

JF011E-PTK (Pulley Tool Kit)



Belt Capture & Direction

Before attempting to remove the Belt & Pulleys, you must wire tie the belt to prevent the 2 segment straps from sliding off either side of the belt. If you don't, the results will be hundreds of little pieces everywhere.

Four ties evenly spaced should keep you out of trouble.

After the Belt & Pulleys are **reassembled** to the case cover, you can safely cut the wire ties and remove them.

THIS IS A DIRECTIONAL BELT!

Make sure to re-install the belt in the same direction as it was removed!

Hand rinse the belt if re-using and soak in approved CVT fluid before re-installing.

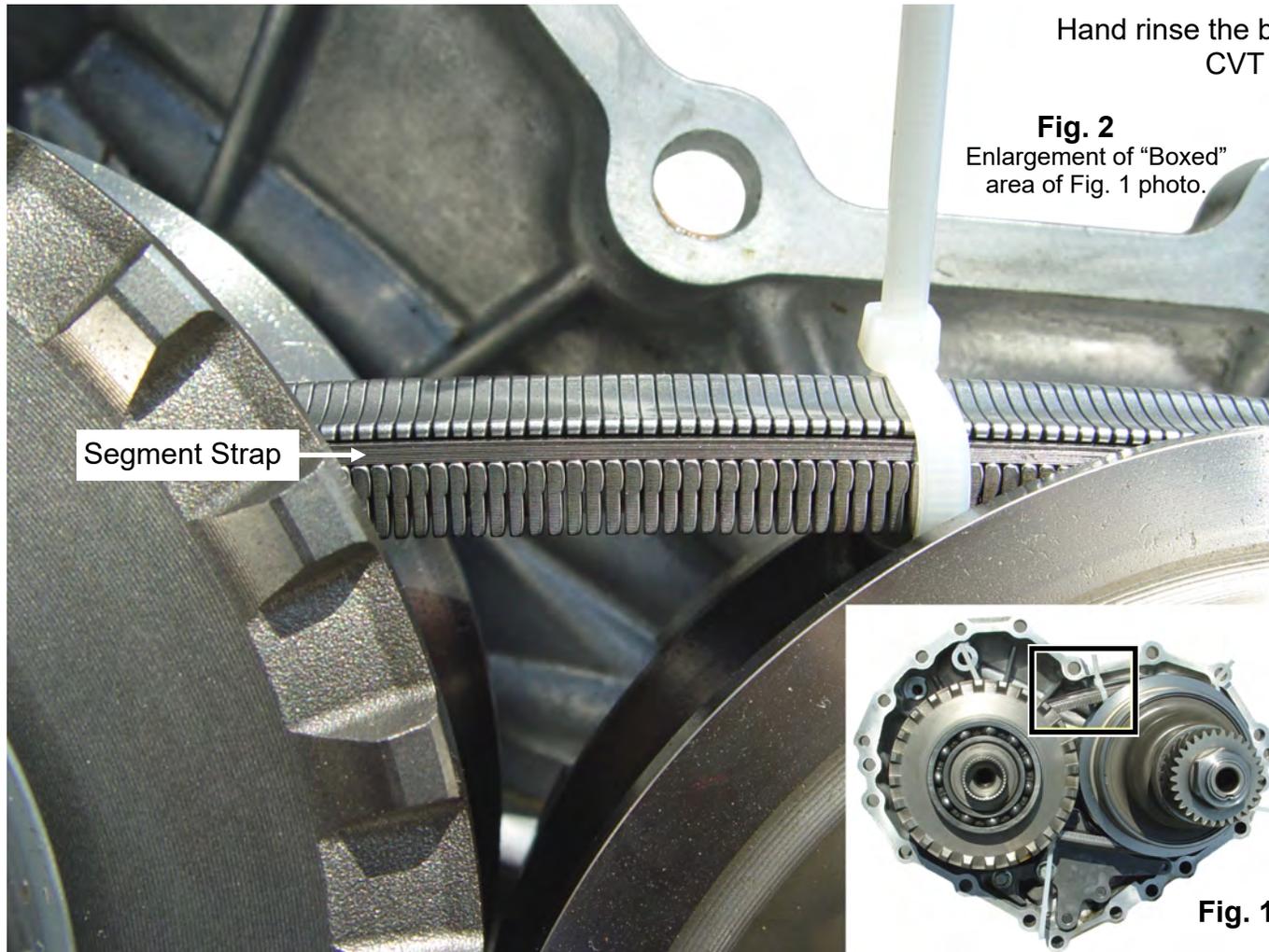


Fig. 2
Enlargement of "Boxed" area of Fig. 1 photo.

Use great care to ensure you return the belt facing the same direction as it came off the pulleys originally.



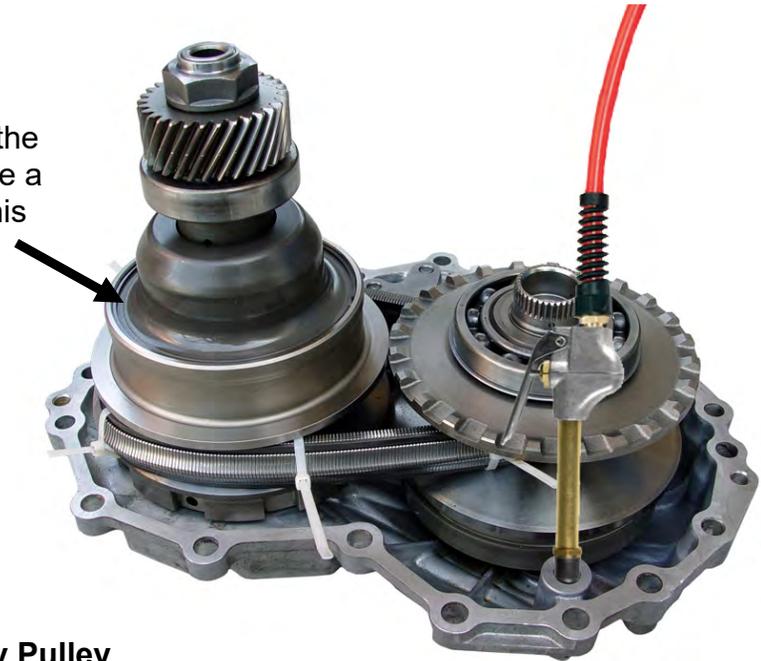
Belt segments will face to the right when viewing the boxed area of lower corner photo.

← Rotate trans as shown in Fig. 1 and view the enlarged "boxed" area in Fig. 2.

Fig. 1

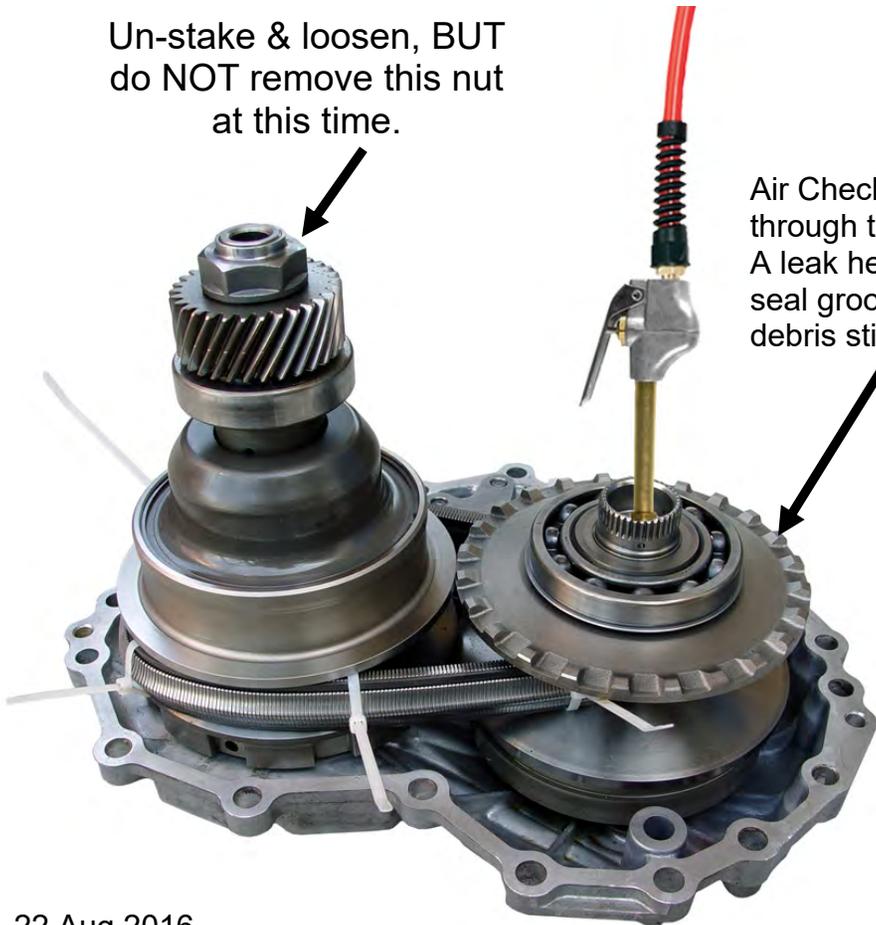
Air Checking Pulley Control Pistons

Air Check the **Secondary Pulley** through the hole in the case as shown. If a noticeable leak is found it could be a damaged drum due to stuck pump valve. Watch for this during teardown and inspection.



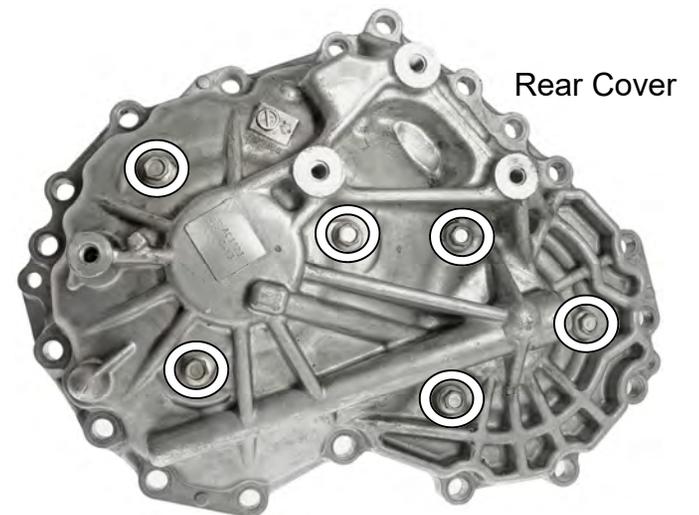
Un-stake & loosen, BUT do NOT remove this nut at this time.

Air Check the **Primary Pulley** through the center of the shaft. A leak here is usually the piston seal groove packed with fine debris sticking the piston ring.



After completing air checks, remove these 6 bolts before starting belt removal process.

Upon re-assembly do this air check again. Remember you will have used assembly gel to hold the rings in, so it may not air check so well with out some trans fluid squirted into the holes.



Releasing Belt Tension

Use the new Strap Clamp (included) to securely hold the outside diameter of the Secondary Pulley while pulling the sheave upward against the return spring. This unloads the tension on the belt and allows you to remove the secondary Pulley from the rear transmission cover.

Make sure puller is secure to Strap Clamp before attempting to lift, move or separate pulleys & belt.

Keep fingers away from belt area!

Strap Clamp Tools Provided

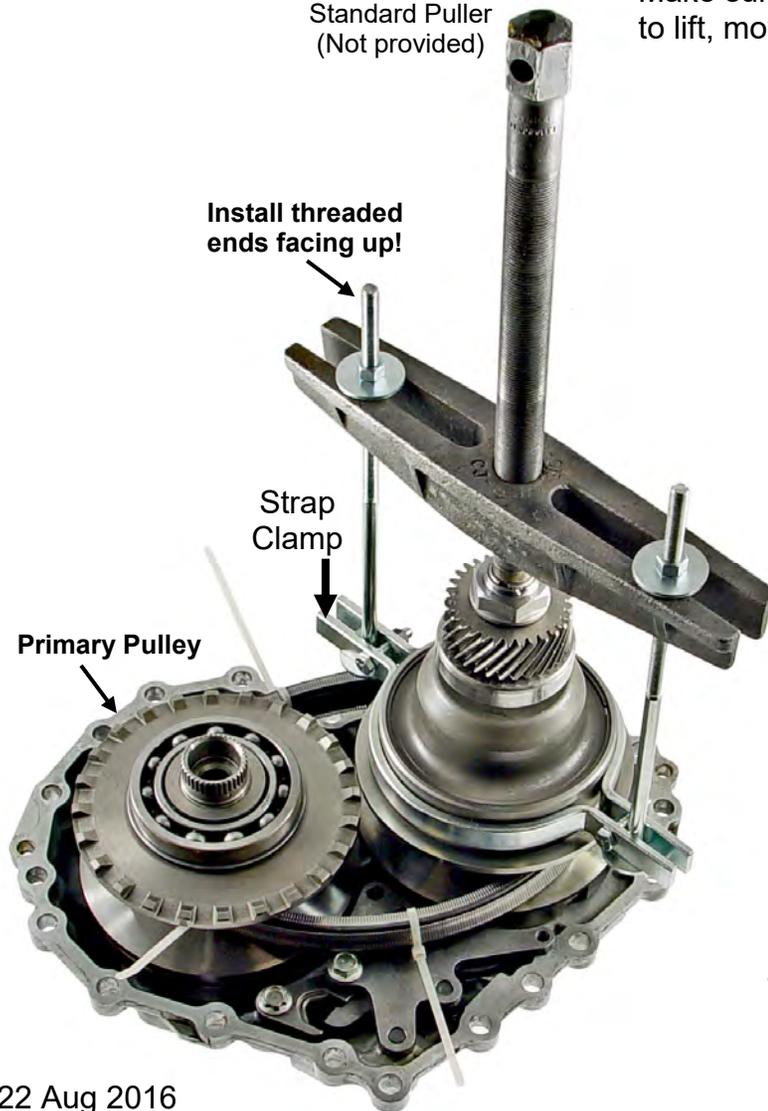


Standard Puller
(Not provided)

Install threaded
ends facing up!

Strap
Clamp

Primary Pulley

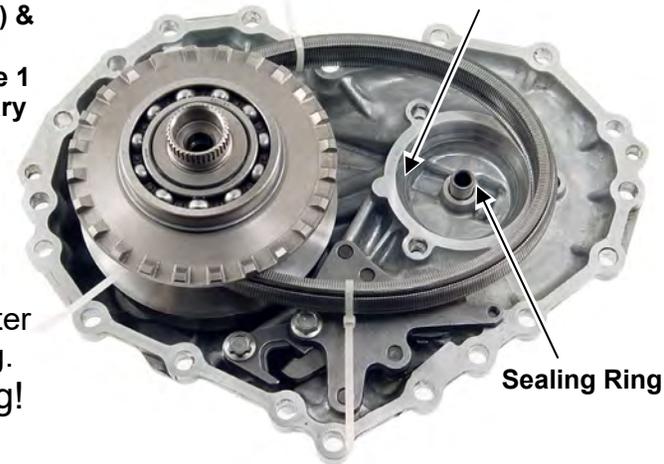


Note any
Bearing Shim(s) &
Locations!
Most units have 1
under secondary
pulley

Use this same procedure
for **re-installing** pulley after
disassembly and cleaning.
Don't skip the cleaning!

Bearing Shim

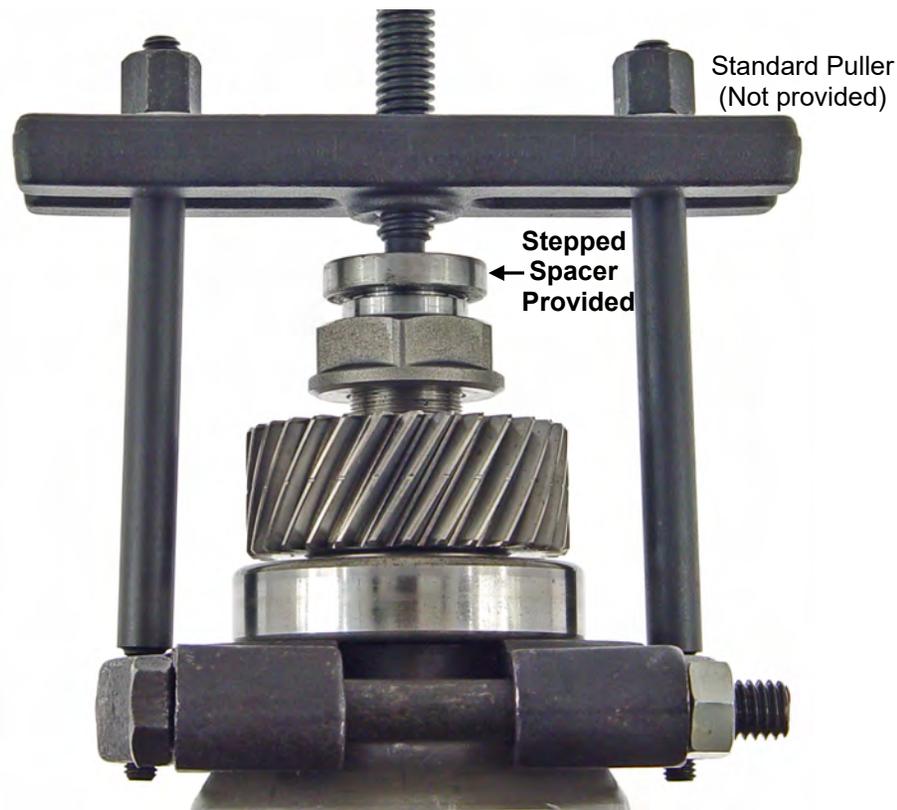
Sealing Ring



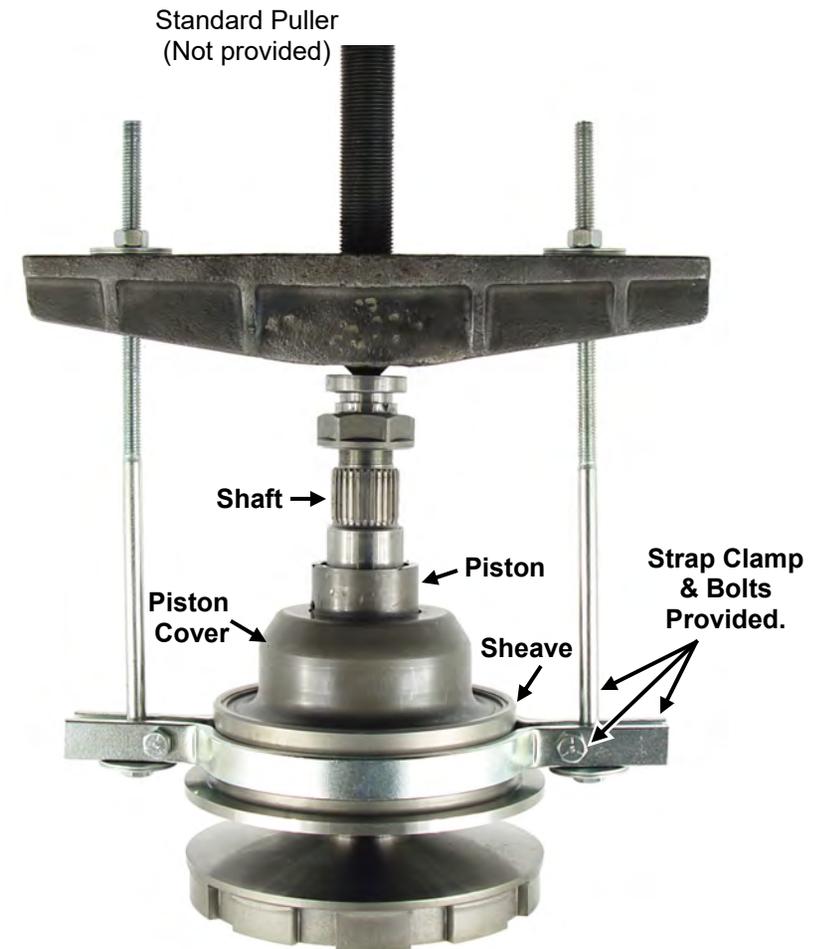
Helpful Tip: After releasing tension on belt, lift the secondary pulley & puller straight up out of bearing pocket and slide it into the belt area of the primary pulley to overlap the pulleys. The belt will now fall outside the secondary pulley. Tilt secondary pulley assembly toward the primary pulley to lift secondary out of the belt and off the rear case cover onto the bench. Remove the puller & Strap Clamp.

Secondary Pulley Disassembly

Remove the bearing and gear together with a Bearing Separator. (Not provided) Enclosed is a stepped spacer you can use with either a press or the tools shown to keep from damaging the shaft or nut. You will have to loosen the tool and back the nut off more to completely remove the parts. Its your choice on how you do it but it's best to apply all the force through the stepped spacer directly to the nose of the shaft until the heaviest part of the pressing is done.



Flat side of Bearing Separator must be under the exposed lip of inner bearing race.



After the bearing & gear is removed, re-install the nut, the stepped spacer and then the strap clamp to pull the piston & sheave off the shaft. The nut will keep the parts from flying once the piston "POPS" loose from the shaft.

WHEN removing the sheave off the shaft, (12) 6mm balls will **scatter** in all directions. **Tip:** Use three or four clean shop towels and surround the assembly to catch them as they try to make their escape.

Secondary Pulley Disassembly



Use a foot press to press down on the piston cover enough to release the pressure off the snap ring holding the cover on. The piston cover should come out of the sheave as you release the pressure on the cover.

Cover stuck? Tap the **Bell area** of the piston cover gently with a light hammer and it will pop loose.
The picture shows how far out of the sheave the piston will be when the spring is fully relaxed.

Be careful with the sealing ring on the piston or you'll have to scrounge around through some used parts to get another.

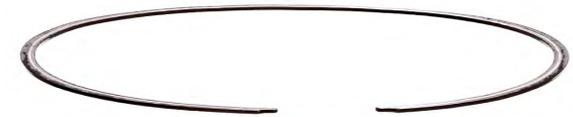
Check ALL the Bearings!

Don't skip this! Clean & Oil **ALL** Bearings first.
Feel for any roughness.

Roughness = Noisy operation!

Most bearings are available from suppliers or on-line. **Pay attention** to which way the bearing **retainer faced** if replacing bearings.

Bell Area of
Piston Cover



Piston
Cover



Secondary
Piston position
with spring
relaxed.

Pulley
Sheave

Note: Don't try reversing this order to re-install the snap-ring after cleaning. You will use a different procedure to re-install the snap ring later.

Typical Exploded View of Secondary Shaft Assembly.

Use extra care cleaning the sealing ring & groove on the piston as well as the inside bottom of the drum. Any left over "mud" will re-stick the sealing ring and cause a malfunction.

The ring **MUST** be free in order to pass an air check on the bench. If it does, you'll know it will work in the car.

Inspect the 3 ball grooves on the shaft and drum as well. We provide replacement high quality balls but save the old ones just in case one gets away from you.



Verify Sealing Ring Overlap



Step Side of Gear Faces Washer

Step

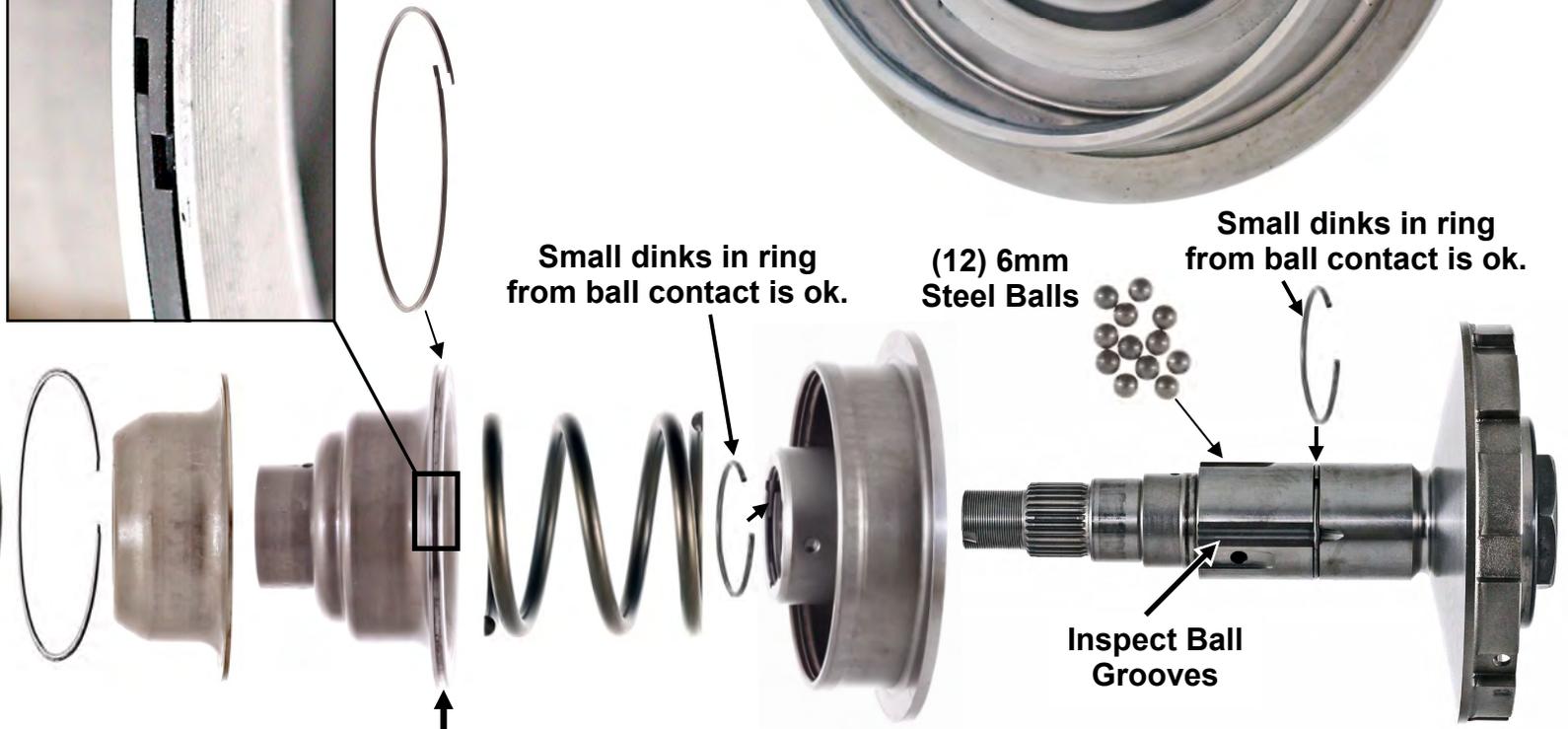


Small dinks in ring from ball contact is ok.

(12) 6mm Steel Balls

Small dinks in ring from ball contact is ok.

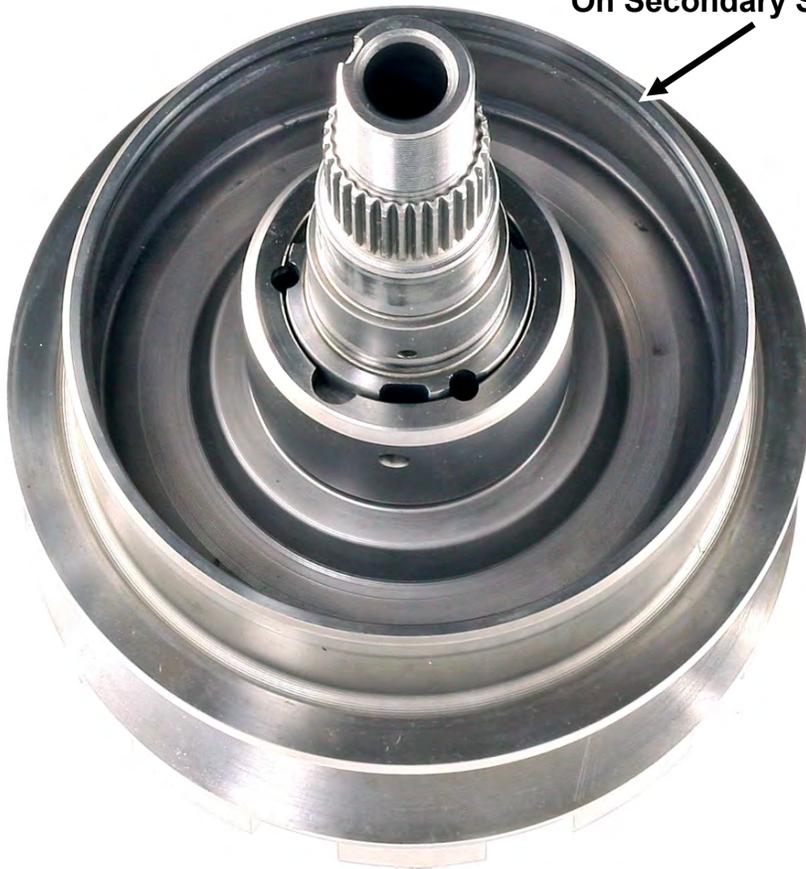
Inspect Ball Grooves



Clean Sealing Ring Groove!

Re-Installing Pulley Sheave onto Secondary Shaft Assembly.

Pulley Sheave installed
On Secondary Shaft



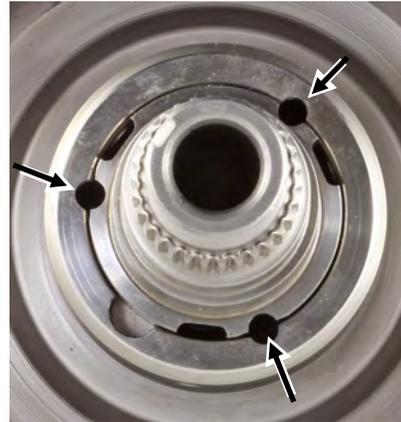
Lubricate the Secondary Shaft & Ball grooves with approved CVT fluid. Align the Pulley Sheave carefully until it will slide down the shaft.

DO NOT USE ANY FORCE!

With the grooves lined up as shown at right, insert (4) 6mm steel balls into each groove. New **high quality** replacements are provided.

Secondary Pulley assembly takes 12 balls total.

Line up Ball Grooves



Line up hump in snap-ring with half-moon groove in Sheave. Seat the Round Snap Ring in Groove so sheave will slide down the shaft.



Line up Hump on snap-ring to half-moon groove in sheave.

Install 4 Balls into each of the three grooves. (12 Balls Total)



It may be necessary to push each ball into the groove with some light pressure. Do not use a hammer! A little pressure and wiggling of the sheave and they will go right in.

After 12 balls have been inserted into the grooves, **lift** gently up on the pulley sheave **just enough** to install the round snap-ring into the snap-ring groove. Make sure the HUMP in the snap-ring **faces up** at you and lines up with the half-moon groove in the pulley. After snap-ring is fully seated it should NOT stop the pulley from sliding downward on the shaft! Snap-ring only holds balls in place.

Don't lift the sheave upward too far or it will scatter the balls again!
(Bearing installed prevents over-travel!)

Re-assembling Secondary Piston Assembly

To re-assemble, install the return spring, the piston (with sealing ring flipped over) and the piston cover.

Press the **inner race onto the shaft** while guiding piston entering the sheave to avoid any sealing ring damage when inner race bottoms on shaft. Install the bearing, spacer, the gear (stepped side toward piston) and nut. Torque the nut to 185 ft-lbs and re-stake. Lay snap-ring on Piston Cover.

Re-install strap clamp and pull sheave upward while guiding the piston into the sheave until the piston & cover are just below the snap-ring groove in the sheave. Tap on piston cover if necessary. Install the Piston Cover snap ring & it's ready to install.

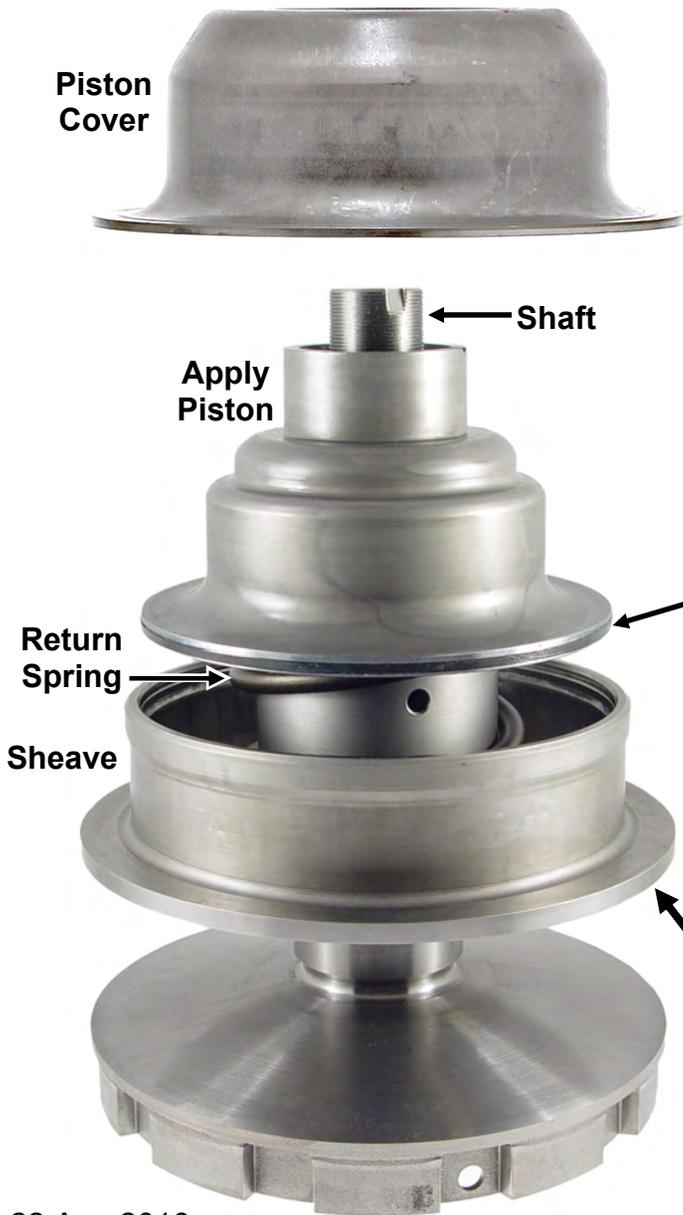
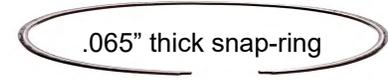
Note: You may need to tighten puller more to give extra clearance for the belt during final reassembly.



ALWAYS Flip the original ring over before installing it back onto piston. This will allow the "unused" side to seal perfectly! Flipping the ring over and a good cleaning is all that is needed! Use assembly gel in 4 to 5 places to evenly hold the sealing ring into groove. Cold parts & cold gel work best. Make sure ring is overlapped correctly.

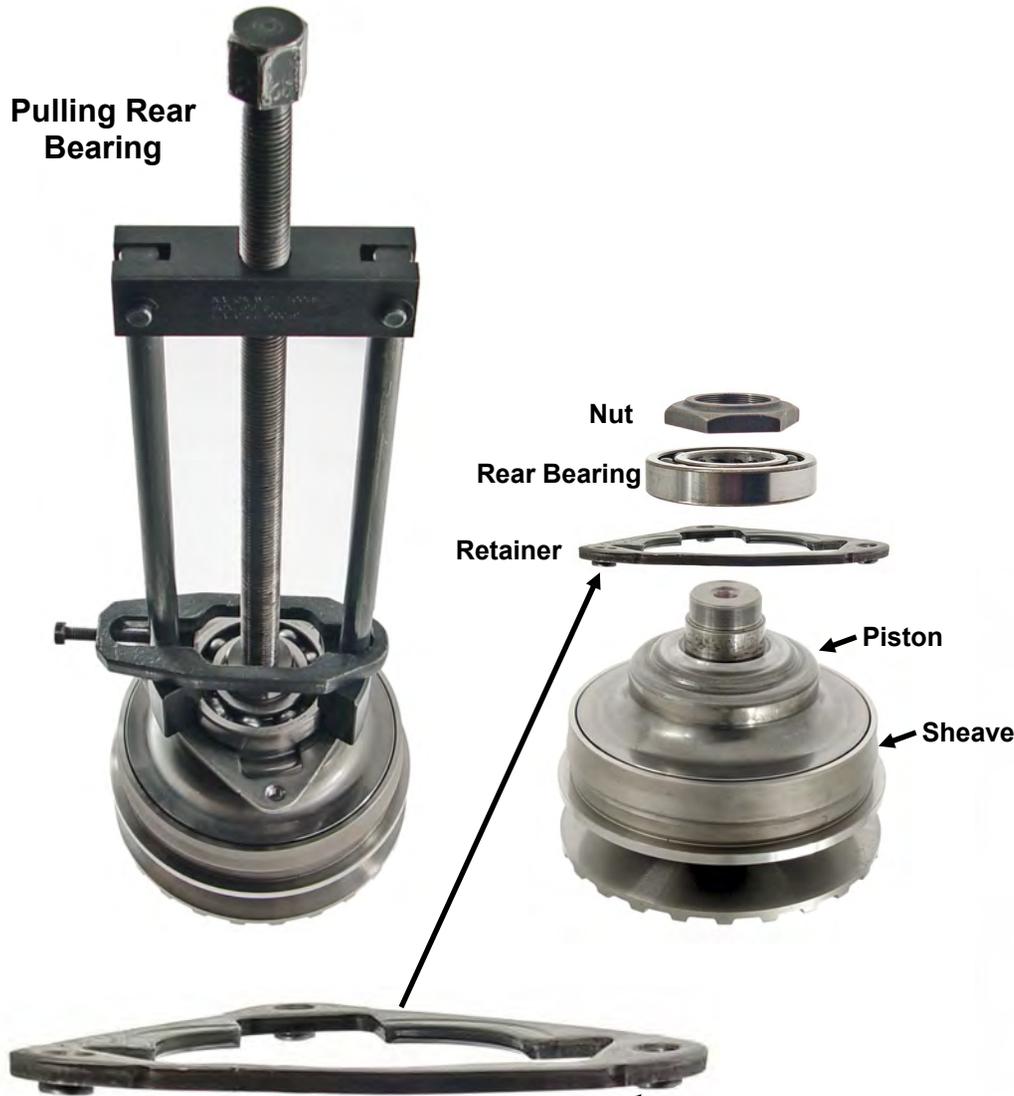
DON'T LIFT the Sheave upward until **after** the Shaft Nut is installed!

After lock-nut is torqued & staked, lay snap-ring on piston cover before strap clamp is re-installed to lift sheave up & over piston.



Primary Pulley Disassembly

Pulling Rear Bearing

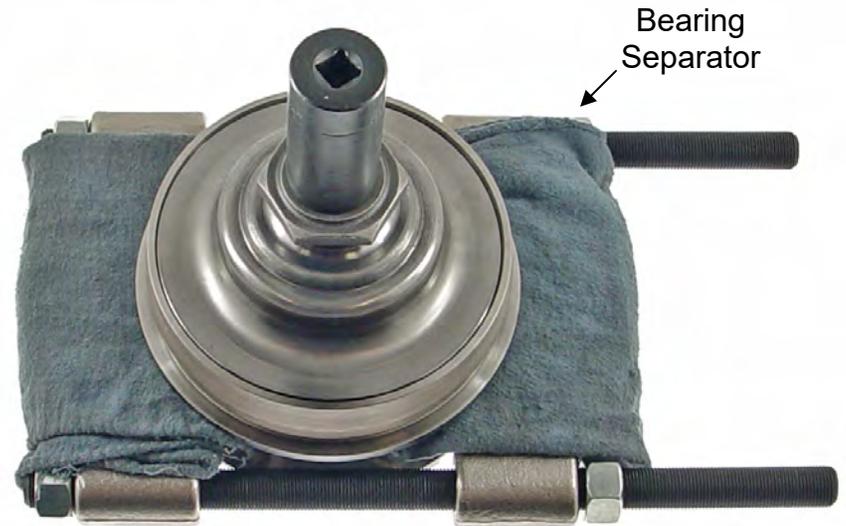


Note the retaining plate bolt holes. The flat side of the bolt holes face the case NOT the pulley. This was **opposite** of the Secondary Pulley on this model. Make a note of your bearing retainers position.

Note: During re-assembly, you'll need to "start" the bolts into each retainer before fully "seating" the parts into the case cover. Use sealant under the bolt heads before final tightening.

Disassembling the Primary Pulley requires pulling the **Rear** bearing, removing the bearing retaining plate and then hold up on the sheave while pressing the shaft through the piston to remove it from the Pulley Sheave. Put the **nut back on first** so when the piston pops loose you won't drop all the heavy parts on the floor.

There are (6) 6mm balls, (2 per groove) that will escape if you don't put something under the assembly to catch them. **New high quality** replacements are provided but save the old ones just in case a ball magically disappears.



It doesn't take much force to press the piston out but it's a good idea to protect the sheave's belt surface from the bearing separator with a couple of folded shop towels.

Primary Pulley Cleaning & Reassembly

The Primary Pulley assembly must be cleaned thoroughly. Mud caked in the Sheave will be a sure cause of rework. Inspect the ball grooves both on the shaft and on the sheave. Inspect the sealing ring for metal contamination. Inspect the snap-rings for damage. Small "dinks" are ok.

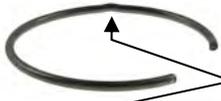


Clean sealing ring groove

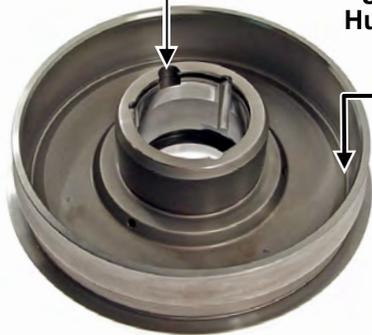


Flip the sealing ring over before installing!

Use assembly gel to hold ring into piston groove. Check ring end for correct overlap. (Same as Secondary)



Line up Hump on snap-ring to half-moon groove in sheave. Hump faces upward.



Scrape and wash mud out of Sheave

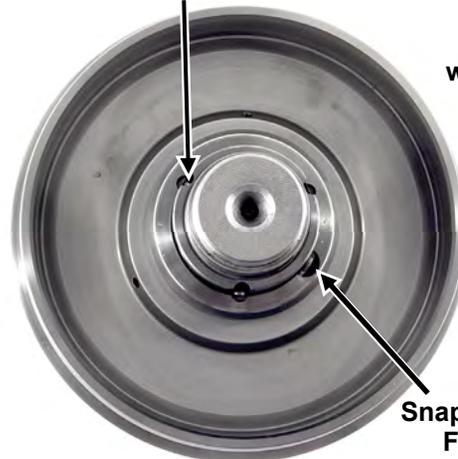


Inspect Ball Grooves on Shaft & Sheave.

When re-installing the piston, the Sheave must be raised up just enough to have the piston enter it. Coil a shop towel around the shaft between the two belt surfaces to hold the sheave upward while pressing the bearing and piston back onto the shaft.

This will keep the piston into the sheave enough to prevent the piston sealing ring from being damaged while pressing the parts back together.

Install (6) 6mm Steel Balls (2 per groove) then the snap-ring



Snap-ring Hump Faces up.

Wrap a shop towel around the Shaft under the Sheave to hold it upward while guiding the piston back in.



Don't lift the Sheave up all the way or the 6mm balls will fall out! (The bearing prevents over travel.)



Piston shown just into the Sheave.

