
INSTALLATION INSTRUCTIONS

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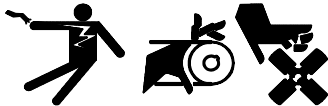
Model: **1250–2000 kW (Detroit Diesel Series 4000)**

Market: **Industrial**

Subject: **Hand Prime Fuel Pump Kits PA-361389, PA-361389-SD, PA-361390, PA-361390-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.

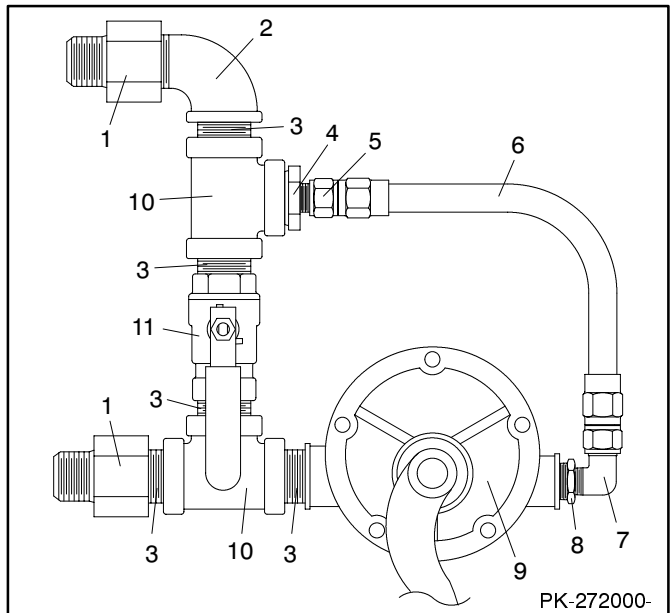
Installation

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

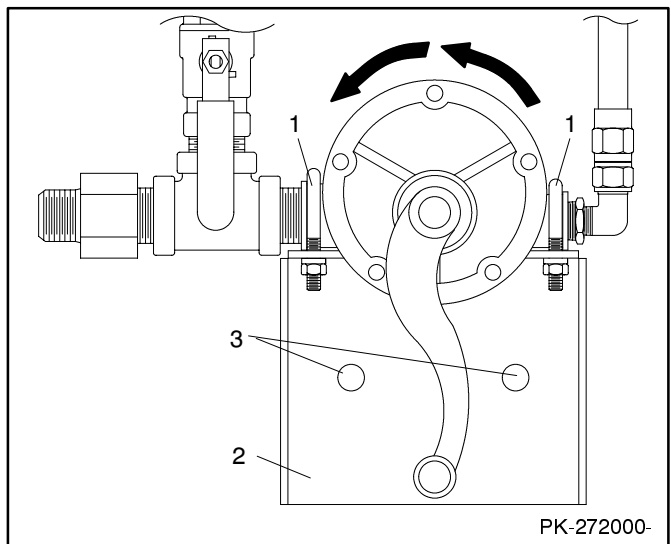
Apply pipe sealant to all non-flared threaded fittings.

4. Apply pipe sealant to the threads on one end of the three 1.5 in. (38 mm) long pipes (X-218-24) and install the pipes in the 1 in. (25 mm) pipe tee (X-203-2). See Figure 1.
5. Apply pipe sealant to the exposed threads of the three pipes installed in step 4. Install the flared tube fitting (361101), pump (361465), and valve (255633) as shown in Figure 1.
6. Apply pipe sealant to the threads on one end of one of the two remaining 1.5 in. (38 mm) long pipes (X-218-24) and install the pipe in the valve. See Figure 1.
7. Apply pipe sealant to the exposed threads of the pipe installed in step 6 and install the second 1 in. (25.4 mm) pipe tee (X-203-2). Position the pipe tee as shown in Figure 1.
8. Apply pipe sealant to the threads on one end of one of the last 1.5 in. (38 mm) pipe (X-218-24) and install the pipe in the pipe tee as shown in Figure 1.
9. Apply pipe sealant to the exposed threads of the pipe installed in step 8 and install the 1 in. (25 mm) street elbow (151385). Position the elbow as shown in Figure 1.
10. Apply pipe sealant to the exposed male threads of the street elbow installed in step 9 and install the second flared tube fitting (361101). See Figure 1.
11. Apply pipe sealant to the male threads of the 1 x 1/2 in. reducer bushing (168848) and install the reducer bushing in the pipe tee. See Figure 1.
12. Apply pipe sealant to the 1/2 in. male threads of the half-union connector and install the connector in the reducer bushing installed in step 11. See Figure 1.
13. Apply pipe sealant to the male threads of the 1/3 x 3/4 in. reducer bushing (X-202-41) and install the reducer bushing in the end of the pump. See Figure 1.



1. Flared tube fitting (361101)
2. Elbow, 1 in. (151385)
3. Pipe, 1.5 in. (127 mm) (X-218-24)
4. Reducer bushing, 1 x 1/2 in. (168848)
5. Half-union connector (X-296-7)
6. Flexible fuel line, 17 in. (431 mm) (274503)
7. Elbow, 7/8-14 x 1/2 in. (X-447-8)
8. Reducer bushing, 1/2 x 3/4 in. (X-202-41)
9. Pump (361465)
10. Pipe tee, 1 in. (25 mm) (X-203-2)
11. Valve (255633)

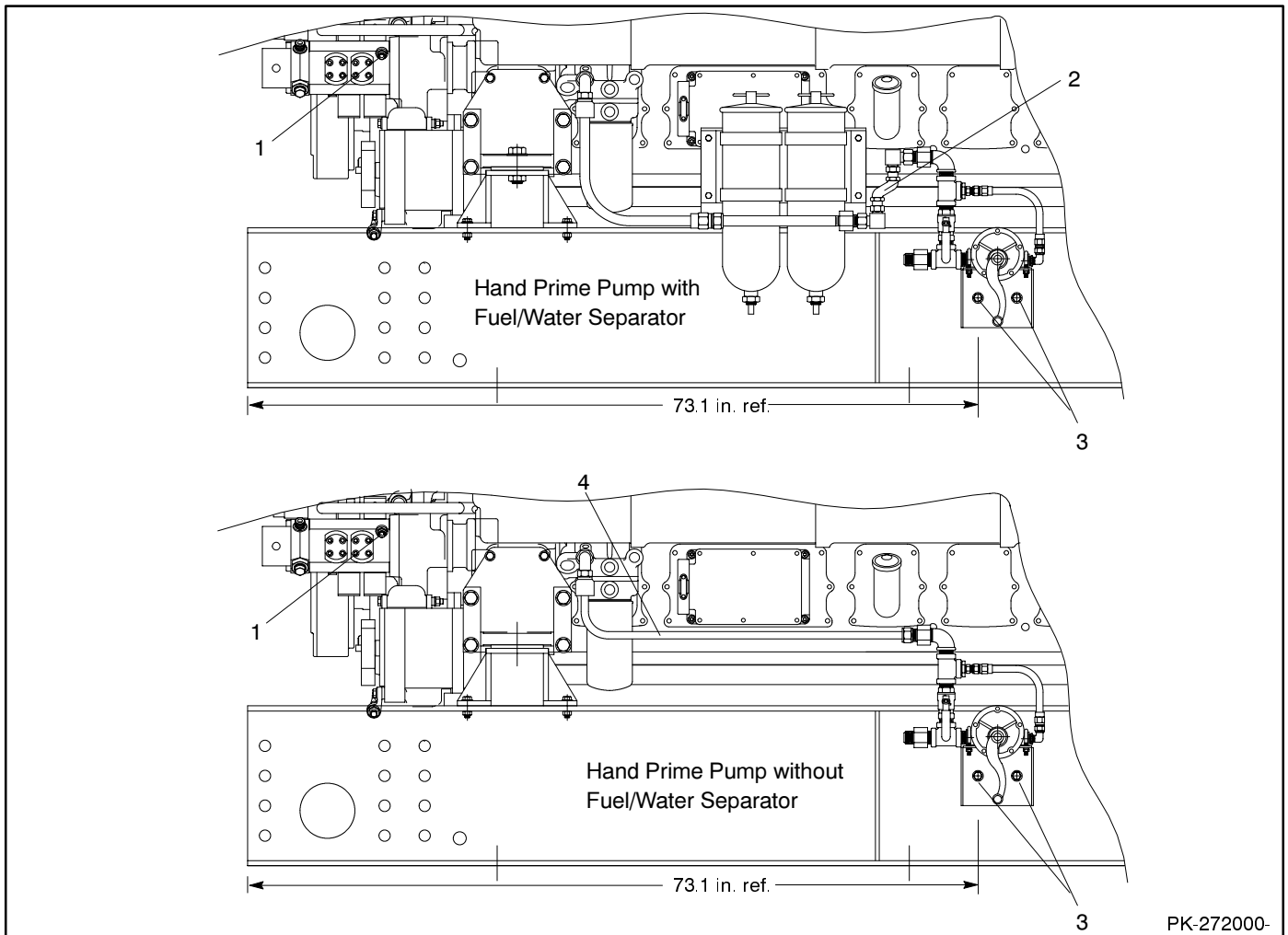
Figure 1. Hand Prime Pump Assembly



1. U-bolt (X-397-3)
2. Pump mounting bracket (361466)
3. 1/2-13 x 1.5 in. bolts (X-129-19) and 1/2-13 spiralock nuts (X-6210-12)

Figure 2. Hand Prime Pump Mounting

14. 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 reducer bushing installed in step 13. Position the elbow as shown in Figure 1.
15. Apply pipe sealant to the exposed threads of the elbow installed in step 14 and the half-union connector installed in step 12. Install the 17 in. (432 mm) flexible fuel line (274503). See Figure 1.
16. Bolt the hand prime pump mounting bracket to the generator set skid with two 1/2-13 x 1.5 in. bolts (X-129-19) and spirallock nuts (X-6210-12). See Figure 3 for the mounting bracket location.
17. Attach the hand prime pump assembly to the the mounting bracket with the two U-bolts (X-397-3). See Figure 2.
18. Install the fuel inlet flexible fuel line. Apply pipe sealant to both of the connections. Generator sets equipped with a fuel/water separator use a 14 in. (356 mm) flexible fuel line (361469). Generator sets without a fuel/water separator use a 39 in. (991 mm) flexible fuel line (361468). See Figure 3.
19. 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.
20. Check that the generator master switch is in the OFF position.
21. Reconnect the generator set engine starting battery, negative (-) lead last.
22. Reconnect the power to the battery charger, if equipped.



1. Bleed point
2. Flexible fuel line (361469)
3. 1/2-13 x 1.5 in. bolts (X-129-19) and 1/2-13 spirallock nuts (X-6210-12)

4. Flexible fuel line (361468)

Figure 3. Pump Assembly Installation

PK-272000-

Hand Prime Fuel Pump Kits

Parts List				
Kits: PA-361389, PA-361389-SD, PA-361390, PA-361390-SD			Unique Parts	
Qty.	Description	Common Parts	PA-361389 PA-361389-SD	PA-361390 PA-361390-SD
2	Screw, 1/2-13 x 1.5 in.	X-129-19		
1	Bushing, reducer, 1/2 x 3/4 in.	X-202-41		
2	Tee, pipe, 1 in. NPT	X-203-2		
5	Nipple, pipe, 1 x 1-1/2 in.	X-218-24		
1	Connector, half union	X-296-7		
2	Bolt, U	X-397-3		
1	Elbow, 7/8-14 x 1/2 in.	X-447-8		
2	Nut, spiralock, 1/2-13	X-6210-12		
1	Elbow, street, 1.0 in. NPT	151385		
1	Bushing, reducer 1/2 x 1 in.	168848		
1	Valve	255633		
1	Line, flexible fuel, 17.0 in.	274503		
2	Fitting, flared tube	361101		
1	Pump, prime	361465		
1	Bracket, prime pump	361466		
1	Line, flexible fuel		(14 in.) 361469	(39 in.) 361468

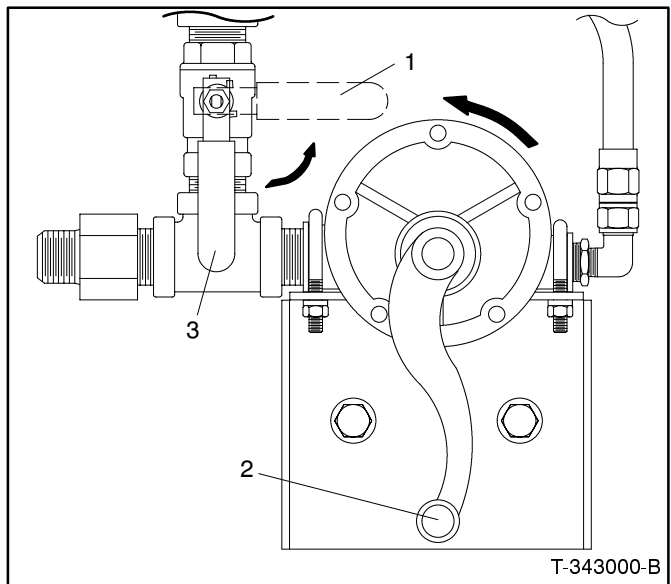
Operation

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 4.
2. Loosen the bleed point on the fuel pump. See Figure 3. Loosening the bleed point 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 bleed point, then stop pumping.
4. Tighten the bleed point.
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.



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

Figure 4. Hand Pump Operation

6. The generator set is now ready for startup.