Light Aircraft Association	**Standard Modification** Issue 2	Mod No. SM14809 Page : 1 of 3 Compiled : A Draper Approved : F Donaldson

TITLE : Replacement of Original Nitrile Rubber Fuel Filler Hose with an Aluminium Elbow and E5 Fuel-proof Connectors or an E5 Fuel-proof Rubber Elbow

APPLICABILITY : **Europa XS and Classic with XS type fuel filler**
Mod Type : **Retro-fit**

1. Introduction

Due to the design of the Europa's fuel filler system, a quantity of fuel inevitably remains in the filler hose after refuelling, more so in the Monowheel due to its tail down ground attitude. Despite the hose not leaking it is possible that the fuel remaining in the filler hose may lead to a fuel smell in the cockpit. This modification is intended to remove or minimise fuel smell and provide an alternative to the original Europa supplied nitrile rubber elbow section of the fuel filler assembly after an example was discovered to have failed in service.

2. Parts List

Qty	Description	Possible Source
1	Aluminium Elbow 50mm – 51mm outside diameter 1.6mm wall thickness seamless aluminium alloy 45° to 60° elbow, length as required.	Demon Tweeks (45° elbow) Tim Ward (52° elbow) wardt@xtra.co.nz AutoSiliconeHoses Ltd. (60°) www.autosiliconehoses.com
125 mm (min)	Connector hose 51mm internal diameter, 4mm minimum wall thickness **fuel proof** rubber hose. (e.g. Samco ProFuel) Note: **Fuel resistant** hose is not acceptable, although use of short sections of the original Europa supplied nitrile rubber elbow may be used subject to annual internal inspection.	Merlin Motor Sport Ltd www.merlinmotorsport.co.uk Demon Tweeks www.demon-tweeks.com or similar outlets
2	Clamps 50 - 70mm stainless steel worm-drive hose clamps to BS 5315 (Retain two clamps from the original assembly)	

OR

1	51mm internal diameter, 4mm minimum wall thickness **fuel proof** 60° rubber elbow with 152mm legs. (e.g. Samco ProFuel)	Special order from Merlin Motor Sport Ltd www.merlinmotorsport.co.uk

3. Action

3.1 Ensure that the fuel level is well below the level of the fuel tank inlet then remove the existing rubber filler hose and discard it or save it for use as a pattern if fitting a new fuel-proof rubber elbow.

Aluminium elbow installation

3.2 Trial fit the aluminium elbow and mark for trimming down as appropriate. Cut to size with a hacksaw so that the tube ends are an accurate fit with the tank inlet boss and filler receptacle and dress the ends with a file so that there is no roughness at the cut ends. Pull through a clean dry cloth several times to ensure that all swarf, etc. is removed.

3.3 The new aluminium elbow will be attached to the tank inlet and 'cobra' filler moulding with two short lengths of fuel proof rubber hose, such as Samco ProFuel. Cut two lengths with a sharp, wet knife such that each piece overlaps onto the fuel tank inlet boss, the 'cobra' and aluminium elbow by 30mm minimum. Slide the four clamps loosely over the elbow before final installation, oriented for easiest access to the tightening heads, then when the connector hoses are located correctly, position one clamp each side of both joints, but not so close that they will tend to squeeze into the joint gap, and tighten them.

3.4 Other hose intended for occasional contact with fuel or fuel vapour only will not be acceptable. It is permissible to make the connector hoses from the original Europa supplied rubber elbow, subject to inspection finding no cracking or other deterioration, including when squeezing it out of shape and on the condition that it will require similar inspection, including internally, on an annual basis.

3.5 Fill the tank to above the upper connector hose and check for leaks. Leave to stand for a while in a well ventilated area and recheck. Make sure that the filler elbow and especially the joints remain accessible for regular inspections.

Alternative fuel-proof rubber elbow installation

3.6 Using a sharp, wet knife, trim the legs of the new rubber elbow such that it overlaps fully onto the fuel tank inlet boss and by at least 30mm the plastic filler 'cobra'. Note that the two leg lengths will be different so the elbow will fit properly only one way round. If the original nitrile rubber elbow is available, use it as a pattern, but note that the bend radii of the two elbows are likely to differ, thus making the leg lengths different for each elbow.

3.7 Clean off any swarf, etc. and install the new elbow as per the original one and secure with a hose clip at each end.

3.8 Fill the tank to above the joint to the 'cobra' and check for leaks. Leave to stand for a while in a well ventilated area and recheck. Make sure that the filler elbow and especially the joints remain accessible for regular inspections.

4. Weight and Balance

There will be negligible change to the aircraft's weight.

5. Flight Test and Special Instructions

5.1 Flight testing is not required.

5.2 To enable the revised design standard of the aircraft to be recorded, a MOD1 – Standard Modification Incorporation form (available from the LAA web site) - must be completed and submitted to LAA Engineering.

Before the modified aircraft may be flown:

5.3 An LAA inspector must check that the installation meets the requirements of this Standard Modification and that there are no leaks.

5.4 With the above found to be satisfactory, a logbook entry must be made, making reference to Standard Modification number SM14809 and the inspector must sign a Permit Maintenance Release (PMR) in the airframe logbook.

5.5 If the connector hoses were made using parts of the original Europa rubber elbow, an entry must be made in the appropriate section of the aircraft logbook for an inspection, including of the internal surface, to be carried out at each annual inspection.

Approved:	F Donaldson B.Tech C.Eng FRAeS Chief Engineer	Signed: