



C703/C703A/C703L Alternator Installation

CEN models C703/C703A/C703L are cradle mount, negative ground alternators rated at 28V/350A. Follow these instructions to ensure proper installation.

1. Alternators not shipped with 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.
2. Install pulley and furnished disc spring washer with beveled side facing pulley. Torque pulley nut to 163 Nm/120 lb. ft. See Figure 1.

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.

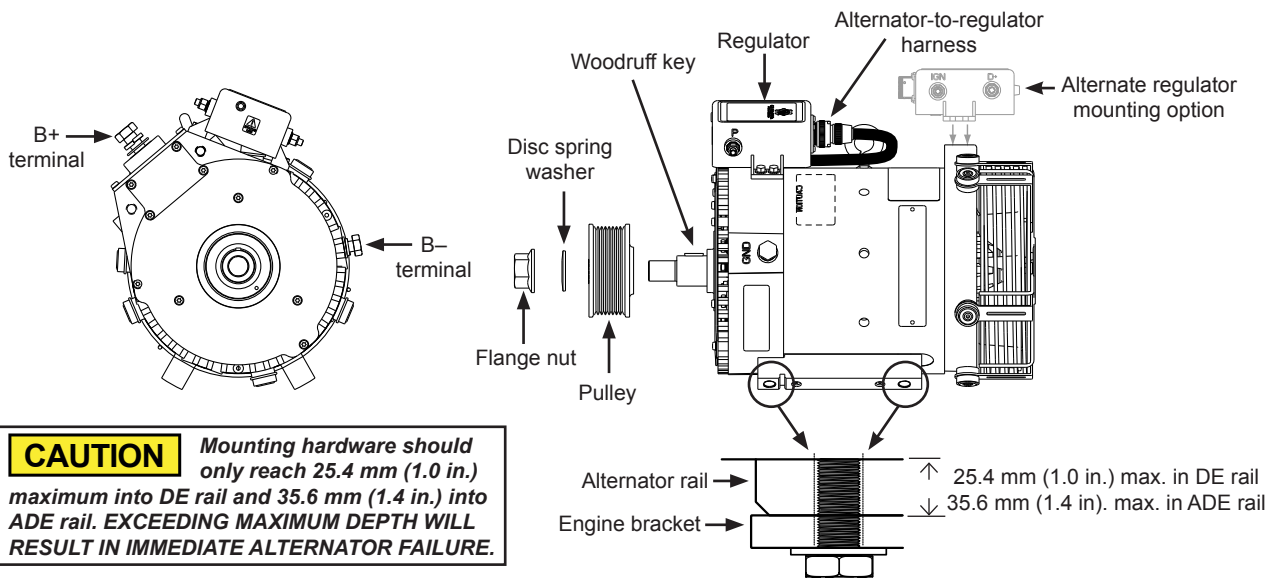
3. Install alternator on engine mounting bracket according to manufacturer's specifications. Use hardened flat washers between mounting surfaces and bolt heads or lock washers. Bolts should be grade 5, minimum. Torque mounting bolts to 88 Nm/65 lb. ft. or to manufacturer's specifications.

CAUTION Minimum recommended thread engagement is 12.7 mm (0.5") into drive end mounting holes and 16.5 mm (0.65") into anti-drive end mounting holes. Maximum mounting screw depth into alternator mounting rail holes, regardless of washer and bracket stackup, is 25.4 mm (1.0 in.) for DE rail and 35.6 mm (1.4 in.) for ADE rail. See Figure 1 inset. EXCEEDING MAXIMUM DEPTH WILL RESULT IN IMMEDIATE ALTERNATOR FAILURE

4. Tension belt to engine manufacturer's recommendation. If an automatic belt tensioner is used, 80–120 lbs. of tension is typical.
5. 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.
6. Connect vehicle B– cable to alternator B– terminal. Install B– hardware in stacking order shown in Figure 3. Torque to 15 Nm/11 lb. ft.

NOTICE All cables and wires must be supported within 305 mm (12 in.) of termination to prevent twisting, loosening, and damage to terminals.

7. Install regulator according to instructions on page 2.



CAUTION Mounting hardware should only reach 25.4 mm (1.0 in.) maximum into DE rail and 35.6 mm (1.4 in.) into ADE rail. EXCEEDING MAXIMUM DEPTH WILL RESULT IN IMMEDIATE ALTERNATOR FAILURE.

Figure 1: C703/C703A/C703L Alternator Installation

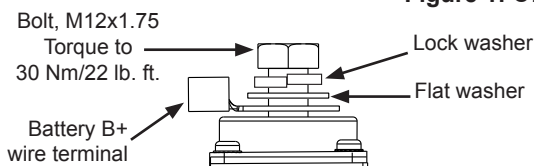


Figure 2: B+ Terminal Hardware Stacking Order

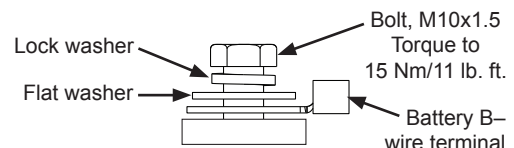


Figure 3: B- Terminal Hardware Stacking Order

Regulator Installation

1. Before installing regulator, verify appropriate switch setting for your application and change if necessary. See Figure 4 and Table 1 for fixed voltage set point options when regulator is used without battery sensor/harness. See Table 2 for battery chemistry-based charge profiles when regulator is used with compatible CEN battery sensor/harness. **Contact battery manufacturer or vehicle OEM for charging set point recommendations for your environment or application if necessary.**
2. Place regulator on regulator mounting bracket on anti-drive end of alternator, as shown in Figure 1 on page 1, or install remotely with extension harness¹.
3. Secure regulator by installing supplied flange lock screws. Torque screws to 8.5 Nm/75 lb. in.
4. Plug alternator-to-regulator harness into 6-pin receptacle on regulator. See Figures 5 and 6 for receptacle location.

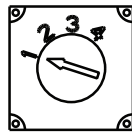


Figure 4: Regulator Voltage Selection Switch
(Located on bottom of regulator)

| Switch Position | Conventional Regulator Set Point or Smart Series with <i>no Sensor/Harness Connected</i> |
|-----------------|---|
| 1 | 27.5 V |
| 2 | 28.0 V |
| 3 | 28.5 V |
| 4 | 29.0 V |

5. Connect regulator terminals as required by vehicle. Refer to Figures 5 and 6 below:
 - **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.

NOTICE *Voltage should be present at IGN terminal when ignition is on or engine is running. No voltage should be present when ignition is off or engine is not running.*

- **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.
- **P/AC/R terminal** (if required) taps AC voltage from alternator, typically half the charge voltage (3A maximum). P/AC/R terminal provides alternator RPM frequency at 10:1 ratio for use with tachometer. Torque terminal hardware to 4.5 Nm/40 lb. in.

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

6. If using a J1939/temperature-voltage sense harness, plug J1939 harness into J1939 receptacle on regulator. See Figure 6 for receptacle location. Reference installation instructions included with harness for more information. Harness sold separately².

| Switch Position | Battery profile for Smart Series Regulators with <i>Sensor/Harness Connected</i> ² |
|-----------------|--|
| 1 | Maintenance (D category) |
| 2 | Maintenance-free (Group 31) |
| 3 | AGM |
| 4 | 29.0 fixed |

1. Contact CEN for regulator extension harness options.
2. Contact CEN for alternative sensor/harness options

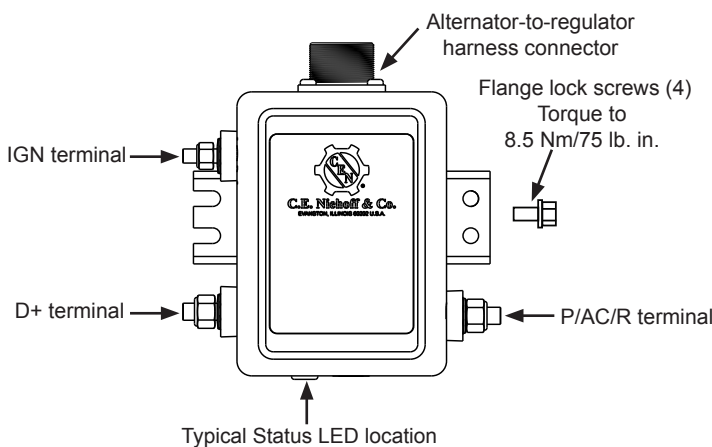


Figure 5: Typical Conventional Voltage Regulator Connections

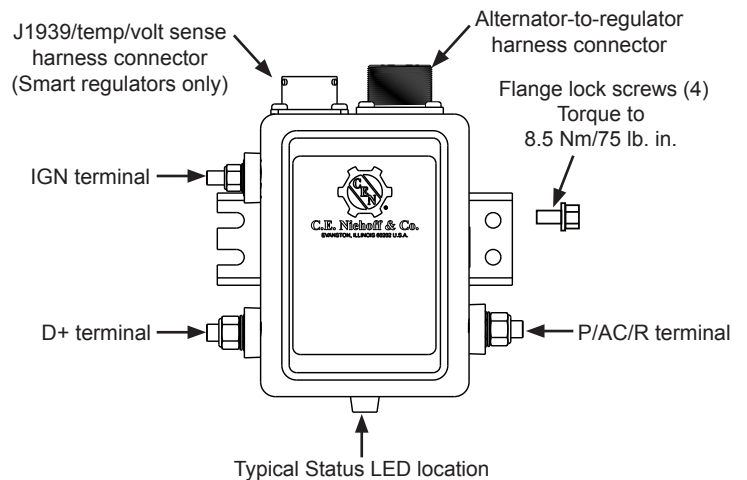


Figure 6: Typical Smart Voltage Regulator Connections

If you have questions about your alternator or these instructions, or if you need to locate a Factory Authorized Service Distributor, please contact us at:
 C. E. Niehoff & Co. • 2021 Lee Street • Evanston, IL 60202 USA
 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