DATA

Model	5GT564B1
Rotation (Facing Commutator End)	CCW
Classification	10-pole, Commutating Pole, Shunt wound, D-C Generator
Resistance at 25 C	
Shunt Field	1.73 ohms
Commutating Field	0.00141 ohms
Starting Field	0.00157 ohms
Brush Data	
Pressure	50 to 60 oz.
Size (Refer to Renewal Parts Bulletin for correct brush catalog number when ordering renewals)	3/4-in. x 1¼-in. x 2¾-in. long
Nominal Air Gap	
Exciting Field	0.145-in.
Commutating Field	0.340-in.
Commutator Side Mica	
Thickness	0.045-in.
Grooving Depth	5/64-in.
Commutator	
New Diameter	23 3/4-in.
Minimum Permissible	23-in.
Bearing Grease Capacity	
Initial Filling (2/3 Full)	44 oz.
Service Filling every 60,000 mi.	3 oz.
Weight of Traction Generator	
Complete Unit Assembled	11,500 lb.
Generator Only	10,200 lb.
Armature with Fan	5,080 lb.
PRINTS	
Photographs	
Commutator End	A-118620
Fan Coupling End	A-118619
Generator with amplidyne exciter & GY20 pulley end	A-118621

DATA (Continued)

ILLUSTRATIONS

Drawings	
Outline with GY20 and AM806	A-118658
Connection Diagram	A-118712
Longitudinal Diagram	A-118688
Characteristic Curve	A-118685
Bearing Assembly	A-118674
Pullers	
Bearing	A-118756
Pulley	A-118756
Crank Shaft Deflection	
Measurement	A-118677
Correct Stone Fit	A-118678

TYPE GT-564-B1 TRACTION GENERATOR

FUNCTION

The traction generator changes the mechanical power developed by the diesel engine into electrical power needed to drive the traction motors. When connected to a source of electrical power - such as the storage batteries - it acts as a starting motor for cranking the diesel engine.

DESCRIPTION

The main generator is a 10-pole, direct-current, commutating pole type, separately excited shunt generator.

The armature is directly coupled to the diesel engine crank shaft. Access to generator and diesel engine coupling may be obtained by removing inspection plates on sides of generator adapter and rejoining crankcase covers.

The generator frame is attached to the generator adapter by twelve bolts entering four bolting flanges. Crankshaft alignment can be made by shimming between the top mounting flanges and the face of the generator adapter.

A framehead carries and encloses a cylindrical roller bearing which supports the commutator end of the armature. The fan end of the armature is supported by the rear main bearing on the engine through the coupling on the diesel engine crankshaft. Sufficient clearance is provided in the generator bearing to permit horizontal movement (end play) of the crankshaft. End thrust is taken by the engine bearing.

The engine end of the armature carries the ventilating fan which draws air through longitudinal ducts in the armature core, along the surface of the armature and between the field coils.

The commutator end shaft extension mounts a multiple-grooved pulley for driving the amplidyne exciter, auxiliary generator and one traction motor blower by V belts.

OPERATION

The main generator is directly coupled to the diesel engine and is driven in a counterclockwise (CCW) direction facing commutator end.

The main generator field is excited by the amplidyne exciter. The amplidyne exciter, through its control circuit, governs the power output of the traction generator.

A starting winding is built into the exciting field coils of the main generator for use when the main generator serves as a motor to crank the diesel engine. Power is supplied by the storage batteries.

INSPECTION

Refer to INSPECTION SCHEDULE.

LUBRICATION

See Lubrication Chart.

TO REMOVE GENERATOR FROM LOCOMOTIVE SEE PLATE A-118620

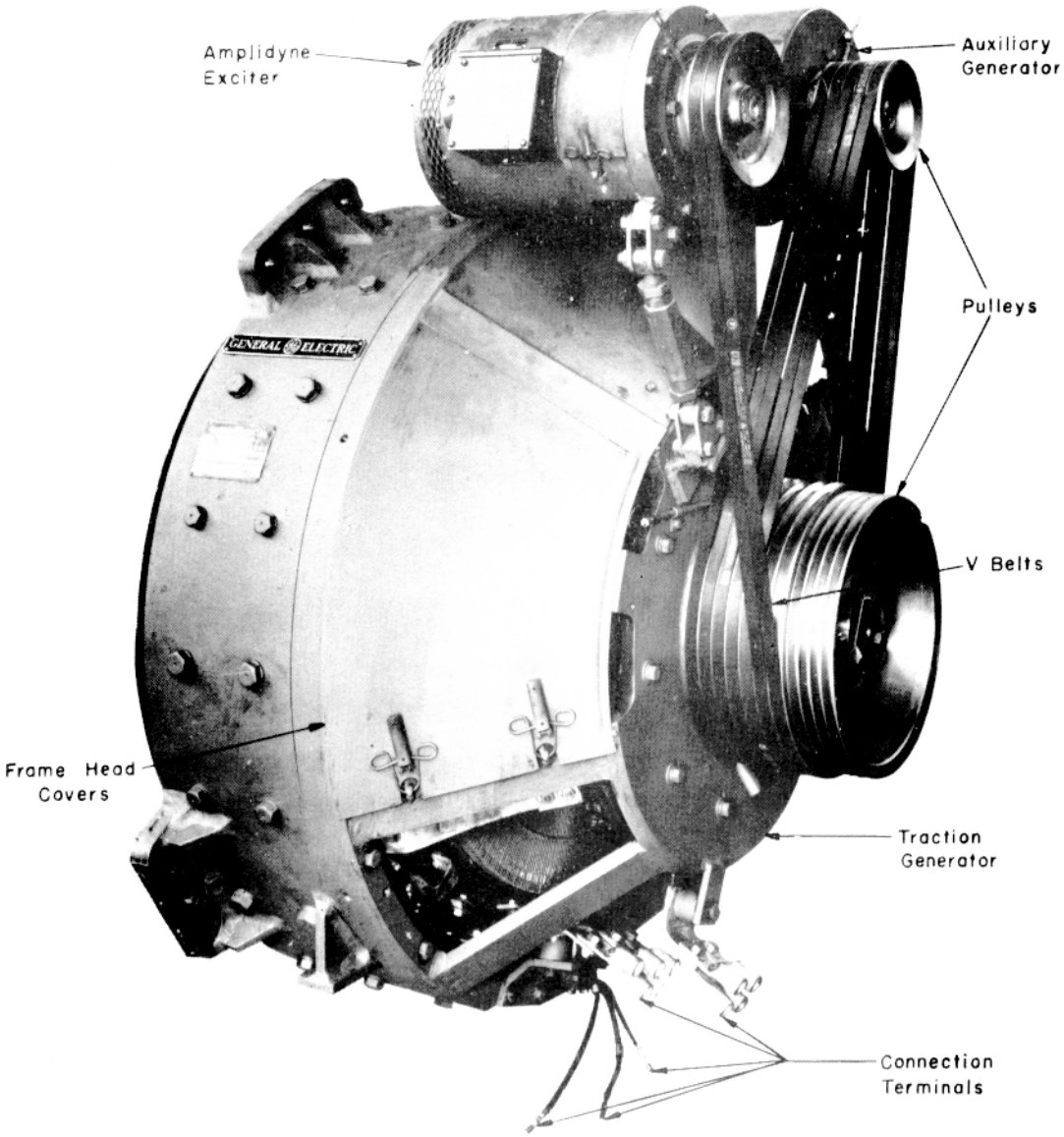
To remove the main generator, remove the hatch cover in the roof of the locomotive as well as all interfering duct work, piping, cables, etc. Overhead crane service should be used. Proceed as follows:

1. Disconnect dynamic braking grids with their duct work and remove hatch cover in roof of locomotive.
2. Remove generator ventilating duct work and all interfering piping, cables, etc.
3. Disconnect electric cables on generator.
4. Remove access covers on sides of generator adapter.
5. Remove protective covers from V belts and pulleys.
6. Cut lockwire and remove twelve crankshaft coupling flange capscrews.
7. Remove the twelve coupling bushings.
8. With overhead crane apply a slight lift, just enough to take weight of generator off mounting bolts - not too much.
9. Remove twelve generator mounting bolts and lockwashers.
10. Pry or jack generator away from engine slowly and carefully. As the crankshaft flange pulls out of its fit in the armature, the armature will drop and be supported by its fan from the bottom of the generator frame.
11. When completely free, lift generator clear of locomotive.
12. Remove the shims from generator adapter and mounting bolts and tie together so they do not become separated or lost.

CLEANING, INSPECTION AND TESTING

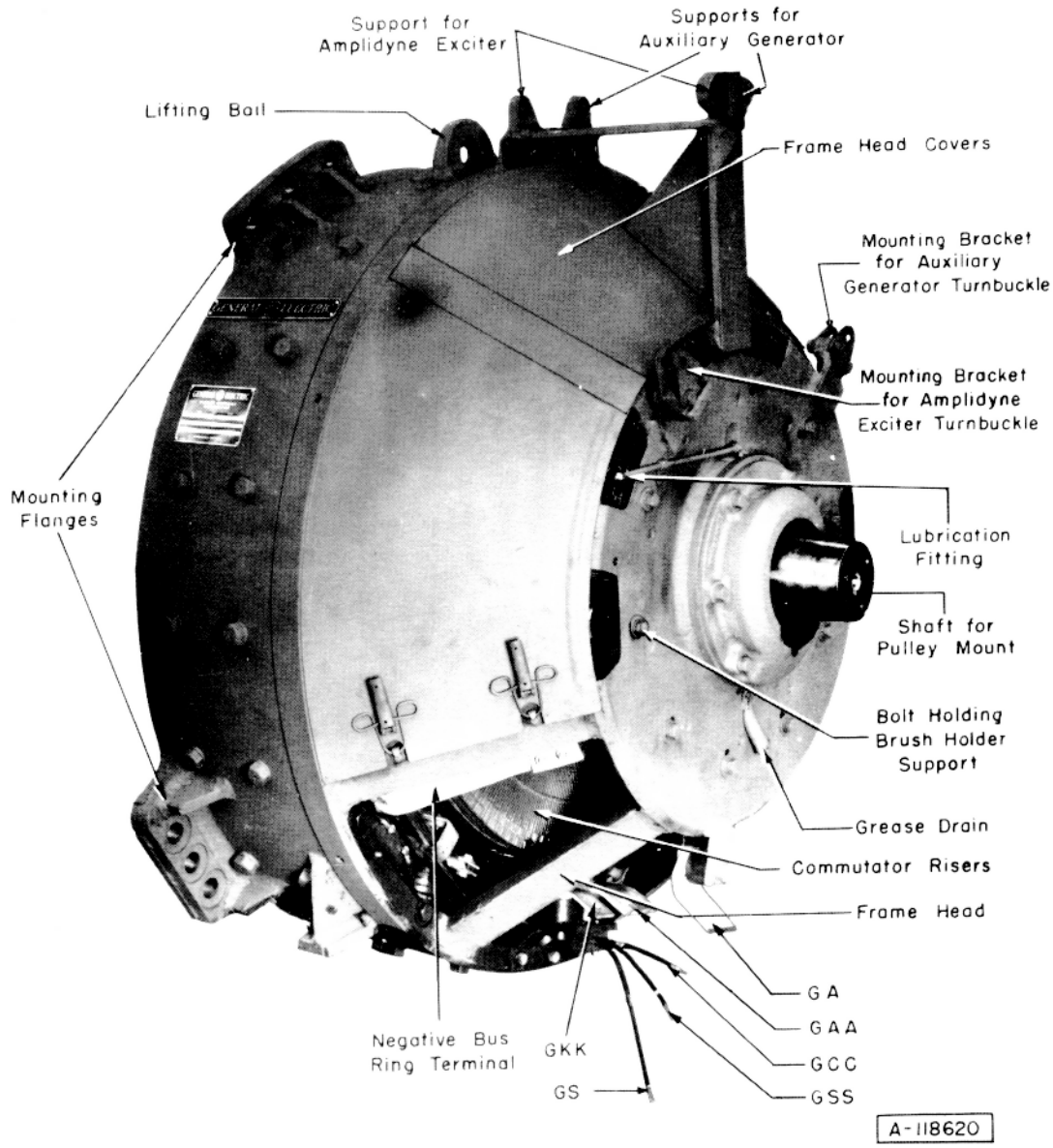
After traction generator has been removed from locomotive, blow out armature and windings with clean, dry compressed air.

Inspect condition of brushes, bearings, commutators, windings and string band.

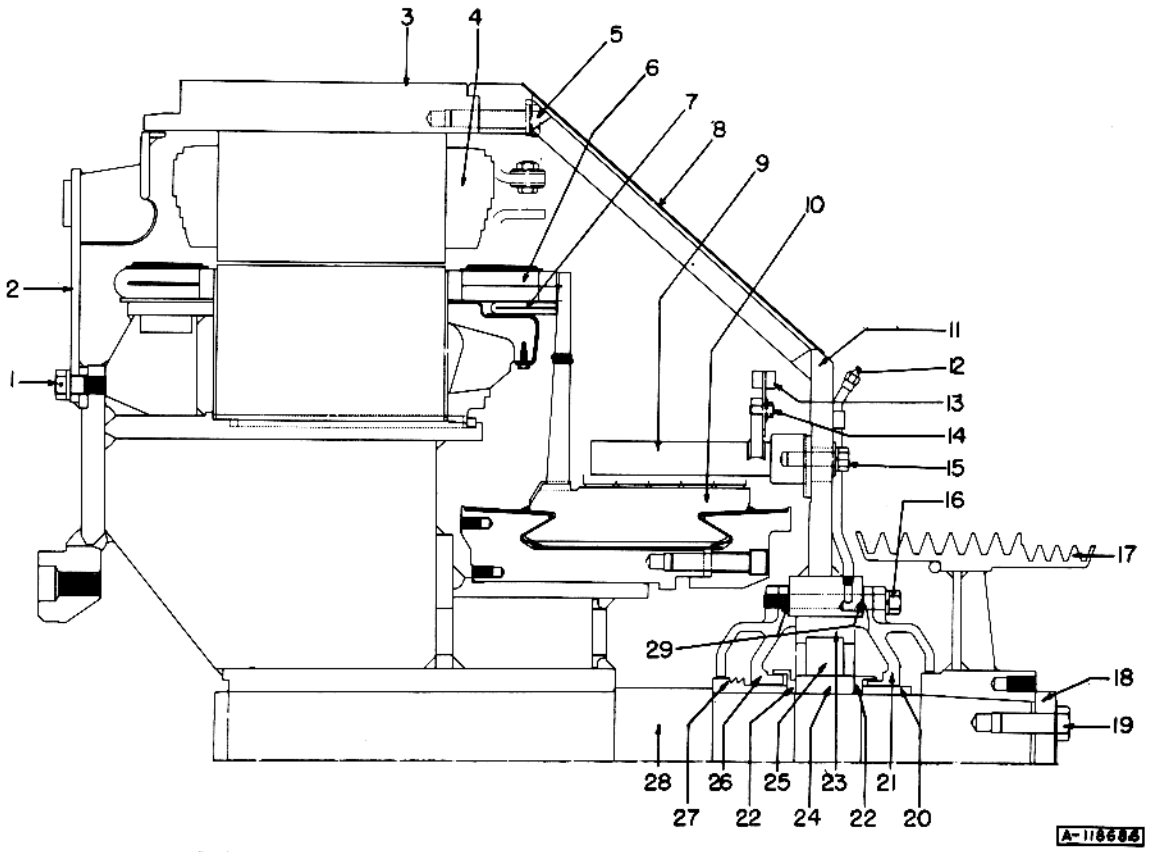


A-118621

G-E TRACTION D-C GENERATOR, TYPE GT-564-B, WITH PULLEY AND WITH BELTED AMPLIDYNE, TYPE AM-806 AND BELTED AUXILIARY GENERATOR, TYPE GY-20, AND BELTS, BEFORE ASSEMBLY OF BELT GUARD. OBLIQUE AMPLIDYNE-SIDE VIEW, COMMUTATOR END AT RIGHT.

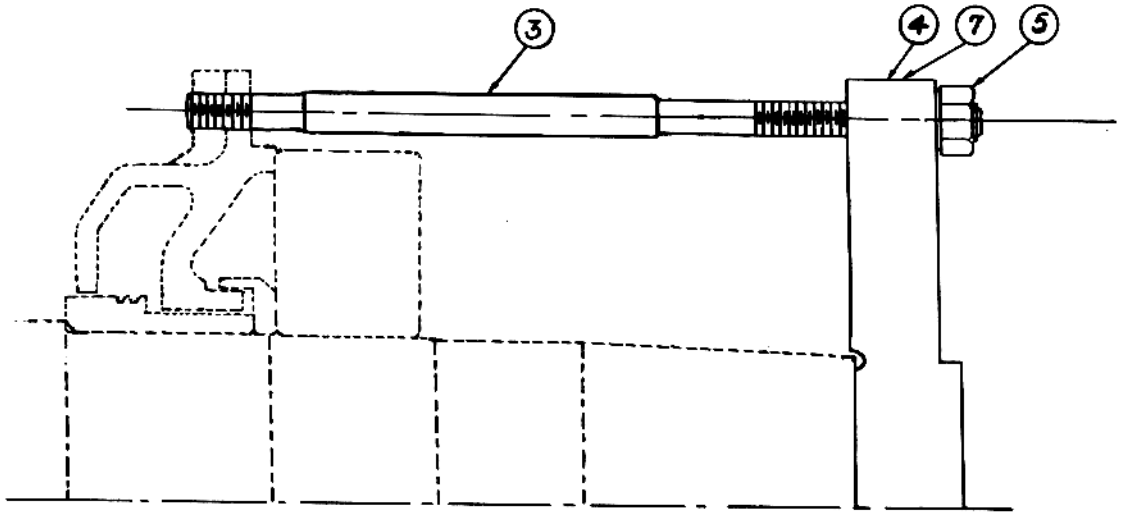


TRACTION D-C GENERATOR, TYPE GT564B COMMUTATOR END AT RIGHT.



LONGITUDINAL SECTION - GENERATOR GT-564-B

1. FAN BOLT
2. FAN
3. MAGNET FRAME
4. FIELD COILS
5. FRAMEHEAD BOLT
6. ARMATURE WINDINGS
7. EQUALIZER
8. FRAMEHEAD COVER
9. BRUSH-HOLDER STUD ASSEMBLY
10. COMMUTATOR
11. FRAMEHEAD
12. GREASE FILLER PIPE
13. BRUSH-HOLDER BUS RINGS
14. BUS-RING BOLT
15. BRUSH-HOLDER BOLT
16. BEARING CAP BOLT
17. PULLEY
18. CLAMPING PLATE
19. CLAMPING PLATE BOLT
20. SLEEVE
21. BEARING CAP (OUTER)
22. FLINGER
23. BEARING RACE (OUTER)
24. BEARING RACE (INNER)
25. BEARING
26. FLINGER
27. SPACING COLLAR
28. SHAFT
29. GASKET



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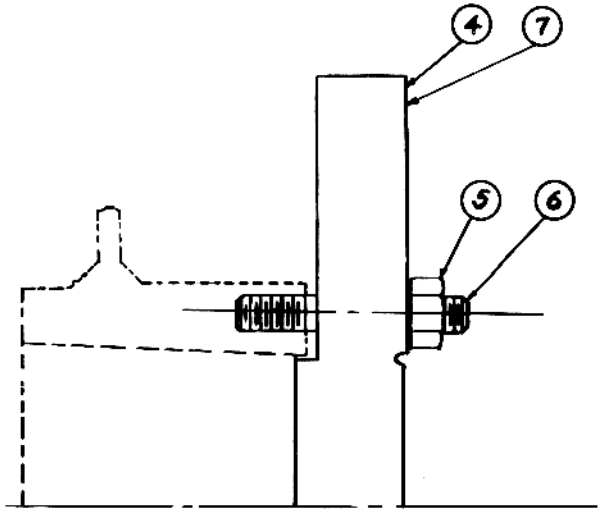


2

1 Assembly (Bearing Puller)
2 Assembly (Pulley Puller)
3 Stud
4 Clamp Plate
5 Nut Hex 5/8"-11
6 Stud
7 Clamp Plate

A-118756

PULLER (BEARING AND PULLEY) GT-564-B

A megohmeter test can be used to check insulation resistance of armature and windings to determine over-all condition of machine. To check insulation resistance of armature, lift all brushes before applying megohmeter test. Insulation resistance should not read less than one megohm.

REMOVING TRACTION GENERATOR ARMATURE - SEE PLATE A-118686

1. Remove generator from locomotive.

2. Remove amplidyne exciter AM-806 and auxiliary generator GY-20. See "Amplidyne" Removal from Locomotive under AMPLIDYNE EXCITER.

3. Take out pulley clamping plate bolts 19 and remove clamping plate 18.

4. Remove V belt pulley 17. Use puller. See Plate A-118756.

5. Remove framehead covers 8.

6. Disassemble outer bearing cap 21; use disassembly adapter to hold armature in place.

7. Place generator with shaft in vertical position. Be sure a sturdy and level support is supplied under coupling face. Block up frame 3.

8. Lift brushes from brushholders 9 and wrap commutator 10 with heavy paper to prevent injury while removing frame.

9. Remove bolts from disassembly adapter.

10. Remove bolts 14 from connection between bus ring 13 and commutating field circuit, and then remove framehead bolts 5.

11. Assembly of framehead 11 with brushholders 9, can then be removed vertically from armature. The framehead will slide off outer bearing race 23, but care must be taken to lift the framehead as nearly vertically as possible so that it will not bind on the outer race.

12. Lift frame 3 from armature.

13. Bearing 25, flingers 22, sleeve 20, gasket 29, and inner bearing cap 26, can be removed with puller.

14. Set armature up in horizontal position. Remove fan bolts 1 and fan 2.

REMOVING FIELD COILS

When field coils are to be removed, provisions should be made to keep each pole, coil, and accompanying shims together. Upon reassembling they should be replaced in their original position.

After the coils are reassembled, care should be taken that the cables are properly connected. Contact surfaces should be clean and the bolts drawn up tightly.

TO REMOVE A MAIN GENERATOR FIELD COIL WITHOUT REMOVING THE GENERATOR FROM LOCOMOTIVE:

1. Remove any framehead cover necessary to gain access to field coils.

2. Disconnect sufficient number of leads to permit removal of coil.

3. Place heavy paper or press board over armature to prevent damage to armature while coil is being removed.

4. Place heavy paper or press board over commutator.

5. Remove pole piece bolts.

6. Slide coil out of frame through opening in framehead. Be careful not to damage brushholders or commutators.

To remove a commutating pole and coil, an exciting pole and coil must be removed.

To remove one of the lower exciting coils it will be necessary to remove one or more adjacent coils.

If the traction generator has been removed from the locomotive, the field coils can be removed through the back or fan end of the frame after removing fan. To do this: See plate A-118619.

1. Block armature up by using 1/8-in. shims between exciting pole and armature core. These may be inserted from commutator end.

2. Remove locking wire from fan bolts.

3. Remove fan bolts.

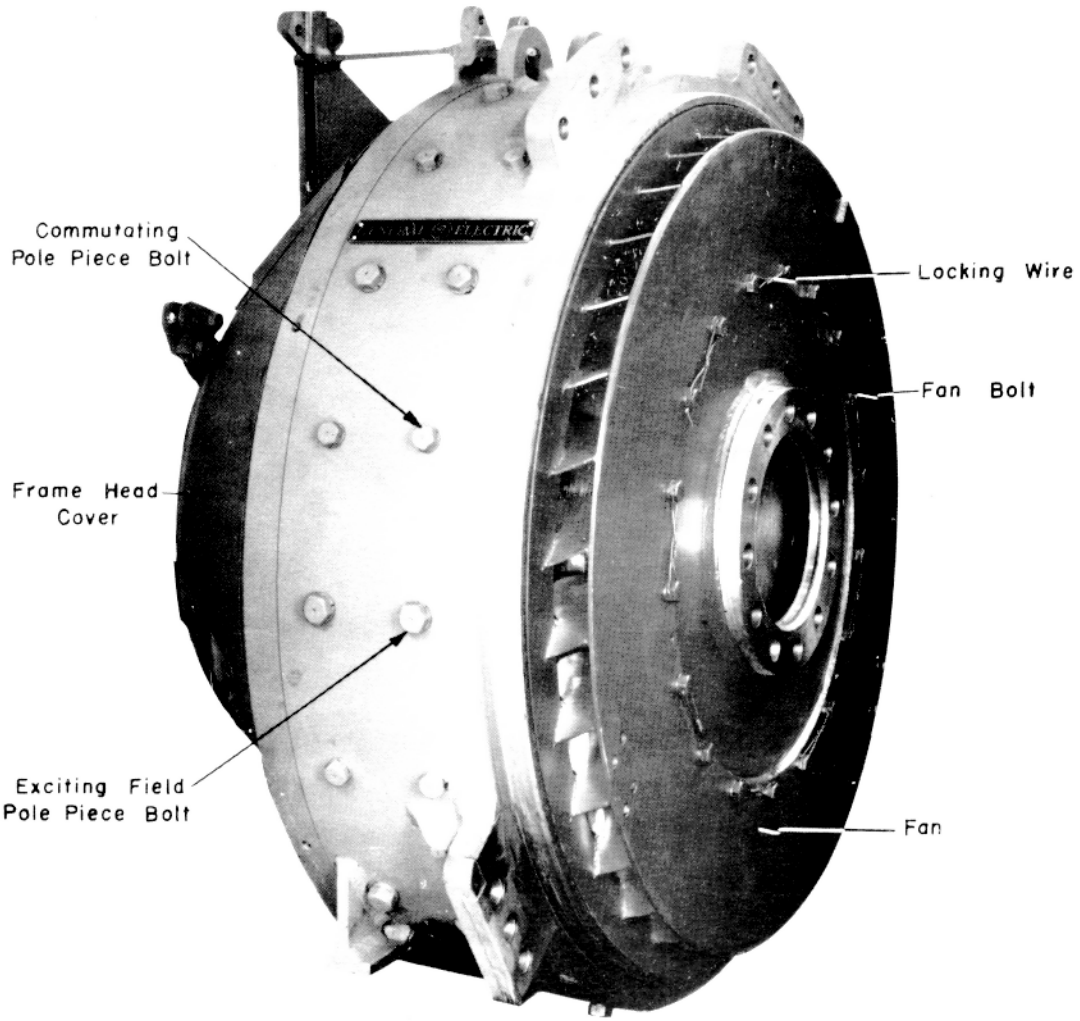
4. Remove fan.

5. Disconnect leads from coil.

6. Remove pole piece bolts from pole piece to be taken out.

7. Slide coil out fan end of frame observing precautions to protect the armature and commutator.

When coils are assembled, exciter coils should be heated internally to approximately 35 C (95 F) before the pole piece bolts are tightened. This is to eliminate any air gap between frame and pole. When assembly of the top field coils is complete, fill countersinks around pole piece bolts



A-118619

G-E TRACTION D-C GENERATOR, TYPE 5GT564B1. OBLIQUE RIGHT-SIDE VIEW, FAN END AT RIGHT.

with G-E 837 compound.

REPAIRS

ARMATURES

The armature should be closely inspected for the condition of bands, wedges, coils, insulation, general assembly and commutator.

Armature bands and core wedges should be tight and secure. Solder on the bands should be intact. If solder has been thrown off, the cause should be determined and corrected and the bands replaced by tight banding.

The coil insulation should be clean and free from blisters, flakes or cracked insulating varnish surface.

When the condition of the insulating varnish on the armature is such that treatment is necessary, or if the banding is loose, the following should be observed.

1. Clean air holes through core. Clean creepage surface back of risers and creepage surface on armature head by reaching in from fan end through spokes of spider.

2. Remove bands and banding base if necessary.

3. Clean all surfaces with cloth dipped in carbon tetrachloride or equivalent, and blow out with dry compressed air. Protect windings from air blast.

4. Heat armature to a temperature of 140 C to 150 C (284 F - 302F); to hold end windings in place, apply narrow temporary bands to each end winding, using fibre base to protect windings.

5. Dip hot 110 C - 120 C (230 F - 248 F) in Glyptal 2480 varnish; for viscosity refer to section "PREPARATION OF VARNISHES UNDER TRACTION MOTOR". Hold armature in varnish for 5 to 10 minutes. Armature should be held on a swivel hook with the commutator end up and be submerged in varnish up to the commutator risers.

6. Thoroughly drain excess accumulation of varnish by spinning and wipe varnish from shaft, using a cloth soaked in Toluol.

7. Bake for 16 hours at an oven temperature of 140 C to 150 C (284 F - 302 F).

8. Measure the insulation resistance while armature is hot. The armature should be baked until the insulation resistance is at least one megohm.

9. Replace temporary bands with permanent binding.

10. Repeat 4, 5, 6 and 7.

11. Cool armature to approximately 50 C (122 F) and dip in Glyptal No. 1201 red enamel to provide the outside finish; for viscosity refer to PREPARATION OF VARNISHES under TRACTION MOTOR.

12. Thoroughly drain excess enamel and remove all enamel from the shaft.

13. Bake for 16 hours at oven temperature of 140 C (284 F).

If armature is in good condition and banding is not replaced, the above varnish treatment should not be necessary. In such case, clean armature as in steps 1 and 3 above; then bake armature for 6 hours at 140 C to 150 C (284 F - 302 F) to remove moisture, cool to approximately 50 C (122 F) and proceed with treatment specified in steps 11, 12 and 13.

Measure insulation resistance with a megohmeter. If resistance is less than one megohm, bake armature until insulation resistance comes within limits.

REWINDING

If rewinding of armature is necessary, send unit to nearest G-E Service Shop.

COMMUTATORS

The commutator should present a smooth surface free from pitting. If it has become pitted or damaged from any cause, stoning or turning will be necessary.

STONING - SEE PLATE A-118678

A stone of proper curvature to fit the commutator surface with a span of approximately 30 degrees around commutator should be used. See Plate A-118678. Extreme care must be taken while the stoning process is taking place to prevent the copper dust from settling in the windings. Blow out armature with dry compressed air frequently.

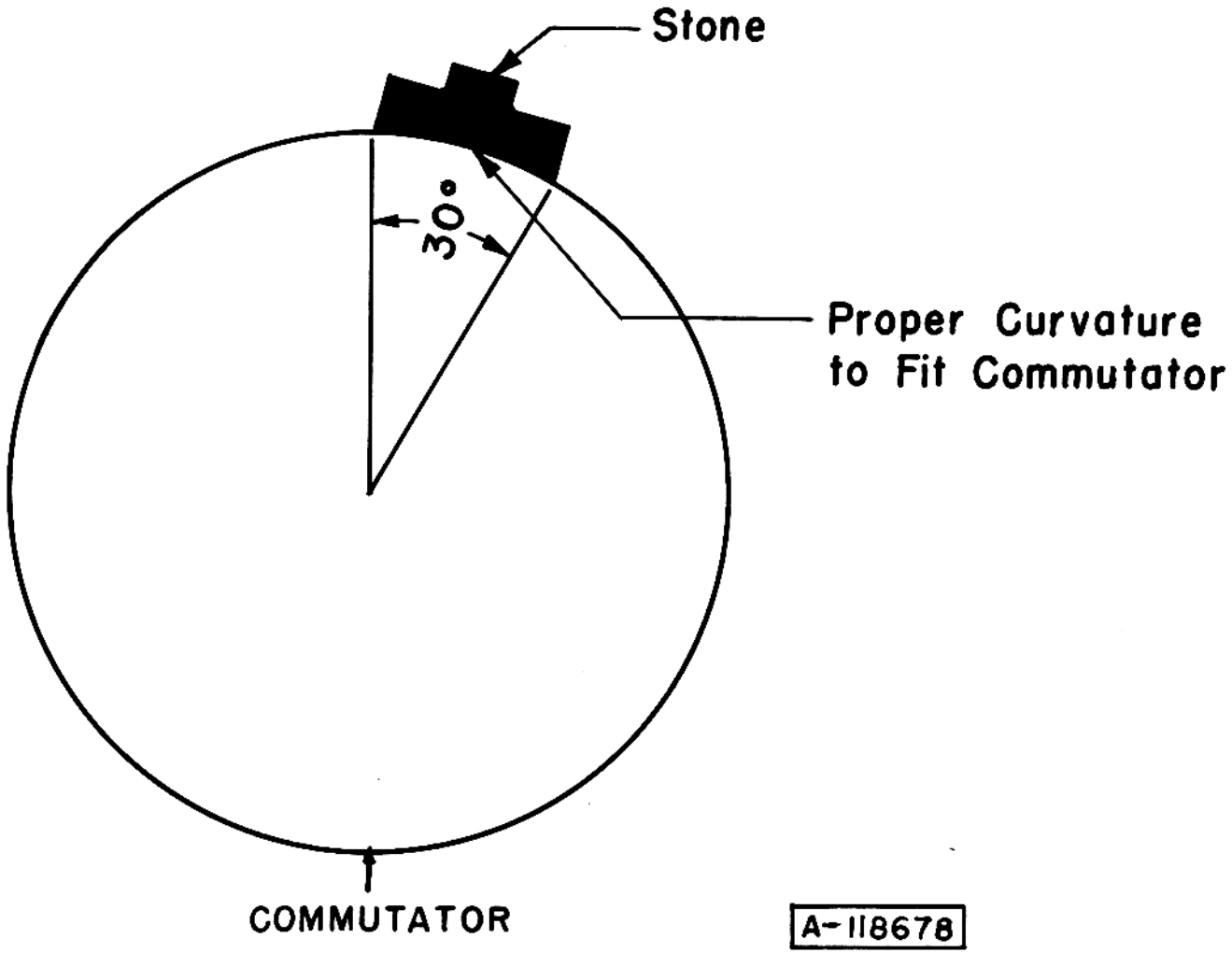
After stoning, check the commutator surface for concentricity by using an eccentricity gage which will mount on the apparatus frame.

Check concentricity with apparatus mounted on its own bearings.

Wipe dirt or grease off string band. Be certain string band is tight and has a smooth surface. If finish has started to flake or chip, sand it lightly and blow out with dry compressed air. A coat of Glyptal No. 1201 red enamel should then be applied and permitted to dry.

TURNING

If the commutator is badly worn or burned, remove the armature from the machine and turn the commutator in a lathe. Remove only enough copper



CORRECT STONE FIT

to give a uniform surface, after which the side mica between segments should be recut, and the commutator surface polished and cleaned.

Whenever possible, turn the commutator by supporting the armature in its own bearings. If the armature is held on lathe centers, be sure that these centers are true with respect to the bearing seats.

Before turning a commutator, make a suitable covering to keep the chips and dust from working into the armature. This covering can best be made as follows:

Use a strip of cloth wide enough to cover commutator risers and long enough to encircle the commutator. Wrap this cloth around the commutator, binding the inside edge with a cord as close to the end connections as possible. Then turn the cloth up over the cord and bind with another cord to the outside of the armature covering the band.

Make sure that the turning post is so set that the ways are parallel to the commutator and that they are fastened and braced securely. Use a side-cutting tool with the point ground to about 1/16 inch radius. The cutting side of the point should be given more rake than is customary for working iron and steel. The tool should be sharp enough to make a clean, smooth cut, without dragging copper over the mica.

While turning the commutator, it should be run at a peripheral speed of approximately 300 ft. per minute, which is about as fast as the tool will cut without burning. With a file, round off the ends of the commutator bars to at least 1/16-inch radius, while the commutator is still in the lathe.

UNDERCUTTING THE MICA

After a commutator has been turned, undercut the side mica to the correct depth. See DATA page. Special saws are available for this purpose and care must be taken not to cut the slots too wide. Remove the sharp edges of the commutator bars with a hand scraper or a knife. Do not bevel the edges of the segments. Clean out the slots to remove all mica chips and fins, and be sure that no copper chips remain in the slot. A satisfactory tool for this operation can be made from a piece of worn-out hack-saw blade.

After the mica has been undercut and the slots cleaned out, the commutator is ready for sanding and final polishing.

BRUSHHOLDERS

Maintain 3/32-in. to 1/8-in. clearance between the bottom of the brushholders and the commutator. When adjusting brushholders, place cardboard between commutator and brushholder. Adjust spacing by loosening the capscrew which secures the mycalex stud to the framehead and adjust the support up or down to obtain the correct clearance. Release the bolt in the slotted ear of the bus ring before attempting to move the brushholder support and tighten it after setting the brushholder.

Examine the brushholders for damage caused by flashover or binding of the brushes. Brushes must slide freely in the holders. Work the brush up and down several times to release any carbon dust or other foreign material which tends to cause binding. Do not snap the spring as this may chip the brush.

To replace a brushholder, remove the complete support assembly with brushholders. First lift or remove the brushes. Remove the bolt which secures the bus ring terminal to the terminal on the brushholder support. Remove the capscrew through the framehead which holds the mycalex insulating stud on the end of the support. Lift out the complete assembly. Remove cardboard.

Installation of a brushholder assembly is the reverse operation. Position the support so the face of the brushholder is 3/32-in. to 1/8-in. from the commutator end with the key on the mycalex stud engaged in the slot on the framehead. Assemble the capscrew and lockwasher and draw up securely. Assemble slotted bus ring terminal and bolt tightly to the support terminal. Install brushes in brushholders.

BRUSHES

Replace brushes that have been chipped or worn excessively, with the same grade of brush or a G-E recommended substitute. This is necessary only when a partial replacement is made. A variety of brushes on the same machine may affect the operation of the generator.

To install a new brush, release tension on spring, lift the brush lever with the fingers and drop the brush in place in the brushholder carbon box. With the brush lever still lifted, secure the brush pigtail under the terminal screw on the brushholder body. Care must be taken to arrange the pigtail shunts so that they clear the commutator riser on the armature and the window in the brushholder body.

SANDING TO FIT BRUSHES

When new brushes are installed, fit them to the commutator by sandpapering. If only a few brushes are being fitted, insert a piece of sandpaper under the brush and draw it in the direction of rotation, being careful that the sandpaper is held tightly against commutator. Lift the brush when moving the sandpaper back, and hold the sandpaper in place so that it rotates with the commutator.

SEATING BRUSHES

When more than one third of a set of new brushes are installed in a generator, "seat" the brushes to a smooth running fit with a soft white "brush seater" Cat. 106X98. Run the engine at idling speed and hold the "seater" lightly against the commutator, moving it back and forward to cover the entire brush surface. The fine particles of "seater" are carried around the commutator and wear the new brushes to a smooth fit. When brushes have been fitted, blow out the dust with dry compressed air.

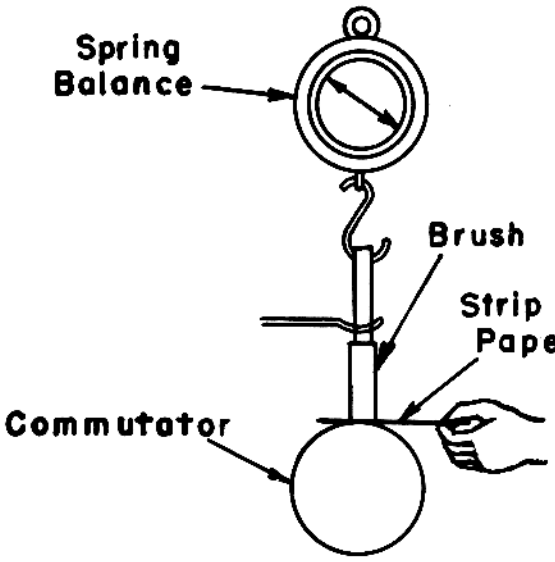


FIG.-1

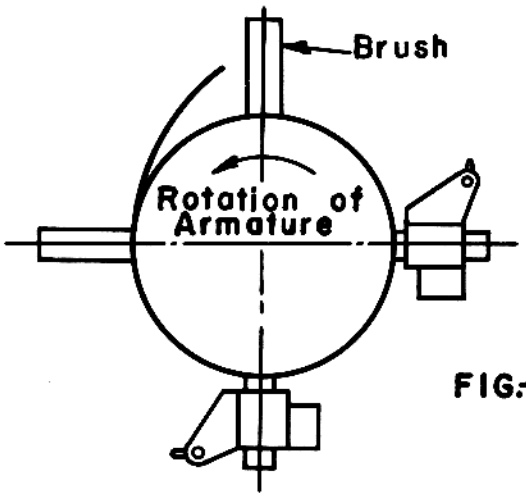


FIG.-2

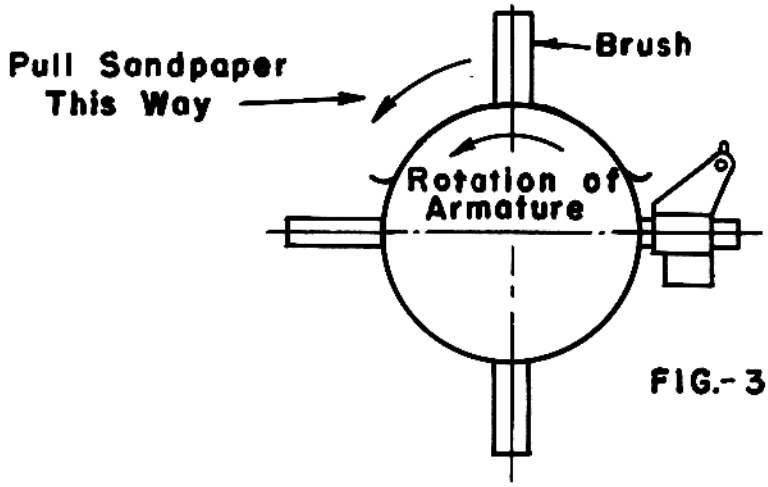
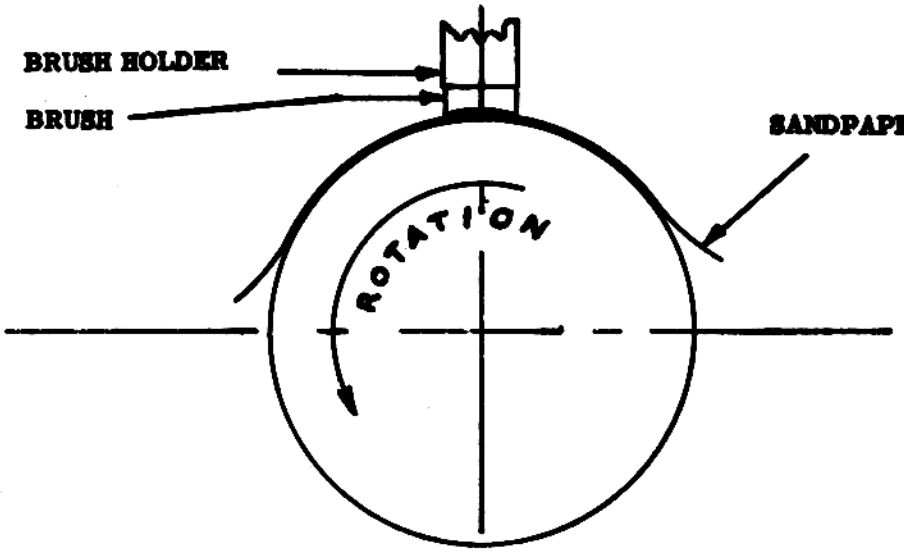


FIG.-3

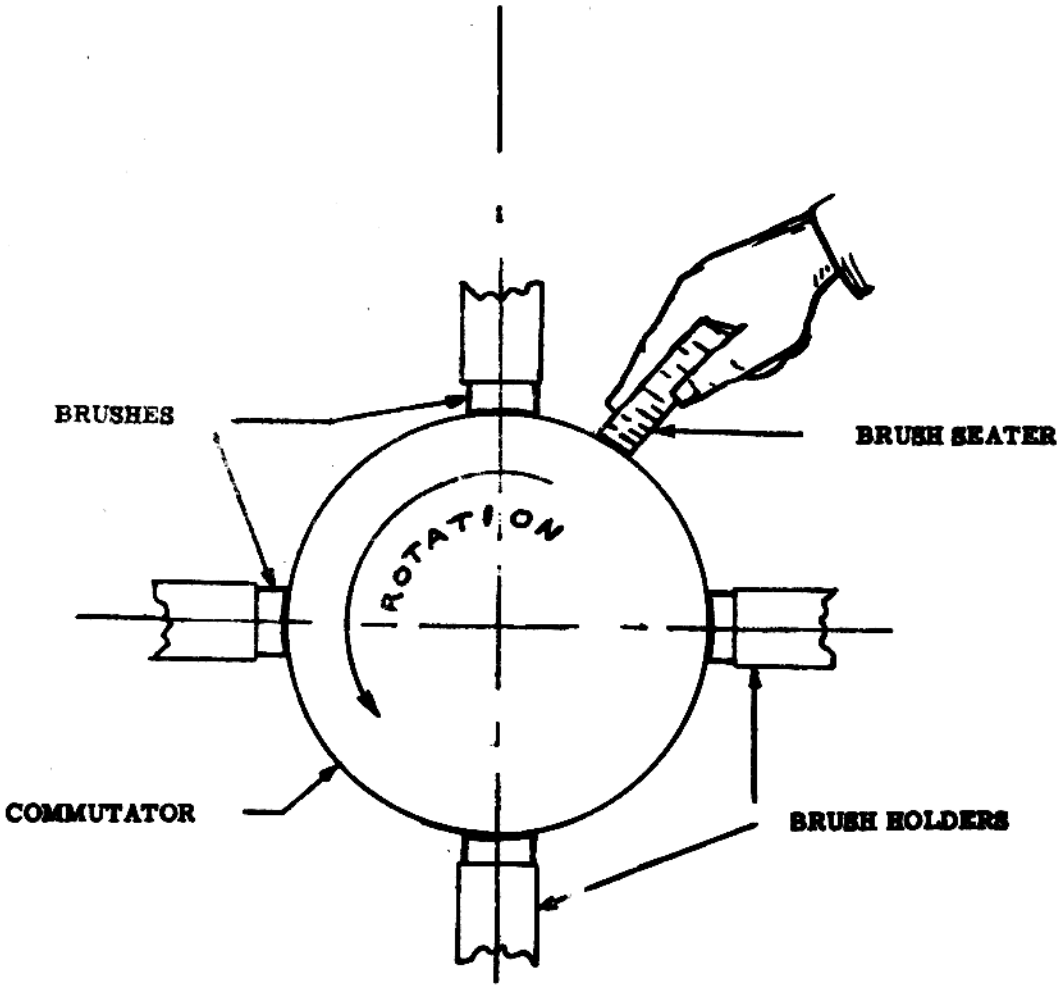
METHOD OF SANDING AND OBTAINING BRUSH PRESSURE

for Generators and Motors

A-118563



SANDING BRUSHES



APPLICATION OF BRUSH SEATER

A-118789 A

BEARINGS

Cleaning

As conditions dictate, bearing assemblies should be disassembled and thoroughly cleaned with kerosene or similar solvent to remove the accumulation of old and hardened grease from bearings, housings and grease passages.

INSPECTION (See Plate A-118674)

After the bearing has been cleaned, rotate it slowly and feel for roughness in rollers or races. Visually inspect rollers and races for signs of pitting or galling, worn spots, loose rivets or loose or worn cages. Inspect for discoloration of rollers, and bearing races for evidence of overheating. Examine bearing fit in framehead for excessive wear. If the bearing condition is questionable, a new bearing should be installed and steps taken to have the questionable bearing reconditioned or scrapped and worn frameheads corrected.

After bearings have been cleaned in the solvent, they should be further washed in a light mineral lubricating oil of SAE-10 grade, heated to 90 C (194 F). This is to prevent corrosion of the highly polished surfaces.

REPACKING

When the bearing compartment is clean and dry, repack with fresh grease. See DATA sheet for bearing grease capacity. When reassembling, some grease should be packed in the bearing itself.

REASSEMBLY OF ARMATURE AND BEARING - SEE PLATES A-118686 and A-118674

In general, reassembly procedure is the reverse of the disassembly procedure previously outlined. Care should be taken in assembling bearing parts to prevent scoring the engaging surfaces of tight fitting parts.

1. Assemble Fan 2 with fan bolts 1 and lock bolts with wire.

2. Set armature up with shaft in vertical position taking care that it is level and on a solid support. Protect commutator with heavy paper.

3. Assemble inner bearing cap 26 and gasket 29 and inner flinger 22 on shaft 28. Heat flinger 22 to 150 C (302 F) before assembling on shaft.

4. After checking bearing fit to see that it is clean and free from upset metal, heat inner bearing race 24 to 110 C (230 F) and hold it against flinger 22 until it has cooled to a tight fit on shaft 28.

5. Set frame 3 over armature - block frame to correct height.

6. Assemble outer bearing race 23 in framehead 11.

7. Assemble framehead 11 over armature to the frame, and assemble framehead bolts 5.

8. Frame and framehead are marked at the factory for correct position of framehead. These marks must be brought into alignment before tightening framehead bolts.

9. Assemble outer flinger 22, sleeve 20 and outer bearing cap 21.

10. Connect leads from bus ring 13 to field circuit.

11. Reassemble brushholders 9 and brushes.

12. Heat at 25 C (77 F) rise and place pulley 17 on the shaft; assemble clamping plate 18 and clamping plate bolts 19.

13. Replace framehead covers 8.

INSPECTION AFTER REPAIRS

After repairs have been made, a careful check should be made that no foreign matter remains in the machine, and that there are no loose brushes or other obstructions on the commutator. Check the connections with the connection diagram. See that all bolts are drawn up tightly and locked.

TESTING AFTER REPAIRS

When generators have been repaired after running in service and all parts are thoroughly clean, measure insulation resistance with a megohmeter. If insulation resistance measures not less than one megohm, apply the following high-potential test to the windings.

Apply 2000 volts to main generator armature, commutating field and starting field and also to exciter differential field.

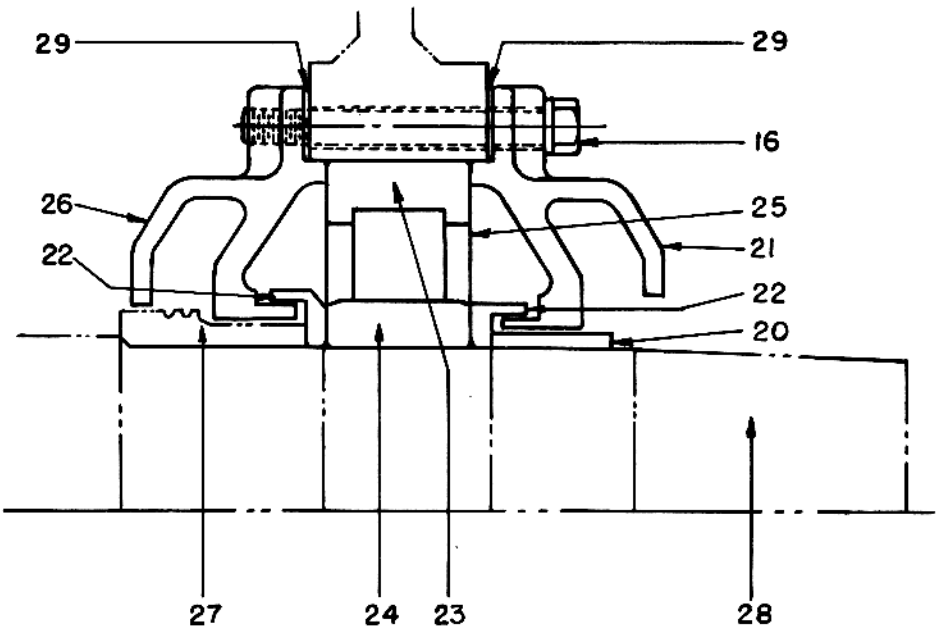
Apply 1100 volts to main generator shunt field.

INSTALLATION OF GENERATOR

Use the following procedure when installing a new generator on an engine. When installing an old machine, reapply same shims, and check counterweight positions with respect to No. 1 engine crank; then follow paragraphs 1, 2, 4, 6, 10, 12 and 16.

1. Inspect all bushing holes. Remove dirt, chips, and any burrs at edges.

2. Fit the coupling bushings to the holes in flange of the crankshaft, and also to the holes in the armature spider coupling



16	Bearing Cap Bolt
20	Sleeve
21	Bearing Cap (Outer)
22	Flingers
23	Bearing Race (Outer)
24	Bearing Race (Inner)
25	Bearing
26	Bearing Cap (Inner)
27	Spacing Collar
28	Shaft
29	Gaskets

A-118674

BEARING ASSEMBLY GT564B

flange. These holes are reamed to a jig, so that alignment should be correct. If the bushings are too large, they may be corrected by careful use of emery cloth. A light tap fit is required. The end of the bushing is rounded to facilitate engagement in the holes when assembling.

3. Install the studs in the four pads on the face of the generator adapter.

4. Remove cardboard strips from space between generator air gap. The armature will then be supported by the fan, which normally has a small clearance in the bore of the generator frame.

5. On new machines, check the bore of the generator adapter and the pilot fit of the generator frame. Generator pilot fit should be checked with the generator resting on its skid. The diametral clearance between these two parts should be from zero to 0.006-in. If more clearance is found to exist, prepare three shims for the bore of the generator adapter to centralize the generator in the fit. The shims may be bent in "U" form to fit around the rim, leaving a tang to hold when assembling. The shims are to be placed at the bottom and on the horizontal centerline at each side.

6. Attach slings and lift the generator. It is important to have the generator hang exactly level and even, so that the studs will enter the holes in the four pads without jamming or bending.

7. Wipe all mating parts clean of chips and dirt. Inspect and eliminate any burrs which might interfere with proper assembly.

8. Rotate the engine crankshaft until the holes in the flange line up with the mating holes in the armature spider coupling flange.

If the generator has one or more counterweights secured to the fan, care must be taken to rotate the shaft until the relation between the engine No. 1 crank and these counterweights is the same as previously. Records of the position of any such counterweights can be obtained from the Engineering Department. On changing a generator on any engine, the counter weight position must remain the same with respect to No. 1 engine crank.

9. Move the generator into engagement with the engine-generator adapter. After the crankshaft and armature spider fit have engaged a short distance, the generator stator frame will start to engage the bore of the generator adapter. Do not pull into full engagement until the coupling bushings are partially installed.

10. Coat the coupling bushings lightly with white lead. Install the bushings in the holes in the crankshaft flange and engage the ends in the holes of the armature spider coupling flange. Install all coupling bushing bolts and tighten securely. Use white lead on threads.

11. On new generators, the two bolting flanges on each side of the generator below the horizontal centerline are provided with 3/32-in. shims, tack welded in place. The bolting flanges near the top must also have shims, but these shims will be less than 3/32-in. thickness so that the end of the generator will be tilted up slightly in order to correct for shaft deflection. A shim of 0.060-in. thickness should be approximately correct. After installing these shims, tighten up all bolts which secure the generator frame to the adapter.

12. Obtain a crankweb deflection gage, of the dial reading type. Place the gage between the two counterweights of the engine crank which is nearest the generator. The gage should be parallel to the axis of the shaft at a point directly opposite the crankpin, i.e. 180 degrees from the crankpin. Proceed as follows: See Plate A-118677.

    a. Crank near bottom center, gage not quite touching connecting rod in left bank.

    b. Crank 90 degrees from bottom center.

    c. Crank at top center.

    d. Crank 90 degrees from top center.

    e. Crank near bottom center, gage not quite touching connecting rod in right bank.

    The indicator must be reset after taking the first reading.

13. The total difference between the two readings at the 90 degrees positions, or between the readings at top center and those near bottom center, should not exceed 0.003-in. If the difference exceeds 0.003-in., corrections must be made by changing shims.

14. After checking and correcting crankshaft deflections, wire coupling bolt heads together in pairs.

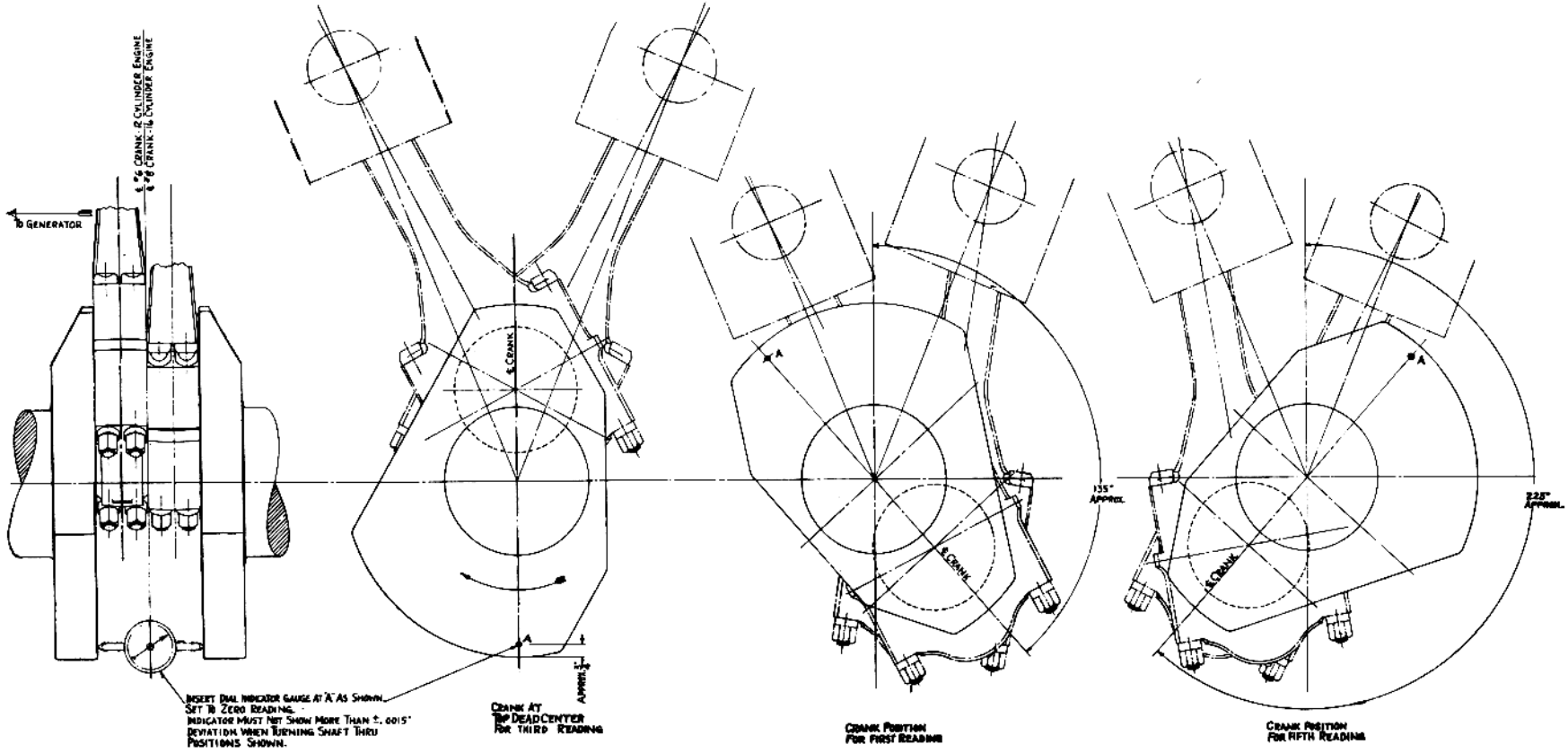
15. Make electrical connections. Check direction of rotation when motoring before completing insulation.

NOTE: Radial runout of crankshaft register should not exceed 0.002-in. total indicator reading, and axial runout of crankshaft and flange face should not exceed 0.002-in. total indicator reading. Radial runout of register fit on adapter for generator frame should not exceed 0.004-in. total indicator reading.

TROUBLE SHOOTING

COMMUTATOR HEATING

Excessive temperature on the commutator is generally caused by the following:



CRANK SHAFT DEFLECTION MEASUREMENT IN FIRST, THIRD AND FIFTH CRANK POSITIONS

A-118677

1. Heavy overload for prolonged period.

2. Sparking at the brushes.

3. Improper brush pressure.

4. Poor condition of the commutator. A blackened or rough surface increases the brush friction and the contact drop, both of which cause increased temperature.

CONTACT HEATING

Bolted contacts may heat if the contact surfaces are not clean, smooth, and bolted together with sufficient pressure. See that the contacts of connecting strips are tight.

POOR COMMUTATION

Sparking at the brushes may be due to any one of the following causes:

1. Excessive overload.

2. Brushes may not be fitted to the surface of the commutator.

3. Brushes may not have proper pressure, or pressure not the same on all brushes.

4. Brushes may bind in the holders.

5. Brushes may have reached their limit of wear.

6. Brushes may be burned on the ends.

7. The commutator may be dirty, oily, rough, or worn out.

8. A commutator bar may be loose or may project above the others.

9. High mica on commutator in brush path.

10. Grounded or short-circuited armature coils.

11. Loose connection between armature lead and commutator bar.

12. Flat spot on the commutator.

13. Commutator out of true.

14. Armature badly out of balance.

15. Defective commutating field coil.

16. Wrong polarity of commutating field coil.

ARMATURE HEATING

Armature heating may result from any of the following causes:

1. Overloading or inadequate ventilation.
2. A partial short-circuit of two coils, heating the two coils affected.
3. Short circuits or grounds in the armature winding or commutator.
4. Rough commutator or unsoldered commutator risers.
5. General heating of the armature may be caused by:
    a. Unequal air gap
    b. Reversed field coil.
    c. Short-circuited or grounded field coil.

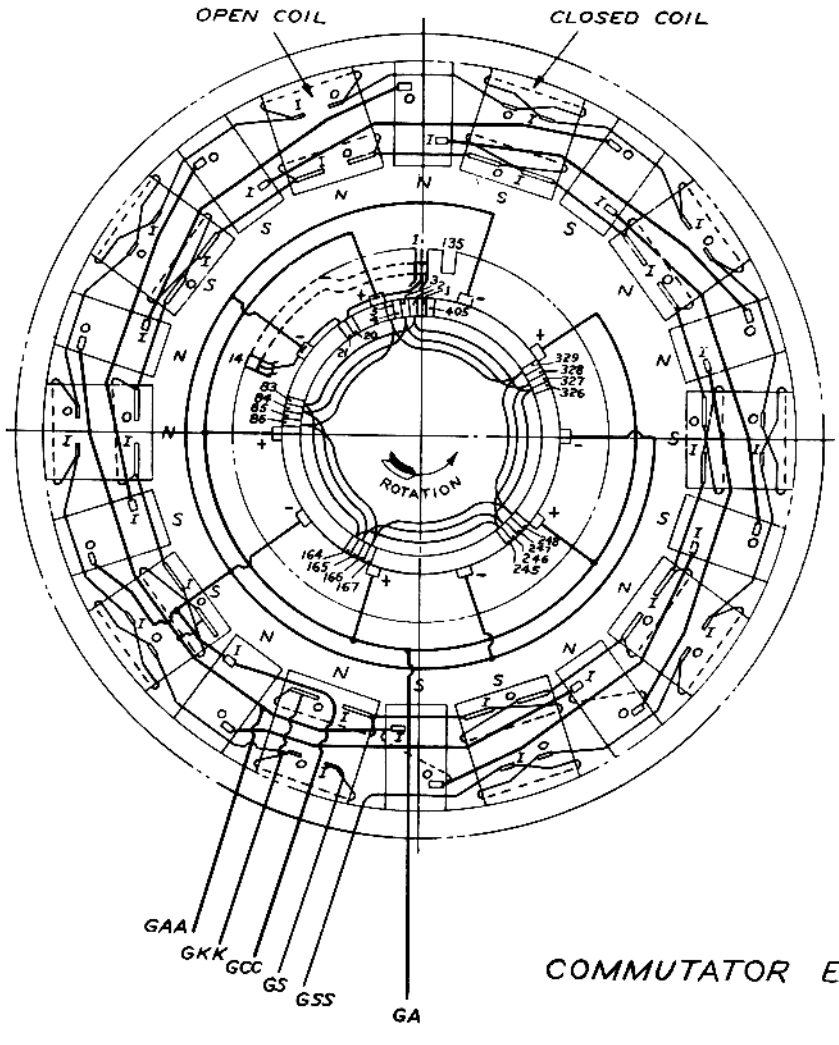
FIELD COILS

Overheating of field coils may result from the following causes:

1. Partial short-circuit of one or more coils.
2. Improper connections.

Check the connections of the field coils with the connection diagram supplied with each generator. Check for reversed field coil by exciting the fields from some source (battery, etc.) and holding two iron rods against the adjacent pole tips all the way around, the free ends of the rods should attract each other. A faulty coil may be detected by exciting the fields from some source and taking the voltage drop across each coil separately; a variation of over 10 percent in the drop indicates faulty coil.

It should be noted that the main generator has more than one winding on each pole, and care should be taken to see that correct terminals are used; consult the cable connection drawing. Plate A-118712.



COMMUTATOR END

COMMUTATOR SEGMENTS TO BE CONNECTED WITH EQUALIZERS AS FOLLOWS:-

- # 2 TO # 83
- # 3 TO # 84
- # 5 TO # 86
- # 6 TO # 87
- # 8 TO # 89
- # 9 TO # 90
- # 11 TO # 92

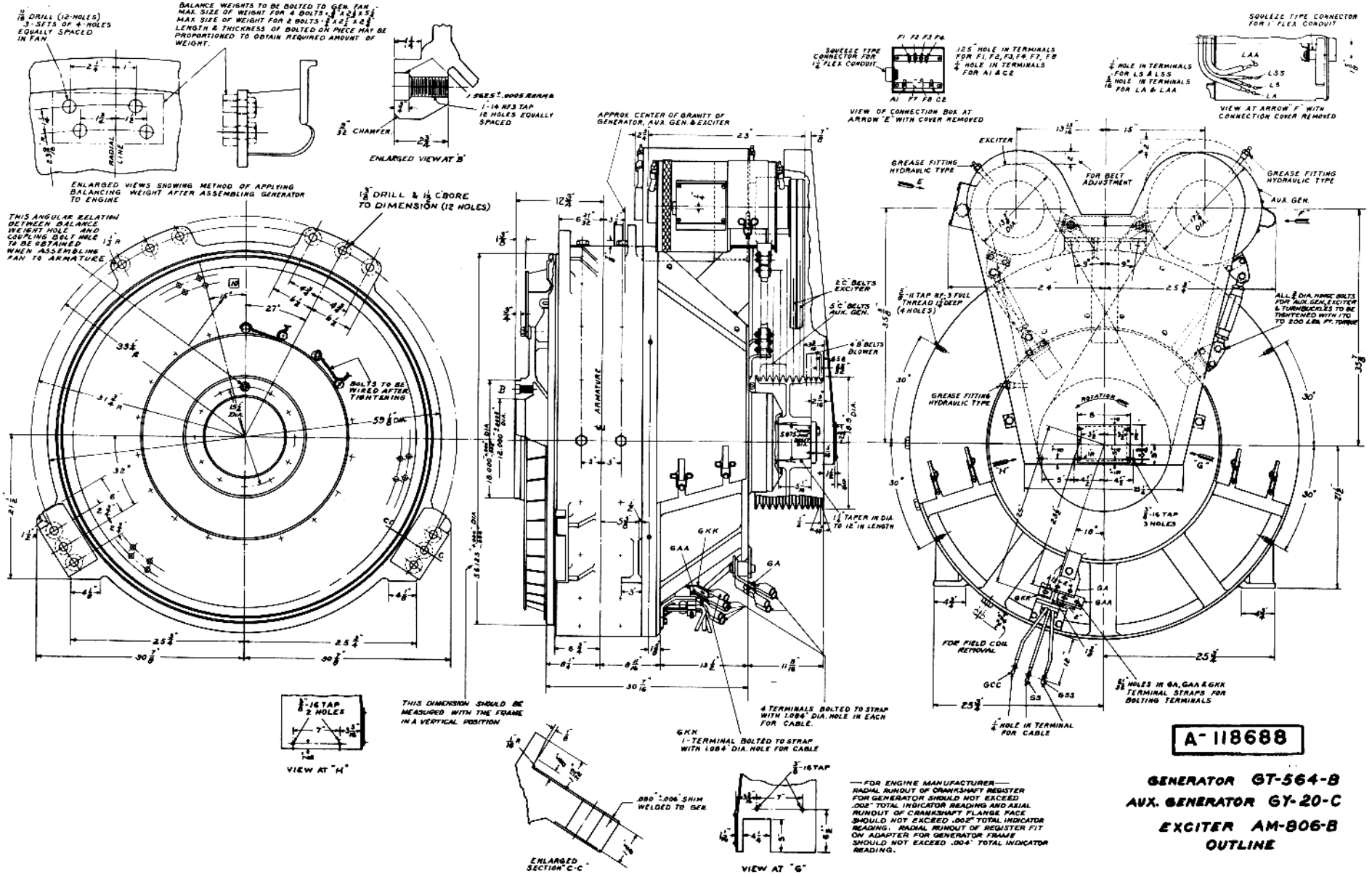
AND SO ON TO #405 TO #81

TURNS	ARMATURE COIL	EXCITING FIELD	COMMUTATING FIELD
1	CAT. 6744211G1	OPEN CAT. 6751679G1	CAT. 6744205G1
	EQUALIZER CAT. 6733610G1	CLOSED CAT. 6751679G2	

GENERATOR GT-564-B

CONNECTION DIAGRAM

A-118712



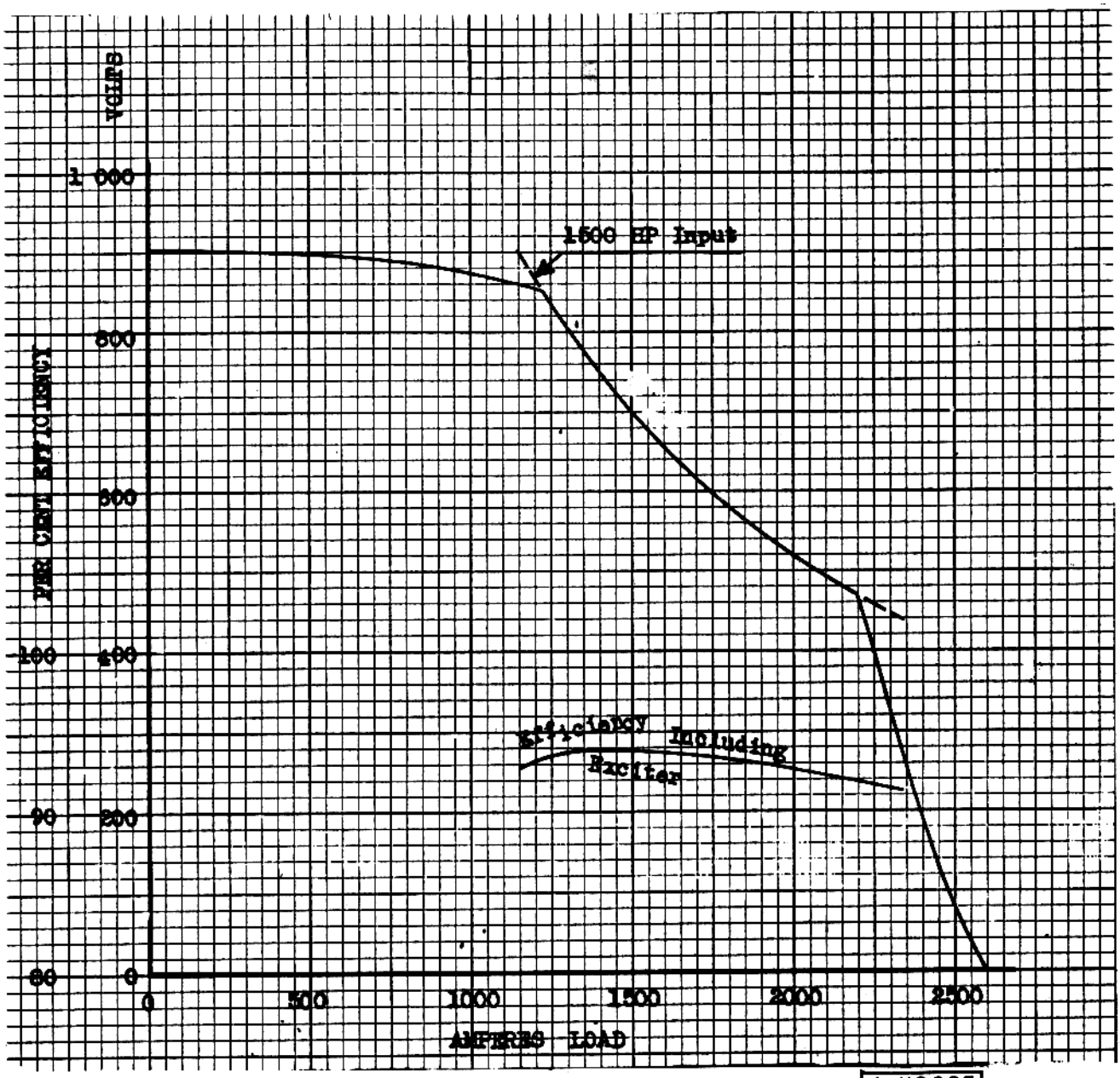
A-118688

GENERATOR GT-564-B

AUX. GENERATOR GY-20-C

EXCITER AM-806-B

OUTLINE



GT-564 Railway Generator
CHARACTERISTICS WITH AM-806 EXCITER
Used with 1500 Hp, 1000 Rpm Diesel Engine
Based on Tests