

System 716949900

**12 volts generator for Yamaha XS650
output at 12V/180W DC**

- Replaces old alternator and regulator, Though the alternator is technically capable of running without a battery (which the stock alternator could not), your ignition will need the battery to get started. The electric output generated during kickstart is not enough to start ignition reliably. You imperatively need a battery.

- No carbon / collector problems any more and sure, no need to modify engine casing.


Advantage over original system:

- all parts are new
- no wear anymore on carbons and collector

Please note!

- Does not replace points and governor setup only alternator.
- Will work with any 12 V ignition setup as long as ignition is based at camshaft level and a **working battery**.
- Can not be used if you had installed an ignition setup directly on your original alternator.
- Does not support the original safety relay that prevents starting into an already running engine.
- Does not support any existing electronic revolution counter.
- Has only 180watts and offers herefore less electric power than original alternator.



Assembly instructions for system 716949900	18.02.2021
<p>- If you can install and time a stock ignition and possess basic mechanical skills, you can install a VAPE! If you never have worked on your ignition, better have it done by someone who knows.</p>	
<p>- VAPE can not monitor the compliance to those instructions, nor the conditions and methods of installation, operation, usage and maintenance of the system. Improper installation may result in damage to property and possibly even bodily injury. Therefore we assume no responsibility for loss, damage or cost which result from, or are in any way related to, incorrect installation, improper operation, or incorrect use and maintenance. We reserve the right to make changes to the product, technical data or assembly and operating instructions without prior notice</p>	
<p style="text-align: center;"><u>IMPORTANT</u></p>	
<p>- Please read these instructions fully and carefully before starting work on your motorcycle Please bear in mind that any modification of the material as well as own repair attempts which have not been agreed with VAPE may result in a loss of warranty. Do not cut off wires. This leads to a loss of reverse polarity protection and often results in damage to electronics. Also, please take note of the information provided on the information page for this system. Check that what you have bought really corresponds to the motorcycle you have. Wrong ignition settings may damage your engine and even hurt you during kickstart (violent kickbacks). Be careful during the first test runs. If needed change settings to safer values (less advance). During assembly check carefully that the rotor (flywheel) does not touch the stator coils or anything else, which may happen due to various circumstances and lead to severe damage.</p>	
<p>Designated use - This system is designated to replace stock dynamo/alternator & ignition systems in vintage and classic motorcycles whose engine characteristics have not been modified aftermarket. This system is not a tuning system and it will not bring significant increases in engine output. It does however significantly enhance roadworthiness and comfort by offering better lighting, better function of side indicators and horn and, compared with the aging stock systems, increased reliability. As our system does not tamper with engine characteristics it does not increase emission of gaseous pollutants and noise. In most cases emission of pollutants should even be reduced due to better combustion. If used as designated the system therefore will not normally infringe the existing legal status of the motorcycle. (Please check your local legal regulations!) This system is not suitable for use in competition events. If used other than the designated way, your warranty will be voided and it might well be that you do not obtain the desired results or, worst you loose legal roadworthiness.</p>	
<p> - VAPE guarantees homologated products marked with the “E” mark in the ring (E8 specifically for the Czech Republic), thereby ensuring a consistent conformity of the product properties with the relevant ECE homologation regulations (especially ECE R10.05). Inspection is regularly carried out by the competent authority.</p>	
<p>- The charging system is only suitable for use with rechargeable 12V (6V systems 6V) lead-acid batteries with liquide electrolyte or sealed lead-acid batteries, AGM, Gel. It is not suitable for use with nickel-cadmium, nickel-metal-hydride, lithium-ion or any other types of rechargeable or non rechargeable batteries.</p>	
<p>- This is a replacement system and not a copy of the stock material. The parts in this system therefore look different and might fit differently (notably ignition coil and regulator) requiring some adaptation by you.</p>	
<p>- During assembly imperatively start with assy of engine based parts to see that those really fit before you start fitting the external parts. In many cases customers assemble those first and thereby often modify them in breach of warranty which renders them unfit for renewed sale. Replacing old ignition systems is not a matter of taking something from a supermarket shelf as there have been very many types, versions and possibly unknown aftermarket modifications which harbour plenty of room for error.</p>	
<p>- Our systems are NOT tested for use with third party electronic devices (such as GPS, mobile phones, LED lighting etc) and may cause damage to such parts. Possibly existing electronic tachometers will not work with the new system. Possibly existing safety switches and electronic valve controls are not supported. It might be that your motorcycle was originally equipped with an ignition that did limit top speed for legal reasons. The new system does not have such a facility, so check your legal situation beforehand.</p>	

- If you have no expertise for the installation have it done by an expert or at a specialist's workshop. Improper installation may damage the new system and your motorcycle, possibly even lead to bodily harm.

- Before you order a system, please check whether a puller tool for the new rotor is included in the kit. If not, better order it at the same time. Never use anything other than the recommended puller tool to pull the new rotor again. Damage to the rotor as a result of use of other tools or methods is not covered by your warranty.

- The rotor is sensible to blows (including during transport). Before assembly, please always check for damage (on rotor without magnet plastification try to push the magnets aside with your fingers). After impact the glued in magnets might have broken loose, sticking to the rotor solely by magnetic force, so that one does not notice right away. During engine run the damage would be considerable. Before placing the rotor onto the engine, please make sure that its magnets have not collected any metal objects such as small screws, nuts and washers. That equally would lead to severe damage.

- **If you have access to the Internet, best view those instructions online.** You get larger and better pictures by clicking onto them and possibly updated information. System list at <http://www.powerdynamo.biz>



You should have received those parts:

- pre-assembled stator unit
- rotor
- regulator
- 2 screws M6x25
- 2 washers
- battery cables
- special puller tool



- To disengage your new rotor again, you should use only the supplied special puller M27x1,25 (part-no.: 71 69 999 99).

- Note: Never use a claw puller, a hammer or any other device. This might shake the magnets off.

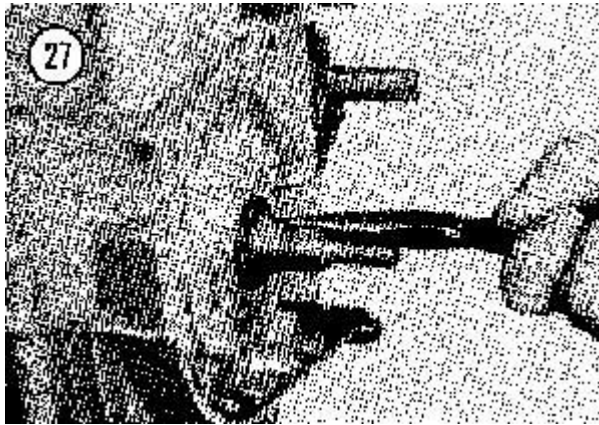
- Make sure your motorcycle rests securely, preferably on an elevated work bench and that you have good access to the dynamo side of the engine. Disconnect your battery and take it out of the motorcycle for the time of work.



- Disconnect the cables from your old alternator. Unscrew the old stator and take it off the engine. Pull the rotor off, you will need a puller screw for this.

- Disconnect the wires at the regulator and take the regulator off. Remove the wires running between alternator and regulator.

- All those parts will not be needed anymore.



- Take the woodruff key from the crank. You will not need it anymore.

- Please do not forget to do so, otherwise you will have trouble later on the assembly.

(Remark: This woodruff key does not actually hold your rotor on the shaft, this is done by the taper!)



- **Check whether there is still a small dowel** at the circumference of the dynamo seat. This is part of the old dynamo arrangement preventing the customer from installing the original unit wrong side up.

- If the dowel is still there, it **has to be removed** (it can be pulled with a pair of pliers).

- If the pin is left untreated, the new plate will not be sitting level to engine and that will cause the new rotor to touch the coils, leading to total destruction of the material.



- Place the new pre-assembled stator unit onto the engine block and screw it down with the 2 screws M6 provided.

- The larger black coil will show towards the wire exit downwards.



- Make sure that you do not pinch the stator wires under the plate.

- There is a cut in way for the wire. Still it is a tight fit.

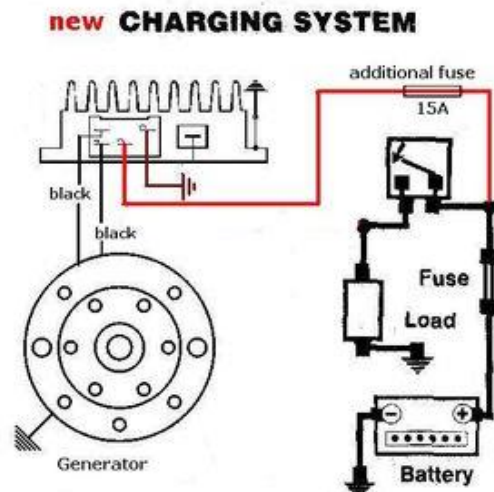
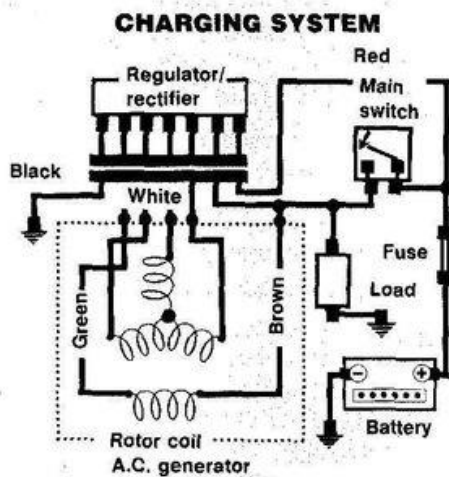


- Put the rotor onto the crank and screw it down with the original fastening nut.
- Place the 2 large washers provided under the nut to compensate that the tapered part of the crank protrudes a little.

- Fit the new regulator/rectifier unit at a convenient spot. As it has about the dimensions of the old, best place it into the same spot. Wiring is quite simple. On the diagrams below

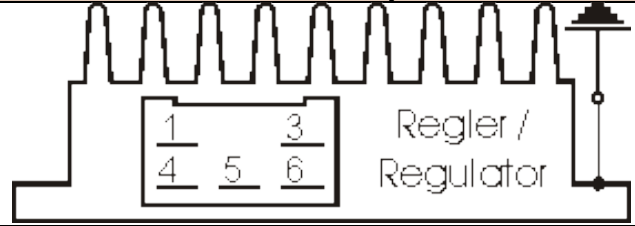
original charging wiring

new charging wiring



- Should you opt for running the system without battery (which it technically can) in a motorcycle equipped with side indicators (flashers) you might have to install a condenser. Not all flasher units will work properly without a battery. Most will go heywire. A strong capacitor will help the problem.

- It has a Plus and a Minus pole, just as the battery and is hooked into wiring same way the battery would have been.

Connect the parts as shown in wiring diagram g-only:	
	<p>- The new regulator/rectifier has a compact plug with 6 positions, of which <u>one</u> is not used. A female plug cover fitting to this plug is delivered. Into this female plug you have to insert the following wires (which have terminals that snap into the plug):</p>
<p>The two black cables leading from the generator ...</p>	<p>... connect to pins 1/4 of the new regulator (from there equally black wires lead inside the unit). It does not matter which wire connects to which of the both terminals (1/4) as they carry alternating current.</p>
<p>The new brown cable with the round eye terminal.</p>	<p>... connects pin 3 of the regulator unit (from there equally a brown wire goes inside the unit) with the negative pole of the battery or (in case you drive without battery) to ground (chassis).</p>
<p>The new red cable with the round eye terminal ...</p> <p style="text-align: center;">Take care: Wrong polarity will damage the electronics!</p>	<p>... connects to pin 5 of the new regulator (from there equally a red wire goes inside the unit). This wire is a major integration point between the old and the new system. Here your regulated positive voltage comes out to connect to battery plus, or (in case you drive without battery) to the voltage input terminal of the main switch (ignition lock, German bikes: pin 51/30).</p>
<p>Make sure that you have a 16A-fuse between battery and vehicle circuitry.</p>	
<p>The green/red wire at pin 6 of the new regulator ...</p>	<p>... is for the charge control light. You connect there the wire that formerly did run from the control light to the original regulator.</p> <p>- Sure that this control only functions with a battery present. Should you drive without battery but still connect the wire, you will see that the light glows even as the generator generates voltage. So without battery, do not connect it.</p>
<p>- The charge light control function is based on a transistor switch and is an additional function. Even if that should fail, the regulator might still be in ok working condition. Simple check: have the engine running, turn lights on, disconnect the battery. If you have bright lights the unit is ok.</p>	
<p>- Remarks for 6 Volt systems:</p>	<ul style="list-style-type: none"> • There is no charge light control function in our 6 volts systems. Hence no green/red wire • The ground wire between plug and regulator body is not brown, but white.
<p>- Finally - and before installing the battery and before the first kickstart - please re-check carefully all connections and fitments against the wiring diagram. Do check battery and light bulbs for correct voltage (12V).</p> <p>- Should something not work, please consult our trouble-shooting guide on our homepage. As a first step disconnect the blue wire from the coil and re-test.</p>	
<p>- IMPORTANT: During crank shaft repair the dynamo shaft is often machined and gets shorter. The result is a rotor sitting lower, possibly touching now with its rivets the stator coil. The result is a destroyed stator and ignition failure.</p>	

Important safety and operating information for dynamo only systems

- Safety first! Please observe the general health and safety regulations motor vehicle repair (MVR) as well as the safety information and obligations indicated by the manufacturer of your motorcycle.
 - After installation, please check tightness of all screws. If parts get loose during run, there will be inevitably damage to the material. We pre-assemble screws only loosely.
 - Give the newly installed dynamo a chance to work, before you start to check and test. Our parts have been checked before delivery to you. You will not be able to check much anyway. At any rate do refrain from measuring the electronic regulator other than the output voltage. You risk several damages to the inner electronic there. You will not get any tangible results from the operation anyway. Check ground connections carefully and, to be on the safe side and for testing, put an additional ground wire from the regulator directly to the engine block.
 - Never do electric arc welding on the bike without completely disconnecting all parts containing semiconductors (ignition coil, regulator, advance) stator and rotor need not be taken off.
 - When you handle the new rotor, take care not to damage its magnets. Refrain from direct blows to the circumference of the rotor. When transporting never put the rotor over the stator. Observe our information relative to transport of the material.
 - It is a good idea to cover the rotor in a thin layer of oil to reduce the risk of corrosion.
 - Never use a claw puller or a hammer to disengage the rotor. Its magnets might become loose in the event. We offer a special puller screw for disengaging the new rotor again (see assembly instruction)!
 - Should the motorcycle not be in use for some longer period, please disconnect the battery (so existing) to prevent current bleeding through the diodes of the regulator. Though, even a disconnected battery will empty itself after a while.
 - Please do observe those remarks, but at the same time, don't be afraid of the installation process. Remember, that before you, thousands of other customers have successfully installed the system.
- Enjoy driving your bike with its new electric heart!***



Schaltplan ohne Zündung 12V (wiring diagram w/o ignition 12V)

