

# Recertification Instructions

(for 25'/30' Slickline Sheaves)

## **Receiving and Initial Inspection**

- Fill out the customer information section of the recertification form doc. # WTI-89.
- Note and record any apparent damages or problems.
- Find and record the serial number of the sheave e.g. (AA-01), located on the manufacturing tag affixed to the wheel.

## **Preparation for Testing**

- Use a 9/16" box end wrench to remove all of the hex head cap screws[19], washers[20], and shrouds[21].
- Position the sheave with the front plate[22] up.
- Use a 1/4" punch to drive the spiral pins[36] out of the front axle nut[23] and remove them.
- Use a spanner wrench to remove the axle nut.
- Retract the locking pins[12].
- Rotate and remove the front plate.
- Remove the wheel assembly[29,30,31,32,33] along with both seal plates[27] and both bearings[28].
- Note the condition of the grease on the recertification form.
- Remove the locknut[42] and shoulder screw[5] from the slotted heavy hex nut[18]. See updates section below.
- Remove the slotted heavy hex nut from the clevis stud.
- Remove the clevis assembly[1,2,3,4,5,8,39,40,41,42] from the rear plate[34].
- Remove the clevis load washer[16], and the shock cushion[15] from the rear plate.
- Replace the clevis load washer and clevis assembly, not the shock cushion.
- Replace the slotted heavy nut onto the clevis stud.
- Install the test wheel assembly, part number TF-256 onto the axle shaft[35].
- Replace the front plate.
- Replace the front axle nut hand tight.

## **Proof Testing**

- Determine the required proof test load. This load will be listed in doc. # WTI-63 Load Rating Chart.
- Proof test the sheave with the approved apparatus, part # TF-203 or similar equipment, If the line load is indicated on the readout stop at 1/2 of the proof test load, the load on the sheave will be double.
- Document the proof test on the recertification form.
- Remember to keep the parts from this sheave separate from any other parts, as they have now been proof tested.
- Complete and sign the Proof Test Certification, doc. # WTI-90.

## **Disassembly**

- Remove the front axle nut[23].
- Remove the front plate[22].
- Remove the test wheel assembly.
- Remove the axle shaft[24] from the rear plate[34].
- Use a 1/4" punch to drive the spiral pins[36] out of the rear axle nut[23] and remove them.
- Carefully hold the axle shaft in a padded vice and use a spanner wrench to remove the axle nut.
- Remove the seal plates[27] and bearings[28] from the hub[31].
- Remove the slotted heavy hex nut from the clevis stud.
- Remove the clevis assembly[1,2,3,4,5,8,39,40,41,42] from the rear plate[34].
- Use a 1/8" allen wrench to remove the other shoulder screw[5,6,or7] from the clevis assembly and disassemble it.
- Remove the clevis load washer[16] from the rear plate.
- Use a 9/16" open end wrench to remove the hex nuts[14] from the set screws[13].
- Use a 3/16" allen wrench to remove the set screws[13] from the rear plate.

- Working through the slot in the rear plate, use a hammer and 3/16" punch to drive the spiral pins[10] out of the collars[11].
- Remove the locking pins[12], collars and springs[9] from the rear plate.
- If required by the NDT inspection company, use a hydraulic press to remove the reinforcement rings[24] from the front and rear plates.

## **Contact the Customer**

- If there are any repairs that need to be made, contact the customer for approval.

## **Updates**

- If the slotted heavy nut[18] is retained with a cotter pin or a spiral pin, replace it with a shoulder screw[5] and a lock nut[42].

## **Non-Destructive Testing**

- Visually inspect all load bearing components for cracks or damage.
- Inspect bearings for any damage including but not limited to: wear, discoloration from heat, fretting or flaking, brinelling (indentation of the rollers into the races), pitting, or corrosion. Replace any bearings which have any of these indications. Bearings can be removed from wheels using bearing removal tool, part number TF-255.
- Inspect the wheel groove for wear. See figure 1. Insert a radius gauge corresponding to the original groove size listed in doc. # WTI-16. If the groove has worn more than 20% from its original form, recommend wheel re-grooving to the customer. Wheels can be re-grooved up to 0.250" deeper than their original diameter. If the wheel cannot be re-grooved within this depth recommend wheel replacement.

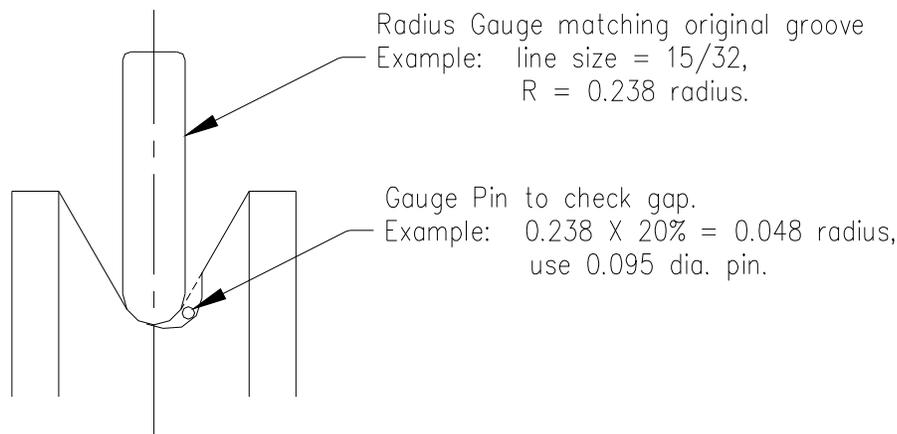


Figure 1. Wheel Groove Inspection

- If the shrouds are damaged replace them.
- Inspect the axle shaft to determine that it is still straight and round within 0.010". If not, replacement is recommended.
- Inspect the front plate[22] and rear plate[34], using eddy current testing. Follow MIL-STD-271 and reject any parts with linear indications.
- Visually inspect the wheel for any cracks. If there are any possible indications, perform a dye penetrant test and reject any parts that have any linear indications.
- Perform a magnetic particle inspection on the following components: clevis-atlas[1] clevis eye[2], locking pins[12], and axle shaft[35]. Follow ASTM E 1444 and reject parts that do not meet the grade C quality level as defined in MIL-STD-1907.
- Perform a magnetic particle inspection on the clevis-sj[3]; following MIL-STD-1907. Reject parts that do not meet the grade C quality level for class 3, as defined in MIL-STD-2175A.
- Dye penetrant test the jaw clevis[4], slotted heavy hex nut[18], and the clevis stud[39,40,or41]. Follow ASTM 1417 and reject any parts with linear indications.
- Replace any discrepant parts, identify them as scrap, and segregate them from the assembly area.

## **Contact the Customer**

- If there are any repairs that need to be made, contact the customer for approval.

## **Document Changes**

- If proof testing or non-destructive testing has revealed any defects, inform the customer of the need to replace the parts.
- Document the changes to be made and record all lot and serial numbers of the components.

## **Re-Assembly**

- Replace the clevis[1,2,3,or4] onto the clevis stud[39,40,or41] and reinstall the shoulder bolt[5,6,or7] and locknut[42].
- Replace the nylon washer[8], the clevis assembly[1,2,3,4,5,8,39,40,41,42], the shock cushion[15], the clevis load washer[16], and the slotted heavy nut[18].
- Tighten the slotted heavy nut till the hole in the clevis stud is fully visible.
- Install the second shoulder bolt[5] and locknut[42].
- Insert the springs[9], collars[11], and locking pins[12] into the rear plate[34].
- Line up the holes and install new spiral pins[10] into the collars.
- Install the set screws[13] into the rear plate and tighten till they bind the locking pins.
- Loosen the set screws just enough so the locking pins are free again.
- Hold the set screws in this position and install and tighten the hex nuts[14].
- Install one axle nut[23] onto the axle shaft[35] so the chamfer is out and stop when the ends are flush.
- Install two new spiral pins[36] into this axle nut and drive them flush with the inside of the axle shaft.
- Install the axle shaft through the rear plate.
- Place new o-rings[25,26] into the grooves of the seal plates[27].
- Pack grease into the bearings[28].
- Install one seal plate, chamfered side first, onto the axle shaft.
- Install one bearing onto the axle shaft.
- Install the wheel[33] onto the axle shaft, with the manufacturing tag[38] up.
- Inject some additional grease into the hub[31] in a circle above the bearing.
- Install the second bearing and second seal plate, chamfered side out.
- Place the rear plate close enough to the edge of the work bench so the axle nut is free.
- Retract the axle shaft enough to relieve the pressure inside the hub.
- Press the seal plate down till all the bearings and seals are tight together and any extra grease has been purged.
- Replace the front plate[22].
- Replace the second axle nut and preload bearings by tightening to 100 inch pounds then tighten to next hole.
- Install two new spiral pins into the axle nut and drive them flush with the inside of the axle shaft.
- Replace the shrouds[21], washers[20], and hex head cap screws[19].
- Verify smooth wheel rotation and smooth locking pin travel.

## **Final Inspection**

- Have someone, other than the person who conducted the recertification or repairs, conduct a final inspection to the sheave, utilizing the Final Inspection Checklist, doc. # WTI-88.

## **Documentation**

- Stamp the date into the inspection tag on the cover of the sheave.
- Make sure the Recertification Form (doc. # WTI-89) is complete, signed, and dated.
- Send a copy of this Recertification Form (doc. # WTI-89), the Proof Test Certification (similar to doc. # WTI-90), the Final Inspection Checklist (doc. # WTI-88), and the Repair Invoice to WTI to be filed with the sheaves permanent records. Return the sheave to the customer along with a copy of the Proof Test Certification and the Recertification Form and an owners manual.
- Remind the customer to return the sheave in one year for its next recertification.