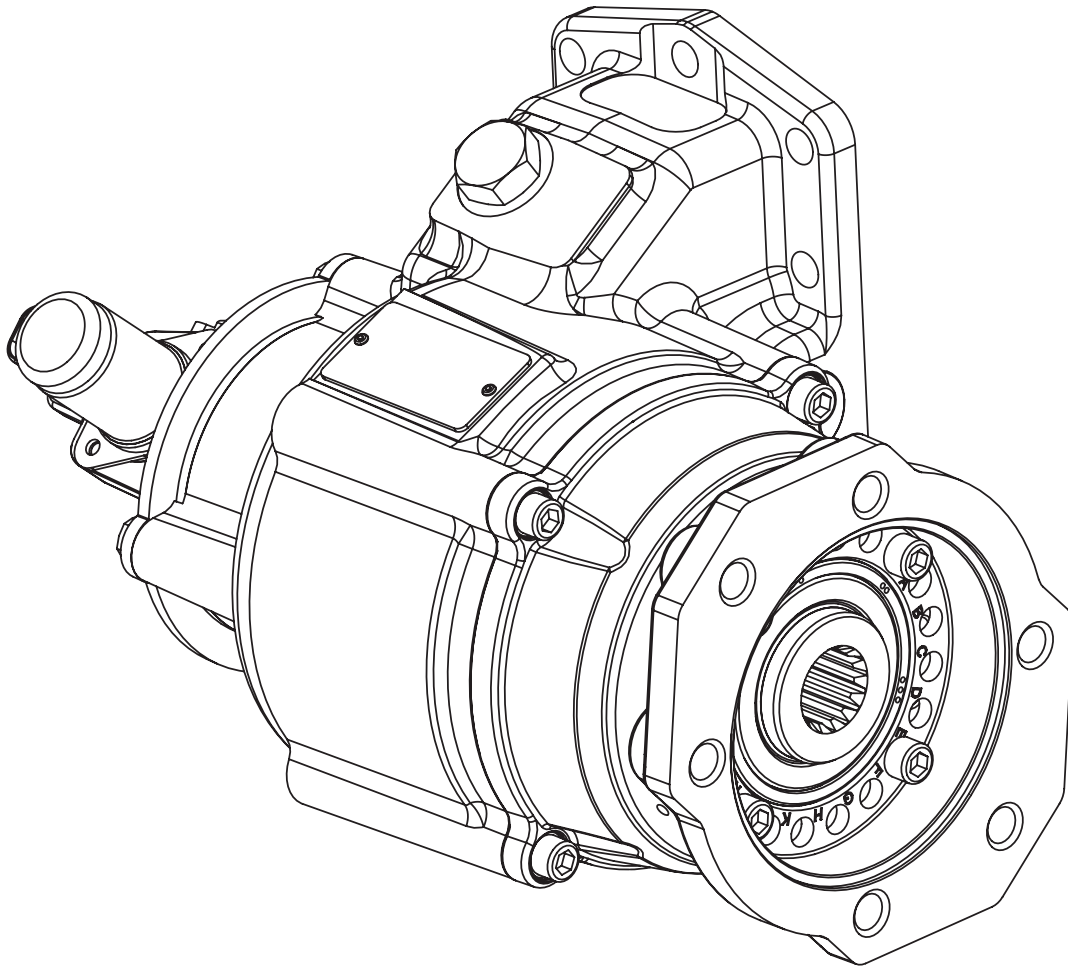
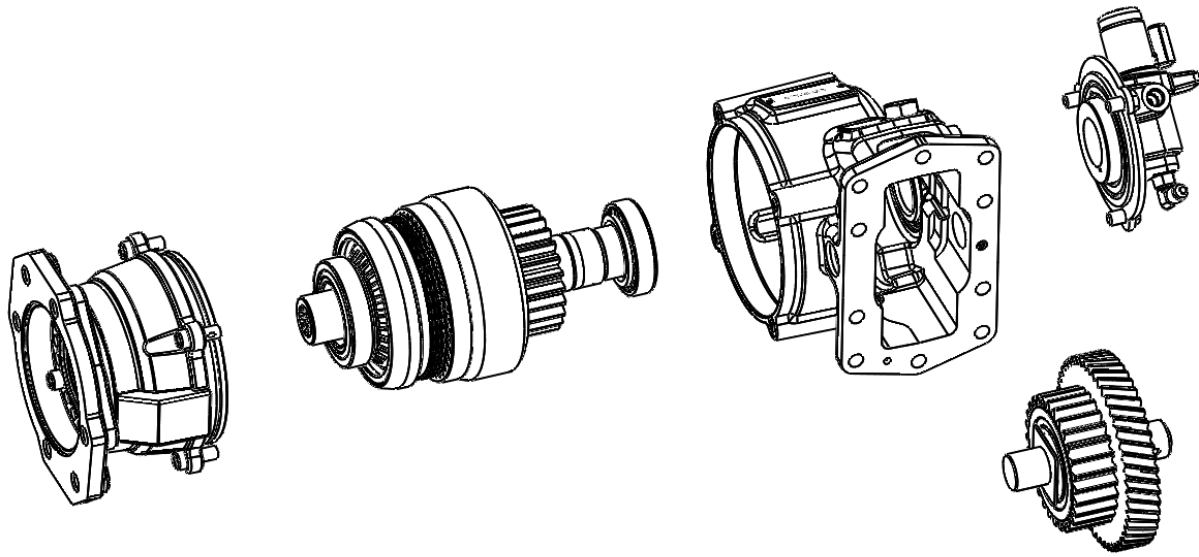




**Muncie[®]
Power
Products**

REBUILD INSTRUCTIONS FOR A20 PTO





TOOLS REQUIRED FOR REBUILD

1/8" hex key
1/4" hex key
1/2" Combination wrench and socket
Mallet or soft faced hammer
Ball Peen Hammer
Dial indicator
Punch
Bearing Puller
Bearing Press
Horseshoe Washer Pliers
A Pair of 9" C-Clamps
Foot-Pounds Torque Wrench

Preparation

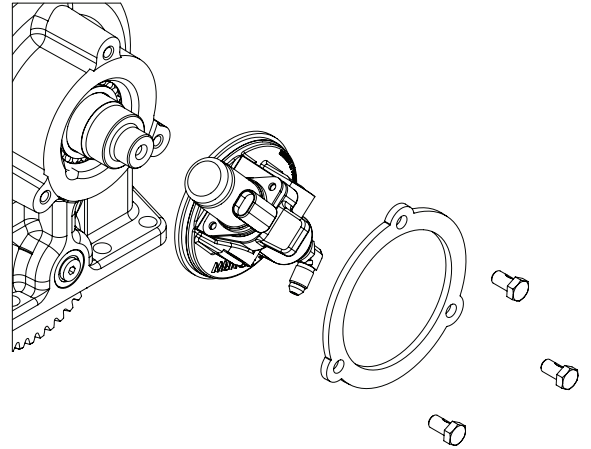
Before beginning the rebuilding process of the PTO, verify that all necessary tools have been obtained. Clean unit thoroughly, and inspect the gears for signs of excess wear or damage prior to beginning the rebuild process.

These instructions are for the rebuilding of A20 Power Take-offs. The rebuild kit includes all new bearings, snap rings, clutch plates, springs, seals, and shims.

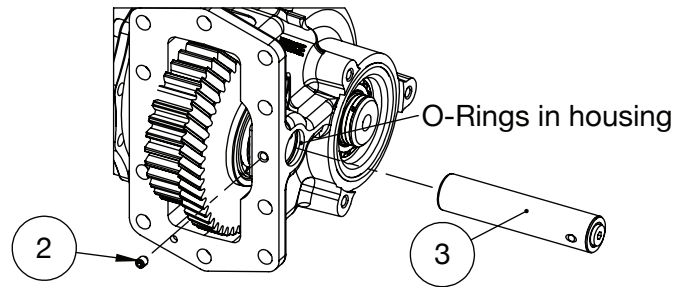
DISASSEMBLY INSTRUCTIONS

SECTION 1 – INPUT GEAR AND BEARING REMOVAL

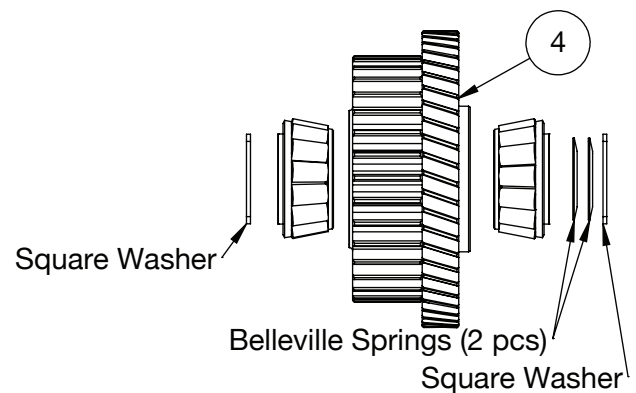
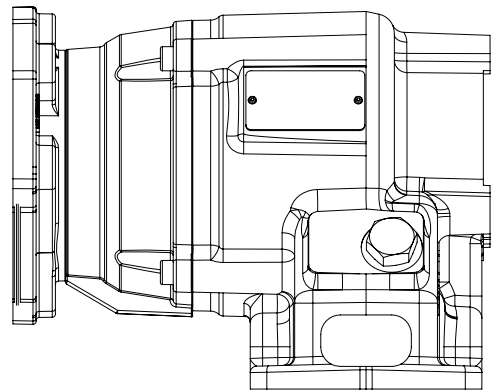
1. Remove valve body from unit to prevent damage to valve during the rebuild process.



2. Remove idler shaft set screw using $\frac{1}{8}$ " hex key.
3. Tap out idler shaft assembly. Remove O-Rings from grooves in housing if they are to be replaced.

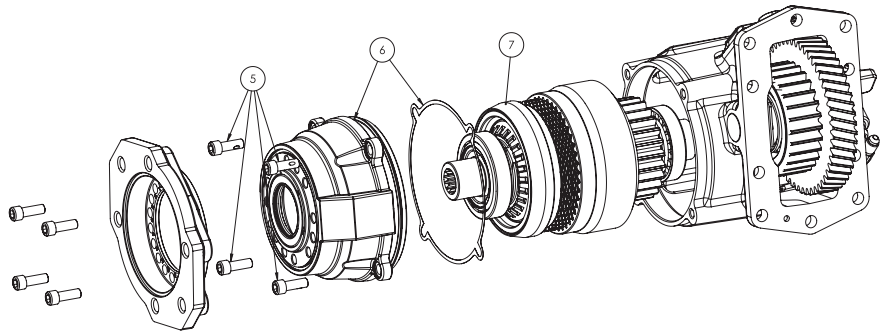


4. Remove Input Gear assembly from PTO housing. There will be one square washer on the output side of the gear. On the opposite end of the gear, there will be two Belleville springs between the gear and the square washer.

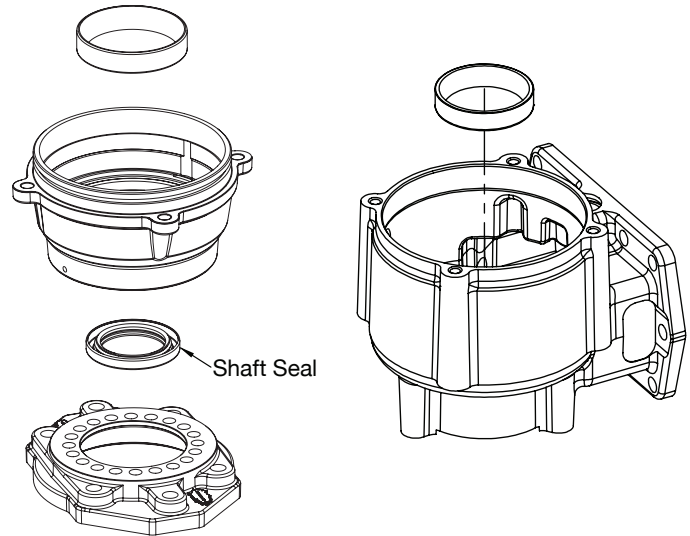


SECTION 2 – OUTPUT ASSEMBLY REMOVAL

5. Remove cap screws holding output cover to housing, using 1/4" hex key.
6. Tap cover off of housing using non marring hammer. Take note of color of shim between cover and housing.
7. Remove Output assembly from PTO housing. Take care to not damage bearing cups or cones during this step!

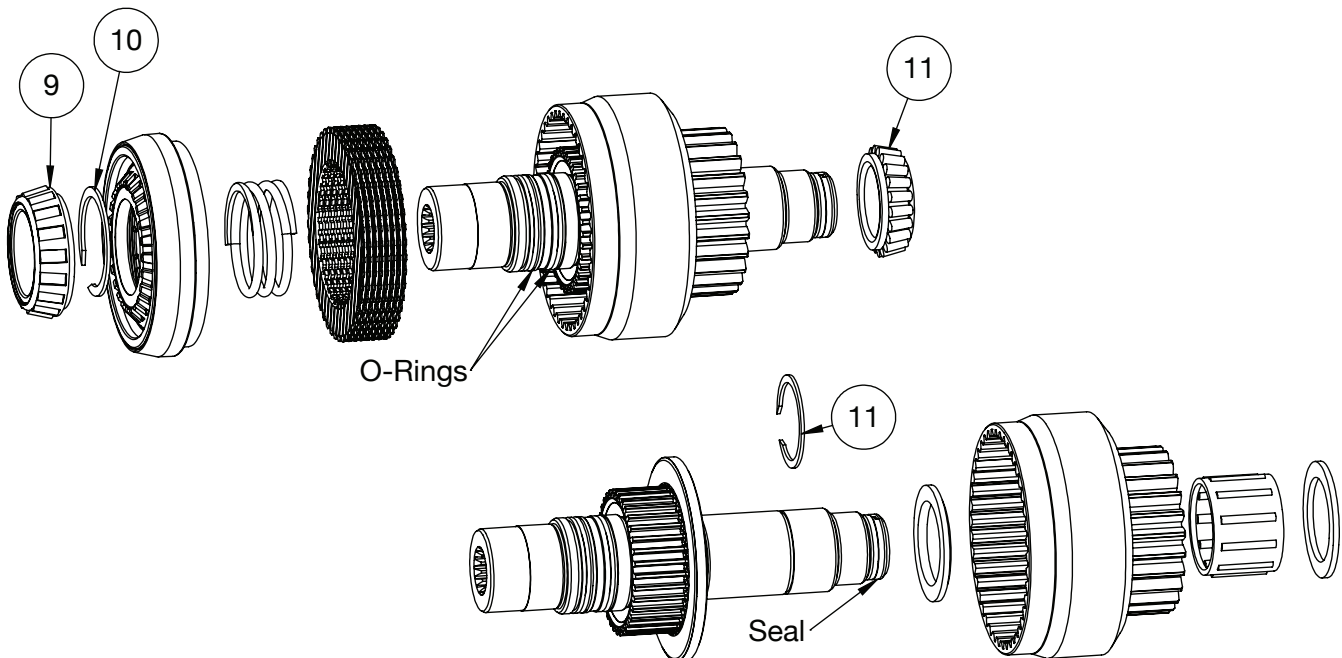


8. Remove output shaft seal. If replacing output bearings, use punch to remove bearing cups from cover and housing. If bearings are not being replaced, do not remove bearing cups.



SECTION 3 – OUTPUT AND CLUTCH DISASSEMBLY

9. Use bearing puller to remove bearing cone from output end of shaft.
10. To remove the snap ring from output side of shaft, you must compress the piston. Then remove the snap ring, allowing you to remove the piston, piston cup, clutch pack and clutch return spring from shaft.
11. If replacing bearings or output gear, use bearing puller to remove rear output bearing, then remove snap ring from back side of output gear, then remove spacers, bearing and output gear from shaft.

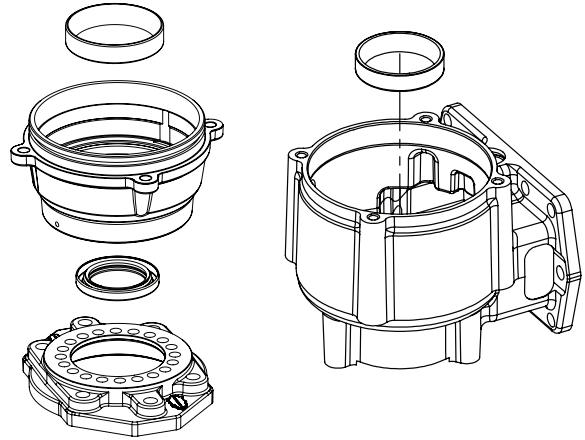


REASSEMBLY INSTRUCTIONS

If not replacing output shaft, front cover or housing, proceed to **Section 5 – PTO Reassembly.**

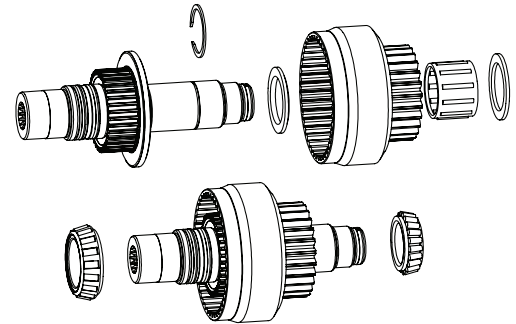
SECTION 4 – PUMP DRIVE PTOS

1. Press bearing cups into housing and front covers, using proper tool.

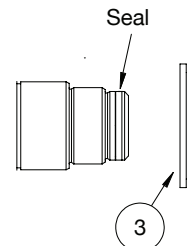


2. Reassembly is basically reverse of disassembly process.

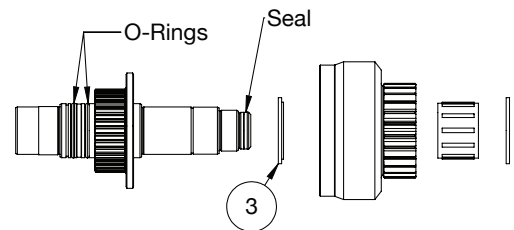
3. If output gear has been removed, reinstall on shaft. The thrust washer closest to the clutch hub has a ridge that faces towards the gear. Make sure this washer is oriented correctly during assembly.



4. Install O-Rings and seal on output shaft.

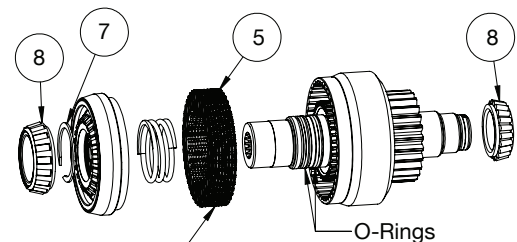


5. Install clutch discs. The rebuild kit includes 8 friction discs and 7 spacer discs. There should be a friction disc on both ends once installed.



6. Replace O-Ring on clutch piston.

7. Install piston return spring, piston and piston cup onto shaft, then install snap ring. It will be necessary to compress and clamp the piston in place in order for snap ring groove to become accessible.

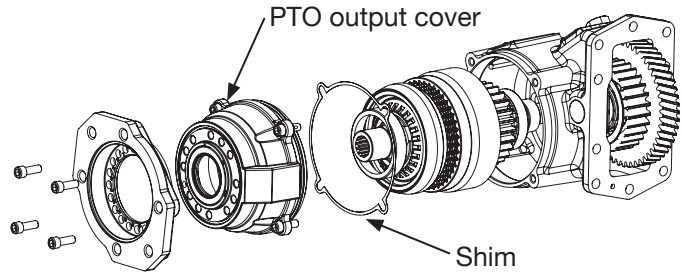


8. Install bearings onto shaft. Be careful to not damage bearings during installation. **Use only the proper tools to install bearings! Bearings must be fully seated to ensure proper function and life!**

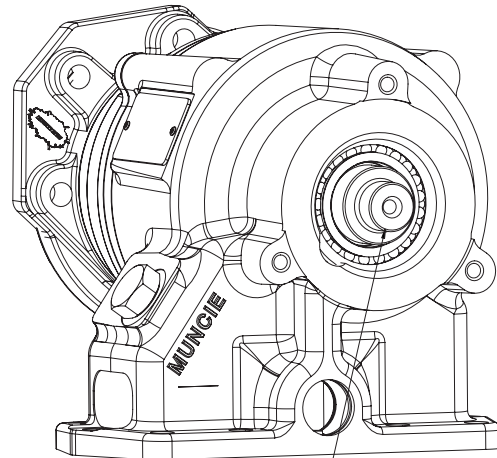
Clutch pack starts and ends with friction disc

SECTION 4 – PUMP DRIVE PTOS CONTINUED

9. Select shim from kit that has same color as one removed from PTO (or Orange + White shims if not known), and place on PTO output cover. Tap output cover into place on PTO housing. Once cover is in place, install the 4 cap screws, and torque to **5 ft.lbs.** Align the shaft vertically and rotate the shaft at least 5 rotations to fully seat the lower bearing.



10. Measure end play of shaft. Adjust as necessary until end play is set between 0.003" - 0.007". Note which shims result in proper end play measurement.

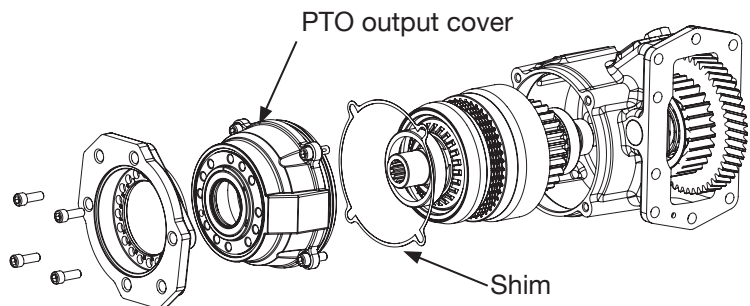


Measure shaft end play here
Set to 0.003" to 0.007"

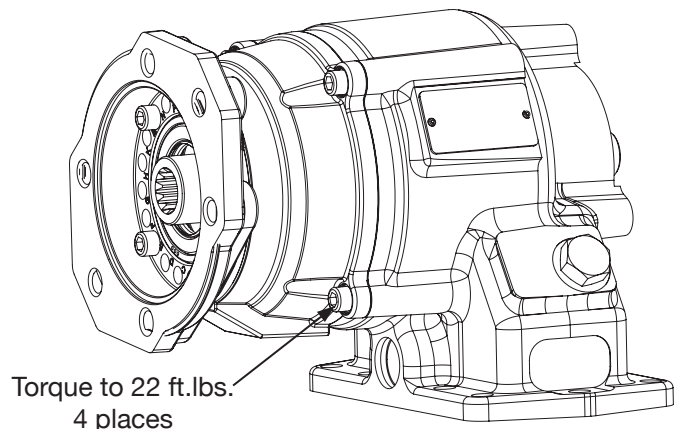
11. Install output shaft seal in cover. If PTO is wet spline model, do not install shaft seal.

12. Install O-Ring on O.D. of output cover.

13. Place shim on O.D. of output cover.
Be sure to use shim of same color as was on unit prior to disassembly, or the shims determined from Section 4 – Shim Selection.



14. Install output shaft subassembly and cover onto housing. **Torque cap screws holding output cover to 22 ft.lbs.**

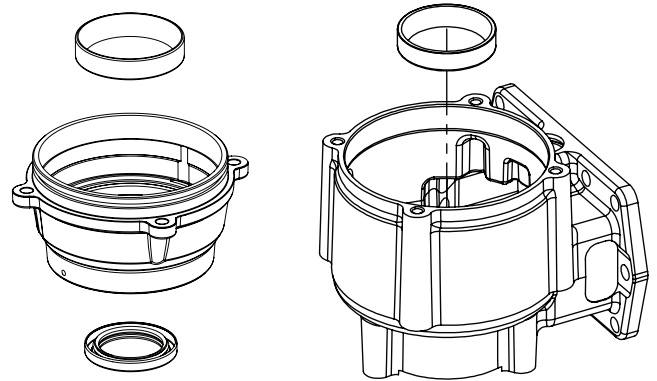


REASSEMBLY INSTRUCTIONS

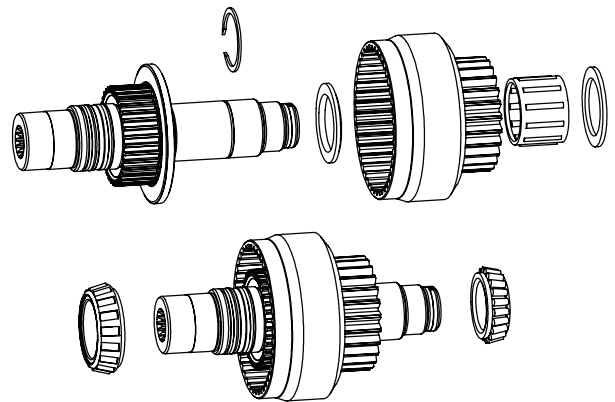
If not replacing output shaft, front cover or housing, proceed to **Section 5 – PTO Reassembly**.

SECTION 4 – COMPANION FLANGE & KEYED SHAFTS

1. Press bearing cups into housing and front covers, using proper tool.

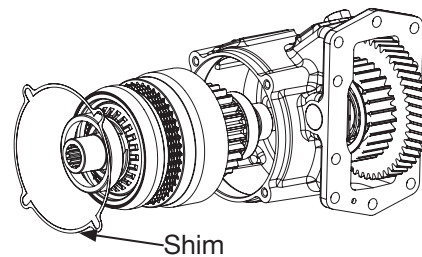


2. Install PTO output gear into shaft (reverse of Disassembly Step 10).

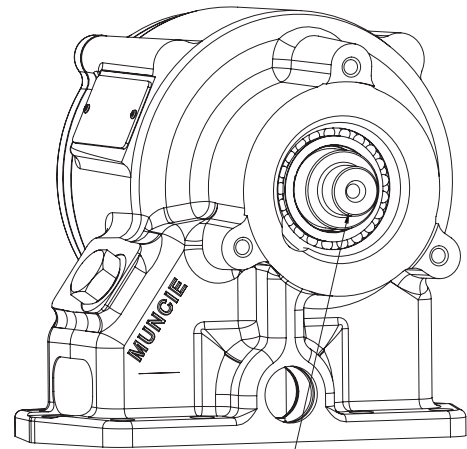


3. Press bearing cones onto shaft.

4. Select shim from kit that has same color as one removed from PTO (or Orange + White shims if not known), and place on PTO output cover. Tap output cover into place on PTO housing. Once cover is in place, install the 4 cap screws, and torque to **5 ft.lbs.** Align the shaft vertically and rotate the shaft at least 5 rotations to fully seat the lower bearing.



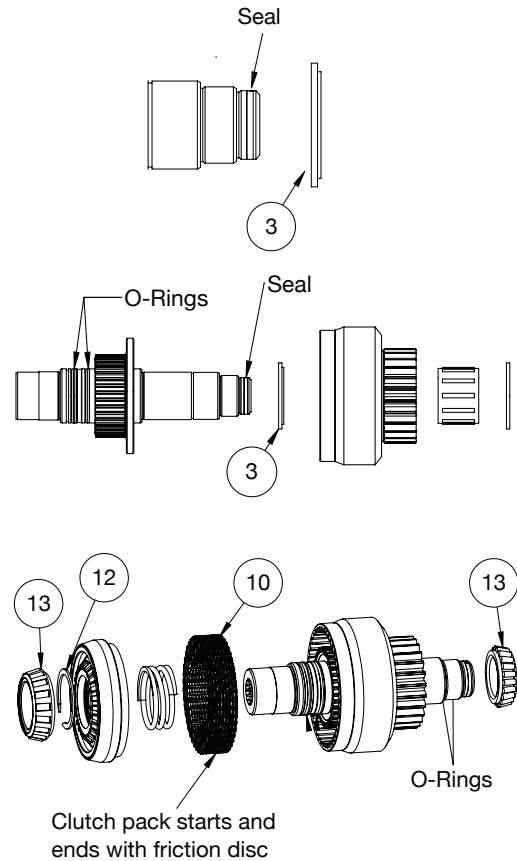
5. Measure end play of shaft. Adjust as necessary until end play is set between 0.003" - 0.007". Note which shims result in proper end play measurement.
6. Once shim selection has been made, remove front output bearing from shaft using bearing puller. Proceed to **Section 2 – PTO Reassembly**.



Measure shaft end play here
Set to 0.003" to 0.007"

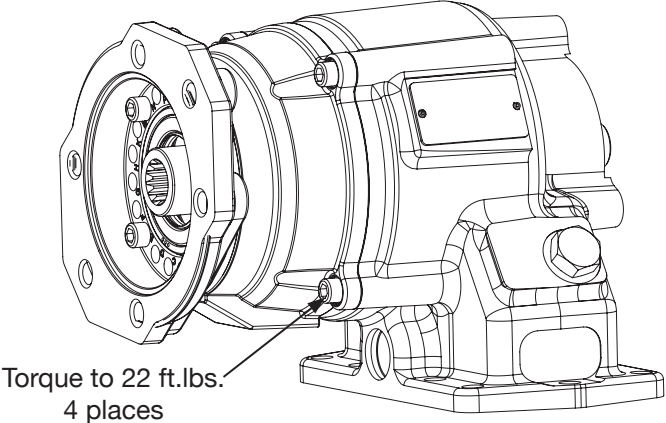
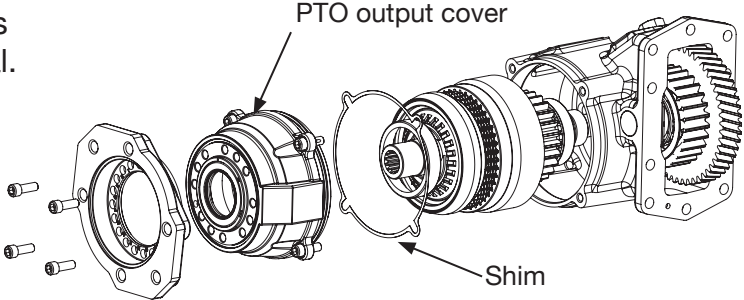
SECTION 4 – COMPANION FLANGE & KEYED SHAFTS CONTINUED

7. Reassembly is basically reverse of disassembly process.
8. If output gear has been removed, reinstall on shaft. The thrust washer closest to the clutch hub has a ridge that faces towards the gear. Make sure this washer is oriented correctly during assembly.
9. Install O-Rings and seal on output shaft.
10. Install clutch discs. The rebuild kit includes 8 friction discs and 7 spacer discs. There should be a friction disc on both ends once installed.
11. Replace O-Ring on clutch piston.
12. Install piston return spring, piston and piston cup onto shaft, then install snap ring. It will be necessary to compress and clamp the piston in place in order for snap ring groove to become accessible.
13. Install bearings onto shaft. Be careful to not damage bearings during installation. **Use only the proper tools to install bearings! Bearings must be fully seated to ensure proper function and life!**



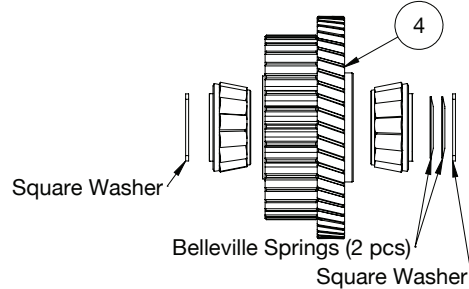
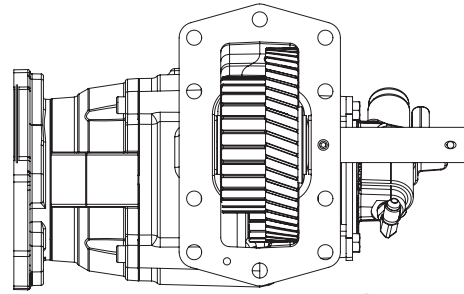
SECTION 4 – COMPANION FLANGE & KEYED SHAFTS CONTINUED

- 14. Install output shaft seal in cover. If PTO is wet spline model, do not install shaft seal.
- 15. Install O-Ring on O.D. of output cover.
- 16. Place shim on O.D. of output cover.
Be sure to use shim of same color as was on unit prior to disassembly, or the shims determined from Section 4 – Shim Selection.
- 17. Install output shaft subassembly and cover onto housing. **Torque cap screws holding output cover to 22 ft.lbs.**



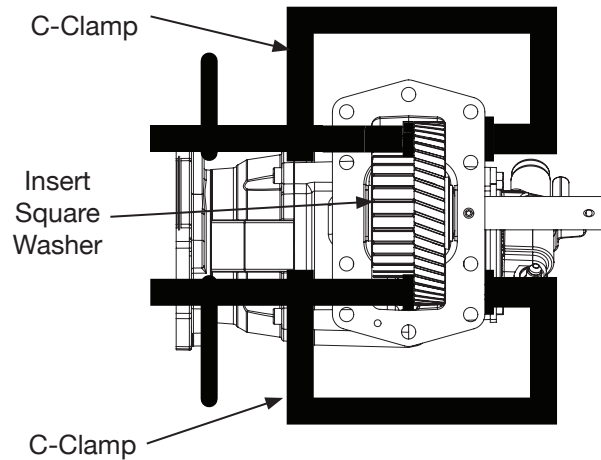
SECTION 5 – INPUT GEAR BEARING INSTALLATION

18. Place bearings in input gear, then insert into housing along with Belleville springs and rear side square washer.
19. Align input assembly with hole for idler shaft. Once aligned, insert idler shaft until it is in both bearings. **DO NOT INSERT ALL THE WAY!** There must be room for the output side square washer to be installed.

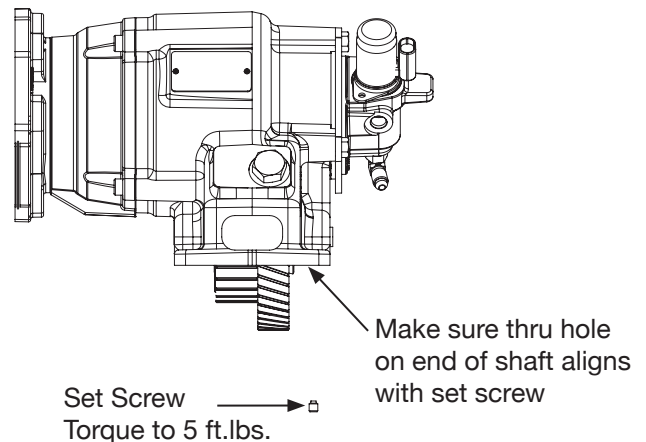


Belleville Spring Installation

20. Place two C-Clamps on the input gear and housing. Then tighten to compress the Belleville washers. Only compress far enough to get the output side square washer started, then tap the washer gently into place. Once the washer is in position insert idler shaft the rest of the way, and remove C-Clamps. **TAKE CARE TO NOT DAMAGE INPUT GEAR DURING WASHER INSTALLATION.**



21. Install set screw. **Torque to 5 ft.lbs.**



NOTES



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