SERVICE INSTRUCTIONS

TURBINE MIXERS

MIXMOR

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MIXMOR

SERVICE INSTRUCTIONS

DRIVE SERIES 'G' TURBINE MIXERS
MODEL TO, TCL, TC & TCM

MANUAL NO. 05-05515
REVISED 6/99

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FOREWORD

The information contained in this Service Instruction Manual covers MixMor Models TO, TCL, TC and TCM turbine mixers with "G" series drive.

The Model is determined by the type of mounting and/or seal. The following is a description of the Models.

"TO" – Baseplate mounted mixer for channel mounting over open tanks.

"TCL" – Flange mounted mixer with low pressure stuffing box (10 psig maximum)

"TC" – Flange mounted mixer with high pressure stuffing box (150 psig maximum) for closed tank application.

"TCM" – Flange mounted mixer with mechanical seal for closed tank application.

The front page of his manual and the certified drawing give the drive size and shaft seal drawing number of your mixer.

GENERAL INFORMATION

When apparent or suspected damage has been found on equipment, during transport from factory to user, both the carrier and MixMor must be notified immediately.

When receiving equipment, a check should be made to determine whether all inventoried parts are still in the shipment. Any discrepancy should be reported to both the carrier and MixMor within one week, if claim is to be made.

MixMor mixers do not require the service of a factory engineer upon installation. This service is not included in the price of the unit; therefore, if it is to be furnished, it must be agreed upon, in writing, between MixMor and the purchaser.

MixMor warranty becomes void if the unit sold is not operated within the rating and mixing service conditions for which it was specifically sold. The purchaser shall take all necessary precautions to eliminate all external destructive conditions, including unusual variable loads affecting the critical speeds of the system, severe shock loading, mechanical or thermal overloads and other conditions of which MixMor was not fully advised. The mixer must be installed and maintained in accordance with this service manual.

MixMor must be informed within thirty days, for warranty to cover the mixer in the event of any malfunction during the warranty period.

All personnel directly responsible for operation of equipment must be instructed on proper installation, maintenance and safety procedures.

Design improvements are implemented on a continuous basis. Therefore, we reserve the right to make changes without notice. If any questions arise regarding the data or information in this manual, please contact MixMor in Los Angeles, California or King of Prussia, Pennsylvania.

HANDLING INSTRUCTIONS

SAFETY

When handling or working on a MixMor mixer, safety precautions must always be remembered and followed. The proper tools, clothing and methods of handling should be used to prevent any accidents.

This manual lists a number of safety precautions. Follow them. Insist that your employees do the same. Safety precautions and equipment have been developed from past accidents which have occurred. Follow and use them for your protection.

HANDLING

Do not support or lift the mixer in a manner which could create excessive stress on parts or shaft extensions. Never allow shafting to support any weight of the drive assembly. A slightly bent shaft will cause extreme mixer vibration. Support the mixer with a lifting sling to prevent damaging of any external mixer parts. Always place the shaft in a horizontal position supporting it at several points.

INSTALLATION INSTRUCTIONS

STORAGE

If installation of the mixer and/or operation is to be delayed for more than one month after factory shipment, special rust preventative precautions should be taken. The precautions may be taken by the user or by the factory if full information concerning storage conditions is provided at the time of ordering. Always store the mixer shaft in a horizontal position, supporting it at several points.

LOCATION

The mounting location of the mixer has a definite effect on the flow pattern within the tank. The recommended location has been made with regard to your particular application and should be carefully followed to obtain optimum results.

MOUNTING

Securely bolt down the mixer to its foundation using proper size bolts which will fit mounting holes. Bolts should be SAE Grade 5 or equivalent.

GEAR REDUCER

The mixer is shipped from the factory with a completely assembled gear drive. Gearing is carefully assembled at the factory to provide proper gear contact. Do not change the setting in any way.

When shipped the gear reducer has been filled with the proper lubricating grease and does not have to be serviced before start-up. We recommend that you read the LUBRICATION INSTRUCTIONS before start-up to familiarize yourself with this mixer.

MIXER SHAFT — Refer to Dwg. No. 05-05508, pg. 19

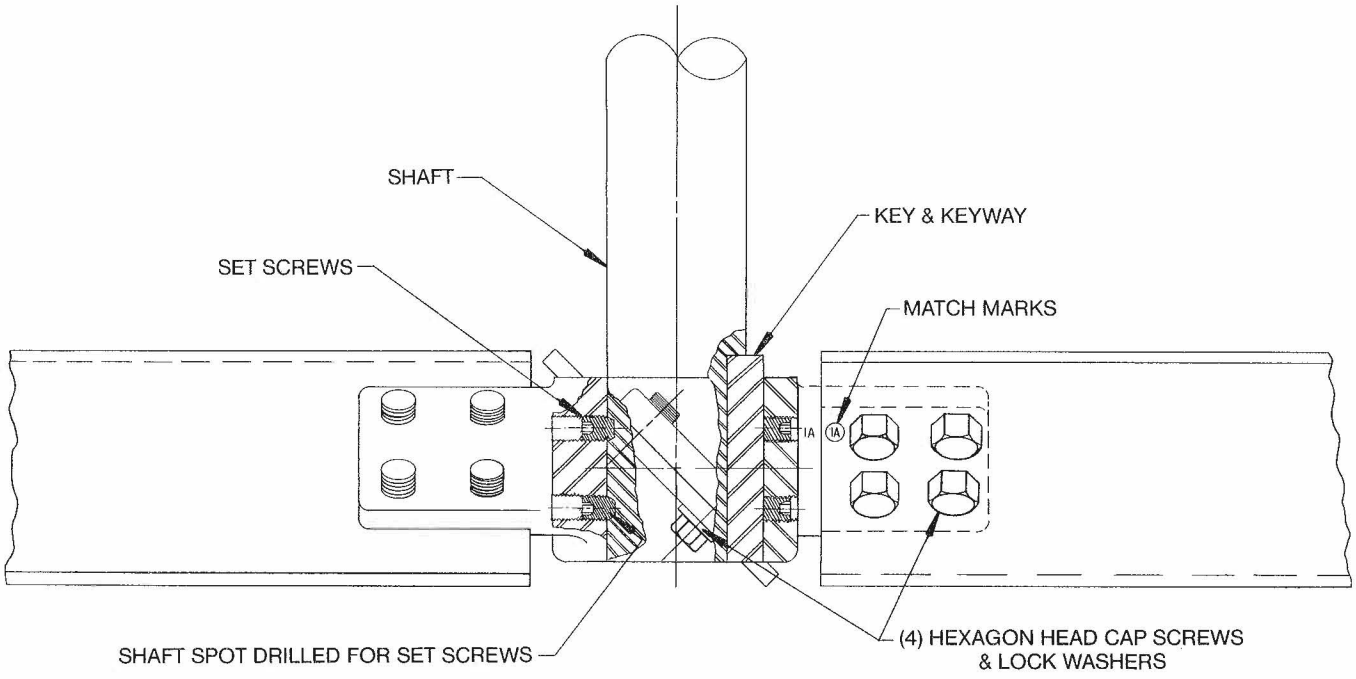
Handle the shaft carefully and always place it in a horizontal position, supporting it at several points. When installing the shaft, slide it through the mounting flange or baseplate, support bearing and into the gear reducer hollow shaft. If your mixer is a Model TCM with a double mechanical seal, refer to the SEAL INSTRUCTIONS for shaft installation procedure. Before assembly put a light coat of NEVER-SEEZ on the bore of the reducer hollow shaft and on the end of the mixer shaft. A tube of NEVER-SEEZ is supplied with the mixer. Slide it in until the end of the shaft is flush with the top of the gear reducer. Align the shaft and gear reducer keyways and slide in the drive key. Raise the shaft up and install the retaining ring. Lower the shaft until the retaining ring rests on the reducer hollow shaft. Tighten the set screws in the gear reducer hollow shaft and the support bearing.

IMPELLER — Refer to Dwg. No. 05-05514

The impeller hubs are keyed and set screwed to the shaft. The shaft is spot drilled for the set screws. The impeller assembly is statically balanced at the factory. The bolted assembly impeller will have the blades and hub ears match marked for assembly in the field.

IMPELLER ASSEMBLY

Dwg. No. 05-05514



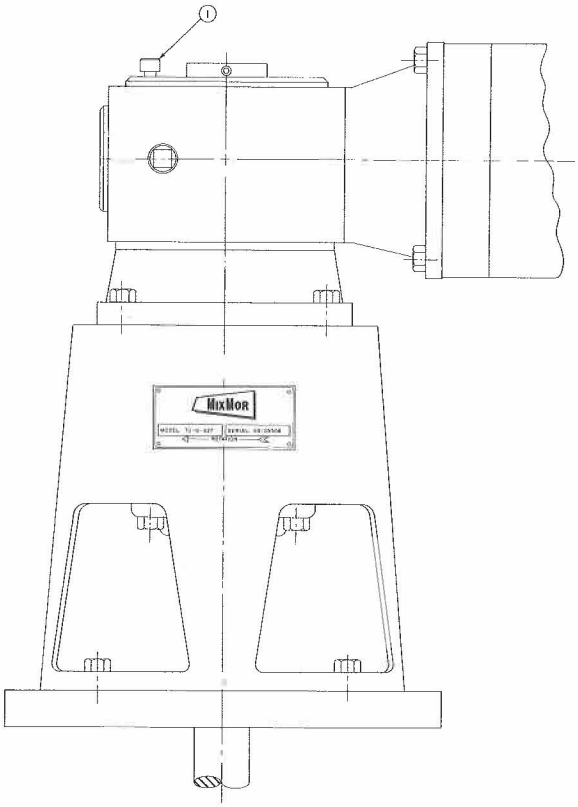
ALL IMPELLERS ARE STATICALLY BALANCED WITH BLADES AND HUB EARS MATCH MARKED.

KEYWAY SPACED AT 90° APART FROM SET SCREWS.

LUBRICATION

GEAR REDUCER

All "G" series turbine mixers are shipped from the factory with the gear reducers filled with the proper lubricating grease. The grease should be changed every five years, when used under normal operating conditions, and/or whenever repair work is performed. If the mixer is operating in extremely dirty, or high or low temperature environments, the grease should be changed more often. If you or your lubricant supplier are uncertain as to the frequency of changes, please consult MixMor for our recommendation.



CHANGING GREASE: Refer to Dwg. No. 05-05509. After five years of operation the grease should be changed. The grease can be changed without removing the drive from the tank and disassembling the gear reducer. To change the grease while the drive is in place the mixer shaft must first be removed. Refer to the INSTALLATION INSTRUCTIONS for shaft removal instructions. Remove top plate (9). Pull out the hollow output shaft (19) with the attached gear (13) and bearings (11). Remove the drain plug from the bottom of the gear case, flush out the gear case with a non-flammable non-toxic solvent. Replace the drain plug and hollow output shaft. Refill the gear case through the breather hole and/or the top plate opening to 85% capacity and replace the top plate. Refer to the charts for approximate grease capacity and approved type.

APPROVED LUBRICANTS

LUBRICANT MANUFACTURER	BRAND NAME
Shell	Alvania EP R000
Mobil	Mobilux EP 023
Exxon	Lidok EP 000
Texaco	Multifax EP 000
Chevron	Duralith EP 000

APPROXIMATE GREASE CAPACITY

DRIVE SIZE	WEIGHT
18	1 lb. 4 oz.
22	2 lb. 2 oz.
27	3 lb. 2 oz.
30	4 lb. 10 oz.
35	6 lb. 10 oz.

SHAFT BEARING

The shaft support bearing mounted inside the pedestal housing will minimize shaft vibration, deflection and hydraulically induced bending movement, assuring an extended gear reducer life. The bearing should contain as much grease as practical, since a full bearing with consequent slight leakage is the best protection against entrance of foreign material. When establishing a relubrication schedule, note that a small amount of grease at frequent intervals is preferable to a large amount at infrequent intervals. A good starting point to establish a relubrication schedule is to relubricate the bearing weekly. If the mixer is operated in a clean, dry environment, the bearings will have to be relubricated less frequently.

Abnormal bearing temperatures may indicate faulty lubrication. Normal temperatures may range from "cool to warm to the touch" up to a point "too hot to touch for more than a few seconds", depending upon the bearing size and surrounding conditions. High temperature with no grease showing at the seals, particularly if the bearing seems noisy, usually indicates too little grease. Unusually high temperature accompanied by excessive leakage of grease indicates too much grease. Normal temperature and a slight showing of grease at the seals indicates proper lubrication.

Many ordinary cup greases are not suitable for lubrication. The bearing has been lubricated at the factory with No. 2 consistency lithium base grease which is suitable for normal operating conditions. Relubricate with lithium base grease or a grease which is compatible with original lubricant and suitable for ball bearing service. In unusual or doubtful cases, consult with a reputable grease manufacturer.

MODEL TCL AND TC STUFFING BOX INSTRUCTIONS

REFER TO DWG. NOS. 05-05510 & 05-05511

GENERAL INFORMATION

The purpose of a stuffing box packing is to limit leakage to a practical level and not to stop leakage completely. If the gland is tightened to prevent leakage, packing life will be shortened and shaft damage will occur. The stuffing box START-UP instructions should be carefully followed for long packing and shaft life.

The packing type furnished with the mixer is specified on the certified drawing. If the furnished packing is not satisfactory for the service conditions, it should be replaced.

LUBRICATION

The high pressure stuffing box (Model TC Dwg. No. 05-05511) is shipped without lubricant because of Federal Regulations and the danger of using a lubricant that may contaminate the product. The stuffing box is normally furnished with a grease fitting and lantern ring for intermittent lubrication of the packing. The low pressure stuffing box (Model TCL Dwg. No. 05-05510) is furnished with packing that has been impregnated with a lubricant and is not supplied with a lantern ring for intermittent lubrication.

START-UP INSTRUCTIONS

Prior to initial operation, the following procedure should be used to assure a long seal life.

1. Tighten the adjustment screws (2) to "finger tightness".
2. Start the mixer and run it until the stuffing box has reached a constant operating temperature. Stop the mixer and tighten opposite screws (2). Note: When tightening the screws, be careful to avoid cocking the follower (1). Even tightening of the follower will seat the packing (5) while it is warm and pliable.
3. Loosen gland screws (2) to finger tightness and re-start the mixer. Leakage may be excessive, but do not tighten the screws for the first 20 to 30 minutes.
4. If leakage is excessive after this initial run-in period, adjust the follower by tightening the screws evenly, one flat or a sixth of a turn at a time. This should be done every 30 minutes until leakage is reduced to a normal level.
5. Adjustments must always be done gradually and held to minimum tightness. Although this procedure may take several hours, it will pay dividends in increased packing and shaft life.

REPACKING PROCEDURE

Note: These instructions cover both the Model TCL and TC. The Model TCL will not have a lantern ring.

1. Remove the follower (1), all packing (5) and lantern ring (8). Carefully avoid scoring the shaft with the packing hook or removal tool.
2. Inspect the shaft and lantern ring (8). Lantern ring, lubrication channel and holes must be free of packing and dirt. Minor shaft wear should be worked smooth. Where excessive wear exists, the shaft should be built up and remachined to give a smooth finish or it should be replaced. Clean stuffing box (6) thoroughly, checking to insure the lubrication holes are free and clear.
3. The location of the lantern ring (8) should be predetermined for proper alignment between lubrication holes and grease lines or fittings.
4. Insert first ring of packing (5) into the box. Install a split spacer (preferably of wood) into the box against packing so that packing ring is firmly seated and spread to make a good seal against the inside walls of the box and the shaft. When tigtening the follower, pull it up evenly so each ring will be packed squarely into the box, assuring a good seal. Repeat this procedure for each ring. The individual packing joints must be staggered at 90°.

5. After the box has been completely packed, replace the follower, tightening the screws (2) to finger tightness.

6. Start the mixer and run it until the stuffing box has reached a constant operating temperature. When tightening the screws, be careful to avoid cocking the follower. Even tightening of the follower will seat the packing while it is warm and pliable.

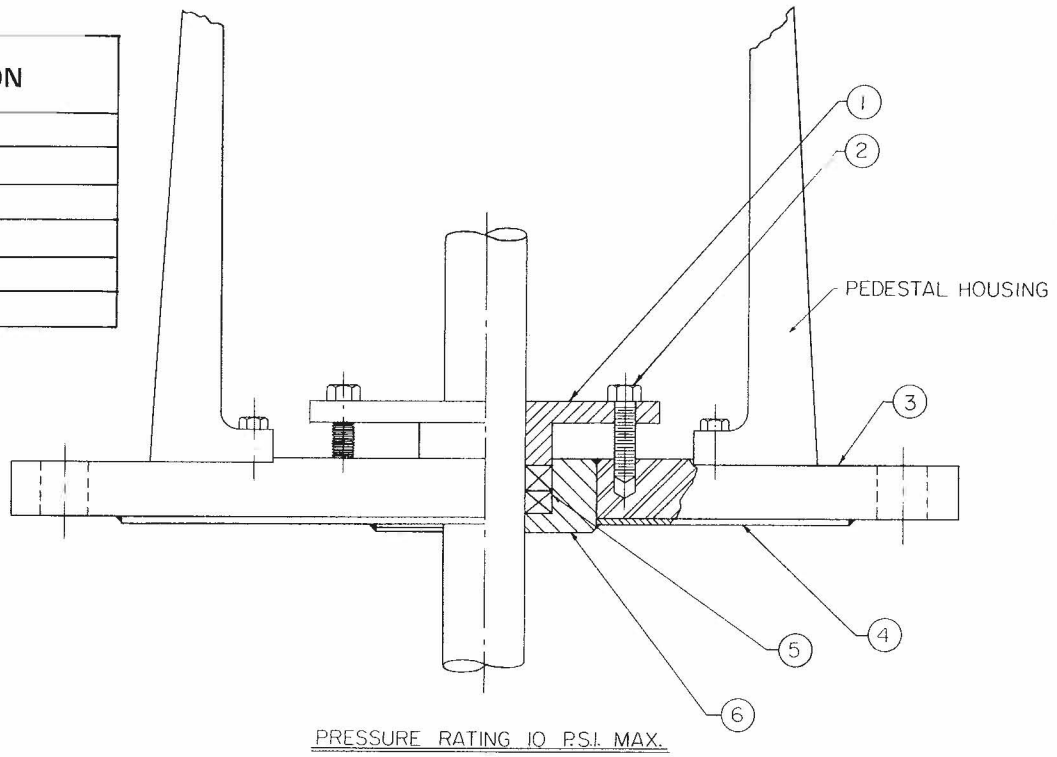
7. Again, loosen the screws to finger tightness. Do not tighten the screws for the first 20 to 30 minutes, even though leakage may be excessive.

8. If leakage is excessive after this initial run-in period, adjust the follower by tightening the screws evenly, one flat or a sixth of a turn at a time. This should be done every 30 minutes until leakage is reduced to a normal level.

9. Adjustments must always be done gradually over several hours and held to a minimum tightness to increase packing and shaft life.

MODEL TCL
Dwg. No. 05-05510

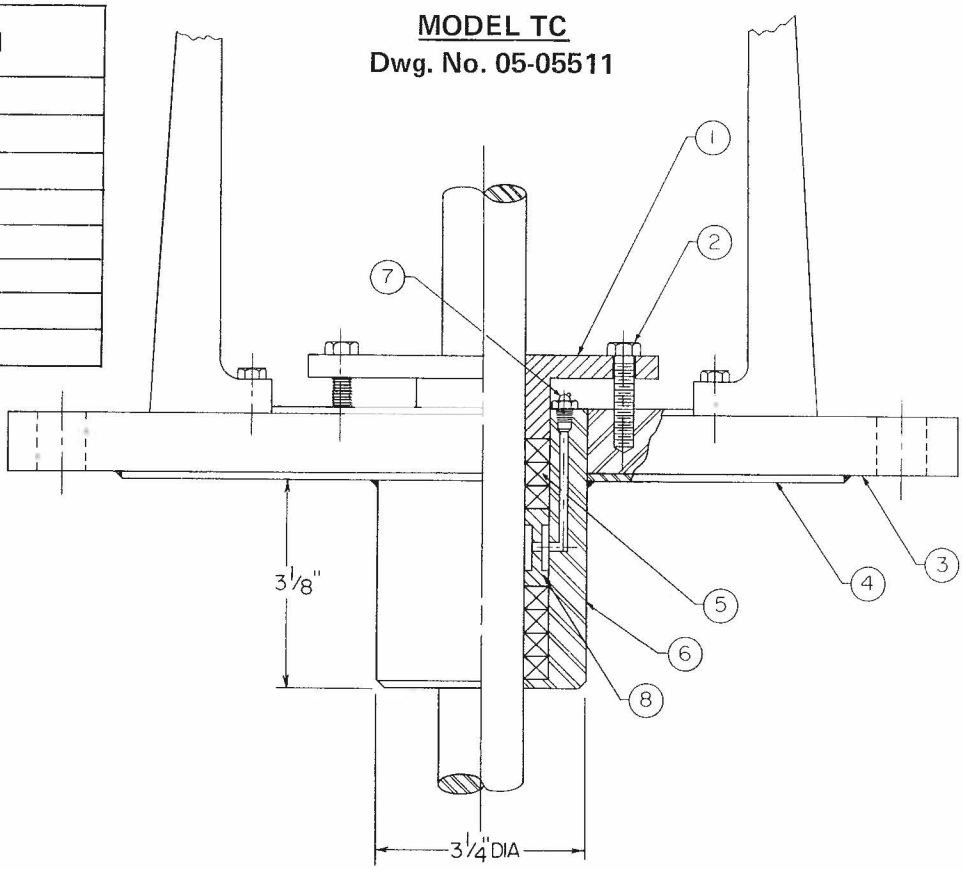
PART NO.	DESCRIPTION
1	Follower
2	Adjustment Screw
3	Flange
4	Flange Facing
5	Packing
6	Stuffing Box



PRESSURE RATING 10 P.S.I. MAX.

MODEL TC
Dwg. No. 05-05511

PART NO.	DESCRIPTION
1	Follower
2	Adjustment Screw
3	Flange
4	Flange Facing
5	Packing
6	Stuffing Box
7	Grease Fitting
8	Lantern Ring



PRESSURE RATING: 150 P.S.I. MAX.

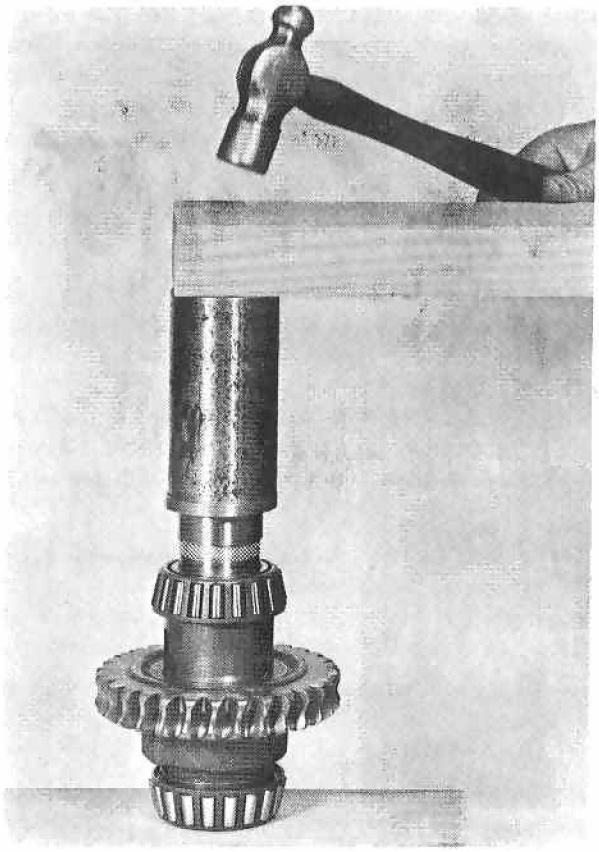


Figure 3
SEAL SLEEVE PRESS-ON

END PLAY ADJUSTMENT AND GEAR CENTERING

The shaft end play is adjusted by adding or removing shims supplied with a replacement gear set. Table A shows the color coding and shim thickness. There are two shim sets, one for the worm shaft (8) and one for the hollow output shaft (19).

Color of Shim	Thickness
Red	.002"
Green	.003"
Blue	.005"
Brown	.010"

Table A

2. All reducers are supplied with seal sleeves (4 & 12) on the input and output shafts. These phosphate coated steel seal sleeves provide a micro-finished surface in contact with the dual lip seals, resulting in a longer operating life for the seals. The seal sleeves are the same or larger in diameter than the shaft bearings. The sleeve will be damaged when bearing replacement is required. When replacing a sleeve, the following procedure is recommended.

Ref. Figure 1

A. The gear shaft or worm shaft should be placed on wooden blocks as shown.

B. Using a blunt chisel or screwdriver (slightly narrower than the seal sleeve) and a light hammer, tap the sleeve at 90° intervals. This will stretch the sleeve which can then be easily removed by hand.

C. Do not use a sharp chisel. This will cut the sleeve and may damage the shaft journal, under the seal, making installation of the new sleeve more difficult.

3. If required, the gear (13) and/or bearings can be pressed off the shaft for replacement.

4. If the bearing and/or seal sleeves have to be replaced, the following procedure is recommended for installation.

Ref. Figures 2 & 3

A. Press the bearing cone or ball bearing onto the shaft.

B. Place a "bead" of Dow-Corning Silastic RTV #732 sealing compound completely around the shaft.

C. Locate the sleeve on the chamfered shoulder on the shaft. Make certain that it is square with the shaft shoulder.

D. Place the press-on washer on top of the sleeve as shown in Figure 2. (This press-on washer is supplied with each replacement input or output shaft.)

E. Select a short length of steel pipe with a square end which is large enough in diameter to fit over the shaft extension and smaller than the press-on washer. Center the pipe on the press-on washer and tap with a light hammer. See Figure 3. Continue to tap until the seal sleeve bottoms securely onto the shaft shoulder. The shaft is now ready for installation into the gear case.

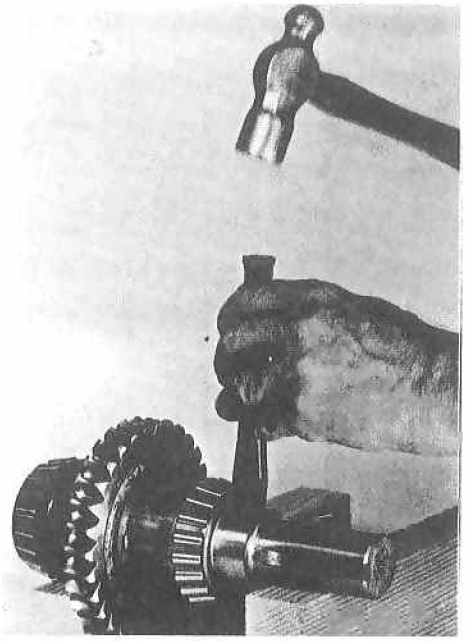


Figure 1
SEAL SLEEVE REMOVAL

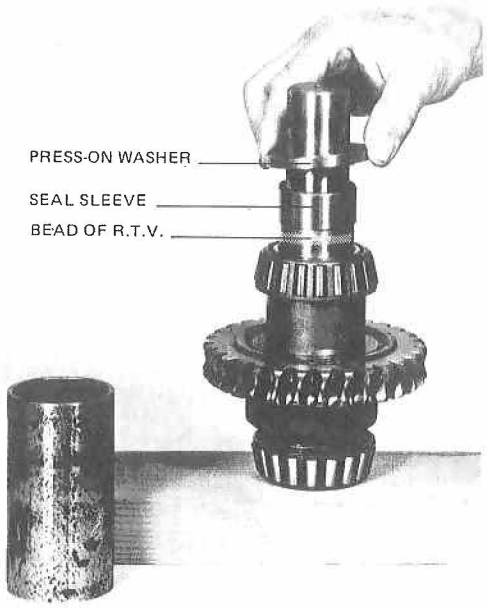


Figure 2
SEAL SLEEVE INSTALLATION

GEAR REDUCER

PREVENTATIVE MAINTENANCE

Keep shafts and vent plug clean to prevent foreign particles from entering seals or gear case. Never paint the vent plug. Check coupling set screws and all fasteners for tightness. Loose fasteners will cause alignment problems and excessive wear. Check end play in shaft. Noticeable movement might indicate service or parts replacement.

When lip seals are new, a small amount of lubricant leakage is sometimes noted until the seals seat on the seal sleeves. This condition is normal. However, if leakage persists, this indicates a damaged seal and it must be replaced.

TROUBLE SHOOTING

It is advisable to periodically inspect your gear drive for signs of wear. Spare or replacement parts can often be ordered and obtained before disassembly is necessary, thus, minimizing down-time. The following symptoms can be visually inspected without disassembly and may, in some cases, require repair work.

1. GREASE LEAKING FROM HOUSING, CAPS, CAP SCREWS OR PIPE PLUGS: Might be corrected by re-tightening or removal and re-coating with Locktite before tightening. If this does not correct the leaking condition, disassembly will be necessary to replace gaskets.

2. HIGH INTERNAL OPERATING TEMPERATURE (ABOVE 200°F): Could indicate that the mixer was being overloaded. Check to see if the viscosity and/or specific gravity of the product being mixed has increased. Damaged bearings or inadequate lubricating grease can also cause heat buildup.

3. GREASE LEAKING FROM SEALS: Indicates that seal sleeves and/or seals are worn and need replacing. Keep dirt and foreign particles off shafts in the area of the seals to minimize wear. On the initial run of a new mixer or after replacement of seals, some lubricant leakage is normal for the first few hours of running time until seals seat against the seal sleeves. If condition persists, seal replacement will be necessary.

4. EXCESSIVE END PLAY OF SHAFTS: If there is a noticeable (approx. .003" or more), measurable shaft movement when couplings are removed and shaft is moved back and forth, it is an indication of bearing wear. Removing gaskets between caps and gear case can usually correct the conditions and avoid bearing replacement. The exact allowable end play is given in the following Table B.

DISASSEMBLY AND SLEEVE REPLACEMENT

Refer to Dwg. No. 05-05509

Never perform any work on the gear reducer or coupling until you are absolutely certain that the prime mover cannot be remotely or automatically started. Clean up area around unit before disassembly to keep parts clean and to keep them in proper order for reassembly. Keep in mind that parts usually go back together in reverse order of disassembly. Also note any match marks which may aid reassembly. Provide wooden blocks for storing machined parts in order to prevent damage to machine surfaces. Before starting disassembly carefully review typical parts list and assembly drawing of unit.

1. Remove motor flange (2), bearing cap (17), side plate (9) and ring mount (21) from the gear reducer housing. Remove the worm shaft (8) and hollow output shaft (19) with gear (13) from housing. Thoroughly clean all parts and inspect for replacement.

START-UP INSTRUCTIONS

When starting up any new piece of equipment, it is wise to proceed cautiously. Even though the best installation practices are followed, the possibilities of errors or omissions always exist. MixMor recommends that before the initial start-up, the following checklist should be followed:

1. Has all accessory equipment such as: breathers, level indicators, pressure gauges, switches, etc., been mounted? It is often necessary to box these items separately to prevent damage or loss in shipment.
2. Are mounting bolts tight? Check all external bolts, screws, accessories, etc., to make sure they have not become loose in shipping and handling.
3. Have all couplings been mounted to shaft extensions correctly with keys and fasteners in place?
4. Have bearings been greased?
5. Have couplings been tightened properly? Have necessary guards and safety devices been installed at all hazardous locations?
6. Have the LUBRICATION INSTRUCTIONS been read?
7. Have required electrical connections been made? Units should be wired in accordance with motor manufacturers' wiring diagram on the motor.
8. Have required piping connections been made?
9. Have mixer shaft seal instructions been followed?

Mixers are test run at the factory. However, during start-up, the following procedures are recommended:

1. If the reducer is equipped with heaters for cold temperature operation, turn on heaters and allow temperature to rise to at least 65°F.
2. Start unit slowly under as light a load as possible. Check rotation of the shaft against rotation arrow on the mixer housing. If necessary, reverse electrical leads on motor to have shaft rotation conform to direction shown on mixer.
3. Prime mover electrical starting equipment should be arranged to start unit as slowly as possible to avoid severe impact loads.
4. As the mixer is brought up to normal operating speed, it should be checked continuously for unusual sounds, excessive vibrations, excessive heat or grease leakage. If any of these develop, the unit should be shut down immediately and the cause determined and corrected. The operating temperature of the mixer at the hottest point should not exceed 200°F.
5. If possible, the mixer should be operated under a light load (approximately half-load) for one or two days to allow final breaking-in of gears. After this period, the unit can be operated under normal load.
6. After the first 48 hours of operation, all external housing and mounting fasteners should be checked for tightness. Loose fasteners can cause alignment problems and excessive wear.

STEADY BEARING

REFER TO DWG. NO. 05-05513

INSTALLATION

The steady bearing must be centered on the mixer shaft's axis of rotation. To assure that the steady bearing is properly located and to minimize bearing preload, it must be installed after the mixer is mounted onto the tank and after the shaft is installed.

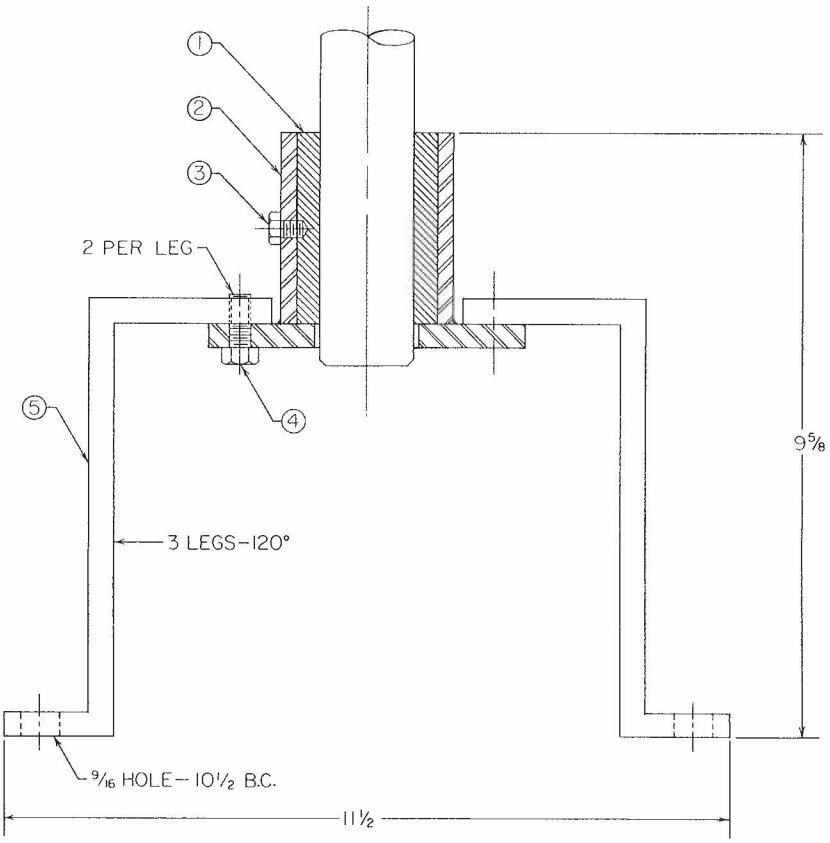
To find the shaft's axis of rotation, attach a marker that will contact the tank bottom to the end of the shaft. Remove the motor fan cover and rotate the motor fan. This will draw a circle on the tank bottom. Install the steady bearing in the center of this circle.

The shaft runout will differ on all mixers depending upon the shaft length.

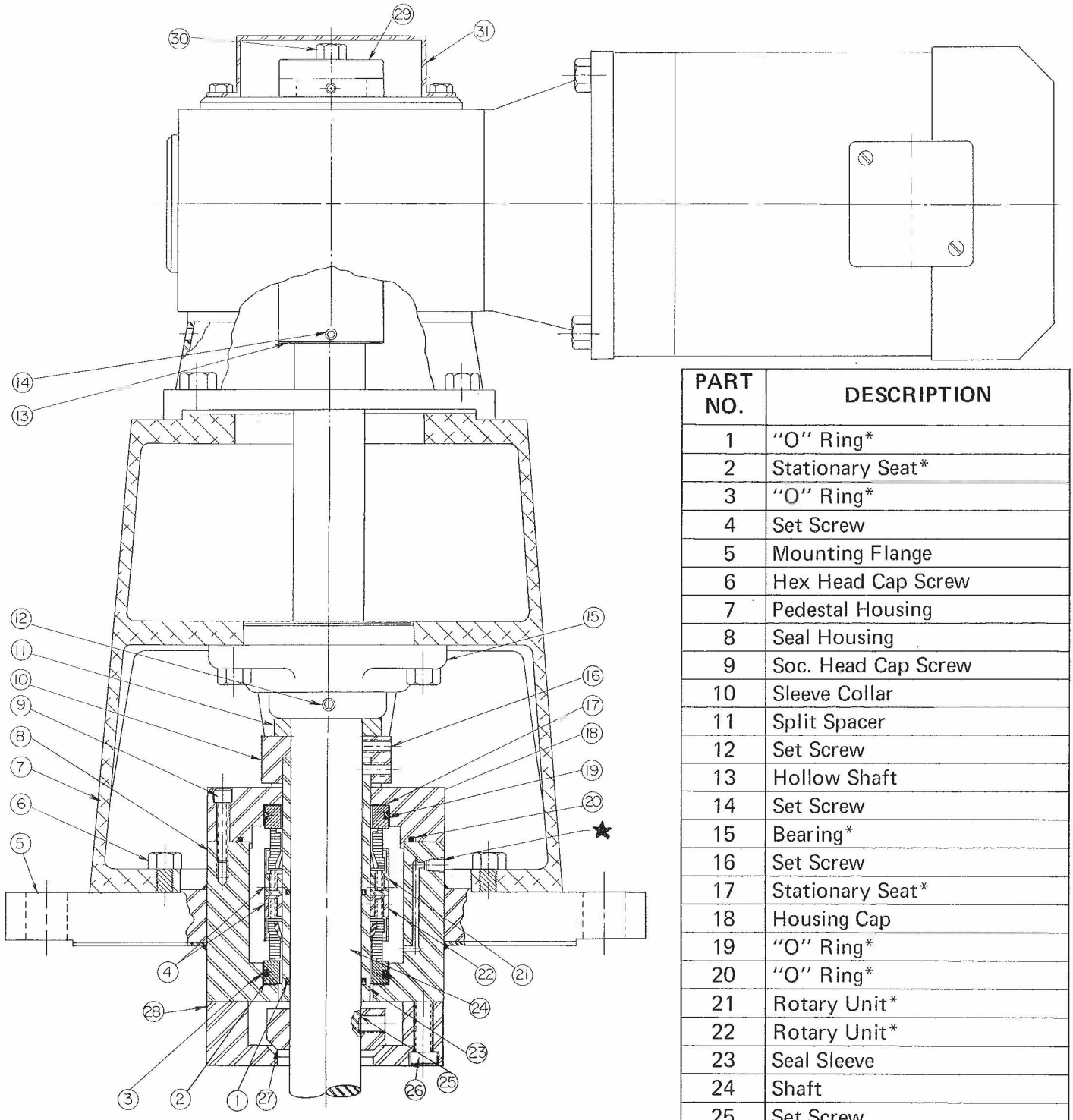
STEADY BEARING
Dwg. No. 05-05513

PART NO.	DESCRIPTION
1	Bushing*
2	Cartridge
3	Retaining Screw
4	Screw
5	Leg

*Recommended Spare Parts



MODEL TCM
Dwg. No. 05-05512



★ LUBRICATION INLET, OUTLET 180° (NOT SHOWN).

PART NO.	DESCRIPTION
1	"O" Ring*
2	Stationary Seat*
3	"O" Ring*
4	Set Screw
5	Mounting Flange
6	Hex Head Cap Screw
7	Pedestal Housing
8	Seal Housing
9	Soc. Head Cap Screw
10	Sleeve Collar
11	Split Spacer
12	Set Screw
13	Hollow Shaft
14	Set Screw
15	Bearing*
16	Set Screw
17	Stationary Seat*
18	Housing Cap
19	"O" Ring*
20	"O" Ring*
21	Rotary Unit*
22	Rotary Unit*
23	Seal Sleeve
24	Shaft
25	Set Screw
26	Cap Screw
27	Shaft Wedge
28	Wedge Holder Housing
29	Keeper Ring
30	Hex Head Cap Screw
31	Cover

*Recommended Spare Parts

REPLACEMENT

1. Depressurize tank, shut off seal lubrication system and lock out power to the prime mover.
2. Loosen set screws in the support bearing (15), sleeve collar (10), and gear reducer hollow shaft (13).
3. Remove cap screw (30) and keeper ring (29) located on top of shaft (24). This will lower the shaft approximately 1/8" and support it with the shaft wedge (27).
4. Remove cap screws (6) and lift the pedestal (7) with the drive assembly from the mounting flange (5).
5. Remove cap screws (9) and housing cap (18). The seal sleeve (23) with rotary units (21 & 22) can now be removed from the seal housing (8).
6. The stationary seat (2 & 17) can now be removed and all parts repaired or replaced as required.
7. While assembling the seal, the following points should be followed:

   A) Put a light coat of mineral oil on the seal sleeve O.D., the rotary units I.D. and all "O" rings while assembling.

   B) The rotary units must be on the center of the portion of the sleeve inside the housing. A centerline is machined on the sleeve.

   C) To properly locate the sleeve inside the housing, the socket head set screws (16) must extend into the clearance holes in the seal sleeve.

   D) Put a coat of NEVER-SEEZ on the bore of the hollow shaft and the end of the mixer shaft.

MODEL TCM MECHANICAL SEAL INSTRUCTIONS

REFER TO DWG. NO. 05-05512

GENERAL INFORMATION

Mechanical seals will produce a near-perfect seal and a long life when handled and operated properly. Care should always be taken during installation or replacement of mechanical seals in accordance with the following instructions. Always be sure that components and lubrication are clean and free of foreign material.

INSTALLATION

The mixer is shipped with the mechanical seal in its housing. The following instructions describe how to install the shaft and set the mechanical seal.

1. Check the mixer shaft (24) for nicks or burrs and put a light coat of mineral oil on it. Be certain that the shaft keyway does not have any sharp edges.
2. Put a light coat of mineral oil on the sleeve "O" rings (1).
3. Slide the split spacer (11) between the seal collar (10) and support bearing (15) collar.
4. Slide shaft wedge (27) over the shaft and attach with set screws (25). The shaft is spot drilled for the set screws/shaft wedge location.
5. Slide the mixer shaft through seal sleeve (23), split spacer (11), support bearing (15) and into gear reducer hollow shaft (13). Care should always be taken when sliding the shaft through the seal sleeve to insure that the "O" rings (1) are not damaged or the sleeve cocked, which would put excessive pressure on the seal faces. Before assembly put a coat of NEVER-SEEZ on the bore of the reducer hollow shaft and on the end of the mixer shaft. A tube of NEVER-SEEZ is supplied with the mixer.
6. Check to be certain that the end of the shaft is flush with the top of the gear reducer hollow shaft. Align the shaft and gear reducer keyways and slide in the drive key. Tighten set screws in the support bearing (15), sleeve collar (1) and gear reducer hollow shaft (13). Attach keeper ring (29) to the top of the shaft with cap screw (30) and attach cover (31).
7. Attach wedge holder housing (28) to seal housing (8) with cap screws (26).
8. Remove the split spacer (11).
9. Remove the plastic shipping plugs in the lubrication inlet and outlet and attach the lubrication system. WARNING – Never operate the mixer without starting the lubrication system or severe seal failure will occur.

LUBRICATION

Mechanical seals must be lubricated with a suitable fluid at 20 psi above the pressure against the inboard seal, but never higher than what the seal is rated for. (The seal rating is shown on the mixer certified drawing.) A light mineral oil is recommended for a lubricant. However, when this cannot be used, due to possible product contamination, a fluid which is compatible with the product may be used. If you are not confident in the lubricity characteristics of your lubricant, consult MixMor. Depending upon the pressure and temperature, the seal may be lubricated with either a dead-end or recirculating/cooling system. The lubricant inlet and outlet holes are properly tagged on the housing. If a dead-end system is used change the lubricant after every 2500 hours of operation or six months, whichever occurs first.

NOTE – Always pressurize the seal housing before the tank.

End play should be adjusted within the limits shown in Table B.

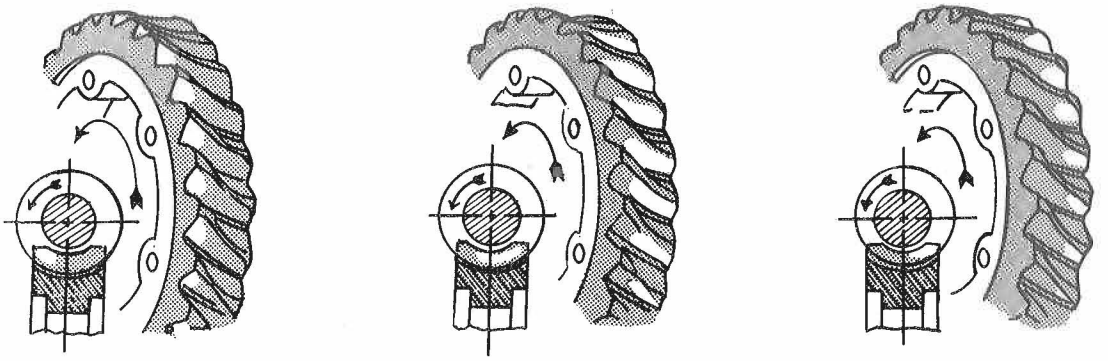
DRIVE SIZE	ALLOWABLE END PLAY				
	WORM SHAFT			OUTPUT SHAFT	
	MINIMUM		MAXIMUM	MINIMUM	MAXIMUM
30 & 35	TAPERED BEARING	.001"	.002"	.002"	.003"
18, 22 & 27	BALL BEARING	Cannot Adjust 1 BEARING is Clamped, 1 BEARING is Floating		.002"	.003"

Table B

The above allowable end play is for normal ambient temperatures (+15° to +125°F). Consult MixMor for temperatures beyond this range.

To properly adjust output shaft end play and center the gear with the worm, apply bluing to gear teeth. Install approximately .020 shims with each side plate. (See Table A for color coding.) Bolt side plates securely. Check axial end play. Adjust to limits shown in Table B by removal or addition of shims.

Run the unit without oil in both directions for several minutes. Apply slight holding pressure to output shaft to assist the marking of the gear. (See Figure 4.) Remove shaft assembly and align the gear with worm by moving shims from one side to the other.



Move gear this ← way to get desired pattern

Correct Marking

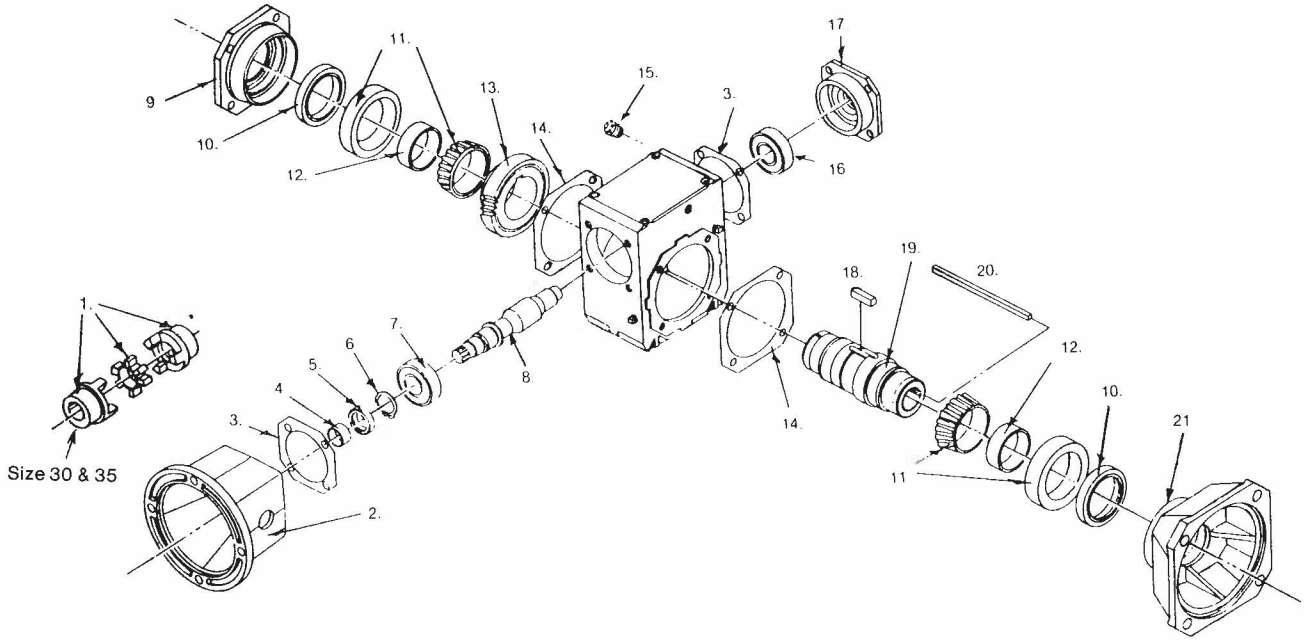
Move gear this → way to get desired pattern

Figure 4

After proper adjustment has been made, apply Dow-Corning Silastic RTV #732 sealing compound between metal surfaces and shims. Fill to the proper level with recommended lubricant.

PARTS LIST FOR DRIVE SERIES 'G'

Dwg. No. 05-05509



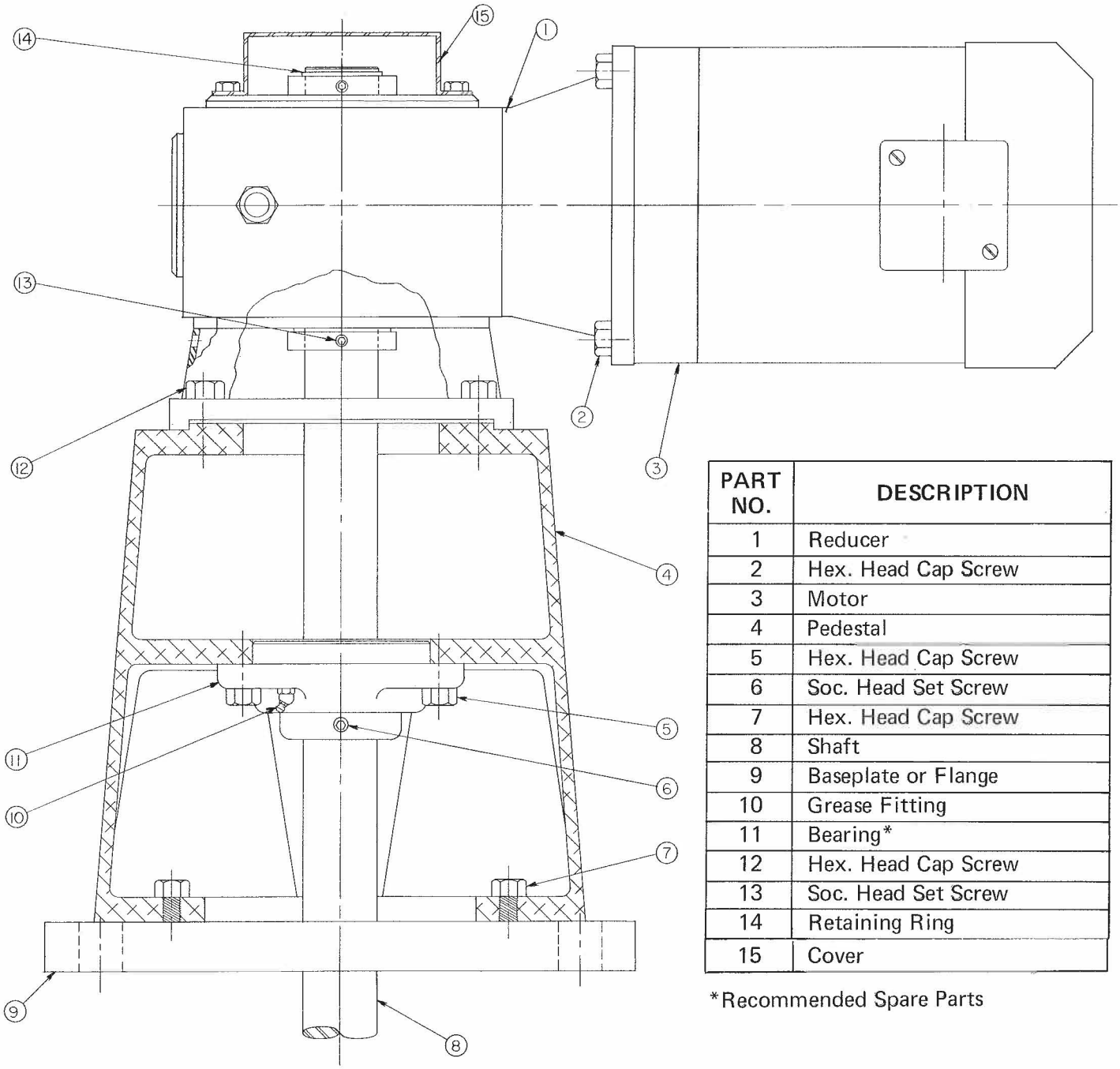
PART NO.	DESCRIPTION
1	Coupling*
2	"C" Flange
3	Shim Set, Input*
4	Wear Sleeve, Input*
5	Seal, Input*
6	Snap Ring*
7	Bearing*
8	Worm Shaft*†**
9	Side Plate, Open
10	Seal, Output*
11	Bearing, Cup & Cone Set
12	Wear Sleeve, Output*
13	Gear, Bronze*†
14	Shim Set, Output*
15	Pressure Relief Valve
16	Bearing*
17	Bearing Cap, Input
18	Key, Gear
19	Hollow Output Shaft**
20	Key, Hollow Shaft
21	Ring Mount

*Recommended Spare Parts

**Includes Wear Sleeves

†Sold as a gear "set" only. Includes input and output shim sets, worm wear sleeve and RTV sealer.

SERIES G MIXER PARTS
Dwg. No. 05-05508



PART NO.	DESCRIPTION
1	Reducer
2	Hex. Head Cap Screw
3	Motor
4	Pedestal
5	Hex. Head Cap Screw
6	Soc. Head Set Screw
7	Hex. Head Cap Screw
8	Shaft
9	Baseplate or Flange
10	Grease Fitting
11	Bearing*
12	Hex. Head Cap Screw
13	Soc. Head Set Screw
14	Retaining Ring
15	Cover

*Recommended Spare Parts