Service Bulletin [2002-2]

Mixer Blade Sets of Parts and Installation Procedure Using Epoxy

Mixer Blade Installation Procedure Important Safety Notice

- STAY CLEAR OF MIXER UNTIL MIXER IS OFF, MAIN PANEL IS LOCKED OUT, AND ALL MIXER COMPONENTS' MOTIONS ARE STOPPED.
- FOLLOW STANDARD SAFETY PROCEDURES WHEN WORKING ON MIXER, INCLUDING SAFETY PROCEDURES AND SUGGESTED LOCKOUT PROCEDURES IN MIXER CATALOG AND SUGGESTED LOCKOUT PROCEDURES PER SAFETY SIGN 113249F0410.
- BEFORE MIXER IS OPERATED: 1) PROPERLY CLOSE AND SECURE FRONT PANEL. 2) MAKE SURE ALL GUARDS AND SAFETY DEVICES ARE PROPERLY INSTALLED.

All previously issued instructions regarding the shimming of mixer blades to the blade arms are superseded by the instructions outlined in this service bulletin and included with each set of parts listed below.

INTRODUCTION

In the interest of preventing premature breakage of replacement mixer blades and to reduce maintenance and lost production costs, Besser Company has successfully proven in the field, the use of new materials and methods used in the installation of mixer blades.

All mixer blades, whether sold separately or in pairs, will be furnished as a complete set of parts. Each set of parts includes all standard parts previously used, as well as the new materials described in the instructions. The following outline briefly describes the new materials furnished in the set of parts:

Semi-Dry Mixer Model (Cu. Ft.)	**40**	**50 & 60**	**80 , 100 & 120**	**160**	
Slump Mixer Model (Cu. Yd.)		**2**	**3 & 4**	**6**	**9 & 10**
Standard Blade Assembly (Solid - No Liners)					
Standard Right Hand Blade	644840	644842	644846	644850	///////
Standard Left Hand Blade	644841	644843	644847	644851	///////
Back-Up Blade Assembly (With Liners)					
Right Hand Back-Up Blade	////////	644844	644848	644852	644854
Left Hand Back-Up Blade	////////	644845	644849	644853	644855
Right Hand Back-Up Blade (With Liners)	////////	644871	644873	644875	644877
Left Hand Back-Up Blade (With Liners)	////////	644872	644874	644876	644878
Blade Liner Assembly	////////	639248	639500	619036	639034
Eccentrics	229070	229070	242144	305928	305928

Mixer Blade Installation Procedure

SAFETY INSTRUCTIONS

Follow standard safety procedures when working on the mixer including the safety procedures noted in the mixer catalog and procedures per safety sign (part #113249F0410). Stay clear of

the mixer until the mixer is off, the main panel is locked out and all mixer components' motions are stopped. Before the mixer is operated, properly close and secure the front panel and make sure all guards and safety devices are properly installed.

STEP 1 Preparation

1. Check the blade arms for straightness.
2. Use Loctite Removable Threadlocker 242 or 243 (Besser Part No. 103245 or 115555F0010) on all fasteners to prevent fastener loosening. Clean fasteners before application of Loctite. Loctite is preferred over lockwashers because lockwashers decrease bolt clamping efficiency and Loctite serves initially as a lubricant. If Loctite is not used, lubricate bolts for proper tightening.
3. Remove paint, burrs and clean all bolted joint surfaces under and between nuts, bolt heads and washers following Figure 3.
    a. Blade and blade arms, items 1 and 2.
    b. Blade arms and blade shaft blocking, items 2 and 4.
    c. Blade shaft blocking and blade shaft, items 4 and 3.
    d. Blade shaft blocking and strap, items 4 and 5.

STEP 2 Install Blade Arms and Blades

1. Attach the blade arms to the shaft. Snug bolts to a tightness which allows for the arms to move but holds arms safely.
2. Install the blades in the mixer.
   Note: the leading end of the blade is the end of the blade closest to the heads of the mixer.
   Note: the trailing end of the blade is the end of the blade closest to the center of the mixer drum.
    a. On the trailing end, locate the bolt through the hub of the blade and center of the arm eccentric.
    b. On the leading end, align the bolt on the hub of the blade with the blade arm.
    c. Snug all nuts and bolts to hold the blades safely.
    d. Align the blade arms 90 degrees to the blade shaft center line.
    e. Adjust clearance between the trough liners and the head liners with eccentrics in blade arms, and blade arm slots (When applicable refer to 490900-M80/100/120).

STEP 3 Using Epoxy as A Shim

When fitting the blades to blade arms epoxy must be used in all instances. Follow the instructions below: Note: Both ends of one blade can be done at the same time, but pay careful attention to limits imposed by epoxy's working time.

1. Read and understand the instructions which come with the epoxy.
2. Mark the eccentric locations on the blade arms.

3. Clean the blade pad.
4. Rough grind the blade pad.
5. Clean the blade pad, blade arm, blade eccentric, blade bolt, and blade arm eccentric hole.
6. Apply a thin layer of release agent to the blade arm, blade eccentric, blade bolt and blade arm eccentric hole.
7. Reassemble the mixer blade arms and blade. Maintain the clearances between the blade and the headliner, and between the blade and trough liner. Allow an opening between the blade and the blade arm in which to apply the epoxy to the blade pad.
8. Mix the epoxy by following the directions provided with the epoxy.
9. Apply epoxy to blade pad by spreading epoxy over prepared application surface with applicator (enclosed) or putty knife. Press firmly to ensure maximum surface contact and avoid entrapping air. Do not exceed working time limits.
10. Snug the blade against the blade arm by tightening the bolt. Make sure the void between the blade and the blade arm is filled with epoxy. Do not tighten the blade bolts to their proper torque settings yet (final tighten).
11. Allow the epoxy to cure. (Follow manufacturer's recommendations).

STEP 4 Final Assembly

1. Tighten the bolts following the torque requirements outlined in figure 3.
    a. NOTE: Torque is force (pounds) times lever arm (feet). A man pushing with 200 foot pounds of force at a distance of 3 feet from bolt exerts a torque of 600 foot pounds (3 times 200=600)
2. To prevent the blade arm from shifting, weld the steel blocks supplied with the new blades to the blade shaft blocking in locations D, E, F, and G as shown in Figure
3. If slotted arms are used (M80/100/120), see 490900. Weld the steel blocks at three points (top, side, and bottom) to the blade shaft blocking. Do not weld the steel blocks to the blade arms.
4. Weld blade arm tension straps when applicable.
5. After mixing the first batch, check the blade arms and blades for tightness. If the blades have loosened, realign the blades and retighten the bolts/nuts to their proper torque settings. Check the arms and blades after mixing the next batch and, if they have loosened again, realign and retighten the blades to their proper torque settings. Continue this process until the blades and blade arms remain tight. Then periodically check the blades and blade arms for alignment and tightness.

STEP 5 Running the Grout Batch when Replacing Blades with Liners

To prepare your new Besser mixer blades for operation, the following procedure is suggested to assure a good seating of the Ni-Hard liners to the mixer blade:

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1. The first batch will be thrown away. It should be run one or two days before the start of production operation.
2. The first batch will be a fine grout mix that consists of 4,000 Lbs. of very fine sand, 1,000 Lbs. of cement, and water to make a 7-9" slump.
3. To make the mix, add the cement and water at the same time to make a cement slurry. Then add the fine sand to make a grout.
4. When the mix is consistent, stop one blade in a submerged position. Allow enough time for the grout to hold in all spaces between the backup blade and the Ni-Hard blade liners. Submerge the opposite blade and allow enough time for the grout to hold in all spaces between the backup blade and the Ni-Hard blade liners.
5. Clean the mixer by hand to allow grout in the blades to harden before the start of production operation.

Fig 2. - Bolt Torque Requirements

Mixer Mode (Ft. Lbs.)	Key	Torque
50 & 60 Cu.Ft. and 2 Cu.Yd	A	1100
80,100 &120 Cu.Ft and 3&4 Cu.Yd	A	740
160 Cu.Ft. and 6 Cu.Yd	A	2100
9 & 10 Cu.Yd.	A	2100
50 & 60 Cu.Ft and 2 Cu.Yd.	B	420
80,100&120 Cu.Ft. and 3&4 Cu. Yd.	B	1400
160 Cu.Ft and 6 Cu.Yd	B	1400
9 & 10 Cu.Yd.	B	1400
50 & 60 Cu.Ft. and 2 Cu.Yd.	C	740
80,100 & 120 Cu.Ft. and 3&4 Cu Yd.	C	2100
160 Cu.Ft. and 6 Cu.Yd.	C	2100
9 & 10 Cu.Yd.	C	2100

Note: Refer to Figure 3 for location description

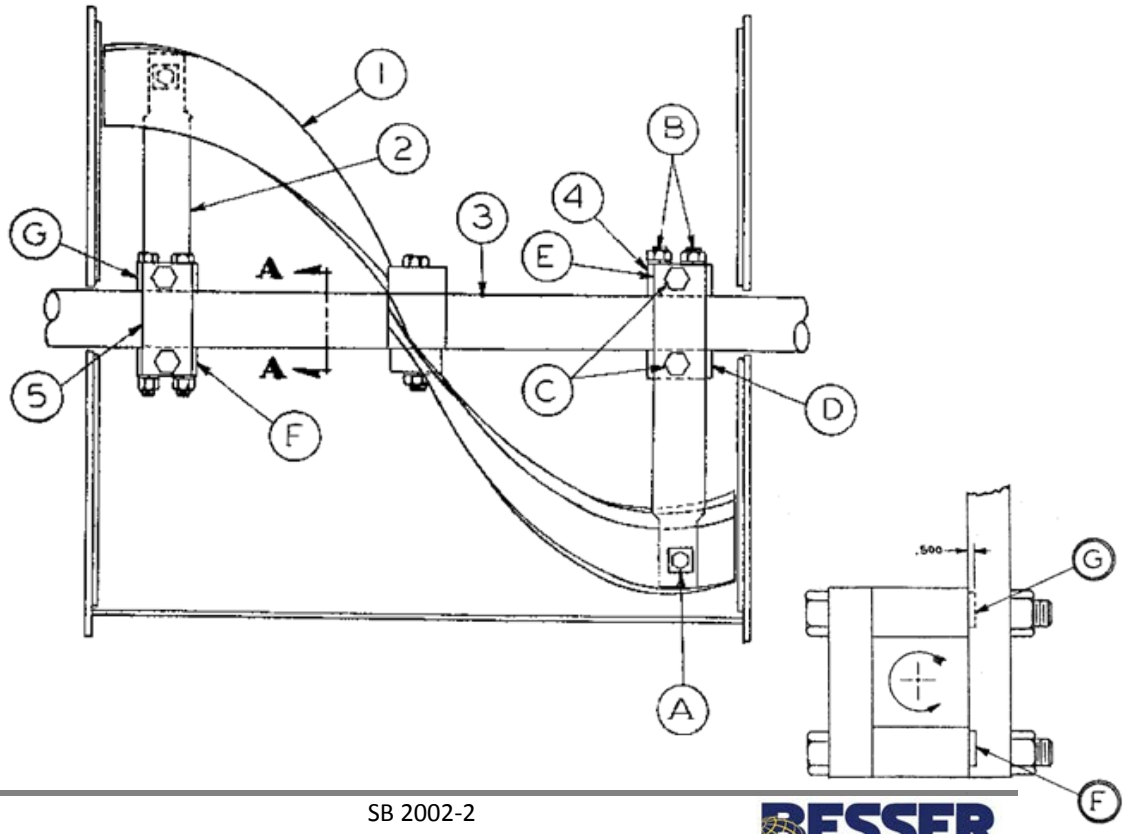

Figure 3 – Bolt and Steel Block Locations for Mixer Blade Assemblies

SAFETY BULLETIN

This notice is issued to advise you that some previously accepted shop practices may not be keeping up with changing Federal and State Safety and Health Standards. Your current shop practices may not emphasize the need for proper precautions to insure safe operation and use of machines, tools, automatic loaders and allied equipment and/or warn against the use of certain solvents or other cleaning substances that are now considered unsafe or prohibited by law. Since many shop practices may not reflect current safety practice and procedures, particularly with regard to the safe operation of equipment, it is important that you review your practices to ensure compliance with Federal and State Safety and Health Standards.

IMPORTANT

The operation of any machine or power-operated device can be extremely hazardous unless proper safety precautions are strictly observed. Observe the following safety precautions:

ALWAYS:

- ✓ Be sure proper guarding is in place for all pinch, catch, shear, crush, and nip points.
- ✓ Be sure that all personnel are clear of the equipment before starting it.
- ✓ Be sure the equipment is properly grounded.
- ✓ Turn the main electrical panel off and lock it out in accordance with published lockout/tagout procedures prior to making adjustments, repairs, and maintenance.
- ✓ Wear appropriate protective equipment such as safety glasses, safety shoes, hearing protection, and hard hats.
- ✓ Keep chemical and flammable material away from electrical or operating equipment.
- ✓ Maintain a safe work area that is free from slipping and tripping hazards.
- ✓ Be sure appropriate safety devices are used when providing maintenance and repairs to all equipment.

NEVER:

- ✓ Exceed the rated capacity of a machine or tool.
- ✓ Modify machinery in any way without prior written approval of the Besser Engineering Department.
- ✓ Operate equipment unless proper maintenance has been regularly performed.
- ✓ Operate any equipment if unusual or excessive noise or vibration occurs.
- ✓ Operate any equipment while any part of the body is in the proximity of potentially hazardous areas.
- ✓ Use any toxic flammable substance as a solvent cleaner.
- ✓ Allow the operation or repair of equipment by untrained personnel.
- ✓ Climb or stand on equipment when it is in operation.

It is important that you review Federal and State Safety and Health Standards on a continual basis. All shop supervisors, maintenance personnel, machine operators, tool operators, and any other person involved in the setup, operation, maintenance, repair or adjustment of Besser-built equipment should read and understand this bulletin and Federal and State Safety and Health Standards on which this bulletin is based.