Micrometers

Learning to Read a Micrometer – Quickly, Efficiently and Accurately

Click Here for Answer Sheet
Automotive Measuring

The two measuring systems used in the Automotive Repair Industry are:

- The U.S. Customary Units System (Standard)
- The Metric System
Some of the Measuring Tools Used in Automotive Repair

- Steel Rule
- Dividers
- Calipers
- Micrometer
- Feeler Gauges
- Dial Indicators
- Temperature gauges/Thermometers
- Torque Wrenches
- Tape Measure
- Tire gauge
- Pressure Gauges
- Vacuum Gauge
Some of the Values Measured

- Length: Inches (in), foot (ft), millimeter (mm)
- Pressure: Pounds per square inch (psi)
- Power: Horsepower (hp)
- Torque: Foot-pound (ft-lb), Newton-meter (N-m)
- Volume: Quart (qt), liter (L)
- Mass: Ounce (oz), pound (lb), gram (g)
- Speed: Miles (kilometers) per hour (mph/kph)
- Temperature: Degrees Fahrenheit/Celsius
The Micrometer

- Used to make very accurate measurements
- Can measure up to one-thousandth of an inch (0.001)
There Are Several Types of Micrometers

- Outside: For outside dimensions
- Inside: For internal measurements
- Depth: Measure the depth of an opening
- Telescoping: Measure internal bores
- Hole: Measuring very small holes
Micrometer Rules

- Never drop or overtighten a micrometer
- Safely store where they cannot be damaged
- Grasp the micrometer frame in your palm and turn the thimble with your thumb and finger
- Hold the mic squarely with the work or false readings will result
- Always check the accuracy of a mic with a gauge block if it has been dropped or not used for a long time
Holding a Micrometer
Securely

Grasp the micrometer frame in your palm and turn the thimble with your thumb and finger.
The Parts of a Micrometer

- Frame
- Spindle
- Thimble
- Anvil
- Measuring Faces
- Barrel
To read a Micrometer...

- First, read the **Barrel Number**
- Second, read the **Sleeve Graduations**
- Finally, read the **Thimble Number**
- Add these **Three Readings** together to obtain the correct reading

To best way to practice using a micrometer is to measure the thickness of a feeler gauge blade
Reading a Micrometer

Equals 0.100
Equals 0.200
Equals 0.300
Equals 0.400

Each number on the barrel = 0.100

Each graduation line is equal to 0.025

Graduation lines
Reading the Barrel

Note the largest number visible on the micrometer barrel. Each number equals 0.010” (2 = 0.200, 3 = 0.300, 4 = 0.400. What would 9 = _____?
Reading the Barrel

Equals 0.100
Equals 0.200
Equals 0.300
Equals 0.400

9 = 0.900
Count the number of graduation lines to the right of the barrel number. Each full sleeve graduation equals 0.025 (2 full lines = 0.050, 3 = 0.075)
Reading the Thimble

Note the thimble graduation aligned with the **Horizontal Sleeve Line**. Each thimble graduation equals 0.001. The number 1 = 0.001, 2 = 0.002, 12 = 0.012, 13 0.013

15 = 0.015
14 = 0.014
13 = 0.013
12 = 0.012
11 = 0.011
10 = ?
Reading the Thimble

Note the thimble graduation aligned with the **Horizontal Sleeve Line**. Each thimble graduation equals 0.001. The number 1 = 0.001, 2 = 0.002, 12 = 0.012, 13 0.013

**Horizontal Sleeve Line**

10 = 0.010
11 = 0.011
12 = 0.012
13 = 0.013
14 = 0.014
15 = 0.015
Reading a Micrometer

What is the largest number visible on the micrometer barrel? 7

How many graduation lines to the right of the sleeve number? 1

What is the thimble graduation aligned with the Horizontal sleeve line? 0
What is the Reading?

<table>
<thead>
<tr>
<th>Value</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>0.700</td>
</tr>
<tr>
<td>1</td>
<td>0.025</td>
</tr>
<tr>
<td>0</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Total 0.725

The correct answer is 0.725!
What is the reading?

Barrel sleeve number? 1 = 0.100
Graduation lines? 3 = 0.075
Thimble graduations? 4 = 0.004
The correct answer?
What is the reading?

Barrel sleeve number? 1 = 0.100
Graduation lines? 3 = 0.075
Thimble graduations? 4 = 0.004
The correct answer? .179
What is the Reading?

What is the **largest number** visible on the **micrometer barrel**? How many **graduation lines** to the right of the sleeve number? What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings…

The correct reading is:
What is the largest number visible on the micrometer barrel?
How many graduation lines to the right of the sleeve number?
What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: .302
What is the largest number visible on the micrometer barrel?

How many graduation lines to the right of the sleeve number?

What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is:
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.022
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is:
What is the **largest number** visible on the **micrometer barrel**?
How many **graduation lines** to the right of the sleeve number?
What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.560
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings...

The correct reading is: ☐
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.725
What is the largest number visible on the micrometer barrel?
How many graduation lines to the right of the sleeve number?
What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is:
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.873
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings...

The correct reading is:
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.262
What is the Reading?

What is the \textbf{largest number} visible on the \textit{micrometer barrel}? How many \textbf{graduation lines} to the right of the sleeve number? What is the \textbf{thimble graduation} aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 

33
What is the Reading?

What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.091
What is the **largest number** visible on the **micrometer barrel**? How many **graduation lines** to the right of the sleeve number? What is the **thimble graduation** aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: [Add]
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.353
What is the Reading?

What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is:  

Measuring face
What is the largest number visible on the micrometer barrel? How many graduation lines to the right of the sleeve number? What is the thimble graduation aligned with the horizontal sleeve line? Add the three readings…

The correct reading is: 0.467
Review:
The Parts of a Micrometer
Review: The Parts of a Micrometer

- Frame
- Thimble
- Anvil
- Measuring Faces
- Barrel
- Spindle
Remember: To Read a Micrometer…

- **First**, read the **Barrel Number**
- **Second**, read the **Sleeve Graduations**
- **Finally**, read the **Thimble Number**

Add these **three readings** together to obtain the correct reading.

To best way to practice using a micrometer is to measure the thickness of a feeler gauge blade.