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Contents

General Information

Business Class M2 vehicles have a molded, fiberglass-reinforced-plastic (FRP) hood panel, and sheet-molded compound (SMC) or reaction-injection-molded (RIM) polymer half-fenders that mount to the cab sides. Several reinforcing members (also made of SMC) are bonded to the engine side of the hood. The front grille is made of injection-molded plastic.

A recess in the hood, above the grille, provides the handle for hood tilting.

The hood panel is compression molded using the preform molding process. The first step in this process is to produce a preform by spraying chopped glass fibers and resin binder in a controlled manner onto a screen that's the same shape as the male molding die. The preform is then heated to cure the resin binder. Next, the preform is moved to a compression molding press. The preform is placed onto the male half of a matched metal mold. As the halves of the mold close, resin is distributed throughout the part, and is cured under heat and pressure.

After molding, the hood is trimmed. Then the fiberglass reinforcements and metal parts are bonded to the hood.

When in the operating position, the hood is supported at the front by the hood-hinge pivots and at the rear by hood support brackets which are attached to the cab. A groove in each bracket mates with pins attached to the inside of the hood, near each upper rear corner. The hood is held down with two rubber over-center latches, with part of the latch attached to the hood, and the other part attached to each half-fender. To prevent warm, under-hood air from entering the cab through the air conditioner/heater air-inlet, a hood seal attaches to the cowl panel, ahead of the windshield.

The front hood-hinge pivots are adjustable fore-and-aft and side-to-side. The rear hood support brackets are adjustable up-and-down only.

Two types of tilt-assist mechanisms are used on the Business Class M2. One type consists of two torsion bars, attached to a bracket bolted to the frame rail front closing crossmember. The outboard ends of the torsion bars fit into slots in the hood hinges. The other type consists of two spring struts, attached to the hood and brackets on the frame rail assemblies.

On vehicles with a torsion-bar tilt-assist mechanism, a damper prevents the hood from slamming when it is being closed. The damper is attached to the right-side upper hood hinge and the bumper.

Hood stop cables or straps, attached to the hood and the radiator, limit the tilt of the hood.

Splash shields under the hood extend to the inboard side of the tires.

On the underside of the hood are several 1-inch (25-mm) thick polyester polyurethane foam hood liners, with a polymer-film facing. The liners reduce engine noise emissions.

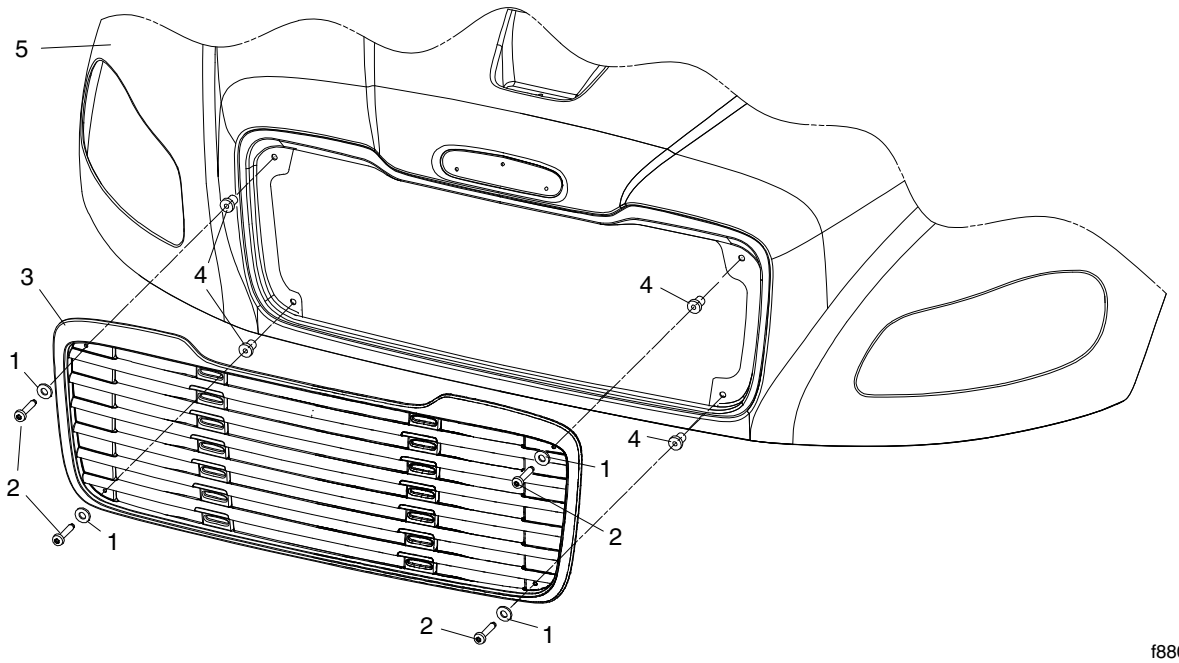
Grille Removal and Installation

Removal

1. Park the vehicle on a level surface, shut down the engine, apply the parking brakes, and chock the rear tires.
2. With the hood in the operating position, use a Torx screwdriver (T30) to remove the grille-to-hood screws. See **Fig. 1**.
3. Remove the grille.

Installation

1. Place the grille in the hood opening and align the screw holes.
2. Using a Torx screwdriver (T30) install the screws and tighten them securely.



1. Washer
2. T30 Torx Screw
3. Grille
4. Well Nut
5. Hood

Fig. 1, Grille Installation

Hood Removal and Installation

Procedures under these headings apply to the following vehicles, as specified:

- vehicles with an engine manufactured through 2006
- vehicles with an EPA07 engine

⚠ WARNING

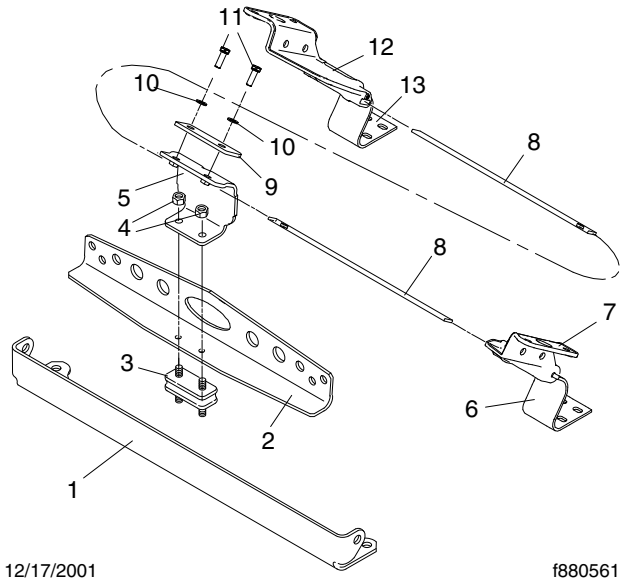
Do not try to lift the hood. Lifting the hood could result in personal injury or damage to the hood assembly and other components.

Vehicles With an Engine Manufactured Through 2006

Removal

1. With the vehicle parked, apply the parking brakes and chock the tires.
2. Remove the grille; see **Subject 100**.
3. Open the hood to the full-tilt position.
4. Remove the tilt-assist torsion bars, as follows; see **Fig. 1**.
   - 4.1 Tilt the hood about 45-degrees to take the tension off the torsion bars of the tilt-assist assembly.
   - 4.2 Reach through the grille opening and remove the two hexbolts that secure the torsion bars to the center mounting bracket.
   - 4.3 Remove the outboard ends of the torsion bars from the slots in the upper hood hinges.
5. Place a support between the floor and the front of the hood; see **Fig. 2**.

   The support should be as wide and as long as the front of the hood, and should be the same height as the lowest edge of the hood. Place cardboard, carpet, rags, or other padding on top of the support to protect the hood.
6. Disconnect the hood damper from the hood; see **Fig. 3**.
7. Disconnect the wiring harness, as follows.
   - 7.1 Remove the standoff bracket located near the left hood hinge.
   - 7.2 Disconnect the wiring harness that runs along the left-side frame rail.
8. Lower the hood until it is balanced over the pivots, to relieve tension on the stop cables. Have an assistant hold the hood in this position.
9. Disconnect the stop cables from the brackets on the radiator; see **Fig. 4**.
10. Carefully tilt the hood onto the support.
11. Using a T-40 Torx® screwdriver, remove the hood-hinge pivot bolts; see **Fig. 5**.
12. Remove the hood from the vehicle by carefully rolling or sliding the hood support away from the vehicle; do not try to lift the hood.



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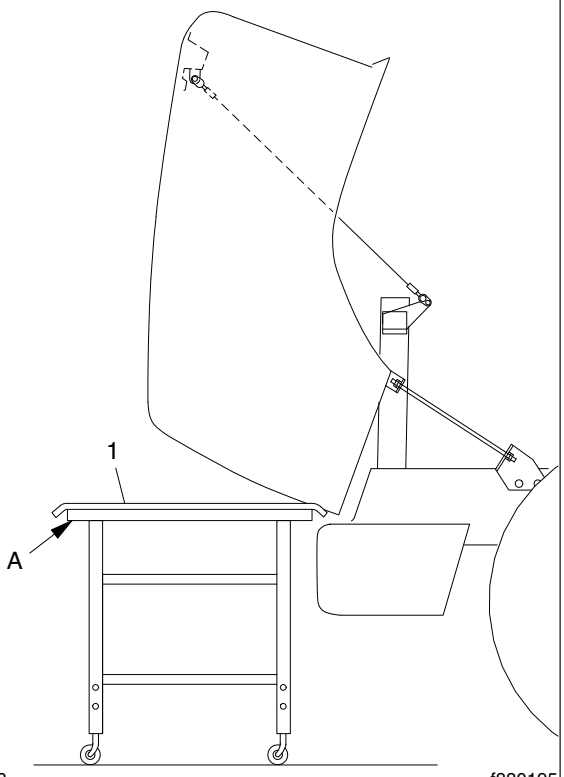
1. Crossmember Closing Bracket
2. Radiator Support Bracket
3. Radiator Isolator Assembly
4. Hexnuts
5. Center Mounting Bracket
6. Lower Hood Hinge, Left Side
7. Upper Hood Hinge, Left Side
8. Torsion Bar
9. Mounting Plate
10. Washer
11. Hexbolt, 3/8–16
12. Upper Hood Hinge, Right Side
13. Lower Hood Hinge, Right Side

Fig. 1, Torsion Bar Installation (vehicles with an engine manufactured through 2006)

Hood Removal and Installation



A. The top of support should be at same height as the lowest edge of hood.

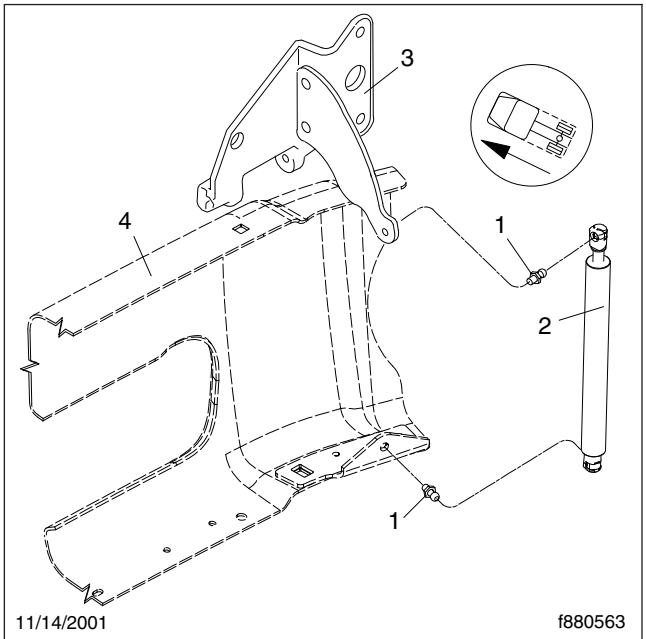
1. Cardboard, Carpet, or Furniture Pad

Fig. 2, Supporting the Hood (typical hood shown)

13. If it is necessary to remove the hood hinges, refer to **Fig. 6**.

Installation

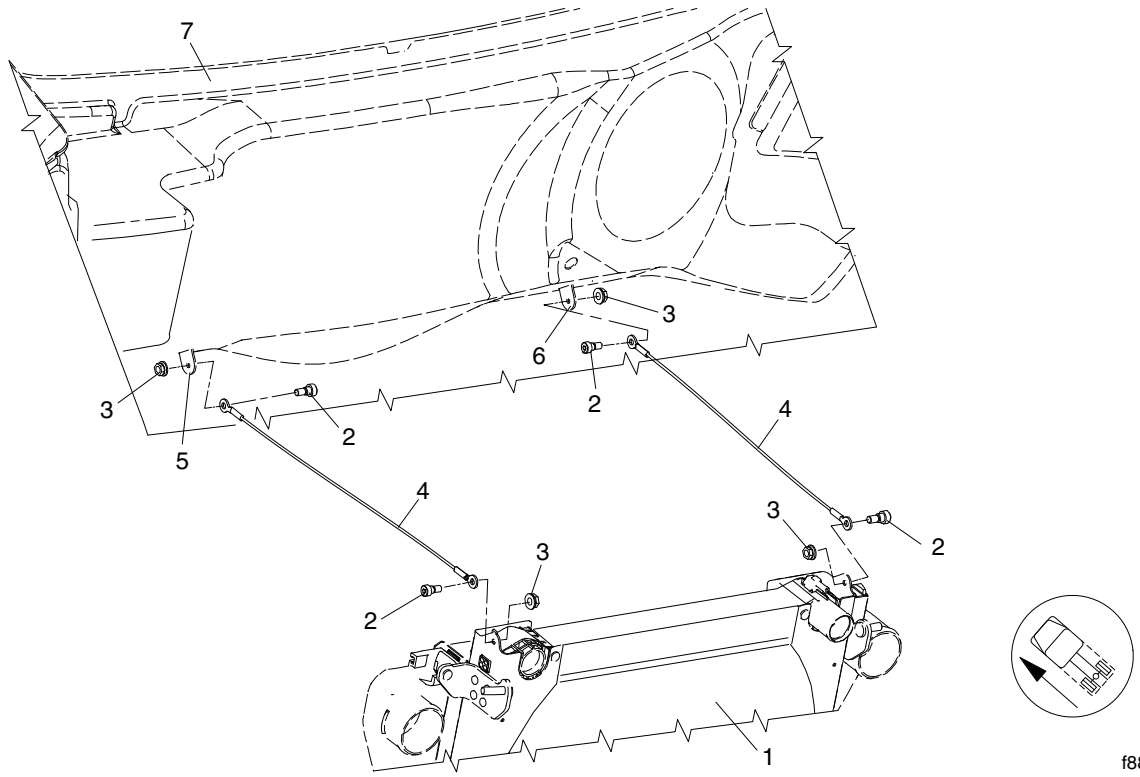
1. With the tires chocked, move the support and hood into alignment with the front of the vehicle. Do not try to lift the hood.
2. Align the holes of the hood hinge brackets with those in the lower hood hinges. Using a T-40 Torx screwdriver, install the hood-pivot bolts from the inboard side. Install the locknuts, and tighten them 25 lbf·ft (34 N·m); see **Fig. 5**.
3. Lower the hood until it is balanced over the pivots, then have an assistant hold the hood in this position.



1. Ball Stud
2. Damper
3. Right-Side Hood Hinge
4. Bumper

Fig. 3, Bumper-Mounted Hood Damper Installation

4. Connect the stop-cable assemblies to the brackets on top of the radiator. Tighten the flanged hexnuts firmly; see **Fig. 4**.
5. Remove the hood support from the front of the vehicle and lower the hood. Check the hood adjustment, and adjust the hood if needed; see **Subject 120**.
6. Open the hood to the full-tilt position.
7. Attach the hood damper to the hood bracket; see **Fig. 3**.
8. Install the torsion bars, as follows; see **Fig. 1**.
   - 8.1 With the hood tilted halfway, insert the outboard end of each torsion bar into the slot in the hood hinge.
   - 8.2 Place the inboard ends of the torsion bars on top of the mounting bracket. Install the mounting plate on top of the torsion bars.
   - 8.3 Secure the mounting plate and torsion bars to the mounting bracket with the



1. Radiator
2. Shoulder-Bolt, 3/8"
3. Flanged Hexnut
4. Hood Stop Cable
5. Left-Side Bracket
6. Right-Side Bracket
7. Hood

Fig. 4, Hood Stop Cables

3/8–16 hexbolts. Tighten the hexbolts 28 lbf·ft (38 N·m).

9. Connect the wiring harness on the left side of the vehicle, then attach it to the standoff bracket near the left hood hinge.
10. Install the grille; see **Subject 100**.
11. Remove the chocks.

Vehicles With an EPA07 Engine

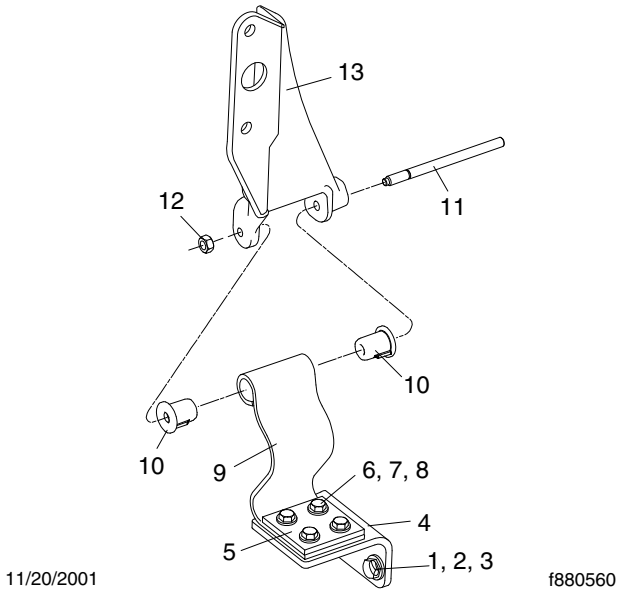
Removal

1. With the vehicle parked, apply the parking brakes and chock the tires.
2. Remove the grille; see **Subject 100**.
3. Open the hood to the full-tilt position.
4. Remove the tilt-assist spring struts by removing the fasteners that secure the struts to the frame assembly and the hood. For vehicles with a 106-inch BBC cab, see **Fig. 7**. For vehicles with a 112-inch BBC cab, see **Fig. 8**.
5. Place a support between the floor and the front of the hood; see **Fig. 2**.

   The support should be as wide and as long as the front of the hood, and should be the same height as the lowest edge of the hood. Place cardboard, carpet, rags, or other padding on top of the support to protect the hood.
6. Disconnect the wiring harness, as follows.

   6.1 Remove the standoff bracket located near the left hood hinge.

Hood Removal and Installation



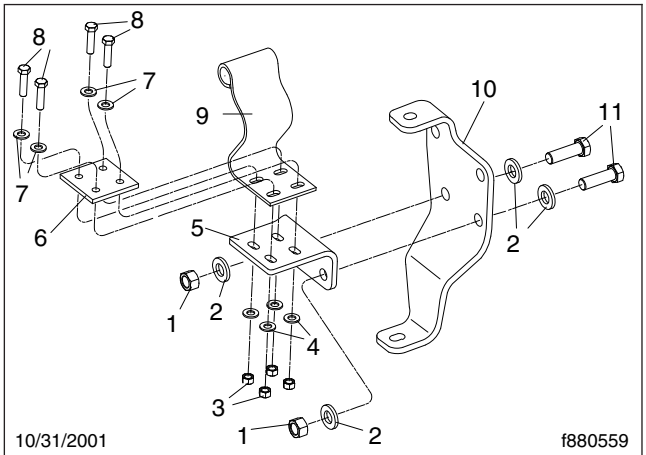
NOTE: Do not remove the bushings unless they are damaged.

1. Hexbolt, 5/8–11
2. Hexnut, 5/8–11
3. Washer
4. Mounting Bracket
5. Mounting Plate
6. Hexbolt, 3/8–16
7. Hexnut, 3/8–16
8. Washer
9. Lower Hood Hinge
10. Bushing
11. Hood Pivot Bolt
12. Locknut, M10
13. Upper Hood Hinge

Fig. 5, Hood Pivot Bolt Installation (vehicles with an engine manufactured through 2006)

6.2 Disconnect the wiring harness that runs along the left-side frame rail.

7. Lower the hood until it is balanced over the pivots, to relieve tension on the stop cables or straps. Have an assistant hold the hood in this position.
8. Disconnect the stop cables (**Fig. 4**), or stop straps (**Fig. 9**), from the brackets on the radiator.
9. Carefully tilt the hood onto the support.
10. Remove the hood-hinge pivot bolts. For a vehicle with a 106-inch BBC cab, see **Fig. 10**. For a vehicle with a 112-inch BBC cab, see **Fig. 11**.
11. Remove the hood from the vehicle by carefully rolling or sliding the hood support away from the vehicle; do not try to lift the hood.



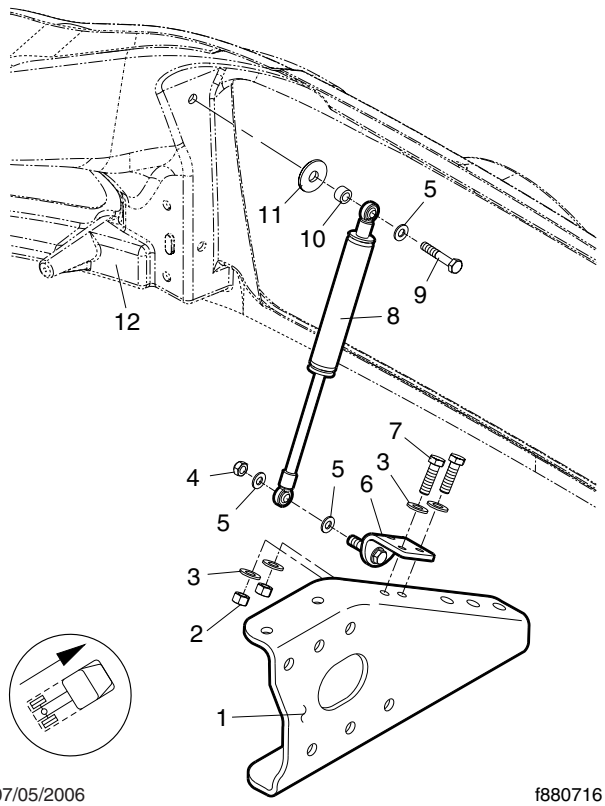
1. Hexnut, 5/8–11
2. Washer
3. Hexnut, 3/8–16
4. Washer
5. Mounting Bracket
6. Mounting Plate
7. Washer
8. Hexbolt, 3/8–16
9. Lower Hood Hinge
10. Bumper Mounting Bracket
11. Hexbolt, 5/8–11

Fig. 6, Hood Hinge Installation (vehicles with an engine manufactured through 2006)

12. If it is necessary to remove the hood hinges, refer to **Fig. 10** (106-inch BBC), or **Fig. 11** (112-inch BBC).

Installation

1. With the tires chocked, move the support and hood into alignment with the front of the vehicle. Do not try to lift the hood.
2. Align the holes of the hood hinge brackets with those in the lower hood hinges. Install the hood-pivot bolts from the inboard side. Install the washers and locknuts. Tighten the locknuts 25 lbf·ft (34 N·m). For vehicles with a 106-inch BBC cab, see **Fig. 10**. For vehicles with a 112-inch BBC cab, see **Fig. 11**.
3. Lower the hood until it is balanced over the pivots, then have an assistant hold the hood in this position.
4. Connect the stop cables (**Fig. 4**) or stop straps (**Fig. 9**) to the brackets on top of the radiator. Tighten the fasteners firmly.
5. Remove the hood support from the front of the vehicle and lower the hood. Check the hood adjustment, and adjust the hood if needed; see **Subject 120**.



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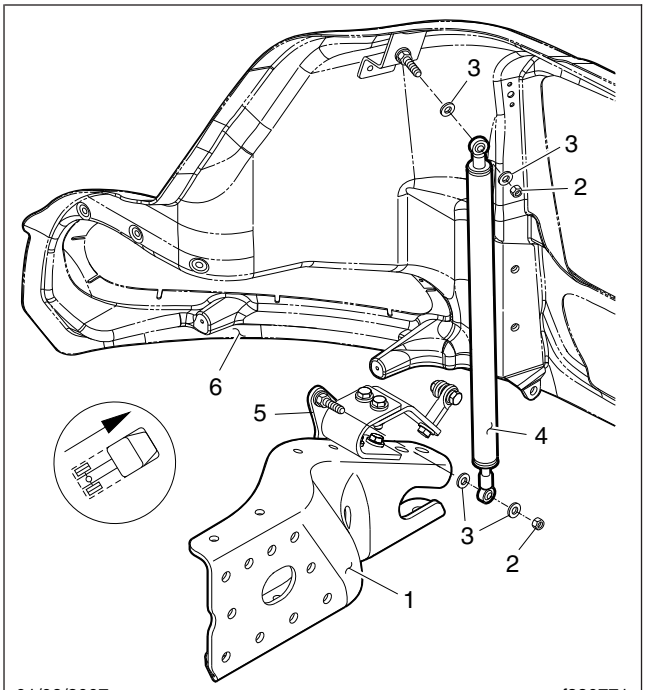
NOTE: Left side shown; right side symmetrical.

1. Frame Rail Assembly
2. Nut
3. Flatwasher, Hardened
4. Locknut
5. Flatwasher
6. Strut Support Bracket
7. Bolt, 3/8–16
8. Tilt-Assist Strut
9. Capscrew, M8 x 45
10. Spacer
11. Washer
12. Hood

Fig. 7, Spring Strut Installation (vehicles with a 106-inch BBC cab)

6. Open the hood to the full-tilt position.
7. Install the tilt-assist spring struts on the frame assembly and the hood. Tighten the fasteners 15 to 19 lbf·ft (20 to 26 N·m). For vehicles with a 106-inch BBC cab, see **Fig. 7**. For vehicles with a 112-inch BBC cab, see **Fig. 8**.
8. Connect the wiring harness on the left side of the vehicle. Then attach it to the standoff bracket.
9. Install the grille; see **Subject 100**.
10. Remove the chocks.



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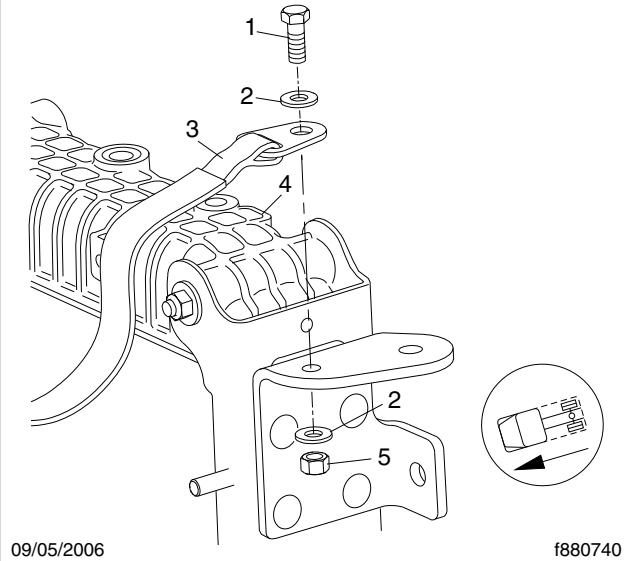
NOTE: Left side shown; right side symmetrical.

1. Frame Rail Assembly
2. Locknut
3. Washer
4. Tilt-Assist Strut
5. Strut Support Bracket
6. Hood

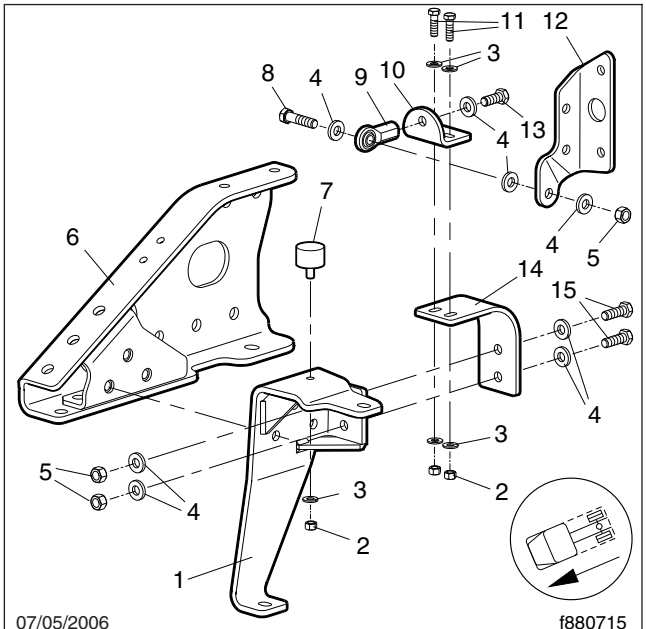
Fig. 8, Spring Strut Installation (vehicles with a 112-inch BBC cab)

Hood Removal and Installation



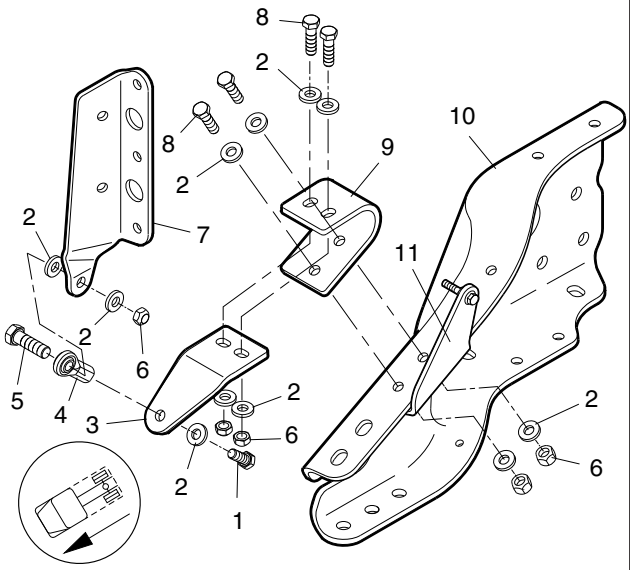
1. Bolt
2. Washer
3. Stop Strap
4. Radiator
5. Nut

Fig. 9, Hood Stop Strap Installation



1. Hood Pivot Bumper Mounting Bracket
2. Nut
3. Washer, Hardened
4. Washer, Hardened
5. Nut
6. Frame Rail Assembly, Left Side
7. Hood Pivot Bumper
8. Pivot Bolt
9. Rod-End Pivot
10. Pivot-Hinge Bracket
11. Bolt, 3/8–16 x 1.25
12. Pivot Bracket
13. Capscrew, 1/2–20 x 1.25
14. Pivot Hinge
15. Bolt, 1/2–13 x 1.5

Fig. 10, Hood Hinge Installation (vehicles with an EPA07 engine, and a 106-inch BBC cab)



1. Capscrew, 1/2–20 x 1.25
2. Washer, Hardened
3. Pivot-Hinge Bracket
4. Rod-End Pivot
5. Pivot Bolt
6. Nut
7. Pivot Bracket
8. Bolt, 1/2–13 x 1.75
9. Pivot Hinge
10. Frame Rail Assembly
11. Strut Support Bracket

Fig. 11, Hood Hinge Installation (vehicles with an EPA07 engine, and a 112-inch BBC cab)

Adjustment

1. Drive the vehicle back and forth to settle the frame and suspension. Park the vehicle on a flat, level surface. Shut down the engine, apply the parking brakes, and chock the tires.
2. With the hood in the operating position, and both hood latches latched, measure the gap between the rear vertical edge of the hood and the front outer vertical edge of the cowl at both sides of the vehicle. See **Fig. 1**. The gap should be between 1-3/8 and 1-5/8 inches (29 to 35 mm).

   If the gap on both sides is within specifications, go to the step for checking the alignment of the hood/cab character lines.

   If the gap is *not* within specifications on one or both sides, adjust the fore-and-aft position of the hood.

   2.1 Determine the amount that the hood must be moved at one or both sides, to correct the gap.

   2.2 Unlatch and tilt the hood.

   2.3 At the side(s) of the hood that must be moved, loosen the four fasteners that attach the hood hinge to the support bracket just enough to allow the hood to slide fore and aft for adjustment.

   Slide that side(s) of the hood fore or aft the amount determined earlier.

   Tighten the fasteners 28 lbf·ft (38 N·m).

   2.4 Return the hood to the operating position, and fasten the latches.

   2.5 Again, check the gap at both sides of the hood.

   If the gap is *not* within specifications, repeat the above procedure.

   When the gap is within specifications at both sides of the hood, go to the next step.
3. With the hood in the operating position, and both hood latches latched, check alignment of the cab and hood character lines. See **Fig. 2**.

   If the character lines are aligned, nothing more needs to be done.

   If the character lines are misaligned, adjust the up-and-down position of the rear of the hood.

   3.1 Unlatch and tilt the hood.

   3.2 If not already done, at the side(s) of the hood that must be moved, loosen the two fasteners that attach the rear hood support isolator assembly to the hood, just enough to allow the hood support assembly to move up or down for adjustment. See **Fig. 2**.

   NOTE: Complete the steps for up-and-down adjustment of one side, before doing the other side.

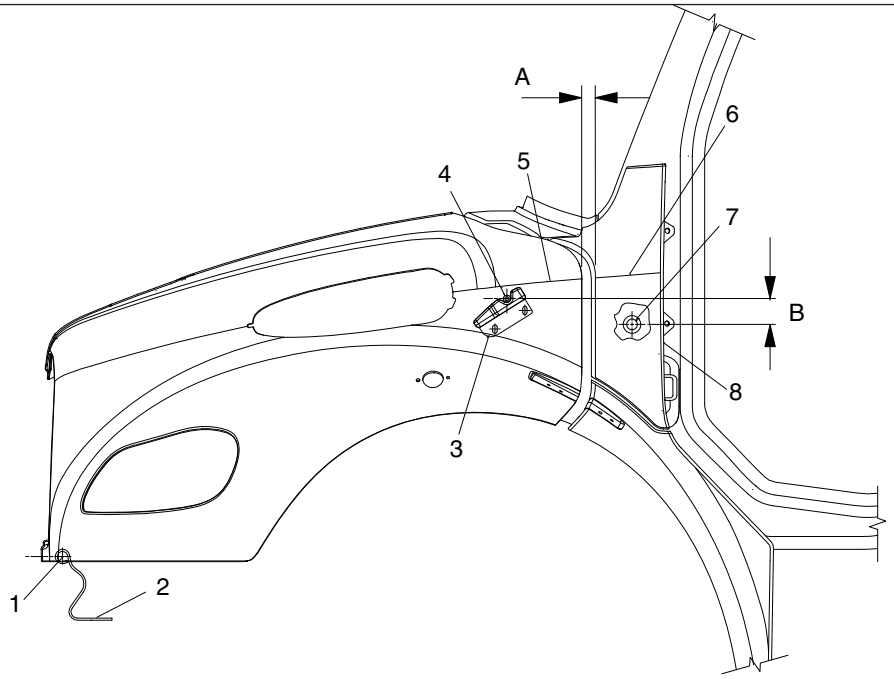
   3.3 Return the hood to the operating position, but latch only the side that is *not* being adjusted.

   3.4 At the side of the hood that's being adjusted, push down on the top of the hood until the character lines (or paint stripes) are aligned.

   3.5 Carefully tilt the hood, without changing the position of the hood support isolator assembly. Tighten the isolator fasteners firmly.

   If the other side of the hood needs to be adjusted, repeat the procedure.
4. Close the hood and latch it.
5. Remove the chocks from the tires.

Hood Adjustment



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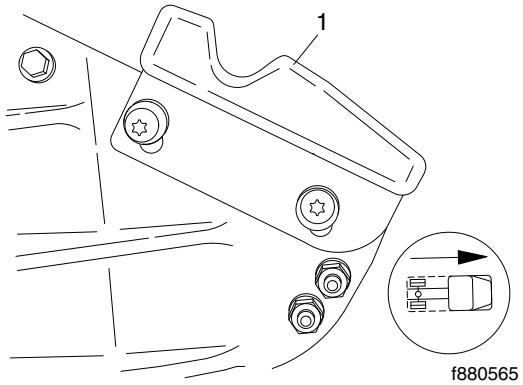
The tolerance between the hood and cab character lines is not to exceed 1/8 inch (3 mm).

A. Between 1-3/8 and 1-5/8 inches (29 to 35 mm)
B. Between 2-1/2 and 2-5/8 inches (58 to 62 mm)

1. Hood Pivot Bolt
2. Hood Lower Hinge
3. Hood Support Isolator
4. Hood Rear Locator Pin
5. Hood Character Line
6. Cab Character Line
7. Flanged Tooling Hole
8. Cowl

Fig. 1, Hood Fore-and-Aft and Rear Height Measurements



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1. Rear Hood Support Isolator Assembly

Fig. 2, Rear Hood Support Isolator

Hood Repair Safety Precautions

Precautions

Before performing any fiberglass repairs, read the following precautions. Observe any additional precautions given by the manufacturers of the repair materials used.

1. All of the raw materials used in repairing fiberglass are harmful to the eyes and could cause blindness. Wear goggles or other protective eye shields to reduce the chances of splash contacting your eyes.
2. Wear protective gloves, as some people may have skin sensitivity to resin. Also, don't allow the hardener to contact your skin. The hardener can be a skin irritant.

IMPORTANT: In case the hardener or resin contacts your skin, wash with soap and water. If the hardener or resin should contact your eyes, rinse with plenty of water (15 minutes), and call a doctor.

3. When working with fiberglass materials, wear old clothing, since the resin may damage garment material. Wash the clothing before wearing again.
4. Most of the liquids involved in fiberglass repair and cleanup (especially when using acetone as a solvent) are flammable; some are also toxic. Don't perform repairs in areas where exposed (or stored) flammable liquids may contact an open flame or any burning material, such as a cigarette. Don't perform repairs in areas that are not well-ventilated.

⚠ WARNING

Do fiberglass repairs in a safe workshop area to prevent severe personal injury due to explosion of flammable liquids or breathing of toxic fumes.

5. Do not use electric tools when the fumes of flammable solvents are present. The heat or sparks generated by the tools could create a fire hazard.
6. When grinding or sanding fiberglass surfaces, wear goggles or other protective eye shields, and also an air purifying respirator, either a throw-away type or one with a replaceable particulate filter(s). Don't breath grinding dust or particles, otherwise irritation may occur. Also, during grinding and sanding operations, wear a disposable (paper) shop coat to keep dust and fiber slivers off your clothing.
7. Because fiberglass dust can shorten the life of electrical units, air-powered tools are preferred (for frequent use).
8. Unless fiberglass repairs are done on a regular (daily) basis, don't save leftover liquids. If liquids must be saved, store them in cool, dark areas, away from direct sunlight.

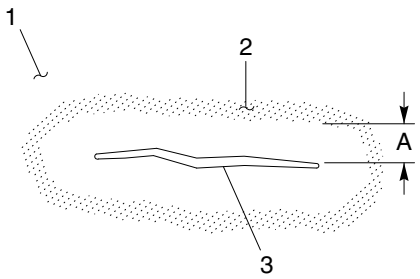
⚠ WARNING

Before starting any hood repair procedure, read the safety precautions in Subject 130. Failure to be aware of the hazards in using raw materials in working with fiberglass could result in serious and long-term health problems.

Surface Damage Repair

Surface damage refers to scratches, chips, or nicks on the outer surface of the hood. Use the following instructions to repair surface damage.

1. Examine the damaged area. If there are cracks, see if they go all the way through the hood. If they do, see "Structural Damage Repair" for instructions.
2. Clean the area with xylene, acetone, or an equivalent grease- and wax-removing solvent. Inspect the area closely.
3. Using 220-grit or finer sandpaper, remove all of the paint around the damaged area to a distance of about 1-1/2 inches (4 cm). See Fig. 1.



A. Remove paint and primer 1-1/2 inches (4 cm) around the damaged area. Use 220-grit or finer sandpaper.

1. Paint
2. Primer
3. Scratch

Fig. 1, Damaged Area with Paint and In-Mold Coating Removed

4. Using an air nozzle, blow off all dust.
5. Apply Ashland Pliogrip 7775L self-leveling urethane adhesive over the non-coated area and spread a thin layer using a squeegee applicator. Cover the entire damaged area, overlapping onto the painted surface. Leave a crowned excess of adhesive, slightly higher than the painted surface.

NOTE: When using Ashland Pliogrip 7775L, dispense the required adhesive from the cartridge in a continuous bead of uniform size and a uniform green color. Discard the initial few inches of discolored bead.

6. After the adhesive dries (about 50 minutes), sand it with a hand-held disc pad. Use 320-grit or finer sandpaper. Feather the edges of the fill so there are no visible sharp edges.
7. Clean the area with compressed air. Mask the area, then spot prime and paint it. Use Sherwin Williams BB–11 black conductive primer. See Group 98 for spot-painting instructions.

Structural Damage Repair

The Preform FRP (fiberglass reinforced plastic) hood consists of a one-piece hood assembly. SMC (sheet molded compound) inner reinforcements are bonded to the engine-side of the hood with a structural adhesive. If the hood is damaged, determine which parts are affected.

If there is damage to any of the reinforcements, the damage is not repairable. For example, if the grille area of the hood is damaged so badly that the reinforcement bonded inside the grille area is also damaged, replace the entire hood assembly.

If a joint between two reinforcements, or between a reinforcement and the hood skin, has separated and there is no damage at the joint area, the parts can be rebonded. Or, if a part of the hood skin is damaged and its adjoining reinforcement(s) aren't damaged, the reinforcement can be separated from the damaged part, the damaged part can be patched, and the reinforcement(s) rebonded in place.

For rebonding parts, see "Hood Reinforcement Rebonding."

For damage in the form of a crack or small hole, see "Crack or Small Hole Repair."

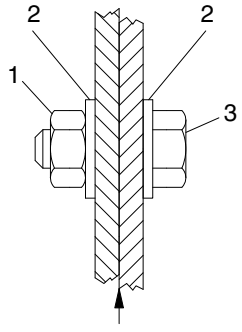
For larger damaged areas, see "Puncture or Large Fracture Repair."

Hood Repair

Hood Reinforcement Rebonding

1. If rebonding a joint that has partially separated, completely separate the reinforcement from the hood using a heat gun and putty knife. Remove as much of the old adhesive as possible. The heat gun will soften the adhesive and allow it to be peeled off the FRP.

   If the parts cannot be separated, work folded medium-grit sandpaper or a section of a steel hacksaw blade between the two surfaces to remove the old adhesive.
2. Scuff the surfaces with 80- to 220-grit sandpaper.
3. Clean the surfaces to be bonded with Ashland 6036 solvent or methylene chloride. Inspect the area closely to be sure all of the old adhesive, dirt, water, grease, and oils are removed.
4. If replacing a large part, align the part on the hood and clamp it in place. Drill holes through the bonding surfaces and install clamping bolts in the holes. Use two washers, one on each side of the joint. See **Fig. 2**. There should be enough clamping bolts to hold the hood in place and keep the bonding surfaces together, or at least one bolt every 12 to 18 inches (30 to 45 cm). Remove the part for application of adhesive.



1. Nut
2. Washers
3. Bolt
4. Bond Joint

Fig. 2, Clamping Bolt at Bond Joint

5. Following the manufacturer's instructions, use enough adhesive to bond the parts together. Use Ashland Pliogrip urethane cartridge materials 7773 or 7779.

NOTE: When using Ashland Pliogrip 7773 or 7779, insert the two tubes of adhesive into the applicator and dispense a 3/8-inch (10-mm) diameter bead of uniform green-colored adhesive at the bonding surface. Discard any adhesive that does not show this uniform green color.

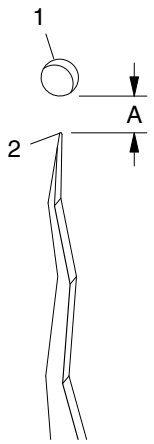
6. Within 3-1/2 minutes (7773) or within 10 minutes (7779) of applying the bead, align the part on the hood and clamp it firmly in place. If it is a large part, install the clamping bolts. Tighten the clamps or clamping bolts just enough to ensure that a uniform amount of pressure is applied along the seam. Ideally, the adhesive should be compressed to form a bondline 1-inch (25-mm) wide and 0.030-inch (0.76-mm) thick. This thickness can be ensured by sprinkling 0.030-inch (0.76-mm) glass beads into the adhesive before mating the parts.
7. Before it cures, remove any excess adhesive that squeezes out the edges of the bond.
8. Remove the clamps after the adhesive has cured for 30 minutes (7773) or for 60 minutes (7779).
9. If holes were drilled for clamping bolts, repair them using the instructions under "Crack or Small Hole Repair."
10. If necessary, prime and paint the repair area using the instructions under "Surface Damage Repair."

Crack or Small Hole Repair

A crack (fracture) or small hole through the laminate requires repair with a fiberglass-reinforced patch.

1. Examine the damage to the hood or apply hand pressure all around the damaged area to check for any concealed damage.
2. If a sound-absorbent liner is present on the underside of the damaged area, peel away the liner to provide an adequate working area.
3. Clean the damaged area on both sides of the hood or with xylene, acetone, or equivalent grease- and wax-removing solvent. Inspect the area closely. All dirt, water, grease, and oils must be removed.
4. If repairing a crack, use a 1/8-inch (3-mm) diameter bit to drill a hole completely through the uncracked laminate 1/8 inch (3 mm) from each end

of the crack, to prevent the crack from lengthening. See **Fig. 3**.



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A. 1/8 inch (3 mm)

1. Drilled 1/8-inch (3-mm) Hole
2. End of Crack

Fig. 3, Drilling a Hole to Prevent the Crack From Lengthening

5. On the engine side of the hood (or underside of the), use a router bit (on a grinder or a drill) to grind away a shallow recess one-quarter the depth of the laminate and extending 1/2 inch (13 mm) outward from all sides of the damage. Taper the outside edge of the ground area. See **Fig. 4**.

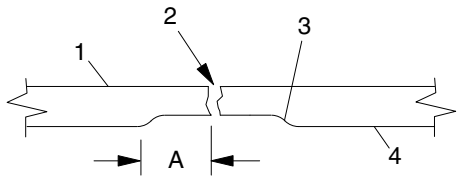
   If repairing a crack, grind outward to the drilled hole at the end of the crack, but not beyond. See **Fig. 5**, Ref. A.

6. Use 80- to 220-grit sandpaper to scuff an area at least 1 inch (25 mm) away from the fracture on all sides. Be sure to scuff thoroughly, since this will give the patch a surface to which it can stick. See **Fig. 5**, Ref. B.

7. Blow the dust away with compressed air and wipe the area with a clean cloth.

8. If necessary, align the panel sections on both sides of the crack, using weights or clamps to re-establish the original panel profile.

9. With a razor-blade knife, cut a section of woven fiberglass cloth to fully cover the crack and to overlay about 3/4 inch (20 mm). See **Fig. 5**, Ref. C.



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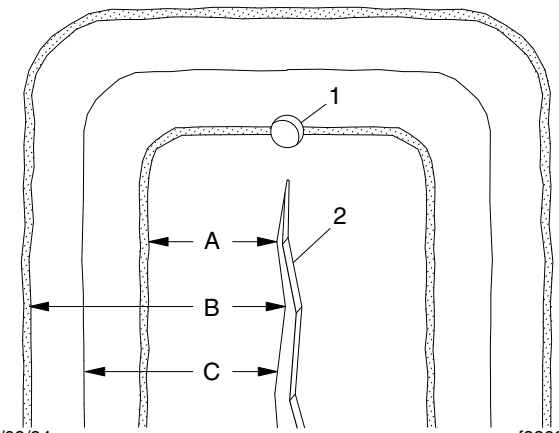
A. Grind a shallow recess one-quarter the depth of the FRP and extending 1/2 inch (13 mm) outward in all directions from the damaged area.

1. FRP
2. Crack
3. Slight Taper
4. Engine Side of Hood (or underside of)

Fig. 4, Recessed Area (cross-sectional view)



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A. Use a router to grind away a shallow recess one-quarter the depth of the FRP and extending 1/2 inch (13 mm) outward from the damage. If repairing a crack, don't grind past the hole drilled at the end of the crack.
B. Use 80- to 220-grit sandpaper to scuff the area 1 inch (25 mm) around the damage.
C. Cut the fiberglass cloth to fully cover the damage, and overlay about 3/4 inch (20 mm).

1. Hole
2. Crack

Fig. 5, Preparing the Damaged Area on the Engine Side of the Hood

10. To bond the fiberglass cloth to the damaged panel, use Ashland Pliogrip 7775L urethane adhesive.

Hood Repair

NOTE: When using Ashland Pliogrip 7775L, dispense the required adhesive from the cartridge in a continuous bead of uniform size and a uniform green color. Discard the initial few inches of discolored bead.

11. Lay the cut section of fiberglass cloth on the repair area, centered over the damage. Using a fiberglass roller, press the cloth down firmly into the layer of adhesive to completely saturate the glass fibers.
12. Apply another layer of adhesive over the glass cloth. Spread the adhesive evenly using the fiberglass roller.
13. After 2 to 5 minutes, the adhesive will start to jell. It may take more time when cool, less when warm.

IMPORTANT: To avoid pre-jelling or skin-over, mate the FRP parts to be bonded within one to four minutes after dispensing the adhesive.

NOTE: To get a smoother surface, press a piece of masking tape, wider than the repair, directly over the wet adhesive and smooth it before it hardens. The tape can be removed after five minutes when the adhesive has set.

14. The patch should be hard enough in 50 minutes to allow sanding to a smooth flat surface if required.
15. Repair the damage on the outside surface of the hood, using the instructions in "Surface Damage Repair." Prime and paint both surfaces, using the instructions in **Group 98**.

Puncture and Large Fracture Repair (Section Replacement)

On very large damaged areas (for example, structural damage on the side surface of the hood covering an area of a square foot or more) it may be easier to do a section replacement rather than make a patch. Fenders and headlight reinforcements may be used in section replacements. Also, a second damaged hood with the needed section intact may be available as scrap.

IMPORTANT: A piece of Preform FRP from another vehicle hood must be used for section replacement. Use of any other material may not allow the necessary bonding for the repair.

1. Push in on the area immediately surrounding and underneath the damaged area to determine the extent of damage.
2. If a sound-absorbent liner is present on the underside of the damaged area, peel away the liner to provide an adequate working area.
3. Clean the damaged area on both sides of the hood with xylene, acetone, or an equivalent grease- and wax-removing solvent. Inspect the area closely. All dirt, water, grease, and oils must be removed.
4. Using a sabre saw, cut out a large, straight-sided panel containing the damaged area.

   If the damage extends to a joint where a reinforcement is bonded to the hood, completely separate the reinforcement with a heat gun and putty knife before cutting. See "Hood Reinforcement Rebonding" for instructions.

⚠ WARNING

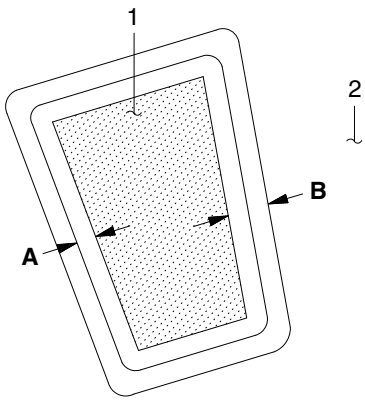
Wear goggles and an air purifying respirator when grinding, cutting, or sanding during all fiberglass repairs. The ground dust and particles could cause temporary or permanent damage to your eyes and, if inhaled, could cause throat or lung irritation.

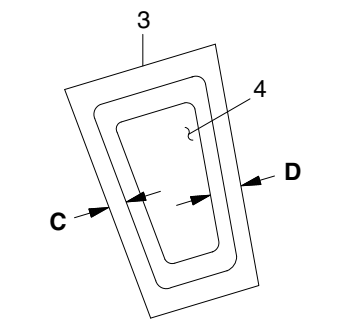
5. From a scrap hood, cut a section replacement panel from the same area, only slightly larger than the cut-out in the damaged hood. Then, trim the section replacement to fit both the size and contour of the original cutout.

   If the damage is next to a headlight reinforcement, but doesn't include the reinforcement, remove the headlight reinforcement from the replacement section (scrap hood), not the damaged hood.
6. After the trimming is completed, sand the edges to allow a 1/16 to 1/8-inch (2 to 3-mm) gap around the cutout.
7. On the engine side of the hood, use a router bit (on a grinder or drill) to grind away a shallow recess one-quarter the depth of the laminate and extending 1/2 inch (13 mm) outward from all sides of the cutout area. See **Fig. 6**, Ref. A.

   Also, grind 1/2 inch (13 mm) inward from all edges on the engine side of the section replacement. See **Fig. 6**, Ref. C.

Slightly taper the outside edge of the ground area on the hood and the inside edge of the ground area on the section replacement. See **Fig. 7**, Ref. 3.





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A and C: Use a router to grind away a shallow recess one-quarter the depth of the FRP and extending 1/2 inch (13 mm) away from the edge.

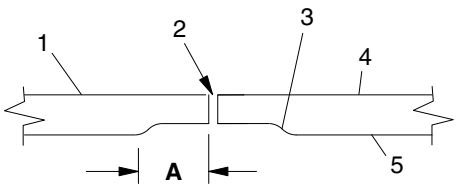
B and D: Use 80 to 220-grit sandpaper to scuff the area 1 inch (25 mm) around the damage.

1. Cutout Hole
2. Engine Side of Hood
3. Section Replacement
4. Engine Side of Section Replacement

Fig. 6, Preparing the Section Replacement and Hood Cutout on the Unexposed Side

8. Use 80 to 220-grit sandpaper to scuff an area at least 1 inch (25 mm) out from all sides of the cutout area. See **Fig. 6**, Ref. B.

   Also, scuff at least 1 inch (25 mm) in from all sides of the section replacement. See **Fig. 6**, Ref. D.



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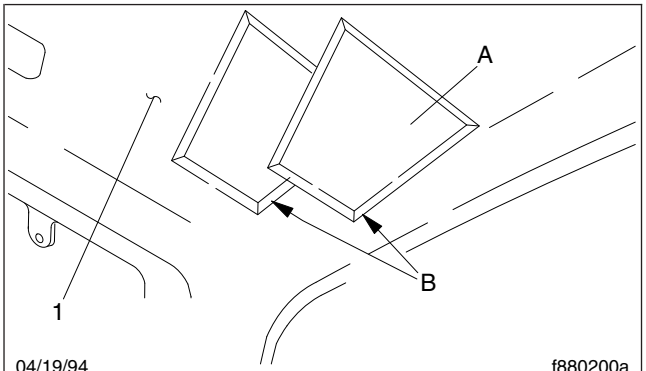
A. Grind a shallow recess one-quarter the depth of the FRP and extending 1/2 inch (13 mm) outward in all directions from the damaged area.

1. Section Replacement
2. Gap
3. Slight Taper
4. Hood
5. Engine Side of Hood

Fig. 7, Cutout Area (cross-sectional view)

Scuff thoroughly, since this will give the section replacement a surface to which it can stick. Be sure to completely sand off any undercoating sprayed on these areas.

9. On the outer sides of both the cutout and the section replacement, bevel the edges about 45 degrees. See **Fig. 8**.



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A. Insert section replacement.
B. Bevel outer surface edges on all sides.

1. Exposed Side of Hood

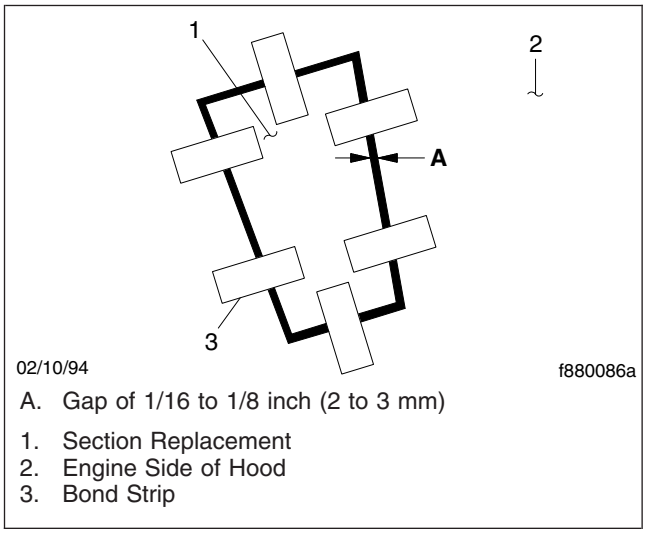
Fig. 8, Areas to be Beveled

10. Gently feather the outer painted surfaces back about 1/2 inch (13 mm) beyond the edges of the repair areas (on both the cutout and the section replacement), using 220-grit or finer sandpaper.
11. Blow the dust away with compressed air, and wipe the area with a clean cloth.

Hood Repair

12. If the section replacement is close enough to an edge, use clamps to temporarily secure it during the repair.

    If the replacement is too far from an edge to use clamps, use bond strips. See **Fig. 9**.



A. Gap of 1/16 to 1/8 inch (2 to 3 mm)

1. Section Replacement
2. Engine Side of Hood
3. Bond Strip

Fig. 9, Securing the Section Replacement to the Hood Using Bond Strips

12.1 Cut some scrap FRP into strips. Make enough strips to hold the section replacement in position; about one every 6 inches (15 cm). If the surface of the replacement panel is contoured or curved, use many small bond strips; larger strips could deform the curves.

12.2 On the engine side of the repair, use 220-grit sandpaper to scuff sand the areas on the hood and section replacement panels where you plan to bond the strips.

12.3 If a joint between the hood and a reinforcement was separated for the repair, rebond the joint. See "Hood Reinforcement Rebonding" for instructions.

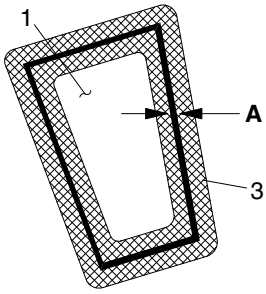
12.4 Holding the section replacement in position, bond the strips to both hood and replacement panels in the area already scuffed. Use Ashland Pliogrip 7773 to bond the strips.

NOTE: When using Ashland Pliogrip 7773, dispense the required adhesive from the cartridge in a continuous bead of uniform size and a uniform green color. Discard the initial few inches of discolored bead.

12.5 After the adhesive has hardened, use 80- to 220-grit sandpaper to scuff the bond strips.

12.6 Blow the dust away with compressed air, and wipe the area with a clean cloth.

13. With a razor-blade knife, cut sections of woven fiberglass cloth to fully cover the gap between the cutout and the section replacement, all the way around the damaged area. The cloth should overlay about 3/4 inch (20 mm) on both sides of the gap. See **Fig. 10**.



NOTE: The fiberglass cloth should overlay about 3/4 inch (20 mm) on both sides of the gap.

A. Gap of 1/16 inch to 1/8 inch (2 to 3 mm)

1. Section Replacement
2. Engine Side of Hood
3. Fiberglass Cloth

Fig. 10, Overlaying the Gap with Fiberglass Cloth

14. To bond the fiberglass cloth to the damaged panel, use Ashland Pliogrip 7775L urethane adhesive.

NOTE: When using Ashland Pliogrip 7775L, dispense the required adhesive from the cartridge in a continuous bead of uniform size and a uniform green color. Discard the initial few inches of discolored bead.

15. Use a plastic or metal device to spread a thin layer of adhesive over the scuffed area.

16. Lay the cut sections of fiberglass cloth on the repair area, centered over the damage. Using a fiberglass roller, press the cloth down firmly into the layer of adhesive to completely saturate the glass fibers.

17. Apply another layer of adhesive over the glass cloth. Spread the adhesive evenly using the fiberglass roller.
18. After 2 to 5 minutes, the adhesive will start to jell. It may take more time when cool, less when warm.

IMPORTANT: To avoid pre-jelling or skin-over, the FRP parts to be bonded should be mated within 1 to 4 minutes after the adhesive is dispensed.

NOTE: To get a smoother surface, press a piece of masking tape, wider than the repair, directly over the wet adhesive and smooth it before it hardens. The tape can be removed after 5 minutes when the adhesive has set.

19. The patch should be hard enough in 50 minutes to allow sanding to a smooth flat surface, if desired.
20. Repair the damage on the outside surface of the hood and paint the surface on both sides, using the instructions in "Surface Damage Repair."

Specifications

Torque Specifications	
Fastener Description	**Torque Value**
Hood Pivot Bolt Locknuts	25 lbf·ft (34 N·m)
Torsion Bar Mounting Hexbolts	28 lbf·ft (38 N·m)
Tilt-Assist Spring Strut Fasteners	15 to 19 lbf·ft (20 to 26 N·m)

Table 1, Torque Specifications