Deck 7 Loose Bolt Repair Process

Purpose:

This repair is for kiosks where the bolts securing the Deck 7 platter to the collar have started to work their way out. Since these bolts are attached from under the deck, they are not accessible to be tightened from below. A modification to cut a slot in the shaft of the bolt will be performed to allow the bolts to be turned from the top side.

Scope:

FSR2

Supplies Needed:

These are the only tools and supplies needed to complete the job correctly. Goggles should be worn at all times while cutting. Gloves are a MUST while applying the super glue as it is quite runny and will get on your hands.

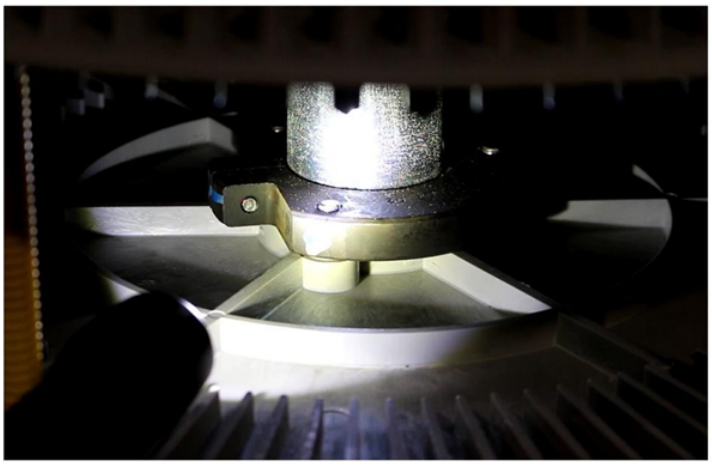
1. Safety Goggles
2. Gloves
3. Small Vacuum
4. Dremel Rotary Tool
5. Cutting Wheel Attachment for the Dremel
6. Flashlight
7. ¼" Drive Ratchet
8. #6 Flathead Bit
9. ¼" Socket
10. Loctite 420 Wicking Super Glue
11. As needed:

    a. QLM T-Handle wrench to tighten any loose collars.
    b. An "S" Flathead Wrench to help with some of the more recessed bolts.

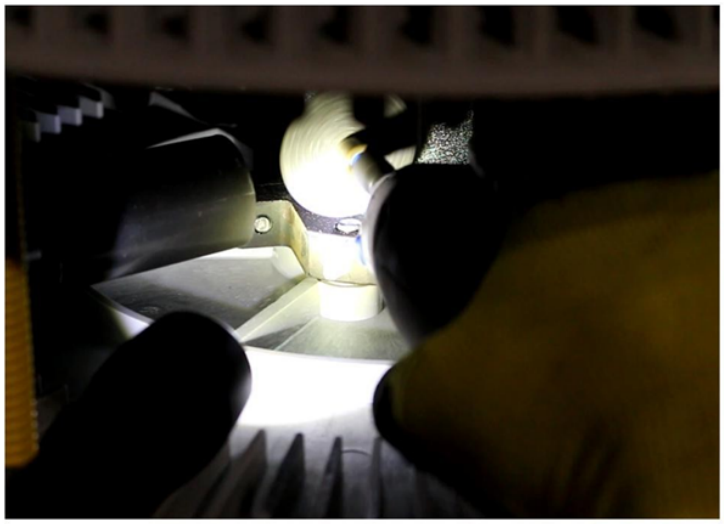
I. Checking the Drum for the Issue

Refer to the Deck 7 Inspection work instruction to verify if the drum requires the repair.

II. Repair Process

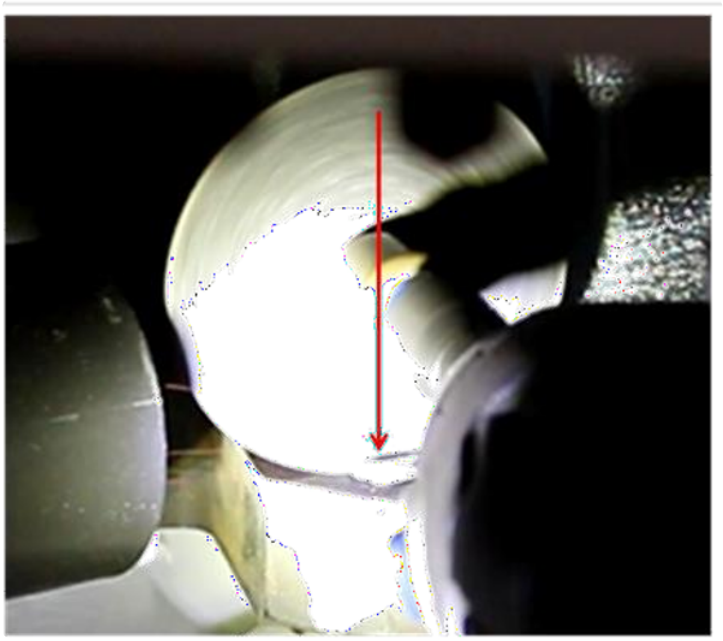


1. All bolts will be repaired when looseness is found
2. Manually turn the drum until one of the bolts is in a comfortable position for repair.
    a. Start with the most-recessed of the bolts.
    b. The direction that the Dremel spins will require the cut to be performed from the right and the vacuum will be positioned to the left.
    c. It's important to cut close to the center of the bolt to have the most strength when tightening it.
        a. Draw a line with a sharpie across the center of the bolt prior to cutting.
        b. This will act as a guide for aligning the Dremel cutting wheel as it cuts into the bolt.
3. Illuminate the work area with a flashlight.



4. Turn on the vacuum and position it to the left while holding the running Dremel from the right as shown.

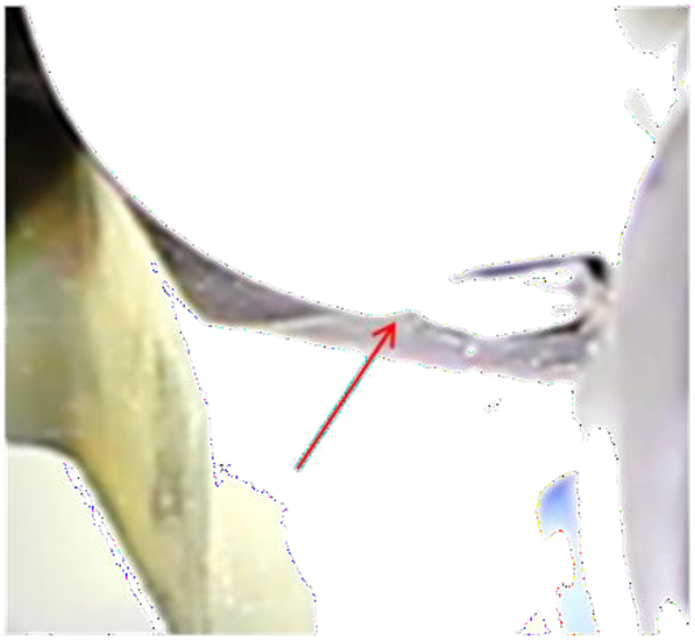
    a. The Dremel should be on full speed.
    b. Hold the vacuum close to the discharged metal and debris while cutting.
    c. Slowly lower the cutting wheel onto the bolt as centered as possible.



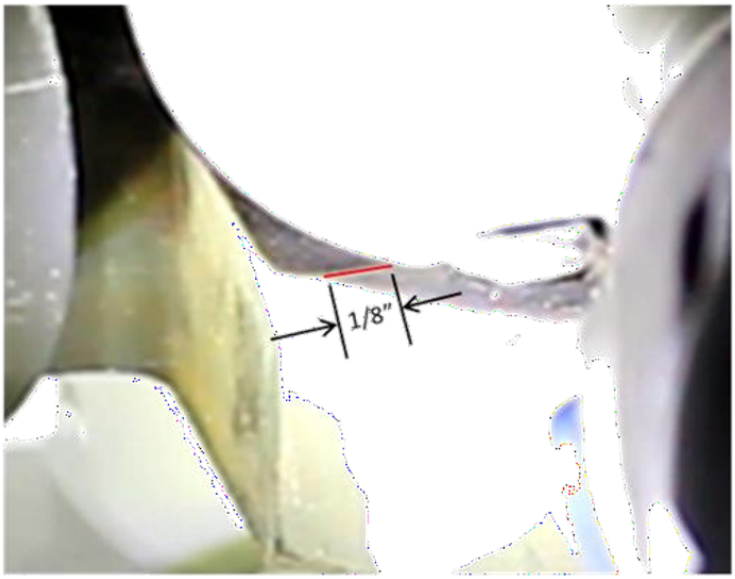
5. To make the slot as deep as possible follow these steps:

a. Cut straight down in the center of the bolt first.

b. Make a small motion from left to right to make the slot even across the entire width of the bolt shaft.
c. Push down slghtly to make the slot deeper while doing this.



d. It is enrely OK to cut into the black collar material when making the slot in the bolt.



e. Just be sure to not cut closer than around 1/8" from the edges of the collar. Cutting too close or through the edge could result in a weak spot in the collar.

f. A cut about 1/8" to 1/4" deep is all that's needed to grip the bolt.
   i. Deeper slots will grip better up to about ¼" max.
   ii. These pictures are with a brand new cutting wheel of larger diameter

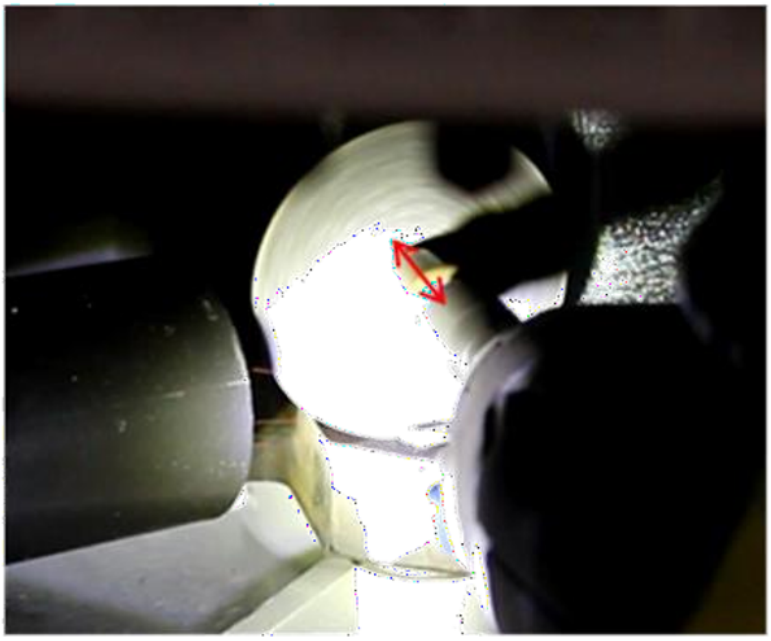
iii. A smaller wheel can cut deeper and still be clear of the edge of the collar.

iv. A deep enough cut to grip the bolt with the slotted bit is what counts.

g. Recessed bolts can be sloed with this method as seen pictured to the right.

i. This bolt was recessed a few threads and the cut was sll possible

ii. Even very deeply recessed bolts can be aempted.



h. There may be issues with the slotted bit fitting when you get to the tightening step.

i. The end of the bit may be too thick.

ii. Widen the slot by centering the wheel and rocking back and forth slightly while cutting.

iii. The cutting wheel can bind easily so this is a small amount of motion and a little time.

iv. This should allow the bit to fit the slot.

i. Proceed to cut all bolts first before moving on to the tightening step.

i. Turn off the Dremel between each cut.

ii. Reposition the drum and lighting for the next bolt.

iii. The only exception to this may be for bolts that are very loose and are already recessed or low in the collar.

1. Vibration from cutting the other bolts can cause the bolts to loosen beyond the reach of the cutting wheel.

2. This is why it is best to start with the lowest of the bolts when possible.

3. For these bolts, cut and then immediately tighten them before proceeding to the others.

4. Tightening the Bolts

a. Since the bolt needs to tighten upwards, the ratchet should be set to loosen (counterclockwise) for these steps.

b. Position the ratchet, with the ¼" socket and flathead bit attached, and align the bit to the slot.

j. While pushing firmly downward with both hands, "tighten" the bolt.

- i. Hold the ratchet as straight as possible while turning counterclockwise.
- ii. Keep a firm downward pressure to hold the bit in the slot.
- iii. Tighten only until the bolt is very snug.

1. This is done mainly by feel and will depend on how well the ratchet is held.
2. **Caution** The bit can bend or break if too much force is used.
   - iv. Some bolts will take several turns to tighten while others only need ¼ to ½ of a turn as in these pics.

1. The bolt below was very loose (it could be turned easily.)
2. It was only turned a little over 90 degrees before it was very tight.
    - v. Tighten all 3 bolts before proceeding to the gluing step.

k. Using the “S” wrench.

- i. The optional “S” wrench or similar can be used for some recessed bolts.
- ii. The slot may have been cut but not deep enough or the ratchet and bit are too large to fit in the bolt hole of the collar.
- iii. The wrenches come with smaller sizes on the ends.

- iv. The “S” wrench will be more difficult to use with regards to stability and torque, and takes more time to reposition and align with the slot when the bolt is recessed.
- v. Use the “S” wrench to bring the bolt up higher and more accessible.
- vi. A deeper cut can then be made at this time as needed.
- vii. Finally, use the ratchet and bit to tighten fully.

III. Gluing and Proactive Steps

For kiosks where no shear can be detected, proactively glue them per the below steps. Make sure there is absolutely NO shear before gluing. Get a second opinion if unsure, Once glued, It will be impossible to make therepair without lifting the drum. Lifting the drum is not an approved repair for the field so the kiosk would need to be replaced.

1. Only use Loctite Super Glue type 420.
   a. Gloves must be worn while applying the Loctite.
   b. It is very runny so tip the bottle upward prior to application.
   c. Barely tip the bottle enough to get the glue to come out during use.

2. To get the best mileage out of the bottle and applicator:
    a. Keep the bottle upright when not applying the glue.
    b. Keep the angle very shallow when applying the glue.
    c. Wipe the applicator tip after every use with a paper towel.
    d. Firmly screw the cap back on.
    e. Store upright.
    f. It's normal for some glue to build up on the end that can be scraped off.
    g. Don't mar or recut the tip as this will increase issues.
    h. The applicator hole can be reopened very carefully with a small paper clip so that it is not widened.

3. Tap the applicator tip to the exposed end of the bolt threads where it meets meets the collar to get the glue to wick onto the bolt and into the threads.
4. Rub the tip around the full circumference of the bolt to fully coat the gap between bolt and collar.

5. 3-5 drops worth of the glue should be enough to form a small “mound” of glue. This will eventually wick down into the threads and fully lock the bolt in place.

6. Deck 8 can be tightened and glued also.

a. The deck 8 Allen bolt heads are easily accessible from underneath the bottom of deck 8.

b. Use a ¼” or 6mm Allen wrench to snug them down about ¼ turn-or until it feels that the plastic is compressing.

c. Glue in the same way as deck 7 above.

d. The Full process in video form for a single bolt can be found at this link, click “Full Bolt Repair” on the left hand side of the e-learning module to view it:

Associated TSBs

Deck 7 Inspection

Deck 7 Supplementary Videos

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Revision #:	Date:	Changes By:	Description:
1.0.0	8/30/2018	Dan Butler	Original Release