

DG Flugzeugbau GmbH

Otto-Lilienthal-Weg 2 / Am Flugplatz • D-76646 Bruchsal • Germany
Postbox 1480, D-76604 Bruchsal • Deutschland
Tel. 07251/3020-100 • Telefax 07251/3020-200 • eMail: dg@dg-flugzeugbau.de
Spare part and material sales: Tel. 07251/3020-270 • lager@dg-flugzeugbau.de
<http://www.dg-flugzeugbau.de>

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

MAINTENANCE MANUAL

FOR THE

MOTORGLIDER

DG-1000T

Type: DG-1000M
Model DG-1000T
Data Sheet No.: EASA.A.072

Factory Serial No.: _____

Registration No.: _____

Date of Issue: June 2005

0 General

0.1 Manual amendments

No.	Page	Description	Date
1	0.3, 0.6, 0.10, 1.22, 1.23, diagram 15a	TN1000/09	October 2006
2	0.5, 0.6, 8.2, diagram 15a	ÄM 1000-1-07	December 2006
3	0.0, 0.3-0.6, 0.12, 1.1, 3.3, 4.2, 4.16, 4.17, 4.21, 4.28, 8.1, 8.4 diagrams 5, 6, 8 - 10, 12, 15, 15a, 5EP50, 5V18, 10FW2, encl. 2 page 1	TN1000/10 Manual revision	January 2007

0.2 List of effective pages

Section	page	issued	replaced/	replaced/	replaced/
0	0.0	June 2005	January 2007		
	0.1	see manual	amendments		
	0.2		"		
	0.3		"		
	0.4		"		
	0.5		"		
	0.6		"		
	0.7	June 2005	January 2007		
	0.8	"			
	0.9	"			
	0.10	"			
	0.11	"			
	0.12	"	January 2007		
1	1.1	June 2005	January 2007		
	1.2	"			
	1.3	"			
	1.4	"			
	1.5	"			
	1.6	"			
	1.7	"			
	1.8	"			
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	1.12	"			
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	1.14	"			
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1.16	"				
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1.18	"				
1.19	"				
1.20	"				
1.21	"				
1.22	"	October 2006			
1.23	"	October 2006			
1.24	"				
1.25	"				

0.2 List of effective pages (continued)

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	1.26	"				
	1.27	"				
	1.28	"				
	1.26	"				
	1.30	"				
	1.31	"				
	1.32	"				
	1.33	"				
	2	2.1	June 2005			
		2.2	"			
2.3		"				
2.4		"				
2.5		"				
2.6		"				
3	3.1	June 2005				
	3.2	"				
	3.3	"				
	3.4	"				
	3.5	"				
	3.6	"				
4	3.7	"				
	3.8	"				
	3.9	"				
	4	4.1	June 2005			
		4.2	"	January 2007		
		4.3	"			
		4.4	"			
		4.5	"			
		4.6	"			
		4.7	"			
		4.8	"			
		4.9	"			
		4.10	"			
4.11		"				
4.12		"				
4.13		"				

0.2 List of effective pages (continued)

Section	page	issued	replaced/	replaced/	replaced/
	4.14	"			
	4.15	"			
	4.16	"	January 2007		
	4.17	"	January 2007		
	4.18	"			
	4.19	"			
	4.20	"			
	2.21	"	January 2007		
	4.22	"			
	4.23	"			
	4.24	"			
	4.25	"			
	4.26	"			
	4.27	"			
	4.28	"	January 2007		
	4.29	"			
	4.30	"			
	4.31	"			
5	5.1	June 2005			
	5.2	"			
6	6.1	June 2005			
	6.2	"			
	6.3	"			
	6.4	"			
7	7.1	June 2005			
8	8.1	June 2005	January 2007		
	8.2	"	Dec. 2006	January 2007	
	8.3	"			
	8.4	"	January 2007		
9	9.1	June 2005			
	9.2	"			

0.2 List of effective pages (continued)

diagram	issued	replaced/	replaced/	replaced/
1	May 2004			
2	Nov. 2001			
3	June 2005			
4	Nov. 2001			
5	Nov. 2001	January 2007		
6	Nov. 2001	January 2007		
7	Nov. 2004			
8	Nov. 2001	January 2007		
9	June 2005	January 2007		
10	May. 2005	January 2007		
11	June 2005			
12	Sept. 2003	January 2007		
13	June 2005			
14	June 2005			
15	June 2005	January 2007		
15a	Oct. 2006	Dec. 2006	January 2007	
16	June 2005			
5EP34	25.01.90			
5EP50	17.12.98			
5V18	14.10.94			
10FW2	05.10.99			
10E102	14.09.05			
10E103	24.06.05			
Encl. 1	June 2005			
Encl. 2	June 2005	Page 1		
		January 2007		

0.4.4 Service time, maintenance documents

Follow the instructions of the respective manufacturer:

- a) Operating Manual for Safety Tow Releases
Series: Europa G 88 Safety Tow Release
Date of Issue: February 1989
Operating Manual for Tow Releases
Series: E 85 Nose Tow Release
Date of Issue: March 1989
- b) Safety harness: instructions of the manufacturer.
- c) Minimum instrumentation: instructions of the manufacturer.
- d) Engine: Manual of the engine manufacturer
- e) Operating- and Service Instructions for propeller DG-P001

Note: The Airworthiness Limitations section is FAA approved and specifies maintenance required under Secs. 43.16 and 91.403 of the Federal Aviation Regulation unless an alternative program has been FAA approved.

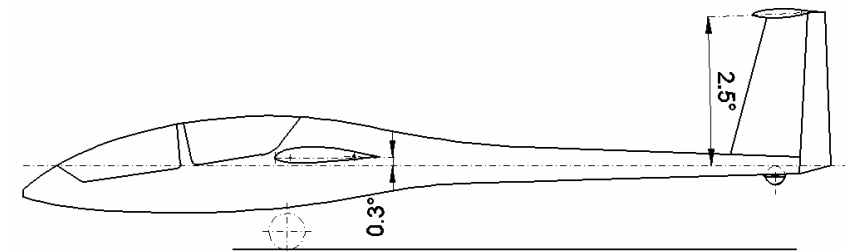
1 System description and adjustment data**1.1 Wing and tailplane setting data****Wing:**

Sweep Back (Leading edge): 0° between $y= 3490$ mm (137 in.) and $y= 6979$ mm (275 in.)

Dihedral (Leading edge line): inboard wing panel up to parting: $2,5^\circ$
to measure: 152 mm (6 in.) between $y= 3490$ mm (137 in.) and $y= 6979$ mm (275 in.)
outboard wing panels: $14,5^\circ$

Angles of Incidence: $-0,3^\circ$ at the wing root, $+1^\circ$ from $y=1200$ mm (47 in.) up to tip

Horizontal tailplane: $-2,5^\circ$



fuselage center line
(corresponding to boom slope 1000:33)

Wing oscillation frequency: ca. 125/min 20 m wing span
ca. 143/min 18 m wing span

Aircraft should rest on main wheel and tailwheel during frequency measurements.

3.3 Greasing and oiling

- A The contact surfaces of the canopies to the fuselage are to be rubbed with colourless floor-polish (canopy and fuselage side) to reduce grating noise in flight. Polish at the beginning of the flight season and then every month.
- B Once a year your glider should be carefully checked and all bearings, including control surface hinges, should be cleaned and greased if necessary. The various greasing points are as follows:
- Aileron drive connections at the inboard aileron.
 - Airbrake drive connection - in airbrake box, also grease the brake paddle pivots.
 - Remove the access panels on the left hand cockpit walls and grease all the pushrod guides, but not those with Teflon linings, note see below.
 - Remove the baggage compartment floors and open the baggage compartment rear cover to grease all bearings.
 - Open the access panels (2 in the front and 2 in the rear cockpit). In the rear cockpit you have to remove the height adjustable seat pan first. Grease all accessible bearings (ball bearings and rod ends with universal bearings)
 - Remove the control column boots and grease all the bearings associated with the control columns.
 - Grease the rudder pedal adjustment slide.
 - Oil all hinge points on the undercarriage in the undercarriage box.
 - Clean and grease all control surfaces hinges.
 - Clean and grease the control hook ups for ailerons, airbrakes and elevator control.
 - Clean and grease all pins and bushes of the wing and tailplane attachment.

Note: The greases we recommend are lithium based pressure-resistant anti-corrosion greases or lithium-soap greases (multi-purpose greases for rolling element bearings).

Use thin engine oil eg. SAE 5W30

Note: The sliding guides of the following parts are made from Teflon and should not be greased:

- Landing gear controlhandle 5FW39 on 5St68/2
- Airbrake control handle 5St69 on 5St68/1

If these parts have been greased inadvertently you have to disassemble the parts and to clean them completely with Acetone.

4.2 Replacement of control circuit cables

The following cable connections are approved:

3.2 mm dia. control cable construction 7x19 with Nicopress-sleeves 28-3-M Copper and tool No. 51-M850 or 63-V-XPM or 64-CGMP where the M groove is to be used. The above applies to the rudder cables, the tow release cable and the powerplant retaining cables.

The cable for the rudder pedal adjustment and the fin tank valve are 1.6 mm dia. control cable construction 7x7 with Nicopress-sleeves 28-1C Copper and the C groove for tool 64-CGMP should be used.

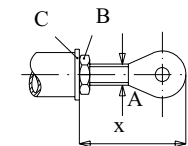
Attachment of the Nicopress sleeves should only be done using the respective tool. All the procedures and checks noted by the tool manufacturers should be followed.

Please refer to aircraft inspection and repair FAA AC 43.13-1 B or later issues.

Note: Control cables according to MIL-W-83420 I/A (was MIL-W-1511A) or ISO 2020 (was LN 9374) should be used.

4.3 Adjustment and servicing of the control circuit

- a) In all cases, new self locking nuts LN 9348 should be used.
- b) Bolts which are not secured with locking nuts have to be secured with Loctite 243. Before installing the bolt clean the thread and the inside thread. Apply only 1 drop of Loctite on the bolt thread. Too much Loctite may cause damage when you try to loosen the bolt again.
- c) With all adjustment work, it should be ensured that the rod ends are not screwed out too far from the pushrod - see sketch below for allowable max. distances for the two sizes used.

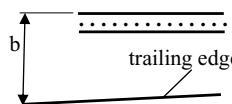


A	max. of x	
	mm	inch
M 6	36	1.4
M 8	60	2.36

Note: All lock nuts (B) are secured by a spring washer (C) DIN 6798 I. Be careful not to loose that washer!

4.7.2 Wing lower surface

Dimple tape is installed as turbulator. The leading edge of the dimple tape is located at distances b in front of the wing trailing edge.



Position	1 in.=25.4 mm	
	y mm	b mm
300mm from wing root	660	277
1. contour brake	3490	264
2. contour brake	6979	209
parting	8593	147
3. contour brake	9303	119
550mm outside 3. contour brake	9843	81

4.7.3 Horizontal tailplane

a) turbulators

60° zig-zag turbulators are installed on upper and lower surface. Prior to removing the turbulators mark the positions of the turbulator leading edges with a pencil on the stabilizer surface, otherwise see table below. The dimensions a are from the turbulator leading edges up to the leading edges of the grooves at the trailing edges of the stabilizer.

b)

Position	1 in.=25.4 mm	
	y mm	a mm
centre	0	81.5
inboard ends of the turbulators on the lower surface	100	80
1. contour brake	960	69,5
tip	1580	29

c) Sealings

The sealings are installed in grooves at the trailing edges of the stabilizer. Curved Mylar sealing tape is used on the upper surface and flat Mylar sealing tape is used on the lower surface. The sealings are glued into the grooves with film tape at the leading edges of the sealings. PVC tape is glued over the sealings to cover the gaps between stabilizer and sealings. The leading edges of the PVC tape shall be 5 mm (1/5 in.) in front of the gaps.

4.7.4 Vertical tailplane

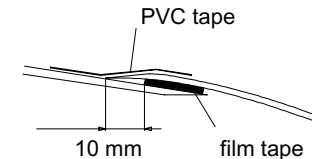
a) Turbulators

First install the sealings see b), as the turbulators have to be glued on top of the sealings at the upper end of the fin. 60° zig-zag turbulators are installed on both sides. Prior to removing the turbulators mark the positions of the turbulator leading edges with a pencil on the fin surface, otherwise see table below. The dimensions a are from the fin leading edges up to the trailing edges of the turbulators. The lower ends of the turbulators are at the fairings for the rudder cables.

Position	1 in.=25.4 mm	
	a mm	
100mm below upper end of the rudder	423	
200 mm above the upper side of the lower rudder mounting bracket	701	

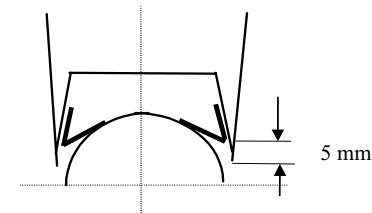
b) Sealings

As sealings 30 mm (1.2 in.) wide Mylar seals with scarfed leading edges are used, so that no step occurs. **Note:** Don't glue the film tape to the leading edges of the sealings. The scarfed leading edges of the sealings must be pressed to the fin surfaces by PVC tapes. Prior to removing the sealings mark the leading edges with a pencil to the fin surfaces.



c) Internal sealing

Additional internal sealing with V-sealing strips. Install the V strips according to the sketch.



4.10.4 Replacement of the engine retaining cable

Please refer to diagram 16

A Removal of the old cables

1. Extend the powerplant.
2. Remove the access panel from the rear engine bay floor.
3. Remove the engine retaining cables from the powerplant, to accomplish this remove the mounting bolt from the engine with 13mm spanners.. Let the cables retract slowly into the fuselage,
4. Pull out the cables via the access hole in the rear engine bay floor until you reach the terminals of the retaining cables (attachment to the bungees).
5. Fix the bungees to the floor to prevent them from disappearing into the fuselage boom.
6. Cut off the retaining cables and pull them out. Don't damage the bungees! Don't lose the steel washers.

B Installing new cables

7. Attach the new cables with thimbles and Nicopress sleeves according to diagram 16 to the bungees. Press the Nicopress sleeves, the end of the cables must be inside the second Nicopress sleeves. Install the steel washers on the cables and wrap Tesaband 651 twice around washer and Nicopress sleeves.
8. Push the retaining cable via the adjustment screws through the rear engine bay bulkhead and pull them forwards.
9. Let the bungees retract slowly into the aft fuselage.
10. Install the retaining cables together with thimbles and Nicopress sleeves to the bolt at the engine. Don't press the sleeves. Adjust the position of the powerplant according to section 1.13.5. Tighten the cables and press the Nicopress sleeves. Cut off the excess cables.
11. Check again the length of the retaining cable. See section 1.13.3. Adjustment is possible at the adjustment screw at the rear bulkhead.
12. Reinstall the access cover to the rear engine bay floor.

Material per retaining cable:

Steel cable diameter 3.2 mm (1/8 in.) approx. 4.2 m (165 in.) long, type see section 4.2.

2 thimbles 3mm DIN 6899A

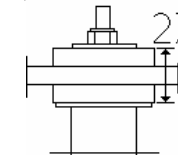
2 Nicopress sleeves 28-3-M

Tesaband 651 (selfadhesive textile tape)

4.10.6.4 Reinstallation of the powerplant

1. Reverse the procedures for removal mentioned above. Refer to sections 4.10.6.1 and 4.10.6.3.
2. Use only new selflocking nuts for reinstallation.
3. Use Loctite 243 to secure all threads and screws without selflocking nuts.
4. Torque values

Cylinder head nuts M6	12 N m (9 ft lb)
Cylinder head nuts M8	20 N m (15 ft lb)
CHT probe	20 N m (15 ft lb)
spark plugs	20 N m (15 ft lb)
propeller (at bolt head)	20 N m (15 ft lb)
Screwed connections at engine,	
carburetors and muffler M8	23 Nm (17 ft lb)
Screwed connections at engine M6	10 Nm (7.4 ft lb)
5. Regard section 4.10.2 when reinstalling the propeller.
6. Torque the upper engine rubber mounts so that they are compressed to a value of 27 mm (1.06 in.) see sketch:



7. Check the adjustment of the proximity switch according to sect. 1.15.4 and correct if necessary.
8. Retract and extend the powerplant via the ignition switch and check the adjustment of the retaining cables according to section 1.13.3 and adjust if necessary.
9. Remove the air-intake filters to check the synchronisation of the carburetors. Look into the intake with different throttle settings and check if the throttle valves are in the same position in both carburetors. If necessary adjust via the Bowden cable terminals at the carburettor intake flanges.

8 Partlist

In this list you will find only parts of the powerplant, the electrical system and control surface sealings and turbulators.

Please find the part no's of the control-system parts and of the metal fittings of the powerplant in the following diagrams.

8.1 Parts for the powerplant

a) necessary for the 25 hours inspection

60510806 Spark plugs Bosch W5AC electrode gap 0.5 mm (.02 in.)

Caution: The removable cap must be secured with a little bit of Loctite 638 on the thread prior to installation

40050360 Spark plug S36 (Bosch W5AC electrode gap 0.5 mm (.02 in.)) with screw cap fastened to the thread by crimping, marked with a red dot of paint on the insulator

60507571 MANN-fuel filter 500009180 WK 31/2(10)

60500150 Gaskets for exhaust manifold (2 pieces needed)

60500142 Air intake filter

70002200 Oil for airfilters with cottonfabric K&N 99-05046

b) Spare parts

45002085 Spark plug connector PVL, 5kOhm, SOLO Nr. 2300701

60510601 Ignition coil Prüfrefx MTZ 120/1 or compatible

60500131 Starter motor: S.J.C.E. Typ 101, 12 Volt, 0,4 kW

60510829 Poly-V belt 4PK755 (4 ribs, profile PK) length: 755 mm

39001031 Exchange kit nuts and bolts for 200 h overhaul

45002081 Gasket for muffler (2 pieces necessary)

60000209 Gas strut for ext.-retr. drive

G10 23 0300 1 0676 AU19 GZ10 01000N

60000154 Gas strut for propeller-stopper

G06 15 0070 0 0222 AG27 GZ07 00080N

60000742 Rubber-buffer D4045 for propeller-stopper and landing-gear over-centre lock

60502240 Spindle-drive HG 7000-12-300-30

41070460 CHT probe

60500163 Sealing gasket (for CHT probe)

60001115 Clamps XO for 6mm bungee (bungee for retaining cable)

Rubber mounts for engine suspension:

45002079 Upper engine mount (4 pieces necessary)

45002080 Lower engine mount (2 pieces necessary)

8.4 Control surface sealings and turbulators

25.4 mm= 1 in., 1 m = 3.2809 ft.

1. Wings - upper surface

30003125 Mylar sealing 0.19 x 22 mm without glue, curved

70000253 Tesafix No. 4965, 9 mm wide, 50 m roll glue film

70000229 Tesafilm 4104 white, 19 mm wide, 66 m roll PVC tape

2. Wings - lower surface

30003300 Noppenband 10m roll (dimple turbulator tape)

3. Ailerons (sliding surface and internal sealing)

30003136 Teflon-glass fabric 0.08 x 38 mm, 33 m roll selfadhesive

70000229 Tesafilm 4104 white, 19 mm wide, 66 m roll PVC tape

4. Horizontal tailplane

30003129 Zig-zag turbulatortape 60 degree 0.4 mm thick

30003125 Upper surface: Mylar sealing 0.19 x 22 mm without glue, curved

30003124 Lower surface: Mylar sealing 0.19 x 22 mm without glue, flat

70000253 Tesafix No. 4965, 9 mm wide, 50 m roll glue film

70000229 Tesafilm 4104 white, 19 mm wide, 66 m roll PVC tape

5. Vertical tailplane

30003142 Zig-zag turbulatortape 60 degree 0.8 mm thick

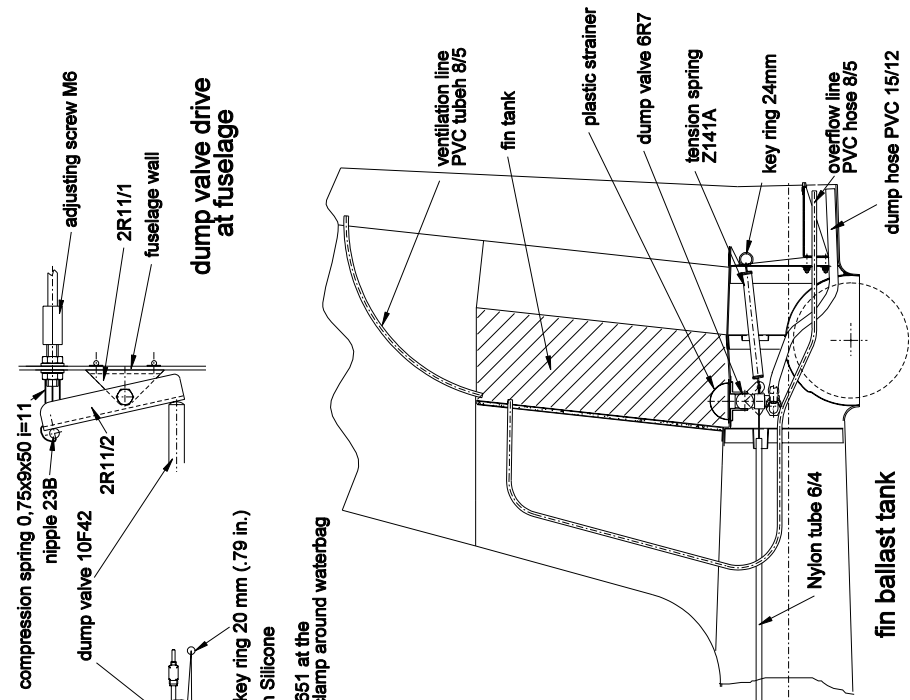
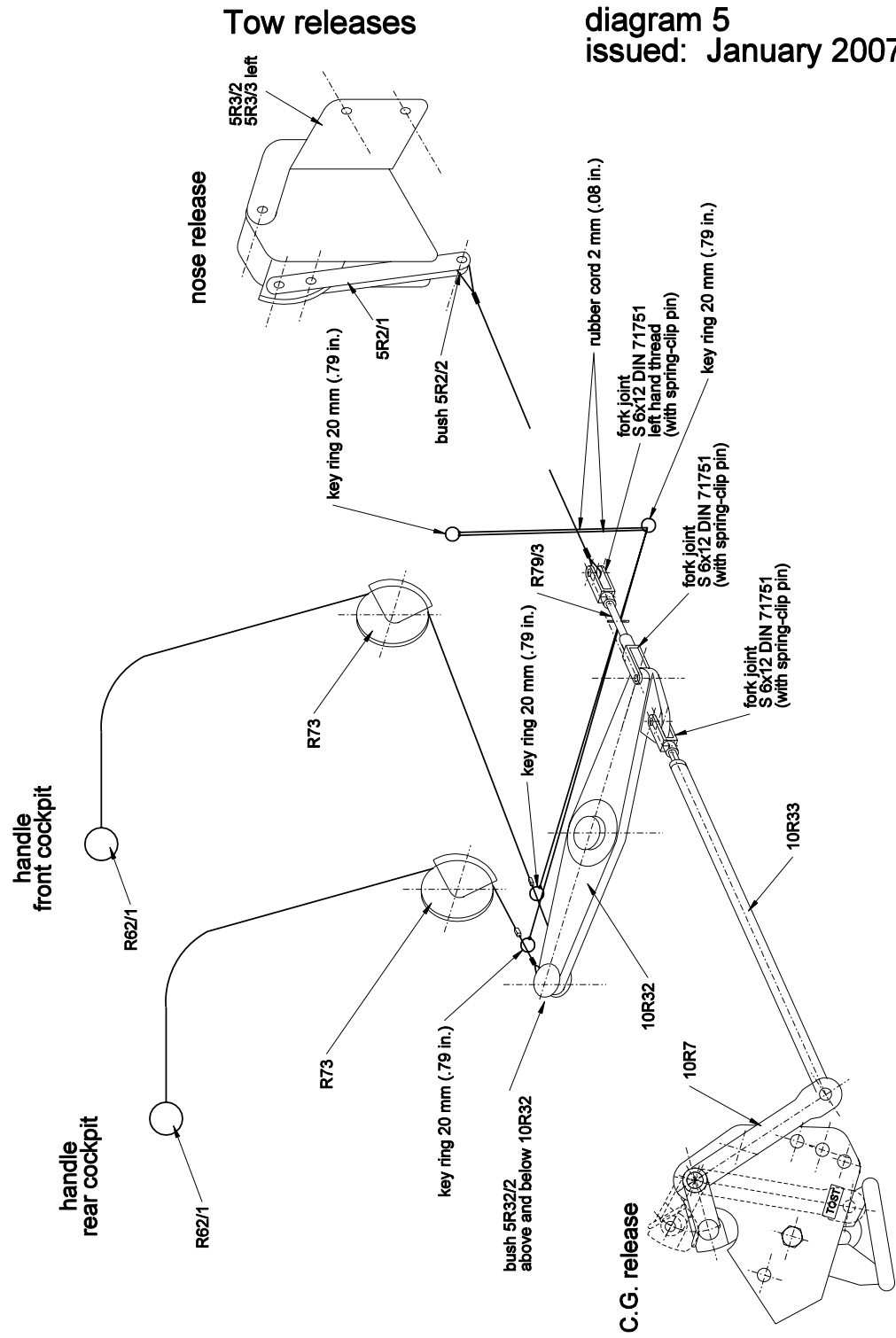
30003128 Mylar sealing 0.19 x 30 mm without adhesive, curved, leading edge scarfed

70000253 Tesafix No. 4965, 9 mm wide, 50 m roll glue film

70000229 Tesafilm 4104 white, 19 mm wide, 66 m roll PVC tape

70000295 Internal sealing: 3M Scotch V-seal weatherstrip Cat.Nr.2101 5.2 m roll

diagram 5
issued: January 2007

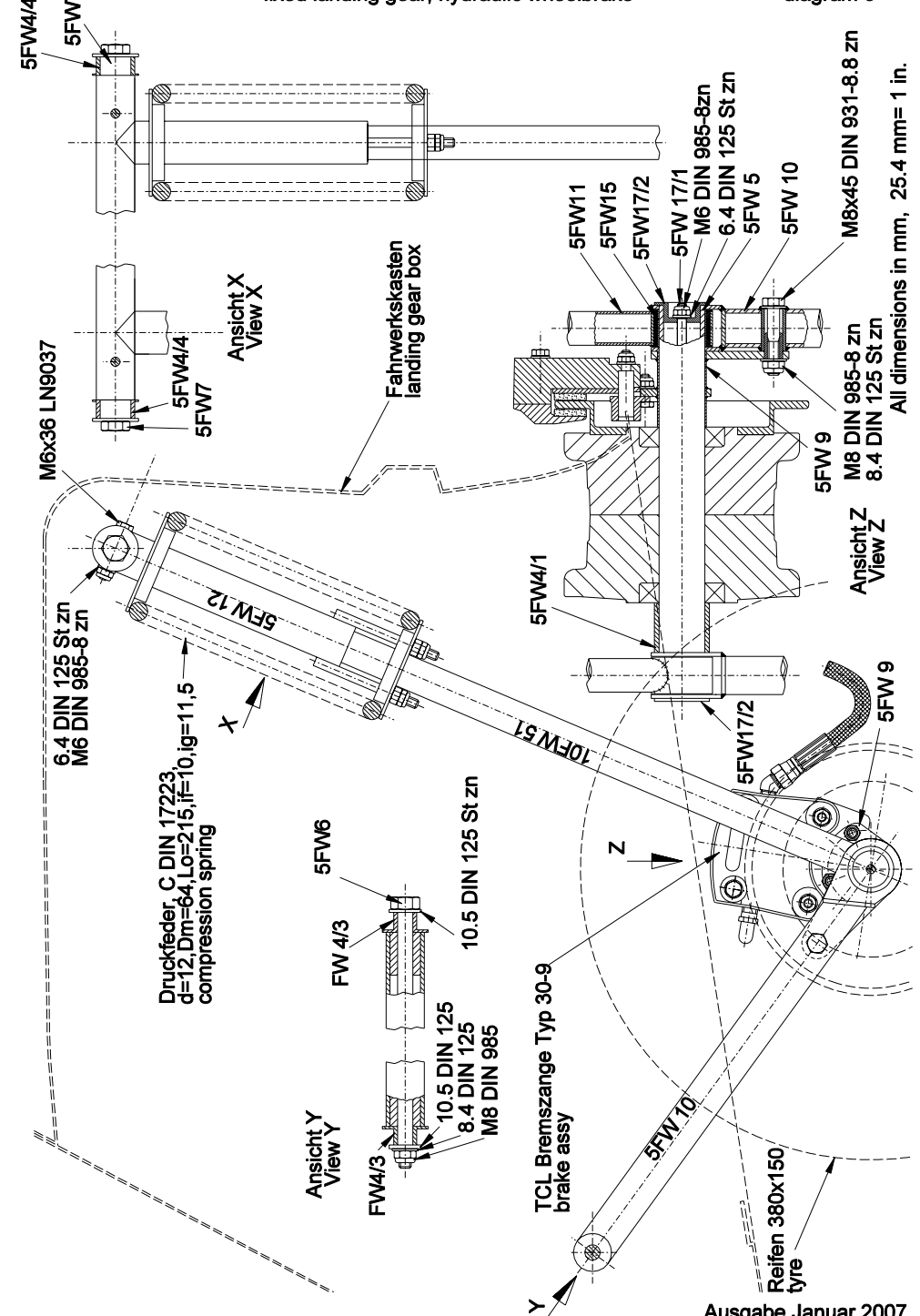
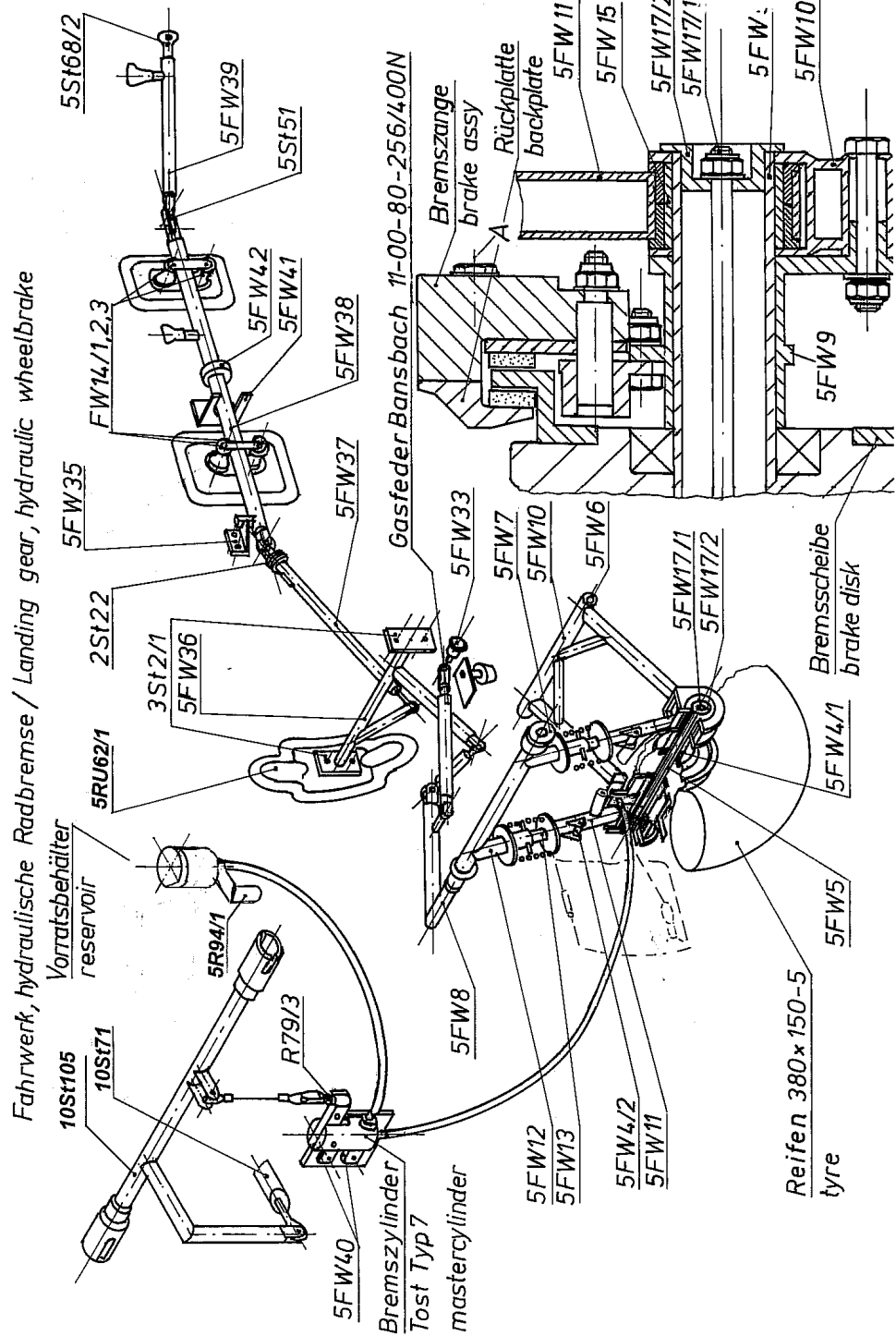


All dimensions in mm, 25.4 mm= 1 in.

diagram 6
issued Jan. 2007

waterballast system

10F42



Anlagen für statischen und Gesamtdruck systems for static and total pressure DG-1000T

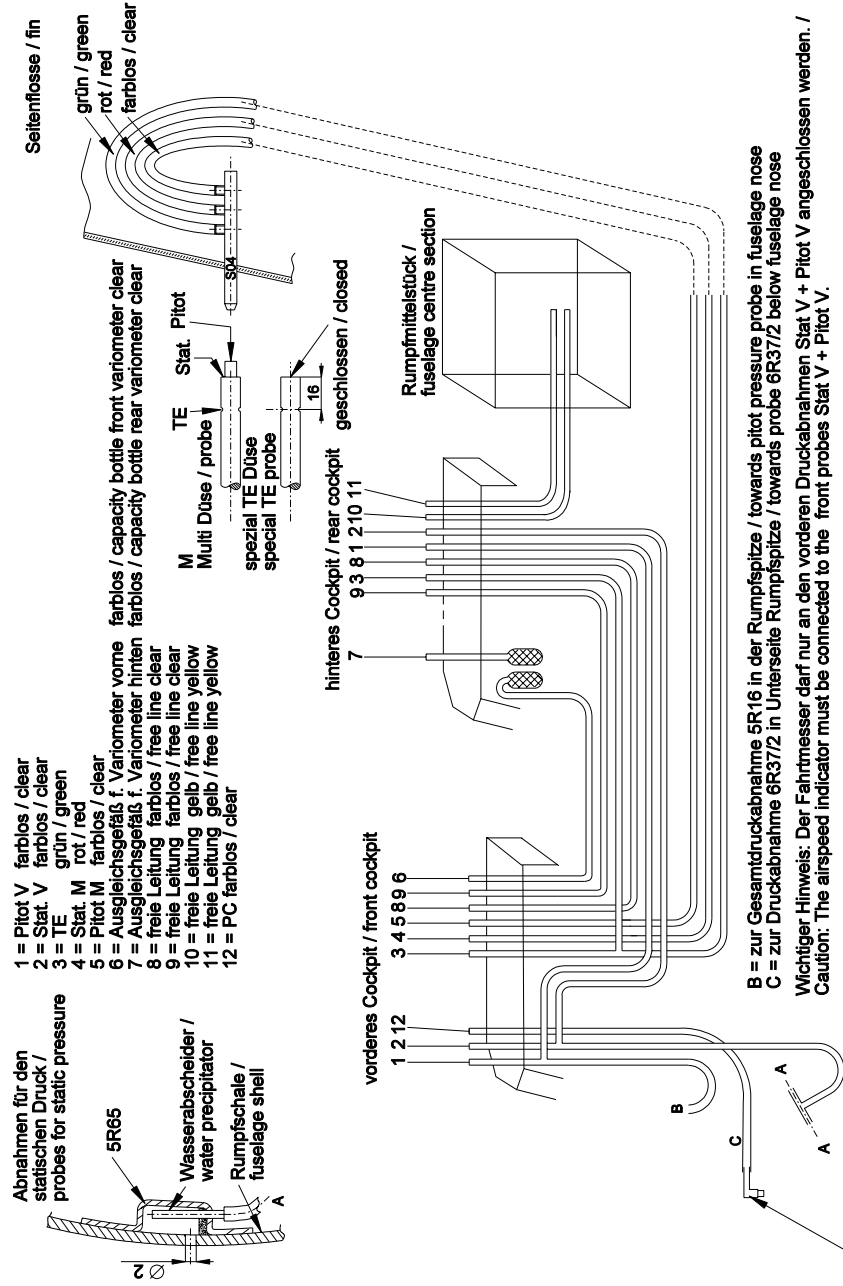


Diagramm 10
 diagram 10
 Ausgabe: Jan. 2007
 issued: Jan 2007

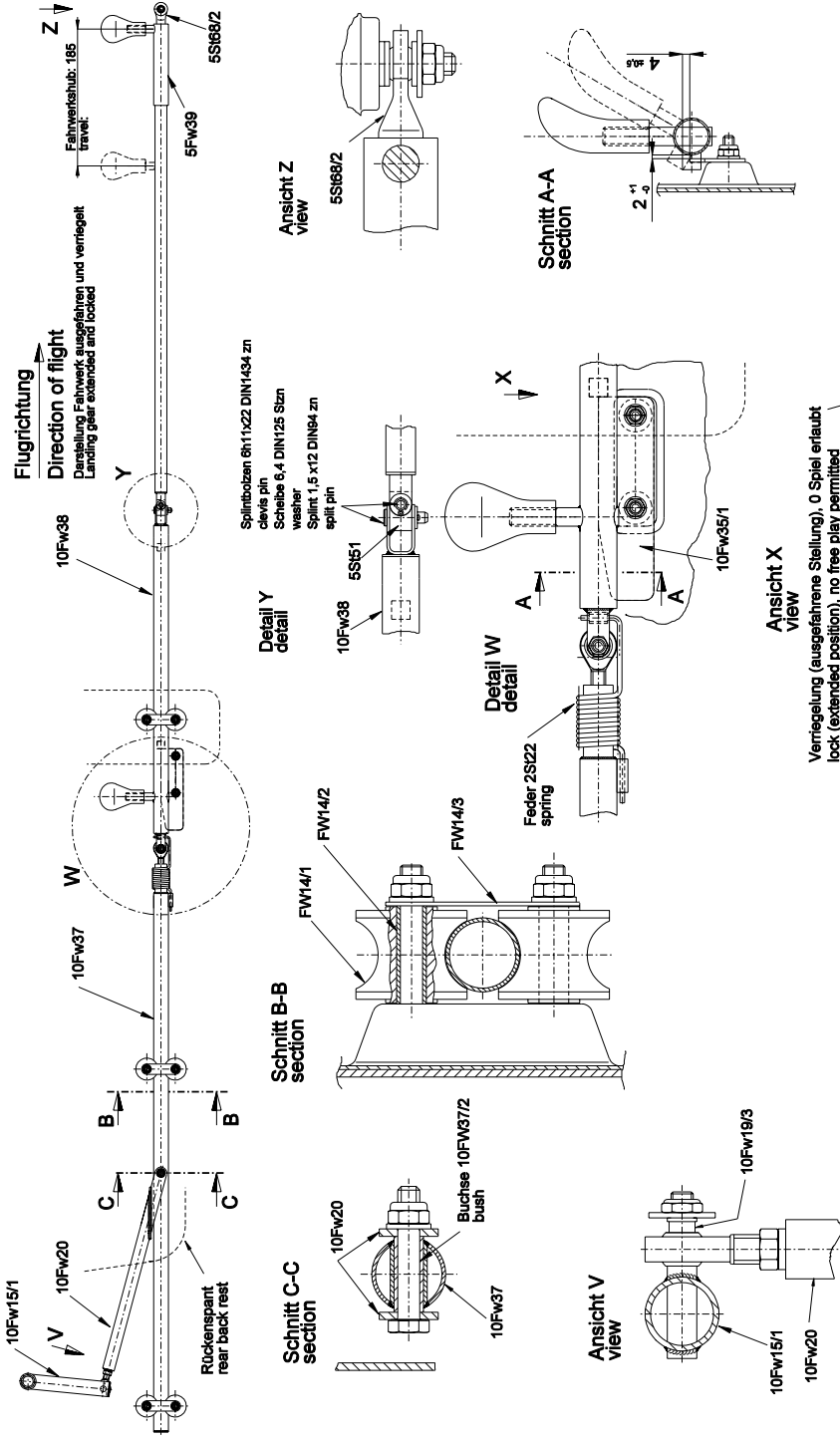
B = zur Gesamtdruckabnahme 5R16 in der Rumpfspitze / towards pitot pressure probe in fuselage nose
 C = zur Druckabnahme 6R37/2 in Unterseite Rumpfspitze / towards probe 6R37/2 below fuselage nose
 Wichtiger Hinweis: Der Fahrtmesser darf nur an den vorderen Druckabnahmen Stat V + Pitot V angeschlossen werden. /
 Caution: The airspeed indicator must be connected to the front probes Stat V + Pitot V.

Arm DEI-NT werden 1=Pitot V und 12=PC angeschlossen, der Anschluss stat. des DEI-NT bleibt offen
 1=Pitot V and 12=PC must be connected to the DEI-NT, the static port of the DEI-NT stays open

Die Anschlüsse der Multi Düse sind zum Anschließen von Variometer- und Rechnersystemen bestimmt. /
 The multi probe is intended to connect variometers and gliding computers.

Alle Schläuche PVC weich 8x1,5 / all lines soft PVC 8x1,5

All dimensions in mm, 25.4 mm= 1 in.

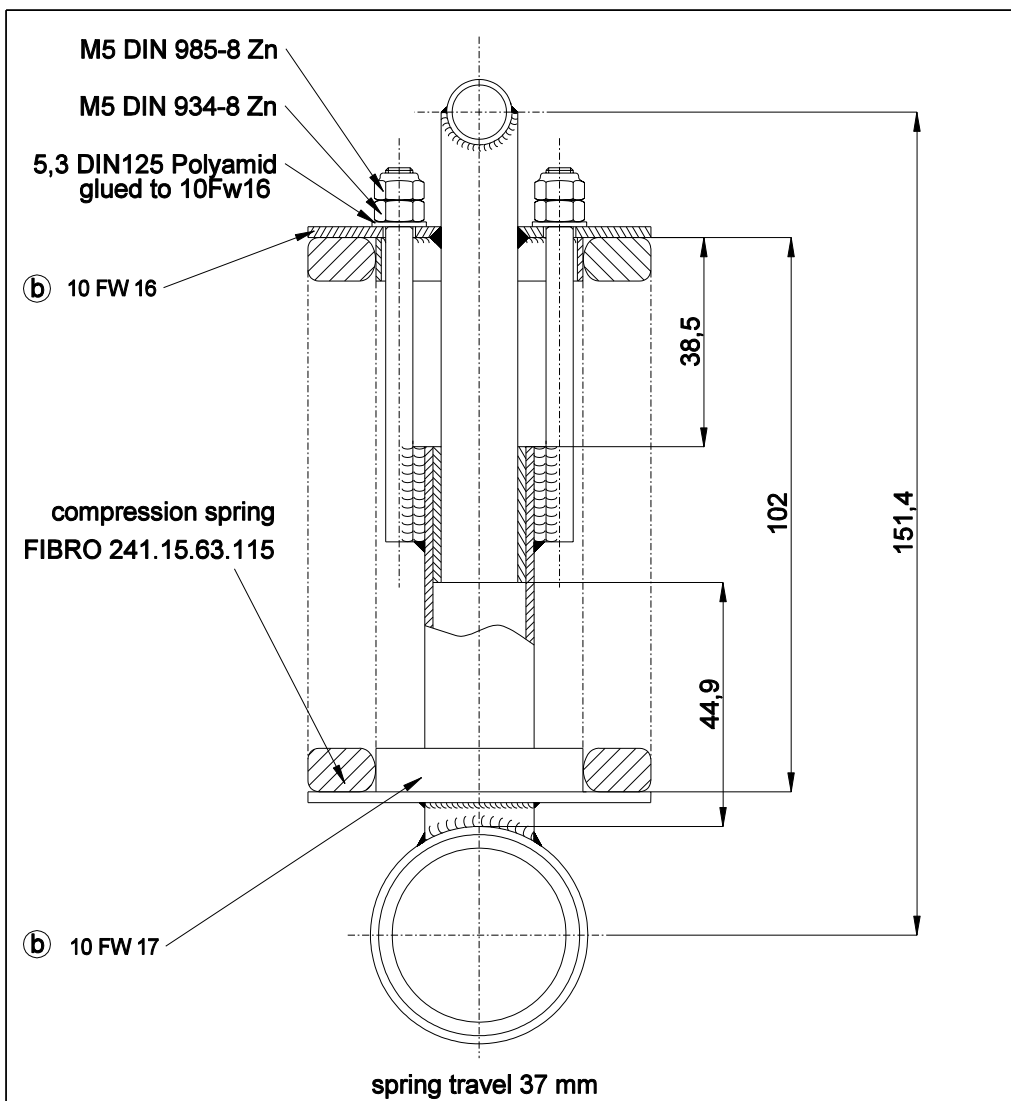


All dimensions in mm, 25.4 mm= 1 in.


Fahrtwerksantrieb (Version ohne Bugrad)
 Landing gear control (Version without nose wheel)

Diagramm 12
 diagram 12

Output: Jan 2007
 issued



All dimensions with spring precompressed
 All dimensions in mm, 25.4 mm= 1 in.

Toleranzen nach Arbeitsanweisung BA 1		Gez.	11.12.97	Camus	DG Flugzeugbau GmbH 78646 Bruchsal 4 Im Schollengarten 20
Schweißen nach Arbeitsanweisung SA 1		Gep.			
		Norm.			
		Maßstab	1:1		 10 FW 2
		Miße ohne Toleranzang. nach:	Assembly Spring leg (landing gear)		
b	10-2	05.10.99	Lehner		
a	alle	18.02.99	Lehner		
Ausg.	Änderung	AM	Tag	Name	

Enclosure 2 for Maintenance Manual DG-1000T

Instructions for transponder installation

All dimensions in mm, 25.4 mm= 1 in.

For the installation please refer to drawing on page 6.

Required materials:

- Transponder
- Transponder aerial Honeywell KA 60
- Mounting plate for aerial (supplied with aerial)
- Aerial cable AIRCELL 7, length 5 metres
- HF-Connector TNC for AIRCELL 7 aerial cable
- BNC-Connector for AIRCELL 7 aerial cable
- BNC-elbow connector Type UG 306/U
- Aluminium tape, width 50 mm, approx length 20 mm
- Adhesive aluminium foil, ca. 400 mm x 250 mm
- Norma pipe-clamp with rubber profile DIN 3016, d=8 mm
- Ty-raps
- Silicone
- Acetone

Required tools:

- Drill
- Drill bits, diameter 5 mm and 13 mm
- Abrasive paper
- Open end spanner 8 mm
- Wire cutting pliers
- "pull-through" aid

1. Holes for aerial installation, installation of the aerial and fitting of shielding

To drill the holes for the aerial installation, it is necessary to position the drilling-template supplied with the aerial at the bottom of the engine compartment right of the centre line according to the drawing.

The two 5mm mounting holes have to be drilled and deburred afterwards. The aerial feed-through is also pre-drilled with 5mm and then enlarged to 13mm.

The support face on the outside of the fuselage has to be cleaned with acetone. Apply silicone to the support face of the aerial and mount according to drawing, including the mounting plate supplied with the aerial.