The Chief Mech. Engineers,
All Indian Railways except SCR

Sub: Innovations and System improvements in Indian Railways

CME/SCR through his MCDO for the month of March, 2014 has informed about the following innovations/system improvements on the freight side.

(i) Instrument for measuring depth of groove on seal wear rings of CTRB.
(ii) Gadget for Drilling Holes on Centre Sill Flange.
(iii) Measuring Gauge for Brake Cylinder Bore.
(iv) Portable Trolley to attend wagon body repairs.

The same innovations are enclosed for yours kind information please.

(Ashesh Agrawal)
Executive Director Mech. Engg.(Fr.)
Railway Board

Encl.: 04 Pages
Copy to: EDS(W)/RDSO.
(B.2) Instrument for measuring depth of groove on seal wear Rings of CTRB(RYPS)

To control hot axles, RDSO has envisaged for 100% check of seal wear ring for its reusability and service reliability, as well as correctly measure the depth of groove formed on seal wear ring and to identify whether it is well within its prescribed limits of 0.13 mm. Two grooves are generally formed on the seal wear ring due to friction with grease seal at the contact area i.e., double lips. These two grooves are formed maintaining space of about 10 mm.

In the earlier arrangement to measure the depth of these two grooves, simple dial indicator was used, there was no vertical adjustment for the dial indicator to measure depth of two grooves in one setting. Therefore, after measuring one groove, seal wear ring had to be placed on a height adjustment piece of 10 mm thick to measure another groove. This was a time consuming and laborious process.

Similarly, the instrument shown in recently circulated 'Recommended practices in the workshop by RDSO,' is also a bulky one to handle and also placing over the seal wear ring for taking correct measurement is finding difficult as it is likely to slip off.

To avoid above problems, shop has designed and developed an instrument which is easy for measurement of two grooves quickly with less effort.

Such newly developed arrangement has two rods welded over the base plate in parallel. The seal wear ring has to be placed simply between two rods as shown in the fig below and moved with in the rods. A dial indicator is mounted on a frame fixed over the base plate. Seal wear ring is placed in position and dial indicator is set to zero. To measure the depth of the groove seal wear ring is rotated and moved accordingly. The dial indicator indicates the amount of wear that had developed at
B.4 GADGET FOR DRILLING HOLES ON CENTRE SILL FLANGE (RYPS):

RDSO has suggested the fitment of modified Centre pivot bracket as per the Drawing no. WD-11065-S-01 for BVZI wagons to overcome the problem of welding failures associated with earlier design. In the process of carrying out this modification, for assembling each Centre pivot bracket, four additional holes of 23.5mm diameter are to be drilled on centre sill flange which is of 20.5mm thick. To drill holes on the centre sill flange portion in-situ when the BVZI has been placed on trestles, to hold the drilling machine and giving the forward feed to the drill bit is laborious and also becomes herculean task.

To overcome this problem, shop has developed one gadget for holding the pneumatic drilling machine and able to give vertical feed to the drill bit during drilling.
In this gadget, holding of the pneumatic drilling machine is achieved with two channels held in vertical position welded over the base plate which in turn welded over a screw jack arrangement. The vertical feeding/ retraction of the drill bit is obtained by rotation of screw jack arms in clockwise /anti clockwise.

B.5 MEASURING GAUGE FOR BRAKE CYLINDER BORE:

As per Wagon maintenance manual, the ovality of Brake cylinder bore has to be checked during POH in workshops. As the thickness of brake cylinder is of 5mm, it is subjected to damage and loses its roundness due to hit by ballast on run or improper handling in section. So far shop is doing visual inspection for dents. Shop is experiencing sick marking cases largely on account of Brake cylinder dectivs.

To tighten the inspection procedure in checking brake cylinder ovality and bore diameter, shop has fabricated a gauge to check the ovality as well as excess wear of the bore than the prescribed diameter of 355mm **0.25/-0.00**. This gauge is held by a handle and moved inside the brake cylinder axially and also simultaneously rotated around, if any obstruction is felt it indicates that there is a dent in the brake cylinder; and if excess clearances with reference to bore gauge, the brake cylinder bore is expanded, in such cases particular brake cylinder is rejected to avoid in-service failure.
C. Carriage and Wagon:

C.1 A portable trolley along with spacious platform is fabricated with in-house resources by GY depot, which can be moved freely on shed floor to attend wagon body repairs.

C.2 “C” category wagons which arrive for ROH repairs have been attended and released. Relevant photographs of the damages attended on the subject wagons are furnished. During the year 2013-14, total 646 “C” category unloadable wagons were attended at RDM, BZA & GY ROH depots.

Before

After