Manual amendments

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01	2, 16	Modification ÄM 800/3/95 rudder heavy version	March 95	
02	2,3,5,6, 10,23,47, 78,79	Manual revision TN 873/5	Oct. 95	
03	2-4,21,24, 53,80,92, 94	Manual revision TN 873/8	March 97	
04	2,4,16,81 draw. 8V96	Winglets at the 18m wingtips TN 873/9	July 97	
05	3,4,54,94	Dimple-tape-turbulators on the lower wing surfaces TN 873/21	Dec. 00	
06	4, diagram 8	Powerplant TN 873/25	August 01	
07	2 - 6, 23, 29, 30, 32, 47, 86	Manual revision TN 873/32	October 04	

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8EP35	Installation wing fuel bags	12.10.93
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drawing W33	Special tool	09.03.88
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0. Airworthiness limitations

0.1 Repairs

Repair damaged wings, fuselage and tail surfaces prior to next flight. Follow the instructions of the DG-800 repair manual. Repairs outside the scope of Glaser-Dirks DG-800 repair manual and major repairs must be accomplished at a certified repair station or by a certified mechanic rated for composite aircraft structure work in accordance with Glaser-Dirks repair methods.

0.2. Life time of the airframe

The maximum allowable operating time for composite sailplanes and motorgliders is 12000 flight hours. Therefore inspection according to sect. 2.4 of this manual has to be excecuted at 3000 h, 6000 h and every 1000 hours following thereafter.

0.3. Life time of components

a) The following components of the power plant have to be replaced after 300 engine hours.
   1. All nuts and bolts on the engine
   2. The drive belt
   3. The relays (starter, extension-retraction)
   4. The propeller bearings (see 4.2)

b) All **flexible fuel lines** including the plugged piece of hose at the pneumatic fuel pump have to be exchanged after 6 years. The fuel lines at the engine have to be exchanged after max. 3 years (see sect.3.5.3).

c) The **spark plugs** have to be exchanged after 25 engine hours.

d) The **fabric straps of the safety harness** have to be exchanged after 12 years.

e) **Other components**
   All other components like propeller, tow hook, wheels, gas struts, control system parts, bolts, pins etc. have no life time limitation, but should be replaced when worn, damaged or disqualified by excessive corrosion.

f) **Flexible fuel bags in the wings** (option)
   Type Uniroyal (rubber): these will have to be exchanged after 10 years
   Type HFK (plastic): see Mounting and testing instructions for HFK TLF.

0.4 Service time, maintenance documents

Follow the instructions of the respective manufacturer.

a) Tow release:
Operating Manual for Safety Tow Releases Series: Europa G 88 Safety Tow Release
Date of Issue: February 1989

and if installed:
Operating Manual for Tow Releases Series: E 85 Nose Tow Release
Date of Issue: March 1989

b) safety harness: instructions of the manufacturer

c) minimum instrumentation: instructions of the manufacturer

d) Engine: Manual for ROTAX engine type 505 version without decompressor

e) Propeller: MT-Propeller Operation and installation manual No. E-203 issued October 1988

f) Flexible fuel bags Type HFK: Mounting and testing instructions for HFK TLF.

0.5 Power plant trouble shooting

Please find a checklist in section 4.23.

1.13.4 **Fuel cocks**

One fuel cock is mounted on the fuselage floor between the tank and the electric fuel pump.
The cock is controlled by a diameter 2 mm (0.08 in.) pianowire from the cockpit.
The stops are located directly at the lever of the fuel cock.
A second fuel cock is mounted at the engine mount and opens and closes automatically with extension and retraction of the engine to prevent over-flooding the engine.

1.13.5 **Fuel filter**

The filter is installed behind the electric fuel pump. The filter is visible from the engine compartment (at the rear lift pin tube).
Warning: Use only transparent filters with a mesh as filter element. Papertype filters may cut off the fuel flow suddenly.

1.13.6 **Fuel quantity indication**

The fuel quantity measuring system in the fuselage tank is by condenser plates. The aircraft's attitude hardly affects the readout.
Incorrect readings can result if the condenser plates are dirty.
A thorough flushing of the plates and fuel tank should solve the problem.
As different fuel qualities may result in different readings a calibration should be executed each time the tank is filled completely, see 1.13.2.
After replacement of the DEI you have to execute a complete fuel gauge calibration according to sect. 4.22.

1.14.8 Socket in baggage compartment

It is used for:
- battery charging (main switch in on-position, two way switch in DEI in Avionik position).
- to provide power for external accessories.

Required plug see part list 8.2.

Connection of the socket terminals: centre pin is positive.

1.14.9 Power plant extension-retraction mechanism

The 12 V DC electrical motor of the system is fitted with an anti interference filter no.4E10. The filter is fixed to the motor by a ty-rap.

The automatic extension and retraction is controlled by the control unit see 1.14.3. This system is installed in the relay compartment.

The extension-retraction motor will be switched off at the end limits by limit switches see 1.14.14 with short delay.

Caution: If the proximity switch (see 1.14.15) is defective (short circuit) a safety interlock in the control unit 8E3 prevents the engine from being retracted automatically with the propeller not in the correct position. The retraction of the engine must be done with the manual switch. The DEI will display **0 0 0** instead of the engine speed. The proximity switch must be exchanged prior to the next engine start.

1.14.10 Manual extension-retraction switch

This switch unit consists of 2 switches.

If you lift the red cover you operate the first switch which cuts off the automatic extension -retraction.

The second switch below the red cover plate activates the extension/retraction motor directly, bypassing the control unit and the safety functions in the DEI.

1.14.11 **Starter Press Button**

The starter press button is located in the middle of the throttle handle and activates the starter relay via the interlock in the DEI and the control unit see 1.14.3.

1.14.12 **Wiring**

Wires from battery to main switch, starter and earth cable LN 9251 white 9mm² = AWG 8 or MIL22759 14mm² = AWG 6..

Power cables LN 9253 A white 1.2mm² = AWG 16 and 2mm² = AWG 14.
Control wiring LN 9253 A white and red 0.4mm² = AWG 22.

Ignition and measuring cables LN 29871 outer cover white, inner cable blue and red, 2 x 0.4mm² = 2 x AWG 22.

Instead of wires from the LN specifications mentioned above suitable wires approved for aircraft use from other aircraft or MIL specifications may be used.
Operating range min.: -55°C up to 105°C (-67° - 220° F) Operating voltage 600 V.

1.14.13 **Circuit breakers and 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 2,3 A for the radio
e) circuit breaker 2,3 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 battery main fuses are located in the seat shell at the right hand side of the instrument panel: 2 pieces 50 A.

1.14.18 **DEI = (Digital Engine Indicator)**

For a description of the readouts and the various functions see flight manual sect. 7.3.
The RPM measurement is fully digital and counts the impulses of the proximity switch.
The cylinderhead temperature (CHT) is measured by a probe 4M30 with a pt 100 temperature sensor which is screwed into the cylinderhead.
Fuel level measurement see sect. 1.13.6.

Functions

The following functions are controlled by the DEI.
a) by the ignition switch
- the ignition (shorting of the magneto coils)
- with the ignition switched off the engine automatic retraction and the control of the propeller position will be activated.
- with the ignition switched on the electric fuel pump, the automatic extension of the engine and the control of the starter motor will be activated.

b) the RPM indicator controls a relay which prevents the starter motor working whilst the engine is running.
c) the limit switch see 1.14.14 at the engine mount activates the control of the starter motor only when the engine is extended
d) the proximity switch see 1.14.15 prevents the automatic retraction of the engine as long as the propeller is not in the correct position for retraction (with the manual extension-retraction switch see 1.14.10 in position "automatic").

Caution: If the proximity switch is defective (short circuit) the DEI will display **0 0 0** instead of the engine RPM see also 1.14.9.
Note: If a new DEI or a replacement DEI should be installed, you have to report your actual elapsed engine time to Glaser-Dirks to enable them to adjust the new DEI to that value.
Note: The automatic extension-retraction control is not housed in the DEI but in the control unit 8 E 3 see 1.14.3.
Warning:with the connector plug disconnected from the DEI, the ignition is not
short-circuit. This means the ignition is on. Don't turn the propeller!

3.5.2. After **300 engine hours** the power plant must undergo a major overhaul.

Apart from the items listed in section 3.4.1., the following items also need to be done.

1. Remove the power plant (see sect. 4.16.). Disassemble the power plant see sect. 4.16.4. If the engine needs a major overhaul ship the engine to the manufacturer - Bombardier Rotax or a Rotax licensed and authority approved aircraft engine maintenance workshop.
2. Replace all the nuts and bolts on the engine
3. Replace the drive belt
4. Replace all the fuel lines including the plugged piece of hose at the pneumatic fuel pump
5. Replace the propeller bearings (see sect. 4.2.)

3.5.3.a) **After max. 3 years** the fuel lines at the engine have to be exchanged (the lines above the automatic fuel cock and the two connectors GS6 near the automatic fuel cock).

b) **After 6 years** all flexible fuel lines have to be exchanged.

Note: The new fuel lines must be flushed thoroughly with fuel after assembly.

3.5.4. **When required**

1. If the fuel tank is excessively dirty or when the fuel gauge gives false indications, a thorough flushing of the fuel tank is required (see sect. 1.13.6).
2. If the engine should run rough between idle and full throttle even after all the points in sect. 3.4.1. are OK, then it is possible that the membranes in the carburettors have hardened. They should then be replaced.
3. **After sudden power loss at full throttle**
   Check pistons and cylinders for seizing marks, see sect. 3.4.1 item 12b.

5. Weight and balance

Method of weighing your aircraft:

1. Assemble the glider completely with gear down.
2. Place scales under the tailwheel.
3. The fuselage must be leveled so that the top of the aft fuselage boom has a tail-down slope of 1000 : 37.
4. Empty water ballast tanks and the fuel tank.
5. Read weight of tail wheel: W2
6. Be certain the wings are level and hold so that no load is brought up.
7. Measure the distance between perpendiculars through points a and b.(See figure, next page).

Note: The distance a may change with different masses due to deflection of the landing gear.

Using the empty mass and the values determined above, calculate the C.G. as follows:

C.G. empty XSE: XSE W2E * b / ME + a

ME = empty mass
W2E = load on tailwheel (empty)

The empty weight includes all accessories but excludes pilot and parachute. Remove loose objects from the cockpit.

C.G. in flight XSF: XSF = W2F * b / MF + a

MF = flight mass
W2F = load on tailwheel (flight mass)

The flight mass includes empty weight items plus pilot, parachute, and all items needed in flight (barograph, camera, cushions, etc.). In addition, the rudder pedals and seat back should be adjusted as in flight.