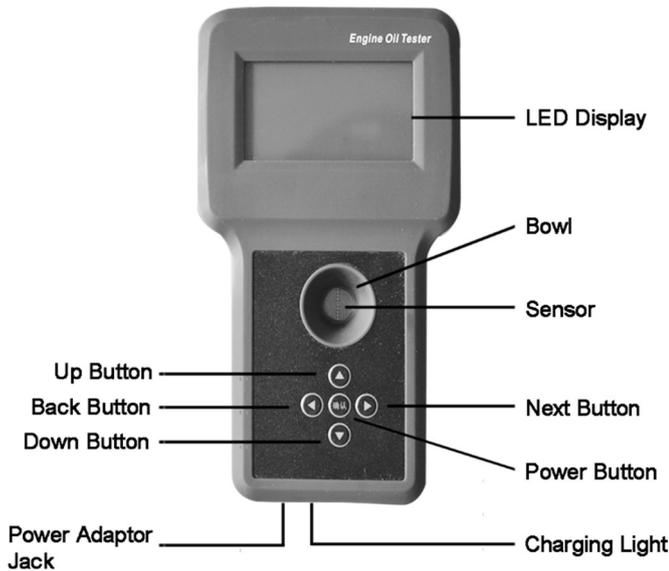


ENGINE OIL ANALYZER OTO350

USER'S MANUAL

INSTRUMENT DESCRIPTION



BUTTONS DESCRIPTION



Power button

- When the instrument is OFF, to turn it ON press and hold the Power button until the unit turns on (in approximately 5 seconds).
- When the instrument is ON, to turn it OFF press and hold the Power button until the display turns off (in approximately 5 seconds).
- Carry out current operation.
- The 'Auto Power Off' feature will automatically turn the instrument off after 5 minutes of no button being pressed.



Up button



Down button



Back button



Next button

OPERATING INSTRUCTION

1. Turn the instrument on.
2. Select the oil mode by pressing the Up and Down button, and then press the Power/Next button as shown in Fig.1.
3. Put 3-5 drops of oil to the bowl of the instrument.
4. Press the Power button. The result will be shown on the display in approximately 15 seconds as shown in Fig.2.

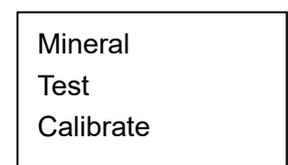
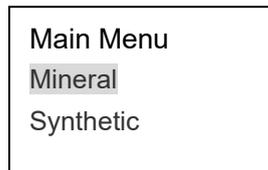


Fig.1

Fig.2

Important:

- Do not drop oil on the sensor before turning on the unit. Make sure that the sensor and the inner surface of the bowl are clean and dry.
- Do not test hot oil. For best results, the temperature of the oil sample to be tested should be close to the temperature of the instrument, and both should be between 10°C-27 °C.
- Place the instrument on a flat surface when testing.
- Put 3-5 drops of oil on the sensor until the oil surface reaches the required height which is indicated in Fig.3

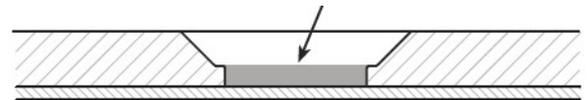


Fig.3

EXPLANATION FOR TEST RESULTS

Test Result	Explanation
0-10%	New Oil / Oil newly changed
10%-20%	Excellent / good oil quality
20%-30%	Fair oil quality
30-40%	Recommend oil change
> 40%	Recommend immediate oil change / Recommend engine check

HOW DOES THE INSTRUMENT WORK?

The tester primarily reacts to the increase in acidity of oil. As the oil degrades, it becomes more acidic and will begin to pit metal engine parts. The result > 90% usually means that the level of acid in the oil has reached a maximum acceptable level, and the oil should be changed. However, other contaminants (such as dirt, soot, water, antifreeze and metal particles) also influence the reading. Water or antifreeze in the oil may indicate a bad seal or head gasket. Metal particles result from unusual wear of bearings, pistons, rings, etc. Excessive carbon or soot may be caused by poor compression and excessive blow-by. Fuel leaking can dilute the oil and may cause an artificially good oil quality reading. If test results show that oil quality does

not drop as expected over time or seems to improve, check engine for fuel leaks. (Try a drop of oil on paper. Look for a gray ring.) If a significantly worse oil rating than expected is displayed, we recommend having the engine checked, or send a sample to an oil laboratory for analysis.

COMMON CAUSES OF INACCURATE READING

1. The sensor and oil bowl are not clean.
2. The oil surface do not reach the required height as indicated in Fig.3
3. The additives of the engine oil may result in inconsistent testing results of one oil sample for each time testing, the accuracy should be $\pm 5\%$.
4. The sensor is sensitive to working temperature and relative humidity. Dampness or severe heat or cold environment may affect testing result.
5. If engine oil condition is inconsistent with testing result, calibration is required.

CALIBRATION

Calibration can be done by the technician after they are out of factory. For engine oil dealer or manufacturer, we advise calibrating the instrument by themselves for each certain kind of engine oil due to different additives, which may affect testing result significantly. Also, we advise calibrating the instrument when the working temperature and relative humidity changed dramatically or the engine oil condition is inconsistent with testing result.

How to Calibrate?

1. When the instrument is ON, press the Power button. The unit is ON.
2. Select the oil mode you need to set and then press the Power or Next button. The unit is now under calibration procedure.
3. Drop Calibration oil to the testing bowl, which must be old oil close or recommend to change.
4. Press the Power button to execute calibrating until the display shown done as in Fig.4 below. Wipe the oil bowl with clean and dry paper towel.
5. As indicated on the display, drop new oil to be tested to the testing bowl. Press the Power button to execute calibrating until the display shown result stored as shown in Fig.5 below.
6. Wipe the oil bowl with clean and dry paper towel.

Important:

- The old and new oil for calibration must be the same

certain kind of engine oil.

- The old oil for calibration must reach a maximum acceptable level (oil close or recommend to change).

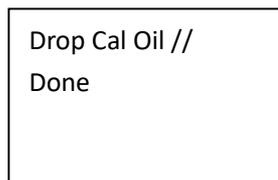


Fig.5

CHARGING THE INSTRUMENT

Please charge the instrument with power adaptor when the unit indicates low battery. The charging light will turn from red to green when the battery is full.

SPECIFICATIONS

Application: The instrument is designed to test gasoline or diesel engine oil.

Display: 128*64 LED Display

Power Supply : 3.7V Li rechargeable battery with 1000mAh

Operating Environment: Working Temperature 10°C-27 °C

Relative Humidity < 80%

Accuracy: $\pm 3\%$

Dimensions: 145x85x20mm

MAINTENANCE

- This instrument is designed for indoor use only. Do not use the instrument in rain.
- Keep the oil bowl and sensor dry and clean. After each time testing, cleaning should be done to the oil bowl and sensor with a clean and dry paper towel.
- Keep the instrument in its carrying case when not in use and do not subject it to dampness or severe heat or cold.

WARRANTY

This instrument is warranted against defects of material or workmanship which develop within a period of six months following the date of purchase by the original owner.

The unit is a sealed instrument and contains no user serviceable parts. Opening other parts of the unit will void the warranty.