UPDATE - Product Advisory Notice

Type E Pump Motor Fault

Product:	Type E Fuel Pump
Currawong part number:	CE370-07, CE370-08, CE370-10
Serial numbers range:	All

ADVISORY UPDATE

Currawong Engineering has completed further testing on the Type E Fuel Pump.

- A replacement Faulhaber motor was supplied with graphite commutator brushes to replace the precious metal brushes found on the previously equipped motor. Information from the supplier suggests these brushes are 'reinforced' and should provide enhanced durability.

- The first replacement motor supplied has been tested at 15V on the *soft start bang-bang motor control* firmware. This motor achieved *515hrs* of operation under these conditions, before a failure in the brushes terminated the test. It should be noted that this test was conducted on a representative engine fuelling system, rather than continuous running, to best simulate field operation. For the duration of this particular test, the pump was not operating at an optimal fuel flow rate and pump duty cycle.

- A further replacement motor with graphite brushes is now under test at 12V on *soft start bang-bang control*, assembled to a brand new pump body. As of *December 10th 2019*, this motor has been in operation for *250hrs*. It is intended this pump will be tested to failure.

- Both a precious metal and a graphite brushed motor are being tested in parallel with the test above, at 12V on *hard start (400Hz ramp rate) bang-bang control* with new pump bodies. This will establish endurance of Type E pumps currently in the field, and the intended replacement graphite brush motors, providing indication of operational life using the updated control firmware.

FIRMWARE UPDATE

The most recent ECU firmware (v6.40B_Release) has undergone extended testing on the endurance pump apparatus, and engine testing at P4F.

Changes (since last release v6.35, 12th October 2017):

1. Added support for bang-bang pump control, enabled by setting both the Kp and Ki pump controller gains to zero. If the gains are not changed, then the normal PI pump control is in operation.
2. Added configurable ramp controller for the pump motor PWM duty cycle.

There are no other functional changes to the ECU firmware.

The procedure for updating firmware can be found in Section 13 of document *CE367.d00 - ECU Type B Manual v4.15* available on the Customer Access Portal. Please ensure the latest version of cEQUIP is installed to complete the update procedure for your ECU. Contact your distributor for further support if required.

- As referenced in the previous Product Advisory Notice of September 2019, Currawong Engineering are testing a motor from a different supplier in parallel with testing referred to above. This motor continues to operate, with endurance testing exceeding *600hrs* at 15V on a *soft start bang-bang control*.

As investigations continue, Currawong Engineering is able to make the following recommendations as preliminary findings from testing to date. These serve as intermediate measures for fuel pumps in the field, to provide customers with confidence to continue using the Type E Fuel Pump.

- Fuel pumps should be operated at 12V maximum**,** and **MUST NOT** be operated at 15V
- Pump control firmware should be updated immediately
- Fuel pump use can be resumed once the two measures above are implemented
- Preliminary operational life of the motor is 350 hours (This number will be revised upwards as endurance testing with the updated firmware continues)

At conclusion of continued investigations, Currawong Engineering will release a full Product Update Bulletin with final outcomes and recommendations.

Update approved by:

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Chief Executive Officer