DT360 & DT400 1974-76 Stator Kit RMK-8 & 9 Roadster & Competition Kits

Fitting Guide, Specifications & Technical Support Document

Thank you for purchasing a Rex's electronic ignition kit. Designed and assembled in our East Sussex workshop, this self-generating ignition system replaces the ageing original electronics with modern components to provide dependable ignition and significantly improved lighting performance.

The ignition and charging systems remain completely independent, exactly as Yamaha intended. Battery voltage must never be applied to the HT coil or CDi unit. Roadster versions retain the direct lighting system, meaning the headlamp only operates while the engine is running.

The new system provides a well-proven high energy ignition developed from many years of experience. It has been in production since 2013, with thousands of real road miles covered. Earlier versions of this stator were supplied with a fixed ignition timing. While this proved ideal for most riders, we regularly received requests from owners who wished to fine-tune the ignition timing to suit their individual riding style, engine specification, or simply to eliminate characteristics they considered undesirable.

In response, we developed a fully adjustable ignition system that remains precise enough to satisfy experienced tuners yet as simple and accessible as possible for anyone with suitable mechanical skills to fit and adjust accurately.

IMPORTANT: Please read this guide fully before fitting, also check you have all the tools and parts you may require. Technical support is included in this help sheet.

Before you Begin: Warnings & Cautions

Working on motorcycles requires specialist tools, knowledge and training. Serious injury, death, damage or loss to your motorcycle or property, may result if parts are incorrectly fitted, adjusted, modified or used for a purpose other than the manufacturer's intended purpose. Failure to follow this guide, the Yamaha workshop manual, accepted industry practices, or normal workshop safety procedures may result in unsafe operation of the machine, damage or injury.

Always refer to our website for the latest version of this publication. Use only the latest available Yamaha documentation for torque settings, assembly procedures, specifications and safety information. Nothing in this guide overrides or replaces Yamaha's published instructions or warnings.

Modification, improper fitting or adjustment or use of non specified equipment may cause an unsafe situation that causes damage or failure of electrical parts.

The person carrying out the work is solely responsible for inspecting components before assembly and for all final adjustments, settings, safety checks and verification that the machine is fit for service before use.

Warning: High Output Ignition System: When checking ignition timing, only use a strobe timing lamp with an inductive clamp that attaches around the HT lead. Timing lamps that interrupt the the HT lead cause ignition system voltages to rise to dangerous levels, creating a risk of severe electric shock, damage to the ignition system, serious injury or death.

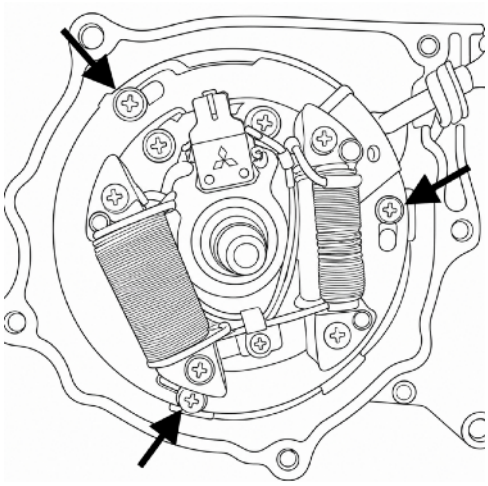
Pacemakers: Persons fitted with a pacemaker, implanted medical device, or those with a known heart condition should not work on, adjust, or test ignition systems, nor work on the machine while the engine is running, due to the risk of electric shock.

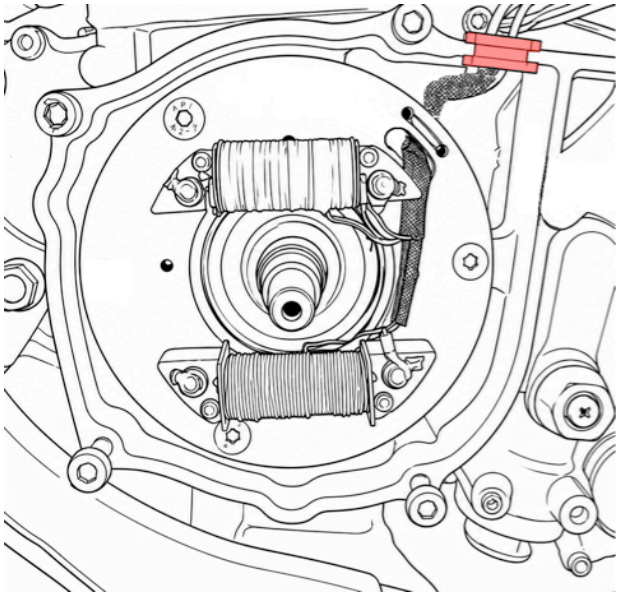
Single-cylinder two-stroke engines can be prone to kickback during starting. Always refer to the owners manual for specific starting advice. Ensure you are familiar with the starting procedure. Use a firm, positive kick through the full stroke and wear suitable motorcycle boots to reduce the risk of injury. Do not jab or partially operate the kickstarter, as this can increase the likelihood of kickback. Larger capacity engines (250cc and above) and all highly tuned engines pose a significant risk and require considerable respect when starting.

1. Access and remove the flywheel. You will need a flywheel puller (p/n: FWP-1). A pneumatic or electric impact driver makes this job much easier. The flywheel can be virtually impossible to remove without the correct tools.

Damage to the engine and/or flywheel will be caused if you attempt to remove the flywheel with pry bars, 'three leg" pullers or other tools than the correct puller.

2. Undo the 3 stator retaining screws (arrowed) and remove the stator along with the wiring.





3. Fit the new stator with windings top and bottom. Ensure the wires are routed upwards as shown. Push the sealing grommet (highlighted red) in to place. Follow the original lead routing and connect the lighting connector to the original one from the wiring loom.

Check that no wires are trapped between the engine and new stator, and the wire is clear of the rotor.

4. Refer to the timing advice (Pg 5), align the slots to the original retaining screws holes. The stator will only align one way round. Use all 3 x M6 screws from the kit to retain the new stator. Secure the screws EXACTLY in the centre of the slots (base timing position).

One slot has no screw hole behind, this is intentional.

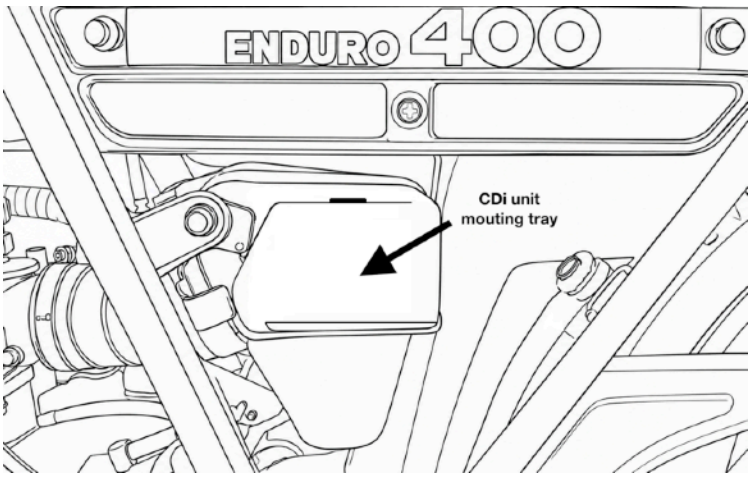
5. Refit the flywheel, the torque values are given in the shop manual.

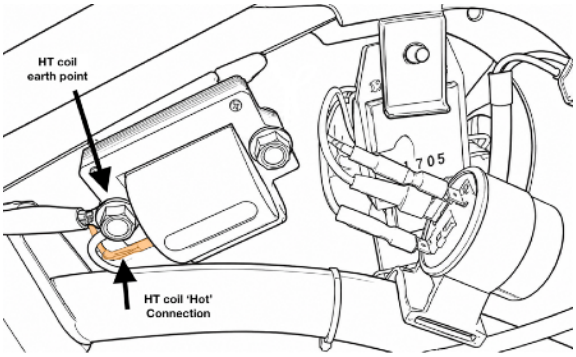
6. Secure the new CDi unit in to the original carrier. Follow the original Yamaha wire routing.

From CDi unit: Lead 1 ~ White connector ⇉ corresponding connector from the new stator wire.

Lead 2 ~ Black rubber connector ⇉ the opposite black connector for the CDi on the bike's loom.

If in doubt where cables go, refer to the shop manual for correct cable routing.





7. Replace the HT coil with the one from the kit. The black wire with ring terminal is the earth and goes under one of the mounting bolts. Connect the orange wire to the HT coil spade connector (or adaptor lead, as applicable).

If fitting a 12 volt conversion - the regulator loom also earths at this point.

8. Ensure that wires are secured well clear of the exhaust system.

12V Conversion - Roadster Kits

Warnings & Cautions

To avoid injury, damaging electrical parts and electrical fires ensure the battery is disconnected and removed from the machine while working on the electrical system.

Modification, improper fitting or adjustment or use of non specified equipment may cause an unsafe situation that causes damage or failure of electrical parts.

Our 12 volt conversion equipment is designed for filament bulbs and lead acid technology (AGM and sealed) batteries.

Lithium batteries MUST NOT be used this equipment, serious damage to you motorcycle or injury may result.

Applying 12 volts to a 6 volt battery can cause the battery to explode or leak acid. Battery acid is highly corrosive and toxic. We recommend only AGM or sealed lead/acid batteries, to reduce the possibility acid leakage.

Connecting the regulator/rectifier incorrectly to the battery will damage it beyond use. Ensure you read and follow this guide before making connections to the battery.

These kits are intended to convert the power source of the lighting system from 6 to 12 volts. The installer assumes all responsibility and liability in ensuring that the lighting system, lamps, bulbs reflectors and associated controls all comply with local vehicle regulations.

As per the original Yamaha design, the ignition and charging system are two totally separate systems that must never be connected to each other. Applying DC power from the battery to the electronic ignition will damage it beyond repair.

Ensure all 6 volt parts have been replaced with 12 volt equivalents before applying 12 volts to the system.

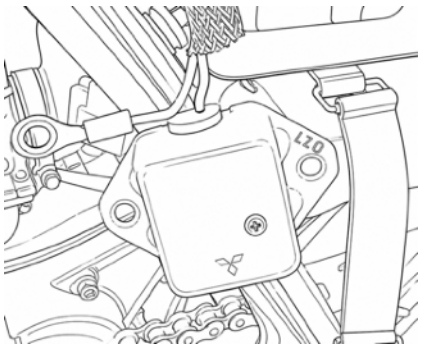
When troubleshooting the charging system use only professional quality multimeters that would be standard equipment in a modern dealership to take electrical measurements. Basic, low cost meters often give unreliable readings, and our technicians may instruct you to disregard suspect measurements taken on budget or antique equipment.

1. Start by replacing the 6 volt battery, bulbs, horn & indicator relay with 12 volts versions.

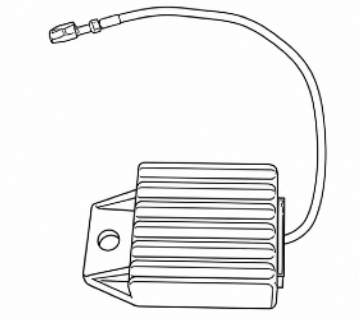
Do not connect the 12V battery at this stage

2. The same fuse can be used, there is no need to replace it with a different value.

3. While working on the bike, look for a 6V regulator, many of these bikes had one added under a service bulletin or by a previous owner. These could be fitted in the headlamp shell, near the HT coil or around the battery. If one is found, remove it.



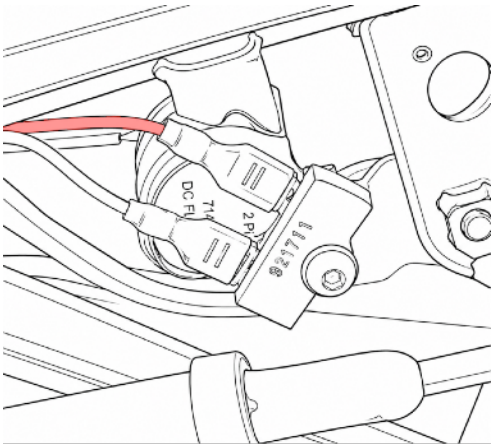
An OEM style 6V regulator shown left and an aftermarket one right.



4. Identify and remove the old rectifier which is located by the HT coil. The new 12 volt combined regulator is bolted where the old rectifier was mounted.

The white and red wires connect to the old rectifier wires of the same colour.

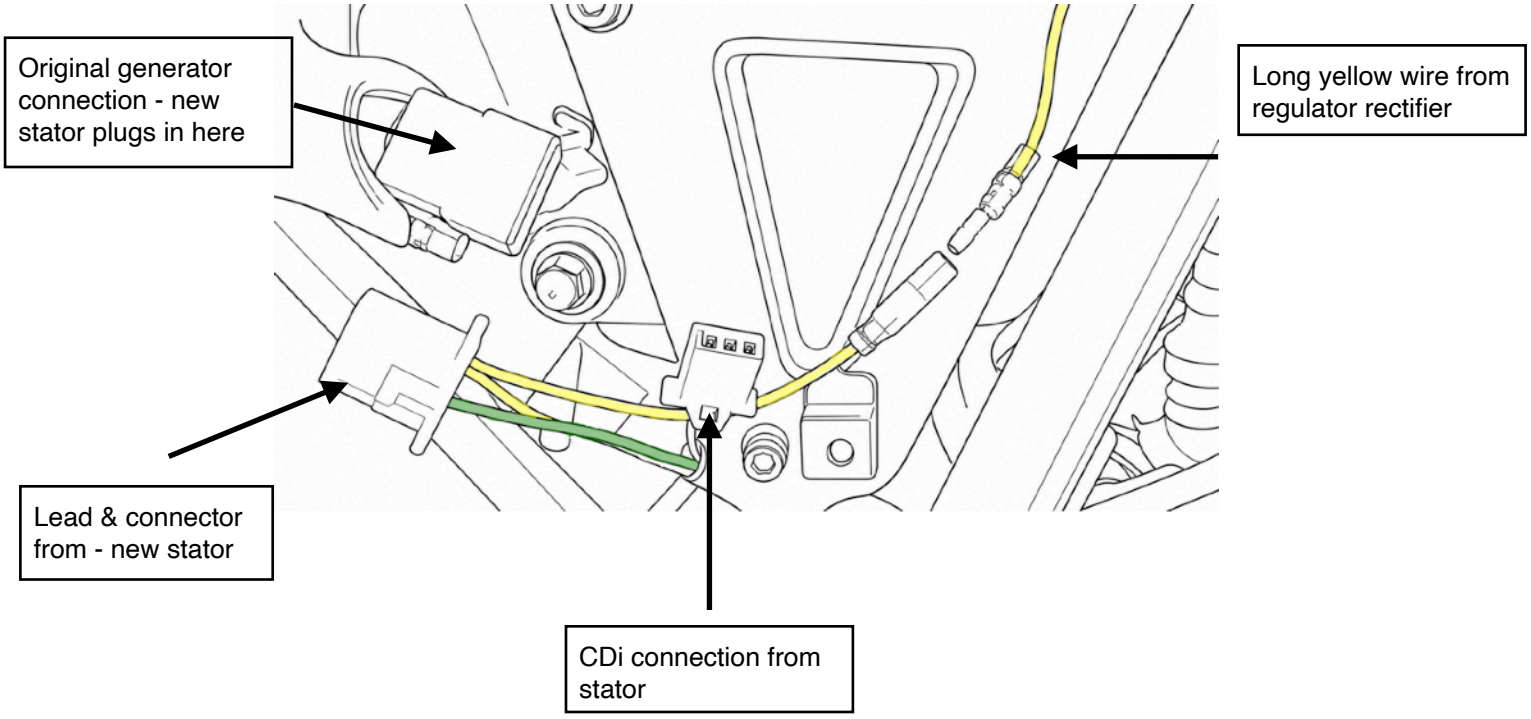
The black wire ring terminal should be fitted under the HT coil mounting bolt.



5. The new stator wire plugs in to the original wiring loom as before. There may be a different number of wires or wires maybe of a slightly different colour in the new stator wire, this is intentional.

Note that the green should connect to the green and yellow to yellow across this connector.*

6. Route the long yellow wire from the regulator rectifier loom down to the where the stator connectors and connect it to the yellow wire there. Secure all wiring away from the exhaust.



*It is quite common to find connectors not as they should be or wires in different positions in connector housings as these bikes were subject to charging system issues and repaired under various service bulletins, many have been modified by previous owners hoping to fix issues themselves. It is a simple matter to either replace, or correct the pin positions in the connector by unclipping the retaining barbs of the terminals with a Jeweller's screw driver, then repositioning to suit. We include the opposite connectors for the rectifier as this commonly is found with corroded terminals.

Final Actions Before Riding the Machine.

7. Check that none of the controls have been restricted or impeded by the new wiring looms or work carried out. Re-assemble the machine as per the shop manual and make it ready to ride.

8. Check all your connections.

9. Connect the 12V battery

10. Set up the ignition timing - see next section.

11. Check the charging by measuring the battery voltage. If the battery is new, allow it to reached fully charged first, you will see a changing reading while it transitions between new and service voltage. **Correct reading:** 14.5V +/- 0.75V at 2,500 - 5,000 RPM, with the headlamp **ON.**

Note: If using a battery eliminator in place of a battery, the voltage can be slightly higher and will fluctuate with load. This is unavoidable without a battery fitted.

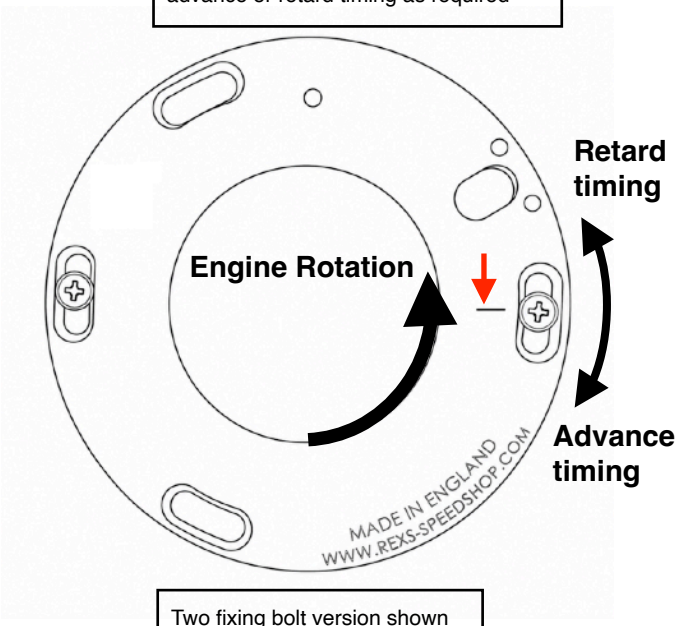
Adjustment of Ignition Timing - Please Read Carefully.
This is a basic procedure for an experienced mechanic, with Yamaha allowing approximately 0.4 hours for the work. If ignition timing adjustment is not something you are familiar with, we strongly recommend that this task is carried out by a suitably skilled and experienced person. The flywheel is removed to adjust stator position, as per the original Yamaha procedure.

Two-stroke engines are generally very responsive to small ignition timing changes. Adjustments should therefore be made in small increments, with the machine tested between each change. Under normal circumstances, the optimum setting will be found in the centre of the adjustment slots, without having to position the stator at either extreme end.

Basic method
A very quick method is to set the stator retaining fasteners precisely in the centre of the slots, so that the alignment mark is aligned with the centre of the retaining screw, as shown →

With all three stator retaining screws tightened, refit the flywheel and the engine cover. Start the engine.

Check the engine starts easily, is running forwards and picks up cleanly. Cautiously pull away and check for clean running at all engine RPMs.

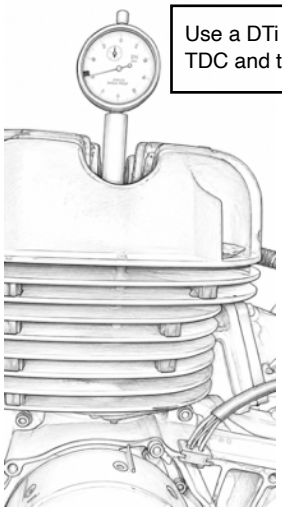


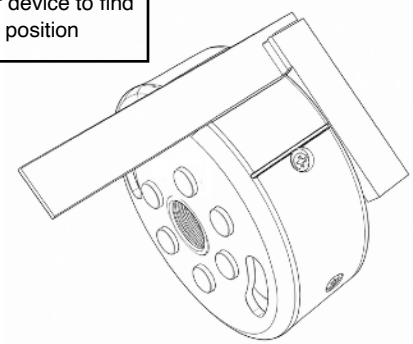
Two fixing bolt version shown

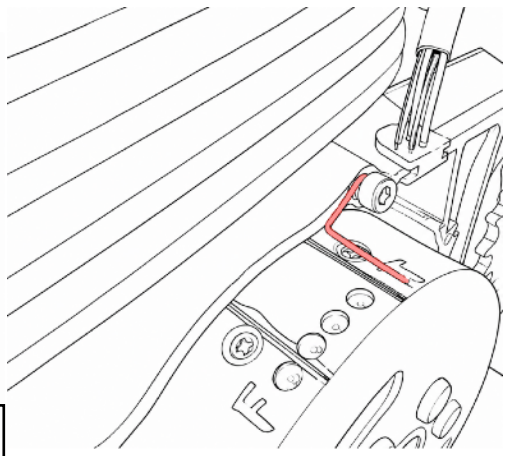
High accuracy set-up.
To set the timing with a higher degree of precision requires accurate timing marks to be made on the flywheel and a temporary pointer fitted to the engine. Use a set square to ensure your scribe lines are straight on the flywheel. A piece of wire bent to suit can be used as a pointer.

Use a DTi or similar device to determine TDC. Scribe an accurate line on the flywheel and align the pointer to show TDC. Turn the engine in the opposite direction to its normal rotation until the DTi shows the required amount of piston travel BTDC. Scribe a second line on the flywheel which accurately aligns with the pointer when the piston is in the correct position. This the 'Fire', or 'timing' mark. Use the standard Yamaha timing specification of 2.75mm BTDC for 360cc models or 2.9mm BTDC for 400cc models to position the second line.

The shop manual explains the use of a DTi to find the piston position in detail. Use these marks, a suitable pointer mounted to the crankcase and a strobe lamp, to set the timing at idle by adjusting the stator position.


Use a DTi or similar device to find TDC and the piston position


A set square will help produce straight, accurate scribe lines on the flywheel


Install a simple pointer (shown in red), set the engine to TDC and accurately align the pointer with the TDC mark on the flywheel.

Timing - Fine Tuning
A popular and highly accurate technique for fine tuning, after having set the initial timing position and the motorcycle has been taken for a short test ride, is done by rotating the stator so the pointer aligns with the **FIRE** mark while the engine is held at approximately **2,500 rpm** (stator is moved in the retard direction). Check each adjustment of the stator position with the strobe lamp.

Some customers have reported that adjusting the stator so the **FIRE** mark aligns at **3,000 rpm** produces excellent results. You could continue this pattern in 500 RPM increments noting the point when performance starts to suffer and returning to a prior setting. A point to note here is that riders may have different opinions on which running characteristics they wish to be more prominent. Both models can be prone to hunting and four-stroking. Careful fine tuning using this method will often reduce or eliminate these characteristics.

Caution – Risk of injury or engine damage: Advancing the ignition beyond the recommended basic setting may appear to improve performance initially. However, excessive advance increases combustion temperatures and may result in severe engine damage or seizure. Always ensure that the ignition timing is set to avoid engine damage.

Our electronic ignition advance curve has been developed and refined for well over a decade and differs from Yamaha's original fixed timing, hence the different approach to set-up. It has been found by owners to improve starting, reduce four-stroking also to provide smoother running throughout the rev range. As every engine differs according to engine condition, fuel quality, carburettor settings, exhaust system and previous modifications, we cannot recommend individual timing adjustments beyond the guidance provided here, as doing so would be pure speculation. The recommendations given have been developed through extensive testing and thousands of real road miles using this, one of our most popular selling electronic ignition kits.

If you are still unable to find the optimum setting with this method, retard the stator by **5°** from the initial setting (Use a protractor and marker pen if required), then advance it in **0.5°** increments, test riding the motorcycle after each adjustment until you are satisfied with the result. We would like to point out, that if you are having to do this, the bike is often found to have other issues preventing the engine running as it should.

Once the final adjustment is made, make a permanent scribe mark on the stator and engine casing. This allows the timing to be returned quickly and accurately should the stator need to be removed in the future.

If you feel the pointer has moved during adjustments, set the piston to TDC, check that the pointer is aligned with the TDC line on the flywheel, adjust it if required. This ensures the timing mark is also correct.

Providing you work carefully, making your own timing marks will often prove more accurate than relying solely on factory stamped timing marks.

We are always pleased to hear from owners who have fine tuned their own machines and are happy to receive feedback on the settings that have worked well for them.

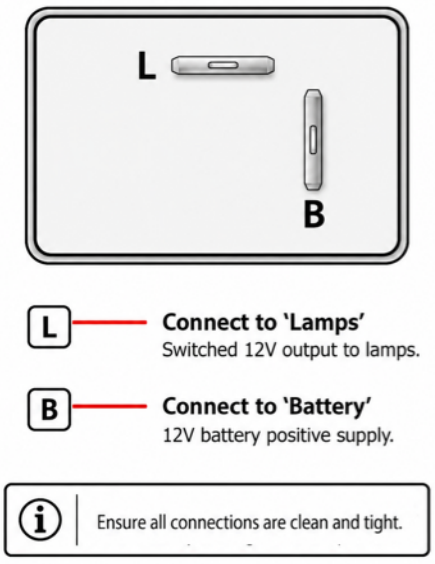
Applicable Flywheels	FOTO2171, FOTO2172, FOTO2173	
Spark plug	Standard plug as per shop manual	Iridium grade, or rider preference
Spark plug gap	0.7 - 0.8 mm (0.028-0.032”)	
Plug cap	LB05F, LB05EMH. Do not use non resistor types.	
Timing	DT360: 2.75mm BTDC	DT400: 2.9mm BTDC
HT Coil	P/N: HTC8. Primary 1.0 - 1.5 Ohms. Sec 5 to 8 K Ohms.	
Source coil	**RMK8** Kits: P/N: SC-6	**RMK 9** Kits: P/N: SC-7
Source coil resistance	**RMK 8:** Black~Brown = 175Ω @20ºC	**RMK9:** Black~Brown=92Ω, Brown~Red=35Ω @20ºC

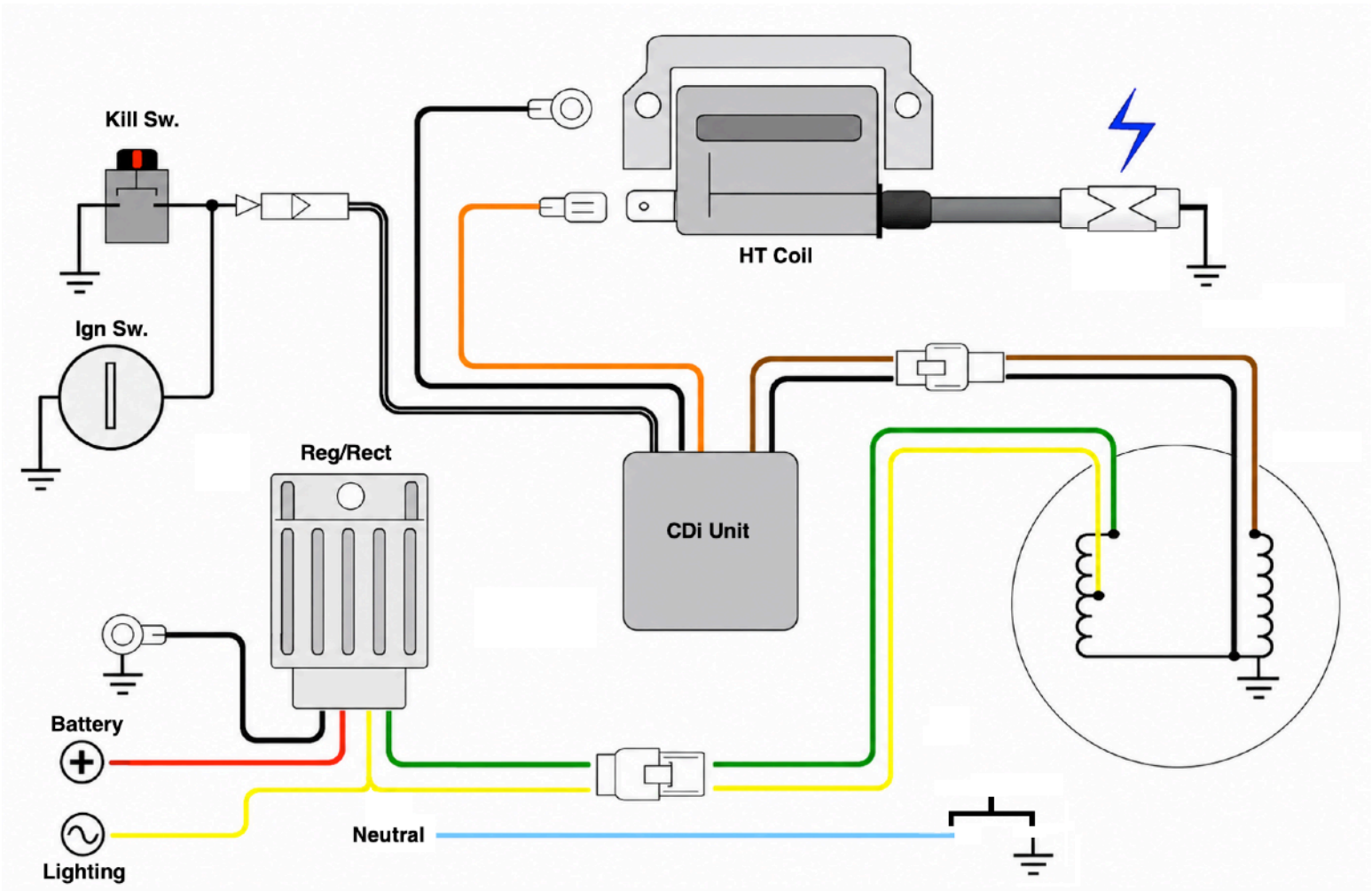
Wiring Information

Battery 6N4B-2B	12V - Use DT12V-Batt
Battery 6N6-3B	12V - Use Motobatt MB3U
Battery Eliminator (Optional)	BE1
Headlamp - Filament Bulbs Only	12V, 35 or 45 Watt
Stop/Tail	12V, 21/5 Watt
Indicator	12V,18 to 21 Watt
Instrument Lamps	12V, 4 watt
Fuse Rating	10 ~ 15 amps
Replacement Regulator	RR12V-1
Replacement Lighting Coil	LC-3
Replacement Indicator Relay	IR-E12V

Indicator Relay Connection

Note our two wire relay is designed to replace most 3 wire relays. The earth wire is not used in this case.



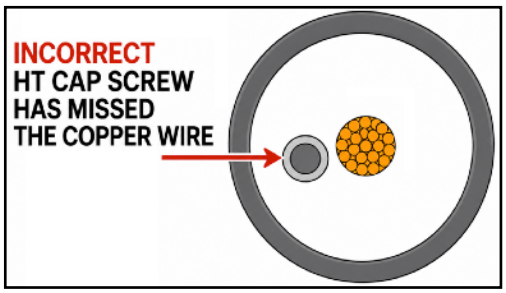


Technical Support - Ignition
Our RMK electronic ignition kits are matched to a specific flywheel. The flywheel part number is more important than the motorcycle model. It is not uncommon to find an incorrect generator fitted, often as the original failed and early ones were known to have issues.

If the engine produces a spark but the ignition timing cannot be adjusted into range, check the number stamped on the flywheel. Compare this with the flywheel specified for your RMK kit on our website. If the numbers do not match, the ignition cannot be timed correctly. The solution is to source the correct flywheel for the kit.

XT500 Owners
Our XT500 RMK kit is designed for points ignition flywheels only. It is not compatible with the later factory CDI flywheel. The solution is to fit a points model flywheel, which is a direct replacement.

No Spark
The most common cause of a no spark condition is a faulty spark plug or an incorrectly fitted HT cap. Ensure the screw-in HT cap has penetrated the copper conductor of the HT lead. It is possible for the cap to screw into the insulation without making electrical contact.



Check the HT coil's primary and secondary resistance readings give sensible readings compared with the specification table above. No reading or an unsteady one shows a failure.

Check the Kill Circuit
Most RMK kits have a separate **black/white** kill wire found near to the HT coil connections. Disconnect this wire and kick the engine over.

- **Spark returns:** The fault is in the kill switch or wiring.
- **Still no spark:** Continue with the checks below.

On kits where the black/white wire cannot be disconnected separately, unplug the CDI connector and perform a continuity test - on the bike's wiring loom - between the black/white wire in that connector and the HT coil mounting bolt (earth). Expected results:

Ignition switch - (Kill switch - if fitted set to 'Run')
- OFF = Continuity
- ON = No continuity

Kill switch (Ignition switch set to 'On')
- RUN = No continuity
- STOP = Continuity

The kill circuit must operate correctly. Do not ride the motorcycle with a faulty kill function.

Inspect the Wiring
Carefully inspect all wiring between the stator and the ignition components. Remove the stator and check that no wires have become trapped or pinched, as this can short the ignition source coil and prevent the system from operating.

Check the Source Coil
Measure the resistance of the source coil and compare it with the specification in the specifications table, above for your RMK kit.

Resistance varies with temperature, so first correct the reading to 20°C before comparing it with the specification. If the corrected value is outside specification, there is no reading, or the resistance is unstable, the source coil is likely to be faulty.

CDI Unit
The CDI unit is not user serviceable or user testable. Never apply battery voltage or any DC power to the CDI unit or the HT coil connected to it. Doing so will permanently damage the ignition system.

Technical Support - Charging and Lighting

Earthing
All RMK kits incorporate their own dedicated earth circuit, connected directly to both the stator and the motorcycle's main earth wiring. This ensures the ignition and lighting systems have a reliable return path.

As the new kit operates at full output, it can expose faults in ageing wiring looms, switchgear, connectors and, in particular, the earth circuit. The main earth wire carries the return current for the entire electrical system, including all lighting, the battery and the stator. Because of the current it carries, it is often the first part of the wiring loom to suffer from corrosion and high resistance.

Before investigating the new charging system, carry out thorough checks on the old, existing wiring loom, connectors and switches. The vast majority of charging and lighting faults are found in original (often 40-50 year old) wiring and/or components.

Batteries
IMPORTANT: Use only lead/acid type batteries, this includes AGM. Lithium batteries have a much higher open circuit voltage and must NEVER be used with this equipment.

The quoted voltages assume a fully charged lead-acid battery. New batteries are normally supplied partially charged for storage and should be fully charged with a motorcycle-specific battery charger before carrying out any charging system checks or fault finding.

Blown Bulbs or Charging Voltage Too High
If bulbs are repeatedly blowing, or the battery charging voltage is over the specified range, the most likely cause is a poor earth connection. High resistance in the earth wiring causes the type of regulator used to increase its output.

Provided the wiring loom is in good condition and the stator has been installed correctly, there is no need to remove paint or create additional earth paths at engine mounts or other parts of the frame. The motorcycle frame is a poor electrical conductor compared with a copper wire, therefore it is important to always ensure the original earth wiring is free of corrosion, all connectors are ‘as new’ and are intended for motorcycle use, secure and in good condition.

NOTE: If you have a battery eliminator in place of a battery, the voltage can rise to around 15V. This is normal, a capacitor does not have a fixed voltage like a battery so will charge up to the level of brief transient spikes that are present in this type of charging system.

Charging Voltage Does Not Rise Above Battery Voltage
This fault is most commonly caused by excessive electrical load. Typical causes include a headlamp bulb of incorrect wattage, a brake lamp switch stuck on, or accessories such as heated grips, phone chargers or USB charging modules.

Roadster kits are designed to improve the original lighting performance by operating at a higher system voltage. They are not intended to power additional electrical accessories.

Charging Voltage Falls Below Battery Voltage (Typically 7.5–9 V) With Engine Running
If the charging voltage falls below the battery voltage only after the engine is started, first check that the original 6 V regulator has been disconnected and removed.

If the charging voltage is correct with the lights switched off, but falls below the battery voltage when the lights are switched on, a ballast resistor or regulator has most likely been left connected in the lighting circuit, wired after the light switch.

Locate and disconnect the unit before further use. These components are often found in unusual locations, having been fitted under service bulletins or by previous owners in an attempt to cure bulb failures. Thoroughly inspect the wiring from the headlamp to the tail lamp.

If the above does not lead you to the issue, refer to the detailed charging system document for 12 volt conversions for ‘Roadster’ RMK kits. This explores the system more deeply, it is available to download on the technical support page of our website.