

## **SUPPLEMENT No. 7C**

### **TOWING GEAR** **AND TOW ROPE SIGNALLING BUILD-IN**

This supplement has to be included in the Z 143 L – Z 143 LSi Aircraft Maintenance Manual (Doc. No. 005.022.2), Chapter 95, in case that there's installed, towing gear, Drwg. No. Z 143.8400 and tow rope signalling, Drwg. No. L 143.8572.

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

## **CONTENTS**

<b>Name</b>	<b>Chapter Section /Subsection Item</b>	<b>Page</b>
<b>TOWING GEAR</b>	<b>95-71-00</b>	
<b>GENERAL</b>		95/70-3
<b>DESCRIPTION AND OPERATION</b>		95/70-3
<b>PLACARDS</b>		95/70-4
<b>MAINTENANCE</b>		
<b>REMOVAL AND INSTALLATION</b>		
<b>REMOVAL OF TOWING GEAR</b>		95/70-6
<b>INSTALLATION OF TOWING GEAR</b>		95/70-7
<b>INSPECTION / CHECK</b>		95/70-7
<b>LIST OF FIGURES</b>		
<b>Fig. 1 Towing gear</b>		95/70-4
<b>Fig. 2 Switch</b>		95/70-5
<b>Fig. 3 Breaking device</b>		95/70-6
<b>Fig. 4 Scheme of towing gear signalling switch connection</b>		95/70-8

## LIST OF EFFECTIVE PAGES

Chapter Section / Subsection Item	Page	Date	Effectivity
95-70-00	95/70-1 95/70-2 95/70-3 95/70-4 95/70-5 95/70-6 95/70-7 95/70-8	2011-02-02 2011-02-02 2011-02-02 2011-02-02 2011-02-02 2011-02-02 2011-02-02 2011-02-02	all all all all all all all all

# TOWING GEAR

## GENERAL

The towing gear is intended for gliders and banners towing. It is delivered as optional equipment.

## DESCRIPTION AND OPERATION (Fig. No.1)

Towing gear assembly consists of:

- release mechanism (1)
- release mechanism handle (4)
- tow rope tensile weak-link (13)
- tow rope signalling switch (Fig. No. 2)
- light signalling on the upper panel of instrument board (**TOWING CABLE** - yellow light)

### NOTE:

The towing gear is delivered together with the rear-view mirror (Fig. No. 1, pos. 7), drawing No. Z 143.8265.

The release mechanism (1) is located under the horizontal tail unit and is attached to the rear fuselage section:

- with the upper dual strut (2) to upper attachment fittings on the stabilizer struts (6)
- with the lower strut (3) to the lower fin (19) on the fuselage.

The eye (18) on the tow rope (20) – at aerotow flight provided with weak-link (13) – is engaged with the release mechanism hook (11). The hook is forced to closed position with the spring (10); it is opened by pulling the release handle (4) placed on the left side of the middle panel under the instrument board. The release pull rod is connected to the control lever of the release mechanism (9) with the cable (5) that passes through the fuselage lower part. The cable is connected to the lever (9) with the „slitted“ pin (12) and the cotter pin. The front end of the cable is locked in the „slitted“ end of the release pull rod (4) with the nut. The tow rope weak-link (13) ensures safety during the aerotow flight. It is attached to the eye (18) on the tow rope (20) by means of the clip (15) and the eye (14) engages it with the release mechanism hook (11). The tow rope weak-link is located in the bush (16). If the force inside the tow rope exceeds 4.900 N (1.100 lbs), the weak-link breaks and the glider is released.

### TOW ROPE ENGAGEMENT (Fig. No.1)

- 1) The end of the tow rope (20) – at aerotow flight provided with weak-link (13) – is engaged with the release mechanism hook (11) of the engine-powered airplane.
- 2) At engagement, the operator opens the release mechanism hook (11), inserts the eye (18) of the rope (20) or the eye (14) of the tow rope weak-link (13) into the space under the release mechanism hook and closes the hook. The hook can be opened as follows:
  - a) by pulling the release mechanism control lever (9) upwards or
  - b) from cockpit, by pulling the release mechanism handle (4) – **TOWING CABLE RELEASE** placard.

### CAUTION:

AFTER THE TOW ROPE (20) IS ENGAGED, PUSH THE RELEASE MECHANISM LEVER (9) WITH THE HAND – THIS ENSURES RELIABLY SNAPPING THE RELEASE MECHANISM STRUT AND THUS ELIMINATES SPONTANEOUS RELEASE AT TOWING.

- 3) After the tow rope (20) is engaged with the release mechanism (1), the operator checks proper engagement by pulling the tow rope three times.
- 4) After the tow rope (20) attachment to the release mechanism (1), the switch (Fig. 2), fitted with two screws inside the breaking device, is switched-on. It is indicated by annunciator light (**TOWING CABLE** yellow) on the upper panel of instrument board (). After tow rope release annunciator light goes off.

EFFECTIVITY: ALL

## PLACARDS

(1) Placard is placed on the lower strut of towing gear behind the rear part of fuselage.

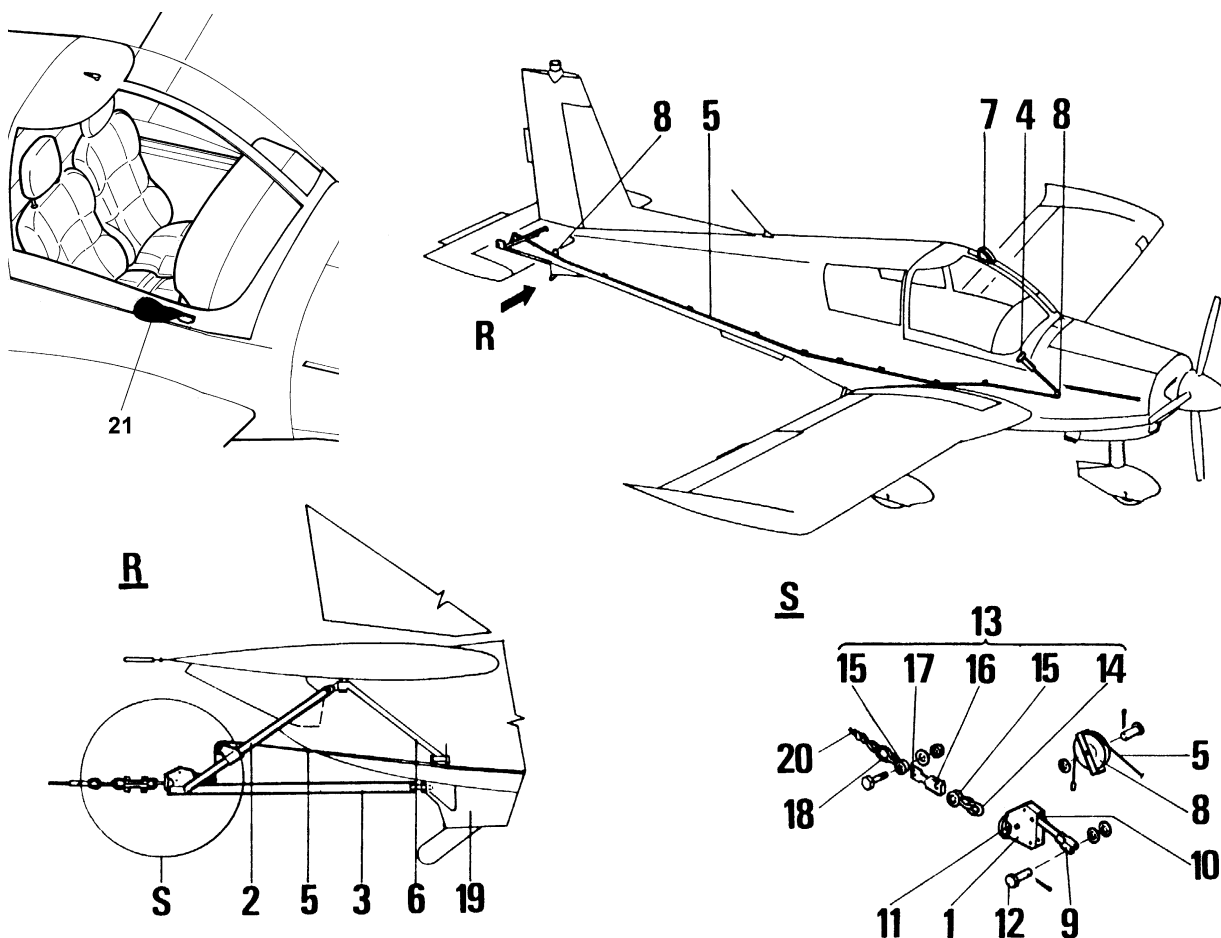
**TOWLINE MUST BE PROVIDED WITH 4.9 kN (1100 lbf), WEAK-LINK IF MAXIMUM TOWLINE STRENGTH EXCEEDS 4.9 kN (1100 lbf).**

(2) Placard is placed on the middle panel (at the tow rope release handle).

**TOWING CABLE RELEASE**

(3) Yellow light is placed on the upper panel of instrument board.

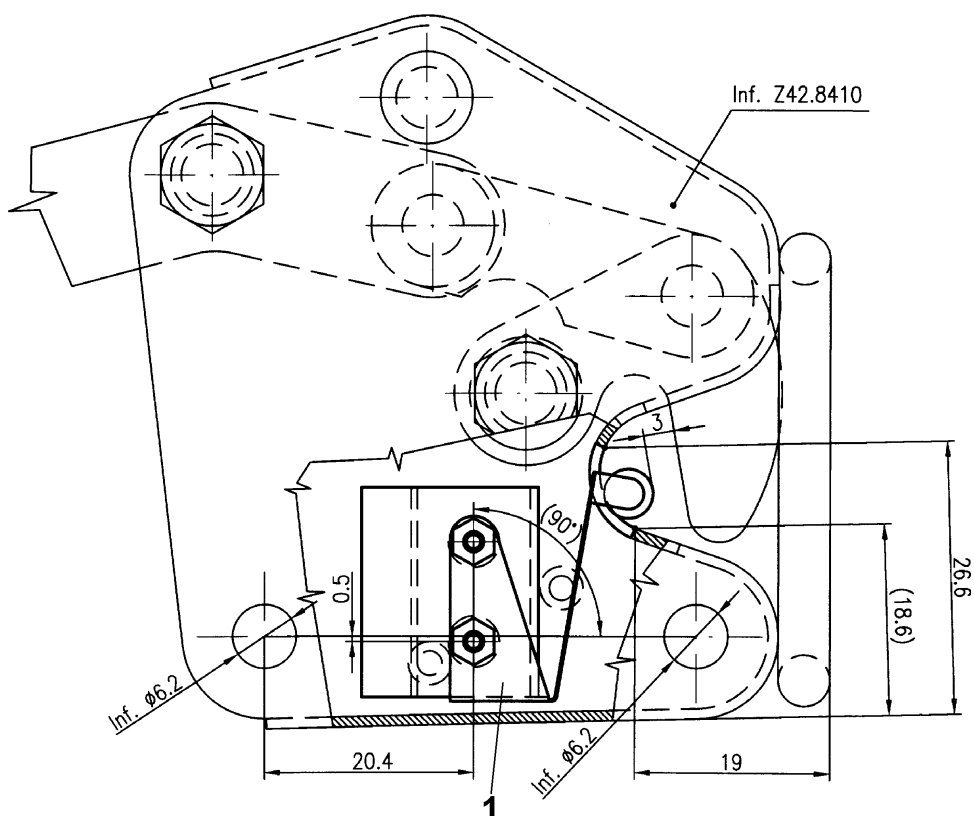
**TOWING CABLE**



EFFECTIVITY: ALL

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1 - release mechanism</li> <li>2 - upper dual strut</li> <li>3 - lower strut</li> <li>4 - release handle</li> <li>5 - cable</li> <li>7 - rear-view mirror</li> <li>8 - pulley</li> <li>9 - control lever of release mechanism</li> <li>10 - spring</li> <li>11 - hook of release mechanism</li> <li>12 - pin with slitted stem</li> </ul> | <ul style="list-style-type: none"> <li>13 - tow rope weak-link (item 14 to 17)</li> <li>14 - eye</li> <li>15 - clip</li> <li>16 - bush</li> <li>17 - breaking point</li> <li>18 - eye on tow rope</li> <li>20 - tow rope</li> <li>21 - side mirror L.H., R.H. - if installed</li> </ul> <p>For information:</p> <ul style="list-style-type: none"> <li>6 - stabilizer strut (L+R)</li> <li>19 - lower fin</li> </ul> |
|--|--|

*Fig. 1 Towing gear*



- 1 - switch

*Fig. 2 Switch*

**EFFECTIVITY: ALL**

95-70-00

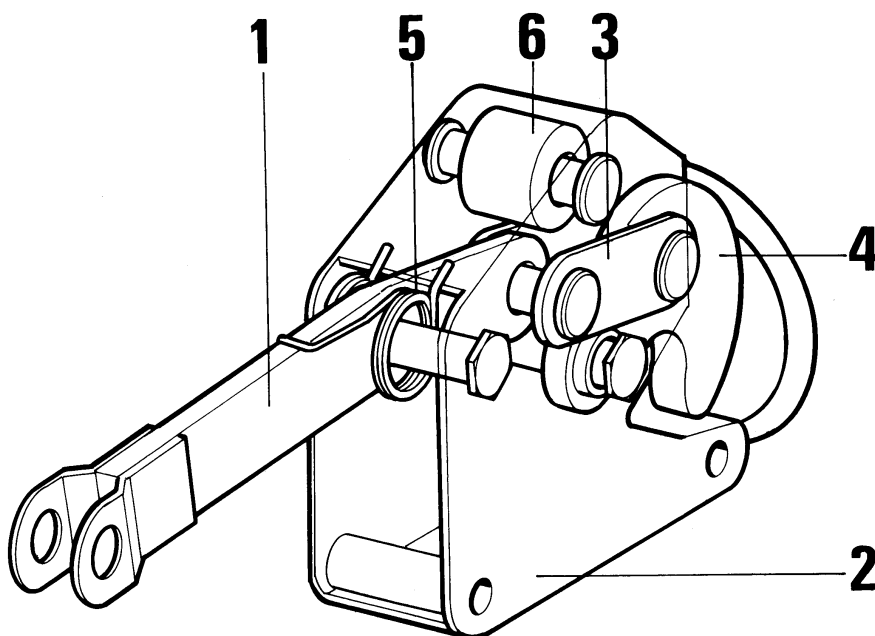
page 95/70-5  
2011-02-02

## **MAINTENANCE**

### **REMOVAL AND INSTALLATION**

#### **REMOVAL OF TOWING GEAR**

- a) Disconnect cable (Fig. 1, item. 5) from release mechanism (1).
- b) Disconnect switch conductors from electric installation of aircraft.
- c) Remove release mechanism (1) from the aircraft.
- d) Remove upper (2) and lower (3) strut.
- e) Remove release mechanism (Fig. 3)
- f) Remove switch from release mechanism (Fig. 2, item 1).



- 1 - release lever
- 2 - switch box
- 3 - coupling

- 4 - switch hook
- 5 - spring
- 6 - spacer

*Fig. 3 Release mechanism*

### **INSTALLATION OF TOW GEAR**

- a) Screw on the switch (Fig. 2, item. 1) into the switch box.
- b) Grease pins of release gear with a suitable kind of grease, assemble lever (Fig. 3, item. 1) with couplings (3) and hook (4). Slip on pins, set washers and secure with cotter pins. Into the breaker hook (4) and lever (1) insert spacers and set into the breaker box (2) including the spacer (6). At the same time with spring (5) insert pin and little screws. Set washers, screw on nuts and secure pin with cotter pins. Check dead travel of hook switcher (0.04-0.07 mm i.e. 0.0016-0.0028 in).

#### **CAUTION:**

TEST THE TOWING GEAR RELEASER WITH STRENGTH 5.88 N (600 KP), AT WHICH IT MUST NOT DISCONNECT SPONTANEOUSLY AND IT MUST NOT BE DEFORMED.

- c) Attach upper (Fig. 1, item 2) and lower (3) strut.
- d) Attach the release mechanism (Fig. 1, item 1) on the aircraft.
- e) Connect cable (Fig. 1, item 5) to release mechanism (1).
- f) Connect switch conductors to electric installation of the aircraft.
- g) Check proper function of the switch by depressing the SIGNALLING CHECK press button on the upper panel of instrument board. The tow rope breaker indicator has to light up.
- h) Engage the rope ring to towing gear – the indicator of tow rope breaking has to light up.

## **INSPECTION/CHECK**

### **TOWING GEAR**

Scheduled checks  
outline

100 (1Y)	Spec.	Note
o		
o		
o		(1)
	o	(2)
	o	(2)
o		
o		(3)

Struts: condition, locking the nuts on attachment bolts.

Release mechanism:

- (a) Fixing in the holder, locking the nuts.
- (b) Check of proper function (including signalling the indicator on the instrument board), greasing.
- (c) Crack detection check of the towing gear breaker box.
- (d) Crack detection of struts (around welds).

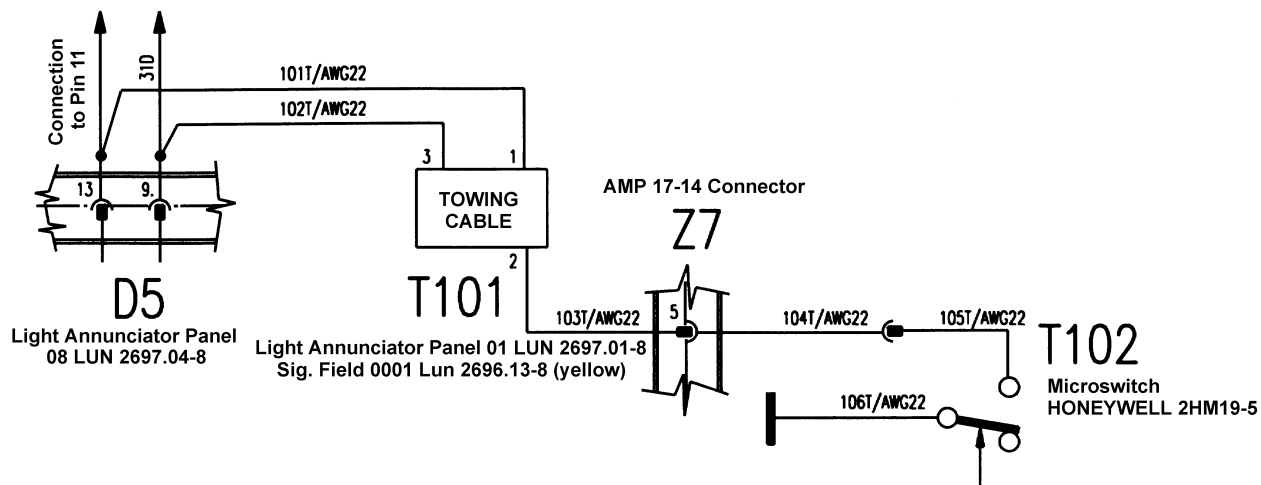
Control: control cable condition, pulleys condition.

Tow rope weak-link: condition (corrosion, damage).

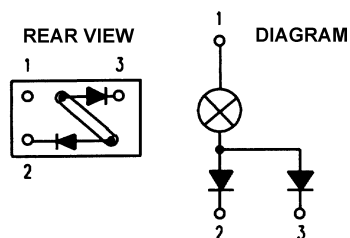
#### **NOTES:**

- (1) Unsuitable locking of the release mechanism (Fig. 1, item 1) may be caused by insufficient greasing or by defective spring (10). If the mechanism function is not improved in spite of proper greasing, replace the mentioned spring.
- (2) The crack detection should be executed after 4 years or 2000 starts (with towing) – whichever occurs first.
- (3) Damaged or considerably corroded weak-link of the tow rope (Fig. 1, item 13) must be replaced.

**EFFECTIVITY: ALL**



**CIRCUIT DIAGRAM: 01 LUN 2697.01-8**



*Fig. 4 Scheme of tow rope signalling switch connection*