ELECTRO-MOTIVE

M.I. 3317-3

MAINTENANCE INSTRUCTION

AR11 TRACTION GENERATOR RECTIFIER BANK ASSEMBLIES AND SUPPRESSION CIRCUIT

CAUTION

Do not perform high potential tests on diodes, either individually or collectively.

If a high potential test is to be performed on the locomotive or generator, all positive and negative generator buses must be shorted together, and the brushes at the collector rings connected together to prevent high potential from being applied to the controlled rectifier assembly SCR.

Operation of the generator without load is not recommended, and should be restricted to an absolute minimum; but under no circumstances allow no-load voltage to exceed 800 VDC, and never operate the generator with the inspection doors open or panels removed.

DESCRIPTION

There are two configurations of this generator, the AR11 and AR11A. Both models are similar in appearance and construction. Differences between the AR11 and AR11A will be identified as applicable throughout this Maintenance Instruction, but this instruction will apply to both models unless specifically identified.

The AR11 and AR11A generators, Fig. 1, are three-phase alternators equipped with two independent and interwoven sets of "Y" connected stator windings and a rotating field common to the stator windings. The output from each set of stator windings is applied to an air cooled rectifier assembly in an air box located at the collector ring end of the generator. The rectifier assembly consists of two rectifier banks, Fig. 2, containing high current, high voltage silicon diodes in three-phase,

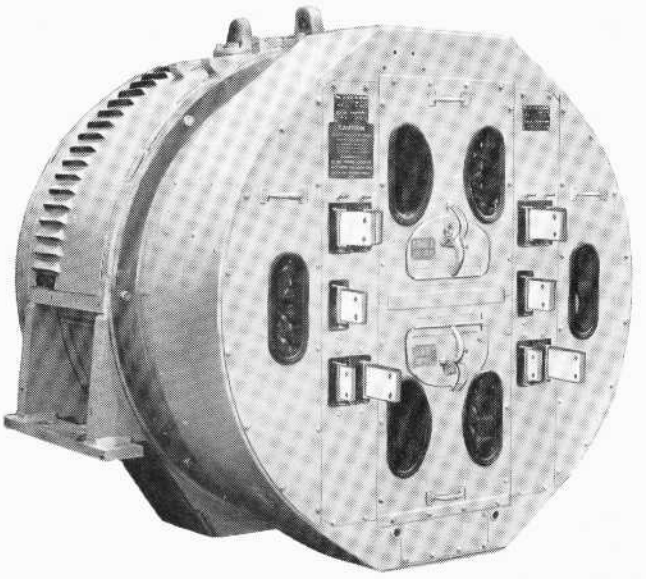

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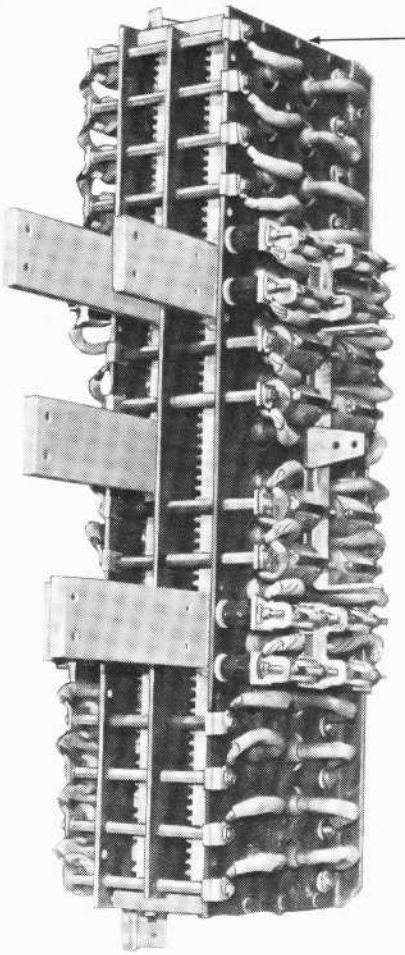
Fig.1 – AR11-D18 Generator



NOTE
AR11A rectifier bank assembly has a molded housing.

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Fig.2 – AR11 Fabricated Rectifier Bank Assembly

full wave, rectifier circuits. The circuits are provided with delta connected resistors and capacitors for suppression of commutation transients.

The two sets of "Y" connected stator windings can either be connected in parallel or in series. To optimize generator efficiency, the generator is equipped for generator transition. The output from each set of stator windings is applied to the two rectifier banks. At start-up, during low speed, high current locomotive operation, the two rectifier banks operate in parallel. At higher locomotive speeds, when current demands begin to decrease and voltage demands begin to increase, generator transition occurs and the two rectifier banks are automatically connected in series.

Generator transition allows the generator to attain greater overall efficiency by enabling two points of highest efficiency instead of one. The result being that significantly greater portions of operating time occur at higher generator efficiency levels.

The rectifier banks are provided with "bridge" diodes and "transition" diodes. The transition diodes are shorted out by a heavy duty contactor to accomplish transition to series operation. Fuse assemblies are provided to isolate diodes that may become shorted. Each fuse is equipped with a spring loaded indicator that protrudes when a diode failure causes the fuse to blow. Windows for fuse inspection are located in the air box.

On the AR11 generator, current transformer is mounted at the top of the air box above the left "A" phase group of rectifiers. Refer to Fig. 3. The transformer monitors the AC current from the left "A" phase generator winding.

The AR11A generator is equipped with current transformers mounted on the generator end plate. There are three transformers, one for phase "A", one for phase "B", and one for phase "C". AC current as sensed by the transformers is proportional to DC current at the main generator busses. As such, it provides a signal that is proportional to DC current output from the main generator.

Refer to Fig. 4 for a simplified pictorial wiring diagram of the AR11 generator. Refer to Fig. 5 for a simplified pictorial wiring diagram of the AR11A generator.

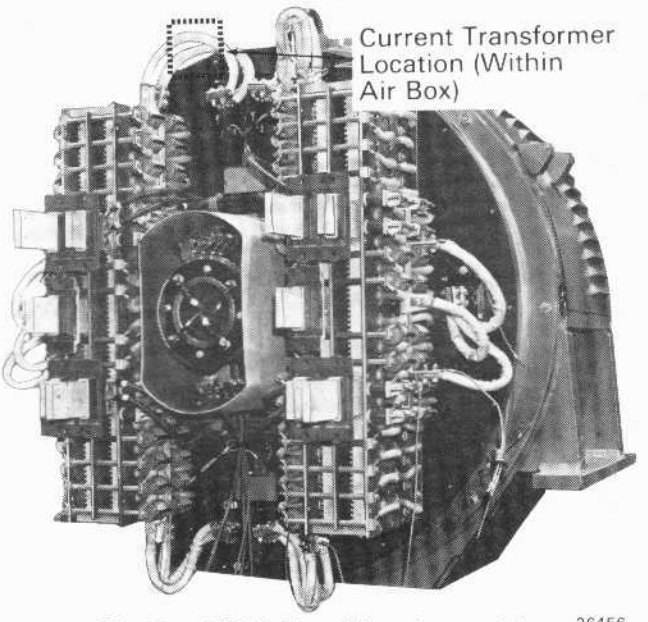


Fig.3 – AR11 Rectifier Assembly 26456

RECTIFIER BANK ASSEMBLIES

The AR11 rectifier bank has a fabricated housing and is equipped with 2200/2600 voltage class diodes. The AR11A rectifier bank has a molded housing and is equipped with 2000/2400 voltage class diodes.

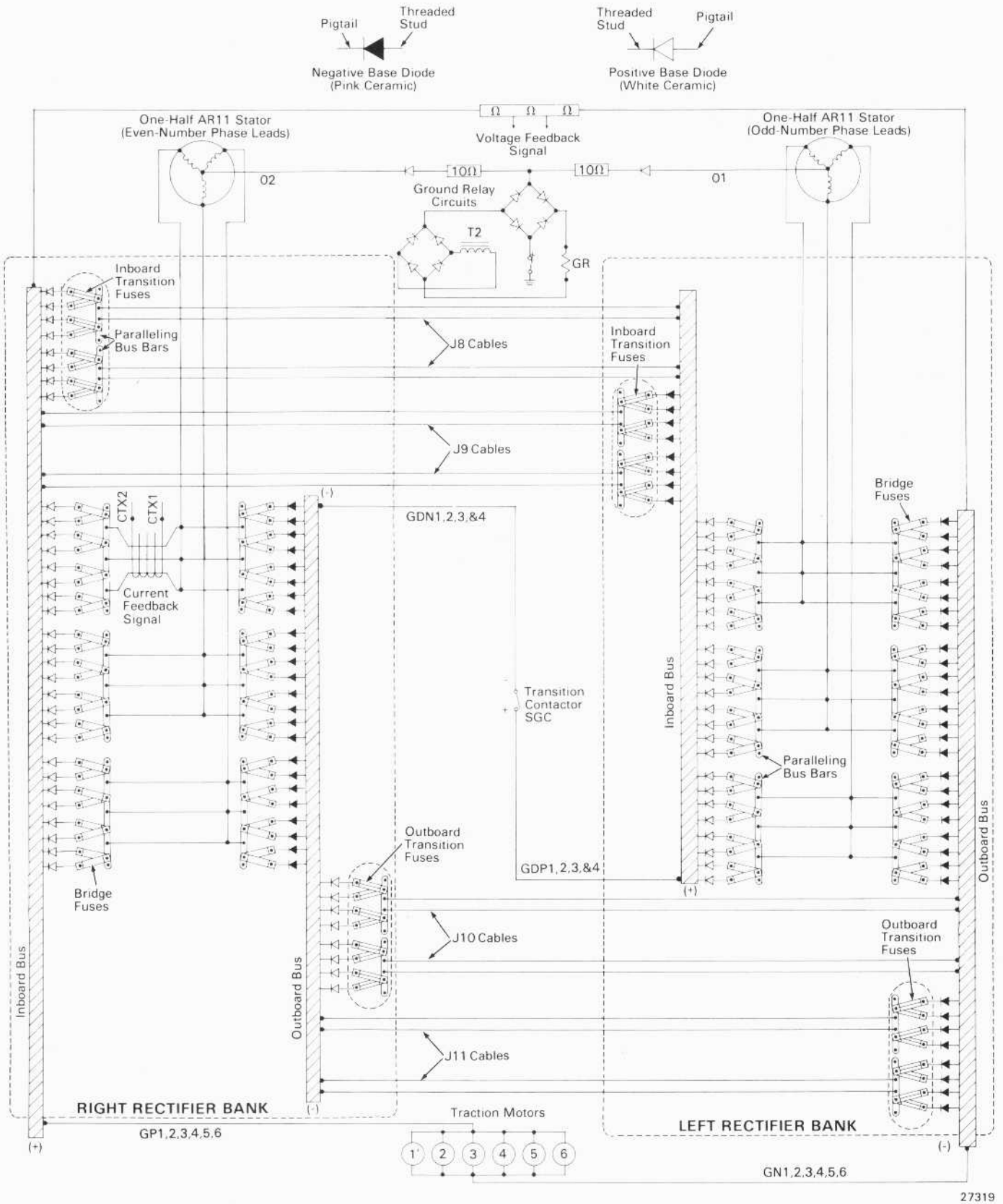


Fig.4 – Simplified AR11 Pictorial Diagram

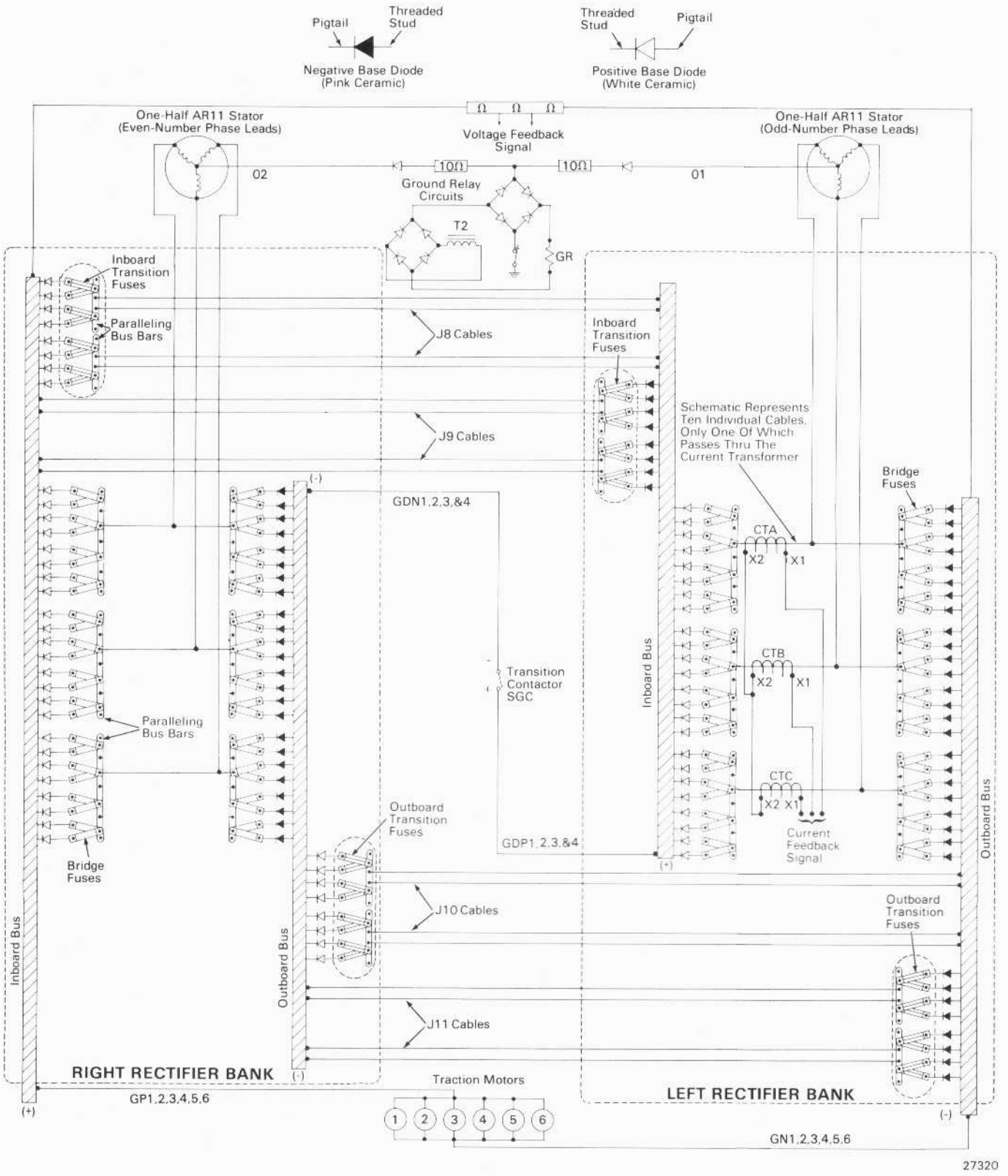


Fig.5 – Simplified AR11A Pictorial Diagram

NOTE

The 2000/2400 volt diodes of the AR11A generator may be used with the AR11 generator which was originally equipped with 2200/2600 volt diodes.

The left-side and right-side rectifier banks of either model are not interchangeable.

AR11A rectifier bank assembly 9547319, Fig. 6, must be assembled on the left-side (when facing the air box) and rectifier bank assembly 9547320, Fig. 7, must be assembled on the right side.

The AR11 rectifier bank assembly 9330047, must be assembled on the left-side (when facing the air box) and rectifier bank assembly 9330048, must be assembled on the right side.

The right bank of both models has 40 positive base diodes and 24 negative base diodes. The left bank of both models has 40 negative base diodes and 24 positive base diodes.

RECTIFIER INSPECTION

The rectifier assembly should be inspected by observing the diode fuse and indicator assemblies through the air box inspection windows. Fig. 8.

There are three groups of diode fuses to check; bridge diode fuses, the transition diode fuse inner group, and the transition diode fuse outer group.

1. There are six groups of eight bridge diodes, Fig. 9. Operation is permissible if no more than one fuse is blown in any one of these groups.

   Do not operate the locomotive if more than one fuse is blown in any group of eight bridge diodes. Refer to Example A of Fig. 11.

2. There are two groupings of 16 transition diode fuses, Fig. 10; 16 fuses in the inner grouping and 16 fuses in the outer grouping. Operation is permissible if no more than two fuses are blown in either one of these groupings.

   Do not operate the locomotive if more than two fuses are blown in either of the groupings. Refer to Examples B and C of Fig. 11.

CLEANING RECTIFIER BANK ASSEMBLY

The following procedure is recommended for cleaning the rectifier assemblies. The cleaning should be performed at the intervals stated in the Scheduled Maintenance Program.

1. Remove the heat sink assemblies from the generator.

2. Remove all fuses from rectifier banks to prevent damage to fuses during cleaning operation. If there is no visible damage to diodes, diodes should be checked in heat sinks. If there is reason to remove diodes before cleaning, inserts such as discarded diodes should be placed in diode holes to protect diode contact surface on the heat sinks. Use special diode wrench to remove diodes. Refer to Service Data for diode wrench part number.

WARNING

Water or cleaning solution allowed to contaminate the arc quenching sand inside the fuse body can cause the fuse to explode when it is required to isolate a shorted diode.

3. Mix a steam cleaner such as Dober Chemical Corporation Cleaner 6006 or Turco Chemical Company Steamfas in a suitable container. Use an 85 g per 3.79 litre (3 oz per gal) mixture of cleaner and water and maintain a tank temperature of approximately 60° C to 71° C (140° F to 160° F).

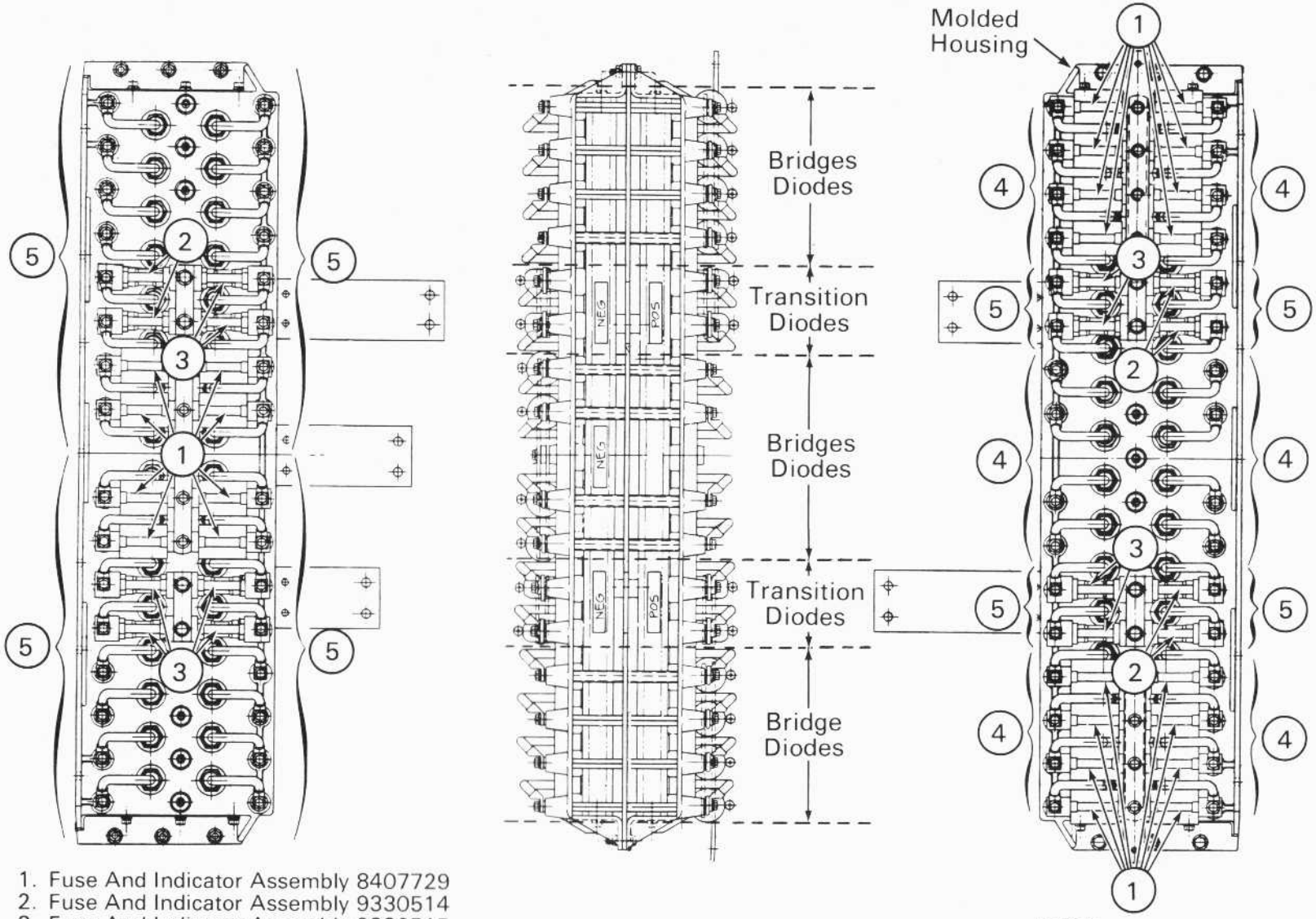
WARNING

Protect skin and clothing while steam cleaning. Operator should always wear rubber apron, boots, gloves, and a plastic face shield.

4. Place steam gun suction pipe into the cleaning solution and regulate the gun to obtain a good soapy solution.

CAUTION

Do not use live steam alone to clean the assemblies, and do not soak the assemblies in a caustic solution. If diodes are removed from the heat sink, the contact surfaces of the diodes and heat sink assemblies must not be cleaned with an abrasive material or wire brush. Such cleaning will destroy the finish and reduce heat rejection capability.



1. Fuse And Indicator Assembly 8407729
2. Fuse And Indicator Assembly 9330514
3. Fuse And Indicator Assembly 9330515
4. Positive Base Diode
5. Negative Base Diode

NOTE

AR11 rectifier left bank 9330047 has the same component locations, but mounted on a fabricated housing.

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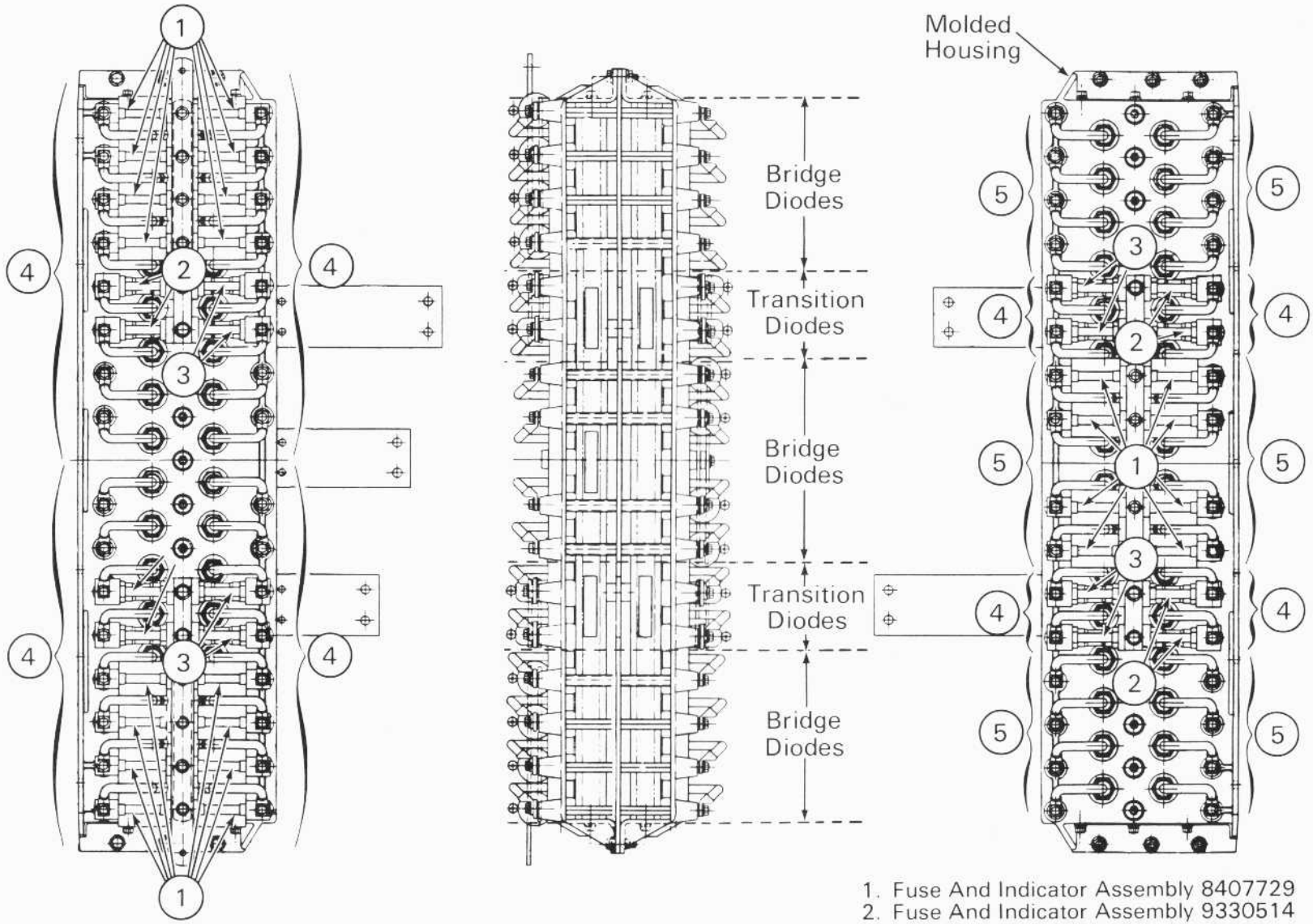
Fig.6 – AR11A Rectifier Left Bank 9547319



NOTE
AR11 Rectifier Right Bank 9330048 Has The Same Component Locations, But Mounted On A Fabricated Housing.

1. Fuse And Indicator Assembly 8407729
2. Fuse And Indicator Assembly 9330514
3. Fuse And Indicator Assembly 9330515
4. Positive Base Diode
5. Negative Base Diode

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Fig.7 – AR11A Rectifier Right Bank 9547320

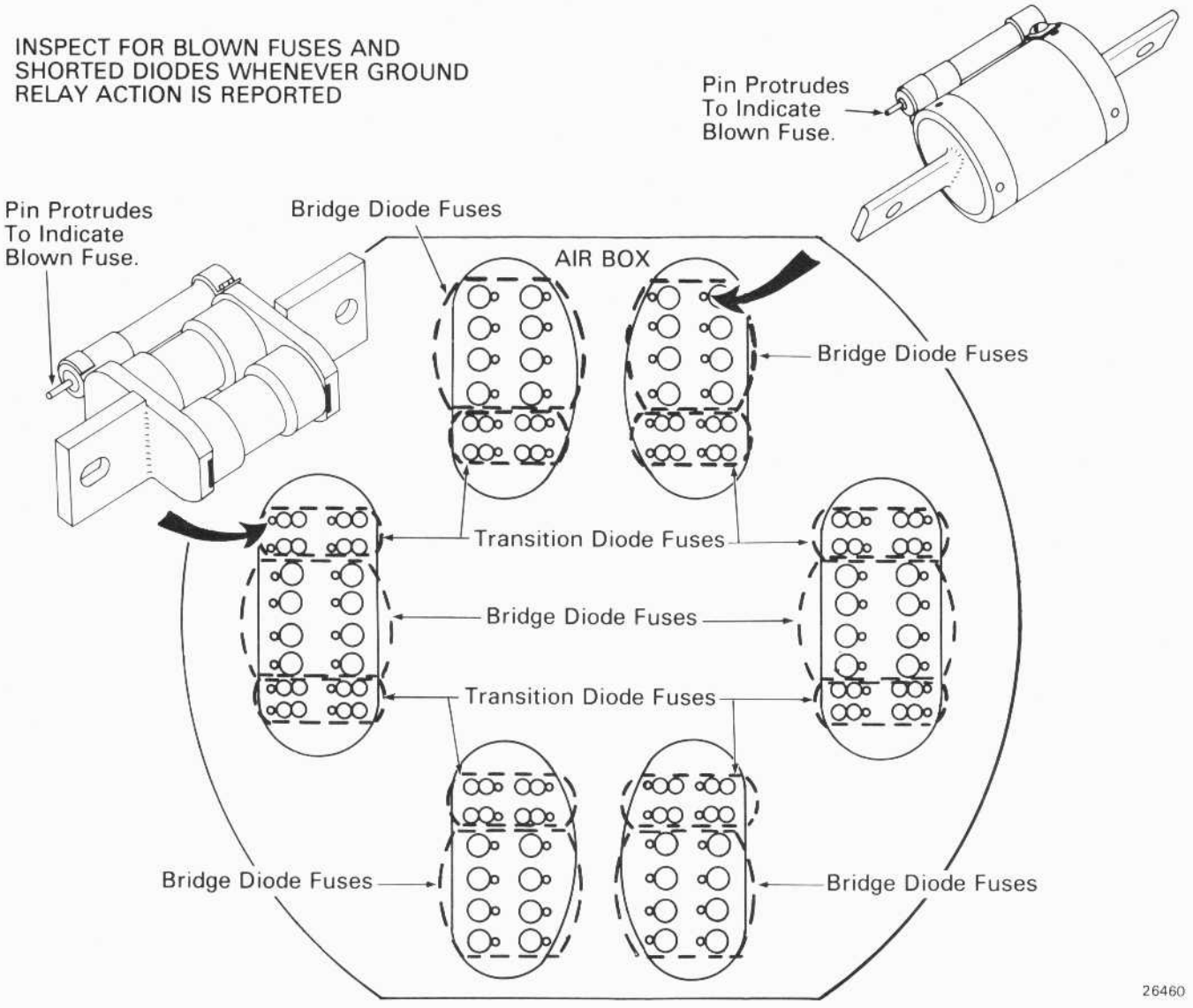


Fig.8 - Diode Fuse And Indicator Assemblies

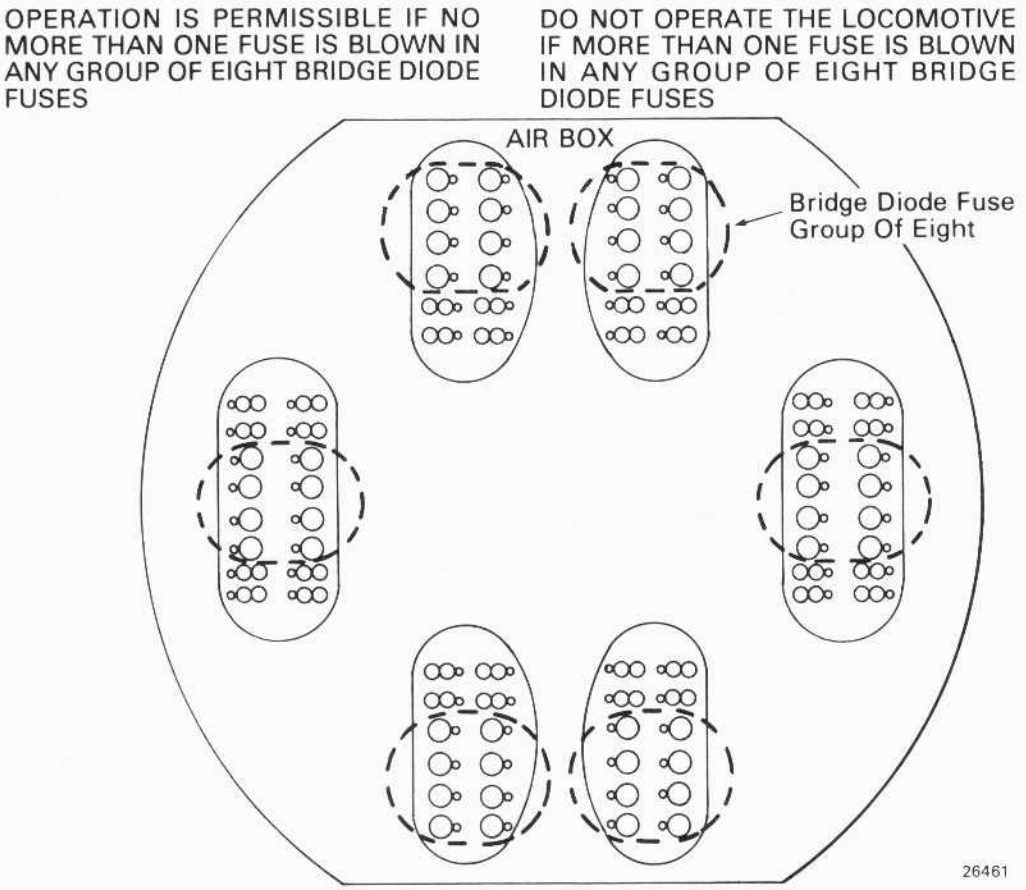
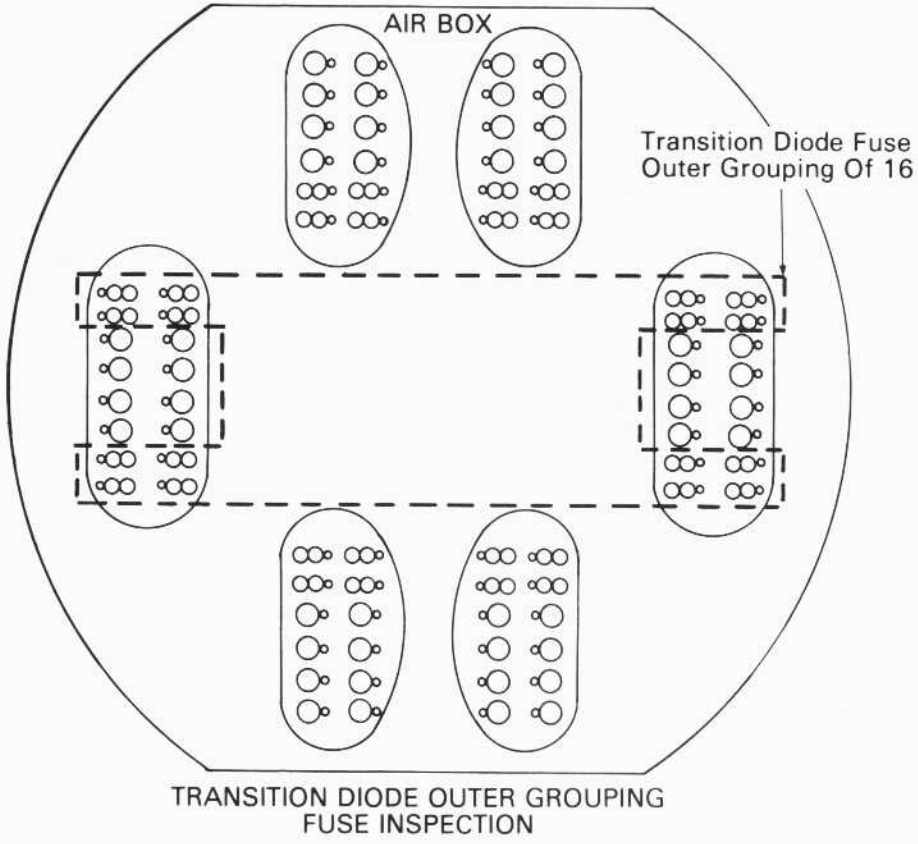


Fig.9 – Bridge Fuse Inspection

OPERATION IS PERMISSIBLE IF NO MORE THAN TWO FUSES ARE BLOWN IN THE OUTER GROUPING OF 16 TRANSITION DIODE FUSES

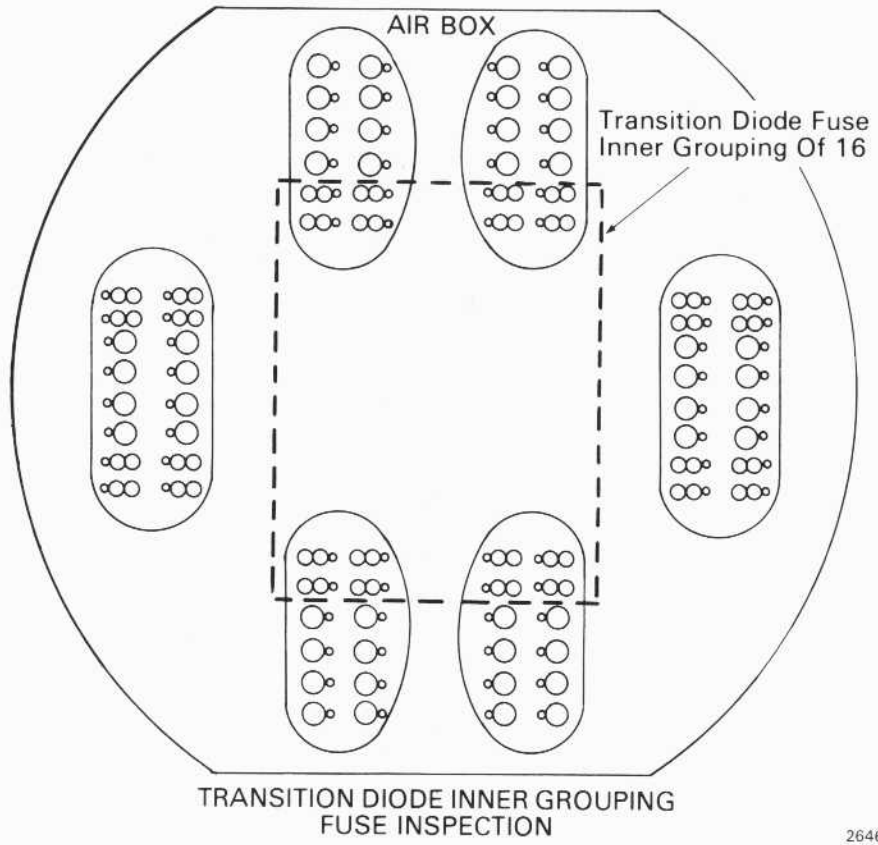
DO NOT OPERATE THE LOCOMOTIVE IF MORE THAN TWO FUSES ARE BLOWN IN THE OUTER GROUPING OF 16 TRANSITION DIODE FUSES



TRANSITION DIODE OUTER GROUPING
FUSE INSPECTION

OPERATION IS PERMISSIBLE IF NO MORE THAN TWO FUSES ARE BLOWN IN THE INNER GROUPING OF 16 TRANSITION DIODE FUSES

DO NOT OPERATE THE LOCOMOTIVE IF MORE THAN TWO FUSES ARE BLOWN IN THE INNER GROUPING OF 16 TRANSITION DIODE FUSES



TRANSITION DIODE INNER GROUPING
FUSE INSPECTION

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Fig.10 – Transition Diode Fuse Inspection

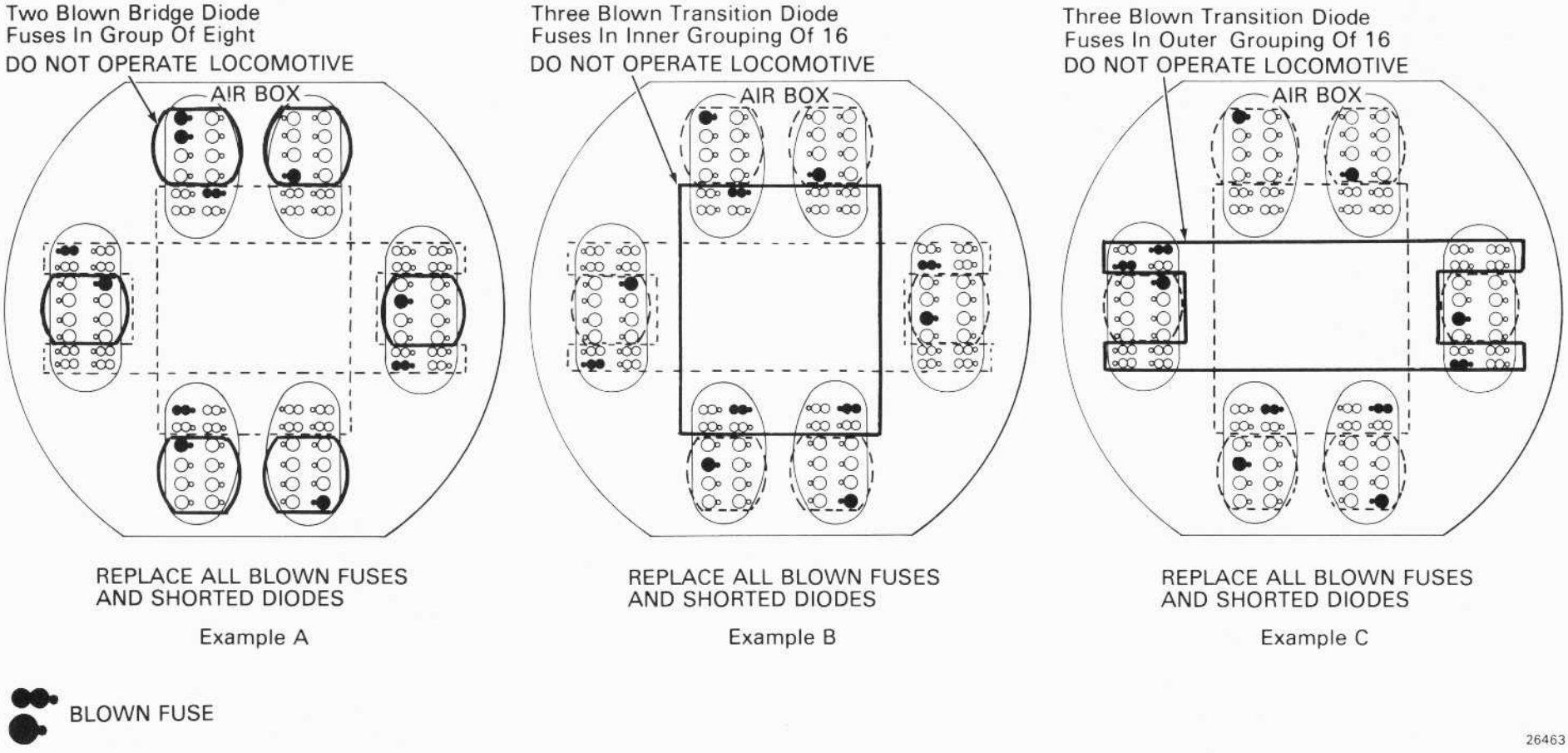


Fig.11 – Examples Of Blown Fuses Which Disable The Generator

5. Clean all parts of the heat sink assembly, keeping the gun nozzle 100 to 150 mm (4 to 6″) from the work.

6. Thoroughly rinse the assembly with a low pressure stream of clean water to remove all residue.

7. Blow off remaining clean water with dry air.

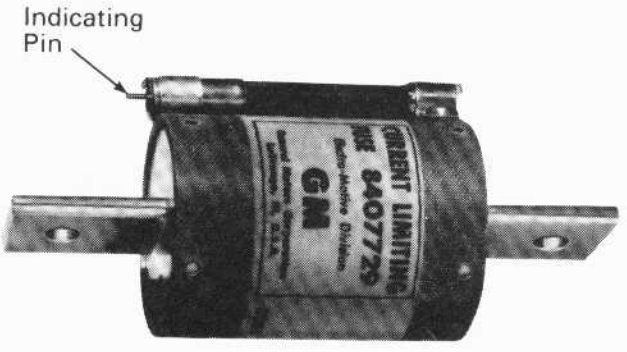
8. After cleaning, the assembly should be checked for flash damage or damage caused by shorting to ground. If damage has occurred, dismantle the assembly and replace any defective parts with new parts. If no damage is found, assembly need not be dismantled.

PROTECTIVE FUSES

Current limiting fuses are provided to isolate shorted diodes. The fuses are a bolted lug type, with the lugs affixed to end blocks. The fusible elements cannot be renewed and a blown fuse cannot be repaired.

A small indicating fuse is affixed to the main fuse body and is connected in parallel with the main fuse elements. When the main elements burn open, the element of the indicator also burns open. A spring in the indicator drives an indicating pin to protrude about 5 mm (3/16″) from the end of the indicator.

The generator has three different fuse and indicator assemblies on both rectifier banks. Each bank has 24 fuse and indicator assemblies 8407729, Fig. 12; 8 fuse and indicator assemblies 9330514; and 8 fuse and indicator assemblies 9330515, Fig. 13.



NOTE
Indicating pin shown in "failed" position.

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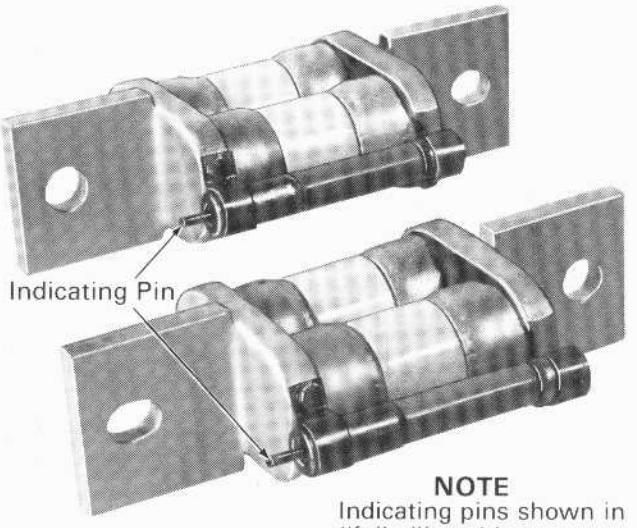
Fig. 12 – Bridge Diode Fuse And Indicator Assembly



NOTE
Indicating pins shown in "failed" position.

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Fig. 13 – Transition Diode Fuse And Indicator Assembly

Fuse and indicator assemblies 8407729 are used with the bridge diodes. Refer to Figs. 6 or 7. Ensure these fuse and indicator assemblies are installed with the indicating pins facing the air box windows. Note that the internal-hex screw on one end of the fuse is provided only for insertion of sand by the manufacturer. The screw is staked to prevent its removal.

Fuse and indicator assemblies 9330514 and 9330515 are used with the transition diodes. Refer to Figs. 6 or 7. For proper installation of these fuse and indicator assemblies, refer to Fig. 14. Note that the 10.3 mm (13/32″) hole in the mounting lug is installed over the center 3/8″-16 insulator stud, and the slotted hole is installed over the 5/16″-18 insulator studs as shown in Fig. 14. The larger 3/8″-16 stud also prevents applying a bridge diode (designed for AC current) in a transition diode (designed for DC current) position. Fuse and indicator assembly 9330514 is always installed in the positions nearest to the generator end plate. Fuse and indicator assembly 9330515 is always installed in the positions nearest the air box front panel.

CAUTION
Ensure the correct part number of transistion diode fuse and indicator assemblies are used to ensure indicating pin faces air box window.

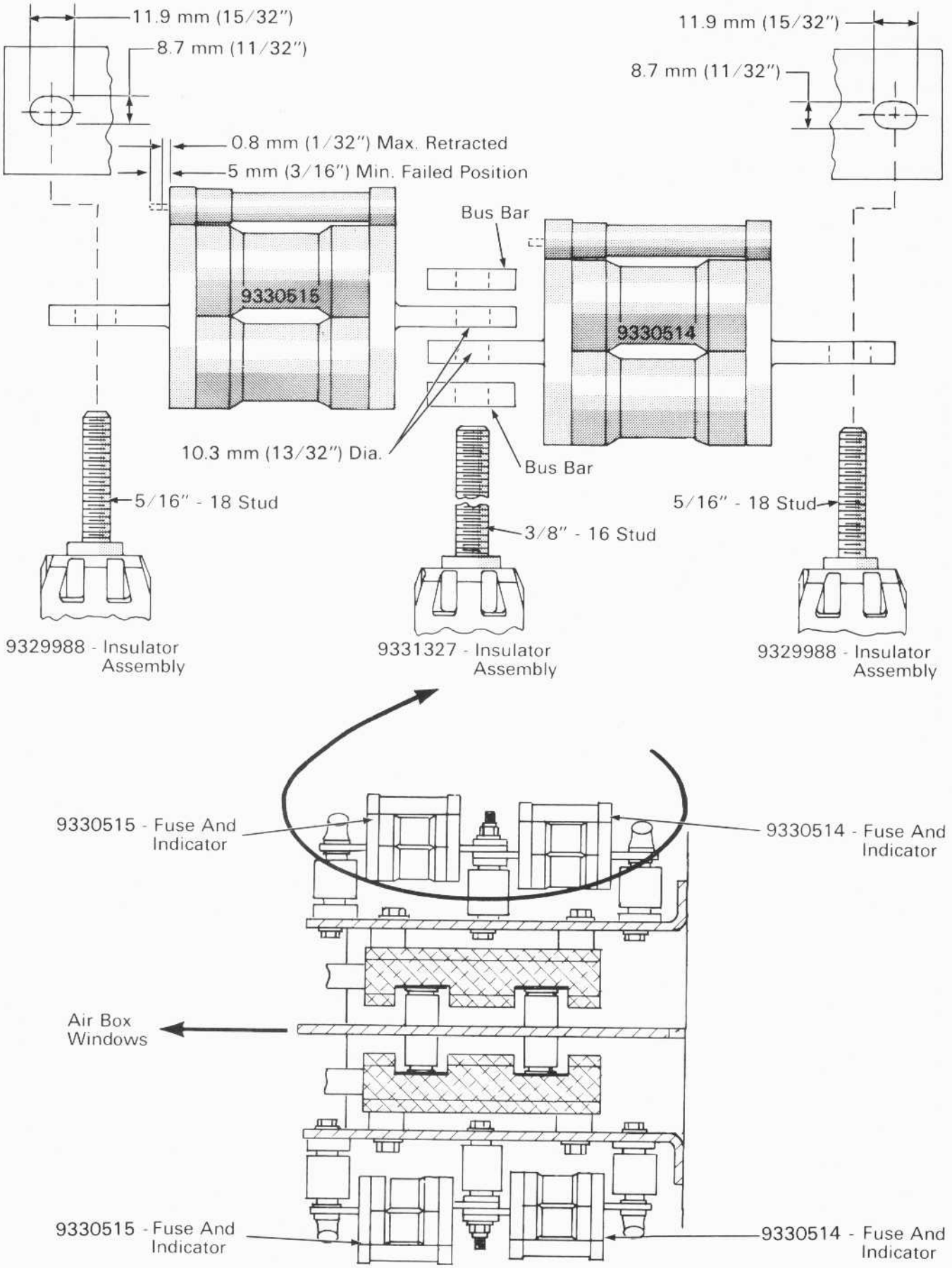


Fig.14 – Transition Diode Fuse And Indicator Assembly

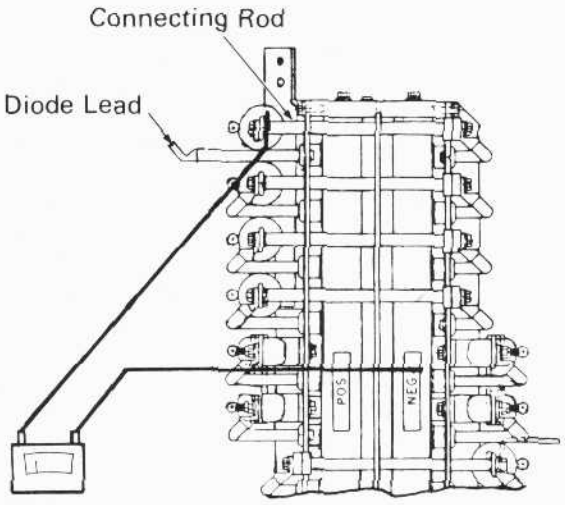
DIODE INSPECTION AND REPLACEMENT

Refer to Fig. 15 for procedure to test diodes and to replace defective diodes with new diodes.

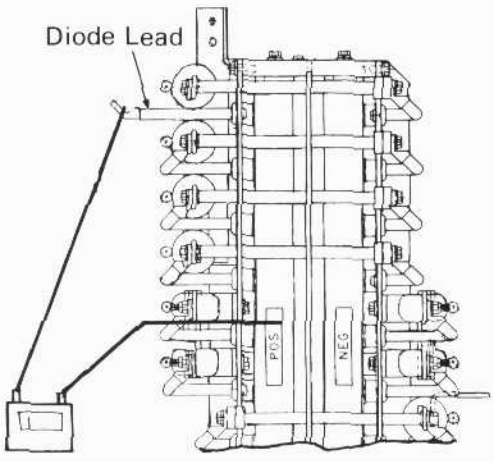
DIODE CLASSIFICATION

For service purposes the following classifications of generator diodes are significant.

1. Polarity with respect to the diode base (threaded stud). A color code is used to assist in identification.
2. Type with respect to forward voltage drop. Identification is assisted by color code and by type number impressed into the base.
3. Voltage class in respect to repetitive and non-repetitive peak inverse voltage rating. Identification is assisted by color code.



Step 3 Test Setup



Step 4 Test Setup

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DIODE INSPECTION AND REPLACEMENT

1. Fuse indicating pin protrudes.
2. Remove bolt and unfasten diode lead. Check fuse continuity.

NOTE

If multiple failures have occurred in a single group of diodes, or if repeated failures have been observed in a single group of diodes, isolate and check all diodes in the group.

3. Place continuity tester across negative bus and connecting rod, then switch the tester leads. This checks one of the diodes.

   If diode is good, the meter registers 10 to 20 ohms in one direction and above 30,000 ohms when leads are reversed.

4. Place continuity tester across positive bus and diode lead, then switch the tester leads. This checks the other diode.
5. Replace blown fuse with a good fuse.
6. Remove any defective diodes, using special diode wrench 8361524.
7. Wipe the diode mounting surface of the heat sink bus. Do not use abrasive material.
8. Replace defective diodes with good diodes of identical type, polarity, and voltage class (or higher voltage class). Apply a thin coating of compound 8346481 to the base of the diode hex *to cover the surface. Do not apply on threads.*
9. With special diode wrench and 0-50 ft-lb torque wrench, torque diodes to 34 N·m (25 ft-lbs). Make certain that the wrench is properly seated when torquing.
10. Torque diode terminal lug bolts to between 15 to 18 N·m (11 to 13 ft-lbs).
11. Replace and securely fasten all air box panels and inspection covers.

Fig.15 - Diode Inspection And Replacement

A table that relates diode service part numbers to other identifying characteristics is provided as Table I in the Service Data section of this instruction.

DIODE POLARITY

THE DIFFERENCE BETWEEN POSITIVE AND NEGATIVE BASE DIODES

The direction in which conventional electrical current flows through a diode determines its polarity. The graphical arrow symbol, Fig. 16, is oriented to indicate diode polarity.

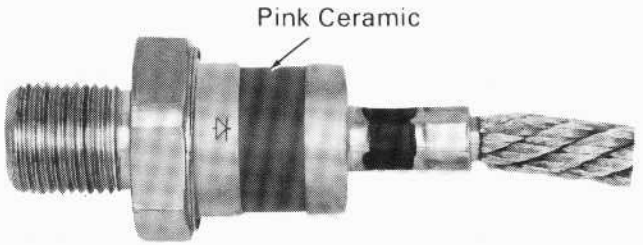

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Fig.16 – Rectifier Polarity Symbol - Negative Base Diode Shown

To provide a permanent method of identification, the ceramic cases of the diodes are permanently colored as follows:

DIODE POLARITY	
Positive Base Diode	White Ceramic
Negative Base Diode	Pink Ceramic

For the diode to conduct, a positive voltage must be applied coincident with the tail of the arrow, and a negative voltage applied coincident with the point of the arrow. If the voltages are reversed, the diode will block, and only a small leakage current will pass through the diode.

Negative base diodes require a positive voltage on the stud, and a negative voltage on the flexible lead in order to conduct.

Positive base diodes require a positive voltage on the flexible lead, and a negative voltage on the stud.

DIODE TYPES

THE DIFFERENCE BETWEEN DIODE TYPES

Because of the high DC current requirements for locomotive tractive power, diodes must be connected in parallel conducting paths. When parallel operation of silicon diodes is undertaken, means must be provided to ensure a reasonable degree of current sharing. Each diode in a parallel group must share the load to prevent overloading of diodes in parallel with it.

Current sharing of generator diodes is accomplished by paralleling only diodes whose forward characteristics (forward voltage drops) are a near match.

At the time of manufacture, diodes are segregated under specific test conditions according to their forward characteristics and are assigned a type number that is permanently impressed in the metal at the flat end of the threaded stud. In addition, a color code band is applied where the flexible lead is crimped to the diode body, Fig. 17.

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DIODE TYPES	
Diode Type Number	Body Crimp Color Band
2	Red
3	Black

Fig.17 – Diode Type - Number And Color Bands

DIODE VOLTAGE CLASSES

Five voltage classes of diodes have been manufactured. The class identification is indicative of repetitive

and non-repetitive peak inverse voltage capabilities under specific test conditions. A color band around the barrel at the lug end of the flexible lead indicates the diode voltage class.

DIODE VOLTAGE CLASSES	
Color Band At Lug Barrel	Voltage Class
None	1600/2000*
Green	2000/2400**
Brown	2200/2600***
Blue	2200/2800****

*Not acceptable in AR11 or AR11A
**Original equipment AR11A acceptable in AR11
***Original equipment AR11 acceptable in AR11A
****Acceptable in AR11 or AR11A

The voltage class used in a specific generator is dependent upon the type of service in which the generator is employed and upon specific characteristics of the control system that is used. Refer to Table Of Diode Identification, Table I, in Service Data section to identify diodes.

MANUFACTURER'S QUALIFICATION MARKS

A variety of qualification marks, Fig. 18, have been placed upon diodes by the manufacturer. For example; small color dots on the diode body, large color spots (not bands) on the diode body or lug, color marks at the edge of the lug, and numbers stamped onto the diode body. These marks are for manufacturer's identification only.

The only significant marks for service purposes are:

1. The color band 360 degrees around the lug barrel at the end of the flexible lead.

2. The color band 360 degrees around the crimp at the flexible lead and diode body.

3. The service part number printed on the cap of the diode body.

4. The color of the ceramic insulator.

5. The diode type number stamped into the flat end of the threaded stud.

ALL OTHER COLOR SPOTS AND STAMPINGS ARE IRRELEVANT FOR SERVICE PURPOSES AND ARE TO BE DISREGARDED COMPLETELY.

DIODE MATCHING

Refer to Fig. 19 for diode matching data. The diodes are paralleled by bus bar in groups of four or eight. Refer to Table I in Service Data for diode identification.

Diodes used in the generator must be matched as follows:

1. Polarity

   The diodes in the groups or groupings of Fig. 20 must be of the same polarity (ceramic bases must be of the same color). The diodes must be installed properly. Refer to Figs. 6 or 7 to determine proper installation. Note that eight transition diodes on the positive bus of the left rectifier bank are negative base (pink) and eight transition diodes on the negative bus of the rectifier right bank are positive base (white). Bus polarity is stamped on the end of the bus.

2. Type

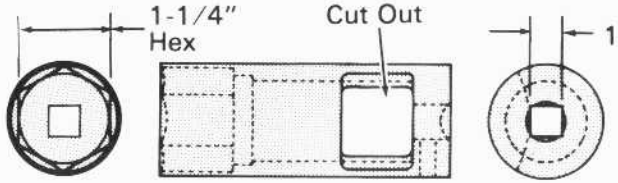
   The diodes in the groups or groupings of Fig. 19 should be of the same type (same impressed type number and same type color band at the low crimp). MIXING OF TYPES WILL CAUSE UNEQUAL LOAD SHARING.

   Observe that hexagonal connecting rods do not connect diodes in parallel; therefore, diodes connected by the rods do not necessarily match by type.

   If due to operating conditions mixing of diode types cannot be avoided, a replacement diode of the next higher type may be used as a temporary emergency fix. This diode should be replaced with the proper type of diode at the earliest opportunity.

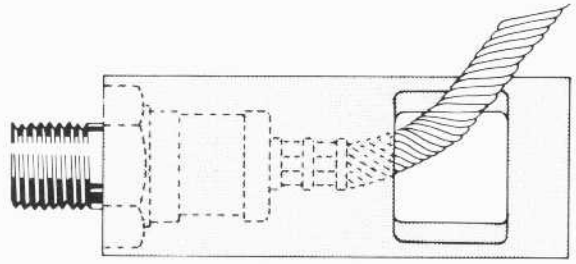
3. Voltage Class

   Diodes of different voltage classes may be mixed in a generator, but all diodes in any generator must equal or better the inverse voltage rating (voltage class) required for the particular application. For example, diodes of



Special Diode Wrench
8361524

Use torque wrench 8375396
0-50 ft-lbs. 1/2" Drive
Torque diodes to 25 ft-lbs.



CAUTION

Make certain that socket is firmly seated. Improper seating can stress the crimped area during torquing.

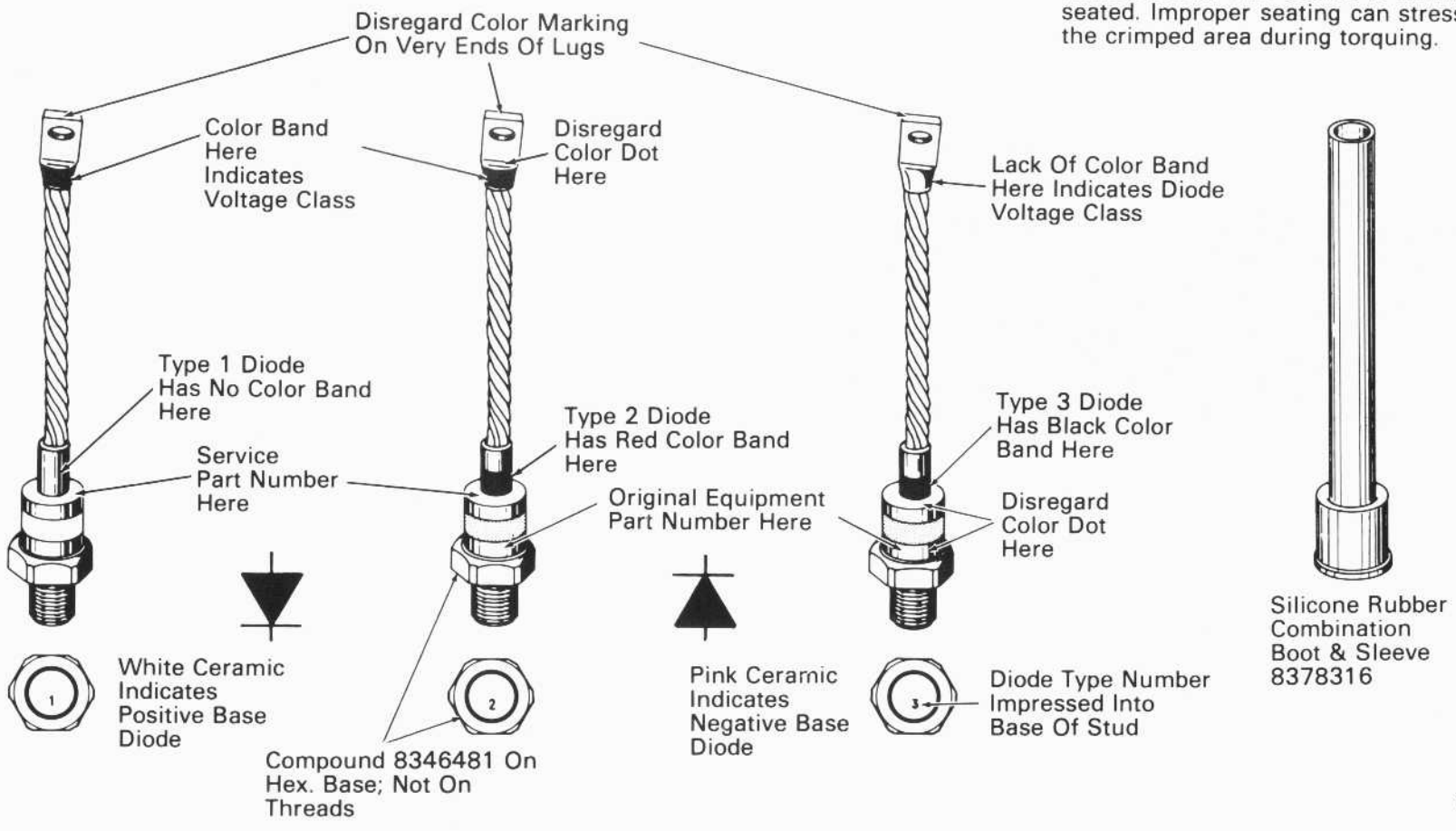


Fig.18 – Diode Identification Markings

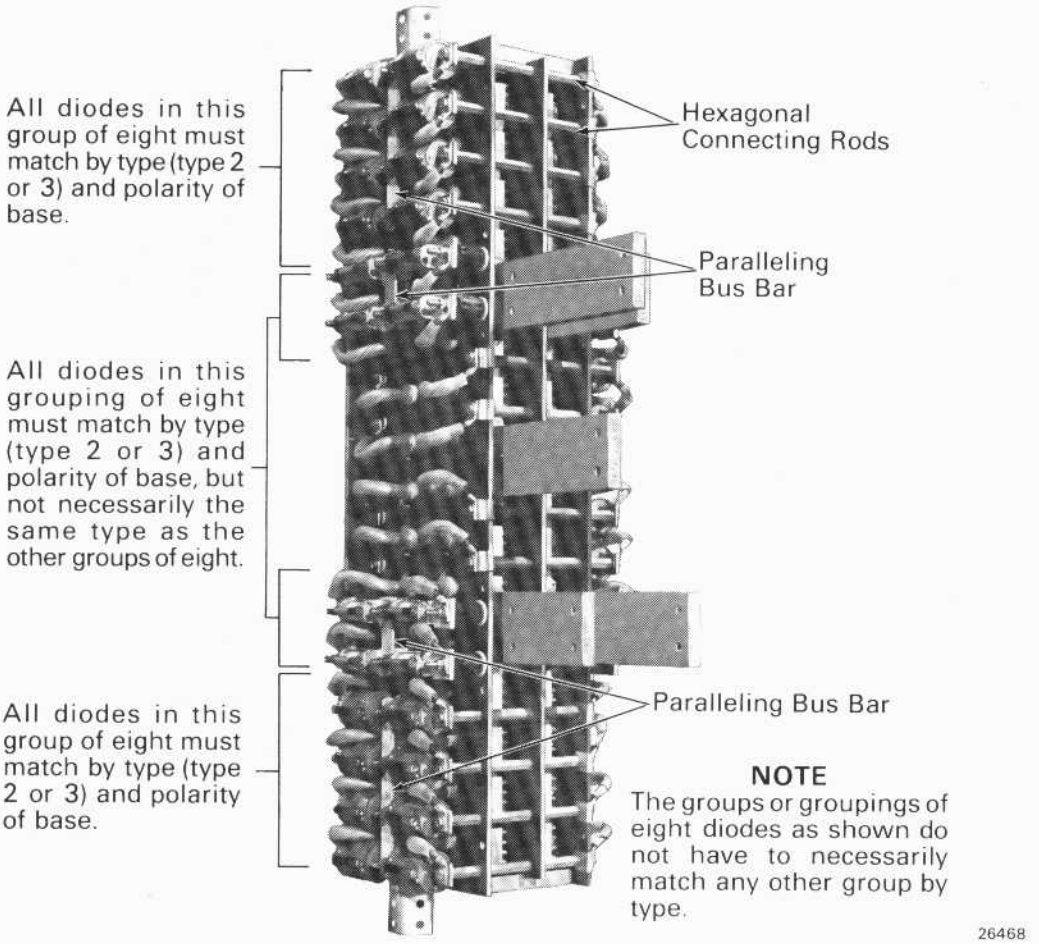


Fig.19 – Diode Matching

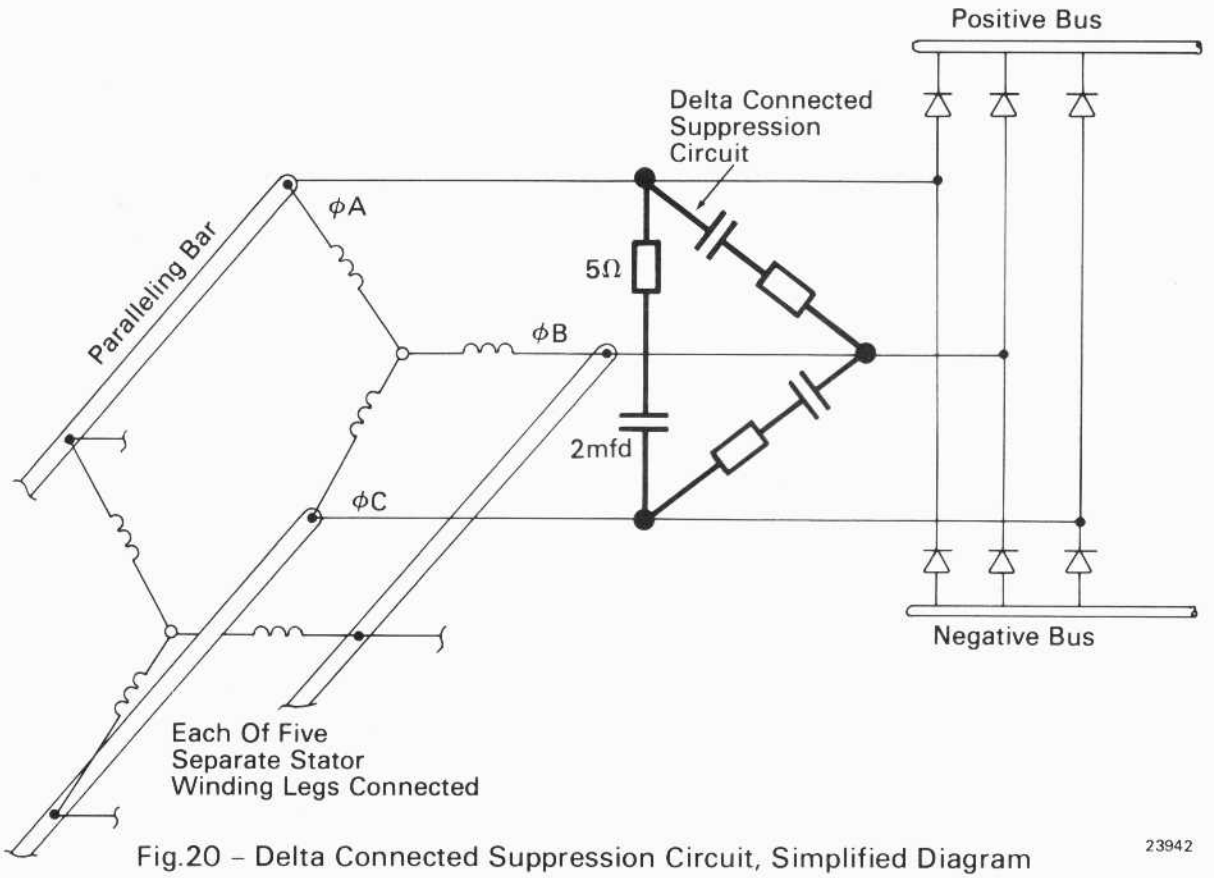


Fig.20 – Delta Connected Suppression Circuit, Simplified Diagram

the 2200/2600 voltage class (brown color band at upper lug barrell) may be mixed with diodes of the 2000/2400 voltage class (green color band at the upper lug) in the AR11A generator, but diodes of the 1600/2000 voltage class must not be used, because the AR11A requires diodes of a higher voltage class.

NOTE

The 2000/2400 volt diodes of the AR11A generator are approved for service in the AR11 generator (originally equipped with 2200/2600 volt diodes).

COMMUTATION TRANSIENT VOLTAGE SUPPRESSION

INTRODUCTION

After commutation, voltage transients are produced. The action of diodes switching from a conducting to a blocking state in the generator is called commutation. During commutation, high reverse current flows in the diodes for a few microseconds, after which time the value of reverse current flow in the diode suddenly drops to almost zero. The rate at which current flow changes from a high value to almost zero, multiplied by circuit inductance, determines the magnitude of the transient voltage spike. If the transient voltage exceeds the reverse rating of the diode, the diode will immediately fail.

The generator is provided with a system for capacitive storage of energy from circuit inductance during commutation. The system is called the commutation transient voltage suppression system.

The suppression system, Fig. 20, uses 2 microfarad capacitors and 5 ohm resistors connected in series delta. These in turn are connected between the "A," "B," and "C" phase paralleling bars on both the left and right banks of the generator.

INSPECTION OF THE SUPPRESSION SYSTEM

An inspection of the commutation transient voltage suppression system should be made every time a faulty or failed diode is detected and replaced. The required inspection is basically visual. The following checks should be made.

1. Check that all connections are tight and are electrically correct.

2. Examine all resistors for evidence of overheating and open turns.

3. Examine all capacitors for oil leaks or deformation of the container. (The container top may be badly pushed out.)

TEST AND CORRECTIVE MEASURES

LOOSE OR IMPROPER CONNECTIONS

Tighten any loose connections in accordance with the applicable wiring diagram.

DAMAGED RESISTORS

Any resistors that appear to be burned or damaged should be disconnected and continuity checked. Faulty resistors must be immediately replaced with qualified resistors.

DEFECTIVE CAPACITORS

If a capacitor is suspected faulty, it should be disconnected and checked in the following manner.

1. Checks with a 500 or 1000 volt megger.

   a. Short circuit the capacitor terminals and connect the positive lead from the megger to the terminals. Connect the megger negative lead to the capacitor case, and rotate the megger handle. The indication should be 25 megohms or more. Disconnect the megger and shorting jumper.

   b. Connect one megger lead to one capacitor terminal and connect the other megger lead to the other capacitor terminal, and rotate the megger handle. If the capacitor is good, there will be a definite meter needle deflection toward zero (indicating capacitor charging current) followed by a drift toward infinity as the capacitor charges. Failure of the meter needle to deflect toward zero is an indication that the capacitor is open internally.

      If the capacitor is shorted, the megger will indicate zero when the megger handle is rotated. If the capacitor is open, it will indicate infinity immediately upon rotating the handle, and the indication will drop to zero when the rotation of handle is stopped.

CAUTION

Carefully discharge the capacitor after the check by using a screwdriver with an insulated handle to short across the capacitor terminals.

2. If only a 500 volt megger is available, and megger checks indicate a good capacitor but the

condition of the capacitor is still suspect (burn spots appear on resistors associated with the capacitor), use a 64 VDC input, 1200 VDC output MG set as a high potential tester to induce possible flashover within the capacitor.

a. Connect the positive output lead from the MG set to one terminal of the capacitor. Connect the negative output lead from the MG set to the other capacitor terminal. Connect a 0-1500 VDC meter to read MG set output voltage. Connect MG set input to a 64 or 74 VDC source.

b. Advance MG set output voltage. The meter needle will advance as the MG set handle is turned. If a flashover is induced in the capacitor, the meter will dip toward zero, indicating a bad capacitor. Immediately reduce voltage to zero, then turn off the MG set.

If the capacitor is good, voltage will remain at the high output value from the MG set. Reduce MG set voltage to zero, then turn off the set.

CAUTION

Carefully discharge the capacitor after the check by using a screwdriver with an insulated handle to short across the capacitor terminals.

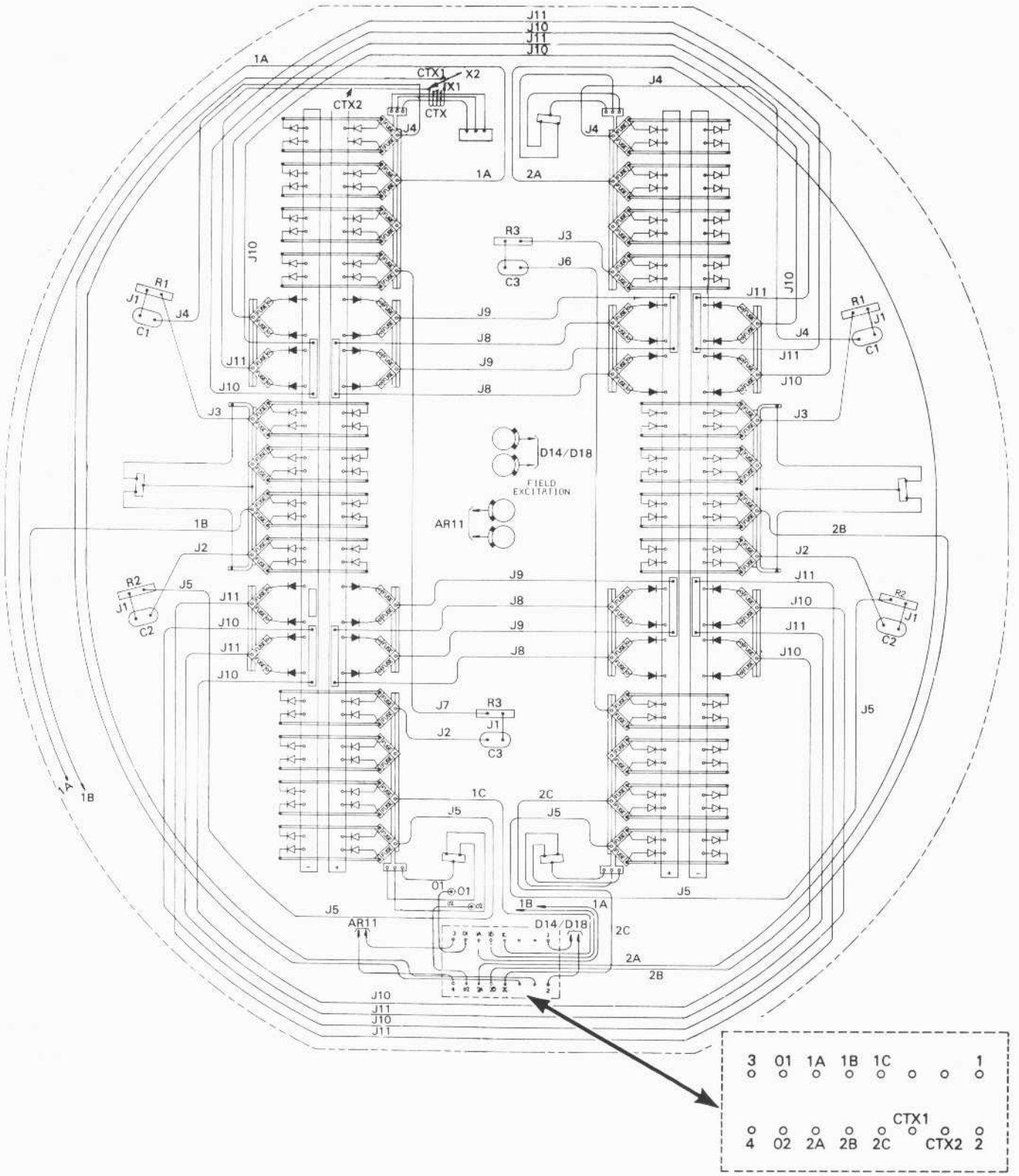
GENERATOR COMPONENTS

Refer to Table II of Service Data for AR11 and AR11A components.

Refer to Fig. 21 for simplified wiring diagram of the AR11 generator rectifier banks and suppression circuits.

Refer to Fig. 22 for simplified wiring diagram of the AR11A generator rectifier banks and suppression circuits.

VIEW FACING COLLECTOR RING END OF ALTERNATOR



SUPPRESSION CIRCUIT COMPONENTS

8380922 RESISTOR - R1, R2, R3
9332016 CAPACITOR - C1, C2, C3

26469

Fig.21 – AR11 Rectifier Banks And Suppression Circuits, Simplified Diagram

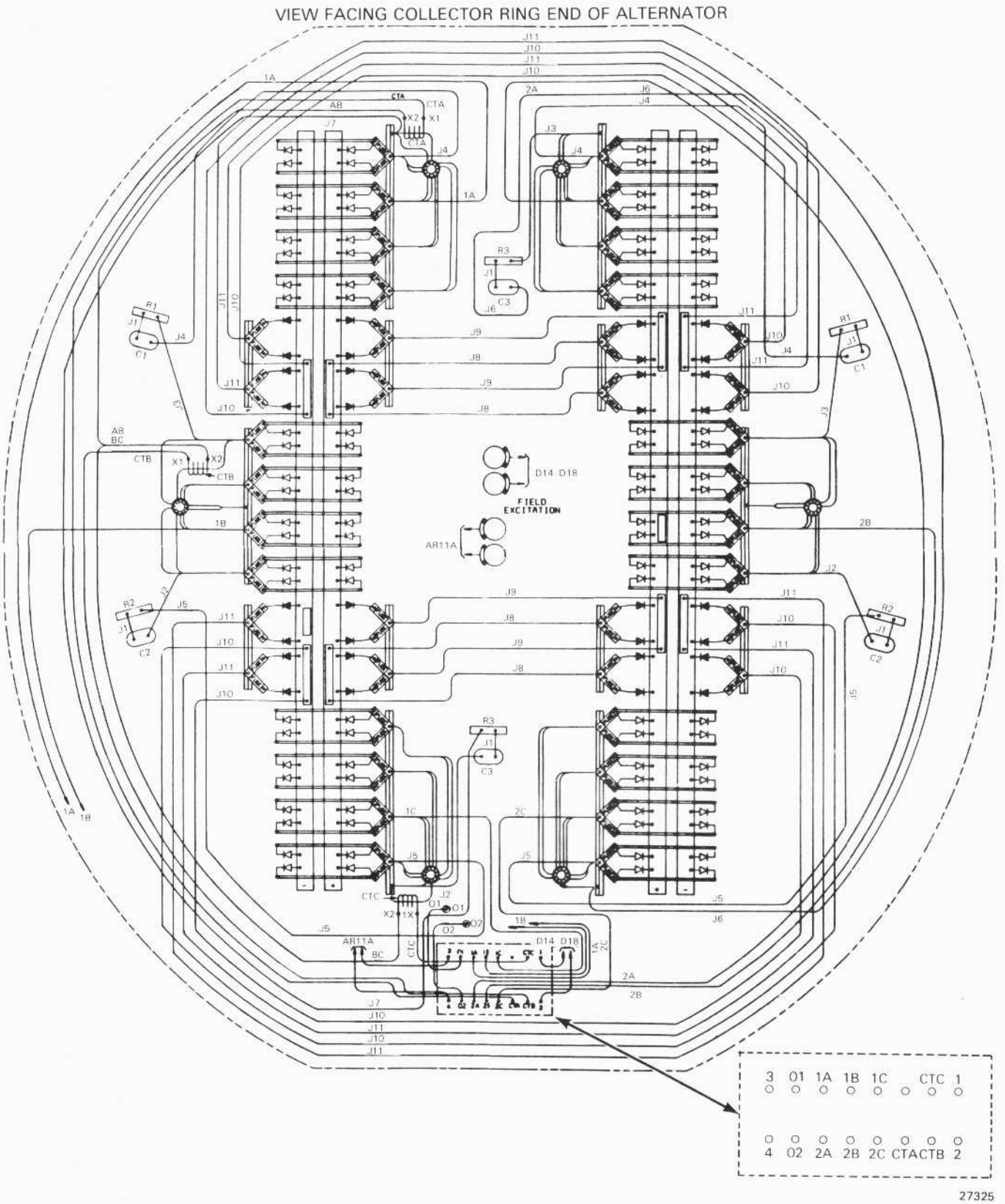


Fig.22 – AR11A Rectifier Banks And Suppression Circuits, Simplified Diagram

SERVICE DATA

SPECIFICATIONS

SERVICE	ORIGINAL EQUIPMENT	VOLTAGE CLASS	TERMINAL LUG BARREL COLOR BAND	POLARITY OF BASE	CERAMIC COLOR	DIODE TYPE	BODY CRIMP COLOR BAND
	8364555	2000/2400	Green	Negative	Pink	2 or 3	Red or Black
	8364554	2000/2400	Green	Positive	White	2 or 3	Red or Black
8368468		2000/2400	Green	Negative	Pink	2	Red
8368466		2000/2400	Green	Positive	White	2	Red
8368469		2000/2400	Green	Negative	Pink	3	Black
8368467		2000/2400	Green	Positive	White	3	Black
	8427677	2200/2600	Brown	Negative	Pink	2 or 3	Red or Black
	8427674	2200/2600	Brown	Positive	White	2 or 3	Red or Black
8447656		2200/2600	Brown	Negative	Pink	2	Red
8447657		2200/2600	Brown	Positive	White	2	Red
8427678		2200/2600	Brown	Negative	Pink	3	Black
8427675		2200/2600	Brown	Positive	White	3	Black

Table I – Diode Identification

Generator		Current Transformer(s)	Filter (Suppression Circuit)		Rectifier Assem.	
Model	Part No.		Resistor	Capacitor	Left Bank	Right Bank
AR11	9540366	(1) 9505829	8380922	9332016	9330047	9330048
AR11A	9547330	(3) 9332353	8380922	9332016	9547319	9547320

Table II – Generator Components

Bridge Diode Fuse And Indicator Assembly 8407729
Transition Diode Fuse And Indicator Assemblies 9330514
9330515
Weight Of Each Rectifier Bank Assembly (Approximate) . . . . . 45 kg (100 lbs)

EQUIPMENT LIST

	Part No.
Special Diode Socket, 1-17/64" Hex	8361524
Torque Wrench 0-50 Ft-lbs – 1/2" Drive	8375396
Compound – Joint	8346481
Multimeter	8276478
Megger Tester, 0-200 megohms at 500 VDC	8174880
Leads, 3.7 m (12 ft)	8174878
Carrying Case	8174879
Dynamotor (MG Set) 1200 VDC Output – 64-76 VDC Input	8233558

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Electro-Motive Division Of General Motors La Grange, Illinois 60525

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