THE PENNSYLVANIA RAILROAD

Locomotive Maintenance Instructions No. L-42.

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Instructions for Application and Maintenance of King Metallic Packing for Piston Rod.

1. General: These instructions refer to packing arrangement and details shown on standard tracing entitled "Locomotives, Piston Rod, King Metallic Packing". Unless otherwise specified, the latest issue of instructions, tracings and circulars of instruction mentioned herein, are intended.

2. Helical Springs: (a) Measure free height of helical springs on all locomotives in service when packing is leaking, or when deemed necessary for any other reason and renew the springs which have free height less than 80 percent of that specified on standard tracings.

(b) Remove all springs at class repairs and whenever crosshead is pulled and check capacity of same with dead weight tester shown on tracing D-87130. The new or used springs that are to be applied when the packing parts are re-assembled must be placed in the tester under 100 pounds load and each one used must have at least the height specified on standard tracings for this load. All springs, new or used, that do not meet this requirement must be scrapped or reclaimed.

3. Detail No. 2: When ground joint surface is refaced, the surface containing grooves for wire joints must also be refaced to maintain the 1/16" shoulder and the grooves for wire joints shown on tracing. The thickness "W" at last refacing must not be more than 1/4" under tracing size for old designs having recess for swab holder, and 1/2" under tracing size for the later design without recess.

"Detail No.5: This ring must be bored slightly less than the smallest diameter of rod using a special chuck screwed on to the lathe spindle, not on the lathe center (The universal chuck must not be used). Calipers must be used in measuring the diameter of piston rod and inside diameter of finished packing ring. The lap joints must make a good joint on rod and must never be filed. Feather edges on lap joint must not be destroyed. Face angle of 40 degrees must be maintained. Ring must be renewed when flat face adjoining details Nos. 3 and 7 is worn or concave 1/16" when bore is scored, when ring is bent out of shape or battered, or when there is evidence of steam blowing through. At running repairs, this detail must be retained in service until the 3/4" longitudinal dimension is reduced to 1/4" if it is in good condition otherwise.

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ished packing ring. The lap joints must make a good joint on rod and must never be filed Feather edges at lap joint must not be destroyed. Face angle of 40 degrees must be maintained. Ring must be renewed when flat face adjoining details Nos. 3 and 7 is worn uneven or concave 1/16", when bore is scored, when ring is bent out of shape or battered, or when there is evidence of steam blowing through. At running repairs, this detail must be retained in service until the 5/4" longitudinal dimension is reduced to 1/4", if it is in good condition otherwise.

6. Detail No. 7: This ring must be scrapped when the thickness of flange is reduced to 1/8" or when out of round more than .015". The rings conforming to design shown on obsolete tracing D-81122 must be scrapped or reclaimed when dimension "N" has been reduced to 3/16".

7. Detail No. 8: The follower ring must be carefully checked and when out of true due to being sprung or worn 1/16", it must be faced. When the thickness is reduced to 1/8" less than tracing size, it must be scrapped.

8. Detail No. 9, This cup must be renewed when worn or out of round more than 1/16". The flange must be faced when it does not have a true bearing on No. 8, and, when the thickness of the flange is less than 5/32", the cup must be scrapped.

9. Assembly of Details Nos. 3 and 7: (a) Detail No. 3 must be bored to suit diameter of rod and pressed into detail No. 7 in accordance with Circular L-54 for a push fit, until it is certain that they are shouldered tightly against each other and a steam tight joint is effected. Taper on detail No. 3 must not have more than 1/16" draw when forced into detail No. 7. When detail No. 3 fits too loosely in detail No. 7, it may be reclaimed by reducing dimension "N" as required but to not less than 3/16" at last repairs. Detail No. 7 must be properly faced for grinding against detail No. 2 and sharp corners on the joint face slightly beveled to prevent burring while handling and assure a steam tight joint.

(b) Detail No. 3 conforming to obsolete tracing D-81122 may be used with detail No. 7 conforming to same tracing until existing stock is exhausted but no more of these obsolete details must be manufactured. These obsolete details No. 7 both new and used, may, however, be reclaimed if they can be machined to conform to the design shown on standard tracing. When the obsolete details Nos. 3 and 7 are used they must be pressed together as indicated above in paragraph (a) and a very light face cut taken over both assembled details to insure that these parts are straight and smooth on the face where they engage the soft metallic packing. The letter "O" 1/4" high must be stamped on this face so that it will engage both the steel and the brass parts to form reference marks from which they can be separated and re-assembled in the same relative position when applying them to the piston rod on the locomotive.