0.1 Record of revisions continued

Rev. No.	Affected Pages/ section	Description	Issue Date	EASA Approval Date	Inserted Date Signature
8	0.5, 9.1-9.12	Electrically operated main landing gear TN1000/14	November 2008	28. January 2009	
9	0.6, 9.1, 9.2, 9.13	Special equipment for very small pilots TN1000/17	May 2010	20. July 2010	
10	0.2 – 0.5, 1.4, 1.5, 2.9, 2.10, 4.3, 4.5, 4.6, 4.8, 4.9, 4.12, 6.3 ÷ 6.6, 6.11, 7.1, 7.2, 7.8, 7.10, 7.12, 7.13, 9.7, 9.13	Manual revision TN1000 /18	February 2011	13.05.11	
11	0.2, 0.5, 9.1, 9.2, 9.14, 9.15	Special equipment for aerobatics TN1000/20	March 2011	6.05.2011	
12	0.2, 0.5, 9.15	TN1000/20 Revision 1	June 2012	20.07.2012	
13	0.1 ÷ 0.5, 1.5, 2.7, 2.9, 4.6 4.8, 4.18, 5.2, 5.4, 6.4, 6.7, 7.10, 7.11, 7.13, 9.8, 9.12	Manual revision TN1000 /24	October 2014	11.11.2014	
14	0.2, 0.3, 0.4, 1.4, 1.5, 1.6, 2.6, 2.8, 2.12, 4.3, 4.6, 4.13, 4.21, 5.4, 5.5	TN1000/25 18m winglets 17,2m end plates	February 2016	July 4, 2016	
15	0.2, 0.5, 7.8	TN1000/34 small nose wheel	October 2017	approval under the authority of DOA Ref. EASA.21J.530 12.09.2017	
16	0.2 - 0. 5, 2.7, 2.12, 6.4, 6.6, 7.2, 7.3, 7.6, 7.7, 7.10, 7.12, 7.13, 9.10	TN1000/41 manual revision, increase of max. cockpit load	December 2018	14.03.2019	
17	0.2 – 0.4, 2.7, 2.12, 6.4, 6.5, 6.7, 6.8	TN1000/41 Revision 1	May 2019	28.05.2019	

0.2 List of effective pages

Section		page	issued	replaced	replaced	replaced
0		0.0	March 2002			
		0.1	see manual amendments			
		0.2	"			
		0.3	"			
		0.4	"			
		0.5	"			
		0.6	March 2002			
1		1.1	"			
		1.2	"			
		1.3	"			
		1.4	"	Febr. 2011	Febr. 2016	
		1.5	"	Febr. 2011	Oct. 2014	Febr. 2016
		1.6	"	Febr. 2016		
2	App.	2.1	March 2002	Sept. 2003		
	"	2.2	"			
	"	2.3	"			
	"	2.4	"			
	"	2.5	"	May 2008		
	"	2.6	"	Febr. 2016		
	"	2.7	"	January 2005 May 2019	Oct. 2014	Dec. 2018
	"	2.8	"	Febr. 2016		
	"	2.9	"	Sept. 2003	May 2008	Oct. 2014
			Febr. 2011			
	"	2.10	"	Febr. 2011		
	"	2.11	"	Sept. 2003		
	"	2.12	"	May 2004 Dec. 2018	May 2008 May 2019	Febr. 2016
3	"	3.1	March 2002			
	"	3.2	"	May 2004	Oct. 2004	
	"	3.3	"			
	"	3.4	"			
	"	3.5	"	January 2005		
4	"	4.1	March 2002	January 2005		
	"	4.2	"			
	"	4.3	"	May 2004	Febr. 2011	Febr. 2016
	"	4.4	"			

0.2 List of effective pages (cont.)

Section		Page	issued	replaced	replaced	replaced
4	App.	4.5	March 2002	Sept. 2003	June 2004	
			Febr. 2011			
	"	4.6	"	Febr. 2011	Oct. 2014	Febr. 2016
		4.7				
	"	4.8	"	Febr. 2011	Oct. 2014	
	"	4.9	"	Febr. 2008	Febr. 2011	
	"	4.10	"			
	"	4.11	"			
	"	4.12	"	Febr. 2011		
	"	4.13	"	Febr. 2008	Febr. 2016	
	"	4.14	"			
	"	4.15	"			
	"	4.16	"			
	"	4.17	"	January 2005		
	"	4.18	"	Oct. 2014		
	"	4.19	"			
	"	4.20	"			
	"	4.21	"	Febr. 2016		
	"	4.22	"			
	"	4.23	"			
	"	4.24	"			
5	"	5.1	March 2002			
	"	5.2	"	Oct. 2014		
	"	5.3	"			
	"	5.4	"	Sept. 2003	Oct. 2014	Febr. 2016
	App.	5.5	"	Febr. 2016		
		5.6	"			
		5.7	"			
6		6.1	March 2002			
		6.2	"			
		6.3	"	Sept. 2003	Febr. 2011	
		6.4	"	Febr. 2011	Oct. 2014	Dec. 2018
				May 2019		
		6.5	"	Sept. 2003	Febr. 2011	May 2019
		6.6	"	Febr. 2011	Dec. 2018	
		6.7	"	Oct. 2014	May 2019	
		6.8	"	May 2019		
		6.9	"			
		6.10	"	Sept. 2003		
		6.11	"	Febr. 2011		

2.7 Manoeuvring load factors

The following load factors must not be exceeded:

Category		Utility	Aerobatic
at manoeuvring speed	V_A	+5,3 -2,65	+7,0 -5,0
at max. speed	V_{NE}	+4,0 -1,5	+7,0 -5,0
with airbrakes extended	V_{NE}	+3,5 0	+3,5 0

2.8 Flight crew

a) single seated, only permissible in the front seat

max. load in the front seat 110 kg (242 lbs.)

min. load in the front seat see placard in cockpit and weighing report page 6.7

b) two seated

Either the front seat or the rear seat may designated as seat of the pilot in command.

If the rear seat is to be designated it must be assured that all necessary operating items and instruments are installed and that the pilot in command has sufficient training in flying safely from the rear seat.

Max. load in the front and in the rear seat: 105 kg (231 lbs.) per seat or max. 110 kg (242 lbs.) in the front seat with the load in the rear seat not exceeding 90 kg (198 lbs.).

Exemption: The load in the front and in the rear seat may be increased to max. 110 kg per seat. To accomplish this the mass of the rear pilot must be compensated by ballast in the ballast box in the fin, see section 6.8.7. In general this means that the ballast box must be filled completely.

Min. cockpit load in the front seat is the min. cockpit load see a) minus 40% of the load in the rear seat. This means that 10 kg (22 lbs.) in the rear seat replaces 4 kg (8.8 lbs.) missing cockpit load in the front seat.

With these loads, the C.G. range given under 6.8 will be kept in the limits if the empty weight C.G. is in its limits. See loading chart in sect. 6.8.

Caution:

With lower pilot weights lead ballast must be added to the seat.

Ballast put on the seat (lead ballast cushion) must be fastened at the safety belt anchor point.

Option: Provision for removable trim-ballast in the front cockpit see sect 7.15.1.

Note: For Australia the lower limit for the min. load in the cockpit should not exceed 66 kg (146 lbs.). A provision for removable ballast see sect. 7.15.1 is mandatory.

2.17 Limitations placards

DG Flugzeugbau GmbH
Type: DG – 1000S Serial No.: 10- S
Year of construction:

Maximum airspeeds	km/h	kts.
Winch launching	150	81
Aero-tow	185	100
Manoeuvring V_A	185	100
Rough air	185	100
Maximum speed V_{NE}	270	146

Approved aerobatic manoeuvres, only without waterballast:
Pos. Loop, Chandelle, Spin, Stall turn
In addition Category A:
Only with 17,2m or 18 m span without winglets, without water ballast:
Half loop and half roll, half roll and half loop, slow roll, inverted flight, half positive flick roll from normal flight with half loop, half negative flick roll from inverted flight
Maximum mass:

Category A	630 kg	1389 lbs.
Category U	750 kg	1653 lbs.

Loading chart

Cockpit load	front seat		rear seat		(Parachute
maximum	105 kg	231 lbs.	105 kg	231 lbs.	included)
or maximum	110 kg	242 lbs.	90 kg	198 lbs.	
minimum	kg	lbs.	/	/	

The load in the front and in the rear seat may be increased to max. 110 kg (242 lbs,) per seat. To accomplish this the mass of the rear pilot must be compensated by ballast in the ballast box in the fin.

With lower pilot weight necessary ballast must be added.

Cockpit Check
1. Lead ballast (for under weight pilot)?
2. Parachute worn properly?
3. Safety harness buckled?
4. Front seat: pedals adjusted?
   Rear seat: seating height adjusted?
5. All controls and knobs in reach?
6. Altimeter?
7. Dive brakes cycled and locked?
8. Positive control check ? (One person at the control surfaces).
9. Fin ballast tank emptied or correct amount filled in?
10. Trim ballast box in the fin, correct amount filled in? Locking device completely engaged?
11. Trim?
12. Both canopies locked?
13. Runway free?

limits for use of the waterballast tank

minimum	°C	13.5	17	24	31	38
ground temperature	°F	56	63	75	88	100
maximum flight	m	1500	2000	3000	4000	5000
altitude above GND	ft.	5000	6500	10000	13000	16500

Altitude in [m]	0-3000	4000	5000	6000	7000	8000
V_{NE} IAS km/h	270	256	243	230	217	205
Altitude in [ft]	0-10000	13000	16000	20000	23000	26000
V_{NE} IAS kts.	146	138	131	124	117	111

Other cockpit placards see section 7

Gepäck max. 15 kg
baggage max. 33 lbs.

Sollbruchstelle 10000 N
rated load 2200 lbs.

Reifendruck 4 bar
Tyre pressure 58 psi
Tail wheel

Reifendruck 2,5 bar
Tyre pressure 36 psi
Main wheel

Reifendruck 2,5 bar
Tyre pressure 36 psi
Nose wheel (if installed)

Ballast box in the fin
Min. load in the front seat
kg **box empty** — **box filled** kg

At the control-light in the front instrument panel

Warning:
Rigging of the horizontal tailplane is only permitted with nose down trim-setting!

at the upper left hand side of the fin

6.8 Loading chart

6.8.1 Cockpit load

see weighing report section 6.8.8.

a) single seated:
   max. load in the front seat 110 kg (242 lbs)
   min. load in the front seat see placard in cockpit and weighing report

b) two-seated:
   Max. load in the front and in the rear seat: 105 kg (231 lbs.) per seat
   or max. 110 kg (242 lbs.) in the front seat with the load in the rear seat not exceeding 90 kg (198 lbs.).

   Exemption: The load in the front and in the rear seat may be increased to max. 110 kg per seat. To accomplish this the mass of the rear pilot must be compensated by ballast in the ballast box in the fin, see section 6.8.7. In general this means that the ballast box must be filled completely.

   min. cockpit load in the front seat is the min. cockpit load see a) minus 40% of the load in the rear seat.

   With these loads, the C.G. range given under section 6.8.8 will be kept in the limits if the empty weight C.G. is in its limits.

With lower pilot weight necessary ballast must be added in the seat or in the optional ballast boxes see below. Ballast put on the seat (lead ballast cushion) must be fastened at the connections of the safety belts.

Note: Extremely light pilots may remove the fin battery, see section 6.8.4.

6.8.2 Removable ballast for underweight pilots

Option: Ballast boxes in the front cockpit for removable ballast (trim weights), see section 7.15.1.

6.8.3 Baggage

max. 15 kg (33lbs)
Heavy pieces of baggage must be secured to the baggage compartment floor (screwing to the floor or with belts). The max. mass secured on one half of the floor (left and right of fuselage centre line) should not exceed 7,5 kg (16.5 lbs.). With the load added in the fuselage the max. load without waterballast (W.B.) (see weighing report section 6.8.8) must not be exceeded.

6.8.4 Battery in the fin

Only the use of the factory supplied battery Z110 (mass 5.5 kg, 12.1 lbs.) is permitted.
Warning: Flying is only allowed with the battery in the fin as otherwise the forward C.G. limit may be exceeded.
Instead of the battery a suitable weight of 5,5 kg may be used.
Note: Extremely light pilots flying solo may remove the fin battery. This lowers the min. front cockpit load by 16 kg (35 lbs.). Install a battery in the baggage compartment according to section 7.15.5 instead.

6.8.5 Waterballast in the wing tanks (Option)

The tanks have a capacity of 80 l (21,2 US gallons) per wing
The permitted amount of waterballast is dependent on the empty weight and of the load in the fuselage and can be determined from the diagram "**Ballast chart"** section 6.8.10.
It is only allowed to fly with symmetric wing ballast!

6.8.6 Fin ballast tank (Option)

Water ballast in the fin tank should be used to compensate the forward move of C.G. due to the water ballast in the wings.
The amount of ballast in the fin is dependent on the amount of water in the wing tanks and to be determined from the following table.

waterballast in the	
wings	fin
kg	kg
20	0,6
40	1,3
60	2,1
80	2,9
100	3,8
120	4,6
140	5,4
160	6,2
/	/

waterballast in the	
wings	fin
lbs.	lbs.
40	1,2
80	2,7
120	4,2
160	5,9
200	7,5
240	9,2
280	10,8
320	12,4
350	13,5

6.8.8 Weighing report (for section 6.3)

Distances in mm, masses in kg -- 25.4 mm = 1 inch / 1 kg = 2.2046 lbs.

Date of weighing:						
Executed by:						
Date of equipment list:						
wing span	18m/ 17.2m	20m				
Empty mass						
Empty mass C.G.						
Max. mass without W.B.						
Cat. U						
Cat. A	630	/				
Max. load without W.B.						
Cat. U						
Cat. A						
max. mass with WB						
max. useful load with W.B.						
min. cockpit load YY (kg)						
min. cockpit load XX (kg)						
max. load in both seats	210*	210*				
Inspector, signature, stamp						

W.B.= waterballast

YY= min. load in front seat for solo flying with fin ballast box empty.
XX= YY+35= min. load in front seat for solo flying with fin ballast box filled.
*The load in the front and in the rear seat may be increased to max.110 kg per seat. To accomplish this the mass of the rear pilot must be compensated by ballast in the ballast box in the fin, see section 6.8.7.

Weighing was executed with: battery in the fin Z110
tailwheel with: ☐ plastic hub
☐ brass hub (see section 7.15.4)

6.8.9 Empty weight C.G. limits (for 6.4)