

TITLE	Sail reinforcement degradation additional test.
CLASSIFICATION	P&M Aviation have classified this bulletin as Mandatory. CAA have classified this bulletin as Mandatory.
COMPLIANCE	For aircraft wing sails/aramid strips more than 2 years old or more than 500 hours flight time (whichever comes first), a test as detailed below must be performed within the next 25 hours, during which period high G manoeuvres must be avoided.
APPLICABILITY	Quik, GT450 & QuikR with X-05 or Technora reinforcement bands.

INTRODUCTION

The standard Bettsometer test on the white dacron sail main body has been used to predict degradation of the underlying Aramid or Technora reinforcement bands. An incident with a 4 year / 1500hrs old flight school aircraft on the Continent has shown this approach is not always conservative, especially in strong sun with reflected light acting on the aramid. So, an additional test has been introduced to measure the strength of the reinforcement band cords directly. Aramid used before 2005 has straight cords on a cloth backing, this type has different characteristics and the new test is not applicable.

A normal Bettsometer cannot be used as the test load is too high. Approved test equipment is available at low cost from P&M Aviation, flying@pmaviation.co.uk tel. +44 1706 655134 or P&M Aviation USA, info@pmaviationusa Tel: 678-455-7805. To preserve the sail, whenever possible it should be protected from light, e.g. by covers, when not in use.

Note – all tests must be carried out using approved test equipment. In the USA the persons who can conduct the test are A&P, LSA Repairman Certificate or P&M Authorized Manufacturer Rep.

ACTION

Inspection

The following materials are subject to the additional reinforcement test as well as the normal Bettsometer test on the sail main body dacron.

- a) Aramid type X-05, which is made of yellow/gold cords woven in a cross pattern with additional diagonal cords sandwiched between transparent mylar films (see fig 1).
The aramid fibres start life as a bright yellow, which changes to a dull gold/brown as UV degradation develops. It may be possible to see the colour change beneath the area covered by the winglet (where fitted).

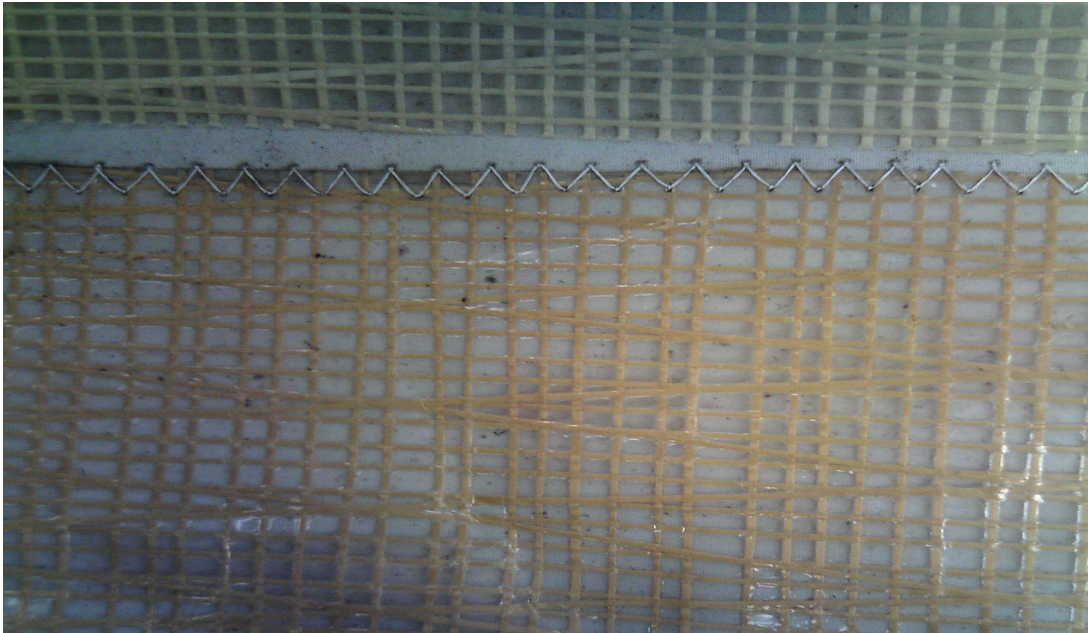


Fig 1, X-05 material. Top strip is new (bright yellow fibres) Bottom strip is degraded (gold/brown).

b) Technora, which is the same weave pattern as X-05 but with black cords and wider sail reinforcement strips (fig. 2). This was introduced 30/06/2010.

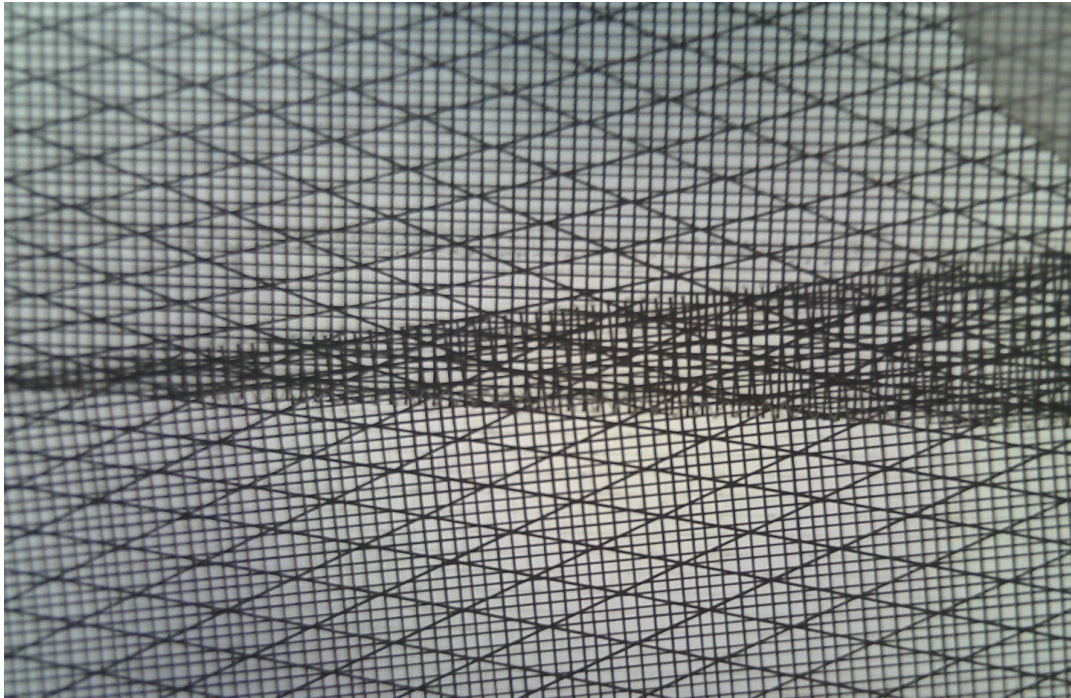


Fig 2. Technora material

The Technora is a para-aramid but dyed black to improve UV tolerance.

Implementation

The test is to be carried out by an inspector, on 2 places on each side of the wing (a total of 4 tests), within the area shown in fig 4. The test may be carried out either with the wing rigged for flight (tensioned) or de-rigged (un-tensioned).

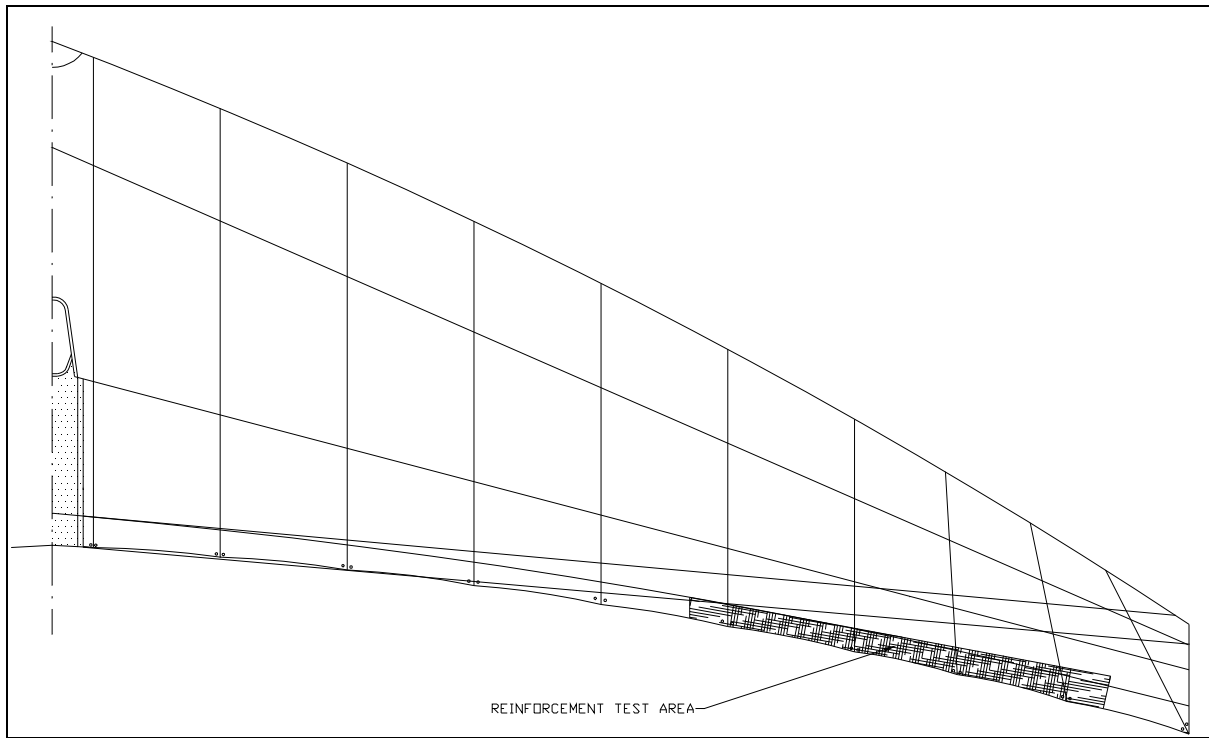


Fig 4 area for reinforcement tests

Look for a cord which is woven underneath nearby cords, to avoid pulling one out of the surface.

Using an approved test instrument (consisting of a modified spring balance of 10kg capacity and a 1.5mm diameter smooth hook with a sharp point), carefully capture one cord, avoiding picking up any additional fibres from the adjoining layer. Pull at 90 degrees away from the surface, gradually increasing the load until the test value is reached as shown in fig. 5. No cord may break below 5kgf (Technora Black) or 6kgf (aramid yellow) load. Care must be taken as if a cord fails, the hook will easily penetrate the Inspector's skin.

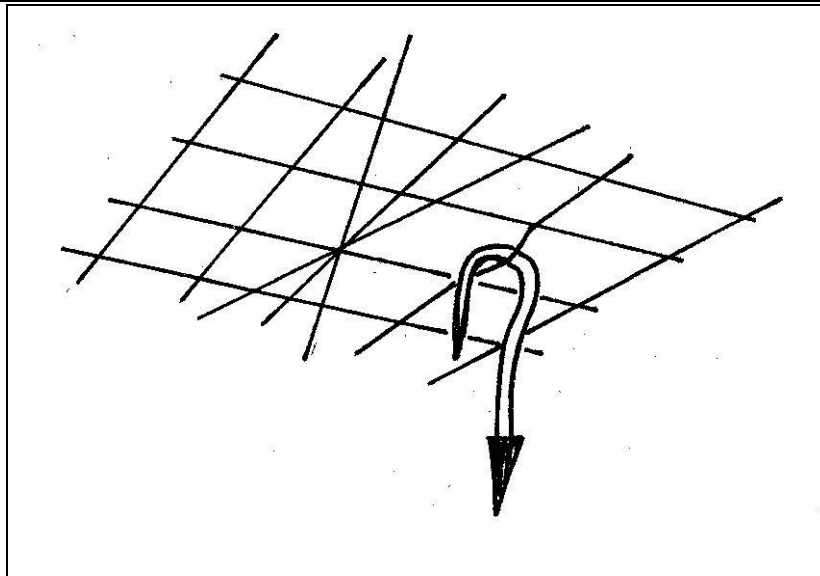


Fig 5. Hook through one cord and pull gradually up to the test load at 90 degrees away from to the surface.

Documentation

This service bulletin must be attached to the operator's manual.

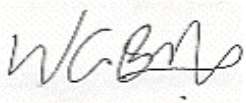
The test must be carried out by an inspector and "sail reinforcement test carried out to SB 132" entered in the aircraft technical logbook.


Continued Airworthiness

The test must be carried out and added to the technical records for the aeroplane at each annual inspection, "Sail reinforcement test carried out to SB 132" and signed by the inspector.

ISSUED BY : W.G.Brooks

DATE : 10th March 2011

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