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## INSTALLATION INSTRUCTIONS

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Original Issue Date: **8/97**

Model: **135-275 kW (Detroit Diesel-Powered Series 50 and 60)**

Market: **Industrial**

Subject: **Solenoid Bypass Kits PA-343364, PA-343364-SD, PA-343365, PA-343365-SD**

The solenoid bypass kit provides a manually operated valve to redirect the fuel supply around the electric fuel solenoid valve. The kit allows for emergency use of the generator set when the fuel solenoid is defective. Close the fuel valve immediately after stopping the generator set. Do not leave the fuel valve open while the generator set is shutdown. Replace the defective fuel solenoid as soon as practical. Observe the following safety precautions while installing the kit.



**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.



**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

**Explosive fuel vapors can cause severe injury or death.** Take additional precautions when using the following fuels:

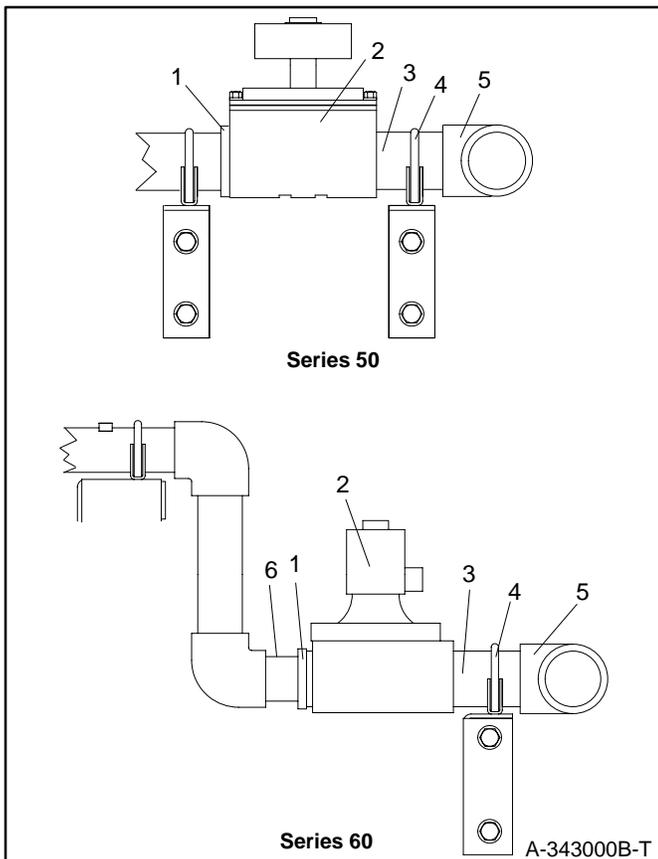
**Natural Gas**—Adequate ventilation is mandatory. Natural gas rises; install natural gas detectors high in room. Inspect detectors often.

## Installation

1. Place the generator set master switch in the OFF position.
2. Disconnect power to battery charger, if equipped.
3. Disconnect the generator set engine starting battery, negative (–) lead first.
4. Turn off fuel supply to generator set.
5. Disconnect fuel supply line at fuel inlet.
6. Remove pipe elbow (X-215-6) from solenoid assembly. If generator set is equipped with an anticipatory alarm kit remove elbow (343382) containing gas pressure valve. Save pipe elbow. See Figure 1.
7. Remove support clamp from pipe connected to solenoid. Save support clamp. See Figure 1.

8. Remove pipe (series 50 X-396-18, series 60 X-396-20) from solenoid. Save pipe from series 50 solenoid assembly. Discard pipe from series 60 solenoid assembly. See Figure 1.
9. Remove solenoid from assembly. Save solenoid.
10. Remove and discard reducer bushing (160212). See Figure 1.
11. **Series 60:** Remove and discard 2.5 in. (63 mm) pipe from bottom elbow and replace with 6.0 in (152 mm) pipe (155029-1). Apply pipe sealant to threads. See Figure 1.

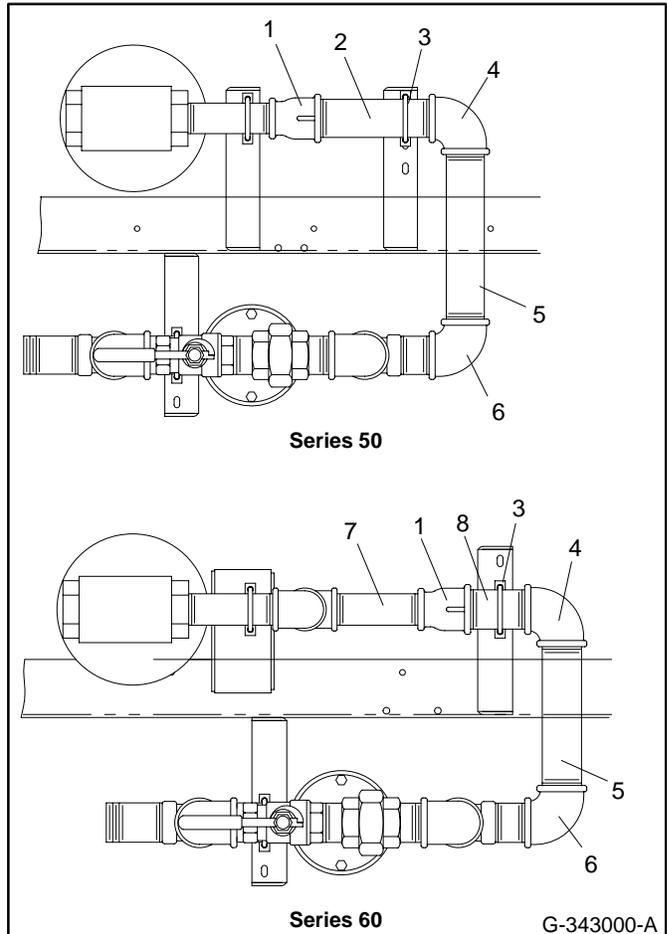
15. Apply pipe sealant to exposed threads of pipe installed in step 13 and install pipe elbow (X-215-6 or 343382 if generator set is equipped with an anticipatory alarm kit) removed earlier in step 6. Position pipe elbow as shown in Figure 2.
16. Apply pipe sealant to threads of 11.5 in. (292 mm) pipe (X-396-23) and install in pipe elbow installed in step 15.
17. Apply pipe sealant to threads of pipe installed in step 16 and install elbow (X-215-6). Position elbow as shown in Figure 2.



1. Reducer bushing (160212)
2. Solenoid
3. Pipe (series 50 X-396-18, series 60 X-396-20)
4. Clamp
5. Pipe elbow (X-215-6)
6. Pipe 2.5 in. (63 mm)

**Figure 1. Standard Solenoid Assembly—Side View**

12. Apply pipe sealant to threads of pipe and install coupling reducer (X-250-1). See Figure 2.
13. **Series 50:** Apply pipe sealant to threads of 8.0 in. (203 mm) pipe (X-396-24) and install in coupling reducer installed in step 12.  
**Series 60:** Apply pipe sealant to threads of 4.5 in. (114 mm) pipe (X-396-21) and install in coupling reducer installed in step 12.
14. Secure pipe to support bracket with clamp removed in step 7

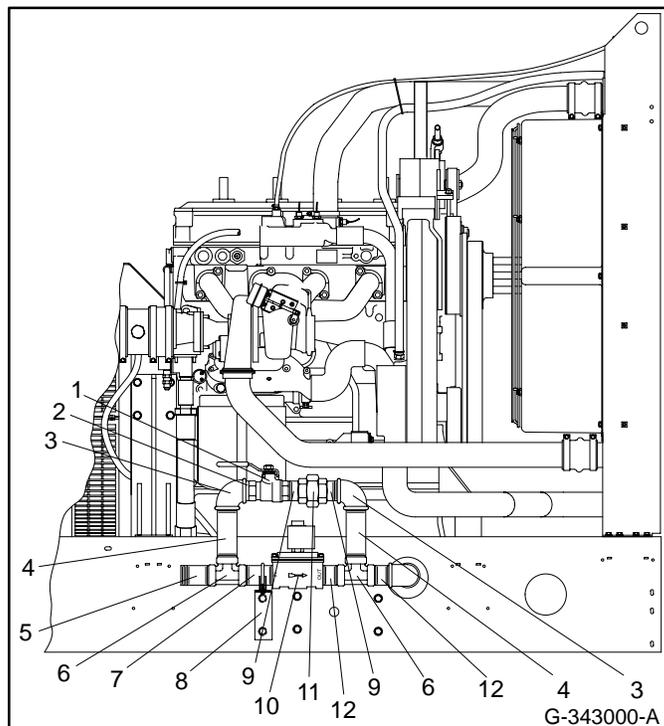


1. Coupling reducer (X-250-1)
2. Pipe (X-396-24) 8.0 in. (203 mm)
3. Existing bracket and clamp
4. Pipe elbow (X-215-6) removed in step 6
5. Pipe (X-396-23) 11.5 in. (292 mm)
6. Elbow 2 NPT (X-215-6)
7. Pipe nipple (155029-1) 6.0 in. (152 mm)
8. Pipe (X-396-21) 4.5 in. (114 mm)

**Figure 2. Solenoid Bypass Installation—Top View**

18. Apply pipe sealant to threads of 3.0 in. (76 mm) pipe (X-396-19) and install in elbow installed in step 17.
19. Apply pipe sealant to exposed threads of pipe installed in step 18 and install pipe tee (X-203-28). Position pipe tee as shown in Figure 3.
20. Apply pipe sealant to threads of 3.0 in. (76 mm) pipe (X-396-19) and install in pipe tee installed in step 19.

21. Secure support bracket (343196) to generator set skid using screws (X-6238-10) and plain washers (X-25-37). See Figure 3 for mounting location.
22. Apply pipe sealant to threads of pipe installed in step 20 and install solenoid. Position solenoid outlet to the front of the generator set. See Figure 3.
23. Apply pipe sealant to threads of 4.5 in. (114 mm) pipe (X-396-21) and install pipe in solenoid inlet. See Figure 3.
24. Secure solenoid assembly to support bracket using clamp (288827).
25. Apply pipe sealant to threads of pipe installed in step 23 and install pipe tee (X-203-28). Position pipe tee as shown in Figure 3.
26. **Series 50:** Apply pipe sealant to threads of 7.0 in. (178 mm) pipe removed from original assembly in step 8 and install pipe vertically in pipe tee on outlet side of solenoid. See Figure 3.  
**Series 60:** Apply pipe sealant to threads of 7.0 in. (178 mm) pipe (X-396-18) supplied in kit and install pipe vertically in pipe tee on outlet side of solenoid. See Figure 3.
27. Apply pipe sealant to threads of pipe installed in step 26 and install 2 NPT elbow (X-215-6). See Figure 3.
28. Apply pipe sealant to threads of 2.5 in. (63 mm) pipe (X-219-8) and install in elbow installed in step 27. See Figure 3.
29. Apply pipe sealant to threads of 7.0 in. (178 mm) pipe (X-396-18) and thread pipe into pipe tee on inlet side of solenoid. See Figure 3.
30. Apply pipe sealant to threads of 7.0 in. (178 mm) pipe installed in step 29 and install elbow (X-215-6). See Figure 3.
31. Apply pipe sealant to threads of 2.0 in. (51 mm) pipe (X-219-9) and install in elbow installed in step 30. See Figure 3.
32. Apply pipe sealant to threads of pipe installed in step 30 and install valve (227255). See Figure 3.
33. Apply pipe sealant to threads of 2.5 in. (63 mm) pipe (X-219-8) and install in valve. See Figure 3.
34. Apply pipe sealant to threads of pipes (X-219-8) and install straight union. See Figure 3.
35. Reconnect fuel supply line.
36. Open fuel supply valve and check for leaks using a soap and water solution. Open and close solenoid bypass valve while checking for fuel leaks.
37. Check that the generator set master switch is in the OFF position.
38. Reconnect the generator set engine starting battery, negative (–) lead last.
39. Reconnect power to battery charger, if equipped.



1. Valve (227255)
2. Pipe (X-219-9) 2.0 in. (51 mm)
3. Elbow 2 NPT (X-215-6)
4. Pipe (X-396-18) 7.0 in. (178 mm)
5. Existing pipe nipple
6. Pipe tee (X-203-28)
7. Pipe (X-396-21) 4.5 in. (114 mm)
8. Support bracket (343196), clamp (288827), screws (X-6238-10), and washers (X-25-37)
9. Pipe (X-219-8) 2.5 in. (63.5 mm)
10. Existing gas solenoid
11. Straight union (X-277-10)
12. Pipe (X-396-19) 3.0 in. (76 mm)

**Figure 3. Solenoid Bypass Installation—Side View**

## Solenoid Bypass Kits

Parts List				
Kits: PA-343364, PA-343364-SD, PA-343365, PA-343365-SD			Unique Parts	
Qty.	Description	Common Parts	PA-343364 PA-343364-SD	PA-343365 PA-343365-SD
2	Washer, plain	X-25-37		
2	Tee, pipe 2" x 2" x 2"	X-203-28		
3	Elbow, pipe 2 NPT	X-215-6		
2	Nipple, pipe 2 NPT x 2.5 in.	X-219-8		
1	Nipple, pipe 2 NPT x 2 in.	X-219-9		
1	Coupling, reducer 1 1/2 x 2	X-250-1		
1	Union, straight	X-277-10		
	Pipe, 2 NPT x 7.0 in.		(1) X-396-18	(2) X-396-18
2	Pipe, 2 NPT x 3.0 in.	X-396-19		
	Pipe, 2 NPT x 4.5 in.		(1) X-396-21	(2) X-396-21
1	Pipe, 2 NPT x 10.0 in.			X-396-22
1	Pipe, 2 NPT x 11.5 in.		X-396-23	
1	Pipe, 2 NPT x 8.0 in.		X-396-24	
2	Screw, h.c. 3/8-16 x 0.750	X-6238-10		
1	Nipple, pipe 1 1/2 x 6.0 in.			155029-1
1	Valve	227255		
1	Clamp, muffler	288827		
1	Bracket, support	343196		