MiTek®

SERVICE BULLETIN

Document ID:

SB253

Title:

BLADE II Saw Motor Replacement

Includes Hub and Saw Blade

Affected machinery: BLADE II wood processing system

Distribution: Customers upon order

CAUTION:
MiTek recommends printing this document in high resolution using color ink. Many of the graphics may be unclear and may create an unsafe condition if this recommendation is not followed.

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Purpose and Scope

This service bulletin instructs how to replace the motor used in the BLADE II wood processing unit.

Overview

BLADE II Parts Included

The parts included in this kit are shown in Table 1. Please make sure all parts and supplies are present before starting the procedure.

Table 1: Parts in SB253KIT

Quantity	Description	Part #
1	Blade hub	76228
1	Bushing (includes hardware)	547258
1	Saw blade, 17”	811071
1 box of 25	Saw blade bolts, 1” long	325188
1	Snap ring	379014
1	Service bulletin document for motor replacement	SB253
1	Motor	474176

If you have any questions, call MiTek Automation Support at 1-800-523-3380.

Supplies Needed

- Socket Wrench
- Torque wrench with capacity up to 220 in-lbs
- T40 Torx™ bit compatible with wrenches referred to in SB251 (also called star or hexalobular internal shaped driver)
- 5-mm hex key socket for torque wrench
- Snap ring pliers
- 5/16 hex key
- Large screwdriver or small pry bar

Lockout/Tagout Procedure

Electrical Lockout/Tagout

	⚠ WARNING
	**ELECTROCUTION HAZARD.** **When the disconnect switch is off, there is still live power within the disconnect switch's enclosure. Always turn off the power at the building's power source to the equipment before opening this electrical enclosure.**

Before performing maintenance on any machine with electrical power, lockout/tagout the machine properly. When working on a machine outside of the machine's main electrical enclosure, not including work on the electrical transmission line to the machine, follow your company's approved lockout/tagout procedures which should include, but are not limited to the steps included in this service bulletin.

Figure 1: Disconnect Switch in Off Position

Pneumatic or Hydraulic System Lockout/Tagout

	⚠ WARNING
	**HIGH PRESSURE HAZARD.** **Bleed pneumatic lines before performing any maintenance on the system.** **Working on pressurized lines may cause injury.**

After lockout/tagout of the electrical power, turn off or close the system's air shut-off valve and attach a lock and tag.

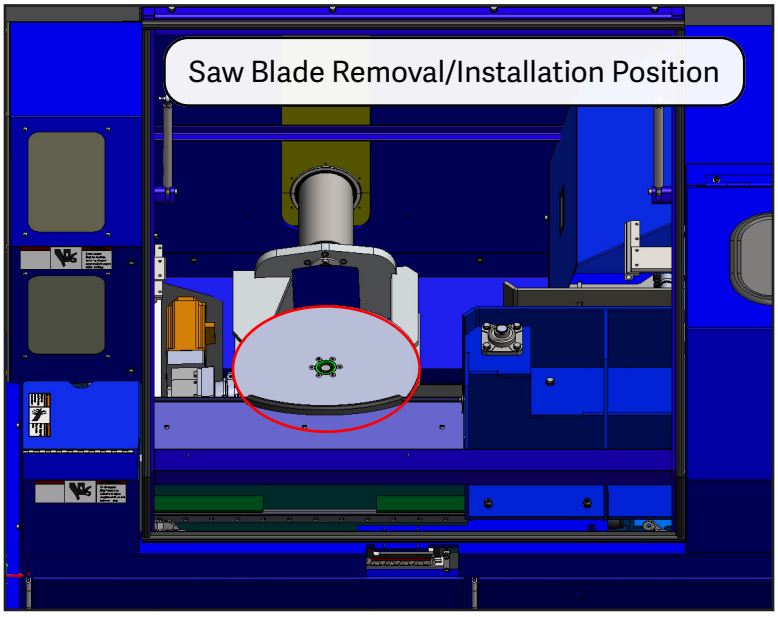
Procedure

Removing Saw Blade

	⚠ WARNING
	**MOVING PARTS CAN CRUSH AND CUT.** **Always verify that power to the machine has been turned off and follow approved lockout/tagout procedures.**

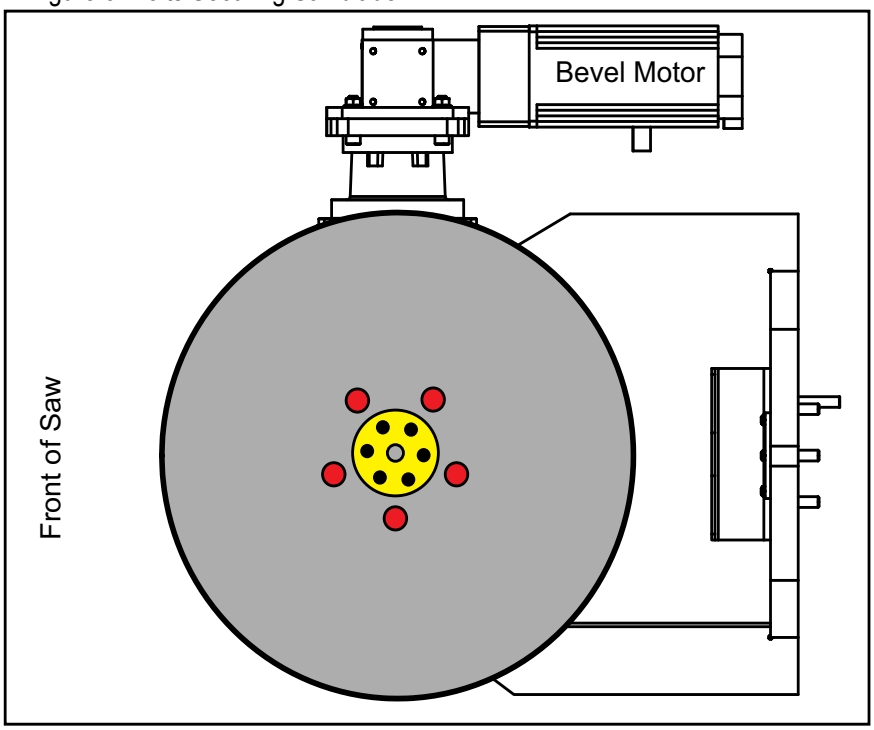
1. Place the saw in Manual Mode using the switch on operator interface, and use the machine software to position the saw head to prepare for saw blade removal:
   a) Rotate the angle of the saw blade so it is in a horizontal position (flat surface on top).
   b) Adjust the elevation and stroke to a comfortable position for removing the blade and motor.

Figure 2: Saw Head Position for Saw Blade Removal



2. While pressing the **Request to Unlock** pushbutton next to the saw chamber door, pull the handle to open the door.
3. Shut down the touchscreen PC using **Power** > **Shutdown** in *Windows.*
4. Turn the disconnect switch handle on the main electrical enclosure to the OFF position. Lockout/tagout the machine. See Figure 1.
5. Use the socket wrench and T40 bit to loosen and remove the 5 bolts securing the saw blade (shown in red in Figure 3).

Figure 3: Bolts Securing Sawblade



6. Remove the saw blade and follow the below instructions to determine whether it should be discarded or kept for resharpening:
   a) Measure the diameter of the blade from outside edge of tooth to outside edge of tooth. If the diameter is less than 16-5/8”, discard it.
   b) If the diameter is greater than 16-5/8”, place the saw blade in a safe location for sharpening.
7. Close the saw chamber door.
8. Power on machine:
   a) Remove lockout/tagout and switch the disconnect switch to the ON position. See Figure 1.
   b) Release E-stop and press Reset switch on the operator interface.

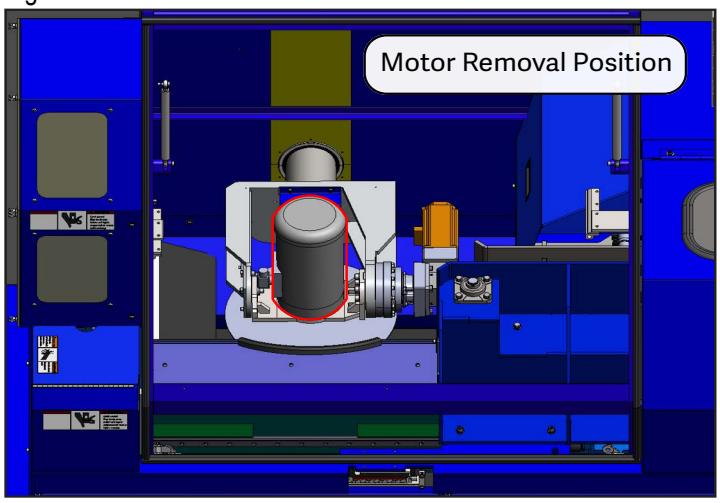
	**⚠ CAUTION** **CUT HAZARD.** **Saw blades are sharp. Wear gloves and eye protection when handling blade.**

Removing the Existing Motor

1. Use the machine software to position the saw head to prepare for motor removal.

a) Adjust the angle so that the motor is pointing upwards and the stroke so that the motor is close to the front of the saw chamber. See Figure 4.

Figure 4: Saw Head Position for Motor Removal

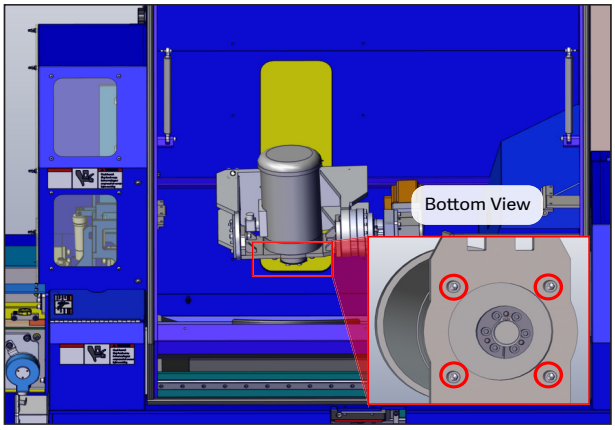


2. Activate an E-stop on the machine.
3. While pressing the **Request to Unlock** pushbutton next to the saw chamber door, pull the handle to open the door.
4. Shut down the touchscreen PC using **Power** > **Shutdown** in *Windows.*
5. Turn the disconnect switch handle on the main electrical enclosure to the OFF position and lockout/tagout the machine. See Figure 1.
6. Unscrew and disconnect the power cable from the saw blade motor. See Figure 5.

Figure 5: Disconnect Power Cable

7. Use the 5/16 hex key to remove the 4 bolts securing the motor shown in Figure 9 and remove the motor. Retain all bolts and washers for installing the new motor.

Figure 6: Removing Motor Bolts



8. Discard the removed motor and attached hub.
9. Clean the motor mounting plate with a soft cloth and solvent to remove any sawdust or debris.
10. Place the new motor onto the motor mounting plate in the same orientation shown in Figure 4 (with the power connector on the left side). Use the 5/16 hex key to secure the motor with the 4 bolts and washers removed in step 7.
11. Reconnect the power cable to the motor. Screw the retaining ring down until it is tight. It should bottom out on the rubber seal on the matting. Pliers may be required to tighten correctly (see Figure 5).
12. Close the saw chamber door.
13. Power on machine:
    a) Remove lockout/tagout and switch the disconnect switch to the ON position. See Figure 1.
    b) Release E-stop and press Reset switch on the operator interface.

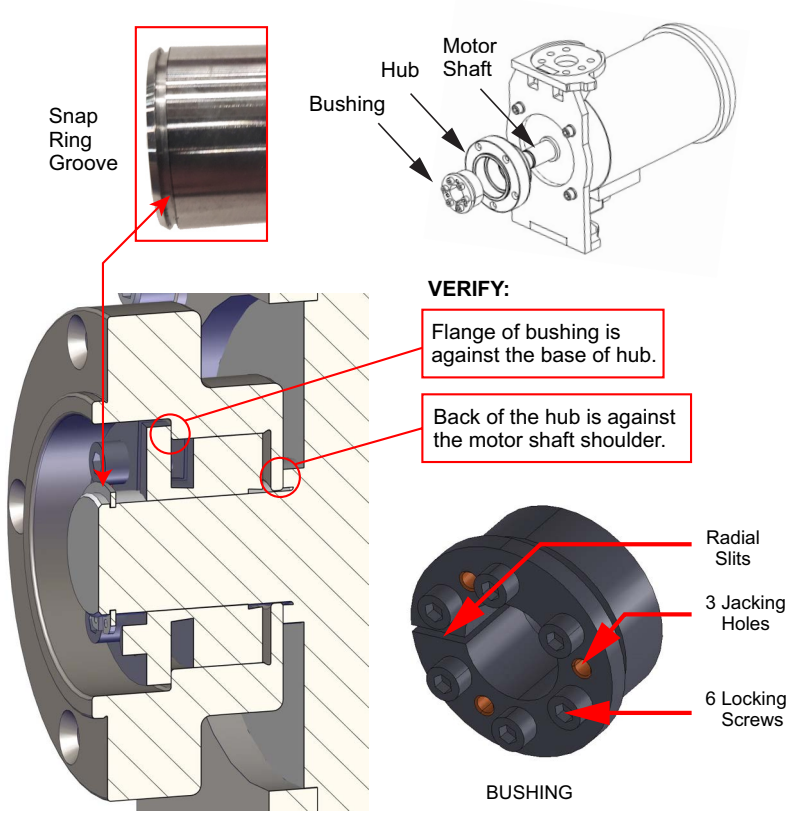
Installing Hub and Bushing

1. Use the machine software to position the saw head to for the installation of the hub and bushing (the motor shaft should be facing upwards).
2. Activate an E-stop on the machine.
3. While pressing the **Request to Unlock** pushbutton next to the saw chamber door, pull the handle to open the door.
4. Shut down the touchscreen PC using **Power** > **Shutdown** in *Windows.*
5. Turn the disconnect switch handle on the main electrical enclosure to the OFF position and lockout/tagout the machine. See Figure 1.

6. Follow the below instructions to prepare for assembly of the hub and bushing:
   a) Clean motor shaft and hub bore with a solvent. It must be clean and dry before proceeding.
   b) Locate a clean surface / environment for the assembly of hub and bushing.
   c) Remove the bushing and hardware from its package. It is shipped pre-applied with a thin coating of machine oil. **DO NOT** remove or clean this oil as it is critical for proper functioning. If necessary, clean only with a clean, soft cloth. **Do NOT** use a solvent.
   d) Verify that the radial slits in both sections of the bushing are in alignment (see Figure 7).
7. To prevent engagement during assembly of the hub and bushing, place 2 locking screws into the jacking holes and finger tighten (see Figure 7).
8. Place the hub and bushing onto the motor shaft in the order shown in Figure 7.
9. Remove the two locking screws inserted in step 20 from the jacking holes.

If the new bushing does not fit inside the hub or over the shaft, do not force it. Loosen the screws and pry the bushing pieces apart and then try again

Figure 7: Assembling and Aligning the Hub and Bushing.



10. Tighten the 6 locking screws finger tight (see Figure 7).

A torque wrench should be calibrated on a yearly basis to ensure accuracy.

How to check the torque after installation (between blade changes):

It is not necessary to re-torque the hub bushing bolts after initial installation unless the hub itself feels loose. If you feel it's necessary to check the torque on the hub bolts, only set the torque wrench to 156 in-lbs. If the bolts turn at 156 in-lbs, repeat all of step 12.

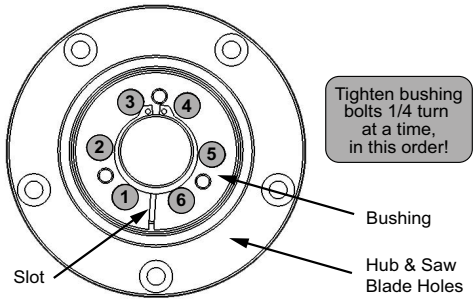
If the bolts do not turn at 156 in-lbs, no further action is needed.

11. Hold the hub still as shown inFigure 8.
    a) To hold hub in position, fasten two bolts to the saw hub. Use extra new saw blade bolts. Do NOT reuse these bolts on a saw blade.
    b) Position a large screwdriver or small pry bar between the two bolts, as shown inFigure 8.
    c) Hold the hub in place with a screwdriver or small pry bar.

Figure 8: Holding the Hub Still
(motor / hub shown outside saw chamber)

12. Using a 5-mm hex socket, tighten the bushing bolts 1/4 turn at a time, using the phased method as described in Figure 9.

Figure 9: Tighten and Torque Bushing Bolts in This Order



    a) Set the torque wrench to **164 in-lbs** (13.7 ft-lbs or 18.5Nm)
    b) Beginning with bolt #1, tighten each bolt 1/4 turn in the order shown.
    c) Repeat until quarter turns can no longer be achieved.
    d) Complete the pattern two more times, torquing the bolts correctly.
    e) Reset the torque wrench to **156 in-lbs** (13 ft-lbs or 17.6 Nm).
    f) Repeat the pattern one more time and ensure that none of the bolts turn at this torque.
    g) If they do turn at the lower torque, reset the wrench to **164 in-lbs** (13.7 ft-lbs or 18.5Nm) and repeat the previous steps.

13. Remove the two saw blade bolts used to hold the hub in place (inserted in step a). Do NOT reuse these bolts on a saw blade.
14. Use the snap ring pliers to install the snap ring onto the motor shaft snap ring groove (see Figure 7).

Installing the New Saw Blade

1. Prepare the surfaces:

	⚠ WARNING
	Mounting surfaces and hardware must be clean and dry when installing saw blade. **Dust, dirt, and lubrication may cause the blade to come loose, causing injury or death.**

   a) Blow off dust from the hub and the bolt threads. Remove all pitch and debris from threads.

   b) Wipe down the mounting surface on the new saw blade and the hub. Use a 320-grit emery cloth, if necessary, to remove pitch.

   c) Ensure all parts are clean, dry, and free of lubricants.

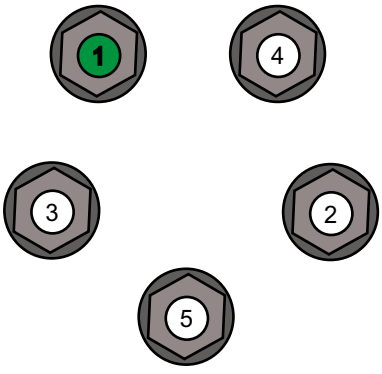
   d) If using a used saw blade, measure its diameter from outside edge of tooth to outside edge of tooth. If the diameter is less than 16-5/8”, discard it.

2. Place the supplied new or sharpened saw blade so the holes align with the holes in the hub and the teeth hook points downward when cutting a straight cut. See Figure 11 for the correct orientation.

	⚠ WARNING
	Use ONLY the bolts described in Table 1. **Use NEW bolts every time the blade is replaced.** **Do NOT use thread adhesive.** **TORQUE to specifications given in Figure 11!** **Ensure the bolts are fully embedded and flush against the saw blade surface.**

3. Using new bolts supplied in this kit, install all 5 bolts.
   - Use the torque wrench and T40 driver and bolts listed in *Supplies Needed*.
   - Do NOT use thread adhesive.
   - Hand tighten all 5 bolts in the order shown in Figure 10.
   - Using a torque wrench, tighten the bolts in the order shown in Figure 10 until they all reach the recommended torque shown in Figure 11.

Figure 10: Tighten Saw Blade Bolts in This Pattern

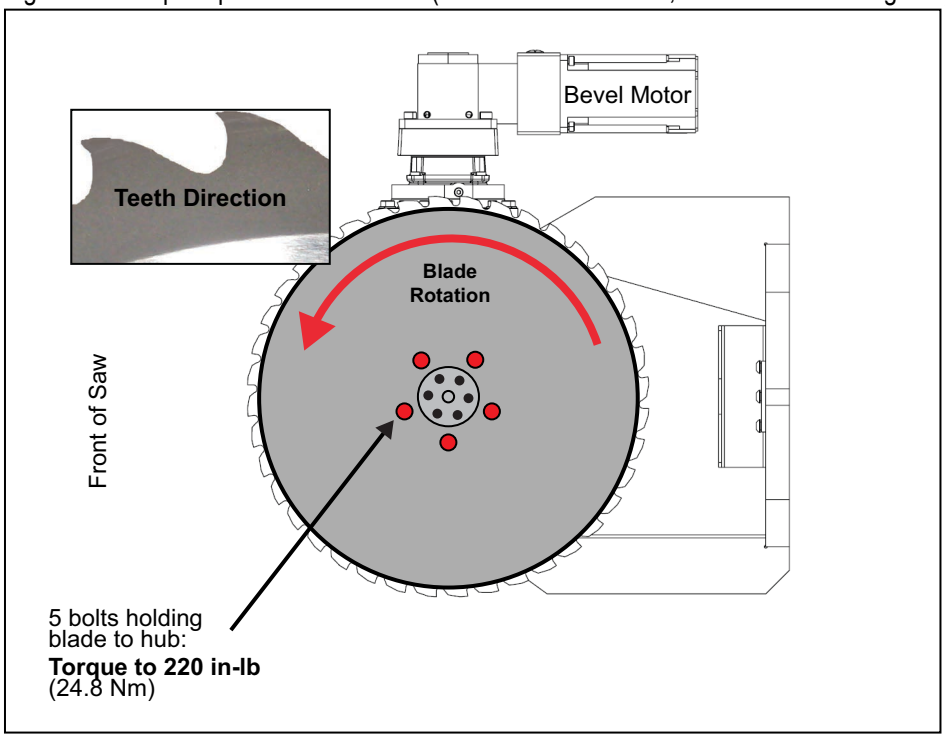


A torque wrench should be calibrated on a yearly basis to ensure accuracy.

- Once properly torqued, all bolts should sit flush with the surface of the blade. If the bolts are protruding or skewed, repeat step 3 with new bolts.

4. By hand, carefully rotate the blade to observe its motion. It should not have any wobble or vibration when rotating.

Figure 11: Torque Specs for Saw Blade (view from side of saw, with blade at 90 degrees)



5. Close the saw chamber door.
6. Power on machine:
   a) Remove lockout/tagout and switch the disconnect switch to the ON position. See Figure 1.
   b) Release E-stop and press Reset switch on the HMI.
7. Use the machine software to start the saw blade rotation and observe its motion. It should not have any wobble or vibration when rotating.

Check the saw blade every shift for the following and replace or repair when needed:

- Cracks, warping, missing or dull teeth, etc.
- Observe any wobble or vibration during rotation.
- Check that the bolts holding the blade to the hub are secure.

8. Calibrate the stroke and LASM axes per your BLADE II manual.

END OF SERVICE BULLETIN