

Tube Hole Gauge



Tube & Pipe Cleaners ◦ Tube Testers ◦ Tube Plugs ◦ Tube Removal ◦ Tube Installation



Operating and Maintenance Instructions

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INTRODUCTION

Thank you for purchasing this Elliott product. More than 100 years of experience have been employed in the design and manufacture of this control, representing the highest standard of quality, value and durability. Elliott tools have proven themselves in thousands of hours of trouble-free field operation.

If this is your first Elliott purchase, welcome to our company; our products are our ambassadors. If this is a repeat purchase, you can rest assured that the same value you have received in the past will continue with all of your purchases, now and in the future.

The Tube Gauge has been designed for the following types of equipment:

Heat Exchangers

Condensers

Chillers

If you have any questions regarding this product, manual or operating instructions, please call Elliott at +1 800 332 0447 toll free (USA only) or +1 937 253 6133, or fax us at +1 937 253 9189 for immediate service.

SAFETY GUIDELINES

Read and save all instructions. Before use, be sure everyone using this machine reads and understands this manual, as well as any labels packaged with or attached to the machine.

- **Know Your Elliott Tool.** Read this manual carefully to learn your tool's application and limitations as well as the potential hazards specific to this tool.
- **Use The Right Tools.** Do not force a tool or attachment to do a job or operate at a speed it was not designed for.
- **Use Proper Accessories.** Use Elliott accessories only. Be sure accessories are properly installed and maintained.
- **Check for Damaged Parts.** Inspect guards and other parts before use. Check for misalignment, binding of moving parts, improper mounting, broken parts or any other conditions that may affect operation. A damaged part should be properly repaired or replaced by an Elliott service facility. For all repairs, insist on only identical replacement parts.
- **Maintain Tool Carefully.** Keep tools clean for best and safest performance. Follow instructions for lubrication, maintenance and changing accessories. Maintain Labels and Nameplates. These carry important information and will assist you in ordering spare and replacement parts. If unreadable or missing, contact an Elliott service facility for a replacement.

OPERATION INSTRUCTIONS

The Elliott Tube Hole Gauge is a precision measuring tool. The all metal construction makes it durable for years of quality use in all applications. The Elliott Tube Hole Gauge has been preset at the factory for accurate measuring.

Measuring

1. Always ensure the centering slide is aligned to keep the gauge in place to measure the same depth in the tube.
 - a.) If the centering slide is not properly set, the gauge will be at an angle and create errors in measurements and create uneven stresses on the tool.
2. When operating the gauge, do not let go of the handle and let the rack 'slam' forward to read the measurement. Allow the mandrel to draw in under its own pace while holding the handle.
 - a.) Doing this will add stress to the rack and internal components that will prematurely wear and create an inaccurate reading over time
3. Pushing against the handle to ensure the gauge balls are in contact with the tube ID is ok but should be done with caution. A slight push to snug into place to ensure the centering slide is aligned with the tube is sufficient
 - a.) Pushing too hard on the gauge can increase the chances of the dial to being pushed out of alignment and force the mandrel and rack to create a false measurement.

CAUTION

DO NOT release the Rack Knob and allow the mandrel to "snap back." This type of mandrel movement could cause the contact balls to loosen from the body or upset the dial calibration.

4. NEVER force the handle to expand the gauge, if it feels like an obstruction is preventing it from expanding, remove the gauge and try to pull the handle and let it return to the home position to ensure the gauge is working properly.
 - a.) If the obstruction is in the tube, remove and clean the tube prior to inserting the gauge again.
 - b.) If the handle does not return to the home position or the gauge seems out of calibration, see the section below this to recalibrate it.
5. If metric measurements are required instead of inch measurements, the dial face can be flipped to show the readings in metric.
 - a.) Refer to the manual to properly make this change.

OPERATION INSTRUCTIONS

Calibrating The Gauge

Provided in the Elliott Tube Hole Gauge kit is a Setting Ring and Wrench. Indicated on the Setting Ring is the proper calibration diameter of the gauge.

1. Move the Centering Slide up the Tube Hole Gauge shaft just behind the (3) contact balls.
2. Withdraw the Mandrel by pulling back on the Rack Knob by the dial case.
3. Place the Setting Ring over the (3) contact balls against the Centering Slide.
4. Allow the Mandrel to pull itself back into position, being careful not to force the mandrel forward or to allow it to “snap back”.

On the Dial Case, toward the front of the Tube Hole Gauge is a scribe mark. If the dial does not read the correct setting, as indicated on the Setting Ring, follow these (4) simple calibration steps:

1. With the Setting Ring still in place, loosen (do not remove) the two screws on the face of the Tube Gauge dial.
2. Adjust the dial to the correct reading by rotating the dial either clockwise or counterclockwise until the proper setting on the dial aligns with the dial case scribe mark.
3. While holding the dial in this position, tighten the two screws, making sure the setting does not change.
4. The screw holes in the dial plate will allow approximately 0.003” of adjustment at calibration. After adjustments are made, should more adjustment still be required, the Tube Hole Gauge must be returned to Elliott Tool Technologies for reconditioning and/or calibration.

INSTALLING EXTENSIONS

The reach of the Elliott Tube Hole Gauge can easily be increased by installing the optional Mandrel and Body Extensions. To install the extensions, follow these (8) steps:

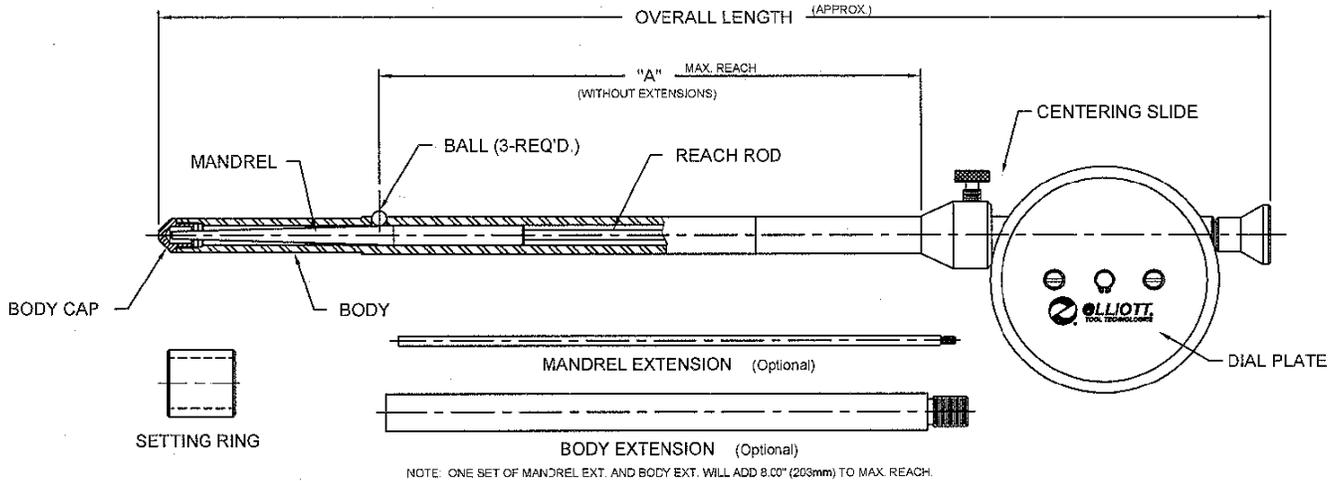
1. Move the Centering Slide to the front (toward the contact balls) of the Tube Hole Gauge.
2. Locate the wrench flats on the Tube Hole Gauge Body. Using the wrench provided in the kit, loosen the body from the Rack Tube. Thread the Body out of the Rack Tube.

CAUTION

DO NOT release the Rack Knob and allow the mandrel to “snap back.” This type of mandrel movement could cause the contact balls to loosen from the body or upset the dial calibration.

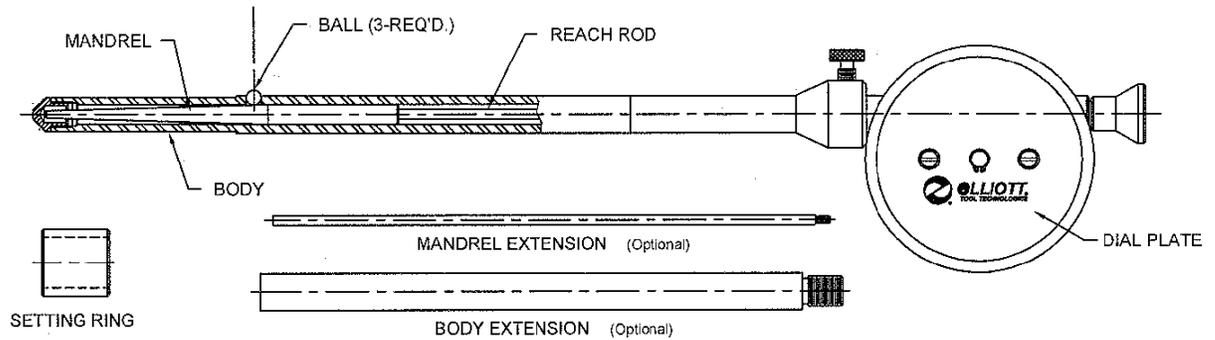
3. Using the wrench provided, loosen the Reach Rod by turning it counterclockwise (as you’re looking into the open end of the Rack Tube). Thread the Reach Rod out of the Rack inside the Rack Tube, separating the unit.
4. Thread the Mandrel Extension to the exposed end of the Reach Rod. Finger-tighten until flush with the shoulder on the Reach Rod. DO NOT overtighten as threads could get damaged.
5. Thread the Body Extension to the Body and finger-tighten until flush with the shoulder on the Body. DO NOT overtighten!
6. To re-assemble the Tube Hole Gauge, extend the Mandrel Extension until the wrench flats on the extension are exposed. Thread the Mandrel Extension into the Rack located inside the Rack Tube. Use the wrench ONLY to ensure the Mandrel Extension is threaded all the way to the shoulder of the Rack. DO NOT overtighten!
7. Slide the Body Extension over the Mandrel Extension and thread onto the Rack Tube until flush to the shoulder of the Rack Tube. DO NOT overtighten!
8. Follow the same steps in Calibrating the Tube Hole Gauge to check for gauge accuracy after assembly.

PARTS LISTS & DIAGRAMS



Tube Data		Tube Gauge Dimensional Data	
Tube Size	Tube Gauge ID Range	Reach	O.A.L
3/8" (9.5mm)	0.290" - 0.350" (7.4 - 8.9mm)	4" (102mm)	14.31" (363.5mm)
1/2" (12.7mm)	0.350" - 0.450" (8.9 - 11.4mm)		15.00" (381mm)
5/8" (15.9mm)	0.440" - 0.560" (11.2 - 14.2mm)		15.50" (394mm)
3/4" (19.1mm)	0.550" - 0.715" (14 - 18.2mm)	8" (203mm)	16.50" (419mm)
7/8" (22.2mm)	0.675" - 0.840" (17.1 - 21.3mm)		
1" (25.4mm)	0.800" - 0.955" (20.3 - 24.5mm)		
1-1/4" (31.8mm)	0.950" - 1.170" (24.1 - 29.7mm)		
1-3/8" (34.9mm)	1.085" - 1.295" (27.5 - 32.9mm)		
1-1/2" (38.1mm)	1.240" - 1.450" (31.5 - 36.8mm)		
2" (50.8mm)	1.700" - 1.910" (43.2 - 48.5mm)		

PARTS LISTS & DIAGRAMS



Tube Hole Gauge	Body	Mandrel	Ball (3 Required)	Setting Ring
876200-375	876206-375	876205-375	109BAS	8252-3/8
876200-500	876206-500	876205-500	109CAS	8252-1/2
876200-625	876206-625	876205-625	109DAS	8252-5/8
876200-750	876206-750	876205-750	109EAS	8252-3/4
876200-875	876206-875		109GAS	8252-7/8
876200-1000	876206-1000		109JAS	8252-1
876200-1250	876206-1250	876205-1250	109MAS	8252-1-1/4
876200-1500	876206-1500	876205-1500	109YAS	8252-1-1/2
876200-1750	876206-1750	876205-1750		8252-1-3/4
876200-1875	876206-1875	876205-1875		8252-1-7/8
876200-2000	876206-2000	876205-2000		8252-2

CARE & MAINTENANCE

1. Never store the gauge after a day(s), or shift, without cleaning the tool and making sure to check the following items for wear and tear.
 - a.) Ball Bearing – Making sure the ball bearings that are measuring the tube are clear and debris is not built up inside the body holes.
 - b.) Ensure that the spring still allows the rack to move freely and return to the home position.
 - c.) Confirming its operation and the calibration can be reviewed above this section.
2. If debris are found in the body holes, take the gauge apart and make sure it is flushed out and apply light tool oil to protect the surface of the body, the rack, and mandrel.
3. If you need to disassemble the tube hole gauge, always ensure you use the provided wrench to do so.
 - a.) Always align wrench on the flats machined on the tool.
 - b.) Never over tighten or force threads loose – doing so will strip or break the small parts inside the tool.
4. If the tube gauge shows signs of surface rust on the body, rack, mandrel, or balls. Contact Elliott Tool to get parts on order or schedule a repair with the factory.
5. Never replace the balls with anything other than what Elliott offers. The size of the measuring balls is carefully chosen to work with the tapered mandrel to provide an accurate measurement
6. If the dial face is found to need service or repaired, do not attempt to do this alone, contact Elliott Tool to have this done at the factory or explore the possible purchase of training to do this sort of repair on your own.

WARRANTY

Should any part, of Seller's own manufacture, prove to have been defective in material or workmanship when shipped (as determined by Seller), Seller warrants that it will, at its sole option, repair or replace said part f.o.b., point of manufacture, provided that Buyer notifies, in writing, of such defect within twelve (12) months from date of shipment from the manufacturing plant.

On request of Seller, the part claimed to be defective will be returned, transportation, insurance, taxes and duties prepaid, to the factory where made, for inspection. Any item, which has been purchased by Seller, is warranted only to the extent of the original manufacturer's warranty to Seller. Seller shall not be liable for any damages or delays caused by defective material or workmanship.

No allowance will be made for repairs or alterations made by others without Seller's written consent or approval. If repairs or alterations are attempted without Seller's consent, Seller's warranty is void.

THE WARRANTIES PROVIDED IN THE OBLIGATIONS AND LIABILITIES OF SELLER HEREUNDER, AND THE RIGHTS AND REMEDIES OF BUYER HEREUNDER ARE EXCLUSIVE AND IN SUBSTITUTION FOR, AND BUYER HEREBY WAIVES ALL OTHER WARRANTIES, GUARANTEES, OBLIGATIONS, CLAIMS FOR LIABILITIES, RIGHTS AND REMEDIES, EXPRESS OR IMPLIED, ARISING BY LAW OR OTHERWISE, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTY FOR MERCHANTABILITY AND FITNESS FOR PURPOSE.

Seller's total liability is limited to the lower of the cost of repair or replacement.



Contact Us

Elliott Tool offers a complete line of precision tube tools to meet your needs. Contact us or your local support.

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