



LTC Nylon Brake Rollers WES Service Advisory

For Users of Waukesha® UZD LTC Equipped Transformers

The purpose of this Service Advisory is to alert you to the maintenance and lubrication that may be necessary to prevent excessive wear of the Nylon Brake Rollers located in the Spring Drive Compartment of your Waukesha® UZD Load Tap Changer. In addition to describing brake roller inspection and lubrication, this advisory provides information on obtaining replacement nylon brake rollers, if needed, for continued LTC performance and reliability.

NYLON BRAKE ROLLERS

The nylon rollers are part of the brake assembly located in the spring drive compartment of the LTC. This air-filled compartment is adjacent to the oil filled selector switch compartment and is accessible by removing the two access plates on the front and side of the LTC. The function of the nylon rollers is to open the brakes by riding up and out of the cam slots on the flywheel. The brakes are then reapplied to stop the momentum of the flywheel upon completion of the tap change. Waukesha's Nylon Brake Roller design has been thoroughly tested and has operated successfully for many years with minimum maintenance required.

INSPECTION FOR WEAR

The Nylon Brake Rollers should be inspected for wear during your next scheduled maintenance interval. You can quickly check the rollers for excessive play by tipping each roller from side-to-side while installed on the axle. If looseness and wear is detected, remove the rollers for a closer inspection being careful not to lose the flat washers on each side of the rollers. If the inside diameter of either roller measures greater than 1/4" (6.35 mm), the roller(s) may be wearing prematurely for various reasons, including possible over-tightening of the brake springs and lack of proper lubrication. If this is the case, both rollers should be replaced by authorized service personnel. Consult the LTC section of your Instruction Manual for proper brake adjustment following roller replacement or lubrication.

*Waukesha®
Transformer
with UZD Load
Tap Changer*



*Waukesha UZD
Load Tap Changer
Spring Drive
Compartment with
Access Plates
Removed for Brake
Roller Inspection*



CAUTION

Excessively worn rollers can affect the timing of the LTC, which may lead to shorter contact life and accelerated oil degradation. This condition can cause the brakes not to open properly resulting in a "slow motion" tap change of the main selector switch. The reduced speed of the selector switch will also increase arcing time between tap changes.

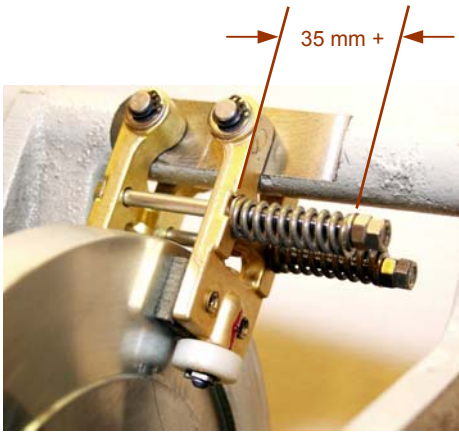


Figure 1: LTC Brake and Nylon Roller Assembly with minimum 35 mm Setting for Spring Tension (Note: Over-tightening may cause accelerated wear of the nylon brake rollers)

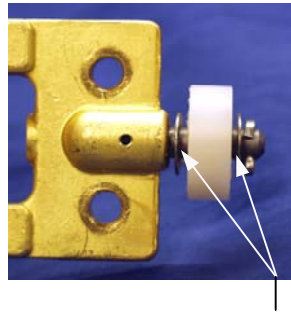


Figure 2: If original rollers are reused, apply Exxon / Beacon P290 grease to each side of nylon roller surface near axle and reassemble with both washers and the cotter pin. Rollers should rotate smoothly without radial play (Note: Parts on axle have been expanded to show washers)

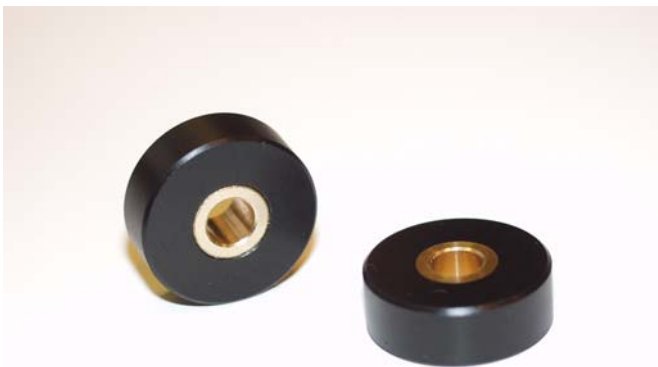


Figure 3: Dual Nylon Rollers open the brakes by riding up and out of the cam slots on the flywheel. During scheduled service intervals, inspect and clean flywheel and nylon rolling surfaces

IMPROVED ROLLER DESIGN

Because we have seen some nylon rollers with prematurely worn or enlarged inside diameters, Waukesha Electric Systems has developed and extensively tested a new material combination for this roller to reduce the probability of wear. The new design utilizes a lubricant-impregnated bronze insert for the inside diameter of the roller which does not require additional axle lubrication. The bronze insert material will also be more resistant to increased pressure if the springs are over-tightened.

To simplify brake roller replacement, the new design is directly interchangeable with the previous roller. The nylon roller material is also the same as the original design but a black dye has been added so it will be easy to tell them apart. This is important since the new lubricant-impregnated bronze insert may not be easily visible when assembled on the axle shaft with washers on either side.



The new Waukesha UZD Load Tap Changer Nylon Brake Roller design with lubricant-impregnated bronze insert eliminates the need for axle lubrication

INSPECTION AND LUBRICATION OF EXISTING ROLLERS

Waukesha® UZD LTC Nylon Brake Rollers have successfully passed a life test of 1,000,000 operations with no lubrication of the axles. However, to increase the continued reliability and performance of your LTC, we recommend that your existing rollers and axles be inspected, cleaned, and the axles lubricated per the following procedure (Steps A1 – A7), at your next service interval.

- A1. Use angled pliers to remove the cotter pin from the shaft and slide the nylon roller off from each axle (do not lose the two washers or cotter pin since they will be needed for proper reassembly). Use a small pry bar to separate the brake shoe from the flywheel. Use care not to damage the brake pad or flywheel.
- A2. Clean the outside and inside of the nylon rollers, the axle shafts, and each side of the flywheel. Check the axle shafts for burrs.
- A3. Measure the I.D. (inside diameter) of each nylon roller. If the diameter is greater than 1/4" (6.35 mm), replace the rollers and proceed to Step B5. If the inside diameter is OK and you want to reuse the original rollers, proceed to Step A4 for proper lubrication. If you choose to replace the rollers, proceed to Step B5.
- A4. To lubricate the axles of the original nylon rollers, apply a small amount of approved lubricant to the Inside Diameter of each roller. Acceptable lubricants are:
 - Exxon / Beacon P 290 Grease
 - BP Grease LS 1
 - Mobil Grease BRB Zero
 - SKF 63
 - Texaco All Temp. Grease.

CAUTION: Do not get any grease on the Outside Diameter of the nylon rollers, brake flywheel or brake pads.

- A5. Reassemble the rollers onto the lubricated axle using both flat washers and the cotter pin (see Figure 2). Refer to your Instruction Manual to check for proper brake operation in both directions.
- A6. Make adjustments to the brake spring tension as needed to stop flywheel rotation between the indicator marks on the flywheel that are appropriate to the direction of travel. Spring tension setting should not be less than 35 mm as measured between flat washers (see Figure 1). Note: Over-tightening may cause accelerated wear of the nylon brake rollers.
- A7. If the flywheel rotation cannot be stopped between the appropriate indicator marks with a brake spring length of 35 mm or greater, complete brake replacement may be required. Contact Larry Kriege at WES Transformer Service (800-835-2732 ext. 1507) for additional information.
- B6. Lubrication of the replacement brake roller axles is not required since the new rollers have lubricant-impregnated, bronze inserts.
- B7. Make adjustments to the brake spring tension as needed to stop the flywheel rotation between the indicator marks on the flywheel that are appropriate to the direction of travel. Spring tension setting should not be less than 35 mm as measured between flat washers (see Figure 1). Note: Over-tightening may cause accelerated wear of the nylon brake rollers.
- If the flywheel rotation cannot be stopped between the appropriate indicator marks with a brake spring length of 35 mm or greater, complete brake replacement may be required.

This completes the inspection and lubrication process for existing brake rollers. Proceed to Step B1 for nylon brake roller replacement.

NYLON BRAKE ROLLER REPLACEMENT

- B1. Use angled pliers to remove the cotter pin from the shaft. Remove and discard the used cotter pin and outside washer.
- B2. Use a small pry bar to separate the brake shoe from the flywheel. Use care not to damage the brake pad or flywheel.
- B3. Remove and discard the existing roller and inside washer.
- B4. Wipe the axle shaft clean and check for burrs.
- B5. Install the replacement roller by assembling the inside washer, roller, outside washer and cotter pin supplied in the Brake Roller Replacement Kit, either:
- ❑ **HVS Part Number: 1030-043K-V1**
 - ❑ **Waukesha Part Number: 550012R1473**

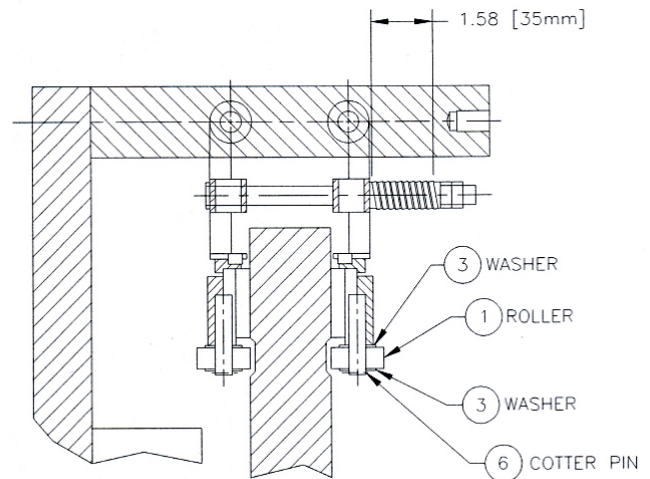
*Nylon Brake Roller assembly for
Waukesha® UZD Load Tap Changer*

KIT ORDERING AND CONTACT INFORMATION

If you need replacement Waukesha UZD LTC Nylon Brake Rollers please contact High Voltage Supply at 800-338-5526 and ask for the Sales department. Request HVS Part Number 1030-043K-V1. You will need to request one Brake Roller Replacement Kit per UZD LTC. These kits will be supplied to you at no charge.

If you have questions or require additional information, please contact Larry Kriege at WES Transformer Service at 800-835-2732 ext. 1507.

At Waukesha Electric Systems, your satisfaction is our most important goal.





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