BGA AIRWORTHINESS AND MAINTENANCE PROCEDURES

PART 4, LEAFLET 4-6

MAINTANENCE AND REPAIR OF METAL STRUCTURES

INTRODUCTION

1. Many gliders make extensive use of metal in their structures. Some gliders, notably the Blanik, have an all-metal monocoque structure. Other gliders such as the K-series, have welded metal tube fuselages. In all cases it is essential that the proper inspection and repair techniques are used to ensure their continued structural integrity. In addition to mechanical damage, metal gliders are also susceptible to deterioration caused by corrosion.

INSPECTION TECHNIQUES

2. Maintenance of glider metal structures should be carried out in accordance with the BGA glider maintenance schedule in conjunction with the appropriate manufacturers' maintenance manuals. Specialist techniques may needed when inspecting a metal aircraft after abnormal incidents such as a heavy landings. The damage which may be expected following a heavy landing would normally be concentrated around the landing gear, its supporting structure in the fuselage and the wing and tailplane attachments. Secondary damage may be found on the fuselage upper and lower skin and structure and the wing skin and structure, depending on the configuration and loading of the aircraft.

3. Because of the number of factors involved, it is not possible to lay down precise details of the examination which must be made after any incident on any type of aircraft but a preliminary survey should normally include the following items:

a. **Landing Gear**:

(1) Examine tyres for excessive creep, flats, bulges, pressure loss.

(2) Examine wheels and brakes for cracks and other damage.

(3) Examine axles, struts and stays for distortion and other damage.

(4) Examine landing gear attachments for damage and distortion.

(5) Examine structure in vicinity of the landing gear attachments for signs of cracks, distortion, movement of rivets or bolts.

b. **Fuselage**:

(1) Examine fuselage skin for wrinkling or other damage, particularly at skin joints and adjacent to landing gear attachments and centre section.

(2) Examine bulkheads and frames for distortion and cracks.

(3) Examine for damage to the supporting structure for heavy items - e.g. seat structure, instrument panel mountings etc.

(4) Check instruments for damage and security.

c. **Mainplanes**:

(1) Examine the upper and lower skin surfaces for signs of wrinkling, pulled rivets, cracks and movement at skin joints. Inertia loading on the wing may result in creasing on the lower surface and cracks or rivet damage on the upper surface.

(2) Check flying controls for range of movement.

(3) Check control surface hinges for cracks, and control surfaces for cracks or buckling.

(4) Where possible, check the wing spars for distortion and cracks.

d. **Tail Unit**:

(1) Check flying controls for range of movement.

(2) Examine rudder and elevator hinges for cracks and control surfaces for cracks and distortion - particularly near balance weight fittings.

(3) Examine tailplane attachments for distortion and cracks.

REPAIR TECHNIQUES

5. Discussion of detailed repair procedures to metal glider structures is beyond the scope of this leaflet. Comprehensive coverage of metal structure repair procedures is contained in Civil Aviation Airworthiness and Inspection Procedures Part 6, Leaflets 6-2, 6-3 and 6-4. The provisions of these leaflets should be observed when executing any repairs to the structure of metal gliders. Minor repairs to metal structures are to be supervised by a suitably rated BGA Inspector. Major repairs of metal airframes are to be supervised and certified by a BGA Senior Inspector. Major repairs are to be carried out to an approved repair scheme and documented as a major modification.