

System 726179900**Generator/ignition for Suzuki T500 & T20
/200/250/350/500 and GT125 (Note: not T125)**

- For street racing system (ignition only) see **System 71 08 599 00**


**Advantage over original system:**

- all parts are new
- plenty of light output
- very stable ignition with solid spark
- better starting, better fuel burning
- no wear anymore on points

- Magnet based generator with integrated solid state ignition. Output 12V/180W DC. Replaces the complete old magneto and ignition system. Solid state, maintenance free, electronic ignition.

- There is no need for changes on engine casing.



Assembly instructions for system 726179900	5.1.2020
<p>- If you can install and time a stock ignition and possess basic mechanical skills, you can install a VAPE! If you never have worked on your ignition, better have it done by someone who knows.</p>	
<p>- 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</p>	
<p><u>IMPORTANT</u></p>	
<p>- 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). During assembly check carefully that the rotor (flywheel) does not touch the stator coils or anything else, which may happen due to various circumstances and lead to severe damage.</p>	
<p>Designated use - This system is designated to replace stock dynamo/alternator & 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 comfort by offering better lighting, better function of side indicators and horn and, compared with the aging stock systems, increased reliability. As our system does not tamper with engine characteristics it does not increase emission of gaseous pollutants and noise. In most cases emission of pollutants should even be reduced due to better combustion. If used as designated the system therefore will not normally infringe the existing legal status of the motorcycle. (Please check your local legal regulations!) This system is not suitable for use in competition events. If used other than the designated way, your warranty will be voided and it might well be that you do not obtain the desired results or, worst you loose legal roadworthiness.</p>	
<p> - VAPE guarantees homologated products marked with the “E” mark in the ring (E8 specifically for the Czech Republic), thereby ensuring a consistent conformity of the product properties with the relevant ECE homologation regulations (especially ECE R10.05). Inspection is regularly carried out by the competent authority.</p>	
<p>- The charging system is only suitable for use with rechargeable 12V (6V systems 6V) lead-acid batteries with liquide electrolyte or sealed lead-acid batteries, AGM, Gel. It is not suitable for use with nickel-cadmium, nickel-metal-hydride, lithium-ion or any other types of rechargeable or non rechargeable batteries.</p>	
<p>- This is a replacement system and not a copy of the stock material. The parts in this system therefore look different and might fit differently (notably ignition coil and regulator) requiring some adaptation by you.</p>	
<p>- 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.</p>	
<p>- Our systems are NOT tested for use with third party electronic devices (such as GPS, mobile phones, LED lighting etc) 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.</p>	

- 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, possibly even lead to bodily harm.

- Before you order a system, please check whether a puller tool for the new rotor is included in the kit. If not, better order it at the same time. Never use anything other than the recommended puller tool to pull the new rotor again. Damage to the rotor as a result of use of other tools or methods is not covered by your warranty.

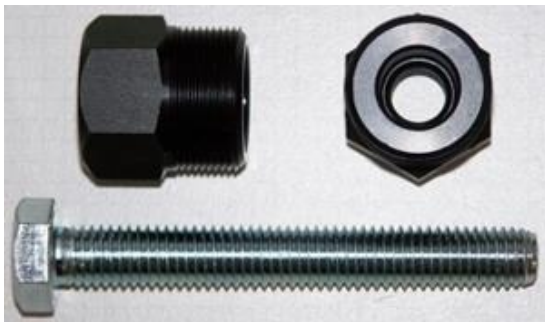
- The rotor is sensible to blows (including during transport). Before assembly, please always check for damage (on rotor without magnet plastification try to push the magnets aside with your fingers). After impact the glued in magnets might have broken loose, sticking to the rotor solely by magnetic force, so that one does not notice right away. During engine run the damage would be considerable. Before placing the rotor onto the engine, please make sure that its magnets have not collected any metal objects such as small screws, nuts and washers. That equally would lead to severe damage.

- **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:

- pre-assembled stator unit
- rotor (flywheel)
- electronic twin (condenser) ignition coil
- high tension cables with rubber plug
- rectifier/regulator with inbuilt smoothing condenser
- relay with cables
- 3 fastening screws and rotor screw
- 2 wire binder



To disengage the new rotor again, you need a puller M27x1.25 (part-no.: 99 99 799 00 - **Not provided!**).

Note: Never use a claw puller, a hammer or any other device, that will shake the magnets off.

- **Please note:** The system is able to work without a battery present. For riding without battery please observe our legal and technical remarks

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

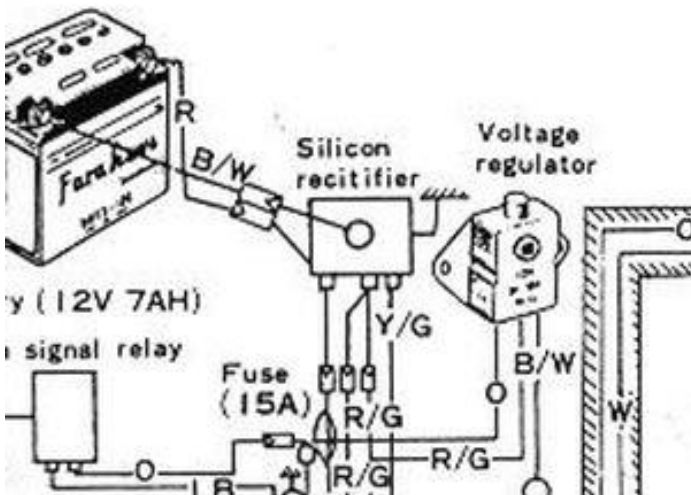


- Disconnect all wires from the old magneto, points and ignition coil, silicone rectifier and voltage rectifier and remove these parts.

- Please identify which wire connects to neutral switch - this needs to be kept. Also, identify the orange wires from the old coils (could be orange/white).

- 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 in the assembly.

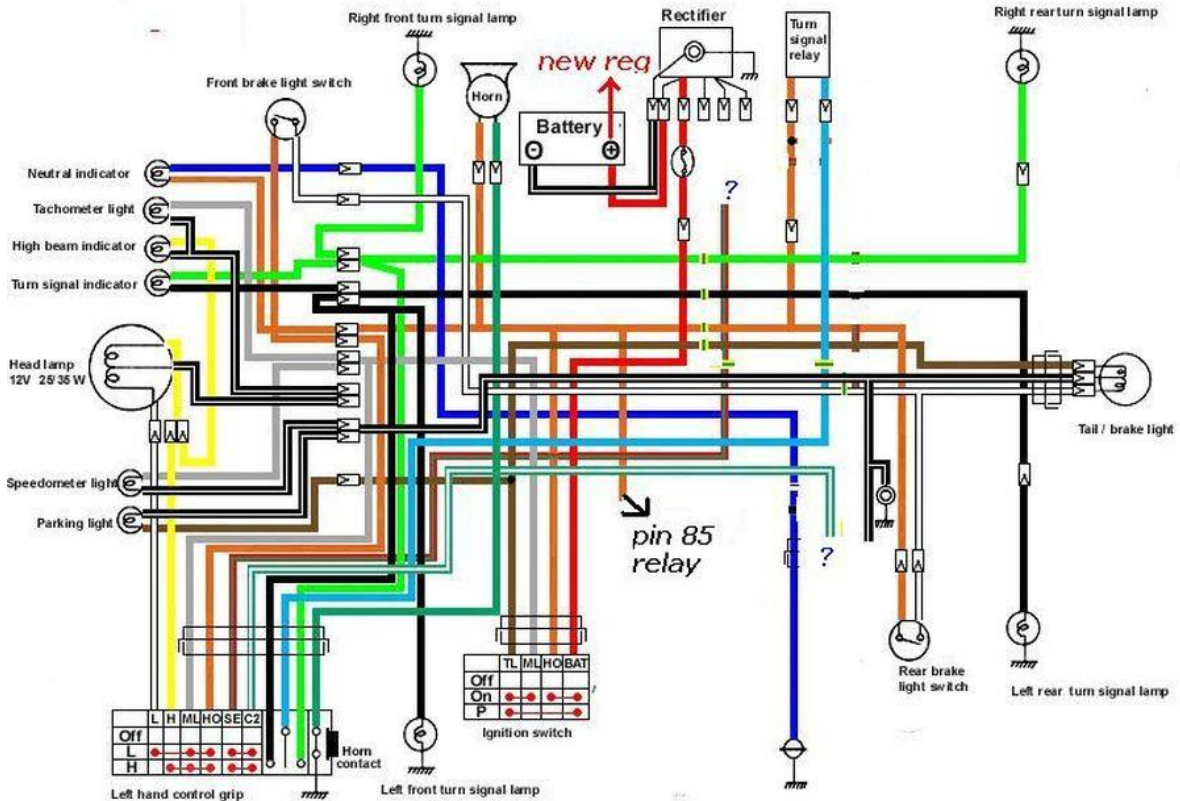
(Remark: This woodruff key does not actually hold your rotor on the shaft, this is done by the cone. It simply guides to the correct setting which will now be otherwise achieved.)



- As a result of taking those parts off, the following wires will be removed totally:

- yellow/green from old magneto to rectifier
- red/green from old magneto to rectifier and regulator
- black/white between regulator and rectifier
- black to old ignition coil 1
- white to old ignition coil 2

- It may be that wire colours in your bike differ.



The modified stock wiring will look something like this after installation of the new system

- At the silicone rectifier arrive 2 red wires. One running to the battery and one to the main switch. Both need to be maintained and connected to each other AND to the red of the new regulator/rectifier (see further below). Rectifier is now only serving as a terminal to keep red wire running to main switch connected to battery plus but not functioning as rectifier any more
- on battery plus terminal you connect the red wire of the new regulator (plus output of system). Here please add additional new fuse into the wire running between new regulator and battery.
- brown (minus) wire of new regulator securely branched to ground, best to battery minus or if you do not want to drive with battery to terminal which grounded battery minus
- The orange wire running to the old regulator needs to be insulated (or cut off at the junction to further orange wires which need to be retained).

- The orange wire running formerly from the main switch to the old ignition coils will be needed if you drive with battery to branch to the new relay (see diagram).

If you do not use the relay option insulate the orange wire. It remains idle.



- Have a look at the new stator. You will find there a small red marking somewhat left of the black coils. This is an ignition marking.

- The unit will be delivered pre-assembled. (It is shown here disassembled to get a better view at the marking.)

- There is no reason to take off the coil. You only risk to damage the wires underneath or set it wrongly back again.



- Put the new stator assembly into the place of your old magneto. Attach the unit securely with the supplied screws and washers. Use the middle position of the oblong holes to have room for adjustment of ignition later on.

(Picture shows different engine)

- Have a look at the new rotor. You will find on its circumference a small lasered on (older rotor pressed in) line. That is an ignition marking too. It is durable, but not well visible, so better highlight it with some marker pen, preferably on top of the flywheel.
- The rotor is missing 2 magnets 180degrees opposite. This is wanted and not a defect, those magnetic holes trigger ignition.



- Take the spark plugs out and bring one of the pistons (no matter which one as the system fires every 180° both plugs at same time) the piston into ignition position. This should be 24 degrees (that is 3.4 mm BTDC).

- You could move the piston by putting the rotor loosely onto the crank shaft and turning it. Check that it may move freely above the stator base.

- Please do bear in mind that the Suzuki turns anti-clockwise. So you have to **turn the rotor clockwise for reaching the ignition point after you had TDC.**



- Take the rotor carefully off again without changing the crank's position and reset it onto the crank in such a way that the marking on the rotor aligns with the marking on the stator. In that position fasten the rotor carefully with the new rotor screw supplied.

- Take care not to change the crank's (ignition) position. Otherwise you have to redo this procedure.

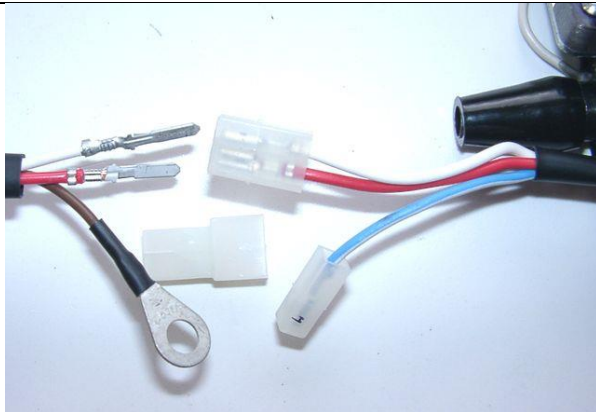


- Screw the spark plugs in again.
- You will now have to fasten the ignition coil and the regulator to the frame of the motorcycle.

For the new parts supplied, connect them as explained now:

Connect the parts as shown in wiring diagram 72ir_102:

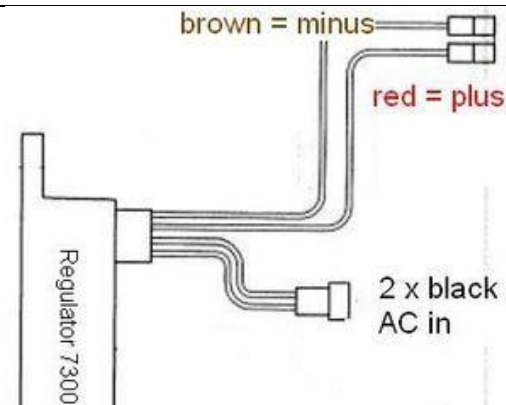
- To facilitate wire exit through the often small openings in the engine casing, the plastic plug of the generator's wiring that leads to the ignition coil have not been put onto the wire terminal. You should place the plug there only once all has been properly installed on the engine side.



- Look for the ignition coil with its female plug and the two wires (red and white).
- Put the provided 2-position plug housing onto this plug and insert the two wires (red and white) from the generator. Make sure that the terminals engage securely in the housing and that you connect:
 - white to white
 - red to red

- Should you need (or want) to get the terminals out of the plug housing again, enter a paper clip from front next to the terminals and push the little barb aside. Than pull the wire out.

- The brown wire from the new generator with the round eye terminal have to be screwed to the holder frame of the ignition coil (ground). This connection is very important. Please don't depend on the frame as *the* earth-connection. Varnish, oil and dirt prevent often a good contact!



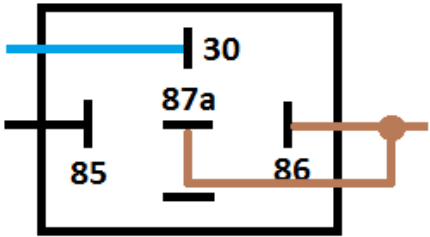
- The new regulator/rectifier has 4 wires
 - 2 black ending in a plastic plug for the AC input from the 2 black generator wires
 - 1 red with a plastic plug which outputs plus
 - 1 brown with a plastic plug being ground (minus)

The two black cables leading from the generator ...

... should be first introduced into the supplied twin plastic plug housing. This housing connects to the plastic plug at the end of the 2 black wires on the regulator. It does not matter which black is at which side, as there is AC.

The brown cable from the regulator ...

... should connect to either battery minus or good ground if there is no battery.

<p>The red cable from the regulator ...</p> <p>Take care: Wrong polarity will damage the electronics!</p>	<p>... should connect to either battery 12V PLUS or if there is no battery to the wiring that runs to your consumers (normally main switch intake pin).</p>
<p>- If you use a battery, make sure that you have a 15A-fuse between battery and vehicle circuitry.</p>	
<p>- There is NO facility for a charge control light without battery this will not work anyway. The regulator has an inbuilt high potency condenser to smoothen voltage. This will make sure that your side indicators (flashers) and horn will work correctly even without battery.</p>	
<p>Remains the blue (sometimes blue/white) wire at the ignition coil. This is the kill (cut-off) wire.</p> <p>Connected to ground - it will stop ignition!</p> <p>Note: Should you experience ignition failures, disconnect as a first measure this blue wire. In many cases that will permit you to get mobile again</p>	<p>Switch off via separate kill switch (when driving without battery): The relay will not be fitted. The blue(/white) cable of the ignition coil will be connected to a kill switch, closing against ground (a button at the handlebars). Or you mount an ignition lock that has a facility to connect against ground when in OFF position.</p> <p>Battery method: Connect the brown relay wire to good ground. Lead the longer black wire from the relay to the wire that did run previously to a pin carrying voltage when the switch is on (in German bikes: pin 15) and connect it there. Connect the blue wire from pin 30 of the relay to the blue(/white) wire at the new ignition coil. Should your battery fail on the road, just disconnect that blue wire and your bike will run again (it will now only not stop by switching off).</p>
<p>Relay wiring (if used):</p> 	<p>- The brown wire with the ring terminal from pins 87a und 86 goes to ground.</p> <p>- The black wire from pin 85 goes to a main switch terminal carrying voltage if switched on.</p>
<p>Screw the high tension (ignition) cable ...</p> <p>- Please do not use any spark amplifying cables, such as "Nology supercables" or "hot wire". This will disturb the system and possibly damage it.</p>	<p>... into the ignition coil and pull over the rubber seal before mounting the coil (it will be easier).</p> <p>- Please do use the cable arriving with the pack and not any old cable.</p>
<p>- 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).</p>	
<p>- Finally - and before installing the battery and before the first kickstart - please re-check carefully all connections and fitments against the wiring diagram. Do check battery and light bulbs for correct voltage (12V).</p> <p>- 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.</p>	
<p>- IMPORTANT: During crank shaft repair the dynamo shaft is often machined and gets shorter. The result is a rotor sitting lower, possibly touching now with its rivets the stator coil. The result is a destroyed stator and ignition failure.</p>	

Important safety and operating information

- 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. 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. Never pull sparkplug caps when engine is running. Wash your vehicle only with engine at standstill and ignition off.

- You should have received the HT Cable with the fixed rubber cap (*which does not contain a resistor*) as a part of the kit, you should have to use a spark plug with an inbuilt resistor (*or replace the cap with the one containing a resistor*) to comply with your local laws (*Electromagnetic compatibility requirements*).

- Do not use a spark plug cap(s) containing a resistor **WITH** a spark plug(s) containing a resistor at the same time. It would cause problems, especially difficult engine starting. The total resistance of cap and spark plug combined should not exceed 5kOhm.

- Remember that candle plugs age, increasing resistance. If an engine only starts when it is cold, it is very likely that a defective spark plug connector or faulty spark plug is the cause. Do not use so-called ignition-reinforcing cables (e.g. Nology).

- After installation, please check tightness of all screws, even those preinstalled. 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 apply changes to it.

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 (such as ignition coil, regulator and advance unit). 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, your spark plugs and spark plug sockets (even if completely new) might be the reason for malfunction. The general experience with our systems is that the carburetor will have to be re-adjusted to lower settings. Should the system not start after assembly, first disconnect the blue (or blue/white) cut-off wire directly at the ignition coil (or in some cases advance unit) to eliminate any malfunction in the cut-off circuitry. Check ground connections carefully, make sure there is a good electrical connection between frame and engine block. In case of troubles, please consult our Knowledge Base first before you send off the material to us for checking.

- The spark of classic, points based ignition systems has with about 10,000 Volts comparatively little energy and looks therefore yellow and fat (which however makes it highly visible). The spark from our system is a high energy spark with up to 40,000 Volts and therefore is needle thin focused in form, and blue in colour, which makes it not so 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 with battery based ignitions).

- Systems using a twin outlet ignition coils have a few peculiarities. Please observe that during tests on one side, the other has either to be connected to an fitted spark plug or securely earthed/grounded. Otherwise there will be no spark on either side. Also with such open exits long and dangerous sparks may fly all over the coil.

- 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. The same is true for soldering. Before touching electronics disconnect the soldering iron from mains! Never use copper putty on spark plugs.

- Electronics are very sensitive to wrong polarity. After work on the system, do check correct polarity of the battery and the regulator. Wrong polarity creates short circuits and will destroy the regulator, the ignition coil and the advance unit. As a rule, wiring will always be colour to colour. Instances, where colour jumps between wires are expressly mentioned in our instructions.

- When you handle the new rotor, take care not to damage its magnets. Refrain from direct blows to the circumference of the rotor. **When transporting never put the rotor over the stator.** Observe our information relative to transport of the material.

- 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" which promise to increase spark.

- It is a good idea to cover the rotor in a thin layer of oil to reduce the risk of corrosion.

- Never use a claw puller or a hammer to disengage the rotor. Its magnets might become loose in the event. We offer a special puller for disengaging the new rotor again (see assembly instruction)!

- Should the motorcycle not be in use for some longer period, please disconnect the battery (so existing) to prevent current bleeding through the diodes of the regulator. Though, even a disconnected battery will empty itself after a while.

- 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.
Enjoy driving your bike with its new electric heart!

VAPE Schaltplan 72ir102 (wiring diagram)

