



SDE030 SDE060

Directional control valves with direct acting solenoid

Features

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

- Different type of inlet covers.
- Different types of spools.
- Different options to be flanged on the ports side.
- Available for parallel and series circuits.
- Emergency handlever available.
- On/off solenoid controls.

Additional information

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

WARNING!

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

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

6th edition July 2013

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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.

Nominal flow rating	SDE030	30 l/min	7.9 US gpm
	SDE060	60 l/min	15.8 US gpm
Operating pressure (max.)		315 bar	4600 psi
Back pressure (max.)	outlet port T	210 bar	3050 psi
Internal leakage (max.) A(B)⇒T	$\Delta p = 100 \text{ bar} - 1450 \text{ psi}$ fluid and valve at 40°C - 104°F	14 cm ³ /min	0,85 in ³ /min
Fluid		Mineral based oil	
Fluid temperature	with NBR (BUNA-N) seals	from -20°C to 80°C	from -4°F to 176°F
	with FPM (VITON) seals	from -20°C to 100°C	from -4°F to 212°F
Viscosity	operating range	from 15 to 75 mm ² /s	from 15 to 75 cSt
	min.	12 mm ² /s	12 cSt
	max.	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		
	BSP	UN-UNF
THREAD ACCORDING TO	ISO 228/1	ISO 263
	BS 2779	ANSI B1.1 unified
CAVITY DIMENSION ACCORDING TO	ISO	11926
	SAE	J11926
	DIN	3852-2 shape X or Y

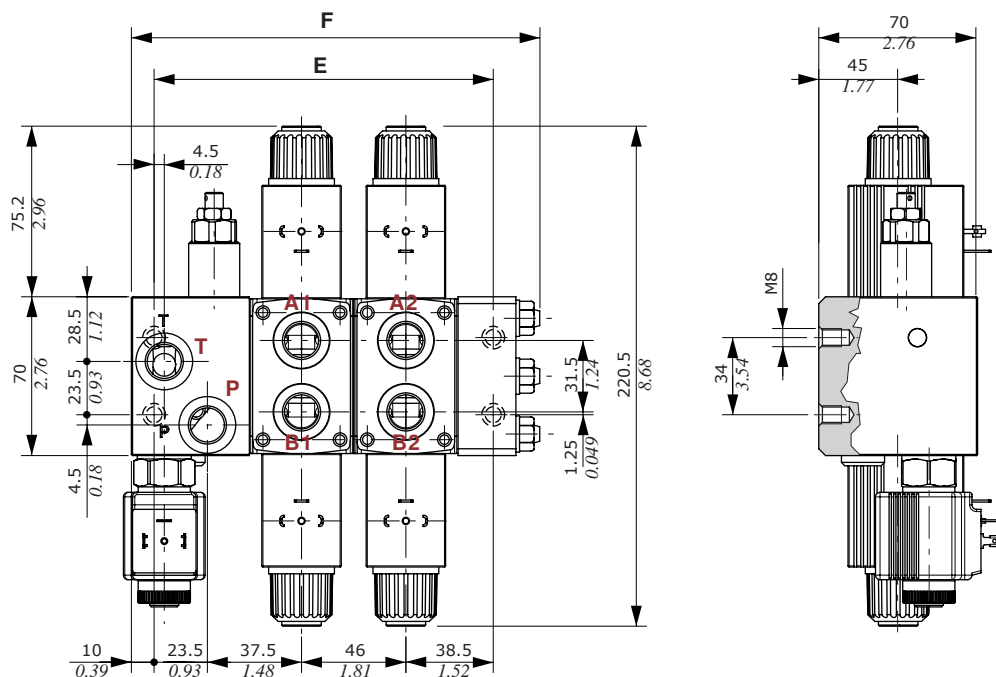
PORTS THREADING	SDE030		SDE060	
	BSP	UN-UNF	BSP	UN-UNF
Inlet P and outlet T	G 3/8	3/4-16 (SAE 8)	G 1/2	3/4-16 (SAE 8)
Ports A and B	G 3/8	9/16-18 (SAE 6)	G 3/8	9/16-18 (SAE 6)
			G 1/2 *	3/4-16 (SAE 8) *

NOTE (*) - Optional thread

Dimensional data

SDE030 directional valve

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

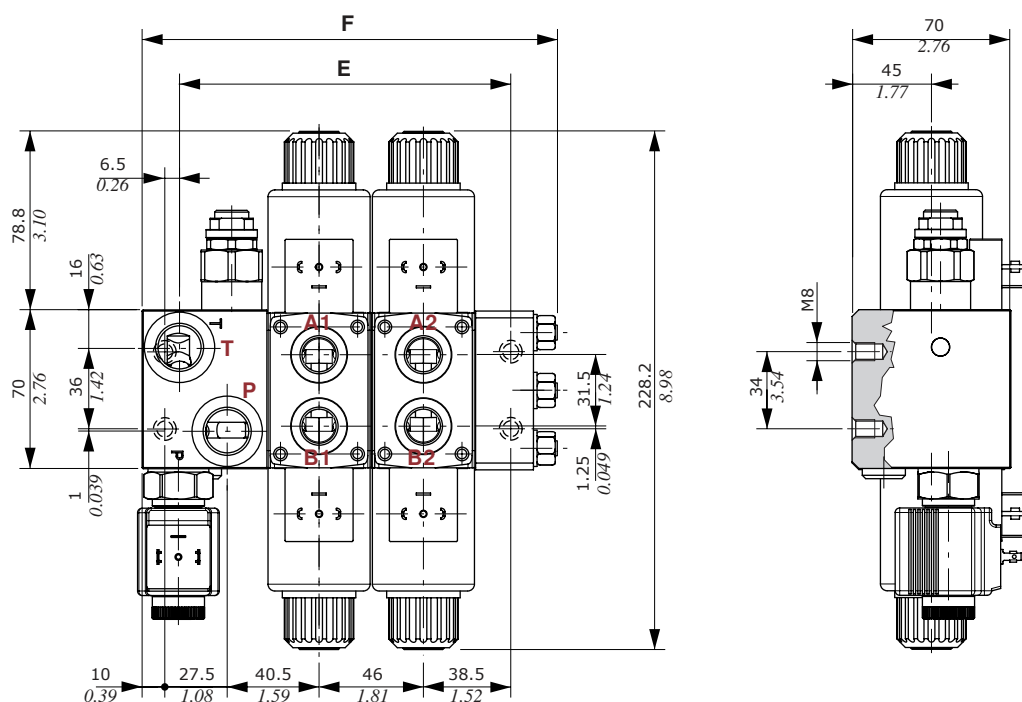


TYPE	type N inlet section				type N1 inlet section (see drawing)						type N2 inlet section			
	E		F		E		F		Weight		E		F	
	mm	in	mm	in	mm	in	mm	in	Kg	lb	mm	in	mm	in
SDE030/ 1	80	3.15	110.5	4.35	103.5	4.07	134	5.28	4.58	10.10	128	5.04	158.6	6.24
SDE030/ 2	126	4.96	156.5	6.16	149.5	5.89	180	7.09	6.61	14.57	174	6.85	204.5	8.05
SDE030/ 3	172	6.77	202.5	7.97	195.5	7.70	226	8.90	8.64	19.05	220	8.66	250.5	9.86
SDE030/ 4	218	8.58	248.5	9.78	241.5	9.51	272	10.71	10.67	23.52	266	10.47	296.5	11.67
SDE030/ 5	264	10.39	294.5	11.59	287.5	11.32	318	12.52	12.70	28.00	312	12.28	342.5	13.48
SDE030/ 6	310	12.20	340.5	13.41	333.5	13.13	364	14.33	14.73	32.47	358	14.09	388.5	15.30
SDE030/ 7	356	14.02	386.5	15.22	379.5	14.94	410	16.14	16.76	36.95	404	15.91	434.5	17.11
SDE030/ 8	402	15.83	432.5	17.03	425.5	16.75	456	17.95	18.79	41.42	450	17.72	480.5	18.92
SDE030/ 9	448	17.64	478.5	18.84	471.5	18.56	502	19.76	20.82	45.90	496	19.53	526.5	20.73
SDE030/ 10	494	19.45	524.5	20.65	517.5	20.37	548	21.57	22.85	50.38	542	21.34	572.5	22.54

Dimensional data

SDE060 directional valve

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

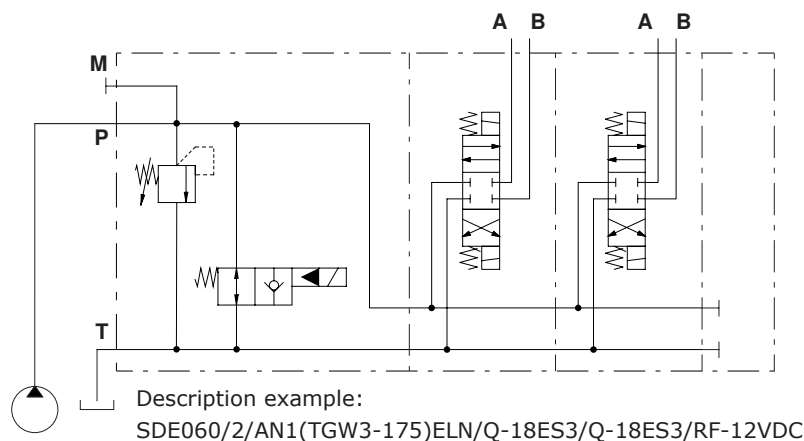


TYPE	type N inlet section				type N1 inlet section (see drawing)						type N2 inlet section			
	E		F		E		F		Weight		E		F	
	mm	in	mm	in	mm	in	mm	in	Kg	lb	mm	in	mm	in
SDE060/ 1	84.5	3.33	115	4.53	106.5	4.19	137	5.12	5.08	11.20	137	5.12	167.5	6.59
SDE060/ 2	130.5	5.14	161	6.34	152.5	6.00	183	7.21	7.43	16.38	183	7.21	213.5	8.41
SDE060/ 3	176.5	6.95	207	8.15	198.5	7.82	229	9.02	9.78	21.56	229	9.02	259.5	10.22
SDE060/ 4	222.5	8.76	253	9.96	244.5	9.63	275	10.83	12.13	26.74	275	10.83	305.5	12.03
SDE060/ 5	268.5	10.57	299	11.77	290.5	11.44	321	12.64	14.48	31.92	321	12.64	351.5	13.84
SDE060/ 6	314.5	12.38	345	13.58	336.5	13.26	367	14.45	16.83	37.10	367	14.45	397.5	15.65
SDE060/ 7	360.5	14.19	391	15.39	382.5	15.06	413	16.26	19.18	42.28	413	16.26	443.5	17.46
SDE060/ 8	406.5	16.00	437	17.20	428.5	16.87	459	18.07	21.53	47.47	459	18.07	489.5	19.27
SDE060/ 9	452.5	17.81	483	19.02	474.5	18.68	505	19.88	23.88	52.65	505	19.88	535.5	21.08
SDE060/ 10	498.5	19.63	529	20.83	520.5	20.49	551	21.69	26.23	57.83	551	21.69	571.5	22.89

Parallel circuit

Parallel circuit is composed using P or Q working section.

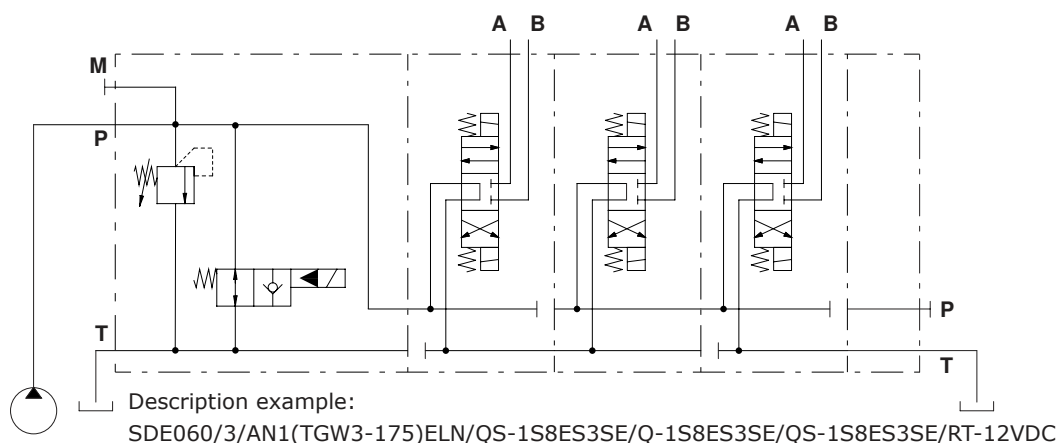
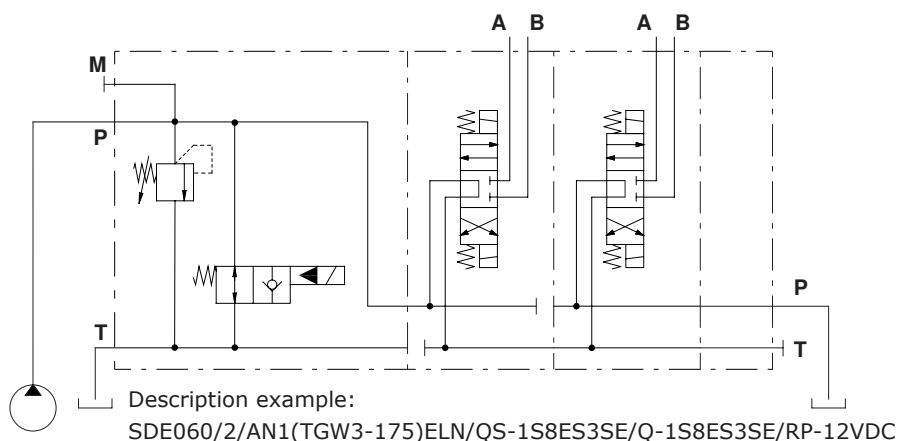
Outlet section can be with or without ports arrangement.

**Series circuit: only for SDE060 valve**

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.

Outlet section depends on total number of working section: if it is even, outlet section must be with P port open, if it is odd, outlet section must be with T port open.



Complete sections ordering codes

SDE030/ 3/ AN1(JG3-120)ELN/ P-18ESB3/ P-18ESB3.PS3(DC3-100)/ RF-.....-12VDC

Nr. of working sections

1

2

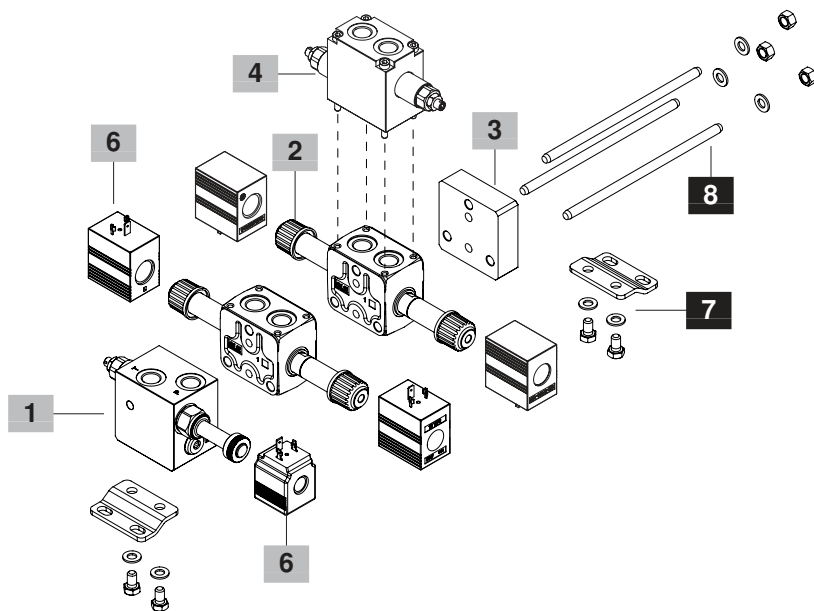
2

4

3

5

6



SDE060/ 3/ AN1(TGW3-120)ELN/ P-18ES3/ P-18ES3.BPEN3/ RF-.....-12VDC

Nr. of working sections

1

2

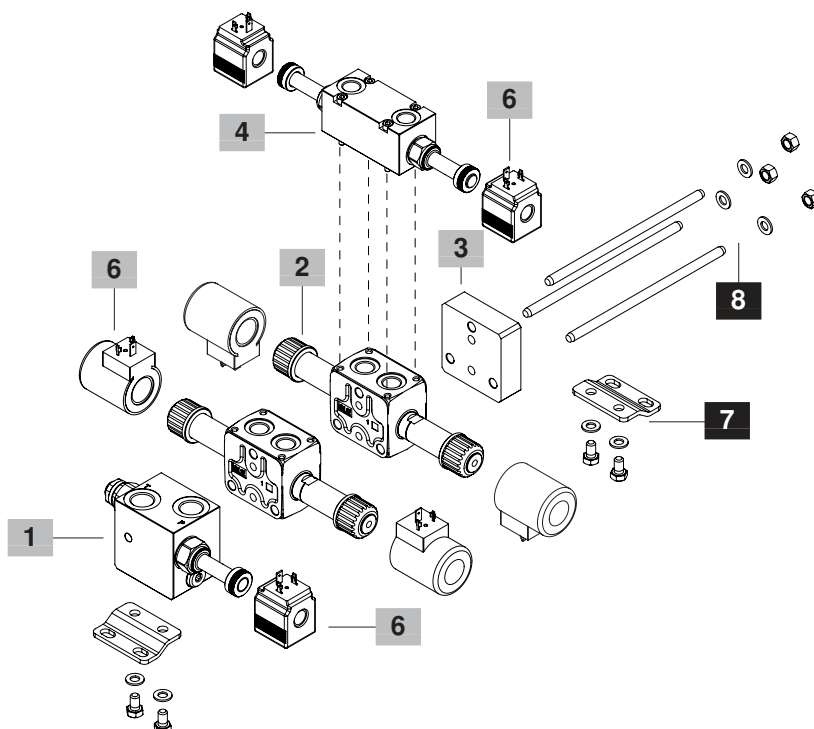
2

4

3

5

6



Complete sections ordering codes

1 Complete inlet section ***SDE030 sectionspage 10**Type: **AN** Code: 5FIA103306

Description: Without valves, ports P and T open

Type: **ANP** Code: 5FIA103302

Description: As type AN, port P open and T plugged

Type: **ANT** Code: 5FIA103302

Description: As type AN, port P plugged and T open

Type: **ANS** Code: 5FIA103303

Description: As type AN, ports P and T open

Type: **AN1(JG3-120)ELN-WC** Code: Y61S303000

Description: With pressure relief valve and solenoid operated unloading valve, ports P and T open

Type: **AN1P(JG3-120)ELN-WC** Code: Y61S303002

Description: As type AN1, port P open and T plugged

Type: **AN2/PPXN1(JG3-120)ELN-WC** Code: Y61S303001

Description: With pressure relief valve, solenoid operated unloading valve and pressure compensated flow control valve, ports P and T open

Type: **AN2P/PPXN1(JG3-120)ELN-WC** Code: Y61S303005

Description: As type AN2, port P open and T plugged

SDE060 sectionspage 15Type: **AN** Code: 5FIA103103

Description: Without valves, ports P and T open

Type: **ANP** Code: 5FIA103304

Description: As type AN, port P open and T plugged

Type: **ANT** Code: 5FIA103304

Description: As type AN, port P plugged and T open

Type: **ANS** Code: 5FIA103305

Description: As type AN, ports P and T open

Type: **AN1(TGW3-175)ELN-WC** Code: Y61S603000

Description: With pressure relief valve and solenoid operated unloading valve

Type: **AN1P(TGW3-175)ELN-WC** Code: Y61S603003

Description: As type AN1, port P open and T plugged

Type: **AN2/PPXN1(TGW3-175)ELN-WC** Code: Y61S603001

Description: With pressure relief valve, solenoid operated unloading valve and pressure compensated flow control valve, ports P and T open

Type: **AN2P/PPXN1(TGW3-175)ELN-WC** Code: Y61S603006

Description: As type AN2, port P open and T plugged

2 Complete working section * page 20

TYPE CODE DESCRIPTION

SDE030 sections: sections are arranged for flangeable valve blocks**Q-18ES3B-WC** Y63S303001 Parallel circuit, type 1 double acting spool**Q-28ES3B-WC** Y63S303002 Parallel circuit, type 2 double acting spool**SDE060 sections:** sections are arranged for flangeable valve blocks**Q-18ES3-WC** Y63S603001 Parallel circuit, type 1 double acting spool**Q-28ES3-WC** Y63S603002 Parallel circuit, type 2 double acting spool**QS-1S8ES3SE-WC** Y63S603003 Series circuit, type 1S double acting series spool**Q-1S8ES3SE-WC** Y63S603005 Parallel circuit, type 1S double acting series spool: **placed after QS series section only****3 Complete outlet section* page 33**TYPE CODE DESCRIPTION
RF 3FIA203000 Without ports (SDE030 and SDE060)**SDE030 sections****RS** 619301200 With ports P and T plugged**RP** 619301100 With port P open and T plugged**RT** 619301000 With port T open and P plugged**SDE060 sections****RS** 619303200 With ports P and T plugged**RP** 619303100 With port P open and T plugged**RT** 619303000 With port T open and P plugged**4 Complete flangeable valve block****Antishock valvespage 28****Check valvespage 29****Solenoid operated check valves (without coils)page 30****Single counterbalance valvespage 32****Double counterbalance valves.page 32****5 Valve threading**

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

6 Coils page 34

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

7 Fixing bracket page 36TYPE CODE DESCRIPTION
STAF 5STA148065 Brackets with fixing screws**8 Assembling kit**

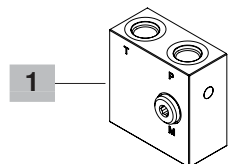
CODE	DESCRIPTION
5TIR108099	Tie rod kit for 1 working section directional valve
5TIR108144	Tie rod kit for 2 working sections directional valve
5TIR108191	Tie rod kit for 3 working sections directional valve
5TIR108236	Tie rod kit for 4 working sections directional valve
5TIR108282	Tie rod kit for 5 working sections directional valve
5TIR108329	Tie rod kit for 6 working sections directional valve
5TIR108375	Tie rod kit for 7 working sections directional valve
5TIR108420	Tie rod kit for 8 working sections directional valve
5TIR108466	Tie rod kit for 9 working sections directional valve
5TIR108512	Tie rod kit for 10 working sections directional valve

NOTE (*) – Codes are referred to **BSP** thread.

SDE030 inlet section parts ordering codes

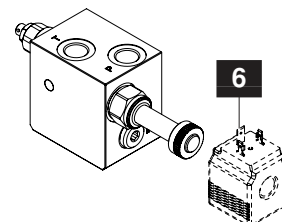
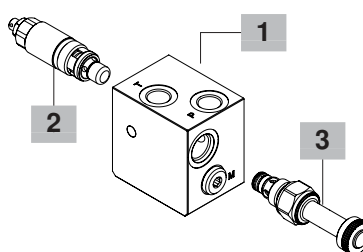
SDE030 / AN -

1 5



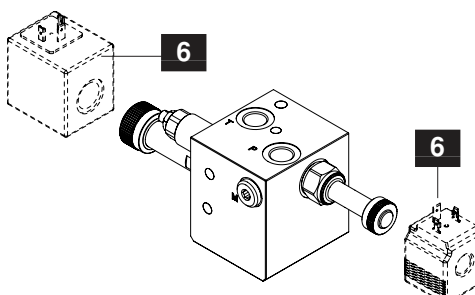
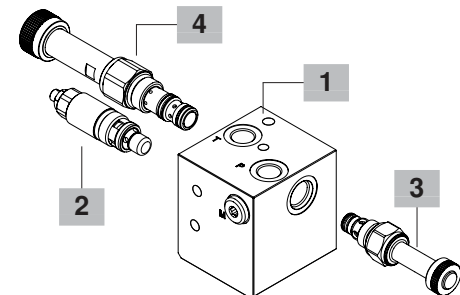
Valve setting (bar)
SDE030 / AN1 (JG3-120) ELN - WC -

1 2 3 Without coil 5



Valve setting (bar)
SDE030 / AN2 / PPXN1 (JG3-120) ELN - WC -

1 4 2 3 Without coil 5



1 Inlet section body kit * page 11

TYPE	CODE	DESCRIPTION
AN	5FIA103306	Without valves
ANP	5FIA103302	As type AN, port P open and T plugged
ANT	5FIA103302	As type AN, port P plugged and T open
ANS	5FIA103303	As type AN, ports P and T plugged
AN1	5FIA103300	With pressure relief valve and unloading valve arrangement, ports P and T open
AN2	5FIA103309	As AN2 with press. compensated flow control valve arrangement, ports P and T open

2 Main relief valve page 13

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

TYPE	CODE	DESCRIPTION
(JG2-63)	5KIT105412	Range 40-63 bar / 580-900 psi std setting 63 bar / 900 psi
(JG3-120)	5KIT105413	Range 50-200 bar / 725-2900 psi std setting 120 bar / 1750 psi
(JG4-220)	5KIT105414	Range 160-315 bar / 2300-4600 psi std setting 220 bar / 3200 psi
SV	XTAP623282	Relief valve blanking plug

Valve set and locked

(JH2-63)	5KIT105452	As type JG2
(JH3-120)	5KIT105453	As type JG3
(JH4-220)	5KIT105454	As type JG4

Anti-tampering configuration

(JZT2-63)	5KIT105462	As type JG2
(JZT3-120)	5KIT105463	As type JG3
(JZT4-220)	5KIT105464	As type JG4

3 Solenoid operated unloading valve page 13

TYPE	CODE	DESCRIPTION
ELN	0EC08002031	Without emergency override
ELV	0EC08002034	With screw type emergency override
ELP	0EC08002033	With push-button emergency override
ELT	0EC08002035	With "twist & push" emergency override
LT	3XTP3533700	Unloading valve blanking plug

4 Press. comp. flow control valve page 14

TYPE	CODE	DESCRIPTION
LT	3XTP3545700	Valve blanking plug

Manual operated

PPAL1	0PP10002000	Hand-wheel setting type
PPAV1	0PP10002005	Screw setting type

Solenoid operated

PPXN1	0PP10002031	Without emergency operation
PPXV1	0PP10002033	With screw type emergency operation
PPXL1	0PP10002035	With hand-wheel emergency operation

5 Section threading

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

6 Optional coils page 34

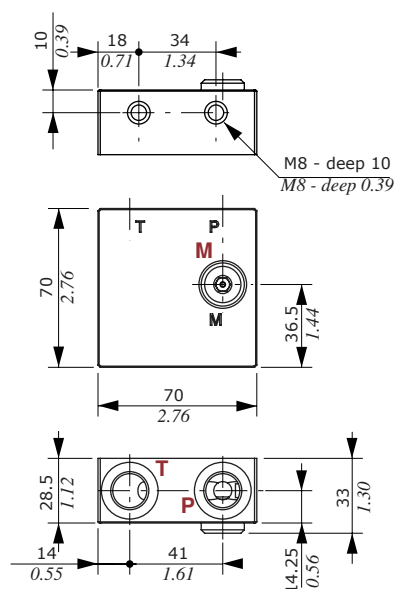
For list of available coils see pages of related sections.

NOTE (*) - Codes are referred to **BSP** thread.

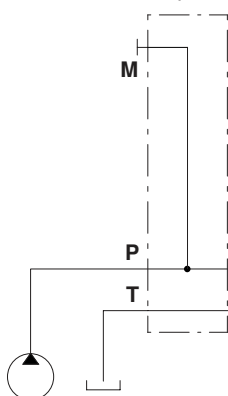
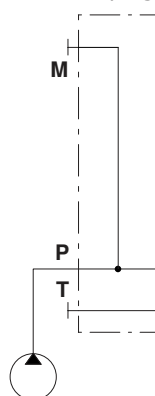
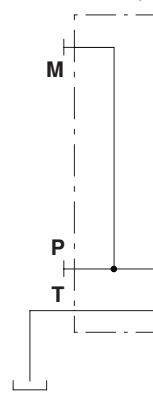
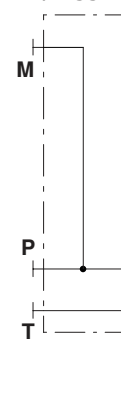
SDE030 inlet section dimensions and circuit

N inlet section

Configuration with ports P and T open

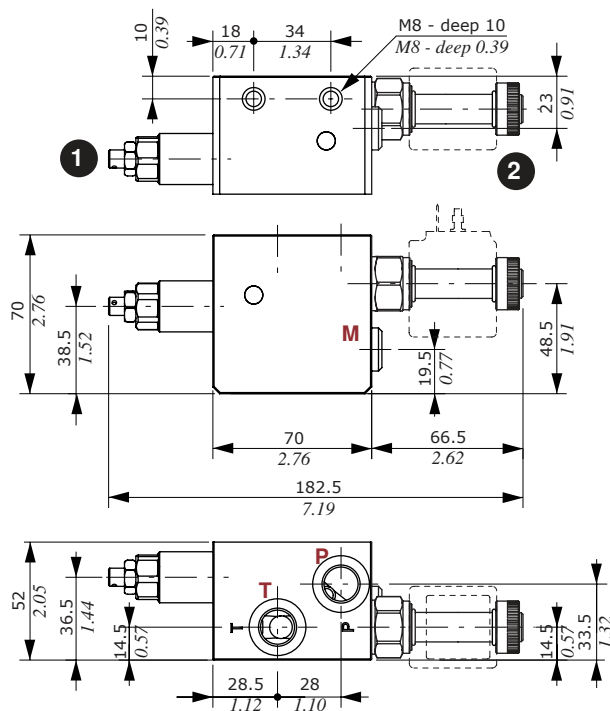


Hydraulic circuit

Type AN
Ports P and T
openType ANP
Port P open
and T pluggedType ANT
Port P plugged
and T openType ANS
Ports P and T
plugged

N1 inlet section

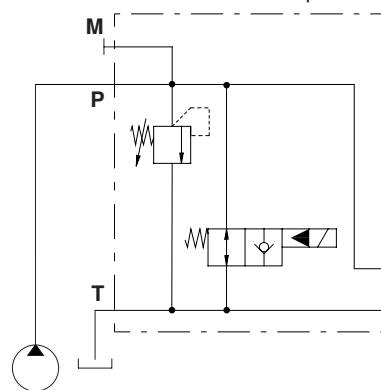
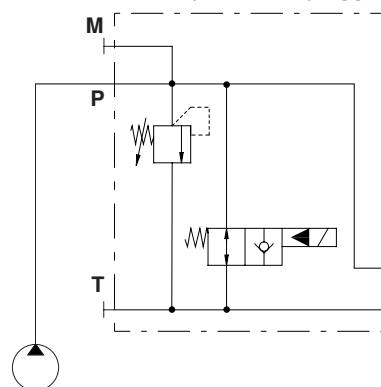
Configuration with ports P and T open



Legenda

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

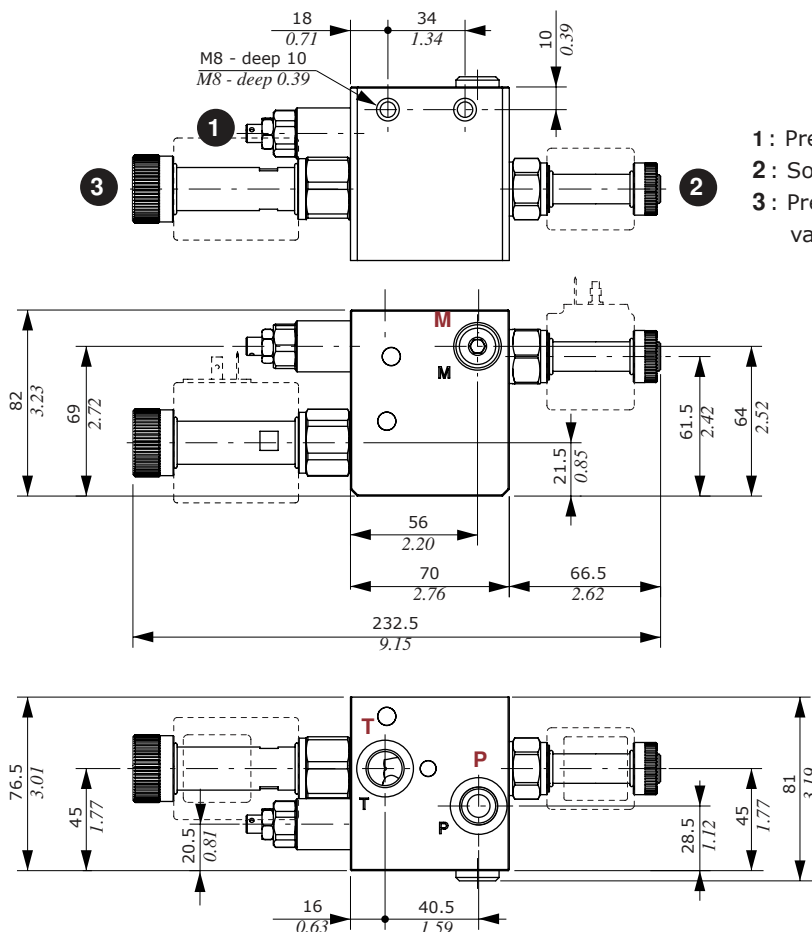
Hydraulic circuit

Type AN
Ports P and T openType AN1P
Port P open and T plugged

SDE030 inlet section dimensions and circuit

N2 inlet section

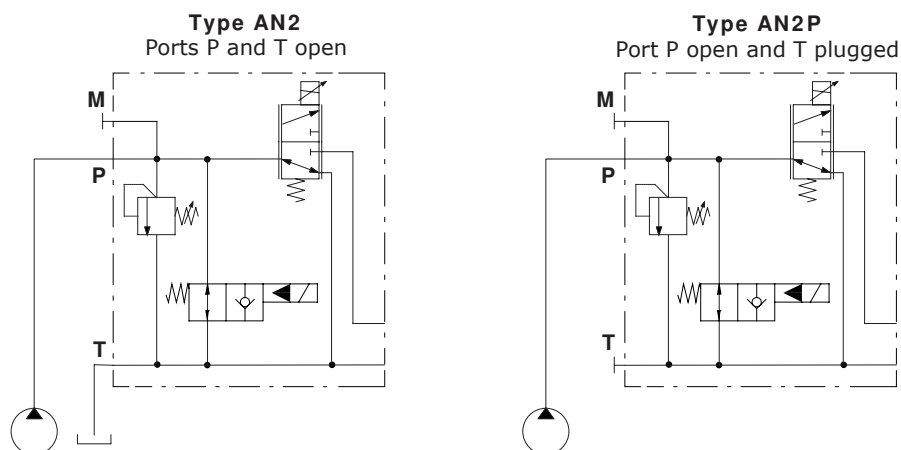
Configuration with ports P and T open



Legenda

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

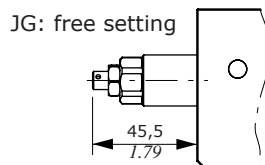
Hydraulic circuit



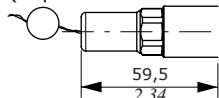
SDE030 inlet section options

Pressure relief valve

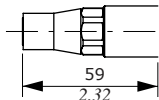
Setting types



JH: valve set and locked
(cap code 3COP117260)



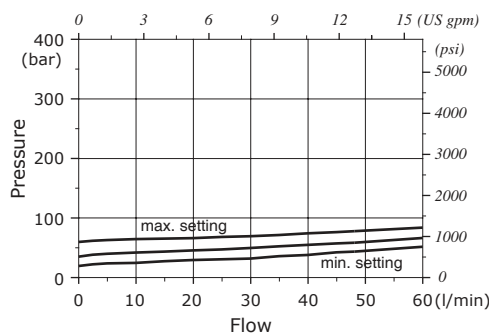
JZT: Anti-tampering cap
(cap code 4COP120420)



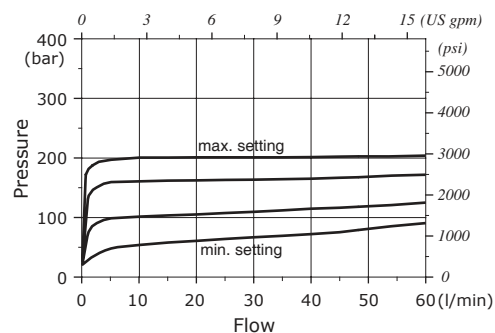
Hydraulic symbol



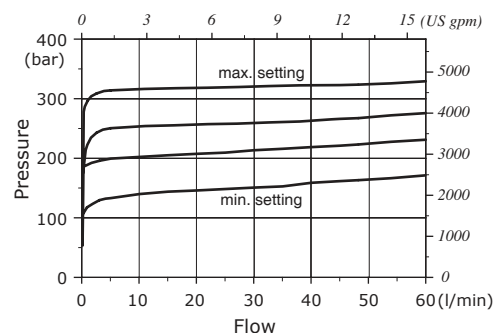
Setting range: type JG2



Setting range: type JG3

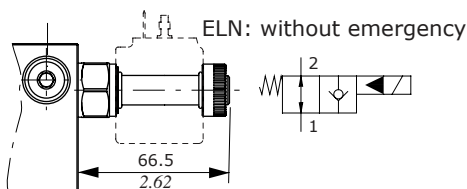


Setting range: type JG4

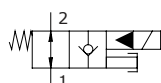
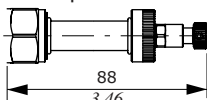


Solenoid operated unloading valve

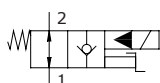
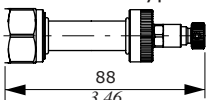
Manual emergency types



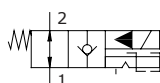
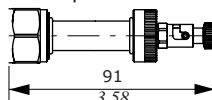
ELP: push button type



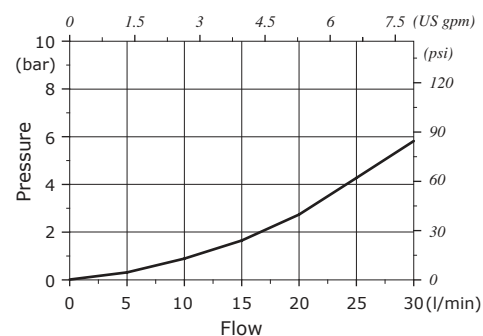
ELV: screw type



ELT: "push & twist" type



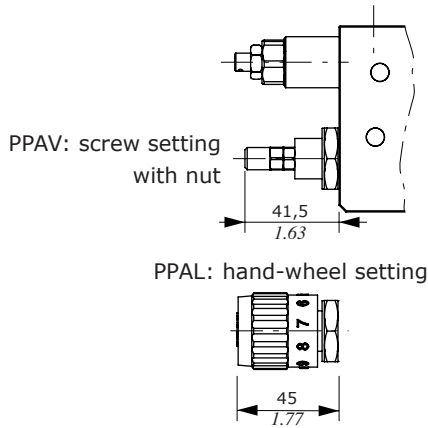
Pressure drop diagram



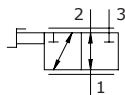
SDE030 inlet section options

Pressure compensated flow control valve

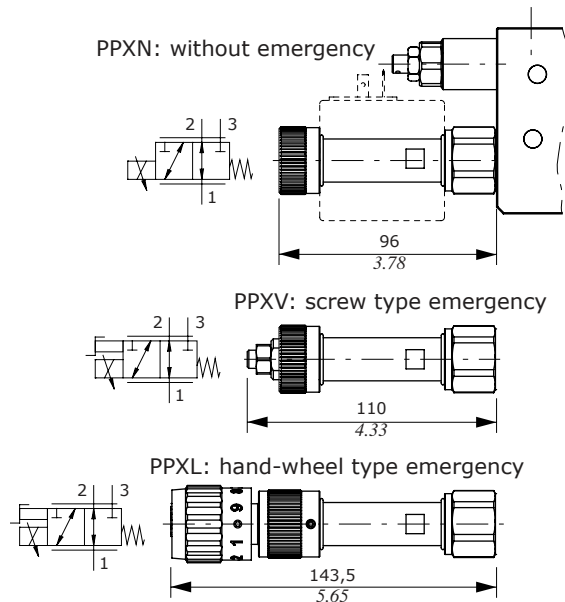
Manual operated types



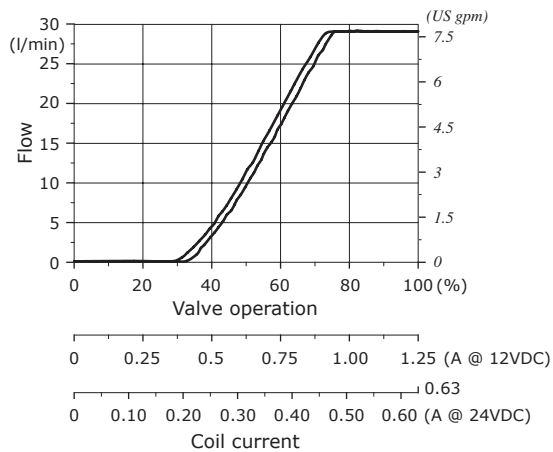
Hydraulic symbol



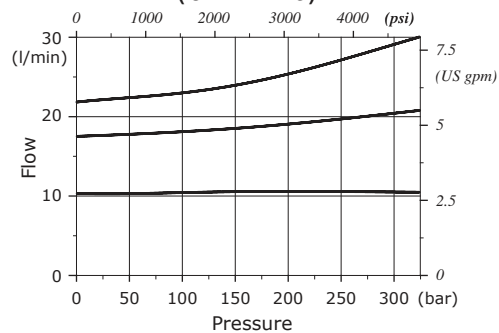
Solenoid operated types



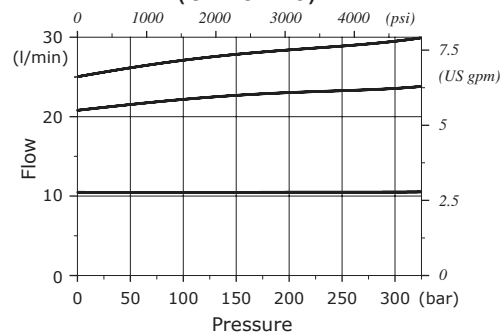
Flow regulation diagram



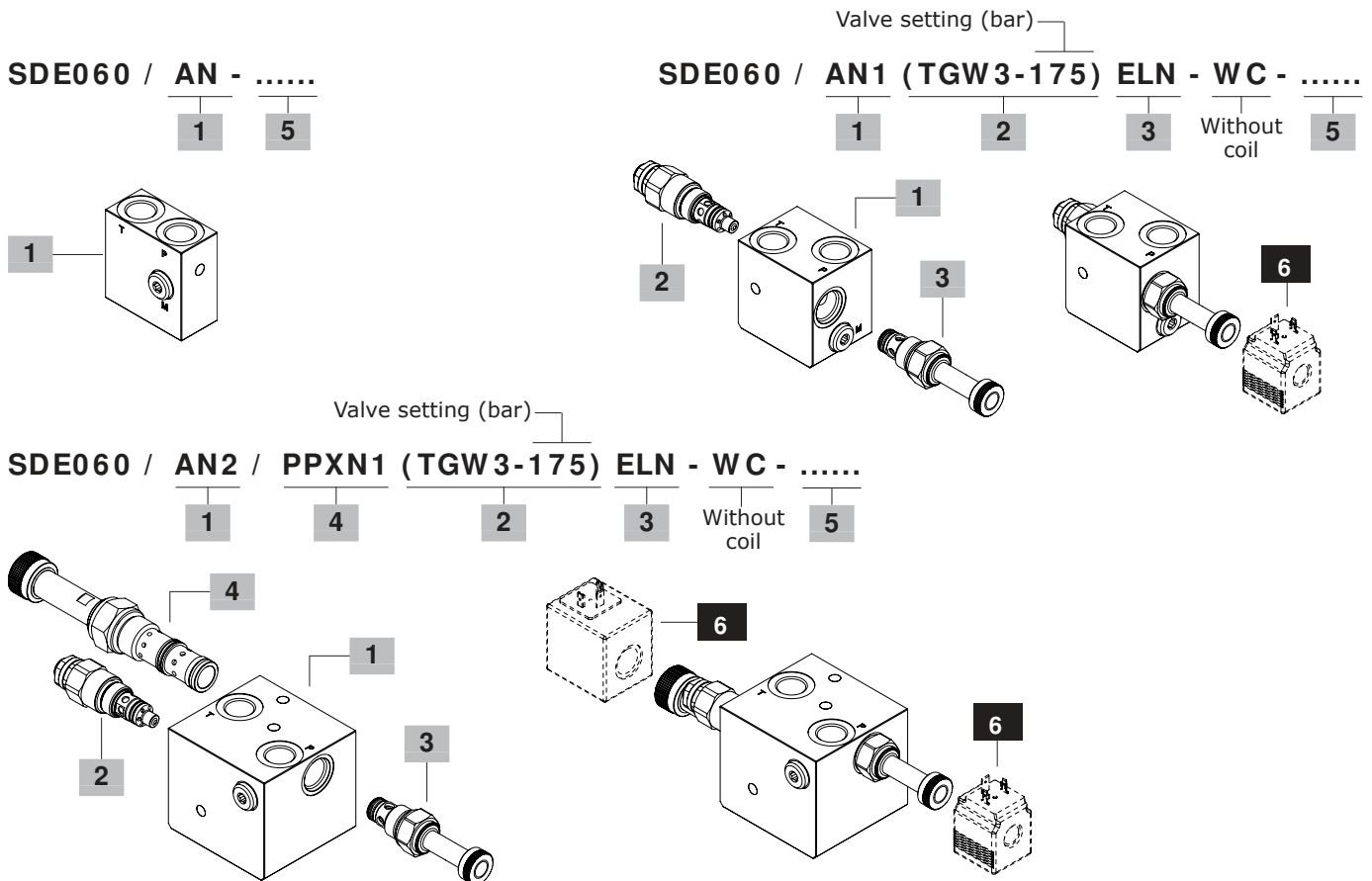
Pressure vs. Flow diagram (on P2 line)



Pressure vs. Flow diagram (on P3 line)



SDE060 inlet section parts ordering codes

**1 Inlet section body kit *** page 16

TYPE	CODE	DESCRIPTION
AN	5FIA103103	Without valves, ports P and T open
ANP	5FIA103304	As type AN, port P open and T plugged
ANT	5FIA103304	As type AN, port P plugged and T open
ANS	5FIA103305	As type AN, ports P and T plugged
AN1	5FIA103307	With pressure relief valve and unloading valve arrangement
AN2	5FIA103310	As previous with pressure compensated flow control valve arrangement

2 Main relief valve page 18

TYPE	CODE	DESCRIPTION
(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

3 Solenoid operated unloading valve page 18

TYPE	CODE	DESCRIPTION
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	3XTP3544200	Unloading valve blanking plug

4 Press. comp. flow control valve page 19

TYPE	CODE	DESCRIPTION
LT	3XTP3558200	Priority valve blanking plug
Manual operated		
PPAL1	0PP12002000	Hand-wheel setting type
PPAV1	0PP12002004	Screw setting type
Solenoid operated		
PPXN1	0PP12002037	Without emergency operation
PPXV1	0PP12002039	With screw type emergency operation
PPXL1	0PP12002041	With hand-wheel emergency operation

5 Section threading

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

6 Optional coils page 34

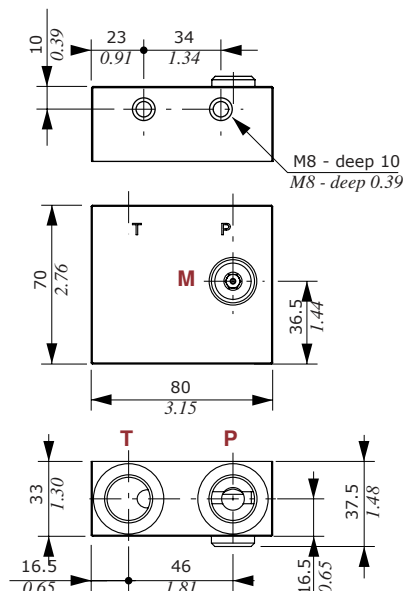
For list of available coils see pages of related sections.

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

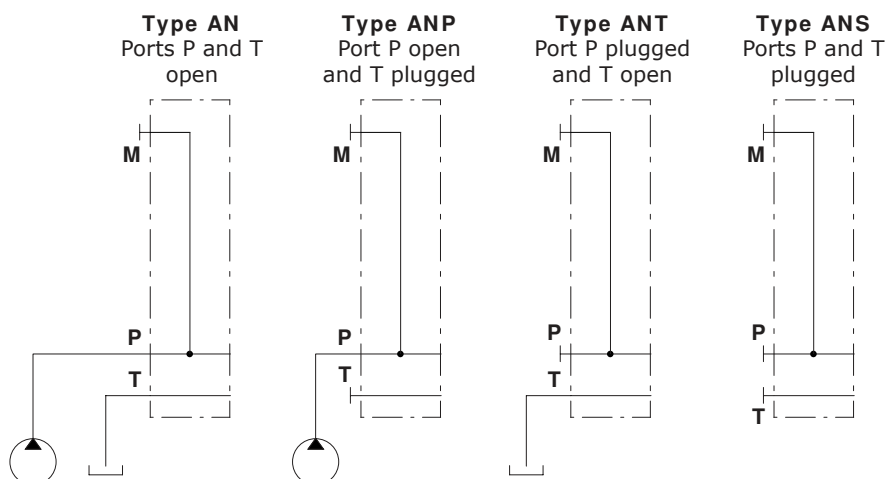
SDE060 inlet section dimensions and circuit

N inlet section

Configuration with ports P and T open

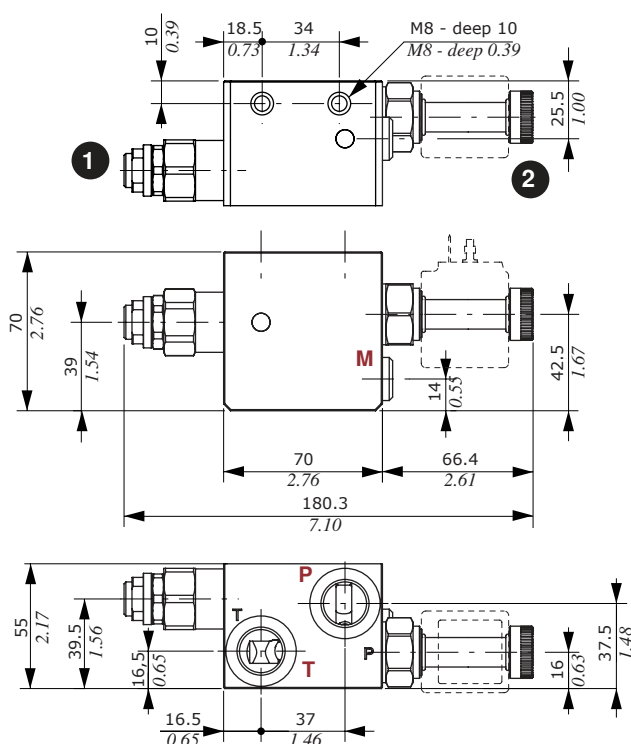


Hydraulic circuit



N1 inlet section

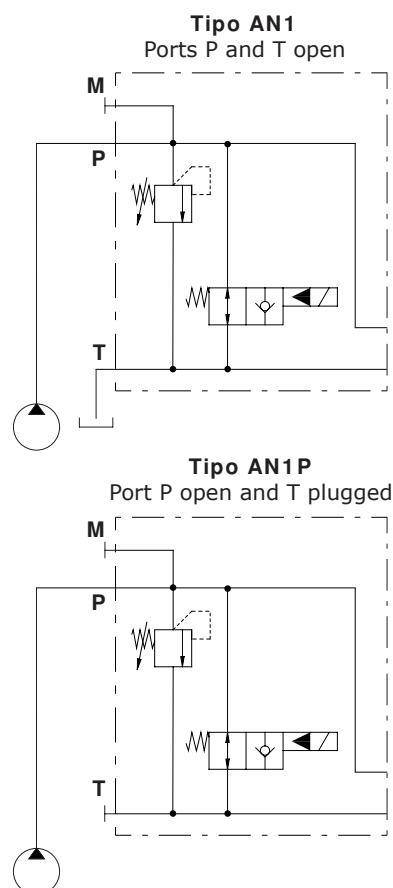
Configuration with ports P and T open



Legenda

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

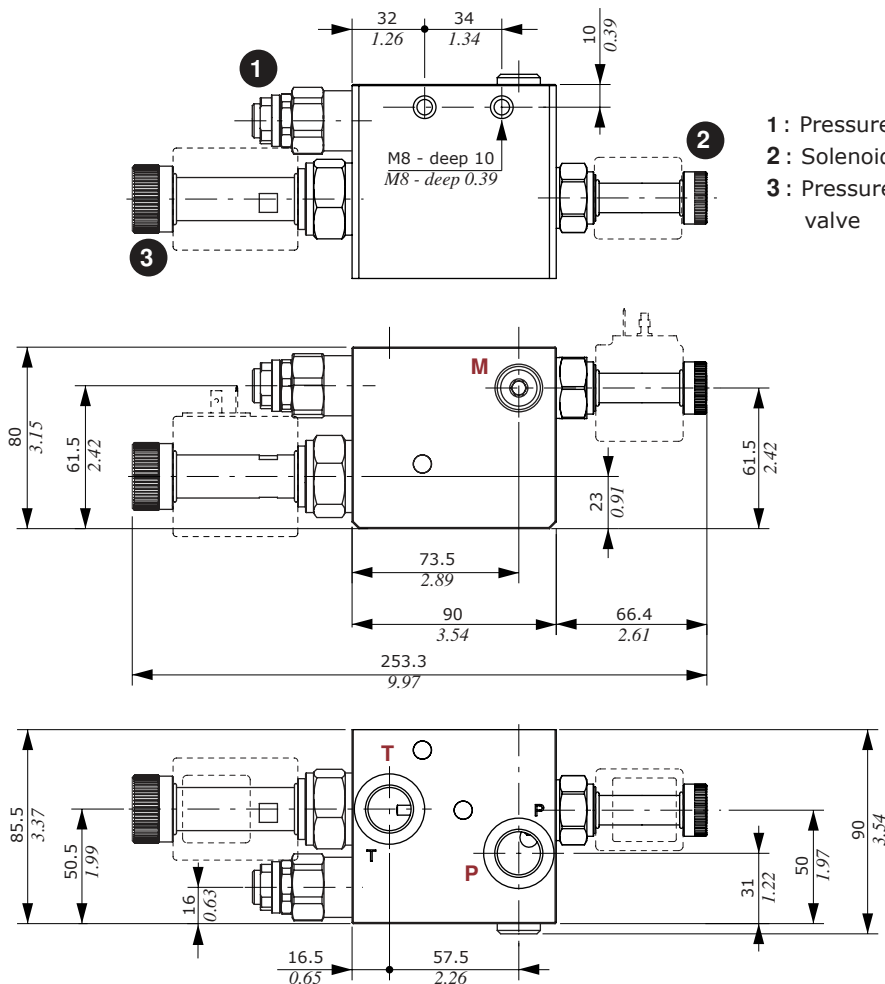
Hydraulic circuit



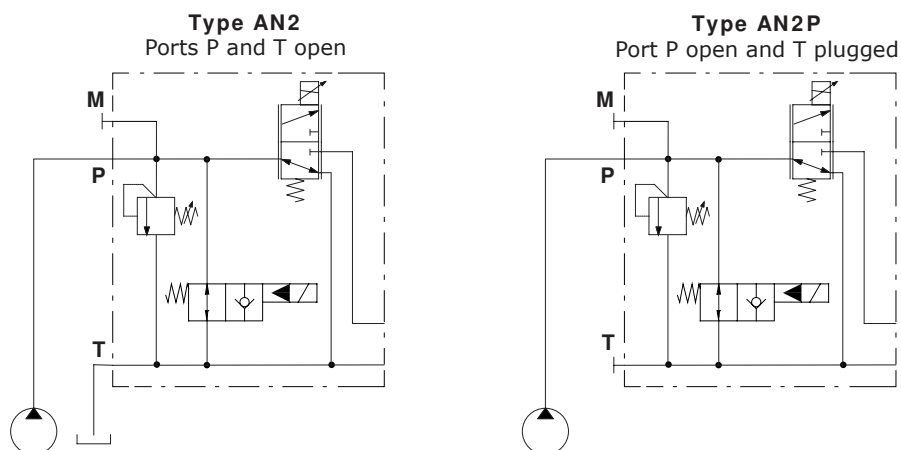
SDE060 inlet section dimensions and circuit

N2 inlet section

Configuration with ports P and T open



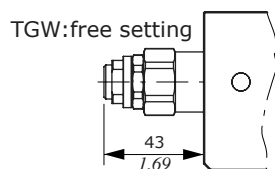
Hydraulic circuit



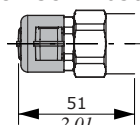
SDE060 inlet section options

Main relief valve

Setting types



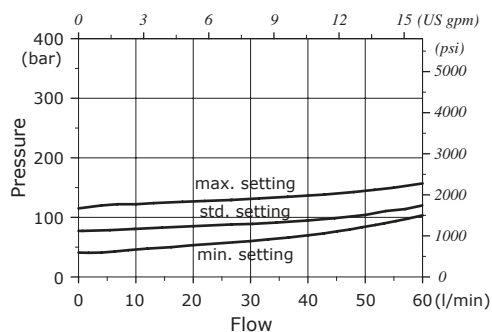
TZW: with anti-tampering cap
(cap code 4COP126300, nr.2 pcs)



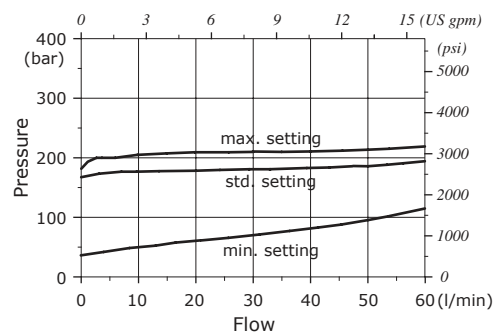
Hydraulic symbol



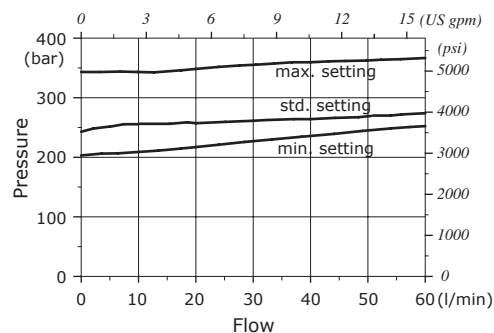
Setting range: type TGW2



Setting range: type TGW3

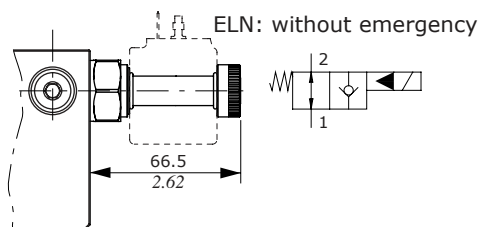


Setting range: type TGW4

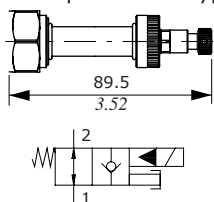


Unloading valve

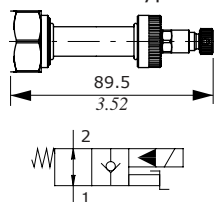
Manual emergency types



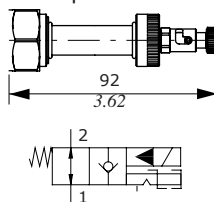
ELP: pull button type



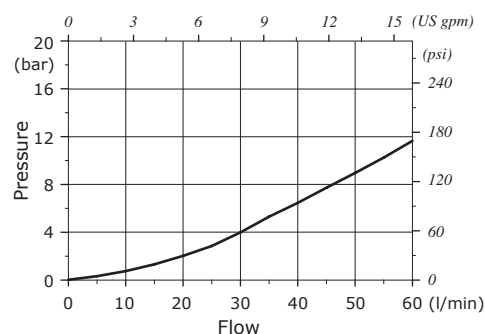
ELV: screw type



ELT: "pull & twist" type



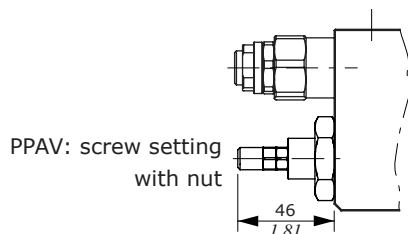
Pressure drop diagram



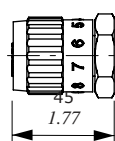
SDE060 inlet section options

Pressure compensated flow control valve

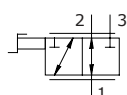
Manual operated types



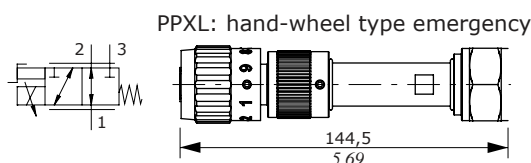
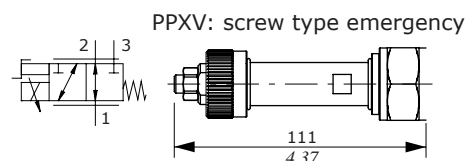
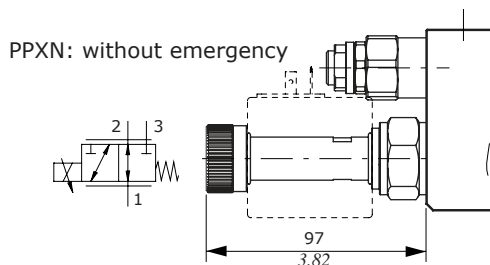
PPAL: hand-wheel setting



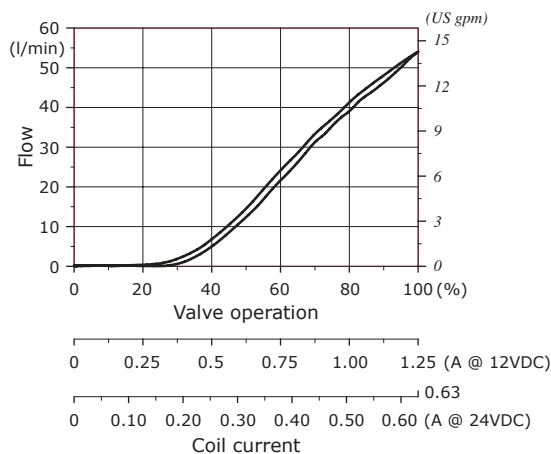
Hydraulic symbol



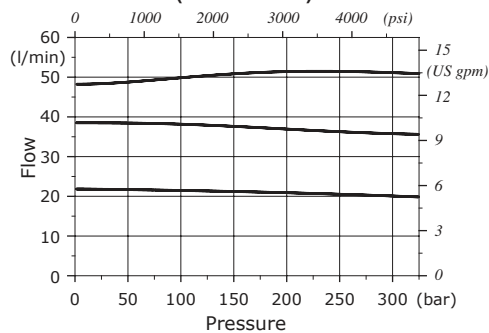
Solenoid operated types



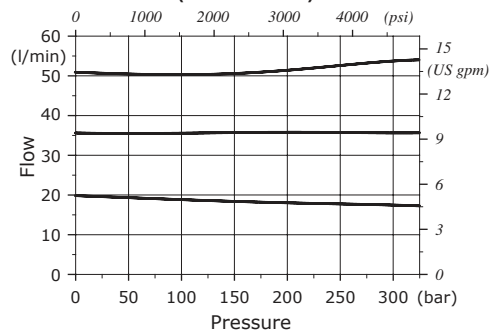
Flow regulation diagram



Pressure vs. Flow diagram (on P2 line)

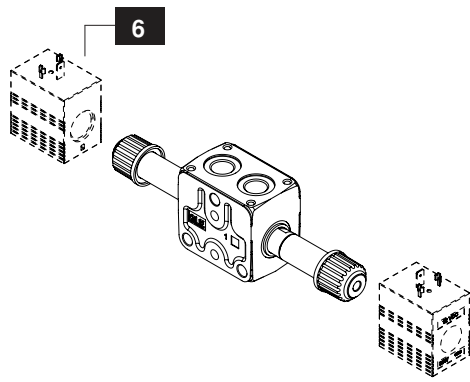
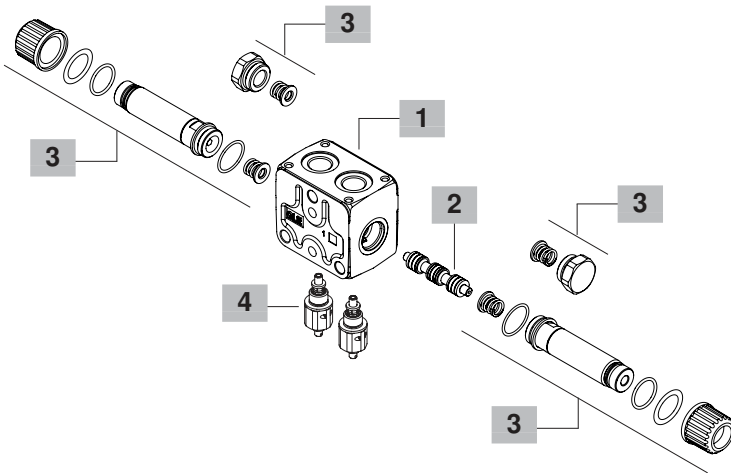


Pressure vs. Flow diagram (on P3 line)

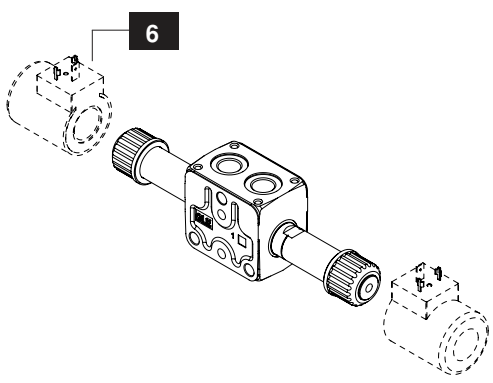
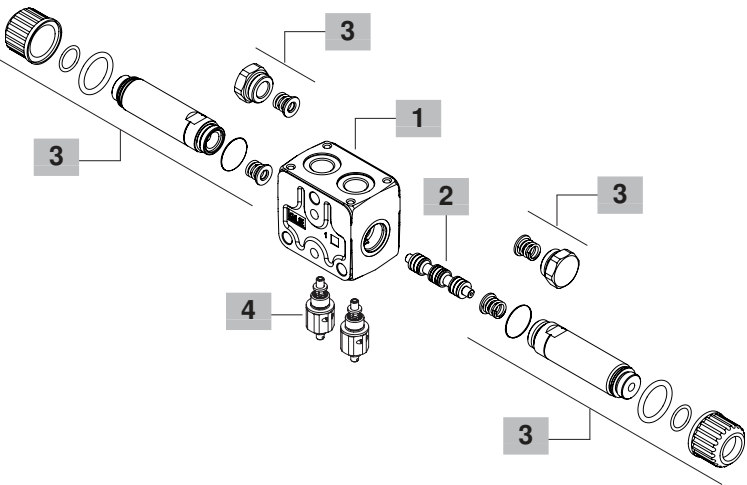


SDE030-SDE060 working section parts ordering codes -----

SDE030 / P - 1 8ES3B . P3(100) - WC -
1 2 3 4 5
Valve setting (bar)
Without coil



SDE060 / P - 1 8ES3 . P3(100) - WC -
1 2 3 4 5
Valve setting (bar)
Without coil



SDE030-SDE060 working section parts ordering codes

1 Working section body kit * page 22

TYPE	CODE	DESCRIPTION
Sections with standard threads: G3/ 8		
Q	5EL1033000	Parallel type, with arrangement for upper flangeable valve block
QS	5EL2033000	As type Q, for series circuit: need spool type 1S . Only for SDE060 valve
Q8	5EL1033500	As type Q, for regenerative circuit on port A: need spool type 8
P	5EL1033010	As type Q, with arrangement for secondary relief valve
Sections with increased threads: G1/ 2		
Q-BSP12	5EL1034010	Parallel type, without arrangement for upper flangeable valve block
QS-BSP12	5EL1034011	As type Q, for series circuit: need spool type 1S . Only for SDE060 valve
Q8-BSP12	5EL1034500	As type Q, for regenerative circuit on port A: needs spool type 8
P-BSP12	5EL1034000	As type Q, with arrangement for secondary port valves

2 Spool page 24

TYPE	CODE	DESCRIPTION
For ON/ OFF solenoid control		
1	3CU9010100	Double acting, A and B closed in neutral position
2	3CU9025100	Double acting, A and B connected to tank in neutral position
2H	3CU9025225	Double acting, A and B partially connected to tank in neutral position
1S	3CU9010101	Double acting, for series circuit: needs control type 8ES3SE
8	3CU9080100	Double acting, for regenerative circuit: needs section type Q8
For ON/ OFF solenoid control with manual lever operation		
1LH	3CU9010200	As type 1
2LH	3CU9020200	As type 2
2HLH	3CU9020210	As type 2H
8LH	3CU9080110	As type 8

3 Control kit

TYPE	CODE	DESCRIPTION
For SDE030 working section page 26		
8ES1B	5CAN08E114	ON/OFF solenoid control on port A
8ES2B	5CAN08E114	ON/OFF solenoid control on port B
8ES3B	5CAN08E115	ON/OFF solenoid control on both ports
8ES3BLHC	5CAN08E215	ON/OFF solenoid control on both ports with emergency lever operation
For SDE060 working section page 27		
8ES1	5CAN08E110	ON/OFF solenoid control on port A
8ES2	5CAN08E110	ON/OFF solenoid control on port B
8ES3	5CAN08E111	ON/OFF solenoid control on both ports
8ES3LHC	5CAN08E211	ON/OFF solenoid control on both ports with emergency lever operation
8ES3SE	5CAN08E116	ON/OFF solenoid control on both ports: dedicated for spool type 1S

4 Secondary port valves page 23

Relief valves: 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 160 to 315 bar / 2300 to 4600 psi, standard setting 200 bar / 2900 psi
P3T	5KIT060100	A and B ports valve blanking plugs

5 Section threading

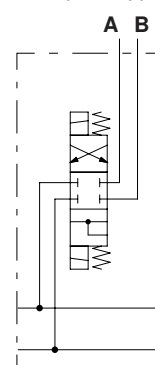
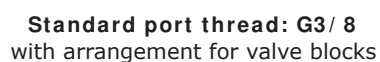
Specify threading always when it is different from BSP standard (see page 4).

6 Optional coils page 34

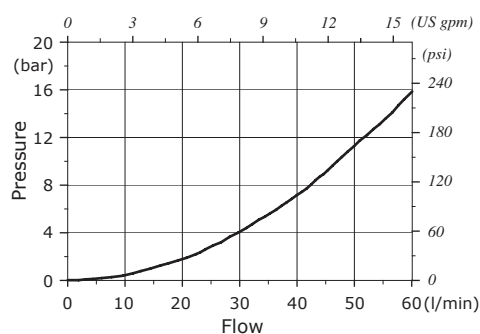
For list of available coils see pages of related sections

NOTE (*) – Codes are referred to **BSP** thread.

Working section type Q



Flow (l/min)	Flow (US gpm)	Pressure (bar)	Pressure (psi)
0	0	0.0	0
10	2.6	0.05	0.7
20	5.2	0.15	2.1
30	7.8	0.30	4.3
40	10.4	0.50	7.2
50	13.0	0.75	10.8
60	15.6	1.00	14.5

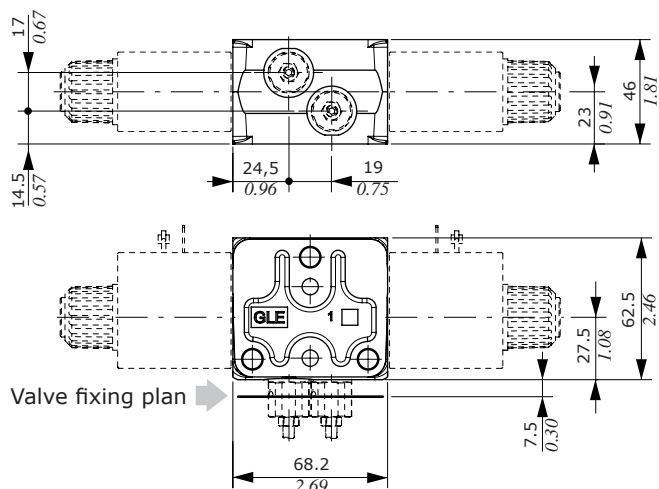


SDE030-SDE060 working section dimensions and circuit

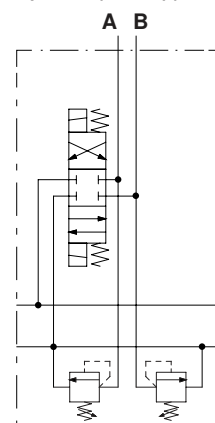
Working section type P

With arrangement for secondary port valves.

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



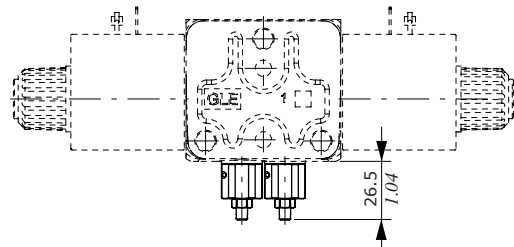
Type P: parallel circuit
(with spool type 1)



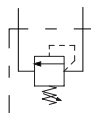
Secondary port valves

Relief valves

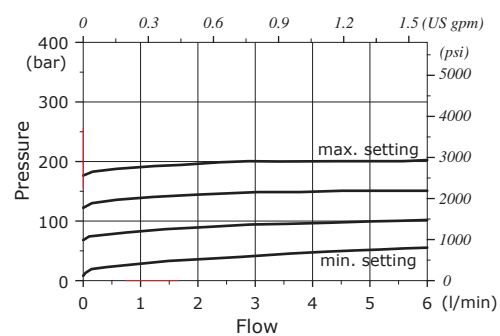
Type G
Screw adjustment



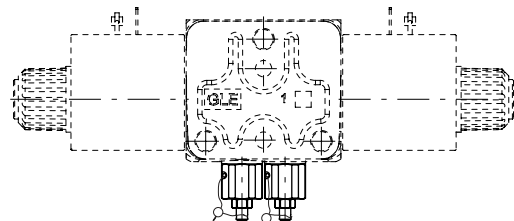
Hydraulic symbol



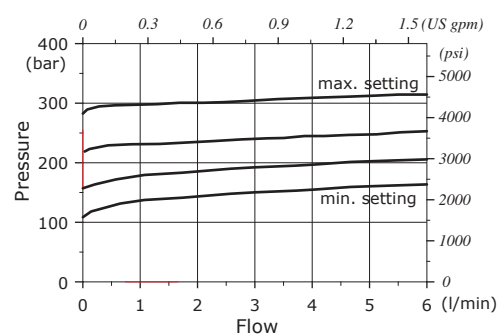
Setting range: type G3



Type H
Valve set and locked

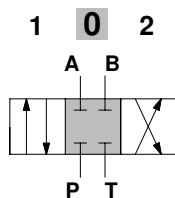


Setting range: type G4



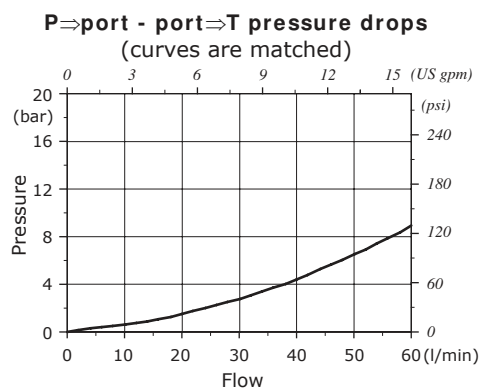
Spools

Type 1

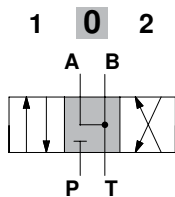


Spool stroke

position 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)

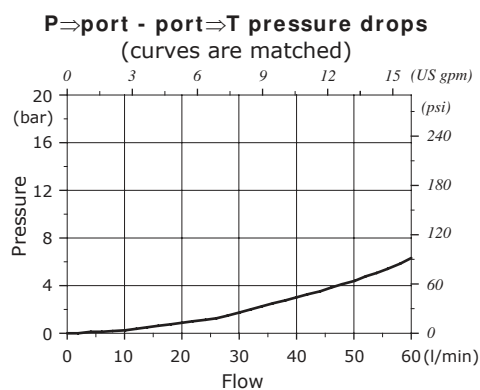


Type 2

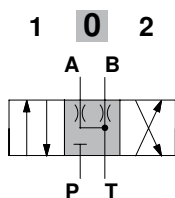


Spool stroke

position 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)

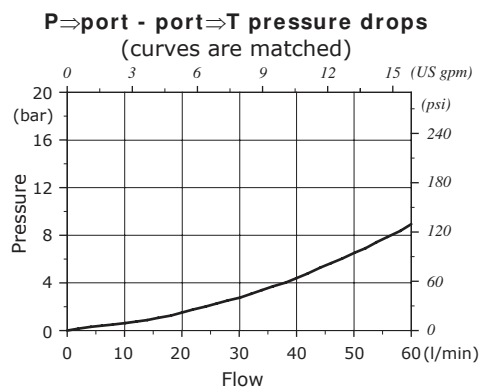


Type 2H

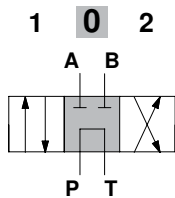


Spool stroke

position 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)

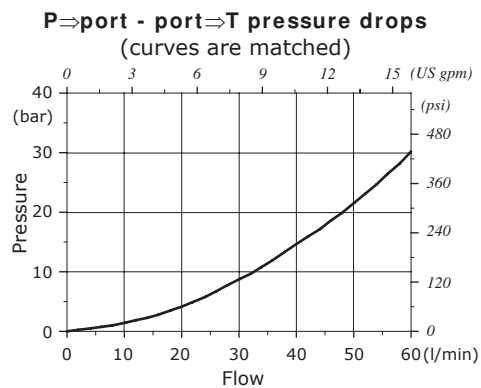


Type 1S



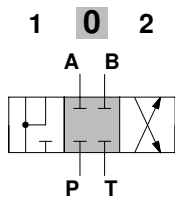
Spool stroke

position 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)



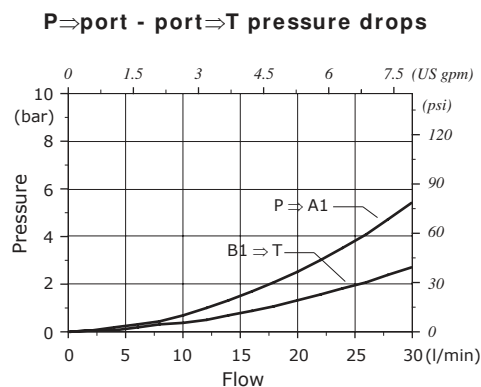
Type 8

Spool suitable for 30 l/min (8 US gpm) max. flow



Spool stroke

position 1: + 3 mm (+ 0.12 in)
position 2: - 3 mm (- 0.12 in)

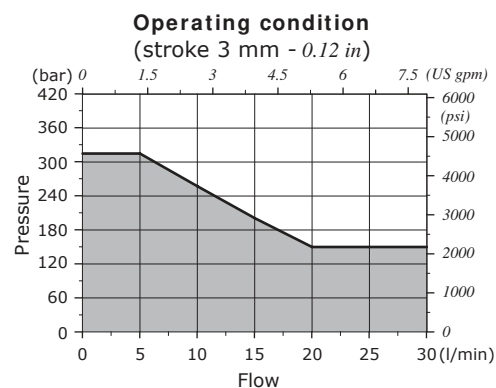
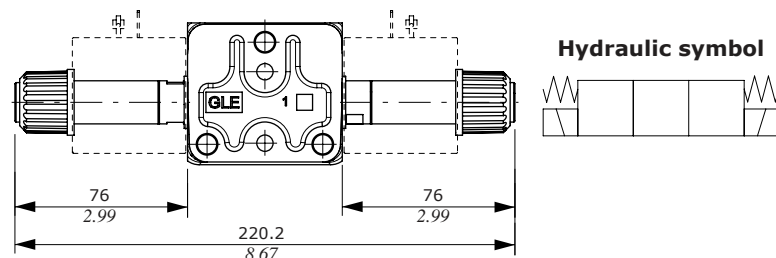


SDE030 spool control kit

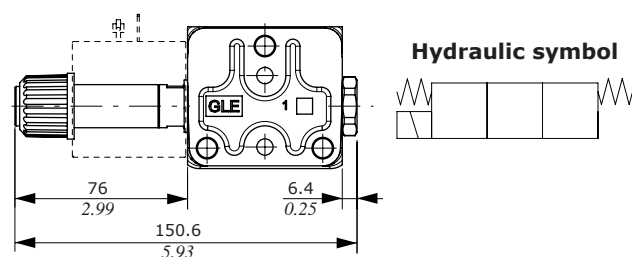
Types 8ES3B - 8ES1B - 8ES2B

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

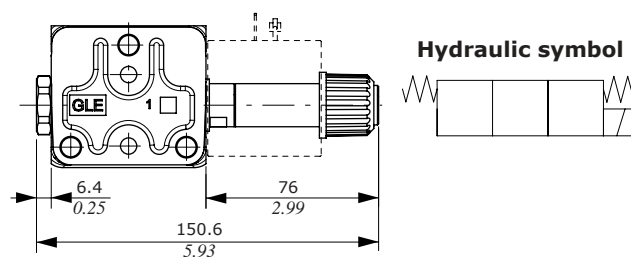
Type 8ES3B: double acting control kit



Type 8ES1B: single acting on A control kit



Type 8ES2B: single acting on B control kit

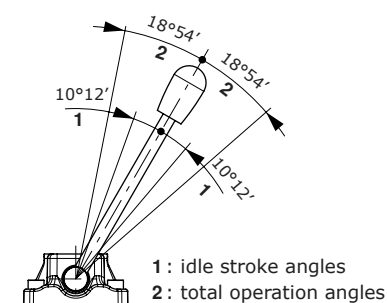
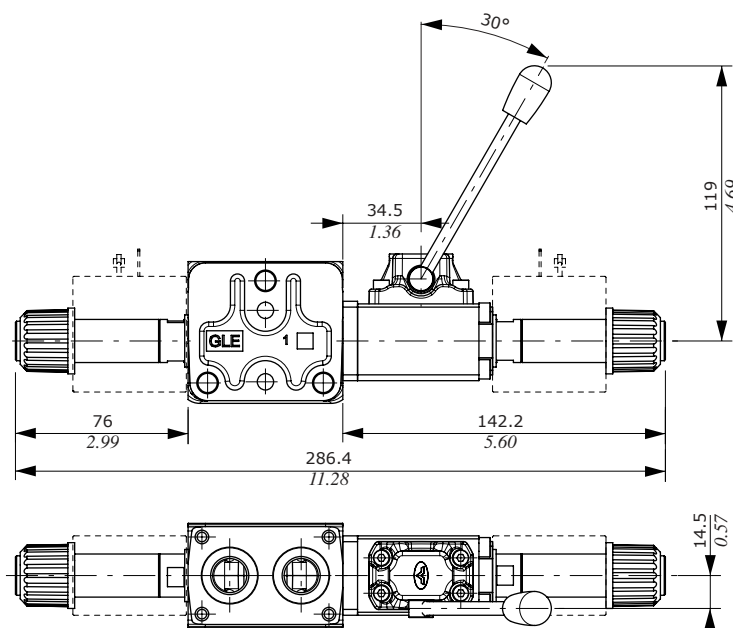


Type 8ES3BLHC

The control is not suitable for series circuit.

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

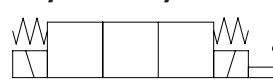
IMPORTANT: lever to be used only for emergency operation, not for continuative use.



Features

Max. pressure. : 50 bar / 725 psi

Hydraulic symbol

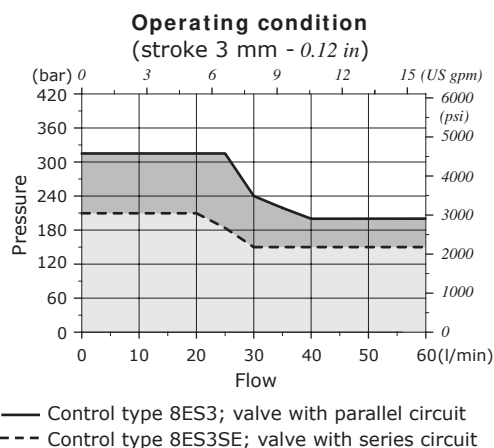
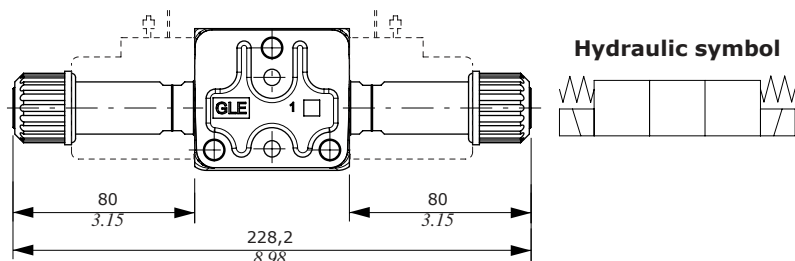


SDE060 spool control kit

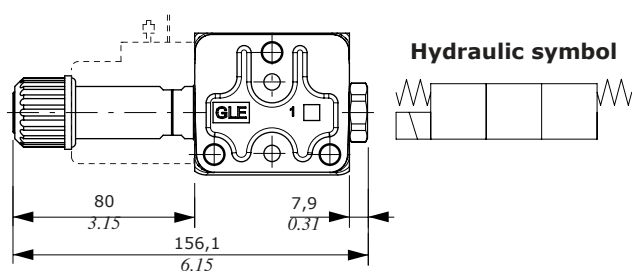
Types 8ES3 - 8ES1 - 8ES2 - 8ES3SE

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

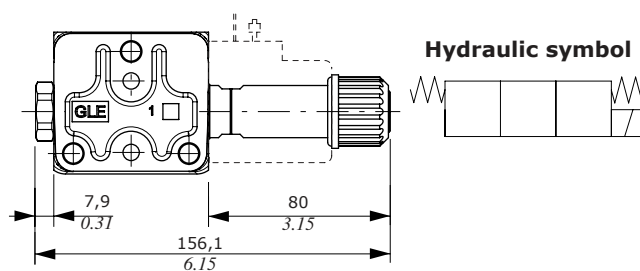
Types 8ES3 - 8ES3SE: double acting control kit



Type 8ES1: single acting on A control kit



Type 8ES2: single acting on B control kit

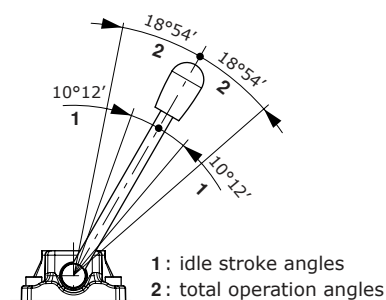
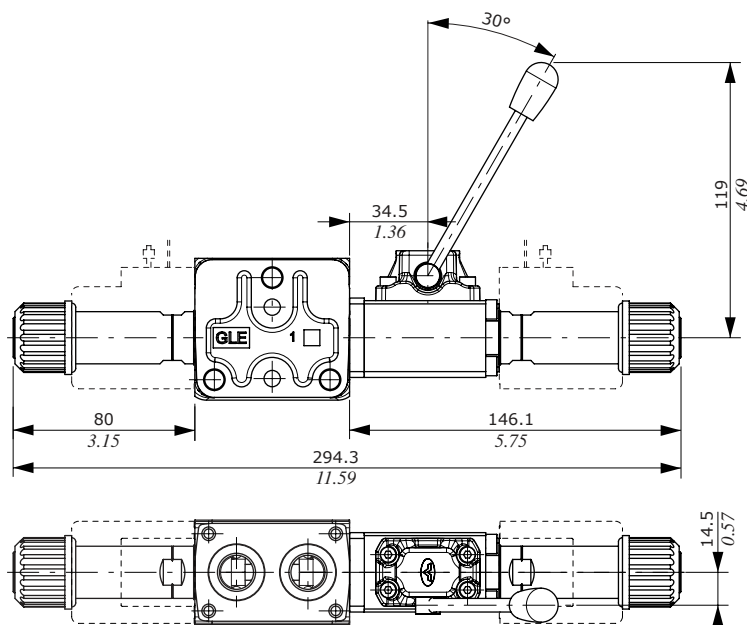


Type 8ES3LHC

The control is not suitable for series circuit.

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

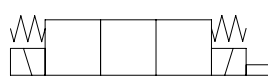
IMPORTANT: lever to be used only for emergency operation, not for continuative use.



Features

Max. pressure. : 50 bar / 725 psi

Hydraulic symbol

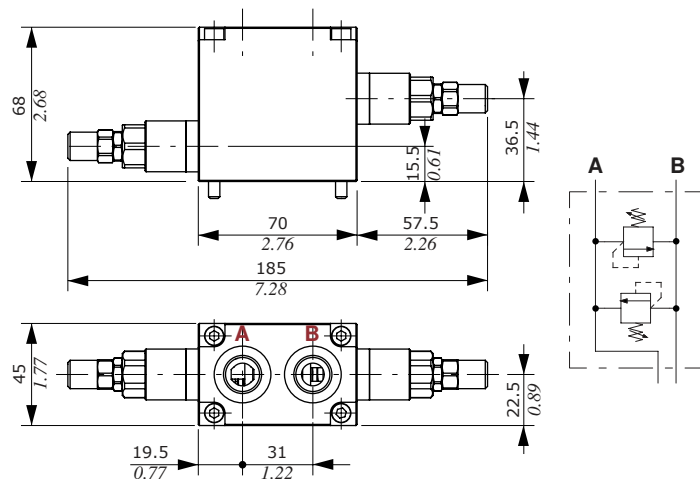


Antishock valves

Dimensional data and circuit

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

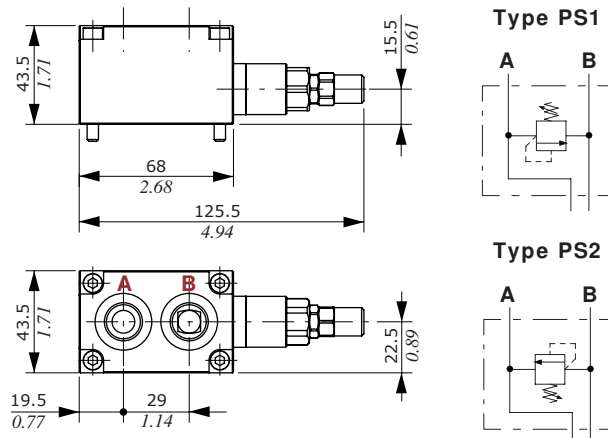
Type PS3: valves on both ports



NOTE: for valve block assembly direction refer to ports name

Type PS1 or PS2: valve on single port

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



Ordering codes

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

Complete antishock valves

PS1 (DC3-160)	619001000	On ports A
PS2 (DC3-160)	619001000	On port B
PS3 (DC3)	619001100	On ports A and B

Part #1: Valve kit

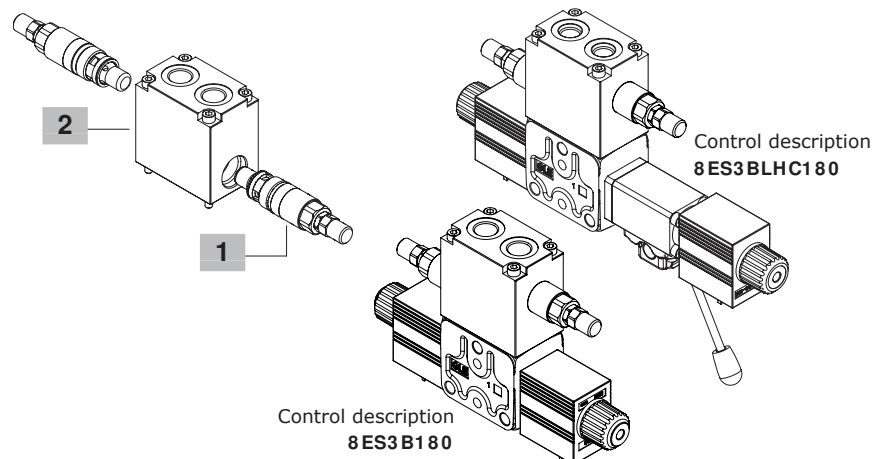
Valves standard setting is referred to 5 l/min (1.3 US gpm) flow, considering the valve mounted on block.

(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
-----	------------	---------------------

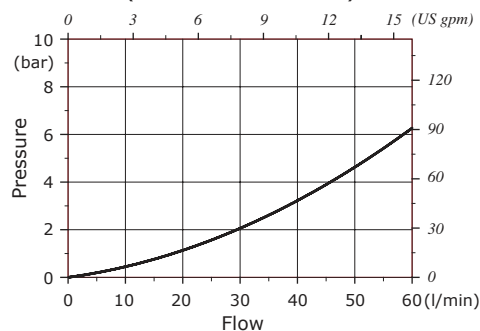
Part #2: Block body kit

PS1-PS2	5COR245682	For single valve on port A or B
PS3	5COR245680	For valves on port A and B

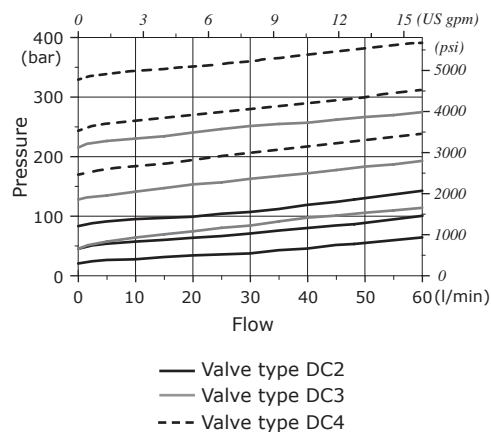


Antishock valve pressure drops

P→port - port→T
(curves are matched)

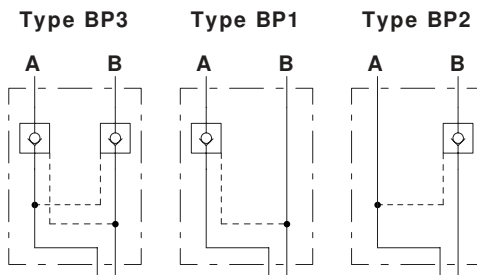
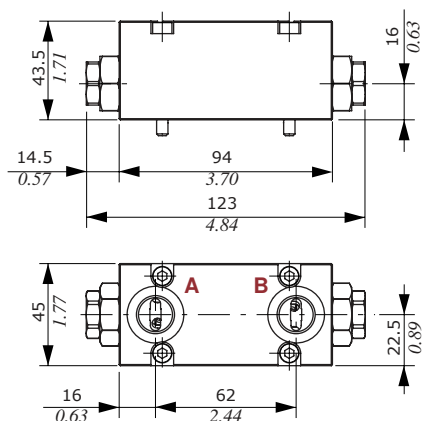


Setting range



Dimensional data and circuit

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



Ordering codes

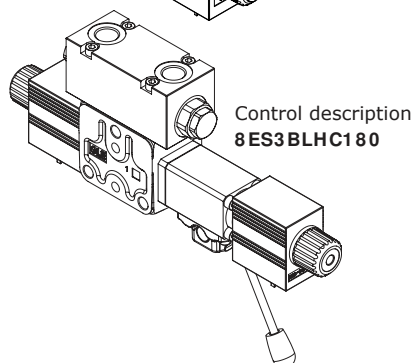
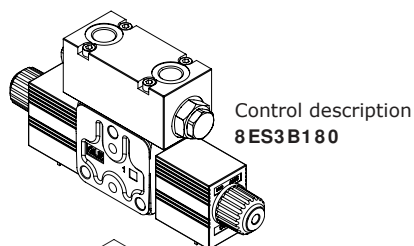
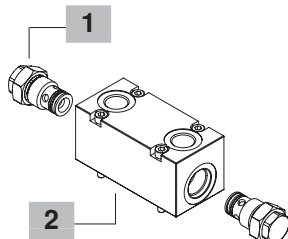
TYPE	CODE	DESCRIPTION
Complete valve block		
BP1	619002000	Valve on port A
BP2	619002000	Valve on port B
BP3	619002100	Valves on ports A and B

Part #1: Valve kit

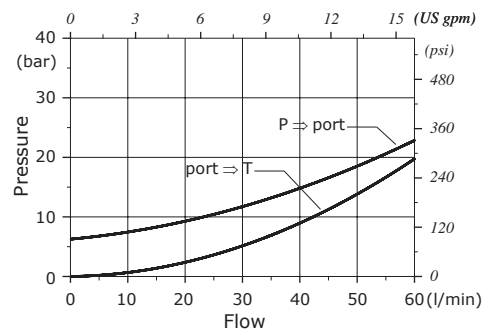
BP	1300020402	Check valve
TBP	XTAP6240140	Valve blanking plug

Part #2: Body kit and piston

5COR245892	Block body kit
3PIS214480	Piston



Check valve pressure drop

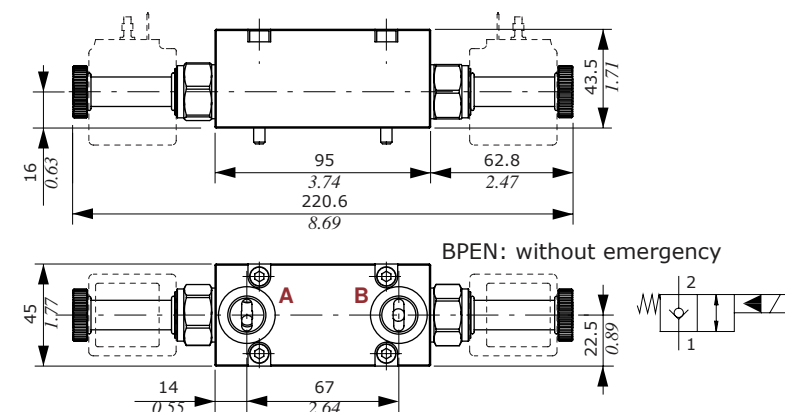


Solenoid operated check valves

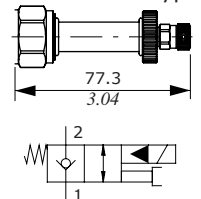
Dimensional data and circuit

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

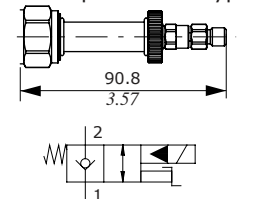
Type BPE(NC) : normally closed circuit



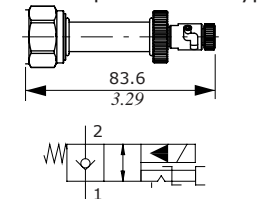
BPEV: screw type



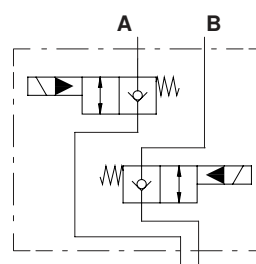
BPEP: pull button type



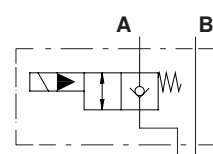
BPEG: "pull & twist" type



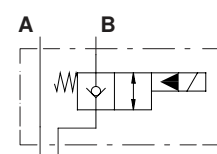
Type BPEN3(NC)



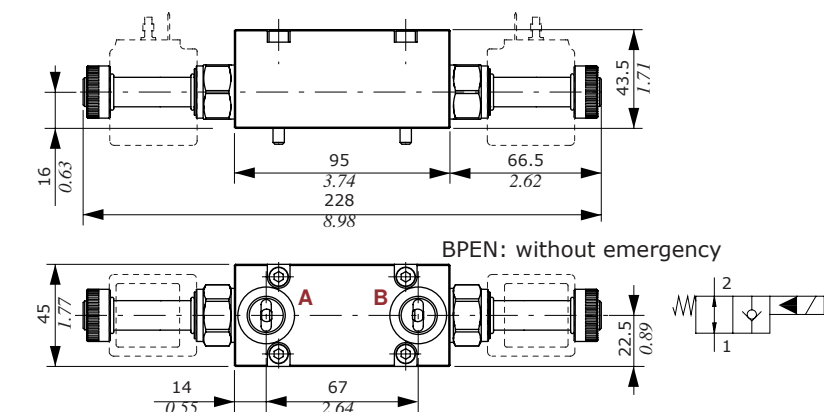
Type BPEN1(NC)



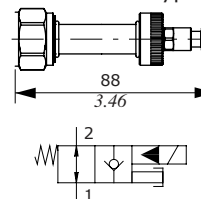
Type BPEN2(NC)



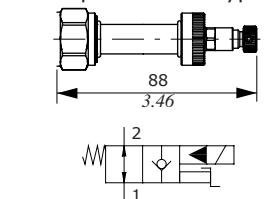
Type BPE(NA) : normally open circuit



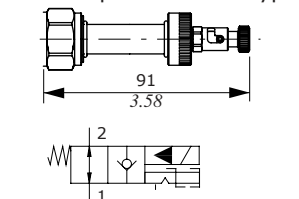
BPEV: screw type



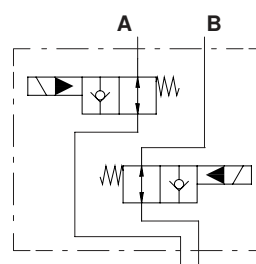
BPEP: push button type



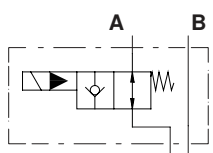
BPEG: "push & twist" type



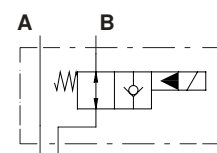
Type BPEN3(NA)



Type BPEN3(NA)

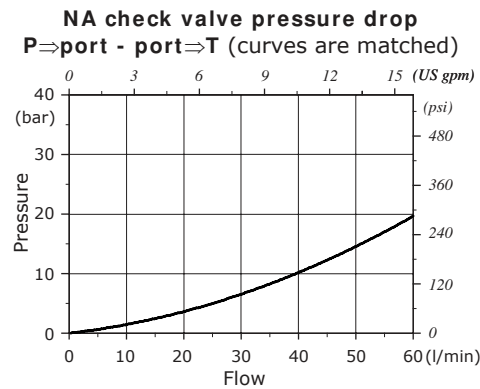


Type BPEN3(NA)



Solenoid operated check valves

Dimensional data and circuit



Ordering codes

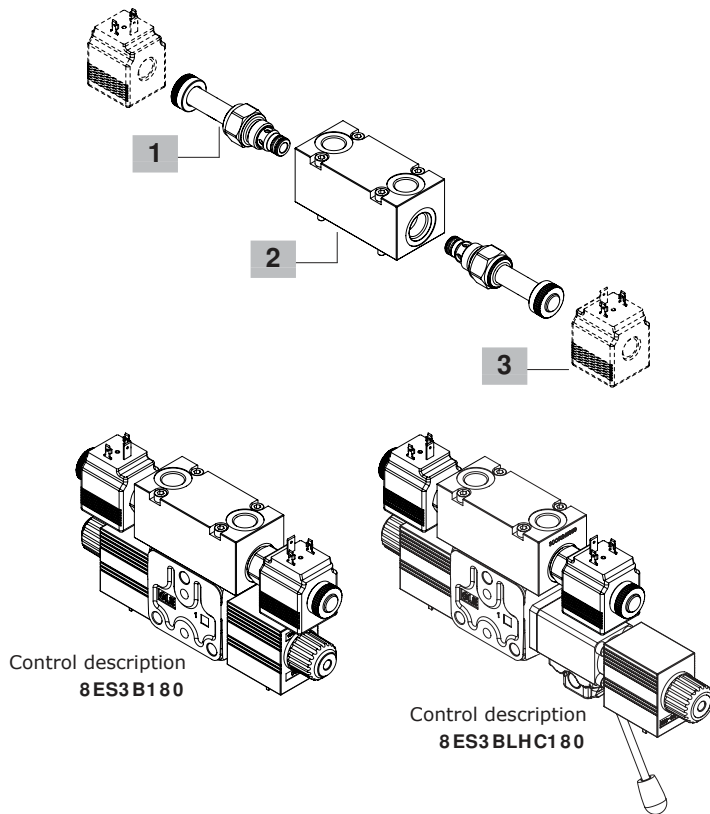
TYPE	CODE	DESCRIPTION
Complete valve block, without coil		
BPEN1(NC)-WC	Y64S363001	On ports A, NC circuit, without manual emergency
BPEN2(NC)-WC	Y64S363001	As previous, on port B
BPEN3(NC)-WC	Y64S363000	As previous, on ports A and B
Part # 1: Valve kit		
NC circuit		
BPEN(NC)	0EC08002032	Without manual emergency
BPEV(NC)	0EC08002037	With screw type emergency
BPEP(NC)	0EC08002036	With pull-button emergency
BPET(NC)	0EC08002038	With "pull & twist" emergency
NA 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" emergency
TBPE	4TP5531500	Valve blanking plug

Part #2: Block body kit

BPE3 5COR245950 Block body kit

Part #3: Coil

Valves needs type BER coil, see page 34

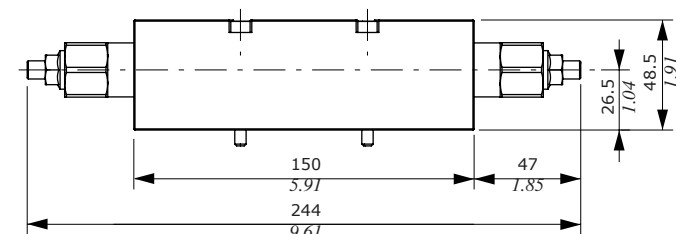


Counterbalance valves

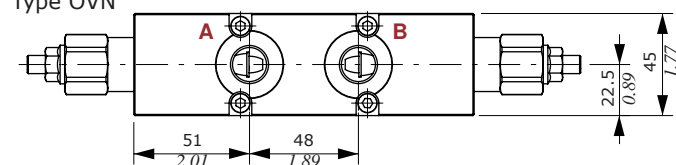
Dimensional data and circuit

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

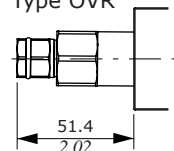
Double acting valve



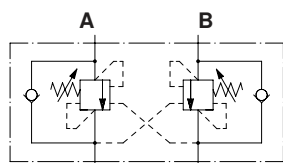
Type OVN



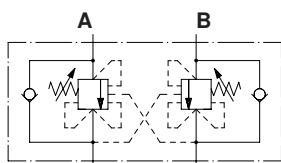
Type OVR



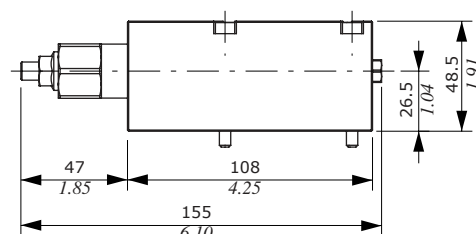
Type OVN301



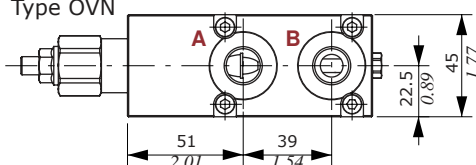
Type OVR301



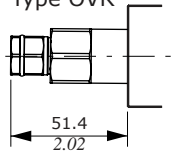
Single acting valve



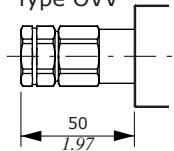
Type OVN



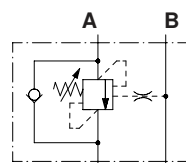
Type OVR



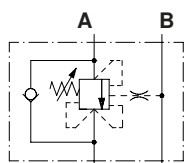
Type OVV



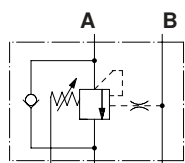
Type OVR101



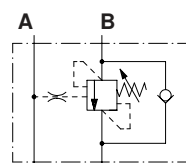
Type OVR101



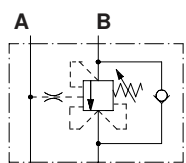
Type OVV101



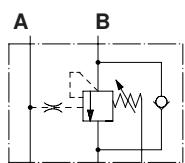
Type OVN201



Type OVR201



Type OVV201



Ordering codes

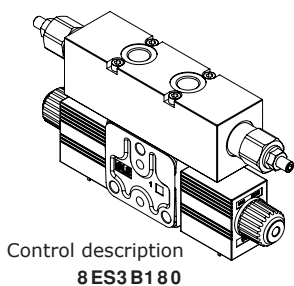
TYPE CODE DESCRIPTION

Single counterbalance valves

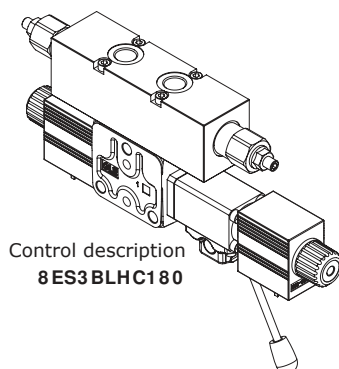
OVN101	1515322100	On port A, load sensitive, pilot ratio = 4
OVN201	1515322100	As previous, on ports B
OVR101	1515422100	On port A, relief compensated, pilot ratio = 4
OVR201	1515422100	As previous, on ports B
OVV101	1515522100	On port A, vented type, pilot ratio = 4
OVV201	1515522100	As previous, on port B

Double counterbalance valves

OVN301	1555222100	Load sensitive, pilot ratio = 4
OVR301	1555322100	Relief compensated, pilot ratio = 4

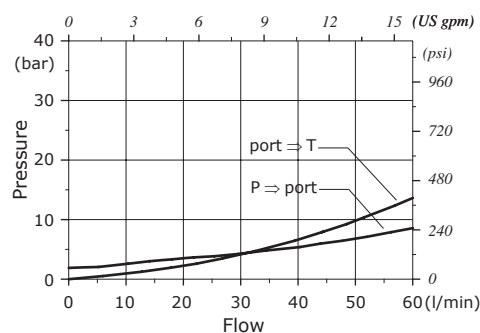


Control description
8ES3B180



Control description
8ES3BLHC180

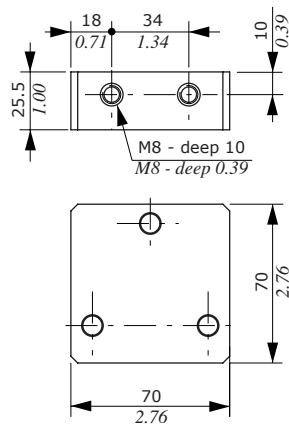
Counterbalance valves pressure drop



SDE030-SDE060 outlet sections

Dimensional data and circuit

Type RF: without ports

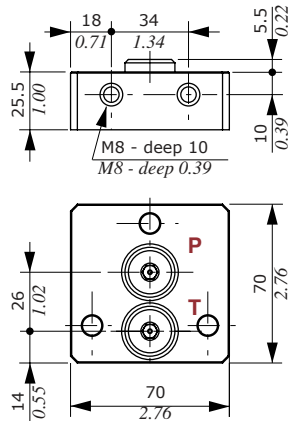


Hydraulic circuit

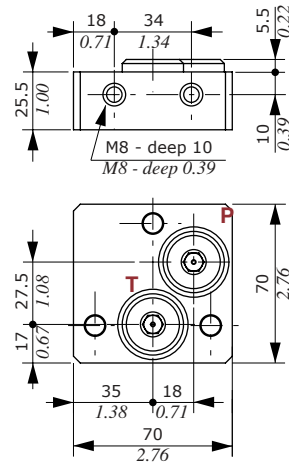


Types RS - RP - RT: with ports

for SDE030



for SDE060



Hydraulic circuit

RS: P and T plugged

RP: P open, T plugged

RT: T open, P plugged



Coils and connectors

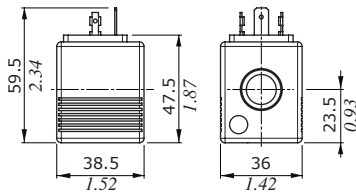
Application on	Coil type	Voltage	Connectors					
			ISO4400	Deutsch DT	AMP JPT	Packard Weatherpack	Packard Metri-pack	Flying leads (without connector)
Solenoid operated unloading valve	BER	10VDC	4SLE001000	-	-	-	-	-
		12VDC	4SLE001200 4SLE001217 ⁽³⁾	4SLE001201 ⁽⁵⁾ 4SLE001209 ⁽³⁻⁵⁾ 4SLE001202 ⁽⁶⁾ 4SLE001216 ⁽³⁻⁶⁾ 4SLE001206 ⁽²⁾	4SLE001203 ⁽⁵⁾ 4SLE001211 ⁽³⁻⁵⁾	4SLE001210 ⁽²⁾	4SLE001214 ⁽²⁾	4SLE001207
		24 VDC	4SLE002400 4SLE002408 ⁽³⁾ 4SLE302400 ⁽¹⁾	4SLE002401 ⁽⁵⁾ 4SLE0024007 ⁽³⁻⁵⁾ 4SLE002402 ⁽⁶⁾	4SLE002403 ⁽⁵⁾	-	-	4SLE002404
		48 VDC	4SLE004800 4SLE304800 ⁽¹⁾	-	-	-	-	-
		110VDC	4SLE011000 4SLE311000 ⁽¹⁾	-	-	-	-	-
		220VDC	4SLE022000 4SLE322000 ⁽¹⁾	-	-	-	-	-
Pressure compensated flow control valve	BQP19	12VDC	4SL5000126	4SL5000125 ⁽⁶⁾	4SL5000129 ⁽⁵⁾	-	-	-
		24VDC	4SL5000245	4SL5000244 ⁽⁶⁾	4SL5000248 ⁽⁵⁾	-	-	-
Controls	D12C (SDE030)	10,5VDC	4SOL412011-C	-	-	-	-	-
		12VDC	4SOL412012-C	4SOL412013-C ⁽⁶⁾ 4SOL412112-C ⁽²⁾	4SOL412014-C ⁽⁵⁾	-	-	4SOL412019-C
		24VDC	4SOL412024-C	4SOL412025-C ⁽⁶⁾	4SOL412026-C ⁽⁵⁾	-	-	-
	D15 (SDE060)	12VDC	4SOL515012	4SOL515014 ⁽⁴⁻⁶⁾ 4SOL515011 ⁽²⁾	4SOL515016 ⁽⁵⁾	-	-	-
		24VDC	4SOL515024	4SOL515025 ⁽⁴⁻⁶⁾ 4SOL515021 ⁽²⁾	4SOL515025 ⁽⁵⁾	-	-	-
		48VDC	4SOL515048	-	-	-	-	-
		98VDC	4SOL515098	-	-	-	-	-
		110VDC	4SOL515110	-	-	-	-	-

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

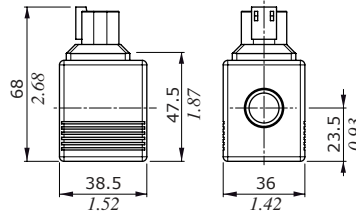
Coils and connectors

Type BER

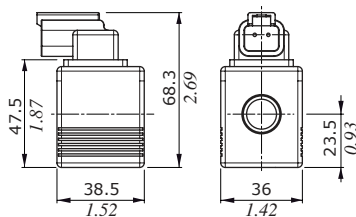
ISO4400 connector



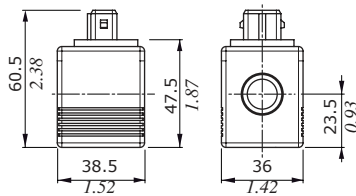
DEUTSCH DT04 connector
(perpendicular type)



DEUTSCH DT04 connector
(parallel type)



AMP JPT 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

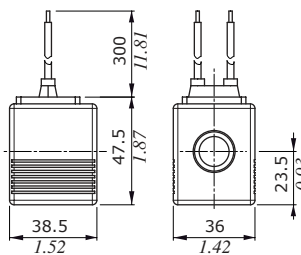
: IP65 - AMP JPT

: IP67 - Weatherpack

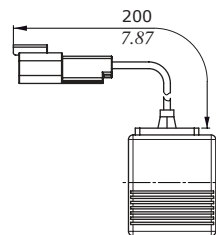
: IP67 - Metri-pack

Insertion: 100%

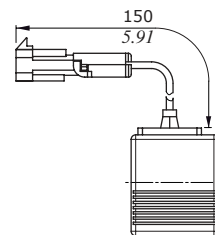
Flying leads



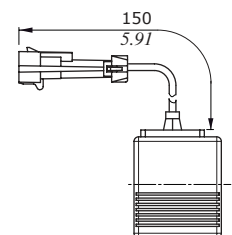
Flying leads with DEUTSCH DT04 connector



Flying leads with PACKARD WEATHER-PACK connector

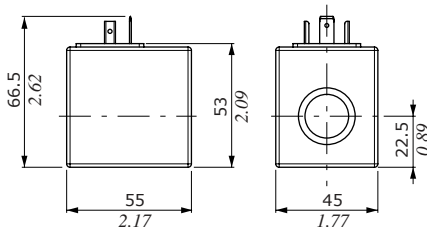


Flying leads with PACKARD METRI-PACK connector

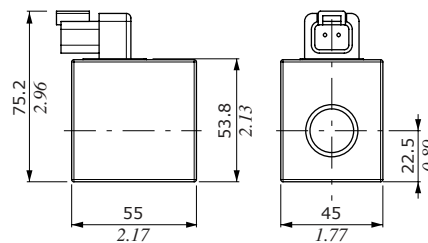


Type BQP19

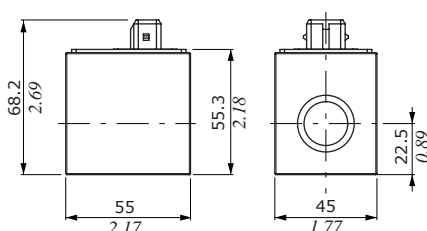
ISO4400 connector



DEUTSCH DT04 connector



AMP JPT connector



Features

Nominal voltage tolerance : $\pm 10\%$

Power rating: 15 W - 12 VDC
: 15 W - 24 VDC

Max. operating current . . : 1.25 A - 12 VDC
: 0.63 A - 24VDC

Coil insulation: Class H
(180°C - 356°F)

Weather protection: IP65 - ISO4400

: IP69K - Deutsch DT

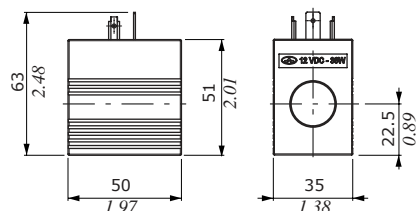
: IP65 - AMP JPT

Insertion : 100%

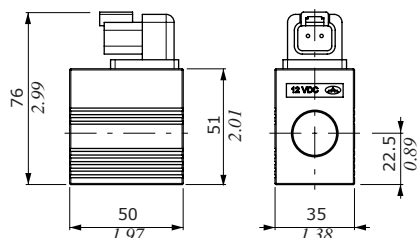
Coils and connectors

Type D12C

ISO4400 connector



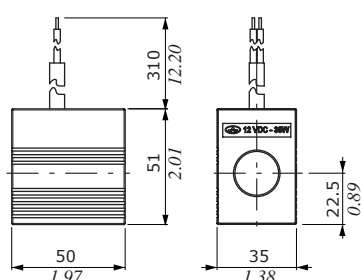
DEUTSCH DT04 connector



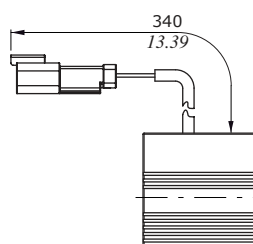
Features

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%

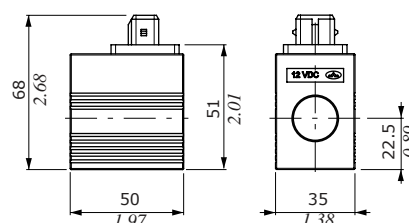
Flying leads



Flying leads with DEUTSCH DT04 connector

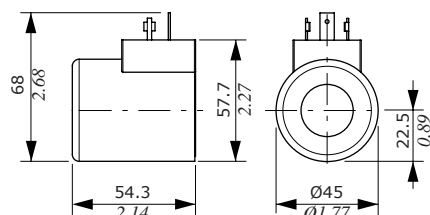


AMP JPT connector

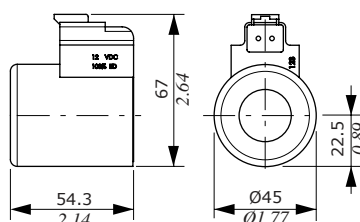


Type D15

ISO4400 connector



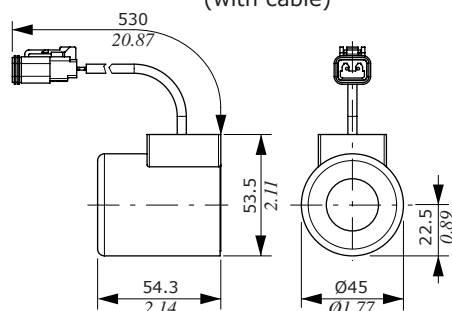
DEUTSCH DT04 connector (with diode)



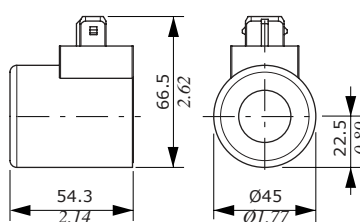
Features

Nominal voltage tolerance : $\pm 10\%$
 Power rating : 38 W - 12/24/48/
 98/110 VDC
 Max. operating current . . : 3.16 A - 12 VDC
 : 1.58 A - 24VDC
 : 0.79 A - 48 VDC
 : 0.41 A - 98 VDC
 : 0.35 A - 110 VDC
 Coil insulation : Class H
 (180°C - 356°F)
 Weather protection : IP65 - ISO4400
 : IP69K - Deutsch DT
 : IP65 - AMP JPT
 Insertion : 100%

DEUTSCH DT06 connector (with cable)



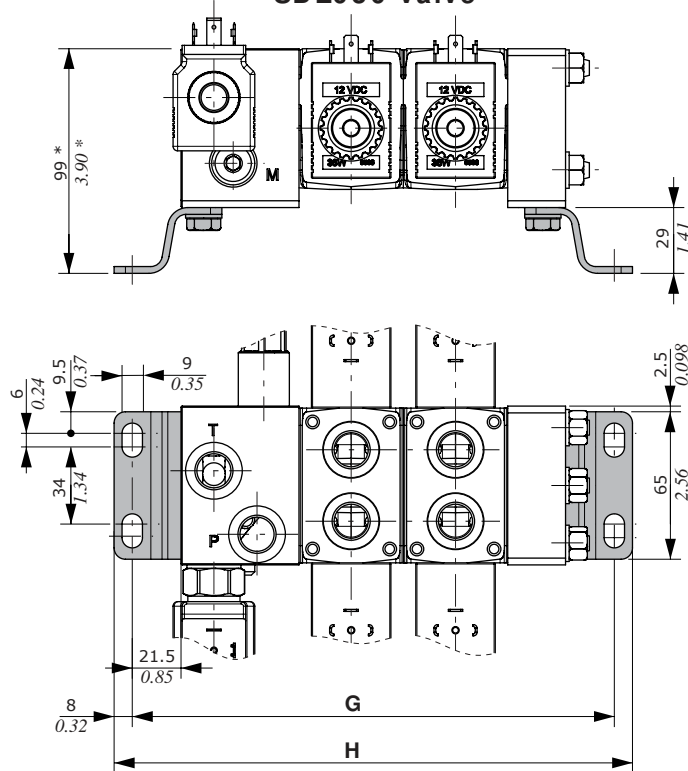
AMP JPT connector



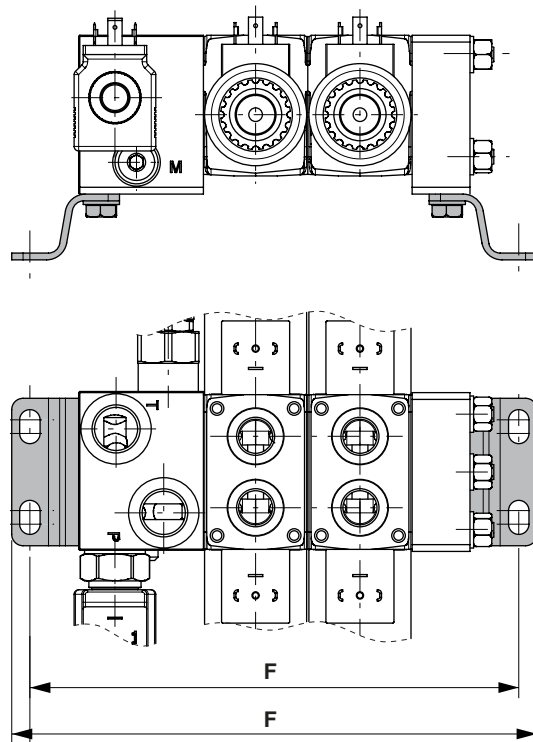
Fixing brackets

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

SDE030 valve



SDE060 valve



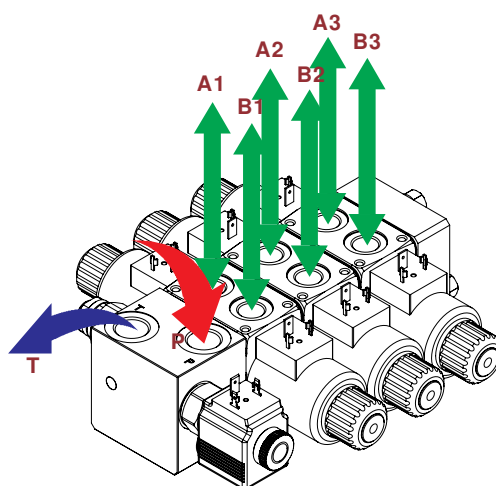
TYPE	type N inlet section				type N1 inlet section				type N2 inlet section			
	G		H		G		H		G		H	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
SDE030/ 1	143	5.63	159	6.26	166.5	6.56	182.5	7.19	191	7.52	207	8.15
SDE030/ 2	189	7.44	205	8.07	212.5	8.37	228.5	9.00	237	9.33	253	9.96
SDE030/ 3	235	9.25	251	9.88	258.5	10.18	274.5	10.81	283	11.14	299	11.77
SDE030/ 4	281	11.06	297	11.69	304.5	11.99	320.5	12.62	329	12.95	345	13.58
SDE030/ 5	327	12.87	343	13.50	350.5	13.80	366.5	14.43	375	14.76	391	15.39
SDE030/ 6	373	14.69	389	15.31	396.5	15.61	412.5	16.24	421	16.57	437	17.20
SDE030/ 7	419	16.50	435	17.13	442.5	17.42	458.5	18.05	467	18.39	483	19.02
SDE030/ 8	465	18.31	481	18.94	488.5	19.23	504.5	19.86	513	20.20	529	20.83
SDE030/ 9	511	20.12	527	20.75	534.5	21.04	550.5	21.67	565	22.24	581	22.87
SDE030/ 10	557	21.93	573	22.56	580.5	22.85	596.5	23.48	605	23.82	621	24.45
SDE060/ 1	147.5	5.81	163.5	6.44	169.5	6.67	185.5	7.30	200	7.87	216	8.50
SDE060/ 2	193.5	7.62	209.5	8.25	215.5	8.48	231.5	9.11	246	9.69	262	10.31
SDE060/ 3	239.5	9.43	255.5	10.06	261.5	10.29	277.5	10.93	292	11.50	308	12.13
SDE060/ 4	285.5	11.24	301.5	11.87	307.5	12.11	323.5	12.74	338	13.31	354	13.94
SDE060/ 5	331.5	13.05	347.5	13.68	353.5	13.92	369.5	14.55	384	15.12	400	15.75
SDE060/ 6	377.5	14.86	393.5	15.49	399.5	15.73	415.5	16.36	430	16.93	446	17.56
SDE060/ 7	426.5	16.79	442.5	17.42	445.5	17.54	461.5	18.17	476	18.74	492	19.37
SDE060/ 8	469.5	18.48	485.5	19.11	491.5	19.35	507.5	19.98	522	20.55	538	21.18
SDE060/ 9	515.5	20.30	531.5	20.93	537.5	21.16	553.5	21.79	568	22.36	584	22.99
SDE060/ 10	561.5	22.11	577.5	22.74	583.5	22.97	599.5	23.60	614	24.17	630	24.80

Installation and maintenance

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

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

- 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 the spool control kit, do not use high pressure wash down directly on the valve;
- Prior to painting, ensure plastic port plugs are tightly in place.



Fittings tightening torque (Nm / lbft)

THREAD TYPE	SDE030		SDE060	
	P and T ports	A and B ports	P and T ports	A and B ports
BSP	G 3/8	G 3/8	G 1/2	G 3/8
With O-Ring seal	35 / 25.8	35 / 25.8	50 / 36.9	35 / 25.8
With copper washer	40 / 29.5	40 / 29.5	60 / 44.3	40 / 29.5
With steel and rubber washer	30 / 22.1	30 / 22.1	60 / 44.3	30 / 22.1
UN-UNF	3/4-16 (SAE 8)	9/16-18 (SAE 6)	3/4-16 (SAE 8)	9/16-18 (SAE 6) 3/4-16 (SAE 8)*
With O-Ring seal	35 / 25.8	30 / 22.1	35 / 25.8	30 / 22.1 35 / 25.8 *

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

Malfunction	Cause	Remedy
External leakage from electric control	Control spool seal due to mechanical actuation.	Locate the leakage and 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 and clean or replace the main relief valve.
	Port relief valve open.	Remove and clean or replace the port relief valve.
	Low pump pressure and flow.	Check the pump and the circuit.

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