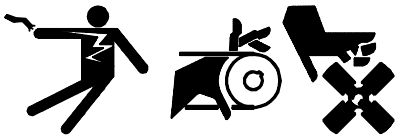
INSTALLATION INSTRUCTIONS

Original Issue Date: **7/96**
Model: **COM-6/90 Volt**
Market: **Industrial**
Subject: **End Bracket Replacement and Carburetor Mounting Adjustment**

Use the following procedure to replace the generator set end bracket on COM-6/90 Volt units with spec numbers PA-195001 or PA-195002 and serial numbers below 366963. Refer to SB-550, included as the last page of this instruction for reference purposes only for end bracket change program information. This procedure also verifies correct throttle adjustment to prevent unwanted shutdown at light or no load.

Read this entire document before using this procedure. Observe the following safety precautions during installation.

⚠ WARNING



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 site power system or remote start/stop switch unless these precautions are followed.

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Hazardous voltage.

Moving rotor.

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Operate generator set only with all guards and electrical enclosures in place.

Grounding generator set. Hazardous voltage can cause severe injury or death. Electrocution 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.

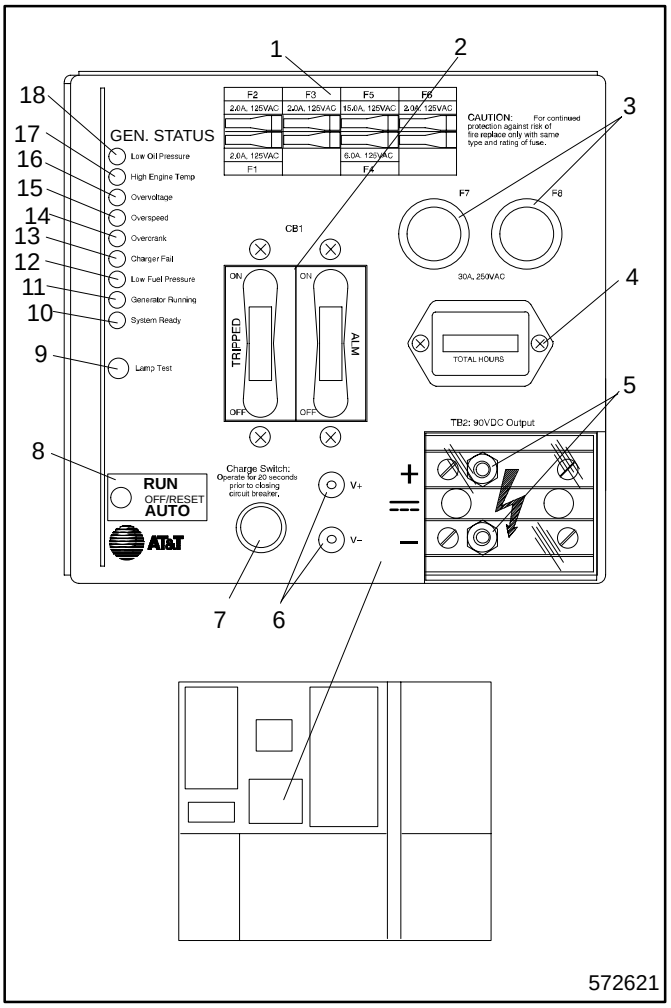
Generator Removal from Cabinet and Disassembly

Tools Needed:

Adjustable wrench 1 1/8” opening
Allen wrench set
Box wrench 10mm
Gas leak detection fluid (soap suds)
Load bank, 6 kW, 24 vdc
Lucent tool 218C
Nut driver set 3/16-1/2 in.
Pipe wrenches
Socket set 1/4-3/4 in.
Standard screwdriver set
Teflon® pipe tape
Wrench set 1/4-3/4 in.

Teflon® is a registered trademark of DuPont Co.

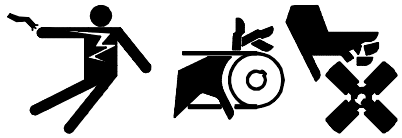
1. Begin the following procedure only with the consent and in the presence of the owner. Verify authorization for access with the Network Health Center. Connect the external AC power connector to the truck generator and start the truck generator. Switch the power from the AC mains to the truck generator. These steps permit the following rework to be performed without traffic outage even if loss of AC utility service main occurs.
2. Place the generator circuit breaker in the OFF position.
3. Start and run the generator for 60-90 seconds to verify that the unit starts, RPM stabilizes, and overvoltage or overspeed shutdown does not occur. If generator runs and speed rises until overvoltage or overspeed shutdown occurs, see Carburetor Mounting Adjustment following.
4. Do not proceed with end bracket replacement and carburetor mounting adjustment until generator set is cool.
5. Place master generator switch on the front of the power conditioner in the OFF/RESET position. See Figure 1.
6. If generator serial number is 366963 or above, end bracket replacement is not necessary. If generator serial number is 366962 or below, proceed.
7. Disconnect AC to the power conditioner.
8. Shut off generator fuel supply outside the cabinet.



1. Control fuses
2. DC circuit breaker
3. Capacitor fuses
4. Hourmeter
5. DC output connections
6. DC voltage test points
7. Charge switch
8. Generator master switch
9. Lamp test
10. System ready
11. Generator running
12. Low fuel
13. Battery charger fault
14. Overcrank
15. Overspeed
16. Overvoltage
17. High engine temperature
18. Low oil pressure

Figure 1. Power Conditioner (Front View)

⚠ WARNING



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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 site power system or remote start/stop switch unless these precautions are followed.

9. Operate the DC circuit breaker CB1 in the power conditioner to the OFF position.
10. Locate and identify engine starting battery. Disconnect generator engine starting battery, negative (–) lead first.
11. Disconnect the AC power cord from the battery charger AC input on the right-hand side of the power conditioner. See Figure 2 item 1.
12. Disconnect generator power leads from the three-position terminal strip on the side of the power conditioner. Pull power leads down into generator set compartment. See Figure 2 item 2.
13. **DO NOT** disconnect DC leads from DC output terminal strip. **DC output leads are live 90 vdc leads when system batteries are connected or AC-powered rectifiers are in service.** See Figure 2 item 3.

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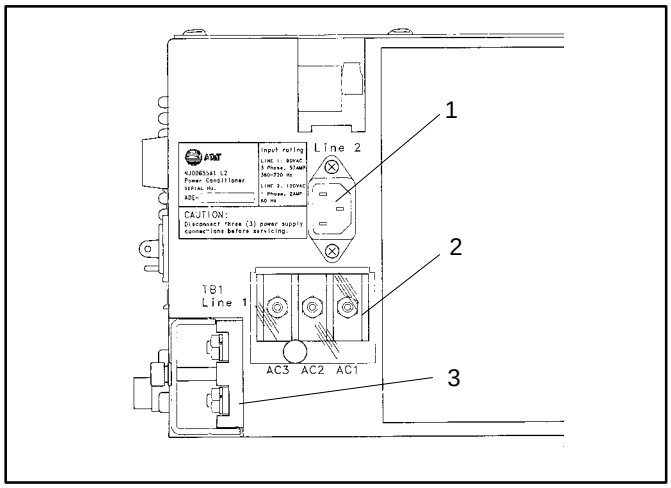


1. 120 volt AC input to battery charger
2. Generator power leads
3. 90 volt DC output terminal strip

Figure 2. COM-6/90V Power Conditioner (Side View)

14. Disconnect main generator wiring harness from the bulkhead connector between the generator compartment and the power node compartment above. See Figure 3.

1. Bulkhead connector

Figure 3. COM-6/90V Bulkhead Connector

15. Disconnect fuel valve harness four-pin connector from the matching engine harness connector. See Figure 4.

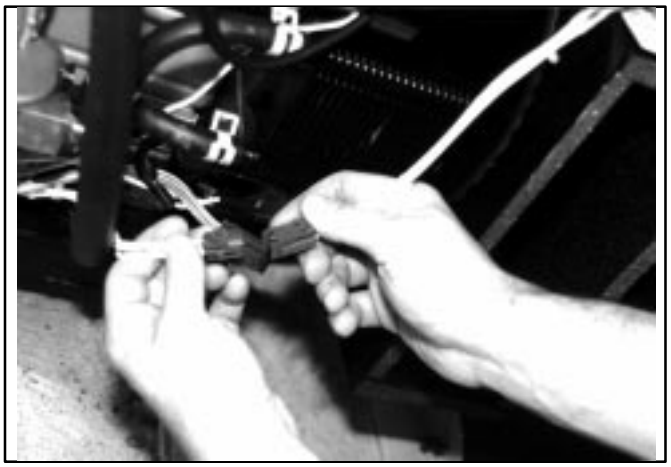


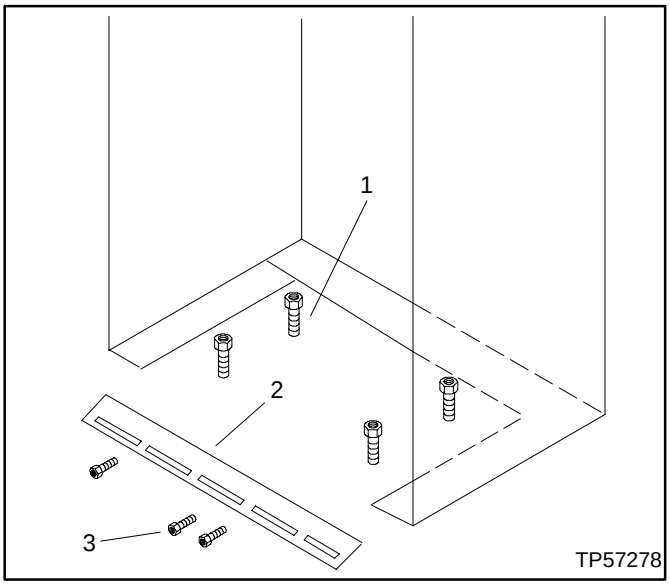
Figure 4. Fuel Valve Harness Four-Pin Connector

16. Disconnect the fuel system hose elbow fitting on the fuel mixing valve at the front of the engine. **Use two wrenches to prevent binding or torquing the fuel valve plastic body**. Use caution; fuel may still be present in fuel line. See Figure 5.

Figure 5. Disconnect Fuel System Hose

17. Remove the four mounting bolts and washers that secure the four skid corners to the floor. See Figure 6.

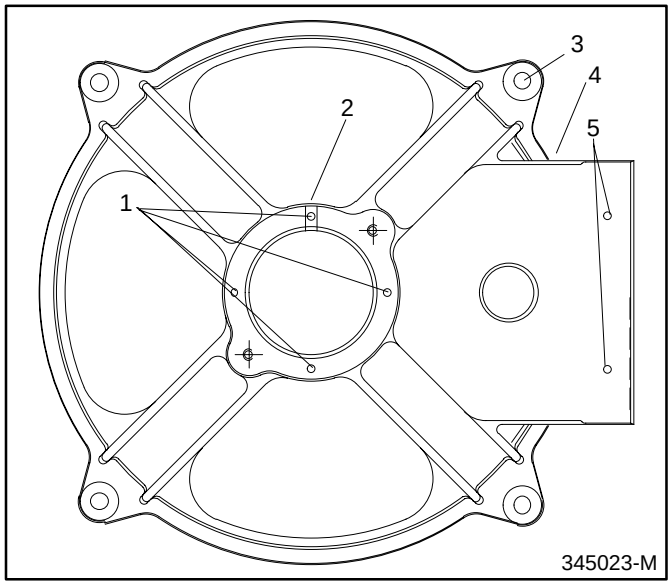
18. Remove the three bolts from the cabinet door lower support. Remove the support to ease generator set removal from the cabinet. See Figure 6.



1. Four mounting bolts
2. Door support lower bar
3. Door lower support bolts

Figure 6. Support Bar Removed

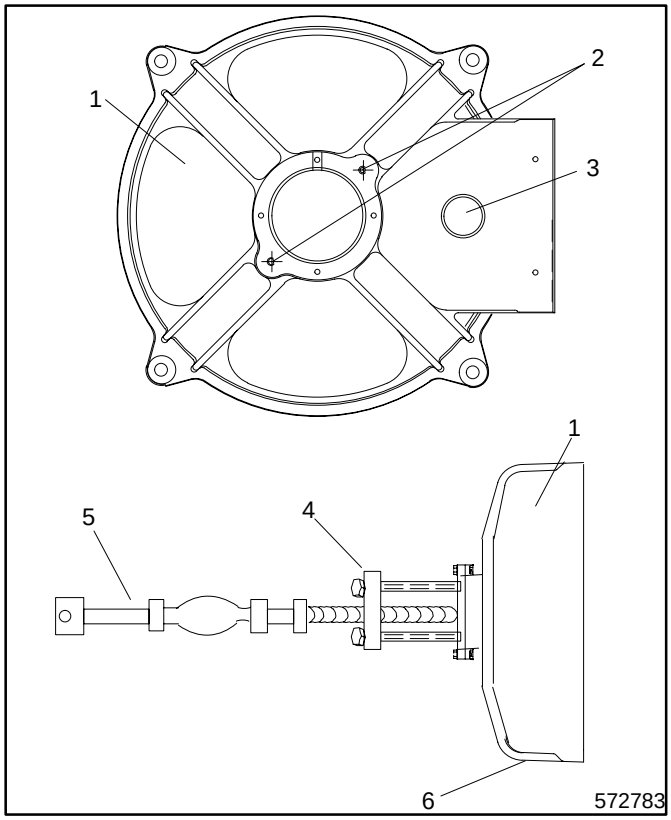
19. Slide the right side of the skid and the generator from the enclosure while positioning the flexible exhaust so that it slides out of the muffler inlet fitting. After the flexible exhaust is free of the muffler inlet fitting, straighten the generator and slide it out of the compartment in a straight line. Grasp generator by exhaust manifold, engine lifting eyes, or skid. Grasping generator by either air inlet duct will cause damage. **The generator is top-heavy if lifted by the skid.**
20. Rotate the generator until it clears the cabinet to access the generator end bracket.
21. Remove four screws from bearing cover. See Figure 7 item 1.
22. Remove four screws securing air inlet duct to end bracket. Gently tap air inlet duct with a screwdriver and hammer to remove. See Figure 7 item 4.
23. Reinstall air inlet duct using four screws removed in step 20 onto new end bracket.
24. Write an **M** on the new end bracket using a non water soluble marker to indicate modified. This helps prevent mixing up the old and new end brackets. See Figure 7 for location.
25. Remove the end bracket bolts. See Figure 7 item 5. **Do not rotate the end bracket with end bracket bolts removed. Rotating end bracket will damage the alternator 3-phase leads coming out of the end bracket.**
26. Loosen the small set screw, if equipped holding the rotor ball bearing in place with a 3/32 in. Allen head wrench. Set screw will not be reused. See Figure 7 item 2.



1. Bearing cover screws
2. Bearing set screw (not visible in this view)
3. End bracket bolts
4. M mark
5. Air inlet screws (4)

Figure 7. End Bracket

27. Remove the end bracket by tapping vertically upward on the bottom of the end bracket with a soft mallet to avoid marring the end bracket and carefully pull the end bracket off the ball bearing until it is free. See Figure 8. Use a slide hammer with an adapter bar as shown in Figure 8 in extreme cases of corrosion.
28. Route generator power leads through port in end bracket. Remove end bracket. See Figure 8 item 3.
29. Inspect generator power leads for signs of wear. Repair wires or replace the generator stator assembly as needed.



1. End bracket
2. Two 1/4-20 in. holes, four inches apart, for use with slide hammer or puller
3. Generator power lead port
4. Adaptor with long bolts attached to end bracket 1/4-20 holes
5. Slide hammer
6. Soft mallet strike location

Figure 8. End Bracket Removal

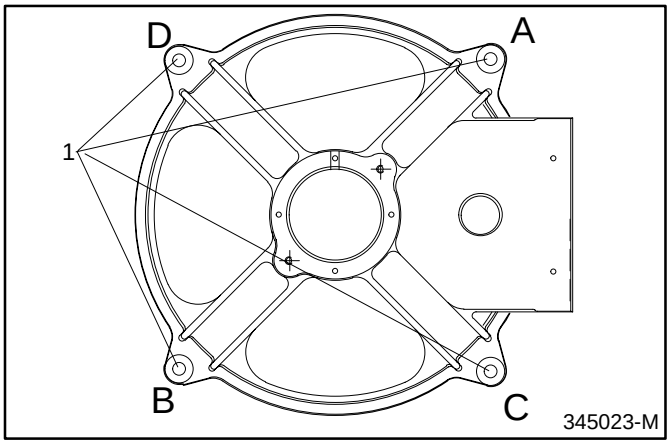
Assembly and Reinstallation

1. Remove plastic grommet from generator power lead port on old end bracket and install in new end bracket. Old end bracket will not be reused. Discard end bracket at customer site if permitted.
2. Route generator power leads through port in new end bracket (345208).
3. Align end bracket on stator assembly and rotor bearing.
4. Install end bracket to its final position by pushing/tapping on it using a soft-faced hammer. Be sure end bracket is fully seated before proceeding to next step.
5. Install end bracket bolts using the A, B, C, D tightening sequence shown in Figure 9. Tighten end bracket bolts to 28 ft. lbs. (38.0 Nm).

NOTE

Do NOT attempt to install end bracket on rotor by tightening bolts. Install end bracket fully and seat it against mating casting before installing bolts. End bracket, engine, and/or generator adaptor damage can result if end bracket is not seated prior to installation.

6. Reinstall bearing cover onto end bracket using self-tapping bolts to cut new threads. See Figure 9 item 1.
7. Install supplied rotor bearing set screw. Torque set screw to 18 ft. lbs. (24.4 Nm.).
8. If generator requires carburetor adjustment per step 3 of Generator Removal from Cabinet and Disassembly perform carburetor adjustment at this time. See Carburetor Mounting Adjustment procedure following.



1. End bracket bolts

Figure 9. End Bracket Tightening Sequence

9. Reinstall generator in cabinet by sliding generator into compartment while raising it carefully. Grasp generator by exhaust manifold, engine lifting eyes, or generator set skid. **Generator is top-heavy if lifted by generator skid.**
10. Slide the generator into the compartment. Engage the slot in the left rear of the base with the 1/2 in. bolt and washer, washer on top of base, in the left rear corner. At the same time, position the flexible exhaust to slide inside the muffler inlet fitting.
11. After engaging the flexible exhaust and left rear bolt, with washer on top of base, push the generator the remaining distance into the compartment to engage the right rear bolt, washer on top of base. The generator is now in its final position.
12. Install the front mounting bolts and washers. Final tighten all four mounting bolts.
13. Reconnect the fuel system hose elbow fitting on the fuel mixing valve at the front of the engine using two wrenches to prevent binding or torquing the fuel valve plastic body. See Figure 5.
14. Reconnect fuel valve harness four-pin connector to the matching engine harness connector. See Figure 4.
15. Reconnect main generator wiring harness to the bulkhead connector between the generator compartment and the power node compartment. Make certain that the connector rotates fully until it clicks solidly into the detent. See Figure 3.
16. Note the correct wire markings and route generator power leads into upper cabinet. Reconnect the three leads to the 3-position terminal strip on the right-hand side of the power conditioner, matching the designated wire numbers with the terminal strip. Reconnect the green ground wire to the generator frame. See Figure 2.
17. Check that the master generator switch is in the OFF/RESET position.
18. Reconnect the generator engine starting battery, negative (–) lead last.
19. Reconnect the AC power cord to the battery charger AC input on the side of the power conditioner.
20. Turn generator fuel supply on. Start generator by moving the master generator switch to RUN. Allow generator set to run for a couple minutes.
21. While the generator set is running check all fittings for leaks using a soap and water solution or other usable method.
22. Check for overspeed or overvoltage because of carburetor misadjustment. Keep the circuit breaker CB1 on the front panel of the power conditioner OFF. The unit should run at low idle and not experience an

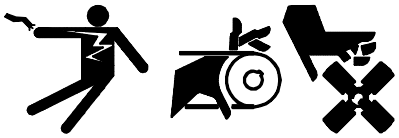
overvoltage or overspeed shutdown condition. Proceed to the Carburetor Mounting Adjustment procedure following if the unit shuts down from either overspeed or overvoltage.

23. Place the master generator switch in the OFF/RESET position.
24. Request the PacBell representative to update the PacBell node service records.
25. Reinstall the cabinet door lower support and mounting bolts. See Figure 6.
26. Check that the master generator switch is in the AUTO position and the circuit breaker CB1 is ON. Verify that AC is reconnected to the power conditioner. Also verify that no fuse failures exist and that the system ready green LED is illuminated.
27. Close the generator cabinet. Call the network health center and verify that all alarms have been cleared.

Carburetor Mounting Adjustment

Perform the following carburetor adjustment on generator sets that shut down from overspeed or overvoltage when the circuit breaker is open. Observe the following safety precautions during installation.

⚠ WARNING



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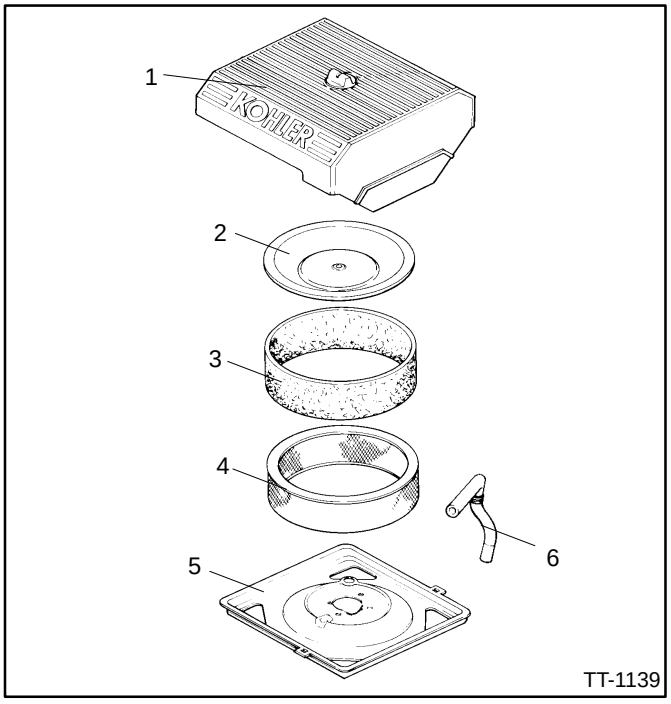
Grounding generator set. Hazardous voltage can cause severe injury or death. Electrocution is possible whenever electricity is present. Open main circuit breakers of all power sources before servicing equipment. Configure the installation to electrically ground the generator set and electrical circuits 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.

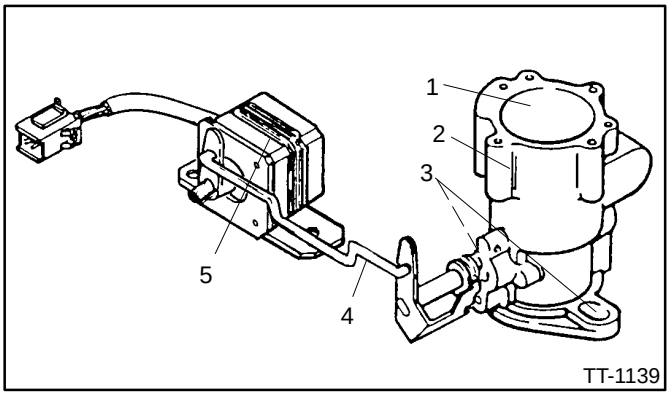
1. Place the master generator set switch in the OFF/RESET position, if not already done.
2. Disconnect generator set engine starting battery, negative (–) lead first, if not already done.
3. Turn circuit breaker CB1 OFF.
4. Disconnect the utility AC power to power conditioner.
5. Remove air cleaner cover. Stuff a rag into the engine intake to prevent debris or hardware from falling inside. See Figure 10.
6. Remove the lower air cleaner cover, oil vapor tube, and air cleaner element from the generator set. See Figure 10.



1. Air cleaner cover
2. Lower air cleaner cover
3. Precleaner element
4. Air cleaner element
5. Air cleaner base
6. Oil vapor tube

Figure 10. Air Cleaner Assembly

7. Verify that carburetor throttle plate closes 100%. If throttle does not completely close, loosen carburetor mounting screws and slide carburetor AWAY from governor stepper motor to its full extent, so that the throttle plate fully closes. See Figure 11.
8. Clean the removed air cleaner covers and wash out the foam-type air filter. Tap the dirt out of the paper air filter.
9. Tighten carburetor mounting screws and reinstall oil tube, and lower air cleaner cover.
10. Remove the rag from the engine intake. Reinstall air cleaner inner elements and air cleaner top cover.
11. If generator set was removed from the cabinet, go to step 9 of Assembly and Reinstallation to reinstall the generator into the cabinet. If generator was not removed, proceed with steps 12-18.
12. Check that the master generator switch is in the OFF/RESET position.
13. Reconnect the generator engine starting battery, negative (–) lead last.
14. Reconnect AC power to power conditioner. Leave CB1 OFF.
15. Test run generator and verify that unit runs with the circuit breaker open and does not shut down from overspeed or overvoltage.
16. Place the master generator switch in the OFF/RESET position.
17. When the procedure is complete check that the master generator switch is in the AUTO position and the circuit breaker CB1 is ON. Verify that AC is reconnected to the power conditioner. Also verify that no fuse failures exist and that the system ready green LED is illuminated.
18. Call the Network Health Center and verify that all generator alarms have cleared. Cabinet door alarms and Transmission equipment alarms will not clear until the cabinet is resealed.



1. Carburetor inlet
2. Carburetor
3. Carburetor screws (2)
4. Carburetor linkage
5. Governor stepper motor

Figure 11. Throttle Adjustment

SB-550 has been reprinted below for reference purposes only.

Service Bulletin: **550**
Original Issue Date: **3/96**
Model: **COM-6/90 Volt, PA-195001 and PA-195002**
Market: **Industrial**
Subject: **End Cover Change Program**

Kohler Company has determined that an edge on the inside surface of the end cover may be in contact with the stator leads. If left unattended, the normal vibration of the generator could cause the edge to chafe the insulation of the stator lead. This end cover condition applies to 140 1994 production units, in California, with serial numbers less than 366963.

Please replace end covers in the affected serial number range with new, rounded-edge end covers. Order the new end cover service part number 345208.

Remove field-deployed units from cabinets for rework. Coordinate rework with generator set owner and representative. It is not necessary to remove crated warehoused units from the crate to replace the end cover. Refer to the COM-6/90V Service Manual, TP-5727, for disassembly/reassembly end cover instructions.