

## CONVERSION OF ELAN DYNAMO TO ALTERNATOR

The car must of course be wired negative earth. Technically possible to retain positive earth but, if necessary, a polarity change takes only a couple of hours and the incidental benefits of now universal negative earth are well worth the effort.

It's also worth bearing in mind that the cost of a new dynamo plus control box exceeds the cost of an alternator with integral regulator !

### TIME REQUIRED

With reasonable working conditions, the whole job can easily be done in an afternoon but ensure that 'bits and pieces' needed are available - in particular the new fan belt.

### HARDWARE REQUIRED

- 1) LUCAS AR-17 ALTERNATOR WITH ALTERNATOR PULLEY.

A medium duty alternator with integral regulator available for about £25. If desired, a 'meatier' alternator could be used but dimensions may vary.

- 2) LOWER MOUNTING BRACKET

I used a Cortina/Escort alternator bracket. This causes slight problems with fan belt size (see later). If a genuine LOTUS bracket is sized differently this may make the job easier. Instructions assume Cortina/Escort bracket is used. VISIT A SCRAP YARD for the bracket. Price of a new one is a 'rip off'.

- 3) UPPER ADJUSTING BRACKET

Readily available and moderately priced. Alternatively, easy to fabricate if you have the time.

There should also be a strengthening bracket which ties the adjusting bracket head-to-bracket bolthole to it's neighbour. Just a plain piece of metal - I didn't bother and three years on all is O.K. - perhaps a wise precaution though.

- 4) 3/8th. inch PACKING WASHERS

Needed to pack out the alternator-to-lower-bracket junction. This gives a modicum of adjustment to ensure pulleys align. About 4 needed.

#### 5) FAN BELT

If the FORD bracket is used there is no fan belt made which will do the job. Solutions :-

i) Pack out the lower mounting bracket until a standard fanbelt fits. I've not tried this but suspect it should be possible. It may be however that this will cut down overall adjusting range.

ii) Fanbelts are wedge belts - designed to transmit more power than cheaper vee belts. Vee belts come in more sizes ! The one used is designated :- Z 29,5 10 X 749 and fits beautifully. As to power transmission, I have an electric fan which cuts down loading but after three years the belt is IMMACULATE. I suspect the extra flexibility of the belt reduces cracking so that overall life is probably lengthened ! Vee belts are cheaper too and available from machine tool outlets etc.

#### 6) NEW MAIN POWER CABLES

About 3 metres of heavy gauge cable suitable for alternators.

#### 7) CONNECTORS

New large spade connector for connection of power cable to solenoid.

Heavy duty connector to join new power lead to existing circuit. (i.e. very large single terminal block or very large butt connector).

'Normal' sized connector to join ignition warning light cable.

Alternator plug to suit AR-17 (or alternator used).

## PROCEDURE

### DISCONNECT THE BATTERY

Do the mechanical bit ! Replace the dynamo with the alternator. Check for sufficient adjustment. A slight 'trim' off of surplus GFRP adjacent to alternator may be needed. It's close but there's no need to 'attack' the body proper - only the overlap. If it won't go check again - something's wrong.

The wiring is VERY SIMPLE - much simpler than the old dynamo configuration. The regulator is built in so the only connections to the alternator are :-

- 1) -VE OUT (Ground)

The chassis of the alternator is -ve out. You've connected that by fitting the alternator !

- 2) WARNING LIGHT CONNECTION

This is the smallest of the three connectors in the ACR-17 plug.

- 3) +VE OUTPUT

BOTH of the larger connectors in the plug are +ve out. The two connectors are joined inside the alternator.

### WIRING PROCEDURE

- 1) Check again that the battery is disconnected !

2) Identify and disconnect the cable going to control box terminal marked IGN. This is the warning light cable which will ultimately connect with the small terminal on the alternator.

3) Identify the field supply cable connected to control box terminal marked F. This is no longer needed but will be used to join the warning light cable identified in step 2 to the alternator. So - disconnect the field supply cable from the control box and join to the warning light cable. Connect the other end of the field cable (which used to be the thinner cable going to the dynamo) to the small terminal in the alternator plug.

4) Identify and disconnect the main battery feed to the control box. This is the large brown cable connected to the control box terminal marked B. This is no longer required - cut it back to the loom (or tape it up).

5) Identify and disconnect the large brown cable connected to the solenoid. This is the other end of the cable identified in step 4. No longer required - cut it back or tape it up.

6) Connect the new heavy duty cable to the solenoid at the point identified in step 5. Connect the other end to either of the two large terminals in the alternator plug.

7) Identify and disconnect the earth cable on the control box. Cut back or tape up - no longer required. Identify the large cable which used to connect the control box to the dynamo. Cut back or tape up (both ends) - no longer required.

8) The remaining cables attached to the control box supply the car's main systems. Disconnect all of these and join them ALL to new heavy duty cable the other end of which is connected to the remaining large connector in the alternator plug.

9) Throw away the old control box - you even gain space !!

10) Plug in the alternator and re-connect the battery.

11) Finished !! Delight in being able to drive at 30 in 4th gear without flattening the battery !!

**N.B.** The battery is now connected to all circuits via the alternator plug. Should the plug be pulled from the alternator for any reason then all power is removed from the car EXCEPT the main solenoid terminals. Can be a useful isolation device...

REMEMBER the rules for alternators :-

NO ELECTRIC WELDING WHILE ALTERNATOR CONNECTED

NEVER DRIVE ALTERNATOR IF DISCONNECTED FROM BATTERY