

# PORTABLE REFRACTOMETER OPERATING INSTRUCTIONS

## SERIES

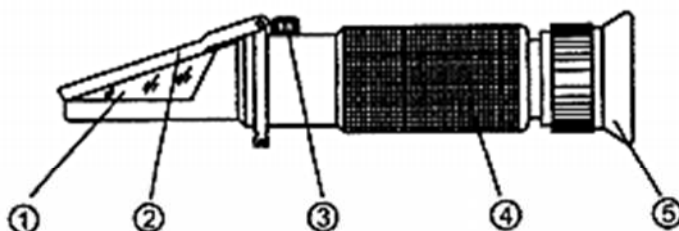
STYLE	MODEL	MEASURING RANGE	RESOLUTION	SIZE Ø×L	WEIGHT
	ORD/ATC				
Milk	FG-601/611	0~20%	0.2%	29×148mm	175g

Ordinary: If the condition temperature isn't 20°C, it need to adjust the zero for the measuring accuracy.

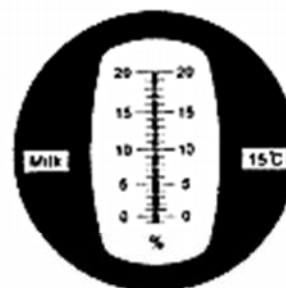
ATC(Automatic Temperature Compensation): The ATC device is a built-in type. Its compensation temperature range: 10°C~30°C

## NAME OF COMPONENTS

- 1.Prism 2.Cover plate 3.Correct screw 4.Mirror tube  
5.Eyepiece(Adjusting ring of diopter)



## DIALS



## USE:

The refractometer can be used for checking whether milk is added with water. The staff for sampling and inspecting does not need to send milk for inspection. Milk can be sampled and inspected on the spot in giving and collecting milk.

By using this new type refractometer, milk can be directly measured without the need of skimming of milk. Through corrective coefficient to optical system, vagueness caused by cream can be eliminated and checking results can be obtained directly from milk.

## Method of Operation:

For obtaining accurate results, the measurement should be performed at the environmental temperature. That is to say, the temperature of distilled water or milk before measuring should be the same as environmental temperature. The calibration temperature of the instrument is 15°C.

1. Adjustment of null (calibration procedure):  
Open the daylight plate. Drop one or two drops of distilled water on the prism. Close the daylight plate and press it lightly. Then adjust the calibration screw to make the white and blue boundary coincide with the null line.
2. Basic Operation: (The milk should be fresh not be cooked and should be mixed round equably.)  
(1). Operation in the same manner as calibration. Open the daylight plate and place 2-3 drops of sampled milk on the prism. Close the daylight plate so the milk spreads across the entire

surface of the prism without air bubbles or dry spots. Allow the sample to remain on the prism for approximately 30 seconds before step (2). This allows the sample to be adjusted to the ambient temperature.

(2). Point the prism into a direction of light source and look into the eyepiece. You will see a circular field with graduations in the center (you may have to focus the eyepiece to clearly see the graduation). The upper portion of the field should be blue and the lower field should be white.

(3). Take the look at the boundary line of the blue and white field across the graduation scales. The scale will provide a direct reading. Clean the prism carefully using a damp soft cloth. DO NOT immerse in water. Read warnings below carefully. Recalibration occasionally to maintain accuracy.

#### Calculation of measured results:

1. Firstly measure the water at the environmental temperature. Drop one or two drops of water on the prism, and then you can obtain the reading. If the white and the blue boundary is a little lower than scale 0%, the difference should be added to the measured results of milk. If the boundary line is a little higher than scale 0%, the difference should be subtracted from the measured results of milk.
2. If you want to know how much water is added to milk, you can use the following method to calculate. For instance:
  - For milk without added water, the reading of the instrument is 9 (1)
  - For milk with added water, the reading of the instrument is 7.8 (2)
  - Then  $(1) - (2) \times 11 = (9 - 7.8) \times 11 = 13.2$
  - The rate of the added water to milk is 13.2%
3. Above result can be calculated in advance, listed in table for reference. Then precision range of the rate of added water to milk by this method +/- 5%, which can be verified by sampling and inspection of milk on spot of cattle farm.

#### WARNINGS- MAINTENANCE

1. Accuracy of the instrument depends on careful calibration. Follow the instructions above closely. Note shifts in ambient temperature will necessitate recalibration and the sample must be allowed ample time to be adjusted to the temperature of the prism prior to measurement. The sample (specimen) and prism MUST be at the same temperature for accurate results. If the temperature varies greatly, the null point should be adjusted once per 30 minutes.
2. Do not expose this instrument to damp working conditions, and do not immerse in water. If the prism becomes foggy, water has entered the body.
3. Clean this unit between each use with a soft, damp cloth. Failure to clean the prism on a regular base will lead to inaccurate results and damage to the prism's coating.
4. 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 basis structure. With care, this unit will provide years of reliable service.
5. DO NOT measure abrasive or corrosive chemicals with this unit.