

Elliott offers a complete line of precision tube tools, including:



## SERIES "GT" GROOVING TOOL



## Operating and Maintenance Instructions

### **tube expanders**

- Boiler Expanders
- Heat Exchanger Expanders
- Condenser Expanders
- Refinery Expanders

### **tube rolling motors & torque controls**

- Electric
- Pneumatic

### **tube cleaners**

- Air & Water Driven Motors (Internal/External Drives)
- Jiffy Guns ("Shoot-Thru" Devices)
- Roto-Jet (Rotating Flex Shaft)

### **additional products**

- Tube and Joint Testers
- Tube Plugs (High & Low Pressure)

### **retubing tools**

- Tube Gauges
- Tube Cutters
- Manual Tools
- Spear Type Tube Pullers
- Collet-Type Tube Pullers
- CYCLGRIP Tube Extractors
- Grooving Tools
- End-Prep Tools

### **metal working products**

- Back Chamfering Tools
- Carbide Roller Burnishing Tools
- Diamond Burnishing Tools
- Elliptical Deburring Tools
- Fine Boring Tools
- Internal Recessing Tools
- Magic Vise
- Mechanical Joining Tools
- Roller Burnishing Tools
- Single Blade Reamers



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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 tool, 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 Elliott Series "GT" Grooving Tool has been designed for the grooving of drilled holes in tube sheets used in heat exchangers, condensers, and boilers.

The Elliott Series "GT" Grooving Tools are designed and built to be versatile, long-wearing, and to machine an accurate, perfectly round groove at a low cost per hole.

# NOTES

# SAFETY

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

1. **Know Your Elliott Grooving Tool.** Read this manual carefully to learn your tool's applications and limitations, as well as potential hazards, associated with this type of equipment.
2. **Keep Work Area Clean and Well Lighted.** Cluttered, dark work areas invite accidents.
3. **Dress Properly.** Do not wear loose clothing or jewelry. Wear a protective hair covering to contain long hair. It is recommended that the operator wear safety glasses with side shields or a full face shield eye protection. Gloves and water repellant, nonskid footwear are also recommended. Keep hands and gloves away from moving parts.
4. **Use Safety Equipment.** Everyone in the work area should wear safety goggles or glasses with side shields complying with current safety standards. Wear hearing protection during extended use, respirator for a confined space and a dust mask for dusty operations. Hard hats, face shields, safety shoes, respirators, etc. should be used when specified or necessary.
5. **Keep Bystanders Away.** Bystanders should be kept at a safe distance from the work area to avoid distracting the operator and contacting the tool.
6. **Protect Others in the Work Area** from debris such as coolant spray. Provide barriers or shields as needed.
7. **Use Proper Accessories.** Use Elliott accessories only. Be sure accessories are properly installed and maintained. Do not defeat the purpose of a guard or other safety device when installing an accessory or attachment.
8. **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. If abnormal noise or vibration occurs, stop the tool immediately and have the problem corrected before further use. Do not use a damaged tool. Tag damaged tools "Do Not Use" until repaired. A guard or other damaged part should be properly repaired or replaced by an Elliott service facility or qualified repairman. For all repairs, insist on only identical replacement parts.
10. **Remove All Wrenches.** Check that all accessory wrenches are removed from the system before turning it on.

# OPERATION

(Refer to page 4 for parts identification)

All grooving tools may be operated in standard radial drills, appropriate pneumatic tools, or computer numerically controlled radial heads for multiple drilling operations or with hand-held drive motors for "after-market" retubing projects.

Each size grooving tool operates in a speed range of 100-500 R.P.M. Standard cutting fluids should be used with these tools for optimum performance. Follow standard machine tool cutting speeds and feeds for the material and diameter you are cutting.

**To set the cutting depth (see Fig. 1):** Loosen the set screw (3) in the housing (10) and thread the housing forward or back until the measurement from the face of the guard (13) to the cutter blade is at the desired depth. Before tightening the set screw (3), ensure the set screw is lined up with the flats on the mandrel adapter (7) to prevent any damage to the adapter threads.

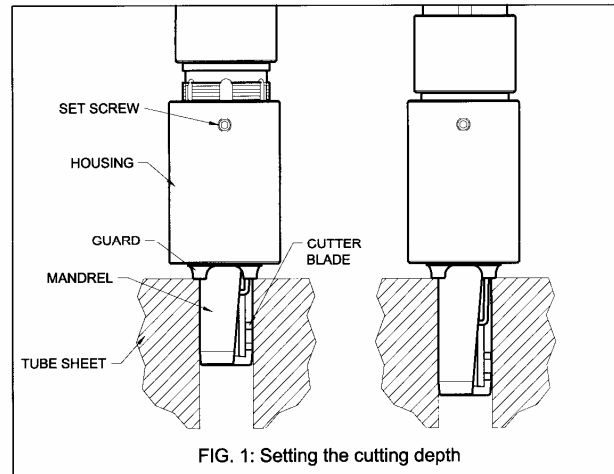


FIG. 1: Setting the cutting depth

**To set the groove depth:** The actual depth of cut for the groove(s) is controlled by threading the adjustment nut (4) either forward or back to decrease or increase the amount of distance the cutter blade will travel up the mandrel (2) taper. With a mandrel slot taper of 5°, mandrel travel of .125" (3.2mm) equals .011" (0.28mm) increase in cutter blade projection. **Note: For tool size 5/8" thru 1-1/4", one revolution of the Adjustment Nut (4) will increase or decrease blade height by .005" (0.13mm). For size 1-1/2" and up, one revolution of the Adjustment Nut will equal .007" (0.18mm) change in blade height.**

**Installing/Replacing Cutter Blades:** The same cutter blade can be used on all tool sizes from 5/8" (15.9mm) to 3" (76.2mm). Standard blade tooth configurations are shown in the chart on page 4. Other blade configurations are available. Contact customer service for details.

To install a cutter blade, slide the tapered end of the blade under the cutter spring (9) and push the blade forward until the hook-end of the cutter spring locks into the groove of the cutter blade.

To remove a cutter blade, pry a flat-end screwdriver under the side of the cutter spring (9). Lift the cutter spring up and slide the cutter blade from the front of the tool's mandrel.

### Mandrel Replacement:

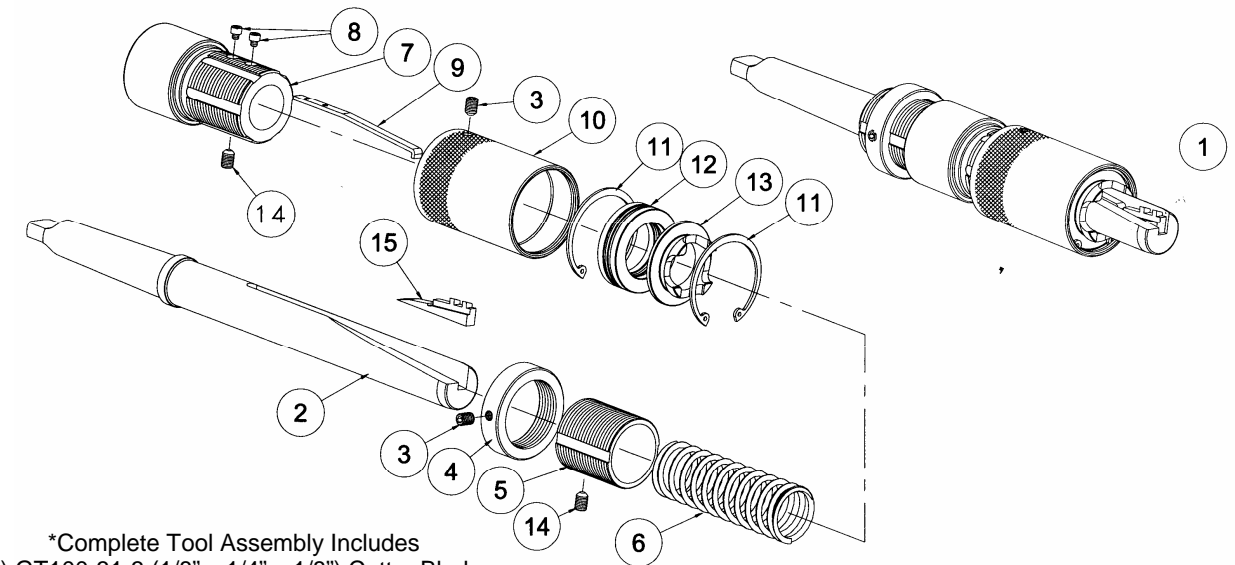
- Loosen set screw (3) in the housing (10) and unthread the housing all the way off.

### IMPORTANT!

Before removing the mandrel adapter (7) in step 2, extreme caution should be taken as this part is under spring tension and could cause serious injury if not removed properly.

- Stand the mandrel (2) on end with the morse taper end down. Press & hold securely the mandrel adapter (7) while loosening set screw (14) located on opposite side of cutter spring (9). Once the set screw is free of the groove in the mandrel, gradually allow the mandrel adapter to slide up the mandrel until there is no more spring tension. (**NOTE: DO NOT** release the mandrel adapter while there is still spring tension!) After removing the mandrel adapter, loosen set screw (14) in the spring retainer (5) and slide the spring retainer off the mandrel.
- To assemble a mandrel, reverse the above steps.

# "GT" SERIES GROOVING TOOL



\*Complete Tool Assembly Includes  
(1) GT100-31-3 (1/8" x 1/4" x 1/8") Cutter Blade.

Item No.	Description	Tool Size									
		5/8	3/4	7/8	1	1-1/4	1-1/2	1-3/4	2	2-1/2	3
1	Assembly*	GT625	GT750	GT875	GT1000	GT1250	GT1500	GT1750	GT2000	GT2500	GT3000
2	Mandrel	GT625-03	GT750-03	GT875-03	GT1000-03	GT1250-03	GT1500-03	GT1750-03	GT2000-03	GT2500-03	GT3000-03
3	Set Screw (2)	128L	128L	128L	128L	128L	128L	128L	128L	128L	128L
4	Adjustment Nut	GT625-07	GT625-07	GT1000-07	GT1000-07	GT1250-07	GT1500-07	GT1750-07	GT2000-07	GT2500-07	GT3000-07
5	Spring Retainer	GT625-08	GT750-08	GT875-08	GT1000-08	GT1250-08	GT1500-08	GT1750-08	GT2000-08	GT2500-08	GT3000-08
6	Spring	37-72600	37-72602S	37-72701	37-S1166	37-11979	37-72962	37-S101	GT2000-39	GT2500-39	GT3000-39
7	Mandrel Adapter	GT625-04	GT750-04	GT875-04	GT1000-04	GT1250-04	GT1500-04	GT1750-04	GT2000-04	GT2500-04	GT3000-04
8	Cap Screw (2)	P8302-69	P8302-69	P8302-69	P8302-69	P8302-69	P8302-69	P8302-69	P8302-69	P8302-76	P8302-76
9	Cutter Spring	GT750-10	GT750-10	GT750-10	GT750-10	GT750-10	GT750-10	GT750-10	GT750-10	GT750-10	GT750-10
10	Housing	GT625-02	GT750-02	GT875-02	GT1000-02	GT1250-02	GT1500-02	GT1750-02	GT2000-02	GT2500-02	GT3000-02
11	Retaining Ring (2)	P8374-156	P8374-156	P8374-187	P8374-187	P8374-212	P8374-237	P8374-256	P8374-306	P8374-354	P8374-412
12	Thrust Bearing	PC80-51204	PC80-51204	PC80-51106	PC80-51106	PC80-51107	PC80-51108	PC80-51109	PC80-51111	PC80-51113	PC80-51116
13	Guard	GT625-06	GT750-06	GT875-06	GT1000-06	GT1250-06	GT1500-06	GT1750-06	GT2000-06	GT2500-06	GT3000-06
14	Set Screw (2)	128G	128G	128G	128G	128G	128G	128G	128G	128G	128G

Cutter Blade				
	BLADE	A	B	C
	GT100-31-1	1/8"	1/8"	1/8"
	GT100-31-2	1/8"	3/16"	1/8"
	GT100-31-3	1/8"	1/4"	1/8"
	GT100-31-4	1/8"	3/8"	1/8"
	GT100-31-5	1/8"	7/16"	1/8"
	GT100-31-6	1/8"	1/2"	1/8"
Other sizes on request. Consult factory for price. For stainless materials add Suffix "S" to part number.				

Specifications							
Model No.	Hole Size in. (mm)	O.A.L. in. (mm)	Wt. Lbs. (kg)	Operating Speed R.P.M.	Max. Cutting Depth in. (mm)	Mandrel Size in. (mm)	Morse Taper
GT625	5/8 (15.9)	12.75 (323.9)	3.5 (1.6)	100-500	2 (50.8)	5/8 (15.9)	No. 3
GT750	3/4 (19.0)	12.75 (323.9)	3.8 (1.7)		2 (50.8)	3/4 (19.0)	No. 3
GT875	7/8 (22.2)	13 (330.2)	4.5 (2.0)		2 (50.8)	7/8 (22.2)	No. 3
GT1000	1 (25.4)	13 (330.2)	4.8 (2.2)		2 (50.8)	1 (25.4)	No. 3
GT1250	1-1/4 (31.8)	13 (330.2)	6.8 (3.1)		2 (50.8)	1-1/4 (31.8)	No. 3
GT1500	1-1/2 (38.1)	13.81 (350.8)	10.6 (4.8)		1.50 (38.1)	1-1/2 (38.1)	No. 4
GT1750	1-3/4 (44.5)	13.81 (350.8)	12.4 (5.6)		1.50 (38.1)	1-3/4 (44.5)	No. 4
GT2000	2 (50.8)	13.81 (350.8)	16.5 (7.5)		1.50 (38.1)	2 (50.8)	No. 4
GT2500	2-1/2 (63.5)	13.81 (350.8)	20.5 (9.3)		1.69 (42.9)	2-1/2 (63.5)	No. 4
GT3000	3 (76.2)	13.81 (350.8)	22.5 (10.2)		1.50 (38.1)	3 (76.2)	No. 4