Cross–Rod Assemblies – Inspection, Repair and Adjustment

Grader cross–rod assemblies should be maintained in good condition; failure to do so may seriously affect the overall performance of the unit. The two most common problems encountered are:

1. Bent or deformed cross–rods.

2. Build up of sticky matter (fruit juice, wax etc) on the cross–rod.

1. Bent cross–rods are normally the result of a grader crash. Most grader crashes are caused by foreign objects (packing materials etc) falling into a running machine. This situation is best avoided by designing safe storage areas for packing materials etc. Boards placed on top of the grader should be cleated on the underside to prevent the entire board from falling into the machine. Where tables are fixed along the sides of the grader, they should be fitted with a simple raised back to prevent materials and personal belongings from being pushed into the machine.

   Where maintenance or alterations have been carried out on the grader, or if the unit has not been run for some while, it is good policy to look along the top and bottom flights of cups to ensure that nothing has been left on the machine. If in doubt, the operator may turn the grader over by hand, having first ensured that all power is removed from the system.

   In the event of a grader crash, it is essential to:

   a. Locate and fix/remove the cause of the crash.

   b. Locate and fix/replace damaged cross–rods.

2. Some build up of dust and dirt on the cross–rods is quite normal and will not usually affect the operation of the unit. A heavy or sticky build up, however, may prevent the cup from floating on the

cross—rod during weighing. A quick test for this involves moving the cup up and down on the cross—rod to check for excessive stickiness or binding. Most operators remove and wash the cross—rod assemblies as part of normal maintenance. Warm water and detergent will easily remove most deposits. Inspection and repair of cross—rods should ideally be carried out at the same time.

Inspection, Repair and Adjustment

1. Inspection for the buildup of deposits on the cross—rod may be carried out as noted above. Cross—rod assemblies should be washed as necessary.

2. Bent cross—rods are most easily located on the grader, by rotating the cross—rod between finger and thumb -_the bend will show up as a ‘wobble’ in the assembly as the rod is rotated. A slight bend (1/8″ or 3mm approximately) is not unusual and rods to this standard may safely be left in the machine. Rods bent in excess of this tolerance should be removed and straightened or replaced as follows:

   a. Unless severely bent or kinked, a cross—rod is easily straightened. Remove all circlips, washers, cups and spacers from the cross—rod. Lay these components out as you remove them.

   b. Roll the cross—rod on a flat tabletop (formica or similar). This will allow you to identify the centre of the bend, and the direction of the bend.

   c. Carefully bend the rod, in the opposite direction across your knee. Put your knee against the original centre of the bend to do this.

   d. Now roll the cross—rod on the tabletop, and bend again as necessary.

   e. Continue this until the rod is within tolerance. Don’t worry if you can’t get the rod exactly straight, as this is not necessary (and often impossible).

   f. Reassemble cups, spacers, washers and circlips onto the cross-rod.

   g. Carefully check that the cross—rod is correctly assembled as follows:

* Cup pins pointing in the right direction.

* Single washer between circlip and cup at each end of rod. (2 & 4 lane machines)

* Any extra packing washers should be placed at the centre of the rod. (2 & 4 lane machines)

* End play of cups should be 2.5 - 3mm **(1/8")** (see following paragraph regarding end-play).

h. Be absolutely sure that all the above items are correct before returning the cross–rod assembly to the grader.

3. Cross–rods should be examined for correct assembly and end–play. Typical errors in the assembly of cross–rods are:

   a. Loose or 'tired' circlips at ends of rod (replace them).

   b. No washer between circlip and cup. (The circlip will snag the cup during weighing, resulting in possible inaccurate results)

   c. Extra packing washers placed between cups and circlip. (2 & 4 lane graders)
   There should be one washer only at this point - packing washers should be at the centre of the rod for 2 & 4 lane graders

   d. Too much or too little end–play of the cups on the cross–rod. (End–play should be *2.5* –3mm (1/8") for 4 lane machines or 2 – 3mm for 2 lane machines, measured with the cups sitting on a flat surface).

   Please note that packing necessary to achieve this will vary from rod to rod due to slight differences in cup dimensions. Some variation will also be found due to expansion and contraction of cups. Wear–strip as used on the grader is a nominal 3mm thick and may be used to check end–play.