Components:

#130-85-07	Carrying Case
#134-03	Lower Bearing
#163-27	Medium Clip

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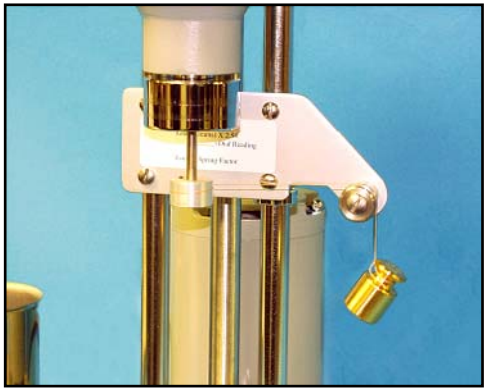

Calibration Kit for 6-Speed Viscometers

Item# 130-45

Instruction Manual

Updated 6/1/2009
Ver. 1.3

OFI Testing Equipment, Inc.

Introduction:

The 130-45 Calibration Kit is provided for checking the calibration of 6-Speed Viscometers. It functions by applying a known amount of torque to the bob shaft. For any applied torque, within the given torque range of the spring, there should be a specific dial reading plus a small tolerance. Loss of calibration while in service can occur if the bob shaft bearings become contaminated or if the bob shaft is bent.

Periodic calibration checks are highly advisable. The primary purpose for this procedure is to check the calibration of the instrument. If the dial does not read zero when it should, or if there is excessive dial deflection when the main shaft is turning, then the bob shaft bearings are probably sticking. If the spring appears to be non-linear, the bob shaft may be bent. An instrument showing these characteristics will need servicing.

Procedure:

1. Place the viscometer on a level surface and with the rotor turning in air, check the dial reading. It should read zero, but a deflection of ± 1/2° is acceptable.

2. Remove the rotor and the bob. To remove the bob, rotate it in the direction of a negative dial reading, until it comes to a stop. Gently turn the bob on the shaft and pull straight down.

3. Check the tapered end of the bob shaft to make sure it is clean, and then install the calibrating spool provided in the kit.

4. Install the calibrating fixture by clamping it to the upper portion of the viscometer support legs.

5. Each of the calibrating weights has a thread attached with a bead at the end of the thread. Select a weight according to the enclosed table, and insert the bead into the recess in the top of the calibrating spool. Wrap the thread at least one turn around the spool, and then drape the thread over the pulley. Be careful that the turns of the thread around the spool do not overlap.

6. Adjust the calibrating fixture up or down until the thread from the spool to the pulley is horizontal.

7. If the instrument has an F-1 standard torsion spring, the following should be observed;

Weight, grams	Dial Reading	Tolerance
10	25.4	1/2°
20	50.8	1/2°
50	127.0	1-1/2°

A deflection of ±1/2° is permissible when operating in air, as this will be damped out when a fluid is being tested.

Dial Deflections with Various Calibrating Weights and Torsion Spring Assemblies:

Torsion Spring Assembly	Color Code	Torsion Spring Constant, (K1) (dyne-cm/deg. defl.)	Weight in Grams 10	20	50	100	200
F-0.2	Green	77.2	127.0	254.0	-	-	-
F-0.5	Yellow	193.0	50.8	101.6	254.0	-	-
F-1	Blue	386.0	25.4	50.8	127.0	254.0	-
F-2	Red	772.0	-	25.4	63.5	127.0	254.0
F-3	Purple	1158.0	-	-	43.0	84.7	169.4
F-4	White	1544.0	-	-	-	63.5	127.0
F-5	Black	1930.0	-	-	-	50.8	101.6
F-10	Orange	3860.0	-	-	-	-	50.8

Calculation:

Torsion Spring Constant, $K_1 = \frac{W\ g\ R}{X}$

K_1 = Torsion Spring Constant in dyne-cm per degree deflection

W = Weight in grams

g = 980.665 cm, sec^{-2} (usually rounded off to 981)

R = Radius of the spool = 1.0 cm

X = Viscometer reading in degrees

Example:

For the F-1 torsion spring assembly, the torsion spring constant, K_1, is 386 dyne-cm per degree deflection. Using the 50 gram calibration weight we have:

$$386 = \frac{50 \times 980.665 \times 1.0}{X}$$

X = 127° (degrees) deflection