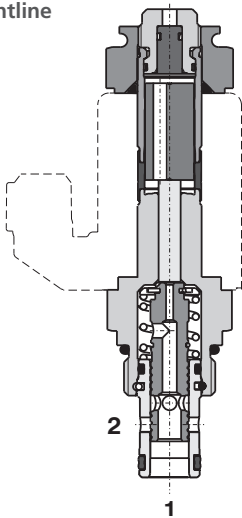


2/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting

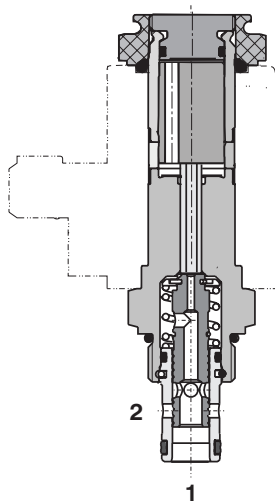
SD2E-A2

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)

Lightline



High performance



Technical Features

- › Hardened precision parts
- › High flow capacity
- › High transmitted hydraulic power
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Variety of optional spools available
- › Coil interchangeability among SD*-A* product line
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

2-way, 2-position high pressure, bi-directional spool valve in the form of a screw-in cartridge. The valve is used mainly to direct flow to actuators.

Model Code	2111	2112
Symbol		

Technical Data

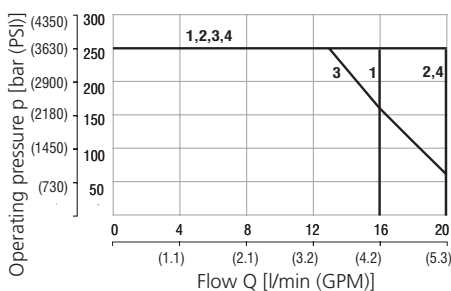
Valve size / Cartridge cavity		3/4-16 UNF-2A / A2 (C-8-2)	
		Lightline	High performance
Max. flow	l/min (GPM)	20 (5.3)	30 (7.9)
Max. operating pressure	bar (PSI)	250 (3630)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	DC ± 10	AC, DC: ± 15
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.14 (0.31)	0.20 (0.44)

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Coil types		C_8007	C14B* C19B*
Valve bodies	In-line mounted	SB_0018	SB-A2*
	Sandwich mounted	SB-04(06)_0028	SB-*A2*
Cavity details / Form tools		SMT_0019	SMT-A2*
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline

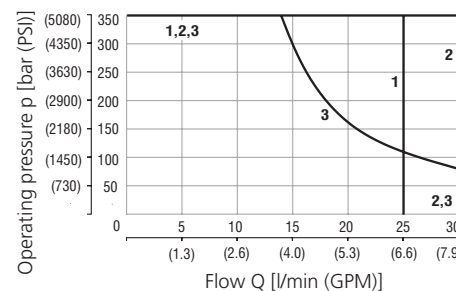
Oil 60 °C (140 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



	Model	Connection
1	2112	2→1
2	2112	1→2
3	2111	1→2
4	2111	2→1

Operating limits - High performance

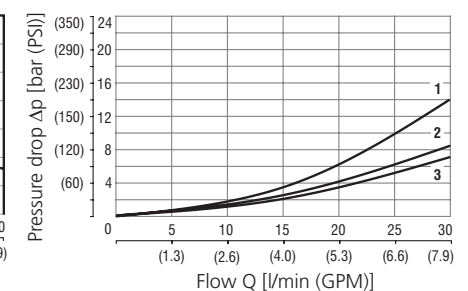
Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



	Model	Connection
1	2112	2→1
2	2112	1→2
2	2111	2→1
3	2111	1→2

Pressure drop related to flow rate

- Lightline, High performance

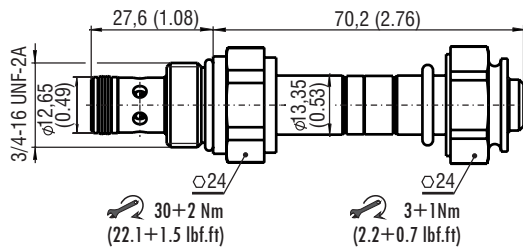


	Model	Connection
1	2112	1→2
1	2112	2→1
2	2111	1→2
3	2111	2→1

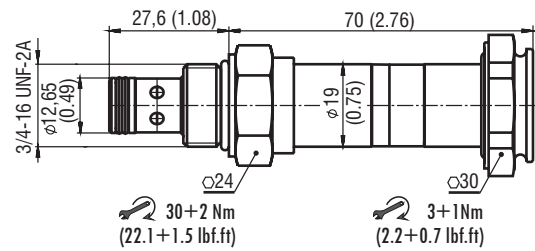
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline



High performance



Manual Override in millimeters (inches)

No Designation - standard	Designation M2 - rubber boot protected	Designation M4 - hand screw (only for High performance)	Designation M5 - socket head screw, size 2.5	Designation M9 - without manual override
<p>L ~ 70,2 (2.63) H ~ 70,0 (2.76)</p>	<p>L ~ 81,7 (3.22) H ~ 81,5 (3.21)</p>	<p>H ~ 89,6 (3.53)</p>	<p>L ~ 77,2 (3.04) H ~ 77,6 (3.06)</p>	<p>L ~ 67,2 (2.65) H ~ 70,0 (2.76)</p>

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

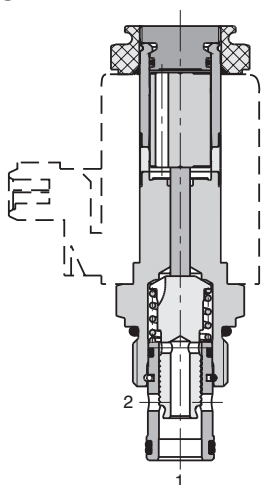
SD2E-A2 / <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> - <input type="checkbox"/>	
2/2 directional valve, solenoid operated, spool type, direct acting	Surface treatment A zinc-coated (ZnCr-3), ISO 9227 (240 h) B zinc-coated (ZnNi), ISO 9227 (520 h)
Valve cavity 3/4-16 UNF (C-8-2)	Seals No designation V NBR FPM (Viton)
Lightline High performance	Manual override standard rubber boot protected hand screw (only for High performance) socket head screw without manual override
Functional symbol 	2111 2112

2/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting

SD2E-B2

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 350 bar (5100 PSI)

Lightline



Technical Features

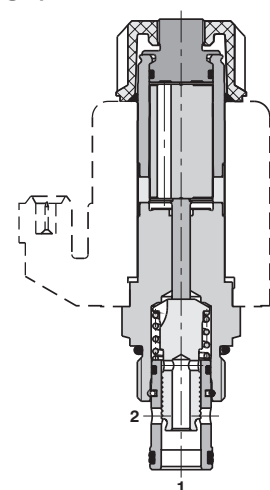
- › Hardened precision parts
- › High flow capacity
- › High transmitted hydraulic power
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Variety of optional spools available
- › Coil interchangeability among SD*-B* product line
- › In the standard version, the valve is zinc-coated (240 h corrosion protection in NSS acc. to ISO 9227)

Functional Description

2-way, 2-position high pressure directional spool valve in form of a screw-in cartridge. The valve is used mainly to direct flow to actuators.

Model Code	2111	2112
Symbol		

High performance



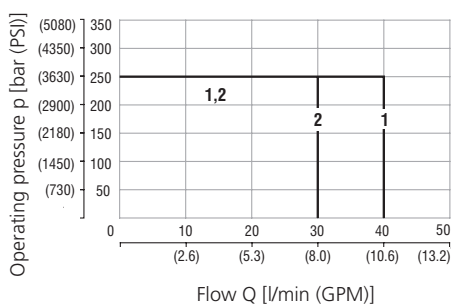
Technical Data

Valve size / Cartridge cavity		7/8-14 UNF-2A / B2 (C-10-2)	
		Lightline	High performance
Max. flow	l/min (GPM)	50 (13.2)	60 (15.9)
Max. operating pressure	bar (PSI)	250 (3630)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	AC, DC: ± 10	AC, DC: ± 15
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.22 (0.49)	0.29 (0.64)
		Type	
General information		Products and operating conditions	
Coil types		C_8007	C_19B* C_22B*
Valve bodies	In-line mounted	SB_0018	SB-B2*
	Sandwich mounted	SB-04(06)_0028	SB-*B2*
Cavity details / Form tools		SMT_0019	SMT-B2*
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline

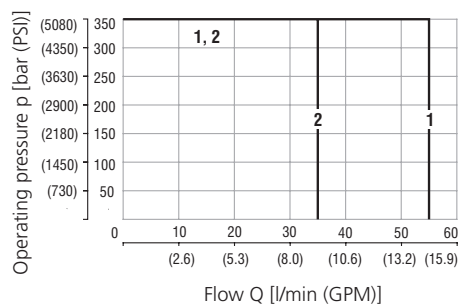
Oil 60 °C (140 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



	Model	Connection
1	2111	2→1
2	2112	2→1

Operating limits - High performance

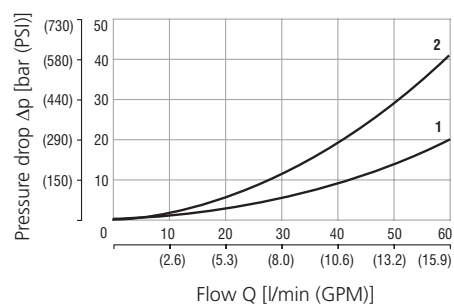
Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



	Model	Connection
1	2111	2→1
2	2112	2→1

Pressure drop related to flow rate

- Lightline, High performance

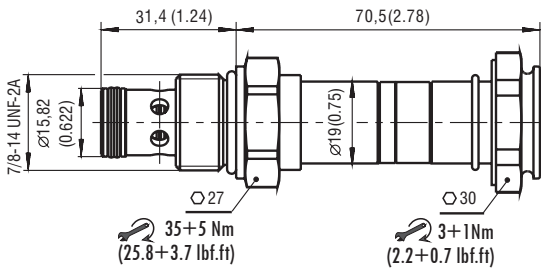


	Model	Connection
1	2111	2→1
2	2112	2→1

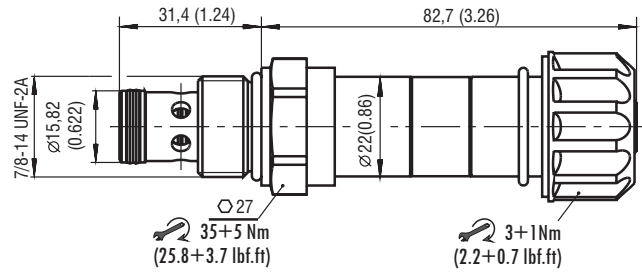
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline



High performance



Manual Override in millimeters (inches)

No designation - standard	Designation M2 - rubber boot protected	Designation M5 - socket head screw, size 2.5	Designation M9 - without manual override
<p>L ~ 70,5 (2.78) H ~ 82,7 (3.26)</p>	<p>L ~ 82,0 (3.23) H ~ 100,0 (3.94)</p>	<p>L ~ 78,1 (3.07) H ~ 84,8 (3.34)</p>	<p>L ~ 70,5 (2.78) H ~ 82,7 (3.26)</p>

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD2E - B2 / -

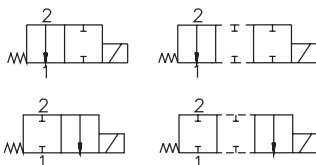
2/2 directional valve, solenoid operated, spool type, direct acting

Valve cavity
7/8-14 UNF (C-10-2)

Model
Lightline
High performance

L
H

Functional symbol



2I11

2I12

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

No designation
V

Seals
NBR
FPM (Viton)

No designation
M2
M5
M9

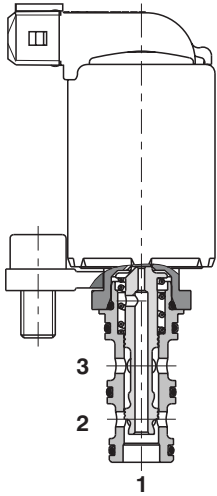
Manual override
standard
rubber boot protected
socket head screw
without manual override

3/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting, Slip-In Style

PD2E1

Size D17/D20 • Q_{max} 30 l/min (8 GPM) • p_{max} 80 bar (1200 PSI)

PD2E1-Y3



Technical Features

- › 3/2 directional valve in an economical design
- › Hardened precision parts
- › High flow capacity
- › Variety of optional spools available
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

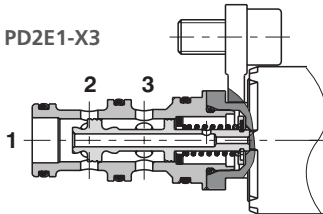
3-way, 2-position spool valve in the form of an economically designed slip-in cartridge. The valve is designed for use in the low-pressure systems of mobile applications, e.g. for functional control of transmissions.

Model Code	2D21	2D26
Symbol		

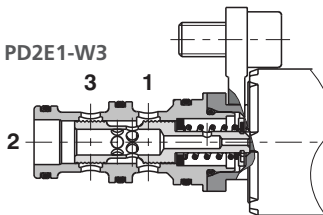
Technical Data

Valve size / Cartridge cavity		D17 / Y3	D20 / X3, W3
Max. flow	l/min (GPM)	30 (7.9)	
Max. operating pressure version Y, X (2, 3), W (3,1)	bar (PSI)	80 (1160)	
Max. operating pressure version Y, X (1), W (2)	bar (PSI)	30 (440)	
Fluid temperature range	°C (°F)	-30...90 (-22...194), +100 (212) short-time	
Ambient temperature range	°C (°F)	-30...90 (-22...194), +100 (212) short-time	
Supply voltage tolerance	%	± 10	
Supply voltage	V	12 DC	24 DC
Quenching diode		BZW06-19B	BZW06-33B
Enclosure type acc. to EN 60529		IP67 / IP 69K	
Weight	kg (lbs)	0.2 (0.44)	

PD2E1-X3



PD2E1-W3

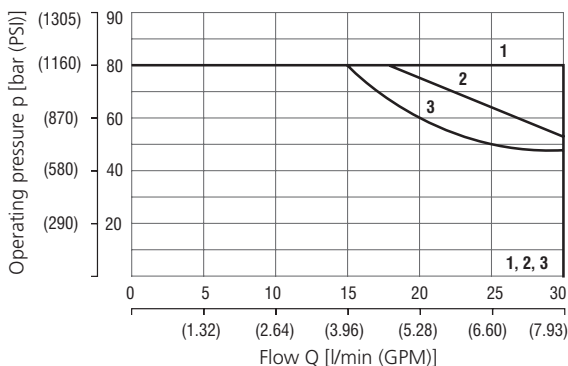


		Datasheet	Type	
Valve			PD2E1-Y3	PD2E1-X3
General information		GI_0060	Products and operating conditions	
Valve bodies	In-line mounted	SB_0018	SB-Y3-*	SB-W3-*
Cavity details		SMT_0019	SMT-Y3*	SMT-W3*
Spare parts		SP_8010		

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

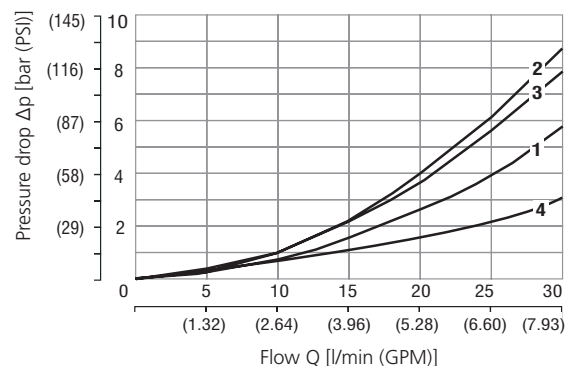
Operating limits

Oil 90 °C (194 °F) / Ambient temperature 90 °C (194 °F) / Voltage $U_n \pm 15\%$ (21.6 VDC)



		Model	Connection
Y3	1	2D21	2→1
	1		3→2
	1	2D26	3→2
	1		2→1
X3	1	2D21	2→1
	2		3→2
W3	3	2D21	2→1
	1		3→2

Pressure drop related to flow rate

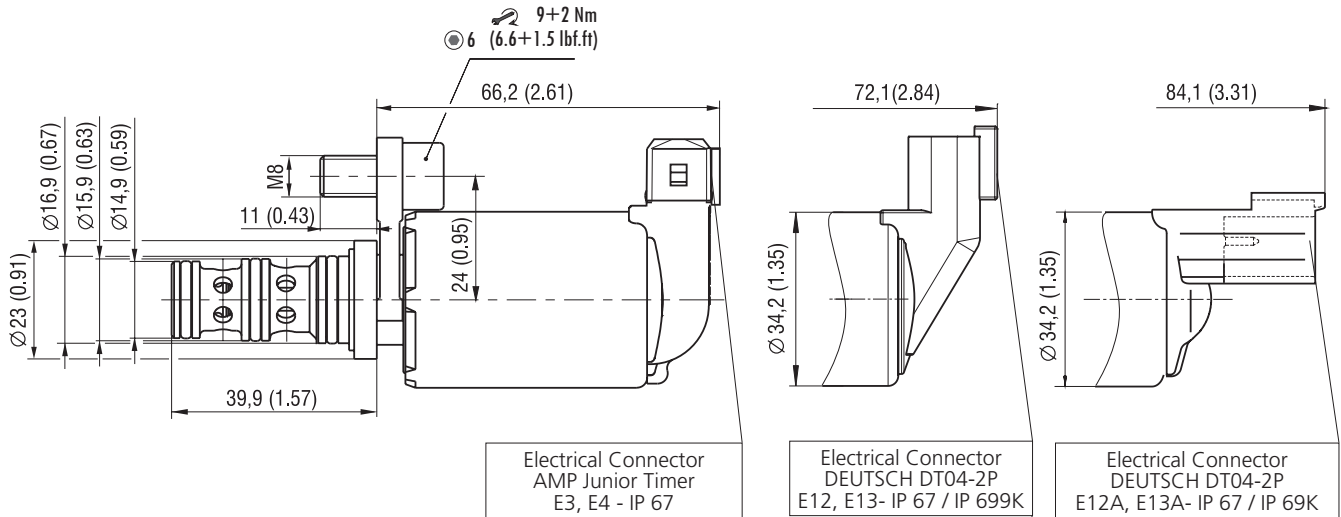


		Model	Connection
Y3	1	2D21	2→1
	2		3→2
	3		2→1
X3	2	2D26	3→2
	3		2→1
W3	1	2D21	2→1
	1		3→2

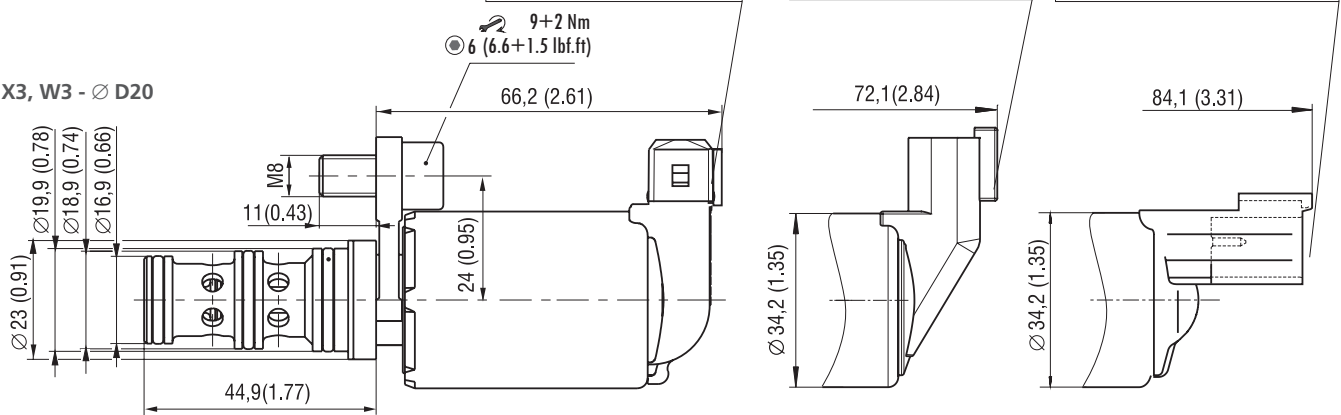
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Y3 - Ø D17



X3, W3 - Ø D20



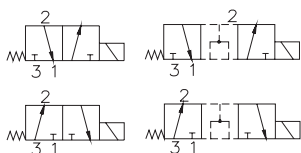
Ordering Code

PD2E1 - [] / [] - [] [] [] - []

3/2 directional valve, solenoid operated, spool type, direct acting, slip-in style

Valve cavity
D17 Y3
D20 W3
D20 X3

Functional symbol



2D21

2D26

12
24

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

Seals
No designation V NBR
FPM (Viton)

Connector
E3 AMP Junior Timer - radial direction (2 pins; male)
E4 E3 with quenching diode
E12 Deutsch DT04-2P - radial direction (2 pins; male)
E13 E12 with quenching diode
E12A Deutsch DT04-2P - axial direction (2 pins; male)
E13A E12A with quenching diode

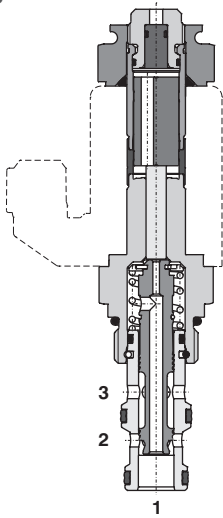
Nominal supply voltage
12 V DC / 1.67 A
24 V DC / 0.84 A

3/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting

SD2E-A3

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)

Lightline



Technical Features

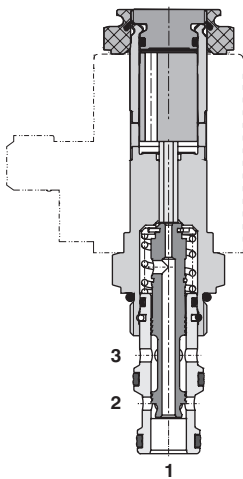
- › Hardened precision parts
- › High flow capacity
- › High transmitted hydraulic power
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Variety of optional spools available
- › Coil interchangeability among SD*-A* product line
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

3-way, 2-position high pressure, bi-directional spool valve in the form of a screw-in cartridge. The valve is used mainly to direct flow to actuators.

Model Code	2D21	2D25	2D26	2D27, 2D31
Symbol				

High performance



Technical Data

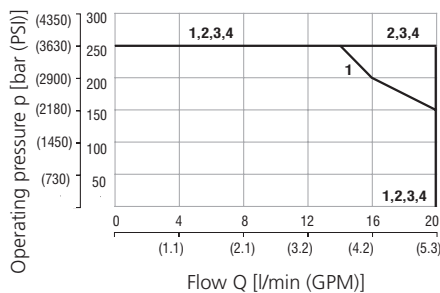
Valve size / Cartridge cavity		3/4-16 UNF-2A / A3 (C-8-3)	
		Lightline	High performance
Max. flow	l/min (GPM)	20 (5.3)	30 (7.9)
Max. operating pressure	bar (PSI)	250 (3630)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	DC ± 10	AC, DC: ± 15
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.14 (0.31)	0.20 (0.44)

General information		Type	
Datasheet		Products and operating conditions	
GI_0060		C14B* C19B*	
Coil types		C_8007	
Valve bodies	In-line mounted	SB_0018	SB-A3*
	Sandwich mounted	SB-04(06)_0028	SB-*A3*
Cavity details / Form tools		SMT_0019 SMT-A3*	
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline

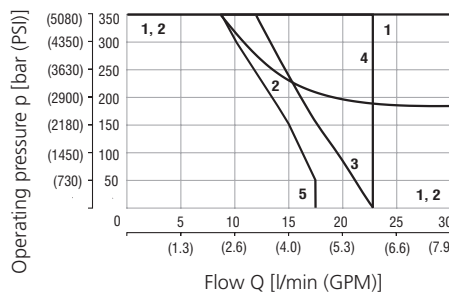
Oil 60 °C (140 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)



	Model	Connection
1	2D26	3→2
2	2D26	2→1
3	2D25	3→2, 2→1
4	2D21	3→2, 2→1

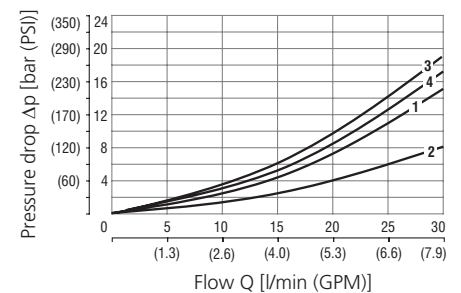
Operating limits - High performance

Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)



	Model	Connection
1	2D21	3→2, 2→1
1	2D25	3→2, 2→1
1	2D31	3→1
2	2D26	3→2, 2→1
3	2D31	2→1
4	2D27	3→1
5	2D27	2→1

Pressure drop related to flow rate - Lightline, High performance

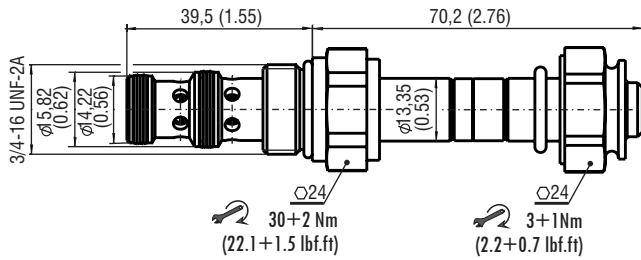


	Model	Connection
1	2D21	3→2
1	2D25	3→2
1	2D31	2→1
1	2D27	2→1
2	2D21	2→1
3	2D26	3→2
3	2D27	3→1
4	2D25	2→1
4	2D26	2→1
4	2D31	3→1

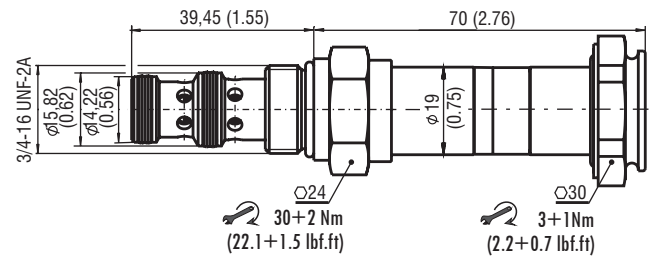
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline



High performance



Manual Override in millimeters (inches)

No Designation - standard	Designation M2 - rubber boot protected	Designation M4 - hand screw (only for High performance)	Designation M5 - socket head screw, size 2.5	Designation M9 - without manual override
<p>L ~ 70,2 (2.63) H ~ 70,0 (2.76)</p>	<p>L ~ 81,7 (3.22) H ~ 81,5 (3.21)</p>	<p>H ~ 89,6 (3.53)</p>	<p>L ~ 77,2 (3.04) H ~ 77,6 (3.06)</p>	<p>L ~ 67,2 (2.65) H ~ 70,0 (2.76)</p>

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD2E-A3 / -

3/2 directional valve, solenoid operated, spool type, direct acting

Valve cavity
3/4-16 UNF (C-8-3)

Functional symbol
Lightline
High performance

		2D21	<p>Surface treatment</p> <p>A zinc-coated (ZnCr-3), ISO 9227 (240 h) B zinc-coated (ZnNi), ISO 9227 (520 h)</p> <p>Seals NBR FPM (Viton)</p> <p>Manual override standard rubber boot protected hand screw (only for High performance) socket head screw without manual override</p>
		2D25	
		2D26	
	only for H	2D27	
	only for H	2D31	

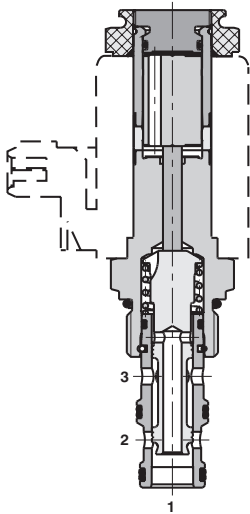
No designation
M2
M4
M5
M9

3/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting

SD2E-B3

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 350 bar (5100 PSI)

Lightline



Technical Features

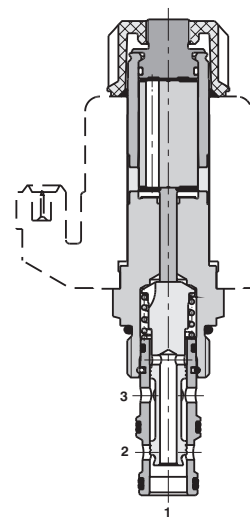
- › Hardened precision parts
- › High flow capacity
- › High transmitted hydraulic power
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Variety of optional spools available
- › Coil interchangeability among SD*-B* product line
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

3-way, 2-position high pressure directional spool valve in form of a screw-in cartridge. The valve is used mainly to direct flow to actuators.

Model Code	2D21	2D25	2D26	2D34
Symbol				

High performance



Technical Data

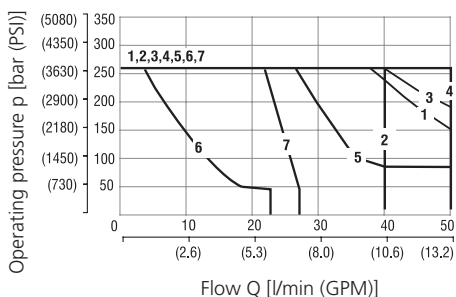
Valve size / Cartridge cavity		7/8-14 UNF-2A / B3 (C-10-3)	
		Lightline	High performance
Max. flow	l/min (GPM)	50 (13.2)	60 (15.9)
Max. operating pressure	bar (PSI)	250 (3630)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	AC, DC: ± 10	AC, DC: ± 15
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.24 (0.53)	0.31 (0.68)

General information		Type	
GI_0060		Products and operating conditions	
Coil types	C_8007	C19B*	C22B*
Valve bodies	In-line mounted	SB-B3*	
	Sandwich mounted	SB-*B3*	
Cavity details / Form tools		SMT-B3*	
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline

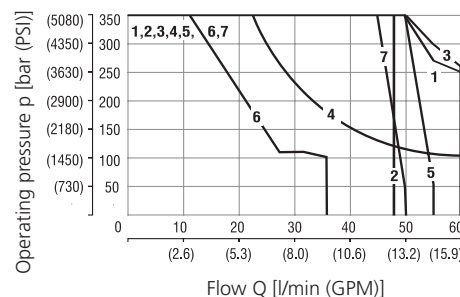
Oil 60 °C (140 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)



Model	Connection	
1	2D21	3→2
2	2D21, 2D26	2→1
3	2D25	3→2
4	2D25	2→1
5	2D26	3→2
6	2D34	3→1
7	2D34	2→1

Operating limits - High performance

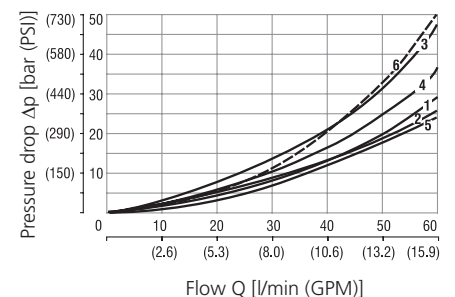
Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)



Model	Connection	
1	2D21	3→2
2	2D21	2→1
3	2D25	3→2
5	2D25, 2D26	2→1
4	2D26	3→2
6	2D34	3→1
7	2D34	2→1

Pressure drop related to flow rate

- Lightline, High performance

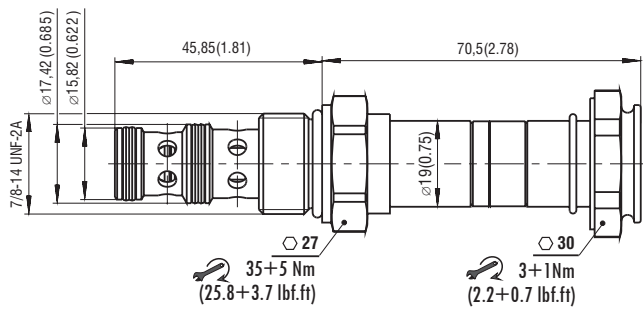


Model	Connection	
1	2D21, 2D26	2→1
2	2D21	3→2
3	2D25	3→2
4	2D25, 2D34	2→1
1	2D26	3→2
5	2D34	3→1
6	2D34	2→1

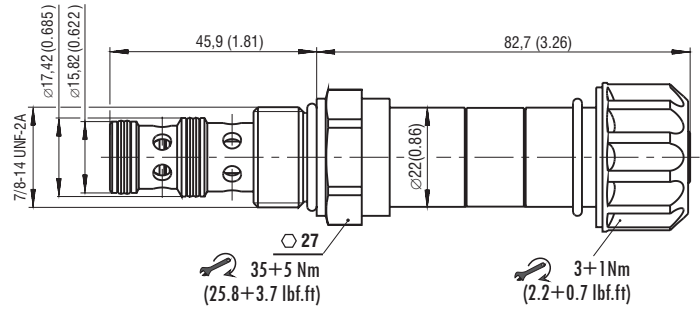
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline



High performance



Manual Override in millimeters (inches)

No designation - standard	Designation M2 - rubber boot protected	Designation M5 - socket head screw, size 2.5	Designation M9 - without manual override
<p>L ~ 70,5 (2.78) H ~ 82,7 (3.26)</p>	<p>L ~ 82,0 (3.23) H ~ 100,0 (3.94)</p>	<p>L ~ 78,1 (3.07) H ~ 84,8 (3.34)</p>	<p>L ~ 70,5 (2.78) H ~ 82,7 (3.26)</p>

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD2E-B3 / -

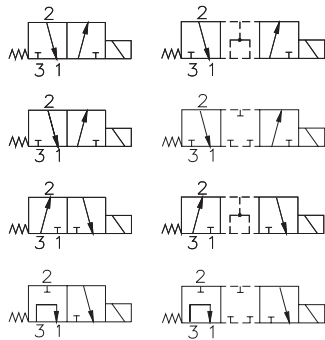
3/2 directional valve, solenoid operated, spool type, direct acting

Valve cavity
7/8-14 UNF (C-10-3)

Lightline
High performance

L
H

Functional symbol



2D21
2D25
2D26
2D34

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

No designation
V

Seals
NBR
FPM (Viton)

No designation
M2
M5
M9

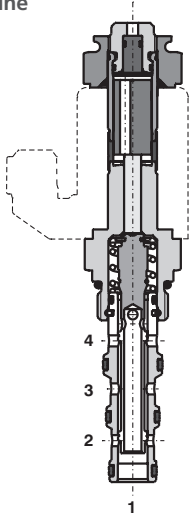
Manual override
standard
rubber boot protected
socket head screw
without manual override

4/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting

SD2E-A4

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)

Lightline



Technical Features

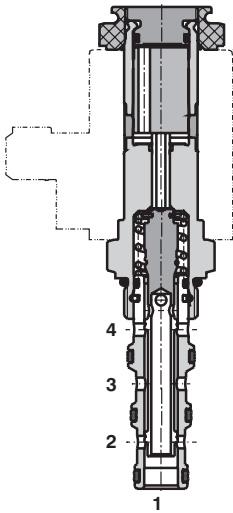
- › Hardened precision parts
- › High flow capacity
- › High transmitted hydraulic power
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Variety of optional spools available
- › Coil interchangeability among SD*-A* product line
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

4-way, 2-position high pressure bi-directional spool valve in the form of a screw-in cartridge. The valve is used mainly to direct flow to actuators.

2Z11	2Z51	2X21	2R21	2P51	2Y11	2C51	2Y61

High performance



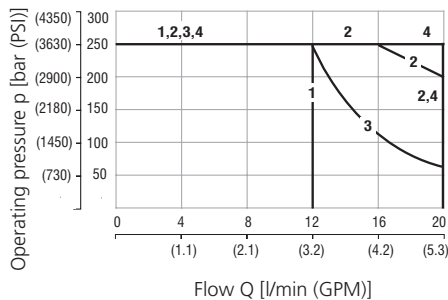
Technical Data

Valve size / Cartridge cavity		3/4-16 UNF-2A / A4 (C-8-4)	
		Lightline	High performance
Max. flow	l/min (GPM)	20 (5.3)	30 (7.9)
Max. operating pressure	bar (PSI)	250 (3630)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	DC ± 10	AC, DC: ± 15
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.15 (0.33)	0.23 (0.51)
General information		Type	
Coil types		Products and operating conditions	
C_8007		C 14B*	C 19B*
Valve bodies	In-line mounted	SB_0018	SB-A4*
	Sandwich mounted	SB-04(06)_0028	SB-*A4*
Cavity details / Form tools		SMT_0019	SMT-A4*
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline

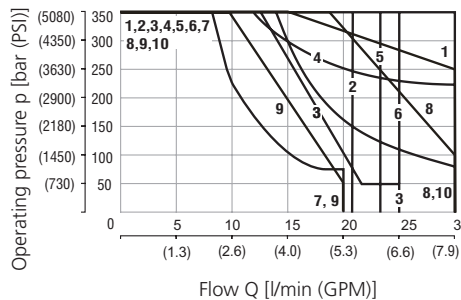
Oil 60 °C (140 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



Model	Connection
1 2Z11	3→2, 4→1
2 2Z51	3→4, 2→1
3 2R21	3→2, 4→1
4 2R21	3→4, 2→1
4 2P51	3→4, 2→1
4 2X21	3→4, 2→1 3→2, 4→1

Operating limits - High performance

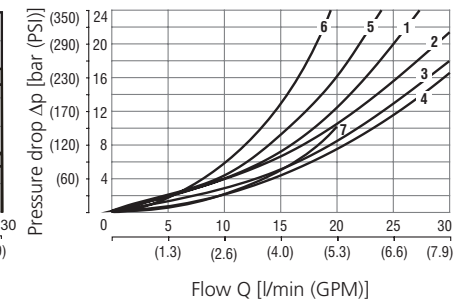
Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



Model	Connection
1 2Z51	3→4, 2→1
2 2Z11	3→2, 4→1
3 2R21	3→2, 4→1
4 2X21	3→4, 2→1
5 2X21	3→2, 4→1
1 2R21	3→4, 2→1
6 2Y11	3→2, 4→1
7 2C51	3→1
8 2Y61	3→2
9 2Y61	4→1
10 2Y61	1→4

Pressure drop related to flow rate

- Lightline, High performance

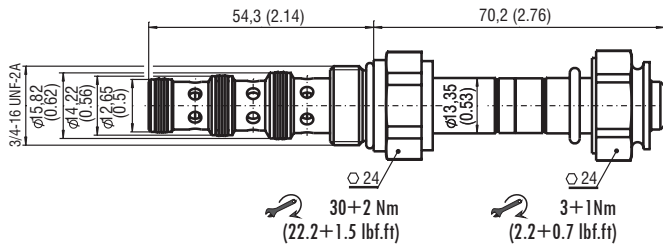


Model	Connection	Model	Connection
1 2Z11	4→1	2R21	2→1
1 2Y61	3→2		
2 2Z11	3→2	2Z51	2→1
2 2X21	3→4, 4→1	2R21	3→2
3 2Z51	3→4	2R21	3→4
3 2Y11	3→2, 4→1		
4 2X21	3→2, 2→1	2C51	3→2, 4→1
5 2R21	4→1		
6 2C51	3→1		
7 2Y61	4→1		

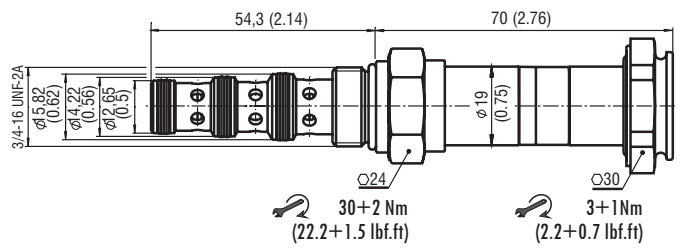
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline



High performance



Manual Override in millimeters (inches)

No Designation - standard	Designation M2 - rubber boot protected	Designation M4 - hand screw (only for High performance)	Designation M5 - socket head screw, size 2.5	Designation M9 - without manual override
<p>L ~ 70,2 (2.63) H ~ 70,0 (2.76)</p>	<p>L ~ 81,7 (3.22) H ~ 81,5 (3.21)</p>	<p>H ~ 89,6 (3.53)</p>	<p>L ~ 77,2 (3.04) H ~ 77,6 (3.06)</p>	<p>L ~ 67,2 (2.65) H ~ 70,0 (2.76)</p>

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD2E-A4 / -

4/2 directional valve, solenoid operated, spool type, direct acting,

Valve cavity
3/4-16 UNF (C-8-4)

Lightline
High performance

L
H

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

Functional symbol

		2Z11
		2Z51
		2X21
		2R21
		only for L 2P51
		only for H 2Y11
		only for H 2Y61
		only for H 2C51

No designation
V

Seals
NBR
FPM (Viton)

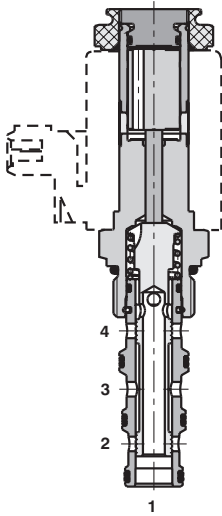
Manual override
standard
M2 rubber boot protected
M4 hand screw (only for High performance)
M5 socket head screw
M9 without manual override

4/2 Directional Valve, Solenoid Operated, Spool Type, Direct Acting

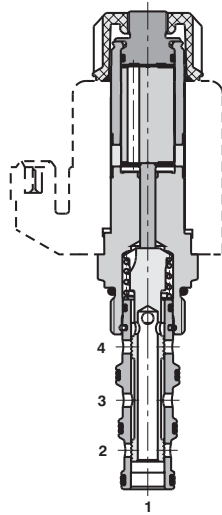
SD2E-B4

7/8-14 UNF • Q_{max} 60 l/min (16 GPM) • p_{max} 350 bar (5100 PSI)

Lightline



High performance



Technical Features

- › Hardened precision parts
- › High flow capacity
- › High transmitted hydraulic power
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Variety of optional spools available
- › Coil interchangeability among SD*-B* product line
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

4-way, 2-position high pressure directional spool valve in form of a screw-in cartridge. The valve is used mainly to direct flow to actuators.

Model Code	2Z11	2Z51	2X21
Symbol			

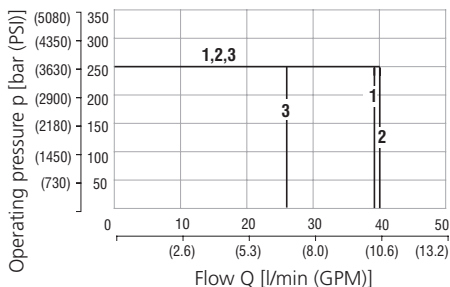
Technical Data

Valve size / Cartridge cavity		7/8-14 UNF-2A / B4 (C-10-4)	
		Lightline	High performance
Max. flow	l/min (GPM)	50 (13.2)	60 (15.9)
Max. operating pressure	bar (PSI)	250 (3630)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	AC, DC: ± 10	
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.25 (0.55)	0.32 (0.71)
General information		Type	
Valve size / Cartridge cavity		Datasheet	
GI_0060		Products and operating conditions	
Coil types		C_8007	C19B* C22B*
Valve bodies		In-line mounted: SB_0018	SB-B4*
		Sandwich mounted: SB-04(06)_0028	SB-*B4*
Cavity details / Form tools		SMT_0019 SMT-B4*	
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline

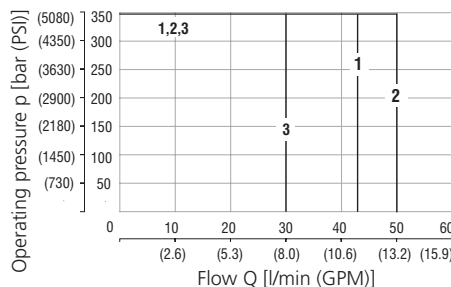
Oil 60 °C (140 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)



Model	Connection
1 2Z11	3→2, 4→1
2 2Z51	3→4, 2→1
2 2X21	3→4, 2→1
3 2X21	3→2, 4→1

Operating limits - High performance

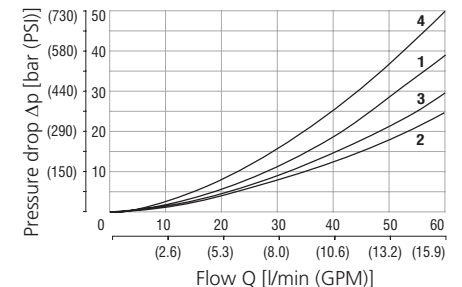
Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)



Model	Connection
1 2Z11	3→2, 4→1
2 2Z51	3→4, 2→1
2 2X21	3→4, 2→1
3 2X21	3→2, 4→1

Pressure drop related to flow rate

- Lightline, High performance

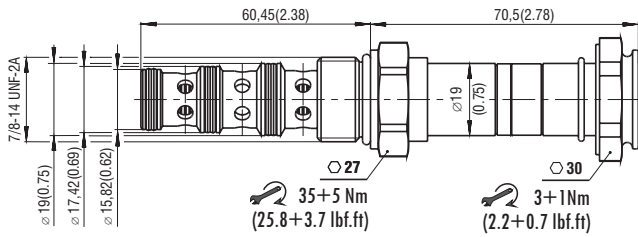


Model	Connection
1 2Z11	3→2
1 2Z11	4→1
3 2Z51 - only for L	3→4
3 2Z51 - only for L	2→1
2 2Z51 - only for H	3→4
3 2Z51 - only for H	2→1
3 2X21	3→2
4 2X21	4→1
3 2X21 Q_{max} 50 l/min	3→4
2 2X21 Q_{max} 40 l/min	2→1

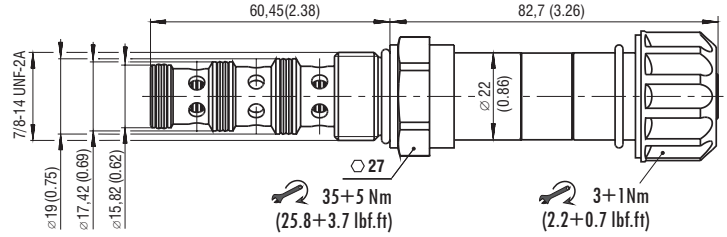
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline



High performance



Manual Override in millimeters (inches)

No designation - standard	Designation M2 - rubber boot protected	Designation M5 - socket head screw, size 2.5	Designation M9 - without manual override
<p>L ~ 70,5 (2.78) H ~ 82,7 (3.26)</p>	<p>L ~ 82,0 (3.23) H ~ 100,0 (3.94)</p>	<p>L ~ 78,1 (3.07) H ~ 84,8 (3.34)</p>	<p>L ~ 70,5 (2.78) H ~ 82,7 (3.26)</p>

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD2E-B4 / -

4/2 directional valve, solenoid operated, spool type, direct acting

Valve cavity
7/8-14 UNF (C-10-4)

Lightline
High performance

Functional symbol

2Z11
2Z51
2X21

Surface treatment

A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

Seals
No designation
V NBR
FPM (Viton)

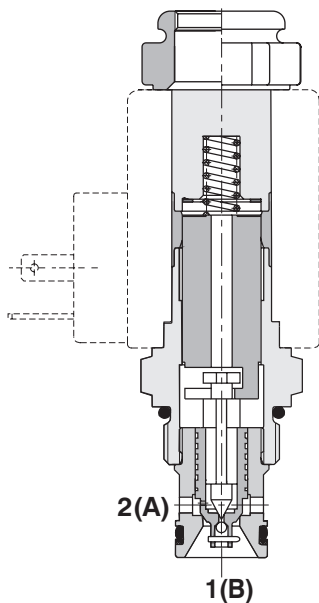
Manual override
No designation
M2 standard
M5 rubber boot protected
M9 socket head screw
without manual override

2/2 Solenoid Operated Poppet Valve, Pilot Operated

ROE3-062S2

M22x1.5 • Q_{max} 63 l/min (17 GPM) • p_{max} 250 bar (3600 PSI)

Normally closed



Technical Features

- › Screw-in cartridge valve with connecting thread M22x1.5
- › All ports may be fully pressurized with maximum pressure 250 bar
- › Valve closes leak-free in specified flow direction
- › Precisely manufactured parts and hardened poppet
- › Normally closed version
- › Optional type of manual override
- › Coil interchangeability among ROE / RPE3-04 product line
- › The valve in standard version is zinc-coated with surface protection 240 h in NSS acc. to ISO 9227

Functional Description

2/2 screw-in cartridge poppet valve with connecting thread M22x1,5, solenoid operated, piloted. The one-directional valve is used for leak-free closing in specified flow direction (2 → 1).

Model Code	S2
Symbol	

Technical Data

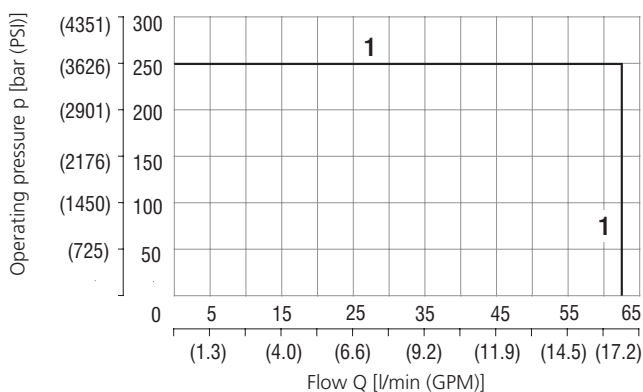
Valve size / Cartridge cavity		M22x1.5 / QG2
Max. flow	l/min (GPM)	63 (16.6)
Max. operating pressure	bar (PSI)	250 (3630)
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... +176)
Fluid temperature range (FPM)	°C (°F)	-20 ... +80 (-4 ... +176)
Ambient temperature	°C (°F)	-20 ... 50 (-4 ... 122)
Supply voltage tolerance	%	AC, DC: ± 10
Max. switching frequency	1/h	15 000
Weight without coil	kg (lbs)	0.20 (0.44)

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Coil types	C_8007	C19B*
Valve bodies	In line mounted	SB-QG2*
	Sandwich mounted	SB-04 (06)_0028
Cavity details	SMT_0019	SMT-QG2*
Spare parts	SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

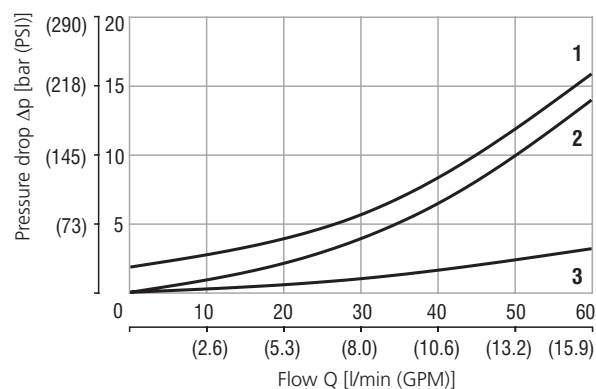
Operating limits

Operating limits for maximum hydraulic power at rated temperature and supply voltage equal to 90% nominal.



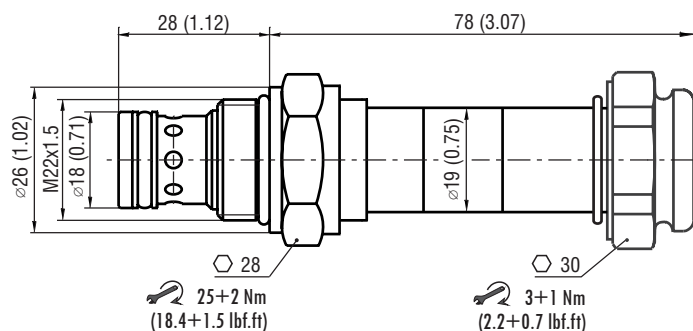
Model	Connection
1	S2
	2→1, 1→2

Pressure drop related to flow rate



Model	Connection	Solenoid	
1	S2	1→2	OFF
2	S2	2→1	ON
3	S2	1→2	ON

Dimensions in millimeters (inches)



Manual Override in millimeters (inches)

Standard - without manual override	Designation N5 - with external hexagon, across flats 14

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

ROE3 - 062 S2 -

<p>2/2 Solenoid Operated Poppet Valve, Pilot Operated M22x1.5</p>	<p>Surface treatment A zinc-coated (ZnCr-3), ISO 9227 (240 h) B zinc-coated (ZnNi), ISO 9227 (520 h)</p>
<p>Valve size</p>	<p>Seals NBR FPM (Viton)</p>
<p>Functional symbol</p>	<p>Manual override standard - without manual override external hexagon, across flats 14</p>

No designation V

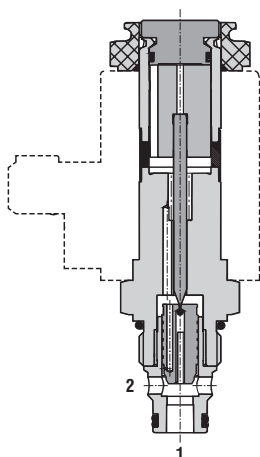
No designation N5

2/2 Directional Valve, Solenoid Operated, Poppet Type, Piloted

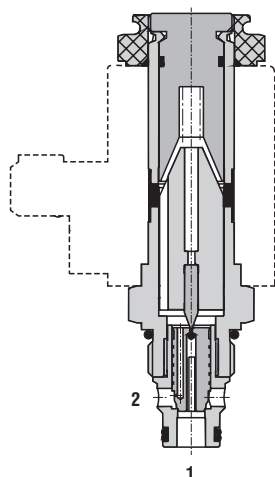
SD3E-A2

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 420 bar (6100 PSI)

Normally Open



Normally Closed



Technical Features

- › Hardened precision parts
- › High flow capacity and leak-free closing
- › High transmitted hydraulic power up to 420 bar
- › Lightline design 250 bar with reduced solenoid power for production cost saving
- › Normally open and normally closed version
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Coil interchangeability among SD*- A* product line
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

2-way, 2-position high pressure, pilot operated poppet valve in form of a screw-in cartridge. The valve is used mainly for on-off bi-directional control of flow to actuators with leak-free closing in one direction.

Model Code	2O2	2L2
Symbol		

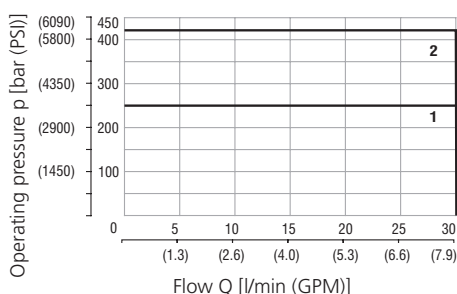
Technical Data

Valve size / Cartridge cavity		3/4-16 UNF-2A / A2 (C-8-2)	
		Lightline	High performance
Max. flow	l/min (GPM)	30 (7.9)	30 (7.9)
Max. operating pressure	bar (PSI)	250 (3630)	420 (6090)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	DC: ± 10	AC, DC: ± 15
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.12 (0.26)	0.20 (0.44)
General information		Type	
Datasheet		Products and operating conditions	
GI_0060		C14B*	
Coil types		C19B*	
Valve bodies	In-line mounted	SB-A2*	
	Sandwich mounted	SB-*A2*	
Cavity details / Form tools		SMT-A2*	
SMT_0019			
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline + High performance

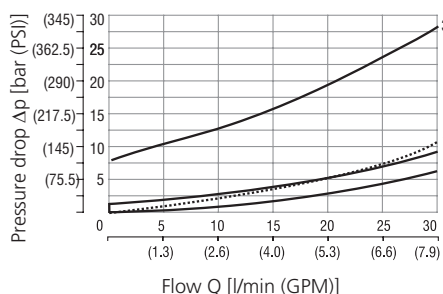
L - Oil 60 °C (140 °F) / Ambient temperature/
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)
HP - Oil 80 °C (176 °F) Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 VDC)



Model	Connection
1 L2L2	1→2, 2→1
1 L2O2	1→2, 2→1
2 H2L2	1→2, 2→1
2 H2O2	1→2, 2→1

Pressure drop related to flow rate

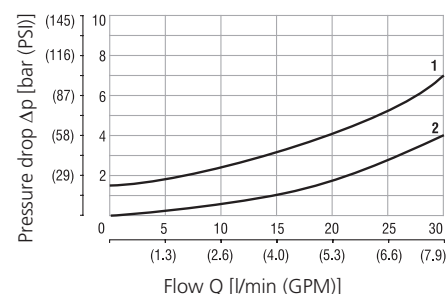
- Lightline



Model	Connection	Solenoid
1 L2L2	1→2	on
1 L2L2	2→1	on
1 L2O2	2→1	off
2 L2L2	1→2	off
3 L2O2	1→2	on
4 L2O2	1→2	off

Pressure drop related to flow rate

- High performance

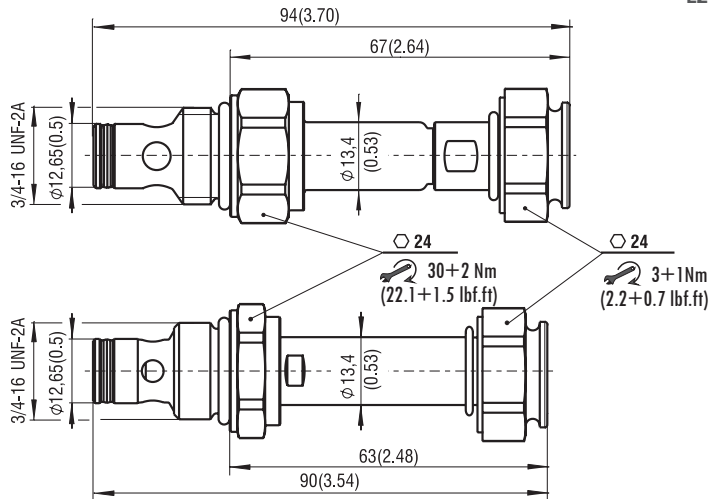


Model	Connection	Solenoid
1 H2L2	1→2	off
2 H2L2	1→2	on
2 H2L2	2→1	on
2 H2O2	1→2	off
2 H2O2	2→1	off
2 H2O2	1→2	on

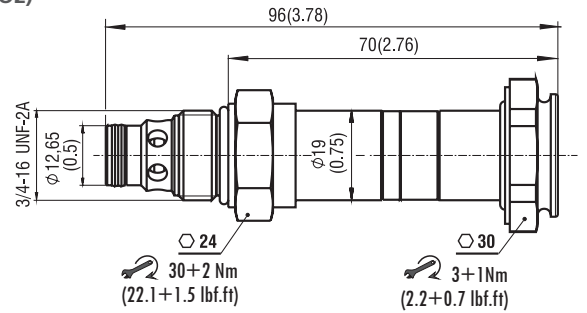
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline L2



High performance L2 (O2)



O2

Manual Override in millimeters (inches)

No designation * - standard for 2O2	Designation M2 for 2O2 * - rubber boot protected	Designation M5 for 2O2 * - socket head screw, size 2.5	Designation M9 for 2O2 - without manual override
 ~ 70.0 (2.76)	 ~ 81.5 (3.21)	 ~ 77.6 (3.06)	 H ~70.0 (2.76) L ~90.0 (3.54)
*Only for High performance version	Designation M4 for 2L2 * - hand screw	Designation M5 for 2L2 * - socket head screw, size 2.5	Designation M9 for 2L2 - without manual override
	 ~88.8 (3.50)	 ~88.8 (3.50)	 H ~70.0 (2.76) L ~94.0 (3.70)

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD3E-A2 / -

2/2 directional valve, solenoid operated, poppet type, piloted

Valve cavity
3/4-16 UNF (C-8-2)

Lightline
High performance

Functional symbol

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)*

*Only for High performance version

Seals
NBR
FPM (Viton)*

*Only for High performance version

Manual override
standard for 2O2*
rubber boot protected*
hand screw*
socket head screw*
without manual override

*Only for High performance version

No designation
V

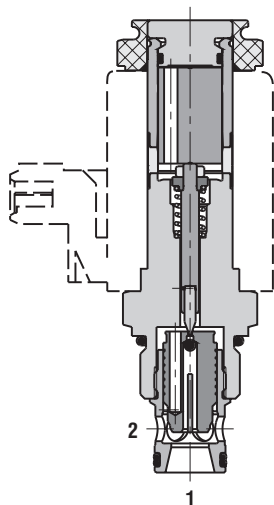
No designation
M2
M4
M5
M9

2/2 Directional Valve, Solenoid Operated, Poppet Type, Piloted

SD3E-B2

7/8-14 UNF • Q_{max} 75 l/min (20 GPM) • p_{max} 420 bar (6100 PSI)

Normally Open



Technical Features

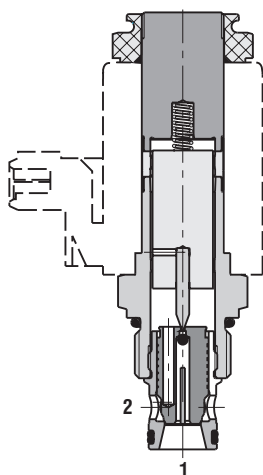
- › Hardened precision parts
- › High flow capacity and leak-free closing
- › High transmitted hydraulic power up to 420 bar
- › Normally open and normally closed version
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Coil interchangeability among SD*- B* product line
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

2/2 screw-in cartridge poppet valve, pilot operated. The one-directional valve with 7/8-14 UNF connection thread is designed for on-off flow control with leak-free closing in 2 → 1 flow direction. In the opposite flow direction the valve is opened by fluid pressure.

Model Code	2O2	2L2
Symbol		

Normally Closed



Technical Data

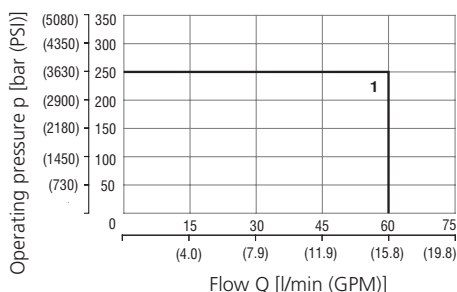
Valve size / Cartridge cavity		7/8-14 UNF-2A / B2 (C-10-2)	
		Lightline	High performance
Max. flow	l/min (GPM)	60 (15.9)	75 (19.8)
Max. operating pressure	bar (PSI)	250 (3630)	420 (6090)
Fluid temperature range (NBR)	°C (°F)	-30...60 (-22...140)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...60 (-4...140)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...50 (-22...122)	-30...80 (-22...176)
Supply voltage tolerance	%	AC, DC: ± 10	AC, DC: ± 15
Max. switching frequency	1/h	15 000	
Weight without coil	kg (lbs)	0.23 (0.51)	0.30 (0.66)

		Datasheet	Type	
General information		GI_0060	Products and operating conditions	
Coil types		C_8007	C19B*	C22B*
Valve bodies	In-line mounted	SB_0018	SB-B2*	
	Sandwich mounted	SB-04(06)_0028	SB-*B2*	
Cavity details / Form tools		SMT_0019	SMT-B2*	
Spare parts		SP_8010		

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - Lightline

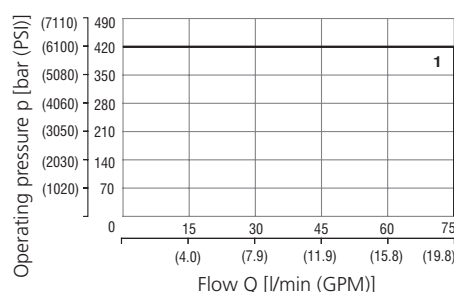
Oil 60 °C (140 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



Model	Connection
1 2L2	1→2, 2→1
1 2O2	1→2, 2→1

Operating limits - High performance

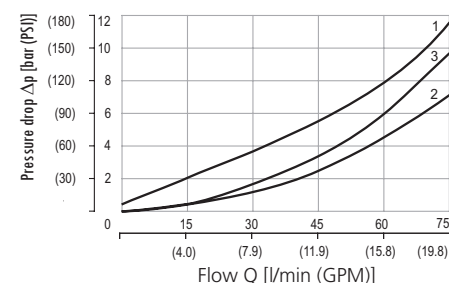
Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



Model	Connection
1 2L2	1→2, 2→1
1 2O2	1→2, 2→1

Pressure drop related to flow rate

- Lightline, High performance

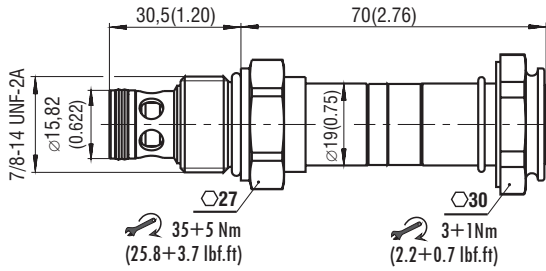


Model	Connection	Solenoid
1 2L2	1→2	off
2 2L2	2→1	on
2 2L2	1→2	on
2 2O2	1→2	off
3 2O2	2→1	off

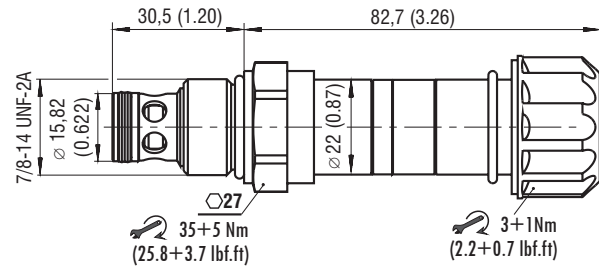
For operating limits under conditions and flow directions other than shown contact our technical support.

Dimensions in millimeters (inches)

Lightline



High performance



Manual Override in millimeters (inches)

No designation - for 2O2 - standard	Designation M2 for 2O2 - rubber boot protected	Designation M5 - for 2O2 - socket head screw, size 2.5	Designation M9 - for 2O2 - without manual override
<p>L ~ 70,0 (2.76) H ~ 82,7 (3.26)</p>	<p>L ~ 82,0 (3.23) H ~ 100,0 (3.94)</p>	<p>L ~ 77,6 (3.06) H ~ 84,8 (3.34)</p>	<p>L ~ 70,0 (2.76) H ~ 82,7 (3.26)</p>
Designation M8 for 2L2 * - removable handwheel with locking		Designation M5 - for 2L2 - socket head screw, size 2.5	Designation M9 - for 2L2 - without manual override
<p>H ~ 96(3.78)</p> <p>③ 28 ± 0,20mm 2.1/2-2 lbf.ft the hand screw mounting the coil</p> <p>① basic position, valve operated by solenoid ② set position, valve open by hand</p>		<p>L ~ 81,8 (3.22) H ~ 93,6 (3.69)</p>	<p>L ~ 70,0 (2.76) H ~ 82,7 (3.26)</p>

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD3E-B2 / -

2/2 directional valve, solenoid operated, poppet type, piloted

Valve cavity
7/8-14 UNF (C-10-2)

Lightline
High performance

Functional symbol

2O2

2L2

Surface treatment

A zinc-coated (ZnCr-3), ISO 9227 (240 h)

B zinc-coated (ZnNi), ISO 9227 (520 h)

Seals
NBR
FPM (Viton)

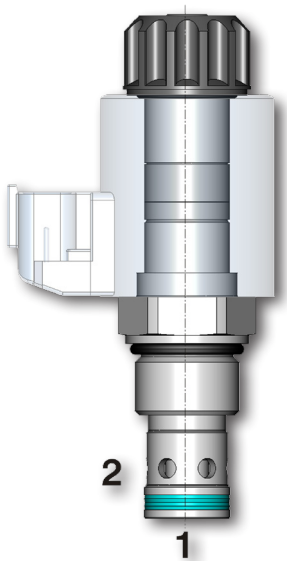
Manual override
standard for 2O2
rubber boot protected
socket head screw
removable handwheel with locking*
without manual override

*Only for High performance version

2/2 Directional Valve, Solenoid Operated, Poppet Type, Piloted

SD3E-C2

1-1/16-12 UN • Q_{max} 150 l/min (40 GPM) • p_{max} 350 bar (5100 PSI)



Technical Features

- › Hardened precision parts
- › High flow capacity and leak-free closing
- › High transmitted hydraulic power, max. pressure 350 bar
- › Normally open and normally closed version
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Coil interchangeability among SD*- C/H* product line
- › In the standard version, the valve is zinc-coated (520 h corrosion protection in NSS acc. to ISO 9227)

Functional Description

2/2 screw-in cartridge poppet valve, pilot operated. The one-directional valve with 1-1/16-12 UN connection thread is designed for on-off flow control with leak-free closing in 2 → 1 flow direction. In the opposite flow direction the valve is opened by fluid pressure.

Model Code	202	2L2
Symbol		

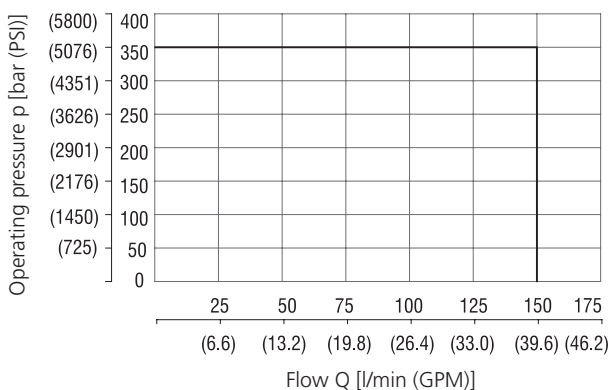
Technical Data

Valve size / Cartridge cavity		1-1/16-12 UN / C2 (C-12-2)	
		High performance	
Max. flow	l/min (GPM)	150 (39.6)	
Max. operating pressure	bar (PSI)	350 (5080)	
Fluid temperature range (NBR)	°C (°F)	-30...80 (-22...176)	
Fluid temperature range (FPM)	°C (°F)	-20...80 (-4...176)	
Ambient temperature range	°C (°F)	-30...80 (-22...176)	
Supply voltage tolerance	%	AC, DC: ± 15	
Max. switching frequency	1/h	7 000	
Weight without coil	kg (lbs)	0.40 (0.88)	
		Datasheet	Type
General information		GI_0060	Products and operating conditions
Coil types		C_8007	C22B*
Valve bodies		In-line mounted	SB_0018
		Sandwich mounted	SB-04(06,10)_0028
Cavity details / Form tools		SMT_0019	SMT-C2*
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits - High performance

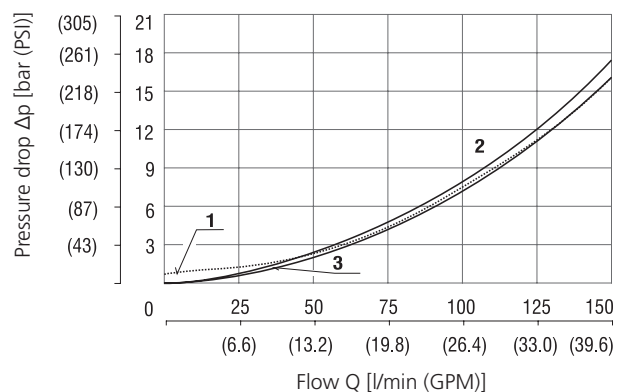
Oil 80 °C (176 °F) / Ambient temperature
50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



	Model	Connection
1	2L2	1→2, 2→1
1	202	1→2, 2→1

Pressure drop related to flow rate

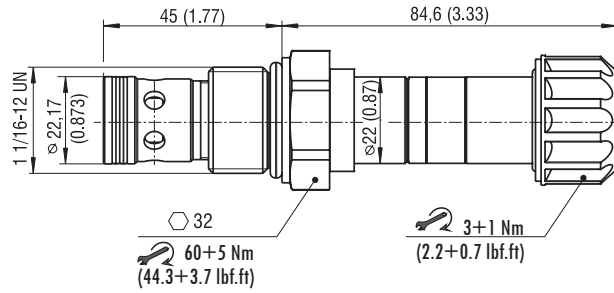
- High performance



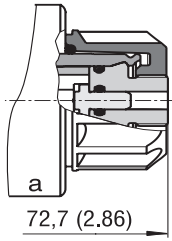
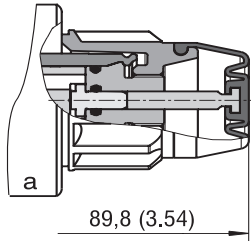
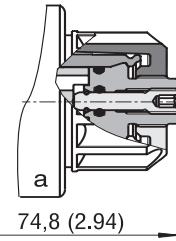
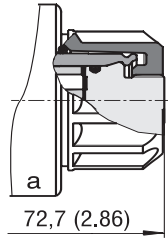
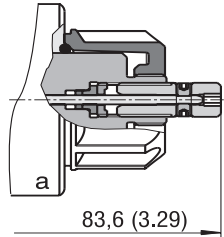
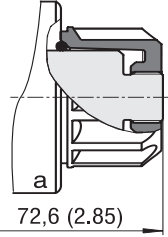
	Model	Connection	Solenoid
1	2L2	1→2	off
2	2L2	2→1	on
3	2L2	1→2	on
2	202	1→2	off
3	202	2→1	off

Dimensions in millimeters (inches)

High performance



Manual Override in millimeters (inches)

No designation - for 2O2 - standard	Designation M2 for 2O2 - rubber boot protected	Designation M5 - for 2O2 - socket head screw, hex. 2.5	Designation M9 - for 2O2 - without manual override
 72,7 (2.86)	 89,8 (3.54)	 74,8 (2.94)	 72,7 (2.86)
		Designation M5 - for 2L2 - socket head screw, hex. 2.5	Designation M9 - for 2L2 - without manual override
		 83,6 (3.29)	 72,6 (2.85)

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port 1 does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

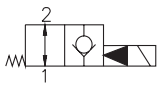
SD3E - C2 / H **- B**

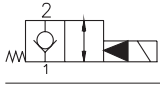
2/2 directional valve, solenoid operated, poppet type, piloted

Valve cavity
1-1/16-12 UN / C2 (C-12-2)

Model
High performance

Model


2O2


2L2

Surface treatment
zinc-coated (ZnNi), ISO 9227 (520 h)

Seals
NBR
FPM (Viton)

Manual override
standard for 2O2
rubber boot protected for 2O2
socket head screw (hex. 2.5)
without manual override

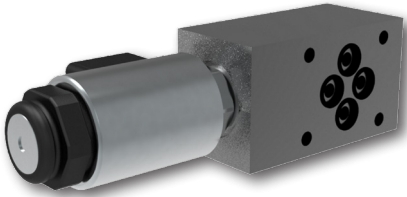
No designation
M2
M5
M9

No designation
V

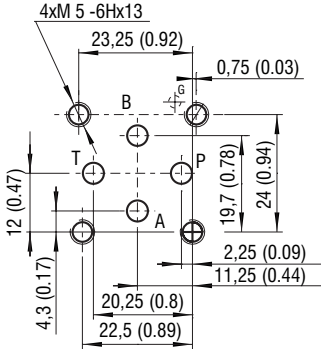
2/2 Solenoid Operated Poppet Valve, Pilot Operated, Modular

ROE3-062S2M

Size 04 (D02), 06 (D03) • Q_{max} 25 l/min (6.6 GPM) • p_{max} 250 bar (3600 PSI)

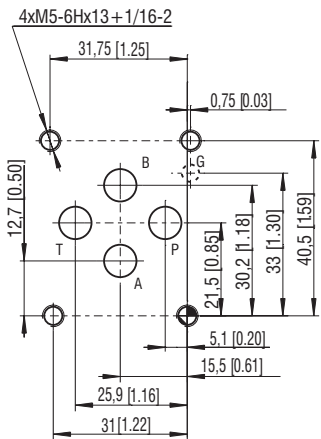


ISO 4401-02-01-0-05



Ports P, A, B, T max \varnothing 4.5 mm (0.18 in)

ISO 4401-03-02-0-05



Ports P, A, B, T max \varnothing 7.5 mm (0.29 in)

Technical Features

- › Valve built-in a modular block with subplate interface acc. to ISO 4401, DIN 24340 (CETOP 02 and 03) or an in-line body
- › All ports may be fully pressurized with maximum pressure 250 bar
- › Valve closes leak-free in specified flow direction
- › Precisely manufactured parts and hardened poppet
- › Normally closed (NC) version
- › Optional type of manual override
- › Coils interchangeable across ROE / RPE3-04 product line
- › In the standard version, the valve body is phosphated and the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

Solenoid operated poppet valve, pilot operated, built-in a modular block size (DN) 04 or 06, designed for creating hydraulic circuits with vertical grouping. The second variant is the valve in an in-line body. The one-directional valve is used for leak-free closing in specified flow direction (see Functional Symbols).

Technical Data

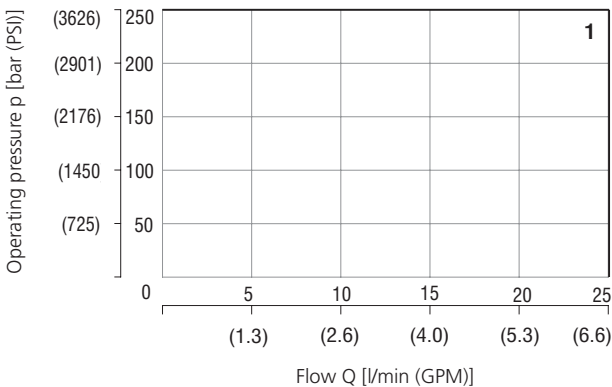
Valve size / Cartridge cavity		04 (02) / QG2	06 (03) / QG2
Max. flow	l/min (GPM)	25 (6.6)	25 (6.6)
Max. operating pressure	bar (PSI)	250 (3630)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... +176)	
Fluid temperature range (FPM)	°C (°F)	-20 ... +80 (-4 ... +176)	
Ambient temperature range	°C (°F)	-20 ... +50 (-4 ... +122)	
Supply voltage tolerance	%	AC, DC: \pm 10	
Max. switching frequency	1/h	15 000	
Switching time, at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)	ON	DC 25 ... 35 AC 25 ... 35	DC 30 ... 50 AC 30 ... 110
	OFF	DC 15 ... 25 AC 50 ... 100	DC 80 ... 130 AC 100 ... 150
Weight	- valve with 1 solenoid	Modular 1.2 (2.5)	Modular 1.5 (3.2)
	- valve with 2 solenoids	Modular 1.7 (3.6)	Modular 2.0 (4.3)
		In-line 1.6 (3.5)	

	Data Sheet	Type
General information	GI_0060	Products and operating conditions
Cavity details	SMT_0019	Size 04, 06
Spare parts	SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits

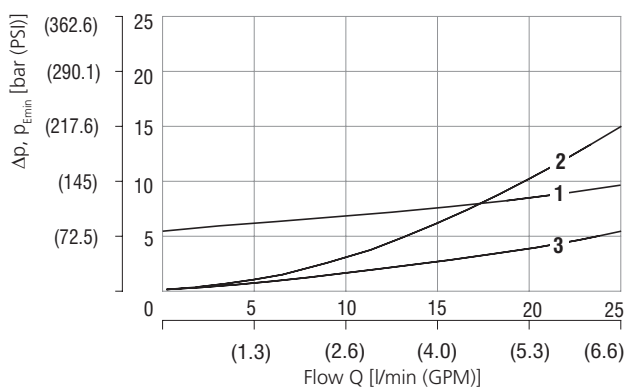
Operating limits for maximum hydraulic power at rated temperature and supplied with voltage equal to 90% of the nominal value



	Model	Direction
1	S2	A-B

Pressure drop related to flow rate

In-line body design R*

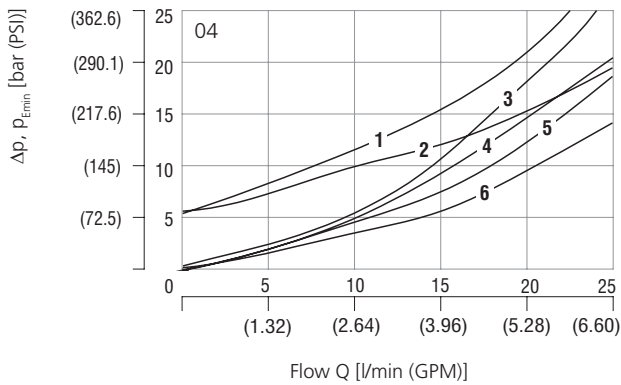


	Model	Direction
1	R1, R2, R3, R4	B-A, Solenoid OFF
2	R1, R3, R4	B-A, Solenoid ON
3	R1, R2, R3, R4	A-B, Solenoid ON

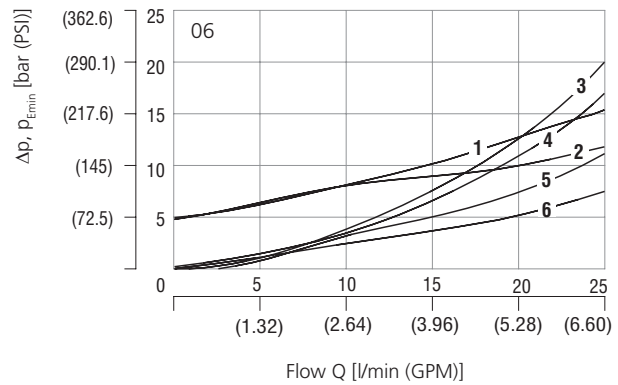
Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate

In-line body design M*



	Model	Direction	Solenoid
1	MD04	T-A	OFF
1	MX04	B-A	OFF
2	MA04	A1-A2	OFF
3	MD04	A-T	
4	MA04	A2-A1	
4	MD04	T-A	ON
5	MX04	B-A	ON
6	MA04	A1-A2	ON



	Model	Direction	Solenoid
1	MD06	T-A	OFF
2	MX06	B-A	OFF
2	MA06	A1-A2	OFF
3	MD06	A-T	
4	MA06	A2-A1	
4	MX06	A-B	
5	MD06	A-T	
6	MA06	A1-A2	ON
6	MX06	B-A	ON

Ordering Code

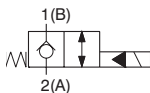
ROE3 - 062 S2 [] [] / [] [] [] [] - []

2/2 Solenoid Operated Poppet Valve, Pilot Operated, Modular

Valve size

Spool symbols

normally closed (NC)



Model

- modular valve, connection A2-A1 **MA**
- modular valve, connection B2-B1 **MB**
- modular valve, connection A-B **MX**
- modular valve, connection A-T **MD**
- modular valve, connection B-T **ME**
- modular valve, connection B2-B1, A2-A1 **MC**
- modular valve, connection B-T, A-T **MF**
- modular valve, connection P-T **MG**
- modular valve, connection P2-P1 **MP***
- in-line valve, 2 ports, thread G3/8 **R1**
- in-line valve, 2 ports, thread G1/2 **R2**
- in-line valve, 2 ports, thread 3/4-16, (SAE 8) **R3**
- in-line valve, 2 ports, thread 7/8-14 (SAE 10) **R4**
- in-line valve, 2 ports, thread G3/8, G1/4 **R7**

*only available for size 06 (D03)

Modular plate size

- ISO 4401-02-01-0-05, DIN 24340 (CETOP 02), size 04 **04**
- ISO 4401-03-02-0-05, DIN 24340 (CETOP 03), size 06 **06**

No designation

Surface treatment

- standard
- A** zinc-coated (ZnCr-3), ISO 9227 (240 h)
- B** zinc-coated (ZnNi), ISO 9227 (520 h)

No designation

Seals

- V** NBR
- FPM (Viton)

No designation N5

Manual override
standard - without manual override with external hexagon 14

- E1**
- E2**
- E3**
- E4**
- E3A**
- E4A**
- E5**
- E8**
- E9**
- E12A**
- E13A**

Connector

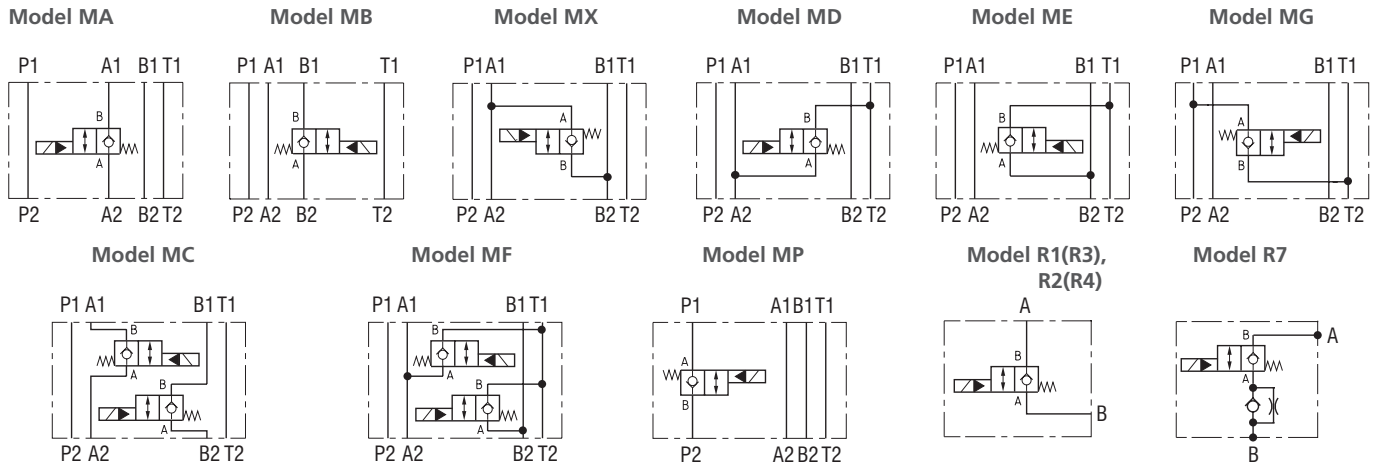
- EN 175301-803-A
- E1 with quenching diode
- AMP Junior Timer - radial direction (2 pins; male)
- E3 with quenching diode
- AMP Junior Timer - axial direction (2 pins; male)
- E3A with quenching diode
- EN 175301-803-A with integrated rectifier
- loose conductors (two insulated wires)
- E8 with quenching diode
- Deutsch DT04-2P - axial direction
- E12A with quenching diode

The AC coils correspond to E5.

Rated supply voltage of solenoids (at the coil terminals)

- 01200** 12 V DC / 2.41 A
- 01400** 14 V DC / 1.66 A
- 02100** 21 V DC / 1.31 A
- 02400** 24 V DC / 1.15 A
- 02700** 27 V DC / 0.89 A
- 20500** 205 V DC / 0.12 A
- 02450** 24 V AC / 1.44 A / 50 (60) Hz
- 12060** 120 V AC / 0.22 A / 50 (60) Hz
- 23050** 230 V AC / 0.12 A / 50 (60) Hz

Functional Symbols



Solenoid Coil in millimeters (inches)

<p>E1 - EN 175301-803-A E2 - E1 with quenching diode Protection degree IP65</p>	<p>E3 - AMP Junior Timer - radial direction E4 - E3 with quenching diode Protection degree IP67</p>	<p>E3A - AMP Junior Timer - axial direction E4A - E3A with quenching diode Protection degree IP67</p>	<p>E5 - EN 175301-803-A and integrated rectifier Protection degree IP65</p>
<p>E8 - Loose conductors (two insulated cables) E9 - (E8 with quenching diode)</p> <p>Note: A = Standard 300 mm (11.81 in), other sizes on demand</p>	<p>E12A - Deutsch DT04-2P E13A - E12A with quenching diode Protection degree IP67 / IP69K</p>		

The indicated IP protection level is only reached with a properly mounted connector.

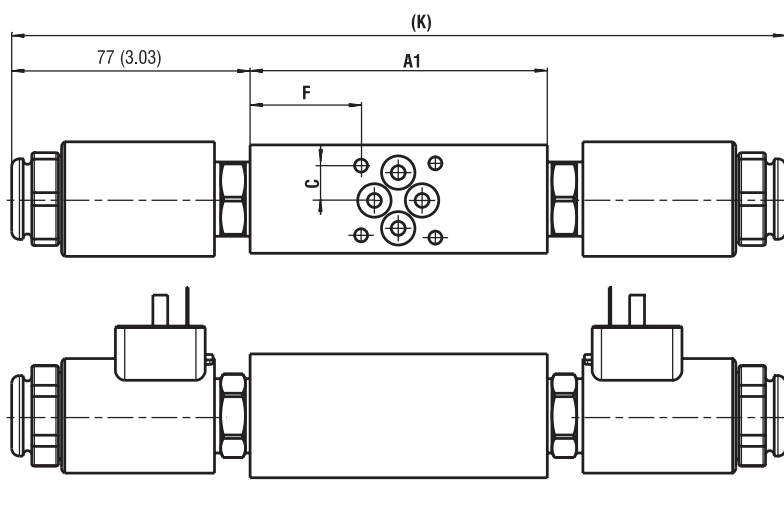
Manual Override in millimeters (inches)

<p>No designation - standard - without manual override</p>	<p>Designation N5 - with external hexagon 14</p>
--	--

Dimensions in millimeters (inches)

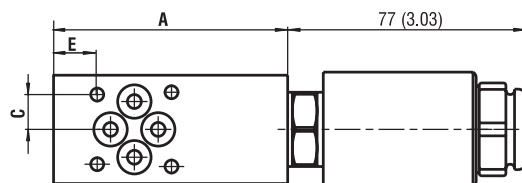
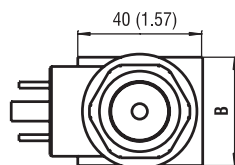
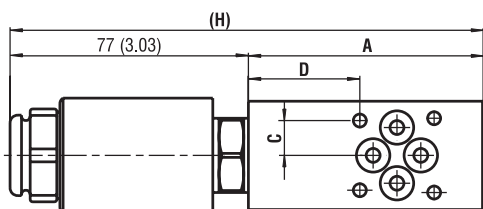
Models MC, MF

	Size 04	Size 06
A	76 (2.99)	80 (3.15)
A1	96 (3.78)	94 (3.70)
B	35 (1.38)	45 (1.77)
C	11,25 (0.44)	15,5 (0.61)
D	36 (1.42)	28 (1.10)
E	16 (0.63)	11,5 (0.45)
F	36 (1.42)	25,5 (1.00)
H	153 (6.02)	157 (6.18)
K	250 (9.84)	248 (9.76)



Models MA, MX, MD, MG, MP

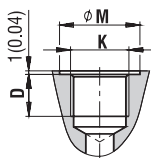
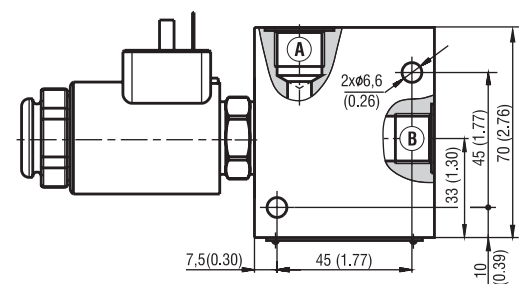
Models MB, ME



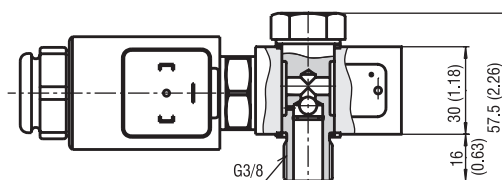
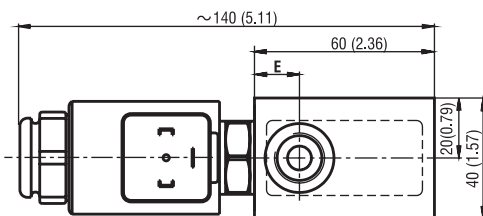
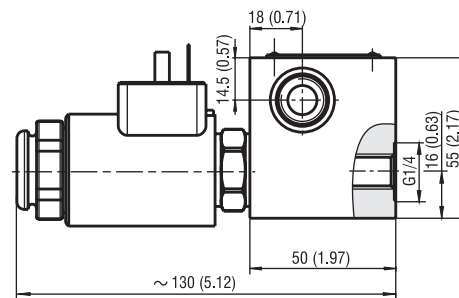
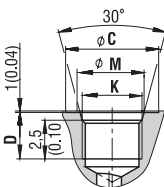
**Models R1 (R2)
Models R3 (R4)**

Cavity A, B
for models **R1 (R2)**
DIN 3852

Model R7



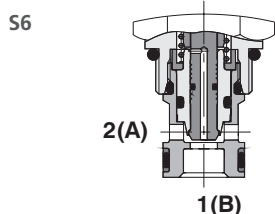
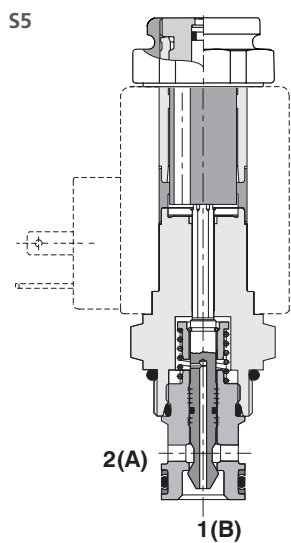
for models **R3 (R4)**
ISO 11926



Model	K	M	C	D	E
R1	G3/8	ø23 (0.91)	-	12 (0.47)	15 (0.59)
R2	G1/2	ø28 (1.10)	-	14 (0.55)	16 (0.61)
R3	3/4-16UNF-2B (SAE 8)	ø20,6 (0.81)	ø30 (1.18)	14,3 (0.56)	16 (0.61)
R4	7/8-14UNF-2B (SAE 10)	ø23,9 (0.94)	ø34 (1.34)	16,7 (0.66)	18 (0.71)

2/2 Solenoid Operated Poppet Valve, Direct Acting

ROE3-042S5(S6) M22x1.5 • Q_{max} 25 l/min (7 GPM) • p_{max} 250 bar (3600 PSI)



Technical Features

- › Screw-in cartridge valve with connecting thread M22x1.5
- › All ports may be fully pressurized with maximum pressure 250 bar
- › Valve closes leak-free in both flow directions
- › Precisely manufactured parts and hardened poppet
- › Normally open or normally closed version
- › Optional type of manual override
- › Coil interchangeability among ROE / RPE3-04 product line
- › The valve in standard version is zinc-coated with surface protection 240 h in NSS acc. to ISO 9227

Functional Description

2/2 screw-in cartridge poppet valve with connecting thread M22x1.5, solenoid operated, direct acting. The bi-directional valve is used for leak-free closing in both flow directions.

Model Code	S5	S6
Symbol		

Technical Data

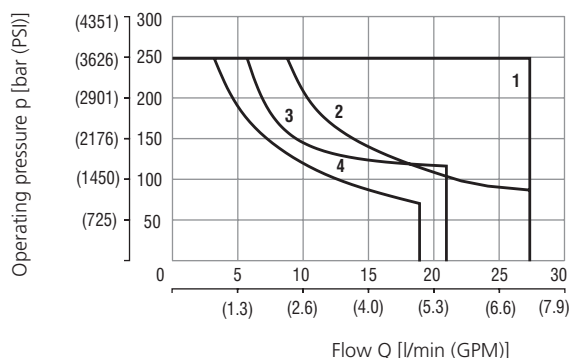
Valve size / Cartridge cavity		M22x1.5 / QG2
Max. flow	l/min (GPM)	25 (6.6)
Max. operating pressure	bar (PSI)	250 (3630)
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... +176)
Fluid temperature range (FPM)	°C (°F)	-20 ... +80 (-4 ... +176)
Ambient temperature	°C (°F)	-20 ... 50 (-4 ... 122)
Supply voltage tolerance	%	AC, DC: ± 10
Max. switching frequency	1/h	15 000
Weight without coil	kg (lbs)	0.2 (0.44)

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Coil types		C_8007	C19B*
Valve bodies	In-line mounted	SB_0018	SB-QG2*
	Sandwich mounted	SB-04 (06)_0028	SB-04-QG2*
Cavity details		SMT_0019	SMT-QG2*
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

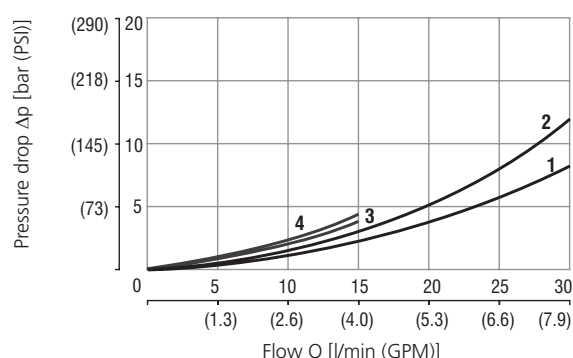
Operating limits

Operating limits for maximum hydraulic power at rated temperature and supply voltage equal to 90% nominal.



	Model	Connection
1	S5	2→1
2	S5	1→2
3	S6	2→1*
4	S6	1→2*

Pressure drop related to flow rate



	Model	Connection
1	S5	2→1
2	S5	1→2
3	S6	2→1*
4	S6	1→2*

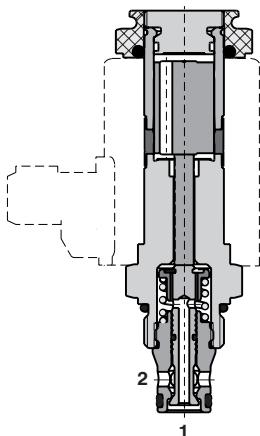
* flow up to 15 l/min (4 GPM)

2/2 Directional Valve, Solenoid Operated, Poppet Type, Blocking, Direct Acting

SD1E-A2

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)

2S5



Technical Features

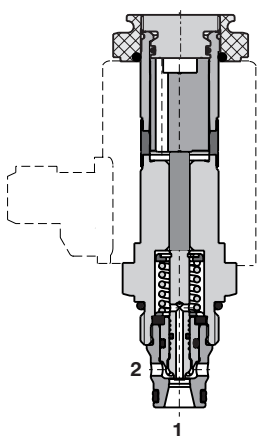
- › Hardened precision parts
- › High flow capacity and leak-free closing (up to 3 drops per minute)
- › High transmitted hydraulic power up to 350 bar
- › Normally open and normally closed version
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Coil interchangeability among SD*-A*/H product line
- › In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

2-way, 2 position high pressure direct acting poppet valve in form of a screw-in cartridge. The valve is used mainly for ON-OFF bi-directional control of flow to actuators with leak-free closing in both directions.

Model Code	2S5	2S6
Symbol		

2S6



Technical Data

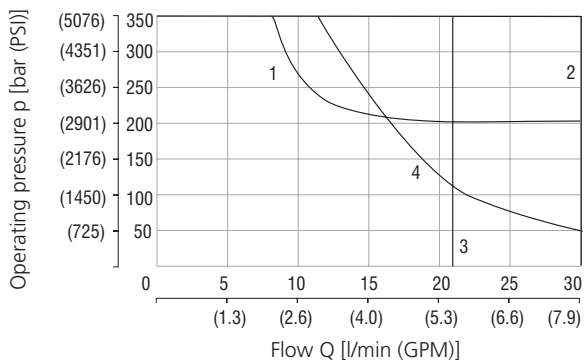
Valve size / Cartridge cavity	3/4-16 UNF-2A / A2 (C-8-2)	
Max. flow	l/min (GPM)	30 (7.9)
Max. operating pressure	bar (PSI)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...80 (-22...176)
Supply voltage tolerance	%	AC, DC: ± 15
Max. switching frequency	1/h	15 000
Weight without coil	kg (lbs)	0.19 (0.42)

	Datasheet	Type
General information	GI_0060	Products and operating conditions
Coil types	C_8007	C19B*
Valve bodies	In-line mounted	SB-A2*
	Sandwich mounted	SB-*A2*
Cavity details / Form tools	SMT_0019	SMT-A2*
Spare parts	SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

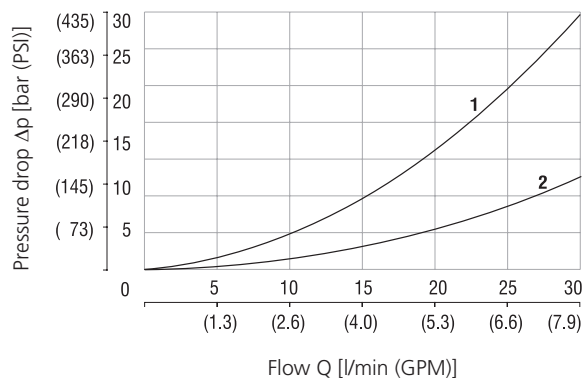
Operating limits

Oil 80 °C (176 °F) / Ambient temperature 50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)



	Model	Connection
1	2S5	1→2
2	2S5	2→1
3	2S6	2→1
4	2S6	1→2

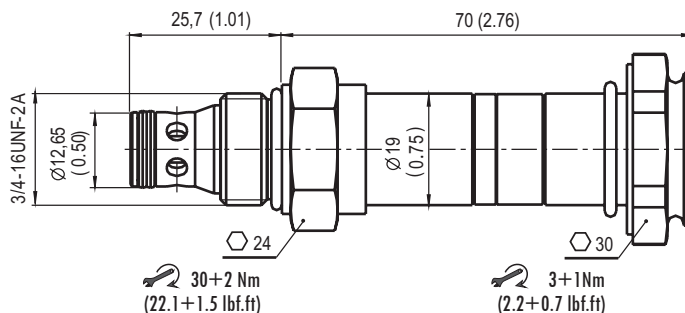
Pressure drop related to flow rate



	Model	Connection
1	2S5	1→2
1	2S5	2→1
2	2S6	1→2
2	2S6	2→1

Dimensions in millimeters (inches)

255, 256



Manual Override in millimeters (inches)

No designation - standard	Designation M2 - rubber boot protected	Designation M4 - hand screw	Designation M5 - socket head screw, size 2.5	Designation M9 - without manual override
~ 70,0 (2.76)	~ 81,5 (3.21)	~ 90 (3.54)	~ 77,5 (3.05)	~ 70,0 (2.76)

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD1E-A2 / H -

2/2 directional valve, solenoid operated, poppet type, blocking, direct acting

Valve cavity
3/4-16 UNF (C-8-2)

High performance

Functional symbol

255

256

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

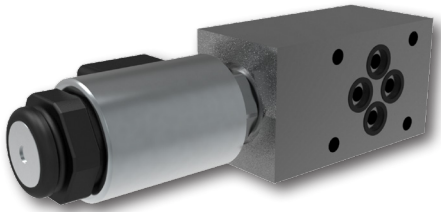
Seals
No designation V
NBR
FPM (Viton)

Manual override
No designation
M2 rubber boot protected
M4 hand screw
M5 socket head screw
M9 without manual override

2/2 Solenoid Operated Poppet Valve, Direct Acting, Modular

ROE3-042S5(S6)M

Size 04 (D02), 06 (D03) • Q_{max} 25 l/min (7 GPM) • p_{max} 250 bar (3600 PSI)



Technical Features

- › Valve built-in a modular block with subplate interface acc. ISO 4401, DIN 24340 (CETOP 02 and 03) or an in-line body
- › All ports may be fully pressurized with maximum pressure 250 bar
- › Valve closes leak-free in both flow directions
- › Precisely manufactured parts and hardened poppet
- › Normally open (NO) and normally closed (NC) versions
- › Optional type of manual override
- › Coils interchangeable across ROE / RPE3-04 product line
- › In the standard version, the valve body is phosphated and the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

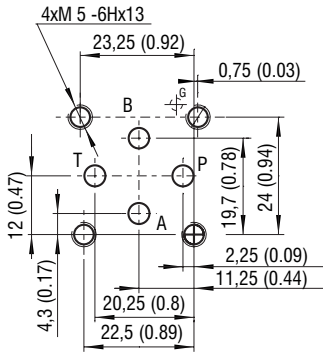
Solenoid operated poppet valve, direct acting, built-in a modular block size (DN) 04 or 06, designed for creating hydraulic circuits with vertical grouping. The second variant is the valve in an in-line body. The bi-directional valve is used for leak-free closing in both flow directions (see Functional Symbols).

Technical Data

Valve size / Cartridge cavity		04 (02) / QG2	06 (03) / QG2
Max. flow	l/min (GPM)	25 (6.6)	25 (6.6)
Max. operating pressure	bar (PSI)	250 (3630)	
Fluid temperature range (NBR)	°C (°F)	-30 ... +80 (-22 ... +176)	
Fluid temperature range (FPM)	°C (°F)	-20 ... +80 (-4 ... +176)	
Ambient temperature range	°C (°F)	-20 ... +50 (-4 ... +122)	
Supply voltage tolerance	%	AC, DC: ± 10	
Max. switching frequency	1/h	15 000	
Switching time, at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)	ON	DC 25 ... 35 AC 25 ... 35	DC 30 ... 50 AC 30 ... 110
	OFF	DC 15 ... 25 AC 50 ... 100	DC 80 ... 130 AC 100 ... 150
Weight	- valve with 1 solenoid	Modular 1.2 (2.5)	Modular 1.5 (3.2)
	- valve with 2 solenoids	Modular 1.7 (3.6)	Modular 2.0 (4.3)
		In-line 1.6 (3.5)	

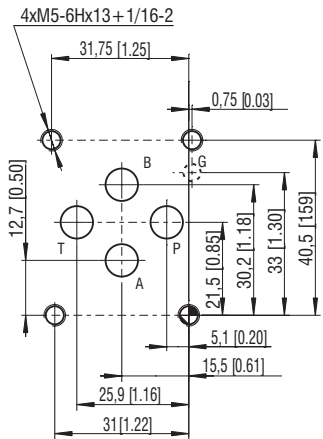
	Data Sheet	Type
General information	GI_0060	Products and operating conditions
Cavity details	SMT_0019	Size 04, 06
Spare parts	SP_8010	

ISO 4401-02-01-0-05



Ports P, A, B, T - max $\varnothing 4.5 \text{ mm}$ (0.18 in)

ISO 4401-03-02-0-05

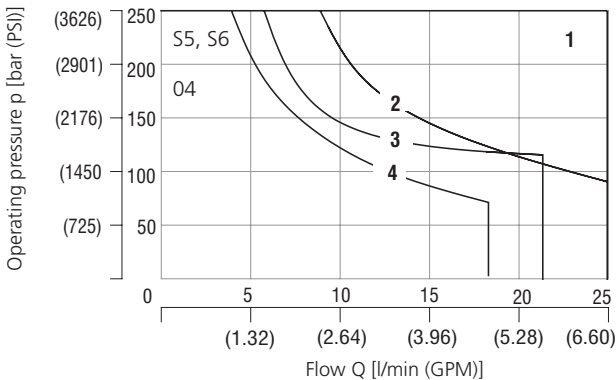


Ports P, A, B, T - max $\varnothing 7.5 \text{ mm}$ (0.29 in)

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits

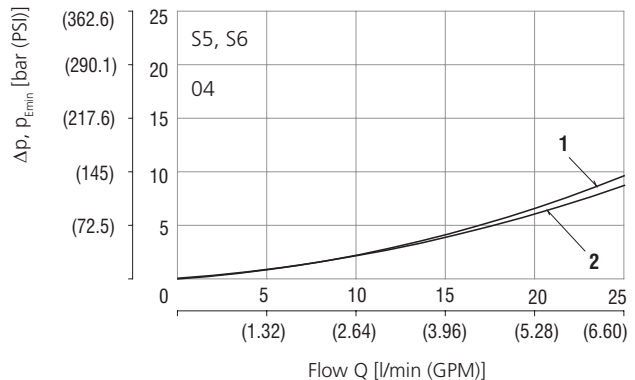
Operating limits for maximum hydraulic power at rated temperature and supplied with voltage equal to 90% of the nominal value



	1	2	3	4
Model	S5	S5	S6	S6
Direction	A-B	B-A	A-B	B-A

Pressure drop related to flow rate

In-line body design R*

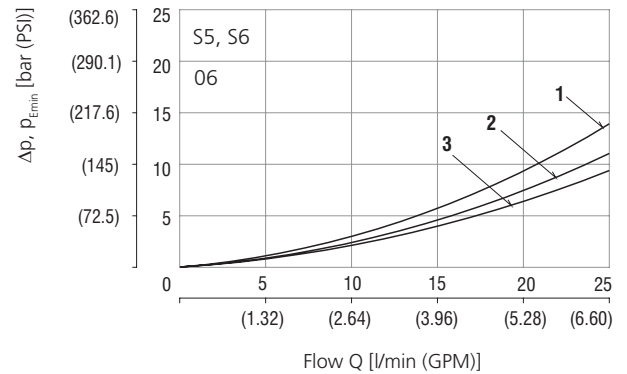
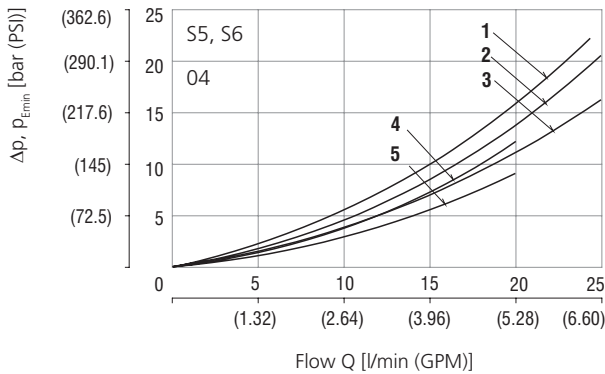


	1	2
Model	R1, R3	R2, R4
Direction	A-B, B-A	A-B, B-A

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Pressure drop related to flow rate

Modular plate M*



S5	Model	Direction	S6	Model	Direction
1	MD04	A-T, T-A	2	MD04	A-T, T-A
	ME04	B-T, T-B		ME04	B-T, T-B
	MF04	A-T, T-A		MF04	A-T, B-T
A-T, B-T		T-A, T-B			
2	MX04	A-B, B-A	4	MX04	A-B, B-A
		MA04			A1-A2, A2-A1
3	MA04	A2-A1	5	MB04	B1-B2, B2-B1
		MB04			B1-B2, B2-B1
					MC04
		B1-B2, B2-B1			

S5	Model	Direction	S6	Model	Direction (to 20 l/min)
1	MD06	A-T, T-A	1	MD06	T-A
	ME06	B-T, T-B		ME06	T-B
	MF06	A-T, B-T / T-A, T-B		MF06	T-A, T-B
2	MA06	A1-A2	2	MD06	A-T
	MB06	B1-B2		ME06	B-T
	MC06	A1-A2 / B1-B2		MF06	A-T, B-T
3	MA06	A2-A1	3	MA06	A1-A2, A2-A1
	MB06	B1-B2		MB06	B1-B2, B2-B1
	MC06	A2-A1 / B2-B1		MC06	A1-A2, A2-A1
		A-B			B1-B2, B2-B1

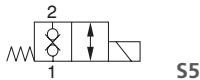
Ordering Code

ROE3 - 042 [] [] [] / [] [] [] [] - []

2/2 Solenoid Operated Poppet Valve, Direct Acting, Modular

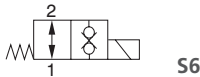
Jmenovitá světlost

normally closed (NC), blocking



S5

normally open (NO), blocking



S6

Model

- modular valve, connection A2-A1 **MA**
- modular valve, connection B2-B1 **MB**
- modular valve, connection A-B **MX**
- modular valve, connection A-T **MD**
- modular valve, connection B-T **ME**
- modular valve, connection B2-B1, A2-A1 **MC**
- modular valve, connection B-T, A-T **MF**
- modular valve, connection P-T **MG**
- modular valve, connection P2-P1 **MP***
- modular valve, connection B2-P2, B2-T2 **MJ**
- in-line valve, 2 ports, thread G3/8 **R1**
- in-line valve, 2 ports, thread G1/2 **R2**
- in-line valve, 2 ports, thread 3/4-16, (SAE 8) **R3**
- in-line valve, 2 ports, thread 7/8-14 (SAE 10) **R4**
- in-line valve, 2 ports, thread G3/8, G1/4 **R7**

*only available for size O6 (D03)

Modular plate size

ISO 4401-02-01-0-05, DIN 24340 (CETOP O2), size O4 **O4**
 ISO 4401-03-02-0-05, DIN 24340 (CETOP O3), size O6 **O6**

No designation

Surface treatment
standard

- A** zinc-coated (ZnCr-3), ISO 9227 (240 h)
- B** zinc-coated (ZnNi), ISO 9227 (520 h)

No designation
V

Seals
NBR
FPM (Viton)

No designation
N2
N4

Manual override
standard
covered with rubber boot
with hand screw

- E1** EN 175301-803-A
- E2** E1 with quenching diode
- E3** AMP Junior Timer - radial direction (2 pins; male)
- E4** E3 with quenching diode
- E3A** AMP Junior Timer - axial direction (2 pins; male)
- E4A** E3A with quenching diode
- E5** EN 175301-803-A with integrated rectifier
- E8** loose conductors (two insulated wires)
- E9** E8 with quenching diode
- E12A** Deutsch DT04-2P - axial direction
- E13A** E12A with quenching diode

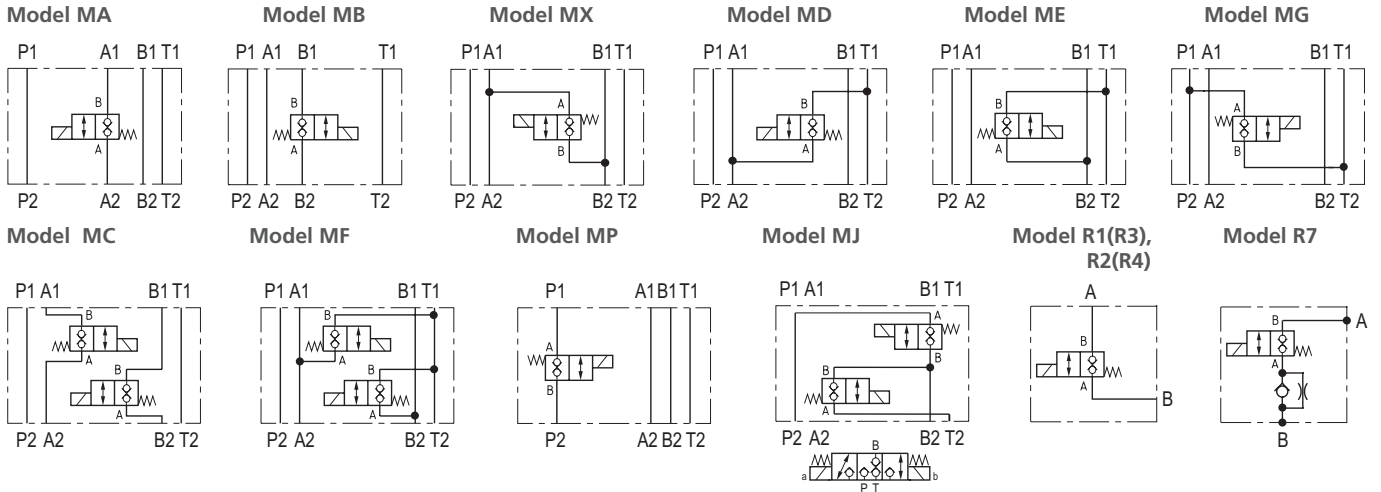
The AC coils correspond to E5.

Rated supply voltage of solenoids (at the coil terminals)

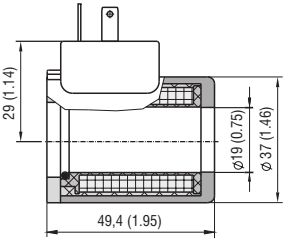
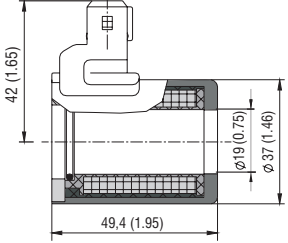
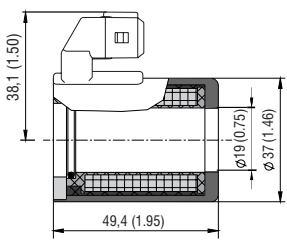
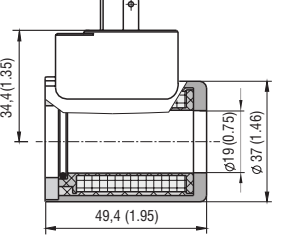
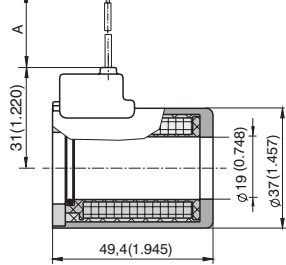
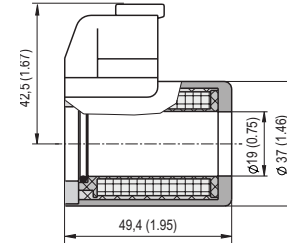
- 01200** 12 V DC / 2.41 A
- 01400** 14 V DC / 1.66 A
- 02100** 21 V DC / 1.31 A
- 02400** 24 V DC / 1.15 A
- 02700** 27 V DC / 0.89 A
- 20500** 205 V DC / 0.12 A
- 02450** 24 V AC / 1.44 A / 50 (60) Hz
- 12060** 120 V AC / 0.22 A / 50 (60) Hz
- 23050** 230 V AC / 0.12 A / 50 (60) Hz

Functional Symbols

Example: ROE3-042S5(S6)M*

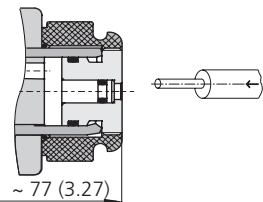
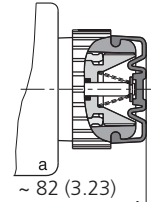
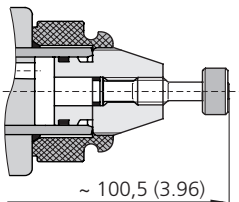


Solenoid Coil in millimeters (inches)

<p>E1 - EN 175301-803-A E2 - E1 with quenching diode Protection degree IP65</p>	<p>E3 - AMP Junior Timer - radial direction E4 - E3 with quenching diode Protection degree IP67</p>	<p>E3A - AMP Junior Timer - axial direction E4A - E3A with quenching diode Protection degree IP67</p>	<p>E5 - EN 175301-803-A and integrated rectifier Protection degree IP65</p>
			
<p>E8 - Loose conductors (two insulated cables) E9 - (E8 with quenching diode)</p>	<p>E12A - Deutsch DT04-2P E13A - E12A with quenching diode Protection degree IP67 / IP69K</p>		
 <p>Note: A = Standard 300 mm (11.81 in), other sizes on demand</p>			

The indicated IP protection level is only reached with a properly mounted connector.

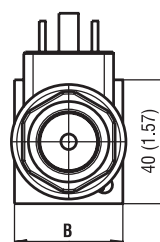
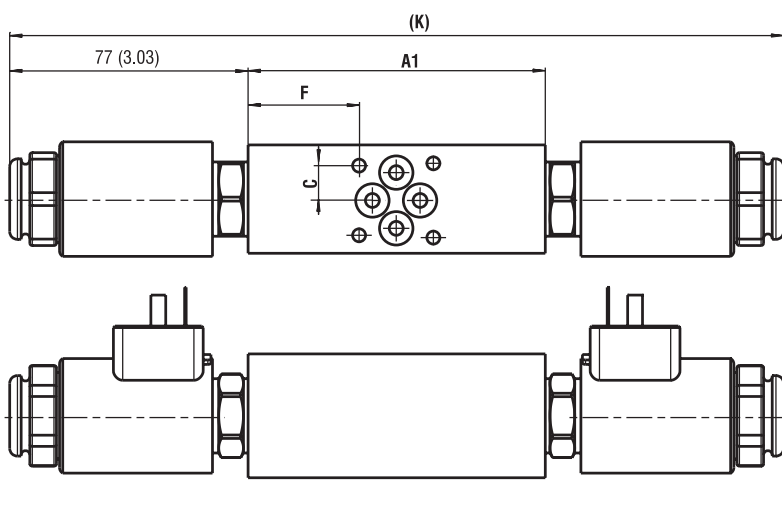
Manual Override in millimeters (inches)

<p>No designation - standard</p>  <p>~ 77 (3.27)</p>	<p>Designation N2 - rubber boot</p>  <p>~ 82 (3.23)</p>	<p>Designation N4 - hand screw</p>  <p>~ 100,5 (3.96)</p>
---	--	--

Dimensions in millimeters (inches)

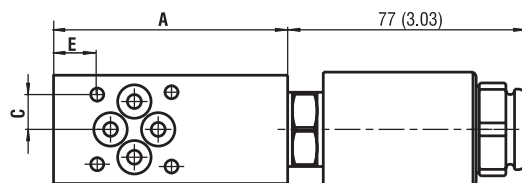
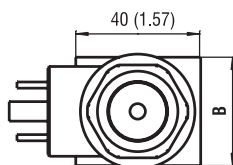
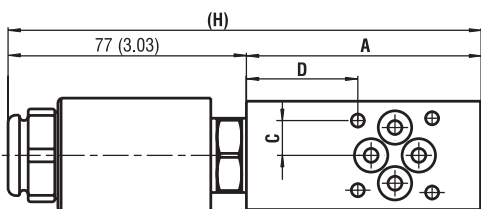
Models MC, MF, MJ

	Size 04	Size 06
A	76 (2.99)	80 (3.15)
A1	96 (3.78)	94 (3.70)
B	35 (1.38)	45 (1.77)
C	11.25 (0.44)	15.5 (0.61)
D	36 (1.42)	28 (1.10)
E	16 (0.63)	11.5 (0.45)
F	36 (1.42)	25.5 (1.00)
H	153 (6.02)	157 (6.18)
K	250 (9.84)	248 (9.76)



Models MA, MX, MD, MG, MP

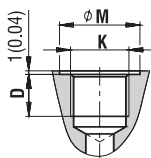
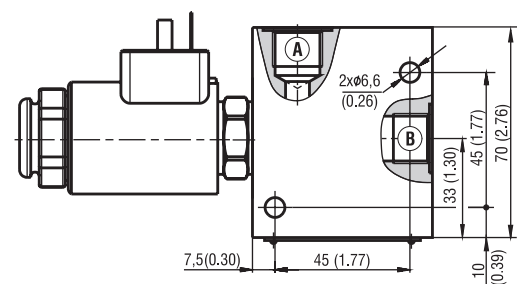
Models MB, ME



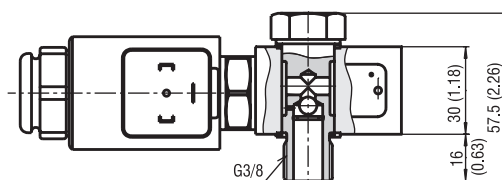
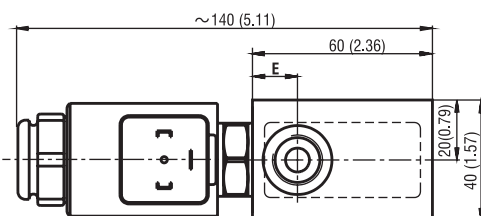
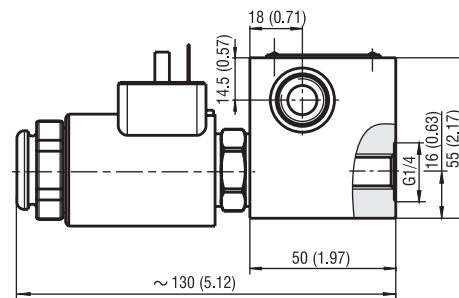
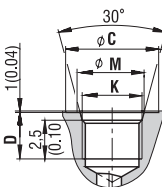
**Models R1 (R2)
Models R3 (R4)**

Cavity A, B
for models **R1 (R2)**
DIN 3852

Model R7



for models **R3 (R4)**
ISO 11926

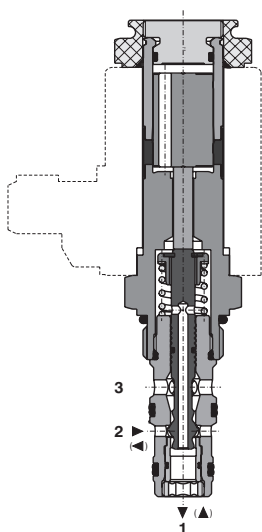


Model	K	M	C	D	E
R1	G3/8	Ø23 (0.91)	-	12 (0.47)	15 (0.59)
R2	G1/2	Ø28 (1.10)	-	14 (0.55)	16 (0.61)
R3	3/4-16UNF-2B (SAE 8)	Ø20.6 (0.81)	Ø30 (1.18)	14.3 (0.56)	16 (0.61)
R4	7/8-14UNF-2B (SAE 10)	Ø23.9 (0.94)	Ø34 (1.34)	16.7 (0.66)	18 (0.71)

SD1E-A3

3/4-16 UNF • Q_{max} 30 l/min (8 GPM) • p_{max} 350 bar (5100 PSI)

2S7



Technical Features

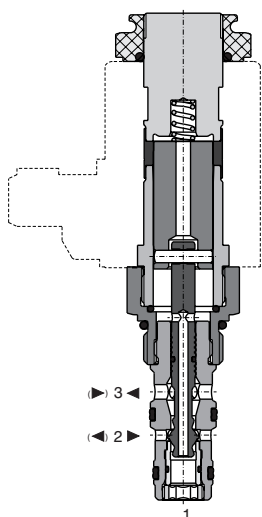
- › Hardened precision parts
- › High flow capacity and leak-free closing (up to 3 drops per minute)
- › High transmitted hydraulic power up to 350 bar
- › Wide range of manual overrides available
- › All ports may be fully pressurized
- › Coil interchangeability among SD*-A*/H product line
- › In the standard version, the valve is zinc-coated for 240 h protection acc. to ISO 9227

Functional Description

3-way, 2 positions, high pressure direct acting poppet valve in form of a screw-in cartridge. The valve is used mainly for ON-OFF bi-directional control of flow to actuators with leak-free closing in both directions.

Model Code	2S7	2S8
Symbol		

2S8



Technical Data

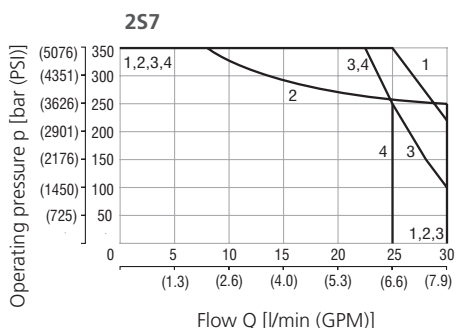
Valve size / Cartridge cavity	3/4-16 UNF-2A / A3 (C-8-3)	
Max. flow	l/min (GPM)	30 (7.9)
Max. operating pressure	bar (PSI)	350 (5080)
Fluid temperature range (NBR)	°C (°F)	-30...80 (-22...176)
Fluid temperature range (FPM)	°C (°F)	-20...80 (-4...176)
Ambient temperature range	°C (°F)	-30...80 (-22...176)
Supply voltage tolerance	%	AC, DC: ± 15
Max. switching frequency	1/h	15 000
Weight without coil	2S7	0.21 (0.45)
	2S8	0.22 (0.47)
General information		Datasheet: GI_0060
Coil types		Type: C_8007
Valve bodies	In-line mounted	Products and operating conditions: SB_0018
	Sandwich mounted	C 19B*
Cavity details / Form tools		SB-A3*
Spare parts		SB-04(06)_0028
		SMT_0019
		SP_8010
		SMT-A3*

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

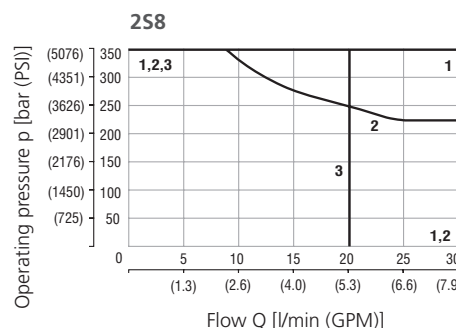
Operating limits

Oil 80 °C (176 °F) / Ambient temperature 50 °C (122 °F) / Voltage U_n -10% (21.6 V DC)

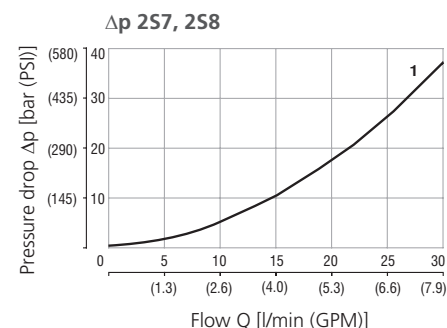
Pressure drop related to flow rate



	Model	Connection
1	2S7	2→1
2	2S7	2→3
3	2S7	3→2
4	2S7	1→2



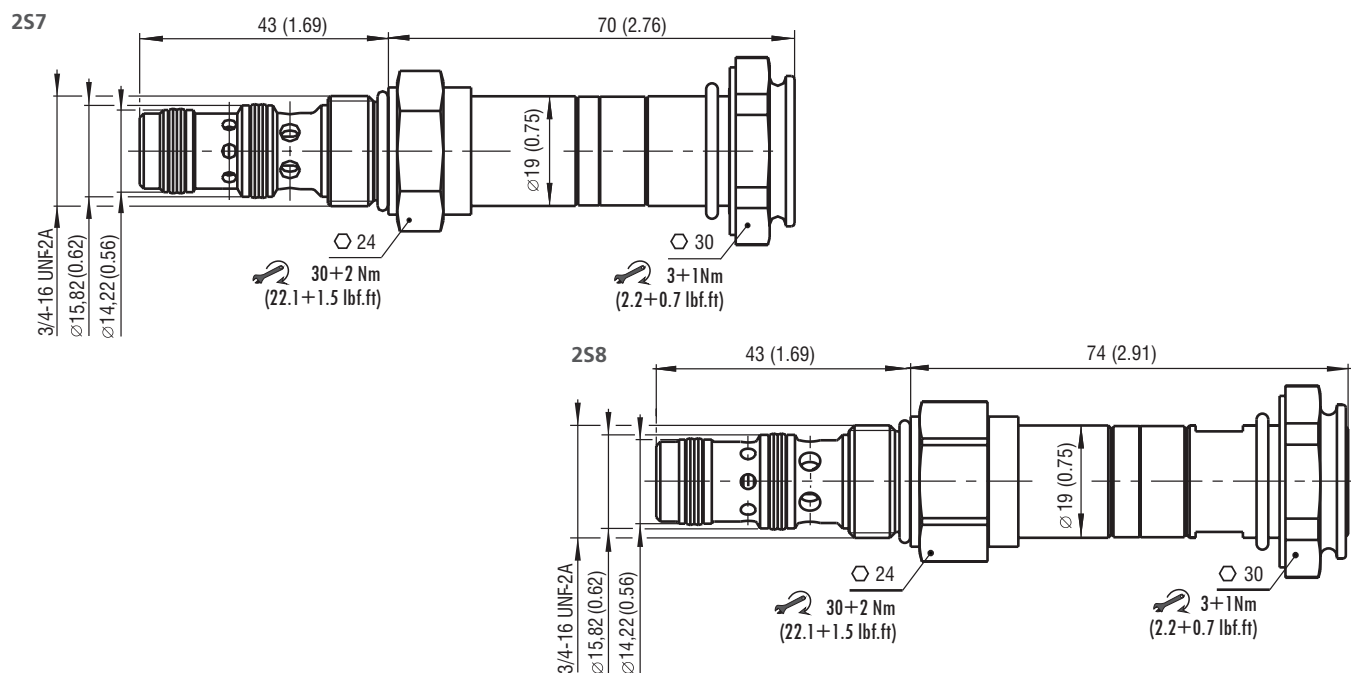
	Model	Connection
1	2S8	1→2, 3→2
2	2S8	2→3
3	2S8	2→1



	Model	Connection
1	2S7, 2S8	1→2*, 2→1, 2→3, 3→2

* max. 25 l/min (6.6 GPM)

Dimensions in millimeters (inches)



Manual Override in millimeters (inches)

No designation - for 2S7 - standard (operated by pin)	Designation M2 - for 2S7 - rubber boot protected	Designation M4 - for 2S7 - hand screw	Designation M5 - for 2S7 - socket head screw, size 2.5
Designation M9 - without manual override - for 2S7	Designation M5 - for 2S8 - socket head screw, size 2.5		

In case of solenoid malfunction or power failure, the spool of the valve can be shifted by manual override as long as the pressure in port T does not exceed 25 bar (363 PSI). For alternative manual overrides contact our technical support.

Ordering Code

SD1E-A3 / H [] [] [] - []

3/2 directional valve, solenoid operated, poppet type, blocking, direct acting,

Valve cavity
3/4-16 UNF (C-8-3)

High performance

Functional symbol

2S7

2S8

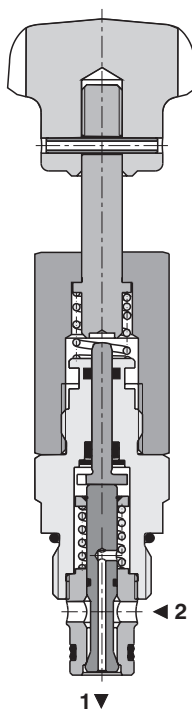
Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

Seals
No designation NBR
V FPM (Viton)

Manual override
No designation standard (operated by pin)
M2 rubber boot protected
M4 hand screw
M5 socket head screw
M9 without manual override

SD1M-A2

3/4-16 UNF • Q_{max} 20 l/min (5 GPM) • p_{max} 250 bar (3600 PSI)



Technical Features

- › Hardened precision parts
- › High flow capacity and leak-free closing
- › Wide range of manual operations
- › Standard version zinc-coated with surface protection acc. to ISO 9227 (240 h salt spray)

Functional Description

A manually operated, 2-way, blocking, push-to-open valve in the form of a screw-in cartridge. The preferential flow is from 2 to 1. The valve provides the possibility to throttle the flow. Position 0 middle hand lever position - the valve is closed. Position I opens the valve against the return spring.

Model Code	2S5	
Symbol		

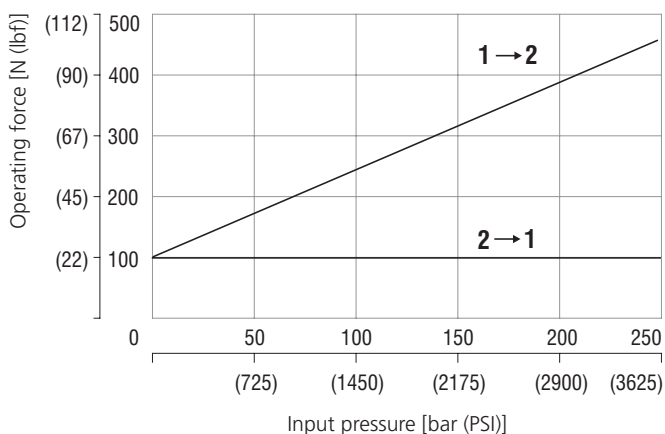
Technical Data

Valve size / Cartridge cavity		3/4-16 UNF-2A / A2 (C-8-2)	
Max. flow	l/min (GPM)	20 (5.3)	
Max. operating pressure	bar (PSI)	250 (3630)	
Max. operating force	N (lbf)	see characteristics	
Fluid temperature range (NBR)	°C (°F)	-30 ... 100 (-22 ... +212)	
Fluid temperature range (FPM)	°C (°F)	-20 ... 120 (-4 ... +248)	
Service life	cycles	10 ⁶	
Weight	model	1	2
	kg (lbs)	0.27 (0.60)	0.38 (0.84)

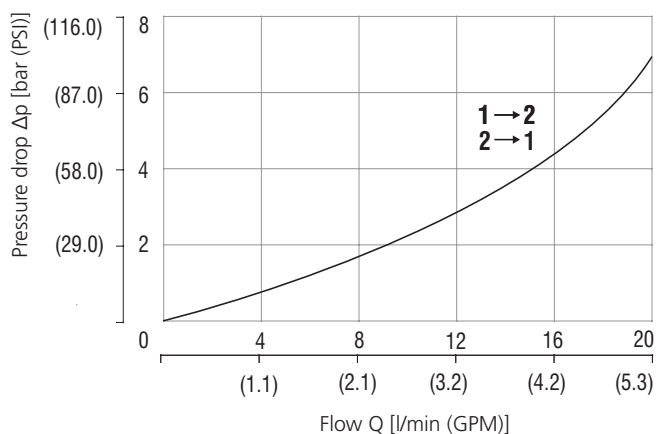
	Datasheet	Type
General information	GI_0060	Products and operating conditions
Valve bodies	In line mounted	SB-A2*
	Sandwich mounted	SB-*A2*
Cavity details / Form tools	SMT_0019	SMT-A2*
Spare parts	SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits

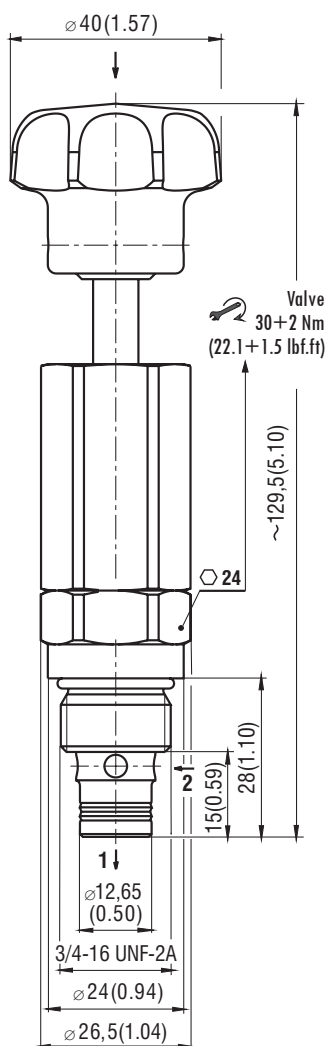


Pressure drop related to flow rate

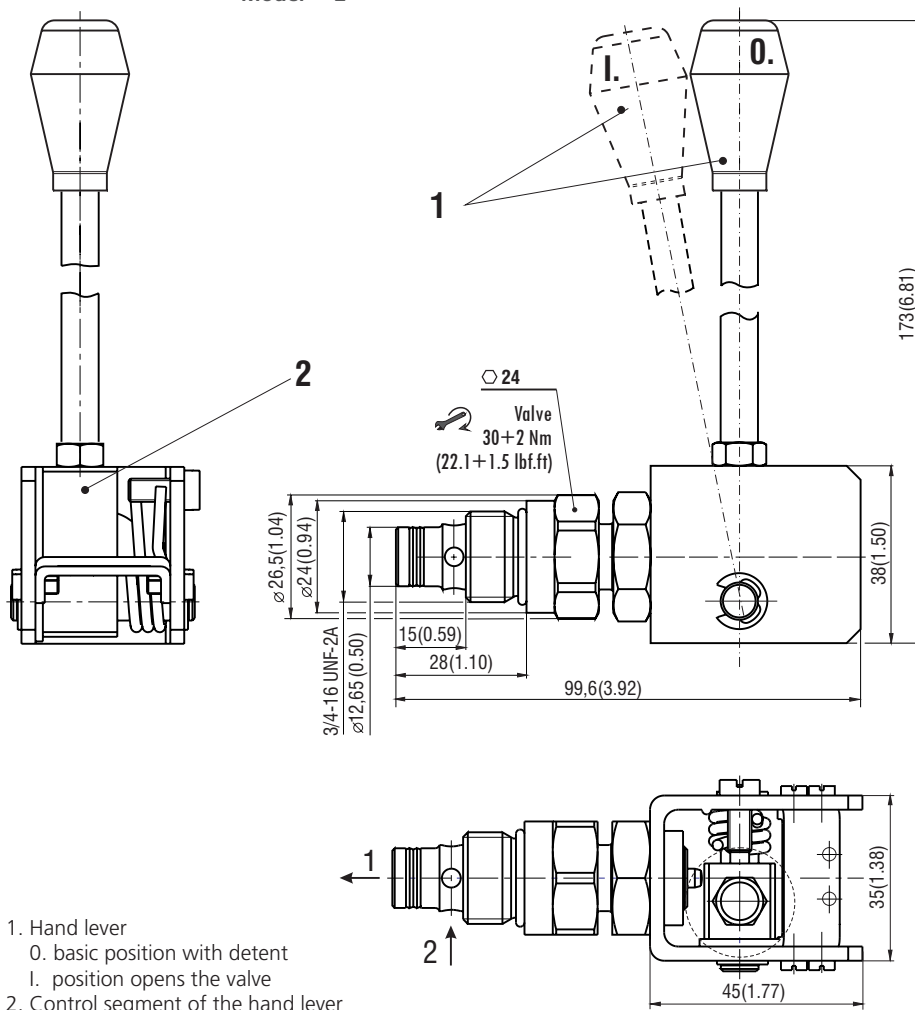


Dimensions in millimeters (inches)

Model 1



Model 2



- 1. Hand lever
- 0. basic position with detent
- 1. position opens the valve
- 2. Control segment of the hand lever

Ordering Code

SD1M - A2 / L 2S5 - -

2/2 directional valve, manually operated poppet type, blocking, direct acting

Valve cavity
3/4-16 UNF (C-8-2)

Model
Lightline

Model

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

No designation
V

Seals
NBR
FPM (Viton)

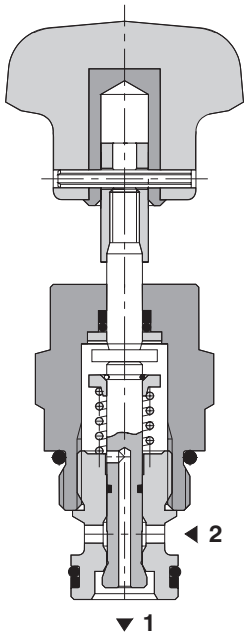
Actuation
1 hand push knob
2 hand lever

2/2 Directional Valve, Manually Operated, Poppet Type, Blocking, Direct Acting

ROR3-062

M22 x 1.5 • Q_{max} 35 l/min (9 GPM) • p_{max} 320 bar (4600 PSI)

Normally closed
Push-to-open



Technical Features

- › Hardened precision parts
- › High flow capacity and leak-free closing
- › Wide range of actuation alternatives
- › Standard version zinc-coated (240 h corrosion protection in NSS acc. to ISO 9227)

Functional Description

A screw-in cartridge poppet valve manually operated by hand lever or push knob with a connecting thread M22x1,5. The bidirectional valve with a preferential flow direction 2 → 1 is designed for leakage free closing. In basic position the valve is closed. When adjusting the lever, the valve gradually opens against spring force and the flow increases up to the maximum.

Modell	1,2	3
Symbol		

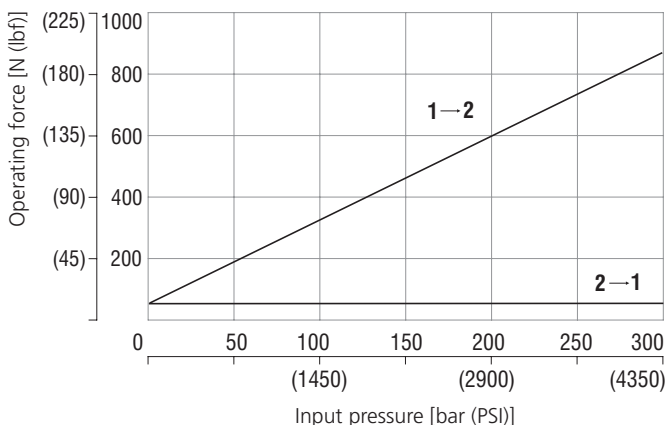
Technical Data

Valve size / Cartridge cavity		M22 x 1.5 / QG2		
Max. flow	l/min (GPM)	35 (9.2)		
Max. operating pressure	bar (PSI)	320 (4640)		
Max. operating force	N (lbf)	see characteristics		
Fluid temperature range (NBR)	°C (°F)	-30 ... +100 (-22 ... +176)		
Fluid temperature range (FPM)	°C (°F)	-20 ... +120 (-4 ... +248)		
Service life	cycles	10 ⁶		
Weight	model	1	2	3
	kg (lbs)	0.15 (0.33)	0.25 (0.55)	0.66 (1.46)

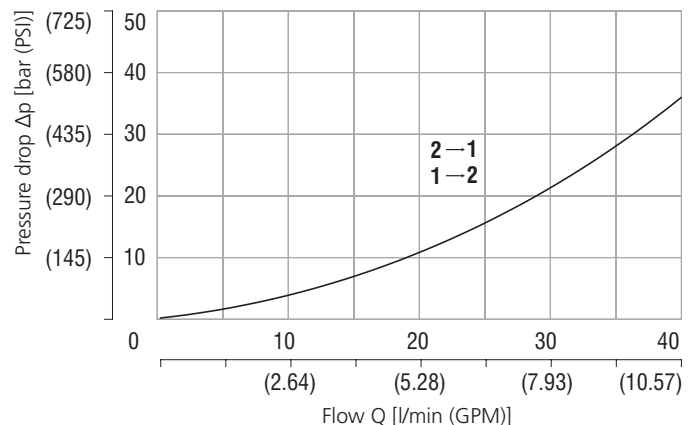
		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-QG2*
	Sandwich mounted	SB-4(06)_0028	SB-*QG2*
Cavity details		SMT_0019	SMT-QG2*
Spare parts		SP_8010	

Characteristics measured at $v = 32 \text{ mm}^2/\text{s}$ (156 SUS)

Operating limits

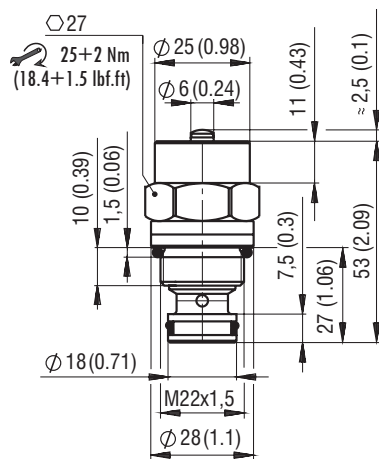


Pressure drop related to flow rate

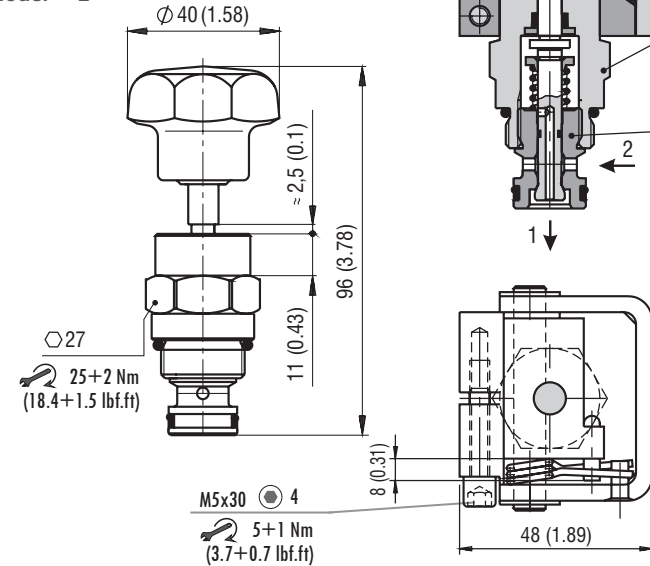


Dimensions in millimeters (inches)

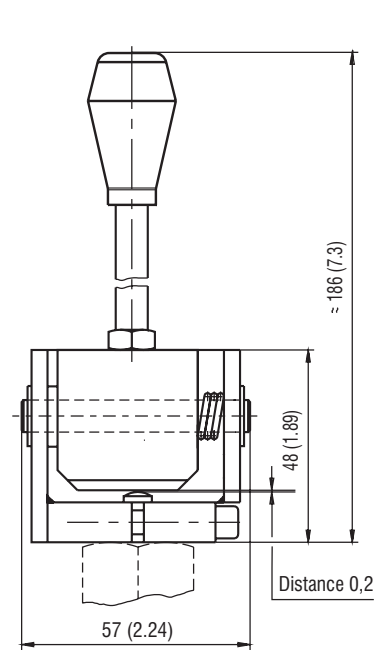
Model 1



Model 2



Model 3



- 1 Hand lever
- 0 position with detent
- 1. position opens the valve
- 2 Section of the hand lever
- 3 SD1M-QG2

Ordering Code

ROR3-06 2 - 00 - - -

2/2 directional valve, manually operated, poppet type, blocking, direct acting M22x1.5

Valve size

Number of valve positions

Flow restrictor
without flow restrictor

Surface treatment
A zinc-coated (ZnCr-3), ISO 9227 (240 h)
B zinc-coated (ZnNi), ISO 9227 (520 h)

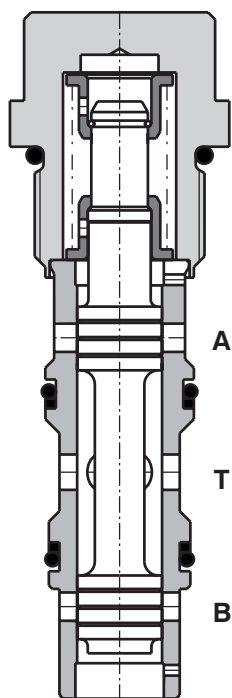
No designation
V

Seals
NBR
FPM (Viton)

Actuation
1 plunger
2 hand push knob
3 hand lever

SD2H-LA3

M24 x 1.5 • Q_{max} 40 l/min (11 GPM) • p_{max} 320 bar (4600 PSI)



Technical Features

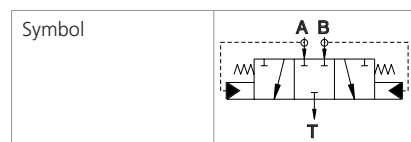
- › Hardened precision parts
- › High flow capacity
- › Simple design and reliable function
- › Optional pressure ranges
- › Automatic alternating fluid discharge from the low-pressure line of hydrostatic circuit
- › Standard version of the valve is zinc-coated with the surface corrosion protection 240 h in NSS acc. to ISO 9227

Functional Description

3-way screw-in cartridge valve is designed for the specific function discharging of heated working fluid from the closed hydrostatic circuit through a cooler and a filter to the tank. The spool is operated hydraulically and provides automatically fluid discharging always from the low-pressure line.

Closed hydrostatic drives are generally loaded with high transmitted power. Losses, generating due the transformation of mechanical energy into pressure energy and vice versa, turn into heat.

It leads to the thermal load of equipment and to the necessity to connect a cooler to the circuit.



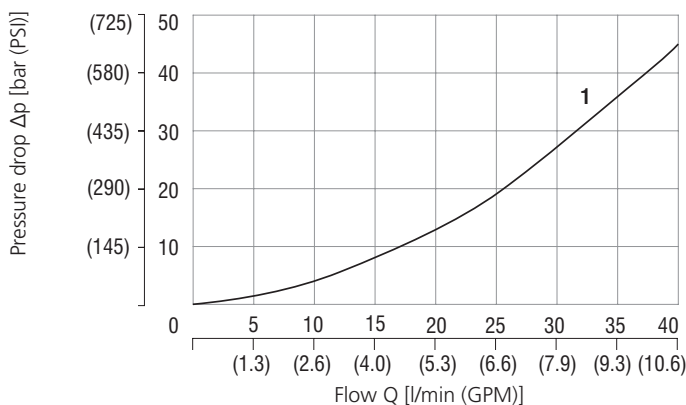
Technical Data

Valve size / Cartridge cavity		M24 x 1.5 / LA3	
Max flow	l/min (GPM)	40 (10.6)	
Max. operating pressure	bar (PSI)	320 (4640)	
Cracking pressure	bar (PSI)	7 (102)	12 (174)
Fluid temperature range (NBR)	°C (°F)	-30...+100 (-22 ...+212)	
Fluid temperature range (FPM)	°C (°F)	-20 ...+120 (-4 ...+248)	
Weight	kg (lbs)	0.23 (0.50)	

		Datasheet	Type
General information		GI_0060	Products and operating conditions
Valve bodies	In-line mounted	SB_0018	SB-LA3* (On request)
	Sandwich mounted	SB-04(06)_0028	SB-*LA3* (On request)
Cavity details		SMT_0019	SMT-LA3*
Spare parts		SP_8010	

Characteristics measured at v = 32 mm²/s (156 SUS)

Pressure drop related to flow rate



Connection	
1	B → T, A → T

