

Service Letter



1. General

(a) No.:	SL 4
(b) Revision / Date	A / October 2017
(b) Title:	Venting of Fuel Coupling Self-Seals
(c) Description:	Operators / Pilots are reminded of the importance of venting liquid fuel from the hose coupling self-seals of Fuel Cylinders or Manifold Hoses after refuelling, pressurising, flight or ground test. Failure to carry out this action can result in accelerated damage to the self-seal sealing rings and/or difficulty connecting the burner hose during in-flight fuel cylinder changes.
(d) Applicability:	All Fuel Cylinder coupling types
(e) Effectivity:	All CNs

Note: Applicability= All types and variants to which the advice can be applied.
Effectivity= Actual CN or group of CN's to which the advice applies.

2. Accomplishment Instructions

Ref: Cameron Balloons Flight Manual, Section 4.9 'Refuelling' and 4.10 'Fuel Pressurisation'
Ref also: Cameron Balloons Ltd Service Letter 'SL 1' 'Emptying of Burner Fuel Hoses'

Failure to vent the Fuel Coupling Self-Seal after filling, pressurising, or part-using a Cylinder, can leave the self-seal volume of the coupling (between the main valve shutter and the self-seal poppet seal) completely filled with liquid fuel. This liquid fuel is trapped within a fixed volume. Any subsequent slight increase in the temperature of the liquid within the coupling will attempt to cause an expansion of the trapped fuel, which because it is held within a fixed volume will instead develop an increase in pressure.

This pressure increase can far exceed that which will occur in a fuel system which has access to a vapour space above the liquid fuel, and can be such that only a few degrees of temperature rise can elevate the fuel pressure to above the normal maximum operating range of the system.

When this occurs the pressure force exerted on the self-seal sealing ring increases such that imprinting or damage may occur more rapidly than would normally be expected.

The trapped pressure also acts to make connection of push-action coupling types (of which the Tema 3800 is one example) far more difficult as the connection force required has to overcome the pressure acting on the self-seal poppet seal area.

This pressure rise behaviour within a trapped volume is purely a physical property of a fluid, and can affect any model of hose coupling made by any manufacturer.

After any refuelling, or pressurising, operation on a Fuel Cylinder the Liquid Off-take Valve should be closed, and then the self-seal poppet of the hose coupling pushed in (using a suitable non-scratching implement e.g integral plastic peg of CBL Rego Dust Cap or blunt end of a wooden pencil) to vent the small volume of fuel from behind the poppet.

This should also be done if the fuel system has not been vented after any period of flight usage or ground testing (Ref Cameron Balloons service letter 'SL 1')

CAUTION - During the venting action a small volume of pressurised fuel will be released. Therefore this action must be made wearing suitable gloves, and away from the eyes or face of any persons, and all possible sources of ignition.

3. *Materials* none

4. *Other Publications Affected* none

5. *Remarks* none

Compiled by:

P. Johnson

Notes:

Date: 16 Oct 2017

Name: Peter Johnson

6. *Design Organisation Approval*

Approval Statement

I hereby confirm that these instructions are in compliance with all the applicable airworthiness requirements. The technical content of this document is approved under the authority of DOA nr EASA.21J.140

Signed, for and on behalf of Cameron Balloons Ltd.

PP *D. Boxall*

Head of Design



Date: *16-05-17*

Name: *D. Boxall*