C851/C851D Alternator OEM Installation Instructions

CEN alternator models C851 (without duct) and C851D (with duct) are cradle mount, negative ground alternators rated at 28 volts/650 amps. To insure proper installation, follow instructions below.

1. **Remove Existing Alternator**
   a. Turn off battery switch or disconnect battery ground.
   b. Remove alternator drive belt.
   c. Label wires for identification, then disconnect electrical connections on existing alternator.
   d. Remove alternator mounting bolts and remove alternator from mounting bracket.
   e. If replacing oil-cooled alternator, remove all oil lines and cap off ports at their sources.

2. **Install C851/C851D Alternator**
   a. Alternators shipped without pulley are shipped with shaft collar, disc spring washer, and nut installed. Remove and discard shaft collar. Make sure Woodruff key is securely wedged in slot in shaft.
   b. Install pulley and furnished disc spring washer with beveled side facing pulley. Torque pulley nut to 163 Nm/120 lb. ft. See Figure 1.
   c. Mount alternator on engine. Using hardened steel washers and grade 5 bolts or higher, torque mounting bolts to 88 Nm/65 lb. ft. or to engine manufacturer’s specifications.
   **CAUTION** Do not hammer pulley when installing pulley on shaft. Carefully slip-fit pulley over shaft to prevent woodruff key from moving out of place.
   d. Connect vehicle B+ cable to alternator B+ terminal. Install hardware on B+ terminal in stacking order shown in Figure 2. Torque to 30 Nm/22 lb. ft.
   e. Connect vehicle B− cable to alternator B− terminal. Install B− hardware in stacking order shown in Figure 3. Torque to 15 Nm/11 lb. in.
   **NOTICE** All cables must be supported within 300 mm (12 in.) to prevent twisting, loosening, and damage to terminals.

3. **Install Fresh Air Duct (C851D only)**
   Attach fresh air duct to duct opening on anti-drive end housing. Duct specifications include:
   - A 100mm/4 in. diameter duct no more than 2.5 m/8 ft. long must be used.
   - A maximum of two 90° bends is allowed.
   - Installation must not obstruct airflow.
   - Do not allow moisture, such as rain, road spray, or water used during vehicle cleaning, to be ingested by duct.

**CAUTION** Mounting hardware should only reach 17.8-22.7 mm (.70-.88 in) into alternator mounting rail.
CEN Regulator Installation

1. Turn regulator over and make sure set point of switch at the bottom of regulator is appropriate for type of battery used. If necessary, change switch set point. See Figure 6 and Table 1 for voltage set point options.

2. Mount regulator on alternator with included hardware as shown in page 1, Figure 1 and Figure 4 below or remotely with extension harnesses. Torque mounting screws to 8.5 Nm/75 lb. in.

3. Plug alternator-to-regulator into receptacle on regulator. See Figure 5 for receptacle location.

4. Connect regulator terminals as required by vehicle:
   - Regulator **IGN terminal** (required) must receive voltage from vehicle DC ignition source or multiplex in order to energize regulator. Torque to 4.5 Nm/40 lb. in. See Figure 5.
   - Regulator **D+ terminal** (if required) provides DC system battery voltage to vehicle (5A maximum) for charge indicator lamp, relay, or multiplex while alternator is producing output. Torque terminal hardware to 4.5 Nm/40 lb. in. See Figure 5.
   - Regulator **P/AC terminal** (if required) taps AC voltage from alternator, typically half the charge voltage (3A maximum). P/AC terminal provides alternator RPM frequency at 10:1 ratio for use with tachometer. Torque terminal hardware to 4.5 Nm/40 lb. in. See Figure 5.

   **NOTICE** If using relay for R/P/AC circuit, coil must be diode-protected and properly rated.

5. If using a J1939/temperature-voltage sense harness, plug J1939 harness into J1939 receptacle on regulator. See Figure 5 for receptacle location. Reference CEN document II184 for harness installation instructions. Harness sold separately.

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**Table 1: Regulator Voltage Switch Settings**

<table>
<thead>
<tr>
<th>Position</th>
<th>Conventional Regulator Set Point or Smart Series with Sensor/Harness Not Connected</th>
<th>Battery profile for Smart Series Regulators with Sensor/Harness or Connected (Battery Select)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27.5 V</td>
<td>Maintenance (D category)</td>
</tr>
<tr>
<td>2</td>
<td>28.0 V</td>
<td>Maintenance-free (Group 31)</td>
</tr>
<tr>
<td>3</td>
<td>28.5 V</td>
<td>AGM</td>
</tr>
<tr>
<td>4</td>
<td>29.0 V Flat</td>
<td></td>
</tr>
</tbody>
</table>

1. Contact CEN for regulator extension harness options.
2. A9-4036 Harness: 4.5 m/15 ft.
   A9-4049 Harness: 12 m/40 ft.
   A9-4048 Harness: 16.7 m/55 ft.
3. Contact CEN for alternative sensor/harness options.