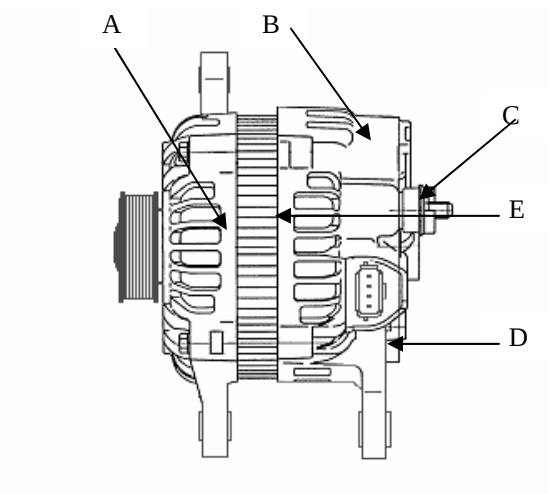
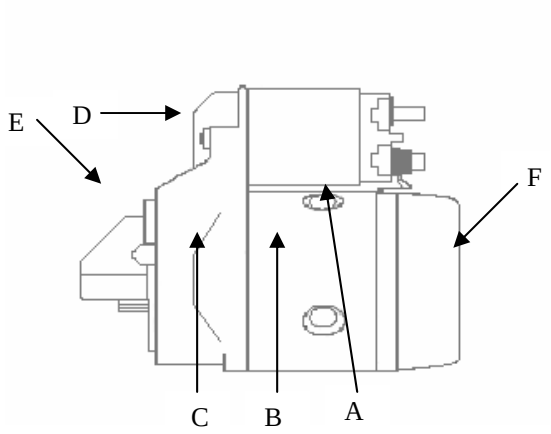
## How to use the catalogue

First find the manufacturer and -model. Following the column specify the engine size and/or -type. Then decide if you are searching for alternator the or starter, by using the left or right column. The part number is then found from the year as listed. The additional information next to the part number indicates the connections, performance and if the alternator is supplied with a pump.
For starter motors there is information about the performance, number of teeth and if it is a gear reduction type.
(See "abbreviations").

## Location of original reference

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




| Producer | ALTERNATOR Position | ALTERNATOR Original No. | STARTER Position | STARTER Original No. |
|---|---|---|---|---|
| AC-Delco (Delco Remy) * | A | 3472**065** | A / F | 3471**144** |
| AC-Delco (Delco Remy) * | A | 3493**604** | F | 9000756 |
| AC-Delco (Delco Remy) * | A | 10479**947** | | |
| AVF | | | A | IM18-4/24 / IM330 |
| Bosch | B/E | 0120489122 | A / B | 0001362001 |
| Ducellier | B | 7541 / 514016 | B | 6216A / 534048 |
| Elmot | B | A115-43-14V43A | B | R11 12V 4KM |
| Femsa | C / D / E | ALD12N-40 | B | MEA13-1 |
| Hitachi | A / E | LT135-35 | C | S114-315 |
| Iskra | A / E | AAK1119 | A / D | AZE1515 |
| Lucas | B / C | 23802 | B | 25249 |
| Marelli | B / C | 63320058 | D / E | 63217118 |
| Magneton-Pal | B | 443 113 516 021 | B | 443 115 144 722 |
| Mitsuba | | | B | S302-04 |
| Mitsubishi | E | A5T31671 / AG2035T | C / D | M3T33582 / MEA04-1 |
| Motorola | E | 9AR2828G | | |
| Nikko | C / E | 0-33000-2290 | A | 0-21000-3391 |
| Nippon Denso | E | 100211-2071 | A | 128000-1440 |
| Paris Rhone | B / C | A13N95 | B | D9R84 |
| SEV Marshal | B / C | 70230302 | | |
| Valeo | B / C | A13N38 | B / C / D | D9E64 |

* By crossing the reference, **3471** (starter), **3472**, **3493** or **10479** (alt.) is added to the first 3 digits of the OE reference.

# Information English

## Exchange conditions

At the time of sale, a surcharge is invoiced in addition to the price of the unit.
The surcharge is repayable in full within 24 months, when core is returned, subject to the following conditions:

- Parts being returned must be in the same condition as when they were removed from the vehicle, i.e. they must not have been opened.

- Rotor/armature must be rotating freely.

- Parts must not have suffered damage from fire or saltwater.

- Parts must in every way, electrically and mechanically correspond to, or be identical with the parts supplied.

Cores returned to Lucas Electrical Europe, which are not corresponding to items bought from Lucas Electrical Europe, will be kept registered for 5 years.

## Warranty

The warranty is valid on the condition that installation and connections are completed correctly and that the item has not been dismantled.
The warranty is not valid, if: the shaft and pinion has been overheated (blue), the armature is seized, the alternator bearings are damaged, the alternator has suffered from oil contamination etc.

## Information

Please pay attention,

... some starters are interchangeable, even though they have a different number of teeth.
This is the case on gear starters, where the pinion can be staggered from the centre of the starter.

...to alternators, with oil on the outside of the housing. Check the engine for leaking oil before installing a new unit.

## Before installation

Alternator

- Check the condition of the battery.
- Check the V-belt is ok and properly tightened.
- Check the connections for corrosion.
- Check that the engine does not leak oil on the alternator.

Starter

- Check the condition of the battery.
- Check the connections. Positive cable, pin 50 and the **ground**.
- Check the ignition switch. Must not be sticking in the start position.
- Check the teeth on the flywheel ring gear for wear.
- Check that bolts and nuts are properly tightened after installation

**Never disconnect the connections to the alternator with the engine running.**
**Before welding on the vehicle, disconnect the battery.**

## Abbreviations

| Note | GB |
|---|---|
| AC | Air condition |
| Anti CW | Anti Clock wise |
| AT | Automatic transmission |
| BO | Bosch |
| BS | Battery sensor |
| CC | Cold climate |
| G/R | Gear reduction |
| ( G/R ) | Can be G/R or conventional |
| HI | Hitachi |
| LH | Left hand mounted |
| M6 B+ | 6 mm B+ terminal |
| M8 B+ | 8 mm B+ terminal |
| Plug B+ | Spade terminal/multiplug B+ |
| PS | Power steering |
| RH | Right hand |
| VA | Valeo |
| W | With RPM connection |
| 1.4 KW | 1.4 KW performance |
| 11T | 11 Teeth pinion |
| 2P | 2-Pole/insolated ground |
| # | Fitted in addition |
| ¤ | Alternator with vacuumpump.<br>(Could also be available without) |
| ~ | Liquid cooled alternator |

## Terminals

| | Battery + | Ground | Field | Charging Lamp | Ignition | Neutral (stator) | R.P.M.-meter | Computer PU/ECU)-Monitor | Computer (CPU/ECU) -control | Battery-sensor | Dummy. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Autolite | B+ | - | F | + | | | | | | | |
| Bosch | B+/B1+/B2+ | D- | DF/DFM | D+/61E/L | | | W | F/FR | C<br>COM | S | |
| Butec | B+ | - | F | D+ | | | | | | | |
| Delco | B+/+ | GRD | F | D+/L/1 | I/IG | | 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 | | | A | |
| Hitachi | B/A | E | F | L | IG/R | N | P | FR | 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 | N | P | | | S | D |
| Marelli | B+/30 | 31 | 67 | 15 | | C | W | | | | |
| Mitsubishi | B/A | E | F | L/I | IG/R | N | P | FR | D/C | S | D |
| Motorola | B+/BAT | -/B-/D- | EXC/DF | +/D+ | | | W | | | | |
| Nippon-Denso | B/A | E- | F | L | IG/R | N | P | FR | C | S | D |
| Prestolite | + | - | EXC | | | | | | | | |
| Paris-Rhone | B+ | B-/- | EXC | L/+ | | | W/R | | | | |
| SEV-Marchal | B+ | -/B-/D- | DF | 61/D+ | | | W | | | | |
| SEV-Motorola | B+ | -/B- | EXC | + | | | W | | | | |
| Valeo | B+ | -/B- | EXC | L/D+ | + | | W | | COM | | |

**F/DF** :
On Bosch alternators with internal fan, this connection is for information to the computer. Variable output 0-11V depending on present performance.

**FR**:
On Japanese alternators, this connection is for information to the computer. Variable output 0-11V depending on present performance.

**G/C**:
The terminal is for an input from the computer. A shunted ground will lower the performance of the alternator.

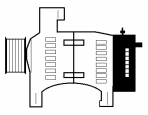
**D** :
On later Mitsubishi alternators (Mazda 626/323 1997-) this connection is for is for managing the field, by a square-pulse DC. The regulator is a part of the engine computer system.
**OBS**. Do not mix up this connection with the "dummy". The shape of the plug is similar to one with the S and 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** :
Is used on later models of VAG, Mercedes and BMW. The plug looks like the common L/DFM, but the alternator can not be tested at this moment. The alternator is through COM connected to the ECU using a data-signal for communication.

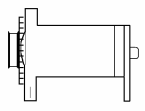
**F/I**:
US and Korean Delco have two codes for the same connection. It is most common to use this connection as F, which is an information output for the computer, describing the present performance. (see also above).
If the vehicle does not use charging-lamp, this connection must be connected to Ignition.

## Lucas Part No. Identification

**LRA.....**
**LRB.....**



**LRD.....**



**LRS.....**
**LRT.....**