

# Instructions for repairing the 1986-87 F-Body Hatch Pull-Down Unit




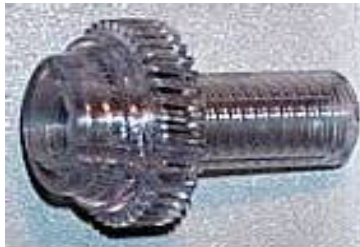
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**CAUTION:** Completely read and understand the instructions before proceeding. There are some critical steps, that if done wrong will damage the unit.

**Parts Source:** Many parts are still available from GM. A few are available only from Top-Down Solutions (TDS). You can order them at:

Top-Down Solutions, PO Box 5601, Hacienda Heights, CA 91745. Their phone number is (626)369-0040, (626)369-0997 (fax). Or e-mail TDS at: [topdownsolutions@yahoo.com](mailto:topdownsolutions@yahoo.com).

TDS p/n 101170	Aftermarket Nylon Guides	 A photograph showing several white nylon guides and two black O-rings. A small card with text and an American flag is visible in the background.	This is manufactured exclusively by TDS. GM never even assigned a part number to the guides. Prior to these aftermarket ones, there was no source for new guides. These guides are machined of solid nylon and are a direct drop-in replacement. They are much stronger than the OEM injection molded ones.
TDS p/n 103121	Reinforced Motor Housing	 A photograph of a reinforced motor housing, showing a metal housing with a triangular reinforcement piece and several screws.	Another TDS exclusive. New GM motor housings are reinforced with 4 pieces of aluminum and epoxy where they commonly fail (where the 3 screws mount it to the frame). Two of the 4 reinforcement pieces are hidden under the triangular shaped piece in the picture. These are much stronger than the un-reinforced GM housings.
GM p/n 20160581	Motor Housing	 A photograph of a standard GM motor housing, showing a metal housing with a triangular reinforcement piece and several screws.	The motor housing is still available from GM or several aftermarket suppliers. But it is no stronger than the original one you are replacing.
GM p/n 20160587 or TDS p/n 109111	Gear nut	 A photograph of a gear nut, showing a metal gear with a threaded shaft.	The gear nut fits the 1986-92 model year F-Body hatch pull-down units. If the motor continues to run without shutting off, yet the latch portion of the unit won't move up and down, the gear nut requires replacement.

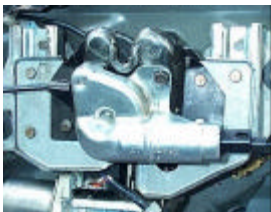
**Tools needed:** 9/32", 10 mm, 11mm & 13 mm socket or wrench, T50 Torx-tip socket, medium Phillips screwdriver, small and large standard screwdrivers, awl or felt-tip permanent ink marker.

### Removing the Rear Compartment Trim:

1. Using a large slotted screwdriver or coin, remove the 4 large plastic screws.
2. Using a medium Phillips screwdriver, remove the two screws at the top of the rear end trim panel near the electrical contact.
3. Lift up on the rear end trim panel to disengage it from the lower retaining tabs. Then let it rest on the front of the luggage compartment.

### Removing the Hatch Pull-Down Unit:

1. Remove the relay from where it attaches to the body and disconnect blue wire from the red/white wire.
2. Remove the ground wires from where they attach to the body using a 9/32" socket or wrench.
3. Using a 10mm socket or wrench remove the hatch solenoid release (switch that opens the hatch or trunk), or manual release (see figures 1 & 2). Take notice of how the tab is attached to the latch mechanism so you can re-attach it later.
4. Mark the location of the hatch pull-down unit where it attaches to the body using a permanent marker. This will help you install it at the same location later.
5. Using a 13 mm socket or wrench remove the 3 bolts holding it to the body. The hatch pull-down unit is now free to be removed from the car.



Solenoid hatch release  
Figure 1



Manual hatch release  
Figure 2

### Disassembling the Hatch Pull-Down Unit:

1. Using a 11mm socket or wrench, remove the 3 screws holding the motor to the frame (see figure 3). **CAUTION: Do not remove the 2 Phillips screws that hold on the motor cover as shown in figure 4.**
2. Unsnap the plastic wire-retaining clip and remove the wire bundle.
3. Using a small screwdriver, lift the tab and disconnect the power connector from the reversing switch.
4. Slide the latch assembly down and free of the frame.
5. Remove the old plastic guides and discard if broken or damaged.
6. Clean the track that the guides slide in with WD40 or equivalent.



Figure 3



Figure 4

**Inspect:** Check the condition of the plastic motor housing where it mounts to the frame with the 3 screws. It is common for this area to be broken by mistakenly slamming the hatch to close it or from weak hatch struts. Also, what is the condition of the gear nut? To visibly inspect the gear nut, more disassembly is required. But a functional clue to the condition of the gear nut is that the latch portion was still being driven up and down by the motor and the lift-rod. A symptom of a bad gear nut is that the motor will continue to run, yet the latch portion doesn't move up and down. A common band-aid to temporarily stop the motor from running is to disconnect the electric connector from the motor. If the motor housing is in good shape and the gear nut functions properly, then skip to the "Replacing the Guides" section.

**Replacing the Motor Housing or Gear Nut:** The motor turns a plastic gear called the gear nut, which moves the lift-rod up and down. The latch mechanism needs to be disconnected from the lift-rod in order to replace the gear nut or motor housing. The latch mechanism assy is connected to the lift-rod with a T50 torx-head bolt and nut as shown in figure 5.

1. Remove the connecting bolt using a T50 Torx-tip socket and 13 mm socket or wrench as shown in figure 5.
2. Using a medium Phillips screwdriver, remove the screw mounting the reversing switch as shown in figure 6.
3. Carefully pry the tang of the connector free from the motor. Remove the reversing switch. Rock it gently back and forth or gently pry from below to remove it.
4. Using a 11 mm socket or wrench, remove the two screws holding the lift rod base plate to the motor housing as shown in figure 7.



Figure 5



Figure 6



Figure 7

5. Gently rock the lift-rod while pulling it free of the motor housing to expose the gear nut.
6. Remove the gear nut, wave washer and bearing. Count the number of turns it takes to remove the gear nut (around 8 revolutions) and write it down.
7. Clean the gear nut, wave washer, bearing and motor housing with WD40 or equivalent.
8. Inspect the threads of the gear nut for wear or damage. Check that the bearing rotates freely. Check the motor housing for cracks or damage. Replace any component if damaged.
9. Clean the old grease from the spindle of the motor with WD40 or equivalent.



Figure 8



Figure 9

### **Assembling the Hatch Pull-Down Unit:**

1. Lubricate the spindle of the motor, the motor housing cavity for the gear nut, gear nut and bearing with white lithium grease or equivalent. TDS recommends Permatex WL-9 (figure 8) White Lithium grease available in 1.5 oz tubes at most Auto Parts stores for around \$2. TDS also stocks it, in case you can't locate it.
2. Assemble the bearing and gear nut onto the lift rod threaded shaft. Turn the gear nut the same number of revolutions as when you disassembled it.
3. Make sure the wave spring is installed onto the end of the gear nut and assemble it onto the motor housing, then tighten the 2 screws as shown in figure 7. **CAUTION:** Make sure the tabs



sticking out of the lift rod are facing the motor and the rounded side of the lift rod is in the slot on the motor housing.

4. Assemble the reversing switch onto the motor and lift rod sub-assembly. Make sure the contacts are engaged properly onto the motor, the molded tab next to the screw hole is slipped over the edge of the motor housing. Install the Phillips head screw and tighten as shown in figure 6.
5. Insert the Torx head-bolt and nut and tighten as shown in figure 5.

**Replacing the Guides:** The new aftermarket guides are made from solid nylon and stronger than the ones they replace. They are designed to have some adjustability to them, to help them fit the manufacturing tolerances of the channels they slide in. You will find they have been identified with an "I" or "O". The "I" guides are thinner in size than the "O" ones. This is to allow you to custom fit them to the channels of your motor assembly. In their instructions, TDS recommends installing them in the sequence "O I I O" (from left to right). If it is too tight on the outside, then try them in the order "O I O I". If it is still too tight on the outside try them in the order "I O O I". Each time will move them by .010".

1. Lube the new guides and the channel they fit into with white lithium grease or equivalent. Install them on the tabs of the latch assembly (see figure 9). TDS recommends the sequence (from left to right) O I I O.
2. Assemble the latch assy to the motor assy testing that it moves freely. If there is too much pressure, or it won't engage with the channels of the motor assy then switch the order of the guides until you have it moving freely. **CAUTION:** Make sure that the wiring loom from the latch switch is positioned through the frame correctly when it is reassembled so it can be re-connected to the motor.
3. Install the 3 screws that secure the motor housing to the frame as shown in figure 5.
4. Plug in the connector to the motor and insert the wire loom through the plastic clamp and snap it shut.

### **Installing the Hatch Pull-Down Unit:**

1. Align the hatch pull-down unit with the marks you made previously and install the three mounting bolts with the 13 mm wrench or socket.
2. Attach the ground screws and the pull-down relay to the holder on the body.
3. Attach the solenoid hatch release or manual hatch release as shown in figures 1 and 2. Make sure that the ground wire from the 10 mm bolt to the body is attached.
4. Attach the blue power wire to the red/white wire.
5. Test that the hatch pull-down unit works properly. **CAUTION:** You MUST hear a "Click" when the hatch pull-down reaches the bottom of the stroke. That sound is the reversing switch being tripped by a tab on the lift-rod. If you don't hear a click, then loosen the three 13 mm mount bolts and adjust the entire unit up slightly. If adjusting it fails to solve the problem, then the unit will need to be disassembled and the gear nut rotated one turn out on the lift-rod and reassembled.
6. Install the rear compartment trim making sure the tabs on the inside bottom slip into the rear panel retainers.
7. Job done, congratulations.

## Instructions for repairing the 1988-91 F-Body Hatch Pull-Down Unit

This style of hatch pull-down unit is referred to as the “first design” for 1991. There was a change mid-year from this design to one with a plastic injection-molded body. The November 1992 GM parts catalog lists the 1st design before VIN# 173202.

**CAUTION:** Completely read and understand the instructions before proceeding. There are some critical steps, that if done wrong will damage the unit.

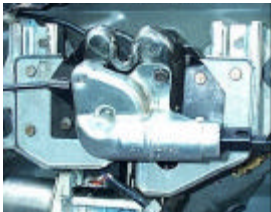
**Tools needed:** 9/32”, 10 mm, 11mm & 13 mm socket or wrench, medium Phillips screwdriver, small and large standard screwdrivers, large tongue and groove style adjustable pliers, awl or permanent marker, spacer (provided in the kit).

### Removing the Rear Compartment Trim:

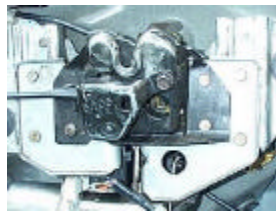
1. Using a large slotted screwdriver or coin, remove the 4 large plastic screws.
2. Using a medium Phillips screwdriver, remove the two screws at the top of the rear end trim panel near the electrical contact.
3. Lift up on the rear end trim panel to disengage it from the lower retaining tabs. Then let it rest on the front of the luggage compartment.

### Removing the Hatch Pull-Down Unit:

1. Remove the relay from where it attaches to the body and disconnect blue wire from the red/white wire.
2. Remove the ground wires from where they attach to the body using a 9/32” socket or wrench.
3. Using a 10mm socket or wrench remove the hatch solenoid release (switch that opens the hatch or trunk), or manual release (see figures 1 & 2). Take notice of how the tab is attached to the latch mechanism so you can re-attach it later.
4. Mark the location of the hatch pull-down unit where it attaches to the body using an awl or permanent marker. This will help you install it at the same location later.
5. Using a 13 mm socket or wrench remove the 3 bolts holding it to the body. The hatch pull-down unit is now free to be removed from the car.



Solenoid hatch release  
Figure 1



Manual hatch release  
Figure 2

### Disassembling the 1988-91 Hatch Pull-Down Unit:

The latch mechanism assy is connected to the motor assy with a pin, which is held on with a push nut.

1. Using a putty knife or small slotted screwdriver pry free the push nut from the pin (see figure 3). Discard the old push nut, a new one is included with the kit.
2. Unsnap the plastic wire retaining clip and remove the wire bundle.
3. Using a small screwdriver, lift the tab and disconnect the power connector from the reversing switch.
4. Slide the latch assembly down and free of the frame.
5. Remove the old plastic guides and discard.
6. Clean the track that the guides slide in with WD40 or equivalent.



Figure 3

**Inspect:** Check the condition of the plastic motor housing where it mounts to the frame with the 3 screws. It is common for this area to be broken by mistakenly slamming the hatch to close it or from weak hatch struts. Also, what is the condition of the gear nut? To visibly inspect the gear nut, more disassembly is required. But a functional clue to the condition of the gear nut is that

the latch portion was still being driven up and down by the motor and the lift-rod. A symptom of a bad gear nut is that the motor will continue to run, yet the latch portion doesn't move up and down. A common band-aid to temporarily stop the motor from running is to disconnect the electric connector from the motor. If the motor housing is in good shape and the gear nut functions properly, then skip to the "Replacing the Guides" section.

**Replacing the Motor Housing or Gear Nut:** The motor turns a plastic gear called the gear nut, which moves the lift-rod up and down. The motor housing needs to be removed from the frame and disassembled in order to replace the gear nut or motor housing.

1. Using a 11mm socket or wrench, remove the 3 screws holding the motor to the frame (see figure 4). **CAUTION: Do not remove the 2 Phillips screws that hold on the motor cover (see figure 5).**
2. Using a medium Phillips screwdriver, remove the screw mounting the reversing switch as shown in figure 6.
3. Carefully pry the tang of the connector free from the motor. Remove the reversing switch. Rock it gently back and forth or gently pry from below to remove it.
4. Using a 11 mm socket or wrench, remove the two screws holding the lift rod base plate to the motor housing as shown in figure 7.
5. Gently rock the lift-rod while pulling it free of the motor housing to expose the gear nut.
6. Remove the gear nut, wave washer and bearing. Count the number of turns it takes to remove the gear nut (around 8 revolutions) and write it down.
7. Clean the gear nut, wave washer, bearing and motor housing with WD40 or equivalent.
8. Inspect the threads of the gear nut for wear or damage. Check that the bearing rotates freely. Check the motor housing for cracks or damage. Replace any component if damaged.
9. Clean the old grease from the spindle of the motor with WD40 or equivalent.



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10

### Assembling the Hatch Pull-Down Unit:

1. Lubricate the spindle of the motor, the motor housing cavity for the gear nut, gear nut and bearing with white lithium grease or equivalent. TDS recommends Permatex WL-9 (figure 8) White Lithium grease available in 1.5 oz tubes at most Auto Parts stores for around \$2. TDS also stocks it, in case you can't locate it.
2. Assemble the bearing and gear nut onto the lift rod threaded shaft. Turn the gear nut the same number of revolutions as when you disassembled it.
3. Make sure the wave spring is installed onto the end of the gear nut and assemble it onto the motor housing, then tighten the 2 screws as shown in figure 7. **CAUTION:** Make sure the tabs

sticking out of the lift rod are facing the motor and the rounded side of the lift rod is in the slot on the motor housing.

4. Assemble the reversing switch onto the motor and lift rod sub-assembly. Make sure the contacts are engaged properly onto the motor, the molded tab next to the screw hole is slipped over the edge of the motor housing. Install the Phillips head screw and tighten as shown in figure 6.
5. Mount the motor housing to the frame with the 3 screws as shown in figure 4.

**Replacing the Guides:** These new replacement guides are made from solid nylon and stronger than the ones they replace. They are designed to have some adjustability to them, to help them fit the manufacturing tolerances of the channels they slide in. You will find they have been identified with an “I” or “O”. The “I” guides are thinner in size than the “O” ones. This is to allow you to custom fit them to the channels of your motor assembly. TDS recommends installing them in the sequence “O I I O” (from left to right). If it is too tight on the outside, then try them in the order “O I O I”. If it is still too tight on the outside try them in the order “I O O I”. Each time will move them by .010”.

1. Lube the new guides and the channel they fit into with white lithium grease or equivalent. Install them on the tabs of the latch assembly (see figure 9). TDS recommends the sequence (from left to right) O I I O.
2. Slide the latch assy into the channels on the frame, testing that it moves freely. If there is too much pressure, or it won't engage with the channels, then switch the order of the guides until you have it moving freely. **CAUTION:** Make sure that the wiring loom from the latch switch is positioned through the frame correctly when it is reassembled so it can be re-connected to the motor.
3. Align the hole in the end of the lift-rod to the “U” slot of the latch assy.
4. Install the pin and the new push nut using large adjustable pliers and the plastic spacer provided in the kit (see figure 10).
5. Plug in the connector to the motor and insert the wire loom through the plastic clamp and snap it shut.

#### **Installing the Hatch Pull-Down Unit:**

1. Align the hatch pull-down unit with the marks you made previously and install the three mounting bolts with the 13 mm wrench or socket.
2. Attach the ground screws and the pull-down relay to the holder on the body.
3. Attach the solenoid hatch release or manual hatch release as shown in figures 1 and 2. Make sure that the ground wire from the 10 mm bolt to the body is attached.
4. Attach the blue power wire to the red/white wire.
5. Test that the hatch pull-down unit works properly. **CAUTION:** You MUST hear a “Click” when the hatch pull-down reaches the bottom of the stroke. That sound is the reversing switch being tripped by a tab on the lift-rod. If you don't hear a click, then loosen the three 13 mm mount bolts and adjust the entire unit up slightly. If adjusting it fails to solve the problem, then the unit will need to be disassembled and the gear nut rotated one turn out on the lift-rod and reassembled.
6. Install the rear compartment trim making sure the tabs on the inside bottom slip into the rear panel retainers.
7. Job done, congratulations.