

UTCIRAS

UTC/RAIL & AIRSOURCES, INC.

ROLLER BEARING RECONDITIONING OVERVIEW

By:

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INTRODUCTION

UTC/RAIL & AIRSOURCES, INC. is an **AAR Certified** manufacturing facility offering the capabilities and major attributes necessary to meet and exceed the manufacturing requirements in any of the following areas:

1. Metal Fabrication & Precision Machining
2. Wheel and Axle Manufacturing
3. Bearing Qualification
4. Truck Overhaul
5. Train-Line Jumper Manufacturing
6. Engineering Support
7. Quality Assurance Program / **AAR Certified**

UTC/RAIL & AIRSOURCES, INC. has a proven track record and has always maintained the highest ethical business standards. Our solid business base, financial background and expertise in Rail Road engineering technology places us at the forefront of today's industry. We offer services including: Precision Machining and Metal Fabrication, Wheel and Axle Assembly (ranging from light rail vehicles to high-speed passenger trains), New Truck Assembly, Roller Bearing Reconditioning, Truck & Gearbox Remanufacturing, Train-line Jumper/Wire Harness Assembly as well as other specialty component manufacturing.

UTC/RAIL & AIRSOURCES is dedicated and committed to supporting any and all contract awards. And, as a certified **SMALL DISADVANTAGED AND WOMAN BUSINESS ENTERPRISE**, we can provide you with **DBE** and **WBE** content requirements.

RECONDITIONED BEARINGS

Bearing maintenance is one of the most important measures taken to ensure the life of the roller bearing, the longevity of the wheel & axle assembly, and the safety of those who utilize trains for commercial and/or passenger applications. Approximately one million new or reconditioned roller bearings are mounted each year, according to the AAR (Association of American Railroads). The roller bearing reconditioning process, therefore, is a meticulous process which demands adherence to the most stringent standards. The process consists of four major steps which include:

- Cleaning
- Inspection
- Assembling
- Quality Assurance



BEARING BEFORE RECONDITIONING



BEARING AFTER RECONDITIONING

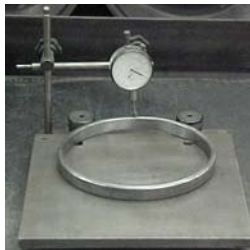
CLEANING PROCEDURE

UTC/RAS utilizes a state-of-the-art Proceco TYPHOON[®] heavy-duty, turntable, power-spray washer designed to clean and rinse large and small parts. Applications include degreasing, surface treatment and phosphating. Hot, low-concentration detergent solutions are used to clean parts. The initial wash cycle is followed by a cold rinse to remove any detergent residues. UTC/RAS also strongly adheres to all EPA & OSHA requirements.



INSPECTION PROCEDURE

After the cleaning process, UTC/RAS thoroughly inspects each roller bearing component part, adhering to AAR standards and recommended practices, OEM specifications, and/or customer specifications. The roller bearing component parts inspected consist of the cup (outer ring), the cone (inner ring), spacer, wear ring, backing ring, end cap (if applicable), & cap screws (if applicable). Any roller bearing component part that is found to be outside any of the aforementioned specifications will be “scrapped” and replaced by either new or reconditioned parts.



ASSEMBLY PROCEDURE

Once the roller bearing component parts pass inspection (within AAR standards and recommended practices, OEM specifications, and/or customer specifications) the assembly process can begin. The cup (outer ring), spacer, and cones (inner rings) are then lateraled to ensure that the required OEM specifications have been met. After the roller bearing has been found to conform to acceptable lateral movement specifications it is then transferred to the greasing and assembly station. Utilizing a metering system the correct amount of new grease (according to OEM specifications) is then applied to the roller bearing. Finally, new seals, wear rings, backing rings, end caps and cap screws (if applicable) are applied, completing the roller bearing assembly process.



QUALITY ASSURANCE

The UTC/RAS bearing facility is approved by the AAR (Association of American Railroads) and is certified under the AAR M-1003 Quality Assurance Program. UTC/RAS goes above and beyond AAR guidelines and requirements by implementing a unique aspect to roller bearing quality assurance. As stated earlier, UTC/RAS performs a 100% inspection on each roller bearing component part. Under the UTC/RAS Roller Bearing Quality Assurance Program, an additional lot audit inspection of 15% is completed. UTC/RAS also visually inspects an additional 5% of the original lot. Therefore UTC/RAS inspects roller bearings and their component parts with a 120% inspection. Along with AAR certification and approval, UTC/RAS maintains certified instruments and gages to ensure that each reconditioned roller bearing is of the highest quality.



SUMMARY

UTC/RAS is an AAR certified wheel, axle, truck assembly and bearing facility utilizing state-of-the-art manufacturing techniques and services to meet our customers every railroad need. Roller bearing function is the very lifeline of every railroad wheel assembly and we here at UTC/RAS fully understand this. We deem the reconditioning process of each and every roller bearing to be of the utmost importance and under our distinctive Quality Assurance Program we implement techniques to ensure that the highest standard of quality is adhered to. In conclusion, roller bearings, depending on wear, can be returned to service (after reconditioning) for a fraction of the cost of new bearings. Thank you for considering UTC/RAS for your roller bearing reconditioning needs.



UTC/RAS where we always put “U” first.