WARNING: It is important that you observe all of the normal safety procedures, including wearing proper protection for every step in this procedure.

This document explains the recommended procedure for repairing a cracked rear cover weld. This is the only approved method for this repair. Any other method of repair may result in damage to the axle, axle housing or other vehicle components and could affect performance and safety. Failure to follow all steps of this procedure will result in a poor repair and the crack could occur again. Welding at any other locations on the axle housing will void the warranty and can result in an early failure and unsafe operation of the axle. DO NOT ATTEMPT ANY OTHER TYPE OF WELD REPAIR ON DANA DRIVE AXLES.

When performing this repair on certain types of vehicles, including tank trucks hauling flammable liquids, it will be necessary to remove the axle from the vehicle before welding.

Welding Equipment and Specifications:

**Mig (wire) Welding**
Welding Gas – recommended – 80% Argon, 20% C-O2  
Gas Flow Setting – 50-60 cfh.  
Wire Size – ER70S-3 or ER70S-6  
First and second passes cover weld, approximate settings – 30 volts, 180 amps.  
Third filler pass, cover weld, approximate settings – 26 volts, 140 amps.  
Apply three weld passes to the cover. The first pass should be centered over the fit-up line and penetrate the failure area. The second pass should be placed slightly above the first. Blend the weld smoothly (without significant cross section enlargement) with the housing and first pass. The third pass should penetrate the lower half of the second pass to the edge of the housing cover. Avoid any significant overlap of weld or undercut. When making the second and third passes the weld direction should be reversed. Always start the weld at one end, never in the middle the intended weld area. See illustrations below for more information.

**Arc (stick) Welding**
Miller DC type stick welder set at 140 -150 amp setting.  
Use E7018 1/8 inch Electrode for all three passes. Note** Remove slag between passes. E7018 rod must be stored in heated rod oven. Apply three weld passes to the cover. The first pass should be centered over the fit-up line and penetrate the failure area. The second pass should be placed slightly above the first. Blend the weld smoothly (without significant cross section enlargement) with the housing and first pass. The third pass should penetrate the lower half of the second pass to the edge of the housing cover. Avoid any significant overlap of weld or undercut.
When making the second and third passes the weld direction should be reversed. Always start the weld at one end, never in the middle the intended weld area. See illustrations below for more information.

When welding the second and third passes, reverse the direction of the weld. Never start or stop a weld close to the 12:00 position. When using an Arc welder you may have to start the weld at the 11:00 position so that you do not run out of electrode at the 12:00 position. You can then go back and fill in the ends of the weld area.

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**Repair Instructions:**

**Important:** Before starting, always wear the proper safety equipment for your protection.

*If Repairs are being performed on*

1. Disconnect the battery grounds and oil temperature sensor wire. **Caution*** If the battery ground is not disconnected, vehicle electronic control modules may be damaged.

2. Block front and back of steer axle tires.

3. Jack-up driver’s side forward rear drive axle and support with jack stand.

4. Remove driver’s side forward rear drive axle tires and rims only.

5. Remove inter axle driveline.

6. For the repair of the cover weld crack, locate the ends of the crack, mark 2 inches either side of the crack. These marks are ONLY for reference! **You must grind until the entire crack is eliminated**. Then grind an additional two-inches on either side of the crack.
7. Remember these cracks start on the inside of the housing and work their way out. You will need to grind through the old weld to the fit-up line, this is where the cover meets the axle housing. You should have approximately ¼” of distance between the top of the cover to the bottom of the ground area. The blue dotted lines below represent the area to be ground.

![Crack In Cover Weld 12:00 Position](image)

8. Use a 4-inch angle grinder to grind away the crack. You must grind just below the old weld, down to the fit-up line. Use the drawing above and the photo below as a guide. It's very important that you recognize the difference between the crack and the point where the cover meets the axle housing. Caution*** Be careful to not break completely through as this will contaminate the axle's lubricant with grinding material.

![Grind Away Crack](image)  
![Side view of Grind](image)

9. Use a wire wheel to remove paint from area to be welded.

10. For All Weld Passes Cover Weld – When using a Mig Welder use approximate setting of 30 volts and 180 amps. If using an Arc welder, use E7018 1/8 inch electrode. Important** The ground from the welder must be connected to the torque rod bracket. See figure below.

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11. **Important:** The first weld pass must be centered over the fit-up line and penetrate the failed area. Remove all slag. The first pass must cool before the second pass can be applied.

12. **Second Pass Cover Weld** – Remember, do not start or stop at the 12:00 position. The second pass will be placed slightly above the initial pass. See drawing below. When making the second pass the weld direction should be reversed. When using an Arc welder you may have to start the weld at the 1:00 position so that you do not run out of electrode at the 12:00 position. You can then go back and fill in the ends of the weld area. When the second pass cools, apply the third weld pass as show on the diagram below.
13. **Third Pass Cover Weld** – The third pass should cover the lower half of the second pass and stop at the housing covers edge. Again, reverse the direction of the weld. Remember, do not start or stop at the 12:00 position.

![Third Pass Cover Weld Diagram](image)

14. Clean and paint the repaired area.

15. Reinstall the torque rod.

16. Reinstall inter axle driveline.

17. Reinstall tires and rims.

18. Reconnect grounds and oil temperature wire.

**If you have any questions about this procedure call the Roadranger Call Center at 1-800-826-4357.**

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For spec'ing or service assistance, call 1-800-826-HELP (4357) 24 hours a day, 7 days a week, (Mexico: 8-332-1515). Or visit our web site at: [http://www.roadranger.com](http://www.roadranger.com)