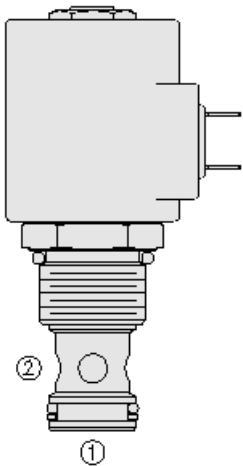




Overview



Description

A solenoid-operated, 2-way, normally closed, poppet-type, proportional, screw-in hydraulic cartridge valve, designed for low leakage blocking and load-holding applications.

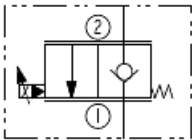
Operation

When de-energized, the sp12-20xx acts as a check valve, allowing flow from 1 to 2, while blocking flow from 2 to 1. When energized, the poppet lifts to open the 2 to 1 flow path.

Features

- Continuous-duty rated coil.
- Efficient wet-armature construction.
- Manual override option.
- Optional waterproof E-Coils rated up to IP69K.
- Industry common cavity.
- Metering option.

Symbol



Ratings

Pressure Ratings

Pressure rating	250 bar (3625 psi)
Proof pressure	345 bar (5000 psi)
Burst pressure	779 bar (11300 psi)
Maximum recommended pressure drop	207 bar (3000 psi)

Flow Ratings

Flow rating	See performance graphs
Maximum internal leakage	5 drops/min - Note: At 207 bar (3000 psi)
Hysteresis	$\Delta\% \leq 10\%$ - Note: At maximum control current for flow from 0 to 5.7 lpm (0 to 1.5 gpm) for the standard poppet and 0 to 56.8 lpm (0 to 15 gpm) for the 'A' metering poppet

Temperature Ratings

Operating fluid temperature	-40 to 100 °C (-40 to 212 °F)	- Note: With Buna N seals
	-26 to 204 °C (-15 to 400 °F)	- Note: With Buna N seals
	-40 to 100 °C (-40 to 212 °F)	- Note: With fluorocarbon seals
	-54 to 107 °C (-65 to 225 °F)	- Note: With polyurethane seals
Storage temperature	-40 to 70 °C (-40 to 160 °F)	
Ambient temperature	-40 to 70 °C (-40 to 160 °F)	

Environmental Ratings

Corrosion Protection	960 hr salt spray per ASTM B117
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Properties

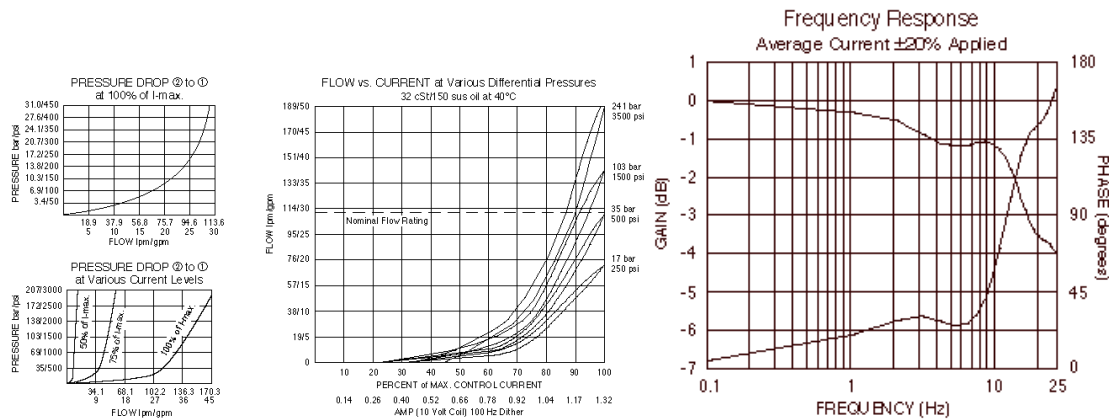
Fluids

Fluids	Mineral based or synthetic hydraulic fluid with lubricating properties.
Fluid viscosity range	7.4 TO 420 cSt
Maximum operating contamination level	20/18/14 PER ISO 4406
Unit weight	0.24 kg (0.52 lb)
Internal wetted surface area	174 cm ² (27.0 in ²)

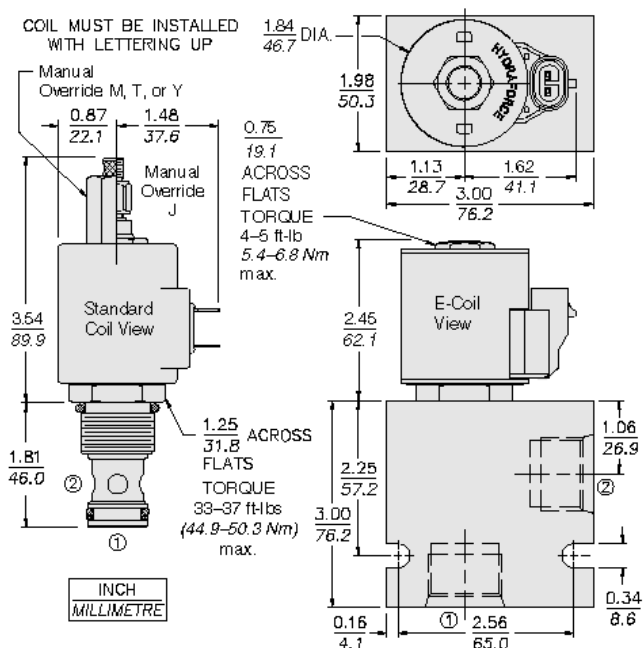
Electrical Specifications

Valve inductance	188.8 mH	- Note: At 1.2 A
Maximum control current	1.2 A	- Note: 12 V coil
Threshold current	0.30 to 0.50 A	- Note: For standard poppet
	0.22 to 0.50 A	- Note: For 'A' metering poppet
Dither PWM frequency	100 Hz	

Performance



Dimensions



Cavity	VC12-2
Cartridge installation torque	44.9 to 50.3 N-m (33 to 37 ft-lb)
Maximum allowable torque	61 N-m (45 ft-lb)
Coil nut torque	6.8 to 9.5 N-m (5 to 7 ft-lb)
Orientation restrictions	None

Seal kit SK12-2X-T - **Note:** X = Seal option

SP12-20

Option

None (Blank)

Metering A

Manual Override M

Manual Override T

Manual Override Y

Manual Override J

For Manual Override details see page 1.001.1

Note: Flow varies with manual override options; see flow ratings on previous page.

Porting

Cartridge Only 0

SAE 10 10T

SAE 12 12T

SAE 16 16T

3/4 in. BSP* 6B

1 in. BSP* 8B

Seals

N Buna N (Std.)

V Fluorocarbon

P Polyurethane

Termination (VDC)

Std. Coil

Dual Spades

DIN 43650

Leadwires (2)

Leads w/Weatherpack® Connectors

Deutsch DT04-2P

Termination (VDC)

E-Coil

Deutsch DT04-2P (IP69K Rated)

Metri-Pack® 150.2A (IP69K Rated)

Coils with internal diode are available. Consult factory.

Voltage

0 Less Coil**

10 10VDC†

12 12VDC

20 20VDC†

24 24VDC

**Includes Std. Coil Nut

†10 VDC and 20 VDC coils should be used for most continuous-duty applications.

CODE	DESCRIPTION
A	Linear Poppet Metering
BLANK	Standard Poppet Metering

CODE	DESCRIPTION
BLANK	NONE
J	Momentary Pull Override, #10-32 threads
M	Two Position Override, Red Knurled Knob
T	Variable Position Override, Red Knurled Knob
Y	Momentary Pull Override, Red Knurled Knob

CODE	DESCRIPTION
BLANK	NONE
S	100 Mesh Screen

CODE	DESCRIPTION
0	No Body
10T	Aluminum SAE 10
12T	Aluminum SAE 12



CODE	DESCRIPTION
16T	Aluminum SAE 16
12TD	Ductile Iron SAE 12
16TD	Ductile Iron SAE 16
8B	Aluminum BSPP 1" (8)
8BD	Ductile Iron BSPP 1" (8)

J Seal

CODE	DESCRIPTION
N	Buna-N
V	Fluorocarbon
P	Polyurethane
U	PPDI Urethane

L Coil

CODE	DESCRIPTION
0	No Coil
10DG	10 VDC, D-Coil, DIN 43650
10DL	10 VDC, D-Coil, Dual Lead Wires
10DS	10 VDC, D-Coil, Dual Spade
10EL	10 VDC, E-Coil, Dual Lead Wires
10ER	10 VDC, E-Coil, Deutsch
12DG	12 VDC, D-Coil, DIN 43650
12DL	12 VDC, D-Coil, Dual Lead Wires, 18 inches long
12DL/36	12 VDC, D-Coil, Dual Lead Wires, 36 inches long
12DL/W	12 VDC, D-Coil, Dual Lead Wires with Weatherpak
12DR	12 VDC, D-Coil, Deutsch
12DS	12 VDC, D-Coil, Dual Spade
12EG	12 VDC, E-Coil, DIN 43650
12EJ	12 VDC, E-Coil, AMP Jr.
12EL	12 VDC, E-Coil, Dual Lead Wires, 18 inches long
12EL/36	12 VDC, E-Coil, Dual Lead Wires, 36 inches long
12ER	12 VDC, E-Coil, Deutsch
12EY	12 VDC, E-Coil, Metri-Pack 150
20DS	20 VDC, D-Coil, Dual Spade
20ER	20 VDC, E-Coil, Deutsch
24AG	24 VDC, D-Coil, DIN 43650
24AP	24 VDC, D-Coil, 1/2" Conduit and Dual Lead Wires
24DG	24 VDC, D-Coil, DIN 43650
24DL	24 VDC, D-Coil, Dual Lead Wires
24DL/W	24 VDC, D-Coil, Dual Lead Wires with Weatherpak
24DP	24 VDC, D-Coil, 1/2" Conduit and Dual Lead Wires
24DR	24 VDC, D-Coil, Deutsch



CODE	DESCRIPTION
24DS	24 VDC, D-Coil, Dual Spade
24EG	24 VDC, E-Coil, DIN 43650
24EJ	24 VDC, E-Coil, AMP Jr.
24EL	24 VDC, E-Coil, Dual Lead Wires, 18 inches long
24EL/36	24 VDC, E-Coil, Dual Lead Wires, 36 inches long
24ER	24 VDC, E-Coil, Deutsch
24EY	24 VDC, E-Coil, Metri-Pack 150
36DS	36 VDC, D-Coil, Dual Spade