Density Meter

Measuring density

- Carefully fill Unitor Density Meter tube with oil up to the fill line about 10mm from the top
- Switch ON, press **Reset** (unit displays revision and supply voltage). Select heating temperature using UP and DOWN arrows (normally 50°C, use 70°C for very viscous oils).
- Press **Return** to start heating. Centigrade digit "°" flashes as the Unitor Density Meter heats the oil.

- Stir the oil occasionally as it heats up with the stirring rod provided.When the temperature stabilises at 50°C the meter is ready for operation, (this takes about 10 minutes).

Do not use the hydrometer for stirring the oil. Be careful with the hydrometers: they are made of glass and will break!

19.3°

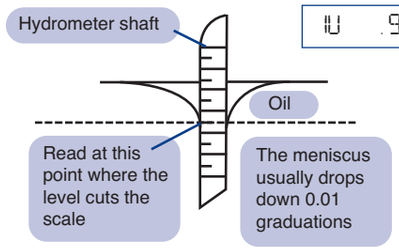
50.0°

- The meter will display the uncorrected [u] hydrometer reading in Mode 1. Stir the oil thoroughly and gently insert the hydrometer (select an appropriate range for this). Imparting a gentle spin will help it reach a steady level.

3 ranges of hydrometers are available:
0.80 - 1.01 Wide range but less discrimination
0.85 - 0.95 Lighter fuels DMA - RMH0.
90 - 1.01 Heavier fuels RMD - RML

1U.980

- Read the hydrometer at the meniscus. Use Arrow and Speed keys in Mode 1 to enter the uncorrected [1u] hydrometer reading at 50°C.



1U .978

- Press **Return**. Display now shows the density corrected to 15°C [1c] in a vacuum kg/m3 in vacuo.

1U .978

Calculating CCAI (Calculated Carbon Aromaticity Index)

- Advance to Mode 2 using the mode key (Not available with 70°C heating).

2 280

- The default viscosity is 280, or the last reading entered. Use Arrow and Speed keys to enter an oil viscosity. This is normally entered in centiStokes at 50°C for fuel oils.

2 273

- Advance to Mode 3. (Not available with 70°C heating). CCAI value is displayed automatically, using the entered density and viscosity values.

3 864

- Use Mode key to cycle modes and repeat calculations.

Conversion to centiStokes from centiPoise

- Holding down Speed key in Mode 2 allows entry of viscosity in centiPoise [P].

2P 273

'P' indicates centiPoise option

- Press **Return** to display value converted from cP to cSt using the density entered in Mode 2.

2 279

Viscosity corrected to centiStokes

Note: Corrected density [1c] can be altered for calculating cSt from cP.

Cleaning after use

- After a measurement is taken, turn off the power supply and the mains lead from the Unitor Density Meter.
- Carefully pour the oil into a container using the pouring spout.

CAUTION: The oil will be hot (up to 70°C). Pour out the contents carefully. Using the rod supplied push a wad of clean tissue down the centre of the tube ensuring all remaining oil is cleaned out.

Test Kits, Spares and Reagents

632554	Hydrometer 800-1010 kg/cbm
632513	Hydrometer 850-950 kg/cbm
632521	Hydrometer 900-1010 kg/cbm

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Specifications

Range	800 to 1010kg/m^3 at 15°C (ISO 8217 Fuel Grades DMA to RML55)
Test temperature:	Selectable 50°C or 70°C
Accuracy:	Typically ±0.1% (800 - 1010kg/m^3)
Power:	110 to 250VAC Autoselected 50/60 Hz 200VA
Fuse rating:	2.5A 20mm 250VAC HRC A/S (T) Ceramic

Intended use

The Unitor Density Meter is designed to measure the density of fuel or lubrication oil either at 50°C or 70°C.

CAUTION: The Unitor Density Meter must not be used for heating any other liquids such as water, cleaning fluids, or any fuels with a low flash point temperature (e.g. gasoline).

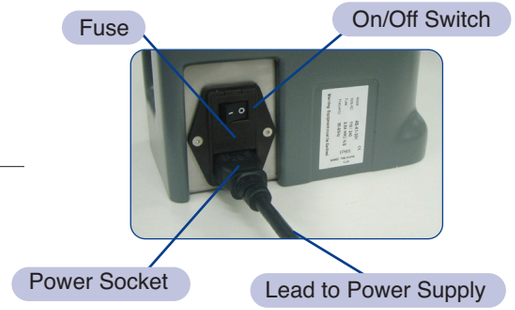
Note: These instructions apply to Unitors Density Meters with software version 2.xx

Setting the mains voltage

The meter auto selects the heating and power supply to match the supplied

Connecting the power supply

- Connect the mains lead into the socket on the rear of the Unitor Density Meter. Plug the other end of the lead into the mains supply.



- Turn on the mains power and then turn on the power supply using the switch next to the socket, Unitor density meter display should illuminate showing the mains voltage detected.

To change fuse

Open lid using screwdriver.

Carefully remove fuses.

Replace and secure lid.

Location

The unit is designed to operate on a flat level surface such as a workbench. The unit, when operating, contains hot oil heated up to 70 °C It is essential for safe operation that it is on a stable surface with the power cable running backwards from the unit where it cannot be accidentally snagged.

Controls and feature

The instrument measures density using a hydrometer dropped in warmed oil. Most oil can be measured at 50 °C but for very viscous oils the units can be set to warm to 70°C .

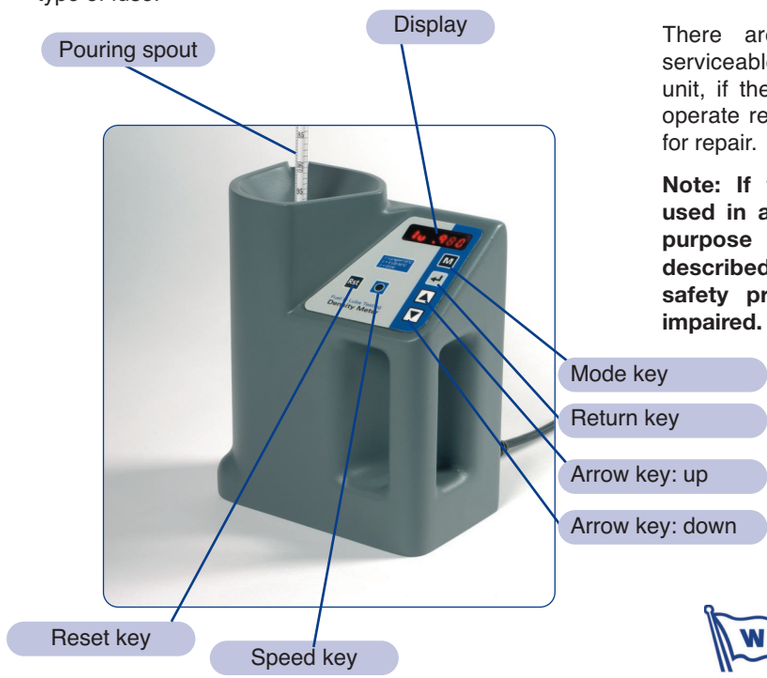
There is a calculator feature, which allows the reading to be adjusted to show density at 15°C in a vacuum. If the viscosity is known in Censtistokes or Centipoise the calculator will display the CCAI.

General cleaning

Make sure the power supply is disconnected from the mains. Wipe down the instrument with a clean dry soft cloth. Do not immerse in water, if necessary to remove stubborn marks use a cloth soaked in warm soapy water.

Maintenance

If the unit fails to power up, disconnect the power lead and check that the fuse is OK. Replacement fuses of the correct type are supplied in the spares pack. Do not use any other type of fuse.



There are no other user serviceable parts inside the unit, if the unit still does not operate return to the supplier for repair.

Note: If the equipment is used in a manner or for a purpose other than that described above then any safety protection may be impaired.

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Adhesive Strip

Adhesive Strip