

ENDURALAST

EDL1



**Stock BOSCH Style Charging System
Installation Guide**

Confirm that you have the correct stator diameter:

Bosch Alternator #	EME Kit # & Stator Size	
0 120 340 001	105	
0 120 340 002	105	
0 120 340 003	105	
0 120 340 004		107
0 120 340 005		107
0 120 340 006	105	
0 120 340 008		107

There may be some cross-over on BMW applications.

BMW 1970-1976 ~ EME # Ending 105

BMW 1974-1975 ~ EME # Ending 105 or 107

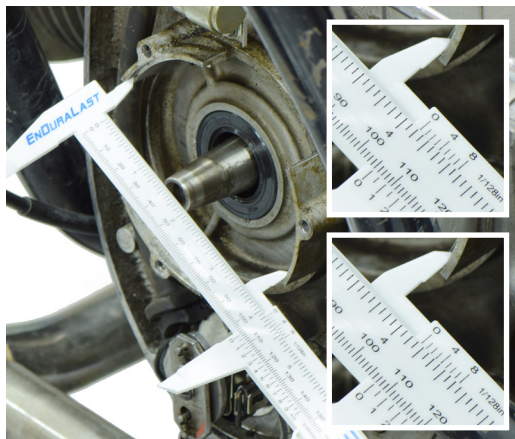
BMW 1976-1995 ~ EME # Ending 107

Moto Guzzi – ALL: EME # Ending 105

Alternatively you can measure the stator with a caliper!

Measure the groove diameter on the engine where the inner side of the stator frame fits into the timing chain cover.

It will either be 105mm or 107mm.



Note Regarding /5 Airheads

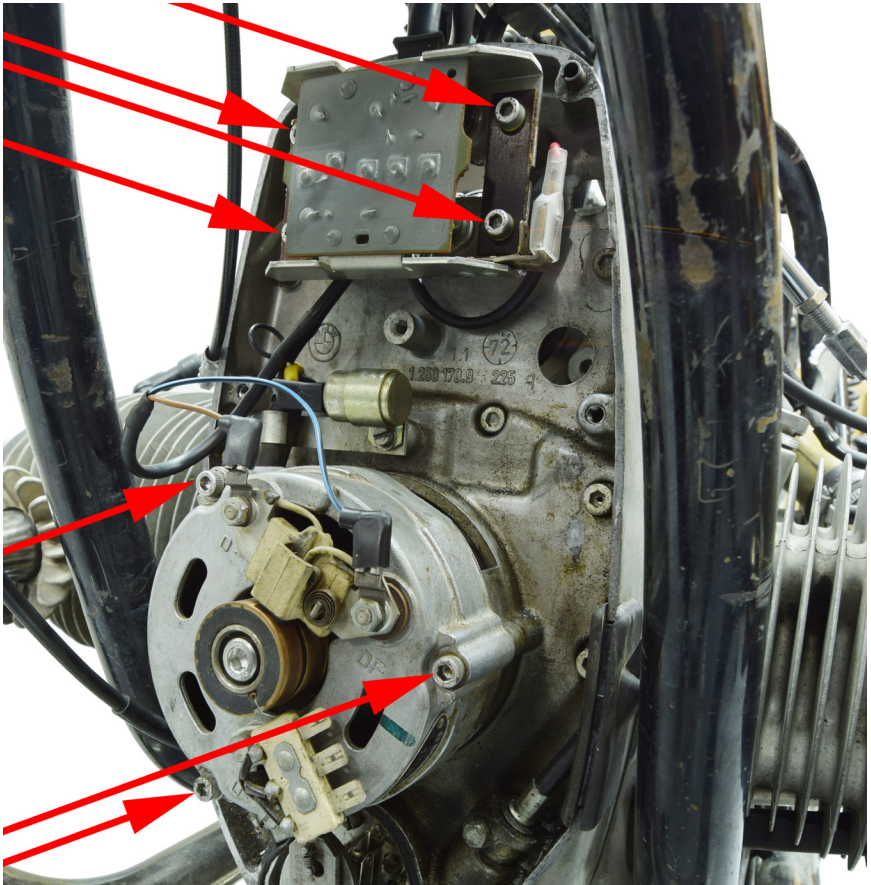
The /5 Airheads have a Bosch alternator (part # 0 120 340 001) that lacked the additional AC circuit “Y” that was installed on later models. The lack of this “Y” circuit capped peak output to only 180w. With /6 and later Airheads, the “Y” circuit was added and output increased to 240w.

We advise that all /5 Airheads upgrade to the later style alternator with the Y post to optimize the alternator output by installing a new stator and stator frame cover, included in this kit.

Remove the Existing Charging Components

Disconnect the battery and charge it so it is fully charged when the installation is complete. Remove any fairings, fuel tank, front engine cover, starter cover, and oil cooler to access the engine front and top of the engine.

- Remove the 4 fasteners that secure the diode board.
- Unplug all the electrical connections, taking note of the wire colors of the front engine harness, and their locations.
- Remove the original diode board.
- Remove the 3 fasteners that secure the stator frame cover to the timing chain cover.
- Disconnect all the electrical connectors from the stator frame and remove the stator and stator frame as one unit.

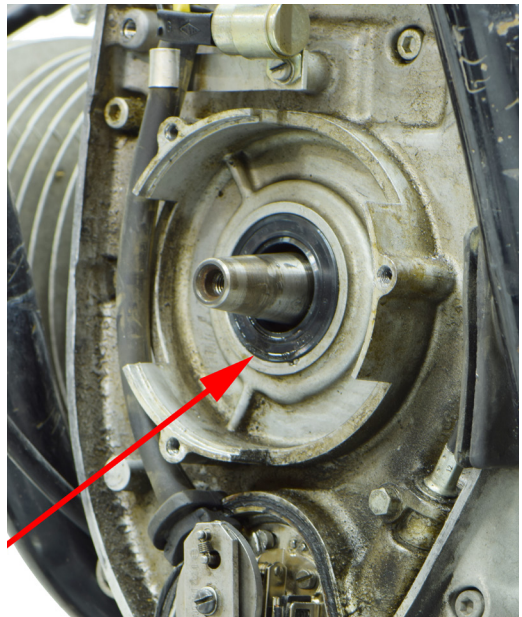


Put the transmission in gear to keep the engine from rotating. Remove the alternator rotor bolt. Place rotor removal tool into the rotor and tighten the tool.



Gently tapping the rotor with a rubber mallet after tightening the removal tool can assist in releasing the rotor from the crankshaft. The rotor can “pop” off the end of the crankshaft, so be prepared!

Once the rotor is removed it is time to inspect the oil seal on the crankshaft. A replacement is included in the kit as this is the best time to replace it. Take note of the orientation and depth so you do not drive it in too far.



Mount the Rotor

Inspect and clean the tapered nose of the crankshaft as the rotor is a friction fit. Remove all remaining oil with alcohol and a clean cloth. Clean the inside of the alternator rotor arbor of any remaining oil from the manufacturing process. Now that both surfaces are clean and prepared, slide the new rotor onto the crankshaft and seat it securely on the taper of the crankshaft. To confirm a clean interface, grasp the rotor and try turning it. If the rotor slips on the crankshaft, remove and clean it again.

Secure the rotor in place with the rotor bolt and lock washer with a torque setting of 14 foot pounds / 19 Newton meters.

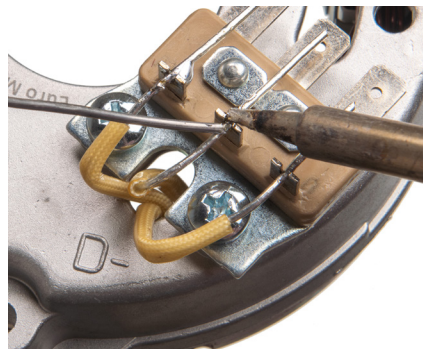
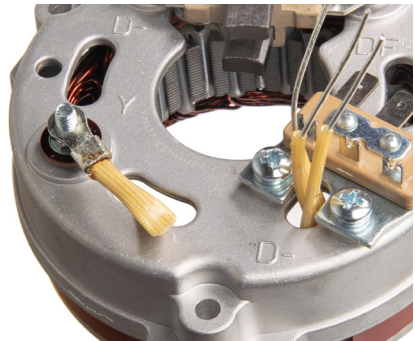
Install the Stator into the New Stator Frame

Feed the stator wires through the new stator frame cover as shown, manipulating the wires so the ring terminal reaches the Y terminal post and the three wire bundle reaches the WVU terminal.

With an 8mm wrench or socket, bolt the Y wire ring terminal onto the Y post as shown.

Solder the three stator wires onto the WVU terminal, the sequence of these three wires is not important as they all carry AC current. Be sure to keep the insulation in place to prevent the wires from contacting the stator frame and shorting to ground.

It is best to leave a little slack on these wires. No slack can be problematic if you intend to mount the EDL-Boigns ignition system down the road. A little slack will allow the re-soldering of the wires if necessary.

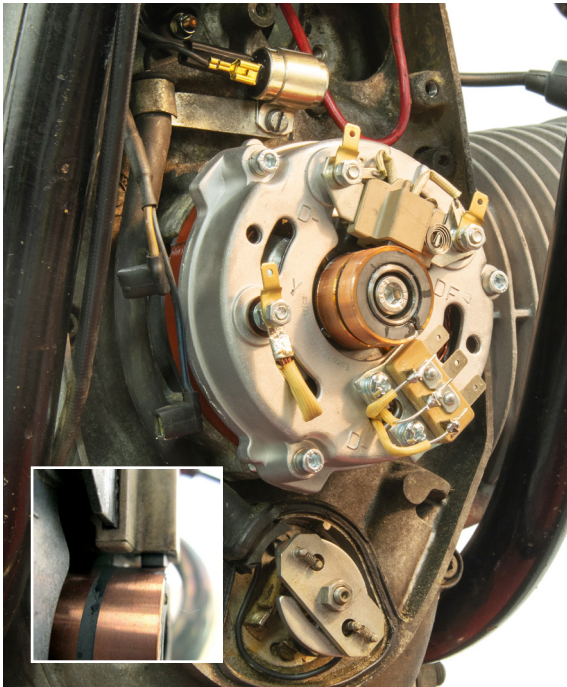
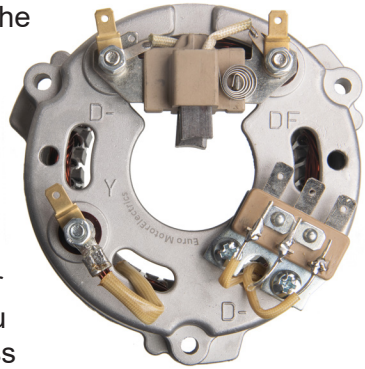


Install the Stator and Stator Frame Assembly

Slide the now combined stator and stator frame assembly over the rotor and secure the outer lip of the stator into the stator seat on the timing chain cover.

Take extra special care to protect the alternator brushes! We recommend you move the brush tension springs up and off to the side so they are hung up on the brush holder and not pressing on the brushes. You could also place a playing or business card over the rotor's copper commutator rings so the brushes will slide over the card and settle into place.

Make sure the stator is seated all the way into all three sections of the timing chain cover. It must be square and true to the rotor and engine. If this is troublesome, inspect the groove on the timing chain cover for a burr or lip that might be impeding the stator from seating completely all the way around into the timing chain cover.



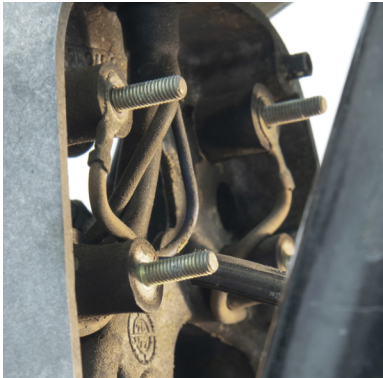
Secure the stator frame to the timing chain cover with the three mounting screws. Take care not to over tighten them and risk stripping the aluminum timing chain cover.

Insert the brush springs back onto the brushes and verify that the brushes align to their respective commutator ring only, and do not bridge the gap.

Mount the Diode Board

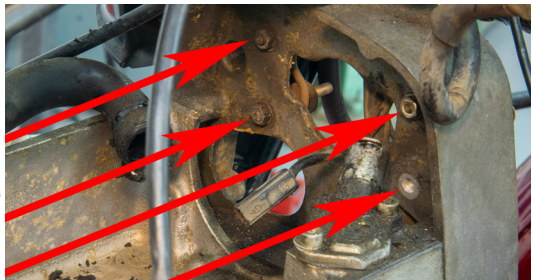
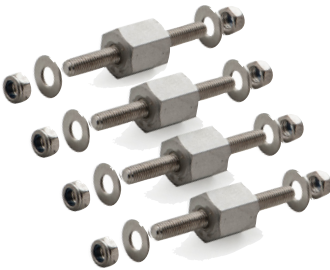
Depending on your model, you will either have solid posts built into the timing cover, or rubber mounts for the diode board.

Early models with a 105mm stator have no rubber mounts, but have solid studs on the timing chain cover as shown here. In this case you will not require the solid mounts.



Later models with a 107mm stator use rubber mounts for the diode board. They can crack, dry, and fail causing the diode board to move and short. In addition, the diode board uses the mounting holes as its ground connection. With the rubber mounts, the grounding is done with ground wires. These brown ground wires can be reused or omitted at your discretion.

Replace the rubber mounts with the solid mounts included in all 107mm kits. It is necessary to remove the starter to fit the lower solid mounts on the timing chain cover. This is an opportune time to install a new EnDuraLast BMW-STR1 starter!



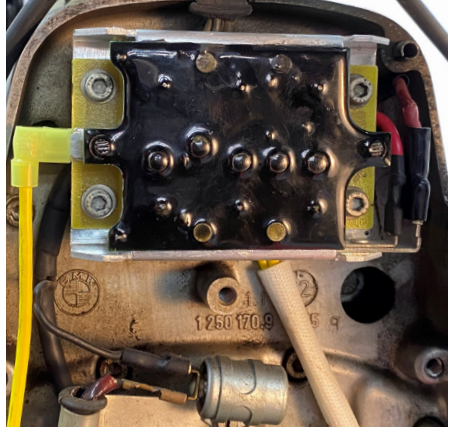
Connect the BLUE DF wire from the front engine harness to the DF terminal located on the back of the diode board. With this connection made, secure the diode board in place at the 4 mounting points on each corner with the M5x16 screws for early models, or over the solid mounts securing the washer and nylock nuts.

Electrical Connections

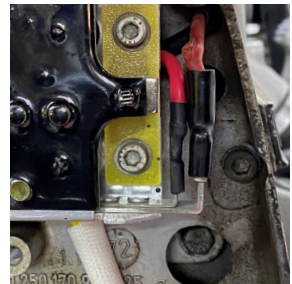
All previous connections are to be maintained, or reconnected to the respective terminals as this is a direct replacement kit.

There are a few different front engine harnesses used between the different Airhead models. Variations in this harness are /5 models, /6 models, and contact points vs transistorized ignition.

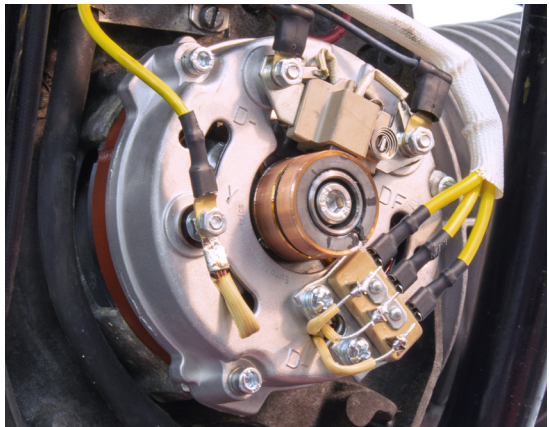
Verify the condition and connections on the remaining terminals of the front engine harness. Airheads with a points plate and condenser have a black wire that was, or may still be, connected to the contact point condenser located between the stator and diode board. This connection needs to be maintained for the contact points ignition to function.



/5 and /6 models have a red wire as part of the front engine harness that connects to the starter relay from the diode board B+ terminal. Reconnect this wire as originally configured to the new diode board, that provides power to the bike. You can also run the included red wire as detailed below in addition to the original wire.



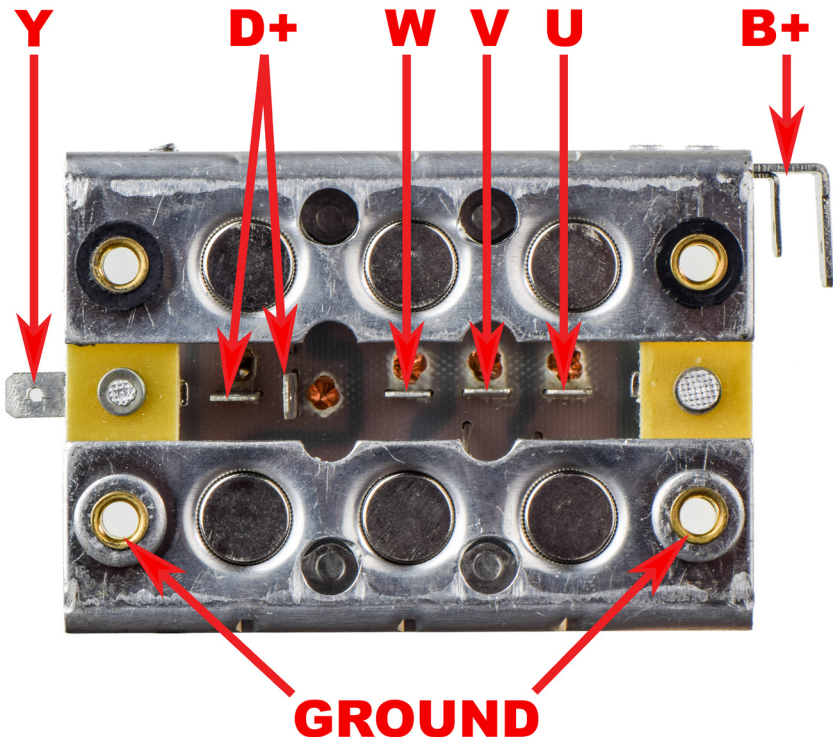
All models, will have wires to connect the brush holder as part of the front engine harness. Reconnect the brown to D- and blue to DF as marked on the stator frame cover.



Diode Board Electrical Connections

The electrical connections to the diode board are the same as the original design, and are as follows:

- The short yellow wire included, connects between the Y terminal on the diode board and the Y terminal on the stator frame.
- The bundled 3 yellow wires connect between the W V U terminals. *The sequence is not important as they are all AC current.*
- The red wire is connected between the starter solenoid B+ terminal (*where the battery positive cable is connected*) and the diode board B+ terminal. *You may have additional terminals connected here for /5 and /6 models.*
- The brown ground straps can be installed on either of the corner mounting points of the diode board ONLY on the GROUND side (opposite the B+ terminal).



Replace the Voltage Regulator

Early BMW models have the voltage regulator mounted as shown here. The new regulator is a direct fit using the two original bolts that secured the original regulator. Reconnect the engine harness to the new regulator.



Later BMW models have the voltage regulator mounted as shown here. The new regulator is a direct fit using the two original bolts that secured the original regulator. Reconnect the engine harness to the new regulator.



Final Reassembly

With the ignition switch still off and transmission in gear, turn the rear wheel while you watch and listen to the rotor to ensure that it runs true and parallel with the stator without touching each other. Ensure that all components are mounted correctly and securely. Check all wiring to make sure that the components are connected properly and that wires are routed appropriately to avoid pinching, binding, and rubbing.

Reinstall the front engine cover, starter cover, fuel tank, and all components that were removed to restore the bike to operating condition. Reinstall the battery, and clean the terminals to ensure a solid connection to the battery cables.

Remember that in the future, just as in the past, whenever you are removing the front engine cover, you must disconnect the battery negative cable to prevent a short, which can damage your diode board.

After confirming correct operation of your new charging system, verify everything is reassembled properly and it is safe to ride.

Verify workmanship

Review the above and inspect work. Twice. Maybe three times.

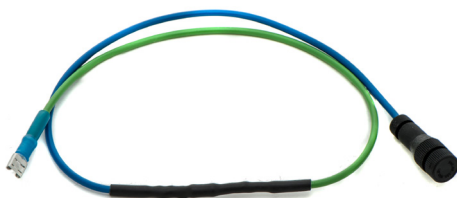
- Ensure that all wiring is connected to the proper locations.
- Check that all connections are clean and snug.
- Check wire routing to ensure that wires are not pinched, have no sharp bends, and are not in danger of chafing.
- Ensure that any remaining unused electrical wiring and connectors from the original charging system are properly secured out of the way and insulated against shorting.
- Use tie wraps to hold any loose wires in place and to prevent possible rubbing caused by vibrations.

Generator Lamp Bypass Modification - *Optional*

NOT included in the kit.

The GEN lamp is required for the Bosch style alternator to function. If the GEN lamp bulb happens to burn out or is removed because the bike has been modified or customized, it will interrupt the current to the rotor and not allow your alternator to charge your battery. To bypass the GEN lamp you will need a resistor with a resistance value of 330 to 440 Ohms to mimic the function of the bulb. You can purchase one **EME Part # BOALT-ResWire**

If you make your own, Blue and Green colored wire will match the factory colors. GREEN is KEY ON battery voltage, and BLUE is the DF circuit.



Solder your resistor between the two wires, and heat shrink it to seal the connections. Connect the Green end to the coil positive terminal, (there is already a Green wire from the chassis harness here.) Connect the Blue wire into the spare DF terminal on your diode board, or tap the blue wire between the diode board and voltage regulator (part of the front engine harness.)

With this modification, the charging system will not begin charging at as low of an RPM as when the original Gen lamp is maintained.



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