

ET850 Series

Torque Controlled Pneumatic Rolling Motors

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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.

Elliott's ET850 Torque Controlled Pneumatic Rolling Motor has been designed for the following types of equipment:

Heat Exchangers

Chillers

Fin Fan Coolers

Other Heat Transfer Vessels

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.

⚠ CAUTION

Caution: Impact resistant eye protection must be worn while operating or working near this tool.

⚠ CAUTION

Caution: Personal hearing protection is highly recommended when operating or working near this tool.

- 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.
- 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. Gloves and water repellent, 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. 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.
- Before tool is connected to pressurized air, check that the throttle operates freely in both directions and returns to the "OFF" position when released. Before changing sockets or performing service on the motor, make sure that the air line is shut off and drained to prevent operation if the throttle is engaged.
- 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

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.
- Maintain Tool Carefully. Keep tools 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.
- Some individuals are susceptible to disorders of the hands and arms when exposed to task which involve highly repetitive motions or vibration. Those individuals predisposed to vasculatory or circulation problems may be particularly susceptible. Cumulative trauma disorders such as Carpal Tunnel Syndrome and Tendonitis can be caused by repetitions, forceful exertions of the hands and arms. These disorders develop gradually over periods of weeks, months and years.
- Tasks should be performed in such a manner that the wrists are maintained in a neutral position, which is not flexed, hyper extended, or turned side to side.
- Stressful postures should be avoided and can be controlled through tool selection and work location. Any user suffering from prolonged symptoms of tingling, numbness, clumsiness or weakened grip, nocturnal pain in the hand or any other disorder of the shoulders, arms, wrists or fingers is advised to consult with a physician.
- The following recommendations will help reduce or moderate the effects of repetitive work motions and/or extended vibration exposure.
 - a.) Use a minimum hand grip force consistent with proper control and safe operation.
 - b.) Keep body and hands warm and dry.
 - c.) Avoid anything that inhibits blood circulation (ie. Smoking Tobacco, Cold Temperatures, etc)
 - d.) Avoid highly repetitive movements of hands and wrists, and continuous vibration exposure.
- Work gloves with vibration reducing liners and wrist supports are available from some manufactures of industrial work gloves. Tool wraps and grips are also available from a number of different manufacturers. WARNING! Proper fit gloves are important. Improperly fitted gloves may restrict blood flow to the fingers and can substantially reduce grip strength.

OPERATION INSTRUCTIONS

The ET850 is a push-pull type torque controlled rolling motor. It is designed for use with regulated, filtered and lubricated 90 psig air (measured at the tool inlet). The tool expands to a preset torque, and then stops. The handle is then pulled away from the tubesheet, operating the motor in reverse and allowing tool removal from the tubesheet. Any time the operator releases the handle, the motor stops.

CAUTION

Caution: If the torque control is adjusted over the maximum power output of the tool, the torque controlled shut off will not function and the tool will operate like a stall type tool. Also, if the tool is being operated at its upper torque limits, a drop in air pressure could cause the torque controlled shut off not to function due to a loss of motor power and the tool will function like a stall type tool. Operational Check: Grip tool securely and be prepared to counteract stall torque in case the torque control is improperly adjusted.

Air Supply

The tool is designed to operate on 90-125 psig maximum air pressure. Optimal range is 90-100 psig. Using 100-125 psig will increase speed but may result in faster wear of expander consumables. The air pressure should be checked at the tool's inlet when the tool is running. An automatic in-line filter-lubricator is required. This will supply tool with clean, lubricated air for optimal performance and tool life.

The air hose should be cleared of accumulated dirt and moisture. Then pour one half (1/2) teaspoon of 10W machine oil into the tool's air inlet before connecting the hose to the tool. A new hose should be similarly lubricated before placing in service. The tool should be cycled several times to disperse the oil before rolling tubes.

Lubricating The Motor

The in-line lubricator should be regularly checked and kept filled with a good grade of SAE 10W machine oil. Application of the tool should govern how frequently it is greased.

The gear assembly can be lubricated through an external grease fitting. Using a hand-held grease gun, apply two shots of NLGI No. 2 Moly grease roughly every four weeks. CAUTION: DO NOT OVER-LUBRICATE. If too much grease is applied, excess grease will be forced into the motor section and cause poor operation.

Tube Rolling Procedure

NOTE: Always clean the tube sheet hole before inserting the tubes. Use a proper size expander to ensure that all tubes are expanded to the same wall reduction.

Set the torque setting ring of the control to the correct torque setting for the type and size of tubes to be rolled. Insert the expander into the quick change chuck on the motor. The motor is turned on or off by the means of a quick operating sleeve type valve. The direction of rotation of the spindle is controlled by the position of the lever handle at the rear of the tool. Pushing forward on the lever handle causes the spindle to turn in a clockwise direction, and pulling back on the lever handle causes it to run in reverse. The lever handle also acts as a torque reaction handle to assist in absorbing the torque of the tool.

TECHNICAL INFORMATION

| Tube OD Range | Motor | Free Speed RPM | Torque Range | Weight | Air Usage | Air Supply Hose | Male Spindle Drive | Standard Quick Change Chuck | Spares Kit |
|--------------------------------|------------|----------------|------------------------------------|------------------|------------------------|-----------------|--------------------|---|------------|
| 5/8" - 3/4" (15.9 - 19.1mm) | ET850-1250 | 1,100 | 22 - 115 in lbs (2.5 - 13.0 Nm) | 11lbs (5.0kg) | 48 cfm (1274 l/min) | 1/2" (12mm) | 3/8" (9.5mm) | 3/8" Fem Sq (optional 1/2" available) | ET850SK-1 |
| 3/4" - 1" (19.1 - 25.4mm) | ET850-600 | 500 | 31 - 192 in lbs (3.5 - 21.7 Nm) | | | | | | ET850SK-2 |
| 1" - 1-1/4" (25.4 - 31.8mm) | ET850-400 | 400 | 5 - 26.5 ft lbs (6.8 - 35.9 Nm) | | | | | 1/2" Fem Sq (optional 3/8" available) | |

**Tube size range may vary due to tube wall thickness, material, tube sheet thickness, lubrication, operation condition, and/or operator technique.*

Operating Noise Level: 95 dBA

Spares Kit

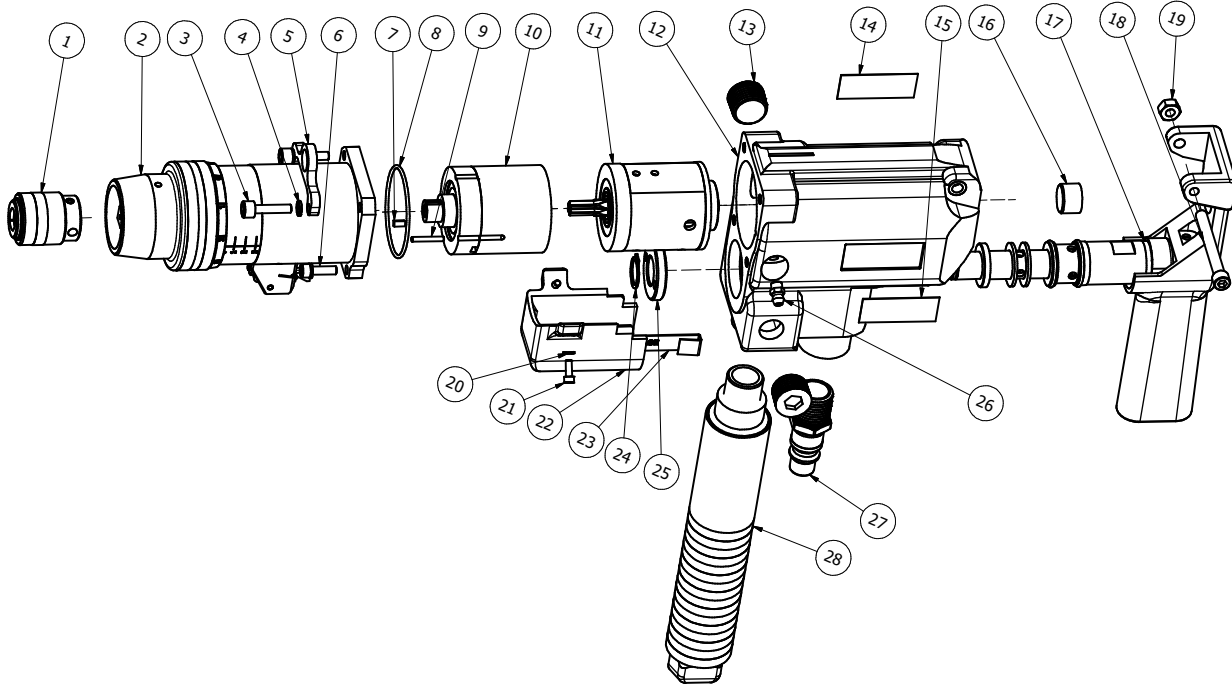
- Shim
- Trip Spring
- Paddle Set (4)
- O-Rings
- Retaining Rings
- Radial Bearing



| Torque | | Model | Setting | | | |
|----------------|-----------------|------------|---------------------------|---------------------------|---------------------------|----------------------------|
| Min | Max | | 0.5 (25% motor output) | 1.0 (50% motor output) | 1.5 (75% motor output) | 2.5 (100% motor output) |
| 22 in Lbs.. | 115 in Lbs. | ET850-1250 | 28.75 in Lbs. | 57.5 in Lbs. | 86.25 in Lbs. | 115 in Lbs. |
| 31 in Lbs. | 192 in Lbs. | ET850-1250 | 48 in Lbs. | 96 in Lbs. | 144 in Lbs. | 192 in Lbs. |
| 5 in Lbs. | 26.5 in Lbs. | ET850-1250 | 6.625 in Lbs. | 13.25 in Lbs. | 19.875 in Lbs. | 26.5 in Lbs. |

**Above data should be used as a guideline only. Actual torque output can be affected by air pressure, motor condition, and volume of air. Results should be validated by using an Elliott Tube Hold Gauge to calculate wall reduction.*

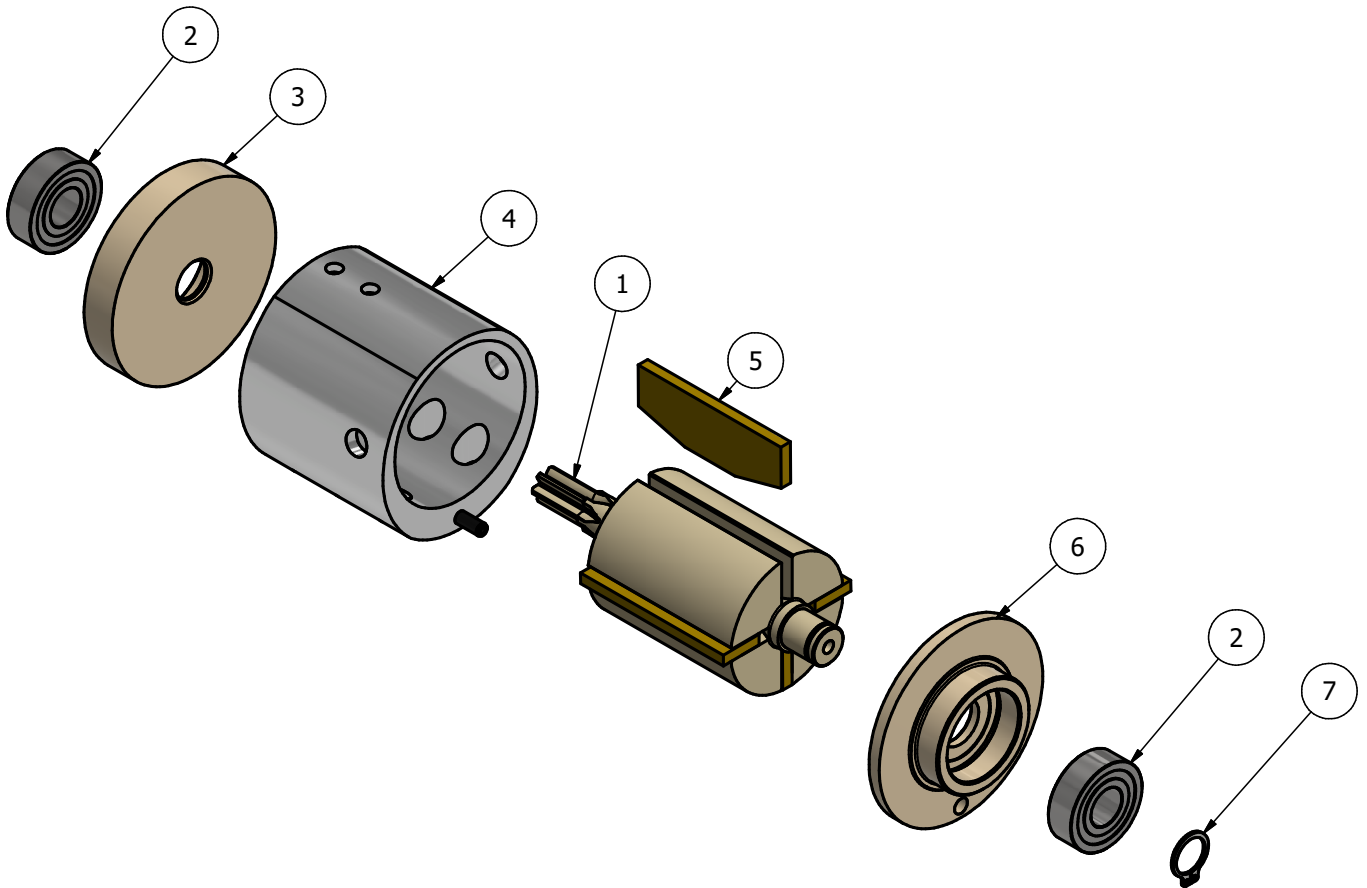
PARTS LISTS & DIAGRAMS



| Item | Qty | Part Number | | | Description | Item | Qty | Part Number | | | Description |
|------|-----|--------------|-----------|-------------|-------------------------------------|------|-----|-------------|-----------|--|-------------|
| | | ET850-1250 | ET850-600 | ET850-400 | | | | ET850-1250 | ET850-600 | ET850-400 | |
| 1 | 1 | 810-037-037 | | 810-050-037 | Quick Change Chuck | 17 | 1 | ET8504000 | | Directional Valve / Lever Sub-Assembly | |
| 2 | 1 | ET8502001 | ET8502002 | ET8502003 | Cam Case Sub-Assembly | 18 | 1 | P8302-101 | | Socket Head Cap Screw, 1/4-28 x 2-1/4 | |
| 3 | 2 | P8302-109 | | | Socket Head Cap Screw, 10-32 x 7/8" | 19 | 1 | 171AA | | Hex Nut, 1/4-28 | |
| 4 | 4 | 133Q | | | Lock Washer, #10 | 20 | 2 | 133G | | Lock Washer, #6 | |
| 5 | 1 | ET3219700 | | | Bracket | 21 | 2 | P8302-76 | | Socket Head Cap Screw, #6-32 x 3/8 | |
| 6 | 2 | P8302-145 | | | Socket Head Cap Screw, #10-32 x 5/8 | 22 | 1 | ET3214456 | | Trip Cover | |
| 7 | 1 | 41-98870A090 | | | Key, 1/8 x 1/8 x 1/4 | 23 | 1 | ET3415282 | | Trip Gauge | |
| 8 | 1 | P8309-33 | | | O-Ring, 1/16 x 2 | 24 | 1 | P8375-62 | | Retaining Ring, External, 5/8 | |
| 9 | 1 | 580-40 | | | Dowel Pin, 7/64 x 5/8 | 25 | 1 | ET3214465 | | Lock Nut | |
| 10 | 1 | ET8503001 | ET8503002 | ET8503003 | Gear Package Sub-Assembly | 26 | 1 | PC56-1792B | | Zerk Fitting | |
| 11 | 1 | ET8501001 | ET8501002 | | Motor Sub-Assembly | 27 | 1 | 41-6534K433 | | Fitting, Male, 1/2 NPT | |
| 12 | 1 | ET8501250 | | | Motor Case | 28 | 1 | ET8404450 | | Muffler Assembly | |
| 13 | 2 | 41-3867T365 | | | 1/2 NPT Plug | 29 | 1 | P8369E | | Hex Key 1/8 (not shown) | |
| 14 | 1 | ETTLBL1800A | | | Elliott Logo Label | 30 | 1 | P8369C | | Hex Key 5/64 (not shown) | |
| 15 | 1 | ET850LBL1 | ET850LBL2 | ET850LBL3 | Serial Number Label | 31 | 1 | TTP2500-300 | | Case (not shown) | |
| 16 | 1 | 41-3867T364 | | | 3/8 NPT Pipe Plug | 32 | 1 | ETTLBL4000A | | Case Label (not shown) | |
| | | | | | | 33 | 1 | 41-6536K51 | | Quick Disconnect (not shown) | |

PARTS LISTS & DIAGRAMS

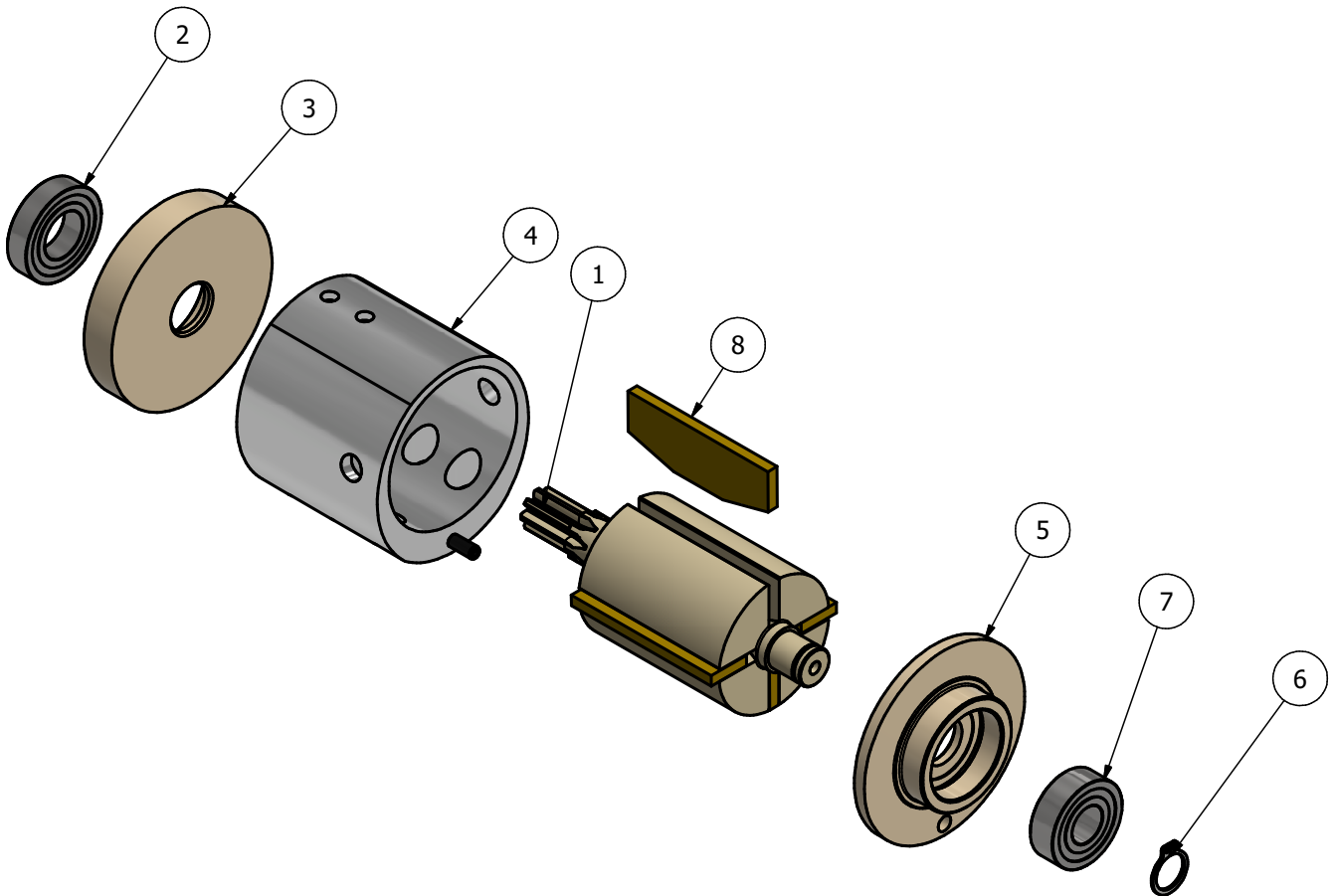
ET850-1250 Motor Sub-Assembly



| Item | Qty | Part Number | Description |
|------|-----|-------------|--------------------------|
| 1 | 1 | ET3230500 | Rotor |
| 2 | 2 | PC80R6ZZ | Radial Ball Bearing |
| 3 | 1 | ET3215200 | Front Thrust |
| 4 | 1 | ET3230100 | Cylinder w/ Pin |
| 5 | 1 | ET3230200-4 | Paddle Set |
| 6 | 1 | ET3230600 | Rear Thrust |
| 7 | 1 | P8375-37 | Retaining Ring, External |

PARTS LISTS & DIAGRAMS

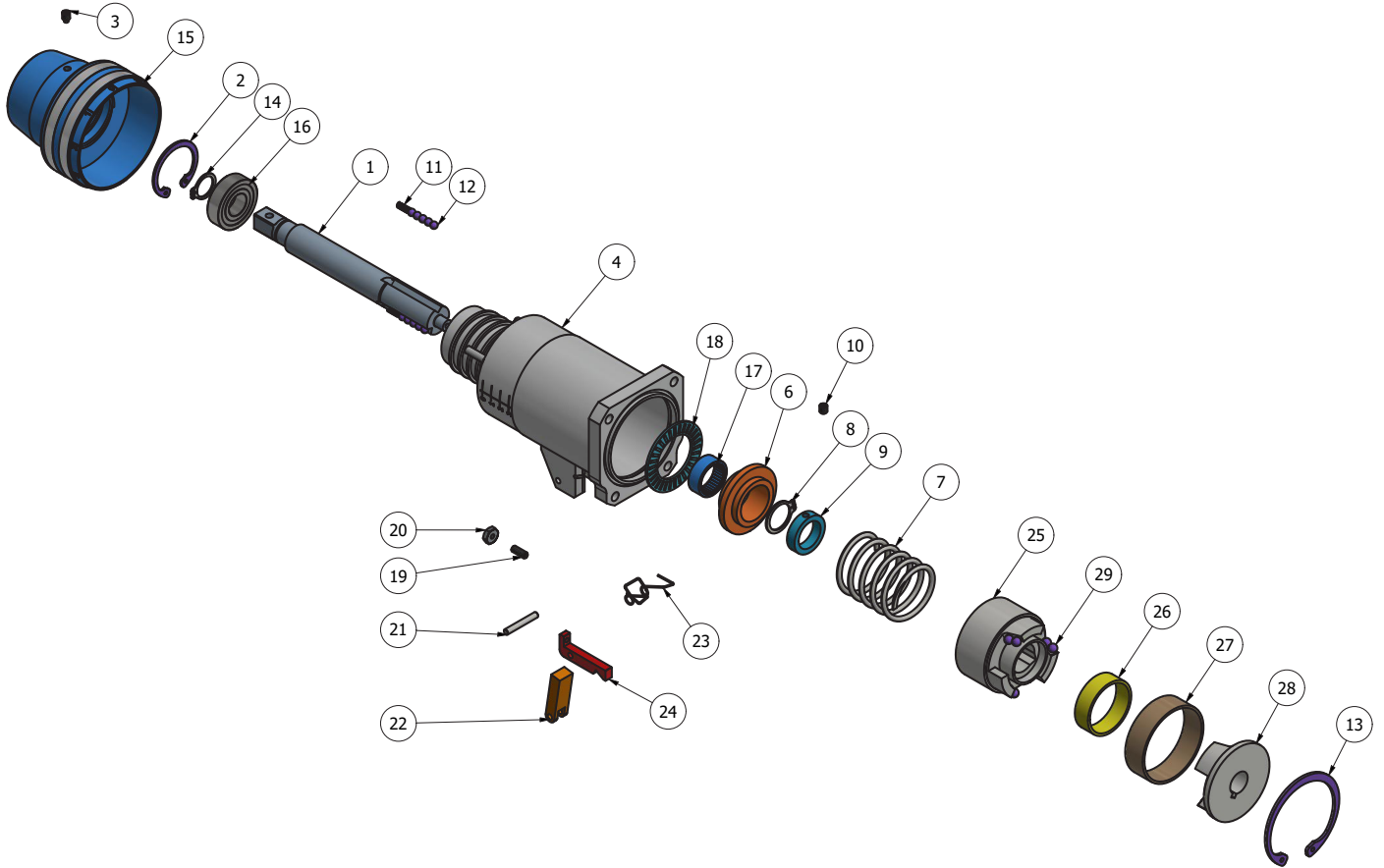
ET850-600 & ET850-400 Motor Sub-Assembly



| Item | Qty | Part Number | Description |
|------|-----|-------------|--------------------------|
| 1 | 1 | ET3230400 | Rotor |
| 2 | 1 | PC80-6901Z | Radial Ball Bearing |
| 3 | 1 | ET3215300 | Front Thrust |
| 4 | 1 | ET3230100 | Cylinder w/ Pin |
| 8 | 1 | ET3230200-4 | Paddle Set |
| 5 | 1 | ET3230600 | Rear Thrust |
| 7 | 1 | PC80R6ZZ | Radial Ball Bearing |
| 6 | 1 | P8375-37 | Retaining Ring, External |

PARTS LISTS & DIAGRAMS

ET850-1250 Cam Case Sub-Assembly

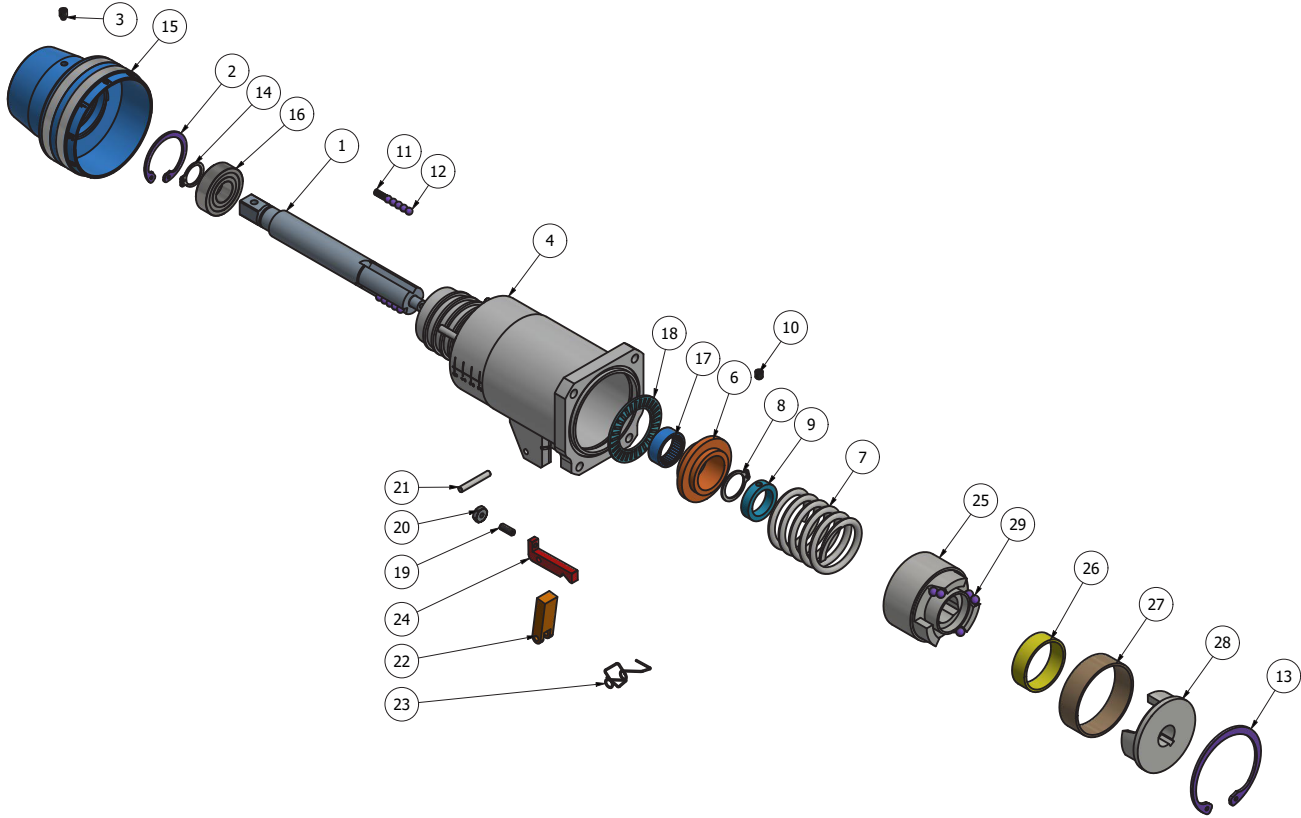


| Item | Qty | Part Number | Description |
|------|-----|-------------|-----------------------------------|
| 1 | 1 | ET3214800 | Spindle |
| 2 | 1 | P8374-112 | Retaining Ring |
| 3 | 2 | 138C | Nylon Tip Set Screw, #8-32 x 3/16 |
| 4 | 1 | ET3214600 | Cam Case |
| 5 | 1 | ET3215500 | Pressure Pad w/ Pins |
| 6 | 1 | ET3215700 | Spring Guide |
| 7 | 1 | ET3218500 | Compression Spring |
| 8 | 1 | P8375-62 | Retaining Ring, External |
| 9 | 1 | ET3218700 | Lock Collar |
| 10 | 1 | 128KK | Cup Point Set Screw, #8-32 x 3/16 |
| 11 | 3 | ET3218900 | Compression Spring |
| 12 | 15 | 109CA | Ball, Steel, 5/32 |
| 13 | 1 | P8374-187 | Retaining Ring |
| 14 | 1 | P8375-50 | Retaining Ring, External |
| 15 | 1 | ET3218400 | Adjusting Nut |

| Item | Qty | Part Number | Description |
|------|-----|-------------|----------------------------------|
| 16 | 1 | PC80R8ZZ | Radial Ball Bearing |
| 17 | 1 | PC80SCE105 | Radial Bearing |
| 18 | 1 | P1067-4 | Thrust Bearing |
| 19 | 1 | 128AY | Cup Point Set Screw, #6-32 x 3/8 |
| 20 | 1 | 171T | Hex Nut, #6-32 |
| 21 | 1 | 580-39 | Dowel Pin, 1/8 x 7/8 |
| 22 | 1 | ET3216100 | Follower |
| 23 | 1 | ET3223500 | Trip Spring |
| 24 | 1 | ET3214462 | Trip |
| 25 | 1 | ET3219100 | Operating Cam |
| 26 | 1 | ET3219400 | Inner Retainer |
| 27 | 1 | ET3227600 | Outer Retainer |
| 28 | 1 | ET3219600 | Drive Cam |
| 29 | 6 | 109DAS | Ball, Stainless Steel, 3/16 |

PARTS LISTS & DIAGRAMS

ET850-600 & ET850-400 Cam Case Sub-Assembly

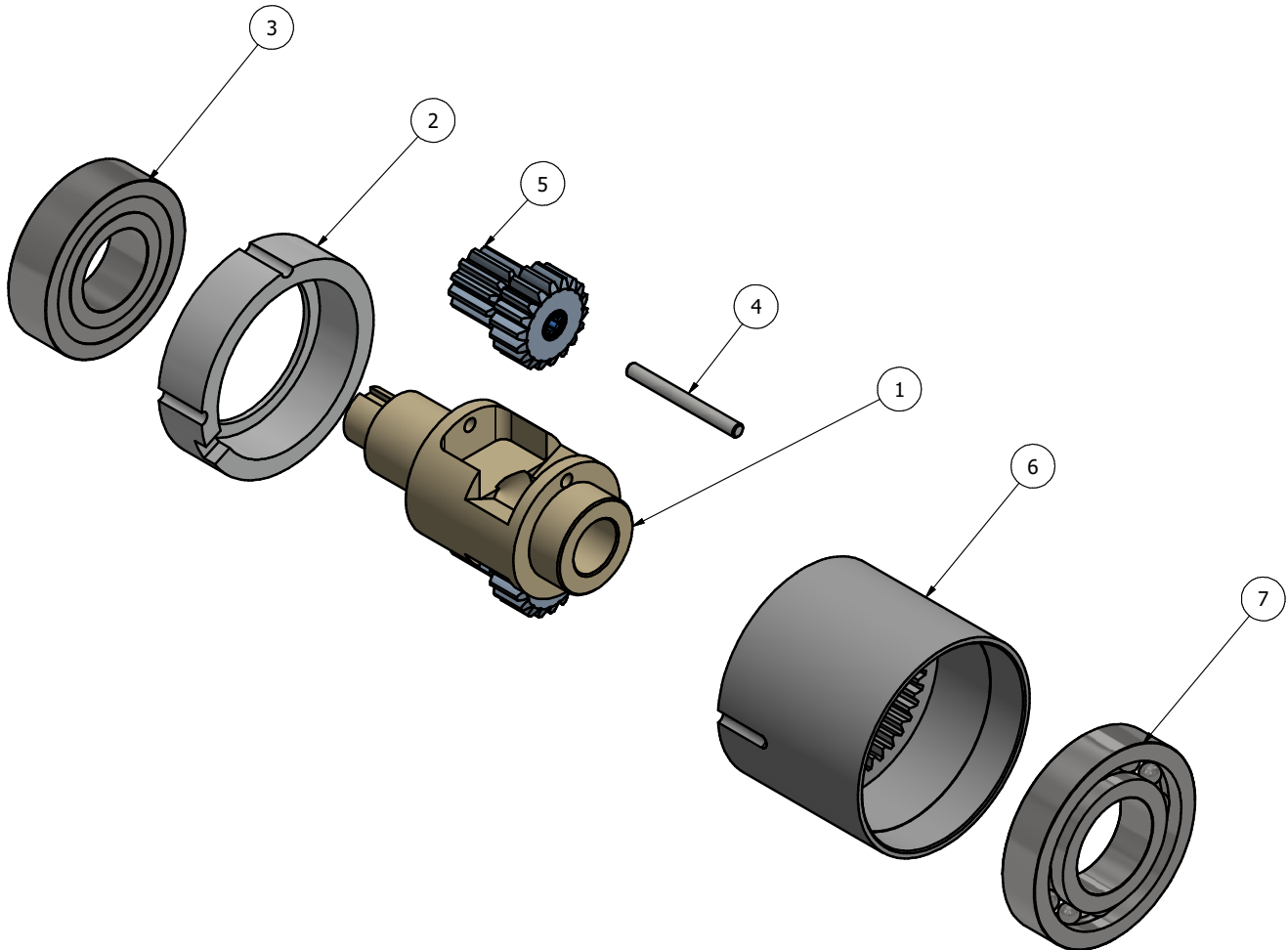


| Item | Qty | Part Number | | Description |
|------|-----|-------------|-----------|-----------------------------------|
| | | ET850-600 | ET850-400 | |
| 1 | 1 | ET3214800 | | Spindle |
| 2 | 1 | P8374-112 | | Retaining Ring |
| 3 | 2 | 138C | | Nylon Tip Set Screw, #8-32 x 3/16 |
| 4 | 1 | ET3214600 | | Cam Case |
| 5 | 1 | ET3215500 | | Pressure Pad w/ Pins |
| 6 | 1 | ET3215700 | | Spring Guide |
| 7 | 1 | ET3214498 | ET8502113 | Compression Spring |
| 8 | 1 | P8375-62 | | Retaining Ring, External |
| 9 | 1 | ET3218700 | | Lock Collar |
| 10 | 1 | 128KK | | Cup Point Set Screw, #8-32 x 3/16 |
| 11 | 3 | ET3218900 | | Compression Spring |
| 12 | 15 | 109CA | | Ball, Steel, 5/32 |
| 13 | 1 | P8374-187 | | Retaining Ring |
| 14 | 1 | P8375-50 | | Retaining Ring, External |
| 15 | 1 | ET3218400 | | Adjusting Nut |

| Item | Qty | Part Number | | Description |
|------|-----|-------------|-----------|----------------------------------|
| | | ET850-600 | ET850-400 | |
| 16 | 1 | PC80R8ZZ | | Radial Ball Bearing |
| 17 | 1 | PC80SCE105 | | Radial Bearing |
| 18 | 1 | P1067-4 | | Thrust Bearing |
| 19 | 1 | 128AY | | Cup Point Set Screw, #6-32 x 3/8 |
| 20 | 1 | 171T | | Hex Nut, #6-32 |
| 21 | 1 | 580-39 | | Dowel Pin, 1/8 x 7/8 |
| 22 | 1 | ET3216100 | | Follower |
| 23 | 1 | ET3223500 | | Trip Spring |
| 24 | 1 | ET3214462 | | Trip |
| 25 | 1 | ET3219100 | | Operating Cam |
| 26 | 1 | ET3219400 | | Inner Retainer |
| 27 | 1 | ET3227600 | | Outer Retainer |
| 28 | 1 | ET3219600 | | Drive Cam |
| 29 | 6 | 109DAS | | Ball, Stainless Steel, 3/16 |

PARTS LISTS & DIAGRAMS

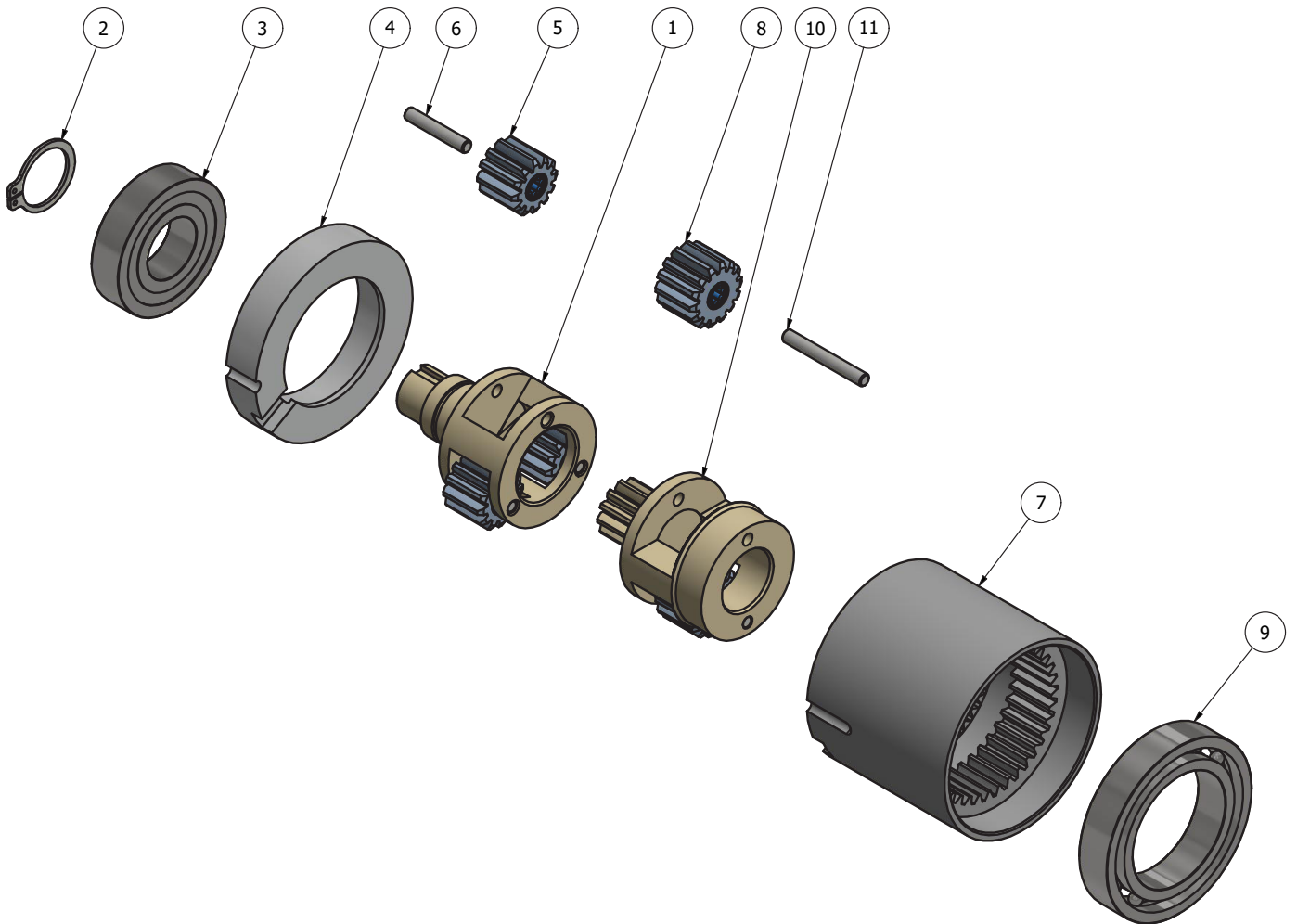
ET850-1250 Gear Package Sub-Assembly



| Item | Qty | Part Number | Description |
|------|-----|-------------|------------------------|
| 1 | 1 | ET3216900 | Output Spider |
| 2 | 1 | ET3219800 | Bearing Support |
| 3 | 1 | PC80R12ZZ | Radial Ball Bearing |
| 4 | 2 | 580-38 | Dowel Pin, 1/8 x 1-1/4 |
| 5 | 2 | ET3215600 | Planet Gear |
| 6 | 1 | ET3216400 | Gear Housing |
| 7 | 1 | PC80R14 | Radial Ball Bearing |

PARTS LISTS & DIAGRAMS

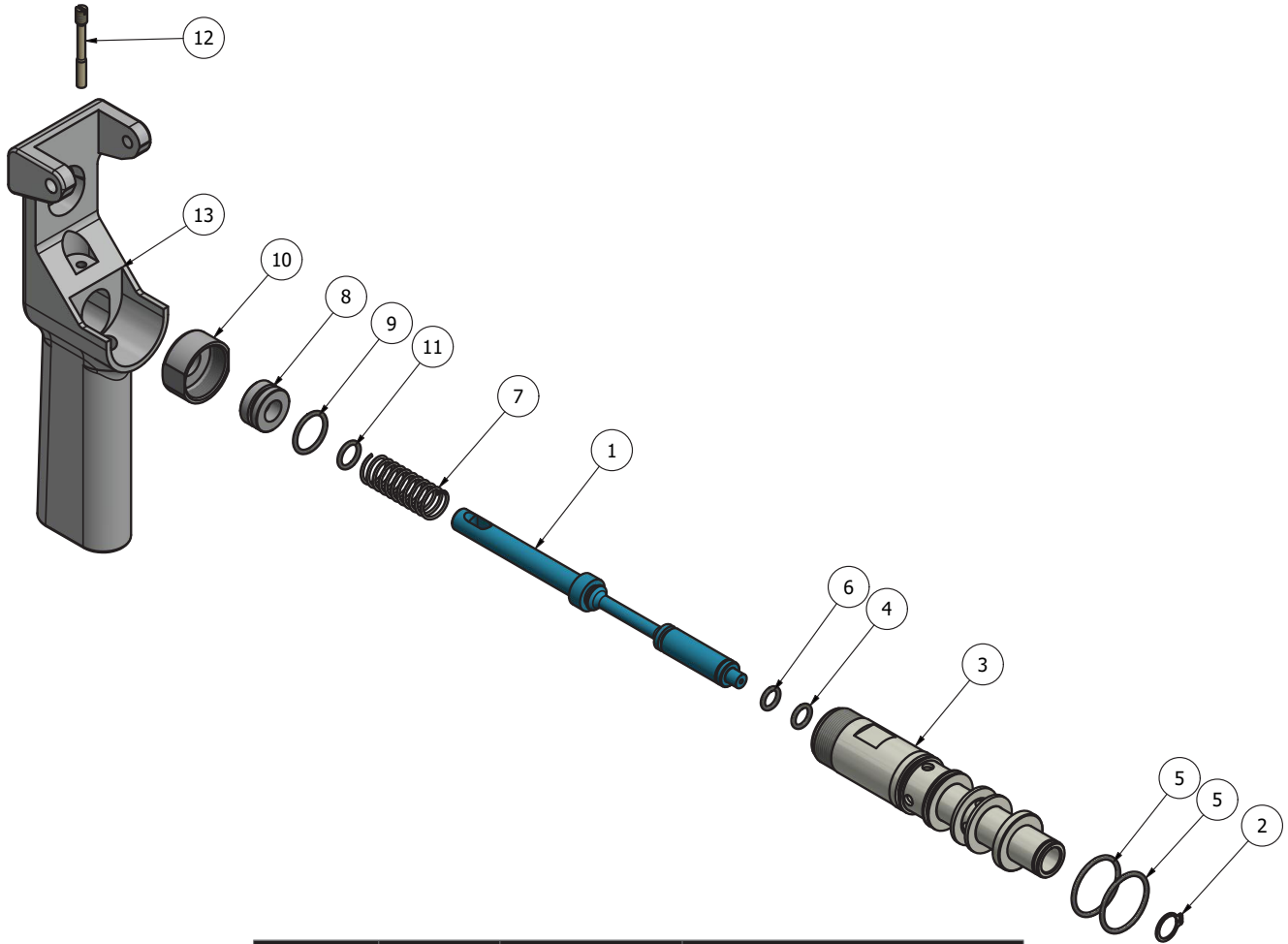
ET850-600 & ET850-400 Gear Package Sub-Assembly



| Item | Qty | Part Number | Description |
|------|-----|-------------|--------------------------|
| 1 | 1 | ET3217000 | Output Spider |
| 2 | 1 | P8375-62 | Retaining Ring, External |
| 3 | 1 | PC80R10ZZ | Radial Ball Bearing |
| 4 | 1 | ET3219900 | Bearing Support |
| 5 | 3 | ET3164200 | Planet Gear |
| 6 | 3 | 580-24 | Dowel Pin, 1/8 x 3/4 |
| 7 | 1 | ET3216500 | Gear Housing |
| 8 | 2 | ET3164100 | Planet Gear |
| 9 | 1 | PC80-6906ZZ | Radial Ball Bearing |
| 10 | 1 | ET3217100 | Gear Spider |
| 11 | 2 | 580-3 | Dowel Pin, 1/8 x 1 |

PARTS LISTS & DIAGRAMS

Lever Sub-Assembly



| Item | Qty | Part Number | Description |
|------|-----|-------------|--------------------------|
| 1 | 1 | ET8567183 | Valve Spindle |
| 2 | 1 | P8375-43 | Retaining Ring, External |
| 3 | 1 | ET8567184 | Directional Valve |
| 4 | 1 | P8309-6 | O-Ring, 1/16 x 5/16 |
| 5 | 2 | P8309-021 | O-Ring, 1/16 x 15/16 |
| 6 | 1 | P8309-932 | O-Ring, 0.059 x 0.295 |
| 7 | 1 | 37-71655S | Compression Spring |
| 8 | 1 | ET8567185 | Shaft Seal |
| 9 | 1 | P8309-016 | O-Ring, 1/16 x 5/8 |
| 10 | 1 | ET3214477 | Cap |
| 11 | 1 | P8309-7 | O-Ring, 1/16 x 3/8 |
| 12 | 1 | ET3214486 | Lever Pin |
| 13 | 1 | ET3214459 | Lever Handle |

MAINTENANCE INSTRUCTIONS

The proper performance and service life of every machine depends on how well it is maintained. The following should become a regular routine of operations.



WARNING

Warning: Remove air supply prior to disassembly or service.

Shut-Off Adjustment

If consistent torque cannot be maintained, check the Shut-Off Trip mechanism. Remove the Trip Cover (pg 9) to expose the mechanism. During forward operation, the Trip abuts the Valve Spindle as shown. This abutment should be set using the included Trip Gage as shown to 0.062" of engagement with the Valve Spindle. This allows shut-off to occur midway through the total travel of the Trip, ensuring repeatable torque. This procedure should be completed with the torque setting at "5".

Cam Case Subassembly (pgs 12-13)

Remove entire assembly by removing socket head cap screws. Remove Internal Retaining Ring (13). Carefully remove Drive Cam (28) and Operating Cam (25), avoiding loss of the bearing balls in the assembly. Remove, clean, and examine Spindle (1). If there is wear or dimpling in the ball spline grooves, the Spindle should be replaced. Check Bearing for wear and replace if necessary. Check Follower (22) for wear and replace if necessary.

To reassemble, install Spindle (1) and secure with External Retaining Ring (14). Place Operating Cam (25) on spindle and align the grooves. Place one Guide Spring (6) and five precision 5/32" balls (12) in each groove (due to precision, no substitution should be made). Install Ball Retainers and using grease place two larger balls on each helical face of the Operating Cam (25). Install the Drive Cam (28) carefully without dislodging the balls from the helical faces. Install the Internal Retaining Ring (13).

Reassembly to Motor Case requires depressing the trip to avoid interference with the Spindle until Socket Head Cap Screws are installed.

Motor And Gear Package Subassemblies (pgs 10-11, 14-15)

After removing Cam Case Subassembly (above), slide out the Motor and Gear Package Subassembly. Disassemble the motor by removing the Front Thrust and check for wear in the Cylinder. Inspect the Paddles and replace if worn. To reassemble, perform the reverse ensuring proper placement and movement of Paddles. Slide Motor into Motor Case placing the protruding pin into the locating hole in the bottom of the Motor Case.

The ET850-600 Gear Package Subassembly is a two stage planetary gear set. Slide gears from the Gear Case, clean, and inspect for wear. Grease gears before reassembly into Gear Case. Insert the Gear Package Subassembly into the Motor Case and insert Dowel Pin.

MAINTENANCE INSTRUCTIONS

The ET850-1250 Gear Package Subassembly is a planetary gear set with a stepped planet gear. Slide gears from the Gear Case, clean, and inspect for wear. Grease gears before reassembly into Gear Case. To reassemble, ensure marked teeth are aligned opposite each other and match the scribed lines on the Gear Case. Insert the Gear Package Subassembly into the Motor Case and insert Dowel Pin.

Ensure adequate lubrication of all parts during reassembly.

Safety Check

After repair or replacement of parts, servicing or prolonged storage, the tool should be checked to verify that the Directional Valve Subassembly is functioning properly. This test should be completed without air pressure. With Trip Cover removed, push forward on the Lever Handle. The handle and valve should move freely and the valve should return to the "OFF" position readily when handle is released. Then, with handle pushed forward, depress the trip by hand, to simulate reaching preset torque. The Spindle should move forward to simulate the shut off of air. When pulling the handle back, the Valve should move into its reverse position before the Spindle inside moves. If the Spindle moves with the Valve in the forward position, then the motor will engage forward instead of reverse when the handle is pulled back, which will cause over-rolling of joints.

TROUBLESHOOTING

| | Air Leakage | Air Strainers Clogged | Air Pressure Too Low | Dirty Air | Water In Air | Incorrect Lubrication | Insufficient Lubrication | Hose Too Small | Long Paddles | Worn Paddles | Rotor Rubbing | Worn Bearing Plates | Worn O-Rings | Handle Contact With Directional Valve | Too Much Grease, Clogs Motor/Paddles | Worn Trip | Misadjusted Trip |
|--------------------------------------|-------------|-----------------------|----------------------|-----------|--------------|-----------------------|--------------------------|----------------|--------------|--------------|---------------|---------------------|--------------|---------------------------------------|--------------------------------------|-----------|------------------|
| Motor Will Not Run | | X | X | | | | X | | X | | X | | | | X | | |
| Lack Of Power | X | X | X | | | X | | X | | X | X | X | | | X | | |
| Speed Too Low | | X | X | | | | | X | | | X | | | | | | |
| High Air Consumption | X | | | | | | | | | X | | X | | | | | |
| Excessive Paddle Wear | | | | X | | X | X | | | | | | | | | | |
| Excessive Bearing Wear | | | | X | | X | X | | | | | | | | | | |
| Rusting Of Parts | | | | | X | X | X | | | | | | | | | | |
| Delamination Of Paddles | | | | X | X | X | | | | | | | | | | | |
| Paddles Chipping | | | | X | | X | X | | | | | | | | | | |
| Motor Continues To Run, Throttle Off | | | | | | | | | | | | | X | X | | | |
| Inconsistent Trip | | | | | | | | | | | | | | | | X | X |
| No Trip (Motor Stalls) | | | | | | | | | | | | | | | | | X |

MOTORS:

Pneumatic motors have assemblies built to very close tolerances. Under constant use and with the possibility of foreign parts moving through the air line, these tolerances have a tendency to suffer. Air motor maintenance is critical. Dirt should not be allowed to collect around exhaust ports or fitting connections.

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.

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Contact Us

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