

Securing L'Hotellier Fittings



Updated: August 7, 2023

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PLEASE NOTE

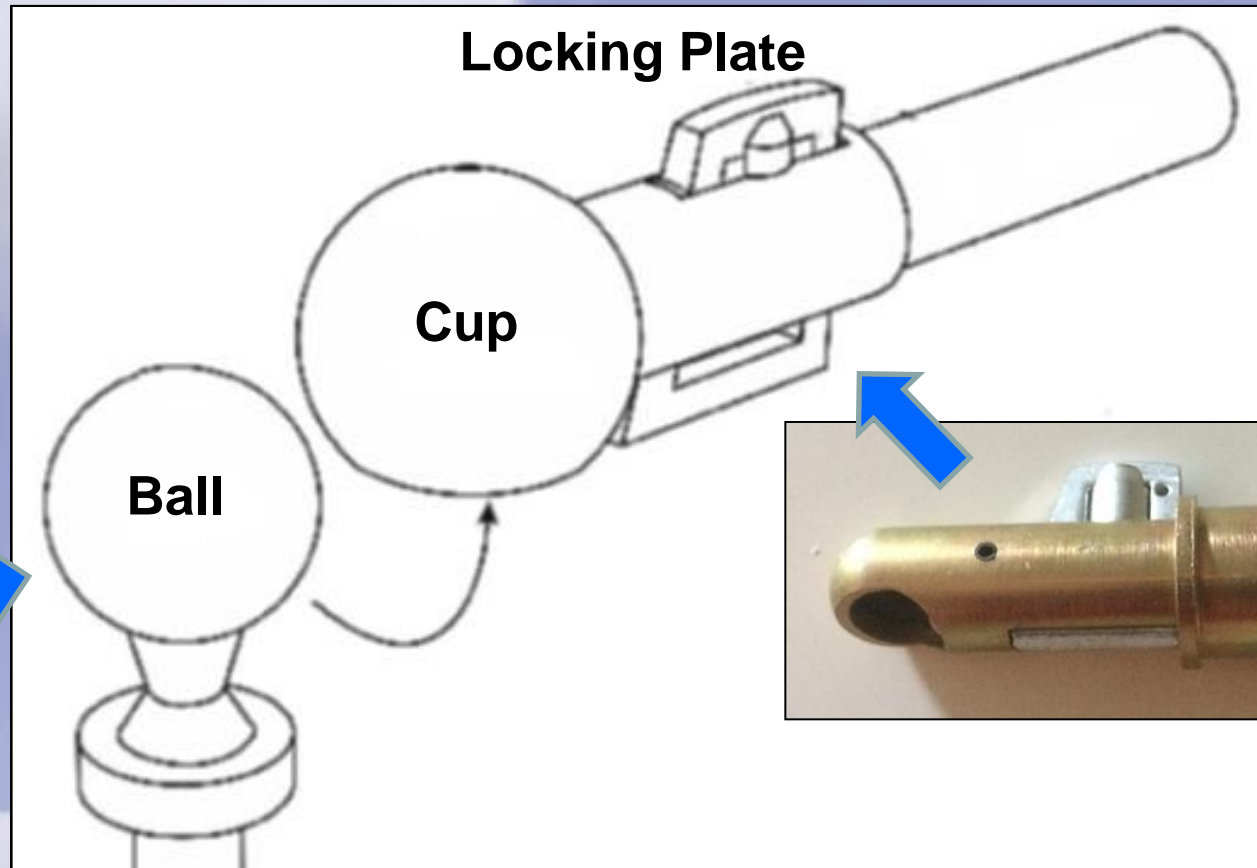
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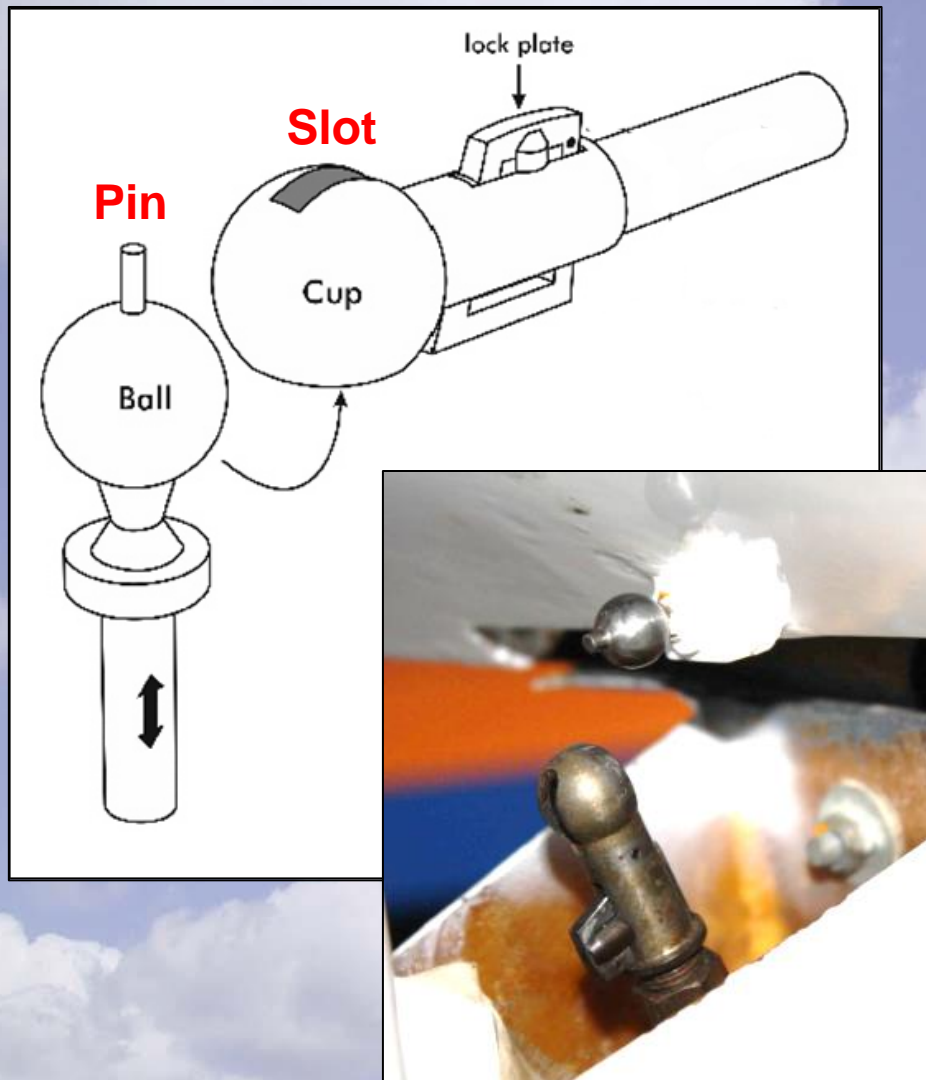
<http://aviation.derosaweb.net/presentations>

Thank you, John

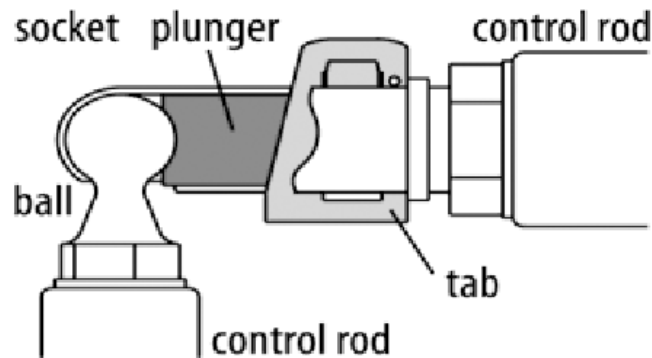
Components of a L'Hotellier Fitting



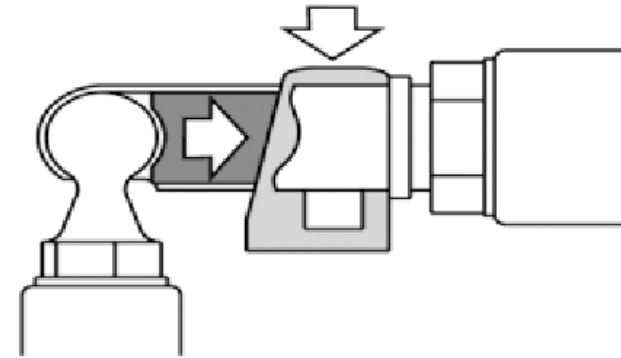
L'Hotellier Type with Alignment Pin and Slot



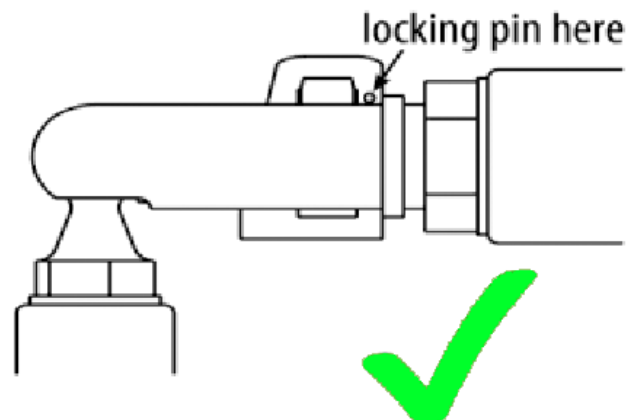
Good & Bad Connection of a L'Hotellier Fitting



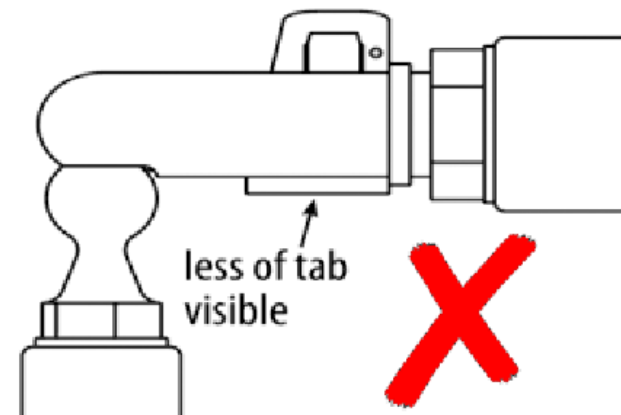
(a) Correct: cut-away shows how tab holds plunger in place



(b) Open: with tab depressed, plunger allows ball to be inserted or removed



(c) Correct: ball engaged, locking pin may be inserted



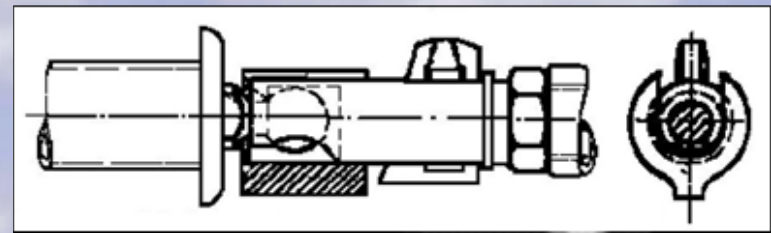
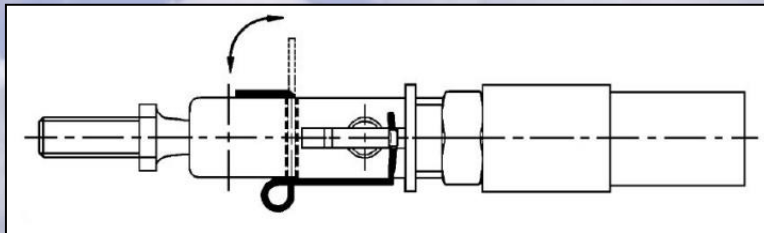
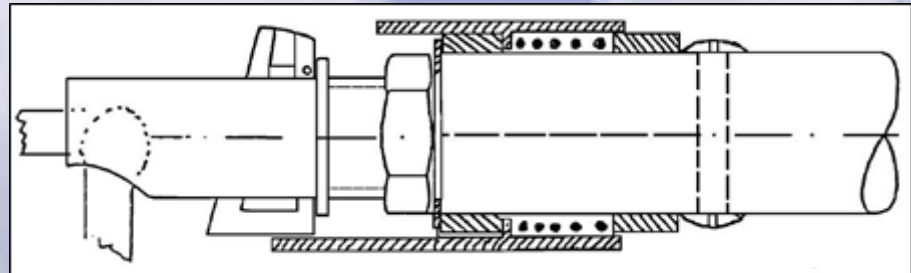
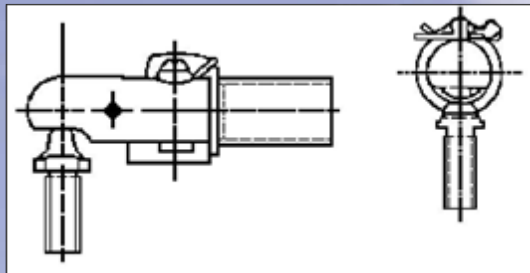
(d) Incorrect: ball not engaged, but locking pin may still be inserted

FAA L'Hotellier Airworthiness Directive

In 1997 the Federal Aviation Administration (FAA) issued airworthiness directive (AD) 97-08-06 to address an issue of L'Hotellier fittings becoming uncoupled during flight. This can result in the loss of control of the aircraft.

What could occur is that the release mechanism and locking plate are not properly engaged during assembly and/or worked loose during flight.

There were four (4) possible solutions to prevent this from happening.
(see the following slides)



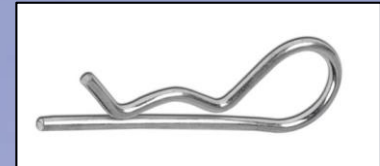
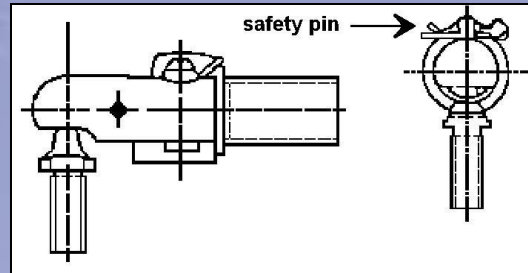
AD 97-08-06 Applies to the Following Aircraft

- **Schleicher**
 - AS 12, AS-K 13, ASK 21, ASW -15, ASW 12, ASW 17, ASW-15B, ASW-19, ASW-19B
- **Centrair**
 - 101, 101A, 101AP, 101P, 201B
- **Eiriavion**
 - PIK-20, PIK-20B, PIK-20D
- **GROB**
 - G103 Twin Astir, G103 Twin II, G103A Twin II Acro, G103C Twin III Acro, GROB G 109, GROB G 109B, G102 ASTIR CS, G102 CLUB ASTIR III, G102 CLUB ASTIR IIIb, G102 Standard Astir III
- **Glaser-Dirks Flugzeugbau**
 - DG-100, DG-101, DG-400, DG-500M
- **Intreprinderea De Constructii Aeronautice**
 - IS-28B2, IS-29D2
- **Rolladen-Schneider**
 - LS1-F, LS3-A
- **Schempp-Hirth**
 - Cirrus, Discus a, JANUS, Nimbus-2, Nimbus-2B, Standard-Cirrus, Ventus-2a

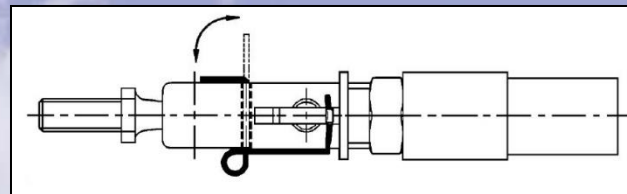
Types of L'Hotellier Securing Solutions

See <http://aviation.derosaweb.net/wedekind> for other details on the different types of solutions.

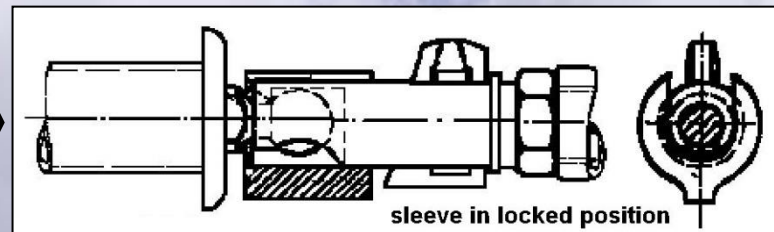
- 1) Drill a hole in the L'Hotellier fitting's release mechanism and insert a spring clip, safety pin, or safety wire.



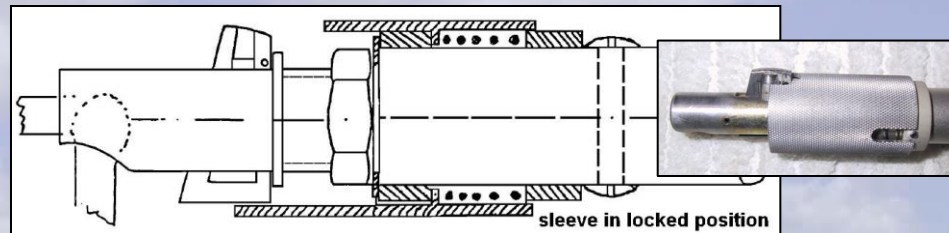
- 2) Drill two holes in the L'Hotellier fitting's release mechanism and insert an "Schempp-Hirth Safety Spring".



- 3) Uerling sleeve that rotates over the release mechanism. This sleeve will not work for 90° (right angle) L'Hotellier connections.

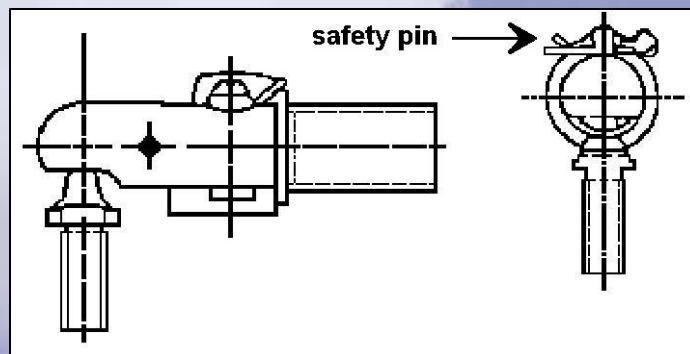


- 4) Use a Wedekind-Sicherung sleeve which captures the release mechanism.



LEAST EXPENSIVE CHOICE

Drill a Hole & Insert a Safety Pin or Wire



Method: Drill a hole in the L'Hotellier fitting's release mechanism to allow the insertion of safety wire, safety pin or a safety clip. This is the default minimum solution.

- Pros

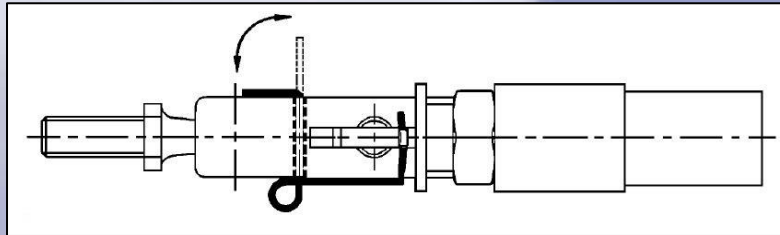
1. Simply mechanical solution.
2. "Permanent" fix.
3. Works on both straight and right angle L'Hotellier fittings.

- Cons

1. Easy to lose the pin inside the glider unless attached by a lanyard.
2. Difficult to fit the safety device in place during assembly
3. Requires modifying the L'Hotellier fitting.

EASIER OPERATING CHOICE

Drill a Hole & Insert a Schempp-Hirth Safety Spring



Method: Drill a hole into both the release mechanism and the body of the mechanism cup. Purchase or fabricate a captive wire "spring" that is semi-permanently installed on the L'Hotellier ball joint. One end of the spring rotates into the hole in the L'Hotellier ball joint engagement push lever.

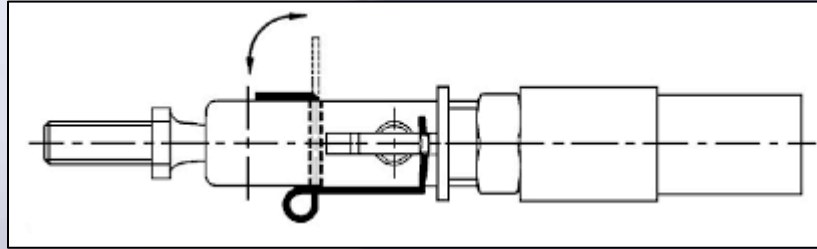
- Pros

- 1.Simple to install.
- 2.Simple to operate.

- Cons

- 1.Requires modifying the L'Hotellier fitting in two places.
- 2.Can be somewhat expensive.

Schempp-Hirth Safety Spring



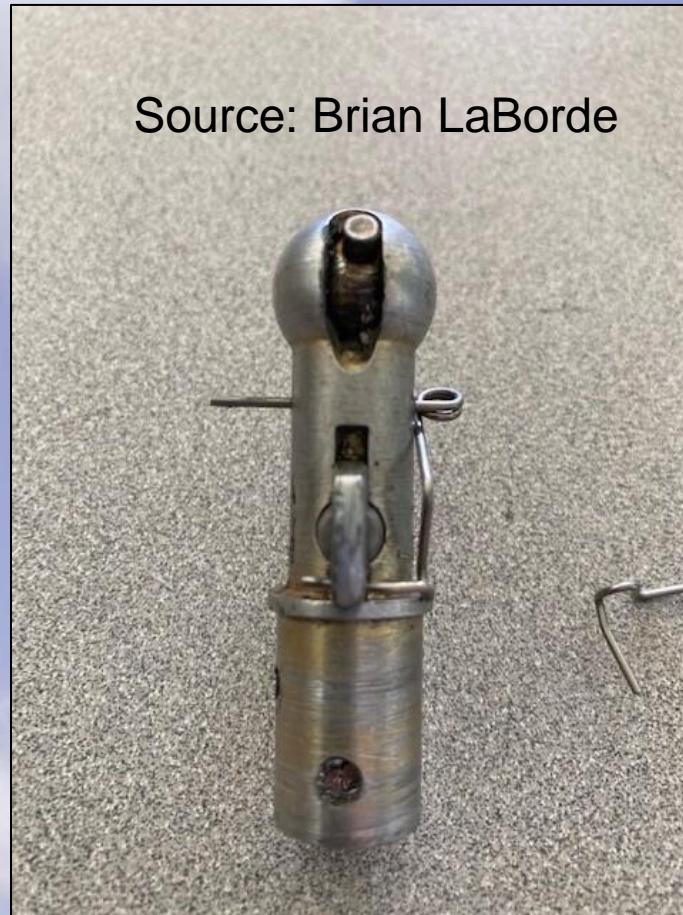
Available From

<https://www.williamssoaring.com/>
<https://www.southernsailplanes.com>

Or You Could

Make your own from music wire!

Schempp-Hirth Safety Spring

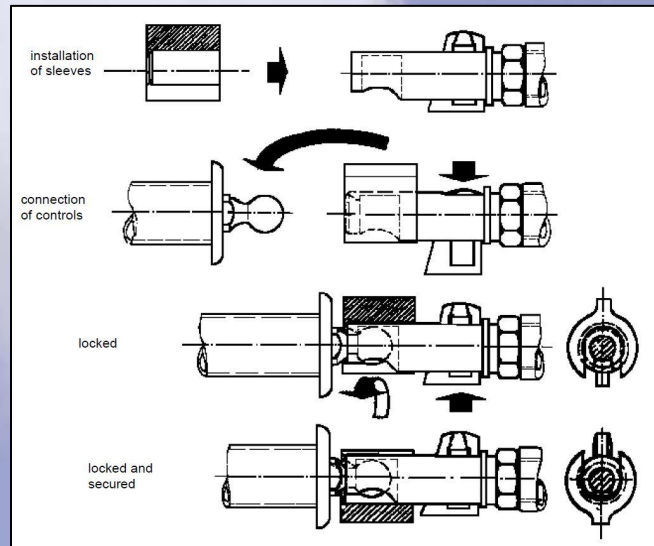


Schempp-Hirth Safety Spring In Use



EASIEST OPERATING CHOICE

Uerling Sleeves or LS Safety Sleeves



Method: Use of a nylon “Uerling” sleeve. The sleeve rotates over the L'Hotellier ball joint and physically prevents a premature release.

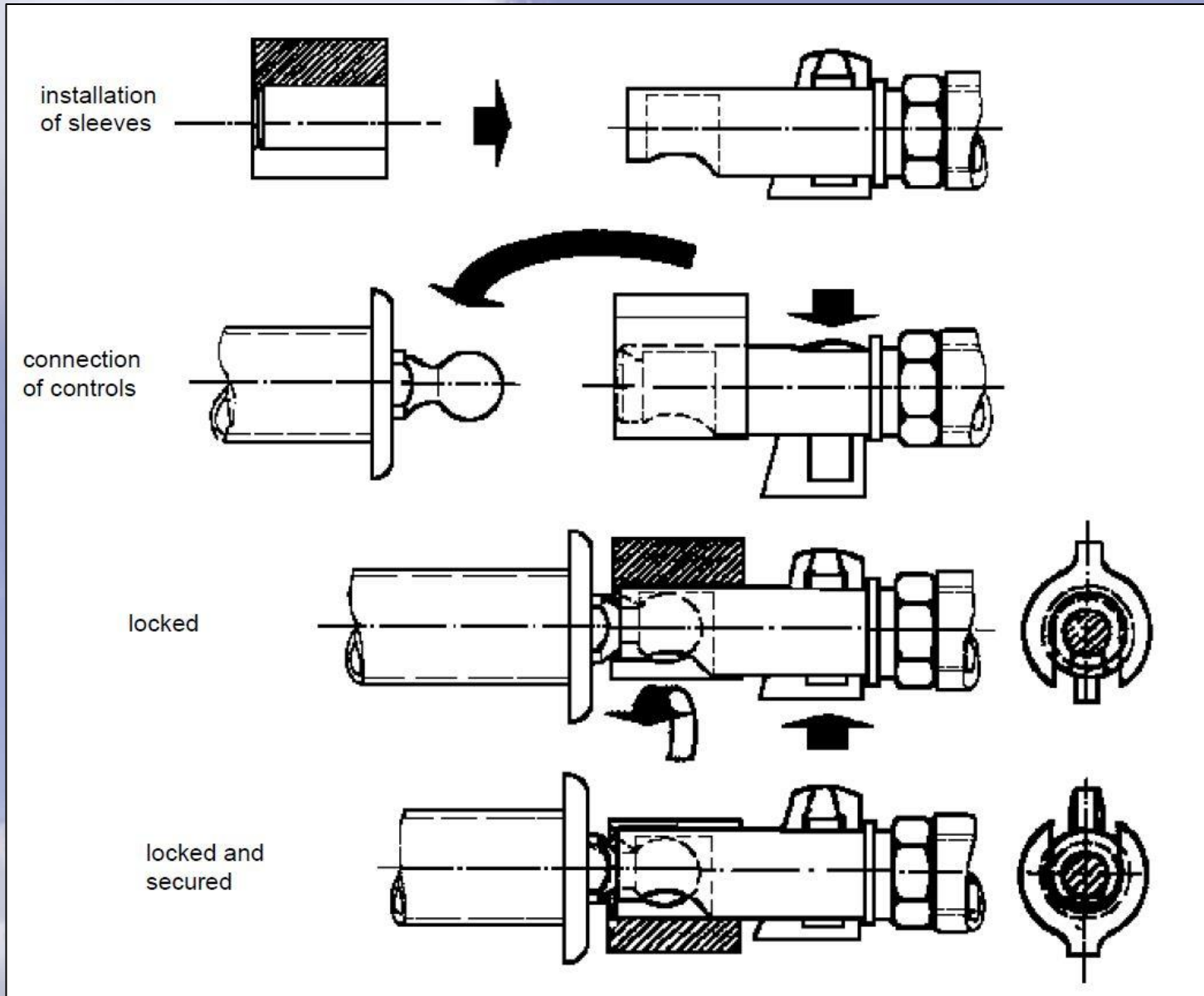
•Pros

- 1.Simplest to install and operate.
- 3.No modification of the l'Hotellier fitting required.
- 4.Only solution which directly prevents the separation of the L'Hotellier ball from the socket. The other solutions prevent the L'Hotellier release mechanism from being inadvertently activated.

•Cons

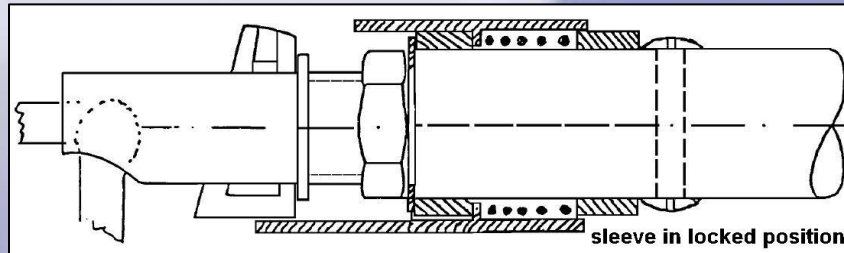
- 1.Non-permanent fix. I have been told that sleeves must be replaced every 2 years. NOTE: To extend the life of Uerling sleeves install them by sliding onto the end of the L'Hotellier connector - do not snap them over the top as this can deform the sleeve.
- 2.Uerling sleeves only work on straight L'Hotellier connections (i.e. airbrakes in DG-100/101, 200/201) but not on right angle connections (i.e. ailerons in DG-100/101, 200/201).

Uerling Sleeve Operation



BEST OVERALL CHOICE

Wedekind Sleeves



Method: Use of a Wedekind-Sicherung spring-loaded sleeve which captures the L'Hotellier release mechanism.

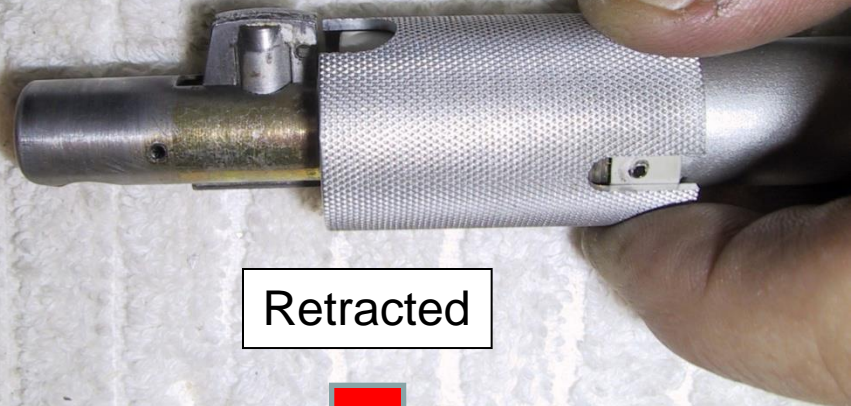
- Pros

1. Very simple solution to operate.
2. "Permanent" fix. Once installed, no further maintenance.
3. Works on both straight and right angle L'Hotellier fittings.

- Cons

1. Costliest of the choices.
2. Most complicated to install.

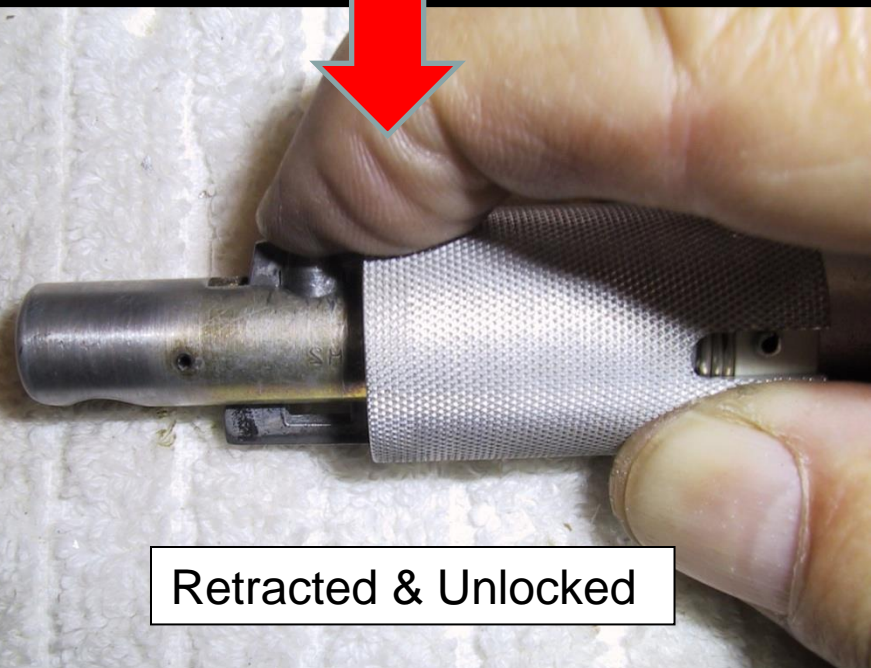
Wedekind Sleeve Operation



Retracted



Released & Locked



Retracted & Unlocked



Another Idea – The “SKB-Connector”

This may be a replacement for the L’Hotellier/Wedekind system. This is said to fit the EB28 & EB29 gliders (Binder Motorenbau GmbH) and the LS1-c, LS1-d, LS1-f, LS4, LS4-a, LS6, LS6-a, LS6-b gliders (DG Flugzeugbau GmbH) plus possibly other DG gliders in the near future.

<https://www.binder-flugmotorenbau.de>

<https://www.dg-aviation.de/en/dg-aircraft-news/ersatz-l-hotellier/18390>



Miscellaneous Reference Information

- Videos ➔ <https://tinyurl.com/lhotellier>
- <http://www.airsailing.org/downloads/safety/Hotellier%20Connectors%20R23.pdf>
- <http://aviation.derosaweb.net/hotellier/documentation/>

Wedekind Sleeve Installation Guidance Pictures & Details

Disclaimer

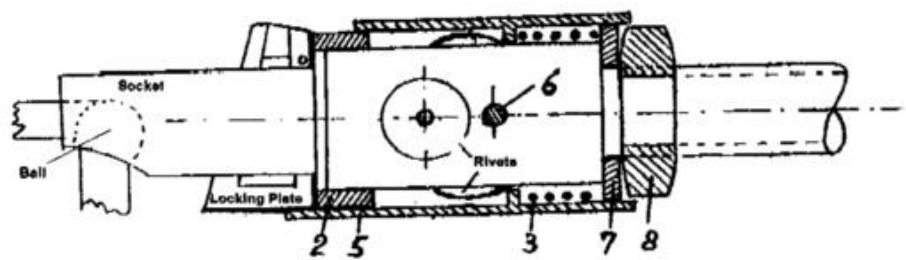
Much care was taken to document the Wedekind sleeve assembly process for future use. However, there may be missing, erroneous, or conflicting information contained within this document.

Installation your glider may differ from what is shown in these slides. The documentation which was provided with the Wedekind sleeves, and from other sources, may not be identical to the situation found in your glider.

All work must be properly performed, documented, and approved by a licensed technician of the appropriate aviation governing authority.

Proceed at your own risk.

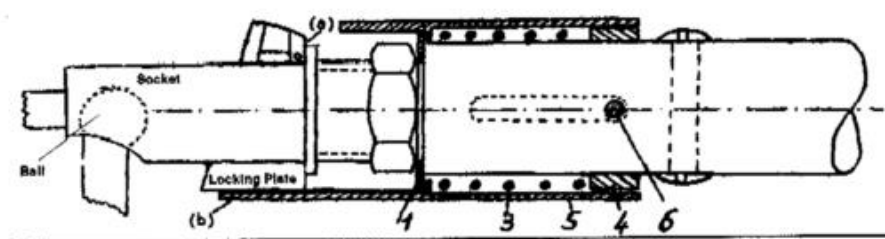
Dipl.- Ing. Klaus Wedekind am Suedhang 56 D-57548 Kirchen Germany	Wedekind Safety Sleeve Type V Automatic Safety Sleeve for L'Hotellier Swivel Joint Quick connectors on Alex. Schleicher Airplanes	Page 2 of 2 North American Distributor Juergen Nick 2820 Gaston Gate Mt. Pleasant, SC 29464
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Assembly Instructions

- Prior to removing the L'Hotellier Swivel Joint Quick Connector from the push rod, precisely measure with a caliper a defined distance (e.g. 100mm) from the end of the Locking Plate and mark it onto the push rod. Should you fail to do so, you will later have to adjust the control surfaces according to your airplanes operation manual.
 - Remove the L'Hotellier Swivel Joint Quick Connector from the Push Rod
 - Snap the Bushing (Part #2) on to the L'Hotellier Swivel Joint Quick Connector right behind the Locking Plate (chamfer facing Locking Plate). Secure the Bushing (Part #2) with Cyanoacrylate (Crazy Glue)
 - In order to mark the hole for the Roll Pin (Part #6) ; Measure 18 mm from the vertical edge of the Locking Plate and mark the position on the L'Hotellier connector. The hole will be drilled later at 90° relative to the Locking Plate.
 - Push / thread the Wedekind Safety Sleeve parts onto the threaded part of the L'Hotellier Swivel Joint Quick connector in the sequence: Part # 5 (first), Part # 3 (second), Part # 7 (third) , Part # 8 (fourth)
 - Hold the Safety Sleeve (Part #5) in the "Secured" position and tighten the M10 Nut (Part #8) until the end of the long hole (facing the threaded side) in the Safety Sleeve (Part #5) is in line with the marking (see step 4) on the L'Hotellier connector.
 - At the marked position drill (at 90° relative to the Locking Plate) a 2mm hole from both sides into the push rod.
Note : the push rod is hollow
 - Run a thin wire through the Safety Sleeve (Part #5) and the push rod. This will allow you to guide the Roll Pin (Part #6) and avoid damage to the push rod. Now, very gently tap the Roll Pin (Part #6) through the Safety Sleeve (Part #5) and the push rod. Avoid denting the Safety Sleeve (Part #5). The Roll Pin shall stick out of the push rod on both sides by approx. the same distance.
 - Thread the L'Hotellier Swivel Joint Quick Connector into the push rod.
 - Readjust the L'Hotellier Swivel Joint Quick Connector to the correct length of engagement (100 mm) and secure it's position by tightening the lock nut.
 - Wrap the threaded section in between the M10 Nuts with Tape up to the level of the push rod or secure the M10 Nuts with Loctite 262 or 638 (Screw adhesive)
- NOTE :** The Safety Sleeve must move freely over the bushing and snap easy into the "Secured" position.
The Roll Pin must glide in the long hole. This ensures that the Safety Sleeve can not rotate. A rotation of the Safety Sleeve will disable the safety function of this device.

Dipl.- Ing. Klaus Wedekind am Suedhang 56 D-57548 Kirchen Germany	Wedekind Safety Sleeve Type W Automatic Safety Sleeve for L'Hotellier Swivel Joint Quick connectors	Page 2 of 2 North American Distributor Juergen Nick 2820 Gaston Gate Mt. Pleasant, SC 29464
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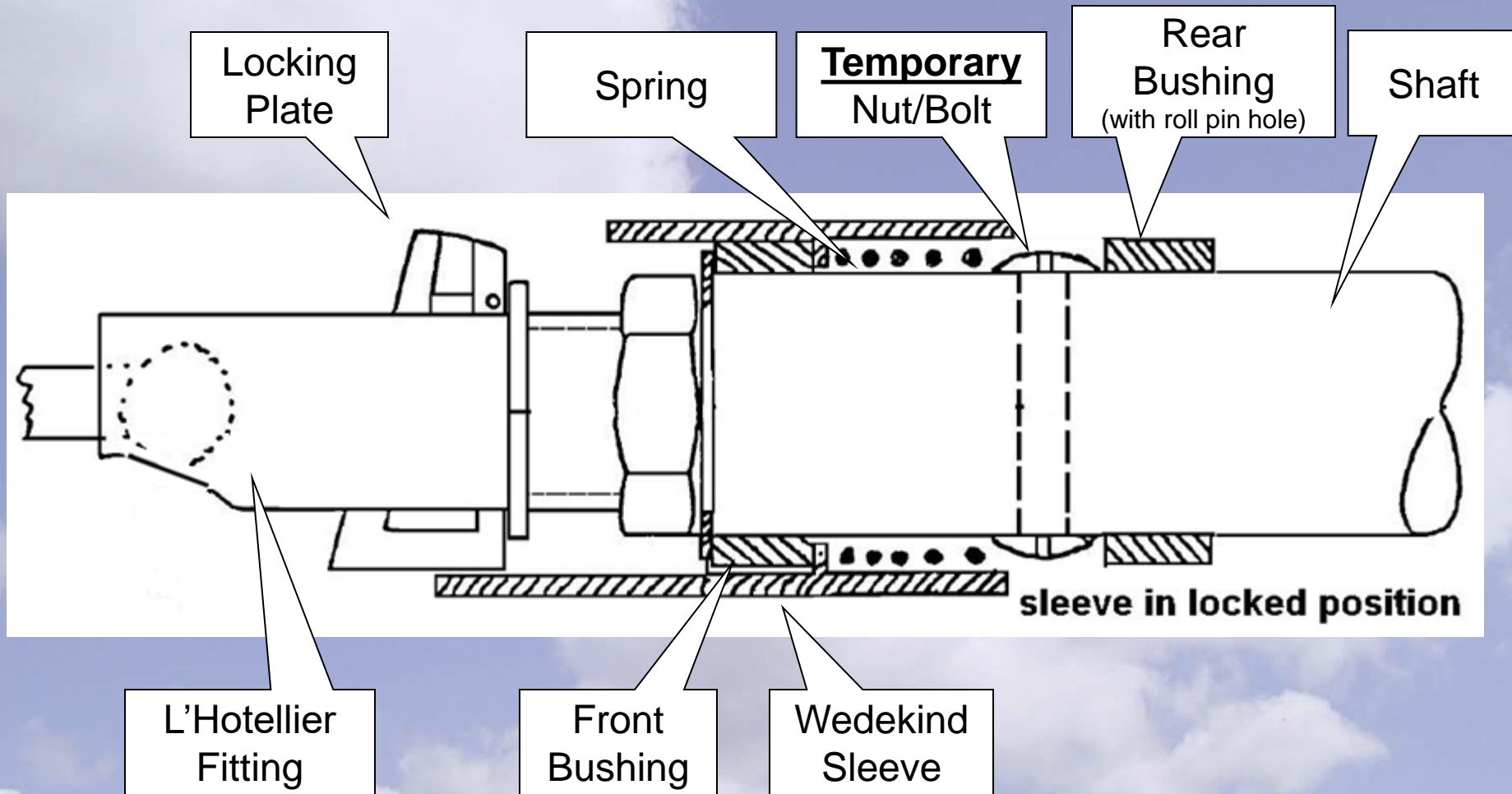
Assembly Instructions

- Prior to removing the L'Hotellier Swivel Joint Quick Connector from the push rod, precisely measure with a caliper a defined distance (e.g. 100mm) from the end of the Locking Plate (Point a) and mark it onto the push rod. Should you fail to do so, you will later have to adjust the control surfaces according to your airplanes operation manual.
 - Remove the L'Hotellier Swivel Joint Quick connector from the Push Rod
 - Push the Wedekind Safety Sleeve parts in the sequence: Part # 4 (first), Part # 3 (second), Part # 5 (third) onto the push rod
 - Slide the washer (Part #1) onto the threaded part of the L'Hotellier Swivel Joint Quick Connector and thread the L'Hotellier Swivel Joint Quick Connector into the push rod.
 - Readjust the L'Hotellier Swivel Joint Quick Connector to the correct length of engagement (100 mm) and secure it's position by tightening the lock nut.
 - Hold the Safety Sleeve (Part #5) in the "Secured" position and push the bushing (Part #4) so far into the Safety Sleeve (Part #5) until the 2 mm holes in the bushing (Part #4) are visible at the end of the long hole of the Safety Sleeve (Part #5)
 - Drill a 2mm hole from both sides, through the holes in the bushing (Part #4), into the push rod.
Note : the push rod is hollow
 - Run a thin wire through the Safety Sleeve (Part #5), bushing (Part #4) and the push rod. This will allow you to guide the Roll Pin (Part #6) and avoid damage to the push rod. Now, very gently tap the Roll Pin (Part #6) through the bushing (Part #4) and the push rod. Avoid denting the Safety Sleeve (Part #5)
- NOTE :** The Safety Sleeve must move freely over the bushing and snap easy into the "Secured" position.
The Roll Pin must glide in the long hole. This ensures that the Safety Sleeve can not rotate. A rotation of the Safety Sleeve will disable the safety function of this device.
To ensure the correct functioning of this safety device, it is sufficient if the safety sleeve(b) overlaps the lower part of the Locking Plate by 3 mm. Should the safety sleeve(b) overlap the lower part of the Locking Plate by more then 3 mm, you may shorten (file) back the safety sleeve so that it overlaps by 3 mm.

DG-101 Airbrake Shaft Procedure

***180° (straight)
L'Hotellier Fitting
(Type S)***

Assembly of 180° (straight)



Note: This diagram is not completely accurate for DG-100 use and should be used for general reference purposes only.

Initial Steps

- 1) Remove the airbrake torque tube from the glider by removing the nut/bolt from the bell crank
- 2) IMPORTANT - Measure the total length of the torque tube between the fitting and the end of the aileron shaft. Accurate measurement is important. I clamped two blocks onto a work bench with the assembled shaft in between for later reference. After completion of the Wedekind fitting assembly, adjust the shaft length per the distance between the reference wooden blocks.

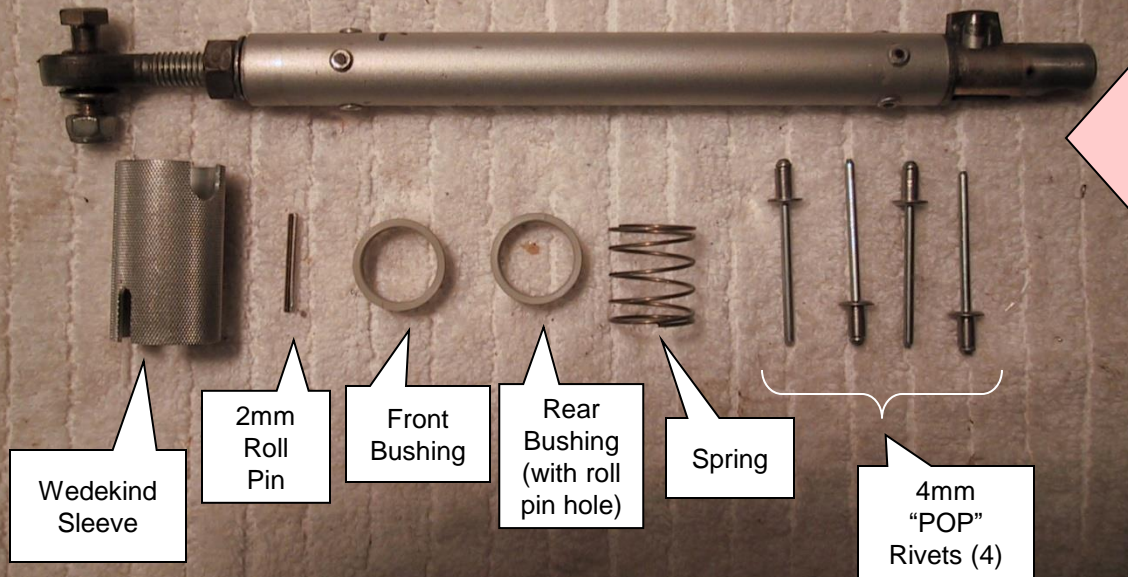
General Comments

- 1) All drilling performed in the procedures is specified as metric. While metric drill bits can be purchased in the US via internet sources and some hardware stores, there are two closely sized SAE numbered drill bits which are much easier to find locally.

2.0mm (0.0787") = #47 drill bit (1.9939mm or 0.0785")

4.1mm (0.1614") = #20 drill bit (4.0894mm or 0.1610")

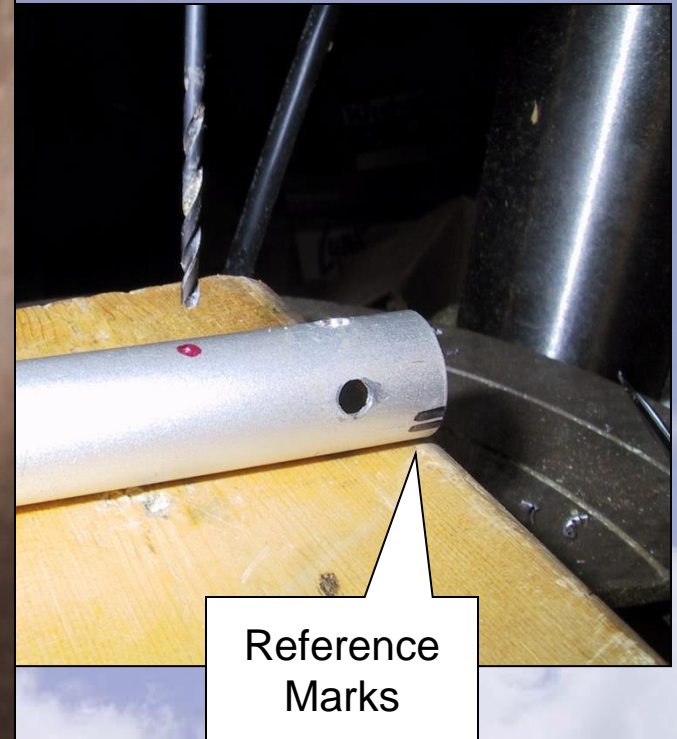
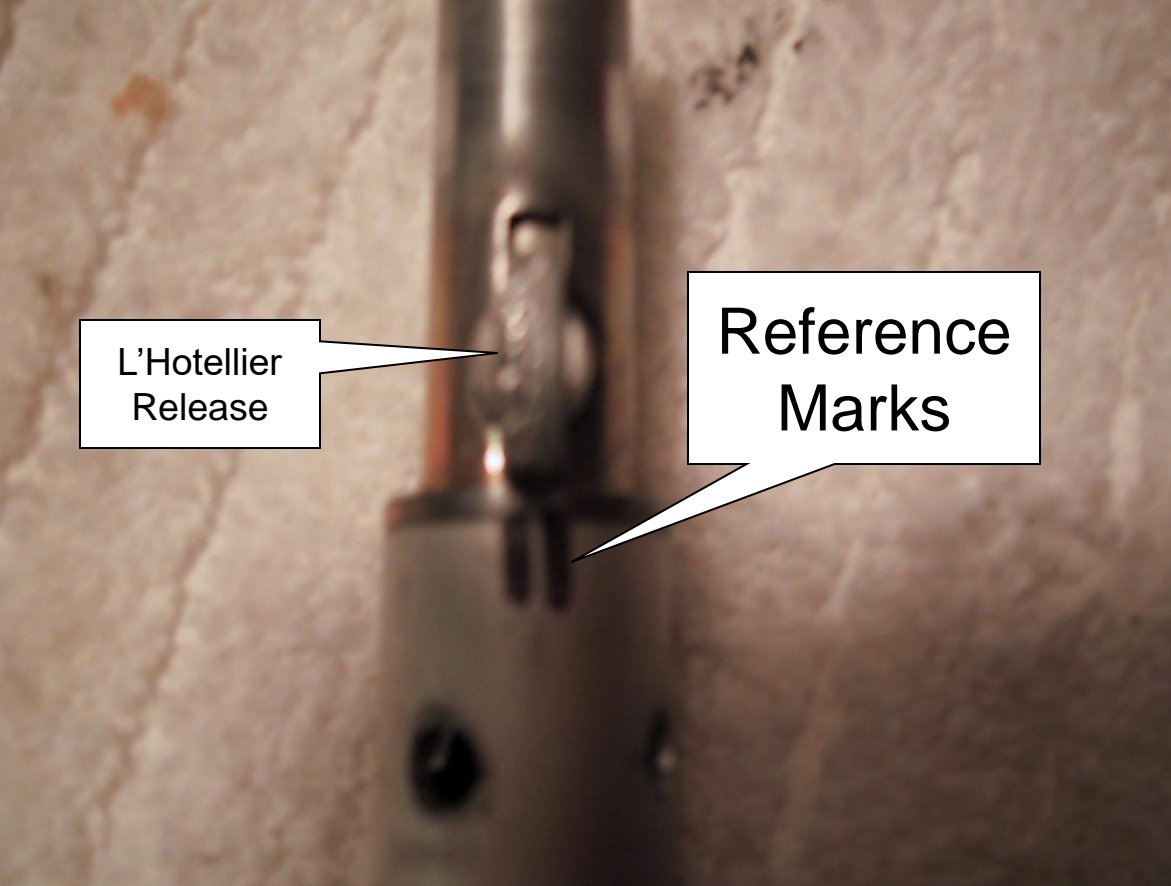
Unaltered Airbrake Push Tube with the Wedekind Sleeve Kit



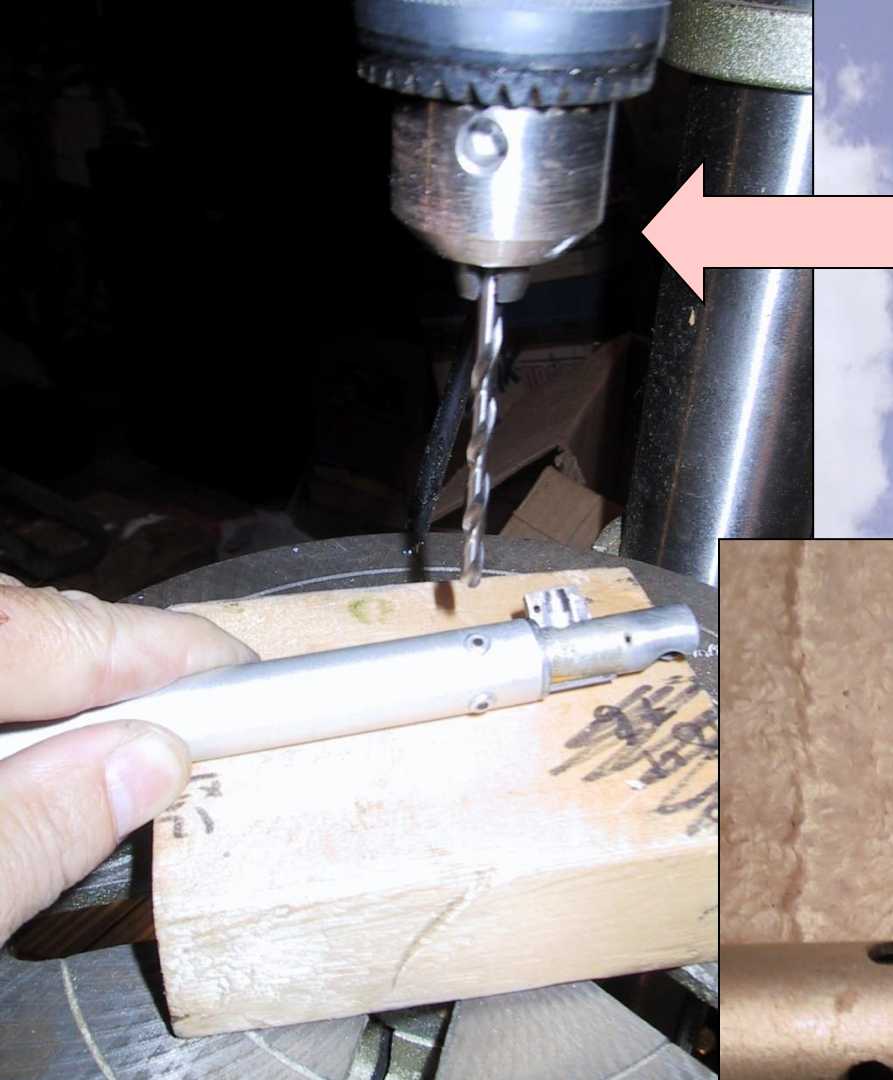
NOTE: The DG's airbrake push tube's L'Hotellier fittings are riveted in place. However, the aileron push tubes's L'Hotellier fittings are screwed in place (slide 19).

Close up of the unaltered Airbrake push tube L'Hotellier fitting with factory riveting.

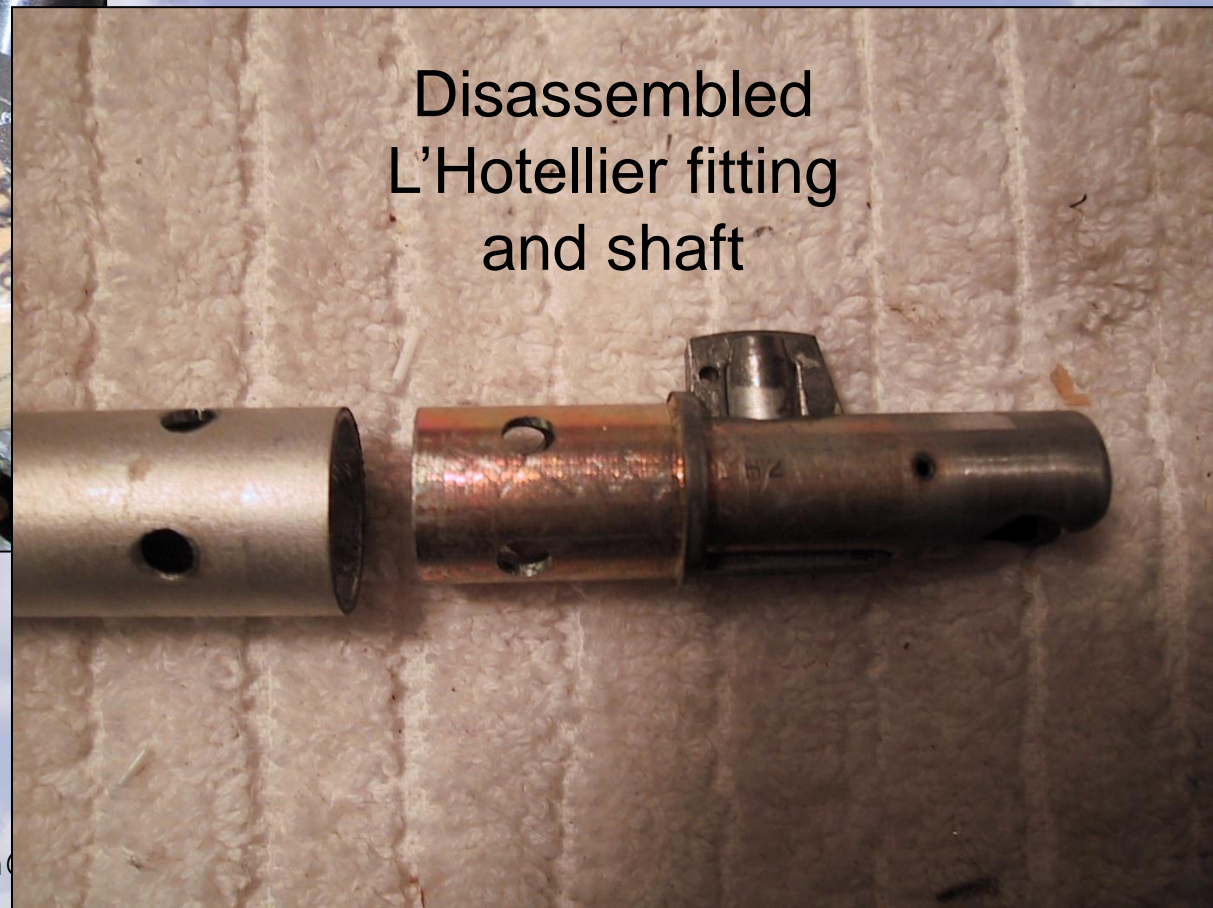




It is difficult to see in the left picture but I marked the relative location of the L'Hotellier fitting on the shaft before drilling out the factory rivets to make sure that I riveted the fitting back into the original orientation. These reference marks do not need to be particularly accurate but simply indicate the orientation of the L'Hotellier fitting relative to the shaft's rivet holds for later re-assembly. These marks can also be seen in the right-hand picture above.

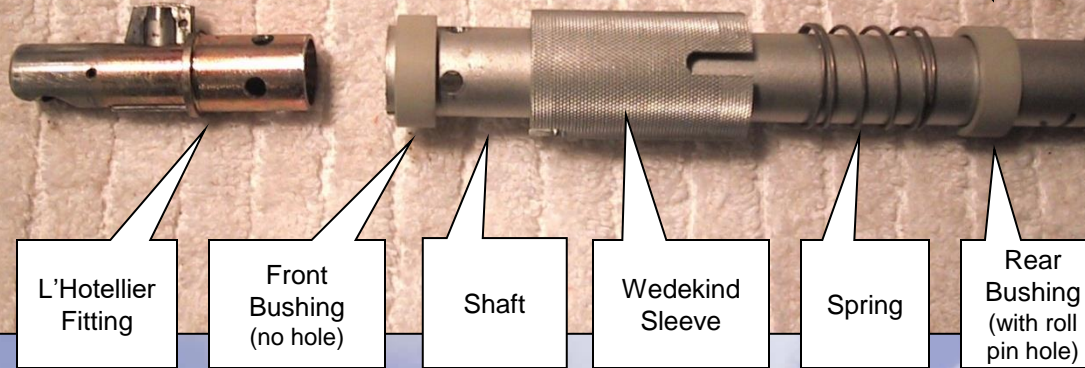


Drilling out the original “POP” rivets.
When I attempted to center punch the rivets, I found that the center of the rivet pushed in, making accurate centering of the drill bit on the rivet a bit easier.



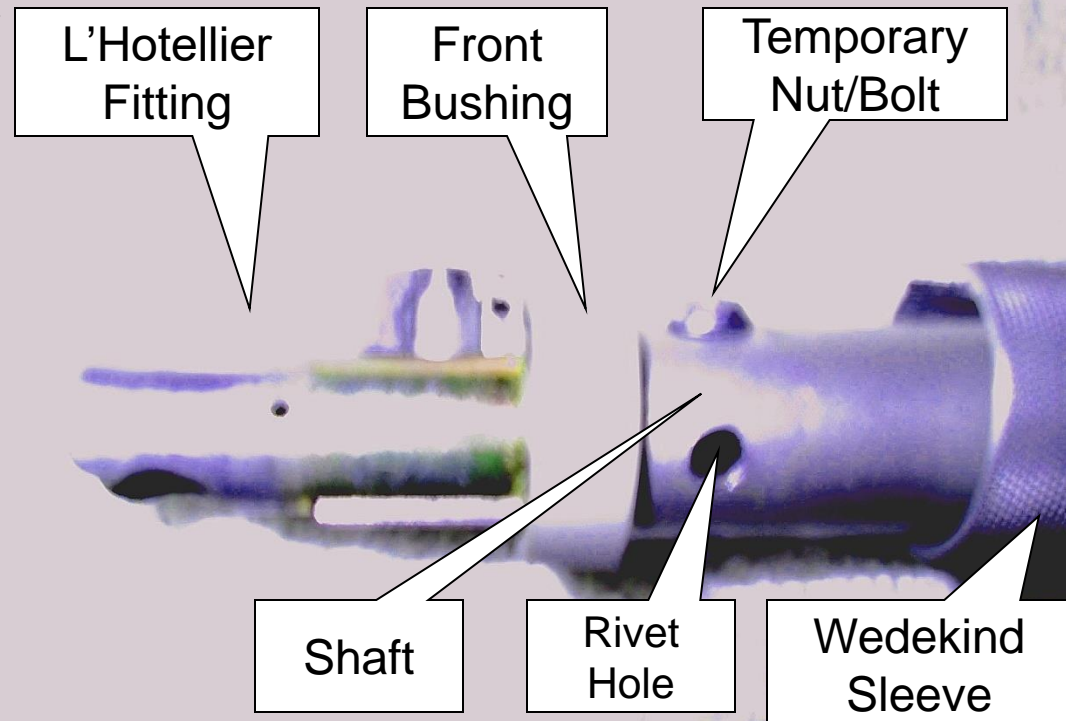
Disassembled
L'Hotellier fitting
and shaft

Trial Assembly

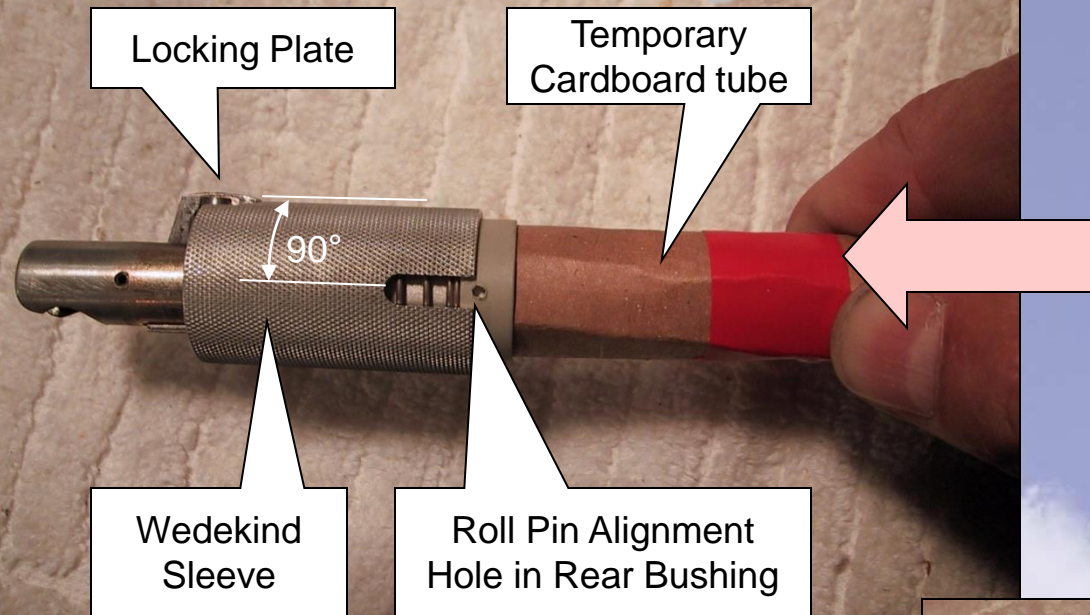


Here are the Wedekind parts lined up on the shaft in the correct order. The rear bushing has a hole in it for a roll pin.

Difficult to see clearly in this picture but I inserted a nut/bolt as a replacement “rivet” to temporarily hold the L’Hotellier fitting in place on the shaft during the trial assembly. The head/tail of the nut/bolt needed to be filed down to clear the sleeve. See the next slide for more details.



Trial Assembly



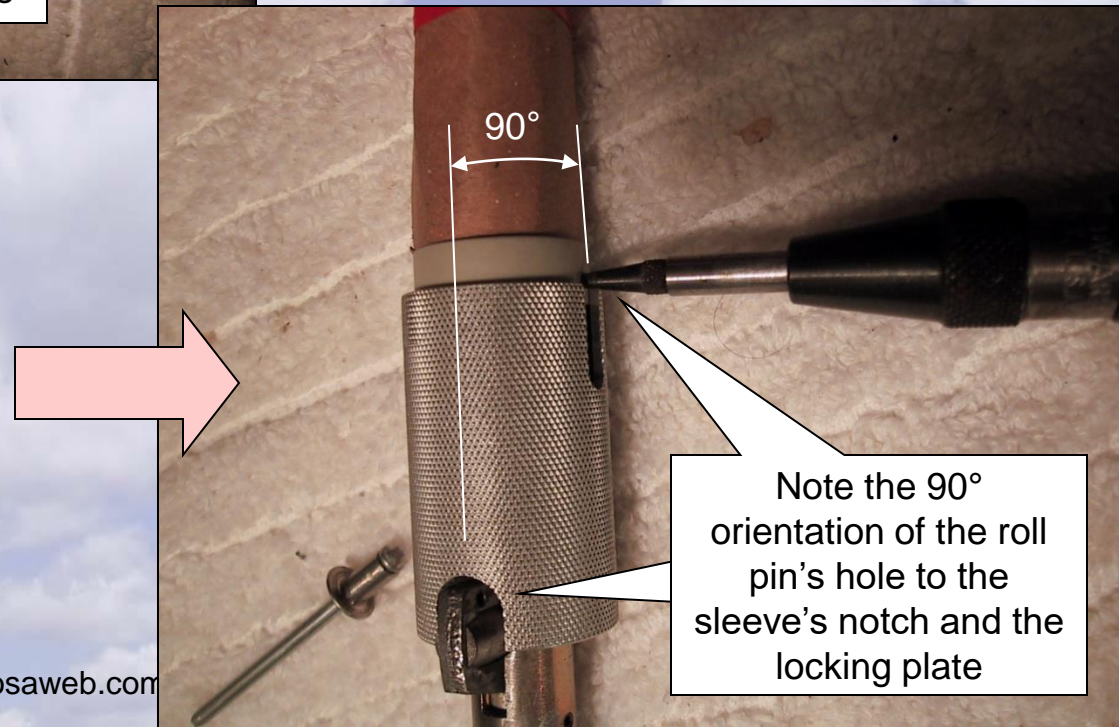
Final trial assembly testing before drilling any irreversible holes.

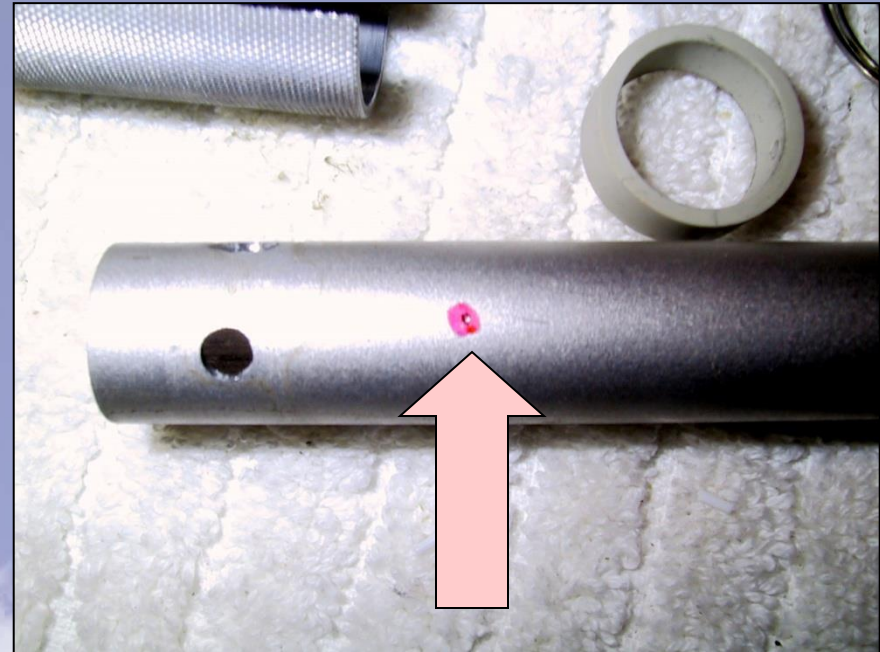
The roll pin alignment hole (on the rear bushing) can be seen near the sleeve slot, 90° to the L'Hotellier cam. When the roll pin is inserted the Wedekind sleeve will not be able to rotate out of position.

I am holding the rear bushing in place with a tube made of cardboard to determine the correct final location of the rear roll pin bushing by testing the action of the spring loaded sleeve. **Test! Test! Test!**

One I have accurately determined the location for the roll pin hole, I used a center punch to mark it.

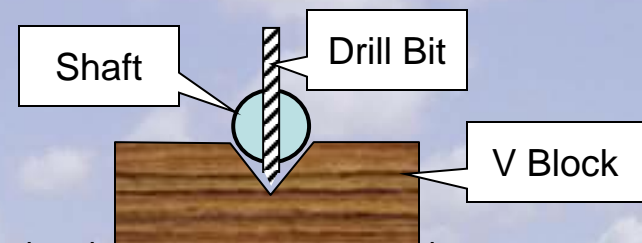
Note the 90° orientation of the roll pin's hole to the sleeve's notch and the locking plate.





To avoid any mistakes, I clearly highlighted the roll pin location mark before drilling a 2mm hole.

The drill must go through the exact opposite sides of the shaft and be 180° from one another. I recommend using a V-shaped block as shown below to accurately hold and center the shaft before drilling.



Here the rear bushing is temporarily held in position by placing some stiff safety wire through the roll pin holes. At this point I have only drilled a single hole in the shaft for the roll pin and can test the complete action of the sleeve in its final form.



Final Assembly

Slide all the parts on the shaft as shown below.

The front bushing must be between the L'Hotellier fitting and the rivets. Then rivet the L'Hotellier fitting back into place.

Per the AD/TN, the shaft's rivet holes needed to be re-drilled (oversized to 4.1mm) to accommodate the replacement 4mm "POP" rivets.

The spring, sleeve and rear bushing are on the shaft but hidden by the riveting tool.

Front Bushing

Wedekind parts in the correct assembly order

L'Hotellier Fitting

Front Bushing (no hole)

Shaft

Wedekind Sleeve

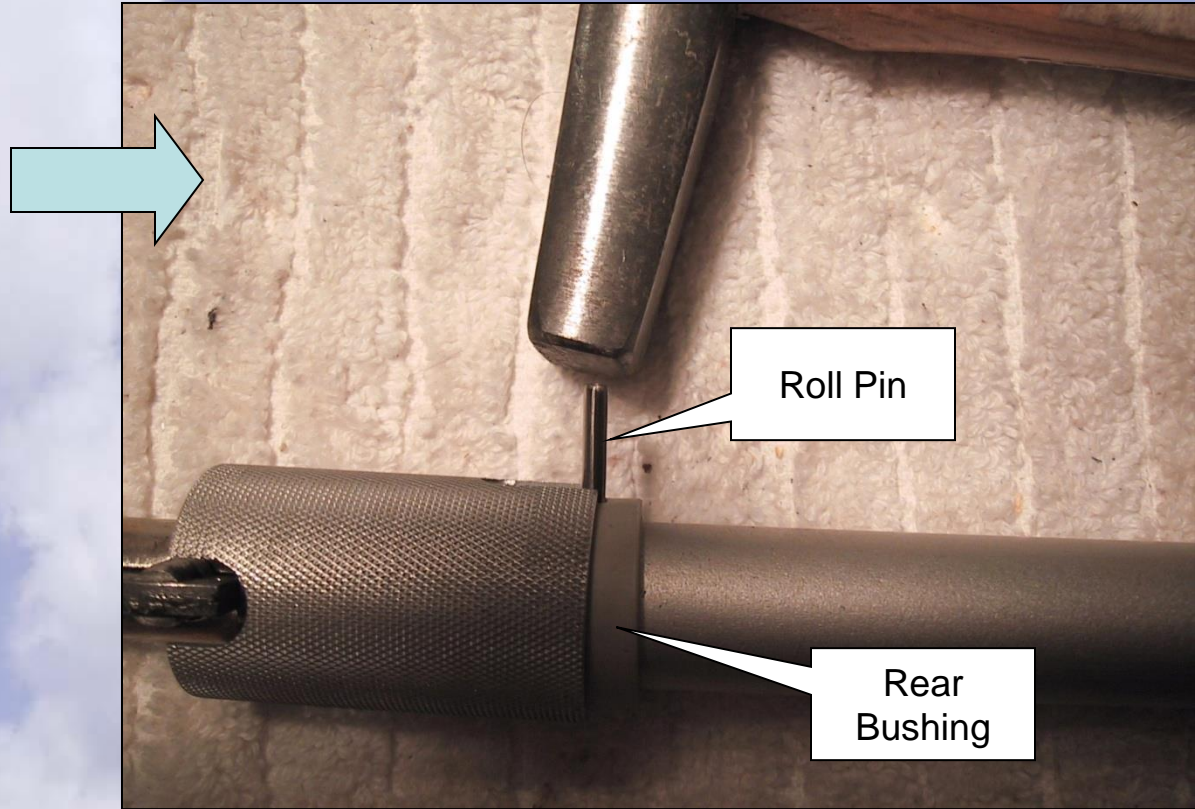
Spring

Rear Bushing (with roll pin hole)

Final Assembly

Slide the spring, sleeve and rear bushing into place, set the 2mm roll pin in place.

The roll pin is slightly longer than the rear bushing to engage the sleeve slots and prevent the sleeve from rotating out of alignment.



This completes the 180° straight airbrake shaft assembly

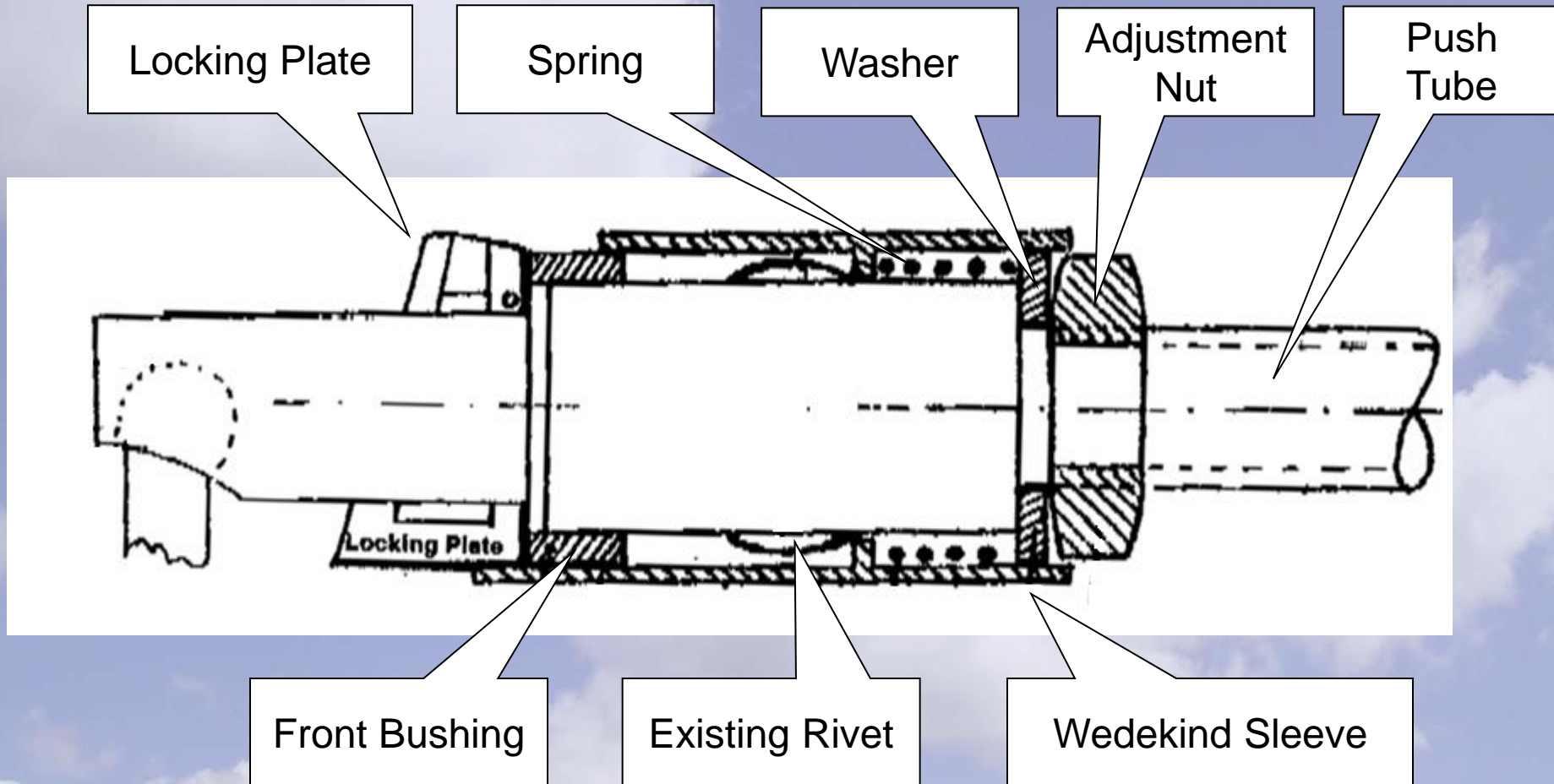
DG-101 Aileron Shaft Procedure

90° (right angle)
L'Hotellier Fitting (Type W)

The assembly is basically identical to the airbrake shaft installation procedure except for a few important differences.

- 1) Instead of riveting the Wedekind fitting in place, a large diameter washer is used to hold all the components into place. No riveting is necessary.
- 2) Make a reference measurement of the location of the L'Hotellier's adjustment nut.
- 3) The L'Hotellier fitting is removed (unscrewed) from the aileron push tube for the installation of the Wedekind sleeve. The aileron push tube is not removed from the glider.
- 4) Test the sleeve for proper spring action.
- 5) Re-mount the L'Hotellier/Wedekind mechanism onto the push tube and adjust the position as needed.

90° (right angle) Detail



Note: This diagram is not perfectly accurate for DG-100 use and should be used for general reference purposes only.

Completed Wederkind Fitting



Possible Sources for Wedekind Sleeves

NOTE: Some of these are probably obsolete! Please let me know!

Eastern Sailplane
Waynesville, OH USA
+1-513-897-5667
john@easternsailplane.com

LMT-Linder GmbH
Walpertshofen, Germany
+49-7353/22 43
<http://www.ltb-lindner.com>

Solaire Canada (LS DG Dealer)
Thamesford, Ontario Canada
+1-519-461-1464
<http://www.solairecanada.com/>

Williams Soaring Center
Williams, CA USA
+1-530-473-5600
<http://store.williamssoaring.com/>

Alexander Schleicher GmbH
Wasserkuppe, Germany
+49-6658 / 89 – 0
info@alexander-schleicher.de

MZ Supplies (Ulrich Werneburg)
Ontario, Canada
613 826-6606
<https://mzsupplies.squarespace.com>

M&H Soaring
Big Flats, NY USA
+1-607-796-4973
<http://mandhsoaring.com>

Güntert + Kohlmetz GmbH,
Bruchsal, Germany
++49-7251-93106-0
<http://www.guentert-kohlmetz.de>

Glasfaser-Flugzeug-Service GmbH
+49 (0)7382 1032
info@streifly.de
<http://www.streifly.de/home-e.htm>

Southern Sailplanes
Berkshire, UK
+44-1488-71774
www.southernsailplanes.com

McLean Aviation
York, UK
+44-1904-738653
<http://www.mclean-aviation.com>

Juergen Nick
Cave Creek, AZ USA
Juergen_nick@msn.com

Miscellaneous Information about Wedekind Sleeves

Some additional documentation on L'Hotellier connectors and Wedekind Sleeves can be found at;

<http://aviation.derosaweb.net/wedekind/documentation/>

I bought my Wedekind sleeves from McLean Aviation (UK LS DG Dealer). Nice folks.

However their Wedekind installation information didn't cover the DG airbrake installation sleeves that they sold me.

York, UK +44-1904-738-653 <http://www.mcleanaviation.co.uk/>

I received some very good information from Solaire Canada (LS DG Dealer)

"Their Wedekind information was written by Jurgen Nick which was much better than the information received from McLean's (which is DG's TN). They show instructions for three types, Type V (not used on DG's) Type W is for the DG's ailerons and Type S is for the airbrakes."

Ed Hollestelle 519-461-1464

<http://www.solairecanada.com/>

Air Sailing safety report on the use of L'Hotellier fittings.

<http://www.air sailing.org/downloads/safety/Hotellier%20Connectors%20R71.pdf>

Colorado Soaring Association use of L'Hotellier fittings on an LD-4A.

<https://www.soarcsa.org/index.php?page=ls-4a-user-guide>

See My Other Presentations

- Transceiver Troubleshooting
- Glider Oxygen Systems
- Working with Glider Air Lines
- Sailplane Electrical Wiring
- Trailer Wiring & LED Lights
- Pilot Relief Systems
- Battery Testing
- Spar Alignment Tool
- L'Hotellier Fittings
- Carbon Fiber Panels
- IGC Filename Decoding
- Blanik L-23 Strut Work
- Survival Kits
- Removing Painted Letters

<http://aviation.derosaweb.net/presentations>

The End Questions?

Email: jhderosa@yahoo.com

Web Site: <http://aviation.derosaweb.net/presentations>