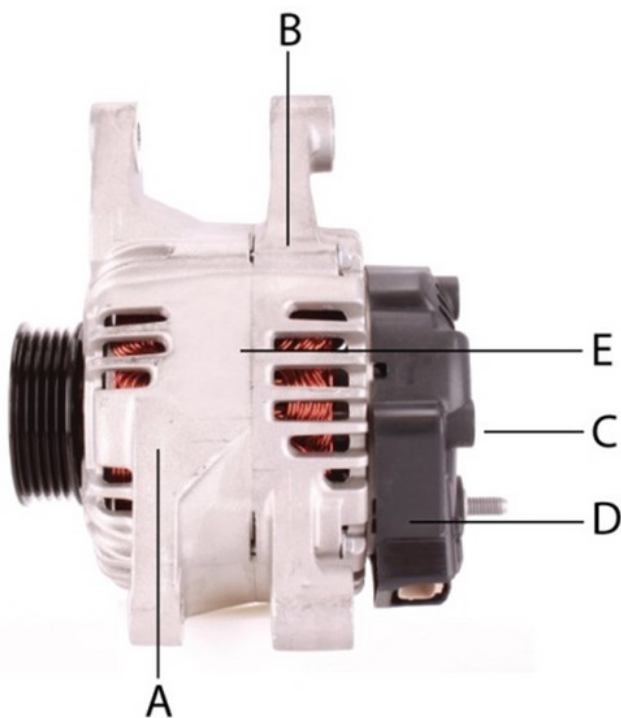




## Location of original reference: Alternators

MANUFACTURER	POSITION	ORIGINAL No.
AC-Delco (Delco Remy)*	A	3472065
AC-Delco (Delco Remy)*	A	10497947
Bosch	B/E	120489122
Ducellier	B	7541/514016
Elmot	B	A115-43-14V43A
Femsa	C/D/E	ALD12N-40
Hitachi	A/E	LT135-35
Iskra	A/E	AAK1119
Lucas	B/C	23802
Marelli	B/C	63320058
Magneton-Pal	B	44311356021
Mitsubishi	E	A5T31671/AG2035T
Motorola	E	9AR2828G
Nikko	C/E	0-33000-2290
Nippon Denso	E	100211-2071
Paris Rhone	B/C	A13N95
SEV Marshal	B/C	70230302
Valeo	B/C	A13N38



If possible, check the OE-reference on the old unit.  
This will ensure the supply of the correct unit.



## Alternators: Terminals

### F/DF:

On Bosch alternators with internal fan, this connection is providing information to the computer about the present performance. It is a variable output 0-11V depending on present performance.

### FR:

On Japanese alternators, this connection feeds information to the computer. On the first versions it is a variable output 0-11V depending on present performance. Later versions are using a pulse-wide modulated signal.

### F1/F2:

Used on alternators without regulator. Both connections are connected to the ECU, which has the build-in regulator-function. If the alternator has to be tested, these terminals requires a plus and ground connected to these two terminals. Polarization is not important.

### C:

The terminal is for an input from the computer. A shunted ground will lower the performance of the alternator.

### D:

On later Mitsubishi alternators (Mazda 626/323 1997) this connection is for managing the field, by a square-pulse DC. The regulator is a part of the engine computer system.

**NOTE.** Do not confuse this connection with the "dummy". The shape of the plug is similar to the S and L. To make sure which connection you have, measure with an ohm-meter between S/D and to the ground. Reading less than 1000 Ohm shows a "data" connection.

### COM:

The plug looks like the common L/DFM for German applications, but the internal guides in the plug is different. It is necessary to have special equipment to test this alternator. The alternator is through the COM-terminal connected to the ECU using a data-signal for communication. The ECU provides information about the needed voltage-setpoint and the alternator respond with a DFM-signal.

### F/I:

US and Korean Delco have two codes for the same connection. Most common is to use this connection as F, which is an information output for the computer, describing the present performance. (see F/DF).

If the vehicle does not use charging-lamp, this connection must be connected to Ignition.

### DFM/M:

A terminal connected to the ECU. Its signal is a puls-wide-modulation and can be tested by measuring between DFM and B+. Later generations of regulators requires a 1000 Ohm pull-up resistor to be able to test the DFM.

No connection of this terminal is required to test alternator performance.

### RC/SIG/RLO:

A terminal connected to the ECU, for adjusting the voltage-setpoint. Some alternators can be tested "stand-alone", whereas other needs this signal to start up. Special equipment is required for a full alternator test. RC and SIG is normally seen on Ford, Land-Rover and Volvo. Toyota is using the RLO.

	Battery +	Ground	Field	Charging Lamp	Ignition	Neutral (stator)	R.P.M.-meter	Computer (CPU/ECU) Monitor	Computer (CPU/ECU) -control	Battery-sensor	Dummy
Autolite	B+	-	F	+							
Bosch	B+/B1+/B2+	D-	DF	D+/61E/L	15		W	F/FR/DF/DFM	C/COM	S	
Butec	B+	-	F	D+							
Delco	B+/+	GRD	F	D+/L/1	I/G		P/R/W	F		M/S/2	D
Ducellier	B+	-/B-/D-	DF/EXC	D+/L			W			+	
Elmot	B+	31	67	15			W				
Femsa	B+	31	EXC	L/+			W				
Fiat	B+/30	31	67	15		C	W				
Ford	B+/BAT	D-/VE	FLD/DF/F	D+/Ind/I			W/STA/S	F/FR/LI	RC/SIG	A/AS/BVS	
Hitachi	B/A	E	F	L	IG/R	N	P	FR/F	C	S	D
Iskra	B+	D-	DF	D+			W				
Lada	B+/30	31	67	15							
Lucas	B+	B-/	F	D+/IND			STA			S	
Mando	B/A	E	F	L/I	IG/R/G	N	P	F		S	D
Marelli	B+/30	31	67	15		C	W				
Mitsubishi	B/A	E	F/F1-F2	L/I	IG/R/G	N	P	FR/F	D/C	S	D
Motorola	B+/BAT	-/B-/D-	EXC/DF	+/D+			W				
Nippon-Denso	B/A	E	F/F1-F2	L	IG/R/G	N	P	FR/M	C/RLO	S	D
Prestolite	+	-	EXC								
Paris-Rhone	B+	B-/	EXC	L/+			W/R				
SEV-Marchal	B+	-/B-/D-	DF	61/D+	+/EX		W				
SEV-Motorola	B+	-/B-	EXC	+			W				
Valeo	B+	-/B-	EXC	L/D+	+/EX		W	DF	COM		