



Service Bulletin

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Service Bulletin # GSBS-08 (2 pages)

To: All owners of effected models

Subject: Servicing 3/4" Bearings With Eccentric locking Ring

Machine Styles: 2 Speed Early Gear Drives, 2 stage models with 10-1/2 and 12 inch impellers.

The effected machines utilize slip fit bearing(s) that work with eccentric locking rings. The purpose of the eccentric collar is to make sure that the shaft rotates with the inner race of a bearing. Often when bearings fail they get stiff and the shaft rotates in the race ruining the shaft. If you keep the inner race and the shaft connected then the shaft is protected until the bearing is really really bad at which point the neglectful owner gets what they deserve. This sort of system allows the shaft to be sized for a close slip fit in the bearing making assembly and disassembly easier than if it were a press fit.

The bearing and collar each have a round hole that fits the shaft. The bearing has a boss of a larger diameter and it is eccentric, meaning that it is off center. The collar has a counter bore, or pocket that matches the boss in diameter and eccentricity.

To apply the locking collar you assemble the system with both parts on the shaft such that the collar mates over the bearing boss. This will mean rotating it to the position where the eccentricities align and they engage. You then locate the drift hole in the collar. This is a blind hole, not the set-screw. Using a drift pin and hammer (or a spanner wrench if you are fancy) you whack the hole to drive the collar in a clockwise direction. Since the main bores of each item are on the shaft the 2 eccentric features are in conflict as you drive them out of phase. Since they cannot rotate they exert large side loads binding each other against the shaft and forming a solid union.

Note that it can be tightened in either direction but should be done clockwise to preserve the right hand thread mentality for the next person taking it apart. Once the side loads are established just tighten the set-screw to safeguard against vibration. To de-couple the system you back off on the set-screw and whack the drift pin hole counter-clockwise looking for it to shift slightly. With a little bit of movement it will slide right off assuming things are not corroded and the shaft will again be free in the bore. Be sure to dress the slight set-screw divot in the shaft with a file before trying to slide the bearing past that point.

It is a very effective system that does less shaft damage than set- screws and is simpler than slip collars and other methods.

With that explanation made we come to the problem at hand, how do you get your machine to come apart?

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When these machines were relatively new disassembly was simple and it still may be in about 10% of all cases. However the stress of use, weather, corrosion and the occasional misguided prior repair can cause the collar and/or the actual bearing to seize to the shaft. Above all take your time and be careful not to damage additional components.

Getting the collar off:

- The advance use of penetrating oil can help.
- If you have removed a pulley from the 3/4" shaft file any set screw divots flush. Do the same for any other nicks. You want a clean shaft so close fitting parts can slide.
- Loosen the set screw by a few turns
- Using a drift pin in the blind hole of the collar drive it counterclockwise. If that will not move try clockwise in case it was installed backwards.
- If it moves from the locked position and releases slide it from the shaft.
- If it only has limited freedom and sliding is not going to happen take hold of it with a large pair of pump pliers (Channel Locks) and work it back and forth with oil.
- If you have a little movement and the right size pickle fork try that.
- If you come to the decision that it's not coming off then you will need to take it apart.
- If you have access to a cutting torch then do your thing. I don't have one (yet) so I'm not going there.
- I use a small (4") disc grinder to breach the collar. I hold it perpendicular to the shaft like I was going to cut the shaft. You can brace against the chassis and swipe the collar up and down, like trimming sideburns. Eventually you will see the metal become foil thin. Revealing the shaft and bearing. Gouging the bearing is fine but be kind to the shaft.
- Once the collar is split it will probably wiggle right off. If not use a punch or cold chisel and handle to spring it open a little.
- Use a file to remove the setscrew divot and any collateral damage.
- Throw it in the scrap steel pail.

Getting the bearing off:

- For impeller bearings this is when you remove bearing flange nuts the auger bearings.
- For the 2 speed jackshaft you will remove the bearing flange nuts and outer flanges allowing the shaft to float Respect the brass fork that is still engaged with the center cog.
- For impellers place a board on the floor and place the augers on the board with the bearing facing upward. This should press the impeller against the back of the chamber lifting the bearing a little.
- Loosening the impeller and moving it forward may sound like a good idea and it is. The catch is that it is probably also seized so skip that option.
- If this is your lucky day a little gentle prying with slip the bearing off and you are done.
- If this isn't your lucky day.....
- A pickle fork or larger pry bar may be able to get under the bearing and get it moving. The bearing flanges are replaceable and inexpensive, other stuff isn't expendable so don't get carried away.
- My prior cutting torch comment applies here.
- At this point I move to dissection. Using a cold chisel and striking hammer or an air hammer with gloves and safety glasses etc. strike the side of the bearing to fracture the outer race. With 2 cracks it will be removable. Remove the outer race, balls and shield.
- All that remains on the shaft is the inner race. You can now get the assembly out of the chassis.
- You might be able to get a gear puller on the race so it's worth trying what you have.
- I usually go to the grinder as described for the locking collar above.
- If you are removing a 2 speed jackshaft the methods are similar. Once one bearing is released you may have enough freedom to get a gear puller on the other complete bearing.

Clean up the shaft and perform the rest of your repair. Your new bearing and collar should slip into place. Drive the collar clockwise and secure the setscrew.