

H15N & H15R Series Foot Flange Mounted Motors



Model	RPM		Stall Torque		Weight		Gear Ratio	Maximum Overhung Load @ Stall*	
	@ Max. HP	Free Speed	ft. lbs.	Nm	lbs.	kg		lbs.	kg
Non-Reversible Models									
H15N54M	2700	5400	2.1	2.8	2.54	1.15	3.88:1	345	156
H15N29M	1450	2900	3.8	5.1	2.54	1.15	7.12:1	345	156
H15N16M	775	1550	6.8	9.2	2.93	1.33	13.39:1	345	156
H15N10M	475	950	11.4	15.4	2.93	1.33	22.3:1	345	156
H15N08M	375	750	14.0	18.9	2.93	1.33	27.66:1	345	156
H15N05M	263	525	20.0	27.0	2.93	1.33	38.87:1	345	156
Reversible Models									
H15R49M	2450	4900	2.1	2.8	2.54	1.15	3.88:1	345	156
H15R26M	1300	2600	3.8	5.1	2.54	1.15	7.12:1	345	156
H15R14M	700	1400	6.8	9.2	2.93	1.33	13.39:1	345	156
H15R09M	425	850	11.4	15.4	2.93	1.33	22.3:1	345	156
H15R07M	338	675	14.0	18.9	2.93	1.33	27.66:1	345	156
H15R05M	238	475	20.0	27.0	2.93	1.33	38.87:1	345	156

* Note: All models assume overhung load located at 0.82" (21.04mm) from face of motor.

For additional product information visit our website at <http://www.apextoolgroup.com>

CAUTION: Disconnect the air supply hose before servicing the tool.

INSTALLATION

For most efficient operation, 90 psig (620 kPa) of clean dry air is required at the tool with the tool running, without extreme fluctuation. Minimum recommended hose size is 1/4" I.D. when the length of the hose is eight feet or less, hose length over eight feet requires a larger I.D. It is recommended that a Gardner-Denver filter and lubricator be used with all tools and an air regulator where air pressures are likely to be higher than required.

TROUBLE SHOOTING

If the tool fails to perform to specifications, please check the following before disassembling.

1. 90 psig (620 kPa) of air pressure is required at the tool with the tool running for rated performance.
2. Air inlet, hose, and connections must be clean and restriction free. Hose size and fittings must match inlet fitting on tool. Do not use reducer bushings.
3. Check oil level in the line lubricator. Clean the line filter if necessary and drain all water and dirt.
4. Make certain the gear housing is tight.

LUBRICATION

Lubricate the motor with an air line lubricator, using a light air tool oil (Cleco # 500021). Adjust the lubricator to dispense one drop per cycle or three drops per minute. This oil is available in one (1) pint (533484) or one (1) gallon (533485) quantities. A high film strength oil (536333) is also available. This oil cannot be used in Atomist type lubricators, use only with Economist or serv-oil type lubricators.

Thoroughly grease all gears with Cleco teflon grease (513156) every 100,000 cycles. Whenever the tool is disassembled, pack the gearing with approximately 1/4 ounce of grease. Teflon grease (513156) is available in one (1) pound cans.

CAUTION: Do not use substitutes for oil and grease. This could result in damage to the tool.

MAINTENANCE

1. Proper and continuous lubrication.
2. Blow out air hose to assure a clean air supply.
3. Be sure the air filter and line lubricator are clean.
4. Fill the line lubricator before operation.
5. Place a few drops of oil into the air inlet of the tool before attaching the air line.
6. Use moisture separators to remove water from the air line.

7. Do not use solvent on bearings or on any parts made of a synthetic material.

8. Do not remove bearings unless replacement is necessary; bearings are a press fit.

SERVICE INSTRUCTIONS AND EQUIPMENT

Use care during disassembly and assembly of these tools. Press only on the inner race of bearings. Use proper tools for disassembly and assembly, as listed:

1. Gear Alignment Tool - 536539
2. Gear Grease (1 lb. can) - 513156

DISASSEMBLY OF TOOL

Remove the screw from the side of the flange housing. This will release the lock, permitting the removal of the housing. Remove the flange housing from the gear case (*left hand thread*).

Remove the retaining ring from the front of the flange housing and push the spindle (*with bearing*) out of the housing (*from the rear*).

DISASSEMBLY OF MOTOR HOUSING

Disassemble the end cap (*with gasket*) from the motor housing by removing the three (3) screws securing it.

Remove the gear case (*left hand thread*) from the motor housing using a 1-7/16" and a 1-1/2" wrench.

DISASSEMBLY OF MOTOR

Remove the stack-up ring to remove the motor assembly from the motor housing. To disassemble the motor, remove the nut from the end of the rotor shaft and disassemble as shown in the parts list page.

DISASSEMBLY OF GEARING

Disassemble the gearing as shown in the parts list pages. On the double geared models, make sure the upper and lower idler gears and slip-on gears (*if used*) are not interchanged. They must be reassembled in the proper location.

NOTE: The number of teeth for each of the gears is listed in the chart on the parts list pages.

INSPECTION OF PARTS

Clean all parts (*except bearings, o-rings and rotor blades*) in a solvent and blow dry. make sure the air inlet screens and muffler are thoroughly cleaned or replaced. Inspect all parts for excessive wear or damage and replace as necessary with Cleco replacement parts.

Coat the needle bearing in the lower end plate and the ball bearing in the upper end plate with a light film of grease. Replace any motor parts showing excessive wear or scoring. Minor scoring in the cylinder and on the end plates can be removed by honing or resurfacing the parts. Check the condition and length of the rotor blades. Blade length should be .002" to .0075" shorter than the cylinder and they must fit freely into the slots in the rotor.

NOTE: If idler gear replacement is necessary, it is recommended that they be replaced in sets along with the mating drive gear.

The ring gear(s) will normally outlive several sets of idler gears, but must be replaced if other than normal wear is apparent, broken teeth, cracks, etc.

ASSEMBLY OF TOOL

Assembly Torques	
Threaded Joint	Torque
Motor Housing/Gear Case	40-50 ft. lbs.
Gear Case/Flange Housing	40-50 ft. lbs.

ASSEMBLY OF MOTOR

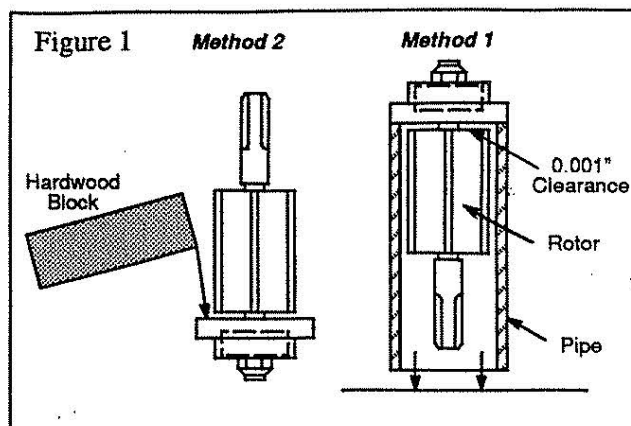
Install the bearings into the upper and lower end plates. Assemble the rotor to the upper end plate using the C109J nut. **NOTE: Position and set the rotor as close as possible to the upper end plate, without dragging or rubbing.** A good practice is to stone the blade slots and polish the ends of the rotor with a medium grit emery cloth. Clean the rotor after doing this. Assemble components making sure the bearing is firmly seated in the upper end plate.

Begin tightening the rotor nut, do not over-tighten. This could cause damage to the bearing. Alternately spin the rotor while tightening the nut until a clearance of approximately 0.001" is achieved.

Figure 1 illustrates two alternate methods of seating the rotor to the upper end plate.

Method 1: Use a piece of pipe which is slightly longer than the rotor, and tap lightly against the work bench several times. This helps seat the threaded components.

Method 2: Hold the rotor and upper end plate assembly vertically (plate downward) and strike the edge of the plate with a wood block.



Assemble the cylinder and rotor blades to the upper end plate and rotor assembly. Make sure the cylinder pins are located in the proper holes in the end plates.

Slide the motor assembly into the motor housing and install the stack-up ring.

ASSEMBLY OF GEARING

NOTE: If gear replacement is necessary, it is recommended that the idler gears be replaced in sets along with the mating drive gear.

NOTE: All gears must be thoroughly greased with 513156 grease, but not excessively.

ASSEMBLY OF GEARING – SINGLE GEARED

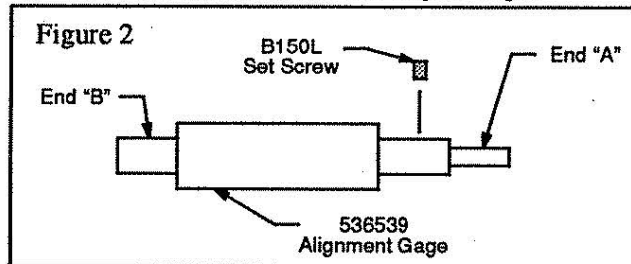
Secure the motor housing in a vertical position in a vise or suitable fixture.

CAUTION: Do not overtighten the vise. This may cause damage to the motor housing.

Install the small thrust washer (303161), needle bearing, and retaining ring into the lower gear cage.

CAUTION: The bearing is a press fit, always press on the printed side of the bearing.

Install the large thrust washer (502995), bearing spacer, and ball bearing on the other end of the gear cage. Assemble the gearing by placing the slip-on gear (if used) thru one of the idler gear slots in the gear cage. Install the washer (535409) against the ball bearing. Coat the idler gear pins with grease (513156) and insert the idler gears, with pins, into each slot of the gear cage. Put a liberal amount of grease on the idler gears and assemble this package into the ring gear. Make sure the square lugs on the ring gear are facing toward the motor end of the gear cage.



If a slip-on gear is used, you may have to use end "B" of alignment tool 536539 (Figure 2) thru the needle bearing of the gear cage to properly mesh the slip-on gear with the idler gears as the ring gear is being installed. Place this gear package onto the motor housing so the rotor gear properly engages the idler gears, or slip-on gear, and the lugs of the ring gear engage the two notches in the motor housing. Install the gear case and using a 1-1/2" open end wrench, tighten to 40-50 ft. lbs. torque (*left hand*).

ASSEMBLY OF GEARING – DOUBLE GEARED

Secure the motor housing in a vertical position in a vise or suitable fixture.

CAUTION: Do not overtighten the vise. This may cause damage to the motor housing.

Install the short spindle gear (*keyed and press fit*), small thrust washer (303161), needle bearing, and retaining ring into the upper gear cage.

CAUTION: The bearing is a press fit, always press on the printed side of the bearing.

Install the retaining ring (800206) on the other end of the gear cage. Assemble the gearing by placing the upper slip-on gear (*if used*) thru one of the idler gear slots in the upper gear cage. Coat the idler gear pins with grease (513156) and insert the upper idler gears, with pins, into each slot of the upper gear cage. Put a liberal amount of grease on the idler gears and assemble this package into a ring gear. Make sure the square lugs on the ring gear are facing toward the motor end of the gear cage.

If an upper slip-on gear is used, it may be necessary to use end "B" of the alignment tool (536539), shown in Figure 2, thru the needle bearing of the upper gear cage to properly mesh the slip-on gear with the upper idler gears as the ring gear is being installed. Place this gear package onto the motor housing so the rotor gear properly engages the idler gears, or slip-on gear, and the lugs of the ring gear engage the two notches in the motor housing.

Assemble the large thrust washer (502995) and ball bearing on the end of the lower gear cage. Install the lower slip-on gear thru one of the idler gear slots in the lower gear cage. Install the washer (535409) against the ball bearing. Coat the idler pins with grease (513156) and insert the idler gears, with pins, into each slot of the lower gear cage. Put a liberal amount of grease on the idler gears and assemble this package into the other ring gear. Make sure the square lugs on the ring gear are facing toward the upper stage of gearing.

It may be necessary to use end "A" of the alignment tool (536539), shown in Figure 2, thru the spline end

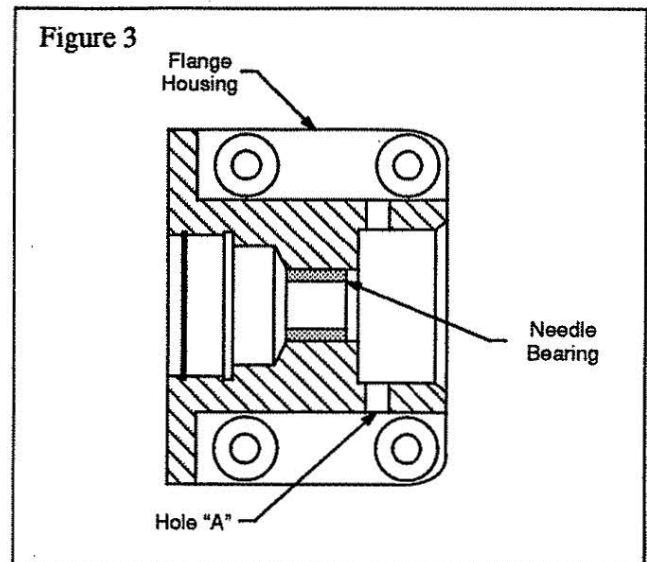
of the lower gear cage to center the slip-on gear for proper meshing with the idler gears as the ring gear is being installed. Place the thrust washer (502977) on the motor end of the lower gear cage and set this assembly onto the upper stage of gearing. Make sure the lower slip-on gear slides over the spline of the short spindle gear and the two lugs on the lower ring gear engage with the two slots on the upper ring gear. Install the gear case and using a 1-1/2" open end wrench, tighten to 40-50 ft. lbs. torque.

ASSEMBLY OF MOTOR HOUSING

Place the gasket and end cap on the motor housing and secure in position with the three (3) screws.

ASSEMBLY OF FLANGE HOUSING

If removed, install the needle bearing into the flange housing as shown in Figure 3.



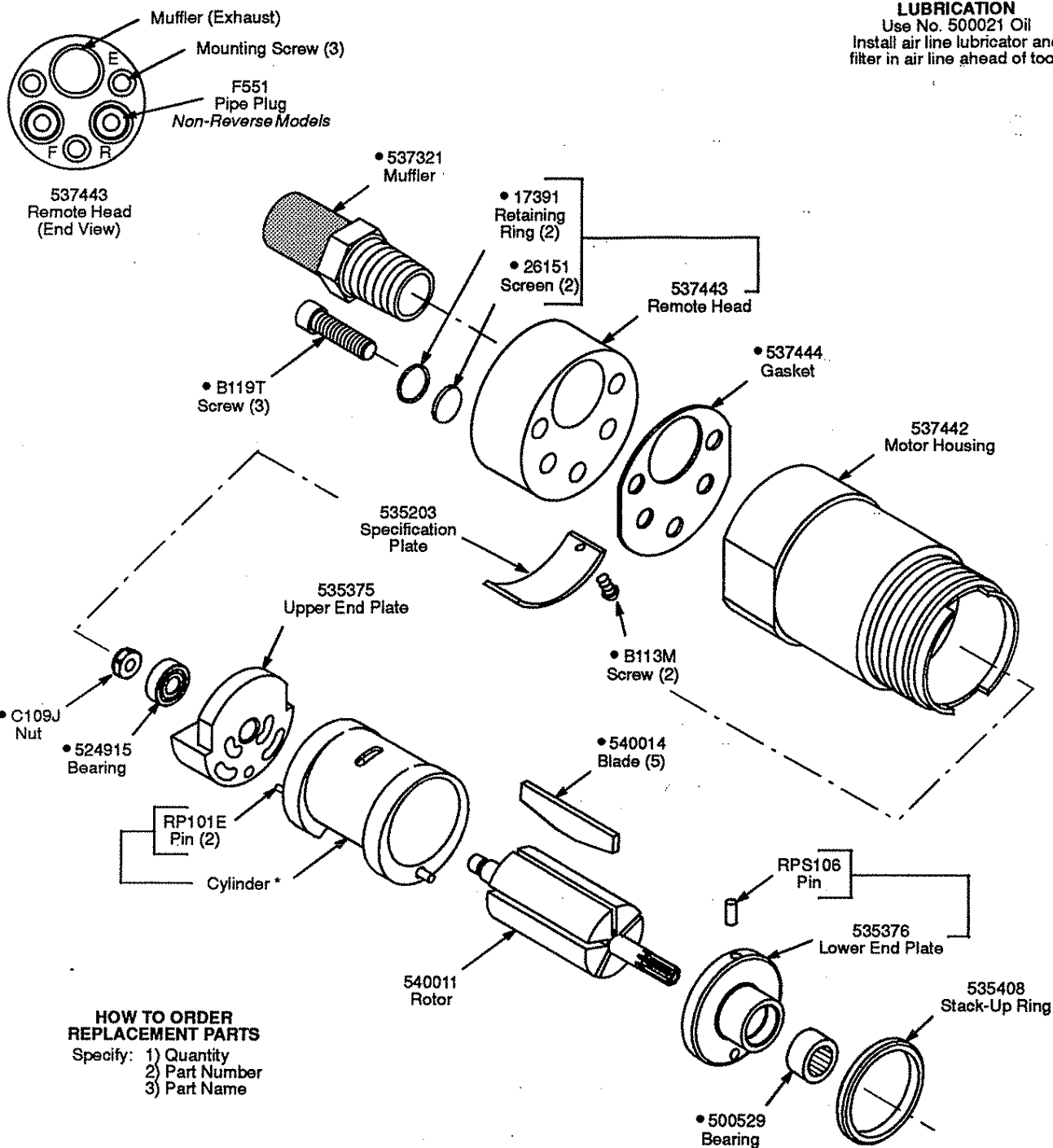
Install the ball bearing and retaining ring (800254) on the spindle. Install the spindle assembly into the front of the flange housing and secure with the large retaining ring (800097).

Place the lock over the end of the gear case. Make sure the four (4) tangs of the lock fit into the slots in the end of the gear case.

Thread the gear case (*left hand thread*) into the flange housing. Make certain the spline on the spindle engage fully with the spline in the gear cage. Make sure the threaded hole in one of the lock tangs aligns with hole "A" in the side of the flange housing, see Figure 3. Apply loctite #242 to the threads of screw (B141B) and install in hole "A" in the side of the flange housing. Tighten to 40-50 in. lbs. torque to secure the lock.

Cleco® H15N & H15R Series Foot Flange Motors Head and Motor Assembly

LUBRICATION
Use No. 500021 Oil
Install air line lubricator and
filter in air line ahead of tool.



HOW TO ORDER REPLACEMENT PARTS

- Specify: 1) Quantity
2) Part Number
3) Part Name

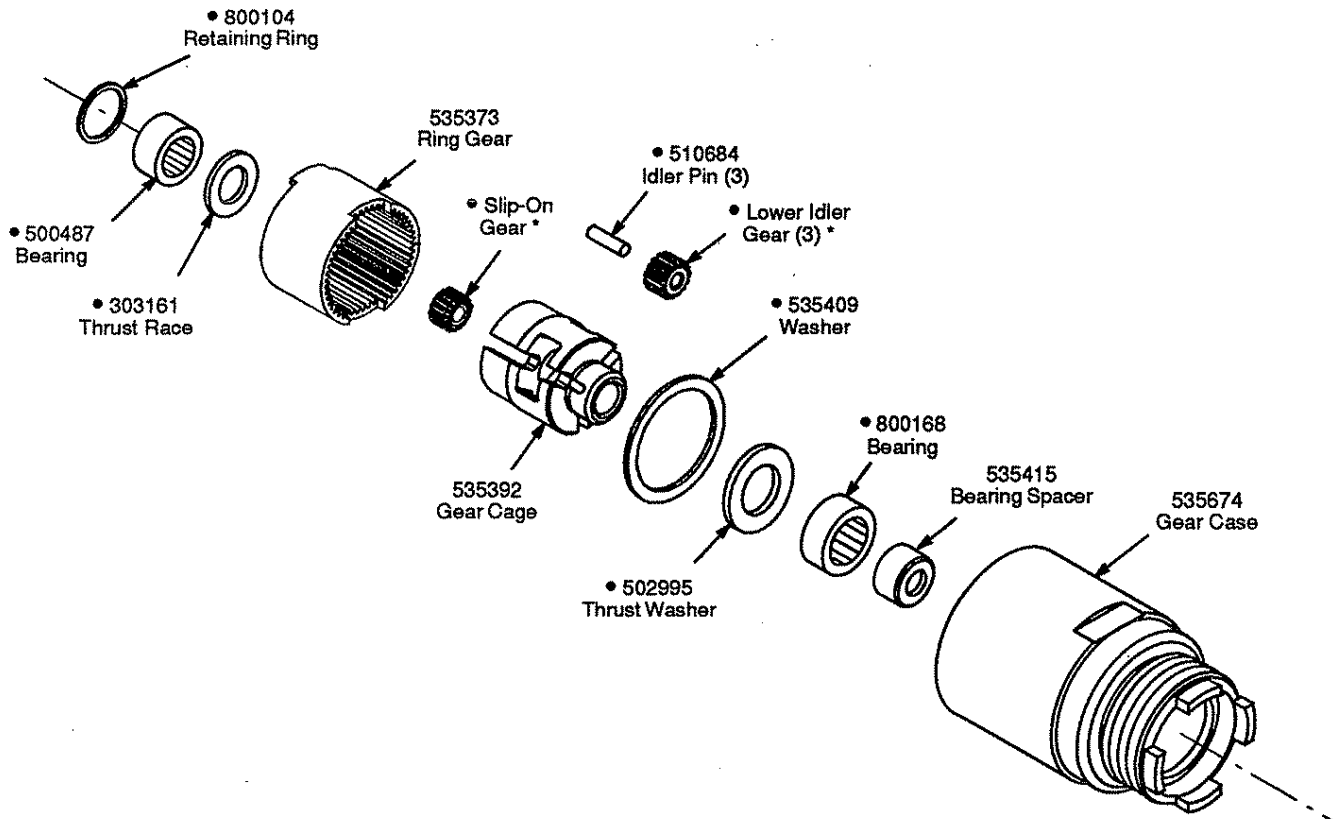
• **NOTE: RECOMMENDED SPARE PARTS**
It is recommended that one (or indicated quantity) of each part designated by a bullet (*) be stocked for every four tools in service.

Model Number	H15N	H15R
Cylinder	540013	540012



Cleco® H15N & H15R Series Foot Flange Motors Single Gearing Assembly

LUBRICATION
Use No. 500021 Oil
Install air line lubricator and
filter in air line ahead of tool.



**HOW TO ORDER
REPLACEMENT PARTS**

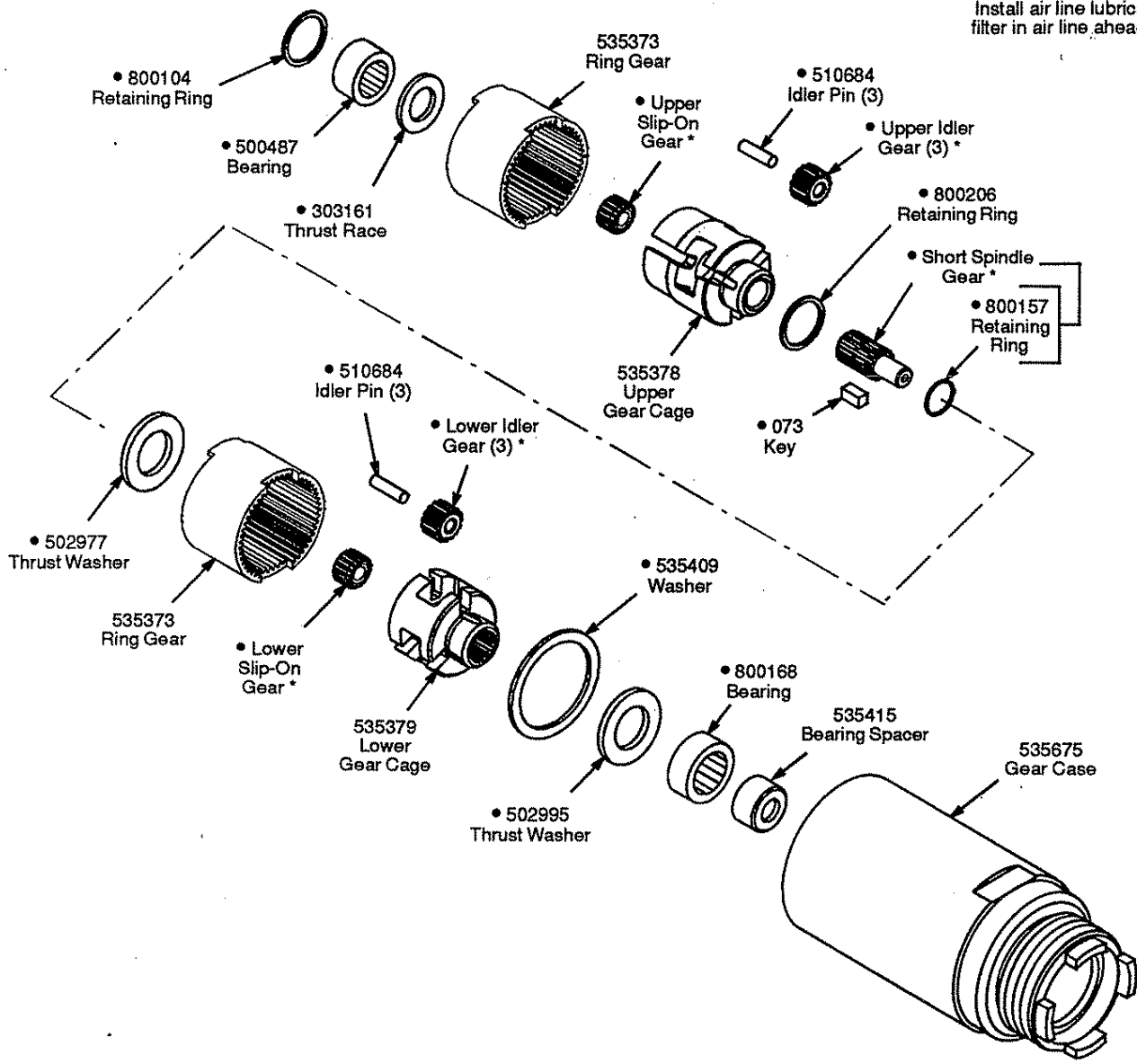
- Specify: 1) Quantity
2) Part Number
3) Part Name

• **NOTE: RECOMMENDED SPARE PARTS**
It is recommended that one (or indicated quantity) of each part designated by a bullet (*) be stocked for every four tools in service.

Model Number	H15N29M H15R26M	H15N54M H15R49M
Idler Gear (No. of teeth)	525811 (20)	525813 (15)
Slip-On Gear (No. of teeth)	----- -----	525818 (17)

Cleco® H15N & H15R Series Foot Flange Motors Double Gearing Assembly

LUBRICATION
Use No. 500021 Oil
Install air line lubricator and
filter in air line ahead of tool.



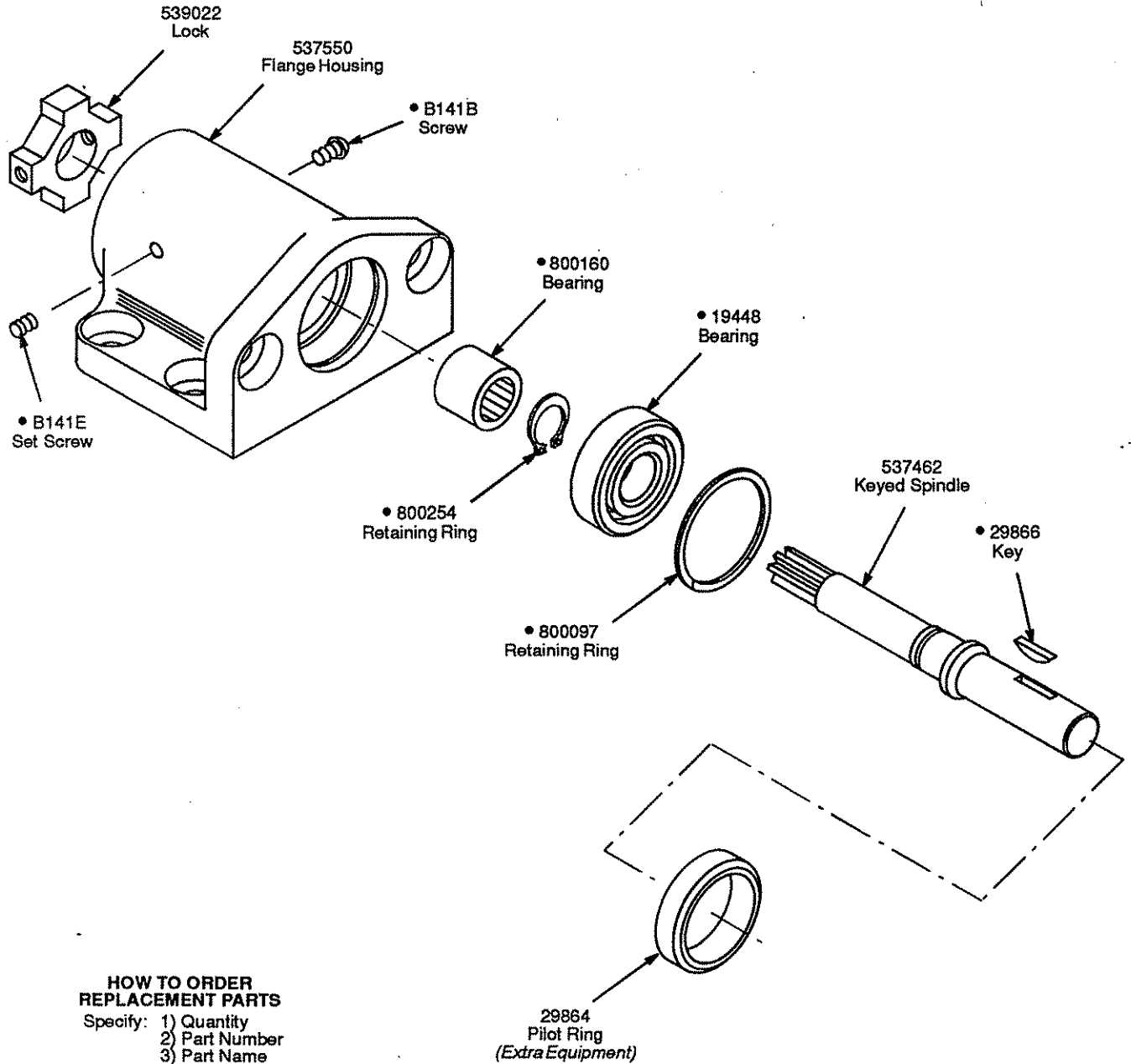
**HOW TO ORDER
REPLACEMENT PARTS**
Specify: 1) Quantity
2) Part Number
3) Part Name

NOTE: RECOMMENDED SPARE PARTS
It is recommended that one (or indicated quantity) of each part designated by a bullet (*) be stocked for every four tools in service.

Model Number	H15N05M H15R05M	H15N08M H15R07M	H15N10M H15R09M	H15N16M H15R14M
Upper Slip-On Gear (No. of teeth)	-----	-----	-----	525818 (17)
Upper Idler Gear (No. of teeth)	525811 (20)	525811 (20)	525811 (20)	525813 (15)
Short Spindle Gear	525846	535410	535410	535410
Lower Slip-On Gear (No. of teeth)	-----	525818 (17)	525816 (23)	525817 (20)
Lower Idler Gear (No. of teeth)	525812 (18)	525813 (15)	525815 (12)	525814 (14)

Cleco® H15N & H15R Series Foot Flange Motors Flange Housing Assembly with Keyed Spindle

LUBRICATION
Use No. 500021 Oil
Install air line lubricator and
filter in air line ahead of tool.



**HOW TO ORDER
REPLACEMENT PARTS**

Specify: 1) Quantity
2) Part Number
3) Part Name

NOTE: RECOMMENDED SPARE PARTS

It is recommended that one (or indicated quantity) of each part designated by a bullet (•) be stocked for every four tools in service.

Recommended Spare Parts List for Cleco® H15N & H15R Series Foot Flange Motors

Number	Description	Qty	Number of Tools	
			1-4	5-8
Head and Motor Assembly				
B113M	Screw	2	2	4
B119T	Screw	3	3	6
C109J	Nut	1	1	2
17391	Retaining Ring	2	2	4
26151	Screen	2	2	4
500529	Bearing	1	1	2
524915	Bearing	1	1	2
537321	Muffler	1	1	2
537444	Gasket	1	1	2
540014	Blade	5	5	10
Flange Housing Assembly				
B141B	Screw	1	1	2
B141E	Set Screw	1	1	2
19448	Bearing	1	1	2
29866	Key	1	1	2
800097	Retaining Ring	1	1	2
800160	Bearing	1	1	2
800254	Retaining Ring	1	1	2
Single Gearing Assembly (Common Parts)				
303161	Thrust Race	1	1	2
500487	Bearing	1	1	2
502995	Thrust Washer	1	1	2
510684	Idler Pin	3	3	6
535409	Washer	1	1	2
800104	Retaining Ring	1	1	2
800168	Bearing	1	1	2
Specific Parts for H15N29M & H15R26M				
525811	Idler Gear	3	3	6
Specific Parts for H15N54M & H15R49M				
525813	Idler Gear	3	3	6
525818	Slip-On Gear	1	1	2

Number	Description	Qty	Number of Tools	
			1-4	5-8
Double Gearing Assembly (Common Parts)				
073	Key	1	1	2
303161	Thrust Race	1	1	2
500487	Bearing	1	1	2
502977	Thrust Washer	1	1	2
502995	Thrust Washer	1	1	2
510684	Idler Pin	6	6	12
535409	Washer	1	1	2
800104	Retaining Ring	1	1	2
800157	Retaining Ring	1	1	2
800168	Bearing	1	1	2
800206	Retaining Ring	1	1	2
Specific Parts for H15N05M & H15R05M				
525811	Upper Idler Gear	3	3	6
525812	Lower Idler Gear	3	3	6
525846	Short Spindle Gear	1	1	2
Specific Parts for H15N08M & H15R07M				
525811	Upper Idler Gear	3	3	6
525813	Lower Idler Gear	3	3	6
525818	Lower Slip-On Gear	1	1	2
535410	Short Spindle Gear	1	1	2
Specific Parts for H15N10M & H15R09M				
525811	Upper Idler Gear	3	3	6
525815	Lower Idler Gear	3	3	6
525816	Lower Slip-On Gear	1	1	2
535410	Short Spindle Gear	1	1	2
Specific Parts for H15N16M & H15R14M				
525813	Upper Idler Gear	3	3	6
525814	Lower Idler Gear	3	3	6
525817	Lower Slip-On Gear	1	1	2
525818	Upper Slip-On Gear	1	1	2
535410	Short Spindle Gear	1	1	2





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