

# VEE GEE Temperature Correction Table

For Refractometers Calibrated At 20°C (λ=589nm)

As an alternative to recalibration of the refractometer due to ambient temperature changes, the following temperature correction table can be used. Ensuring that both the distilled water and the ambient temperature are both at exactly 20°C, follow steps 2-7 under the CALIBRATION section on the preceding page. Once this is accomplished, if ambient temperature changes, simply apply the temperature correction values listed below. For example, a reading of Brix 40.0% at 25°C is corrected to Brix 40.4%; a reading of Brix 65.0% at 10°C is corrected to Brix 64.25%.

		Brix%																(-) SUBTRACT Value From Reading		
		0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75		80	85
Temperature °C	10	0.53	0.56	0.59	0.62	0.65	0.67	0.69	0.71	0.72	0.73	0.74	0.75	0.75	0.75	0.75	0.75	0.74	0.73	(-) SUBTRACT Value From Reading
	11	0.49	0.52	0.54	0.57	0.59	0.61	0.63	0.64	0.65	0.66	0.67	0.68	0.68	0.68	0.68	0.67	0.67	0.66	(-) SUBTRACT Value From Reading
	12	0.44	0.47	0.49	0.51	0.53	0.55	0.56	0.57	0.58	0.59	0.60	0.60	0.61	0.61	0.60	0.60	0.60	0.59	(-) SUBTRACT Value From Reading
	13	0.40	0.41	0.43	0.45	0.47	0.48	0.50	0.51	0.52	0.52	0.53	0.53	0.53	0.53	0.53	0.53	0.52	0.52	(-) SUBTRACT Value From Reading
	14	0.34	0.36	0.38	0.39	0.40	0.42	0.43	0.44	0.44	0.45	0.45	0.46	0.46	0.46	0.46	0.45	0.45	0.44	(-) SUBTRACT Value From Reading
	15	0.29	0.31	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	0.37	0.37	0.37	(-) SUBTRACT Value From Reading
	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	(-) SUBTRACT Value From Reading
	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	(-) SUBTRACT Value From Reading
	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	(-) SUBTRACT Value From Reading
	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	0.08	(-) SUBTRACT Value From Reading
	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	(+) ADD Value To Reading
	22	0.13	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	0.15	(+) ADD Value To Reading
	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	0.23	0.23	0.23	0.23	0.22	(+) ADD Value To Reading
	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	0.31	0.31	0.31	0.30	0.30	(+) ADD Value To Reading
	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	0.39	0.39	0.39	0.38	0.37	(+) ADD Value To Reading
	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	0.47	0.47	0.46	0.46	0.45	(+) ADD Value To Reading
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	0.55	0.55	0.54	0.53	0.52	0.52	(+) ADD Value To Reading	
28	0.58	0.59	0.60	0.61	0.62	0.63	0.64	0.64	0.65	0.65	0.64	0.64	0.64	0.63	0.62	0.61	0.60	0.60	(+) ADD Value To Reading	
29	0.66	0.67	0.68	0.69	0.70	0.71	0.72	0.73	0.73	0.73	0.73	0.73	0.72	0.72	0.71	0.70	0.69	0.68	(+) ADD Value To Reading	
30	0.74	0.75	0.77	0.78	0.79	0.80	0.81	0.81	0.82	0.81	0.81	0.81	0.81	0.80	0.79	0.78	0.77	0.75	(+) ADD Value To Reading	
31	0.83	0.84	0.85	0.87	0.88	0.89	0.89	0.90	0.90	0.90	0.90	0.90	0.89	0.88	0.87	0.86	0.84	0.83	(+) ADD Value To Reading	
32	0.91	0.93	0.94	0.95	0.96	0.97	0.98	0.99	0.99	0.99	0.99	0.98	0.97	0.96	0.95	0.94	0.92	0.90	(+) ADD Value To Reading	
33	1.00	1.02	1.03	1.04	1.05	1.06	1.07	1.08	1.08	1.08	1.07	1.07	1.06	1.05	1.03	1.02	1.00	0.98	(+) ADD Value To Reading	
34	1.10	1.11	1.12	1.13	1.15	1.15	1.16	1.17	1.17	1.16	1.16	1.15	1.14	1.13	1.12	1.10	1.08	1.06	(+) ADD Value To Reading	
35	1.19	1.20	1.22	1.23	1.24	1.25	1.25	1.26	1.26	1.25	1.25	1.24	1.23	1.21	1.20	1.18	1.16	1.13	(+) ADD Value To Reading	
36	1.29	1.30	1.31	1.32	1.33	1.34	1.35	1.35	1.35	1.35	1.34	1.33	1.32	1.30	1.28	1.26	1.24	1.22	(+) ADD Value To Reading	
37	1.38	1.40	1.41	1.42	1.43	1.44	1.44	1.44	1.44	1.43	1.42	1.40	1.38	1.36	1.34	1.32	1.29	1.29	(+) ADD Value To Reading	
38	1.48	1.50	1.51	1.52	1.53	1.53	1.54	1.54	1.53	1.53	1.52	1.51	1.49	1.47	1.45	1.42	1.39	1.36	(+) ADD Value To Reading	
39	1.59	1.60	1.61	1.62	1.62	1.63	1.63	1.63	1.63	1.62	1.61	1.60	1.58	1.56	1.53	1.50	1.47	1.44	(+) ADD Value To Reading	
40	1.69	1.70	1.71	1.72	1.72	1.73	1.73	1.73	1.72	1.71	1.70	1.69	1.67	1.64	1.62	1.59	1.55	1.52	(+) ADD Value To Reading	

Source: ICUMSA, 1974

## VEE GEE Specifications

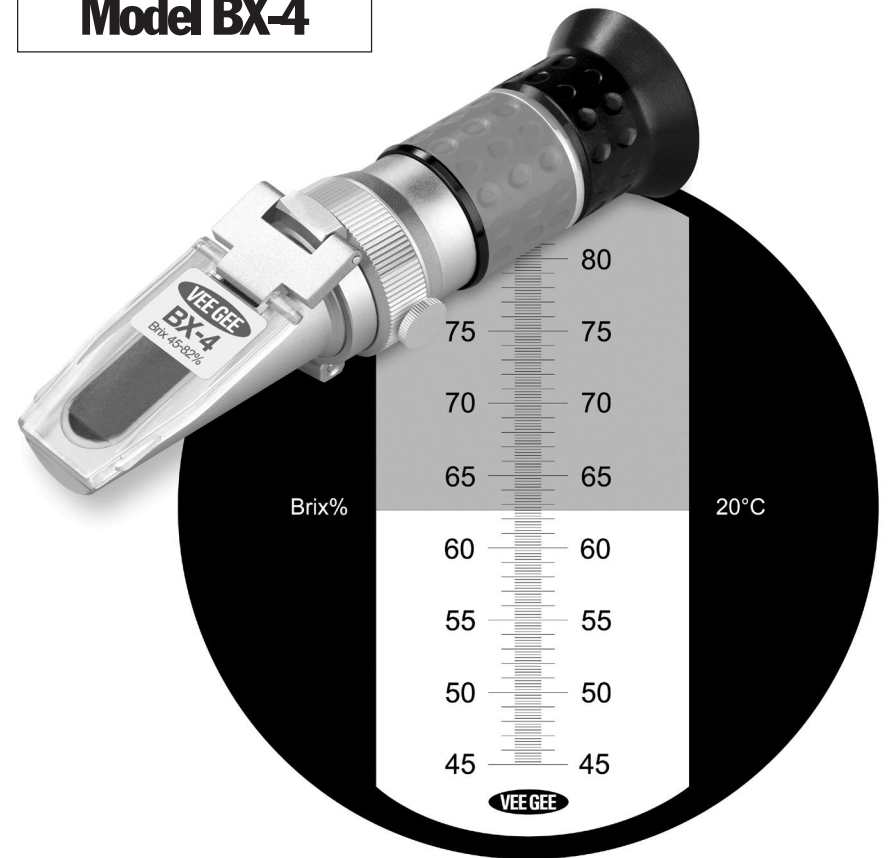
- Range:** Brix 45.0-82.0%
- Resolution:** 0.2%
- Accuracy:** ±0.2%
- Dimensions:** 40 x 40 x 140mm (1.6 x 1.6 x 5.5")
- Weight:** 230g (8.1 oz.)
- Supplied With:** Vinyl Carrying Case (1), Plastic Transfer Pipet (1)
- Optional Oil Standards:** Brix 60.0%, ¼ oz. Bottle (cat. no. 45000-OS025)



Warranty information and registration form can be found at: [www.veege.com/service\\_support](http://www.veege.com/service_support)



## Operation Manual Model BX-4



Brix 45-82%

## VEE GEE Introduction

Thank you for purchasing this VEE GEE Refractometer. With the user in mind, VEE GEE Refractometers are built from modern designs and, with proper care, this instrument should provide many years of reliable performance. It's recommended this manual is read entirely before using the refractometer for the first time.

## VEE GEE Refractometer Components

### Rubber Hood

Houses and protects the focusable lens. Prevents light from entering through the eyepiece during use.

### Calibration Ring

Mechanism used to zero or calibrate the refractometer, without the requirement of additional tools.

### Rubber Grip

Insulates the refractometer against hand heat for accurate results.

### Calibration Ring Set Screw

Secures the calibration ring in place to protect from any shifts which could occur during use.

### Non-Roll Stand

Protects against damage to the instrument when set down between measurements.

### Daylight Plate & Prism

The prism and sample are covered by the daylight plate during readings.

## VEE GEE Precautions

- ⚠ This refractometer is an optical instrument -- it can become damaged if dropped or handled in a rough manner.
- ⚠ The prism is made of optical glass and is susceptible to scratches -- do not apply any rough or abrasive material and take care when cleaning the prism.
- ⚠ After each use, clean the prism surface and daylight plate with a soft cloth or tissue soaked in water and wipe off with a dry cloth or tissue.
- ⚠ Do not hold the refractometer under a stream of water from a faucet. Do not splash it with or dip it in water.
- ⚠ If the surface of the prism becomes coated with an oily solution or similar, it will repel test samples and affect readings. If this occurs, the prism should be cleaned with a weakened detergent or similar solvent.

## VEE GEE Calibration

- 1 Calibration should be conducted at the start of each day or when any shifts in ambient temperature occur. If recalibration is impractical, refer to the directions and temperature correction table on the following page. For standard calibration procedures, please follow the directions below.
- 2 Open the daylight plate and apply one or two drops of a liquid standard on to the surface of the prism [a **Brix 60.0%** oil standard is used for this example. A prepared sucrose solution (weight of sucrose vs. distilled water) of a known concentration (minimum Brix 45.0%) may also be used for calibration purposes]. Hold the prism at an angle close to parallel with the floor so the liquid standard will not run off of the prism.
- 3 Gently close the daylight plate over the prism. The liquid standard should spread as a thin, even layer in between the daylight plate and the prism. By looking through the daylight plate, ensure that the liquid standard covers the ENTIRE surface of the prism. If there are bubbles and gaps or if the liquid standard is only on one portion of the prism, the liquid standard must be reapplied (Figure 1). Inaccurate calibrations will result if the prism is not covered correctly.
- 4 Looking through the eyepiece, hold the refractometer and direct the daylight plate upwards towards light. If the scale is not in focus, adjust it by gently turning the eyepiece (rubber hood) either clockwise or counterclockwise. Be careful not to overturn the focusing mechanism.
- 5 When the refractometer scale is viewed through the eyepiece, the upper field of view will be seen as blue and the lower field will be seen as white (Figure 2). Confirm that the boundary line crosses the scale at "60" (or the value of the liquid standard being used) (Figure 3).
- 6 If the boundary line falls above or below "60", gently loosen the set screw on the calibration ring. While looking through the eyepiece, gently turn the calibration ring clockwise or counterclockwise until the boundary line is at "60." Once this is achieved gently tighten down the set screw. (NOTE: Do not over-tighten. If the set screw is over-tightened, the boundary line may shift slightly).
- 7 When calibration is complete, gently wipe the prism using tissue paper.

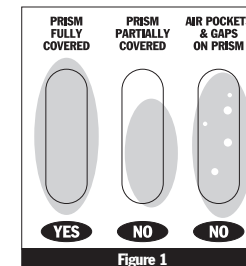


Figure 1

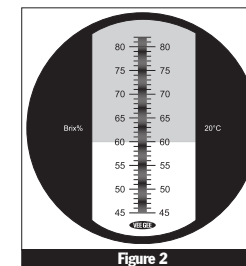


Figure 2

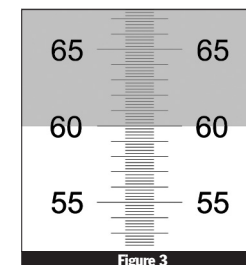


Figure 3

## VEE GEE General Use

- 1 Open the daylight plate and apply one or two drops of the sample solution to the surface of the prism. Hold the prism at an angle close to parallel with the floor so the sample will not run off of the prism.
- 2 Gently close the daylight plate over the prism. The sample solution should spread as a thin, even layer in between the daylight plate and the prism. By looking through the daylight plate, ensure that the sample solution covers the ENTIRE surface of the prism. If there are bubbles and gaps or if the sample is only on one portion of the prism, the sample solution must be reapplied (Figure 1). Inaccurate readings will result if the prism is not covered correctly.
- 3 Looking through the eyepiece, hold the refractometer and direct the daylight plate upwards towards light. If the scale is not in focus, adjust it by gently turning the eyepiece (rubber hood) either clockwise or counterclockwise. Be careful not to overturn the focusing mechanism.
- 4 When the refractometer scale is viewed through the eyepiece, the upper field of view will be seen as blue and the lower field will be seen as white (Figure 4). The reading is taken at the point where the boundary line of the blue and white fields crosses the scale (Figure 5). The value is the Brix% reading of the sample.
- 5 When each measurement is complete, the sample must be cleaned from the prism using tissue paper and water.

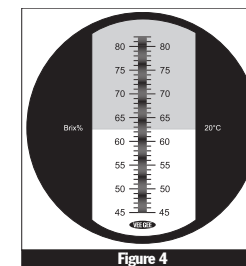


Figure 4

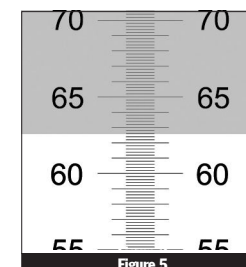


Figure 5