

AIRWORTHINESS ADVICE NOTICE

TYPE AFFECTED: Nimbus-3T / Nimbus-3DT / Nimbus-3DM

SUBJECT: Miscellaneous airworthiness information.

BACKGROUND: Refer GFA AN 97 (Nimbus-3T) & AN 134 (Nimbus-3DT & 3DM) for historical airworthiness advice.

DEFECTS:

1. L'Hotellier Ball and Swivel joints - A recent loss of control incident on a Nimbus-3T has highlighted the importance of maintaining flight control connector securing device condition on L'Hotellier couplings. The LBA in 1998 issued Airworthiness Directive No. 1993-001 issue 3 applicable to all sailplanes, powered sailplanes and aeroplanes that use L'Hotellier ball and socket connectors with lock plates.

Schempp-Hirth Technical Notes 831-9 & 847-5 and associated appendix with embodied flight manual supplements address the subject of L'Hotellier Balls and swivel joints on the Nimbus-3T, Nimbus-3DT and Nimbus-3DM. All locking plate connectors MUST be secured in accordance with LBA AD No. 1993-001/3 (AD No. 1993-001/3 is attached to this advice notice).

On Nimbus-3 aircraft, space is not sufficient to secure the couplings connecting the control rods of inboard and outboard wing panels with the standard safety pin. Such couplings must then be secured with the aid of a special Schempp-Hirth safety clip to prevent a jamming of controls. It is further recommended to use these safety clips for fuselage-to-wing connections (instead of the standard safety pin).

It was established when investigating the Nimbus-3T accident that the left-hand outer flap L'Hotellier connection was disconnected. It is believed that the disconnection occurred on crash impact. That Schempp-Hirth safety clip was missing and never found. Other safety clips on the same aircraft were inspected and found to be in poor or distorted condition and in need of replacement.

It is important to note when fitting the Schempp-Hirth safety clip that there is a left-hand and right-hand clip, a left-hand clip for the

SIGNED:



CHIEF TECHNICAL OFFICER

For and on behalf of:

**THE GLIDING FEDERATION
OF AUSTRALIA**

GFA AN 147	ISSUE: 1	12Dec2022	Page 2 of 2
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left wing connectors and a right-hand clip for the right wing connectors.

This advice notice is issued to remind owners and operators of the importance to maintain and replace L’Hotellier locking plate safety pins as required to ensure safety pin functionality and the pins fitness for purpose.



**Airworthiness
Directive
1993-001/3**

Luftfahrt-Bundesamt
Airworthiness Directive Section
Lilienthalplatz 6
38108 Braunschweig
Federal Republic of Germany

L'Hotellier ball and socket connectors

Effective Date: April 09, 1998

Affected:

Kind of aeronautical product:	Aircraft
Manufacturer:	L'Hotellier
Type:	L'Hotellier ball and socket connectors with lock plates
Models affected:	ball and socket connectors <u>with lock plates</u>
Serial numbers affected:	all
German Type Certificate No.:	none

Subject:

L'Hotellier ball and socket connectors with lock plates if installed in sailplanes, powered sailplanes and aeroplanes

Reason:

Reported incidents involving L'Hotellier ball and socket connectors have prompted the LBA to have investigations made as to the operational safety of L'Hotellier ball and socket connectors.

The results have shown that the friction surfaces of the lock plates will be run in and smoothened after a relatively small number of operations. As has been demonstrated in the tests, in this case even normal operating conditions are sufficient under unfavourable circumstances to surmount the static friction (i.e. the lock plates open).

The a.m. airworthiness deficiency may result in inadvertent disconnect of the L'Hotellier ball and socket connectors and thus to considerable operational malfunctions.

Controllability of the aircraft may be affected or even lost so that the defect may lead to an accident.

The reason for the issue of the second edition in April 1994 was the revision of the L'Hotellier Instruction for Maintenance by which the roundness tolerance of the ball was increased from max. 0.05 mm to 0.1 mm.

The ball and socket connectors are to be secured by means of safety pins, Uerlings sleeves or Uerlings type sleeves.

This AD has been issued as a result of several occurrences with Uerlings type sleeves. For well-founded reasons, especially these sleeves are to be inspected for absense of cracks and sufficient self-locking ability and, if necessary, are to be replaced.

Action:

The Luftfahrt-Bundesamt emphasizes the fact that all pilots have to familiarize themselves with the particularities of L'Hotellier connectors, especially with the different locking systems and their handling.

The ball and socket connectors with lock plates are to be secured. For this purpose, the following actions are to be accomplished:

1. Safety pins (e.g. L'H 140-31 made by Hotellier), have to be retrofitted, if not yet installed. In certain cases, it may become necessary to rebores the hole in the lock plate, which is provided for visual inspection, to \varnothing 1.2 mm so that the safety pin can be inserted (see attachment section I).

The use of a safety pin can be waived if the L'Hotellier ball and socket connector is already equipped with an approved locking system (e.g. Uerlings type sleeve, LS locking sleeve, Schempp-Hirth spring or Wedekind locking system) or if such a system is to be installed.

LBA approved locking systems: see attachment section II.

Uerlings type sleeves (specification number SE-001/78) as well as LS locking sleeves can only be used for straight joints and transmissions, but cannot be used for 90° joints.

Inspection of Uerlings Type Sleeves



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Inspection of these sleeves for the absence of cracks and sufficient locking force (self-locking ability), replacement of the sleeves, if necessary (see attachment part III).

Installation information:

The sleeves have to be slid axially onto the L'Hotellier ball and socket connector, they may by no means be clipped radially onto the L'Hotellier ball and socket connector. Radial clipping (excessive opening of the sleeve) may lead to cracks or ruptures due to over stressing so that the sleeve cannot function properly any more.

Annual inspection of sleeves :

The sleeves shall be inspected at least once a year for the absence of cracks and sufficient locking force (self-locking ability). In the original specification for the Uerlings sleeves a biannual replacement interval is assumed. Deviations from this provision are stated in the technical information by the manufacturers.

2. Flight Manual

a) Section "Rigging"

The recommendation : „The lock plate of L'Hotellier ball and socket connectors should be secured"... given in several Flight Manuals in the a.m. or in a similar form is to be deleted and to be replaced by the following sentence:

"The L'Hotellier ball and socket connector must be secured."

- b)** If older Flight Manuals do not contain information about L'Hotellier ball and socket connectors, section IV (see attachment) is to be included in the Flight Manual under the Section "Rigging", if the L'Hotellier connector is or is to be secured by means of a safety pin. If necessary, the entry is to be included on a new page.
- c)** If Uerlings type sleeves are used as additional locking systems for L'Hotellier connectors, section III of the attachment is to be included in the Flight Manual.

These entries in the Flight Manual may be hand-written or inserted as a copy indicating the AD-No. 1993-001/3 in the Flight Manual.

The amendment is to be entered in the list of effective pages indicating the AD-No. 1993-001/3.

3. Maintenance Manual

The enclosed Instructions for Maintenance (L'Hotellier, issue E 03/94) become herewith part of the operating instructions and are to be included in the aircraft Maintenance Manual - as far as this has not been done already by the manufacturers of the sailplanes, powered sailplanes, and aeroplanes concerned.

- 4.** All L'Hotellier ball and socket connectors are to be inspected in accordance with the above Instructions for Maintenance. Connectors exceeding the allowable tolerances are to be replaced.

Note:

Type-related technical information already published by the manufacturer or by the product support organisation for L'Hotellier ball and socket connectors become part of this AD.

The safety pins are available from:

- L'Hotellier safety pin, reference no. L'H 140-31
- safety pin Ø 1.2 mm, Ford reference no. 1473 931 (worldwide)
- manufacturers or product support organisations for the sailplane, powered sailplane or aeroplane types concerned

Compliance:

Locking of L'Hotellier connectors:

- on sailplanes and powered sailplanes not later than April 30th, 1994.
- on aeroplanes not later than May 15th, 1998.

Inspection of the Uerlings type sleeves on all aircraft:

Enquiries regarding this Airworthiness Directive should be referred to Mr. Olaf Schneider, Airworthiness Directive Section at the above address, fax-no. 0049 531/2355-254. Please note, that in case of any difficulty, reference should be made to the German issue!



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With the next annual inspection but not later than May 15th, 1998, and thereafter at least once a year.

Technical publication by the manufacturer:

-none-

Accomplishment and log book entry:

Action to be accomplished by an approved maintenance organisation and to be checked and entered in the log book by a licensed inspector.

Note:

This AD supersedes the AD-No. 1993-001/2 dated April 20, 1994.

Holders of affected aircraft registered in Germany have to observe the following:

As a result of the a.m. deficiencies, the airworthiness of the aircraft is affected to such an extent that after the expiry of the a.m. dates the aircraft may be operated only after proper accomplishment of the prescribed actions. In the interest of aviation safety outweighing the interest of the receiver in a postponement of the prescribed actions, the immediate compliance with this AD is to be directed

Instructions about Available Legal Remedies:

An appeal to this notice may be raised within a period of one month following notification. Appeals must be submitted in writing or registered at the Luftfahrt-Bundesamt, Lilienthalplatz 6, 38108 Braunschweig.

Attachment to Airworthiness Directive No. 1993-001/3

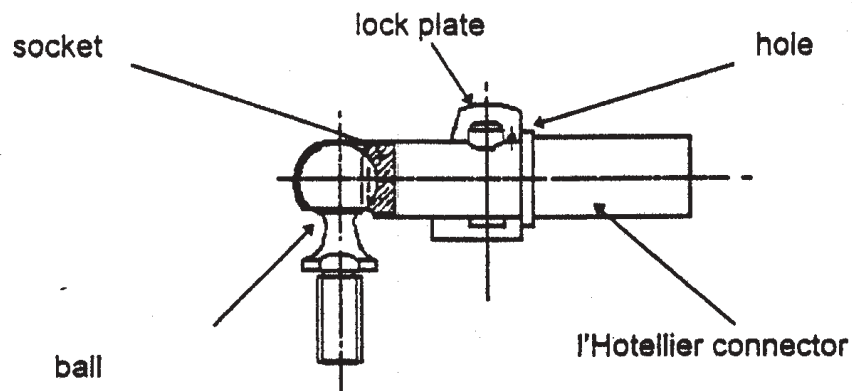
L'Hotellier ball and socket connector, lock plate

Attachment page 1 of 4

Section I

L'Hotellier ball and socket connectors with lock plate

If the connectors are not yet equipped with safety pins (e.g. l'H 140-31 made by Hotellier), these safety pins have to be retrofitted. In certain cases it may become necessary to rebores the hole in the lock plate, which is provided for visual inspection, to $\varnothing 1.2$ mm so that the safety pin can be inserted.



Warning!

Unsecured ball and socket connectors may open automatically in flight!

Attachment to Airworthiness Directive No. 1993-001/3 L'Hotellier ball and socket connector, lock plate

Attachment page 2 of 4

Section II

LBA-approved locking systems

The following systems to secure l'Hotellier ball and socket connectors are LBA-approved: Uerlings sleeves or Uerlings type sleeves (see section III), safety pin (figures 2 and 2a), LS-safety sleeve (figure 3), Schempp-Hirth spring (figure 4) und Wedekind locking system (figure 5).

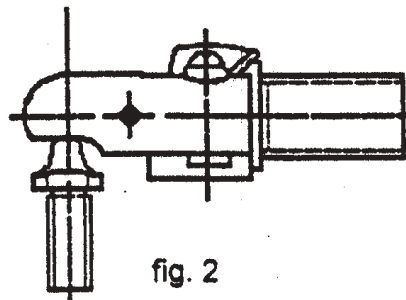


fig. 2



fig. 2a

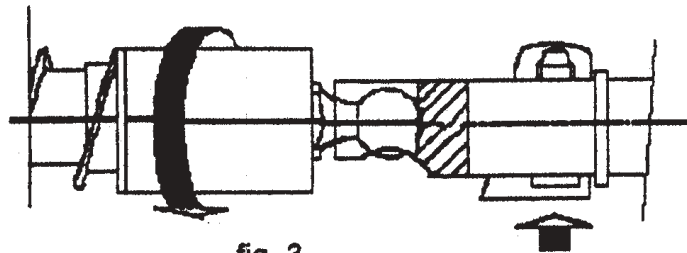


fig. 3

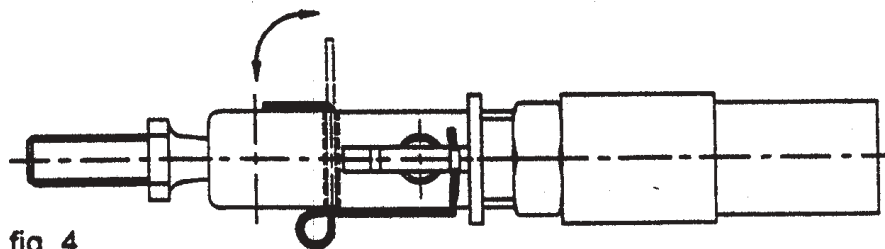


fig. 4

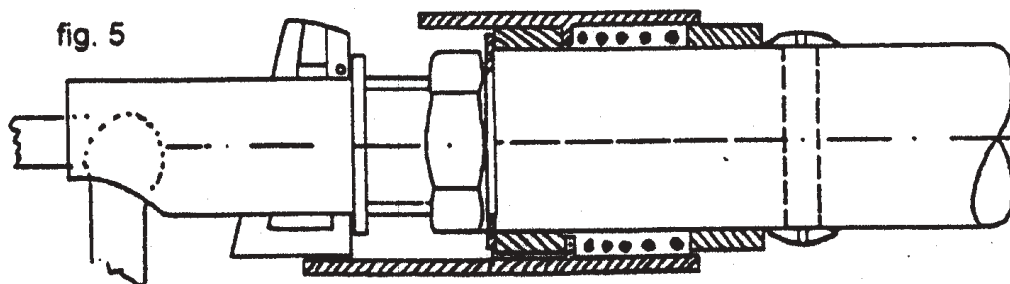


fig. 5

Attachment to Airworthiness Directive No. 1993-001/3
L'Hotellier ball and socket connector, lock plate

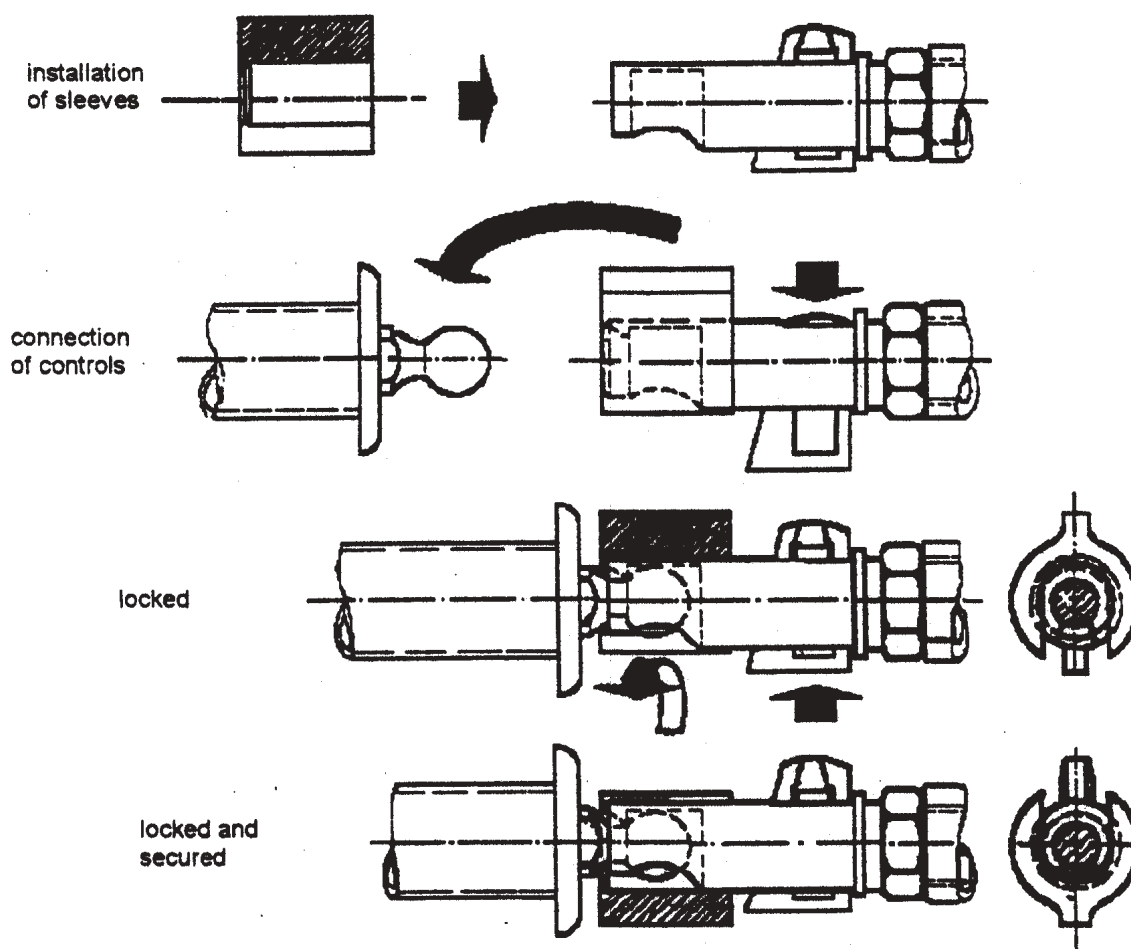
Attachment page 3 of 4

Section III

Installation instruction for Uerlings type sleeves

For installation, the sleeves have to be slid axially onto the l'Hotellier ball and socket connectors.

They may by no means be clipped radially onto the l'Hotellier ball and socket connector. Radial clipping (excessive opening of the sleeve) may lead to cracks or ruptures due to overstressing so that the sleeve cannot function properly any more.



Attachment to Airworthiness Directive No. 1993-001/3
L'Hotellier ball and socket connector, lock plate
Attachment page 4 of 4

Section IV

L'Hotellier ball and socket connectors

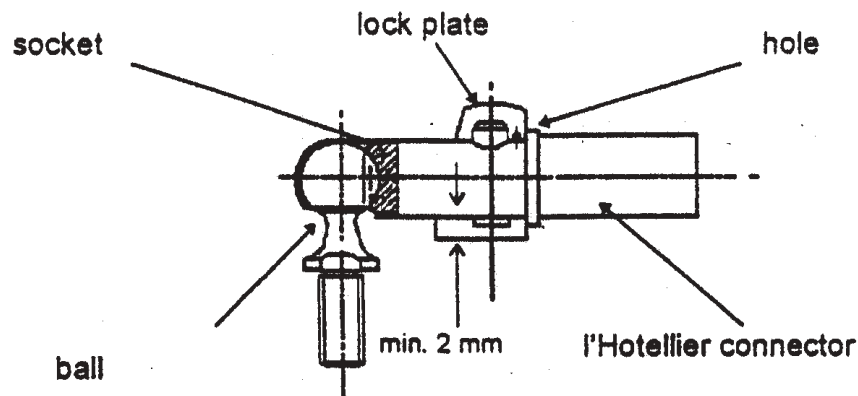
Prior to the installation of ball and socket connectors, everyone has to familiarize himself with their functioning.

The socket is to be slid completely over the ball with the lock plate pressed down. During locking the lock plate moves back slightly so that in a correct connection the hole on the narrow edge of the lock plate becomes visible.

The safety pin is to be inserted in this hole thus securing the ball and socket connector.

Attention:

By loading the connection full engagement of the ball is to be verified!



Warning!

Unsecured ball and socket connectors may open automatically in flight.