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Fowler 52-085-040-0

Fowler 52-085-040-0 Master Vernier Caliper Instruction Manual

Model: 52-085-040-0 | Brand: Fowler

1. Product Overview

The Fowler 52-085-040-0 Master Vernier Caliper is a precision measuring instrument designed for accurate measurements in both inch and metric units. It features a 0.001 inch / 0.02 mm graduation and bi-directional jaws for versatile measurement applications.

Key Features:

- Measures internal (ID) and external (OD) dimensions of holes, grooves, and tube thickness.
- Long jaws provide access to hard-to-reach areas and enhance accuracy over a long measuring range.
- Open-face design allows both inch and metric vernier scales to be positioned on one side for convenience.
- Fine adjustment screw for precise positioning.
- Locking screw to secure measurements.
- Extra-long vernier for enhanced accuracy.
- Sharp black graduations and widely spaced fine graduations on a satin chrome finished beam for improved readability.
- Raised slide surfaces prevent wear of graduations, ensuring accuracy and long life.
- Adjustable vernier for wear compensation over time.
- Ground and lapped measuring faces for accuracy and wear resistance.
- Hardened stainless steel construction for durability.
- Supplied with a fitted case for protection and storage.

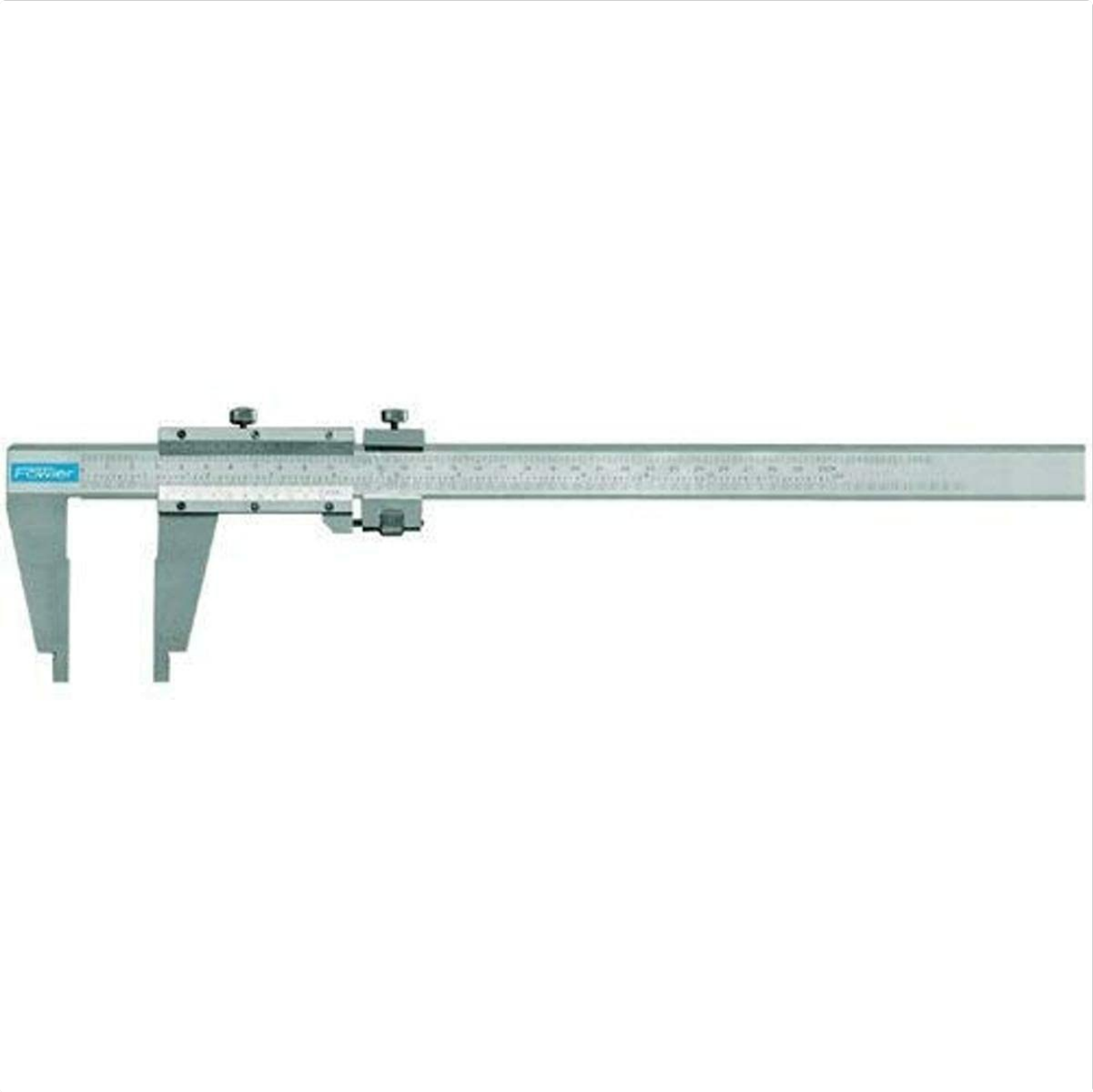

Figure 1: The Fowler 52-085-040-0 Master Vernier Caliper. This image shows the full length of the caliper with its main beam, sliding jaw, and measurement scales.

2. Setup

1. **Unpacking:** Carefully remove the caliper from its fitted case. Inspect the instrument for any signs of damage during transit.
2. **Cleaning:** Before first use, gently wipe all measuring surfaces and the beam with a clean, lint-free cloth. A small amount of instrument cleaning oil can be used if necessary, then wiped dry. Ensure no dust or debris is present on the measuring faces or scales.
3. **Initial Check:** Close the jaws completely. The zero mark on the vernier scale should align perfectly with the zero mark on the main scale. If there is a slight misalignment, this is known as zero error. While vernier calipers are generally robust, significant zero error may indicate damage or require professional calibration.
4. **Familiarization:** Slide the movable jaw along the main beam to feel the movement. Use the fine adjustment screw to observe its effect on precise positioning. Practice engaging and disengaging the locking screw.

3. Operating Instructions

The Fowler Master Vernier Caliper allows for three primary types of measurements: external, internal, and step measurements.

3.1. External Measurement (Outer Diameter - OD)

1. Open the main jaws of the caliper wider than the object to be measured.
2. Place the object between the main jaws.
3. Gently close the jaws until they make firm contact with the object. Avoid excessive force, which can deform the object or the caliper.
4. Use the fine adjustment screw for precise contact.
5. Engage the locking screw to hold the jaws in position.
6. Carefully remove the caliper from the object and proceed to read the measurement.

3.2. Internal Measurement (Inner Diameter - ID)

1. Close the small upper jaws of the caliper and insert them into the opening to be measured.
2. Open the jaws until they make firm contact with the internal surfaces of the object.
3. Use the fine adjustment screw for precise contact.
4. Engage the locking screw.
5. Carefully remove the caliper and read the measurement.

3.3. Step Measurement

1. Place the end of the main beam on the upper surface of the step.
2. Slide the movable jaw downwards until the end of the jaw makes contact with the lower surface of the step.
3. Use the fine adjustment screw for precise contact.
4. Engage the locking screw.
5. Read the measurement.

3.4. Reading the Vernier Caliper

The Fowler 52-085-040-0 features both inch and metric scales. The reading process involves two steps:

1. **Main Scale Reading:** Identify the last whole unit (inch or millimeter) on the main scale that the zero mark of the vernier scale has passed. This gives the primary part of your measurement.
2. **Vernier Scale Reading:** Find the mark on the vernier scale that aligns perfectly with any mark on the main scale. Multiply this vernier scale reading by the caliper's least count (0.001 inch or 0.02 mm).
3. **Total Measurement:** Add the main scale reading and the vernier scale reading to get the total measurement.

Example: If the zero mark on the vernier scale is past 1.2 inches on the main scale, and the 5th mark on the vernier scale aligns with a main scale mark, the reading would be 1.2 + (5 * 0.001) = 1.205 inches.

4. Maintenance

- **Cleaning:** After each use, wipe the caliper clean with a soft, lint-free cloth to remove any dirt, oil, or moisture. For stubborn grime, use a mild cleaning solution specifically designed for precision instruments, then dry thoroughly.
- **Lubrication:** Periodically apply a thin film of light instrument oil to the sliding surfaces of the beam to ensure smooth movement and prevent corrosion. Wipe off any excess oil.

- **Storage:** Always store the caliper in its fitted case when not in use. This protects it from dust, impacts, and environmental factors that could affect its accuracy. Store in a dry, temperature-controlled environment.
- **Wear Adjustment:** The vernier can be adjusted over time to compensate for wear on the measuring faces. This adjustment should be performed by a qualified technician or according to specific instructions if provided with the tool. Improper adjustment can lead to inaccuracies.
- **Inspection:** Regularly inspect the measuring faces for nicks, burrs, or wear. Check the scales for clarity and ensure the locking screw and fine adjustment mechanism operate smoothly.

5. Troubleshooting

Problem	Possible Cause	Solution
Inaccurate readings	Dirt or debris on measuring faces/beam Improper technique (e.g., excessive force) Zero error Wear on measuring faces	Clean the caliper thoroughly. Ensure gentle, firm contact with the object. Check for zero alignment; if significant, consider professional calibration. Inspect for wear; if severe, consider adjustment or replacement.
Stiff or jerky slide movement	Lack of lubrication Dirt or corrosion on the beam Damage to the sliding mechanism	Clean the beam and apply a thin film of instrument oil. Clean the beam thoroughly to remove any foreign particles. If movement remains stiff after cleaning and lubrication, contact support.
Locking screw not holding position	Loose screw mechanism Worn locking pad	Tighten the locking screw firmly. If the issue persists, the locking mechanism may require service. Contact support.

6. Specifications

Feature	Detail
Model Number	52-085-040-0
Brand	Fowler (Fred V. Fowler Company, Inc.)
Measurement Range	0-40 inches / 0-1000 mm
Graduation	0.001 inch / 0.02 mm
Material	Hardened Stainless Steel
Finish	Satin Chrome
Product Weight	6.8 Kilograms
Package Dimensions	137.16 x 34.29 x 20.32 cm
Batteries Required	No
UPC	646795102149

7. Warranty and Support

The Fowler 52-085-040-0 Master Vernier Caliper is backed by a **1-year warranty** provided by Fowler High Precision.
For any product issues, technical assistance, or warranty claims, please contact Fowler directly. Their headquarters are located in Newton, Massachusetts, USA.
For contact information, please refer to the official Fowler High Precision website or product packaging.