

NML FLOAT LEVEL TRANSDUCER



Flow
Pressure
Level
Temperature
Measurement
Monitoring
Control



- Simple Reliable Design
- Wetted Materials: Brass, Stainless Steel, PVC, or PVDF
- Stem Lengths to 12 Feet
- Resistive or 4-20 mA Output
- Operating Conditions up to 800 PSIG and 300°F



USA

KOBOLD Instruments Inc.
1801 Parkway View Drive
Pittsburgh, PA 15205
PH: +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
PH: +1 514-428-8090
FAX: +1 514-428-8899
E-MAIL: kobold@kobold.ca



MEXICO

Camino Dorado 131
Misión Cimatario
Querétaro 76087, Qro.
Mexico
PH/FAX: +52 (442) 295 1567
E-MAIL: contreras@kobold.com

Visit KOBOLD Online at
www.koboldusa.com

Model:
NML

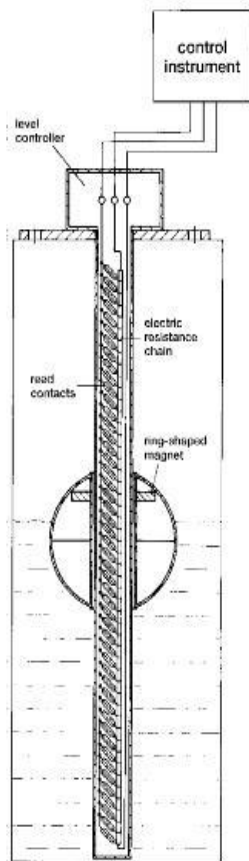
Description

Float level transducers are still one of the simplest and most reliable means of measuring the level of non-coating, low viscosity liquids. Factors such as foaming, vapors, and liquid dielectric, which can cause other types of level sensing technologies to malfunction, will not affect the NML series. The NML is available with all stainless steel wetted parts which gives the sensor a maximum possible pressure rating of 800 PSIG and temperature rating of 300°F. Economical brass and PVC designs are also available for less aggressive applications. PVDF is available for applications involving harsh chemicals. The NML provides a resistive output (0-5000 Ω) which varies proportionality as level changes. An integral 4-20 mA transmitter is available as an option.

The NML series is available with a variety of fitting, float and material options to suit your specific level sensing criteria. Reliable operation and simple design makes the NML an excellent choice for many tough level sensing applications.



KOBOLD NML Float Level Transducer



Operating Principle

The NML level transducer consists of a guide tube (stem) onto which a float with an imbedded permanent magnet is installed. As liquid level changes, the float will rise and fall following liquid level. The magnet inside the float activates a network of reed switches attached to a series of precision resistors placed in the stem. The system acts as a 3-wire potentiometer with resistance that varies between 0-5000 Ω as liquid level changes. Measuring resolution is a function of reed switch placement and is typically ±0.5 inch.

Liquid Density

When specifying the NML series, the specific gravity of the liquid to be measured must be known. The float selected must have a lower minimum specific gravity limit than the specific gravity of the liquid. A variety of float types are available which can accommodate liquids with specific gravity down to 0.47. Table 1 provides float dimensions operating limits and minimum specific gravity limits for all available floats.

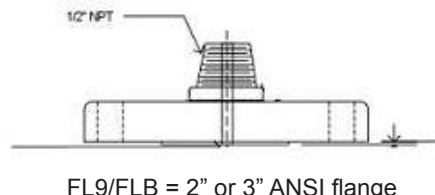
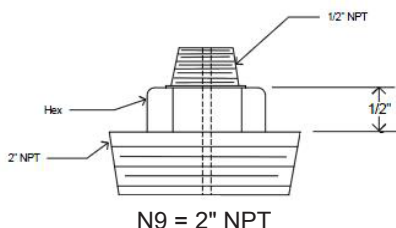


Table 1: NML Series Float Information

Float order code	Description	Minimum liquid specific gravity	Temp. Range	Max. Pressure	Remarks
FPP	Polypropylene 1-1/2" diameter, cylindrical	0.60	-10 to 140 °F	50 PSIG at 70 °F	Available only with PVC stem
FBN	Buna-N 1-9/16" diameter, cylindrical	0.55	-40 to 180 °F in water -40 to 225 °F in oil	200 PSIG	Available only on brass or SS stems
FS2	316 stainless steel 2" diameter, spherical	0.59	-40 to 300 °F	600 PSIG	The standard float for stainless steel NML versions
FS26	316 stainless steel 2" dia. X 2.6" long	0.65	-40 to 300 °F	800 PSIG	Higher pressure float for stainless steel NML versions
FS3	316 stainless steel 3" diameter, spherical	0.47	-40 to 300 °F	500 PSIG	For low specific gravity liquids. Can install from outside of tank with 3" ANSI flange fitting
FPV	PVDF 2-1/8" diameter, cylindrical	0.90	-40 to 250 °F	50 PSIG at 70 °F	Available only with PVDF stem
FPVC	PVC 1-7/8" diameter cylindrical	0.60	-10 to 100 °F	50 PSIG	Available only with PVC stem

Note: Some fitting/float combinations will require access to the inside of the tank for installation due the diameter of the float versus the fitting. Review your desired float/fitting combination carefully to insure installation in your tank is possible and access to the inside of the tank is possible if necessary.

Fitting Styles



Specifications

Max. Measuring Length

SS stem: 118 inches
Brass/PVC/PVDF stem: 144 inches

Note: The overall stem length ("LO") will be longer than the measuring length ("L") in order to accommodate the internal sensing assembly.
 See Table 2 for details.

Max. Operating

Press./Temp: See Table 1

Available Materials

Stem/fitting: 316 SS, Brass, PVC, PVDF
Float: 316 SS, Buna-N, PVDF, PVC, Polypropylene

Minimum Liquid Specific Gravity:

See Table 1 for each float style
Resolution: ±0.5"

Electrical Specifications

Resistive Output

Nominal Resistance: 0-5000 Ω ±10%
Max. Sensing Voltage: 20 VDC
Electrical Connection: 24 In. lead wire
Electrical Protection: NEMA 4X/IP65

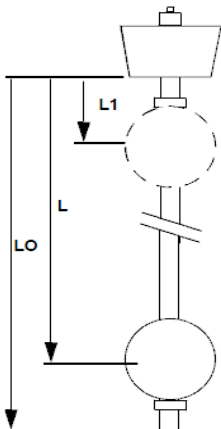
Analog Output w/Polycarbonate J-Box (option -RT)

Type: 4-20 mA, 2-wire
Supply Voltage: 16-32 VDC
Max. Loop Resistance: 750Ω at 24 VDC
Electrical Connection: 1/2" NPT
Electrical Protection: NEMA 4X/ IP 65

Optional Junction Box (option -J)

Material: Aluminum
Electrical Connection: 1/2" NPT
Electrical Protection: NEMA 4X/ IP 65

Ordering Codes	
NML	= Float Level Transducer
- 1 - 2 - 3 - 4 - 5	Stem/Fitting Material = Brass = 316 Stainless Steel = PVC = PVDF = PP
- 00 - N4 - N5 - N9 - FL9 - FLB	Fitting Style = Open Tube = 1/2" NPT facing up = 3/4" NPT facing up = 2" NPT with 1/2" NPT conduit fitting = 2" 150 LB ANSI flange with 1/2" NPT conduit fitting = 3" 150 LB ANSI flange with 1/2" NPT conduit fitting
- FPP - FBN - FS2 - FS26 - FS3 - FPV - FPVC	Float Style = Polypropylene (only with PVC stem) SG=0.60 = Buna-N (only with brass or SS stem) SG=0.55 = 316 stainless steel, 2" diameter SG=0.59 = 316 stainless steel 2" dia. X 2.6" SG=0.65 = 316 stainless steel, 3" diameter SG=0.47 = PVDF float (only with PVDF stem) SG=0.90 = PVC (only with PVC stem) SG = 0.60
- W - RT	Output Type = Resistive output, nominal 0-5000Ω = 4-20 mA w/NEMA 4X Polycarbonate Junction Box
- 0 - J - 90 - T - S - EW	Options = No Additional Options = NEMA 4X Aluminum Junction Box (N/A with option -RT) = 90 Degree top Fitting = Terminal Block = Weighted float for interface detection (specify upper and lower liquid SG) = Extended lead wire length (N/A with option -RT or option -J, specify desired lengths)
- L	= Specify probe length
NML - 2 N9 FS2 RT 0	L = 60 inches
Sample NML Specification	



L = User specified measuring length
LO = Overall length of measuring stem
L1 = Upper stem deadband

Table 2: Upper Deadband and Overall Stem Length

Float Code	L1	LO
FPP	1 5/8"	L + 2"
FBN	1 1/2"	L + 2"
FS2	1 1/2"	L + 2"
FS26	1 5/8"	L + 2 1/4"
FS3	2"	L + 2 1/4"
FPV	2"	L + 3"
FPVC	1 5/8"	L + 2"