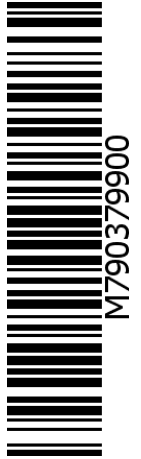


**System 790379900****advantages over the old system:****Alternator/electronic ignition for Beta Trail Rev3 (engine turns clockwise)**

- Magneto ignition system with integrated fully electronic ignition. Light output at 12V/100W direct current. Contactless, maintenance-free, electronic ignition with its own power supply within the system.

- Replaces the complete old alternator and ignition. You do not need to make any changes to your engine housing.

- all parts are new
- Significantly brighter light
- Very stable ignition with high-energy sparks
- Better start and better combustion



<b>Installation instructions for system 790379900</b>	<b>4.7.2023</b>
<p>- If you can install and adjust the original ignition and have general mechanical skills, you can also install a VAPE system. If you have never dealt with this before, it is better to have the system installed by someone who is familiar with it.</p>	
<p>- VAPE cannot monitor compliance with these instructions or the conditions and methods of installation, operation, use and maintenance of this system. Improper installation may result in damage to property or even personal injury. We accept no responsibility or liability for loss, damage or costs resulting from incorrect installation, improper operation or incorrect use and maintenance of the system. maintenance or in any way related to it. We reserve the right to make changes to the product, technical data or installation and operating instructions without prior notice.</p>	
<p><b><u>IMPORTANT</u></b></p>	
<p><b><u>Please read the complete instructions carefully before starting installation</u></b> Remember that unauthorised modifications, including attempts to repair parts, may invalidate the warranty. This also applies to the cutting of cables, which very often leads to the loss of the reverse polarity protected plugs and consequently to material-destroying short circuits or reverse polarity. <b>Follow the instructions on the information page for the system</b> . Make sure that the system configuration shown actually corresponds to the requirements of your engine. Incorrect ignition values, for example, can damage the engine and/or cause injuries when starting (kickback of the kickstarter). Special care should be taken when starting the engine for the first time after installation. If you notice any misbehaviour, check and change the ignition setting! When installing, check very carefully that the rotor is not rubbing against the stator coil or elsewhere, which can happen for various reasons and cause serious damage. can lead.</p>	
<p><b><u>Intended use</u></b> - This is a <b>replacement system and not a copy of the original material</b>. The parts of the system therefore also look different from the original parts and the ignition coil and regulator in particular may have different mounting points that require you to make adjustments. This system is intended <b>exclusively</b> for replacing original light/ignition systems in vintage and classic motorbikes <b>whose engine characteristics have not been subsequently influenced by design changes</b>. It is not a tuning system, it does not change the original engine characteristics and no significantly higher engine performance is achieved, but the roadworthiness and safety of the vehicle is improved by better lighting, clearer flashing, a constantly powerful horn and greater general reliability compared to the aged original systems. As our systems do not significantly change the engine characteristics, the exhaust and noise behaviour does not deteriorate. In most cases This even improves the exhaust gas behaviour, as combustion is more complete.</p>	
	<p>- VAPE guarantees homologated products labelled in the ring with the "E" mark (specifically for the Czech Republic, E8), which ensures consistent compliance of the product properties with the applicable ECE homologation regulations (in particular ECE R10.05) is ensured. The inspection is carried out regularly by the competent authority</p>
<p>- The charging system is <b>only suitable for use with rechargeable 12V (6V systems 6V) lead-acid batteries with liquid electrolyte or sealed lead-acid accumulators, AGM, gel</b>. It is not suitable for use with nickel-cadmium, nickel-metal-hydride, lithium-ion or other types of rechargeable or non-rechargeable batteries.</p>	
<p>- The system <b>is not suitable for use in the context of sporting events</b>. If the system is not used as intended, the warranty becomes void. In addition, the system may not provide the performance you require and we will then have to inform you of this. We are also unable to help with our support because we do not know the situation. In the worst case</p>	

In this case, improper use can even lead to the cancellation of the operating permit.

- **When fitting the parts, always start by fitting the parts on the motor side** (adapter, stator, rotor) to ensure that this material really fits before fitting the parts to be fitted outside the motor. Unfortunately, it is usually the case that the  
The installation of regulators, ignition coils and, if necessary, control units is started at the beginning and these parts are very often modified in the process (without tuning!), which makes a later resale by us impossible. Unfortunately, replacing the lighting/ignition systems of old motorbikes is not like shopping in a supermarket off the shelf, but in view of the variety of types and the possible changes to the materials since their production many years ago has always been a complex matter, which unfortunately can also contain errors

- Our systems are **NOT tested for use with other electronic components (such as third-party ignitions, sat navs, mobile phones, LED lights, etc.)** and may cause damage to such parts under certain circumstances. Any existing rev counters are not supported by the system. However, we offer a rev counter solution. Any circuit breakers or exhaust controls controlled by the ignition are also not supported. It is also possible that your original ignition had a device to limit the speed for legal reasons. The new system has no such device device. Therefore, check the legal situation beforehand.

- If you do not have the specialist knowledge required for installation, please have the installation carried out by a specialist or an appropriate specialist workshop. Due to improper installation the new system as well as the motorbike can be damaged or even cause injury to the rider.

- Before ordering a system, please check whether the **rotor puller** recommended by us 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 and aids, the warranty expires.  
Warranty claim!

- The rotor is extremely sensitive to impact (e.g. also during transport). Always check the rotor for any damage before installation.  
Damage. If it is a rotor in which the magnets are not moulded, check the tight fit of the magnets by trying to push them sideways with your fingers. After impact, some of the glued-in magnets may have become loose and are only held in place by their magnetic force. This would cause serious damage during operation.  
on the system. At the same time, please check the magnets of the rotor for foreign objects (e.g. screws or other metal objects).

- **If you have access to the Internet, it is better to view this documentation online.** You can enlarge most of the pictures by clicking on them and you will get more and more information. possibly more up-to-date information. System list at: <http://www.powerdynamo.biz>



#### You should have received these parts!

- Base plate with stator coil
- Rotor
- CDI ignition coil
- Regulator/rectifier
- Ignition cable with rubber connector
- Fastening screws



- To remove the new rotor, you will need an M27x1.25 puller (part no. 99 99 799 00 - **not included in the scope of delivery**).  
ATTENTION: the original Motoplat/SEM puller does not fit, it has M26x1.5!  
You will have to remove the rotor if you want to set the ignition differently.

- **ATTENTION:** When using of a claw puller, the magnets in the rotor come loose!



- Now disconnect all cables from your old alternator and ignition coil and remove these parts.

- Remove the dowel pin on the crankshaft that went into the groove of the old limo rotor. Don't worry, it has no holding function, it should only lead to the ignition setting. Forget to pull the pin, the rotor will not go onto the shaft later and you will have to dismantle the stator again to get to the pin.



- Place the pre-assembled stator with the base plate on the motor. Fasten the plate with the 3 M5 screws and washers supplied.

- The alignment does not affect the function of the system. Care should be taken to ensure that the cable can be routed well out of the cable outlet on the motor (and does not rub against the rotor later!).

- Take a look at the base plate of the new stator. You will find a red mark near the large black coil (on the left in the picture at approx. 4 o'clock). This is an ignition mark that is required for setting.

- As the ignition mark on the base plate is unfortunately no longer visible once the rotor has been fitted, you must either extend the mark to the engine block or remember a prominent point on the block that remains visible beyond the rotor.

- To attach the base plate to the motor block, first remove the 3 M4 screws and lift the coil slightly (to access the screws underneath).

- Take care not to damage the enamelled insulation of the coil wires.



- Take a look at the rotor, you will find a lasered line on its outer circumference.
- This is also an ignition marker.



- Remove the spark plug and move the piston to the ignition timing position. This varies from model to model and is between 1 and 3.5 mm before TDC. Please refer to your documents for more information.

- You can loosely place the new rotor on the shaft and turn it. Remember that the shaft rotates in a clockwise direction. You must therefore turn back from TDC in an anti-clockwise direction to reach the ignition timing.

- When the piston is in the ignition position, place the rotor on the crankshaft so that the markings on the rotor (grey) and the crankshaft are aligned. Match the base plate (red).

- The picture shows the extended marking of the base plate (mentioned above), as the base plate is completely covered by the rotor. becomes.



- In this position, you must screw the rotor in place using the original nut and the two washers supplied.

- Without the washers, the nut would touch the top of the rotor and it could not be tightened.

- This completes the work on the engine. Screw the spark plug back in.

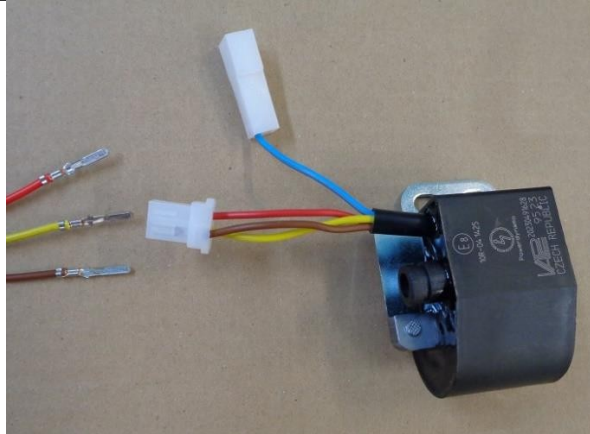
- Attach the new ignition coil in a suitable place. As far as this is concerned, any location is fine, although proximity to the spark plug is of course advantageous.

- First twist the ignition cable into the ignition coil. First loosen one of the two screws. An earth cable from the stator goes here.

- Attach the new controller to a suitable location.  
Lay the new alternator cable on the frame using the enclosed cable ties so that it ends with all cables at the height of the regulator/ignition coil. Make sure that nothing can chafe.

**Connect the cables as shown in wiring diagram 73ik\_102, i.e:**

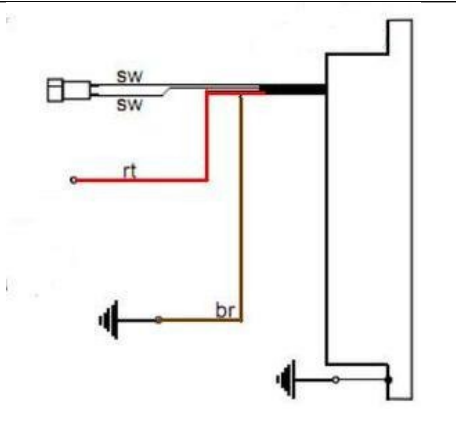
- To make it easier for the cable to pass through narrow openings or to enable it to do so in the first place, the plug of the cable leading to the new ignition coil from the new alternator has not yet been plugged onto the contact lugs at the end of the cable. You should only attach the plug when the cable was finally guided through the motor opening. In addition ...



... Take the female connector of the ignition coil with the cable colours yellow, red and brown.  
- Plug the loose 4-pin connector sleeve supplied onto this connector and insert the loose alternator cables (white, red and brown) with the contact lugs at the rear into the connector. Ensure that the connector lugs engage in the connector housing. Pay strict attention to the correct position of these cables in the connector:

- yellow on yellow
- red comes on red
- brown on brown

- If you want (or need) to remove the cables from the connector housing, it is best to use a bent paper clip and press the barbs of the contact lugs to the side so that the connectors can be released.



The new regulator/rectifier has 4 cables:

- the two black cables with the plastic plug are the AC voltage input
- the red cable with plastic plug which supplies positive
- the brown cable with plastic plug is the earth contact

The two black cables from the controller ...

... are connected to the two black cables of the alternator. To do this, insert the two black alternator cables into the 2-pin connector sleeve supplied. It does not matter which cable is connected to which of the two terminals, as alternating current is fed in here.

The brown cable from the controller ...

... is connected to the **negative** of the battery, or to **earth** if driven without a battery.

The red cable from the controller ...

**Caution:** Incorrect polarity will damage the electronics!

... is either connected to the **plus of the 12 volt battery** or, when driving without a battery, with the cable that goes to the consumers (normally the input terminal on the main switch).

<p>- If you are driving with a battery, make sure that a <b>15A fuse</b> is used between the battery and the vehicle electrical system.</p>	
<p>- It is not possible to connect a charge indicator lamp, which would not work anyway when driving without a battery. The regulator has an integrated capacitor which smoothes the pulsating DC voltage. This ensures that any indicators and horn function correctly even without a battery.</p>	
<p>- This leaves the blue (sometimes also blue/white) cable of the ignition coil - the switch-off cable.</p> <p style="text-align: center;"><b>Note:</b></p> <p>In the event of ignition faults, disconnect this cable first (pull the plug). The journey will then usually continue</p>	<p><b>- If it is connected to earth, the ignition goes out!</b></p> <p>- This circuit variant is used by us in vehicles that originally already had magneto ignition (pole wheel) and thus also switched off by short-circuiting to earth.</p> <p>- These vehicles have a terminal on the ignition lock (terminal 2 on German vehicles), which is connected to earth in the "OFF" position. The blue (/white) cable is connected to this terminal. This switches off the ignition as before.</p>
<p>- The high-voltage cable (ignition cable) ...</p> <p>Please <b>do not</b> use "Nology super cables" ("hot wire"). These cause faults in VAPE systems and can damage the electronics</p>	<p>... screw into the ignition coil and place the rubber cap over it. This is of course easier if you do this before fitting the coil to the vehicle. Please also use the ignition cable supplied and not an old, undefined cable.</p>
<p>- You will be doing yourself a favour if you fit new spark plugs and new spark plug connectors (preferably 1-2, but no more than 5 kilohms) to your motorbike at this point. More than enough faults can be traced back to "apparently good" cables, spark plugs and plugs (including brand new ones)!</p> <p>- <b>Do not use</b> spark plugs with an internal suppression resistor <b>together</b> with suppressed spark plug connectors (this results in double the resistance). Only ever use one interference suppression method.</p>	
<p>- Finally - <b>before installing the battery and before the first start</b> - please take your time to check all fastenings and wiring. Remember to change all bulbs from 6 to 12 volts. Also remember that you will now need a 12V battery. The horn can remain on 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 ignition coil (pull off the contact), most faults are hidden in the switch-off area.</p>	
<p><b>- IMPORTANT:</b> Please note that in the event of any (earlier) <b>regeneration of the crankshaft</b> whose alternator journals have been overwound and thus shortened. As a result, the rotor is lower and contact can occur between the rotor (the rivets are the lowest point) and the stator coil. The result is a destroyed stator and thus ignition failure.</p>	

<p style="text-align: center;"><b>Important safety and operating instructions - MUST be read and observed in full!</b></p>
<p>- Observe the safety instructions and requirements specified by the vehicle manufacturer and the motor vehicle trade. Installation requires specialised knowledge.</p> <p>The ignition markings on the material are for orientation purposes only during installation. Please use suitable methods (stroboscope) after installation to check the correctness of your adjustment to prevent damage to the engine or risks to your health. You alone are responsible for installation and correct adjustment.</p>

- Caution Ignition systems generate high voltage, danger to life! With our ignition coils up to 40,000 volts! If handled carelessly, this can not only cause severe pain, but can also damage the heart in particular! People with pacemakers should not carry out any work on ignition systems. Always keep a safe distance from the electrode and open high-voltage cables and press the spark plug connector firmly to earth with an insulating object during the test to safely discharge the voltage.

Never pull a spark plug connector to synchronise the carburettor! Never disconnect or touch the ignition cable while the engine is running or at cranking speed. Only wash the vehicle when the engine is not running.

- If your VAPE ignition cable was supplied with rubber spark plugs attached to it (*which do not have a built-in interference suppression resistor*), please use the plugs with built-in resistor (*to comply with local laws regarding electromagnetic compatibility requirements*). Or change the cable(s) for normal ones and use shielded *plug connectors* (*under no circumstances should you use suppressed plugs AND suppressed plug connectors at the same time. This would lead to malfunctions, especially difficult starting of the engine*). The total resistance of the plug/plug connector combination should not exceed 5kOhm.

- Remember that spark plug connectors age and increase their resistance. If an engine only starts when cold, the cause is almost certainly a defective spark plug connector or a defective spark plug. Do not use any so-called ignition-boosting cables (e.g. Nology).

- After installation, please check that all retaining screws are tight. If the parts become loose, they will be destroyed. We only tighten the screws loosely during pre-assembly!

- Give the newly installed system a chance to ignite before you start measuring and testing everything. Please also note our instructions on how to check for the existence of sparks. Our parts are all tested before delivery. You can hardly measure anything on them anyway. In any case, refrain from measuring the electronic parts (including the ignition coil except for its high-voltage output). You risk destroying them and still not getting usable results!

Remember that the carburettor, the intake rubber and, above all, the spark plugs and spark plugs (unfortunately also completely new ones) can often be the cause if the engine does not run straight away (as a rule, its setting must also be changed after the air conditioner has been installed). If the system does not run straight away, check the earth connections in particular, especially between the chassis earth and the engine block.

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

- If you have a system with a dual ignition coil, please note some special features of this coil. The ignition only works correctly if both plugs are connected to the coil. This means that you cannot even remove one spark plug to test it. This is because each output is the plug of the other coil to earth. If you really only want to test one side, the other coil output must be connected to earth.

- At around 10,000 volts, the spark from classic interrupter systems only has a low energy level and therefore looks yellow and thick. The spark from our systems is a high-energy spark with up to 40,000 volts and is therefore very sharply focussed and blue, which makes it less visible. In addition, the spark is only generated when the kickstarter is pedalled. Simply pushing the kickstarter lever by hand does not generate a spark.

- Most of our systems are ignition and lighting current generator in one. This can be recognised by the presence of a regulator. You can hardly measure anything on the regulator apart from the voltage it emits. If you are not getting any current, check the earth connections and the wiring from the regulator to the ignition switch in particular. This important connection is often cut and overlooked during installation! Most PD systems have DC regulators/rectifiers. However, there are also AC regulators with special features. must be observed.



- Never electrically weld on the vehicle without first completely disconnecting all electronic parts containing semiconductors (regulator, ignition coil and control unit). The stator and rotor do not have to be removed; solder only with soldering equipment that is operated via ballast transformers or disconnect the mains plug of the soldering iron before soldering to avoid overvoltage damage to the parts. Never apply copper paste to connectors. or spark plug.

- Electronics are sensitive to polarity reversal. Always check the correct connection of the battery and the correct wiring after interfering with the system. Reverse polarity and short circuits will immediately destroy the regulator and the ignition coil! As a rule, the wiring is always colour on colour. Exceptions are expressly mentioned in the instructions. Reverse polarity damage is not covered by the warranty.

- When installing the rotor, please take care not to damage the magnets. Avoid direct mechanical impact on the rotor. **When transporting the Lima, never place the stator in the rotor; follow our instructions on shipping (packaging).**

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

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

- If your vehicle will not be used for a longer period of time, you should disconnect the battery (if present) to prevent a possible slow discharge via the diodes of the rectifier. However, even if the battery is disconnected after a longer period of time, you will still notice its discharge. notice, that's normal.

- Please follow these instructions, but at the same time do not let yourself be unsettled. Thousands of customers have already successfully installed our systems before you.

***Good luck and have fun driving!***



# Circuit diagram 73ik102

## (wiring diagram)

