

Stall Torque Pneumatic Rolling Motor

440LA



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



Operating and Maintenance Instructions

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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.

WARNING

When using electric tools, certain safety precautions are required to reduce the risk of electrical shock and personal injury.

WARNING

To reduce the risk of injury, always unplug your machine before performing any maintenance. Never disassemble the machine or try to do any wiring on the electrical system. Contact Elliott for all repairs.

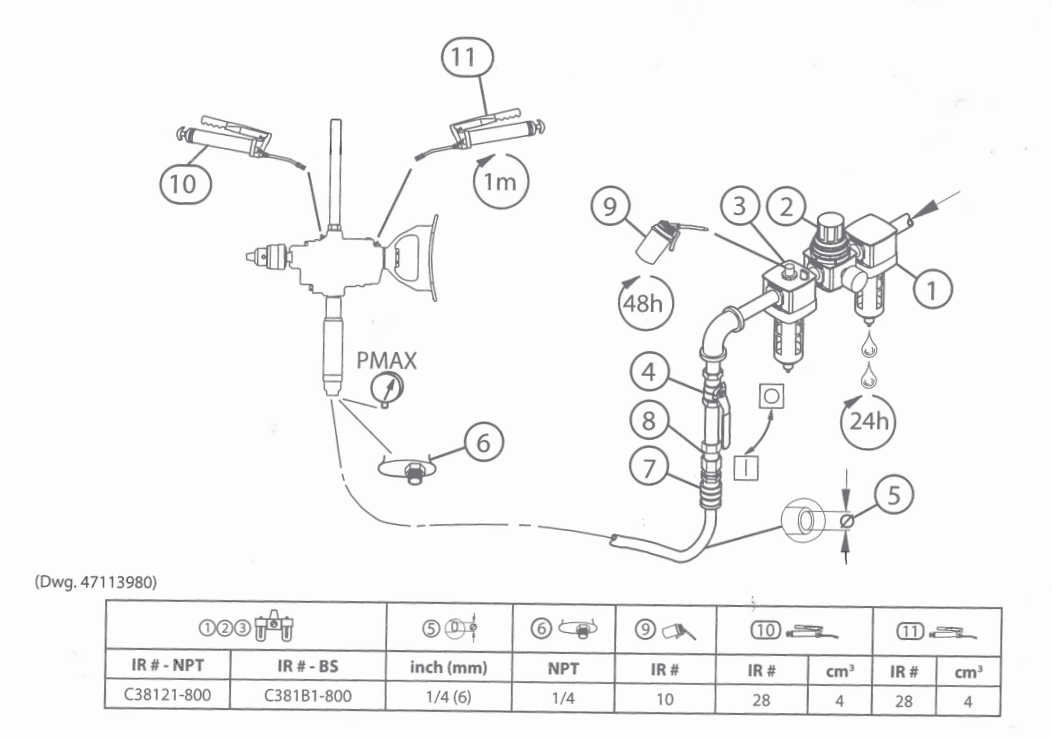
- Know Your Elliott Tool. Read this manual carefully to learn your tool's application and limitations as well as the potential hazards specific to this tool.
- Ground Your Elliott Tool. Always use properly grounded electrical outlets, and if using an extension cord, make sure that it is of the proper size for the electrical load and it is equipped with a ground wire and ground plug.
- Avoid Dangerous Environments. Do not use power tools in damp or wet locations
- Keep Work Area Clean and Well Lit. Cluttered, dark work areas invite accidents.
- 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.
- 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. 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.
- 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

SAFETY GUIDELINES

be properly repaired or replaced by an Elliott service facility. For all repairs, insist on only identical replacement parts.

- Keep Hands Away from All Moving 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.
- Unplug Tool. Unplug tool when it is not in use, before changing accessories or performing recommended maintenance.
- 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.

GENERAL INFORMATION



Product Specifications

- Free Speed RPM: 350
- Capacity in Steel
 - a.) Drilling: 7/8" (22mm)
 - b.) Reaming: 5/8" (16mm)
- Spindle Attachment: No. 2 Morse Taper Socket
- Vibration: <2.5 m/s²

INSTALLATION AND LUBRICATION

Installation and Lubrication

Size air supply line to ensure tool's maximum operating pressure (P_{MAX}) at tool inlet. Drain condensate from valve(s) at low point(s) of piping, air filter and compressor tank daily. Install a properly sized Safety Air Fuse upstream of hose and use an anti-whip device across any hose coupling without internal shut-off, to prevent hose whipping if a hose fails or coupling disconnects. See drawing 47113980 and table on page 2. Maintenance frequency is shown in a circular arrow and defined as h=hours, d=days, and m=months of actual use. Items identified as:

- | | |
|-----------------------------|------------------------------|
| 1. Air filter | 7. Coupling |
| 2. Regulator | 8. Safety Air Fuse |
| 3. Lubricator | 9. Oil |
| 4. Emergency shut-off valve | 10. Grease - during assembly |
| 5. Hose diameter | 11. Grease - through fitting |
| 6. Thread Size | |

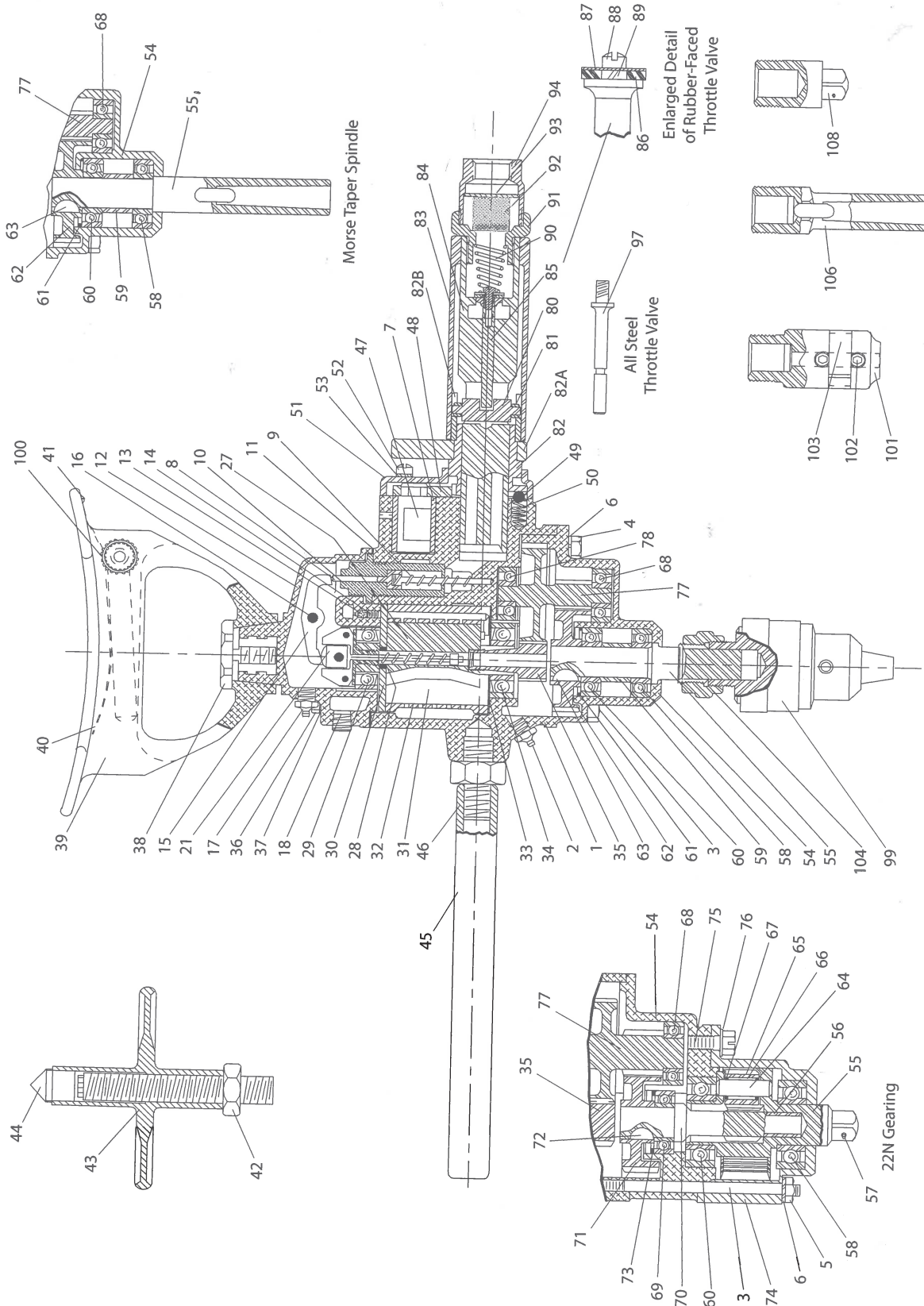
Oiler Adjustment

To adjust oiler, remove the Backhead and turn the Oiler Adjusting Screws . **Turning the Screws in (clockwise) reduces the oil flow**. Backing the Screws out increases the oil flow. The oil flow can be controlled by turning either Screw.

Parts and Maintenance

When the life of the tool has expired, it is recommended that the tool be disassembled, degreased and parts be separated by material so that they can be recycled.

PARTS LISTS & DIAGRAMS



PARTS LISTS & DIAGRAMS

Item	Part Description
1	Motor Housing
	for 22N models
	for models ending in -EU
	for all other models
*	Warning Label
	for models ending in -EU
	for all other models
*	Nameplate
	for models ending in -EU
	for all other models
2	Grease Fitting
‡ 3	Housing Stud (for 22N) (4)
---	Housing Long Cap Screw (for all others) (4)
‡ 4	Housing Short Cap Screw (2)
5	Stud Nut (1 for each stud)
6	Lock Washer (6)
7	Reverse Valve Bushing
8	Governor Valve
9	Governor Valve Spring
• 10	Governor Valve Bushing
• *	Air Port Gasket (1 for 2X Series and 2 for 22 Series)
• 11	Backhead Gasket
12	Backhead
13	Oiler Felt (2)
14	Oiler Adjusting Screw (2)
15	Governor Lever
16	Governor Lever Pin
17	Grease Fitting
18	Oil Chamber Plug
21	Governor Assembly
27	Rotor
28	Rotor Bearing Spacer
• 29	Rear Rotor Bearing
• 30	Rear End Plate
• 31	Vane Packet (set of 5 Vanes)
32	Cylinder
*	Cylinder Dowel
• 33	Front End Plate
• 34	Front Rotor Bearing
35	Rotor Pinion
	for 2XJ, 2XK, 22J, 22K and 22KW (15 teeth)
	for 2XM and 22M (9 teeth)
	for 22N (17 teeth)
36	Backhead Cap Screw (6)
37	Backhead Cap Screw Lock Washer (6)
38	Breast Plate Screw
39	Breast Plate
40	Chuck Wrench Clip
41	Clip Screw
---	Feed Screw Assembly
42	Feed Screw

Item	Part Description
43	Feed Handle
44	Feed Handle Center
45	Dead Handle
46	Dead Handle Stud
47	Reverse Valve
48	Reverse Valve Sector
† 49	Stop Pin
† 50	Stop Pin Spring
51	Sector Cover
52	Sector Cover Screw (4)
53	Sector Cover Screw Lock Washer (4)
*	Throttle Body Set Screw
*	Throttle Body Set Screw Lock Washer
98	Suspension Ring
99	Drill Chuck
	1/8" to 5/8" capacity
	0 to 1/2" capacity
	5/64" to 1/2" capacity
100	Drill Chuck Wrench
	for 1/8" to 5/8" chuck
	for 0 to 1/2" chuck
	for 5/64" to 1/2" capacity
101	Wood Bit Chuck
102	Wood Bit Chuck Screw (1 for R2H-51; 2 for R22W-151)
103	Chuck Screw Retainer
---	Wood Bit Chuck Wrench (5/16" x 6" long hex wrench)
104	Chuck Nut
105	Use-Em-Up Socket (No. 2 Morse Taper Socket)
106	Morse Taper Socket
	No. 1 Morse Taper Socket
	No. 2 Morse Taper Socket
	No. 3 Morse Taper Socket
• 107	Socket Adapter (1/2" square drive) (Pin-Type Retainer)
*	Socket Retaining Plunger
*	Retaining Plunger Spring
108	Socket Adapter (Overall length 1-3/4")
	1/2" Square Drive
	5/8" Square Drive
*	Hose Nipple (1/2" hose to 3/8" male pipe)

* Not Illustrated.

PARTS LISTS & DIAGRAMS

Item	Part Description
54	Gear Case
	for threaded Stub Taper or
	No. 2 Morse Taper Spindle
	for No. 3 Morse Taper Spindle
	for 5/8" Square Drive or Stub Taper Spindle
	Spindle Assembly
	Threaded Spindle (for Series 2X)
	Stub Taper Spindle (for Series 22)
	Stub Taper Spindle
	No. 2 Morse Taper Spindle
	No. 3 Morse Taper Spindle
	5/8" Square Drive Spindle with Pin-Type Retainer
	5/8" Square Drive Spindle with Ball-Type Retainer
55	Spindle
	Threaded (703-16 thd.) (for Series 2X)
	Stub Taper (for Series 22)
	Stub Taper
	No. 2 Morse Taper
	No. 3 Morse Taper
	5/8" Square Drive with Pin-Type Retainer
	5/8" Square Drive with Ball-Type Retainer
56	Spindle Gear Shaft Bushing
	Socket Retaining Plunger (for 5/8" Square Drive Spindle)
	Pin-Type
	Ball-Type
	Plunger Retaining Spring (for 5/8" Square Drive Spindle)
58	Spindle Bearing
59	Spindle Bearing Spacer
60	Thrust Bearing
61	Bearing Retainer
62	Spindle Gear
63	Spindle Gear Key
64	Planet Gear Shaft (3)
65	Planet Gear (3)
66	Planet Gear Roller (63)
67	Roller Retaining Plate (6)
68	Intermediate Gear Front Bearing
69	Spindle Gear Bearing
70	Spindle Gear Shaft
71	Spindle Gear
72	Spindle Gear Key
73	Bearing Retainer
74	Gear Case Cover
75	Gear Case Cover Cap Screw
76	Cover Cap Screw Lock Washer
77	Intermediate Gear
	for 2XJ and 22J (13/45 teeth)
	for 2XK, 22K and 22KW (10/45 teeth)
	for 2XM and 22M (9/50 teeth)
for 22N (13/43 teeth)	
78	Intermediate Gear Rear Bearing

Item	Part Description
---	Throttle Assembly
79	Throttle Cam
80	Throttle Valve Lift Pin
81	Throttle Valve Lift Pin Roller (2)
82	Throttle Sector
82A	Reverse Lever (for reversible models only)
*	Reverse Lever Set Screw (2)
82B	Throttle Cam (for reversible models only)
83	Throttle Sleeve
† 84	Throttle Body
‡ 85	Rubber-Faced Throttle Valve
• 86	Throttle Valve Face
87	Throttle Valve Face Cap
88	Throttle Valve Face Retaining Screw
89	Retaining Screw Lock Washer
• 90	Throttle Valve Spring
----	Air Strainer Assembly
91	Air Strainer Cap
92	Air Strainer Screen
93	Air Strainer Screen Support
94	Air Strainer Body
95	Throttle Lever
96	Throttle Lever Spacer
*	Rotational Label
97	All Steel Throttle Valve

* Not illustrated.

MAINTENANCE INSTRUCTIONS

WARNING

Always wear eye protection when operating or performing maintenance on this tool.

Always turn off the air supply and disconnect the air supply hose before installing, removing or adjusting any accessory on this tool or before performing any maintenance on this tool.

Note: When reading the instructions, refer to exploded diagrams in Parts Information Manual when applicable (see under Related Documentation for form numbers).

Disassembly

General Instructions

1. Do not disassemble the tool any further than necessary to replace or repair damaged parts.
2. Whenever grasping a tool or part in a vise, always use leather-covered or copper-covered vise jaws to protect the surface of the part and help prevent distortion. This is particularly true of threaded members and housings.
3. Do not remove any part which is a press fit in or on a subassembly unless the removal of that part is necessary for repairs or replacement.
4. Do not disassemble the tool unless you have a complete set of new gaskets and O-rings for replacement.

Maintenance Procedure

1. Keep the air strainer clean. Periodically, as experience indicates, unscrew the Air Strainer Body (94) from the Air Strainer Cap (91) and wash the Air Strainer Screen (92) in a clean, suitable, cleaning solution. Push the prongs on the Air Strainer Screen Support (93) into one end of the Screen and insert the Screen, support end first, into the Body when assembling the strainer.
2. For Reversible Tools, remove the throttle body set screw from the side of the Motor Housing (1 or 252) before attempting to pull the Throttle Body (84) from the Housing.
3. The thread on the Governor Assembly (21) is a left-hand thread; turn it clockwise to unscrew it from the Rotor (27).

WARNING

Never clamp the Cylinder (32) in a vise.

4. When disassembling the motor, grasp the Cylinder in one hand. Insert a 5/16" diameter rod into the bore of the Rotor (27) and drive the rotor hub out of the Rear Rotor Bearing (29). Unscrew the Rotor Pinion (35) from the Rotor and screw a 3/8"-24 thread bolt in its place. Support the Front End Plate (33) and press the rotor front hub out of the Front Rotor Bearing (34).
5. The front hub of the Rotor contains a tapered socket. The rim of the Front End Plate is flatted, one flat on Series 2X; two on Series 22. When assembling the motor, slip the Front End Plate, crescent grooved side first, over the rotor front hub and retain it by pressing the Front Rotor Bearing shielded side first, onto the rotor hub as far as possible without binding the End Plate against the rotor face. Clean and dry the tapered surfaces of the Rotor and Rotor Pinion and screw the Pinion tightly into the Rotor. Insert a Vane (31) into each vane slot in the Rotor. Place the Cylinder over the Rotor and onto the End Plate. Align the air ports and dowel hole in the Cylinder and End Plate. If they cannot be aligned, invert the Cylinder. Install the Rear End Plate (30), crescent grooved side first, and Rear Rotor Bearing (29), shielded side first.
6. When applying the Backhead (12 or 260), draw it evenly against the Backhead Gasket (11) on the face of the Motor Housing (1 or 252) by turning each Backhead Cap Screw (36) a little at a time until all are tight.

For All Models Except 22N

1. Insert a small screwdriver through one of the holes in the Spindle Gear (62) and pry the Bearing Retainer (61) out of the groove in the Gear Case (54) before attempting to withdraw the Spindle Assembly from the Gear Case.

2. Press the Spindle (55) out of the Spindle Gear and remove the Spindle Gear Key (63) from the Spindle before attempting to press the Spindle out of the Thrust Bearing (60), Spindle Bearing Spacer (59) and Spindle Bearing (58).
3. Press the Intermediate Gear Front Bearing (68) into the Gear Case before installing the Spindle Assembly.
4. In the order named, press the Spindle Bearing, sealed side first, Spindle Bearing Spacer and Thrust Bearing, shielded side first, onto the Spindle.
5. Lay the Bearing Retainer on the web of the recessed hub side of the Spindle Gear and press the Spindle into the Spindle Gear.
6. Slide the Spindle Assembly into the Gear Case and install the Bearing Retainer in the groove in the Gear Case with a small screwdriver inserted through one of the holes in the Spindle Gear.

For Model 22N

1. Rotate the Spindle Gear (71) until one of the holes in the gear web aligns with the notch in the gear case wall. Insert a small screwdriver into the notch and pry the Bearing Retainer (73) out of the groove in the Gear Case before attempting to remove the Spindle Gear Shaft (70) from the Gear Case.
2. Press the Spindle Gear Shaft out of the Spindle Gear and remove the Spindle Gear Key (72) from the Shaft before attempting to press the Shaft out of the Spindle Gear Bearing (69).
3. Support the short hub end of the Spindle (55 or 251) and press on the front end of the Planet Gear Shafts (64) when removing the Shafts from the spindle gear head. The Planet Gear Rollers (66) and Roller Retaining Plates (67) are free to drop out when the Gears are removed from the Spindle. Use care to prevent loss of these small parts.
4. When assembling the Spindle, coat the inner wall of the Planet Gears (65) with the recommended grease and insert a Planet Gear Shaft through each gear bore. Slide twenty-one Planet Gear Rollers into the space between the gear wall and Shaft. Slip a Roller Retaining Plate over each end of the Shaft and against the Rollers. Carefully withdraw the Shafts and insert the Gears into the gear frame on the Spindle.
5. Install the Spindle Bearing shielded side first on the Spindle. On the shielded side, the face of the bearing inner ring is slightly lower than that of the outer ring. On the opposite side of the Bearing the faces are flush.
6. Press the Intermediate Gear Front Bearing into the Gear Case before installing the assembled Spindle Gear Shaft.
7. Lay the Bearing Retainer on the web of the recessed hub side of the Spindle Gear and press the Spindle Gear Shaft into the Spindle Gear. Slide the assembled Spindle Gear Shaft into the Gear Case. Insert a small screwdriver through the holes in the Spindle Gear and install the Bearing Retainer in the gear case groove.

TROUBLESHOOTING

Trouble	Probable Cause	Solution
Low power or low free speed	Dirty Inlet Bushing or Air Strainer Screen and/or Exhaust Silencer	Using a clean, suitable, cleaning solution in a well-ventilated area, clean the Air Strainer Screen, Inlet Bushing and Exhaust Silencer. Allow to air dry.
	Worn or broken Vanes	Replace complete set of Vanes.
	Worn or broken Cylinder and/or scored End Plates.	Examine Cylinder and replace it if it is worn or broken or if bore is scored or wavy. Replace End Plates if they are scored.
	Dirty motor parts.	Disassemble the tool and clean all parts with a clean, suitable, cleaning solution, in a well-ventilated area. Reassemble the tool.
	Improper positioning of Reverse Valve.	Make certain Reverse Valve is fully engaged to left or right.
Motor will not run	Incorrect assembly of motor.	Disassemble motor, replace worn or broken parts and reassemble as instructed.
Rough operation	Worn or broken Rear Rotor Bearing Assembly or Front Rotor Bearing	Examine each bearing. Replace if worn or damaged.
	Worn or broken Bevel Gear or Bevel Pinion	Examine the Bevel Gear and Bevel Pinion. If either is worn or damaged, replace both the Gear and the Pinion because they are a matched set and must not be used separately.
Air leaks	Worn Valve Face or Valve Face Cap	Replace worn parts.
	Oil Chamber Plug worn or not tight	Tighten the Plug. If the problem persists, replace the Plug.
Gear Case gets hot	Insufficient grease	Clean and inspect the Gear Case gearing parts and lubricate as instructed in LUBRICATION.
	Worn or damaged parts	Clean and inspect the Gear Case and gearing. Replace worn or broken components.

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.

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

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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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