
INSTALLATION INSTRUCTIONS

Original Issue Date: 11/93

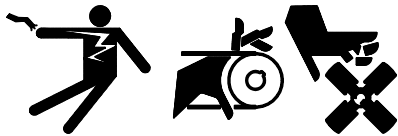
Model: 200-400 kW

Market: Industrial

Subject: Subbase Fuel Tank Kits PA-336116 to PA-336124,
PA-336116-SD to PA-336124-SD

Subbase fuel tanks provide fuel storage immediately beneath the generator set so the engine fuel transfer pump can easily draw fuel for starting and running. The subbase fuel tank also provides a convenient location for connection of fuel injector return lines.

WARNING



Accidental starting.

Can cause severe injury or death.

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

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 any equipment connected to generator set. The generator set can be started by automatic transfer switch or remote start/stop switch unless these precautions are followed.

WARNING



Explosive fuel vapors.

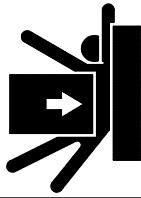
Can cause severe injury or death.

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

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 potential 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. Flexible sections are used to avoid breakage due to vibration. If any fuel leakage, fuel accumulation, or electrical sparks are noted, DO NOT OPERATE GENERATOR SET. Repair systems before resuming generator set operation

Explosive fuel vapors can cause severe injury or death. Storing gasoline and other volatile fuels in day or subbase fuel tanks can cause an explosion. Store only diesel fuel in these tanks.

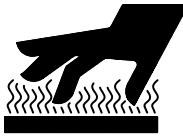
⚠ WARNING



**Unbalanced weight.
Improper lift can cause severe injury or death
and/or equipment damage.**

Do not use lifting eyes.
Use lifting bars through holes in skid to lift
generator set.

⚠ WARNING



**Hot engine and exhaust system.
Can cause severe injury or death.**

Do not work on generator set until it is allowed to
cool.

Hot parts can cause severe injury or death. Do not
touch hot engine parts. An engine gets hot while running
and exhaust system components get extremely hot.

Fuel Tank Kit/Part Numbers

Fuel Tank Capacity Gal. (L)	Fuel Tank Kit Number	Fuel Tank Part Number Included in Kit
200 kW 100 (378)	PA-336116 PA-336116-SD	336139
150 (568)	PA-336117 PA-336117-SD	336140
250 (946)	PA-336118 PA-336118-SD	336141
230-300 kW 100 (378)	PA-336119 PA-336119-SD	336142
150 (568)	PA-336120 PA-336120-SD	336143
250 (946)	PA-336121 PA-336121-SD	336144
350-400 kW 100 (378)	PA-336122 PA-336122-SD	336145
150 (568)	PA-336123 PA-336123-SD	336146
250 (946)	PA-336124 PA-336124-SD	336147

Fuel Tank Specifications

Fuel Tank Capacity Gal. (L)	Fuel Tank Height in. (mm)	Fuel Tank Width in. (mm)	Fuel Tank Length in. (mm)
200 kW 100 (378)	8 (203)	50 (1270)	120 (3048)
150 (568)	10 (254)	50 (1270)	120 (3048)
250 (946)	16 (394)	50 (1270)	120 (3048)
230-300 kW 100 (378)	8 (203)	50 (1270)	108 (2743)
150 (568)	10 (254)	50 (1270)	108 (2743)
250 (946)	16 (394)	50 (1270)	108 (2743)
350-400 kW 100 (378)	8 (203)	50 (1270)	114 (2896)
150 (568)	10 (254)	50 (1270)	114 (2896)
250 (946)	16 (394)	50 (1270)	114 (2896)

Installation

1. Turn generator set master switch to OFF position. Disconnect generator set engine starting battery, negative (–) lead first.
2. Calculate the weight of the generator set and accessories (including subbase fuel tank and fuel) to determine the strength of the mounting pad construction. Use applicable generator set spec sheet for data.

NOTE

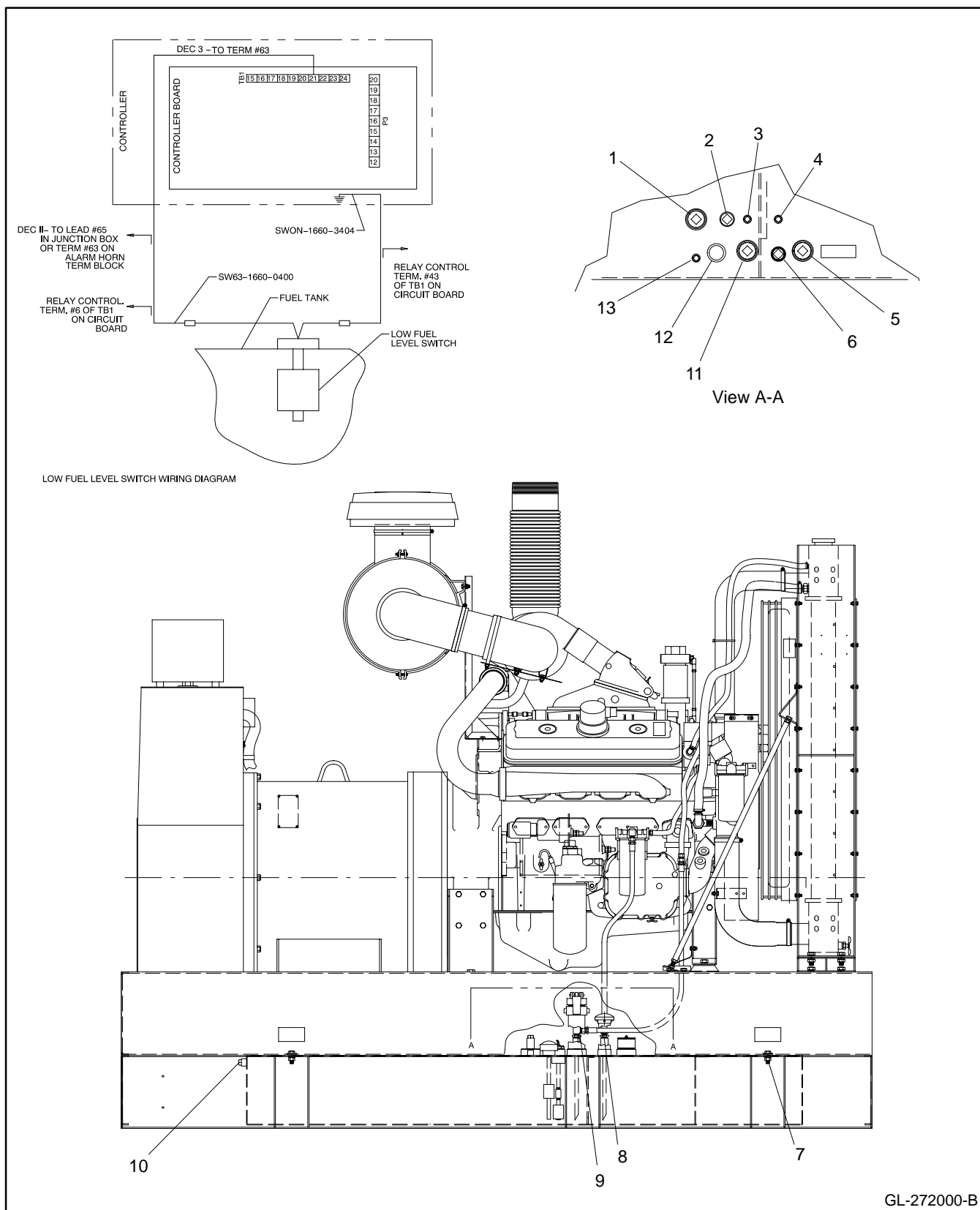
Use the formulas below to calculate total weight (lbs.) of the tank and fuel:

Fuel weight (lbs.) = Tank capacity (gal) x 7.3 (lbs.)

Total weight of fuel tank and fuel (lbs.) = Fuel weight + tank weight (see specifications chart)

Total weight of generator set with subbase fuel tank (lbs.) = Total weight of tank and fuel + weight of generator set (see spec sheet)

3. Use applicable generator set spec sheet and dimensional drawing to size mounting pad.
4. Attach the subbase fuel tank to mounting pad concrete using anchor bolts placed in the cement before it has set. Otherwise, install anchors later by drilling holes in the concrete.
5. Hoist the generator set into place and bolt it to the subbase fuel tank. Torque mounting bolts to 240 ft. lbs. (325 Nm). Size all hoist equipment accordingly.
6. Install the optional fuel gauge (if required). The fuel gauge fits into the fuel gauge fitting in the tank. See Figure 1.
7. Install optional low fuel level switch (if required). Remove 1 1/4-in. NPT pipe plug from tank. Pipe plug will not be reused. Apply pipe sealant to threads of switch and install.
8. Connection of low fuel level switch leads 63 and N varies depending upon which controller is used. See Low Level Switch Wiring Diagram in Figure 1 for connection. Use cable ties as necessary to secure leads.
9. Install flexible fuel line kit. Refer to installation instructions provided with kit. Connect two lines—one supply line and one return line—between the generator set and the subbase fuel tank.



1. Level sensor (day tank model only)
2. Fuel level switch (optional)
3. Fuel return
4. Fuel supply
5. Emergency pressure relief valve (optional)
6. Vent cap (optional)
7. Mounting hardware (X-6239-3, X-26-10, X-88-12, X-25-29)
8. Fuel supply line (X-202-28)
9. Fuel return line (X-202-28)
10. Pump overflow (day tank models only)
11. Sealed fill cap (optional)
12. Fuel gauge/cap (optional)
13. Pump inlet (day tank model only)

Figure 1. Subbase Fuel Tank Installation Drawing 200-400 kW

10. For subbase fuel tank with a day tank install transfer pump kit and float switch. See Figure 3. For subbase fuel tank without a day tank proceed to step 11.

NOTE

Transfer pump and controller box assembly are shown at suggested mounting locations.

- a. Remove cover plate from controller box assembly (A-224818). Mount controller box assembly to skid using two screws, washers, and nuts supplied with the controller box assembly. Do not yet install cover plate.
- b. Mount transfer pump assembly (A-290024) to skid. See Figure 2.
- c. Remove pipe plug for fuel inlet connection at subbase fuel tank. Pipe plug is not reused. Apply pipe sealant to male ends of 1/2 to 1/4-in. NPT reducer bushing (X-202-12) and elbow hose connector (X-391-20). Install reducer bushing into subbase fuel tank and install elbow hose connector into reducer bushing. Point elbow hose connector toward transfer pump assembly when final tightened.
- d. Apply pipe sealant to elbow hose connector (X-391-20) and install into transfer pump assembly outlet. Point elbow hose connector toward subbase fuel tank when final tightened.
- e. Slide hose clamps (X-426-10) over each end of flexible fuel line (X-386-102) approximately 1 in. (25.4 mm). Install fuel line to transfer pump assembly outlet and subbase tank inlet. Locate hose clamps approximately 1/4 in. (6 mm) from fuel line end and tighten.
- f. Remove pipe plug for float switch installation from subbase fuel tank. Pipe plug is not

reused. Apply pipe sealant to threads of float switch and install in subbase fuel tank.

- g. Connect float switch leads to controller as follows:
Yellow to Yellow
Red to Red
Black or Brown to Brown
- h. Install conduit connector (156327) to transfer pump assembly.
- i. Connect green, white, and black leads of controller box to transfer pump assembly. Remove electric motor access plate. Connect green lead to green screw, white lead to silver screw, and black lead to brass screw. Refer to schematic on electric motor and motor wiring schematic shown in Figure 3 to make connections. Replace electric motor access plate.

NOTE

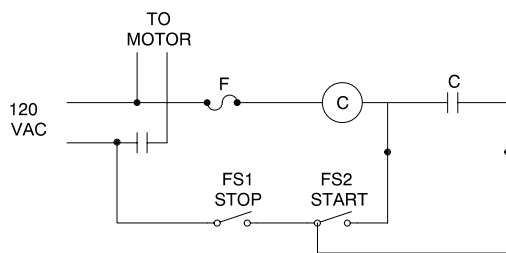
Electric motor rotation must be clockwise for transfer pump operation. Check motor schematic for correct rotation. If rotation is counterclockwise, motor will operate but transfer pump will not pump fuel.

- j. Make AC voltage connections to controller box assembly. Remove knockout and add conduit as necessary. Replace controller box cover.
- k. Leave circuit breaker connected to transfer pump assembly power line open until external fuel tank is filled and all piping completed.

NOTE

Seal all unused fittings with steel pipe plugs. The plastic plugs in these fittings are for shipping and are not intended for permanent use.

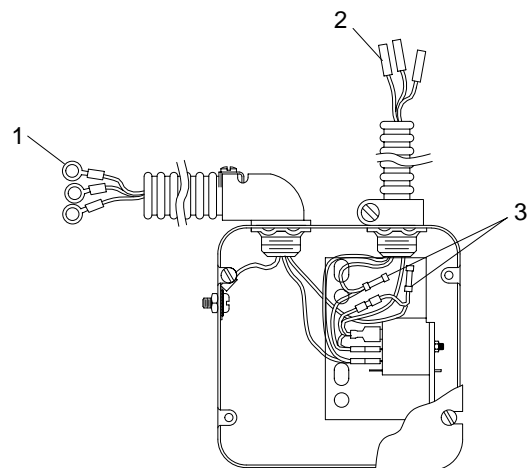
11. Complete the remaining installation and start-up procedures as required by contractor/ distributor.



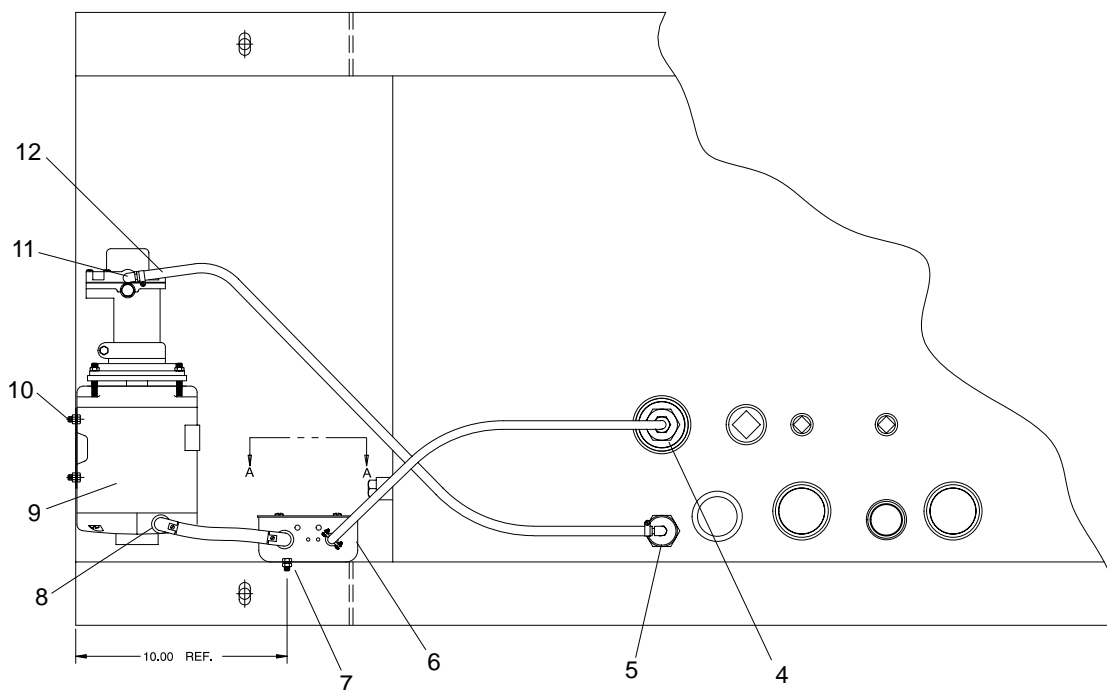
SCHEMATIC

FS1= FLOAT SWITCH STOP
 FS2= FLOAT SWITCH START
 C= CONTROL RELAY
 F= INLINE FUSE

NOTE:
 FS1 AND FS2 ARE ON THE SAME
 STEM AND ARE INSTALLED IN THE
 SAME TANK PORT.



VIEW A-A



GM-272000

- | | |
|---|--|
| 1. Motor leads | 7. Mounting hardware (X-50-3, X-25-36, X-6210-5) |
| 2. Float switch control wires | 8. Conduit elbow connector (156327) |
| 3. 120 VAC power connections | 9. Motor pump assembly (A-290024) |
| 4. Float switch | 10. Mounting hardware (X-125-5, X-25-85, X-6210-7) |
| 5. Reducer bushing (X-202-12) and elbow hose connector (X-391-20) | 11. Elbow hose connector (X-391-20) |
| 6. Controller box assembly (A-274818) | 12. Fuel line |

Figure 2. Subbase Fuel Tank with Day Tank Option Installed

Subbase Fuel Tank Kits.

Parts List					
KITS: PA-336116, PA-336116-SD, PA-336117, PA-336117-SD, PA-336118, PA-336118-SD			Unique Parts		
Qty.	Description	Common Parts	PA-336116 PA-336116-SD	PA-336117 PA-336117-SD	PA-336118 PA-336118-SD
12	Washer, plain	X-25-29			
6	Nut, hex	X-88-12			
2	Bushing, reducer 3/8 x 1/2	X-202-28			
1	Union, straight	X-695-3			
6	Screw, H.C.	X-6239-3			
1	Line, flexible fuel	274736			
1	Line, flexible fuel	324512			
1	Tank, subbase fuel		336139	336140	336141

Parts List					
KITS: PA-336119, PA-336119-SD, PA-336120, PA-336120-SD, PA-336121, PA-336121-SD			Unique Parts		
Qty.	Description	Common Parts	PA-336119 PA-336119-SD	PA-336120 PA-336120-SD	PA-336121 PA-336121-SD
4	Washer, plain	X-25-26			
12	Washer, plain	X-25-29			
6	Nut, hex	X-88-12			
4	Nut, spiralock	X-6210-12			
6	Screw, H.C.	X-6239-3			
1	Tank, subbase fuel		336142	336143	336144

Parts List					
KITS: PA-336122, PA-336122-SD, PA-336123, PA-336123-SD, PA-336124, PA-336124-SD			Unique Parts		
Qty.	Description	Common Parts	PA-336122 PA-336122-SD	PA-336123 PA-336123-SD	PA-336124 PA-336124-SD
12	Washer, plain	X-25-29			
6	Nut, hex	X-88-12			
2	Bushing, reducer 3/8 x 1/2	X-202-28			
6	Screw, H.C.	X-6239-3			
1	Tank, subbase fuel		336145	336146	336147

Transfer Pump Kit.

Parts List		
KIT: PA-224875		
Qty.	Description	Part Number
1	Box assembly, controller	A-224874
1	Pump assembly, motor	A-290024
1	Bushing, reducer 1/4 x 1	X-202-12
1	Hose	X-386-102
2	Connector, hose elbow	X-391-20
2	Clamp, hose	X-426-10
1	Connector, conduit elbow	156327