Tube Tugger®

Semi-Continuous Tube Extractor

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

Operating and Maintenance Instructions

www.elliott-tool.com

ELLIOTT TOOL TECHNOLOGIES

Table Of Contents

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

Chillers

Heat Exchangers

Fin Fan Coolers

Surface Condensers

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 INSTRUCTIONS

Every effort has been made to ensure the operation of the Elliott Tube-Tugger is safe, although it is impossible to remove all possibilities of accidents.

It is very important that all operators of this machine are fully aware of the following safety considerations.

1. If you are unfamiliar with the Elliott Tube-Tugger, read this Operation Manual thoroughly before use.
2. Always wear safety glasses, protective gloves, safety shoes and protective clothing.
3. Do not allow other people in the area of the machine unless they are wearing suitable protective clothing and equipment.
4. 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.
5. The Elliott Tube-Tugger 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.
6. Ensure all hydraulic connections are properly made and that the hydraulic hoses are in good condition.
7. Always be aware of hydraulic power shut off valve.
8. Always shut down the hydraulic power supply before changing tooling.
9. Do not operate the machine if there appears to be damage to the machine, if screws are loose or missing, or if performance appears to be unsatisfactory.
10. Never use the Tube-Tugger, or any other power tool when under the influence of medication, drugs or alcohol that decrease concentration and impair operator control.
11. 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.
12. 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.
13. 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.

SAFETY INSTRUCTIONS

14. 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.
15. Do not use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.
16. 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.
17. 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.
18. Always use protective covers on disconnected quick couplers.

START-UP

Unpacking:

The Elliott Tube-Tugger is shipped in a carton complete with all accessories listed. 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:

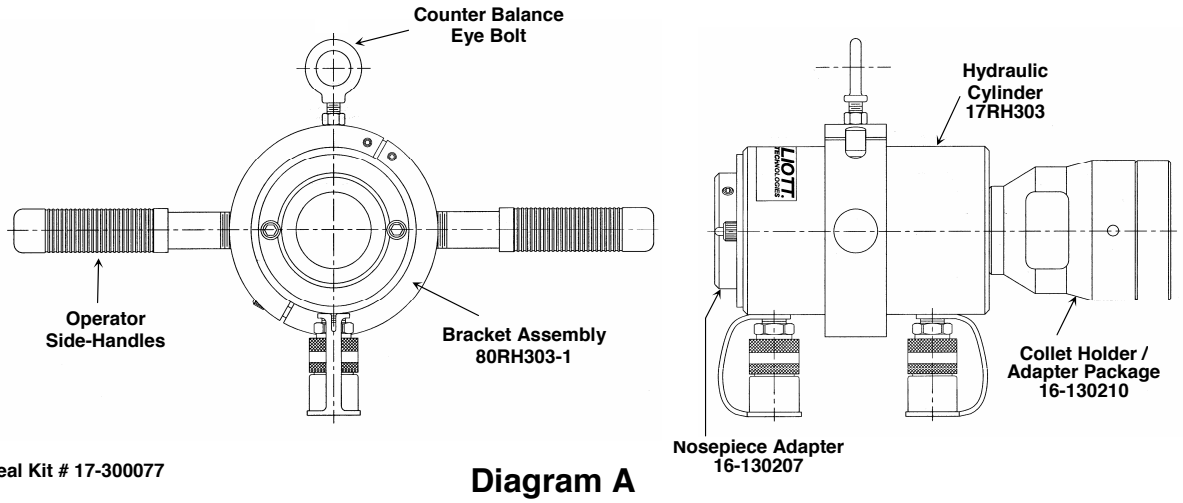
The Elliott Tube-Tugger requires a hydraulic power source. The hydraulic power source supplied by Elliott will be an electric, pneumatic or manual pump.

1. Position the Tube-Tugger and the hydraulic power source on a flat surface.
2. Connect counter balance eye bolt and fasten operator side handles.
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 Tube-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 Tube-Tugger is ready for tool installation.

Removing the Hydraulic Hoses:

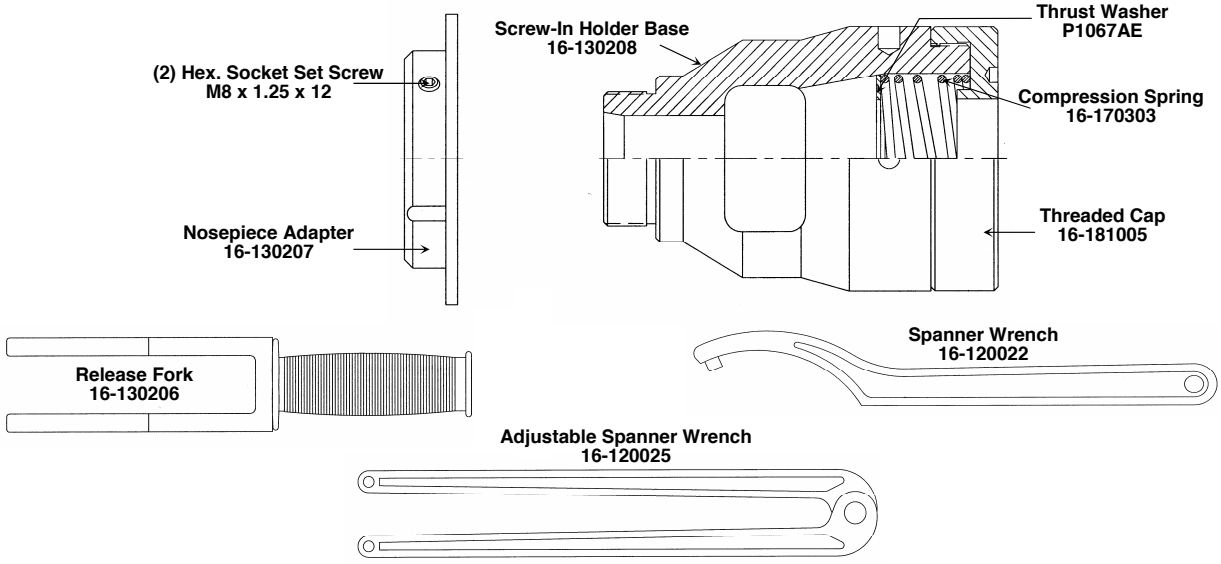
1. Neutralize the pressure before removing the hydraulic hoses.
   NOTE: On the hydraulic power units with remote control, flip the switch on the top of the hydraulic pump from "Remote" to "Off". Cycle both "Advance" and "Retract" switches on the remote control, to neutralize the pressure.

QUICK REFERENCE DIAGRAMS

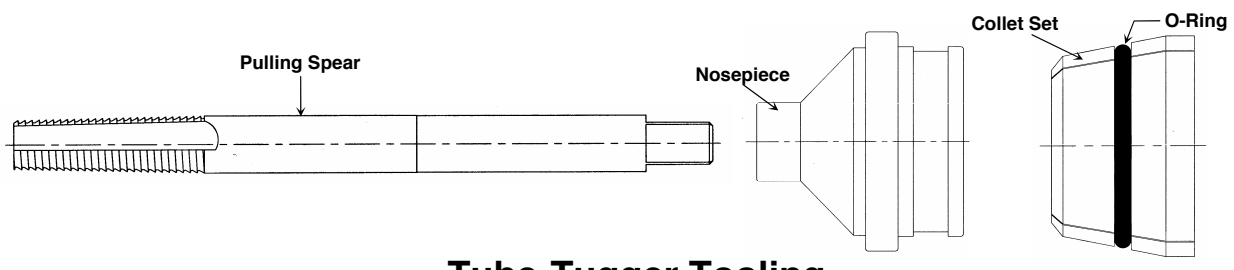


Seal Kit # 17-300077

Diagram A



Collet Holder / Adapter Package 16-130210
Diagram B



Tube-Tugger Tooling
Diagram C

OPERATING INSTRUCTIONS

The Tube-Tugger has been designed for efficient use and optimum productivity. The unit is small, lightweight and portable.

The Tube-Tugger will extract tubes with outside diameters ranging from 5/8” to 1-1/4”. Standard OD collet jaws and nosepieces are available for 5/8”, 3/4”, 7/8”, 1” and 1-1/4” OD tubes.

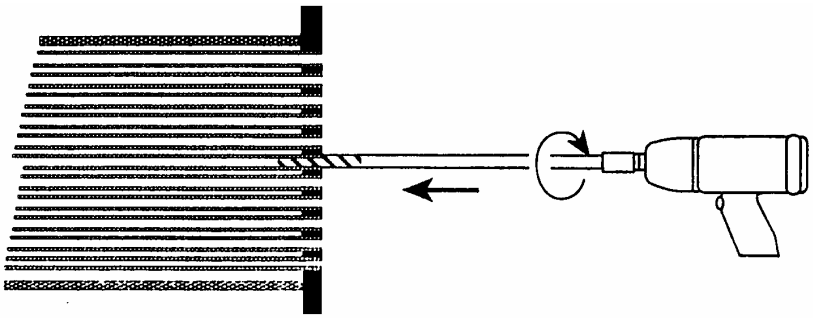
Pulling spears are sized for the tube ID. Twenty-five standard spear sizes are available.

The tool selection guide for the Tube-Tugger is listed on page 12.

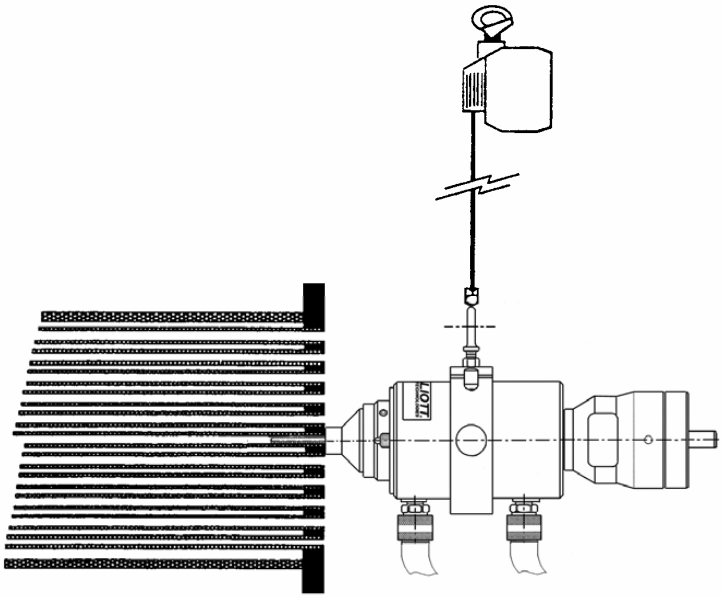
1. Determine the OD and ID of the tubes to be extracted.
2. Select the proper tools: Nosepiece, pulling spear and collet set (See Page 12).
3. Install the correct nosepiece and collet set on the Tube-Tugger.
4. Thread the spear into the tube ID using adapter with an impact drive or by hand.
   NOTE: Be careful not to impact the spear too deep, as this will cause difficulty in extracting the tubes.
5. Secure Tube-Tugger to counter balance.
6. Position the Tube-Tugger over the spear and hold against the tube sheet.
7. Initiate the stroke of the Tube-Tugger. When the Tube-Tugger has reached its maximum stroke, initiate the return stroke, keeping the Tube-Tugger in contact with the tube sheet. Repeat until the tube end is visible from the back end of the collet holder.
8. Once the spear has passed through the collet jaws, stop the Tube-Tugger and remove the spear from the tube.
9. Continue the extraction until the tube is fully extracted from the vessel. Once the tube is pulling freely the operator may hand pull the tube through the collet jaws to speed up the extraction process.
   NOTE: The release fork may be used to fully open the collet jaws if required.
10. Repeat steps 4 to 9 until all tubes are extracted.

OPERATING INSTRUCTIONS (CONT.)

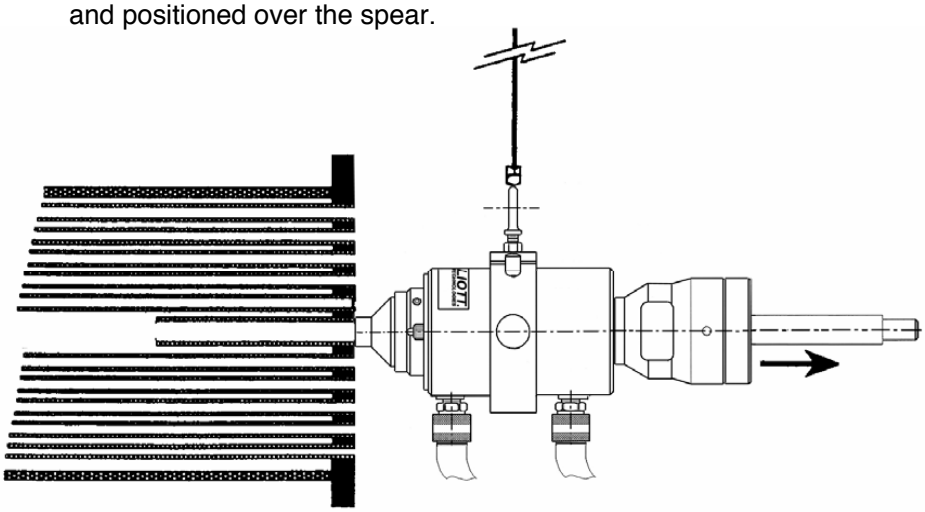
Diagram D



Spear being impacted into tube.



Tube-Tugger secured to counter balance
and positioned over the spear.



Tube-Tugger in operation.

TOOL CHANGEOVER

Changing the Nosepiece:

1. Loosen socket screws in nosepiece adapter with Allen wrench.
2. Remove nosepiece from nosepiece adapter.
3. Insert new nosepiece into nosepiece adapter.
4. Make sure that the socket screw engages into slotted ring of the nosepiece.
5. Tighten socket screw to lock in nosepiece.

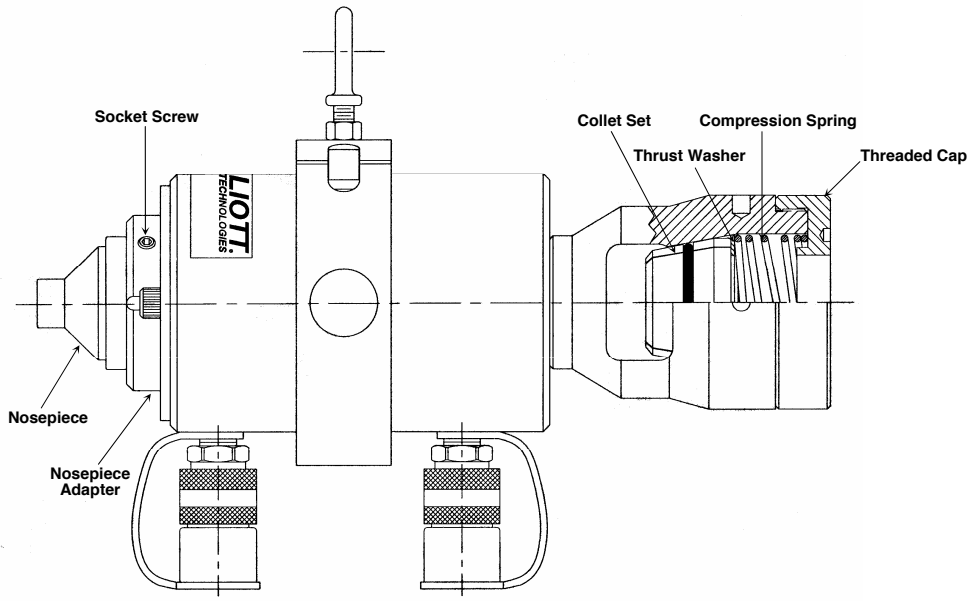


Diagram E

Changing the Collet Set:

6. Engage spanner wrench into threaded cap and loosen cap.
7. Unthread cap from rear of Tube-Tugger.
8. Remove compression spring and thrust washer.
9. Remove set of collet jaws from Tube-Tugger.
10. Lubricate new set of collet jaws on the OD of the jaws.
11. Insert new set of collet jaws into Tube-Tugger.
12. Insert thrust washer and compression spring.
13. Thread cap onto Tube-Tugger.
14. Secure cap firmly using spanner wrench and release fork.

TOOL SELECTION CHART / SPECIFICATIONS

Tube OD	BWG	Spear		Minimum Spear *Diameter		Maximum Spear *Diameter		Male Sq. Size	Nose Piece	*Collet Set with O-Ring
		29" Reach	48" Reach	Inch	mm	Inch	mm			
5/8"(15.9mm)	7	TT625-7	TT625-7-48	0.245	6.2	0.385	9.8	1/2"	80-40125N062	80-40125C062
	8-9	TT625-8	TT625-8-48	0.280	7.1	0.432	11.0			
	10-12	TT625-10	-	0.342	8.7	0.482	12.2			
	13-15	TT625-13	-	0.425	10.8	0.545	13.8			
	16-18	TT625-16	-	0.485	12.3	0.589	15.0			
	19-24	TT625-19	-	0.531	13.5	0.615	15.6			
3/4" (19.1mm)	7	TT750-7	TT750-7-48	0.370	9.4	0.528	13.4	5/8"	80-40125N075	80-40125C075
	8-9	TT750-8	TT750-8-48	0.405	10.3	0.576	14.6			
	10-12	TT750-10	TT750-10-48	0.467	11.9	0.625	15.9			
	13-15	TT750-13	TT750-13-48	0.550	14.0	0.685	17.4			
	16-18	TT750-16	TT750-16-48	0.610	15.5	0.727	18.5			
	19-24	TT750-19	TT750-19-48	0.656	16.7	0.750	19.1			
7/8" (22.2mm)	7	TT875-7	TT875-7-48	0.495	12.6	0.653	16.6		80-40125N087	80-40125C087
	8-9	TT875-8	TT875-8-48	0.530	13.5	0.701	17.8			
	10-12	TT875-10	TT875-10-48	0.592	15.0	0.750	19.1			
	13-15	TT875-13	TT875-13-48	0.675	17.1	0.810	20.6			
	16-18	TT875-16	TT875-16-48	0.735	18.7	0.852	21.6			
	19-24	TT875-19	TT875-19-48	0.781	19.8	0.875	22.2			
1" (25.4mm)	7	TT1000-7	TT1000-7-48	0.620	15.7	0.778	19.8	3/4"	80-40125N100	80-40125C100
	8-9	TT1000-8	TT1000-8-48	0.655	16.6	0.826	21.0			
	10-12	TT1000-10	TT1000-10-48	0.717	18.2	0.875	22.2			
	13-15	TT1000-13	TT1000-13-48	0.800	20.3	0.935	23.7			
	16-18	TT1000-16	TT1000-16-48	0.860	21.8	0.977	24.8			
	19-24	TT1000-19	TT1000-19-48	0.906	23.0	1.000	25.4			
1-1/4" (31.8mm)	7	TT1250-7	TT1250-7-48	0.870	22.1	1.028	26.1	1"	80-40125N125	80-40125C125
	8-9	TT1250-8	TT1250-8-48	0.905	23.0	1.076	27.3			
	10-12	TT1250-10	TT1250-10-48	0.967	24.6	1.125	28.6			
	13-15	TT1250-13	TT1250-13-48	1.050	26.7	1.185	30.1			
	16-18	TT1250-16	TT1250-16-48	1.110	28.2	1.227	31.2			
	19-24	TT1250-19	TT1250-19-48	1.156	29.4	1.250	31.8			

** O-Ring number P8309-225 is supplied with all Collet Sets.*
Elliott highly recommends using P8788 Spear Lubricant with your spears to greatly increase spear life.

TOOL SELECTION CHART / SPECIFICATIONS

Puller Specifications						
Puller	Capacity	Stroke	Diameter	Lengths		
				Collapsed	Extended	Across Handles
80-40125	30 Ton (27.2Mt)	3.000" (76.2mm)	6.500" (165.1mm)	12.940" (329.0mm)	15.940" (405.0mm)	18.250" (464.0mm)
80-40125-6		6.000" (152.4mm)		18.000" (457.0mm)	22.000" (559.0mm)	

Hydraulic Pumps							
Part Number	Pump Type	HP	Maximum Operating Pressure (psi)	Power Requirement	Weight		Repair Kit
					Lbs.	Kg.	
M5773-00	110V Electric		10,000	25 Amps @110V	88	39.9	17-300332
M5776-00	220V Electric			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

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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