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F L I G H T M A N U A L
for the
M O T O R G L I D E R

DG-800B

Commercial designation from ser. no. 8-219 on: ***DG-808B***

Model: DG-800B (SOLO 2 625 01)

German Data Sheet No.: 873

Factory Serial No.: _____

Registration No.: _____

Date of Issue: March 1998

Pages as indicated by "App." are approved by:

(Signature) _____

(Authority) Anerkannt durch Luftfahrt-Bundesamt

(Stamp) 

(Original date of approval) 20. März 98

This motorglider is to be operated in compliance with information and limitations contained herein.
The original German Language edition of this manual has been approved as operating instruction according to "Paragraph 12(1) 2. of Luft-Ger Po".
Approval of translation has been done by best knowledge and judgement.

Rev. No.	Affected Pages/ section	Description	Issue Date	LBA Approval Date	Inserted Date Signature
8	0.4, 0.5, 4.8, 4.9, 7.14	Hydraulic disc brake TN 873/17 (Option)	October 1999	Nov. 1. 1999	
9	0.4, 4.4, 4.5	Permanently installed refuelling pump (Option)/ pump control from ser.no. 8-173 on ÄM 800-10-99	Nov. 1999	Nov. 12. 1999	
10	0.3, 0.5, 2.7, 6.2	Maximum mass of all non lifting parts ÄM 800-11-99 from ser.no. 8-191 on	Nov. 1999	Dec. 14. 1999	
11	0.4, 0.5, 4.12, 7.6,	TN 873/19 powerplant control extension-retraction switch unit (retrofit, standard from ser.no. 8-195 on)	May 2000	July 5. 2000	
12	0.3, 0.5, 2.10, 7.14	ÄM 800-12-00 Tow hooks/ only for aerotow (Option)	Sept. 2000	24.10.00	
13	0.5, 7.5	TN 873/20 Parking brake combined with an airbrake securing device (retrofit, standard from ser.no. 8-219 on)	Dec. 2000	07.02.01	
14	0.3 – 0.5, 1.5, 1.6, 3.6, 4.12, 4.13, 4.13a, 4.19, 4.20, 4.22, 7.3, 7.6, 7.7	ÄM 800/13/00 Vertical tailplane, steerable tailwheel, powerplant incl. electrics from ser.no. 8-219 on	Dec. 2000	12.02.01	
15	0.3, 0.4, 2.7, 4.14, 4.26	TN 873/23 manual revision	Febr. 2001	26.02.01	
16	0.3, 0.4, 0.5, 2.6, 4.5, 4.6, 4.8, 7.8	TN 873/26 manual revision	Nov. 2001	21.11.01	
17	0.3-0.5, 3.4, 4.8, 4.19, 5.6, 5.8, 7.7, 7.14, 8.7	TN 873/29 manual revision	March 2004		

0.2 List of effective pages

Section		page	issued	replaced	replaced	replaced	replaced
0		0.0	March 98				
		0.1	/				
		0.2	/				
		0.3	see record of revisions				
		0.4	"				
		0.5	"				
		0.6	Nov. 97				
1		1.1	"				
		1.2	March 98				
		1.3	Nov. 97				
		1.4	"				
		1.5	"	Dec. 00			
		1.6	"	Dec. 00			
2	App.	2.1	"				
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3	"	3.1	"				
	"	3.2	"				
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	"	3.4	"	March 04			
	"	3.5	"	Febr. 99			
	"	3.6	"	"	Dec.00		
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	"	4.7	"				
	"	4.8	"	Oct. 99	Nov. 01	March 04	
	"	4.9	"	Febr. 99	Oct. 99		
4	"	4.10	"	Febr. 99			
	"	4.11	"				
	"	4.12	Dec. 97	Febr. 99	May 00	Dec.00	
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	"	4.19	"	Dec.00	March 04		
	"	4.20	"	Febr. 99	Dec.00		
	"	4.21	"				
	"	4.22	"	Dec.00			
	"	4.23	"				
	"	4.24	"				
	"	4.25	"				
	"	4.26	"	Febr. 01			
5	"	5.1	"				
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	"	5.3	"				
	"	5.4	"				
	"	5.5	"				
	"	5.6	"	March 04			
	App.	5.7	"				
		5.8	"	March 04			
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		5.11	"				
		5.12	"	Febr. 99			

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Section	page	issued	replaced	replaced	replaced	replaced
6	6.1	"				
	6.2	"	Nov. 99			
	6.3	"				
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	6.5	"				
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	6.7	"				
	6.8	"				
	6.9	"				
	6.10	"				
7	7.1	"				
	7.2	"	Febr. 99			
	7.3	"	Dec.00			
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	7.5	"	Dec. 00			
	7.6	"	May 00	Dec.00		
	7.7	"	Dec.00	March 04		
	7.8	Dec. 97	Febr. 99	June 99	Sept. 99	Nov. 01
	7.9	Nov. 97				
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	7.14	"	Oct. 99	Sept. 00	March 04	
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8	8.1	"				
	8.2	"	Febr. 99			
	8.3	"				
	8.4	"				
	8.6	"				
	8.5	"				
	8.7	"	March 04			
9	9.1	"				

3.8.2 Power loss during flight
Push the control stick forward immediately, watch the airspeed indicator!

Check
- fuel cock position?
- fuel quantity?

If no change, retract the engine or land with extended engine.

3.9 **Fires**

3.9.1 In engine on the ground
- close fuel cock and switch off ignition if the engine is still running
- keep engine extended
- switch off main switch (switch 26)
- use extinguisher, cloth or suitable external means

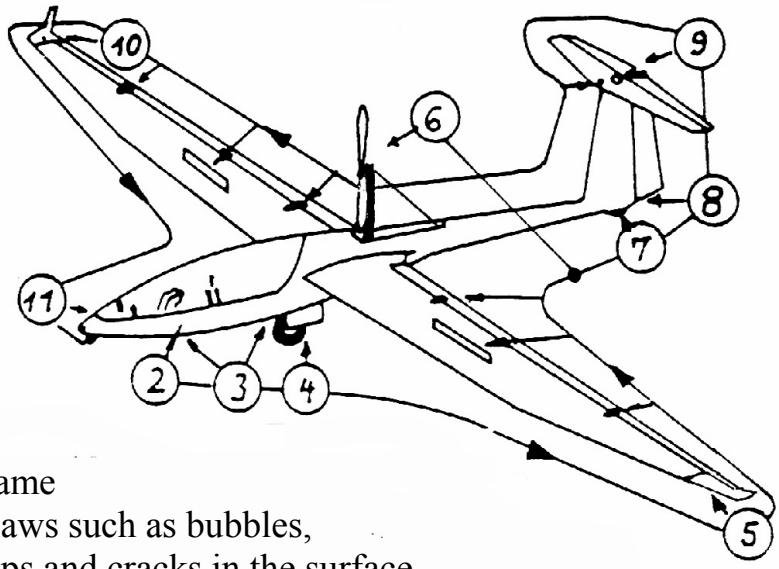
3.9.2 In engine in flight
- close fuel cock
- open throttle fully if engine is still running until engine stops
- if possible retract the engine to quench the fire
- switch off engine master switch (switch 36)
- land as soon as possible
- extinguish fire

3.9.3 **In the fuselage**

3.9.3.1 Front fuselage (electrical fire)
- switch off main switch (switch 26)
- close ventilation, open swivel air vents and side window
- land as soon as possible if the fire is not extinguished (circuits are effectively protected by circuit breakers)

3.9.3.2 Rear fuselage (engine)
- the red fire warning light will indicate a fire (temperature above 140°C, 284°F)
- close fuel cock
- open throttle fully if engine is still running until the engine stops
- if possible retract the engine to smother the fire
- switch off engine master switch (switch 36)
- if smoke prevents flying open ventilation
- land as soon as possible
- extinguish fire

B Inspection after rigging / Walk around the aircraft



1. All parts of the airframe
   a) check for flaws such as bubbles, holes, bumps and cracks in the surface
   b) check leading -and trailing-edges of the wings and control surfaces for cracks
2. Cockpit area
   a) check the canopy locking mechanism
   b) check the canopy emergency release for proper locking, check according to sect. 7.15 (not each day, but min. every 3 month)
   c) check the main pin securing
   d) check all controls for wear and function, incl. positive control check
   e) check the tow release system for wear and function incl. cable release check
   f) check for foreign objects
   g) check the instrumentation and radio for wear and function
   h) switch on the main switch, from ser.no. 8-97 on the fire warning light must flash once (self-test-function), check the engine controls
   i) check all fuses including the battery fuse
   j) check the extension-retraction mechanism by operating it in both directions. The extension time should not exceed 13 seconds!
   Note: If the mechanism can't be operated with the ignition switch or with the manual switch, check the circuit breaker.
   k) extend the engine
   l) **Option disc brake:** Check the break fluid level (the reservoir is located in the rear left hand side of the baggage compartment.
3. Tow hooks
   a) check the ring muzzle of the C.G. hook for wear and function
   b) check both hooks (if installed) for cleanliness and corrosion

4.5.6 Engine stop retraction and extension – start in flight and after landing

4.5.6.1 Stopping and retracting the engine in flight

1. Lift the rear view mirror so that you see the propeller. Check if the red cover of the manual extension - retraction switch on the right side console is in the down position (**not applicable from ser.no. 8-219 on**). Check the circuit breaker for engine extension-retraction.
2. Fly at 85-90 km/h (46-49 kts).

Caution: If the throttle is closed at speeds in excess of 100 km/h (54 kts) the engine may retract a little bit due to vibrations when slowing down. The **engine travelling** light will shine instead of **engine extended**. Slow turning of the propeller by the starter motor will no longer function. If necessary extend the engine again via the ignition switch or via the manual switch and turn the propeller into retraction position.

3. Bring the throttle back to idle. A cooling run of aprox. ½ minute is recommended.
4. Switch off the ignition.
5. The engine will be slowed down by the electric propeller brake.
6. If the propeller does not stop in the retraction position, the prop-brake will release automatically until the propeller starts turning slowly. With the ignition switched off, the propeller may be turned into the retraction position by pressing the starter button.
   The starter motor receives only pulses of electric power to turn the propeller slowly. As soon as the propeller is in retraction position, the electric power is cut off.
   If turning the propeller with the starter motor doesn't work, you may turn the propeller by increasing the airspeed. Watch the procedure in the mirror!
7. The engine will retract by itself as soon as the control light stops shining.
   In case the automatic retraction is defective, the engine must be retracted via the manual extension-retraction switch.
8. After engine retraction set the engine master switch to "off". With only short gliding flights i.e. saw tooth cross country flights, the switch can be left on "on".

Caution: If the electric propellerbrake fails, use the manual brake. Keep the brake on during the entire engine retraction.

Caution: With high temperatures (temperature on ground above 25°C/77°F) there is the risk of overheating the propeller after engine retraction. To avoid damage extend the engine again via the manual switch (approx. 1 second) to open the engine doors, retract again after 5 minutes.

5.2.3 **Take off performance**

The data is valid for take off from dry level hard surface, no wind and proper condition of engine, propeller and aircraft.
The take off procedure is to be executed according to 4.5.2.

SR = take off roll
S = take off distance to 15 m (50 ft.) altitude
T = temperature on ground
H = pressure altitude, can be computed as follows:
H (m) = (1013 mb - QNH) • 100 / 11.7 + airfield elevation (m)

18m span		m = 440 kg		m = 525 kg	
H (m)	T (°C)	SR(m)	S(m)	SR(m)	S(m)
0	0°	110	174	157	240
	15°	123	193	175	267
	30°	136	214	194	296
500	0°	124	196	177	270
	15°	138	218	197	301
	30°	153	241	218	333
1000	0°	140	221	200	305
	15°	156	246	222	339
	30°	173	272	246	376
1500	0°	159	250	226	344
	15°	176	278	251	383
	30°	195	308	278	424

15m span		m = 440 kg		m = 480 kg	
H (m)	T (°C)	SR(m)	S(m)	SR(m)	S(m)
0	0°	116	183	138	214
	15°	129	203	154	238
	30°	143	225	170	264
500	0°	131	206	156	241
	15°	146	229	173	269
	30°	161	254	192	297
1000	0°	148	232	176	272
	15°	164	259	196	303
	30°	182	286	216	335
1500	0°	167	263	198	308
	15°	186	292	221	342
	30°	205	323	244	379

Dry level grass surface increase the take off distance by 10% to 15%.
Warning: Wet soft grass surface may increase the take off distance much more

5.3 Additional Information

5.3.1 Demonstrated crosswind performance

The demonstrated crosswind velocity is 15 km/h (8 kts.) according to the airworthiness requirements.

5.3.2 Gliding performance

(data evaluated by comparison flights)

Performance data with 15 m span (S = 10.68 m²)

Wing loading	kg/m²	32	35	40	49
0	lbs/ft²	6.6	7.2	8.2	10.0
min.sink rate	m/s	.54	.57	.61	.68
1	ft/min	106	112	120	134
at V	km/h	73	77	83	92
2	kts.	39	42	45	50
best glide ratio	/	44.8	45.0	45.2	45.8
at V	km/h	98	103	110	122
	kts.	53	56	59	66

Performance data with 18 m span (S=11.81 m²)

Wing loading	kg/ m²	30	35	40	44.5
	lbs/ft²	6.1	7.2	8.2	9.1
min.sink rate	m/s	.47	.51	.54	.57
	ft/min	93	100	106	112
at V	km/h	72	77	83	87
	kts.	39	42	45	47
best glide ratio	/	49.8	50	50.2	50.7
at V	km/h	94	102	109	114
	kts.	51	55	59	62

With winglets at the 18 m tips (Option) the max. L/D is increased by approx. 1.5 points. The min. sink is reduced by approx. 0.03 m/s (6 ft/min.).

A variation in speed by ±10 km/h (5 kts) from the above will decrease the best glide angle by 0.5 glide points and increase the min. sink rate by 1 cm/sec. (2 ft/min).

For optimum performance, the aircraft should be flown with a C.G. position between medium and the rear of the allowable range. However the aircraft will be more pitch sensitive at aft C.G. position.

The wing fuselage joint and the tailplane locking bolt hole should be taped up and the aircraft thoroughly cleaned to obtain maximum performance. The polars apply to a "clean" aircraft.
With dirty wings or flight in rain, the performance drops accordingly.

Operating the wing flaps see 5.3.4.

27/1 Switch for the electric propeller-brake
(**not applicable from ser.no. 8-219 on**)
To the front = off
To the rear = automatic function



The red cover plate of the manual extension-retraction switch (27) holds the switch for the propeller brake in the „auto“ positon.

Automatic brake

After switching off the ignition the automatic brake will slow down the propeller speed. The braking procedure starts as soon as the engine speed is below 3.000 RPM. The braking is continuous until the propeller is stopped. Then the brake opens again and the propeller must be positioned vertical by the airstream or with the starter motor (ignition off see item 29). As soon as the propeller is in the correct position (control light 43 off) the brake engages and holds the propeller until the engine is retracted.

28) Fuel cock – red
to the front = open
to the rear = closed
Close the fuel cock only in an emergency
(see chapter 3)



29) Throttle handle with integrated starter button
The starter button is only activated when the engine is extended and the ignition switch is in the "on" position.

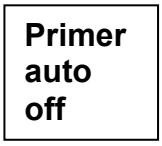


With the engine running the starter motor will be blocked automatically.

Aligning the propeller for retraction with the starter button

If after stopping the propeller is not in the retraction position, it is possible to turn the propeller slowly with the starter motor into retraction position by pressing the starter button (ignition switched off). The starter motor speed is reduced by electronic means during this procedure. This procedure should not be used on the ground so as not to unnecessarily stress the starter motor.

30) **Primer switch**
up = automatic operation
down = off (no injection)
(see also set. 4.5.1.2)



31) Manual propeller-brake (grey)



32) Rear view mirror to watch the propeller during aligning procedure

7.6 **Landing gear**

See diagram 2 M.M.

a) Main wheel: retractable, assisted by a gas strut, spring mounted, fully sealed landing gear box, internal drum brake, Tyre 5.00 - 5 4 PR or 6 PR Diameter 362 mm (14.25 in)
Tyre pressure 3.5 bar (51 psi)
Drum brake, hydraulic disc brake as an option

b) Tailwheel: Tyre 200 x 50 2 PR Diameter 200 mm (7.87 in)
Tyre pressure 2 bar (29 psi)
With plastic hub (brass hub not permitted)

7.7 **Tow hooks**

See diagram 5 M.M.
"Safety release G 88" for winch- and aerotow installed near the C.G..
additional as option "nose release E 85" installed under the instrument console, only for aerotow. Both hooks are operated by the same handle.
Warning: If no C.G. hook is installed, winch launching is not permitted with this glider.

7.8 **Seats and safety harness**

The seat is constructed as an integral inner shell.
The backrest is adjustable by means of an aircushion (Adjustment see sect. 7.3 item 22).
The backrest can be screwed to the seat shell at 3 different positions dependent on the thickness of the parachute.

The head rest is integrated in the back rest to take up the rebound forces of the pilots head in the case of a crash landing.

Warning: If the DG-800 shall be flown without back rest, a separate neckrest (Option) must be installed.

As safety harness only symmetric 4-point harnesses fixed at the given fixing points are allowed.

7.9 **Baggage compartment**

Max. load 15 kg (33 lbs.).

Heavy pieces of baggage must be secured to the baggage compartment floor. 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.).

F. Fuel lines clogged or kinked. Check fuel flow rate
see maintenance manual sect. 1.13.3.

G. If the engine can't be accelerated from idle to full throttle and cleaning the carburettors (see 4 A and B) doesn't help, you should exchange the carburettor membrane and the gaskets.

5. **Fuel leaks out of the carburettors**
see 4 A
6. **Loss of electrical power**
see flight manual sect. 3.11.
7. **Ignition problems**
No spark:
   - **on 1 spark plug of one ignition circuit:**
     Spark plug, ignition cable or electronic box defective.
   - **on both spark plugs of one ignition circuit:**
     Too low starting r.p.m.; weak battery;
     shorting cable or ignition switch having ground connection;
     electronic box defective: if after interchanging the boxes with the other ignition circuit the trouble appears on the other ignition circuit; if not, armature plate (in the engine) or cables may be defective.
   - **on none of the spark plugs:**
     too low starting r.p.m.; weak battery;
     shorting cable or ignition switch having ground connection;
     cable defective;
     If after interchanging the boxes with the other ignition circuit one circuit will function again, one electronic box and the armature plate are defective.
8. **Engine becomes too hot**
Carburettor fuel nozzles clogged
Fuel lines clogged,
Fuel filter dirty
Cooling system defective
(Test of the coolant pump see DG Service Info 49-02)
Spark plugs defective
Ignition timing not correct
9. **Sudden power loss at full throttle**
Check pistons and cylinders for seizing marks, see maintenance manual sect. 3.5.1 item 12.
10. **Coolant pump and 2. fuel pump (if installed) running** with ignition switched off (engine master switch on). If this failure occurs, there is a short in the generator or generator circuit.