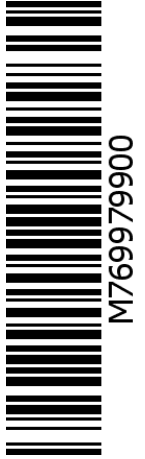


System 769979900**Advantages over the old system:****Alternator/electronic ignition
for 4-speed engine ILO M 250**

- Magneto-type lighting system with integrated fully electronic ignition. Lighting output 12V/180W DC. Contactless electronic ignition with its own power supply within the system. Replaces the old Noris MLZSn 45/60 RF alternator (including original rotor with weight ring), centrifugal adjuster, breaker and ignition coil.

- No modifications to your engine casing are required. You can run the system entirely without a battery.

- all parts are new
- significantly brighter light
- very reliable ignition with high-energy sparks
- Better starting and better combustion
- No more wear on the breaker



Fitting instructions for system 769979900	24 June 2026
<p>- 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.</p>	
<p>- 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.</p>	
<p><u>IMPORTANT</u></p>	
<p><u>Please ensure you read the entire instruction manual carefully before you begin installation</u> 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 after installation. If 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.</p>	
<p><u>Intended use</u> - 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 vehicle's roadworthiness and safety 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.</p>	
	<p>- VAPE guarantees that its products are type-approved and marked with the letter 'E' (specifically 'E8' for the Czech Republic), thereby ensuring that the products' characteristics consistently comply with the relevant ECE type-approval regulations (in particular ECE R10.05). Inspections are carried out regularly by the competent authority</p>
<p>- 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.</p>	

- 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 scenario, improper use may even result in the revocation of the operating licence.

- **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 equipment, 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 allows 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 and washer for the rotor screw
- Pre-assembled stator unit
- Regulator/rectifier
- Ignition coil / ignition cable
- Cut-off relay
- Rotor puller
- Small parts

- You can remove the new rotor using a puller (included!).

- **WARNING:** If you use a claw puller, the magnets in the rotor will come loose!



- Now disconnect all the cables from your old alternator and remove these parts. Remove the rotor using a suitable puller and remove the key on the crankshaft that fitted into the groove of the old rotor. Don't worry, it didn't serve any retaining function; it was only there to aid ignition timing. If you forget to remove the pin, the rotor won't fit onto the shaft later on and you'll have to dismantle the stator again to get hold of the pin.





- You now have the empty housing in front of you.



- Now move the piston to the ignition position. Check the value in your original documentation (we recommend 4 mm before TDC).

- Look at the rotor; there is a laser marking around its circumference. This is the ignition mark. It might be a good idea to highlight the mark with a coloured felt-tip pen.

- Now fit the rotor onto the crankshaft (with the crankshaft still set to top dead centre) so that the mark on its circumference points roughly towards the left-hand screw hole on the casing. It is very important not to alter the position of the crankshaft (which is set to top dead centre). If this changes, please repeat the procedure.

- Note: To turn the engine, you can use the new rotor, which has only been fitted by hand. This allows the engine to be turned more precisely than with the kick-starter.

- In this and the following two pictures, the old silver rotor can still be seen. The rotor is now black. Technically, however, there is no difference.



- Secure the rotor in this position using the original rotor screw. Also place the supplied 8mm washer under the screw.



- Now place the pre-assembled stator plate onto the motor. The rotor's ignition mark should now be visible in the hole – which is located at approximately 11 o'clock on the plate.
- Secure the plate to the engine casing using the supplied M5x12 cylinder head bolts and washers, passing them through the slotted holes. Do not tighten the bolts yet.



- Set the piston precisely to the ignition timing again. Rotate the stator plate within the slotted holes so that the mark on the rotor aligns exactly with the two tips of the eye, and tighten the stator plate in this position.
- If the plate cannot be adjusted far enough, you will need to loosen the rotor again and reposition it accordingly.

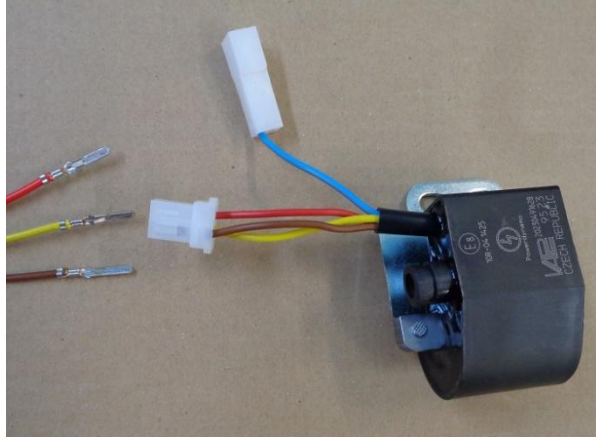
- This completes the work on the engine.

- Secure the new electronic rectifier/regulator and the new ignition coil in a suitable position. First, twist the high-voltage cable into the ignition coil. Using the cable ties provided, route the new alternator cable along the frame so that it ends, together with all the other cables, at the level of the regulator/ignition coil. Ensure that nothing can rub against anything.

Connect the cables as shown in the relevant wiring diagram!

- For our DC (standard) regulator (952269906), use wiring diagram **73ir12**:
 - If the DC regulator is supplied with a built-in smoothing capacitor (730079950), please also use circuit diagram **R_102**:

- To make it easier to feed the cable through narrow openings, or indeed to make this possible in the first place, the connector on the cable leading to the new ignition coil from the new alternator has not yet been plugged onto the terminal tabs at the end of the cable. You should only connect the connector once the cable has been finally routed through the engine opening. To do this...



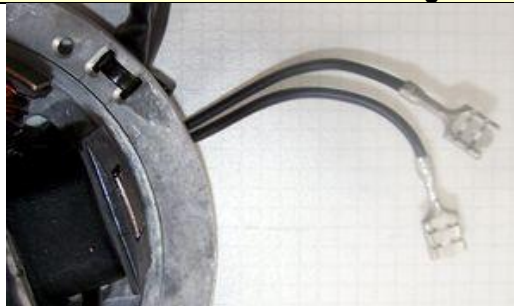
... take the female connector from the ignition coil with the red, brown and yellow wires.

- Fit the loose 4-pin connector sleeve supplied with the kit onto this plug and insert the loose alternator cables (red, brown and white) into the plug, aligning the contact tabs at the rear. Ensure that the contact tabs click into place inside the plug housing. It is essential to ensure that these cables are positioned correctly within the plug:

- yellow to yellow
- red to red
- brown to brown

- If you wish (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.

Connecting the alternator to the lighting circuit:



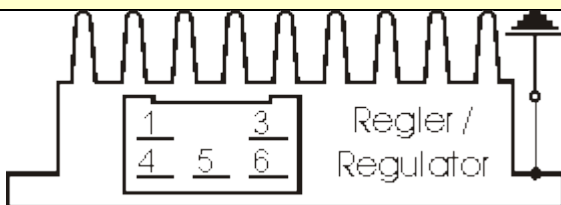
- The two black cables coming from the alternator supply power to the lights, horn, indicators, etc. Like the regulator itself, they have nothing to do with the ignition.

- This voltage must still be stabilised (regulated) and, for most applications, rectified, as it is initially alternating current.

- **There are two different types of regulator available for this purpose:**

Warning: Any **mix-up between positive and negative terminals** will result in the **immediate destruction of the regulator, which is not covered by the warranty!** (You can clearly tell it has been destroyed by the smell of burning!). Please note that there are batteries on the market where the positive terminal is in the position where the negative terminal used to be!

Regulator variant 1: with a DC (standard) regulator (95 22 699 06), use **circuit diagram 73ir12**:



- The new regulator/rectifier has a compact connector with 6 sockets, one of which is free. A matching connector is supplied with the regulator; the cables must be inserted into this and must click into place.

<p>- The two black cables from the new alternator ...</p>	<p>... are connected to terminals 1 and 4 of the new rectifier (black cables then run from there 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 in here.</p>
<p>- The new brown cable with the ring terminal on one end ...</p>	<p>... connect 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!</p>
<p>The new red cable with the ring terminal on one end ...</p>	<p>... connect terminal 5 of the regulator/rectifier (a red cable also runs into the regulator from there) to the positive terminal of the battery or to the terminal on the fuse box to which the power cable from the old alternator was connected (on German motorbikes: terminal 51).</p>
<p>- Ensure that a 15A fuse is used between the battery and the vehicle's electrical system. If there is an old, higher-amp fuse (from the original 6-volt system) at the ignition switch, please replace it.</p>	
<p>- Connect the green/red cable from the new regulator to terminal 6 ...</p>	<p>.. is for connecting the charge indicator. This is where the indicator light (if fitted) is connected. Naturally, this only works if a battery is present. If the indicator light is nevertheless connected without a battery, it will glow dimly whilst the engine is running, even though electricity is being generated. In short, leave the connection unconnected if there is no battery. The same applies if no light is fitted.</p>

Regulator variant 2: when using a DC regulator with a built-in smoothing capacitor (730079950), also use **circuit diagram R_102:**

- the two black cables are connected to the black cables coming from the alternator
- the red cable is the 12V DC output
- The brown cable is the negative terminal and is connected internally to the regulator housing

<p>- That leaves the blue/white cable from the ignition coil – the cut-off cable.</p> <p>- If it is connected to earth, the ignition will cut out!</p> <p>- 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</p>	<p>- Switch-off via a separate switch: The relay is not fitted. The blue (/white) cable from the ignition coil is connected to a 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 switching off. Alternatively, you can use an ignition switch that cuts the circuit to earth.</p> <p>- 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 live terminal on the main switch (ignition switch; on German motorbikes: terminal 15 or 54) when the switch is in the 'On' position. 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!)</p>
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<p>- Relay pinout (if this option is used):</p>	<p>- The brown cable with the ring terminal from terminals 87a and 86 is connected to earth.</p> <p>- The black cable from terminal 85 goes to terminal 15 on the ignition switch (live terminal when 'On').</p>
<p>- 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.</p>	<p>... screw it into the ignition coil and fit the rubber cap over it. 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.</p>
<p>- 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 kilohms, but no more than 5 kilohms). More than enough interference can be traced back to 'seemingly good' cables, plugs and leads (including brand-new ones)!</p> <p>- Do not use spark plugs with an internal interference suppression resistor in conjunction with interference-suppressed spark plug caps (this results in double the resistance). Always use only one interference suppression method.</p>	
<p>- 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.</p> <p>- 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 (unplug the connector); most faults are hidden in the switch-off area.</p>	
<p>- 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.</p>	

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 on 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 laws 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, particularly 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 their resistance increases as a result. 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!

- First of all, give the system you've just fitted a chance to fire 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 is 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 can 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 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).

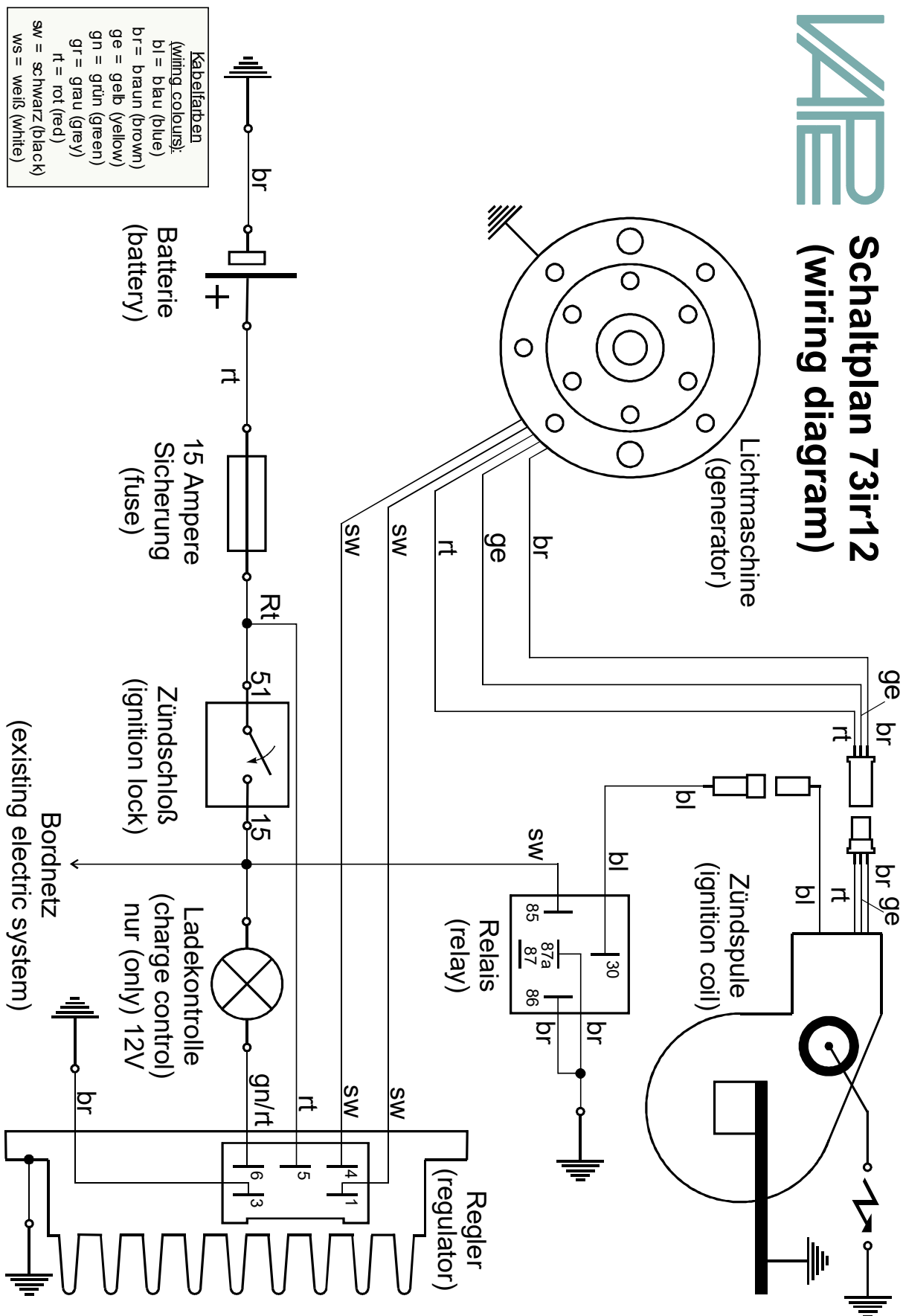
- If your vehicle is not going to be used for a prolonged period, you should disconnect the battery (if fitted) to prevent any slow discharge via the rectifier diodes. However, even with the battery disconnected, you will notice that it has discharged after a long period; this is normal.

- 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!



Schaltplan 73ir12 (wiring diagram)



VAPE Schaltplan Regler 102 (wiring diagram regulator)

