TN1000/13
Additional instructions

The new or amended text in the revised page will be indicated by a black vertical line in the right hand margin

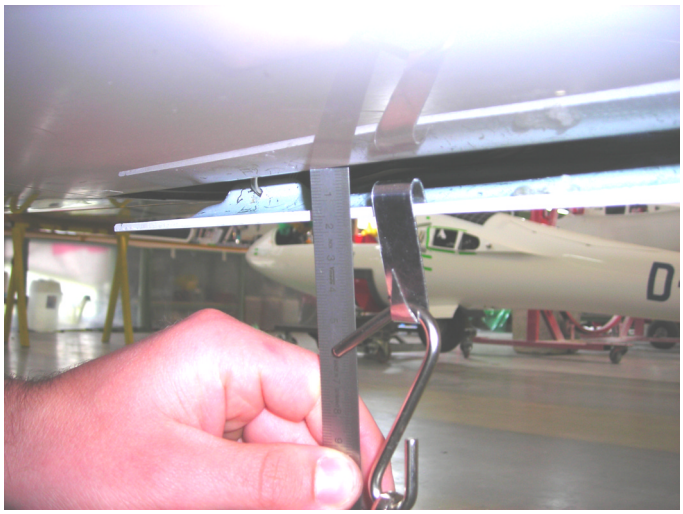
Revision	Modification	issue	Name
0	Initial release	16.07.08	Koenen
a	Point 5: gluing of latch added	28.11.08	Koenen
b	Securing cord and guide rings for landing gear door rubber cords	6.04.2009	W. Dirks
c	Position chain link, corrections on poage 6	9.04.2009	W. Dirks

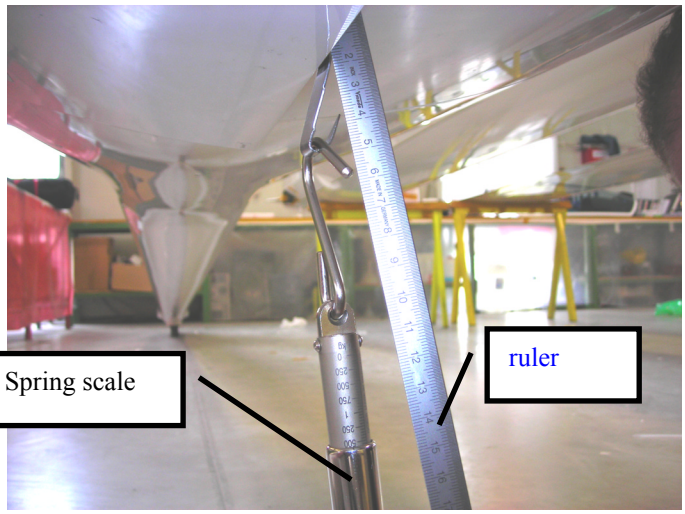
1. Installation of the landing gear door rubber cords

When installing the positive locking device we found that there is a possibility to reduce the operating forces if the installation of the landing gear door rubber cords is changed. We recommend that you install the rubber cords according to installation plan 10EP18.
Rubber cords and clamps are included in the retrofit kit.

Installation

- Install the landing gear door rubber cords at 10FW10/1 according to installation plan 10EP18. Clamp the rubber cords according to section C-C in drawing 10EP18. Don't fix the clamps too close to the tube. Take care that you can rotate the rubber cord at the tube easily. Don't forget the heat shrink tubing.
- Install chain links according to item 5 b). There must be a distance of 150 mm between the pivot point of the upper and lower strut. b
- Route the rubber cords through the key rings and attach them to the landing gear doors. Press the clamps only so far that the rubber cords can't slip by themselves. It must still be possible to move the rubber cords by hand. Secure the rubber cords with tape if they slip by themselves.
- There must be a force of 150N at the right hand side landing gear door and a force of 125 N at the left hand side door if the doors are opened 15 mm. Position the rubber cords so that they produce these forces. The measurement must be accomplished according to pictures below with landing gear fully retracted and locked.





- If the doors reach the required forces press the clamps completely. Shrink the heat shrink tubing.
- Install securing cords according to item 5a). b

2. Installation of the Bowden cable outer of the positive locking device

Install the Bowden cable outer in the landing gear box according to installation plan 10EP15a and fig. 2.1 – 2.2 of this document. Installation plan 10EP15 and fig 19 of the working instruction are no longer valid for the installation of the Bowden cable outer in the landing gear box.

Working instruction point A19:

When retrofitting the positive locking device we found that on some ser. no.'s the key ring for brake hose attachment has an inner diameter less than 20 mm. On these serial numbers the Bowden cable outer can't be routed through this key ring. You have to install another key ring for the Bowden cable according to view B in installation plan 10EP15a.

At all other serial numbers it is necessary to secure the ty-rap of the key ring which is attached to 10FW12/2 against slipping. Slip the ty-rap to the position 180 mm according to 10EP15a first. As securing devices install one ty-rap fixed with rapid adhesive above the ty-rap of the key ring and one below. Tighten the ty-raps according to 10EP15a view B).

Working instruction point A19, figure 19 and installation plan 10EP15

When installing the positive locking device we found that the Bowden cable outer should not be routed according to installation plan 10EP15 and figure 19 of the working instruction but according to 10EP15a and figure 2.1 – 2.2 of this document. By installation according to 10EP15a the length of the Bowden cable outer will be reduced which results in reduction of cable friction.

Define the length of the Bowden cable outer when the landing gear is retracted.

The installation in the fuselage is not affected by this modification.

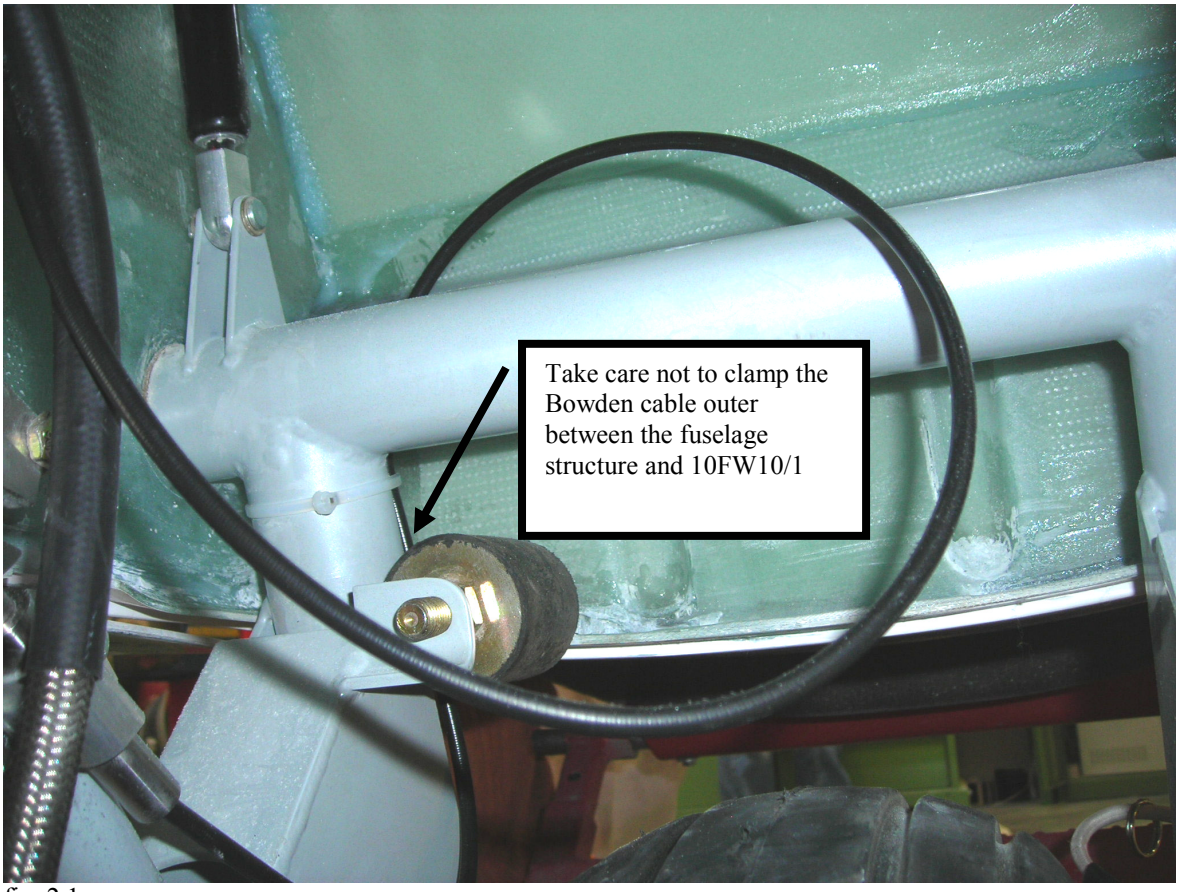

Take care not to clamp the Bowden cable outer between the fuselage structure and 10FW10/1

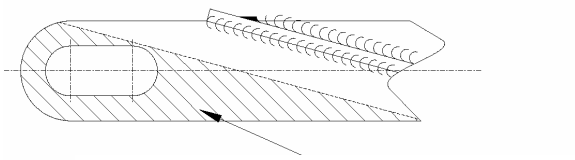
fig. 2.1



fig. 2.2

3. Fork of pushrod 10FW20

Unfortunately we detected that the fork of the pushrod 10FW20 doesn't always have an inner width of 20.5 mm. To slide without a noticeable amount of friction, the width of the fork has to be a minimum of 20.5 mm. Widen out the fork if necessary (see sketch below).



Area of the inner width 20.5 mm

4. Differences to the data referred to in the TN for ser.no. 10-1 up to 10-42.

At DG-1000 ser.no.'s 10-1 up to 10-42 the distance between the pivot point and the strut centre line at the connection of the lower strut 10FW14/1 to the upper strut 10FW12/2 is 2 mm smaller than from the ser.no.'s 10-43 and higher.

Therefore some parts of retrofit kit for the positive locking device have different dimensions.

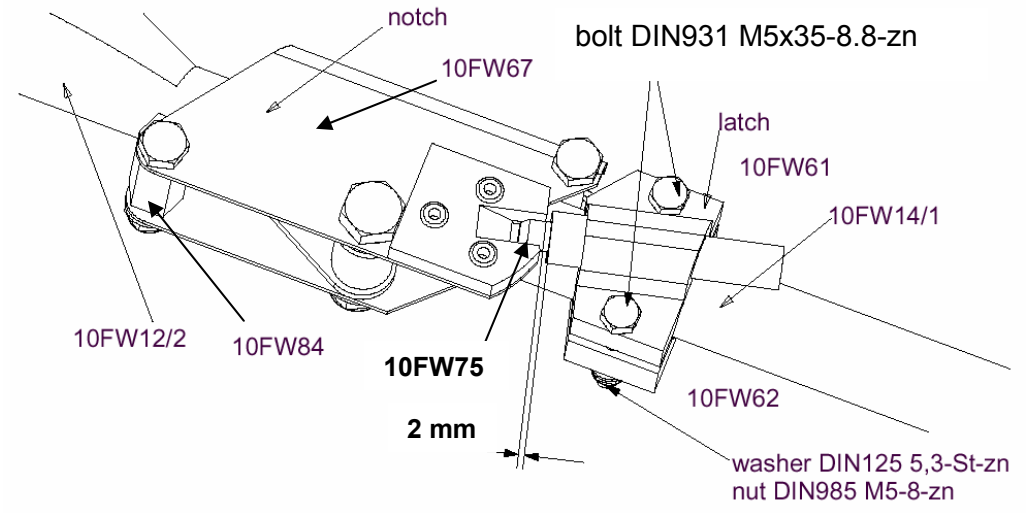
For ser.no.'s 10-1 up to 10-42 you need the retrofit kit with the part number 41060011 instead of part number 41060009 which is referred to in the TN.

The following parts are different from the parts referred to in the working instruction 1 to TN1000/13.

ser.no.'s 10-1 up to 10-42	from ser.no. 10-43 on (referred to in TN)
10FW66	10FW67
10FW85	10FW84

5. Tolerance of the distance between notch and latch

There is a distance of 1 mm referred to in the working instruction between notch and latch. The distance should be 2 mm. Adjust the Bowden cable according to working instruction item C 5 with a distance of 1 mm between the locking pin and the notch in fully disengaged position. Check if the bolt engages a minimum of 3 mm into the slot of the notch.
If the adjustment of the latch is correct mark the position, unfasten the latch and glue it to 10FW14/1 using Loctite 638 or UHU plus endfest. Fasten the bolts M5x35 with a fastening torque of 6 Nm.



5. Securing cord and guide rings for landing gear door rubber cords

b

5 a) Securing cord: A securing cord must be fixed to both landing gear door rubber cords according to figure 3.
First wrap the securing cord around the upper fork 10FW13/1 and make a knot. Don't knot the cord too tightly, it must still rotate easily on the tube of the fork. Knot the two ends of the cord tightly to the landing gear door rubber cords so that they can't slip.
Cut off the ends of the securing cord approx. 10 mm behind the knots.

Material: Rubber cord dia. 2 mm, length 750 mm (incl. the length necessary to make the knots).

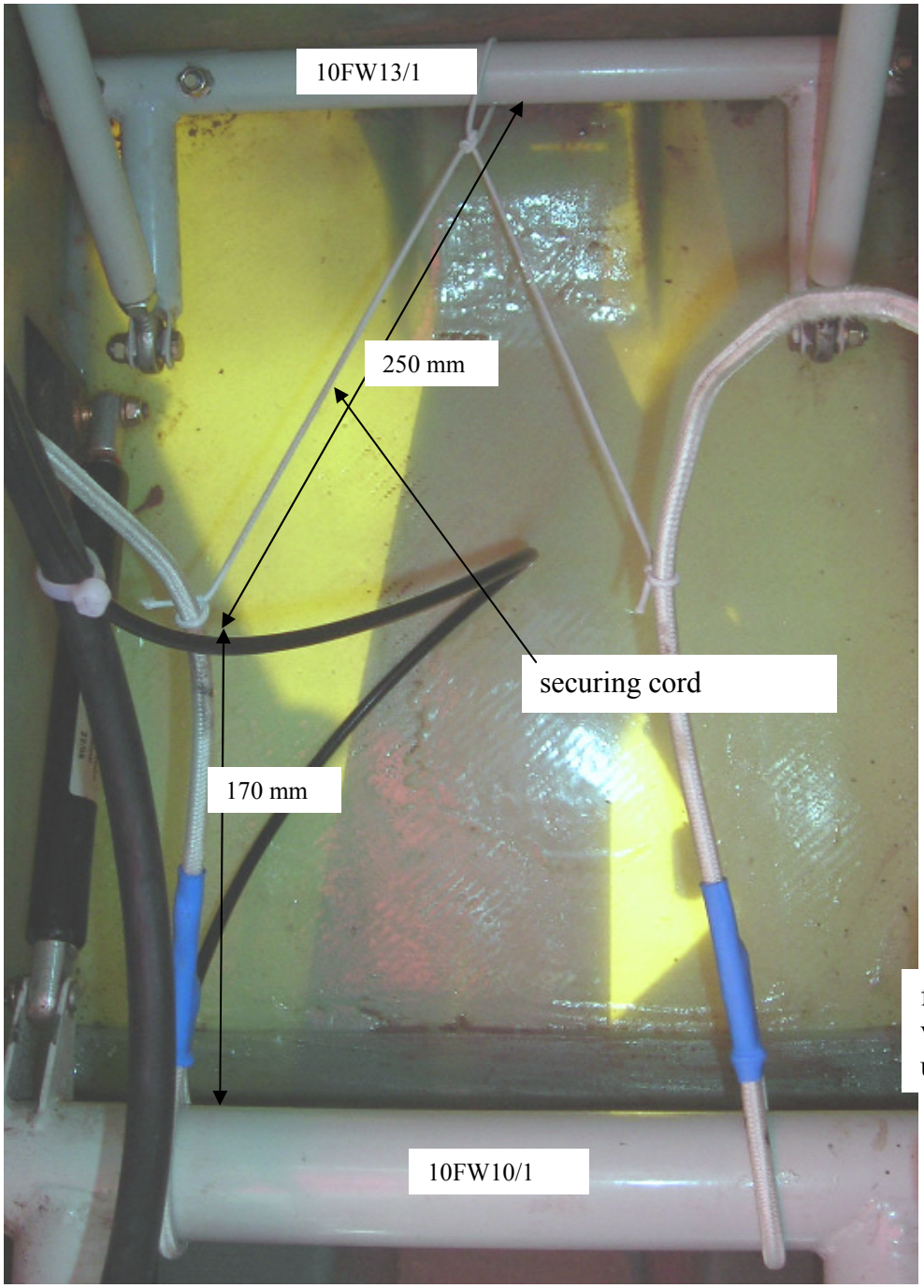


figure 3
view to the front, upwards

5 b) Guide rings: In addition we found out that the Ty-raps which fix the key rings to fork 10FW12/2 (see installation plan 10EP18) may be damaged by the rapid glue. Therefore the Ty-raps must be replaced by hose clamps and the key rings by chain-links.
After installation flap the chain links downwards see figure 5.
To remove the key rings and to push on the chain-links you may detach the landing gear door rubber cords at the key rings at the doors.

Material: 2 hose clamps 539, 12 - 20 width 9 mm W2
2 chain links 26x3



figure 4
before flapping the chain link

c

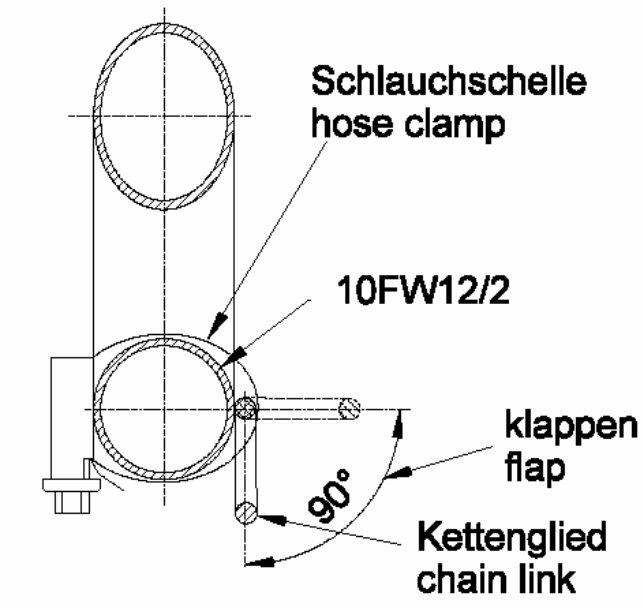
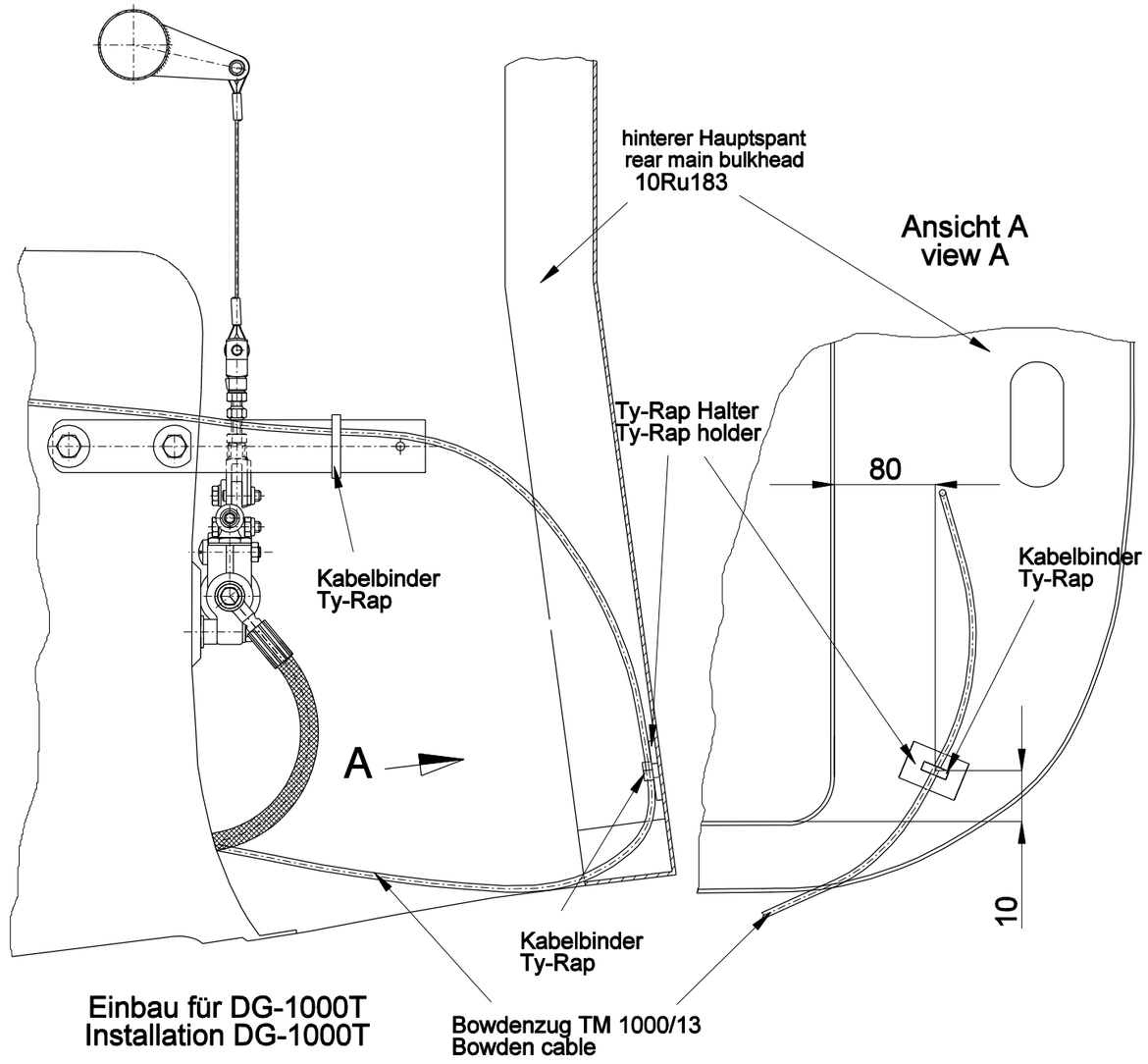
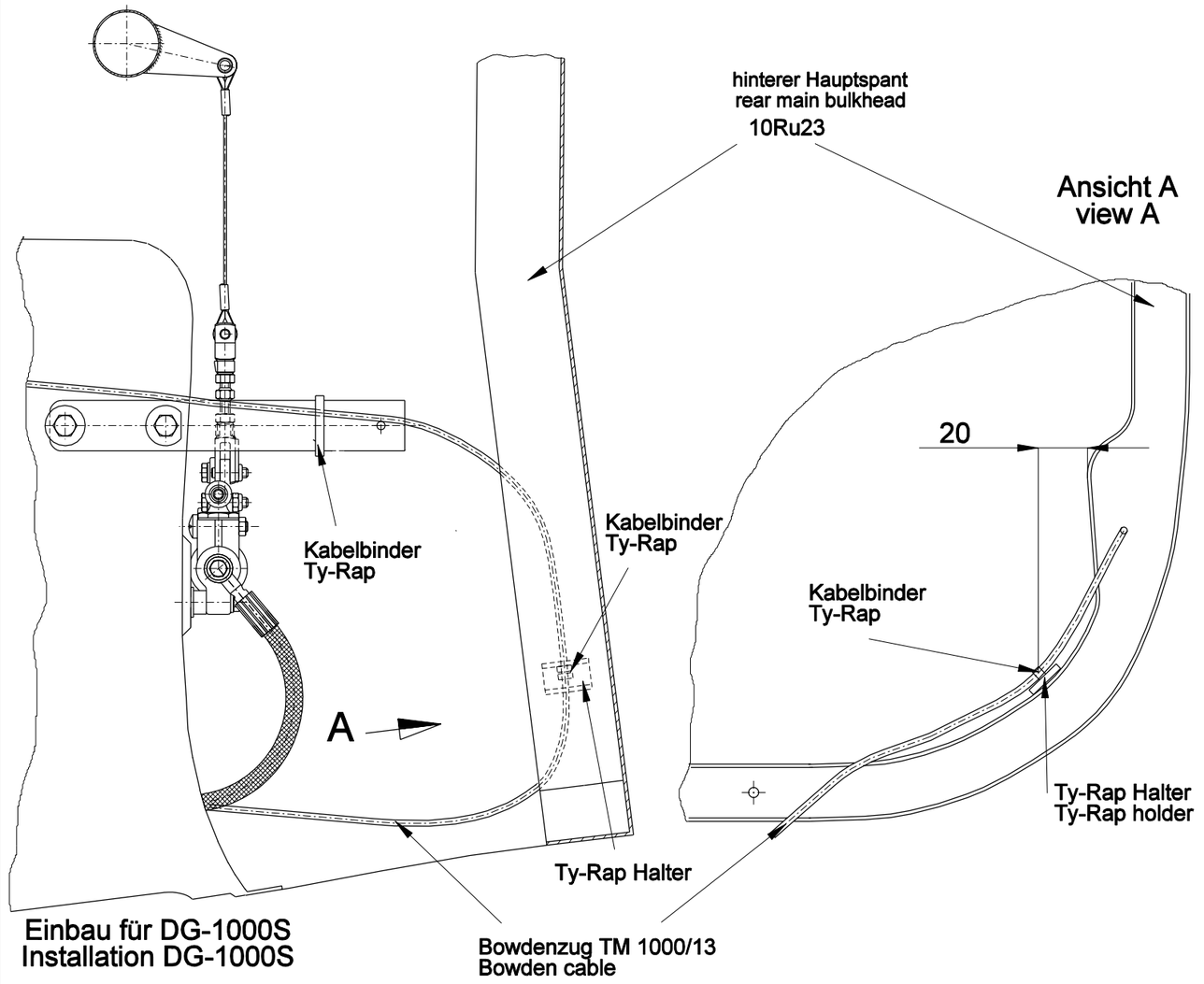


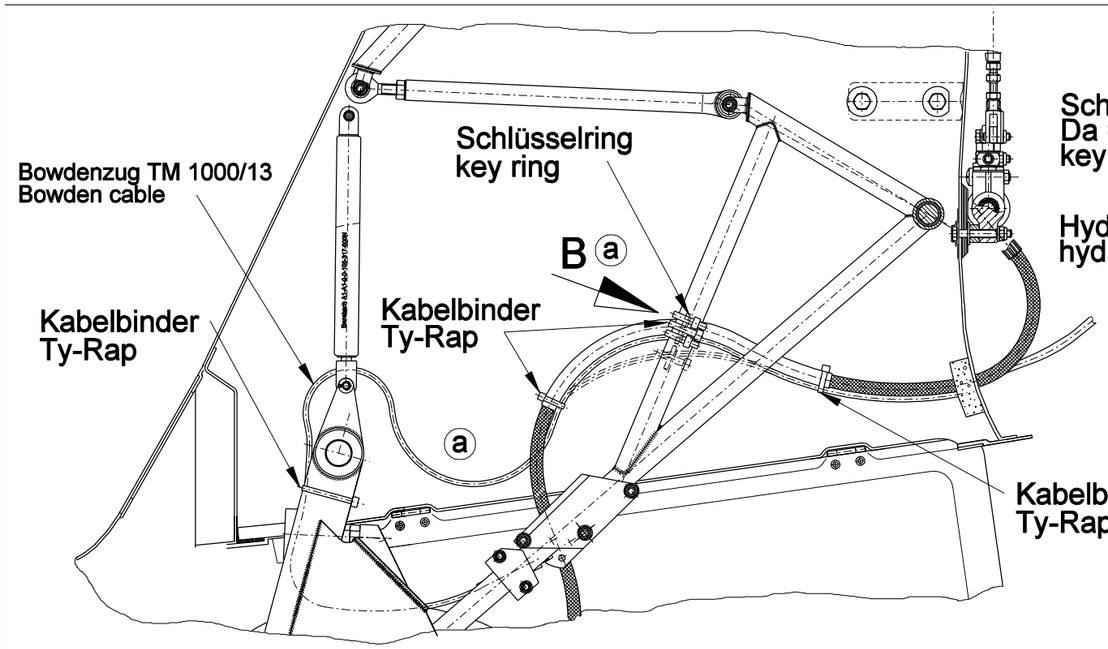
figure 5



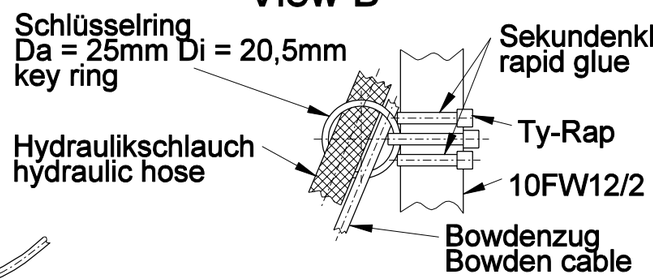
Einbau für DG-1000T
Installation DG-1000T



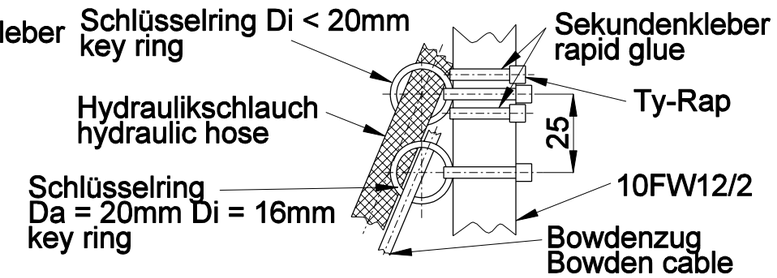
Einbau für DG-1000S
Installation DG-1000S



Ansicht B ⓐ
View B



Alternativ für Schlüsselring mit Di kleiner 20mm
alternative for key ring with Di less than 20mm



Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
a	Bowdenzug-verlauf geändert		7.07.08	vDühren
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	03.03.08	F.Müller
Gepr.		
Norm.		

Maßstab : :

Maße ohne Toleranz-ang. nach:

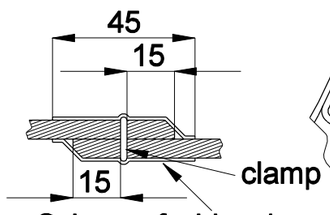
Bowdenzugeinbau
Zwangsverriegelung TM 1000/13

Installation of Bowden cable
positive locking device TN 1000/13

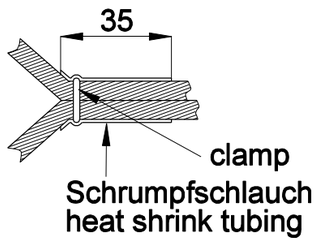
DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

10EP15

Schnitt D-D
section D-D



Schnitt E-E
section E-E



Gummizug Ø2mm
Rubber cord
Länge des Zuschnitts ca. 750 mm
pre-cut length approx. 750 mm

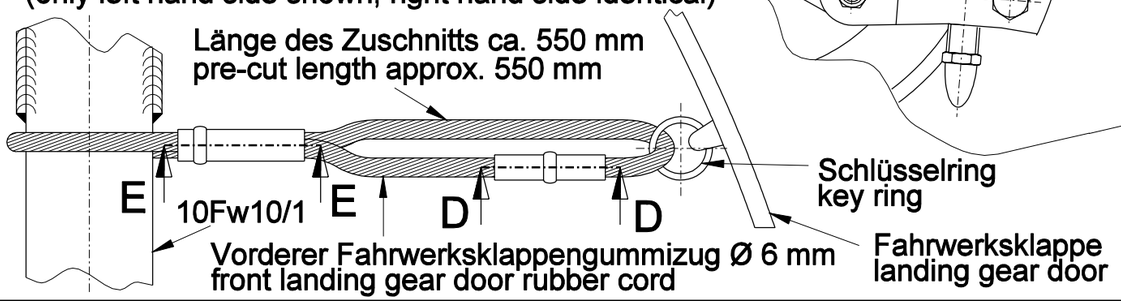
Ty-Rap
Schlüsselring
key ring

Ty-Rap
Hydraulikschlauch
hydraulic hose

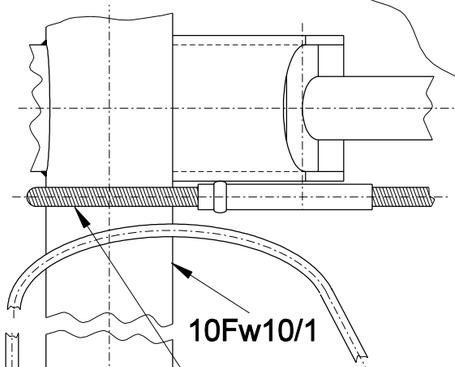
170
180
Ty-Rap
Schrumpfschlauch
heat shrink tubing
clamp
Fest verknoten
Ty-Rap
20
35
150
10FW62
10FW67
10FW14/1
10FW10/1
10FW12/2
Schlauchschelle
hose clamp
Kettenglied
chain link
Bowdenzug
Bowden cable
A
A
b
B

Vorderer
Fahrwerks-
klappen-
gummizug
front landing
gear door
rubber cord

Ansicht B / View B
(Nur linke Seite dargestellt, rechts identisch)
(only left hand side shown, right hand side identical)

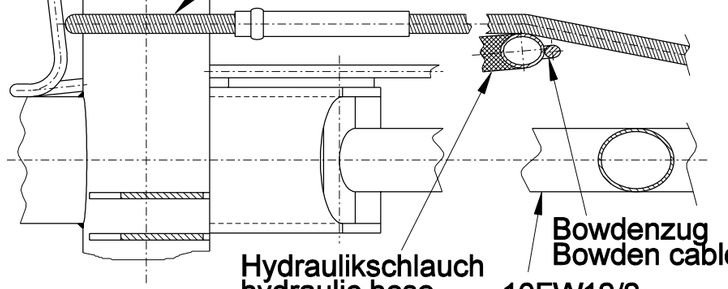


Schnitt A-A
section A-A

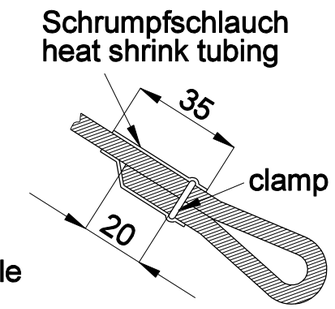


Hinterer Fahrwerksklappengummizug Ø 6 mm
rear landing gear door rubber cord
Länge des Zuschnitts ca. 1000 mm
pre-cut length approx. 1000 mm
C
C

Hinterer Fahrwerksklappengummizug
rear landing gear door rubber cord



Schnitt C-C
section C-C



Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
b	Kettenglied		09.04.09	R. Klur
a	Gummizüge Schlauchschelle		30.03.09	R. Klur
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	07.07.08	van Dühren
Gepr.		
Norm.		

DG
Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Maßstab 1:2

Maße ohne Toleranz-ang. nach:

Fahrwerksklappen Gummizüge
Landing gear doors Rubber cords

10EP18