

SECTION 501-35: Body Repairs
REMOVAL AND INSTALLATION

2014 F-150 Workshop Manual
Procedure revision date: 10/25/2013

Frame Members — Rear Frame Section

Special Tool(s)

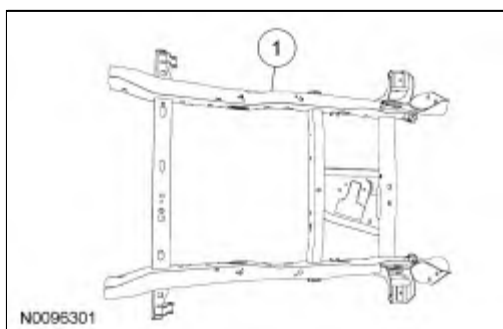
 ST3049-A	Rust Inhibitor Installation Kit 286-00002
 ST3048-A	Undercoating Spray Gun 286-00001

General Equipment

3 Phase Inverter Spot Welder 254-00002
Compuspot 700F Welder 190-50080
I4 Inverter Spot Welder 254-000014
Inverter Welder with MIG Welder 254-00015

Material

Item	Specification
Motorcraft® Metal Surface Prep ZC-31-A	—
Motorcraft® Premium Undercoating PM-25-A	—
Rust Inhibitor ValuGard™ VG104, VG104A (aerosol)	—



Item	Part Number	Description
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1	5F040	Rear frame section
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WARNING: Collision damage repair must conform to the instructions contained in this workshop manual. Replacement components must be new, genuine Ford Motor Company parts. Recycled, salvaged, aftermarket or reconditioned parts (including body parts, wheels or safety restraint components) are not authorized by Ford.

Departure from the instructions provided in this manual, including alternate repair methods or the use of substitute components, risks compromising crash safety. Failure to follow these instructions may adversely affect structural integrity and crash safety performance, which could result in serious personal injury to vehicle occupants in a crash.



WARNING: Invisible ultraviolet and infrared rays emitted in welding can injure unprotected eyes and skin. Always use protection such as a welder's helmet with dark-colored filter lenses of the correct density. Electric welding will produce intense radiation, therefore, filter plate lenses of the deepest shade providing adequate visibility are recommended. It is strongly recommended that persons working in the weld area wear flash safety goggles. Also wear protective clothing. Failure to follow these instructions may result in serious personal injury.



WARNING: Always wear protective equipment including eye protection with side shields, and a dust mask when sanding or grinding. Failure to follow these instructions may result in serious personal injury.

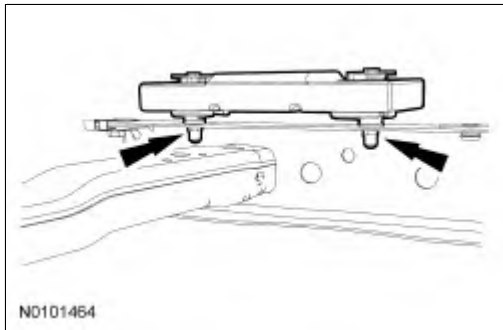
NOTE: Leaf spring front attachment brackets are not required when carrying out rear frame section replacement. These are available separately (base part number 5775/6) if they have been damaged and require replacement.

NOTE: Observe prescribed welding procedures when carrying out repairs to the frame assembly. For additional information, refer to [Welding Precautions — Steel](#) in this section.

1. **NOTE:** All body alignment measurements are carried out with the vehicle detrimmed. Measurements are made metal to metal, on center, unless otherwise specified.

Measure the vehicle to determine if the body requires straightening and alignment. The vehicle must be restored its correct overall dimensions prior to beginning this procedure. For body dimensional information, refer to [Body](#) in this section.

- Anchor the vehicle to a frame rack following the equipment manufacturer's instructions.
2. Remove the rear bumper assembly. For additional information, refer to [Section 501-19](#).
 3. Remove the rear tailgate assembly and complete pickup box assembly. For additional information, refer to [Section 501-04](#).
 4. Lower and remove the spare tire and remove the spare tire carrier assembly from the frame section.
 5. If equipped, remove the frame dampener located on the left rear frame rail.



6. Drain and remove the fuel tank assembly. For additional information, refer to [Section 310-00](#). Plug the open lines.
 - Disconnect and remove the evaporative emissions unit from the frame section.

7. Remove exhaust hangers and the exhaust system. For additional information, refer to [Section 309-00](#).

8. Remove the running board step (if equipped). For additional information, refer to [Section 501-08](#).

9. Position the vehicle on a frame rack and anchor in place following the equipment manufacturer's guidelines.

10. **NOTE:** All body alignment measurements are carried out with the vehicle detrimmed. Measurements are made metal-to-metal, on center unless otherwise specified.

Measure the vehicle to determine if the body and frame requires straightening and alignment. For additional dimensional information, refer to [Body](#) in this section.

11. Position and tighten fixtures to hold the front eye bolts of the leaf spring attachments. This will secure the rear axle and spring assembly in place as the frame section is removed and replaced.

12. Using the frame rack towers, position a support chain under the rear cab mount area of the center section of the frame and apply light tension to secure the cab and center section in place.

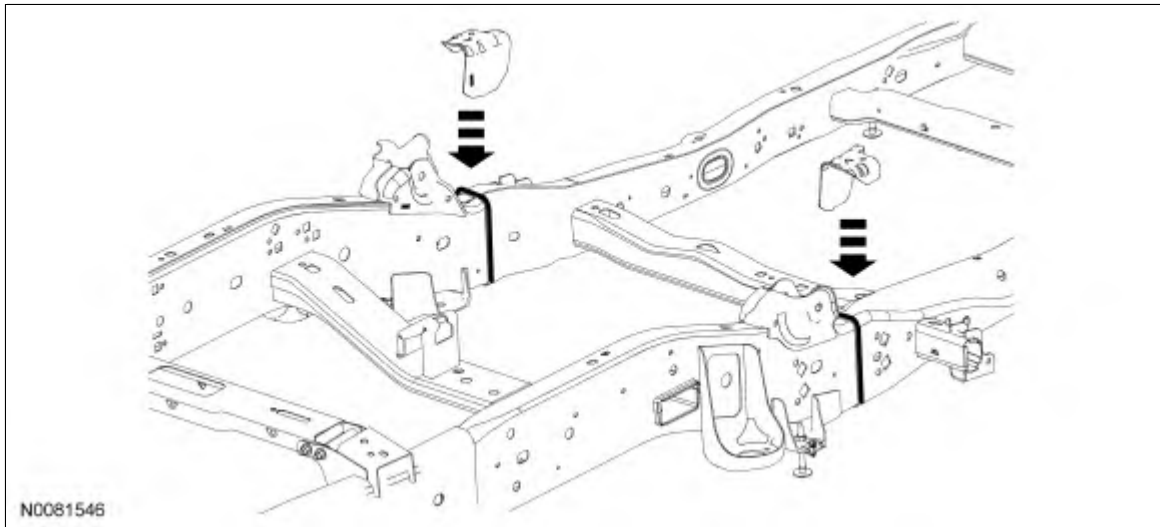
13. Remove the rear shock absorbers. For additional information, refer to [Section 204-04](#).

14.  **WARNING:** Adjust the rear axle height to relieve spring tension before removing any shackle bolts, nuts or spring pins. Springs under tension may release with great force. Failure to follow this instruction may result in serious personal injury.

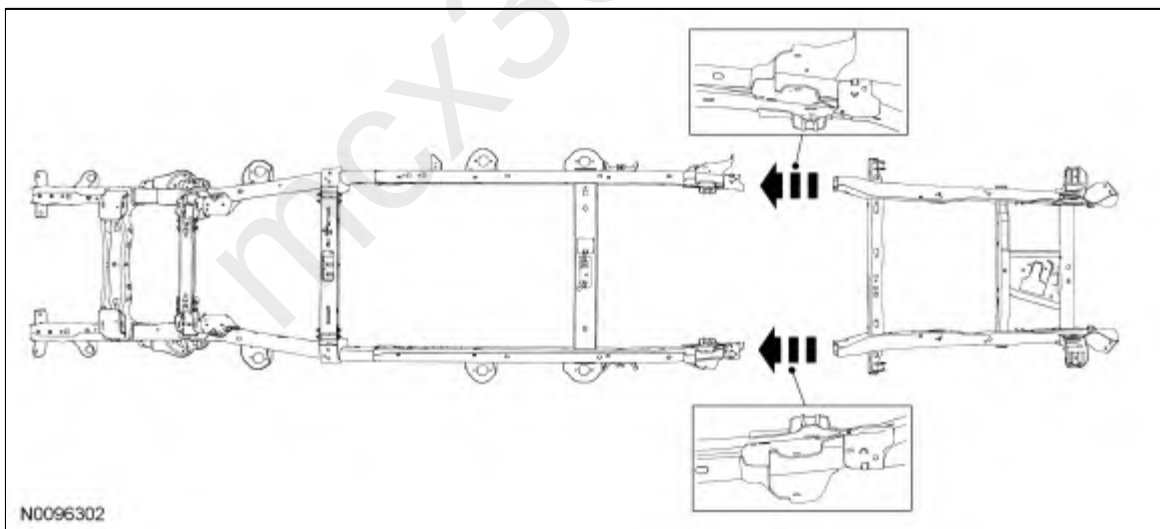
Remove the rear spring eye bolts. With the help of an assistant, hold the spring down with a large pry bar, then slowly release tension after removing the bolt. For additional information, refer to [Section 204-04](#).

15. **NOTE:** The rear frame section on this vehicle is retained by a welded joint and reinforcement bracket near the forward leaf spring eye brackets.

Using a high-speed grinder and correct eye, face and ear protection, grind the welds holding the rear frame reinforcement brackets to the frame rail and remove the brackets completely.

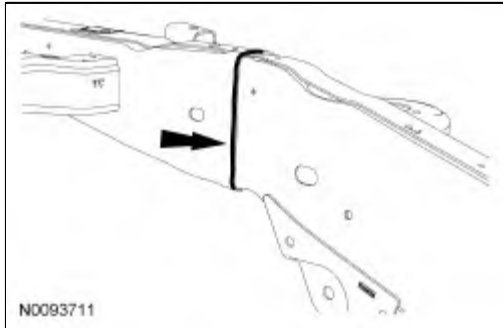


16. Using a high-speed grinder and correct eye, face and ear protection, grind the welds holding the center and rear frame sections together. Make sure not cut into the center side rail as it must be reused.
17. Grind off the excess welding material that remains in front of the weld line on the existing frame.
 - Remove only the weld material. Do not grind out the center frame rail as it will be reused.
18. Using an air chisel with a sharp one-inch, wedge-type chisel, separate the ground area of the joints.
19. With the help of an assistant, remove the complete rear frame section.

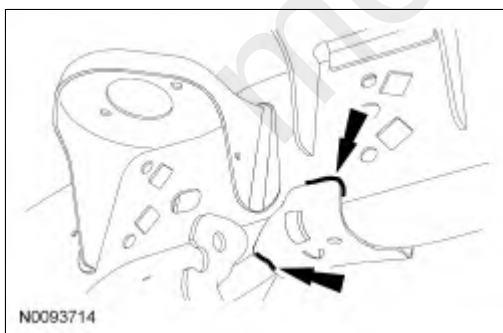
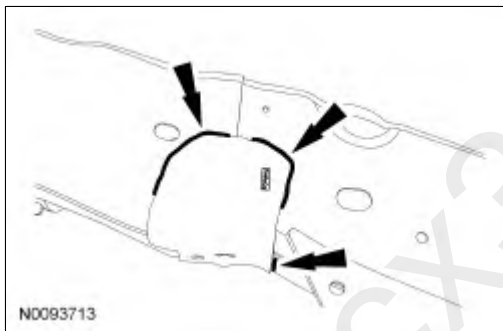


20. With the help of an assistant, position the replacement section into the center section of the frame.
 - Loosely clamp the replacement section in place.
21. Carry out frame measurements to verify correct position of the replacement section and clamp firmly into position. For additional dimensional information, refer to [Body](#) in this section.
 - Apply a weld-through primer locally in the areas to be welded.
22. Make sure the repair joint and surrounding repair area have attained a minimum temperature of 10°C (50°F) before carrying out the weld procedure.

23. With correct measurements verified and the replacement section in position, tack weld the replacement section to the center section.
24. When fit and alignment are correct, weld the new section to the original center section on all overlap joints using a MIG welding machine capable of producing a minimum of 200 amps. Use 0.9-1.1 mm (0.035-0.045 in) ER70S-3 or equivalent weld wire that is compatible with mild (Society of Automotive Engineers (SAE) 1010) steel.
 - Dress weld(s) as necessary.

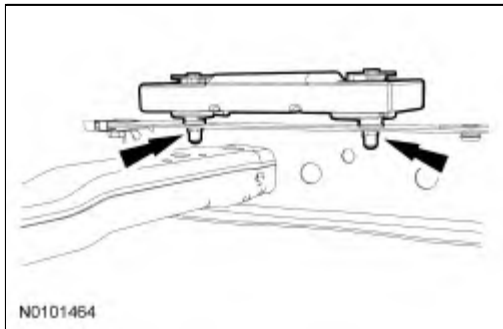


25. Position the rear reinforcement brackets and clamp in place. Apply a weld-through primer to the areas to be welded and weld as shown.



26. Use a dye penetrant to determine if any cracks or large voids exist in the weld joint. If cracks or other defects exist, grind out the defect and repair until the weld is free of defects.
 - Clean the repair area with metal surface cleaner and apply anti-corrosion coating to the affected areas of the frame and service replacement section. For additional information regarding corrosion protection, refer to [Restoring Corrosion Protection Following Repair](#) in this section.
27. Reinstall the rear springs and shocks. For additional information, refer to [Section 204-04](#).

28. Reinstall the spare tire carrier assembly.
29. Reinstall the fuel tank and evaporative emissions unit. For additional information, refer to [Section 310-00](#).
30. If equipped, reinstall the frame dampener on the frame rail of service replacement frame.
 - Tighten to 47 Nm (35 lb-ft).



31. Reinstall the exhaust system. For additional information, refer to [Section 309-00](#).
 32. Reinstall the pickup bed assembly. For additional information, refer to [Section 501-04](#).
 33. Remove the vehicle from the frame rack and complete any final assembly required.
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