

## TOP ENTRY MIXER

### SECTION B

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#### INITIAL INSPECTION, RECEIVING AND STORAGE

B1.1 Immediately upon receipt of the equipment check the crating and contents for any damage that may have occurred in transit. Report any damage immediately to the carrier and to *Sharpe Mixers*. Check against the packing slip to be sure that all parts were received. Report missing items to the carrier and *Sharpe Mixers*.

B1.2 The drive unit, impellers and the mixer shaft are often packed in a separate containers. If space allows, keep shipping containers for possible future use.

B1.3 **Storage:** Storage is when a) mixer has been delivered to the job site and is awaiting installation, b) mixer has been installed, but regular operation is delayed, c) there are long idle periods between operating cycles, d) plant/department operation is shut down. Store mixer in a clean, dry location, with circulating air, free from wide variations

in temperature. Electric motors are easily damaged by moisture. Store the entire unit off the floor, covered with plastic, and use desiccants to reduce moisture buildup. Do not seal the plastic cover as this traps moisture. If the motor shows signs of moisture absorption before start-up, dry the motor out by applying 10% voltage on two leads. This will give approximately 50% rated current (if in doubt, measure resistance in windings; one to three meg-ohms is normal). There are also sprays available to help dry out motors. Relubricate motor before start-up when in storage six months or more. Storage of mixers over six months must have gear reducers filled completely with storage oil. Do not install vent plug when in storage. Spray oil on exposed lip seals and unpainted carbon steel parts. Rotate motor and gearbox shafts periodically. When returning to service, drain storage oil, clean with mineral spirits, and replace with correct lubricant (see Section C).

#### MOUNTING THE DRIVE

B2.1 Mounting structure must be stable and strong enough to handle torque, bending moment, weight specified on assembly drawing, and all additional loads not related to the mixer. The structure must not flex or vibrate when the mixer is in operation. If mounting to an unstable support, mixer loads may cause damage to the equipment, tank, or other hazards. See the assembly drawing in the front of this manual for your mixer mounting configuration.

B2.2 Mixer drives with mounting plates may need to be shimmed for shaft to be vertically aligned and then bolted securely to the mounting structure. It is recommended to use lock washers or double nuts on the mounting bolts to prevent bolts from loosening by equipment vibration.

B2.3 When foot mounted motors are supplied, readjust/shim the motor after installation for proper alignment of the flexible coupling (see Paragraph B7.10). Larger motors may require outboard support. Install a pipe leg from the underside of the motor scoop to the tank structure when required.

**CAUTION: DO NOT LIFT MIXER BY THE SHAFT. DO NOT LIFT THE MIXER USING THE LIFTING LUG OF THE MOTOR ALONE. USE SLINGS TIGHTENED AROUND THE MIXER DRIVE TO LIFT.**

## INSTALLING THE MIXER SHAFT

**WARNING:** Always lockout power before installing or removing mixer equipment

B3.1 Mixer shafts are installed in the field after the drive has been installed on the tank. Mixers with optional dust seals need those parts to be installed in sequence while installing the mixer shaft. Refer to the detail drawings in front of the manual or on page B-3. Note the type of couple to the drive on the assembly drawings and install shaft per the following means:

**B3.2 Hollow bore drive:** Remove cover over hollow bore on drive (when supplied). Remove hold washer and protective wrap on top of mixer shaft. Clean machined section of shaft. Coat the gearbox bore with NEVER -SEEZ®. Raise mixer shaft from below and through seal (if present). Install the shaft into the drive (see Figure B3.1). Be sure key is in place. Do not hammer parts in place. If keys do not fit, grind to size. Before bolting hold washer in place, add NEVER -SEEZ® compound (supplied) to the top of shaft. Tighten the hold washer securely. Reinstall the hollow bore cover (when supplied).

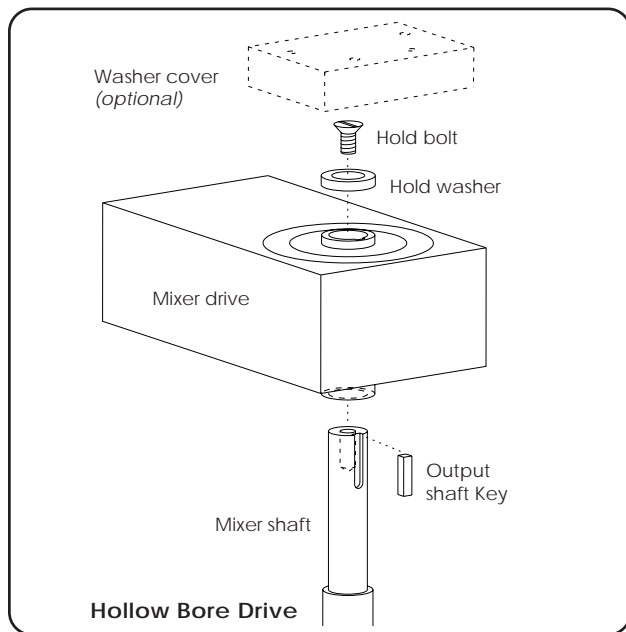


FIGURE B3.1

**B3.3 Split coupling drive:** Remove split coupling from drive shaft. Raise mixer shaft from below and through seal (if present). Bolt hold washer to top of mixer shaft. Install keys on both shafts. Do not hammer parts in place. If keys do not fit, grind to size. Make sure all parts are clean, and assemble split coupling halves onto shafts (see Figure B3.2). The split coupling has one end marked "drive" on each half. These ends must face the gearbox for proper alignment. Make sure gap is even on both sides of coupling. Tighten split coupling bolts to the torque ratings listed in Table B8.1. Tighten from the center out, in an opposite/diagonal sequence.

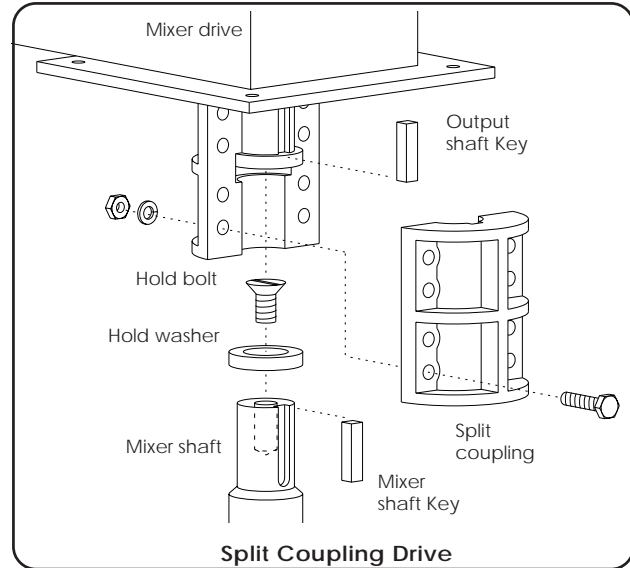


FIGURE B3.2

**B3.3 Removable flange coupling:** Clean mating surfaces of any nicks or grit which may cause misalignment. Tighten hold bolt and setscrews on gearbox output shaft coupling. Raise mixer shaft to mate to flange coupling. Bolt flanges securely together (see Figure B3.3). Tighten flange coupling bolts to the torque ratings listed in Table B8.1. Tighten in an opposite/diagonal sequence. Make sure the flanges mount flush (no gap).

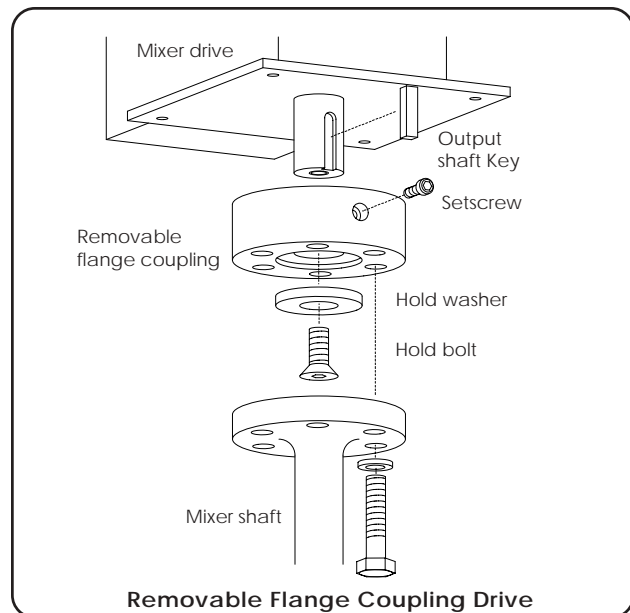
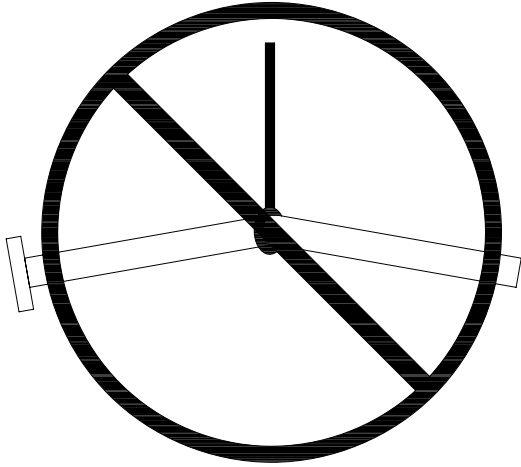


FIGURE B3.3

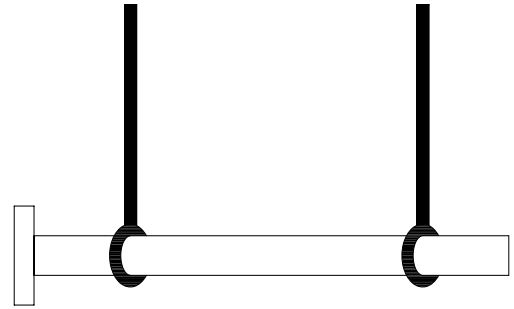
**CAUTION:** Rubber covered, coated and polished parts required special handling during assembly. Use care to prevent damage to edges and outside corners. Use cardboard or protective padding to protect shafts, impellers and tanks.

FIGURE B3.4



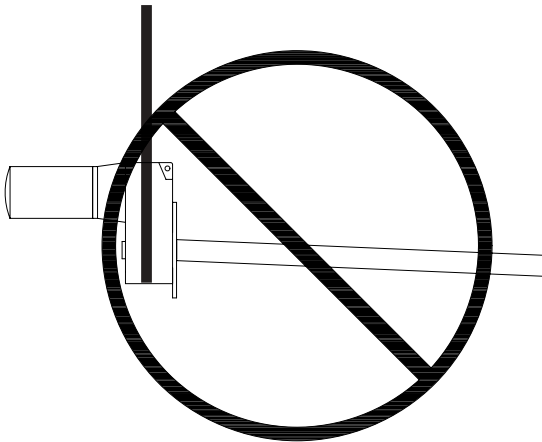
NEVER LIFT SHAFT IN THE CENTER

FIGURE B3.7



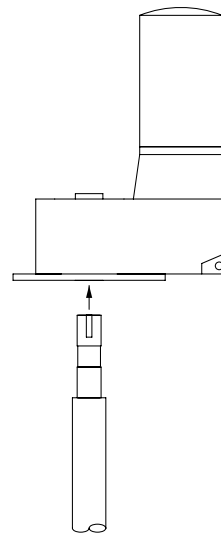
LIFT ON EACH END WHEN POSSIBLE

FIGURE B3.5



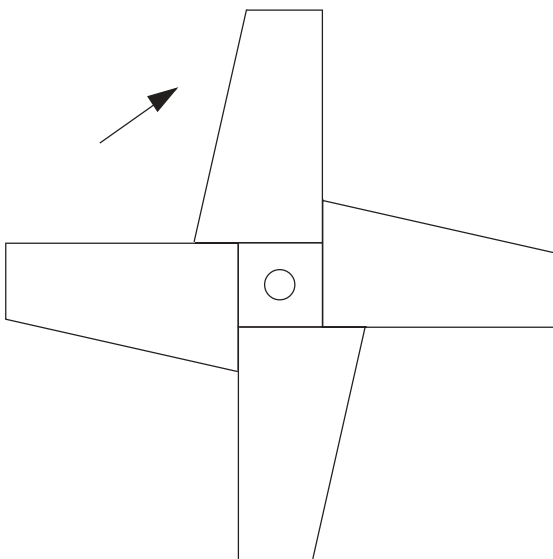
DO NOT LIFT DRIVE WITH SHAFT INSTALLED

FIGURE B3.8



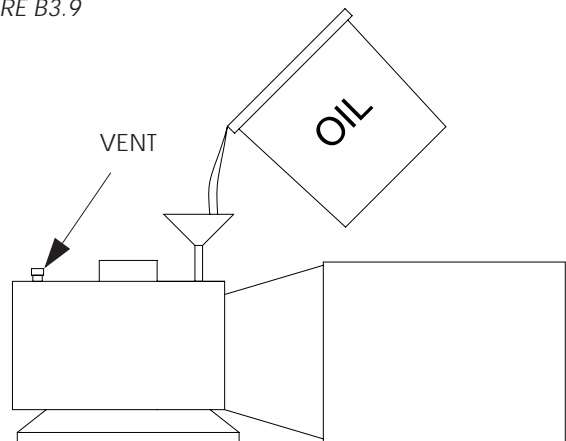
INSTALL SHAFT AFTER DRIVE IS SECURELY MOUNTED

FIGURE B3.6



VERIFY CORRECT IMPELLER ROTATION WITH DRAWING IN FRONT OF MANUAL

FIGURE B3.9



**CAUTION:**  
 GEARBOX MUST BE LUBRICATED AND VENTED BEFORE START UP. USE OF ANY LUBRICANTS NOT LISTED ON APPROVED LUBRICANTS LIST IN SECTION C MAY CAUSE GEARBOX DAMAGE AND VOID WARRANTY

## VAPOR SEAL MAINTENANCE

(optional equipment)

B4.1 Vapor seals will seal vapors from the product but will not hold pressure. No lubrication is required. Replace vapor seals periodically when wear is apparent. To replace the seals remove mixer shaft from drive. Remove gearbox from flange. Seals may now be removed and replaced. (Figure B4.1)

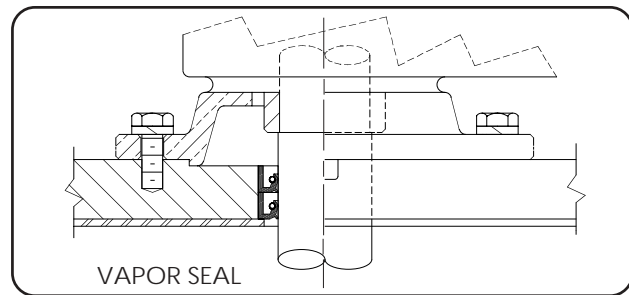


FIGURE B4.1

## DUST CUP MAINTENANCE

(optional equipment)

B4.2 Dust cups will keep out dust and particles from the product but will not hold pressure or vapors. Install the dust cup on the shaft while installing the shaft up into the drive. Use a light lubricant on the o-ring to assist in installation on the shaft. To replace the o-ring remove mixer shaft from the drive and remove dust cup from the shaft. (Figure B4.2)

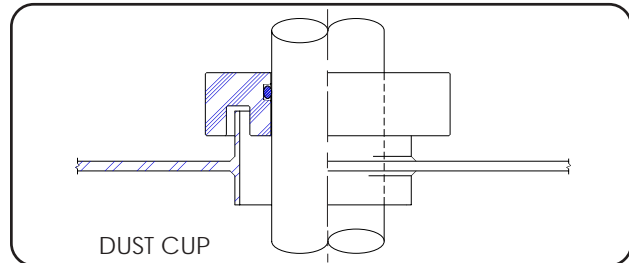


FIGURE B4.2

## EXCLUDER SEAL MAINTENANCE

(optional equipment)

B4.3 Excluders ship split from the factory and do not require shaft removal to install. See the excluder drawing in the front of the manual for assembly detail. Excluders will keep out dust and particles from the product but will not hold pressure. Apply lubricant periodically to top of tank and bottom of the excluder to prevent premature wear. (Figure B4.3)

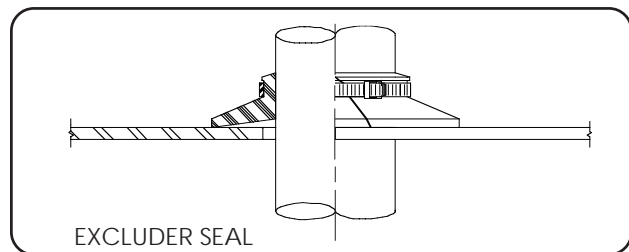


FIGURE B4.3

## INSTALLING THE MIXER IMPELLER

B5.1 Install impeller(s) per the assembly drawings in the front of the manual. Verify impeller rotation and location. Torque all bolts per Table B8.1.

B5.2 **1-Piece all welded assembly** : Requires a manway large enough to pass impeller(s).

B5.3 **1-Piece impellers w/setscrews**: Slide the impeller onto the shaft and align set screw with shaft divots (if present). Tighten setscrews securely. (Figure A)

B5.4 **1-Piece impeller w/key** (one set screw): Slide impeller past shaft keyway. Install hook-key on shaft so that the pin fits into the divot in the keyway. Slide impeller over the hook-key until impeller rests on pin. Tighten the setscrew securely. (Figure B)

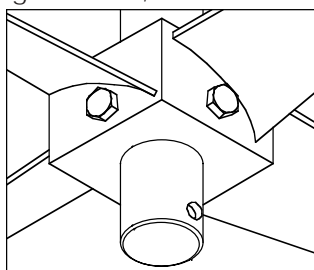
B5.5 **Split hub impeller**: Clamp split hub impeller to shaft. Maintain equal spacing between hub halves. Tighten bolts, nuts and lockwashers securely.

B5.6 **Split hub impeller w/ torque pin**: Align shaft torque pin with the hub divot. Clamp split hub impeller to shaft. Maintain equal spacing between hub halves. Tighten bolts, nuts and lockwashers securely. (Figure C)

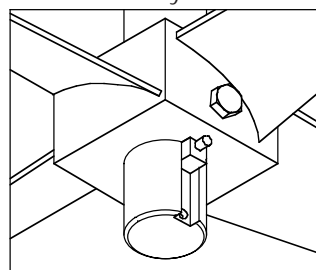
B5.7 **Split hub impeller w/ key**: Align shaft keyway with the split hub key. Clamp split hub impeller to shaft. Maintain equal spacing between hub halves. Tighten bolts, nuts and lockwashers securely. (Figure D)

B5.8 **Bolt on impeller assembly**: Bolt blades to tabs that are welded to shaft (refer to sales drawing for assembly detail). Tighten bolts, nuts and lockwashers securely.

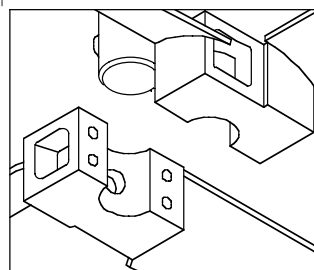
B5.9 **Rubber covered / Coated impellers**: May require special assembly detail (refer to sales drawing for assembly detail).



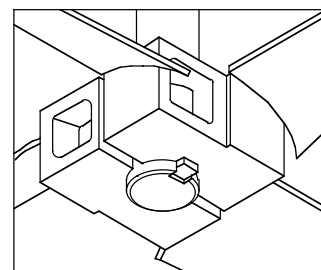
(A) 1-PIECE HUB



(B) 1-PIECE HUB W/ HOOK KEY



(C) SPLIT HUB W/ TORQUE PIN



(D) SPLIT HUB W/ KEY

## INSTALLING THE STEADY BEARING *(optional equipment)*

B6.1 If the mixer was supplied with a steady bearing refer to the data sheet and the drawings in the front of manual to identify the type of steady bearing and mounting configuration.

B6.2 The steady bearing must be installed after the mixer drive and shaft assembly have been installed and firmly bolted in place. Proper steady bearing operation requires the agitator shaft be straight and the steady bearing be centered on the shaft, not the center of the tank.

B6.3 To center the steady bearing, manually rotate the mixer shaft (use the flexible motor coupling or the motor fan) to determine the shaft's natural axis

of rotation (see figure B5.1). A marking pen placed on the bottom of the shaft will help mark the center of rotation. DO NOT predetermine the bearing location. The tank center line and the shaft center line are not always the same.

B6.4 After the shaft centerline has been determined install the steady bearing. Grind or cut the legs of the steady bearing to fit the tank. Weld/bolt steady bearing assembly in place. When welding bearing legs tack weld first to locate bearing then final weld (use caution not generate too much heat and distort bearing material). Use weld pads on thin-wall tanks.

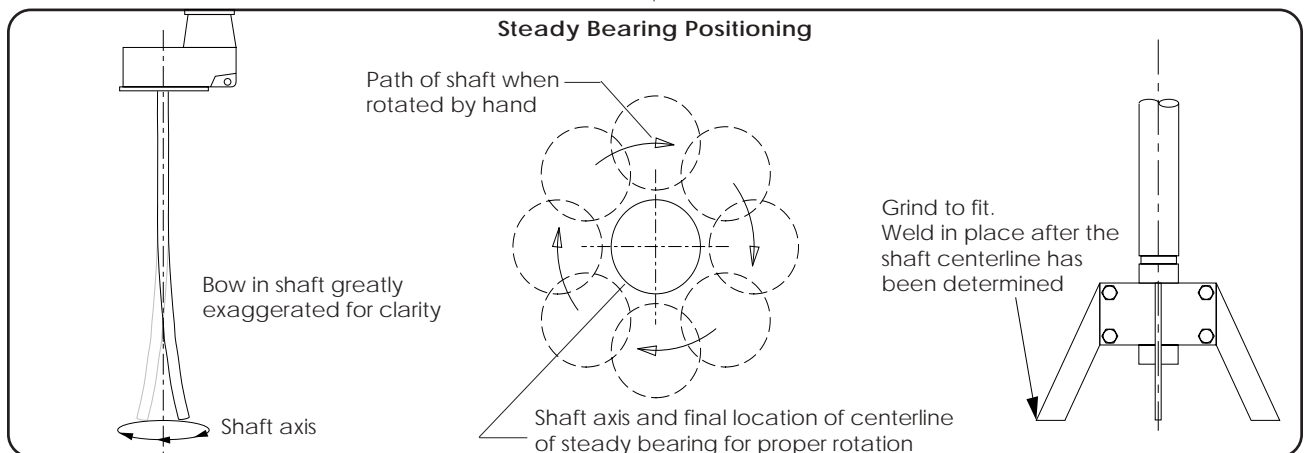


FIGURE B5.1

## MOTOR CONNECTIONS, LUBRICATION AND COUPLINGS

B7.1 **WARNING:** High voltage and rotating parts can cause serious or fatal injury. Electric machinery can be hazardous. Installation, operation, and maintenance of electric machinery should be performed by qualified personnel. Familiarity with NEMA safety standards, National Electrical Code and local building codes are required.

B7.2 **Wiring:** Starting and overload control devices must be matched to motor rating. Follow control manufacturer's instructions for proper connections and installation. Ground the mixer motor properly to avoid serious injury to personnel. Grounding needs to be in accordance with the National Electrical Code and consistent with local building codes. See motor conduit box for wiring diagram.

B7.3 **CAUTION:** Motor failures due to overload are not covered by motor manufacturer's warranty. Size fuses and overload controls properly to protect the motor from damage.

B7.4 Electrical connections must conform to National Electrical code and all local regulations. Line voltage and wire capacity must match motor rating stamped on motor nameplate.

B7.5 **Electric motors - Single phase:** If your mixer is supplied with a single phase motor it may be wired by the factory with a ten foot cord and an on/off switch. If no cord or switch is provided refer to the wiring diagram on the motor for correct connections. Check that the switch is in the off position before plugging the cord into a 110 volt outlet. *Check for proper rotation!* Interchange lines if necessary for proper rotation (see data sheet or rotation sticker on drive).

B7.6 **Electric motors - 3 phase:** Motors requiring 3 phase power must be wired according to the wiring diagrams on the motor. Rotation of the impeller must match the data sheet or rotation sticker on the mixer drive. Interchange lines if necessary for proper rotation.

**B7.7 Electric Variable Speed:** Electric motors using an AC variable frequency or SCR controller must be wired following the instructions supplied with the controller. Many adjustments are often required to the controller and instructions must be read carefully before applying power. See data sheet and assembly drawings for possible RPM lockout ranges. Operate only at speeds outlined on those sheets.

**CAUTION:** VARIABLE SPEED CONTROLLERS MUST BE ADJUSTED TO LIMIT MAXIMUM MOTOR SPEED AND MAXIMUM AMP DRAW TO MOTOR NAMEPLATE SPECIFICATIONS. EXCEEDING THESE VALUES MAY DAMAGE EQUIPMENT AND VOID WARRANTY.

**B7.8** Other types of motors (e.g.: hydraulic) must be installed per the motor manufacturer instructions. See data sheet and assembly drawings for possible RPM lockout ranges. Operate only at speeds outlined on those sheets. Damage to equipment or serious injury to personnel can result if speed limitations are not followed.

**B7.9 Motor lubrication:** The motor bearings have been greased by the manufacturer and do not require lubrication at start-up unless the motor has been in storage for six months or longer. Motors with a 145T NEMA frame or smaller usually have sealed for life bearing and need no relubrication. Motors with regreasable bearings should be lubricated on a standard maintenance schedule. See table B7.1 and B7.2 for service conditions and lubrications frequency. Relubricate with a No. 2 consistency lithium soap base and petroleum compound. Open and clean zirc and drains. Add grease per table B7.3. Run motor 30-60 minutes before replacing drain plugs. Remove excess grease and replace input plugs.

MOTOR SERVICE CONDITIONS	
Standard Conditions	Eight hours per day, normal or light, loading, clean @ 100°F (40°C) max.
Severe Conditions	Twenty-four hour per day operation or shock, loading, vibration, or in dirt 100-120°F (40-50°C)
Extreme Conditions	Heavy shock or vibration, or dust.

table 7.1

MOTOR LUBRICATION FREQUENCY				
SPEED	NEMA (IEC) Frame	Standard Conditions	Severe Conditions	Extreme Conditions
1800 R.P.M. and Slower	182 (112) Thru 215 (132)	3 years	1 year	6 months
	254 (160) Thru 365 (200)	2 years	6 to 12 months	3 months
	404 (225) Thru 449 (280)	1 years	6 months	1 to 3 months
	3600 R.P.M.	All Frames	6 months	3 months

table 7.2

NEMA (IEC) FRAME SIZE	Approx. Grease Volume in in. <sup>3</sup> (cm <sup>3</sup> )
182 Thru 215 (223-132)	0.5 (8)
254 Thru 286 (160-180)	1.0 (16)
324 Thru 365 (200-225)	1.5 (24)
404 Thru 449 (250-280)	2.5 (40)

table 7.3

**B7.10 Motor couplings:** C-face motor inputs require no coupling alignment. To remove the motor from the gearbox remove mounting bolts and loosen the coupling set screws. Foot mounted motors require proper alignment. Check parallel alignment by placing a straight edge across the two coupling halves at various points without rotating the motor (see figure B7.4). Offset should not exceed 0.015". Check angular alignment with micrometers or calipers (see figure B7.5). Measure from the outside of each half at various points without rotating the motor. The difference between the max and min. dimensions should not exceed 0.015". To realign the motor shim the feet and recheck the alignment. After the coupling has been aligned verify that the keys and setscrews are tight and that the guards are in place.

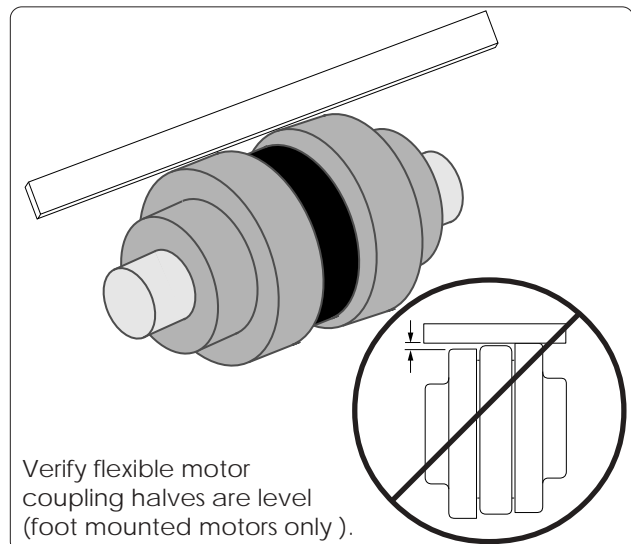


FIGURE B7.4

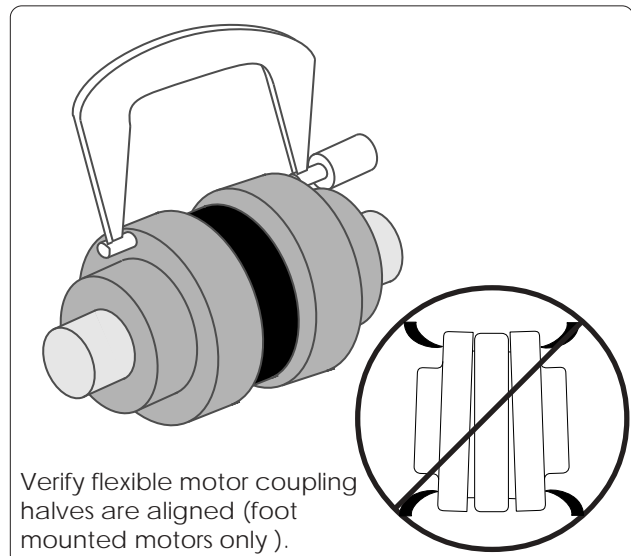


FIGURE B7.5  
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## START UP & OPERATION

B8.1 Before start-up visually inspect the mixer. Verify that the mixer components match the certified drawings in the front of the manual.

B8.2 Read service manual.

B8.3 Read and follow instructions of all tags and nameplates attached to the mixer.

B8.4 Install, assemble and level mixer. Check all mounting and impeller bolts. Verify that all are installed and are properly tightened.

B8.5 Check gearbox lubrication level. Some models may be shipped "dry" (without lubricant) and must be filled with the proper lubricant before start-up. Refer to Section C for the proper type and amount of lubricant. Units shipped with oil have had the air vent replaced with a temporary plug for shipment. **Vent must be reinstalled prior to start-up or damage may occur.** Check the oil level before start up. Verify that none was lost during shipment/installation. **DO NOT OVER OR UNDER FILL THE GEARBOX.**

**USE OF ANY LUBRICANTS NOT LISTED ON APPROVED LUBRICANTS LIST MAY CAUSE GEARBOX DAMAGE AND VOID WARRANTY.**

B8.6 Lock out power to equipment. Rotate mixer shaft by hand (use motor fan or coupling) to check shaft straightness and assure that the impeller is free of any obstructions in the tank.

B8.7 Test motor line resistance for possible moisture build up during storage. Do not apply power if any resistance exceeds one to three megohms. See B1.3.

B8.8 Verify that the wiring is properly installed, grounded, and insulated. Check motor wiring against the wiring diagram supplied on the motor.

B8.9 When variable speed drives are used (air motors, hydraulic motors, mechanical variable & AC variable frequency drives) limit the allowable speeds to the the speeds shown in on the certified drawings. Specific data for variable drives are in the back of the manual or in the drive shipping box.

B8.10 Prior and during start up complete the start up check list, Section B9.0

B8.11 **Do not** operate the mixer in fluids in where the viscosity, specific gravity, temperature or pressure are greater than the design condition

B8.12 Check operating motor amperage against motor nameplate amperage.

B8.13 Vortexing may occur if liquid level is too close to the upper impeller. This will cause aeration of the product and excessive vibration of the equipment. When mixing products of dissimilar viscosities and/or specific gravities the lighter or less viscous material should be introduced first. Gradually add the heavier material or powders into the center of the tank while the agitator is running. Never dump large amounts of powder or solids into the mixing tank. This may create clotting or "sanding in" of impeller and cause damage to the equipment.

**CAUTION: DO NOT START MIXER WITH IMPELLER BURIED IN SOLIDS OR WITH LIQUID SOLUTION SOLIDIFIED. DAMAGE WILL OCCUR.**

B8.14 If impeller is buried in solids prior to starting mixer, solids must be dispersed. This may be achieved with an air hose, a recirculating pump, or a large stirring stick if necessary (depending on tank size).

B8.15 Extended operation of mixer when liquid level is at or near bottom impeller is not recommended. Excessive loading and vibration will occur.

B8.16 Keep motors free from oil, dust, dirt, water, and chemicals. Keep air intakes and outlets free from foreign material. Electric motors supplied, although designed for outdoor use, may be damaged due to weather. A rain hood or other protection may be necessary to prolong motor life. Consult factory for recommendations.

B8.17 Regular maintenance is the best assurance of trouble free, long life mixer operation. Inspect and relubricate at regular intervals. Frequency and thoroughness depends on operation, nature of service, and environment.

B8.18 In the event of a break down within the warranty period, Sharpe Mixers must be notified within 15 days if it is intended that the warranty is to cover the problem. When requesting spare/replace-ment parts anytime, have serial number and model number off mixer nameplate readily available. Do not disassemble components or otherwise modify equipment without prior authorization from Sharpe Mixers or warranty will be voided.

### BOLT TIGHTENING TORQUE VALUES

Bolt Size (FT-LBS)	3/8"-16	1/2"-13	9/16"-12	5/8"-11	3/4"-10	7/8"-9	1.0"-8	1-1/8"-7	1-1/4"-7	1-3/8"-6	1-1/2"-1
	20	45	65	95	150	200	300	475	660	850	1000

Tighten all bolts as specified.

Lubricate all fasteners with grease, oil or an anti-seize product. If no lubrication is use when tightening bolts as specified multiply table values by 1.3.

*Table B8.1*

**START-UP CHECK LIST**

**WARNING:** Lockout / Tagout power before servicing or start-up. High voltage and rotating parts can cause serious or fatal injury.

**CAUTION:** Do not operate the mixer in fluids in where the viscosity, specific gravity, temperature or pressure are greater than the design condition.

**B9.0 Start-Up Checklist**

Prior and during start-up please check that the following things have been done:

- a. Manual has been read and followed.....
- b. Data sheet and drawings have been reviewed.....
- c. Mixer has been installed, assembled and leveled.....
- d. All mounting and assembly bolts have been tightened per table B8.1.....
- e. All guards have been installed.....
- f. Proper type and amount of lubricant (see Section C) .....
- g. Wiring correctly installed, grounded and insulated.....
- h. Motor checked for moisture absorption  
Resistance (less than 3 meg-ohms):.....
- i. Verify shaft rotation .....  C.W. ....  C.C.W.
- j. Verify impeller(s) spacing against certified drawings; measure:.....
- k. Verify Impeller(s) flow direction against dwg:..  UP-PUMPING  DOWN PUMPING
- l. Verify shaft R.P.M. ....
- m. Correct voltage/amperage @ start-up:.....   
     Motor nameplate F.L.A.:.....   
     F.L.A. measured with ampmeter (each lead) \_\_\_\_\_   
     Actual line voltage measured (each lead) \_\_\_\_\_
- n. Excessive vibration at mixer support or flange?.....
- o. Excessive shaft runout? Measure: .....
- p. Speed limitations set on variable speed controller.....   
     (when applicable)
- q. Mixer operating to design specifications.....

Notes:

\_\_\_\_\_  
INSPECTOR

\_\_\_\_\_  
DATE

**NOTE:** Sharpe Mixers will not accept back charges for any repair work that has **NOT** been previously authorized.

**DO NOT** modify the mixer in the field without consulting Sharpe mixers. **UNAUTHORIZED MODIFICATIONS WILL VOID WARRANTY.**



PROBLEM	POSSIBLE CAUSE	SOLUTION
<ul style="list-style-type: none"> <li>• Shaft will not fit into drive or coupling</li> </ul>	<ul style="list-style-type: none"> <li>• Set screws extend into bore</li> <li>• Shaft over size (proper dia. 0.001" - 0.002" under nominal dia.)</li> <li>• Damaged shaft</li> <li>• Oversize key</li> </ul>	<ul style="list-style-type: none"> <li>• Loosen set screws</li> <li>• Measure and consult factory</li> <li>• Consult factory</li> <li>• Grind key to fit</li> </ul>
<ul style="list-style-type: none"> <li>• Mixer will not start</li> </ul>	<ul style="list-style-type: none"> <li>• Incorrect wiring</li> <li>• Loose connections</li> <li>• Blown fuse</li> <li>• Incorrect voltage</li> <li>• Impeller interference</li> <li>• Water damage to motor</li> <li>• Wrong size heaters in starter</li> </ul>	<ul style="list-style-type: none"> <li>• Check wiring diagram and wire correctly</li> <li>• Check and tighten connections</li> <li>• Replace fuse</li> <li>• Wire for correct voltage</li> <li>• Free all debris for rotation</li> <li>• Service or replace motor (consult factory)</li> <li>• Replace heaters</li> </ul>
<ul style="list-style-type: none"> <li>• Mixer will not reach correct speed</li> </ul>	<ul style="list-style-type: none"> <li>• Overload of motor</li> <li>• Loose drive coupling bolts</li> <li>• See "Mixer will not start"</li> </ul>	<ul style="list-style-type: none"> <li>• Check amperage against nameplate data</li> <li>• Check coupling bolt tension (coupling and/or shaft maybe damaged if mixer has been run with slipping coupling)</li> </ul>
<ul style="list-style-type: none"> <li>• Motor runs hot /</li> <li>• Amperage overload</li> </ul>	<ul style="list-style-type: none"> <li>• Low or high voltage</li> <li>• Product too viscous or too heavy</li> <li>• Restricted ventilation</li> <li>• Frequent starting and stopping</li> <li>• Unbalanced voltage between phases</li> <li>• Incorrect rotation</li> <li>• Incorrect rotation or upside-down impeller</li> <li>• Impeller too close to tank floor</li> <li>• Lack of/improper lubricant</li> <li>• Improper output speed</li> <li>• Build up of sediment on tank bottom</li> <li>• Undersized heaters</li> <li>• Product buildup on impeller</li> <li>• Variable frequency drive incompatible with motor</li> </ul>	<ul style="list-style-type: none"> <li>• Wire for correct voltage</li> <li>• Check viscosity and specific gravity of product (consult factory)</li> <li>• Clear vents</li> <li>• Check with factory - a special motor may be required</li> <li>• Consult electrician</li> <li>• Change motor leads per nameplate instructions</li> <li>• Check against assembly drawings - correct if required</li> <li>• raise impeller</li> <li>• Add or change lubricant (see Section C)</li> <li>• Confirm speed - consult factory</li> <li>• Clean or irrigate sediment</li> <li>• Replace with correct heaters</li> <li>• Clean impeller of debris</li> <li>• Consult VF drive manufacturer for motor recommendation</li> </ul>

PROBLEM	POSSIBLE CAUSE	SOLUTION
<ul style="list-style-type: none"> <li>• Noisy</li> </ul>	<ul style="list-style-type: none"> <li>• Insufficient lubricant</li> <li>• Foreign material in lubricant</li> <li>• Incorrect lubricant</li> <li>• Worn or faulty bearings or gears</li> <li>• Incorrect coupling alignment</li> <li>• Bent/broken guards</li> </ul>	<ul style="list-style-type: none"> <li>• Fill proper amount of lubricant</li> <li>• Change lubricant</li> <li>• Change to correct lubricant</li> <li>• Check bearings/gears and replace if necessary</li> <li>• adjust/align coupling</li> <li>• Straighten/replace guard</li> </ul>
<ul style="list-style-type: none"> <li>• Bearing failure</li> </ul>	<ul style="list-style-type: none"> <li>• High temperature product</li> <li>• Excessive overhung load</li> <li>• Water damage</li> <li>• See all items under "Noisy"</li> </ul>	<ul style="list-style-type: none"> <li>• Provide heat shield</li> <li>• Consult factory</li> <li>• Replace bearing (check all other parts)</li> </ul>
<ul style="list-style-type: none"> <li>• Gear failure</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive loading (check amps)</li> <li>• Lack of (or improper) lubrication</li> <li>• Start-stop-start loading (product burying impeller with solids)</li> <li>• Foreign material in lubricant</li> </ul>	<ul style="list-style-type: none"> <li>• Consult factory</li> <li>• Fill with recommended lubricant or equivalent (see Section C)</li> <li>• Free impeller of any solids at start-up (pre stir with air hose or paddle)</li> <li>• Replace lubricant</li> </ul>
<ul style="list-style-type: none"> <li>• Oil leakage</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive lubricant</li> <li>• Damaged/broken gasket</li> <li>• Loose bolts around side plates</li> <li>• Seals worn or damaged</li> <li>• Vent not installed/clogged</li> </ul>	<ul style="list-style-type: none"> <li>• Check manual for proper amount lubricant and drain excess</li> <li>• Replace gasket</li> <li>• Check and tighten bolts</li> <li>• Replace seals</li> <li>• Replace seals - install/unclog vent</li> </ul>
<ul style="list-style-type: none"> <li>• Shaft vibration</li> </ul>	<ul style="list-style-type: none"> <li>• Impeller not immersed in liquid</li> <li>• Impeller too close to surface</li> <li>• Bent mixer shaft</li> <li>• Unstable mounting platform</li> <li>• Loose or improperly assembled coupling</li> <li>• Debris in coupling</li> <li>• Damaged gearbox bearings</li> <li>• Debris on impeller</li> <li>• Loose or bent impeller blades</li> </ul>	<ul style="list-style-type: none"> <li>• Fill tank</li> <li>• Fill tank or lower impeller</li> <li>• Consult factory</li> <li>• Reinforce platform</li> <li>• Assemble securely (see Para. B7.10)</li> <li>• Clean and reassemble</li> <li>• Check and replace if necessary</li> <li>• Clean impeller</li> <li>• Tighten or straighten (consult factory)</li> </ul>

Note: Other trouble shooting guides for special optional equipment will be located in Section D (when present).

**CAUTION: DO NOT MODIFY MIXER WITHOUT PRIOR AUTHORIZATION FROM SHARPE MIXERS OR WARRANTY WILL BE VOID.**

**ALWAYS REFERENCE THE MIXER SERIAL NUMBER WHEN PLACING ORDER OR MAKING PARTS INQUIRY. THIS SERIAL NUMBER IS LOCATED ON THE SHARPE MIXER NAMEPLATE & ON THE FRONT COVER OF THE SERVICE MANUAL.**

**RECOMMENDED SPARE PARTS**

B11.0 Recommended spare parts are different for individual needs. The allowable down time is the main factor affecting which parts should be kept on the shelf as spares (allowable time period the mixer can be out of service).

Note: Shafts and impellers, although not normally wearing parts, may be damaged and require repair/replacement. These parts are long delivery items and should be considered if extended down time is unacceptable. For any downtime, all wearing parts are normally recommended spares. These include: bearings, seals, gears, input couplings, shims/gaskets, steady bearing wear sleeves and bushings when present.

- Standard shipment    Recommended parts to stock for repair due to long delivery
- 10 to 12 weeks    - Complete mixer w/polished or coated wetted parts (Consult factory to expedite)
- 6 to 8 weeks    - Complete mixer (Consult factory to expedite)
- 5 weeks    - Hardened shafts, special motors (call for quote)
- 3 to 4 weeks    - Machined parts, wear sleeves, impellers, mixer shafts, split couplings
- 2 to 3 weeks    - Complete gearbox (Consult factory to expedite)
- 2 weeks    - Standard motors
- 3 to 5 days    - Stock motors, bearings, lip seals
- Expedited Services- Consult factory for price and delivery

End of Section

**NOTE:** Replacement gearboxes should be purchased through SHARPE MIXERS. SHARPE MIXERS incorporates several modifications to the gearbox casing and internal parts to make the gearbox suitable for operation as an agitator drive. Purchasing the gearbox from other suppliers may result in incorrect selection and possible gearbox failure.

**WARRANTY**

For standard terms and conditions of sale including warranty, please refer to the inside front cover of this manual. The expressed warranty implies that MIXER was purchased through SHARPE MIXERS. Warranties for MIXERS purchased through distributors must be handled through original distributor.

MAINTENANCE NOTES DESCRIPTION	Date	By

