

GAGEMAKER

IT-5100

Internal Diameter Gage

OPERATION MANUAL



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Congratulations! Your decision to purchase a Gagemaker product above all others on the market demonstrates your confidence in our quality and workmanship.

To ensure the high performance and operation of our product, we urge you to use the included reference materials. They contain important information for proper setup and use of the equipment. Also, we recommend that you follow the care and maintenance tips in this manual to keep the equipment working in top condition.

If your questions have not been addressed in our reference materials, contact your local representative or a customer service representative at 713-472-7360.

Introduction

The IT-5100 Series of internal diameter gages are suitable for many different applications whether measuring straight bore diameters or inspecting for taper in threaded connectors. These gages adapt quickly through the use of interchangeable contact points and a quick release lower arm ensures that the gage is securely positioned when taking measurements.

Before inspecting straight diameters, the IT-5100 gages must be preset to a nominal predetermined dimension, using gage blocks, a cylindrical ring gage, or any precision ground master.

Inspecting straight diameters only requires inserting the IT-5100 gage into the part and sweeping in both directions for the smallest indicator reading. To inspect tapered threads, the contact points are placed in the threads of the part and the gage is properly positioned by sweeping to obtain the largest indicator reading. Taking measurements in several different locations along the entire length of the thread will detect any variations in taper. To maintain accurate readings during use, we also recommended periodically zeroing the gage.

Technical Support

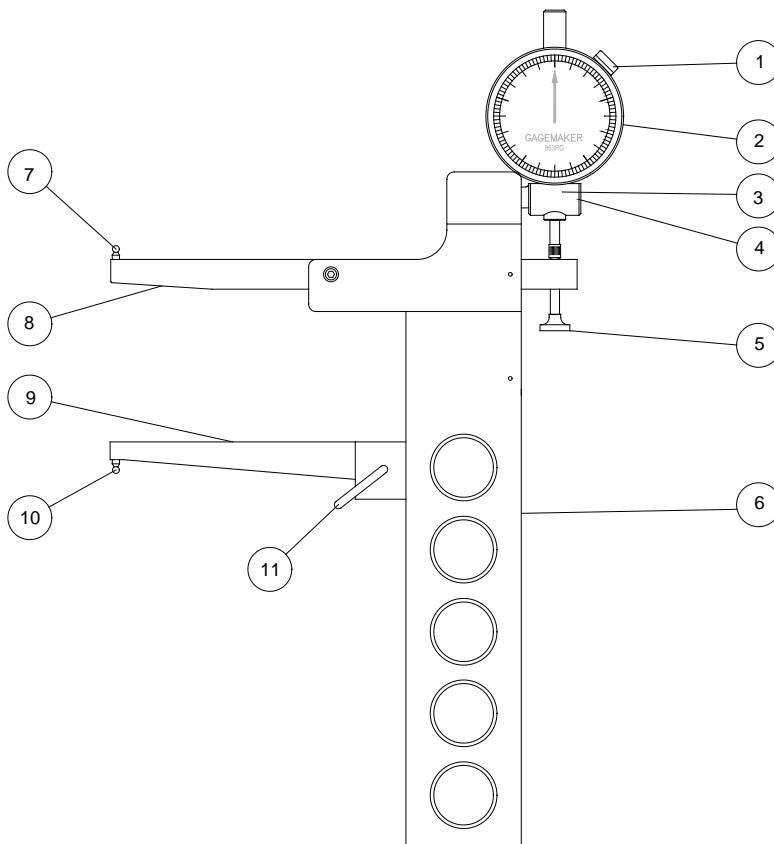
Phone: 713-472-7360
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E-mail: gagemaker@gagemaker.com

Product Information and Updates

Visit our web site at: www.gagemaker.com

System Components

Take some time to become familiar with all the parts that make up the IT-5100 gage by reviewing the labeled diagram below. The part names are important for understanding the operating instructions.



Component List

Item	Description	Qty	Item	Description	Qty
1	Indicator clamp	1	7	Upper contact point	1
2	Indicator (Continuous .0001" – Tapered Diameters, Balanced .0005" – Straight Diameters)	1	8	Upper arm	1
3	Indicator block	1	9	Lower arm	1
4	Indicator set screw	1	10	Lower contact point	1
5	Retraction lever	1	11	Lower arm bent bolt	1
6	Gage body	1			

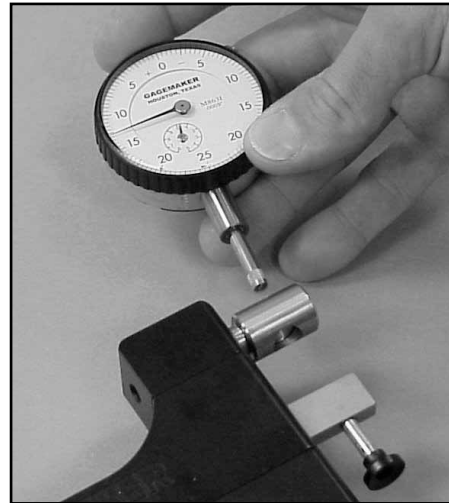
Setup Procedures

Setting Up the IT-5100 Gage

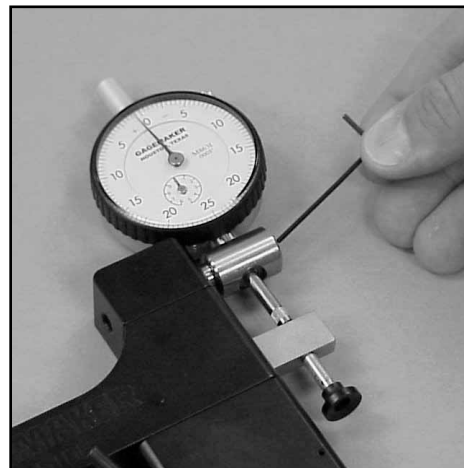
Materials Needed:

- IT-5100 gage
- Contact points (2)
- 7/64" hex wrench
- Paper clip

1. Insert the indicator into the indicator block.



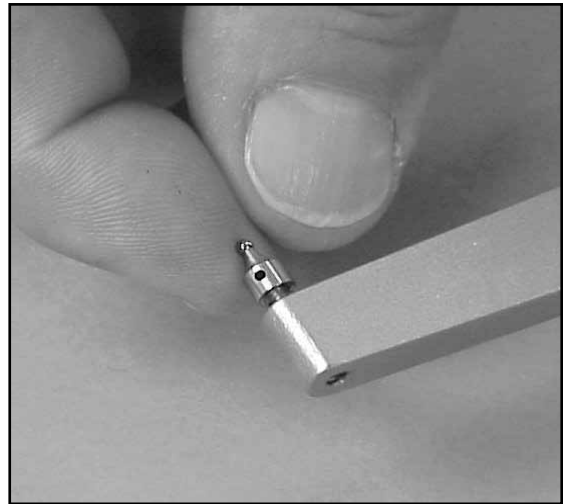
2. Using a 7/64" hex wrench, tighten the set screw in the indicator block to secure the indicator.



Note: When taking measurements, rotate the indicator to the proper position for taking readings, if necessary.

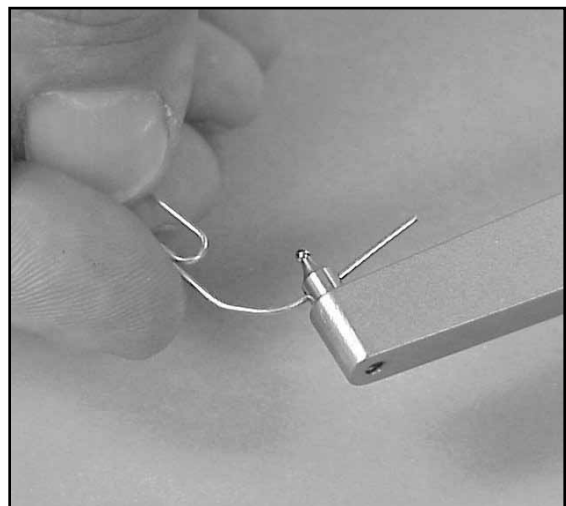
Setting Up the IT-5100 Gage (continued)

3. Screw one contact point into the upper arm of the gage and the other contact point into the lower arm.



Do not use pliers to tighten the contact points, as damage may result.

4. To secure the contact points, open a paper clip and insert it into the hole in the contact point's shaft. Rotate, using moderate pressure, to tighten the contact point.



Operating Procedures

Inspecting Straight Diameters

Materials Needed:

- IT-5100 gage
- Part
- Gage block(s)
- Inspection report

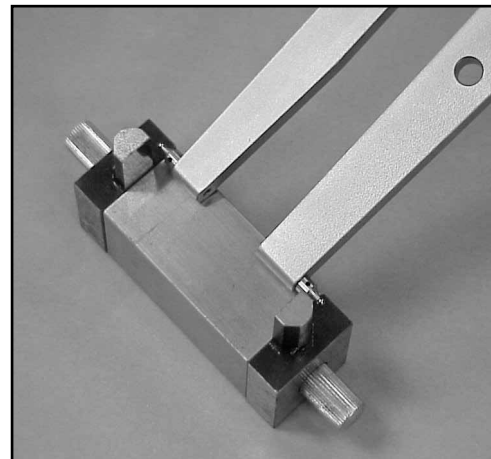


Before inspecting straight diameters, the IT-5100 gages must be preset to a nominal predetermined dimension using gage blocks, a cylindrical ring gage, or any precision ground master. To ensure consistent and accurate readings, the IT-5100 gage should be zeroed on a setting master once during each shift, at a minimum.

1. Stack the proper size gage block(s) for the desired setting dimension.
2. Loosen the bent bolt to release the lower arm.

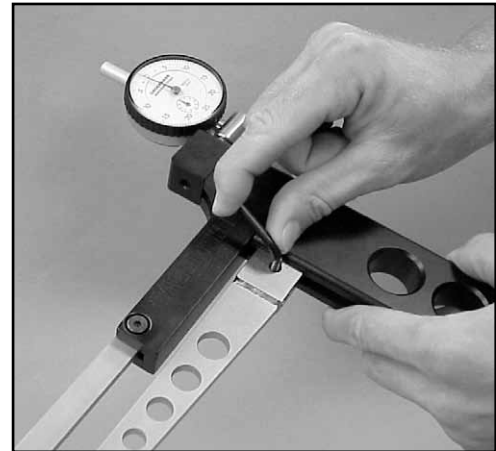


3. Slide the lower arm of the gage so that the distance of the contact points is slightly larger than the gage block(s).

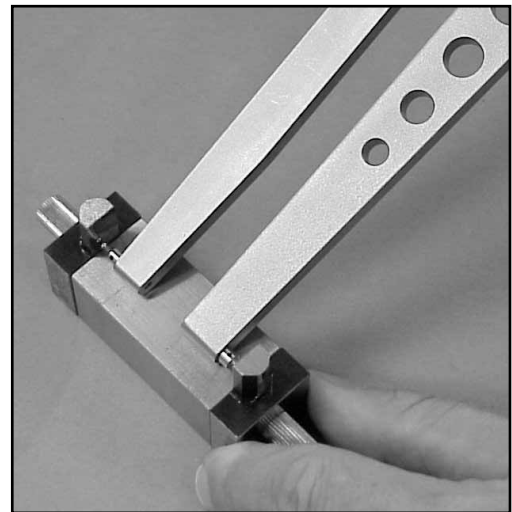


Inspecting Straight Diameters (continued)

4. Tighten the bent bolt to secure the lower arm in place.



5. Push the retraction lever on the IT-5100 and place the contact points between the gage block(s).



6. Turn the indicator dial on the IT-5100 to align the needle with zero.



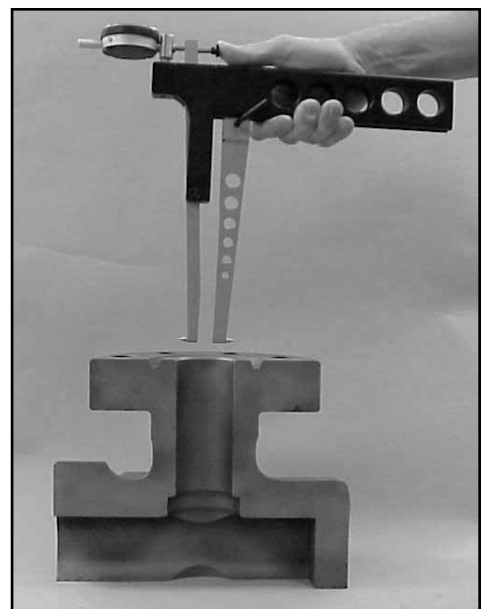
Inspecting Straight Diameters (continued)

7. Tighten the indicator clamp.
8. Remove the IT-5100 from the gage block(s). Reposition the gage on the gage block(s) to verify the zero setting.

Note: Note the position of the small revolution counter on the indicator before removing the gage. Place a piece of masking tape on the backside of the indicator and record the dial setting of the small revolution counter to eliminate incorrect indicator readings.

9. Remove the gage block(s) from the IT-5100.
10. Set a frequency for verifying the zero setting of all gages. As a minimum, the IT-5100 gage should be zeroed on gage block(s) once during each shift to ensure accurate readings.

11. Press the retraction lever and insert the IT-5100 gage inside the part.



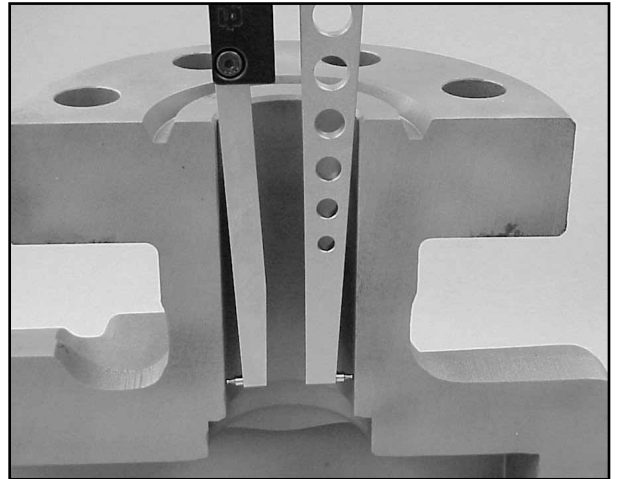
Inspecting Straight Diameters (continued)

12. Place the gage at the desired position in the part and release the retraction lever to seat the contact points.

Note: Sweep the gage in both directions to locate the smallest indicator reading.

13. Record any deviations on an inspection or calibration report.

14. Press the retraction lever to remove the gage from the part.



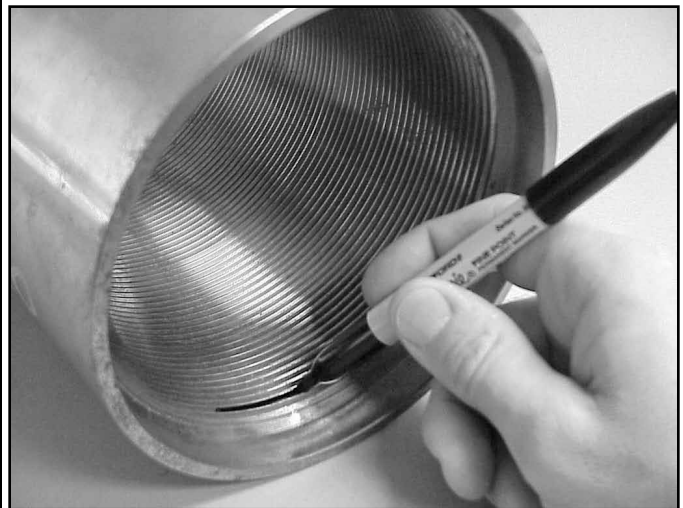
Inspecting Tapered Diameters

Materials Needed:

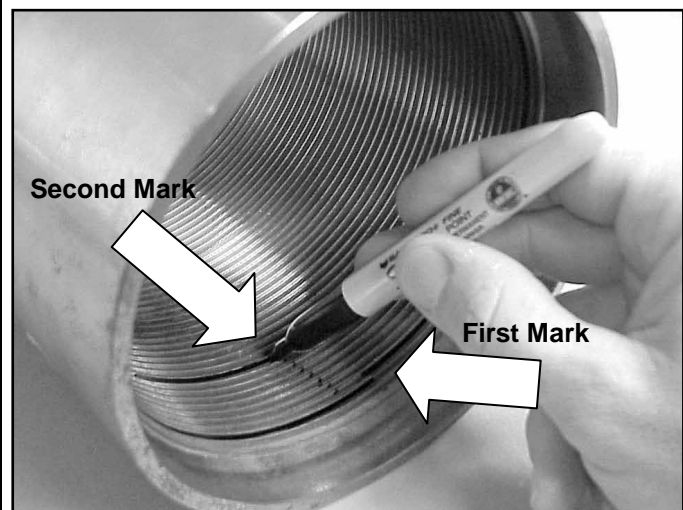
- IT-5100 gage
- Part
- Marking pen
- Inspection report

Inspecting parts using the IT-5100 gage requires no setting master. However, inspection does involve marking two inspection locations with a marking pen, which are 1" apart on the connection. This process ensures that the contact points will be placed in the same helical path of the thread during inspection.

1. Using a marking pen, draw one full revolution on the threads of the part being measured, starting at the first perfect thread.



2. Mark another full revolution on the threads of the part one inch back from the first mark. For example, for a 8 pitch thread, count back 8 threads.



Inspecting Tapered Diameters (continued)

3. Loosen the bent bolt on the lower arm.



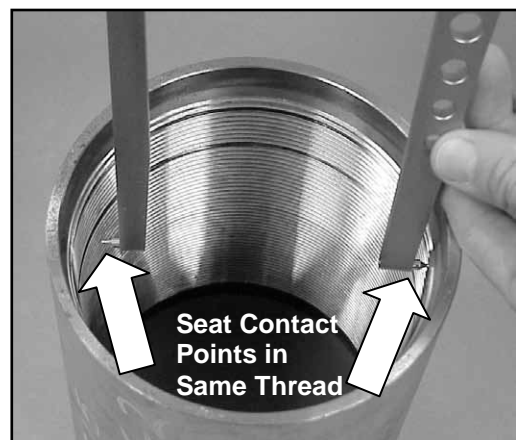
4. Adjust the lower arm of the IT-5100 gage to fit inside the part.



5. Seat the lower contact point into the first marked thread of the part.

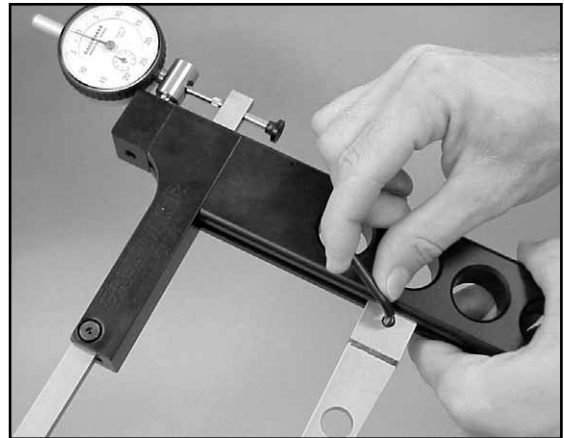
6. Adjust the location of the lower arm until the upper contact point is seated in the same marked thread of the part.

7. Press the retraction lever to remove the gage from the part.

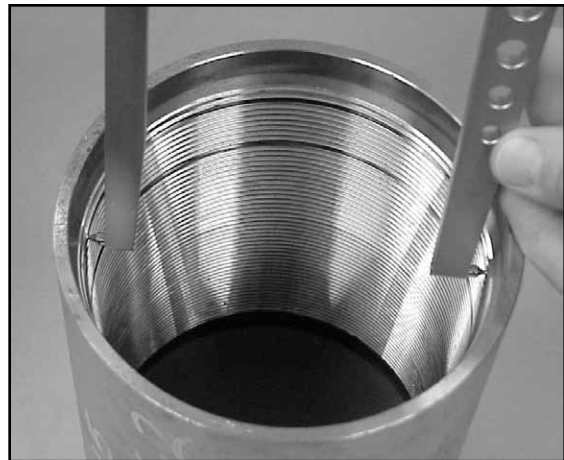


Inspecting Tapered Diameters (continued)

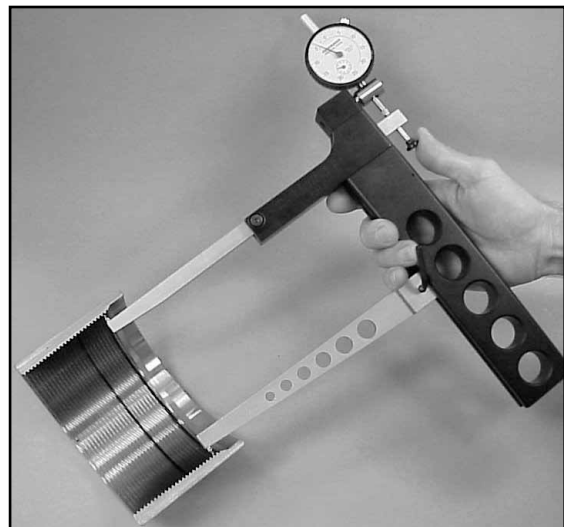
- 8. Continue to slide the lower arm until the indicator shows one revolution of preload.
- 9. Tighten the bent bolt to secure the arm in place.



- 10. Press the retraction lever and seat the contact points in the first marked thread.



- 11. As shown in the cross section of thread, use the lower arm as a pivot and sweep the upper contact point side to side to locate the largest indicator reading.

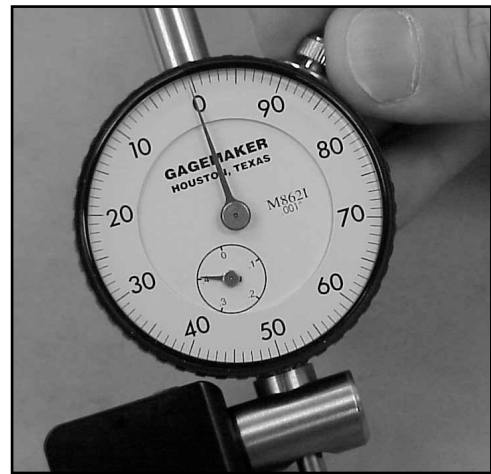


Inspecting Tapered Diameters (continued)

12. Turn the indicator dial on the IT-5100 gage to align the needle with zero.



13. Tighten the indicator clamp.

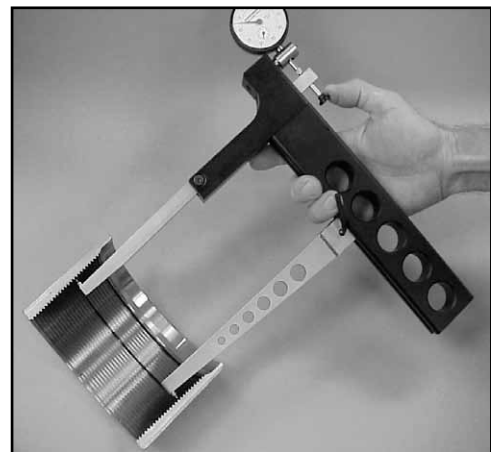


14. As shown in the cross section of the thread, remove the gage from the first marked thread and insert into the second marked thread.

15. Use the lower arm as a pivot and sweep the upper contact point side to side to locate the largest indicator reading.

16. Record any deviations on an inspection or calibration report.

17. Compare the readings with the measurement specified in API Specification 5B.



Care and Maintenance

Replacing the Indicator

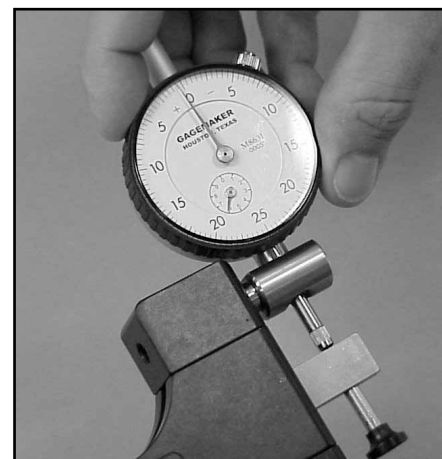
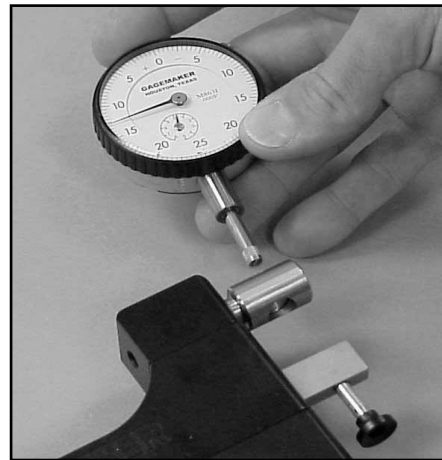
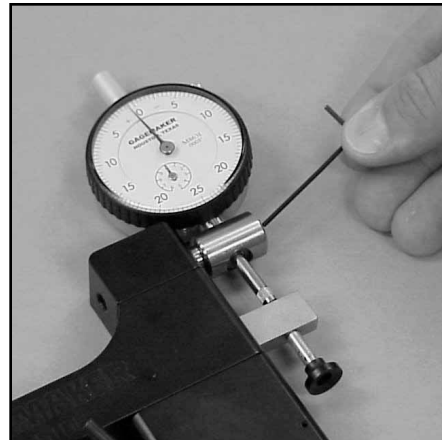
Materials Needed:

- IT-5100 gage
- Indicator
- 7/64" hex wrench

1. Using a 7/64" hex wrench, loosen the set screw on the upper arm assembly.

2. Remove the indicator from the indicator block.

3. Insert the new indicator into the indicator block and tighten the set screw.



Maintenance Tips

- Keep all unprotected metal surfaces coated with light oil.
- Avoid dropping the gage or subjecting it to any vibration or impact.
- Keep the gage dry and away from any machine coolant spray.
- Do not force the movement of any of the mechanical parts. The mechanics are designed to move freely.
- Keep the indicator face clean.

Warranty Information

Gagemaker warrants its products to be free from defects in material and workmanship under normal operating conditions for 12 months from the date of shipment. This warranty is limited to repairing, or at Gagemaker's option, replacing any product which is proven to have been defective at the time it was shipped and/or suffered damage during shipping, provided buyer has given Gagemaker written notice of any such claimed defect within 15 days of receipt. Any defective product must be properly packed and shipped to the Gagemaker factory in Pasadena, Texas USA. This warranty applies to all products when used in a normal industrial environment. Any unauthorized tampering, misuse or neglect will make this warranty null and void. Under no circumstances will GAGEMAKER or any affiliate have any liabilities for loss or for any indirect or consequential damages. The foregoing warranties are in lieu of all other warranties expressed or implied, including but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Return products for repair or calibration to:

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