

New Mixer Blade Sets of Parts and Installation Procedure

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:

1. **Steel Blocks** are welded to the blade shaft blocking to prevent the blade arms from shifting.
2. **Threadlocker 242** (#103245) is applied to all fasteners to prevent them from working loose.
3. **Titanium Putty** is used as a shim to fill gaps between the blade arm and blade. If gaps exist, there is a loss of surface to surface contact between the blade arm & blade. Even after tightening the bolts to their specific torque requirements, there would still be a good chance that the bolts would loosen. It is also important to note that the gaps between the mating surfaces of the blade & arm in excess of 1/16" should not be closed by tightening the bolts. This would increase the tension on the blade enough to make it break either during installation or within a short time after production is started. Titanium Putty is the best method for filling gaps between the blade arm & blade.
4. **Cleaning Agent** is used to prepare the part surfaces for application of the titanium putty.
5. **Releasing Agent** is applied to the part surfaces the titanium putty should not adhere to.
6. **Hardened Flat Washers** and Threadlocker 242 replace lock washers to increase bolt clamping efficiency and prevent bolt loosening.

All previously issued instructions regarding the shimming of mixer blades to the blade arms are superseded by the instructions outlined in this service bulletin and included with each set of parts listed below.

| 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 |
| L.eft Hand Back-Up Blade (With Liners) | //////// | 644872 | 644874 | 644876 | 644878 |
| Blade Liner Assembly | //////// | 639248 | 639500 | 619036 | 639034 |
| Eccentrics | 229070 | 229070 | 242144 | 305928 | 305928 |

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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. Clean all bolts/nuts. Apply Loctite Removable Threadlocker 242 (Besser Part No. 103245) on all bolts/ nuts to prevent bolts/nuts from loosening. Loctite is preferred over lock washers because lock washers decrease bolt clamping efficiency. Loctite also serves initially as a lubricant. If Loctite is not used, lubricate the bolts/nuts for proper tightening.
3. Remove paint, remove burrs, and clean all bolted joint surfaces including under nuts, bolt heads and washers. Clean between the blade and arms, between blade arms and blade shaft blocking, between blade shaft blocking and blade shaft, and between blade shaft blocking and the strap.

STEP 2: Install Blade Arms and Blades

1. Attach the blade arms to the shaft. Snug bolts/nuts to a tightness which allows for the arms to move but holds the arms safely.
2. Install the blades in the mixer as follows (the leading end of the blade is the end of the blade closest to the heads of mixer, 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.
2. On the leading end, align the bolt on the hub of the blade with the blade arm.
 - a. Snug all nuts and bolts to hold the blades safely.
 - b. Align the blade arms 90 degrees to the blade shaft center line.
3. Adjust clearances between the trough liners and the head liners by adjusting eccentrics on the blade arms. The blade should have a clearance of 5/8" to 1" from the trough liners and 5/8" to 1-1/4" from the head liners.

STEP 4: Using Titanium Putty as a Shim

When fitting the blades to blade arms titanium putty 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 titanium putty's working time.

1. Read and understand the instructions which come with the titanium putty. Pay careful

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attention to the working time limits of the putty once the two parts are mixed. (See point 9 below).

2. Mark the eccentric locations on the blade arms.
3. Clean the blade pad with the Devcon conditioner/cleaner.
4. Rough grind the blade pad.
5. With conditioner/cleaner, clean the blade pad, blade arm, blade eccentric, blade bolt, and blade arm eccentric hole.
6. Apply Devcon release agent to the blade arm, blade eccentric, blade bolt and blade arm eccentric hole.
7. Re-assemble 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 titanium putty to the blade pad.
8. Mix the titanium putty by adding the hardener to the resin. For proper performance, the hardener and resin must be mixed in specific ratios. If you are mixing less than the full contents of the hardener and resin containers, you should mix the two materials as follows:
 - By volume: 3 parts resin to 1 part hardener
 - By weight: 4.3 parts resin to 1 part hardenerMix the two parts thoroughly with a screwdriver or similar tool until a uniform, streak-free consistency is obtained (this usually takes about 4 minutes of mixing time). Be sure to mix the material on the bottom and sides of the mixing container so that all of the mixture is of a uniform consistency.
9. Once the hardener and resin are mixed, the approximate working time of the titanium putty is 15 minutes at 90° F, 25 minutes at 75° F, and 35 minutes at 60°F. Plan on a shorter working time when a large quantity of the titanium putty is mixed.
10. **Note:** Titanium putty can be built up in multiple layers. Clean titanium putty surface with Devcon cleaner/conditioner before applying additional layers. Cold temperature applications. Apply only to dry surfaces. For maximum adhesion preheat repair area to 100-140 Degrees F immediately before applying epoxy. This procedure eliminates moisture, contaminants or solvents and promotes adhesion of titanium putty to substrate.
11. Make sure the prepared application surfaces are dry. Apply the titanium putty to the blade pad by spreading the titanium putty with the supplied applicator or a putty knife. Press firmly to ensure that the putty obtains maximum contact with the application surfaces.
12. 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 putty and that the titanium putty thickness is at least 1/16 inch. Do not tighten the blade bolts to their proper torque settings yet.
13. Allow the titanium putty to cure as outlined below. The titanium putty can generally be

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machined after the "Functional Cure" time has passed. Wait at least until the "Final Cure" time has passed before using the mixer.

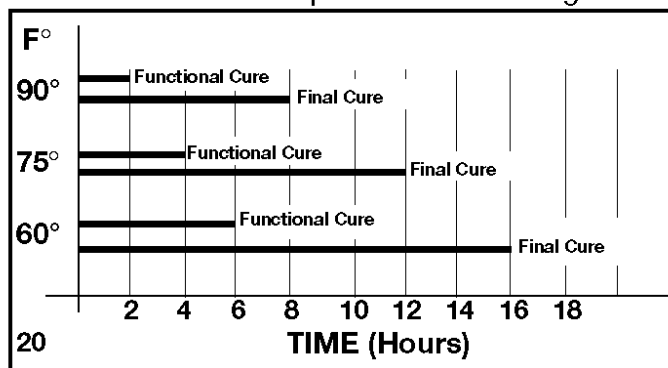


Figure 2 - Cure Times for Titanium Putty

Sections of titanium putty that are less than 1/4 inch thick will require a slightly longer curing time. Thicker sections will cure faster. To speed up the curing process, place a heat lamp approximately 18 inches away from the area where the titanium putty has been applied. Final cure time for an area heated to 200° F. is approximately 3 to 4 hours. (NEVER EXPOSE THE TITANIUM PUTTY TO A DIRECT FLAME.) Curing time will vary depending on the surrounding temperature.

14. If the titanium putty is hardened at room temperature, its strength can be improved by heating the area where the titanium putty has been applied to 200° F. overnight.*

STEP 5: Final Assembly

1. Tighten the bolts following the torque requirements outlined in figure 3.
2. To prevent the blade arm from shifting, weld the steel blocks supplied with the new blade(s) to the blade shaft blocking in locations D, E, F, and G as shown in Figure 3. 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.
3. After mixing the first batch, check the blade arms and blades for tightness. If the blades have loosened, re-align the blades and re-tighten the bolts/nuts to their proper torque settings. Check the arms and blades after mixing the next batch and, if they have loosened again, re-align and re-tighten 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 6: 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:

1. The first batch will be thrown away. It should be run one or two days before the start of production operation.

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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.

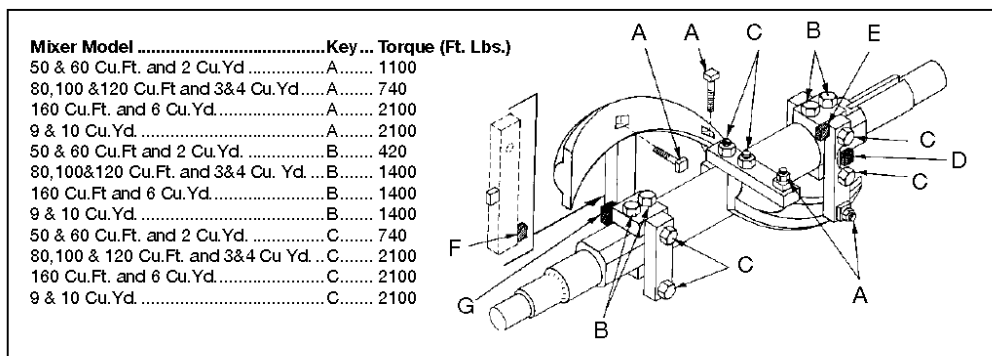


Figure 3 - Bolt Torque Requirements, Bolt and Steel Block Locations for Mixer Blade Assemblies

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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.

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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.