

ADJUSTABLE VOLTAGE REGULATOR - BMW Aircooled Twins

READ THE FOLLOWING CAREFULLY BEFORE INSTALLATION.

Failure to correctly install this unit could cause damage to other parts of the electrical system

Overview

The voltage regulator in a charging system is in reality a voltage limiter. It limits the maximum voltage that is supplied from the alternator to the battery. It has no effect on the output of the alternator below the limit voltage and as such cannot increase the alternator output beyond what is available at a certain RPM.

A 12 volt battery requires a voltage greater than 12 volts across it in order to charge. The actual voltage required to achieve a full charge varies depending on temperature and other factors but can generally be assumed to be between 13.8 and 14.4 volts. The higher the voltage the more current that will pass through the battery and the faster the battery will achieve a full charge condition. If the voltage is too high however the battery can be damaged by excessive internal heating causing the electrolyte (water/acid) to boil off and the plates to distort.

In the BMW system the voltage regulator "sees" the voltage across the battery by an indirect means through diodes in the diode board. Due to minor variations in the components the voltage that the regulator "sees" may be slightly different from the actual voltage across the battery. To compensate for this and to optimize the battery charging voltage an adjustable voltage regulator may be used.

Optimum settings

As stated above, the optimum charging voltage depends on a number of variables including temperature and age of battery and therefore it is not possible to state that any particular voltage is correct. However some guidelines can be applied.

If most of your riding is around town with a lot of stop/start situations the voltage should be set as high as possible without causing damage. This would be about 14.4 volts. If much of you riding is at cruising speeds set it a little lower say 14.2 volts.

Never set the voltage above 14.5 volts as damage to the battery and other components may result.

Installation

Before adjusting the regulator, it is important that the battery is in good condition, and is capable of taking and holding a charge. A failing battery could cause the regulator to be set incorrectly as could other faults in the charging system.

Assuming that other parts of the system are in good condition proceed as follows:

1. Fully charge the battery. If this is not convenient, install the regulator and run the bike (go for a ride) to charge the battery. The regulator is shipped with the voltage set to a safe level.

2. You may have to remove the tank to gain access to the regulator, and install the unit. It does not need to be bolted in place if you choose not to at this stage as the case is not used for grounding.

3. Connect a digital voltmeter directly across the battery (which should be fully charged) , and note the voltage. It should read above 12.5 volts .

4. With the headlamp turned off if possible (or the bulb removed) start the engine and increase the revs to about 2500 rpm. The voltage should rise and remain steady. When the voltage is steady, use a small screwdriver to turn the adjusting screw on the underside of the regulator until the desired voltage is reached. This voltage should remain steady (within a few hundredths of a volt).

If the voltage continues to slowly rise the battery was not in a fully charged condition. Again, it is important that the voltage stabilizes.

If completed quickly, you should have enough gas in the carburetor bowls to complete this adjustment. If you have problems you may need to replace the tank, and perform the adjustment with the tank in place. Remember that the regulator does not need to be bolted in place for this to be performed.

5. Once completed, stop the engine, bolt the regulator in place, replace the tank, and verify that the voltage setting is stable.

6. It is a good idea to recheck the voltage again after a long ride to see that the maximum voltage is stable.

WARRANTY

This unit comes with a 12 month free replacement warranty. This means that if it should fail within 12 months from the date of purchase during normal use we will replace it free of charge. We cannot replace units that appear to be damaged from misuse or incorrect installation. We cannot accept responsibility for damage to any other electrical or mechanical components as a result of incorrect installation or use. It is up to you to read and understand the installation instructions before installing this unit.

We want you to be 100% happy with your purchase. If you have any trouble installing this product you may phone us, contact us at the address above or email us.