

# BGA AIRWORTHINESS AND MAINTENANCE PROCEDURES

## PART 2, LEAFLET 13

### COMPLEX MAINTENANCE TASKS

#### DEFINITION AND AUTHORITY TO CARRY OUT COMPLEX TASKS

##### General

##### 1. Definition

Part M (M.A.801) requires that complex tasks are released by a person authorised by a Part M subpart F maintenance Organisation. Only in the case of ELA 1 aircraft where the certification is by a Part 66 Licensed Engineer is a subpart F not required. The BGA inspector authorisation although recognised by the CAA is not equivalent to a Part 66 licence hence subpart F authorisation is required.

Complex tasks are described in Part M Appendix vii, however this description does not lend itself to sailplanes or light aircraft easily. To assist BGA inspectors and owners the BGA has developed the following guidance.

##### 2. Complex airframe tasks.

Identifying what tasks would be considered by EASA or the CAA as complex tasks falling into the Part M Appendix vii category, needs to be accomplished before work is started. The lists below will assist you in categorising the task. Should a task fall into the complex task category application must be made in accordance with section 4 of this leaflet. If the task is identified as "non applicable" then all that is needed is proper recording on worksheets and an entry in the log book.

**The modification, repair or replacement by riveting, bonding, laminating or welding of any of the following airframe parts:**

*The examples in Italics does not constitute a complete list, please use it as a guide to the complexity of the task when making the assessment.*

	"Complex Tasks" Part M Appendix vii - requirement	"Complex Tasks" BGA part/task definition - <i>example</i> <b>Approval required</b>	"Non Complex Tasks" Non applicable parts/task - <i>example</i> <b>Approval not required</b>
A	Box Beam	Fuselage wing carry through structure and wing attachment <i>Replacement or repair of centre section member or frame</i>	Fairings, alignment guides. <i>Repair of secondary tubes or stiffening bulkheads not carrying primary structure</i>
B	Wing stringer or chord member	Wing stringer that has structural loads or supporting flying controls. <i>Composite or monocoque construction wing repair greater than 15cm in any direction before scarfing</i>	Stringers and formers that are used for carrying fabric or skin. <i>Small non primary structure repairs.</i>
C	Spar	Wing main spar, rear spar, auxiliary spar. <i>Broken or damaged spar repairs. Repair of spar web.</i>	False spar, trailing edge. Spar repairs on wooden structure wings that do not require the use of an alignment fixture or jig.

			<i>Minor spar repairs outboard of the aileron cut out</i>
D	Spar flange	Spar upper or lower flange or attachment or location. <i>Repair of spar joint or spigot</i>	<i>Spar flange repairs outboard of the aileron cut out</i>
E	Member of a truss type beam	Framework and supporting structure. <i>Repair of wing support, landing gear support, empennage support, engine support structures.</i>	Member used to support fabric, or fairings. <i>Repair of cowling or fairing supports.</i>
F	Web of a beam	Web of a spar or rib that is primary structure. <i>Repair of a tail plane mounting rib. Repair of a spar extension</i>	Minor reinforcements. <i>Aileron cut out reinforcement repair</i>
G	Keel or chine of a flying boat hull or float	Not applicable	
H	Corrugated sheet compression member in a wing or tail surface	Not applicable	
I	Main wing rib	Ribs used to support flying controls or attachment points. <i>Composite or monocoque construction wing repair more than 15 cm in any direction or involving a structural member</i>	Ribs used to support fabric, skin or profile. <i>Repair of a wooden wing rib. Repair of a GRP end rib not used for wing location</i>
J	Wing or tail brace strut	Brace strut or wire <i>Replacement of load bearing end fitting</i>	Fairings and attachment brackets not forming main load path <i>Replacement of cable guide or fairing bracket</i>
K	Engine mount	Mount, pylon, brace struts, attachment points, extension structure, pivot points. <i>Repair of pylon</i>	Accessory and fairing mountings <i>Repair of exhaust or ancillary equipment mounting</i>
L	Fuselage longeron or frame	Main longeron, keel tube. Composite or monocoque construction repair more than 15 cm in any direction or involving a structural member <i>Major fuselage repair</i>	Longeron, fabric or skin supports. Secondary non primary structure. <i>Repair to fuselage secondary tube. Minor fuselage GRP repair</i>
M	Member of a side truss, horizontal truss or bulkhead	Load carrying bulkhead or frame <i>Fuselage stiffening bulkhead repair</i>	Non load bearing formers. <i>Repair of non primary structural bulkheads and equipment shelves. Repair of instrument panels.</i>
N	Seat support brace or bracket	Main seat fixings, harness attachments. <i>Repair of seat harness attachment mounting points</i>	Seat pan or back support, fairings or panels, secondary seat backs/bases <i>Repair of seat harness guide and location attachments</i>
O	Seat rail replacement	Seat attachment rails <i>Repair of seat attachment rails</i>	Seat base or back locations. <i>Repair of peg location holes or adjustment slots</i>
P	Landing gear strut or brace strut	Frame and mounting structure. <i>Repair of landing gear load bearing mounting.</i>	Door or brake attachment, fairing attachments. <i>Repair of u/c doors and hinges.</i>
Q	Axle	Main wheel, nose/tail wheel axle <i>Weld repair of main wheel axle.</i>	Wing tip wheels <i>Repair of wing tip wheel axle location points</i>

R	Wheel	Main wheel, nose/tail wheel <i>Weld repair of a wheel</i>	Wing tip wheels <i>Any repairs</i>
S	Ski or ski pedestal	Not applicable	

The modification or repair of any of the following parts

	Appendix vii	BGA part/task definition	Non applicable parts/task
A	Aircraft skin or the skin of a float if the work requires the use of a support, jig or fixture	Any work that requires the use of a alignment jig or fixture, broken wings, broken fuselage, broken tail plane. <i>Major structural repairs on fabric/wooden skin aircraft involving the use of a alignment jig or fixture.</i> <i>Repair of control surfaces where mass balancing is required</i>	Repair work to aircraft skin or frame that does not require alignment of the aircraft. <i>Non primary structure repairs.</i> <i>Minor repairs to the skin or trailing edge of a control surface where mass balancing is not required.</i>
B	Aircraft skin that is subject to pressurisation loads	Not applicable	
C	Load bearing part of a control system including control column. Pedal, shaft, quadrant, bell crank, torque tube, control horn and forged or cast brackets, but excluding (i) the swaging of a repair splice or cable fitting (ii) the replacement of a push-pull tube end fitting that is attached by riveting	Including control system mountings and moving parts. <i>Primary control system repairs</i>	<i>Repair of control cables.</i> <i>Replacement of control rod fittings by riveting or bolting.</i> <i>Secondary control system repairs</i>
D	Any other structure not listed above that the manufacturer has identified as primary structure in its maintenance manual, structural repair manual or instructions for continued airworthiness	As identified in the manufacturers manuals or Technical Notes (SB) or Airworthiness Directives Any repairs identified by the manufacturer as a Major repair.	Any repair identified as a minor repair by the manufacturer and not listed above
E	BGA additional requirements applicable to EASA aircraft as the requirements do not consider GRP/FRP composite structures.	<i>Substantial repair or re-gelling/re finishing of a GRP/FRP aircraft, fuselage, wing or tail plane where the old gel or surface finish is to be substantially or completely removed on inner/lower 2/3 of a aerofoil/stabiliser section or fuselage between the wing and tail intersections.</i> <i>Lower fuselage repairs involving significant structural damage</i>  <i>In case of doubt please contact the BGA QM or CTO for guidance.</i>	<i>Refinishing not requiring the removal of all the old gel or surface finish.</i> <i>A wing minor repair or re-gel outboard of the aileron cut out.</i> <i>Fin or tail plane minor repair or re-gel on outer/upper 1/3.</i>  <i>Fuselage minor repair or refinish forward of the wing or aft/ below the fin intersections or in the lower fuselage section (wheels up landing type damage, tail or nose wheel heavy landing damage without significant structural damage and not adjacent to a structural intersection)</i>

Notes;

- (1) The above tasks are identified by EASA as Complex Tasks and apply to the actions identified at the start of the lists i.e. riveting, bonding, laminating or welding. It does not include replacement by normal processes such as bolting, disassembly where complex task approval would not be required.
- (2) The task list above assumes that the certifier holds the appropriate BGA authorisation i.e. CR, WR, MR, SS, MG or a part 66 licence and where appropriate BGA Senior Inspector authorisation
- (3) Some tasks above will require a duplicate or second inspection where it involves an item of sensitive maintenance, control system, critical bolted joint e.g. engine mount, landing gear mount, wing attachment (if not designed for disassembly after flight)
- (4) If a repair is determined as not needing authorisation but subsequently develops into a task identified above, the work must be halted until authorisation is gained.
- (5) Authorisation to carry out the repair does not substitute the requirement for an approved repair scheme published in the maintenance or repair manual, generic repair manual if specified by the aircraft type certificate holder as approved data, or DOA approved repair scheme.

### 3. **Authority to carry out complex tasks**

There are two ways to be issued with authorisation to carry out complex tasks

- List 1 Approved Complex Maintenance sites  
Inclusion in the BGA Airworthiness Exposition under "List 1". "Approval to carry out complex tasks"  
This is designed for professional maintainers who carry out complex tasks routinely on a regular basis. The approval involves a formal application process and CAA audit and oversight. For details of how to apply and costs please contact the BGA.
- List 2 maintenance sites (un-listed)  
BGA Internal application process. This is designed for all other than List 1 site inspectors who wish to carry out complex tasks but on an ad-hoc basis probably only a few occasions each year. The application process and requirements are described below. These inspectors will be under BGA Quality Group oversight.

Inspectors in List 2 who carry out a greater number of complex tasks may be asked to apply for List 1 approval.

If you are not list 1 then you are automatically included in list 2. The only exception is where you hold an EASA company approval to carry out complex maintenance tasks e.g. Part 145 with the aircraft type within your scope of approval.

Senior Inspectors

If a task involves a substantial major repair probably involving juggling or alignment of the aircraft fuselage, wing, tail plane or powerplant, a BGA Senior Inspector is required to certify these tasks. Authority to carry out a complex task does not in itself grant senior inspector privileges.

### 4. **Application to carry out complex tasks**

Application for list 2 BGA inspectors is on application form BGA 277.

5. BGA 277 will require the aircraft details, the description of the work, name of certifying inspector and location

6. To carry out the work you will be required to provide a description of the facilities including any special environmental requirements such as heat, dust extraction, humidity control etc. that will be available for the repair/work
7. You will also be required to describe the equipment, tools and data to support the work including modification instructions, repair manuals, specific repair schemes as applicable.
8. The application should be sent to the BGA office where it will be forwarded to a member of the technical team or quality manager who will assess the application and approve. The approval process may require a visit prior to the work starting and/or during work in progress or at the completion, applicants will be advised.
9. There will be a fee structure for authority to carry out complex tasks and will depend on the degree of oversight required. Details will be published in the BGA Fees and Charges on the BGA web site or by contacting the BGA office.
10. Some approvals will require a initial visit and sometimes subsequent visits depending on the complexity of the task or the individual inspectors experience, details of the requirement will be advised by returning the BGA 277 as authority to start work or as otherwise indicated.
11. Example BGA 277 below.



# British Gliding Association

## Complex Maintenance Application

This form is used for BGA inspectors at non approved maintenance sites (List 2) to apply for specific authorisation to carry out complex maintenance tasks on aircraft under BGA maintenance control.

ELA 1 aircraft; Sailplanes, Self Sustaining Sailplanes, Powered Sailplanes and Motor gliders.

For a definition of complex tasks and how to apply for approval see AMP 2-13.

BGA Number <b>9999</b>	Registration <b>G-ABCD</b>	Make & Type <b>SCHLEICHER ASK 21</b>
Serial/works number <b>21-0000</b>	Description of work (title) <b>REPAIR DAMAGED FUSELAGE</b>	
Location where work is to be accomplished <b>THE GLIDING CLUB, ANY TOWN.</b>		
Name of certifying BGA inspector <b>J SMITH</b>	Inspector number <b>I/A/9999</b>	Contact telephone number <b>01234 567890</b>
Date work is due to be started <b>01/04/2009</b>	Expected completion date <b>01/06/2009</b>	Work or Repair scheme approval reference <b>SCHLEICHER 21/0001</b>
Details of the work <b>Fuselage damaged 300 mm aft of wing, hole made by ground vehicle approx 200 mm dia. Double skin insertion repair to be carried out. Jigging not required.</b>		
Description of facility <b>Heated workshop with dust extraction. Heating by thermostatically controlled radiators and heat lamps and recording equipment available for post cure. Repair cloth stored in humidity controlled heated cabinet, resin stored in dark cool cupboard.</b>		
Description of equipment, tools & data to support work <b>Sanding equipment, vacuum forming equipment, temperature monitoring and recording. Resin mixing scales. Normal hand tools. Dust masks and personal protective equipment. Repair in accordance with Schleicher repair manual and TN 01-1999.</b>		

### Quality requirements

Approval (BGA USE)		
Work plan approved no visits required <input checked="" type="checkbox"/> Initial visit required <input type="checkbox"/> follow up visits required <input type="checkbox"/>		
Initial visit Date	Name	Comments
Approval to start work Date <b>04/04/2009</b>	Name <b>A Other</b>	Signed
1st Follow up visit Date	Name	Comments
2nd Follow up visit Date	Name	Comments