



Lite-Touch Series Pneumatic Screwdriver Repair Manual

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Tools Needed for Repair

US-LT Drivers

1. Phillips Drivers (#1 & #2)
2. Dental Pick
3. Pin Spanners (#351)
4. Needle Nose Pliers
5. Pin Punch
6. Ball Peen Hammer (8 oz.)
7. Standard Pliers
8. Snap Ring Pliers
9. Crescent Wrench
10. Lock Ring & Horseshoe Washer Pliers (Proto-P250)
11. Propane Torch (Turner Self-Lighting)

Pneumatic Screwdriver Repair Fixtures

US-LT Series Jig List

Jig to Insert the Band on the Anvil

Part Number	Model Number
471-670-7-1	US-LT Series

Jig to Hold Tool for Disassembly & Reassembly

Part Numbers	Model Numbers
459-025-1-0	US-LT10 & US-LT20
408-025-1-0	US-LT30 & US-LT40
444-025-4-0	US-LT50

Disassembly and Reassembly of the Clutch

Disassembly

1. Separate the Clutch Casing from the Gear Casing and remove the Clutch Assembly.
2. Remove the Regulator Screw by inserting a Phillips Driver between it and the Retainer and turning the Phillips Driver counter-clockwise.
3. Slide the Retainer off the Anvil. Make sure not to lose the Pin that locks the Retainer to the Anvil.
4. Remove the Torque Spring, Spring Setter, and Back-up Ring from the Anvil.
5. Carefully slide the Cam Ring up and remove the four Balls from under it. Now remove the Cam Ring.
6. Lift the hooked end of the Band out of the hole in the Anvil and slide it around the Anvil until the end of the Notch Pin is exposed. Now remove the Notch Pin. **Caution:** Do not bend or stretch the Band out of shape.
7. Remove the Snap Ring from the back of the Anvil.
8. Slide the Anvil Spacer up and remove the Balls that hold the Cam in the Anvil. **Note:** "C" model clutches do not have the Snap Ring, Anvil Spacer, or Balls.
9. Now slide the Cam and Pilot Pin out of the Anvil. Remove the Pilot Pin from the Cam.
10. Remove the Ball and Spring from out of the Anvil.
11. Thoroughly clean all parts.

Inspection

1. **Cam:** Inspect the Cam Lobes for grooving where they push the Ball out against the Cam Ring.
Pilot Pin: Inspect the shoulder that is pushed up against the Notch Pin for rounding.
Notch Pin: Inspect the ends for rounding.
Cam Ring: Inspect the inside surface where the Balls ride for pitting and grooving.
Balls: Inspect for pitting.
2. Inspect all Springs for tension.
3. Replace all worn parts.

Reassembly

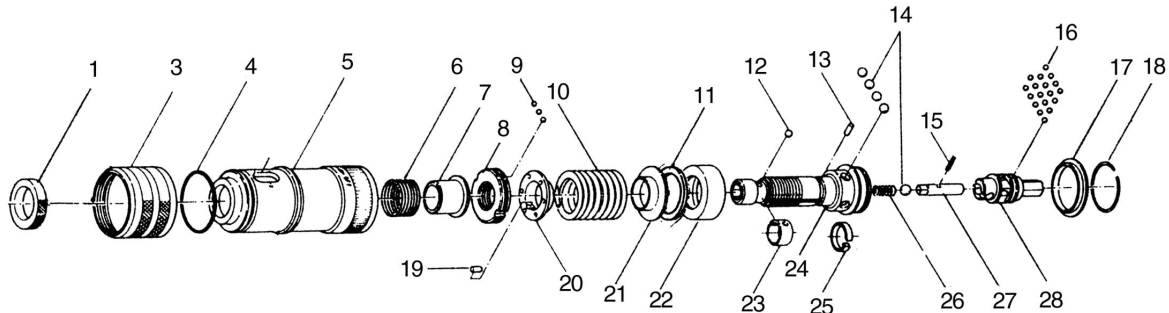
1. Install the Pilot Pin into the Cam with the square end up.
2. Put the Spring and Ball into the Anvil and slide the Cam into the Anvil.
3. Line up the groove on the Cam with the hole in the Anvil and install all of the Balls that hold the Cam in place.
4. Install the Anvil Spacer and Snap Ring. **Note:** Make sure the Anvil's Spacer is installed the correct way. Consult breakdown for the tool you are working with for proper installation.
5. Install the Notch Pin into the Anvil and slide the Band back into place. Now rotate the Cam and make sure the Notch Pin is pushing the Band up.
6. Put a small amount of grease in each hole of the Anvil and install the Balls.

Disassembly and Reassembly of the Clutch (cont.)

7. Slide the Cam Ring down onto the Balls.
8. Put the Back-up Ring and Spring Retainer down onto the Cam.
9. Install the Torque Spring and Retainer onto the Anvil.
10. Line the slot in the Anvil with the slot in the Retainer and install the Locking Pin.
11. Thread the Regulator Screw onto the Anvil (counter-clockwise).
12. Install the Clutch back into the tool and test.

Exploded View of the Clutch Assembly

US-LT Series



Part Number	Description	Part Number	Description
1	Bushing	16	3/32 Steel Ball
3	Clutch Casing Sleeve	17	Anvil Spacer
4	O-Ring	18	Snap Ring
5	Clutch Casing	19	Pin
6	Spring	20	Retainer
7	Bit Sleeve	21	Spring Setter
8	Regulator Screw	22	Cam Ring
9	3/32 Steel Ball	23	Bit Band
10	Torque Spring	24	Anvil
11	Back-up Ring	25	Notch Pin Band
12	1/8 Steel Ball	26	Spring
13	Notch Pin	27	Pilot Pin
14	3/16 Steel Ball	28	Cam
15	"G" Pin		

Disassembly and Reassembly of the Gear Section

Disassembly

1. Remove Gear Casing from the Air Motor Casing (right-hand thread).
2. Remove the Snap Ring from the front of the Gear Casing.
3. Remove the Planet Gears and the Gear Cage from the Gear Casing. In some Gear Casings, the Gear Cage will come out the front of the Gear Casing.
4. Remove the Bearing from the Gear Casing.
5. Clean all parts thoroughly.

Inspection

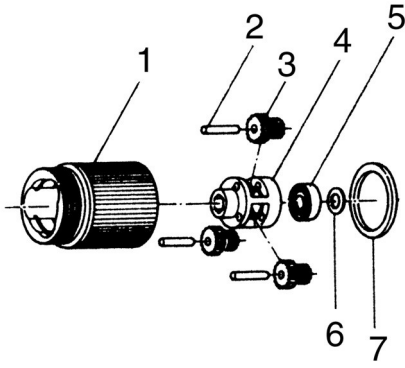
1. Inspect the teeth of the Gear Casing and Planet Gears for pitting and grooving.
2. Inspect Needle Rollers for wear.
3. Inspect Bearings for side play and knocking.
4. Replace all worn parts.

Assembly

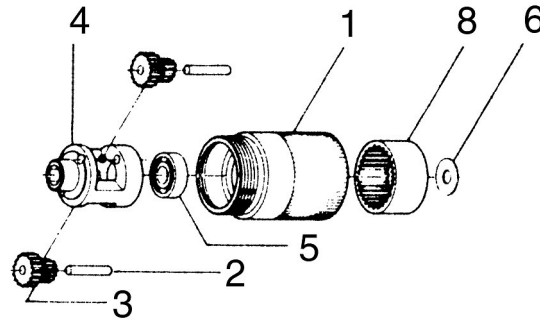
1. Install the Bearing and Snap Ring into the front of the Gear Casing. **Note:** Except for the US-LT20-18 & US-LT30-17, proceed to step #6.
2. Install the Second Gear Cage into the Casing.
3. Install three Needle Rollers and the first set of Planet Gears. Put a small amount of grease by each Planet Gear and on the Gear Cage.
4. Install the First Gear Cage, Needle Rollers, and the second set of Planet Gears. Put a small amount of grease by each Planet Gear and on the Gear Cage. **Note:** On the mid and low RPMs, make sure to install the Spacer.
5. If the tool you are working with has a Rotor Gear, install the Rotor Gear and Spacer into the Gear Cage.
6. On the US-LT30-17, install the Planet Gears and Needle Rollers into the Gear Cage. Now install the Gear Cage into the Gear Casing through the front and install the Bearing and Snap Ring.
7. On the US-LT20-18, install the Internal Gear on the top of the Air Motor section and over the Rotor. Now install the Planet Gears and Needle Roller into the Gear Cage. Make sure the timing marks and top of the larger end are lined up opposite one another and install into the Internal Gear. Slide the Gear Casing down over the Internal Gear and thread onto the Air Motor Casing.
8. Install the Gear Casing Assembly onto the Air Motor Casing and test the tool.

Exploded View of the Gear Casing Assembly

US-LT30B-11 Series



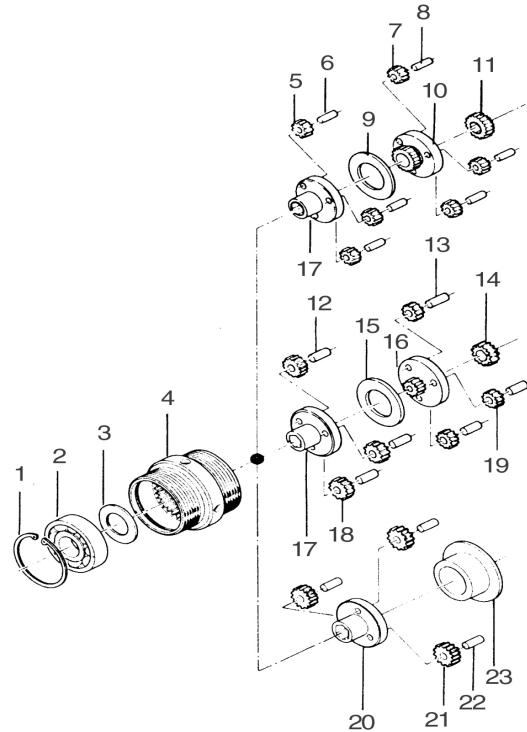
US-LT20B-18



Part Number	Description	Part Number	Description
1	Gear Casing	5	Ball Bearing
2	Needle Roller	6	Spacer
3	Planet Gear	7	Spacer
4	Gear Cage	8	Internal Gear

Exploded View of the Gear Casing Assembly

US-LT Series



Part Number	Description	Part Number	Description
1	Snap Ring	13	Needle Roller
2	Bearing	14	Rotor Gear
3	Spacer	15	Spacer
4	Gear Casing	16	First Gear Cage
5	Planet Gear	17	Second Gear Cage
6	Needle Roller	18	Planet Gear
7	Planet Gear	19	Planet Gear
8	Needle Roller	20	Gear Cage
9	Spacer	21	Planet Gear
10	First Gear Cage	22	Needle Roller
11	Rotor Gear	23	Spacer
12	Needle Roller		

Disassembly and Reassembly of the Air Motor Section

Disassembly

1. Remove the Air Motor Casing from the Gear Casing.
2. Taking hold of the end of the Rotor, pull the Air Motor out of the Casing.
3. Pull the Front Plate off and remove the Bearing.
4. Remove the Blades from the Rotor.
5. Press the Rotor out of the Rear Plate Bearing and remove the Bearing from the Rear Plate.
6. Thoroughly clean all parts.

Inspection

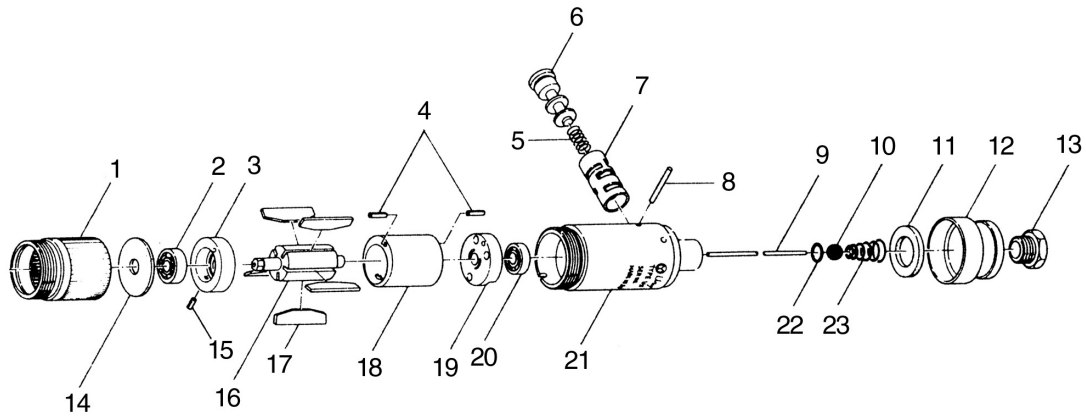
1. Inspect Bearings for knocking and side play.
2. Inspect Cylinder for waviness.
3. Inspect Plates for grooving.
4. Inspect Blades for splitting and grooving on the sides and ends.
5. Inspect the Exhaust Filter for dirt.
6. Replace all worn parts.

Assembly

1. Press greased Bearing into Rear Plate and over the Rotor. **Note:** There should be a slight drag between the Rotor and the Rear Plate.
2. Lightly oil the Blades and install into the Rotor with the flat side out.
3. Slide Cylinder down over the Rotor, lining up the Roll Pin with the center hole in the Rear Plate.
4. Grease Bearing and press into the Front Plate. Install the Front Plate onto the Rotor with the Bearing side up.
5. Slide the Air Motor Assembly into the Casing, lining up the Roll Pin on the side of the Front Plate with the slot in the Casing. **Note:** The Air Motor will stick out of the Casing about 1/16th of an inch.
6. Thread the Gear Casing Assembly onto the Air Motor Casing and test the tool.

Exploded View of the Air Motor Assembly

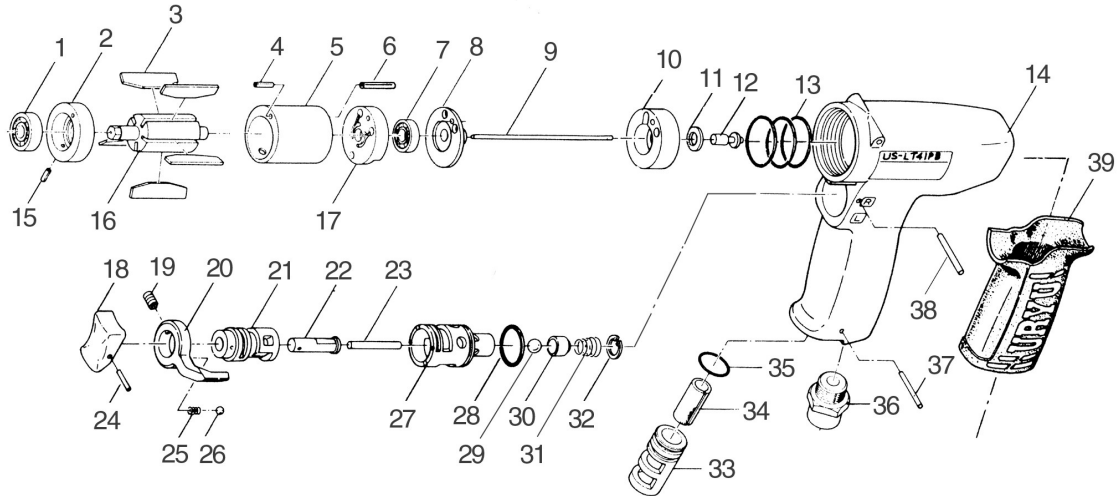
US-LT Push to Start Series



Part Number	Description	Part Number	Description
1	Gear Casing	13	Air Inlet Bushing
2	Bearing	14	Spacer
3	Front Plate	15	Roll Pin
4	Roll Pin	16	Rotor
5	Spring	17	Blade
6	Reverse Valve	18	Cylinder
7	Reverse Valve Bushing	19	Rear Plate
8	Pin	20	Bearing
9	Valve Rod	21	Casing
10	Ball	22	O-Ring
11	Filter	23	Cone Spring
12	Exhaust Deflector		

Exploded View of the Air Motor Assembly (cont.)

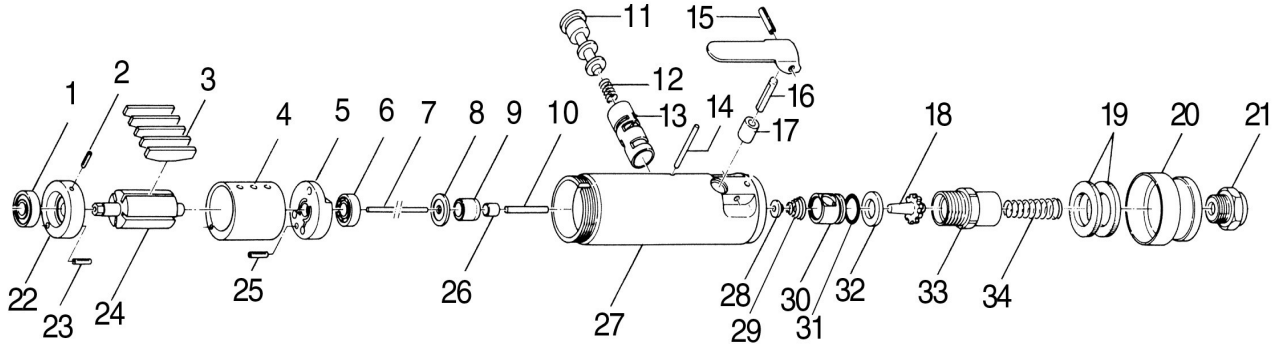
US-LT Pistol Series



Part Number	Description	Part Number	Description
1	Bearing	21	Reverse Valve
2	Front Plate	22	Valve Rod Bushing
3	Blade	23	Pin
4	Roll Pin	24	Roll Pin
5	Cylinder	25	Spring
6	Roll Pin	26	Ball
7	Bearing	27	Reverse Valve Bushing
8	Rear Plate Spacer	28	O-Ring
9	Valve Rod	29	Ball
10	Handle Bushing	30	Valve
11	Packing	31	Cone Spring
12	Shut-off Valve	32	Inner Snap Ring
13	O-Ring	33	Exhaust Stack
14	Handle Casing	34	Filter
15	Roll Pin	35	O-Ring
16	Rotor	36	Air Inlet Bushing
17	Rear Plate	37	Pin
18	Valve Lever	38	Pin
19	Allen Head Dog Point Screw	39	Handle Jacket
20	Reverse Lever		

Exploded View of the Air Motor Assembly (cont.)

US-LT Lever Series



Part Number	Description	Part Number	Description
1	Ball Bearing	18	Valve
2	Roll Pin	19	Filter
3	Blades	20	Exhaust Deflector
4	Cylinder	21	Air Inlet Bushing
5	Rear Motor Plate	22	Front Motor Plate
6	Ball Bearing	23	Roll Pin
7	Valve Rod	24	Rotor
8	Rear Plate Spacer	25	Roll Pin
9	Bushing	26	Valve Rod Cap
10	Rear Valve Rod	27	Casing
11	Reverse Lever	28	Shut Off Valve
12	Spring	29	Cone Spring
13	Reverse Valve Bushing	30	Valve Bushing
14	Pin	31	O-Ring
15	Roll Pin	32	Valve Packing
16	Valve Pin	33	Air Inlet Connector
17	Valve Pin Bushing	34	Cone Spring

Disassembly and Reassembly of the Angle Head Section

Disassembly

1. Loosen and remove the Angle Head Casing Cover, Driven Gear, and Driven Gear Spindle.
2. Loosen Locking Nut from the Clutch Casing and remove the Angle Head Casing.
3. Remove the Bearing from down inside the Angle Head Casing and remove the Driving Gear.
4. Thoroughly clean all parts.

Inspection

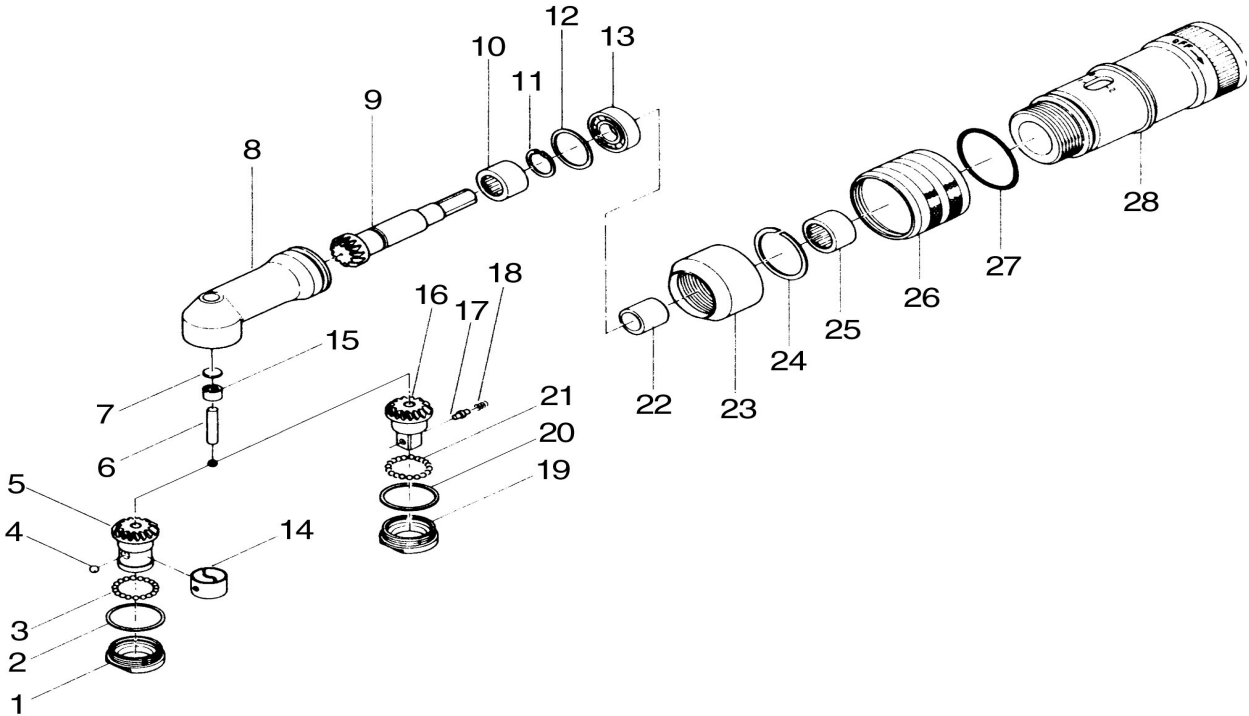
1. Inspect the Driven and Driving Gears for pitting and grooving.
2. Inspect all Bearings for side play and knocking.
3. Inspect the Driven Gear Spindle for side wear.
4. Replace all worn parts.

Assembly

1. Set the Driven Gear into the Angle Head Casing Cover and install the Balls around the Driven Gear.
2. Install the Driven Gear into the Angle Head Casing and secure by threading the Angle Head Casing Cover into the Angle Head Casing.
3. Put a small amount of grease on the Driving Gear and install it into the Angle Head Casing.
4. Install the Adjusting Spacer and Bearing into the Angle Head Casing. **Note:** The Adjusting Spacer is used to set the gear lash.
5. Install the Angle Head Casing onto the Clutch Casing and test the tool.

Exploded View of the Angle Head Assembly

US-LT Series



Part Number	Description	Part Number	Description
1	Angle Head Casing Cover	15	Needle Roller Bearing
2	Adjusting Spacer	16	Driven Gear
3	1/16 Steel Ball	17	1/8 Steel Ball
4	1/8 Steel Ball	18	Spring
5	Driven Gear	19	Angle Head Casing Cover
6	Driven Gear Spindle	20	Adjusting Spacer
7	Round Plate	21	1/16 Steel Ball
8	Angle Casing	22	Spacer
9	Driving Gear	23	Locking Nut
10	Needle Roller Bearing	24	Snap Ring
11	Snap Ring	25	Needle Roller Bearing
12	Adjusting Spacer	26	Clutch Casing Sleeve
13	Ball Bearing	27	O-Ring
14	Bit Band	28	Clutch Casing

LT Series Troubleshooting

PROBLEM	CAUSE	SOLUTION
Loses torque every time the fastener is run down. Finally the tool will not run.	The Lock Pin did not get put back into the Spring Retainer.	Put the Lock Pin in the Spring Retainer.
Tool operates intermittently.	One or more of the shoulders on the Pilot Pin is rounded.	Replace the Pilot Pin.
Tool shuts off as soon as it is started or tool shuts off but will not re-start.	Spring under Pilot Pin has lost tension. Notch Pin is rounded. Notch Pin Band is stretched out of shape. The shoulders on the Pilot Pin are rounded.	Replace Notch Pin, Band, and/or Pilot Pin. Replace Spring.
Tool ratchets when it shuts off.	Valve Rod too long. Bur on Pilot Pin or inside of Cam.	Shorten Valve Rod. Clean bur off of Pilot Pin or Cam.
Loss of RPMs	Exhaust Filter is dirty causing back pressure.	Replace Filter.
Lever type only. Tool will not run.	The Valve Rod is pushed through the Shut-off Valve.	Replace Shut-off Valve.
Tool runs all the time.	O-ring has gotten pushed down into the Casing. Air pressure is too high.	Put the O-ring back into its seat.
Lever type only. Tool will not reset.	Valve Packing damaged or Valve Pin installed upside-down.	Replace Valve Packing. Reinstall Valve Pin right-side-up.
The tool will not reset after it shuts off.	The Anvil Spacer is backwards.	Turn the Anvil Spacer over.
Pistol series only. Tool will not run.	The Valve Rod Cap Pin has been pushed by the ball.	Reset the Valve Rod Cap.
Pistol series only. Tool runs all the time.	Foreign matter under ball in Throttle assembly.	Clean Throttle assembly.

Recommended Preventative Maintenance

It is recommended that the whole tool be cleaned and inspected every 250,000 cycles or six months, whichever occurs first.



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