APPENDIX 7

DESCRIPTION OF THE CAR ALTERNATOR

1. Introduction

In this appendix, the car alternator presented as case study of the resource planning module (see chapter 10) will be detailed.

Each of its components will be described and a possible assembly sequence will be presented in order for the reader to be able to easily understand the meaning of each operation. For more details, the reader is refereed to (Pellichero, 1999).

2. Description of product's parts

In this section, we will describe the product's parts with the help of several figures drawn with SolidEdge.

Figure A7.1.The front housing (palier avant).

Figure A7.1 illustrates the part called front housing, which has been chosen as base part for the assembly. This means that it will be placed first on the pallet and that all the other parts of the product will be mounted on it.

Figure 4 illustrates the bearing, which is inserted inside the front-housing.

Figure A7.2. The bearing (roulement).

Figure A7.3 illustrates the plate and the screws used to fasten it on the front housing.

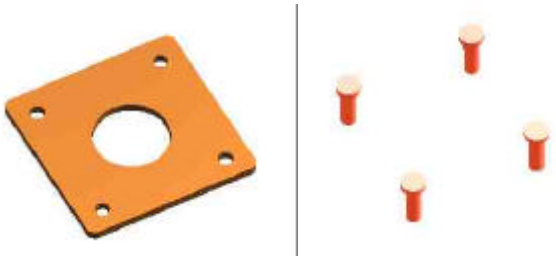

Figure A7.3. The plate (plaquette) and the four screws (vis) used to fasten it.

Figure A7.4. The stator.

In Figure A7.4 we can see the stator and in Figure A7.5, we can see the four clamps and the screws. These parts are used to fix the stator onto the front housing of the alternator.

Figure A7.5. The four clamps (brides) and the four screws (vis) used to fasten them.

Figure A7.6 illustrates the rotor, which is already fastened with a bearing.

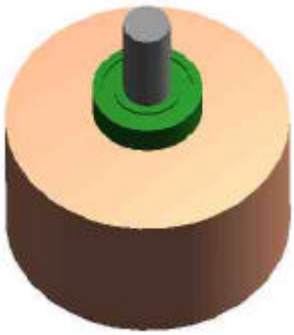

Figure A7.6. The rotor.

Figure A7.7 illustrates the rear-housing. It is interesting to remark that this part contains four big stems that will be used to fasten the cover on the rear-housing.

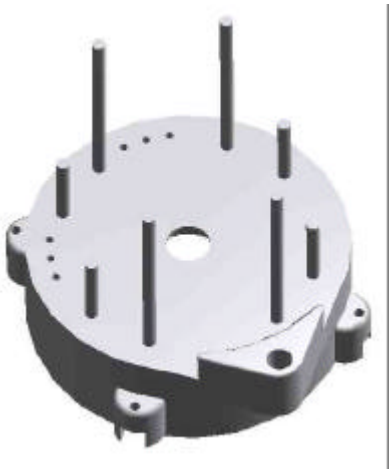

Figure A7.7. The rear-housing (palier-arrière).

Figure A7.8. The pulley (poulie).

Figure 10 illustrates the pulley, which is fixed to the rotor's shaft below the front-housing. This pulley is fixed with the help of a nut illustrated in Figure A7.9.

Figure A7.9. The nut (ecrou) used to fasten the pulley.

Figure A7.10. The diodes-bridge (pont de diodes).

Figure A7.10 illustrates the diodes-bridge, which is placed on the top of the rear-housing.

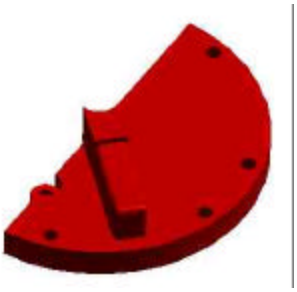

Figure A7.11. The regulator (régulateur).

The regulator is shown in Figure A7.11, it is also fastened on the top of the rear-housing, just next to the diodes-bridge.

These two last parts will be fastened with the help of four stems of the rear-housing and four nuts for each of them.

Figure A7.12. The D+ support.

The so-called D+ support is an electrical component placed above the regulator and the diodes-bridge and fixed with the help of 3 nuts.

Figure A7.13. The cover (couvercle).

Figure A7.13 illustrates the cover, which will protect the electrical part of the alternator constituted by the diodes-bridge, the regulator and the D+ support.

3. Description of a possible assembly sequence

In this section, a set of figures describing a possible assembly sequence is presented to help the reader to better understand the way the product's parts are assembled.

Figure A7.14 illustrates this sequence which starts with the front-housing as base-part (1). The bearing is then inserted into the front-housing (2) followed by the placement (3) and the screwing (4) of the plate. The stator is then inserted in the front-housing (5) and fixed by the four clamps-screws sets (6).

The rotor is then placed inside the front-housing (7) and covered by the rear-housing (8) which is then fixed by four screws (9).
After a reorientation of the so-obtained sub-assembly, the pulley is added below the front-housing (10) and fixed with a nut (11).
The alternator is then replaced in its starting position and the diodes-bridges (12), the regulator (13) and the D+ support (14) are placed onto the rear-housing and fixed with nuts (15).
Finally, the cover is placed on the top of the rear-housing (16) and fixed with nuts (17).

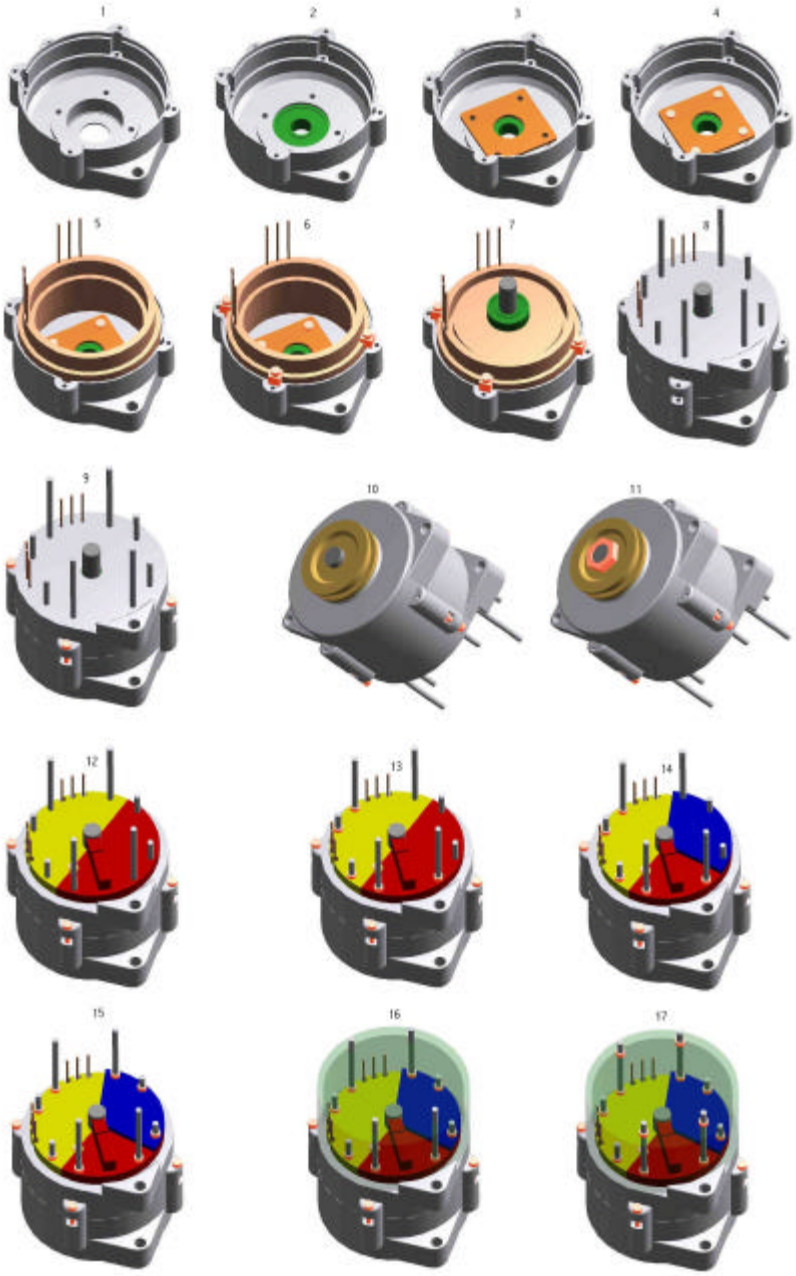

Figure A7.14. A possible assembly sequence.