

SWIVEL ACTUATOR REBUILD INSTRUCTIONS

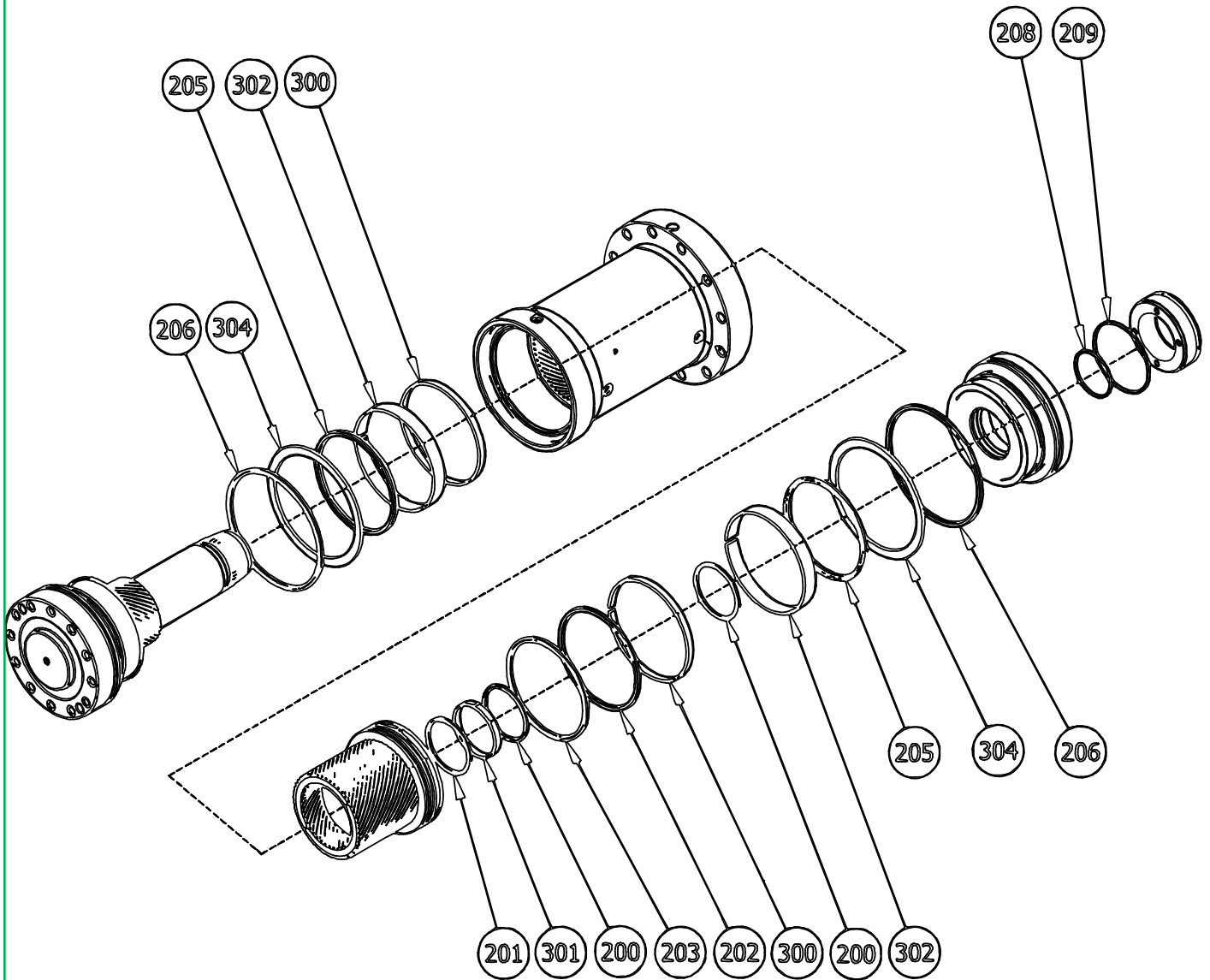
DOC #15-2015

WARRANTY + SERVICE 888.960.0364
PARTS 888.960.0361



DIAMONDMOWERS.COM

SWIVEL ACTUATOR BREAKDOWN



SEALS

ITEM	DESCRIPTION	QTY
200	Cup Seal	2
201	Cup Seal (without o-ring)	1
202	Cup Seal	1
203	Cup Seal (without o-ring)	1
205	Main Pressure - Z-Seal	2
206	Exclusion Seal	2
208	O-ring - Seal	1
209	O-ring - Seal	1

WEAR GUIDES

ITEM	DESCRIPTION	QTY
300	Wear Guide	2
301	Wear Guide	1
302	Wear Guide	2
304	Thrust Washer	2

NOTES:

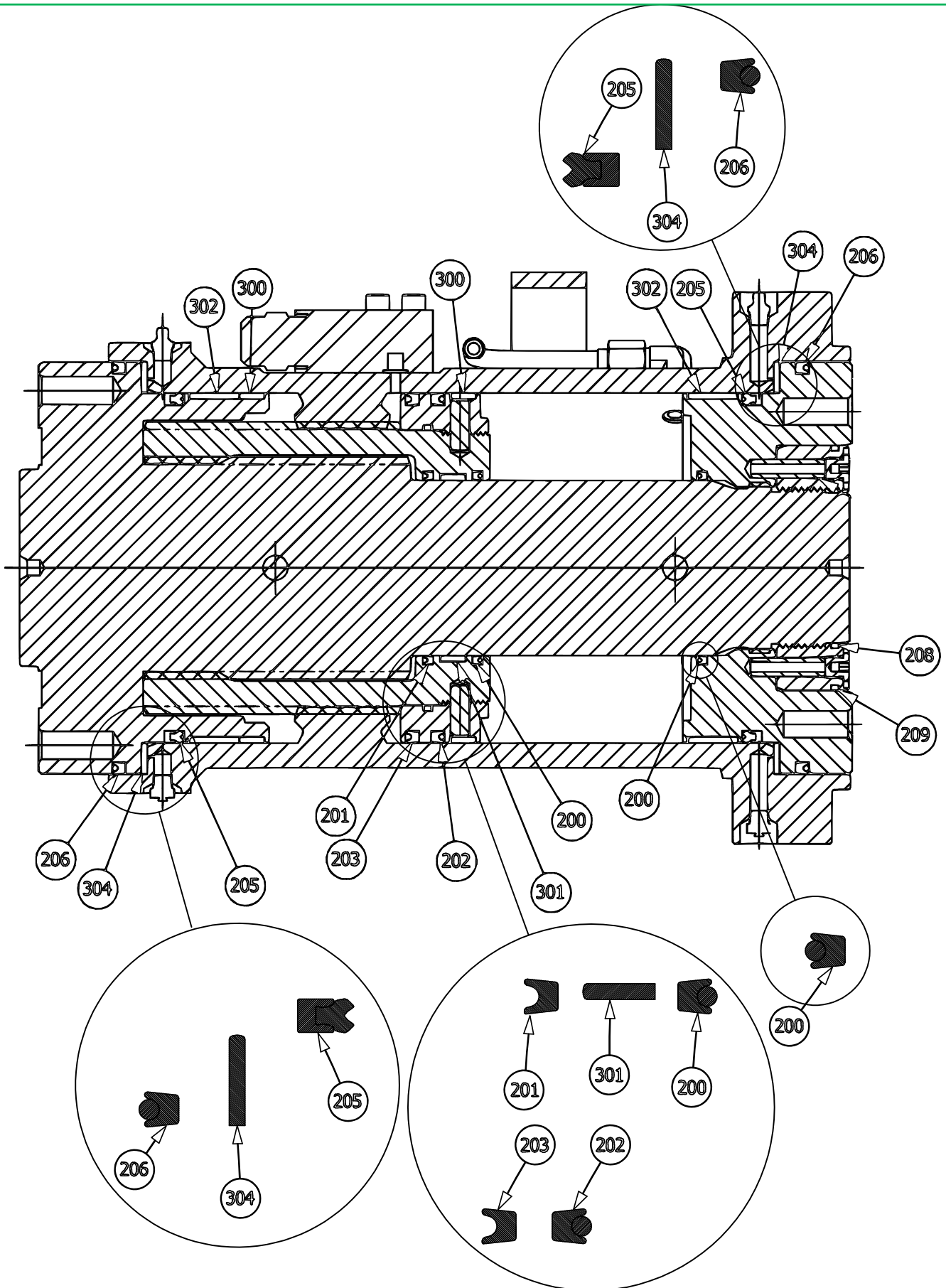
Wear guides are not part of standard seal kit.

Replacement of guides are not typical.

Call Diamond Customer Service to order guides if needed.

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SWIVEL ACTUATOR BREAKDOWN



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SWIVEL ACTUATOR REBUILD INSTRUCTIONS

TOOLS NEEDED FOR SWIVEL ACTUATOR REBUILD:

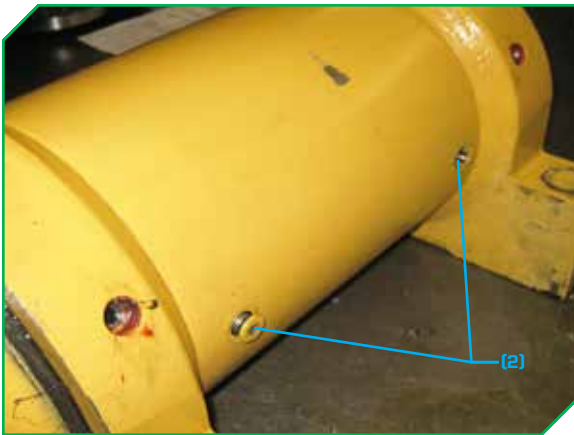
- Hex wrench set
- Prybar
- Seal tools
- Plastic bar or solid wood block
- Hammer or mallet
- C-Clamp
- Flashlight
- Paint pen or permanent marker
- Safety glasses.

SWIVEL ACTUATOR REBUILD INSTRUCTIONS:

- Place the swivel actuator on the work surface with the (4) cap plugs₍₁₎ facing you as illustrated.



- Remove the (4) port plugs₍₂₎ (or other hardware) from the swivel actuator.
 - There will be (2) on either side of the swivel actuator.
 - There will be some oil loss when these port plugs₍₂₎ are removed.



- Remove the (4) cap plugs₍₁₎ from the locknut₍₃₎.



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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Remove the dowel pin (4) located in one of the exposed ports as illustrated.
 - Use the 10-32 bolt included with your kit.
 - Set the dowel pin (4) aside for reinstallation later on.



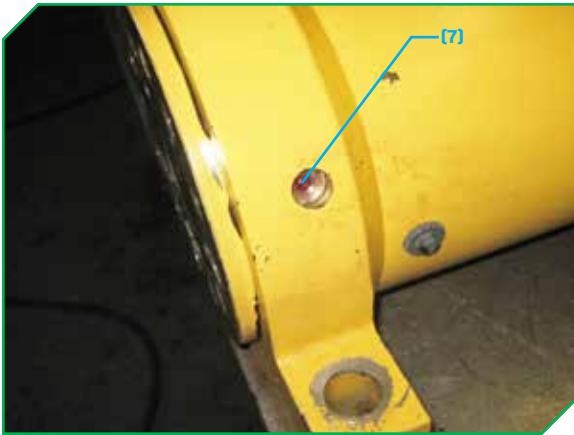
- Thread (2) $\frac{1}{16}$ " x 2- $\frac{1}{4}$ " NF bolts (5) into the locknut (3).
 - Thread a bolt (5) on each side of the locknut (3) as illustrated.



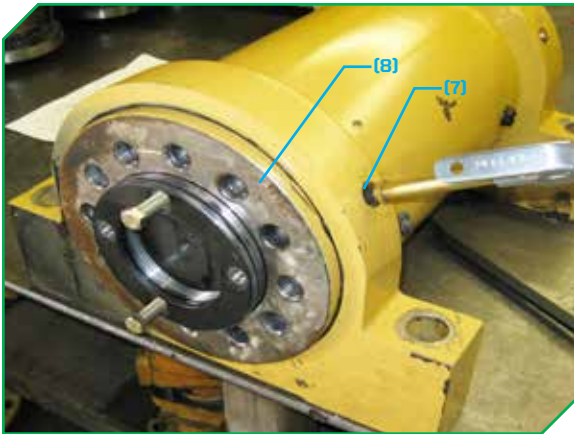
- Use a prybar to unthread the locknut (3) out of the endcap (6).
 - Rotate the locknut (3) counter-clockwise.
 - Unthread the locknut (3) until only a few threads are engaged; **DO NOT** fully remove the locknut at this time.

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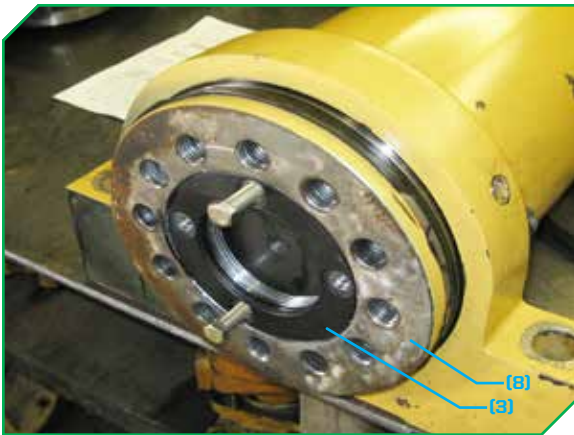
SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Remove the top side grease purge ⁽⁷⁾ from the swivel actuator.



- Blow air into the grease purge port ⁽⁷⁾ in the swivel actuator to force the endcap ⁽⁸⁾ out of the swivel actuator as illustrated.
 - Use an air chuck with pressurized air.



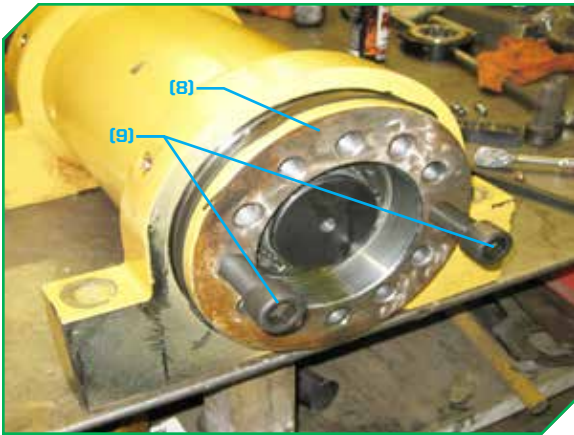
- Shown in the illustration at left is the endcap ⁽⁸⁾ forced out of the swivel actuator and flush with the locknut ⁽³⁾.



- Finish unthreading the locknut ⁽³⁾ from the endcap ⁽⁸⁾, remove it, and set it aside.

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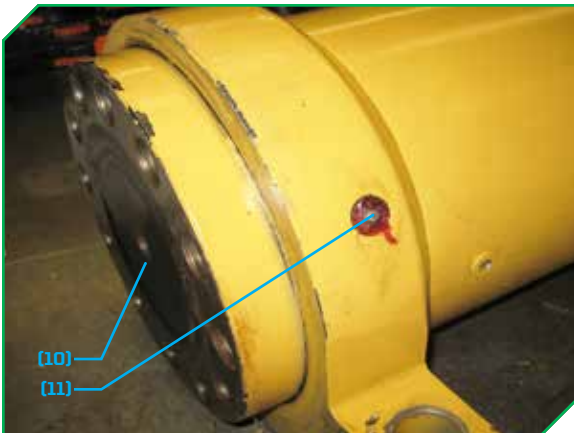
SWIVEL ACTUATOR REBUILD INSTRUCTIONS



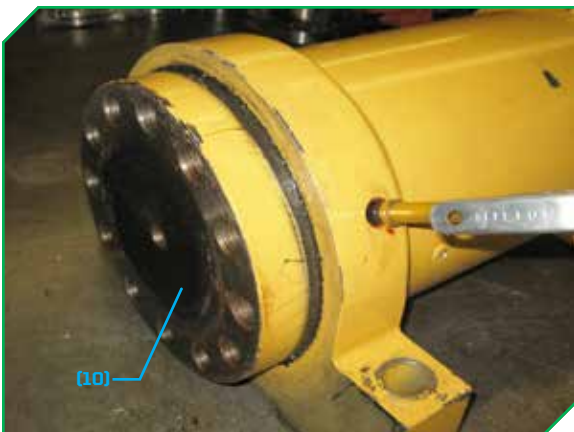
- Thread (2) cap bolts ⁽⁹⁾ into the endcap ⁽⁸⁾ and pull the endcap ⁽⁸⁾ from the swivel actuator.



- Set the endcap ⁽⁸⁾ aside after removing it from the swivel actuator.



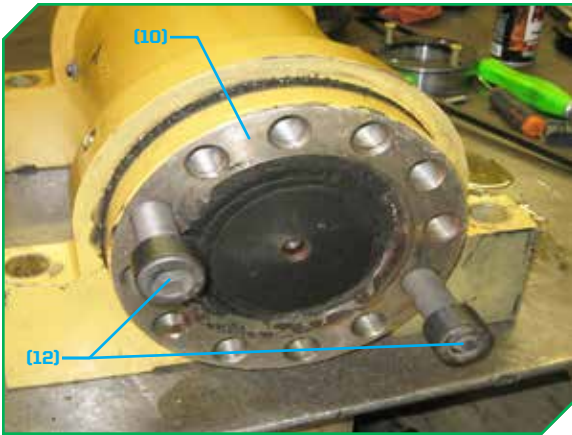
- Turn the swivel actuator around on the work surface so now the shaft ⁽¹⁰⁾ on the bottom of the swivel actuator is facing you.
- Remove the bottom grease purge ⁽¹¹⁾.



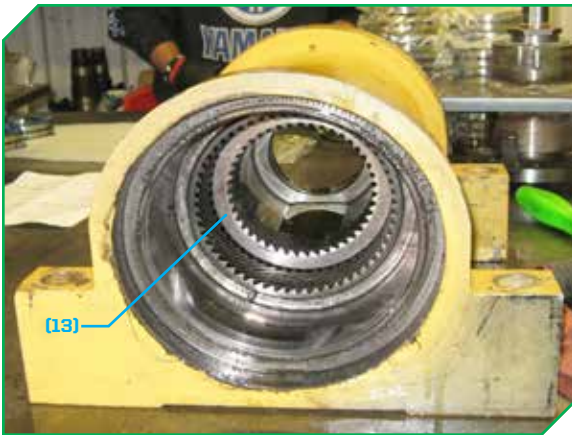
- Blow air into the grease purge port ⁽⁷⁾ in the swivel actuator to force the shaft ⁽¹⁰⁾ out of the swivel actuator as illustrated.
 - Use an air chuck with pressurized air.

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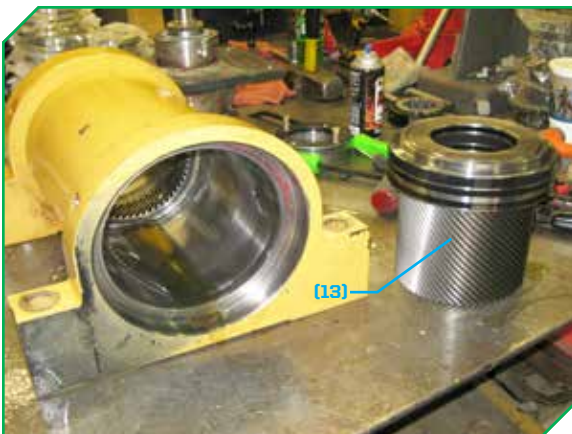
SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Thread (2) cap bolts (12) into the shaft as illustrated, and pull the shaft (10) from the swivel actuator.
 - **NOTE:** While rotating the shaft (10) counter-clockwise, be careful not to damage the shaft (10) or swivel actuator.
 - Set the shaft aside.



- Turn the swivel actuator housing around on the work surface until the top of the swivel actuator is facing you.
- Gently tap the piston sleeve (13) outwards towards the top of the swivel actuator until nearly free, but **NOT** all the way out.
 - Use a rubber mallet or dead blow with a plastic bar.



- Grab the piston sleeve (13) and while gently pulling and twisting, remove it from the swivel actuator.
 - Set the piston sleeve (13) aside.
 - **NOTE:** While rotating the piston sleeve (13) clockwise, be careful not to damage the piston sleeve (13) or swivel actuator during removal.
 - Check the smooth surfaces of the interior of the swivel actuator and confirm there are no scratches, burrs, or other raised surfaces.
 - Use fine emery paper to smooth out imperfections, and then clean out any debris / filings.

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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Remove the split ring wear guide⁽¹⁴⁾ from the piston sleeve⁽¹³⁾ as illustrated, and discard it if the bearings are to be replaced⁽¹³⁾, or if not, set it aside for reinstallation.
 - The ends of the external split ring wear guide⁽¹⁴⁾ should overlap; if not, it will need to be replaced.



- Remove the (2) cup seals⁽¹⁵⁾ from the piston sleeve⁽¹³⁾ exterior and discard them.



- Remove the (2) cups seals⁽¹⁶⁾ and split ring wear guide⁽¹⁷⁾ from the interior of the piston sleeve⁽¹³⁾ and set it aside for reinstallation.
 - Discard the split ring wear guide⁽¹⁷⁾ if it is to be replaced.



- Remove the (2) O-rings⁽¹⁸⁾ (one on the outside, and one on the inside) from the locknut⁽³⁾.
 - Discard the O-rings⁽¹⁸⁾.

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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Remove the (2) split ring wear guides (19) from the shaft (10) and set them aside for reinstallation.
 - Discard the (2) split ring wear guides (19) if they are to be replaced.



- Remove the Z-seal (20), thrust washer (21), and exclusion seal (22) from the shaft (10).
 - Discard the Z-seal (20) and exclusion seal (22).
 - Discard the thrust washer (21) unless it is to be reused.



- Remove the (2) split ring wear guides (23) from the endcap (8) and set them aside.
 - Discard the (2) split ring wear guides (23) if they are to be replaced.



- Remove the Z-seal (24), thrust washer (25), and exclusion seal (26) from the endcap (8).
 - Discard the Z-seal (24) and exclusion seal (26).
 - Discard the thrust washer (25) unless it is to be reused.

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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Remove the cup seal⁽²⁷⁾ from the interior of the endcap⁽⁸⁾.
 - Discard the cup seal⁽²⁷⁾.



- Take the swivel actuator components over to a wash station, and clean them thoroughly of any grease, oil, debris, etc.
 - If the original wear guides⁽¹⁴⁾⁽¹⁷⁾⁽¹⁹⁾ and thrust washers⁽²¹⁾⁽²⁵⁾ are to be reused, clean them off as well.



- Tear a small hole into the seal kit bag containing the new seals and O-rings, and pour in a couple ounces of hydraulic oil. Work the oil around in the bag until all of the seals and O-rings are fully coated with the hydraulic oil.



- Locate the (2) new thrust washers⁽²¹⁾⁽²⁵⁾ (or the original thrust washers⁽²¹⁾⁽²⁵⁾ for reuse) and thoroughly coat both sides of the thrust washers⁽²¹⁾⁽²⁵⁾ with grease.

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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



NOTE: Reference the parts breakdown at the beginning of this manual to assist in part identification, orientation, and placement when reassembling the swivel actuator.

- Install the cup seals ⁽¹⁶⁾ and split ring wear guide ⁽¹⁷⁾ into the interior of the piston sleeve ⁽¹³⁾.
 - Confirm the cup seal ⁽¹⁶⁾ with O-ring is groove facing **UP**.
 - Confirm the cup seal ⁽¹⁶⁾ without O-ring is groove facing **DOWN**.



- Install the cup seals ⁽¹⁵⁾ onto the exterior of the piston sleeve ⁽¹³⁾.
 - Confirm the cup seal ⁽¹⁵⁾ with O-ring is groove facing **UP**.
 - Confirm the cup seal ⁽¹⁵⁾ without O-ring is groove facing **DOWN**.
 - Confirm the dowel pin ⁽²⁸⁾ (**NOT** the dowel pin ⁽⁴⁾ removed in the beginning of this manual) is in its recess before proceeding.



- Install the split ring wear guide ⁽¹⁴⁾ onto the exterior of the piston sleeve ⁽¹³⁾ as illustrated.



- Install the exclusion seal ⁽²⁶⁾ onto the endcap ⁽⁸⁾.
 - Confirm the groove is facing down towards the threaded holes / painted outside surface.
- Install the greased thrust washer ⁽²⁵⁾ onto the endcap ⁽⁸⁾.
- Install the Z-seal ⁽²⁴⁾ onto the endcap ⁽⁸⁾.
 - Confirm the grooves are facing **UP**.
- Install the cup seal ⁽²⁷⁾ into the interior of the endcap ⁽⁸⁾.
 - Confirm the O-ring has its groove facing **UP**.

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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Install the (2) split ring wear guides₍₂₃₎ onto the endcap₍₈₎.
 - Confirm the **WIDE** wear guide₍₂₃₎ is on the bottom, and the **NARROW** wear guide₍₂₃₎ is on the top.



- Install the exclusion seal₍₂₂₎ onto the shaft₍₁₀₎.
 - Confirm the groove is facing down towards the threaded holes / painted outside surface.
- Install the greased thrust washer₍₂₁₎ onto the shaft₍₁₀₎.



- Install the Z-seal₍₂₀₎ onto the shaft₍₁₀₎.
 - Confirm the grooves are facing up.
- Install the (2) split ring wear guides₍₁₉₎ onto the shaft₍₁₀₎.



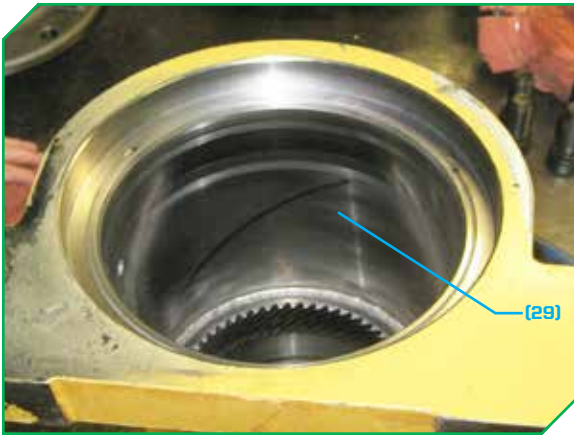
- Install the (2) O-rings₍₁₈₎ on the exterior and in the interior of the locknut₍₃₎.

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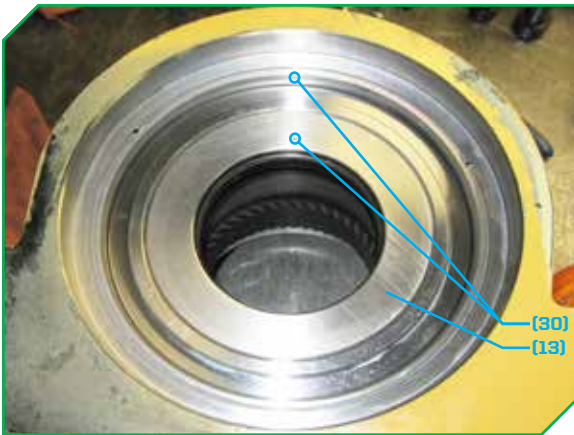
SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Once all of the seals have been installed, there should only be one large O-ring left in the kit as illustrated at left.



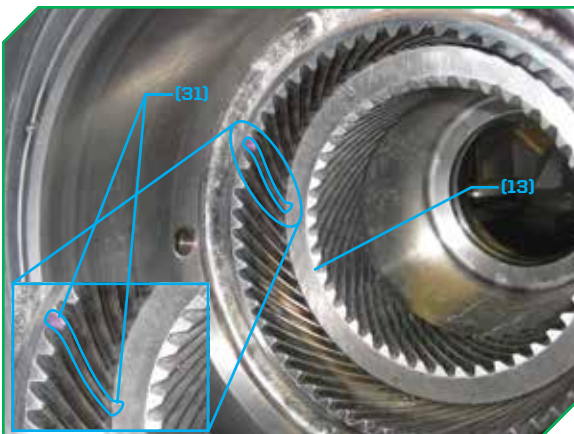
- Reposition the swivel actuator on the work surface so the top is positioned facing up.
 - Large smooth area ⁽²⁹⁾ is towards the top of the actuator.



- Carefully place the piston sleeve ⁽¹³⁾ down into the swivel actuator as illustrated.
 - Align the piston sleeve ⁽¹³⁾ to the swivel actuator utilizing the timing marks ⁽³⁰⁾.
 - **DO NOT** fully insert the piston sleeve ⁽¹³⁾ until the next step is completed first.

- Turn the swivel actuator around on the work surface so that you can look into the bottom of the swivel actuator.

- Locate the internal timing marks ⁽³¹⁾ on the piston sleeve ⁽¹³⁾ and swivel actuator.
 - Use a paint pen or marker to add visibility to the internal timing marks ⁽³¹⁾.
 - Confirm the timing mark ⁽³¹⁾ on the piston sleeve ⁽¹³⁾ groove is aligned with the top edge of the ridge with the timing mark ⁽³¹⁾ on the swivel actuator.
 - If the internal timing marks ⁽³¹⁾ in **THIS** step are not aligned exactly, pull the piston sleeve ⁽¹³⁾ from the swivel actuator and reinsert it. Confirm alignment and repeat as needed.

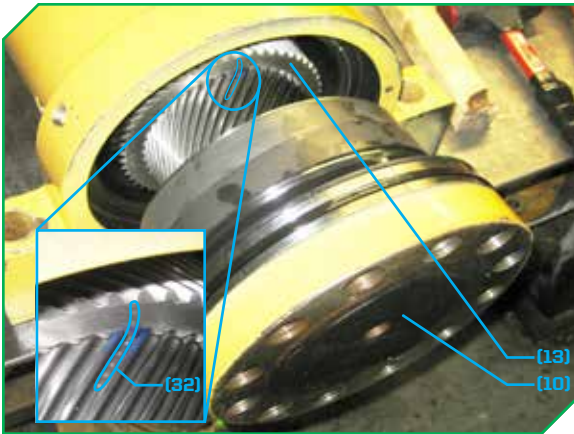


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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- When the piston sleeve⁽¹³⁾ has been correctly timed to the swivel actuator as described on the previous page, push it all the way in so it is fully inserted.



- Insert the shaft⁽¹⁰⁾ into the piston sleeve⁽¹³⁾.
 - Confirm the timing marks⁽³²⁾ on the piston sleeve⁽¹³⁾ edge are exactly aligned with the timing marks⁽³²⁾ in the shaft's⁽¹⁰⁾ groove as illustrated.
 - **NOTE:** Be cautious not to damage the shaft⁽¹³⁾ or swivel actuator surfaces. Confirm the seals are not folded over and wear guides are still properly seated.



- Thread the (2) cap bolts⁽¹²⁾ back into the base of the shaft⁽¹⁰⁾.
- Twist / thread the shaft⁽¹⁰⁾ back into the piston sleeve⁽¹³⁾ by turning the shaft⁽¹⁰⁾ clockwise.



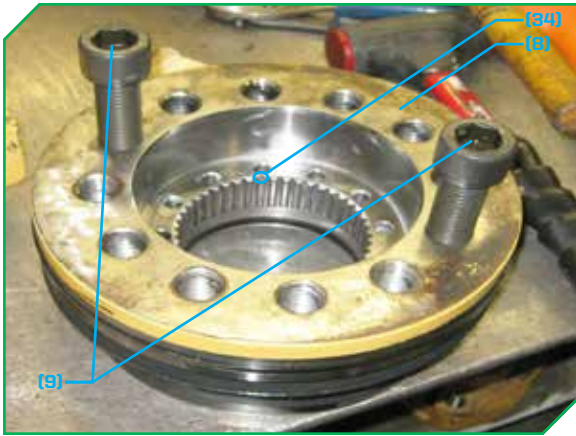
- Finish by fully twisting / threading the shaft⁽¹⁰⁾ into the piston sleeve⁽¹³⁾ until it is tight up against the swivel actuator as illustrated.
- Remove the (2) cap bolts⁽¹²⁾ from the shaft⁽¹⁰⁾.

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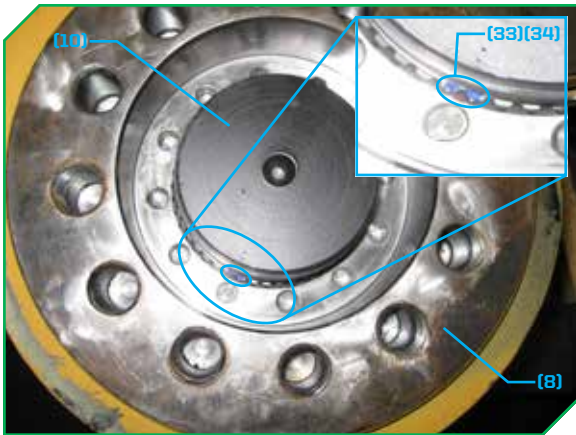
SWIVEL ACTUATOR REBUILD INSTRUCTIONS



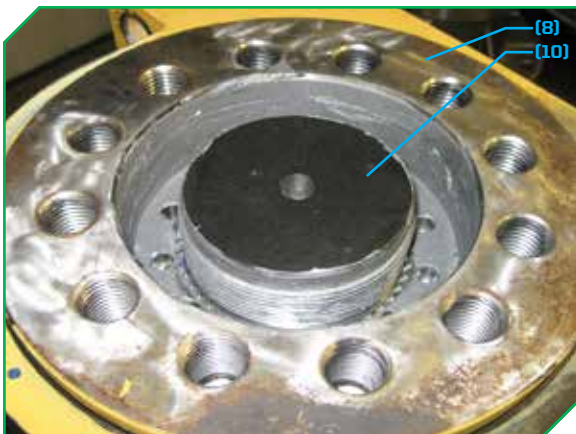
- Turn the swivel actuator around on the work surface until the top of the swivel actuator is facing you.
- Locate the timing mark (33) on one of the grooves of the shaft (10) as illustrated.



- Thread (2) cap bolts (9) into the endcap (8).
- Locate the timing mark (34) on one of the endcap's (8) ridges.



- Insert the endcap (8) over the shaft (10).
 - Confirm the endcap's (8) ridge with timing mark (34) is inserted into the shaft's (10) groove with timing mark (33) as illustrated.



- Push the endcap (8) into the swivel actuator until it is fully seated.
- Thoroughly apply anti-seize to the interior of the endcap (8) and exterior of the exposed shaft (10) as illustrated.

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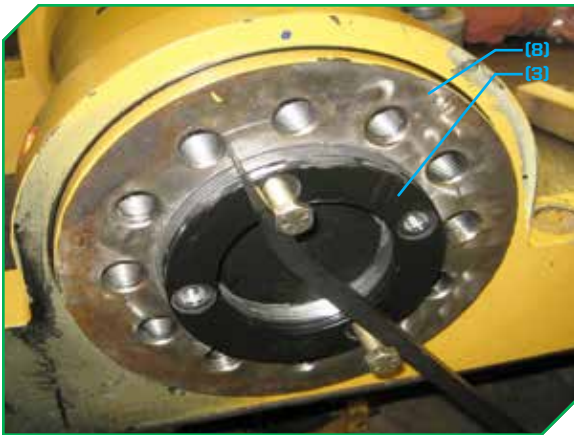
SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Thoroughly apply anti-seize to the exterior and interior of the locknut₍₃₎ as illustrated.



- Thread (2) hex bolts₍₅₎ into the locknut₍₃₎.
- Thread the locknut₍₃₎ into the endcap₍₈₎ by turning the locknut₍₃₎ clockwise.



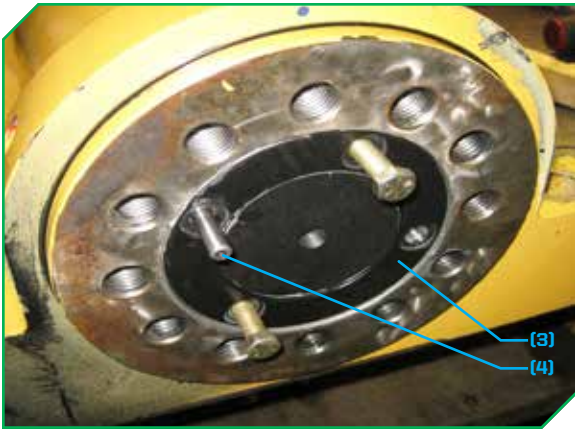
- Use a prybar as needed to continue threading the locknut₍₃₎ clockwise until it is fully seated into the endcap₍₈₎.



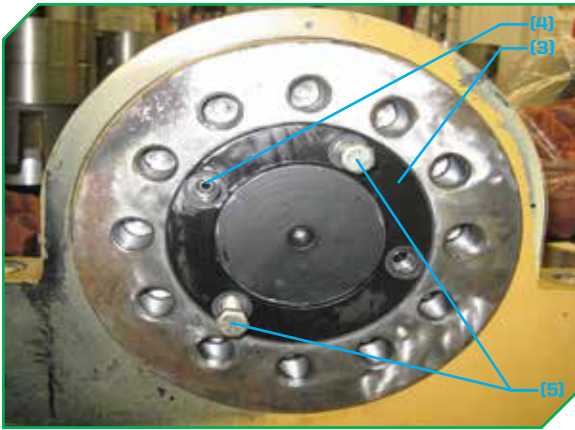
- Once the locknut₍₃₎ is seated, tighten it until one of the cap plug holes is aligned with the dowel pin₍₄₎ recess as illustrated.

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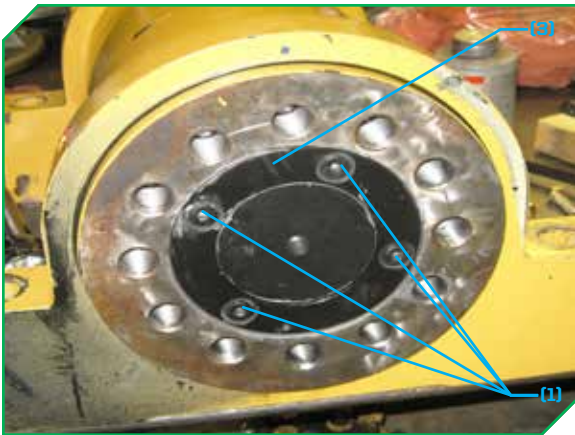
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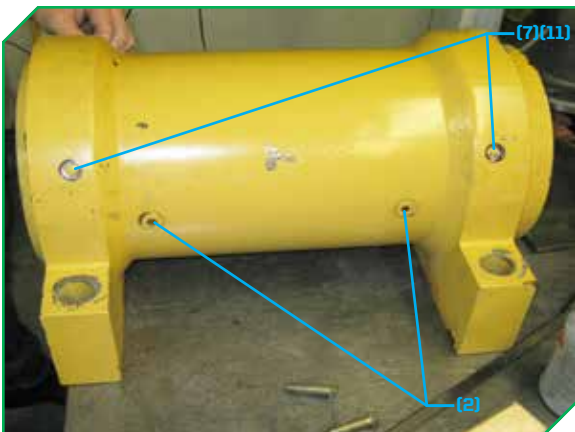
- Insert the dowel pin (4) (removed in the beginning of this manual) into the recess in the locknut (3) illustrated in the previous step.
 - Confirm the hole in the dowel pin (4) is facing out and visible as illustrated.



- Confirm the dowel pin (4) is fully seated in the locknut (3) as illustrated.
- Remove the hex bolts (5) from the locknut (3).



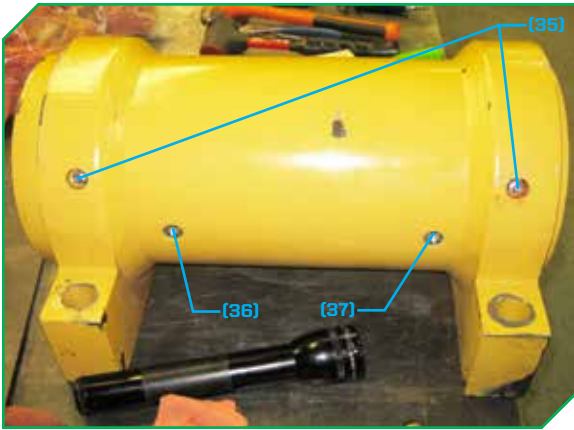
- Replace the (4) cap plugs (1) into the locknut (3).
 - Confirm (4) cap plugs (1) are fully tightened down.



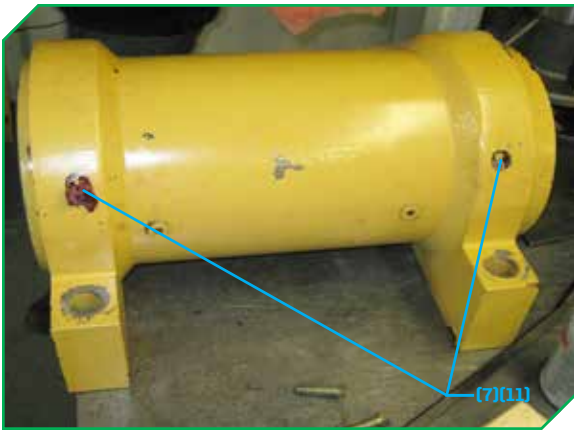
- Thread (2) port plugs (2) into the swivel actuator on one side.
- Thread the (2) grease purges (7)(11) previously removed earlier in this manual back into the housing as illustrated.

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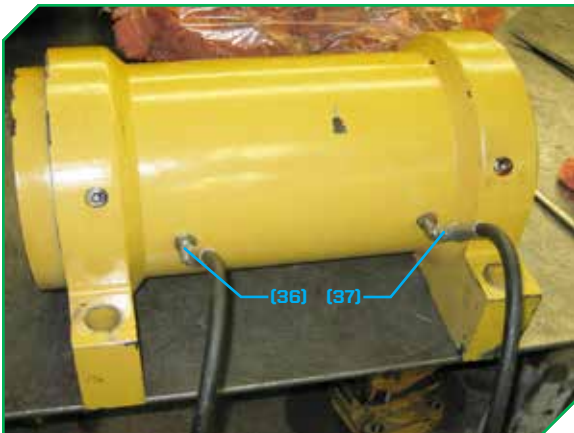
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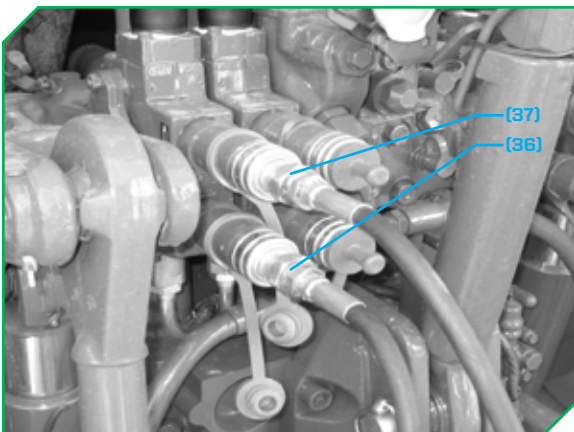
- Turn the swivel actuator around to gain access to the grease zerks (35).
 - Confirm the bottom (36) and top (37) ports on this side are not plugged as illustrated.
- Grease the zerks (35) until grease is expelled thru the grease purges on the opposite side as illustrated.



- Plumb a hydraulic hose line to each port (36)(37) as illustrated.
 - Hoses should be equipped with quick disconnects for plumbing to tractor auxiliary hydraulics.

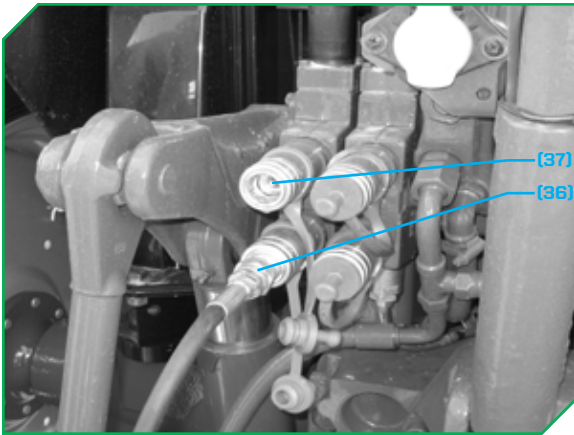


- Connect the top (37) and bottom (36) hoses from the swivel actuator to the top and bottom ports on the tractor's auxiliary hydraulics.
- Start the tractor, and begin cycling the swivel actuator one direction (bottoming it out) and holding for several seconds. Repeat for the other direction. Repeat this procedure for 20-25 cycles.
 - Check for oil leakage.
 - There should be **NO** leakage.

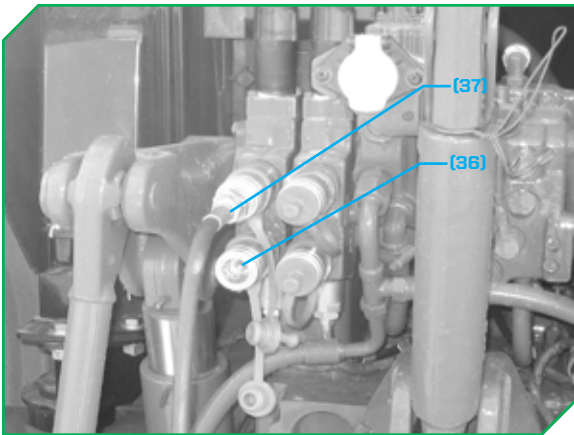
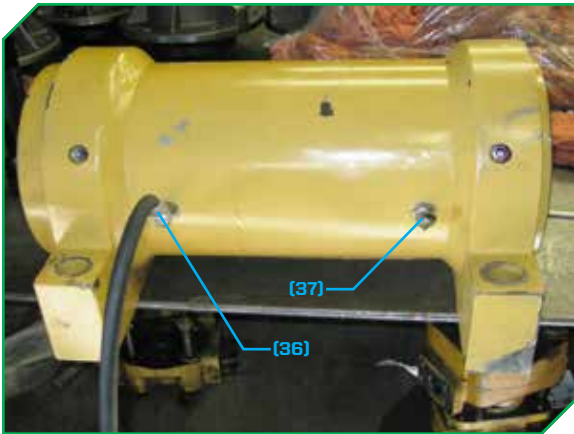


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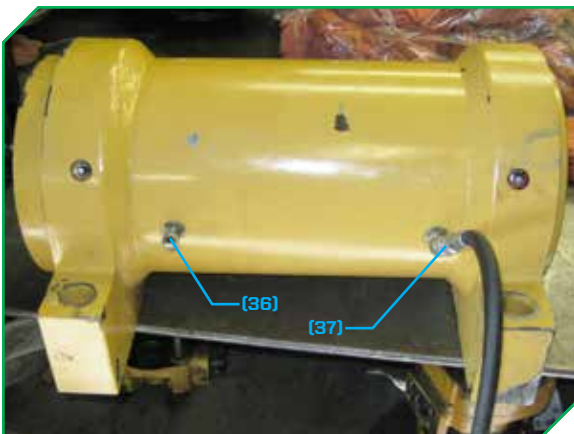
SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Cycle the swivel actuator to one side until it stops and disconnect the top ⁽³⁷⁾ hose from the tractor.
- Remove the top ⁽³⁷⁾ hose from the swivel actuator.
- Cycle the bottom ⁽³⁶⁾ hose from the tractor's auxiliary hydraulics, pressurizing it for several seconds.
 - Observe for oil blow-by by looking for oil coming out of the top ⁽³⁷⁾ port.
 - There should be **NO** oil blow-by.



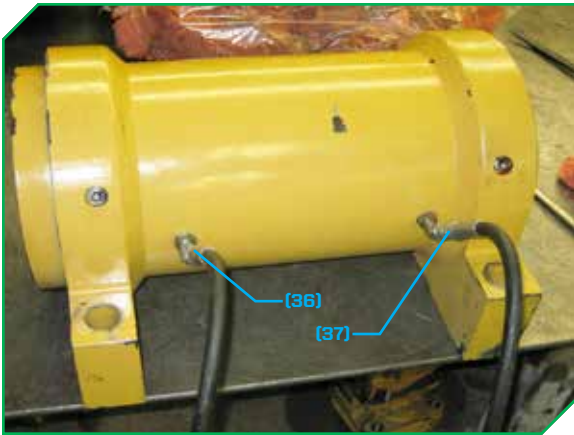
- Re-attach the top hose to the tractor's auxiliary hydraulics and to the top ⁽³⁷⁾ port on the swivel actuator.
- Cycle the swivel actuator the opposite direction until it stops.
- Disconnect the bottom ⁽³⁶⁾ hose from the swivel actuator and the tractor's auxiliary hydraulics.



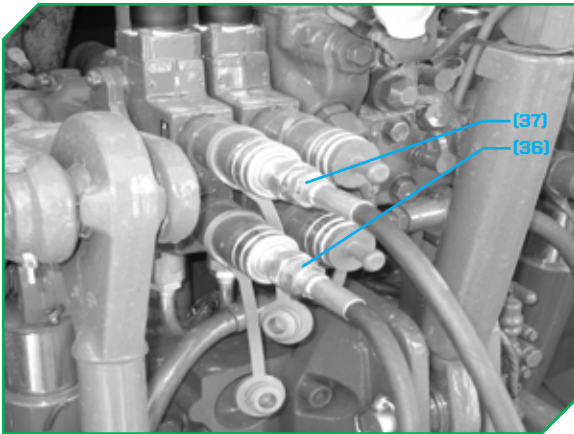
- Cycle the top ⁽³⁷⁾ hose from the tractor's auxiliary hydraulics, pressurizing it for several seconds.
 - Observe for oil blow-by by looking for oil coming out of the bottom ⁽³⁶⁾ port.
 - There should be **NO** oil blow-by.

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SWIVEL ACTUATOR REBUILD INSTRUCTIONS



- Reconnect the bottom ⁽³⁶⁾ hose to the swivel actuator and the tractor's auxiliary hydraulics.
- Cycle the swivel actuator both directions several times.
 - Finish by running the piston sleeve up all the way to the top of the swivel actuator.
- The rebuild process is now finished. Assuming there was no malfunction or leakage, the actuator is fully rebuilt.



- Reinstall the swivel actuator into the mainframe.
 - The boom mounting surface ⁽³⁸⁾ should face to the rear of the tractor for booms equipped with a rear travel rest.
 - The swivel actuator should be rotated counter-clockwise (1) mounting hole increment ⁽³⁹⁾ (as viewed from the top) from where the boom mounting surface ⁽³⁸⁾ was facing to the rear of the tractor for booms **NOT** equipped with a rear travel rest.
- Re-attach the hydraulic hoses and test for correct function ⁽⁴⁰⁾ and position prior to remounting the boom to the swivel actuator.