NC
MAGNETIC FLOAT SWITCHES FOR LIQUIDS



- Available Materials: Brass, Stainless Steel, Buna-N, Polypropylene and PVC
- Maximum Pressure: 400 PSIG
- Maximum Temperature: $300^{\circ} \mathrm{F}$
- Singlepoint and Multipoint Designs
- Field Changeable Switch Logic

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## HIGH QUALITY LEVEL SWITCHES FOR EVERY APPLICATION

## Versatile Design

KOBOLD level switch products are designed to meet a wide range of application requirements by addressing such design considerations as:

- Pressure and Temperature
- Mounting Orientation
- Termination
- Media Characteristics such as Density,

Viscosity and Corrosivity

- Materials of Construction
- Switch Load


## Operation

All KOBOLD level switches use a hermetically sealed reed contact actuated by a magnet in the float. As the float rises and falls, the magnetic field causes the switch inside the stem to open or close.

KOBOLD level switches can be mounted in the tank top or bottom, or can be adapted for side mounting. Switches will operate normally with up to a 30 degree tilt from vertical.

All single point switches are field selectable for normally open (N/O) or normally closed (N/C) switch operation by simply removing the retaining ring and flipping the float.

## Design Flexibility

Some KOBOLD level switches can be provided to detect the interface between two dissimilar liquids such as water and oil.

KOBOLD level switches can be provided with other mounting styles such as flanges, bent stem, different NPT, straight threads, and metric size mounting plugs.

KOBOLD level switches can be made intrinsic ally safe for hazardous applications by the use of I.S. barriers such as the REL-6000 series. Contact protection relays such as the RL-series should always be considered to protect switches from overload.


## Electrical Data

| Switch Ratings - Resistive Loads |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Contact Rating | Switch Type | Maximum Voltage | Maximum AC | Current DC |  |
|  |  |  |  |  |  |
| 100 VA | SPST | 240 VAC/VDC | 1.0 A | 0.4 A |  |
| 20 VA | SPDT | $240 \mathrm{VAC} / V D C$ | 0.7 A | 0.4 A |  |

NOTE: Above ratings are for resistive loads only.

Top Mount NCP-2554


Side Mount NCP-5094


## NCP Ordering Information

| Type | Part No. | Stem/Float <br> Material | Switch |
| :---: | :---: | :---: | :---: |
| Top Mount | NCP-2554 | Polypro/Polypro | 20 VA, SPST |
| Side Mount | NCP-5094 | Polypro/Polypro | 20 VA, SPST |

## Top Mount Model NCP-2554

## Features

- Small, compact size with small displacement
- Highly reliable, yet inexpensive
- Seamless cellular construction
- Excellent chemical resistance


## Specifications

| Max. Pressure: | 100 PSIG |
| :---: | :---: |
| Temperature Range |  |
| Operating: | $-40^{\circ} \mathrm{F}$ to $225{ }^{\circ} \mathrm{F}$ |
| Fittings: | 1/8" NPT |
| Leads: | 22 AWG×24" |
| Liquid Specific Gravity |  |
| Minimum: | 0.81 |

## Side Mount Model NCP-5094

## Features

- Side mount design fits small vessels
- Minimal float travel and displacement
- Highly chemical resistant


## Specifications

Max. Pressure: 40 PSIG
Temperature Range: $-40^{\circ} \mathrm{F}$ to $176^{\circ} \mathrm{F}$
Fittings: PF $1 / 4^{\prime \prime}\left(1 / 2^{\prime \prime} \times 20\right)$
Leads: 22 AWG×24"
Liquid Specific Gravity
Minimum: 0.81

NC - Magnetic Float Switches for Liquids

## NCB SMALL BUNA-N SWITCHES

General Purpose NCB-1054 \& NCB-1064

## General Purpose NCB-1054 \& NCB-1064

## Features

- Small, compact size, 1 " dia. float
- Precise repeatability
- Reliable, long-life performance
- Highly resistant to shock and vibration
- Buna-N float
- Stems available in 316 SS or Brass


## Specifications

| Max. Pressure: | 150 PSIG |
| :---: | :---: |
| Operating Temperature Range |  |
| In Oil: | $-40^{\circ} \mathrm{F}$ to $230{ }^{\circ} \mathrm{F}$ |
| In Water: | $-40^{\circ} \mathrm{F}$ to $180{ }^{\circ} \mathrm{F}$ |
| Fittings: | $1 / \mathrm{s}{ }^{1}$ NPT |
| Leads: | 22 AWG $\times 24$ " |

Liquid Specific Gravity
Minimum: 0.55

NCB Ordering Information

| Type | Part No. | Stem/Float <br> Material | Switch |
| :---: | :---: | :---: | :---: |
| Top Mount | NCB-1054 | 316 SS/Buna-N | 20 VA, SPST |
| Top Mount | NCB-1064 | Brass/Buna-N | 20 VA, SPST |

## NCB GENERAL PURPOSE BUNA-N SWITCHES

Intermediate Size NCB-1000


## Large Size NCB-5000



## NCB Ordering Information

| Type | Float Size | Part No. | Stem/Float <br> Material | Switch |
| :---: | :---: | :---: | :---: | :---: |
| Top Mount | Intermediate | NCB-1084 | 316 SS/Buna-N | 100 VA, SPST |
| Top Mount | Intermediate | NCB-1094 | Brass/Buna-N | 100 VA, SPST |
| Top Mount | Large | NCB-5124 | 316 SS/Buna-N | 100 VA, SPST |
| Top Mount | Large | NCB-5134 | Brass/Buna-N | 100 VA, SPST |
|  |  |  |  |  |
| Top Mount | Large | NCB-5154 | Brass/Buna-N | 20 VA, SPST |

## NCB-1000 <br> Intermediate Size

## Features

- Highly reliable, yet inexpensive
- Compact, narrow displacement
- Stem available in 316 SS or Brass
- Long operating life


## Specifications

Max. Pressure: 150 PSIG
Operating Temperature Range
In Oil: $\quad-40^{\circ} \mathrm{F}$ to $230^{\circ} \mathrm{F}$
In Water: $\quad-40^{\circ} \mathrm{F}$ to $180^{\circ} \mathrm{F}$
Fittings: $\quad 1 / 8$ NPT
Leads: $\quad 18$ AWG $\times 24$
Liquid Specific Gravity
Minimum:
0.55

## NCB-5000 Large Size

## Features

- Large float provides maximum displacement in high viscosity fluids
- Rugged design for heavy duty service


## Specifications

| Max. Pressure: | 150 PSIG |
| :--- | :--- |
| Operating Temperature Range |  |
| In Oil: | $-40^{\circ} \mathrm{F}$ to $230^{\circ} \mathrm{F}$ |
| In Water: | $-40^{\circ} \mathrm{F}$ to $180^{\circ} \mathrm{F}$ |
| Fittings: | $1 / 4 \mathrm{NPT}$ |
| Leads: | $18 \mathrm{AWG} \times 24^{\prime \prime}$ |
| Liquid Specific | Gravity |
| Minimum: | 0.55 |

## NCS ALL STAINLESS STEEL SWITCHES

## For High Corrosive, High Temperature Applications

## Small Size Models

## Features

- Compact size, 1.1" dia. float
- Long operating life
- Highly resistant to shock and vibration
- All wetted parts 316 SS


## Specifications

| Max. Pressure: | 400 PSIG |
| :---: | :---: |
| Temperature Range: | $-40^{\circ} \mathrm{F}$ to $300{ }^{\circ} \mathrm{F}$ |
| Fittings: | $1 / s^{\prime \prime}$ NPT |
| Leads: | $22 \mathrm{AWG} \times 24{ }^{\prime \prime}$ |
| Liquid Specific Gravitur | ty |
| Minimum: | 0.77 |

## Large NCS Models

## Features

- All wetted parts 316 stainless steel
- High resistance to corrosive chemicals
- Operates in high temperatures
- High pressure capable


## Specifications

| Max. Pressure: | 400 PSIG |
| :--- | :--- |
| Temperature Range: | $-40^{\circ} \mathrm{F}$ to $300^{\circ} \mathrm{F}$ |
| Fittings |  |
| $\quad$ Typical: | $1 / 4 "$ NPT or |
| NCS-7202: | $1 / 2^{\prime \prime}-13$ UNF |
| Leads |  |
| Standard: 18 AWG $\times 2$ feet <br> Waterproof: 18 AWG $\times 10$ feet <br> Liquid Specific Gravity  <br> Minimum: 0.65 |  |

## Model NCS-1074 Small Size



## Model NCS Large Size



NCS Ordering Information

| Size | Type | Part No. | Stem/Float <br> Material | Switch |
| :---: | :---: | :---: | :---: | :--- |
| Small | Standard | NCS-1074 | $316 \mathrm{SS} / 316 \mathrm{SS}$ | 20 VA, SPST |
|  |  |  |  |  |
| Large | Standard | NCS-1104 | 316 SS/316 SS | 100 VA, SPST |
|  |  |  |  |  |
| Large | Waterproof-NPT | NCS-7201 | $316 \mathrm{SS} / 316 \mathrm{SS}$ | 20 VA, SPST |
| Large | Waterproof-UNF | NCS-7202 | $316 \mathrm{SS} / 316 \mathrm{SS}$ | 20 VA, SPST |

## NC BENT STEM SIDEMOUNT AND PVC SWITCHES

NCS-5161 and NCB-5171 Sidemount Switches


## BUNA




## SS NCS-5161 and Buna-N NCB-5171 Sidemount Switches

## Features

- $90^{\circ}$ bend allows mounting where access to tank top or bottom is restricted
- 316 SS stem standard
- Floats available in SS or Buna-N
- Long operating life


## Specifications

| Maximum Pressure |  |
| :--- | :--- |
| SS: | 275 PSIG |
| Buna: | 150 PSIG |

Operating Temperature Range

| SS: |  | $-40{ }^{\circ} \mathrm{F}$ to $300{ }^{\circ} \mathrm{F}$ |
| :---: | :---: | :---: |
| Buna: | In Oil: | $-40{ }^{\circ} \mathrm{F}$ to $230{ }^{\circ} \mathrm{F}$ |
|  | In Water: | - $40{ }^{\circ} \mathrm{F}$ to $180^{\circ} \mathrm{F}$ |
| Fittings: |  | PF 1/8" (3/8"-24) |
| Leads: |  | 22 AWG×11" |
| Minimum | iquid Sp | cific Gravity |
| SS: |  | 0.77 |
| Buna: |  | 0.55 |

## Ordering Information

| Type | Part No. | Stem/Float <br> Material | Switch |
| :---: | :---: | :---: | :---: |
| Side Mount | NCS-5161 | 316 SS/316 SS | 20 VA, SPST |
| Side Mount | NCB-5171 | 316 SS/Buna-N | 20 VA, SPST |

NCG STANDARD MULTIPOINT LEVEL SWITCHES

The KOBOLD Standard Multipoint Level Switches are available in lengths to 96 inches, with switches located as per your instructions.

## Switch Geometry


$A=11 / 2^{\prime \prime}$ minimum distance to highest level
$B=3^{\prime \prime}$ minimum distance between levels
$C=2^{\prime \prime}$ minimum distance from end of unit to lowest level

Stem Choices

| Maximum Length: | $96 "$ |
| :---: | :---: |
| Wetted Parts |  |
| Stem/Fittings: | 316 SS or Brass |
| Electrical Ratings: | SPST, 100 VA , option: SPDT 20 VA |

- Special units available to 10 feet.
- Up to 5 control points per unit

Float Choices

| Wetted Parts: | Buna-N <br> Stainless Steel |
| :--- | :--- |
| Maximum Pressure |  |
| $\quad$ Buna-N: | 150 PSIG |
| Stainless Steel: | 400 PSIG |
| $\quad$ PVC: | 100 PSIG |
| Operating Temperature |  |
| Buna-N: In Oil: | $-40{ }^{\circ} \mathrm{F}$ to $230^{\circ} \mathrm{F}$ |
| In Water: | $-40^{\circ} \mathrm{F}$ to $180^{\circ} \mathrm{F}$ |
| Stainless Steel: | $-40^{\circ} \mathrm{F}$ to $300^{\circ} \mathrm{F}$ |
| PVC: | $-40^{\circ} \mathrm{F}$ to $140^{\circ} \mathrm{F}$ |

Minimum Liquid Specific Gravity
Type 1 Foat: 0.65

Type 2 Foat: 0.55
Type 3 Float: 0.55
Type 4 Float: 0.85

## Fitting Choice Selection Table

| Fitting Choices | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| Fitting | 1/2" NPT | $\begin{aligned} & 11 / 4^{\prime \prime} \\ & \text { NPT } \end{aligned}$ | 2" NPT | 3" ANSI Flange | $\begin{gathered} 1 / 2^{\prime \prime} \\ \text { Tubing } \end{gathered}$ |

Float Choice Selection Table

| Type 1 Float 316 SS | Type 2 Float Buna-N | Type 3 Float Buna-N | Type 4 Float PVC |
| :---: | :---: | :---: | :---: |
|  |  |  |  |

## NCG STANDARD MULTIPOINT LEVEL SWITCHES

NCG Ordering Information

| NCG- | W = Fitting Type | X = Fitting/ <br> Stem Material | $\mathbf{Y}=$ Number of Switch Levels | Z = Float Type \& Material | Options |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | W = 1: $1 / 2{ }^{\prime \prime}$ NPT Male | X = 1: Brass/Brass | $Y=1-5$ <br> Specify Number of Levels | Z = 1: Stainless Steel (Fitting Types 1, 3, 4 and 5) | -A: Adjustable Fitting (Fitting Types 2, 3 and 4, not w/PVC |
|  | $\begin{gathered} \text { W = 2: } 11 / 4 " \mathrm{NPT} \\ \text { with } 1 / 2^{\prime \prime} \mathrm{NPT} \\ \text { Conduit } \end{gathered}$ | $\mathrm{X}=2: \mathrm{SS} / \mathrm{SS}$ |  | Z = 2: Small Buna-N | -B: Weighted Buna-N floats for interface detection (Specify desired |
|  | $\begin{gathered} \text { W = 3: 2" NPT with } \\ 1 / 2 " \text { NPT } \end{gathered}$ | X = 3: PVC/PVC <br> (Stem Type <br> 1,3 and 4 only) |  | Z = 3: Large Buna-N (Fitting Types | float S. G.) |
|  | Conduit <br> W = 4: 3" ANSI Flange |  |  | $1,3,4 \text { and 5) }$ | -D4: Group IV Wiring 20 VA, SPDT Reed Switch |
|  | W = 4: 3" ANSI Flange SS \& PVC only <br> W = 5: $1 / 22^{\prime \prime}$ Tube End |  |  |  | -N: Junction Box <br> NEMA 4 <br> -NT: Junction Box w/Terminal Strip NEMA 4 |

NCM MINIATURE LEVEL SWITCHES

The KOBOLD Miniature Multipoint Level Switches are available in lengths to 48 inches. Up to five switches may be located as per your instructions.

## Electrical Ratings <br> Contact Type: <br> SPST, 100 VA, <br> Maximum Levels Group II Wiring (Standard): Group I Wiring: Lead Wires: <br> 4 <br> 22AWG, <br> 24 inches long <br> $$
3
$$

Stem Choices


Float Choices

| Maximum Pressure: |  |
| :--- | :--- |
| Buna-N, Polypro: | 150 PSIG |
| Stainless Steel: | 270 or 400 PSIG |
| Operating Temperature |  |
| Buna-N: In Oil: | $-40{ }^{\circ} \mathrm{F}$ to $225^{\circ} \mathrm{F}$ |
| In Water: | $-40^{\circ} \mathrm{F}$ to $180^{\circ} \mathrm{F}$ |
| Polypropylene: | $-40^{\circ} \mathrm{F}$ to $150^{\circ} \mathrm{F}$ |
| Stainless Steel: | $-40^{\circ} \mathrm{F}$ to $300^{\circ} \mathrm{F}$ |

Minimum Liquid Specific Gravity

| Type 1 Foat: | 0.70 |
| :--- | :--- |
| Type 2 Foat: | 0.47 |
| Type 3 Float: | 0.60 |
| Type 4 Foat: | 0.70 |

## Switch Geometry


$\mathrm{A}=3 / 4^{\prime \prime}$ minimum distance to highest level
$B=1 \frac{1}{2} 2^{\prime \prime}$ minimum distance between levels
$\mathrm{C}=1$ " minimum distance from end of unit to lowest level except float type 4, $2^{\prime \prime} \mathrm{min}$. distance

## Fitting Choice Selection Table

| Stem Choices | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| Fitting | 1/8" NPT | 1/4" NPT | 1" NPT | $3 / 4{ }^{\text {" }}$ NPT | 5/18" Tubing |

## Float Choice Selection Table

| Type 1 Float 316 SS/270 PSIG | Type 2 Float Buna-N | Type 3 Float Polypropylene | Type 4 Float 316 SS/400 PSIG |
| :---: | :---: | :---: | :---: |
|  |  |  |  |

NCM MINIATURE MULTIPOINT LEVEL SWITCHES

## NCM Ordering Information

| NCM- | W = Fitting Type | X = Fitting \& Stem Material | $\mathrm{Y}=$ Number of Switch Levels | $\begin{gathered} Z= \\ \text { Float Type \& } \\ \text { Material } \end{gathered}$ | Options |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | W = 1: $1 / 8^{\prime \prime}$ NPT Male W = 2: $1_{4} 4^{\prime \prime}$ NPT Male W = 3: 1" NPT Male W = 4: ${ }^{3 / 4} 4^{4 \prime}$ NPT Male W =5: 5/16" Tube End | $\begin{gathered} X=1: \text { Brass } / B \text { rass } \\ X=\begin{array}{l} \text { 2:Stainless Steel } / \\ \\ \text { Stainless Steel } \end{array} \end{gathered}$ | $Y=1-5$ <br> Specify Number of Levels | $\begin{gathered} \mathrm{Z}=1: 316 \text { Stainless } \\ \text { Steel } \\ \mathrm{Z}=2: \text { Buna- } \mathrm{N} \\ \mathrm{Z}=3: \text { Polypropylene } \\ \mathrm{Z}=4: 316 \text { Stainless } \\ \text { Steel, Small } \end{gathered}$ | -D1: Group I Wiring 100 VA, SPST <br> -N: J unction Box NEMA 4 <br> -NT: J unction Box with Terminal Strip |

