



## INSTRUCTION MANUAL

Q.C.- MASTER REFRACTOMETER

## MASTER-M

(Cat.No. 2313 Brix 0.0 ~ 33.0%)

## MASTER-2M

(Cat.No. 2323 Brix 28.0~ 62.0%)

## MASTER-3M

(Cat.No. 2333 Brix 58.0~ 90.0%)

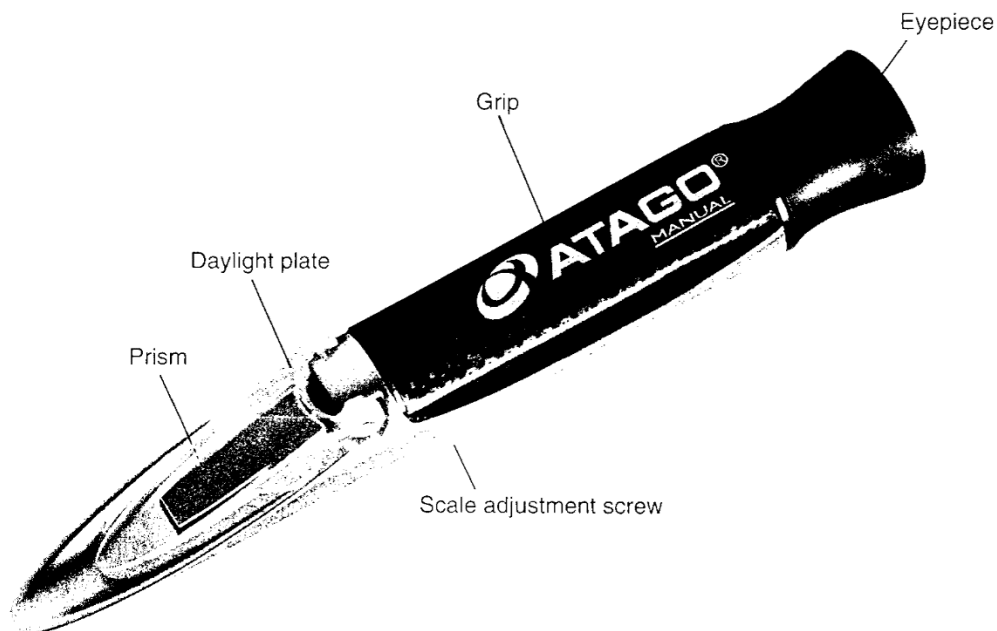
## MASTER-4M

(Cat.No. 2343 Brix 45.0~ 82.0%)

## MASTER-53M

(Cat.No. 2353 Brix 0.0~ 53.0%)

### 1. Names and functions of main parts



(The photo is MASTER-M.)

ATAGO instruments are rigorously inspected to ensure each unit meets the highest standards of quality assurance.

## PRECAUTIONS

(Be sure to read the following before use.)

### **Warning!**

When using this instrument to measure solutions which may be harmful to humans, please handle all materials carefully, using the proper gloves and mask. Please be aware of any special handling instructions for any harmful solution.

### **Caution**

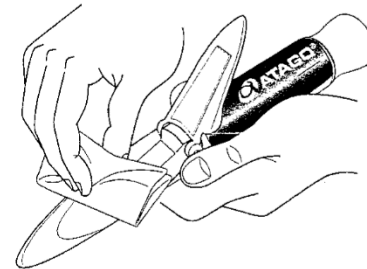
- Carefully read the instruction manual of this instrument to ensure proper use and operating methods.
- When handling and carrying this instrument, avoid dropping or subjecting to any strong shock or excessive force.
- If this instrument is used for any application other than its intended purpose, ATAGO will not be held liable for any damage caused by the use of or the measurement(s) obtained by the operator.
- ATAGO is not liable for any loss and damage caused by the measurement and use of this instrument.
- The prism is considered a consumable item and a charge will be incurred for the replacement of this part.
- All instruments received for repair are subject to a possible inspection fee. ATAGO does not warrant the problems which are caused by user's fault even though the unit is under warranty.

Temperature corrections for refractometric sucrose (dry substance) measurements at 589nm  
Reference temperature : 20°C

Temperature °C	Brix (%)																		
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	
	Subtract from the measured value																		
15	0.29	0.30	0.32	0.33	0.34	0.35	0.36	0.37	0.37	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.37	0.37	
16	0.24	0.25	0.26	0.27	0.28	0.28	0.29	0.30	0.30	0.30	0.31	0.31	0.31	0.31	0.31	0.30	0.30	0.30	
17	0.18	0.19	0.20	0.20	0.21	0.21	0.22	0.22	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.22	
18	0.12	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
19	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	
	Add to the measured value																		
21	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.07	
22	0.13	0.14	0.14	0.14	0.15	0.15	0.15	0.15	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	
23	0.20	0.21	0.21	0.22	0.22	0.23	0.23	0.23	0.23	0.24	0.24	0.24	0.24	0.24	0.23	0.23	0.23	0.22	
24	0.27	0.28	0.29	0.29	0.30	0.30	0.31	0.31	0.31	0.32	0.32	0.32	0.32	0.32	0.31	0.31	0.31	0.30	
25	0.34	0.35	0.36	0.37	0.38	0.38	0.39	0.39	0.40	0.40	0.40	0.40	0.40	0.40	0.39	0.39	0.38	0.37	
26	0.42	0.43	0.44	0.45	0.46	0.46	0.47	0.47	0.48	0.48	0.48	0.48	0.48	0.48	0.47	0.47	0.46	0.45	
27	0.50	0.51	0.52	0.53	0.54	0.55	0.55	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.55	0.55	0.54	0.52	
28	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.64	0.64	0.65	0.65	0.64	0.64	0.64	0.63	0.63	0.62	0.61	
29	0.66	0.67	0.68	0.70	0.71	0.71	0.72	0.73	0.73	0.73	0.73	0.73	0.72	0.72	0.71	0.70	0.69	0.67	
30	0.74	0.76	0.77	0.78	0.79	0.80	0.81	0.81	0.82	0.82	0.81	0.81	0.80	0.80	0.79	0.78	0.76	0.75	
31	0.83	0.84	0.85	0.87	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.89	0.89	0.88	0.87	0.86	0.84	0.82	
32	0.92	0.93	0.94	0.96	0.97	0.98	0.98	0.99	0.99	0.99	0.99	0.98	0.97	0.96	0.95	0.93	0.92	0.90	
33	1.01	1.02	1.03	1.05	1.06	1.07	1.07	1.08	1.08	1.08	1.07	1.07	1.06	1.04	1.03	1.01	1.00	0.98	
34	1.10	1.11	1.13	1.14	1.15	1.16	1.16	1.17	1.17	1.16	1.16	1.15	1.14	1.13	1.11	1.09	1.07	1.05	
35	1.19	1.21	1.22	1.23	1.24	1.25	1.25	1.26	1.26	1.25	1.25	1.24	1.23	1.21	1.19	1.17	1.15	1.13	
36	1.29	1.30	1.31	1.33	1.34	1.34	1.35	1.35	1.35	1.34	1.34	1.33	1.31	1.29	1.28	1.25	1.23	1.20	
37	1.39	1.40	1.41	1.42	1.43	1.44	1.44	1.44	1.44	1.43	1.43	1.41	1.40	1.38	1.36	1.33	1.31	1.28	
38	1.49	1.50	1.51	1.52	1.53	1.53	1.54	1.54	1.53	1.53	1.52	1.50	1.48	1.46	1.44	1.42	1.39	1.36	
39	1.59	1.60	1.61	1.62	1.63	1.63	1.63	1.63	1.63	1.62	1.61	1.59	1.57	1.55	1.52	1.50	1.47	1.43	
40	1.69	1.70	1.71	1.72	1.73	1.73	1.73	1.73	1.72	1.71	1.70	1.68	1.66	1.63	1.61	1.58	1.54	1.51	

## 7. Precautions

- ① Store the refractometer, in its carrying case, in a dry place, (0 to 40 °C).
- ② Do not leave the refractometer in direct sunshine.
- ③ Hold the refractometer between your fingers. Do not wrap your hand around the grip.
- ④ When the sample is turbid or colored, the field of vision darkens and the boundary line may become unclear or completely disappear. In such cases, a stronger light source such as direct sunlight or bright light from a microscope will be more effective for better viewing.
- ⑤ Never splash water on the unit.
- ⑥ Wipe the sample off with a wet tissue.
- ⑦ The refractometer is a precise and sensitive optical instrument. Do not drop or subject to strong shock or excessive force.
- ⑧ Be careful to not scratch the prism surface. After use, clean the prism surface and daylight plate with a soft cloth soaked in water and wipe the moisture off with a dry cloth.
- ⑨ The prism and daylight plate should be completely clean before sampling. If the refractometer is used to measure an oil base or similar type sample, a residue or film may be left on the prism. In this situation, wipe the prism surface with ethyl alcohol to clean off any remaining sample.



※After each measurement, wipe the sample off the prism, daylight plate, and around the prism area with a soft moist tissue.

## 8. Specifications

	MASTER-M (Cat.No.2313)	MASTER-2M (Cat.No.2323)	MASTER-3M (Cat.No.2333)	MASTER-4M (Cat.No.2343)	MASTER-53M (Cat.No.2353)
Measurement range	Brix 0.0~33.0%	Brix 28.0~62.0%	Brix 58.0~90.0%	Brix 45.0~82.0%	Brix 0.0~53.0%
Minimum scale	Brix 0.2%				Brix 0.5%
Size and weight	3.3 × 3.3 × 20.4cm, 160g		3.3 × 3.3 × 16.8cm, 120g		

— When the scale cannot be read clearly!?

If the view of the scale area cannot be read clearly due to dirt, carefully wipe the lens clean with a dry tissue. If moisture has collected inside on the scale area, keep the refractometer in a dry, warm place to dry out the instrument.