CEPS 179

PROVISIONAL ISSUE

# British Railways Board

Chief Mechanical & Electrical Engineer's Department

## OVERHAUL OF CAV AC 203 ALTERNATORS FITTED TO DIESEL MULTIPLE UNITS



NOVEMBER 1976

PROCESS SPECIFICATION NO. C.E.P.S.179

AMENDMENTS

| DATE | AMENDMENT |
| --- | --- |
| NOVEMBER 1976 | PROVISIONAL ISSUE (SUBJECT TO PROVING ON THE SHOP FLOOR) |



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# PROCESS SPECIFICATION CEPS 179

## OVERHAUL OF CAV AC203 ALTERNATORS FITTED TO DIESEL MULTIPLE UNITS

### GENERAL

This specification details the work to be followed in overhauling and repairing AC203 alternators fitted to diesel multiple unit power cars.

### TOOLS AND MATERIALS

| | |
|---|---|
| Cleaning solvent - SPB11 | BR Cat. No. 7/68268 |
| Woven glass sleeving 4 mm, Vidaflex 99 | BR Cat. No. 55/200140 |
| Lubricating grease - Alvania 2 | BR Cat. No. 27/1350 |

Rotor extractor - see Figure 4

Test equipment (see Figure 5):-

5 to 6 HP driving motor with variable speed control upto 8000 RPM with a suitable pulley.

460-24-3 Control board. (One regulator should be kept as a "master")

24V battery and/or variable non-reactive load to give a current of not less than 60A.

Digital voltmeter to read upto 50 V d.c. or first grade moving coil voltmeter 0-50V fsd.

BS first grade moving coil ammeter - centre zero 0-100A.

Other test equipment:-

100V or 250V Insulation tester (Megger or equivalent)

Resistance measuring device - range 0.063 ohms to 20 ohms.

### ATTACHED APPENDICES AND FIGURES

Appendix A. Data
Appendix B. Renewal of slip rings.
Appendix C. Rotor field faults
Appendix D. Fault finding guide

Figure 1 Exploded view of AC203 alternator
Figure 2 Heat sink replacement
Figure 3 Performance curves
Figure 4 Rotor extractor
Figure 5 Bench test circuit
Figure 6 Schematic diagram.

Cont'd.

OPERATIONS

1. Dismantling
2. Overhaul of rotor
3. Overhaul of stator and endshields
4. Overhaul of bearings
5. Examination of pulley
6. Re-assembling
7. Testing
8. Final inspection.

1. DISMANTLING (See Figure 1)

1.1 Clean the alternator externally using paraffin or SPB11 solvent.

NOTE: The yoke (69) and endshields (46 and 78) are made from alloy and should not be placed in a Bosch or other strong alkaline solutions.

1.2 To ensure that the endshields (46 and 78) are assembled in the same position relative to the stator, scribe a line across the edge of the flange on both endshields and the stator case.

1.3 Remove the baffle (1) from the slip ring endshield (46).

1.4 Remove the fan securing nut (6) and washers (7 and 8) and withdraw the fan (5).

1.5 Remove the nut (81) from the drive end of the shaft and withdraw the pulley using an extractor.

1.6 Remove the cover (37) and gland plate (38) from the terminal box.

1.7 Disconnect and remove the 'A' lead from the terminal post. (see Figure 2)

1.8 Remove the brush box (55) complete with brushes (61).

1.9 Remove the bearing clamp plate (9) and the spacer (14) from the slip ring end. Remove the lubricator (4) from the end of the rotor shaft.

1.10 Remove drive end clamp plate screws (73).

1.11 Use the existing notches, remove the drive-end endshield (78).

1.12 Place rotor extractor (Figure 4) squarely over the rotor shaft and assemble hardened-washer and nut. Holding the horizontal handle on the rotor extractor slowly tighten nut to withdraw rotor (70) from slip ring endshield (46).

1.13 Disconnect and remove the three screws (53) and washers (54) securing the three phase stator leads to the heat sinks (16).

1.14 Remove the securing screws (47) from the slip ring endshield and remove the endshield.

Cont'd.

1. - Cont'd.

1.15 Remove the circlips (51) and the oil seal (50) from the slip ring endshield. Remove the slip ring bearing (15) from the endshield. Remove the oil seal (13) from the slip ring bearing clamp plate (9).

1.16 Remove the O-ring (71) from the flange on the slip ring endshield.

1.17 Remove the oil seal (77) from the drive end endshield. Remove the O-ring (71)from the flange on the drive end endshield.

1.18 Remove the O-ring (52) from the slip ring end of the rotor shaft.

2. OVERHAUL OF ROTOR

2.1 Remove any traces of grease-using the approved solvent.

2.2 Blow out the rotor using dry compressed air to remove all traces of carbon dust.

2.3 Examine the slip rings (70A) for damage. The slip rings must be turned if:-

burning is evident
there is radial wear exceeding 0.015" (0.38mm).
the eccentricity of the rings exceeds 0.002".(0.05mm)

If the slip ring is to be turned proceed as follows:-

2.3.1 Mount the rotor in a lathe using centres.

2.3.2 Clock the bearing seats and adjust the centres such that the bearing seats are running true to ± 0.0005"(0.01mm).

2.3.3 Turn the slip rings using a tungsten or diamond tipped tool. If the diameter of the slip rings is less than that quoted in Appendix A then the slip ring unit must be replaced. Renew a slip ring as detailed in Appendix B.

2.4 Measure the resistance between slip rings. This must be between the limits stated in Appendix A.

Using an insulation tester check the insulation resistance between the slip rings and shaft. The minimum insulation level is 2 M ohm.

If the insulation is less than 2 M ohm or the resistance valve indicates that there is a fault in field system proceed as detailed in Appendix C.

2.5 Examine the woodruff key (68) and shaft for damage. Renew as required.

3. OVERHAUL OF STATOR AND ENDSHIELDS

3.1 Clean the stator endshields, (46 and 78),fan (5),clamp plates (9 and 72) and the baffle (1) with the approved solvent to remove all traces of grease and oil.

3.2 Remove all traces of carbon dust using dry compressed air.

3.3 Clean the diode and heat sink assembly (16) using a fine bristle brush removing any traces of grease with the approved solvent.

NOTE: Take care not to damage the interconnecting cables.

Cont'd.

3.-Cont'd.

3.4 Measure the resistance between phase terminals by connecting a 24V supply in series with a variable resistor and an ammeter to any two of the phase terminals in turn. Pass a current through the winding not exceeding 40A and measure the voltage. Estimate the resistance. This must be within the limits quoted in Appendix A.

Using an insulation tester check the insulation resistance between the stator and frame. The minimum insulation level is 2 M ohms.

If the insulation is less than 2 M ohms or the resistance indicates that there is a fault in the field system proceed as detailed in Appendix C.

3.5 Check the brush lengths. These must be greater than 0.4" (10.12mm). If the brushes are to be renewed, proceed as follows:-

3.5.1 Unscrew the securing nuts (56) from the brush terminal posts and remove the crinkle washer (67), lucar blade (59) and insulation washer (58).

3.5.2 Press the terminal post down into the brush box.

NOTE: The brush, spring and post are integral and are replaced as a complete assembly (61).

3.5.3 Remove the O-ring seal (60) from the terminal post aperture and renew.

3.5.4 Fit a new brush, spring and post assembly (61). Assemble insulation washer, lucar blade, crinkle washer and secure with the nut.



3.6 Check endshields, fan and fan shroud for damage and renew as required.

3.7 Check the diode heat sink using a 44 or 48 watt lamp connected in series with a probe in the positive line of a 24V supply and a second probe connected to the negative line of the supply.

Proceed as follows (refer to Figure 2):-

| Test No. | Positive Probe Connection | Negative Probe Connection | Diode Under Test | Serviceable Indication |
|---|---|---|---|---|
| 1 | Each Heat Sink in Turn | + Terminal | Postive | Lamp Illuminated |
| 2 | + Terminal | Each Heat Sink in Turn | Positive | No Illumination |
| 3 | - Terminal | Each Heat Sink in Turn | Negative | Lamp Illuminated |
| 4 | Each Heat Sink in Turn | - Terminal | Negative | No Illumination |
| 5 | Each Heat Sink in Turn | 'A' Terminal | Auxiliary | Lamp Illuminated |
| 6 | 'A' Terminal | Each Heat Sink in Turn | Auxiliary | No Illumination |

Cont'd.

3. - 3.7. - Cont'd.

On the 60A alternators, individual diodes (17, 17A and 17B) cannot be removed. If faulty, the complete assembly consisting of three diodes and heat sink must be changed and replaced with heat sink assembly service part no. 6270-46E. (item 16 on Figure 1).

The main diodes are identified by coloured spots: diodes with a RED SPOT must be connected to the POSITIVE main output terminal, and diodes with a BLACK SPOT to the NEGATIVE main output terminal. ( See Figure 2. )

The replacement heat sink assembly is supplied with suitable lengths of wire attached to each diode. The auxiliary diode has two lengths of wire attached. One of these is not required and must be cut off close to the point of contact on the diode. These wires are connected by soldering to the appropriate positions in the wiring of the complete heat sink assembly.

NOTE: The connections on the bottom (middle) heat sink of production alternators differ from those illustrated and must not be altered, unless replacing it by a new type replacement heat sink service part number 6270-46E.

When all three heat sinks have been replaced with part no 6270-46E the fixing posts - positioned between the heat sinks - are not required and should be removed.

To remove and replace a heat sink, proceed as follows:-

3.7.1 Unsolder and remove the leads from the connecting tags (27 and 32) and when an end heat sink is faulty disconnect the lead from the output terminal tag. Cut the leads from the auxiliary diode to the other auxiliary diodes about 19 to 25mm ($\frac{3}{4}$ to 1 inch) from the diode.

3.7.2 Remove the fixing screws, (19) washers, (20 and 21) and insulating bushes (22). Withdraw the heat sink. Take care not to damage the insulator (18) which is positioned between the base of the heat sink and the endshield.

3.7.3 Position the replacement heat sink on the insulator. Replace the insulating bushes, washers and screws. Evenly tighten the screws to the correct torque loading (See section 8 in Appendix A).

3.7.4 Solder the leads from the main diodes to the appropriate tags. (See Figure 2).

3.7.5 To connect the auxiliary diode lead or leads to the severed connecting leads, slide a small length of glass sleeving of suitable diameter over the lead to be joined. Cut the diode lead allowing sufficient for overlap. Lightly twist the two bared ends together and solder the joint. Paint the joint with B8 clear varnish paint and when partly dry (tacky) slide the glass sleeving over the joint and pull tight. Again paint the covered joint with B8 clear varnish paint.

3.7.6 After fitting a replacement and making the connections, bind the leads with neat ties.

3.7.7 Test the heat sink as above.

Cont'd.

3. - Cont'd.

3.8 Check the bushes in the suspension holes for damage or wear. The maximum dimension of the bush hole is 16.49mm. If any bush is worn beyond these limits or is damaged the corresponding pair must be renewed.

4. OVERHAUL OF BEARINGS

4.1 Clean the bearings in white spirit to remove all traces of old grease.

4.2 Examine the bearings for damage such as cage damage or roughness. If in doubt renew the bearing concerned.

4.3 If a bearing is to be renewed ensure the new one is of the correct type and fit - see Appendix A.

4.4 Pack the bearing with the specified grease and with the amount required - see Appendix A and store in box or plastic bag until required.

5. EXAMINATION OF PULLEY (See drawing DE/64601 for pulley dimensions)

5.1 Examine the vee belt pulley for cracks or chipping. Damaged pulleys must be renewed.

5.2 Using a short length of new vee belt of the correct type and size pushed firmly into each vee in turn, check that the clearance between the belt and the bottom of the pulley is not less than 3/32".

Check the vee faces and look for signs of scarring or ridging sufficient to cause the vee belt to snag or lie on a ledge.

5.3 If the pulley is worn or scored or ridged, renew the pulley.

6. RE-ASSEMBLING

NOTE: Fit new seals, O-rings and gaskets and before assembling, smear with Shell Alvania 2 grease. Lightly smear all threads of all cover screws prior to assembly.

Tighten screws and nuts to the torque figures quoted in section 8 of Appendix A in operations marked *.

6.1 Fit the oil seal (50) between the two circlips (51) in the bore of the slip ring endshield. Fit the O-ring (71) on the flange lip of the slip ring endshield (46). Fit the oil seal (13) in the slip ring bearing clamp plate.

6.2 Fit the oil seal (77) in the bore of the drive end endshield (78) and the O-ring (71) on the flange lip.

6.3 Fit the O-ring (52) on the slip ring end of the rotor shaft.

* 6.4 Align the scribed lines on the slip ring endshield (see operation 1.2) and the stator and fit the endshield on the stator. Replace and secure the washers and screws. (47 to 48).

Cont'd.

6. - Cont'd.

* 6.5 Replace and secure the three-phase stator leads on the heat sink.

6.6 Assemble the spacer in the bore (14) of the clamp plate (9) with the slotted end of the spacer towards the bearing (15).

6.7 Insert the rotor with the attached drive endshield into the stator, aligning the scribed lines on the endshield and the stator. Ensure that the rotor shaft is correctly aligned with the bore of the slip ring endshield.

* 6.8 Evenly draw the rotor on by turning each drive endshield screw (79) half a turn at a time until right home.

* 6.9 Fit the slip ring bearing on the rotor shaft and press it into the housing by replacing the clamp plate and tightening the securing screws evenly.

* 6.10 Fit the fan securely by replacing the washers and tightening the nut to the correct torque loading.

* 6.11 Replace the brush box with the gasket and dowel correctly positioned. Secure the box with two screws and washers.

* 6.12 Connect and secure the flying lead to the 'A' terminal on the brush box. Ensure that the tag is correctly located and positioned on the lucar blade and terminal post. Take care not to damage the insulator strip positioned between the terminals. Replace the terminal box cover and gland plate.

6.13 Assemble and secure the shroud on the slip ring endshield.

6.14 Assemble and secure the pulley.



## 7. TESTING

NOTE: Care must be taken to make the correct connections to the regulator. Wrong connections or short circuits, no matter how brief, can cause irreparable damage.
The warning indicator lamp shown in Figure 5 is used to determine faulty equipment. Refer to Appendix D for cause of fault indications.

7.1 Mount the alternator on the test arm and connect the drive.

7.2 Make the connections shown in Figure 5 using a master regulator of the correct type set to the MED voltage position. The warning lamp should illuminate as soon as the warning light switch is closed.

NOTE: DO NOT MAKE ANY DISCONNECTION OR CONNECTION WHILST THE ALTERNATOR IS RUNNING.

7.3 Start the drive motor and increase speed until the ammeter indicates that the alternator is charging. The warning lamp should go out.

7.4 Connect a voltmeter between terminals A and F on the regulator and reduce the speed to the cut-in speed (section 3, Appendix A). The voltmeter should indicate a value not less than 24V. Remove the voltmeter.

7.5 Connect the voltmeter across terminals B- and B+.

Cont'd.

7. - Cont'd.

7.6 Refer to Figure 3 and carry out a load test at various speeds and currents between 10 and 60A and 650 and 1070 RPM and ensure that the characteristic falls within the "envelope" indicated by the dotted line.

If the machine performance lies outside this "envelope" shut down and investigate cause - see Appendix D.

7.7 Take the generator upto 8000 RPM and ensure that the output current is retained at 60A.

8. FINAL INSPECTION

8.1 Ensure that all connections are tight.

8.2 Cover all appertures from ingress of water by means of masking tape.

8.3 Do not paint the outer case.

## APPENDIX A

## DATA

| | | | |
|---|---|---|---|
| 1. | Machine type | AC203-060-24/2 (Type-current rating-voltage rating/ swing mounted). | |
| 2. | Regulator type | AC 460-3 | |
| 3. | Performance | Output voltage(nominal) | 24V |
| | | Max. output (hot or cold) | 60A @ 27.5V |
| | | Cut-in speed (cold) | 650 RPM |
| | | " " " (hot ) | 700 RPM |
| | | Speed for full load (cold) | 1000 RPM |
| | | " " " " (hot ) | 1250 RPM |
| | | Absolute maximum speed | 8000 RPM |
| | | Weight | 53lb (24.4 Kg) |
| 4. | Rectification | Built in silicon diodes located in slip ring endshield and comprising:- | |
| | | 6 main 25A Lucas push-in diodes | |
| | | 3 aux 18A Lucas push-in diodes | |
| 5. | Bearings | | |
| | 5.1. Drive End | Type - | Roller NC5-12 |
| | | Fit - | |
| | | Shaft diameter - | |
| | | Housing diameter - | |
| | | Lubricant quantity - | 0.12oz (3.5g) |
| | 5.2. Slip ring-end | Type - | Ball NC2-16 |
| | | Fit - | |
| | | Shaft diameter - | |
| | | Housing diameter - | |
| | | Lubricant quantity - | 0.05oz (1.5g) |
| | 5.3. Lubricant | Shell Alvania 2 | |

Contd/....

APPENDIX A (Contd/....)

| | | |
|---|---|---|
| 6. Rotor | Type | - claw |
| | Slip rings | - 2 |
| | Slip rings "as new" diameter | - |
| | Slip rings minimum diameter | - 1.60" (40.7mm) |
| | Field coil resistance | - 9 to 11 ohms |
| | Brush type | - 6067-79 |
| | Minimum brush length | - 0.312" (7.9mm) |
| | Brush spring pressure | - 8oz (227g) |
| 7. Stator | Winding type | - Delta |
| | Resistance(each phase coil) | - 0.095 ohms |
| | Resistance(between any two phase terminals) | - 0.063 ohms |

8. Torque settings

| | Torque | Used in operation |
|---|---|---|
| Fan nut | 20lb ft (2.7 Nm) | 6.10 |
| Endshield screws | 30lb ft (3.4 Nm) | 6.4, 6.8 |
| Heat sink fixing screws | " " " | 3.7.3. |
| Three phase leads from stator to heat sink | 25lb ft (2.8 Nm) | 6.5 |
| Output terminals | 30lb ft (2.8 Nm) | - |
| 'A' terminal | 10lb ft (1.2 Nm) | 6.12 |
| Brush box fixing screws and cover screws | 20lb ft (2.3 Nm) | 6.11 |
| Bearing clamp-plate screws | | |
| DE | 30lb ft (3.4 Nm) | 6.9 |
| SLE | 20lb ft (2.3 Nm) | |

APPENDIX B.

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### RENEWAL OF SLIP RINGS

1. Disconnect the slip rings by unsoldering the leads. Mark the leads to indicate their relative slip ring positions.

2. Push the leads below the surface of the shaft.

3. Remove the slip ring assembly by pulling on one of the slip rings with a three arm extractor.

   Should difficulty be experienced, a groove may be machined in the insulation hub to pull direct on the sleeve. Take care not to damage the shaft while carrying out this operation.

4. Heat the new slip ring assembly in an oven at a temporature of 80° to 90°C for ½ hour.

5. Push the assembly onto the shaft until it abuts against the mating spigot.

6. Reconnect the slip rings ensuring that the leads are connected to the correct slip ring.

7. Check the rotor for continuity using a multimeter.

APPENDIX C.

## PROCESS SPECIFICATION CEPS 179

### ROTOR FIELD FAULTS

1. If the rotor field is defective the entire rotor must be renewed.

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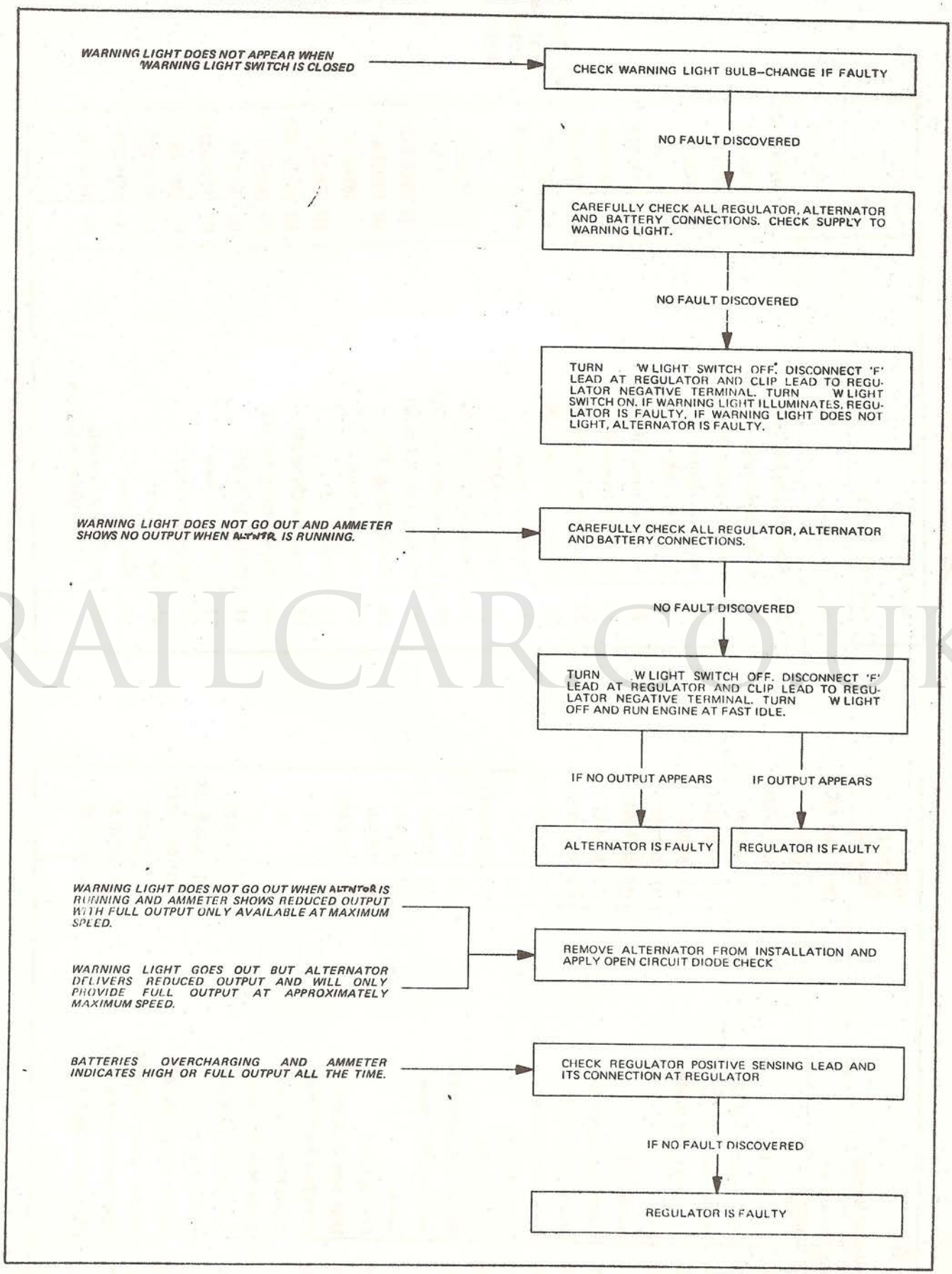





## Fault finding guide.

# INDEX TO FIGURES 1 and 2

| Model | AC203 |
|---|---|
| Despatch Number | 060-24-2<br>1284002 |

| Illus. | Description | Qty | Part No. |
|---|---|---|---|
| 1 | Baffle | (1) | 6270-21 |
| 2 | Screw for (1) | (4) | NS206-9Z1 |
| 3 | Washer, spring for (2) | (4) | 5293-39 |
| — | Washer, plain for (2) | (4) | NW2-20Z1 |
| 4 | Lubricator, end shields | (2) | 6270-57 |
| 5 | Fan | (1) | 6270-65 |
| 6 | Nut for (5) | (1) | NU7-38Z1 |
| 7 | Washer, spring for (6) | (1) | 5001-40 |
| 8 | Washer, plain for (6) | (1) | NW2-182Z1 |
| 9 | Plate, clamp S.R.E. | (1) | 6270-40 |
| 10 | Gasket for (9) | (1) | a |
| 11 | Screw for (9) | (4) | NS206-9Z1 |
| 12 | Washer, spring for (11) | (4) | 5293-39 |
| 13 | Seal, oil S.R.E. outer | (1) | 6270-54 |
| 14 | Spacer | (1) | 6270-42 |
| 15 | Bearing S.R.E. | (1) | NC2-16 |
| 16 | Heat Sink & Diodes | (3) | 6270-46E |
| 17 | Heat Sink Field Diode | | — |
| 17A | Diode Main Negative | | — |
| 17B | Diode Main Positive | | — |
| 18 | Insulator for heat sink | (1) | 6270-29 |
| 19 | Screw, heat sinks | (9) | NS209-15Z1 |
| 20 | Washer, plain (19 & 24) | (11) | NW2-28Z1 |
| 21 | Washer, spring (19 & 24) | (11) | 5244-22 |
| 22 | Bush, insulating for (19) | (9) | 6270-32 |
| 23 | Post, insulating & tag | (2) | 6270-92 |

| Model | AC203 |
|---|---|
| Despatch Number | 060-24-2<br>1284002 |

| Illus. | Description | Qty | Part No. |
|---|---|---|---|
| 24 | Screw, fixing for (23) | (2) | NS209-18Z1 |
| 25 | Screw, terminal positive | (1) | 5334-408 |
| 26 | Washer, spring (27 & 32) | (5) | 5001-31 |
| 27 | Terminal, positive | (1) | 6270-43 |
| — | Packer, for (27) | | — |
| 28 | Insulator, front for (27) | (1) | 6270-28A |
| 29 | Tag, field terminal | (1) | 5459-394 |
| 30 | Screw terminal negative | (1) | 5334-407 |
| 31 | Washer, spring for (27) | (1) | 5001-10 |
| 32 | Terminal negative | (1) | 6270-43A |
| — | Packer, for (32) | | — |
| 33 | Insulator, front for (32) | (1) | 6270-28 |
| 34 | Insulator, rear (27 & 32) | (2) | 6270-49 |
| 35 | Washer, plain (27 & 32) | (2) | NW2-81T1 |
| 36 | Nut for (27 & 32) | (4) | NU11-6T1 |
| 37 | Cover, terminal | (1) | 6270-24 |
| 38 | Plate, gland | (1) | 6270-26 |
| 39 | Screw for (37 & 38) | (8) | NS206-9Z1 |
| 40 | Washer, spring for (39) | (8) | 5293-39 |
| 41 | Gasket (37 & 38) | (2) | 6270-27 |
| 42 | Nut, cable, gland | (1) | 5658-339A |
| — | Washer, for (42) | (1) | NW2-240Z1 |
| 43 | Ferrule outer | (1) | 5998-22N |
| 44 | Ferrule inner | (1) | 5998-22M |
| 45 | Plug, gland for cable from 4.9mm to 6.5mm | (1) | 5658-310 |

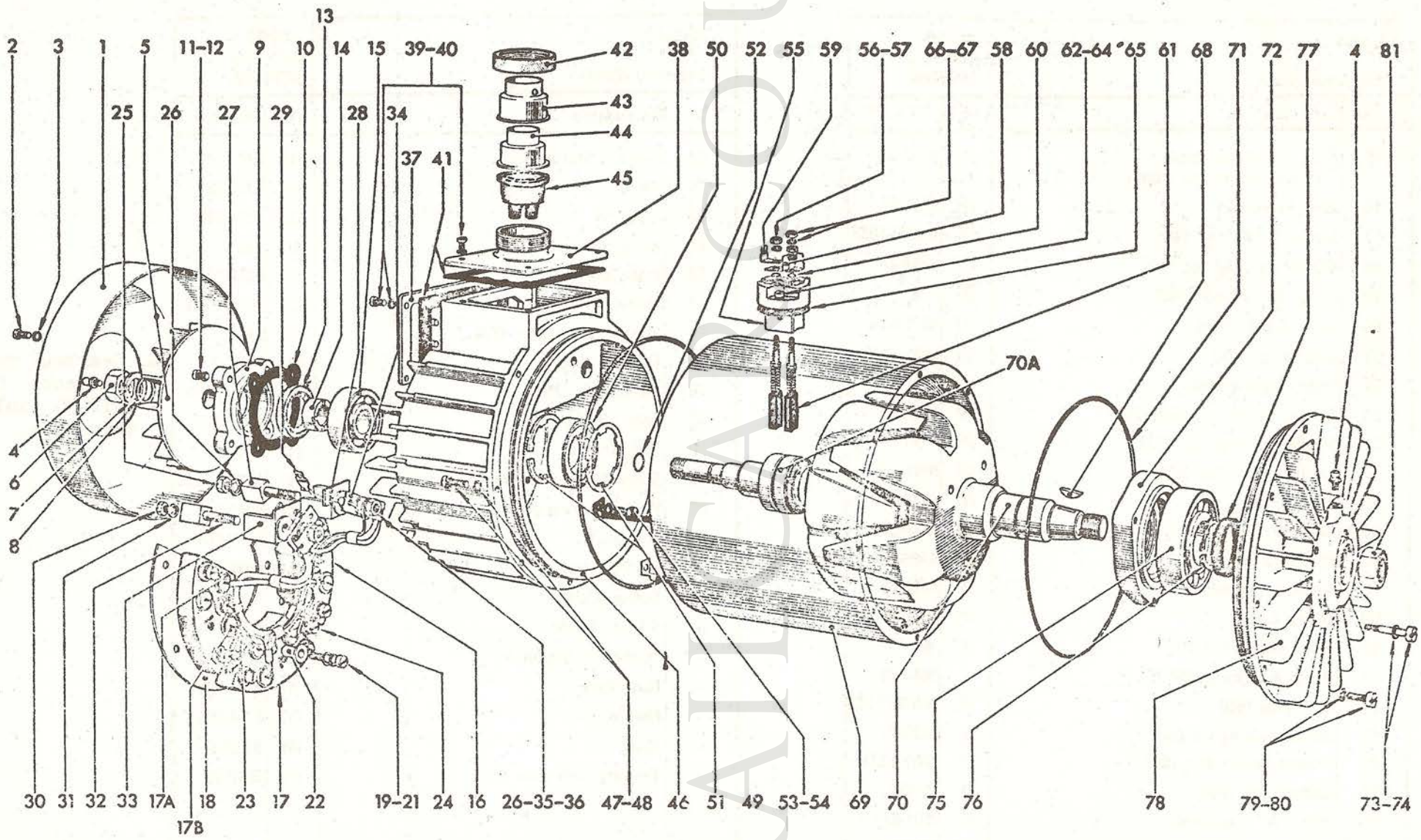
a. Overhaul Seal and Gasket Set 6010-30 includes this item.

## INDEX TO FIGURES 1 and 2

| Model | | AC203 060-24-2 | |
|---|---|---|---|
| Despatch Number | | 1284002 | |
| Illus. | Description | Qty | Part No. |
| 45 | Plug, gland for cable from 6.5mm to 10mm | (1) | 5658-311 |
| 46 | S.R. Endshield | (1) | 6270-23 |
| 47 | Screw fixing for (46) | (7) | NS209-10Z1 |
| 48 | Washer, spring for (47) | (7) | 5244-22 |
| 49 | Ring, sealing for (46) | (1) | a |
| 50 | Seal, S.R.E. inner | (1) | 6270-54A |
| 51 | Circlip for (50 | (2) | 5950-44A |
| 52 | Ring, sealing shaft | (1) | a |
| 53 | Screw, stator connection | (3) | NS209-8T1 |
| 54 | Washer, spring for (53) | (3) | 5244-22 |
| — | Washer, plain for (53) | (3) | NW1-13T1 |
| 55 | Box, brush | (1) | 6220-246 |
| 56 | Nut, brush | (2) | NU2-5T |
| 57 | Washer, crinkle | (2) | 5936-241 |
| 58 | Insulator, terminal | (1) | 6220-65 |
| 59 | Blade, Lucar | (2) | 6220-85 |
| 60 | Ring, sealing for (61) | (2) | a |
| 61 | Brush & terminal (SET) | | 6067-94 |
| 62 | Screw for (55) | (2) | NS206-11Z1 |
| 63 | Washer, spring for (62) | (2) | 5293-39 |
| 64 | Washer, plain for (62) | (2) | NW2-13Z1 |
| 65 | Gasket for (55) | (1) | 6220-75 |
| 66 | Nut "A" Terminal | (1) | NU1-6T1 |
| 67 | Washer, crinkle | (1) | 5936-241 |
| 68 | Key | (1) | NK1-9 |

| Model | | AC203 060-24-2 | |
|---|---|---|---|
| Despatch Number | | 1284002 | |
| Illus. | Description | Qty | Part No. |
| 69 | Yoke & Stator | (1) | 6270-09 |
| 70 | Rotor | (1) | 6270-38 |
| 70A | Slip ring | (1) | 6270-210 |
| 71 | Ring, sealing for (78) | (1) | a |
| 72 | Plate, clamp | (1) | 6270-13 |
| 73 | Screw, for (72) | (3) | NS209-21Z1 |
| 74 | Washer, sealing for (73) | (3) | a |
| 75 | D.E. Bearing | (1) | NC5-12 |
| 76 | Circlip, for (75) | (1) | 5886-200A |
| 77 | Seal, oil D.E. | (1) | 6270-54B |
| 78 | D.E. Shield | (1) | 6270-11 |
| 79 | Screw fixing for (78) | (8) | NS209-10Z1 |
| 80 | Washer, spring for (78) | (8) | 5244-22 |
| 81 | Nut, snaft | (1) | 5330-464 |
| — | Blade, Lucar | (1) | 5459-422 |
| — | Screw, blade | (1) | NS200-16T1 |
| — | Washer, blade | (1) | NW1-2T1 |
| — | Washer, spring blade | (2) | 5268-28 |
| — | Nut, blade | (2) | NU7-1T1 |
| — | Nameplate | (1) | 5434-435 |
| — | Rivet | (4) | NR21-5 |
| — | Terminal Inhibitor Kit | (1) | 6010-36 |

a. Overhaul Seal and Gasket Set 6010-30 includes this item.




PROCESS SPECIFICATION CEPS 179 FIGURE 1. EXPLODED VIEW OF AC 203 ALTERNATOR

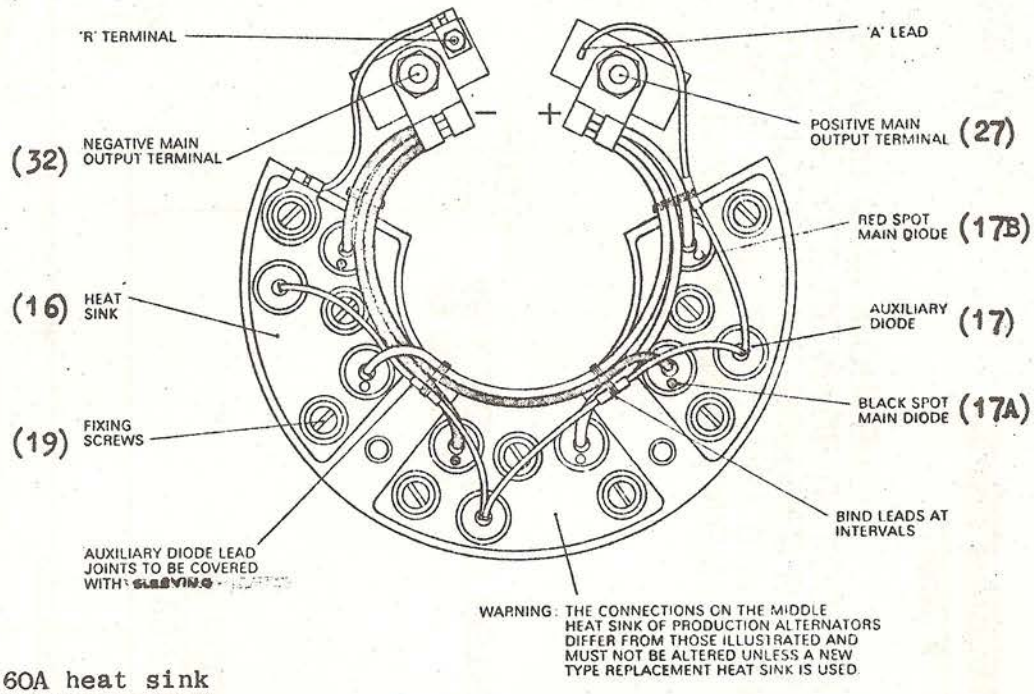



FIGURE 2, 60A heat sink replacement

**NOTE: Numbers in brackets correspond to those shown in Figure 1.**



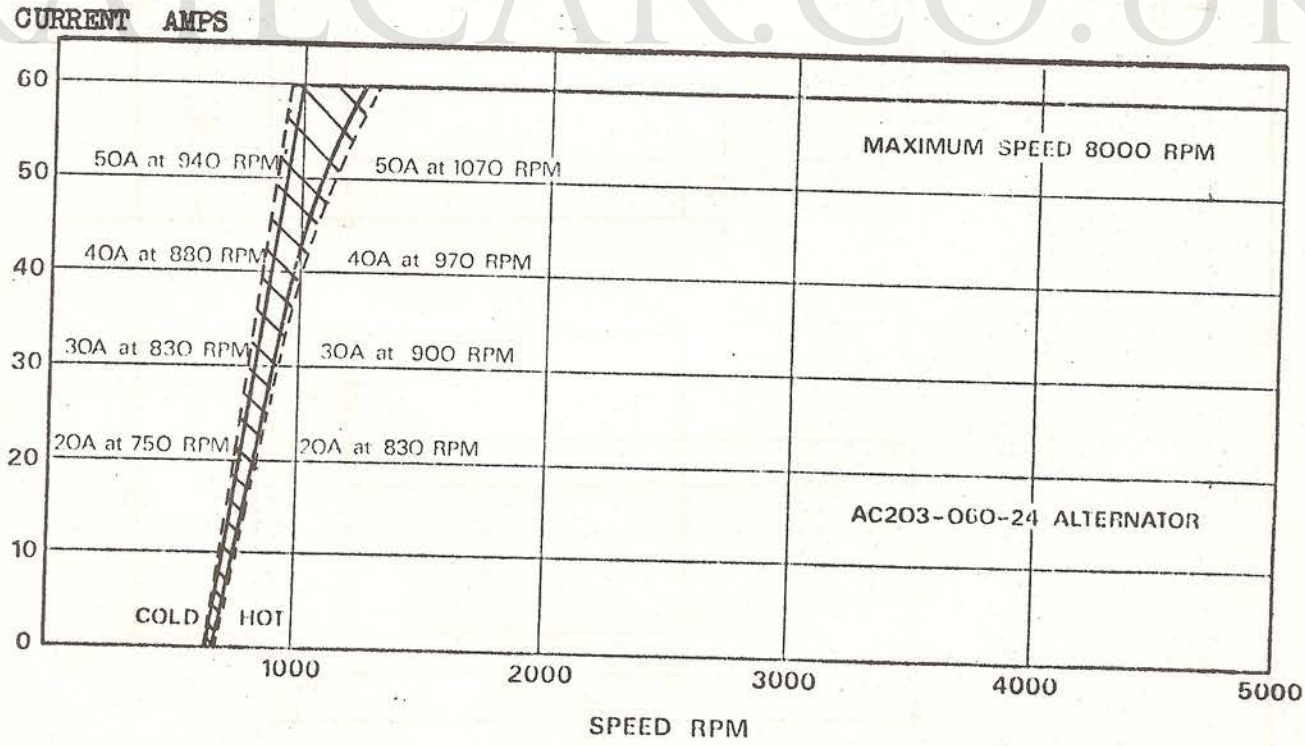
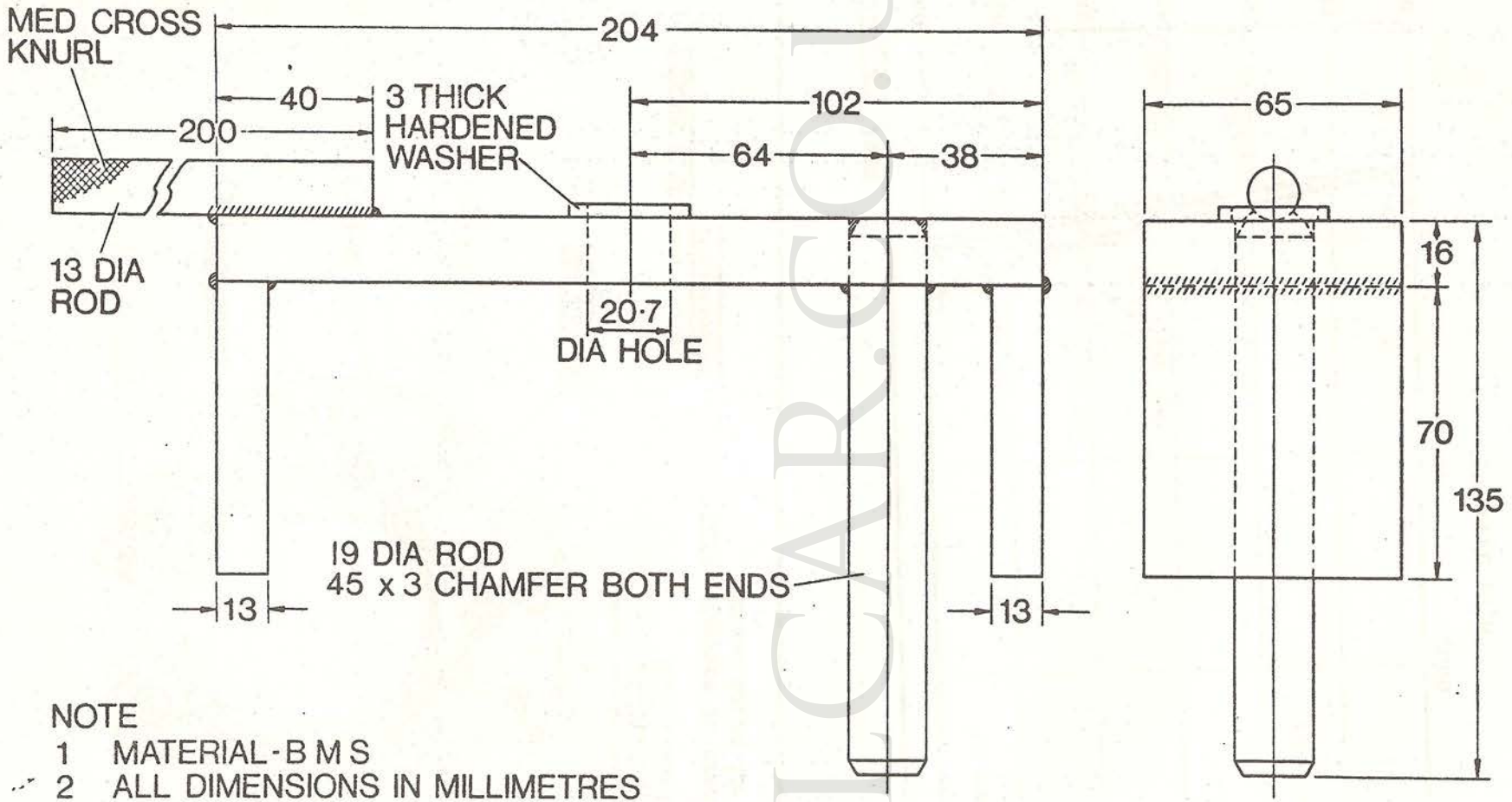



FIGURE 3 Performance Curves

PROCESS SPECIFICATION CEPS 179




NOTE

1 MATERIAL - B M S
2 ALL DIMENSIONS IN MILLIMETRES
3 WELD WHERE SHOWN BY SHADED SECTION
4 THIS TOOL IS NOT SUPPLIED BY C A V AND SHOULD BE MADE UP LOCALLY OR IN YOUR OWN WORKSHOP

FIGURE 4. Rotor extractor

PROCESS SPECIFICATION CEPS 179

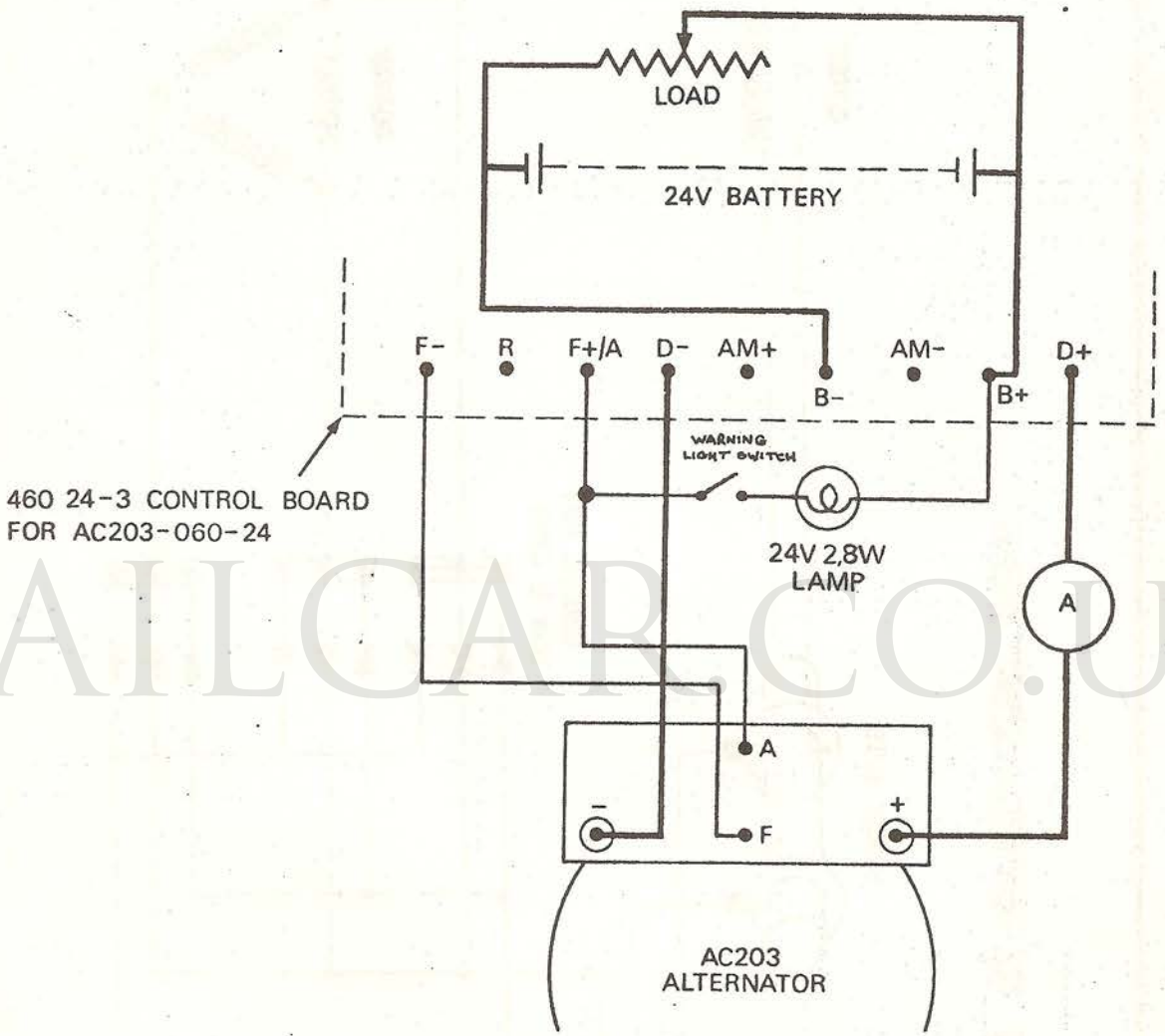
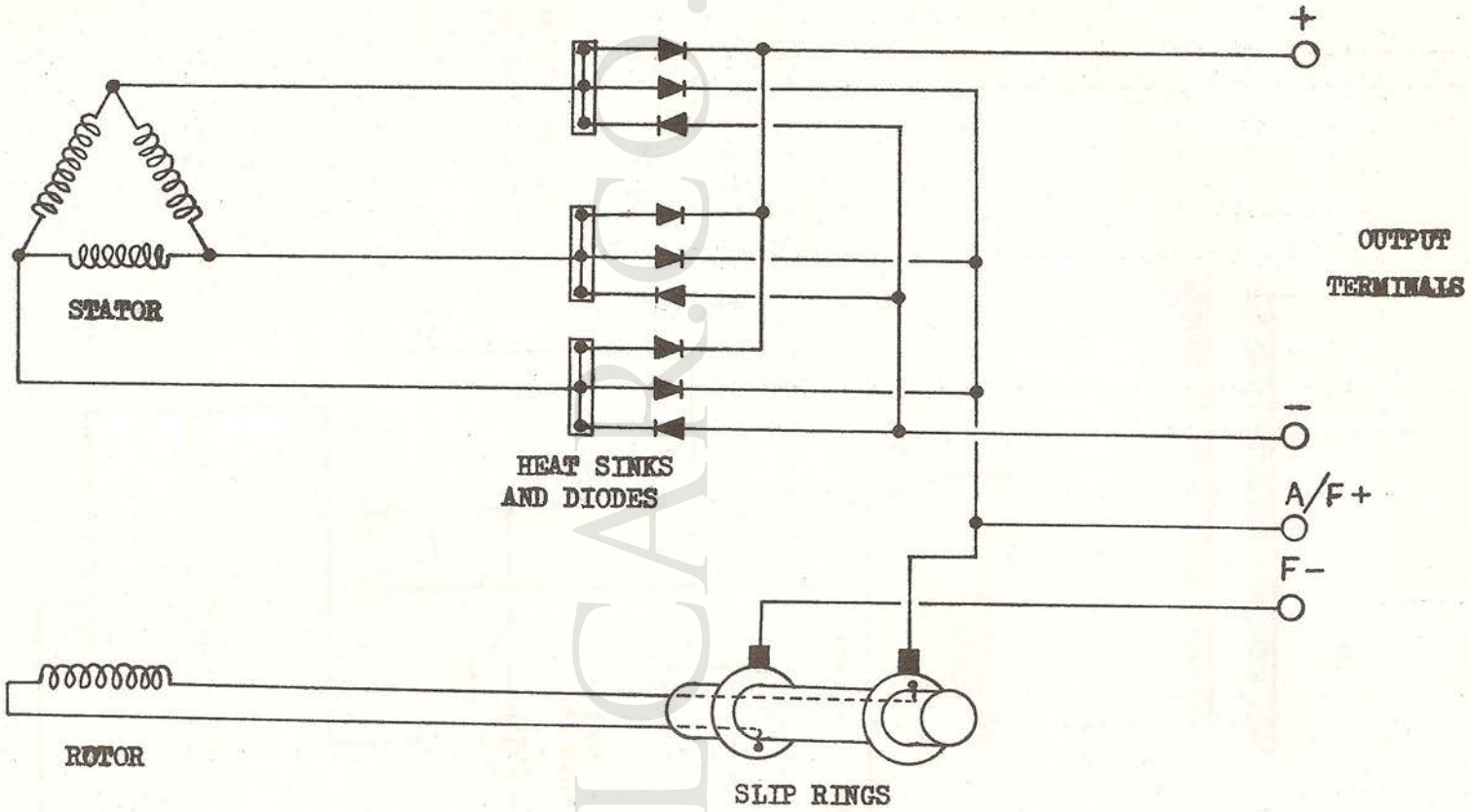





FIGURE 5. Bench test circuit

PROCESS SPECIFICATION CEPS 179




PROCESS SPECIFICATION CEPS 179 FIGURE 6. SCHEMATIC DIAGRAM