SUPPLEMENT 9

TO THE AIRPLANE FLIGHT MANUAL FOR THE POWERED SAILPLANE HK 36 TTC

OPERATION WITH TOW-ROPE RETRACTION DEVICE

Doc. No. **: 3.01.20-E**

Date of Issue **: 03 Mar 1998**

Pages identified by “ACG-appr.” in the List of Effective Pages are approved by:

Signature : _____

Authority : _____

Stamp : _____

Original date of approval : _____

This powered sailplane must be operated in compliance with the information and limitations contained herein.

Prior to operating the powered sailplane, the pilot must take notice of all the information contained in this Airplane Flight Manual.

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0.1 RECORD OF REVISIONS

Rev No.	Sec.	Pages	Date of Revision	Approval	Date of Approval	Date Inserted	Signature
1	0, 6, 8	All, except Cover Page	27-Jan-2021	Revision No. 1 of the Supplement Doc. No. 3.01.20-E-09 is approved under the authority of DOA No. EASA.21J.052	11-Feb-2021		
2	0, 6	9-9-1, 9-9-2, 9-9-15	20-Sep-2021	Revision No. 2 of the Supplement Doc. No. 3.01.20-E-09 is approved under the authority of DOA No. EASA.21J.052	07-Dec-2021		

0.2 LIST OF EFFECTIVE PAGES

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SECTION 1
GENERAL

1.1 INTRODUCTION

Pages 9-9-0 through 9-9-21 constitute Supplement No. 9 to the Airplane Flight Manual for the powered sailplane HK 36 TTC and are valid only for the operation of the powered sailplane as a tow-plane with the tow-rope retraction device installed in combination with the standard towing coupling and the corresponding AFM Supplement No. 1.

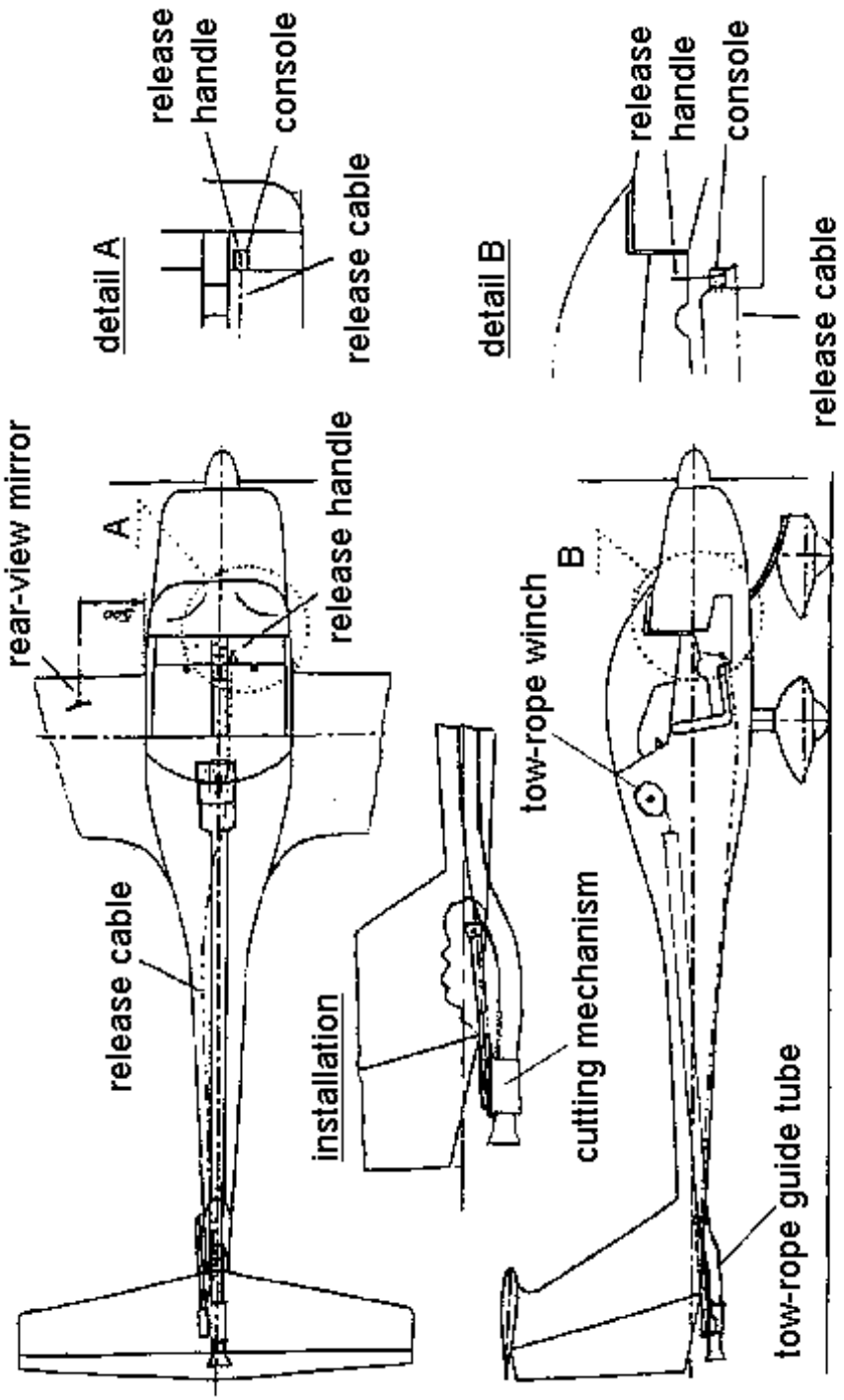
1.5 DESCRIPTIVE DATA

The tow-rope retraction device is installed in the fuselage of the powered sailplane. The device allows the retraction of the tow-rope during flight, after the towed sailplane has been released.

The powered sailplane is able to land without dropping the tow-rope.

The tow-rope may be detached with the cable cutting mechanism in critical moments of flight.

1.6 THREE-VIEW DRAWING



SECTION 2
LIMITATIONS

2.14 OTHER LIMITATIONS

Operation of tow-rope retraction device and standard towing coupling at the same time is not permitted, i.e. only one system may be in use at a time, while the other one must be secured against possible use.

Limitation Placard:

WARNING

Operation with the Tow-Rope Retraction Device
The release cable must be connected with the cable of the cutting mechanism (of the tow-rope retraction device).
The standard towing coupling must be secured against use by wire.

Operation with the Release Mechanism
The release cable must be connected with the standard towing coupling.
The ring couple of the tow-rope retraction device must be secured at the cutting lever with a wire against pulling out.

Banner towing is not permitted when using the tow-rope retraction device.

During towing operations with the use of the tow-rope retraction device no baggage may be carried.

SECTION 3

EMERGENCY PROCEDURES

3.7 ENGINE FAILURE

1. In case of engine failure during towing advise sailplane pilot (via radio or by giving signs) to release. Otherwise cut the tow-rope.

CAUTION

In case of emergency pull the yellow/red release handle of the cutting mechanism (also release handle of standard towing coupling) abruptly all the way to the stop.

2. Proceed according to the Emergency Procedures as given in the main part of the HK 36 TTC Airplane Flight Manual.

3.9 OTHER EMERGENCIES

Extreme Position of Towed Sailplane

If maneuverability is significantly impaired due to an extreme position of the towed sailplane, the tow-rope must be cut immediately.

If the towed sailplane is apparently outside of a 60 degree cone behind the tow-plane (i.e. if the angle between the tow-rope and the longitudinal axis of the tow-plane exceeds 30 degrees), the tow-rope must be cut immediately.

WARNING

In general the most critical situation during towing is created when the towed sailplane is flying higher than the powered sailplane at take-off and climb, especially when the towed sailplane is using a C.G.-coupling (if use is authorized).

Failure of Tow-Rope Retraction Device

If the tow-rope is not retractable during flight, it should be cut above the airfield whilst still in flight. Landings with tow-rope not retracted shall only be performed if an approach sector totally clear of obstacles is available and only at an increased approach speed.

If a knot is tied in the rope, as may happen in very few cases, the rope will be retracted just up to the knot. In such cases land as advised above and undo the knot. In order to avoid knots being tied, the pilot of the towed sailplane must not release when the rope is under high load.

Failures during taxiing

During taxiing verify with help of the rear-view mirror that the tow-rope is totally retracted. Otherwise activate the tow-rope retraction winch by pressing the rocker-switch and retract the tow-rope all the way. Not complying to this advice may lead to damage of the tow-plane's tail.

3.10 FAILURE OF THE RELEASE DEVICE ON THE SAILPLANE

Landing of the tow-plane/towed sailplane combination is possible with the sailplane's air brakes fully extended and the rate of descent being controlled via the power setting of the tow-plane.

WARNING

During tow-plane operation, the air brakes ot the tow-plane must not be extended!

SECTION 4

NORMAL PROCEDURES

4.4 PRE-FLIGHT INSPECTION

Add the following items to the preflight inspection list:

1. Check system for insecure mounting and loose connections.
2. Verify cutting mechanism is connected to release cable.
3. Check movement of the cutting knife for interference, by applying a slight pressure by hand.
4. Check green mouth piece for damage.
5. Check breaking piece.
6. Pull out tow-rope completely and check for damage, especially around endpiece, also verify that the winch drum is free to turn witout any interference in its movement.
7. At cold outside air temperatures check for frozen tow-rope.
8. Retract tow-rope a few meters until aluminum stop-egg is visible in view-window of winch drum cover. Check for loose screw-connection of stop-egg.
9. Retract tow-rope completely, applying a resisting force to the tow-rope so that it is wound up tightly on the drum.
10. Verify rear-view mirror is correctly adjusted.
11. Verify push-type circuit breaker is pushed in, i.e. the white marking must not be visible.

4.5 NORMAL PROCEDURES AND RECOMMENDED SPEEDS

4.5.2 TAKE-OFF AND CLIMB

The towing-plane is positioned in front of the sailplane to be towed. The tow-rope must be pulled to the sailplane and attached to the towing coupling. The tow-plane pilot must tauten the tow-rope until the stop-egg is heard to reach the stop-egg detent. Then the green marking of the tow-rope is visible.

CAUTION

The tow-plane pilot must only start towing after the stop-egg has reached the stop-egg detent, i.e. the green marking of the tow-rope must be visible.

4.5.4 APPROACH

1. After the sailplane has released press the rocker-switch for the tow-rope retraction winch and retract the tow-rope. Illumination of the red warning light inside the rocker-switch indicates operation of the winch.

2. In the rear-view mirror mounted on the left-hand wing observe of the retraction of the tow-rope. If the rope's endpiece is retracted, the winch will stop operating automatically.

3. By looking in the rear-view mirror verify the complete retraction of the tow-rope; the red-colored part at the end of the rope must be swallowed by the green mouth-piece.

4. Perform landing approach as given in the main part of the HK 36 TTC Airplane Flight Manual.

CAUTION

In case the tow-rope is not completely retracted, it should be cut during flight above the airfield. Landings with tow-rope not retracted shall only be performed if an approach sector totally clear of obstacles is available and only at an increased approach speed.

NOTE

During retraction of the tow-rope it is recomended not to exceed an airspeed of 170 km/h (92 kts. / 106 mph). This is in order to avoid early termination of the winch-operation.

SECTION 5
PERFORMANCE

5.1 INTRODUCTION

There are no changes to Supplement No. 1.

SECTION 6
MASS (WEIGHT) AND BALANCE / EQUIPMENT LIST

6.1 INTRODUCTION

For the operation of the HK 36 TTC as a tow-plane the airplane must be weighed in order to determine basic empty mass (weight) and corresponding center of gravity. The basic empty mass (weight) includes the tow-rope retraction device.

6.9 EQUIPMENT LIST

Additional Equipment for Tow-Plane Operation using the Tow-Rope Retraction Device

1 Electrically powered tow-rope winch and mount
1 Tow-rope guide tube
1 Cutting mechanism
1 Tow-rope at a length of 30 to 50 m (98 to 164 ft.) made of polyester, PVC or polyamide with max. diameter 6.3 mm (0.25 in.) with green marking as of DAI-WI No. 28.
1 Aluminum stop-egg
1 End-piece, silicon protection tube, breaking-piece (with ultimate load of 400 daN / 900 lbf) and ring-couple.
See if national regulations or sailplane manufacturer require an ultimate load different to the one mentioned above.

SECTION 7
POWERED SAILPLANE AND SYSTEMS DESCRIPTION

7.1 INTRODUCTION

Tow-Rope Retraction Device

The tow-rope retraction device consists of two sections:

a) Cutting Mechanism

The cutting device is screwed to the standard towing coupling. Tensile forces acting in the tow-rope during towing are released by the stop-egg onto the stop-egg detent. The stop-egg detent is an inner part of the cutting-mechanism located forward of the cutting-knife. The stop-egg is fixed onto the tow-rope and removes any tensile forces from the tow-rope winch.

b) Electrically Powered Tow-Rope Winch

The electrically powered winch (installed in the baggage compartment) is activated by a rocker switch (on/off switch with integrated circuit protector). A red light inside the switch indicates operation of the winch. When the rope's endpiece is swallowed by the green mouth piece the winch switches off automatically. 50 meters (164 ft.) of tow-rope is the maximum usable length accomodated by the winch-drum. The tow-rope runs in the tow-rope guide tube which leads from the winch-drum to the cutting mechanism.

The rear-view mirror is mounted on the leading edge of the left-hand wing with two camlocs. The mirror is positioned as to give a view of the tow-rope.

7.8 COCKPIT

The yellow/red release-handle, located in the cockpit right to the throttle-quadrant, activates the cutting-mechanism when operating with the tow-rope retraction device. Its dead travel shall be 10 mm (0.4 inch). The tow-rope is cut by abruptly pulling the release handle with force and all the way to the stop.

7.11 ELECTRICAL SYSTEM

The winch rocker-switch with its integrated circuit breaker and a manually operated push-type circuit breaker (featuring an indicating-type reset button) are located on the cockpit's left-hand side. A red warning light inside the switch indicates operation of the winch. Winch-operation is stopped automatically by the rocker-switch.

If there is any type of stoppage on the tow-rope (i.e. if the forces on the tow-rope during retraction are too large for the winch) the integrated circuit breaker will activate and stop the winch operation.

7.14 PLACARDS / INSCRIPTIONS

The following additional placards are installed for tow-plane operation of the HK 36 TTC with the tow-rope retraction device:

✧ on fuselage underneath rudder:

WARNING

Operation with the Tow-Rope Retraction Device
The release cable must be connected with the cable of the cutting mechanism (of the tow-rope retraction device).
The standard towing coupling must be secured against use by wire.

Operation with the Release Mechanism
The release cable must be connected with the standard towing coupling.
The ring couple of the tow-rope retraction device must be secured at the cutting lever with a wire against pulling out.

✧ on cover of winch-drum:

During towing operation with use of the Tow-Rope Retraction Device no baggage may be carried

✧ underneath rocker-switch of tow-rope retraction device:

Tow-Rope Retraction Device

✧ on release lever:

Towing Coupling / Cutting Mechanism

Four red colored rings (e.g. adhesive tape), 10 mm (0.4 in.) wide, in intervals of 20 mm (0.8 in.), starting at the top.

SECTION 8
POWERED SAILPLANE HANDLING, CARE AND MAINTENANCE

8.2 POWERED SAILPLANE INSPECTION PERIODS

8.2.2 INSPECTION PERIODS FOR THE TOW-ROPE RETRACTION DEVICE

At each 100 hour inspection, the retraction device must be checked for poor condition and malfunction and the cutting mechanism must be cleaned and lubricated.

The following steps must be accomplished:

1. Verify proper operation of cutting-mechanism by activation with tow-rope fully retracted.
2. Disassemble cutting-mechanism and inspect knife for good blade and check for damage.
3. Clean inside of cutting-mechanism.
4. Clean tow-rope guide tube and check for chafing or abrasion.
5. For reassembly of the cutting-knife the engraved arrow must point aft. Do not overtighten castle nut and secure it with split-pin.
6. Lubricate all moving parts.
7. Check spring of (red) cutting-lever.
8. Check safety clutch for malfunction: if holding load is not between 70 and 90 N (15.7 and 20.2 lbf.), have safety clutch adjusted by manufacturer. Holding load shall be measured directly at the winch drum.

9. Check the load needed to pull out the tow-rope: if it is greater than 120 N (27 lbf.), check system for excessive wear of tow-rope housing and change damaged parts if necessary.
10. Check winch drum mount for insecure mounting and damage.
11. Attach ring couple according to DAI-WI No. 28 at the end of the tow-rope.
12. Check electrical connections.
13. Check breaking piece for damage and poor condition.

TBO of tow-rope retraction device is 4 years or 2000 landings in tow-plane operation, whichever comes first.

After 2000 landings in tow-plane operation a new tow-rope must be installed. If the tow-rope is in a poor condition, a new one must be installed even earlier.