0 General

0.1 Amendments

No.	Page	Description	Date
0.1	all	New standardized format of the initial Maintenance Manual of Variant DG-500M	December 2009
0.2	0.10, 1.15, 1.22, 1.27, 2.1, 3.9, 4.2, 4.15, 5.1, 6.2, 8.1-8.3	Miscellaneous changes to the contents of the latest amendment of the initial maintenance manual	December 2009
1	0.3, 0.6, 0.9, add diagram 7a	Wheel brake TN500/03	July 2011
2	0.3, 0.4, 0.6, 0.9, 1.10, 2.1, 2.3, 2.6, 2.8,, 2.9, 4.5, 4.6, file working instruction No. 1 for TN348/20 issue 3 at the end of the MM	Headrest securing ropes in the rear cockpit, manual amendments TN500/05	September 2011
3	0.1, 0.3, 0.4, 0.6, 0.10, 0.11, 3.4, 3.6, 3.9, diagram 14	Fuel hoses TN500/10	Oktober 2016
4	0.1, 0.6, 0.10, diagram 14	Oil return line, TN500/10 Rev. 1	May 2017

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0.2 List of effective pages

Section	page	issued	replaced /	replaced /	replaced /
0	0.0	December 09			
	0.1	See manual amendments			
	0.2	See manual amendments			
	0.3	See manual amendments			
	0.4	See manual amendments			
	0.5	See manual amendments			
	0.6	See manual amendments			
	0.7	December 09			
	0.8	"			
	0.9	"	July 11	September 11	
	0.10	"	October 2016		
	0.11	"	October 2016		
	1.1	December 09			
	1.2	"			
	1.3	"			
	1.4	"			
	1.5	"			
	1.6	"			
	1.7	"			
	1.8	"			
	1.9	"			
	1.10.	"	September 11		
	1.11	"			
	1.12	"			
	1.13	"			
	1.14	"			
	1.15	"			
	1.16	"			
	1.17	"			
	1.18	"			
	1.19	"			
	1.20	"			
	1.21	"			
	1.22	"			
	1.23	"			
	1.24	"			
	1.25	"			
	1.26	"			
	1.27	"			
	1.28	"			

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List of effective pages (cont.)

Section	page	issued	replaced /	replaced /	replaced /
	1.29	December 09			
	1.30	"			
2	2.1	December 09	September 11		
	2.2	"			
	2.3	"	September 11		
	2.4	"			
	2.5	"			
	2.6	"	September 11		
	2.7	"			
	2.8	"	September 11		
	2.9	"	September 11		
	2.10	"			
3	3.1	December 09			
	3.2	"			
	3.3	"			
	3.4	"	October 2016		
	3.5	"			
	3.6	"	October 2016		
	3.7	"			
	3.8	"			
	3.9	"	October 2016		
4	4.1	December 09			
	4.2	"			
	4.3	"			
	4.4	"			
	4.5	"	September 11		
	4.6	"	September 11		
	4.7	"			
	4.8	"			
	4.9	"			
	4.10	"			
	4.11	"			
	4.12	"			
	4.13	"			
	4.14	"			
	4.15	"			
	4.16	"			
	4.17	"			

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List of effective pages (cont.)

Diagram	issued	replaced	replaced	replaced	replaced
1	April 90				
2	April 90				
3	April 90				
4	April 90				
5	April 90				
6	April 90				
7	April 90				
7a	July11				
8	April 90				
9	April 90				
10	April 90				
11	March 97				
12	April 90				
13	Febr. 96				
14	April 90	May 2008	October 2016	May 2017	

Enclosures		issued	replaced	replaced	replaced
(9.1)	Equipment list	Dec. 09			
(9.2)	Checklists for the 25 hour service work	Dec. 09			
5EP30	Installation ELT	27.02.91			
5EP31	Installation Dräger oxygen system	5.02.90			
5E1	Wiring scheme	09.04.90			
5E2	Wiring plan	08.03.90			
Service Info 0-2/92		Mar. 92			
Working instruction No. 1 for TN348/20 issue 3		22.10.08			

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Instructions for continued airworthiness

0.4 Airworthiness limitations

0.4.1 Repairs:

Repair or replace damaged parts prior to next flight. Follow the instructions of the DG-500M repair manual for repairs of the airframe. Repairs outside the scope of DG-500M repair manual and major repairs must be accomplished at an approved repair station or by an approved mechanic rated for composite aircraft structure work in accordance with DG repair methods.

Use only genuine spare parts.

For all aircraft under EASA regulations the following applies: According to part 21, subpart M to accomplish major repairs an approved repair instruction is required, see also TN DG-G-01 “Approved repair methods according to EU Commission Regulation 1702/2003 part 21, subpart M”

0.4.2 Life time of the airframe

The maximum allowable operating time for variant DG-500M is 12000 flight hours. Therefore inspection according to section 2.4 of this manual has to be executed at 3000 h, 6000 h, 9000 h and every 1000 hours following thereafter.

0.4.3 Life time of equipment and components

a) The **fabric straps of the safety harness** have to be exchanged according to the instructions of the respective manufacturer. If no limitations are given, exchange after 12 years.

b) The rubber cords in the elevator control system see section 1.2.6 and in the wing flap control system see section 1.4.6 have to be replaced at least every 6 years.

c) The following **parts of the power plant** have to be exchanged after 300 hours engine time
   1. all bolts and nuts of the power plant
   2. the drive belt
   3. all relays (starter, extension-retraction)
   4. the propeller bearings

d) The **flexible fuel lines** including the plugged piece of hose at the diaphragm fuel pump have to be exchanged after 6 years.
   TN 500/10: When instructions 2 and 3 of this TN have been accomplished the life time of the flexible fuel lines is 10 years.

Note: The oil return line from the diaphragm fuel pump to the fuel tank (if installed) has no life time limitation.

e) The **hoses of the engine cooling system** have to be exchanged after 6 years.

f) The **spark plugs** have a life time of 25 engine hours.

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g) **Flexible fuel bags in the wings** (option) These have to be exchanged after 10 years.

h) **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

0.4.4 Service time, maintenance documents of equipment and components

Follow the instructions of the respective manufacturer.

a) Operating Manual for Tow Releases
Series: E 85 Nose Tow Release
latest approved version

Operating Manual for Safety Tow Releases
Series: Europa G 88 Safety Tow Release
latest approved version

b) safety harness: instructions of the manufacturer

c) minimum instrumentation: instructions of the manufacturer

d) Engine: Manual for ROTAX engine type 535 C latest approved version

e) Propeller: MT-Propeller Operation and installation manual No. E-203
latest approved version

0.4.5 Power plant trouble shooting

Please find a checklist in section 4.22

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3.5 Maintenance of the power plant

3.5.1 25 hour inspection

The following checks and maintenance work should be done every 25 hours engine time.

Items 1, 4, 12, 14, 15, 17, 19 and 33 should be executed at least 1 year after the last 25 hour inspection, preferably with the annual inspection.

Item 10 and 11 should be executed only 50 hours engine time.

In your aircraft log you will find stickers where you can enter the next maintenance dates. Fix these stickers at a visible place in the cockpit, preferably near the elapsed time indicator.

Checklists for this maintenance work are in the enclosures of this manual. Please complete the checklist when executing the 25 hour inspection and file it in the aircraft log.

1. General visual inspection

2. Change the spark plugs (together with item 3)

3a. Remove the 2 GFRP struts 5M10 from the engine.

Check if the steel bushes of the GFRP struts became loose. Therefore also check the distance between centres of the 2 bushes.

Nominal: 248 $\pm$ 0.1 mm If the bushes are loose or the distance is enlarged, the struts must be exchanged.

Check the bolts and the bushes for wear. The upper bushes 5M55/1 must have a length of 28 mm and the lower bushes 5M54/3 must have a length of 24.5 mm.

If the bolts are worn or the bushes are shorter (compressed) they must be exchanged.

For reassembly use only 1 drop of Loctite on the bolt thread. Tightening torque 2.2 daNm (16 ft.lb.).

3b. Check the propeller carrier plate 5 M 2 using a magnifying glass for cracks nearby bolts connecting it to attachment 5M4 (s. TN 843/8)

4. Change the fuel filter.
Paper filters should under no circumstances be used.

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12. Check cooling system for leaks, refill cooling water if necessary, check antifreeze. Check the radiator and its mounting.

    Caution: The hose clamp which secures the cap of the cooling liquid reservoir must be mounted so that the screwed joint is in the front to prevent the engine retaining cables catching the screwed joint.

13. Check the cylinders and pistons via the exhaust ports for seizing marks, rings sticking and for carbon remains. Illuminate the combustion chamber and check for combustion deposits. Use torch and mirror for these checks. If seizing marks can be detected the engine shall not be used any more.
    Excessive combustion deposits have to be removed. If rings are sticking, the cylinders must be removed. Remove and clean rings and grooves. Exchange rings if necessary. Check and remove combustion deposits also from the inner sides of the pistons.

    Caution: Necessary repair work must be accomplished at an approved repair station rated for such engine work.

14. Check and grease the starter motor gear shaft (don't grease the starter motor gear) Check starter motor for tight mounting. There should be no excessive radial free play of the starter motor gear axle. With too much free play the starter has to be exchanged.

15. Clean the starter ring gear and check for cracks. If you find any cracks the ring gear must be exchanged. see section 4.17.

16. Check all engine bolts with a torque wrench see 1.11.10.
    Check especially the torque of the cylinder head nuts.

17. Clean engine and radiator

18. Check the exhaust pipe and muffler and their mounting for cracks.

19. Check all fuel lines including the plugged piece of hose at the pneumatic fuel pump for any wear, fissures, kinks, tight fit and leaks. For the check switch on the ignition to run the electric fuel pump to demonstrate operating fuel pressure.

20. Oil all cables and associated levers and check for proper functioning. Replace cables when worn.

21. Check the drive belt for wear and correct tension see 1.11.6. If the drive belt shows signs of wear or if there are cracks/tears at the base of the belt teeth, the drive belt has to be replaced.

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3.5.2 Every 3 years

Exchange the cooling liquid. Instructions see section 4.15

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

Apart from the items listed in section 3.5.1, the following items also need to be done.

1. Remove the power plant.
   Disassemble the power plant Ship the engine to an approved repair station approved for Rotax engine overhaul.
2. Replace all the nuts and bolts on the engine
3. Replace the drive belt
4. Replace all the relays
5. Replace the propeller bearings

3.5.4 After 6 years

1. The flexible fuel lines incl. the plugged piece of hose at the pneumatic fuel pump have to be exchanged after 6 years.
   TN500/10: When instructions 2 and 3 of this TN have been accomplished the above mentioned fuel lines must not be exchanged after 3 years. But after 6 years all fuel hoses are to be inspected visually thoroughly and completely for any damage especially fissures, kinks or leaks. For the check switch on the ignition to run the electric fuel pump to demonstrate operating fuel pressure. Repeat this inspection every following year.

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

2. The hoses of the engine cooling system have to be exchanged after 6 years.

3.5.5 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 section 1.13.2)
2. If the engine should run rough between idle and full throttle even after all the points in section 3.5.1 are OK, then it is possible that the membrane in the carburettor is hardened. It should then be replaced.

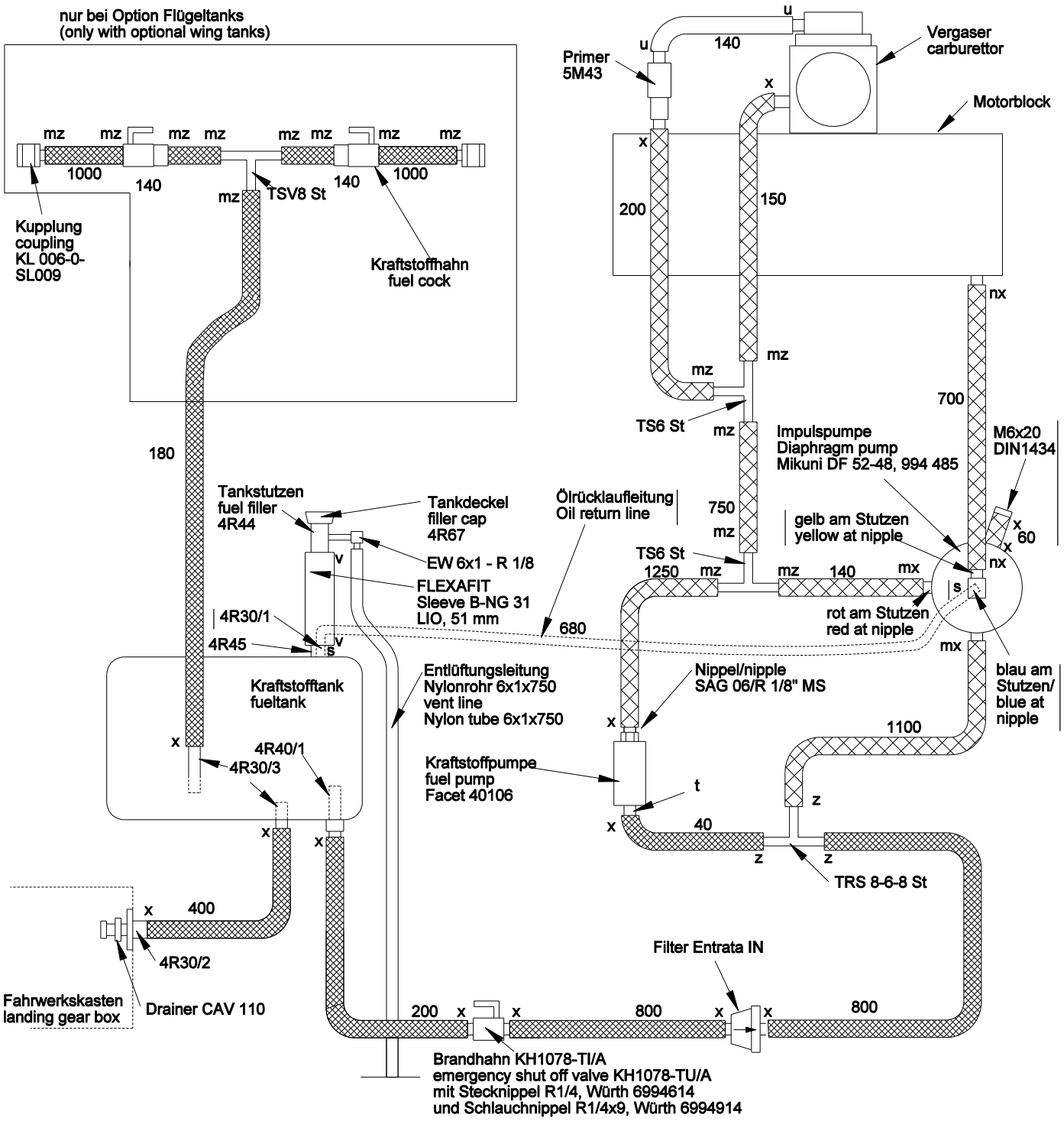
3.6 Hydraulic wheel brake system

The brake fluid must be exchanged at least every 4 years (see section 1.6.4)

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Kraftstoffanlage/fuel system



Kraftstoffschläuche
fuel hoses

500
Länge [mm]
length [mm]

- Silikonschlauch/silicone hose Innendurchmesser/inside dia. 2,5 mm
- DIN 73379-2A ⌀ 8mm innen/inside dia. 8 mm
- ISO 7840-A1 ⌀ 6mm innen/inside dia. 6 mm
- Kraftstoffschlauch ⌀6mm innen/inside dia. 6 mm mit Metallgeflecht/with metal shielding

Verbindungsstücke und Klemmen
Fittings and clamps

- m Schrumpfschlauch rot 30mm lang heat shrink tubing red 30 mm long
- n Schrumpfschlauch blau,30mm lang heat shrink tubing blue 30 mm long
- s Schlauchschelle/hose clamp S70/3 12/9
- t Nippel/nipple SAG08/R 1/8" MS
- u Drahtsicherung/securing with safety wire
- v Schlauchschelle/hose clamp 40-60
- x Schlauchschelle/hose clamp S70/7 14/9
- y Schlauchschelle/hose clamp S70/6 13/9
- z 1-Ohrklemme/ear clamp 157.3