

Frame Members-Front Frame Section

Special Tool(s) / General Equipment

Grinder
Plasma Cutter
MIG/MAG Welding Equipment
Locking Pliers

Removal

NOTE: The following procedure provides steps to replace the front frame short section at the first frame crossmember or the frame section at the center rail joint depending on the extent of vehicle damage.

1. Restore the vehicle to manufacturer's dimensions.
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).

All vehicles

2. Remove the following items:
 1. Refer to: [Front Bumper - Raptor](#) (501-19 Bumpers, Removal and Installation).
 2. Refer to: [Fender](#) (501-02 Front End Body Panels, Removal and Installation).
 3. Refer to: [Radiator Grille - Raptor](#) (501-08 Exterior Trim and Ornamentation, Removal and Installation).
 4. Unbolt the Front End Sheet Metal (FESM) body mount bolts and raise or remove the body if required.
Refer to: Frame and Body Mounting (502-02) .
3. Anchor the vehicle to a frame rack following the equipment manufacturer's instructions.

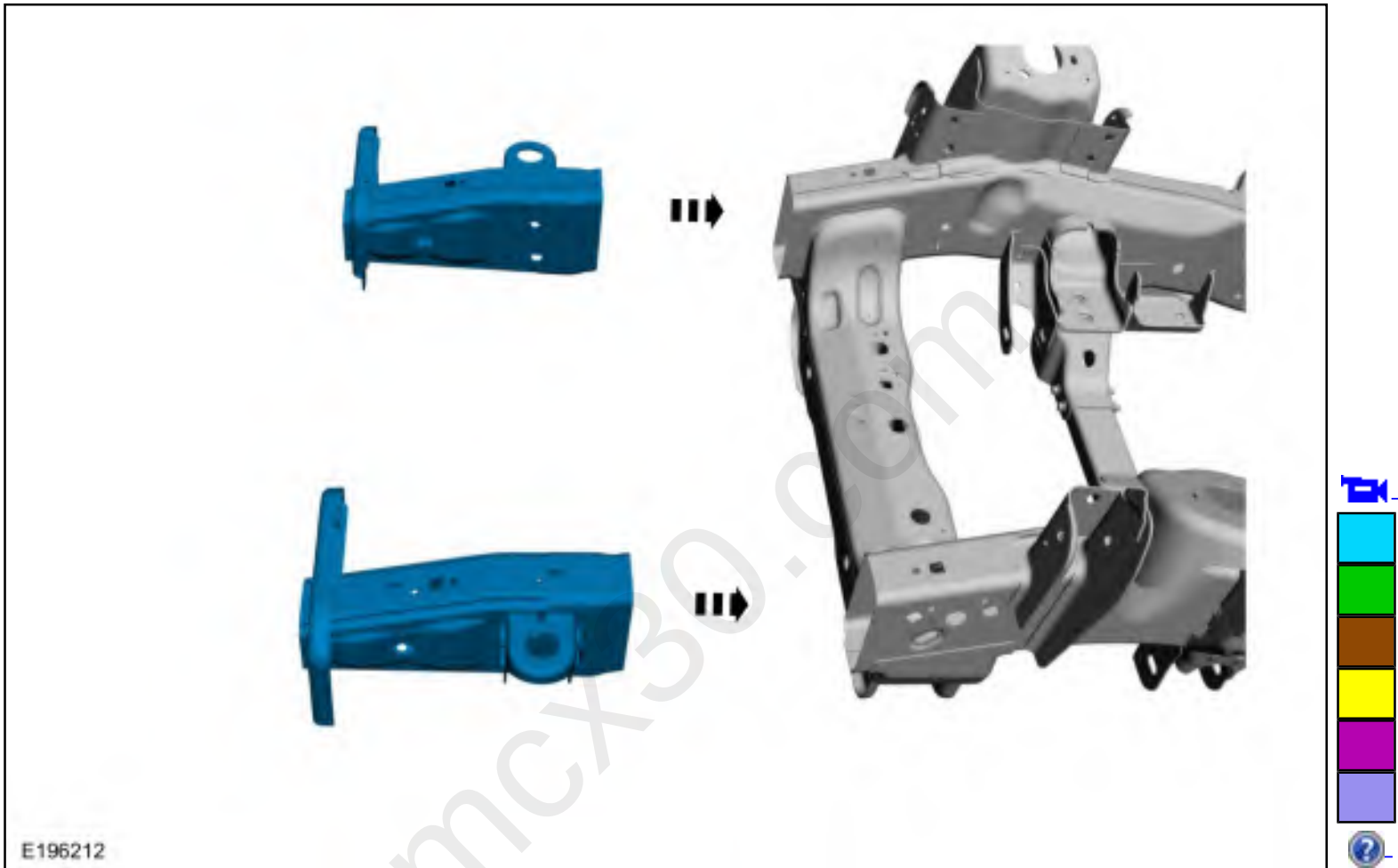
Front Frame Short Section

NOTICE: This section of the frame **MUST NOT** be straightened if any holes or surfaces show evidence of collapse or buckling. If any evidence of damage exists **BEHIND** the first frame cross member in

terms of buckling, cracking, etc. then the entire front frame section or entire frame must be replaced.

4. **NOTE:** *The replacement front frame components are production parts designed with a taper to insert into the front rail section to assist in alignment and welding operations.*

Front frame short section overview.



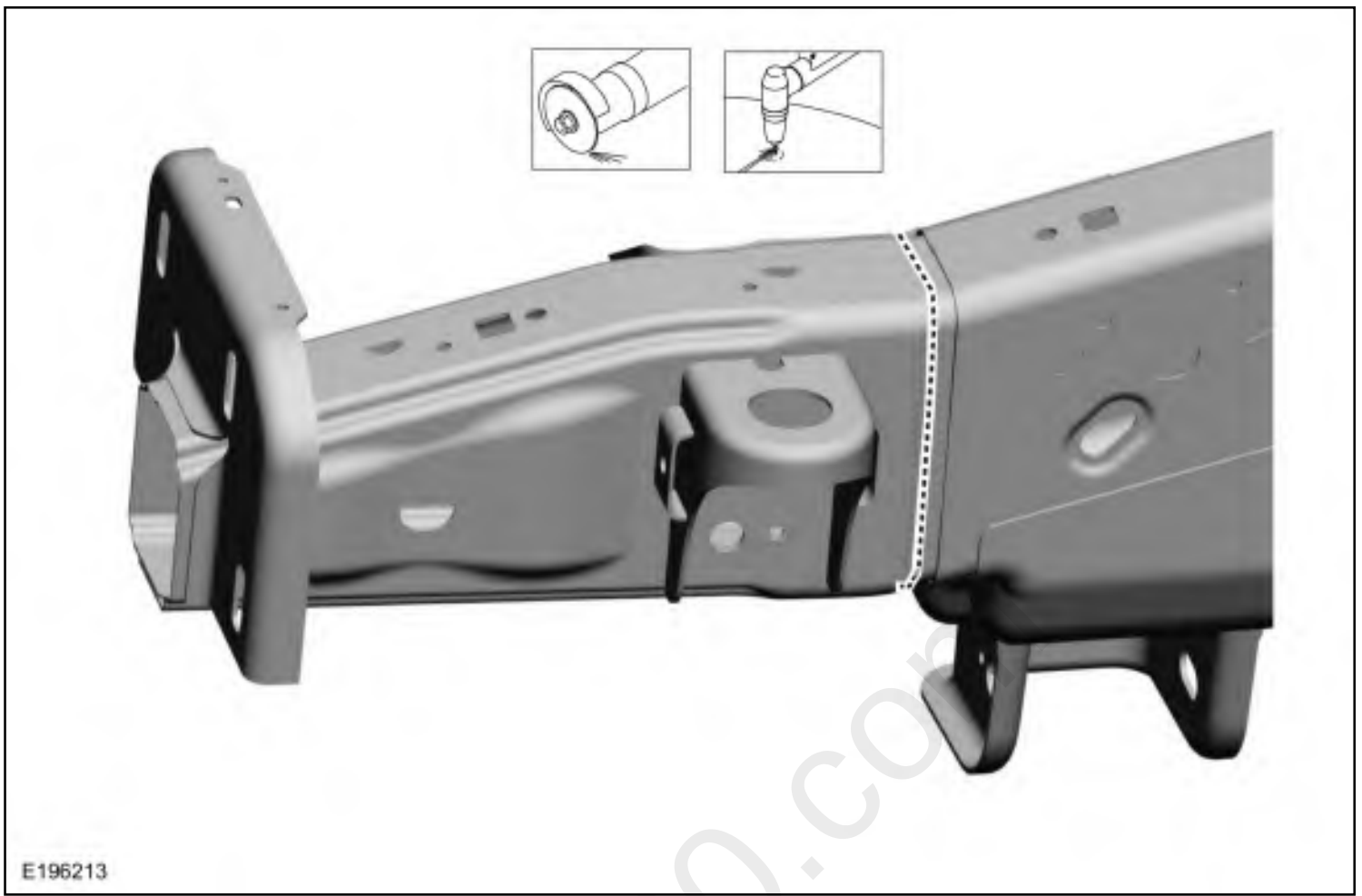
5. **NOTE:** *Do not cut directly along the center of the weld line. Leave enough material on the front side of the weld centerline to allow the remaining weld and frame material to be ground back to the front edge of the front mid rail. This is necessary to make sure of correct fit between the frame and the replacement frame section.*

NOTE: *LH side shown, RH side similar.*

Locate the vertical weld of the front frame to center rail, using a plasma cutter, reciprocating saw or cut-off wheel cut through the frame rail.

Use the General Equipment: Grinder

Use the General Equipment: Plasma Cutter

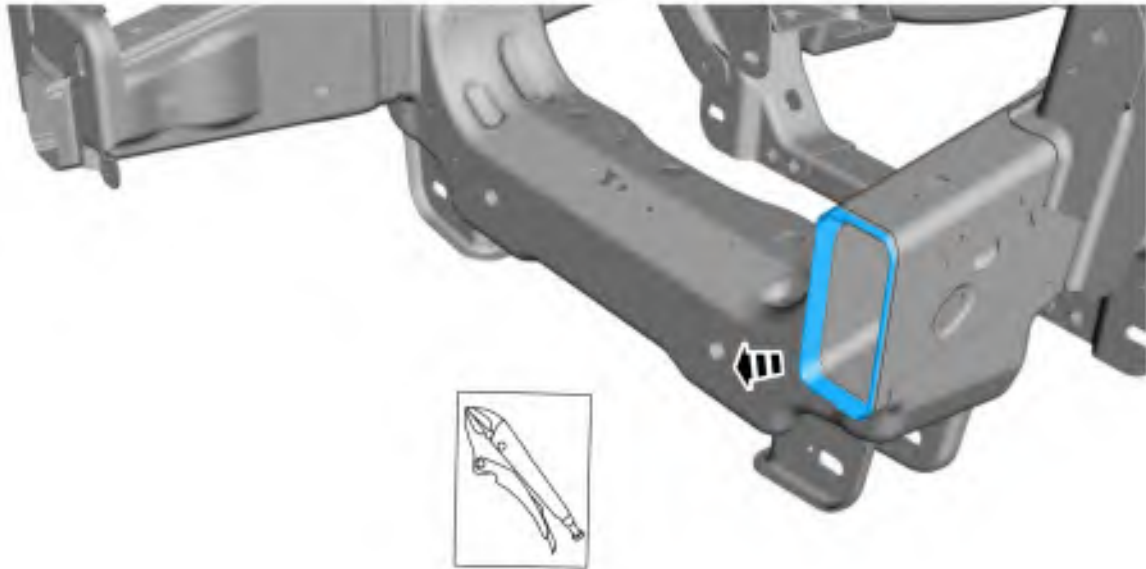


6. Remove the frame section from the affected side.



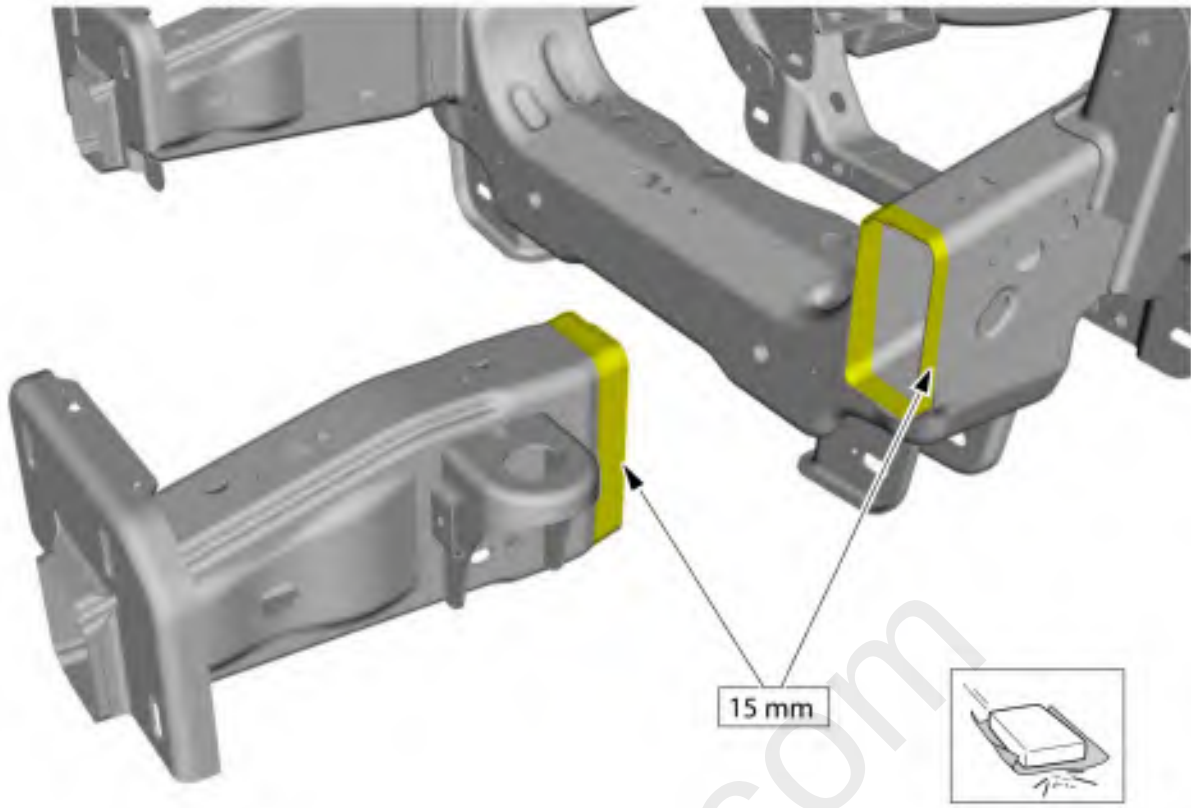
7. Grind off the excess welding material that remains around the perimeter of the front edge of the front frame rail of the frame assembly, and remove the remaining portion of the frame section from inside the frame rail.

Use the General Equipment: Locking Pliers



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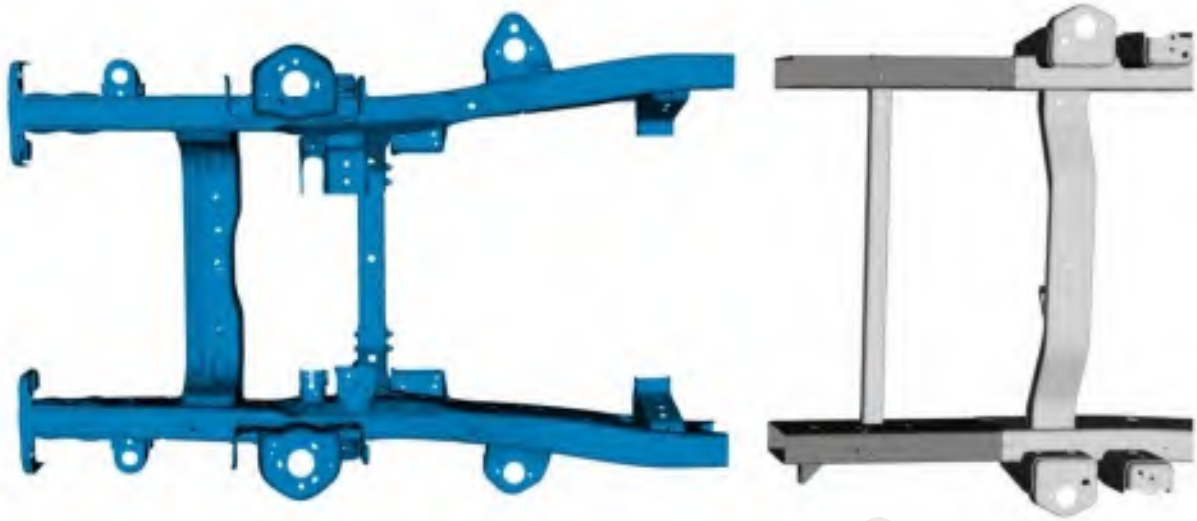
8. Using a wire brush or sandpaper, remove the e-coat paint from the existing frame near the edges to be welded on the inner and outer surfaces within approximately 15 mm (0.5 in.) of the repair joint.



Front Frame Section

NOTE: The front frame section on this vehicle is retained by welded lap joints. The frame section will be removed and installed by grinding of the original welded joints, followed by welding of the new section into position.

9. Front frame section overview.

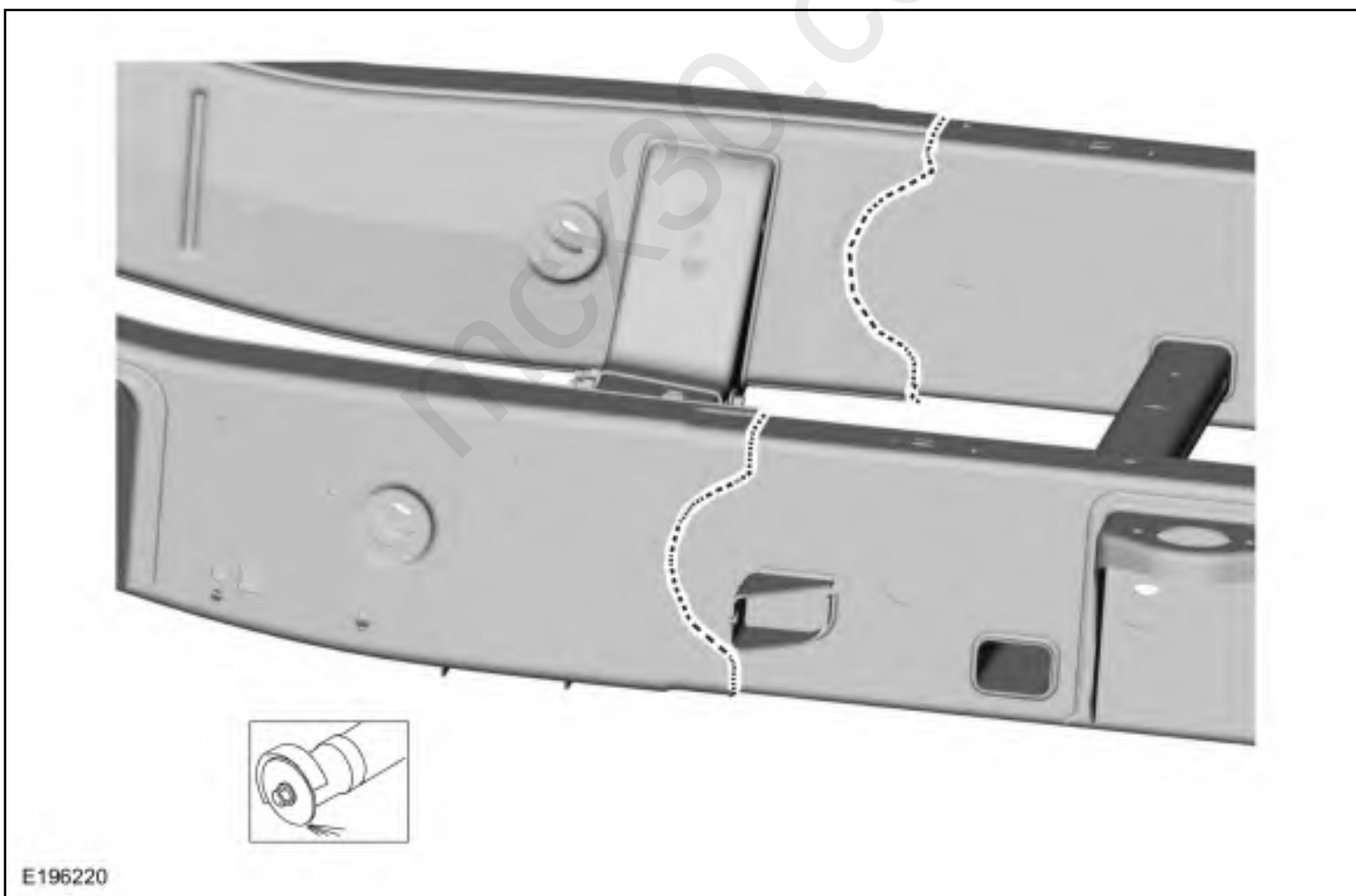


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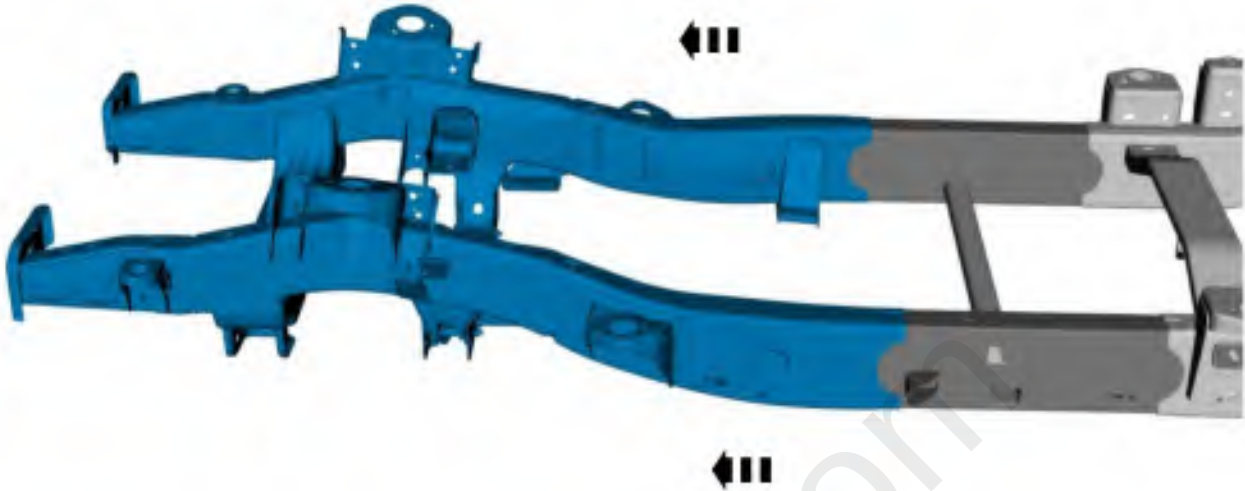
10. Remove the following items:

1. Refer to: [Transmission Support Crossmember](#) (502-02 Full Frame and Body Mounting, Removal and Installation).
2. If equipped.
Refer to: [Front Driveshaft](#) (205-01 Driveshaft, Removal and Installation).
3. If equipped.
Refer to: [Halfshaft](#) (205-04 Front Drive Halfshafts, Removal and Installation).
4. Refer to: [Shock Absorber and Spring Assembly](#) (204-01A Front Suspension - RWD, Removal and Installation).
5. Raise and support the engine and transmission assembly.
Refer to: [Engine Mount LH](#) (303-01A Engine - 2.7L EcoBoost (238kW/324PS), Removal and Installation).
Refer to: [Engine Mount RH](#) (303-01A Engine - 2.7L EcoBoost (238kW/324PS), Removal and Installation).
6. Remove the lower control arm, if equipped with 2WD.
Refer to: [Lower Arm](#) (204-01A Front Suspension - RWD, Removal and Installation).
7. Remove the lower control arm, if equipped with 4WD.
Refer to: [Lower Arm](#) (204-01B Front Suspension - 4WD, Removal and Installation).
8. Remove the upper control arm, if equipped with 2WD.
Refer to: [Upper Arm](#) (204-01A Front Suspension - RWD, Removal and Installation).

9. Remove the upper control arm, if equipped with 4WD.
Refer to: [Upper Arm](#) (204-01B Front Suspension - 4WD, Removal and Installation).
10. Refer to: [Steering Gear](#) (211-02 Power Steering, Removal and Installation).
11. Disconnect the exhaust system for the engine.
Refer to: [Catalytic Converter LH](#) (309-00C Exhaust System - 3.5L EcoBoost (272kW/370PS), Removal and Installation).
Refer to: [Catalytic Converter RH](#) (309-00C Exhaust System - 3.5L EcoBoost (272kW/370PS), Removal and Installation).
11. Loosen the body mount to frame bushing bolts from the radiator support and the forward cab support.
12. Disconnect and remove any remaining wiring, lines, and related fittings from the frame section.
13. Grind through the original welded joints retaining the forward frame section to the center section. Be careful not to cut into the center side rail since it will be reused.
 - Using a chisel gun with a sharp 25.4 mm (1 inch) wide wedge chisel, separate the ground area of the joints.
Use the General Equipment: Grinder

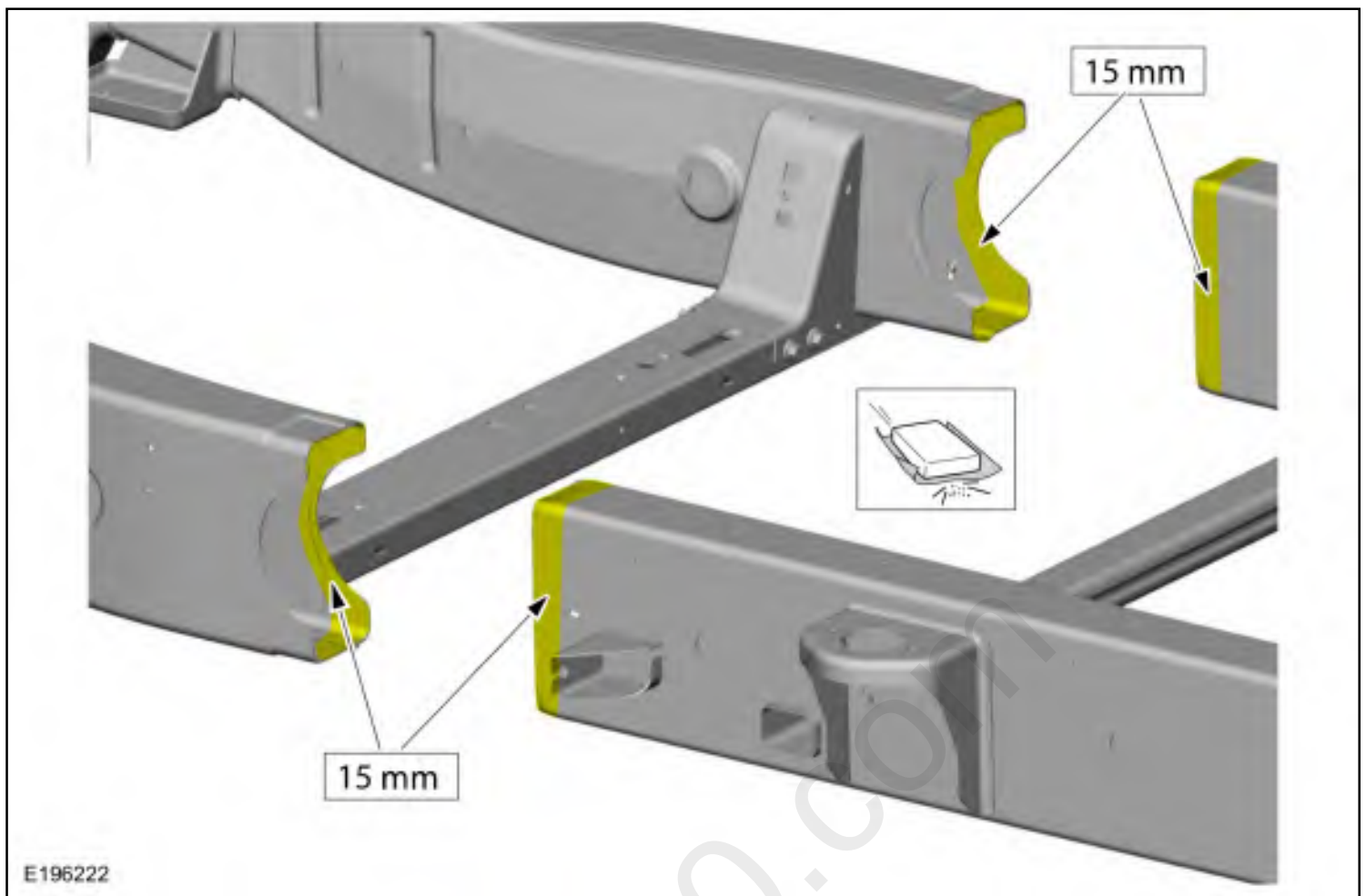


14. With the help of an assistant, remove the complete front frame section.



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15. Using a wire brush or sandpaper, remove the e-coat paint from the existing frame near the edges to be welded on the inner and outer surfaces within approximately 15 mm (0.5 in.) of the repair joint.



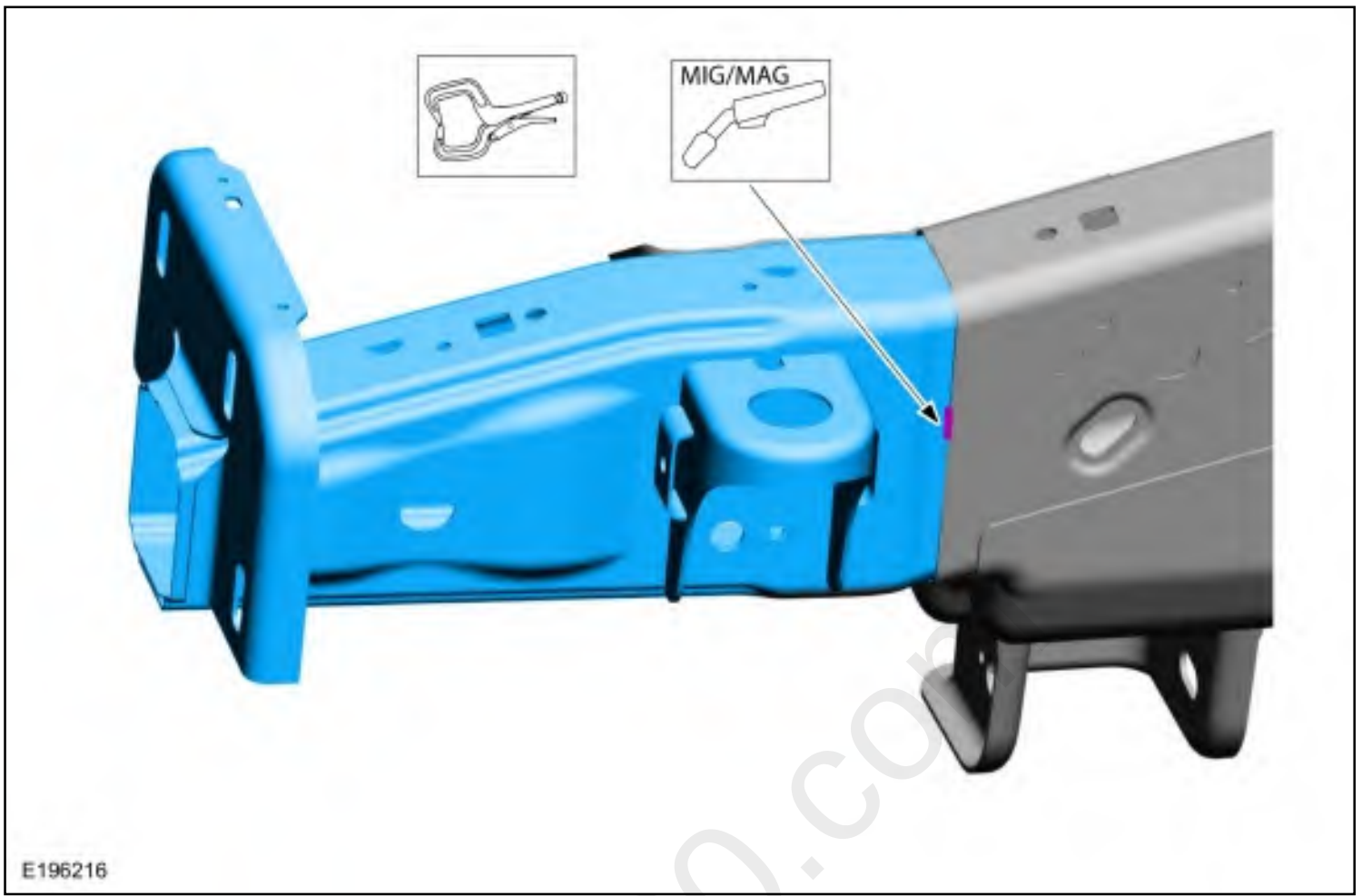
Installation

Front Frame Short Section

NOTE: LH side shown, RH side similar.

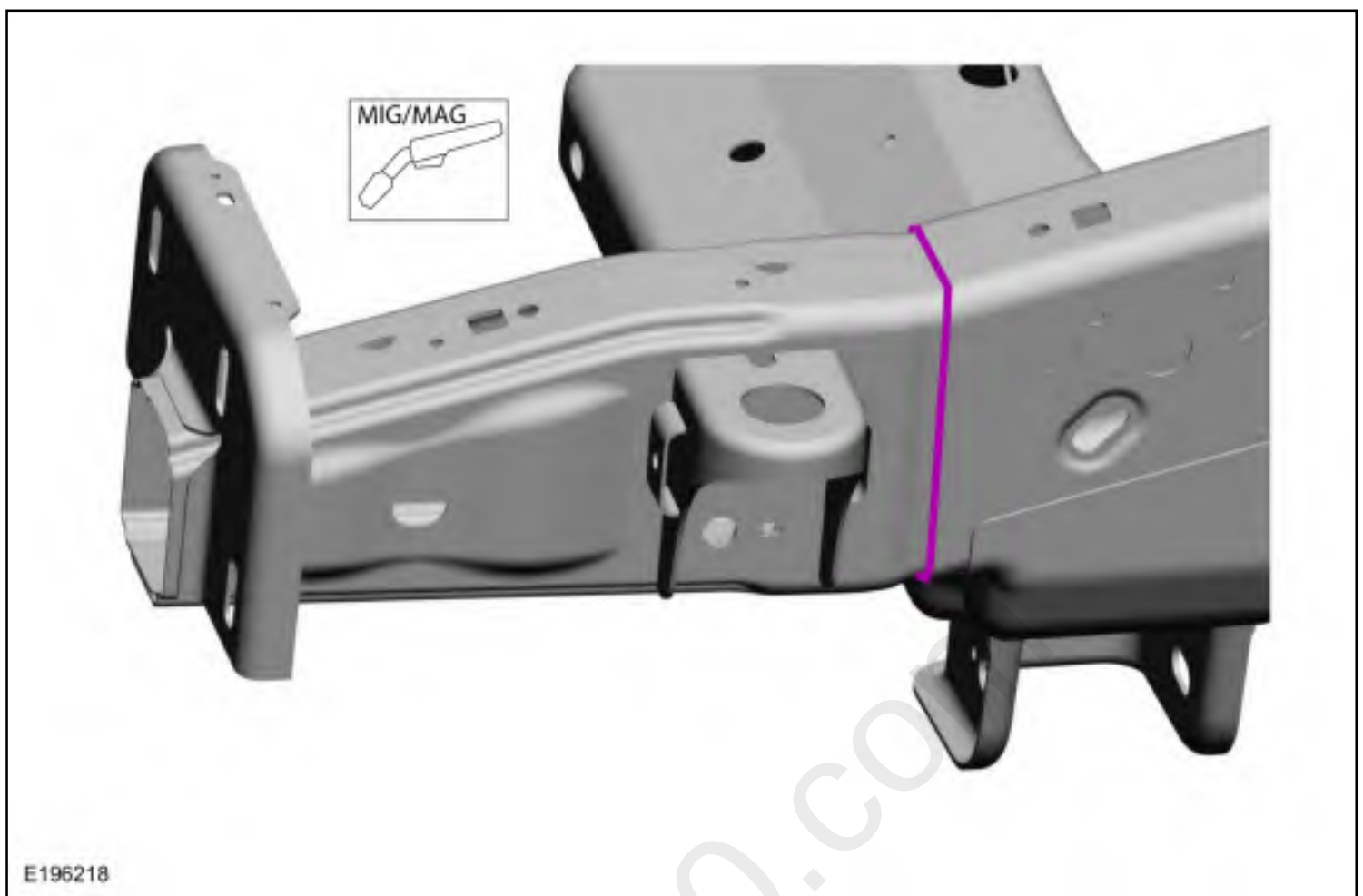
1. Verify dimensional accuracy **before** performing any welding operations.
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).
2. **NOTE:** Check that the Front End Sheet Metal (FESM) body mount bracket lines up with the sheet metal hole for the body mount bolt.

Install the front frame section inside the mid front rail of the frame and tack weld at 4 locations.
Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).
Use the General Equipment: MIG/MAG Welding Equipment
Use the General Equipment: Locking Pliers



3. Re-check the frame replacement alignment by lowering the body, and then raise it. Weld the joint completely if this alignment is correct.

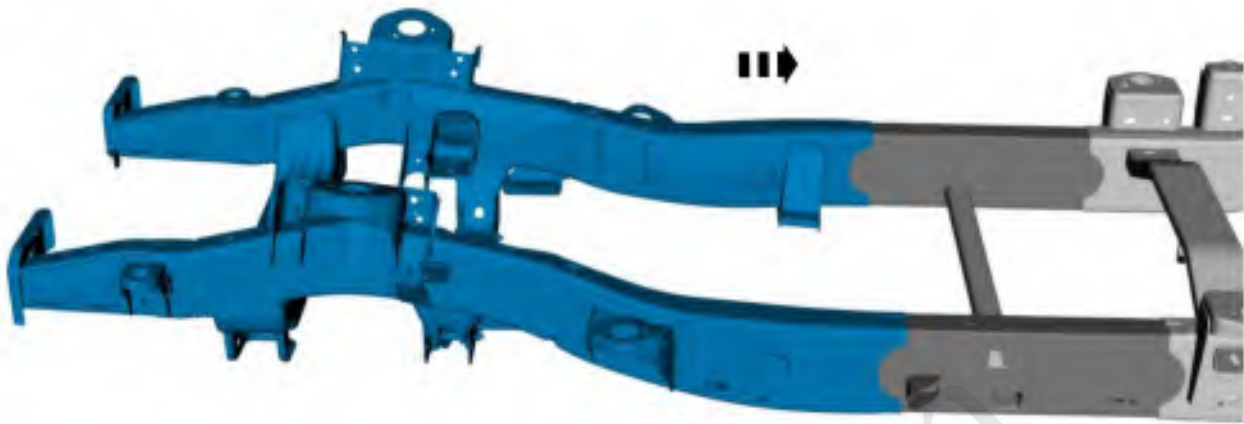
Use the General Equipment: MIG/MAG Welding Equipment



4. Metal finish the repair area using typical metal finishing techniques.
5. Refinish using a Ford approved paint system.
6. Restore corrosion protection.
Refer to: [Corrosion Prevention](#) (501-25 Body Repairs - General Information, General Procedures).

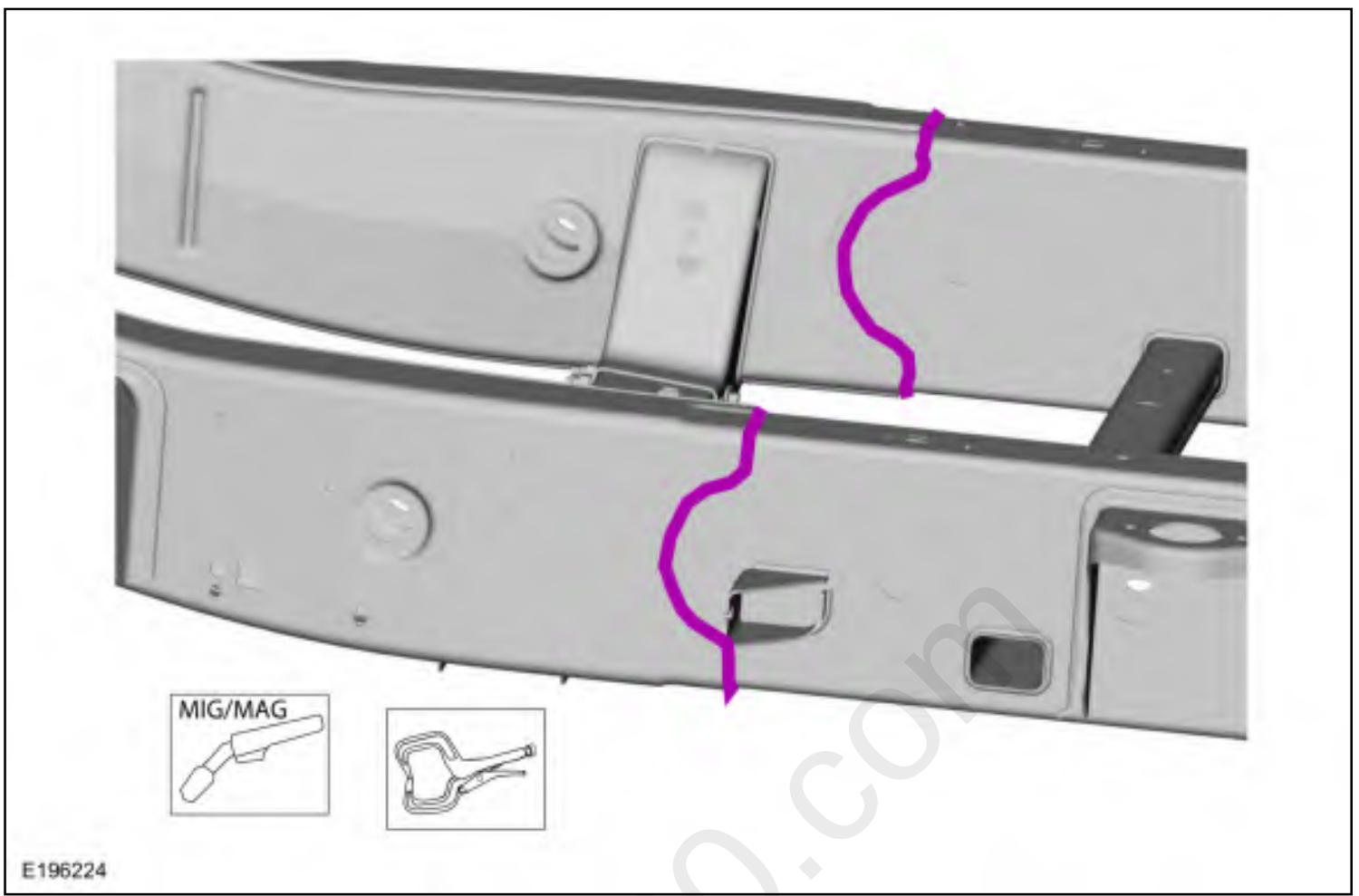
Front Frame Section

7. With the help of an assistant, position the new front frame section into place on the vehicle.



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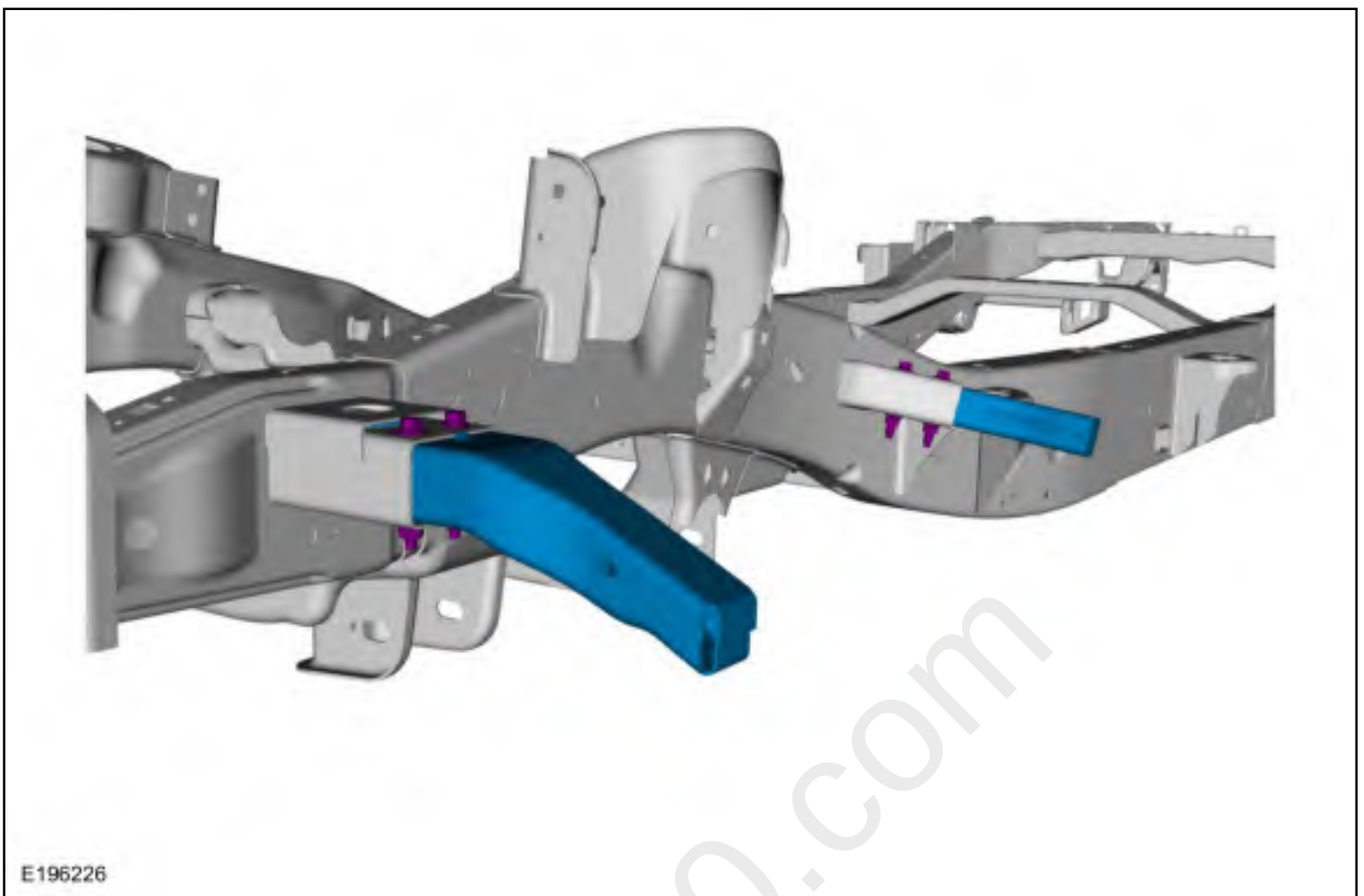
8. Verify dimensional accuracy **before** performing any welding operations.
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).
9. Support the new section, and loosely clamp the replacement section in a preliminary position.
 - Verify correct dimensions, then solid weld the new section to the original on all overlap joints.
Refer to: [Body and Frame](#) (501-26 Body Repairs - Vehicle Specific Information and Tolerance Checks, Description and Operation).
Refer to: [Joining Techniques](#) (501-25 Body Repairs - General Information, General Procedures).
Use the General Equipment: MIG/MAG Welding Equipment
Use the General Equipment: Locking Pliers



10. **NOTE:** *SuperCrew only, LH side shown, RH side similar.*

If equipped, install the brackets.

Torque: 76 lb.ft (103 Nm)



11. Metal finish the repair area using typical metal finishing techniques.
12. Refinish using a Ford approved paint system.
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 4. Refer to: [Shock Absorber and Spring Assembly](#) (204-01A Front Suspension - RWD, Removal and Installation).
 5. Install the lower control arm, if equipped with 2WD.
Refer to: [Lower Arm](#) (204-01A Front Suspension - RWD, Removal and Installation).
 6. Install the lower control arm, if equipped with 4WD.
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7. Install the upper control arm, if equipped with 2WD.
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8. Install the upper control arm, if equipped with 4WD.
Refer to: [Upper Arm](#) (204-01B Front Suspension - 4WD, Removal and Installation).
9. Refer to: [Steering Gear](#) (211-02 Power Steering, Removal and Installation).
10. Reposition the engine and transmission assembly.
Refer to: [Engine Mount LH](#) (303-01A Engine - 2.7L EcoBoost (238kW/324PS), Removal and Installation).
Refer to: [Engine Mount RH](#) (303-01A Engine - 2.7L EcoBoost (238kW/324PS), Removal and Installation).
11. Reconnect the exhaust system to the engine.
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All vehicles

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