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# Solenoid Valves

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3-Way, 2-Position Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	EVH 06/D5	NCS06/3	Solenoid Valve, Poppet Type, 3-Way, 2-Position	20 l/min [5 US gal/min]	230 bar [3300 psi]	SV - 18

2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-CDB	SDC08-2	Solenoid Valve, Poppet - Type, Double-Blocking, Normally Closed	16 l/min [4 US gal/min]	230 bar [3300 psi]	SV - 20
	EVK 06/C5	NCS06/2		40 l/min [10.6 US gal/min]	210 bar [3000 psi]	SV - 22

2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	HSVP10-CDB	SDC10-2	Solenoid Valve, Poppet Type, Normally Closed, Pilot Operated, Double Blocking	50 l/min [13.2 US gal/min]	350 bar [5075 psi]	SV - 24

2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	HSVP10-ODB	SDC10-2	Solenoid Valve, Poppet Type, Normally Open, Pilot Operated, Double Blocking	50 l/min [13.2 US gal/min]	350 bar [5075 psi]	SV - 26

2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
				35 l/min	230 bar**	SV 20
	3VF00-IVC	3DC08-2		[9 US gal/min]	[3300 psi]	30-20
		SDC10.2		80 l/min	230 bar**	SV - 30
	SVPTU-INC	SDC10-2	Solenoid Valve, Poppet Type, Normally Closed,	[21 US gal/min]	[3300 psi]	
	HSVP10-NC	SDC10.2		65 l/min	350 bar	SV - 32
		3DC10-2		[17 US gal/min]	[5075 psi]	
		CD12.2		114 l/min	350 bar	SV - 34
	H3VF12-NC	CF 12-2	Pliot Operated	[30 US gal/min]	[5075 psi]	
				152 l/min	350 bar	SV - 36
	H3VF 10-NC	SDC10-2		[40 US gal/min]	[5075 psi]	
		50(20.2		227 l/min	350 bar	CV/ 20
	HSVP20-NC SDC20-2			[60 US gal/min]	[5075 psi]	50 - 38





3-Way 2-Position Ponnet	Model No	Cavity	Description	Flow*	Pressure	Page
	SVP08-NCF	NCS06/3	Solenoid Valve, Poppet Type, Normally Open, Pilot Operated, Flow Control	15 l/min [4 US gal/min]	230 bar [3300 psi]	SV - 40
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-NCR	SDC08-2		35 l/min [9 US gal/min]	230 bar** [3300 psi]	SV - 42
	SVP10-NCR	SDC10-2		80 l/min [21 US gal/min]	230 bar** [3300 psi]	SV - 44
	HSVP10-NCR	SDC10-2	Poppet Type,	65 l/min [17 US gal/min]	350 bar [5075 psi]	SV - 46
	HSVP12-NCR	CP12-2	Pilot Operated with	114 l/min [30 US gal/min]	350 bar [5075 psi]	SV - 48
1	HSVP16-NCR	SDC16-2	Neverse free flow	152 l/min [40 US gal/min]	350 bar [5075 psi]	SV - 50
	HSVP20-NCR	SDC20-2		227 l/min [60 US gal/min]	350 bar [5075 psi]	SV - 52
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-NO	SDC08-2	Solenoid Valve, Poppet	35 l/min [9 US gal/min]	230 bar** [3300 psi]	SV - 54
	SVP10-NO	SDC10-2		80 l/min [21 US gal/min]	230 bar** [3300 psi]	SV - 56
	HSVP10-NO	SDC10-2		65 l/min [17 US gal/min]	350 bar [5075 psi]	SV - 58
	HSVP12-NO	CP12-2	lype, Normally Open, Pilot Operated	114 l/min [30 US gal/min]	350 bar [5075 psi]	SV - 60
	HSVP16-NO	SDC16-2		152 l/min [40 US gal/min]	350 bar [5075 psi]	SV - 62
	HSVP20-NO	SDC20-2		265 l/min [70 US gal/min]	350 bar [5075 psi]	SV - 64
2.Way Poppet	Model No.	Cavity	Description	Flow*	Prossuro	Page
	SVP08-NOR	SDC08-2	Description	35 l/min [9 US gal/min]	230 bar** [3300 psi]	SV - 66
	SVP10-NOR	SDC10-2		80 l/min [21 US gal/min]	230 bar** [3300 psi]	SV - 68
	HSVP10-NOR	SDC10-2	Solenoid Valve, Poppet Type, Normally Open	65 l/min [17 US gal/min]	350 bar [5075 psi]	SV - 70
	HSVP12-NOR	CP12-2	Pilot Operated with Reverse Free Flow	114 l/min [30 US gal/min]	350 bar [5075 psi]	SV - 72
	HSVP16-NOR	SDC16-2		152 l/min [40 US gal/min]	350 bar [5075 psi]	SV - 74
	HSVP20-NOR	SDC20-2		265 l/min [70 US gal/min]	350 bar [5075 psi]	SV - 76



2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-22-01	SDC08-2	Solenoid Valve, Spool Type, 2-Way,	16 l/min [4 US gal/min]	230 bar** [3300 psi]	SV - 78
	HSV10-22-01	SDC10-2	2-Position, Normally Open, Push Type	50 l/min [13 US gal/min]	350 bar [5075 psi]	SV - 80

2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-22-01	SDC10-2	Solenoid Valve, Spool Type, 2-Way, 2-Position, Normally Open, Pull Type	27 l/min [7 US gal/min]	230 bar** [3300 psi]	SV - 82
	SV15-22-01	NCS 12/2		60 l/min [16 US gal/min]	210 bar** [3000 psi]	SV - 84

2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08 22 02	50000 2		14 l/min	230 bar**	CV 96
	5000-22-02	SDC08-2		[4 US gal/min]	[3300 psi]	30-00
	SV10 22 02	CDC10.2	Solenoid Valve, Spool	35 l/min	230 bar**	SV - 88
	SV10-22-02	2 SDC10-2	Type, 2-Way, 2-Position,	[9 US gal/min]	[3300 psi]	
		CDC10.2	Normally Closed, Pull	50 l/min	350 bar	SV 00
	HSV10-22-02	2 SDC10-2	Туре	[13 US gal/min]	[5075 psi]	50 - 90
(1)	SV/15 22 02	NCS 12/2		60 l/min	210 bar**	SV 02
	SV15-22-02 NCS12/2			[16 US gal/min]	[3045 psi]	50 - 92

2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-22-03	SDC08-2	Solenoid Valve, Spool Type, 2-Way, 2-Position, Normally Open, Pull Type	12 l/min [3 US gal/min]	230 bar** [3300 psi]	SV - 94

3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-01	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	17 l/min [4.5 US gal/min]	230 bar** [3300 psi]	SV - 96
	SV10-23-01	SDC10-3		28 l/min [7 US gal/min]	230 bar** [3300 psi]	SV - 98
	HSV10-23-01	SDC10-3		30 l/min [8 US gal/min]	350 bar [5075 psi]	SV - 100
	CP521-21	CP12-3		60 l/min [16 US gal/min]	240 bar [3500 psi]	SV - 102





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3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-02	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	10 l/min [3 US gal/min]	230 bar** [3300 psi]	SV - 104
	SV09-23-02	SDC10-3		21 l/min [6 US gal/min]	100 bar [1450 psi]	SV - 106
	SV10-23-02	SDC10-3		15 l/min [4 US gal/min]	230 bar [3300 psi]	SV - 108
	HSV10-23-02	SDC10-3		28 l/min [7.4 US gal/min]	350 bar** [5075 psi]	SV - 110

3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-03	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	18 l/min [5 US gal/min]	230 bar** [3300 psi]	SV - 112

3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-04	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	10 l/min [3 US gal/min]	230 bar** [3300 psi]	SV - 114
	SV10-23-04	SDC10-3		20 l/min [5 US gal/min]	230 bar** [3300 psi]	SV - 116
	SV15-23-04	NCS12/3		50 l/min [13 US gal/min]	210 bar** [3000 psi]	SV - 118

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08 24 01			8 l/min	230 bar**	SV 120
	3000-24-01 30000	3DC08-4		[2 US gal/min]	[3300 psi]	50-120
	CV00 24 01	SV00 24 01 SDC10 4		20 l/min	100 bar	CV 122
	5V09-24-01 SL	SDC10-4		[5 US gal/min]	[1450 psi]	50 - 122
	SV10 24 01 SDC10 4	CDC10.4	Solenoid Valve, Spool	15 l/min	230 bar**	SV 124
	5010-24-01	SDC10-4	Type, 4-Way, 2-Position	[4 US gal/min	[3300 psi]	50-124
		SDC10.4		25 l/min	350 bar**	SV 120
3 1	HSV10-24-01	SDC10-4		[6.6 US gal/min]	[5075 psi]	50 - 120
	SV15 24 01 NCC12	NCC12/4		55 l/min	210 bar**	CV 120
	5015-24-01	INCS12/4		[15 US gal/min]	[3000 psi]	50 - 128

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
2 ④	SV08-24-02	SDC08-4		10 l/min [3 US gal/min]	230 bar** [3300 psi]	SV - 130
	SV10-24-02	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	24 l/min [6.3 US gal/min]	230 bar** [3300 psi]	SV - 132
3 1	SV15-24-02	NCS12/4		60 l/min [16 US gal/min]	210 bar** [3045 psi]	SV - 134





4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV15-24-03	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	50 l/min [13 US gal/min]	210 bar** [3000 psi]	SV - 136

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-24-04	SDC08-4	Solenoid Valve, Spool	8 l/min [2 US gal/min]	230 bar** [3300 psi]	SV - 138
	SV15-24-04	NCS12/4	Type, 4-Way, 2-Position	50 l/min [13 US gal/min]	210 bar** [3000 psi]	SV - 140

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-12	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	18 l/min [5 US gal/min]	230 bar** [3300 psi]	SV - 142

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-05	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	25 l/min [7 US gal/min]	230 bar** [3300 psi]	SV - 144

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-06	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	20 l/min [5 US gal/min]	230 bar** [3300 psi]	SV - 146

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-07	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	24 l/min [6 US gal/min]	230 bar** [3300 psi]	SV - 148





4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-24-08	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	24 l/min [6 US gal/min]	230 bar** [3300 psi]	SV - 150
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page

Solenoid Valve, Spool

Type, 4-Way, 2-Position [8 US gal/min]

32 l/min

240 bar

[3500 psi]

SV - 152

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-13	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	21 l/min [6 US gal/min]	230 bar** [3300 psi]	SV - 154

SDC12-4

CP531-21

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
(2)  (4)	SV08-34-02	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 3-Position, Closed Center	10 l/min [2.6 US gal/min]	230 bar** [3300 psi]	SV - 156
	SV10-34-02	SDC10-4		20 l/min [6 US gal/min]	230 bar** [3300 psi]	SV - 158
	HSV10-34-02	SDC10-4		25 l/min [6.6 US gal/min]	350 bar** [5075 psi]	SV - 160
	SV15-34-02	NCS12/4		55 l/min [15 US gal/min]	210 bar** [3000 psi]	SV - 162

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-34-03	SDC08-4	Solenoid Valve, Spool	8 l/min [2 US gal/min]	230 bar** [3300 psi]	SV - 164
$\begin{array}{c c} & & & & \\ & & & & \\ & & & & \\ & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & &$	SV15-34-03	NCS12/4	Type, 4-Way, 3-Position, All Open Center	50 l/min [13 US gal/min]	210 bar** [3000 psi]	SV - 168

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
$\begin{array}{c c} & & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\$	SV10-34-03	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 3-Position, All Open Center	16 l/min [4 US gal/min]	230 bar** [3300 psi]	SV - 166



4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-34-04	SDC08-4	Solenoid Valve, Spool	6 l/min [2 US gal/min]	230 bar** [3300 psi]	SV - 170
$\begin{array}{c c} & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & \\$	SV15-34-04	NCS12/4	Type, 4-Way, 3-Position	50 l/min [13 US gal/min]	210 bar** [3000 psi]	SV - 172

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
(2)  (4)	SV10-34-04	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	15 l/min [4 US gal/min]	230 bar** [3300 psi]	SV - 174

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
$\begin{array}{c c} & & & & \\ & & & & \\ & & & & \\ & & & & $	SV08-34-05	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	10 l/min [2 US gal/min]	230 bar** [3300 psi]	SV - 176
	SV10-34-05	SDC10-4		20 l/min [6 US gal/min]	230 bar** [3300 psi]	SV - 178
	HSV10-34-05	SDC10-4		25 l/min [6.6 US gal/min]	350 bar** [5075 psi]	SV - 180
	SV15-34-05	NCS12/4		55 l/min [15 US gal/min]	210 bar** [3000 psi]	SV - 182

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
$\begin{array}{c c} & (4) \\ & (4) \\ & (5) \\ & (3) \\ & (1) \\ \end{array}$	SV10-34-11	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	24 l/min [6 US gal/min]	230 bar** [3300 psi]	SV - 184

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	SV10-34-14	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	18 l/min [5 US gal/min]	230 bar** [3300 psi]	SV - 186

\* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only. \*\* See 315 bar pressure rating note on page SV-10.







#### **SOLENOID VALVES**

Solenoid valves are electrically-operated, on-off poppet or spool-type valves for load holding, blocking, or directional control applications.

#### Solenoid valves



#### PLUS+1<sup>™</sup> COMPLIANT

Comatrol solenoid valves are PLUS+1<sup>™</sup> compliant. PLUS+1 compliance means our valves are directly compatible with the PLUS+1 machine control architecture. Adding solenoid valves to your application using PLUS+1 GUIDE software is as easy as *drag-and-drop*. Software development that used to take months can now be done in just a few hours. For more information on PLUS+1 GUIDE, visit *www.comatrol.com* or http:// powersolutions.danfoss.com/Products/MobileElectronics/PLUS1Compliance. The table below details available GUIDE function blocks for controlling Comatrol solenoid valves.

#### **GUIDE** function blocks

On-off	10106088
On-off-on	10106102

## SV AND HSV COIL OPTIONS

All SV and SVP valves may be ordered with a robust coil option. The robust coil option uses a steel nut and does not use O-rings on the top and bottom of the coil. The standard coil option uses a plastic nut with one O-ring on the top of the coil and one O-ring on the bottom of the coil. HSV and HSVP valves come standard with the robust coil, using the steel nut.

#### **Robust Coil Nut**



No O-rings needed Torque is same as standard nut **Standard Coil Nut** 



Standard Coil Nut Kit includes O-rings





PRESSURE RATING Comatrol solenoid valves are tested and qualified to 1 million duty cycles at 230 bar (3330 psi) for standard valves and 350 bar (5075 psi) for HSV high pressure valves according to NFPA T2.6.1 standards. A portion of our standard solenoid valve line has been qualified at 315 bar, but at a reduced operational life. Cycles are intended as the number of times the product is exposed to rated pressure at the defined port(s). The operational life at the (315 bar) varies by valve model and is identified in the Applications statement on each valve page. Contact your Comatrol product application engineer to verify that the expected service life meets your operational requirements.

#### POPPET-TYPE SOLENOID VALVES

Poppet-type solenoid valves are two-way, normally open or normally-closed valves.

#### Normally-closed

Normally-closed poppet valves block flow from 2 to 1 when de-energized. When the solenoid coil is energized, magnetic force lifts the small pilot dart from it's seat, creating a pressure differential across the main poppet that provides the force to lift the main poppet off it's seat. Models with free-reverse-flow also act as allow-pressure, free-flow check valve from 1 to 2 when energized; standard models provide an orifice-connection to 2 when pressure is applied at 1.



#### Normally-open

Normally-open poppet valves provide free flow from 2 to 1 when de-energized. When the solenoid coil is energized, magnetic force seats the small pilot dart, creating a pressure differential that provides the force to seat the main poppet and block flow. Models with free-reverse flow also act as a low-pressure, free-flow check valve from 1 to 2 when de-energized; standard models provide an orifice-connection to 2 when pressure is applied at 1.







POPPET-TYPE SOLENOID	Applications
VALVES	Common applications for normally-open and normally-closed poppet valves
(continued)	include:

- Load holding and lowering with single-acting cylinders.
- Unloading of a fixed-displacement pump.
- Use in combination to duplicate four-way, three-position valve functions. These circuits create low-cost, compact alternatives to subplate- or stack-type directional control valves. As an added advantage these poppet valve circuits do not need load holding checks as the poppets provide the same low-leakage function.

#### Load holding and lowering

#### 4-way 3-position directional valve circuits





#### Pump unloading







#### BI-DIRECTIONAL POPPET-TYPE SOLENOID VALVES

Bi-directional poppet-type solenoid valves are two-way, normally open or normally-closed valves. The poppets are pressure-balanced so that the spring holds the poppet in it's de-energized position. When the solenoid coil is energized, magnetic force overcomes the spring and causes the poppet to shift.

#### Normally-closed

Normally-closed bi-directional poppet valves block flow in both directions when de-energized and allow freeflow when energized. These valves are typically used as directional controls for single-acting cylinders or uni-directional motors where low-leakage load holding is required, or where multiple functions must be separated.

#### Independent cylinder operation and load-holding



## Normally closed bi-directional poppet-type solenoid valve



#### SPOOL-TYPE SOLENOID VALVES

Spool-type valves are available in 2-way 2-position, 3-way 2-position, 4-way 2-position, and 4-way 3 position configurations. For all these valves the spools are pressurebalanced and are held in position by a spring when de-energized. When the solenoid coil is energized, magnetic force overcomes the spring and shifts the spool. As the spool moves, flow forces, also known as Bernoulli forces, act on the spool and can prevent proper operation. These forces are a function of pressure and flow, and the catalog ratings show the operating limits for each valve. These limits are based on the valve's ability to shift at 85% of nominal voltage at 140°F ambient temperature. For this reason flow and pressure ratings for solenoid spool valves should not be exceeded.

Consult your Comatrol representative for extreme applications.





SPOOL-TYPE SOLENOID VALVES (continued) Two-way, two-position

Two-way, two-position spool-type valves are either normally open or normally closed.



Common applications for two-way, twoposition spool type solenoid valves are:

- Unloading of a fixed-displacement pump.
- Cylinder regeneration. When the two-way two-position spool valve is energized the cylinder circuit is in regeneration mode for faster cylinder extension.
- Two-speed motor (or cylinder) operation. By using multiple valves and circuit logic, similar circuits can be used for three-speed, four-speed, etc.



#### Two-speed motor circuit



#### Cylinder regeneration circuit Energize 2-way spool valve for faster extension







#### **SPOOL-TYPE SOLENOID** VALVES (continued)

#### Three-way, two-position

Three-way, two-position spool-type valves are available with a variety of porting and flow paths.

#### Three-way, two-position spool-type solenoid valves



Common applications for three-way, two-position spool type solenoid valves:

- Control of a single-acting cylinder, clutch, or . brake.
- Circuit selector
- Pilot control for a large directional spool. •
- Use in combination to duplicate four-way, • three-position valve functions, creating low-cost, compact alternatives to subplate- or stack-type directional control valves.

#### Single acting cylinder, clutch, or brake



#### 4-way 3-position directional valve circuits



#### Pilot for directional valve





SV - Solenoid Valves

**Application Notes** 





SPOOL-TYPE SOLENOID VALVES (continued)

#### Four-way, two-position

Four-way, two-position spool-type valves are available with normally-open, normally-closed, reversing, and single-acting spool options.

#### Four-way, two-position spool-type solenoid valves



Common applications for four-way, twoposition spool type solenoid valves are:

- Directional control for motors or cylinders.
- Use in combination to duplicate four-way, three-position valve functions, creating low-cost, compact alternatives to subplate- or stacktype directional control valves.

Motor directional control



4-way 3-position directional valve circuits

# SV - Solenoid Valves Application Notes

#### 4-way 2-position spool options









SPOOL-TYPE SOLENOID VALVES (continued)

#### Four-way, three-position

Four-way, three-position spool-type valves are available with normally-open, normallyclosed, motor, and tandem spools. These valves are typically used for directional control for motor or cylinder functions. Typical series (or open-center) and parallel (or closedcenter) circuits are shown below.

Four-way, three-position spool-type solenoid valve



4-way 3-position spool options



Series (open-center) circuit



Parallel (closed-center) circuit







#### MANUAL OVERRIDES

Comatrol solenoid valves, where noted in the individual catalog pages, have optional manual overrides. The manual overrides are "safety" features for when power is lost and the solenoid needs to be operated. 2 position valves with manual overrides, when activated, shift the valve to its energized position. Some 3 position valves come standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2. Manual override options are intended for emergency use only and are not intended for continuous operation.

MANUAL OVERRIDE OPTIONS								
Override Activated	Normal Position	Size	Order Code	Description				
08 Size (Normal)	10 Size (Normal)	08 & 10 Size	OMIT (PN for HSV's)	Standard for any valve with push-pin manual override feature, where indicated in the catalog (HSV's & HSVP's noted with "PN" in the order code). Standard or Robust coil nuts are used, depending on the coil / valve.				
		10 Size	OPS Push Pin Nut for Protection & Actuation	Optional for any 10-size valve with push-pin manual override. Kit for standard coil (nut + 2 O-rings) 173801368; Kit for 3-position, 4-way valve (nut + O-ring) 173801378; Nut for robust coil 173801388				
08 Size (Normal)	10 Size (Normal)	08 & 10 Size	PB Push Button	Optional feature for any valve with push-pin manual override. Standard or Robust coil nuts are used, depending on the coil / valve.				
	24.5	08 Size	SPS Screw Style	Optional feature for any valve with push-pin manual override, standard or robust coil nuts are used, depending				
7.15	25.75	10 Size	(Push Type Valves)	Kit for 10 Size Tube = 170013919. Part number for SPS Manual Override Kit for 08 Size Tube = 272601688.				
32.5-		10 Size & HSVP12, 16 & 20	PAT Push-and- Twist (Push Type Valves)	Optional feature for any valve with push-pin manual override. Allows the operator to manually actuate a solenoid valve with a push style tube (normally open), without requiring an electrical signal to the coil. When the valve is in the normal (neutral) position, the operator can push in, and then twist CW or CCW) the override into an actuated (shifted) position. The valve will remain actuated until the operator again pushes in and twists (CW or CCW) the override to the neutral position.				
		08 Size	M Screw Style	Optional feature for any valve with pull-type manual override (Normally-Closed poppet-type valves). Standard or Robust				
		10 Size	(Pull-Type Manual Override)	Coil nuts are used depending on the coil selected.				
		08 Size	OP Screw Style w/ Protective Nut	Optional for any 08-size valve with pull-type manual override (M). Nut kit for standard coil 173803268 Not available with robust coil.				



## Solenoid Valves Catalog 3-Way, 2-Position Poppet EVH 06/D5



#### **OPERATION**

This is a direct-acting, 2-position, 3-way, poppet-type Metric NCS 06-size solenoid valve. When de-energized, the valve checks flow from port 3, while allowing free flow between port 1 and 2. When energized, the valve poppet checks flow from port 1, while allowing free flow between port 2 and 3. This valve comes standard with a push-pin type manual override.

#### **APPLICATIONS**

This valve is designed for hydraulic circuits requiring very low leakage and can be used for load holding and blocking applications.



Shown with Standard Coil, Deutsch Connector

# **SV - Solenoid Valves** EVH 06/D5

PECIFICATIONS	
lated pressure*	230

Rated pressure*	230 bar [3300 psi]
Rated flow at 7 bar	20 l/min
[100 psi]	[5 US gal/min]
Weight	0.44 kg [0.97 lb]
Cavity	NCS06/3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **PERFORMANCE CURVES**



**SCHEMATIC** 







## Solenoid Valves Catalog 3-Way, 2-Position Poppet EVH 06/D5

Cross-sectional view



#### DIMENSIONS

mm [in]



#### **EXAMPLE CIRCUITS**

Single Acting Cylinder



#### **ORDERING INFORMATION**

<u>EVH 06/D5</u> - <u>12D</u> - <u>DE</u> - <u>PB</u> - <u>00</u> - <u>B</u>														
Solenoid Valve, Poppet Type,														
											Sea	Code	Materia	Seal Kits
					_				_			В	Buna-N	230000110
												v	Viton	23000070
	<u> </u>									1				1
Coil Voltage	Standard Coil	Robust Coil		Coil Termination	Standard Coil	IP Rating	Robust Coil	IP Rating		Co	de	Body	and Ports	Body Nomenclature
	Code	Code			Code		Code			0	0	Cartri	idge Only	No Body
No Coil, with nut*	00	R00		No Coil	00	-	00	-		SE	6S	#6 SAE, AL		NCS06/3-SE-6S
10 VDC	10D	R10D		Amp Junior	AJ	IP67	-	-		SE	SE8S #8 5		SAE, AL	NCS06/3-SE-8S
12 VDC	12D	R12D		Amp Junior with Diode	AJD	IP67	-	-		SE	3/8	3/8	BSP, AL	NCS06/3-SE-3/8
20 VDC	20D	R20D		AMP SuperSeal 1.5	AS	IP67	AS	IP69K		SE1/2 1/2 BSP, AL		NCS06/3-SE-1/2		
24 VDC	24D	R24D		AMP SuperSeal with Diode	ASD	IP67	ASDB	IP69K						
110 VAC**	1100			Deutsch	DE	IP67	DE	IP69K					Code	Manual Override
220 VAC**	2204	-		Deutsch with Diode	DED	IP67	DEDB	IP69K					Omit	Push Pin (Standard)
220 VAC		Flying Leads	FL	IP65	FL	IP69K				PB	Push Button			
<ul> <li>Standard coil – plastic nut and O-rings;</li> </ul>		Flving Leads with Diode	FLD	IP65	FLDB	IP69K					CDC	Screw Style		
R-coil – steel nut P/N 173804910				DIN 43650	DN	1P65	-	-					323	(Push-Type Valve)
(no coil O-rings need	ed)			Metri-Pack 150 Type 2	-	-	M3	IP69K					OPS	Push Pin Nut for
** DIN only - external re	ectifier needeo	1		Metri-Pack 150 with Diode			M3DB	IP69K					013	Protection & Actuation
				Michi Fack 150 With Dibue	· ·	-	111300	11 0 9 K					ΡΔΤ	Push and Twist



Solenoid Valves Catalog 2-Way Poppet SVP08-CDB



#### **OPERATION**

This is a normally-closed, double-blocking poppet-type, 2 position, 08-size solenoid valve. When de-energized, the SVP08-CDB blocks flow in both directions. When energized, the valve's poppet lifts and allows flow from port 2 to port 1, and from port 1 to port 2. This valve comes standard with a push-pin type manual override.

#### **APPLICATIONS**

The SVP08-CDB is designed for low leakage applications and can be used to control the advance and retract of single acting and double acting cylinders. The valve can also be used to lock pressure in a group of cylinders.

230 bar [3300 psi]

[4 US gal/min]

16 l/min



Shown with filter option

#### **SCHEMATIC**





#### **PERFORMANCE CURVES**



Operating envelope 26 cSt [121 SUS] hyd.oil@50°C [122°F] psi bar 250 3500 3000 200 2500 150 2000 1500 100 1000 50 500 0 0 15 5 10 20 25 0 l/min US gal/min ò 3 1.5 4.5 6 11141717 • Rev CA • August 2015

#### SPECIFICATIONS

Rated flow at 7 bar

Rated pressure\*

[100 psi]

Leakage

Weight

Cavity



SV - Solenoid Valves SVP08-CDB



Solenoid Valves Catalog 2-Way Poppet EVK 06/C5



#### **OPERATION**

This is a normally-closed, double-blocking poppet-type, 2 position, Metric NCS 06-size solenoid valve. When de-energized, the EVK 06/C5 blocks flow in both directions. When energized, the valve's poppet lifts and allows flow from port 2 to port 1, and from port 1 to port 2. This valve comes standard with a push-pin type manual override.

#### **APPLICATIONS**

The EVK 06/C5 is designed for circuits requiring very low leakage can be used to control the advance and retract of single acting and double acting cylinders. The double blocking state can be used to lock pressure in a group of cylinders.



Shown with Standard Coil, Deutsch Connector

#### SCHEMATIC



#### SPECIFICATIONS

Rated pressure*	210 bar [3000 psi]
Rated flow	40 l/min [10.6 US gal/min]
Weight	0.43 kg [0.95 lb]
Cavity	NCS06/2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### PERFORMANCE CURVES

Pressure drop 26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Operating envelope 26 cSt [121 SUS] hyd.oil at 50°C [122 °F]









#### **OPERATION**

This is normally-closed, poppet-style 10-size solenoid valve. When de-energized, the valve block in both directions. When energized, the valve's poppet is opens on its seat, allowing flow from 2 to 1 or 1 to 2.

#### **APPLICATIONS**

The HSVP10-CDB is designed for high pressure, low leakage applications and can be used to control the advance and retract of single acting and double acting cylinders. The valve can also be used to lock pressure in a group of cylinders.

#### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]
Rated flow at 7 bar	50 l/min
[100 psi]	[13.2 US gal/min]
Leakage	6 drops/min @ Rated Pressure
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-2
Standard Coil	H16 29 Watt

\*Rated Pressure based on NFPA fatigue test standard (at 1 Million Cycles)

#### SCHEMATIC



#### **PERFORMANCE CURVES**





Solenoid Valves Catalog 2-Way Poppet

HSVP10-CDB



Cross-sectional view



#### **EXAMPLE CIRCUITS**





#### **ORDERING INFORMATION**

		HSVP10 - CDB - H	12D - DE -	- XC -	P - 0	)0				
High Pressure S Poppet type, 10	Soleno Size	id Valve,		T			Bodies			
CDB: Normally (	Close	d,			[		Code	Port & Material	Body Nom	enclature
Double Diocking	y, r un	туре					00	Cartridge only	No Body	
Co	oil Volt	tage					S3B	3/8 BSP, Ductile	SDC10-2-	-S3B
Co	ode	Description					S4B	1/2 BSP, Ductile	SDC10-2-	S4B
	00	No Coil					S6S	#6 SAE, Ductile	SDC10-2-	S6S
H	12D	12 VDC					S8S	#8 SAE, Ductile	SDC10-2-	S8S
L H2	24D	24 VDC					*** Alumi	num bodies available	for lower p	ressure
Co	oil Terr	nination					application	ons. Please consult fa	actory for de	tails.
Co	ode	Description		IP Ratin	ng		Seal Or	tion		
(	00	No Coil		-			Code	Seal Materi	al	Seal kit
F	FL	Flying Lead		IP 69k			P	Polyurethane Single	e Seal	11132135
C	DE	Deutsch		IP 69k			<u> </u>			11102100
A	٩S	AMP SuperSeal 1.5 and Metri-Pac	k 150 type 1	IP 67			Manual	Ovorrido		
AS	SDB	AMP Super Seal with Bi-directiona	l Diode	IP 67			Code	Description		
DE	EDB	Deutsch with Bi-directional Diode		IP 69k			XC	NO Manual Overrid	e	
FL	LDB	Flying Lead with Bi-directional Dio	de	IP 69k					-	

# SV - Solenoid Valves HSVP10-CDB





#### **OPERATION**

This is a normally-open, poppet-style 10-size solenoid valve. When de-energized, the valve allows free flow from 2 to 1 or 1 to 2. When energized, the valve's poppet is seated and flow is blocked in both directions.

#### **APPLICATIONS**

The HSVP10-ODB is designed for high pressure, low leakage applications and can be used to control the advance and retract of single acting and double acting cylinders. The valve can also be used to lock pressure in a group of cylinders.

#### **SPECIFICATIONS**

Rated pressure*	350 bar [5075 psi]
Rated flow at 7 bar	50 l/min
[100 psi]	[13.2 US gal/min]
Leakage	6 drops/min @ Rated Pressure
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-2
Standard Coil	H16 29 Watt

\*Rated Pressure based on NFPA fatigue test standard (at 1 Million Cycles)

#### SCHEMATIC



#### **PERFORMANCE CURVES**









#### **EXAMPLE CIRCUITS**





#### **ORDERING INFORMATION**

HSVP10 - ODB - H12D - DE - PN - P - 00 High Pressure Solenoid Valve, Poppet type, 10 Size cavity Bodies Code Port & Material ODB: Normally Open, Double Blocking, Push Type Body Nomenclature 00 Cartridge only No Body Coil Voltage S3B 3/8 BSP, Ductile SDC10-2-S3B Code Description S4B 1/2 BSP, Ductile SDC10-2-S4B S6S #6 SAE, Ductile SDC10-2-S6S 00 No Coil S8S #8 SAE, Ductile SDC10-2-S8S H12D 12 VDC \*\*\* Aluminum bodies available for lower pressure H24D 24 VDC application. Please consult factory for details. Coil Termination Seal Option Code Description IP Rating Seal Material Seal kit Code 00 No Coil Ρ Polyurethane Single Seal 11132135 FL IP 69k Flying Lead Manual Override DE IP 69k Deutsch AS AMP SuperSeal 1.5 and Metri-Pack 150 type 1 IP 67 Code Description ASDB AMP Super Seal with Diode Bidirectional IP 67 Push Pin PN DEDB Deutsch with Diode Bidirectional IP 69k Push Pin M/O Nut for Protection & Actuation OPS FLDB Flying Lead with Diode Bidirectional PAT Push and Twist IP 69k



Solenoid Valves Catalog 2-Way Poppet SVP08-NC



#### **OPERATION**

This is a normally-closed, pilot-operated, poppet-style 08-size solenoid valve. When de-energized, the SVP08-NC acts as a check valve allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and blocks flow from port 2 to port 1, and severely restricts from port 1 to port 2. This valve is available with an optional pull-type manual override.

#### **APPLICATIONS**

The SVP08-NC is designed to function as load holding or blocking valve in applications where low internal leakage is required. In load holding applications, the circuit should be designed so that the de-energized state is the position that is holding the load. This valve can operate at an inlet pressure of 315 bar on port 2 for 600,000 cycles.



Shown with Robust Coil, Deutsch Connector

#### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Maximum flow at	35 l/min
rated pressure	[9 US gal/min]
Leakage	6 drops/min @
	Rated pressure
Weight	0.23 kg [0.51 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rinas needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**

#### **SCHEMATIC**



Pressure drop

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]





Solenoid Valves Catalog 2-Way Poppet

SVP08-NC





Cross-sectional view



#### **EXAMPLE CIRCUITS**

On/Off Motor Circuit



#### **ORDERING INFORMATION**





Solenoid Valves Catalog 2-Way Poppet SVP10-NC



#### **OPERATION**

This is a normally-closed, pilot-operated, poppet-style 10-size solenoid valve. When de-energized, the SVP10-NC acts as a check valve allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and severely restricts from port 1 to port 2. This valve is available with an optional pull-type manual override.

#### **APPLICATIONS**

The SVP10-NC is designed to function as load holding or blocking valve in applications where low internal leakage is required. In load holding applications, the circuit should be designed so that the de-energized state is the position that is holding the load. This valve can operate at an inlet pressure of 315 bar on port 2 for 250,000 cycles.



Shown with Standard Coil, Deutsch Connector

## Rated

#### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**					
Rated flow at 7 bar	80 l/min					
[100 psi]	[21 US gal/min]					
Leakage	6 drops/min @					
	Rated pressure					
Weight	0.43 kg [0.95 lb]					
Cavity	SDC10-2					
Standard Coil	M16 26 Watt					
Robust Coil	R16 20 Watt					
	Robust Nut P/N <b>173804910</b>					
	(no coil O-rings needed)					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

psi

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**

#### SCHEMATIC









#### **EXAMPLE CIRCUITS**

**On/Off Motor Circuit** 



Metri-Pack 150 with Diod

M3DB

IP69F

(no coil O-rings needed) \*\* DIN only - external rectifier needed

SV - Solenoid Valves SVP10-NC



Solenoid Valves Catalog 2-Way Poppet HSVP10-NC



#### **OPERATION**

This is a normally-closed, pilot-operated, poppet-style 10-size solenoid valve. When de-energized, the HSVP10-NC acts as a check valve allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and severely restricts from port 1 to port 2.

#### **APPLICATIONS**

The HSVP10-NC is designed to function as load holding or blocking valve in applications where low internal leakage is required. In load holding applications, the circuit should be designed so that the de-energized state is the position that is holding the load.



Shown with Standard H16 Coil, Deutsch Connector

#### **SPECIFICATIONS**

Rated pressure*	350 bar [5075 psi]*						
Rated flow at 7 bar	65 l/min						
[100 psi]	[17 US gal/min]						
Leakage	6 drops/min @						
	Rated pressure						
Weight	0.42 kg [0.93 lb]						
Cavity	SDC10-2						
Standard Coil	H16 29 Watt						

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **PERFORMANCE CURVES**



Pressure Drop 26 cSt [121 SUS] hyd.oil at 50C [122F]

# (1)

(2)

11141717 • Rev CA • August 2015

**SCHEMATIC** 



### Solenoid Valves Catalog 2-Way Poppet HSVP10-NC





**EXAMPLE CIRCUITS** 

**On/Off Motor Circuit** 



#### **ORDERING INFORMATION**

High Pressure Solenoid Valve Normally-Closed, Pilot Operated, 10 Size, Poppet Type Coil Voltage Code Description 00 No Coil H12D 12 VDC H24D 24 VDC Coll Termination Code Description 00 No Coil FL Flying Lead DE Deutsch AS AMP Super Seal 1.5 & Metri Pack 150 type 1 DEDB Deutsch with Diode Bidirectional DEDB Deutsch		HSVP10 - NC - H12D - DE - XC - P - 00												
Code       Ports & Material       Body Nome         Normally-Closed, Pilot Operated,       Coil Voltage       00       Cartridge Only       No Body         10 Size, Poppet Type       Coil Voltage       00       Cartridge Only       No Body         00       No Coil       H12D       12 VDC       S4B       1/2 BSP, Ductile       SDC10-2-S         S4B       1/2 BSP, Ductile       SDC10-2-S       S6S       #6 SAE, Ductile       SDC10-2-S         S6S       #6 SAE, Ductile       SDC10-2-S       S6S       #6 SAE, Ductile       SDC10-2-S         S6S       #6 SAE, Ductile       SDC10-2-S       S6S       #6 SAE, Ductile       SDC10-2-S         S8S       #8 SAE, Ductile       SDC10-2-S       S8S       #8 SAE, Ductile       SDC10-2-S         S8S       #8 SAE, Ductile       SDC10-2-S       S8S       #8 SAE, Ductile       SDC10-2-S         S8S       #8 SAE, Ductile       SDC10-2-S       S8S       #8 SAE, Ductile       SDC10-2-S         S8S       #8 SAE, Ductile       SDC10-2-S       S8S       #8 SAE, Ductile       SDC10-2-S         S8S       #8 SAE, Ductile       SDC10-2-S       S8S       #8 SAE, Ductile       SDC10-2-S         S8S       #8 SAE, Ductile       SDE <td< th=""><th>D</th><th>2-1</th><th></th><th></th><th></th><th></th><th><math>\square</math></th><th>г -</th><th>гт</th><th></th><th>Bodies</th><th></th><th></th><th></th></td<>	D	2-1					$\square$	г -	гт		Bodies			
Normally-Closed, Pilot Operated,         10 Size, Poppet Type         Coil Voltage         Code       Description         00       No Coil         H12D       12 VDC         H24D       24 VDC         Code       Description         00       No Coil         H24D       24 VDC         S88       #8 SAE, Ductile       SDC10-2-S         S88       #8 SAE, Ductile       SDE         DE       Deutsch       IP69K         ASDB	Pressure 3	Solenoid Valve									Code	Ports & Mater	ial Body No	omenclature
10 Size, Poppet Type       Code Description         00       No Coil         H12D       12 VDC         H24D       24 VDC         Kooli       H12D         H24D       24 VDC         Kooli       H12D         Kooli       H12D         H24D       24 VDC         Kooli       H12D         H24D       24 VDC         Kooli       H12D         H12D       12 VDC         H24D       24 VDC         Kooli       H12D         H12D       12 VDC         H24D       24 VDC         Kooli       Seal Option         Oo       No Coil         FL       Flying Lead         DE       Deutsch         AS       AMP Super Seal 1.5 & Metri Pack 150 type 1         DEDB       Deutsch with Diode Bidirectional         DEDB       Deutsch with Diode Bidirectional         DPBB       Deutsch with Diode Bidirectional         DPBB       Deutsch with Diode Bidirectional	nally-Close	d, Pilot Operated,		Itago					L	—	00	Cartridge Only	No Body	1
Code       Description         00       No Coil         H12D       12 VDC         H24D       24 VDC         H24D       24 VDC         S8S       #8 SAE, Ductile       SDC10-2-S         S8       #8 SAE, Ductile       SDC10-2-S         S8       #8 SAE, Ductile       SDC10-2-S         B0       No Coil       -         FL       Flying Lead       IP69K         DE       Deutsch       IP69K         DEBB       Deutsch with Diode Bidirectional <th>ize, Poppet</th> <th>Туре</th> <th>Code</th> <th>Description</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Γ</th> <th>S3B</th> <th>3/8 BSP, Ducti</th> <th>le SDC10-</th> <th>2-S3B</th>	ize, Poppet	Туре	Code	Description						Γ	S3B	3/8 BSP, Ducti	le SDC10-	2-S3B
00       No Coli         H12D       12 VDC         H24D       24 VDC         Korrent H24D       24 VDC         S8S       #8 SAE, Ductile       SDC10-2-S         S8       #8 SAE, Ductile       SDE         DE       Deutsch       IP69K         DE       Deutsch with Diode Bidirectional       IP69K			Code	Ne Ceil						Г	S4B	1/2 BSP, Ducti	le SDC10-	2-S4B
Coil Termination       IP Rating         00       No Coil         FL       Flying Lead         DE       Deutsch         AS       AMP Super Seal 1.5 & Metri Pack 150 type 1         ASDB       AMP Super Seal with Diode Bidirectional         DEB       Deutsch with Diode Bidirectional			1420							Г	S6S	#6 SAE, Ductil	e SDC10-	2-S6S
Coil Termination       IP Rating         00       No Coil         FL       Flying Lead         DE       Deutsch         ASDB       AMP Super Seal 1.5 & Metri Pack 150 type 1         DEBB       Deutsch with Diode Bidirectional         DEBB       Deutsch with Diode Bidirectional			HIZD	12 VDC						Γ	S8S	#8 SAE, Ductil	e SDC10-	2-S8S
Coil Termination       applications. Please consult factory for         Code       Description       IP Rating       Seal Option         00       No Coil       -       -         FL       Flying Lead       IP69K       Code       Seal Material       S         DE       Deutsch       IP69K       P       Polyurethane Single Seal       1         ASDB       AMP Super Seal vith Diode Bidirectional       IP69K       3         DEBB       Deutsch with Diode Bidirectional       IP69K			HZ4D	24 VDC							*** Alum	inum Bodies av	ailable for lowe	r pressure
Code     Description     IP Rating       00     No Coil     -       FL     Flying Lead     IP69K       DE     Deutsch     IP69K       AS     AMP Super Seal 1.5 & Metri Pack 150 type 1     IP69K       ASDB     AMP Super Seal with Diode Bidirectional     IP69K       DEBD     Deutsch with Diode Bidirectional     IP69K	Coil Ter	rmination									appli	cations. Please	consult factory	for details.
00     No Coil     -       FL     Flying Lead     IP69K       DE     Deutsch     IP69K       AS     AMP Super Seal 1.5 & Metri Pack 150 type 1     IP69K       ASDB     AMP Super Seal with Diode Bidirectional     IP69K       DEB     Deutsch with Diode Bidirectional     IP69K	Code	Description			IP Rati	ing	.							
FL     Flying Lead     IP69K       DE     Deutsch     IP69K       AS     AMP Super Seal 1.5 & Metri Pack 150 type 1     IP69K       ASDB     AMP Super Seal with Diode Bidirectional     IP69K       DEBB     Deutsch with Diode Bidirectional     IP69K	00	No Coil			-						Sea	I Option		
DE     Deutsch     IP69K       AS     AMP Super Seal 1.5 & Metri Pack 150 type 1     IP69K       ASDB     AMP Super Seal with Diode Bidirectional     IP69K       DEBB     Deutsch with Diode Bidirectional     IP69K	FL	Flying Lead			IP69K						Co	de Seal Mate	rial	Seal Kit
AS     AMP Super Seal 1.5 & Metri Pack 150 type 1     IP69K       ASDB     AMP Super Seal with Diode Bidirectional     IP69K       DEDB     Deutsch with Diode Bidirectional     IP69K	DE	Deutsch			IP69K						Р	Polyuretha	ne Single Seal	11132135
ASDB AMP Super Seal with Diode Bidirectional IP69K DEDB Deutsch with Diode Bidirectional IP69K Code Description	AS	AMP Super Seal 1.	5 & Metri	Pack 150 type 1	IP69K						V	Viton		354000819
DEDB Deutsch with Diode Bidirectional IP69K	ASDB	AMP Super Seal with Diode Bidirectional			IP69K				Manual	Overric	es			
Code Description	DEDB	Deutsch with Diode Bidirectional			IP69K		l	L-r	Code	Descr	ption			1
FLDB Flying Lead with Diode Bidirectional IP69K XC No Manual Override	FLDB	Flying Lead with Diode Bidirectional			IP69K			ŀ	XC	No Ma	nual Ov	erride		1



Solenoid Valves Catalog 2-Way Poppet HSVP12-NC



#### **OPERATION**

This is a normally-closed, pilot-operated, poppet-style 12-size solenoid valve. When de-energized, the HSVP12-NC acts as a check valve allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and severely restricts from port 1 to port 2.

#### **APPLICATIONS**

The HSVP12-NC is designed to function as load holding or blocking valve in applications where low internal leakage is required. In load holding applications, the circuit should be designed so that the de-energized state is the position that is holding the load. This solenoid valve is a technical replacement for CP501-1.



Shown with Standard H16 Coil, Deutsch Connector

(2)

 $(\mathbf{1})$ 

**SCHEMATIC** 

# SV - Solenoid Valves HSVP12-NC

#### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar	114 l/min
[100 psi]	[30 US gal/min]
Leakage	6 drops/min @
	Rated pressure
Weight	0.67 kg [1.47 lb]
Cavity	CP12-2
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **PERFORMANCE CURVES**



#### Pressure Drop 26 cSt [121 SUS] hyd.oil at 50C [122F]



Solenoid Valves Catalog 2-Way Poppet

HSVP12-NC





Cross-sectional view



#### **EXAMPLE CIRCUITS**

**On/Off Motor Circuit** 



#### **ORDERING INFORMATION**

HSVP12 - NC - H12			2D - D	- DE - XC - B - 00 Bodies								
					ĒŤ	ŤŤ	Code	Ports & N	laterial	Body Nome	nclature	
High Pressure Solenoid Valve							00	Cartridge	Only	No Body		
Normally-Closed, Pilot Operated,							10S	#10 SAE,	AL	CP12-2-10S		
12 Size, Poppet Type Coil Voltage							S10S	#10 SAE,	DUCTILE	CP12-2-S10	S	
		Code	Description -					12S	#12 SAE,	AL	CP12-2-12S	
		H00	No Coil						#12 SAE, DUCTILE		CP12-2-S12S	
		H12D	12 VDC						1/2 BSP, AL 1/2 BSP,DUCTILE		CP12-2-4B	
		H24D	24 VDC	S4B	CP12-2-S4B							
							6B	3/4 BSP, /	۹L	CP12-2-6B		
Coil Termination							S6B	3/4 BSP. I	DUCTILE	CP12-2-S6B		
Code Description			IP Rat	ting			**Aluminu	**Aluminum hodies are to be used for lower pressures less than				
00 No Coil			-				210 har (	210 har (3 000 nsi)				
FL	Flying Lead			IP69K				210 bui (	Seal Option			
DE	DE Deutsch			IP69K						Code	Seal Material	Seal Kit
AS AMP Super Seal 1.5 & Metri Pack 150 type 1			IP69K	<					В	Buna	120017	
ASDB	ASDB AMP Super Seal with Diode Bidirectional			IP69K			V Viton				Viton	120018
DEDB Deutsch with Diode Bidirectional			IP69K			Manual	nual Overrides					
FLDB Elving Lead with Diode Bidirectional			IP69K			Code	Descriptio	Description				
			0011			XC	No Manua	lo Manual Override				



Solenoid Valves Catalog 2-Way Poppet HSVP16-NC



#### **OPERATION**

This is a normally-closed, pilot-operated, poppet-style 16-size solenoid valve. When de-energized, the HSVP16-NC acts as a check valve allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and severely restricts from port 1 to port 2.

#### **APPLICATIONS**

The HSVP16-NC is designed to function as load holding or blocking valve in applications where low internal leakage is required. In load holding applications, the circuit should be designed so that the de-energized state is the position that is holding the load.



Shown with Standard H16 Coil, Deutsch Connector

# **SV - Solenoid Valves** HSVP16-NC

#### **SPECIFICATIONS**

Rated pressure*	350 bar [5075 psi]*				
Rated flow at 7 bar	152 l/min				
[100 psi]	[40 US gal/min]				
Leakage	6 drops/min @				
	Rated pressure				
Weight	.75 kg [1.6 lb]				
Cavity	SDC16-2				
Standard Coil	H16 29 Watt				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **PERFORMANCE CURVES**



Pressure Drop 26 cSt [121 SUS] hyd.oil at 507C [122 7F]

**SCHEMATIC** 






### ORDERING INFORMATION

**EXAMPLE CIRCUITS** 

Bodies Code Ports & Material Body Nomenclature High Pressure Solenoid Valve No Body Cartridge Only 00 Normally-Closed, Pilot Operated, 12S #12 SAE, AL SDC16-2-12S Coil Voltage 16 Size, Poppet Type S12S #12 SAE, DUCTILE SDC16-2-S12S Code Description 16S #16 SAE, AL SDC16-2-16S No Coi H00 S16S #16 SAE, DUCTILE SDC16-2-S16S H12D 12 VDC 3/4 BSP, AL SDC16-2-6B 6B H24D 24 VDC S6B 3/4 BSP, DUCTILE SDC16-2-S6B **Coil Termination** 8B 1 BSP, AL SDC16-2-8B Code Description IP Rating S8B 1 BSP, DUCTILE SDC16-2-S8B No Coil 00 \*\*Aluminum bodies are to be used for lower pressures less than 210 bar (3,000 psi) Seal Option FL IP69K Flying Lead DE IP69K Code Seal Material Seal Kit Deutsch AS AMP Super Seal 1.5 & Metri Pack 150 type 1 IP69K В Buna 120019 ٧ Viton 120020 ASDB AMP Super Seal with Diode Bidirectional IP69K Manual Overrides DEDB Deutsch with Diode Bidirectional IP69K Code Description FLDB Flying Lead with Diode Bidirectional P69K XC No Manual Override

### 11141717 • Rev CA • August 2015



Solenoid Valves Catalog 2-Way Poppet HSVP20-NC



### **OPERATION**

This is a normally-closed, pilot-operated, poppet-style 20-size solenoid valve. When de-energized, the HSVP20-NC acts as a check valve allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and severely restricts from port 1 to port 2.

### **APPLICATIONS**

The HSVP20-NC is designed to function as load holding or blocking valve in applications where low internal leakage is required. In load holding applications, the circuit should be designed so that the de-energized state is the position that is holding the load.



Shown with Standard H16 Coil, Deutsch Connector

# SV - Solenoid Valves HSVP20-NC

### SPECIFICATIONS

-						
Rated pressure*	350 bar [5075 psi]*					
Rated flow at 7 bar	227 l/min					
[100 psi]	[60 US gal/min]					
Leakage	6 drops/min @					
	Rated pressure					
Weight	1.04 kg [2.29 lb]					
Cavity	SDC20-2					
Standard Coil	H16 29 Watt					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### **PERFORMANCE CURVES**

### Pressure Drop 26 cSt [121 SUS] hyd.oil at 50♭C [122 ♭F]



SCHEMATIC





Solenoid Valves Catalog 2-Way Poppet

HSVP20-NC





### **EXAMPLE CIRCUITS**

On/Off Motor Circuit







Solenoid Valves Catalog 2-Way Poppet SVP08-NCF

### **OPERATION**

This is a normally-closed, pilot-operated, poppet-style 08-size solenoid valve. When de-energized, the SPV08-NCF acts as a check valve, allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows restricted flow through the orifice from port 2 to port 1. This valve is available with optional filter and with pull-type manual override.

### **APPLICATIONS**

SPECIFICATIONS

Rated flow at 7 bar

**Rated pressure\*** 

[100 psi]

Leakage

Weight

Cavity

**Standard Coil** 

**Robust Coil** 

**Robust Coil** 

The SVP08-NCF is designed to function as load holding or blocking valve in applications where low internal leakage and various bleeding flows are required in two different positions. In load holding applications, the circuit should be designed so that the de-energized state is the position that is holding the load. When it is energized, a load lowering function will be achieved via a non-compensated orifice. Example applications include scissor & telescopic manlifts, which use a single-acting cylinder for raising and lowering of the platform. The valve has an additional (optional) threaded pull-type override for emergency lowering via a wire cable or a knob handle.

230 bar [3300 psi]

[4.2 US gal/min]

0.23 kg [0.51 lb]

SDC08-02

M13 20 Watt

R13 16 Watt

6 drops/min @ Rated pressure

Robust Nut P/N 173800539 (no coil O-rings needed)

Robust Nut P/N 173800539 (No coil O-rings needed)

16 l/min



### SCHEMATIC



\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles). **PERFORMANCE CURVES** 

### Pressure drop (1 to 2) 26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Pressure drop (2 to 1) 26 cSt [121 SUS] hyd.oil at 50°C [122 °F]





2

27.2

[ 1.06 ]



110 OVERRIDE OF

20

OPTION

7

12.7

[ 0.50 ]

Ove

# SV - Solenoid Valves SVP08-NCF

### **EXAMPLE CIRCUITS**

 COILS NOT SHOWN FOR CLARITY INSTALL O-RINGS (2) PLCS AS SHOWN

59.5

[ 2.34 ]

2.6

[ 0.11]



### Current vs new circuit schematics for single-acting cylinder application. SVP08-NCF replaces 3 valves, while adding manual override and filter options.

[ 0.14 ] Override 40.

[ 0.66 ]

63

[2.48]

### **ORDERING INFORMATION**

### SVP08 - NCF - 1.0 - 12D - DE - M4 - B - F - 00

		SVPU		<u> </u>	0 - 121		14		F - U	U										
Solenoid	Valve, Pop	ppet type													Code	Body	anc	l Ports	Body N	omenclature
08 Size o	avity		·								_				00	Cartri	dge	only	No Bod	У
NCF: No	rmally Clos	ed,									F	Filter			4S	#4 SA	.E.	AL	CP08-2	-4S
Flow Cor	ntrol Fixed,	Pull Type									1	No Filter		Omit	6S	#6 SA	.E.	AL	CP08-2	-65
Orifice	7 Flow 7 b	ər	1								F	Filter 300 m	u	F	S6S	#6 SA	<b>Ε</b> ,	Steel	CP08-2	-S6S
1.0	131PM	 I0 34 GPM1									1				2B	1/4 B	SP,	AL	SDC08	-2-2B
12	2.21 PM	[0.54 GPM]								_ L			-		3B	3/8 B	SP,	AL	SDC08	-2-3B
1.4	271 PM	[0.20 CF M]			Coil Tor	mination	Sta	ndard	IP	Pobu	<b>.</b>	ID			S3B	3/8 B	SP,	Steel	CP08-2	-S3B
17	4   PM [1	06 GPM1				mation	Coi	l Code	Rating	Coll C	ai Sode	Rating								
2.0	5 8 I PM	11 54 GPMI	-		No Coil		00		-	00		-				Cod	le	Material Seal Kits		Seal Kits
2.0	0.0 11 11		]		Amp Jur	nior	AJ		IP 67	-		-				в		Buna-N	1	354000119
Coil Vo	Itage	Standard	Robust		Amp Jur	nior W Diode	AJ	D	IP 67	-		-				V		Viton		354000219
1.0.1		Coil Code	Coll Code			nerSeal 1 5	AS		IP 67	AS		IP 69K					. 1			
NO COL	,with hut"	00	RUU					n	10 67	ASD	•	ID COK	L			Coc	le	Manua	Overrid	6
10 VDC	>	10D	R10D		AMP SU	perseal w Diod	8 ~~		IF 07	700	0	IP 69K				Om	it	No Ove	rride	
12 VDC	>	12D	R12D		Deutsch		DE		IP 69K	DE	_	IP 69K				M4		Pull Ov	erride N	l4 thread
20 VDC	>	20D	R20D		Deutsch	W Diode	DE	D	IP 69K	DED	в	IP 69K				M5		Pull Ov	erride N	15 thread
24 VD0	)	24D	R24D		Flying Le	eads	FL		IP 65	FL		IP 69K				U10	)	Pull O/	R 10-32	-UNF thread
110 VA	C**	110A	-		Flying Leads W Diode		FL	D	IP 65	FLD	В	IP 69K				PG		Pull Ov	erride w	ith Knob
220 VA	C **	220A	-		DIN 436	50	DN	I	IP 65	-		-				M		Pull Sc		
* Standa	ard coil-plast	tic nut and Q	-rings: R-coil	- steel	Metri-Pa	ick 150 Type 2	-		-	МЗ		IP 69K				0.0		Dull 00		
nut P	N 1738005	39 (no coll O-	rings neede	1)	Metri-Pa	ick 150 W Diode	- 1		-	M3D	B	IP 60K				OP		Puil Sc	rew w/P	rotection"
** DIN or	nly-external	rectifier need	led	•					1		-					* Onl	y av	/ailable \	with stan	dard coll



Solenoid Valves Catalog 2-Way Poppet SVP08-NCR



### **OPERATION**

This is a normally-closed, pilot-operated, poppet-type 08-size solenoid valve with free reverse flow. When de-energized, the valve acts as a check valve, allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and from 2 to 1. This valve is available with an optional pull-type manual override.

### **APPLICATIONS**

This valve is designed for low leakage applications and can be used in a circuit with a single acting cylinder to control motion, provide load holding or as a general purpose diverter or dump valve. The SVP08-NCR can operate at an inlet pressure of 315 bar on port 2 for 600,000 cycles.



Shown with Robust Coil, Deutsch Connector

# SV - Solenoid Valves SVP08-NCR

### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**						
Maximum flow at	35 l/min						
rated pressure	[9 US gal/min]						
Leakage	6 drops/min @						
	Rated pressure						
Weight	0.23 kg [0.51 lb]						
Cavity	SDC08-2						
Standard Coil	M13 20 Watt						
Robust Coil	R13 16 Watt						
	Robust Nut P/N <b>173800539</b>						
	(no coil O-rings needed)						

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**

### SCHEMATIC







## Solenoid Valves Catalog 2-Way Poppet

SVP08-NCR



DIMENSIONS





### **EXAMPLE CIRCUITS**



### Lift, hold, & lower single acting cylinder



P103 102E

0	(500 )		400		_	~ ~					
S	/P08-I	NCR-	12D -	DE - M - B	(	00	C	de Body	and Ports	Body Nomenclature	
						_		0 Cartr	idge Only	No Body	
	1		1				4	S #4	SAE, AL	CP08-2-4S	
								<b>S</b> #6	SAE, AL	CP08-2-6S	
Solenoid Valve, Por	pet						S	5S #6 S	AE, Steel	CP08-2-S6S	
Type, 08 Size Cavity					Filter:		DO	i <b>2B</b> 1/4	BSP, AL	SDC08-2-DG2B	
					No Filter	Om	it DO	i <b>3B</b> 3/8	BSP, AL	SDC08-2-DG3B	
					Filter 300	mµ F	S	3B 3/8	3SP, Steel	CP08-2-S3B	
								_	_		
NCR:								Seal Code	Material	Seal Kits	
Normally Closed,								В	Buna-N	354000119	
Free Reverse Flow,	Pull Type							v	Viton	354000219	
				Coil Termination	Standard Coil	IP Rating	Robust Coi	IP Rating	Code	Manual Override	
				contermination	Code	ii nating	Code	ii nating	Omit	No Override	
Coil Voltage	Standard Coil	Robust Coil	1	No Coil	00	-	00	-	M	Pull Screw	
convoluge	Code	Code		Amp Junior	AJ	IP67	-		OP	Pull Screw w/	
No Coil, with n	it* 00	R00		Amp Junior with Diode	AJD	IP67	-			Protection*	
10 \	DC 10D	R10D		AMP SuperSeal 1.5	AS	IP67	AS	IP69K	<ul> <li>Only available</li> </ul>	lable with	
12 \	DC 12D	R12D		AMP SuperSeal with Diode	ASD	IP67	ASDB	IP69K	standard	COII	
20 \	DC 20D	R20D		Deutsch	DE	IP67	DE	IP69K			
20 \	DC 24D	R24D		Deutsch with Diode	DED	IP67	DEDB	IP69K			
110 VA	** 1104	11240		Flying Leads	FL	IP65	FL	IP69K			
220 VA	** 2204			Flying Leads with Diode	FLD	IP65	FLDB	IP69K			
* Standard as "	ZZUA		ate al put	DIN 43650	DN	IP65	-	-			
Standard Coll – pla D/N 172900520 (J	stic nut and O-ri	ngs; R-coll –	steel nut	Metri-Pack 150 Type 2	-	-	M3	IP69K			
** DIN only - extern	l rectifier neede	d		Metri-Pack 150 with Diode	-	-	M3DB	IP69K			
Sitt only Colorin											



Solenoid Valves Catalog 2-Way Poppet SVP10-NCR



### **OPERATION**

This is a normally-closed, pilot-operated, poppet-type 10-size solenoid valve with free reverse flow. When de-energized, the valve acts as a check valve, allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and from 2 to 1. This valve is available with an optional pull-type manual override.

### **APPLICATIONS**

This valve is designed for low leakage applications and can be used in a circuit with a single acting cylinder to control motion, provide load holding or as a general purpose diverter or dump valve. The SVP10-NCR can operate at an inlet pressure of 315 bar on port 2 for 250,000 cycles.



Shown with Standard Coil, Deutsch Connector

# SV - Solenoid Valves SVP10-NCR

### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	80 l/min
[100 psi]	[21 US gal/min]
Leakage	6 drops/min @
	Rated pressure
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**



Pressure drop

### SCHEMATIC





### EXAMPLE CIPCINTS



Lift, hold, & lower single acting cylinder



P103 102E





Solenoid Valves Catalog 2-Way Poppet HSVP10-NCR



### **OPERATION**

This is a normally-closed, pilot-operated, poppet-type 10-size solenoid valve with free reverse flow. When de-energized, the valve acts as a check valve, allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and from 2 to 1.

### **APPLICATIONS**

This valve is designed for low leakage applications and can be used in a circuit with a single acting cylinder to control motion, provide load holding or as a general purpose diverter or dump valve.



Shown with Standard H16 Coil, Deutsch Connector

(2)

 $\mathbb{D}$ 

**SCHEMATIC** 

### SPE Rate

### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar	65 l/min
[100 psi]	[17 US gal/min]
Leakage	6 drops/min @
	Rated pressure
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### PERFORMANCE CURVES



Pressure Drop 26 cSt [121 SUS] hyd.oil at 50C [122F]



Solenoid Valves Catalog 2-Way Poppet

HSVP10-NCR





### **EXAMPLE CIRCUITS**



### Lift, hold, & lower single acting cylinder



P103 102E

ah Pre	-		110 11			20-0	<u></u>	<u>- M</u>	F-00	<u>)</u>	Bodies	5			
	essure S	olenoid Valve —									Code	Po	rts & Material	Body Nor	menclature
ormally	y-Closed	d, Pilot Operated,	0-111/-	H					L		00	Ca	rtridge Only	No Body	
) Size,	Poppet	Туре		Description							S3B	3/8	BSP, Ductile	SDC10-2	-S3B
ith Rev	verse Fr	ee Flow	Code	Description							S4B	1/2	BSP, Ductile	SDC10-2-	-S4B
			00	No Coll							S6S	#6	SAE, Ductile	SDC10-2	-S6S
			H12D	12 VDC							S8S	#8	SAE, Ductile	SDC10-2	-S8S
			H24D	24 VDC						'	*** Alu	minun	n Bodies availabl	e for lower	pressure
c	Coil Ter	mination									арр	licatio	ons. Please cons	ult factory f	for details.
6	Code	Description			IP Rat	ting	J								
0	00	No Coil			-						Se	al Op	otion		
F	FL	Flying Lead			IP69K						Co	ode	Seal Material		Seal Kit
	DE	Deutsch			IP69K						Р		Polyurethane Si	ngle Seal	11132135
1	AS	AMP Super Seal 1.	5 & Metri	Pack 150 type 1	IP69K						۷		Viton		354000819
7	ASDB	AMP Super Seal wi	th Diode I	Bidirectional	IP69K				Manual	Overri	des				
	DEDB	Deutsch with Diode	Bidirectio	nal	IP69K			<u> </u> г	Code	Desc	ription				
F	FLDB	Flying Lead with Diode Bidirectional						ŀ	XC	No M	anual O	verrid	e		



Solenoid Valves Catalog 2-Way Poppet HSVP12-NCR



### **OPERATION**

This is a normally-closed, pilot-operated, poppet-type 12-size solenoid valve with free reverse flow. When de-energized, the valve acts as a check valve, allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and from 2 to 1.

### **APPLICATIONS**

This valve is designed for low leakage applications and can be used in a circuit with a single acting cylinder to control motion, provide load holding or as a general purpose diverter or dump valve.

This solenoid valve is a technical replacement for CP501-3.



Shown with Standard H16 Coil, Deutsch Connector

### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*					
Rated flow at 7 bar	114 l/min					
[100 psi]	[30 US gal/min]					
Leakage	6 drops/min @					
	Rated pressure					
Weight	0.43 kg [0.95 lb]					
Cavity	CP12-2					
Standard Coil	H16 29 Watt					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### **PERFORMANCE CURVES**



Pressure Drop 26 cSt [121 SUS] hyd.oil at 50C [122F]

### **SCHEMATIC**







### DIMENSIONS

Cross-sectional view



### **EXAMPLE CIRCUITS**



### Lift, hold, & lower single acting cylinder



P103 102E

### **ORDERING INFORMATION**

HSVP12 - NCR - H12D - DE - XC - B - 00 Bodies

					- + +	ТТ		Code	Ports &	Materia	I Body Nor	nenclature	
High Pressure	Solenoid Valve ——							00	Cartrido	ge Only	No Body		
Normally-Close	d, Pilot Operated,							10S	#10 SA	E, AL	CP12-2-1	0S	
Free Reverse Flow, 12 Size, Coil Voltage								S10S	#10 SA	E, DUCT	ILE CP12-2-S	10S	
Poppet Type Code Description H00 No Coil								12S	#12 SA	E, AL	CP12-2-1	2S	
								S12S	#12 SA	E, DUCT	ILE CP12-2-S	12S	
		H12D	12 VDC					4B	1/2 BSF	P, AL	CP12-2-4	В	
		H24D	24 VDC					S4B	1/2 BSF	, DUCTIL	.E CP12-2-8	54B	
Coil Te	rmination							6B	3/4 BSF	P, AL	CP12-2-6	В	
Code	Description			IP Rati	ing		1	S6B	3/4 BSF	P, DUCTI	LE CP12-2-S	6B	
00	No Coil			-				**Aluminur	n bodies a	are to be us	ed for lower press	ures less thar	
FL	Flying Lead			IP69K				210 bar (3	<sup>(0 bar (3,000 psi)</sup> Seal Option				
DE	Deutsch			IP69K					[	Code	Seal Material	Seal Kit	
AS	AMP Super Seal 1.	5 & Metri	Pack 150 type 1	IP69K						В	Buna	120017	
ASDB	ASDB AMP Super Seal with Diode Bidirectional									V	Viton	120018	
DEDB	Deutsch with Diode	Bidirectio	nal	IP69K		Manual	Ove	errides	L				
FLDB	Flying Lead with Diode Bidirectional			IP69K	$ \Box$	Code	De	escriptio	n				
	,	Jour Diano	0			XC	No	Manual	Overrid	е			

SV - Solenoid Valves HSVP12-NCR



Solenoid Valves Catalog 2-Way Poppet HSVP16-NCR



### **OPERATION**

This is a normally-closed, pilot-operated, poppet-type 16-size solenoid valve with free reverse flow. When de-energized, the valve acts as a check valve, allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and from 2 to 1.

### **APPLICATIONS**

This valve is designed for low leakage applications and can be used in a circuit with a single acting cylinder to control motion, provide load holding or as a general purpose diverter or dump valve.

This solenoid valve is a technical replacement for CP502-3.



(2)

(1)

**SCHEMATIC** 

Shown with Standard H16 Coil, Deutsch Connector

### **SPECIFICATIONS**

Rated pressure*	350 bar [5075 psi]*					
Rated flow at 7 bar	152 l/min					
[100 psi]	[40 US gal/min]					
Leakage	6 drops/min @					
	Rated pressure					
Weight	0.73 kg [1.61 lb]					
Cavity	SDC16-2					
Standard Coil	H16 29 Watt					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### **PERFORMANCE CURVES**



Pressure Drop 26 cSt [121 SUS] hyd.oil at 50ウC [122 ウF]







Cross-sectional view

### **EXAMPLE CIRCUITS**

DIMENSIONS





### Lift, hold, & lower single acting cylinder



P103 102E

SV - Solenoid Valves HSVP16-NCR

### **ORDERING INFORMATION**

HSVP16 - NCR - H12D - DE - XC - B - 00 Bodies

							Douica					
							Code	Ports 8	Materia	Body Nom	enclature	
High Pressure	Solenoid Valve —						00	Cartridg	e Only	No Body		
Normally-Close	d, Pilot Operated,						12S	#12 SA	E, AL	SDC16-2-1	I2S	
Free Reverse F	low, 16 Size,	Coil Vo	ltage				S12S	#12 SA	E, DUCTI	_E SDC16-2-8	S12S	
Poppet Type Code Description					16S	#16 SA	E, AL	SDC16-2-1	16S			
		H00	No Coil				S16S	#16 SA	E, DUCTI	LE SDC16-2-S	S16S	
		H12D	12 VDC				6B	3/4 BSF	, AL	SDC16-2-6	6B	
		H24D	24 VDC				S6B	3/4 BSF	,DUCTIL	E SDC16-2-S	6B	
Coll Te	rmination						8B	1 BSP,	AL	SDC16-2-8	3B	
Code	Description			IP Rat	ating		S8B	1 BSP,	DUCTILE	SDC16-2-5	68B	
00000	No.0-1			iii ixu	ang		**Aluminum bodies are to be used for lower pressures less that					
00	NO COI			-			210 bar (3	.000 psi)				
FL	Flying Lead			IP69K	K							
DE	Deutsch			IP69K	К				Code	Seal Material	Seal Kit	
AS	AMP Super Seal 1	5 & Metri	Pack 150 type 1	IP69K	К				В	Buna	120019	
ASDB	AMP Super Seal w	ith Diode I	Bidirectional	IP69K	К				V	Viton	120020	
DEDB Deutsch with Diode Bidirectional			IP69K	К	Manua	Overrides						
FLDB	Elving Lead with Di	ode Bidire	otional	IDEOK		Code	Descriptio	n				
FLDB	r lying Leau with Di		ouona	1 030		XC	No Manua	Override	)			



Solenoid Valves Catalog 2-Way Poppet HSVP20-NCR

### **OPERATION**

This is a normally-closed, pilot-operated, poppet-type 20-size solenoid valve with free reverse flow. When de-energized, the valve acts as a check valve, allowing flow from port 1 to port 2, and blocking flow from port 2 to port 1. When energized, the valve's poppet is shifted and allows flow from port 2 to port 1, and from 2 to 1.

### **APPLICATIONS**

This valve is designed for low leakage applications and can be used in a circuit with a single acting cylinder to control motion, provide load holding or as a general purpose diverter or dump valve.

This solenoid valve is a technical replacement for CP503-3.



# SV - Solenoid Valves

HSVP20-NCR

### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*					
Rated flow at 7 bar	227 l/min					
[100 psi]	[60 US gal/min]					
Leakage	6 drops/min @					
	Rated pressure					
Weight	1.04 kg [2.29 lb]					
Cavity	SDC20-2					
Standard Coil	H16 29 Watt					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### SCHEMATIC



### **PERFORMANCE CURVES**

Pressure Drop 26 cSt [121 SUS] hyd.oil at 50 C [122 F]







### **EXAMPLE CIRCUITS**



### Lift, hold, & lower single acting cylinder



P103 102E

SV - Solenoid Valves HSVP20-NCR

		HSVE	<u> 20 - NCR</u>	- <u>H12</u> [	<u>D - DE</u> -	<u>XC</u> -	<u> B</u> - <u>00</u>	) - Bodle:	5			
								Code	Ports	& Materi	al Body No	omenclatur
gh Pressure S	Solenoid Valve						1 L	00	Cartrido	ge Only	No Body	,
ormally-Close	d, Pilot Operated,							16S	#16 SA	e, al	SDC20-	2-16S
ee Reverse F	low, 20 Size,	Coil Vo	oltage					S16S	#16 SA	E, DUCT	LE SDC20-	2-S16S
oppet Type		Code	Description					20S	#20 SA	E, AL	SDC20-	2-6B
		H00	No Coil					S20S	#20 SA	e,ducti	LE SDC20-	2-S6B
		H12D	12 VDC					8B	1 BSP,	AL	SDC20	2-8B
		H24D	24 VDC					S8B	1 BSP,	DUCTILE	E SDC20-	2-S8B
Coll To	rmination							10B	1 1/4 B	SP, AL	SDC20-	2-10B
Code	Description			ID Dating				S10B	1 1/4 BS	SP, DUC	TILE SDC20	2-S10B
Coue	No Coil			IF Raung	9			**Alumii	num bodies	are to be u	sed for lower pres	ssures less tha
FI	Flying Lead			- IP69K	-			210 bar	(3,000 psi)	Seal O	otion	
DE	Deutsch			IP69K	-					Code	Seal Materia	Seal Kit
AS	AMP Super Seal 1	5 & Metri	Pack 150 type 1	IP69K	-					В	Buna	120011
ASDB	AMP Super Seal wi	th Diode I	Bidirectional	IP69K	-1					V	Viton	120012
DEDB	Deutsch with Diode	Bidirectic	onal	IP69K	1		Manual	Overrides	3			
FLDB	Flying Lead with Diode Bidirectional			IP69K	-		Code	Descript	ption			
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						XC	No Manu	al Overric	de		



Solenoid Valves Catalog 2-Way Poppet SVP08-NO



### **OPERATION**

This is a normally open, pilot-operated, poppet-type 08-size solenoid valve. When de-energized, the SVP08-NO severely restricts flow from port 1 to port 2, while allowing free flow from port 2 to 1. When energized, the valve's poppet is shifted to block flow from port 2 to port 1, and allows reverse flow between port 1 to port 2 at a high pressure drop. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This valve is designed for use for uni-directional blocking, load holding, clamping or gripping applications in hydraulic circuits where low internal leakage is required. The SVP08-NO can operate at an inlet pressure of 315 bar on port 2 for 600,000 cycles.



Shown with Robust Coil

### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	35 l/min
[100 psi]	[9 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.23 kg [0.51 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**









### **EXAMPLE CIRCUITS**



Pump unloading To system



# SV - Solenoid Valves SVP08-NO





Solenoid Valves Catalog 2-Way Poppet SVP10-NO



### **OPERATION**

This is a normally open, pilot-operated, poppet-type 10-size solenoid valve. When de-energized, the SVP10-NO severely restricts flow from port 1 to port 2, while blocking flow from port 2 to 1. When energized, the valve's poppet is shifted to block flow from port 2 to port 1, and allow reverse flow between port 1 to port 2 at a high pressure drop. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This valve is designed for use for uni-directional blocking, load holding, clamping or gripping applications in hydraulic circuits where low internal leakage is required. The SVP10-NO can operate at an inlet pressure of 315 bar on port 2 for 300,000 cycles.



Shown with Standard Coil, Deutsch Connector

# **SV - Solenoid Valves** SVP10-NO

### **SPECIFICATIONS**

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	80 l/min
[100 psi]	[21 US gal/min]
Leakage	6 drops/min @
	Rated pressure
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**

### **SCHEMATIC**



psi bar 261 18 218 15 1 to 2 Energized 174 12 131 9 2 to 1 De-energized 87 6 44 3 0 0 10 20 30 l/min 0 50 70 40 60 2.6 5.3 7.9 10.6 13.2 15.9 18.5 US gal/min

### Pressure drop 33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



### **EXAMPLE CIRCUITS**



Pump unloading To system





Solenoid Valves Catalog 2-Way Poppet HSVP10-NO



### **OPERATION**

This is a normally open, pilot-operated, poppet-type 10-size solenoid valve. When de-energized, the HSVP10-NO severely restricts flow from port 1 to port 2, while blocking flow from port 2 to 1. When energized, the valve's poppet is shifted to block flow from port 2 to port 1, and allow reverse flow between port 1 to port 2 at a high pressure drop. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This valve is designed for use for uni-directional blocking, load holding, clamping or gripping applications in hydraulic circuits where low internal leakage is required.



Shown with Standard H16 Coil, Deutsch Connector

### SPECIFICATIONS

**SV - Solenoid Valves** 

HSVP10-NO

Rated pressure*	350 bar [5075 psi]*				
Rated flow at 7 bar	65 l/min				
[100 psi]	[17 US gal/min]				
Leakage	6 drops/min @				
	Rated pressure				
Weight	0.42 kg [0.93 lb]				
Cavity	SDC10-2				
Standard Coil	H16 29 Watt				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### SCHEMATIC



### **PERFORMANCE CURVES**

SV - 58



Pressure drop 26 cSt [121 SUS] hyd.oil at 50C [122F]



Solenoid Valves Catalog 2-Way Poppet

HSVP10-NO



### DIMENSIONS



24mm 9-11 Nm

### Cross-sectional view



### **EXAMPLE CIRCUITS**



# Pump unloading To system



### **ORDERING INFORMATION**

### HSVP10 - NO - H12D - DE - PN - P

PAT

Push and Twist

High Pressure Solenoid Valve, Normally-Open, Pilot-Operated, 10 Size, Poppet Type									
			Code	Description	┓				
			ноо	No Coil	1				
			H12D	12 VDC	1				
			H24D	24 VDC	1				
	Coil Te	ermination			_				
	Code	Description			IP	Rating			
	00	No Coil	No Coil						
	FL	Flying Lead	Flying Lead						
	DE Deutsch								
	AS AMP SuperSeal 1.5 and Metri-Pack 150 type 1								
	ASDB AMP Super Seal with Diode Bidirectional								
	DEDB Deutsch with Diode Bidirectional								
	FLDB	Flying Lead with Diode Bidir	ectional		IP	69k			

1 - P	- <u>P</u> - <u>00</u>									
- T	-  _	Bodies								
		Code	Port & Material	Body Nome	nclature					
		00	Cartridge only	No Body						
		S3B	3/8 BSP, Ductile	SDC10-2-S	3B					
		S4B	1/2 BSP, Ductile	SDC10-2-S	4B					
		S6S	SDC10-2-S	6S						
		S8S #8 SAE, Ductile SDC10-2-S8S								
	*** Aluminium bodies available for lower pressure									
		applicat	ion. Please consult	t factory for d	etails.					
	Seal O	ption			_					
_	Code		Seal Material	Seal kit						
	Р	Polyur	ethane Single Seal	11132138	5					
	V	Viton 354000819								
Manua	Manual Override									
Code	Description									
PN	Push P	Push Pin								
OPS	Push Pin M/O Nut for Protection & Actuation									



Solenoid Valves Catalog 2-Way Poppet HSVP12-NO



### **OPERATION**

This is a normally open, pilot-operated, poppet-type 12-size solenoid valve. When de-energized, the HSVP12-NO severely restricts flow from port 1 to port 2, while blocking flow from port 2 to 1. When energized, the valve's poppet is shifted to block flow from port 2 to port 1, and allow reverse flow between port 1 to port 2 at a high pressure drop. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This valve is designed for use for uni-directional blocking, load holding, clamping or gripping applications in hydraulic circuits where low internal leakage is required.

This solenoid valve is a technical replacement for CP502-3.



Shown with Standard H16 Coil, Deutsch Connector

### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*				
Rated flow at 7 bar	114 l/min				
[100 psi]	[30 US gal/min]				
Leakage	6 drops/min @				
	Rated pressure				
Weight	0.67 kg [1.47 lb]				
Cavity	CP12-2				
Standard Coil	H16 29 Watt				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### **PERFORMANCE CURVES**



Pressure drop 26 cSt [121 SUS] hyd.oil at 50C [122F]

### **SCHEMATIC**





Solenoid Valves Catalog 2-Way Poppet HSVP12-NO

Cross-sectional view

501 12 100

**5** 

### DIMENSIONS

mm [in]



### **EXAMPLE CIRCUITS**





### **ORDERING INFORMATION**

High F	Pressure	Solenoid Valve						
12 Siz	ally-Open	, Pilot Operated,	Coil Vo	ltage				
12 012	e, i oppe	туре	Code	Description				
			H00	No Coil				
			H12D	12 VDC				
			H24D	24 VDC				
	Coil Te	rmination						
	Code	Description			IP Rat	ing	]	
	00	No Coil			-			
	FL	Flying Lead			IP69K			
	DE	Deutsch			IP69K			
	AS	AMP Super Seal 1.5	5 & Metri	Pack 150 type	1 IP69K			M
	ASDB	AMP Super Seal wit	IP69K		l	L C		
	DEDB	Deutsch with Diode	IP69K			P		
	FLDB	Flying Lead with Did	ode Bidire	ctional	IP69K			0
								-

### HSVP12 - NO - H12D - DE - PN - B - 00 Bodi

١	- E	3 - ()() Bodies									
	-	Г <sup>-</sup>		Code	e Ports & Mater			Body Nom	enclature		
				00	Cartridge	e Only		No Body			
				10S	#10 SAE	, AL		CP12-2-108	S		
				S10S	#10 SAE	, DUCTIL	E	CP12-2-S1	0S		
				12S	#12 SAE	, AL		CP12-2-128	S		
				S12S	#12 SAE	, DUCTIL	E	CP12-2-S1	2S		
				4B	1/2 BSP,	AL		CP12-2-4B			
			S4B 1/2 BSP			DUCTILE	= (	CP12-2-S4	64B		
		6B		3/4 BSP, AL			CP12-2-6B				
				S6B	3/4 BSP,	DUCTIL	Е	CP12-2-S6	6B		
		**Aluminum bodies are			e to be use	d for	lower pressur	res less than			
				210 bar (3	,000 psi)	Seal O	ptio	n			
						Code	Se	eal Material	Seal Kit		
						В	Βι	una	120017		
Manual Overrides				V	Vit	ton	120018				
	Co	de	Description								
	PN		Push Pin								
	OP	S	Push Pin M/O Nut for Protection & Actuation								
	PA	Г	Push	and Twis	t						



Solenoid Valves Catalog 2-Way Poppet HSVP16-NO



### **OPERATION**

This is a normally open, pilot-operated, poppet-type 16-size solenoid valve. When de-energized, the HSVP16-NO severely restricts flow from port 1 to port 2, while blocking flow from port 2 to 1. When energized, the valve's poppet is shifted to block flow from port 2 to port 1, and allow reverse flow between port 1 to port 2 at a high pressure drop. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This valve is designed for use for uni-directional blocking, load holding, clamping or gripping applications in hydraulic circuits where low internal leakage is required.



Shown with Standard H16 Coil, Deutsch Connector

### **SPECIFICATIONS**

Rated pressure*	350 bar [5075 psi]*			
Rated flow at 7 bar	152 l/min			
[100 psi]	[40 US gal/min]			
Leakage	6 drops/min @			
	Rated pressure			
Weight	0.73 kg [1.61 lb]			
Cavity	SDC16-2			
Standard Coil	H16 29 Watt			

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### **PERFORMANCE CURVES**



### Pressure Drop 26 cSt [121 SUS] hyd.oil at 507C [122 7F]

SCHEMATIC









### **EXAMPLE CIRCUITS**





		HSVP16 - NO	- H12D	- DE - PN - I	B - 00	Bodles				
			<u> </u>		ΤŤ	Code	Ports	& Materi	al Body Nor	nenclatu
Dragouro	Colonaid Value					00	Cartrid	ge Only	No Body	
Pressure a	Dilet Operated					12S	#12 SA	AE, AL	SDC16-2-	12S
ally-Open,	, Filot Operated,	Coll Voltage				\$12S	#12 SA	E, DUCT	TILE SDC16-2-	S12S
ze, roppe	туре					16S	#16 SA	AE, AL	SDC16-2-	16S
		H00 No Coll				S16S	#16 SA	E, DUC	TILE SDC16-2-	S16S
		H12D 12 VDC				6B	3/4 BS	P, AL	SDC16-2-	6B
		H24D 24 VDC				S6B	3/4 BS	P,DUCTI	LE SDC16-2-	S6B
						8B	1 BSP,	AL	SDC16-2-	8B
Coil Te	rmination		-			S8B	1 BSP,	DUCTIL	E SDC16-2-	S8B
Code	Description		IP Rating			**Aluminu	m bodies	are to be u	sed for lower press	ures less th
00	No Coil		-			210 bar (3	3,000 psi)	Seal O	ption	_
FL	Flying Lead		IP69K		L			Code	Seal Materia	Seal Kit
DE	Deutsch		IP69K	]				В	Buna	120019
AS	AMP Super Seal 1	.5 & Metri Pack 150 type 1	IP69K	]	Manua	Overrides		V	Viton	120020
ASDB	AMP Super Seal w	ith Diode Bidirectional	IP69K	] 4	Code	Descriptio	n			
DEDB	Deutsch with Diode	e Bidirectional	IP69K	]	PN	Push Pin				-1
FLDB	Flying Lead with D	iode Bidirectional	IP69K	]	OPS	Push Pin M	//O Nut f	ior Protec	ction & Actuatio	
				-	DAT.	Push and	Twiet			-



Solenoid Valves Catalog 2-Way Poppet HSVP20-NO

### **OPERATION**

This is a normally open, pilot-operated, poppet-type 20-size solenoid valve. When de-energized, the HSVP20-NO severely restricts flow from port 1 to port 2, while blocking flow from port 2 to 1. When energized, the valve's poppet is shifted to block flow from port 2 to port 1, and allow reverse flow between port 1 to port 2 at a high pressure drop. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This valve is designed for use for uni-directional blocking, load holding, clamping or gripping applications in hydraulic circuits where low internal leakage is required.



Shown with Standard H16 Coil, Deutsch Connector

# SV - Solenoid Valves HSVP20-NO

### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*				
Rated flow at 7 bar	265 l/min				
[100 psi]	[70 US gal/min]				
Leakage	6 drops/min @				
	Rated pressure				
Weight	1.04 kg [2.29 lb]				
Cavity	SDC20-2				
Standard Coil	H16 29 Watt				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### **PERFORMANCE CURVES**

### psi bar 225 15 12 150 9 neralz 6 75 1-2 3 0 n 129 215 258 l/min 43 86 172 0 34 68 US gal/min 17 51

Pressure Drop 26 cSt [121 SUS] hyd.oil at 50∜C [122 ∜F]

### SCHEMATIC



**11141717** • Rev CA • August 2015





DIMENSIONS

Cross-sectional view



### **EXAMPLE CIRCUITS**





	HSVP20 - NO - H12D - DF - PN - B - 0(				3 - 00	Bodles						
				<u> </u>	<u> </u>	÷÷ ÷	ŤŤ	Code	Ports &	Materia	Body Nom	enclature
								00	Cartridge	Only	No Body	
High Pressure S	ligh Pressure Solenoid Valve							16S	#16 SAE,	AL	SDC20-2-	16S
Normally-Open	lormally-Open, Pilot Operated,							S16S	#16 SAE,	DUCTIL	E SDC20-2-S	S16S
20 Size, Poppe	t Type	Coil Vo	Itage					20S	#20 SAE,	AL	SDC20-2-	6B
		Code	Description					S20S	#20 SAE,	DUCTILE	SDC20-2-8	S6B
		H00	No Coil					8B	1 BSP, A	L	SDC20-2-1	3B
		H12D	12 VDC					S8B	1 BSP, D	UCTILE	SDC20-2-	S8B
	H24D 24 VDC							10B	1 1/4 BSF	P, AL	SDC20-2-	10B
Coil Te	Coil Termination							S10B	1 1/4 BSF	, DUCTI	E SDC20-2-	S10B
Code	Code Description			IP Rating				**Alumin	ium bodies ar	e to be use	d for lower pressu	res less than
00	No Coil				1			210 bar	(3,000 psi)	Seal O	otion	
FI	Elving Lead			IDEOK	1					Code	Seal Materia	Seal Kit
	Deutsch			IDEOK	1					В	Buna	120011
	AMP Super Seal 1.5 & Metri Pack 150 type 1			IDEOK	1		Manual Overrides V Viton 12			120012		
	AMP Super Seal with Diode Bidirectional			ID60K	1	L_r	Code	Descript	on			٦.
	EDB Deutsch with Diode Bidirectional			IPROK	1	ŀ	PN	Push Pin				
FLDB	Elving Lead with Diode Bidirectional			IPAGK	1	ŀ	OPS	Push Pin	in M/O Nut for Protection & Actuation			
	TEDB THying Lead with Didde Didirectional			II OOK	1	ŀ	PAT	Push and	Push and Twist			



Solenoid Valves Catalog 2-Way Poppet SVP08-NOR



### **OPERATION**

This is a normally-open, pilot-operated, poppet-type 08-size solenoid valve with free reverse flow. When de-energized the valve allows flow from port 1 to 2 and from port 2 to 1. When energized, the pilot poppet closes allowing the valve to act as a check valve flowing from port 1 to port 2, while blocking flow from port 2 to 1. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This is a low leakage valve designed for use in load holding applications or as a general purpose diverter or dump valve. The SVP08-NOR can operate at an inlet pressure of 315 bar on port 2 for 600,000 cycles.



Shown with Standard Coil, Deutsch Connector

### **SPECIFICATIONS**

**SV - Solenoid Valves** 

**SVP08-NOR** 

Rated pressure*	230 bar [3300 psi]**					
Rated flow at 7 bar	35 l/min					
[100 psi]	[9 US gal/min]					
Leakage	6 drops/min @					
	Rated pressure					
Weight	0.23 kg [0.51 lb]					
Cavity	SDC08-2					
Standard Coil	M13 20 Watt					
Robust Coil	R13 16 Watt					
	Robust Nut P/N <b>173800539</b>					
	(no coil O-rings needed)					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**



### **SCHEMATIC**



### Pressure drop



# Lift



### **ORDERING INFORMATION**



P103 102E



Solenoid Valves Catalog 2-Way Poppet SVP10-NOR



### **OPERATION**

This is a normally-open, pilot-operated, poppet-type 10-size solenoid valve with free reverse flow. When de-energized the valve allows flow from port 1 to 2 and from port 2 to 1. When energized, the pilot poppet closes allowing the valve to act as a check valve flowing from port 1 to port 2, while blocking flow from port 2 to 1. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This is a low leakage valve designed for use in load holding applications or as a general purpose diverter or dump valve. The SVP10-NOR can operate at an inlet pressure of 315 bar on port 2 for 300,000 cycles.



Shown with Robust Coil, Deutsch Connector

### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**					
Rated flow at 7 bar	80 l/min					
[100 psi]	[21 US gal/min]					
Leakage	6 drops/min @					
	Rated pressure					
Weight	0.43 kg [0.95 lb]					
Cavity	SDC10-2					
Standard Coil	M16 26 Watt					
Robust Coil	R16 20 Watt					
	Robust Nut P/N <b>173804910</b>					
	(no coil O-rings needed)					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**







33 cSt [154 SUS] hyd.oil @ 38°C [100° F]





### **EXAMPLE CIRCUITS**







### **ORDERING INFORMATION**



P103 102E



Solenoid Valves Catalog 2-Way Poppet HSVP10-NOR



### **OPERATION**

This is a normally-open, pilot-operated, poppet-type 10-size solenoid valve with free reverse flow. When de-energized the valve allows flow from port 1 to 2 and from port 2 to 1. When energized, the pilot poppet closes allowing the valve to act as a check valve flowing from port 1 to port 2, while blocking flow from port 2 to 1. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This is a low leakage valve designed for use in load holding applications or as a general purpose diverter or dump valve.



Shown with Standard H16 Coil, Deutsch Connector

### SPECIFICATIONS

**SV - Solenoid Valves** 

**HSVP10-NOR** 

Rated pressure*	350 bar [5075 psi]*				
Rated flow at 7 bar	65 l/min				
[100 psi]	[17 US gal/min]				
Leakage	6 drops/min @				
	Rated pressure				
Weight	0.42 kg [0.93 lb]				
Cavity	SDC10-2				
Standard Coil	H16 29 Watt				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### SCHEMATIC



### **PERFORMANCE CURVES**



Pressure drop 26 cSt [121 SUS] hyd.oil at 50C [122F]



### Solenoid Valves Catalog 2-Way Poppet

HSVP10-NOR



### DIMENSIONS







### **EXAMPLE CIRCUITS**



### **ORDERING INFORMATION**

### <u>HSVP10 - NOR - H12D - DE - PN - P - 00</u>

								Bodies	1		
High Pressure Solenoid Valve, Normally-Open, Pilot-Operated, with Erec Beyarce Elow							Code	Port & Material	Body Nom	enclature	
							00	Cartridge only	No Body		
10 Size, Poppet Type		Coil Ve	oltage	_J				S3B	3/8 BSP. Ductile	SDC10-2-	53B
		Code	Description	n				C4P	1/2 BSB, Ductile	SDC10-2-5	S4B
		ноо	No Coil		34B 1/2 BSF, Du		1/2 BSF, Ductile	, CDC10 2 C15			
			12 VDC					565	#6 SAE, Ductile	30010-2-0	303
			24 VDC	-				S8S	#8 SAE, Ductile	SDC10-2-	585
		11240	24 VDC					*** Alun	ninium bodies avail	able for low	er pressur
Coil Te	Coil Termination							applicat	tion. Please consult	t factory for	details.
Code	Code Description			IP Rating		L	Seal C	al Option			
00 No Coll			-	1		Code		Seal Material	Seal kit		
FL Flying Lead			IP 69k			P	Polyurethane Single Seal 11132135			5	
			ID POL			V	Viton		3540008	19	
			IF OSK	-	Manua		4		1		
AS	AS AMP SuperSeal 1.5 and Metri-Pack 150 type 1			IP 69k		Manua		16			
ASDB AMP Super Seal with Diode Bidirectional			IP 69k		Code	Description					
DEDB Deutsch with Diode Bidirectional			IP 69k	1	PN	Push Pin					
FLDB	FLDB Flying Lead with Diode Bidirectional			IP 69k	1	OPS	Push Pin M/O Nut for Protection & Actuation				
					1	PAT	Push and Twist				



Solenoid Valves Catalog 2-Way Poppet HSVP12-NOR



### **OPERATION**

This is a normally-open, pilot-operated, poppet-type 12-size solenoid valve with free reverse flow. When de-energized the valve allows flow from port 1 to 2 and from port 2 to 1. When energized, the pilot poppet closes allowing the valve to act as a check valve flowing from port 1 to port 2, while blocking flow from port 2 to 1. This valve comes standard with a push pin type manual override.

### **APPLICATIONS**

This is a low leakage valve designed for use in load holding applications or as a general purpose diverter or dump valve.

This solenoid valve is a technical replacement for CP501-4.



Shown with Standard H16 Coil, Deutsch Connector

# SV - Solenoid Valves HSVP12-NOR

### SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*				
Rated flow at 7 bar	114 l/min				
[100 psi]	[30 US gal/min]				
Leakage	6 drops/min @				
	Rated pressure				
Weight	0.67 kg [1.47 lb]				
Cavity	CP12-2				
Standard Coil	H16 29 Watt				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

### **PERFORMANCE CURVES**



Pressure drop

### **SCHEMATIC**



SV - 72


Solenoid Valves Catalog 2-Way Poppet HSVP12-NOR

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DIMENSIONS

Cross-sectional view





**EXAMPLE CIRCUITS** 



		HSVF	212 - NOR	- H1	2D - E	DE - P	'N - E	3 - 00	Bodie	s			
						$\top$ $\neg$	Γ -	$\Gamma \top$	Code	Ports &	Material	Body Nom	enclature
ressure	Solenoid Valve —								00	Cartridg	e Only	No Body	
lly-Open	, Pilot Operated,								10S	#10 SA	E, AL	CP12-2-108	3
Reverse	Flow, 12 Size,	Coil Vo	ltage						S10S	#10 SAE	E, DUCTIL	E CP12-2-S10	)S
t Type		Code	Description						12S	#12 SA	E, AL	CP12-2-128	3
		H00	No Coil						S12S	#12 SA	E, DUCTIL	E CP12-2-S12	2S
		H12D	12 VDC						4B	1/2 BSF	, AL	CP12-2-4B	
		H24D	24 VDC						S4B	1/2 BSP	DUCTILE	CP12-2-S4	В
	minotion								6B	3/4 BSF	, AL	CP12-2-6B	
Coll le	Description				41				S6B	3/4 BSF	, DUCTILI	E CP12-2-S6	3
Code	Description			IP Ra	ting	-			**Alum	inum bodies a	e to be used	for lower pressur	es less thar
00	No Coil			-					210 ba	r (3,000 psi)	Seal Op	tion	
FL	Flying Lead			IP69K	(						Code	Seal Material	Seal Kit
DE	Deutsch			IP69K	(						В	Buna	120017
AS	AMP Super Seal 1	.5 & Metri	Pack 150 type 1	IP69ł	<			Monual	Override		V	Viton	120018
ASDB	AMP Super Seal w	ith Diode B	Bidirectional	IP69K	(		_		Dvernue	<b>,</b>			7
DEDB	Deutsch with Diode	Bidirectio	nal	IP69K	(	I	-	Code	Descript	lon			-
FLDB	Flving Lead with D	iode Bidire	ctional	IP69K	(			PN	Push Pin				4
	, , , , , , , , , , , , , , , , , , , ,							OPS	Push Pin	M/O Nut fo	r Protectio	n & Actuation	
								PAT	Push and	l Twist			
	ressure S Ily-Open Reverse It Type Coil Ter Code 00 FL DE AS ASDB DEDB FLDB	ressure Solenoid Valve — Ily-Open, Pilot Operated, Reverse Flow, 12 Size, I Type Coil Termination Code Description 00 No Coil FL Flying Lead DE Deutsch AS AMP Super Seal 1 ASDB AMP Super Seal with Diod FLDB Flying Lead with D	HSVF ressure Solenoid Valve Ily-Open, Pilot Operated, Reverse Flow, 12 Size, t Type Coil Ve H00 H12D H24D Coil Termination Code Description 00 No Coil FL Flying Lead DE Deutsch AS AMP Super Seal 1.5 & Metri ASDB AMP Super Seal with Diode E DEDB Deutsch with Diode Bidirection FLDB Flying Lead With Flyi	HSVP12 - NOR         ressure Solenoid Valve         Ily-Open, Pilot Operated,         Reverse Flow, 12 Size,         t Type         Coil Voltage         Coil Voltage         Code       Description         H12D       12 VDC         H24D       24 VDC         Coll Termination         Code         Description         00       No Coil         FL       Flying Lead         DE       Deutsch         AS       AMP Super Seal 1.5 & Metri Pack 150 type 1         ASDB       AMP Super Seal with Diode Bidirectional         DEDB       Deutsch with Diode Bidirectional         FLDB       Flying Lead with Diode Bidirectional	HSVP12 - NOR - H1         ressure Solenoid Valve         Ily-Open, Pilot Operated,         Reverse Flow, 12 Size,         t Type         Coil Voltage         Karting         H12D         12 VDC         H2D         24 VDC         Coil Termination         Coll Pescription         IP69K         DE       Deutsch         AMP Super Seal 1.5 & Metri Pack 150 type 1         IP69K         AS         AMP Super Seal vith Diode Bidirectional         IP69K         DE       Deutsch with Diode Bidirectional         IP69K         Flying Lead	HSVP12 - NOR - H12D - [         ressure Solenoid Valve         Ily-Open, Pilot Operated, Reverse Flow, 12 Size, It Type       Coil Voltage         Code       Description         H00       No Coil         H12D       12 VDC         H24D       24 VDC         Coil Termination         IP Rating         00       No Coil         FL       Flying Lead       IP69K         AS       AMP Super Seal 1.5 & Metri Pack 150 type 1       IP69K         ASDB       AMP Super Seal vith Diode Bidirectional       IP69K         DED       Deutsch with Diode Bidirectional       IP69K         FLDB       Flying Lead with Diode Bidirectional       IP69K	HSVP12 - NOR - H12D - DE - P         ressure Solenoid Valve         Ily-Open, Pilot Operated, Reverse Flow, 12 Size, It Type         Coil Voltage         Coil Voltage         It Type         Coil Voltage         Coil Voltage         It Type         Coil Voltage         Coil No Coil         H12D         H12D         It Type         Coil Termination         Code         Description         00       No Coil         FL       Flying Lead         DE       Deutsch         AS       AMP Super Seal 1.5 & Metri Pack 150 type 1         ASDB       AMP Super Seal with Diode Bidirectional         IP69K         DEDB       Deutsch with Diode Bidirectional         IP69K         FLDB       Flying Lead with Diode Bidirectional	HSVP12 - NOR - H12D - DE - PN - F         ressure Solenoid Valve         Ily-Open, Pilot Operated, Reverse Flow, 12 Size, t Type         Coil Voltage         Coil Termination         Code       Description         IP Rating         00       No Coil         FL       Flying Lead         DE       Deutsch         AS       AMP Super Seal 1.5 & Metri Pack 150 type 1         ASDB       AMP Super Seal with Diode Bidirectional         IP69K         FLDB       Flying Lead with Diode Bidirectional         IP69K	HSVP12 - NOR - H12D - DE - PN - B - 00 ressure Solenoid Valve Ily-Open, Pilot Operated, Reverse Flow, 12 Size, t Type Coil Voltage Coil Voltage Coil Voltage Coil Voltage Coil Voltage Coil H12D 12 VDC H24D 24 VDC Coil H12D 12 VDC H24D 24 VDC Coil Termination Code Description IP Rating 00 No Coil FL Flying Lead IP69K AS AMP Super Seal 1.5 & Metri Pack 150 type 1 IP69K ASDB AMP Super Seal 1.5 & Metri Pack 150 type 1 IP69K ASDB AMP Super Seal 1.5 & Metri Pack 150 type 1 IP69K ASDB AMP Super Seal vith Diode Bidirectional IP69K FLDB Flying Lead with Diode Bidirectional IP69K OPS PAT	HSVP12 - NOR - H12D - DE - PN - B - 00 Bodie ressure Solenoid Valve Ily-Open, Pilot Operated, Reverse Flow, 12 Size, t Type Coil Voltage Coil Pascription Coil Pascription PN Push Pin OPS Push Pin PAT Push and	HSVP12 - NOR - H12D - DE - PN - B - 00 Bodies Code Ports & 00 Cartridg 10S #10 SAE S10S #10 SAE S12S #12 SAE 4B 1/2 BSP S4B 1/2 BSP S4B 1/2 BSP 6B 3/4 BSP S6B 3/4 BSP S6B 3/4 BSP S6B 3/4 BSP S6B 3/4 BSP S6B 3/4 BSP S10 bar (3,000 psi) FL Flying Lead Deutsch AS AMP Super Seal 1.5 & Metri Pack 150 type 1 IP69K ASDB AMP Super Seal 1.5 & Metri Pack 150 type 1 IP69K ASDB AMP Super Seal 1.5 & Metri Pack 150 type 1 IP69K FLDB Flying Lead with Diode Bidirectional IP69K FLDB Flying Lead with Diode Bidirectional IP69K	HSVP12 - NOR - H12D - DE - PN - B - 00       Bodies         code       Ports & Material         00       Cartridge Only       105       #10 SAE, AL         100       No Coil       105       #10 SAE, AL         112       #10 SAE, AL       S108       #10 SAE, AL         112       #112 D       12 VDC       125       #12 SAE, AL         112       #12 SAE, AL       S125       #12 SAE, AL         112       #12 VDC       H24D       24 VDC       4B       1/2 BSP, AL         112       #12 SAE, AL       S4B       1/2 BSP, AL       S4B       3/4 BSP, AL         112       #12 SAE, DUCTILE       6B       3/4 BSP, AL       S6B       3/4 BSP, AL         112       #12 SAE, AL       S4B       1/2 BSP, AL       S6B       S4B       1/2 BSP, DUCTILE         112       #12 SAE, DUCTILE       6B       3/4 BSP, AL       S6B       S6B       SeB OP         112       Flying Lead       IP69K       Post & Manual Overrides       V       S6B       SeB OP         112       Flying Lead with Diode Bidirectional       IP69K       Post & Manual Overrides       V       V         112       Bidirectional	HSVP12 - NOR - H12D - DE - PN - B - 00       Bodies         Code Ports & Material Body Nome         No Cole       Ports & Material Body Nome       00       Cartridge Only       No Body         105       #10 SAE, AL       CP12-2-105         Stops       #12 SAE, AL       CP12-2-105         Stops       #12 SAE, AL       CP12-2-105         Stops       #12 SAE, AL       CP12-2-24B         Stops       #12 SAE, AL       CP12-2-24B         Stops       3/4 BSP, AL       CP12-2-28B         Stops       Stops       Stops       Stops         Monual Overrides       P12-2-28B       Stops       Stops         Stops       Manual Overrides       V       Viton         X-Aluminum bodies are to be used



Solenoid Valves Catalog 2-Way Poppet HSVP16-NOR



## **OPERATION**

This is a normally-open, pilot-operated, poppet-type 16-size solenoid valve with free reverse flow. When de-energized the valve allows flow from port 1 to 2 and from port 2 to 1. When energized, the pilot poppet closes allowing the valve to act as a check valve flowing from port 1 to port 2, while blocking flow from port 2 to 1. This valve comes standard with a push pin type manual override.



## **APPLICATIONS**

This is a low leakage valve designed for use in load holding applications or as a general purpose diverter or dump valve.

This solenoid valve is a technical replacement for CP502-4.

Shown with Standard H16 Coil, Deutsch Connector

## SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar	152 l/min
[100 psi]	[40 US gal/min]
Leakage	6 drops/min @
	Rated pressure
Weight	0.73 kg [1.61 lb]
Cavity	SDC16-2
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

## **PERFORMANCE CURVES**



Pressure Drop 26 cSt [121 SUS] hyd.oil at 50<sup>†</sup>C [122 <sup>†</sup>F]

SCHEMATIC







## DIMENSIONS

Cross-sectional view



## **EXAMPLE CIRCUITS**



			HSVE	216 - NOR	- H1	2D - I	DE - F	PN - I	B - 00	Bodies					
							Τ -	Г	гΤ	Code	Ports &	Materia	Body No	omencla	ature
High I	Pressure	Solenoid Valve								00	Cartridg	e Only	No Body	,	
Norm	ally-Open	, Pilot Operated,								12S	#12 SA	E, AL	SDC16-	2-12S	
Free	Reverse	Flow, 16 Size,	Coil Vo	oltage						S12S	#12 SA	E, DUCTI	LE SDC16-	2-S12S	
Poppe	et Type		Code	Description —						16S	#16 SA	E, AL	SDC16-	2-16S	
			H00	No Coil						S16S	#16 SA	E, DUCT	LE SDC16-	2-S16S	
			H12D	12 VDC						6B	3/4 BSF	P, AL	SDC16-	2 <b>-</b> 6B	
			H24D	24 VDC						S6B	3/4 BSF	,DUCTIL	E SDC16-2	2-S6B	
		rmination								8B	1 BSP, .	AL	SDC16-	2-8B	
	Code	Description			ID Dat	ting				S8B	1 BSP,	DUCTILE	SDC16-	2-S8B	
	00	No Coll			IF Kat		_			**Aluminu	m bodies a	re to be use	ed for lower pres	sures es	ss than
	00				-					210 bar (3	3,000 psi)	Seal O	otion		
	FL	Flying Lead			IP69K							Code	Seal Mater	ial Sea	l Kit
	DE	Deutsch			IP69K	ζ						В	Buna	1200	019
	AS	AMP Super Seal 1	.5 & Metri	Pack 150 type 1	IP69K	<			Manual (	Worrldoe		V	Viton	1200	020
	ASDB	AMP Super Seal w	ith Diode I	Bidirectional	IP69K			Іг	Mariual	Decented				<u> </u>	
	DEDB	Deutsch with Diode	e Bidirectio	onal	IP69K	(		4	Code	Descriptio	n				
	FLDB	Flying Lead with D	iode Bidire	ectional	IP69K			L	PN	Push Pin					
	L							L	OPS	Push Pin N	//O Nut fo	or Protect	ion & Actuat	on	
									PAT	Push and	Twist				



Solenoid Valves Catalog 2-Way Poppet HSVP20-NOR

## **OPERATION**

This is a normally-open, pilot-operated, poppet-type 20-size solenoid valve with free reverse flow. When de-energized the valve allows flow from port 1 to 2 and from port 2 to 1. When energized, the pilot poppet closes allowing the valve to act as a check valve flowing from port 1 to port 2, while blocking flow from port 2 to 1. This valve comes standard with a push pin type manual override.

## **APPLICATIONS**

This is a low leakage valve designed for use in load holding applications or as a general purpose diverter or dump valve.

This solenoid valve is a technical replacement for CP503-4



Shown with Standard H16 Coil,

Deutsch Connector

## SCHEMATIC



## SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar	265 l/min
[100 psi]	[70 US gal/min]
Leakage	6 drops/min @
	Rated pressure
Weight	1.04 kg [2.29 lb]
Cavity	SDC20-2
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

## PERFORMANCE CURVES







Solenoid Valves Catalog 2-Way Poppet HSVP20-NOR

Ъľ

## DIMENSIONS

mm [in]

Cross-sectional view



## **EXAMPLE CIRCUITS**



## **ORDERING INFORMATION**

HSVP20 - NOR - H12D - DE - PN - B - 00 Bodies Code Ports & Material Body Nomenclature

										0000	1 0110 0	matorial	bouy non	lonolataro
										00	Cartridge	Only	No Body	
h Pressure	Solenoid Valve —								-[	16S	#16 SAE,	AL	SDC20-2	16S
mally-Oper	, Pilot Operated,									S16S	#16 SAE,	DUCTILE	SDC20-2-	S16S
Free Reverse Flow, 20 Size, Coil Voltage Oppet Type Code Description								[	20S	#20 SAE,	AL	SDC20-2-	6B	
				J				Ì	S20S	#20 SAE,I	DUCTILE	SDC20-2-	S6B	
		H00	No Coil						Ì	8B	1 BSP, AL	-	SDC20-2-	-8B
		H12D	12 VDC						Ī	S8B	1 BSP, DI	JCTILE	SDC20-2-	S8B
		H24D	24 VDC						ł	10B	1 1/4 BSF	, AL	SDC20-2-	10B
Coji Te	rmination									S10B	1 1/4 BSP	, DUCTIL	E SDC20-2	-S10B
Code	Description			IP Ra	ting	]				**AlumIn	um bodles are	e to be use	d for lower pressu	ires less than
00	No Coil			-						210 bar (	3,000 psi)	Seal O	otion	
FL	Flving Lead			IP69K								Code	Seal Materia	I Seal Kit
DE	Deutsch			IP69K								В	Buna	120011
AS	AMP Super Seal	1.5 & Metri	Pack 150 type 1	IP69k	(			Manual	l Ov	errides		V	Viton	120012
ASDB	AMP Super Seal v	with Diode I	Bidirectional	IP69K	(	1	F	Code	D	escripti	on			7
DEDB	Deutsch with Diod	le Bidirectic	na	IP69K	(			PN	P	ush Pin				7
FLDB Flying Lead with Diode Bidirectional			IP69K	(			OPS	P	ush Pin I	M/O Nut fo	r Protecti	on & Actuation	1	
L	1							PAT	P	ush and	Twist			7



Solenoid Valves Catalog 2-Way Spool SV08-22-01



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 2-Way, Normally Open, Push-Type. When de-energized, the SV08-22-01 allows flow in both directions. When energized, flow is blocked in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve comes standard with a one-direction, push-pin manual override.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.

Shown with Standard Coil, Deutsch Connector

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	16 l/min
[100 psi]	[4 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# PERFORMANCE CURVES



## SCHEMATIC



#### Operating envelope









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SV - Solenoid Valves SV08-22-01



Solenoid Valves Catalog 2-Way Spool HSV10-22-01



## **OPERATION**

This is a Spool Type, 2-Position, 2-Way, Normally Open, Push-Type, 10-size Solenoid Valve. When de-energized, the HSV10-22-01 allows flow in both directions. When energized, flow is blocked in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.



Shown with Standard H16 Coil, Deutsch Connector

#### SCHEMATIC



# SPECIFICATIONS

**SV - Solenoid Valves** 

HSV10-22-01

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar	50 l/min
[100 psi]	[13 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-2
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

## **PERFORMANCE CURVES**









## Operating Envelope



Solenoid Valves Catalog 2-Way Spool HSV10-22-01 **-**





Solenoid Valves Catalog 2-Way Spool SV10-22-01



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 2-Way, Normally Open, Pull-Type, 10-size. When de-energized, the SV10-22-01 allows flow in both directions. When energized, flow is blocked in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 120,000 cycles. In case of inlet from port 2 this value can be increased to 500,000 cycles.



Shown with Robust Coil, Deutsch Connector

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	27 l/min
[100 psi]	[7 US gal/min]
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**

Pressure drop



#### Operating envelope



**SCHEMATIC** 









## **EXAMPLE CIRCUITS**







0)/40	~~			~~				
SV10	- 22 -	01 - 12D - DE	= - B - (	υUr	Code	Body a	nd Ports	Body Nomenclature
					00	Cartric	dge Only	No Body
1	1				6S	#6 S	AE, AL	CP10-2-6S
					8S	#8 S	AE, AL	CP10-2-8S
Solenoid Valve, 10 Size					S8S	#8 SA	E, Steel	CP10-2-S8S
Cavity					DG3B	3/8 E	BSP, AL	SDC10-2-DG3B
					DG4B	1/2 E	BSP, AL	SDC10-2-DG4B
22: 0 Decition 0 Marcol Trans					S4B	1/2 BS	SP, Steel	CP10-2-S4B
2 Position, 2 way, Spool Type						al Carla	Material	Cool Kito
					50	ar Code	Naterial Rupp N	3E4004010
01:		L			⊢	в	Buna-N	354004019
Schematic: Normally Open,		<u> </u>				v	VILUII	554005419
Pull Type		Coil Termination	Standard Coil		Robust Coil			
Coil Voltage Standard Coil	Robust Coil	con remindrion	Code	IP Rating	Code	IP Ratin	g	
Code	Code	No Coil	00		00	-		
No Coil, with nut* 00	R00	Amp Junior	AJ	IP67	-	-		
10 VDC 10D	R10D	Amp Junior with Diode	AID	IP67	-	-		
12 VDC 12D	R12D	AMP SuperSeal 1 5	AS	IP67	ΔS	IP69K		
20 VDC 20D	R20D	AMP SuperSeal with Diode	ASD	IP67	ASDB	IP69K	-	
24 VDC 24D	R24D	Deutsch	DE	IP67	DE	IP69K		
110 VAC** 110A	-	Deutsch with Diode	DED	IP67	DEDB	IP69K		
220 VAC** 220A	-	Elving Leads	FI	IP65	FI	IP69K	-	
* Standard coil - plastic nut and O-ri	nas.	Elving Leads with Diode	FLD	IP65	FLDB	IP69K	-	
R-coil – steel nut P/N 173804910		DIN 43650	DN	IP65			-	
(no coil O-rings needed)		Metri-Pack 150 Type 2		05	M3	IP69K	-	
** DIN and a sub-sector at the stiff as a solution						0510	-	



Solenoid Valves Catalog 2 Way, 2 Position Spool SV15-22-01



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 2-Way, Normally Open, Pull-Type, High Flow (15-Size). When de-energized, the SV15-22-01 allows flow in both directions. When energized, flow is blocked in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/NA and uses a metric M33x2 cavity (NCS 12/2) for high flow capability.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 100,000 cycles. In case of inlet from port 2 this value can be increased to 300,000 cycles.



Shown with Standard Coil, DIN Connector

### SCHEMATIC



## **SPECIFICATIONS**

Rated Pressure*	210 bar [3000 psi]**
Maximum Rated Flow at 7 bar	60 l/min
[100 psi]	[16 US gal/min]
Weight including coil	0.65 kg [1.65 lbs]
Cavity	NCS 12/2
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

## **PERFORMANCE CURVES**



## Operating envelope





## Solenoid Valves Catalog 2 Way, 2 Position Spool SV15-22-01





## **EXAMPLE CIRCUITS**



# 

Cylinder regeneration circuit

Energize 2-way spool valve for faster extenstion





## Solenoid Valves Catalog 2-Way Spool SV08-22-02



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 2-Way, Normally Closed, Pull-Type. When de-energized, the SV08-22-02 blocks flow in both directions. When energized, the spool shifts to allow flow in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond guickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.



Shown with Robust Coil, Deutsch Connector

2)

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	14 l/min
[100 psi]	[4 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

**PERFORMANCE CURVES** 

Pressure drop

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



Operating envelope

**SCHEMATIC** 



SV - 86



## **EXAMPLE CIRCUITS**



Two-speed motor circuit



c	<u>ممر ب</u>	<u></u>	າດ 4.0	ם ח		р	<u></u>					
<u>3</u>	<u> </u>	- <u>22</u> - <u>(</u>	<u>JZ - IZ</u>	<u>ים</u> - <u>ט</u>	<u> </u>	<u>D</u> -	<u> </u>	Г	Code	Body	and Ports	Body Nomenclature
						-			00	Cartri	dge Only	No Body
									4S	#4 5	SAE, AL	CP08-2-4S
									6S	#6 \$	SAE, AL	CP08-2-6S
Solenoid Valve, 08									S6S	#6 S/	AE, Steel	CP08-2-S6S
Size Cavity									DG2B	1/4	BSP, AL	SDC08-2-DG2B
									DG3B	3/8	BSP, AL	SDC08-2-DG3B
22:									S3B	3/8 B	SP, Steel	CP08-2-S3B
2 Position, 2 Way, Sp	ool Type											
						· · · · ·				Seal Code	Material	Seal Kits
03:										В	Buna-N	354003119
Schematic: Normally		-								v	Viton	354003619
Closed, Pull Type											-	
Coil Voltago	Standard Coil	Roburt Coil	Coi	I Termination		Standa	rd Coil	IP Rating	Robust Coi	IP Rating		
con voltage	Code	Code				Co	de		Code			
No Coil with put*	00	POO		1	lo Coil	00	)	-	00	-		
10 VDC	100	R10D		Amp	Junior	A	J	IP67	-			
10 VDC	100	RIUD	An	np Junior with	Diode	AJ	D	IP67				
12 VDC	12D	R12D		AMP SuperS	eal 1.5	A	s	IP67	AS	IP69K		
20 VDC	200	RZOD	AMP S	uperSeal with	Diode	AS	D	IP67	ASDB	IP69K		
24 VDC	24D	R24D		D	eutsch	D	E	IP67	DE	IP69K		
110 VAC**	110A	-		Deutsch with	Diode	DE	D	IP67	DEDB	IP69K		
220 VAC**	220A	-		Flying	Leads	FI	L	IP65	FL	IP69K		
* Standard coil - plastic	c nut and O-rir	ngs	Flyi	ng Leads with	Diode	FL	D	IP65	FLDB	IP69K		
R-coil – steel nut P/N	173800539			DIN	43650	DI	N	IP65	-	-		
(no coil O-rings need	ed)		M	etri-Pack 150	Type 2		-	-	M3	IP69K		
** DIN only - external re	ectifier needeo	ł	Metri-	Pack 150 with	Diode		-	-	M3DB	IP69K		



Solenoid Valves Catalog 2-Way Spool SV10-22-02

## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 2-Way, Normally Closed, Push-Type, 10-size. When de-energized, the SV10-22-02 blocks flow in both directions. When energized, the spool shifts to allow flow in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 120,000 cycles. In case of inlet from port 2 this value can be increased to 500,000 cycles.



Shown with Standard Coil, Deutsch Connector

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	35 l/min
[100 psi]	[9 US gal/min]
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

## **PERFORMANCE CURVES**



Pressure drop

# SCHEMATIC



## Operating envelope







Solenoid Valves Catalog 2-Way Spool HSV10-22-02



## **OPERATION**

This is a Spool Type, 2-Position, 2-Way, Normally Closed, Pull-Type, 10-size Solenoid Valve. When de-energized, the HSV10-22-02 blocks flow in both directions. When energized, the spool shifts to allow flow in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.



Shown with Standard H16 Coil, Deutsch Connector

## SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar	50 l/min
[100 psi]	[13 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-2
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).





## PERFORMANCE CURVES







## **ORDERING INFORMATION**

			HSV1	0 - 22 - 02	- H1	2D - D	)E - X	(C - I	P - 0(	)					
		-					-	Γ.	гΤ	-	Bodies				
High Pre	essure t	Solenoid Valve									Code	Por	ts & Material	Body Nor	nenclature
Normally	y-Close	d, Direct Acting,	Call Va						L		00	Car	tridge Only	No Body	
10 Size,	Spool	Туре		litage							S3B	3/8	BSP, Ductile	SDC10-2-	-S3B
			Code	Description							S4B	1/2	BSP. Ductile	SDC10-2-	S4B
			00	No Coil							S6S	#6	SAF Ductile	SDC10-2	S6S
			H12D	12 VDC							282	#9	SAE Ductile	SDC10-2	282
			H24D	24 VDC							303	#0	SAE, Ducule	50010-2	-303
											Alun	ninum	Bodies available	e for lower	pressure
	Coil Te	rmination									appli	icatio	ns. Please cons	ult factory f	or details.
	Code	Description			IP Ra	ting	1								
	00	No Coil			-						Sea	al Op	tion		
Ī	FL	Flying Lead			IP69k	$\langle \rangle$					Co	de	Seal Material		Seal Kit
h	DE	Deutsch			IP69k						P		Polyurethane Si	ngle Seal	11132135
E	AS	AMP Super Seal 1.5	5 & Metri	Pack 150 type 1	IP69										
H		AMP Super Seal wit	th Diode I	Bidirectional	IDEOK	$\frac{1}{c}$			Manual	Overr	des				
H		AMP Super Seal W	Didina atia	Bidirectional	IDCOM	÷		Ч	Code	Desc	ription				
Ľ	DEDB	Deutsch with Diode	Diurectio	inan in	12096			ŀ	XC	No M	anual Ov	erride	2		
Ľ	FLDB	Flying Lead with Die	ode Bidire	ectional	IP69k	(		L	~~	1.10 10		0.710	<i>,</i>		

ப



## Solenoid Valves Catalog 2 Way, 2 Position Spool SV15-22-02



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 2-Way, Normally Closed, Pull-Type, High Flow (15-Size). When de-energized, the SV15-22-02 blocks flow in both directions. When energized, the spool shifts to allow flow in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/NC and uses a metric M33x2 cavity (NCS 12/2) for high flow capability.

## **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 100,000 cycles. In case of inlet from port 2 this value can be increased to 300,000 cycles.



Shown with Standard Coil, DIN Connector

## SCHEMATIC



### SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	60 l/min
[100 psi]	[16 US gal/min]
Weight including coil	0.65 kg [1.65 lbs]
Cavity	NCS 12/2
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

## **PERFORMANCE CURVES**



## Operating envelope



SV - Solenoid Valves SV15-22-02



## Solenoid Valves Catalog 2 Way, 2 Position Spool SV15-22-02







Solenoid Valves Catalog 2-Way Spool SV08-22-03



Solenoid Valve, Spool Type, 2-Position, 2-Way, Normally Open, Pull-Type. When de-energized, the SV08-22-03 allows flow in both directions. When energized, flow is blocked in both directions. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

Shown with Robust Coil, Deutsch Connector

## APPLICATIONS

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.

## SPECIFICATIONS

JI LCII ICATIONS	
Rated pressure*	230 bar [3300 psi]**
Maximum flow at	12 l/min
rated pressure	[3.2 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

## PERFORMANCE CURVES



**SCHEMATIC** 





#### Operating envelope

5



**-**

## DIMENSIONS

Cross-sectional view





Pump Unloading

## **EXAMPLE CIRCUITS**

Cylinder regeneration circuit



Energize 2-way spool valve for faster extenstion





## Solenoid Valves Catalog 3-Way, 2-Position Spool SV08-23-01

## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, Normally Closed, Push-Type. When de-energized, the SV08-23-01 allows flow from port 1 to port 2, while port 3 is blocked. When energized, flow is allowed from port 3 to port 1, while port 2 is blocked. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve comes standard with a one-direction, push-pin manual override.

## **APPLICATIONS**

These spool-type valves are commonly used in a selector circuit, or as an on/off pilot control for a directional spool valve. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.



Shown with Standard Coil, Deutsch Connector

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	17 l/min
[100 psi]	[4.5 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

## **PERFORMANCE CURVES**



## **SCHEMATIC**



## Operating envelope





# Solenoid Valves Catalog 3-Way, 2-Position Spool SV08-23-01





## **EXAMPLE CIRCUITS**

## Create a Low Pressure 4-Way, 3-Position Directional Control Valve



# On/Off Pilot Control for Directional Spool Valve



<b>0</b> ) (0.0	~~ ~			- /	~ -			
SV08 -	- 23 - 0	1 - 12D - DE -	· PB -	В-(	JO г_	Code Bo	ody and Ports	Body Nomenclature
<u></u>	<u> </u>	<u> </u>	<u> </u>		— IL	<b>00</b> C	artridge Only	No Body
1	1 1	1 I I	1			4S	#4 SAE, AL	CP08-3-4S
						6S	#6 SAE, AL	CP08-3-6S
Solenoid Valve, 08						S6S #	6 SAE, Steel	CP08-3-S6S
Size Cavity						SE2B	1/4 BSP, AL	SDC08-3-SE2B
0.20 00000						SE3B	3/8 BSP, AL	SDC08-3-SE3B
23.						S3B #	6 SAE, Steel	CP08-3-S3B
2 Position 3 Way Spool Type								
2 roshion, o may, opoor type						Seal Co	de Material	Seal Kits
01:						В	Buna-N	354003210
Schematic: Push Type			-		1	v	Viton	354003819
conomiation i aon i jpo								
					L L		Code	Manual Override
Coil Voltage Standard Coil	Robust Coil	Coil Termination	Standard Coil	IP Rating	Robust Coil	IP Rating	Omit	Push Pin (Standard)
Code	Code		Code		Code		PB	Push Button
No Coil, with nut* 00	R00	No Coil	00	-	00	-	CDC	Screw Style
10 VDC 10D	R10D	Amp Junior	AJ	IP67	-	-	3P3	(Push-Type Valve)
12 VDC 12D	R12D	Amp Junior with Diode	AJD	IP67	-	-		
20 VDC 20D	R20D	AMP SuperSeal 1.5	AS	IP67	AS	IP69K		
24 VDC 24D	R20D	AMP SuperSeal with Diode	ASD	IP67 ASDB		IP69K		
110 VAC** 1104	N24D	Deutsch	DE	IP67	DE	IP69K		
220 VAC** 2204		Deutsch with Diode	DED	IP67	DEDB	IP69K		
* Oten dead anily algorithmut and O riv	-	Flying Leads	FL	IP65	FL	IP69K		
<ul> <li>Standard coll – plastic nut and U-rir</li> <li>B apil, steel put D/N 173800530</li> </ul>	ig	Flying Leads with Diode	FLD	IP65	FLDB	IP69K		
(no poil O ringo poodod)		DIN 43650	DN	IP65	-	-		
(no con O-nings needed)								
TO LUNI ODIV OVIORDOL FOOTITIOF DOODOC		Metri-Pack 150, Type 2	-	-	M3	IP69K		



Solenoid Valves Catalog 3-Way, 2-Position Spool SV10-23-01



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, Normally Closed, Pull-Type. When de-energized, the SV10-23-01 allows flow from port 1 to port 2, while port 3 is blocked. When energized, flow is allowed from port 3 to port 1, while port 2 is blocked. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve comes standard with a one-direction, push-pin manual override.

## **APPLICATIONS**

These spool-type valves are commonly used in a selector circuit, or as an on/off pilot control for a directional spool valve. Solenoid spooltype valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	28 l/min
[100 psi]	[7 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

## **PERFORMANCE CURVES**





Shown with Robust Coil, Metri-Pack Type 2 Connector

**SCHEMATIC** 



#### Operating envelope





# Solenoid Valves Catalog 3-Way, 2-Position Spool SV10-23-01





## **EXAMPLE CIRCUITS**



	~ ~ ~		a at ta		<b>-</b>		-	<u>.</u>				
	SV	10 -2	3 - 01 - 12	- ט	DE -	ΡВ -	- B - C	)U —	Code	Body a	nd Ports	Body Nomenclature
				_				_	00	Cartric	lge Only	No Body
		1	I I I						6S	#6 S	AE, AL	CP10-3-6S
Solonoid Valvo 10 Si	70							_	8S	#8 S	AE, AL	CP10-3-8S
Cavity		J							<b>S8S</b>	#8 SA	E, Steel	CP10-3-S8S
ounty									DG3B	3/8 E	SP, AL	SDC10-3-DG3B
									DG4B	1/2 8	SP, AL	SDC10-3-DG4B
23:									S4B	1/2 BS	P, Steel	CP10-3-S4B
2 Position, 3 Way, Sp	ool Type											
										Seal Code	Materia	I Seal Kits
01.										В	Buna-N	354004210
Schomatic: Buch Typ	•	_								V	Viton	354003719
Schematic. Fush Typ	e									1		
			Coil Termination		Standard Coil	IP Rating	Robust Coil	IP Rating			Code	Manual Override
Coil Voltage	Standard Coil	Robust Coil			Code		Code				Omit	Push Pin (Standard)
con voltage	Code	Code	N	o Coil	00	-	00	-			PB	Push Button
No Coil with put*	00	POO	Amp J	unior	AJ	IP67	-	-			SPS	Screw Style
10 VDC	100	R10D	Amp Junior with [	Diode	AJD	IP67	-	-				(Push-Type Valve)
10 VDC	100	RIOD	AMP SuperSe	al 1.5	AS	IP67	AS	IP69K			OPS	Push Pin Nut for
12 VDC	120	RIZD	AMP SuperSeal with I	Diode	ASD	IP67	ASDB	IP69K			DAT	Protection & Actuation
20 VDC	200	RZOD	De	utsch	DE	IP67	DE	IP69K			PAI	Push and Twist
24 VDC	24D	R24D	Deutsch with [	Diode	DED	IP67	DEDB	IP69K				
110 VAC**	110A	-	Flying I	_eads	FL	IP65	FL	IP69K				
220 VAC**	220A	-	Flying Leads with [	Diode	FLD	IP65	FLDB	IP69K				
* Standard coil - plastic	nut and O-rir	ngs	DIN 4	3650	DN	IP65	-	-				
R-coil – steel nut P/N	173804910		Metri-Pack 150 T	ype 2	-	-	M3	IP69K				
(no coil O-rings neede	d)		Metri-Pack 150 with I	Diode	-	-	M3DB	IP69K				
** DIN only - external re	ectifier needeo	1										



Solenoid Valves Catalog 3-Way, 2-Position Spool HSV10-23-01



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, Normally Closed, Pull-Type. When de-energized, the HSV10-23-01 allows flow from port 1 to port 2, while port 3 is blocked. When energized, flow is allowed from port 3 to port 1, while port 2 is blocked. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve comes standard with a one-direction, push-pin manual override.

## **APPLICATIONS**

These spool-type valves are commonly used in a selector circuit, or as an on/off pilot control for a directional spool valve. Solenoid spooltype valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.



Shown with Robust Coil, Metri-Pack Type 1 Connector

## SPECIFICATIONS

Rated pressure*	350bar [5075 psi]*
Rated flow at 7 bar	30 l/min
[100 psi]	[8 US gal/min]
Weight	0.57 kg [1.26 lb]
Cavity	SDC10-3
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **SCHEMATIC**



#### **PERFORMANCE CURVES**

## Pressure drop 26 cSt [121 SUS] hyd.oil at 50°C [122 °F]





Solenoid Valves Catalog 3-Way, 2-Position Spool HSV10-23-01



## DIMENSIONS

Cross-sectional view

mm [in]



## **EXAMPLE CIRCUITS**

# Selector circuit

To circuit A To circuit B



#### **ORDERING INFORMATION** HSV10 - 23 - 01 - H12D - DE - PN - P - 00 Bodles High Pressure Solenoid Valve, Port & Material Code **Body Nomenclature** This is a direct-acting, 2-position, 3-way, spool-type solenoid valve. 00 Cartridge only No Body Coll Voltage 3/8 BSP, Ductile SDC10-3-S3B Code Description S3B SDC10-3-S4B 1/2 BSP, Ductile No Coll S4B HOO SDC10-3-S6S H12D 12 VDC S6S #6 SAE, Ductile SDC10-3-S8S #8 SAE, Ductile H24D 24 VDC **S8S** \* Aluminium bodies available for lower pressure Coll Termination application. Please consult factory for details. Code Description IP Rating Seal Option 00 No Coil Code Seal Material Seal kit FL Flying Lead IP 69k Р Polyurethane Single Seal 11140113 DE Deutsch IP 69k Manual Override AS IP 69k AMP SuperSeal 1.5 and Metri-Pack 150 type 1 Description Code ASDB AMP Super Seal with Diode Bidirectional IP 69k PN Push Pin DEDB Deutsch with Diode Bidirectional IP 69k OPS Push Pin M/O Nut for Protection & Actuation FLDB Flying Lead with Diode Bidirectional IP 69k PAT Push and Twist

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Solenoid Valves Catalog 3-Way, 2-Position Spool CP521-21



## **OPERATION**

Solenoid Valve, Poppet Type, 2-Position, 3-Way, Pull-Type, 12-size. When de-energized, the CP521-21 allows flow from port 1 to port 2, while port 3 is blocked. When energized, flow is allowed from port 3 to port 1, while port 2 is blocked. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve comes standard with a one-direction, push-pin manual override.

## **APPLICATIONS**

These spool-type valves are commonly used in a selector circuit, or as an on/off pilot control for a directional spool valve. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.



#### **SCHEMATIC**



### SPECIFICATIONS

Rated pressure*	240 bar [3500 psi]
Rated flow at 7 bar	60 l/min
[100 psi]	[16 US gal/min]
Weight	0.80 kg [1.76 lb]
Cavity	CP12-3
Robust Coil	D14E 30 Watt
(Standard)	Robust Nut P/N 321567

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

## **PERFORMANCE CURVES**





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## **EXAMPLE CIRCUITS**

# Selector circuit

To circuit A To circuit B







Solenoid Valves Catalog 3-Way, 2-Position Spool SV08-23-02

## **OPERATION**

This is a direct-acting, 3-way, 2-position, spool-type solenoid valve. Recommend the following connections: port 3 to inlet, port 1 to actuator and port 2 to drain. When de-energized, the SV08-23-02 allows flow from port 1 to port 2, while port 3 is blocked. When energized, flow is allowed from port 3 to port 1, while port 2 is blocked. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

## **APPLICATIONS**

Common applications include on-off control of single-acting cylinders, clutches, or motors. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	10 l/min
[100 psi]	[3 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

## **PERFORMANCE CURVES**

Pressure drop 33 cSt [154 SUS] hyd.oil @ 38°C [100° F] psi bar 348 24 290 20 232 16 174 12 3 to 1 or 1 to 3 116 8 Eneraized 58 4 to 2 or 2 to 1 **De-Energized** 0 0 l/min 0 2 4 6 8 10 12 14 16 18 0.5 1.1 1.6 2.1 2.6 3.2 3.7 4.2 4.8 US gal/min

Shown with Robust Coil, Metri-Pack Type 2 Connector

## SCHEMATIC



#### psi bar 350 5000 300 4000 250 3000 200 150 2000 100 1000 50 0 0 16 20 l/min 12 4 8 ò 2 з 4 5 US gal/min Rated per NFPA T 2.6.1 at 1 million cycles ----- Rated per NFPA T 2.6.1 at reduced operational life 11141717 • Rev CA • August 2015

## Operating envelope





## Solenoid Valves Catalog 3-Way, 2-Position Spool SV08-23-02





mm [in]





## **EXAMPLE CIRCUITS**

## On/Off Pilot Control for **Directional Spool Valve**



#### On/Off Pilot Control for Single-Acting Cylinder, Clutch or Brake



Create a Low Pressure 4-Way, 3-Position Directional Control Valve



01	100	~~ /			-	<b>-</b>					
SV08 - 23 - 02 - 12D - DE -						B-00 m		Code	Body a	ind Ports	Body Nomenclature
								00	Cartrio	ige Only	No Body
	1	1	1	ı I		1 1		4S	#4 S	AE, AL	CP08-3-4S
								6S	#6 S	AE, AL	CP08-3-6S
Solenoid Valve, 08						_		S6S	#6 SA	E, Steel	CP08-3-S6S
Size Cavity								SE2B	1/4 E	BSP, AL	SDC08-3-SE2B
								SE3B	3/8 E	3SP, AL	SDC08-3-SE3B
aa.							S3B	#6 SA	E, Steel	CP08-3-S3B	
23: 2 Booition 2 Way Spo						1					
2 Position, 5 way, Spo	or type					-			Seal Code	Material	Seal Kits
									В	Buna-N	354003210
U2:			_						v	Viton	354003819
Schematic. Full Type											
			Coil	Termination	St	tandard Coil	IP Rating	Robust C	oil IP Ratir	Ig	
I						Code		Code		U	
Coil Voltage S	tandard Coil	Robust Coil		No Coil		00	-	00	-		
	Code	Code		Amp Junior		AJ	IP67	-			
No Coil, with nut*	00	R00	Amr	Amp Junior with Diode		AID	IP67				
10 VDC	10D	R10D		AMP SuperSeal 1.5		AS	IP67	AS	IP69K		
12 VDC	12D	R12D	AMP SU	AMP SuperSeal with Diode		ASD	IP67	ASDB	IP69k		
20 VDC	20D	R20D	74411 54	Deutsch		DF	IP67	DF	IP69k		
24 VDC	24D	R24D	r	Deutsch with Diode		DED	IP67	DEDR	IDEOK		
110 VAC**	110A	-		Flying Leads		FI	1065	FI	IDEOK		
220 VAC**	220A	-	Elvin	Elving Loads with Diodo		ELD.	1065	ELDR	IDEON	·	
* Standard coil - plastic put and O-rings				DIN 42650		DN	105	1100	IFUSK	-	
R-coil – steel nut P/N 173800539			Mot	Motri Back 150 Type 2		DIA	1F05	-	10604		
(no coil O-rings needed)			Netri D	Matri Dack 150 with Diada		-	-	IVIS	IPO9N	÷	
** DIN only external rec	Wetri-P	ACK 120 MILLI DIG	Jue	-	-	IVISDB	IP69K	<u> </u>			



## Solenoid Valves Catalog 3-Way, 2-Position Spool SV09-23-02



## APPLICATIONS

pressure drop in the system.

**OPERATION** 

Common applications include low-pressure on-off control of single-acting cylinders, clutches, or brakes. It is also optimal for hydraulically piloting large directional spool valves or for pilot cut-off valve of the control pressure of a valve or psiton pump. Refer to example circuits. Use the optional screen to help protect the actuator from large particles. Select the robust coil for those extreme environmental conditions – voltage extremes, high temperature, shock & vibration, chemicals, and/or water ingression.

Recommend the following connections: port 3 to inlet, port 1 to actuator and port 2 to drain. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. The 09 Series valve uses a 10 size cavity with an 08 size tube and coil, providing an optimal product for high flow and low pressure, while minimizing

This is a direct-acting, 3-way, 2-position, spool-type solenoid valve.

Shown with Standard Coil and Filter



Shown with Robust Coil and Filter

## SPECIFICATIONS

Rated pressure*	100 bar [1450 psi]					
Maximum flow at 7 bar	21 l/min [					
[100 psi]	6 US gal/min]					
Leakage	20 ml/mln [1.22 ln <sup>3</sup> /mln]					
	at rated pressure					
Weight	0.354 kg [0.78 lb]					
Cavity	SDC10-3					
Standard Coil	M13 20 Watt					
Robust Coil	R13 16 Watt					
	Robust Nut P/N 173800539 No coil					
	O-rings needed.					

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

## **PERFORMANCE CURVES**



## SCHEMATIC







## Solenoid Valves Catalog 3-Way, 2-Position Spool SV09-23-02





## **EXAMPLE CIRCUITS**





## Create a Low Pressure 4-Way, 3-Position Directional Control Valve



# On/Off Pilot Control for Directional Spool Valve



P103 111

ORDERING INFORMATION



P103 109

SV - Solenoid Valves SV09-23-02



## Solenoid Valves Catalog 3-Way, 2-Position Spool SV10-23-02



## **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, Normally Closed, Pull-Type. Recommend the following connections: port 3 to inlet, port 1 to actuator and port 2 to drain. When de-energized, the SV10-23-02 allows flow from port 1 to port 2, while port 3 is blocked. When energized, flow is allowed from port 3 to port 1, while port 2 is blocked. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

## **APPLICATIONS**

Common applications include on-off control of single-acting cylinders, clutches, or motors. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.



Shown with Standard Coil, Deutsch Connector

## SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	15 l/min
[100 psi]	[4 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.





## PERFORMANCE CURVES



## Operating envelope



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DIMENSIONS Cross-sectional view mm [in] 24 mm 9-11 N m [6-8 lbfft] 7/8-14 UNF-2A 2 StandardCoil Nut Kit P/N 17400021 (coil O-rings included) آمو ہے C 1 ~ Ø26.5 [1.04] لعن 12 3 CAL NOT SHOWN FOR CLARITY INSTALL O-RING (2) PLCS AS SHOWN - 5.0 [0.20] - 77.0 [3.03] -46.5 [1.83]

# **EXAMPLE CIRCUITS**



On/Off Pilot Control for

Directional Spool Valve









ć	N/40	<u></u>	00			00					
<u>.</u>	<u>5V IU</u>	- <u>23</u> -	<u> </u>	- <u>120 - DE</u>	- <u>E</u>	<u> </u>		Code	Body a	nd Ports	Body Nomenclature
_					_	- <u> </u>		00	Cartric	ige Only	No Body
	1							6S	#6 S	AE, AL	CP10-3-6S
								85	#8 S	AE, AL	CP10-3-8S
Solenoid Valve, 10 Siz	ie —							<b>S8S</b>	#8 SA	E, Steel	CP10-3-S8S
Cavity								SE3B	3/8 E	BSP, AL	SDC10-3-SE3B
								SE4B	1/2 E	BSP, AL	SDC10-3-SE4B
23:								S4B	1/2 BS	SP, Steel	CP10-3-S4B
2 Position, 3 Way, Sp	ool Type								aal Cada	Matorial	Cool Vite
								÷	P B	Dupp N	254004210
02:									D V	Dulld-IN	354004210
Schematic: Pull Type								-	V	VILOII	334003713
			Т	Coil Tormination		Standard Coil	ID Poting	Robust Coil	ID Pating	7	
Coil Voltage	Standard Coil	Robust Coil		contermination		Code	ii itating	Code	ii nating	·	
-	Code	Code	Ť	No	Coil	00	-	00	-		
No Coil, with nut*	00	R00	t	Amp Ju	inior	AJ	IP67	-	-		
10 VDC	10D	R10D	Ī	Amp Junior with Di	iode	AJD	IP67	-	-		
12 VDC	12D	R12D	Î	AMP SuperSeal	l 1.5	AS	IP67	AS	IP69K		
20 VDC	20D	R20D	Ī	AMP SuperSeal with Di	iode	ASD	IP67	ASDB	IP69K		
24 VDC	24D	R24D	I	Deu	ıtsch	DE	IP67	DE	IP69K		
110 VAC**	110A	-	Ī	Deutsch with Di	iode	DED	IP67	DEDB	IP69K		
220 VAC**	220A	-	Ī	Flying Le	eads	FL	IP65	FL	IP69K		
* Standard coil - plastic	nut and O-rir	nas:	I	Flying Leads with Di	iode	FLD	IP65	FLDB	IP69K		
R-coil – steel nut P/N	173804910		Ī	DIN 43	3650	DN	IP65	-	-	1	
(no coil O-rings need	ed)		Ī	Metri-Pack 150 Ty	pe 2	-	-	M3	IP69K	1	
** DIN only - external re	ectifier needeo	t	I	Metri-Pack 150 with Di	iode	-	-	M3DB	IP69K		





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, Normally Closed, Pull-Type. Recommend the following connections: port 3 to inlet, port 1 to actuator and port 2 to drain. When de-energized, the HSV10-23-02 allows flow from port 1 to port 2, while port 3 is blocked. When energized, flow is allowed from port 3 to port 1, while port 2 is blocked. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

Common applications include on-off control of single-acting cylinders, clutches, or motors. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. In case of inlet from port 2 this value can be increased to 500,000 cycles.



Shown with Robust Coil, Metri-Pack Type 1 Connector

# SPECIFICATIONS

Rated pressure*	350bar [5075 psi]*
Rated flow at 7 bar	28 l/min
[100 psi]	[7 US gal/min]
Weight	0.57 kg [1.26 lb]
Cavity	SDC10-3
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).





### **PERFORMANCE CURVES**

Pressure drop 26 cSt [121 SUS] hyd.oil at 50ካC [122 ካF]



Operating envelope





### DIMENSIONS

Cross-sectional view



# Ø 26.5 Ø 1.04 ] 1 COIL NOT SHOWN FOR CLARITY 12 3 5 [ 0.20 ] 77 46.5 [ 3.03 ] [ 1.831]

# **EXAMPLE CIRCUITS**

# On/Off Pilot Control for Directional Spool Valve



## Create a High Pressure 4-Way, 3-Position Directional Control Valve



On/Off Pilot Control for Single-Acting Cylinder, Clutch or Brake



		HSV10	- 23	- 02 - 1	<u>1120 - L</u>	우드 - 스	<u>c</u> - <u>i</u>	<u> 0</u>	5			
Hial	n Pressu	ire Solenold Valve.							Bodles			
This	is a dir	ect-acting, 2-position,							Code	Port & Material	Body Nomer	nclature
3-w	ay, spoo	l-type solenoid valve.	Coil V	oltage					00	Cartridge only	No Body	
			Code	Descriptio	n				S3B	3/8 BSP, Ductile	SDC10-3-S3	в
			HOO	No Co	1				S4B	1/2 BSP, Ductile	SDC10-3-S4	в
			H12D	12 VDC	1				S6S	#6 SAE, Ductile	SDC10-3-S6	S
			H24D	24 VDC	1				<b>S8S</b>	#8 SAE, Ductlle	SDC10-3-S8	S
	Coll Te	mination			_				*** Alur	ninium bodies avail	able for lower	pressur
	Code	Description			IP Rating				applica	tion. Please consult	factory for de	stalls.
	00	No Coll			•			Seal C	Option			
	FL	Flying Lead			IP 69k			Code		Seal Material	Seal kit	7
	DE	Deutsch			IP 69k			Р	Polyur	ethane Single Seal	11140113	]
	AS	AMP SuperSeal 1.5 and Me	etrl-Pack	150 type 1	IP 69k							-
	ASDB	AMP Super Seal with Diode	Bidirec	tional	IP 69k		Manu	al Overri	de			
DEDB Deutsch with Diode Bidirectional			IP 69k		Code	Description						
	FLDB	Fiving Lead with Diode Bid	rectiona		IP 69k		xC	No Ma	nual Ov	ernde		

		00	Cartridge only	No Body					
		S3B	3/8 BSP, Ductile	SDC10-3-S3B					
		S4B	1/2 BSP, Ductle	SDC10-3-S4B					
		S6S	#6 SAE, Ductile	SDC10-3-S6S					
	S8S #8 SAE, Ductile SDC10-3-S85								
	*** Aluminium bodies evallable for lower press								
		applicat	ion. Please consul	t factory for deta	alis.				
	Seal O	ption							
	Code		Seal Material	Seal kit					
	Р	Polyur	ethane Single Seal	11140113					





# **OPERATION**

This is a direct-acting, 3-way, 2-position, spool-type, 08-size solenoid valve. When de-energized, the SV08-23-03 allows flow between port 1 and port 2, while port 3 is blocked. When energized, flow is allowed between port 3 and port 2, while port 1 is blocked. This valve comes standard with a one-direction, push-pin manual override.

# **APPLICATIONS**

Common applications include on-off control of single-acting cylinders, clutches, or motors. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.



Shown with Robust Coil, Metri-Pack Type 2 Connector

### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	
[100 psi]	18 l/min
	[5 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**



Pressure drop

### **SCHEMATIC**











Cross-sectional view



**EXAMPLE CIRCUITS** 

Single Acting Cylinder









Solenoid Valve, Spool Type, 2-Position, 3-Way, 08 size. When de-energized, the SV08-23-04 allows flow from port 3 to port 2, blocking port 1. When energized, ports 2 and 1 are connected, blocking port 3. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit like a single-acting cylinder, clutch, brake, circuit selector valve, or pilot for a large directional spool valve. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 400,000 cycles. In case of inlet from port 2 this value can be increased to 600,000 cycles.

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	10 l/min
[100 psi]	[3 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **PERFORMANCE CURVES**



Shown with Standard Coil, Deutsch Connector

### **SCHEMATIC**

psi

5000

4000



# bar 350 250 200







# **EXAMPLE CIRCUITS**



Single Acting Cylinder



_													
S	SV08 -	- 23 - (	04 - 12	D - DI	— — F	3 - ()()		Code	Body	and Po	orts	Body Nomencla	iture
		<u> </u>	<u> </u>		= =	<u> </u>		00	Cartri	idge Or	nly	No Body	
	1	1	1 1	1		1 1		4S	#4 9	SAE, AL	_	CP08-3-4S	
								6S	#6 9	SAE, AL	_	CP08-3-6S	
Solenoid Valve 08			1 1					S6S	#6 S/	۹E, Ste	el	CP08-3-S6S	j.
Size Cavity								SE2B	1/4	BSP, A	L	SDC08-3-SE2	B
,			1 1					SE3B	3/8	BSP, A	L	SDC08-3-SE3	В
22.								S3B	#6 SA	۹E, Ste	el	CP08-3-S3B	,
2 Position 3 Way Sn													
21 031001, 5 Way, 0p	ooi i ype							Se	al Code	Ma	terial	Seal Kits	
04.			_					Ē	В	Bu	na-N	35400321	0
Schematic: Pull Type									v	Vi	iton	35400381	9
										_			
Coil Voltage	Standard Coil	Robust Coil	Co	oil Terminatic	n	Standard Coil	IP Rating	Robust Co	il IP Ra	ting			
-	Code	Code				Code		Code	_				
No Coil, with nut*	00	R00			No Coil	00	-	00					
10 VDC	10D	R10D		Arr	np Junior	AJ	IP67	-					
12 VDC	12D	R12D	A	mp Junior wi	th Diode	AJD	IP67	-					
20 VDC	20D	R20D		AMP Super	rSeal 1.5	AS	IP67	AS	IP6	9K			
24 VDC	240	R24D	AMP	SuperSeal wi	th Diode	ASD	IP67	ASDB	IP6	9K			
110.1/4.0**	1104	1/240			Deutsch	DE	IP67	DE	IP6	9K			
110 VAC**	110A			Deutsch wi	th Diode	DED	IP67	DEDB	IP6	9K			
ZZU VAC	ZZUA	· ·		Flyi	ng Leads	FL	IP65	FL	IP6	9K			
* Standard coil – plastic	c nut and O-rir	ngs	FI	ying Leads wi	th Diode	FLD	IP65	FLDB	IP6	9K			
R-coll – steel nut P/N	173800539			DI	N 43650	DN	IP65	-		-			
(no coil O-rings neede	ea)		N	letri-Pack 150	), Type 2	-	-	M3	IP6	9К			
Din only - external re	ecumer needec	1	Metr	i-Pack 150 wi	th Diode	-	-	M3DB	IP6	9К			





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, 10-Size. When de-energized, the SV10-23-04 allows flow from port 3 to port 2, blocking port 1. When energized, ports 2 and 1 are connected, blocking port 3. Port 1 may be fully pressurized, but is not intended to be the inlet port. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit like a single-acting cylinder, clutch, brake, circuit selector valve, or pilot for a large directional spool valve. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can be pressurized to 315 Bar on port 2 for 500,000 operating cycles.



Shown with Robust Coil, Deutsch Connector

### SCHEMATIC



# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	20 l/min
[100 psi]	[5 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# PERFORMANCE CURVES







SV10-23-04

**H** 



Metri-Pack 150 with Diode

M3DB

IP69K

11141717 • Rev CA • August 2015

(no coil O-rings needed) \*\* DIN only - external rectifier needed





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, High Flow (15-Size). When de-energized, the SV15-23-04 allows flow from port 3 to port 2, blocking port 1. When energized, ports 2 and 1 are connected, blocking port 3. Port 1 may be fully pressurized, but is not intended to be the inlet port. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/3201 and uses a metric M33x2 cavity (NCS 12/3) for high flow capability.



# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit like a single-acting cylinder, clutch, brake, circuit selector valve, or pilot for a large directional spool valve. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar for 100,000 cycles. In case of inlet from port 2 this value can be increased to 300,000 cycles.

Shown with Standard Coil, Deutsch Connector

# SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	50 l/min
[100 psi]	[13 US gal/min]
Weight including coil	0.89 kg [1.96 lbs]
Cavity	NCS 12/3
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **SCHEMATIC**



# **PERFORMANCE CURVES**



Operating envelope







### DIMENSIONS





# **EXAMPLE CIRCUITS**

# Uni-directional Motor



# Single Acting Cylinder







# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, 08-size. When de-energized, the SV08-24-01 allows flow from port 3 to port 2, and from port 4 to port 1. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Can be used in combination to duplicate a four-way, three-position valve, creating an economical, compact function. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).



Shown with Standard Coil, Deutsch Connector

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	8 l/min
[100 psi]	[2 US gal/min]
Weight	0.32 kg [0.71 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**

33 cSt [154 SUS] hyd.oil @ 38°C [100° F] bar psi 406 28 348 24 290 20 3 to 2 to 4 to 1 232 16 **De-Energized** 174 12 3 to 4 to 2 to 1 116 8 Energized 58 4 0 0 0 6 8 l/min 2 10 14 16 18 4 12 1.1 2.1 2.6 3.2 3.7 0.5 1.6 4.2 4.8 US gal/min

Pressure drop

### **SCHEMATIC**



### psi bar 350 5000 Port 2 Port 4 300 4000 250 3000 200 Port 4 150 2000 100 Port 2 1000 50 0 0 8 12 16 20 l/min US gal/min Ó 2 3 4 5 1 Rated per NFPA T 2.6.1 at 1 million cycles

Operating envelope

----- Rated per NFPA T 2.6.1 at reduced operational life





### DIMENSIONS

mm [in]





# **EXAMPLE CIRCUITS**







**OPERATION** 

This is a direct-acting, 4-way, 2-position, spool-type solenoid valve.

Recommend the following connections: port 3 to inlet, ports 2 & 4 to actuator(s) and port 1 to drain. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. The 09 Series valve uses a 10 size cavity with an 08 size tube and coil, providing an optimal product for high flow and low pressure, while minimizing pressure drop in the system.

Shown with Standard Coil and Filter

# **APPLICATIONS**

Common applications include low-pressure on-off control of dual clutch systems or pressure-assist brakes. It can also be used for low pressure bi-directional control of motors. Refer to example circuits. Use the optional screen to help protect the actuator from large particles. Select the robust coil for those extreme environmental conditions – voltage extremes, high temperature, shock & vibration, chemicals, and/ or water ingression.

Shown with Robust Coil and Filter

# SV - Solenoid Valves

SV09-24-01

# SPECIFICATIONS

Rated pressure*	100 bar [1450 psi]
Maximum flow at 7 bar	20 l/min
[100 psi]	[5.33 US gal/min]
Leakage	75 ml/mln
	[5.6 ln³/mln]
Weight Including coil	0.37 kg [0.78 lb]
Cavity	SDC10-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

# **PERFORMANCE CURVES**



Operating envelope 26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Filter Option



**SCHEMATIC** 

No Filter Option





Cross-sectional view



## DIMENSIONS

mm [in]



# **EXAMPLE CIRCUITS** Bi-Directional Control of Motors -Low Pressure

Dual Clutch System Using Pressure Reducing Valve and 2-Position, 4-Way Solenoid





# **ORDERING INFORMATION**

5	<u>svog</u> -	- <u>24</u> - <u>(</u>	<u>)1 - 12</u>	<u>:D - DE</u> -	- <u>B</u> -F	<u>- 00</u>					
	1	1	1	i 1		L	Code	Body	and Port	; 1	Body Nomenclature
							00	Cart	ridge Only		No Body
Solenoid Valve, Spoo							4S	#4	SAE, AL		CP08-3-4S
Type, 10 Size Cavity					· · · · ·		6S	#6	SAE, AL		CP08-3-65
					Filter:		SE2B	1/-	4 BSP, AL		SDC08-3-SE2B
24:					No Fil	er Omit	SE3B	3/3	3 BSP, AL		SDC08-3-SE3B
2 Position, 4 Way					500 µ	0 F			1		
								Seal Cod	e Mate	rial	Seal Kits
01:							ł	<u>ь</u> V	Duna	-11	354001919
Normally Open							L L	v	VILL	211	554002019
Schematic			Coil	Termination	Standard Co	II IR Pating	Robust		ating		
			con	renningtion	Code	in noting	Code	2011 11 1	uun B		
Coil Voltage	Standard Coil	Robust Coil		No Coil	00	· ·	00		-		
	Code	Code		Amp Junior	AJ	IP67	-				
No Coil, with nut*	00	R00	Am	a Junior with Diode	AID	IP67					
10 VDC	10D	R10D		AMP SuperSeal 1.5	AS	IP67	AS	IP	69K		
12 VDC	12D	R12D	AMP Su	perSeal with Diode	ASD	IP67	ASD	3 IP	69K		
20 VDC	20D	R20D		Deutsch	DE	IP67	DE	IP	69K		
24 VDC	24D	R24D		Deutsch with Diode	DED	IP67	DEDI	3 IP	69K		
110 VAC**	110A	-		Flving Leads	FL	IP65	FL		P65		
220 VAC**	220A	-	Elvin	g Leads with Diode	FLD	IP65	FLDE	3 1	P65		
* Standard coil - plastic	onut and O-rir	ngs		DIN 43650	DN	IP65	-				
R-coil - steel nut P/N	173800539	0	Met	ri-Pack 150, Type 2	-		M3	IP	69K		
(no coil O-rings neede	ed)		Metri-P	ack 150 with Diode		1 · 1	M3D	B IP	69K		
** DIN only - external re	ectifier needeo	l .									

P103 114





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, 10 size. When de-energized, the SV10-24-01 allows flow from port 3 to port 2, and from port 4 to port 1. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# 

Shown with Robust Coil

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like

motors or cylinders. Can be used in combination to duplicate a four-way, three-position valve, creating an economical, compact function. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).

# SPECIFICATIONS

**SV - Solenoid Valves** 

SV10-24-01

Rated pressure*	230 bar [3300 psi]**				
Rated flow at 7 bar	15 l/min				
[100 psi]	[4 US gal/min]				
Weight	0.45 kg [0.99 lb]				
Cavity	SDC10-4				
Standard Coil	M16 26 Watt				
Robust Coil	R16 20 Watt				
	Robust Nut P/N <b>173804910</b>				
	(no coil O-rings needed)				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# PERFORMANCE CURVES

Pressure drop 33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



# SCHEMATIC









DIMENSIONS Cross-sectional view mm [in] 24 mm 3 9-11 N· m [6-8 lbfft] Standard Co il nut kit P/N 17409021 27 mm 7/8-14 UNF-2A 45-50 N**∙m** [33-37 lbf·ft] (coil O-rings included) کمر ρd Ø26.5 [1.04] 66 <u> 2</u> ΑŒ ĤЭ CO IL NO T SHOWN FOR CLARITY INSTALL O-RING (2) PL CS AS SHOW N - 5.0 [0.20]

60.0 [2.44]

# **EXAMPLE CIRCUITS**

77.0 [3.03]



C	1/10	- 24 -	$01 - 1^{\circ}$	20 <u>-</u> DE	: _ F	8 _ 00		_	1		
<u> </u>		- <u>24</u> -	<u> - 1</u>	<u>20 - DL</u>	ᆕᅳ	<u>y - 00</u>		Code	Body a	and Ports	Body Nomenclature
								00	Cartri	dge Only	No Body
				1 1				<u>6</u> S	#6 5	AE, AL	CP10-4-6S
Solenoid Valve, 10 Siz	e _							<u>85</u>	#8 5	AE, AL	CP10-4-8S
Cavity	_							<b>S8S</b>	#8 SA	E, Steel	CP10-4-S8S
								L3B	3/8	BSP, AL	SDC10-4-L3B
24.								L4B	1/2	BSP, AL	SDC10-4-L4B
2 Position 4 Way Spor	ol Type			1 1				S4B	1/2 B	SP, Steel	CP10-4-S4B
21 callon, 4 Way, opo	ortype								1		
				1 1					Seal Code	Material	Seal Kits
01:				L				ł	В	Buna-N	354001919
Schematic: Pull Type								11	V	Viton	354002019
				Coil Termination		Standard Coil	IP Rating	Robust C	oil IP Rati	ησ	
Coil Voltage	Standard Coil	Robust Coil		con remination		Code	ii nating	Code		' <sup>0</sup>	
	Code	Code			No Coil	00	-	00	- ·	-	
No Coil, with nut*	00	R00		Amr	Junior	AJ	IP67				
10 VDC	10D	R10D		Amp Junior with	Diode	AID	IP67			-	
12 VDC	12D	R12D		AMP Super	ieal 1 5	AS	IP67	AS	IP69k		
20 VDC	20D	R20D	AN	VP SuperSeal with	Diode	ASD	IP67	ASDB	IP69k		
24 VDC	24D	R24D		n ouperoeur ma	)eutsch	DE	IP67	DF	IP69k		
110 VAC**	1104		Deutsch with Diode		Diode	DED	IP67	DEDB	IP69k		
220 VAC**	2204		Elving Leads		z Leads	FI	IP65	FI	IP69k		
220 176	2204			Elving Leads with	Diode	FLD	IP65	FLDB	IPEQ	H	
* Standard coil – plastic	c nut and O-rir	ngs		DIN	43650		IP65		11 054	H	
R-coil – steel nut P/N	173804910			Motri Dack 150	Tupo 2	BN	11 0.5	-	10604	-	
(no coll O-rings neede	d)			otri Dock 150	Dioda			Mapp	10090	H	
** DIN only - external re	ectifier needed		IVI	etri-Pack 150 With	ו טוטמפ	-	-	IVISDB	19698	<u> </u>	





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, 10-size. When de-energized, the HSV10-24-01 allows flow from port 3 to port 2, and from port 4 to port 1. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.



# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for blocking the flow of a 2-way function, pump unloading or cylinder regeneration. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.

# SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*				
Rated flow at 7 bar	25 l/min				
[100 psi]	[6.6 US gal/min]				
Weight	0.45 kg [0.99 lb]				
Cavity	SDC10-4				
Standard Coil	H16 29Watt				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).





# **PERFORMANCE CURVES**

Pressure drop

26 cSt [121 SUS] hyd.oil at 50°C [122 °F]











# **EXAMPLE CIRCUITS**

Motor directional control









	Bodies							
	Code	Port & Material	Body Nomenclature					
	00	Cartridge only	No Body					
	S3B	3/8 BSP, Ductile	SDC10-4-S3B					
	S4B	1/2 BSP, Ductile	SDC10-4-S4B					
	S6S	#6 SAE, Ductile	SDC10-4-S6S					
Ī	S8S	#8 SAE, Ductile	SDC10-4-S8S					
,	*** Aluminium bodies available for lower pressure							

application. Please consult factory for details.

# Seal Option

L	Code	Seal Material	Seal kit
	Р	Polyurethane Single Seal	11143824

Code	Description
XC	No Manual Override

11141717 • Rev CA • August 2015



# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-24-01 allows flow from port 3 to port 2, and from port 4 to port 1. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/4205 and uses a metric M33x2 cavity (NCS 12/4) for high flow capability.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Use the optional screen to help protect the actuator from large particles. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).



Shown with Standard Coil, DIN Connector

# SPECIFICATIONS

**SV - Solenoid Valves** 

SV15-24-01

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	60 l/min
[100 psi]	[16 US gal/min]
Weight including coil	0.95 kg [2.09 lbs]
Cavity	NCS 12/4
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **SCHEMATIC**



# PERFORMANCE CURVES









# DIMENSIONS

Cross-sectional view

mm [in]



# **EXAMPLE CIRCUITS**

Motor directional control













# **OPERATION**

This is a direct-acting, 2-position, 4-way, 08-size spool-type solenoid valve. When de-energized, the SV08-24-02 blocks flow to all ports. When energized, the spool shifts to allow flow from port 3 to 4, and from port 2 to 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.

This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).



Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	10 l/min
[100 psi]	[3 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **PERFORMANCE CURVES**





Shown with Standard Coil, Deutsch Connector

### **SCHEMATIC**









# **EXAMPLE CIRCUITS**

Create a 4-Way 3-Position Valve Circuit





<u>SV08</u> - <u>24</u> - <u>02</u> - <u>12D</u> - <u>L</u>		- ()()			-		
		<u><u> </u></u>		Code	Body a	nd Ports	Body Nomenclature
	<u> </u>	<u> </u>		00	Cartri	lge Only	No Body
				4S	#4 S	AE, AL	CP08-4-4S
				6S	#6 S	AE, AL	CP08-4-6S
Solenoid Valve, 08 -				S6S	#6 SA	E, Steel	CP08-4-S6S
Size Cavity				L2B	1/41	BSP, AL	SDC08-4-L2B
				S3B	3/8 B	SP, Steel	CP08-4-S3B
24: 2 Desition 4 Wey Sneel Type					Code	Matarial	Coal Vita
2 Position, 4 way, Spool Type						Rupp N	254002210
				H	- D V	Viton	354003319
UZ: Schomatic: Bull Type	•			L	<u> </u>	VILOII	334003313
Schematic: Full Type						-	
Coil Voltage Standard Coil Robust Coil Coil Term	ination	Standard Coil	IP Rating	Robust Coi	IP Rating		
Code Code		Code		Code	-	-	
No Coil, with nut* 00 R00	No Coil	00	-	00	· ·	4	
10 VDC 10D R10D	Amp Junior	AJ	IP67	-	-	-	
12 VDC 12D B12D Amp Juni	ior with Diode	AJD	IP67	•		4	
20 VDC 20D R20D AMP	SuperSeal 1.5	AS	IP67	AS	IP69K	4	
AMP SuperSe	eal with Diode	ASD	IP67	ASDB	IP69K		
24 VDC 240 R240	Deutsch	DE	IP67	DE	IP69K	4	
110 VAC*** 110A - Deuts	Deutsch with Diode		IP67	DEDB	IP69K	1	
220 VAC** 220A -	Flying Leads	FL	IP65	FL	IP69K		
* Standard coil – plastic nut and O-rings Flying Lea	ds with Diode	FLD	IP65	FLDB	IP69K		
R-coil – steel nut P/N 173800539	DIN 43650	DN	IP65	-	-		
(no coil O-rings needed) Metri-Pa	ck 150, Type 2	-	-	M3	IP69K		
** DIN only - external rectifier needed Metri-Pack 1	50 with Diode	-	-	M3DB	IP69K	1	



# **OPERATION**

This is a direct-acting, 2-position, 4-way, 10-size spool-type solenoid valve. When de-engergized, the SV10-24-02 blocks flow to all ports. When energized, the spool shifts to allow flow from port 3 to 4, and from port 2 to 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Common appliations include unidirectional motor or cylinder control.

This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).

# SPECIFICATIONS

**SV - Solenoid Valves** 

SV10-24-02

Rated Pressure*	230 bar [3330 psi]**
Maximum Rated Flow at 7 bar	20 l/min
[100 psi]	[5.3 US gal/min]
Weight including coil	0.45 kg [1lbs]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N 173804910
	(no coil O-rings needed)
Diode (Optional)	Standard Coil - Unidirectional
	Robust Coil - Bidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **PERFORMANCE CURVES**



Pressure drop

Shown with Standard Coil. Deutsch Connector

Shown with Robust Coil, Deutsch Connector

# **SCHEMATIC**







5(0.2)

۲,

Ø (1.04)

т (1)



COIL NOT SHOWN FOR CLARITY INSTALL O-RING (2) PLCS AS SHOWN

77

(3.03)

# **EXAMPLE CIRCUITS**

Uni-directional Motor, Variable Pump



Create a 4-Way 3-Position Valve Circuit



P ∆ ③ [

62

(2.44)

2

C		- 21 - 1		- R	_ 00					1
<u> </u>		- <u>24</u> - <u>1</u>		- 0	- 00		Code	Body a	and Ports	Body Nomenclature
							00	Cartri	dge Only	No Body
			1 1 1				6S	#6 S	AE, AL	CP10-4-65
Solenoid Valve, 10 Size	e		1 1 1				85	#8 S	AE, AL	CP10-4-8S
Cavity							S8S	#8 SA	E, Steel	CP10-4-S8S
			1 1 1				L3B	3/8	BSP, AL	SDC10-4-L3B
24.							L4B	1/2	BSP, AL	SDC10-4-L4B
2 Position 4 Way Snot	ol Type						S4B	1/2 B	SP, Steel	CP10-4-S4B
2 1 031001, 4 Way, opo	ortype			L						1
				-				Seal Code	Material	Seal Kits
02:			-   _				ŀ	В	Buna-N	354001919
Schematic: Pull Type								V	Viton	354002019
			Coil Termination		Standard Coil	IP Rating	Robust Co	il IP Ratir	ng.	
Coil Voltage	Standard Coil	Robust Coil	Con remainded		Code	in northig	Code		.8	
	Code	Code	N	o Coil	00	-	00	· ·	-	
No Coil, with nut*	00	R00	Amp	unior	AI	IP67		· ·	-	
10 VDC	10D	R10D	Amp Jupior with [	Diode	AID	IP67	-	- ·	-	
12 VDC	12D	R12D	AMP SuperSe	al 1 5	45	IP67	<b>AS</b>	IP69k		
20 VDC	20D	R20D	AMP SuperSeal with [	Diode		IP67	ASDB	IPEGR	H	
24 VDC	24D	R24D	Aivir SuperSear with E	utsch	<u></u>	107		IDEON	<u> </u>	
110 VAC**	1104		Deutsch with [	Diode	DED	IP67	DEDB	IDEGR	<u> </u>	
220 VAC**	2204		Elving Loads		51	1065	51	IDEQU	-	
220 VAC	220A	-	Flying I	Diada		IPOD		IPOSN	<del>.</del>	
* Standard coil – plastic	c nut and O-rir	ngs	Figing Leads with L			IDCE	FLUB	12034	<b>H</b>	
R-coil – steel nut P/N	173804910		DIN 4	13050	DN	1862	-	-	-	
(no coil O-rings neede	ed)		Metri-Pack 150 F	ype 2	-	-	M3	IP69K	-	
** DIN only - external re	ectifier needec	1	Metri-Pack 150 with I	Diode	-		M3DB	IP69k		





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-24-02 blocks flow to all ports. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. The SV15 uses a 15 size cavity. This valve is a direct replacement for EDH 12/4206 and uses a metric M33x2 cavity (NCS 12/4) for high flow capability.

# **APPLICATIONS**

These valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond quickly

to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage

Shown with Standard Coil, Deutsch Connector

poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Use the optional screen to help protect the actuator from large particles. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).

# SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	60 l/min
[100 psi]	[16 US gal/min]
Weight including coil	0.95 kg [2.09 lbs]
Cavity	NCS 12/4
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# SCHEMATIC



# **PERFORMANCE CURVES**







Cross-sectional view



### DIMENSIONS

mm [in]



# **EXAMPLE CIRCUITS**





# Create a 4-Way 3-Position Valve Circuit



5	<u>SV15</u> -	- <u>24</u> - <u>0</u> 2	<u>2 - 12</u>	<u>D</u> - <u>D</u>	<u>E - E</u>	<u>3</u> -	<u>F</u> - <u>00</u>	<u>)</u>			
	1	1 1					<u>ا</u>	Code	Body and	l Ports	Body Nomenclature
								00	Cartridg	e Only	No Body
Solenoid Valve, Spoo						Filt	er:	<b>8</b> 5	#8 SAE	, AL	NCS 12/4-L-8S
Type, 15 Size Cavity						No Filter Omit		12S	#12 SA	E, AL	NCS 12/4-L-12S
					300 µm F 41		4B	1/2 BS	P, AL	NCS 12/4-L-1/2	
24:								6B	3/4 BS	P, AL	NCS 12/4-L-3/4
2 Position, 4 Way					Seal	Code	Material	Seal	Kits		
02:					E	3	Buna-N	1111	5884		
Schematic type	Schematic type					V Viton 11115885					
Coil Voltage	Standard Coil										
	Code				1		Coil Torminat	ion	Standard Co	il ID Patin	-
No Coil, with nut*	00						con reminat	1011	Code	in in Racin	Б
10 VDC	10D							No Coil	00	-	
12 VDC	12D						А	mp Junior	AJ	IP67	
20 VDC	20D						Amp Junior v	vith Diode	AJD	IP67	
24 VDC	24D							Deutsch	DE	IP67	
110 VAC**	110A						Deutsch v	ith Diode	DED	IP67	
220 VAC**	220A						Fly	ing Leads/	FL	IP65	
* Standard coil - plastic	c nut and O-rir	ngs						DIN 46650	DN	IP65	
** External Rectifier Ne	eded – DN ter	mination only									_





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-24-03 opens flow between all four ports. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/4207 and uses a metric M33x2 cavity (NCS 12/4) for high flow capability.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).



Shown with Standard Coil, Deutsch Connector

# SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**				
Maximum Rated Flow at 7 bar	50 l/min				
[100 psi]	[13 US gal/min]				
Weight including coil	0.95 kg [2.09 lbs]				
Cavity	NCS 12/4				
Coil	M19-33W				
Diode (Optional)	Unidirectional				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **PERFORMANCE CURVES**



# SCHEMATIC



Operating envelope







### DIMENSIONS

Cross-sectional view

mm [in]



# **EXAMPLE CIRCUITS**









# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, 08 size. When de-energized, the SV08-24-04 allows flow from port 3 to port 1, while ports 2 and 4 are blocked. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Can be used in combination to duplicate a four-way, three-position valve, creating an economical, compact function. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).

# Shown with Standard Coil. **Deutsch Connector**

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	8 l/min
[100 psi]	[2 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **PERFORMANCE CURVES**



### **SCHEMATIC**



### Operating envelope





**SV - Solenoid Valves** 

SV08-24-04

11141717 • Rev CA • August 2015



Cross-sectional view

**H** 

### DIMENSIONS

mm [in]



# **EXAMPLE CIRCUITS**





# Series/Parallel



# Uni-directional Motor Control



# **ORDERING INFORMATION**



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# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-24-04 allows flow from port 3 to port 1, while ports 2 and 4 are blocked. When energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/4208 and uses a metric M33x2 cavity (NCS 12/4) for high flow capability.

# **APPLICATIONS**

These valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).



Shown with Standard Coil, DIN Connector

## SCHEMATIC



# SV - Solenoid Valves SV15-24-04

# SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**				
Maximum Rated Flow at 7 bar	50 l/min				
[100 psi]	[13 US gal/min]				
Weight including coil	0.95 kg [2.09 lbs]				
Cavity	NCS 12/4				
Coil	M19-33W				
Diode (Optional)	Unidirectional				

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# PERFORMANCE CURVES











# DIMENSIONS mm [in]







# **EXAMPLE CIRCUITS**



# Uni-directional Motor Control



# Create a 4-Way 3-Position Valve Circuit



# ORDERING INFORMATION

5	SV15 -	- <u>24</u> - <u>04</u> - <u>12</u>	<u>D - DE</u>	<u>- B</u> -	<u>00</u>				
						de Body	and Ports	Body Nom	enclature
					0	0 Cart	ridge Only	No B	ody
Solenoid Valve, Spoo					8	<b>s</b> #8	SAE, AL	NCS 12/	/4-L-8S
Type, 15 Size Cavity					12	S #12	2 SAE, AL	NCS 12/-	4-L-12S
					4	B 1/2	2 BSP, AL	NCS 12/-	4-L-1/2
24:					6	B 3/4	1 BSP, AL	NCS 12/-	4-L-3/4
2 Position, 4 Way									
				Seal Code	Material	Seal	Kits		
04:				В	Buna-N	1111	5884		
Schematic type					Vitori				
Coil Voltage	Standard Coil								
	Code				Coil Termir	ation	Standard Coil	IP Rating	
No Coil, with nut*	00					acion	Code		
10 VDC	10D					No Coil	00	-	
12 VDC	12D					Amp Junior	AJ	IP67	
20 VDC	20D				Amp Junio	r with Diode	AJD	IP67	
24 VDC	24D					Deutsch	DE	IP67	
110 VAC**	110A				Deutsc	n with Diode	DED	IP67	
220 VAC**	220A	]				Flying Leads	FL	IP65	
* Standard coil - plastic	c nut and O-rir	ngs				DIN 46650	DN	IP65	
** External Rectifier Ne	eded – DN tei	rmination only							

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# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, 10-size. When de-energized, the SV10-24-12 allows flow from port 3 to port 1, while ports 2 and 4 are blocked. When energized, the spool shifts to allow flow from port 2 to port 3, and from port 4 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.

This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).



Shown with Robust Coil, Metri-Pack Type 2 Connector

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	18 l/min
[100 psi]	[5 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **PERFORMANCE CURVES**



# .

**SCHEMATIC** 











**EXAMPLE CIRCUITS** 





<b>ORDERING INFORMATIO</b>	Ν										
ç	\$\/10	- 24 -	12 -	12D - DF	= _ F	R = 00			Deducer	d Deute	De du Nesser eleture
<u> </u>	<u>, , , , , , , , , , , , , , , , , , , </u>		12			<u> </u>			Cortride	a Ports	No Rody
	1	1		1 1		i i		66			CD10.4.65
								03	#0 SA #0 CA		CP10-4-03
Solenoid Valve, 10 Siz	• _						_	605	#0 JA	E, AL Stool	CP10-4-83
Cavity								138	3/9 BG		SDC10-4-138
								148	1/2 BS		SDC10-4-L3B
24:								S4B	1/2 BSE	Steel	CP10-4-S4B
2 Position, 4 Way, Spo	ol Type								1/2 001	, steel	01104340
								Sea	al Code	Material	Seal Kits
12:									В	Buna-N	354001919
Schematic: Pull Type									V	Viton	354002019
			-	Cail Tanainatia	_	Chandard Cail	ID Dating	Dahuat Cail	ID Dating	1	
Coil Voltage	Standard Coil	Robust Coil		con rermination	n	Codo	IP Rating	Codo	IP Kating	,	
	Code	Code			No Coil	00		00			
No Coil, with nut*	00	R00	- F	٨m	n lunior	00	1067			-	
10 VDC	10D	R10D	- F	Amp Junior wit	h Diode		107			-	
12 VDC	12D	R12D		Amp Junior wit	Seal 1 5	<u>A30</u>	IP67	Δ\$	IP69K		
20 VDC	20D	R20D		AMP SuperSeal wit	h Diode	ASD	IP67	ASDB	IP69K		
24 VDC	24D	R24D		/ Will Supersed wit	Deutsch	DE	IP67	DE	IP69K	1	
110 VAC**	110A	· ·		Deutsch wit	h Diode	DED	IP67	DEDB	IP69K	1	
220 VAC**	220A	· ·		Flvin	g Leads	FL	IP65	FL	IP69K		
* Standard soil plasti	put and O riv			Flying Leads wit	h Diode	FLD	IP65	FLDB	IP69K	1	
Standard coll – plastic nut and O-rings R coll – stool put R/N 173804010				DI	43650	DN	IP65	-	-	1	
(no coil O-rings needed)				Metri-Pack 150	) Type 2	-	-	M3	IP69K	1	
** DIN only - external rectifier needed			Г	Metri-Pack 150 wit	h Diode	-	-	M3DB	IP69K		





# **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 3-Way, 10-Size. When de-energized, the SV10-24-05 allows flow from port 3 to port 4, and from port 2 to port 1. When energized, all ports are blocked. Port 1 may be fully pressurized, but is not intended to be the inlet port. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.

This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).



Shown with Standard Coil, Deutsch Connector

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	25 l/min
[100 psi]	[7 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# **PERFORMANCE CURVES**



# Operating envelope

**SCHEMATIC** 

(2)

3

(4)

(1)




# Solenoid Valves Catalog 4-Way, 2-Position Spool SV10-24-05





**EXAMPLE CIRCUITS** 



Solenoid Valve, 10 Size   Body Nomenclature     Solenoid Valve, 10 Size   00     Cavity   Solenoid Valve, 10 Size     24:   Solenoid Valve, 10 Size     24:   Solenoid Valve, 10 Size     25:   Solenoid Valve, 10 Size     26:   Solenoid Valve, 10 Size     27:   Solenoid Valve, 10 Size     28:   Pass Solenoid Valve, 10 Size     29:   Solenoid Valve, 10 Size     20:   Solenoid Valve, 10 Size     21:   Solenoid Valve, 10 Size     22:   Solenoid Valve, 10 Size     23:   Solenoid Valve, 10 Size     24:   Solenoid Valve, 10 Size     25:   Solenoid Valve, 10 Size     05:   Solenoid Valve, 10 Size     05:   Solenoid Valve, 10 Size     Schematic: Pull Type   Seal Code     Coil Voltage   Standard Coil Robust Coil Code     Coil Voltage   Code     Code   Code     Code   Code     Code   Code     Coll Voltage   Code     10: VDC   100     10: VDC   Robust Coil		c	21/10	24	05	100 01							
Solenoid Valve, 10 Size     Od     Cartridge Only     No Body       Cavity     65     #6 SAE, AL     CP10-4-65       24:     24:     138     3/8 BSP, AL     SDC10-4-14B       29 osition, 4 Way, Spool Type     148     1/2 BSP, AL     SDC10-4-14B       5:     Schematic: Pull Type     Seal Code     Material     Seal Kits       6:     Standard Coil     Robust Coil     Coil     Viton     354001919       5:     Coil Voltage     Standard Coil     Robust Coil     Code     Code     Code       10 VDC     100     Robust Coil     Code     Code     Code     Code     Code     Code     No Coil     PRating     Robust Coil     P Rating     No Coil     P Rating     No Coil     P Rating     No Coil     No Coil     P Rating     No Coil     P Rating     No Coil     No Coil     No Coil     P Rating     No Coil     No Coil     P Rating     No Coil		<u> </u>	<u>sviu</u> -	- <u>24</u>	<u>03</u> -	<u>120 - DI</u>	<u> </u>	<u>s - 00</u>		Code	Body a	and Ports	Body Nomenclature
Solenoid Valve, 10 Size     GS     #6 SAE, AL     CP10-4-6S       Cavity     88     #8 SAE, Stell     CP10-4-8S       24:			_	-		· ·				00	Cartri	dge Only	No Body
Solenoid Valve, 10 Size										<u>65</u>	#6 S	AE, AL	CP10-4-6S
Cavity     Standard Coil     Coil Voltage     Standard Coil     Robust Coil     Coil Voltage     Standard Coil     P Rating     Robust Coil     Coil Voltage     Coil Voltage     Standard Coil P Rating     Robust Coil Voltage     Coil Voltage	Sole	noid Valve, 10 Siz	e _							85	#8 S	AE, AL	CP10-4-8S
24:	Cavi	ty	_							<b>S8S</b>	#8 SA	E, Steel	CP10-4-S8S
Coil Voltage     Standard Coil     Robust Coil     Coil Termination     Standard Coil     PR Ating     Standard Coil     PR Ating       12 VDC     120 DR     Robust Coil     Code     Code     Code     Code     Code     Code     Code     Standard Coil     PR Ating       10 VDC     100 D     R10D     Robust Coil     O0     -     -     -       22 VDC     122 VDC     122 VDC     R24D     AMP SuperSeal 1.5     AS     IP65K       22 VAC **     220 VAC **     220 Ad     -     -     -     -       * Standard coil - plastic nut and O-rings R-coil - steel nut P/N 173804910 (no coil O- ings needed)     -     -     -     -       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     -     -     -										L3B	3/8	BSP, AL	SDC10-4-L3B
Coil Voltage     Standard Coil     Robust Coil     Coil Voltage     Standard Coil     Robust Coil     V     Viton     354002019       Coil Voltage     Standard Coil     Robust Coil     Code     Code     Code     Code     Code     Code     V     Viton     354002019       Coil Voltage     Standard Coil     Robust Coil     Code	24.									L4B	1/2	BSP, AL	SDC10-4-L4B
Op: Seal Code Material Seal Kits   B Buna-N 354001919   V Viton 354001919   V Viton 354002019   V Viton 354002019   Coil Voltage Standard Coil Robust Coil   Code Code Code   No Coil, with nut* 00 Robust   10 VDC 100 Ri0D   110 VDC 120 R12D   20 VDC 20D R2DD   20 VDC 20D R2DD   20 VDC** 110A -   110 VAC*** 110A   20 VDC*** 120A   * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910 (no coil O-ings needed)   ** DIN only - external rectifier needed	2 Po:	sition, 4 Way, Spo	ol Type							S4B	1/2 B	SP, Steel	CP10-4-S4B
Of: Deal CODe Waterlain Sear NIS   Schematic: Pull Type B Bun-N 354001919   Coil Voltage Standard Coil Robust Coil Code Code   Code Code Code Code Code   No Coil, with nut* 00 R00 - -   10 VDC 10D R10D Amp Junior AJ IP67 -   20 VDC 20D R20D AMP SuperSeal 1.5 AS IP67 -   21 VDC 24D R24D Deutsch DE IP67 DE   20 VDC 20D R20D AMP SuperSeal 1.5 AS IP69K   21 VDC 20D R24D Deutsch DE IP67 DE   22 VAC* 220Ac** 220A - Flying Leads FL IP65 FL   * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910 (no coil O-rings needed) Flying Leads with Diode FL IP65 -   ** DIN only - external rectifier needed Metri-Pack 150 with Diode - M3D IP69K		, <b>,</b> ,									Soal Codo	Material	Cool Kite
Dot   Dotation   Output	~-											Rupp N	254001010
Coil Voltage     Standard Coil Code     Robust Coil Code     Coil Termination     Standard Coil Code     IP Rating Code     Robust Coil Code     IP Rating       No Coil, with nut*     00     R00     Anno Linior     All     IP67     -       10 VDC     100     R10D     Anno Linior     All     IP67     -       20 VDC     200     R20D     R40D     IP67     -     -       20 VDC     200     R20D     AMP SuperSeal 1.5     AS     IP67     ASDB       20 VDC     200     R20D     AMP SuperSeal 1.5     AS     IP67     ASDB       20 VDC     200     R20D     AMP SuperSeal 1.5     AS     IP67     ASDB       20 VDC**     110A     -     Deutsch     DE     IP67     DE       20 VDC***     220A     -     Flying Leads     FL     IP65     FL     IP69K       20 VDC***     220A     -     Flying Leads With Diode     FLD     IP65     FLD     IP69K       * Standard coil – plastic nut and O-rings     Flyin	05: Saha	metics Dull Ture				'					v	Viton	354001919
Coil Voltage   Standard Coil   Cole   Cole   Cole   Code   Code   Code     No Coil, with nut*   00   R00   R00   Amp Junior   AJ   IP67   -   -     10 VDC   10D   R10D   Amp Junior   AJ   IP67   -   -     20 VDC   12D   R20D   Amp Junior with Diode   AJD   IP67   AS   IP68K     20 VDC   20D   R20D   AMP SuperSeal 1.5   ASD   IP67   ASDB   IP69K     110 VAC***   110A   -   Deutsch   DE   IP67   DE   IP69K     220 VAC***   220A   -   Flying Leads   FL   IP65   FL   IP69K     * Standard coil – plastic nut and C-rings R-coil – steel nut P/N 173804910   -   -   Hitri-Pack 150 Type 2   -   -   M3DB   IP69K     ** DIN only - external rectifier needed   Metri-Pack 150 with Diode   -   -   M3DB   IP69K	oune	mauc. Fuil Type										•11011	554002015
Coll Voltage     Standard Coll Code     Code Code     Code     Code       No Coil, with nut*     00     R00     00     -     00     -       10 VDC     100     R100     Amp Junior     AJ     IP67     -     -       12 VDC     12D     R12D     AMP SuperSeal 1.5     AS     IP67     ASD     IP69K       20 VDC     200     R20D     AMP SuperSeal 1.5     AS     IP67     ASD     IP69K       210 VAC**     100 A     -     Deutsch     DE     IP67     DE     IP69K       220 VAC**     100 A     -     Deutsch with Diode     DED     IP67     DE0B     IP69K       20 VAC**     100 A     -     Deutsch with Diode     DEU     IP67     DE0B     IP69K       20 VAC**     100 A     -     Flying Leads with Diode     FL     IP65     FL     IP69K       * Standard coll – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FL     IP65     IP6H     IP69K       * DIN only -	_	* 11 i i i				Coil Terminatio	on	Standard Coil	<b>IP</b> Rating	Robust (	Coil IP Ratin	ng	
No Coil, with nut*     Oco     O     O     O       10 VDC     100     R100     Amp Junior     AJ     IP67     -       12 VDC     120     R120     Amp Junior     AJ     IP67     -     -       20 VDC     200     R20D     AMP SuperSeal I.S     AS     IP67     AS     IP69K       24 VDC     240     R24D     AMP SuperSeal I.S     AS     IP67     DE     IP68K       110 VAC**     110A     -     Deutsch     DE     IP67     DE     IP69K       220 VAC***     220A     -     Flying Leads with Diode     PED     IP65     FL     IP69K       * Standard coil – Jastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FLB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M33     IP69K		Coll Voltage	Standard Coll	Robust Coll	L			Code		Code			
No Coll, with nut?     UO     NOU     Amp Junior     AI     IP67     -     -       10 VDC     100 DR     R10D     Amp Junior with Diode     AJD     IP67     -     -       12 VDC     12D     R12D     Amp Junior with Diode     AJD     IP67     -     -       20 VDC     20D     R20D     AMP SuperSeal 1.5     AS     IP67     ASD     IP69K       24 VDC     24D     R24D     Deutsch     DE     IP67     DE     IP69K       110 VAC***     110A     -     Deutsch with Diode     DE     IP67     DE     IP69K       220 VAC***     220A     -     Flying Leads FL     IP65     FL     IP69K       20 vAC***     220A     -     Flying Leads With Diode     FLD     IP65     FLDBB     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Metri-Pack 150 Type 2     -     M3 DB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M3DB     IP69K		No. Coll with weak	Code	Code			No Coil	00	-	00	-		
10 VUC     100     R10D     Amp Junior with Diode     AJD     IP67     -     -       12 VDC     12D     R12D     AMP SuperSeal 1.5     AS     IP67     AS     IP69K       20 VDC     20D     R20D     AMP SuperSeal 1.5     AS     IP67     ASD     IP69K       24 VDC     24D     R24D     Deutsch     DE     IP67     DE     IP69K       110 VAC**     110A     -     Deutsch with Diode     DED     IP67     DE     IP69K       220 VAC**     220A     -     Flying Leads with Diode     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FLB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M33     IP69K	_	NO COIL, WITH NUT"	00	RUU	L	An	np Junior	AJ	IP67	-	-		
12 VDC     120     R12D     AMP SuperSeal 1.5     AS     IP67     AS     IP69K       20 VDC     20D     R20D     AMP SuperSeal 1.5     AS     IP67     ASD     IP69K       24 VDC     24D     R24D     Deutsch     DE     IP67     DE     IP69K       110 VAC**     110A     -     Deutsch     DE     IP67     DEDB     IP69K       220 VAC***     220A     -     Flying Leads with Diode     FLD     IP65     FLB     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FLD     IP65     -     -       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M33B     IP69K	_	10 VDC	10D	R10D		Amp Junior wi	th Diode	AJD	IP67	-	-		
20 VDC     20D     R20D     AMP SuperSeal with Diode     ASD     IP67     ASDB     IP69K       24 VDC     24D     R24D     Deutsch     DE     IP67     DE     IP69K       110 VAC**     110A     -     Deutsch     DE     IP67     DE     IP69K       220 VAC**     110A     -     Deutsch with Diode     DED     IP67     DE     IP69K       220 VAC**     110A     -     -     Flying Leads with Diode     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     -     -       Metri-Pack 150 Type 2     -     -     M3DB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M3DB     IP69K		12 VDC	12D	R12D		AMP Supe	rSeal 1.5	AS	IP67	AS	IP69k	<u> </u>	
24 VDC     24D     R240     Deutsch     DE     IP67     DE     IP69K       110 VAC**     110A     -     Deutsch with Diode     DED     IP67     DED     IP69K       220 VAC***     220A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FLDB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M3DB     IP69K		20 VDC	20D	R20D		AMP SuperSeal wi	th Diode	ASD	IP67	ASDB	IP69k		
110 VAC**     110A     -     Deutsch with Diode     DED     IP67     DEDB     IP69K       220 VAC**     220 A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic rut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FLD     IP69K       (no coil O-rings needed)     Metri-Pack 150 Type 2     -     M3DB     IP69K		24 VDC	24D	R24D			Deutsch	DE	IP67	DE	IP69k	<	
220 VAC**     220A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910 (no coil O-rings needed)     Flying Leads with Diode     FLD     IP65     FLDB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 Type 2     -     M3DB     IP69K		110 VAC**	110A	-	L	Deutsch wi	th Diode	DED	IP67	DEDB	IP69k	<u>.</u>	
* Standard coil – plastic nut and O-rings     Flying Leads with Diode     FLD     IP65     FLDB     IP69K       R-coil – steel nut P/N 173804910     DIN 43650     DN     IP65     -     -       (no coil O-rings needed)     Metri-Pack 150 Type 2     -     -     M3DB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     -     M3DB     IP69K		220 VAC**	220A	-		Flyi	ng Leads	FL	IP65	FL	IP69k	(	
R-coil – steel nut P/N 173804910     DIN 43650     DN     IP65     -     -       (no coil O-rings needed)     Metri-Pack 150 Type 2     -     -     M3     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     -     M3DB     IP69K	* St	andard coil – plastic	c nut and O-rir	nas	L	Flying Leads wi	th Diode	FLD	IP65	FLDB	IP69k	<u> </u>	
(no coil O-rings needed)     Metri-Pack 150 Type 2     -     M3     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     -     M3DB     IP69K	R-	coil - steel nut P/N	173804910	.3-		DI	IN 43650	DN	IP65	-	-		
** DIN only - external rectifier needed Metri-Pack 150 with Diode - M3DB IP69K	(no	o coil O-rings neede	ed)			Metri-Pack 15	0 Type 2	-	-	M3	IP69k	<u> </u>	
	** D	IN only - external re	ectifier needec	1		Metri-Pack 150 wi	th Diode	-	-	M3DE	IP69k	<u> </u>	



# Solenoid Valves Catalog 4 Way, 2 Position Spool SV10-24-06

# **OPERATION**

This is a direct acting, 2-postion, 4-way spool type solenoid valve. When de-energized, the SV10-24-06 blocks flow to all ports. When energized, the spool shifts to allow flow from port 2 and 4 to port 1, while blocking flow to port 3. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve uses the SDC10-4 cavity.

#### **APPLICATIONS**

Common applications include switching a motor or cylinder between locked and free floating mode, or for fourth position float. Port 3 is closed independently of spool position. An external float can be created with this valve, without the need for an external "T" and hose. This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).

Shown with Standard Coil, Deutsch Connectors



# SCHEMATIC

Shown with Robust Coil Deutsch Connector



# Operating envelope



11141717 • Rev CA • August 2015

# SPECIFICATIONS

Rated Pressure*	230 bar [3330 psi]**
Rated Flow at 10 bar	23 l/min
(145 psi)	[6 US gal/min]
Weight including coil	0.45 kg [1.0 lbs]
Cavity	SDC10-4
Standard Coil	M16 26W
Robust Coil	R16 20W
	Robust nut P/N 173804910
	(No coil O-ring needed)
Diode (Optional)	Standard Coil - Unidirectional
	Robust Coil - Bidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**





# Solenoid Valves Catalog 4 Way, 2 Position Spool SV10-24-06





#### **EXAMPLE CIRCUITS**

Fourth Position Float



c		_ 2/ _	06 - 12	וח _ ח		<u> 00 – 8</u>					
<u> </u>		- <u>24</u> -	<u>00 - 12</u>	브 - 브	느ᅳ느	<u>1 - 00</u>		Code	Body a	and Ports	Body Nomenclature
								00	Cartri	dge Only	No Body
			1 1					6S	#6 5	AE, AL	CP10-4-6S
Solenoid Valve, 10 Size	• _		1 1					85	#8 9	AE, AL	CP10-4-8S
Cavity			1 1					S8S	#8 SA	E, Steel	CP10-4-S8S
			1 1					L3B	3/8	BSP, AL	SDC10-4-L3B
24.								L4B	1/2	BSP, AL	SDC10-4-L4B
2 Position, 4 Way, Spor	ol Type		1 1					S4B	1/2 B	SP, Steel	CP10-4-S4B
_ · · · · · · · · · · · · · · · · · · ·			1 1						Cool Coole	Managerial	Carl Kita
			1 1						B B	Dune N	3E4001010
06:			_					I		Miton	354001919
Schematic: Pull Type									v 1	VICOII	554002015
			C	oil Terminatio	on	Standard Coil	IP Rating	Robust C	oil IP Rati	ng	
Coil Voltage	Standard Coil	Robust Coil				Code		Code			
	Code	Code			No Coil	00	-	00	-		
No Coil, with nut*	00	R00		An	np Junior	AJ	IP67	-	-		
10 VDC	10D	R10D	L A	Amp Junior wi	th Diode	AJD	IP67	-	-		
12 VDC	12D	R12D		AMP Supe	rSeal 1.5	AS	IP67	AS	IP69H		
20 VDC	20D	R20D	AMP	SuperSeal wi	th Diode	ASD	IP67	ASDB	IP69H		
24 VDC	24D	R24D			Deutsch	DE	IP67	DE	IP69H		
110 VAC**	110A	-		Deutsch wi	th Diode	DED	IP67	DEDB	IP69H		
220 VAC**	220A	-		Flyi	ng Leads	FL	IP65	FL	IP69H		
* Standard coil - plastic	nut and O-rin	age	FI	ying Leads wi	ith Diode	FLD	IP65	FLDB	IP69H		
R-coil - steel nut P/N	173804910	195		D	IN 43650	DN	IP65	-	-		
(no coil O rings neede	() 600 10 10			Metri-Pack 15	0 Type 2	-	-	M3	IP69		
** DIN only - external re	ectifier needed	1	Metr	ri-Pack 150 wi	th Diode	-	-	M3DB	IP69H		
,											



Solenoid Valves Catalog 4-Way, 2-Position Spool SV10-24-07



#### **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, 10-Size. When de-energized, all ports on the SV10-24-07 are blocked. When energized, the spool shifts allow from port 3 to port 2, and from port 4 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.

This valve can be operated with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).



Shown with Standard Coil, Deutsch Connector

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	24 l/min
[ 100 psi]	[6 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

Pressure drop

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**

26 cSt [121 SUS] hyd.oil at 50°C [122 °F] psi bar 300 20 1) 4 to 1 Energized 2) 3 to 2 Energized 15 200 10 2 100 5 0 40 l/min 10 20 30 ò 6 8 ź 4 10 US gall/min

#### **SCHEMATIC**



#### Operating envelope



SV - Solenoid Valves SV10-24-07



# Solenoid Valves Catalog 4-Way, 2-Position Spool SV10-24-07





**EXAMPLE CIRCUITS** 

**Uni-directional Motor** 



Solenoid Valve, 10 Size   Body Nomenclature     Solenoid Valve, 10 Size   No Body     Cavity   Solenoid Valve, 10 Size   No Body     Cavity   Solenoid Valve, 10 Size   No Body     Cavity   Solenoid Valve, 10 Size   Solenoid Valve, 10 Size   No Body     Cavity   Solenoid Valve, 10 Size   Solenoid Valve, 10 Size   No Body     24:   Solenoid Valve, 10 Size   CP10-4-85   SSS   #8 SAE, AL   CP10-4-85     24:   Solenoid Valve, 10 Size   Solenoid Valve, 10 Size   CP10-4-54B   Solenoid Valve, 10 Size   CP10-4-54B     24:   Code   Code   Code   Colon-4-14B   Solenoid Valve, 10 Size   Solenoid V		c	1/10	24	07							
Solenoid Valve, 10 Size     00     Cartridge Only     No Body       Cavity     65     #6 SAE, AL     CP10-4-65       24:     24:     28     128     3/8 BSP, AL     SDC10-4-L4B       24:     29 osition, 4 Way, Spool Type     148     1/2 BSP, AL     SDC10-4-L4B       37:     Schematic: Pull Type     Seal Code     Material     Seal Kits       8     Buna-N     354001919     V     Viton     354002019       Coil Voltage     Standard Coil     Robust Coil     Code     Code     Code       No Coil, with nut*     00     Roo     AMP Superseal 1.5     AS     IP6 SK       10 VDC     100     R100     Amp Junior AJ     IP67     -     -       AMP Superseal Xth Diode     ASD     IP67     -     -     -       20 VDC     200     R20D     AMP Superseal Xth Diode     ASD     IP67     -     -       * Standard coil – plastic nut and O-rings     Flying Leads with Diode     ASD     IP67     -     -       20 VDC     200 <td></td> <td><u> </u></td> <td><u>sviu</u> -</td> <td>- <u>24</u> -</td> <td><u> -</u> -</td> <td><u>120 - DE - E</u></td> <td><u>5 - 00</u></td> <td></td> <td>Code</td> <td>Body a</td> <td>and Ports</td> <td>Body Nomenclature</td>		<u> </u>	<u>sviu</u> -	- <u>24</u> -	<u> -</u> -	<u>120 - DE - E</u>	<u>5 - 00</u>		Code	Body a	and Ports	Body Nomenclature
Solenoid Valve, 10 Size     65     #6 SAE, AL     CP10-4-85       Cavity     88     #8 SAE, AL     CP10-4-85       24:									00	Cartrie	dge Only	No Body
Solenoid Valve, 10 Size							1 1		6S	#6 S	AE, AL	CP10-4-6S
Cavity     Standard Coil     Robust Coil     Code     Cod	Sc	olenoid Valve, 10 Siz	e						85	#8 S	AE, AL	CP10-4-8S
24:	Ca	ivity							<b>S8S</b>	#8 SA	E, Steel	CP10-4-S8S
24:   L4B   1/2 BSP, AL   SDC10-4.14B     2 Position, 4 Way, Spool Type   Sel Xits   Specific Action Active and the selection of the se									L3B	3/8 [	BSP, AL	SDC10-4-L3B
Coil Voltage     Standard Coil     Robust Coil     Coil Termination     Standard Coil     IP Rating     Robust Coil     V     Viton     354002019       Coil Voltage     Standard Coil     Robust Coil     Code     Code     Code     Code     Code     V     Viton     354002019       No Coil, with nut*     00     Roo     Code	24.								L4B	1/2 6	BSP, AL	SDC10-4-L4B
Schematic: Pull Type Seal Code Material Seal Kits   B Buna-N 354001919   V Viton 354001919   V Viton 354001919   V Viton 354002019   Coil Voltage Standard Coil Code IP Rating Code Robust Coil   No Coil, with nut* 00 R00 -   10 VDC 10D R10D Amp Junior AJ   12 VDC 220 R22D AMP SuperSeal J.S AS   24 VDC 24D R24D AMP SuperSeal J.S IP67   110 VAC** 110A - IP67 DE   * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910 (no coil O-rings needed) Flying Leads PL IP65 FL   ** Oll Nonly - external rectifier needed Metri-Pack 150 with Diode - M3D IP69K	2 F	Position. 4 Wav. Spo	ol Type						S4B	1/2 B	SP, Steel	CP10-4-S4B
Coil Voltage     Standard Coil     Robust Coil     Coil Voltage     Standard Coil     Robust Coil     Coil Voltage     Standard Coil     Robust Coil     Coil Voltage     Code     Code <td></td> <td>·····, · ···<b>,</b> · ···<b>,</b> · ···</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>54</td> <td>aal Code</td> <td>Material</td> <td>Soal Kits</td>		·····, · ··· <b>,</b> · ··· <b>,</b> · ···							54	aal Code	Material	Soal Kits
Coil Voltage   Standard Coil   Robust Coil   Coil Termination   Standard Coil   IP Rating   Standard Coil   P Rating     Coil Voltage   Standard Coil   Robust Coil   Code   Code   Code   Standard Coil   P Rating     No Coil, with nut*   00   R00   Amp Junior   AJ   IP67   -     10 VDC   10D   R10D   Amp Junior   AJ   IP67   -     20 VDC   20D   R20D   AMP Superseal .S   AS   IP67   AS   IP69K     24 VDC   240   R24D   Deutsch   DE   IP67   DE   IP69K     20 VAC**   100A   -   -   Flying Leads FL   IP65   FL   IP69K     20 VAC**   200A   -   -   Flying Leads with Diode   DED   IP67   DE0B   IP69K     20 VAC**   200A   -   -   -   -   -   -   -     * Standard coil – plastic nut and O-rings   Flying Leads with Diode   FL   IP65   FL   IP69K     -   moli O-rings needed)   -   -	07.								5	B	Buna-N	354001919
Coil Voltage   Standard Coil   Robust Coil   Coil Voltage   Standard Coil   IP Rating   Robust Coil   IP Rating     Coil Voltage   Code   Code   Code   Code   Code   Code     No Coil, with nut*   00   R00   Amp Junior   AJ   IP67   -     10 VDC   10D   R10D   Amp Junior   AJ   IP67   -     20 VDC   20D   R20D   AMP SuperSeal JS   AS   IP667   AS     20 VDC   24D   R24D   AMP SuperSeal Vith Diode   ASD   IP67   ASD     20 VDC 20D   R20D   AMP SuperSeal Vith Diode   Deutsch   DE   IP67   DE     20 VDC 24D   R24D   Deutsch   DE   IP67   DE   IP69K     20 VDC 24D   R24D   Flying Leads with Diode   DED   IP67   DEDB   IP69K     20 VDC 24D   R24D   Flying Leads with Diode   FLD   IP65   FLB   IP69K     * Standard coil – plastic nut and O-rings   Flying Leads with Diode   FLD   IP65   FLB   IP69K     "O(no coil O-rings nee	073 Sc	hematic: Bull Type							H	v	Viton	354002019
Coil Voltage   Standard Coil   Robust Coil   Coil   Standard Coil   IP Rating   Robust Coil   IP Rating     Code   Code   Code   Code   Code   Code   Code     No Coil, with nut*   00   R00   R00   And   IP67   -   -     10 VDC   10D   R10D   Amp Junior   AJ   IP67   -   -     20 VDC   20D   R20D   AMP SuperSeal 1.5   AS   IP67   ASD   IP69K     20 VDC**   110A   -   Deutsch   DE   IP67   DE   IP69K     20 VAC***   120A   -   Flying Leads   FL   IP65   FL   IP69K     20 VAC***   220A   -   Flying Leads with Diode   DED   IP67   DEB   IP69K     20 vAC***   220A   -   Flying Leads   FL   IP65   FL   IP69K     30 oil – steel nut P/N 173804910   -   Metri-Pack 150 Type 2   -   M32B   IP69K     ** DIN only - external rectifier needed   Metri-Pack 150 with Diode   -   -   M32B	00	nematic. Full Type			_						-	551002015
Coll voltage     Standard coll moduls coll Code     Code     Code       No Coil, with nut*     00     R00     -     00     -       10 VDC     100     R100     Amp Junior     AJ     IP67     -       11 VDC     120     R12D     AMP SuperSeal 1.5     AS     IP67     -       20 VDC     200     R20D     AMP SuperSeal 1.5     AS     IP67     ASD     IP69K       24 VDC     240     R24D     Deutsch     DE     IP67     DE     IP69K       20 VAC**     110A     -     Deutsch with Diode     DED     IP67     DE     IP69K       20 VAC**     220 VAC**     200     -     Flying Leads with Diode     FL     IP65     FL     IP69K       20 VAC**     10A     -     Deutsch with Diode     FL     IP65     FL     IP69K       30 V Coll – steel nut P/N 173804910     Metri-Pack 150 Type 2     -     M3DB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M3DB	Г	Cell Veltege	Stondard Call	Dahuat Cail		Coil Termination	Standard Coil	IP Rating	Robust Coi	I IP Ratir	ng	
No Coil, with nut*     OC     Could		con voltage	Code	Code			Code		Code	_		
No Coli, Wint Nation     Note     And Durino     All Display     IP67     -     -       10 VDC     100 DR     R10D     And Durinor with Diode     AJD     IP67     -     -       12 VDC     12D     R12D     And PsuperSeal 1.5     AS     IP67     ASD     IP69K       20 VDC     20D     R20D     AMP SuperSeal 1.5     AS     IP67     ASDB     IP69K       24 VDC     24D     R24D     Deutsch     DE     IP67     DE     IP69K       210 VAC**     110 VAC**     1104     -     Deutsch with Diode     DED     IP67     DEDB     IP69K       220 VAC**     220A     -     -     Flying Leads with Diode     FL     IP65     FL     IP69K       8 coil – steel nut P/N 173804910     Metri-Pack 150 Type 2     -     -     M3DB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     -     M3DB     IP69K	F	No Coil with put*	00	POO		No Coil	00	-	00	-		
10 VCC     10D     NUO     Amp Junior with Diode     AJD     IP67     -     -       12 VDC     12D     R12D     AMP SuperSeal 1.5     AS     IP67     AS     IP69K       20 VDC     20D     R20D     AMP SuperSeal 1.5     AS     IP67     ASD     IP69K       24 VDC     24D     R24D     Deutsch     DE     IP67     DE     IP69K       110 VAC**     110A     -     Deutsch with Diode     DE     IP67     DE     IP69K       220 VAC***     220A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FLDB     IP69K       Metri-Pack 150 Type 2     -     -     M3DB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M3DB     IP69K	F	10 VDC	100	R00		Amp Junior	AJ	IP67	-	-	_	
12 VUC     12 VUC<	н	10 VDC	100	R10D		Amp Junior with Diode	AJD	IP67	-	-	_	
20 V0C     200     R24D     AMP SuperSeal with Diode     ASD     IP67     ASDB     IP69K       24 VDC     24D     R24D     Deutsch     DE     IP67     DE     IP69K       110 VAC**     110A     -     Deutsch with Diode     DED     IP67     DEB     IP69K       220 VAC**     220A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic nut and 0-rings R-coil – steel nut P/N 173804910     -     Flying Leads with Diode     FLD     IP65     FLD     IP69K       Metri-Pack 150 Type 2     -     M3DB     IP69K	H	12 VDC	120	RIZD		AMP SuperSeal 1.5	AS	IP67	AS	IP69K	<u> </u>	
24 VUC     240     R240     Deutsch     DE     IP67     DE     IP69K       110 VAC**     110A     -     Deutsch with Diode     DED     IP67     DEB     IP69K       220 VAC***     220A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FLDB     IP69K       * Oli O-rings needed)     Metri-Pack 150 Type 2     -     M3DB     IP69K	F	20 VDC	200	RZOD		AMP SuperSeal with Diode	ASD	IP67	ASDB	IP69K	<u>(</u>	
110 VAC**     110 A     -     Deutsch with Diode     DED     IP67     DEDB     IP69K       220 VAC**     220A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910     Flying Leads with Diode     FLD     IP65     FL B     IP69K       * Olto only - external rectifier needed     Metri-Pack 150 with Diode     -     M33     IP69K	F	24 VDC	24D	R24D		Deutsch	DE	IP67	DE	IP69K	<u>(</u>	
220 VAC**     220A     -     Flying Leads     FL     IP65     FL     IP69K       * Standard coil – plastic nut and O-rings R-coil – steel nut P/N 173804910 (no coil O-rings needed)     Flying Leads with Diode     FLD     IP65     FLDB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 Type 2     -     M3DB     IP69K	F	110 VAC**	110A	-		Deutsch with Diode	DED	IP67	DEDB	IP69K	(	
* Standard coil – plastic nut and O-rings     Flying Leads with Diode     FLD     IP65     FLDB     IP69K       R-coil – steel nut P/N 173804910     DIN 43650     DN     IP65     -     -       (no coil O-rings needed)     Metri-Pack 150 Type 2     -     -     M3DB     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     -     M3DB     IP69K	L	220 VAC**	220A	-		Flying Leads	FL	IP65	FL	IP69K	(	
R-coil – steel nut P/N 173804910     DIN 43650     DN     IP65     -       (no coil O-rings needed)     Metri-Pack 150 Type 2     -     M3     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     M3DB     IP69K	*	Standard coil - plastic	c nut and O-rir	nas		Flying Leads with Diode	FLD	IP65	FLDB	IP69K	(	
(no coil O-rings needed)     Metri-Pack 150 Type 2     -     M3     IP69K       ** DIN only - external rectifier needed     Metri-Pack 150 with Diode     -     -     M3DB     IP69K	1	R-coil - steel nut P/N	173804910	0		DIN 43650	DN	IP65	-	-		
** DIN only - external rectifier needed Metri-Pack 150 with Diode M3DB IP69K	1	(no coil O-rings neede	ed)			Metri-Pack 150 Type 2	· ·	-	M3	IP69K	<u> </u>	
	**	DIN only - external re	ectifier needeo	1		Metri-Pack 150 with Diode	•	-	M3DB	IP69K		



# Solenoid Valves Catalog 4-Way, 2-Position Spool SV08-24-08



#### **OPERATION**

Solenoid Valve, Spool Type, 2-Position, 4-Way, 08-size. When de-energized, the SV08-24-08 allows flow from ports 2 and 4 to port 1, while port 3 is blocked. When energized, the spool shifts to allow flow from port 3 to 4, and from 2 to 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for connecting both sides of a motor (free-wheeling) or cylinder to tank when not energized. Then, when energized, the valve provides unidirectional flow to the motor or cylinder. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.

This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).



Shown with Robust Coil, Metri-Pack Type 2 Connector

#### SPECIFICATIONS

SPECIFICATIONS	
Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	24 l/min
[100 psi]	[6 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**



#### SCHEMATIC



#### Operating envelope



----- Rated per NFPA T 2.6.1 at reduced operational life



# Solenoid Valves Catalog 4-Way, 2-Position Spool SV08-24-08





DIMENSIONS





**EXAMPLE CIRCUITS** 

Free wheel on Uni-directional Motor



Ρ

<u> </u>	N /00	04									
2		- 24 -	08 -		<u> </u>	<u>s - UU</u>		Code	Body a	and Ports	Body Nomenclature
								00	Cartri	dge Only	No Body
	1			1 1				4S	#4 9	SAE, AL	CP08-4-4S
								6S	#6 9	SAE, AL	CP08-4-6S
Solenoid Valve, 08								S6S	#6 S/	AE, Steel	CP08-4-S6S
Size Cavity								L2B	1/4	BSP, AL	SDC08-4-L2B
								S3B	3/8 B	SP, Steel	CP08-4-S3B
24:											
2 Position, 4 Way, Sp	ool Type								Seal Code	Material	Seal Kits
									В	Buna-N	354003319
08:									v	Viton	354003919
Schematic: Pull Type		-									
			I	Coil Terminatio	n	Standard C	nil IP Rating	Robust	oil IP Rat	ing	
Coil Voltage	Standard Coil	Robust Coil				Code		Code			
con ronage	Code	Code			No Coil	00	- ·	00			
No Coil, with nut*	00	R00	I	Am	p Junior	AJ	IP67	-			
10 VDC	10D	R10D		Amp Junior wit	h Diode	AJD	IP67	-			
12 VDC	12D	R12D	I	AMP Super	Seal 1.5	AS	IP67	AS	IP69	К	
20 VDC	20D	R20D		AMP SuperSeal wit	h Diode	ASD	IP67	ASDE	IP69	К	
24 VDC	24D	R24D			Deutsch	DE	IP67	DE	IP69	К	
110 VAC**	1104			Deutsch wit	h Diode	DED	IP67	DEDE	IP69	К	
220 VAC**	2204			Flyin	ng Leads	FL	IP65	FL	IP69	К	
* Standard sail plastic			I	Flying Leads wit	h Diode	FLD	IP65	FLDB	IP69	К	
B coil ctool put P/N	3 Hut and O-fil	ngs	I	DI	N 43650	DN	IP65	-	-		
(no coil O rings nood	od)		I	Metri-Pack 150	0 Type 2	-	-	M3	IP69	К	
** DIN only - external r	eu) ectifier neede	h	1	Metri-Pack 150 wit	h Diode	-	-	M3D	<b>3</b> IP69	К	
	Counci HEEUE										



Solenoid Valves Catalog 4-Way, 2-Position Spool CP531-21



#### **OPERATION**

This is a solenoid valve, spool-type, 4-way, 2-position, 12-size. When de-engergized, the CP531-21 allows flow from port 3 to port 4, and from port 2 to port 1. When energized, flow s allowed from port 3 to port 2, and from port 4 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

#### **APPLICATIONS**

These valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit, like motors or cylinders. Solenoid spool-type valves are direct acting and respond guickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve.



#### **SCHEMATIC**



#### SPECIFICATIONS

Rated pressure*	240 bar [3500 psi]*
Rated flow at 7 bar	32 l/min
[100 psi]	[8 US gal/min]
Weight	0.82 kg [1.81 lb]
Cavity	SDC12-4
Robust Coil	D14E 30 Watt
(Standard)	Robust Nut P/N <b>321567</b>

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **PERFORMANCE CURVES**









#### **Bi-directional Motor**







# Solenoid Valves Catalog 4-Way, 2-Position Spool SV10-24-13

Solenoid Valve, Spool Type, 2-Position, 4-Way, 10-Size. When de-energized, a ports on the SV10-24-13 are open. When energized, the spool shifts allow fror port 3 to port 2, and from port 4 to port 1. Follow the "Operating Envelope" limit to ensure shifting of the valve during operation.

### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for connecting both sides of a motor (free-wheeling) or cylinder to both the pressure and tank ports when not energized. Then, when energized, the valve provides unidirectional flow to the motor or cylinder. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can be operated with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).



#### SPECIEICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	21 l/min
[100 psi]	[6 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### PERFORMANCE CURVES



# **SCHEMATIC**







# Solenoid Valves Catalog 4-Way, 2-Position Spool SV10-24-13





**EXAMPLE CIRCUITS** 

Free Wheel and Motor Control



**ORDERING INFORMATION** <u>SV10</u> - <u>24</u> - <u>13</u> - <u>12D</u> - <u>DE</u> - <u>B</u> - 00 Body and Ports ody Nomenclature Code 00 Cartridge Only No Body 6S #6 SAE, AL CP10-4-65 Solenoid Valve, 10 Size Cavity 8S #8 SAE, AL CP10-4-85 **S8S** #8 SAE, Stee CP10-4-S8S L3B 3/8 BSP, AI SDC10-4-L3B L4B 1/2 BSP. AL SDC10-4-L4B 24: \_\_\_\_\_ 2 Position, 4 Way, Spool Type S4B CP10-4-S4B 1/2 BSP, Steel Seal Code Material Seal Kits 354001919 13: \_\_\_\_\_ Schematic: Pull Type Buna-N v Vitor 354002019 Coil Termination Standard Coil Robust Coi IP Ratin IP Ratin Coil Voltage tandard Coi Robust Coil Code Code Code Code No Coi 00 00 No Coil, with nut 00 R00 Amp Junio AJ IP67 10 VDC 10D R10D Amp Junior with Diode AJD IP67 12 VDC 12D R12D AMP SuperSeal 1. IP67 IP69k AS AS 20 VD0 20D R20D MP SuperSeal with Diod ASD IP67 ASDB IP69K 24 VD 24D R24D Deutsc DE IP67 DE IP69K 110 VAC 110A Deutsch with Diode DED IP67 DEDB IP69K 220 VAC\*\* 220A Flying Lead FL IP65 FL IP69K FLD IP65 FLDB IP69K Flying Leads with Diode Standard coil – plastic nut and O-rings DIN 43650 DN IP65 R-coil - steel nut P/N 173804910 (no coil O-rings needed) \*\* DIN only - external rectifier needed M3 Metri-Pack 150 Type 2 IP69K Metri-Pack 150 with Diod M3DB IP69k



Solenoid Valves Catalog 4-Way, 3-Position Spool SV08-34-02

## **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 08-size. When de-energized, the SV08-34-02 is closed center, blocking all flow. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. The SV08-34-02 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2.

# **APPLICATIONS**

These valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve comes standard with a manual override (one-direction, push-pin style). This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).



Shown with Robust Coils, Metri-Pack Type 2 Connectors

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	10 l/min
[100 psi]	[3 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### PERFORMANCE CURVES

33 cSt [154 SUS] hyd.oil @ 38°C [100° F] psi bar 435 30 363 25 290 20 3 to 2 to 4 to 1 218 15 S2-Energized 145 10 3 to 4 to 2 to 1 72.5 5 S1-Energized 0 0 l/min 2 0 4 6 8 10 12 14 16 18 0.5 1.6 2.1 2.6 3.2 3.7 4.2 4.8 1.1 US gal/min

Pressure drop

SCHEMATIC







Double Acting Cylinder with Unloading Valve



Fourth Position Float



C	001/10	21 (	10 10D		DD	D	^^ -			
<u> </u>	<u> </u>	- <u>34</u> - <u>(</u>	<u> 120</u> - <u>120</u> -		- <u>PD</u> -	므 -	<u>n vo</u>	ode Bo	ody and Ports	Body Nomenclature
							니트	00 C	artridge Only	No Body
								4S	#4 SAE, AL	CP08-4-4S
								6S	#6 SAE, AL	CP08-4-6S
Solenoid Valve, 08	-						L	56S #	6 SAE, Steel	CP08-4-S6S
Size Cavity								2B	1/4 BSP, AL	SDC08-4-L2B
							L	<b>33B</b> 3	/8 BPS, Steel	CP08-4-S3B
34:								Seal Co	de Material	Seal Kits
3 Position, 4 Way, Sp	ooliype							B	Buna-N	354003319
								v	Viton	354003919
02:			-							
Schematic: Closed									Code	Manual Override
Center			Coil Termin	ation	Standard Coil	IP Rating	Robust Coil	IP Rating	Omit	Push Pin (Standard)
Coil Voltago	Standard Coil	Robust Coil	contentin	acion	Code	in norths	Code	in norma	PB	Push Button
Coll Voltage	Code	Code		No Coil	00	-	00		6.00	Screw Style (Push-
No Coil, with nut*	00	R00		Amp Junior	AJ	IP67		-	542	Type Valve)
10 VDC	10D	R10D	Amp Junio	r with Diode	AJD	IP67	-	-		
12 VDC	12D	R12D	AMP S	uperSeal 1.5	AS	IP67	AS	IP69K		
20 VDC	200	R20D	AMP SuperSea	l with Diode	ASD	IP67	ASDB	IP69K		
24 VDC	240	R24D		Deutsch	DE	IP67	DE	IP69K		
110.VAC**	1104	11240	Deutsch	n with Diode	DED	IP67	DEDB	IP69K		
220 VAC**	2204	<u> </u>		Flying Leads	FL	IP65	FL	IP69K		
220 VAC**	ZZUA	· ·	Flying Lead	s with Diode	FLD	IP65	FLDB	IP69K		
Standard coll – plastic B soil steel put D/N	172800520	ngs		DIN 43650	DN	IP65	-	-		
(no coil O rings pood	173000539		Metri-Pac	< 150 Type 2	-	-	M3	IP69K		
** DIN Only - external r	cu) ectifier neede	d	Metri-Pack 150	) with Diode	-	-	M3DB	IP69K		



# Solenoid Valves Catalog 4-Way, 3-Position Spool SV10-34-02

# **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 10-size. When de-energized, the SV10-34-02 is closed center, blocking all flow. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. This valve comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve comes standard with a manual override (one-direction, push-pin style). Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).



Shown with Standard Coils, Deutsch Connectors

# SV - Solenoid Valves SV10-34-02

SPECIFICATIONS
----------------

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	20 l/min
[100 psi]	[5 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**

33 cSt [154 SUS] hyd.oil @ 38°C [100° F] psi bar 232 16 3 to 2 to 4 to 1 174 12 S2-energized 116 8 58 4 3 to 4 to 2 to 1 S1-energized 0 0 l/min 0 4 8 12 16 20 24 28 1.1 2.1 3.2 4.2 5.3 6.3 7.4 US gal/min

Pressure drop









# Solenoid Valves Catalog 4-Way, 3-Position Spool SV10-34-02





# **EXAMPLE CIRCUITS**

Fourth Position Float



# Double Acting Cylinder with Unloading Valve



SV - Solenoid Valves SV10-34-02

		CV/4/	<b>h</b>	00 14	2D		DD	р	00		_		-
		<u>3VI</u>	<u>J - 3</u>	<u> - UZ - 1</u>	20	- <u>DE</u> -	<u> </u>	- <u>D</u> -	<u> </u>	Code	Body B	and Ports	Body Nomenclature
		-				·				00	Cartri	dge Only	No Body
										65	#6 5	SAE, AL	CP10-4-6S
										8S	#8 9	SAE, AL	CP10-4-8S
Solenoid Valve 10 Si	zo Cavity —									S8S	#8 S/	AE, Steel	CP10-4-S8S
	Le ouvrig									L3B	3/8	BSP, AL	SDC10-4-L3B
										L4B	1/2	BSP, AL	SDC10-4-L4B
34:										S4B	1/2 B	SP, Steel	CP10-4-S4B
3 Position, 4 Way, Sp	ool Type										Seal Code	Materia	al Seal Kits
										<b>-</b>	B	Buna-N	354001919
02:											v	Viton	354002019
Schematic: Closed					1								
Center				Coil Termination		Standard Coil	IP Rating	Robust Coil	IP Rating			Code	Ivianual Override
Coil Voltage	Standard Coil	Robust Coil				Code	Ů	Code	Ĭ			Omit	Push Pin (Standard)
Ŭ Ŭ	Code	Code		Ν	lo Coil	00	-	00	-			РВ	Push Button
No Coil, with nut*	00	R00		Amp	Junior	AJ	IP67	-	-			SPS	Screw Style
10 VDC	10D	R10D		Amp Junior with	Diode	AJD	IP67	-	-				Push Dip Nut for
12 VDC	12D	R12D		AMP SuperSe	al 1.5	AS	IP67	AS	IP69K			OPS	Protection & Actuation
20 VDC	20D	R20D		AMP SuperSeal with	Diode	ASD	IP67	ASDB	IP69K			ΡΔΤ	Push and Twist
24 VDC	24D	R24D		De	eutsch	DE	IP67	DE	IP69K			141	Tush and Twist
110 VAC**	1104			Deutsch with	Diode	DED	IP67	DEDB	IP69K				
220 VAC**	2204	-		Flying	Leads	FL	IP65	FL	IP69K				
220 VAC	0A		1	Flying Leads with	Diode	FLD	IP65	FLDB	IP69K				
* Standard coil - plastic	c nut and O-rir	ngs; R-coil –	- steel	DIN	43650	DN	IP65	-	-				
nut P/N 173804910 (	no coil O-rings	s needed)		Metri-Pack 150	Гуре 2	-	-	M3	IP69K				
** DIN only - external re	ectifier needeo	ł		Metri-Pack 150 with	Diode	-	-	M3DB	IP69K				



Solenoid Valves Catalog 4-Way, 3-Position Spool HSV10-34-02

#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 10-size. When de-energized, the HSV10-34-02 is closed center, blocking all flow. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. This valve comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Use the optional screen to help protect the actuator from large particles. This valve comes standard with a manual override (one-direction, pushpin style). Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).



Shown with High Pressure Coils, Deutsch Connectors

# SPECIFICATIONS

**SV - Solenoid Valves** 

HSV10-34-02

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar	25 l/min
[100 psi]	[6.6 US gal/min]
Weight	0.85 kg [1.87 lb]
Cavity	SDC10-4
Standard Coil	H16 29 Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **SCHEMATIC**



#### **PERFORMANCE CURVES**



Pressure drop

Operating envelope



SV - 160



Solenoid Valves Catalog 4-Way, 3-Position Spool HSV10-34-02 **5** 



#### **EXAMPLE CIRCUITS**

Fourth Position Float



# Double Acting Cylinder with Unloading Valve



ORDERING INFORMATION

# <u>HSV10 - 34 - 02 - H12D - DE - PN - P - 00</u>

						- T		Bodies		
High Pressur	e Solenoid Valve,							Code	Port & Material	Body Nomenclature
4-way, spool	-type solenoid valve.	Coil Vol	tage					00	Cartridge only	No Body
		Code	Description					S3B	3/8 BSP, Ductile	SDC10-4-S3B
		HOO	No Coil	_				S4B	1/2 BSP, Ductile	SDC10-4-S4B
		H12D	12 VDC	-				S6S	#6 SAE, Ductile	SDC10-4-S6S
		H24D	24 VDC	_				S8S	#8 SAE, Ductile	SDC10-4-S8S
Coil Te	rmination	112 10						*** Alum	num bodies available f	or lower pressure
Code	Description			IP Ratin	a		Soal Opt	applicatio	on. Please consult facto	ry for details.
00	No Coil			-	5		Codo		Seal Material	Seal kit
FI	Flying Lead			IP 69k			D	Polyure	hane Single Seal	111/292/
DE	Deutsch			IP 69k				rolyare		11143024
AS	AMP SuperSeal 1.5 and Metri-Pag	k 150 typ	e 1	IP 69k		Manual	Override			
ASDB	AMP Super Seal with Diode Bidir	ectional		IP 69k		Code	Descript	ion		
DEDB	Deutsch with Diode Bidirectional			IP 69k		PN	Push Pin	M/O No.t	(	1
FLDB	Elving Lead with Diode Bidirectic	nal		IP 69k		OPS	Push Pin	WI/O NUT	for Protection & Actuat	ion
	I iying Lead with Diode Didirectio	inui		11 09K		PAT	Push and	d Twist		



Solenoid Valves Catalog 4 Way, 3 Position Spool SV15-34-02



#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-34-02 is closed center, blocking all flow. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/4306 and uses a metric M33x2 cavity (NCS 12/4) for high flow capability. The SV15-34-02 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2.

#### **APPLICATIONS**

These valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Use the optional screen to help protect the actuator from large particles. This valve comes standard with a manual override (one-direction, push-pin style). This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).



#### SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	60 l/min
[100 psi]	[16 US gal/min]
Weight including coil	1.400 kg [3.09 lbs]
Cavity	NCS 12/4
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# SCHEMATIC



#### **PERFORMANCE CURVES**



Pressure Drop





11141717 • Rev CA • August 2015



# Solenoid Valves Catalog 4 Way, 3 Position Spool SV15-34-02



#### DIMENSIONS

mm [in]

Cross-sectional view



## **EXAMPLE CIRCUITS**





# 2

5	<u>5V15</u> -	- <u>34</u> - <u>C</u>	<u>)2 - 12</u>	<u>D - D</u>	<u> - E</u>	<u>3</u> -	<u>F</u> -	<u>00</u>				
	1	1	1 I	I			1		ode	Body ar	nd Ports	Body Nomenclature
									00	Cartrid	ge Only	No Body
Solenoid Valve, Spoo									8S	#8 SA	E, AL	NCS 12/4-L-8S
Type, 15 Size Cavity						Filte	er:		125	#12 S	AE, AL	NCS 12/4-L-12S
						No F	ilter Om	it 🗌	4B	1/2 B	SP, AL	NCS 12/4-L-1/2
34:						300	µm F		6B	3/4 B	SP, AL	NCS 12/4-L-3/4
02: Schematic type	Standard Coil				Seal	Code B V	Material Buna-N Viton	Sea 111 111	al Kits .15884 .15885	1 5 7		
No Coil, with nut*	Code <b>00</b>				1		Coil Termin	ation	Sta	ndard Coil	IP Rating	
10 VDC	10D							No Co	il	00		
12 VDC	12D							Amn Junio	r	AI	IP67	
20 VDC	20D						Amp Junior	with Diod	e	AID	IP67	
24 VDC	24D							Deutsc	h	DE	IP67	
110 VAC**	110A						Deutsch	with Diod	e	DED	IP67	
220 VAC**	220A						F	- lying Lead	s	FL	IP65	
* Standard coil - plastic	c nut and O-rin	ngs						DIN 4665	0	DN	IP65	
** External Rectifier Ne	eded - DN ter	mination only										



# Solenoid Valves Catalog 4-Way, 3-Position Spool SV08-34-03



Solenoid Valve, Spool Type, 3-Position, 4-Way, 08-size. When de-energized, the SV08-34-03 is open center, and opens flow between all four ports. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. The SV08-34-03 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).



Shown with Robust Coils, Deutsch Connectors

### SPECIFICATIONS

**SV - Solenoid Valves** 

SV08-34-03

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	8 l/min
100 psi]	[2 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

### **PERFORMANCE CURVES**



# SCHEMATIC







Directional motor control with dual counterbalance and pressure compensation



Double-acting cylinder control with single pilot-operated check.



S/102 21	02 12D - DE		D	00 -				
<u>3700</u> - <u>34</u> -	<u>03 - 120 - DL</u>	- <u>FD</u> -	- 므 -	- <u></u> -	Code	Body a	and Ports	Body Nomenclature
· · · · ·					00	Cartrio	dge Only	No Body
				1 11	4S	#4 S	AE, AL	CP08-4-4S
					6S	#6 S	AE, AL	CP08-4-6S
Solenoid Valve, 08 —					S6S	#6 SA	E, Steel	CP08-4-S6S
Size Cavity					L2B	1/4 E	BSP, AL	SDC08-4-L2B
				L	S3B	3/8 BI	PS, Steel	CP08-4-S3B
34:					Se	al Code	Material	Seal Kits
3 Position, 4 Way, Spool Type						в	Buna-N	354003319
						v	Viton	354003919
03:								
Schematic: Open Center				_   <sup>L</sup>			Code	Manual Override
	Coil Termination	Standard Coil	IP Rating	Robust Coil	IP Rating	1	Omit	Push Pin (Standard)
Coil Voltage Standard Coil Robust Coil		Code	Ű	Code	l `	1	PB	Push Button
Code Code	No Coil	00	-	00	-	1	CDC	Screw Style (Push-
No Coil, with nut* 00 R00	Amp Junior	AJ	IP67	-	-		313	Type Valve)
10 VDC 10D R10D	Amp Junior with Diode	AJD	IP67	-	-			
12 VDC 12D R12D	AMP SuperSeal 1.5	AS	IP67	AS	IP69K	]		
20 VDC 20D R20D	AMP SuperSeal with Diode	ASD	IP67	ASDB	IP69K	]		
24 VDC 24D R24D	Deutsch	DE	IP67	DE	IP69K	]		
110 VAC** 110A -	Deutsch with Diode	DED	IP67	DEDB	IP69K	]		
220 VAC** 220A -	Flying Leads	FL	IP65	FL	IP69K			
* Standard coil – plastic put and O-rings	Flying Leads with Diode	FLD	IP65	FLDB	IP69K			
R-coil – steel nut P/N 173800539	DIN 43650	DN	IP65	-	-	]		
(no coil O-rings needed)	Metri-Pack 150 Type 2	-	-	M3	IP69K	]		
	Advertige of Approximate provide							



Solenoid Valves Catalog 4-Way, 3-Position Spool SV10-34-03

#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 10-size. When de-energized, the SV10-34-03 is open center, and opens flow between all four ports. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.



#### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).

Shown with Standard Coils, Deutsch Connectors

# SV - Solenoid Valves SV10-34-03

# SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	25 l/min
[100 psi]	[6.6 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**

Pressure drop 33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



SCHEMATIC







Directional motor control with dual counterbalance and pressure compensation



Double-acting cylinder control with single pilot-operated check.



		SV/10	י_ ר	3/ 03 12	חי		DD	B	00					
		<u> 3 v it</u>	<u>-</u>	<u> - 03 - 12</u>	<u>.</u>		<u>FD</u>		<u> </u>	Code	e Body	and Ports	E	ody Nomenclature
									.	00	Cartr	idge Only		No Body
										<u>6S</u>	#6 :	SAE, AL	-	CP10-4-6S
										85	#8 :	SAE, AL		CP10-4-8S
Solenoid Valve, 10	Size Cavity –									S85	#8 S/	AE, Steel		CP10-4-S8S
										L3B	3/8	BSP, AL		SDC10-4-L3B
										L4B	1/2	BSP, AL		SDC10-4-L4B
34:				-						S4B	1/2 B	SP, Steel		CP10-4-S4B
3 Position, 4 Way, 8	pool Type										Seal Code	Materi	al	Seal Kits
										<b>–</b>	В	Buna-l	N	354001919
03:											v	Viton		354002019
Schematic: Open												Carla		Assessed Occurride
Center				Coil Termination		Standard Coil	IP Rating	Robust Coil	IP Rating			Code	1	vianual Overnue
Coil Voltage	Standard Coil	Robust Coil	1			Code		Code	, i			Omit	PL	Ish Pin (Standard)
_	Code	Code		No	Coil	00	-	00	-			РВ		Push Button
No Coil, with nut	* 00	R00		Amp Ju	inior	AJ	IP67	-	-			SPS		Screw Style
10 VD	C 10D	R10D		Amp Junior with D	iode	AJD	IP67	-	-				(1	Push Dip Nut for
12 VD	C 12D	R12D	1	AMP SuperSea	l 1.5	AS	IP67	AS	IP69K			OPS	Pro	tection & Actuation
20 VD	C 20D	R20D	1	AMP SuperSeal with D	iode	ASD	IP67	ASDB	IP69K			ΡΔΤ	FIU	Push and Twist
24 VD	240	R24D		Deu	ıtsch	DE	IP67	DE	IP69K			141		i usii uliu i wist
110 VAC*	* 110A			Deutsch with D	iode	DED	IP67	DEDB	IP69K					
220 VAC*	* 2204	-		Flying L	eads	FL	IP65	FL	IP69K					
220 VAC	220A	-	1	Flying Leads with D	iode	FLD	IP65	FLDB	IP69K					
* Standard coil – plas	tic nut and O-ri	ngs; R-coil –	steel	DIN 43	3650	DN	IP65	-	-					
nut P/N 173804910	(no coil O-rings	s needed)		Metri-Pack 150 Ty	pe 2	-	-	M3	IP69K					
** DIN only - external	rectifier needed	ł		Metri-Pack 150 with D	iode	-	-	M3DB	IP69K					



# Solenoid Valves Catalog 4 Way, 3 Position Spool SV15-34-03



#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-34-03 is open center, and opens flow between all four ports. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/4307 and uses a metric M33x2 cavity (NCS 12/4) for high flow capability. The SV15-34-03 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2.

#### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).



#### SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	50 l/min
[100 psi]	[13 US gal/min]
Weight including coil	1.40 kg [3.09 lbs]
Cavity	NCS 12/4
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# SCHEMATIC



### **PERFORMANCE CURVES**







### Directional motor control with dual counterbalance and pressure compensation



# Double-acting cylinder control with single pilot-operated check.







Solenoid Valves Catalog 4-Way, 3-Position Spool SV08-34-04



#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 08-size. When de-energized, the SV08-34-04 allows flow from port 3 to port 1, while ports 2 and 4 are blocked. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

#### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).

Shown with Robust Coils, Metri-Pack Type 2 Connectors

# SV - Solenoid Valves SV08-34-04

#### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	6 l/min
[100 psi]	[2 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**



#### SCHEMATIC

()---))--))-- mm

![](_page_169_Figure_17.jpeg)

#### Operating envelope

![](_page_169_Figure_19.jpeg)

#### 11141717 • Rev CA • August 2015

![](_page_170_Picture_0.jpeg)

![](_page_170_Figure_2.jpeg)

# Series Circuit - Open Center

![](_page_170_Figure_4.jpeg)

C C	<u>ه ۸</u>	21 0			סס	D	<u> </u>					
<u> </u>	<u></u>	· <u>34</u> - <u>(</u>	<u> 120 - I</u>	ᅳ	- <u>PD</u> -	므 -	<u> </u>	Code	Body a	nd Ports	Body Nomenclature	
								00	Cartrid	lge Only	No Body	
								4S	#4 S/	AE, AL	CP08-4-4S	
								6S	#6 S/	AE, AL	CP08-4-6S	
Solenoid Valve, 08								S6S	#6 SA	E, Steel	CP08-4-S6S	
Size Cavity								L2B	1/4 B	SSP, AL	SDC08-4-L2B	
								S3B	3/8 BP	PS, Steel	CP08-4-S3B	
34:								Sea	Code	Material	Seal Kits	
3 Position, 4 Way, Sp	ool Type							-	в	Buna-N	354003319	
									v	Viton	354003919	
04:								-				
Schematic: Closed		-					-			Code	Manual Override	
Center Work Ports			Coil Termination		Standard Coil	IP Rating	Robust Coil	IP Ratin	7	Omit	Push Pin (Standard)	
Coil Voltage	Standard Coil	Robust Coil					Code	Ŭ		РВ	Push Button	
	Code	Code		No Coil	00	-	00	-		606	Screw Style (Push-	
No Coil, with nut*	00	R00	Amp	Junior	AJ	IP67	-	-		383	Type Valve)	
10 VDC	10D	R10D	Amp Junior wit	ו Diode	AJD	IP67	-	-		-		
12 VDC	12D	R12D	AMP Supers	eal 1.5	AS	IP67	AS	IP69K				
20 VDC	20D	R20D	AMP SuperSeal with	n Diode	ASD	IP67	ASDB	IP69K				
24 VDC	24D	R24D	[	Deutsch		IP67	DE	IP69K				
110 VAC**	110A	-	Deutsch with	Deutsch with Diode		IP67	DEDB	IP69K				
220 VAC**	220A	-	Flying Leads		FL	IP65	FL	IP69K				
* Standard coil - plastic	nut and O-rin	ngs	Flying Leads wit	n Diode	FLD	IP65	FLDB	IP69K				
R-coil - steel nut P/N	173800539	-	DIN	43650	DN	IP65 -		-				
(no coil O-rings neede	ed)		Metri-Pack 150,	Type 2	-	-	M3	IP69K				
** DIN only - external rectifier needed			Metri-Pack 150 with	-	M3DB		IP69K					

![](_page_171_Picture_0.jpeg)

# Solenoid Valves Catalog 4 Way, 3 Position Spool SV15-34-04

![](_page_171_Picture_2.jpeg)

# **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-34-04 allows flow from port 3 to port 1, while ports 2 and 4 are blocked. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/4308. The SV15-34-04 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2.

# APPLICATIONS

These valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).

#### SPECIFICATIONS

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	50 l/min
[100 psi]	[13 US gal/min]
Weight including coil	1.400 kg [3.09 lbs]
Cavity	NCS 12/4
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# PERFORMANCE CURVES

![](_page_171_Figure_12.jpeg)

![](_page_171_Figure_13.jpeg)

SCHEMATIC

![](_page_171_Figure_15.jpeg)

![](_page_171_Figure_17.jpeg)

![](_page_171_Figure_20.jpeg)

![](_page_172_Picture_0.jpeg)

# Solenoid Valves Catalog 4 Way, 3 Position Spool SV15-34-04

**F** 

#### DIMENSIONS

Cross-sectional view

mm [in]

![](_page_172_Figure_6.jpeg)

## **EXAMPLE CIRCUITS**

# Series Circuit - Open Center

![](_page_172_Figure_9.jpeg)

Sequencing Circuit

![](_page_172_Figure_11.jpeg)

![](_page_172_Figure_14.jpeg)

![](_page_173_Picture_0.jpeg)

Solenoid Valves Catalog 4-Way, 3-Position Spool SV10-34-04

![](_page_173_Picture_2.jpeg)

#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 10- size. When de-energized, the SV10-34-04 allows flow from port 3 to port 1, while ports 2 and 4 are blocked. When energized, the SV10-34-03 is open center, and opens flow between all four ports. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to 1. When coil S2 is energized, the spool shifts to allow flow flow from port 3 to port 4, and from port 2 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

#### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).

![](_page_173_Picture_7.jpeg)

Shown with Robust Coils. Deutsch Connectors

# SV - Solenoid Valves SV10-34-04

#### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	15 l/min [4 US gal/min]
[100 psi]	
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**

Pressure drop 33 cSt [154 SUS] hyd.oil @ 38°C [100° F]

![](_page_173_Figure_16.jpeg)

#### SCHEMATIC

![](_page_173_Figure_19.jpeg)

#### Operating envelope

![](_page_173_Figure_21.jpeg)

11141717 • Rev CA • August 2015

![](_page_174_Picture_0.jpeg)

![](_page_174_Figure_2.jpeg)

# Series Circuit - Open Center

![](_page_174_Figure_4.jpeg)

SV - Solenoid Valves SV10-34-04

![](_page_174_Figure_6.jpeg)

		C)/4	<u>م</u>		1 100		סס	D	00					
		<u>3VI</u>	<u>u</u> - <u>.</u>	<u>54</u> - <u>U</u>	<u>+ - IZD</u>		- <u>PD</u>	- <u>D</u> -	<u>00</u> г	Code	Body	and Ports	Bc	ody Nomenclature
										00	Cartri	dge Only		No Body
										6S	#6 5	SAE, AL		CP10-4-6S
										8S	#8 5	SAE, AL		CP10-4-8S
Solenoid Valve 10 Si	ze Cavity —									S8S	#8 S/	AE, Steel		CP10-4-S8S
	Le ouvrity									L3B	3/8	BSP, AL		SDC10-4-L3B
										L4B	1/2	BSP, AL		SDC10-4-L4B
34:				- 1						S4B	1/2 B	SP, Steel		CP10-4-S4B
3 Position, 4 Way, Sp	ool Type										Seal Code	Materia	1	Seal Kits
										<b>-</b>	B	Buna-N	<u> </u>	354001919
04:											v	Viton	-	354002019
Schematic: Closed												Carla		a suel Que mide
Center Work Ports			_	Coil Te	rmination	Standard Coil	IP Rating	Robust Coil	IP Rating			Omit	IVI	h Dip (Standard)
Coil Voltage	Standard Coil	Robust Co	1				-	Code	-			DD	Pus	Duck Dutter
	Code	Code			No Coil	00	-	00	-			PD		Push Button
No Coil, with nut*	00	R00			Amp Junior	AJ	IP67	IP67 -				SPS	(Push-Type Valve)	
10 VDC	10D	R10D		Amp Ji	unior with Diode	AJD	IP67	57					P	ush Pin Nut for
12 VDC	12D	R12D		AN	VIP SuperSeal 1.5	AS	IP67	AS IPE				OPS	Prote	ection & Actuation
20 VDC	20D	R20D		AMP Supe	rSeal with Diode	ASD	IP67	ASDB IP69K				ΡΔΤ	F	Push and Twist
24 VDC	24D	R24D	-		Deutsch	DE	IP67	57 DE IP69K						don and Twist
110 VAC**	110A	-		Dei	Deutsch with Diode		IP67	DEDB IP69K						
220 VAC**	2204	-	-	Flying Leads		FL	IP65	FL	IP69K					
220 1/10		_		Flying L	Leads with Diode	FLD	IP65	FLDB	IP69K					
* Standard coil – plastic nut and O-rings; R-coil – steel			DIN 43650		DN	IP65	-	-						
nut P/N 173804910 (	no coil O-rings	s needed)		Metri	-Pack 150 Type 2	-	-	M3	IP69K					
** DIN only - external rectifier needed				Metri-Pac	k 150 with Diode	-	-	M3DB	IP69K					

![](_page_175_Picture_0.jpeg)

Solenoid Valves Catalog 4-Way, 3-Position Spool SV08-34-05

![](_page_175_Picture_2.jpeg)

#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 08-size. When de-energized, the SV08-34-05 is float-center, allowing flow between ports 1, 2 and 4, while port 3 is blocked. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

#### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Use the optional screen to help protect the actuator from large particles. This valve can operate with an inlet pressure of 315 bar on port 3 for 500,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended for use as inlet (Tank only).

![](_page_175_Picture_7.jpeg)

Shown with Standard Coils, Deutsch Connectors

#### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	10 l/min
[100 psi]	[3 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt
	Robust Nut P/N <b>173800539</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### PERFORMANCE CURVES

![](_page_175_Figure_14.jpeg)

## SCHEMATIC

![](_page_175_Figure_16.jpeg)

![](_page_175_Figure_18.jpeg)

![](_page_176_Picture_0.jpeg)

Double-acting cylinder control with dual counterbalance

![](_page_176_Figure_3.jpeg)

![](_page_176_Figure_4.jpeg)

2 Speed Circuit

C	<u>مر، ۱۰</u>	24	05 100		חח	D	<u> </u>				
<u> </u>	<u> </u>	- <u>34</u> - <u>9</u>	<u>05 - IZD</u> ·		- <u>PD</u> -	므 -		ode Bo	ody and	d Ports	Body Nomenclature
			_					<b>00</b> C	artridg	e Only	No Body
								4S	#4 SAE	E, AL	CP08-4-4S
								6S	#6 SAE	E, AL	CP08-4-6S
Solenoid Valve, 08	_							56S #	6 SAE,	Steel	CP08-4-S6S
Size Cavity								2B	1/4 BSI	P, AL	SDC08-4-L2B
								<b>3B</b> 3	/8 BPS	, Steel	CP08-4-S3B
34:								Seal Co	ode	Material	Seal Kits
3 Position, 4 Way, Sp	ooliype							В		Buna-N	354003319
05.								v		Viton	354003919
UD: Sohomotio: Elect Con			_								•
Schematic. Float Cen	lei									Code	Manual Override
Coil Voltage	Standard Coil	Robust Coil	Coil Termin	ation	Standard Coil	IP Rating	Robust Coil	IP Rating		Omit	Push Pin (Standard)
	Code	Code					Code			PB	Push Button
No Coil, with nut*	00	R00		No Coil		-	00	-		SDS	Screw Style (Push-
10 VDC	10D	R10D		Amp Junior	AJ	IP67	-	-		515	Type Valve)
12 VDC	12D	R12D	Amp Junior	with Diode	AJD	IP67	-	-			
20 VDC	20D	R20D	AMP Su	perSeal 1.5	AS	IP67	AS	IP69K			
24 VDC	24D	R24D	AMP SuperSea	l with Diode	ASD	IP67	ASDB	IP69K			
110 VAC**	1104			Deutsch	DE	IP67	DE	IP69K			
220 VAC**	2204		Deutsch	Deutsch with Diode		IP67	DEDB	IP69K			
* Standard agil plaatic	nut and O riv			Flying Leads	FL	IP65	FL	IP69K			
P coil stool put P/N	17390530	igs	Flying Leads	with Diode	FLD	IP65	FLDB	IP69K			
(no coil O-rings need)	ad)			DIN 43650	DN	IP65	-	-			
** DIN only - external re	ectifier needer	4	Metri-Pack	: 150 Type 2	-	-	M3	IP69K			
Birtoniy Oxfornario		•	Metri-Pack 150	) with Diode	-	-	M3DB	IP69K			

![](_page_177_Picture_0.jpeg)

Solenoid Valves Catalog 4-Way, 3-Position Spool SV10-34-05

![](_page_177_Picture_2.jpeg)

#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 10-size. When de-energized, the SV10-34-05 is float-center, allowing flow between ports 1, 2 and 4, while port 3 is blocked. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. The HSV10-34-05 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

![](_page_177_Picture_5.jpeg)

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).

#### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**
Rated flow at 7 bar	20 l/min
[100 psi]	[5 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**

![](_page_177_Figure_14.jpeg)

#### SCHEMATIC

![](_page_177_Figure_16.jpeg)

#### Operating envelope

![](_page_177_Figure_18.jpeg)

----- Rated per NFPA T 2.6.1 at reduced operational life

![](_page_178_Figure_0.jpeg)

# Double-acting cylinder control with dual counterbalance

![](_page_178_Figure_3.jpeg)

		CV/10	<b>h</b>	06 10	П		חח	D	00					
		<u>3v I</u>	<u> </u>	<u> 54 - US - IZI</u>		- <u>DE</u> -	<u> PB</u>	- <u>D</u> -	<u>uu</u> r	Code	e Body	and Ports	Bo	dy Nomenclature
										00	Cartri	dge Only		No Body
				1 1 1						6S	#6 5	SAE, AL		CP10-4-6S
										85	#8 5	SAE, AL		CP10-4-8S
Solenoid Valve 10 Si	ze Cavity 🗕									S8S	#8 S/	AE, Steel		CP10-4-S8S
										L3B	3/8	BSP, AL		SDC10-4-L3B
										L4B	1/2	BSP, AL		SDC10-4-L4B
34:										S4B	1/2 B	SP, Steel		CP10-4-S4B
3 Position, 4 Way, Sp	ool Type										Seal Code	Materia		Seal Kits
										<b>-</b>	В	Buna-N	1	354001919
05:											v	Viton		354002019
Schematic: Float												Codo		anual Override
Center			-	Coil Termination		Standard Coil	IP Rating	Robust Coil	IP Rating			Omit	Dur	h Din (Standard)
Coil Voltage	Standard Coil	Robust Coil				Code	-	Code	-			DP	Pus	Push Button
	Code	Code		No C	Coil	00	-	00	-			PD		Fusil Button
No Coil, with nut*	00	R00		Amp Jun	nior	AJ	IP67					SPS	(Push-Type Valve)	
10 VDC	10D	R10D		Amp Junior with Dio	ode	AJD	IP67	IP67					P	ush Pin Nut for
12 VDC	12D	R12D		AMP SuperSeal	1.5	AS	IP67	AS IP69K				OPS	Prote	ction & Actuation
20 VDC	20D	R20D		AMP SuperSeal with Did	ode	ASD	IP67	IP67 ASDB				PAT	P	ush and Twist
24 VDC	24D	R24D	1	Deuts	sch	DE	IP67	DE	IP69K					
110 VAC**	110A	-		Deutsch with Dio	ode	DED	IP67	DEDB IP69K						
220 VAC**	2204			Flying Lea	ads	FL	IP65	FL	IP69K					
	0A		1	Flying Leads with Diode		FLD	IP65	FLDB	IP69K					
* Standard coil – plastic nut and O-rings; R-coil – steel			DIN 436	650	DN	IP65	-	-						
nut P/N 173804910 (	no coil O-rings	s needed)		Metri-Pack 150 Typ	e 2	-	-	M3	IP69K					
** DIN only - external rectifier needed				Metri-Pack 150 with Dio	ode	-	-	M3DB	IP69K					

![](_page_179_Picture_0.jpeg)

# Solenoid Valves Catalog 4-Way, 3-Position Spool HSV10-34-05

![](_page_179_Picture_2.jpeg)

# **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 10-size. When de-energized, the SV10-34-05 is float-center, allowing flow between ports 1, 2 and 4, while port 3 is blocked. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. The HSV10-34-05 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).

![](_page_179_Picture_7.jpeg)

Shown with High Pressure Coils, **Deutsch Connectors** 

# SPECIFICATIONS

Rated pressure*	350 bar [5075 psi]*
Rated flow at 7 bar [100 psi]	25 l/min [6.6 US gal/min]
Weight	0.85 kg [1.85 lb]
Cavity	SDC10-4
Standard Coil	H16 29Watt

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

#### **SCHEMATIC**

![](_page_179_Figure_13.jpeg)

### **PERFORMANCE CURVES**

![](_page_179_Figure_15.jpeg)

Operating envelope

![](_page_179_Figure_17.jpeg)


Solenoid Valves Catalog 4-Way, 3-Position Spool HSV10-34-05





#### **EXAMPLE CIRCUITS**

# Double-acting cylinder control with dual counterbalance



## **ORDERING INFORMATION**

# HSV10 - 34 - 05 - H12D - DE - PN - P - 00

									Bodies				
High Pressure	e Solenoid Valve,								Code	Port & Material	Body Nomencla		
This is a direc	t-acting, 2-position,						00	Cartridge only	No Body				
4-way, spool-	type solenoid valve.	Coll Vo	tage	_					S3B	3/8 BSP, Ductile	SDC10-4-S3B		
		Code	Description	_					S4B	1/2 BSP, Ductile	SDC10-4-S4B		
		H00	No Coil	_					565	#6 SAE. Ductile	SDC10-4-S6S		
		H12D	12 VDC						505	#8 SAE Ductile	SDC10-4-585		
		H24D	24 VDC						*** Alum	inum bodies available	for lower pressure		
Coil Ter	Coil Termination								applicatio	on. Please consult facto	ory for details.		
Code	Description		IP Rating	g		Seal Option							
00	No Coil		-				Code		Seal Material	Seal kit			
FL	Flying Lead		IP 69k				Р	Polyure	thane Single Seal	11143824			
DE	Deutsch		IP 69k			Manual Override							
AS	AMP SuperSeal 1.5 and Metri-P	e 1	IP 69k		Codo	Code Description							
ASDB	AMP Super Seal with Diode Bid	IP 69k			PN	Push Pin	Push Pin						
DEDB	DEDB Deutsch with Diode Bidirectional						OPS	Push Pin	M/O Nut for Protection & Actuation				
FLDB	FLDB Flying Lead with Diode Bidirectional						PAT	Push an	Push and Twist				
					_			· asirun	a				

# SV - Solenoid Valves HSV10-34-05

Body Nomenclature



# Solenoid Valves Catalog 4 Way, 3 Position Spool SV15-34-05



## **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, High Flow (15-Size). When de-energized, the SV15-34-05 is floatcenter, allowing flow between ports 1, 2 and 4, while port 3 is blocked. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation. This valve is a direct replacement for EDH 12/4309 and uses a metric M33x2 cavity (NCS 12/4) for high flow capability. The SV15-34-05 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2.

# **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. Use the optional screen to help protect the actuator from large particles. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).



#### **SPECIFICATIONS**

Rated Pressure*	210 bar [3045 psi]**
Maximum Rated Flow at 7 bar	60 l/min
[100 psi]	[16 US gal/min]
Weight including coil	1.400 kg [3.09 lbs]
Cavity	NCS 12/4
Coil	M19-33W
Diode (Optional)	Unidirectional

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

# SCHEMATIC





#### **PERFORMANCE CURVES**



Operating envelope





# Solenoid Valves Catalog 4 Way, 3 Position Spool SV15-34-05



#### DIMENSIONS

Cross-sectional view

mm [in]



# **EXAMPLE CIRCUITS**

Double-acting cylinder control with dual counterbalance



2 Speed Circuit



#### **ORDERING INFORMATION**

<u>SV15</u> - <u>34</u> - <u>05</u> - <u>12D</u> - <u>DE</u> - <u>V</u> - <u>F</u> - <u>00</u> Body and Ports Body Nomenclature Code 00 Cartridge Only No Body Solenoid Valve, Spool **8**5 #8 SAE, AL NCS 12/4-L-85 Type, 15 Size Cavity Filter: 125 #12 SAE, AL NCS 12/4-L-12S No Filter Omit 4B 1/2 BSP. AL NCS 12/4-L-1/2 300 µm 6B NCS 12/4-L-3/4 3/4 BSP, AL 34: 3 Position, 4 Way Material Seal Kits eal Cod в Buna-N 11115884 05: Schematic type Viton 11115885 Coil Voltage Standard Coi Code **Coil Termination** Standard Coi IP Ratin No Coil. with nut 00 Code 10 VDC 10D No Coi 00 12 VDC 12D Amp Junio AJ IP67 20 VDC 20D AJD Amp Junior with Diode IP67 24 VD0 24D Deutsch DE IP67 110 VAC\*\* 110A Deutsch with Diode DED IP67 220 VAC\*\* 220A Flying Leads FL IP65 \* Standard coil – plastic nut and O-rings \*\* External Rectifier Needed – DN termination only DIN 46650 IP65 DN



# Solenoid Valves Catalog 4-Way, 3-Position Spool SV10-34-11



#### **OPERATION**

Solenoid Valve, Spool Type, 3-Position, 4-Way, 10-size. When de-energized, the SV10-34-11 allows flow from port 4 to 1, blocking port 2 and 3. When coil S1 is energized, the spool shifts to allow flow from port 3 to port 4, and from port 2 to 1. When coil S2 is energized, the spool shifts to allow flow from port 3 to port 2, and from port 4 to port 1 This valve comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2. Follow the "Operating Envelope" limits to ensure shifting of the valve during operation.

#### **APPLICATIONS**

These spool-type valves are primarily used in mobile and industrial applications for controlling the direction of the flow in a circuit. Solenoid spool-type valves are direct acting and respond quickly to coil voltage input. Spool valves will have some leakage due to spool clearance, so if your application requires no leakage at the working port(s), apply a low leakage poppet valve(s), like PO check valve, counterbalance valve, etc., in addition to this solenoid valve. This valve can operate with an inlet pressure of 315 bar on port 3 for 400,000 cycles. Port 1 may be pressurized to 210 bar, but is not intended as inlet (Tank only).



Shown with Robust Coils. **Deutsch Connectors** 

#### SPECIFICATIONS

Rated pressure*	230 bar [3300 psi]**								
Rated flow at 7 bar	24 l/min								
[100 psi]	6 US gal/min]								
Weight	0.81 kg [1.79 lb]								
Cavity	SDC10-4								
Standard Coil	M16 26 Watt								
Robust Coil	R16 20 Watt								
	Robust Nut P/N <b>173804910</b>								
	(no coil O-rings needed)								

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### PERFORMANCE CURVES



# **SCHEMATIC**



#### Operating envelope





Solenoid Valves Catalog 4-Way, 3-Position Spool SV10-34-11





#### **EXAMPLE CIRCUITS**

#### **Cushion Relief in Cylinder Application**



## **ORDERING INFORMATION**

		01/4	~ ~	<b>.</b>	4 4 9 6		-		Р	00					
		201	U - J	54 - I	I - IZL	<u>ט</u> - נ	<u> </u>	РΒ	- В -	<u> </u>	Cod	le Body	and Ports	E	3ody Nomenclature
						_		<u> </u>	-		00	Cart	ridge Only		No Body
				1 1							65	#6	SAE, AL		CP10-4-6S
											85	#8	SAE, AL		CP10-4-8S
Solenoid Valve 10 Si	zo Cavity —										S85	5 #8	SAE, Steel		CP10-4-S8S
	Le ouvrity										L3E	3 3/3	3 BSP, AL		SDC10-4-L3B
											L4E	3 1/2	2 BSP, AL		SDC10-4-L4B
34:				- 1							S41	3 1/2	BSP, Steel		CP10-4-S4B
3 Position, 4 Way, Sp	ool Type											Seal Code	Materi	ial	Seal Kits
											-	B	Buna-	N	354001919
11:												v	Vitor	1	354002019
Schematic: 3P4W													Code		Manual Override
		Coil Te	Coil Termination		Standard Coil IP F		Robust Coil	IP Rating	_		Omit		vialidal Overflue		
Coil Voltage	Standard Coil	Robust Coi	L .			Coc	le		Code				DP	PI	Bush Button
	Code	Code			No Co	oil 00	)	-	00	-			PD		Fusil Button
No Coil, with nut*	00	R00			Amp Junio	or A	1	IP67					SPS		Push-Type Valve)
10 VDC	10D	R10D		Amp J	unior with Dioc	de AJ	D	IP67	-					<u> </u>	Push Pin Nut for
12 VDC	12D	R12D		AM	.5 AS	5	IP67	AS IP69K				OPS	Pro	tection & Actuation	
20 VDC	20D	R20D		AMP Supe	de AS	D	IP67	ASDB IP69K				PAT		Push and Twist	
24 VDC	24D	R24D	1		Deutso	ch DE		IP67	DE	IP69K					
110 VAC**	110A	-	1	De	utsch with Dioc	ie DE	D	IP67	DEDB	IP69K					
220 VAC**	220A	-			Flying Lead	ds FL		IP65	FL	IP69K					
			-	Flying I	Leads with Dioc	ie FLI	D	IP65	FLDB	IP69K					
<ul> <li>Standard coil – plastic</li> </ul>	c nut and O-rir	ngs; R-coil	<ul> <li>steel</li> </ul>		50 DM	1	IP65	-	-						
nut P/N 173804910 (i	no coil O-rings	s needed)		Metri	2	-	-	M3	IP69K						
** DIN only - external re	ectifier needed	i		Metri-Pac	k 150 with Dioc	le	-	-	M3DB	IP69K					



# Solenoid Valves Catalog 4 Way, 3 Position Spool SV10-34-14

#### **OPERATION**

This is a direct acting, 3-position, 4-way spool type solenoid valve. When de-energized, the SV10-34-14 allows flow from port 3 to 2 and from port 4 to 1. When coil S1 is energized, the spool shifts to the float position, allowing flow from port 2 and 4 to port 1, while blocking flow to port 3. When coil S2 is energized, the spool shifts to allow flow from port 2 to 1, and from port 4 to 3. The SV10-34-14 comes standard with a one-direction, push-pin manual override. When the manual override is pushed, the spool shifts following the logic of energizing S2. The SV10 uses a 10 size cavity and an optional 500 micron filter is available.

# **APPLICATIONS**

These valves are typically used for directional control for motor or cylinder functions, to run forward, reverse, or float free. Applications for this schematic include street sweepers (broom height control) and windrower header height. Use a pressure reducing valve before the "P" port to manage the force. This valve can also be applied to a reversing fan drive with a pressure regulated variable pump. The schematic allows the fan to shift smoothly from forward to reverse. Additionally, if the fan drive loses power, the spool shifts to the center position and the fan turns in the forward direction. This valve can operate with an inlet pressure of 315 bar on port 3 for 300,000 cycles. Port 1 may be pressurized to 150 bar, but is not intended for use as inlet (Tank only).

# SPECIFICATIONS

Rated Pressure*	230 bar [3330 psi]
Maximum Rated Flow at 7 bar	17 l/min
[100 psi]	[4.5 US gal/min]
Weight including coil	0.81 kg [1.79 lbs]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt
	Robust Nut P/N <b>173804910</b>
	(no coil O-rings needed)

\* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

\*\* See 315 bar pressure rating note on page 10.

#### **PERFORMANCE CURVES**





Shown with Standard Coils, Deutsch Connectors



Shown with Robust Coils, Deutsch Connectors

#### SCHEMATIC





#### Operating envelope







#### **EXAMPLE CIRCUITS**

#### Height Control with Float Option



## ORDERING INFORMATION

		C)/40	$\mathbf{r}$	01 11 10			סס	р		E	$ \cap \cap $		_		
		<u>5VIU</u>	<u>j - c</u>	<u> 94 - 14 - 12</u>	<u>.</u>	- DE -	<u> </u>	- <u>D</u>	-	<u> </u>	<u>UU</u>	Code	Body	and Ports	Body Nomenclature
										-		00	Cartr	idge Only	No Body
												6S	#6	SAE, AL	CP10-4-6S
											_	8S	#8	SAE, AL	CP10-4-8S
Solenoid Valve 10 Si	ze Cavity 🗕											S8S	#8 S.	AE, Steel	CP10-4-S8S
	Le ouvrity								No F	ilter	Omit	L3B	3/8	BSP, AL	SDC10-4-L3B
									Filte	r 500 mµ	F	L4B	1/2	BSP, AL	SDC10-4-L4B
34:				-						-		S4B	1/2 E	SP, Steel	CP10-4-S4B
3 Position, 4 Way, Sp	ool Type							L					Seal Code	Materi	al Seal Kits
											-		B	Buna-I	354001919
14:													v	Viton	354002019
Schematic: Raise, Lo	wer,													Codo	Manual Override
Float			_	Coil Termination		Standard Coil	IP Rating	Robust (	Coil	IP Rating				Omit	Buch Dip (Standard)
Coil Voltage	Standard Coil	Robust Coil				Code	-	Code	2	-				Onne	Push Putter
	Code	Code		No	Coil	00	-	00		-				PD	Correct Chulo
No Coil, with nut*	00	R00		Amp Ju	inior	AJ	IP67	-		-				SPS	(Push-Type Valve)
10 VDC	10D	R10D		Amp Junior with Di	iode	AJD	IP67	-		-					Push Pin Nut for
12 VDC	12D	R12D		AMP SuperSea	l 1.5	AS	IP67	AS		IP69K				OPS	Protection & Actuation
20 VDC	20D	R20D		AMP SuperSeal with Di	iode	ASD	IP67	ASDB	3	IP69K				PAT	Push and Twist
24 VDC	24D	R24D		Deu	tsch	DE	IP67	DE		IP69K					
110 VAC**	110A	-		Deutsch with Di	iode	DED	IP67	DEDB	3	IP69K					
220 VAC**	220A	-		Flying Le	eads	FL	IP65	FL		IP69K					
				Flying Leads with Di	iode	FLD	IP65	FLDB	3	IP69K					
* Standard coil – plastic nut and O-rings; R-coil – steel DIN						DN	IP65	-		-					
nut P/N 173804910 (	no coil O-rings	s needed)		Metri-Pack 150 Ty	pe 2	-	-	M3		IP69K					
** DIN only - external re	ectifier needeo	i		Metri-Pack 150 with Di	-	-	M3DE	в	IP69K						



