DP-40

Vane operated flow switch for heavy-duty applications

Features

/ Leak proof body
/ Free-Swinging vane
/ Electrical unit can be replaced
/ Thread, tee or flange installation
/ Field adjustable multilayer vane
/ Up to 1000 or 2000 psig
/ 5000 psig on special request
/ Weatherproof NEMA4
/ ATEX or IECEx

Description:

The DP-40 Flow Switch is rugged and reliable, ideal for automatically protecting equipment and pipeline systems against damage from reduction or loss of flow. A unique magnetically actuated switching design gives superior performance. There are no bellows, springs, or seals to fail. Instead, a free swinging vane attracts a magnet within the solid metal switch body, actuating a snap switch by means of a simple lever arm. Time tested in thousands of pipeline installations and processing plants around the world this series is weatherproof, designed to meet NEMA 4 and explosion-proof (listing included in specifications). The DP-40 can be used in pipes 1 ½″ and up.

Application:

/ Protects pumps, motors and other equipment against low or no flow
/ Controls sequential operation of pumps
/ Automatically starts auxiliary pumps and engines
/ Stops liquid cooled engines, machines and processing when coolant flow is interrupted
/ Shuts down burner when air flow through heating coil fails
/ Controls dampers according to flow

Technical Specifications

Media /	Gases or liquids compatible with wetted materials.
max. Pressure /	Brass body 1000 psig (69 bar), 316 SS body 2000 psig (138 bar), optional 5000 psig (345 bar) available with 316 SS body and SPDT switch only.
max. Media.-temp. /	-4. . .+275°F (-20. . .+135°C) standard, MT high temperature option +400°F (+205°C) [MT option not UL, CSA, ATEX or IECEx]
max. Ambeint-temp. /	-4. . .+163°F (-20. . .+73°C)
Wetted materials /	
Vane:	316 SS
Body:	Brass or 316 SS standard
Magnet keeper:	430 SS standard, 316 SS optional
Options:	Other materials are also available on request.
Protection class /	Weatherproof and Explosion-proof. **Listed with UL and CSA for Class I, Groups C and D; Class II, Groups E, F, and G.
ATEX-Certificate No. /	KEMA 03 ATEX 2383
ATEX-Certified /	II 2 G Ex d IIB T6 Gb
ATEX Standards /	EN60079-0: 2009 EN60079-1: 2007
IECEx-Certificate No. /	IECEx DEK 11.0071
IECEx-Certified /	Ex d IIB T6. . .T3 or 145°C Gb
IECE-Standards /	IEC 60079-0: 2007 IEC 60079-1: 2007

Electrical Specifications:

Switch type /	SPDT snap switch standard, DPDT snap switch optional.
Electrical rating /	
UL, FM, ATEX and IECEx models:	10A @ 125/250 VAC (V~)
CSA models:	5 A @ 125/250 VAC (V~) 5 A res., 3 A ind. @ 30 VDC (V)
MV option:	1 A @125 VAC (V~); 1 A res. 5 A ind. @ 30 VDC (V)
MT option:	5 A @ 125/250 VAC (V~)

[MT and MV option without UL, CSA, FM, ATEX or IECEx]

Electrical connections /	
UL and CSA models:	16 AWG, 6″ (152 mm) long
ATEX and IECEx unit:	Terminal block
Conduit connection:	¾″ female NPT or M25 (BSPT)
Process connection:	1½″ NPT-male, BSPT
Mounting orientation:	Within 5° of vertical for proper operation. Units for horizontal installation (vertical pipe with up flow) available.
Set point adjustment /	
For universal vane:	five vane combinations
Weight:	4 lb 8 oz (1.9 kg)
Agency approvals:	ATEX, CE, CSA, FM, IECEx, UL**

**No housing option (-NH) has no approvals

Ordering Codes:

Order Number	DP-40.	1.	2.	D

DP-40 Vane operated flow switch, for heavy-duty applications

Housing /
1 = brass body
2 = 316 SS body

Process connection /
1 = 1½″ NPTM
2 = 1½″ BSPT ATEX

Options /
D = DPDT contacts
MV = gold plated contacts*
MT = high temperature, option rated 400°F (204°C)*
TRI = increasing flow time delay relay option with 2 SPDT contacts, adjustable from 0-1 to 0-31 minutes*
TRD = decreasing flow time delay relay option with 2 SPDT contacts, adjustable from 0-1 to 0-31 minutes*
316 = 316 SS magnet keeper
V = vertical up flow, option for upward flow in vertical pipe
AT = ATEX compliant construction
IEC = IECEx certified construction

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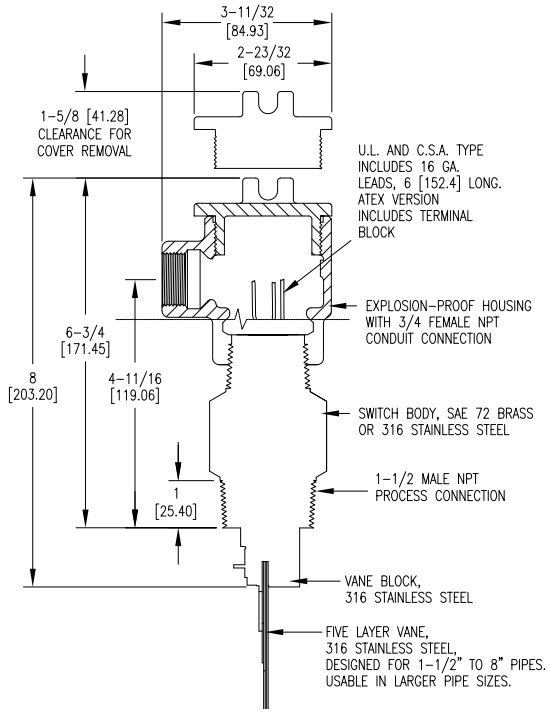
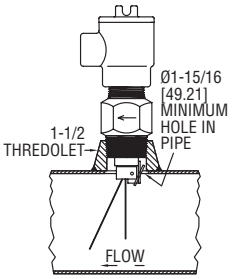
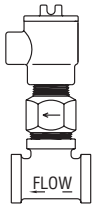
Dimensions in mm:

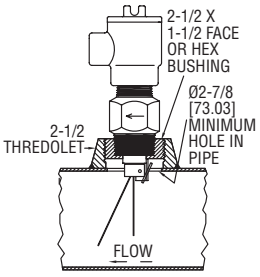




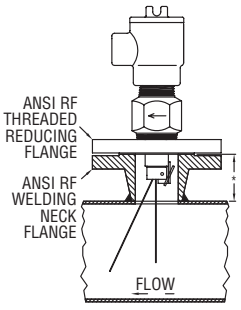
Standard Installation



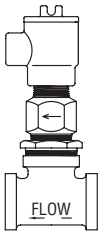
1-1/2˝ x 1-1/2˝x 1-1/2˝ Tee Installation



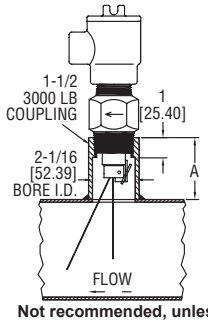
2-1/2˝ Threaded Branch Connection



Flange Installation
*Flange face to pipe O.D. specified by customer. Normally should not exceed 5˝ (172)



2˝ x 2˝ x 2˝ Tee Installation



Not recommended, unless coupling is bored out to 2-1/16˝ (52.4) as shown

Pipe Size	Dim. A
2˝	2-5/8 (66.7)
3˝	2-1/2 (63.5)
4˝	2-7/16 (61.9)

Approximate Actuation/Deactuation Flow Rates for Cold Water; GPM (LPM)

Vane Layers	1.5" Pipe	2" Pipe	3" Pipe	4" Pipe	6" Pipe	8" Rohr	10" Pipe	12" Pipe	14" Pipe	16" Pipe	18" Pipe	20" Pipe
1	7-3 (26.67-11.67)	15-8 (56.7-30)	45-22 (167-83.3)	95-40 (367-150)	210-120 (800-450)	375-175 (1417-667)	600-300 (2267-1133)	900-450 (3400-1700)	1200-600 (4550-2267)	1400-800 (5300-3033)	2000-1000 (7567-3783)	2400-1200 (9083-4550)
1 & 2		7-4 (26.7-15)	23-14 (86.7-53.3)	50-35 (190-132)	130-90 (500-333)	230-150 (867-567)	450-250 (1700-950)	650-350 (2467-1317)	900-500 (3400-1900)	1200-650 (4550-2467)	1450-800 (5483-3033)	1800-1000 (6817-3783)
1,2 & 3			11-7 (41.7-26.7)	27-19 (102-71.7)	80-60 (300-233)	160-115 (600-433)	300-180 (1133-683)	450-275 (1700-1033)	600-350 (2267-1317)	750-450 (2750-2083)	1000-600 (3783-2267)	1200-700 (4550-2650)
1,2,3 & 4				17-12 (65-45)	60-45 (233-167)	120-90 (450-333)	230-150 (867-567)	310-200 (1167-750)	430-280 (1633-1067)	550-360 (2083-1367)	700-450 (2650-1700)	850-550 (3217-2083)
1,2,3,4 & 5					40-30 (152-113)	80-65 (300-250)	135-100 (517-383)	200-140 (750-533)	290-200 (1100-750)	360-250 (1367-950)	460-325 (1733-1233)	575-400 (2183-1517)

Actuation rates are based on cold water at a specific gravity of 1.0.

For fluids of different specific gravity, actuation rates may be approximated by dividing the rate shown by the square root of the specific gravity.

Approximate Actuation/Deactuation Flow Rates for Cold Air; SCFM (LPS)

Vane Layers	1.5" Pipe	2" Pipe	3" Pipe	4" Pipe	6" Pipe	8" Pipe	10" Pipe	12" Pipe	14" Pipe	16" Pipe	18" Pipe	20" Pipe
1	32-17 (15-8)	65-32 (30-20)	210-105 (100-50)	400-200 (190-90)	950-475 (450-220)	1550-850 (730-400)	2400-1300 (1100-600)	3450-1900 (1600-900)	4700-2600 (2200-1200)	6400-3500 (3000-1700)	8000-4400 (3800-2100)	10000-5500 (4700-2600)
1 & 2		23-13 (10-6)	120-70 (60-30)	195-140 (90-70)	550-375 (260-180)	1100-700 (520-330)	1850-1200 (870-570)	2700-1750 (1300-800)	3400-2200 (1600-1000)	4800-3100 (2300-1500)	6000-3900 (2800-1800)	7400-4800 (3500-2300)
1,2 & 3			60-48 (30-20)	135-100 (60-50)	375-265 (180-130)	725-500 (340-240)	1200-850 (570-400)	1850-1300 (870-610)	2600-1800 (1200-800)	3350-2350 (1600-1100)	4300-3000 (2000-1400)	5300-3700 (2500-1700)
1,2,3 & 4				65-50 (30-20)	260-200 (120-90)	500-400 (240-190)	875-700 (410-330)	1250-1000 (590-470)	1900-1500 (900-710)	2500-2000 (1200-900)	3100-2500 (1500-1200)	3900-3100 (1800-1500)
1,2,3,4 & 5					130-100 (60-50)	310-250 (150-120)	650-525 (310-250)	1000-800 (470-380)	1600-1250 (760-590)	2200-1750 (1040-830)	2800-2250 (1300-1100)	3550-2850 (1700-1300)

Actuation rates are based on air at standard conditions.

For gases at other pressures, temperatures, or specific gravities, consult factory for equivalent flow approximations.

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