

Pazon
IGNITIONS WITH THE 7½ YEAR WARRANTY

Altair™



ARIEL
ARROW / LEADER

ELECTRONIC IGNITION

WITH 6 VOLT ELECTRICS

POSITIVE OR NEGATIVE GROUND



SYSTEM TYPE: ALA-6

Altair Applications:

ARIEL ARROW / ARIEL LEADER
& SIMILAR TWIN 2 STROKES
WITH 6 VOLT ELECTRICS,
POSITIVE OR NEGATIVE GROUND

- 12 Volt system also available (part code: ALA)

Altair System Contents:

- IGNITION MODULE 6/12 VOLT (BLACK CASE WITH LONG WIRES)
- TRIGGER ASSEMBLY (ROUND GREEN PRINTED CIRCUIT)
- STEEL ROTOR ASSEMBLY WITH FIXING SCREW & CIRCLIP
- ONE 6 VOLT DUAL OUTPUT IGNITION COIL + SPACERS + FIXINGS
- TWO IGNITION COIL PLUG LEADS (COPPER CORED)
- TWO 5K RESISTOR PLUG CAPS
- CRIMP CONNECTORS & INSULATORS
- RED GROUNDING WIRE
- LARGE & SMALL CABLE TIES
- CABLE TIE ADHESIVE MOUNTING BASE

WARNING: FOR MOTORCYCLES WITH ALTERNATOR & RECTIFIER TYPE CHARGING SYSTEMS.

Unlike 12 Volt electrical systems (as fitted to later British motorcycles), this type of 6 Volt charging system has no voltage control (i.e. zener diode), relying instead on loading from the battery (& lighting) to keep the voltage within acceptable limits. If the battery should become disconnected whilst running it is likely that excessive voltage will be fed into the wiring harness; this may lead to failure of the ignition module. Failure of a module due to excessive supply voltage will not be covered by the warranty. We recommend that the battery cells & condition are regularly checked and that the battery connections are kept secure and tight at all times. Bulb failure and/or battery boiling will normally indicate a charging problem. To avoid overcharging problems Pazon can supply a 6 volt rectifier/regulator (part code: RR6) which controls the voltage to a maximum of 7.5 volts; this unit also replaces the original rectifier.

WARNING: RISK OF ELECTRIC SHOCK
ALWAYS TURN OFF BEFORE WORKING ON THE SYSTEM

BEFORE FITTING, PLEASE READ THESE INSTRUCTIONS CAREFULLY,
INCLUDING THE NOTICE ON PAGE 12.

Altair Installation Instructions:

5K resistor plug caps (as supplied) should be fitted to the h.t. leads.

1. All connections must be of the highest quality, use crimped or soldered connections; twisted wires will not give a satisfactory operation.
2. Remove linings to dummy tank to gain access. For safety, disconnect the battery (preferably both terminals).
3. [Remove side shield on the Leader]. Remove the contact-breaker cover. Disconnect the two wires (usually black-white & black-yellow) from the contact-breakers. Undo the two fixing screws and remove the complete contact-breaker/condenser assembly. Keep the screws in a safe place for later. At the other end, these two wires must be disconnected from the ignition coils. These two wires are no longer required, but they can be used later to pull the new trigger wires through (step 18).
4. Remove the points cam from the end of the crankshaft. This is normally fixed to the crankshaft with a self-extracting screw. Undo the screw and it will go tight, where it pushes against the circlip inside the cam. Keep turning and the screw should extract the cam from the taper on the end of the crankshaft.
5. Disconnect the remaining wires from the ignition coils (normally coloured white or black-white). These come from the ignition switch supply.
6. Slacken the clamps and remove the original 6 volt ignition coils.
7. Using the supplied aluminium spacers, fixing bolts, nuts & washers, mount the supplied ignition coil in a ventilated position, via each end of the laminated metal bar. There is an access panel on the bottom of the dummy tank, the new coil can be mounted here between the bottom of this and the real petrol tank, if preferred. (This also allows the ignition module to be mounted close to the coil, secured using an adhesive pad onto the top of the petrol tank). The coil mounting centres @ 90mm/102mm. We recommend using the 102mm centres, as it provides easier access to the low tension terminals. Ideally the coil should be bolted to a sheet of metal (preferably aluminium). This will allow heat to be drawn away from the centre of the coil. Fit the supplied h.t. (plug) leads into the two outlets on the coil, and slide over the rubber covers. Route the leads to the spark plugs (either way around), cut to length (as required) and fit the supplied plug caps to the ends. The caps are designed to screw onto the copper cored leads.

8. Mount the ignition module in a convenient place (reasonably close to the ignition coil), e.g. under the seat or tank, but away from direct sources of heat. Allow some air space around the module. Do not wrap in foam rubber or similar. A thin sheet of rubber can be placed between the module and mounting point/frame, to minimise movement and vibration effects. If mounting close to the ignition coil, allow some space between the module and coil (as this will get warm). Secure the ignition module to the frame using one or more large cable ties. An adhesive cable-tie mounting base is provided, which can be affixed to the side or back of the module case, and the cable tie passed through and around the module and frame (or mounting bracket).

Wiring

9. Note: the low tension terminals on the supplied dual ignition coil are not marked plus/minus. It does not matter which terminal is taken as positive/negative. Take the violet wire from the ignition module, route to one of the ignition coil terminals (this will become 'negative'), cut to length and fit a small ring crimp connector to the end of the wire. Connect the violet wire to one of the ignition coil terminals, using the fixing screw, spring & flat washers provided.
10. Take the red wire from the ignition module, route to the other terminal on the ignition coil (this will become 'positive'), cut to length and fit a small ring crimp connector to the end of the wire. Do not fit to the coil terminal (see next step).

For **NEGATIVE GROUND** electrics, goto step 13

For **POSITIVE GROUND** electrics (standard):

11. Take the red grounding wire, fit a small ring crimp connector on one end and connect to 'positive' terminal on the ignition coil, **together with the red wire from the ignition module**, using the fixing screw, spring & flat washers provided. You should now have two ring terminals on the 'positive' terminal of the coil. Cut the red grounding wire to length and fit a ring terminal on the other end, and connect to a good grounding point on the frame, ideally the battery positive (+) terminal. See page 8.
12. Take the black wire from the ignition module, cut to length and fit an insulator and male spade crimp connector to the end. Connect

to a negative feed from the ignition switch. The wire that was connected to the original ignition coil (SW terminal) can be used for this. This wire is typically white. If desired, an in-line fuse can be fitted here (minimum 5 amp recommended). See page 8. Goto step 15.

For **NEGATIVE GROUND** electrics:

13. Locate one of the positive ignition feed wires previously removed from the ignition coils in step 5. Any other wires are spare and should be covered with insulation to prevent shorting to the frame etc. Route to the 'positive' terminal of the ignition coil, cut to length (if required). Fit a small ring crimp connector on the end of the wire. Connect to the 'positive' terminal on the ignition coil, **together with the red wire from the ignition module**, using the fixing screw, spring & flat washers provided. You should now have two ring terminals on the 'positive' terminal of the coil. If desired, an in-line fuse can be fitted here (minimum 5 amp recommended). See page 8.
14. Take the black wire from the ignition module, route to a good grounding point on the frame, ideally the battery negative (—) terminal. Cut the wire to length and fit a suitable crimp connector (e.g. ring terminal). Connect the black wire onto the grounding point. See page 9.
15. If not already done, remove the two contact-breaker wires (and any sleeving), previously disconnected in step 3.
16. Take the ignition trigger assembly (round green printed circuit) and pass a small tie-strap through the set of holes in front of the 3-way connector block (this may already be fitted); leave unfastened at this stage.
17. Fit the ignition trigger assembly in the contact-breaker housing, with the terminal connector block at the top, positioned midway on its adjustment slots. Refit the original contact-breaker fixings, finger tighten only.
18. Allowing some slack in the cable (for ignition timing adjustment), route the three sleeved bi-coloured wires (white-red, violet-red & white-black) from the ignition module down to the contact-breaker housing; this would normally be following the same route as the original contact-breaker wires. To make it easier to pass these wires through the small hole in the framework, feed a piece of stiff wire (or a large tie-strap) from underneath, tape the wires to it and

use to pull the wires through. Feed the sleeved wires through the hole in the contact-breaker cover. Route the sleeved wires to the trigger connector block, passing over the small tie-strap inserted earlier. Cut the wires & sleeving to length. Carefully strip back a small amount of insulation (4-5mm) from the ends of the three wires (the ends can be soldered, if preferred). Insert the wires into the connector block on the trigger in order (from top to bottom):

White—Red, Violet—Red, White—Black (**colours must match**)

Tighten the terminal screws. Secure the sleeved wires to the trigger plate by fastening the small tie-strap; cut off the excess from the tie-strap.

19. Remove the spark plugs.
20. Set the engine to the standard timing mark in the normal manner, by inserting the factory tool (or a 9/64" rod) into the top contact-breaker cover fixing screw hole and rotating the engine until the rod engages fully into the hole; this locks the crank into the correct timing position. Either of the two timing holes can be used, since both plugs fire at the same time.
21. Fit the supplied steel rotor assembly onto the end of the crankshaft. Note that the rotor only fits onto the crankshaft a short distance. The rotor should stop short of the pin in the end of the shaft; if not you will need to remove the pin. Position the rotor so that the leading edge of one of the slots is aligned with the centre of the sensor on the trigger assembly (the rotor spins anti-clockwise). See fig. 3, page 9. Tighten the rotor fixing screw.
22. Remove the timing tool inserted earlier.
23. Re-check all connections are good and tight; any loose crimps should be removed, slightly closed up and refitted, or preferably replaced.

24. **IGNITION TIMING:**

**Warning: risk of electric shock, keep hands
& body away from coil, ht leads, caps & plugs**

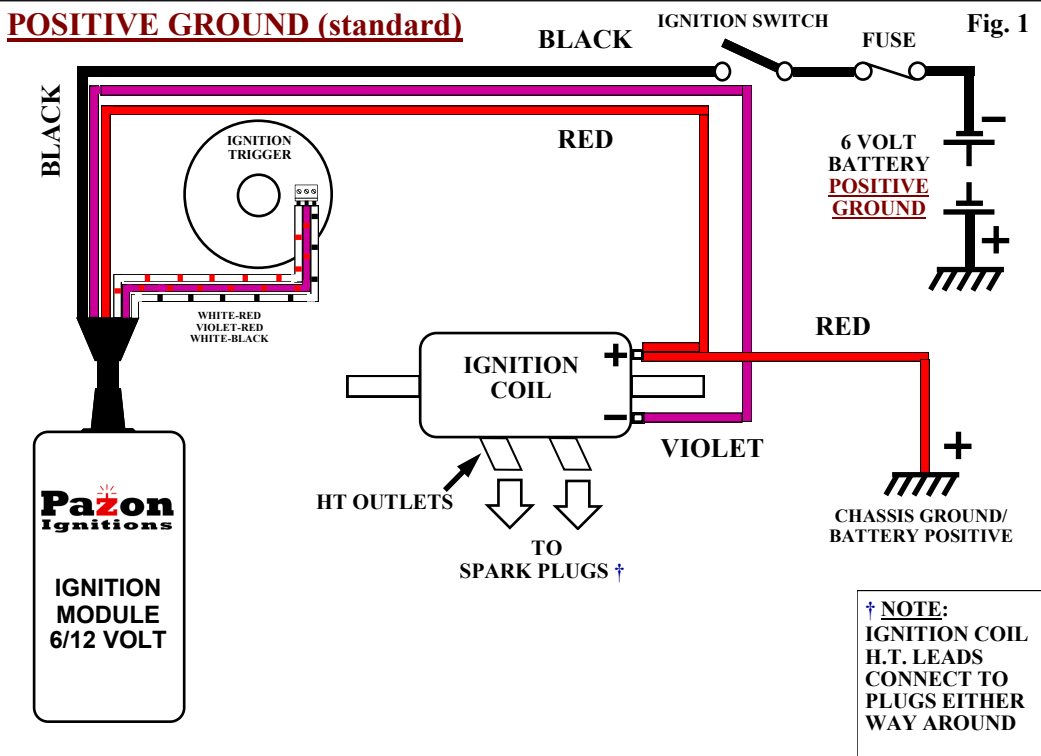
Push the spark plugs into the plug caps and ground onto the engine. The following operations will normally produce a spark from the plugs, therefore it is recommended that the violet wire be temporarily removed from the negative terminal of ignition coil#2, place insulating tape over the end of the connector to prevent shorting to ground. Alternatively, temporarily disconnect the Violet-Red wire from the trigger. This will prevent any undesired

sparks whilst timing and **avoid the possible risk of electric shock.**

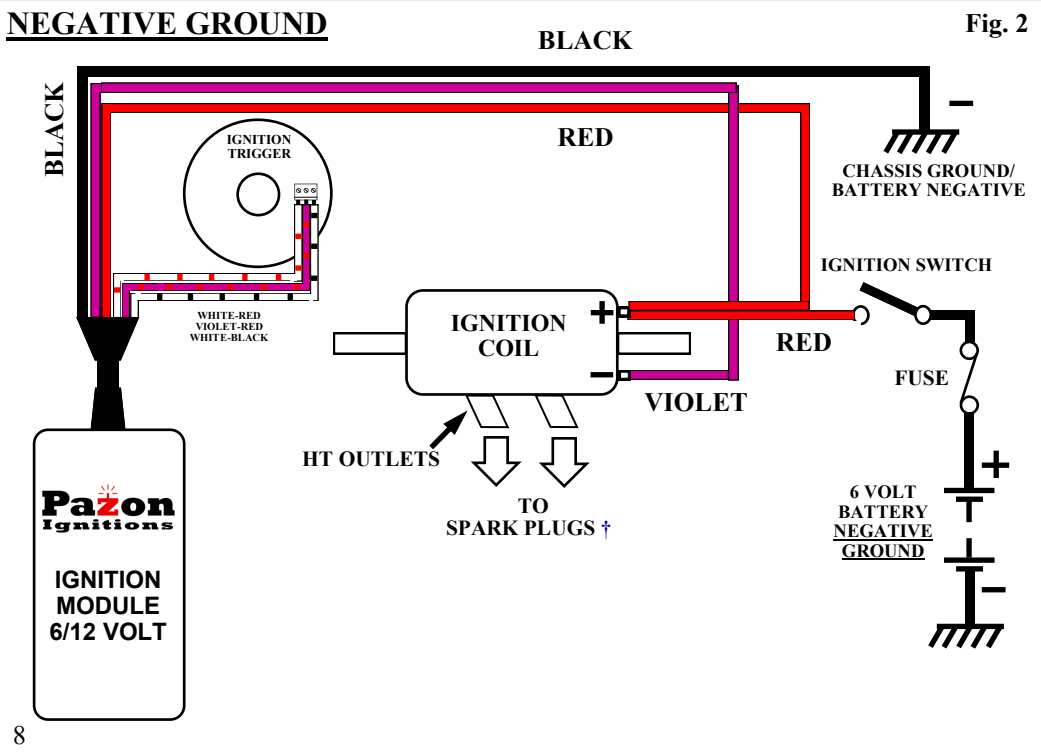
Check that the ignition switch is off. Reconnect the battery.

- Rotate the trigger fully anti-clockwise to the end of the adjustment slots. See fig. 4
 - **Switch the ignition on.** The red static timing light on the trigger assembly will be off.
 - Rotate the trigger fully clockwise to the end of the adjustment slots. The red static timing light turns ON. See fig. 5
 - Rotate the trigger fully anti-clockwise to the end of the adjustment slots. The red static timing light turns OFF. See fig. 6
 - Finally, rotate the trigger slowly clockwise until the red static timing light turns ON. See fig. 7
 - Keeping the trigger in position, tighten the two fixing screws. Do not overtighten or the plate may become distorted.
 - If you make a mistake with the above, switch the ignition off and restart from the beginning of step 24. Reconnect the violet wire, if removed earlier.
25. After road testing, if you wish to fine-tune the ignition timing, make very small movements of the ignition trigger on its slotted holes. **For safety, switch ignition off between adjustments**
- To advance the timing, rotate the trigger clockwise.
 - To retard the timing, rotate the trigger anti-clockwise.
26. Refit contact-breaker cover, **ensuring that excess on the trigger wires is gently pulled back through the grommet in the cover, to avoid damage to the wires by fouling on the spinning rotor.**
27. The timing is now set and requires no further adjustment. However, please note that for satisfactory operation of this ignition system it is important that the wiring, ignition coils, switch, battery, h.t. leads, plugs and plug caps are in good order.
28. The emergency start facility should not be used with this ignition system and should be disconnected.
29. The installation is now complete.

POSITIVE GROUND (standard)



NEGATIVE GROUND



STATIC IGNITION TIMING
(WIRING NOT SHOWN FOR CLARITY)

Fig. 3

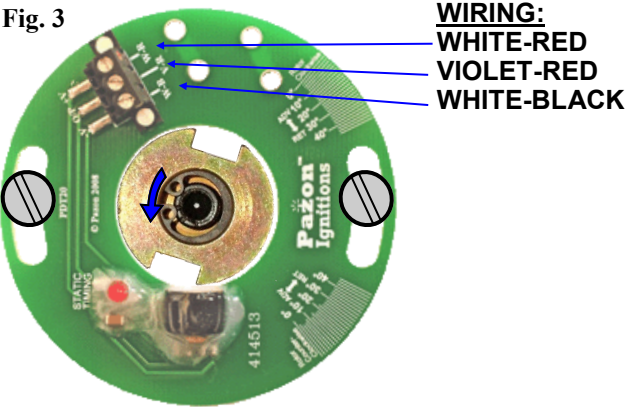


Fig. 4

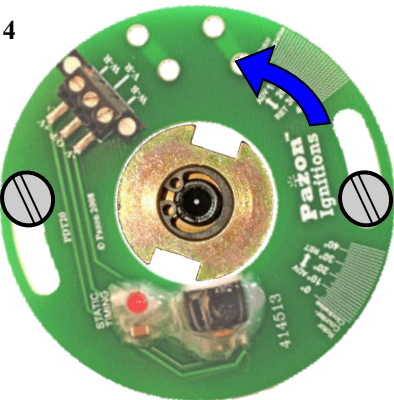
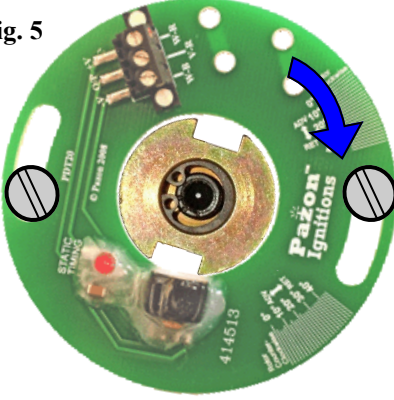


Fig. 5



START POSITION
SWITCH IGNITION ON

Fig. 6

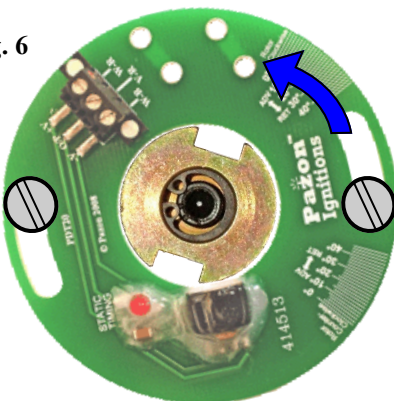
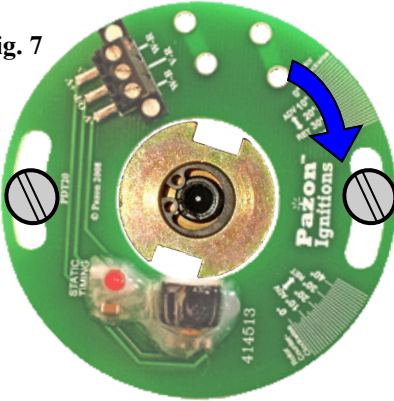


Fig. 7



Ignition Coils

For best results use one 6 volt dual output coil with a primary resistance of 1.5 to 2.5 ohms.

CDI type and some electronic ignition coils are incompatible with this system; for suitability check the primary resistance is 1.5 ohms or more (measure across the + and — terminals with a multimeter).

Ignition coils can develop a short circuit to ground through the case, especially if the clamps are too tight. This can cause overheating of the affected coil and can also produce misfiring/bad running on one or both cylinders. Slacken the clamps and examine the coil casing for heavy crease marks. If in doubt replace the coils.

Recommended ignition coil (available from PAZON) for this system:

1 x IC32 Pazon 6 Volt Dual Output Coil

General Data/Troubleshooting

This system can be adapted to work on many types of engine, provided that the required firing interval is every 180°.

This ignition is of the wasted spark type, i.e. both plugs spark at the same time, every half turn of the engine. One plug will fire on the compression stroke and the other will fire on the combustion stroke (the wasted spark). Since both plugs spark at the same time, bad running/running on one cylinder can only be due to a faulty plug, cap, ht lead, ignition coil or mechanical problem, not the ignition module or ignition trigger.

Wiring should be cut to the correct length. Excess wire should not be coiled up; this can affect the correct running of the ignition system. Where possible the wires from the ignition trigger should be run separately from the rest of the wiring loom, especially the alternator stator wiring.

The frame/chassis must act as an electrical return (ground/earth), whether positive or negative ground. If the engine is rubber mounted a good ground/earth strap must be provided.

The system can also be run total-loss from a battery only (e.g. for racing applications).

The **Altair** ignition module features a simple self-test facility for producing sparks without turning the engine:

- Switch the ignition on.
- Loosen the middle screw of the connector block on the ignition trigger and disconnect the Violet-Red wire.
- Take the Violet-Red wire and touch the end of the wire onto the White-Black terminal block screw and remove it, approximately once per second. Both plugs should spark at the same time.
- If only one plug produces sparks, check the coil, lead, cap and plug.
- If there are no sparks, check battery, switch, grounding, wiring, connections & ignition module.
- Continuous sparks without turning the engine indicates a poor supply to the ignition; check battery (bad cell), switch, grounding, & connections.

Altair Technical Data

Ignition Module (Part# ALAM)

Minimum Supply Voltage:	5 Volts DC
Maximum Supply Voltage:	16 Volts DC
Maximum Ignition Coil Peak Primary Voltage:	400 Volts (Regulated)
Maximum Ignition Coil Secondary Voltage:	Ignition Coil Dependent
Current Draw (Static):	0.05 Amps Max. (Ignition Coils Off)
Current Draw (Dynamic):	Typically 3-4 Amps (Coil type & rpm dependent)
Maximum Ignition Coil Current Draw:	5 Amps
Ignition Coil Turn Off (Engine Static):	< 3 Seconds (Typical)
Minimum Cranking Speed:	10rpm (Typical)

Ignition Trigger (Part# PDT20)

Trigger Type:	Dual element differential hall-effect
3-Way Connector Block Wire Size:	0.75mm ² max.

Ignition Timing Disc / Rotor (Part# TRAA)

Material:	Mild steel, zinc/gold passivated
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Terms & Conditions and Warranty

- Use of this product indicates your acceptance of this notice.
- The product design & literature is Copyright © PAZON IGNITIONS LTD. 2005-2023, and is protected under international copyright, trademark & treaty provisions.
- To provide the best ignition systems possible, PAZON IGNITIONS reserves the right to alter and improve the specifications of its products without prior notice.

Ignition Systems

- Pazon warrants to the original purchaser that the Pazon Ignition System be free from defects in workmanship & parts under normal use for a period of 7½ years from date of purchase.

Ignition Spares

- Spares are defined as item(s) not purchased as part of a complete ignition system. Pazon Ignitions warrants to the original purchaser that these item(s) be free from defects in workmanship & parts under normal use for a period of one year from date of purchase.
- Ignition coils will only be covered by the warranty if it can be proved that the fault is due to a manufacturing fault within the coil.

Limitation of Liability

- In no event shall Pazon Ignitions liability related to the product exceed the purchase price actually paid for the product.
- Neither Pazon Ignitions nor its suppliers shall in any event be liable for any damages whatsoever arising out of or related to the use or inability to use the product, including but not limited to the direct, indirect, special, incidental or consequential damages, or other pecuniary loss.
- This warranty will be void if the product or parts have been altered, damaged, abused or installed incorrectly.
- This warranty will be void if parts supplied by Pazon Ignitions are used with other makes of ignition. Your statutory rights are not affected.

Warranty Claims

- To make a claim under warranty, the product must be returned to PAZON IGNITIONS or its authorized representative, with a copy of your receipt (or evidence of date & place of purchase), within the warranty period.
- Include a detailed description of the problem and why you believe there is a fault within the ignition system.
- The system must be returned postage paid. Proof of posting is not proof of receipt, therefore we recommend using a recorded mail service.
- Upon receipt we will thoroughly test the returned items and repair or replace any items found to be faulty and covered by the warranty.
- Please allow seven working days from receipt of the returned parts before contacting us, to allow sufficient time for a thorough test and evaluation.
- PLEASE CONTACT PAZON IGNITIONS FOR RETURN INSTRUCTIONS.

✉ **Pazon Ignitions Ltd, 274 Hot Springs Road, RD 2,
Katikati 3178, Bay of Plenty, New Zealand**

☎ **TELEPHONE: +64 (0) 7549 5878** ☎ **FAX: +64 (0) 7549 5879**
EMAIL: ignition@pazon.com WEB: www.pazon.com