

Flight manual DG-500MB

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 Revision No. and the date will be shown on the bottom left hand of the page.

Rev. No.	Affected Pages/ section	Description	Issue Date	LBA Approval Date	Inserted Date Signature
1	0.5, 7.8	DEI circuit breaker, manual revision TN 843/13	Oct. 1999	03.11.99	
2	0.3, 4.8	Greasing schedule, manual revision TN 843/16	Jan. 2001	07.02.01	
3	0.3, 0.4, 0.5, 3.3, 3.4, 4.3, 4.5, 4.8, 4.12, 4.13, 4.14, 4.18, 4.21, 4.22, 5.5, 7.6, 7.7, 7.8, 7.12, 8.7	Engine control, manual extension and retraction control, manual revision TN 843/17	July 2002	31.07.02	
6	0.4, 0.5, 4.20, 8.7	Manual revision TN 843/19	March 2004	20.04.04	
7	0.3, 0.4, 2.8, 3.7, 3.8, 4.1, 4.25, 4.26	Manual revision TN 843/24	January 2006	6.03.06	

Flight manual DG-500MB

0.2 List of effective pages

Section	Page	issued	replaced	replaced	replaced
0	0.0	July 1999			
	0.1	See Record of revisions			
	0.2	"			
	0.3	"			
	0.4	"			
	0.5	"			
	0.6	Nov. 98			
1	1.1	Nov. 98			
	1.2	July 1999			
	1.3	Nov. 98			
	1.4	"			
	1.5	"			
	1.6	"			
	1.7	"			
	2	App..	2.1	Nov. 98	
"		2.2	"		
"		2.3	"		
"		2.4	"		
"		2.5	"		
"		2.6	"		
"		2.7	"		
"		2.8	"	Jan. 06	
"		2.9	"		
"		2.10	"		
"		2.11	"		
"		2.12	"		
3		"	3.1	Nov. 98	
	"	3.2	"		
	"	3.3	"	July 02	
	"	3.4	"	July 02	
	"	3.5	"		
	"	3.6	"		
	"	3.7	"	Jan. 06	
	"	3.8	Jan. 06		
	4	"	4.1	Nov. 98	Jan. 06
"		4.2	"		
"		4.3	"	July 02	
"		4.4	"		
"		4.5	"	July 02	
"		4.6	"		
"		4.7	"		
"		4.8	"	Jan.01	July 02
App.		4.9	"		

Flight manual DG-500MB

0.2 List of effective pages (cont.)

Section	Page	issued	replaced	replaced
4	App.	4.10	Nov. 98	Jan. 06
	"	4.11	"	
	"	4.12	"	July 02
	"	4.13	"	July 02
	"	4.14	"	July 02
	"	4.15	"	
	"	4.16	"	
	"	4.17	"	
	"	4.18	"	July 02
	"	4.19	"	
	"	4.20	"	March 04
	"	4.21	"	July 02
	"	4.22	"	July 02
	"	4.23	"	
	"	4.24	"	
	"	4.25	"	Jan. 06
	"	4.26	"	Jan. 06
"	4.27	"		
5	"	5.1	Nov. 98	
	"	5.2	"	
	"	5.3	"	
	"	5.4	"	
	App..	5.5	"	July 02
		5.6	"	
		5.7	"	
		5.8	"	
		5.9	"	
		5.10	"	
		5.11	"	
		5.12	"	
6		6.1	Nov. 98	
		6.2	"	
		6.3	"	
		6.4	"	
		6.5	"	
		6.6	"	
		6.7	"	
		6.8	"	
		6.9	"	
		6.10	"	

Flight manual DG-500MB

2.9 Approved manoeuvres

This sailplane is certified for normal gliding in the "Utility" category. Simple aerobatics are approved but only without waterballast and with the engine retracted. The following aerobatic manoeuvres are approved see sect. 4.5.12:

Manoeuvre	recommended entry speed IAS	
	km/h	kts.
Spins	/	/
Inside Loop	200	108
Lazy Eight	200	108
Chandelle	200	108
Turn (only with 20 m wing span)	200	108

2.10 Manoeuvring load factors

The following load factors must not be exceeded:

at manoeuvring speed	VA + 5.3 -2.65
at max. speed	VNE + 4.0 -1.5
airbrakes extended	VNE + 3.5
wingflaps in landing position	VFE + 4.0

2.11 Flight crew

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 page 6.5	

b) two seated

max. cockpit load is 210 kg (463 lbs.) with a max. of 105 kg (231 lbs.) in the front seat or 110 kg (242 lbs.) in the front seat and 90 kg (198 lbs.) in the rear seat.

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 2.8 will be kept in the limits if the empty weight C.G. is in its limits. see loading chart in sect. 6.

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.

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 anchorage points. Installation for removable trim ballast see sect. 7.16.1.

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. 7.16.1 is mandatory.

Flight manual DG-500MB

3.15 Flight with asymmetric waterballast

If you suspect that the waterballast does not dump symmetrically you have to close the dump valves of the wingtanks immediately, to avoid greater asymmetry.

Asymmetry can be verified by the necessary aileron deflection in straight flight at low airspeeds.

When flying with asymmetric waterballast you have to increase the airspeed, especially in turns, so that you can avoid a stall at all costs.

If the aircraft does enter a spin, you have to push the stick forward clearly during recovery.

Fly the landing pattern and touch down approx. 10 km/h (6 kts.) faster than usually and after touch down control carefully the bank angle to avoid the wing touching the ground too early.

3.16 Emergency wheel up landing

It is not recommended to execute a wheel up emergency landing, as the energy absorption capability of the fuselage is much smaller than that of the landing gear.

If the landing gear can't be extended use wing flap setting L and touch down with small angle of attack.

3.17 Emergency ground loop

If there is the risk of overshooting the landing strip you have to decide at least 40 m (130 ft) before the end of the field to execute a controlled ground loop.

If possible turn into the wind, lift the tail by pushing the stick forward.

Flight manual DG-500MB

3.18 Emergency landing on water

From the experience with emergency water landing we know, that it is likely that the sailplane will dive into the water, cockpit first.

Therefore an emergency landing on water should be the last choice. In the case of a water landing, however, extend the landing gear.

On downwind leg of the landing pattern: Extend the landing gear, unlock the parachute harness (not the seat harness)

Touch down: With landing gear extended and airspeed as low as possible.

At point of touch-down: Use your left arm to protect your face against possible canopy fracture.

After touch down: Unfasten seat belt harnesses and undo parachute.

Leaving the cockpit under water: If the canopy has not fractured, opening the canopy may be possible only after the forward fuselage is almost completely filled with water.

Flight manual DG500 MB

Section 4

- 4. Normal procedures
 - 4.1 Introduction
 - 4.2 Rigging and derigging, filling the watertanks, refuelling
 - 4.2.1 Rigging
 - 4.2.2 Filling the watertanks (Option)
 - 4.2.3 Filling and dumping the fin ballast tank (Option)
 - 4.2.4 Refuelling
 - 4.2.5 Derigging
 - 4.2.6 Rigging and derigging the wing tip extensions (Option)
 - 4.3 Daily Inspection
 - 4.4 Pre-flight Inspection
 - 4.5 Normal procedures and recommended speeds
 - 4.5.1 Engine starting, taxiing procedures
 - 4.5.2 Self-launching, take off and climb
 - 4.5.3 Tow launch
 - 4.5.4 Free flight
 - 4.5.5 Cruise engine on
 - Utilisation of the wing fuel tanks
 - 4.5.6 Engine stop - retraction and extension – start in flight
 - 4.5.7 Approach and landing
 - 4.5.8 Flight with waterballast
 - 4.5.9 Flight at high altitude and at low temperatures
 - 4.5.10 Flight in rain and thunderstorms
 - 4.5.11 Cloud flying
 - 4.5.12 Aerobatics
 - 4.6 Flight with the engine removed

Flight manual DG-500MB

4.5.9 Flight at high altitude and at low temperatures

With temperatures below 0°C (32°F) for instance when wave flying or flying in winter, it is possible that the control circuits could become stiffer. Special care should be taken to ensure that there is no moisture on any section of the control circuits to minimize the possibility of freeze up. It could be advantageous to apply Vaseline along all the edges of the airbrake cover plates to minimize the possibility of freezing closed.

Apply the controls in short periods.
It is not allowed to carry waterballast.

Caution:

1. At temperatures below -20°C (-4°F) there is the risk of cracking the gelcoat.
2. Attention must be paid to the fact that at higher altitudes the true airspeed is greater than the indicated airspeed.

The max. speed VNE is reduced. See the following table:

Altitude in					
Metres	0-2000	3000	4000	5000	6000
VNE IAS km/h	270	256	243	230	218

Altitude in					
ft.	0-6600	10000	13000	16000	20000
VNE IAS kts.	146	138	131	124	117

3. Dump the water ballast before you reach freezing altitude or descend to lower altitudes.
4. Do not fly below 0°C (32°F) when your glider is wet (e.g. after rain).

4.5.10 Flight in rain and thunderstorms

With light rain the stall speed and the sink rate increases slightly and the approach speed has to be increased.

With the engine running

In normal rain, the rate of climb will be reduced by 1/3. The cross country cruising speed will also be reduced by approx. 10 km/h (5 kts). Take off in rain should only be done with a long enough airfield and attention given to safety. A take off should not be attempted in heavy rain. Rain increases the wear on the leading edge of the propeller so that any flight in rain should be kept to the absolute minimum.

Warning: Flights and especially winch launches in the vicinity of thunder storms should be avoided. Due to lightning discharge, carbon fibre structures may be destroyed.

Flight manual DG-500MB

4.5.11 Cloud flying

(only without waterballast and with the engine retracted)

Take care to fly smoothly and coordinated. It is prohibited to use a spin as a method for loosing altitude in the clouds. In case of emergency, pull out the dive brakes fully before exceeding a speed of 200 km/h and dive with max. 200 km/h (108 kts) to leave the cloud.

Warning: Flying in or near thunderstorm-clouds is prohibited.

4.5.12 Aerobatics

Permissible only without ballast in the wings and with the engine retracted

Execute only the approved manoeuvres.

Wing flap setting for all manoeuvres 0°.

Approved manoeuvres

Entry Speed

1. Spins	
2. Inside Loop	200 km/h (108 kts)
3. Chandelle	200 km/h (108 kts)
4. Lazy Eight	200 km/h (108 kts)
5. Stall turn (only with 20 m wing span)	200 km/h (108 kts)

Spins:

Caution: Prolonged spinning is only possible at aft C.G. positions, this means single seated. It is not necessary to extend the dive brakes during spin recovery. The DG-500MB shows a very large nose down pitch after leaving the spin. So you have to flare out correspondingly.

With **medium and forward C.G. positions** prolonged spinning is not possible. The DG-500MB will terminate the spin by itself after a certain number of turns dependent on the C.G. position. The nose down pitch and speed will be high so with these C.G. positions not more than 1 turn spins should be executed, to avoid high g-loads.

In addition there is a tendency that the spin will turn into a spiral dive after 1 or 2 turns. Reaching this state you have to recover immediately.

Inducing the spin: (Normal procedure)

Gradually bring the sailplane into a stall. When it starts to burble, pull the stick back completely and kick in full rudder in the spin direction.

Recovering from the spin:

Apply full rudder opposite against direction of the spin, pause, then ease stick forward until the rotation ceases, centralize the controls and carefully pull out of the dive. The ailerons should be kept neutral during recovery. Height loss during recovery is approx. 100 m (320 ft), the max. speed is 200 km/h (108 kts).