Replacement Alternator Wiring Instructions

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80 Amp Denso Alternators – Lucas AC/ACR Replacement
[NEGATIVE EARTH SYSTEMS ONLY]

The Lucas 11AC externally regulated alternator has 4 connections as follows:

- B+ Battery +ve terminal or main feed
- F+ Switched live +ve feed
- F- Connection to External Regulator (Lucas 4TR)
- AL Charge Warning light output ('W' phase voltage which is half the output voltage of the alternator)

The WOSP 80A internally regulated alternator has 4 x connections as follows:

- B+ Battery +ve terminal or main feed
- B- Additional earth point (rarely used)
- D+ Warning lamp connection / exciter wire
- W Phase voltage which is half the output voltage of the alternator.

Section One – Early Cars with a separate ignition switch and starter button

1. Cars without a charge warning light connection

Some cars fitted with a Lucas AC11 alternator do not have a charge warning light connected. Examples include early Series 1 4.2 E-Types. The presence of a charge warning light can be checked by inspecting the connections on the rear of the alternator. If there is a wire connected to the terminal marked 'AL' you do have a warning light connection and should refer to the next section of these instructions.

Do not confuse the presence of a dashboard ignition warning light with a charge warning light. On cars without the connection to the alternator 'AL' terminal the ignition warning light is operated by an oil pressure switch and is not related to the function of the alternator.

Once you have confirmed that you **do not have a charge warning light** connection proceed as follows:

- Disconnect the battery
- Label the 3 wires connected to the terminals on the Lucas AC11 and then disconnect them
- Remove the AC11 alternator
- Install the replacement WOSP AC Style alternator
- Connect the wire labelled B+ to the B+ Terminal on the rear of the Denso AC style alternator
- Connect the wire labelled F+ to the D+ warning light terminal (Lamp) on the rear of the new unit.
- Insulate and secure the wire labelled F-. This is no longer required.
- As a precautionary measure (to avoid a flat battery caused by current leakage from a faulty / sticking regulator) you should disconnect and insulate the earth lead from the external regulator (Lucas 4TR).

2. Cars with a Warning Light activated by the Charge Warning Light Control Unit and Oil Pressure Switch

The presence of a charge warning light can be checked by inspecting the connections on the rear of the alternator. If there is a wire connected to the terminal marked 'AL' you do have a warning light connection. You will also have a warning light control unit (Lucas 3AW) which is connected to the other end of the wire attached to the 'AL' terminal on your 11AC alternator. The control unit can normally be found on the bulkhead; next to the external regulator and looks a little like a large cylindrical relay with three terminals on its base.

It is now very important to determine if your ignition warning light is activated by **both** the alternator warning control unit and an oil pressure switch. This can be done as follows:

- Identify if you have an oil pressure warning light switch and disconnect the lead (earth) from the terminal on the switch
- Find the Alternator warning light control unit (Lucas 3AW) and disconnect the earth lead
- Turn on the ignition but do not start the engine
- Check to see if the ignition warning light is illuminated - It should be extinguished
- Reconnect the earth leads to the oil pressure switch and Lucas 3AW one at a time and check to see if each one operates ignition warning light individually

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- Turn off the ignition – reconnect the earth leads on both the oil pressure switch and the Lucas 3AW
- If the ignition light illuminated when either the oil pressure switch or earth lead to the 3AW were connected it is essential that you follow the instructions below:

Modern style alternator wiring eliminating the Lucas 3AW Warning light control unit – No Oil Pressure Light

This method removes the need for the Lucas 3AW warning light control unit but does not allow the use of your oil pressure warning switch. This may not be an issue if you have a reliable oil pressure gauge but if the warning light is your only guide to oil pressure this is NOT recommended.

- Disconnect the battery
- Label the 4 wires connected to the terminals on the Lucas AC11 and then disconnect them
- Remove the AC11 alternator
- Install the replacement WOSP AC Style alternator
- Connect the wire labelled B+ to the B+ Terminal on the rear of the Denso AC Style alternator
- Insulate and secure the wire labelled F+. This is no longer required.
- Insulate and secure the wire labelled F-. This is no longer required.
- Connect the wire labelled 'AL' to the D+ warning light terminal (Lamp) on the new Denso alternator.
- Disconnect the wires from the Lucas 3AW control unit and connect the input and output wires together (AL and WL) – ensure the joint is fully insulated and that the earth lead is secured or removed completely. The 3AW can be removed or left in situ to avoid holes in the bulkhead.
- Disconnect and insulate the lead from the oil pressure switch. The oil pressure switch will no longer work.
- As a precautionary measure (to avoid a flat battery caused by current leakage from a faulty / sticking regulator) you should disconnect and insulate the earth lead from the external regulator (Lucas 4TR).

It is essential that if you plan to remove the Lucas 3AW relay you must disconnect your Oil Pressure Switch. If your oil pressure switch fails in the closed position or your oil pressure drops to the point where the switch closes when the engine is running there is very severe risk of a short circuit from the warning light feed.

3. Cars with an Ignition Warning Light activated by only the Charge Warning Light Control Unit

If you are not certain that your ignition warning light is activated by only the alternator warning control unit you must check to see if it is also activated by an oil pressure switch. Please refer to the section above for details of the procedure to do this.

The presence of a charge warning light can be checked by inspecting the connections on the rear of the alternator. If there is a wire connected to the terminal marked 'AL' you do have a warning light connection. You will also have a warning light control unit (Lucas 3AW) which is connected to the other end of the wire attached to the 'AL' terminal on your 11AC alternator. The control unit can normally be found on the bulkhead; next to the external regulator and looks a little like a large cylindrical relay with three terminals on its base.

Modern style alternator wiring eliminating the Lucas 3AW Warning light control unit

This method removes the need for the Lucas 3AW warning light control unit.

- Disconnect the battery
- Label the 4 wires connected to the terminals on the Lucas AC11 and then disconnect them
- Remove the AC11 alternator
- Install the replacement WOSP AC style alternator
- Connect the wire labelled B+ to the B+ Terminal on the rear of the WOSP alternator
- Connect the wire labelled AL to the D+ warning light terminal (LAMP) on the rear of the unit.
- Insulate and secure the wire labelled F+. This is no longer required.
- Insulate and secure the wire labelled F-. This is no longer required.
- Disconnect the wires from the Lucas 3AW control unit and connect the input and output wires together – ensure the joint is fully insulated and that the earth lead is secured or removed completely. The 3AW can be removed or left in situ to avoid holes in the bulkhead.
- As a precautionary measure (to avoid a flat battery caused by current leakage from a faulty / sticking regulator) you should disconnect and insulate the earth lead from the external regulator (Lucas 4TR).

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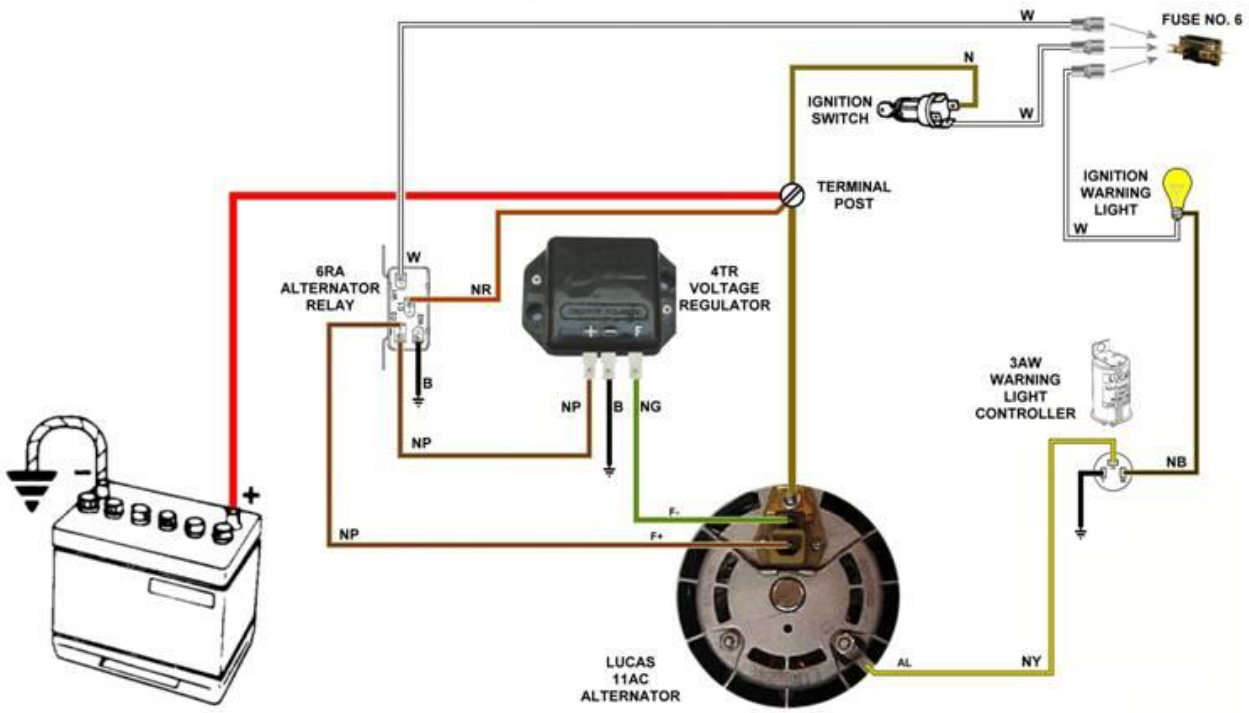
Section 2 – Later Cars with a combined ignition and starter switch

Later cars were fitted with an ignition switch which also incorporated the starter (like a modern ignition).

As well as the change to the ignition switch, the later cars were also fitted with an external alternator relay (Lucas 6RA). The wiring for the alternator on these cars differs from the earlier vehicles which had a separate ignition switch and starter button. A schematic of the typical wiring is given below:



To install the new Denso AC style alternator on later cars the following instructions apply:

This method removes the need for the Lucas 3AW warning light control unit.

- Disconnect the battery
- Label the 4 wires connected to the terminals on the Lucas AC11 and then disconnect them
- Remove the AC11 alternator
- Install the replacement WOSP AC style alternator
- Connect the wire labelled B+ to the B+ Terminal on the rear of the WOSP AC Style alternator
- Connect the wire labelled AL to the D+ warning light terminal (LAMP) on the rear of the unit.
- Insulate and secure the wire labelled F+. This is no longer required.
- Insulate and secure the wire labelled F-. This is no longer required.
- Disconnect the wires from the Lucas 3AW control unit and connect the input and output wires together – ensure the joint is fully insulated and that the earth lead is secured or removed completely. The 3AW can be removed or left in situ to avoid holes in the bulkhead.
- Disconnect and secure the earth lead from the 6RA Alternator Relay
- As a precautionary measure (to avoid a flat battery caused by current leakage from a faulty / sticking regulator) you should disconnect and insulate the earth lead from the external regulator (Lucas 4TR).

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