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
01	0.3-0.5, 2.1, 2.6, 2.8, 2.10, 2.12, 4.2, 4.4, 4.8, 4.18, 4.21, 4.25, 4.26, 5.11, 6.3, 7.3, 7.12, 8.6	Manual revision TN 873/5	Oct. 95	Nov.09.95	
02	0.3-0.5, 2.6, 4.11, 4.16, 6.3, 7.7	Manual revision TN 873/8	March 97	June 05.97	
03	0.5, 9.1, 9.2, 9.3	Winglets at the 18 m wingtips TN 873/9	July 97	March 05.98	
04	0.5, 7.5	Parking brake TN 873/14	June 99	July 07. 99	
05	0.5, 7.5	Parking brake combined with an airbrake securing device TN 873/20	Dec. 00	Febr. 07.01	
06	0.5, 9.1, 9.2, 9.4-9.6	Emergency bail-out aid NOAH (Option) TN 873/18	June 02	08.08.02	
07	0.3-0.5, 4.5, 4.5a, 5.6, 7.7, 7.11, 7.16, 8.7	Manual revision TN 873/32	October 04	05.11.04	

0.2 List of effective pages

Section		page	issued	replaced	replaced
0		0.0	Sept. 93		
		0.1	/		
		0.2	/		
		0.3	see manual amendments		
		0.4	"		
		0.5	"		
		0.6	Sept. 93		
1		1.1	Sept. 93		
		1.2	Febr. 94		
		1.3	Sept. 93		
		1.4	"		
		1.5	"		
		1.6	"		
2	App.	2.1	"	Oct. 95	
	"	2.2	"		
	"	2.3	"		
	"	2.4	"		
	"	2.5	"		
	"	2.6	"	Oct. 95	March 97
	"	2.7	"		
	"	2.8	"	Oct. 95	
	"	2.9	"		
	"	2.10	"	Oct. 95	
	"	2.11	"		
	"	2.12	Okt. 95		
3	"	3.1	Sept. 93		
	"	3.2	"		
	"	3.3	"		
	"	3.4	"		
	"	3.5	"		
	"	3.6	"		
	"	3.7	"		
4	"	4.1	"		
	"	4.2	"	Oct. 95	
	"	4.3	"		
	"	4.4	"	Oct. 95	
	"	4.5	"	Oct. 04	
	"	4.5a	"	Oct. 04	
	"	4.6	"		
	"	4.7	"		
	"	4.8	"	Oct. 95	
	App.	4.9	"		

0.2 List of effective pages (cont.)

Section		page	issued	replaced	replaced
4	App.	4.10	Sept. 93		
	"	4.11	"	March 97	
	"	4.12	"		
	"	4.13	"		
	"	4.14	"		
	"	4.15	"		
	"	4.16	"	March 97	
	"	4.17	"		
	"	4.18	"	Oct. 95	
	"	4.19	"		
	"	4.20	"		
	"	4.21	"	Oct. 95	
	"	4.22	"		
	"	4.23	"		
	"	4.24	"		
	"	4.25	"	Oct. 95	
	"	4.26	"	" "	
5	"	5.1	"		
	"	5.2	"		
	"	5.3	"		
	"	5.4	"		
	"	5.5	"		
	"	5.6	"	Oct. 04	
	App.	5.7	"		
		5.8	"		
		5.9	"		
		5.10	"		
		5.11	"	Oct. 95	
		5.12	"		
6		6.1	"		
		6.2	"		
		6.3	"	Oct. 95	March 97
		6.4	"		
		6.5	"		
		6.6	"		
		6.7	Sept. 93		
		6.8	not effective		
		6.9	Sept. 93		
		6.10	"		

0.2 List of effective pages (cont.)

Section	page	issued	replaced	replaced
7	7.1	Sept. 93		
	7.2	"		
	7.3	"	Oct. 95	
	7.4	"		
	7.5	"	June 99	Dec. 00
	7.6	"		
	7.7	"	March 97	Oct. 04
	7.8	"		
	7.9	"		
	7.10	"		
	7.11	"	Oct. 04	
	7.12	"	Oct. 95	
	7.13	"		
	7.14	"		
	7.15	"		
	7.16	"	Oct. 04	
	7.17	"		
	7.18	"		
8	8.1	"		
	8.2	"		
	8.3	"		
	8.4	"		
	8.5	"		
	8.6	"	Oct. 95	
	8.7	"	Oct. 04	
9	9.1	July 97	June 02	
	9.2	June 02		
	9.3	July 97		
	9.4	June 02		
	9.5	"		
	9.6	"		

4.2.3.4 Storage of the pump system (see a)

To increase the lifetime of the pump it is better not to empty the pump, but to store the pump filled with fuel. Therefore remove hose A by disengaging the coupling . The couplings C + D are closing the fuel lines to the pump when disengaged.

4.2.3.5 Wing fuel tanks (Option)

Filling can only be done by using the separate electric pump system Z 02/2. Therefore the fuselage tank should not be filled completely, otherwise the pump system will switch off.

Close the wing tank valves in the fuselage. Attach the quick connector C of the pump system to the wing fuel tank, plug the hose A into the quick connector D and the other end into a canister. Switch on the pump for min. 1 minute to remove air and any remains of fuel from the tank.

Remove the quick connector C from the wing tank and plug hose A into quick connector C.

Place the wing tip of the tank to be filled on the ground.

Connect the quick connector D to the wing tank and fill the wing tank. Fill in max. 10l (2.64 US gal).

After filling the wing tank connect the fuselage connector to the wing connector.

Caution: Empty the wing fuel tanks prior to derigging.

Don't park the rigged glider with filled wing fuel tanks for extended periods!

Warning: Overfilling the tanks will damage the wing-shell due to the pressure of the refuelling pump.

4.2.3.6 **In case there is no can available for premixing the fuel and oil for filling** the wing tanks, the fuselage tank can be used. Transfer approx. 5 litres (1.3 US gal.) of fuel into the fuselage tank, pour in the oil and fill the tank with fuel. Then fill the wing tanks (option) from the fuselage tank.

4.2.4 Derigging

Derigging follows the reverse of rigging.

Waterballast must be dumped first.

Transfer the fuel from the wing tanks (Option) to the fuselage tank or empty the wing tanks using the electric pump system in reverse.

Disconnect the connectors from the wing fuel tanks.

Lock the airbrakes.

4.2.5 Rigging and derigging the wing tip extensions (Option)

1. Insert the wing tip extensions into the wing.
   Press in the locking pin with your finger.
   Insert the wing tip as far as the flaperon connector starts to slide into the flaperon slot.
   Strike firmly with the palm of your hand on to the wing tip to lock in the wing tip extension.
2. Disassembling of the wing tip
   Use a diameter 6 mm pin for pressing in the locking pin on the wings upper side.

1. The rigging of the 15 m wingtips with winglets (Option) has to be done analogous to the wing tip extensions.

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°	130	229	175	291
	15°	145	255	195	324
	30°	160	282	216	359
500	0°	146	258	197	327
	15°	163	287	219	364
	30°	180	317	243	403
1000	0°	165	290	222	368
	15°	183	323	247	410
	30°	203	357	273	454
1500	0°	187	329	252	419
	15°	208	367	280	466
	30°	231	406	310	516
15m span		m = 440 kg		m = 525 kg	
H (m)	T(°C)	SR(m)	S(m)	SR(m)	S(m)
0	0°	136	230	193	316
	15°	151	256	215	352
	30°	167	284	238	390
500	0°	153	259	217	356
	15°	170	288	242	396
	30°	188	319	268	438
1000	0°	172	291	244	400
	15°	191	324	272	445
	30°	211	359	301	493
1500	0°	195	331	278	455
	15°	217	368	309	506
	30°	240	408	342	560

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

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. As soon as an engine speed of 1200 RPM is exceeded, the starter will be switched off.

Throttle

Starter

Aligning the propeller for retraction with the starter button
If the propeller after stopping 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 due to the slow starter motor speed.

30) Choke (black) pulled out = closed
pushed in (front) = open

Choke

31) Propellerbrake manual

Propeller-brake

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

33) Fuses



a) circuit breaker 10 A for the engine extension - retraction motor

b) circuit breaker 4 A for the DEI

c) circuit breaker 4 A for the 12 V socket

d) circuit breaker 3 A for the radio

e) circuit breaker 3 A spare for turn-and bank indicator or horizon

f) circuit breaker 2 A for the electric variometer

g) circuit breaker 10 A for the generator, the control unit and the proximity switch

34) Switch for the electric propellerbrake (Option)

on prop
off
auto brake

to the rear:	automatic brake	on	prop
centre:	off	off	brake
to the front:	braked	auto	

The red cover plate of the manual extension-retraction switch (27) holds the switch for the propellerbrake in the "auto" position.

44) Outside air temperature OAT indication (Option).
Switch No. 43 to the left: OAT in °C is displayed on the right display.
Note: If the option is not installed and you press switch No. 43 to the left nothing will be displayed on the right display.

45) Display for the fuel level in the fuselage tank in liters.
Fuel Liter The amount displayed is the total amount in the tank less 0.5l (0.13 U.S.gal.) unusable amount. When reaching the non usable amount of fuel LL will be displayed and the display starts blinking.

46) Display for the engine speed x 10 **engine speed RPM x 10**
e.g. **6 0 2** means 6020 RPM engine speed. When exceeding the max. continuos engine speed of 6100 RPM a blinking double point will appear in front of the last digit, e.g. **6 1:1** .
When exceeding the max. engine speed of 6800 RPM the whole display starts blinking **6 8:1** .

After switching off the ignition (DEI still switched on) 3 dashes will be displayed **- - -** .
As soon as the propeller is aligned or the ignition is switched on again, the engine speed will be displayed.

- - - shows that the DEI is working in the sequence which controls the optional electric propellerbrake (item 34) even if this option is not installed.

Caution: If **0 0 0** is displayed instead of the engine RPM the proximity switch at the upper drive belt pulley is defective (short circuit in the switch).
With this defect the control light 41 will not work and the automatic retraction of the engine will not be activated.
You have to retract the engine with the manual switch.
A new proximity switch must be installed prior to the next engine start.

7.11. Powerplant

7.11.1 Engine Rotax 505

Manufacturer:	Bombardier Rotax at Gunskirchen, Austria
Type:	aircooled 2-cylinder twostroke engine with dual electronic ignition.
Take off power:	43 PS (31 KW) at 6200 RPM
Reduction:	2 : 1 by toothed drive belt

7.11.2 Propeller

MT 136 R 75 - 1 B

Manufacturer	mt-propeller at Straubing FRG
Type:	Wooden propeller

7.11.3 Extension - retraction mechanism

Electric spindle drive with ball screw shaft.
The opening and closing of the engine bay doors is automatic.

7.12 Fuel system

7.12.1 **Fuselage tank** 22 l (5.8 US gal.) (useable amount of fuel)
A condenser type probe is installed in the tank to allow an indication which is almost independent from the pitch angle. A pressure switch at the tank outlet cuts off the electric power for the refuelling electric fuel pump system (Option) as soon as the tank is full.

7.12.2 Fuel pumps

a) electric fuel pump, controlled via the ignition switch, installed on the fuselage floor.
b) mechanical diaphragm fuel pump driven by the vacuum impulses from the crankcase, installed inside the fuselage.

7.12.3 Wing tanks

Bags with approx. 10 l (2.6 US gal.) volume.
Type HFK: The bags are each equipped with a ventilation line. A pressure valve is installed in each line to avoid inadvertent spoilage of fuel. The valve opens if the fuel pressure exceeds 0.1 bar (1.5 psi).
Type Uniroyal: The bags don’t have a ventilation line

8.8 cont.

5. **Fuel leaks out of the carburettors**
   see 4 A

6. **Loss of electrical power**
   see flight manual sect. 3.10.

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
   Spark plugs defective
   Ignition timing not correct
   Incorrect indication of the CHT-probe, this will occur in the case of the probe coming loose. Check the condition of the thread. Retighten the probe see maintenance manual sect. 1.11.10(b).

9. **Sudden power loss at full throttle**
   Check pistons and cylinders for seizing marks, see maintenance manual sect. 3.5.1 item 12.