PRODUCT BULLETIN NUMBER: 90

SAFETY ALERT

DATE: July 22, 2003
Revision 1

SUBJECT: **Back Up Wrench Inspection**

SERIAL NUMBERS: **002 and up**

DISCUSSION: A Top drive recently developed cracks on the slide of the back up wrench inner tube. These cracks could result in improper operation of the gripper and ultimately lead to a failure causing the entire gripper to break free.

RECOMMENDATION: The back up wrench slide should be inspected as shown on the attached map as soon as possible. A dry magnetic particle inspection should be sufficient to identify any cracks that may have developed. The gripper cylinder frame may have to be removed to fully inspect the slide.
If any cracks are found, the wrench should be repaired or replaced. Repair procedures will be ready for distribution by July 25, 2003.

All areas of the back up wrench and slide should be inspected as shown on the inspection map on an annual basis or when circumstances call for an out of period inspection. This could be after rough drilling, jarring, hoisting with the gripper closed, or after a high impact. A visual inspection should be performed on a weekly basis.

INFORMATION: *For a complete list of all bulletins go to* ***www.canrig.com***

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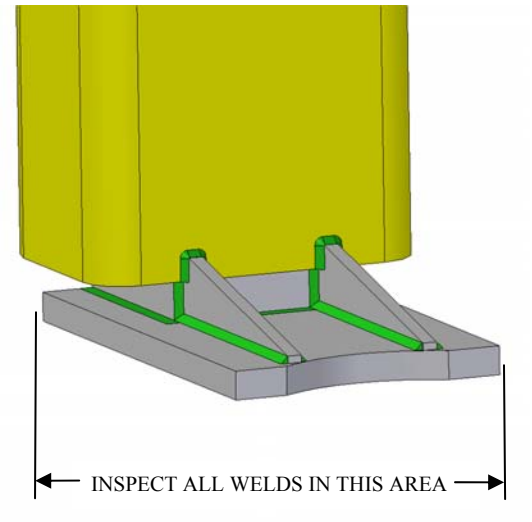
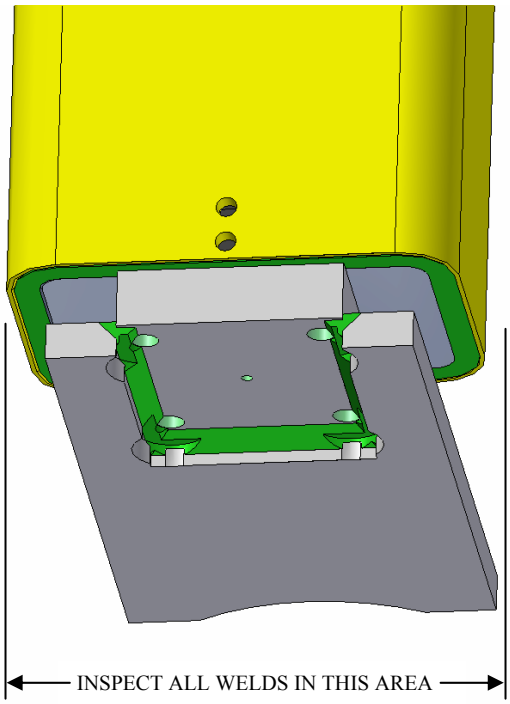
INSPECTION INDICATION MAP

Back Up Wrench Slide

The following information should be supplied on the Inspection Report as a minimum:

Purchase Order #
Date:
Inspection Report #
Canrig Part #
Inspector's Signature/Stamp:
Serial #
Type of Inspection:





Procedure:
Method: Dry Magnetic Particle method in accordance with ASTM E709
Visual Examination: Visually examine all other areas not designated as MPI for signs of fatigue.

Back-Up Wrench Weld Repair Procedure

This procedure covers the repair of welding cracks associated with the BUW Slide and Inner Tube due to rough drilling, jarring, high impact or hoisting with the gripper closed.

The success of this procedure will depend on the adherence to it and on the qualifications of the individual making the repairs. Therefore it is important that all necessary welding must be done by a welder certified to weld the applicable material to the joint design in accordance with AWS D1.1 or equivalent. This would involve things such as:

1. Make sure to adjust the amperage on the welding machine to give you the best penetration possible.
2. Remove the slag after each pass.

1) BUW Slide Repair:

The slide is generally cracking at the weld joining the slide's bottom plate (1) to the center block (2) that is welded to the inner tube as shown below in Figure 1.

Figure 1: Typical Crack in a Slide

The cause of the crack may result in bending the slide's bottom plate (1). **The BUW inner tube assembly must be replaced if the bottom plate is bent in excess of 1/8".** To check the slide's bottom plate, use a straight edge and place on the bottom of the slide as shown in the picture of Figure 2.

Figure 2: Bent Bottom Plate

If the bottom plate weld has a crack and is NOT bent in excess of 1/8", use the following procedure to repair the cracked weld:

1. Remove the existing weld in the area where the crack is present, down to the base material using grinding or gouging method. To make sure that the crack is completely removed, it is necessary to grind past the visible crack.

2. Dry- MPI (Magnetic Particle Inspection) the crack area completely by going past the end of the visible crack. Ensure that the crack is completely removed.

3. If it was found that the crack was not completely removed or a new crack was discovered, grind the crack completely and Dry-MPI the area again to ensure that the crack is completely removed.

4. The top side of the bottom plate must be prepped as shown on the drawing in figure 3 of this procedure.

5. Prior to any welding, make sure that the Slide's bottom plate (1) is SQUARE to the sides of the inner tube (4) to within 0.03 inch and verify that the distance from the top of the bottom plate to the bottom side of the inner tube is 1.50 inches minimum as shown in figure 3. If tolerances were not met, correct as necessary. The welds around the top of the Slide gussets (where welded to the lower end of the inner tube) may have to be ground and removed to allow for better Slide flexibility. For illustration of the gusset (3) welds, see figure 4. If tolerances can not be achieved, replace the inner tube/slide assembly, otherwise proceed to step 6.

6. Preheat the joint to be welded to 400^{o} Fahrenheit (205^{o} C) (using Rose-Bud/torch is acceptable). To verify temperature, use temperature crayon to ensure proper heat distribution of the entire joint to be welded.

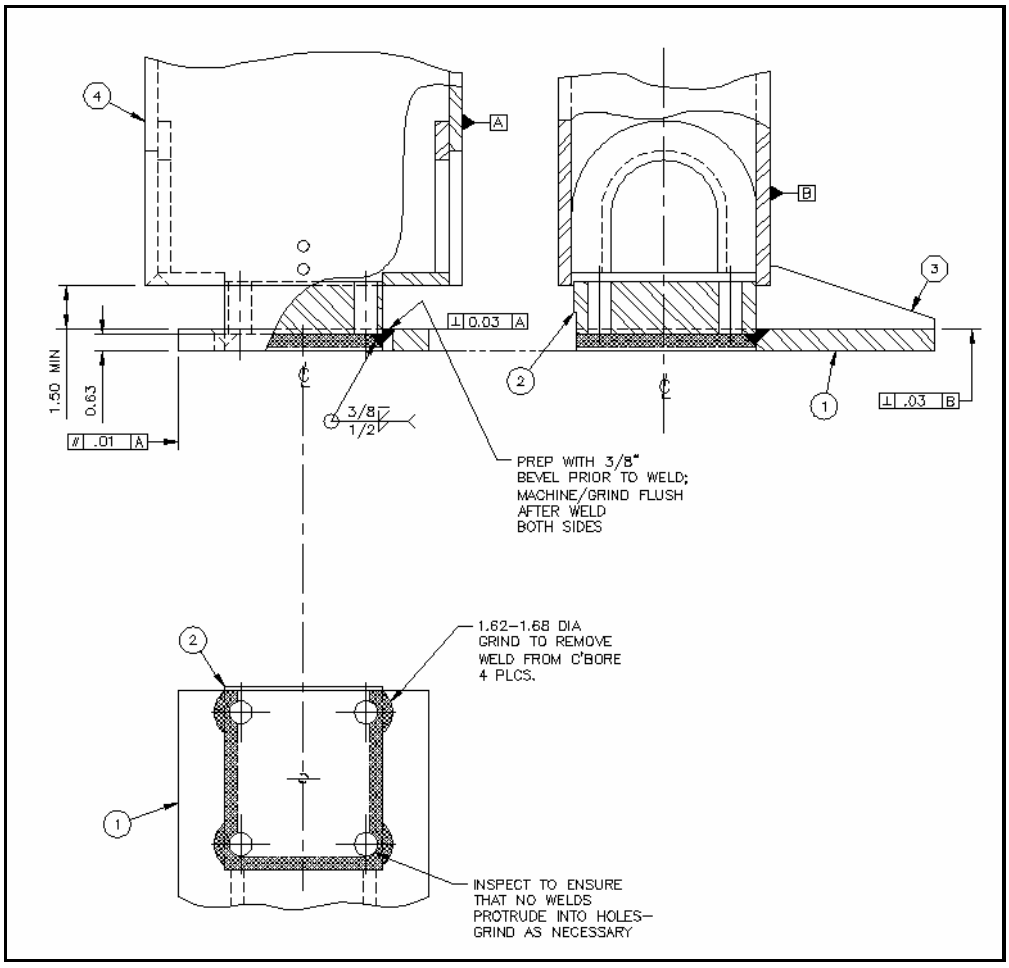


Figure 3: Welding of Slide's Bottom Plate

7. Weld the prepped area using Low Hydrogen E9018 – 3/32” or E9018 – 1/8” rods or equivalent (see Notes). Make sure to adjust the amperage to allow for full penetration weld on both the top and bottom sides of the bottom plate.

8. Allow the weld to slow cool to ambient temperature using thermal blanket over the weld (Do not quench).

9. Machine/Grind the weld on the top side of the bottom plate to make flush with existing machined surface.

10. Grind excess weld from the counter bore areas on the bottom plate as shown above in figure 3 to allow enough room for the rod nut socket.

11. Dry-MPI the weld to ensure that there are no cracks.

2) BUW Slide Gusset Weld Repair:

Cracks in the BUW Slide Gusset welds must be repaired as follows:

1. Remove the existing fillet weld around the top of the gussets (3) where they are attached to the lower end of the inner tube (4) using grinding or gouging method. It is essential that the cracks are completely removed.

2. Dry-MPI the crack area completely to ensure that the crack is completely removed.

3. Make a ¼” fillet weld around the top end of each gusset where it attaches to the end of the inner tube as shown in figure 4. Use Low Hydrogen E7018-3/32” or E7018-1/8” welding rods or equivalent (see Notes).

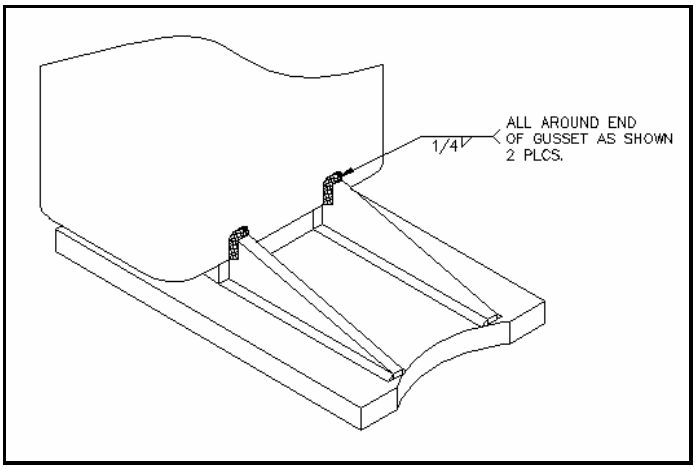


Figure 4: Gusset Weld

4. Dry-MPI the weld to ensure that there are no cracks in the weld.

3) BUW Slide/Inner Tube Joint Repair:

Cracks in the weld joining the Slide's center block (2) to the inner tube must be repaired as follows:

1. Remove the existing fillet weld where the crack is present down to the base material using grinding or gouging method. It is essential that the crack is completely removed.

2. Dry-MPI the crack area completely by going past the end of the crack to ensure that the crack is completely removed.

3. Make a 3/8" fillet weld using Low Hydrogen E7018-1/8" rod or equivalent (see Notes) along the prepped area as shown in figure 5.

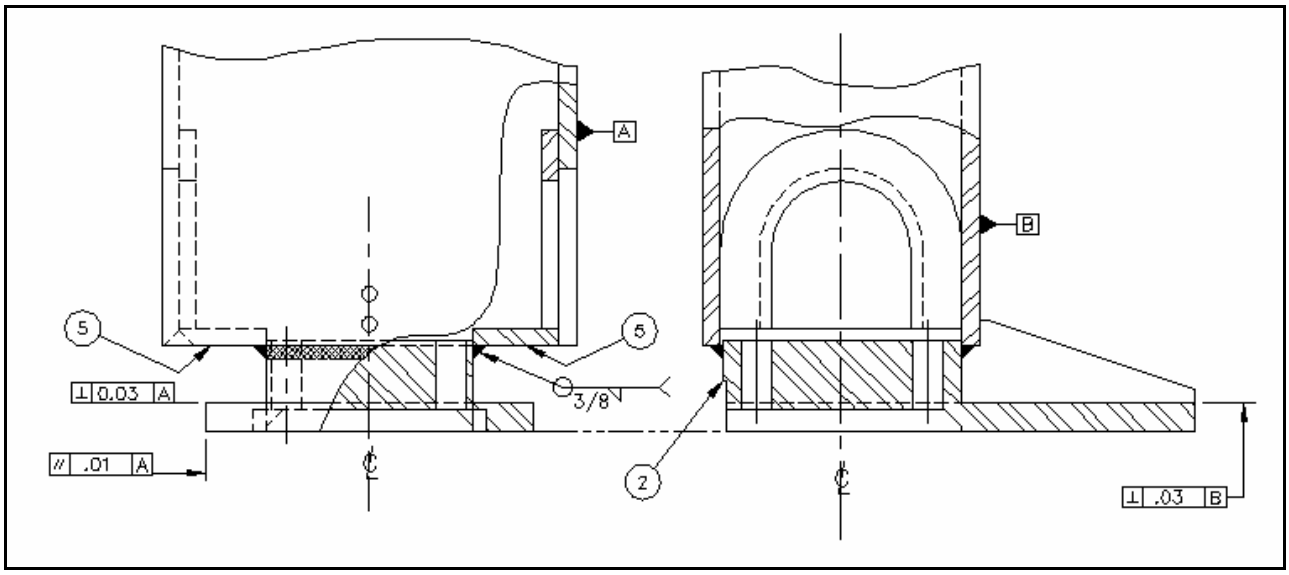


Figure 5: Slide/Inner Tube Joint

4. Dry-MPI the weld to ensure that there are no cracks.

4) BUW Inner Tube End/Strips Repair:

Cracks may occur at the lower end of the inner tube where it is welded to the two strips (5). For illustration see figure 6. This type of crack must be repaired as follows:

1. Remove the existing weld in the area where the crack is present down to the base material using grinding or gouging method. Make sure the crack is completely removed.

2. The inner tube end and the plate must be prepped properly with 3/8" bevels as shown in figure 6.

3. Make a 3/8" weld (double bevel) using Low Hydrogen E7018-3/32" or 1/8" welding rods or equivalent (see Notes).

4. Grind the weld flush with the base material to maintain the 1.5" distance between the end of the inner tube and the top of the slide plate as shown in figure 6.

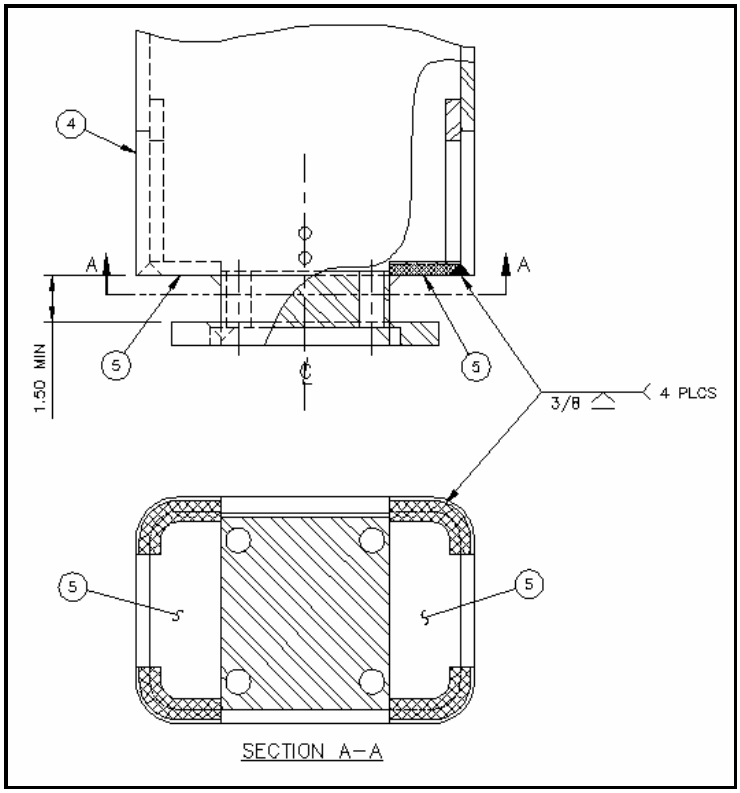


Figure 6: Inner Tube/Strips Weld

5. Dry-MPI the weld area to ensure that there are no cracks in the weld.

Notes:
7018 is a Low Hydrogen welding rod with 70,000 PSI tensile strength
9018 is a Low Hydrogen welding rod with 90,000 PSI tensile strength.