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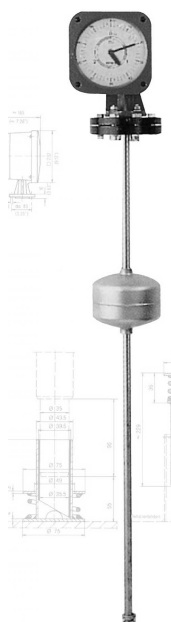
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ИНДИКАТОРЫ УРОВНЯ

BM51



Technical data

	ACversion WE 77/Ex I WE 77/Ex 2	DCversion WE 77/Ex 1-G WE 77/Ex 2-G
Power supply		
Standard	230 V AC \pm 10% ^{+6%} (220 V AC \pm 10% ^{+15%}), 120V AC ^{+5%} 45to 65Hz	
Special versions	24, 42, 110, 127 V	15to70VDC
Power consumption	AC approx. 35 VA	max. 63W
Input intrinsically safe to ...	DIN 19234or NAMUR	DIN 19234or NAMUR
Protection category PTBNo .	[EEx ia] II C or [EEx ib] II C	[EEx ia] II C or [EEx ib] II C
Open-circuit voltage Short-circuit current	Ex - 79/2043 X 8 V AC (1 3.5 V AC*) } values per circuit 8m A(3l mA *)	Ex - 81/2146 X 8 V DC (12 7 V DC*) } values per circuit (21 mA *)
Safe external inductance*capacitance*		
[EEx ia] II C	3mH/230nF } values per circuit	2mH/370nF } values per circuit
[EEx ib] II C	31mH/609nF	70mH/800nF
Output non-intrinsically safe		
Number of switches	WE 77/Ex I: 1 changeover contact WE 77/Ex 2: 2 changeover contact	WE 77/Ex 1-G: 1 changeover contact WE 77/Ex 2G: 2 changeover contact
Contact rating	AC: 4 A/250 V/500 Ncos ep= 0.7	DC : 220 V/0.1 A; 60 V/0.6 A; 24 V/4 A
Display "relay active"	withLED	withLED
Housing		
Material	plastic NORYL S E O, self extinguishing	
Fixing	snap-on mounting on 3S mm(1.38") standard rail to DIN 46277or screw fixing , dimensions to DIN 43603	
Connection	self-opening binding posts , max.cross-section 2• 1.5 mm ² (2* 14 AWG)	
Type of protection	IP 20, to DIN 40050; equivalent to N E M A I	
Environment category	HUE , to DIN 40040 ambient temperature -2S to +60 °C (-13 °F to + 140 °F)	

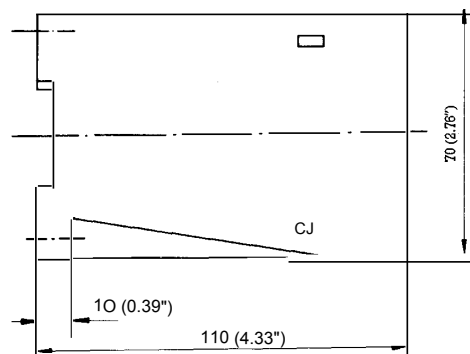
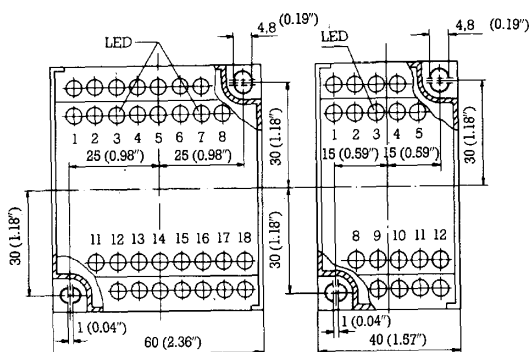
* max.values for operation in hazardous-duty systems

If mechanical switches are connected, connect a 10kohm resistor across the input.

Dimensions

WE/Ex-1

WE/Ex-2



6. Float selection

Select float as a function of pressure, temperature and density of the product. Also select the material of construction to suit the application in question.

Float		Operating conditions					Stock number	
No.	Shape	Dimensions (mm)	Material	Max. operating pressure MPa 20 °C	Product* temperature OC min. max.	Min. density kg/1		
1	Disk	dia. 195 x 185 *	stainless steel 1.4571	0.6	(6)	- 160 +400	0.5	2.02236.00
2	Ball	dia. 197 x 1.0 dia.	stainless steel 1.4571	1.5	(15)	- 160 +400	0.55	8.09772.00
3	Cylinder	190 x 180	polypropylene**	0.4	(4)	+ 10 + 60	0.4	8.08704.02
4	Cylinder	dia. 140 x 211	PVC**	0.4	(4)	- 40 + 60	0.5	8.04813.03
5	Cylinder	dia. 140 x 200	hard glass**	0.3	(3)	- 50 +200	0.9	8.08298.00

* If used in hazardous areas, please note data specified in the Certificate of Conformity.

** Not suitable for use in hazardous areas.

Note: The specified operating pressure applies to 20 °C. Float test pressure = Operating pressure * 1.3.

(Hazardous duty units = Operating pressure * 1.5).

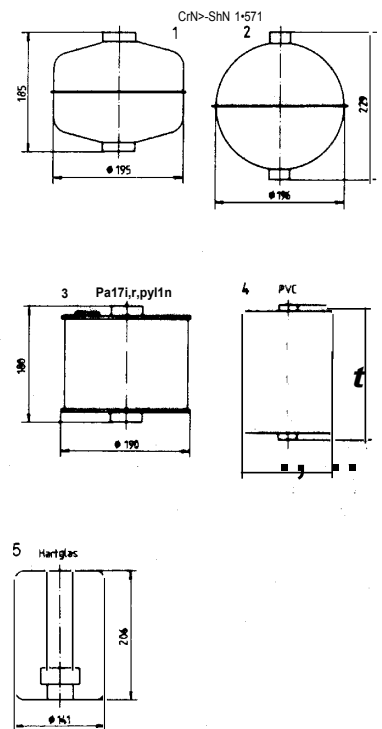
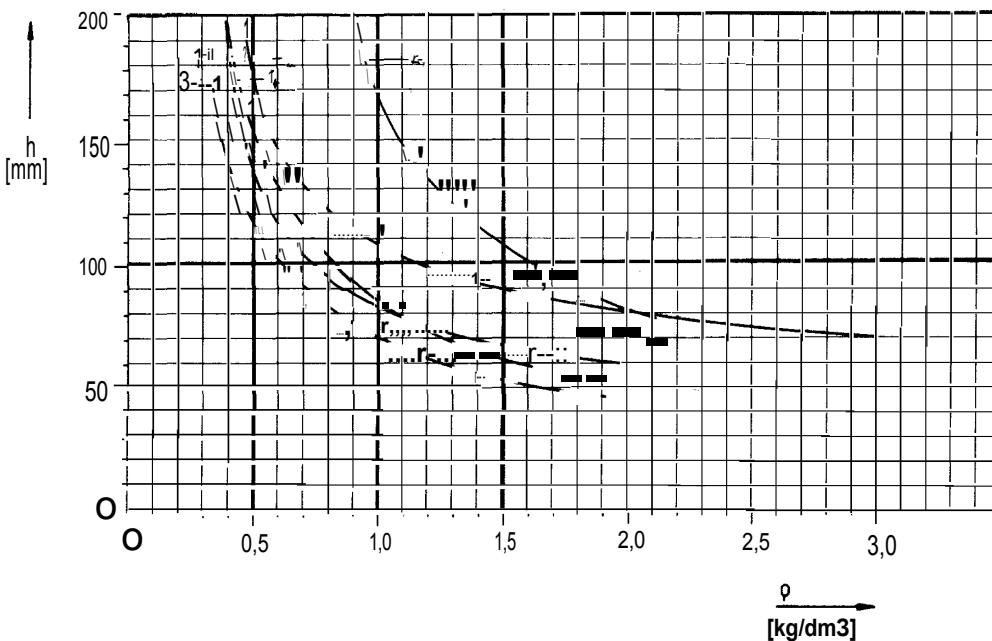
Note: The float operating pressure should be equal to the vessel test pressure. If the vessel test pressure is higher than the float operating pressure, remove the float before testing the vessel. Refer to instrument nameplate for float operating pressure.

Floats

Each float is designed and constructed for the specified liquid product and given operating conditions.

Float graphs

The graphs show the depth of immersion "h" for each float as a function of the product density ρ .



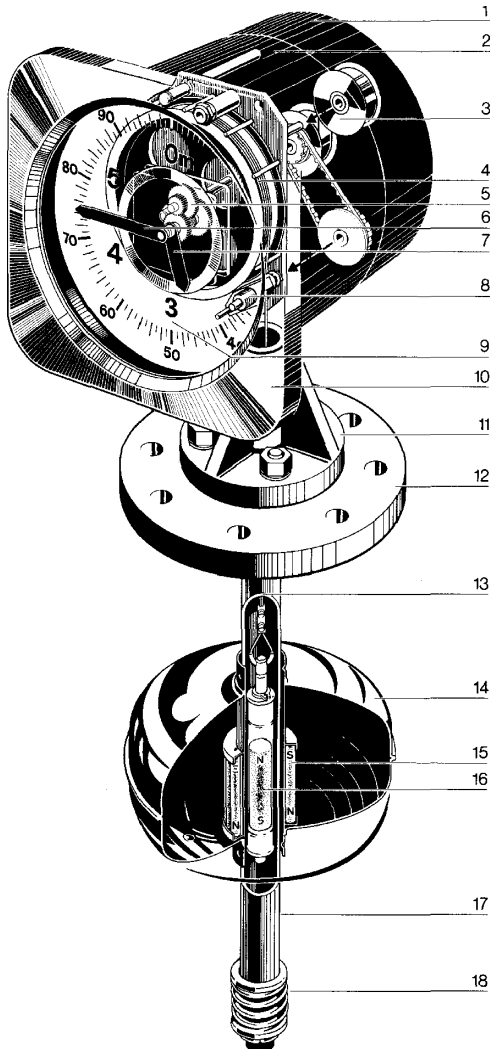
9. Technical data

Instrument type	BM 51 level gauge
Measuring range	max. 6 m
Product Viscosity Solids Particle size	Liquids, incl. liquefied gases :5 100 MPa · s :;:; 100 g/l :5 200 µm dia.
Accuracy	± 3 mm of measured value
Operating data * Max. pressure Product density Ambient temperature Product temperature	0.6 MPa (6 bar), special version: 1.5 MPa (15 bar) 0.5 bis 3.0 kg/l – 60 to + 120 °C, PP version: max. + 60 °C – 160 to + 400 °C Note restrictions imposed by built-in options!
Indication Design Scale marks	Circular scale, 160 mm dia. (m) and (cm) marks Special version: (m ³) or (%) marks
Connection Standard Special version	Flange DN 80, PN 16, to DIN 2527 other DN, flanges to DIN 2512 and other standards
Housing Material Enclosure to DIN 40050	Grey cast iron IP 56

* Note: Allow for operating data of floats!

7. Level gauge components

- | | |
|--------------------------|----------------------|
| 1 Cover, rear | 10 Cover with window |
| 2 Housing | 11 Mounting flange |
| 3 Spring motor | 12 Connecting flange |
| 4 Measuring drum | 13 Wire cable |
| 5 Gear unit | 14 Float |
| 6 Centimetre hand, large | 15 Magnet system |
| 7 Metre hand, small | 16 Follower magnet |
| 8 Cable guide | 17 Guide tube |
| 9 Scale | 18 Limit stop |



8. Changing the wire cable

1. Disconnect flanged connection between indicator housing and guide tube.
2. Pull wire cable and magnet out of the guide tube. (If follower magnet has become detached: fetch wire end and magnet out with a special catching device obtainable from our Service Dept.) Reel in wire cable using the spring motor up to the end stop.
3. Remove both housing covers, both pointer hands, and the dial face. Disconnect any rear-mounted electrical/pneumatic lines.
4. Pay off wire cable from the measuring drum against the force of the spring motor up to the end stop.
5. Turn the measuring drum until the knotted end of the wire is visible through the hole in the baseplate. Secure measuring drum against turning.
6. Pull out the knot using pincers or a hook and cut it off. Remove rest of wire from measuring drum.
7. Slide the leading end of the new wire cable through the cable guide and thread it from outside through the small hole in the measuring drum. Then pull it through the hole in the baseplate, tie a knot in the end and cut off excess wire. Pull the knot back to the end stop in the measuring drum. Release the measuring drum.
8. The force of the spring motor will automatically wind the wire cable onto the measuring drum. Guide the cable by hand to avoid looping.
9. Wind an adequate length of cable onto the measuring drum (one full turn = 0.4 m).
10. When a sufficient length of cable has been wound up, pull cable through the cable guide, attach a rope clamp and cut off cable 0.5 m behind the clamp. Secure measuring gear-ing by tightening both screws in the indicator housing.
11. Thread the end of the cable outwards through the flange and attach the follower magnet.
12. For partially filled tanks, proceed as described in Section 3. Start-up. Measure current liquid level with a yardstick and transfer this reading to the indicator. For empty tanks, proceed as described under Presetting Dimension "V" and Adjustment of Measuring System.
13. Place indicator housing on guide tube and screw down.
14. Replace both indicator housing covers.

Instrument versions

Designation	Guide tube
BMSI/RR Standard	St. steel 1.4571, tube dia. 28 x 2 mm Flange DN 80, PN 16, St. steel 1.4571
BMSI/NR Standard	St. steel 1.4571, tube dia. 28 x 2 mm Flange DN 80, PN 16, steel
BM 51/N-PTFE Polytetrafluorethylene	St. steel 1.4301, tube dia. 28 x 2 mm with PTFE liner, 3 mm Flange DN 80, PN 16, steel, PTFE gasket
BMSI/N-PP Polypropylene	St. steel 1.4301, tube dia. 28 x 2 mm with PP tube, flange DN 80, PN 16, steel with PP gasket
BM51/M Marine	St. steel 1.4301, tube dia. 28 x 2 mm Flange DN 80, PN 16, steel

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