

SUPPLEMENT No. 7B

TOWING GEAR WITH TOST TOW RELEASE –
FEUERSTEIN SYSTEM

This Supplement must be attached to the Airplane Maintenance Manual, (Doc. No. 005.022.2), Section 95, when the Towing gear with TOST E-85 tow release - FEUERSTEIN system is installed, according to Drwg. No. L 143.8700.

The information contained herein supplements or supersedes the information in the Z 143 LSi Airplane Maintenance Manual (Doc. No. 005.022.2).

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TOWING GEAR WITH TOST FEUERSTEIN SYSTEM

GENERAL

The TOST towing equipment – FEUERSTEIN system (with the retraction winch and the cutting device) is aimed for gliders towing. It enables retraction of the towline in flight after the glider has been released; the cutting device enables to cut off the towline in an emergency.

The TOST towing equipment – FEUERSTEIN system (further only TOST towing equipment) is provided as optional equipment.

DESCRIPTION AND FUNCTION

The TOST towing equipment assembly consists of:

- The draw gear (Fig. No. 1, item 1) fitted with the cutting device
- The towline (2) fitted with the pair of rings and eventually with the bush with weak-link (3)
- The retraction winch (4)
- The electric system of retraction winch

NOTE:

Provided with TOST towing equipment are two side observation mirrors, L 143.8701, located on sides of the sliding canopy and the roof rear-view mirror, Z 143.8265, placed on the sliding canopy-up.

The towline (2) is winded up on the drum of the retraction winch (4), located in the bottom baggage compartment. The drum projects partially from the aircraft contour under the fuselage and is shielded with composite GFR cover. From the drum the towline is led through the protective tube (5) below the fuselage rear part to the draw gear (1). At the end of the towline, there is installed a pair of rings for connecting the glider, eventually the bush with weak-link (3). The bush of weak-link is red-marked for better visibility.

The draw gear (1) is positioned under the horizontal tail unit and is attached to the rear fuselage part:

- with the upper strut (8) to the eyes on the stabilizer supports
- with the lower strut (9) to the lower tail fin on the fuselage

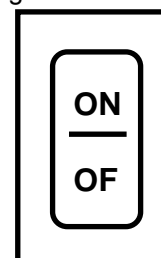
A part of the draw gear is the traction block (Fig. No. 2, item 2) that serves as a stop for the drawing sleeve (3) fastened on the towline. When the towline is retracted, the drawing sleeve passes through the protective tube (Fig. No. 1, item 5) and is winded up together with the towline on the drum of retraction winch (4). The draw gear is terminated with the rubber cone (Fig. No. 2, item 6) into which the bush with weak-link (4) (if used) is drawn after retracting the whole towline.

The draw gear is fitted with the cutting device (Fig. No. 2, item 1). The cutting lever (5) is actuated with the control wire (8) that leads from the handle (Fig. No. 1, item 6) positioned on the left of the central panel below the instrument board.

The electric system of retraction winch consists of:

- the electric motor of retraction winch
- the circuit switch located on the front control panel at fuses
- the automatic switch with the check light located on the front controlpanel at the throttle control.

To retract the towline, switch the automatic switch to „ON“ position (the internal check light of the switch is on). After retracting the towline, the drum of retraction winch is stopped, the electric motor of retraction winch turns over the friction clutch, while the electric current consumption increases and the automatic switch is switched off (the internal check light of the switch is off).



EFFECTIVITY: ALL

The rear-view mirrors enable to check visually the towed glider as well as the towline retraction. The side mirrors are adjustable. Inside of the mirror cover, there is the articulated joint that enables the mirror adjustment. The joint is fitted with the arresting screw that serves for regulation of the mirror adjustment „rigidity“. The arresting screw is accessible after removal of the mirror from the mirror cover.

PLACARDS

(1) The placard is located on the left of the central panel at the cutting device handle

TOWLINE CUTTING

SCHLEPPSEILKAPP

(2) The placard is located on the front control panel at the switch with the check light.

**TOWLINE
RETRACTION**

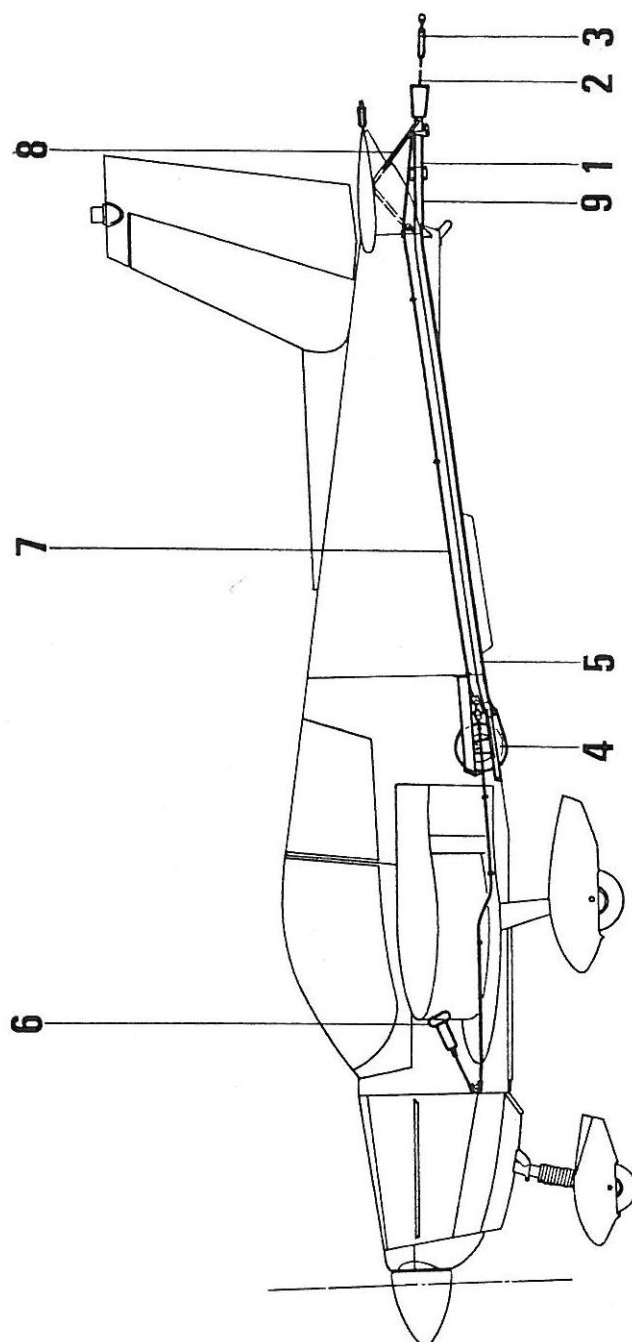
**SCHLEPPSEIL-
AUFWICKELN**

(3) The placard is located on the panel of fuses at the circuit switch

**WINCH
MOTOR**

**WINDE
MOTOR**

Fig. No. 1 TOST Towing gear
(drawn with the weak-link)



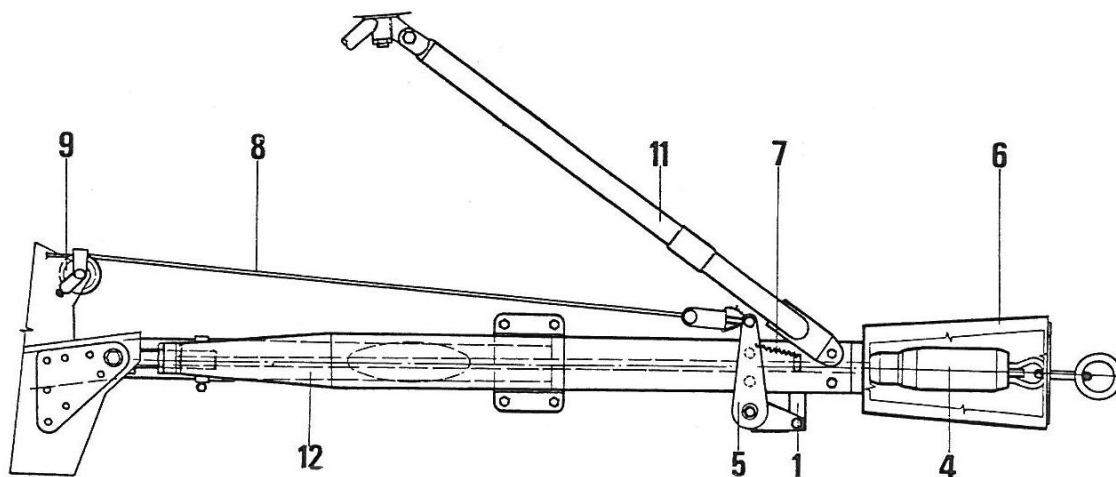
- 1 - draw gear
- 2 - towline
- 3 - bush with weak-link
- 4 - retraction winch
- 5 - protective tube

- 6 - cutting device handle
- 7 - control wire
- 8 - upper strut
- 9 - lower strut

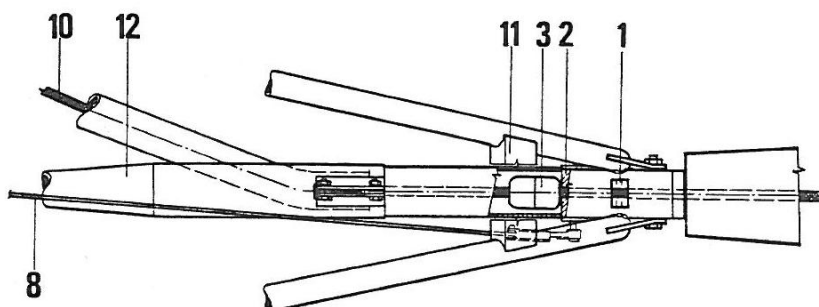
EFFECTIVITY: ALL

Fig. No. 2 Draw gear
(drawn with the weak-link)

A



B

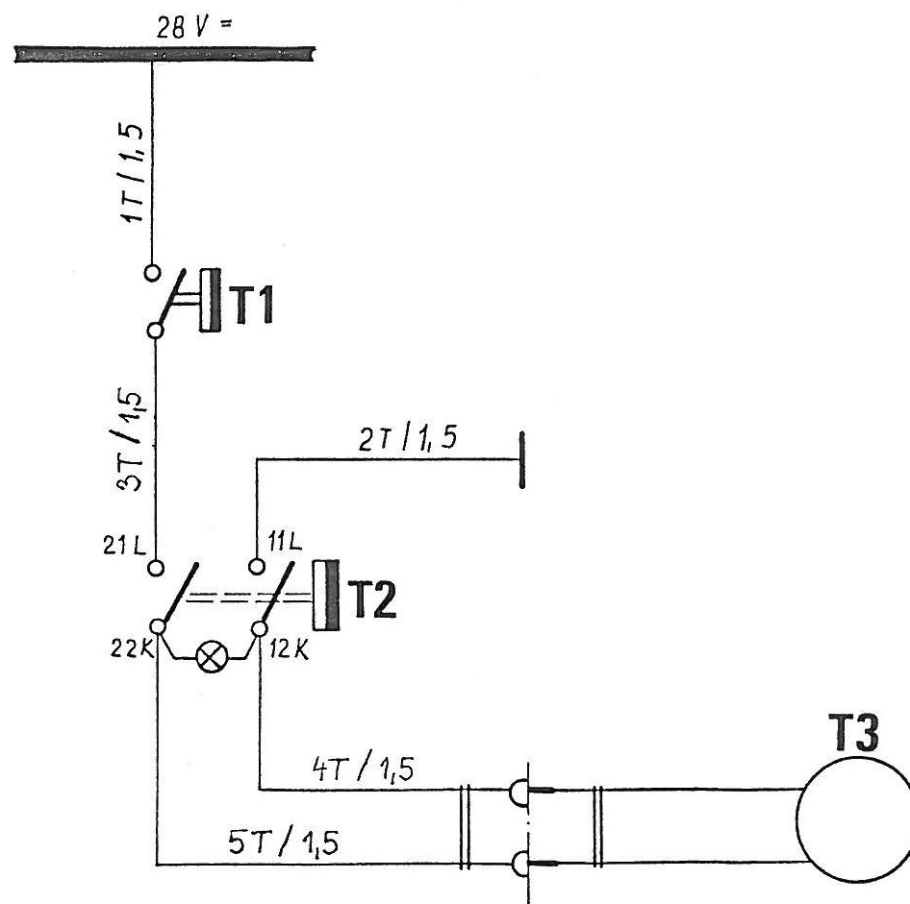


- A – the towline is wound up on the drum of retraction winch (the bush with weak-link is drawn in the rubber cone)
B – the towline is drawn out to a maximum (the drawing sleeve on towline is stopped at the traction block of the draw gear)

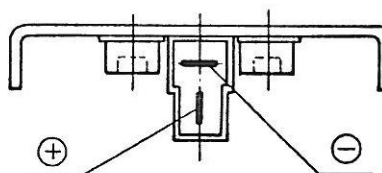
- | | |
|----------------------------|------------------|
| 1 - cutting device (knife) | 7 - spring |
| 2 - traction block | 8 - control wire |
| 3 - drawing sleeve | 9 - pulley |
| 4 - bush with weak-link | 10 - towline |
| 5 - cutting lever | 11 - upper strut |
| 6 - rubber cone | 12 - lower strut |

EFFECTIVITY: ALL

Fig. No. 3 Circuit diagram



Connection of the electric motor connector



T1 – circuit switch (**WINCH MOTOR**) or (**WINDEMOTOR**)
 T2 – switch with check light
 (**TOWLINE RETRACTION**) or (**SCHLEPPSEILAUFWICKELN**)
 T3 – electric motor of retraction winch

ETA 2-5700-IG2-P10-DD-6A

ETA 3120-F321-P7T1-W14FB2
 24V DC GA-22

EFFECTIVITY: ALL

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MAINTENANCE

DISASSEMBLY / ASSEMBLY

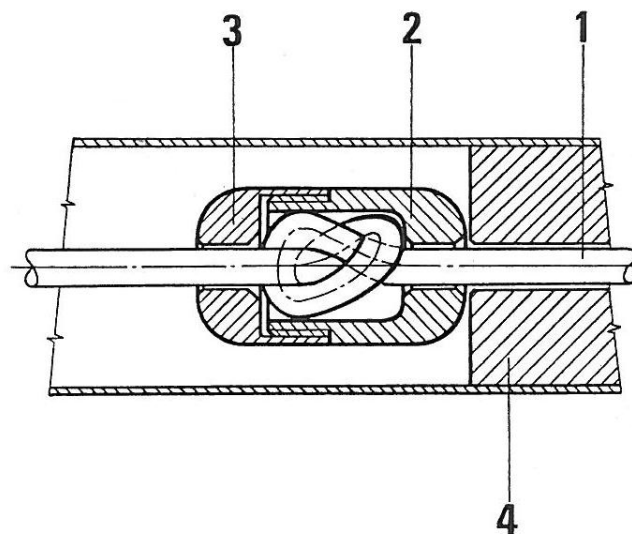
PROCEDURE OF TOWLINE REPLACEMENT

- 1) Remove the pair of rings or the weak-link bush (Fig. 4, item 7) (if used) from the towline end:
 - dismount the screw with the nut (8) and remove the weak-link from the bush (7)
 - cut off the towline and remove the knotted towline end from the bush of weak-link.
- 2) Remove the composite GFR cover under the retraction winch drum.
- 3) Draw out the towline from the aircraft:
 - draw out the towline together with the drawing sleeve (2; 3) from the protective tube (Fig. 1, item 5) through the hole under the drum of retraction winch
 - tear off the sticking tape that fixes the towline end to the drum of retraction winch and unreel the towline from the drum
 - remove the drawing sleeve (Fig. 4, Item 2; 3) from the towline.
- 4) Unroll the new towline behind the aircraft.
- 5) Using the pull-through string, draw the towline through the draw gear (Fig. 1, item 1) and through the protective tube (5) and then pull this towline out so that it protrudes 4 metres behind the flared end of the protective tube (at the drum of retraction winch) - mark the towline on its periphery at the draw gear end (1).
- 6) Pull out the towline at the drum of retraction winch so that above-mentioned marking is positioned behind the protective tube flared end. Slide one half of the drawing sleeve - screw (Fig. 4, item 2) on the towline (as far as behind the marking). Knot the towline in the marked point, tighten and insert this knot into the half of the drawing sleeve (2). Slide the other half of the drawing sleeve - the nut (3) on the towline and screw both drawing sleeve halves together.
- 7) Pass the towline through the protective tube so that the drawing sleeve stops at the traction block of the draw gear (4) - wind the rest of towline on the drum of retraction winch by hand (pull the towline end through the hole in the drum of retraction winch and fix it to the drum inside diameter with sticking tape).
- 8) Provide the towline end with the pair of rings or slide the bush of weak-link (7) on the towline end (as required). Make the knot (so-called "**DRAGON'S LOOP**") on the towline and tighten it. Cut off the towline close behind the knot, seal in the end of towline and insert the knot into the bush of weak-link (7).
- 9) Put the weak-link (5) with the shield (6) in the weak-link bush and connect it to this bush (7) with the use of screw and nut (8).
- 10) Accomplish the test of the towline retraction.
- 11) Protect the projecting part of the retraction winch drum under the fuselage with the composite GFR cover.

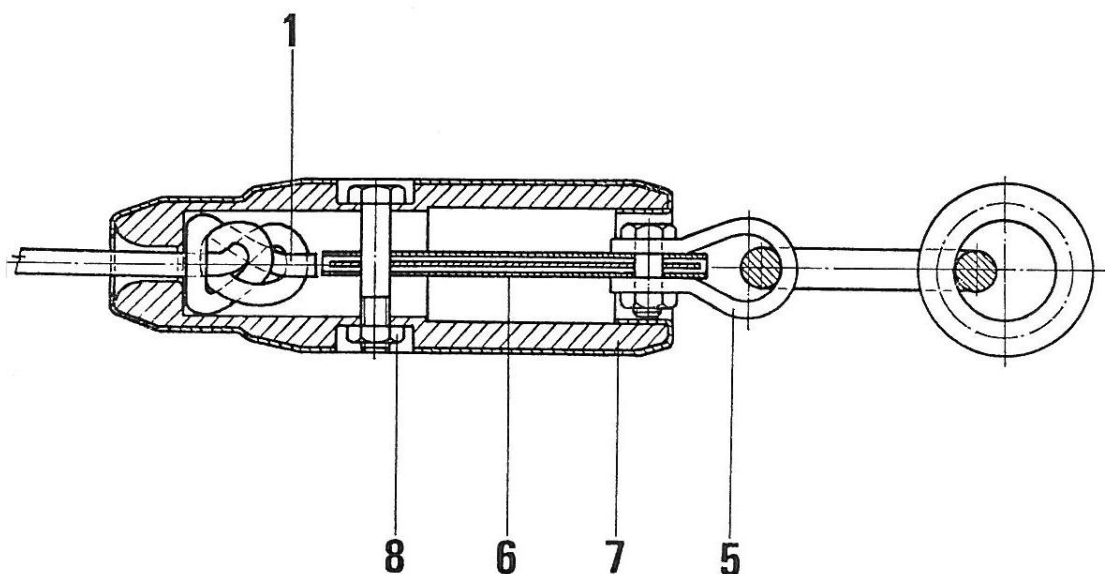
EFFECTIVITY: ALL

Fig. 4 Drawing sleeve and bush with weak-link

A



B



A - drawing sleeve

1 - towline

2 - drawing sleeve - screw

3 - drawing sleeve - nut

4 - traction block of draw gear

B - bush with weak-link

5 - weak-link with eye

6 - shield of weak-link

7 - weak-link bush

8 - screw and nut

EFFECTIVITY: ALL

INSPECTION / CHECK

TOST TOWING GEAR

Scheduled
maintenance check

Struts: condition, nuts locked

Cutting device:

- condition, proper function, locking (1):
- spring of the cutting lever (2): condition
- control wire of the cutting lever, pulleys: condition

Towline (3): replace acc. to its condition

Electric system of retraction winch: check wires and electric connection for condition

f 50	100 (AN)
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NOTES:

- (1) Remove the knife (Fig. No. 2, item 1), clean properly the cutting device inside and check its condition.
Re-install the knife - fit on the bolt, screw on the nut. Tighten the nut so that free movement of the knife is secured and then lock it with the cotter pin.

CAUTION:

AT RE-INSTALLATION OF THE KNIFE OBSERVE THE PROPER MOUNTING OF THE KNIFE INTO THE CUTTING DEVICE.

After the knife re-installation carry out the function test of the cutting device when the towline is fully winded up. Pull the towline end through the draw gear and provide it with the pair of rings, eventually with the bush with weak-link.

- (2) Check the spring (Fig. No. 2, item 7) of the cutting lever for appropriate function – if necessary, replace the spring.
- (3) Replace the towline if damaged or after execution of 1000 aerotows at the latest.

CAUTION:

USE ONLY PLATED PVC OR PA TOWLINES WITH MAX. ϕ 6,3 mm.
USE OF TWISTED OR SPLICED TOWLINES IS PROHIBITED.

EFFECTIVITY: ALL