



# **RIVA RACING**

## **PERFORMANCE PRODUCTS & ACCESSORIES**

### **Pump Extension Kit (+50mm)**

**PART# - RS33085-PEK-50**

**APPLICATION(S):** RXT-X / RXT / GTX-SC

#### **Required tools**

Drive Shaft Holder Tool  
PTO Seal Support Tool  
Floating Ring Tool  
Engine Alignment Tool

#### **Part#**

529 035 986  
529 035 842  
529 035 841  
Contact your local Sea-Doo Dealer

#### **Recommended tools**

Sea-Doo 4-TEC Shop Manual

#### **Part#**

219 100 313 (2008 version)

These instructions have been written in point form and refer to illustrations. Please follow these step-by-step instructions and illustrations carefully. Advanced mechanical skills are required for the proper completion of this installation. It is recommended that your local RIVA Performance Products Dealer install this kit.

## **- INSTALLATION INSTRUCTIONS -**

- 1) Place supplied stainless steel replacement wear ring in freezer. *Yes, a freezer!!!*
- 2) To prevent engine oil from running out of PTO when drive shaft is removed start engine, run at 4,000rpm for 10 seconds and pull D.E.S.S. lanyard to stop.
- 3) Disconnect battery. **NOTE: Negative cable first (black). Positive cable second (red).**
- 4) Disconnect steering cable, reverse cable and VTS rod from steering nozzle. (see illustration #1)
- 5) If O.P.A.S. was removed previously proceed to step 6.  
Disconnect O.P.A.S. arms from brackets at thru hull fittings. Remove O.P.A.S. pump hose from barbed fitting at top of reduction nozzle. (see illustration #2)
- 6) Remove the four (4) bolts securing reduction nozzle to pump stator housing. (see illustration #1) Remove reduction/steering nozzle assembly and set aside. **NOTE: If using a pump wedge remove it as this kit is not designed nor intended to be used with a pump wedge.**
- 7) Remove reverse cable end, steering cable end and VTS rod. **NOTE: If using a pump wedge remove steering cable extension.** (see illustration #3)
- 8) Remove the four bolts securing pump stator housing to hull. Remove pump stator housing. (see illustration #3)
- 9) Remove rubber seal around edge of pump housing at wear ring and set aside. Remove pump impeller.

Wear ring removal.

- 10) For stock plastic wear rings follow step 10-a. For RIVA Stainless Steel Wear Rings follow step 10-b.
  - a) Carefully remove the stock plastic impeller wear ring by cutting in two places. Take care not to damage the housing. **NOTE: This can be done using a small jigsaw, small hand-held grinder, or low-clearance hacksaw such as a Snap-on HS3 or equivalent. Insert flat screwdriver between wear ring and housing. Push wear ring inward so it collapses internally. Removes pieces.**
  - b) Place complete pump in a freezer for several hours. After removing immediately heat outside of housing with a heat gun. Holding pump so wear ring is facing down gently tap outside with a rubber mallet. If wear ring doesn't

slip outward gently tap stator hub downward onto a piece of pipe so short shaft is not damaged. Repeat until wear ring is removed.

- 11) Inspect pump stator housing wall for damage (EG-rough spots, gauges, raised edges). Smooth housing wall if necessary. Place pump stator housing outside in direct sunlight for at least one hour. **NOTE: This is to aid in installation of stainless steel replacement wear ring. DO NOT USE OTHER HEAT SOURCES TO WARM HOUSING.**

**NOTE: To make installation of wear ring easier the following step should be done quickly!**

- 12) Remove supplied wear ring from freezer and place into pump stator housing with arrow facing inward so that it is equally inserted all the way around. Wear ring should slide into housing easily. If not, see **NOTE** after step 13.
- 13) Immediately place pump stator in a vice securing evenly with moderate pressure. DO NOT REMOVE until wear ring returns to room temperature.

**NOTE: Wear ring should slip into pump stator housing. If wear ring does not repeat freezing and warming processes again. If wear ring still does not slide into wear ring easily do the following.**

Using a manual press, slowly press ring into pump stator housing until it seats into bottom of housing completely. (see illustration #4) If a manual press is not available a piece of wood such as a 2"x4" can be used. (see illustration #5) Manually engage wear ring into housing making sure it is equally inserted all around. Place 2"x4" over wear ring. Using a hammer, strike wood to push wear ring inward. Rotate wood 90-degrees and strike again. Repeat until wear ring seats into housing completely.

The following steps outline the removal and installation of the drive shaft as recommend by BRP in the 4-TEC Shop Manual. Failure to follow these steps or the taking of short cuts could lead to an engine seal failure that could result in engine damage which RIVA Racing and BRP shall not be liable for.

- 14) Install drive shaft holder tool onto pump support (transom plate). Secure with stock bolts. (see illustration #6)
- 15) Unclip engine coolant overflow tank from vent tube support. Take care not to tip overflow tank allowing coolant to drain.
- 16) Remove vent tube support (4 M8 bolts).
- 17) Remove exhaust hoses, supercharger air inlet tube and intercooler tubes to gain access to drive shaft area at rear of engine (thru hull carrier for pump).
- 18) Remove supercharger unit. **NOTE:** You will need a special Torx adapter to remove and replace the upper/rear bolt.
- 19) At rear of engine lift rubber protector to expose PTO engine seal assembly. Install PTO seal support tool onto bottom of PTO between engine and PTO seal assembly. (see illustration #7)
- 20) Using the drive shaft circlip remover tool push the floating ring rearwards to expose the circlip. (see illustration #8) This step is done to ensure the floating ring is free and not stuck on the drive shaft. **Do not remove circlip at this time.**
- 21) Remove drive shaft circlip removal tool and drive shaft holder tool (at pump). Install floating ring tool onto drive shaft between PTO seal support tool and floating ring. (see illustration #9) **NOTE:** Largest opening on floating ring tool faces engine.
- 22) Turn screw clockwise so that tool pushes PTO seal forward and drive shaft rearward to expose o-ring contact area on drive shaft. Continue expanding tool until there is 18mm between telltale groove and tool edge. (see illustration #9) Lubricate o-ring contact area of drive shaft with silicone spray.
- 23) Remove floating ring tool. At pump area push drive shaft forward and replace drive shaft holder tool.
- 24) Replace floating tool so that largest opening is facing floating ring. Turn screw clockwise forcing floating ring rearwards until circlip is exposed. (see illustration #10) Remove and **discard** circlip. **NOTE: A new circlip is provided with Pump Extension Kit.**
- 25) Remove drive shaft holder tool first (at pump) and then floating ring tool. Place rags under PTO housing. Remove drive shaft completely and set aside.

**NOTE: Engine/Pump alignment must be checked at this time. To do this properly a Sea-Doo alignment tool must be used. Please contact your local Authorized Sea-Doo dealer.**

- 26) Remove o-rings inside floating ring and discard. Apply waterproof grease to the two supplied large Viton o-rings and install into floating ring. (see illustration #11) **NOTE: Do not get any grease on front edge of floating ring.**
- 27) Apply anti-corrosion spray onto supplied drive shaft. (see illustration #12) Apply a thin coating of white lithium grease to splines at end of shaft with rubber damper. Carefully install drive shaft (rubber damper end first) into PTO seal and then crankshaft splines. **NOTE: It may be necessary to move PTO seal assembly up and down to position it in the same axis as drive shaft.**
- 28) Inspect drive shaft at PTO seal assembly. (see illustration #'s 13 & 14) If telltale groove is visible tap pump end of drive shaft with a rubber mallet until motor end bottoms out against engine. **CAUTION: If 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.**
- 29) Using the four supplied M10 bolts install drive shaft holder tool onto pump support (transom plate) with supplied billet spacer in between tool and pump support (transom plate).
- 30) Install floating ring tool onto drive shaft between PTO seal support tool and floating ring. (see illustration #15) **NOTE: Largest opening on floating ring tool faces floating ring.**
- 31) Turn screw clockwise forcing floating ring rearwards until circlip groove in driveshaft is exposed. Install supplied new circlip. (see illustration #15) **NOTE: Do not reuse old circlip. A new circlip is provided with Pump Extension Kit.**
- 32) Remove floating ring tool first, drive shaft holder tool and billet spacer second and PTO seal support tool last. **NOTE: Pushing drive shaft boot rearwards will ease removal of PTO seal support tool.**

**ENSURE THE FOLLOWING ARE PROPERLY POSITIONED:**

- Telltale groove is not visible.
  - Inner sleeve is flush with outer circumference of PTO seal assembly.
  - Circlip is not exposed.
- 33) Thoroughly clean engine side of supercharger housing and coat unpainted area with Anti-seize.
  - 34) Install supercharger unit onto engine. You may need to rotate supercharger impeller to allow gear to mesh with the flywheel gear. Secure supercharger unit to engine using OE bolts. **NOTE: Apply red Loc-tite to bolts. Torque bolts to 11 N•m (97 lbf•in).**
  - 35) Replace exhaust hoses, supercharger air inlet tube and intercooler tubes removed to allow access to drive shaft area. **NOTE: Do not over tighten clamps.**
  - 36) Replace vent tube support (4 M8 bolts). **NOTE: Apply blue Loc-tite to bolts. Do not over tighten bolts.**
  - 37) Replace engine coolant overflow tank.

Replace pump components.

- 38) Install the remaining supplied o-rings into the supplied billet spacer. (see illustration #16) Two small o-rings for the bilge siphon passages and one medium o-ring for the cooling passage.
- 39) Apply silicone sealant to edge of pump stator housing. (see illustration #17) Install supplied billet spacer over extended wear ring and onto pump stator housing. **NOTE: Ensure cooling and bilge passages are aligned properly and that excess silicone does not get into passages.** (see illustration #18)
- 40) Install rubber seal around edge of wear ring. (see illustration #19) Make sure rubber gaskets are in place at top of pump housing.
- 41) Apply glass cleaner to rubber seal on pump assembly. Install pump into craft and secure using supplied M10 bolts and OE washers. (see illustration #20) **NOTE: Apply blue Loc-tite to bolts. Torque to 25 N•m (18 lbf•ft) in a criss-cross pattern.**
- 42) Install supplied VTS rod, reverse cable extension and steering cable extension. (see illustration #20) **NOTE: Do not secure reverse and steering cable extensions.**

- 43) Replace reduction/steering nozzle assembly. (see illustration #20) **NOTE: Do not install a pump wedge. Apply silicone sealant to mating surfaces. Use BLUE Loc-tite on bolts. Torque to 21 N•m (16 lbf•ft) in a criss-cross pattern.**
- 44) Install reverse and steering cables onto steering nozzle. Check reverse cable actuation to ensure full travel. Check steering to ensure full travel and proper alignment. After aligning reverse and steering cables tighten cable jam nuts and hardware securing cable ends to steering nozzle.
- 45) If O.P.A.S. was removed previously proceed to step 46.  
Reconnect O.P.A.S. arms to brackets at thru hull fittings. **NOTE: Use BLUE Loc-Tite. Do not over tighten bolts.**
- 46) Reconnect O.P.A.S. pump hose to barbed fitting at top of reduction nozzle.
- 47) Reconnect battery cables. **NOTE: Positive cable first (red). Negative cable second (black).**
- 48) Check bilge for tools, rags, etc. Start craft and run using flush kit to check for smooth operation and leaks at exhaust, supercharger and intercooler connecting points. Do not run craft out of water for more than two minutes at a time.

***Remember, the water belongs to everyone.  
Please respect the environment and ride responsibly!***

### **Technical Support**

For answers to questions regarding installation or trouble shooting RIVA Performance Products contact:  
RIVA Technical Support directly at (954) 247-0705 or by e-mail at [tech\\_support@rivamotorsports.com](mailto:tech_support@rivamotorsports.com)

### **Limited Warranty**

RIVA Pump Extension Kits carry a 90-days limited warranty to the original purchaser. They are warranted to be free of defects in materials and workmanship under normal use and service. Customer modified components will be void of warranty. This warranty is limited to defects in the primary components only. Finish and/or wear marks in or on primary components are not covered under this warranty.

RIVA Racing's liability is expressly limited to the repair or replacement of the components contained within or associated with this kit. RIVA Racing agrees to repair or at RIVA's option, replace any defective unit without charge, if product is returned to RIVA Racing freight prepaid within the warranty period. Any equipment returned which, in RIVA's opinion, has been subjected to misuse, abuse, overheating or accident shall not be covered by this warranty.

RIVA Racing shall have no liability for special, incidental or consequential damages or injury to persons or property from any cause arising from the sale, installation or use of this product.

No other warranty, express or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose, applies. Various states do not allow for the limitation of incidental or consequential damages and therefore the above exclusion or limitation may not apply to you.

Warranty does not include the expenses related to freight or transportation of parts or compensation for any inconvenience or loss of use while being repaired. A copy of the original invoice must accompany all warranty claims.

Warranted replacement parts will be returned freight collect.

**- INSTALLATION IMAGES -**

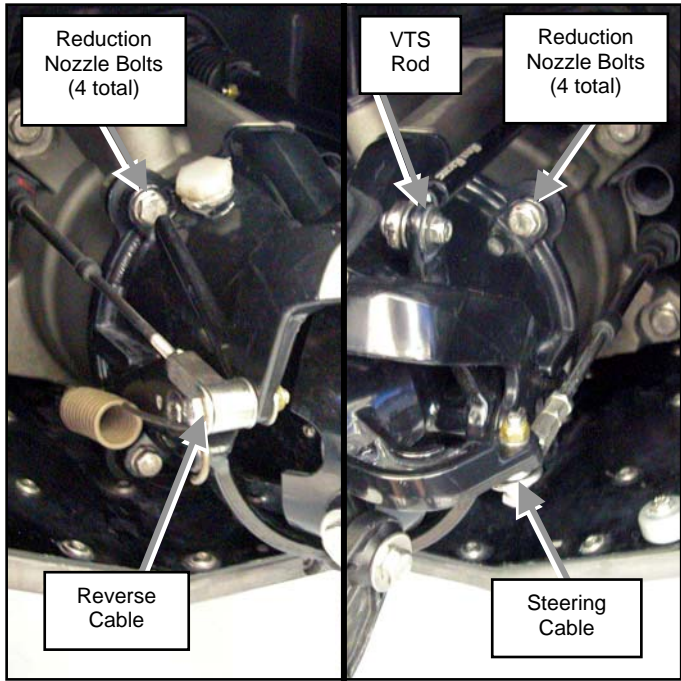


Illustration #1

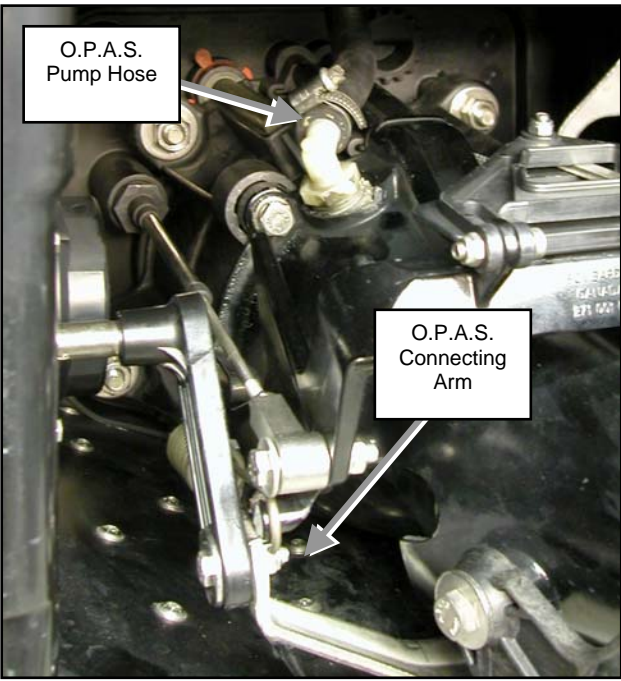


Illustration #2

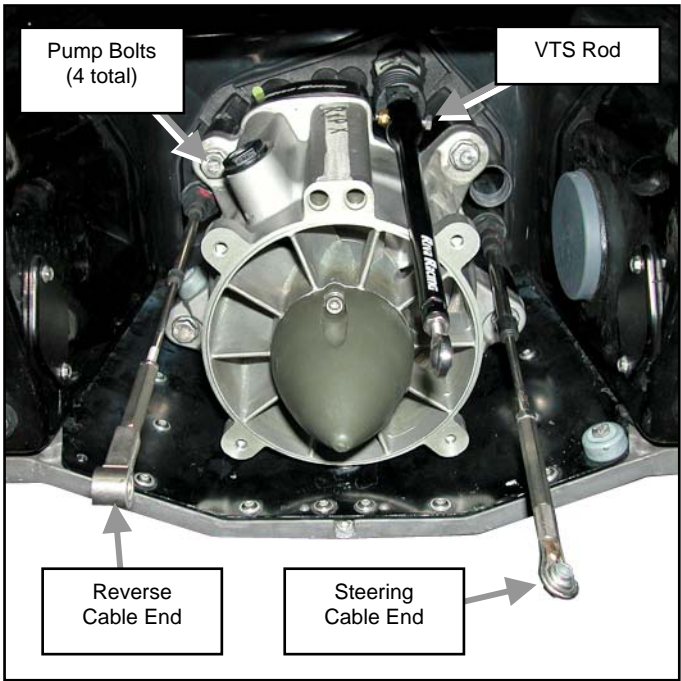


Illustration #3

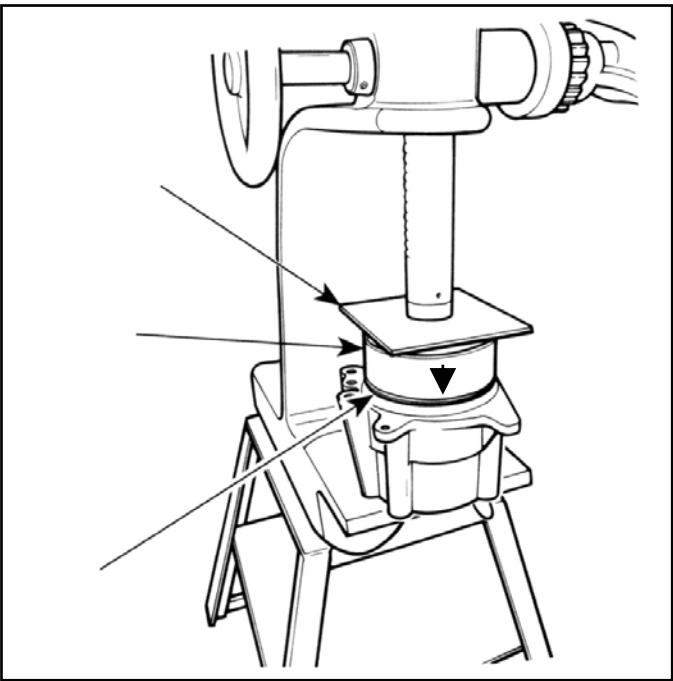


Illustration #4



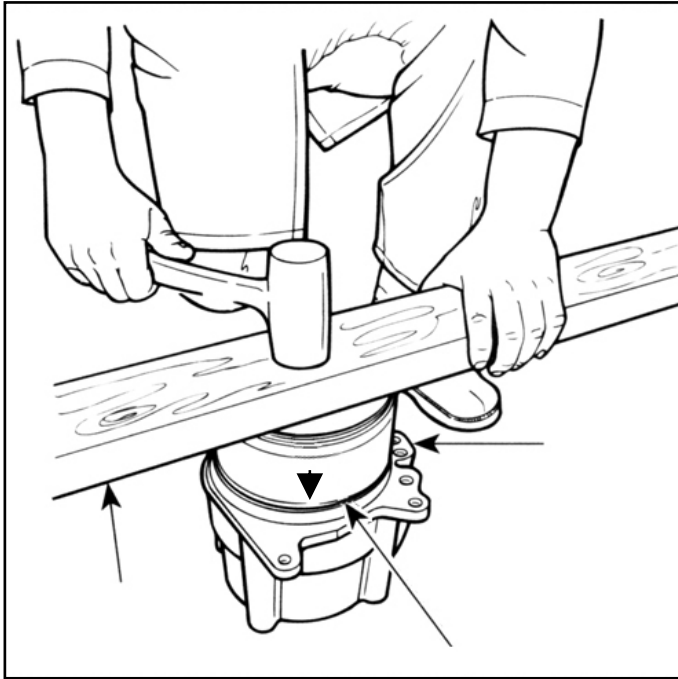


Illustration #5

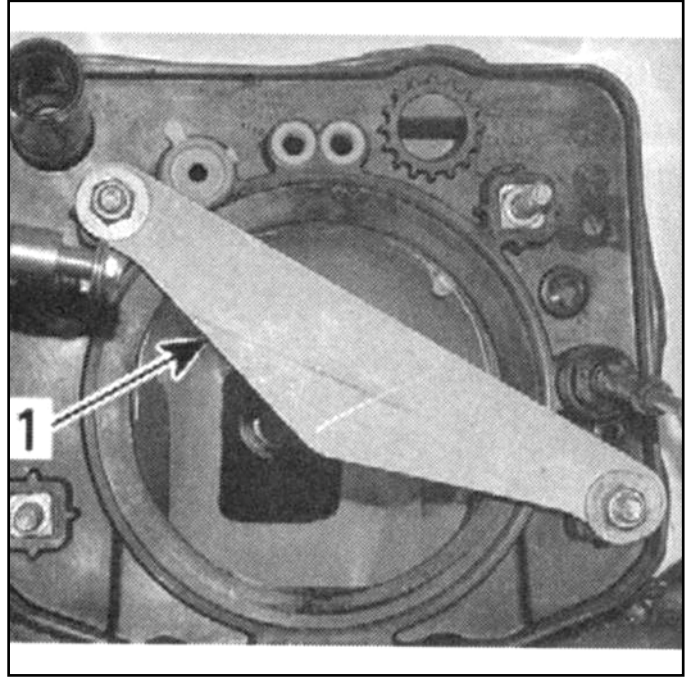


Illustration #6

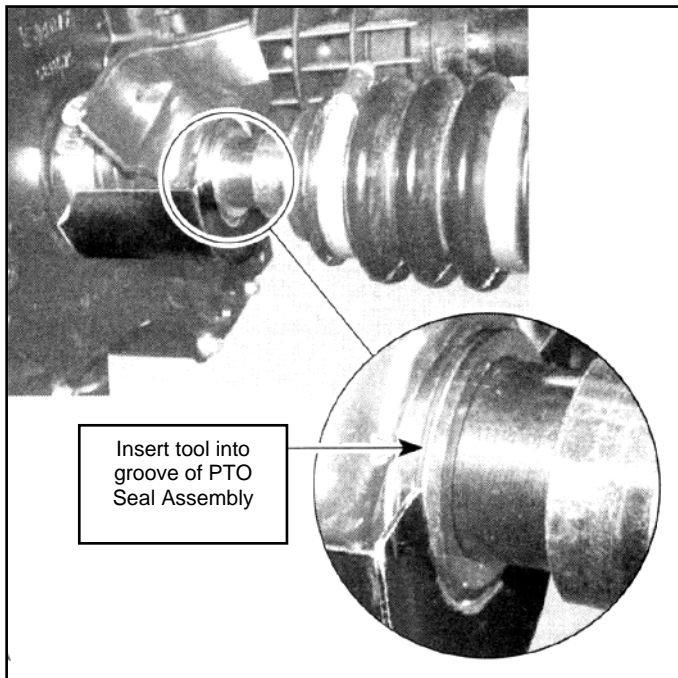


Illustration #7

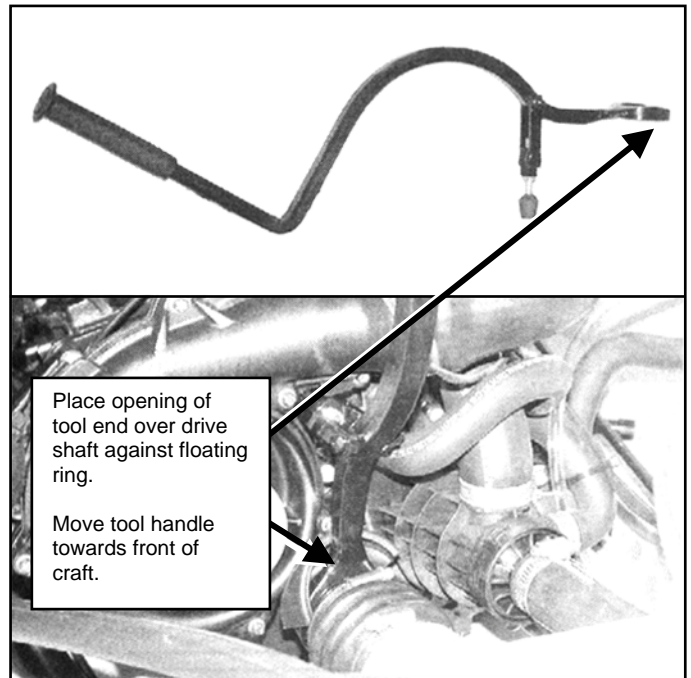


Illustration #8

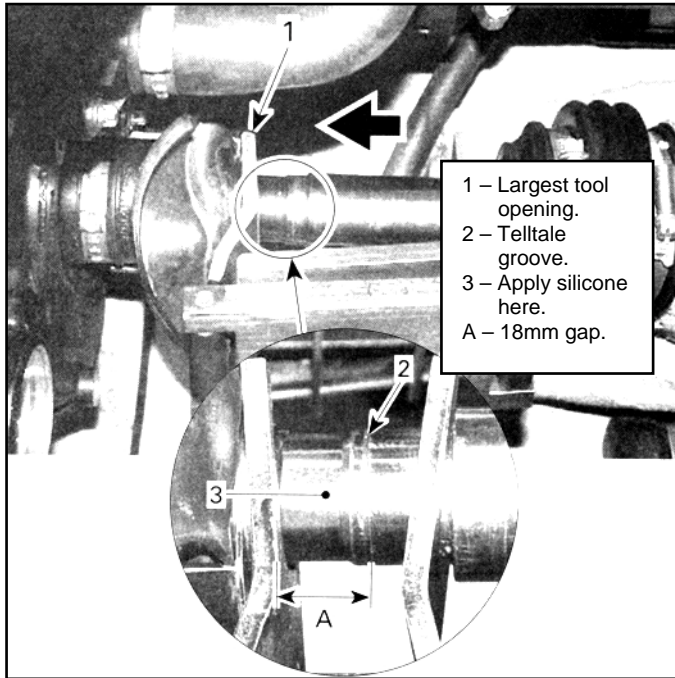


Illustration #9

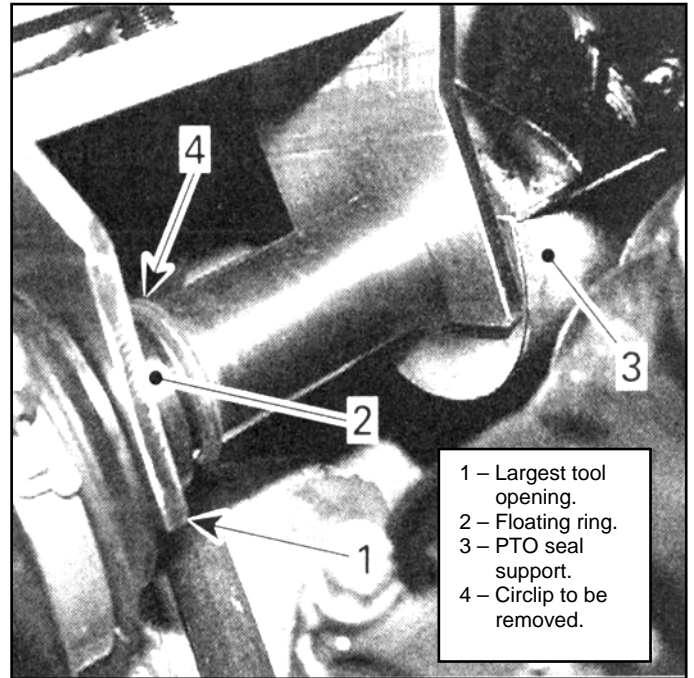


Illustration #10

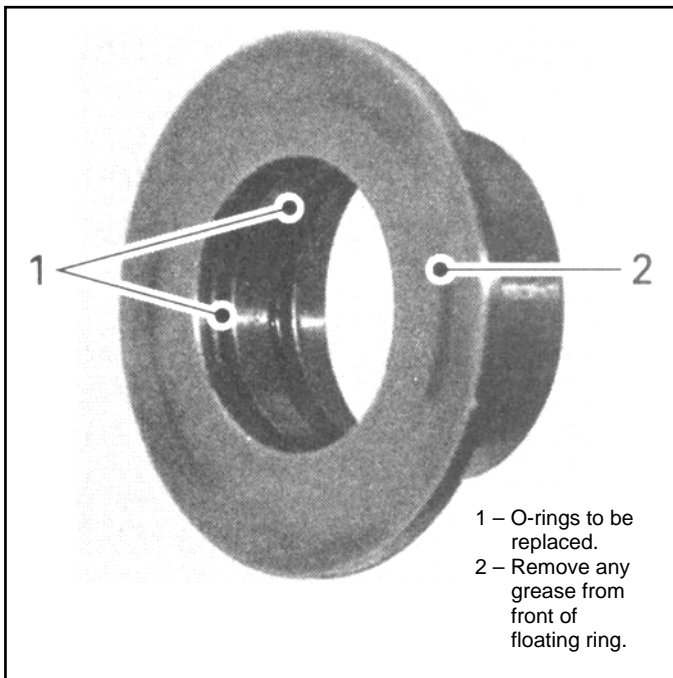


Illustration #11

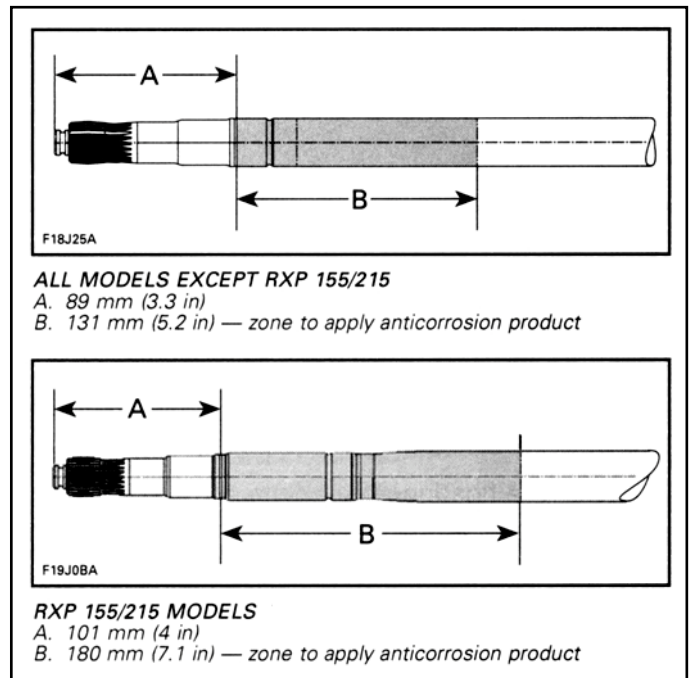


Illustration #12



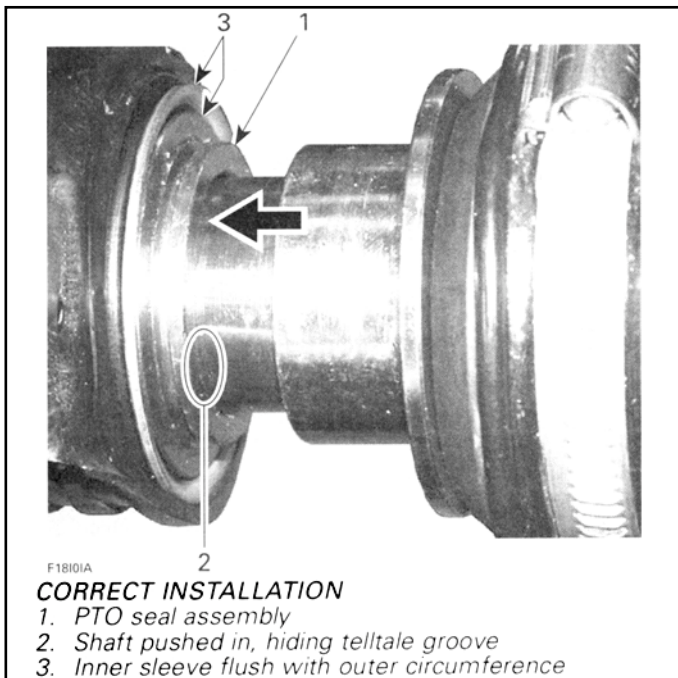


Illustration #13

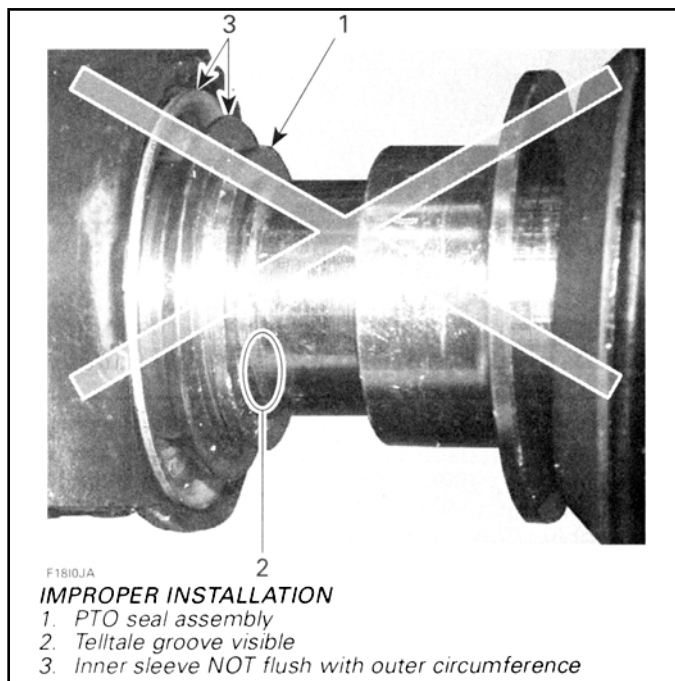


Illustration #14

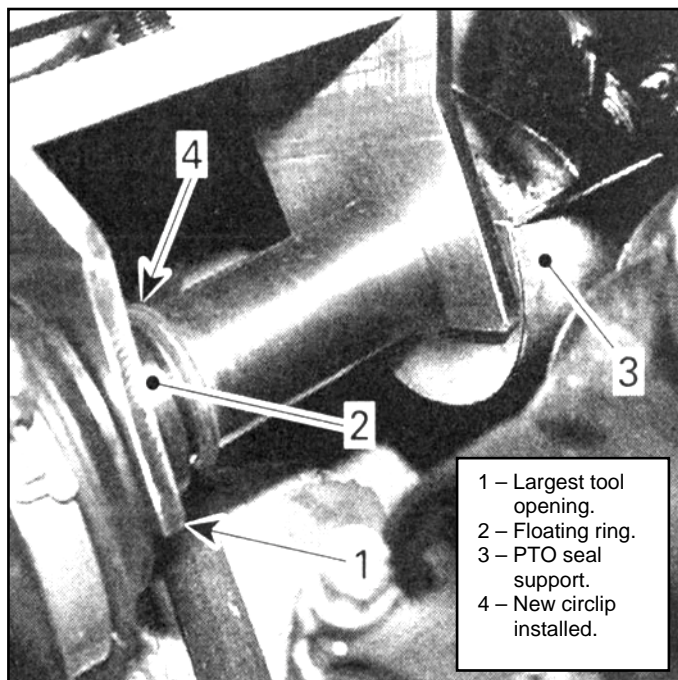


Illustration #15

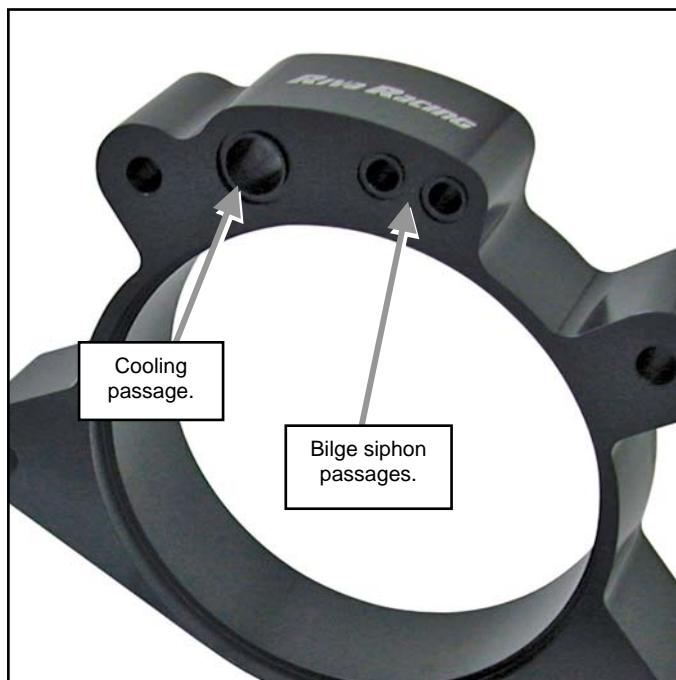


Illustration #16



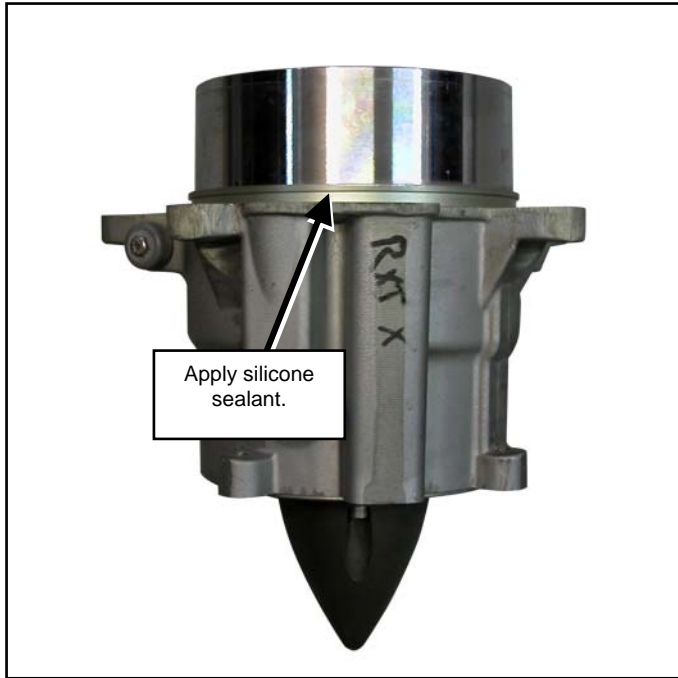


Illustration #17

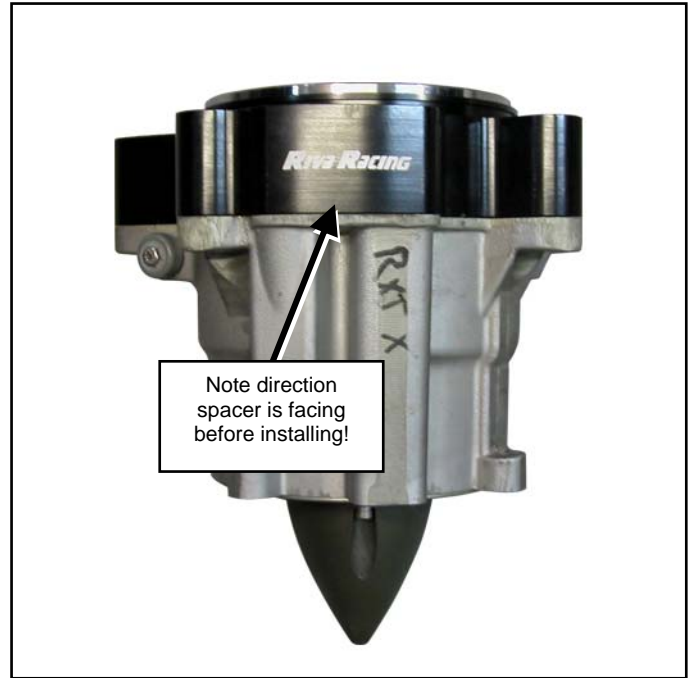


Illustration #18

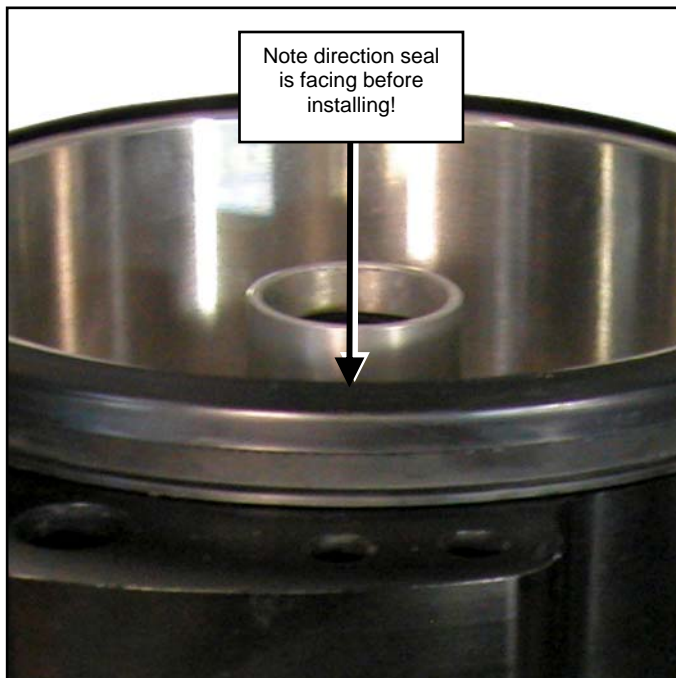


Illustration #19

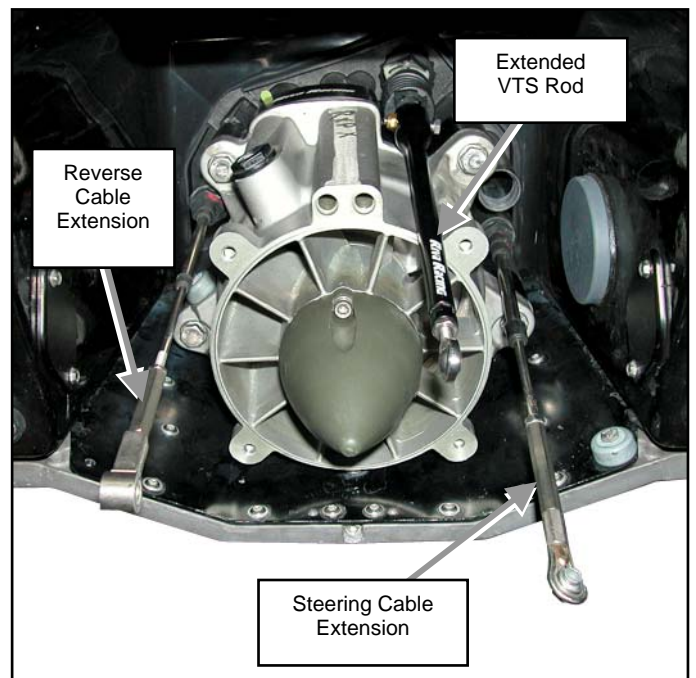


Illustration #20