

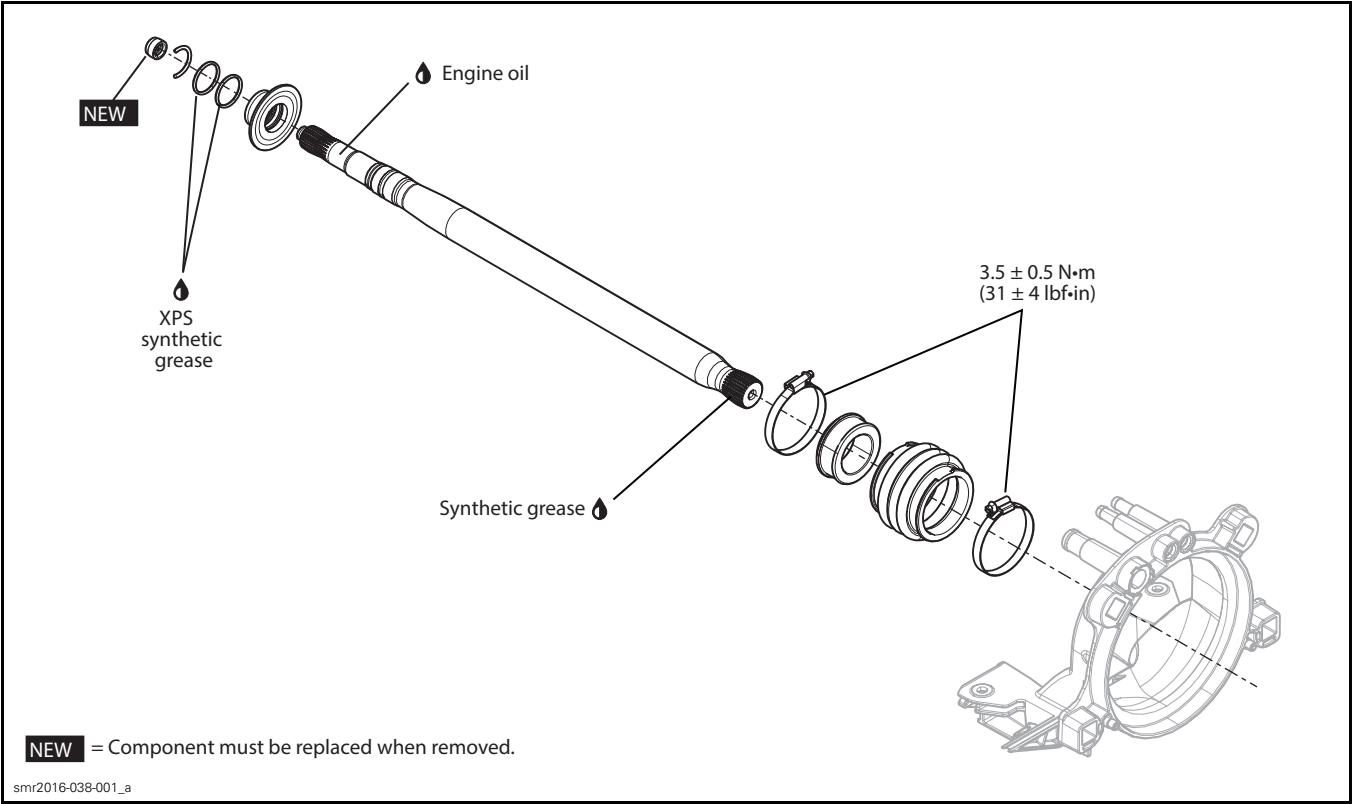
# DRIVE SHAFT (1500 SERIES)

## SERVICE TOOLS

| Description                        | Part Number       | Page |
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| FLOATING RING TOOL (TYPE II) ..... | 529 036 116 ..... | 2    |
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## SERVICE PRODUCTS

| Description                 | Part Number       | Page |
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| PULLEY FLANGE CLEANER ..... | 413 711 809 ..... | 4    |
| XPS LUBE .....              | 293 600 016 ..... | 3    |
| XPS SYNTHETIC GREASE .....  | 293 550 010 ..... | 6    |



PROCEDURES

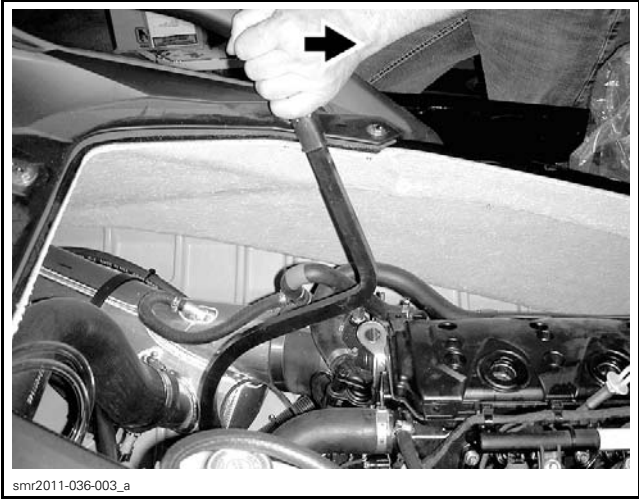
DRIVE SHAFT

Removing the Drive Shaft

Procedures

- 1. Remove or open the seat.
- 2. Lift rubber protector to expose PTO seal assembly.
- 3. Confirm the floating ring is not stuck on drive shaft as follows:

| REQUIRED TOOL                                   |
|-------------------------------------------------|
| DRIVE SHAFT C-CLIP REMOVER<br>(P/N 529 036 026) |

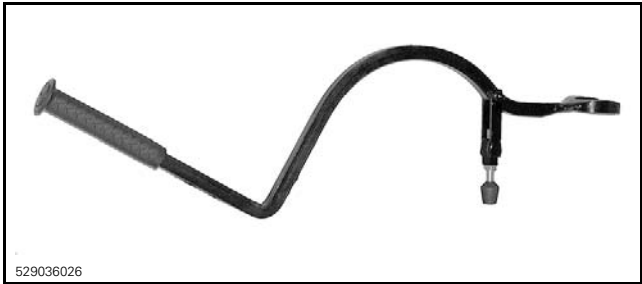


The next steps (4 to 12) should be performed only if the floating ring seems stuck or hard to move. Otherwise, go to the step 13.

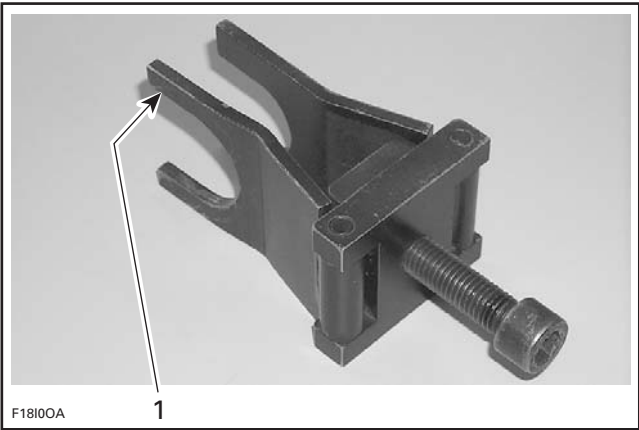
**NOTE:** Do not remove circlip at this time.

- 4. Remove the drive shaft C-clip remover.
- 5. Remove the supercharger. Refer to appropriate *SUPERCHARGER* subsection.
- 6. Install the following tool on drive shaft with its largest opening on PTO side.

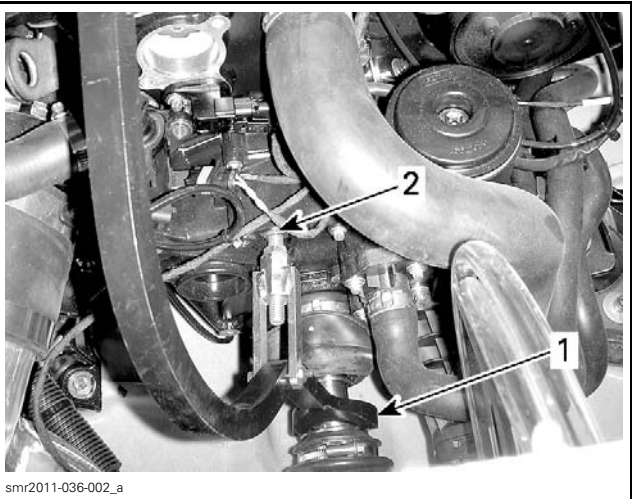
| REQUIRED TOOL                                     |
|---------------------------------------------------|
| FLOATING RING TOOL (TYPE II)<br>(P/N 529 036 116) |



- 3.1 Place the fork of drive shaft C-clip remover against floating ring.
- 3.2 Place the adjustable arm against the engine or the arm of the tool against the supercharger.

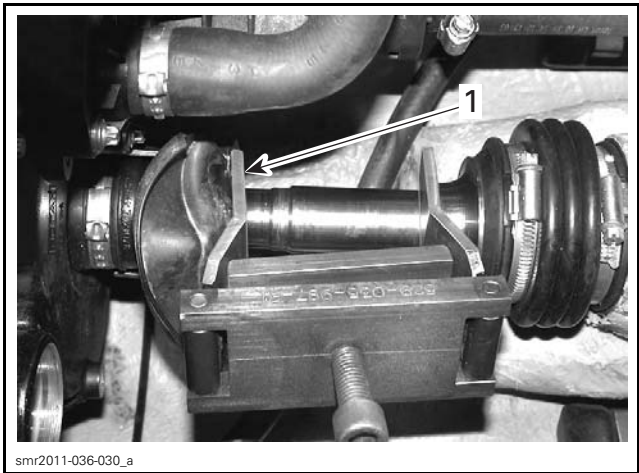


TYPICAL  
1. Largest opening on PTO seal side



1. Fork against floating ring  
2. Adjustable arm

- 3.3 Move the tool handle toward the front of vehicle to push floating ring rearward.



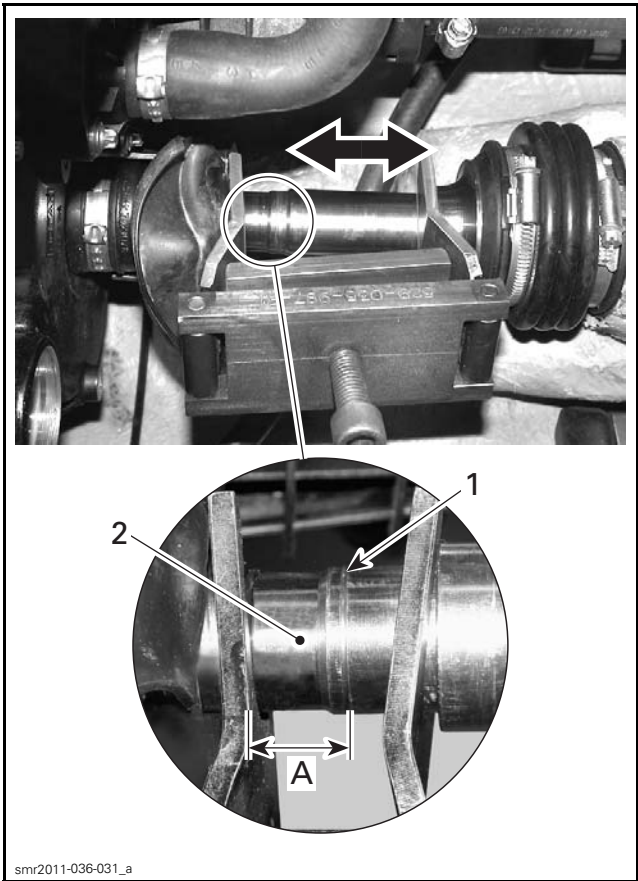
**TYPICAL**  
1. Largest opening here

7. To expose the O-ring contact area, tighten tool screw until the following gap is obtained.

| GAP BETWEEN TELLTALE GROOVE AND TOOL EDGE |
|-------------------------------------------|
| 18 mm (11/16 in)                          |

8. Lubricate O-ring contact area with XPS LUBE (P/N 293 600 016).

**NOTE:** This is necessary to ease drive shaft removal later in this procedure.



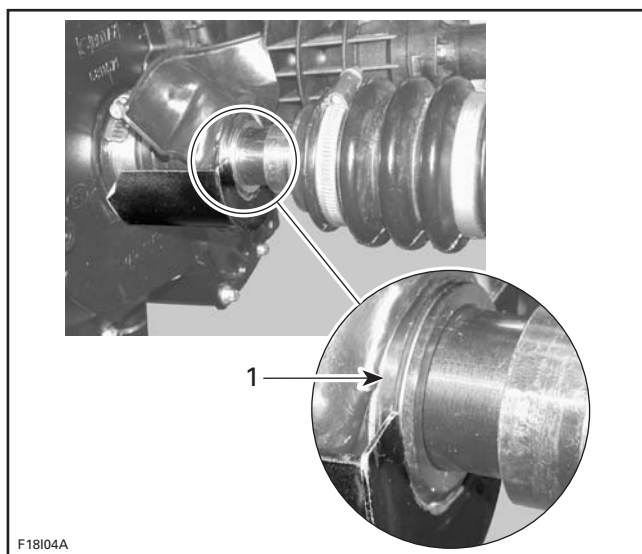
**TYPICAL**  
1. Telltale groove  
2. Lubricate this area  
A. 18 mm (11/16 in)

9. Remove the floating ring tool.  
10. Install the following tool to PTO seal assembly.

| REQUIRED TOOL                      |
|------------------------------------|
| PTO SUPPORT TOOL (P/N 529 035 842) |



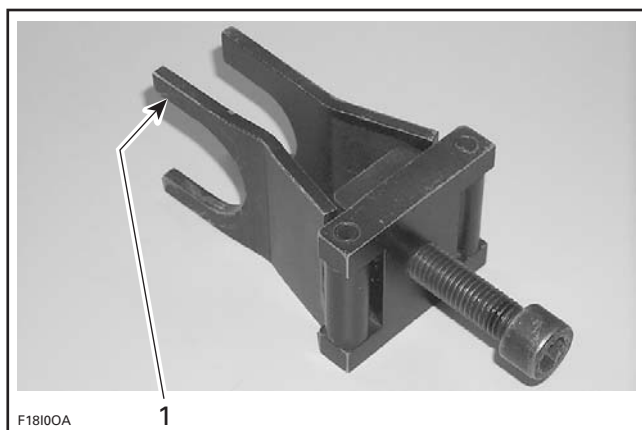
## Subsection XX (DRIVE SHAFT (1500 SERIES))



1. Insert in groove of PTO seal assembly

**NOTICE** Strictly follow this procedure otherwise damage to component might occur.

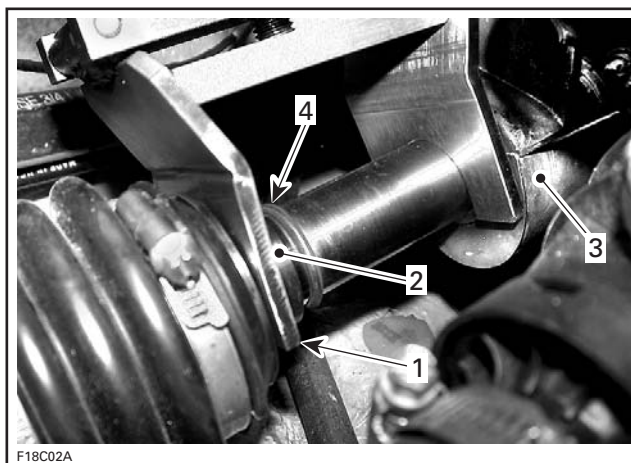
11. Reinstall the floating ring tool as shown.



**TYPICAL**  
1. Largest opening on PTO seal side

12. Tighten tool screw to push floating ring rearward and expose circlip.

13. Remove and discard circlip.



**TYPICAL**  
1. Largest opening here  
2. Floating ring  
3. PTO seal support tool  
4. Remove circlip

14. Remove the floating ring tool.

15. Place rags under PTO housing to prevent spillage. If spillage occurs, clean immediately with the PULLEY FLANGE CLEANER (P/N 413 711 809) to prevent oil stains.

16. Remove jet pump. Refer to *JET PUMP* sub-section.

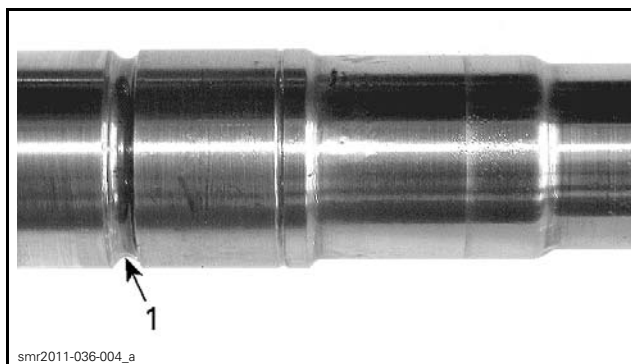
17. Remove drive shaft.

**NOTE:** A slight jerk to the rear may be required to remove the drive shaft from the PTO seal assembly.

### Inspecting the Drive Shaft

#### Drive Shaft

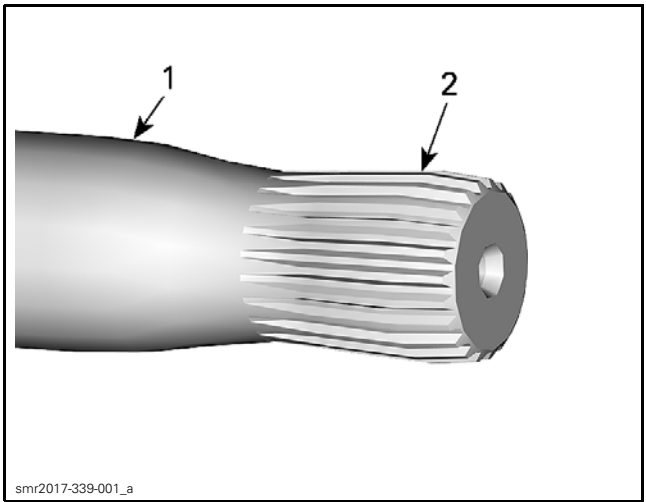
Inspect condition of circlip groove. If there is any damage or severe wear, replace drive shaft.



1. Circlip groove

Inspect condition of drive shaft splines. If splines are damaged, replace drive shaft and check splines of impeller and PTO housing.

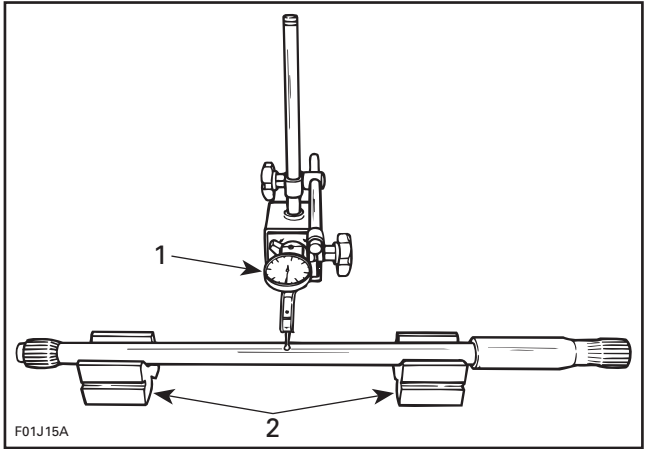
With your finger nail, feel machined surface of drive shaft. If any irregular surface is found, replace drive shaft.



**TYPICAL**  
1. Surface condition  
2. Splines condition

Place drive shaft on V-blocks and set-up a dial gauge in center of shaft. Slowly rotate shaft; difference between highest and lowest dial gauge reading is deflection. Refer to the following illustration.

**NOTE:** Excessive deflection could cause vibration and damage to drive shaft splines, impeller or floating ring.



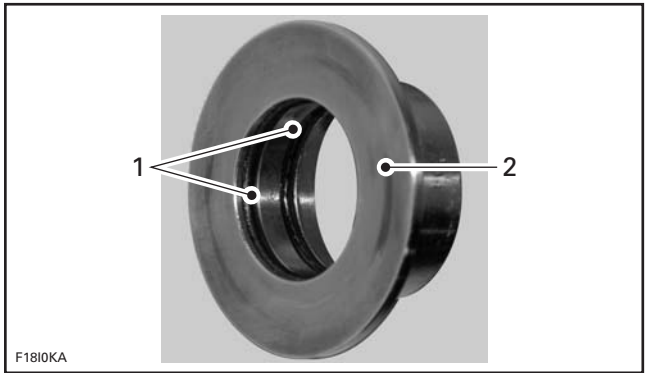
**MEASURING DRIVE SHAFT DEFLECTION**  
1. Dial gauge  
2. V-blocks

| MAXIMUM DEFLECTION |
|--------------------|
| 0.5 mm (.02 in)    |

### Floating Ring

Inspect condition of O-rings and contact surface of floating ring.

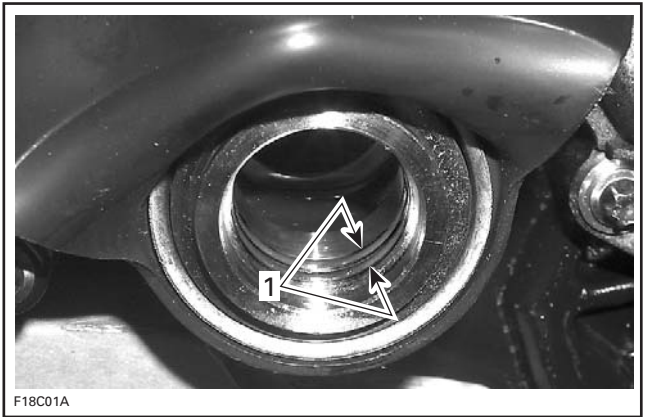
Replace as required.



1. O-rings  
2. Contact surface

### Installing the Drive Shaft

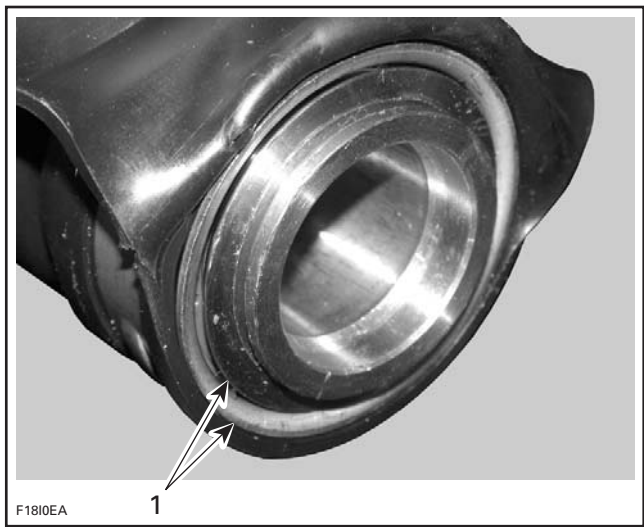
Before installing drive shaft, discard both O-rings inside PTO seal and install **NEW** ones.



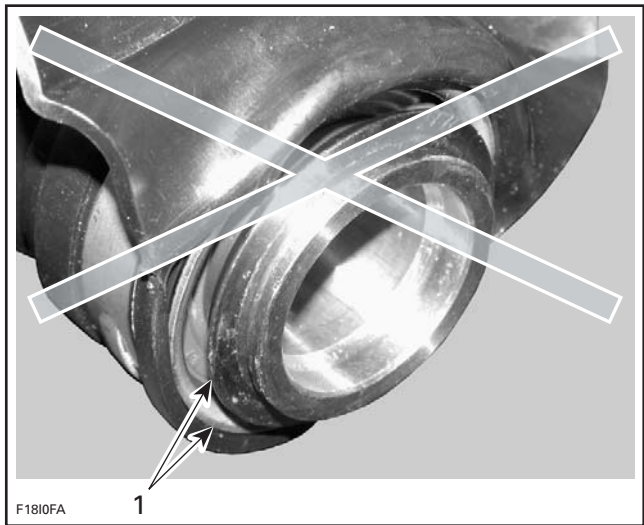
1. O-rings

Inspect PTO seal assembly. The inner sleeve must be flush with outer circumference of the assembly. Otherwise, gently push or tap on inner sleeve until flush.

Subsection XX (DRIVE SHAFT (1500 SERIES))

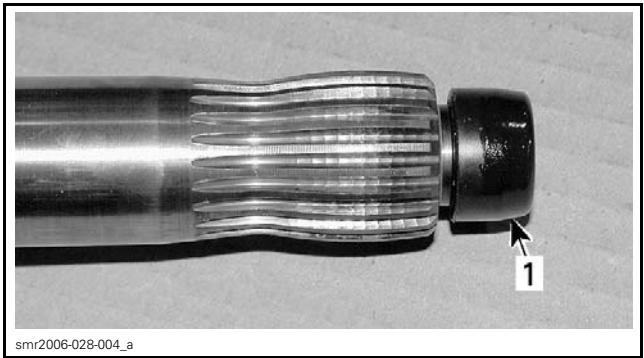


**CORRECT POSITION**  
1. Inner sleeve flush with outer circumference



**INCORRECT POSITION**  
1. Inner sleeve not flush with outer circumference

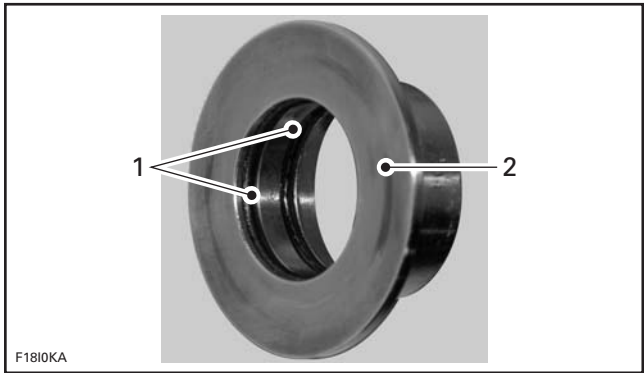
Remove the damper at the end of drive shaft and replace it with a **NEW** one.



1. Damper

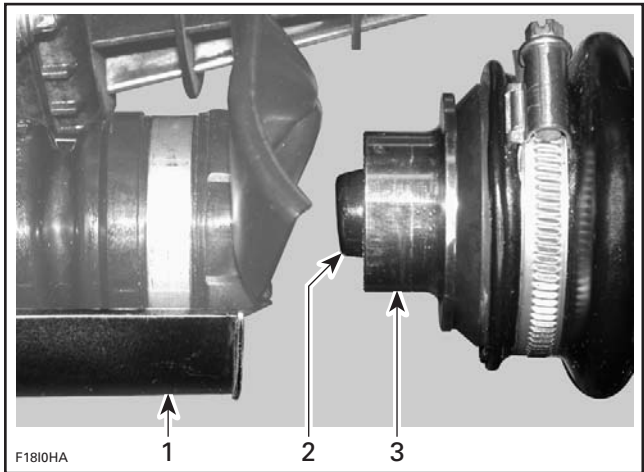
Install the PTO SUPPORT TOOL (P/N 529 035 842) on PTO seal assembly.

Apply a thin coat of XPS SYNTHETIC GREASE (P/N 293 550 010) on the floating ring O-rings. Do not get grease on floating ring contact surface.



1. XP-S synthetic grease on O-rings  
2. No lubrication on contact surface

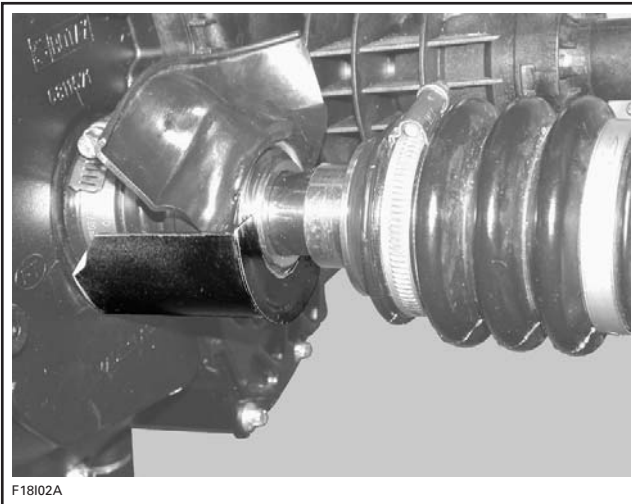
Slide drive shaft far enough to install floating ring.



1. PTO seal support  
2. Drive shaft end  
3. Insert floating ring on shaft end

Continue pushing drive shaft towards engine carefully guiding it in the PTO seal then in crankshaft splines. It may be necessary to move PTO seal assembly up and down to position it in the same axis as the drive shaft.

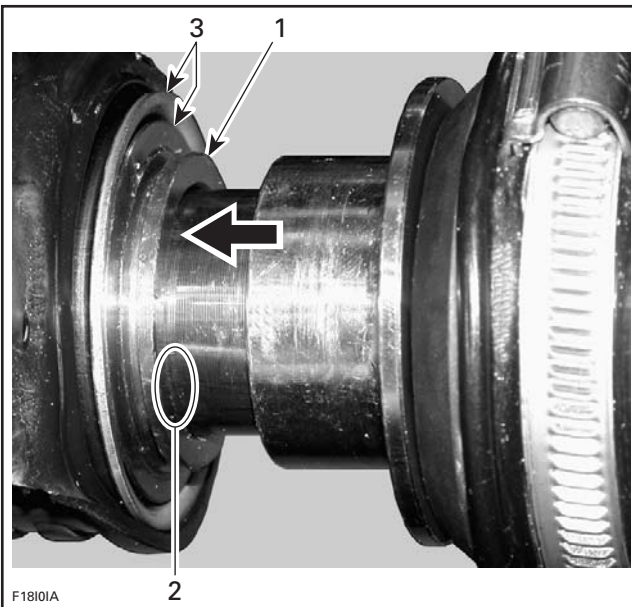
**NOTE:** If drive shaft does not enter into the PTO seal, check engine alignment.



TYPICAL

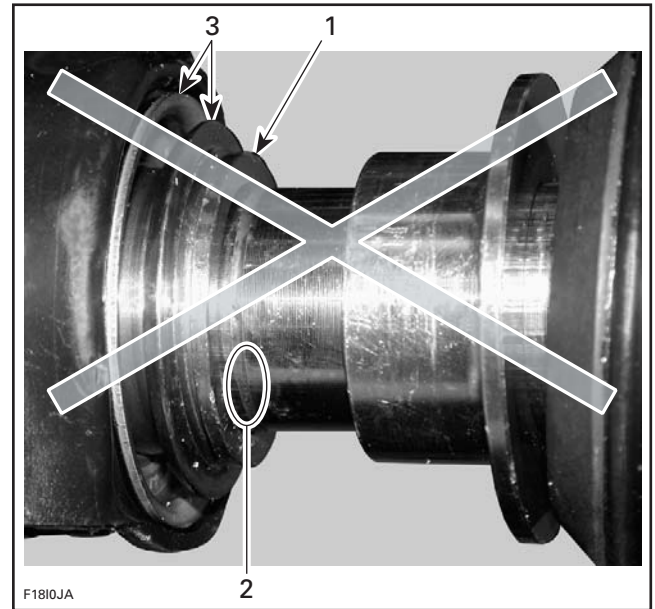
Maintain PTO seal assembly in the proper position and tap shaft end until it bottoms against engine. At this time, the telltale groove **MUST NOT** be visible. This validates the correct position.

**NOTICE** If the telltale groove is exposed, the installation is wrong and PTO seal assembly will be pressed into crankshaft splines which could rub a hole in seal thus creating an oil leak.



CORRECT INSTALLATION

1. PTO seal assembly
2. Shaft pushed in, hiding telltale groove
3. Inner sleeve flush with outer circumference



IMPROPER INSTALLATION

1. PTO seal assembly
2. Telltale groove visible
3. Inner sleeve NOT flush with outer circumference

Temporarily install the jet pump housing. Push floating ring rearwards and install a **NEW** circlip.

Ensure everything is properly positioned:

- Telltale groove is not visible
- Inner sleeve is flush with outer circumference of PTO seal assembly
- Circlip is not exposed.

If telltale groove is visible, pull PTO seal assembly rearwards to fully extend it.

If inner sleeve is not flush, gently tap it until it is flush.

Reposition rubber protector.

Permanently install jet pump. Refer to *JET PUMP* subsection.

Test watercraft then ensure there is:

- No oil leak in PTO seal area
- No water intrusion by the thru-hull fitting area.

## DRIVE SHAFT BELLOWS

### Inspecting the Drive Shaft Bellows

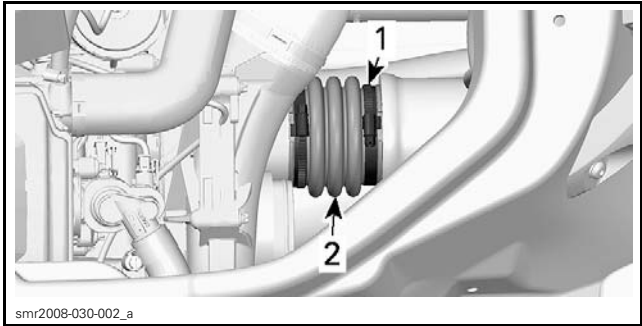
Inspect the condition of the bellows. If there is any damage or evidence of wear, replace it.

### Removing the Drive Shaft Bellows

Remove drive shaft. Refer to *DRIVE SHAFT* in this subsection.

Subsection XX (DRIVE SHAFT (1500 SERIES))

Loosen gear clamp holding bellows, then carefully pull bellows and carbon ring from hull insert.



- TYPICAL**  
1. Loosen this clamp  
2. Drive shaft bellows

Installing the Drive Shaft Bellows

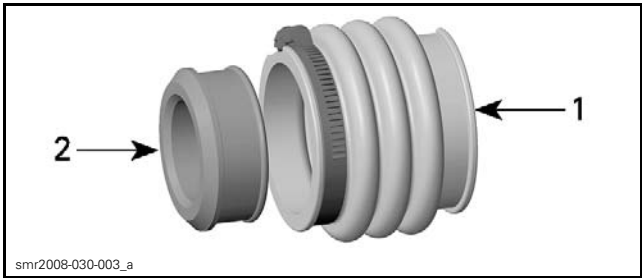
The installation is the reverse of the removal procedure.

CARBON RING

Removing the Carbon Ring

Remove *DRIVE SHAFT BELLOWS*. See procedure in this subsection.

Loosen gear clamp then pull carbon ring from drive shaft bellows.



1. Drive shaft bellows  
2. Carbon ring

Installing the Carbon Ring

The installation is the reverse of the removal procedure.