Rev. No.	Affected Pages/ section	Description	Issue Date	EASA Approval Date
18	0.2a, 0.4, 0.5, 4.8, 7.1, 7.13	TN1000/42 Canopy lock, rear locking rods	July 2019	17.09.2019
19	0.2a, 0.5, 9.1, 9.2, 9.16-9.18	Manual rudder control TN1000/36 Revision 2	May 2020	approval under the authority of DOA Ref. EASA.21J.530 4.06.2020
20	Title, 0.0, 0.2a, 0.3, 0.4, 1.2, 1.4 - 1.6, 2.5, 2.12, 4.3, 5.4, 6.3, 6.9	TN1000/45 Manual revision, raised max. TOW, optional 20 m wing tips with neo Winglets	October 2021	8th June 2022
21	0.2a, 0.3, 0.4, 2.6, 4.21, 4.23, 4.24	TN 1000/49 Manual revision, permitted aerobatic manoeuvres Cat.A	June 2023	approval under the authority of DOA Ref. EASA.21J.530 13.June 2023

0.2 List of effective pages

Section		page	issued	replaced	replaced	replaced
		Title	March 2002	Oct. 2021		
0		0.0	March 2002	Oct. 2021		
		0.1	see manual amendments			
		0.2	"			
		0.2a	"			
		0.3	"			
		0.4	"			
		0.5	"			
		0.6	March 2002			
1		1.1	"			
		1.2	"	Oct. 2021		
		1.3	"			
		1.4	"	Febr. 2011	Febr. 2016	Oct. 2021
		1.5	"	Febr. 2011	Oct. 2014	Febr. 2016
				Oct. 2021		
		1.6	"	Febr. 2016	Oct. 2021	
2	App.	2.1	March 2002	Sept. 2003		
	"	2.2	"			
	"	2.3	"			
	"	2.4	"			
	"	2.5	"	May 2008	Oct. 2021	
	"	2.6	"	Febr. 2016	June2023	
	"	2.7	"	January 2005	Oct. 2014	Dec. 2018
				May 2019		
	"	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	May 2008	Febr. 2016
				Dec. 2018	May 2019	Oct. 2021
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
				Oct. 2021		
	"	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		July 2019		
	"	4.8	"	Febr. 2011	Oct. 2014	July 2019
	"	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	June2023	
	"	4.22	"			
	"	4.23	"	June 2023		
	"	4.24	"	June 2023		
5	"	5.1	March 2002			
	"	5.2	"	Oct. 2014		
	"	5.3	"			
	"	5.4	"	Sept. 2003	Oct. 2014	Febr. 2016
				Oct. 2021		
	App.	5.5	"	Febr. 2016		
		5.6	"			
		5.7	"			
6		6.1	March 2002			
		6.2	"			
		6.3	"	Sept. 2003	Febr. 2011	Oct. 2021
		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	"	Oct. 2021		
		6.10	"	Sept. 2003		
		6.11	"	Febr. 2011		

2.5 Centre of gravity

Centre of gravity range in flight is
190mm (7.48 inch) up to 440mm (17.32 inch) behind datum.

Datum = wing leading edge at the rootrib.
reference line = aft fuselage centre line horizontal.

C.G. diagrams and loading chart see sect. 6.

2.6 Approved manoeuvres

Category „Utility“:

The glider is certified for normal gliding in the "Utility" category.
Simple aerobatics are approved but only without waterballast and with the weight of the rear pilot compensated by ballast in the ballast box in the fin see section 6.8.7.

The following aerobatic manoeuvres are approved with all spans:

Spins	Chandelle
Inside loop	Turn
Lazy Eight	

Recommended entry speeds see section 4.5.8.1.

Category „Aerobatic“

Span 17,2 m or 18 m without winglets and without water ballast, max. mass 630 kg (1389 lbs.) and with the required equipment see section 2.10 installed and with the weight of the rear pilot compensated by ballast in the ballast box in the fin see section 6.8.7.

In addition to the manoeuvres in category „Utility“ the following manoeuvres are approved:

Inverted flight
half loop and half roll
half roll and half loop
slow roll
half flick roll from normal to inverted flight with half loop
half flick roll from inverted to normal flight
Combination of approved manoeuvres see section 4.5.8.2

Recommended entry speeds see section 4.5.8.2.

4.5.8.2 Category A, Aerobatic

Only approved with 17,2m span or 18m span without winglets, without water ballast, max. mass 630 kg (1389 lbs.) and with the weight of the rear pilot compensated by ballast in the ballast box in the fin see section 6.8.7 and with the required equipment installed see section 2.10.
Execute only the approved manoeuvres.
Don't execute aerobatics below the safety altitude required by national law.

Approved manoeuvres (Category A, Aerobatic):
All manoeuvres approved for category U, Utility and additionally:

Approved manoeuvres	**recommended airspeed**	**g-load**
Inverted flight	120 - 200 km/h (65 - 108 kts.)	-1
Lines in inverted flight max. 45^up or downwards	120 - 220 km/h (65 - 119 kts)	-1 to -2g
Positive loop from inverted to inverted	Entry speed 120 km/h (65 kts) Max. speed at bottom 220 km/h(119 kts)	+3 to +4g
	Entry speeds	
half loop and half roll	220 km/h (119 kts.)	+5.0
half roll and half loop	180 – 200 km/h (97 - 108 kts.)	+4.5
slow roll	180 - 200 km/h (97 - 108 kts.)	+/-1.5
Rolling circle with in or outside roll	190 - 220 km/h (103 - 119 kts)	+/-2g
half positive flick roll from normal to inverted flight with half pos. loop	120 - 140 km/h (65 - 76 kts.)	+4.0
half negative flick roll from inverted to normal flight	130 – 150 km/h (70 - 81 kts.)	-3.5
Humpty Bump: Like loop, but with marked vertical line, afterwards pulled or pressed Humpty	200-220 km/h (108 - 119 kts.) Pulling at min. 100km/h (54kts) pressing at min.110km/h (60kts)	+3 to+4g +1,5g -1,5g
Combinations of approved manoeuvres		

Caution: Inverted spinning with the DG-1000S is not approved. Only spinning from normal flight attitude is approved.

Caution: the DG-1000S is equipped with a powerful longitudinal trimming device. In addition the mass balance weight of the elevator is incorporated in the elevator control system. Due to these facts the elevator control forces during inverted flight change considerably with trim position.
It is strongly recommended to trim the glider to approx. 140 km/h (76 kts.) in horizontal flight prior to executing aerobatics, especially prior to inverted flight.

Slow roll
After reaching the entry speed of 180 - 200 km/h (97-108 kts.) the nose must be raised slightly above the horizon. After returning the stick to neutral, full aileron has to be applied in the desired direction.
When the wing passes the vertical position the rudder must be applied a little in upwards direction.
After the wing has passed the first vertical position the stick is to be pushed slightly (never abruptly) forward to keep the nose above the horizon. When the wing passes the second vertical position the rudder must be applied upwards to keep the nose above the horizon until normal flying position is reached.
Note: If during the inverted flight the nose is raised too high above the horizon and the speed is reduced too much, a stall could occur when the wing reaches the second vertical position and the roll is finished as a "flicked" roll.
The stall is indicated by buffeting of the tailplane.

Rolling circle:
If flown during roll with elevator correction in the blade positions and corresponding rudder correction up, a roll circle will occur.
Note: Care must be taken to maintain the required speed and rudder deflections so as not to create a stall!

Humpty-Bump:
Humptys are only allowed from normal flight attitude! For the Humpt, the entry speed is to be selected somewhat higher than for a turn, i.e. approx. 220 km/h (119kts).
After a strong pull up into the vertical, this line is to be stabilized until the speed is reduced to 100 up to 120 km/h (54 up to 65kts). The Humpty is to be flown in the vertical position. Then the rollover (loop without movement around the transverse axis) is initiated with full pulled elevator or full pushed elevator, whereby the speed for pushing is to be selected higher than for pulling.
During the rotation, hold the stick in the fully pulled or pushed deflection without aileron deflection. It may happen that the airplane turns over at too low speed at the top or takes a slight backward phase, which is to be avoided.

Flick manoeuvres
The flick manoeuvres which have been tested with the DG-1000S should only be executed by experienced aerobatic pilots. The result is dependent as for any other sailplane on several parameters like inducing control speed, C.G. position, control movement during rotation etc.,

Due to the large span and the resulting large moment of inertia, executing flick manoeuvres is more difficult than with smaller aerobatic gliders. Therefore you should not try these manoeuvres solo unless you have trained and mastered them on other gliders

Half positive flick roll from normal to inverted flight with half positive loop
Tested entry speed: 120 – 140 km/h (65 – 76 kts.).
Prior to inducing the flick roll, place the nose a little below the horizon.
Induce the half roll with full stick backwards and full rudder only. After the rotation starts ease the stick to neutral to avoid too large an angle of attack and unnecessary loss of speed.
Stop the rolling motion in the inverted position by neutralizing the elevator control and with a little rudder against the rolling direction. Then pull the stick back to fly the half positive loop before the glider stalls in the inverted attitude.
If you keep the stick pulled back for too long a time during entry, it may not be possible to stop the rotation in the inverted attitude and the glider will continue to roll into normal flight position.

Half negative flick roll from inverted to normal flight
Tested entry speed: 130 – 150 km/h (70 – 81 kts.).
Induce the half roll with full stick forwards and full rudder only. If you use additional aileron there may be some vibration in the fuselage due to vortices. The vibrations don't impair the flight characteristics.
Shortly before reaching normal upright position, the rotation has to be stopped by pulling the stick backwards and applying some opposite rudder.
Stopping the half roll in exactly horizontal attitude is nearly impossible. The glider will adopt a nose down position.

Combinations of approved manoevres
Combinations of approved manoevres may also be flown if the operating limits are observed.

Caution:
If the operating limits have been exceeded during a flight, a comprehensive inspection of the entire airframe must be performed before the next takeoff . If damage is discovered, the manufacturer must be informed and, if necessary, a repair procedure determined by him.