0 Revisions

0.1 Record of revisions

Any revision of the present manual, except actual weighing data, must be recorded in the following table and in case of approved sections endorsed by the responsible airworthiness authority.

The new or amended text in the revised page will be indicated by a black vertical line in the right hand margin, and the under lying document for the revision and the date will be shown on the bottom of the page.

Rev. No.	Affected Pages/section	Description	Issue Date	EASA Approval Date	Inserted Date Signature
1	Title, 0.1, 0.2, 0.4÷0.7, 1.5, 2.5, 2.7, 2.10, 2.11, 2.13, 2.14, 3.2, 4.7, 4.9 ÷4.11, 4.14, 4.15, 4.21, 4.24, 4.29, 4.33, 5.1, 5.4 ÷ 5.12, 6.1 ÷ 6.3, 6.5, 6.7, 6.9 ÷ 6.15, 7.2, 7.6, 7.9, 7.12, 7.25 ÷ 7.28, 7.30, 8.3	Manual revision TN1000/22	October 2012	10. Dec. 2012	
2	0.2, 0.4 ÷ 0.6, 2.5, 2.6, 4.33, 7.19, 7.30	Manual revision TN1000/23	July 2014	7 August 2014	

0.2 List of effective pages

Section		page	issued	replaced	replaced
0		Title	October 2010	October 2012	
		0.1	see manual amendments		
		0.2	"		
		0.3	"		
		0.4	"		
		0.5	"		
		0.6	"		
		0.7			
		0.8			
1		1.1	October 2010		
		1.2	March 2011		
		1.3	October 2010		
		1.4	October 2010		
		1.5	October 2010	October 2012	
		1.6	October 2010		
2	EASA-app.	2.1	October 2010		
	"	2.2	October 2010		
	"	2.3	October 2010		
	"	2.4	October 2010		
	"	2.5	October 2010	October 2012	July 2014
	"	2.6	October 2010		July 2014
	"	2.7	October 2010	October 2012	
	"	2.8	October 2010		
	"	2.9	October 2010		
	"	2.10	October 2010	October 2012	
	"	2.11	October 2010	October 2012	
	"	2.12	October 2010		
	"	2.13	October 2010	October 2012	
	"	2.14	October 2010	October 2012	
3	"	3.1	October 2010		
	"	3.2	October 2010	October 2012	
	"	3.3	October 2010		
	"	3.4	October 2010		
	"	3.5	October 2010		
	"	3.6	October 2010		
	"	3.7	October 2010		
	"	3.8	October 2010		

0.2 List of effective pages (cont.)

Section		page	issued	replaced
4	EASA-app.	4.1	October 2010	
	"	4.2	October 2010	
	"	4.3	October 2010	
	"	4.4	October 2010	
	"	4.5	October 2010	
4		4.6	October 2010	
		4.7	October 2010	October 2012
	"	4.8	October 2010	
	"	4.9	October 2010	October 2012
	"	4.10	October 2010	October 2012
	"	4.11	October 2010	October 2012
	"	4.12	October 2010	
	"	4.13	October 2010	
	"	4.14	October 2010	October 2012
	"	4.15	October 2010	October 2012
	"	4.16	October 2010	
	"	4.17	October 2010	
	"	4.18	October 2010	
	"	4.19	October 2010	
	"	4.20	October 2010	
	"	4.21	October 2010	October 2012
	"	4.22	October 2010	
	"	4.23	October 2010	
	"	4.24	October 2010	October 2012
	"	4.25	October 2010	
	"	4.26	October 2010	
	"	4.27	October 2010	
	"	4.28	October 2010	
	"	4.29	October 2010	October 2012
	"	4.30	October 2010	
	"	4.31	October 2010	
	"	4.32	October 2010	
	"	4.33	October 2010	October 2012 July 2014
5	"	5.1	October 2010	October 2012
	"	5.2	October 2010	
	"	5.3	October 2010	
	"	5.4	October 2010	October 2012
	"	5.5	October 2010	October 2012
	"	5.6	October 2010	October 2012
	EASA-app.	5.7	October 2010	October 2012
		5.8	October 2010	October 2012
		5.9	October 2010	October 2012
		5.10	October 2010	October 2012
		5.11	October 2012	
		5.12	October 2012	

0.2 List of effective pages (cont.)

Section	page	issued	replaced	Section
6	6.1	October 2010	October 2012	
	6.2	October 2010	October 2012	
	6.3	October 2010	October 2012	
	6.4	October 2010		
	6.5	October 2010	October 2012	
	6.6	October 2010		
	6.7	October 2010	October 2012	
	6.8	October 2010		
	6.9	October 2010	October 2012	
	6.10	October 2010	October 2012	
	6.11	October 2010	October 2012	
	6.12	October 2010	October 2012	
	6.13	October 2012		
	6.14	October 2012		
	6.15	October 2012		
7	7.1	October 2010		
	7.2	October 2010	October 2012	
	7.3	October 2010		
	7.4	October 2010		
	7.5	October 2010		
	7.6	October 2010	October 2012	
	7.7	October 2010		
	7.8	October 2010		
	7.9	October 2010	October 2012	
	7.10	October 2010		
	7.11	October 2010		
	7.12	October 2010	October 2012	
	7.13	October 2010		
	7.14	October 2010		
	7.15	October 2010		
	7.16	October 2010		
	7.17	October 2010		
	7.18	October 2010		
	7.19	October 2010	July 2014	
	7.20	October 2010		
	7.21	October 2010		
	7.22	October 2010		
	7.23	October 2010		
	7.24	October 2010		
	7.25	October 2010	October 2012	
	7.26	October 2010		
	7.27	October 2010	October 2012	
	7.28	October 2010	October 2012	
	7.29	October 2010		
	7.30	October 2010	October 2012	July 2014

2.4 Power plant

Engine manufacturer:	Solo Kleinmotoren Sindelfingen/Maichingen Germany	
Engine	Solo 2 625 02 i, liquid cooled two cylinder two stroke engine	
Maximum power:	Start:	50 KW / 68 PS (horse power)
	Continuous:	50 KW / 68 PS
Max.	Engine RPM:	6600 1/min
"	Continuous RPM:	6600 1/min
Max. cylinderhead (coolant) temperature:		105°C
Reduction gear (with 5 V-belts)		approx. 1:2,8

Caution: The engine is equipped with an emergency system which may be activated via a switch in the front (and optionally in the rear) instrument panel in case of a failure of the engine control unit (ECU). This system ensures uninterrupted engine operation.

Note: The engine control (ECU) prevents exceeding an engine RPM of 6700 by switching off the ignition. If you reduce the engine speed the ignition will be activated again.

Note: The max. engine RPM given by the engine manufacturer is 6700 RPM. This max. RPM is reduced for operation in the DG-1000M for not exceeding the max. permissible RPM of the propeller.

Propeller:	Diameter 1.6 m (5.25 ft)
Manufacturer:	Binder Flugzeug und Motorenbau GmbH
Type /Variant:	BM-G1-160-R-120-1

2.5 Power plant instrument markings

(on DEI-NT, DEI=digital engine indicator)
Power plant instrument markings and their significance are shown below:

Engine speed indicator:
At the centre of the DEI-NT display, digital indication with 4 digits, limitation data printed above display:

green	0-6600	normal operation range RPM
red	6600	max. RPM

Max. continuous RPM:
No indication as identical with max. RPM.

Max. RPM:
When exceeding this RPM a full screen warning message "Engine Speed" appears, when this warning has been confirmed (by pushing the selector knob at the right hand side of the display) the engine speed display is blinking whilst the engine speed is above max. RPM.

Cylinderhead (coolant) temperature indicator (CHT):
On right hand upper side of the DEI-NT display, digital indication with 3 digits, limitation data printed above display:
red 95°C up to ser. No. 10-204M22,
105°C from ser. No. 10-205M23 on and earlier ser. No.s if instruction 3 from TN1000/23 has been executed.
When exceeding this temperature a full screen warning "CHT overTemp" appears, when this warning has been confirmed (by pushing the selector knob at the right hand side of the display) the CHT display will keep blinking as long as the CHT is above the max. CHT.

Fuel quantity indicator:
On left hand upper side of the DEI-NT display, indication digital with 2 digits. Limitation data for the non useable amount of fuel printed above the display:
red 1 L
When a fuel quantity of approx. 4 Litres is reached a full screen warning "Low Fuel" appears, when this warning has been confirmed (by pushing the selector knob at the right hand side of the display) "R" is displayed and blinking.

2.6 Fuel

Fuel capacity:
Fuselage tank:

total:	41 L	(10.83 US gal.)
Non useable amount of fuel:	1 L	(0.26 US gal.)
Useable amount of fuel:	40 L	(10.57 US gal)

Approved fuel grades:
Car super gasoline min. 95 octane (ROZ) (RON) leaded or unleaded
or: AVGAS 100 LL (only if super gasoline is not available)
or: mix 50% AVGAS 100 LL and 50% Car super gasoline unleaded min 92 octane (ROZ) (RON)

Caution: Fuel with more than 10% Ethanol is not acceptable to be used for the DG-1000M engine.

mixed with self mixing Super quality two stroke oil - specification JASO FC or FD or higher quality. Mixing ratio 1:50.

Note: The SOLO company recommends the following oil types: CASTROL Actevo 2T or CASTROL Super TwoStroke..

4.6 Flight with the engine removed from the aircraft

The DG-1000M can be flown without the engine when the engine is sent for a major overhaul, or removed to decrease the aircraft empty weight for competition flying or for aerobatics.
The following items must be executed: (see sect. 4.10.9 in the maintenance manual).

1. Remove the powerplant. Spindle drive, gas struts and exhaust system remain in the fuselage.
   Insulate the terminal of the starter motor positive wire (in the engine compartment).

2. In addition to the on-board battery install a battery in the fin see section. 7.17.6.

3. Carry out a C.G. calculation according to section 6.9. The in-flight C.G. will be moved forward by approx. 75 mm (3 in.) depending on the flight mass and empty mass C.G.
   This C.G. shift is acceptable, as the forward limit of the in-flight C.G. for operation with engine removed is 120 mm in front of the C.G. with engine installed.

Item	**mass**		**C.G. behind datum**		**moment**	
	kg	**lbs.**	**m**	**ft.**	**kg×m**	**ft.×lbs.**
Mass reduction						
engine with propeller	-58	-127.9	1.261	4.14	-73.14	-529.0
Additional mass						
fin battery	5.5	12.1	5.34	17.52	29.37	212.4
Difference	-52.5	-115.7	0.834	2.735	-43.77	-316.6

4. Fix the limit switch “engine retracted” with a Ty-rap in the actuated position. Otherwise the DEI-NT will remain in the powered flight mode.
5. Tape the engine doors carefully with fabric tape.

Note: After switching on the main switch some failure messages will be displayed. Confirm each message by pressing the selector switch to eliminate the message.

13. "Raise Gear" = Landing gear should be retracted, appears 8 minutes after take-off in case the landing gear is still extended.
14. "Starter Run" = Starter motor didn't disengage and is producing electric power, stop the engine immediately to prevent damage of the control unit. This message can't be erased by pushing the selector knob.
15. "CBox OvrTemp" = Starter motor control in control unit above temperature limit. If this warning appears don't operate the starter motor any more. If possible switch off the main switch.
16. "Battery Overch." = Battery voltage constantly above 14,9V.
17. "Low Battery" = Battery voltage below 11V for more than 30 seconds.

Caution: The starter motor control in the control unit will supply no electric power to the starter motor if the battery voltage is below 11 V prior to the starting attempt, starting is not possible!

18. "Main Switch" = Reminder to switch off the main switch.
    With landing gear retracted (e.g.on the trailer after derigging) after 60 seconds.
    With landing gear extended (e.g. in the hangar) after 5 minutes.
    In both cases time counts after the last operation of any item of the electrical system.
19. **Only with TNDG-G-09 executed:** "Open Fuel! " = Fuel cock not fully opened. Warning appears when ignition will be switched on.

7.4.5.3 Explanation for failure messages

Spindle Fuse:

The re-settable fuse for the spindle drive may be blown in the following cases:

a) The propeller hub hooks during extension at the engine doors.

b) The limit switch in position engine extended or retracted is not operated.

As soon as the fuse is blown the Control Unit changes to manual extension-retraction mode and thus cuts off power to the spindle drive and reports the failure to the DEI-NT.

After the cool-down time (approx. 10sec.) the message disappears and the symbol for manual operation (hand) will be displayed on the screen.

You may reactivate the automatic operation by operating the ignition switch, even during the cool-down time.

Case a) Retract the powerplant again manually, then try to extend the engine again.

Case b) Partially retract the engine manually and then try to extend the powerplant manually up to its operating position.

7.17.5 Battery in the baggage compartment with battery selector switch

An additional battery Z73 12V/7Ah with holder Z72 or Z01 12V/10Ah with holder Z200 may be installed in the baggage compartment.
In this case a battery selector switch must be installed in the front instrument panel.
Selector positions:
up = internal battery centre position = off down = additional batteries
Preferably the gliding computers and loggers shall be connected to this switch.
The battery fuse is installed at the battery, type: G fuse G 250 V 5 x 20 / 4 A fast.

7.17.6 Battery in the fin

A battery may be installed in the fin.
Section 4.2.5 and the loading chart see section 6.8.4 must be regarded.
Only the use of the factory supplied battery Z110 (12 V, min. 12 Ah, mass 5.5 kg (12.1 lbs.) is permitted.
The battery fuse is installed at the battery, type: G fuse G 250 V 5 x 20 / 4 A fast.
The wiring for this battery is in parallel to the battery in the baggage compartment.

7.17.7 Radio installation with automatic commutation

If the factory approved radio installation set is installed, the radio will be switched automatically from "normal" mode to "engine on" mode with the engine extended. With "normal mode" only the goose neck microphones are working.
With "engine on" mode the intercom system is working. Only the microphones of the headsets are working.
The loudspeaker and the speakers of the headsets are working together in both modes.

Note: Some modern radios (e.g. Becker AR 6201) enable operation of headsets with standard microphones together with the gooseneck-microphones which are equipped with dynamic microphones.
To use headsets with standard microphones one V-adapter 10E109 must be installed per headset. In gliding mode the standard microphones of the headsets will not be switched off.