

INSTALLATION INSTRUCTIONS

Original Issue Date: **9/90**

Model: **400-3250 kW**

Market: **Industrial**

Subject: **Vibration Spring Isolation Kits**

Introduction

Install the vibration isolators under the generator set skid to isolate generator set vibration from the mounting surface. Install the vibration isolators according to the following procedure. Use Figure 1 to select the appropriate illustration based on the kit number. Observe the following safety precautions when installing the vibration spring isolator kit.

Use the respective generator set spec sheet to determine the weight of the unit and select a lifting method using the generator set Installation Manual TP-5700. The adjusting process must be done with the generator set at the full operating weight.

Kit Number	Refer to Illustration
GM10981-KP1	Figure 13
GM11407-KP1	Figure 14
GM39767-KP1	Figure 15
GM39770-KP1	Figure 16
GM39770-KP2	Figure 16
GM39771-KP1	Figure 14
GM39772-KP1	Figure 17
GM39774-KP1	Figure 18
GM69204-KP1	Figure 19
GM69204-KP2	Figure 20
GM69204-KP3	Figure 21
GM69204-KP4	Figure 22
GM69205-KP1	Figure 23
GM69207-KP1	Figure 23
GM69209-KP1	Figure 21
GM69238-KP2	Figure 24
GM69239-KP1	Figure 21
GM77244-KP1	Figure 21
GM84955-KP1	Figure 25
GM84956-KP1	Figure 26
GM91228-KP1	Figure 27

Figure 1 Kit Numbers and Illustrations

Special Tools and Equipment

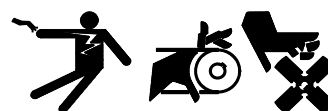
The following items are needed when mounting the generator set on a concrete mounting base.

- Hammer drill
- Hammer drill bit sized for the concrete anchors
- Concrete anchors and hardware for mounting vibration isolators to concrete base.

If the mounting base is not concrete, the installation technician must determine the necessary tools and equipment.

Safety Precautions

⚠ WARNING



**Accidental starting.
Can cause severe injury or death.**

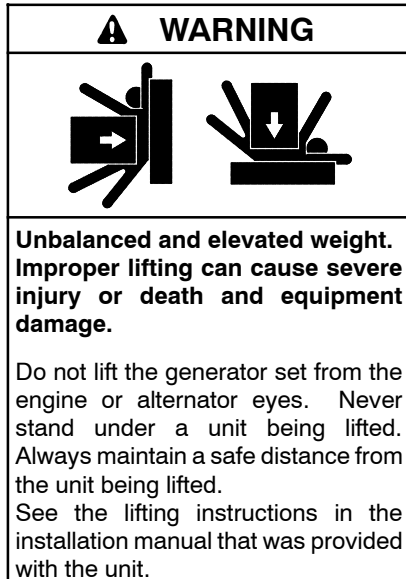
Disconnect the battery cables before working on the generator set. Remove the negative (-) lead first when disconnecting the battery. Reconnect the negative (-) lead last when reconnecting the battery.

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, disable the generator set as follows: (1) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

(Decision-Maker® 3+ and 550 Controllers)

Disabling the generator set. Accidental starting can cause severe injury or death. Before working on the generator set or equipment connected to the set, disable the generator set as follows: (1) Press the generator set off/reset button to shut down the generator set. (2) Disconnect the power to the battery charger, if equipped. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent the starting of the generator set by the remote start/stop switch.

(Decision-Maker® 3000 and 6000 Controllers)



Installation Procedure

1. Remove the generator set from service.

- 1.1 Move the generator set master master to the OFF position (Decision-Maker® 3+ and 550 controllers).

OR

Press the generator set master control OFF/RESET button (Decision-Maker® 3000 and 6000 controllers).

- 1.2 Disconnect the power to the battery charger, if equipped.
- 1.3 Disconnect the power to the block heater, if equipped.
- 1.4 Disconnect the generator set engine starting battery(ies), negative (-) lead first.

2. Mount the vibration isolators to the mounting base

- 2.1 Raise the generator set enough to align the mounting holes of the vibration isolator mount with

the corresponding holes in the generator set skid. Use Figure 1 to determine the respective mounting location illustration based on the kit number.

- 2.2 Attach the vibration isolators to the mounting base using the holes in the isolator's bottom plate. Some vibration isolators have a set of holes for mounting to concrete and a set of holes for mounting to steel. Mounting hardware is not supplied in the kit. See Figure 2, Figure 3, Figure 4, Figure 5, or Figure 6 for mounting data.

Note: Welding to steel is permitted provided the weld achieves the required strength.

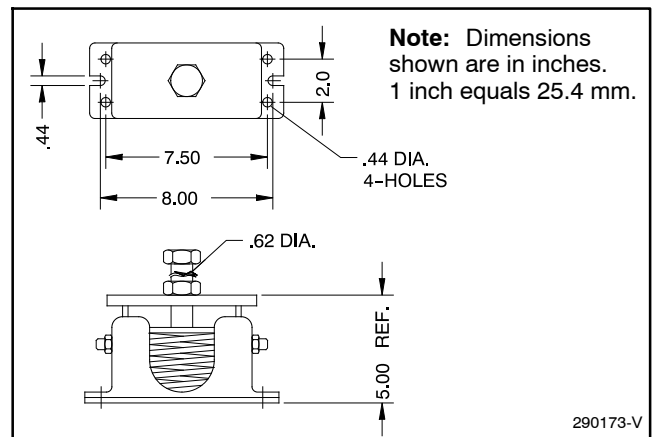


Figure 2 Vibration Isolators GM39515 and GM41122

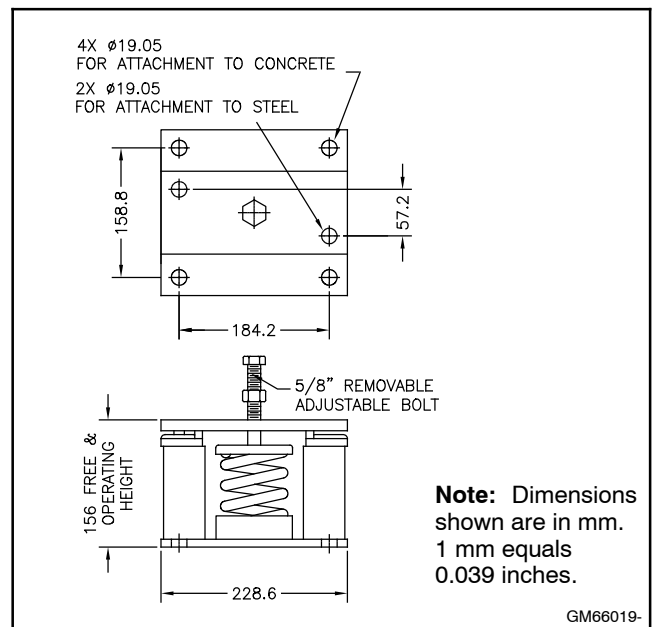


Figure 3 Vibration Isolators GM66304 and GM76149

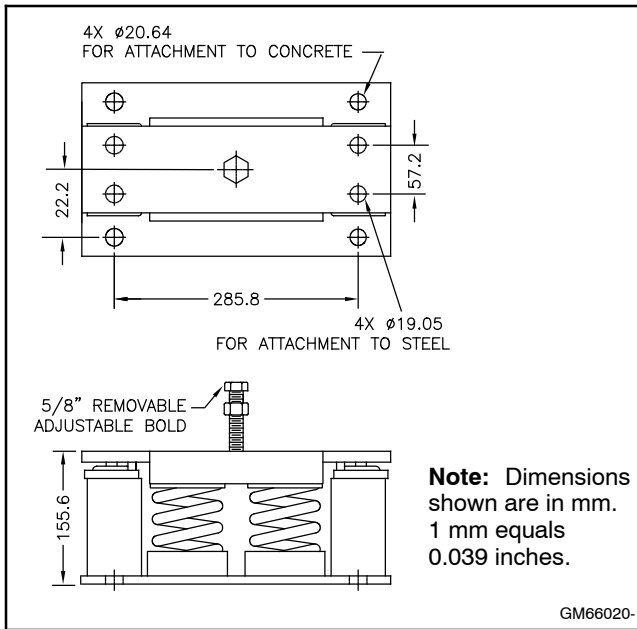


Figure 4 Vibration Isolators GM66020, GM66022, GM66023, and GM66024

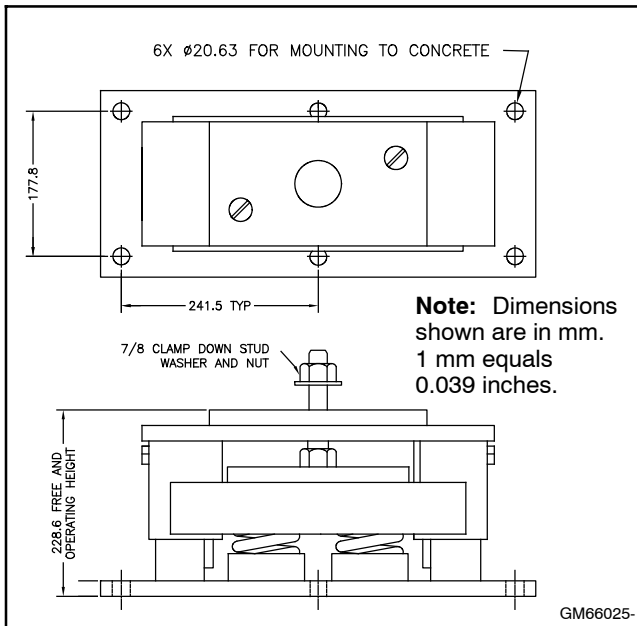


Figure 5 Vibration Isolator GM66025

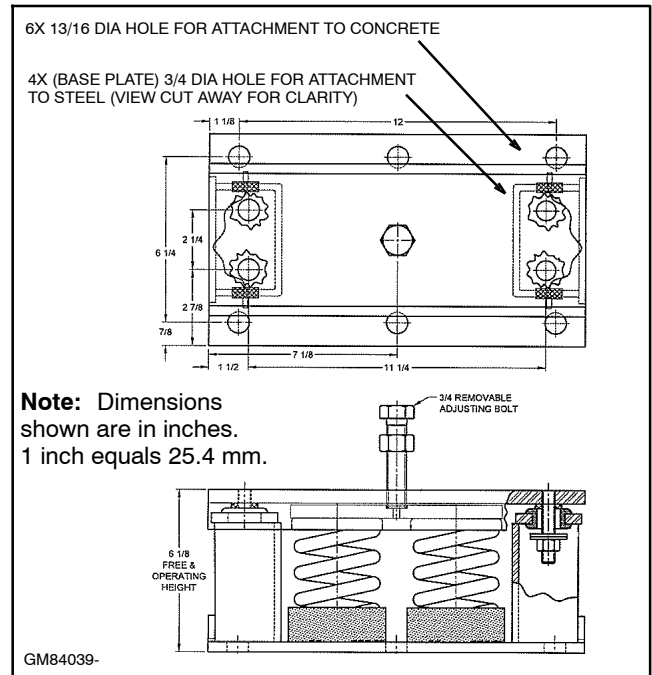


Figure 6 Vibration Isolator GM84954

3. Prepare the generator set and kit components.

3.1 The installation and adjustment of the vibration isolators to the generator set has a different procedure depending on the respective kit. Refer to Figure 7 for the correct procedure.

Kit Number	Go to Step:	Seismic Isolator
GM10981-KP1	Step 4	No
GM11407-KP1		
GM39767-KP1		
GM39770-KP1		
GM39770-KP2		
GM39771-KP1		
GM39772-KP1		
GM39774-KP1		
GM69204-KP1	Step 5	Yes
GM69204-KP2		
GM69204-KP3		
GM69204-KP4		
GM69205-KP1		
GM69207-KP1	Step 6	
GM69209-KP1	Step 5	
GM69238-KP2		
GM69239-KP1		
GM77244-KP1		
GM84955-KP1		
GM84956-KP1		
GM91228-KP1		

Figure 7 Vibration Isolator Mounting

4. Mounting and adjusting the vibration isolators. (All kits except seismic vibration isolator kits)

- 4.1 Loosen the vibration isolator mount side screws (item 1) to allow movement of the side plates and rubber bumpers. See Figure 8. If necessary, remove the side plates for full vertical motion.

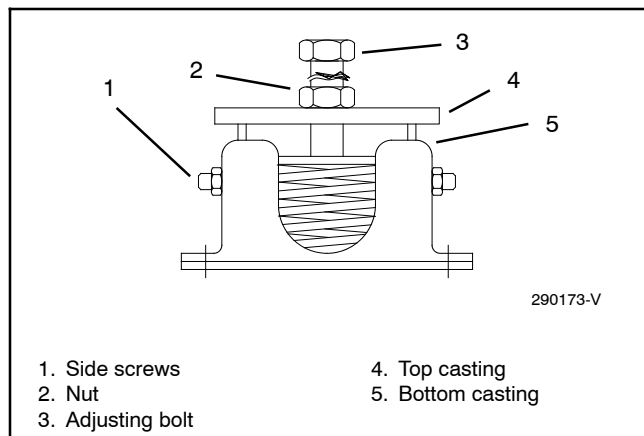


Figure 8 Vibration Isolators GM39515 and GM41122

- 4.2 Remove the leveling bolt (item 3) from each vibration isolator.
- 4.3 Install the beveled washer on the required leveling bolts. See Figure 9 for the beveled washer installation locations.

Kit No.	Beveled Washer Location
GM10981-KP1	Not used
GM11407-KP1	All eight vibration isolators
GM39767-KP1	Front (radiator end) four vibration isolators
GM39770-KP1	All six vibration isolators
GM39770-KP2	All six vibration isolators
GM39771-KP1	All eight vibration isolators
GM39772-KP1	Front (radiator end) four vibration isolators
GM39774-KP1	Front (radiator end) two vibration isolators

Figure 9 Beveled Washer Installation Locations

- 4.4 Oil the threads of each leveling bolt to ease the adjustment procedure.

- 4.5 Install each isolator by inserting the leveling bolt (item 3) through the hole in the generator set skid and threading the bolt into the top of the isolator casting. Turn each leveling bolt (item 3) clockwise twice (720°) to secure the leveling bolt to the vibration isolator mount.
- 4.6 Lower the generator set onto the vibration isolators keeping the isolators parallel with the generator set skid.
- 4.7 Turn the leveling bolts (item 3) clockwise until the generator set rises and floats on the vibration isolators. Raise the generator set by adjusting isolators in 6 mm ($1/4$ in.) increments.
- 4.8 Adjust the vibration isolators until the top castings (item 4) rise approximately 6–10 mm ($1/4$ – $3/8$ in.) above the bottom casting (item 5).
- 4.9 Adjust all isolators to the same height. Adjust any isolator that is shorter than the others in the set by backing out the leveling bolt until it is the same height as the other isolators.
- 4.10 Refer to Figure 2 for the recommended operating height of the vibration isolators.
- 4.11 Level the generator set. Turn the leveling bolt (item 3) clockwise on the lowest isolator(s) until the generator set is level. If an isolator requires more than 13 mm ($1/2$ in.) adjustment, remove the isolator and insert spacers (washers) between the isolator and the generator set skid. The generator set floats on the vibration isolator after completing the leveling process.
- 4.12 Install and/or finger tighten the side screws (item 1) and plates. Adjust each plate equally until restricting the horizontal movement of the generator set to the desired degree. Do not overtighten the side plates. Overtightening the side plates decreases the vibration isolation.
- 4.13 Tighten nut (item 2) toward the generator set skid.
- 4.14 **Generator sets with 2-bearing alternators only.** Perform the generator installation and alignment procedure as outlined in SB-566.
- 4.15 Go to step 7.

5. Mounting and adjusting the seismic vibration isolators. (All seismic vibration isolator kits except GM69207-KP1)

- 5.1 Vibration isolators are shipped with two removable spacer shims (item 4) between the top plate and the housing. See Figure 10. Keep the shims in place when the generator set is positioned over the vibration isolators.

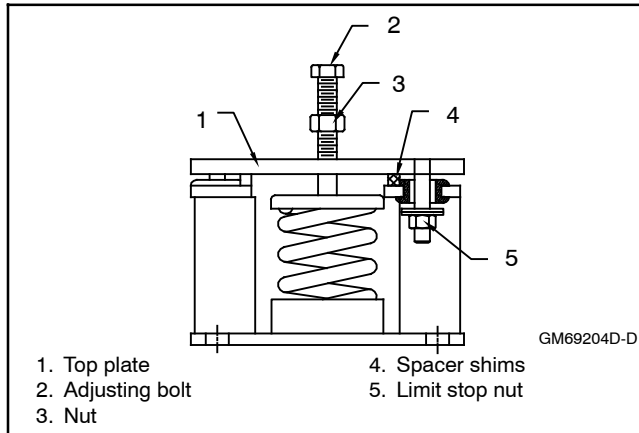


Figure 10 Adjusting Seismic Vibration Isolators
(All seismic isolator models, except GM69207-KP1)

- 5.2 With all (item 4) shims in place, remove adjusting bolt (item 2) with nut (item 3) and set aside.
- 5.3 Lower the generator set onto the top plate (item 1) and align the generator set mounting hole with the tapped hole in the top plate.
- 5.4 Oil the threads of each adjusting bolt to ease the adjustment procedure.
- 5.5 Thread nut (item 3) toward the adjusting bolt (item 2) head and reinstall in threaded hole of top plate. Tighten the adjusting bolt until it starts to compress the spring.

- 5.6 Back off each of the limit stop nuts (item 5) at each vibration isolator 6–10 mm (0.25–0.38 in.).
- 5.7 Adjust each vibration isolator in sequence by turning each adjusting bolt (item 2) one full clockwise turn. Periodically check the limit stop nut (item 5) for clearance between the washer and rubber grommet. Back off the limit stop nut (item 5) if needed.

Stop adjustment of a given vibration isolator when the top plate (item 1) has risen above the shim (item 4). Continue until all vibration isolators have the top plate above the shim.

- 5.8 Remove all spacer shims (item 4). Store these items for future use.
- 5.9 Refer to Figure 3, Figure 4, or Figure 6 for the recommended operating height of the vibration isolators.
- 5.10 Fine adjust vibration isolators to level the generator set.
- 5.11 Adjust all limit stop nuts (item 5) at each vibration isolator to obtain a 10 mm (0.38 in.) clearance between the washer and rubber grommet.
- 5.12 Tighten nut (item 3) toward the generator set skid.
- 5.13 **Generator sets with 2-bearing alternators only.** Perform the generator installation and alignment procedure as outlined in SB-566.
- 5.14 Go to step 7.

6. Mounting and adjusting the seismic vibration isolators. (GM69207-KP1 kit using GM66025 vibration isolator only)

6.1 Remove the clamp down nut (item 3) from each seismic vibration isolator. See Figure 11.

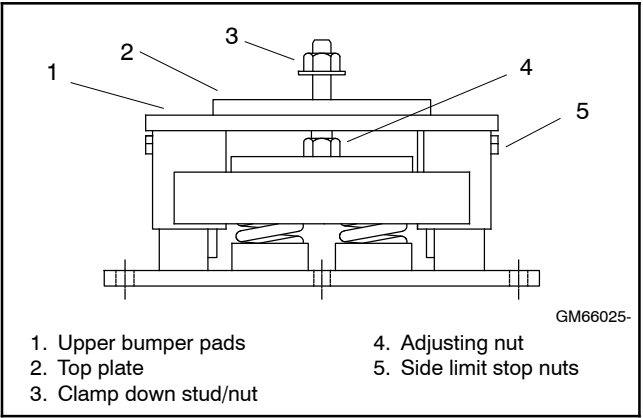


Figure 11 Adjusting Seismic Vibration Isolators (GM69207-KP1 kit using GM66025)

- 6.2 Carefully position the generator set mounting holes above the seismic isolator stud (item 3) and lower the generator set on the top plate (item 2).
- 6.3 Oil the threads of each clamp down stud to ease the adjustment procedure.
- 6.4 Install the beveled washer on the required leveling studs. See Figure 12 for the beveled washer installation locations.

Kit No.	Beveled Washer Location
GM69207-KP1	Front (radiator end) four vibration isolator mounts

Figure 12 Beveled Washer Installation Locations

6.5 Install and tighten the clamp down nut (item 3) toward the generator set skid. The weight of the unit will cause the springs to compress where the

top plate (item 2) will rest on the upper bumper pads (item 1).

- 6.6 Loosen the side limit stop lock nuts (item 5).
- 6.7 Adjust each vibration isolator in sequence by turning each adjusting nut (item 4) one full clockwise turn. Periodically check the side limit stop nuts (item 5) for clearance. Back off the side limit stop nuts (item 5) if needed.

Stop adjustment of a given vibration isolator when the top plate (item 1) has risen above the upper bumper pad (item 1) 6 mm (0.25 in.). Continue until all vibration isolators have the top plate above the upper bumper pad.

Note: Be sure that the side limit stop lock nuts continue to show clearance.

- 6.8 Refer to Figure 5 for the recommended operating height of the vibration isolators.
- 6.9 Fine adjust vibration isolators to level the generator set using adjusting nut (item 4).
- 6.10 Adjust side limit nut (item 5) to obtain a 6 mm (0.25 in.) maximum clearance.

7. Restore the generator set to service.

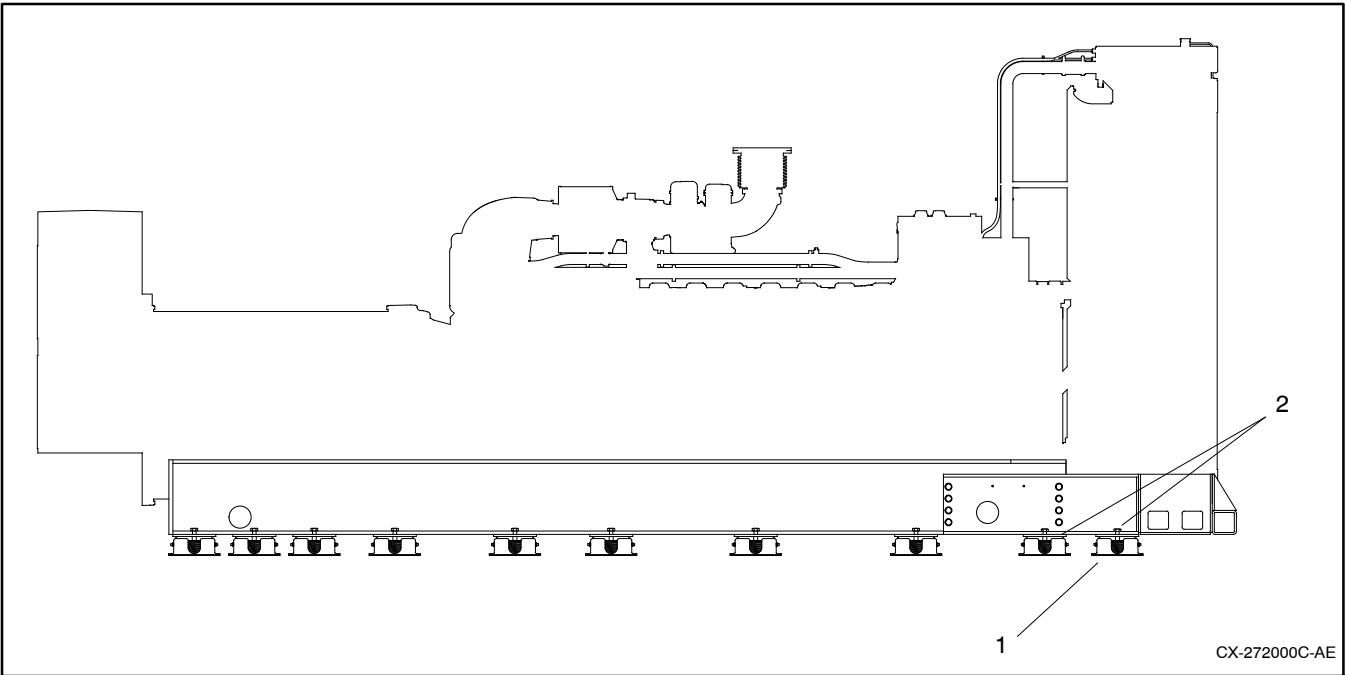
- 7.1 Remove the lifting equipment from the generator set.
- 7.2 Check that the generator set master switch is in the OFF position (Decision-Maker® 3+ and 550 controllers).
- 7.3 Reconnect the generator set engine starting battery, negative (-) lead last.
- 7.4 Reconnect power to the battery charger, if equipped.
- 7.5 Reconnect the power to the block heater, if equipped.



Figure 13 Vibration Isolator Installation

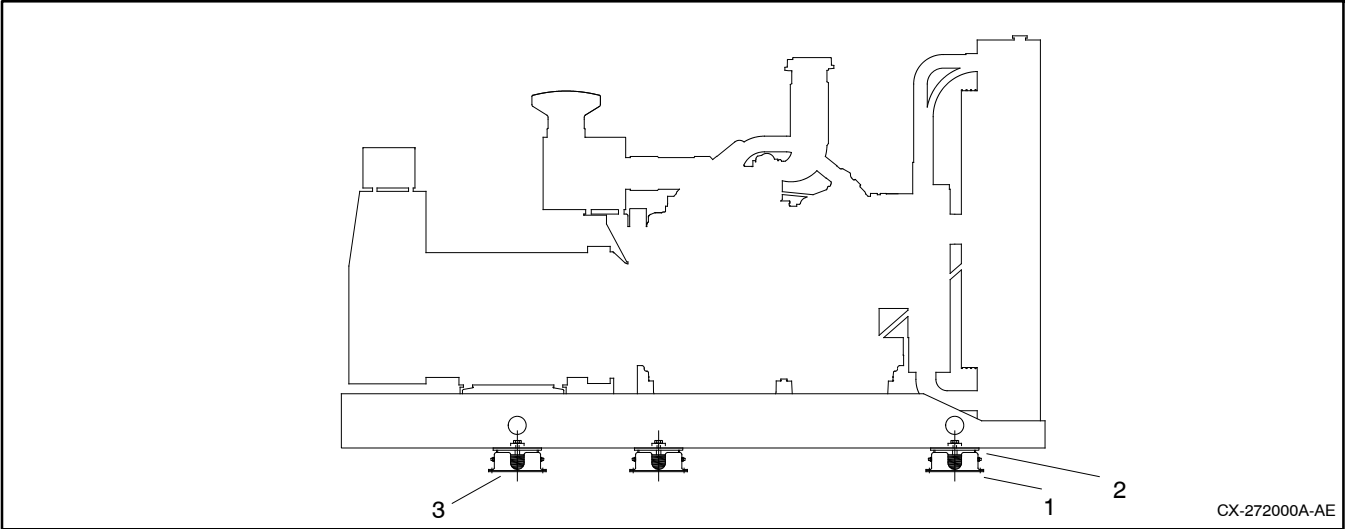


Figure 14 Vibration Isolator Installation



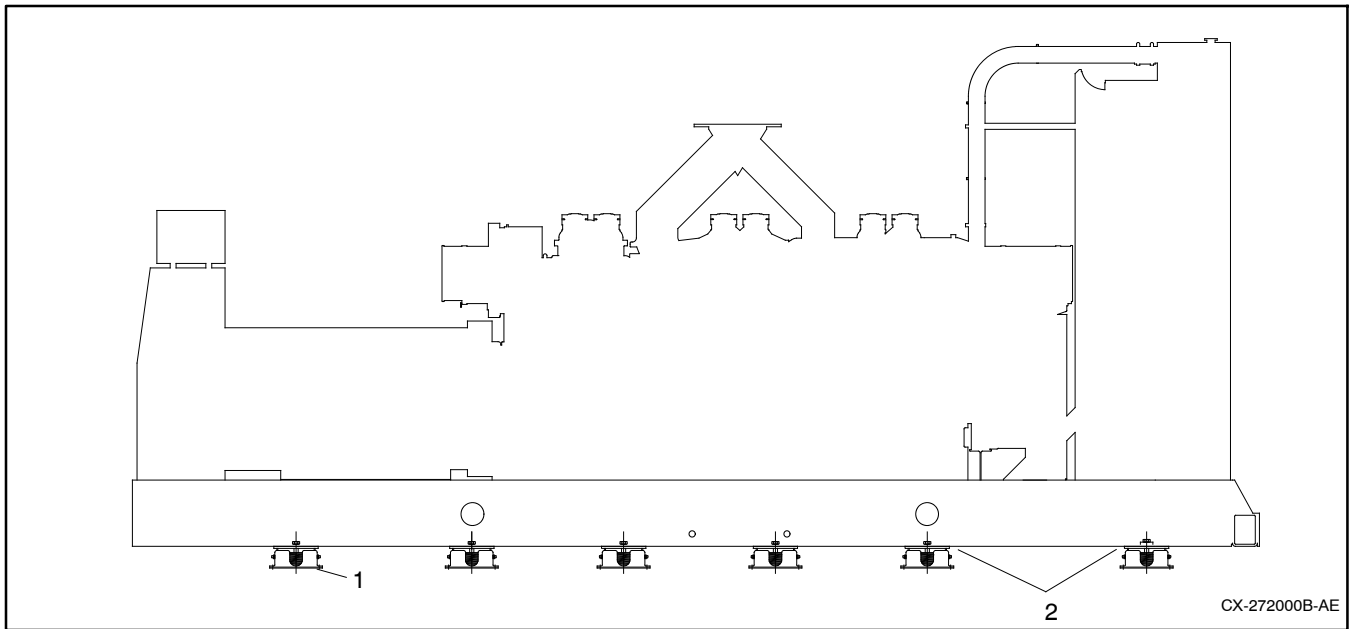
Item	Description	GM39767-KP1
1	Vibration Damper	GM39515 (qty. 20)
2	Beveled Washer	X-6011-3 (qty. 4) (front 4 mounts only)

Figure 15 Vibration Isolator Installation



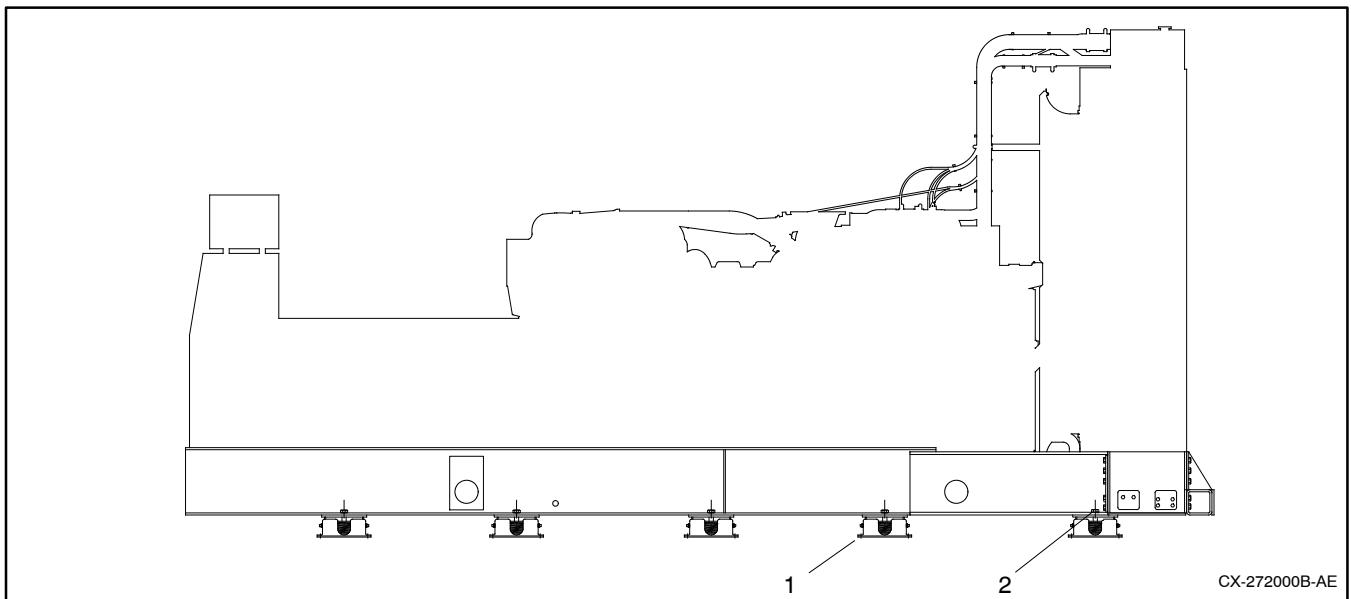
Item	Description	GM39770-KP1	GM39770-KP2
1	Vibration Damper	GM39515 (qty. 4)	GM41122 (qty. 4) (front 4 mounts only)
2	Beveled Washer	X-6011-3 (qty. 6)	X-6011-3 (qty. 6)
3	Vibration Damper	GM39515 (qty. 2)	GM39515 (qty. 2) (rear 2 mounts only)

Figure 16 Vibration Isolator Installation



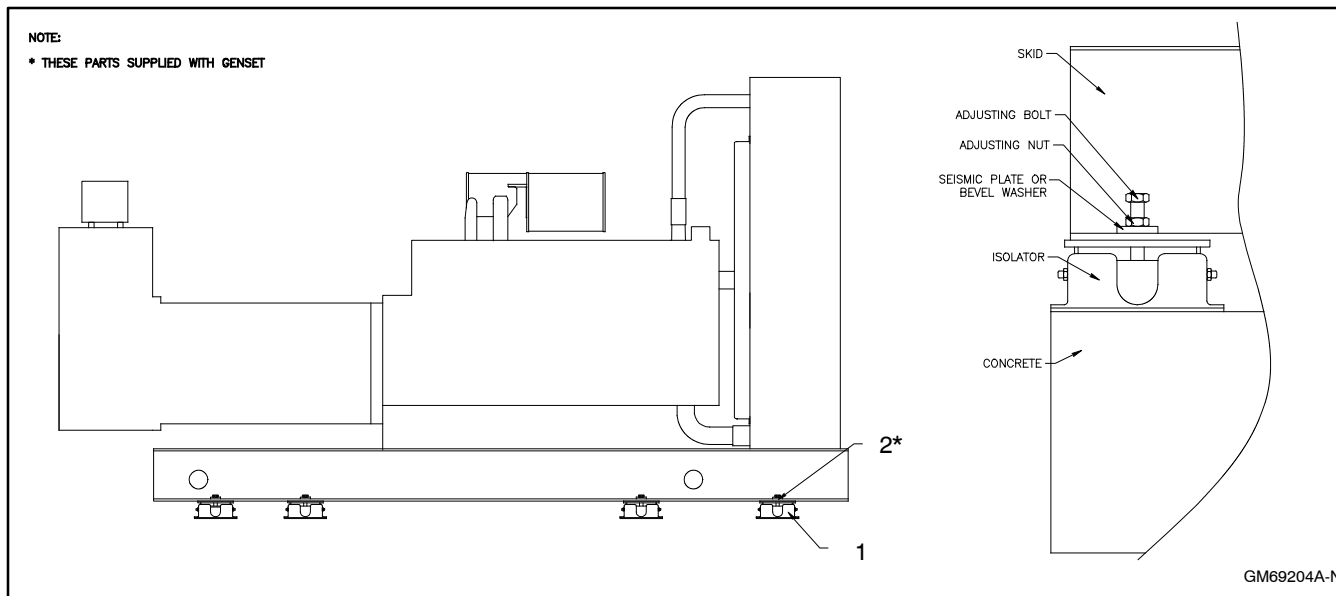
Item	Description	GM39772-KP1
1	Vibration Damper	GM39515 (qty. 12)
2	Beveled Washer	X-6011-3 (qty. 4) (front 4 mounts only)

Figure 17 Vibration Isolator Installation



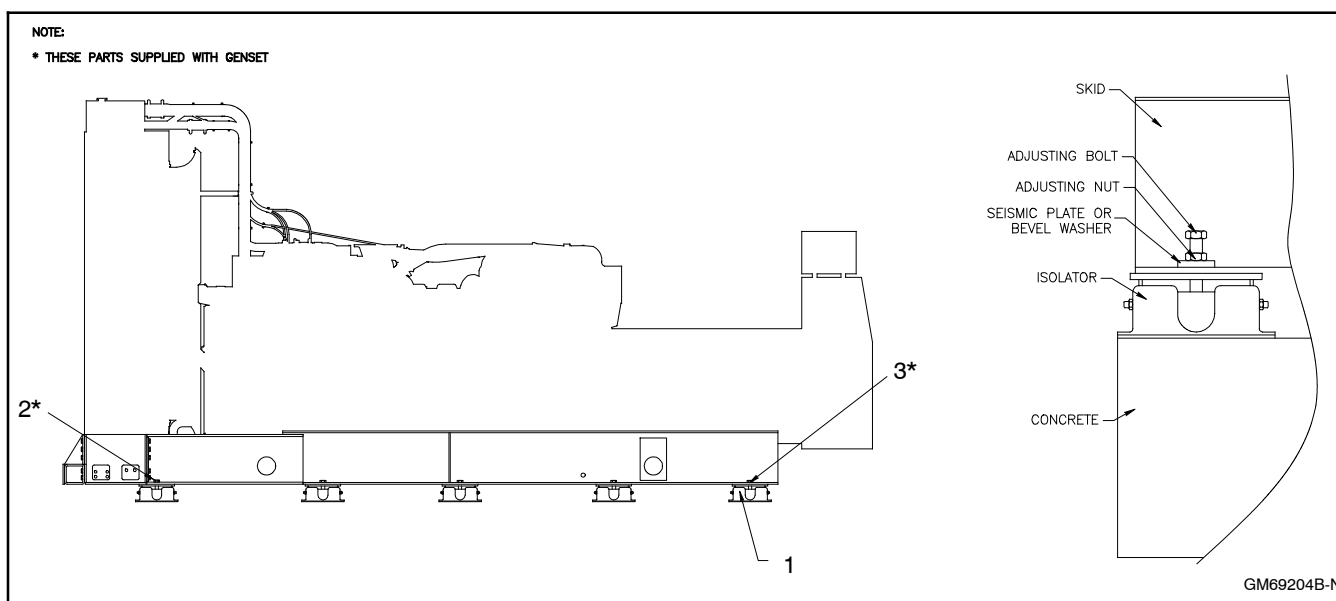
Item	Description	GM39774-KP1
1	Vibration Damper	GM39515 (qty. 10)
2	Beveled Washer	X-6011-3 (qty. 2) (front two mounts only)

Figure 18 Vibration Isolator Installation



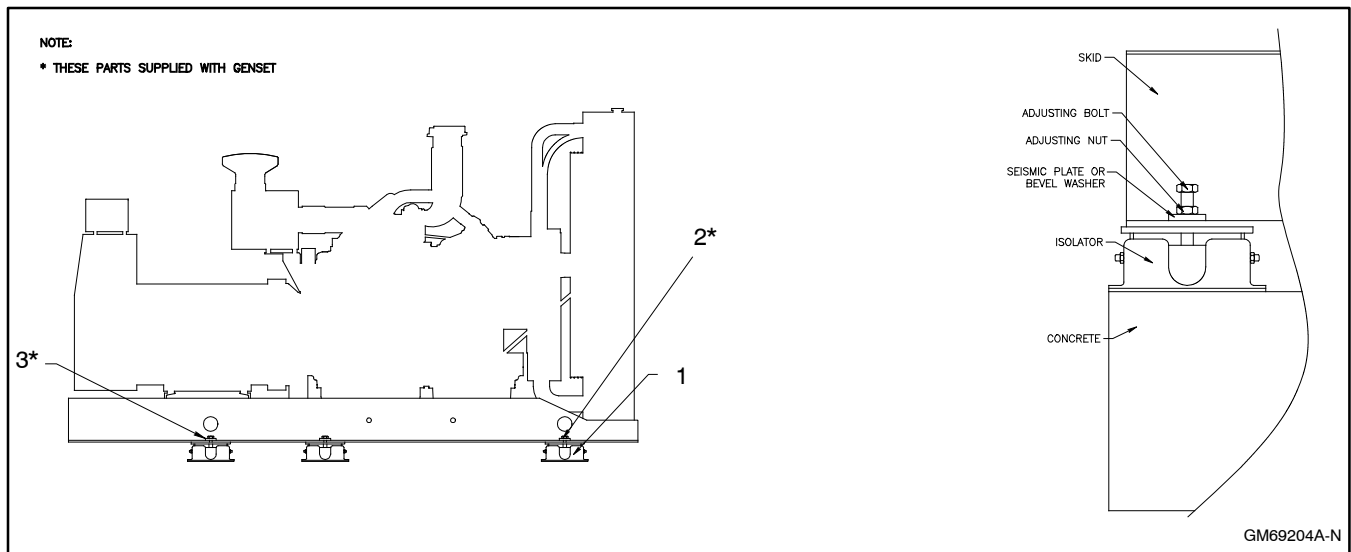
Item	Description	GM69204-KP1
1	Vibration Damper	GM66020 (qty. 8)
2*	Beveled Washer	X-6011-1 (qty. 8)
* Supplied with generator set.		

Figure 19 Vibration Isolator Installation



Item	Description	GM69204-KP2
1	Vibration Damper	GM66020 (qty. 10)
2*	Beveled Washer	X-6011-3 (qty. 2) (front 2 mounts only)
3*	Mounting Plate	GM70698 (qty. 8) (rear 8 mounts only)
* Supplied with generator set.		

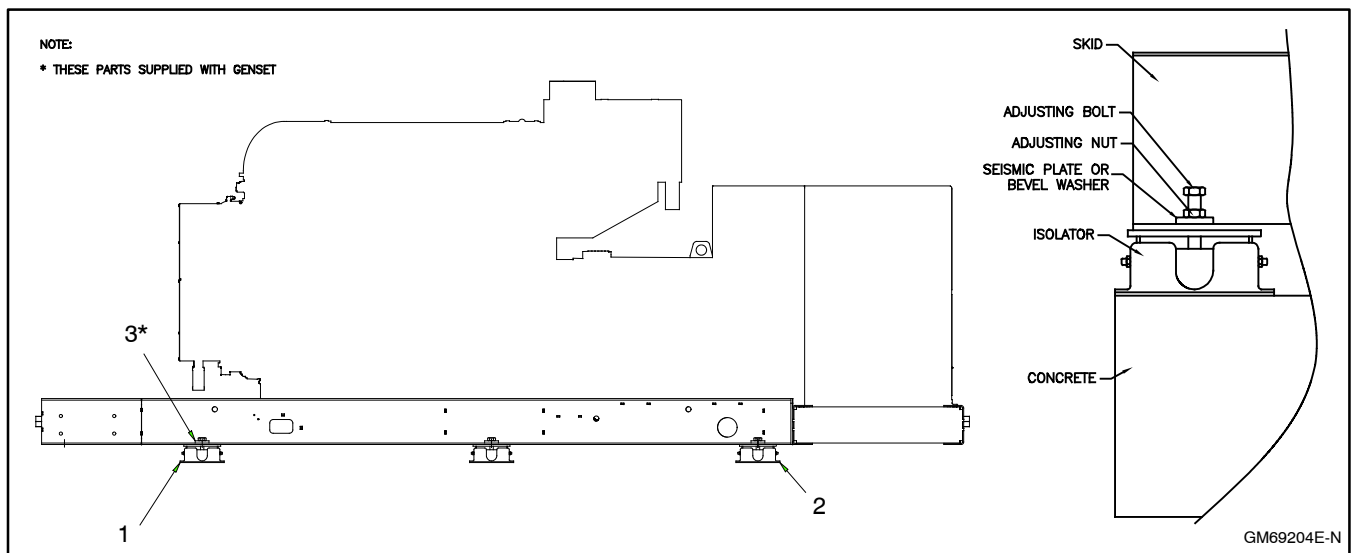
Figure 20 Vibration Isolator Installation



Item	Description	GM69204-KP3	GM69209-KP1	GM69239-KP1	GM77244-KP1
1	Vibration Damper	GM66020 (qty. 6)	GM66022 (qty.6)	GM66304 (qty.6)	GM76149 (qty. 6)
2*	Beveled Washer	X-6011-1 (qty. 2) (front 2 mounts only when using 50°C radiator only)	X-6011-3 (qty. 6)	X-6011-3 (qty. 6)	X-6011-3 (qty. 6)
3*	Mounting Plate	GM69898 (qty. 6)	—	—	GM70698 (qty. 6)

* Supplied with generator set.

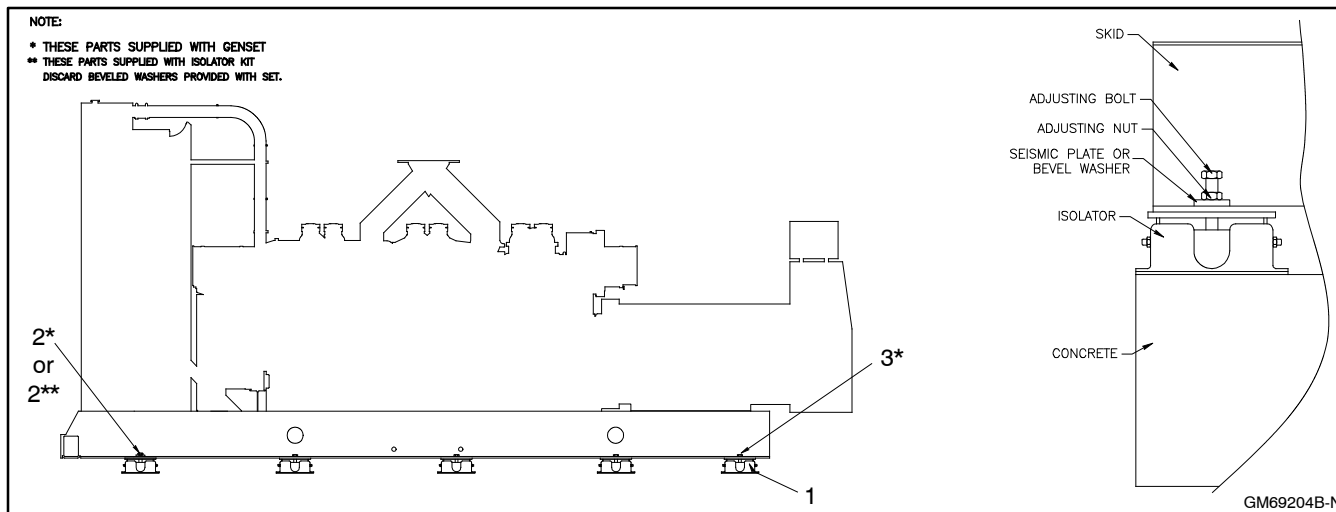
Figure 21 Vibration Isolator Installation



Item	Description	GM69204-KP4
1	Vibration Damper	GM66022 (qty. 4) (front 4 mounts only)
2	Vibration Damper	GM84954 (qty. 2) (rear 2 mounts only)
3*	Mounting Plate	GM69898 (qty. 6)

* Supplied with generator set.

Figure 22 Vibration Isolator Installation

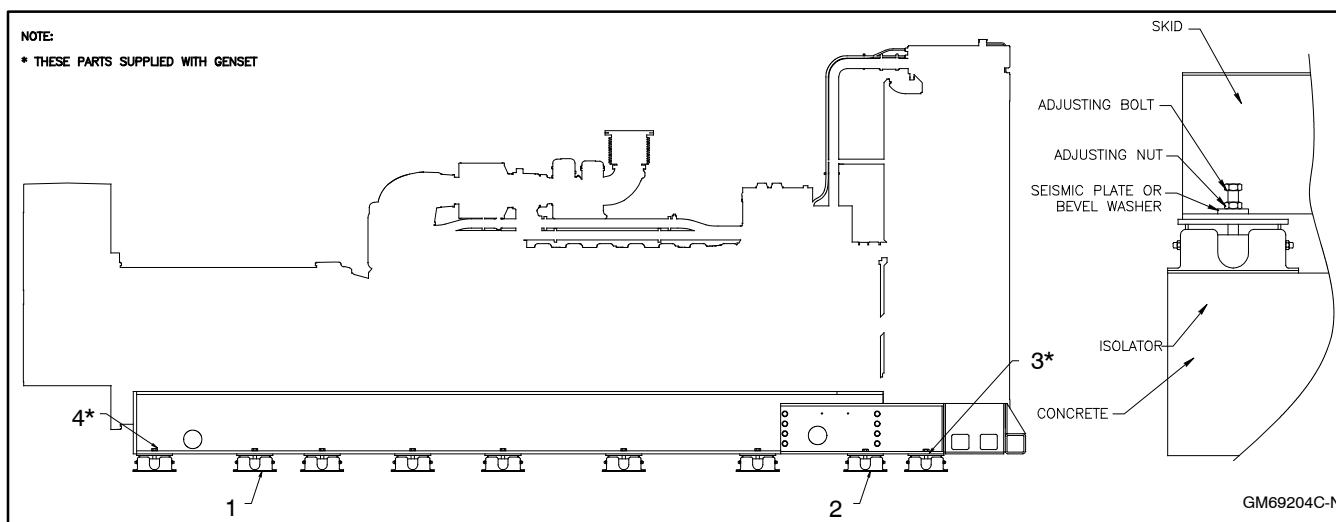


Item	Description	GM69205-KP1	GM69207-KP1
1	Vibration Damper	GM66023 (qty. 10)	GM66025 (qty. 10)
2	Beveled Washer	X-6011-3 (qty. 4) * (front 4 mounts only)	X-6011-1 (qty. 4) ** (front 4 mounts only)
3*	Mounting Plate	GM70698 (6) (rear 6 mounts only)	—

* Supplied with generator set.

** Supplied with vibration spring isolator kit. Discard beveled washers provided with the generator set.

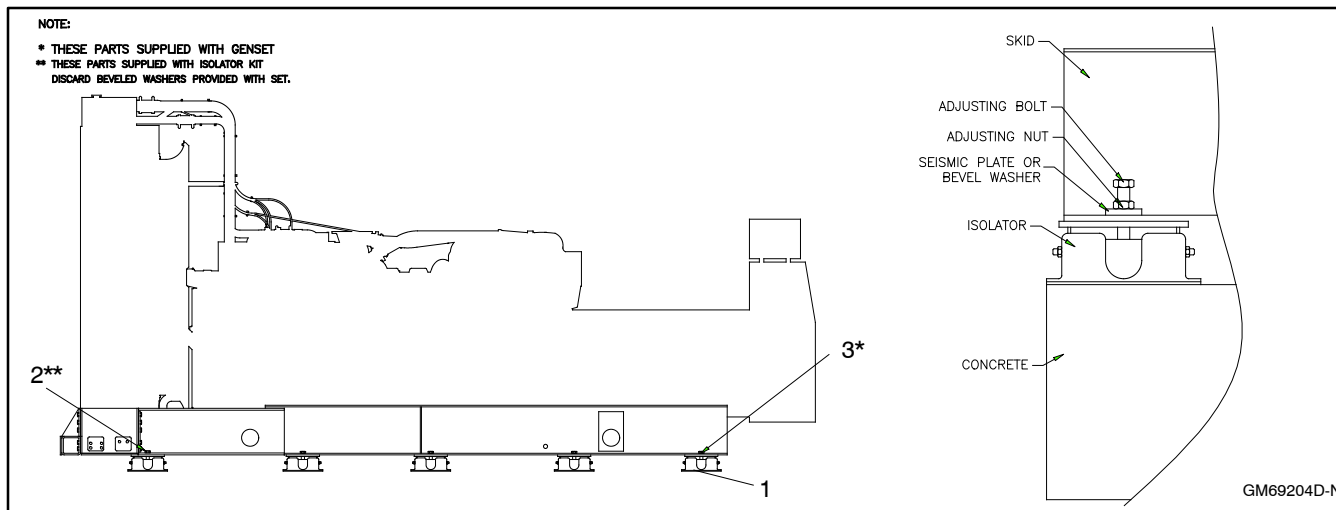
Figure 23 Vibration Isolator Installation



Item	Description	GM69238-KP2
1	Vibration Damper	GM84954 (qty. 8) (rear 8 mounts only)
2	Vibration Damper	GM66020 (qty. 12) (front 12 mounts only)
3*	Beveled Washer	X-6011-1 (qty. 4) (front 4 mount only)
4*	Mounting Plate	GM71709 (qty. 16) (rear 16 mounts only)

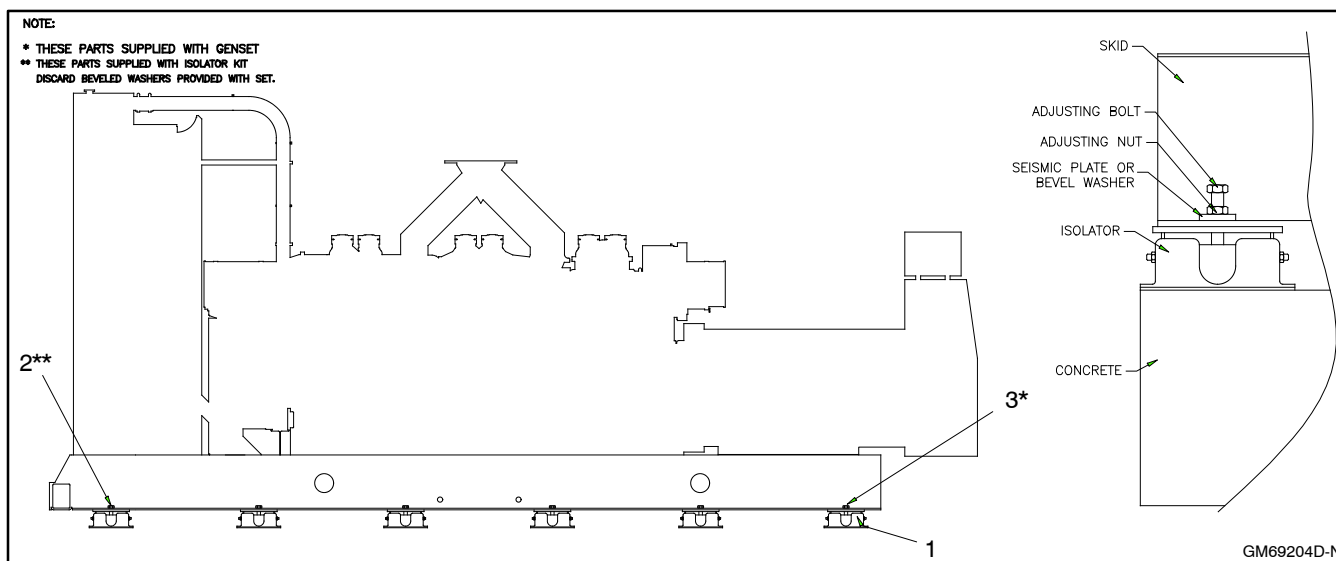
* Supplied with generator set.

Figure 24 Vibration Isolator Installation



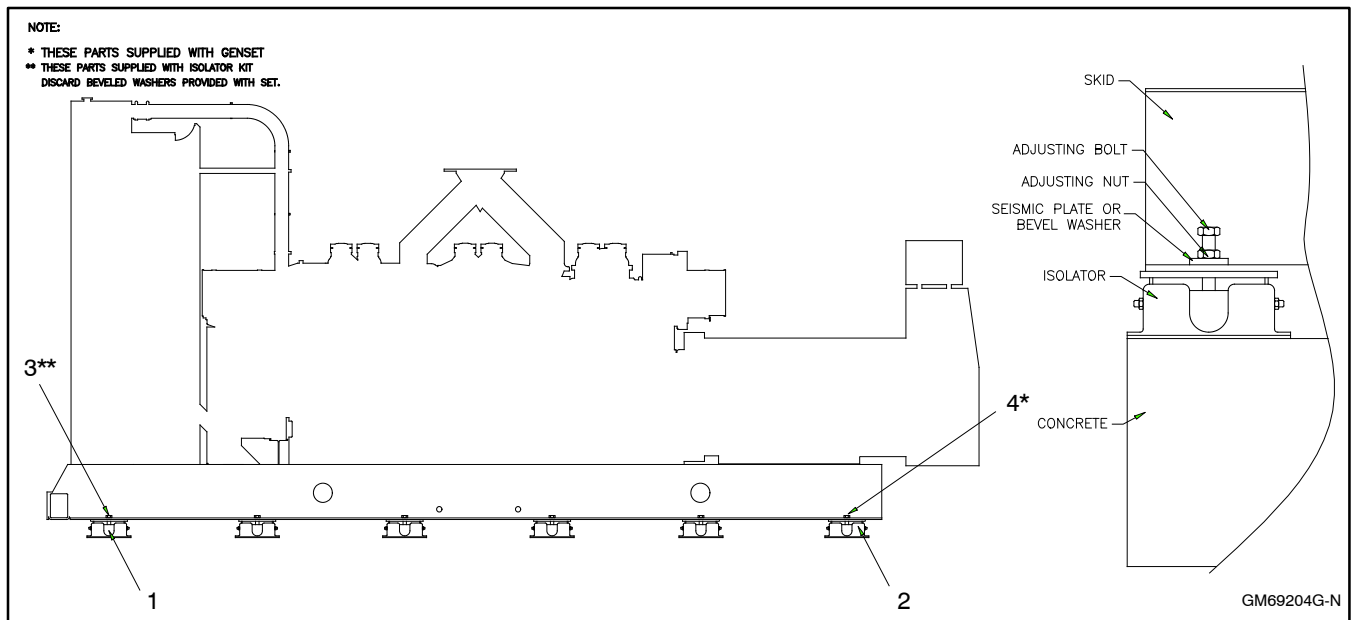
Item	Description	GM84955-KP1
1	Vibration Damper	GM84954 (qty. 10)
2**	Beveled Washer	X-6011-1 (qty. 4) (front 4 mounts only)
3*	Mounting Plate	GM70698 (qty.6) (rear 6 mounts only)
* Supplied with generator set.		
** Supplied with vibration spring isolator kit. Discard beveled washers provided with the generator set.		

Figure 25 Vibration Isolator Installation



Item	Description	GM84956-KP2
1	Vibration Damper	GM84954 (qty. 12)
2**	Beveled Washer	X-6011-1 (qty. 4) (front 4 mounts only)
3*	Mounting Plate	GM70698 (qty.8) (rear 8 mounts only)
* Supplied with generator set.		
** Supplied with vibration spring isolator kit. Discard beveled washers provided with the generator set.		

Figure 26 Vibration Isolator Installation



Item	Description	GM91228-KP1
1	Vibration Damper	GM66020 (qty. 16) (front 16 mounts only)
2	Vibration Damper	GM66024 (qty. 2) (rear 2 mounts only)
3**	Beveled Washer	X-6011-1 (qty. 4) (front 4 mounts only)
4*	Mounting Plate	GM70698 (qty. 14) (rear 14 mounts only)
* Supplied with generator set.		
** Supplied with vibration spring isolator kit. Discard beveled washers provided with the generator set.		

Figure 27 Vibration Isolator Installation

Parts List

Description	GM10981-KP1	GM11407-KP1	GM39767-KP1	GM39770-KP1	GM39770-KP2
Vibration Damper	GM41122 (qty. 4)	GM41122 (qty. 8)	GM39515 (qty. 20)	GM39515 (qty. 6)	GM39515 (qty. 2)
Vibration Damper	—	—	—	—	GM41122 (qty. 4)
Beveled Washer	—	X-6011-3 (qty. 8)	X-6011-3 (qty. 4)	X-6011-3 (qty. 6)	X-6011-3 (qty. 6)

Description	GM39771-KP1	GM39772-KP1	GM39774-KP1	GM69204-KP1	GM69204-KP2
Vibration Damper	GM39515 (qty. 8)	GM39515 (qty. 12)	GM39515 (qty. 10)	GM66020 (qty. 8)	GM66020 (qty. 10)
Beveled Washer	X-6011-3 (qty. 8)	X-6011-3 (qty. 4)	X-6011-3 (qty. 2)	—	—

Description	GM69204-KP3	GM69204-KP4	GM69205-KP1	GM69207-KP1	GM69209-KP1
Vibration Damper	GM66020 (qty. 6)	GM66022 (qty. 4)	GM66023 (qty. 10)	GM66025 (qty. 10)	GM66022 (qty. 6)
Vibration Damper	—	GM84954 (qty. 2)	—	—	—
Beveled Washer	—	—	—	X-6011-1 (qty. 4)	—

Description	GM69238-KP2	GM69239-KP1	GM77244-KP1	GM84955-KP1	GM84956-KP1
Vibration Damper	GM66020 (qty. 12)	GM66304 (qty. 6)	GM76149 (qty. 6)	GM84954 (qty. 10)	GM84954 (qty. 12)
Vibration Damper	GM84954 (qty. 8)	—	—	—	—
Beveled Washer	—	—	—	X-6011-1 (qty. 4)	X-6011-1 (qty. 4)

Description	GM91228-KP1
Vibration Damper	GM66020 (qty. 16)
Vibration Damper	GM66024 (qty. 2)
Beveled Washer	X-6011-1 (qty. 4)

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