

GAGEMAKER

PD-6001
Thread Diameter
Measurement Gage
OPERATION MANUAL



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OMPD-600110-00

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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 installation, 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 PD-6001 Thread Diameter Measurement Gage inspects the pitch diameter of internal threads ranging from 6" - 24". The pitch diameter of a thread is the size at which two parts will screw together without exceeding product tolerance limits.

The PD-6001 gage uses contact points that are precision ground in matched sets to ANSI specifications to ensure maximum accuracy. The contact points seat in the thread at the pitch line during inspection and the gage's indicator reports actual measurement readings. Each set of contact points is interchangeable to allow measuring different thread pitches. Contact point diameters are manufactured to tolerances of $\pm .0002$ " and measurements are based on the proven three wire inspection method and technique.

The PD-6001 includes eight extension rods that attach to the gage and allow measuring a range of diameters up to 24". Using different combinations of the extension rods and the fine adjustment knob will give the PD-6001 gage the proper internal dimension for the part being inspected. The PD-6001 Gage Extension Rod Selection Chart provides minimum and maximum diameter ranges for selecting the proper combination of extension rods for the application.

Before inspecting parts, the PD-6001 gage must be preset to a nominal predetermined dimension. For determining the gage's setting dimensions, gauging tolerances, and specific type of contact point for the application, the Thread Disk for Windows program is available as an option. The PD-6001 gage can be preset using gage blocks or the MIC TRAC MT-3000 measurement center.

To inspect parts, 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 pitch diameter. To maintain accurate readings during use, we strongly recommended periodically zeroing gage.

Technical Support

Phone: 713-472-7360

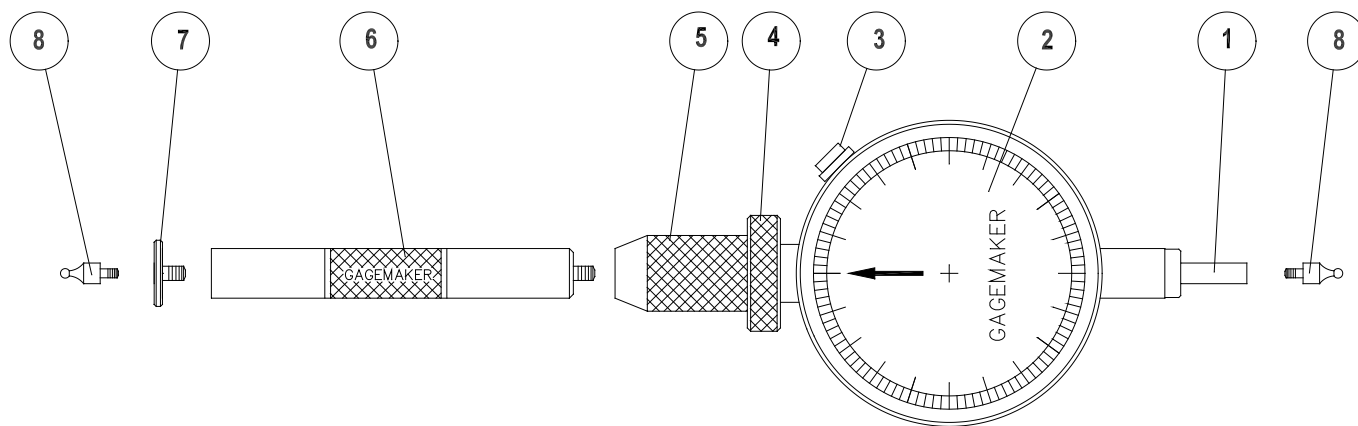
Hours: Monday – Friday 8AM – 5PM (CST)

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 PD-6001 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 shaft	1	5	Fine adjustment knob	1
2	Indicator	1	6	Extension rod*	8
3	Indicator clamp	1	7	Contact point adapter	1
4	Fine adjustment lock	1	8	Contact point	2

* PD-6001 includes 8 different sizes of extension rods ranging from 0.430" – 10.320"

Setup Procedures



The accuracy and repeatability of your PD-6001 gage depends on the correct attachment and set up of the components. Each of the procedures on the following pages will help you to set up your PD-6001 gage properly.

Setting Up the PD-6001 Gage

Materials Needed:

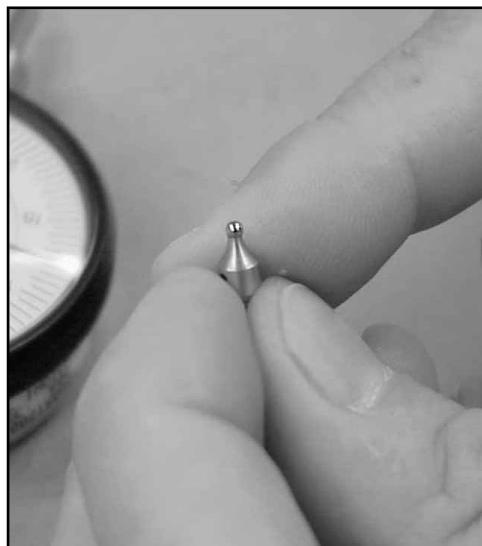
- PD-6001 gage
- Contact points (proper pitch)
- Thread Disk for Windows software
- PD-6001 Gage Extension Rod Selection Chart
- Extension rods (PDA – PDH)
- Paper clip

Setting up the PD-6001 gage, involves determining the contact point type for your application and installing them on the gage. Entering some minimal thread information into the Thread Disk for Windows program will provide you with the proper type contact points, gage setting dimensions, and the gauging tolerances for your application.

1. Start the Thread Disk for Windows program.
2. Select the Thread Type and Thread Class.
3. Type the Nominal Diameter and Threads per Inch.
4. Select the Number of Thread Starts.
5. Click the Calculate button.
6. Click the Gagemaker tab.
7. Based on the Point # displayed on the Gagemaker screen, select the proper contact point.
8. Print the Gagemaker screen for future reference in determining the gage settings and product tolerances.

Setting Up the PD-6001 Gage (continued)

9. Inspect the contact points to ensure that they are not damaged.



10. Screw one of the contact points into the threaded hole in the indicator shaft. Be sure that the contact point is fully seated.



Setting Up the PD-6001 Gage (continued)

11. Using the PD-6001 Gage Extension Rod Selection Chart, locate the minimum and maximum diameter range for the part.
12. Select the proper extension rod(s) to be attached to the PD-6001 to give the gage the proper internal dimension.

PD-6001 Gage Extension Rod Selection Chart					
Range		Rod Type	Range		Rod Type
MIN	MAX		MIN	MAX	
5.845	6.275	A	15.305	15.375	A,D,G
6.275	6.705	B	15.375	16.165	H
6.705	7.135	C	16.165	16.595	A,H
7.135	7.565	D	16.595	17.025	B,H
7.565	7.995	A,D	17.025	17.455	C,H
7.995	8.425	B,D	17.455	17.855	D,H
8.425	8.855	C,D	17.855	18.315	A,D,H
8.855	9.285	E	18.315	18.745	B,D,H
9.285	9.715	A,E	18.745	19.175	F,G
9.715	10.145	B,E	19.175	19.605	E,H
10.145	10.575	C,E	19.605	20.035	A,E,H
10.575	11.005	D,E	20.035	20.465	B,E,H
11.005	11.435	F	20.465	20.895	C,E,H
11.435	11.865	A,F	20.895	21.325	D,E,H
11.865	12.295	B,F	21.325	21.755	F,H
12.295	12.725	C,F	21.755	22.185	A,F,H
12.725	13.155	D,F	22.185	22.615	B,F,H
13.155	13.585	G	22.615	23.045	C,F,H
13.585	14.015	A,G	23.045	23.475	D,F,H
14.015	14.445	B,G	23.475	23.905	G,H
14.445	14.875	C,G	23.905	24.335	A,G,H
14.875	15.305	D,G			

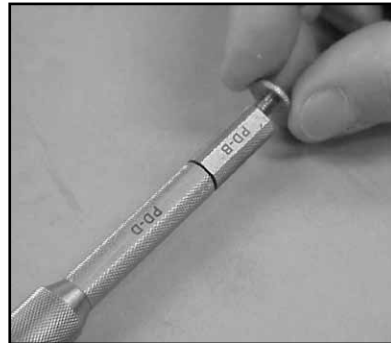
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Setting Up the PD-6001 Gage (continued)

13. Attach the extension rod(s) to the fine adjustment knob on the PG-6001.



14. Attach the contact point adapter to the extension rod(s).

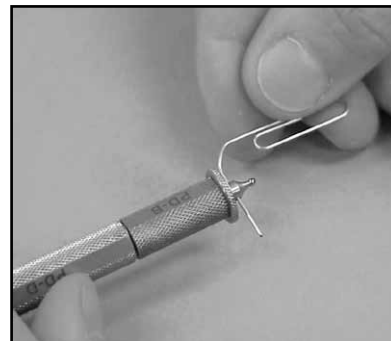


15. Attach the contact point to the adapter.



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

16. 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.



Zeroing the PD-6001 Gage Using Gage Blocks

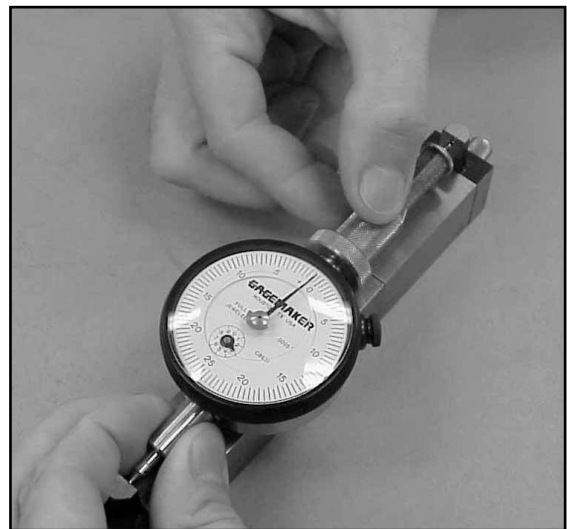
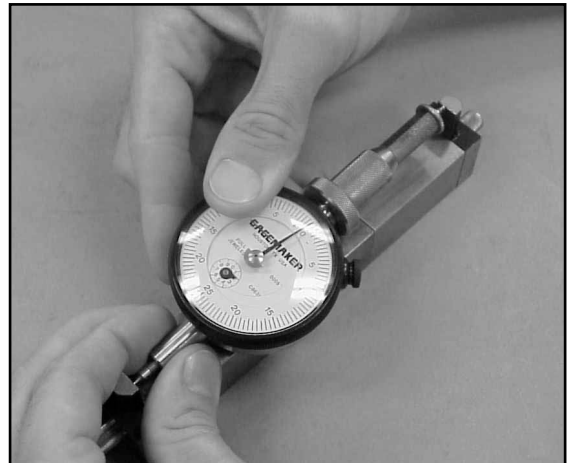
Materials Needed:

- PD-6001 gage
- Gage block(s)



To ensure consistent and accurate readings, the PD-6001 gage should be zeroed on a gage block once during each shift, at a minimum.

1. Locate the gage setting dimensions previously printed from the Gagemaker screen in the Thread Disk for Windows software.
2. Stack the proper size gage block(s) for the desired setting dimension.
3. Insert the PD-6001 gage between the gage blocks.
4. Turn the fine adjustment knob until the contact points touch the gage block(s).
5. To give the gage the proper preload, turn the fine adjustment knob one complete revolution.

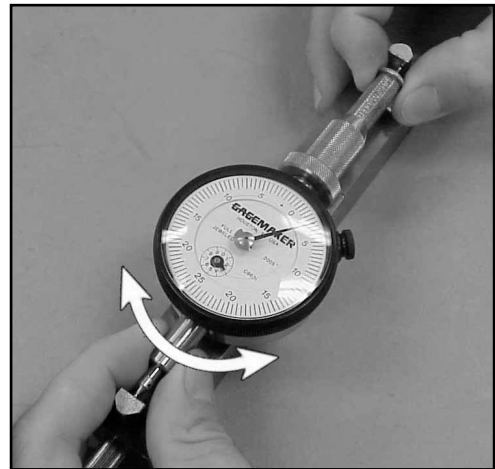


Zeroing the PD-6001 Gage Using Gage Blocks (continued)

6. To secure the position of the PD-6001, turn the fine adjustment lock.



7. While maintaining pressure between the lower contact point and gage block, sweep the upper contact point to locate the smallest indicator reading.



8. Turn the indicator dial on the PD-6001 to align the needle with zero.

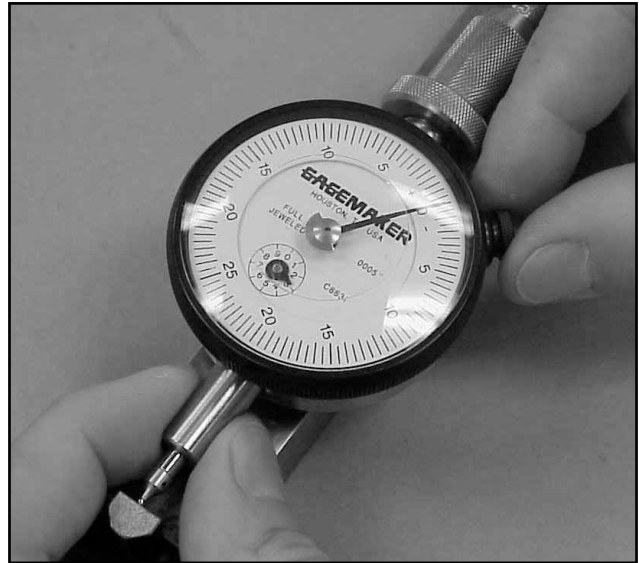


Zeroing the PD-6001 Gage Using Gage Blocks (continued)

9. Tighten the indicator clamp.
10. Remove the PD-6001 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 readings to eliminate incorrect indicator readings.

11. Remove the gage block(s) from the PD-6001.
12. Set a frequency for verifying the zero setting of all gages. As a minimum, the PD-6001 gage should be zeroed on gage block(s) once during each shift to ensure accurate readings.



Zeroing the PD-6001 Gage Using the MIC TRAC

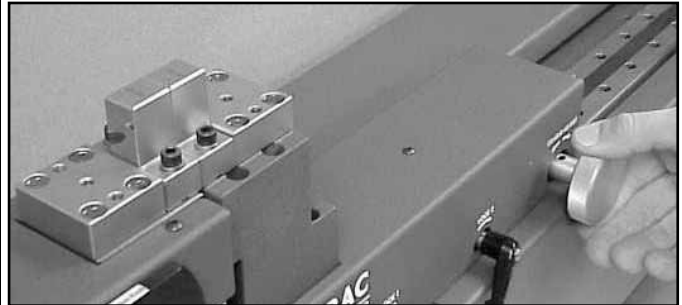
Materials Needed:

- PD-6001 gage
- MIC TRAC MT-3000, CPU, and flat face anvils
- Setting dimensions (Thread Disk for Windows software)



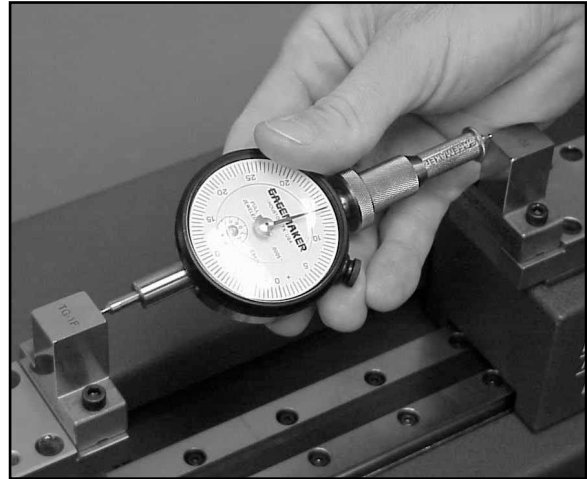
To ensure consistent and accurate readings, the PD-6001 gage should be zeroed on the MIC TRAC once during each shift, at a minimum.

1. Turn the coarse adjust knob counterclockwise to bring the flat face anvils together.
2. If necessary for documentation purposes, press the PRINT pad on the CPU to record the starting location of the anvils.
3. Press the INT pad on the CPU to change to internal measurement mode.
4. Locate the gage setting dimensions previously printed from the Gagemaker screen in the Thread Disk for Windows software.
5. Turn the coarse adjust knob on the MT-3000 to display a measurement that is close to the desired setting dimension.
6. Secure the coarse adjust lock.
7. Turn the fine adjust knob until the CPU displays the exact setting dimension.
8. Secure the fine-adjust lock.
9. If necessary for documentation purposes, press the PRINT pad on the CPU to record the actual setting dimension.



Zeroing the PD-6001 Gage Using the MIC TRAC (continued)

10. Insert the PD-6001 gage between the flat face anvils.



11. Turn the fine adjustment knob until the contact points touch the flat face anvils.



12. To give the gage the proper preload, turn the fine adjustment knob until the needle on the indicator dial makes one complete revolution.



13. To secure the position of the PD-6001, turn the fine adjustment lock.

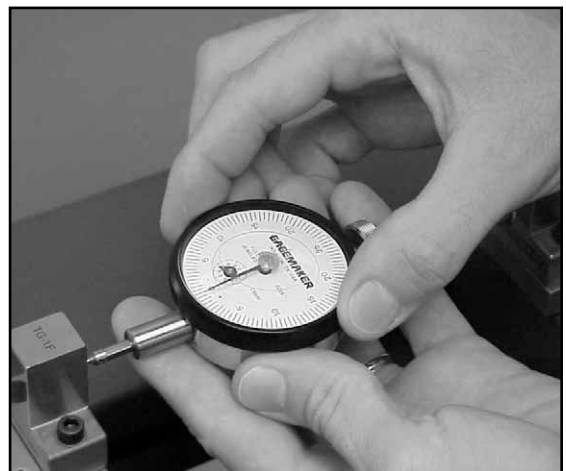
14. Remove the gage from the MT-3000.

Zeroing the PD-6001 Gage Using the MIC TRAC (continued)

15. While maintaining pressure between the lower contact point and flat face anvil, sweep the upper contact point to locate the smallest indicator reading.



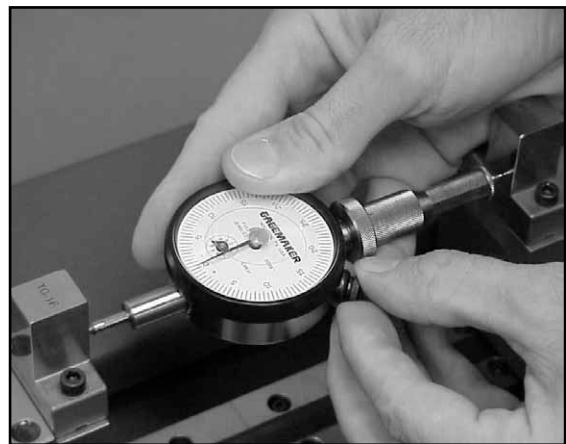
16. Turn the indicator dial on the PD-6001 to align the needle with zero.



17. Tighten the indicator clamp.

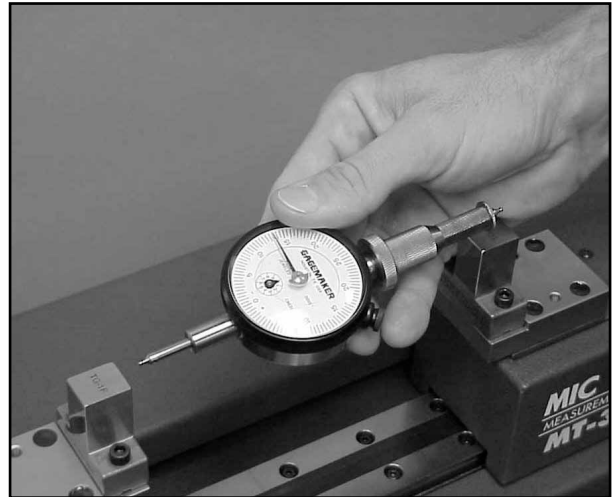
18. Remove the PD-6001 from the MT-3000.
Reposition the gage on the flat face anvils to verify the zero setting.

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.



Zeroing the PD-6001 Gage Using the MIC TRAC (continued)

19. Remove the PD-6001 gage from the MT-3000.
20. Set a frequency for verifying the zero setting of all gages. As a minimum, the PD-6001 gage should be zeroed on the MIC TRAC once during each shift to ensure accurate readings.



Operating Procedures

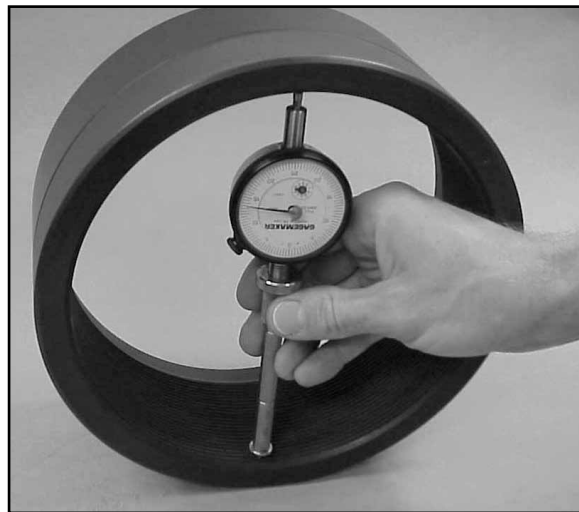
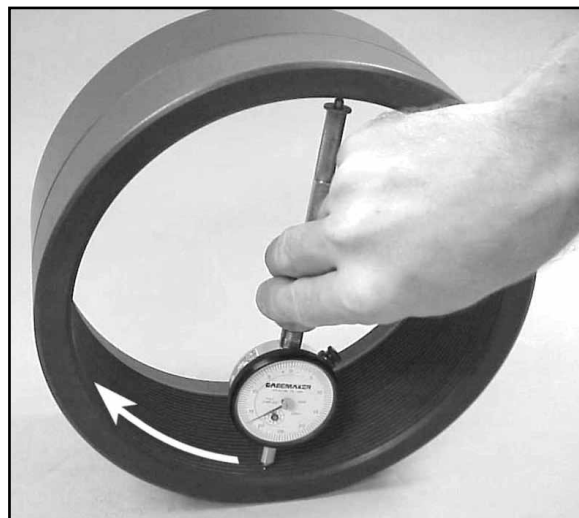
Inspecting Parts

Materials Needed:

- PD-6001 gage
- Gauging tolerances (Thread Disk for Windows software)
- Part
- Inspection report

Inspecting parts using the PD-6001 involves placing the gage on a part in order to compare the nominal pitch diameter of the gage to the actual pitch diameter of the part.

1. After zeroing the PD-6001 gage, position the upper contact point in the second thread of the part.
2. Trace the contact point around the thread 180 degrees.
3. Place the lower contact point in the second thread. This practice ensures that both contact points are positioned correctly.



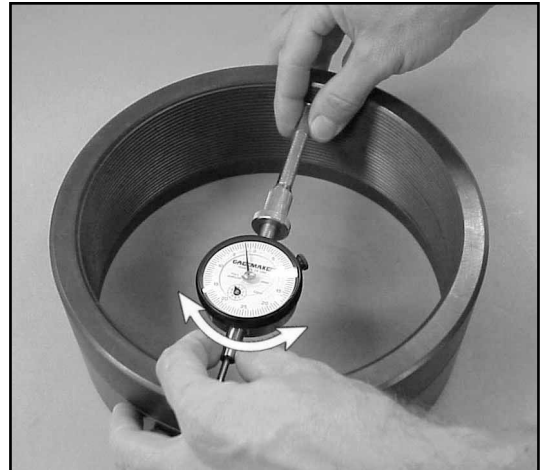
Inspecting Parts (continued)

4. Ensure that the contact points on the PD-6001 fully engage with the threads in the part.



5. Sweep the PD-6001 gage to locate the largest indicator reading on the part. Use the gauging tolerances, previously printed from the Gagemaker screen in the Thread Disk for Windows software, to determine the accuracy of the diameter.

Note: Be sure that the small revolution counter on the indicator is pointing to the same number as when the gage was zeroed. Refer to the number previously recorded on the back of the indicator.

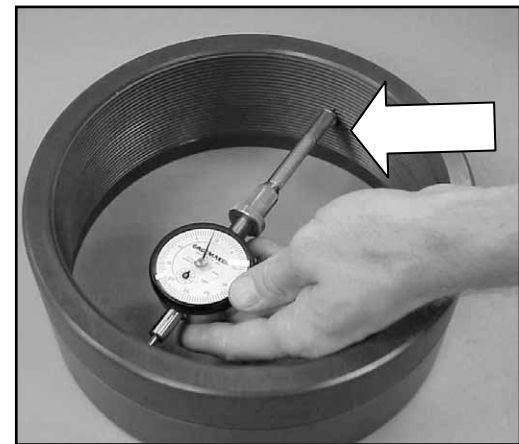
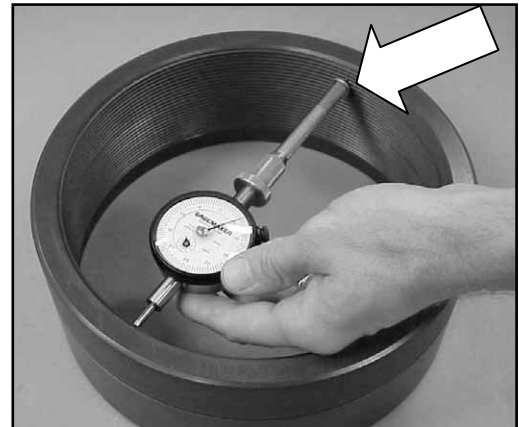


Inspecting Parts (continued)

6. Measure the part in several different positions along the entire length of the thread to detect any variation in the part's diameter.

Note: A measurement should also be taken adjacent to any thread pullout area to ensure no burrs are causing interference with mating parts.

7. Record any deviations on an inspection or calibration report.
8. Use the first part you inspected as a control piece to verify repeatability. Mark the part at a location where it was inspected and record the deviation from zero.
9. During the inspection process, periodically place the PD-6001 on the control piece to verify the gage's accuracy.



Care and Maintenance

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:

**Gagemaker LP
712 East Southmore Ave.
Pasadena, TX 77502-110**

Notes:

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Gagemaker, LP, P.O. Box 87709, Houston, Texas 77287-7709
712 East Southmore Ave., Pasadena, Texas 77502
Phone: 713-472-7360
Fax: 713-472-7241
Web site: www.gagemaker.com