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# **ART-102 Installation Instructions**

## **1987-96 Jeep Wrangler Front Frame, Shackle, & Steering Box Mount Kit**

**1) Safety Notes – Follow all instructions. Failure to follow instructions may result in property damage or serious or fatal injury. User assumes all liability.**

- a) Remove the battery. **BE SAFE.**
- b) Look for fuel lines. IF you are working close to the fuel system, check for leaking fuel. Clamp off or disconnect fuel line if needed. **BE SAFE.**
- c) Keep all flammable materials at least 20 feet from the car. **BE SAFE.**
- d) Remove any plastic or materials that might burn or be susceptible to melting in the area you will be working. **BE SAFE.**
- e) Keep fire extinguisher and water hose near vehicle. **BE SAFE.**
- f) Wear safety gloves and full eye protection at all times. **BE SAFE.**
- g) Use a fire watch person when torch cutting, plasma cutting or welding. **BE [well you know]**

## **2) Different Welding Styles**

- a) “Stick” or “Arc” welding is difficult for some people, but can produce a sound weld.
- b) “Mig” (wire fed) welding produces a very sound weld. We suggest a 220 volt machine with .035 wire (E7056) and a 75% Argon, 25% CO<sub>2</sub> gas mix.
- c) “Tig” welding is also an option, but due to the rust and other imperfections of the old material, is NOT recommended unless you’re a professional welder.

## **3) Preparing your Jeep for a New Frame Section & Kit Installation**

- a) Support your Jeep properly over a solid, level floor. Use good safety stands – don’t cut corners here! – or on an automotive repair shop lift. You should support the Jeep by the frame so that the suspension is unloaded, or hanging; this will make it easier to lower the leaf spring.

- b) You need to remove the front bumper and any body panels that might attach to the frame section you're repairing.
- c) If you're working on the driver's side frame rail, you need to remove the steering box, or you can unbolt it from the frame and push it away from the frame, as well as lowering the sway bar out of the way.
- d) Remove the bracket that attaches under the frame and to the steering box.
- e) Remove the front shackle bolt, and remove the bushing.
- f) Lower the front leaf spring down and out of your way. Give yourself plenty of room and time, this job takes a bit of work to finish.
- g) **This kit is designed as a frame replacement section and welds in place.** Before you start cutting the old frame away, take a measurement or two and record them. You want to be sure it is welded in at the original distance from the ground and from the opposite frame rail. The factory frame diagram shows the inside distance between the front frame rails as 717.55 millimeters (28.25 inches). See **Figure B**
- h) Some frames have brackets, bump stops, etc. that might have to be cut off and welded back on after the kit is installed. Drill out spot welds on such parts for a clean cut.
- i) Paint or rustproof frame repair after welding and inspection is completed.



**Figure A** shows us using a plasma cutter to remove the rusted frame section. You can also use a torch. Be sure to have someone act as a fire watch person while you do this (don't ask your dog).





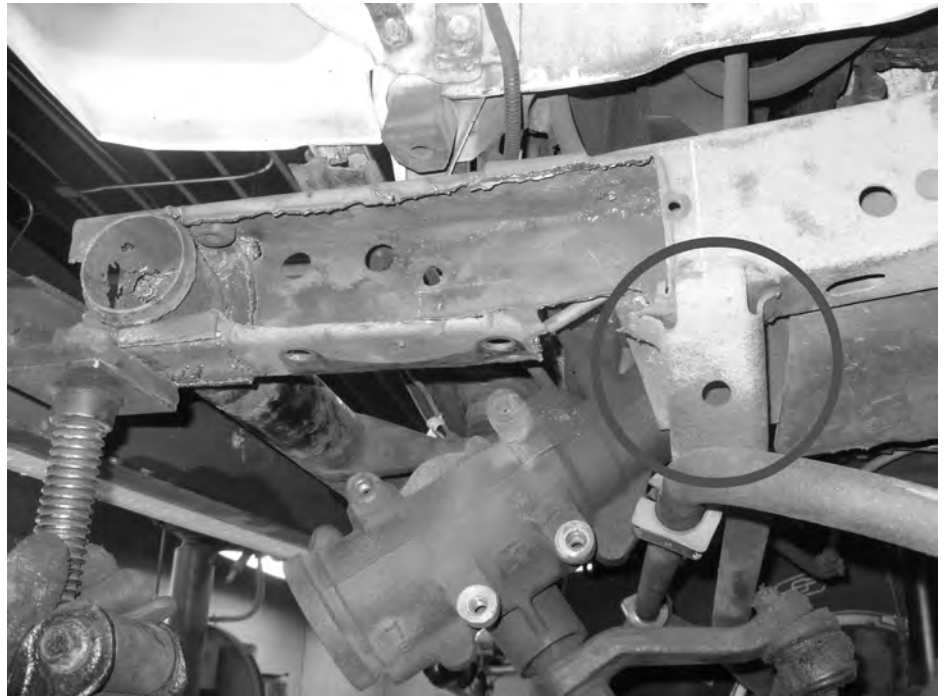
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#### 4) Welding Notes

- a) You must weld the frame kit solid for maximum strength. Allow some time for cooling and move around to different locations on the frame repair kit.
- b) Good welds require clean surfaces, so grind, scrape, or wire brush surfaces that are to be welded together.

**Figure B** shows the frame being cut away in sections. Take your time and be sure to cut away all the rust. NOTE where we stop cutting. Do not cut away the panhard bar bracket, our kit does not fix the area that is circled, or beyond it.

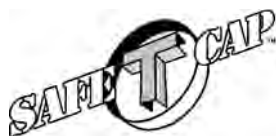
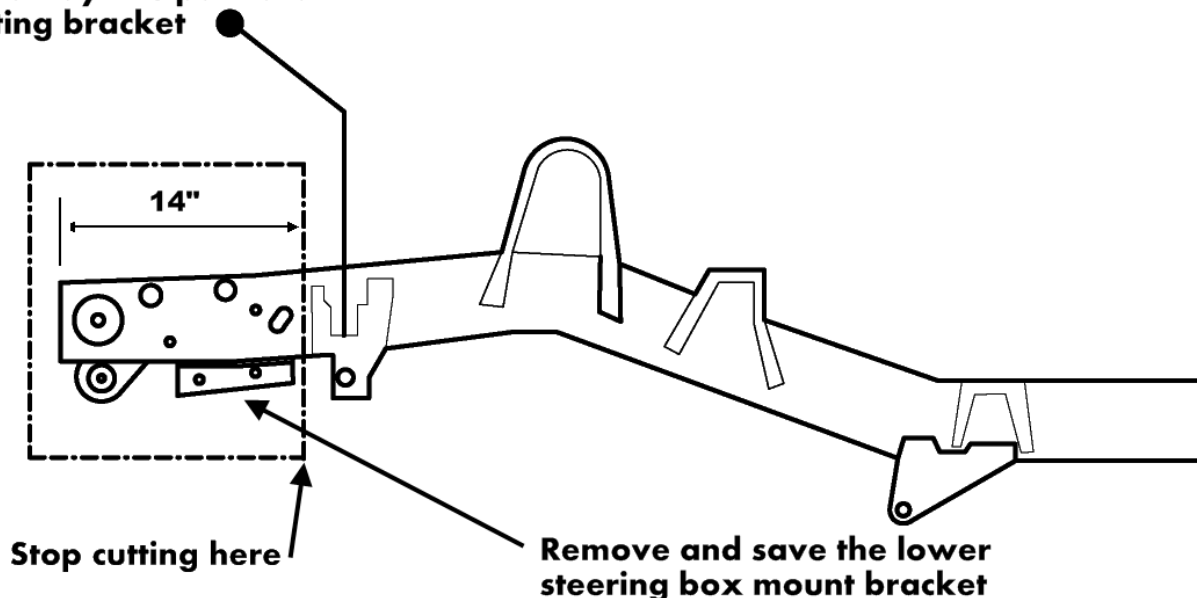


- c) Ambient Temperature should be at least 50 degrees.
- d) **If in doubt, bring it to a professional welder**, or have them inspect your work before final coating.

## Installation Procedures and Tips

- 1) Because this is a frame replacement section, steps should be taken to brace the frame **BEFORE** you cut the rusted section away. If the engine is still in place, it will help keep it from moving; however you should plan to weld a support brace across the frame to keep it from shifting laterally. You should also weld a second support brace in place to keep the frame from shifting up or down while you're doing this repair.
- 2) Start by cutting the section of frame rail away from the center radiator support, and cut back as far as the panhard bar mount bracket. **Do not cut beyond the mount**, our kit does not go beyond that. You will need to remove one of the ears on the panhard bar bracket where our replacement section joins up. If you do have rust beyond there, you will need to fabricate a repair of your own.

**Do not cut away this panhard bar mounting bracket**





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- 3) Cut the frame away carefully, and make sure you're not cutting away too much. We cut it away in sections in order to relieve any energy (stress) that might be stored in the frame section.



**Figure C** shows the front radiator support left in place

- 4) Save the radiator crossmember pipe that runs from side to side. Carefully cut away the front of the frame and be sure to grind down the old factory welds so your new frame replacement section slides over the pipe.

5) After the rusted frame is cut away, fit the kit in place and clamp it, and support the kit from underneath. You should run a 4ft level across the frame rails to be sure the new frame repair kit is in the correct place, both vertically and horizontally. Measure the distance between your new frame section, and the frame on the opposite side. It must be 28-1/4", no more, no less. **Be accurate here, take your time and adjust the frame repair kit if needed.** Clamp it back in place and measure again. Also look at the reference diagram on page 4. Measure the location of the spring perch distance from the rear crossmember, or the other leaf spring perches. Get them right. If it's in the correct spot, tack weld it in place and measure one more time to be sure.



**Figure D** shows us leveling and adjusting the frame repair kit





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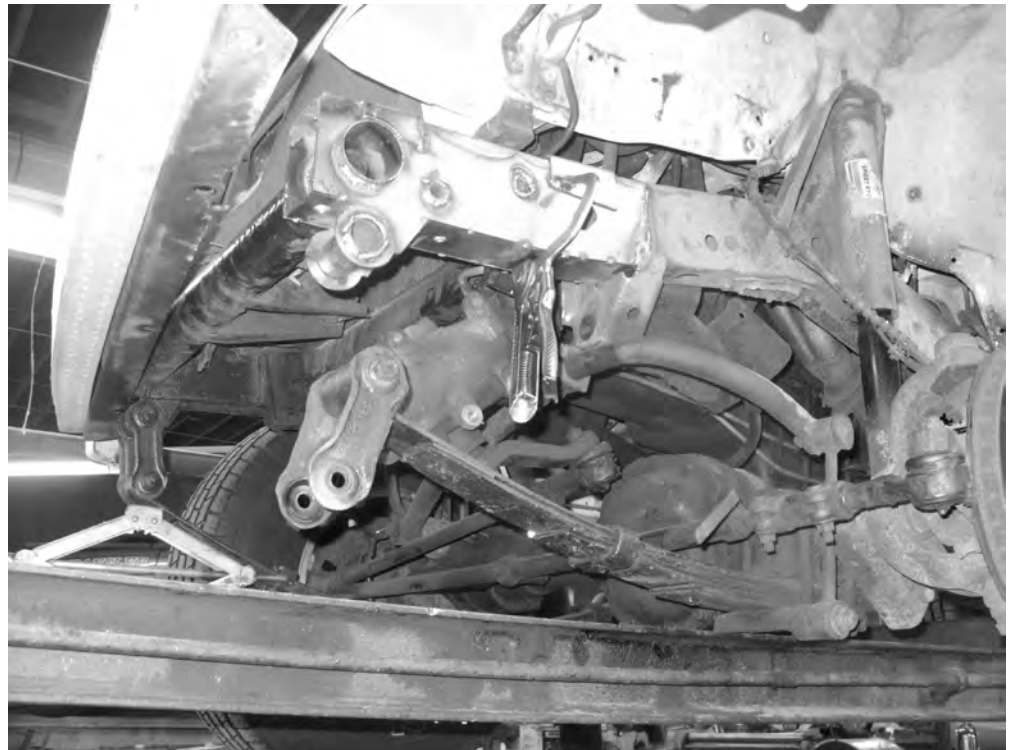
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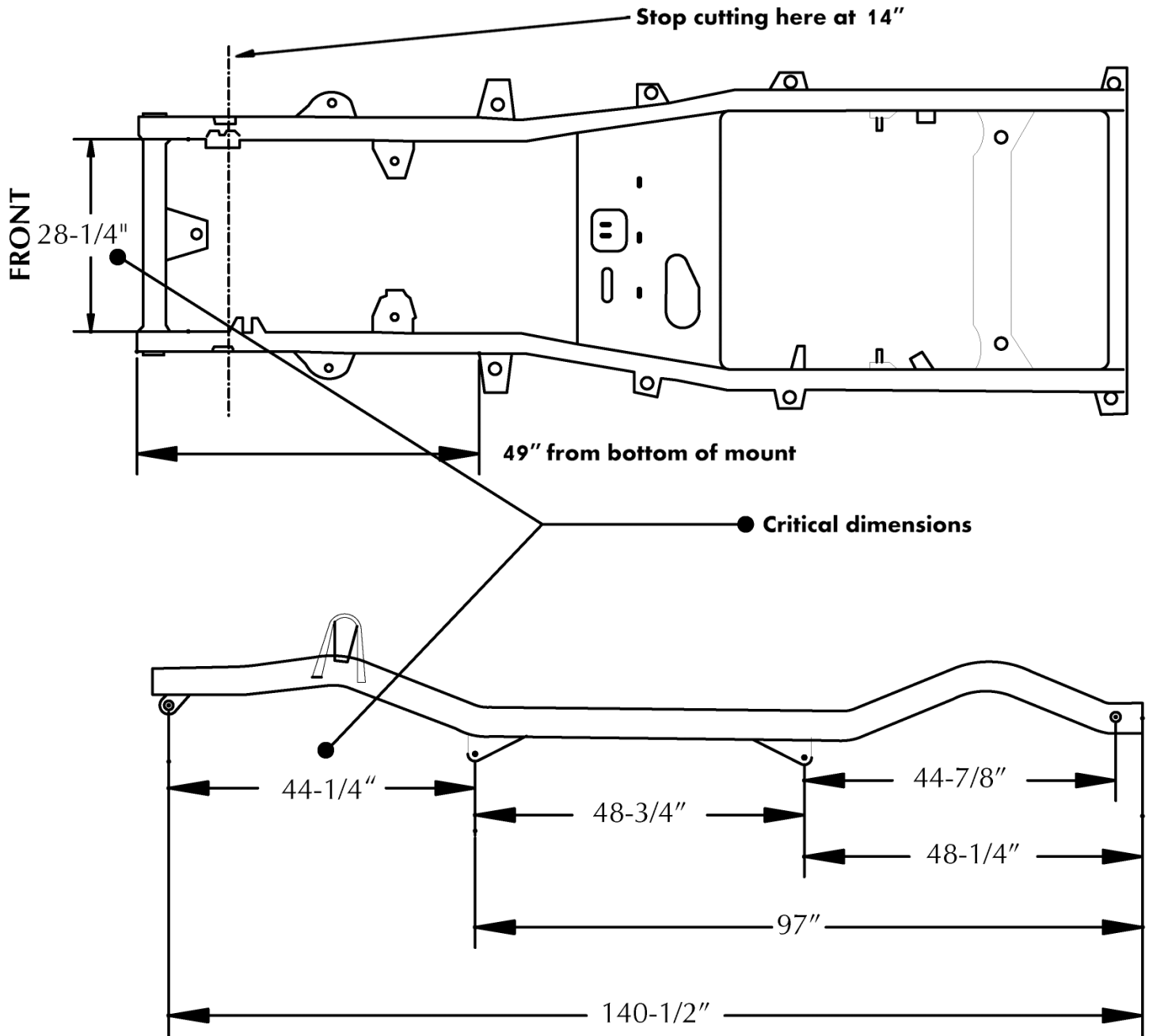
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- 6) If the kit is in the correct location, and it matches up to the measurements you recorded before cutting it away, you're in good shape, and almost done. It's time to weld it in place. Set the welder, and get started, move around and don't overheat one area. Run a bead 1-2 inches long, then move to another area, do the same thing. Take your time and do a good job. We know you're anxious to get back on the trail, but be sure to get this right. The welding is critical.

**Figure E** shows the frame repair kit while it's being welded in place.





ALL MEASUREMENTS ARE +/- 1/16"

