

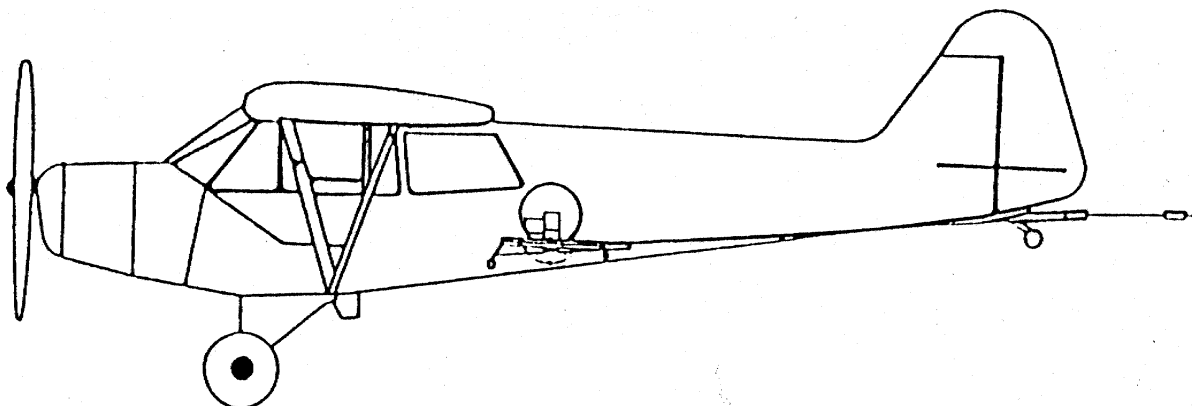
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Installation Guide

for the Tow Cable Retractor Winch with Guillotine (CRG)

for tow planes

types Piper ★ Citabria ★ Stinson ★ Maule ★ Husky



The tow cable retractor winch unit consists from the following assembly groups

- Stop plate unit with guillotine
- Cable retractor winch
- Electric connection

When fitting this device to the aircraft it is more functional to proceed according to the following description and not according to the assembly groups. Otherwise already mounted parts would lead to interferences.

Braunschweig
24. Januar 1985



Jung

Braunschweig
30. März 1990



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Status of Document

Issue II			June 2009	B. Dörflein
New issue acc. to STC – EASA.A.S.03948 of 23 June 2009				
Supplement for the aircraft types Husky A-1A und A-1B (see page 7)				

Changes are marked with margin line

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When fitting the Tow Cable Retractor Winch with Guillotine (CRG) into tail wheel towing airplanes, it must fundamentally be distinguished between fitting work that applies to

- **the basic model only – or to variations within these models**
- **and fitting work that is identical for all airplanes.**

1. Installation of winch unit

A) PIPER PA 12, PA 18/19

Remove cover fabric from the rear seat and backrest, remove floor of baggage compartment. **Z 1**

Pass the frontal struts of winch unit on the left side between the seat springs and screw slightly, do the same with the rear struts at the following flange.

Place the base plate with with the engine onto the struts and pass M8 screws just through. Keep clearance to the airplane side wall, to ensure that the base plate with engine will allow to be turned up for maintenance work.

After having mounted the cable protective tube (see special instruction), insert the diagonal strut and screw everything firmly together.

Mind the free-running ability of the cable drum as far as the drum cover is concerned.

Provide an opening in the back panel of the baggage compartment – if necessary – for passing the drum cover.

Saw compartment floor in the middle directly across, cut recesses for the struts and screw on again.

Cover winch unit with a protective case from metal sheet, aluminium or plywood.

B) CITABRIA Type 7 and 8

Remove back wall and floor of baggage compartment. **Z 2**

Insert struts and base plate with engine in the same way as for Piper.

If the battery is on the left side, it must be shifted to the right side.

Now, mount the back panel to both diagonal struts in front of the winch, by using snap fastener.

C) STINSON models L-5 and 108-3

Mount struts and base plate with engine in the same way as for Piper.

For these models, ship the towing beam to the manufacturer, who will provide for the complete installation of the stop plate unit with guillotine. **Z 3**

D) MAULE all types

Remove back panel of baggage compartment. Saw recess into the metal sheet at the compartment floor for the front strut.

Install winch (drum at the outside, mount front strut ~150/210 mm, rear strut ~70/130 mm from the middle. True up and adjust diagonal strut.

Exchange the drive lever for tail wheel control at the rudder against the new one. **Z 3**

Re-install back panel of baggage compartment after completion of all work.

Screw holder for base plate with engine to the floor of baggage compartment.

Z 4

At singular types of aircraft it can be necessary, to move the battery

Provide for an opening in the lower section of the compartment back panel for passing the protective tube.

Cover winch unit and drum cover with a protective case from metal sheet, aluminium or plywood.

2. Installation of tow support with stop plate unit and guillotine - for all types

Remove tail wheel and springs, screw on towing beam with spring pack, if necessary use washer, so that the rudder moves freely (parts are included in the Maule ship set).

Z 8A

Screw on also the spring U clamp (if necessary drill the holder because of the width of the towing beam).

Here, consider the holder for the actuating cable.

The fitting on the right side serves as holder of a Tost tow release E-85.

Z 4

See separate instruction.

Z 8

Take the control cable that, so far, had been used to actuate the tow release and pass it through the rear left fuselage end and out. Include it into a holder unit at the left screw of the spring U clamp and hang it into the cutting lever.

True up structural discrepancies by means of suitable adapter pieces, considering the slight sagging of the bend at the tow release.

**Perform cutting test with a cable rest. The tow cable must be completely cut through.
For this test pull the cutting lever in the cockpit with a jerk until it gets to the final stop!**

3. Mounting of the cable protective tube - for all types

This aluminium tube, 30 × 2 × 3500 mm, is to be provided by the customer. Alternatively it is possible to use a tube from plastic. (Attention: for Maule = 3000 mm length).

Husky A-1A: Due to easier bend ductility an plastic tube is more suitable than the aluminium tub.

Pass the protective tube for the cable from the tail side into the stop plate unit up to the stop plate. Find out the stop by external marking.

Process front side of protective tube to become slightly trumpet-shaped.

The protective tube must level horizontally in the drum cover front as well as in the rear section of the stop plate unit. Therefore, it is necessary to bend the protective tube slightly to form a "S". For a free running of the cable sleeve there must not be a buckle in the protective tube.

Recommendation: It is useful, to fill up the tube with quartz sand before bending, to avoid changes in diameter.

Cut a cross slot in the skin at the bottom side of the fuselage towards the outlet of the protective tube, slot length approx. 50 mm. Slot location about 300 to 450 mm behind the grip handle, depending on aircraft type.

Z 4

Pass the protective tube from behind through the cross slot into the fuselage interior towards the front up to the winch, align in the rear opening of the stop plate unit up to the stop and the front end accurately in conformity with the cable drum centre, to enable the cable a proper coiling during the

cable retract operation. By this, there is no need for a winding unit (weight reasons!).

Screw tube support 338 on to the next bulkhead behind the drum cover. Align the protective tube accurately in conformity with the cable drum centre and true up height differences.

After completion of this work, shorten the protective tube as far as it will project into the drum cover for only 20 – 25 mm. Cut off the oversize, firmly screw the protective tube and fasten at the rear end of the drum cover with hose clamps (TY-RAP).

Attention: Mind the free-running ability of the control cables!

Close the cross slot on the fuselage bottom again.

4. Electrical installation

This work has to be performed according to the electric diagram:

Z 10

The circuit breaker and the toggle switch are already pre-mounted on an instrument plate. As the toggle switch is equipped with a control light, it should be installed to be visible by the pilot, close to the throttle. The complete instrument plate of our ship set allows to be easily and rapidly mounted in a blank cover in the instrument panel.

Z 6

Run 2 electric cables, AWG 12, plus and minus, to the baggage compartment, screw them to the instrument plate and connect them to the toggle switch.

5. Feeding of tow cable

Lay out the tow cable in full length behind the towing aircraft.

Pass auxiliary cable wind-up-wire through stop plate unit and protection tube towards the front. Hang tow cable onto the rear end and pull up to the front to the cable drum. From there, pull the cable about further 4 meters.

Mark the tow cable at the rear end of the stop plate unit by a felt-type pen and pull up the cable until this marking appears at the drum.

Now, slip the half of the cable sleeve with exterior thread onto the cable (thread showing to the glider). Make an overhand knot into the cable, close to the marking. Tighten the knot with a jerk and pull it into the sleeve interior. Slip the other sleeve half over frontal cable end (open sleeve half showing to the cabin of the towing aircraft) and screw firmly to the already fitted sleeve half. You will find detailed drawing in the Operating Manual.

Pull the tow cable to the rear again, till the sleeve stops at the stop plate (load entry). Place the free tow cable end onto the cable drum at the drum fillet (drum edge). Only fix the cable end with adhesive tape on the drum surface.

Do not fix the cable end at the motor side and do not make a knot!

Wind up some coils of tow cable by hand onto the drum. Make sure that the windings are well distributed. This will ensure accurate re-winding of the cable during retracting operation.

Demount the „end piece“ by **only** removing the special bolt M 6 x 32. Slip the aluminium part (with protective tube) over the rear end of the tow cable. Make an overhand knot (the same as in the cable sleeve) at the end of the tow cable. Weld/seal cut cable ends immediately to prevent fraying. Pull the knot into the borehole of the aluminium end piece.

Fit again the weak link with shackle and connecting ring pair into the aluminium end piece and screw with the special bolt M 6 x 32. The special bolt M 6 x 32 is placed off centre. The weak link can thus only be fitted in one position, see detailed drawing in the Operating Manual.

Mark the protective tube of the end piece with **red** adhesive tape.

If it is necessary to replace the tow cable, proceed as described above. Instruction is included in the Flight Manual, too.

Conduct a test run for cable retraction. Hold the cable easily in the hand while it is Re-wounded and look out for the sense of cable drum rotation and proper coiling. If the cable runs towards the left or right edge of the cable drum, the protective tube is not accurately centred in conformity with the drum centre. Re-adjust the protective tube accordingly.

6. Mirror mounting

Screw the mirror to the left wing strut.

Adjust the mirror to make sure that the pilot of the towing plane can see the end of the stop plate unit well, for observing the cable pull out and the retract operation.

7. Apply the following inscription:

Cutting lever on stop plate unit
Former release lever:
Circuit breaker:
Toggle switch

DO NOT PUSH
CUTTING LEVER
WINCH ENGINE
CABLE RETRACTION

Mass:

Winch complete with cable	7,5 kilos (with standard engine)
(excess weight Tendo engine, if applicable)	1,4 kilos)
Stop plate (traction) unit with guillotine	2.5 kilos

You have to deduct 5 kilos from the original permissible weight in the baggage compartment

After having installed the CRG the pertinent flight manual has to be supplemented as far as the new empty weight and empty weight momentum of the aircraft are concerned.

T:SEK:Spornrad:Installation issue 2009



European Aviation Safety Agency

SUPPLEMENTAL TYPE CERTIFICATE

EASA.A.S.03948

This Supplemental Type Certificate is issued by EASA, acting in accordance with Regulation (EC) No. 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation and in accordance with Commission Regulation (EC) No. 1702/2003 to

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and certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable Type Certification Basis and environmental protection requirements when operated within the conditions and limitations specified below:

Original Product Type Certificate Number: EASA.IM.A.294

Type Certificate Holder: Aviat Inc.

Model: Husky A-1A, Husky A-1B

Description of Design Change:

Installation of Tow Cable retractor Winch with Guillotine to Husky A-1A, A-1B. Extension of LBA STC 0326/xxx, dated 21 October 1992.

Associated Technical Documentation:

- Anhang zum Flughandbuch, LBA approved 24 January 1985 is now valid for Husky A-1A and A-1B: Flug- und Betriebsanweisung fuer Flugzeugabschleppseil-Einziehwinde mit Kappvorrichtung fuer Piper, Husky, Citabria, Maule, Stinson.
- The following installation manual (page 3 point 5) has to be added with Husky A-1A and A-1B: Einbau-Anleitung fuer die Schleppseil-Einziehwinde mit Kappvorrichtung fuer Schleppflugzeuge der Typen Piper, Husky, Citabria, Maule, Stinson.

Limitations and Conditions:

Prior to installation of this modification the installer must determine that the interrelationship between this modification and any other previously installed modification will introduce no adverse effect upon the airworthiness of the product. The installation of this modification by third persons is subject to written permission of the approval holder and holding and disposal of the approved appropriate documentation.

This STC is a revision to and supersedes LBA STC 0326/xxx, dated 21 October 1992.

This Certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,

Date of issue: 23 June 2009


Roger HARDY
Certification Manager

STC – EASA.A.S.03948 – Tost GmbH Flugzeuggerätebau München

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