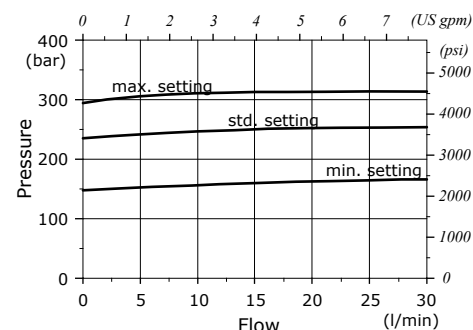
Setting range: JNS2 type



Setting range: JNS3 type



Setting range: JNS4 type



Legenda

JN: Adjustment locking nut

(nut code 3COP117260)

JH: valve set and locked

(cap code 3COP117260)

JZT: valve set and locked

(cap code 4COP120420)

Wrenches and tightening torque

X = wrench 13 - 6.6 Nm (4.9 lbft)

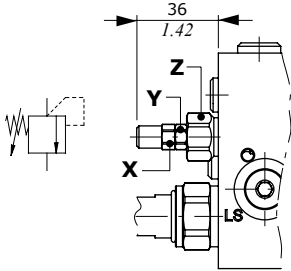
Y = wrench 13 - 24 Nm (17.7 lbft)

Z = wrench 19 - 24 Nm (17.7 lbft)

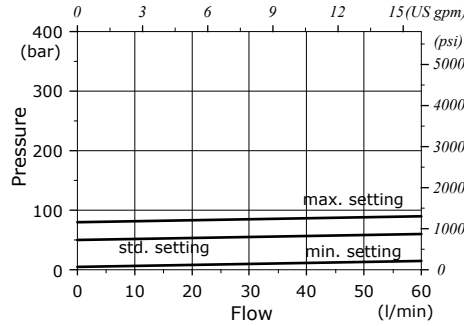
Inlet section: options

Main relief valve

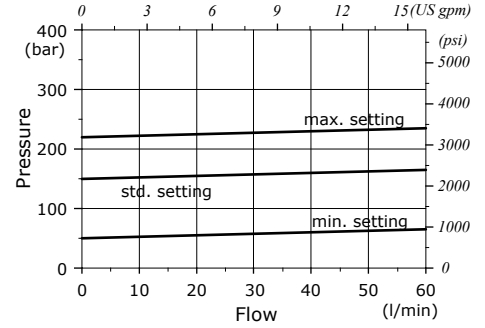
For sections AN6 - AN7 - AN11 - AN6B - AN7B and AN11B type



Setting range: VMP02TV type



Setting range: VMP02TS type



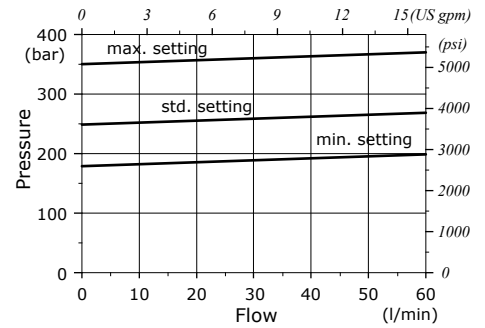
Wrenches and tightening torque

X = wrench 10

Y = wrench 10 - 6.6 Nm (4.9 lbf·ft)

Z = wrench 19 - 24 Nm (17.7 lbf·ft)

Setting range: VMP02TR type

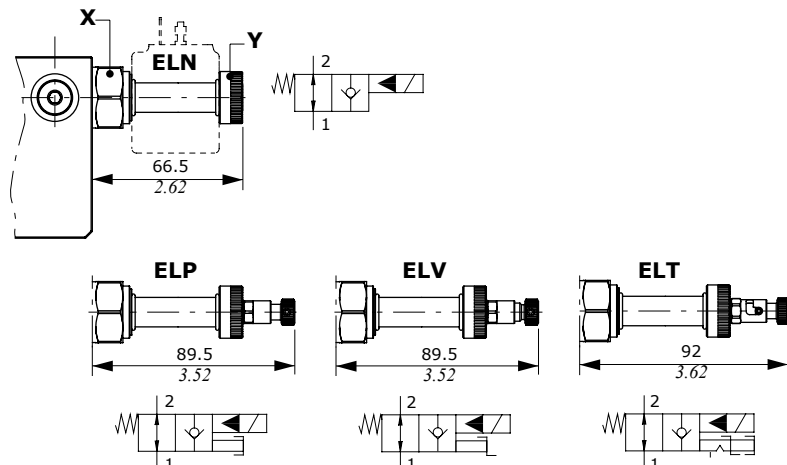


Inlet section: options

Unloading valve

For sections AN1 and AN2 type

Emergency actuation types



Legenda

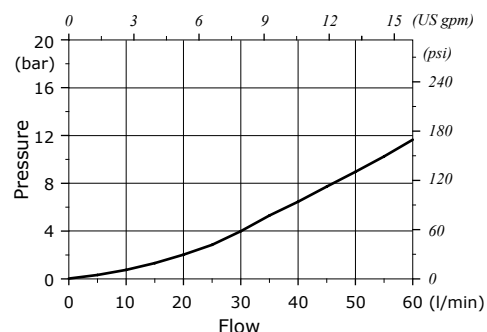
ELN: without emergency actuation
ELP: push-button type emergency actuation
ELV: screw type emergency actuation
ELT: "push&twist" type emergency actuation

Wrenches and tightening torque

X = wrench 27 - 50 Nm (37 lbft)

Y = 5 Nm (3.7 lbft)

Pressure drop diagram



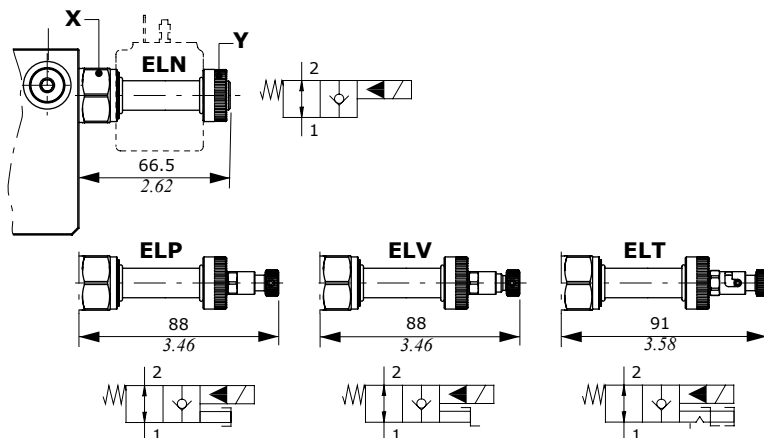
Valve features

Max. flow: 60 l/min (15.8 US gpm)
 Max. pressure: 380 bar (5500 psi)
 Internal leakage: 0.25 cm³/min @ 210 bar
 (0.015 in³/min @ 3050 psi)

For coil features and options see **BER** coil on pages 62 and 63

For sections AN1B and AN2B type

Emergency actuation types



Legenda

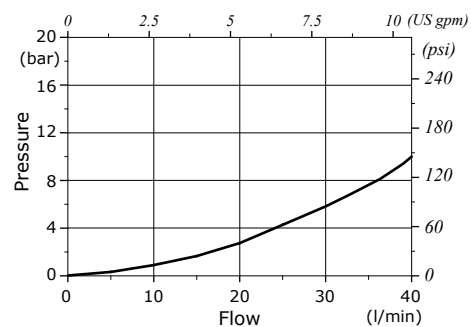
ELN: without emergency actuation
ELP: push-button type emergency actuation
ELV: screw type emergency actuation
ELT: "push&twist" type emergency actuation

Wrenches and tightening torque

X = wrench 24 - 30 Nm (22 lbft)

Y = 5 Nm (3.7 lbft)

Pressure drop diagram



Valve features

Max. flow: 40 l/min (10.6 US gpm)
 Max. pressure: 380 bar (5500 psi)
 Internal leakage: 0.25 cm³/min @ 210 bar
 (0.015 in³/min @ 3050 psi)

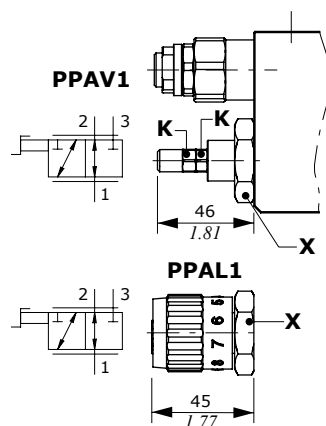
For coil features and options see **BER** coil on pages 62 and 63

Inlet section: options

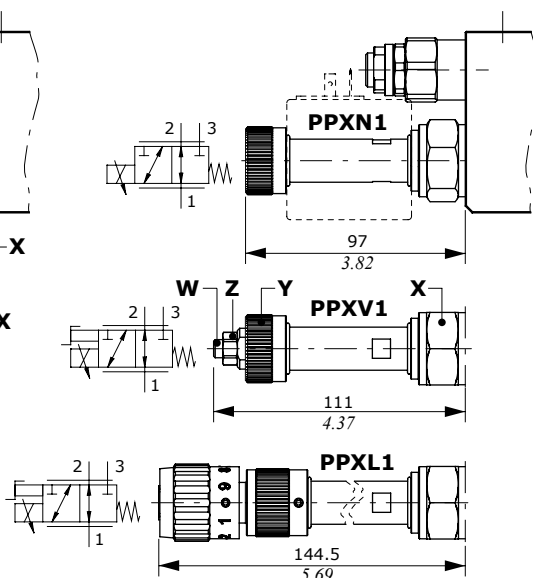
Pressure compensated flow control valve

For section AN2 type

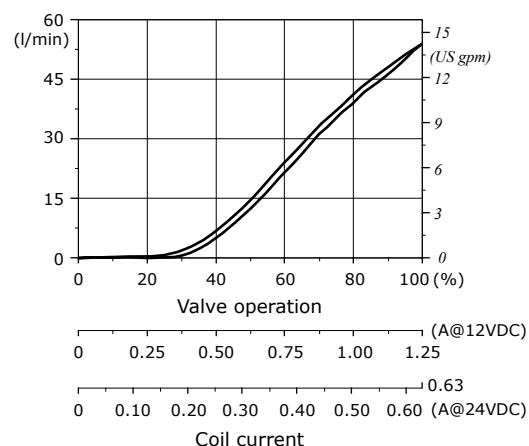
Manual operated



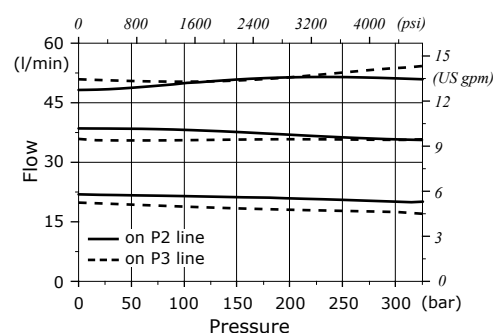
Solenoid operated



Flow regulation diagram



Flow vs. Pressure diagram



Legenda

- PPAV1:** screw setting type
- PPAL1:** hand-wheel setting type
- PPXN1:** without emergency actuation
- PPXV1:** screw type emergency actuation
- PPXL1:** hand-wheel emergency actuation

Wrenches and tightening torque

- K = wrench 10 - 6.6 Nm (4.9 lbft)
- X = wrench 32 - 80 Nm (59 lbft)
- Y = 5 Nm (3.7 lbft)
- W = allen wrench 4
- Z = wrench 8 - 15 Nm (11 lbft)

Valve features

- Max. inlet flow : 90 l/min (23.8 US gpm)
- Max. regulated flow : 50 l/min (13.2 US gpm) - PPA types
60 l/min (16 US gpm) - PPX types
- Inlet flow (PPX types) : regulated flow +15%
- Max. pressure : 350 bar (5100 psi) - PPA types
315 bar (4600 psi) - PPX types
- Internal leakage (PPX types) . . : 250 cm³/min a 210 bar
(15.3 in³/min @ 3050 psi)

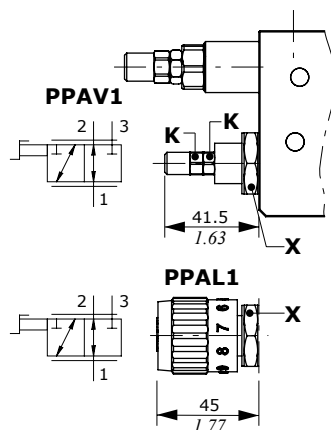
For coil features and options see **BQP19** or **BH** coils on pages 62 and 63.

Inlet section: options

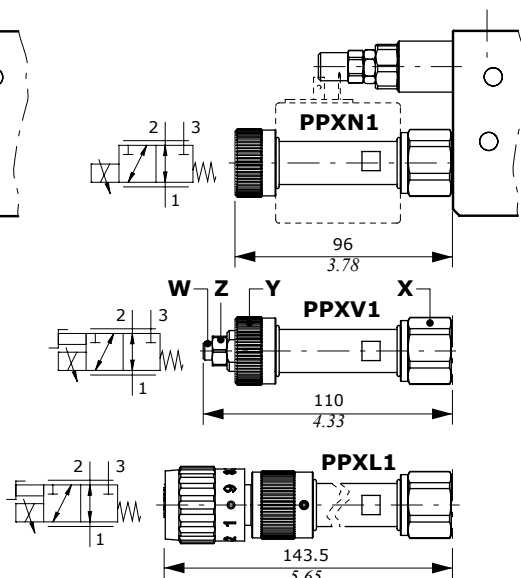
Pressure compensated flow control valve

For section AN2B type

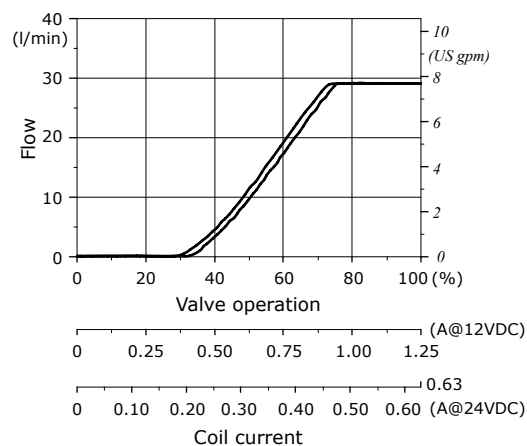
Manual operated



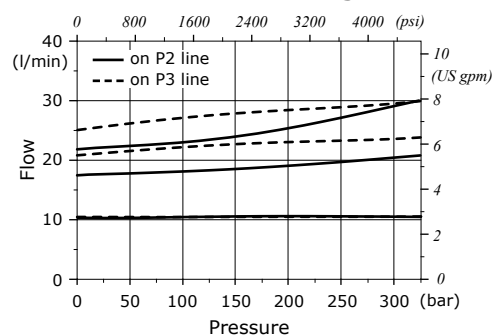
Solenoid operated



Flow regulation diagram



Flow vs. Pressure diagram



Legenda

PPAV1: screw setting type

PPAL1: hand-wheel setting type

PPXN1: without emergency actuation

PPXV1: screw type emergency actuation

PPXL1: hand-wheel emergency actuation

Wrenches and tightening torque

K = wrench 10 - 6.6 Nm (4.9 lbft)

X = wrench 27 - 50 Nm (37 lbft)

Y = 5 Nm (3.7 lbft)

W = allen wrench 4

Z = wrench 8 - 15 Nm (11 lbft)

Valve features

Max. inlet flow : 50 l/min (13.2 US gpm)

Max. regulated flow : 30 l/min (7.9 US gpm)

Inlet flow (PPX types) : regulated flow +5%

Max. pressure : 350 bar (5100 psi) - PPA types

315 bar (4600 psi) - PPX types

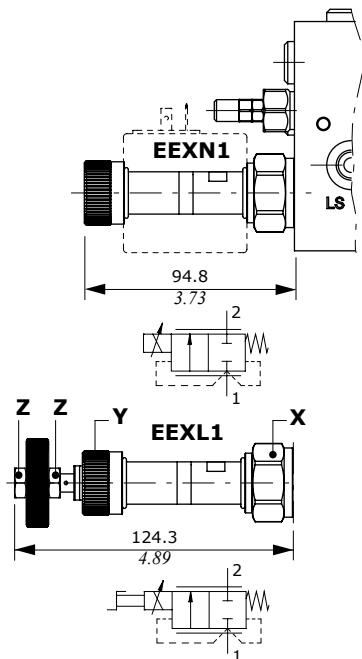
Internal leakage (PPX types) . . : 150 cm³/min @ 210 bar(9.1 in³/min @ 3050 psi)For coil features and options see **BQP19** or **BH** coils on pages 62 and 63.

Inlet section: options

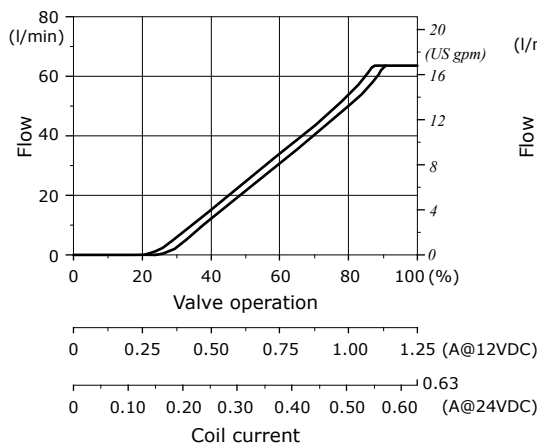
Pressure compensated flow control valve

For sections AN6-AN7-AN11 type

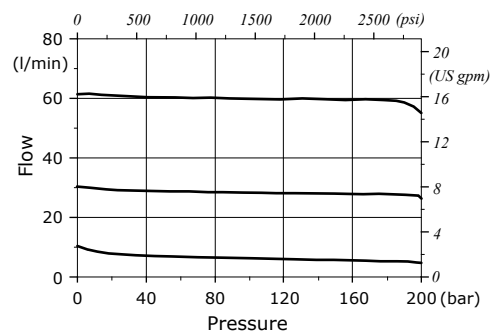
Curves are measured using the standard compensator mounted on section, with 7 bar (100 psi) stand-by.



Flow regulation diagram



Flow vs. Pressure diagram



Legenda

EEXN1: without emergency actuation

EEXL1: hand-wheel emergency actuation

Wrenches and tightening torque

K = wrench 10 - 6.6 Nm (4.9 lbft)

X = wrench 32 - 80 Nm (59 lbft)

Y = 5 Nm (3.7 lbft)

Z = wrench 13 - 9.8 Nm (7.2 lbft)

Valve features

Max. flow 60 l/min (15.8 US gpm)

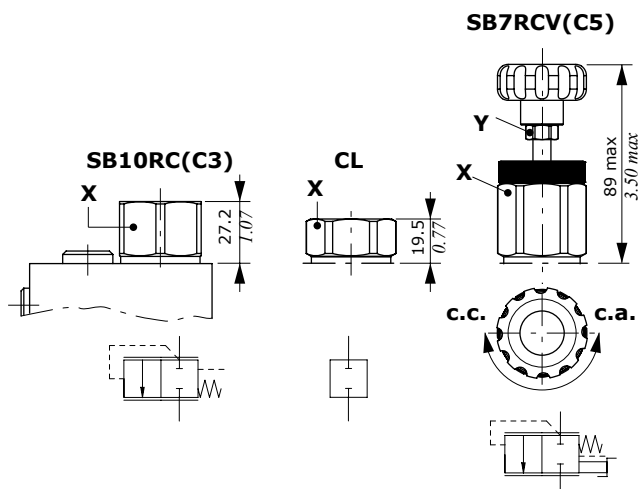
Max. pressure 315 bar (4560 psi)

Internal leakages 200 cm³/min @ 150 bar
(12.2 in³/min @ 2175 psi)

For coil features and options see **BQP19** or **BH** coils on pages 62 and 63.

Compensator kit

For sections AN6-AN7-AN11 type



Legenda

SB7RC(C5): compensator with 7 bar (100 psi) stand-by, for Open Center circuit

CL: compensator blanking plug, for Closed Center circuit (for AN11 type)

SB7RCV(C5): compensator with 7 bar (100 psi) stand-by, hand-wheel actuation for Open Center to Closed Center circuit switching

Wrenches and tightening torque

X = wrench 36 - 42 Nm (31 lbft)

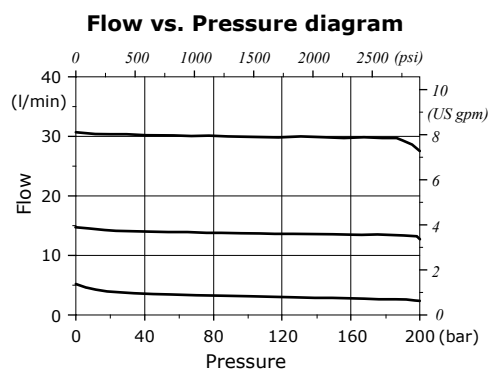
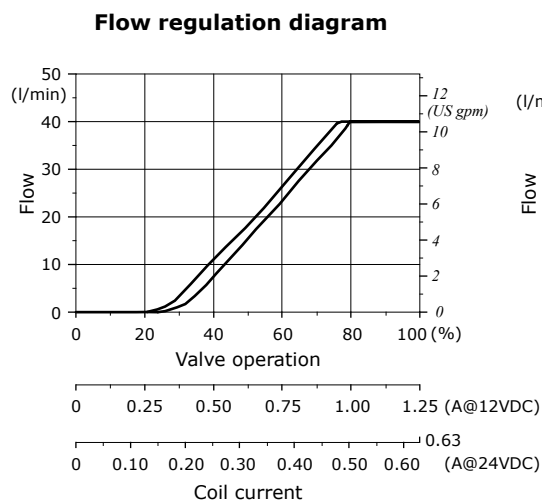
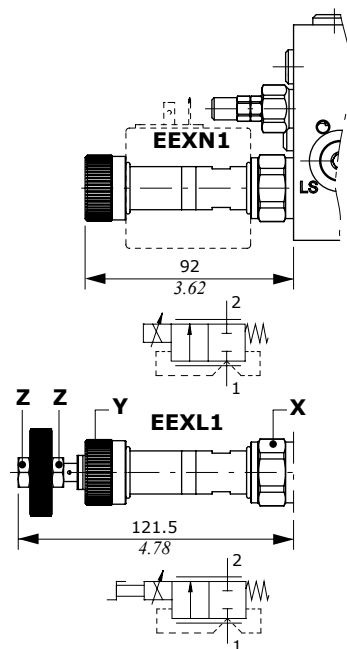
Y = wrench 13 - 6.6 Nm (4.9 lbft)

Inlet section: options

Pressure compensated flow control valve

For sections AN6B-AN7B-AN11B type

Curves are measured using the standard compensator mounted on section, with 10 bar (145 psi) stand-by.



Legenda

EEXN1: without emergency actuation

EEXL1: hand-wheel emergency actuation

Wrenches and tightening torque

K = wrench 10 - 6.6 Nm (4.9 lbft)

X = wrench 27 - 50 Nm (37 lbft)

Y = 5 Nm (3.7 lbft)

Z = wrench 13 - 9.8 Nm (7.2 lbft)

Valve features

Max. flow 40 l/min (10.6 US gpm)

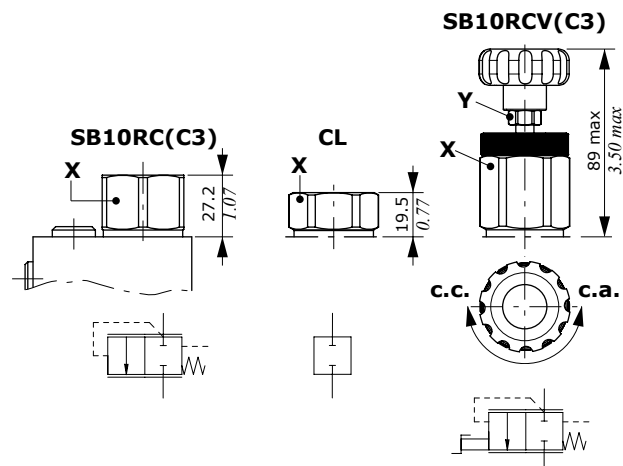
Max. pressure 300 bar (5500 psi)

Internal leakages 150 cm³/min @ 150 bar
(9.1 in³/min @ 2175 psi)

For coil features and options see **BQP19** or **BH** coils on pages 62 and 63.

Compensator kit

For sections AN6B-AN7B-AN11B type



Legenda

SB10RC(C3): compensator with 10 bar (145 psi) stand-by, for Open Center circuit

CL: compensator blanking plug, for Closed Center circuit (for AN11B type)

SB10RCV(C3): compensator with 10 bar (145 psi) stand-by, hand-wheel actuation for Open Center to Closed Center circuit switching

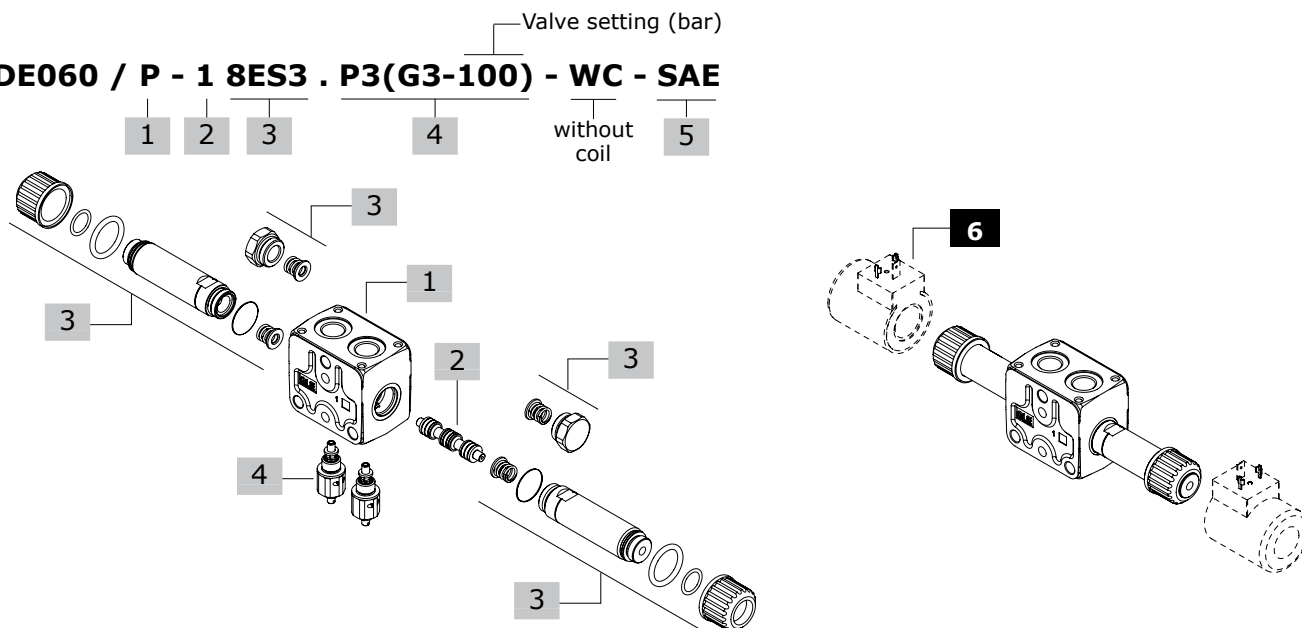
Wrenches and tightening torque

X = wrench 36 - 42 Nm (31 lbft)

Y = wrench 13 - 6.6 Nm (4.9 lbft)

Working section: part ordering codes

SDE060 / P - 1 8ES3 . P3(G3-100) - WC - SAE



1 Working section body kit * page 49

Section bodies are cast iron made

TYPE CODE DESCRIPTION

Sections with standard threads: SAE6

Q-SAE	5EL1037000	Parallel type, with arrangement for upper flangeable valve block
QS-SAE	5EL2037000	As type Q, for series circuit: need spool type 1S[#]. Only for section up to 60 l/min (15.8 US gpm)
Q(8)-SAE	5EL1037510	As type Q, for regenerative circuit on port A: need spool type 8
P-SAE	5EL1037010	As type Q, with arrangement for secondary relief valve

Sections with increased threads: SAE8

NF-SAE8	5EL1038010	Parallel type, without arrangement for upper flangeable valve block
QSNF-SAE8	5EL1038011	As type Q, for series circuit: needs spool type 1S[#]. Only for SDE060 valve
QNF(8)-SAE8	5EL1038500	As type Q, for regenerative circuit on port A: needs spool type 8
PNF-SAE8	5EL1038000	As type Q, with arrangement for secondary port valves

3 On/off solenoid control page 52

TYPE CODE DESCRIPTION

For section up to 60 l/min (15.8 US gpm)

8ES1	5CAN08E110C	Single acting on port A
8ES2	5CAN08E110C	Single acting on port B
8ES3	5CAN08E111C	Double acting
8ES3LHD	5CAN08E311	Double acting with emergency lever operation: needs dedicated spools
8ES3SE	5CAN08E116C	Double acting: for spool type 1S[#]
For section up to 30 l/min (7.9 US gpm)		
8ES1B	5CAN08E114C	Single acting on port A
8ES2B	5CAN08E114C	Single acting on port B
8ES3B	5CAN08E115C	Double acting
8ES3BLHD	5CAN08E315	Double acting with emergency lever operation: needs dedicated spools

NOTES (#) - For Series circuit configuration rules see page 31.

(*) - Codes are referred to **UN-UNF** thread.

2 Spool page 51

TYPE CODE DESCRIPTION

For ON/OFF solenoid control

1	3CU9010102	Double acting, A and B closed in neutral pos.
1A	3CU9010103	Double acting, A to tank in neutral pos. For connect B to tank (type 1B) is necessary to turn the spool
2	3CU9025100	Double acting, A and B to tank in neutral pos.
2H	3CU9025225	Double acting, A and B partially to tank in neutral position
1S	3CU9010101	Double acting, for series circuit: needs control type 8ES3SE and section type QS-QSNF[#]
8	3CU9080100	Double acting, for regenerative circuit, for 30 l/min (7.9 US gpm): needs section type Q8

For ON/OFF solenoid control with manual lever operation

1LHD	3CU9010300	As type 1
1ALHD	3CU9010303	As type 1A
2LHD	3CU9020300	As type 2
2HLHD	3CU9020310	As type 2H

4 Port relief valves page 50

Standard setting is referred to 10 l/min (2.6 US gpm) flow.

TYPE CODE DESCRIPTION

P(G3-100)	5KIT060000	From 50 to 200 bar (725 to 2900 psi), standard setting 100 bar (1450 psi)
P(G4-200)	5KIT060001	From 200 to 315 bar (2900 to 4600 psi), standard setting 200 bar (2900 psi)
P3T	5KIT060100	A and B ports valve blanking plugs

5 Section threading

Specify threading always when it is different from BSP standard (see page 4).

6 Optional coils page 62

For list of available coils see pages of related sections

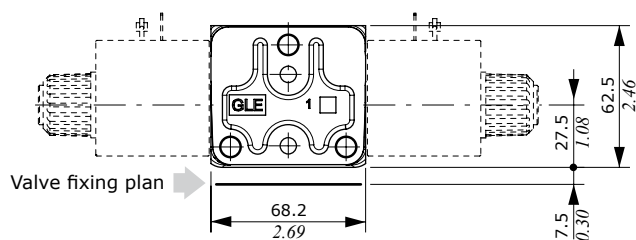
7 Protective bellow page 54

TYPE CODE DESCRIPTION

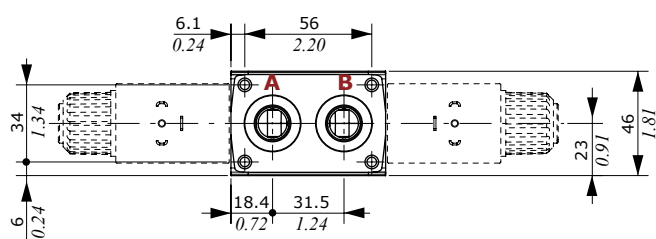
-	4ACC512-C	Cap for solenoid ring nut D12C
-	4ACC515-C	Cap for solenoid ring nut D15C

Dimensions and hydraulic circuit

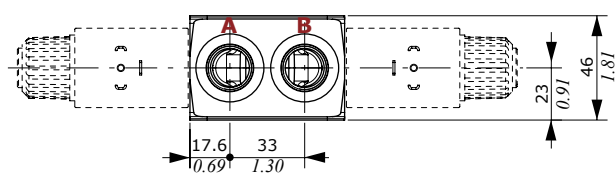
Working section Q type



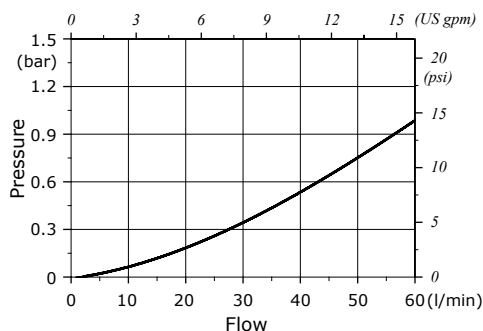
Standard port thread: SAE6
with arrangement for valve blocks



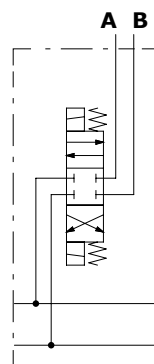
Increased port thread: SAE8
without arrangement for valve blocks (NF type)



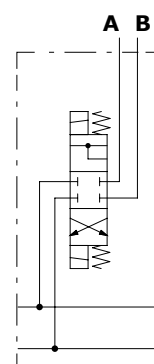
Flow through pressure drop
(parallel and regenerative circuits)



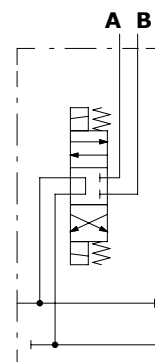
Q type: parallel circuit
(with spool type 1)



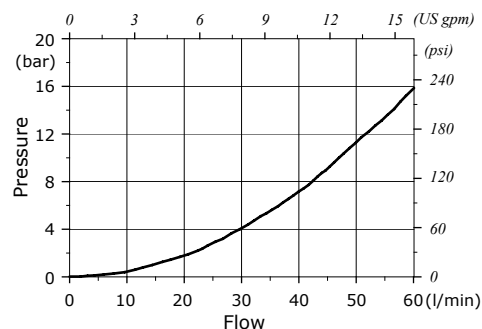
Q8 type: regenerative circuit
(needs spool type 8)



QS type for series circuit
(needs spool type 1S)



Flow through pressure drop
(QS series section with 1S spool)



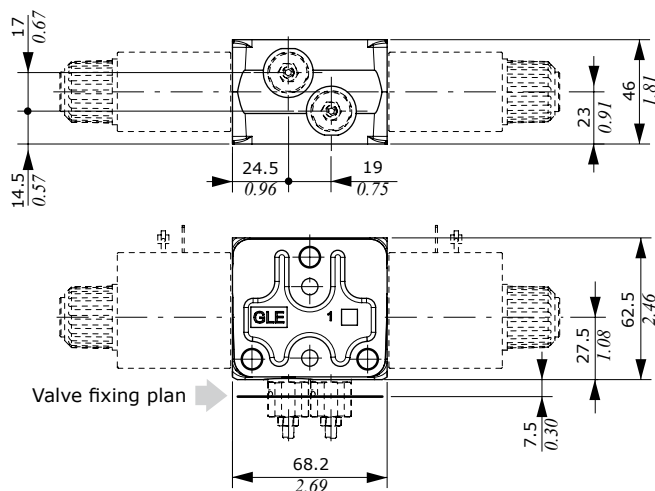
Working section

Dimension and hydraulic circuit

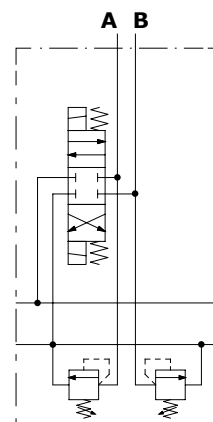
Working section Q type

With arrangement for secondary port valves.

P type section is available also with increased port threads (G1/2): see Q type section for dimensional data.

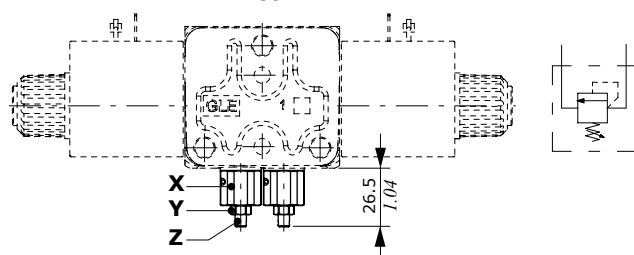


P type: parallel circuit (with spool type 1)

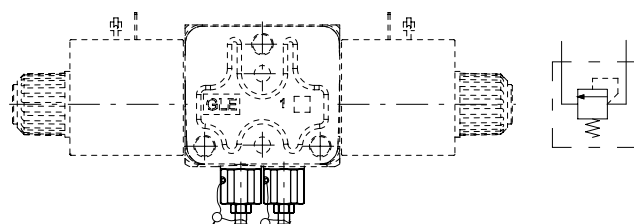


Port relief valves

G type



H type



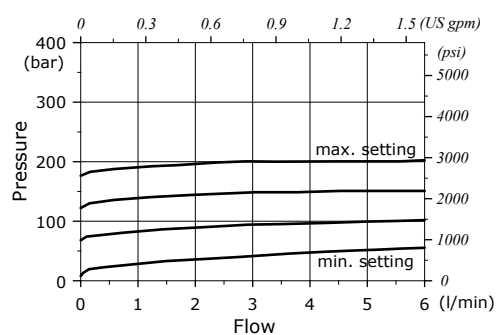
Legenda

- G:** screw setting type
- H:** valve set and locked

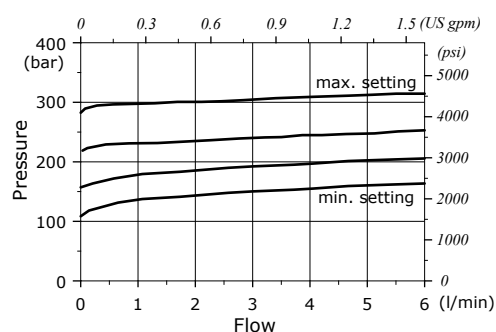
Wrenches and tightening torque

- X = wrench 17 - 24 Nm (17.7 lbf ft)
- Y = wrench 8 - 6.6 Nm (4.9 lbf ft)
- Z = allen wrench 2.5

Setting range: G3 type



Setting range: G4 type

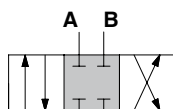


Spools

Types 1-1LHD

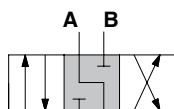
Double acting, A and B closed in neutral position

1 0 2

P T
Strokeposition 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)**Types 1A-1ALHD**

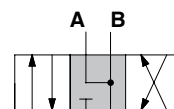
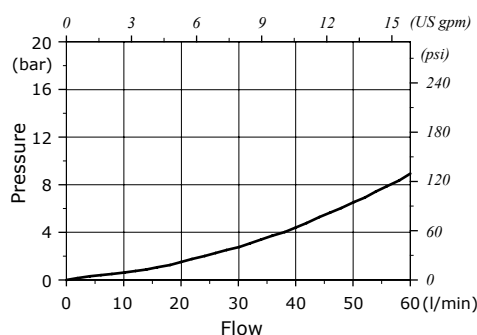
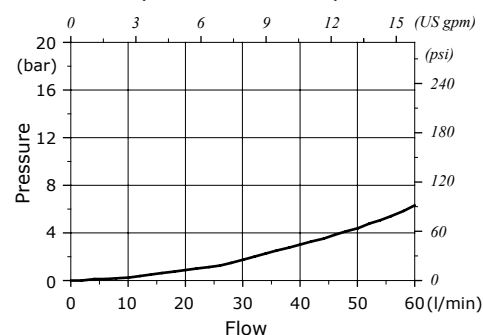
Double acting, A to tank in neutral position

1 0 2

P T
Strokeposition 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)**Types 2-2LHD**

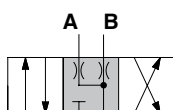
Double acting, A and B to tank in neutral position

1 0 2

P T
Strokeposition 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)**P⇒port - port⇒T pressure drops**
(curves are matched)**P⇒port - port⇒T pressure drops**
(curves are matched)**Types 2H-2HLHD**

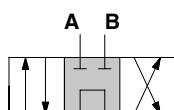
Double acting, A and B partially to tank in neutral position

1 0 2

P T
Strokeposition 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)**Types 1S**

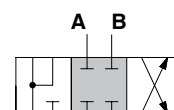
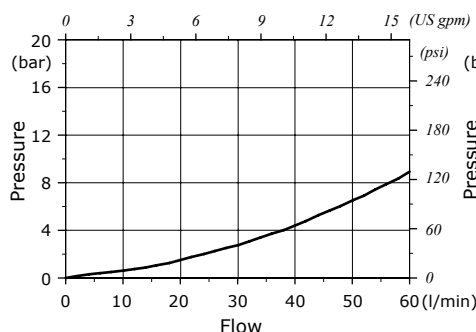
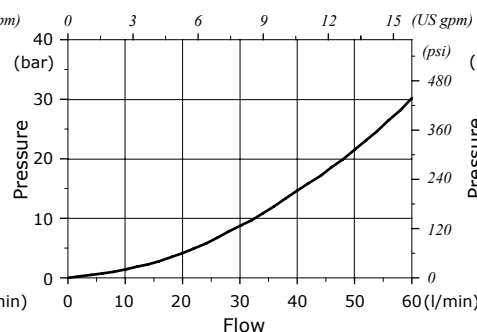
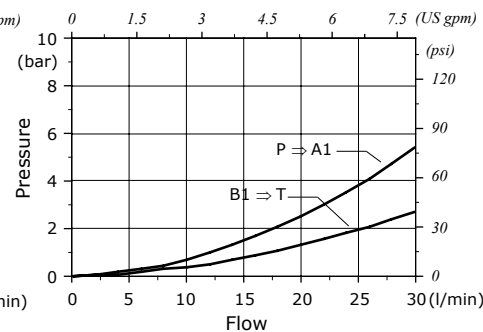
Double acting, for series circuit

1 0 2

P T
Strokeposition 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)**Types 8-8LHD**

Double acting, for regenerative circuit

1 0 2

P T
Strokeposition 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)**P⇒port - port⇒T pressure drops**
(curves are matched)**P⇒port - port⇒T pressure drops**
(curves are matched)**P⇒port - port⇒T pressure drops**
indicated for 30 l/min (7.9 US gpm) max

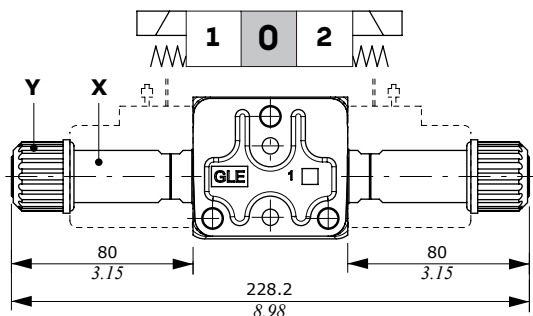
Working section

On/off solenoid control: 8ES3 - 8ES1 - 8ES2 - 8ES3SE types

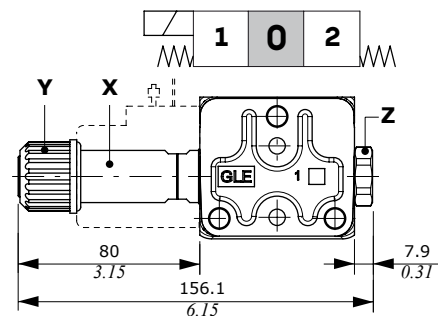
For section configuration up to 60 l/min (15.8 US gpm) flow rate.

When the section is configured with flangeable valve block, the coils on control must be rotated 180°

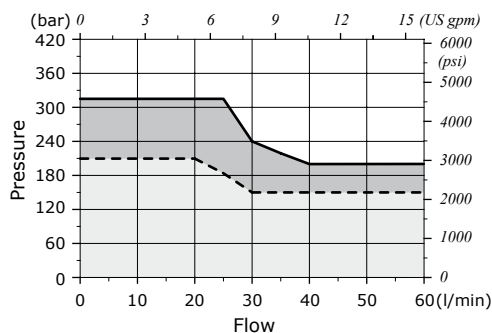
8ES3 - 8ES3SE: double acting control kit



8ES1: single acting on A control kit



Operating condition (stroke 3 mm - 0.12 in)



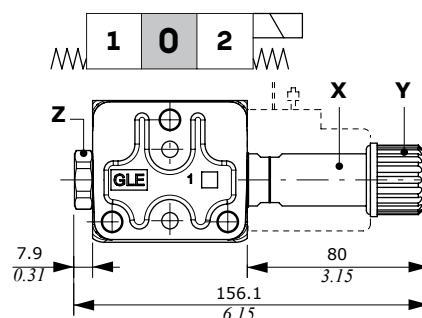
Wrenches and tightening torque

- X = wrench 20 - 24 Nm (17.7 lbft)
- Y = 15 Nm (11 lbft)
- Z = wrench 24 - 24 Nm (17.7 lbft)

For coil options and features see **D15C** coil on pages 62 and 64.

- SDE060 with 8ES3 control kit; parallel circuit
- - - SDE060 with 8ES3SE control kit; series circuit

8ES2: single acting on B control kit



On/off solenoid control with lever: type 8ES3LHD

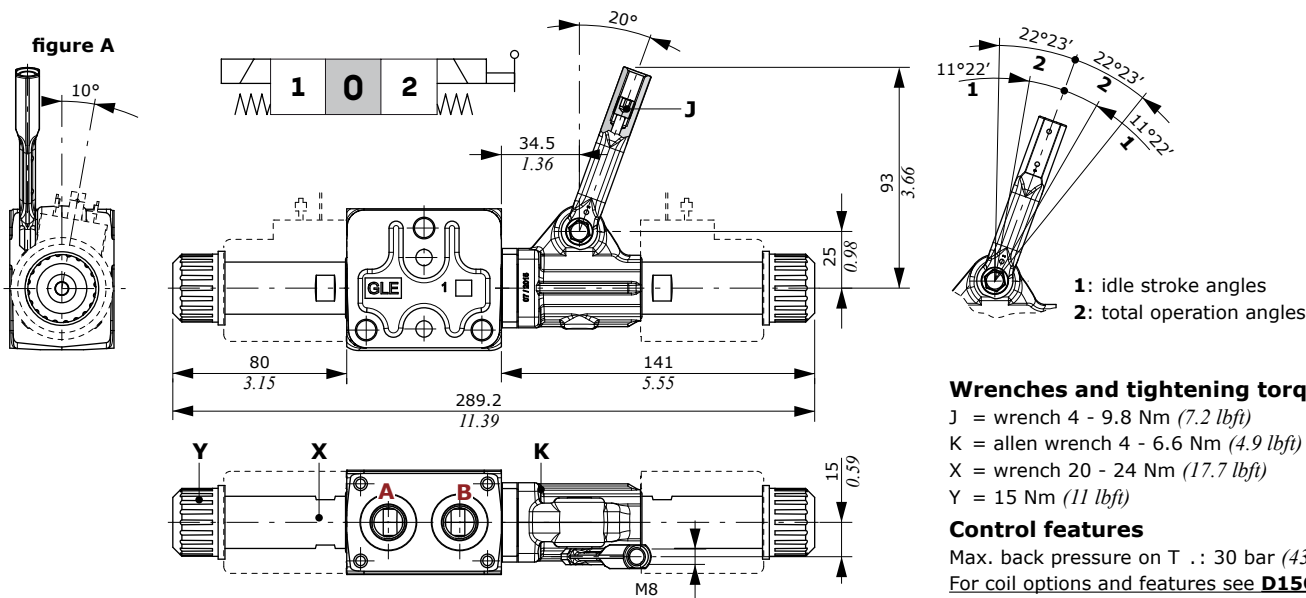
For section configuration up to 60 l/min (15.8 US gpm) flow rate; this control is not suitable for series circuit.

To properly operation the coil on lever side must be rotated 10° (figure A).

When the section is configured with flangeable valve block, the control (with coil) must be rotated 180°.

The control needs dedicated spools: see page 44 for list.

IMPORTANT: lever to be used only for emergency operation, not for continuative use.



Wrenches and tightening torque

- J = wrench 4 - 9.8 Nm (7.2 lbft)
- K = allen wrench 4 - 6.6 Nm (4.9 lbft)
- X = wrench 20 - 24 Nm (17.7 lbft)
- Y = 15 Nm (11 lbft)

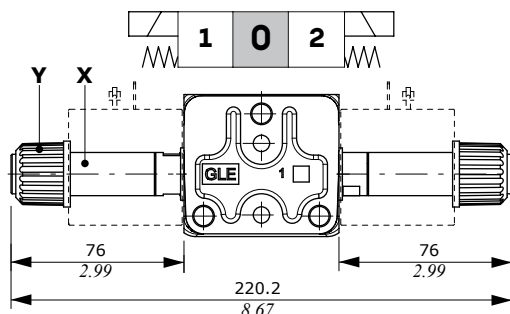
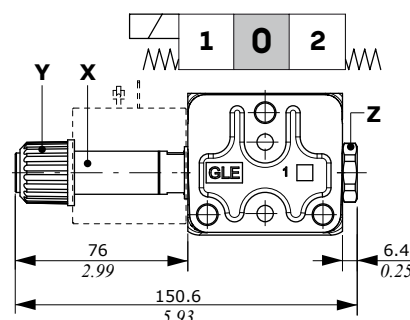
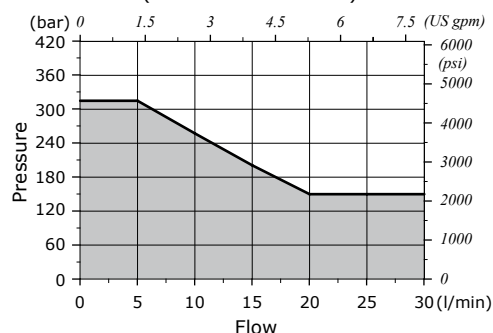
Control features

Max. back pressure on T : 30 bar (435 psi)
For coil options and features see **D15C** coil on pages 62 and 64.

On/off solenoid control: 8ES3B - 8ES1B - 8ES2B types

For section configuration up to 30 l/min (7.9 US gpm) flow rate; control is not suitable for series circuit

When the section is configured with flangeable valve block, the coils on control must be rotated 180°

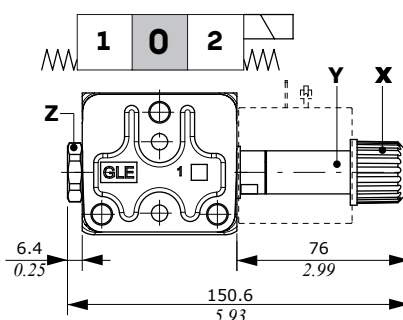
8ES3B: double acting control kit**8ES1B: single acting on A control kit****Operating condition**
(stroke 3 mm - 0.12 in)**Wrenches and tightening torque**

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

Y = 6.6 Nm (4.9 lbf ft)

Z = wrench 24 - 24 Nm (17.7 lbf ft)

For coil options and features see **D12C** coil on pages 62 and 64.

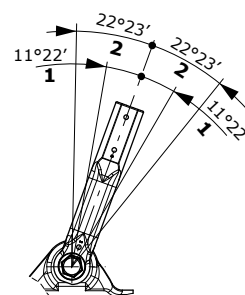
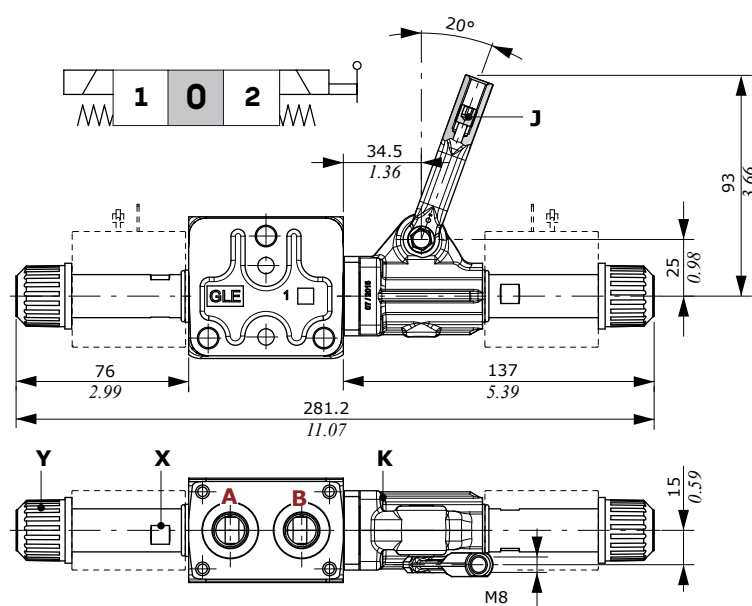
8ES2B: single acting on B control kit**On/off solenoid control with lever: 8ES3BLHD type**

For section configuration up to 30 l/min (7.9 US gpm) flow rate; this control is not suitable for series circuit

When the section is configured with flangeable valve block, the control (with coil) must be rotated 180°.

The control needs dedicated spools: see page 44 for list.

IMPORTANT: lever to be used only for emergency operation, not for continuative use.



1: idle stroke angles
2: total operation angles

Wrenches and tightening torque

J = wrench 4 - 9.8 Nm (7.2 lbf ft)

K = allen wrench 4 - 6.6 Nm (4.9 lbf ft)

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

Y = 6.6 Nm (4.9 lbf ft)

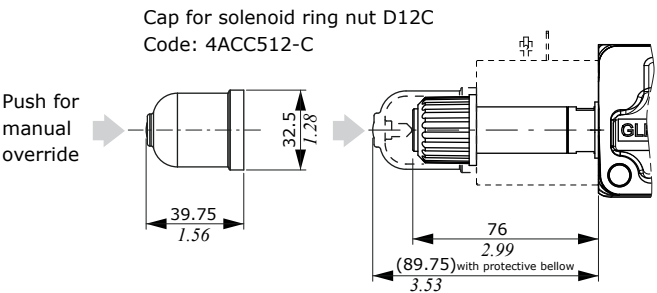
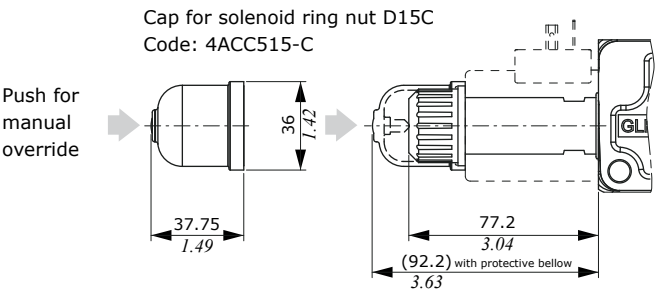
Control features

Max. back pressure on T : 30 bar (435 psi)

For coil options and features see **D12C** coil on pages 62 and 64.

Working section

Protective bellow

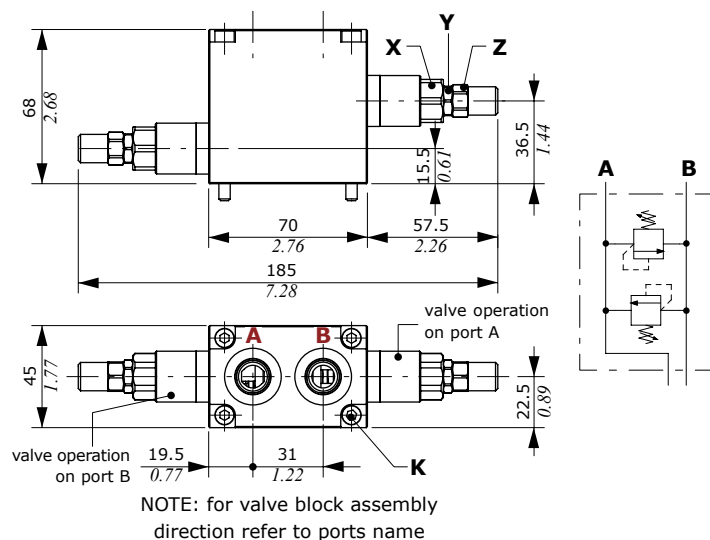


Flangeable valve blocks

Antishock valves with cross operation

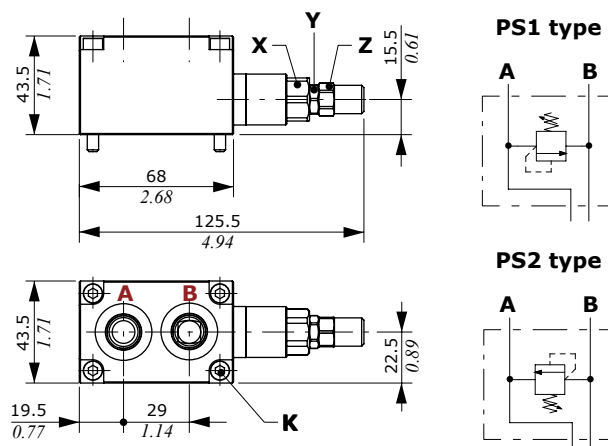
8ES on/off solenoid controls (with or without lever operation) must be rotated 180°.

PS3 type: valves on both ports



PS1 or PS2 types: valve on single port

(PS1 type is drawn: PS2 type has the valve mounted on the opposite side and the same dimensions)



Wrenches and tightening torque

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

X = wrench 19 - 42 Nm (31 lbft)

Y = wrench 13 - 24 Nm (17.7 lbft)

Z = wrench 13 - 6.6 Nm (4.9 lbft)

Ordering codes

TYPE	CODE	DESCRIPTION
Complete antishock valves		
PS1(DC3-160)-SAE	619001001	Valve with operation on port A
PS2(DC3-160)-SAE	619001001	Valve with operation on port B
PS3(DC3-160\DC4-200)-SAE	619001104	Valves with operation on port A (160) and B (200)

Part #1: Valve kit

Valve standard setting is referred to 5 l/min (1.3 US gpm) flow, considering the valve mounted on block.

(DC2-60)	1100520460	Range 20-80 bar (290-1150 psi) std setting 60 bar (870 psi)
(DC3-160)	1100520408	Range 50-220 bar (725-3200 psi) std setting 160 bar (2300 psi)
(DC4-280)	1100520414	Range 180-350 bar (2600-5100 psi) std setting 280 bar (4050 psi)

PST XTAP623282 Valve blanking plug

Part #2: Block body kit

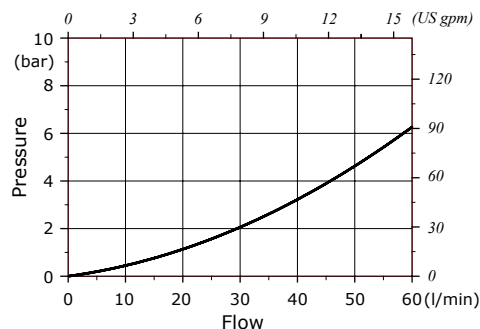
PS1-PS2-SAE 5COR245683 For single valve on port A or B

PS3-SAE 5COR245681 For valves on port A and B

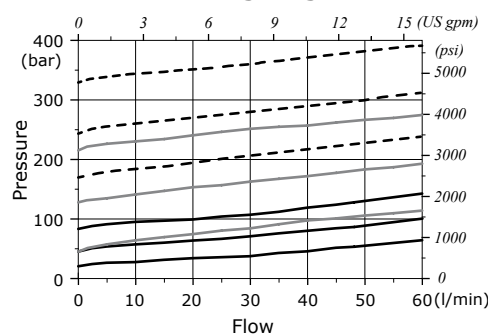
Antishock valve pressure drops

P⇒port - port⇒T

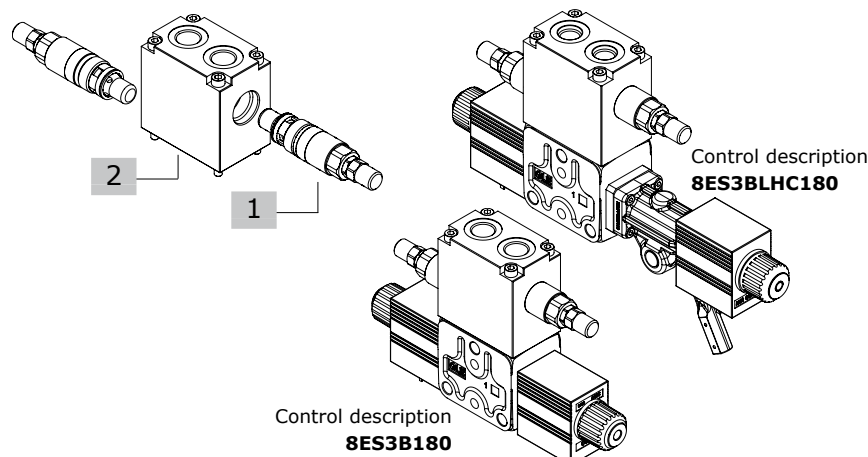
(curves are matched)



Setting range



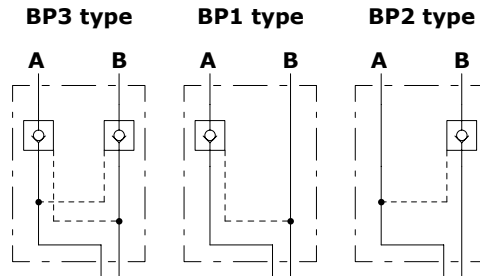
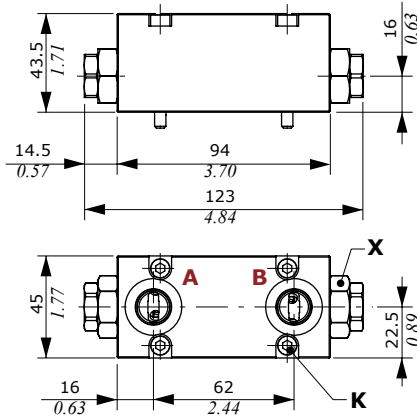
— Valve type DC2
— Valve type DC3
--- Valve type DC4



Flangeable valve blocks

Check valves

8ES on/off solenoid controls (with or without lever operation) must be rotated 180°.



Wrenches and tightening torque

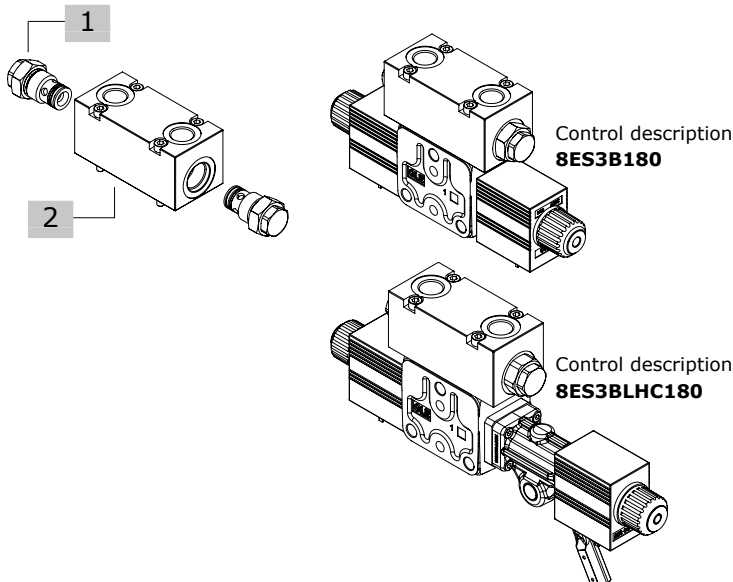
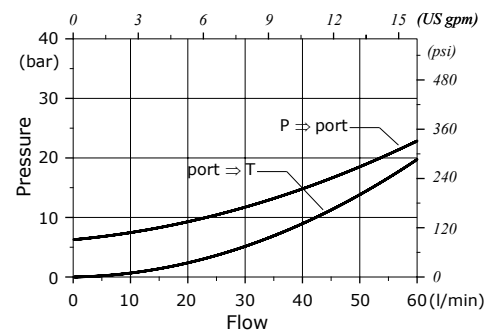
K = allen wrench 4 - 9.8 Nm (7.2 lbft)

X = wrench 29 - 42 Nm (31 lbft)

Ordering codes

TYPE	CODE	DESCRIPTION
Complete valve block		
BP1-SAE	619002001	Valve on port A
BP2-SAE	619002001	Valve on port B
BP3-SAE	619002101	Valves on ports A and B
Part #1: Valve kit		
BP	1300020402	Check valve
TBP	XTAP627260	Valve blanking plug
Part #2: Body kit and piston		
	5COR245891	Block body kit
	3PIS214480	Piston

Check valve pressure drop

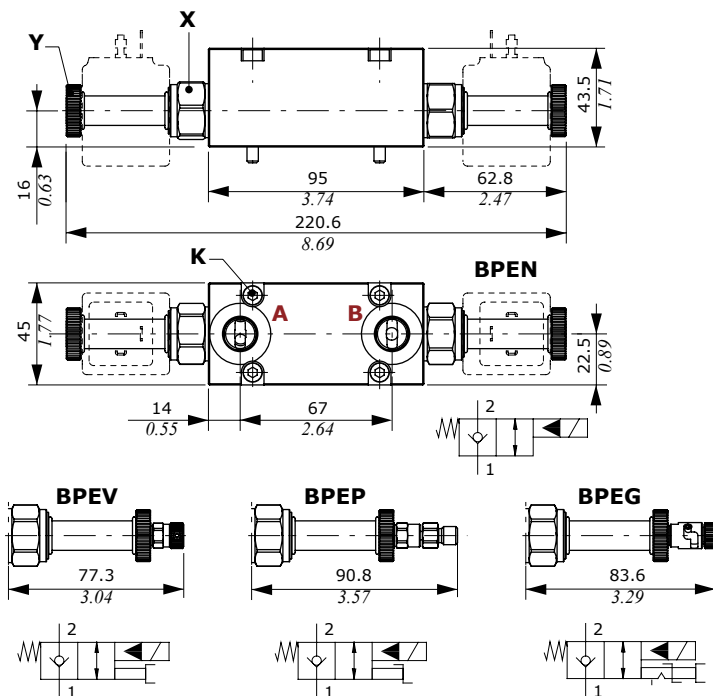


Flangeable valve blocks

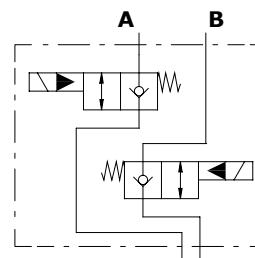
Solenoid operated check valves

8ES on/off solenoid controls (with or without lever operation) must be rotated 180°.

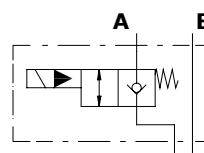
BPE(NC) type: normally closed circuit



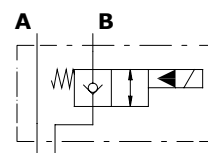
BPEN3(NC) type



BPEN1(NC) type



BPEN2(NC) type



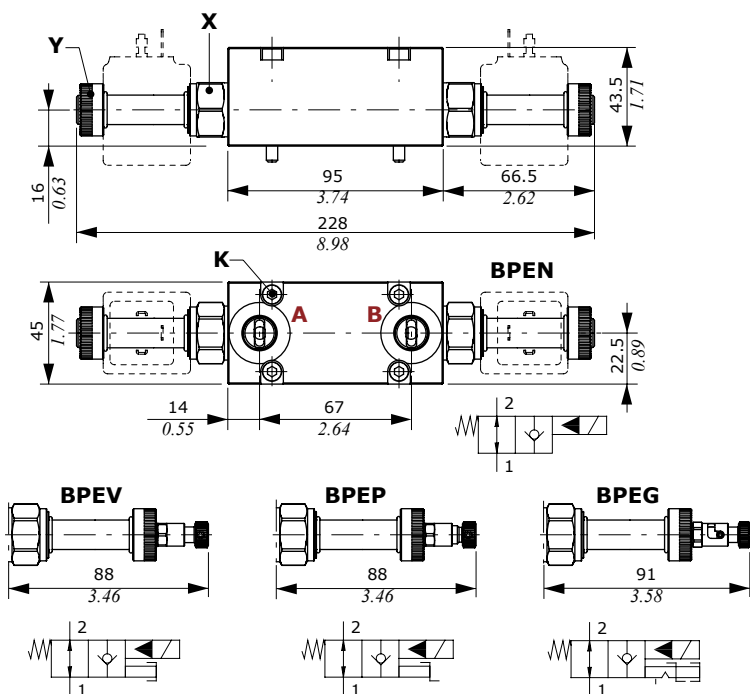
Wrenches and tightening torque

K = allen wrench 4 - 9.8 Nm (7.2 lbf)

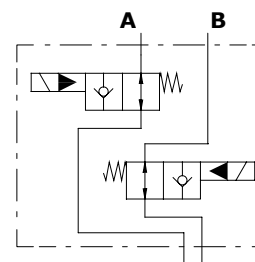
X = wrench 24 - 30 Nm (22 lbf)

Y = 5 Nm (3.7 lbf)

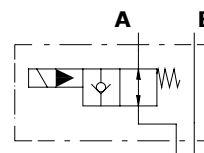
BPE(NA) type: normally open circuit



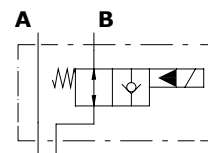
BPEN3(NA) type



BPEN3(NA) type

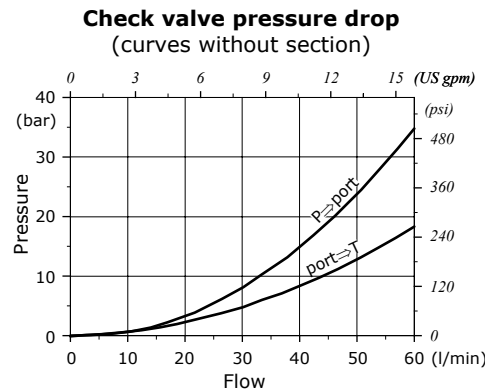


BPEN3(NA) type



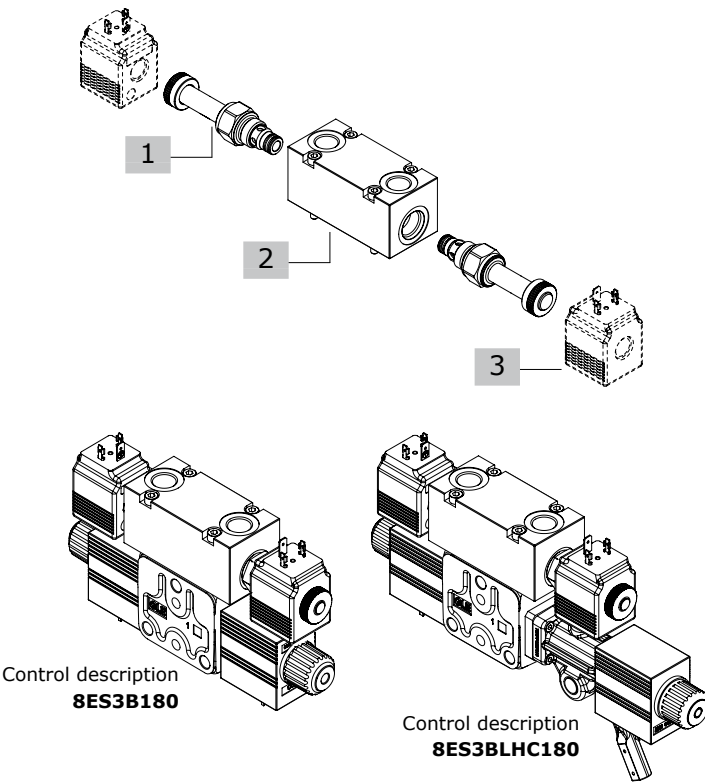
Flangeable valve blocks

Solenoid operated check valves



Ordering codes

TYPE	CODE	DESCRIPTION
Complete valve block, without coil		
BPEN1(NC)-WC-SAE	Y64S367001	On ports A, NC circuit, without manual emergency
BPEN2(NC)-WC-SAE	Y64S367001	As previous, on port B
BPEN3(NC)-WC-SAE	Y64S367000	As previous, on ports A and B
Part #1: Valve kit		
TBPE	3XTAP822150	Valve blanking plug
Normally closed circuit		
BPEN(NC)	0EC08002032	Without manual emergency
BPEV(NC)	0EC08002037	With screw type emergency
BPEP(NC)	0EC08002036	With pull-button emergency
BPET(NC)	0EC08002038	With "pull & twist" emergency
Normally open circuit		
BPEN(NA)	0EC08002031	Without manual emergency
BPEV(NA)	0EC08002034	With screw type emergency
BPEP(NA)	0EC08002033	With push-button emergency
BPET(NA)	0EC08002035	With "push & twist" emerg.
Part #2: Block body kit		
BPE3-SAE	5COR245951	Block body kit
Part #3: Coil		
Valves needs type BER coil, see page 62.		

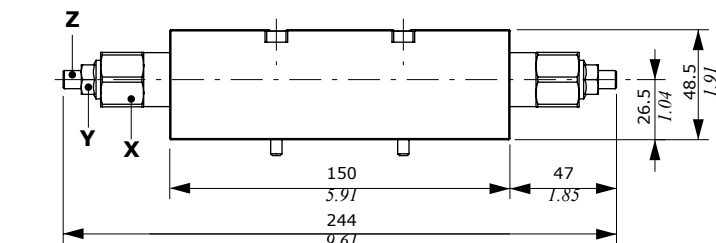


Flangeable valve blocks

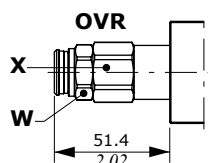
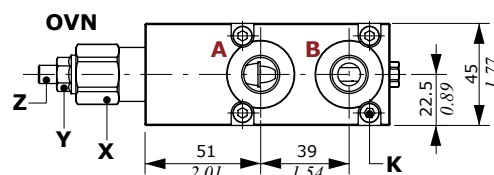
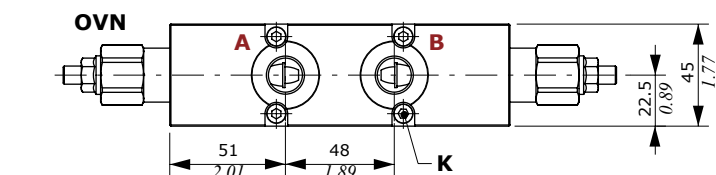
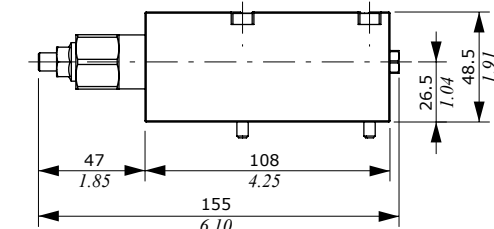
Counterbalance valves

8ES on/off solenoid controls (with or without lever operation) must be rotated 180°.

Double acting valve



Single acting valve



Wrenches and tightening torque

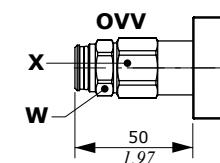
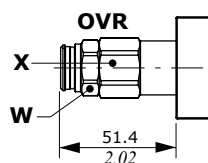
K = allen wrench 4 - 9.8 Nm (7.2 lbft)

X = allen wrench 24 - 50 Nm (37 lbft)

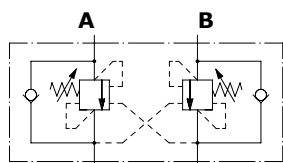
Y = wrench 13 - 15 Nm (11 lbft)

Z = allen wrench 4

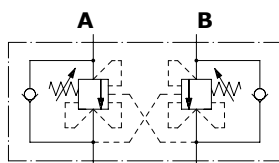
W = wrench 22 - 35 Nm (25.8 lbft)



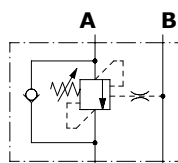
OVN301 type



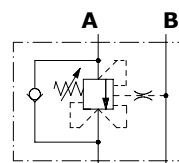
OVR301 type



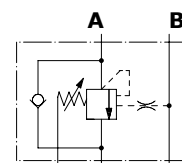
OVR101 type



OVR101 type



OVV101 type



Ordering codes

TYPE	CODE	DESCRIPTION
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Single counterbalance valves

OVN101-SAE 1515322200 On port A, load sensitive, pilot ratio = 4

OVN201-SAE 1515322200 As previous, on ports B

OVR101-SAE 1515422200 On port A, relief comp., pilot ratio = 4

OVR201-SAE 1515422200 As previous, on ports B

OVV101-SAE 1515522200 On port A, vented type, pilot ratio = 4

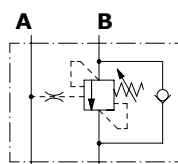
OVV201-SAE 1515522200 As previous, on port B

Double counterbalance valves

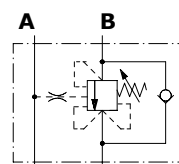
OVN301-SAE 1555222200 Load sensitive, pilot ratio = 4

OVR301-SAE 1555322200 Relief compensated, pilot ratio = 4

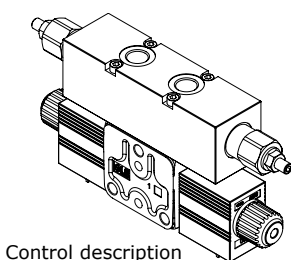
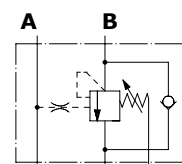
OVN201 type



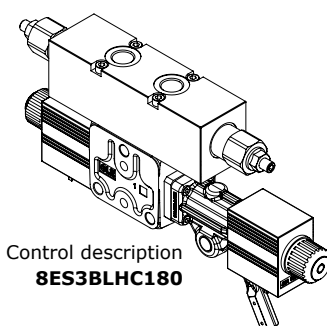
OVR201 type



OVV201 type

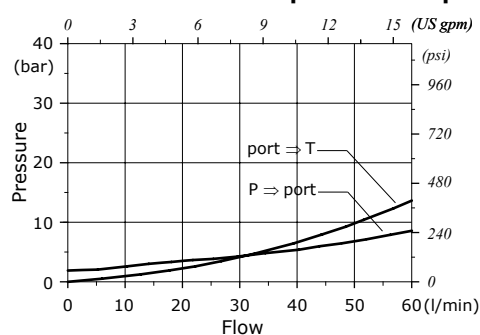


Control description
8ES3B180



Control description
8ES3BLHC180

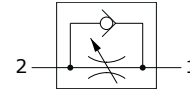
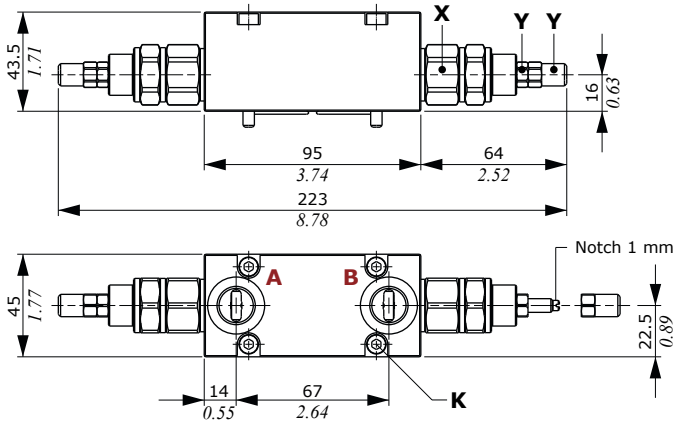
Counterbalance valves pressure drop



Flangeable valve blocks

Flow control valves

8ES on/off solenoid controls (with or without lever operation) must be rotated 180°.



Wrenches and tightening torque

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

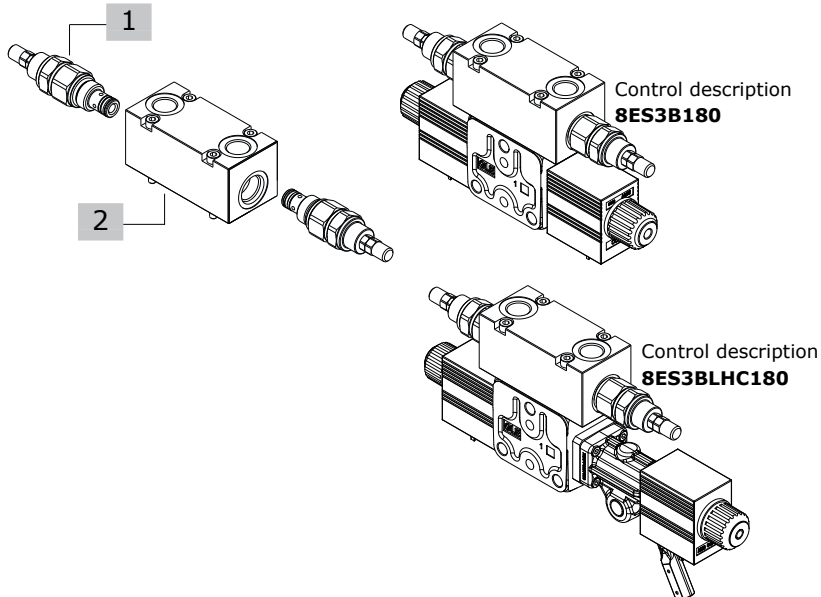
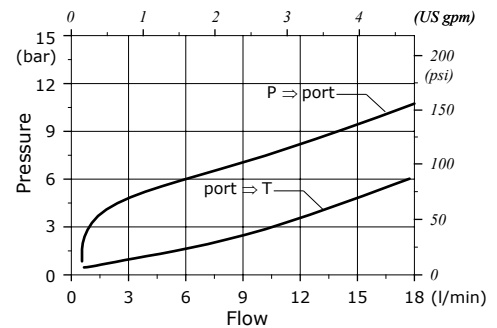
X = wrench 24 - 30 Nm (22 lbft)

Y = wrench 10 - 6,6 Nm (4.9 lbft)

Ordering codes

TYPE	CODE	DESCRIPTION
Complete valve block		
NU08A/AS1B1	619004000	Valve on port A
NU08A/AS1B2	619004000	Valve on port B
NU08A/AS1B3	619004100	Valves on ports A and B
Part #1: Valve kit		
NU08A/AS1B	0NU08002001	Check valve
-	3XTAP822150	Valve blanking plug
Part #2: Body kit		
-	5COR245950	Block body kit

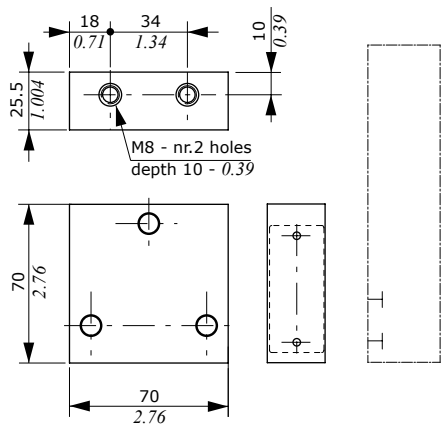
Pressure drop



Dimensions and hydraulic circuit

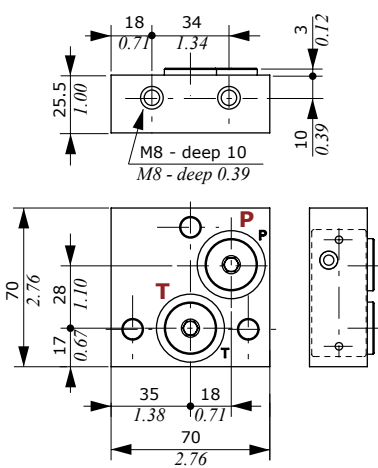
Without port arrangement

RF type



With ports arrangement

RS - RP - RT types
drawing shows type RS



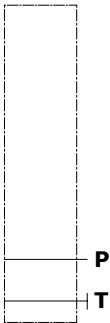
Wrenches and tightening torque

X = allen wrench 8 - 24 Nm (17.7 lbft)
Y = allen wrench 6 - 24 Nm (17.7 lbft)

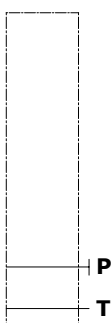
RS-RSB types
P and T ports plugged



RP-RPB types
P open, T plugged

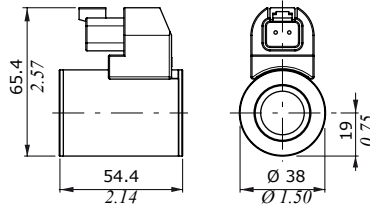


RT-RTB types
T open, P plugged

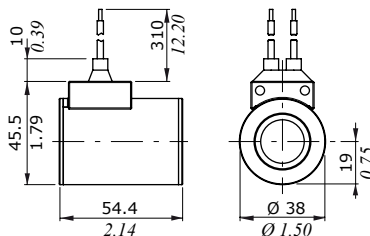


BH type

DEUTSCH DT04 connector



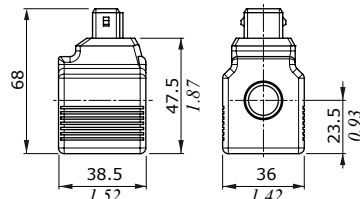
Flying leads



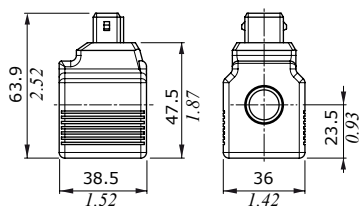
Features

Nominal voltage tolerance . : ±10%
Power rating : 33 W - 12/24 VDC
Max. oper. current (on/off) . : 2.75 A - 12 VDC
 : 1.38 A - 24 VDC
Max. prop. control current . : 1.7 A - 12 VDC
 : 0.85 A - 24 VDC
Coil insulation : Class H
 (180°C - 356°F)
Weather protection : IP65 - ISO4400
 : IP69K -Deutsch DT
 : IP65 - AMP JPT
Insertion : 100%

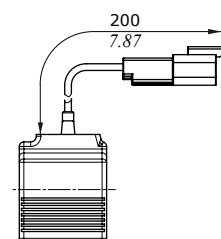
DEUTSCH DT04 connector
(perpendicular type)



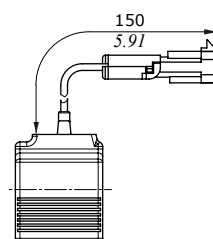
AMP JPT connector



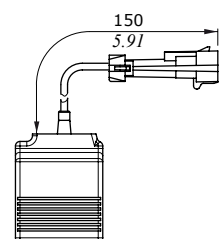
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector



Flying leads with PACKARD METRI-PACK connector



Features

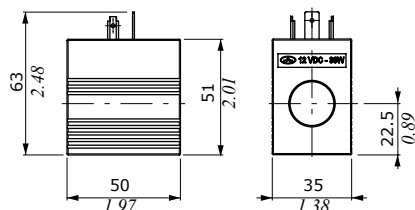
Nominal voltage tolerance : $\pm 10\%$
Power rating : 19.2 W @ 10/12/24/48/
110/220 VDC
: 19 W @ 24/110/220 RAC
: 19.2 W @ 48 RAC
Max. operating current . . : 1.9 A @ 10 VDC
: 1.61 A @ 12 VDC
: 0.80 A @ 24 VDC
: 0.40 A @ 48 VDC
: 0.17 A @ 110 VDC
: 0.09 A @ 220 VDC
: 0.89 A @ 24 RAC
: 0.45 A @ 48 RAC
: 0.19 A @ 110 RAC
: 0.09 A @ 220 RAC
Coil insulation : Class H (180°C - 356°F)
Weather protection : IP65 - ISO4400
: IP69K - Deutsch DT
: IP65 - AMP JPT
: IP67 - Weatherpack
: IP67 - Metri-pack
Insertion : 100%

Accessories

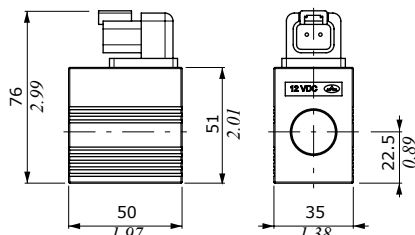
Coils and connectors

D12C type

ISO4400 connector



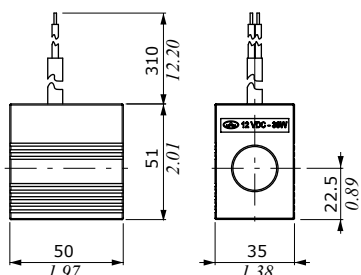
DEUTSCH DT04 connector



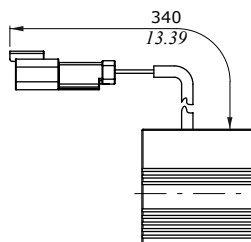
Features

Nominal voltage tolerance : $\pm 10\%$
 Power rating 36 W @
 10.5/12/24 VDC
 Max. operating current . . . 3.43 A @ 10.5 VDC
 3 A @ 12 VDC
 1.5 A @ 24VDC
 Coil insulation Class H (180°C - 356°F)
 Weather protection IP65 - ISO4400
 IP69K - Deutsch DT
 IP65 - AMP JPT
 Insertion 100%

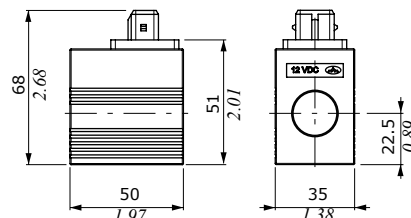
Flying leads



Flying leads with DEUTSCH DT04 connector

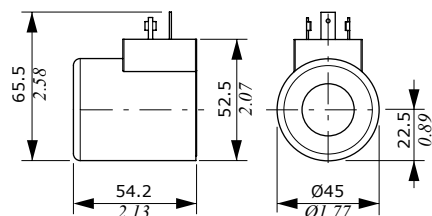


AMP JPT connector

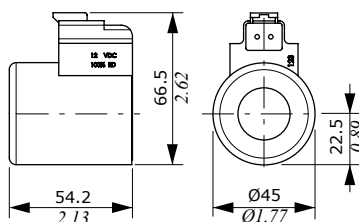


D15C type

ISO4400 connector



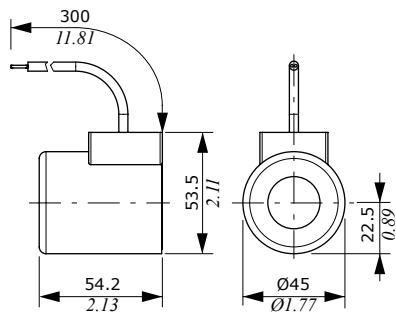
DEUTSCH DT04 connector



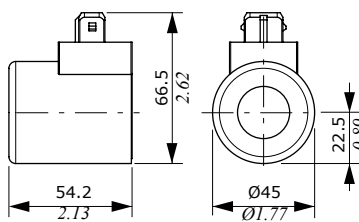
Features

Nominal voltage tolerance : $\pm 10\%$
 Power rating 38 W @
 12/14/24/ VDC
 Max. operating current . . . 3.16 A @ 12 VDC
 2.75 A @ 14VDC
 1.58 A @ 24VDC
 Coil insulation Class H
 (180°C - 356°F)
 Weather protection IP65 - ISO4400
 IP69K - Deutsch DT
 IP65 - AMP JPT
 Insertion 100%

Flying leads



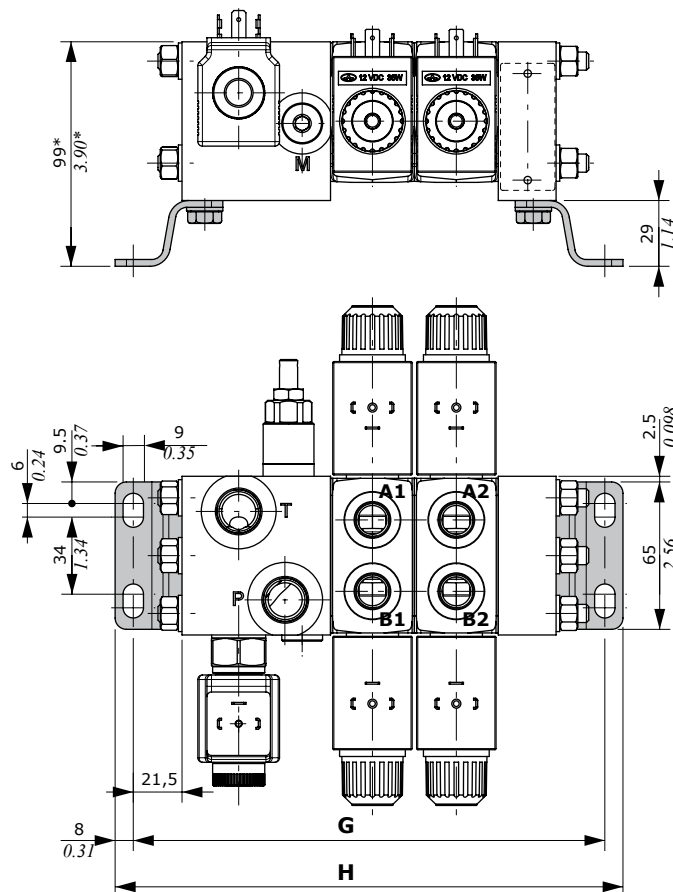
AMP JPT connector



Fixing brackets

SDE030

Dimensions (*) are referred to directional valve with N1 type inlet section.



TYPE	with section N type				with sections N1-N2-N6-N7 type			
	G		H		G		H	
	mm	in	mm	in	mm	in	mm	in
SDE030/1	134	5.28	150	5.91	171	6.73	187	7.36
SDE030/2	171	6.73	187	7.36	208	8.19	224	8.82
SDE030/3	208	8.19	224	8.82	245	9.65	261	10.28
SDE030/4	245	9.65	261	10.28	282	11.10	298	11.73
SDE030/5	282	11.10	298	11.73	319	12.56	335	13.19
SDE030/6	319	12.56	335	13.19	356	14.02	372	14.65
SDE030/7	356	14.02	372	14.65	393	15.47	409	16.10
SDE030/8	393	15.47	409	16.10	430	16.93	446	17.56
SDE030/9	430	16.93	446	17.56	467	18.39	483	19.02
SDE030/10	467	18.39	483	19.02	504	19.84	520	20.47

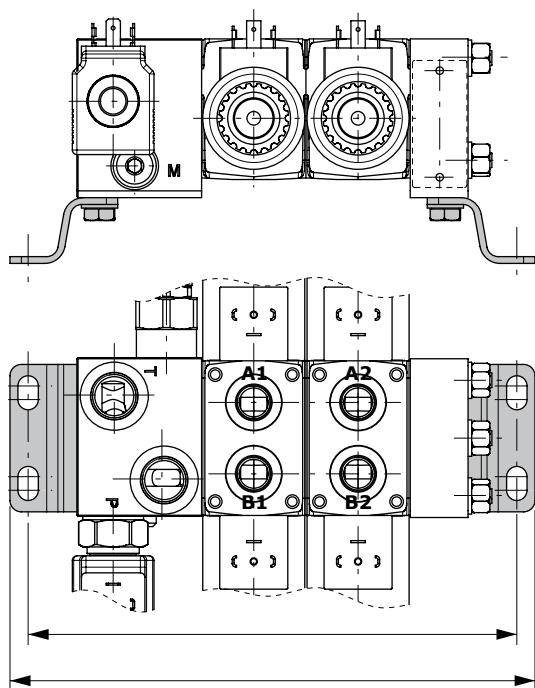
Accessories

Fixing brackets

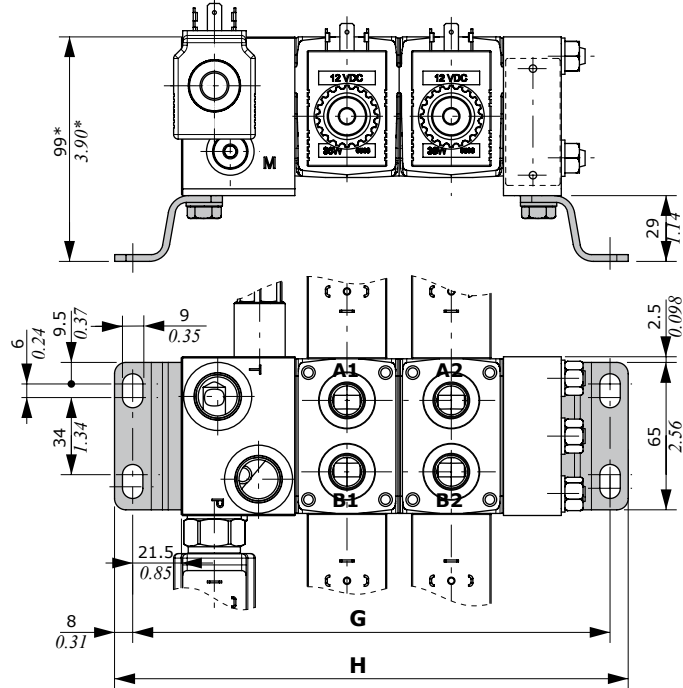
SDE060

Dimensions (*) are referred to directional valve with N1 type inlet section.

On valve for 60 l/min (15.8 US gpm) flow rate



On valve for 30 l/min (7.9 US gpm) flow rate



Valve for 60 l/min (15.8 US gpm) flow rate

TYPE	with section N type				with section N1 type				with section N2 type			
	G		H		G		H		G		H	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
SDE060/1	146.5	5.77	162.5	6.40	169.5	6.67	185.5	7.30	200	7.87	216	8.50
SDE060/2	192.5	7.58	208.5	8.21	215.5	8.48	231.5	9.11	246	9.69	262	10.31
SDE060/3	238.5	9.39	254.5	10.02	261.5	10.29	277.5	10.93	292	11.50	308	12.13
SDE060/4	284.5	11.20	300.5	11.83	307.5	12.11	323.5	12.74	338	13.31	354	13.94
SDE060/5	330.5	13.01	346.5	13.64	353.5	13.92	369.5	14.55	384	15.12	400	15.75
SDE060/6	376.5	14.82	392.5	15.45	399.5	15.73	415.5	16.36	430	16.93	446	17.56
SDE060/7	422.5	16.63	441.5	17.38	445.5	17.54	461.5	18.17	476	18.74	492	19.37
SDE060/8	468.5	18.44	484.5	19.07	491.5	19.35	507.5	19.98	522	20.55	538	21.18
SDE060/9	514.5	20.26	530.5	20.89	537.5	21.16	553.5	21.79	568	22.36	584	22.99
SDE060/10	560.5	22.07	575.5	22.66	583.5	22.97	599.5	23.60	614	24.17	630	24.80

Valve for 30 l/min (7.9 US gpm) flow rate

TYPE	with section NB type				with section N1B type				with section N2B type				with sections N6B-N7B type			
	G		H		G		H		G		H		G		H	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
SDE060/1	146.5	5.77	162.5	6.40	162.5	6.40	178.5	7.03	191	7.52	207	8.15	183.5	7.22	199.5	7.85
SDE060/2	192.5	7.58	208.5	8.21	208.5	8.21	224.5	8.84	237	9.33	253	9.96	229.5	9.04	245.5	9.66
SDE060/3	238.5	9.39	254.5	10.02	254.5	10.02	270.5	10.65	283	11.14	299	11.77	275.5	10.85	291.5	11.48
SDE060/4	284.5	11.20	300.5	11.83	300.5	11.83	316.5	12.46	329	12.95	345	13.58	321.5	12.66	337.5	13.29
SDE060/5	330.5	13.01	346.5	13.64	346.5	13.64	362.5	14.27	375	14.76	391	15.39	367.5	14.47	383.5	15.10
SDE060/6	376.5	14.82	392.5	15.45	392.5	15.45	408.5	16.08	421	16.57	437	17.20	413.5	16.28	429.5	16.91
SDE060/7	422.5	16.63	441.5	17.38	438.5	17.26	454.5	17.89	467	18.39	483	19.02	459.5	18.09	475.5	18.72
SDE060/8	468.5	18.44	484.5	19.07	484.5	19.07	500.5	19.70	513	20.20	529	20.83	505.5	19.90	521.5	20.53
SDE060/9	514.5	20.26	530.5	20.89	530.5	20.89	546.5	21.52	559	22.01	575	22.64	551.5	21.71	567.5	22.34
SDE060/10	560.5	22.07	575.5	22.66	576.5	22.70	592.5	23.33	605	23.82	621	24.45	597.5	23.52	613.5	24.15

Installation and maintenance

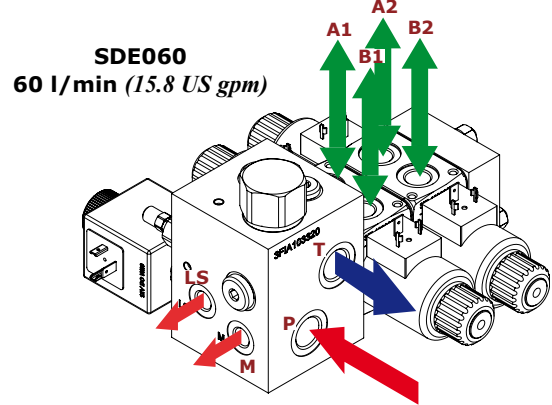
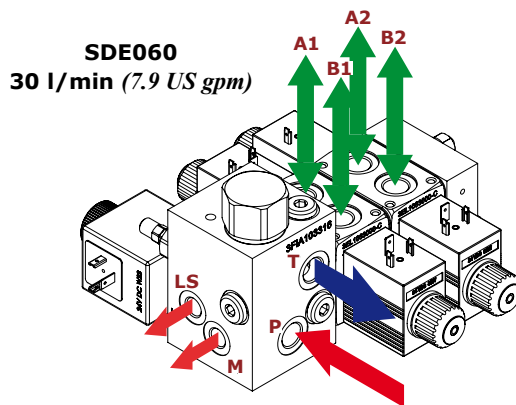
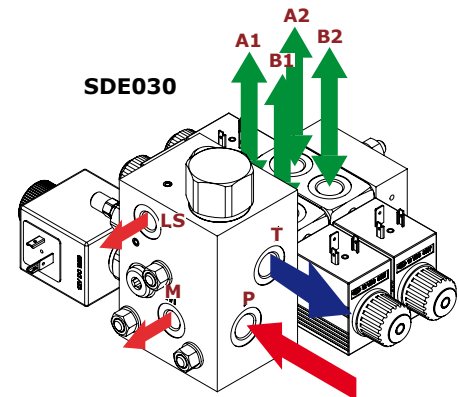
The SDE060-SDE030 valves are assembled and tested as per the technical specifications of this catalogue.

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

- the valves can be assembled in any position; in order to prevent body deformation and spool sticking, mount the products on a flat surface;
- In order to prevent the possibility of water entering into the spool control kit, do not use high pressure wash down directly on the valves;
- Before painting, ensure plastic port plugs are tightly in their place.

Fittings tightening torque (Nm-lbft)

SDE030			
THREAD TYPE	P-T ports	A-B ports	M-LS ports
BSP	G 3/8	G 3/8	G 1/4
With O-Ring seal	35 - 25.8	35 - 25.8	25 - 18.4
With copper washer	40 - 29.5	40 - 29.5	30 - 22
With steel and rubber washer	30 - 22	30 - 22	16 - 11.8
UN-UNF	3/4-16 (SAE 8)	9/16-18 (SAE 6)	7/16-20 (SAE 4) 9/16-18 (SAE 6)**
With O-Ring seal	35 - 25.8	30 - 22	18-13.3 • 30**- 22**



THREAD TYPE	Section for 30 l/min (7.9 US gpm)			Section for 60 l/min (15.8 US gpm)		
	P-T ports	A-B ports	M-LS ports	P-T ports	A-B ports	M-LS ports
BSP	G 3/8	G 3/8	G 1/4	G 1/2	G 3/8 • G 1/2*	G 1/4
With O-Ring seal	35 - 25.8	35 - 25.8	25 - 18.4	50 - 37	35-25.8 • 50*-37*	25 - 18.4
With copper washer	40 - 29.5	40 - 29.5	30 - 22	60 - 44.3	40-29.5 • 60*-44.3*	30 - 22
With steel and rubber washer	30 - 22	30 - 22	16 - 11.8	60 - 44.3	30-22 • 60*-44.3*	16 - 11.8
UN-UNF	3/4-16 (SAE 8)	9/16-18 (SAE 6)	7/16-20 (SAE 4) 9/16-18 (SAE 6)**	3/4-16 (SAE 8)	9/16-18 (SAE 6) 3/4-16 (SAE 8)**	7/16-20 (SAE 4) 9/16-18 (SAE 6)**
With O-Ring seal	35 - 25.8	30 - 22	18-13.3 • 30**- 22**	35 - 25.8	30-22 • 35**- 25.8**	18-13.3 • 30**- 22**

NOTE – These torques are recommended. Assembly tightening torque depends on many factors, including lubrication, coating and surface finishing. The manufacturer must be consulted.

Malfunction	Cause	Remedy
External leakage from electric control	Control spool seal due to mechanical wear.	Replace the seal.
Excessive internal leakage on A and B ports.	Increase clearance between spools and body due to high wear.	Replace the directional control valve and check the oil contamination level.
Inability to build pressure on A and B	Main pressure relief valve blocked open.	Remove, clean or replace the main relief valve.
	Port relief valve open.	Remove, clean or replace the port relief valve.
	Low pump pressure and flow.	Check the pump and the circuit.

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