
INSTALLATION INSTRUCTIONS

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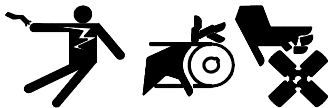
Model: 230–350 kW (Detroit Diesel Series 60)

Market: Industrial

Subject: Hand Prime Fuel Pump Kits PA-343516, PA-343516-SD, PA-343517, PA-343517-SD

Install the hand prime fuel pump kit to eliminate the need for cranking the engine to bleed air from the fuel system after fuel system maintenance, such as replacing the fuel filter(s). Observe the following safety precautions while installing the kit.

⚠ WARNING

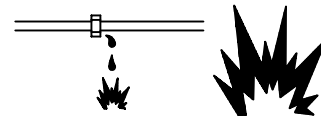


Accidental starting.
Can cause severe injury or death.

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.

⚠ WARNING



Explosive fuel vapors.
Can cause severe injury or death.

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

The fuel system. Explosive fuel vapors can cause severe injury or death. Vaporized fuels are highly explosive. Use extreme care when handling and storing fuels. Store fuels 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 because spilled fuel may ignite on contact with hot parts or from sparks. Do not smoke or permit flames or sparks to occur near sources of spilled fuel or fuel vapors. Keep the fuel lines and connections tight and in good condition. Do not replace flexible fuel lines with rigid lines. Use flexible sections to avoid fuel line breakage caused by vibration. Do not operate the generator set in the presence of fuel leaks, fuel accumulation, or sparks. Repair fuel systems before resuming generator set operation.

Draining the fuel system. Explosive fuel vapors can cause severe injury or death. Spilled fuel can cause an explosion. Use a container to catch fuel when draining the fuel system. Wipe up spilled fuel after draining the system.

Installation

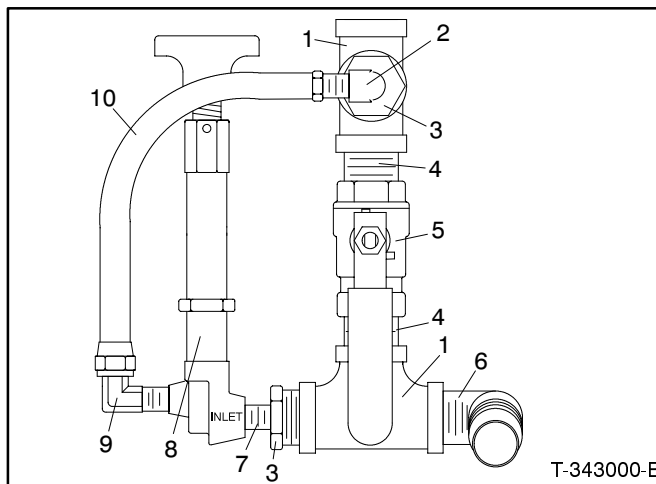
1. Place the generator set master switch in the OFF position.
2. Disconnect the power to the battery charger, if equipped.
3. Disconnect the generator set engine starting battery(ies), negative (–) lead first.

NOTE

Apply pipe sealant to all non-flared threaded fittings.

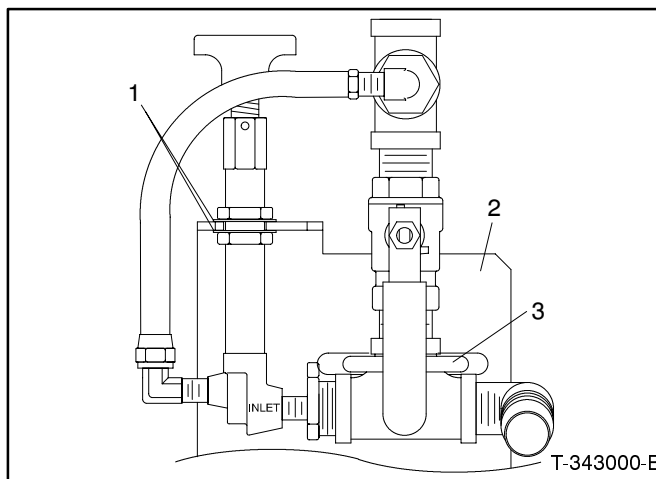
(X-125-31) and two 0.344 in. plain washers (X-25-85). See Figure 3.

18. Thread the bottom brass nut on the pump body down so it will be below the mounting bracket when the assembly is secured to the mounting bracket. See Figure 1.
19. Remove the handle and plunger from the pump.
20. Slide one of the washers (X-25-15) onto the pump body and down onto the bottom brass nut. See Figure 2.
21. Attach the hand pump assembly to the mounting bracket using the U-bolt (X-397-1). See Figure 2.



1. Pipe tee (X-203-13)
2. Elbow (X-555-2)
3. Reducer bushing (X-202-29)
4. Pipe (X-209-2)
5. Shutoff valve (255612)
6. Elbow (X-447-8)
7. Pipe (X-217-6)
8. Hand prime pump (347351)
9. Elbow (X-447-10)
10. Flexible fuel line (270727)

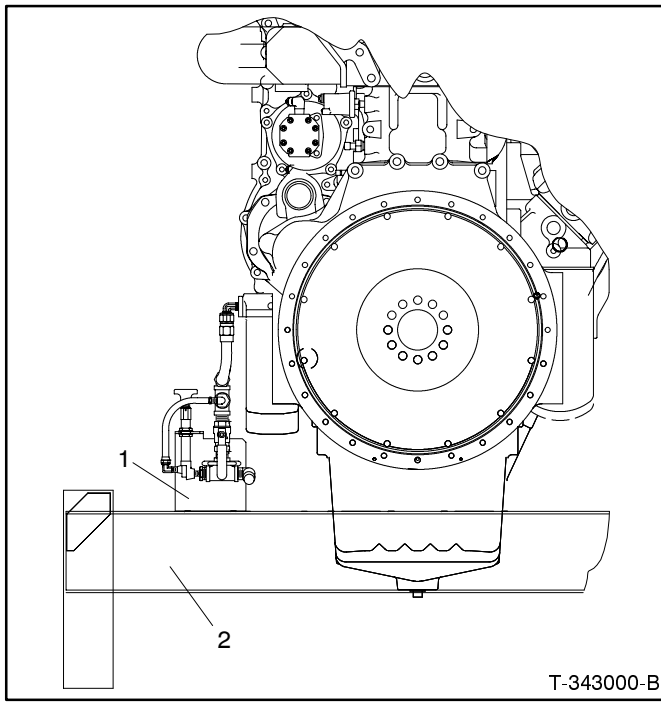
Figure 1. Hand Pump Assembly



1. Washer (X-25-15)
2. Mounting bracket (343515)
3. U-bolt (X-397-1)

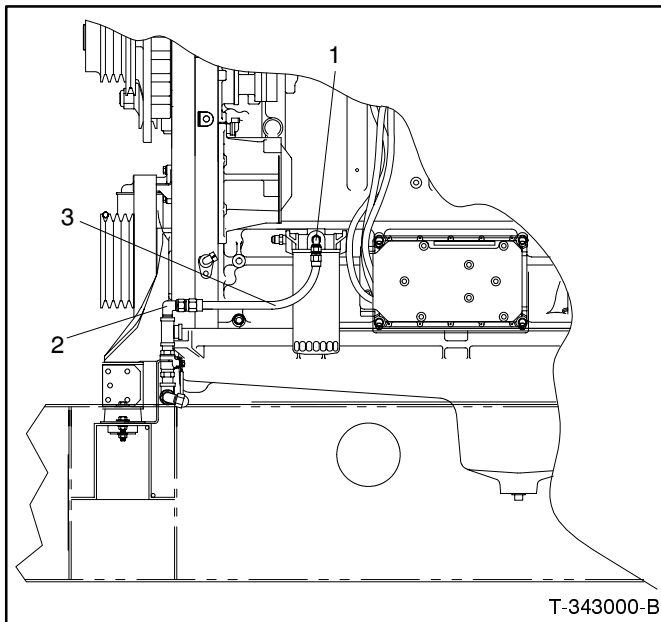
Figure 2. Hand Pump Mounting

4. Apply pipe sealant to the male threads of the 1/8 x 1/2 in. reducer bushing (X-202-29) and install the reducer bushing in one end of the 1/2 in. pipe tee (X-203-13). See Figure 1.
5. Apply pipe sealant to the male threads on the non-flared end of the 7/8-14 x 1/2 in. elbow (X-447-8) and install the elbow in the 1/2 in. pipe tee. Position the elbow as shown in Figure 1.
6. Apply pipe sealant to the threads on one end of the 1/8 x 3/4 in. pipe (X-217-6) and install the pipe in the reducer bushing installed in step 4. See Figure 1.
7. Apply pipe sealant to the exposed threads of the 1/8 in. pipe installed in step 6 and install the hand pump. Position the hand pump as shown in Figure 1.
8. Apply pipe sealant to the threads of the non-flared end of the 7/16-20 x 1/8 in. elbow (X-447-10) and install the elbow into the base of the hand pump. See Figure 1 for positioning of the elbow.
9. Apply pipe sealant to the threads on one end of the 1/2 x 1-3/16 in. pipe (X-209-2) and install the pipe in the 1/2 in. pipe tee. See Figure 1.
10. Apply pipe sealant to the exposed threads of the 1/2 in. pipe installed in step 9 and thread the shutoff valve (255612) onto the pipe. Position the shutoff valve as shown in Figure 1.
11. Apply pipe sealant to the threads on one end of the second 1/2 x 1-3/16 in. pipe (X-209-2) and install the pipe in the top of the shutoff valve. See Figure 1.
12. Apply pipe sealant to the exposed threads of the 1/2 in. pipe installed in step 11 and thread the second pipe tee (X-203-13) onto the pipe. Position the pipe tee as shown in Figure 1.
13. Apply pipe sealant to the male threads of the second 1/8 x 1/2 in. reducer bushing (X-202-29) and install the reducer bushing in the pipe tee installed in step 12. See Figure 1.
14. Apply pipe sealant to the male threads of the 1/8 x 1/8 in. street elbow (X-555-2) and install the elbow in the reducer bushing installed in step 13. Position the elbow as shown in Figure 1.
15. Apply pipe sealant to the male threads of the flexible fuel line (270727) and install the fuel line into the elbow installed in step 14. See Figure 1.
16. Secure the opposite end of the fuel line secured in the previous step to the elbow installed in step 8. See Figure 1.
17. Bolt the hand pump mounting bracket (343515) to the skid cross member with two 5/16-18 x 0.875 in bolts



1. Mounting bracket (343515)
2. Skid cross member

Figure 3. Engine —End View

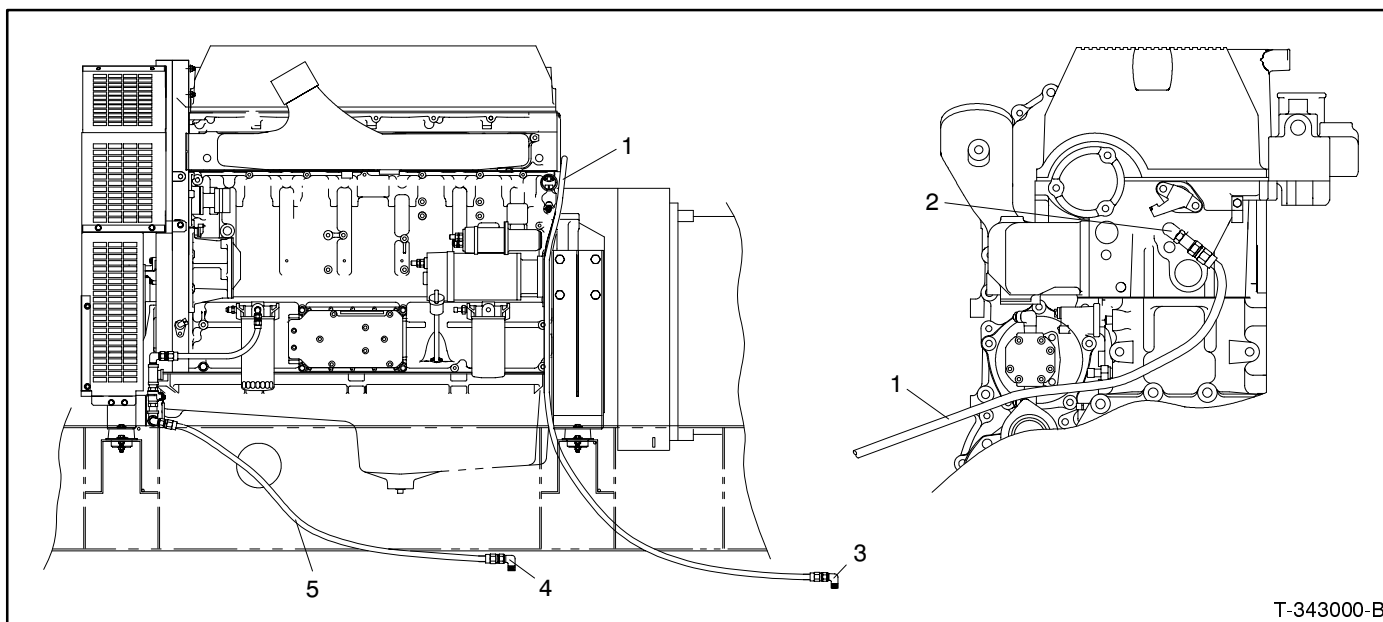


1. Elbow, 7/8-14 x 3/8 in. (X-447-14)
2. Elbow, 7/8-14 x 1/2 in. (X-447-8)
3. Flexible fuel line, 17 in. (274503)

Figure 4. Hand Pump Connections

22. With the pump secured to the mounting bracket slide the second washer (X-25-15) onto the pump body and down onto the top of the mounting bracket. See Figure 2.
23. Install the second brass nut onto the pump body. Tighten both the upper and lower nuts against the mounting bracket. See Figure 2.

24. Reinstall the handle and plunger into the pump and tighten the nut.
25. Apply pipe sealant to the 1/2 in. threads of the 7/8-14 x 1/2 in. elbow (X-447-8) and install the elbow in the pipe tee. See Figure 4.
26. Apply pipe sealant to the 3/8 in. threads of the 7/8-14 x 3/8 in. elbow (X-447-14) and install the elbow in the fuel filter inlet. See Figure 4.
27. Install one end of the 17 in. flexible fuel line (274503) to the fitting installed in step 26. See Figure 4.
28. Install the opposite end of the 17 in. flexible fuel line to the fitting installed in step 25. See Figure 4.
29. For kits **PA-343516** and **PA-343516-SD** go to step 37. For kits **PA-343517** and **PA-343517-SD** go to step 30.
30. Secure one end of the 63 in. (1600 mm) flexible fuel line (274228) to the fuel inlet elbow. See Figure 5.
31. Secure one end of the 70 in. (1778 mm) flexible fuel line (343604) to the fuel return fitting on the back of the engine. See Figure 5.
32. Rotate the fuel return fittings as far down as possible. Verify that the fuel line is not kinked. See Figure 5.
33. Install the 3/4-16 x 3/8 in. elbow (X-447-20) in the free end of the fuel return line. See Figure 5.
34. Install the 7/8-14 x 3/8 in. elbow (X-447-14) in the free end of the fuel inlet line. See Figure 5.
35. Connect the flexible fuel lines to the fuel supply as required.
36. Bleed air from the fuel system according to the engine manufacturer's instructions. Trapped air in the fuel system causes difficult starting and/or erratic engine operation.
37. Check that the generator master switch is in the OFF position.
38. Reconnect the generator set engine starting battery, negative (-) lead last.
39. Reconnect the power to the battery charger, if equipped.



T-343000-B

1. Fuel return flexible fuel line, 70 in. (1.8 m) (343604)
2. Fuel return fitting
3. Elbow, 3/4-16 x 3/8 in. (X-447-20)
4. Elbow, 7/8-14 x 3/8 in. (X-447-14)
5. Fuel inlet flexible fuel line, 63 in. (1.6 m) (274228)

Figure 5. Flexible Fuel Line Connections

Hand Prime Fuel Pump Kit

Parts List				
Kits: PA-343516, PA-343516-SD, PA-343517, PA-343517-SD			Unique Parts	
Qty.	Description	Common Parts	PA-343516 PA-343516-SD	PA-343517 PA-343517-SD
2	Washer, plain, 0.656 in.	X-25-15		
2	Washer, plain, 0.344 in.	X-25-85		
2	Screw, h.c., 5/16-18 x 0.875 in.	X-125-31		
2	Bushing, reducer, 1/8 x 1/2 in.	X-202-29		
2	Tee, pipe, 1/2 in.	X-203-13		
2	Pipe, 1/2 x 1-3/16 in.	X-209-2		
1	Pipe, 1/8 x 3/4 in.	X-217-6		
1	Bolt, U, 5/16-18 x 1-1/2 in.	X-397-1		
2	Elbow, 7/8-14 x 1/2 in.	X-447-8		
1	Elbow, 7/16-20 x 1/8 in.	X-447-10		
	Elbow, 7/8-14 x 3/8 in.		(1) X-447-14	(2) X-447-14
1	Elbow, 3/4-16 x 3/8 in.			X-447-20
1	Elbow, street, 1/8 x 1/8 in.	X-555-2		
1	Valve, shutoff	255612		
1	Line, flexible fuel, 8 in.	270727		
1	Line, flexible fuel, 63 in.			274228
1	Line, flexible fuel, 17 in.	274503		
1	Bracket, fuel pump	343515		
1	Line, flexible fuel, 70 in.			343604
1	Pump, hand prime	347351		

Operation

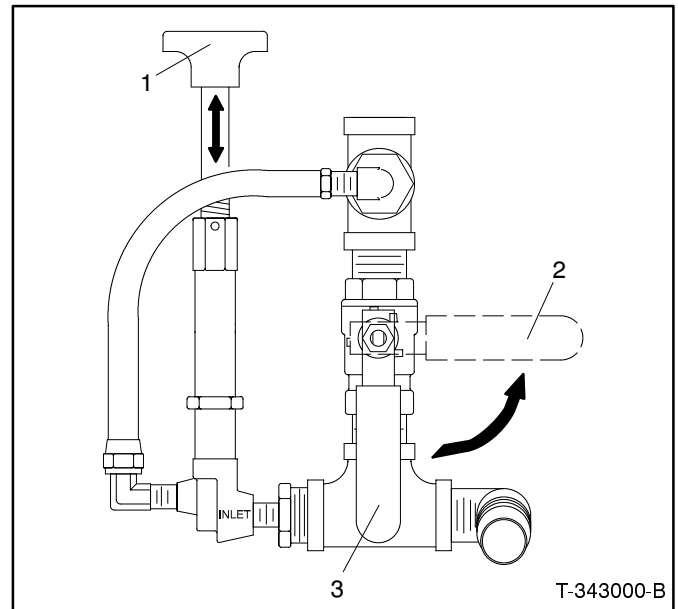
Use the following procedure to prime the fuel system with the hand prime fuel pump kit.

1. Move the hand prime fuel pump valve to the closed position. See Figure 6.
2. Remove the vent screw on the top of the primary fuel filter. Removing the vent screw allows air to be expelled from the fuel system when the hand pump is operated.
3. Operate the hand pump until fuel begins to flow from the vent screw on the top of the primary fuel filter, then stop pumping.
4. Reinstall the vent screw in the top of the primary fuel filter.
5. Return the hand prime fuel pump valve to the open position.

NOTE

The hand prime fuel pump valve must be open during generator set operation. Do not operate the hand pump while the generator set is operating.

6. The generator set is now ready for startup.



1. Hand pump handle
2. Valve in the closed position—pumping
3. Valve in the open position—generator set operating

Figure 6. Hand Pump Operation