



B73 & Series 75 Sealed External Cage Liquid Level Switches

DESCRIPTION

Sealed external cage type level switches are completely self-contained units designed for side mounting to a tank or vessel with threaded or flanged pipe connections. These units are an industry standard in petroleum refineries and chemical plants. Thousands of these switches are in daily service throughout the world.

FEATURES

- Carbon steel or stainless steel welded float chamber
- Service pressures up to 2240 psig (154 bar)
- Process temperatures up to +1000° F (+538° C)
- Specific gravity ratings as low as 0.32
- Available switch styles including dry contact, hermetically sealed and pneumatic
- Single or multiple switch mechanisms available
- Available switch enclosures include:
 - NEMA 1 carbon steel for pneumatics
 - TYPE 4X/7/9 Class I, Div. 1 Groups C & D or Groups B, C & D polymer coated aluminum
- 1", 1½", or 2" tank connections available in either NPT, socket weld, flanged side/side or flanged side/bottom construction
- Optional high temperature insulation available. See bulletin 41-106.

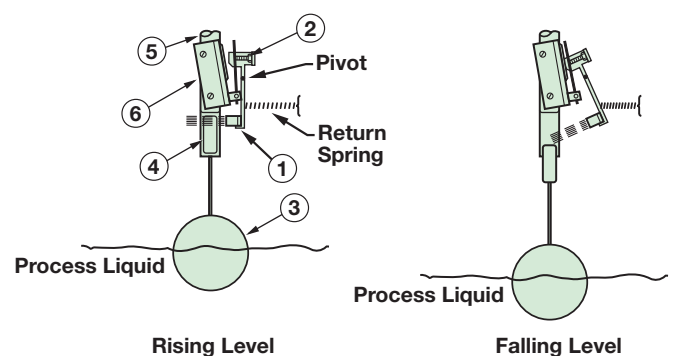


APPLICATIONS





- Accumulators
- Receivers
- Flare pots
- Scrubbers
- Oil refineries
- Steam and electric generating stations
- Flash tanks
- Knockout drums
- Storage tanks
- Separators
- Chemical processing plants

TECHNOLOGY

A permanent magnet ① is attached to a pivoted switch actuator and adjustment screw ②. As the float ③ rises following the liquid level, it raises the attraction sleeve ④ into the field of the magnet, which then snaps against the non-magnetic enclosing tube ⑤, actuating the switch ⑥. The enclosing tube provides a static pressure boundary between the switch mechanism and the process. On a falling level, an inonel spring retracts the magnet, deactivating the switch.



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, HS, 8 or 9 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 ^②  | All with an electric switch mechanism and an ATEX housing ^① | ATEX II 2 G EEx D IIC T6 94/9/EC IEC Ex Ex d IIC T6 IP66 |
| CE  | Low Voltage Directives 2006/95/EC Per Harmonized Standard: EN 61010-1/1993 & Amendment No. 1 | Installation Category II Pollution Degree 2 |

① Models with two HS switches are not ATEX approved.

② 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

BASIC ELECTRICAL RATINGS

| Voltage | Switch Series and Non-Inductive Ampere Rating | | | | | | | |
|---------|---|-------|-------|------|------|------|------|------|
| | B | C | D | F | HS | R | 8 | 9 |
| 120 VAC | 15.00 | 15.00 | 10.00 | 2.50 | 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 | 0.50 |
| 120 VDC | 0.50 | 1.00 | 10.00 | 0.30 | 0.50 | 0.40 | — | — |
| 240 VDC | 0.25 | 0.50 | 3.00 | — | 0.25 | — | — | — |

DIMENSIONAL SPECIFICATIONS

CARBON STEEL CHAMBERS WITH 1½-INCH CONNECTIONS

INCHES

MILLIMETERS

| | Min. ^① SG | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | |
|-----|-------------------------|-------------------|------|-------|------------------------|-------|-------|-------------------|-------|-------|-------------------------------|-------|-------------------|------|-----|------------------------|-----|-----|-------------------|-----|-----|-------------------------------|-----|
| | | A | B | C | A | B | C | A | B | C | HL | LL | A | B | C | A | B | C | A | B | C | HL | LL |
| | | B75 | 0.67 | 8.94 | 4.22 | 23.06 | 12.56 | 7.69 | 26.69 | 13.21 | 7.69 | 27.34 | 1.93 | 2.61 | 227 | 107 | 586 | 319 | 195 | 678 | 336 | 195 | 694 |
| C75 | 0.55 | | | | | | | | | | 1.93 | 2.61 | | | | | | | | | | 49 | 66 |
| F75 | 0.55 | 11.06 | 5.75 | 26.19 | 14.78 | 9.19 | 29.92 | 15.39 | 9.19 | 30.53 | 1.08 | 1.66 | 281 | 146 | 665 | 375 | 233 | 760 | 391 | 233 | 775 | 27 | 42 |
| G75 | 0.53 | 9.62 | 4.75 | 24.09 | 13.31 | 8.19 | 27.75 | 13.96 | 8.19 | 28.42 | 1.59 | 2.25 | 244 | 121 | 612 | 338 | 208 | 705 | 355 | 208 | 722 | 40 | 57 |
| J75 | 0.48 | | | | | | | | | | 2.23 | 2.95 | | | | | | | | | | 56 | 74 |
| K75 | 0.39 | 12.06 | 5.75 | 27.14 | 15.56 | 9.19 | 30.64 | 16.21 | 9.19 | 31.29 | 1.77 | 2.39 | 306 | 146 | 689 | 395 | 233 | 778 | 412 | 233 | 795 | 44 | 60 |
| L75 | 0.40 | 9.62 | 4.75 | 24.09 | 13.31 | 8.19 | 27.75 | 13.96 | 8.19 | 28.42 | 1.78 | 2.52 | 244 | 121 | 612 | 338 | 208 | 705 | 355 | 208 | 722 | 44 | 64 |
| N75 | 0.32 | 12.06 | 5.75 | 27.14 | 15.56 | 9.19 | 30.64 | 16.21 | 9.19 | 31.29 | 1.81 | 2.49 | 306 | 146 | 689 | 395 | 233 | 778 | 412 | 233 | 806 | 45 | 63 |
| S75 | 0.60 | Consult Factory | | | | | | | | | n/a | n/a | Consult Factory | | | | | | | | | n/a | n/a |
| V75 | 0.74 | 8.82 | 4.22 | 23.20 | 12.56 | 7.68 | 26.94 | 13.21 | 7.68 | 27.79 | 1.94 | 2.69 | 224 | 107 | 589 | 319 | 195 | 684 | 336 | 195 | 706 | 49 | 68 |
| Z75 | 0.68 | 9.51 | 4.75 | 24.09 | 13.31 | 8.18 | 27.89 | 13.96 | 8.18 | 28.54 | 1.69 | 2.59 | 242 | 121 | 612 | 338 | 208 | 708 | 355 | 208 | 725 | 43 | 66 |

Levels are ±0.25" (6 mm)

CARBON STEEL CHAMBERS WITH 2-INCH CONNECTIONS
INCHES

MILLIMETERS

| | Min ^① SG | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | |
|-----|------------------------|-------------------|------|-------|------------------------|------|-------|-------------------|------|-------|-------------------------------|------|-------------------|-----|-----|------------------------|-----|-----|-------------------|-----|-----|-------------------------------|-----|
| | | A | B | C | A | B | C | A | B | C | HL | LL | A | B | C | A | B | C | A | B | C | HL | LL |
| B75 | 0.67 | 8.69 | 4.34 | 23.20 | 12.56 | 7.69 | 26.07 | 13.21 | 7.69 | 27.72 | 1.48 | 2.16 | 221 | 110 | 589 | 319 | 195 | 662 | 336 | 195 | 704 | 37 | 54 |
| C75 | 0.55 | | | | | | | | | | 1.64 | 2.36 | | | | | | | | | | 41 | 59 |
| F75 | 0.55 | 10.94 | 5.88 | 26.32 | 14.78 | 9.19 | 30.16 | 15.39 | 9.19 | 30.77 | 0.78 | 1.36 | 278 | 149 | 669 | 375 | 233 | 766 | 391 | 233 | 782 | 19 | 34 |
| G75 | 0.53 | 9.50 | 4.88 | 24.21 | 13.31 | 8.19 | 28.02 | 13.96 | 8.19 | 28.67 | 1.31 | 1.97 | 241 | 124 | 615 | 338 | 208 | 712 | 355 | 208 | 728 | 33 | 50 |
| J75 | 0.48 | | | | | | | | | | 1.95 | 2.67 | | | | | | | | | | 49 | 67 |
| K75 | 0.39 | 11.94 | 5.88 | 27.32 | 15.56 | 9.19 | 30.94 | 16.21 | 9.19 | 31.59 | 1.59 | 2.21 | 303 | 149 | 694 | 395 | 233 | 786 | 412 | 233 | 802 | 40 | 56 |
| L75 | 0.40 | 9.50 | 4.88 | 24.21 | 13.31 | 8.19 | 28.02 | 13.96 | 8.19 | 28.67 | 1.50 | 2.24 | 241 | 124 | 615 | 338 | 208 | 712 | 355 | 208 | 728 | 38 | 56 |
| N75 | 0.32 | 11.94 | 5.88 | 27.32 | 15.56 | 9.19 | 30.94 | 16.21 | 9.19 | 31.59 | 1.63 | 2.31 | 303 | 149 | 694 | 395 | 233 | 786 | 412 | 233 | 802 | 40 | 58 |
| S75 | 0.60 | Consult Factory | | | | | | | | | n/a | n/a | Consult Factory | | | | | | | | | n/a | n/a |
| V75 | 0.74 | 8.49 | 4.34 | 23.27 | 12.56 | 7.68 | 27.34 | 13.21 | 7.68 | 27.99 | 1.88 | 2.63 | 216 | 110 | 591 | 319 | 195 | 694 | 336 | 195 | 711 | 48 | 67 |
| Z75 | 0.68 | 9.31 | 4.87 | 24.16 | 13.31 | 8.18 | 28.16 | 13.96 | 8.18 | 28.81 | 1.44 | 2.25 | 236 | 124 | 614 | 338 | 208 | 715 | 355 | 208 | 732 | 37 | 57 |

Levels are ±0.25" (6 mm)

| Housing | D | E |
|------------------------|---------------|---------------|
| NEMA 1 | 4.70 (119) | 5.00 (127) |
| TYPE 4X/7/9 Group B | 5.93 (151) | 3.87 (98) |

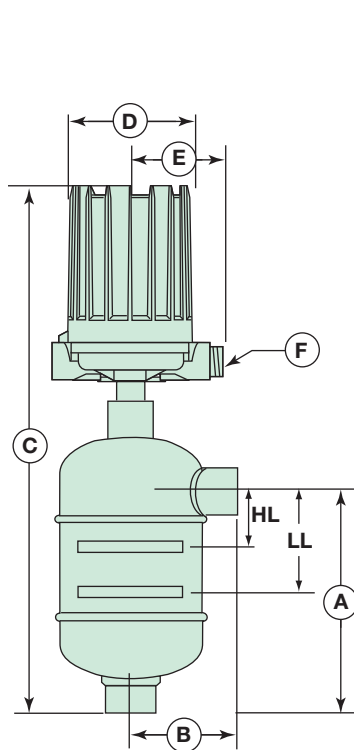
| Conduit Connections F |
|-----------------------|
| Electrical Switches |
| TYPE 4X/7/9: 1" NPT |
| Group B: 1" NPT |
| Pneumatic Switches |
| NEMA 1: ¼" NPT |

① Min S.G. given is for single switch units with -1 materials of construction only. Consult factory for other configurations.

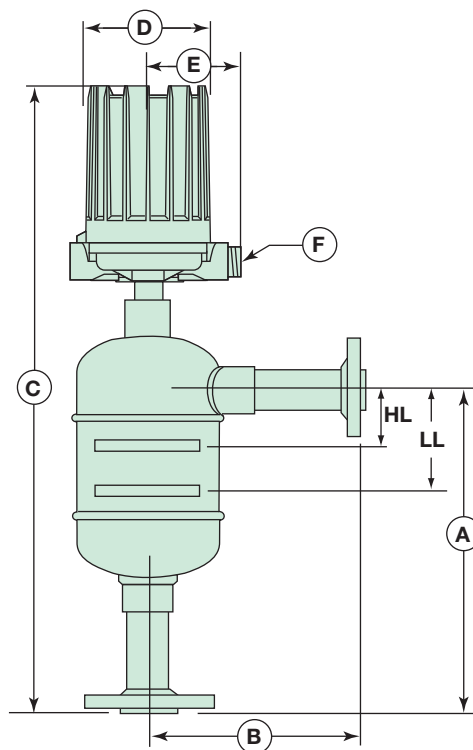
② Switch actuating levels (HL & LL) are given for minimum specific gravity materials of construction -1 and single switch units. Consult factory for other configurations.

NOTES:

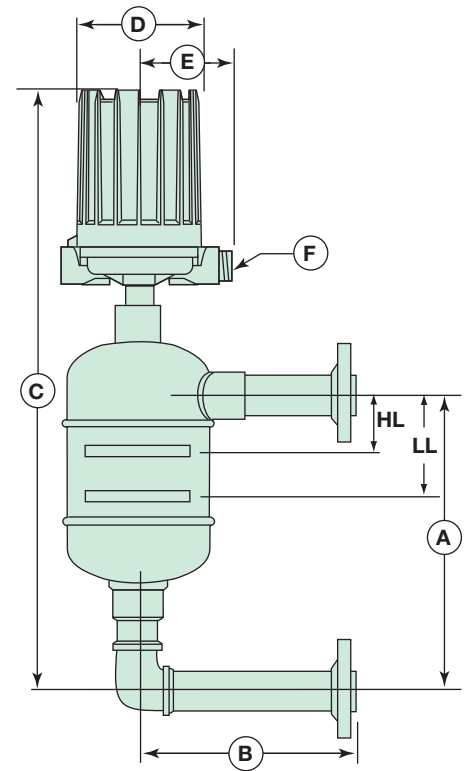
1. Standard process connections are a combination of 1" NPT and 1" socket weld coupling.
2. Allow overhead clearance of 10 inches (254 mm) for cover removal.
3. All housings rotatable 360 degrees.



Series 75
Threaded and Socket Weld
Upper Side/Bottom



Series 75
Flanged Upper Side/Bottom



Series 75
Flanged Side/Side

DIMENSIONAL SPECIFICATIONS

STAINLESS STEEL CHAMBERS WITH 1-INCH CONNECTIONS INCHES

MILLIMETERS

| | Min. SG ^① | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | |
|------------------|----------------------|-------------------|------|-------|------------------------|------|-------|-------------------|------|-------|-------------------------------|------|-------------------|----|-----|------------------------|-----|-----|-------------------|-----|-----|-------------------------------|----|
| | | A | B | C | A | B | C | A | B | C | HL | LL | A | B | C | A | B | C | A | B | C | HL | LL |
| B73 | 0.59 | 6.36 | 3.34 | 17.44 | 9.25 | 6.25 | 20.32 | 9.90 | 6.25 | 21.00 | 1.22 | 2.10 | 151 | 84 | 442 | 235 | 159 | 515 | 251 | 159 | 532 | 30 | 53 |
| C75 | 0.60 | 8.50 | 3.61 | 22.06 | 11.56 | 6.68 | 25.12 | 12.21 | 6.68 | 25.75 | 2.75 | 3.62 | 216 | 92 | 560 | 294 | 170 | 638 | 310 | 170 | 654 | 70 | 92 |
| J75 | 0.57 | 9.25 | 3.61 | 23.06 | 12.31 | 6.68 | 26.12 | 12.96 | 6.68 | 26.75 | 2.93 | 3.78 | 235 | 92 | 586 | 313 | 170 | 663 | 329 | 170 | 679 | 74 | 96 |
| O75 ^③ | 0.85 | 8.50 | 2.71 | 21.87 | 11.56 | 5.68 | 24.93 | 12.21 | 5.68 | 25.62 | 2.44 | 3.50 | 216 | 69 | 555 | 294 | 144 | 633 | 310 | 144 | 651 | 62 | 89 |
| O75 ^④ | 0.85 | 8.50 | 2.59 | 21.56 | 11.56 | 5.56 | 24.62 | 12.21 | 5.56 | 25.43 | 2.44 | 3.50 | 216 | 66 | 548 | 294 | 141 | 625 | 310 | 141 | 646 | 62 | 89 |
| P75 | 0.75 | 8.50 | 3.09 | 21.93 | 11.56 | 6.12 | 25.00 | 12.21 | 6.12 | 25.68 | 2.56 | 3.50 | 216 | 76 | 557 | 294 | 155 | 635 | 310 | 155 | 652 | 65 | 89 |

Levels are ±0.25" (6 mm)

CARBON STEEL CHAMBERS WITH 1-INCH CONNECTIONS INCHES

MILLIMETERS

| | Min. SG ^① | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | | NPT & Socket Weld | | | Flanged Upper Side/Btm | | | Flanged Side/Side | | | Actuating Levels ^② | |
|-----|----------------------|-------------------|------|-------|------------------------|------|-------|-------------------|------|-------|-------------------------------|------|-------------------|-----|-----|------------------------|-----|-----|-------------------|-----|-----|-------------------------------|----|
| | | A | B | C | A | B | C | A | B | C | HL | LL | A | B | C | A | B | C | A | B | C | HL | LL |
| B73 | 0.59 | 6.36 | 3.34 | 17.44 | 9.25 | 6.25 | 20.32 | 9.90 | 6.25 | 21.00 | 1.22 | 2.10 | 151 | 84 | 442 | 235 | 159 | 515 | 251 | 159 | 532 | 30 | 53 |
| B75 | 0.67 | 8.69 | 3.80 | 22.69 | 11.56 | 6.69 | 25.56 | 12.21 | 6.69 | 26.21 | 2.56 | 3.24 | 221 | 97 | 576 | 294 | 170 | 649 | 310 | 170 | 666 | 65 | 82 |
| C75 | 0.55 | | | | | | | | | | 2.72 | 3.44 | | | | | | | | | | 69 | 87 |
| F75 | 0.55 | 10.91 | 5.33 | 24.91 | 13.78 | 8.19 | 27.78 | 14.39 | 8.19 | 28.39 | 1.76 | 2.35 | 277 | 135 | 633 | 350 | 208 | 706 | 366 | 208 | 721 | 44 | 59 |
| G75 | 0.53 | 9.44 | 4.33 | 23.44 | 12.31 | 7.19 | 26.31 | 12.96 | 7.19 | 26.96 | 2.25 | 2.92 | 240 | 110 | 595 | 313 | 183 | 668 | 329 | 183 | 685 | 57 | 74 |
| J75 | 0.48 | | | | | | | | | | 2.90 | 3.62 | | | | | | | | | | 73 | 91 |
| K75 | 0.39 | 11.69 | 5.33 | 25.69 | 14.56 | 8.19 | 28.56 | 15.21 | 8.19 | 29.21 | 2.15 | 2.77 | 297 | 135 | 653 | 370 | 208 | 754 | 386 | 208 | 742 | 54 | 70 |
| L75 | 0.40 | 9.44 | 4.33 | 23.44 | 12.31 | 7.19 | 26.31 | 12.96 | 7.19 | 26.96 | 2.45 | 3.19 | 240 | 110 | 595 | 313 | 183 | 668 | 329 | 183 | 685 | 62 | 81 |
| N75 | 0.32 | 11.69 | 5.33 | 25.69 | 14.56 | 8.19 | 28.56 | 15.21 | 8.19 | 29.21 | 2.17 | 2.86 | 297 | 135 | 653 | 370 | 208 | 754 | 386 | 208 | 742 | 55 | 72 |
| S75 | 0.60 | 11.16 | 5.33 | 27.06 | Consult Factory | | | | | | 2.13 | 2.78 | 283 | 135 | 687 | Consult Factory | | | | | | 54 | 70 |
| V75 | 0.74 | 9.02 | 4.15 | 23.27 | 11.56 | 6.68 | 25.81 | 12.21 | 6.68 | 26.46 | 2.63 | 3.38 | 229 | 105 | 591 | 294 | 170 | 656 | 313 | 170 | 672 | 69 | 86 |
| Z75 | 0.68 | 9.77 | 4.68 | 24.16 | 12.31 | 7.18 | 26.70 | 12.96 | 7.18 | 27.35 | 2.38 | 3.19 | 248 | 119 | 614 | 313 | 182 | 678 | 329 | 182 | 695 | 60 | 81 |

Levels are ±0.25" (6 mm)

| Housing | D | E |
|------------------------|---------------|---------------|
| NEMA 1 | 4.70 (119) | 5.00 (127) |
| TYPE 4X/7/9 Group B | 5.93 (151) | 3.87 (98) |

| Conduit Connections F |
|-----------------------|
| Electrical Switches |
| TYPE 4X/7/9: 1" NPT |
| Group B: 1" NPT |
| Pneumatic Switches |
| NEMA 1: ¼" NPT |

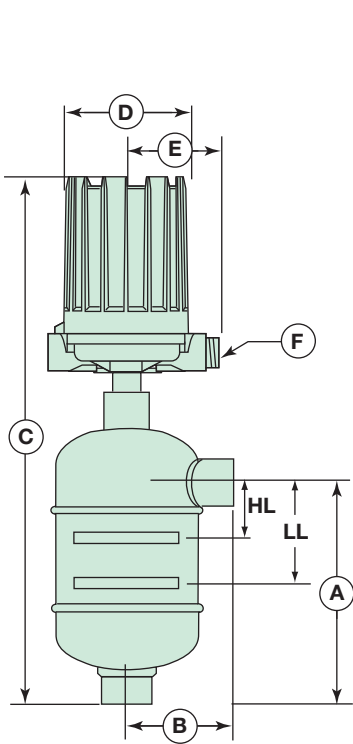
- ① Min S.G. given is for single switch units with -1 materials of construction only. Consult factory for other configurations.
- ② Switch actuating levels (HL & LL) are given for minimum specific gravity materials of construction -1 and single switch units. Consult factory for other configurations.
- ③ 304 Stainless steel only.
- ④ 316 Stainless steel only.
- ⑤ These dimensions increase by 2.19 inches (55 mm) with Series HS switches with terminal blocks.

NOTES:

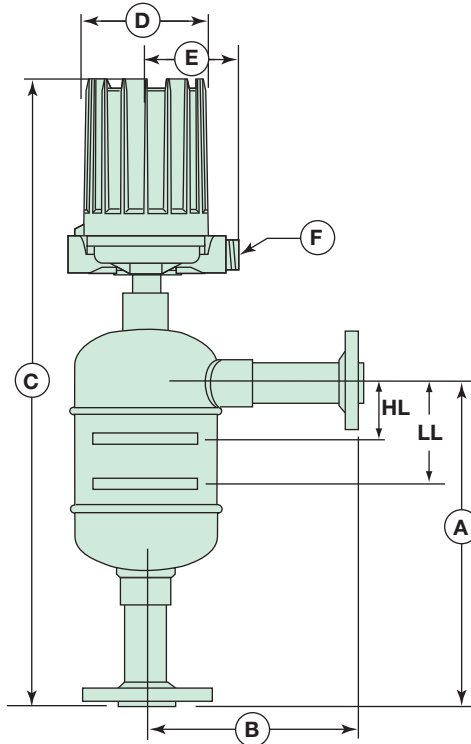
1. Standard process connections are a combination of 1" NPT and 1" socket weld coupling.
2. Allow overhead clearance of 10 inches (254 mm) for cover removal.
3. All housings rotatable 360 degrees.

DIMENSIONAL SPECIFICATIONS

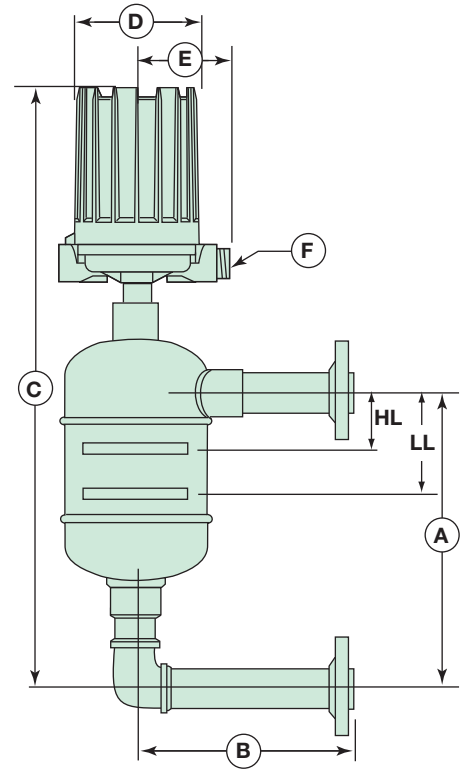
INCHES (mm)



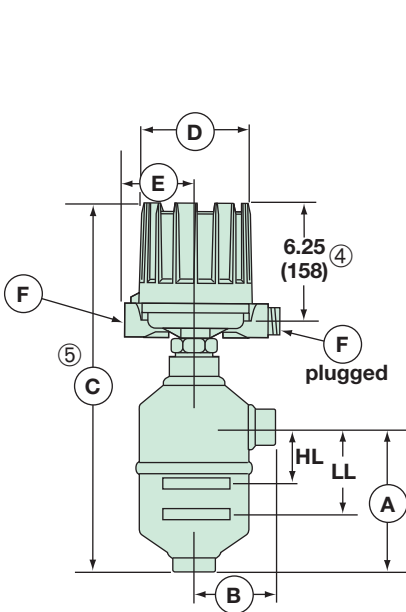
Series 75
Threaded and Socket Weld
Upper Side/Bottom



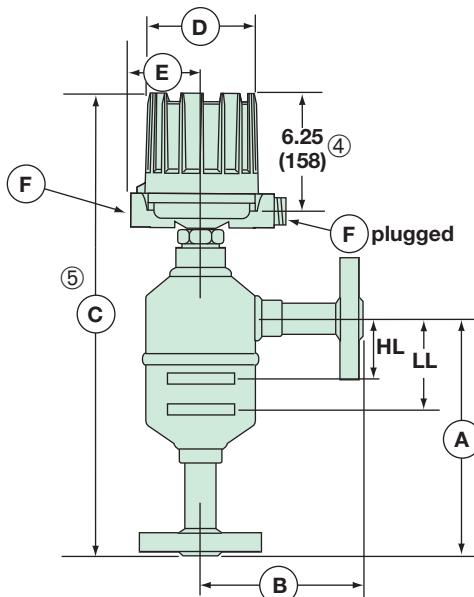
Series 75
Flanged Upper Side/Bottom



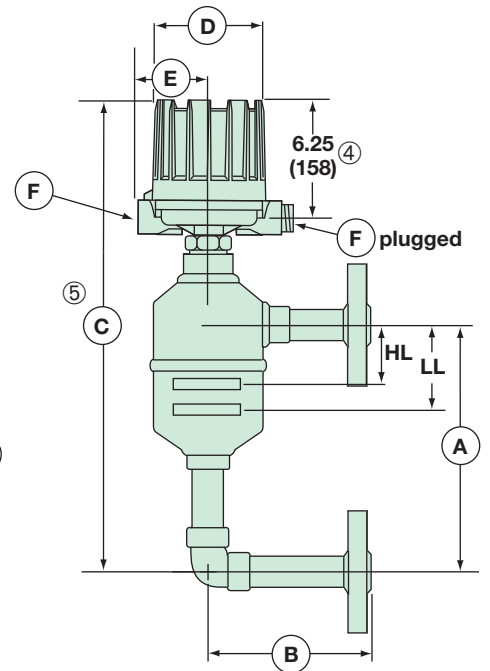
Series 75
Flanged Side/Side



Model B73
Threaded and Socket Weld
Upper Side/Bottom



Model B73
Flanged Upper Side/Bottom



Model B73
Flanged Side/Side

MODEL NUMBER

SERIES B73

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

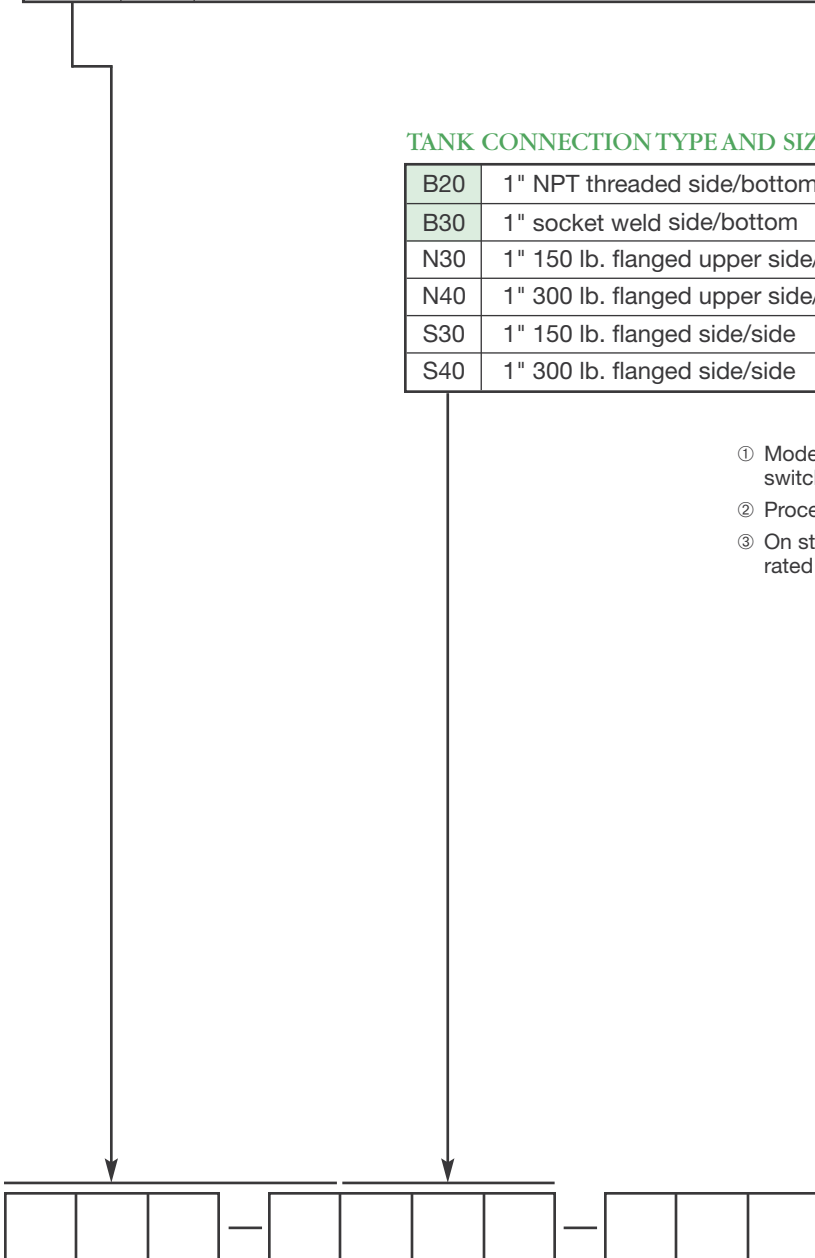
MODEL NUMBER CODE

| Model No. | Min. SG | Materials of Construction | Pressure Rating | | | |
|-----------|---------|--|-----------------|------------------|-----------|------------------|
| | | | psig @ ° F | | bar @ ° C | |
| | | | 100 | 450 ^① | 38 | 232 ^① |
| B73-1 | 0.59 | Carbon steel chamber, 316 stainless steel float, 400 stainless steel trim | 400 | 275 | 28 | 20 |
| B73-2 | 0.59 | Carbon steel chamber, 316 stainless steel float, 316 stainless steel trim | | | | |
| B73-3 | 0.59 | 304 stainless steel chamber, 316 stainless steel float, 304 stainless steel trim | | | | |
| B73-4 | 0.59 | 316 stainless steel chamber, 316 stainless steel float, 316 stainless steel trim | | | | |

TANK CONNECTION TYPE AND SIZE

| | |
|-----|--------------------------------------|
| B20 | 1" NPT threaded side/bottom |
| B30 | 1" socket weld side/bottom |
| N30 | 1" 150 lb. flanged upper side/bottom |
| N40 | 1" 300 lb. flanged upper side/bottom |
| S30 | 1" 150 lb. flanged side/side |
| S40 | 1" 300 lb. flanged side/side |

- ① Models are limited to maximum temperature rating of selected switch mechanism. See Switch Mechanism chart on page 9.
- ② Process temperature based on +100° F (+38° C) ambient.
- ③ On steam & other condensing applications, temperature down-rated to +400° F (+204° C) process @ +100° F (+38° C) ambient.

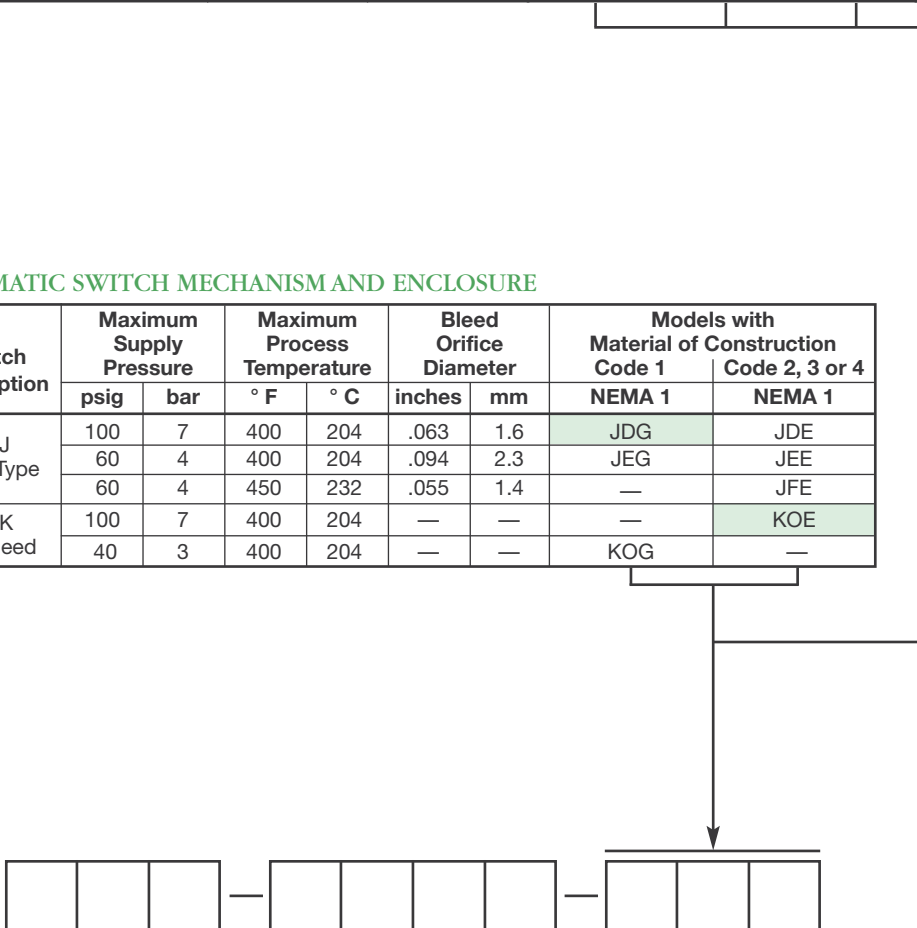


ELECTRIC SWITCH MECHANISM AND ENCLOSURE

| Switch Description | ② Process Temperature Range °F (°C) | One Set Point Contacts | Model B73-1 Only | | | Models B73-2, B73-3, B73-4 | | |
|--|--|------------------------|--------------------------------|--------------------------------|--------------------------|-----------------------------|--------------------------------|--------------------------|
| | | | TYPE 4X/7/9 Aluminum Enclosure | | | | | |
| | | | Class I, Div 1 Groups C & D | Class I, Div 1 Groups B, C & D | Ⓢ II 2 G EEx D IIC T6 | Class I, Div 1 Groups C & D | Class I, Div 1 Groups B, C & D | Ⓢ II 2 G EEx D IIC T6 |
| Series B Snap | -40 to +250 (-40 to +121) | SPDT | BKP | BKT | BAC | BKQ | BKS | BA9 |
| | | DPDT | BNP | BNT | BBC | BNQ | BNS | BB9 |
| Series C Snap | -40 to +450 (-40 to +232) | SPDT | CKP | CKT | CAC | CKQ | CKS | CA9 |
| | | DPDT | CNP | CNT | CBC | CNQ | CNS | CB9 |
| Series D Snap | -40 to +250 (-40 to +121) | SPDT | n/a | | | DKQ | DKS | DA9 |
| | | DPDT | n/a | | | DNQ | DNS | DB9 |
| Series F Hermetically Sealed Snap | -50 to +450 (-46 to +232) | SPDT | FKP | FKT | FAC | FKQ | FKS | FA9 |
| | | DPDT | FNP | FNT | FBC | FNQ | FNS | FB9 |
| Series HS Hermetically Sealed 5 amp Snap with wiring leads | ③ -50 to +450 (-46 to +232) | SPDT | n/a | | | HMC | HEK | n/a |
| | | DPDT | n/a | | | HMF | HET | n/a |
| Series HS Hermetically Sealed 5 amp Snap with terminal block | ③ -50 to +450 (-46 to +232) | SPDT | n/a | | | HM3 | HM4 | HA9 |
| | | DPDT | n/a | | | HM7 | HM8 | HB9 |

PNEUMATIC SWITCH MECHANISM AND ENCLOSURE

| Switch Description | Maximum Supply Pressure | | Maximum Process Temperature | | Bleed Orifice Diameter | | Models with Material of Construction | |
|---------------------|-------------------------|-----|-----------------------------|-----|------------------------|-----|--------------------------------------|----------------|
| | psig | bar | ° F | ° C | inches | mm | Code 1 | Code 2, 3 or 4 |
| | | | | | | | NEMA 1 | NEMA 1 |
| Series J Bleed Type | 100 | 7 | 400 | 204 | .063 | 1.6 | JDG | JDE |
| | 60 | 4 | 400 | 204 | .094 | 2.3 | JEG | JEE |
| | 60 | 4 | 450 | 232 | .055 | 1.4 | — | JFE |
| Series K Non-Bleed | 100 | 7 | 400 | 204 | — | — | — | KOE |
| | 40 | 3 | 400 | 204 | — | — | KOG | — |



MODEL NUMBER

SERIES 75 with Carbon Steel Chamber



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

MODEL NUMBER CODE

| Model Code | Min. S.G. for models with ① Material of Construction Code | | | Pressure Rating ② | | | | | | | | | |
|------------------|--|------|--|-------------------|------|------|------------------|-------------------|-----------|-----|-----|------------------|-----|
| | | | | psig @ ° F | | | | | bar @ ° C | | | | |
| | 1 | 2 | | 100 | 550 | 750 | 900 ^③ | 1000 ^③ | 38 | 288 | 399 | 482 ^③ | 538 |
| B75 | 0.67 | 0.71 | | 1000 | 870 | 716 | 357 | 138 | 69 | 60 | 49 | 25 | 10 |
| C75 | 0.55 | 0.59 | | 500 | 435 | 400 | 357 | 138 | 34 | 30 | 28 | 25 | 10 |
| F75 | 0.55 | 0.56 | | 1000 | 870 | 800 | 523 | 200 | 69 | 60 | 55 | 36 | 14 |
| G75 | 0.53 | 0.56 | | 750 | 653 | 600 | 338 | 130 | 52 | 45 | 41 | 23 | 9 |
| J75 | 0.48 | 0.51 | | 400 | — | 250 | — | — | 28 | — | 17 | — | — |
| K75 | 0.39 | 0.40 | | 600 | — | 375 | — | — | 41 | — | 26 | — | — |
| L75 | 0.40 | 0.42 | | 300 | — | 185 | — | — | 21 | — | 13 | — | — |
| N75 | 0.32 | 0.33 | | 450 | — | 280 | — | — | 31 | — | 19 | — | — |
| S75 ^④ | 0.60 | n/a | | 1500 | 1275 | 1045 | 523 | n/a | 103 | 88 | 72 | 36 | n/a |
| V75 ^④ | 0.74 | 0.81 | | 2240 | 1913 | 1455 | 728 | n/a | 154 | 132 | 100 | 50 | n/a |
| Z75 ^④ | 0.68 | 0.71 | | 2193 | 1913 | 1425 | 713 | n/a | 151 | 132 | 98 | 49 | n/a |

MATERIALS OF CONSTRUCTION

| | |
|---|---|
| 1 | Carbon steel chamber, 316 stainless steel float, 400 stainless steel trim |
| 2 | Carbon steel chamber, 316 stainless steel float, 316 stainless steel trim |

TANK CONNECTION TYPE AND SIZE

| Type | Material | Size | | | | | | | | | | | |
|---------------------------|----------|------------------------------------|-----|-----|------------------|-----|-----|-----|------------------|-----|-----|-----|------------------|
| | | 1" | | | | 1½" | | | | 2" | | | |
| Threaded Side/Bottom | CS | B20 | | | | C20 | | | | D20 | | | |
| Socket Weld Side/Bottom | CS | B30 | | | | C30 | | | | D30 | | | |
| | | Cage Mounting Flange Rating (lbs.) | | | | | | | | | | | |
| | | 150 | 300 | 600 | 900 ^⑤ | 150 | 300 | 600 | 900 ^⑤ | 150 | 300 | 600 | 900 ^⑤ |
| Flanged Upper Side/Bottom | CS | N30 | N40 | N50 | N60 | P30 | P40 | P50 | P60 | Q30 | Q40 | Q50 | Q60 |
| Flanged Side/Side | CS | S30 | S40 | S50 | S60 | T30 | T40 | T50 | T60 | V30 | V40 | V50 | V60 |

PNEUMATIC SWITCH MECHANISM AND ENCLOSURE

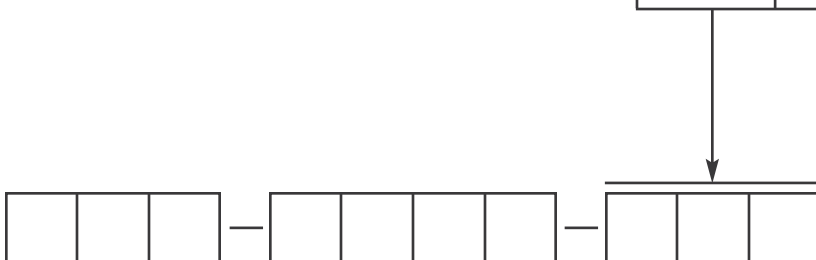
| Switch Description | Maximum Supply Pressure | | Maximum Process Temperature | | Bleed Orifice Diameter | | Excluding S75, V75 & Z75 | S75, V75 & Z75 |
|------------------------|-------------------------|-----|-----------------------------|-----|------------------------|-----|--------------------------|----------------|
| | psig | bar | ° F | ° C | inches | mm | NEMA 1 | NEMA 1 |
| Series J Bleed Type | 100 | 7 | 400 | 204 | .063 | 1.6 | JDE | JKE |
| | 60 | 4 | 400 | 204 | .094 | 2.3 | JEE | JLE |
| | 60 | 4 | 700 | 371 | .055 | 1.3 | JFE | JME |
| Series K Non-Bleed | 100 | 7 | 400 | 204 | — | — | KOE | KPE |

- ① Minimum specific gravity ratings apply only to single stage units. Consult factory for two or three stage units.
- ② Models are limited to maximum temperature rating of selected switch mechanism. See Switch Mechanism Charts above.
- ③ Use caution when specifying carbon steel and stainless steel for temperatures greater than +800° F (+427° C), as they become sensitized.
- ④ S75, V75 & Z75 contain 17-7 ph float.
- ⑤ Valid for Models V75 & Z75 only.
- ⑥ Process temperature based on +100° F (+38° C) ambient.
- ⑦ HS switches can be used with only materials of construction code 1 on models S75, V75 & Z75.
- ⑧ On steam and other condensing applications, temperature down-rated to +400° F (+204° C) process at +100° F (+38° C) ambient.

See next page for **Electric Switch Mechanism and Enclosure** codes.

ELECTRIC SWITCH MECHANISM AND ENCLOSURE

| Switch Description | Process ® Temperature Range °F (°C) | Contacts | Set Points | All Models with Material of Construction Code 1 except Models S75, V75 & Z75 | | | All models with Material of Construction Codes 2 and all Models S75, V75 & Z75 | | |
|--|---|----------|------------|--|------------------------------|-----------------------------------|--|------------------------------|-----------------------------------|
| | | | | TYPE 4X/7/9 Aluminum Enclosure | | | | | |
| | | | | Class I, Div 1 Groups C&D | Class I, Div 1 Group B | ATEX Ex II 2 G EEx d IIC T6 | Class I, Div 1 Groups C&D | Class I, Div 1 Group B | ATEX Ex II 2 G EEx d IIC T6 |
| Series B Snap Switch | -40 to +250 (-40 to +121) | SPDT | 1 | BKA | BKJ | BCC | BKB | BKK | BC9 |
| | | | 2 | BLA | BLJ | BDC | BLB | BLK | BD9 |
| | | | 3 | BMA | BMJ | BEC | BMB | — | BE9 |
| | | DPDT | 1 | BNA | BNJ | BFC | BNB | BNK | BF9 |
| 2 | BOA | | BOJ | BGC | BOB | BOK | BG9 | | |
| Series C Snap Switch | -40 to +450 (-40 to +232) | SPDT | 1 | CKA | CKJ | CCC | CKB | CKK | CC9 |
| | | | 2 | CLA | CLJ | CDC | CLB | CLK | CD9 |
| | | | 3 | CMA | CMJ | CEC | CMB | CMK | CE9 |
| | | DPDT | 1 | CNA | CNJ | CFC | CNB | CNK | CF9 |
| 2 | COA | | COJ | CGC | COB | COK | CG9 | | |
| Series D DC Current Snap Switch | -40 to +250 (-40 to +121) | SPDT | 1 | DKB | DKK | DC9 | DKB | DKK | DC9 |
| | | | 2 | DLB | DLK | DD9 | DLB | DLK | DD9 |
| | | | 3 | DMB | — | DE9 | DMB | — | DE9 |
| | | DPDT | 1 | DNB | DNK | DF9 | DNB | DNK | DF9 |
| 2 | DOB | | DOK | DG9 | DOB | DOK | DG9 | | |
| Series F Hermetically Sealed Snap Switch | -50 to +750 (-46 to +399) | SPDT | 1 | FKA | FKJ | FCC | FKB | FKK | FC9 |
| | | | 2 | FLA | FLJ | FDC | FLB | FLK | FD9 |
| | | DPDT | 1 | FNA | FNJ | FFC | FNB | FNK | FF9 |
| | | | 2 | FOA | FOJ | FGC | FOB | FOK | FG9 |
| Series HS ⑦ Hermetically Sealed 5-amp Snap Switch with Wiring Leads | -50 to +550 ⑧ (-46 to +288) | SPDT | 1 | HMJ | HMK | N/A | HMJ | HMK | N/A |
| | | | 2 | HMN | HMP | | HMN | HMP | |
| | | DPDT | 1 | HMS | HMT | | HMS | HMT | |
| | | | 2 | HMY | HMZ | | HMY | HMZ | |
| Series HS ⑦ Hermetically Sealed 5-amp Snap Switch with Terminal Block | -50 to +550 ⑧ (-46 to +288) | SPDT | 1 | HM3 | HM4 | HA9 | HM3 | HM4 | HA9 |
| | | DPDT | 1 | HM7 | HM8 | HB9 | HM7 | HM8 | HB9 |
| Series R High Temperature Snap Switch | -40 to +750 (-40 to +399) | SPDT | 1 | RKB | RKK | RC9 | RKB | RKK | RC9 |
| | | | 2 | RLB | RLK | RD9 | RLB | RLK | RD9 |
| | | DPDT | 1 | RNB | RNK | RF9 | RNB | RNK | RF9 |
| | | | 2 | ROB | ROK | RG9 | ROB | ROK | RG9 |
| Series 8 Hermetically Sealed Snap Switch | -50 to +750 (-46 to +399) | SPDT | 1 | 8KA | 8KJ | 8CC | 8KB | 8KK | 8C9 |
| | | | 2 | 8LA | — | 8DC | 8LB | 8LK | 8D9 |
| | | | 3 | 8MA | — | 8EC | 8MB | 8MK | 8E9 |
| | | DPDT | 1 | 8NA | 8NJ | 8FC | 8NB | 8NK | 8F9 |
| 2 | 8OA | | — | 8GC | 8OB | — | 8G9 | | |
| Series 9 High Temperature Hermetically Sealed Snap Switch | -50 to +750 (-46 to +399) | SPDT | 1 | 9KA | — | 9CC | 9KB | — | 9C9 |
| | | | 2 | 9LA | — | 9DC | 9LB | — | 9D9 |
| | | | 3 | 9MA | — | 9EC | 9MB | — | 9E9 |
| | | DPDT | 1 | 9NA | — | 9FC | 9NB | — | 9F9 |
| 2 | 9OA | | — | 9GC | 9OB | — | 9G9 | | |
| Switch Description | Process ® Temp. Range °F (°C) | Contacts | Set Points | CS/Aluminum | Cast Iron | | CS/Aluminum | Cast Iron | |
| | | | | NEMA 4X | Class I, Div 1 Groups C&D | Class I, Div 1 Group B | NEMA 4X | Class I, Div 1 Groups C&D | Class I, Div 1 Group B |
| Series R High Temperature Snap Switch | -40 to +1000 (-40 to +538) | SPDT | 1 | R1M | RKM | RKW | R1M | RKM | RKW |
| | | | 2 | R3M | RLM | — | R3M | RLM | — |
| | | DPDT | 1 | RDM | RNM | RNW | RDM | RNM | RNW |
| | | | 2 | REM | ROM | ROW | REM | ROM | ROW |
| Series 9 High Temperature Hermetically Sealed Snap Switch | -50 to +1000 (-46 to +538) | SPDT | 1 | 9AD | 9KD | — | 9AM | 9KM | 9KW |
| | | | 2 | 9BD | 9LD | — | 9BM | — | — |
| | | | 3 | 9CD | — | — | 9CM | — | — |
| | | DPDT | 1 | 9DD | 9ND | — | 9DM | 9NM | 9NW |
| 2 | 9ED | | 9OD | — | 9EM | — | — | | |



MODEL NUMBER

SERIES 75 with Stainless Steel Chamber

MODEL NUMBER CODE

| Model Code | Min. S.G. for models with ^① Material of Construction Code | Pressure Rating ^② | | | | | | | | | |
|------------|---|------------------------------|-----|-----|-----|------------------|-------------------|----|-----|-----|------------------|
| | | psig @ ° F | | | | | bar @ ° C | | | | |
| | | 3 & 4 | 100 | 550 | 750 | 900 ^③ | 1000 ^③ | 38 | 288 | 399 | 482 ^③ |
| C75 | 0.60 | 500 | 435 | 400 | 385 | 380 | 34 | 30 | 28 | 26 | 26 |
| J75 | 0.57 | 400 | — | 225 | — | — | 28 | — | 16 | — | — |
| O75 | 0.85 | 500 | 435 | 400 | 385 | 380 | 34 | 30 | 28 | 26 | 26 |
| P75 | 0.75 | 400 | — | 225 | — | — | 28 | — | 16 | — | — |

MATERIALS OF CONSTRUCTION

| | |
|---|--|
| 3 | 304 Stainless steel chamber, 316 stainless steel float, 316 stainless steel trim |
| 4 | 316 Stainless steel chamber, 316 stainless steel float, 316 stainless steel trim |

TANK CONNECTION TYPE AND SIZE

| Type | Material | Size | | | | | | | | | | | | |
|---------------------------|----------|------------------------------------|-----|-----------------|------------------|-----|-----|-----------------|-----|-----|-----|-----|-----|--|
| | | 1" | | | 1½" ^④ | | | 2" ^④ | | | | | | |
| Threaded Side/Bottom | SS | B20 | | | C20 | | | D20 | | | | | | |
| Socket Weld Side/Bottom | SS | B30 | | | C30 | | | D30 | | | | | | |
| | | Cage Mounting Flange Rating (lbs.) | | | | | | | | | | | | |
| | | 150 | 300 | 600 | 900 | 150 | 300 | 600 | 900 | 150 | 300 | 600 | 900 | |
| Flanged Upper Side/Bottom | SS | N30 | N40 | Consult Factory | | | | | | | | | | |
| Flanged Side/Side | SS | S30 | S40 | Consult Factory | | | | | | | | | | |

PNEUMATIC SWITCH MECHANISM AND ENCLOSURE

| Switch Description | Maximum Supply Pressure | | Maximum Process Temperature | | Bleed Orifice Diameter | | NEMA 1 |
|---------------------|-------------------------|-----|-----------------------------|-----|------------------------|-----|--------|
| | psig | bar | ° F | ° C | inches | mm | |
| Series J Bleed Type | 100 | 7 | 400 | 204 | .063 | 1.6 | JDE |
| | 60 | 4 | 400 | 204 | .094 | 2.3 | JEE |
| | 60 | 4 | 700 | 371 | .055 | 1.3 | JFE |
| Series K Non-Bleed | 100 | 7 | 400 | 204 | — | — | KOE |

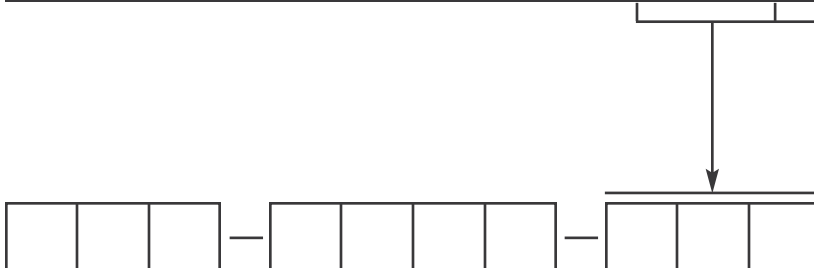
- ① Minimum specific gravity ratings apply only to single stage units. Consult factory for two or three stage units.
- ② Models are limited to maximum temperature rating of selected switch mechanism. See Switch Mechanism Charts above.
- ③ Use caution when specifying carbon steel and stainless steel for temperatures greater than +800° F (+427° C), as they become sensitized.
- ④ The O75 and P75 are not available with 1½" and 2" process connections.
- ⑤ Process temperature based on +100° F (+38° C) ambient.
- ⑥ On steam and other condensing applications, temperature down-rated to +400° F (+204° C) process at +100° F (+38° C) ambient.

See next page for **Electric Switch Mechanism and Enclosure** codes.



ELECTRIC SWITCH MECHANISM AND ENCLOSURE

| Switch Description | Process ⑤ Temperature Range °F (°C) | Contacts | Set Points | All models | | |
|--|---|----------|------------|--------------------------------|------------------------------|-----------------------------------|
| | | | | TYPE 4X/7/9 Aluminum Enclosure | | |
| | | | | Class I, Div 1 Groups C&D | Class I, Div 1 Group B | ATEX Ex II 2 G EEx d IIC T6 |
| Series B Snap Switch | -40 to +250 (-40 to +121) | SPDT | 1 | BKB | BKK | BC9 |
| | | | 2 | BLB | BLK | BD9 |
| | | | 3 | BMB | — | BE9 |
| | | DPDT | 1 | BNB | BNK | BF9 |
| | | | 2 | BOB | BOK | BG9 |
| Series C Snap Switch | -40 to +450 (-40 to +232) | SPDT | 1 | CKB | CKK | CC9 |
| | | | 2 | CLB | CLK | CD9 |
| | | | 3 | CMB | CMK | CE9 |
| | | DPDT | 1 | CNB | CNK | CF9 |
| | | | 2 | COB | COK | CG9 |
| Series D DC Current Snap Switch | -40 to +250 (-40 to +121) | SPDT | 1 | DKB | DKK | DC9 |
| | | | 2 | DLB | DLK | DD9 |
| | | | 3 | DMB | — | DE9 |
| | | DPDT | 1 | DNB | DNK | DF9 |
| | | | 2 | DOB | DOK | DG9 |
| Series F Hermetically Sealed Snap Switch | -50 to +750 (-46 to +399) | SPDT | 1 | FKB | FKK | FC9 |
| | | | 2 | FLB | FLK | FD9 |
| | | DPDT | 1 | FNB | FNK | FF9 |
| | | | 2 | FOB | FOK | FG9 |
| Series HS Hermetically Sealed 5-amp Snap Switch with Wiring Leads | -50 to +550 ⑥ (-46 to +288) | SPDT | 1 | HMJ | HMK | N/A |
| | | | 2 | HMN | HMP | |
| | | DPDT | 1 | HMS | HMT | |
| | | | 2 | HMY | HMZ | |
| Series HS Hermetically Sealed 5-amp Snap Switch with Terminal Block | -50 to +550 ⑥ (-46 to +288) | SPDT | 1 | HM3 | HM4 | HA9 |
| | | DPDT | 1 | HM7 | HM8 | HB9 |
| Series R High Temperature Snap Switch | -40 to +750 (-40 to +399) | SPDT | 1 | RKB | RKK | RC9 |
| | | | 2 | RLB | RLK | RD9 |
| | | DPDT | 1 | RNB | RNK | RF9 |
| | | | 2 | ROB | ROK | RG9 |
| Series 8 Hermetically Sealed Snap Switch | -50 to +750 (-46 to +399) | SPDT | 1 | 8KB | 8KK | 8C9 |
| | | | 2 | 8LB | 8LK | 8D9 |
| | | | 3 | 8MB | 8MK | 8E9 |
| | | DPDT | 1 | 8NB | 8NK | 8F9 |
| | | | 2 | 8OB | — | 8G9 |
| Series 9 High Temperature Hermetically Sealed Snap Switch | -50 to +750 (-46 to +399) | SPDT | 1 | 9KB | — | 9C9 |
| | | | 2 | 9LB | — | 9D9 |
| | | | 3 | 9MB | — | 9E9 |
| | | DPDT | 1 | 9NB | — | 9F9 |
| | | | 2 | 9OB | — | 9G9 |
| Switch Description | Process ⑤ Temp. Range °F (°C) | Contacts | Set Points | CS/Aluminum | Cast Iron | |
| | | | | NEMA 4X | Class I, Div 1 Groups C&D | Class I, Div 1 Group B |
| Series R High Temperature Snap Switch | -40 to +1000 (-40 to +538) | SPDT | 1 | R1M | RKM | RKW |
| | | | 2 | R3M | RLM | — |
| | | DPDT | 1 | RDM | RNM | RNW |
| | | | 2 | REM | ROM | ROW |
| Series 9 High Temperature Hermetically Sealed Snap Switch | -50 to +1000 (-46 to +538) | SPDT | 1 | 9AM | 9KM | 9KW |
| | | | 2 | 9BM | — | — |
| | | | 3 | 9CM | — | — |
| | | DPDT | 1 | 9DM | 9NM | 9NW |
| | | | 2 | 9EM | — | — |



QUALITY

MAGNETROL
REGISTERED TO
ISO 9001
Your Assurance of
Quality and Service

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.

The MAGNETROL 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 Sealed External Cage Level Switches are available for quick shipment, usually within one week after factory receipt of a complete 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.

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