Subject : Installation of transponder and aerial for transponder

Effectivity : All DG gliders and motorgliders

Accomplishment : For transponder installation

Reason : To achieve perfect signal transmission the aerial should be installed according to the following instructions.

Instructions :

1. DG single seaters:

1.1. All DG single seaters: outboard aerial may be installed according to drawing Z152.

alternatively 1.1.1. outboard aerial TRANSFLEX4 according to drawing Z184

alternatively 1.2. GRP-Gliders: inboard aerial according to drawing Z178 (not possible for DG-808S Version Competition).

1.3. Motorgliders

1.3.1. outboard aerial below engine compartment according to drawing Z175.

alternatively 1.3.2. outboard aerial TRANSFLEX4 below engine compartment according to drawing Z185

alternatively 1.3.3. outboard aerial on top of fuselage boom according to drawing Z179.

alternatively 1.3.4. Antenna BD1 at fin shear web Z180 (only possible during production).

2. DG two seaters:

2.1 DG-500 glider and DG-1000S:

2.1.1 Install attachment Z117 according to drawing Z118 behind the rear main bulkhead.

alternatively 2.1.2 inboard aerial according to drawing Z178.

2.2 DG 500 and 500MB:

2.2.1 Install attachment Z154 at the rear panel of luggage compartment according to drawing Z151.

alternatively 2.2.2 outboard aerial below the engine compartment according to drawing Z177.

alternatively 2.2.3 outboard aerial TRANSFLEX4 below the engine compartment according to drawing Z187

2.3 DG-1000T:

2.3.1. outboard aerial below engine compartment according to drawing Z176.

alternatively 2.3.2. outboard aerial TRANSFLEX4 below the engine compartment according to drawing Z186

alternatively 2.3.3. Antenna BD1 at fin shear web Z181 (only possible during production).

3. All: Installation of the Transponders and the aerial cable see enclosure 1 for TN DG-G-02.

4. All motorgliders: Execute a new compass compensation

Material :

1. DG single seaters:

1.1. 1 x Aerial Honeywell KA60, self-adhesive aluminium foil approx. 30x30cm large or aluminium foil 30x30cm and spray adhesive, 2 x fireproof rubber grommet HV D17.5. aerial cable Aircell 7, 1 x BNC-connector, 1 x BNC-elbow adapter, silicone.

1.1.1. Aerial Funkwerk TRANSFLEX4
2 bolts M5x20DIN965-A2, 2 washers 5,3DIN125 St zn, 2 selflocking nuts M5DIN985-8 zn, further material see 1.1

1.2. GRP gliders: 1x transponder aerial BD1W, 1 x attachment Z178/1, 1 x pipe clamp with rubber profile DIN3016 20-15, 1 x bolt DIN912 M6x20, aerial cable Aircell 7, 1 x BNC-connector, epoxy resin and hardener, cotton-flocks.

1.3. Motor glider

1.3.1. 1 x aerial Honeywell KA 60, self adhesive aluminium tape 50 mm wide, 2 x fireproof rubber grommet HV D17.5, aerial cable Aircell 7, 1 x BNC-connector , 1 x BNC-elbow adapter, silicone, self-adhesive aluminium foil approx. 30x30cm large or alum. foil 30x30cm and spray adhesive.

1.3.2. Aerial Funkwerk TRANSFLEX4
2 bolts M5x20DIN965-A2, 2 washers 5,3DIN125 St zn, 2 selflocking nuts M5DIN985-8 zn, further material see 1.3.1

1.3.3. same as 1.3.1, + 1 x fireproof rubber grommet HV D17.5, 8 x ty-rap 2.5 mm, 8 x self adhesive fastener for ty-rap.

a

Material cont. :

2. DG two seaters:

2.1 DG-500 sailplanes and DG-1000S:

2.1.1 1 x aerial Becker KEC-KC-89, 1 x support Z117, 2 x mount Z90, 2x bolt M6x12 DIN912-8.8zn, 2 x washer 6,4 DIN9021 St zn, Epoxy resin with hardener and cotton-flocks, aerial cable Aircell 7, 1 x BNC-connector.

2.1.2 see 1.2

2.2 DG-500 and DG-500MB:

2.2.1 1 x aerial Becker KEC-KC-89, 1 x washer 13 DIN125 St zn, 1 x support Z154, 4 x rivet Fero DIN7337 3x6 mm, Epoxy resin with hardener and cotton-flocks, aerial cable Aircell 7, 1 x BNC-connector.

2.2.2 1 x aerial Honeywell KA 60, self adhesive aluminium tape 1 x fireproof rubber grommet HV D17.5, aerial cable Aircell 7, 1 x BNC-connecter, 1 x BNC-elbow adapter, silicone, self-adhesive aluminium foil approx. 30x30cm large or aluminium foil 30x30cm and spray adhesive.

2.2.3 Aerial Funkwerk TRANSFLEX4
2 bolts M5x20DIN965-A2, 2 washers 5,3DIN125 St zn, 2 selflocking nuts M5DIN985-8 zn, further material see 2.2.2

2.3 DG-1000T:

2.3.1 see 2.2.2.

2.3.2 see 2.2.3

3 All

Approved Transponder Mode A/C or Mode S,
enclosure 1 for TN DG-G-02 and drawings see instructions.

Weight and balance : Execute a C.G. weighing after installation.

Remarks : Instead of the aerial Honeywell KA 60 other approved aerials built in the same way from other suppliers may be used.

The Aerial Honeywell KA60 may be replaced by the Aerial Funkwerk TRANSFLEX4 without further instructions, as the distance of the mounting holes is the same.

the installation must be executed by the manufacturer or by a licensed workshop and to be inspected and entered in the aircraft logs by a licensed inspector.
The proper functioning of the system must be inspected by an avionics inspector class 1 with the appropriate authorisation.

This TN is only valid with a release document form DG-F-G-02 which indicates model and ser. no. of the aircraft in which the transponder shall be installed and the type of transponder to be used.
The release document must be requested from the TC holder (DG Flugzeugbau GmbH).

Bruchsal, date:
January 17. 2008

Author:
Dipl. Ing. Wilhelm Dirks

EASA approved on 25.02.2008
under Approval No. EASA.A.C.09029

Correction a 15.06.2011

Enclosure 1 for technical note TN DG-G-02

Instructions for transponder installation

Required materials see TN DG-G-02.

1. Installation of the aerial

For the installation please refer to the respective drawing listed in TN DG-G-02..

2. Installation of the ground plane

As a counterbalance to the aerial, self adhesive aluminium foil or aluminium foil fixed with spray adhesive approx. 300mm x 300mm (11.8 x 11.8 in.) has to be fitted according to the respective drawing.
Before fitting the foil, degrease the engine bay surfaces with acetone.
When installing the aerial in the engine bay of DG-800B. DG-808C and DG-500MB the installation of aluminium foil is not necessary as the engine bay is already equipped with aluminium foil.
With the BD1 aerials no ground plane is needed.

3. Feeding through of the aerial cable

3.1 In order to feed the aerial cable through, the following parts need to be removed:

Single seater

- front instrument panel cover
- front control column boot
- access cover at the left hand side of the front control stick (if installed)
- baggage compartment covers (bottom and rear part)
- if possible remove the GFRP tube for the oxygen bottle

Two-seater

- front instrument panel cover
- front control column boot
- access cover at the left hand side of the front control stick
- instrument panel bottom part in rear cockpit needs to be removed completely, not just folded open, this means that the hinges at the bottom must be disconnected from the fuselage
- baggage compartment covers (bottom and back part)

3.2 Feeding the cable through.
The aerial cable is delivered over length without terminals.
To make feeding through easier, it is recommended to wrap the cable ends with insulating tape in order to “round” the ends.

Single seater

Feed the aerial cable from the instrument panel parallel to the instrument lines at the right hand side of the fuselage up to the end of the landing gear box.
It is recommended to use a “pull-through” aid, since the empty pipe has tight radii.
If there is a free empty pipe insert the cable into this pipe.

Two-seater

The cable is fed through from the opening in the rear cockpit floor to both the front and the engine bay..

First feed through to the front. Push the aerial cable parallel to the empty cable pipe (see picture 1) on the right hand side of the fuselage until it comes out near the front control stick. Now, follow the empty pipes on the right-hand side of the control column, leading into the instrument panel. Fix aerial cable every 200 mm to the wiring harness or to other wiring already installed wherever possible with TY-raps.

Feed the other end of the aerial cable parallel to the instrument lines up to the end of the landing gear box.

It is recommended to use a “pull-through” aid, since the empty pipe has tight radii.

If there is a free empty pipe insert the cable into this pipe.



The aerial cable has to be fixed to the bottom of the opening in the rear cockpit with cable ties every 50mm see picture 1; otherwise the function of the towing hook mechanism can be affected.

picture 1

aerial cable

All

Depending on the type of transponder attach a HF-Connector TNC (threaded) or HF-Connector BNC (bayonet lock) to the front end of the aerial cable.

4. Installation of the transponder

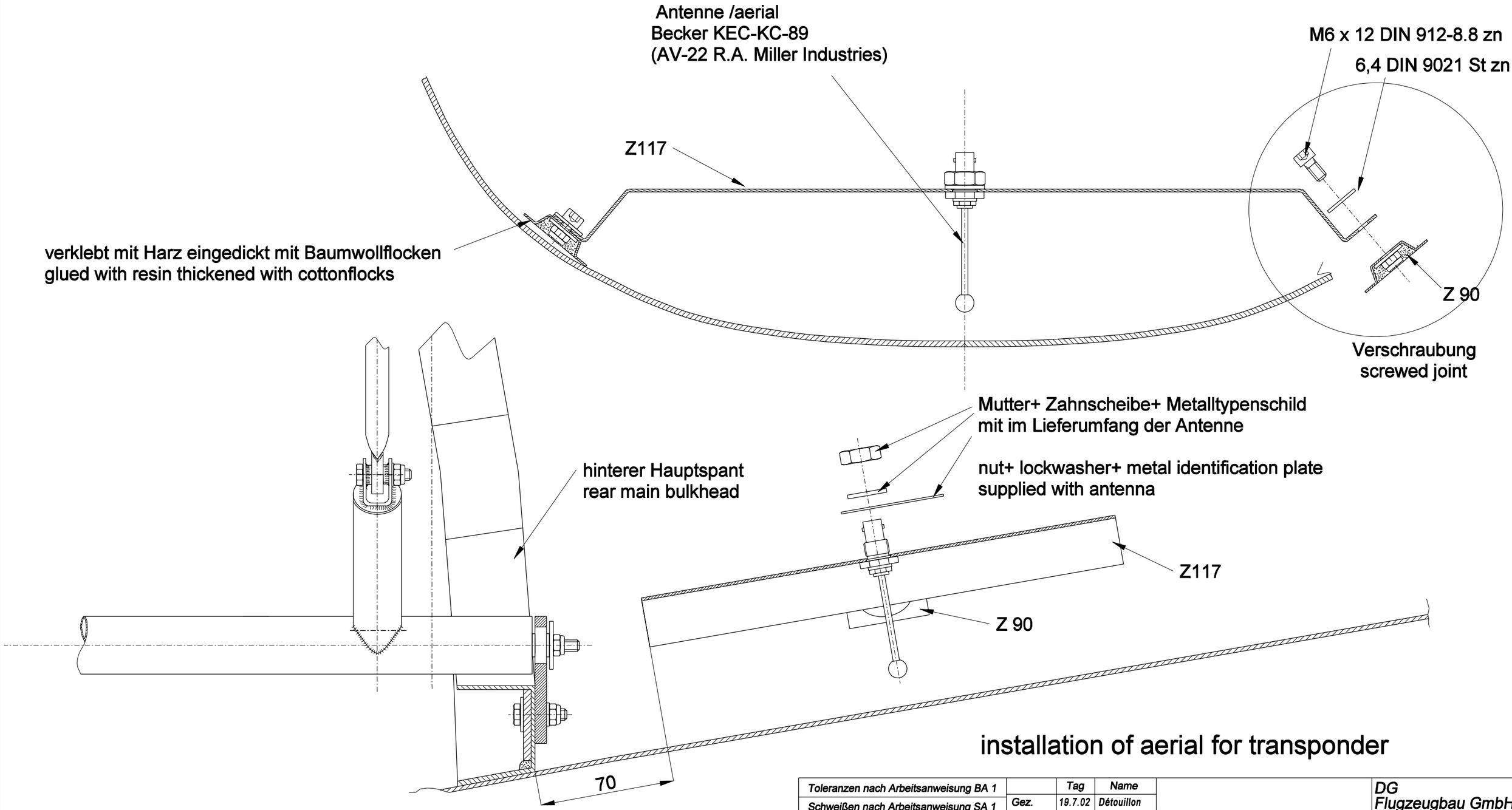
Mount the transponder to a suitable place on the instrument panel.

Connect the HF-Connector to the transponder. Power supply takes place via a 3A circuit breaker or a 3A fuse. Install the circuit breaker or the fuse holder to a free space in the front instrument panel and mark with XPDR.

In DG motorgliders you may use one of the 3A circuit breaker already installed (marked with XPDR or Gyros), if not used already for another device. Mark correctly with XPDR.

For mode C,S the static pressure port of the transponder or altitude encoder must be connected to the aircraft static pressure system by using a “T”- fitting.

5. Reinstall all parts removed under 3.1.



installation of aerial for transponder

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
a	Korrekturen	all	22.01.04	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	19.7.02	Détouillon
Gepr.		
Norm.		

Maßstab 1:2

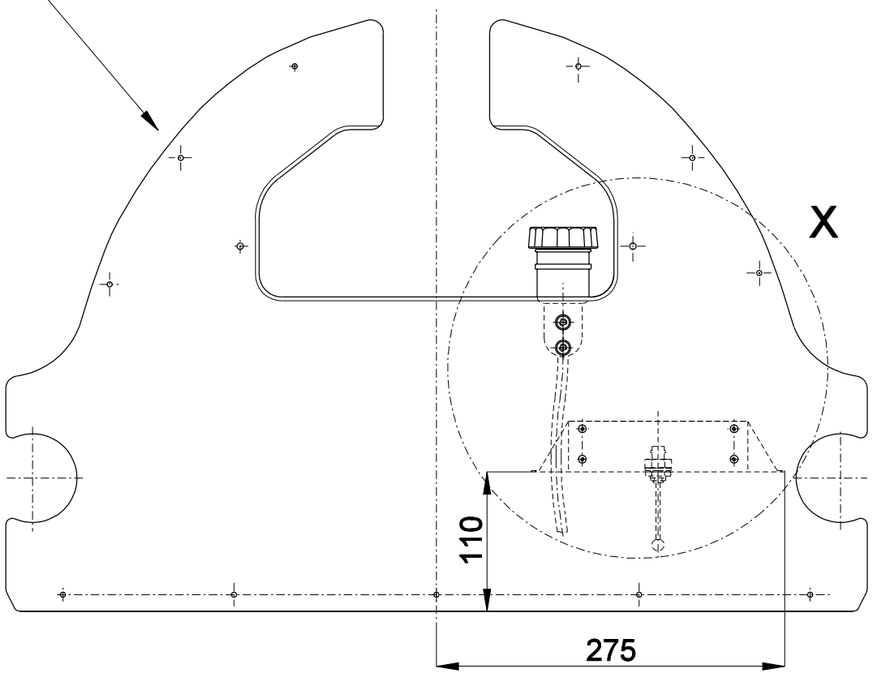
Maße ohne Toleranz-ang. nach:

Transponder Antenne
Einbau
DG-500 /DG-1000S

DG Flugzeugbau GmbH
76646 Bruchsal 4
Im Schollengarten 20

Z 118

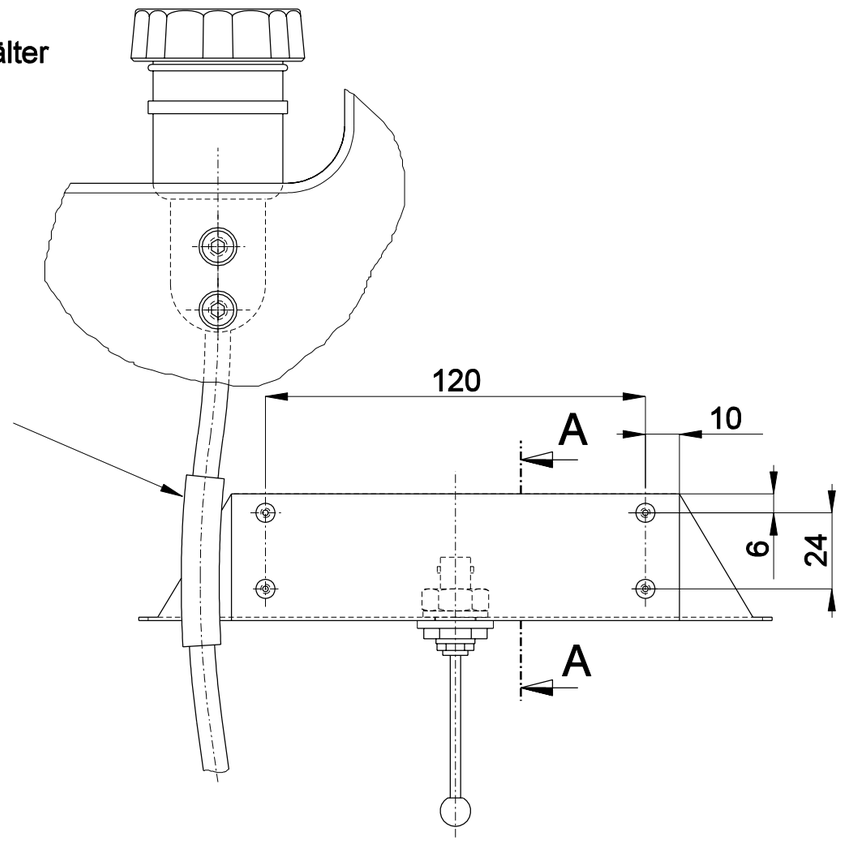
Gepäckraumrückwand
(Rear baggage compartment wall)



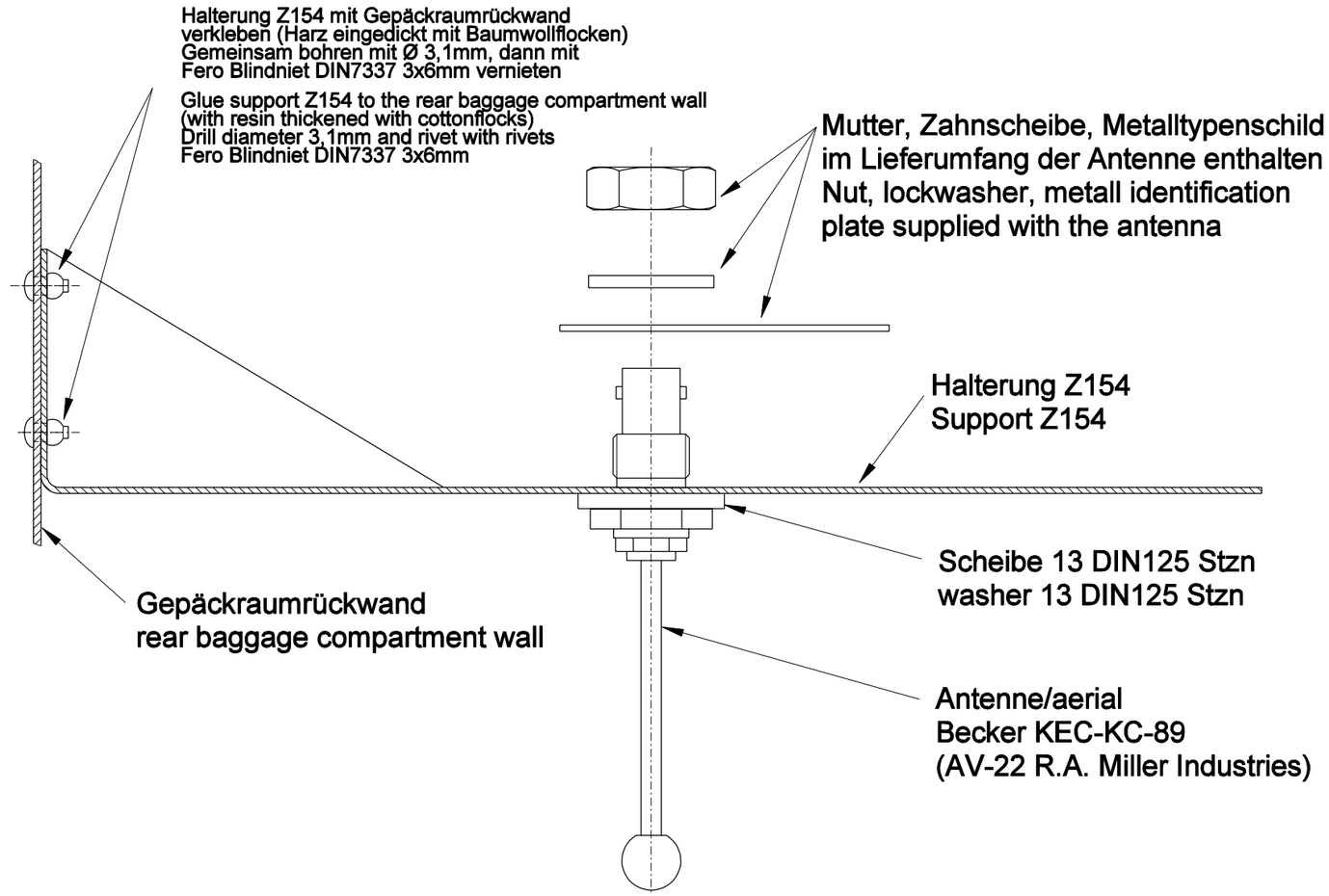
Detail X (M1:2) (ohne Gepäckraumrückwand) (without rear baggage compartment wall)

Bremsflüssigkeitsbehälter
Brake fluid reservoir

Scheuerschutz für
Hydraulikschlauch
(Tesa-Gewebeband)
Rubbing protection for
brake fluid hose
(Tesa Fabric tape)



Schnitt A-A (M1:1)



Achtung: Beim Festziehen der Antennenverschraubung Alufolie auf Halterung Z154 nicht beschädigen!
Warning: When fixing the aerial take care not to damage the aluminium layer on support Z154

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	22.01.04	S. Lehner
Gepr.		
Norm.		

Maßstab 1:1 1:2

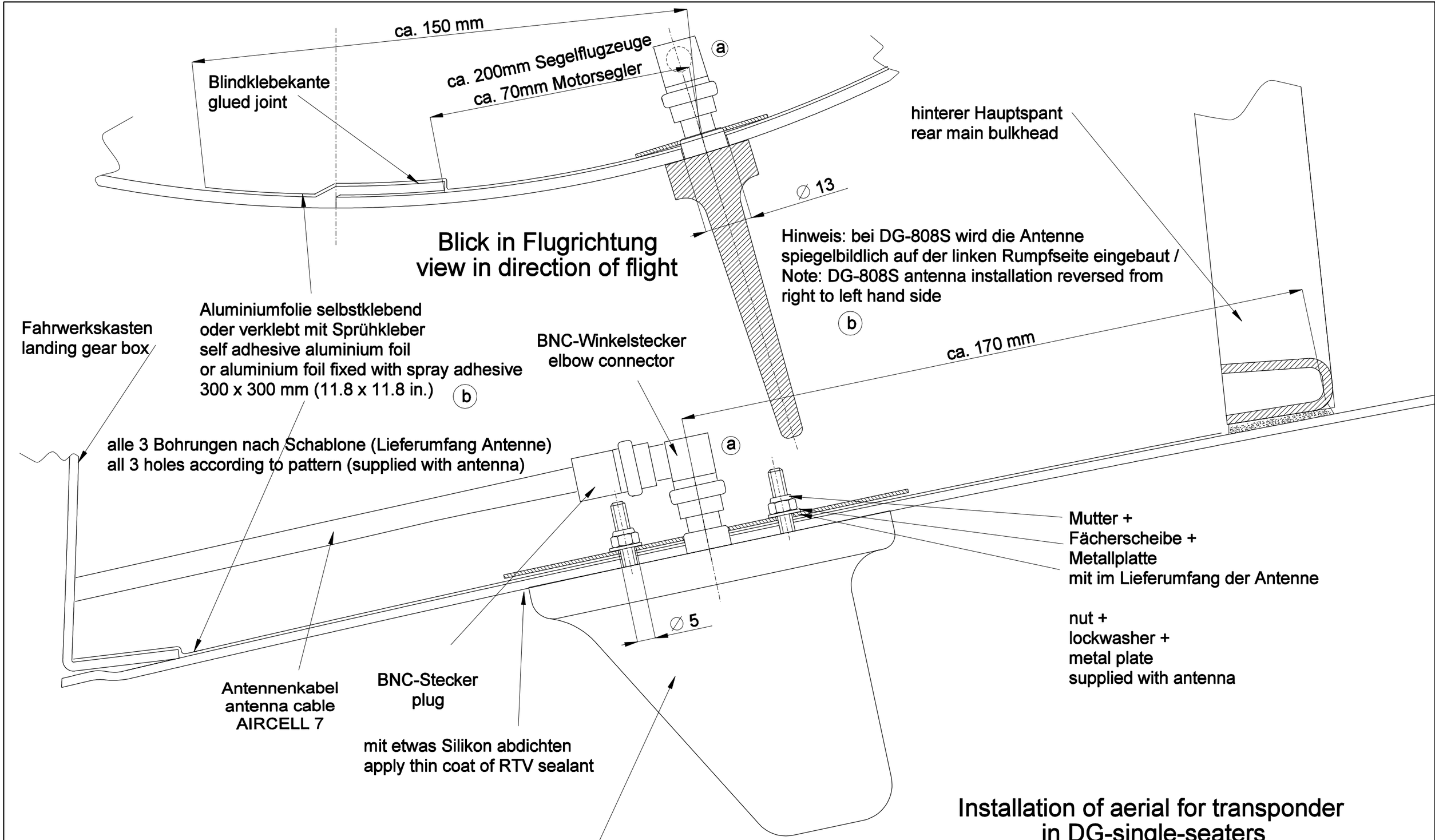
Maße ohne Toleranz-ang. nach:

Einbau Transponderantenne
Installation of aerial for transponder

DG-500M/DG-500MB

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z151



Installation of aerial for transponder in DG-single-seaters

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
b	Alufolie definiert		21.01.08	W.Dirks
a	Stecker und Kabel		13.12.07	F.Müller
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	21.01.04	W. Dirks
Gepr.		
Norm.		

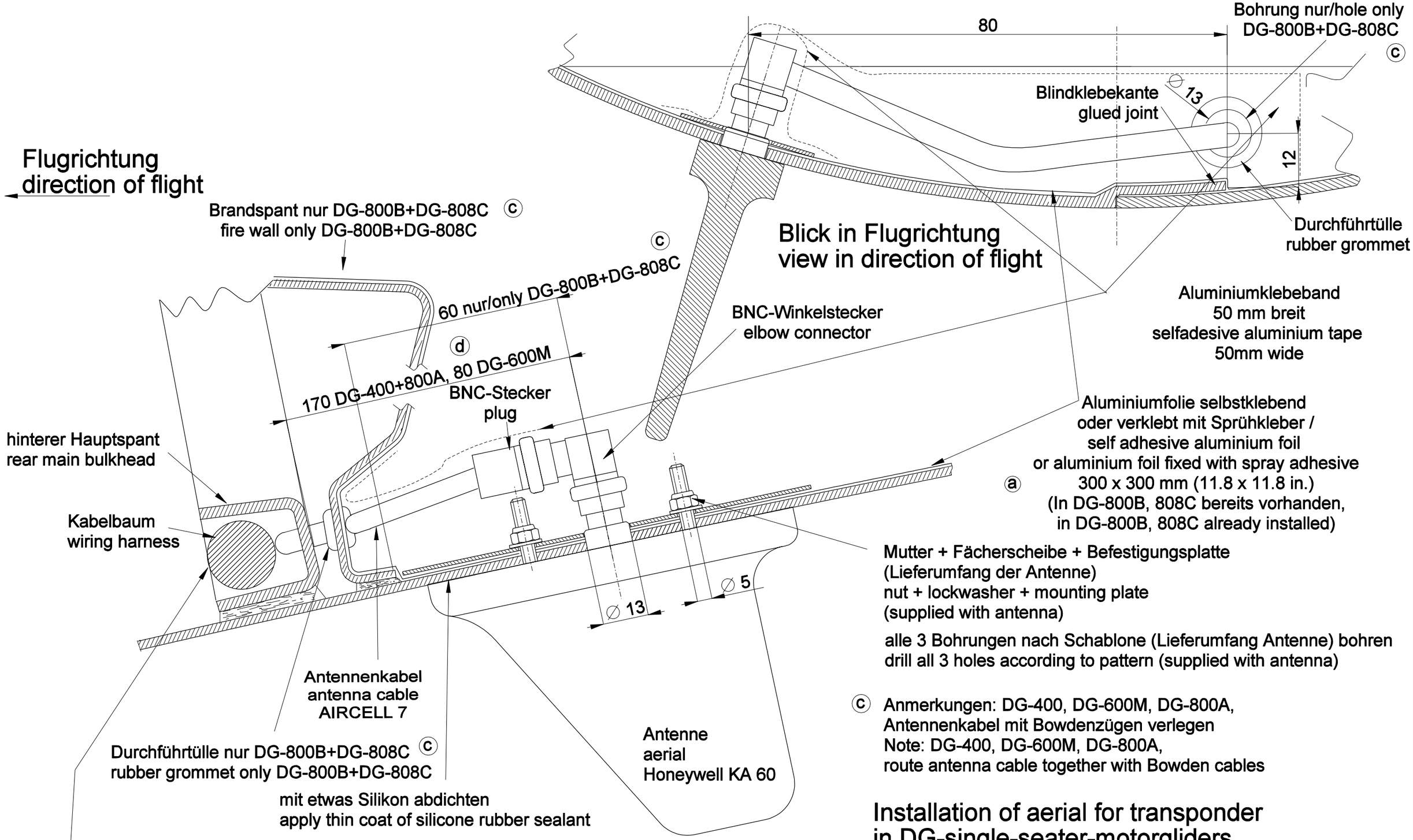
Maßstab 1:1 :

Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG-Einsitzer

DG
Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z152



b Wichtiger Hinweis: Den Kabelbaum so weit nach vorne verschieben, dass er beim Bohren des Loches für das Antennenkabel nicht beschädigt wird. Dazu müssen Ty-raps entfernt werden.

Caution: Move the wiring harness so far to the front that you can't damage it when drilling the hole for the antenna cable. To accomplish this ty-raps must be removed.

c Anmerkungen: DG-400, DG-600M, DG-800A,
Antennenkabel mit Bowdenzügen verlegen
Note: DG-400, DG-600M, DG-800A,
route antenna cable together with Bowden cables

Installation of aerial for transponder in DG-single-seater-motorgliders

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
d	Masse geändert 150 statt 40, 80 statt 60		5.03.15	W.Dirks
c	Angaben Baureihen		7.08.14	W.Dirks
b	Hinweis ergänzt		15.09.08	W.Dirks
a	Alu-Folie definiert		21.01.08	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

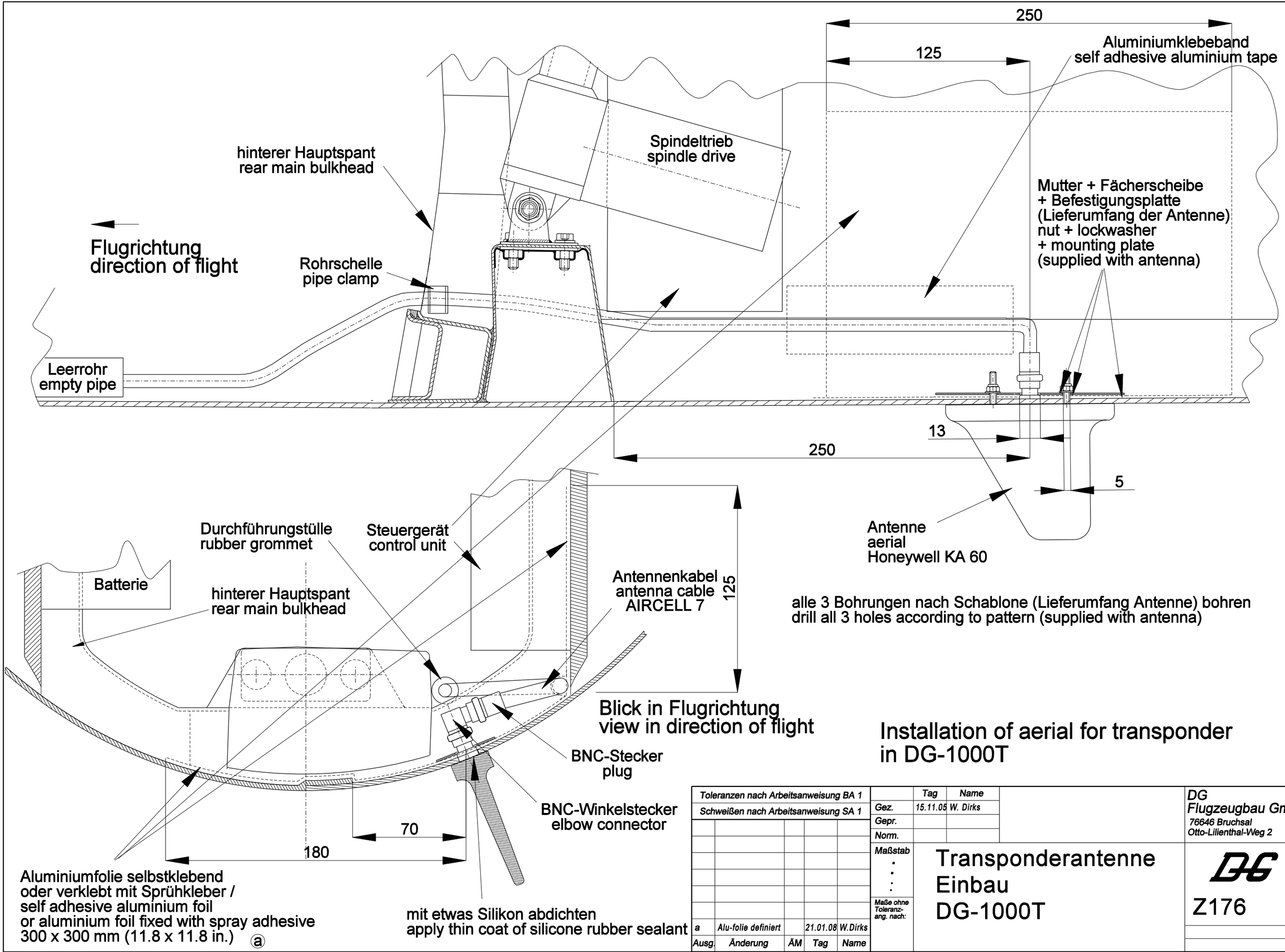
	Tag	Name
Gez.	28.9.05	F.Ruppert
Gepr.		
Norm.		

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Maßstab 1:1
Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG-Einsitzer
Motorsegler

Z 175



Installation of aerial for transponder in DG-1000T

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
a	Alu-folie definiert		21.01.08	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	15.11.05	W. Dirks
Gepr.		
Norm.		

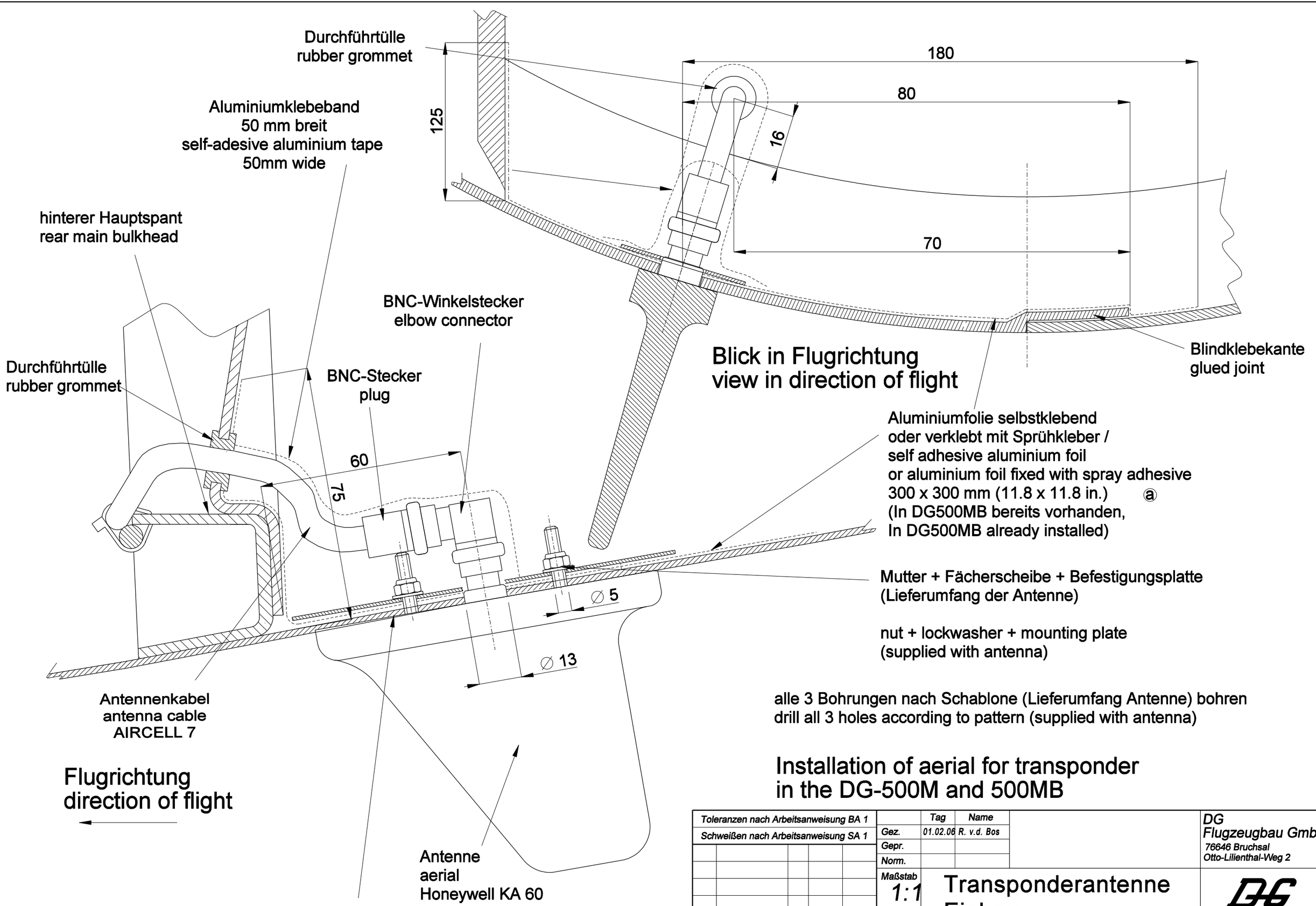
Maßstab : :

Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG-1000T

DG
Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z176



alle 3 Bohrungen nach Schablone (Lieferumfang Antenne) bohren
drill all 3 holes according to pattern (supplied with antenna)

Installation of aerial for transponder in the DG-500M and 500MB

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
a	Alu-Folie definiert		21.01.08	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	01.02.06	R. v.d. Bos
Gepr.		
Norm.		

Maßstab 1:1

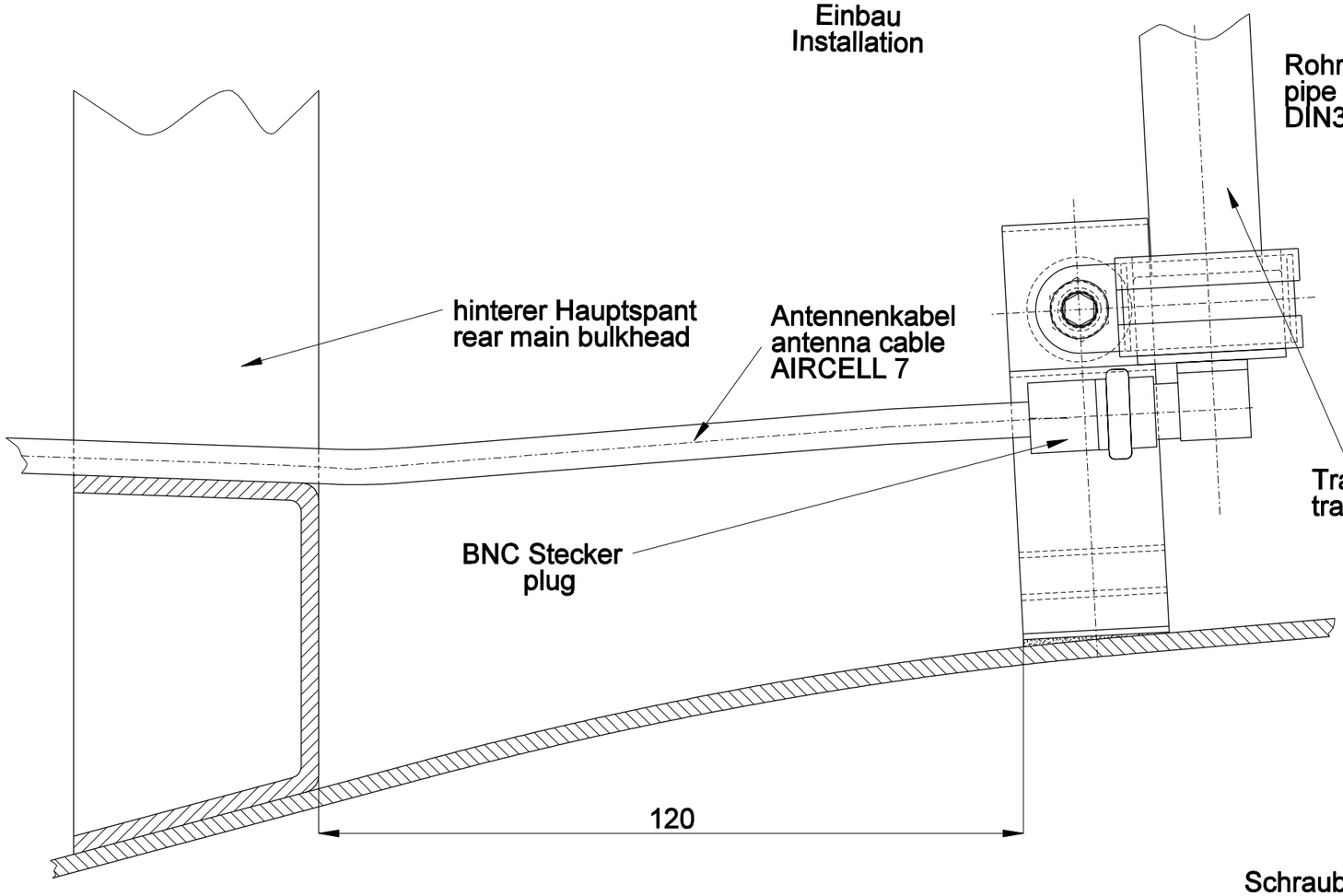
Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG500M und
DG500MB

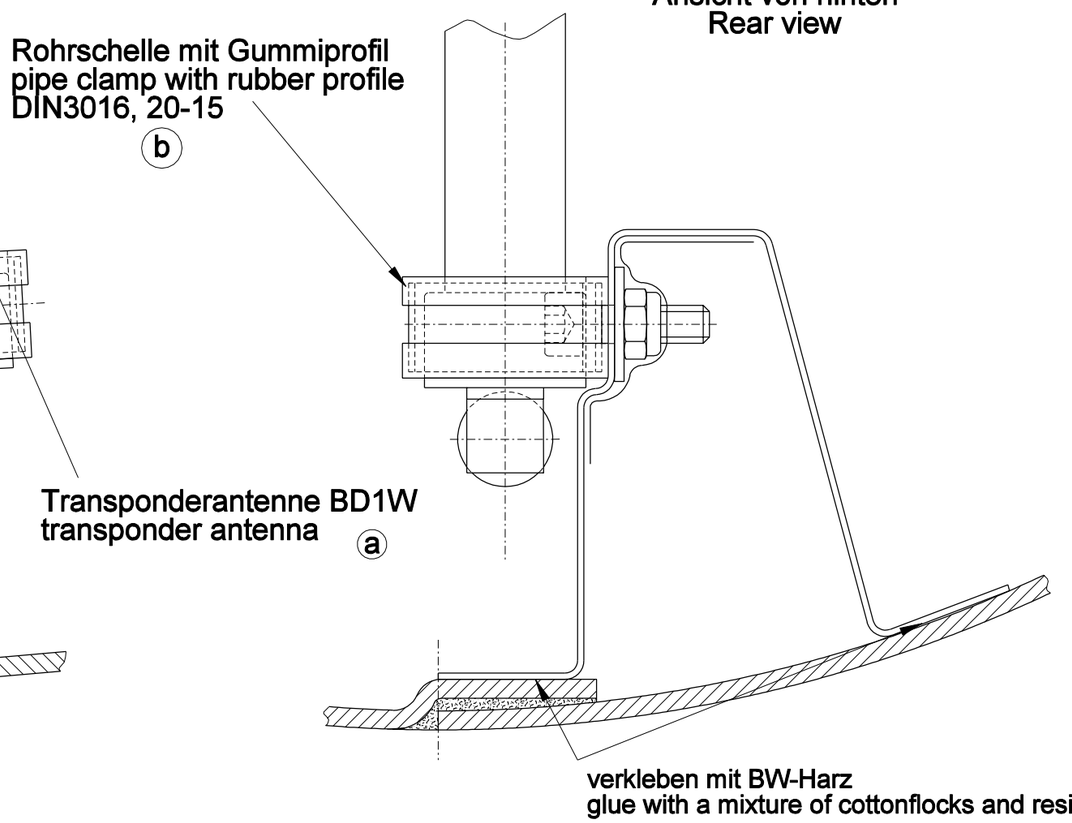
DG
Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z 177

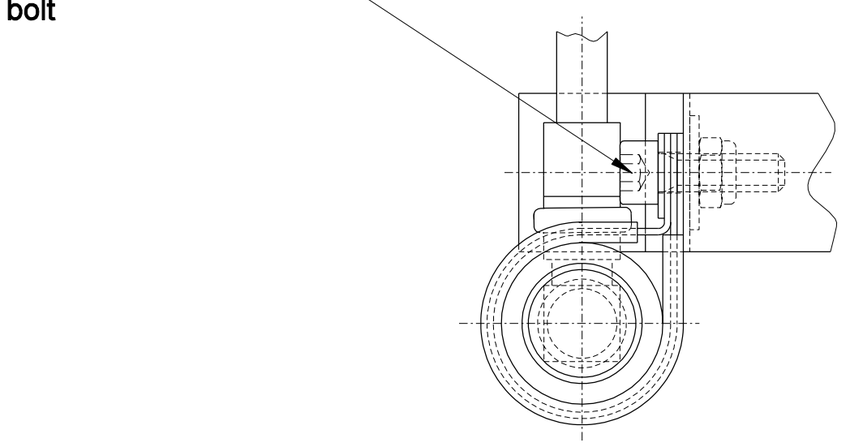
Einbau
Installation



Ansicht von hinten
Rear view



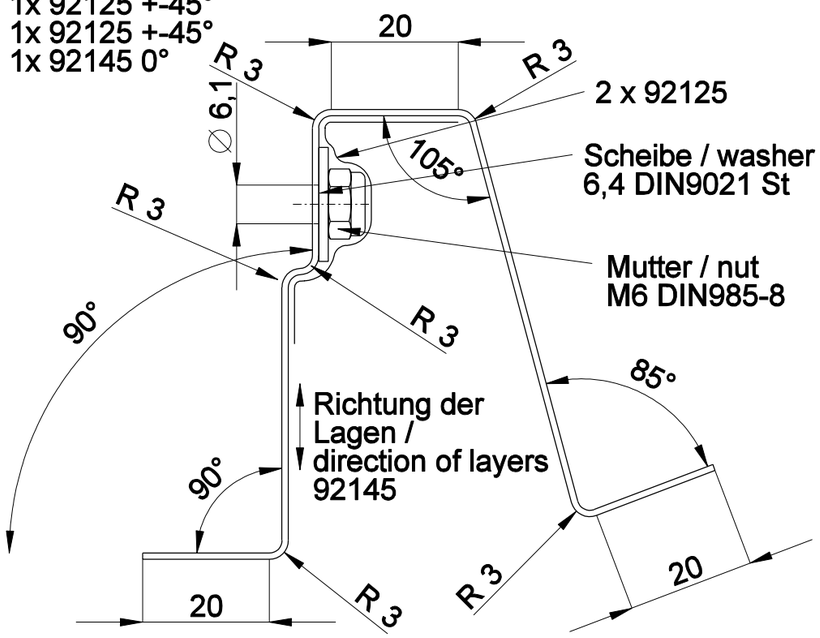
Draufsicht
Top view

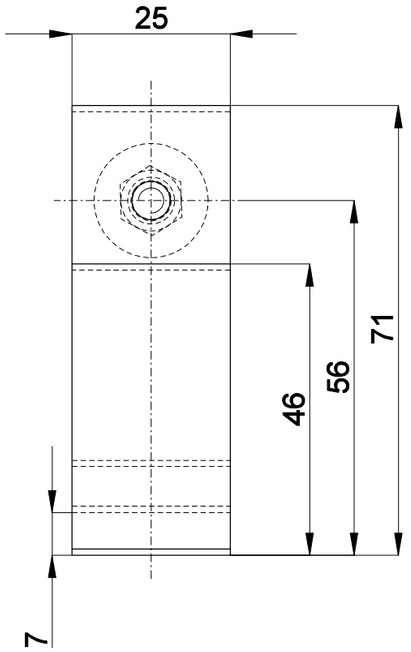


Belegung / lay-up:

1x 92145 0°
1x 92125 +-45°
1x 92125 +-45°
1x 92145 0°

Teil 1
part 1





Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
b	20-15 statt 25-15		15.06.11	W.Dirks
a	Antenne BD1W		8.02.07	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	11.05.06	Könen
Gepr.		
Norm.		

Maßstab 1:1

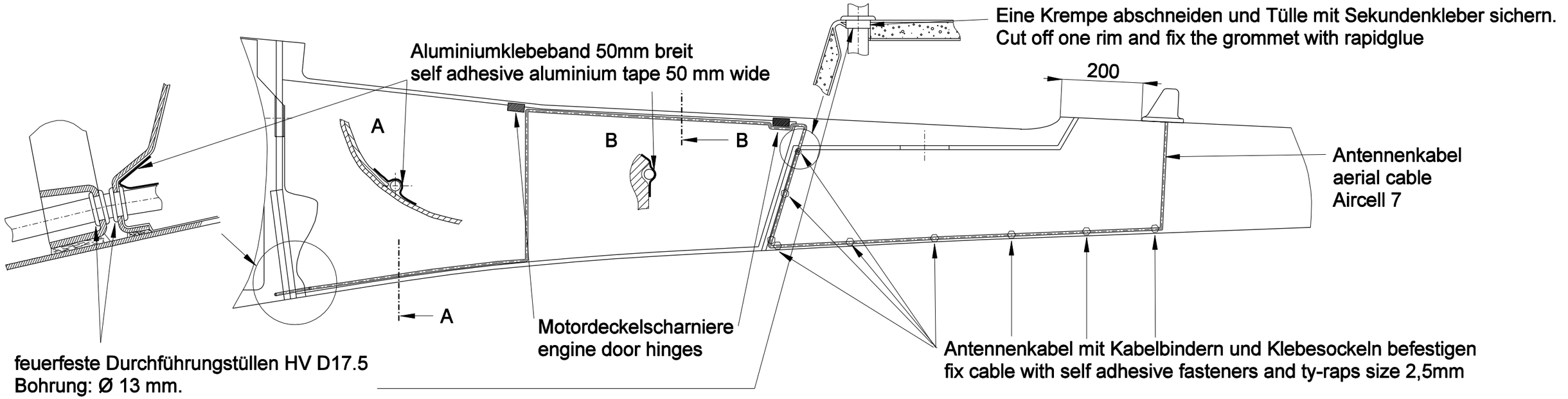
Maße ohne Toleranz-ang. nach:

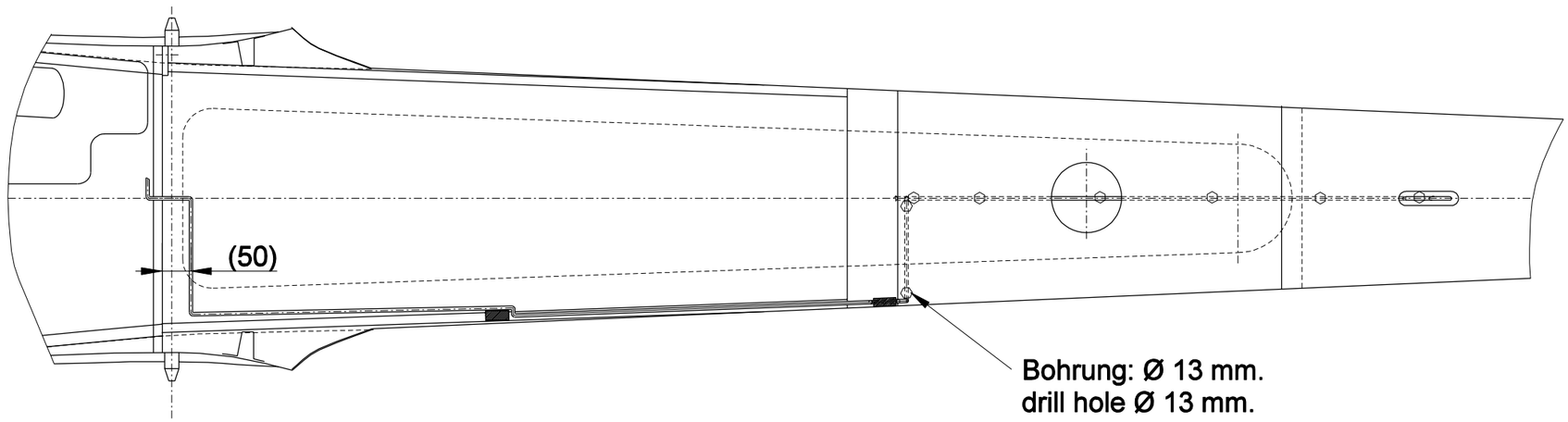
Transponderantenne für
GFK Segelflugzeuge
transponder antenna for
GFRP Sailplanes

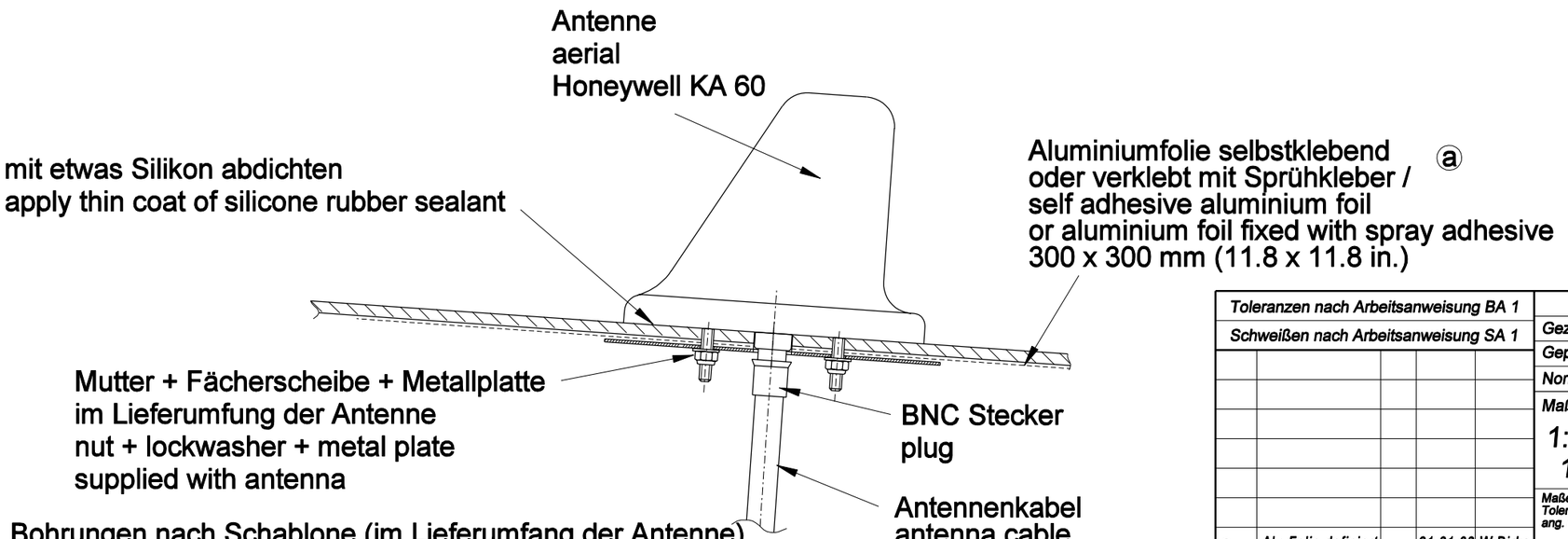
Teil 1: GFK Halterung
part 1: GFRP mounting bracket

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z178







Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
a	Alu-Folie definiert		21.01.08	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	24.07.06	Jeitner
Gepr.		
Norm.		

Maßstab 1:10 1:2

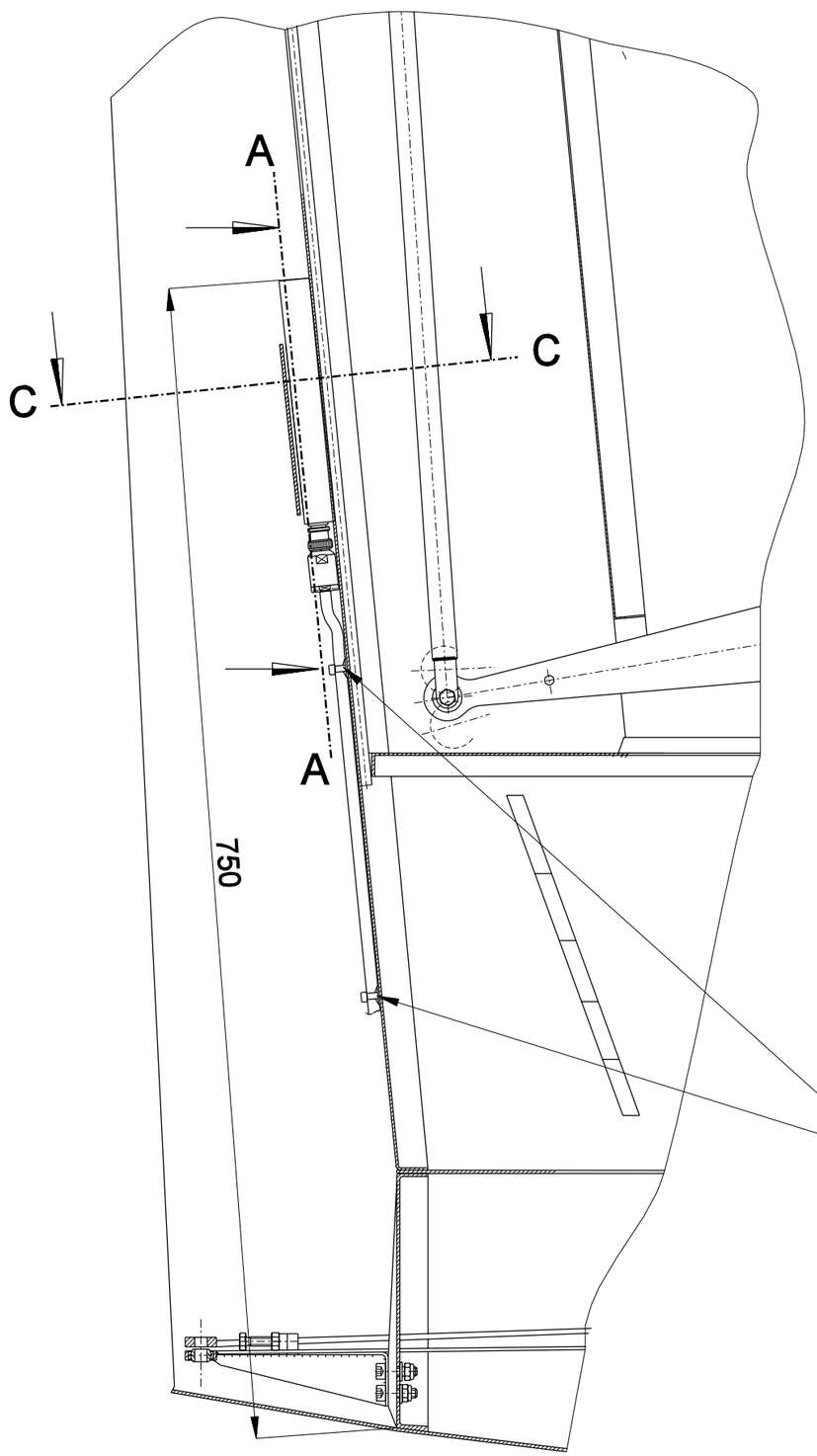
Maße ohne Toleranz-ang. nach:

Montage Transponderantenne
oben auf Rumpfröhre

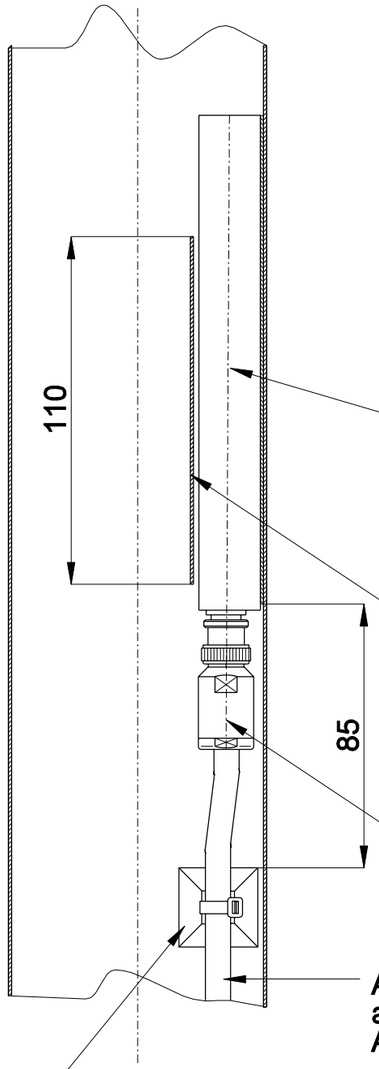
Mounting transponder Antenna
on top of fuselage tube

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z179



Schnitt A-A, M 1:2
cross section



Transponderantenne BD1
transponder antenna

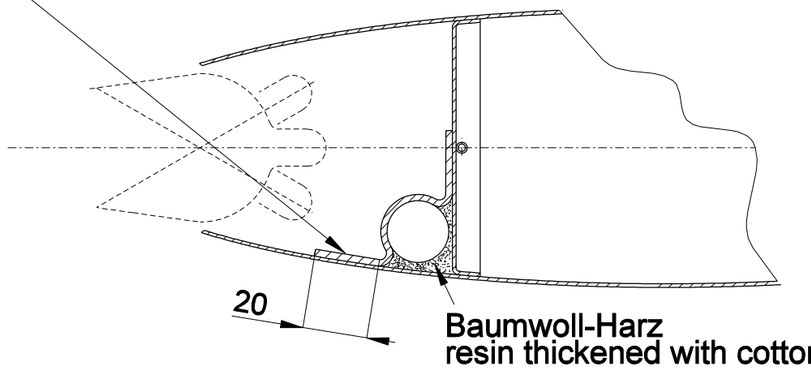
2 Lagen
2 layers
92125 +-45°
100mm x110mm

BNC Stecker
plug

Antennenkabel
antenna cable
AIRCELL 7

TyRap-Halter + Ty-Rap
ty-rap holder + ty-rap

Schnitt C-C, M 1:2
cross section



Baumwoll-Harz
resin thickened with cotton flocks

Installation of aerial for transponder in vertical fin DG-808C

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
b	PVC-Rohr entf.		09.03.07	
a	PVC-Rohr geänd.		15.11.06	Bruchm.
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	15.11.06	Bruchmüller
Gepr.		
Norm.		

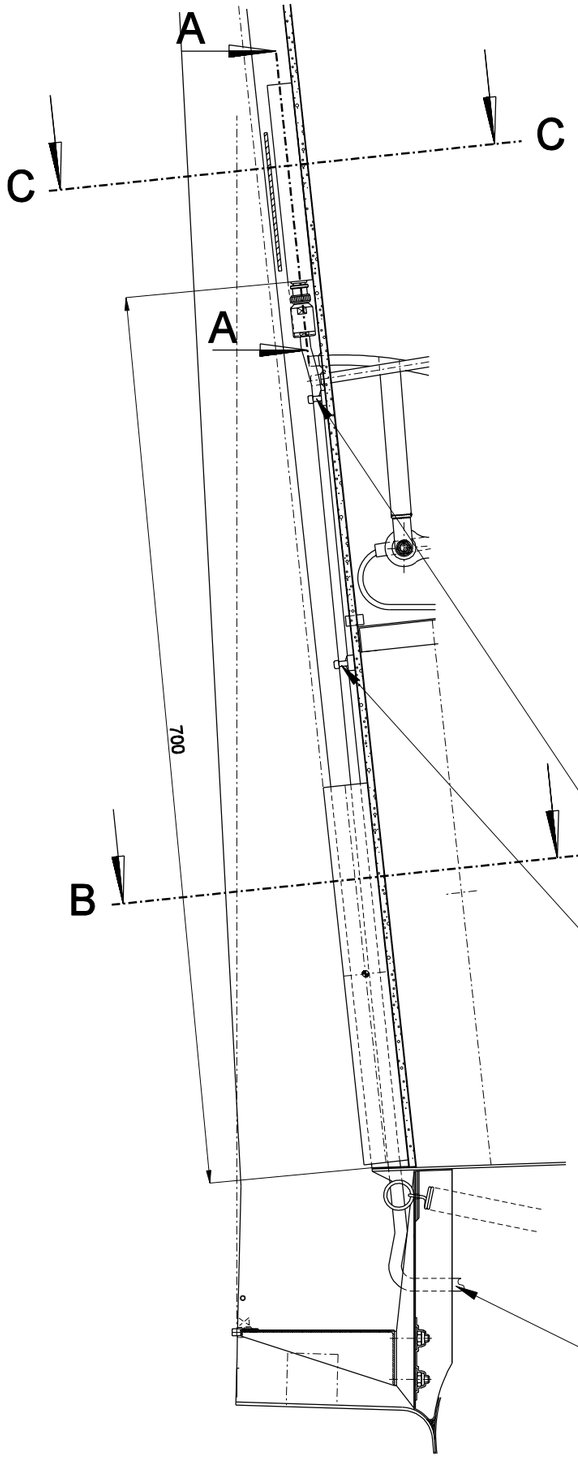
Maßstab 1:2 1:4

Maße ohne Toleranz-ang. nach:

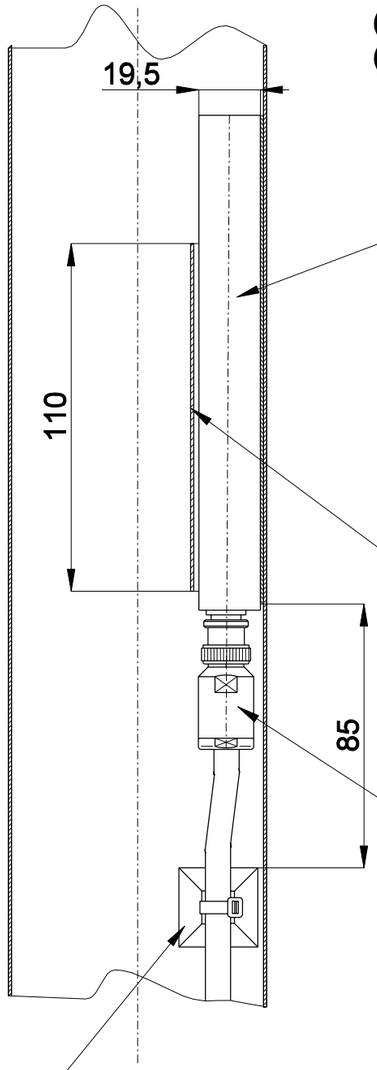
DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Transponderantenne in Seitenflosse DG-808C

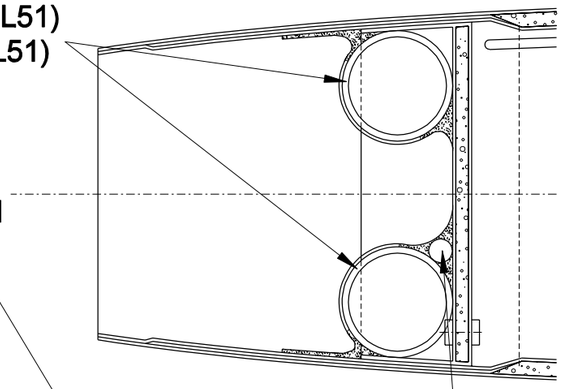
Z 180



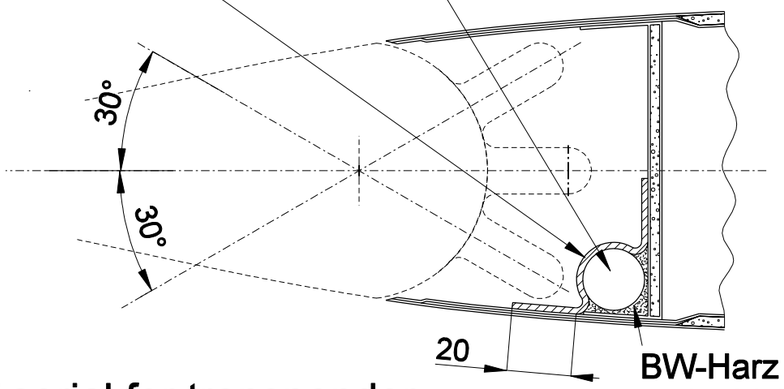
Schnitt A-A M 1:2
cross section



Schnitt B-B M 1:2
cross section



Schnitt C-C M 1:2
cross section



Rohr / tube 35x2 mm
(Einbau siehe Zeichnung 10L51)
(installation see drawing 10L51)

Transponderantenne BD1
transponder antenna

Antennenkabel
antenna cable
AIRCELL 7

2 Lagen / 2 layers
92125 +-45° 100mmx110mm

BNC-Stecker
plug

TyRap-Halter + Ty-Rap
ty-rap holder + ty-rap

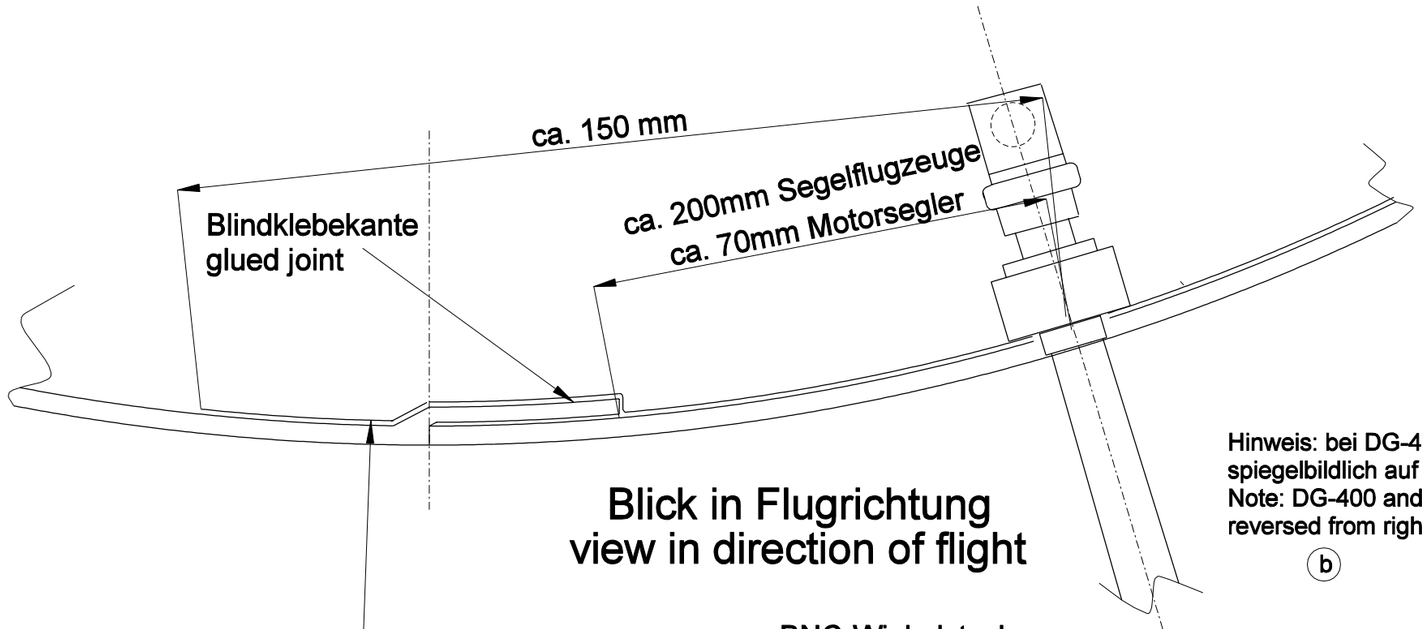
Antennenkabel
antenna cable
AIRCELL 7
verlegt in rechter Rumpfseite
(siehe Zeichnung 10L01 ab Ausgabe d)
routed in right hand fuselage side
(see drawing 10L01 from issue d on)

BW-Harz
resin thickened
with cotton flocks

Installation of aerial for transponder in vertical fin DG-1000

Toleranzen nach Arbeitsanweisung BA 1						Tag	Name
Schweißen nach Arbeitsanweisung SA 1					Gez.	09.03.07	Bruchmüller
					Gepr.		
					Norm.		
Ausg.	Änderung	ÄM	Tag	Name	Maßstab 1:2 1:5	Transponderantenne in Seitenflosse DG-1000	Z181
					Maße ohne Toleranz- ang. nach:		

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

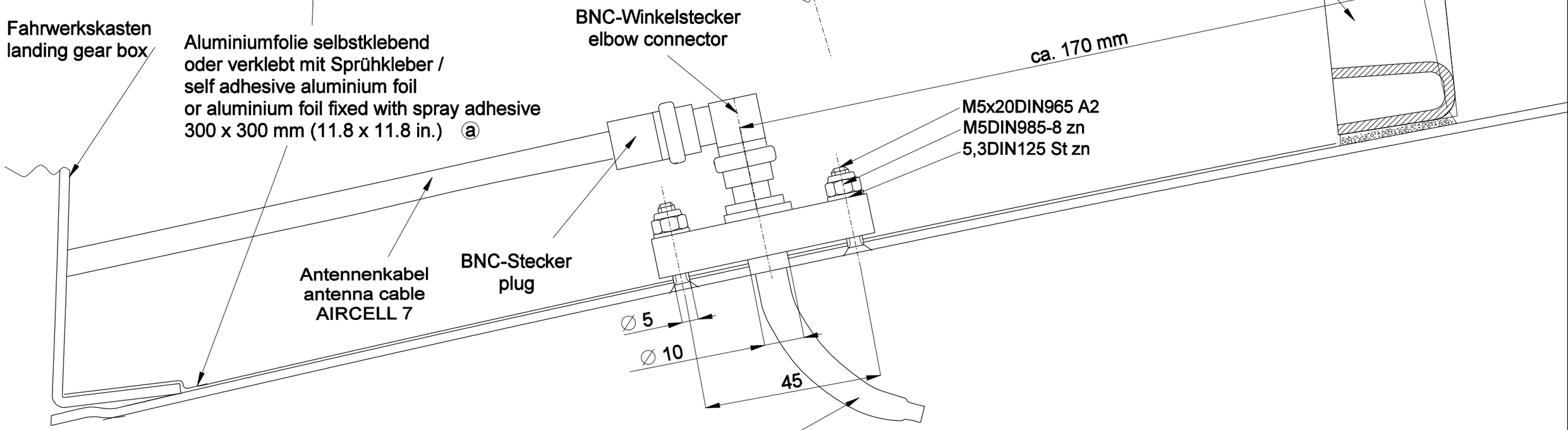


Blick in Flugrichtung
view in direction of flight

hinterer Hauptspant
rear main bulkhead

Hinweis: bei DG-400 und DG-808S wird die Antenne spiegelbildlich auf der linken Rumpfseite eingebaut / Note: DG-400 and DG-808S antenna installation reversed from right to left hand side

(b)



Installation of aerial for transponder in DG-single-seaters

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
b	DG-400 eingefügt		7.08.14	W.Dirks
a	Alu-Folie definiert		21.01.08	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	13.12.07	F.Müller
Gepr.		
Norm.		

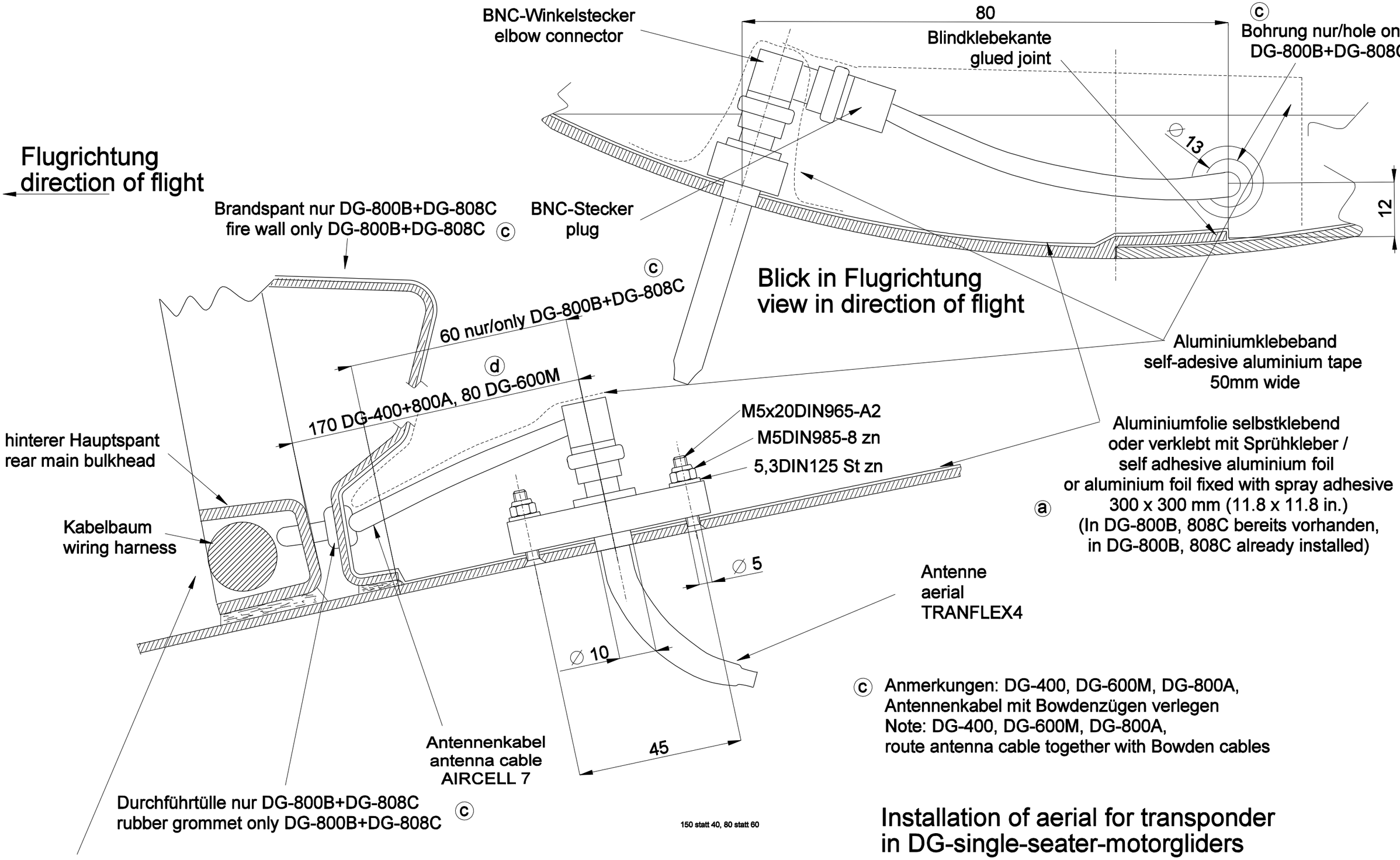
Maßstab 1:1 :

Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG-Einsitzer

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z184



c Anmerkungen: DG-400, DG-600M, DG-800A,
Antennenkabel mit Bowdenzügen verlegen
Note: DG-400, DG-600M, DG-800A,
route antenna cable together with Bowden cables

b Wichtiger Hinweis: Den Kabelbaum so weit nach vorne verschieben, dass er beim Bohren des Loches für das Antennenkabel nicht beschädigt wird. Dazu müssen Ty-raps entfernt werden.

Caution: Move the wiring harness so far to the front that you can't damage it when drilling the hole for the antenna cable. To accomplish this ty-raps must be removed.

Installation of aerial for transponder in DG-single-seater-motorgliders

Ausg.	Änderung	ÄM	Tag	Name
d	Masse geändert 150 statt 40, 80 statt 60		5.03.15	150 statt
c	Angaben Baureihen		7.08.14	W.Dirks
b	Hinweis ergänzt		15.09.08	Hinweis e
a	Alu-Folie definiert		21.01.08	W.Dirks

Toleranzen nach Arbeitsanweisung BA 1
Schweißen nach Arbeitsanweisung SA 1

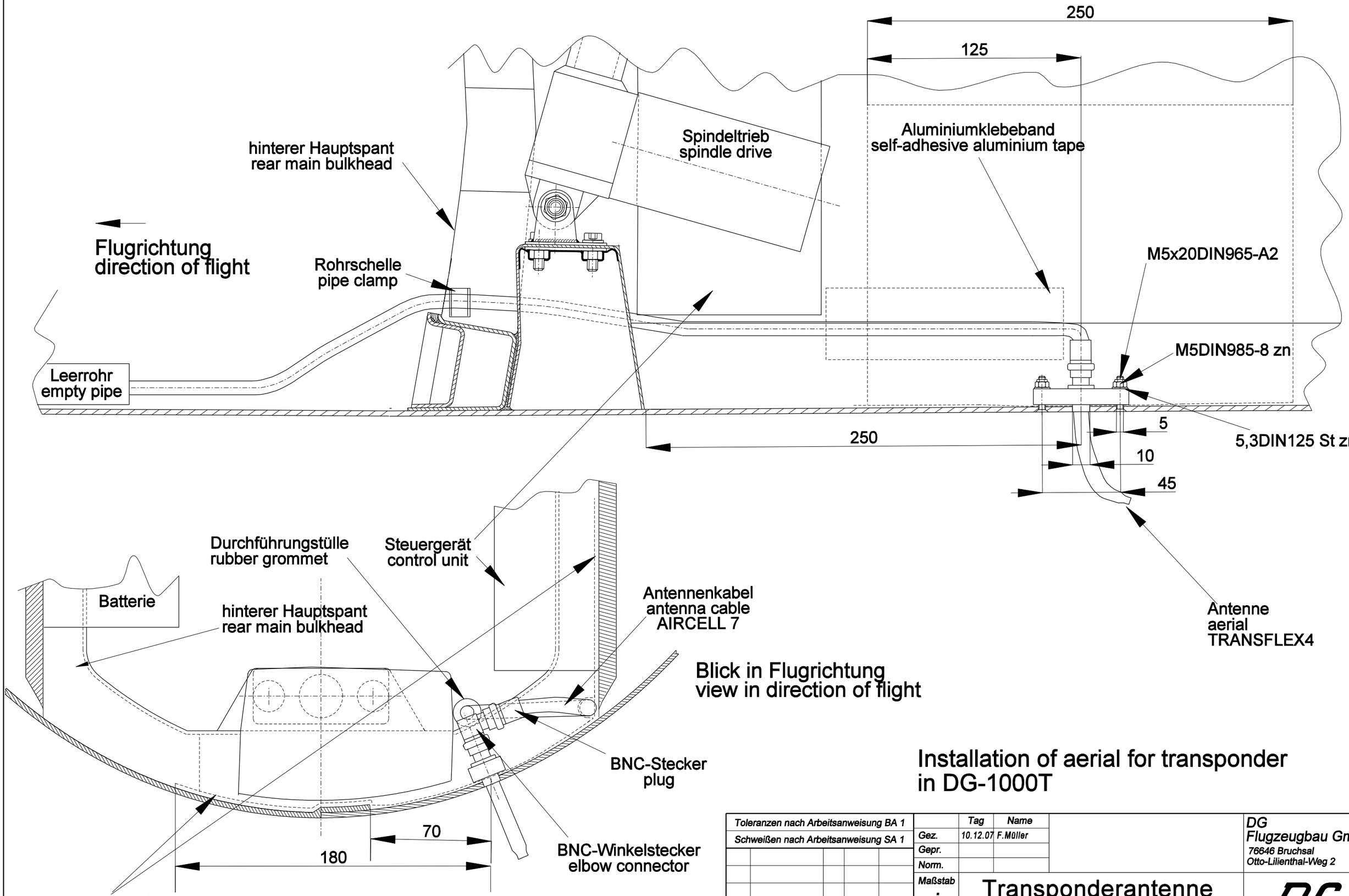
	Tag	Name
Gez.	10.12.07	F.Müller
Gepr.		
Norm.		

Maßstab 1:1 :
Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG-Einsitzer
Motorsegler

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z185



Blick in Flugrichtung
view in direction of flight

Installation of aerial for transponder in DG-1000T

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
a	Alu-Folie definiert		21.01.08	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	10.12.07	F.Müller
Gepr.		
Norm.		

Maßstab :

Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG-1000T

DG Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z186

Durchführtülle
rubber grommet

180

80

16

125

Aluminiumklebeband
50 mm breit
self-adesive aluminium tape
50mm wide

Durchführtülle
rubber bushing

70

hinterer Hauptspant
rear main bulkhead

BNC-Stecker
plug

BNC-Winkelstecker
elbow connector

Blick in Flugrichtung
view in direction of flight

Blindklebekante
glued joint

60

75

M5x20DIN965-A2
M5DIN985-8 zn
5,3DIN125 St zn

Aluminiumfolie selbstklebend
oder verklebt mit Sprühkleber /
self adhesive aluminium foil
or aluminium foil fixed with spray adhesive
300 x 300 mm (11.8 x 11.8 in.)
(In DG500MB bereits vorhanden,
In DG500MB already installed) ⓐ

∅ 5

∅ 10

45

125

Antennenkabel
antenna cable
AIRCELL 7

Flugrichtung
direction of flight

Antenne
aerial
TRANFLEX4

Installation of aerial for transponder in the DG-500M and 500MB

Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
a	Alu-Folie definiert		21.01.08	W.Dirks
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	10.12.07	F.Müller
Gepr.		
Norm.		

Maßstab 1:1 :

Maße ohne Toleranz-ang. nach:

Transponderantenne
Einbau
DG500M und
DG500MB

DG
Flugzeugbau GmbH
76646 Bruchsal
Otto-Lilienthal-Weg 2

Z187