Advisory Circular (AC)

Glider and Banner Towing

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this Advisory Circular (AC) is to provide guidance material on gliders or banners towing operation.

1.2 Guidance Applicability

This document is applicable to all Transport Canada personnel, delegates and industry.

1.3 Description of Changes

This document, formerly AMA No. 523/6, is reissued as an AC. With the exception of minor editorial changes, the content is unaltered.

1.4 Termination

This document does not have a terminating action. It will however, be reviewed periodically for suitability of content.

2.0 REFERENCES

2.1 Reference Documents

It is intended that the following reference materials be used in conjunction with this document:

Airworthiness Manual (AWM):

(a) Part VI, Subpart 2 of the Canadian Aviation Regulations (CAR) — *Towing*;

(b) Chapter 523 of the Airworthiness Manual (AWM) — *Normal, Utility, Aerobatic and Commuter Category Aeroplanes*, sections 523.21 and 523.23,

(c) Chapter 522of the AWM — *Gliders and Powered Glider,* sections 522.581, 522.585; and

(d) Chapter 551 of the AWM — Aircraft-*Equipment and Installation,* section 551.10.

2.2 Cancelled Document

As of the effective date of this document, AMA No. 523/6 dated 27 March 2001 is cancelled.

3.0 BACKGROUND

CAR 602.22 states: "No person shall operate an aeroplane that is towing an object unless the aeroplane is equipped with a tow hook and release control system that meet the applicable standards of airworthiness". Chapter 551 provides standards for the approval (STC/LSTC) of tow hooks and release control system.

4.0 TOW HOOK INSTALLATION APPROVAL

A tow hook system shall meet the requirements for flight test, structural analysis and/or static test contained in section 551.10 of the AWM. The adequacy of the aeroplane structure to meet the structural requirements of this section shall be determined by either static test or structural analysis.

5.0 TOWING AEROPLANE

(a) **Engine Cooling** - The aeroplane shall be fitted with a functioning cylinder head temperature gauge, or compliance with cooling requirements with the towed load must have been demonstrated.

(b) **Climb performance** - When towing a glider or banner at its maximum permitted operating weight with the tow aeroplane at its maximum approved operating weight, the rate of climb must be:

(i) 100 fpm at 1000 ft above the take-off surface for each altitude and temperature for which approval is requested; or

(ii) 300 fpm at sea level on a standard day.

(c) **Controllability** - The aeroplane should not require exceptional pilot skill while towing. If the aeroplane model has previously been approved for towing this may be considered and further testing may not be required.

(d) **Towing Speed Limits** - Unless there is a specific maximum speed limitation for the tow plane, the glider flight manual usually indicates a maximum towing speed. This speed can vary considerably over the range of glider types.

(e) **Rear View Mirror** - A mirror shall be mounted on the tow plane to monitor the glider. Although there may be radio communication between the glider and the tow plane, most glider operations include visual signals both in flight and on the ground during launching.

(f) **Tow Line Assembly** - The towline assembly consists of the towrope, weak link and tow-rings.

(i) The towrope should have a breaking strength not less than 80% of the maximum operating weight of the glider and not more than twice the operating weight. For banners, the towrope should have a breaking strength of 10 times the banner weight.

(ii) The strength of the weak link shall not be more than 90% of the strength of the towrope, or 90% of the allowable towing force specified for either the tow hook or the glider. The weak link shall be installed:

1) for gliders, at the point of attachment of the tow rope to the glider; and

2) for banners, at the point of attachment of the tow rope to the tow plane.

(iii) Tow rings shall not interfere with the correct operation of the hook on the tow plane within the 20-degree cone angle for gliders and 10 degrees for banners and be of sufficient strength not to yield under 110% of the limiting load.

6.0 INSPECTION AND MAINTENANCE

(a) Inspection procedures and the service lives of towing installation components, including towlines, shall be in accordance with manufacturers' instructions.

(b) Where such instructions are not available:

(i) The tow rope and weak link shall be inspected at the start of every flying day; and if broken strands are found the rope shall be replaced before conducting any flight operation. Damaged thimbles and deformed rings shall be replaced before conducting any flight operation.

(ii) The tow hook release mechanism shall be inspected daily, when in use, for wear and proper operation.

7.0 FLIGHT MANUAL SUPPLEMENT

The following information shall be included in the approved section of the supplement:

(a) The maximum load that can be applied to the tow hook;

(b) The maximum size of a banner that could be towed (if applicable);

(c) Aircraft weight restrictions, if any, associated with towing;

(d) Manoeuvre limitations (bank angles, etc.), if any;

(e) Any additional equipment required, such as temperature gauges, mirrors, etc.;

(f) Kinds of operation and occupancy restrictions (i.e., passengers);

(g) Recommended normal and emergency procedures associated with towing operations, including the recommended operating speeds, power settings and pre-flight inspection of tow line assembly. Any special notes, cautions, and warnings associated with the operations shall also be included;

(h) Any changes to the aircraft stall speeds (this variation would also require a placard near the Air Speed Indicator; and

(i) Pertinent comments regarding the impact of the towed load on the performance of the aircraft.

8.0 HEADQUARTERS CONTACT

For more information please contact:

Policy Standards Coordinator (AARDH/P)

Phone: (613) 990-3923
Facsimile: (613) 996-9178
E-mail: AARDH-P@tc.gc.ca

Original signed by Maher Khouzam

Maher Khouzam
Chief, Regulatory Standards
Aircraft Certification Branch