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Instruction Sheet

A299d 7-88

Assembly Instructions for Installation of Under-Floor Housing Kits 405-3335 BGE* and 405-3402 NHE for Recreational Vehicle Generator Sets

*BGE models built with oversized (NHE) drip tray require kit 405-3402

This instruction is for use by qualified service personnel only. Review the entire instructions before starting installation.

▲WARNING *Incorrect installation, service, or parts replacement can result in severe personal injury, death, and/or equipment damage. Service personnel must be qualified to perform electrical and mechanical installations.*

These kits are designed for use in recreational vehicles only. They must not be used to install generator sets in commercial vehicles such as tool vans, communication vans, and delivery trucks. Use of this kit in commercial vehicles can cause fatigue of kit parts due to the increased stress in commercial applications.

▲WARNING *Incorrect housing kit application may fail to secure the generator set, resulting in severe personal injury, death, and/or equipment damage. Under-Floor housing kits 405-3335 and 403-3402 are designed for use in recreational vehicles only and must not be used to install generator sets in commercial vehicles.*

With an under-floor installation, a special housing is used to suspend the generator set from the underside of the vehicle (see Figure 1). The housing is fastened to support members that are built into the vehicle framework. The housing must be mounted near the exterior of the vehicle. Access to the generator set should be provided through a door located in the exterior of the coach.

The support structure must be designed to support the weight of the generator set in a dynamic environment. Each unique application should be evaluated and designed to provide an adequate generator set support structure. It is the responsibility of the vehicle manufacturer and the installer to provide a structurally-sound frame and provide mounting hardware to attach this kit.

▲WARNING *Failure to provide an adequate support structure can result in severe personal injury, death, and/or equipment damage. Carefully follow installation instructions and provide an adequate support structure. Use specified hardware and tighten all screws and nuts to the recommended torque settings.*

Carefully follow these important design parameters when developing the support structure and during installation of the under-floor housing.

- The dynamic conditions imposed on the under-floor kit should not exceed cyclic vertical forces of ± 5 g-force (± 1250 lb) and cyclic horizontal forces of ± 1 g-force (± 250 lb).
- The mounting surface of the vehicle support structure must be flat and it must be able to support the housing in such a way that mounting fasteners, when properly torqued, do not imbed into or compress the mounting surface.
- All fasteners used in the under-floor housing kit must be properly torqued. See Recommended Torque Settings.

Follow specific recommendations for installation of parts and hardware when installing this kit. Use a thread locking compound (supplied) on all hinge mounting screws (10) and front support screws (4 for BGE/BGEL, 6 for NHE/NHEL).

Install this kit in accordance with UL and all applicable code requirements. Refer to the appropriate generator set installation manual for connecting the generator set to the vehicle systems.

RECOMMENDED TORQUE SETTINGS

Unless otherwise specified, use the following recommended torque settings during installation.

1/4-20 screws/nuts	7 ft lb (9.5 N•m)
5/16-18 screws/nuts	14 ft lb (19 N•m)
3/8-16 screws/nuts	25 ft lb (34 N•m)
7/16-14 screws/nuts	40 ft lb (54 N•m)

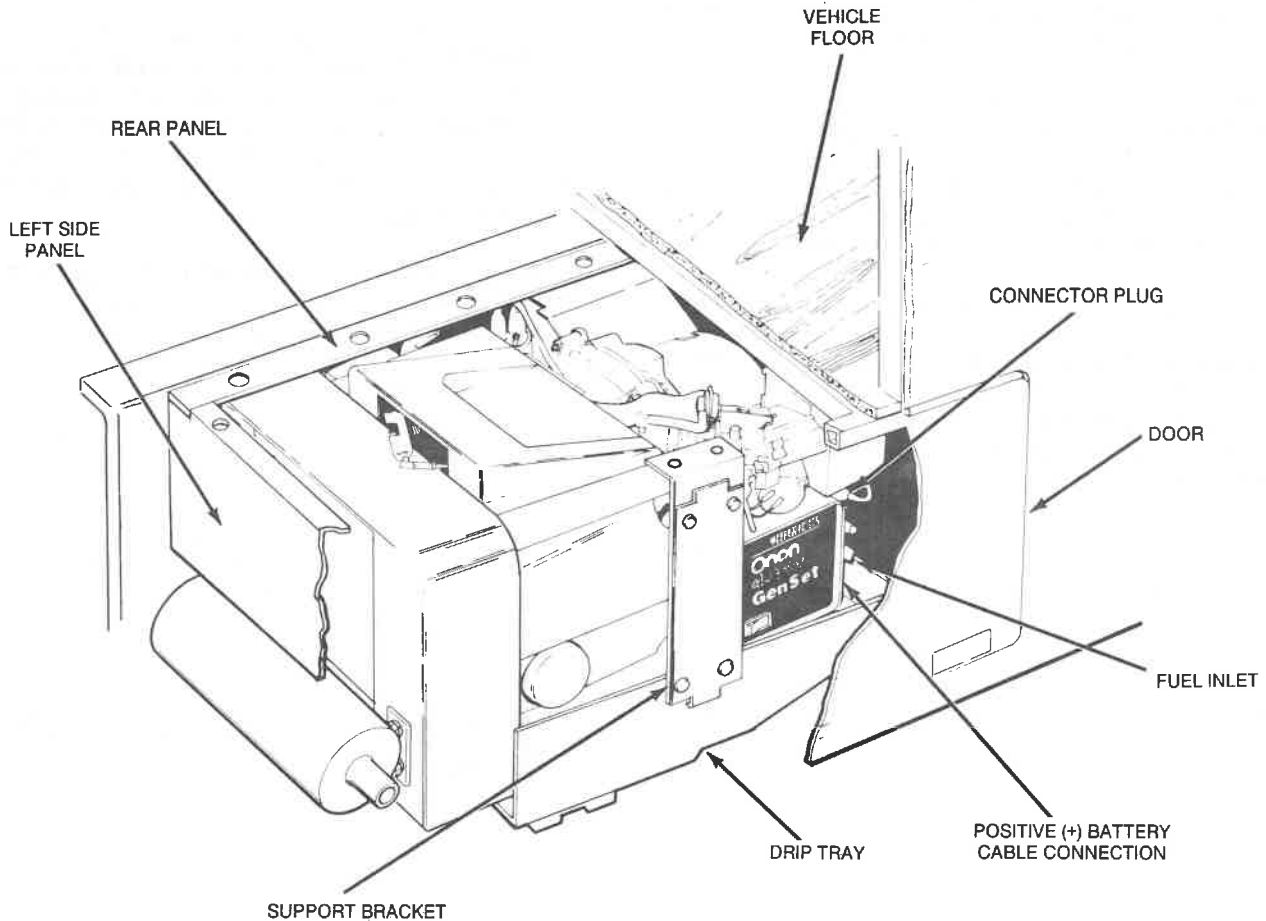
INSTALLATION

During assembly refer to the under-floor housing kit illustration Figure 2 (405-3335) or 3 (405-3402). The vehicle must be parked on as level a surface as possible. Carefully follow these steps.

1. Put the vehicle in the park position, lock the brakes, and remove the ignition key. Make sure no one moves the vehicle while performing this procedure.

⚠ WARNING

Dropping the generator set can result in severe personal injury or death. Make sure no one moves the vehicle during this procedure and perform each step very carefully.



EXS-1122

FIGURE 1. TYPICAL UNDER-FLOOR INSTALLATION

2. Mark and drill holes for mounting the compartment housing to the vehicle support structure. Use the template supplied with the kit to determine the proper hole locations. Be careful to avoid hitting fuel or electrical lines when drilling into the vehicle structure. Lay out kit location to avoid contacting fuel lines and electrical lines with the kit components.
3. Measure all five grommets in the kit. Install the three 5/8 inch (16 mm) inside diameter grommets into the right housing panel. The two 1/2 inch (13 mm) grommets will be used later.
4. Fasten the rear brace and hinge pins from the kit to the rear panel using the 3/8-16 x 0.75 screws and flat washers (4). Center the rear brace and secure finger tight only at this time.
5. Attach hinge plates (2) to drip tray using only the four outside hinge plate holes. Secure with the 1/4-20 x 0.75 inch screws and flat washers (4) to the recommended torque.
6. Bolt the following items to the vehicle support structure:
 - A. Right housing panel
 - B. Rear housing panel
 - C. Left housing panel
 - D. Front housing bracket
 - E. NHE/NHEL Only: Bracket for support bracket (Figure 3).

Each of the housing component mounting flanges must mount flush and be in continuous contact with the support structure mounting surface. Do not use shims, washers, or spacers between the mounting surfaces unless the full flange width and length is supported or fatigue and breakage of kit components can occur.

▲WARNING *Failure to install the housing components properly can result in severe personal injury, death, and/or equipment damage. Carefully follow installation instructions and provide an adequate support structure. Mount housing components so that mounting flanges are flush with the mounting surface of the support structure. Use specified hardware and tighten all screws and nuts to the recommended torque settings.*

Use 3/8 inch nuts and bolts (grade 5 or better), to allow adequate mounting torque (not supplied due to length requirement variations between vehicle types). Use the enclosed 3/8-inch hardened flat washers on all mounting bolts. See Figures 2 and 3. Tighten mounting bolts to the recommended torque.

▲WARNING *Exhaust gas is poisonous and presents the hazard of severe personal injury or death. Seal bolt holes with a silicone/rubber based sealant to prevent exhaust gas from entering the vehicle coach.*

7. Insert two 1/2 inch (13 mm) I.D. grommets into left and right panel housings. Push each nose of rear panel through the grommet. Attach with 1/4-20 x 0.38 inch screws, lock washers, and flat washers at the recommended torque.
8. Install the side brace on the right side (generator side) by installing the 5/16-18 x 0.50 capscrew and nut through the brace and upper front hole of panel. Secure the other end of the side brace to the rear brace with 7/16-14 x 0.75 screw. Tighten the capscrews and nuts finger tight at this time.
9. Install the other side brace on the left side (engine side) by installing the 5/16-18 x 0.50 capscrew and nut through the brace and upper front hole of panel. Secure the other end of the side brace to the rear brace with 7/16-14 x 0.75 screw and nut. Tighten the capscrews and nuts finger tight at this time.

To clarify side bracket mounting, refer to the following:

- A. **For BGE/BGEL Only:** See Figure 2. The notch in the side brace, used on the left side only, goes over the grommet on the left housing panel. On the right side, the grommet goes through the hole cutout of that side brace.
 - B. **For NHE/NHEL only:** See Figure 3. For side brace used on the left side, grommet on housing panel goes through brace hole cutout. The right brace goes completely above grommet on panel.
10. Tighten the capscrews and nuts for the right, left and rear braces in the order indicated in Figures 2 or 3. Be sure to follow this order (1 through 6). Observe the recommended torque values.
 11. If there is excess clearance between the rear brace and the left side (engine side) brace by area "6" noted in Figures 2 or 3, fill the gap with the spacer washers provided. Tighten the capscrew and nut to the recommended torque.
 12. Place the generator set on a floor jack or forklift. Raise set until the attached hinge plates are slightly higher than the hinge pins. Slide hinge plates through the openings between the rear panel and hinge pins. Keep the generator set supported.

▲WARNING *Dropping the generator set can result in severe personal injury or death. Continue to support the weight of the set so the unit does not fall.*

13. Make electrical connections while the generator set is on the floor jack or forklift. To prevent accidental starting, DO NOT connect the battery negative (-) ground cable until the installation is complete. Refer to Electrical Connections in the generator set installation manual.
14. Lower the generator set and clip the hinge plates over the hinge pins. If generator set will be left in the down (tilted) position for more than 30 minutes, drain the engine oil first.

CAUTION *Oil in the cylinders can cause engine damage during starting attempts. Oil can enter the engine cylinders when the generator set is in the down (tilted) position. Do not leave the generator set in this position for more than 30 minutes if the engine oil has not been drained.*

15. Attach hinge supports to hinge plates using 1/4-20 x 0.75 inch screws and flat washers (2). Tighten to the recommended torque.

16. Install the housing support to the drip pan using 5/16-18 x 0.75 screws and flat washers (2). Do not tighten mounting screws at this time.

17. Lift the generator set to hook up the housing support in the slot of the housing bracket. Secure with the 5/16-18 x 0.75 screws and flat washers (2) to the housing support bracket. Tighten the screws at the top and bottom of the housing support to the recommended torque.

18. **NHE/NHEL only:** Install the support bracket to the bracket and drip tray, as shown in Figure 3, using 5/16-18 x 0.75 screws and flat washers (2). Tighten to the recommended torque.

19. Install protective shielding to complete the compartment and to protect the set from road debris. Since each installation may be different, the installer must provide the shielding. See the generator set installation manual for generator set shielding techniques.

Underfloor Housing Kit 405-3335

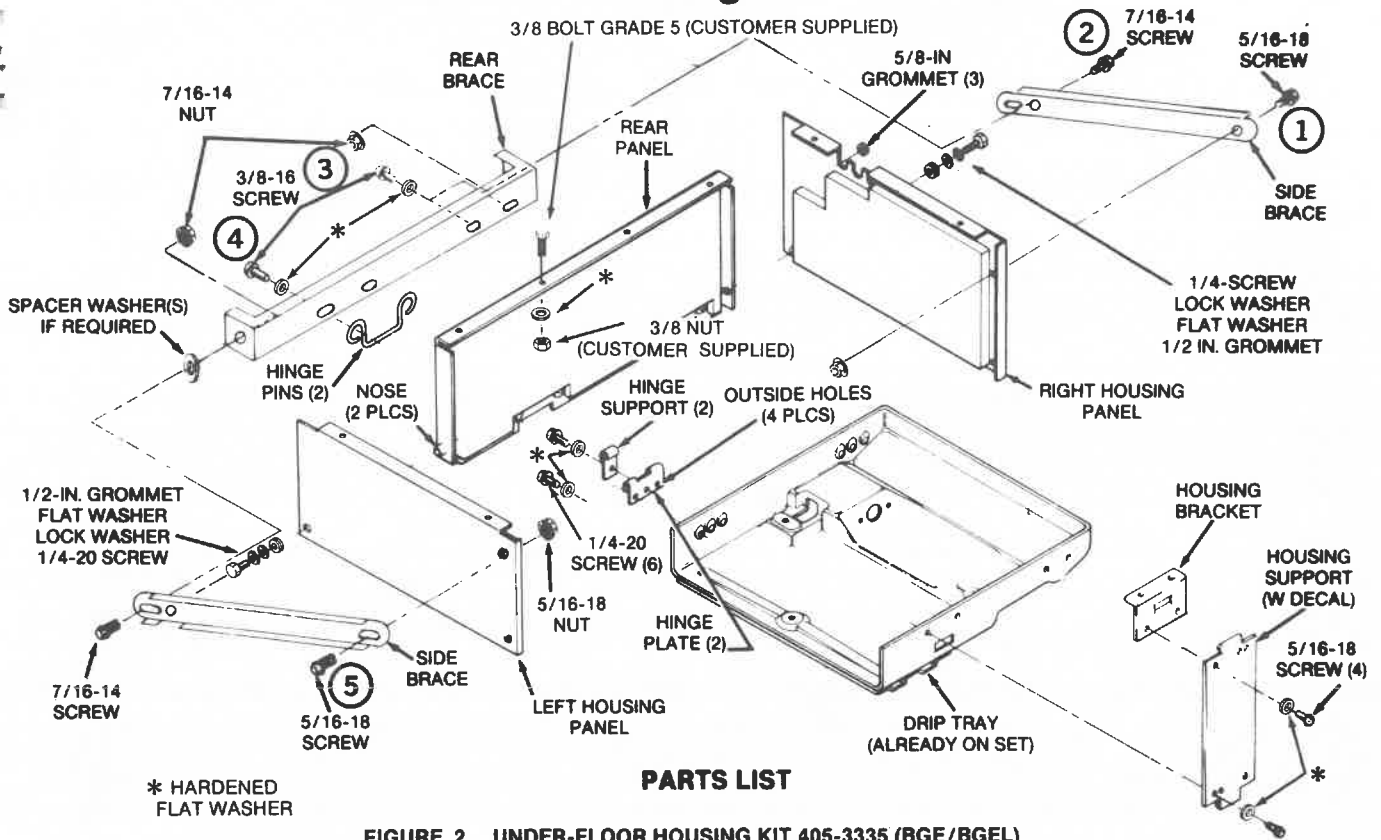


FIGURE 2. UNDER-FLOOR HOUSING KIT 405-3335 (BGE/BGEL)

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Underfloor Housing Kit 405-3402

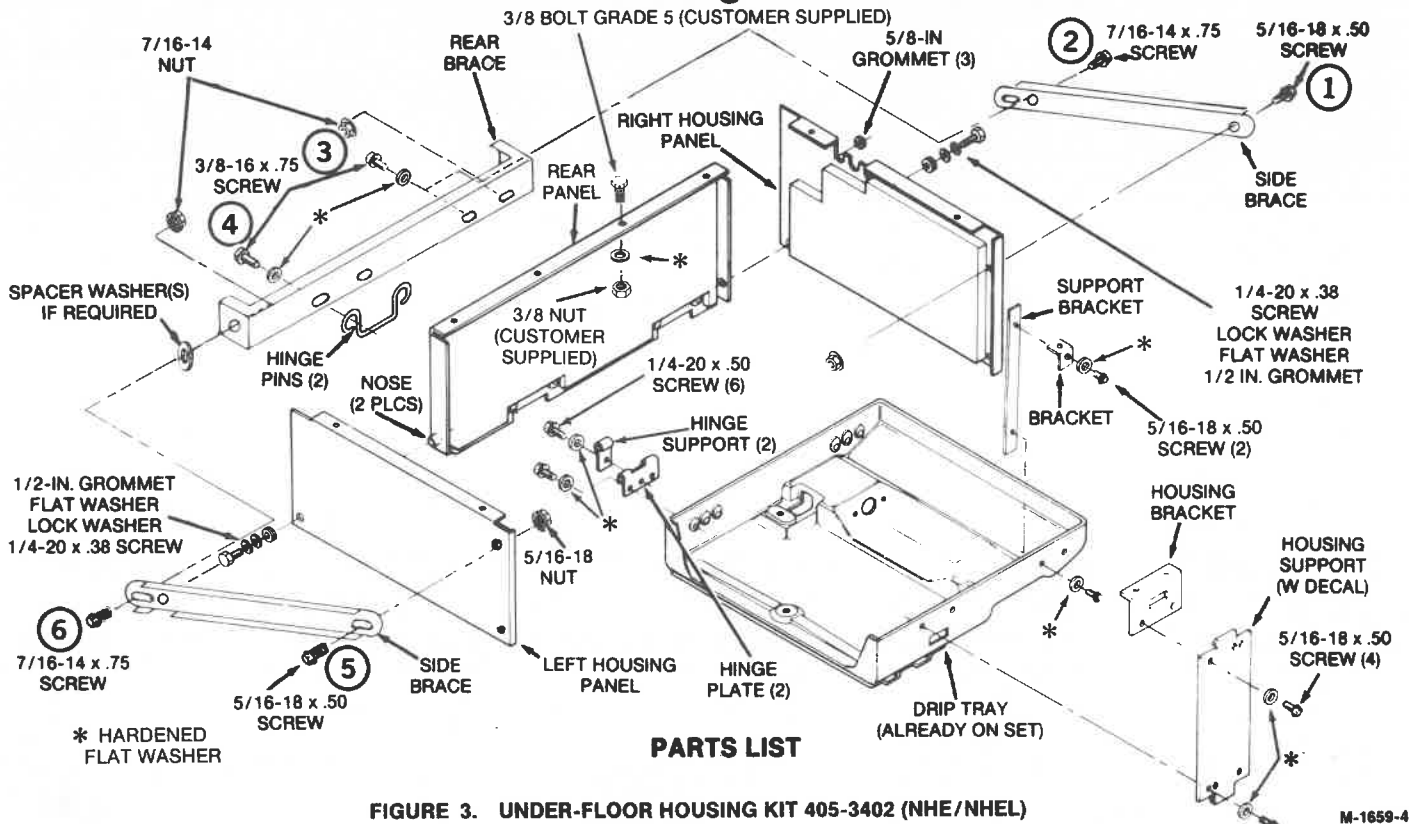


FIGURE 3. UNDER-FLOOR HOUSING KIT 405-3402 (NHE/NHEL)

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