



**Mastercool<sup>®</sup> Inc.**  
*"World Class Quality"*

*English*

---

**OPERATING INSTRUCTIONS**

**REFRACTOMETER**

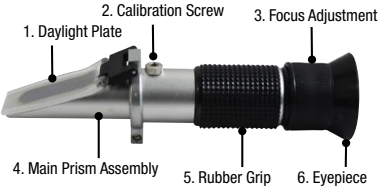
**MODEL# 43705**

---



**43705  
REFRACTOMETER**

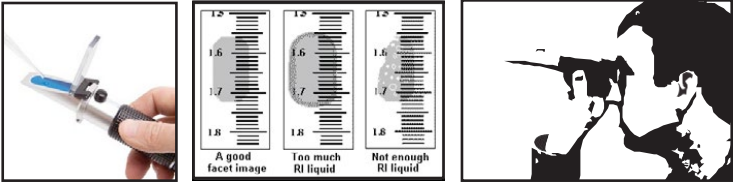
Item #	Part #	Part Description
1	43705-01	Daylight Plate
2	43705-02	Calibration Screw
3	43705-03	Focus Adjustment
4	43705-04	Main Prism Assembly
5	43705-05	Rubber Grip
6	43705-06	Eyeiece



- FEATURES:**
- Offers a quick and easy way to test the freezing point of coolant/anti-freeze
  - Compatible with Ethylene or Propylene Glycol
  - Measures battery acid specific gravity
  - Automatic temperature compensation
  - Large, easy to read graphics and high contrast lens
  - Adjustable focus viewfinder
  - Strong, metal body structure
  - Includes storage case, fluid dropper and calibration screw driver
  - Not for use with OAT coolants or DEF

SPECIFICATIONS:		
<b>Range:</b>	<b>Minimum Division:</b>	<b>Accuracy:</b>
Ethylene Glycol: -84 to 32°F	Ethylene Glycol: 5°F	Ethylene Glycol: ±5°F
Propylene Glycol: -60 to 32°F	Propylene Glycol: 5°F	Propylene Glycol: ±5°F
Battery: 1.100 - 1.400 Specific Gravity	Battery: 0.01 Specific Gravity	Battery: ±0.01 Specific Gravity

- WARNINGS/MAINTENANCE:**
1. Accurate measurement depends on careful calibration. The prism and sample must be at the same temperature for accurate results.
  2. Do not expose the instrument to damp working conditions, and do not immerse the instrument in water. If the instrument becomes foggy, water has entered the body. Contact your dealer for repair.
  3. **Do not measure abrasive or corrosive chemicals with this instrument. They can damage the prism's coating.**
  4. Clean the instrument between each measurement using a soft, damp cloth. Failure to clean the prism on a regular basis will lead to inaccurate results and damage to the prism's coating.
  5. This is an optical instrument. It requires careful handling and storage. Failure to do so can result in damage to the optical components and its basic structure. With care, this instrument will provide years of reliable service.



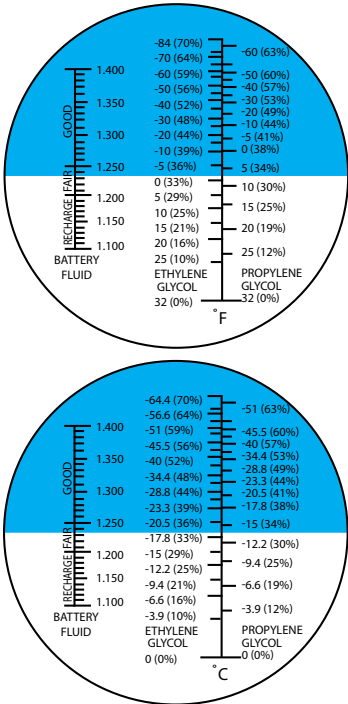
**CALIBRATION:**

- 1. Open daylight plate, and place 2-3 drops of distilled water on the main prism. Close the daylight plate so the water spreads across the entire surface of the prism without air bubbles or dry spots. Allow the sample to temperature adjust on the prism for approximately 30 seconds before going to step #2. (This allows the sample to adjust to the ambient temperature of the refractometer)
- 2. Hold daylight plate in the direction of a light source and look into the eyepiece. You will see a circular field with graduations down the center (you may have to focus the eyepiece to clearly see the graduations). The upper portion of the field should be blue, while the lower portion should be white. (The pictures shown here and shown in step 3 & step 4 are only as reference; the specific scale is listed on the product.)
- 3. Look into the eyepiece and turn the calibration screw until the boundary between the upper blue field and the lower white field meet exactly on the zero scale. The instrument is temperature compensated for use between 50°F and 86°F (10°C to 30°C). For best results, calibrate when the temperature of the instrument is 68°F (20°C).

**OPERATION:**

**NOTE:** It is recommended to calibrate the instrument before first use. The instrument is temperature compensated for use between 50°F and 86°F (10°C to 30°C). If the instrument is used outside of that temperature range, it is recommended that it is calibrated before every use.

- 1. Lift the daylight plate off of the prism.
- 2. Place a few drops of the fluid sample on the clean, dry prism.
- 3. Lower the daylight plate onto the prism. The fluid should cover the prism without bubbles or dry spots. For best results, wait 20 to 30 seconds for the temperature of the fluid to match the temperature of the prism.
- 4. Hold the instrument so light goes into daylight plate.
- 5. Read the scale for the fluid sample at the line between the blue area and white area. In the samples (at right), the reading for Ethylene Glycol is -25°C (40.5% Ethylene Glycol). The eye piece can be turned to bring the scale into focus.
- 6. Clean the prism and daylight plate with a soft, clean cloth dampened with distilled water. Make sure the instrument is dry before replacing in its box.



**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)