

INSTALLATION INSTRUCTIONS

Original Issue Date: 1/09

Model: **30RES, 30RYG, and RGEN30**

Market: **Residential/Commercial**

Subject: **Oil Makeup/Low Level Shutdown Kit GM65412-KA1 and KP1**

Introduction

The oil makeup/low level shutdown kit protects the generator set engine if the oil level drops. The kit includes a 2-quart oil reservoir, a large sight gauge for easy viewing of the oil level, and an oil level sensor that signals the controller to shut down the engine if the oil level drops below a preset level. The kit is designed to fit inside the enclosure on the generator set models listed above.

Read the entire installation procedure and compare the kit parts with the parts list at the end of this publication before beginning installation. Perform the steps in the order shown.

See Figure 1 for the installed kit illustration.

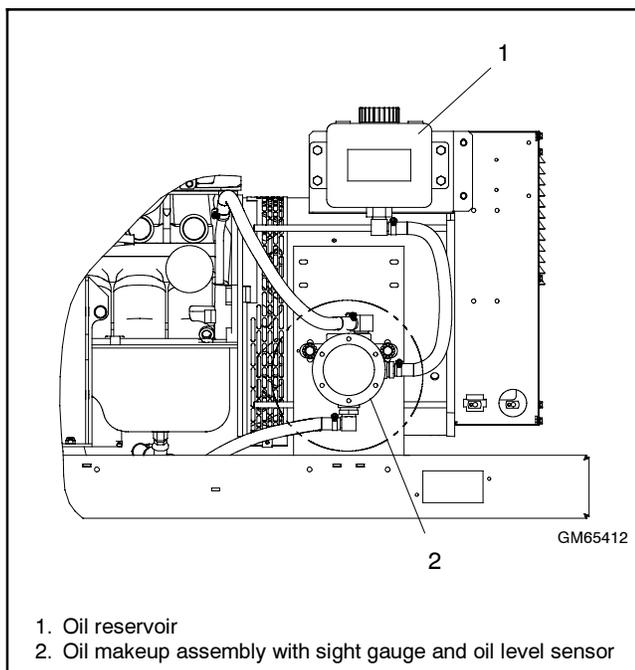
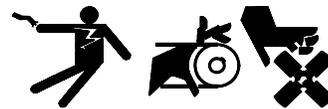


Figure 1 Installed Oil Makeup Kit

Safety Precautions

Observe the following safety precautions while installing the kit.

⚠ 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.

Installation Procedure

1. Place the generator set master switch in the OFF position.
2. Disconnect the power to the battery charger, if equipped.
3. Disconnect the battery, negative (-) lead first.

Note: For factory-installed kits, go to step 22.

4. Drain the oil from the gen set into a suitable container.
5. Remove the existing drain valve and drain hose from the bottom of the oil pan. Save the drain hose; it will be reused.
6. Install the new oil valve assembly shown in Figure 2 and Figure 3 as follows:
 - a. Install tee X-203-15 with bushing D-228, pipe X-217-6, and pipe adapter GM65451 into the drain hole in the oil pan. See Figure 3.
 - b. Install the two elbows, X-274-6, onto the tee. Direct the elbows to the sides as shown in Figure 4.
 - c. Install the two valves, 359653. See Figure 2. Close both valves.
7. Connect the existing drain hose to the new valve assembly. See Figure 4.

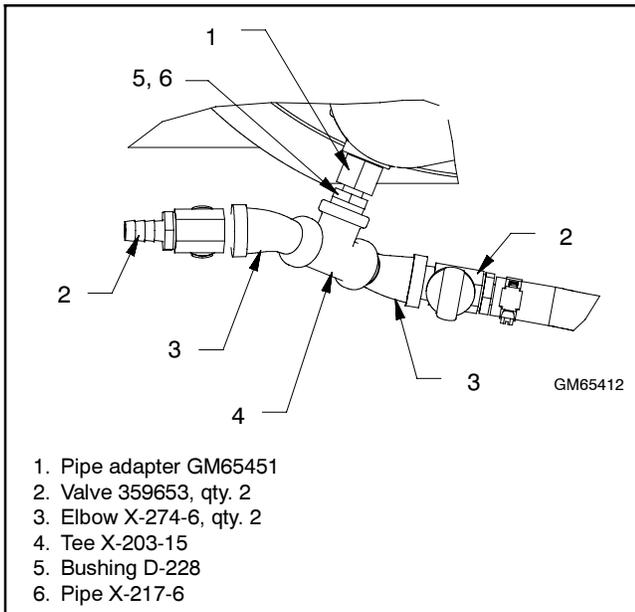


Figure 2 Tee and Valve Assembly

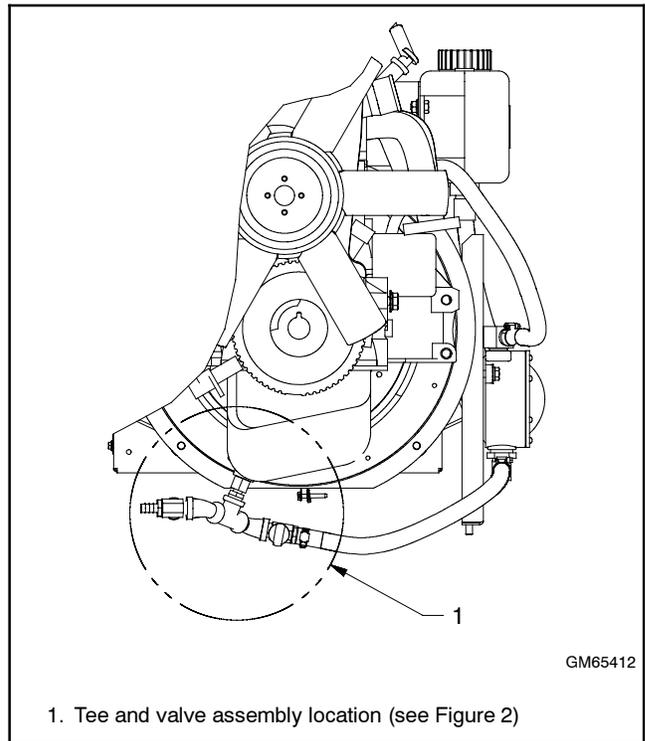


Figure 3 Valve Assembly Location

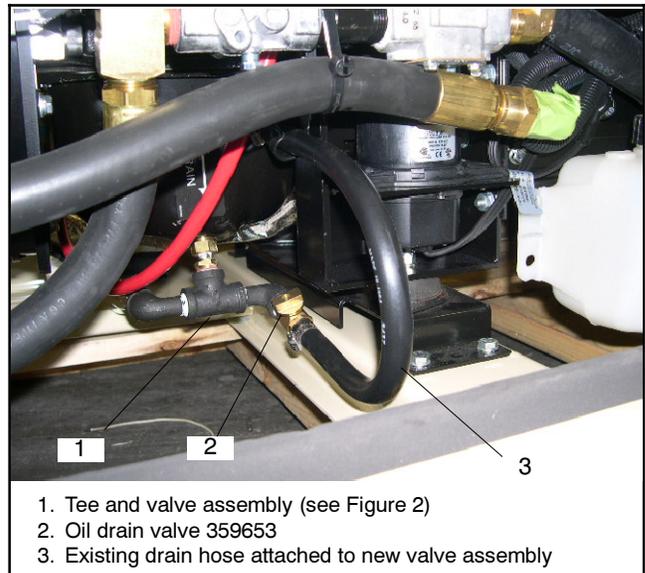


Figure 4 Oil Drain Valve and Hose

8. Remove the battery charger and mounting bracket from the generator set, if equipped.
9. Install oil level mounting bracket GM65414 using the mounting holes with weld nuts that were used for the battery charger mounting bracket. Use two M933-08016-60 screws and two M125A-08-80 washers to attach the bracket to the skid as shown in Figure 5. Note the different orientation of the bracket with the sound enclosure or weather enclosure indicated in Figure 5.
10. Assemble the following fittings onto oil level gauge assembly GM65413. See Figure 6.
 - 90 degree connector X-391-21
 - 90 degree connector X-391-42
 - Hose connector X-582-5
 - Reducing bushing X-202-41

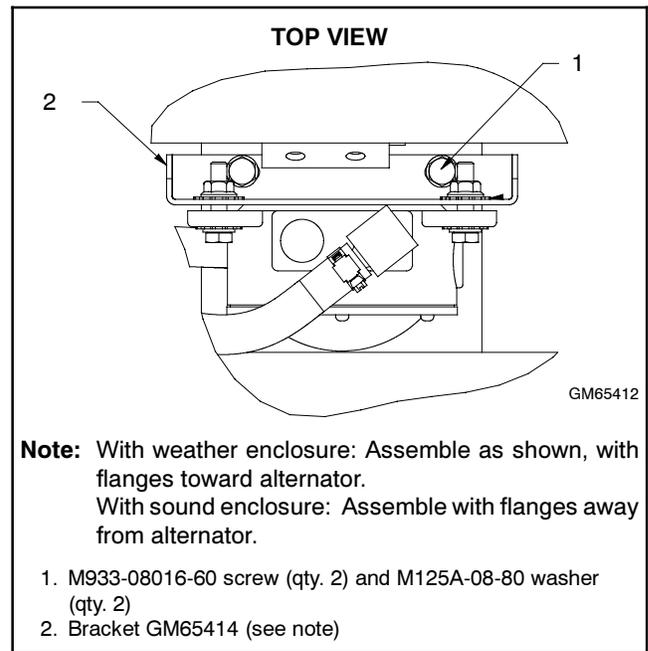


Figure 5 Oil Level Bracket Mounting

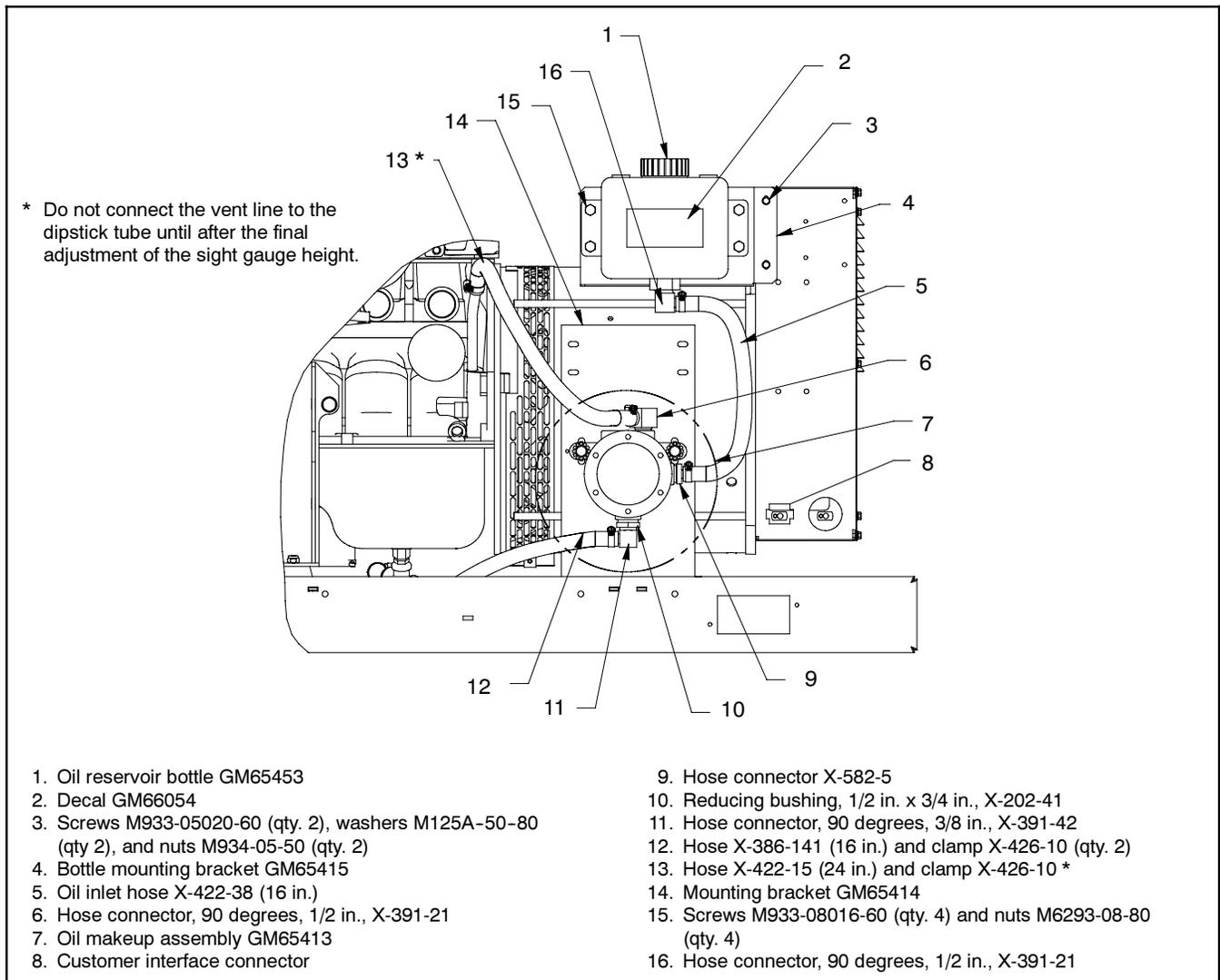


Figure 6 Oil Reservoir Bottle Mounting and Hose Connections

11. Mount the oil level gauge assembly, GM65413, onto the bracket as follows. See Figure 7.

- a. Use two M931-08035-60 screws, X-22-14 lock washers, X-22-16 lock washers, and M125A-08-80 washers to attach the sight gauge assembly to the bracket. Do not tighten the screws.
- b. Set the initial height of the assembly so that the center of the mounting screw lines up with the small hole on the mounting bracket and the sight glass is level. See Figure 7. Do not final tighten the mounting screws until the height adjustment procedure in step 28.

12. Install the battery charger, if equipped, onto new bracket GM65414. Use existing fasteners.

13. Install 90 degree connector X-391-21 into the bottom of oil bottle GM65415. See Figure 6.

14. Install mounting bracket GM65415 and oil bottle GM65453 as follows. See Figure 6.

- a. Remove the junction box end panel to gain access to the inside of the junction box.
- b. Use two M933-05020-60 screws, two M125A-50-80 washers, and two M934-05-50 nuts to attach mounting bracket GM65415 to the generator set junction box.
- c. Use four M933-08016-60 screws and four M6293-08-80 nuts to mount oil bottle GM65453 onto the bracket.

15. Connect the following hoses. Use hose clamps X-426-10 to secure both ends of each hose. See Figure 6.

- a. Connect 406 mm (16 in.) hose X-422-38 from the bottom of the oil bottle to the gauge inlet.
- b. Connect 406 mm (16 in.) hose X-386-141 from the oil pan to the outlet connection at the bottom of the gauge assembly.
- c. Connect 610 mm (24 in.) hose X-422-15 to the vent connection at the top of the gauge assembly. Do not connect the other end of the hose at this time.

16. Affix decal GM66054 to the oil bottle. See Figure 6 and Figure 8.

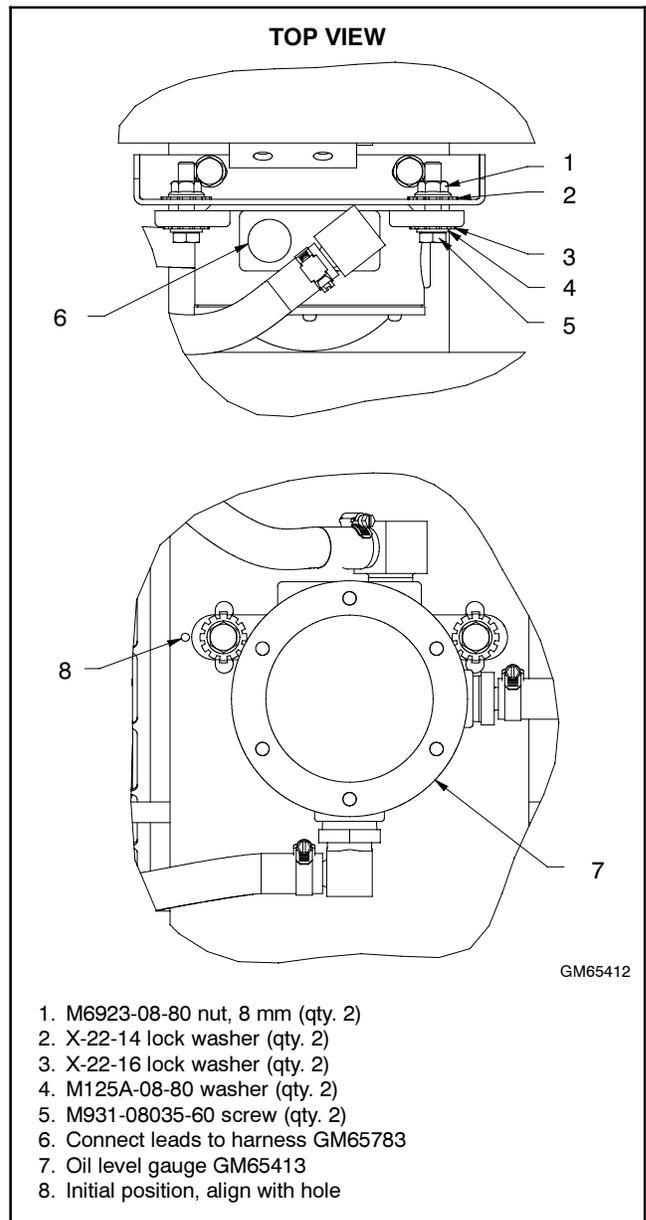


Figure 7 Oil Level Gauge GM65413 Mounting

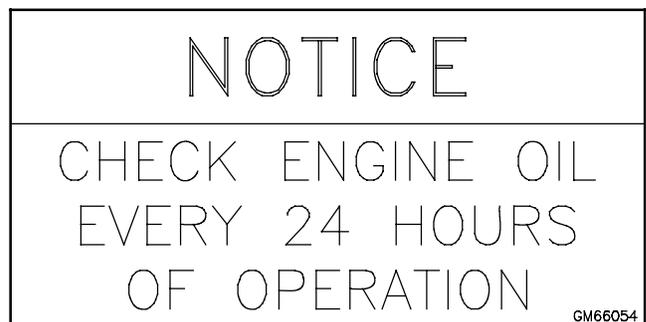


Figure 8 Decal GM66054

17. Some engine harnesses include leads with connectors for connection of the oil level gauge assembly. Check for leads 30B and N12 from the engine harness (near the alternator).
 - a. If leads 30B and N12 from the engine harness are NOT present, go to step 18.
 - b. If leads 30B and N12 are present, connect the two leads from the oil level gauge assembly to leads 30B and N12 as follows: Connect harness lead 30B to the red and white leads from the gauge assembly. Connect harness lead N12 to the black lead. Extension harness GM65783 is not required. Go to step 22.
18. Disconnect the existing harness, if equipped, from the 12-pin customer interface connector on the generator set's junction box. See Figure 9 for the location of the customer interface connector.
19. Connect the two leads from the oil level gauge assembly to the new extension harness GM65783. Connect harness lead 30B to the red and white leads from the gauge assembly. Connect harness lead N12 to the black lead. See Figure 9 and Figure 10.
20. Connect the 12-pin connector of the new extension harness to the customer interface connector. See Figure 9.
21. Reconnect the existing harness, if equipped, to the mating 12-pin plug on the new extension harness.
22. Verify that the valve to the oil makeup kit is closed. Fill the generator set's engine with 3.5 liters (3.7 quarts) of oil.
23. Reconnect the battery. Start and run the generator set for a few minutes to distribute the oil, then use

the dip stick to check the oil level. Add more oil if necessary to bring the oil level up to the full line on the dipstick.

Note: There is no oil in the sight gauge or oil reservoir at this time.

24. Stop the generator set.
25. Open the valve between the oil pan and the oil level gauge. Wait for oil to flow into the sight gauge.
26. Remove the dipstick from the engine and attach the oil level gauge vent hose to the dipstick tube using clamp X-426-10. Store the dipstick in a convenient location.
27. Start the generator set.

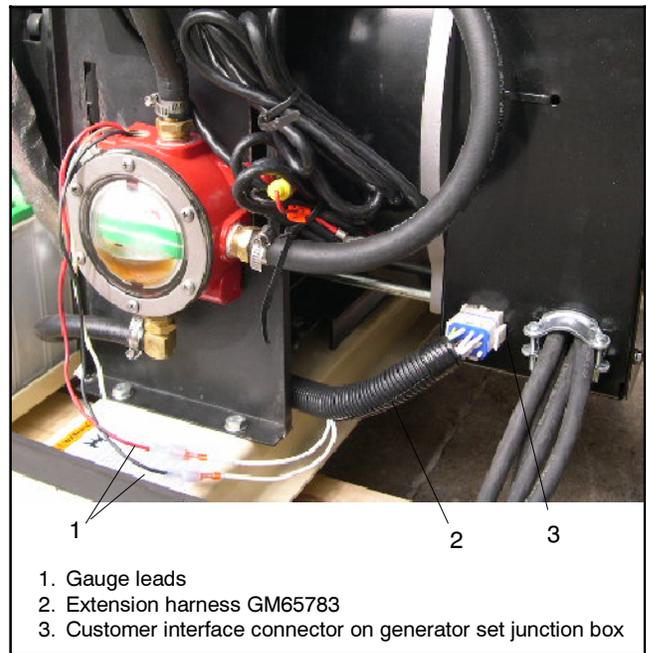
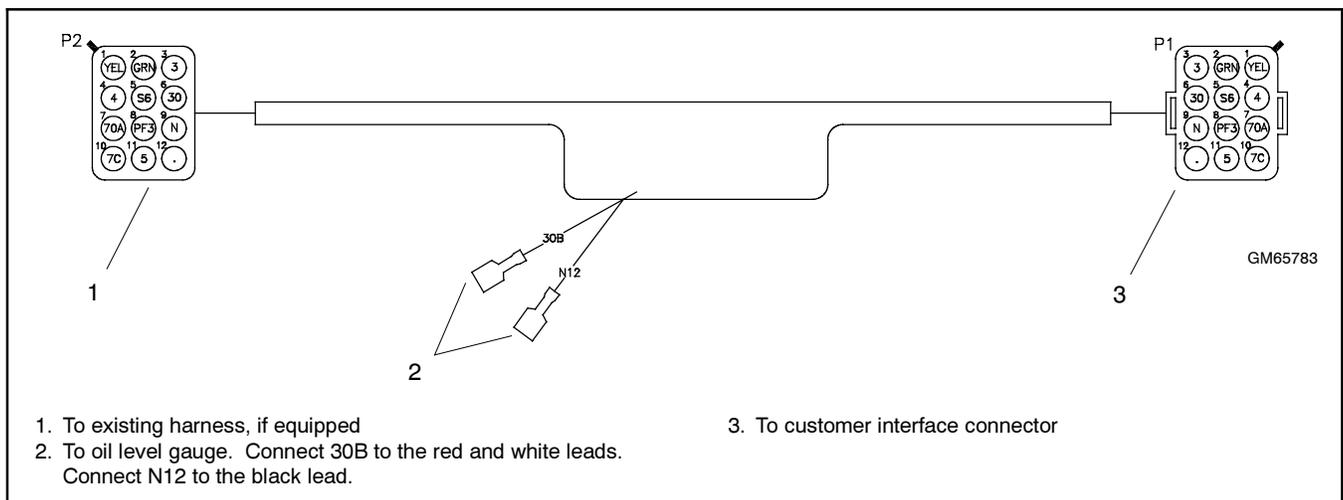


Figure 9 Extension Harness GM65783 Connections



1. To existing harness, if equipped
2. To oil level gauge. Connect 30B to the red and white leads. Connect N12 to the black lead.

3. To customer interface connector

Figure 10 Extension Harness GM65783

28. Adjust the height of the oil level gauge so that the oil level falls between the green lines on the sight glass while the generator set is running. Tighten the oil level gauge mounting screws.
29. Stop the generator set.
Note: The oil level shown on the sight glass may appear high when the genset is not running. This is normal.
30. Add about 2 quarts of oil to the oil bottle and replace the cap.
31. Check that the generator set master switch is in the OFF position.
32. Reconnect power to the battery charger, if equipped.
33. Start and run the generator set for a few minutes. Confirm that the oil level is at the white line on the sight glass while the generator set is running.

Kit Operation

Check the oil level shown in the sight glass while the engine is running without load. The level may appear high when the engine is stopped. This is normal, as some of the engine oil flows down into the oil pan when the engine is not running.

As the load on the engine increases, the oil level in the sight glass may drop below the line. The kit supplies oil from the reservoir until the reservoir is empty. The controller will shut down the generator set when the oil reservoir is empty, protecting the engine.

A check valve prevents excess oil from the oil reservoir from flowing into the engine.

Check the oil level by viewing the level shown on the gauge and through the sides of the oil reservoir. Replenish the oil supply by adding oil to the makeup kit reservoir.

Note: The oil reservoir bottle looks similar to the coolant reservoir bottle. Be sure to add oil only to the oil reservoir.

Continue to check the oil level regularly as instructed in the generator set Operation Manual, and add oil as needed. During extended generator set operation (for example, during an extended power outage due to a storm), check the oil level every 24 hours.

Oil Level Shutdown (Auxiliary Fault, AF)

The oil level gauge assembly includes an oil level sensor that signals the ADC controller to shut down the generator set if the oil level is too low. An oil level fault will cause the ADC controller to shut down the generator set and display an auxiliary fault (AF) or a low oil level fault (LOIL).

If the generator set shuts down on an AF or LOIL fault, correct and clear the fault as follows:

1. Check the oil level in the sight glass and the reservoir.
2. Add oil to the reservoir to bring the level up to the full line on the bottle.
3. Move the generator set master switch to OFF/RESET to clear the fault from the controller.
4. Move the master switch to RUN to start the generator set. Check the oil level shown in the sight glass while the engine is running. Verify that the oil level is at the white line on the sight glass while the engine is running.
5. If the oil level is not at the white line on the gauge, turn off the engine and use the dipstick to check the engine oil level. If the engine oil level is at the full line on the dipstick, adjust the gauge position as instructed in the Installation Instructions. Make sure that the mounting screws are securely tightened after adjusting the gauge position.

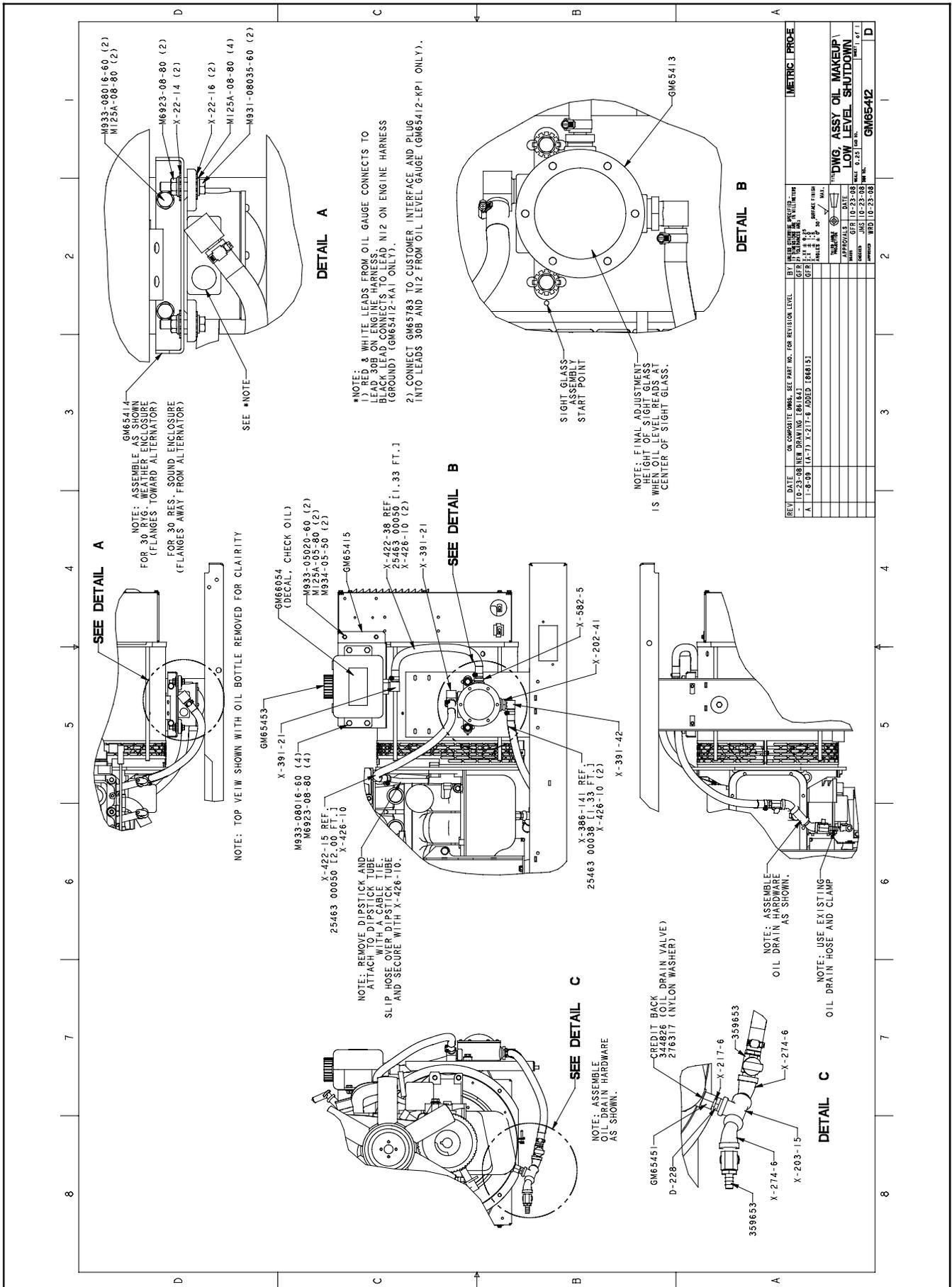


Figure 11 Assembly Drawing

Parts List

Oil Makeup/Low Level Shutdown Kit

Kit: GM65412-KP1		
Qty.	Description	Part Number
2	Valve, oil drain (3/8-18 NPT)	359653
1	Bushing, reducing (1/8 x 3/8" NPT)+vib	D-228
1	Gauge, Oil Level	GM65413
1	Bracket, Oil Level	GM65414
1	Bracket, Oil Tank	GM65415
1	Adapter, Pipe	GM65451
1	Bottle, Oil	GM65453
1	Harness, Extension Oil Makeup Kit	GM65783
1	Decal, Check Oil	GM66054
2	Washer, plain	M125A-05-80
6	Washer, plain 8.4 ID x 16.0 OD	M125A-08-80
6	Nut, Hex 8 mm	M6923-08-80
2	Screw, hex cap	M931-08035-60
2	Screw, hex cap	M933-05020-60
6	Screw, hex cap	M933-08016-60
2	Nut, Hex 5 mm	M934-05-50
1	Instruction, Installation	TT-1499
1	Bushing, reducing (1/2 x 3/4" NPT)	X-202-41
1	Tee, pipe (3/8 x 3/8 x 3/8 in. NPT)	X-203-15
1	Pipe (1/8" NPT x 0.75")	X-217-6
2	Washer, lock, .391 ID x .975 in. OD	X-22-14
2	Washer, lock .326 ID x.883 in. OD	X-22-16
2	Elbow, street (45 deg x 3/8" NPT)	X-274-6
1	Line, Flex Fuel	X-386-141
2	Connector, 90 deg. (1/2" id hose)	X-391-21
1	Connector, 90 deg. (3/8" id hose)	X-391-42
1	Line, flexible	X-422-15
1	Line, flex	X-422-38
6	Clamp, hose, .5/1 in.	X-426-10
1	Connector, hose + Vibra Seal	X-582-5