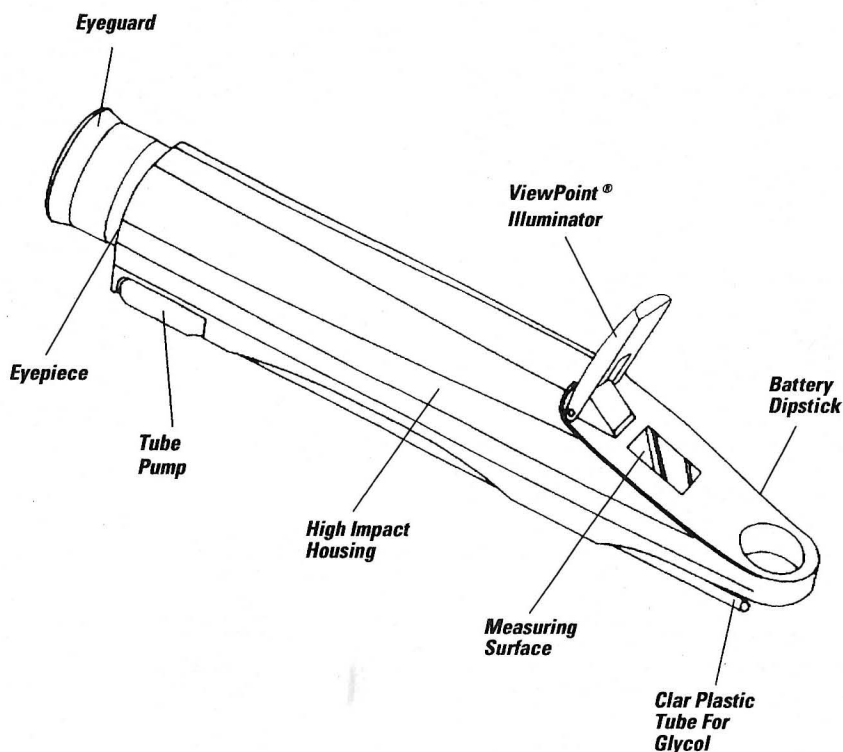


MISCO®

Glycol & Battery Tester

Model 7084VP (°F) and 7064VP (°C)



Instruction Manual

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Phone (440) 349-1500 • FAX (440) 349-1511

1.0 Introduction

The MISCO Glycol & Battery Tester (refractometer) is a fast and easy-to-use method for testing the freeze point of glycol based solutions and battery charge condition. It provides automatic-temperature-compensation for immediate, accurate direct readings of ethylene glycol or propylene glycol fluids and battery electrolyte.

The Glycol & Battery Tester is available in two models: Model 7084VP measures freeze point protection in degrees Fahrenheit and Model 7064VP measures in degrees Celsius.

NOTE: Accuracy of the refractometer readings may be slightly affected by the specific coolant formulation of individual manufacturers.

Using a refractometer to test freeze point, following the American Society for Testing & Materials (ASTM) Standard Practice D3321, provides results that are precise to $\pm 1.0^{\circ}\text{F}$ ($\pm 0.55^{\circ}\text{C}$) reading a 50% vol. aqueous solution of ethylene glycol.

2.0 Cleaning the Instrument

The Instrument should be thoroughly cleaned after each use. Any residue left on the measuring surface could result in an inaccurate reading or damage to the instrument.

To clean, swing back the ViewPoint Illuminator, located at the slanted end of the instrument, to expose the measuring surface. Wipe clean both the surface and the bottom of the ViewPoint Illuminator. Dry them with a tissue or a clean soft cloth. Close the ViewPoint Illuminator.

3.0 Sampling

CAUTION: Read this section and follow all instructions before using the Instrument to check a car's engine coolant or battery. You should use extreme caution when removing the radiator cap. The radiator cap should not be removed while the car is running or the engine is warm. Extremely hot liquid may be in the radiator and could cause personal injury. Read and follow vehicle manufacturers instructions concerning safe access to vehicle engine coolants.

You should also use extreme caution when testing any acid or caustic solution in the battery. They may cause personal injury if they come into contact with your skin or eyes.

We recommend that safety glasses and gloves be worn when removing the radiator cap and testing any acid or caustic solution in a battery. You should also be sure that the eyepiece of the Instrument is completely free of any liquid before looking through it.

To Sample Anti-Freeze Solution

The clear plastic dropper, located on the side of the Instrument, should be used to draw the test sample. Be sure the dropper is free of any previous sample before starting the testing procedure.

Dip the end of the plastic dropper into the coolant without removing it from the tester. Be sure to insert the tube slightly below the fluid level (Figure 1).

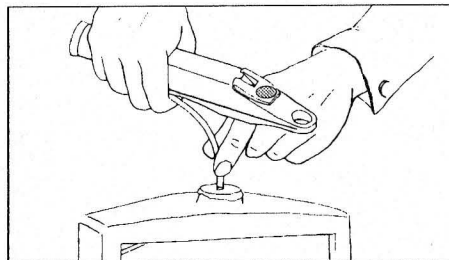


Figure 1.

Press and release the bulb to draw a sample of coolant. Bend the plastic tube around the Instrument so that the tip can be inserted in the ViewPoint Illuminator opening. Eject a few drops of the coolant onto the measuring surface by pressing the bulb (Figure 2). Now take the reading (Section 4.0).

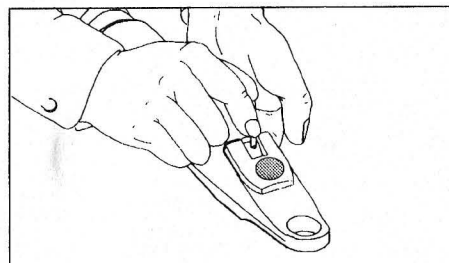


Figure 2.

To Sample the Battery Acid

Use the battery dipstick located on the bottom of the instrument to obtain a sample of battery acid. **Do not use the clear plastic tube to withdraw battery acid.** To check a battery charge, perform the test before adding water to the battery. Place a few drops of acid on the measuring surface, close the ViewPoint Illuminator and read the battery scale. A separate reading must be taken for each battery cell.

Never open the ViewPoint Illuminator while taking readings. Evaporation of water from the fluid sample being tested can affect the reading. Now take the reading.

4.0 Taking the Reading

Your Instrument is equipped with an eyeguard that can be used in two positions. When wearing eyeglasses, the eyeguard should be folded back; when no eyewear is worn the eyeguard should be extended. Proper positioning of the eyeguard will help eliminate stray light and improve image quality.

NOTE: The temperature scale is reversed from a standard thermometer scale. Readings below 0° are on the upper half of the scale (Figure 4). The scale is not visible until a sample is placed on the surface. If the concentration of the solution tested is greater than the limits of the scale, the shadow will not be visible.

To take a reading, point the Instrument toward any light source, or press the top of the ViewPoint Illuminator, and look into the eyepiece (Fig. 3).

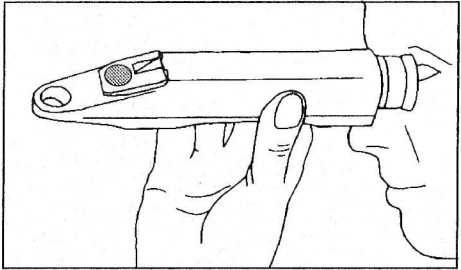


Figure 3

The coolant freeze point or battery charge reading is taken where the dark and light portions of the scale meet. Take the coolant reading on the right-hand scale, the battery charge reading on the left (Figure 4).

To obtain the best contrast between the light and dark portions of the scale, it may be necessary to use the ViewPoint Illuminator or tilt the instrument toward an external light source. If the edge between the light and dark shadow is not sharp, the measuring surface was not sufficiently clean and dry or there was not enough fluid on the measuring surface.

Clean the instrument according to the instructions in Section 2.0, and perform a new test.

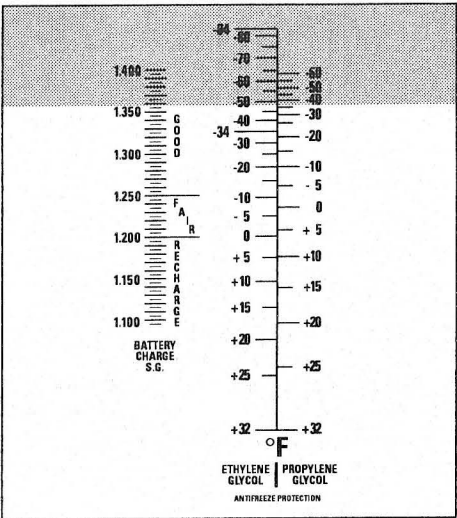


Figure 4.

5.0 Calibrating the Instrument

The Instrument is factory calibrated and sealed. The instrument will rarely, if ever, need adjustment.

To check adjustment, make sure that the temperature of the instrument is between 70° and 85°F (21° and 29°C) and take a reading with distilled water. If the reading departs from a 32°F (0°C) reading on the antifreeze protection scale, a correction can be made by adjusting the screw on the bottom of the instrument.

Remove the sealant covering the screw. Turn the screw in the direction necessary to adjust the reading to the 32°F (0°C) line. Never remove the screw from the instrument. Reseal the screw using silicone sealant.

6.0 Service

In the event your instrument needs service or certified calibration please send it shipping prepaid to:



6275 Cochran Road · Solon, OH 44139-3316 (USA)
Phone: 440-349-1500

7.0 Warranty

General Conditions of Warranty

All additions, alterations and exceptions to and/or waivers of the General Conditions of Warranty must be in writing and form an integral part of the offer and the contract of sale..

1. As promptly as possible upon receipt of the End User's notice in writing, Reichert Inc., hereinafter referred to as the Manufacturer, hereby undertakes, as it may see fit and at its sole discretion, either to replace or repair any parts of its Products which are or have become ascertainably defective or unserviceable due to poor materials, faulty design or deficient manufacture. All parts replaced shall become the Manufacturer's property.

2.1 This Warranty applies to the repair or replacement and recommissioning free of charge of defective or unserviceable parts, inclusive of the cost of transport, packing and insurance.

2.2 The Warranty period begins on the proved date of delivery to the End User or of commissioning the equipment, whichever is later, except that it shall begin not later than sixty days after the date of the Manufacturer's invoice.

3. The following warranty period shall apply:

PRODUCT NAME

**MISCO Glycol & Battery Testers
Model 7084VP & 7064VP**

WARRANTY PERIOD (12) Months

4. The Manufacturer's liability under Warranty shall not apply to damage due to normal wear and tear, improper use, inadequate maintenance, disregard of operating instructions, excessive load or stress or to any other cause not due or attributable to the Manufacturer. Except by the express prior agreement in writing, the Manufacturer shall not be liable under Warranty for damage due or attributable to repairs or alterations made by the End User or any unauthorized third party to Products under Warranty, or to the use of components or spare parts not specified or approved by the Manufacturer.

5. This Warranty expressly excludes transport damage; consumer items, such as batteries, accumulators, bulbs, and fuses; and adjustment or readjustment of the Products.

6. This Warranty expressly excludes any liability by the Manufacturer for consequential loss or damage on any grounds, such as (but not limited to) the non-availability to End User of the Products under Warranty or the need to repeat work processes.

7. For goods and components manufactured by any third party, the Manufacturer's liability under Warranty is expressly limited to the terms of the Warranty by the supplier for such goods and components.

8. The Manufacturer shall not be required to provide services under Warranty until and unless the End User has paid such part of the purchase price as bears a reasonable relation to the value of the defect complained of.

9. Place of performance for work under Warranty shall be the Manufacturer's registered office or the nearest authorized service center and for Products forming part of a fixed installation it shall be the site of such installation. The Manufacturer shall at its sole discretion decide the place of performance.

The Manufacturer shall have the right to charge for services under Warranty if the instrument's site is outside the End User's country.

10. This Warranty shall be interpreted in accordance with substantive U.S. law. The place of jurisdiction shall be the Manufacturer's registered office, except that the Manufacturer shall at its sole discretion also have the right to invoke the courts of law having jurisdiction at the End User's place of business.

¹1992 Annual Book of ASTM Standards, Volume 15.05 Engine Coolants; Halogenated Organic Solvents; Industrial Chemicals. Published as Practice D3321, "Standard Practice for Use of the Refractometer for Field Test Determination of the Freezing Point of Aqueous Engine Coolants." (Philadelphia, PA: American Society for Testing and Materials 1992, Section 9.1, 21, 107-109).

Due to a policy of continuous development, we reserve the right to change specifications without notice.