0 General

0.1 Amendments

No.	Page	Description	Date
0.1	all	New standardized format of the initial Maintenance Manual of Variant DG-400	December 2009
0.2	0.12, 0.13, 1.10, 1.11, 1.13, 1.19, 1.25, 2.1, 2.2, 2.6, 3.2, 3.6, 4.8 - 4.10, 4.12, 4.16, 5.1, 5.2, 6.1 - 6.3, 8.1 – 8.4, Checkliste, SI 1/86/2, L'Hotellier Instructions for the maintenance M 10.01, SI 61/06, 4R14, TN825/46, 4E30, Service Info 63/07 with working instruction No. 1 for TN826/22 and drawing 4M81	Miscellaneous changes to the contents of the latest amendment of the initial maintenance manual	December 2009
1	0.1, 0.3 – 0.6, 0.9, 0.12, 3.3, 3.6, 3.7, 8.2, diagram 8, delete diagram 8a	Fuel hoses TN DG-SS-02	October 2016

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0.2 List of effective pages

Section	page	issued	replaced	replaced	replaced
0	0.0	December 09	See manual amendments		
	0.1	"	"		
	0.2	"	"		
	0.3	"	"		
	0.4	"	"		
	0.5	"	"		
	0.6	"	"		
	0.7	"	"		
	0.8	"			
	0.9	"	October 2016		
	0.10	"			
	0.11	"			
	0.12	"	October 2016		
	0.13	"			
1	1.1	December 09			
	1.2	"			
	1.3	"			
	1.4	"			
	1.5	"			
	1.6	"			
	1.7	"			
	1.8	"			
	1.9	"			
	1.10	"			
	1.11	"			
	1.12	"			
	1.13	"			
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	1.15	"			
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	1.17	"			
	1.18	"			
	1.19	"			
	1.20	"			
	1.21	"			
	1.22	"			
	1.23	"			
	1.24	"			
	1.25	"			
	1.26				
	1.27				

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2	2.1	December 09			
	2.2	"			
	2.3	"			
	2.4	"			
	2.5	"			
	2.6	"			
3	3.1	December 09			
	3.2	"			
	3.3	"	October 2016		
	3.4	"			
	3.5	"			
	3.6	"	October 2016		
	3.7	"	October 2016		
4	4.1	December 09			
	4.2	"			
	4.3	"			
	4.4	"			
	4.5	"			
	4.6	"			
	4.7	"			
	4.8	"			
	4.9	"			
	4.10	"			
	4.11	"			
	4.12	"			
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	4.14	"			
	4.15	"			
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	4.17	"			
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	4.21	"			
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	4.23	"			
	4.24	"			
	4.25	"			

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5	5.1	December 09			
	5.2	"			
6	6.1	December 09			
	6.2	"			
	6.3	"			
7	7.1	December 09			
8	8.1	December 09			
	8.2	"	October 2016		
	8.3	"			
	8.4	"			

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List of effective pages (continued)

Diagrams		issued	replaced	replaced	replaced
1	Elevator control circuit	Febr. 1987			
2	Rudder control circuit, landing gear	July 1988			
2a	Tail wheel	Febr. 1987			
3	Aileron, flap and spoiler control circuits, wheel brake	Febr. 1987			
4	Template for checking aileron deflection	Okt. 1981			
5	Tow hook, water ballast release system	April 1988			
6	Power plant with Bosch electronic boxes (for Ducati electronic boxes refer in addition to drawing 4 M 71 see enclosure)	August 2001			
7	Power plant extension-retraction mechanism	April 88			
8	Fuel system	April 1988	October 2016		
8a	Fuel system (TN826/45 instr. 1 executed)	June 2004	deleted		
9	Electrical system	July 1984			
10	Empty weight centre of gravity range	April 1988			
11	Placards	June 1986			
12	Installation brake motor (Option BEA)	Sept 1990			
13	Electrical system with Option BEA	Sept 1990			

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0.4 Airworthiness limitations

0.4.1 Repairs:

Repair or replace damaged parts prior to next flight. Follow the instructions of the DG-400 repair manual for repairs of the airframe. Repairs outside the scope of DG-400repair 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-400 is 12000 flight hours. Therefore inspections according to section 2.4 of this manual have 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 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 and the shut off valves have to be exchanged after 6 years. The fuel lines at the engine have to be exchanged every 2-3 years (see sect. 3.4.3). The shut off valves must no longer be exchanged as soon as TN826/45 instruction 1 has been accomplished.
TN DG-SS-02: When instructions 2 and 3 of this TN have been accomplished the life time of the flexible fuel lines is 10 years.

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

d) 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.

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3.4 Servicing the Engine

3.4.1 25 hour inspection

The following checks and maintenance work should be done every 25 hours engine time.
Items 1, 3, 6, 9, 12 and 28 should be executed at least 1 year after the last 25 hour inspection, preferably with the annual inspection.
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.

1a). Remove the engine fairing (option) and check for cracks.
1b). General visual inspection.
2. Change spark plugs (not at the 5 hr. inspection).

Caution: When removing or reinstalling the securing plates of the ignition cables, the cylinder head nuts must be held with a special wrench (see sect. 7.) If you have turned the cylinder head nuts, you have to retorque them (see sect. 4.12).

Note: Reassembling the front spark plug coupling be careful to plug in the coupling so far, that its metal housing touches the motorblock. During the first assembly after the change of the spark plugs it may be necessary to use a hammer with a piece of wood (ca. 5 cm, 2 in. long) in between for the last gap.

Both notes apply to engines with Bosch electronic boxes only.

3. Exchange the fuel filter: close the valve located upstream of the filter, remove the hoses from the valve and the electric pump by unscrewing the screw caps with a 17 mm open end spanner. Filter-types see sect. 8.1, paper filters should under **no** circumstances be used.
4. Measure fuel flow (see 1.12.3). Note down the values.
5. Remove the carburettor cover, remove the needle valve, flush the carburettor by switching on the fuel pump. The fuel must spout out as a powerful stream. Remove the main nozzle. Clean nozzle and chamber (see 1.12.5).
6. 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.

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3.4.2 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 section 4.6.).
   Disassemble the power plant see s section 4.6.4. Ship the engine with the muffler loose 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 fuel lines, see section 3.4.3a).
5. Replace all the relays
6. Replace the propeller bearings (see section 4.2.)

3.4.3 After max. 3 years

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

TN DG-SS-02: When instructions 3 of this TN have been accomplished the above mentioned fuel lines must not be exchanged after 3 years. But after 3 years the fuel hoses which are routed in front of the cylinder heads 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.

3.4.4 After 6 years

After 6 years all flexible fuel lines including the plugged piece of hose at the pneumatic fuel pump and the two shut off valves have to be exchanged.

TN DG-SS-02: 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.

Note: After the accomplishment of TN826/45 instruction 1 the shut off valves no longer need to be exchanged.

The line from tank to drainer valve shall be located so that it does not lie directly on the fuselage shell.

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

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3.4.5 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 1.12.).
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 section 3.4.1 item 11b.

3.5 Damage of the airframe

Before every flight, especially after a longer period of non-use, an inspection should be carried out. Check for any small changes such as small holes, bubbles and uneven patches on any skin surfaces, these signal that something can be wrong.
With Major Damage contact the DG Flugzeugbau GmbH factory immediately and send photographs and a damage report from a licensed inspector. With this information, the correct repair procedures can then be determined.

Minor damage such as small cracks and holes in the skin surfaces can be repaired by a licensed workshop.

Additional information like a listing of all materials used in the DG-400 can be found in the repair manual.

Home repairs should not be attempted when:
- the main spars is damaged, major fittings an the wings, fuselage or tail plane are broken out or white patches are noted around them in the laminate.
- When areas are so badly damaged that component parts cannot be repaired without special jigs for proper positioning and alignment.
- Whenever it is necessary to cut into undamaged areas to execute repairs.

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60000175 Gas spring for extension-retraction drive A1LO-02-250-585/1200N
40460140 Spindle drive without spindle and without drive motor
60504038 Drive motor with gear, brake and pinion for spindle drive (see Service Info 61/06)

60507560 Electric fuel pump Facet 40105
60500246 Diaphragm vacuum pump Mikuni DF 52-48, 994 485
60507550 Drainer CAV 110 (1/8" NPT)

Warning: Replace sealing ring of the drainer by partno.60504402 prior to installation!

60504402 Sealing ring for Drainer CAV 110 (for automotive fuel)
40470300 Probe for cylinder head temperature 4M30

Service kit fuel lines (necessary every 6 years, TN826/45 instruction 1 must have been accomplished):

39001000 for Tillotson carburettors 39001001 for Mikuni carburettors

Note: When instructions 2 and 3 of **TN DG-SS-02** have been accomplished the fuel lines must not be exchanged after 6 years but have a life time of 10 years.

Service kit fuel line at the engine (necessary every 3 years)

39001003 for Tillotson carburettors 39001002 for Mikuni carburettors

Note: When instructions 3 of **TN DG-SS-02** have been accomplished the fuel lines must not be exchanged after 3 years but have a life time of 10 years. These hoses are included in positions 39001000 and 39001001.

60507660 fuel cock PN 16 V 6 12026
omitted with TN826/45 instruction 1 replaced by:
60507650 fuel cock KH 1075 ¼" with red handle
60507660 threaded connector with pipe olive and cap nut (2 items necessary)

60507650 fuel cock Götz 755.008
omitted with TN826/45 instruction 1 replaced by:
60000527 fuel cock KH 1072T PTFE
80012130 threaded connector ¼" (female), 8mm
80012131 threaded connector ¼" (male), 8mm

In addition with noise absorbing engine fairing for Tillotson carburettors

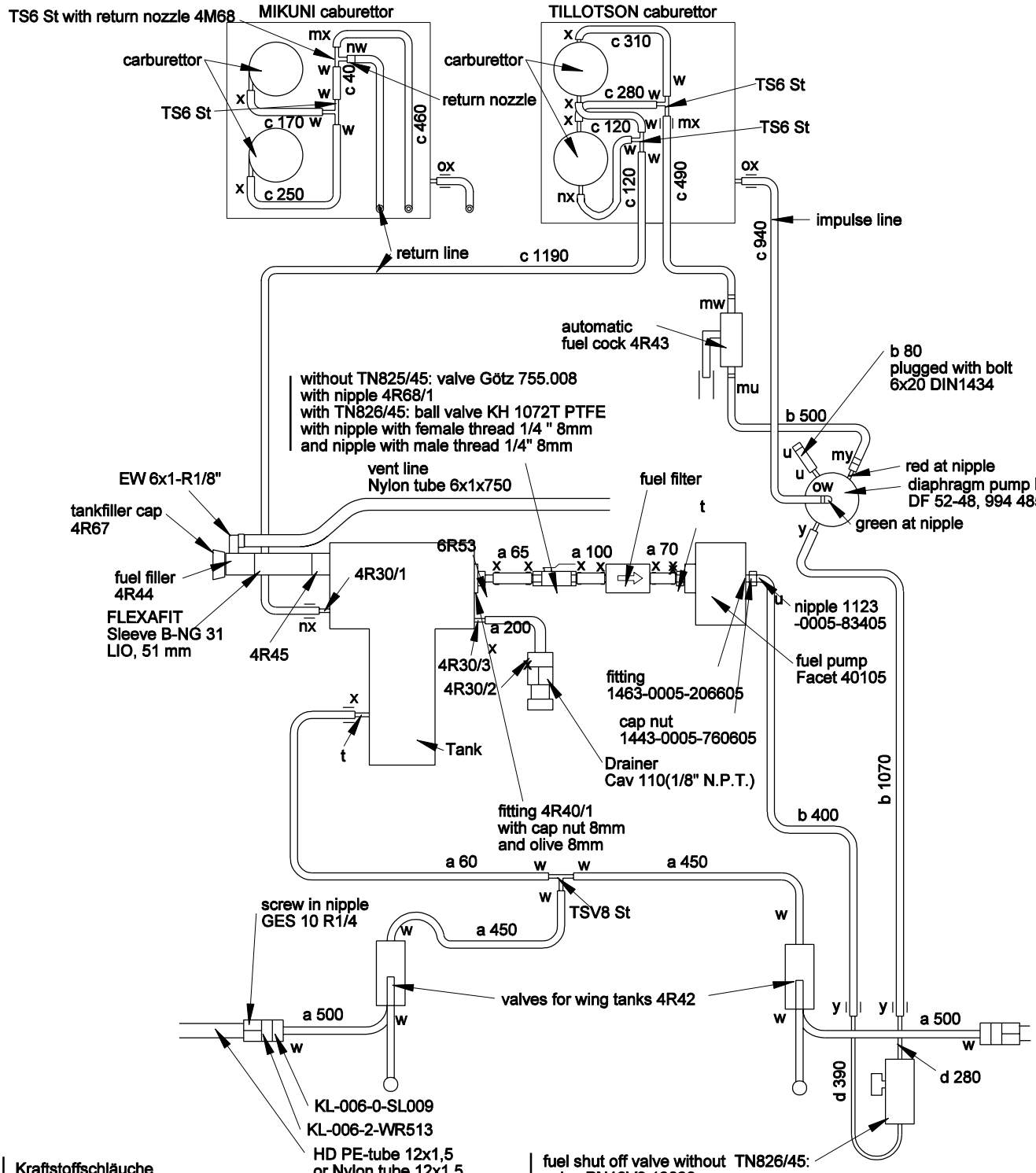
60500238 Intake funnel
60500239 Sealing
60500141 Air filter

for Mikuni carburettors

60500242 Intake funnel
60500140 Air filter

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fuel system



Kraftstoffschläuche
a= DIN 73379-2A ∅ 8mm innen
b= DIN 73379-2A ∅ 6mm innen
c= ISO 7840-A1 ∅6mm innen
d= Al Rohr 6x1

500 Länge [mm]

Fittings and clamps
m Schrumpfschlauch rot 20mm lang
n Schrumpfschlauch blau 20mm lang
o Schrumpfschlauch grün 20mm lang
t Nippel/nipple SAG08/R 1/8" MS
u 1-Ohrklemme 145.3
w 1-Ohrklemme 157.3
x Schlauchschelle S70/7 14/9
y Schauchschelle S70/6 13/9