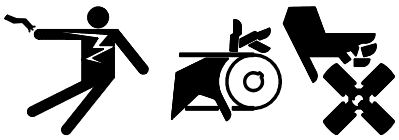
INSTALLATION INSTRUCTIONS

Original Issue Date: **2/96**
Model: **50/60/70 kW (Ford-Powered LSG-875 Engine)**
Market: **Industrial**
Subject: **Anticipatory Alarm Kits PA-326167, PA-326167-SD, PA-326840, PA-326840-SD**

The anticipatory alarm kit provides switches to monitor the following functions: low water temperature, anticipatory high water temperature, anticipatory low oil pressure, and in some kits low fuel pressure. These switches are used with the controller and the remote annunciator options. The low water temperature indicator activates if the optional engine block heater malfunctions and/or the engine coolant temperature is too low. The anticipatory high water temperature indicator activates if the engine coolant approaches shutdown range. The anticipatory low pressure indicator activates if the engine oil pressure approaches shutdown range. The low fuel level indicator activates if the fuel pressure falls below a preset level. Observe the following safety precautions while installing the kit.

⚠ WARNING



Accidental starting.
Can cause severe injury or death.

Disconnect battery cables before working on generator set (disconnect negative lead first and reconnect it last).

Disabling generator set. Accidental starting can cause severe injury or death. Turn generator set master switch to OFF position, disconnect power to battery charger, and remove battery cables (remove negative lead first and reconnect it last) to disable generator set before working on the generator set or connected equipment. The generator set can be started by an automatic transfer switch or remote start/stop switch unless these precautions are followed.

⚠ WARNING

Explosive fuel vapors.
Can cause severe injury or death.

Use extreme care when handling, storing, and using fuels.

Fuel system. Explosive fuel vapors can cause severe injury or death. All fuels are highly explosive in a vapor state. Use extreme care when handling and storing fuels. Store fuel in a well-ventilated area away from spark-producing equipment and out of the reach of children. Never add fuel to the tank while the engine is running since spilled fuel may ignite on contact with hot parts or from ignition spark. Do not smoke or permit flame or spark to occur near sources of spilled fuel or fuel vapors. Keep fuel lines and connections tight and in good condition. Do not replace flexible fuel lines with rigid lines. Use flexible sections to avoid breakage caused by vibration. Do not operate generator set in the presence of fuel leaks, fuel accumulation, or sparks. Repair systems before resuming generator set operation

⚠ WARNING

Hot coolant and steam.
Can cause severe injury or death.

Before removing pressure cap, stop generator set and allow it to cool. Then loosen pressure cap to relieve pressure.

Checking coolant level. Hot coolant can cause severe injury or death. Allow engine to cool. Release pressure from cooling system before opening pressure cap. To release pressure, cover the pressure cap with a thick cloth; then slowly turn it counterclockwise to the first stop. Remove cap after pressure has been completely released and the engine has cooled. Check coolant level at tank if generator set is equipped with a coolant recovery tank.

Installation

1. Place the generator set master switch in the OFF position.
2. Disconnect the generator set engine starting battery, negative (–) lead first.
3. Allow the generator set to cool. Drain the coolant into a suitable container.

NOTE

The petcock valve is located on the radiator bottom and/or on the engine block.

NOTE

It is not necessary to drain all coolant in order to install the engine temperature switch. Drain just enough coolant to prevent leakage when the engine temperature switch is removed.

4. Remove the existing pipe plug for the anticipatory high water temperature switch. See Figure 1 for location.
5. Coat the threads of the anticipatory high water temperature switch (343160) with pipe sealant and install where pipe plug was removed.
6. Remove the existing freeze plug. See Figure 1 for location. To remove freeze plug, use a freeze plug puller, or puncture the center and pry it out.

NOTE

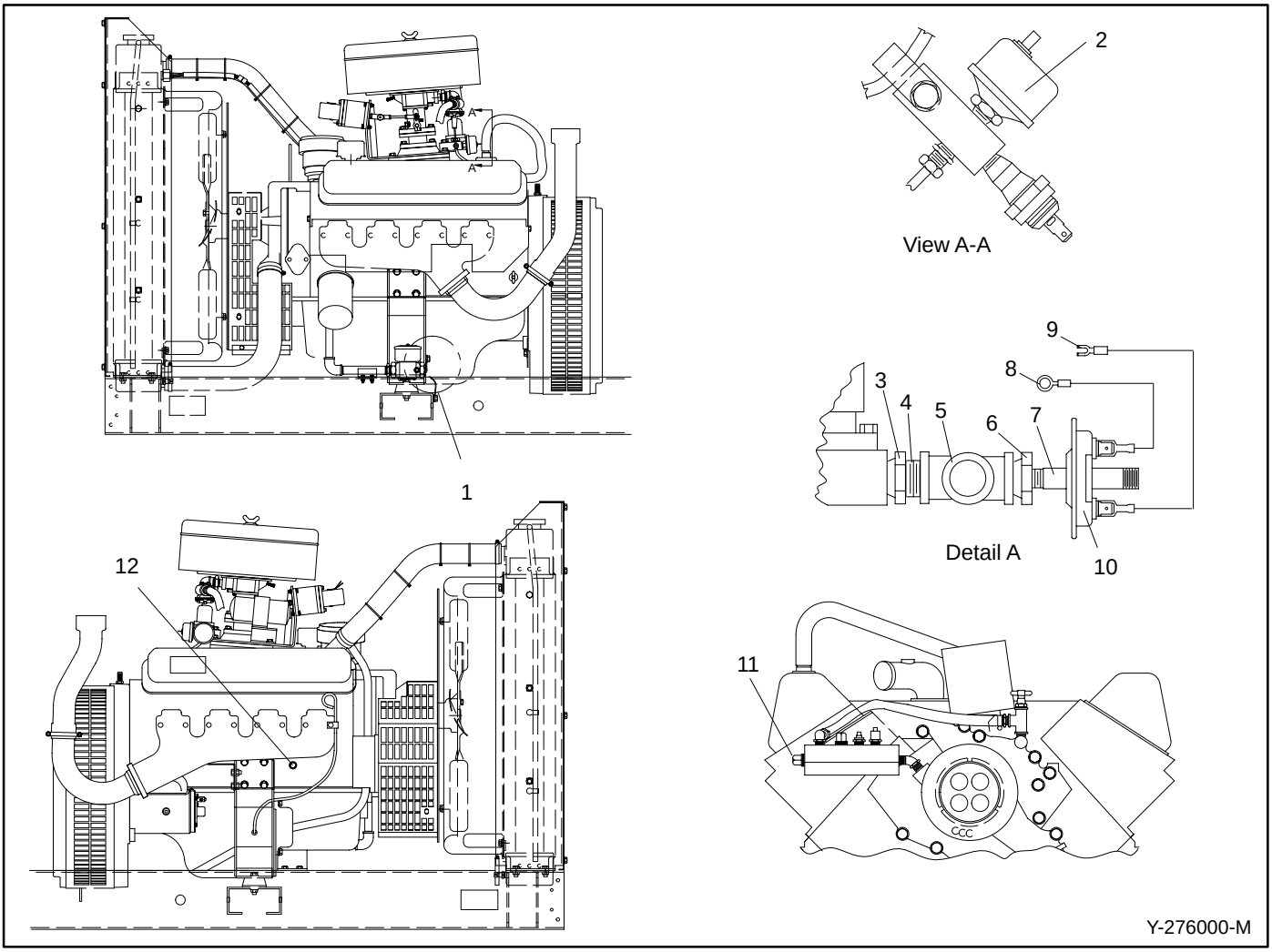
Be careful not to damage the sealing surface.

7. Make sure hole edges and freeze plug adapter (276212) are clean and dry. Apply Loctite® threadlocker 290 to the edges of the freeze plug adapter and hole with pipe sealant. Loctite® is a registered trademark of the Loctite corporation.
8. Install freeze plug adapter using a hardwood dowel and hammer. Drive freeze plug adapter into engine so that it is flush with the outside surface of the block. Do not drive freeze plug adapter beyond that point or it may be forced into the water jacket.
9. Coat the male threads of the reducer bushing (X-202-23) with pipe sealant and install into freeze plug adapter.
10. Coat the threads of the low water temperature switch (255264) with pipe sealant and install into reducer bushing.
11. Remove the existing pipe plug for the anticipatory low oil pressure switch. See Figure 1 for location.
12. Coat the threads of the anticipatory low oil pressure switch (271425) with pipe sealant and install where pipe plug was removed.
13. Connect lead 35A of the engine wiring harness to one terminal on the low water temperature switch (255264). Connect the N ground lead of the engine wiring harness from the bell housing ground screw to the other terminal of the switch.
14. Connect lead 40A of the engine wiring harness to the terminal on the anticipatory high water temperature switch (343160).
15. Connect lead 41A of the engine wiring harness to the terminal on the anticipatory low oil pressure switch (271425).
16. If the anticipatory alarm kit includes a low fuel pressure switch continue to step 17. If the kit does not include a low fuel pressure switch go to step 30.
17. Turn off fuel supply.
18. Disconnect fuel supply line from generator set gas valve assembly.
19. Apply pipe sealant to threads of reducer bushing (X-202-32) and install in gas valve assembly. See Figure 1.
20. Apply pipe sealant to threads of pipe nipple (X-218-24) and install in reducer bushing.
21. Apply pipe sealant to exposed threads of pipe nipple installed in step 20 and thread pipe tee (X-203-2) onto nipple. See Figure 1.
22. Apply pipe sealant to threads of bushing (AC-1459) and install in pipe tee.
23. Apply pipe sealant to the threads on one end of pipe (X-217-6) and install in bushing installed in step 22.

24. Apply pipe sealant to exposed threads of pipe installed in step 23 and thread vacuum switch onto pipe. See Figure 1.
25. Connect leads (SW63-1648-5722 and SW0N-1610-5716) to vacuum switch. See Figure 1.
26. Connect lead SW63-1648-5722 to generator set controller. See Figure 2 for controller lead connection.
27. Connect lead SW0N-1610-5716 to engine ground.
28. Reconnect fuel line to generator set.
29. Turn fuel supply on and check fuel inlet connection for leaks. Tighten fuel inlet connection as required.
30. Close the petcock valve on the bottom of the radiator and/or the engine block.
31. Fill the cooling system with fresh coolant. Dispose of all waste materials (engine oil, fuel, coolant, etc.) in an environmentally safe manner. Contact your local authority for correct procedures and location.
32. Check that the controller master switch is in the OFF position.
33. Reconnect the generator set engine starting battery, negative (–) lead last.
34. Test run the generator set for a few minutes and check for leaks at the switches.

NOTE

Pay special attention to the coolant level. After draining the coolant, allow time for complete refill of the engine water jacket. Check coolant level as prescribed in the Prestart Checklist of the Operation Manual.



1. See Detail A
2. Anticipatory low oil pressure switch (271425)
3. Reducer bushing (X-202-32)
4. Pipe nipple (X-218-24)
5. Pipe tee (X-203-2)
6. Reducer bushing (AC-1459)
7. Pipe nipple (X-217-6)
8. Vacuum switch engine ground lead (SW0N-1610-5716)
9. Vacuum switch controller lead (SW63-1648-5722)
10. Vacuum switch (345207)
11. Anticipatory high water temperature switch (343160)
12. Low water temperature switch (255264), freeze plug (276212), reducer bushing (X-202-23)

Figure 1. Plug Removal and Switch Installation Locations

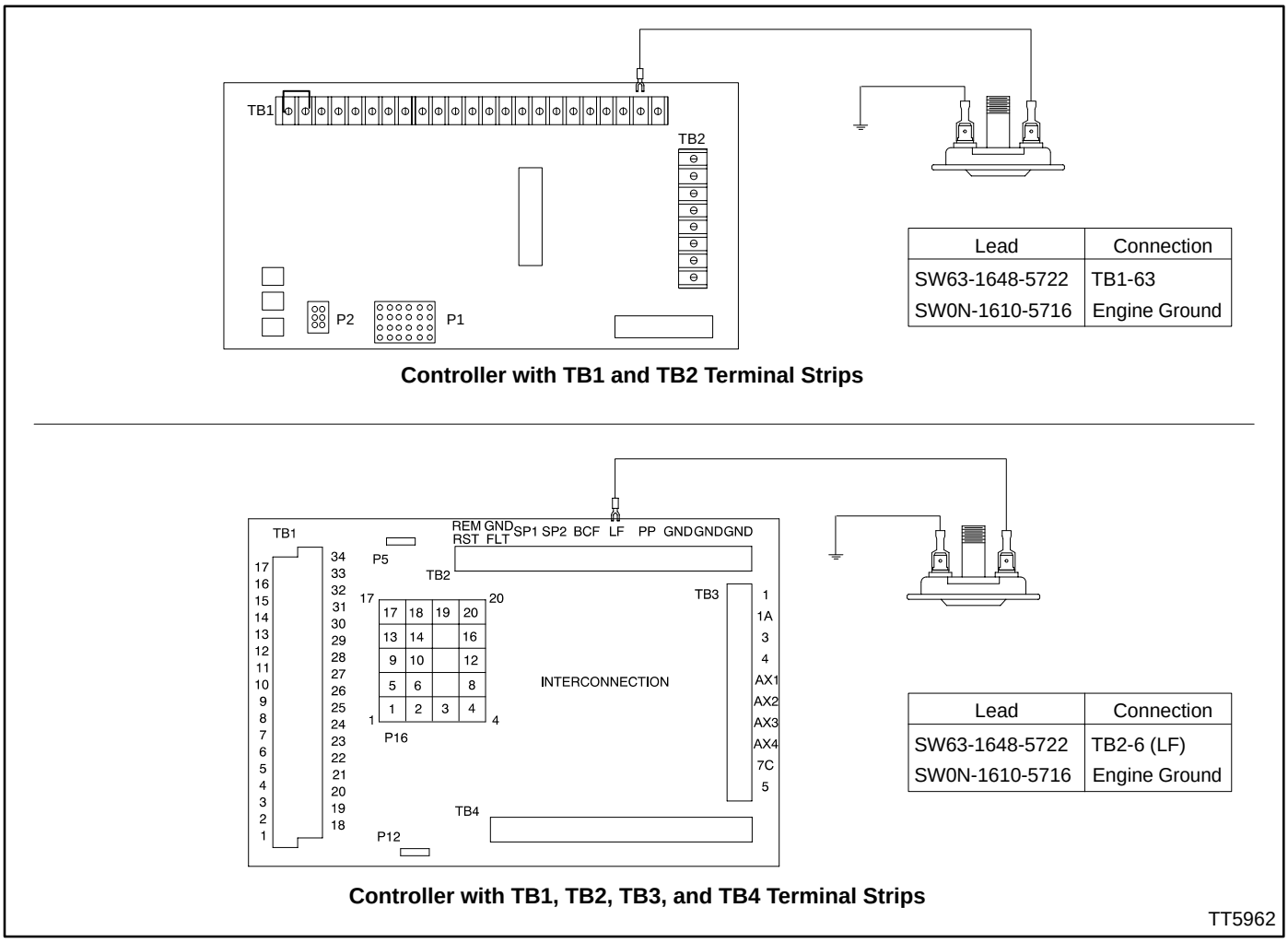


Figure 2. Controller Lead Connection

Anticipatory Alarm Kits

Parts List				
Kits: PA-326167, PA-326167-SD, PA-326840, PA-326840-SD			Unique Parts	
Qty.	Description	Common Parts	PA-326167 PA-326167-SD	PA-326840 PA-326840-SD
1	Bushing, reducer 1/8 x 1			AC-1459
1	Bushing, reducer 3/8 x 3/4	X-202-23		
1	Bushing, reducer 1 x 1-1/4			X-202-32
1	Tee, pipe 1 x 1 x 1			X-203-2
1	Nipple, pipe 1/8 x 3/4			X-217-6
1	Nipple, pipe 1 x 1-1/2			X-218-24
1	Switch, low water temperature	255264		
1	Switch, oil pressure	271425		
1	Plug, freeze	276212		
1	Switch, high water temperature	343160		
1	Switch, vacuum			345207
1	Lead, vacuum switch ground			SW0N-1610-5716
1	Lead, vacuum switch controller			SW63-1648-5722