1. Regulator Installation

A2-330/A2-336 regulators are flat-temperature compensated and factory-set at lowest setting to accommodate 8D batteries. For other batteries:

a. Remove regulator from housing and change position on voltage selector switch. See Table 1.

b. Re-install regulator on drive end housing, and torque mounting screws to 8.5 Nm/75 lb. in.

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Battery Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27.5 V Maintenance</td>
</tr>
<tr>
<td>2</td>
<td>28.0 V Maintenance*</td>
</tr>
<tr>
<td>3</td>
<td>28.5 V Maintenance-Free</td>
</tr>
<tr>
<td>4</td>
<td>29.0 V Maintenance-Free*</td>
</tr>
</tbody>
</table>

* Use this setpoint to maintain proper battery charge level during shorter operating cycles.

2. A2-346 Regulator Installation

The A2-346 regulator is flat-temperature compensated and can be used with or without A9-4036 temperature-voltage sense/J1939 harness from vehicle.

When A9-4036 temperature-voltage sense/J1939 harness is not connected, regulator operates at fixed voltage set point determined by position of switch on bottom of regulator. See column 2 in Table 2.

When A9-4036 temperature-voltage sense/J1939 harness is connected, regulator will automatically optimize the charge voltage for battery type based on temperature. See column 3 in Table 2 and select switch position based on battery type.

Regulator voltage selection switch is factory-set to Position 1. To change, remove regulator, turn regulator over, and select appropriate switch position (see NOTICE above and Table 2 below).

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>A9-4036 Harness Not Connected (Voltage Select)</th>
<th>A9-4036 Harness Connected (Battery Select)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>27.5 V Maintenance (D Category)</td>
<td>Maintenance (Group 31)</td>
</tr>
<tr>
<td>2</td>
<td>28.0 V Maintenance-free (Group 31)</td>
<td>AGM</td>
</tr>
<tr>
<td>3</td>
<td>28.5 V AGM</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>29.0 V DO NOT USE POSITION # 4</td>
<td></td>
</tr>
</tbody>
</table>

NOTICE
If an extended wiring harness is supplied with alternator and regulator, see separate instructions packed with harness.
3. Alternator Installation
   a. Carefully place alternator on alternator mounting bracket.
      CAUTION Use caution when lifting alternator to prevent possible injury. Use hoist along with lifting ring on top of alternator.
   b. Rail mounting requires four 1/2-13 UNC-2A, SAE grade 5 or higher, mounting bolts with lock washers. Mounting bolts should extend 17.8/22.7 mm (0.7/0.88 in.) into alternator mounting rail. Torque mounting bolts to 88 Nm/65 lb. ft.
   c. Some alternators are furnished with a vibration dampening bracket (CEN part no. A4-104). Attach one end of bracket to drive end housing and other end to engine. See Figure 1. See engine manufacturer’s torque specification for engine gear case bolt torque.
   d. Connect B+ cable from vehicle to alternator B+ terminal. Torque B+ terminal on alternator to 30 Nm/22 lb. ft.
   e. Torque cable clamp hardware to 14 Nm/ B+ cable must be supported by cable clamp within 12 in. of B+ output terminal to avoid premature failure of B+ output terminal. CEN recommends using cable clamp attached to alternator anti-drive end housing for support.
   f. Connect ground cable from vehicle to alternator B– terminal. Torque B– terminal on alternator to 15 Nm/11 lb. ft.

4. Install Drive Belt
Alternators are shipped with pulley, disc spring washer, and nut installed. Install alternator drive belt and secure belt tension bracket assembly. Loop alternator drive belt over pulleys and align belt with polyvee grooves.

5. Tension Drive Belt
The following recommendations are for manual and automatic belt tensioners:
   • K-section pulley: 10 grooves minimum; 12 grooves preferred.
   • Belt wrap: 180 degree nominal. Less wrap requires a pulley with more grooves and more belt tension.
   • Belt tension: 80 lbs to 120 lbs. nominal. More pulley grooves permit lower belt tension. For further questions, contact drive belt manufacturer.

CAUTION Both too low and too high belt tension cause premature bearing failure. Too low belt tension causes belt slip, pulley heating, bearing heating, and bearing failure. Too high belt tension increases bearing fatigue, resulting in bearing failure.

6. Regulator Connections (Figure 2)
   a. Make sure alternator-to-regulator harness plug is secure in regulator receptacle.
   b. A2-330/A2-336: Connect IGN terminal to ignition source through IGN switch, using proper ring terminal. Torque terminal nut to 4.5 Nm/40 lb. in.
   c. A2-346: Regulator can function with or without vehicle ignition. When necessary, connect IGN terminal on A2-346 regulator to vehicle ignition to provide battery voltage when engine is running. Circuit should be off (no voltage present) when vehicle ignition is off or engine is not running. Use proper ring terminal and torque MS terminal nut to 4.5 Nm/40 lb in.
   d. When required, connect P terminal to tachometer or relay. P terminal can tap AC voltage, typically half the charge voltage. Use proper ring terminal. Torque terminal nut to 4.5 Nm/40 lb. in.
   e. When required, connect D+ terminal to controller through a relay. D+ terminal can provide 28 VDC sense voltage to multiplex controller. Maximum current from D+ can be no more than 5 amps. Relay coil must be diode protected and rated for proper voltage. Use proper ring terminal. Torque terminal nut to 4.5 Nm/40 lb. in.
   f. A2-346 only: If not using A9-4036 temperature-voltage sense/J1939 harness, keep cap on regulator.
   g. If using A9-4036 temperature-voltage sense/J1939 harness, remove cap from regulator and plug harness connector into 10-pin connector.

7. Shortening Temp-Voltage Sense Harness
Harness length is 182 inches, enough to reach battery compartment in most vehicles. Unused harness length should be coiled up. Use cable ties every 12-14 inches to securely support harness between regulator and battery compartment. If A9-4036 harness length must be shortened:
   a. Cut black wire off 6" above terminal, save terminal. Cut remaining black wire to length.
   b. Crimp and solder or use insulated butt splice to connect and 6" wire.
   c. Cut red wire to desired length and use terminal to connect.
   d. Attach terminal from black wire in A9-4036 harness to battery 28 V battery post.
   e. Attach terminal from red wire to 28 V battery positive post.
   f. If using J1939 connector on harness, connect as indicated by vehicle manufacturer.

8. Install Fresh Air Duct Over Duct Opening
Follow the requirements below when installing the fresh air duct:
   • 100 mm/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, and water used during vehicle cleaning, to be ingested by duct.

If you have questions about your alternator or any of these instructions, or if you need to locate a Factory Authorized Service Dealer, please contact us at:
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TEL: 800.643.4633 USA and Canada • TEL: 847.866.6030 outside USA and Canada • FAX: 847.492.1242
E-mail us at service@CENiehoff.com

Figure 2: Regulator Connections