

System 705899900**Advantages over the old system:****Alternator / electronic ignition for Universal B50 Sport**

- Magneto ignition system with integrated contactless, speed-dependent automatic ignition adjustment. Light output 12V/150W DC. Replaces the old Scintilla-type magneto, along with the regulator and adjustment mechanism. No modifications to your engine casing are required. Technically speaking, you can run the system entirely without a battery. The ignition is integrated into the new alternator.

- The ignition coil, regulator and control unit must be installed outside the engine.

- All parts are new
- Fully electronic, contactless ignition with automatic ignition timing adjustment
- significantly brighter light (uses a 40/45W bulb)
- Stable ignition with a strong spark
- Improved starting performance and better fuel combustion
- No further wear on the carbon brushes, collector, centrifugal regulator or breaker



Installation instructions for system 705899900	28 April 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 worked on one before, it is best to have the system fitted by someone who knows what they are doing.</p>	
<p>- VAPE is unable to monitor compliance with these instructions, or 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 for any loss, damage or costs arising from, or in any way connected with, 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 make sure you read the entire 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 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 kickstarter). 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 equipment. The components of the system therefore look different from the original parts, and in particular the ignition coil and regulator may have different mounting points, requiring you to make adjustments. This system is intended exclusively for replacing original lighting/ignition systems in classic and modern classic motorcycles 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 significantly higher engine power. However, it does improve the roadworthiness and safety of the vehicle through better lighting, clearer indicators, a consistently loud horn and, compared to the ageing original systems, greater overall reliability. As our systems do not cause any significant change to the engine characteristics, exhaust and noise emissions are not adversely affected. In most cases, exhaust emissions are likely to improve, as combustion becomes more complete.</p>	
	<p>- VAPE guarantees type-approved products marked with the letter 'E' in a circle (specifically for the Czech Republic, E8), 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</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. 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 lapse. 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 withdrawal of the operating licence.

- **When fitting the parts, you must start by fitting the engine-side components** (adapter, stator, rotor) to check that they actually fit before fitting the parts that are to be mounted outside the engine. 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 (incorrectly!) in the process, which makes it impossible for us to resell them later. Unfortunately, replacing the lighting and ignition systems on older motorcycles is 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 that can, regrettably, 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 ignition-controlled exhaust systems are not supported. It may also be the case that your original ignition system had a speed-limiting device fitted for legal reasons. 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 done by a qualified professional or a specialist workshop. Incorrect installation may damage both the new system and the motorcycle, or 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!

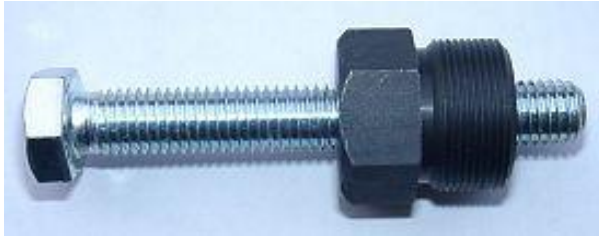
- The rotor is extremely sensitive to impact (e.g. including during transport). You must always check the rotor for any damage before installation. If the rotor has magnets that are not encapsulated, check that the magnets are securely in place by trying to push them sideways with your fingers. Following 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.** You can click on most of the images to enlarge them, and you will find more detailed and possibly more up-to-date information. System list available at: <http://www.powerdynamo.biz>

You should have received these parts!



- Base plate with stator coils
- Rotor (pole wheel)
- Twin ignition coil/ignition cable
- Control unit for ignition timing
- Regulator/rectifier
- Relay with connecting cables
- Retaining screws



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

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

- Ensure that your motorbike is securely positioned, preferably on a raised work platform, and that you have good access to the alternator side of the engine.

- Disconnect the battery and remove it from the motorbike. Please say goodbye to it at this point, as from now on you will have a 12-volt electrical system and – if you wish to fit a battery – you will need a 12-volt battery.

- Remove all 6-volt bulbs from the headlights, speedometer lighting and rear lights. The old horn can stay in place.



- Now disconnect all the cables from your old alternator and remove it.

- Unscrew the stud bolts that held the old alternator in place. The new unit will be screwed into these threaded holes.

- On the base plate of the new stator, you will find a red dot. This should point upwards. This is an ignition mark, which must later be aligned with the mark on the rotor.

- Note: You can, of course, also screw the stator onto the motor with a 180° rotation. However, this means the marking will be at the bottom, making adjustment more difficult.

- Now place the new base plate with the stator onto the motor block. Secure it in place using the two M8 hexagon bolts.



- Take a look at the new rotor. You will find a laser-etched mark on its circumference.
- This is an ignition mark.



- Look at the stator unit. Here you will find a small red mark.
- This is also a timing mark.
- Both must be aligned when the crankshaft is at top dead centre.
- Secure the stator unit with the two M8x25 bolts and the M8 washers.
- Please note that you do NOT need to remove the stator from the bracket.

- Remove the spark plugs to ensure the crankshaft turns freely. Fit the rotor onto the crankshaft (do not secure it yet) and **(IMPORTANT!)**: check that the rotor can rotate freely over the base plate and coil assembly.



- Move a piston (any one will do) to top dead centre. The easiest way is to use any existing TDC mark.
- Please set to TDC, not to ignition timing.
- With the crankshaft in this position, carefully remove the rotor again. Caution: the position of the shaft must not be altered in the process.



- Remember the rotor mark
- Note the mark on the housing
- Check that the crankshaft is at TDC
- Fit the rotor so that both markings are aligned.

- The easiest way to do this is to screw the puller into the rotor; this makes it easier to grip.

- In this position, secure the rotor with the supplied M8x35 rotor screw (don't forget the washer). Ensure that you do not alter the crankshaft position, although 1–2 mm of lateral rotation is insignificant.

- You have now set the ignition to the standard value. In theory, you can adjust this as required by fitting the rotor offset by the desired angle.

- Offsetting the rotor (while keeping the crankshaft position constant) in an anti-clockwise direction results in earlier ignition
- Moving the timing clockwise results in a later ignition
- If the ignition settings differ, please ensure you check the ignition timing with a strobe to avoid engine damage.
- You'll be doing yourself a favour if you fit new spark plugs and new spark plug leads (preferably with 0–2 kOhm resistance) to your motorbike at this stage.
- Set the spark plug gap to 0.4–0.6 mm.



- Screwing on the cover holder:

- Take the original metal plate and screw it to the cover holder using the two M8x20 bolts and the two original nuts

- Screw the cover bracket and the spacer tubes onto the new stator unit.

- Please use the two M8x70 screws for this.

*** PLEASE NOTE: the adapter plate for securing the cover is NOT included in the scope of delivery!!!**



- Now the new electronic ignition coil, the control unit and the regulator/rectifier must be fitted to the motorcycle. The regulator is sufficiently sized and does not require a direct supply of fresh air. These parts can, for example, be attached to a small mounting plate (not included) under the upper engine cover.

- Before installing the control unit, take a look at the small switches on the front of the unit. These 4 switches activate different adjustment curves.



- The setting recommended for these motorcycles is activated by setting switch 2 to ON and all others to the opposite position (i.e. OFF). This provides 2° of ignition at start-up and then adjusts smoothly from 1,000 rpm to 40° at 3,000 rpm.



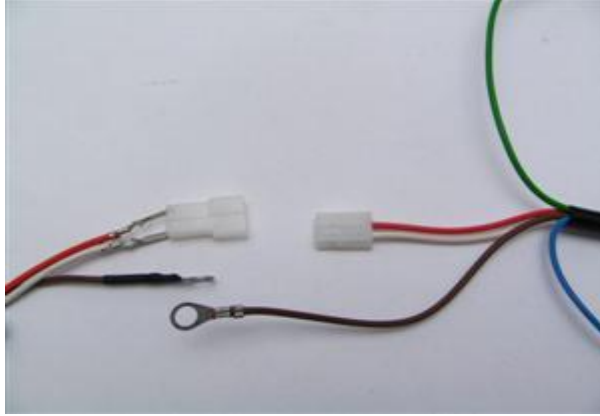
- You may be able to fit the external parts of the system (control unit, regulator) in the upper section of the engine casing.

Connect the cables as shown in the relevant circuit diagram!

For our DC (standard) regulator (**95 22 699 06**), use wiring diagram **92ir12**:

If the DC regulator is supplied with a built-in smoothing capacitor (**73 00 799 50**), please also use **wiring 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 plug on the cable leading to the new ignition coil from the new alternator has not yet been connected to the terminal lugs at the end of the cable. You should only connect the plug once the cable has been fed through the engine opening. To do this ...



... take the female connector from the control unit with the red and white cables.

- Fit the loose 2-pin connector sleeve supplied with this part onto the plug, and insert the loose alternator cables (red and white) into the plug, aligning the contacts at the rear. Ensure that the contacts click into place within 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, it is best to use a straightened paperclip to push the barbs on the contact tabs to one side, so that the connectors can be released.

- The brown cables from the alternator and the control unit, fitted with ring terminals, must be screwed onto the ignition coil's earth terminal (retaining clip). The system will not work without these connections! Please do not rely on the frame's earth connection. Paint, dirt and oil residues often prevent a good earth contact at the coil.

The grey or green cable from the control unit ...

... is connected to the plug on the new ignition coil.

WARNING! If possible, DO NOT extend the green cable from the control unit. This may cause ignition faults.

Under no circumstances should you route the ignition cable(s) and the control unit cable(s) together in a shared sheath or otherwise run them parallel to one another over a long distance. This leads to feedback and consequently to ignition faults, and in some cases may even destroy the control unit.

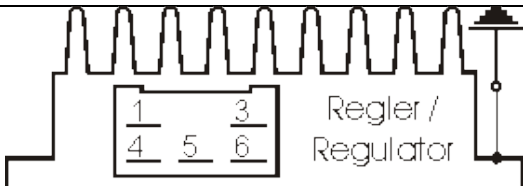
Connecting the alternator to the power supply:



- The two black cables coming from the alternator supply power to the lights, horn, indicators, etc. They have nothing to do with the ignition.
 - This voltage must still be stabilised (regulated) and rectified for most applications, as it is initially alternating current.
- **There are two different types of regulator available for this purpose:**

Warning: Any **mix-up of positive and negative terminals** will **immediately destroy the regulator, which is not covered by the warranty!** (You can clearly tell it has been destroyed by the smell of burning!)

Regulator variant 1: when using the DC (standard) controller (95 22 699 06), use circuit diagram 92ir12:



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

- The two black cables from the new alternator ...

... are connected to terminals 1/4 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 (1/4), as alternating current is fed in here.

- The new brown cable with the ring terminal on one end ...

... connects terminal 3 of the regulator/rectifier (a brown cable also runs from there into the regulator) 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 on one end ...

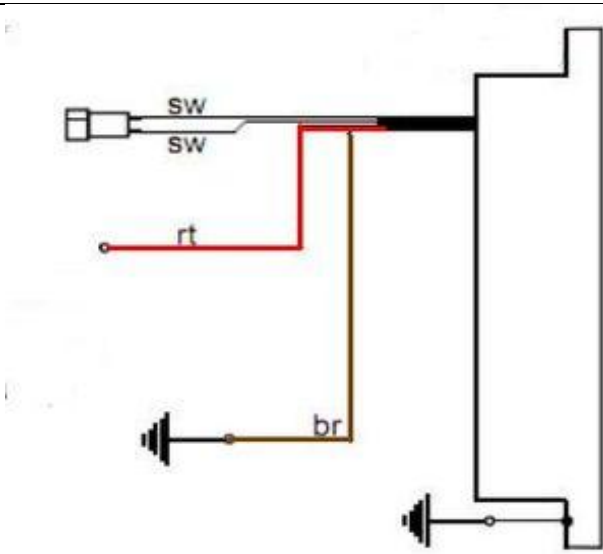
... connects terminal 5 of the regulator/rectifier (a red cable also runs into the regulator from there) to the positive terminal of the battery or to the terminal on the fuse box to which the power cable from the old alternator was connected (on German motorcycles: terminal 51).

- Ensure that a **15A fuse** is used between the battery and the vehicle electrical system. If there is an old, higher-amp fuse (from the original 6-volt system) at the ignition switch, please replace it.

- Connect the green/red cable of the new regulator to terminal 6 ...

... 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 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.

Regulator variant 2: with DC regulator with built-in smoothing capacitor (73 00 799 50), 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 controller housing

- That leaves the blue/white cable from the control unit – the cut-off cable.

If it is connected to earth, the ignition will switch off!

Note:

If you experience ignition problems, disconnect this cable first (pull the plug). In most cases, you will then be able to continue your journey

- Switching off via a separate switch:

The relay is not fitted. The blue/white cable from the control unit is connected to a switch that cuts the circuit to earth (e.g. a push-button switch to be mounted on the handlebars). Further instructions can be found in the information on switching off. Alternatively, you can use an ignition switch that cuts the circuit to earth.

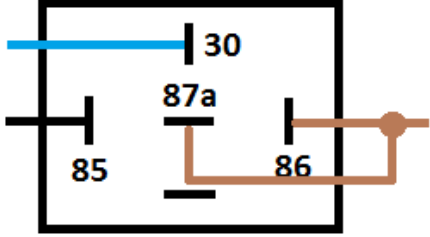
- Disconnection via position 5 (ignition switch 'push-in' position, if fitted):

The blue cut-off cable from the ignition coil is connected to terminal 61 (terminal normally used for charge control). All cables previously connected to this terminal, including those to 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 there are loads connected to earth (at least the idle speed control), via which the ignition coil obtains the earth connection required for switching off.

- Battery type:

Connect the brown cable of the relay with the ring terminal to earth. Route the longer black cable of the relay to a terminal on the main switch that carries current when in the 'On' position (ignition switch; on German motorcycles: terminal 15 or 54).



Connect the blue cable (coming from terminal 30 of the relay) to the blue/white cable of the control unit. 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>Relay pinout (if this option is used):</p> 	<ul style="list-style-type: none"> - The brown cable with the ring terminal from terminals 87a and 86 is connected to earth. - The black cable from terminal 85 goes to the ignition switch (live terminal when 'On').
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<p>- The high-voltage cable (ignition cable) ...</p> <p>Please do not use "Nology Super Cables" ("hot wire"). These cause interference in VAPE systems and may damage the electronics</p>	<p>... 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 bike. Please also use the ignition cable supplied and not an old, unknown cable.</p>
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- 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, but no more than 5 kilohms). More than enough faults can be traced back to 'seemingly good' cables, plugs and leads (including brand-new ones)!

- **Do not use** spark plugs with an internal spark plug resistor **in conjunction** with spark plug caps fitted with a spark plug resistor (this results in double the resistance). Always use only one method of spark plug resistance.

	 <ul style="list-style-type: none"> - With our dual ignition coils, both outputs go to the spark plugs and only then to earth via them. - The typical resistance between the two outputs is 6.2 kΩ. Both channels always fire simultaneously (which, incidentally, is the case with many ignition systems and poses no problem). However, the spark phases are offset by 180 degrees on each side, which must be taken into account when taking measurements with a stroboscope.
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- The ignition will only work properly if both spark plugs are connected to the coils. This means you cannot even remove one spark plug to test it. This is because each output draws its ground via the spark plug of the other output. If you really only want to test one side, the other coil output must be grounded. The circuit then functions like a single-output ignition coil (see above). If the current flow on one side is interrupted, either nothing happens at all, or the system draws ground from the nearest point. This often results in sparks flying around the ignition coil. Anyone who genuinely requires two separate outputs must use two individual coils.

	<ul style="list-style-type: none"> - Alternatively, we offer two individual coils that are operated in parallel. With this setup, it is possible to test just one cylinder at a time. The other coil is simply disconnected.
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- Finally – **before fitting the battery and before the first start** – please take your time to check all fixings and wiring. Remember to replace all bulbs from 6 to 12 volts. Also remember that from now on you will need a 12V battery. The horn can remain on 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 (unplug 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 can 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 – PLEASE read and follow these instructions in full!

- Observe the safety instructions and requirements prescribed by the vehicle manufacturer and the automotive trade. Installation requires specialist knowledge.

The ignition markings applied to the material are for guidance only during installation. After installation, please check the correctness of your settings using suitable methods (stroboscope) to rule out 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, more importantly, 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 connector firmly to earth using an insulating object to safely discharge the voltage.

Never disconnect a spark plug lead to synchronise the carburettor! Never disconnect or touch the ignition cables whilst the engine is running or at starting 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 kΩ.

- Remember 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-enhancing cables (e.g. Nology).

- After installation, 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, give the system you've just installed a chance to fire up before you start measuring and testing everything. Please also follow our instructions on how to check for a spark. All our parts are tested before dispatch. In any case, there is little you can measure on them. Under no circumstances should you attempt to measure the electronic components (including the ignition coil, except for 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, this is often due to the carburettor, the intake rubber and, above all, the spark plug connectors and spark plugs (unfortunately even brand new ones); as a rule, the settings must also be adjusted after installing a Lima alternator. If the system does not run straight away, check the earth connections first and foremost, particularly between the chassis earth and the engine block.

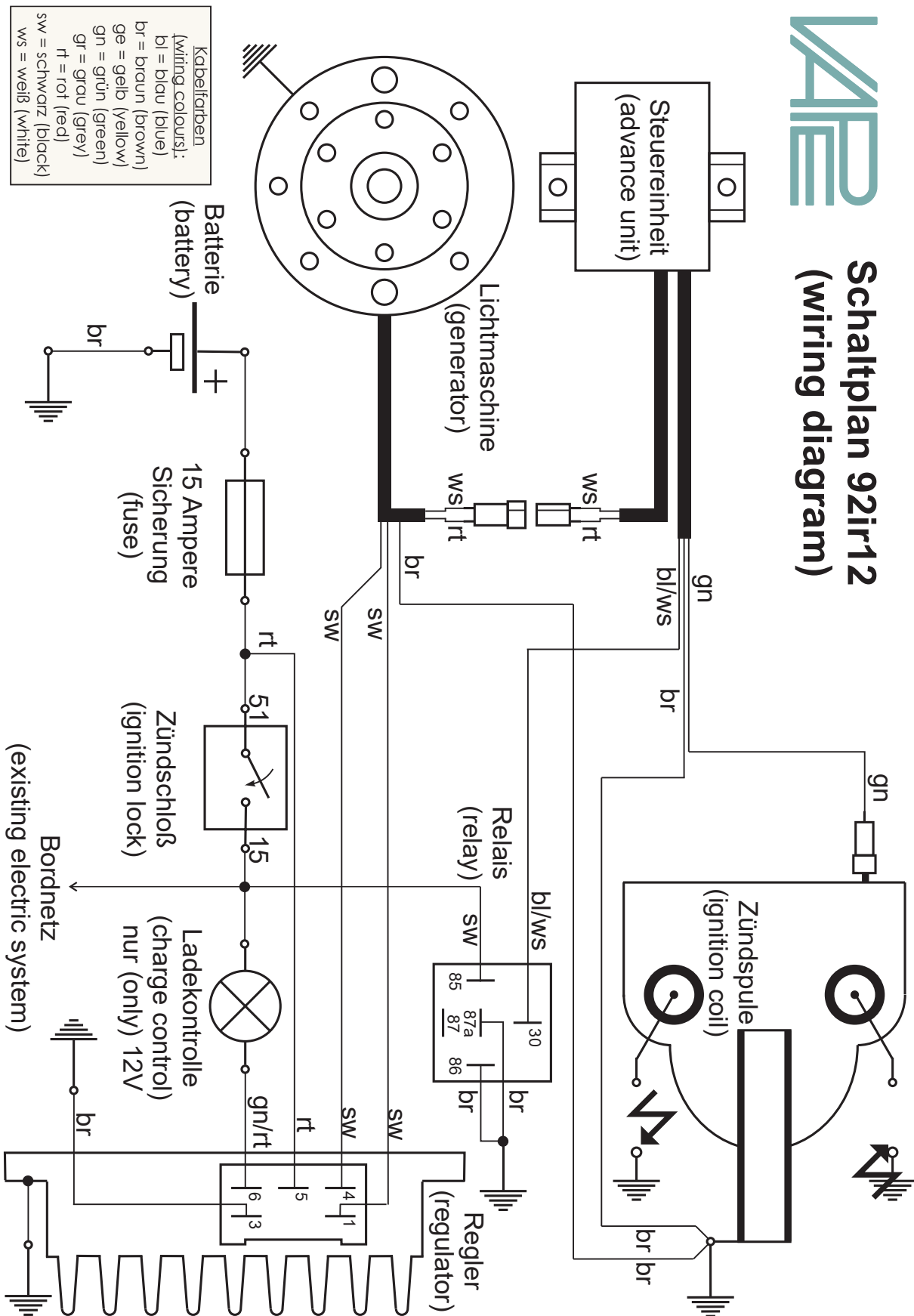
Before you remove the parts again and send them to us for testing, please check our knowledge base to see if there is already an answer to your problem there. If not, please use our service ticket system to request specific assistance.

- If you have a system with a dual ignition coil, please note a few specific features of this coil. The ignition will only work properly if both spark plugs are connected to the coil. This means you cannot simply remove one spark plug to test it, as each output is connected to the other's spark plug via the ground. If you really only want to test one side, the other coil output must be connected to ground.
- The spark produced by traditional breaker systems has a low energy level of around 10,000 volts and therefore appears thick and yellow. 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 at engine speeds reached when the kick-starter is engaged. Simply pressing the kick-start lever by hand does not produce a spark.
- Most of our systems combine the ignition and the alternator in one unit. You can tell this by the presence of a regulator. Apart from the voltage output by the regulator, there is little 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 electrical 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 equipment powered by a step-down transformer, or unplug the soldering iron before soldering to prevent damage to the components caused by overvoltage. Never use copper paste on 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 stated 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 harsh 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 a screw-in puller M27x1.25 (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 take note of these instructions, but don't let them unsettle you. Thousands of customers have already successfully installed our systems before you.

Good luck and enjoy your drive!



Schaltplan 92ir12 (wiring diagram)



VAPE Schaltplan Regler 102 (wiring diagram regulator)

