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 #13
THE INDIVIUAL RESERVOIR AND MANIFOLD HOLDER ASSEMBLIES

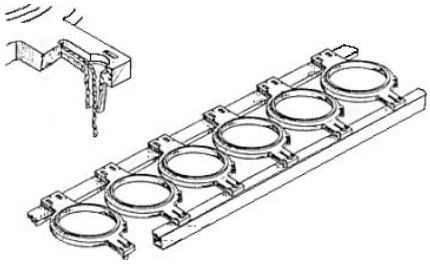
REVIEW: Ring Tip #1 covered the extreme importance of regular chemical cleaning of the ring's internal structure. Ring Tip #2 covered the importance of the external cleaning of the surfaces of the ring, holder, rails, and separators. Ring Tip #3 covered the avoidance of ring breakage. Ring Tip #4 covered avoiding ring breakage with sintered rings. Ring Tip #5 dealt with reducing ring heat and the plant electric bill. Ring Tip #6 reviewed controlling ring oil usage with sintered rings. Ring Tip #7 covered the non-recommended addition of chemical ring cleaners to ring oil. Ring Tip #8 covered periodic wick replacement for sintered and solid steel rings. Ring Tip #9 summarized the importance of traveler fit and weight in ring spinning and twisting. Ring Tip #10 covered sintered ring pore volume, oil bleed rates, and oil viscosity. Ring Tip #11 covered ring oil types and their effect on ring spinning and twisting productivity. Ring Tip #12 covered ring oil viscosity and the lubricated ring.

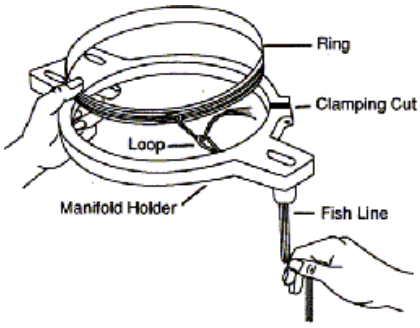
GENERAL: With heavy denier yarns (carpet yarn, tire cord, wool and twines) where oil usage is higher than with finer denier yarns, the trend is toward centralized lubrication or manifold oil delivery systems. With finer denier yarns such as worsted, there is also a move toward the manifold type system because of the number of positions on a frame that require hand filling of individual reservoirs. The move toward manifold systems has been largely prompted by the labor savings.

Because fine denier twisting or draw twisting uses so little oil, and also because ring assemblies are often removed for repair or replacement, there has been almost no need for a centralized manifold system.

TYPES OF CENTRALIZED MANIFOLD SYSTEMS: There are basically three types of manifold systems:

1) **Gravity-Fed Manifold Systems** are probably the most widely used and are common to Merriman and most Eadie systems. A variation of this system is small diameter tubing connecting holders to one another such as used with Merriman HVT and Herr rings. This involves an oil reservoir at the end(s) of the frame, feeding oil through a carburetor to manifold piping segments. These segments are mounted inboard or outboard for rail mounted ring assemblies, or outboard on back mounted rings along the length of the frame. The ring assembly allows the wick to drop into the manifold segment. (See drawing at right)

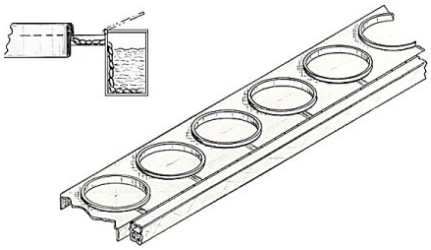




Other than labor savings of centralized lubrication, the primary advantage of this type of assembly is that the ring can be easily removed from the holder, cleaned (a service provided by Epic Ring Service) and reinstalled by the plant. The plant simply solvent washes the holder and pulls the wick tails of the cleaned ring through the manifold with looped fishing line. (See drawing at left) The cost of regular ring cleaning is low when compared to the more complex individual reservoir assembly.

The primary disadvantage of this type of centralized system is that, once the ring and wick become plugged, there is no way that oil can reach the ring to provide lubrication by leakage around the ring. Generally, this system is fairly leak-proof. This type of ring must be cleaned and rewicked regularly, every 2 to 3 years and at least every 3.5 years. Failure to do this means poor yarn quality and can result in ring face damage, requiring either refacing or, in the worst case, ring replacement.

2) **Felt Pad Manifold Systems** are becoming more common in worsted spinning and in many types of heavy denier European frames. A U-shaped section of sheet metal with a lid is mounted outboard to the ring rail. Each segment will feed many rings. In each segment there is a full felt pad. To re-oil, the lid is opened and the felt is saturated with oil. Oil is carried to the ring by capillary action of a connecting wick through the ring rail. (See drawing) (A variation on this is to interconnect the segments so that a reservoir on the end(s) of the frame fed through a carburetor can lubricate all frame positions.)

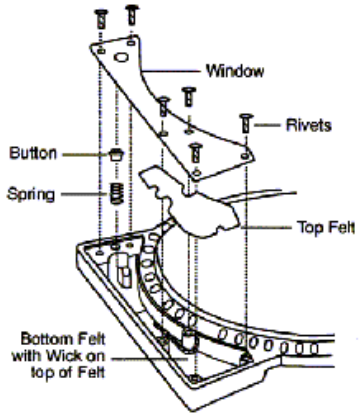


In its basic form, the felt pad manifold is simpler and less costly than the full gravity system, and may feed from 6 to 24 rings per segment, and is virtually leak-proof. In most systems (Gaudino being one exception where mounting screws are not easily accessible), the rings can easily be removed for cleaning and rewicking. The cleaned & rewicked ring is then reinstalled by the plant.

The felt pad ring assembly, like the full gravity system, depends on capillary action to bring oil to the ring. In heavy denier spinning or twisting, rings should be cleaned every 2 to 3 years and certainly every 3.5 years to maintain production efficiency and prevent ring damage. With finer denier (e.g., worsted yarns with solid steel rings and steel travelers), the ring should be removed at least every two years for surface inspection (refacing may be necessary), rewicking and cleaning. Many manufacturers recommend rewicking as frequently as every 9 to 12 months.

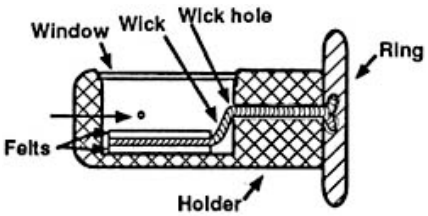
3) **Injection Manifold Systems**: Very few of these systems are in existence in North America and they are generally rare in Europe and elsewhere. The primary drawback is high system maintenance. The system depends on pressure to inject oil to the ring or ring face. The system is subject to plugging of feed lines, connections and injector orifices. If the system is not closely maintained, the ring receives no oil and will soon be damaged.

THE INDIVIDUAL RESERVOIR RING: Each ring assembly is a self-contained unit with its own oil reservoir, wicking and delivery system. There are typically many parts to a ring holder assembly, including windows, felts, rivets, buttons, springs, seals and sealants. See drawing of a Merriman individual reservoir assembly at right.



The disassembly for ring cleaning and reassembly in rebuilding is complex. It requires having not only all the parts available, but also special tools and skills for rebuilding. It is not economical or recommended that the plant attempt its own assembly rebuilding. The complete assembly should be sent to Epic Ring Service for ring and holder cleaning and rebuilding.

The obvious disadvantage of the individual reservoir assembly is that considerable labor is used in refilling each reservoir. It also can be a source of oil leakage and housekeeping problems when compared to centralized systems.



WICK HOLE IN RESERVOIR

Most individual reservoir holders have a wick hole that is about halfway up the reservoir. (See drawing) When the ring is either new or cleaned, the reservoir should NEVER be filled above the wick hole. Filling above the wick hole bypasses the filtering action of both wick and felt and hastens ring plugging from particulate matter in the oil. Further, the wick also acts to meter oil to the ring. Bypassing the wick by overfilling means excess oil on the face of the ring and leakage from the ring to the floor.

The saving grace of the individual reservoir is that when the ring and wick become blocked, the reservoir can be overfilled in order to intentionally induce leakage. Some of the leaked oil reaches the ring face to keep the ring running, but the intermittent nature of oil supply means tension variations up and down the frame, a high frequency of broken ends, and lower yarn quality. The assembly should be removed as soon as possible, cleaned and rebuilt.

If you did not receive Ring Maintenance Tips #1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 and/or 12, contact Epic.

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