ELECTRO-MOTIVE DIVISION • GENERAL MOTORS CORPORATION
SERVICE DEPARTMENT

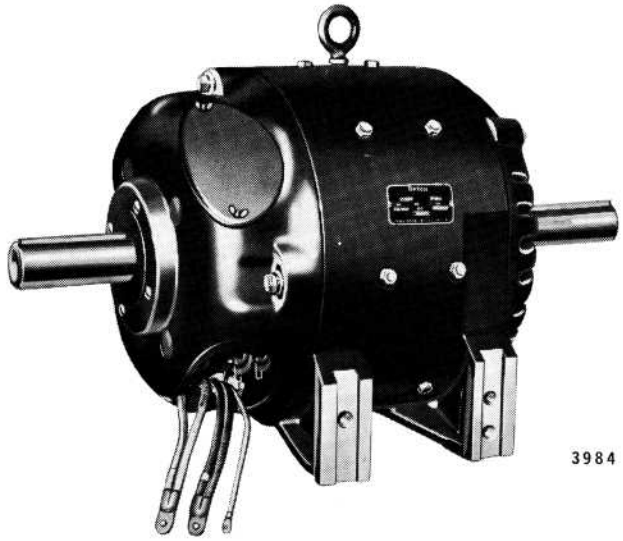
MAINTENANCE INSTRUCTION

AUXILIARY GENERATORS 10, 18, AND 24 KW

DESCRIPTION

This bulletin covers the 10, 18, and 24 KW auxiliary generators, Model A-7159-A5, A-8102-A3, A-8102-M2, A-8145, and 2A-8145. Since all of these models are similar in construction, operation, and maintenance, the information presented will apply to all models unless otherwise noted.

These generators are shunt wound machines which produce 80 volts direct current at 850-2400 RPM. (24 KW machines are 74 volts at 920-2733 RPM.) They are ventilated by a fan mounted on the armature which draws air into the generator. Rotation is counterclockwise when viewed from the commutator end. Most of the generators are driven by a flexible coupling and shaft extension from the diesel engine, however, a few applications are belt driven.



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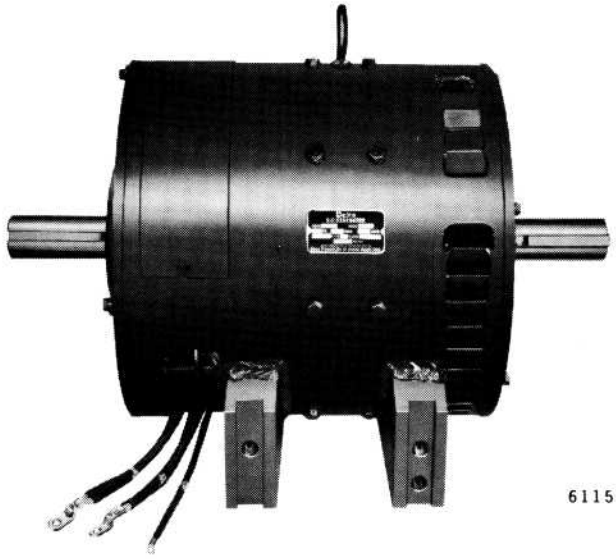
10 KW



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18 AND 24 KW

Fig. 1 — Auxiliary Generators

OPERATION

When applied to locomotives, these generators provide direct current for excitation of DC main generators, charge storage batteries, supply control circuits, lighting and miscellaneous other low voltage current needs.

Residual magnetism furnishes excitation after which the machine becomes self-excited from its field windings. Since these generators will be operating at varying speeds, voltage regulators are used to control the field excitation through the external lead connections provided.

MAINTENANCE

The generator is designed and manufactured to provide long life and satisfying performance with a minimum of maintenance. Like any machine, however, certain maintenance is required, the extent of which is largely determined by the operation and service to which the generator is subjected. Inspections and maintenance should be performed on the systematic basis outlined in the Scheduled Maintenance Program.

*NOTE: Refer to M.I. 3701 Rev. A for 10 and 18 KW auxiliary generator models not listed above.

CLEANING

It is essential that the generator be kept clean at all times. The generator should be blown out with clean dry compressed air whenever conditions warrant, and at periods as outlined in the applicable Scheduled Maintenance Program.

The generator should not be cleaned with liquid of any kind. Cleaning the coils and windings with a liquid cleaner may cause low megger readings. All that is necessary is to blow out the dust and dirt with clean dry compressed air, often enough to prevent any accumulations. A large volume of air at reasonably low pressure should be used. If a high pressure from a nozzle is used, there is danger of loosening the binding tape and cutting the protective coating on the various parts.

In cases where there are heavy deposits of grease or dirt which cannot be removed with air and dry cloths, a stiff brush, soft wooden or fibre scrapers may be required. If commutator becomes oil sprayed, dampen a cloth in a solvent type cleaner to remove oil. However, every precaution should be taken to keep the cleaner off the commutator and copper parts. This type of cleaner should be used only when other methods will not remove the foreign material.

INSPECTION

The generator should be inspected at intervals as specified in the applicable Scheduled Maintenance Program. These inspections will ensure operational efficiency and determine what maintenance is required to prevent failure in service. Specific inspection procedures for generator components are included in this bulletin.

BRUSHES AND BRUSH HOLDERS

The 10 and 18 KW generators are equipped with constant pressure brush holders, Fig. 2, and the 24 KW generator is equipped with an adjustable type brush holder, Fig. 3.

The constant pressure type brush holder assembly contains a removeable spring clip assembly which exerts a preset pressure on the brushes as they are worn down. To remove the brushes from this brush holder the spring clip must first be removed by pressing the retaining spring on the side of the spring clip which releases it from the brush holder.

A periodic inspection of brushes and brush holders should be made, and the following points should be observed.

Brushes should move freely in the brush holder. If the adjustable spring type holder is used, lift the spring and raise and lower the brushes in the carbonways to remove any dirt that may have accumulated. Care should be taken not to snap the spring, as this may damage the spring and chip the brush. With the constant pressure brush holder, the spring housing assemblies must be removed, as previously explained, before the brushes can be raised and lowered.

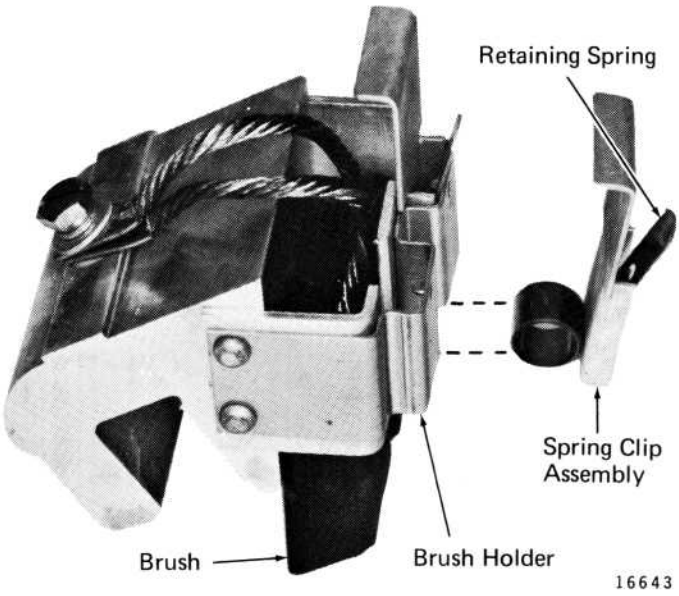

Fig. 2 – Constant Pressure Brush Holder

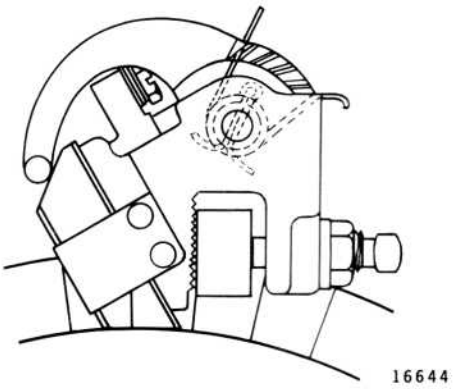

Fig. 3 – Adjustable Spring Type Brush Holder

Excessively worn or chipped brushes should be replaced with the type recommended by the locomotive manufacturer. If a full set of brushes is not required, the replacement brushes should be the same type as those remaining in the generator. A mixed set may result in unsatisfactory operation. Refer to Maintenance Data for brush type and wear limit.

When the new brushes are installed they should be "sanded-in" one at a time by placing a piece of No. 00 grade sandpaper under the brush with the sand side contacting the brush and moving the sandpaper in the direction of rotation. Lift the brush when moving the paper back, and keep the paper close to the commutator to avoid rounding the edges of the brush.

NOTE: DO NOT USE EMERY CLOTH OR EMERY PAPER FOR "SANDING-IN" BRUSHES.

The constant pressure type brush holder springs need no adjustment as the pressure will remain the same throughout the brush life, regardless of the brush length. The adjustable type spring tension should, however, be maintained as specified under Maintenance Data. It is important that all brushes be adjusted to the same pressure, as unequal brush pressure will cause unequal current distribution in the brushes. Refer to Fig. 4 for method of measuring and adjusting brush pressure.

Maintain 1/8" clearance between the bottom of each brush holder and the commutator. The brush holder assembly is arranged in such a way that the brush holder may be moved toward the commutator by loosening the check nut and the set screw on the brush arm. Brush holders should be rigidly bolted in place. The carbon brush shunts should be so arranged that they will clear the parts of the frame that are at ground potential.

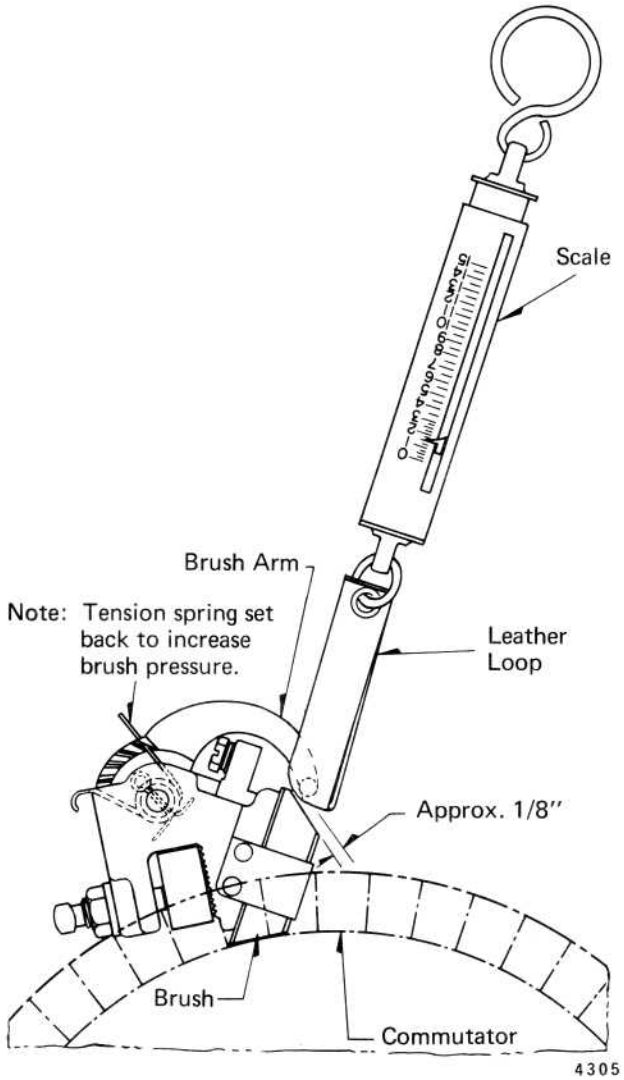

Fig. 4 — Measuring Brush Pressure

COMMUTATOR

The commutator should present a polished surface entirely free from pitting. In the event the commutator becomes pitted it should be cleaned with a fine commutator stone.

NOTE: Do not use carborundum, emery cloth, or emery paper on the commutator.

When cleaning the commutator with a stone, extreme caution must be taken to keep copper dust from the windings. The air openings in the end frame on the fan end should be covered to prevent the fan from drawing dust into the windings. After cleaning the commutator, blow out windings carefully with clean dry compressed air at reduced pressure.

It the commutator has high and low spots or signs of burning, the armature should be placed in a lathe and the commutator turned just enough to give it a uniform surface.

Do not apply lubricant to the commutator because it is detrimental to successful operation. If the commutator is not kept clean and free from grease and oil, carbon dust will collect in the grooves between the segments and may cause a short circuit.

DISASSEMBLY

REMOVING ARMATURE FROM STATOR

1. Remove sheaves (where used) with sheave puller and remove keys from the shaft.

2. Before removing the end frames on the fan and commutator end, mark the end frame and stator assembly with a prick punch. This is done so that the brushes will not be shifted away from the electrical neutral when reassembling the commutator end frame.

3. Remove the brushes from the brush holder and cover the commutator with a protective fish paper covering.

4. Disconnect the connection from brush holder to interpole field coils and remove the clamps holding stator leads to housing.

5. Remove cap screw nuts from the commutator and fan end frames.

6. Remove screws, bearing cap to housing, and remove pipe plug and nipple from both ends, if used.

7. Place a protector over shaft and apply a piece of pipe over the shaft extension. Support the free end of the pipe with blocks and loosen the commutator end bearing frame by tapping on frame using a brass or copper bar. When the commutator end frame is moved away from the stator, place fish paper between armature and pole piece at the bottom of the armature. Remove commutator end frame. Remove the fan end frame by tapping on the frame; the frame can then be slipped over the bearing assembly. The fish paper under the armature will protect the armature from dropping.

8. To remove the generator armature entirely, a heavy rope should be placed around the ends of the armature shaft and the complete armature lifted enough to clear the pole pieces. Ease the armature out of the frame toward the fan end. Care must be exercised not to injure the laminations and windings during this process. An extension pipe may be required over the shaft at the commutator end, so that the armature may be projected far enough out of the frame to be handled.

CAUTION: Before using an extension pipe, protect the threaded portion of shaft and the shaft itself. Support the armature on wooden blocks after removal. Never lift the weight of the armature with rope around the commutator.

REMOVING ARMATURE BEARINGS

1. Remove bearing covers from commutator end and fan end by tapping cover with soft metal hammer and pry open with a screw driver. A retainer pin holds the bearing housing covers on both bearing assemblies.

2. Remove bearing retainer locknut from both ends of bearing assemblies.

CAUTION: Keep commutator end bearing assembly parts separated from the fan end bearing assembly parts. Mixing the bearing parts will cause the armature to bind and run hot due to improper end play.

3. Remove remaining bearing assembly on shaft by tapping the bearing housing lightly and evenly with a rawhide mallet or soft metal hammer.

NOTE: A new bearing must be installed and the old bearing discarded.

4. Remove the armature fan. The fan is of one piece construction bolted to the armature spider. By removing the bolts, the fan can be slipped off the shaft. Care should be taken to reassemble the fan in the same position, if the balance has not been disturbed.

ARMATURE INSPECTION AND CLEANING

Before the armature can be properly checked and its electrical qualifications met, it must be thoroughly clean and dry. When cleaning the armature, first blow out all carbon dust, using clean dry compressed air. A large volume of air at reasonably low pressure should be used to prevent damage to the insulation.

After the carbon dust has been blown out of the armature, the armature may be cleaned using petroleum solvent Apco No. 42 (Stoddard solvent - flash point 115° F.). Wipe the outside of the armature with a cloth well saturated with the solvent to remove external grease and dirt. Dry the armature using low pressure air, making sure the air is blown into the pockets and through the openings in the armature, to remove internal accumulation of dirt. After the armature has been satisfactorily cleaned, it should be set aside to allow the solvent to evaporate before any electrical tests are made.

CAUTION: Use the usual safety precautions that apply to inflammable fluids. Provide adequate ventilation when any type of solvent is used.

The armature should be closely inspected for condition of bands, wedges, coils, insulation, commutator, and the general assembly. Armature bands and core wedges should be tight and secure. Soldering on the band should be intact. If the solder has been thrown, the cause should be determined and corrected and bands replaced. The coil insulation should be free of blisters, flakes, or cracked insulating varnish surfaces.

ARMATURE AND COMMUTATOR REPAIR

Armature Electrical Tests

Before applying a high potential test to the armature, make an insulation condition test with a megohmmeter. A reading of one megohm minimum should be recorded by applying 500 volts DC to the winding for one minute. If armature is free of insulation deterioration, moisture grounds, and the creepage surface is clean, a high megohm reading may be expected, usually from 100 megohms to infinity. When low megohm readings are found, the armature should be heated for 4 hours at 100° C. in a convection type oven. Recheck megohm readings after cooling armature to the

temperature of the last test for a comparison value. If below 1 megohm, determine cause and correct.

When the armature passes the megohmmeter test, apply a high potential test at 800 volts for one minute. The armatures that fail on high potential test should be stripped and rewound, unless the fault can be located and a permanent repair made.

When the armature passes the high potential test, apply a bar-to-bar resistance comparison test with a low resistance ohmmeter test set. Readings above normal may indicate poor solder joints; and readings below normal will indicate a short which must be eliminated or the armature stripped and rewound.

Armature Wire Bands

Armature wire bands should be tight and solder on the bands should be intact. If the solder has been thrown from the bands, or the bands are loose, the cause should be determined, corrected and bands replaced. If extensive repair is required, return the armature to the manufacturer.

Armature Varnish Treatment

Armatures which have passed all electrical tests should be given a varnish treatment as follows:

1. Place armature, fan end down, in a convection oven and preheat so the core and winding temperature is 130° ± 10° C.

2. Keeping varnish away from the commutator surface, dip the armature in a varnish tank for 10 minutes containing clear baking varnish 8160879 held to Ford Cup No. 4 viscosity between 100 and 130 seconds at 21.1° C. using Xylol 8117384 for thinning.

3. Remove the armature from the varnish, allow to drain for 5 minutes. Then clean shaft and bake armature in convection oven for 5 hours, with maximum oven temperature at 160° C.

   After baking, and while armature is hot, check commutator bolts to see that they are tightened to 360 inch-pounds torque. Also apply a high potential test at 800 volts for one minute while the armature is still hot.

When the commutator is rough, burned, or eccentric, the armature should be placed in a lathe and the commutator turned. Before turning the commutator, a suitable head covering should be placed over the end windings to prevent the chips working into the armature. While turning, the peripheral speed of the commutator surface should be about 300 feet per minute. Use a carboloy tipped tool when cutting commutator surface. Round off the ends of the commutator segments to at least 1/32" radius with a mill file.

After the commutator has been turned, the mica insulation between segment bus bars should be regrooved to the proper depth and width as shown in the Maintenance Data.

The sharp edges of the commutator bars should be removed with a hand scraper or a triangular file. Inspect grooves to see that no copper chips remain. Final polishing should be done with a fine grade commutator stone and crocus cloth.

Check commutator for maximum eccentricity of .0005" or .001" total indicator reading. Also check commutator diameter neck width dimensions. See Maintenance Data for limits.

ARMATURE BALANCE

Dynamic Balancing Of Armature

It is recommended that the armature be dynamically balanced after any of the following operations.

1. Armature rewound or coils repaired.

2. Armature rebanded.

3. Armature vacuum impregnated or dipped and baked.

4. Repairs to commutator other than tightening and turning.

NOTE: It is advisable that no repairs be made to the commutators of this generator, except tightening and turning. When conditions are such that the commutator needs expensive repair, return the generator to the manufacturer.

The auxiliary generator armature must be in dynamic balance within 1/2 inch-ounce.

STATOR REPAIR

Stator Assembly Cleaning

The method of cleaning the stator is similar to that used in cleaning the armature, taking care to remove all grease and dirt from around, under and between the field coils. The materials, solvent, and safety precautions are the same.

Stator Electrical Tests

Apply an insulation condition test with a megohmmeter; if low readings are found, dry out stator before applying high potential test.

After passing a megohmmeter test of not less than 3 megohms, make a 800 volt AC 60 cycle high potential test on field coils to stator frame.

Make a resistance check of field coil and interpole circuits, see Maintenance Data in this instruction. A polarity test, if necessary, can be made with the aid of a magnetized tip needle and by applying direct current to the field circuits.

End Frame And Brush Rigging Assembly

Inspect the brush holder assembly for damaged holders and springs. Remove all burrs that might have been caused by flashing. Clean the complete end frame of any grease, oil, and dirt, and buff brush holders.

After the end frame brush rigging has been repaired, apply a high potential test of 800 volts for one minute.

Stator Field Coils

Connections and leads to coils should be examined to determine if they are mechanically and electrically satisfactory. Field coils, leads, and cable connections must be secured and all taping made intact. Check shunt and interpole fields for tightness.

STATOR VARNISH TREATMENT

Stators which have passed all electrical tests should be given a varnish treatment as follows:

1. Examine field coil insulation for cracks in insulation. If field coils are tight and insulation is in good condition, the stator may be varnished.
2. Protect contact surfaces of cables with surgical tape.
3. Preheat stator in a convection type oven so that the average pole and winding temperature is 130° ± 10° C.
4. Dip the stator assembly in clear baking varnish 8160879 for five minutes. Maintain viscosity of varnish the same as when dipping the armature.
5. Remove stator from varnish and allow to drain for 5 minutes.
6. Clean varnish from all mounting surfaces.
7. Bake stator assembly for five hours in a convection type oven with oven temperature not over 160° C.
8. Remove stator assembly from oven and cool to room temperature.
9. Remove surgical tape from connections.
10. Retap holes in frame to remove varnish.

When necessary to remove field coils, provision should be made to keep each pole, coil, and shims together. Upon reassembly the parts should be placed back in their original position.

NOTE: The interpole coil should not be removed from the pole. If the interpole coil is in need of repair a new interpole and pole piece should be installed.

New field coils which are to be installed should first be kept for one hour in a 120° C. oven. While hot, they should be assembled on poles and drawn up tightly in the generator frame.

Clean the contact surfaces for both solder and bolted connections. Make sure the bolted connections are tight before solder is applied to these connections.

ASSEMBLY

ARMATURE BEARING ASSEMBLY

The bearings are sealed type ball bearings which do not require additional lubrication between overhaul periods.

NOTE: When assembling 18 and 24 KW machines, all references to bearing covers in the following assembly instructions should be changed to end frames. See Figs. 5 and 6 for bearing assembly.

1. Clean out grease cavities in bearing housings and covers.
2. Assemble bearing parts and apply sealant 8305894, to the inside diameter of both bearings and the outside of the fan end bearing.

NOTE: Model A-8145 is equipped with a roller bearing at the fan end. When reassembling this model, convert to Model 2A-8145 by replacing roller bearing assembly with ball bearing as shown in Fig. 6. The following parts should be used in the conversion.

Fan End

Bearing Housing	-3181203 (Reused from C.E.)
Spacer	- 5312203 (New)
Bearing	- 907786 (New)
Collar	- 3181232 (Reused)

Commutator End

Bearing Housing	- 3181204 (New)
Bearing	- 907786 (New)
Collar	- 5375932 (Reused)

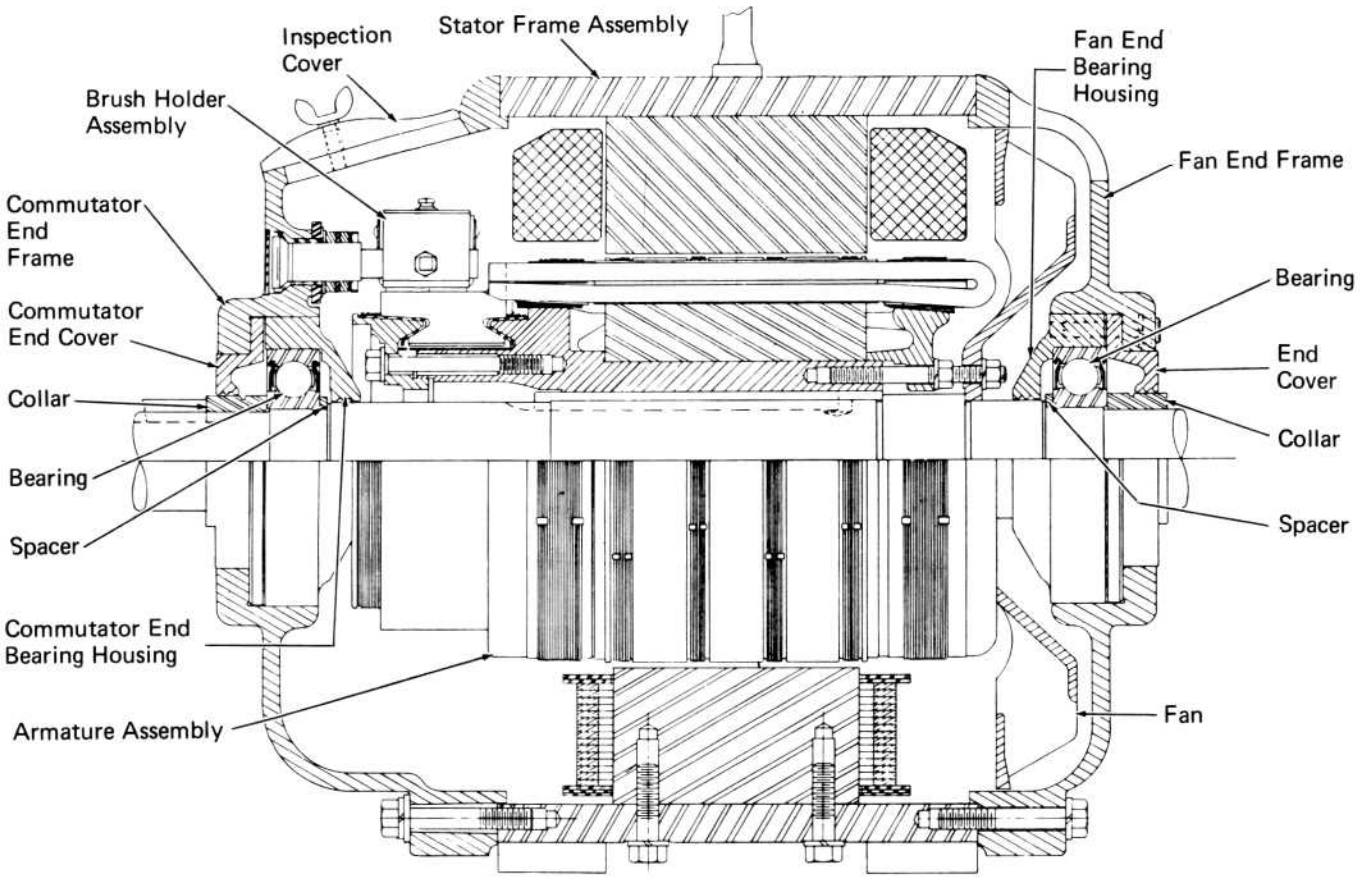

Fig. 5 – Model A-7159-A5, Cross-Section

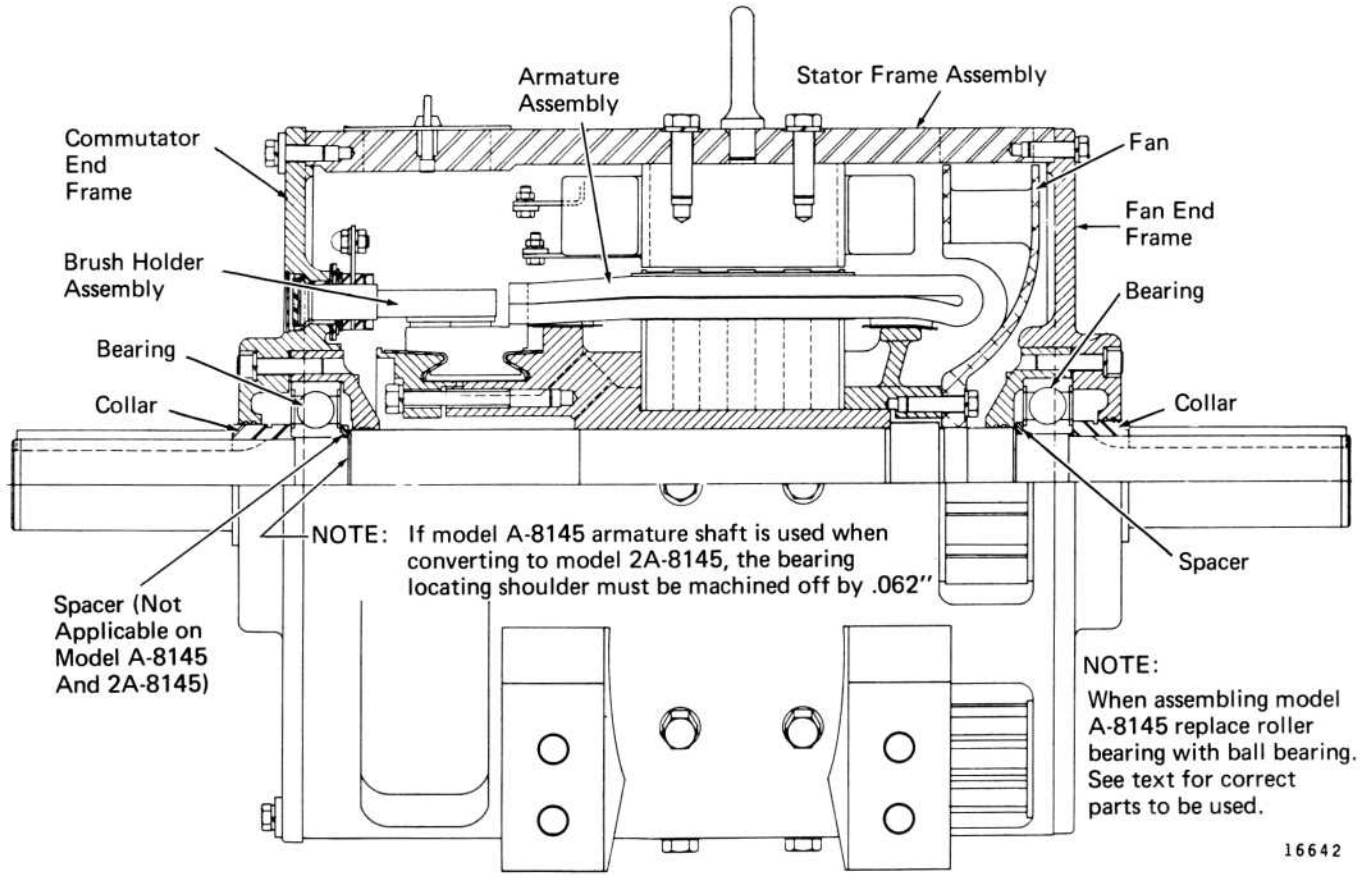

Fig. 6 – Model A-8102-A3, A-8102-M2, A-8145, And 2A-8145, Cross-Section

3. If the bearing housings and covers are in good shape, fill the labyrinth grooves with grease as specified in Maintenance Data.

4. Before placing bearing housings and covers on the shaft, determine their proper location by laying them side by side and noting that one of the housings is slightly higher than the other and one of the cover mounting flanges is thicker than the other. The housing that is slightly higher should be assembled with the thinner cover. This combination will give the generator the end play needed for proper operation.

NOTE: End play of the generator can be on either end as determined by the application. If the auxiliary generator is to be driven directly from the engine gear train, the end play or free end must be on the commutator end of the generator. If the generator is to be belt driven, the end play must be on the end being driven.

5. Fill the cavity in the bearing housing and bearing cover up to shaft level with ball bearing grease, then install the housing on the shaft.

NOTE: If fan was removed from armature it must be installed before bearing housing.

6. Next apply the bearing spacer, and grease packed bearing in the housing.

7. Apply sealant 8305894 on the inside diameter of the collar and apply collar to shaft.

8. Install the bearing cover and gasket over the collar. On 18 and 24 KW models the end frames cannot be installed until the armature is installed in the stator.

ARMATURE INSTALLATION

1. Assemble the generator in a horizontal position protecting the commutator with fish paper.

2. Place a pipe through the stator assembly and over the shaft extension on the commutator end of the armature.

3. Lift the armature with a rope around the pipe extension and rear extension of the armature shaft, and guide the armature into place. Care must be exercised so that the armature and the pole assemblies are not damaged during assembly.

4. Remove rope and pipe from shaft, and place end frames over bearing assemblies.

5. Lift until the end frames fit the stator and bolt in place.

6. Torque the end housing bolts to the frame to 50-55 ft-lbs.

7. Install the socket head screws in the end frames and torque to 20-25 ft-lbs.

8. Insert the pipe nipple and the pipe plug in the threaded opening in the bearing end frame to permanently seal the bearing.

9. Clamp external leads in position.

10. Assemble brushes to brush holder and seat brushes to commutator. Adjust spring tension on brush holder pressure arm to 1-1/2 to 2-1/2 lbs. on machines with adjustable type brush holders. Blow out carbon dust.

11. Insert key in each generator shaft extension and tape in place.

BRUSH SETTING

KICK NEUTRAL METHOD

After the generator has been overhauled and to ensure proper function, it is important that the brushes be set as close to electrical neutral as possible. In order to check this setting, the procedure outlined below should be followed:

1. While the brushes are resting on the commutator, inspect brush holders for equal spacing on the commutator. Use commutator as a scale to make this measurement.

2. Mark one bar lightly and count off bar 1 to 32 counterclockwise facing the commutator end on the 18 and 24 KW generators and 1 to 25 on the 10 KW generators. In each case, mark the last bar counted.

3. Viewing the generator from the commutator end, rotate armature to locate the center of the bar marked one (1) near the center of the top right brush holder brush. The bar marked No. 32 on the 18 and 24 KW generator should now be located near the center of the top left brush holder brushes. The bar marked No. 25 on the 10 KW generator should be in the same position given for the 18 KW.

4. Connect a six volt storage battery and a switch in series with the generator field.

5. Use zero center reading ammeter (50 millivolt movement) with a pair of leads and prods. Apply the prods across commutator bars marked either 1 to 32 or 1 to 25 depending on the generator being checked. Read the kick voltage of the armature when the switch in the field circuit is opened and closed. All brushes must be isolated from the commutator when this check is being made.

NOTE: When the battery switch is closed, wait several seconds so that the field current can build up to its maximum value before the switch is opened.

6. Open the switch to excite the field, then rapidly close the switch. Note the deflection of the meter. Rotate the armature about one commutator bar and repeat the sequence just finished. If the second reading is greater than the first, and of the same polarity, the armature was rotated in the wrong direction.

   If the meter shows a deflection of the opposite polarity, the neutral point has been passed. Following the above pattern of rotating the armature until the deflection of the meter connected across either bar 1 to 25 or 1 to 32, depending on the generator being checked, is zero or as near to zero as possible.

7. After neutral has been found, check if right and left upper brushes locate on bars marked as shown in Fig. 7 and 8. If not, rotate the end housing so that the location of the brushes will conform to these figures. Work to plus or minus 1/64" of location setting.

NOTE: If the above settings cannot be obtained by rotating the end housing, it may be found that the angular spacing of the brush holder is inaccurate.

8. A recheck should be made of the kick neutral after the end housing has been rotated into proper position because the armature may have moved slightly.

INSULATION TEST

All high potential tests must be made by placing electrodes on circuit under test before closing switch. Dangerous overvoltage surges may result when touching the circuit under test with electrodes already energized.

This generator is a low voltage machine and for insulation test purpose falls in the same class as the locomotive low voltage tests. Apply 600 volts to ground for one minute after overhaul.

GENERATOR INSTALLATION

Refer to Maintenance Instruction 1753 for alignment information of shaft driven auxiliary generators. When installing belt driven auxiliary generators the following items should be checked.

1. Belts must be clean and dry.

2. Drive and driven sheaves should be aligned and parallel with each other.

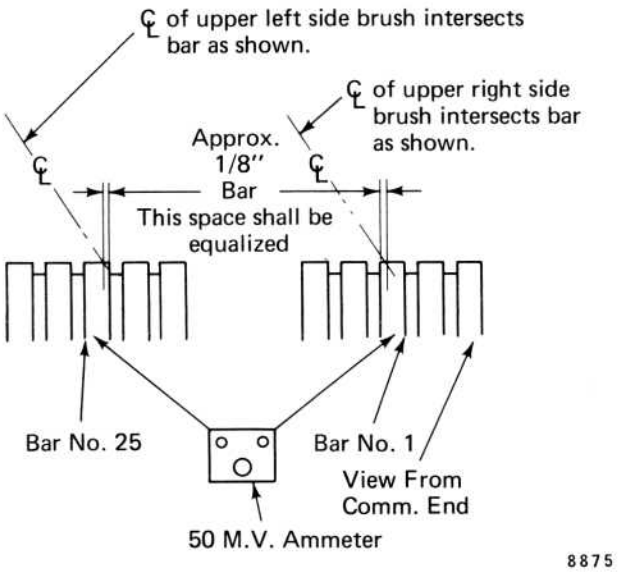

Fig. 7 – Brush Setting
10 KW

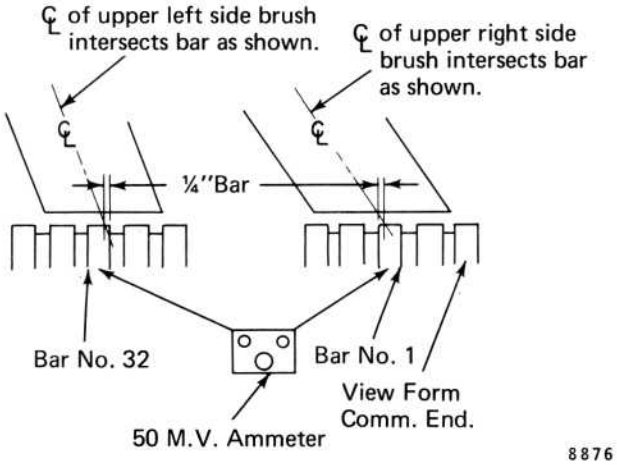

Fig. 8 – Brush Setting
18 And 24 KW

3. When pressing the auxiliary generator sheave on shaft, do not press sheave flush with end of shaft.

   Allow the sheave to protrude approximately 3/16" from end of shaft. Further adjustment of sheave may be made by bolt and retainer plate during the alignment operation with the driving sheave.

4. Drive belt tension is adjusted by shifting the generator in its slotted supports by means of adjusting screws after loosening the auxiliary generator support bolts. Belts should be adjusted to avoid excessive slack or unwarranted sagging. Satisfactory belt tension will be obtained when a normal pressure applied midway

NOTE: When the battery switch is closed, wait several seconds so that the field current can build up to its maximum value before the switch is opened.

6. Open the switch to excite the field, then rapidly close the switch. Note the deflection of the meter. Rotate the armature about one commutator bar and repeat the sequence just finished. If the second reading is greater than the first, and of the same polarity, the armature was rotated in the wrong direction.

   If the meter shows a deflection of the opposite polarity, the neutral point has been passed. Following the above pattern of rotating the armature until the deflection of the meter connected across either bar 1 to 25 or 1 to 32, depending on the generator being checked, is zero or as near to zero as possible.

7. After neutral has been found, check if right and left upper brushes locate on bars marked as shown in Fig. 7 and 8. If not, rotate the end housing so that the location of the brushes will conform to these figures. Work to plus or minus 1/64" of location setting.

NOTE: If the above settings cannot be obtained by rotating the end housing, it may be found that the angular spacing of the brush holder is inaccurate.

8. A recheck should be made of the kick neutral after the end housing has been rotated into proper position because the armature may have moved slightly.

INSULATION TEST

All high potential tests must be made by placing electrodes on circuit under test before closing switch. Dangerous overvoltage surges may result when touching the circuit under test with electrodes already energized.

This generator is a low voltage machine and for insulation test purpose falls in the same class as the locomotive low voltage tests. Apply 600 volts to ground for one minute after overhaul.

GENERATOR INSTALLATION

Refer to Maintenance Instruction 1753 for alignment information of shaft driven auxiliary generators. When installing belt driven auxiliary generators the following items should be checked.

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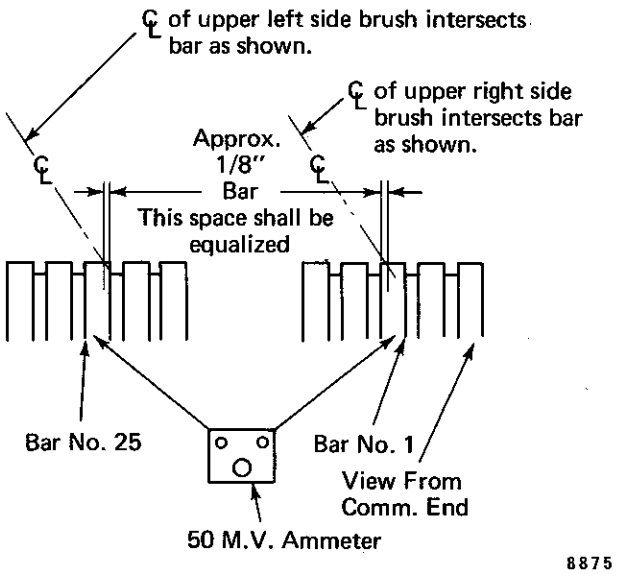

Fig. 7 — Brush Setting
10 KW

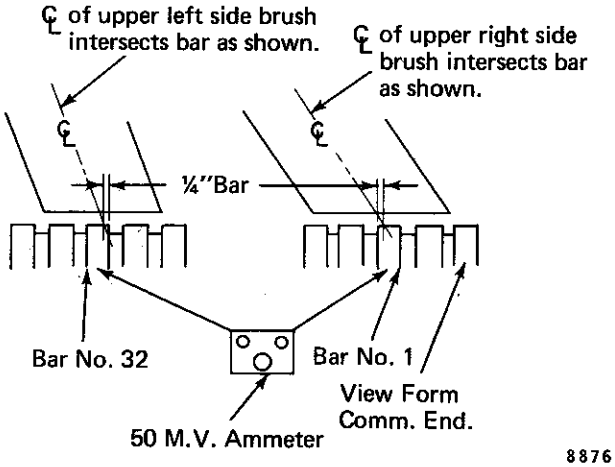

Fig. 8 — Brush Setting
18 And 24 KW

3. When pressing the auxiliary generator sheave on shaft, do not press sheave flush with end of shaft.

   Allow the sheave to protrude approximately 3/16" from end of shaft. Further adjustment of sheave may be made by bolt and retainer plate during the alignment operation with the driving sheave.

4. Drive belt tension is adjusted by shifting the generator in its slotted supports by means of adjusting screws after loosening the auxiliary generator support bolts. Belts should be adjusted to avoid excessive slack or unwarranted sagging. Satisfactory belt tension will be obtained when a normal pressure applied midway

between the main generator and auxiliary generator sheaves will depress a single belt 1/2" to 1".

GENERATOR TESTING

Test the auxiliary generator voltage after the installation is complete. If the voltage is low or zero, check for the following conditions:

1. Brushes not making good contact.
2. Shunt field reversed or short circuited.
3. Shunt field circuit open.

A reversed field connection can usually be detected by the generator voltage tending to approach zero when the generator is started, indicating faulty wiring.

The voltage of the generator may increase with reverse polarity because the residual field is in the wrong direction.

CAUTION: If the battery charging switch is closed, the voltage of the generator (because of the reverse polarity) would add to the battery voltage and may produce a large current with considerable damage to the charging equipment.

MAINTENANCE DATA

SPECIFICATIONS

Weight	
10 KW	731 lbs.
18 & 24 KW	750 lbs.
Air Gap	
Main pole	
10 KW	.098"
18 & 24 KW	.073"
Interpole	
10 KW	.1035"
18 & 24 KW	.140"
Limits Of Resistance (at 75° C.)	
Armature	
10 KW	.01817 to .02009 ohms – Bars 1-10 – .01165 to .01287 ohms
18 & 24 KW	.01692 to .01870 ohms – Bars 1-8 – .00718 to .00794 ohms
Interpole	
10 KW	.00975 to .01077 ohms
18 & 24 KW	.01131 to .01251 ohms
Shunt field	
10 KW	7.11 to 7.85 ohms
18 & 24 KW	6.60 to 7.30 ohms
Brush Holders	
Number of brush holders	4
Clearance – bottom of brush holder to commutator	1/8"
Brush spring pressure (adjustable type)	1-1/2 – 2-1/2 lbs.
Brushes	
Number per brush holder	2
Brush type	
10 KW	8350491 (DE8)
18 KW	4945398 (E44)
24 KW	3199367 (E35)
Brush size	2" x .985" x .616"
Brush wear (Min.)	1"
Commutator	
Minimum diameter	7.125"
Neck width	.312"
Mica groove depth	3/64"
Mica groove width	.030"
Grease	
Chevron BRB-2	8398924