M783759900

**System 78 37 599 00**

INFO **Price**

## solid state ignition for Suzuki GT250X7

Highspeed (up to 22.000rpm) magnet based solid state ignition for vintage bike racing applications. At 18.000rpm (i.e. 36.000 sparks/min) still 25 Kilovolts output. (3.000-8.000rpm = 40kV, see diagram). Diameter of rotor is 59mm, rotor weight is 180 gramms.
Replaces the stock Suzuki PEI or such replacement systems as Motoplat, Hitachi, Fensatronic and Kröber.

**Note: No facility for lighting provided!!**
No lights - no use on public roads! (consult national regulations)

**advantages over old systems**

- all parts are new
- very stable ignition with high energy spark
- better starting and fuel burning, increases engine performance
- no problem with points anymore
- very lightweight, rotor at 180gr, total system at 850gr

**documentation**

- assembly instructions
- wiring diagram
- parts in the pack (photo)
- output diagram
- timing diagram
- dimensions of double ignition coil
- dimensions of stator and rotor

**Photos**

- the new system fitted
- the new ignition coil
- the new rotor (flywheel)

**Assembly instructions for System 78 37 599 00**

**Version 28.07.2016**

**If you can install and time a stock ignition and possess basic mechanical skills, you can install a VAPE system!**
**If you never have worked on your ignition, better have it done by someone who knows.**

VAPE can not monitor the compliance to those instructions, nor the conditions and methods of installation, operation, usage and maintenance of the system. Improper installation may result in damage to property and possibly even bodily injury. Therefore we assume no responsibility for loss, damage or cost which result from, or are in any way related to, incorrect installation, improper operation, or incorrect use and maintenance. We reserve the right to make changes to the product, technical data or assembly and operating instructions without prior notice.

**IMPORTANT:**

**Please read these instructions fully and carefully before starting work on your motorcycle.** Please bear in mind that any **modification of the material as well as own repair attempts** which have not been agreed with VAPE may result in a loss of warranty. Do not cut off wires. This leads to a loss of reverse polarity protection and often results in damage to electronics. Also, please take note of the information provided on the information page for this system. Check that what you have bought really corresponds to the motorcycle you have. Wrong ignition settings may damage your engine and even hurt you during kickstart (violent kickbacks). Be careful during the first test runs. If needed change settings to safer values (less advance).

**Designated use**

This system is designated to replace stock ignition systems in vintage and classic motorcycles whose engine characteristics have not been modified aftermarket. This system is not a tuning system and it will not bring significant increases in engine output. It does however significantly enhance roadworthiness and road safety by offering increased reliability compared with the aging stock systems . As our systems do not tamper with engine characteristics they do not increase emission of gassous pollutants and noise. In most cases emission of pullutants should be even reduced due to better combustion.
If used as designated the system therefore will not normally infringe the existing legal status of the motorcycle (this statement is valid for Germany, as this situation might be different in other countries, please consult your local road licencing regulations).
This system is not suitable for use in competition events. If used other than designated warranty is voided and it might well be that you do not obtain the desired results. In worst cases use not in accordance with designated use might entail legal roadunworthiness.

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| | **During assembly imperatively start with assy of engine based parts** to see that those really fit before you start fitting the external parts. In many cases customers assemble those first and thereby often modify them in breach of warranty which renders them unfit for renewed sale. Replacing old ignition systems is not a matter of taking something from a supermarket shelf as there have been very many types, versions and possibly unknown aftermarket modifications which harbour plenty of room for error. |
| | Our systems are NOT tested for use with other electronic devices (such as GPS, mobile phones, other 3rd party material.) and may cause damage to such parts. Possibly existing electronic tachometers will not work with the new system. Possibly existing safety switches and electronic valve controls are not supported. It might be that your motorcycle was originally equipped with an ignition that did limit top speed for legal reasons. The new system does not have such a facility, so check your legal situation beforehand |
| | If you have no expertise for the installation have it done by an expert or at a specialist's workshop. Improper installation may damage the new system and your motorcycle. |
| Internet | If you have access to the Internet, best view those instructions online. You get larger and better pictures by clicking onto them and possibly updated information. System list at http://www.powerdynamo.biz |

**You should have received those parts**

- adapter plate and fastening screws
- stator (ring)
- rotor
- twin ignition coil
- high tension cable
- spacer for rotor nut
- assembly/puller tool

(This picture and the following are showing a similar Suzuki GT250 engine!)

Make sure your bike rests securely on its stand, preferably on an elevated work bench and that you have good access to the generator side of the engine.

Take-off your old ignition system (different types are possible) and eventually all adapter plates and the old ignition coil.

Pull the rotor off, you will need a puller screw for this. Take the woodruff key from the crank. You will not need it anymore. Please do not forget to do so, otherwise you will have trouble later on the assembly. (Remark: This woodruff key does not actually hold your rotor on the shaft, this is done by the cone. It simply guides to the correct setting which will now be otherwise achieved.)

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Unscrew the stator of the adapter ring. This is necessary to get access to the mounting screws. (The picture shows a similar engine where the screws are on a greater diameter!)

Put the adapter plate onto the crank case. The opening for the cables has show to about 1-2 o'clock, in course of the cable outlet. Screw it down with the 3 provided screws M5x20.

Put the stator onto the adapter plate. The cable have to lead through the cable opening. Screw down the stator with the 3 screws M5x16 and washers.

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You should set the screws in the center of mounting holes, so you have the possibility for timing correction.

Remove the spark plugs. Place the rotor loosely onto the crank and check that it may move freely above the statorbase. Put the new rotor handtight on the crank shaft for turning the shaft. Bring the piston into ignition position. Take the rotor carefully off again without changing the crank's position.

Set the rotor onto the crank in such a way, that the marking on the rotor aligns with the marking on the stator. If there is any change in the crank's position, you have to start again. In that position fasten the rotor carefully. (Please don't forget to use the washer!)

For turning the rotor and stabilizing when fastening, use the enclosed tool as shown.

The same tool can be used to pull off the rotor again.

If the crank shaft don't reach over the rotor to get pressed off, please use some spacer, best a larger steel ball.

Fasten the new twin ignition coil on the frame of your bike and screw the both ht-cables in. Connect the both plugs from the stator wire on the ignition coil terminal. These contacts have different dimensions, so you can't push it on wrong. The ignition coil is not only a transformer, but it included also a capacitor discharge ignition. So never mix those wires up and never connect the coil to something else.


The red/white cable (6.3mm plug) is good for the ignition voltage, the black cable (4.2mm plug) for the pulse. The red/white cable branches - it goes to the kill switch for cut-off the system.

Connect the metal core of the ignition coil to solid electrical ground. It's not enough to screw it down to the painted frame. Best use a extra ground wire there.

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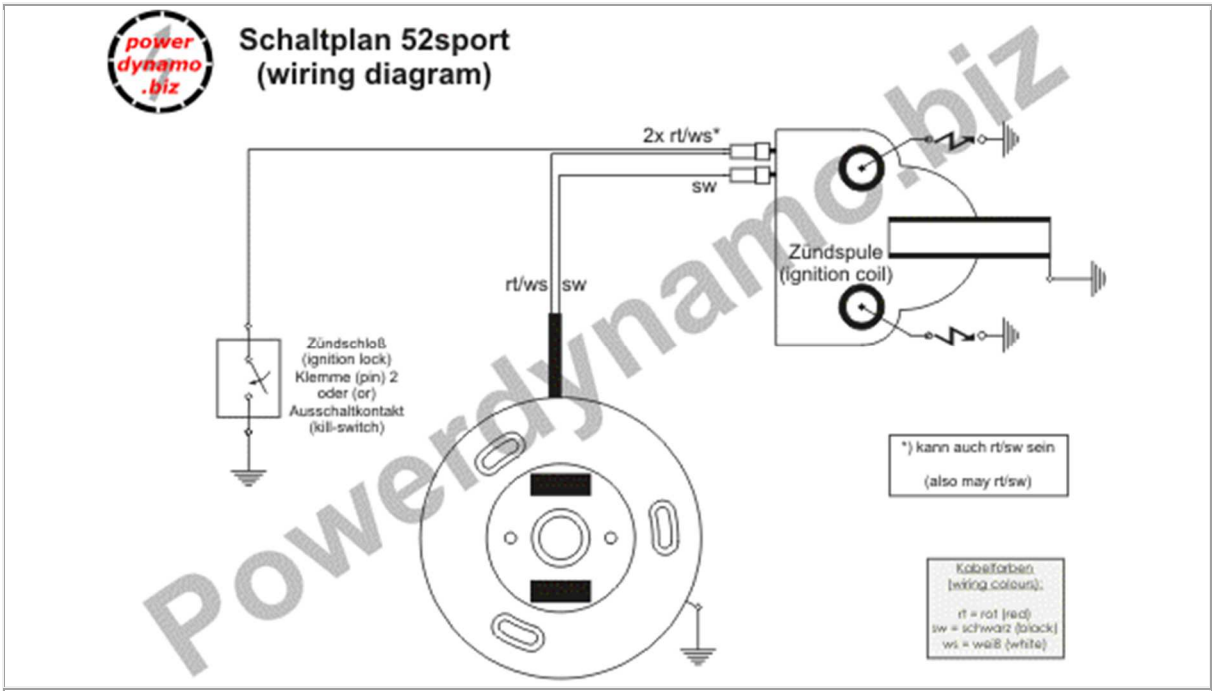
Connect the parts as shown here: **52sport**

**This is very simple.** The cable from the stator has 2 plugs in different sizes. The ignition coil has 2 suitable terminals. Put the plugs onto the suitable terminals. Confusing the plugs will destroy the coil!
The free end of the small sideways connected wire is the wire for the kill switch. When that is connected to ground, ignition will stop. Here you connect your OFF-switch which closes against ground when activated.

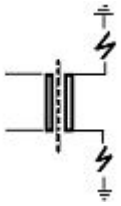
**extremely important is** to fit a g**round wire securely connecting the metal core (holder frame) of the coil to engine ground** (not to frame as contact between engine and frame is never good!).
If you will be using a handlebar mounted kill switch **make sure that your handlabar has good ground** (powder coated frames prevent such!).
Otherwise, it may be that when you press the kill switch to stop the engine, you will be ground and you than feel the voltage from the capacitor in the system.




Screw the high tension cables into the ignition coil and place the rubber seals over the exits. It's more easier if you do that before mounting the coil. Please do use the cable arriving with the pack and not any old cables.

You will do yourself a favour to treat your bike to new spark plugs and spark plug sockets (preferably some between 0-2kOhm). Plenty of problems are to be traced back to "apparently good" (even completely "brand-new") sparks plugs, terminals and cables.

**Do not use** spark plugs with an intern suppression resistor. NGK (e.g.) offered such spark plugs coded with an "R" (for resistor). Further, please do not use any spark amplifying cable, such as "Nology supercables" or "hot wires". This will disturb the system and possibly damage it.



In our twin outlet coils both ends of the secondary go to spark plugs.

Typical resistance between both exits is 6.2kOhm. Both exists fire at the same time (as many twin systems do). Sparks will be polarised however at a 180 degrees difference which might manifest when you strobe it and which can show with some amount of carbonisation at the spark plug getting the positive spark. This is however not a serious problem and, unfortunately, it can not be helped..

Ignition will only work correctly if both plug terminals are connected. You may not test one side with the other open (not sitting on the mounted spark plug). This is because (effectively) each exit uses ground from the other. That means also that both plugs are working in serial, adding resistances, so better use low resistance spark plug (resistor) sockets and make sure they are good (if in doubt, measure resistance on a **hot** socket (warm it up before measuring).

Is the flow from ground of one side via spark plug there, via coil, to the other spark plug and its ground interrupted you get no spark - on neither side. If you really want to test only one side, put the HT wire of the other to ground (earth it) than it will work. The use of 2 individual ignition coils is not possible on this system.

Sometimes a coil deprived of its ground from the other side searches for a substitute - with some solid fireworks around it to the chassis.

Finally - **and before installing the battery and before the first kickstart** - please re-check carefully all connections and fitments against the wiring diagram. Please don't depend on the frame as *the* earth-connection. Varnish, oil and dirt prevent often a good contact!

Should something not work, please consult our trouble-shooting guide on our homepage. As a first step disconnect the blue wire from the coil and re-test.

**Please note:** The crankshaft speed needed to get the system sparking is with about 500 revs/min quite high. If you simply turn the rear wheel of your lifted vehicle to check spark, you will not get any.
**You need fast kickstart action or better still push-starting the bike.**

| | **Important safety and operating information for sports systems of type 71 00** |
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| | **The material has been exclusively made for sports purposes and is NOT destined for use on public roads!** |
| # | Safety first! Please observe the general health and safety regulations motor vehicle repair (MVR) as well as the safety information and obligations indicated by the manufacturer of your motorcycle.<br>The timing marks on the material are for general guidance only during first installation. Please check after assembly by suitable means (stroboscope) that settings are correct to prevent damage to the engine or possibly even your health. You alone are responsible for the installation and the correctness of settings. |
| # | Ignition systems generate high tension! With our material right up to 40.000 Volts! This may, if handled carelessly, not only be painful, but outrightly dangerous. Please do keep a safe distance to the electrode of your spark plug and open high tension cables. Should you need to test spark firing, hold the spark plug socket securely with some well insulating material and push it firmly to solid ground of the engine block to earth the output. |
| # | After installation, please check tightness of all screws. If parts get loose during run, there will be inevitably damage to the material. We pre-assemble screws only loosely. |
| # | Give the newly installed system a chance to work, before you start to check and test values, or what is worse is to apply changes to customize the firing point before running the system. Our parts have been checked before delivery to you. You will not be able to check much anyway. **At any rate do refrain from measuring the electronic components (both stator and ignition coil). You risk severe damage to the inner electronics there. You will not get any tangible results from the operation anyway**. Bear in mind that also your carburetor and your spark plugs and spark plug sockets might be the reason for malfunction (even if absolutely new). The general experience with our systems is that the carburetor will have to |

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| | be re-adjusted to lower settings. Should the system not start after assembly, first disconnect the blue cut-off wire directly at the ignition coil (or in some cases advance unit) to eliminate any mistake in the cut-off circuitry. Check ground connections carefully, better put an additional wire between engine block and metal frame of the ignition coil. |
| # | The shaft speed needed to start ignition is relatively high with about 500revs/min. Simply turning the lifted rear wheel will not produce a spark. **You need rapid kick-starter movement or better still push-start.** |
| # | There are systems destined for clockwise and there are systems destined for anticlockwise run of the crankshaft. Confusing the 2 senses will mean you have no spark. You may check for what sense your system has been made by the colour of its wires.<br># a black/red wire: clockwise<br># a white/red wire: anticlockwise |
| # | The spark of classic, points based ignition systems has with only about 10,000 Volts little energy and looks therefore yellow and bulky (hence well visible). The spark from our system is a high energy spark with up to 40,000 Volts and is therefore very sharp (needle thin focused) in form, and blue in colour, which makes it not well visible. Furthermore you get spark only at kick-start operated speeds and not by pushing the kick-lever down slowly with your hand (as you might get on classic systems). |
| # | Systems using a twin outlet ignition coils have a few perculiarities. Please observe that during tests on one side, the other has either to be connected to an fitted spark plug or securely earthed. Otherwise there will be no spark on either side. |
| # | Never do electric arc welding on the bike without completely disconnecting all parts containing semiconductors (ignition coil, regulator, advance) stator and rotor need not be taken off. Never use copper putty on spark plugs. |
| # | When connecting the ignition coil double check that you put the wires to the correct pins. (One is smaller). If you confuse them, the high tension for the condenser charge will kill the input switch |
| # | Do not use spark plug sockets with a resistance of more than 5kOhm. Better use 1 or 2kOhm ones. Bear in mind that spark plug sockets do age and thereby increase their internal resistance. Should an engine start up only when cold, a defective spark plug socket and/or spark plug is very probably the cause. In case of problems check high tension cables too. Never use carbon fibre HT-cables. Never use so called "hot wires", never use resistor spark plugs on this system, it will hamper starting. |
| # | It is a good idea to cover the rotor in a thin layer of oil to reduce the risk of corrosion. |
| # | Please do observe these remarks, but at the same time, don't be afraid of the installation process. Remember, that before you, thousands of other customers have successfully installed the system.<br>***Enjoy driving your bike with its new electric heart!*** |

# Schaltplan 52sport
# (wiring diagram)