System 73657996V

6V alternator / electronic ignition for single-cylinder JAWA and CZ motorbikes

JAWA 11 / 353 / 355 / 356 / 559 / 590
CZ 450 / 453 / 455 / 470 / 475 / 477 / 482 / 485 / 487

- The 6-volt system does not support a charge indicator light (only the 12V version, system 736579900).

- Magneto lighting system with integrated fully electronic ignition. Light output: 6V/75W DC. Contactless, maintenance-free, electronic ignition with its own power supply within the system; can therefore also be operated without a battery. Replaces the old alternator, breaker, ignition coil and regulator. No modifications to your engine casing are required.

- This system is an alternative to our systems 35361799 and 45061799. The system is simpler as it does not require a sensor.

Note: the system is negative ground

Advantages over the old system

- All parts are new
- significantly higher light output
- very stable ignition with high-energy sparks
- better starting performance and improved combustion
- No more trouble with the distributor

M73657996V

Fitting instructions for system 73657996V	21.7.2026

- If you are able to fit and adjust the original ignition system and have general mechanical skills, you can also fit a VAPE system. If you have never dealt with this before, it is best to have the system fitted by someone who is familiar with it.

- VAPE is unable to monitor compliance with these instructions, or with the conditions and methods relating to the installation, operation, use and maintenance of this system. Incorrect installation may result in damage to property or even personal injury. We accept no responsibility or liability whatsoever for any loss, damage or costs arising from, or in any way related to, faulty installation, improper operation, or incorrect use and maintenance. We reserve the right to make changes to the product, technical specifications or installation and operating instructions without prior notice.

IMPORTANT

Please ensure you read the entire instruction manual carefully before you begin installation

Please bear in mind that unauthorised modifications, including attempts at repair, to the components may result in the loss of your warranty rights. This also applies to cutting cables, which very often leads to the loss of reverse-polarity-protected connectors and, consequently, to short circuits or reverse polarity that can damage the components.

Please note the **instructions on the system information page**. Ensure that the system configuration shown actually meets the requirements of your engine. Incorrect ignition settings, for example, can certainly damage the engine and/or cause injury when starting (kickback from the kick-starter). Particular caution is required during the first start-up following installation. Should you notice any malfunction, check and adjust the ignition timing! During installation, check very carefully that the rotor is not rubbing against the stator coil or anywhere else, as this can occur for various reasons and lead to serious damage.

Intended use

- This is a **replacement system and not a copy of the original components**. The parts of the system therefore look different from the original parts, and in particular the ignition coil and regulator may have different mounting points, which will require you to make adjustments. This system is intended **exclusively** as a replacement for original lighting and ignition systems in classic and modern classic motorbikes **whose engine characteristics have not been subsequently altered by design modifications**. It is not a tuning system; it does not alter the original engine characteristics and does not result in a significantly higher engine output. However, it does improve the roadworthiness and safety of the vehicle through better lighting, more visible indicators, a consistently powerful horn and, compared to the ageing original systems, greater overall reliability. As our systems do not cause any significant change to the engine's performance characteristics, there is no deterioration in exhaust emissions or noise levels. In most cases, exhaust emissions are likely to improve, as combustion becomes more complete.

- VAPE guarantees that its products are type-approved and marked with the letter 'E' (specifically 'E8' for the Czech Republic), thereby ensuring that the product characteristics consistently comply with the relevant ECE type-approval regulations (in particular ECE R10.05). Inspections are carried out regularly by the competent authority

- The charging system is strictly **intended for use only with rechargeable 12V (6V systems: 6V) lead-acid batteries with liquid electrolyte or sealed lead-acid batteries, AGM and gel types.** It is not suitable for use with nickel-cadmium, nickel-metal hydride, lithium-ion or other types of rechargeable or non-rechargeable batteries.

- The system is **not suitable for use at sporting events.**

If the system is used for purposes other than those for which it is intended, the warranty will be void. Furthermore, the system may not perform as you require, and we will be unable to assist you via our support service as we will not be aware of the situation. In the worst- case, use for purposes other than those for which it is intended may even result in the revocation of the operating licence.

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- When fitting the parts, **be sure to start by fitting the parts on the motor side** (adapter, stator, rotor) to check that these components actually fit before fitting the parts to be mounted outside the motor. Unfortunately, it is often the case that people start by fitting the regulator, ignition coil and, where applicable, the control unit, and these parts are very often modified (without being properly calibrated!), which makes it impossible for us to resell them later. Replacing the lighting and ignition systems on older motorbikes is, unfortunately, not like picking something off the shelf at the supermarket; given the wide variety of models and the possible changes to the components since they were first produced many years ago, it is always a complex matter which, regrettably, can also involve errors.
- Our systems have **NOT been tested for use with other electronic components (such as third-party ignition systems, sat-navs, mobile phones, LED lights, etc.)** and may, under certain circumstances, cause damage to such components. Any existing rev counters are not supported by the system. However, we do offer a rev counter solution. Similarly, any circuit breakers or exhaust control systems operated by the ignition are not supported. It may also be the case that, for legal reasons, your original ignition system was fitted with a speed-limiting device. The new system does not have such a device. You should therefore check the legal situation beforehand.
- If you do not have the necessary expertise to carry out the installation, please have it carried out by a qualified technician or a specialist workshop. Incorrect installation may damage both the new system and the motorbike, or may even result in injury to the rider.
- Before ordering a system, please check whether the **rotor puller** we recommend is included in the scope of delivery. If not, it is best to order it at the same time! If the rotor is damaged by the use of other tools or aids, the warranty claim will be void!
- The rotor is extremely sensitive to impact (e.g. including during transport). You must always check the rotor for any damage before installation. If the rotor has magnets that are not encapsulated, check that the magnets are securely in place by trying to push them sideways with your fingers. Following an impact, some of the glued-in magnets may have become loose and are now held in place solely by their magnetic force. This would cause serious damage to the system during operation. At the same time, please check the rotor's magnets for foreign objects (e.g. screws or other metallic items).
- If you have internet access, it is best to view this documentation online. This will allow you to click on most of the images to enlarge them, and you will find more – and possibly more up-to-date – information. System list available at: *http://www.powerdynamo.biz*

You should have received the following parts:

- Rotor (flywheel)
- Pre-assembled stator plate
- Electronic ignition coil (CDI)
- Regulator/rectifier
- Cut-off relay
- Ignition leads
- M6 fixing screws

- To remove the new rotor, you will need an M27x1.25 puller (order no.: 99 99 799 00 **– not included!**).

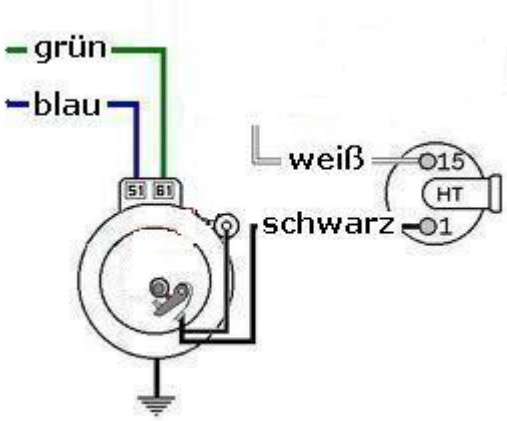
CAUTION: if you use a claw puller, the magnets in the rotor will come loose!

- Notes on the old wiring:
- Please check whether you have one of the early JAWA/CZ models where the positive terminal of the battery is connected to earth (the frame). If so, you must reverse the polarity of the system. **Earth must now be connected to the negative terminal of the battery**, and the positive terminal must be connected to terminal 30 on the ignition switch. If you fail to do this, the electronics in the ignition coil and the regulator will be destroyed!

- Experience shows that, over time, modifications have been made to the electrical system on almost every motorbike. As a result, the cable colours – and indeed even the electrical connections or components themselves – are often no longer identical to the original and may therefore differ from what we describe here. If in doubt, please consult an original wiring diagram.
- The wiring of our system is the same for all JAWA/CZ models. The specific details regarding connection to the motorbike's electrical system, including the ammeter and fuel tap, are explained in our supplementary information for the 'Perak'.

- Make sure your motorbike is securely on its stand, preferably on a raised work platform, and that you have easy access to the alternator side of the engine.

- Disconnect the battery and remove it from the motorbike. The system allows you to ride without a battery at all.



- Now disconnect all the cables from your old alternator, the regulator and the ignition coil, and remove these parts. You can remove the old rotor using an M8x90 pull-off screw.

- Check whether the white cable from the neutral switch runs up through the alternator's wiring harness towards the central wiring harness. If so, you will inevitably have to remove this cable and then re-route it.

- Pay attention to the blue cable that ran from terminal 30 on the ignition switch to terminal 51 on the old alternator. This will later be connected to the new regulator.
- Also note the green cable that was connected to the regulator (terminal 61 or terminal D). This goes to the charge control unit and, on our 12-volt models, is also reconnected to the regulator.
- Make sure you keep the white cable (from the ignition switch) leading to the ignition coil; you will need it.
- Remove the black cable from the distributor to the ignition coil; it is not needed.

- Decide which method of cut-off you wish to use. There are various options, each with its own advantages and disadvantages. We have provided the relay option.

- Relay option (supplied as standard)
Advantage: This option allows you to use the ignition switch as normal. Nothing changes in terms of how you operate the motorbike.
Disadvantage: You cannot use the system without a battery. (Although, in an emergency, you can still ride without it; it's just that the ignition cut-off won't work!)

- Kill switch method
Advantage: The motorbike can be ridden without a battery. There is no relay that could fail.
Disadvantage: You need to fit an additional kill switch, preferably on the handlebars.
Tip: You can repurpose the headlight flash button as a kill switch.

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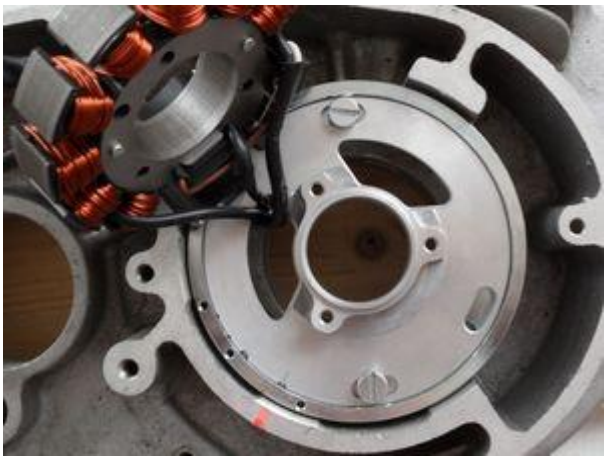
- Disconnect all cables leading to the old alternator.

- Remove the alternator and the old ignition coil, as well as the old regulator if it is not mounted on the alternator.

- The locating pin can be left in place, except on the 125/150 cc engines, and makes ignition timing easier to set. However, this is also quite straightforward to do without the locating pin.

- On the 125/150 cc engines, it must be removed, otherwise the ignition cannot be set correctly.

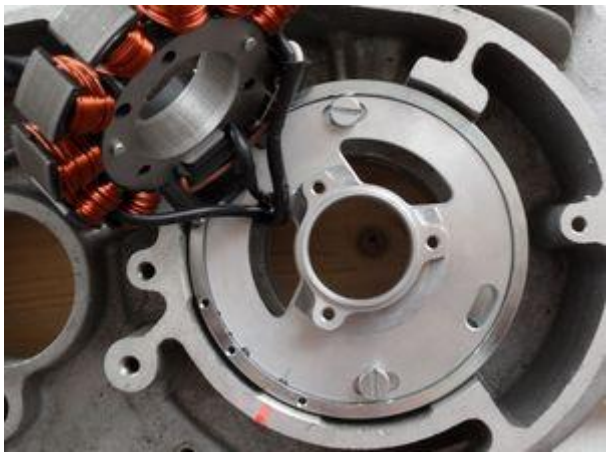


- Remove the 3 screws securing the new stator to its base plate and pull it slightly away from the plate so that you can access the mounting holes underneath. Take care not to damage the enamel insulation on the coil wires.

- Identify the mounting holes required for the JAWA/CZ. There are two sets of holes, one of which is for an MZ.

- Please note that the correct holes and the cable passage through the plate shown here are important for the ignition timing.

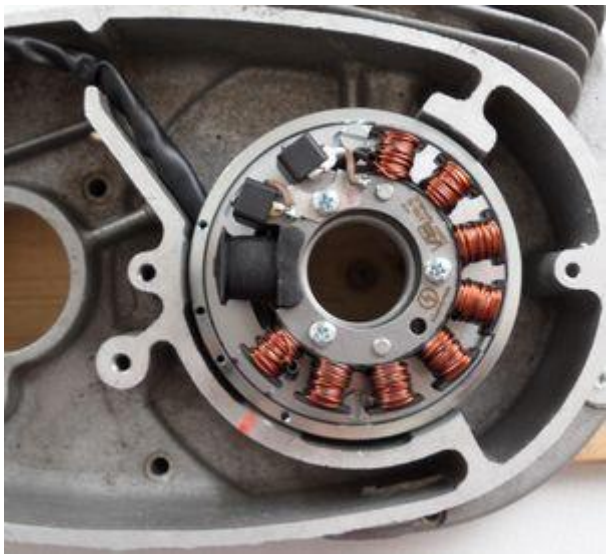
- The following two images show how the outer steel ring must be fitted onto the old alternator.
- There are sometimes misconceptions about this; some people believe that the aluminium plate must sit right at the bottom of the engine and that the steel ring should therefore be omitted.
- No, please use the steel ring as shown here.



- Place the base plate (consisting of the outer steel ring and the inner aluminium plate) onto the mounting point of the old alternator, as shown here. Insert the bolts centrally into the slotted holes.

- Take particular care to select the correct mounting slots in the stator bracket (see above). The stator coil is still loosely attached to the cable.

- With the steel ring, it does not matter which holes are used.

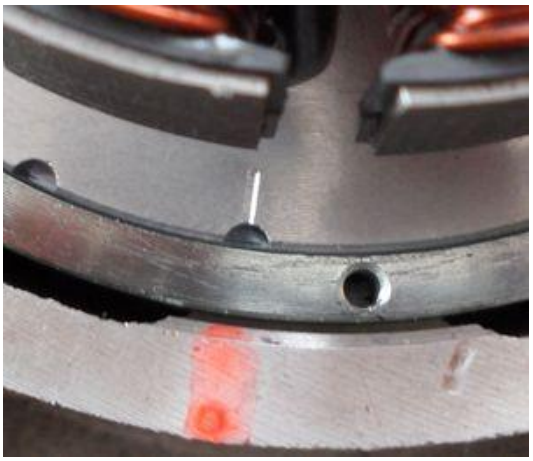


- Replace the stator coil on the base plate. The coil must click into place quite firmly. If it simply rests loosely on the plate, a cable is almost certainly trapped underneath! Ensure that the stator is sitting straight on the plate and that no cables are trapped – otherwise this will result in damage to the system or, at the very least, malfunctions.

- Check one last time that you have selected the mounting holes appropriate for your vehicle type (see the section above) and that everything has been assembled correctly. The thick black coil must now be pointing towards the 9 o'clock position.

- Secure the stator again using the 3 M4x25 screws.

- Take a look at the stator mounting plate. There, at around the 7 o'clock position, you will find a sma line marking at the level of a half-hole. This is the ignition mark. As this will no longer be visible once the rotor is fitted, it is advisable to transfer this mark outwards onto the housing using a fibre-tip pen a centre punch. This will make it easier to fine-tune the ignition later on.



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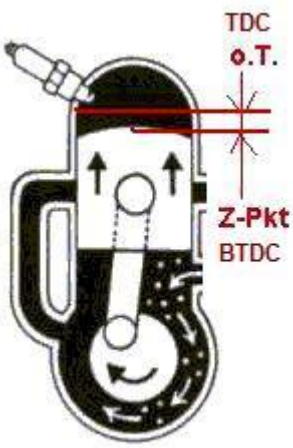
- Take a look at the rotor; it also has a line marking for the ignition on its circumference.

- Fit the rotor onto the crankshaft. Ensure that it is locked into place on the crankshaft's dowel pin. Please check that the rotor is seated securely on the shaft. Sometimes the dowel pins protrude too far and prevent a proper fit. In this case, the pin must be shortened slightly with a file.

- Also check that the rotor moves freely downwards towards the base plate and does not rub against it. Before securing the rotor with screws, check the ignition timing and, if necessary, adjust the position of the base plate (slotted holes) as follows:

- Ignition occurs when the mark on the rotor is directly aligned with the mark on the plate (which is no longer visible as it is now on the engine block). (see photo)
- So, remove the spark plug, move the piston to the ignition position and check whether the markings are aligned. If they are not, note the direction and extent of the misalignment, remove the rotor and rotate the base plate accordingly within the slotted holes. Then screw the plate back on securely. Please note: only use the flat screws supplied; otherwise, they will get into the magnets.



- Fix the electronic rectifier/controller in a suitable position, e.g. on the inside of the toolbox.

- Fit the new electronic ignition coil in the same position as the old one. For JAWA motorbikes (with a square-section frame), we have pre-fitted a mounting bracket to the ignition coil, which allows the new coil to be fitted (more or less) without any problems into the mounting hole of the old original coil. To use this option, the coil must be fitted with the cable terminals facing rearwards. Unfortunately, the height of this mounting hole often varies, meaning it does not always fit our bracket perfectly. The bracket is not required for single-cylinder CZ models.

Please note: None of our 6-volt systems support the charge indicator light function!

Connect the cables as shown in **wiring diagram 71ir6**, i.e.:

- To make it easier to feed the cable through tight openings, or indeed to make this possible in the first place, the connector on the cable leading from the new alternator to the new ignition coil has not yet been fitted to the terminal tabs at the end of the cable. You should only attach the connector once the cable has been fed through the engine opening for good. To do this...

... take the female connector from the ignition coil with the red and white wires.

- Fit the loose 2-pin connector sleeve supplied onto this plug and insert the loose alternator cables (red and white) with their terminals into the rear of the plug. Ensure that the cable terminals click into place inside the plug housing. It is essential to ensure that these cables are positioned correctly within the plug:

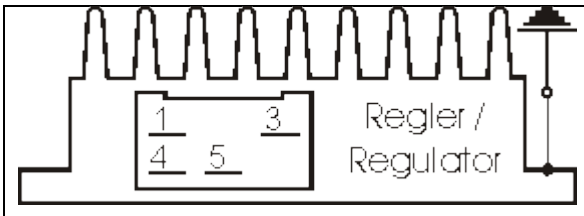
- white to white
- red to red

- If you want (or need) to remove the cables from the connector housing again, it is best to use a paperclip that has been bent open and use it to push the barbs on the contact tabs to one side, so that the connectors can be released.

- The brown cable from the alternator, which has a ring terminal, is screwed onto the ignition coil's earth terminal (retaining clip).

- Please note: Failure to observe this is the most common cause of ignition problems! Without this direct connection, the system will not work, or will not operate fault-free in the long term, if you rely solely on the frame as a conductor.

- Please do not rely on the frame's earth connection. Paint, dirt and oil residues often prevent the coil from making a good earth contact.



- The regulator/rectifier has a compact connector with 6 sockets, two of which are free. The regulator is supplied (from November 2007 onwards) with a matching counterpart into which the cables must be inserted and which must click into place.

- The regulator has no connection for a charge indicator light!

- The two black cables from the new alternator ... ... are connected to terminals 1 and 4 of the new rectifier (from there, black cables also run into the regulator). It does not matter which cable is connected to which of the two terminals (1 and 4), as alternating current is fed into the circuit here.

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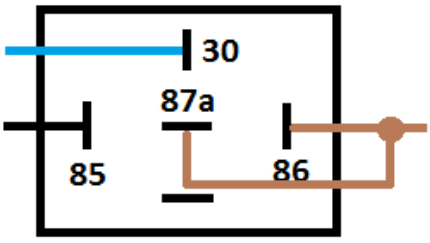
- The new brown cable with the ring terminal at one end ...	... connects terminal 3 of the regulator/rectifier (a brown cable also runs into the regulator from there) to the negative terminal of the battery or a solid earth. Caution: do not reverse the polarity!
The new red cable with the ring terminal at one end ...	... connects terminal 5 of the regulator/rectifier (from which a red cable also runs into the regulator) to the positive terminal of the battery. This is the junction point between the old and new lighting systems. - If you are riding without a battery, connect it to the cable that supplies power to the ignition switch (on German motorbikes: terminal 30).
- Ensure that a **15A fuse** is used between the battery and the vehicle's electrical system.	
- The blue/white cable from the ignition coil is the cut-off cable. **- If it is connected to earth, the ignition will cut out!** **- Note:** If you experience ignition faults, disconnect this cable first (pull out the plug). In most cases, you'll then be able to continue your journey	**- Switching off via a separate switch:** - The relay is not fitted. The blue/white cable from the ignition coil is connected to a cut-off switch that cuts the circuit to earth (e.g. a push-button switch to be fitted to the handlebars). Further details can be found in the information on the cut-off system. Alternatively, you can use an ignition switch that cuts the circuit to earth. **- Switch-off via position 5 (push-start position on the ignition switch, if fitted):** - Connect the blue/white ignition coil cut-off cable to terminal 61 (the standard terminal for the charge control). All cables previously connected to this terminal, including the one for the charge control bulb, must be disconnected (or the bulb removed). The ignition is switched off by turning the ignition to position 5 until the engine has come to a standstill. What happens is that, in position 5, a connection is made via terminal 61 to terminal 15, where electrical components are connected to earth (at least the idle speed control), and it is via this connection that the ignition coil obtains the earth connection required to switch off.
- Relay configuration (if this option is used)**:**  	**- Battery type:** - Connect the brown cable from the relay with the ring terminal to earth. Route the longer black cable from the relay to a terminal on the main switch that carries current when in the 'On' position (ignition switch; for German motorbikes: terminal 15 or 54). Connect the blue cable (coming from terminal 30 of the relay) to the blue/white cable from the ignition coil. In the event of a battery failure whilst on the road, this cable should be disconnected to allow you to continue your journey. (However, the engine cannot then be switched off!) - The brown cable with the ring terminal from terminals 87a and 86 is connected to earth. - The black cable from terminal 85 goes to terminal 15 on the ignition switch (live terminal when 'On').

- The high-voltage cable (ignition cable) ... Please **do not use** 'Nology Super Cables' ('hot wire'). These cause interference in VAPE systems and may damage the electronics.	... screw them into the ignition coil and fit the rubber cap over them. This is, of course, easier if you do this before fitting the coil to the motorbike. Please also use the ignition lead supplied and not an old, unknown lead.
- You'll be doing yourself a favour if, at this stage, you fit your motorbike with new spark plugs and new plug leads (preferably with 1–2 kiloohms, but no more than 5 kiloohms). More than enough interference can be traced back to 'seemingly good' cables, plugs and leads (including brand-new ones)! - **Do not use** spark plugs with an internal suppression resistor **in conjunction** with suppressed spark plug caps (this results in double the resistance). Always use only one suppression method.	
- Finally – **before fitting the battery and before starting the engine for the first time** – please take your time to check all fixings and wiring. Remember to replace all bulbs from 6 to 12 volts. Also bear in mind that from now on you will need a 12V battery. The horn can remain at 6 volts. - If the system does not work straight away, please consult our troubleshooting page. As a first step, disconnect the blue cable between the relay and the ignition coil (disconnect the connector); most faults are hidden in the switch-off circuit.	
- IMPORTANT: Please note that if **the crankshaft** has been (previously) **reconditioned**, its alternator journal may have been over-machined and is therefore shorter. This causes the rotor to sit lower, which may result in contact between the rotor (the rivets are the lowest point) and the stator coil. The result is a damaged stator and, consequently, a loss of ignition.	

Important safety and operating instructions – YOU MUST read and follow these in full!
- Observe the safety instructions and requirements stipulated by the vehicle manufacturer and the automotive trade. Installation requires specialist knowledge. The ignition markings applied to the component are for guidance only during installation. After installation, please check that your settings are correct using suitable methods (e.g. a stroboscope) to prevent damage to the engine or risks to your health. You are solely responsible for the installation and correct adjustment.
- Caution : Ignition systems generate high voltage – risk of fatal injury! Our ignition coils can reach up to 40,000 volts! If handled carelessly, this can not only cause severe pain but, above all, be harmful to the heart! People with pacemakers should not carry out any work on ignition systems. Always maintain a safe distance from the electrode and exposed high-voltage cables, and when testing, press the spark plug cap firmly to earth using an insulating object to safely discharge the voltage. Never disconnect a spark plug cap to synchronise the carburettor! Never disconnect or touch the ignition leads whilst the engine is running or at starter speed. Only wash the vehicle when the engine is switched off.
- If your VAPE ignition cable was supplied with rubber spark plug connectors attached *(which do not have a built-in suppression resistor)*, please use spark plugs with a built-in resistor *(to comply with local legislation regarding electromagnetic compatibility requirements)*. Alternatively, replace the cable(s) with standard ones and use shielded spark plug connectors *(under no circumstances, however, should you use suppressed spark plugs AND suppressed spark plug connectors at the same time. This would lead to interference, in particular difficulty in starting the engine).* The total resistance of the spark plug and spark plug connector combination should not exceed 5 kOhm. - Bear in mind that spark plug caps age and, as a result, their resistance increases. If an engine only starts when cold, the cause is almost certainly a faulty spark plug cap or a faulty spark plug. Do not use so-called 'spark-boosting' cables (e.g. Nology).
- After fitting, please ensure you check that all retaining screws are tight. If the parts become loose, they will be damaged. We only tighten the screws loosely during pre-assembly!

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- First of all, give the system you've just installed a chance to fire up before you start measuring and testing everything. Please also note our instructions on how to check for a spark. All our parts are tested before dispatch. In any case, there's hardly anything you can measure on them. Under no circumstances should you attempt to measure the electronic components (including the ignition coil, apart from its high-voltage output). You risk damaging them and will still not obtain any useful results!
Bear in mind that if the engine does not run straight away, the fault may often lie with the carburettor, the intake rubber and, above all, the spark plug caps and spark plugs (unfortunately, even brand-new ones); as a rule, the Lima alternator's settings also need adjusting after installation. If the system does not run straight away, check the earth connections first and foremost, particularly between the chassis earth and the engine block.
Before you remove the parts again straight away and send them to us for inspection, please check our knowledge base to see if there is already an answer to your problem there. If not, please use our service ticket system to request specific assistance.

- If you have a system with a dual ignition coil, please bear in mind a few specific features of this coil. The ignition will only work correctly if both spark plugs are connected to the coil. This means you cannot even remove one spark plug to test it, as each output is earthed via the other spark plug. If you really only want to test one side, the other coil output must be earthed.

- The spark produced by traditional breaker systems has a low energy level of around 10,000 volts and therefore appears yellow and thick. The spark produced by our systems is a high-energy spark of up to 40,000 volts and is therefore very sharply focused and blue, which makes it less visible. Furthermore, the spark is only generated once the engine has reached the speed required by the kick-starter. Simply pressing the kick-start lever by hand does not produce a spark.

- Most of our systems combine the ignition and alternator functions in one unit. You can tell this by the presence of a regulator. Apart from the voltage output by the regulator, there is hardly anything else you can measure on it. If you are not getting any power, check the earth connections and the wiring from the regulator to the ignition switch first and foremost. This important connection is often cut and overlooked during installation! Most PD systems have DC regulators/rectifiers. However, there are also AC regulators, which have specific features that need to be taken into account.

- Never carry out electric welding on the vehicle without first completely disconnecting all electronic components containing semiconductors (regulator, ignition coil and control unit). The stator and rotor do not need to be removed. Only solder using soldering equipment powered by isolating transformers, or unplug the soldering iron from the mains before soldering to prevent damage to the components caused by overvoltage. Never apply copper paste to connectors or spark plugs.

- Electronic components are sensitive to reverse polarity. After carrying out any work on the system, always check that the battery is connected correctly and that the wiring is correct. Reverse polarity and short circuits will immediately destroy the control unit and the ignition coil! As a general rule, wires should always be connected colour-to-colour. Any exceptions are explicitly mentioned in the instructions. Damage caused by reverse polarity is not covered by the warranty.

- When assembling the rotor, please take care not to damage the magnets. Avoid applying direct mechanical force to the rotor. **Never place the stator inside the rotor when transporting the generator;** please follow our shipping instructions (packaging).

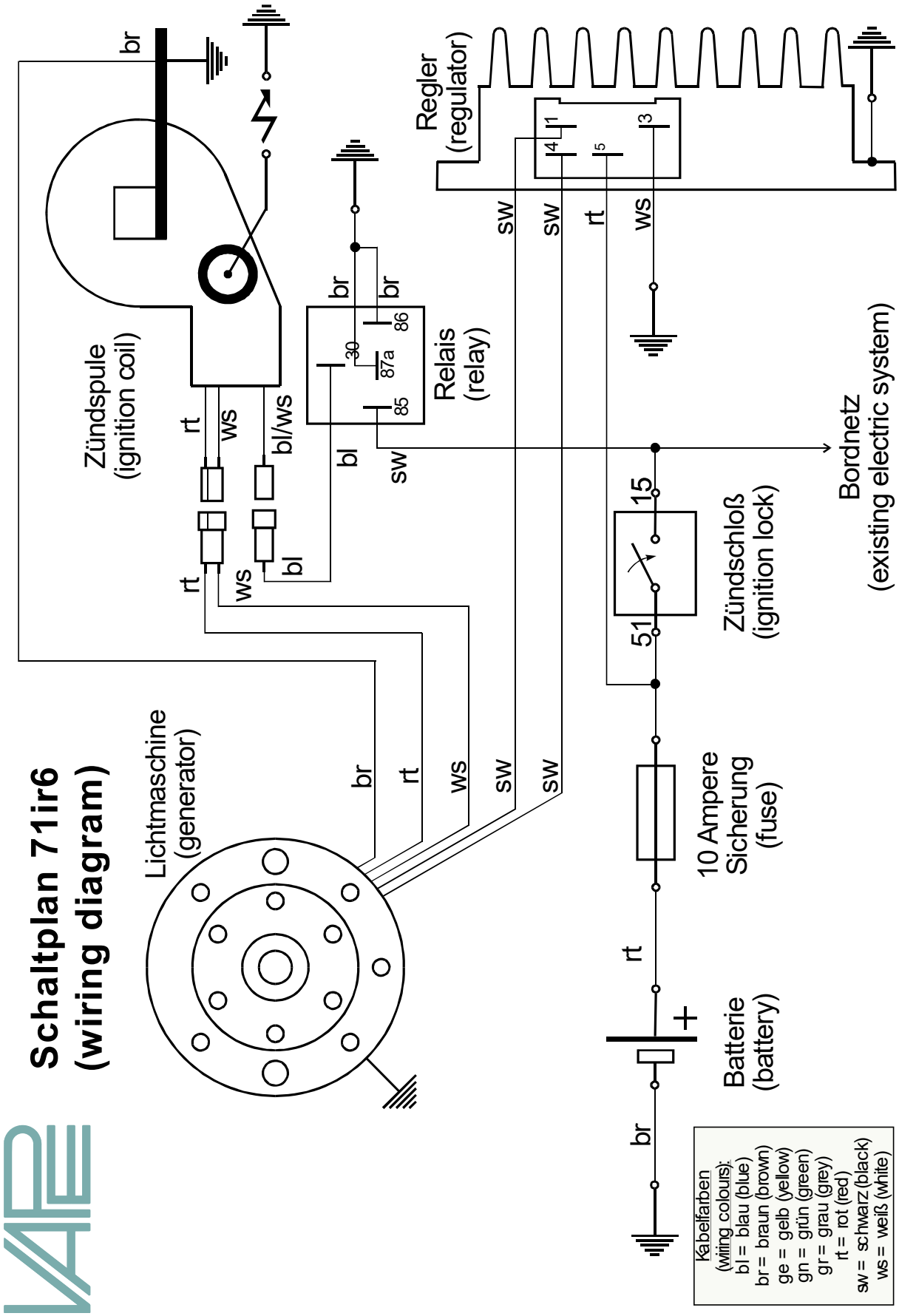
- Lightly oil the outside of the rotor; otherwise, it will rust quickly in the corrosive environment (which is not harmful, but looks unsightly).

- Never use a claw puller or a hammer to remove the rotor. This may cause the magnets to come loose. Always use only an M27x1.25 screw-in puller (see installation instructions).

- If your vehicle is not going to be used for a prolonged period, you should disconnect the battery (if fitted) to prevent any slow discharge via the rectifier's diodes. However, even with the battery disconnected, you will notice that it has discharged after a long period; this is normal.

- Please bear these points in mind, but don't let them unsettle you. Thousands of customers before you have already successfully fitted our systems.

Good luck, and enjoy your drive!



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