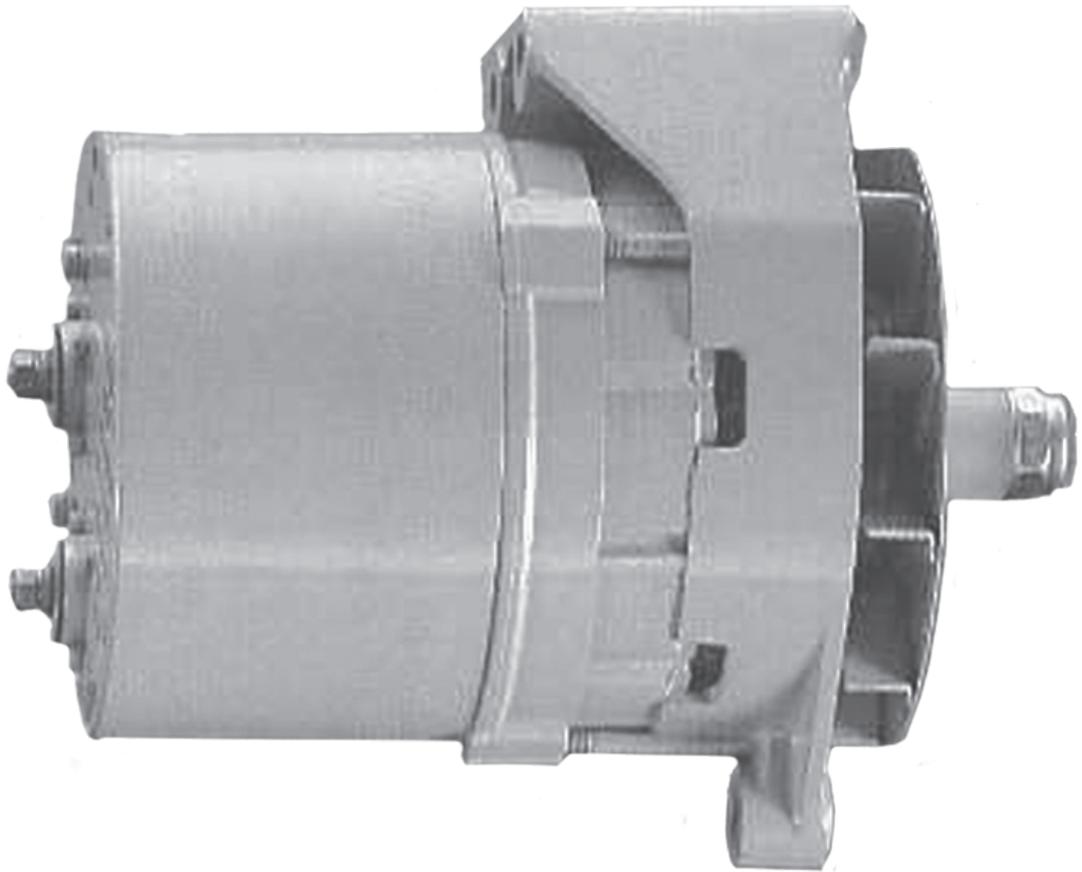




SERVICE MANUAL FOR THE AC5R FAMILY OF ALTERNATORS



TROUBLESHOOTING, DIAGNOSTICS
AND REPAIR

Prestolite
electric

Leece-Neville
HEAVY DUTY SYSTEMS



AC5R ALTERNATOR

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This publication is supplementary to the AC5 Workshop Manual and must be read in conjunction with all relevant general instructions contained in Pub No. C2584E.

AC5R ALTERNATOR

GENERAL DESCRIPTION

All alternators in the AC5R range have a built-in regulator fixed to the slip ring end shield. The regulator employs solid state circuitry throughout and the transistors, diodes and resistors are mounted on a printed circuit board contained within a special moulding for maximum protection and to withstand vibration. There are no moving parts to wear, the regulator requires no adjustment during service and is a non-repairable item.

PRE-DISMANTLING CHECK

The alternator and regulator form an integrated unit, therefore it is essential to carry out a test to determine whether the alternator or the regulator is at fault, before undertaking dismantling or repair work on the alternator.

- 1 Loosen and remove the three screws and washers holding the alternator cover. Remove the cover.
- 2 Disconnect the F lead from the terminal on the alternator brush box.
- 3 Connect a lead from the F terminal on the brush box to the - connection on the alternator.

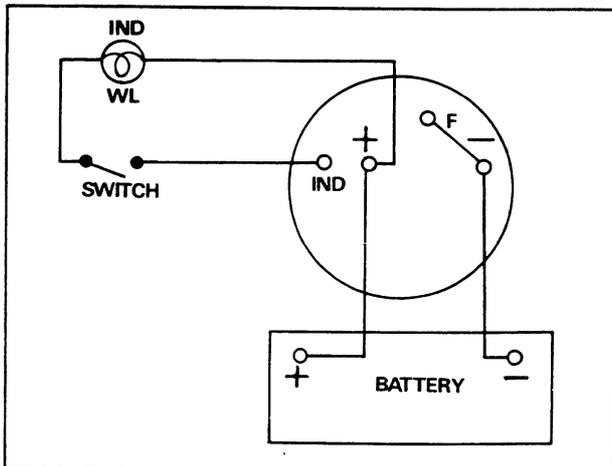


Fig 1 Test circuit

4 Wire the + and IND connections on the alternator with lamp and switch as shown in Fig 1. Check the lamp and switch before test. With the switch closed, if the lamp lights the regulator is faulty. If the lamp does not light the alternator is faulty.

DO NOT REMOVE ANY CONNECTIONS WHILE THE ALTERNATOR IS RUNNING.

DISMANTLING

GENERAL

Before dismantling the unit, remove all surface dirt and grease with a cloth or brush dipped in kerosene or suitable cleaning fluid, taking care to prevent the liquid from entering the machine through any gaps in the casing.

REGULATOR

Loosen and remove three screws, washers and remove cover.

Before removing the regulator, mark up the regulator leads and make a note of the connections.

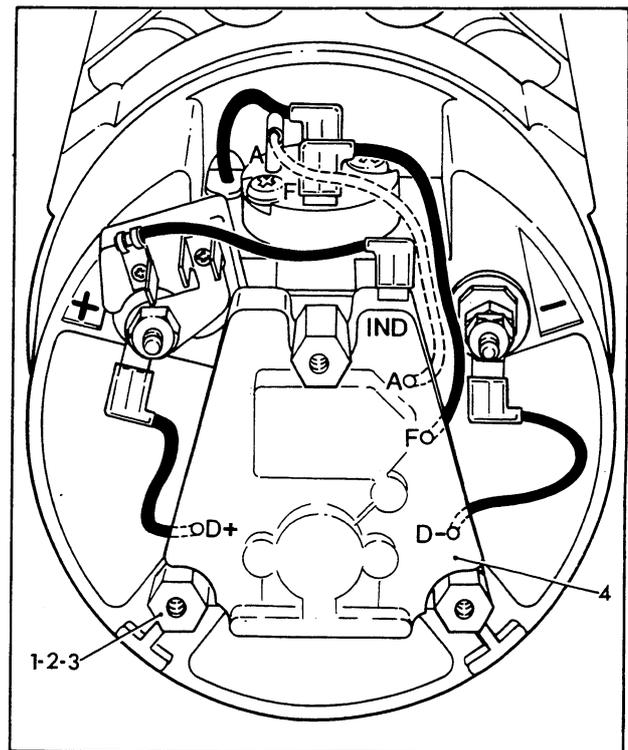


Fig 2 Slip ring end shield and regulator

Loosen and remove pillar (1) Fig 2, spring washer and flat washers (2 & 3). Then withdraw the regulator (4) from the slip ring end shield.

If the alternator is at fault continue the dismantling procedure by following all the relevant instructions in the AC5 Workshop Manual, Publication No C2584E.

COMPONENT INSPECTION & RENEWAL

The regulator and Lucar connections should be thoroughly cleaned before examination. Examine the regulator visually for signs of cracking, and any other signs of damage. If there is any visual damage a new regulator should be fitted.

REGULATOR TEST

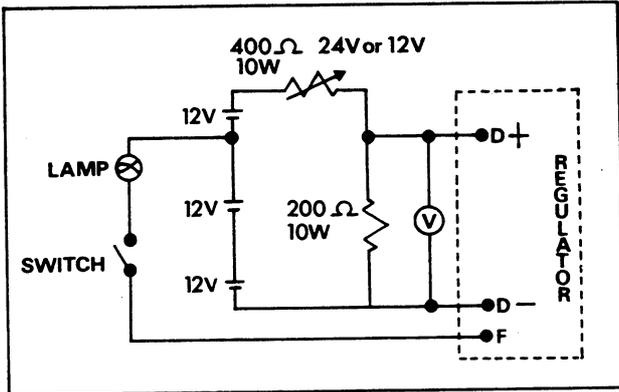


Fig 3 Regulator test circuit

Wire the regulator to the warning lamp, ON/OFF switch, voltmeter, variable resistance and a 36 volt supply, as shown in Fig 3.

- 1 Close the switch — if the lamp does not light; Regulator is faulty, discard and replace with a new one.
- 2 With the switch still closed and the lamp alight, increase the voltage across D+ and D-. The light should go out at 28,5 volt. If the light remains illuminated, the regulator is faulty. Discard it if faulty, and replace with a new regulator.

ASSEMBLY

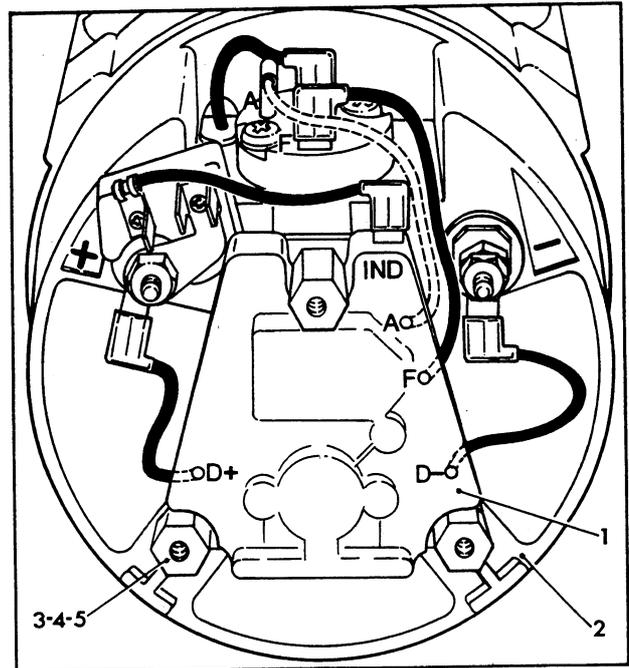


Fig 4 Slip ring end shield and regulator

Position the regulator (1) Fig 4, on the slip ring end shield (2) with wiring leads innermost and align the regulator locating holes with those on the three bosses on the slip ring end shield. Secure with flat washer (3) spring washer (4) and pillar (5). The Pillars to be tightened to 1,7 to 2,3 Nm (15 to 20 lbf in) torque value.

WIRING CONNECTIONS	
REGULATOR	ALTERNATOR
D+	+ SLIP RING END SHIELD
D-	- SLIP RING END SHIELD
F	F BRUSH BOX
A	A BRUSH BOX
IND	IND WIRED ONTO NYLON BLOCK

Fig 5 Wiring connections

Connect the Lucar connectors to the Lucar blades in the same positions as noted when dismantling, see Fig 5.

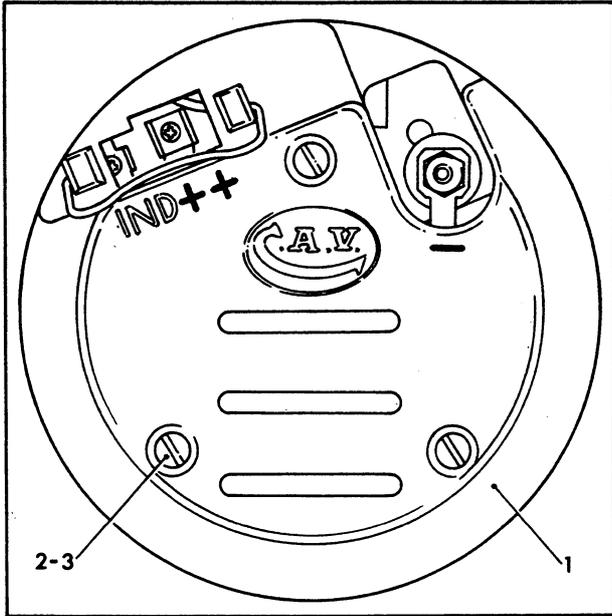


Fig 6 Protection cover

Assemble cover (1) Fig 6, and secure with washers and screws (2 & 3) and tighten to 1,4 to 1,7 Nm (12 to 15 lbf in).

CHECKING ALTERNATOR OUTPUT WITH INTEGRAL REGULATOR FITTED

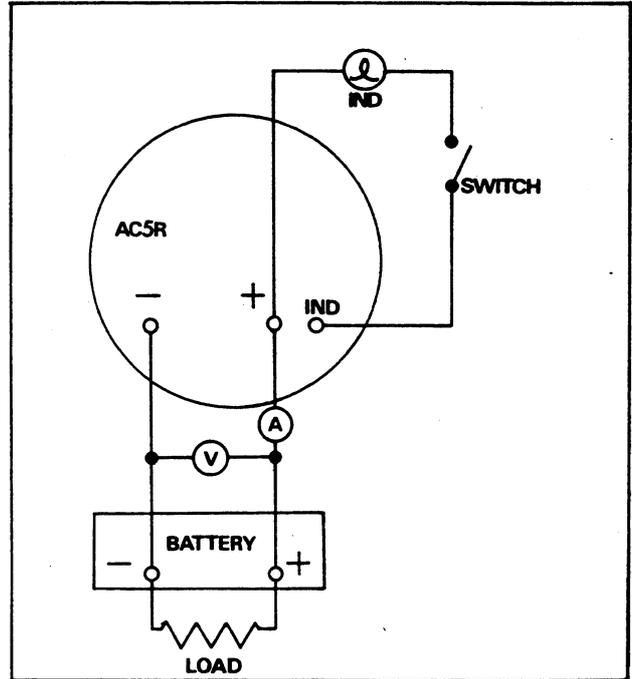


Fig 7 Test circuit

Wire the alternator with the integral regulator to the warning lamp, ON/OFF switch, voltmeter, ammeter, battery and adjustable load as shown in Fig 7. The warning lamp switch should be in the OFF position initially.

The adjustable load must be set so that the battery is discharged sufficiently to allow the alternator to develop its full output; if the battery is in a fully charged condition, the voltage regulator will taper off the alternator output and prevent the following test figures being achieved.

TESTING THE ALTERNATOR

The regulator can be damaged by excessively high voltages, currents or temperatures, and precautions must be taken when testing the equipment.

BEFORE CONNECTING REGULATOR

1 The alternator must be given the static tests as detailed in the relevant instructions in the AC5 Workshop Manual, Publication No C2584E.

2 When the tests are satisfactory fit the regulator and connect the leads as shown in Fig 4.

Type of Alternator	Cutting-in Speed rpm	Current Output @ 2000 rpm	Current Output @ 3000 rpm	Current Output @ 4000 rpm
24V Std	1 250 @ 28V	16,5A	25,5A	29A

Fig 8 Performance data

Close the warning lamp switch then run the machine up to the first speed stated in the table Fig 8. Compare the alternator current output with the figure given. Check the output for each of the other speeds given in the table.

Some variation from the stated outputs is permissible, but failure to reach within 10% of the required figure indicates a faulty regulator. Renew the regulator if faulty.

DO NOT REMOVE ANY CONNECTIONS WHILE THE ALTERNATOR IS RUNNING.