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Mesa Ocean Currents Measurement System

7.a Support Documentation Subsystem- Aanderaa Compass Checkout Fixture

**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Office of Marine Technology
Engineering Development Laboratory**

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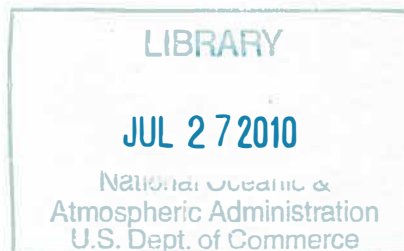
Ocean Currents Measurement System

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This documentation package explains the theory and operation of the Ocean Currents Measurement System developed for the MESA Program by the National Ocean Survey's Engineering Development Laboratory. The documentation is divided into seven subsystem manuals (listed below). This modularity provides the flexibility to change or make additions to a particular subsystem manual without replacing the entire package. It also allows two or more people to read different sections of the documentation at the same time.

Ocean Currents Measurement System Manuals

1. System Description
2. Peopleware Subsystem
3. A. Mooring Subsystem
B. Recording Current Meter
4. Data Conversion and Processing Subsystem
5. Data Quality Control Subsystem
6. Maintenance and Failure Reporting Subsystem
7. Support Documentation Subsystem
 - a. Aanderaa Compass Checkout Fixture
 - b. Aanderaa Current Meter Test and Evaluation
 - c. AMF Acoustic Release/Pinger
 - d. SB-510 Seabeacon Surface Buoy
 - e. Coast Guard 155 mm Lantern
 - f. Aanderaa Current Meter In Situ Monitoring Group Manual
 - g. Time Counter Module For The Aanderaa Current Meter





Introduction

The purpose of the compass checkout fixture is to facilitate the checkout of the Aanderaa current meter following routine maintenance and during pre-deployment and post deployment compass checks.

With the fixture two different methods of checking the compass can be used. The method selected will depend upon the physical environment where the checkout is performed.

If the checkout is performed on board ship or in an area where the earth's field is severely distorted by surrounding steel objects, the fixture should be used with the field supplied by the permanent magnet. With this magnet the compass can be turned through 360° with minimal interference from the earth's field.

If the checkout is done in a "clean" earth's field environment, the fixture can be used as a turntable to turn the current meter thru 360° . When using this method, the permanent magnet is removed and the compass allowed to be attracted only by the earth's field. Either method can be used with the current meter in its pressure case or out of the pressure case.

Operation

- (1) Fixture used as a Turntable in the Earth's Field:

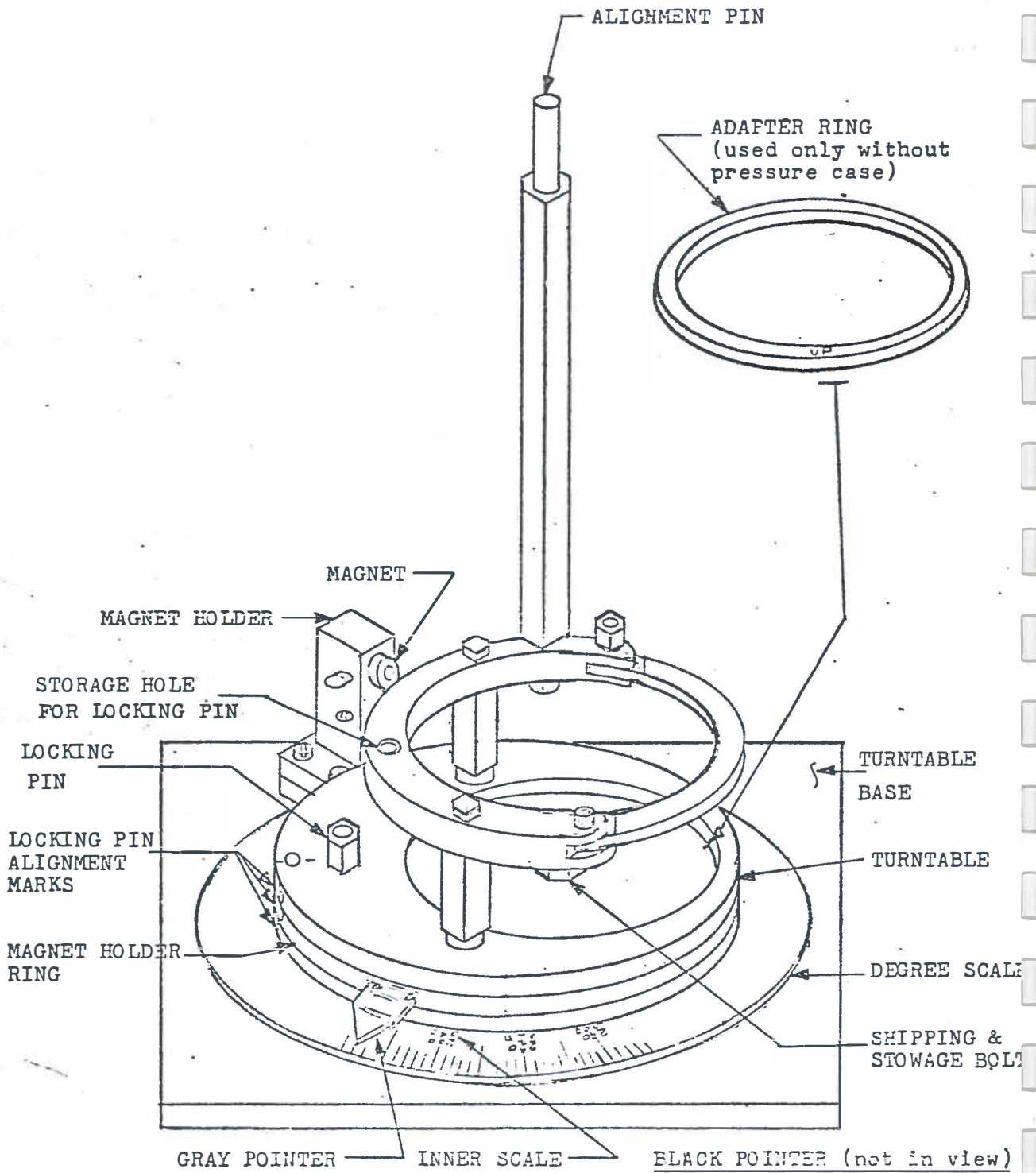
Remove the shipping bolt located in the center of the recessed area which secures the turntable to the base. Remove

the permanent magnet from its holder. Orient the magnet holder ring so that the zero marks on the edge of the top and center ring are aligned. The locking pin can now be inserted which locks the magnet holder ring to the turntable. Turn the fixture so that the gray pointer reads 0° on the inner degree scale. With an accurate magnetic north indicator such as a sensitive compass, the fixture base should be aligned in the earth's field with the alignment pin towards magnetic north. Place the adapter ring in the recessed area if the compass check is to be done without the pressure. Place the current meter on the fixture with the alignment pin keyed to the orientation block. The current meter can now be turned CW or CCW and readings taken at desired intervals, reading degrees on the inner scale with the gray pointer. The accuracy which can be expected with the fixture will be as good as the alignment of the fixture with magnetic north.

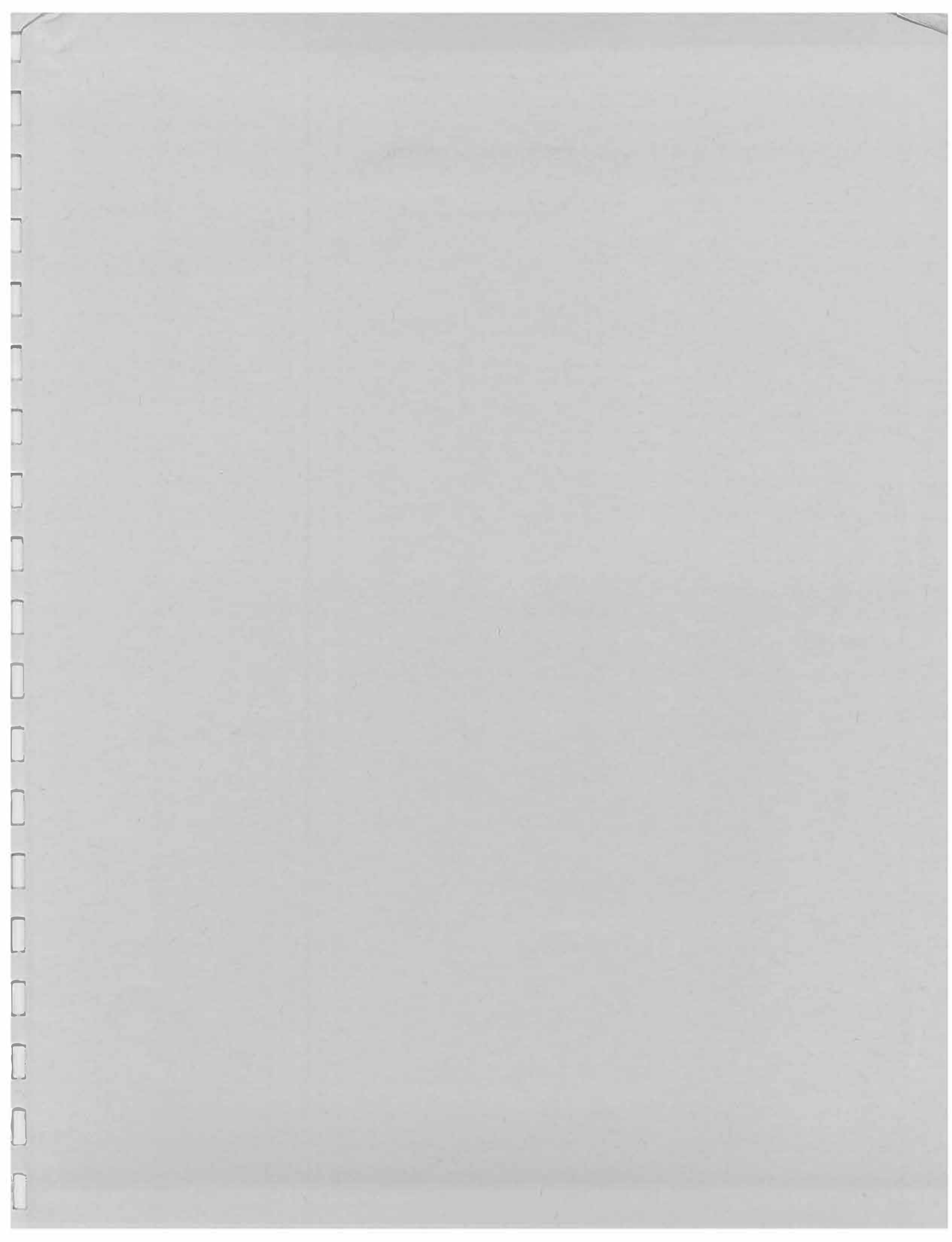
(2) Fixture used with Permanent Magnet Supplied Field:

If the compass test is to be done with the current meter in its pressure case, place the permanent magnet in the upper hole in the magnet holder. If the pressure case is not used, place the magnet in the bottom hole and put the adapter ring into the recessed area. Place the current meter on the fixture with the alignment pin keyed to the orientation block of the current meter. Remove the magnet holder ring locking

pin. The current meter compass can now be turned through 360° in the CW or CCW direction by moving the magnet and readings taken at desired intervals. Direction in degrees is read on the outer scale using the black pointer. Assuming that the fixture is set up with the alignment pin towards magnetic north, the largest errors will occur at 90° and 270° when the compass is at right angles to magnetic north. Under these conditions laboratory tests have shown differences of 6° to 8° from the true readings.



AANDERAA COMPASS CHECKOUT FIXTURE



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