



SERVICE INSTRUCTIONS

MODEL HV
V-BELT DRIVEN SIDE ENTERING MIXERS
MANUAL NO. 05-05580
REVISED 12/04

CUSTOMER:

P.O. NO.:

ITEM NO.:

MIXER MODEL NO.:

MIXER SERIAL NO.:

MIXER SHAFT SPEED:

DATE:

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FOREWORD

The information contained in this manual covers MixMor Model HV, V-belt driven side entering mixers.

This model is furnished with different types of shaft seals. The front page of this manual and the certified drawing lists the seal number, which corresponds with the type of seal furnished on 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 immediately be reported to both the carrier and MixMor, 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.

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. 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.

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.

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

Remove the impeller and mount the mixer on the tank flange as outlined in the HANDLING INSTRUCTIONS. Tighten the flange bolts and replace the impeller. Properly adjust the tie rods and turnbuckles or pipe pedestal mount until the mixer is level.

V-BELT DRIVE

The mixer is shipped with the V-belts installed. However, they must be properly adjusted before the mixer is put into service.

Because of the higher horsepower ratings of narrow belts, they must be operated at higher tensions than classical belts. However, due to flexibility of the smaller cross section, they may not feel as tight as would be expected for the tension they carry.

1. Disconnect power to the motor. Be certain that the mixer cannot be remotely or automatically started.
2. Remove the pulley guard and adjust the belts so that the slack in each belt is on the same side of the drive. Adjust take-up until the belts are seated in the sheaves.
3. Start the mixer. When it is operating at full load and full speed, adjust the take-up screw until only a slight bow appears on the slack side. Shut off the mixer.
4. Apply the force, perpendicular to the center of the span, (refer to Figure 1) required to deflect the belt the distance shown on Chart 1. The force can be applied by means of a simple spring scale or a commercially available V-belt tension tester. The tension tester will provide scales for reading both the required force and the distance of belt deflection.

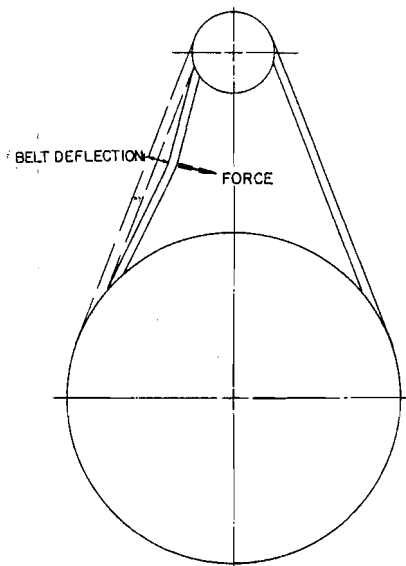


FIGURE 1

MixMor Model	Shaft Speed					
	420 RPM			280 RPM		
	Defl.	Force/Lbs.		Defl.	Force/Lbs.	
Min.		Max.	Min.		Max.	
HV-1	1/4"	3.7	5.6	1/4"	3.7	5.6
HV-1.5	1/4"	3.7	5.6	1/4"	3.7	5.6
HV-2	1/4"	3.7	5.6	1/4"	3.7	5.6
HV-3	1/4"	3.7	5.6	1/4"	3.7	5.6
HV-5	1/4"	3.7	5.6	1/4"	3.7	5.6
HV-7.5	1/4"	3.7	5.6	1/4"	3.7	5.6
HV-10	1/4"	3.7	5.6	1/4"	3.7	5.6
HV-15	1/4"	5.1	7.5	9/32"	5.1	7.5
HV-20	1/4"	5.1	7.5	9/32"	5.1	7.5
HV-25	9/32"	5.1	7.5	9/32"	5.1	7.5
HV-30	9/32"	5.1	7.5	5/16"	5.5	8.4
HV-40	9/32"	5.1	7.5	5/16"	5.5	8.4
HV-50	5/16"	5.5	8.4	5/16"	5.5	8.4
HV-60	5/16"	5.5	8.4			

CHART 1

5. The force required in step 4 should be within the limitations given in Chart 1. If it is not, adjust the tension accordingly. The new belts can initially be tightened to 120% of maximum force. Subsequent running will reduce the tension to within specified tolerances.
6. Recheck tension of new belts several times in the first 50 hours of operation and adjust if necessary. Thereafter, check the belt tension periodically.

SHAFT SEAL

The mixer shaft seal must be checked before the mixer is started and/or the tank filled. Most seals are installed when shipped from the factory. Refer to the SHAFT SEAL section for detailed instructions.

LUBRICATION

SHAFT BEARINGS

The mixer shaft runs on two heavy-duty ball bearings. These bearings are supplied with grease fittings and should be relubricated periodically, depending upon operating conditions, on a regular schedule. The bearings 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 bearings 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 bearings have 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.

STANDARD PACKED STUFFING BOX # 05-00549
WATERFLUSH STUFFING BOX # 05-00767

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 all 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 stuffing box 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. If your mixer is furnished with an optional spring or weight loaded lubricator, the following instructions apply.

SPRING LOADED LUBRICATOR: (Refer to Dwg. # 05-05147) This automatic grease lubricator puts continuous pressure on the lubricant which is forced into the lantern ring (1) for distribution to the packing. The lubricator is supplied with a valve (2) to regulate the flow of lubricant. To fill the grease cup, screw the thumb nut (7) to the right and raise the plunger (4) to the top of the cup. Unscrew the cover (6) and fill with grease. Replace the cover (6) and raise the thumb nut (7) to the top of the stem, allowing the spring (5) to force the plunger (4) down on the grease. To stop the feed, screw the thumb nut (7) down to the cover.

WEIGHT LOADED LUBRICATOR: (Refer to Dwg. # 05-05148) The primary advantage of this lubricator over the spring loaded is the inherent visual aid of the weight arm (12) in measuring the amount of lubricant remaining in the grease cup. That is, when the arm is all the way down, the grease cup is empty. The amount of grease flow into the lantern ring can be adjusted by the valve (2) in the grease cup and the location of the weight (9) on the weight arm (12). To fill the grease cup, raise the weight arm (12) so that all the pressure is removed from the plunger (4). Unscrew the cover (6) and remove the plunger (4). Fill the cup and replace the plunger (4) and cover (6).

START-UP INSTRUCTIONS

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

1. Tighten the gland screws (4) to "finger tightness"
2. Start the mixer and run it until the stuffing box (2) has reached a constant operation temperature. Stop the mixer and tighten opposite screws (4). When tightening the screws, be careful to avoid cocking the follower (3). Even tightening of the follower will seat the packing (9) while it is warm and pliable.
3. Loosen gland screws (4) 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.

SEAL-OFF INSTRUCTIONS (Refer to Dwg. # 05-05583)

The stuffing box is designed so that the shaft can be sealed off and the packing replaced with a full tank.

1. Disconnect the power to the motor. Be certain that the mixer cannot be remotely or automatically started.
2. Loosen the socket head set screws (31 & 34) in bearings (29 & 35).

3. Remove pulley guard (40) and pull the shaft back approximately 1/4". This will seal off the tank contents with "O" ring (7).
4. The packing can now be replaced as described in the following REPACKING PROCEDURE instructions.
5. Return the shaft to its original position by reversing the above instructions before starting up mixer.

REPACKING PROCEDURE

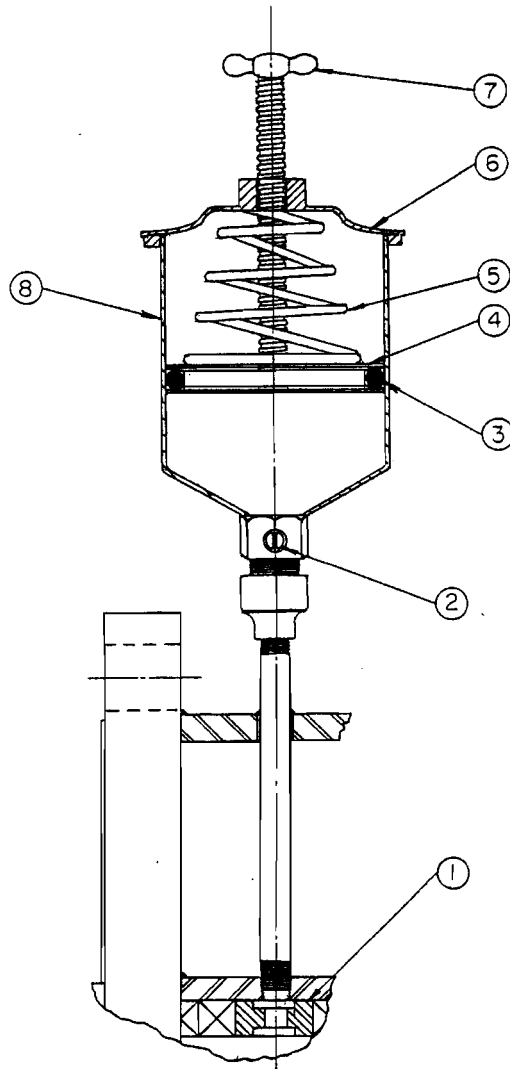
1. Remove the follower (3), all packing (9) and lantern ring (11). Carefully avoid scoring the shaft with the packing hook or removal tool.
2. Inspect the shaft and lantern ring (11). Lantern ring, lubrication channel and holes must be free of packing and dirt. Minor shaft wear should be worked smooth. Where excessive wear exists, the shaft should be built-up and re-machined to give a smooth finish or it should be replaced. Clean stuffing box (2) thoroughly, checking to insure the lubrication holes are free and clear.
3. The location of the lantern ring (11) should be predetermined for proper alignment between lubrication holes and grease lines or fittings.
4. Insert first ring of packing (9) 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 tightening 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 (4) to finger tightness.
6. Start the mixer and run it until the stuffing box (2) has reached a constant operating temperature. Stop the mixer and tighten the screws. When tightening, be careful to avoid cocking the follower. Even tightening of the follower will seat the packing (9) 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. This should be done every 30 minutes until leakage is reduced to a normal level.
9. Adjustment must always be done gradually, over several hours and held to minimum tightness to increase packing life.

WATERFLUSH OPERATION (Refer to Dwg. # 05-00767)

The waterflush stuffing box is designed to assist in keeping solids that are in the product from entering the stuffing box and causing premature shaft and/or packing failure due to abrasion. This design facilitates a constant flow of water through the seal (12) and into the tank. This constant flow will keep most of the solids out of the stuffing box. As much water as your process will permit should be allowed to flow through the seal. The greater the flow the better the system will work. The stuffing box has a 1/8" NPT male fitting for attachment of the water line.

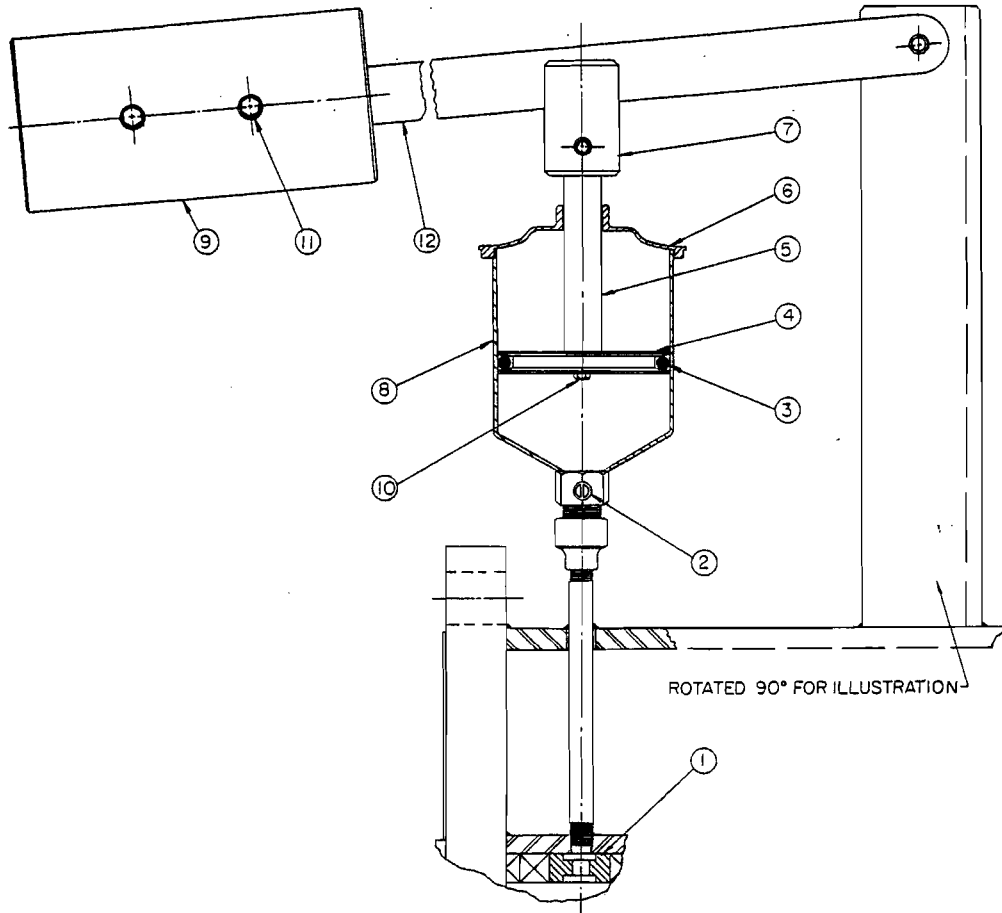
SPRING LOADED LUBRICATOR

Dwg. No. 05-05147



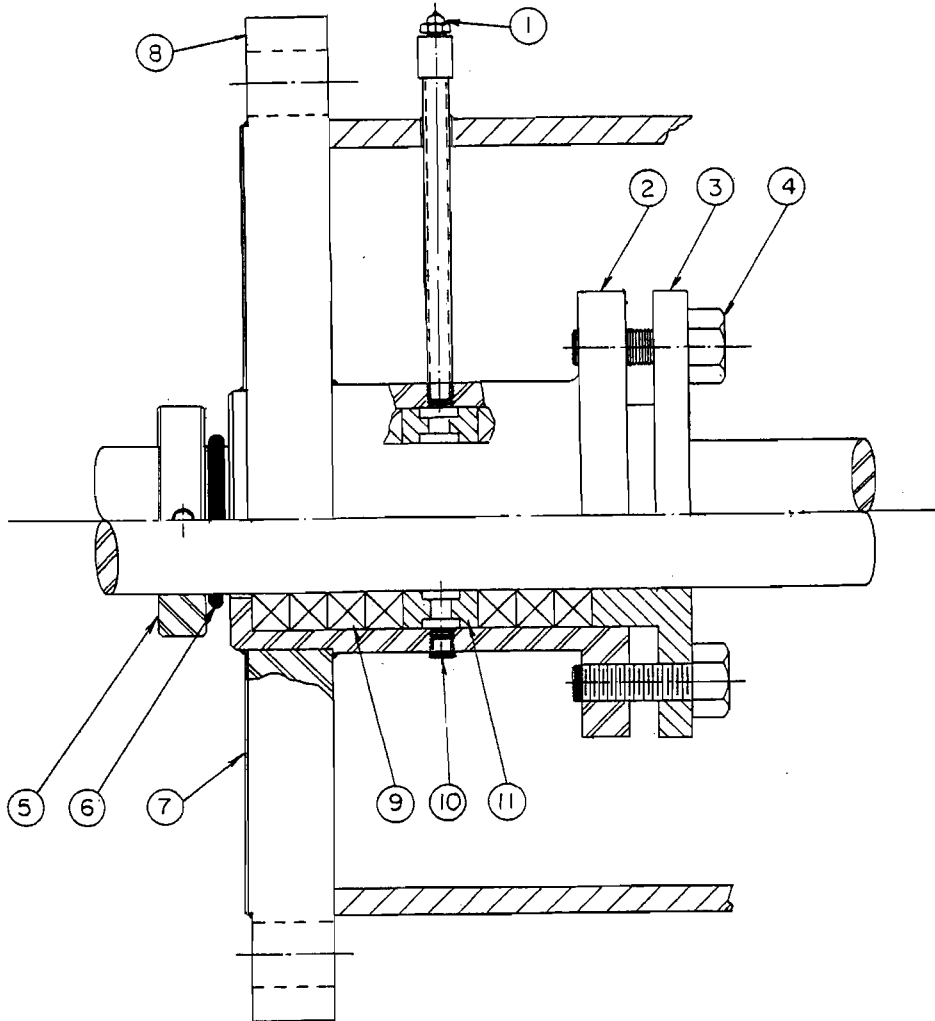
PART NO.	DESCRIPTION
1	LANTERN RING
2	VALVE
3	'O' RING
4	PLUNGER
5	COMPRESSION SPRING
6	COVER
7	THUMB NUT
8	GREASE CUP

WEIGHT LOADED LUBRICATOR
Dwg. No. 05148



PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
1	LANTERN RING	7	ARM GUIDE
2	VALVE	8	GREASE CUP
3	'O' RING	9	WEIGHT
4	PLUNGER	10	HEX HEAD CAP SCREW
5	SHAFT	11	SOCKET HEAD CAP SCREW
6	COVER	12	WEIGHT ARM

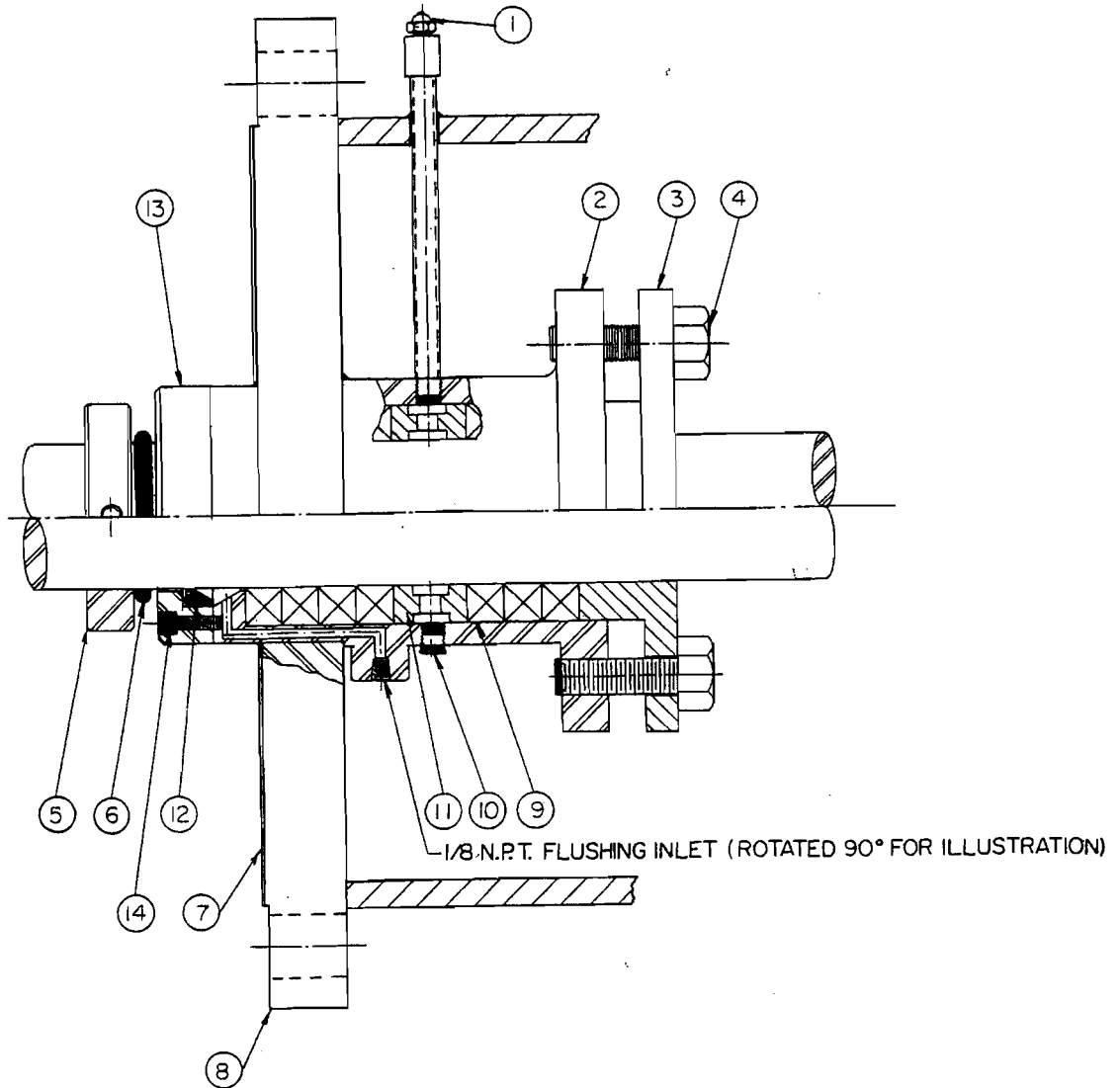
STANDARD PACKED STUFFING BOX
Dwg. No. 05-00549



PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
1	GREASE FITTING	7	FLANGE FACING
2	STUFFING BOX	8	FLANGE
3	FOLLOWER+	9	PACKING+
4	HEX HEAD CAP SCREW	10	PLUG
5	SEAL OFF COLLAR	11	LANTERN RING+
6	'O' RING+		

+ RECOMMENDED SPARE PARTS

WATERFLUSH STUFFING BOX
Dwg. No. 05-00767



PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
1	GREASE FITTING	8	FLANGE
2	STUFFING BOX	9	PACKING+
3	FOLLOWER+	10	PLUG
4	HEX HEAD CAP SCREW	11	LANTERN RING+
5	SEAL OFF COLLAR	12	LIP SEAL+
6	'O' RING+	13	SEAL HOUSING
7	FLANGE FACING	14	SOCKET HEAD CAP SCREW

+ RECOMMENDED SPARE PARTS

START-UP INSTRUCTIONS

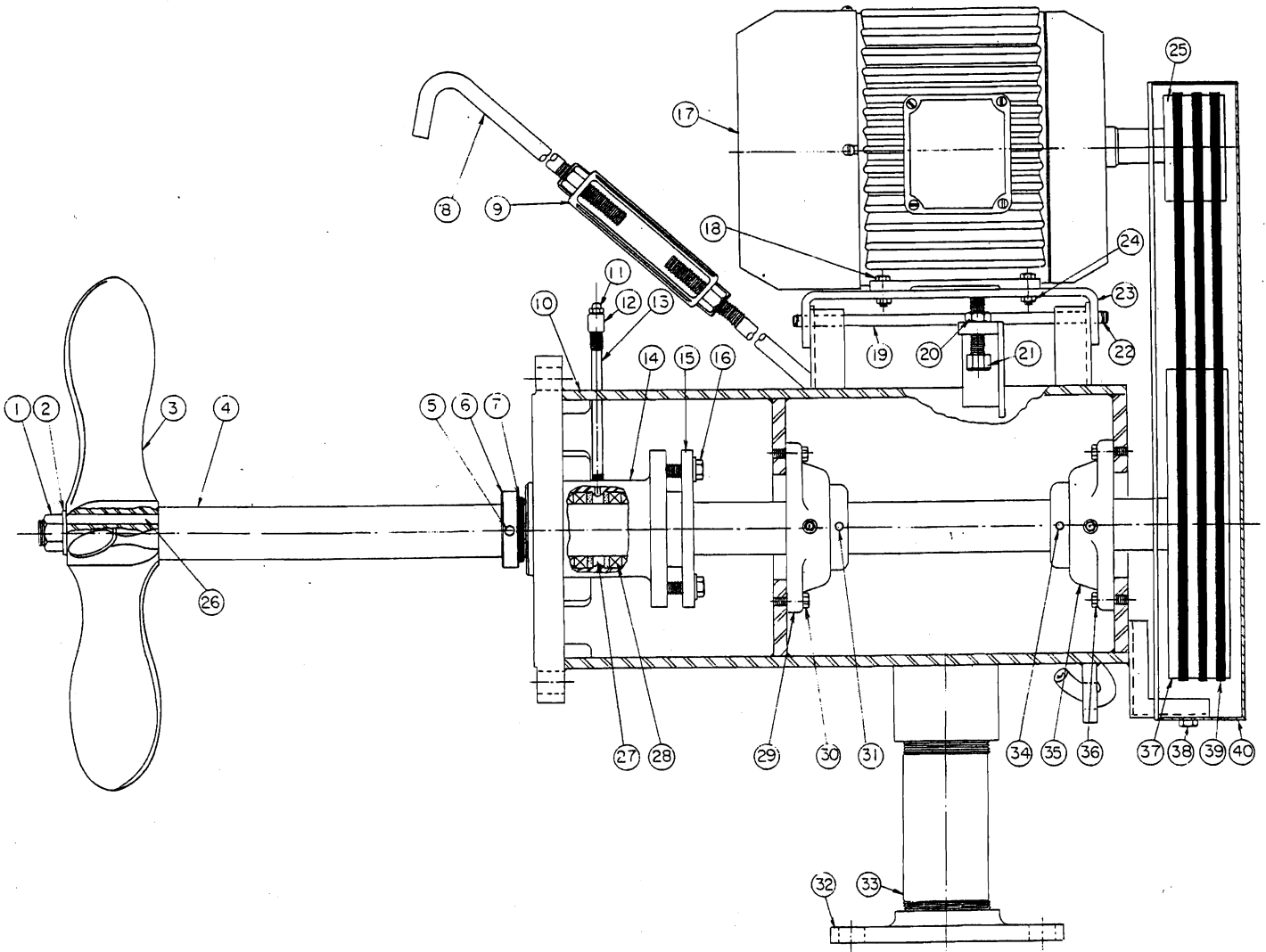
When starting up any new piece of equipment, it is wise to proceed cautiously. Even though the best installation practices are followed, the possibilities of errors or omissions always exist. MixMor recommends that before the initial start-up, the following checklist should be followed:

1. Has all accessory equipment such as: 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 bearings been greased?
4. Have couplings been tightened properly? Have necessary guards and safety devices been installed at all hazardous locations?
5. Has the V-belt drive been properly adjusted as shown in the INSTALLATION INSTRUCTIONS section?
6. Have required electrical connections been made? Units should be wired in accordance with motor manufacturers' wiring diagram on the motor.
7. Have required piping connections been made?
8. Have mixer shaft seal instructions been followed?

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

1. 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 motors to have shaft rotation conform to direction shown on mixer.
2. Prime mover electrical starting equipment should be arranged to start unit as slowly as possible to avoid severe impact loads.
3. As the mixer is brought up to normal operating speed, it should be checked continuously for unusual sounds, excessive vibrations, excessive heat or leakage. If any of these develop, the unit should be shut down immediately and the cause determined and corrected.
4. 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.
5. Re-check tension of the V-belts several times in the first 50 hours of operation and adjust as outlined in the INSTALLATION INSTRUCTIONS, if necessary. Thereafter, check the belt tension periodically.

MIXER PARTS
Dwg. No. 05-05583



NOTE: MIXER SHOWN WITH #05-00549 STANDARD STUFFING BOX. IF MIXER SUPPLIED WITH DIFFERENT SHAFT SEAL, REFER TO THE SPECIFIC SEAL DRAWING.

PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION	PART NO.	DESCRIPTION
1	HEX NUT	11	GREASE FITTING	21	ADJUSTMENT SCREW	31	SOCKET HEAD SET SCREW
2	FLAT WASHER	12	COUPLING	22	COTTER PIN	32	BASE FLANGE
3	IMPELLER	13	GREASE FITTING	23	MOTOR BASE	33	PIPE LEG SUPPORT
4	SHAFT	14	STUFFING BOX	24	HEX NUT	34	SOCKET HEAD SET SCREW
5	SOCKET HEAD SET ACREW	15	FOLLOWER	25	MOTOR PULLEY	35	BEARING+
6	SEAL OFF COLLAR	16	HEX HEAD CAP SCREW	26	KEY	36	HEX HEAD CAP SCREW
7	'O' RING+	17	MOTOR	27	LANTERN RING+	37	DRIVEN PULLEY
8	TIE ROD	18	HEX HEAD CAP SCREW	28	PACKING+	38	HEX HEAD CAP SCREW
9	TURNBUCKLE	19	MOTOR BASE PLATE	29	BEARING+	39	BELT+
10	HOUSING	20	LOCK NUT	30	HEX HEAD CAP SCREW	40	BELT GUARD

+ RECOMMENDED SPARE PARTS

