
INSTALLATION INSTRUCTIONS

Original Issue Date: 5/96

Model: 20-2000 kW with Microprocessor Controller

Market: Industrial

Subject: Remote Connection Kits PAA-344422, PAA-344422-SD,
PAA-344423, PAA-344423-SD, PAA-344505, PAA-344505-SD,
PA-344559, PA-344559-SD

Use the 5 ft. (2 m), 15 ft. (5 m), 25 ft. (8 m), or 40 ft. (12 m) remote connection kit to mount the microprocessor controller in a remote location. The connection box mounts to the junction box in place of the controller and connects to the generator set. A wiring harness connects the connection box to the remote mounted controller. Observe the following safety precautions during installation.



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	
<p>Hazardous voltage.</p>	<p>Moving rotor.</p>
<p>Can cause severe injury or death.</p> <p>Operate generator set only with all guards and electrical enclosures in place.</p>	

Grounding generator set. Hazardous voltage can cause severe injury or death. Electrocutation is possible whenever electricity is present. Open main circuit breakers of all power sources before servicing equipment. Configure the installation to electrically ground the generator set and electrical circuits when in use. Never contact electrical leads or appliances when standing in water or on wet ground, as the chance of electrocution is increased under such conditions.

Short circuits. Hazardous voltage can cause severe injury or death. Short circuits can cause bodily injury and/or equipment damage. Do not contact electrical connections with tools or jewelry while adjustments are made. Remove wristwatch, rings, and jewelry before servicing equipment.

Installation

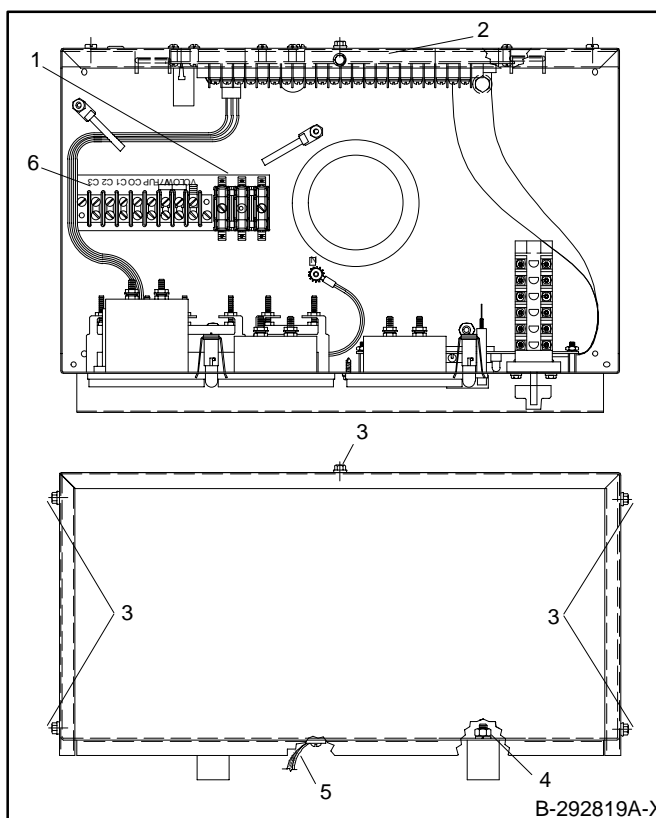
1. Place the generator set master switch in the OFF position.
3. Remove generator set controller cover.
2. Disconnect the generator set engine starting battery(ies), negative (–) lead first.

4. Disconnect the following external leads from the controller:
 - a. Plug P1 from the controller board.
 - b. Leads V7, V8, and V9 from the AC fuse terminal block.
 - c. Leads V0, C0, C1, C2, and C3 from CT/meter terminal block.
 - d. Lead 5 (water temperature sender input) from water temperature gauge.
 - e. Lead 7C (oil pressure sender input) from oil pressure gauge.
 - f. Connector at voltage adjustment potentiometer leads 67 and 68 (if so equipped).
 - g. Controller ground strap.
5. Remove four controller mounting nuts and washers (save hardware for mounting the remote connection box). Carefully push wires through hole in the bottom of controller and remove controller assembly. See Figure 1.
6. Mount controller assembly in remote location with customer-supplied mounting hardware. Do not mount controller at a distance greater than the length of the remote harness.
7. Insert generator leads through grommet of remote connection box. Route leads through cable tie loop and connect leads to corresponding terminals on terminal blocks. See Figure 2.
8. Connect plug P1 to corresponding connector on the remote connection box.
9. Secure remote connection box assembly (A-347239) to controller mounts on generator junction box. Secure with nuts and washers removed in step 5.

NOTE

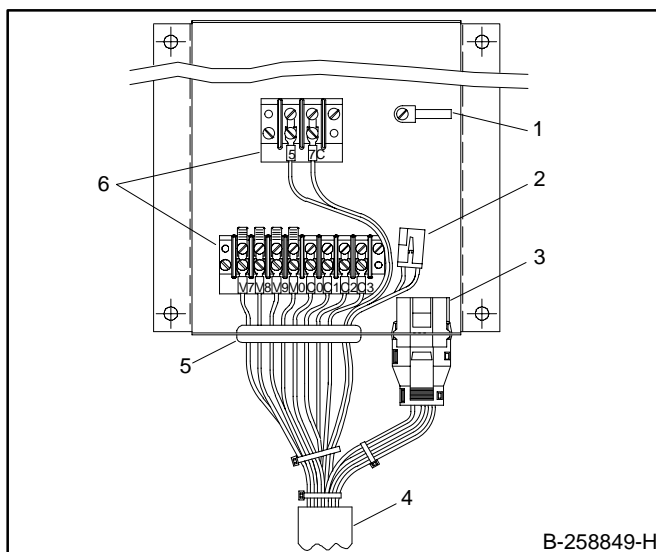
Verify that all connections are tight and leads are securely attached to the inside of the junction box before mounting connection box to junction box.

10. Route 40 ft. (11 m) wiring harness to the remote mounted controller. Connect harness leads to corresponding terminals. See Figure 3 and Figure 4.
11. Reinstall generator set controller cover.
12. Check that the generator set master switch is in the OFF position.
13. Reconnect generator set engine starting battery(ies), negative (–) lead last.



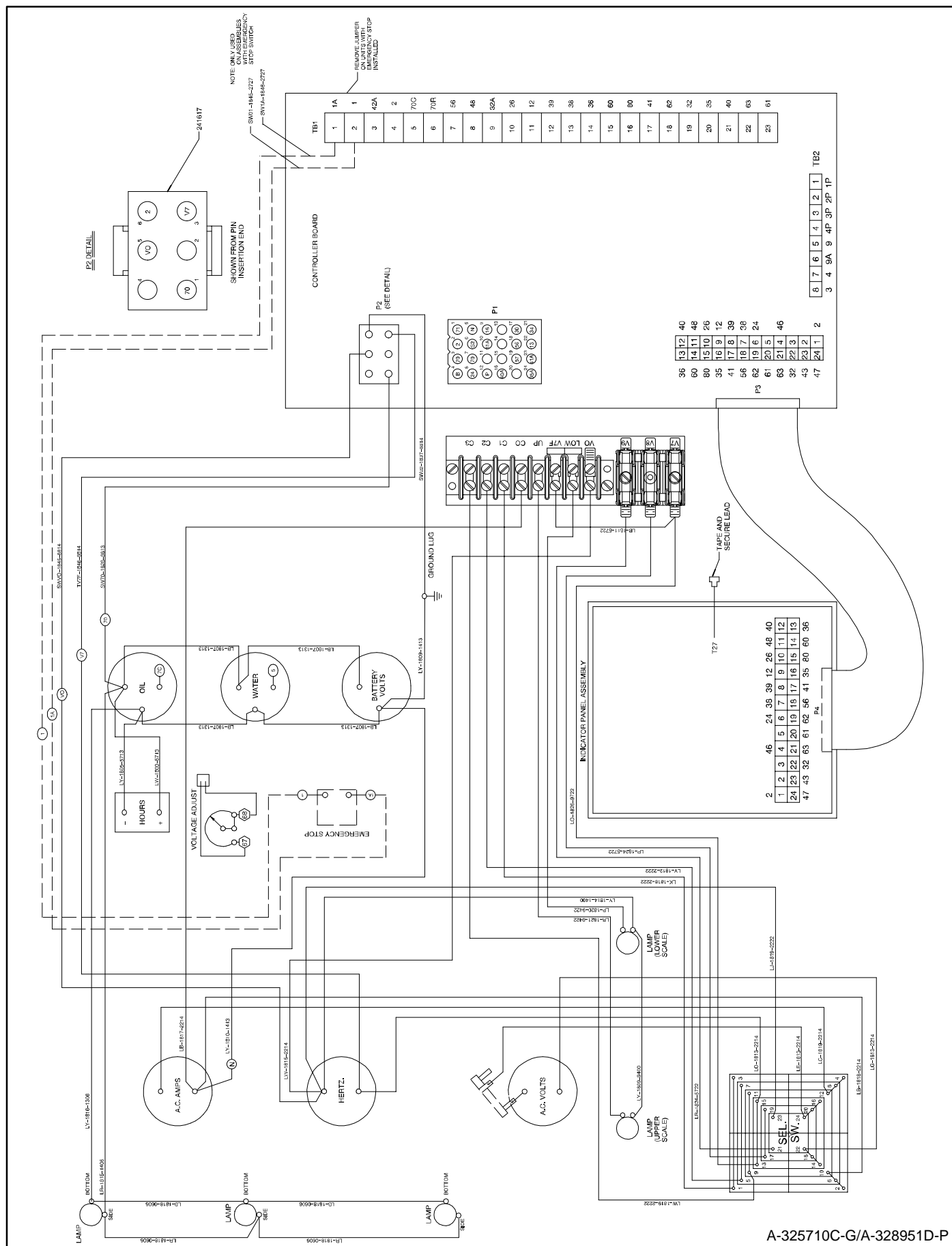
1. AC fuse terminal block
2. Controller board
3. Controller cover screws
4. Controller mounting nuts
5. Ground strap
6. CT/meter terminal block

Figure 1. Controller Assembly



1. Cable tie loop
2. Connector P2
3. Connector P1
4. Wiring harness (40 ft. [11 m])
5. Grommet
6. Terminal block

Figure 2. Remote Connection Box Assembly



TB1 Terminal Strip

1	Ground—emergency stop relay (K4)—Connect emergency stop across terminals TB1-1 and 1A†
1A	Emergency Stop Relay (K4) coil; negative side—Connect emergency stop across terminals TB1-1 and 1A†
2	Ground terminal
12	Overcrank (OC) signal*
26	Auxiliary (AUX) signal*
32	Common Fault/Prealarm Line 1—A/V alarm or common fault relay activated by OC, 12; AUX, 26; LWT, 35; HET, 36; LOP, 38; OS, 39; AHET, 40; ALOP, 41; and LF, 63 faults
32A	Common Fault/Prealarm Line 2—A/V alarm or common fault relay activated by AUX, 26; HET, 36; LOP, 38; OS, 39; and ES, 48 faults
35	Low water temperature (LWT) signal
36	High engine temperature (HET) signal*
38	Low oil pressure (LOP) signal*
39	Overspeed (OS) signal*
40	Anticipatory high engine temperature (AHET) signal*
41	Anticipatory low oil pressure (ALOP) signal*
42A	Battery voltage (fuse #1 protected)—Accessory power supply; Customer may also provide separate accessory power source
48	Emergency stop (ES) signal*
56	Air damper (AD) switch (if equipped). Standard on all 200-2000 kW Detroit Diesel powered models
60	System ready signal*
61	Battery charger fault—Connect battery charger alarm contact to TB1-61 to activate fault lamp (active low) (if used)
62	Low battery volts—Connect battery charger alarm contact to TB1-62 to activate fault lamp (active low) (if used)
63	Low fuel (LF) fault—Connect fuel level sensor to TB1-63 to activate fault lamp (active low) (if used)
70C	Generator in cool down mode signal
70R	Generator in running mode signal
80	Not in auto signal*

NOTE: Not all terminals are used for all generator sets (see appropriate wiring diagrams for specific generator set model)

† Connect jumper across terminals 1 and 1A if emergency stop switch is not used.

* Use a remote annunciator and/or A/V alarm kit as an indicator with a dry contact kit connected to controller terminal strip TB1.

TB2 Terminal Strip

1P	Prime power operation
2P	Prime power operation
3	Remote start ground—Connect transfer switch or remote start switch to TB2-3 and TB2-4
3P	Prime power operation
4	Remote start—Connect transfer switch or remote start switch to TB2-3 and TB2-4
4P	Prime power operation
9	Crank mode selection (open—cyclic crank; ground—continuous crank). Connect TB2-9 to TB2-9A for continuous cranking; leave TB2-9 open cyclic cranking—see Starting
9A	Crank mode ground

NOTE: To use prime power mode—place jumpers across TB2-1P to TB2-2P, TB2-3P to TB2-4P, and TB2-3 to TB2-4. To deactivate prime power mode—remove jumpers across TB2-1P to TB2-2P, TB2-3P to TB2-4P, and TB2-3 to TB2-4.

Figure 4. Controller TB1 and TB2 Terminal Strip Identification

Remote Connection Kits

Parts List						
Kits: PAA-344422, PAA-344422-SD, PAA-344423, PAA-344423-SD, PAA-344505, PAA-344505-SD, PA-344559, PA-344559-SD			Unique Parts			
Qty.	Description	Common Parts	PAA-344422 PAA-344422-SD	PAA-344423 PAA-344423-SD	PAA-344505 PAA-344505-SD	PA-344559 PA-344559-SD
1	Box, assembly (includes*)	A-347239				
1	*Grommet, 2 1/8 x 2 1/2	X-284-10				
1	*Tie, cable nylon	X-468-3				
1	*Tie, cable 21 in.	X-468-7				
2	Screw, r.h.m. 8-32 x 0.50 in.	X-51-15				
4	*Screw, r.h.m. 8-32 x 0.625 in.	X-51-53				
4	*Terminal	238898				
1	*Block, terminal (4)	243845				
1	*Block, terminal (10)	246115				
1	*Harness, wiring		344503	344504	347238	344557
1	*Box, remote connection	258845				
1	*Marker, strip (4)	258848				
1	*Marker, strip (10)	282824				