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		Compiled : G Smith
		Approved : F Donaldson

TITLE : 3-Leaf Nose Wheel Fork

APPLICABILITY : CZAW SportCruiser Series 2 and 3 modified with SM13605 Dover Spindle

Mod Type : Retro-fit

1. Introduction

The original nose wheel fork, supplied by CZAW for the SportCruiser, was made from two formed aluminium plates and was found to be prone to fatigue cracking so was consequently subject to a mandatory inspection at each 50 hour interval. Although no total failure of this component has been reported, replacement forks, as supplied by CSA, have become difficult to obtain and are expensive. A CZAW nose wheel fork, modified with the addition of a third leaf to reduce stresses, was LAA approved for use on a SportCruiser in 2013 and has been operated for more than 200 hours, almost exclusively from grass runways, with no problems encountered. New 3-leaf nose wheel forks, manufactured to the same standard as the modified CZAW fork, are now available for purchase and can be fitted in accordance with this Standard Modification document

2. Parts list

Qty	Description	Source
1	3-leaf Nose Wheel Fork	Sprite Aviation Services Ltd www.spriteaviation.co.uk
6	Bolt - ¼" diameter (supplied with fork)	Various
12	Washer - AN960-10 (supplied with fork)	Various
2	1/8" Split-pin (see maintenance manual for part number)	Various
1	Emfimastic PU 50 Polyurethane Sealant (Sikaflex EBT+)	Screwfix - (Pt No. 87344)

3. Action

Before installation of the new 3-Leaf Nose Wheel Fork, familiarise yourself with the following instructions and have the correct tools ready with which to carry out the work.

3.1 Remove the spat, if fitted, and support the aircraft in accordance with the maintenance manual so that the nose wheel is clear of the ground.

Caution: An incorrectly supported aircraft could be seriously damaged and/or cause injury.

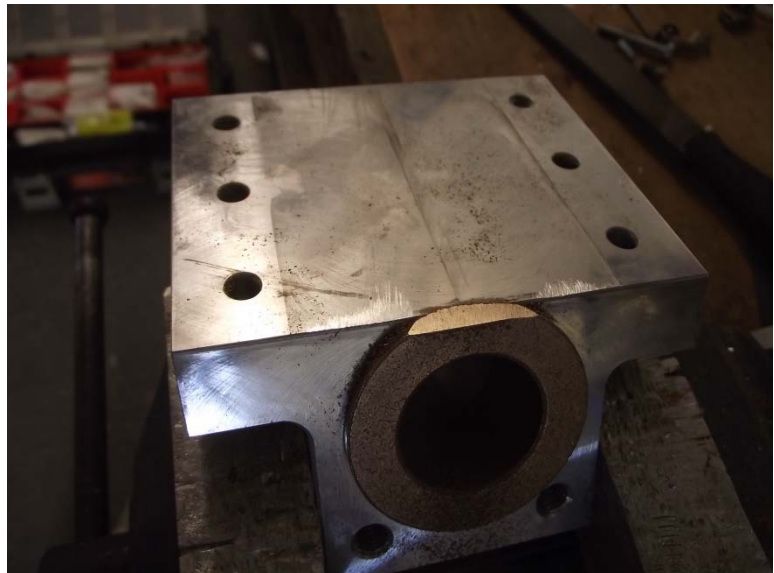


3.2 Undo the six ¼" bolts and remove the old fork from the spindle housing. Some forks were fitted with a steel backing plate (shown) rather than washers under the bolt heads. This can be discarded as it is no longer required.



3.3 Remove and discard the axle nut split pins, withdraw the axle and remove the wheel.

3.4 Noting that the new fork is marked 'TOP', temporarily locate the new fork onto the spindle housing using the four corner bolts and check that it does not contact the lower bearing flange. It is likely that pressure from the fork on the flange will distort the bearing and tighten against the spindle. If this is the case, then carefully file the bearing flange, as shown, to ensure there is clearance, clean thoroughly, lubricate the bearings, then re-install the spindle housing onto the fork.





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3.5 Wearing appropriate skin protection, degrease the back of the spindle housing and the front face of the new fork using a suitable degreaser.

Apply a bead of the Emfimastic sealant on the rear face of the spindle housing as shown.

Do not use a silicone based sealant. Acetoxy silicone sealants release acetic acid as they cure which may cause the aluminium to corrode.

3.6 Fit the new fork to the spindle housing, inserting the new bolts supplied, with a washer under the head, through the fork first.

Place one washer on each bolt and then the nut.

Note: The mounting bolt holes of some Dover Spindle housings have been counter-bored to provide a flat face for the nuts, in which case two washers will be required under each nut to prevent them becoming thread bound. Use the old washers as required.



3.7 Progressively tighten the nuts to 10 N·m (90 lbf·in). The mastic will squeeze out and prevent moisture getting between the two components. Wipe away the excess with a rag to give a smart finish.



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3.8 Fit the wheel according to the appropriate wheel manufacturer's instructions. Marc-Ingegno wheels have parallel bearings while Matco wheels have tapered bearings which require a more complicated tightening technique. If in doubt, consult the manufacturer's instructions.

Remember to install new split pins to secure the castellated nuts.



If you intend to fit a spat then use three AN960-10 washers to space off the rear of each spat bracket as shown.

You may need to bend the brackets inwards slightly to compensate for the wider fork.

Note: The prototype 3-leaf fork, with the 3rd leaf riveted instead of bolted in place, is shown in this photo.



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4. Weight and Balance


The new 3-Leaf Fork is slightly heavier than the original (by approx 310 grams). Although only a small change, the Weight and Balance report of the aircraft should nevertheless be amended accordingly. Use the table below to do the calculations then transfer the data to the 'changes in service' table on weight and balance report.

	Weight (kgs)	CG (mm)	Moment
Aircraft pre-mod			
Installation of 3-leaf fork.	+0.31	-882	-273
Aircraft post-mod			

5. Flight Test and Special Instructions

Flight testing is not required, however, before the modified aircraft may be flown:

- 5.1 An LAA inspector must check that the installation meets the requirements of this Standard Modification document.
- 5.2 With the above found to be satisfactory, a logbook entry must be made, making reference to Standard Modification number SM13680 and the inspector must sign a Permit Maintenance Release (PMR) in the airframe logbook.
- 5.3 To enable the revised design standard of the aircraft to be recorded in the aircraft's file at LAA HQ, a **MOD1** – Standard Modification Incorporation form (available from the LAA web site) - must be completed and submitted to LAA Engineering.

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