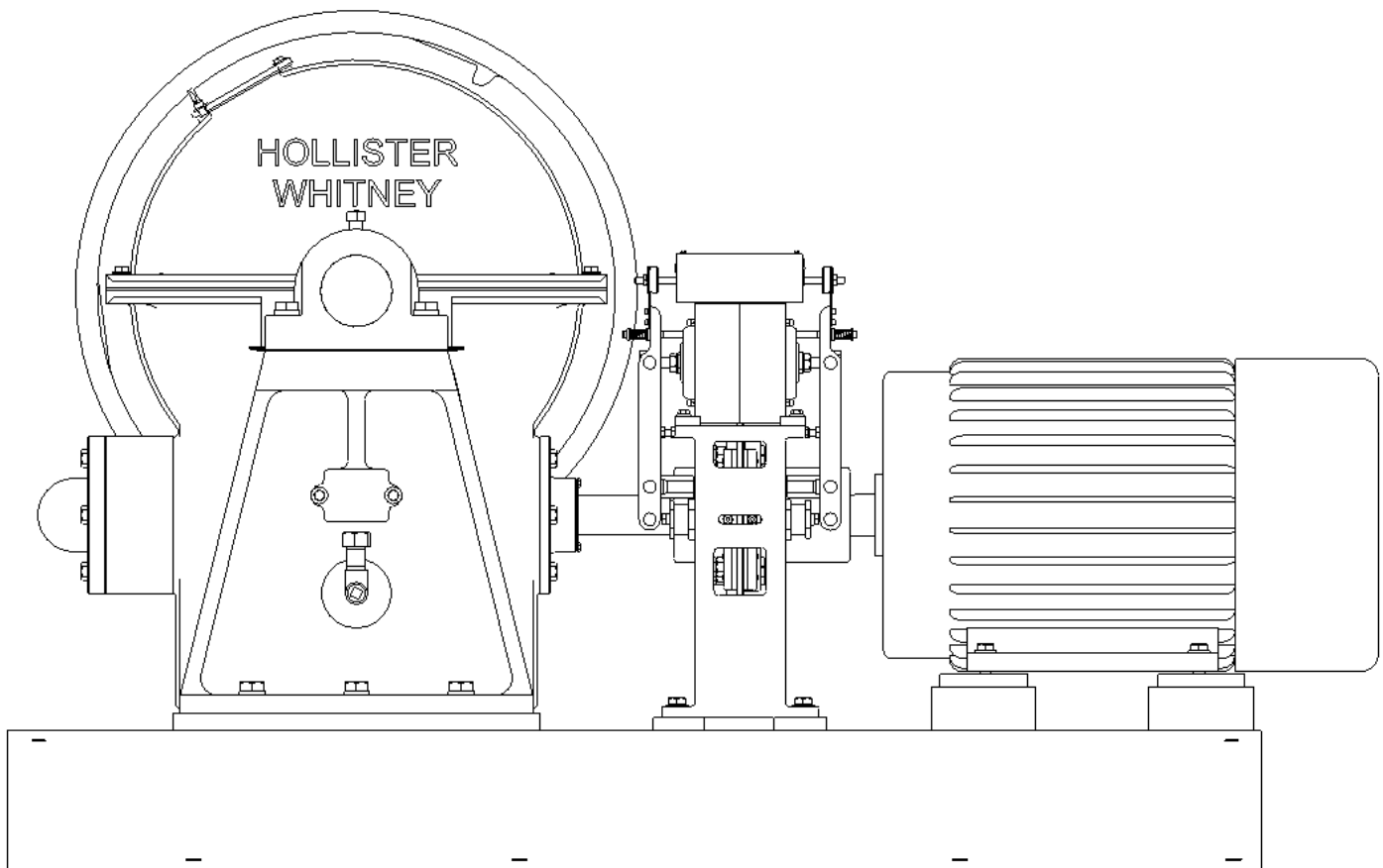
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REPLACEMENT PARTS INSTRUCTIONS FOR GEARED TRACTION MACHINES




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HOLLISTER-WHITNEY ELEVATOR CO. LLC
SOCKETS USED ON MACHINES

#34 MACHINE: 3/4" SOCKET
 9/16" SOCKET
 15/16" SOCKET
 1-5/16" SOCKET
 1-5/16" HAMMER WRENCH

#43/#44 MACHINE: 3/4" SOCKET
 15/16" SOCKET
 1-1/16" SOCKET
 1-11/16" SOCKET
 1-11/16" HAMMER WRENCH

#53/#54 MACHINE: 3/4" SOCKET
 1-1/8" SOCKET
 1-1/4" SOCKET
 1-7/8" SOCKET
 1-7/8" HAMMER WRENCH

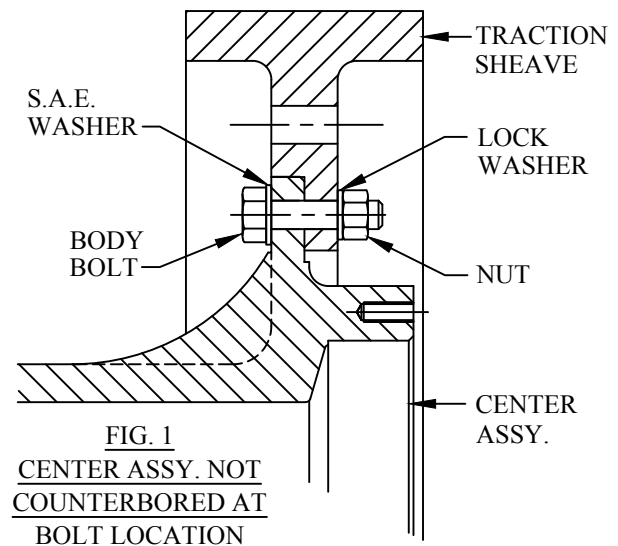
#63/#64 MACHINE: 15/16" SOCKET
 1-1/8" SOCKET
 1-1/4" SOCKET
 1-5/16" SOCKET
 2-1/4" SOCKET
 2-1/4" HAMMER WRENCH

#74 MACHINE: 1-1/2 SOCKET
 1-7/16" SOCKET
 2-3/4" SOCKET
 3-1/4" SOCKET
 3-1/4" HAMMER WRENCH

HOLLISTER-WHITNEY ELEVATOR CO. LLC
INSTRUCTIONS FOR REPLACEMENT OF TRACTION SHEAVE

Instructions:

1. Traction sheave is mounted with shrink fit. To remove the sheave you will need some form of heat, preferably an acetylene torch with a large heating tip (rosebud) which is used for heating only.
2. Apply heat to the traction sheave until just past "hand-touch" temperature. While heating, use an impact wrench to "walk-off" the sheave one bolt at a time. There are three tapped holes in the traction sheave that are used for this purpose. If there is resistance, apply additional heat.
3. Remove and rest the sheave on blocking so the sheave is free of the center, and at this point, you can remove the outboard stand. This will keep the gear from being moved out of position in relation to the worm.
4. After removal of the outboard stand, remove the old sheave.
5. Any burrs must be removed from the center flange surface, bolt holes, and back-off screw indentions to assure a flush re-mount.
6. You will now need to preheat the new traction sheave to nearly the same temperature and you are ready for assembly.
7. Use 4 N.C. standard bolts the same diameter as the body bolts to pull the sheave onto the center. DO NOT USE BODY BOLTS. Once it is set into position with the 4 standard bolts in place, replace the outboard stand. Tighten traction sheave on center going nut-to-nut around the circle. Additional heat may be required for easy assembly.
8. Once you are sure the traction sheave is flush against the flange, the holes will require a slight reaming to accept the large body bolts.
9. Attach the replacement traction sheave to the existing center assembly with body bolts. NOTE: Place a S.A.E. washer at the underside of the bolt head if the center assembly has not been counterbored. If the center assembly has been counterbored at the bolt location, then the S.A.E. washer is not required. Secure the bolts with a lock washer and nut. (See Fig. 1)
10. Check run-out of sheave with a dial indicator.
It should run within .005 and if it does not, then you may need to apply additional heat and re-tighten all bolts.



HOLLISTER-WHITNEY ELEVATOR CO. LLC
INSTRUCTIONS FOR REPLACEMENT OF WORM & GEAR SETS

(Reference: H-W Bulletin #1000 or #1125)

<u>Description</u>	<u>Purpose</u>
Dowel Pin	To maintain setting during transit.
Shim Pack	To adjust depth of gear mesh.
Jack Screw	To raise either shaft support block for shim adjustment.
Bolts	To maintain position of shaft support block.
Set Screws	To maintain position of main shaft axially in shaft support blocks.

Mounting and Alignment Procedure:

1. Gear center seat must be true and clean. Gear must be uniformly heated for shrink fit on gear center. Make certain gear is fully seated against flange, and aligned for insertion of body fit bolts. Re-ream all holes.
2. After installation of replacement worm shaft, check for free-spinning. Mount and align motor, lubricate worm shaft bushings and thrust bearings intermittently while running machine to insure freedom of worm, also, back off bearing cap bolts to enable the thrust bearings to seek their center. Re-tighten cap bolts and install gear/traction sheave assembly.
3. Adjust setting of gear in relation to worm to result in approximately .005" backlash (measured with tangentially mounted dial indicator, reading on flank of gear tooth) by rocking center assembly while duplicating factory gear contact pattern, if present. Pattern must be established under simulated load condition which can be accomplished by applying the pressure of a wood pry beam against rotating traction sheave rim.
4. Height of gear/traction sheave assembly is adjusted by thickness of shim packs under both shaft support blocks. Note that the top shim is actually a laminated shim pack which can be peeled off in .002" increments.
5. Gear/traction sheave assembly can be rotated in relation to worm shaft by shifting position of appropriate shaft support block sideways, since the hold down bolts are positioned in oversized holes in blocks.
6. Gear/traction sheave assembly can be shifted axially through bore of shaft support blocks.
7. Add new gear oil (refer to Lubrication Instructions).



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REPLACEMENT BEARINGS AND SEALS FOR HOLLISTER-WHITNEY GEARED MACHINES	12/14/18	C	1 of 1	E-130

REPLACEMENT BEARINGS AND SEALS FOR HOLLISTER-WHITNEY MACHINES

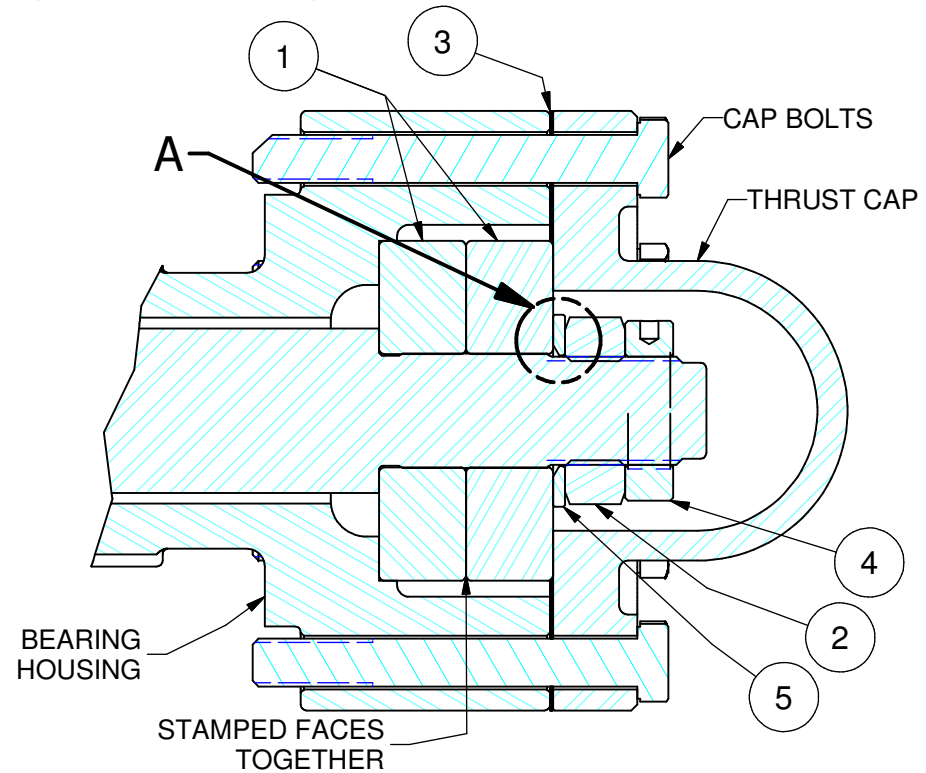
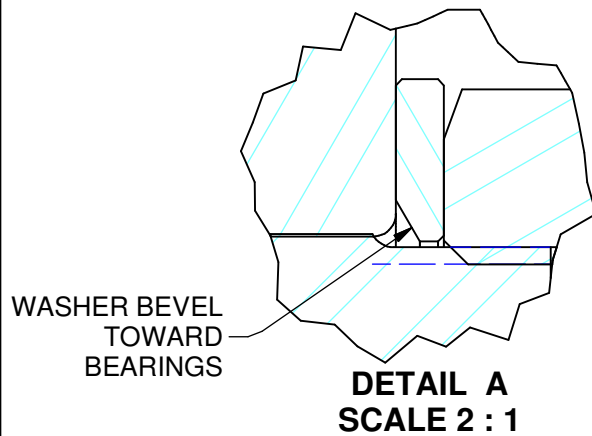
MACH.	INFO.	BEARING GEAR END	BEARING T.S. END	BEARING-THRUST (Matched set of 2)	HOUSING SEAL Gear or T.S. End	CLIPPER SEAL (Split)	CLIPPER SEAL
#34	HW Part #	34-089	34-090	34-091	34-092	34-081-1	34-081
	Mfg	Timken	Timken	SKF	Garlock/Klozure	Parker	Parker
	Part #	Cup - 3920 Cone - 3980	Cup - 65500 Cone - 65237	7405 BCBM	21158-1642	0150-9628	6679-H1L5
#43 #44	HW Part #	43-089	43-090	43-091	43-092	43-081-1	43-081
	Mfg	Timken	Timken	SKF	SKF	J.M. Clipper	Parker
	Part #	Cup - H414210 Cone - H414242	Cup - 6320 Cone - 6386	7406 BGBM	26189	10872	7182 H1L5
#53 #54	HW Part #	53-089	53-090	53-091	53-092	53-081-1	53-081
	Mfg	Timken	Timken	SKF	SKF	Parker	Parker
	Part #	Cup - 752 Cone - 759	Cup - 6535 Cone - 6580	7407 BM/DGB	34886	0193-4274	5828 H1L5
#63 #64	HW Part #	63-089	63-090	63-091	63-092	63-081-1	63-081
	Mfg	Timken	Timken	SKF	SKF	Parker	SKF
	Part #	Cup - 64700 Cone - 64450	Cup - 932 Cone - 938	7409 BM/DGB	45032	0218-6532	CR 21759
#74	HW Part #	74-089	74-090	74-091	74-092	74-081-1	74-081
	Mfg	Timken	Timken	FAG	SKF	Garlock/Klozur	SKF
	Part #	Cup - 99100 Cone - 99600	Cup - HH234010 Cone - HH234048	7413 B.MP.UO	60006	25003-6356	CR 32395

NOTICE: IF THE MACHINE BEING REPAIRED HAS JAM NUT & LOCK COLLAR, SEE PAGE 2 OF 2 FOR INSTALLATION PROCEDURES.

MACHINES WITH JAM NUTS AND LOCK COLLARS have generally been used since October 2001 (Contract #A140000 & newer).

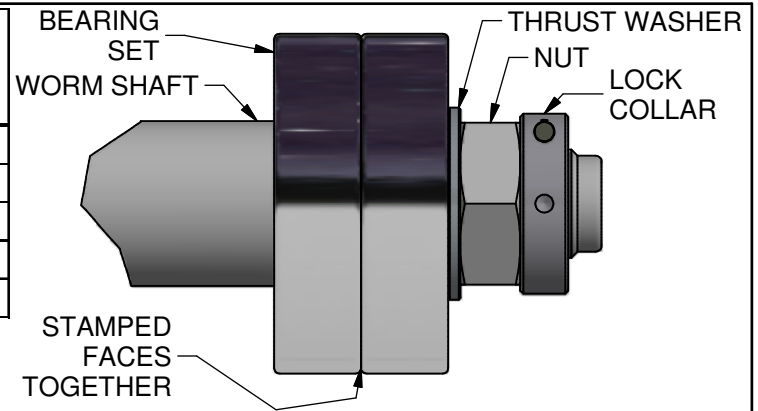
If the machine being repaired has a Castle Nut & Cotter Pin combination, see Document E-127 for instructions.

ITEM	QTY	DESCRIPTION	KIT #34-202	KIT #44-202	KIT #54-202	KIT #64-202	KIT #74-202
1	1	THRUST BEARING SET	#7405	#7406	#7407	#7409	#7413
2	1	NUT	34-075	43-075	53-075	63-075	74-200
3	8	GASKET/SHIM	34-087	43-087	53-087	63-087	74-087
4	1	LOCK COLLAR	34-198	44-198	54-198	64-198	74-198
5	1	WASHER	34-199	44-199	54-199	64-199	74-199
6	1	THREAD LOCKER	LOCTITE #243 or PERMATEX BLUE PX#24325 (Not Shown)				



			C	OIL SPECIFICATION UPDATE, PUR #518	LTL	9/10/12	HOLLISTER-WHITNEY ELEVATOR CO. LLC				
			B	ADD PERMATEX & 34 MACHINE, PUR #439	LTL	2/14/11					
D	UPDATE, LOCTITE #243 WAS #2440, PUR #1034	LTL	A	CLAMP SCREW TORQUE UPDATED PUR #231	LTL	9/4/03	TITLE PARTS LIST & INSTALLATION INSTRUCTION - #7400 SERIES THRUST BEARING w/ LOCK COLLAR				
THIS DRAWING IS SUPPLIED AS A REPRESENTATION OF THE EQUIPMENT HOLLISTER-WHITNEY ELEVATOR CO. LLC ("MANUFACTURER") HAS AGREED TO SUPPLY. SLIGHT ADJUSTMENTS MAY OCCUR DURING MANUFACTURING AND INSTALLATION. ANY MODIFICATIONS NOT APPROVED IN WRITING BY MANUFACTURER MAY AFFECT OPERATION, VOIDS ANY WARRANTY AND RELEASES MANUFACTURER OF ALL LIABILITY. THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION THAT CANNOT BE REPRODUCED OR DIVULGED, IN WHOLE OR IN PART, WITHOUT WRITTEN AUTHORIZATION FROM THE MANUFACTURER.				THIRD ANGLE PROJECTION			DRAWN BY LTL		SCALE 1 / 2	MATERIAL SEE PARTS LISTS	REFERENCE TOL. ALL DIMENSIONS REFERENCE UNLESS OTHERWISE SPECIFIED
							SHEET SIZE A		DATE 6/19/2003		E-126 SHEET 1 OF 2

Machine	Thrust Bearing	CONDITIONING Worm Threads, Nut Torque	FINAL Worm Nut Torque	Collar Clamping Screw Torque	Thrust Cap Bolt Torque
34	#7405	250 ft-lbs	75 ft-lbs	14 ft-lbs (170 in-lbs)	23 ft-lbs
43/44/44F	#7406	350 ft-lbs	95 ft-lbs	14 ft-lbs (170 in-lbs)	55 ft-lbs
53/54	#7407	350 ft-lbs	125 ft-lbs	14 ft-lbs (170 in-lbs)	55 ft-lbs
63/64	#7409	350 ft-lbs	200 ft-lbs	14 ft-lbs (170 in-lbs)	110 ft-lbs
74	#7413	550 ft-lbs	375 ft-lbs	27 ft-lbs (325 in-lbs)	200 ft-lbs



1. Drain and thoroughly clean gear housing, thrust bearing housing, and thrust cap. The face of the shoulder on worm shaft must project beyond bearing face on bearing housing.
2. Place the STAMPED faces of outer races of thrust bearings together and assemble on worm shaft as shown.
3. Install washer on worm shaft. Make sure the bore chamfer on washer is toward bearings. Install and torque nut according to the CONDITIONING TORQUE on chart above to condition the worm threads. Back nut off and remove.
4. Clean threads of nut and worm thoroughly with a non-oil based cleaner and let dry completely.
5. Apply provided Thread Locking Adhesive (Loctite #243 or Permatex Threadlocker Blue PX#24325) to worm threads where nut will be located.
6. Re-install nut and re-torque to the FINAL TORQUE value specified in the chart above.
7. Install new lock collar provided. Snug down collar against nut by tapping spanner wrench handle lightly with a brass hammer. Tighten clamping screw on collar to value specified in chart above.
8. Install just enough shims between thrust cap and housing to eliminate ALL axial end play in worm shaft. Remove one shim and torque thrust cap bolts per chart (0.001" to 0.007" preload on outer races is recommended).
9. After unit is completely re-assembled, and before starting machine, fill gear housing to correct oil level with worm gear oil of approved specification (See Lubrication Instructions Bulletin #1150).
10. Before restoring car to service, slightly back off all thrust bearing cap bolts temporarily, and run EMPTY car for several trips. Re-tighten cap bolts to specified torque value and place car into regular service.

					HOLLISTER-WHITNEY							
					ELEVATOR CO. LLC							
					TITLE PARTS LIST & INSTALLATION INSTRUCTION - #7400 SERIES THRUST BEARING w/ LOCK COLLAR							
					SEE PAGE 1 OF 2 FOR REVISION HISTORY							
THIS DRAWING IS SUPPLIED AS A REPRESENTATION OF THE EQUIPMENT HOLLISTER-WHITNEY ELEVATOR CO. LLC ("MANUFACTURER") HAS AGREED TO SUPPLY. SLIGHT ADJUSTMENTS MAY OCCUR DURING MANUFACTURING AND INSTALLATION. ANY MODIFICATIONS NOT APPROVED IN WRITING BY MANUFACTURER MAY AFFECT OPERATION, VOIDS ANY WARRANTY AND RELEASES MANUFACTURER OF ALL LIABILITY. THIS DOCUMENT CONTAINS CONFIDENTIAL AND PROPRIETARY INFORMATION THAT CANNOT BE REPRODUCED OR DIVULGED, IN WHOLE OR IN PART, WITHOUT WRITTEN AUTHORIZATION FROM THE MANUFACTURER.					THIRD ANGLE PROJECTION			DRAWN BY		SCALE	MATERIAL	REFERENCE TOL.
								LTL		1 / 2	SEE PARTS LISTS	
					SHEET SIZE		DATE		E-126			
					A		6/19/2003		SHEET 2 OF 2			


HOLLISTER-WHITNEY ELEVATOR CO. LLC
INSTRUCTIONS FOR REPLACEMENT OF GEAR & TRACTION SHEAVE BEARINGS & SEALS

Instructions:

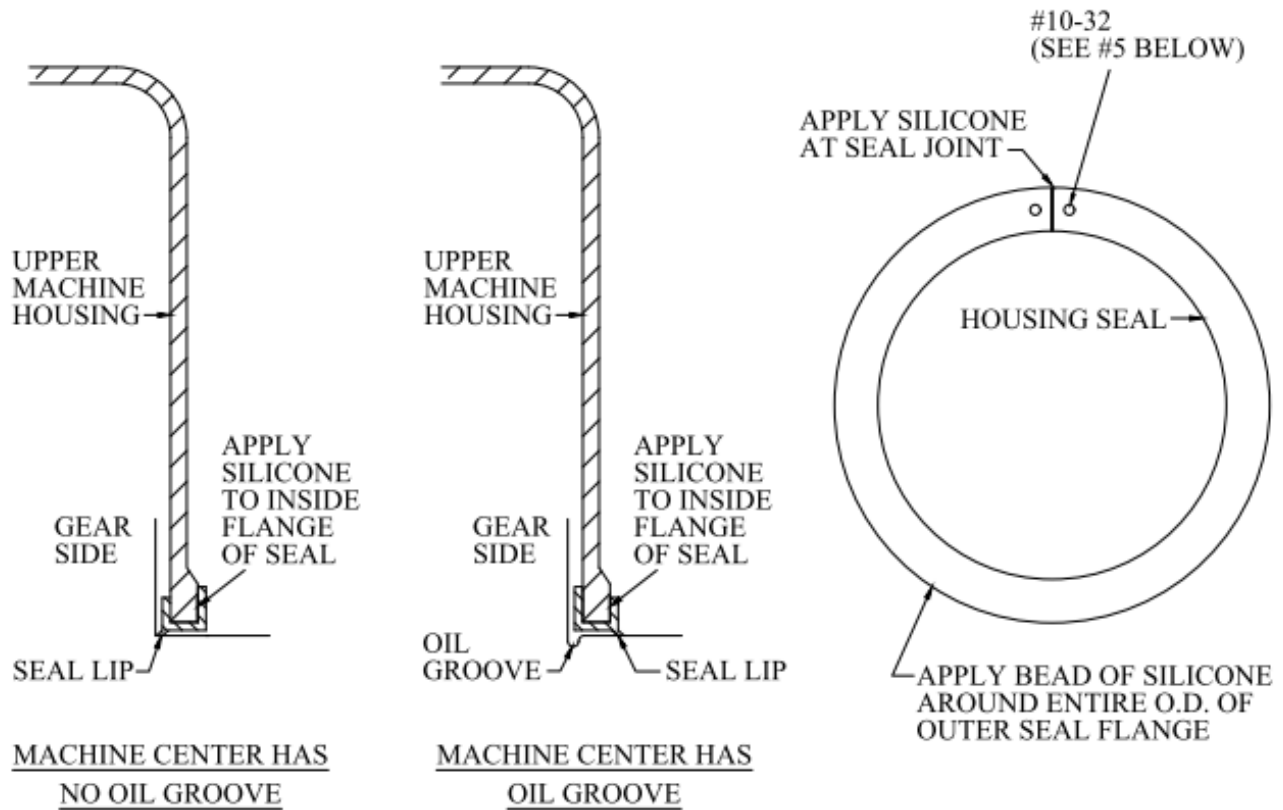
1. Gear/traction sheave assembly must be removed from machine. Take care in marking location of shaft on assembly before dismantling. Be careful also to protect bronze gear from damage in handling of the assembly.
2. Remove shaft support blocks from both ends of shaft, and mark the position of the retainer with a center punch for later re-assembly alignment. Remove the retainer bolts and both retainers. Tapped holes in both ends of retainers are provided for removing, and you can use a suitable bolt for this. After suitable blocking impact the shaft until the first bearing is removed from the shaft. Take special care not to damage the ends of the shaft during impacting.
3. Remove shaft from the center assembly with the other bearing attached to it, and after wiping clear any grease (to avoid fire hazard), you can apply some heat to loosen the fit, and remove the bearing. Be sure to remove all excess grease from the cavity and shaft.
4. Using an inside bearing puller, pull outer races from both bearings, and remove both oil seals. Press in new outer races and seals.
5. Reset the shaft in the center assembly in the proper position. After heating the traction sheave end bearing in oil (not to exceed 250°), assemble it to the traction sheave end of the shaft making sure bearing is up to shoulder on shaft. After the bearing cools, with retainer and center clean, place a 3/16" bead of silicone at inside corner of retainer and re-assemble.
6. Repeat the process for the gear end, once again making sure both bearings are against the shaft shoulder. Note that prior to re-assembling the retainer on the gear end, add approximately .040" shim. This will be a trial-and-error method of adding or removing shims as you tighten the bolts and turn the shaft until you acquire the proper pre-load on the shaft (*see below).

<u>H-W MACHINE MODEL</u>	<u>*FT. LBS. OF PRE-LOAD</u>
#34	15-20 ft. lbs.
#43/#44	15-20 ft. lbs.
#53/#54	20-25 ft. lbs.
#63/#64	25-30 ft. lbs.
#74	50-52 ft. lbs.

7. After total re-assembly and the replacing of the tapered pins, blue-up 3 teeth on the gear adjacent to the H-W original bluing. Compare the pattern, and if it is not the same then remove pins and reduce shims (NOTE: Top shim separates in .002" thickness) and repeat procedure to duplicate original pattern. There should be .005" to .007" backlash between worm and gear. (ALSO NOTE: Do not replace taper pins if the holes are out of position.)

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	MACHINE HOUSING SEAL INSTALLATION INSTRUCTIONS	12/13/18	B	1 of 1	E-121

HOLLISTER-WHITNEY ELEVATOR CO. LLC
INSTRUCTIONS FOR INSTALLATION OF MACHINE HOUSING SEAL



INSTRUCTIONS

1. Install the seal on the machine lower housing so that the seal lip is facing the gear side of the housing if the machine center does not have an oil groove. If the machine center does have an oil groove, the seal should be installed on the machine housing so that the seal lip is facing away from the gear side of the housing as shown above.
2. Refasten the seal joint with its screw or link fastener.
3. Apply RTV silicone liberally to the seal joint and to the inside flange of the seal.
4. Replace the machine upper housing keeping it in alignment with the lower housing at the seal side.
5. Apply RTV silicone to the O.D. of the outside flange of the seal. Allow the silicone to set for 24 hours before operating the machine. If machine has to be operated before this time limit, drill and tap (2) #10-32 holes in the housing to attach the seal as shown.