



Technical instructions

ENM-10 Level regulator



Engineered for life

DESCRIPTION

The simplest kind of level regulator. A mechanical switch enclosed in a plastic casing suspended freely at the exact height required, at the end of its cable. When the liquid level reaches this casing, the regulator changes position and the mechanical switch cuts off or restores the circuit as needed, which in turn starts up or shuts down the pump, or triggers an alarm signal. Wear-free and maintenance-free! In sewage pumping stations, for underground water drainage or during draining operations – in short, virtually anywhere level adjustment is needed, the ENM-10 is the ideal solution.

The level regulator casing is made of polypropylene and the electrical cable of special PVC compound. The plastic components are welded and screwed; therefore, no gluing is needed. Furthermore, no impurities or deposits get embedded on the casing, as it is perfectly smooth.

Different versions of the level regulator are available, depending on the type of liquid for which it is to be used. The standard regulator, for liquids having a density between 0.95 and 1.10 g/cm³, can be supplied with a 6, 13, 20, 30 or 50 metre (20, 42, 65, 100 or 167 ft) cable. For other densities, the only cable length available is 20 metres (65 ft). The regulator is able to withstand temperatures of up to +60°C (140°F).

Dimensions

Densities g/cm ³	Regulator height in mm (inches)	Diameter in mm (inches)
0.65—0.80	194 (7 ¹⁰ / ₁₆)	100 (4)
0.80—0.95	177 (7 ⁶ / ₃₂)	100 (4)
0.95—1.10	162 (6 ³ / ₈)	100 (4)
1.05—1.20	142 (5 ⁵ / ₁₆)	100 (4)
1.20—1.30	133 (5 ¹ / ₄)	100 (4)
1.30—1.40	130 (5 ¹ / ₁₆)	100 (4)
1.40—1.50	126 (5)	100 (4)

Technical specifications

Liquid temperature:	min. 0°C (32°F) max. 60°C (140°F)
Liquid density:	min. 0.65 g/cm ³ max. 1.5 g/cm ³
Protection rating:	IP68, 20 m (65 ft)
Microswitch	Alternating current
interrupting capacity:	resistive load, 250V 10A inductive load, 250V 3A cos φ = 0.5 Direct current, 30V 5A

Note that permitted voltages can in some cases be limited by local regulations.

Approvals: CSA, CE, SEMKO, NEMKO, DEMKO
Approvals in compliance with the EN 610058 standard.

Weight: Standard regulators (0.95–1.10) with 20 m (65 ft) of cable: approx. 2 kg (4.5 lb).

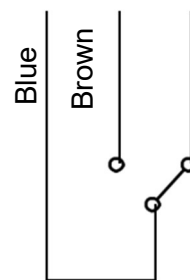
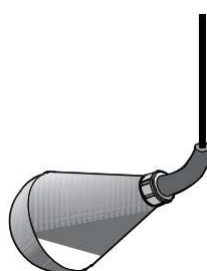
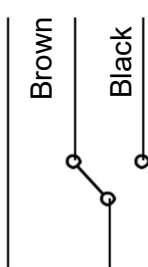
Materials

Casing:	polypropylene
Off-loading sleeve:	EPDM rubber
Cable:	special PVC compound or NBR/PVC nitrile/Chlorinated PVC

Local regulations must be strictly adhered to, especially in respect of

- fire and explosion hazards,
- hygiene directives.

Contact operation



CHEMICAL SUBSTANCE RESISTANCE CHART

The liquid most often encountered in level regulation contexts is indisputably water. Out of the millions of regulators currently in use worldwide, it can thus be estimated that at least nine out of ten operate precisely in water.

However, due to its polypropylene casing, its PVC or NBR/PVC nitrile/PVC cable and its EPDM rubber off-loading sleeve, the ENM-10 level regulator is virtually insensitive to many corrosive liquids.

The chart below specifies the extent to which this regulator, equipped, depending on the case, with a PVC or NBR/

PVC nitrile/PVC cable, is corroded by different chemical substances based on two temperature levels. Resistance is ranked according to three levels: 0 = no corrosion, 1 = low or moderate corrosion, 2 = high corrosion. The — sign indicates that the necessary data are lacking.

Also note that the floatability of the regulator is determined by the density of the liquid. Therefore ENM-10 is available for seven different densities. See page 2.

Acids	PVC cable		NBR/ PVC nitrile/PVC rubber cable		Salts	PVC cable		NBR/P VC nitrile/PVC rubber cable		Solvents	PVC cable		NBR/ PVC nitrile/PVC rubber cable	
	20°C (68°F)	60°C (140°F)	20°C (68°F)	60°C (140°F)		20°C (68°F)	60°C (140°F)	20°C (68°F)	60°C (140°F)		20°C (68°F)	60°C (140°F)	20°C (68°F)	60°C (140°F)
Acetic acid 50%	1	2	0	0	Aluminium chloride	0	0	0	0	Acetone	2	2	2	2
Acetic acid 75%	2	2	0	0	Calcium sulphate	0	0	0	0	Aniline	2	2	1	2
Benzoic acid	2	2	0	0	Calcium chloride	0	0	0	0	Benzene	2	2	2	2
Boric acid 5%	0	—	0	0	Calcium nitrate	0	0	0	0	Butyl alcohol	2	2	0	1
Butyric acid	2	2	2	2	Copper chloride	0	0	0	0	Carbon tetrachloride	2	2	2	2
Chromic acid	0	2	2	2	Copper sulphate	0	0	0	0	Chlorobenzene	2	2	2	2
Citric acid	0	1	0	0	Ferric chloride	0	0	0	0	Chloroform	2	2	2	2
Hydrobromic acid 5%	1	2	0	0	Ferrous sulphate	0	0	0	0	Ethanol	2	2	0	1
Hydrochloric acid 10%	0	1	0	1	Magnesium chloride	0	0	0	0	Ethyl ether	2	2	2	2
Hydrochloric acid 37%	1	2	0	2	Potassium sulphate	0	0	0	0	Ethyl acetate	2	2	2	2
Hydrocyanic acid 10%	0	0	1	2	Potassium nitrate	0	0	0	0	Ethylene dichloride	2	2	2	2
Hydrofluoric acid 5%	0	2	0	1	Potassium carbonate	1	1	1	1	Ethylene chloride	2	2	2	2
Hypochlorous acid	1	2	2	2	Potassium bicarbonate	0	0	0	0	Formaldehyde 37%	1	2	0	0
Malic acid	2	2	2	2	Sodium sulphate	0	0	0	0	Gasoline	2	2	2	2
Nitric acid 5%	1	1	1	1	Sodium chloride	0	0	0	0	Kerosene	2	2	2	2
Nitric acid 65%	2	2	2	2	Sodium nitrate	0	0	0	0	Methanol	2	2	0	0
Oleic acid	1	2	2	2	Sodium bicarbonate	0	0	0	0	Methylethylketone	2	2	2	2
Oxalic acid 50%	1	1	1	2	0	0	0	0	0	Methylene chloride	2	2	2	2
Phosphoric acid 25%	0	0	1	2	Sodium carbonate	0	0	0	0	Nitrobenzene	2	2	2	2
Phosphoric acid 85%	0	0	1	2	Stannic chloride	1	1	1	1	Phenol	2	2	2	2
Sulphuric acid 10%	1	2	1	2	Zinc sulphate	0	0	0	0	Toluene	2	2	2	2
Sulphuric acid 78%	2	2	2	2	Zinc chloride	0	0	0	0	Trichloroethylene	2	2	2	2
Tannic acid	0	0	0	0						Turpentine	2	2	2	2
Tartaric acid	1	1	1	1						Xylene	2	2	2	2
Bases					Oils					Gases				
Ammonium hydroxide	0	—	0	0	Castor oil	1	1	1	1	Carbon dioxide	0	0	0	0
Calcium hydroxide	0	0	0	0	Coconut oil	0	—	0	2	Carbon monoxide	0	0	0	0
Potassium hydroxide	1	2	0	0	Corn oil	2	2	2	2	Chlorine (wet)	2	2	2	2
Sodium hydroxide	1	2	0	0	Diesel oil	2	2	2	2	Hydrogen sulphide	0	0	1	1
					Linseed oil	2	2	2	2	Sulphur dioxide (wet)	1	1	2	2
					Mineral oils	2	2	2	2					
					Olive oil	1	1	1	1					
					Silicone oils	0	0	0	0					

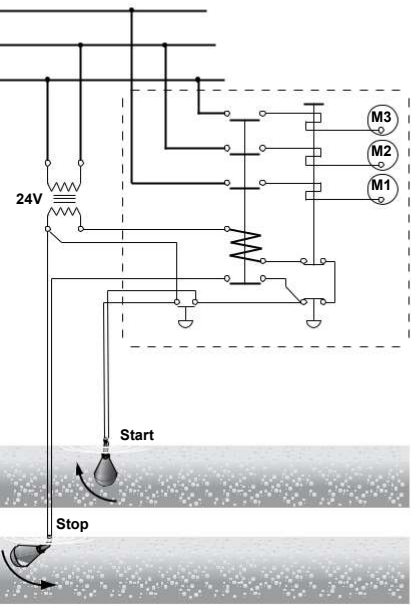
0 = no corrosion, 1 = low or moderate corrosion, 2 = high corrosion, — = data not available.

Connection

In order to comply with local regulations, level regulators are usually connected to a low-voltage circuit, via a transformer. Each installation includes two regulators, one for start-up, the other for shutdown. These two regulators can be supplemented by a third, connected to an alarm signal activated at a defined level. For these different functions, exactly the same regulators are used.

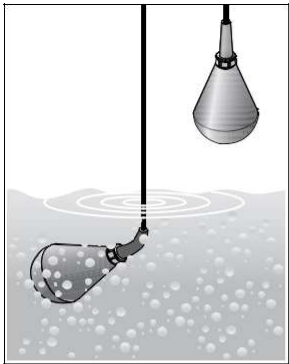
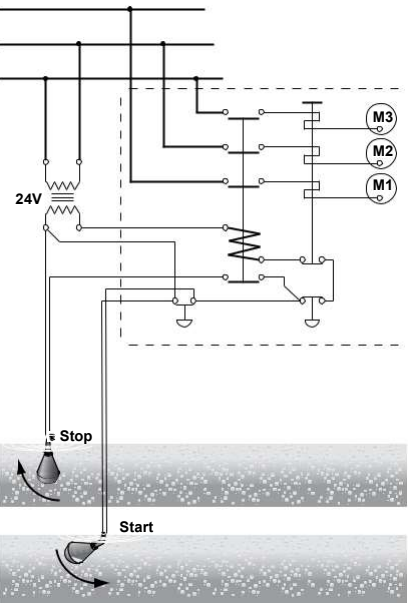
A. Draining

Connect the blue and black wires.
Isolate the brown wire.



B. Filling

Connect the blue and brown wires.
Isolate the black wire.



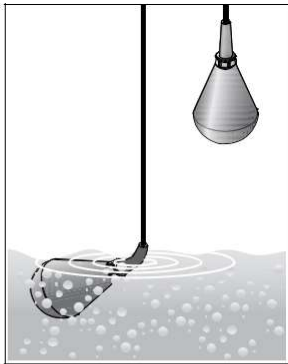
Lower the level



... to the permitted lower limit.



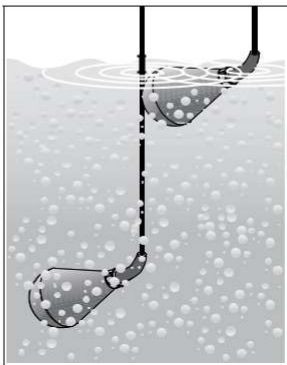
The regulator is then activated...



... and the process is reversed.



When the permitted upper level is in turn reached...



... then the second regulator is activated ...



... with the opposite effect.

We reserve the right to make any changes due to technological upgrades to our products. The contents of these instructions are subject to change without notice.