KENNEDY®

QUALITY INDUSTRIAL TOOLING

Portable Optical Refractometer

- Improved eyepiece and focus adjuster
- Improved calibration mechanism with covered screw
- Improved textured rubber sleeve on barrel
- Equipped with Automatic Temperature Compensation system



KEN-336-1877E

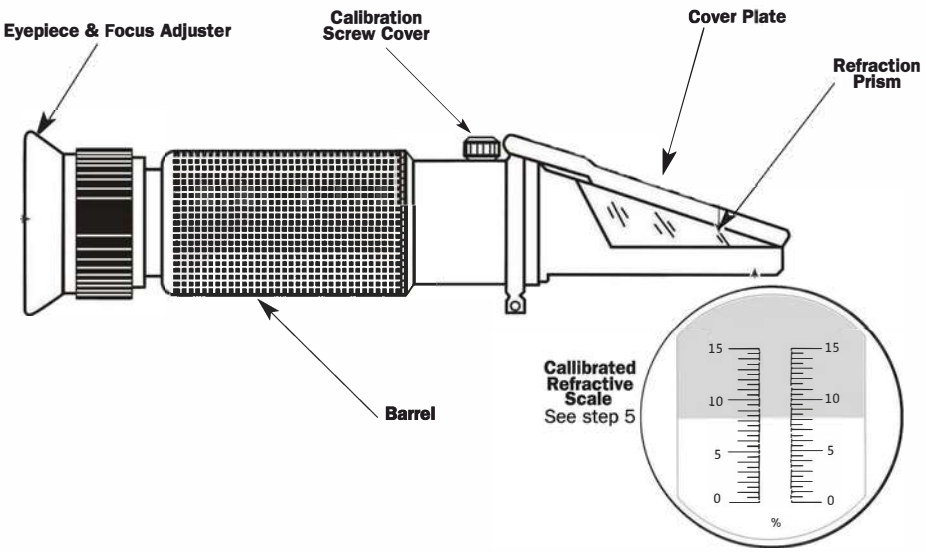
OPERATOR'S MANUAL

AVAILABLE FROM YOUR DISTRIBUTOR

KENNEDY TOOLS
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KENNEDY Portable Optical Refractometer

An optical instrument which uses the variation in refractive index of fluids at different concentrations to measure dilution ratios.



Instructions

The instrument is equipped with automatic temperature compensation system (ATC), the ambient working temperature of the room must be 20° C (68° F) whenever the instrument is re-calibrated. Once calibrated,shifts in ambient temperature within the acceptable range (10° C -30° C) should not affect accuracy.

Calibration

Use a "standard" of known value, on the refractive index. Distilled water being zero, is recommended.

1. Open cover plate, and ensure both prism,and inner face of cover plate are clean. Use a soft, clean and lint free cloth.
2. Place a drop of distilled water onto the centre of the prism and close the cover.
3. The sample will spread over the surface of the prism and become a thin film.
4. With a light source (daylight is preferable) above the prism cover, look through the eyepiece. Focus is adjusted by means of rotating the adjuster. The line of measurement is the boundary line between the blue and white zones.
5. Using the small screwdriver provided adjust the calibration screw until the boundary line is exactly at zero on the scale.

The refractometer is now ready for use.

6. To measure a sample from the coolant system, take a drop from the outlet pipe of the machine. This avoids picking up any tramp oil from the surface of the coolant tank.
7. After cleaning (drying) the prism and inner face of the cover plate, place a drop from the sample onto the centre of the prism.
8. Close the lid and take a reading by looking through the eyepiece (focus as necessary by rotating the adjuster) and record the figure where the boundary line passes through the scale.
9. Clean prism and cover after use.
The reading taken should be related to the refraction index figure given for the particular product and dilution by the manufacturer.

Application

1, Mainly used for preparing and testing the percentage concentration of emulsions for cooling and cooling in the mechanical processing industry, as well as M-10 and MDT emulsions commonly used in mines. Widely used in mechanical processing, mining selection, underground support and other fields
2, For determining the concentration of oil in water emulsions and transparent solutions, such as machine shop coolant.
Maintaining the correct mixture in coolant systems is vital to ensure optimum performance from cutting tools.

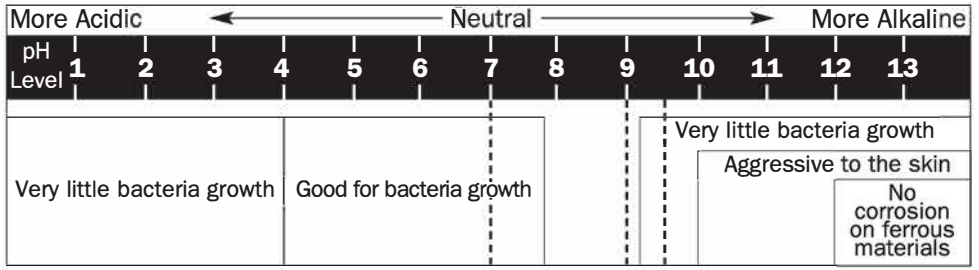
Note: Dilution ratio does not necessarily give an indication of the condition of the emulsion. Bacteria and/or pH level can effect coolant performance. For further details regarding pH level please see below.

Warning - Maintenance

1, The prism and sample must be at the same temperature for accurate results.
2, Do not expose in the instrument to damp working conditions,and do not immerse the instrument in water.
3, Do not measure abrasive or corrosive chemicals with this instrument.
4, This is an optical instrument which requires careful handling and storage.

The pH Scale

pH is a measurement of the acidity or alkalinity of an aqueous fluid.
pH should be measured using pH papers, which are available from your KENNEDY distributor.
The end of the paper should be dipped in to the test fluid. Within a matter of seconds it will change colour. This colour can then be matched to a standard pH colour chart. Always test a sample from the outlet pipe of the machine. This avoids picking up tramp oil from the surface of the coolant tank.



Typical fresh cutting fluids are in the range pH 9 to 9.5

Each division on the scale is a factor of 10 from the next, eg. pH 9 is ten times more alkaline than pH 8.

The pH level should never be above 10 as this will cause skin irritation.

Bacteria prefer slightly acidic conditions, ie. just below pH 7 but start to be encouraged at anything below around pH 8. Bacteria can live at pH9 and as they work they excrete acid waste which reduces the pH of the emulsion, further improving their environment.

Alkaline pH's reduce corrosion of ferrous materials and above pH 12 there is no corrosion on these materials.

Cutting fluids are usually formulated to have a fresh emulsion pH in the range 9.0 - 9.5, ie. as high as possible to resist bacteria and corrosion without causing skin problems.

SPECIFICATIONS:

Range ND: Bx: 0-15%	**Weight:** 170g
Accuracy: ± 0.2%	**Dimensions:** (W x H x L) 40 x 40 x 180mm