



C653/C653A Alternator OEM Installation Instructions

CEN alternator models C653 and C653A are J180 hinge mount, negative ground alternators rated at 28 volts/260 amps. C653A anti-drive end housing is clocked 40°. See Figure 2.

Follow these instructions to ensure proper installation.

1. Alternators not shipped with pulley are shipped with shaft collar, disc spring washer, and flange nut installed. Remove and discard shaft collar. Make sure Woodruff key is securely wedged and level in shaft slot.
2. Install pulley, furnished disc spring washer (beveled side facing pulley), and nut on shaft. Torque 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 mounting bracket according to vehicle/engine manufacturer's specifications. Use hardened flat washers between mounting surfaces and bolt heads or lock washers. Mounting bolts should be Grade 5 (Metric class 8.8), minimum.

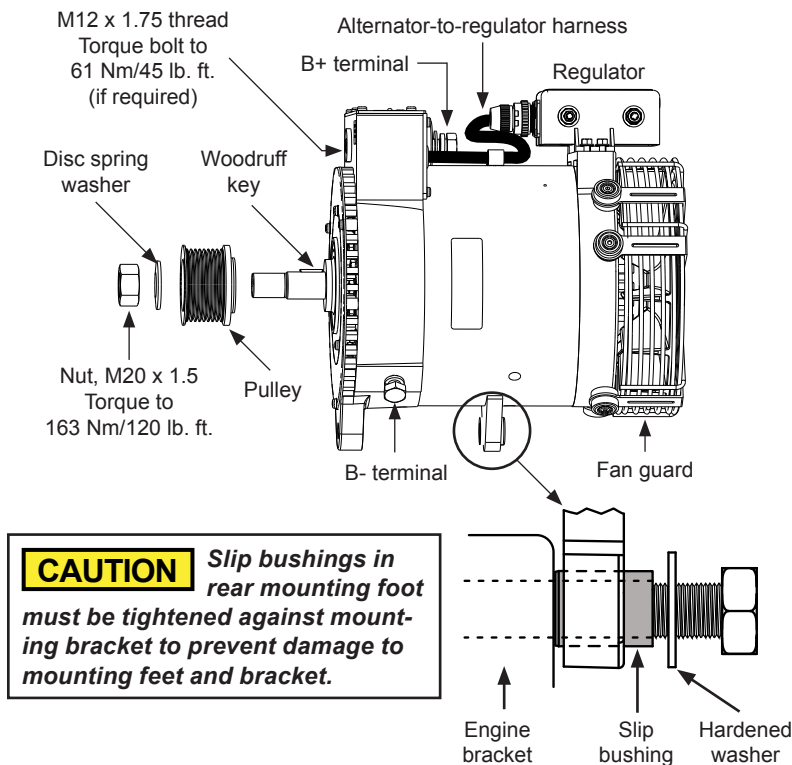


Figure 1: C653 Alternator Installation

CAUTION Slip bushings in rear mounting foot must be tightened against mounting bracket to prevent damage to mounting feet and bracket.

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4. Tension belt to vehicle manufacturer's specifications.
5. Connect vehicle B+ cable to alternator B+ terminal and install terminal hardware in stacking order shown in Figure 3. Torque hardware to 32 Nm/24 lb. ft.
6. Connect vehicle B- cable to alternator B- terminal and install terminal hardware in stacking order shown in Figure 4. Torque hardware to 15 Nm/11 lb. ft.

NOTICE Wire gauge for alternator B+ cable must be capable of handling maximum alternator output with minimum voltage drop. All cables must be supported within 305 mm (12 in.) to prevent twisting, loosening, and damage to terminals.

7. Install regulator according to instructions on page 2.

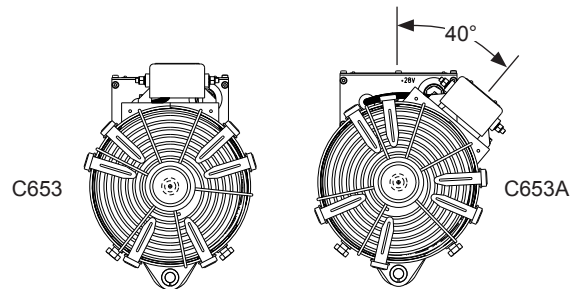


Figure 2: C653/C653A Comparison

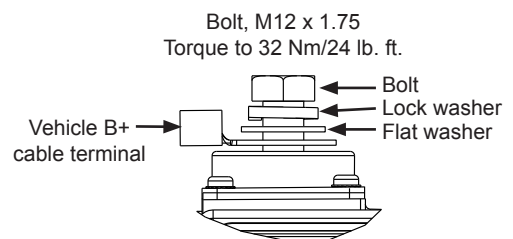


Figure 3: B+ Terminal Hardware Stacking Order

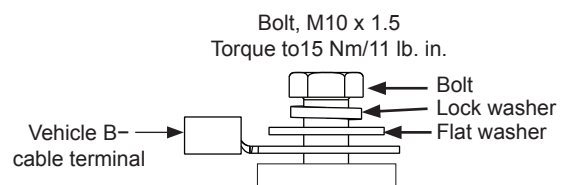


Figure 4: B- Terminal Hardware Stacking Order

CEN Regulator Installation

C653/C653A alternators are compatible with self-excited (see Figure 6) and ignition-excited regulators (see Figure 7). Available CEN Smart Regulators offer added features such as temperature/voltage compensation and J1939 communication¹.

1. Turn regulator over and make sure set point of switch bottom of regulator is appropriate for type of battery used. If necessary, change switch set point. See Figure 5 and Table 1 for voltage set point options.
2. Mount regulator on alternator or remotely² as required and torque mounting screws to 8.5 Nm/75 lb. in.
3. Plug alternator-to-regulator into receptacle on regulator. See Figures 6 and 7 for receptacle location.
4. Connect regulator terminals as required by vehicle:
 - 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 Figures 6 and 7.

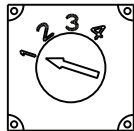


Figure 5: Regulator Voltage Selection Switch

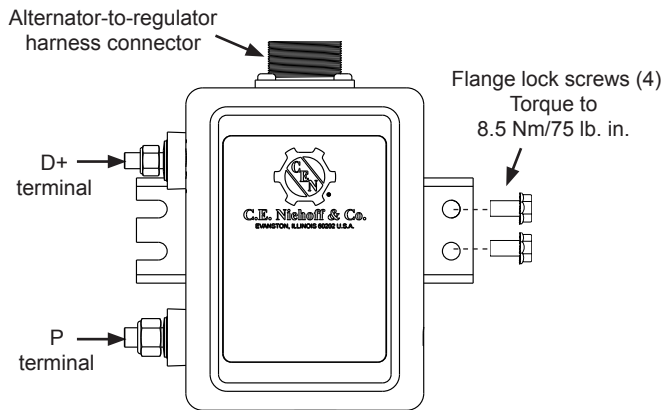


Figure 6: Typical Self-excited Regulator Connections

- Regulator **P/AC terminal** (if required) taps AC voltage from alternator, typically half the charge voltage (3A maximum). P/AC terminal provides signal frequency at 10:1 ratio of alternator RPM for use with tachometer. Torque terminal hardware to 4.5 Nm/40 lb. in. See Figures 6 and 7.

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

- Regulator **IGN terminal** (if required by regulator¹) 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 7.

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

5. If using a CEN Smart Regulator with J1939/temperature-voltage sense harness, plug J1939/sense harness into J1939 receptacle on regulator. See Figure 7 for receptacle location. Reference harness installation instructions included with harness for more information. Harness sold separately³.

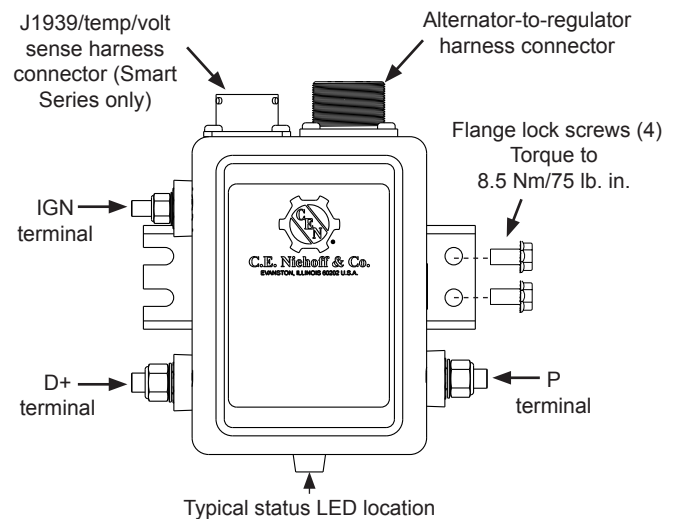


Figure 7: Typical Ignition-excited Regulator Connections

Table 1: Regulator Voltage Switch Settings

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

1. Contact CEN or see regulator model-specific documentation for full list of features.
2. Contact CEN for regulator extension harness options.
3. Contact CEN for sensor/harness options.

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:
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