

MiTek[®]

SERVICE BULLETIN

Affected machinery:

RoofTracker™ III roller press

Document:

SB236

Title:

Replacing a Sprocket Locking Device on a Drive Shaft

Applicable Frame Numbers:

All *RoofTracker III* roller presses

Distribution:

Customers upon order

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Purpose and Scope

The locking device on the gantry head holds the drive sprocket in place on the drive shaft. Replacing the locking device properly is essential to avoid costly replacement of the gearmotor.

This procedure explains how to remove a locking device and replace it with another locking device.

The parts included in this kit are shown below. Please make sure all parts are present before starting this procedure.

Table 1: Parts in SB236KIT

Quantity	Description	Part #
1	Service bulletin document	SB236
1	Locking device	547553

Before beginning the procedure, gather the supplies listed here:

- Torque wrench capable of 7.4 ft-lb (10 Nm) to 29.7 ft-lbs (40.3 Nm)
- SAE hex drivers and socket wrench or SAE hex wrenches
- 1-7/8" combination wrench
- Calipers
- Level
- Machine oil that does NOT contain silicone or molybdenum sulfide
- Sander or grinder
- Clean cloth or rag
- Pliers
- Paint pen

If you have any questions, call MiTek Machinery Division Customer Service at 1-800-523-3380.



This procedure may take three to five hours to perform.



If you misplace the screws for the locking device, order M8-1.25 x 50mm ISO 4762 Class 12.9 socket head cap screws from the OEM.

Procedure

Electrical Lockout/Tagout Procedure

Before performing maintenance on any machine with electrical power, lockout/tagout the machine properly. Follow your company's approved lockout/tagout procedures, which should include, but are not limited to, the steps here.

1. Engage an E-stop on the machine.
2. Locate the disconnect switch on the main electrical enclosure. Turn the disconnect switch's handle to the Off position. See Figure 1.



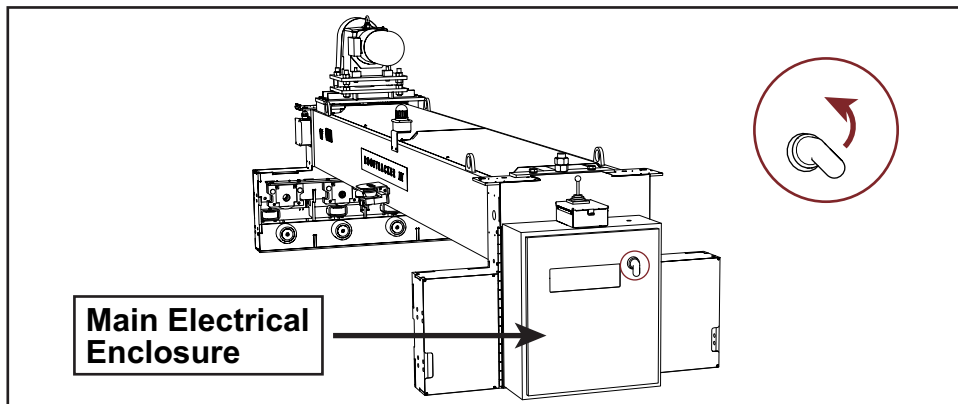
	 WARNING
	<p>ELECTROCUTION HAZARD.</p> <p>Even when the disconnect switch is off, there is still live power supplied to the disconnect switch's enclosure.</p> <p>Always turn off power to the equipment before opening this enclosure.</p>

Figure 1: Removing Power from the *RoofTracker III*

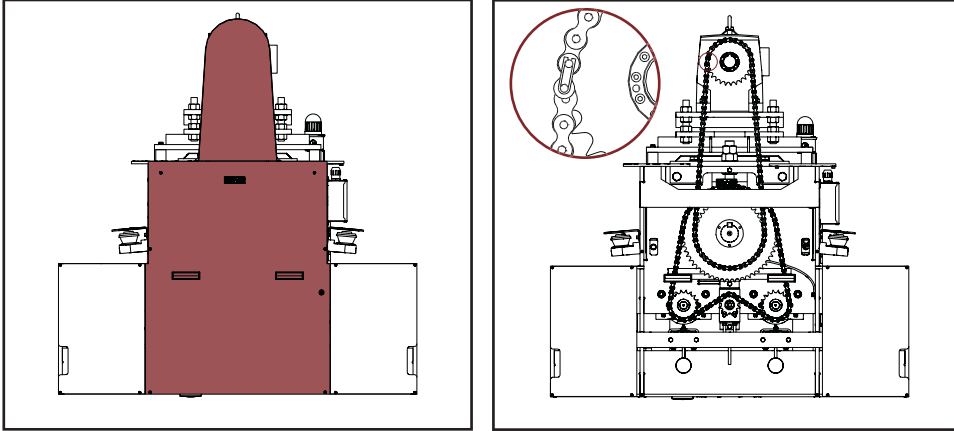


3. Attach a lock and tag that meet OSHA requirements for lockout/tagout.

Removing the Drive Chain

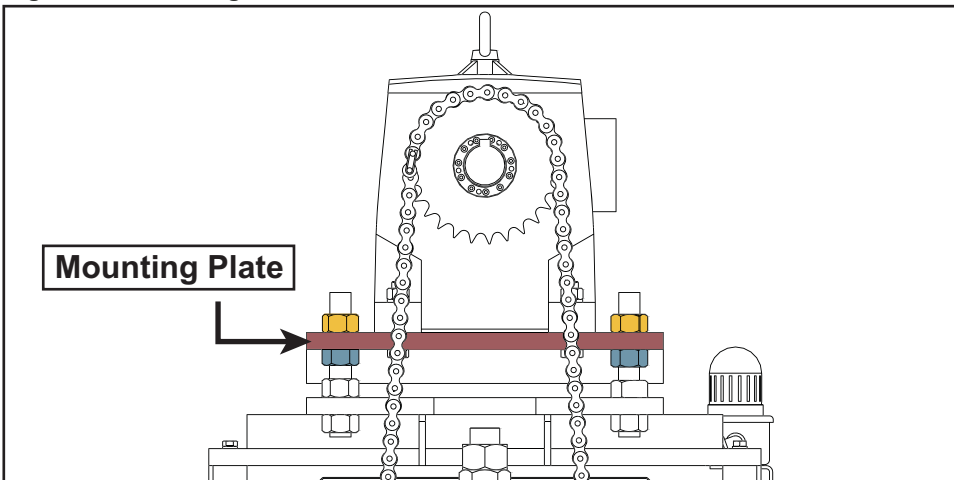
1. Go to the end of the gantry head opposite of the main electrical enclosure.
2. Remove the end guards highlighted in red in Figure 2 to access the drive chain.

Figure 2: End Guard Location



3. Check to see if the master link, circled in red in Figure 2, is accessible.
 - If the master link is accessible, proceed to step 4.
 - If the master link is not accessible, replace the guards, remove the lock and tag, and move the gantry head slightly. Lockout/tagout again. Then repeat steps 2 and 3.
4. Lower the mounting plate to reduce chain tension by using the following steps. See Figure 3 for reference.

Figure 3: Mounting Plate



- a) Turn the nuts highlighted in yellow in Figure 3 counterclockwise just enough to break torque.
 - b) Turn the nuts highlighted in blue in Figure 3 clockwise until the mounting plate moves just enough to remove tension from the chain.
5. Remove the master link. Remove the chain.

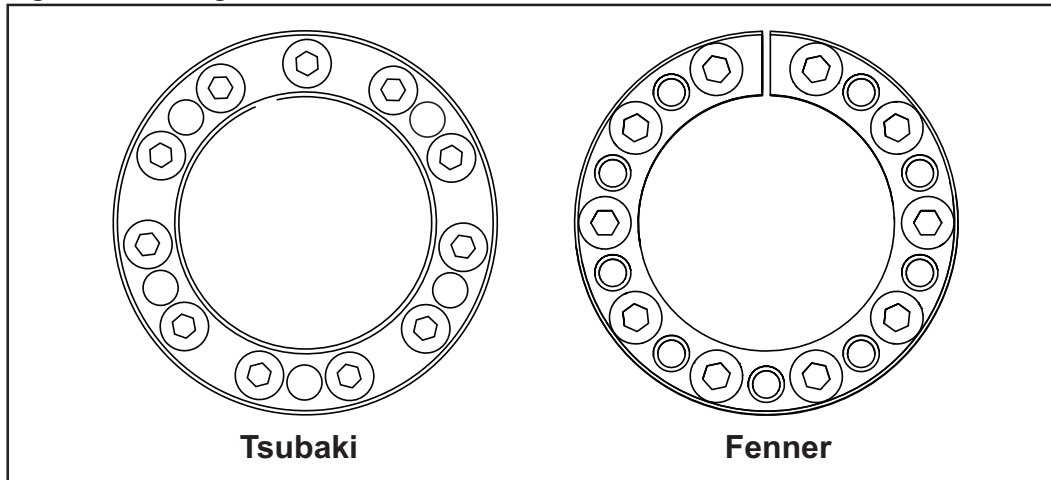
Identifying Your Locking Device

Removal instructions vary by model of locking device. Use Table 2 below to navigate to the instructions that apply to your model.

Table 2: Locking Device Identification

Number of Screws in Locking Device	Manufacturer	Removal Instructions
11	Tsubaki	page 6
10	Fenner	page 8

Figure 4: Locking Device Identification



	NOTICE
	<p>Do NOT use an impact driver at ANY point during this procedure.</p> <p>Use of an impact driver damages the locking device and may lead to equipment failure and costly parts replacement.</p>
	NOTICE
	<p>Do NOT reinstall a locking device more than one time.</p> <p>Reinstalling a locking device more than one time may lead to equipment failure and costly parts replacement.</p>

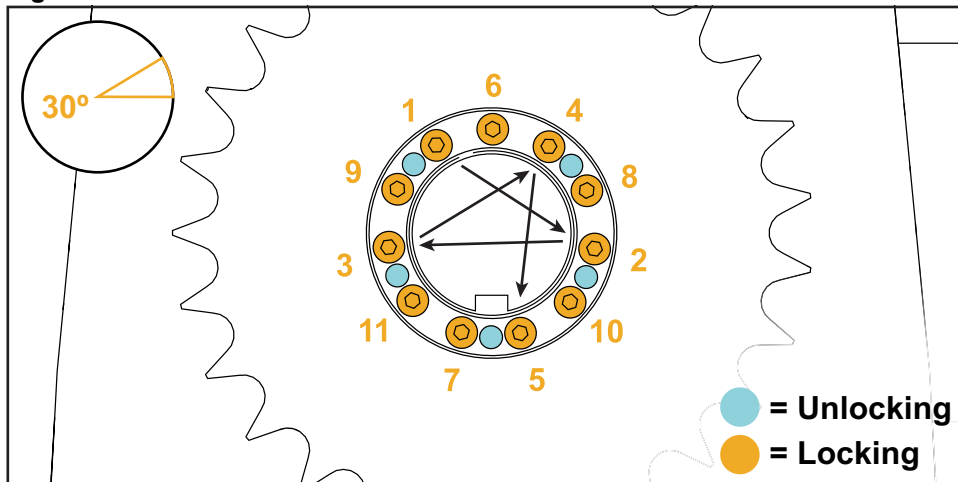
Removing a Tsubaki Locking Device

1. For reference, write the numbers of the locking holes on the sprocket. The screw in locking hole 6 is the only screw that is not next to an unlocking hole. See Figure 5.
2. Remove all of the screws from the locking holes by turning each screw 30 degrees at a time in the pattern shown in Figure 5.
Turning more than 30 degrees at one time may damage the taper rings in the locking device. Damaged taper rings may keep the locking device from functioning properly.



If you are removing a Fenner locking device, see page 8.

Figure 5: Tsubaki Screw Removal Pattern



3. Lubricate five of the screws and all five unlocking holes. See Figure 5 for the location of the unlocking holes.

NOTICE	
	<p>The lubricant should not NOT contain silicone or molybdenum sulfide.</p> <p>Lubricants with silicone or molybdenum sulfide may damage the locking device.</p>

4. Tighten the five lubricated screws in the unlocking holes by hand.

5. Finish tightening the five screws by using the following guidelines.
 - Tighten screws 30 degrees at a time in the pattern shown in Figure 6 until you reach 30 ft-lbs of torque with each screw.
 - Do not exceed 30 ft-lbs of torque with any screw.
 - Do not tighten past the minimum distance indicated in Figure 7. Tightening past this minimum distance may damage the locking device.

While tightening the screws, the torque should suddenly lighten twice. This indicates that both taper rings are unlocked. If the torque does not lighten, repeat step 5, but turn each screw less than 30 degrees at a time.

Figure 6: Tsubaki Unlocking Hole Location and Unlocking Pattern

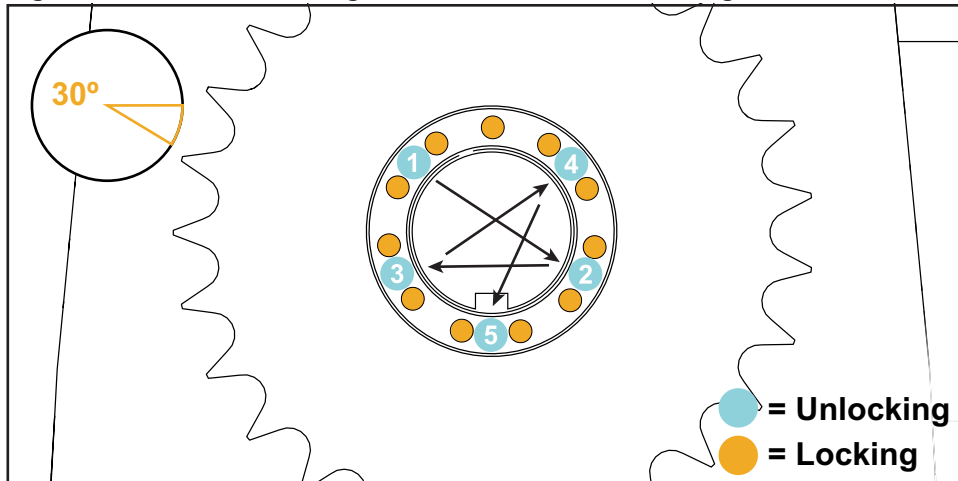
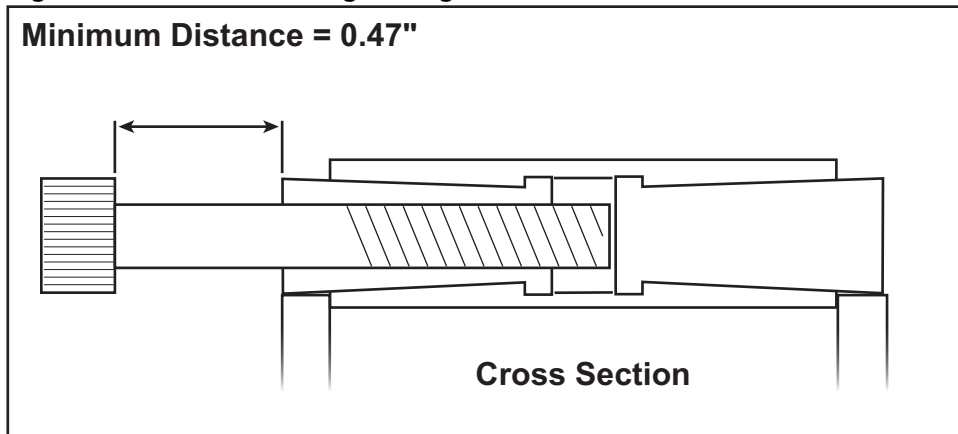


Figure 7: Tsubaki Screw Tightening Distance



6. Once the taper rings have unlocked, remove the locking device and drive sprocket from the drive shaft.
7. Proceed based on whether you are replacing or reinstalling a locking device.
 - If you are replacing a locking device, retain the screws as spares and discard the locking device. Skip to page 11.
 - If you are reinstalling the existing locking device, retain the screws and locking device. Skip to page 11.

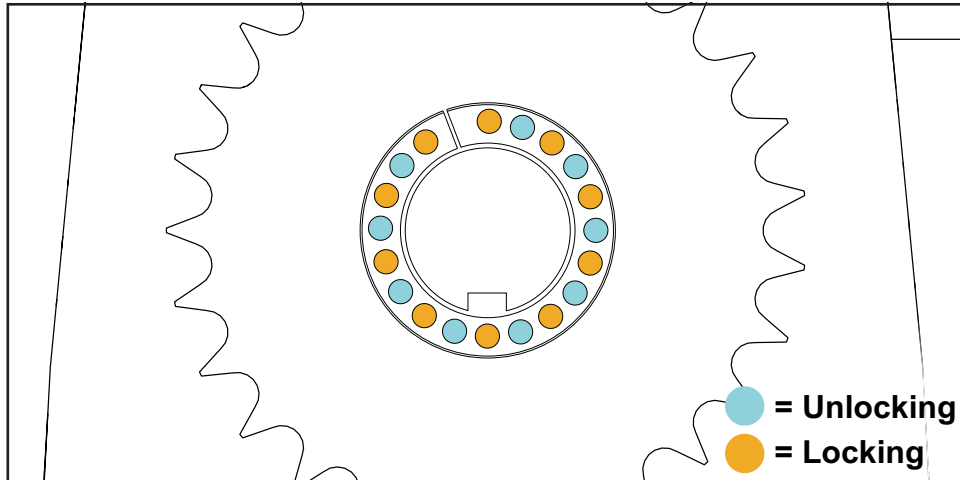
Removing a Fenner Locking Device

1. Remove all screws from their locking holes shown in Figure 8. Check the screws and threads to make sure they are not damaged.



If you are removing a Tsubaki locking device, see page 6.

Figure 8: Fenner Screws in Locking Holes

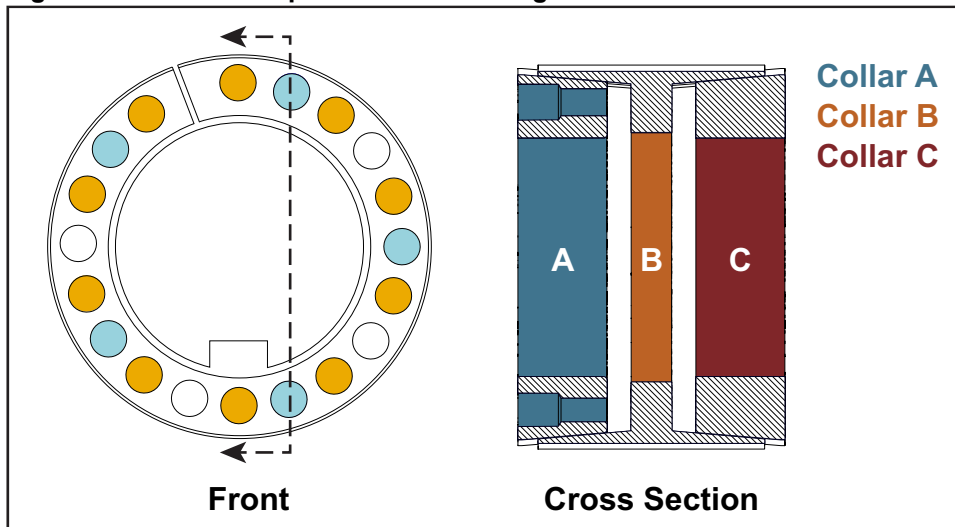


2. Flatten the ends of five screws. Lightly chamfer the ends of the five screws so that the screws have a slight taper.

Flattening and chamfering the screws prevents damage and allows you to remove them from the clamp collars as you remove the locking device.
3. Place the five chamfered screws into the unlocking holes of clamp collar A. Clamp collar A is identified in the cross-section view shown in Figure 9. Unlocking hole locations are colored in light blue in Figure 9.

The unlocking holes of clamp collar A have threads near the front of clamp collar A.

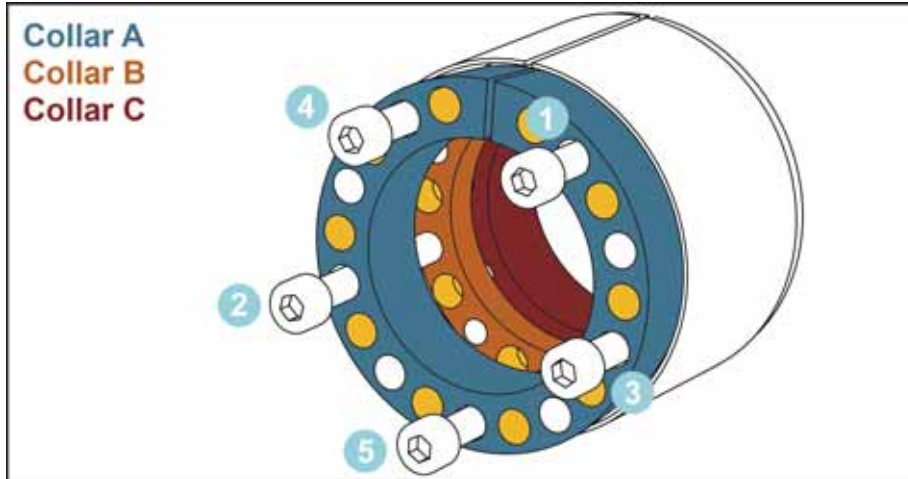
Figure 9: Fenner Clamp Collar A Unlocking Hole Locations



4. Support the drive sprocket so that it does not tilt and deform the locking device.
5. Release the locking device by using the following steps.
 - a) Tighten screw 1 in Figure 10 a half of a turn.
 - b) Proceed to tighten each screw one half turn in the order shown in Figure 10.

After tightening all screws one full turn, clamp collar A may not appear to have moved even though the screws may seem tight. This condition is normal. Continue with the procedure.

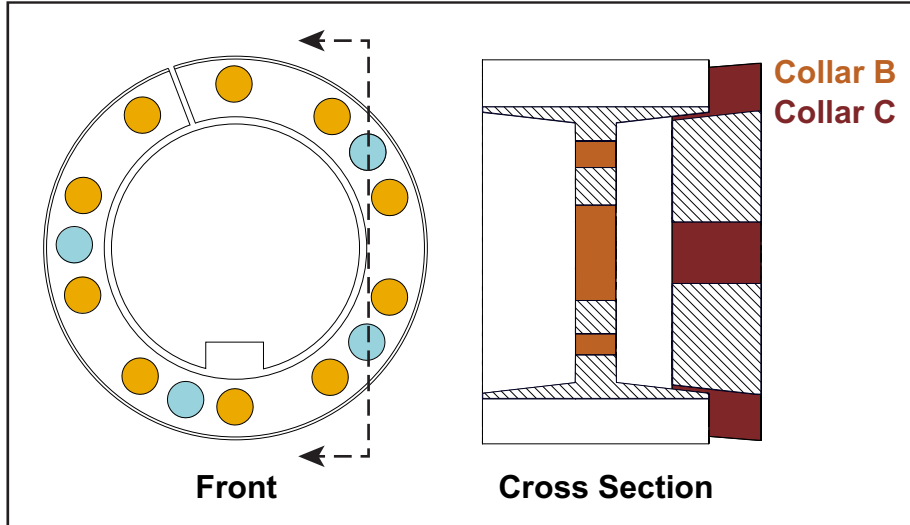
Figure 10: Fenner Clamp Collar A Removal



- c) Repeat steps a and b until clamp collar A comes free of the locking device completely. Remove clamp collar A and the screws now inserted in it.

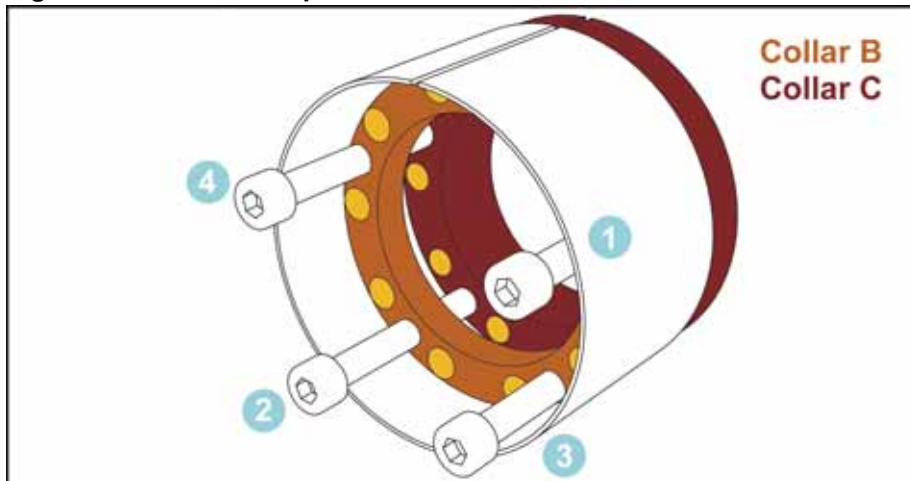
- d) Remove the screws from clamp collar A.
- e) Place the chamfered screws into the unlocking holes of clamp collar B.
Unlocking hole locations are colored in light blue in Figure 11.
The unlocking holes for clamp collar B have threads in clamp collar B.

Figure 11: Fenner Clamp Collar B Unlocking Hole Locations



- f) Release clamp collar C by turning the screws one half turn at a time in the pattern shown in Figure 12. When complete, clamp collar C disengages.

Figure 12: Fenner Clamp Collar C Removal



- 6. Remove the drive sprocket and clamp collars from the drive shaft.
- 7. Discard the locking device and the screws.



Installing a Tsubaki Locking Device

Before you begin, make sure that the drive chain is removed and the drive sprocket is removed from the drive shaft.

1. Remove all of the locking screws from the locking device.
2. Clean the inner surfaces of the sprocket bore and the drive shaft surface. Lightly lubricate both surfaces after cleaning.
3. Place lubrication in the following locations, highlighted in red in Figure 13:
 - on all screw threads
 - under the screw head
 - between the inner ring and taper rings
 - between the outer ring and taper rings


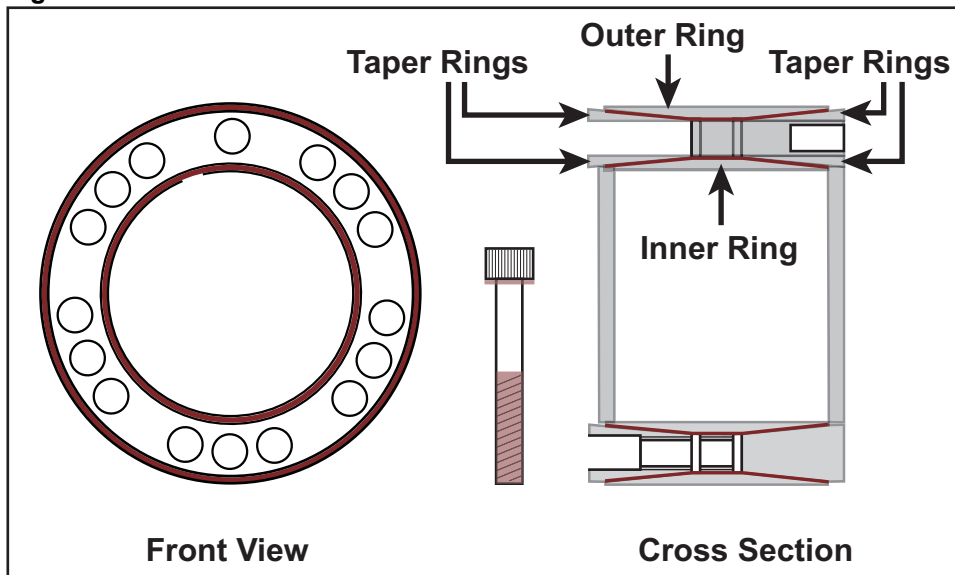
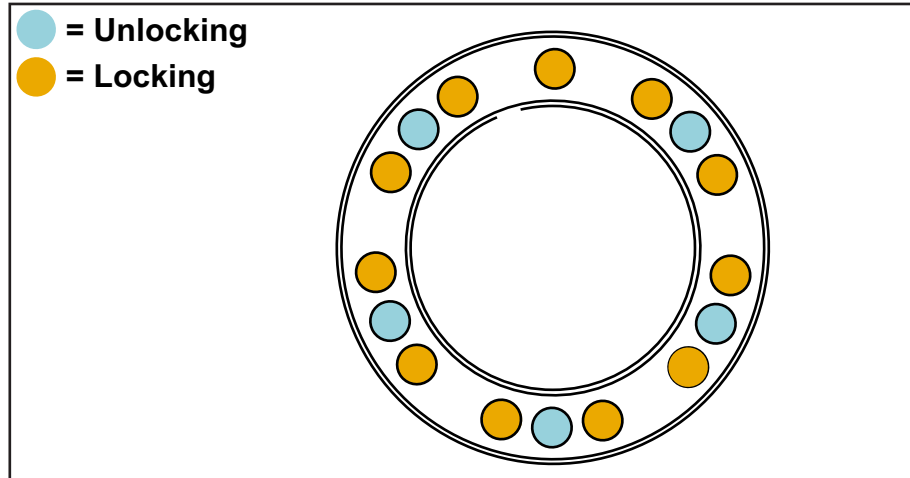
NOTICE	
	<p>The lubricant should not NOT contain silicone or molybdenum sulfide.</p> <p>Lubricants with silicone or molybdenum sulfide may damage the locking device.</p>

Figure 13: Tsubaki Lubrication Locations



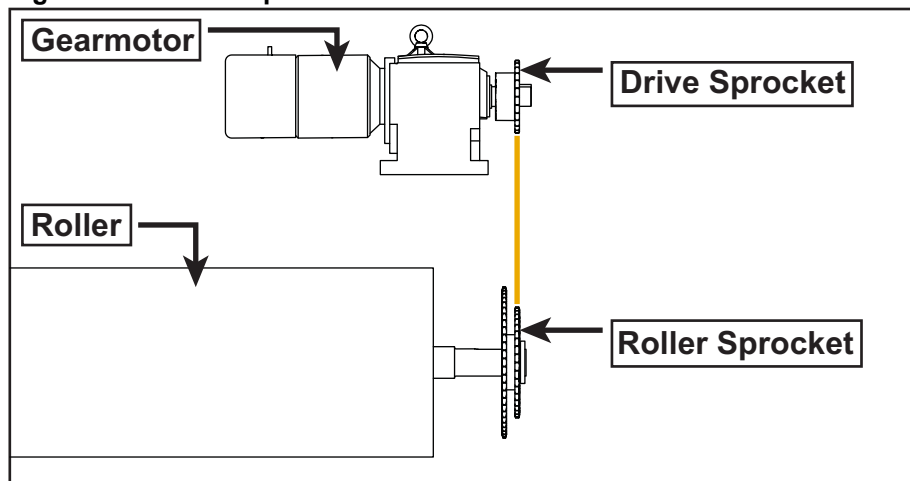
4. Place the locking device on the drive shaft using the following steps.
 - a) Tighten two screws into unlocking holes on opposite sides until the taper rings separate as much as possible. Unlocking holes are shown in Figure 14.

Figure 14: Unlocking Hole Locations



- b) Lightly tighten the remaining screws into any of the locking holes.
- c) Loosen the screws in the unlocking holes one full turn.
- d) Place the locking device into the drive sprocket bore.
- e) Place the drive sprocket and locking device onto the drive shaft.
- f) Make sure that the face of the drive sprocket is parallel and even with the face of the roller sprocket below it. See Figure 15. Only 1/4" or less of the locking device should protrude from the drive sprocket.

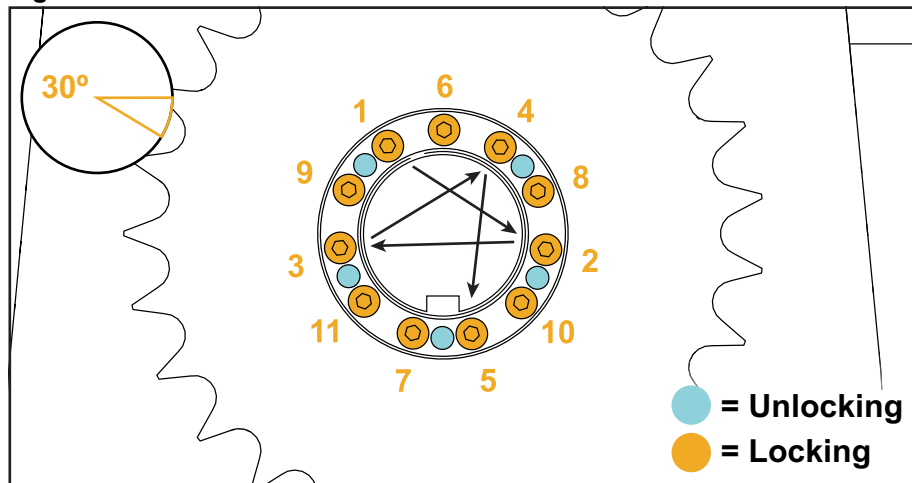
Figure 15: Parallel Sprocket Faces



- g) Remove the two screws from the unlocking holes. Lightly tighten them into the remaining locking holes.

5. Torque the screws in the locking holes by using the following steps.
 - a) Check the sprocket to see if the numbers of the locking holes are written on it.
 - If the sprocket has locking hole numbers written on it, make sure that the screws in the locking holes align with the numbers shown in Figure 16.
 - If the sprocket does not have locking hole numbers written on it, write the numbers on the sprocket. The screw in locking hole 6 is the only screw that is not next to an unlocking hole. See Figure 16.
 - b) Set the torque wrench to 7.4 ft-lbs (10 Nm). Tighten each screw 30 degrees at a time in the pattern shown in Figure 16. Continue to turn each screw 30 degrees at a time until torque is reached.

Figure 16: Tsubaki Screw Installation Pattern



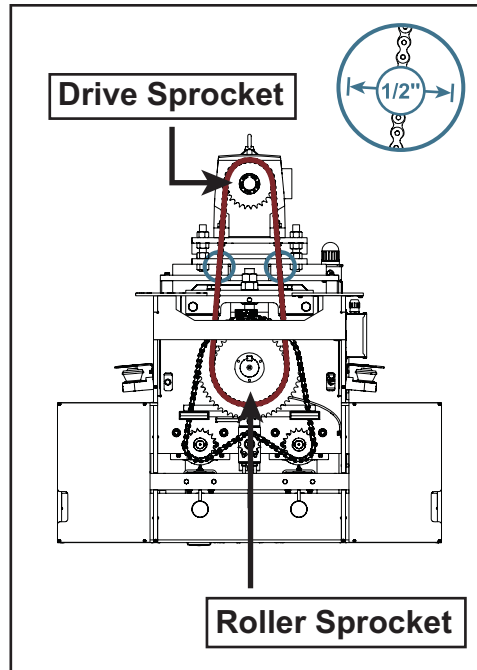
- c) Set the torque wrench to 14.9 ft-lbs (20.2 Nm) and repeat the process in step b.
- d) Set the torque wrench to 29.7 ft-lbs (40.3 Nm) and repeat the process in step b until all locking screws reach torque.
- e) Moving clockwise around the locking device, check that the screws are all torqued properly to 29.7 ft-lbs (40.3 Nm).

If torqued properly, none of the screws should move when turned with a torque wrench set to 29.7 ft-lbs.

Completing Installation of the Locking Device

1. Replace the chain using the following steps:
 - a) Route the chain around the drive sprocket and the roller sprocket. The routing of the chain is displayed in red in Figure 17
 - b) Reconnect the ends of the chain using the master link.
 - c) Restore tension to the chain by moving the mounting plate while keeping the mounting plate level. Tension the chain by leaving a small amount of play, which is specified in blue in Figure 17, on each side.
2. Replace the guards.
3. Remove the lock and tag.
4. Resume operation.

Figure 17: Chain Routing



Only use a master link to connect the chain.

If an offset link was used previously, replace it with a master link.