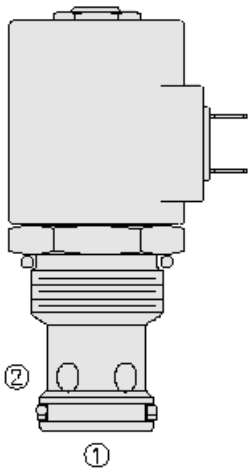




## Overview



### Description

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

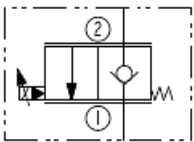
### Operation

When de-energized, the SP16-20 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. In this mode, flow from port 1 to port 2 is severely restricted.

### Features

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

## Symbol



## Ratings

### Pressure Ratings

Pressure rating	250 bar (3625 psi)	- <b>Note:</b> Per NFPA T2.6.1 R2-2000 using 99.9 assurance and 90% verification levels
Proof pressure	344 bar (5000 psi)	
Burst pressure	779 bar (11300 psi)	

### Flow Ratings

Flow rating	227.4 lpm (60 gpm)	- <b>Note:</b> Based on 34.4 bar (500 psi) pressure drop (see performance graphs)
Maximum internal leakage	5 drops/min	- <b>Note:</b> At rated pressure
Hysteresis per cent	5 %	- <b>Note:</b> Maximum up to 60% of imax
	10 %	- <b>Note:</b> Maximum from 60% of imax up to imax

### Temperature Ratings

Operating fluid temperature	-40 to 100 °C (-40 to 212 °F)	- <b>Note:</b> With buna N seals
	-35 to 204 °C (-31 to 400 °F)	- <b>Note:</b> With fluorocarbon seals
	-54 to 107 °C (-65 to 225 °F)	- <b>Note:</b> With polyurethane seals
Storage temperature	-40 to 70 °C (-40 to 160 °F)	
Ambient temperature	-40 to 70 °C (-40 to 160 °F)	

### Other Ratings

Corrosion protection	960 hr salt spray per ASTM b117
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## Operating Parameters

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



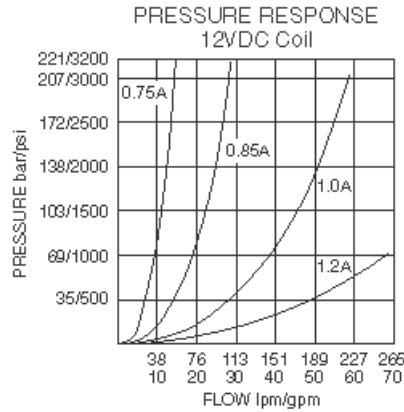
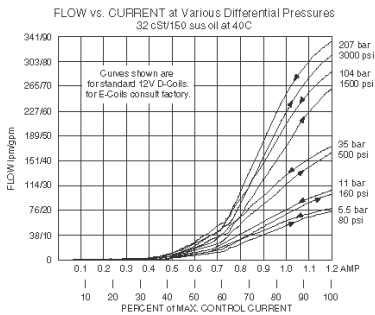
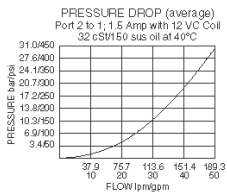
## Properties

Unit weight	0.32 kg (0.71 lb)
Internal wetted surface area	221 cm <sup>2</sup> (34.2 in <sup>2</sup> )

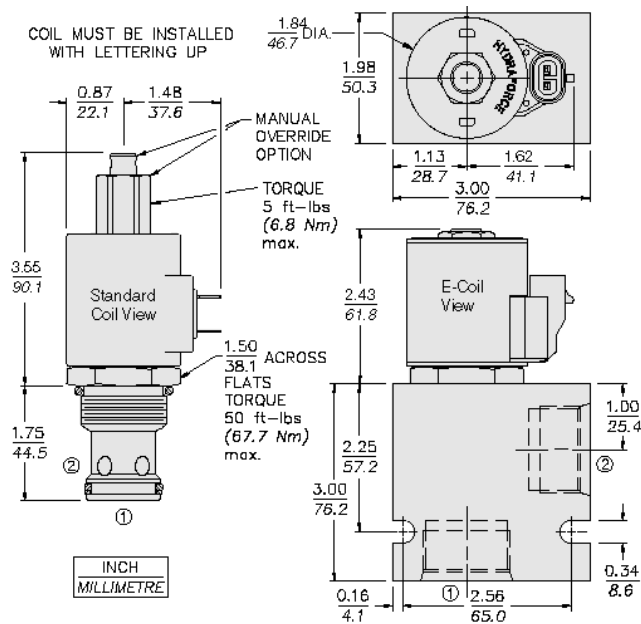
## Electrical Parameters

Valve inductance	166 mH
Maximum control current	1.2 A - <b>Note:</b> D-coil 12 Vdc
Threshold current	0.4 A - <b>Note:</b> D-coil 12 Vdc (see performance graphs)
Dither PWM frequency	100 to 400 Hz

## Performance



## Dimensions



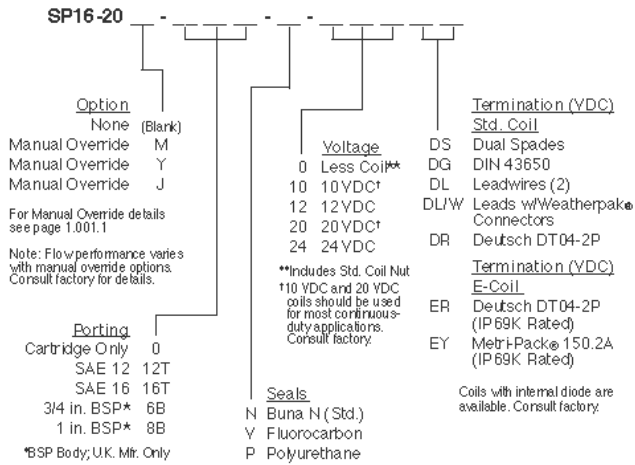
## Installation Specifications

Cavity	VC16-2
Cartridge installation torque	62.4 to 73.2 N-m (46 to 54 ft-lb)
Maximum allowable torque	169 N-m (125 ft-lb)
Coil nut torque	6.8 to 9.5 N-m (5 to 7 ft-lb)
Orientation restriction	None

## Accessories

Seal kit	SK16-2X-T - <b>Note:</b> X = seal option
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## Order Code



**Model Options**

**SP16-20DE-H-J-L**

**D Poppet Metering**

CODE	DESCRIPTION
A	Linear Poppet Metering
BLANK	Standard Poppet Metering

**E Manual Override**

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

**H Line Body**

CODE	DESCRIPTION
0	No Body
12T	Aluminum SAE 12
16T	Aluminum SAE 16
12TD	Ductile Iron SAE 12
16TD	Ductile Iron SAE 16
6B	Aluminum BSPP 3/4" (6)
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
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