TY250 Twin Shock Electronic Ignition
RMK-3 Fitting Guide



Thank you for purchasing a Rex's electronic ignition kit. Designed and manufactured in our East Sussex workshop, this self-generating ignition system is intended specifically for the Trials discipline and gives smooth, dependable performance across the RPM range. Our unique **Dual Power™** stator and in-house developed electronics ensures the system is never over stressed and remains consistent all day, under all conditions.

Both our **Clubman** and **Pro** ignition systems feature our unique **Dual Power™** stator assembly. Unlike systems that rely on a single source winding, the **Dual Power™** design delivers substantially more electrical energy to the CDI unit which builds progressively without causing peaky engine performance. The result is a less electrical stress on each winding, stronger spark, improved low to mid range performance and progressive ignition energy.

The **Clubman** ignition is supplied with a carefully developed advance curve designed to provide excellent all-round performance for general trials riding.

The **Pro** ignition combines our Dual Power™ stator with two timing curves. A more aggressive "Hill Climb" advance curve can be brought in to play at the flick a switch. This allows the rider to choose between the standard all-round setting and a more responsive advance characteristic when conditions permit.

Previous versions of this ignition were supplied with a fixed timing setting. While this worked well for the majority of riders, we received regular requests from customers who wished to fine-tune the ignition timing to suit their individual riding style, engine specification and local conditions. We have met this request with a simple to set up, yet fully adjustable system.

Regulated 12 volt lighting kits are available from us for standard TY stators & our RMK ignition kits.

Before you Begin: Warnings & Cautions

Working on motorcycles requires specialist tools, knowledge and training. Serious injury, death, damage to property, or loss may result if parts are incorrectly fitted, adjusted, modified or used for a purpose other than the manufacturers 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.

Always refer to 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.

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.

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.

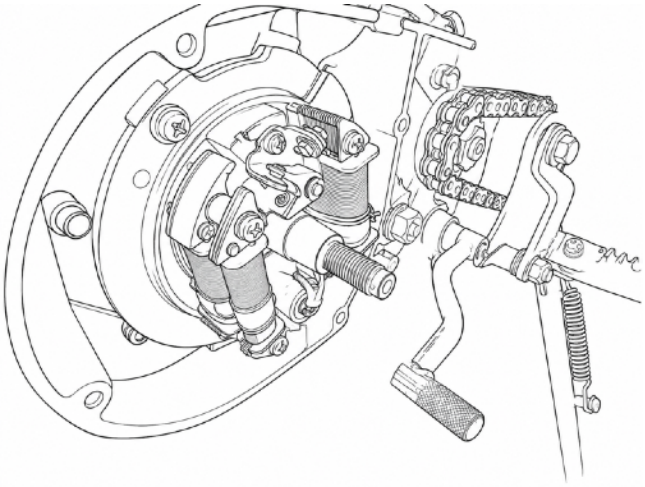
Single-cylinder two-stroke engines can be prone to kickback during starting. Always refer to the owners manual for specific starting advice; some machines feature a 'missing tooth' kick starter to protect the user, or are fitted with a decompressor. Ensure you are familiar with the starting procedure. 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.

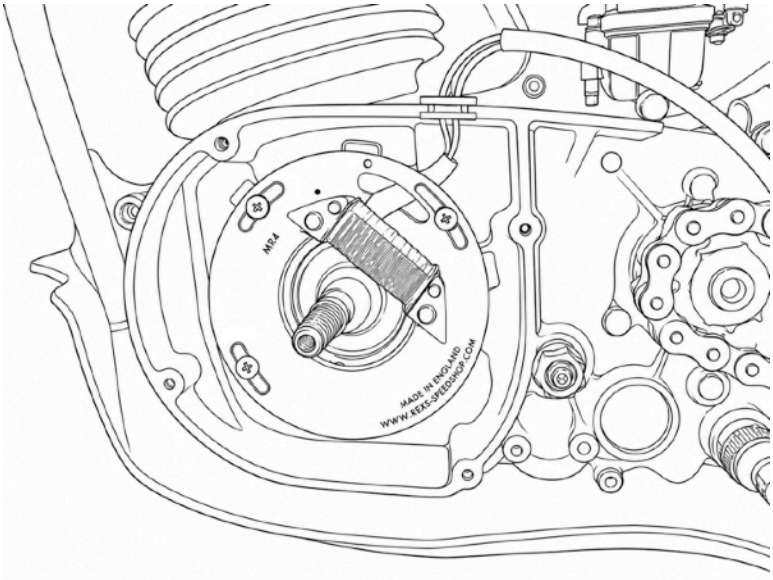
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Fitting Guide

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

2. Undo all 3 stator retaining screws and remove the stator along with the wiring.





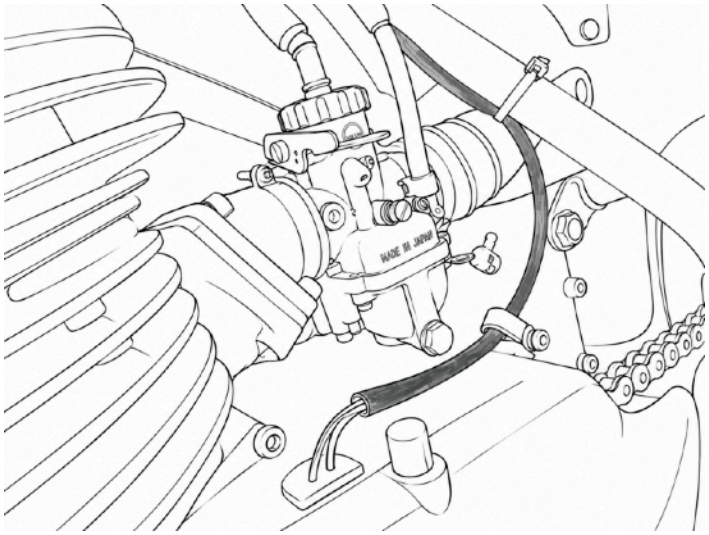
3. Fit the electronic ignition stator with windings as shown, left. Use the 3 x M6 Philips screws from the kit to fasten it to the engine at the two mounting positions as shown in figure 2.

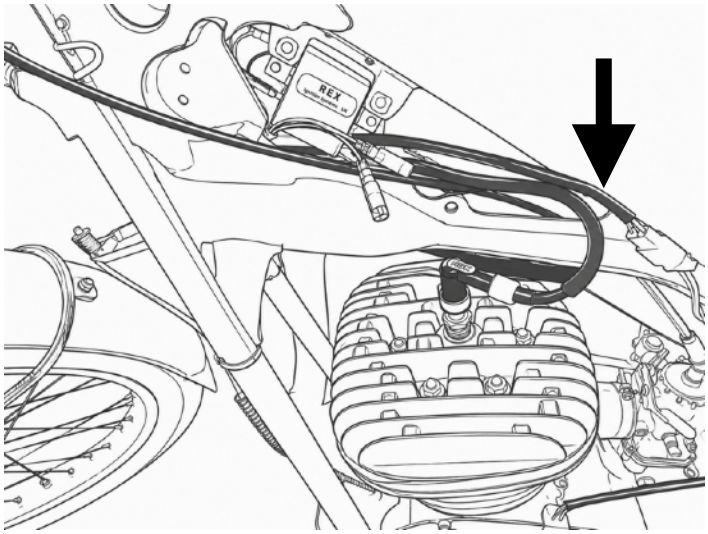
The stator plate can be a tight fit, ensure it pulls down flat against its mounts.

Check wires are not crushed or pinched against the back of the new stator plate if it does not sit correctly.

4. Refit the fly-wheel. Torque tighten to the Yamaha specification.

5. Mount the new HT coil with the lead pointing towards the rear wheel, as shown.





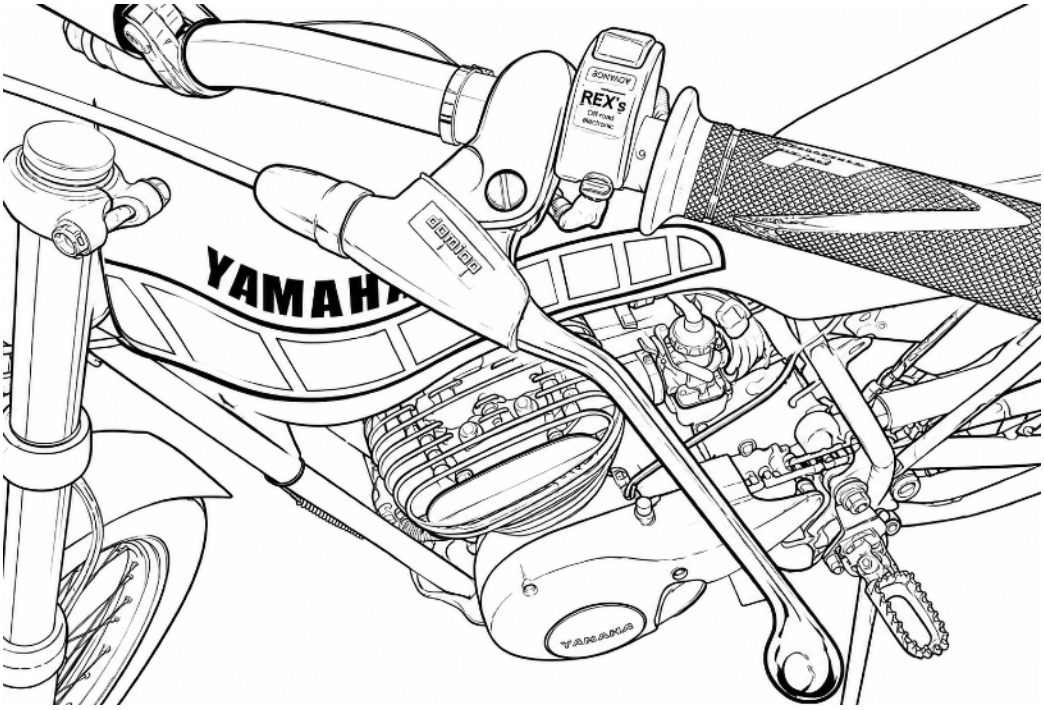
6. Route the stator wire up along the frame as shown. Secure it so it can't get caught by objects such as bushes or branches.

7. The CDI fits to the inside of the tool kit area. Peel off the protective cover on the velcro and stick to the inner surface of the housing, with the wires positioned best to allow them to exit rearwards.

8. Place the ring terminal on the CDi black wire under one of the mounting bolts. Connect the orange wire to the HT coil push fit terminal. The black/white connects to the kill switch.

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‘Pro’ versions only



The switch will not fit to “fatbars" between the bar clamps.

The switch is designed for traditional 7/8” bars. Fit it and loop the wiring under the brake lever and then along the back of the handle bars so that branches or bushes on the course don't catch in the wire.

Route the wires down and pass them around the tank mount flange on the LHS of the headstock. Secure the wire to the bars with cable ties.

The BLUE wires connect to the CDi unit. It does not matter which way round they are connected.

Ensure the steering is free to move and the switch loom does not interfere with or impede other controls.

Important:

Installed as shown, push the switch back, towards the rider for standard ‘Clubman’ setting.

Push the switch FORWARD towards the ‘advance’ sticker for the aggressive hill climbing setting

Only start the engine in the normal or (Clubman) position.

The throttle MUST be closed when switching between timing curves.

Warning: Operating the selector switch with the throttle open may cause the engine to have a power surge or falter, this may lead to loss of control and/or personal injury.

Maintenance

Dirty, wet or corroded contacts may cause the timing to change randomly. An ‘on the day’ solution is to spray a light oil such as WD40 in to the switch and ‘exercise’ it thoroughly with the engine off.

Disconnecting the blue wires will allow the CDi to run in Clubman mode if the switch develops a fault or is waterlogged and causing problems.

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Set-up of Ignition Timing.

This is a straightforward procedure for an experienced mechanic, with Yamaha allowing approximately 0.4 hours for the work.

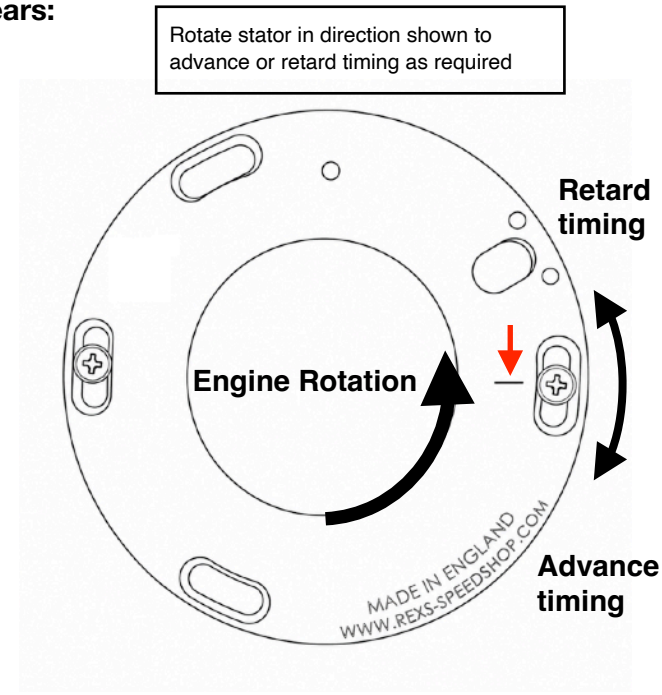
If ignition timing adjustment is not something you are familiar with, we strongly recommend that this task is carried out by a suitably skilled and experienced person.

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.

Pro kits only: Set up is always done with the two blue wires disconnected at the CDi unit.

Easy Set-up method: Proven results over many years:

We recommend that the stator retaining screws are set precisely in the centre of the slots, with alignment mark is lined up with centre of retaining screw as shown →



With both stator retaining screws tightened, refit the flywheel and the engine cover. Start the engine. Cautiously pull away and check for clean running.

To check it is set correctly: Roll along at walking speed, just off the throttle, the engine should roll along smoothly with NO tendency speed up, surge or snatch when rolling along.

-If the engine feels like it is always trying to pull away, retard the timing one degree and try again.

-If the engine feels as if it is sluggish and always wants to stop, advance the timing one degree and try again.

The engine should ‘roll-on’ smoothly when the throttle is opened. Once happy with the walking pace & roll-on test, ensure the engine is easy to start and runs cleanly to full throttle.

Pro kits: reconnect the blue wires. On stable, solid ground test the engine performance using both settings. Always check the engine runs safely in both settings.

Note single cylinder machines have a tendency to kick back on starting, in many cases retarding the ignition timing a degree or two, or altering engine set up may reduce this tendency.

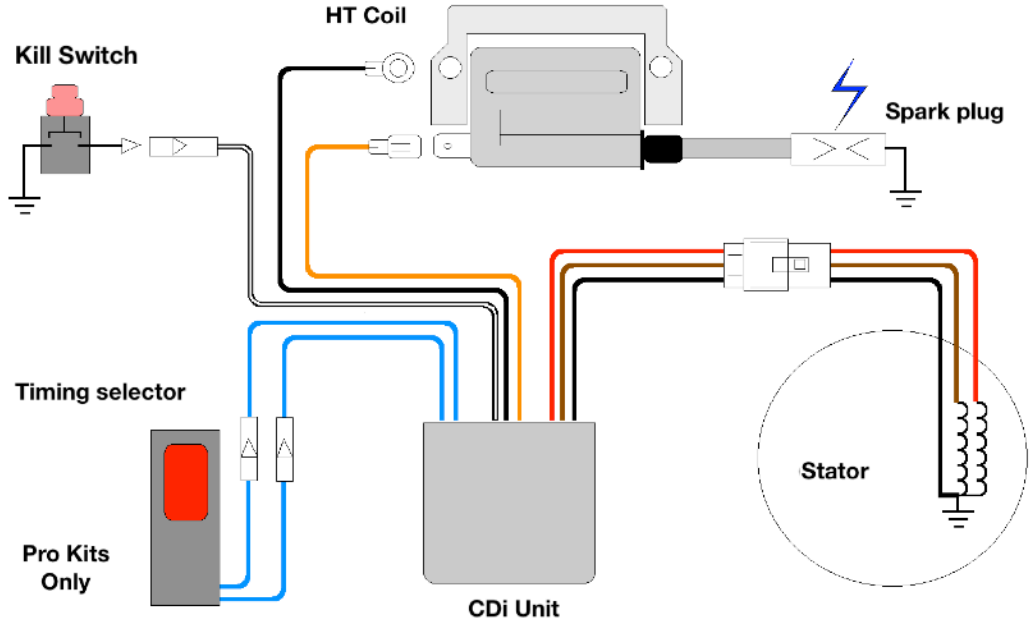
IMPORTANT
Check the engine always starts and runs forwards! Retard the timing if it runs in reverse.

Once the rider is happy with the bike’s running, make permanent timing marks, we recommend using a centre-punch to mark the engine case and stator for easy resetting should the need arise.

What is the correct timing figure - Technical Set-up requiring specialist tooling.
Use the standard Yamaha timing specification of 2.7 mm or 20 degrees BTDC at 2,500 RPM. Use the original flywheel timing marks, together with a suitable pointer mounted to the crankcase and a strobe, to give your starting point. Please note the timing curve we have developed is different to OEM, so **always** check you are happy with the way the engine runs and ensure it is running safely if you are setting solely to the factory (OEM) timing marks. Try the walking pace and roll-on tests and ensure smooth predictable performance. Adjust as required.

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Wiring Diagram



Rex's RMK-3 TY250 Ignition Specifications	
Recommended spark plug	NGK BRE7EiX
Spark plug gap	0.7 - 0.8 mm (0.028-0.032")
Plug cap	LB05F, LB05EMH
Timing	3.1mm BTD +/- 0.2mm @1,100RPM
HT Coil	P/N: HTC8 Primary 1.0 - 1.5 Ohms. Sec 5 tc K Ohms.
Ignition Source winding	P/N: SC-7
Source winding resistance	Black to brown 93 Ohms +/- 5% Brown to red 36 ohms +/- 5% Measure at 20 degrees C, engine not run for several hours.
Charging	None fitted. Lighting sets can be built to order.

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