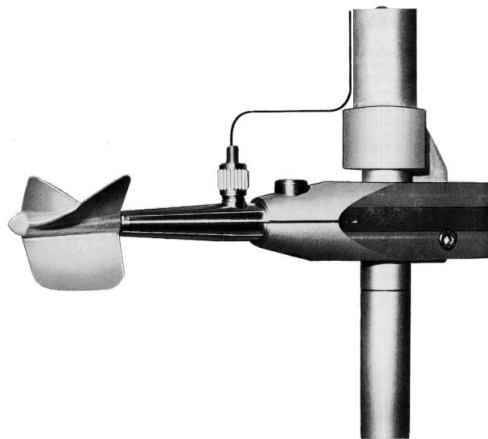
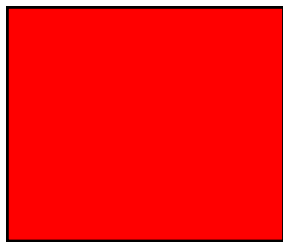


Mini Current Meter M1



User Manual



Product no. : 1313
Revision :
File : Arch-Orig
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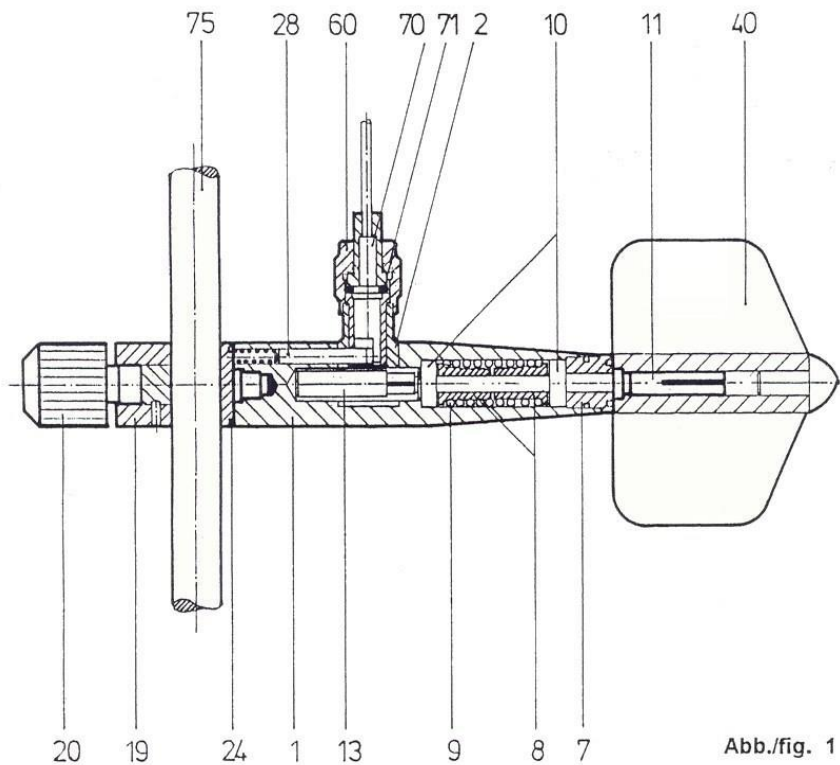
1. Product description

The current meter M I (art. no. 1313) is provided for determination of current velocities. It is a high quality precision measuring instrument, so please handle it carefully and consider all points of this service manual.

2. Safety and danger instructions

Please take care, that this current meter is a precision measuring instrument, which has to be handled carefully. Observe strictly the items in the operation and maintenance manual.

3. Parts survey



part	part no.:	part	part no.:
1 meterbody, front		24 O-ring 12x1	
2 contact support		28 reed-switch	
7 locking screw		60 plug cap	
8 spring centering		70 plug core hose	
9 pressure spring		71 O-ring 5 x 2	
10 ball bearing		40 propeller 50mm dia	
11 meter axle		75 rod 9mm dia	
13 magnet support, cplte.			
19 meterbody rear			
20 clamping piece			

4. Current meter mountings

The current meter M I is mainly used with rod 9 mm diameter. The rod (3 sections, 1,5 m long) is stored in the instrument case. The parts have to be screwed together and stuck to the bottom part. Into the upper part of the rod the red plug (+ pole) of the connection cable is to be inset.

The meterbody will be connected to the rod with the clamping piece (20).

On request rods with cm-division and dm-graduation are available.

5. Cable connection

Screw plug cap (60) with thread (minus pole) on the thread of the contact support (2). Insert second wire with banana plug (plus pole - red) into the rod from above. Connect cable to the impulse counter according to colours of the plugs and sockets.

6. Change of propellers

The propellers are manufactured of high quality seawater resistant aluminium and are anodized. The propeller will be slipped on the slot of the axle. Change of propellers in the same way.

Attention: do not use force



Attention!

- Please control regularly that the propeller fits well to the axis, so that it cannot go lost.
- If necessary, you can bend apart the axis carefully with a knife, till the propeller can be fixed properly on the axis.

7. Startup and oil change

The meter axle with ball bearings is running in a chamber, filled with special oil.

The delivery of the instrument is without oil filling. Do not start the current meter before filling special oil into the chamber.

Remove oil when putting out of operation for a long period.

Attention:

Before starting, please check whether the oil chamber has been filled, otherwise refill it. Go ahead as follows:

- a) open locking screw (7) with socket wrench (97)
- b) take out meter axle (11) with ball bearing (10), pressure spring (9) and spring centering (8). Protect ball bearing from dirt and dust.
- c) remove used oil. Keep meterbody (1) in sloping position - connection thread of the contact support is on the side - and fill new oil into the oil chamber, just up to 25 mm below the rim.
- d) insert the meter axle (11) and ball bearings (10). Take care, that the magnet support (13) is fastened tight to the meter axle (11). Oilfilling should raise up to the upper rim of the oil chamber. Wipe off overflow of oil. Rescrew locking screw (7) with socket wrench (97).

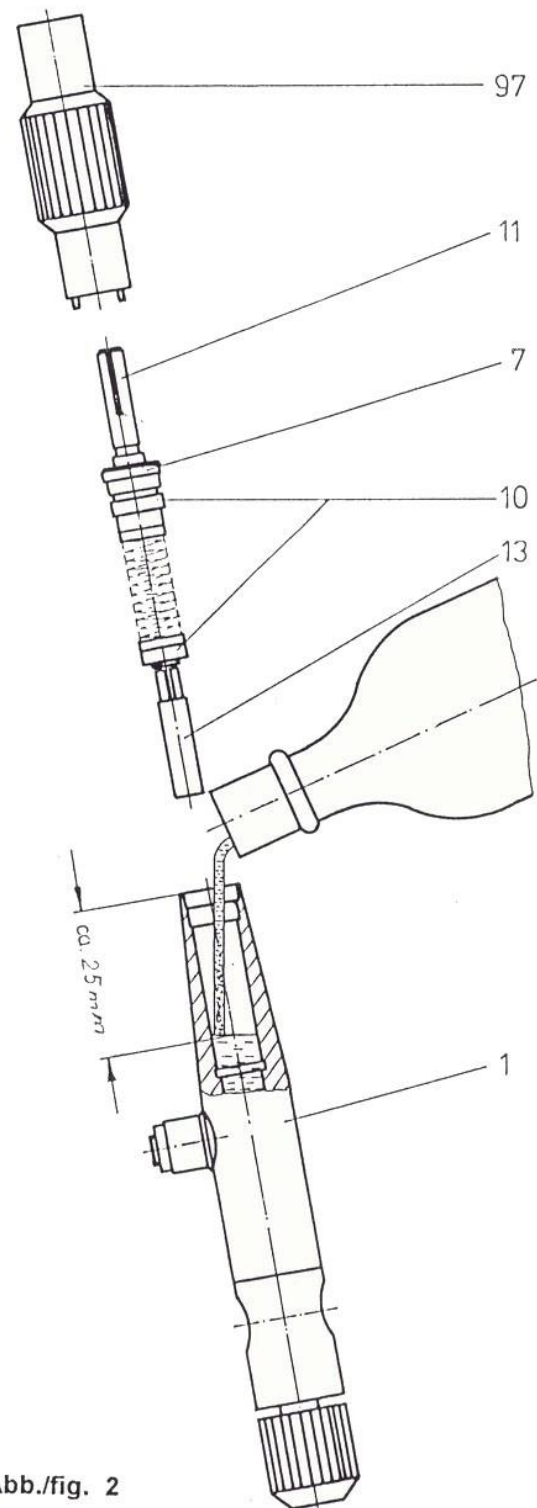


Abb./fig. 2

8. Determination of velocity

The calibration of the current meter is determined individually with each propeller in a hydraulic towing channel. The current velocity (v) is determined according to the calibration equation:

$$v = k \cdot n + \Delta$$

v = flow velocity m/sec.
 n = propeller revolutions per second
 k = hydraulic pitch of the propeller (cm)
 Δ = characteristic of the current meter

9. Reed-switch

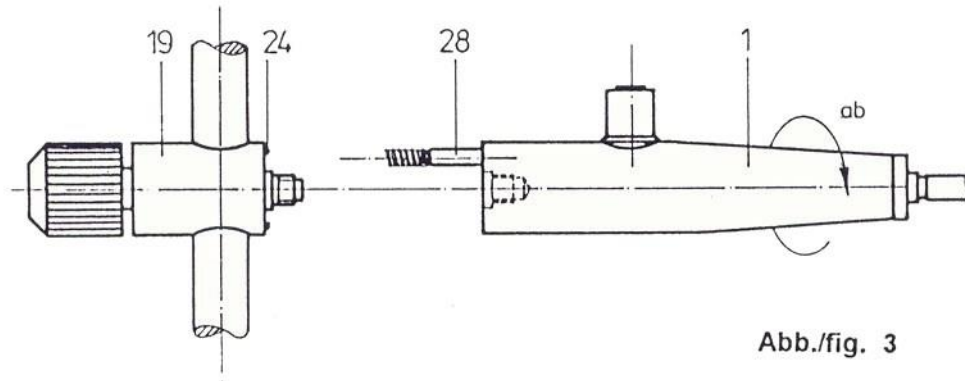
The counting impulse, necessary for measuring, will be effected by means of the reed-switch and the magnet, once per revolution of propeller.

10. Exchange of reed-switch

Separate front part of meterbody (1) from rear part (19) by screwing. Carefully pull out reed-switch (28) with tension spring. Insert complete new reed-switch.

Take care that the contact-surfaces of both meterbody parts are clean, and the O-ring (24) perfectly fits the notch in the rear part of the meterbody (19).

Finally screw both parts together manually.



11. Ball bearings

Extremely smooth running ball bearings are used.

They have to be protected absolutely from dirt and dust, otherwise the instrument will not run smoothly.

In case there should penetrate dirt into the ball bearings during exchange of oil, clean the ball bearings in purified benzine only.

12. Exchange of ball bearings

Push off magnet-support (13) and carefully push securing-disc (1.9 DIN 6799) out of the groove. Remove damaged ball bearings (10), pressure spring (9) and spring centering (8) from the meteraxle.

Clean ball bearings from dirt as described in item 10.

Mount all parts vice-versa.

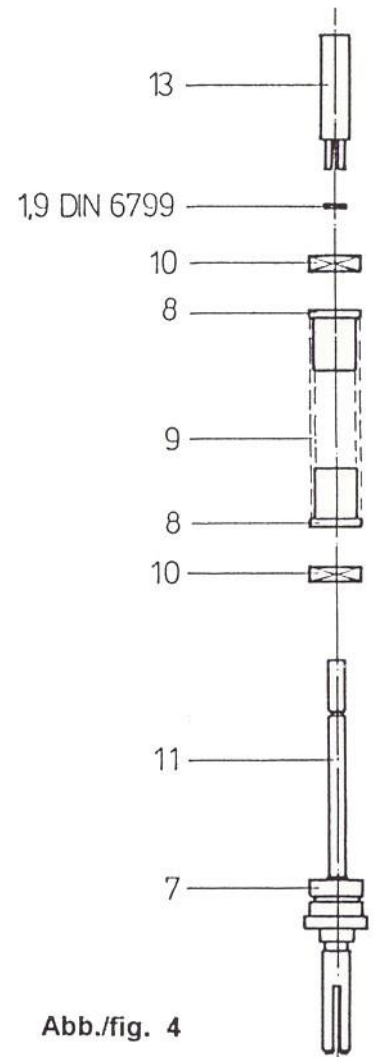


Abb./fig. 4

13.Shortening of the cable

If the cable is damaged at the plug or has to be shortened, go ahead as follows:

- a) cut off the damaged part of the cable
- b) insulate cable according to drawing and twist wire together.
- c) push plug cap (60) and then plug hose (62) on the cable. Twist the wire and push it into the multicore cable end (70), which is included within the maintenance material.
- d) compress wire and multicore cable end or solder it. Please take care, that the front side is flat.
- e) check whether wire and multi core cable end are fixed. Then push plug hose (62) over multi core cable end (70).

For using the meterbody with a rod of 20 mm dia. (FI 170.47, .48, .50 resp. . 52), a special clamp (90) is available. Both, relocating device (FI 170.55) and red plug (plus pole / 65) for picking-up the impulses are fastened on this special clamp.

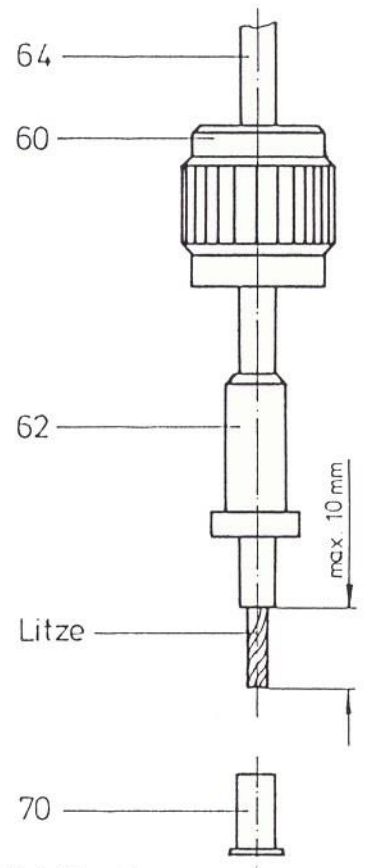


Abb./fig. 5

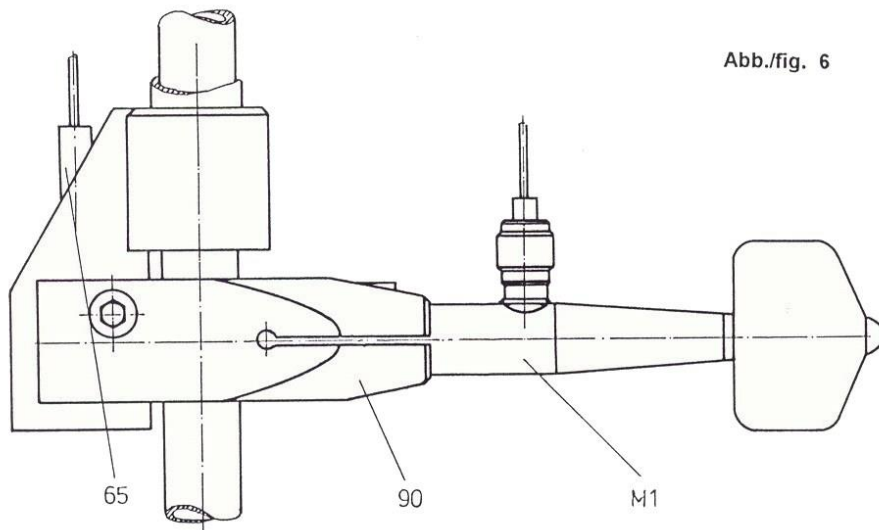


Abb./fig. 6