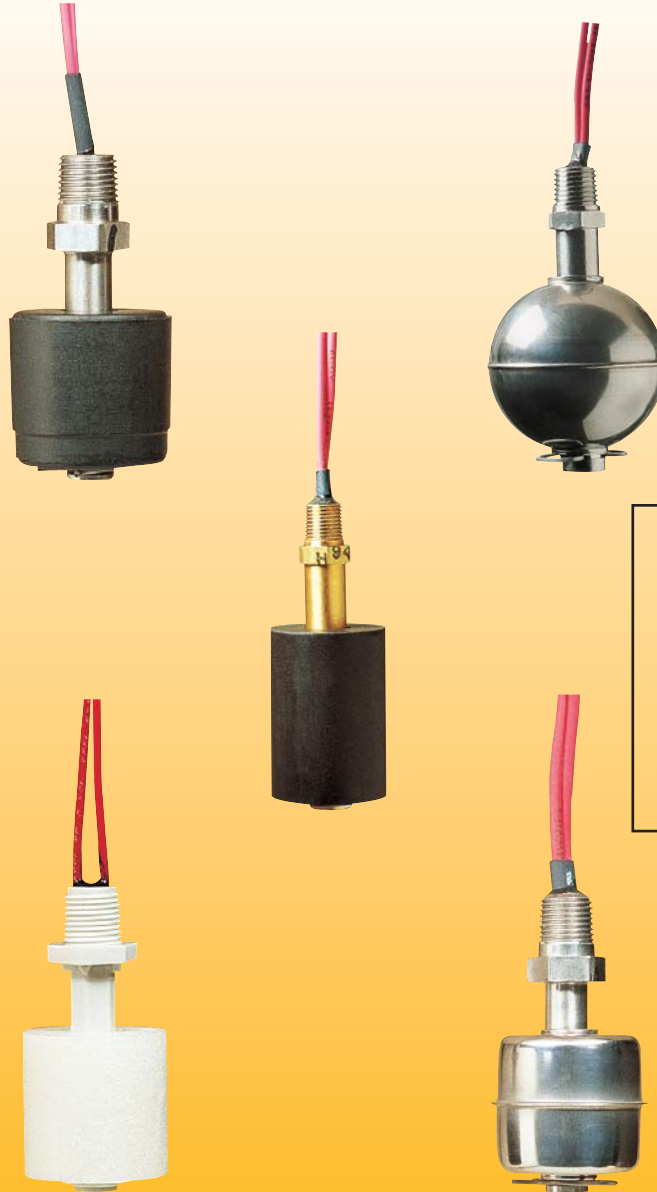


# NC MAGNETIC FLOAT SWITCHES FOR LIQUIDS



Flow  
Pressure  
Level  
Temperature  
measurement  
monitoring  
control

N1



- Available Materials: Brass, Stainless Steel, Buna-N, Polypropylene and PVC
- Maximum Pressure: 400 PSIG
- Maximum Temperature: 300°F
- Singlepoint and Multipoint Designs
- Field Changeable Switch Logic



## USA

KOBOLD Instruments Inc.  
1801 Parkway View Drive  
USA - Pittsburgh, PA 15205  
☎ +1 412-788-2830  
Fax +1 412-788-4890  
E-mail: info@koboldusa.com



## CANADA

KOBOLD Instruments Canada Inc.  
9A Aviation  
Pointe-Claire, QC H9R 4Z2  
☎ +1 514-428-8090  
Fax +1 514-428-8899  
E-mail: kobold@kobold.ca

Visit KOBOLD Online at  
[www.kobold.com](http://www.kobold.com)

Model:  
NC

## 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:

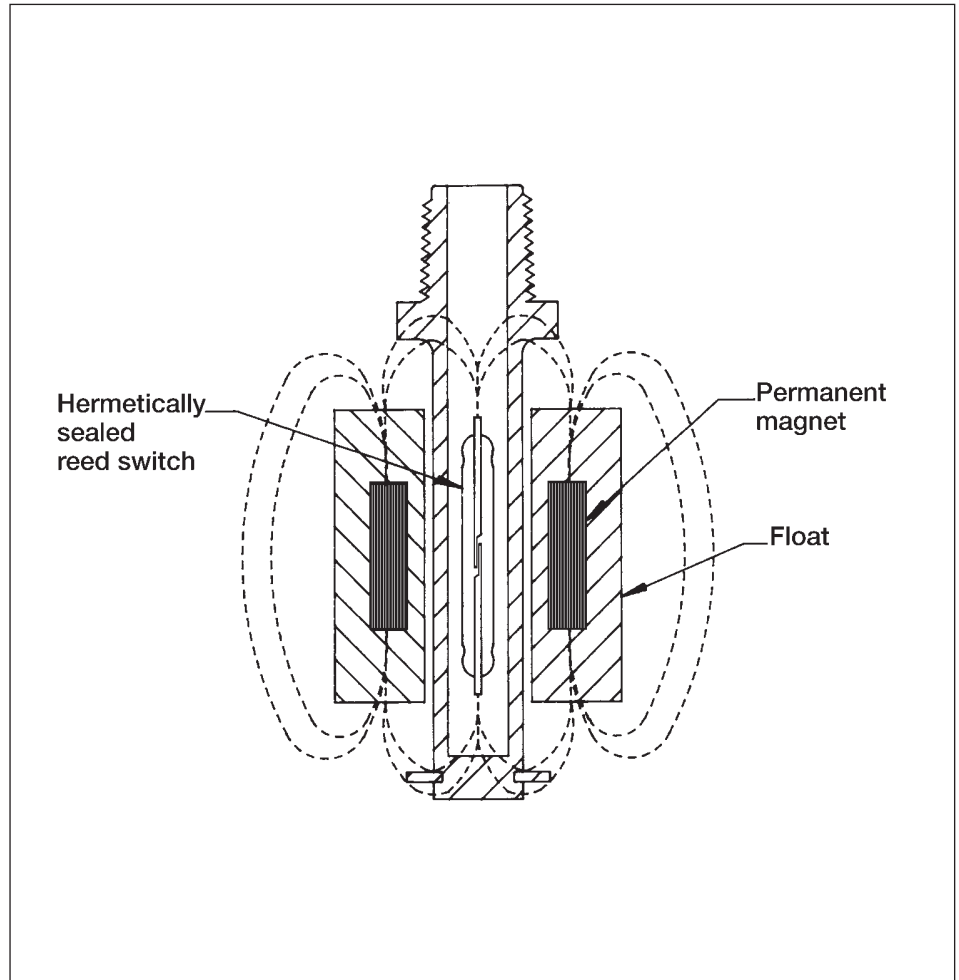
- Pressure and Temperature
- Mounting Orientation
- Termination
- Media Characteristics such as Density, Viscosity and Corrosivity
- Materials of Construction
- Switch Load

### 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 intrinsically 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.

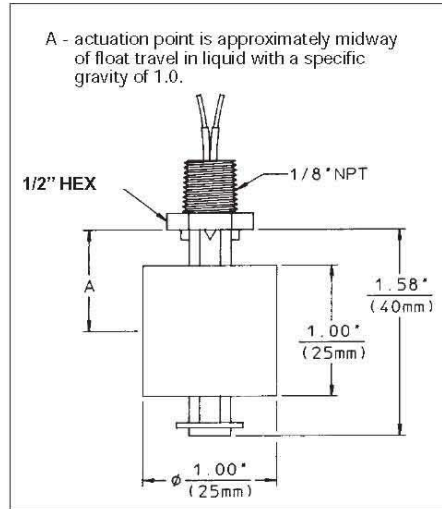
### Electrical Data

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 VAC/VDC	0.7 A	0.4 A

NOTE: Above ratings are for resistive loads only.

## NCP SMALL POLYPROPYLENE SWITCHES

### Top Mount NCP-2554



### Top Mount Model NCP-2554

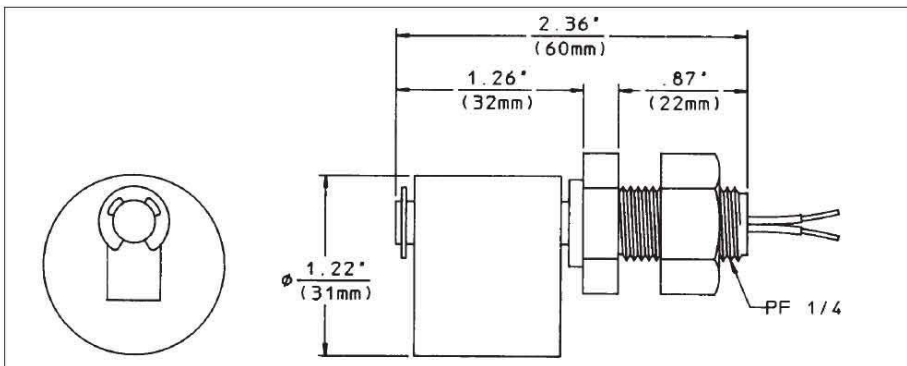
#### Features

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

#### Specifications

<b>Max. Pressure:</b>	100 PSIG
<b>Temperature Range</b>	
<b>Operating:</b>	- 40 °F to 225 °F
<b>Fittings:</b>	1/8" NPT
<b>Leads:</b>	22 AWG×24"
<b>Liquid Specific Gravity</b>	
<b>Minimum:</b>	0.81

### Side Mount NCP-5094



### Side Mount Model NCP-5094

#### Features

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

#### Specifications

<b>Max. Pressure:</b>	40 PSIG
<b>Temperature Range:</b>	- 40 °F to 176 °F
<b>Fittings:</b>	PF 1/4" (1/2"×20)
<b>Leads:</b>	22 AWG×24"
<b>Liquid Specific Gravity</b>	
<b>Minimum:</b>	0.81

### NCP Ordering Information

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



## NCB SMALL BUNA-N SWITCHES

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

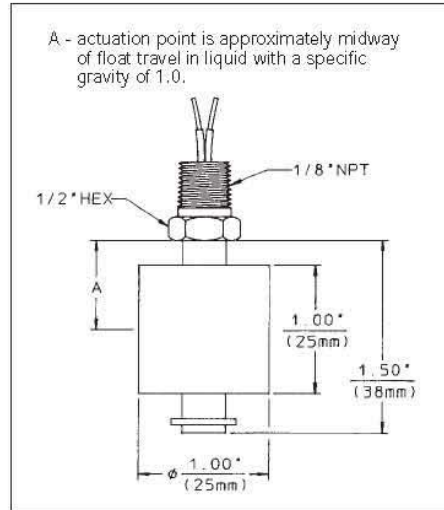
## General Purpose NCB-1054 & NCB-1064

### 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 °F to 230 °F  
**In Water:** - 40 °F to 180 °F  
**Fittings:** 1/8" NPT  
**Leads:** 22 AWG×24"  
**Liquid Specific Gravity**  
**Minimum:** 0.55

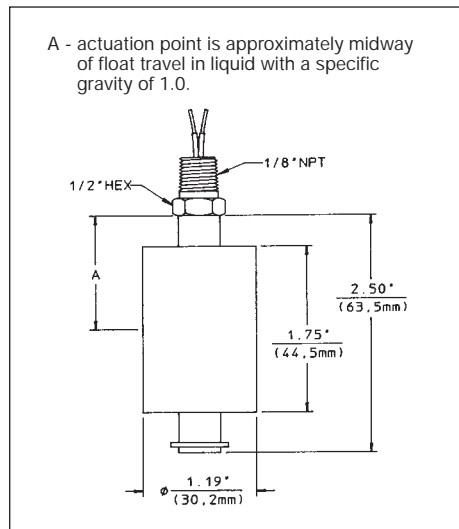


### NCB Ordering Information

Type	Part No.	Stem/Float 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



### NCB-1000 Intermediate Size

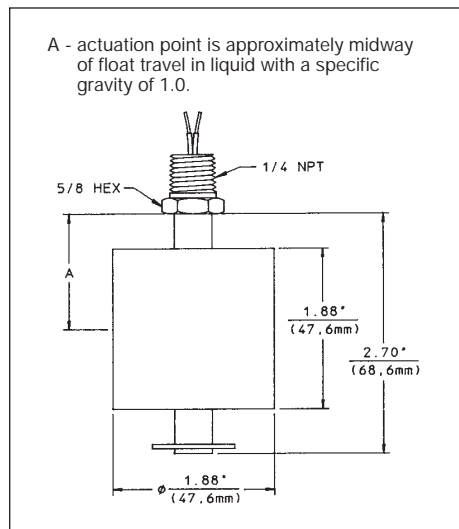
#### Features

- 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:** - 40 °F to 230 °F  
**In Water:** - 40 °F to 180 °F  
**Fittings:** 1/8 NPT  
**Leads:** 18 AWG×24  
**Liquid Specific Gravity**  
**Minimum:** 0.55

### Large Size NCB-5000



### NCB-5000 Large Size

#### Features

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

### NCB Ordering Information

Type	Float Size	Part No.	Stem/Float 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

#### Specifications

**Max. Pressure:** 150 PSIG  
**Operating Temperature Range**  
**In Oil:** - 40 °F to 230 °F  
**In Water:** - 40 °F to 180 °F  
**Fittings:** 1/4 NPT  
**Leads:** 18 AWG×24  
**Liquid Specific Gravity**  
**Minimum:** 0.55







## NCS ALL STAINLESS STEEL SWITCHES For High Corrosive, High Temperature Applications

### Small Size Models

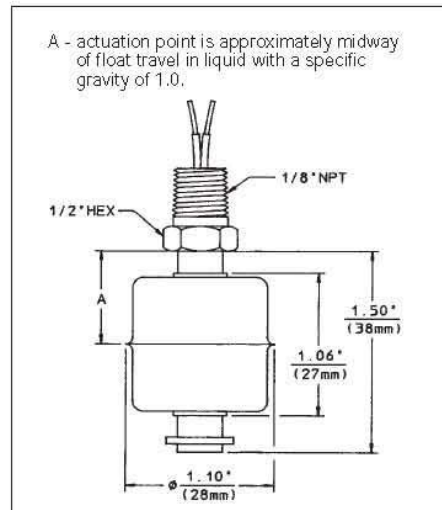
#### Features

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

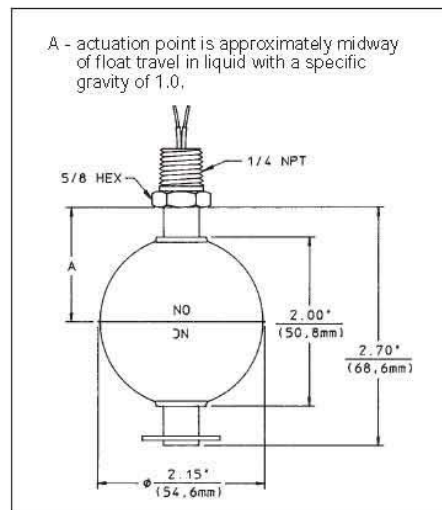
#### Specifications

**Max. Pressure:** 400 PSIG  
**Temperature Range:** - 40 °F to 300 °F  
**Fittings:** 1/8" NPT  
**Leads:** 22 AWG×24"  
**Liquid Specific Gravity**  
**Minimum:** 0.77

#### Model NCS-1074 Small Size



#### Model NCS Large Size



### Large NCS Models

#### Features

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

#### Specifications

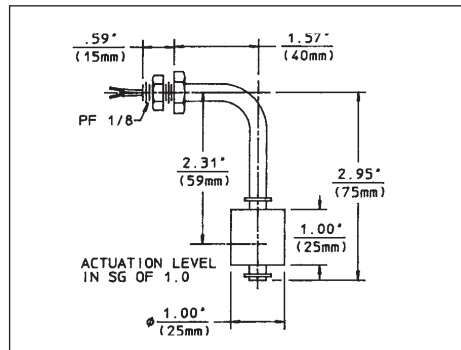
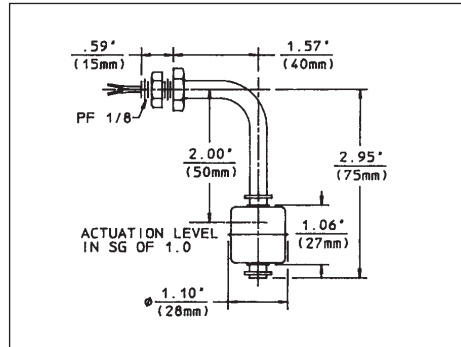
**Max. Pressure:** 400 PSIG  
**Temperature Range:** - 40 °F to 300 °F  
**Fittings**  
**Typical:** 1/4" NPT or  
**NCS-7202:** 1/2"-13 UNF  
**Leads**  
**Standard:** 18 AWG×2 feet  
**Waterproof:** 18 AWG×10 feet  
**Liquid Specific Gravity**  
**Minimum:** 0.65

#### NCS Ordering Information

Size	Type	Part No.	Stem/Float Material	Switch
Small	Standard	NCS-1074	316 SS/316 SS	20 VA, SPST
Large	Standard	NCS-1104	316 SS/316 SS	100 VA, SPST
Large	Waterproof - NPT	NCS-7201	316 SS/316 SS	20 VA, SPST
Large	Waterproof - UNF	NCS-7202	316 SS/316 SS	20 VA, SPST

## NC BENT STEM SIDEMOUNT AND PVC SWITCHES

### NCS-5161 and NCB-5171 Sidemount Switches



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

N1

### Features

- 90° 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 °F to 300 °F
- Buna: In Oil:** - 40 °F to 230 °F
- In Water:** - 40 °F to 180 °F

#### Fittings:

PF 1/8" (3/8"-24)

#### Leads:

22 AWG×11"

#### Minimum Liquid Specific Gravity

- SS:** 0.77
- Buna:** 0.55

### Ordering Information

Type	Part No.	Stem/Float 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.

### 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

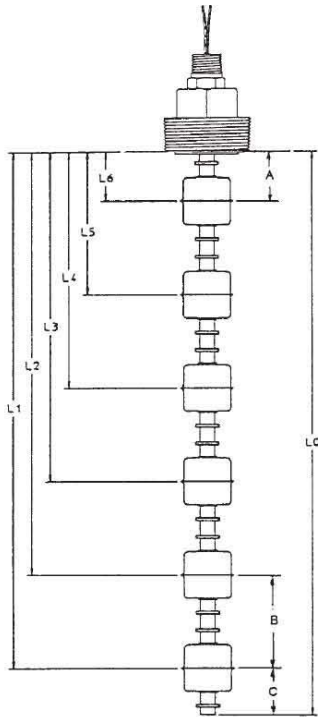
**Wetted Parts:** Buna-N  
 Stainless Steel

**Maximum Pressure**  
**Buna-N:** 150 PSIG  
**Stainless Steel:** 400 PSIG  
**PVC:** 100 PSIG

**Operating Temperature**  
**Buna-N: In Oil:** - 40 °F to 230 °F  
**In Water:** - 40 °F to 180 °F  
**Stainless Steel:** - 40 °F to 300 °F  
**PVC:** - 40 °F to 140 °F

**Minimum Liquid Specific Gravity**  
**Type 1 Float:** 0.65  
**Type 2 Float:** 0.55  
**Type 3 Float:** 0.55  
**Type 4 Float:** 0.85

### Switch Geometry



A = 1/2" minimum distance to highest level  
 B = 3" minimum distance between levels  
 C = 2" minimum distance from end of unit to lowest level

### Fitting Choice Selection Table

Fitting Choices	Type 1	Type 2	Type 3	Type 4	Type 5
<b>Fitting</b>	1/2" NPT	1 1/4" NPT	2" NPT	3" ANSI Flange	1/2" Tubing

### 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/ Stem Material	Y = Number of Switch Levels	Z = Float Type & Material	Options
	W = 1: 1/2" NPT Male	X = 1: Brass/Brass	Y = 1-5	Z = 1: Stainless Steel (Fitting Types 1, 3, 4 and 5)	-A: Adjustable Fitting (Fitting Types 2, 3, and 4, not w/PVC)
	W = 2: 1 1/4" NPT with 1/2" NPT Conduit	X = 2: SS/SS	Specify Number of Levels	Z = 2: Small Buna-N	-B: Weighted Buna-N floats for interface detection (Specify desired float S. G.)
	W = 3: 2" NPT with 1/2" NPT Conduit	X = 3: PVC/PVC (Stem Type 1, 3 and 4 only)		Z = 3: Large Buna-N (Fitting Types 1, 3, 4 and 5)	-D4: Group IV Wiring 20 VA, SPDT Reed Switch
	W = 4: 3" ANSI Flange SS & PVC only			Z = 4: PVC (For PVC Stem only)	-N: Junction Box NEMA 4 -NT: Junction Box w/Terminal Strip NEMA 4
	W = 5: 1/2" Tube End				

N1

### How to Order

Before ordering, it is important to thoroughly define your level switch requirements. Simply follow the instructions given in this section, paying special attention to steps 1-4. Note that:

- Switch operation is defined as »normal« when the float is dry, and the container is empty.
- Standard lead wires are 24 inches long, 22 AWG.
- Standard wiring is Group II.

1. Select the stem type.
2. Select the stem material.
3. Specify the number of switch levels needed and define their operation by completing the »Actuation Point Location and Logic« section below.
4. Choose the type of float desired and complete the »Application Information« section below to assure suitability.
5. Determine voltage and current to be switched.
6. Specify all other options desired.
7. Determine the number of complete units required.
8. Make a copy of the completed »Actuation Point Location and Logic« and »Application Information« tables below, and include with your order.

### Actuation Point Location and Logic

Distance (inches)	SPST Switch Operation	
L0: = (L1 + 2")		
L1: _____	NO Dry: _____	NC Dry: _____
L2: _____	NO Dry: _____	NC Dry: _____
L3: _____	NO Dry: _____	NC Dry: _____
L4: _____	NO Dry: _____	NC Dry: _____
L5: _____	NO Dry: _____	NC Dry: _____
L6: _____	NO Dry: _____	NC Dry: _____

### Application Information

Process Liquid: Name: \_\_\_\_\_

Specific Gravity: \_\_\_\_\_

Viscosity: \_\_\_\_\_

Temperature: Operating: \_\_\_\_\_

Maximum: \_\_\_\_\_

Minimum: \_\_\_\_\_

Pressure: Operating: \_\_\_\_\_

Maximum: \_\_\_\_\_

Tank Material: \_\_\_\_\_

**NOTE:** 3" minimum distance between levels.

Subject to change without prior notice.

## 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**  
**Contact Type:** SPST, 100 VA,

**Maximum Levels**  
**Group II Wiring (Standard):** 3  
**Group I Wiring:** 4  
**Lead Wires:** 22AWG, 24 inches long

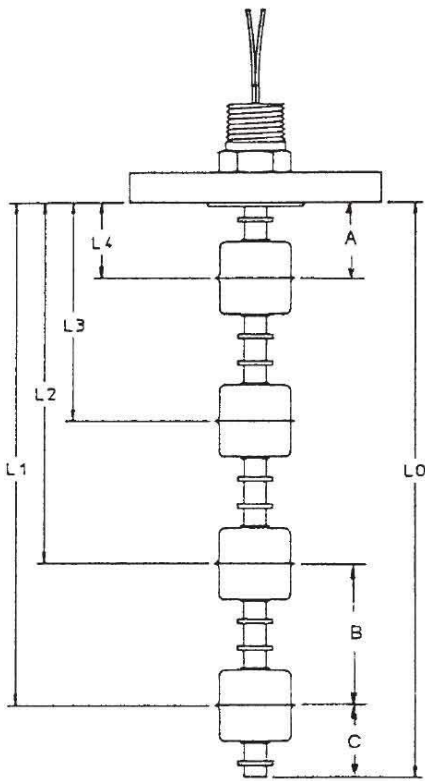
### Stem Choices

**Maximum Length:** 48"  
**Wetted Parts**  
**Stem/Fittings:** 316 SS, Brass  
**Float Stops**  
**Brass Units:** Brass  
**SS Units:** 316 SS  
 ● Up to 48" overall length  
 ● Up to 4 control points

### Float Choices

**Maximum Pressure:**  
**Buna-N, Polypro:** 150 PSIG  
**Stainless Steel:** 270 or 400 PSIG  
**Operating Temperature**  
**Buna-N: In Oil:** - 40 °F to 225 °F  
**In Water:** - 40 °F to 180 °F  
**Polypropylene:** - 40 °F to 150 °F  
**Stainless Steel:** - 40 °F to 300 °F  
**Minimum Liquid Specific Gravity**  
**Type 1 Float:** 0.70  
**Type 2 Float:** 0.47  
**Type 3 Float:** 0.60  
**Type 4 Float:** 0.70

### Switch Geometry



A = 3/4" minimum distance to highest level  
 B = 1 1/2" minimum distance between levels  
 C = 1" minimum distance from end of unit to lowest level except float type 4, 2" min. distance

### Fitting Choice Selection Table

Stem Choices	Type 1	Type 2	Type 3	Type 4	Type 5
<b>Fitting</b>	1/8" NPT	1/4" NPT	1" NPT	3/4" NPT	5/16" 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

N1

NCM-	W = Fitting Type	X = Fitting & Stem Material	Y = Number of Switch Levels	Z = Float Type & Material	Options
	W = 1: 1/8" NPT Male	X = 1: Brass/Brass	Y = 1-5	Z = 1: 316 Stainless Steel	-D1: Group I Wiring 100 VA, SPST
	W = 2: 1/4" NPT Male	X = 2: Stainless Steel/ Stainless Steel	Specify Number of Levels	Z = 2: Buna-N	
	W = 3: 1" NPT Male			Z = 3: Polypropylene	-N: Junction Box NEMA 4
	W = 4: 3/4" NPT Male			Z = 4: 316 Stainless Steel, Small	-NT: Junction Box with Terminal Strip
	W = 5: 5/16" Tube End				

## How to Order

Before ordering, it is important to thoroughly define your level switch requirements. Simply follow the instructions given in this section, paying special attention to steps 1-4. Note that:

- Switch operation is defined as »normal« when the float is dry, and the container is empty.
- Standard lead wires are 24 inches long, 22 AWG.
- Standard wiring is Group II.

1. Select the stem type.
2. Select the stem material.
3. Specify the number of switch levels needed and define their operation by completing the »Actuation Point Location and Logic« section below.
4. Choose the type of float desired and complete the »Application Information« section below to assure suitability.
5. Determine voltage and current to be switched. If necessary, order an

- isolation relay such as the RL-series
6. Specify all other options desired.
7. Determine the number of complete units required.
8. Make a copy of the completed »Actuation Point Location and Logic« and »Application Information« tables below, and include with your order.

## Actuation Point Location and Logic

Distance (inches)	SPST Switch Operation	
L0: = (L1 + 1")		
L1: _____	NO Dry: _____	NC Dry: _____
L2: _____	NO Dry: _____	NC Dry: _____
L3: _____	NO Dry: _____	NC Dry: _____
L4: _____	NO Dry: _____	NC Dry: _____
L5: _____	NO Dry: _____	NC Dry: _____

## Application Information

Process Liquid: Name: \_\_\_\_\_

Specific Gravity: \_\_\_\_\_

Viscosity: \_\_\_\_\_

Temperature: Operating: \_\_\_\_\_

Maximum: \_\_\_\_\_

Minimum: \_\_\_\_\_

Pressure: Operating: \_\_\_\_\_

Maximum: \_\_\_\_\_

Tank Material: \_\_\_\_\_

**NOTE:** 1 1/2" minimum distance between levels.

Subject to change without prior notice.