

SERVICE BULLETIN NUMBER 150 issue A

TITLE Unfused wiring and fire hazard
CLASSIFICATION P&M Aviation have classified this service bulletin as essential.
COMPLIANCE Inspection at Permit revalidation or within next 25 hours, whichever is less.
APPLICABILITY All Flight Design CT2K, CTSW and CTSL.

- [BM83](#) Issue 1 Flight Design CTSL
- [BM72](#) Issue 1 Flight Design CTSW
- [BM65](#) Issue 6 Flight Design CT2K

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REVISION HISTORY

Issue	Date	Changes
1	27/9/2018	
1	18/10/18	Amended clarification of wire length vs risk of shorting

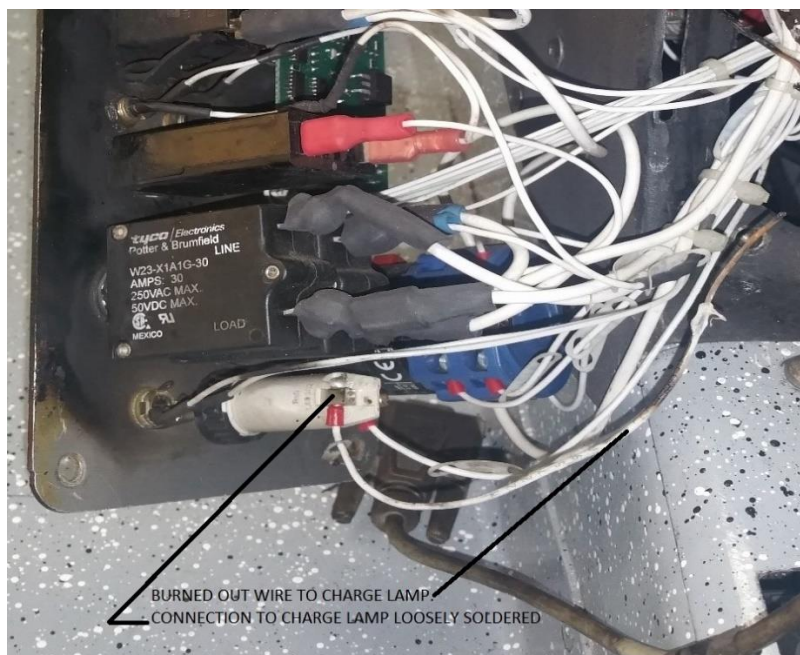
1. INTRODUCTION

General

A CTSW suffered an in-flight fire in the cockpit. Fortunately, the aircraft was landed safely, and the fire extinguished with CO₂. The fire was caused by the charge lamp +12v supply wire which was trapped in a panel joint and had chafed and shorted to earth through the carbon structure. The charge indicator lamp on this aircraft had been moved from its normal position on the top of the upper instrument panel to the bottom of the centre console and was fed by a loose wire. The wiring was generally very untidy, with loose connections and several after-market equipment additions.

The charge indicator lamp is operated by the "L" terminal on the voltage regulator, which goes to 0v (earthed) for the light to go ON. The light is fed by a +12V power source. As shown in the Rotax installation manual and the CT wiring diagram, the +12V power source for the charge lamp comes through a 22AWG or 0.5mm sq. wire, straight from the regulator output +B terminal. This means that should the +12v lamp supply wire short to earth, the full regulator output AND up to 30A current from the battery is available, easily enough to burn the wire out. If the charge lamp wiring run is long, there is more risk. The first line of defence is insulation, the second is protection by fusing or circuit breaker.

Shorting to carbon/epoxy is hazardous because the material is resistive and does not conduct heat well. Great heat is produced causing the resin to ignite. Once it is alight, the resin will continue to burn, producing smoke.



Fire damage. Note the burned-out wire running to the charge lamp, and the missing screw to the charge lamp replaced with a loose solder blob on the wire.

2. ACTION

Remove the lower console panel. Inspect the condition and security of the wiring, especially the charge lamp +ve supply wire.

In order to minimise the run of unprotected wire, unless it is very short in length and supported so that a short circuit to earth is impossible, it is recommended to put a 1A fuse in the supply wire to the charge lamp, close to the regulator (modification M342). See wiring diagram in appendix A.

If the lamp wire needs replacing or rerouting, only non-PVC insulation of AWG22 gauge (P&M part no. 55A0811-22-9) may be used.

Ensure the wiring is tidy with tight connections and is well secured and protected. Be sure the wiring cannot be trapped in panel joints and has adequate strain relief. Ensure it cannot short against anything including control runs, at all extremes of movement.

Alternatively, if the aircraft is equipped with a sensitive voltmeter with a low volts warning calibrated to give an alarm when the battery voltage drops below the normal on-charge voltage range (warning below approximately 12.7v) then the charge lamp may be removed entirely. Most EFIS or EMS type displays have a facility to display calibrated low voltage alarms.

The P&M Battery state monitor (BSM) may be fitted (part no. IEBSM-2). This is a single LED voltmeter giving red slow flash (very low volts) red (low volts), orange (freshly charged battery) green (on charge at correct regulated voltage) fast red flash (over voltage). The BSM has an internal thermal fuse, but the +12v wiring to it should be routed to minimise the possibility of shorting to earth and/or be fused.

In addition, plastic fuel filters inside the instrument binnacle must be replaced with modified fire resistant type P&M part 024-032.

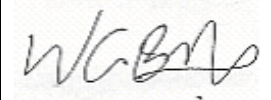
3. CONTINUED AIRWORTHINESS

Remove the instrument panels enough to inspect the wiring for routing, security and chafing, especially any carrying +12V.

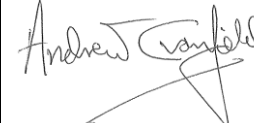
4. DOCUMENTATION

The aircraft logbook must be signed by a qualified person to show it has been modified to M342 and inspected according to SB 150. A copy of this SB should be kept with the aircraft operator's handbook.

ISSUED BY W.G.Brooks

Approved		Date
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Appendix A – Wiring Diagram

