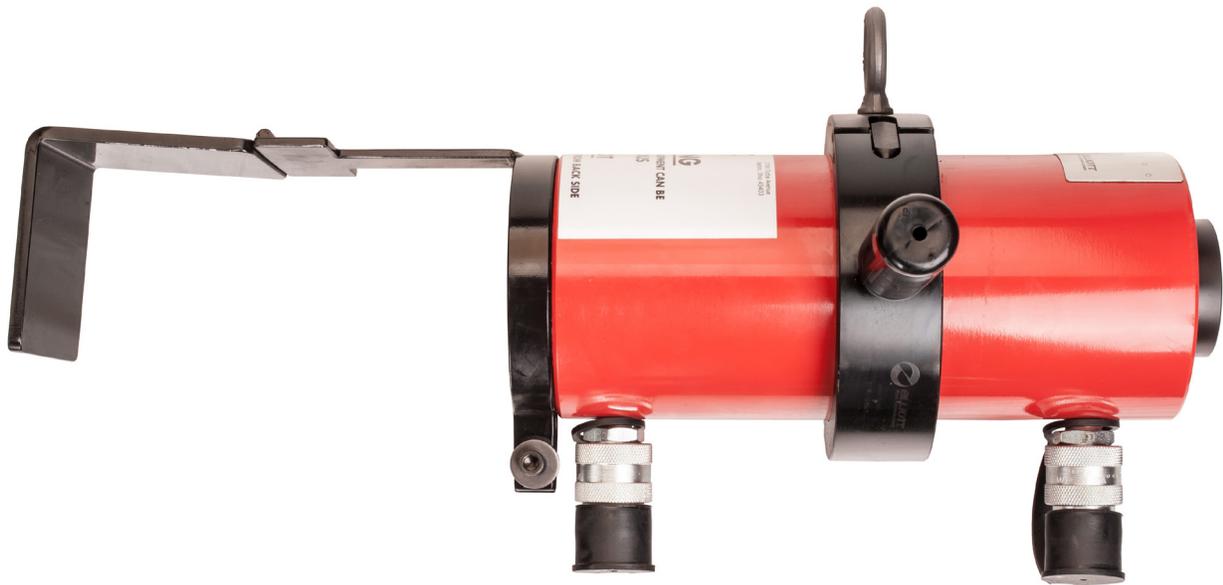


# Stub Tugger

80-40130



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 Stub Tugger has been designed for the following types of equipment:

**Heat Exchangers**

**Condensers**

**Chillers**

**Boilers**

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.
- As the machine is hydraulically driven, hydraulic oil leaks from the ram and hose connections are possible. If hydraulic oil is leaked, clean-up oil immediately to avoid slippery floor surfaces.
- The cylinder stroke is controlled by a manual control on the hydraulic power source. It is important to read and understand the manual for the hydraulic power source.
- Ensure all hydraulic connections are properly made and that the hydraulic hoses are in good condition.
- Always be aware of hydraulic power shut off valve and shut down the hydraulic power supply before changing tooling.
- 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.
- Use Safety Equipment. Everyone in the work area should wear safety goggles or glasses with side shields complying with current safety standards. Hard hats, face shields, safety shoes, respirators, etc. should be used when specified or necessary. Keep a fire extinguisher nearby.
- 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. If abnormal noise or vibration occurs, turn the tool off immediately and have the problem corrected before further use. Do not use a damaged tool. Tag damaged tools "Do Not Use" until repaired. A damaged part should be properly repaired or replaced by an Elliott service facility. For all repairs, insist on only identical replacement parts.
- Do Not Overreach. Maintain Control. Keep proper footing and balance at all times.
- Stay Alert. Watch what you are doing, and use common sense. DO NOT use a tool when you are tired, distracted or under the influence of drugs, alcohol or any medication causing decreased control.
- Maintain Tool Carefully. Keep tools sharp and 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.

# **SAFETY GUIDELINES**

- DO NOT attempt to adjust or service the rod end relief valve on a double-acting cylinder or ram. If oil leakage is detected from this relief valve, discontinue use of the cylinder or ram immediately and contact your nearest Authorized Hydraulic Service Center. If improperly adjusted, the cylinder or ram could develop excessive pressure and cause the cylinder, hose or couplers to burst which could cause serious injury or death.
- When extending a cylinder or ram under load, always ensure that the coupler(s) or port thread(s) has (have) not been damaged or do(es) not come in contact with any rigid obstruction. If this condition does occur, the coupler's attaching threads may become stripped or pulled from the cylinder or ram resulting in the instantaneous release of high pressure hydraulic fluid, flying objects, and loss of the load. All of these possible results could cause serious injury or death.
- Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the pump and release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.
- Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold, or heavy impact. Do not allow the hose to kink, twist, curl, crush, cut, or bend so tightly that the fluid flow within the hose is blocked or reduced. Periodically inspect the hose for wear, because any of these conditions can damage the hose and possibly result in personal injury.
- Do not use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.
- Keep the cylinder clean at all times. While at a job site, when the cylinder is not in use, keep the piston rod fully retracted and upside down.
- Use an approved, high-grade pipe thread sealant to seal all hydraulic connections. PTFE tape can be used if only one layer of tape is used and it is applied carefully (two threads back) to prevent the tape from being pinched by the coupler and broken off inside the pipe end. Any loose pieces of tape could travel through the system and obstruct the flow of fluid or cause jamming of precision-fit parts.
- Always use protective covers on disconnected quick couplers.

# **RECEIVING & INSTALLATION**

## **Uncrating**

The Elliott Stub-Tugger is shipped in a carton complete with all accessories. On arrival, check for external damage to the box. If damage is found, notify the carrier and the supplier so insurance inspectors can examine the box before it is unpacked. When opened, check the contents against the packing and parts list. Report any damage or shortage to Elliott.

Ensure that there is no packaging material left inside the openings of the machine, especially in the hydraulic inlets.

## **Connecting to Hydraulic Power Supply**

The Elliott Stub-Tugger requires a hydraulic power source. The hydraulic power source supplied by Elliott will be an electric, pneumatic or manual pump.

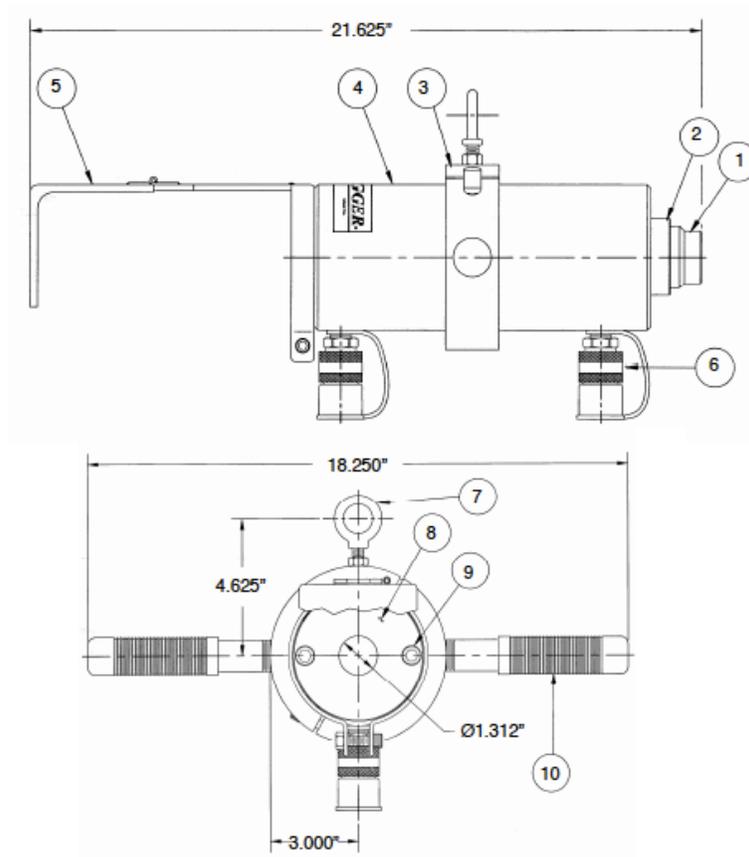
1. Position the Elliott Stub-Tugger and the hydraulic power source on a flat surface.
2. Connect counter balance eyebolt and fasten operator side handles to the Elliott Stub-Tugger if not already assembled.
3. Connect the two 15' hydraulic hoses to both units. Important: Make sure that the male hose fittings are totally in contact with female fitting shoulder on the tube pulling cylinder before threading down the locking fitting. Otherwise the cylinder 's relief valve will activate and release a fog of hydraulic fluid and the cylinder will remain idle.
4. Before operating the pump, all hose connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.
5. Follow the directions of the Elliott hydraulic pump manual to assure that hydraulic pump is working properly.
6. Cycle the Elliott Stub-Tugger several strokes to eliminate any air in the hydraulic lines.  
NOTE: The hydraulic hoses are pre-charged with oil by the factory.
7. The Elliott Stub-Tugger is ready for operation.

## **Removing the Hydraulic Hoses**

Neutralize the pressure before removing the hydraulic hoses.

NOTE: On the hydraulic power units with remote control, flip the switch on the top of the hydraulic pump from "Remote" to "Off". Cycle both "Advance" and "Retrack" switches on the remote control, to neutralize the pressure

# QUICK REFERENCE DIAGRAMS



Item	Description	Part Number
1	Load Cap	80-3055-22
2	Nose Piece Adapter	80-40130D6
3	Bracket Assembly	80RH303-1
4	30-Ton Hydraulic Cylinder	17RH306D
5	Safety Shield	80-40130D8
6	Hydraulic Coupling (2)	17-9796
7	*Eyebolt	512543
8	Strike Plate	80-40130D5
9	Hex. Socket Cap Screw (2)	P8302-151
10	*Side Handles (2)	80RH303-13
11 (Not Shown)	15' Hydraulic Hoses (2)	80RH303-4
12 (Not Shown)	Seal Kit	17-300822
13 (Not Shown)	Hex Allen Wrench- 5/16"	P8369K
14 (Not Shown)	Hex Allen Wrench- 3/8"	P8369L

# OPERATION INSTRUCTIONS

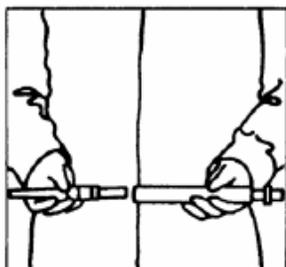
The Stub-Tugger has been designed for efficient use and optimum productivity.

The Stub-Tugger will extract tubes with outside diameters ranging from 3/8” to 3”. Pulling spears are sized for the tube ID. Twenty-five standard spear sizes are available.

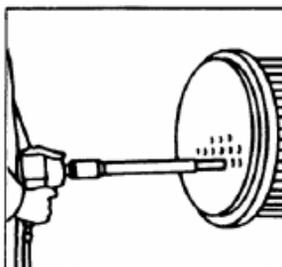
1. Determine the ID of the tubes to be extracted.
2. Select the proper spear and adapter combination for the tube to be pulled. For tube OD's 3/8” to 1”, tooling required: Spear, adapter, nose piece and lock (see figure A). For tube OD's 1-1/4” to 3”, tooling required: Spear, adapter, adapter extension, extension chair and lock. (See figure B)
3. Screw tooling components together. Thread the self-feeding spear/adapter into the tube I.D. in clockwise rotation. This can be done by hand or with a pneumatic impact wrench.
4. Position the hydraulic cylinder over the spear/adapter with the nose piece or extension chair in place.
5. Slip the horseshoe lock retainer into its mating slot on the adapter.
6. Position the Ram nose piece or extension chair against the tube sheet.
7. Drop safety shield into position and initiate the stroke of the Stub-Tugger.
8. When the maximum cylinder stroke is reached the tube should have broken loose from the tube sheet.
9. Reverse the ram stroke returning the ram to home position.
10. If the tube does not pull free from the vessel, the ram can be used to break the tube loose by removing the strike plate against the lock.
11. After tube is removed from the tube sheet, remove spear from the tube.

Part Number	Pump Type	HP	Maximum Operating Pressure (psi)	Power Requirement	Weight		Repair Kit
					Lbs.	Kg.	
M5773-00	110V Electric	1.13	10,000	25 Amps @110V	88	39.9	17-300332
M5776-00	220V Electric	1.13		15 Amps @220V			
M5775-00	Pneumatic	3		50 cfm @80 psi	91	41.3	
80-36102D3	Manual	NA	10,000	NA	28	12.7	17-300508

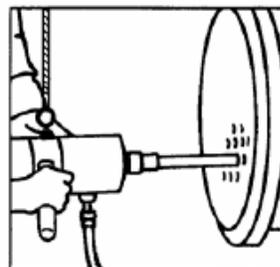
# OPERATION INSTRUCTIONS



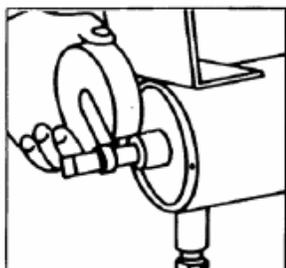
1. Thread the spear into the adapter.



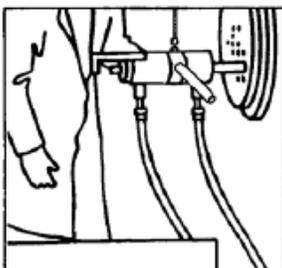
2. Using either a hand wrench or impact wrench, turn the spear into the tube.



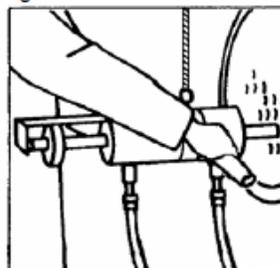
3. Place the double – acting ram unit over the spear – keep front of cylinder end clear of other tube ends and flush against the tube sheet.



4. Lift the safety shield and place the horseshoe lock into the adapter groove.



5. Drop the safety shield into working position, and apply pressure with the pump.



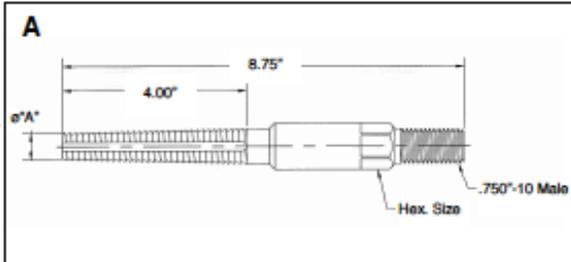
6. After cylinder pressure has pulled the tube through full stroke, return cylinder back into the ram unit. The ram can now be used to assist in the removal of tube by jolting the ram against the horseshoe lock.

**WARNING:**  
Do not stand behind cylinder when Stub-Tugger is in operation.

Specifications	
Standard Tube OD Range	3/8" - 3" (9.5 - 76mm)
Cylinder Capacity	30 Tons
Cylinder Length (with Nose Piece)	13-1/4" (337mm)
Diameter	6" (152mm)
Weight	40 lbs (18kg)
Stroke	6" (152mm)
Hydraulic Oil Type	ISO 32 Grade

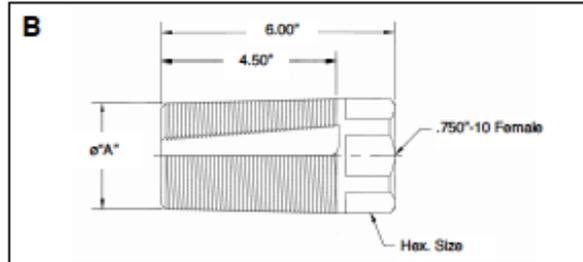
# TOOL SELECTION CHART

## Hex Drive Spear with Male Adapter Threads (1" O.D. and smaller)



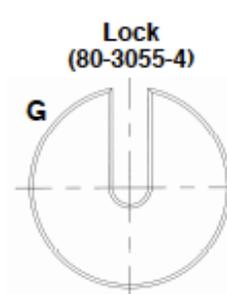
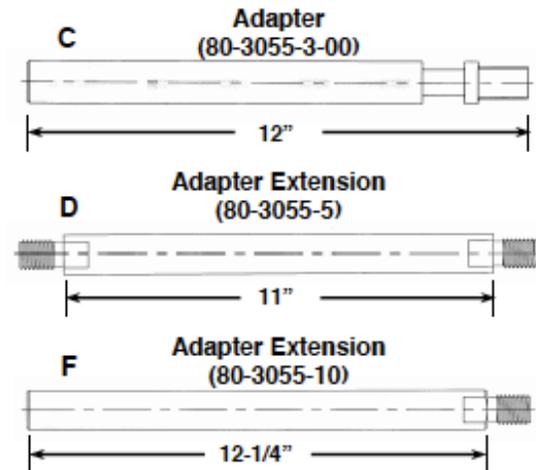
Size Range	Part No.	"A" Ø	Hex Size
3/8" x 20-22 Ga.	E375-20	.295"	5/8" Flat
1/2" x 20-22 Ga.	E500-20	.427"	7/8"
5/8" x 12-13 Ga.	E625-12	.402"	7/8"
5/8" x 14-15 Ga.	E625-14	.454"	7/8"
5/8" x 16-17 Ga.	E625-16	.489"	7/8"
5/8" x 18-19 Ga.	E625-18	.521"	7/8"
5/8" x 20-22 Ga.	E625-20	.545"	7/8"
3/4" x 8-9 Ga.	E750-8	.410"	7/8"
3/4" x 10-11 Ga.	E750-10	.470"	7/8"
3/4" x 12-13 Ga.	E750-12	.520"	7/8"
3/4" x 14-15 Ga.	E750-14	.579"	7/8"
3/4" x 16-17 Ga.	E750-16	.614"	7/8"
3/4" x 18-19 Ga.	E750-18	.646"	7/8"
3/4" x 20-22 Ga.	E750-20	.670"	7/8"
7/8" x 14-15 Ga.	E875-14	.699"	7/8"
7/8" x 16-17 Ga.	E875-16	.740"	7/8"
7/8" x 18-19 Ga.	E875-18	.760"	7/8"
7/8" x 20-22 Ga.	E875-20	.800"	7/8"
1" x 8-9 Ga.	E1000-8	.660"	7/8"
1" x 10-11 Ga.	E1000-10	.720"	7/8"
1" x 12-13 Ga.	E1000-12	.777"	7/8"
1" x 14-15 Ga.	E1000-14	.829"	7/8"
1" x 16-17 Ga.	E1000-16	.864"	7/8"
1" x 18-19 Ga.	E1000-18	.896"	7/8"
1" x 20-22 Ga.	E1000-20	.920"	7/8"

## Hex Drive Spear with Female Adapter Threads (1-1/4" O.D. and larger)



Size Range	Part No.	"A" Ø	Hex Size
1-1/4" x 8-9 Ga.	E1250-8	.900"	1-1/8"
1-1/4" x 10-11 Ga.	E1250-10	.977"	1-1/8"
1-1/4" x 12-13 Ga.	E1250-12	1.027"	1-1/8"
1-1/4" x 14-15 Ga.	E1250-14	1.079"	1-1/8"
1-1/4" x 16-17 Ga.	E1250-16	1.115"	1-1/8"
1-1/4" x 18-19 Ga.	E1250-18	1.145"	1-1/8"
1-1/2" x 10-11 Ga.	E1500-10	1.227"	1-1/4"
1-1/2" x 12-13 Ga.	E1500-12	1.255"	1-1/4"
1-1/2" x 14-15 Ga.	E1500-14	1.329"	1-1/4"
1-1/2" x 16-17 Ga.	E1500-16	1.365"	1-1/4"
1-3/4" x 10-11 Ga.	E1750-10	1.462"	1-5/8"
1-3/4" x 12-13 Ga.	E1750-12	1.512"	1-5/8"
1-3/4" x 14-15 Ga.	E1750-14	1.564"	1-5/8"
1-3/4" x 16-17 Ga.	E1750-16	1.600"	1-5/8"
2" x 7-9 Ga.	E2000-7	1.620"	1-5/8"
2" x 10-11 Ga.	E2000-10	1.710"	1-5/8"
2" x 12-13 Ga.	E2000-12	1.770"	1-5/8"
2" x 14-15 Ga.	E2000-14	1.820"	1-5/8"
2-1/2" x 7-9 Ga.	E2500-7	2.120"	2-1/4"
2-1/2" x 10-11 Ga.	E2500-10	2.220"	2-1/4"
2-1/2" x 12-13 Ga.	E2500-12	2.270"	2-1/4"
2-1/2" x 14-15 Ga.	E2500-14	2.320"	2-1/4"

Note: Above sizes are standard. Additional sizes available upon request.  
Note: Lubricant is recommended on pulling teeth.



## Extension Chair (part number below)



Part No.	Tube O.D.
80-3055-7	1-1/4"
80-36307	1-1/2" - 1-3/4"
80-36308	2"
80-36309	2-1/4" - 2-1/2"
80-36311	3"

Extension Chair "E" is sized to allow tube being pulled to enter I.D. of chair. Items B, C, D, E, and G are required for sizes 1-1/4" O.D. and larger. F is optional for extra reach. Consult factory for other sizes.

A, C, and G are required for tube sizes under 1-1/4" O.D. F is optional for extra reach.

# TROUBLESHOOTING

Problem	Cause	Solution
Cylinders will not extend or retract but pump achieves full pressure.	Hose connector not properly seated or pressurized.	Disconnect hoses, relieve pressure in hoses by depressing ball into a rag on floor. To relieve pressure in female connector insert wooden dowel into fitting, wrap a rag around connector and tap with a hammer.

# 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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