REPLACING THE CAT SEAL IN THE 90AD EXTRUDER
SAFETY

J.C. Steele and Sons equipment is designed to process large amounts of heavy products. To accomplish many of the required operations of our customers, high horsepower and heavy components are required. A great deal of time and effort has been invested into our equipment to make them as safe as practically possible. The safety features are no substitute of caution and common sense. A careless moment is all that is needed to cause a serious accident. Please refer to the machine’s Owner’s Manual for a detailed list of safety precautions.

GENERAL DESCRIPTION

This bulletin outlines the procedure to replace the cat seal in the 90AD extruder. Removing the thrust assembly is not necessary for this procedure. Other procedures may be necessary in order to accomplish this procedure, including the removal of the augers, liners, and liner adapters. A video of this process is located at the JCSS website.

SPECIAL TOOLS NEEDED

- A 1” x 2” x 10” (25mm x 50mm x 250mm) metal block
- Rosebud torch (in rare occasions)
- A single Grade 5 (not harder), 5/8” bolt about 3” long
- Two pieces of 6” long ½” -13NC threaded rod
- Seating tool for installing Cat seal
MANPOWER ESTIMATE

This procedure will require 1 man for 2 hours, depending upon the maintenance state of the equipment and ease of access.

PROCEDURE

1. Follow all plant procedures to *lock out extruder and pug sealer from electrical sources*.
   - The ability to *independently supply air* to the *extruder clutch* is necessary. This is done by a separate air compressor, or, if the plant controls allow, engagement of clutch with extruder motor disengaged.

2. Drain *oil* from the *thrust bearing*.

3. Remove *augers* and clean dirt out around *locknut (8NA)* and *cover plate (8XA)*.

4. Grind the *shaft* where the auger pushes against the shaft shoulder.
   - This is to remove any metal that has been pushed up and will prevent removal of the nut.
   - May have to file or wire brush the shaft threads to clean them up if they have been damaged.

5. Use a *metal block* roughly 1” x 2” x 10” (25mm x 50mm x 250mm) and wedge between the *vacuum chamber* and notched place on the *locknut (8NA)*.

FIG 2: Isometric view of the locknut and cover plate of the thrust assembly
In the vacuum chamber, the best place to do this is on the side opposite the feed-roll shaft where the lower curved section and upper flat section come together.

6. **Turn clutch** by hand, counter clockwise as viewed from the front, (with air on so clutch is engaged) to loosen the locknut (locknut has LEFT-hand threads).
   - In **rare** occasions the nut will still be too tight and a **rosebud torch** to heat the nut is required.
   - After the nut is loose, you may **turn by hand** with the aid of a couple 5/8" bolts put into two of the holes in the face of the nut (the bolts provide a handhold to turn the nut).

7. Take out the **twelve ½” hex bolts** on the **cover plate (8XA)**.

8. Use **three ½” bolts** in the three tapped holes around the outside to **push off cover plate (8XA)**.
   - These bolts should be longer than the twelve bolts just removed so that the cover can be pushed completely off.
   - Both parts of the cat seal should be out of the way once the nut and cover have been removed.
9. Remove the **O-ring (8SO)**.

10. Clean and inspect the **thrust pot** and **bearing**.

11. Remove old **gaskets**, clean **mating surfaces**, etc.
12. Before reassembling, make sure the grease path is clear by pumping grease into the fitting on the outside of the housing and look for grease purging in the bore of the thrust bearing housing (where the new cover will be installed).

13. Install new gasket (8G1) and new O-ring (8XAO) in the cover (8XA) (cover is not yet in the machine).

14. Apply grease on the Cat seal groove in the locknut (8NA).

15. Install half of the Cat seal in the locknut (8NA) using the Cat seal sealing tool.
   - Apply grease to the outside of the Cat seal ring half.

16. Install the new O-ring (8SO) in the groove on the locknut (8NA).

JCSS recommends replacing the 8XA cover, 8NA nut, 8OS O-ring, 8G1 gasket, cover O-ring (8XAO) anytime the Cat seal is replaced.

All bolts should have Anti-seize applied to the threads before installation.
17. Install the **cover plate (8XA)**.

- Note the position of the **grease hole** and orient the cover so this hole is close to being at the top.
- Use two pieces of 6" long ½"-13NC **threaded rod** as guides to install the cover. These rods are threaded into two of the outer tapped holes in the bearing housing. The cover is started on the threaded rods and the nuts are used to pull into place.
- Remove the **threaded rods**.
- Install the 8 **bolts** into the **cover plate (8XA)**.
18. Apply grease to the Cat seal groove in the cover plate (8XA).
19. Install the other half of the Cat seal using the Cat seal seating tool.
   ➢ Grease the outside of the Cat seal half.
20. Remove the socket head setscrew from the nut (8NA).
21. Apply anti-seize to the shaft threads.

![Applying anti-seize to shaft threads](image)

FIG 9: Applying anti-seize to shaft threads

22. Install the nut (8NA) (LEFT-hand threads).
   ➢ Tighten as far as possible by hand.
   ➢ Tapping (not hard) with a hammer may help with the hand-tightening to work over any tight threads.
   ➢ Hand-tightening the nut over several revolutions makes sure it is not cross-threaded.
23. Use a single Grade 5 (not harder), 5/8” bolt about 3” long in the face of the nut and the removal block wedged between this bolt and the vacuum chamber, turn the clutch to further tighten the 8NA nut. Once the bolt bends, stop.
24. Reinsert setscrews into ½” holes to protect threads.
25. Pre-load the bearings.
   ➢ There are six tapped holes in the face of the cover (8XA) to accomplish this.
   ➢ Apply Permatex or silicon to the S1 and S2 setscrews.
   ➢ First, install the six long setscrews (S1) and run them until they bottom.
   ➢ After this, apply minimal pressure, maximum quarter turn after initial contact is made.
   ➢ Next, install the six shorter setscrews (S2) until they seat against the inner setscrews.
   ➢ Firmly lock the outer setscrews in place.
26. Install **new oil** in the **thrust bearing housing**.

27. With the **shaft** rotating, **grease** at the **thrust bearing fitting** until grease is **purged** between the **cover (8XA)** and **nut (8NA)**.
   - Grease should purge all the way around.

28. Install **augers** and **liners**.
   - Refer to section 5.5.2 of the **machine owner’s manual** to accomplish this task.