0 MANUAL CONTENTS

0.1 Log 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 on the right margin, and the revision No. and the date will be shown on the bottom left hand of the page

Rev. No.	Pages affected	Description	Date	EASA Approval
1	0.1,0.2, 0.4, 0.5, 0.6, 0.7, 4-9, 4-55, 7-15, 7-21, 8-7	TN8017, necessary changes to the power plant	Nov. 2010	14.03.11
2	0.1, 0.2, 0.4, 0.5, 0.6, 4-27, 4-42, 4-43, 4-52, 7-3	TN8019, wheel brake actuated by airbrake handle	February 2011	13.10.11

0.2 List of Effective Pages

Chapter	Page	Issued	Issued	Issued	Issued
0	Titel page	April 2005			
	Warnings	April 2005			
	0-1	April 2005	Feb. 2011		
	0-2	April 2005	Feb. 2011		
	0-3	April 2005			
	0-4	April 2005	Feb. 2011		
	0-5	April 2005	Feb. 2011		
	0-6	April 2005	Feb. 2011		
	0-7	April 2005	Nov. 2010		
	0-8	April 2005			
1	1-1	April 2005			
	1-2	April 2005			
	1-3	April 2005			
	1-4	April 2005			
	1-5	April 2005			
2	2-1	April 2005			
	2-2	April 2005			
	2-3	April 2005			
	2-4	April 2005			
	2-5	April 2005			
	2-6	April 2005			
	2-7	April 2005			
	2-8	April 2005			
	2-9	April 2005			
	2-10	April 2005			
	2-11	April 2005			
	2-12	April 2005			
	2-13	April 2005			
	2-14	April 2005			

0.2 List of Effective Pages continued

Chapter	Page	Issued	Issued	Issued	Issued
4	4-1	April 2005			
	4-2	April 2005			
	4-3	April 2005			
	4-4	April 2005			
	4-5	April 2005			
	4-6	April 2005			
	4-7	April 2005			
	4-8	April 2005			
	4-9	April 2005	Nov. 2010		
	4-10	April 2005			
	4-11	April 2005			
	4-12	April 2005			
	4-13	April 2005			
	4-14	April 2005			
	4-15	April 2005			
	4-16	April 2005			
	4-17	April 2005			
	4-18	April 2005			
	4-19	April 2005			
	4-20	April 2005			
	4-21	April 2005			
	4-22	April 2005			
	4-23	April 2005			
	4-24	April 2005			
	4-25	April 2005			
	4-26	April 2005			
	4-27	April 2005	Feb. 2011		
	4-28	April 2005			
	4-29	April 2005			
	4-30	April 2005			
	4-31	April 2005			
	4-32	April 2005			
	4-33	April 2005			
	4-34	April 2005			
	4-35	April 2005			
	4-36	April 2005			
	4-37	April 2005			
	4-38	April 2005			
	4-39	April 2005			
	4-40	April 2005			

0.2 List of Effective Pages continued

Chapter	Page	Issued	Issued	Issued	Issued
4	4-41	April 2005			
	4-42	April 2005	Feb. 2011		
	4-43	April 2005	Feb. 2011		
	4-44	April 2005			
	4-45	April 2005			
	4-46	April 2005			
	4-47	April 2005			
	4-48	April 2005			
	4-49	April 2005			
	4-50	April 2005			
	4-51	April 2005			
	4-52	April 2005	Feb. 2011		
	4-53	April 2005			
	4-54	April 2005			
	4-55	April 2005	Nov. 2010		
5	5-1	April 2005			
	5-2	April 2005			
	5-3	April 2005			
	5-4	April 2005			
	5-5	April 2005			
	5-6	April 2005			
	5-7	April 2005			
	5-8	April 2005			
	5-9	April 2005			
	5-10	April 2005			
6	6-1	April 2005			
	6-2	April 2005			
	6-3	April 2005			
	6-4	April 2005			
	6-5	April 2005			
	6-6	April 2005			

0.2 List of Effective Pages continued

Chapter	Page	Issued	Issued	Issued	Issued
7	7-1	April 2005			
	7-2	April 2005			
	7-3	April 2005	Feb. 2011		
	7-4	April 2005			
	7-5	April 2005			
	7-6	April 2005			
	7-7	April 2005			
	7-8	April 2005			
	7-9	April 2005			
	7-10	April 2005			
	7-11	April 2005			
	7-12	April 2005			
	7-13	April 2005			
	7-14	April 2005			
	7-15	April 2005	Nov. 2010		
	7-16	April 2005			
	7-17	April 2005			
	7-18	April 2005			
	7-19	April 2005			
	7-20	April 2005			
	7-21	April 2005	Nov. 2010		
	7-22	April 2005			
	7-23	April 2005			
	7-24	April 2005			
	7-25	April 2005			
	7-26	April 2005			
	7-27	April 2005			
	7-28	April 2005			
	7-29	April 2005			
	7-30	April 2005			
	7-31	April 2005			
	7-32	April 2005			
	7-33	April 2005			
	7-34	April 2005			
	7-35	April 2005			
	7-36	April 2005			
	7-37	April 2005			
	7-38	April 2005			
	7-39	April 2005			
	7-40	April 2005			

4.7.5 RETRACTABLE LANDING GEAR

(a) Extension or retraction permitted over whole approved speed range.
(b) Rapid operation eases retraction.
(c) Handle locked in forward position = gear up.
(d) Handle locked in rearward position = gear down.

Important Note: During winch launch, retract gear after releasing tow cable, because C.G. hook is fitted to landing gear fork.
When operating landing gear at high speeds, avoid unintentional elevator movements.

4.7.6 WHEEL BRAKE

Press rudder pedals with both feet to activate wheel brake.

Important Note: For safe braking, place pedals during take-off and landing nearer to the pilot.

With TN8019 executed: The wheel brake is actuated by the air brake handle, instead of by the rudder pedals.
The important note above is not valid.

4.7.11 WINCH LAUNCH OR AUTO TOW

(a) Trim slightly nose heavy: Trim position indicator in front of neutral-mark.

(b) Adjust backrest properly (See section 4.7.4) and tighten seat belt harness to avoid sliding backwards during acceleration and steep climb.

(c) Ask winch operator to avoid too high acceleration.
The higher the initial acceleration, the higher the pitch-up tendency.

(d) Use wheel brake during tightening of tow cable to avoid rolling over cable.

With TN8019 executed: It's not recommended to use the wheel brake during tightening of tow cable.

(e) Pronounced forward stick pressure is required during transition arc.

(f) **Minimum tow speed**:

without water ballast	90 km/h <49 Kt., 56 mph>
with water ballast	110 km/h <59 Kt., 68 mph>

(g) Retract landing gear **after** tow, because C.G. hook is fitted to landing gear fork.

Warning: ***Winch launch or auto tow with engine extended is not approved.***

Winch launch with high flight mass should only be performed on appropriately powered winches!

4.7.12 AERO TOW

(a) Aero tow is approved only at the nose hook.

(b) Trim slightly nose heavy: Trim position indicator in front of neutral mark.

(c) Use wheel brake during tightening of tow cable to avoid rolling over rope.

With TN8019 executed: It's not recommended to use the wheel brake during tightening of aero tow rope.

(d) **Minimum Tow Speed**:

without water ballast	100 km/h <54 Kt., 62 mph>
with water ballast	120 km/h <65 Kt., 74 mph>

(e) Recommended tow cable length: 30 - 80 m <100 – 260 ft>

Warning: ***Aero tow with engine extended is not approved.***
Aero tow with high flight mass should only be performed behind appropriately powered tow planes. Limitations regarding tow load of tugs must be complied with!

4.7.17 LANDING

(a) Water ballast should normally be dumped prior to landing. Because of possible unequal dumping, see also "Emergency Procedures", section 3.9.4 and "Normal Procedures", section 4.7.10.6.

Caution: Water ballast discharge is recommended before landing on an airfield. Water ballast must be discharged before outlandings! *Pilots are advised against landing with maximum all-up mass.*

(b) Extend landing gear in time and lock (right hand gear handle).

(c) Place pedals near enough to pilot, to enable proper foot brake operation.

With TN8019 executed: No pedal adjustment is required before landing.

(d) Landing with gear retracted not advisable, because pilot is much better protected by the sprung landing gear compared to the fuselage shell. Check fuselage underside shell after wheel-up landings for damage.

(e) Air brakes allow control of glide angle within wide limits, therefore side-slipping is not necessary.

Warning: ***Minimum approach speed with air brakes fully extended:***
Without water ballast not below 95 km/h <51 Kt., 59 mph>.
With water ballast not below 105 km/h <57 Kt., 65 mph>.

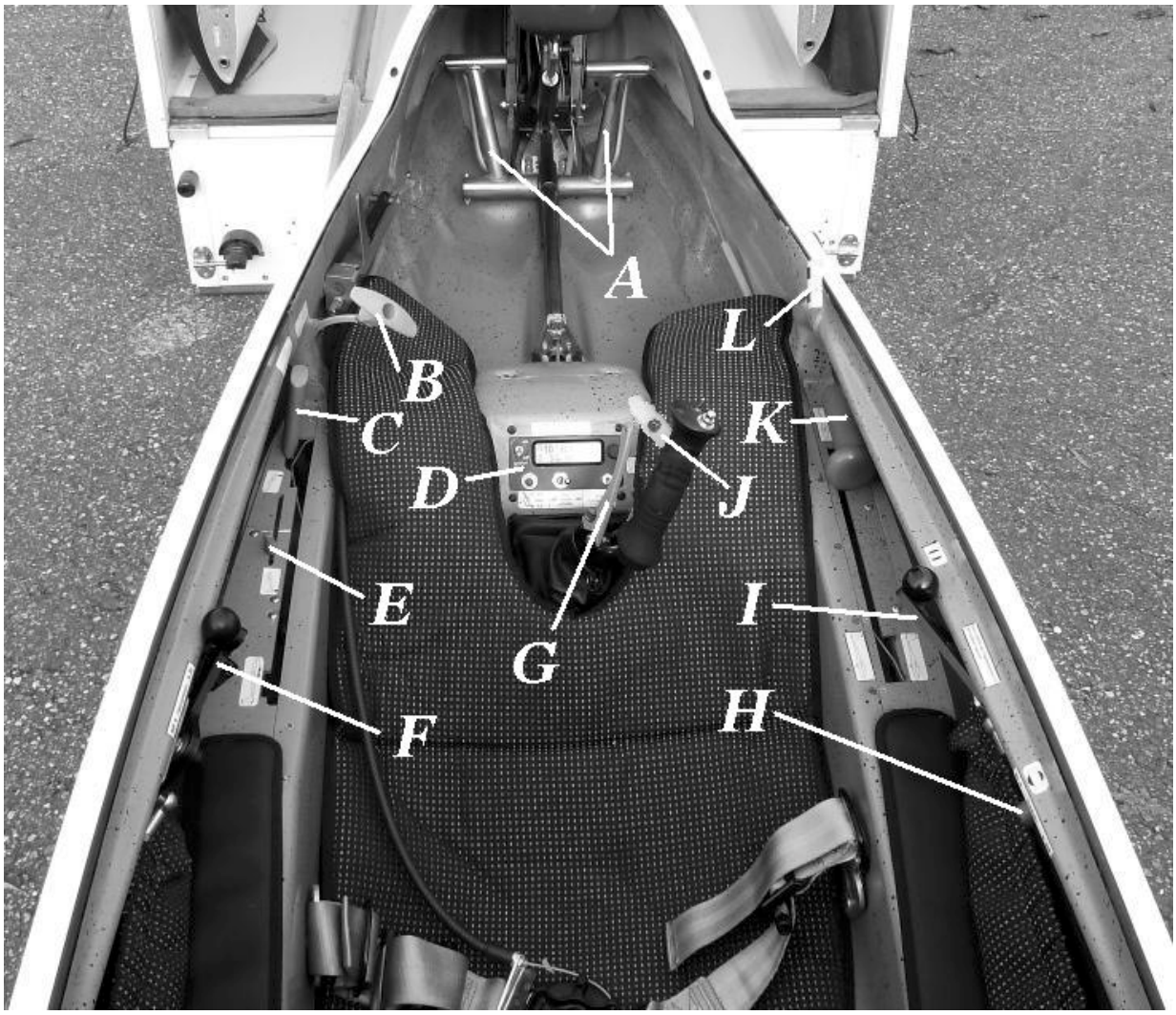
Minimum speed increases:

With air brakes extended	***by about 10 km/h <5 Kt., 6 mph>.***
In rain and with air brakes extended	***by about 20 km/h <11 Kt., 12 mph>.***

Warnung: ***Side-slip with air brakes extended is not recommended for landing, because nose heavy moment of air brakes allows no* slow *side-slip.***

Caution: Normal landing with engine retracted. When landing with engine extended cannot be avoided, take care of remarks in chapter "Emergency Procedures", section 3.9.10 .

7.2 COCKPIT CONTROLS



Description of propulsion system see section 4.3, engine region

A - Rudder pedals and wheel brake (feet operated)
A with TN8019 executed:
Only rudder pedals
B - Tow cable release
C - Air brake handle
C with TN8019 executed:
Airbrake and wheel brake
D - DEI-NT
E - Trim lever, also indicating trim position
F - Decompression handle
G - Trim locking lever
H - Fuel cock
I - Water ballast
J - Pedal adjustment
K – Landing gear lever
L - NOAH (optional, s. paragraph 9.3)