

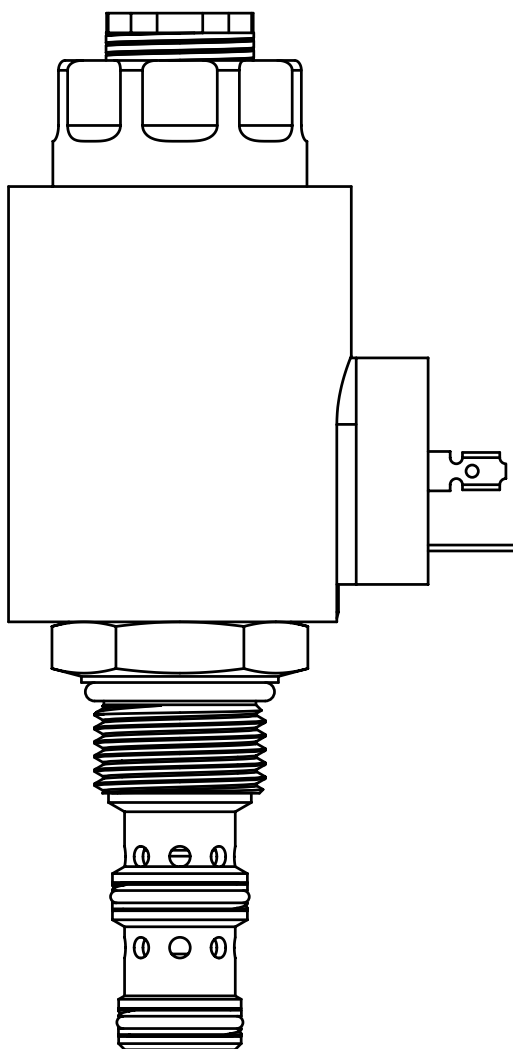
EATON

Vickers

Screw-in Cartridge Valves

Proportional Flow Control Valves

EFV1-10



VICKERS[®]

EFV1-10*-0

Proportional flow control valve, normally open, spool type

Description

The EFV1-10*-0** is a normally open, unidirectional, uncompensated, spool type, two way, proportional flow control, screw-in cartridge valve.

Operation

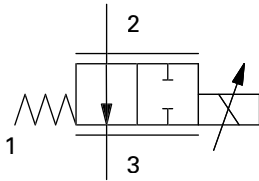
The valve is controlled by current supplied to the coil. At zero current, the valve is fully open from port 2 to port 3. At 1500 to 1600 mA (12V coil) the valve is fully closed. Port 1 is used for pressure balancing the spool and armature and must be blocked in all cases.

The maximum intended pressure drop is 300 PSID.

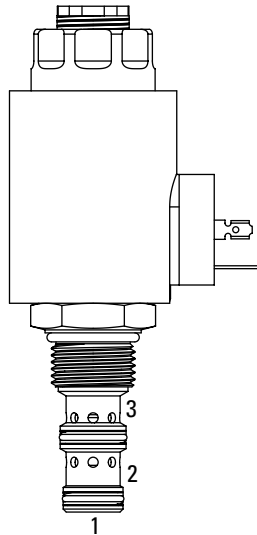
At pressure drops above 300 PSID, almost no increase in flow is obtained. The intended flow direction is from port 2 to port 3. Operation of the valve with flow from port 3 to port 2 will produce flow vs current and flow vs pressure drop curves that are significantly different from those obtained with flow from port 2 to port 3.

Since the spool and armature are pressure balanced, the operating pressure does not affect the operating characteristics of the valve. The operating point of the valve is determined only by current, pressure drop and temperature.

Functional Symbol



Profile View



RATINGS AND SPECIFICATIONS

Performance data is typical with DTE 24 hydraulic fluid at 120°F

Typical application pressure	210 bar (3000 psi)
Cartridge endurance rating	1 million cycles
Cartridge fatigue pressure rating (NFPA/T2.6.1 R2-2000)	210 bar (3000 psi)
Cartridge burst pressure rating (NFPA/T2.6.1 R2-2000)	751 bar (10,900 psi)
Rated maximum flow at 160 PSID	Flow rating "A" 15.1 L/min (4 USgpm) Flow rating "B" 30.2 L/min (8 USgpm) Flow rating "C" 37.9 L/min (10 USgpm)
Hysteresis	1 USgpm with 400Hz PWM driver
Leakage (fully closed)	197 cm ³ /min (12 in ³ /min) at 3000 PSID
Ambient operating temperature	-30° to 90°C (-22° to 194°F)
Maximum oil temperature	120°C (248°F)
Maximum internal coil temperature	200°C (392°F)
Nominal supply voltage	12/24 V
Current to fully close valve	1500 - 1600 mA (12V coil), 750 - 800 mA (24V coil)
Recommended PWM frequency	200 - 400 Hz
Coil resistance at 20°C (68°F)	4.7 Ω (12V), 19.0 Ω (24V)
Mass	Cartridge only 0,37 kg (0.82 lb) Cartridge with coil and end nut 0,73 kg (1.62 lb)
Fluid	All general purpose hydraulic oils such as: MIL-H-5606, SAE 10, SAE 20, DTE 24, etc.
Filtration	Cleanliness code 18/16/13
Cavity	C-10-3
Seal kit	9900225-000 (Buna-N) 9900226-000 (Viton®)

Viton is a registered trademark of E.I. DuPont

Note

Port 1 is unused and must be plugged.

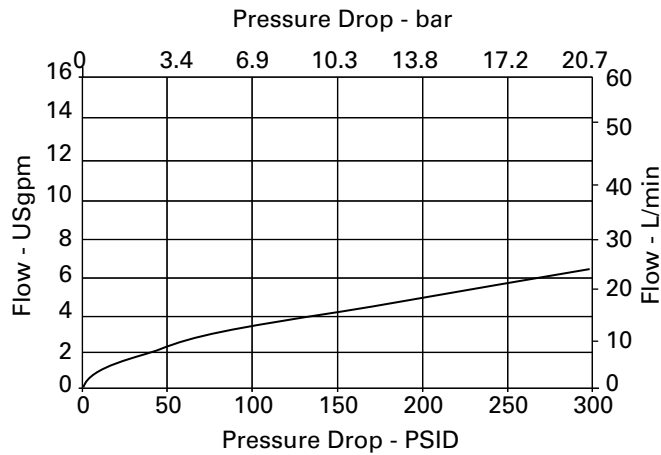
Performance Curves

EFV1-10*-0

Cartridge Only

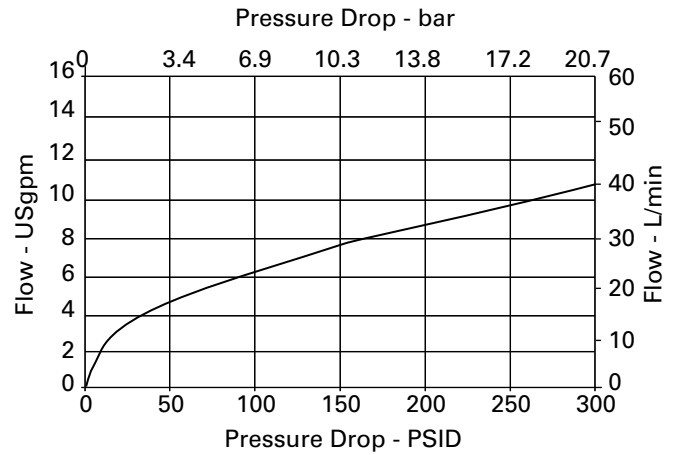
Max. Flow vs Pressure Drop

Flow rating "A" (Valve fully open)



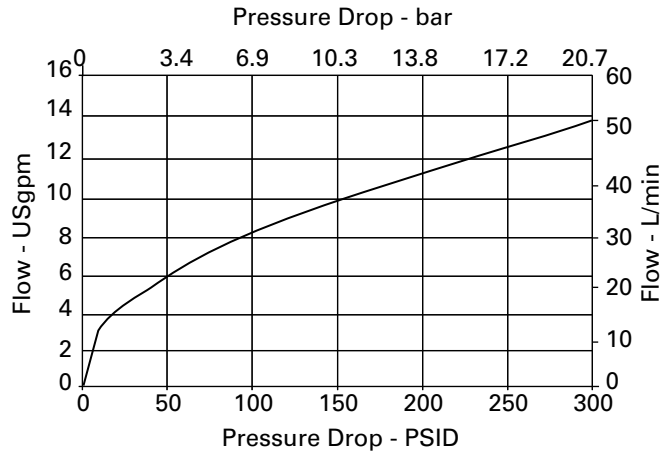
Max. Flow vs Pressure Drop

Flow rating "B" (Valve fully open)

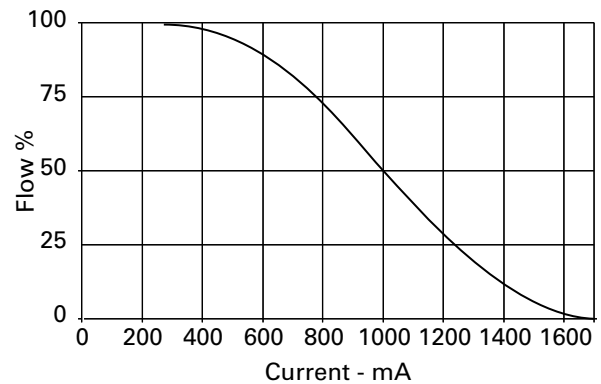


Max. Flow vs Pressure Drop

Flow rating "C" (Valve fully open)



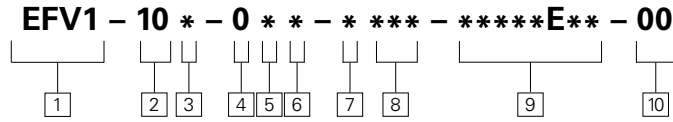
Flow vs. Current



Note

To determine operating characteristics for the flow rating selected, at a specific differential pressure, first determine maximum flow from upper curve at the differential pressure value. This will be the "100% flow" flow on the lower curve.

Parameters: 400 Hz PWM



1 Function
EFV1 - Electro Proportional Flow Control Valve

2 Size
10 - 10 Size

3 Seals
N - Buna-N
V - Viton®

4 Logic
0 - Normally Open

5 Flow Rating
A - 4 USgpm @ 160 PSID
B - 8 USgpm @ 160 PSID
C - 10 USgpm @ 160 PSID

6 Bleed Screw and Manual Override
0 - No core tube special features
B - Bleed screw
P - Bleed screw and push-pin type manual override
S - Screw-in type manual override

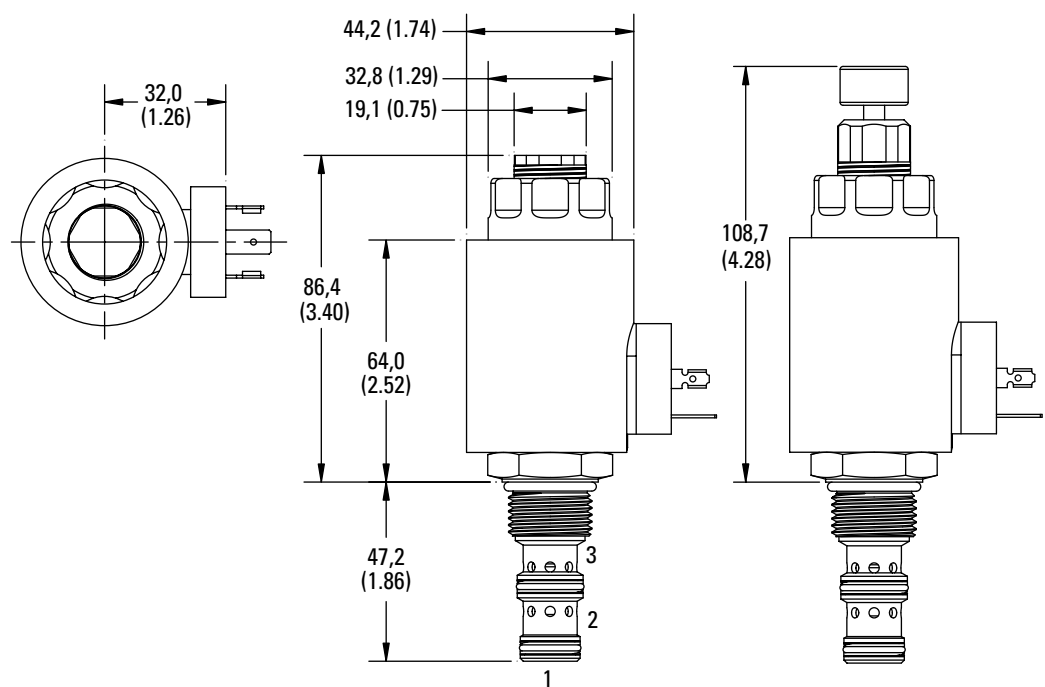
7 Material Code		8 Port Code*		Description	Part Number	Port 1 Plug
0	000			No manifold block	-	-
A	03B			Aluminum, Light Duty 3/8" BSPP	02-173358	4995036-003
		06T		Aluminum, Light Duty SAE 6	566162	125-6T
		02G		Aluminum, 1/4" BSPP	876705	4995036-002
		03G		Aluminum, 3/8" BSPP	876714	4995036-003
		06H		Aluminum, SAE 6	876704	125-6T
S	08H			Aluminum, SAE 8	876711	125-8T
		02G		Steel, 1/4" BSPP	02-175127	4995036-002
		03G		Steel, 3/8" BSPP	02-175128	4995036-003
		06T		Steel, SAE 6	02-175124	125-6T
		08T		Steel, SAE 8	02-175125	125-8T

Note: Both the manifold and port plug are required.

9 Coil Model Code*
 See page C-10.
 * These model digits will not be stamped on the valve.

10 Special Features
00 - None
 (Only required when valve has special features, omitted if "00.")

Dimensions
 mm (inch)
 Torque cartridge in housing
S - 68-75 Nm (50-55 ft. lbs)
A - 47-54 Nm (35-40 ft. lbs)



Note: EFV1-10 with DIN-43650 connector shown.

Note: Port 1 is unused and must be plugged.

Note - S type manual override shown

EFV1-10*-C

Proportional flow control valve, normally closed, spool type

Description

The EFV1-10*-C** is a normally closed, unidirectional, uncompensated, spool type, two way, proportional flow control, screw-in cartridge valve.

Operation

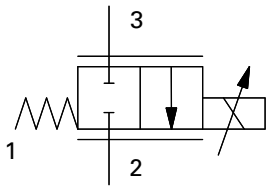
The valve is controlled by current supplied to the coil. At zero current, the valve is fully closed from port 3 to port 2. At 1500 mA (12V coil) the valve is considered fully open. This is the maximum intended current level for use in applications. Port 1 is used for pressure balancing the spool and armature and must be blocked in all cases.

The maximum intended pressure drop is 300 PSID. At pressure drops above 300 PSID, almost no increase in flow is obtained. The intended flow direction is from port 3 to port 2. Operation of the valve with flow from port 2 to port 3 will produce flow vs current and flow vs pressure drop curves that are significantly different from those

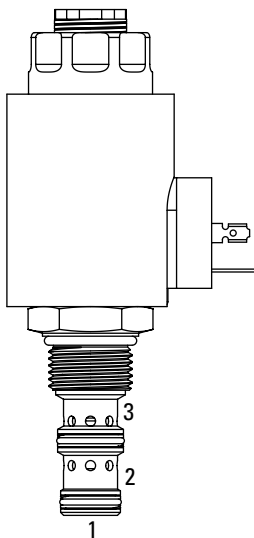
obtained with flow from port 3 to port 2.

Since the spool and armature are pressure balanced, the operating pressure does not affect the operating characteristics of the valve. The operating point of the valve is determined only by current, pressure drop and temperature.

Functional Symbol



Profile View



RATINGS AND SPECIFICATIONS

Performance data is typical with DTE 24 hydraulic fluid at 120°F

Typical application pressure	210 bar (3000 psi)
Cartridge endurance rating	1 million cycles
Cartridge fatigue pressure rating (NFPA/T2.6.1 R2-2000)	210 bar (3000 psi)
Cartridge burst pressure rating (NFPA/T2.6.1 R2-2000)	751 bar (10,900 psi)
Rated maximum flow at 160 PSID	Flow rating "A" 15.1 L/min (4 USgpm)
	Flow rating "B" 30.2 L/min (8 USgpm)
	Flow rating "C" 37.9 L/min (10 USgpm)
Hysteresis	1 USgpm with 400Hz PWM driver
Leakage (fully closed)	197 cm ³ /min (12 in ³ /min) at 3000 PSID
Ambient operating temperature	-30° to 90°C (-22° to 194°F)
Maximum oil temperature	120°C (248°F)
Maximum internal coil temperature	200°C (392°F)
Nominal supply voltage	12/24 V
Current to fully close valve	1500 - 1600 mA (12V coil), 750 - 800 mA (24V coil)
Recommended dither frequency	200 - 400 Hz
Coil resistance at 20°C (68°F)	4.7 Ω (12V), 19.0 Ω (24V)
Mass	Cartridge only 0,37 kg (0.82 lb)
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Filtration	Cleanliness code 18/16/13
Cavity	C-10-3
Seal kit	9900225-000 (Buna-N)
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Viton is a registered trademark of E.I. DuPont

Note

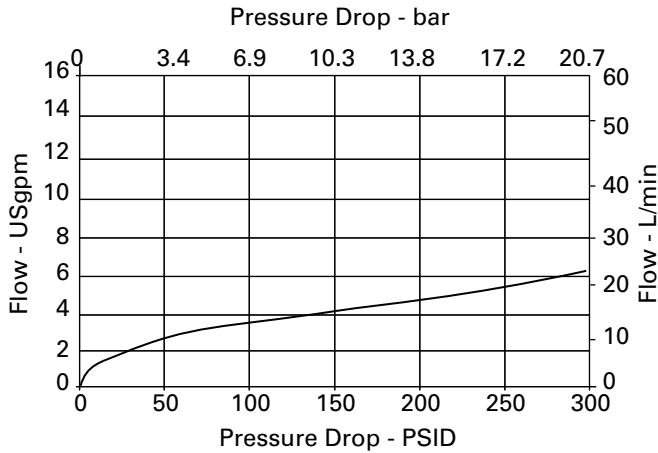
Port 1 is unused and must be plugged.

Performance Curves

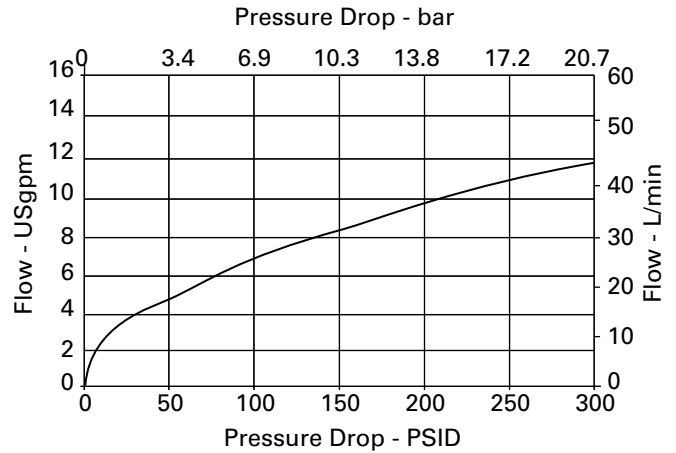
EFV1-10*-C

Cartridge Only

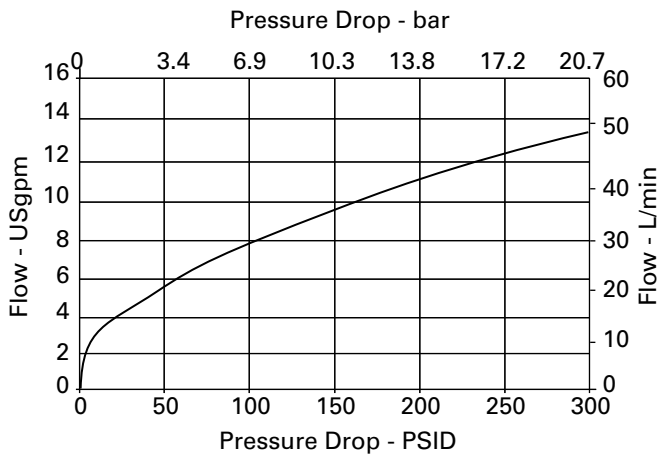
Max. Flow vs Pressure Drop
Flow rating "A" (Zero Current)



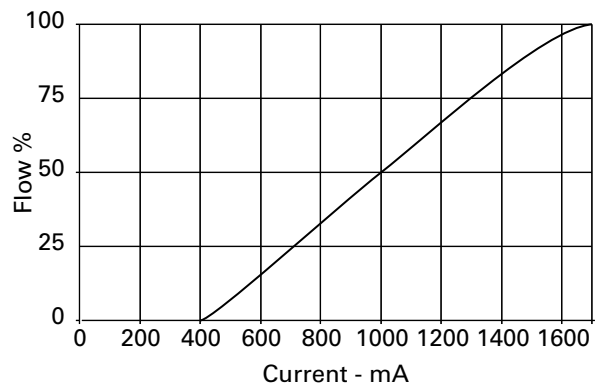
Max. Flow vs Pressure Drop
Flow rating "B" (Zero Current)



Max. Flow vs Pressure Drop
Flow rating "C" (Zero Current)



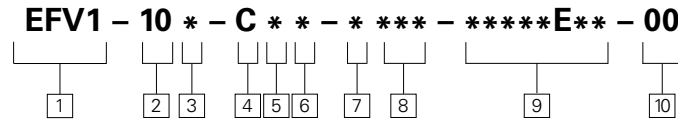
Flow vs. Current



Note

To determine operating characteristics for the flow rating selected, at a specific differential pressure, first determine maximum flow from upper curve at the differential pressure value. This will be the "100%" flow on the lower curve.

Parameters: 400 Hz PWM



1 Function
EFV1 - Electro Proportional Flow Control Valve

2 Size
10 - 10 Size

3 Seals
N - Buna-N
V - Viton®

4 Logic
C - Normally Closed

5 Flow Rating
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6 Bleed Screw and Manual Override
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7 Material Code	8 Port Code*	Description	Part Number	Port 1 Plug
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	08T	Steel, SAE 8	02-175125	125-8T

Note: Both the manifold and port plug are required.

9 Coil Model Code*
 See page C-10.
 * These model digits will not be stamped on the valve.

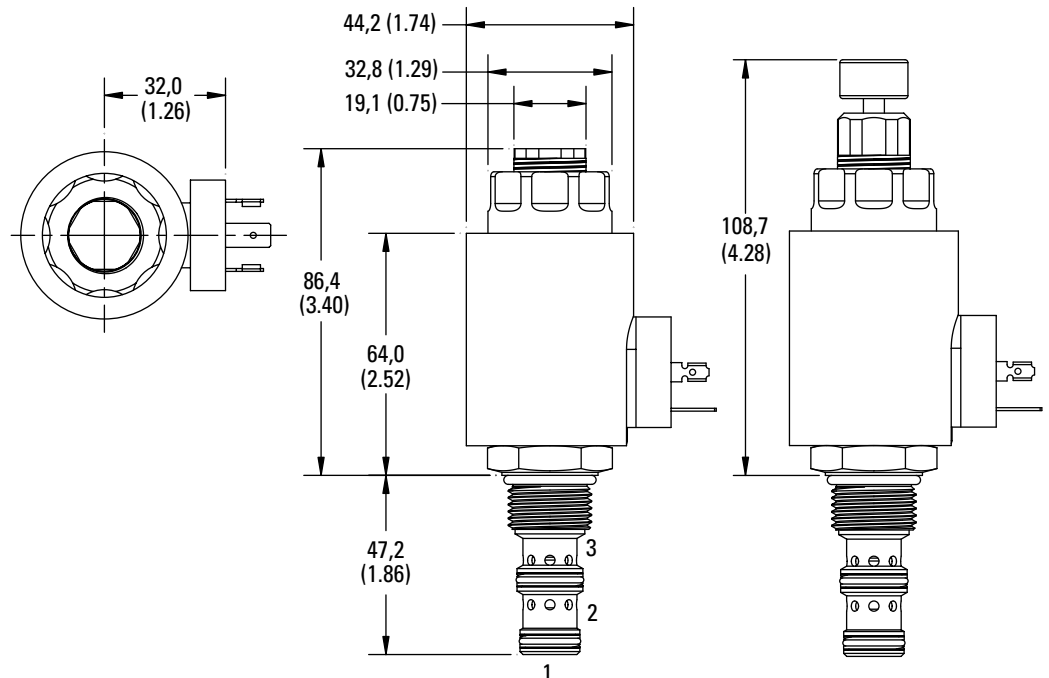
10 Special Features
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 (Only required when valve has special features, omitted if "00.")

Dimensions

mm (inch)

Torque cartridge in housing

- S** - 68-75 Nm (50-55 ft. lbs)
- A** - 47-54 Nm (35-40 ft. lbs)



Note: EFV1-10 with DIN-43650 connector shown.

Note: Port 1 is unused and must be plugged.

Note - S type manual override shown

Eaton
14615 Lone Oak Road
Eden Prairie, MN 55344
USA
Tel: 952 937-9800
Fax: 952 974-7722
www.hydraulics.eaton.com

Eaton
20 Rosamond Road
Footscray
Victoria 3011
Australia
Tel: (61) 3 9319 8222
Fax: (61) 3 9318 5714

Eaton
Dr.-Reckeweg-Str. 1
D-76532 Baden-Baden
Germany
Tel: (49) 7221 682-0
Fax: (49) 7221 682-788

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