



External Cage Displacer Actuated Liquid Level Switches

DESCRIPTION

High Pressure Liquid Level Switches are displacer actuated units, utilizing a single switch mechanism for level alarm or control functions. These units are designed for service pressures up to 5000 psig (345 bar) and liquids with specific gravities of 0.40 and above. They utilize the Magnetrol magnetic principle to assure dependable performance.

FEATURES

- Fabricated carbon steel cages are standard for all models.
- B74 available with 304 & 316 SS cages
- Sealed or flanged cages available
- Inconel displacer spring and stainless steel trim
- Stainless steel displacers
- Pressures to 5000 psig (345 bar)
- Temperatures to +750° F (+399° C)
- Specific gravity down to 0.40
- Choice of switch mechanism:
 - Dry contact
 - Pneumatic
 - Hermetically sealed
- Choice of switch enclosure:
 - NEMA 1 carbon steel for pneumatics
 - TYPE 4X/7/9 Class I, Div. 1, Groups C & D polymer coated aluminum
 - TYPE 4X/7/9 Class I, Div. 1, Group B polymer coated aluminum
- Choice of tank connections:
 - NPT
 - Side/side flanges
 - Socketweld
 - Side/bottom flanges
- Optional custom high temperature insulation available. See bulletin 41-106 for details.



**H13 Sealed Cage Model
with a TYPE 4X/7/9
Switch Housing**

APPLICATIONS

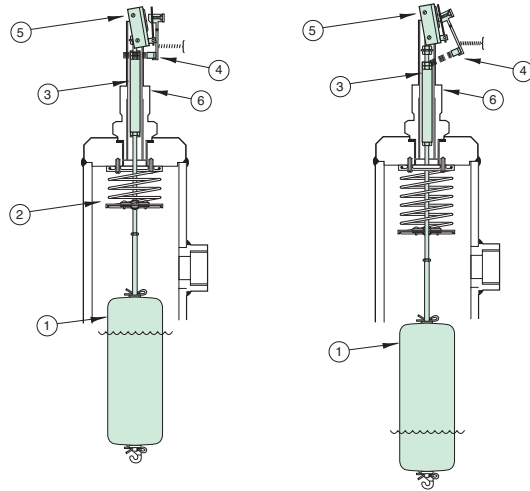
- Hydraulic accumulators
- Natural gas receivers
- H.P. scrubbers
- Hydrocarbon flash tanks

OPTIONS

- Special levels/body extensions
- 316/304 SS chambers
- NACE
- Gold switch contacts
- Interface (except B74)
- Vent and drain connections

TECHNOLOGY

The weight of the displacer ① is supported by the spring ②. Rising liquid level imparts buoyancy forces on the displacer allowing the spring to compress. The attraction sleeve ③, attached to the spring, moves upward into the field of a permanent magnet ④. Magnet motion causes the switch ⑤ to actuate. A non-magnetic barrier tube ⑥ provides a static pressure boundary between the switch mechanism and the displacer assembly.



SPECIFICATIONS

SWITCH MECHANISMS AND ENCLOSURES

SERIES J & K PNEUMATIC SWITCHES

- Suited for applications where electrical power is not available
- Bleed and non-bleed designs
- Process temperatures to +400° F (+204° C)



SERIES F, HS, H1 & 8 HERMETICALLY SEALED SWITCHES

- Ideal for use in salt and other corrosive atmospheres
- Series “HS” and “H1” are positively pressurized capsules for entire mechanism and contacts
- Process temperatures to +750° F (+399° C)



SERIES B, C & D DRY CONTACT SWITCHES

- Designed for AC and DC current applications
- Series C for process temperatures to +450° F (+232° C)



SWITCH ENCLOSURES





- TYPE 4X/7/9 aluminum enclosures
- Designed to meet Class I, Div. 1, Groups C & D and Class I, Div. 1 Group B
- Optional housing heaters and drains available for some enclosures
- Pneumatic switch mechanisms available with a NEMA 1 enclosure



BASIC ELECTRICAL RATINGS

Voltage	Switch Series and Non-Inductive Ampere Rating						
	B	C	D	F	HS	H1	8
120 VAC	15.00	15.00	10.00	0.25	5.00	1.00	1.00
240 VAC	15.00	15.00	—	—	5.00	1.00	—
24 VDC	6.00	10.00	10.00	4.00	5.00	1.00	3.00
120 VDC	0.50	1.00	10.00	0.30	0.50	0.40	—
240 VDC	0.25	0.50	3.00	—	0.25	—	—

AGENCY APPROVALS

AGENCY	APPROVED MODEL	AREA CLASSIFICATION
FM 	All with an electric switch mechanism and a housing listed as TYPE 4X/7/9	Class I, Div 1, Groups C & D Class II, Div 1, Groups E, F & G
	All with an electric switch mechanism and a housing listed as TYPE 4X/7/9 Class I, Div 1, Group B	Class I, Div 1, Groups B, C & D Class II, Div 1, Groups E, F & G
CSA 	All with a Series F, H1, HS or 8 electric switch mechanism and a housing listed as CSA TYPE 4X	Class I, Div 2, Groups B, C & D
	All with an electric switch mechanism and a housing listed as TYPE 4X/7/9	Class I, Div 1, Groups C & D Class II, Div 1, Groups E, F & G
	All with an electric switch mechanism and a housing listed as TYPE 4X/7/9 Class I, Div 1, Group B	Class I, Div 1, Groups B, C & D Class II, Div 1, Groups E, F & G
ATEX / IEC Ex ① 	All with an electric switch mechanism and an ATEX housing	ATEX II 2 G EEx d IIC T6 94/9/EC IEC Ex Ex d IIC T6 IP 66
CE 	Low Voltage Directives 2006/95/EC Per Harmonized Standard: EN 61010-1/1993 & Amendment No. 1	Installation Category II Pollution Degree 2

① IEC Installation Instructions:

The cable entry and closing devices shall be Ex d certified suitable for the conditions of use and correctly installed.

For ambient temperatures above +55° C or for process temperatures above +150° C, suitable heat resistant cables shall be used.

Heat extensions (between process connection and housing) shall never be insulated.

Special conditions for safe use:

When the equipment is installed in process temperatures higher than +85° C the temperature classification must be reduced according to the following table as per IEC60079-0.

Maximum Process Temperature	Temperature Classification
< 85° C	T6
< 100° C	T5
< 135° C	T4
< 200° C	T3
< 300° C	T2
< 450° C	T1

These units are in conformity with IECEx KEM 05.0020X

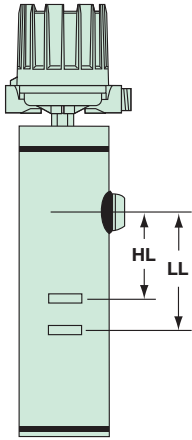
Classification Ex d IIC T6

T_{ambient} -40° C to +70° C

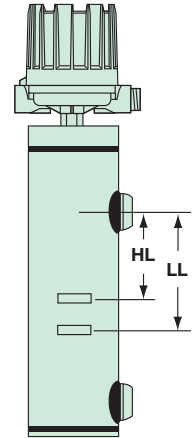
ACTUATION LEVELS

SEALED CAGE DESIGN

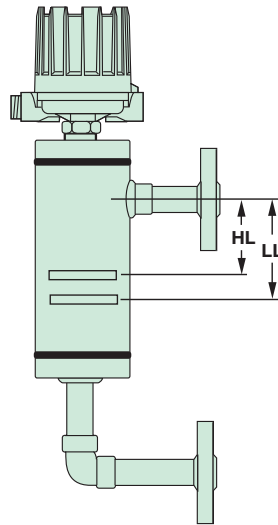
INCHES (MM)



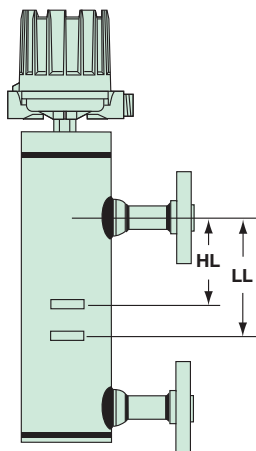
**Sealed Chamber w/NPT or Socket weld
Side/Bottom Connections
(B74, H13, H31, H51)**



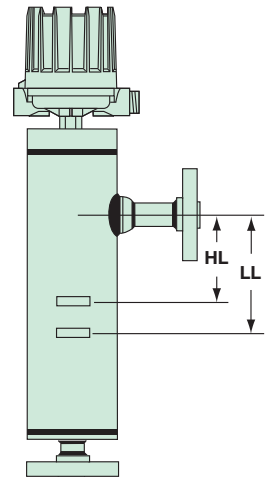
**Sealed Chamber w/NPT or Socket weld
Side/Side Connections
(H13, H31, H51)**



**Sealed Chamber
Side/Side Flange Connections
(B74 only)**



**Sealed Chamber
Side/Side Flange Connections
(H13, H31, H51)**



**Sealed Chamber
Side/Bottom Flange Connections
(B74, H13, H31, H51)**

ACTUATION LEVELS

SEALED CAGE DESIGN

INCHES (MM)

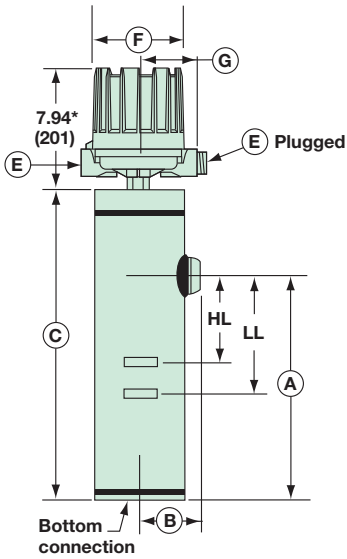
		Specific Gravity													
		0.40		0.50		0.60		0.70		0.80		0.90		1.00	
Model Code	Process Temp °F (°C)	HL	LL	HL	LL	HL	LL	HL	LL	HL	LL	HL	LL	HL	LL
B74	100 (38)	1.30 (33)	4.77 (121)	2.17 (55)	5.00 (127)	2.73 (69)	5.16 (131)	3.13 (80)	5.28 (134)	3.44 (87)	5.37 (136)	3.67 (93)	5.45 (138)	3.86 (98)	5.51 (140)
	200 (93)	1.24 (31)	4.70 (119)	2.13 (54)	4.95 (126)	2.70 (69)	5.11 (130)	3.11 (79)	5.24 (133)	3.42 (87)	5.34 (136)	3.66 (93)	5.41 (137)	3.85 (98)	5.48 (139)
	300 (149)	1.18 (30)	4.62 (117)	2.09 (53)	4.88 (124)	2.67 (68)	5.06 (129)	3.09 (78)	5.19 (132)	3.40 (86)	5.30 (135)	3.64 (92)	5.38 (137)	3.84 (98)	5.45 (138)
H13	100 (38)	5.09 (129)	9.04 (230)	6.26 (159)	9.50 (241)	7.04 (179)	9.81 (249)	7.59 (193)	10.03 (255)	8.01 (203)	10.20 (259)	8.33 (212)	10.33 (262)	8.59 (218)	10.43 (265)
	200 (93)	4.73 (120)	8.63 (219)	5.97 (152)	9.17 (233)	6.79 (172)	9.54 (242)	7.38 (187)	9.80 (249)	7.82 (199)	9.99 (254)	8.17 (208)	10.14 (258)	8.44 (214)	10.27 (261)
	300 (149)	4.31 (109)	8.15 (207)	5.63 (143)	8.79 (223)	6.51 (165)	9.22 (234)	7.14 (181)	9.53 (242)	7.62 (194)	9.76 (248)	7.98 (203)	9.93 (252)	8.28 (210)	10.08 (256)
	400 (204)	4.06 (103)	7.69 (195)	5.25 (133)	8.31 (211)	6.19 (157)	8.81 (224)	6.88 (175)	9.19 (233)	7.38 (187)	9.50 (241)	7.75 (197)	9.69 (246)	8.06 (205)	9.88 (251)
	500 (260)	n/a	n/a	4.81 (122)	7.88 (200)	5.81 (148)	8.44 (214)	6.56 (167)	8.88 (226)	7.06 (179)	9.19 (233)	7.50 (191)	9.44 (240)	7.88 (200)	9.63 (245)
H31	100 (38)	3.06 (78)	6.50 (165)	4.63 (118)	7.44 (189)	5.69 (145)	8.06 (205)	6.44 (164)	8.50 (216)	6.94 (176)	8.88 (226)	7.38 (187)	9.13 (232)	7.75 (197)	9.31 (236)
	200 (93)	n/a	n/a	4.06 (109)	6.81 (181)	5.19 (138)	7.56 (198)	6.00 (157)	8.06 (211)	6.56 (171)	8.44 (219)	7.06 (1.83)	8.75 (227)	7.44 (192)	9.00 (232)
	300 (149)	n/a	n/a	3.38 (86)	6.19 (157)	4.63 (118)	7.00 (178)	5.50 (140)	7.56 (192)	6.19 (157)	8.06 (205)	6.69 (170)	8.38 (213)	7.13 (181)	8.63 (219)
	400 (204)	n/a	n/a	n/a	n/a	4.06 (103)	6.38 (162)	5.00 (127)	7.06 (179)	5.75 (146)	7.56 (192)	6.31 (160)	7.94 (202)	6.75 (171)	8.25 (210)
	500 (260)	n/a	n/a	n/a	n/a	3.38 (86)	5.69 (145)	4.44 (113)	6.44 (164)	5.25 (133)	7.06 (179)	5.88 (149)	7.50 (191)	6.38 (162)	7.88 (200)
H51	100 (38)	2.75 (70)	6.25 (159)	4.31 (109)	7.19 (183)	5.38 (137)	7.75 (197)	6.13 (156)	8.19 (208)	6.63 (168)	8.56 (217)	7.06 (179)	8.81 (224)	7.44 (189)	9.00 (229)
	200 (93)	n/a	n/a	3.75 (95)	6.56 (167)	4.88 (124)	7.25 (184)	5.69 (145)	7.81 (198)	6.31 (160)	8.19 (208)	6.75 (171)	8.50 (216)	7.13 (181)	8.69 (221)
	300 (149)	n/a	n/a	3.13 (80)	5.88 (149)	4.38 (111)	6.69 (170)	5.25 (133)	7.31 (186)	5.88 (149)	7.75 (197)	6.44 (164)	8.13 (207)	6.81 (173)	8.38 (213)
	400 (204)	n/a	n/a	n/a	n/a	3.75 (95)	6.06 (154)	4.75 (121)	6.75 (171)	5.44 (138)	7.25 (184)	6.00 (152)	7.69 (195)	6.50 (165)	8.00 (203)
	500 (260)	n/a	n/a	n/a	n/a	3.13 (80)	5.38 (137)	4.19 (106)	6.19 (157)	4.94 (125)	6.75 (171)	5.56 (141)	7.19 (183)	6.06 (154)	7.56 (192)

Levels ±0.25" (6 mm)

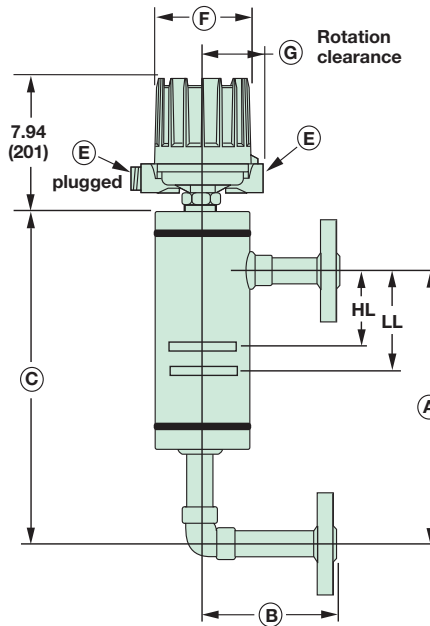
DIMENSIONAL SPECIFICATIONS

SEALED CAGE DESIGN

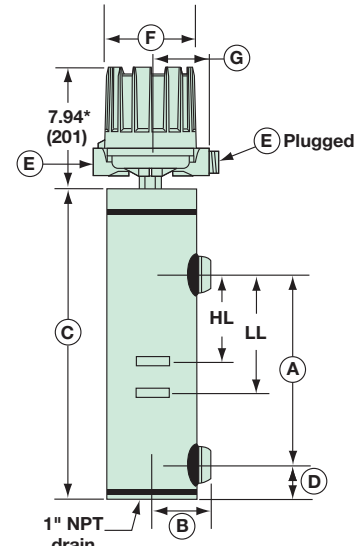
INCHES (MM)



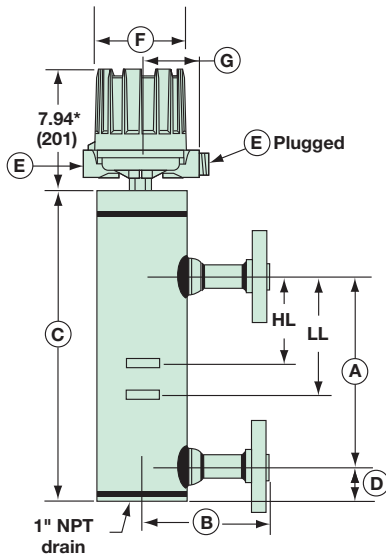
Sealed Chamber w/NPT or Socket weld Side/Bottom Connections (B74, H13, H31, H51)



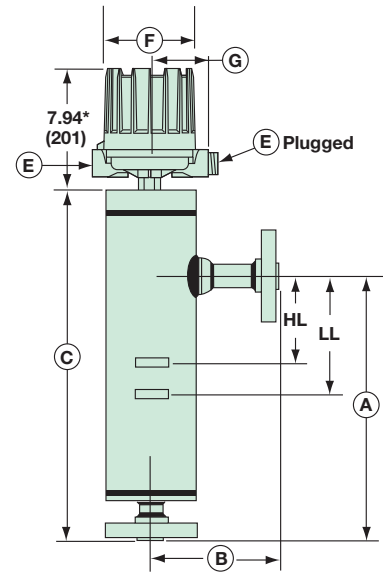
Sealed Chamber Side/Side Flange Connections (B74 only)



Sealed Chamber w/NPT or Socket weld Side/Side Connections (H13, H31, H51)



Sealed Chamber Side/Side Flange Connections (H13, H31, H51)



Sealed Chamber Side/Bottom Flange Connections (B74, H13, H31, H51)

Conduit Connections E	
Electric Switches:	
Type 4X/7/9:	1" NPT
Group B:	1" NPT
Pneumatic Switches:	
NEMA 1:	¼" NPT

Housing	F	G
NEMA 1	4.69 (119)	5.00 (127)
TYPE 4X/7/9*	5.93 (151)	3.78 (96)
TYPE 4X/7/9 Group B*		

* These dimensions increase by 2.19 (56) when used with Series HS switches with terminal blocks.

DIMENSIONAL SPECIFICATIONS

SEALED CAGE DESIGN

INCHES (MM)

Dimensions–Upper Side/Bottom

Model Code	Connection Size	NPT or SW			Flanges		
		A	B	C	A	B	C
B74	1"	8.32 (211)	3.27 (83)	10.56 (268)	12.87 (327)	6.38 (162)	15.12 (384)
	1-1/2"		3.69 (94)	11.56 (295)	12.56 (319)	6.61 (168)	14.81 (376)
	2"		3.81 (97)		12.43 (316)	6.68 (170)	14.69 (373)
H13	1"	14.25 (362)	2.77 (70)	20.63 (524)	17.75 (451)	6.39 (162)	24.12 (613)
	1-1/2"		3.19 (81)			6.69 (170)	
	2"		3.31 (84)			6.81 (173)	
H31	1"	14.25 (362)	4.40 (112)	21.13 (537)	17.50 (444)	7.90 (201)	24.38 (619)
	1-1/2"		4.53 (115)			7.84 (199)	
	2"		4.91 (125)			10.00 (254)	
H51	1"	15.60 (396)	4.50 (114)	23.01 (584)	19.47 (495)	8.00 (203)	26.89 (683)
	1-1/2"		4.63 (118)			7.93 (201)	
	2"		5.00 (127)			10.00 (254)	

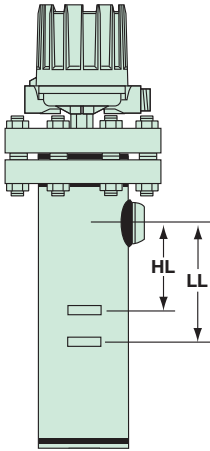
Dimensions–Side/Side

Model Code	Connection Size	NPT or SW						Flanges					
		A		B	C		D	A		B	C		D
		Std.	14"		Std.	14"		Std.	14"		Std.	14"	
B74	1"							13.62 (346)	n/a	6.38 (162)	15.88 (403)	n/a	n/a
	1-1/2"	n/a	n/a	n/a	n/a	n/a	n/a	13.31 (338)		6.61 (168)	15.56 (395)		
	2"							13.18 (335)		6.68 (170)	15.44 (392)		
H13	1"			2.77 (70)						6.39 (162)			
	1-1/2"	11.50 (292)	14.00 (356)	3.19 (81)	20.63 (524)	23.12 (587)	2.75 (70)	11.50 (292)	14.00 (356)	6.69 (170)	20.63 (524)	23.12 (587)	2.75 (70)
	2"			3.31 (84)						6.81 (173)			
H31	1"			4.40 (112)						7.90 (201)			
	1-1/2"	11.50 (292)	14.00 (356)	4.53 (115)	21.13 (537)	23.63 (600)	2.75 (70)	11.50 (292)	14.00 (356)	7.84 (199)	21.13 (537)	23.63 (600)	2.75 (70)
	2"			4.91 (125)						10.00 (254)			
H51	1"			4.50 (114)						8.00 (203)			
	1-1/2"	11.64 (296)	14.00 (356)	4.63 (118)	23.01 (584)	23.57 (599)	3.96 (101)	11.64 (296)	14.00 (356)	7.93 (201)	23.01 (584)	23.57 (599)	3.96 (101)
	2"			5.00 (127)						10.00 (254)			

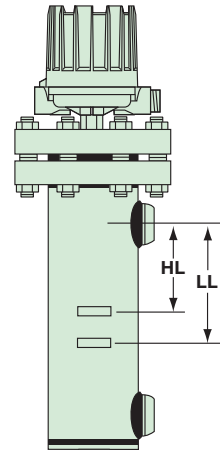
ACTUATION LEVELS

FLANGED TOP CAGE DESIGN

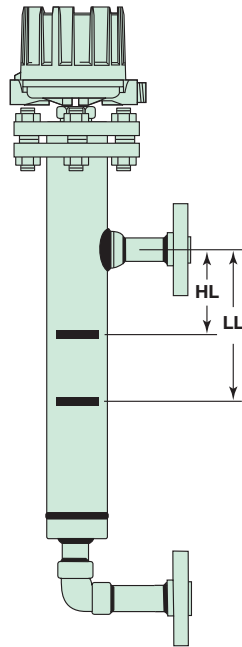
INCHES (MM)



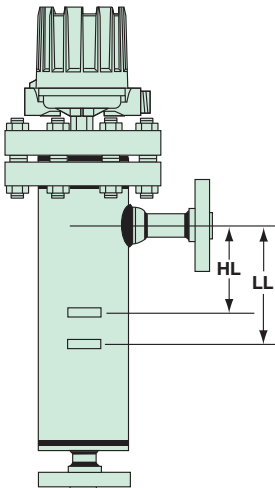
**Flanged Top Chamber w/NPT or
Socket weld Side/Bottom Connections
(C74, H15, H32, H52)**



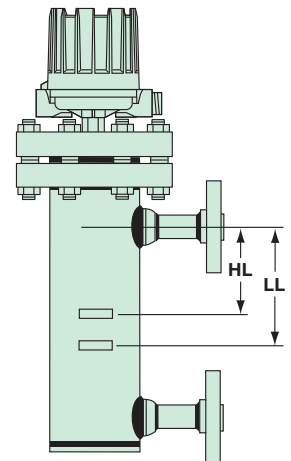
**Flanged Top Chamber w/NPT or
Socket weld Side/Side Connections
(H15, H32, H52)**



**Flanged Top Chamber
Side/Side Flange Connections
(C74 only)**



**Flanged Top Chamber
Side/Bottom Flange Connections
(C74, H15, H32, H52)**



**Flanged Top Chamber
Side/Side Flange Connections
(H15, H32, H52)**

ACTUATION LEVELS

FLANGED TOP CAGE DESIGN

INCHES (MM)

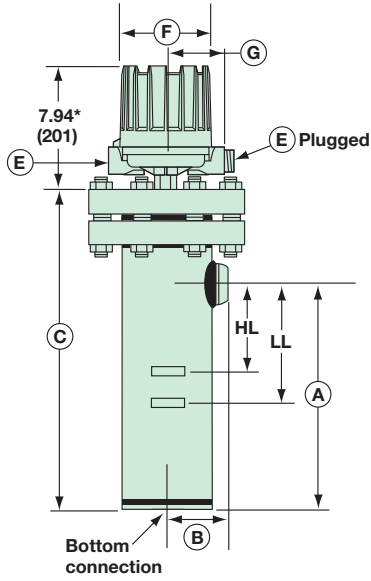
		Specific Gravity													
		0.40		0.50		0.60		0.70		0.80		0.90		1.00	
Model Code	Process Temp °F (°C)	HL	LL	HL	LL	HL	LL	HL	LL	HL	LL	HL	LL	HL	LL
C74	100 (38)	4.38 (111)	8.24 (209)	5.56 (141)	8.74 (222)	6.35 (161)	9.07 (230)	6.92 (176)	9.31 (236)	7.34 (186)	9.49 (241)	7.67 (195)	9.63 (245)	7.94 (202)	9.74 (247)
	200 (93)	4.01 (102)	7.83 (199)	5.27 (134)	8.41 (214)	6.11 (155)	8.80 (224)	6.71 (170)	9.08 (231)	7.16 (182)	9.28 (236)	7.51 (191)	9.44 (240)	7.79 (198)	9.57 (243)
	300 (149)	3.59 (91)	7.44 (189)	5.00 (127)	8.04 (204)	5.83 (148)	8.49 (216)	6.47 (164)	8.81 (224)	6.95 (177)	9.05 (230)	7.32 (186)	9.24 (235)	7.62 (194)	9.39 (239)
	400 (204)	n/a	n/a	4.63 (118)	7.62 (194)	5.52 (140)	8.14 (207)	6.25 (159)	8.51 (216)	6.72 (171)	8.79 (223)	7.12 (181)	9.00 (229)	7.50 (191)	9.18 (233)
	500 (260)	n/a	n/a	4.15 (105)	7.15 (182)	5.18 (132)	7.75 (197)	5.91 (150)	8.18 (208)	6.46 (164)	8.50 (216)	6.89 (175)	8.75 (222)	7.23 (184)	8.94 (227)
H15	100 (38)	2.47 (63)	5.93 (151)	3.90 (99)	6.74 (171)	4.86 (123)	7.29 (185)	5.54 (141)	7.67 (195)	6.05 (154)	7.96 (202)	6.44 (164)	8.19 (208)	6.76 (172)	8.37 (213)
	200 (93)	2.12 (54)	5.54 (141)	3.62 (92)	6.43 (163)	4.62 (117)	7.02 (178)	8.34 (136)	7.45 (189)	5.87 (149)	7.77 (197)	6.29 (160)	8.02 (204)	6.62 (168)	8.21 (209)
	300 (149)	n/a	n/a	3.30 (84)	6.07 (154)	4.36 (111)	6.73 (171)	5.11 (130)	7.19 (183)	5.67 (144)	7.55 (192)	6.11 (155)	7.82 (199)	6.46 (164)	8.04 (204)
	400 (204)	n/a	n/a	2.94 (133)	5.63 (211)	4.00 (157)	6.38 (224)	4.81 (175)	6.88 (233)	5.44 (187)	7.25 (241)	5.88 (197)	7.56 (246)	6.25 (205)	7.81 (251)
	500 (260)	n/a	n/a	2.50 (64)	5.19 (132)	3.69 (94)	6.00 (152)	4.56 (116)	6.56 (167)	5.19 (132)	7.00 (178)	5.69 (145)	7.31 (186)	6.06 (154)	7.63 (194)
H32	100 (38)	2.75 (70)	6.25 (159)	4.31 (109)	7.19 (183)	5.38 (137)	7.75 (197)	6.13 (156)	8.19 (208)	6.63 (168)	8.56 (217)	7.06 (179)	8.81 (224)	7.44 (189)	9.00 (229)
	200 (93)	n/a	n/a	3.75 (95)	6.56 (167)	4.88 (124)	7.25 (184)	5.69 (145)	7.81 (198)	6.31 (160)	8.19 (208)	6.75 (171)	8.50 (216)	7.13 (181)	8.69 (221)
	300 (149)	n/a	n/a	3.13 (80)	5.88 (149)	4.38 (111)	6.69 (170)	5.25 (133)	7.31 (186)	5.88 (149)	7.75 (197)	6.44 (164)	8.13 (207)	6.81 (173)	8.38 (213)
	400 (204)	n/a	n/a	n/a	n/a	3.75 (95)	6.06 (154)	4.75 (121)	6.75 (171)	5.44 (138)	7.25 (184)	6.00 (152)	7.69 (195)	6.50 (165)	8.00 (203)
	500 (260)	n/a	n/a	n/a	n/a	3.13 (80)	5.38 (137)	4.19 (106)	6.19 (157)	4.94 (125)	6.75 (171)	5.56 (141)	7.19 (183)	6.06 (154)	7.56 (192)
H52	100 (38)	2.75 (70)	6.25 (159)	4.31 (109)	7.19 (183)	5.38 (137)	7.75 (197)	6.13 (156)	8.19 (208)	6.63 (168)	8.56 (217)	7.06 (179)	8.81 (224)	7.44 (189)	9.00 (229)
	200 (93)	n/a	n/a	3.75 (95)	6.56 (167)	4.88 (124)	7.25 (184)	5.69 (145)	7.81 (198)	6.31 (160)	8.19 (208)	6.75 (171)	8.50 (216)	7.13 (181)	8.69 (221)
	300 (149)	n/a	n/a	3.13 (80)	5.88 (149)	4.38 (111)	6.69 (170)	5.25 (133)	7.31 (186)	5.88 (149)	7.75 (197)	6.44 (164)	8.13 (207)	6.81 (173)	8.38 (213)
	400 (204)	n/a	n/a	n/a	n/a	3.75 (95)	6.06 (154)	4.75 (121)	6.75 (171)	5.44 (138)	7.25 (184)	6.00 (152)	7.69 (195)	6.50 (165)	8.00 (203)
	500 (260)	n/a	n/a	n/a	n/a	3.13 (80)	5.38 (137)	4.19 (106)	6.19 (157)	4.94 (125)	6.75 (171)	5.56 (141)	7.19 (183)	6.06 (154)	7.56 (192)

Levels ±0.25" (6 mm)

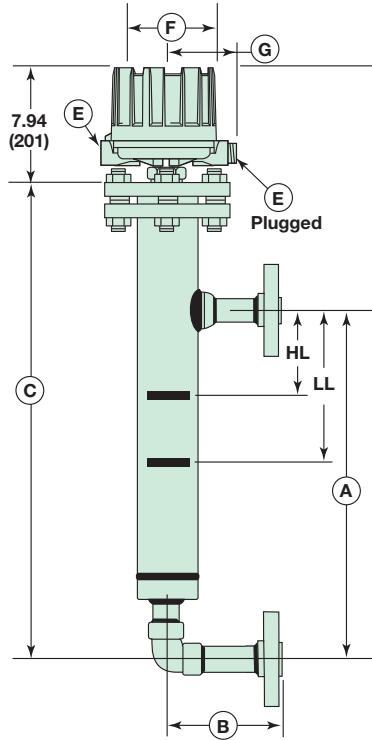
DIMENSIONAL SPECIFICATIONS

FLANGED TOP CHAMBER DESIGN

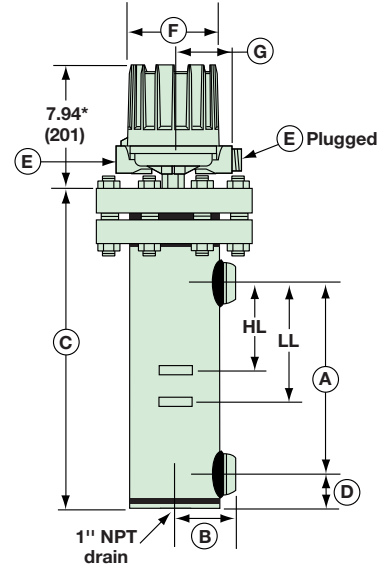
INCHES (MM)



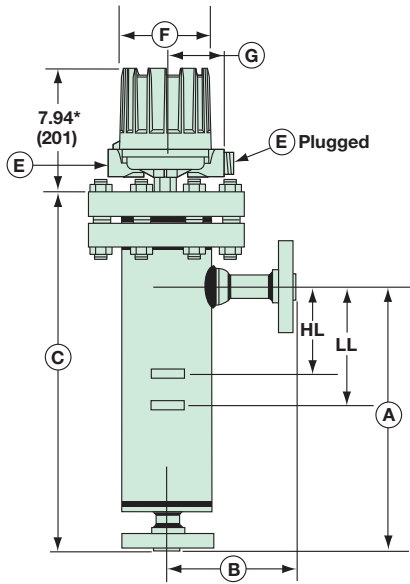
Flanged Top Chamber w/NPT or Socket weld Side/Bottom Connections (C74, H15, H32, H52)



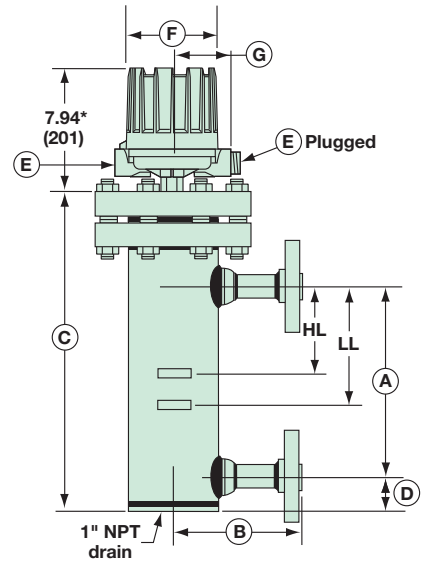
Flanged Top Chamber Side/Side Flange Connections (C74 only)



Flanged Top Chamber w/NPT or Socket weld Side/Side Connections (H15, H32, H52)



Flanged Top Chamber Side/Bottom Flange Connections (C74, H15, H32, H52)



Flanged Top Chamber Side/Side Flange Connections (H15, H32, H52)

Conduit Connections E
Electric Switches:
Type 4X/7/9: 1" NPT
Group B: 1" NPT
Pneumatic Switches:
NEMA 1: ¼" NPT

Housing	F	G
NEMA 1	4.69 (119)	5.00 (127)
TYPE 4X/7/9*	5.93 (151)	3.78 (96)
TYPE 4X/7/9 Group B*		

* These dimensions increase by 2.19 (56) when used with Series HS switches with terminal blocks.

DIMENSIONAL SPECIFICATIONS

FLANGED TOP CAGE DESIGN

INCHES (MM)

Dimensions–Upper Side/Bottom

Model Code	Connection Size	NPT or SW			Flanges		
		A	B	C	A	B	C
C74 300#	1"	15.65 (398)	2.77 (70)	22.69 (576)	18.33 (466)	5.45 (138)	25.38 (645)
	1-1½"	15.77 (401)	3.19 (81)	22.81 (579)		6.19 (157)	
	2"	15.90 (404)	3.31 (84)	22.94 (583)		6.25 (159)	
C74 600#	1"	15.65 (398)	2.77 (70)	23.06 (586)	18.33 (466)	5.45 (138)	26.38 (670)
	1-1½"	15.77 (401)	3.19 (81)	23.19 (589)		6.19 (157)	
	2"	15.90 (404)	3.31 (84)	23.31 (592)		6.25 (159)	
H15	1"	14.85 (377)	3.62 (89)	23.12 (587)	18.33 (466)	9.50 (241)	26.63 (676)
	1-1½"		3.69 (91)				
	2"		3.81 (97)				
H32	1"	14.25 (362)	4.40 (112)	21.38 (543)	17.50 (444)	10.00 (254)	24.63 (626)
	1-1½"		4.53 (115)				
	2"		4.91 (125)				
H52	1"	15.60 (396)	4.50 (114)	23.88 (607)	19.21 (488)	10.00 (254)	27.50 (698)
	1-1½"		4.63 (118)				
	2"		5.00 (127)				

Dimensions–Side/Side

Model Code	Connection Size	NPT or SW						Flanges					
		A		B	C		D	A		B	C		D
		Std.	14"		Std.	14"		Std.	14"		Std.	14"	
C74 300#	1"									5.45 (138)			
	1-1½"	n/a	n/a	n/a	n/a	n/a	n/a	18.97 (482)	n/a	6.19 (157)	26.00 (660)	n/a	n/a
	2"									6.25 (159)			
C74 600#	1"									5.45 (138)			
	1-1½"	n/a	n/a	n/a	n/a	n/a	n/a	18.97 (482)	n/a	6.19 (157)	26.38 (670)	n/a	n/a
	2"									6.25 (159)			
H15	1"			3.62 (92)									
	1-1½"	11.50 (292)	14.00 (356)	3.69 (94)	23.12 (587)	25.63 (651)	3.35 (85)	11.50 (292)	14.00 (356)	9.50 (241)	23.12 (587)	25.63 (651)	3.35 (85)
	2"			3.81 (97)									
H32	1"			4.40 (112)									
	1-1½"	11.50 (292)	14.00 (356)	4.53 (115)	21.38 (543)	23.88 (607)	2.75 (70)	11.50 (292)	14.00 (356)	10.00 (254)	21.38 (543)	23.88 (607)	2.75 (70)
	2"			4.91 (125)									
H52	1"			4.50 (114)									
	1-1½"	11.64 (296)	14.00 (356)	4.63 (115)	23.88 (607)	26.25 (667)	3.96 (101)	11.64 (296)	14.00 (356)	10.00 (254)	23.88 (607)	26.25 (667)	3.96 (101)
	2"			5.00 (127)									

MODEL NUMBER

STANDARD PRESSURE



Models available for quick shipment, usually within one week after factory receipt of a purchase order, through the Expedite Ship Plan (ESP)

SPECIFIC GRAVITY AND PRESSURE RATING CODE

Model	Cage Style	Cage Material	Minimum S.G.	Pressure Rating at given Temperature – psi (bar)		
				+100° F (+38° C)	+300° F (+149° C)	+500° F (+260° C) ①
B74	Sealed	Carbon Steel	0.40	1480 (102)	1315 (91)	n/a
B74		304 Stainless Steel		1440 (99)	1200 (83)	n/a
B74		316 Stainless Steel		1440 (99)	1240 (85)	n/a
H13		Carbon Steel	See Chart Below	1500 (103)	1500 (103)	1350 (93)
C74 (300#)	Flanged	300# Carbon steel	See Chart Below	740 (51)	740 (51)	740 (51)
C74 (600#)		600# Carbon steel		1480 (102)	1400 (97)	1190 (82)
H15		Carbon steel		1500 (103)	1500 (103)	1350 (93)

Model	Minimum Specific Gravity Up to Temperature Shown				
	+100° F (+38° C)	+200° F (+93° C)	+300° F (+149° C)	+400° F (+204° C)	+500° F (+260° C)
H13	0.40	0.40	0.40	0.41	0.44
H15	0.40	0.43	0.46	0.48	0.50
C74	0.40	0.40	0.40	0.42	0.44

MATERIALS OF CONSTRUCTION

Code	Applicable Models	Cage	Sleeve	Spring Trim
1	B74, C74, H13, H15	Carbon Steel	400 SS	Inconel & 316 SS
2 ②	H13, H15	Carbon Steel	400 SS	316 SS
2	B74, C74	Carbon Steel	316 SS	Inconel & 316 SS
3	B74	304 Stainless Steel	316 SS	Inconel & 316 SS
4	B74	316 Stainless Steel	316 SS	Inconel & 316 SS

TANK CONNECTION TYPE AND SIZE

B74			C74 300 lb			C74 600 lb			H13 & H15			Connection Type	C/C	Location
1"	1½"	2"	1"	1½"	2"	1"	1½"	2"	1"	1½"	2"			
B20	C20	D20	B70	C70	D70	B90	C90	D90	B20	C20	D20	NPT	Std	side/bottom
B30	C30	D30	B80	C80	D80	B01	C01	D01	B30	C30	D30	Socketweld		
N30	P30	Q30	—	—	—	—	—	—	N30	P30	Q30	150 lb ANSI flanges		
N40	P40	Q40	N40	P40	Q40	—	—	—	N40	P40	Q40	300 lb ANSI flanges		
N50	P50	Q50	—	—	—	N50	P50	Q50	N50	P50	Q50	600 lb ANSI flanges		
—	—	—	—	—	—	—	—	—	B40	C40	D40	NPT	Std	side/side
—	—	—	—	—	—	—	—	—	B44	C44	D44	NPT	14"	
—	—	—	—	—	—	—	—	—	B50	C50	D50	NPT	Std	
—	—	—	—	—	—	—	—	—	B54	C54	D54	Socketweld	14"	
S30	T30	V30	—	—	—	—	—	—	S30	T30	V30	150 lb ANSI flanges	Std	
—	—	—	—	—	—	—	—	—	S34	T34	V34	150 lb ANSI flanges	14"	
S40	T40	V40	S40	T40	V40	—	—	—	S40	T40	V40	300 lb ANSI flanges	Std	
—	—	—	—	—	—	—	—	—	S44	T44	V44	300 lb ANSI flanges	14"	
S50	T50	V50	—	—	—	S50	T50	V50	S50	T50	V50	600 lb ANSI flanges	Std	
—	—	—	—	—	—	—	—	—	S54	T54	V54	600 lb ANSI flanges	14"	



MODEL NUMBER CONTINUED

STANDARD PRESSURE

ELECTRIC SWITCH MECHANISM AND ENCLOSURE ③

Switch Description ④	Maximum Process Temperature ° F (° C) ⑤	One Set Point	TYPE 4X/7/9 Aluminum Enclosure		
			Class I, Div. 1, Groups C & D	Class I, Div. 1, Group B	ATEX Ex II 2G EEx d IIC T6
Series B Snap Switch	250 (121)	SPDT DPDT	BKQ BNQ	BKS BNS	BA9 BB9
Series C Snap Switch	450 (232)	SPDT DPDT	CKQ CNQ	CKS CNS	CA9 CB9
Series D Snap Switch for DC Current Application	250 (121)	SPDT DPDT	DKQ DNQ	DKS DNS	DA9 DB9
Series F Hermetically Sealed Snap Switch	500 (260)	SPDT DPDT	FKQ FNQ	FKS FNS	FA9 FB9
Series HS 5 Amp Hermetically ⑥ Sealed Snap Switch w/Wiring Leads	500 ⑦ (260)	SPDT DPDT	HMC HMF	HEK ⑧ HET ⑧	N/A
Series HS 5 Amp Hermetically ⑥ Sealed Snap Switch w/Terminal Block	500 ⑦ (260)	SPDT DPDT	HM3 HM7	HM4 HM8	HA9 HB9
Series 8 Hermetically Sealed Snap Switch	500 (260)	SPDT DPDT	8KQ 8NQ	8KS 8NS	8A9 8B9

PNEUMATIC SWITCH MECHANISM AND ENCLOSURE

Switch Description	Maximum Supply Pressure	Maximum Process Temperature	Bleed Orifice Diameter	NEMA 1		
				B74, C74-1, 300# C74-2	H13, H15	600# C74-2
Series J Bleed Type	100 psig (7 bar)	+400° F (+204° C)	.063 (1.6 mm)	JDE	JKE	JKE
	60 psig (4 bar)		.094 (2.4 mm)	JEE	JLE	JLE
Series k Non-Bleed	100 psig (7 bar)	+400° F (+204° C)	—	KOE	KOE	KPE

- ① Consult factory for temperatures up to +750° F (+399° C).
- ② Maximum temperature rating +200° F (+93° C) with type 316 SS spring.
- ③ Consult factory for TYPE 4X/7/9 cast iron housings.
- ④ Uncontrolled housing heater or drain available in TYPE 4X/7/9 enclosures. Consult factory for switch codes.
- ⑤ Process temperature based on +100° F (+38° C) ambient.
- ⑥ HS switch not available on 600# C74 model with materials of construction code -2.
- ⑦ On condensing applications, temperature down-rated to +400° F (204° C) process at +100° F (+38° C) ambient.
- ⑧ CSA approval does not apply to Series HE switches.



MODEL NUMBER

HIGH PRESSURE

SPECIFIC GRAVITY AND PRESSURE RATING CODE

Model	Cage Style	Cage Material	Minimum S.G.	Pressure Rating at given Temperature – psi (bar)		
				+100° F (+38° C)	+300° F (+149° C)	+500° F ① (+260° C)
H31	Sealed	Carbon Steel	See Chart Below	4150 (286)	—	3920 (270)
H51				5000 (345)	5000 (345)	4475 (309)
H32	Flanged			4150 (286)	—	3920 (270)
H52				5000 (345)	5000 (345)	4475 (309)

Minimum Specific Gravity Up to Temperature Shown				
+100° F (+38° C)	+200° F (+93° C)	+300° F (+149° C)	+400° F (+204° C)	+500° F (+260° C)
0.40	0.44	0.47	0.51	0.56

MATERIALS OF CONSTRUCTION

No.	Cage	Sleeve	Spring Trim
1	Carbon Steel	400 SS	Inconel & 316 SS

TANK CONNECTION TYPE AND SIZE

H31 & H32			H51 & H52			Connection Type	C/C	Location
1"	1½"	2"	1"	1½"	2"			
B20	C20	D20	B20	C20	D20	NPT	Std	side/bottom
B30	C30	D30	B30	C30	D30	Socketweld		
N50	P50	Q50	—	—	—	600 lb ANSI flanges		
N60	P60	Q60	N60	P60	Q60	900 lb ANSI flanges		
N70	P70	Q70	N70	P70	Q70	1500 lb ANSI flanges		
—	—	—	N80	P80	Q80	2500 lb ANSI flanges		
B40	C40	D40	B40	C40	D40	NPT	Std	side/side
B44	C44	D44	B44	C44	D44		14"	
B50	C50	D50	B50	C50	D50	Socketweld	Std	
B54	C54	D54	B54	C54	D54		14"	
S50	T50	V50	—	—	—	600 lb ANSI flanges	Std	
S54	T54	V54	—	—	—		14"	
S60	T60	V60	S60	T60	V60	900 lb ANSI flanges	Std	
S64	T64	V64	S64	T64	V64		14"	
S70	T70	V70	S70	T70	V70	1500 lb ANSI flanges	Std	
S74	T74	V74	S74	T74	V74		14"	
—	—	—	S80	T80	V80	2500 lb ANSI flanges	Std	
—	—	—	S84	T84	V84		14"	



MODEL NUMBER CONTINUED

HIGH PRESSURE

ELECTRIC SWITCH MECHANISM AND ENCLOSURE ②

Switch Description ③	Maximum Process ④ Temperature ° F (° C)	One Set Point	Type 4X/7/9 Aluminum Enclosure		
			Class I, Div. 1, Groups C & D	Class I, Div. 1, Group B	ATEX Ex II 2G EEx d IIC T6
Series B Snap Switch	250 (121)	SPDT DPDT	BKQ BNQ	BKS BNS	BA9 BB9
Series C Snap Switch	450 (232)	SPDT DPDT	CKQ CNQ	CKS CNS	CA9 CB9
Series D Snap Switch for DC Current Application	250 (121)	SPDT DPDT	DKQ DNQ	DKS DNS	DA9 DB9
Series F Hermetically Sealed Snap Switch	500 (260)	SPDT DPDT	FKQ FNQ	FKS FNS	FA9 FB9
Series HS 5 Amp Hermetically ⑤⑥ Sealed Snap Switch w/Wiring Leads	500 (260)	SPDT DPDT	HMC HMF	HEK ⑦ HET ⑦	N/A
Series HS 5 Amp Hermetically ⑤⑥ Sealed Snap Switch w/Terminal Block	500 (260)	SPDT DPDT	HM3 HM7	HM4 HM8	HA9 HB9
Series 8 Hermetically Sealed Snap Switch	500 (260)	SPDT DPDT	8KQ 8NQ	8KS 8NS	8A9 8B9

PNEUMATIC SWITCH MECHANISM AND ENCLOSURE

Switch Description	Maximum Supply Pressure	Maximum Process Temperature	Bleed Orifice Diameter	NEMA 1	
				H31, H32	H51, H52
Series J Bleed Type	100 psig (7 bar)	+400° F (+204° C)	.063 (1.6 mm)	JKE	JKE
	60 psig (4 bar)		.094 (2.4 mm)	JLE	JLE
Series k Non-Bleed	100 psig (7 bar)	+400° F (+204° C)	—	KOE	KPE

- ① Consult factory for temperatures up to +750° F (+399° C).
- ② Consult factory for TYPE 4X/7/9 cast iron housings.
- ③ Uncontrolled housing heater or drain available in TYPE 4X/7/9 enclosures. Consult factory for switch codes.
- ④ Process temperature based on +100° F (+38° C) ambient
- ⑤ HS switch not available on models H51 or H52.
- ⑥ On condensing applications, temperature down-rated to +400° F (204° C) process at +100° F (+38° C) ambient.
- ⑦ CSA approval does not apply to Series HE switches.



QUALITY



The quality assurance system in place at Magnetrol guarantees the highest level of quality throughout the company. Magnetrol is committed to providing full customer satisfaction both in quality products and quality service.

Magnetrol's quality assurance system is registered to ISO 9001 affirming its commitment to known international quality standards providing the strongest assurance of product/service quality available.

ESP

Expedite Ship Plan

Several External Cage Switches are available for quick shipment, usually within one week after factory receipt of a purchase order, through the Expedite Ship Plan (ESP).

To take advantage of ESP, match the color coded model number codes in the selection charts (standard dimensions apply).

ESP service may not apply to orders of ten units or more. Contact your local representative for lead times on larger volume orders, as well as other products and options.

WARRANTY



All Magnetrol mechanical level and flow controls are warranted free of defects in materials or workmanship for five full years from the date of original factory shipment.

If returned within the warranty period; and, upon factory inspection of the control, the cause of the claim is determined to be covered under the warranty; then, Magnetrol will repair or

replace the control at no cost to the purchaser (or owner) other than transportation.

Magnetrol shall not be liable for misapplication, labor claims, direct or consequential damage or expense arising from the installation or use of equipment. There are no other warranties expressed or implied, except special written warranties covering some Magnetrol products.



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