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www.NationsStarterAlternator.com

Nations WS500 Best Practices Installation Guide OEM Wakespeed Design with Regulator Mounted close to Battery & Wiring System

Wires Used for Lithium Systems:

- **Wire #1 (Brown)**

This is ignition and will be routed to the vehicle fuse panel or upfitter panel on Sprinter to have power with key.

- **Wire #4 (Grey two-wire cable. Green heat shrink plug)**

This is the alternator temp sensor and will be routed along wiring to the alternator and plug into the connector, mounted to the alternator case.

- **Wire #5 (Black)**

This is alternator/regulator ground and will be routed to negative distribution buss bar.

- **Wire #6 (Red)**

This is alternator/regulator positive power and will route to alternator side of fuse assembly going to positive buss bar. Use 15A Inline Fuse.

- **Wire #7 (Blue)**

This is alternator field and will route to alternator green wire from plug and be securely crimped and heat shrunk.

- **Wire #8 (Yellow)**

This is stator wire and will route to alternator with wire coming out behind cover that is either white or yellow to be securely crimped and heat shrunk.

- **Wire #10 (Black/Yellow Stripe)**

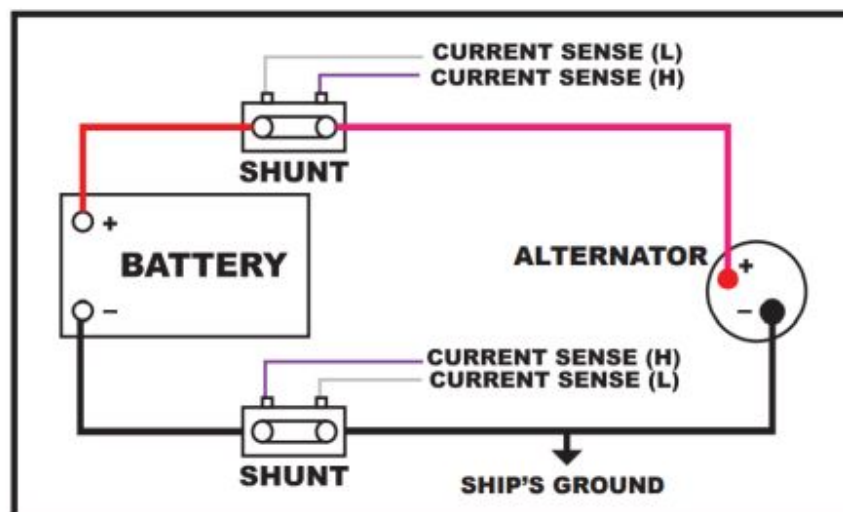
Connect to negative distribution buss bar. Same buss bar as #5 wire.

- **Wire #11 (Red/Yellow Stripe)**

Connect to alternator side of fuse assembly with #6 (recommend inline fuse 3-5 amps)

- **Wires #12 & #13 (Purple + & Grey -)**

Connect to battery shunt – this is crucial to take advantage of the WS500 current sensing. See diagram – shunt normally on negative side - Purple closest to battery, Grey to ground distribution.



NOTE: DIAGRAM IS INTENDED TO INDICATE PLACEMENT OF CURRENT SENSE WIRES BASED ON SHUNT LOCATION. ONLY ONE SHUNT IS REQUIRED FOR REGULATOR OPERATION.

Only 1 shunt needs to be used. Do not try to install both. If using high side shunt, use inline fuse 3-5 amps.

Optional High & Low Wires to CAN bms connections on lithionics or can equipped batteries:

Green Wire - Low | Additional Yellow Wire - High

With CAN connection there is no need to install wires #12 & #13 to shunt. But, there is no problem if they are installed. If not used, connect them together

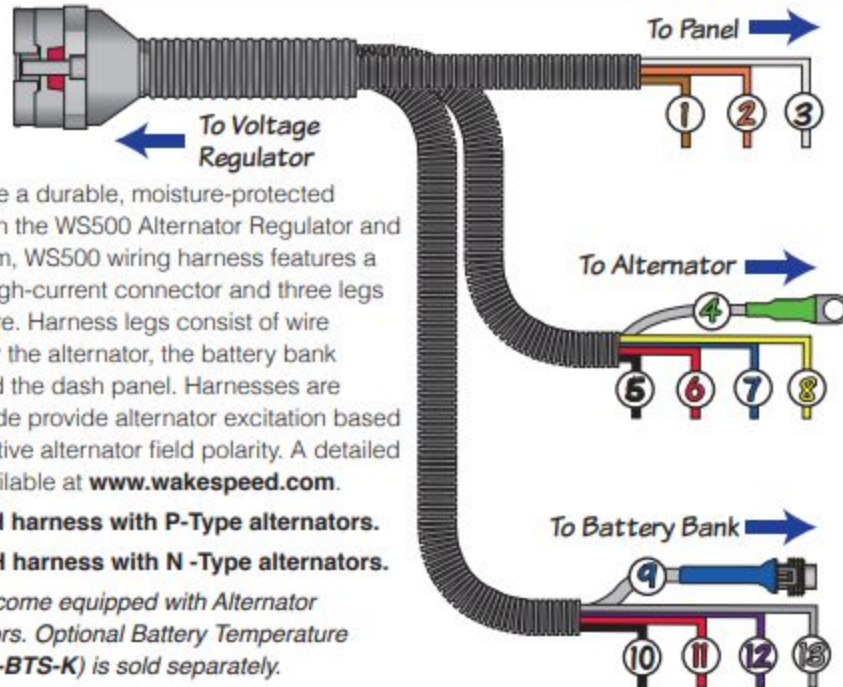
Tech Help: - 1-888-334-2632 | Email: adam@nationsstarteralternator.com

Wakeped: 360-299-1231 | Additional resources & manuals available at wakespeed.com



WS500

ADVANCED ALTERNATOR REGULATOR



Designed to provide a durable, moisture-protected connection between the WS500 Alternator Regulator and the electrical system, WS500 wiring harness features a rugged Ampseal high-current connector and three legs of tinned marine wire. Harness legs consist of wire groups destined for the alternator, the battery bank being charged, and the dash panel. Harnesses are configured to provide provide alternator excitation based on positive or negative alternator field polarity. A detailed User's Guide is available at www.wakespeed.com.

Use the WS500-PH harness with P-Type alternators.

Use the WS500-NH harness with N-Type alternators.

NOTE: Harnesses come equipped with Alternator Temperature Sensors. Optional Battery Temperature Sensor Kit (WS500-BTS-K) is sold separately.

- 1 Ignition Wire (Brown)** Connects to switched voltage source (key switch or oil pressure switch). Must see zero volts when off and minimum of 8.5 VDC to activate.
- 2 Lamp/Feature Out Wire (Orange)** Remains neutral during normal regulator operation, and provides a source of ground to drive warning lamp or alarm if faults are detected. See User Guide for details.
- 3 Feature In Wire (White)** Can be connected to a voltage source greater than 8.5 VDC to enable a range of selectable optional capabilities as detailed in the User's Guide.
- 4 Alternator Temperature Sensor (Grey two-wire cable. Green cable shrink.)** Connects to alternator case bolt or ground post.
- 5 Alternator Ground (Black)** Connects to alternator ground post.
- 6 Alternator Positive (Red)** Connects to alternator positive output post. Fused at 15A.
- 7 Alternator Field (Blue)** Connects to alternator's external field terminal.
- 8 Stator (Yellow)** Connects to alternator's AC/stator output.
- 9 Battery Temperature Cable (Grey two-wire cable. Blue cable shrink.)** Provides a connection point for optional battery temperature sensor. Battery Temperature Sensor (WS500-BTS-K) sold separately.
- 10 Battery Ground Sense* (Black/Yellow Stripe)** Connects to ground terminal of battery being charged. Connect wire to battery ground terminal closest to the center of the battery bank.
- 11 Battery Positive Sense* (Red/Yellow Stripe)** Connects to positive terminal of battery being charged. Connect wire to battery positive terminal closest to the center of the battery bank. Fused at 3A.
- 12 Current Sensing** (+) (Purple)** Connects to the positive sense terminal on the battery shunt.
- 13 Current Sensing** (-) (Grey)** Connects to the negative sense terminal on the battery shunt.

*Battery voltage sensing is most accurate when positive and negative sense wires are located nearest the center of the battery bank, or at opposite ends of the battery bank. See discussion of voltage sensing in the User's Guide for more information.

**Current sensing is calibrated for a 500A/50mV (default) current shunt. Installation may depend on whether shunt is installed HIGH or LOW. Refer to User's Guide for recommendations.