DG Aviation GmbH

FLIGHT MANUAL
FOR THE MOTORGLIDER

DG-1001M

TYPE: DG-1000
VARIANT: DG-1000M
TC Data Sheet No.: EASA.A.072
Issued: October 2010



Owner:

Ser. No.:

Registration:

Flight manual approved by
(Signature)
(Authority)
(Stamp)

Date of approval 25/3/11

This motorglider is to be operated in compliance with information and limitations contained herein.

This Flight Manual is FAA approved for U.S. registered motorgliders in accordance with the provision of 14 CFR Section 21.29, and is required by FAA Type Certificate Data Sheet No. G20CE.

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Warnings and hints

- All motorgliders are very complex technical devices. If you don't use yours as it is intended and within the certified operating limitations or if you fail to carry out proper maintenance work, it may harm your health or place your life in danger.
- Prior to flying the aircraft read all manuals carefully and regard especially all warnings, caution remarks and notes given in the manuals.
- Never take-off without executing a serious pre-flight inspection according to the flight manual!
- Always respect the relevant safety altitudes!
- Respect the stall speeds and always fly with a safety margin above the stall speed according to the flight conditions, especially at low altitudes and in the mountains.
- Use only the battery chargers as specified in the flight manual.
- Don't execute yourself any work on the control system except for greasing.
- Repairs and maintenance work should only be accomplished by the manufacturer or at certified repair stations rated for this type of work. A list of stations which have experience with DG aircraft may be obtained from DG Aviation.
  In the U.S., a properly certificated individual may also perform repairs and maintenance work.
- Even if no annual inspections are required in your country, have your aircraft checked annually, see maintenance manual section 2.
- Please pay attention to our web-site www.dg-aviation.de/en. There you will find the latest technical notes and service information for your glider: Home/ Service/ Technical Documentation
  The „DG Pilot Info" informs you immediately by e-mail about the publication of new technical notes and service information.
  If you don't receive this info service, please send a mail to info@dg-aviation.de with subject "DG Newsletter please" to receive this service free of charge.

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0 Revisions

0.1 Record of revisions

Any revision of the present manual, except for 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
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
3	0.2, 0.4, 0.5, 4.15	Manual revision TN1000/27	July 2015	10. August 2015
4	0.1, 0.2, 0.4-0.6, 2.14, 4.10, 4.11, 4.12, 4.16, 6.6, 7.2, 7.30	Manual revision TN1000/32	July 2017	10.08.2017
5	0.2, 0.7, 9.1, 9.2, 9.4, 9.5	Manual rudder control TN1000/36	August 2018	25.11. 2018
6	Title, 0.1, 0.2, 0.4 - 0.6, 1.4, 1.6, 2.14, 4.3, 7.29	TN1000/45 Manual revision, optional 20 m wing tips with neo Winglets	October 2021	8th June 2022

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0.2 List of effective pages

Section		page	issued	replaced	replaced
		Title	October 2010	October 2012	October 2021
0		0.1	see manual amendments		
		0.2	"		
		0.3	"		
		0.4	"		
		0.5	"		
		0.6	"		
		0.7	"		
		0.8	October 2010		
1		1.1	October 2010		
		1.2	March 2011		
		1.3	October 2010		
		1.4	October 2010	October 2021	
		1.5	October 2010	October 2012	
		1.6	October 2010	October 2021	
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
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	"	2.7	October 2010	October 2012	
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	"	2.9	October 2010		
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	"	2.14	October 2010	October 2012 October 2021	July 2017
3	"	3.1	October 2010		
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4		4.6	October 2010	
		4.7	October 2010	October 2012
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	"	4.9	October 2010	October 2012
	"	4.10	October 2010	October 2012 July 2017
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	"	4.14	October 2010	October 2012
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	"	4.16	October 2010	July 2017
	"	4.17	October 2010	
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	"	4.32	October 2010	
	"	4.33	October 2010	October 2012 July 2014
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	"	5.2	October 2010	
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	"	5.4	October 2010	October 2012
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	7.30	October 2010	October 2012 July 2017	July 2014

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1.4 Descriptive data

The DG-1000M is a self-launching two-place high performance motorglider with retractable powerplant for training and cross country flying.

- Wing constructed from carbonfibre reinforced plastics with parting at y= 8,6m and
  up to ser. No. 10-275: Wing tips for 20 m span with Winglet,
  from ser. No. 10-276 on: Wing tips for 20 m span with neo Winglets.

Note: The wing tips with neo Winglets may be retrofitted to earlier ser. No.s.

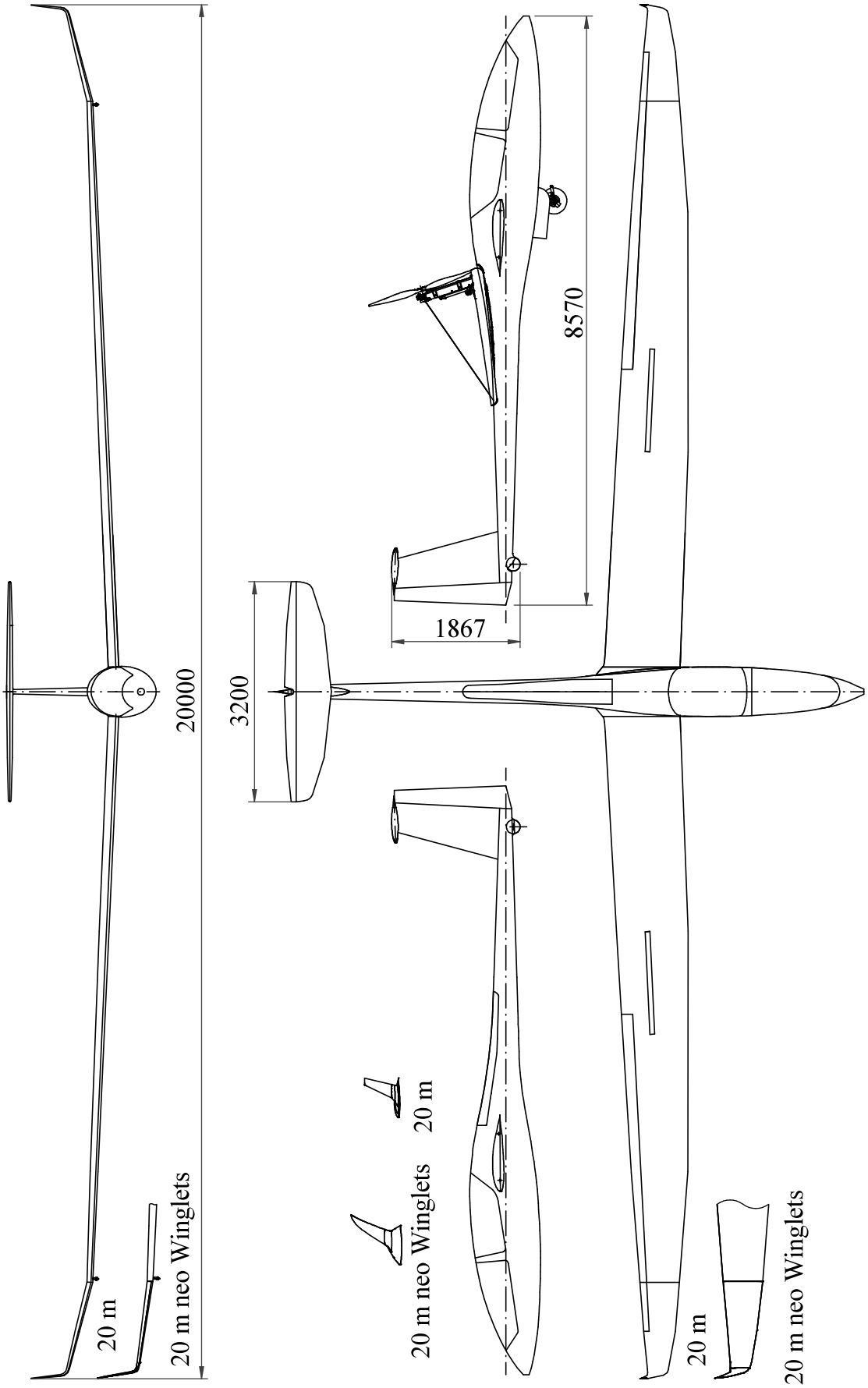
- Automatic hook-up s for all controls.
- Comfortable seating and modern cockpit design similar to the DG-single-seaters - safety cockpit.
- Large 2 piece canopy for very good in-flight vision.
- Draught free canopy demist and 1 adjustable swivel air vent for each pilot.
- Sealed airbrake and landing gear boxes.
- Controls in each cockpit.
- All controls are operated with the left hand, which enables the right hand to remain on the control stick.
- Very high, spring-mounted, electrically operated retractable main landing gear, wheel with hydraulic disc brake.
  A landing gear warning device is integrated into the system.
  Both cockpits are equipped with all controls and control lights.
  A manually operated emergency extension system is provided.
  Technical data:
  Extension and retraction time (electrically operated): approx. 7seconds
  Extension time emergency operation: approx. 2 seconds.
- Steerable tailwheel and wing wheels for easy taxiing. The wing wheels are mounted only approx. 8.5 m outboard of the fuselage centre to allow taxiing on narrow taxiways.

Other characteristics:

- Water ballast bags in the wings are optional.
- Standard: A ballast-box is installed in the fin. It can be used to compensate for the mass of the rear pilot and as trim-possibility for heavy pilots.
- Max. ballast capacity: 12 kg.
- Option: 2 ballast boxes in the front cockpit. The trim-weights used for the trim-ballast box in the fin also fit into these ballast boxes.

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1.5 Three view drawing (dimensions in mm)



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2.20 Limitations placards

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Type: DG – 1000M Serial No.: 10- M
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
Powerplant extended	185	100
Powerplant extension-retraction	100	54

Approved aerobatic manoeuvres, approved up to a max. mass of 683 kg /1506 lbs:
Pos. Loop, Chandelle, Spin, Stall turn

Maximum mass: 790 kg /1742 lbs.

Loading chart

Cockpit load	front seat		rear seat		(Parachute
maximum	110 kg	242 lbs.	90 kg	198 lbs.	included)
or maximum	105 kg	231 lbs.	105 kg	231 lbs.	
minimum	kg	lbs.	/	/	without fin battery
minimum	kg	lbs.	/	/	With fin battery

With lower pilot weight necessary ballast must be added.
Warnung: Um die vordere Schwerpunktlage einzuhalten, dürfen schwere Piloten die DG-1000M doppelsitzig nur betreiben, wenn Sie die Masse von vorderem und hinterem Piloten siehe FHB Abschnitt 6.8.7 austrimmen.

Pre-flight 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. Trim ballast box in the fin, correct amount filled in? Locking device completely engaged?
10. Battery in the fin? Loading chart regarded?
11. Trim?

In addition for self launching
12. Fuel level?
13. Fuel cock open?
14. Canopy open, propeller circle clear?
15. After engine start close and lock both canopies.
16. Check max. engine RPM, min. 5900RPM.
17. Check both ignition circuits (4000 RPM)
18. Check emergency system (4000 RPM)
19. Runway free?

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 3 bar
Tyre pressure 43.5 psi
Main wheel

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

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

LG ext.-retr. up to 185 km/h 100 kts.

Below the controls and control lights for the electrically operated landing gear

Benzin min. 95 Okt. petrol min. 95 ROZ. **50:1** Zweitaktöl two stroke oil **40 l**

On top of main bulkhead left hand side and at fuel filler (Option)

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

Note: Engine limitations are printed on the DEI-NT (see section 7.4).

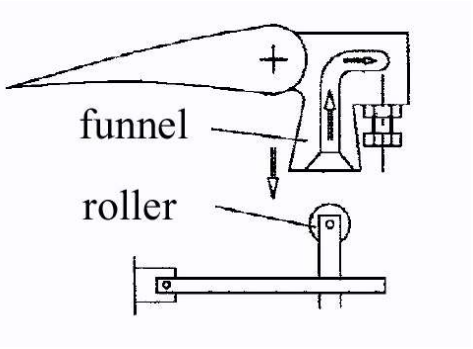
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4. Rigging of the stabilizer
   Battery box in the fin: Check if the securing wire 10L35 (made from piano wire) is installed. If a battery is to be installed refer to section 4.2.5, connect the battery.

Caution: Rigging of the horizontal tailplane is only permitted with nose down trim-setting. Therefore operate the trim release lever and push the control stick forward, then release the lever to engage the trim (don't operate the trim control knob, the trim should not be pushed to the most nose down position).

Screw the tool W 38/2 into the securing plate (near the top of the left surface of the fin). Pull out the securing plate with the tool, move it downwards to engage in the rigging position. Set the stabilizer on, so that the roller at the fuselage side push rod is inserted into the funnel at the elevator.

Monitor the procedure carefully!



When the stabilizer is set down and laying on the fin, push it aft. The roller will engage and slide forward in the funnel if you hold the elevator in the pertinent position.

Release the securing device by pulling out with the tool and engage the securing device by lifting the tool. The securing plate must be flush with the surface of the fin. Screw out the tool.

Check for correct elevator connection by looking from the rear into the gap at the right hand side of the rudder.

5. Rigging of the outboard wing panels: Insert the wing tip extensions into the wing. Press in the locking pin with your finger.
   Insert the wing tip until the aileron connector starts to slide onto the aileron. Strike firmly with the palm of your hand on to the wing tip to lock in the wing tip extension.

Caution: Due to flutter reasons it is not allowed to mount additional masses (e.g. cameras) at the winglets!

6. Tape the gaps of the wing-fuselage junctions and the wing joints.

7. Execute a positive control check, one helper to hold firmly the control surfaces is needed.

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7.17 Miscellaneous equipment (Options)

7.17.1 Removable ballast for under weight pilots

The ballast boxes (Option) at the right and left hand side of the instrument console underneath the carpets can accommodate 2 ballast weights of min 2.4 kg (5.3 lbs.) each. Each weight compensates a pilot mass of 3.2 kg (7 lbs.). So a max. of 12.8 kg (28 lbs.) missing pilot mass can be compensated.
The ballast weights are to be fixed in the box with a M8 knurled nut.
The ballast weights used for the ballast box in the fin may be used for these ballast boxes too.

7.17.2 Oxygen system

a) Installation of the oxygen cylinders
2 oxygen bottle of 3 l capacity with diameter 100 mm (3.94 in.) may be installed.
Installation places: One bottle in front of the rear seat and one bottle in the baggage compartment, see drawing 10R146 (attached to the MM).
Installation is only approved using the equipment supplied by DG-Aviation GmbH..

Note: If an oxygen bottle is installed in the baggage compartment installation of a battery see section 7.17.5 and/or of an ELT see section 7.17.3 is not possible.

b) Installation of the oxygen system
To ensure a safe installation ask DG Aviation for an installation instruction.
For the installation of the Dräger Höhenatmer E 20088 you will find an installation plan 5EP31 in the maintenance Manual.

7.17.3 ELT Emergency Locator Transmitter

Installation see maintenance manual DG-1000M section 6.10.2.

7.17.4 Transponder

Installation see maintenance manual DG-1000M section 6.10.1.

Caution: The antenna wire must be installed during production of the aircraft, retrofit is not possible.

Caution: Concerning 7.17.2 up to 7.17.4
The installation has to be accomplished by DG-Aviation or by an approved service station and to be inspected and entered in the aircraft log book and released to service.

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