

LEVEL-SENSING ADVANCE

by **MEDER electronic** E2/08

*Products for
Tomorrow...*

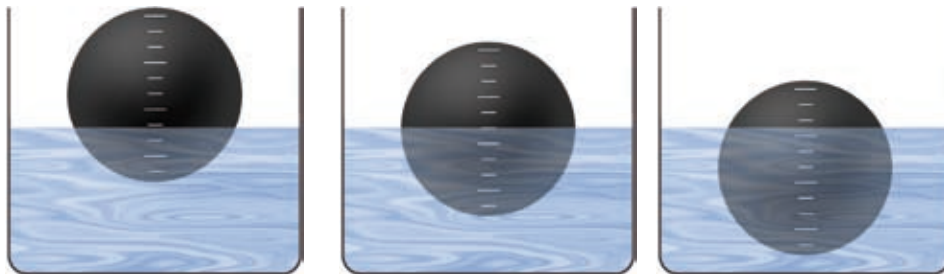
NBR – The Advanced Material for Level Sensors

The ability to measure the level of all types of liquids efficiently and accurately has become an increasing demand. These liquid level measurements generally use a liquid level sensor consisting of a stem and float. The stem contains boundary points and the float will move between them. Meder's approach uses a magnet imbedded in the float and a hermetically sealed reed switch/es strategically placed in the stem.

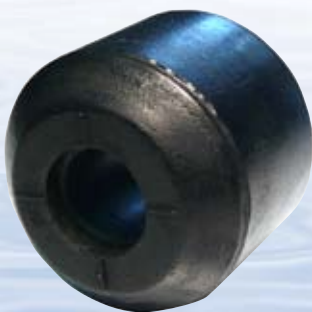
Some of the key parameters of liquid level sensors are sensing points, stable buoyancy, specific gravity, resistance to heat, resistance to oil, fuels and various chemicals. These apply to both the float and stem. Many floats have been made using brass and various types of plastic that have failed to stand up to the characteristics of a multitude of requirements.

MEDER is now providing a better solution with Nitrile Butadiene Rubber or simply - NBR. Floats developed with this material have much better resistance to oil, fuel, and high temperatures. The floats have excellent features over a broader range. The NBR float material (with their built-in magnets) coupled with our existing floats of Polyamide (PA), Polypropylene (PP) in our LS series, expand our liquid level sensors positive attributes as follows:

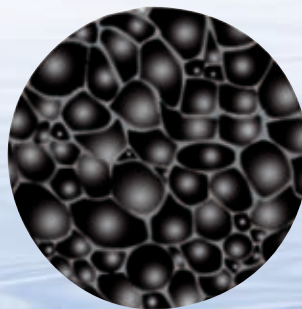
- Specialized magnets depending upon the requirements
- Various float buoyancy levels
- Selective operate points for closing and opening
- A range of reed switch switching requirements relative to position
- A range of reed switch power switching requirements
- A full range of standard sensors having both horizontal and vertical mounting



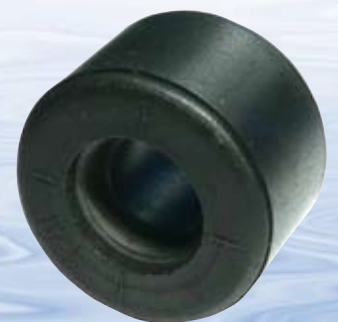
Each S.G. or buoyancy can be realized, the float remains stable for a given set of parameters.



MS01-NBR



Microscoped "Micro Cells" - Honeycomb structure



MS02-NBR

Overview of the Advantages of NBR



Suitable for insertion of metal....



Many kinds of shapes....

1

Acceptable for High and Low Temperature Applications

Under certain conditions, temperature resistance is up to 180°C. Stable to as low as -50°C

3

Mechanical Strength

NBR floats are ebonite, a very strong hard rubber, suitable for insertion of metals or magnets within the NBR.

5

Almost No Dimensional Change

Minimal dimensional effects particularly when measuring Cp's and Cpk's.

Resistance to Oil and Fuels

Minimal absorption of gasoline, benzene, alcohol and toluene (consult engineering for details)

2

Pressure Resistance

Floats maintain their stable buoyancy, with sizes having a specific gravity (SG) up to 0.3kg/cm³, and having water absorption under 2-3 Mega Pascal.

4

Many kinds of shapes

For a large range of applications

6

Examples for Applications

Automotive Industry

- Fuel sender float
- Engine oil
- ABS-system
- Carburetor
- Radiator
- Window-washer
- Power steering
- Various monitoring devices
- Fuel filter for diesel
- Fuel gauge for LPG
- Construction and Agricultural machines

Aerospace and Shipping Industry

- Fuel tank gauge
- Fuel sensor for rockets
- Sensor for LPG ships
- Fuel sensor for Jet Ski
- Oil level sensor for Jet Ski
- Fuel gauge for tanker

Industrial Machines

- Liquid level sensor in Factories
- Oil level gauge for transformers
- Air-leak valve for under waterworks
- Boiler control
- Auto-drain for pneumatic filter
- Lubricating units
- Generators
- Gasoline fuel dispensers
- Gasoline underground tanks

Electronic Machines

- Humidifiers
- Copiers
- Automatic bending machines
- Water cleaners
- Detection of the liquid level for two different kinds of S.G. liquids
- Supersonic cleaner
- Developer for pictures
- Oil baths for testing instruments
- Atomic power plant tanks

Home Appliance

- Stoves
- Air-conditioners
- Solar systems
- Fan-heaters
- Saunas
- Dish-washers
- Showers and toilets
- Vacuum cleaners
- Fuel cell systems

There are many other applications of floats. The above mentioned are only examples.

Comparison with Other Materials Floats

Conditions	NBR Float	Stainless Steel	Plastic Foam
Cut and Break	⊙	X	△
Temperature Resistance	⊙	⊙	X
Resistance to Fuels, Oils	⊙	⊙	X
Shock Resistance	⊙	X	△
Metal Inserts	⊙	△	⊙
Magnet Inserts	⊙	⊙	⊙
Water Pressure Resistance	⊙	X	X
Anti-corrosion	⊙	⊙	△
Price Range	⊙	X	△
Food Applications	X	⊙	⊙
Drinking Water	X	⊙	⊙

⊙ ideal

△ suitable

X not suitable