



Epic Enterprises, Inc.

TEXTILE MACHINERY PARTS & SERVICE
P.O. Box 979 • Southern Pines, NC 28388-0979 USA
(910) 695-5441 • (910) 692-9013 Fax
E-Mail: epic@epicenterprises.com • Website: www.epicenterprises.com

RING MAINTENANCE TIP #3 AVOIDING RING BREAKAGE WITH SINTERED RINGS

THE SINTERED RING, A FINE WATCH

REVIEW: Ring Tip #1 covered the extreme importance of regular chemical cleaning of the ring's internal structure every 2 to 3 years if run with petroleum ring oil, and every 3 to 5 years if run with pure synthetic ring oil. Ring Tip #2 covered the importance of the external cleaning of the surfaces of the ring, holder, rails, and separators every 2 to 3 months.

Ring Tip #3 covers the avoidance of ring breakage.

Rather surprisingly, EXPERIENCE SHOWS THAT ABOUT 5 TO 10% OF ALL SINTERED RINGS IN SERVICE ARE CRACKED or otherwise defective. Most defects can be observed while the ring is in the holder. Hair line cracks and other defects are a prime source of ends-down; as the traveler hits these largely unseen defects, the defect causes the traveler to jump, resulting in a momentary variation in tension; if a tension spike coincides with a weak spot in the yarn bundle, there is a broken end. Even if the end does not break, there is filament breakage within the yarn bundle.

Further, a sintered ring crack means that there is a direct flow of oil through the crack, leading to excess oil on the ring (yarn staining) and leakage onto the entire area and floor.

THE SINTERED RING IS, BY NATURE, QUITE BRITTLE AND SUBJECT TO BREAKAGE. The high hardness of the carbon steel ring and its sintered, powder metallurgical structure mean brittleness. The likelihood of breakage increases with narrow cross-section rings, (generally under 0.150" or 4mm wall thickness) and with large diameter, low height rings such as an 8.5" x 3/8" (216mm x 9.5mm) size.

CAUSES OF CRACK AND DEFECTS are many and include:



crack, not visible in compression of holder



same ring when removed from holder

1) **FAULTS PRIOR TO INSTALLATION AND DURING INSTALLATION:** Somewhat rarely, there are faults resulting from manufacture, where rings delaminate laterally (see photograph) from improper pressing and sintering. Some rings are broken during shipment to the plant, while rough handling during installation breaks many others. Visual inspection in receiving will not reveal hairline cracks of rings in their holders. Obvious cracks, chips, and de-lamination can be seen. Inspect all rings prior to installation; do not install faulty rings. Employees must be made aware that rings are very subject to breakage and that a ring assembly should be handled like a delicate watch.

2) **ROUGH HANDLING DURING USE:** It is almost impossible to avoid a certain amount of accidental breakage or edge chipping when a bobbin or a tool is dropped on the ring. The only way to minimize damage is to train operators, doffers and mechanics that the ring is fragile and highly susceptible to breakage; employees should be encouraged to look carefully at the ring after an unavoidable accident and to report a suspect ring.



delamination fault

2) **THE CASE OF THE SLIPPING RING:** Occasionally, a ring will loosen in its holder and start to rotate. Too often, this is solved by an overly zealous fixer over tightening the holder on the ring with the comment, "that ring will never slip again." Once the ring had slipped, the wick was broken, thus starving that ring of its oil supply; at the same time, over tightening may either crack the ring, or cause it to go egg-shaped, thus increasing the possibility of broken ends. Employees should immediately report a slipping ring, so that it may be removed for repair.

3) **VIBRATION AND RAIL MOUNTED HOLDERS VS BACK MOUNT HOLDERS:** Frame vibration is a primary source of breakage. Back mounted holders do not have the support that rail mounted holders have, and the incidence of both holder and ring breakage about doubles with back mounted holders from vibration. Back mounted assembly breakage can be attenuated, by using front stabilization bars.

The "Skinned Holder" is a special problem and induces breakage. Take the example of a 6" (152mm) gauge frame originally set up with 4.5" (114mm) rings; this is a safe condition because there is adequate holder width on the sides to support the ring, to prevent vibration cracking. The plant decides they can squeeze a 5" (127mm) ring on the frame to build a bigger package and reduce doffing labor. This is done by skinning a 5" holder (see photo), to squeeze it onto the frame; which substantially reduces the support that the holder gives the fragile ring, and leads directly to a very high incidence of vibration fracture of the ring and holder.

Further, the skinned holder is forced to rub against the separators, causing drag and bending of the holder and resultant breakage. This rubbing action also causes the holder sides (and separators) to wear over time, leading to a further loss of support for the ring and vibration fracture. Very often, the skinned holder was not equipped with nylon wear studs to prevent both wear of the holder and separator. Epic can add replaceable nylon studs to avoid breakage from wear and bending from holder contact.

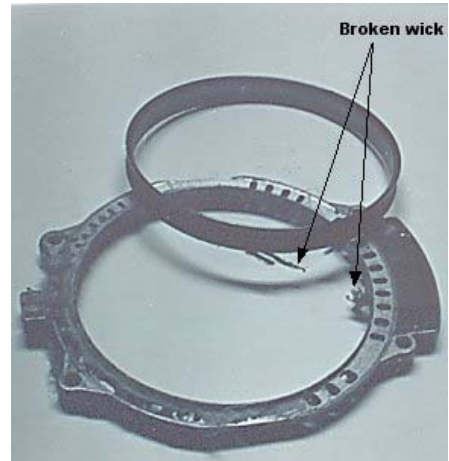
The skinned holder should be avoided. Locate and correct sources of vibration. Secure all holders with star washers. Regularly check holders for tightness. Back mounted holders (holding 5.5" or 140 mm or larger rings) with individual reservoir assemblies should be equipped front stabilization bars. Note that front mounted manifold systems serve the same purpose as the front stabilization bar.

5) **REMOVAL FOR REPAIR AND REWICKING:** Generally, it is safe for the plant to remove a manifold type ring assembly (e.g., Centrilube, Eadie-Lube, etc.) for repair and re-wicking because repair is relatively uncomplicated. The individual reservoir assembly is more complicated and involves special tools, seals, sealants, and parts; therefore, it is generally advisable to have an experienced full service agency do this repair work on the individual reservoir assembly. Inexperienced personnel performing ring assembly repair work often causes breakage of ring and/or holder and follow-on problems from incorrect rebuilding.

Epic Ring Service is the only full service agency in the Americas with a stock of thousands of different parts for all ring types; the processing equipment for professional internal and external cleaning; and the specialized tools and fixtures for disassembly and reassembly.

ALWAYS SAVE BROKEN HOLDERS- WIRE THE BROKEN SEGMENT TOGETHER: Holders can be repaired by welding, yielding a stronger holder than the new holder. Welding performed by Epic will be covered in a subsequent Ring Tip.

If you did not receive Ring Maintenance Tips #1 and/or #2, contact Epic.



wick breaks when ring slips in holder



the fragility of a "skinned" holder