

RotorSport UK Ltd

Service Repair Request and Evaluation/Approval

This form (Part 2 of 2) is the response from RotorSport UK Ltd to a Service Repair and Evaluation/Approval request, which specifies the company authorised repair method. Deviation from this method renders the authorisation ineffective.

Upon completion of the repair the repairer must enter details into the logbook/worksheet with the repair number and sign as normal.

If any problems with carrying out the work authorised, contact RSUK immediately on +44(0)1588 650769, or email gerry@rotorsport.org.

Repair No. and Issue: SRA-020 Iss2
Calidus Mast bracket cracks

CCAR No.: None

Repair classification:

Mod approval No: None

MAJOR or

Aircraft type
Calidus

Aircraft serial No. RSUL/CALS/005
First application: G-YROZ

MINOR

Repair problem description & cause of problem if known

Calidus G-YROZ was found to have small cracks in the welds attaching the uppermost body mounting brackets to the vertical mast tube. This SRA-020 describes how to repair these cracks and reinforce the weld to prevent recurrence. It is considered a MINOR repair as there is significant redundancy in the mast-to-body mounting (8 bolted locations)

2-off Upper mounts

4-off central mounts



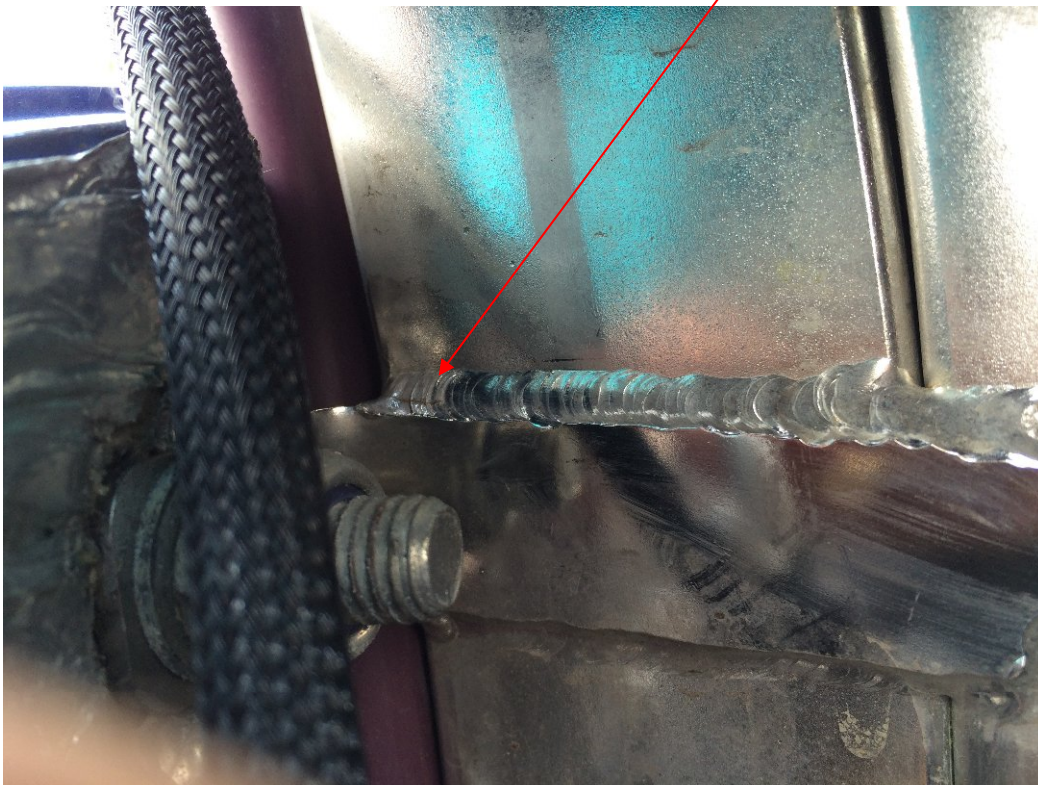
2-off lower mounts

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Crack in right-hand bracket



Crack in left-hand bracket



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Limitations on implementation The cracks must not have propagated more than 33% of either weld length (i.e. max crack length 22mm) Welding must be carried-out by a welder approved by RSUK/CAA
Approval statement. The technical content of this document is approved under the authority of the UK CAA Design Organisation Approval Ref: DAI/9917/06.
Tooling required. Conventional hand tools and TIG welding equipment only
Weight and balance. Not affected
Manuals affected. None affected
Previous modifications affecting this SRA. None
List of materials required to complete this SRA: Weld filler rod only
List of components required to complete this SRA: None
Interchangeability: Not applicable
Parts disposition: Not applicable
Accomplishment instructions/details of the repair: <ol style="list-style-type: none">1) In order to create sufficient space for access the body and airframe must be separated slightly. Park the aircraft on level ground and remove the engine cowlings as described in AMM RSUK0061. Remove the rear seat cushions and ease-back the fabric trim from the bulkhead as required. Release the four fuel-tank straps a little to avoid straining the fuel tanks. Release by a few turns the 8 fasteners securing the body to the airframe, more so at the upper fasteners than the lower ones. Place a suitably padded trolley jack under the body and carefully lift the aircraft so that the upper mounting points separate sufficiently for access. Whilst moving the body monitor the control tube aft bearing (fitted centrally at the rear of the aircraft). If any strain is evident the fastener should be slackened. (Note: if this is done then on reassembly it must be removed to allow fresh Loctite 243 to be applied)2) Remove the air-redirection plates, disconnecting the coolant pipe as required3) Release the cable-ties securing the push-pull cables to the mast and move the cables clear of the working area. If necessary the cables must be disconnected from their mountings in order to move clear – mark accordingly to ensure correct set-up on reassembly4) Release the cable-ties securing the wiring harness to the mast and move the harness clear of the working area

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- 5) Protect the body and firewall pad with suitable heat-resistant covering. Protect the engine parts and fuel tanks with fire-proof covering. If there is any doubt then drain and remove the fuel tanks.
- 6) Provide suitable fire-safety precautions (e.g. local fire extinguishers and personnel)
- 7) Wash/wipe the intended weld area to remove any oil or dirt deposits
- 8) Using a Dremmel-type tool with small grinding wheel (typ 0.75mm thick) progressively grind-out the length of the crack. Expose, **but do not grind into** the mast wall. Remove all grinding debris and clean-up with Amberclene LO30. Arrange inspection of the exposed mast wall in the area of the crack by a qualified inspector using a dye-penetrant process. If there is no evidence of a crack in the mast wall then remove the process deposits and proceed as below. If any crack is evident or there is any doubt, do not proceed but refer to RSUK.
- 9) Weld-up each prepared crack in one continuous pass (see below for welding requirements)
- 10) Working behind the bracket make a vertical fillet weld between the bracket and the mast section (both sides of aircraft)
- 11) Reinstall 8-off body/mast mountings at the same time as progressively removing trolley jack
- 12) Retighten fuel tank straps and replace filler
- 13) Refit all other items removed
- 14) If removed refit cable rod-ends to control points and check satisfactory operation of controls. Note that a second signature is required to verify this activity
- 15) Refit cowlings, seat cushions

Welding requirements for paras 9 & 10

1. Final preparation of weld area

Remove any deposits by cleaning with a lint-free cloth and halogen-free solvent (Amberclene LO30).

Remove any surface debris by brushing with a stainless-steel wire-brush.

2. Welding

Set the TIG welder for job +ve, electrode -ve.

Using an electrode 2.4mm diameter, filler metal 316 stainless steel and heat-setting 60-70amps produce continuous fillet welds in a single run.

Ensure that filler metal is present in the whole welded length so that a joint "fused only" is not created.

3. Clean-up

Remove burn marks from the weld and areas adjacent using a stainless-steel wire-brush followed by Scotchbrite pads or rubbing blocks if required.

Do not use any acid treatment for clean-up

4. Inspection

Using a magnifying glass at least 4x and good illumination inspect the weld to ensure that there is a high build for the whole length of the weld with no inclusions or voids present and that the start and end of each run are of uniform shape.

Reference to other documentation:

None

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Test and inspection records: Complete attached worksheet				
Special Tools & Health and Safety requirements, and/or components required for repair: No special tools or components required				
Quality Inspection requirements after repair: Visual inspection required as described above				
Flight test requirements after repair: No flight test required				
Documentation completion: <ol style="list-style-type: none">1. Complete the SRA worksheet attached2. After embodiment of this repair SRA-020 the authorised engineer must make an entry in the airframe logbook white pages stating that the repair has been embodied.				
Service repair authorised by: (name, signature, and date of signature)				
Quality Control Manager	Engineering Manager	Chief Test Pilot (where an effect on flight performance or safety) None required	CVE	Head of Airworthiness
Document effectivity date: 28 April 2016				

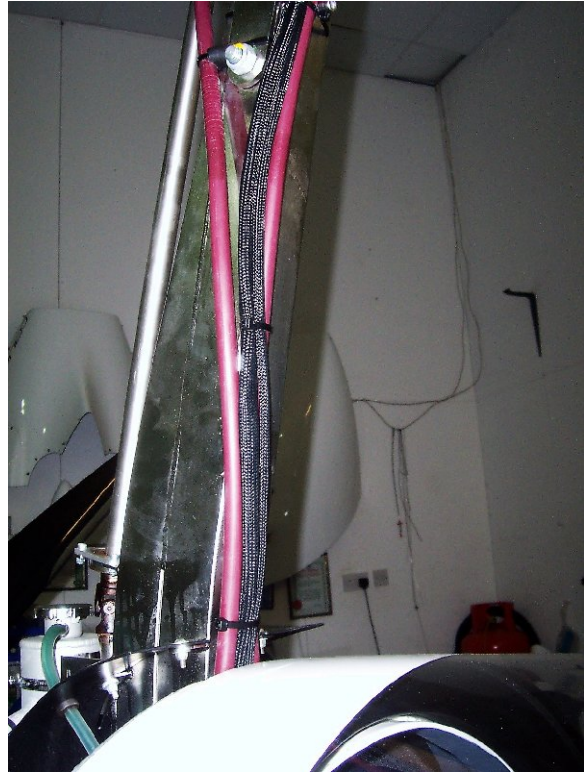
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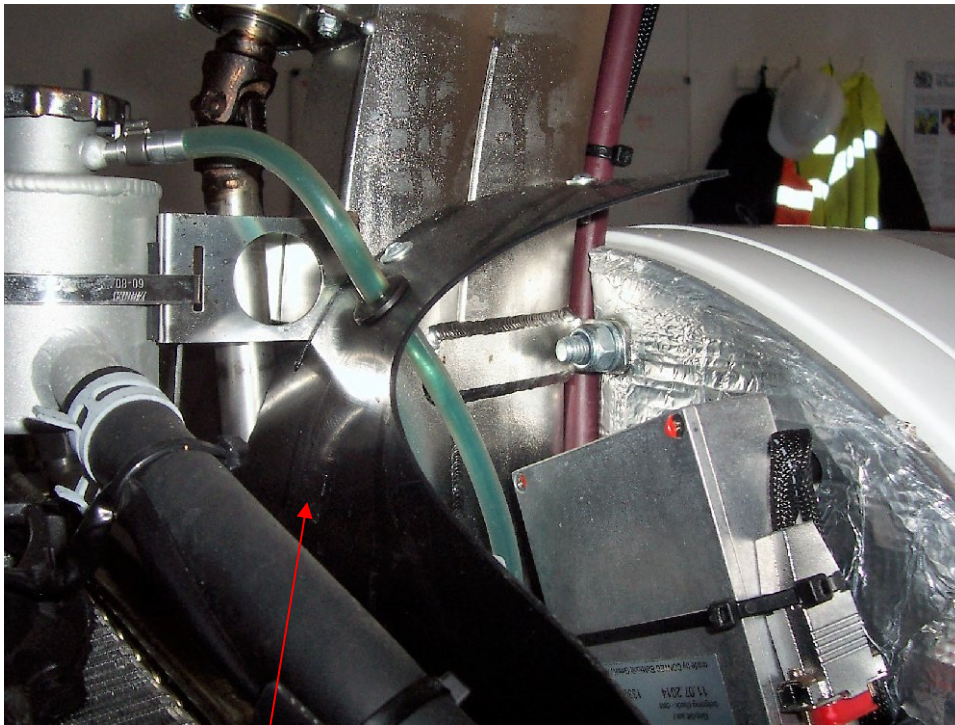
Photographs



Access at rear of cockpit

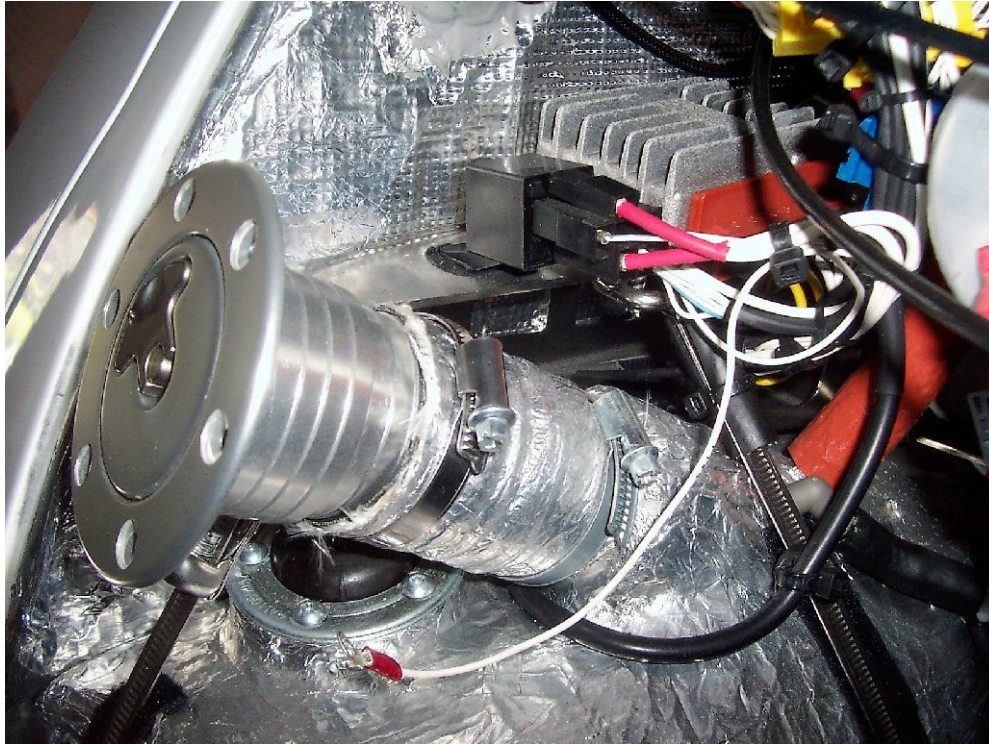


Cables and harness attachment



Air redirection plate each side

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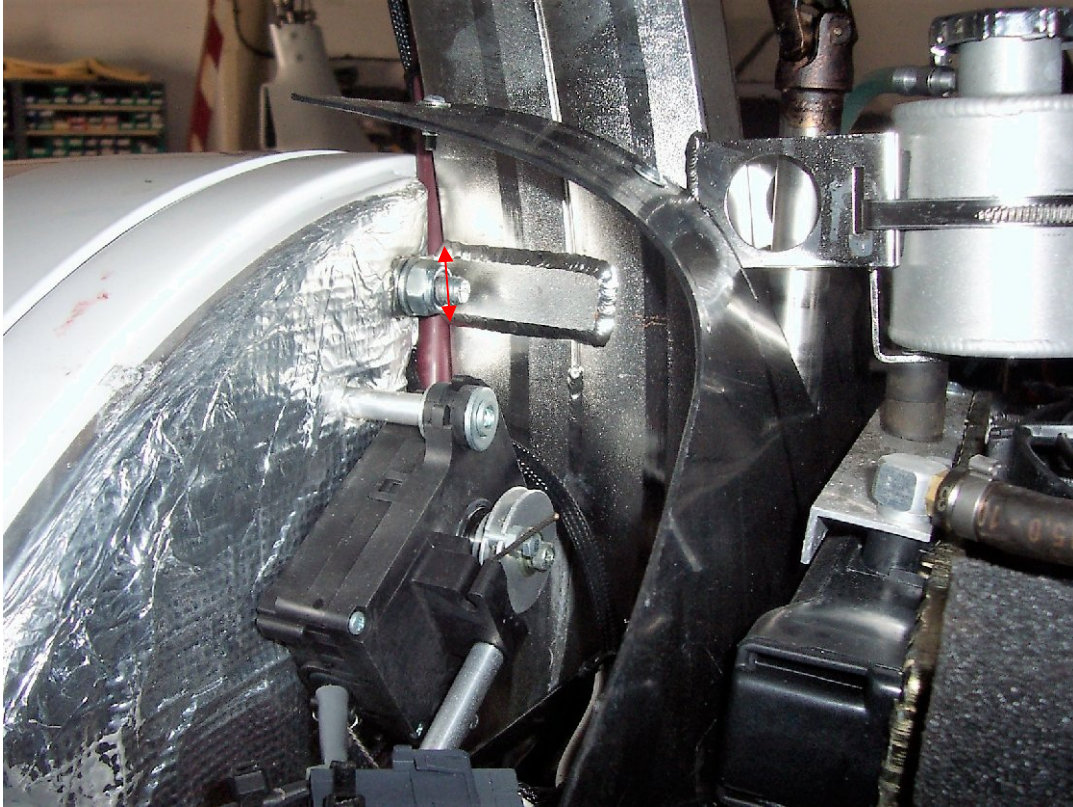
Access to left-centre mountings behind fuel filler inlet



Access to right centre mountings behind oil tank

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Vertical fillet weld each side of airframe (shown red)



Aft Control tube bearing

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Aircraft serial no. Registration G-	<h3 style="margin: 0;">Service Repair Implementation Worksheet</h3>	Date raised: Raised by:	
Purpose – record service repair implementation actions taken, then to inspect aircraft and return to service.		Document reference: SRA-020 iss2	
Maintenance manual referred to and issue level/date:			
Note; attach any secondary sheets to this document			
Task	Notes	Eng'r check/date	Inspector check/date
Part body/airframe interface without damage			
Grind-out cracks for inspection of mast wall.	State result:		
Remake horizontal welds (2-places) and inspect			
Make new vertical welds (2-places) and inspect			
Body/airframe mounting re-established			
Control tube bearing secured with fresh Loctite 243	Only if released		
Fuel tanks reinstalled			
Control cables refitted and controls verified	Duplicate signature must be provided		
Other items replaced			
All protective coverings removed			
Cowlings replaced			
Confirm no tools or equipment left in aircraft			
Customer acceptance: Name: Signature/date:		Aircraft Hobbs meter reading: Confirm logbooks annotated:	
Permit Maintenance Release: The work recorded above has been completed to my satisfaction and in that respect the aircraft is considered fit for flight.			
Engineer/Inspector signature Name: CAA Authorisation code :		Date of work Location where work completed	

PLEASE FAX THIS BACK TO 01588650769 (or send by email to info@rotorsport.org)