

Maintenance Manual DG-1000M

0 General

0.1 Manual amendments

No.	Page	Description	Date
1	0.0, 0.1, 0.3 ÷ 0.7, 0.9, 0.12 ÷ 0.14, 1.2, 1.5, 1.8 ÷ 1.12, 1.20, 1.24, 1.31, 1.33, 1.34, 2.1 ÷ 2.4, 2.6, 3.1 ÷ 3.7, 4.6 ÷ 4.8, 4.11, 4.12, 4.19 ÷ 4.24, 4.26, 4.27, 4.29, 4.30, 6.1, 6.4, 7.2, 8.1 ÷ 8.4, diagrams 2, 3, 7, 15, 16, 23, add drawing W59, 10E202 issue C (only with coolant pump Pierburg)	Manual revision Alternative for coolant pump TN1000/22	October 2012
2	0.1, 0.3, 0.6, 0.11, 0.13, 0.14, 1.3, 1.4, 1.10, 8.2, 8.3, 8.5	Manual revision TN1000/23	July 2014
3	0.1, 0.3- 0.6, 1.11, 1.28, 3.8, 4.12, 8.2, 8.3, diagram 16	Fuel pressure regulator Manual revision TN1000/27	July 2015
4	0.1, 0.4 ÷ 0.7, 3.7, 4.25, 7.1, 7.2, 8.3, diagram 2, 10E202, Inspection instruction No. 1 for TN1000/30	Inspections drive mount Manual revision TN1000/30	March 2016
5	0.1, 0.7, drawing 10E202 issue h	Electrical system, manual revision TN1000/31	December 2016
6	0.1, 0.3, 0.4, 0.6, 0.8, 0.13 - 0.15, 2.1, 2.2, 2.6, 3.5, 8.1, 8.2, diagrams 10, 12, 14, 23	Manual revision TN1000/32	July 2017

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0.2 List of effective pages

Section	page	issued	replaced	replaced	replaced
0	0.0	October 2010			
	0.1	"	See list of amendments		
	0.2	"	See list of amendments		
	0.3	"	See list of amendments		
	0.4	"	See list of amendments		
	0.5	"	See list of amendments		
	0.6	"	See list of amendments		
	0.7	"	See list of amendments		
	0.8	"	October 2012	July 2017	
	0.9	"	October 2012		
	0.10	"			
	0.11	"	July 2014		
	0.12	"	October 2012		
	0.13	"	October 2012	July 2014	July 2017
	0.14	"	October 2012	July 2014	July 2017
	0.15		July 2017		
	1.1	October 2010			
	1.2	"	October 2012		
	1.3	"	July 2014		
	1.4	"	July 2014		
	1.5	"	October 2012		
	1.6	"			
	1.7	"			
	1.8	"	October 2012		
	1.9	"	October 2012		
	1.10	"	October 2012	July 2014	
	1.11	"	October 2012	July 2015	
	1.12	"	October 2012		
	1.13	"			
	1.14	"			
	1.15	"			
	1.16	"			
	1.17	"			
	1.18	"			
	1.19	"			
	1.20	"	October 2012		
	1.21	"			
	1.22	"			
	1.23	"			

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List of effective pages (cont.)

Section	page	issued	replaced	replaced	replaced
	1.24	October 2010	October 2012		
	1.25	"			
	1.26	"			
	1.27	"			
	1.28	"	July 2015		
	1.29	October 2010			
	1.30	"			
	1.31	"	October 2012		
	1.32	"			
	1.33	"	October 2012		
	1.34	"	October 2012		
	1.35	"			
2	2.1	October 2010	October 2012	July 2017	
	2.2	"	October 2012	July 2017	
	2.3	"	October 2012		
	2.4	"	October 2012		
	2.5	"			
	2.6	"	October 2012	July 2017	
3	3.1	October 2010	October 2012		
	3.2	"	October 2012		
	3.3	"	October 2012		
	3.4	"	October 2012		
	3.5	"	October 2012	July 2017	
	3.6	"	October 2012		
	3.7	"	October 2012	March 2016	
	3.8	"	July 2015		

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List of effective pages (cont.)

Section	page	issued	replaced	replaced	replaced
7	7.1	October 2010	March 2016		
	7.2	October 2012	March 2016		
8	8.1	October 2010	October 2012	July 2017	
	8.2	"	October 2012	July 2014	July 2015
			July 2017		
	8.3	"	October 2012	July 2014	July 2015
		March 2016			
	8.4	"	October 2012		
	8.5	July 2014			
9	9.1	October 2010			
	9.2	"			
	9.3	"			
	9.4	"			
	9.5	"			
	9.6	"			
Diagram		issued	replaced	replaced	replaced
1		October 10			
2		October 10	October 2012	March 2016	
3		June 05	October 2012		
4		Nov. 01			
5		October 10			
6		October 10			
7		October 10	October 2012		
8		October 10			
9		October 10			
10		October 10	July 2017		
11		October 10			
12		October 10	July 2017		
13		October 10			
14		October 10	July 2017		
15		October 10	October 2012		
16		October 10	October 2012	July 2015	
17		October 10			
18		October 10			
19		October 10			
20		October 10			
21		October 10			
22		October 10			
23		October 10	October 2012	July 2017	
24		October 10			
25		October 10			
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27		October 10			

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0.4 Airworthiness limitations

0.4.1 Repairs

Repair damaged airframe parts prior to next flight. Follow the instructions of the DG-1000 repair manual. Repairs outside the scope of the DG-1000 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 or those methods approved by the national aviation authorities.

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 German composite sailplanes and motorgliders was proofed for 12000 flight hours.

The initial life time for the DG-1000M is 3000 flight hours.

Extension of the life time to 12000 hours can only be achieved by implementing a comprehensive inspection program for the aircraft to be carried out in accordance with data that has been approved by an applicable aviation authority, see section 2.4 of this manual.

Only for USA

Note: *The Airworthiness Limitations section is FAA approved and specifies maintenance required under Secs. 43.16 and 91.403 of the Federal Aviation Regulation unless an alternative program has been FAA approved.*

0.5 Further service information

0.5.1 Life time of equipment and components

Use only genuine spare parts. For part. No.'s of all parts please refer to section 8.

Note: You will find detailed instructions for replacement of the life limited parts (if applicable) in section 4 of this manual.

After exchanging life limited parts change the “Summary of operating hours” for your motorglider by entering the replacement dates of the exchanged parts.

- a) The following components of the power plant have to be replaced after 400 engine hours.
 1. All nuts and bolts on the engine, parts-kit with reference list and instructions part no. 39001028
 2. The bearings in the upper drive belt pulley, part no. 59332050 and 59320320
- b) The **gasket for the drainer valve** has to be exchanged after 6 years, part no. 60504402.
- c) The **coolant hoses** , part no. 39001029) have to be exchanged after 6 years.
- d) All **flexible fuel lines** have to be exchanged after 6 years (part no.s 48000009 and 48000092).
- e) The **drive belts** have to be exchanged after 100 engine hours, part no. 60510831).
- f) The **spark plugs** have to be exchanged after 100 engine hours, part no.40050360.
- g) 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, approved types see section 6.3.
- h) The **rubber cord** in the elevator control system see section 1.2.6 has to be replaced at least every 6 years, part no. 30091131.

0.5.2 Service times for other than life limited parts

The **coolant** has to be exchanged after 6 years (type see section 2.12.2).

The **brake fluid of the wheel brake** has to be exchanged after 4 years (types see section 1.6.2).

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.

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0.5.3 Service time, maintenance documents of equipment and components

Follow the instructions of the respective manufacturer.

a) Tow releases:

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

Operating Manual for Tow Releases Series: E 85 Nose Tow Release, latest approved version.

b) Safety harness: instructions of the manufacturer, latest approved version. Approved types see section 6.3.

c) Minimum instrumentation: instructions of the manufacturer, approved instruments see sections 6.1, 6.2 and 6.4.

d) Engine: Manual for the engine SOLO Type 2625 02 I, latest approved version.

e) Propeller: Operation- and Maintenance manual for fixed pitch propeller in Glass or Carbon reinforced Plastic type BM, latest approved version.

0.5.4 Power plant trouble shooting

Please find a checklist in AFM section 8.8.

2 Inspections

2.1 Daily inspection

see flight manual section 4.3

2.2 Regular inspections

A Annual inspection (and 100hr inspection – only for USA)

- Execute all items of the daily inspection (see flight manual section 4.3).
- Check the rudder cables for wear especially around the “S” tubes on the rudder pedals. Worn rudder cables should be replaced (see section 4.2).
- Check the seals of the rudder (see section 1.3.4).
- Inspect all bolted connections and locking devices ie. locknuts, split pins etc.
- Check all metal parts for adequate greasing and rust prevention. (see section 3.3).
- Check the control surface deflections (see sections 1.2 up to 1.4).
- Check the free play in all control circuits (see section 1.2 up to 1.6)
- Check the fore and aft play of the wings (see section 1.11).
- Check the canopy emergency releases according to section 7.16 of the flight manual.
- Check the tension of the lines of the waterbag attachment (see section 4.1).
- Check the rubber cords in the control system (see sections 1.2.6, 1.3.6 and 1.7.5).
- Check the rubber cords in the control system (see sections 1.2.6, 1.3.6 and 1.7.5).
- Check the thickness of the wheel brake linings and of the brake disc (see section 1.6.2).
- Check if the brake fluid has to be exchanged (see section 1.6.2).
- Check the airbrakes according to section 4.4.
- Check the fin ballast box according to section 1.9.
- Check the canopy opening and canopy emergency release handles for enough friction (canopies removed from fuselage). A force of 15 – 20 N (3.3 up to 4.4 lbs.) should be required at the end of the handle. If the force is too low tighten the hinge bolt of the handles accordingly.
- Check if the powerplant has been serviced according to section 3.6.1.
- Check the torque of the propeller bolts (see section 3.6.1 item 23).
- **Tow hooks:** The operating and maintenance instructions for the release mechanisms, see sect. 0.4.4 of this maintenance manual have to be followed.
- **All-up weight and centre of gravity:** These should be checked at least every 4 years during the annual inspection.

B Special inspections

C.G. tow hook:

After a wheel-up landing, the C.G. tow hook is to be cleaned and to be carefully checked for any damage.

Fuselage nose:

After a landing where the fuselage nose has touched the ground, the nose tow hook is to be cleaned and to be checked for correct functioning.

Clean the hole of the PC port (necessary for the stall warning) located behind the fuselage nose on the lower surface.

C.G. weighing: After all work which may influence the C.G.

2.4 Inspection procedure for increase of service time

1. General

The results of fatigue tests of wingspar sections have demonstrated that the service time of GFRP/CFRP gliders and motorgliders may be limited to 12000 hours, if for each individual glider (in addition to the obligatory annual inspections) the airworthiness is demonstrated according to a special multi-step inspection program particularly with regard to the service life.

2. Dates

When the glider has reached a service time of 3000 hours, an inspection must be done in accordance with the inspection program mentioned under point 3. If the results of this inspection are positive or if any defects found have been duly repaired, the service time of the glider is extended by another 3000 hours to a total of 6000 hours (first step).

The above inspection program must be repeated when the glider has reached a service time of 6000 hours. If the results of this inspection are positive or if any defects found have been duly repaired, the service time of the glider is extended to 9000 hours (second step).

When the glider has reached a service time of 9000 h the above inspection program must be repeated. If the results of the inspection are still positive, or if any defects found have been duly repaired, the service time may be extended to a total of 10000 hours (third step).

Proceed analogous when reaching 10000 and 11000 hours (4. + 5. step).

3. DG Flugzeugbau will develop an inspection program to be executed at 3000 h, 6000 h, 9000h, and every 1000 hours thereafter up to the 12000 hour limit. This program will be approved by the aviation authorities and will be available for purchase from DG Flugzeugbau.

When you request the inspection program, the following data should be submitted: Model/Type, Registration, Serial Number and the operating hours at which the inspection will be performed. A charge will be made for the inspection program.

4. The inspection must only be done by a licensed repair station or inspector.
5. The results of the inspections have to be recorded in an inspection test report wherein comments are required for each inspection instruction. If the inspections are done outside the DG Flugzeugbau facilities, a copy of the records must be sent to DG Flugzeugbau for evaluation and information.

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- 5) Check the intake airfilters for excessive dirt and wear, wash with pure petroleum spirit and blow compressed air in reverse direction through the filters. Spray the outside with oil for filters with cotton fabric, reinstall the filters. To clean the front filter it may be advantageous to disconnect the wiring of the air intake sensor, to accomplish this remove the heat shrink tubing from the plugs/sockets and reinstall the tubing after the work. We recommend to exchange the filters every 25 hours. Also new filters must be sprayed with filter oil. To accomplish the exchange remove the air intake sensor from the front filter by removing with caution the sealing compound which fixes the sensor. Drill a dia. 6 mm hole from the lower side into the flange of the new filter and install the sensor the same way as in the old filter, fix with suitable sealing compound, e.g. silicone.
- 5a) With the airfilters still removed check visually the screws of the throttle valves for tight fit.
- 6) Check the throttle cable and associated lever. Replace cable when worn.
- 7) Clean engine and radiator.
- 8) Check cooling system for leaks, refill coolant if necessary, check antifreeze (data see section 1.12.2). Check the radiator and its mounting. Check the coolant hoses.
To check the water pump, switch on the ignition. You should hear a buzz.
- 9) Remove the exhaust manifold.
For the lower bolts a shortened wrench is needed see section 7 item U. Check the cylinders and pistons via the exhaust ports for seizing marks, for carbon remains and for sticking piston rings. Press against the piston rings with a suitable tool (e.g. small flat end screw driver). The rings must be movable. Black remains on the outside of the pistons below the rings indicate sticking or damaged piston rings, this is not acceptable. Illuminate the combustion chamber, check for combustion deposits and for cracks in the cylinder coating especially at the inlet and transfer ports. Use a torch and mirror for these checks. If seizing marks or cracks are detected the engine must not be used. Excessive combustion deposits have to be removed. With sticking piston rings the cylinders must be removed. Take out the piston rings and clean the grooves and the rings or replace the rings. Remove also any combustion deposits inside the pistons.

Caution: Necessary repair work including removal of combustion deposits must be accomplished at a certified repair station rated for such engine work.

- 10) Check the cylinder base for indications of leaking and/or damaged gaskets. When gaskets are damaged or leaking they must be exchanged.

Caution: The exchange of cylinder base gaskets must be accomplished at a certified repair station rated for such engine work.

8 Partlist

Please find the part no's of the control-system parts and of the metal fittings of the powerplant in the following diagrams.

Note: The number at the left hand side is the DG part no.. Please use these numbers for ordering any parts.

8.1 Parts for the powerplant

8.1.1 Parts necessary for the 25 hours inspection

- 60500150 Gaskets for exhaust manifold (2 pieces needed)
- 60500185 Air intake filter K&N RU2760
- 70002200 Oil for airfilters with cottonfabric K&N 99-05046
- 60000377 Copper sealing ring 10x14x0,8 DIN 7603 A

8.1.2 Spare parts

8.1.2.1 Power plant and extension retraction system

- 40050360 Spark plug S36 (Bosch W5AC electrode gap 0.5 mm) with screw cap fastened to the thread by crimping, marked with a red dot of paint on the insulator
- 60510821 Spark plug connector Bosch 0356351032 1k Ω
- 60500155 Gasket for coolant outlet
- 60500127 Nut for spring coupling M8 for exhaust muffler
- 60500128 Spring for spring coupling M8
- 60000337 Spring for propeller stopper
- 41071730 Starter motor: 10M173DENSO 128 000-1671 12 V modified
- 60510831 V-drive belt Optibelt Super X-Power XPZ 2540 Ld (5 pieces needed)
- 40871711 Drive belt roller 10M101
- 5932050 Front bearing for upper pulley 32205 B
- 59320320 Rear bearing for upper pulley 320/32 X
- 52200054 Securing washer 20 DIN462 for upper pulley front bearing
- 30002028 Special grease for upper pulley bearings SKF LGMT3
- 39001028 Exchange kit nuts and bolts for 400 h overhaul
- 60000157 Gas strut for ext.-retr. drive S47/2 with Ultra-bush
- 60504045 Ext.-retr. spindledrive type Stross BSA10 RN1 C205
- 60504043 Ext.-retr. spindledrive type Stross BSA10 RN1 C205 assembled with fork 10M170 and flange 8M230/2
- 60000219 Rubber mount at engine hinge axis in engine mount: Ultra-bush 0118055.60
- 41071170 Front engine shock mount 10M117
- 60504014 Rear engine mount Lord J-3608-1 Shock mount
- 60001115 Clamps XO for 6mm bungee (bungee for retaining cable)
- 52130011 Securing washer 13 DIN432-St zn for powerplant main hinges
- 60000338 Rubber buffer 3917210000 (engine tilt limit stop)

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8.1.2.2 Parts for cooling system

- 60001201 Electric water pump Webasto U4810 modified (no longer available)
- 60001210 Coolant pump Pierburg modified (replacement for Webasto).
- 41072800 Elastic adapter-ring 10M280

Note: A voltage converter 10E211 (see section 8.1.2.4) must be installed to run the coolant pump Pierburg with sufficient power.

- 60504049 Radiator KTM VW 0425 or later type VW2192
- 39001019 Service kit cooling system hoses

Rubber mounts for radiator

- 60000275 2 pieces Rundlager Type B (upper mount)
- 60000262 1 piece Rundlager Type A (lower mount)
- 60000377 Copper sealing ring 10x14x0,8 DIN 7603 A for service port

8.1.2.3 Parts for fuel system

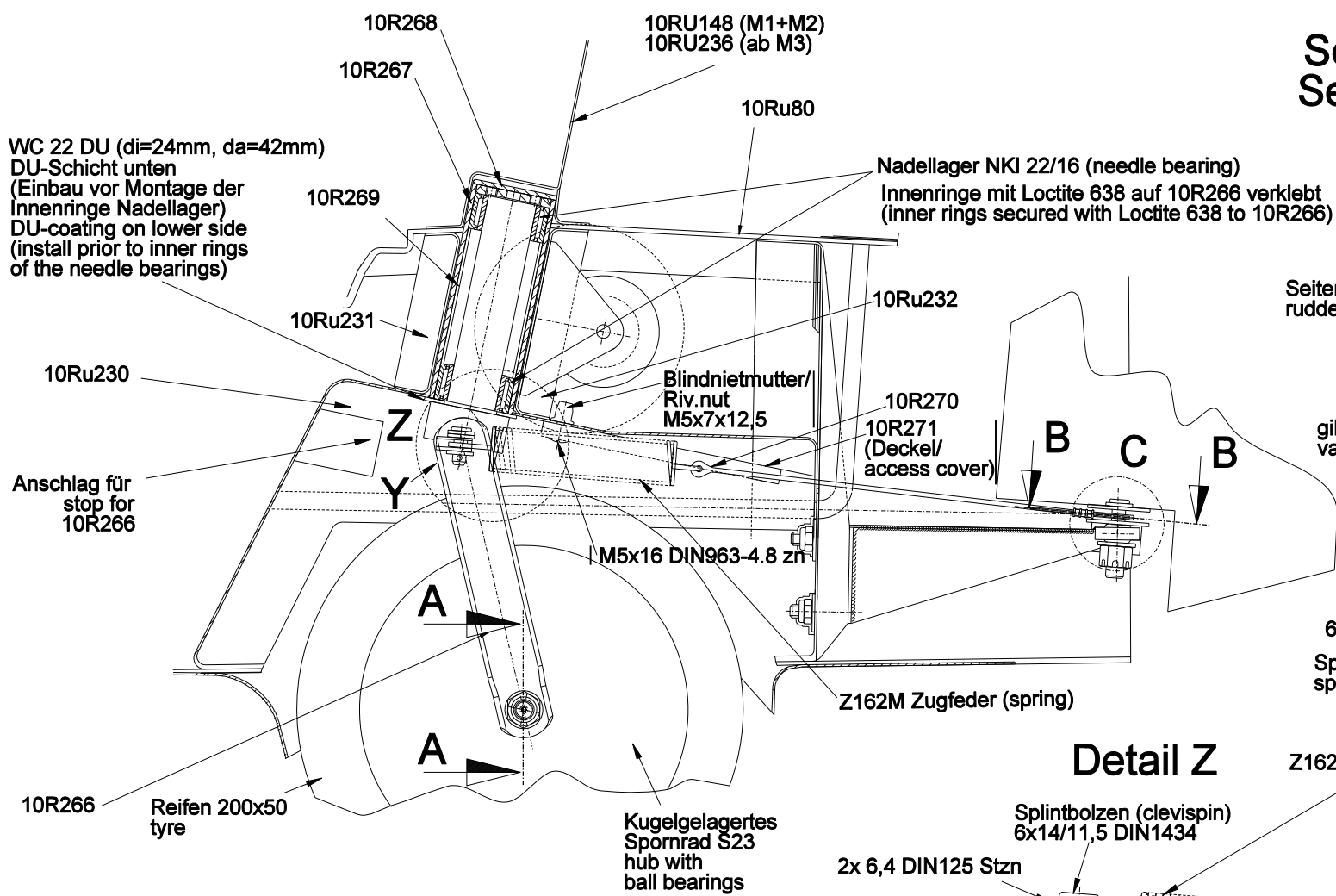
- 60507550 Drainer CAV 110 (1/8" NPT)

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

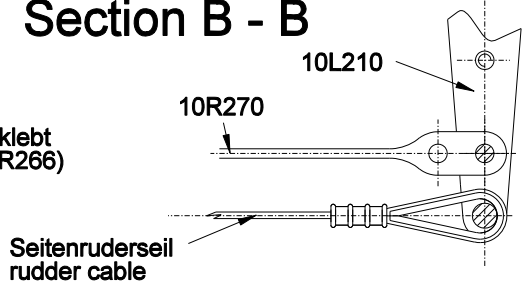
- 60504402 Sealing ring for drainer CAV 110 (for automotive fuel)
- 60510516 Fuel pressure switch DRS 5 ES 0,5 – 5 bar seal FKM or
- 60510519 Fuel pressure switch Beck 901.51
- 60507577 Fuel pressure regulator Pierburg 7.21476.50.0 (no more available)

Note: When replacing by 60507578 follow the working instructions No. 1 for TN1000/27.

- 60507578 fuel pressure regulator Solo 2300884 (Bosch 0280160557 with bracket from Solo)
- 60507575 Fuel pump Pierburg with rubber sleeve 7.22156.60.0
- 60507562 Refuelling pump Facet 60106
- 60507576 Fuel filter Pierburg Nr. 4.00030.80.0 (in front of fuel pump)
- 60507568 Fuel filter MANN WK 613 (behind fuel pump)
- 60507571 MANN-fuel- filter 500009180 WK 31/2(10) for refuelling pump
- 60510833 Injection valve Bosch 0 280 155 868
- 60504407 O-Ring for Injection valve Bosch
- 60507802 Front fuel gauge: VDO 224-011-020-279X
- 60507800 Rear fuel gauge: VDO224 082 005 088
- 60000527 Fuel cock KH 1072 T
- 60507607 Coupling for fuel filler hose KL-006-0-SL007
- 45001605 Full tank sensor with wiring, plug and gasket 60507547
- 60507547 Gasket O-ring 10 x 2,5 80FPM610 for full tank sensor
- 48000009 Fuel hose 7,5x13,5 mm DIN 73379-2A
- 48000092 Fuel hose Inner dia. 3,5 mm fabric braided 2122.0200 (for emergency system)

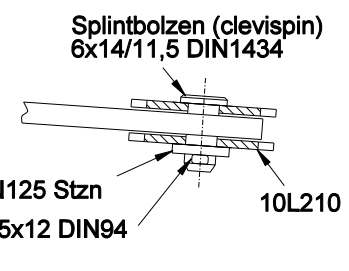


Schnitt B - B
Section B - B

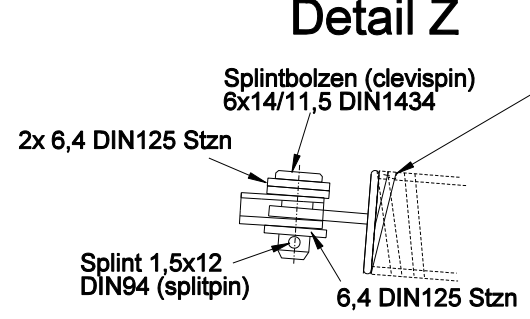


Detail C

gilt für Seitenruderseil und 10R270
valid for rudder cable and 10R270



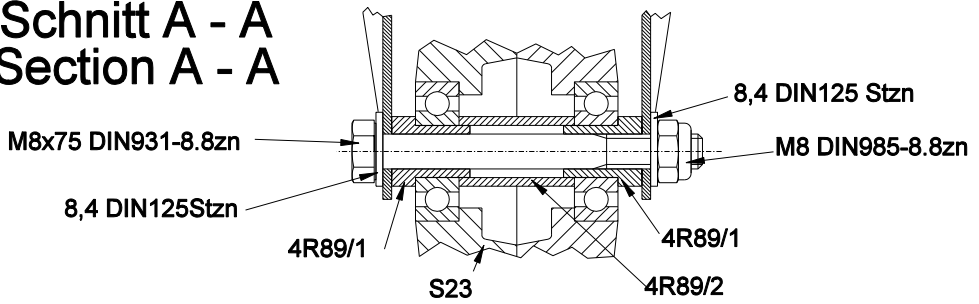
Detail Z

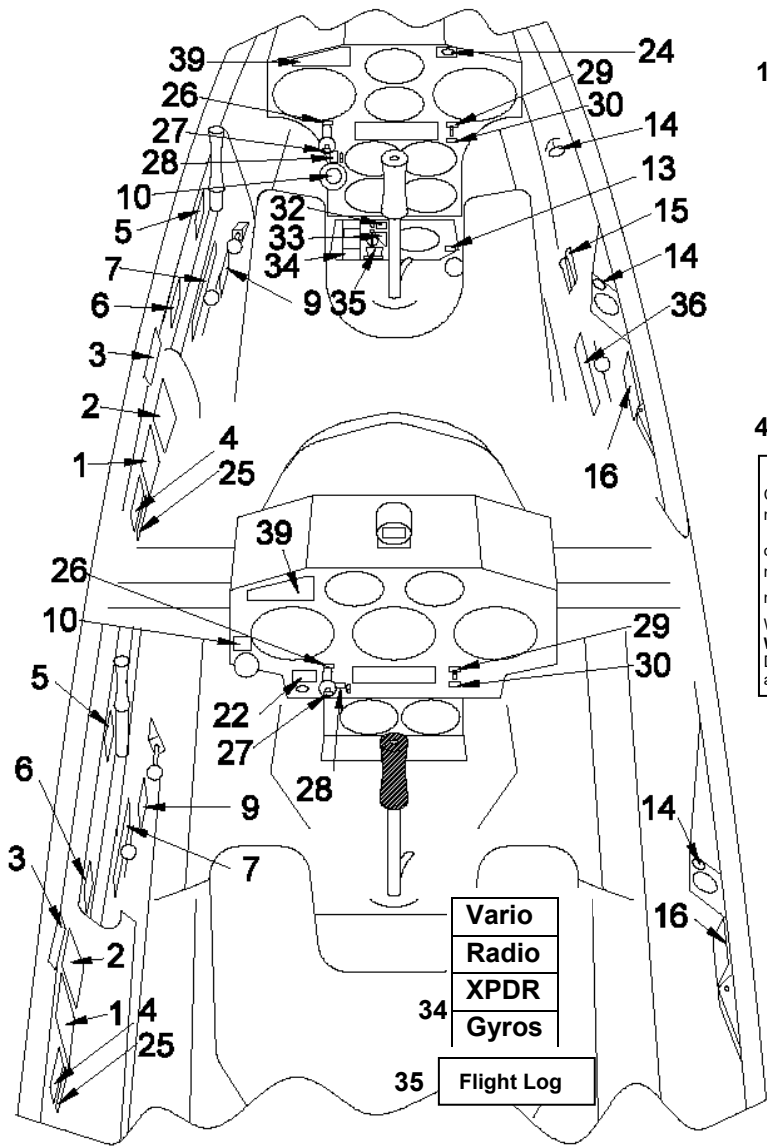


Detail Y



Schnitt A - A
Section A - A





26	Throttle	28	man. ↑	29	normal	32	intern off	33	charging
27	Starter			30	emergency		extern		main on
36	auf Brandhahn zu open fuel cock closed								

39 placards landing gear see diagram 24

Placards DG-1000M

1 DG Flugzeugbau GmbH
 Type: DG – 1000M Serial No.: 10- M
 Year of construction:

	km/h	kts.
Maximum airspeeds	150	81
Winch launching	185	100
Aero-tow	185	100
Manoeuvring V _A	185	100
Rough air	270	146
Maximum speed V _{NE}	185	100
Powerplant extended	100	54

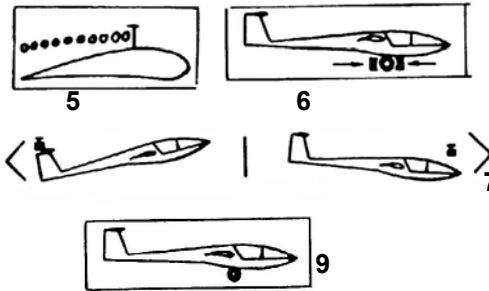
Powerplant extension-retraction
 Approved aerobatic manoeuvres, approved up to a max. mass of 683 kg /1506 lbs:
Pos. Loop, Chandelle, Spin, Stall turn

4 Maximum mass: 790 kg /1742 lbs.

Loading chart

Cockpit load	front seat		rear seat		(Parachute included)
	kg	lbs.	kg	lbs.	
maximum	110	242	90	198	without fin battery
or maximum	105	231	105	231	without fin battery
minimum	kg	lbs.	/	/	With fin battery
minimum	kg	lbs.	/	/	With fin battery

With lower pilot weight necessary ballast must be added.
Warning: To keep from exceeding the forward C.G. limits when flying the DG-1000M two-seated, heavy pilots must compensate the mass of the front and the rear pilot according to AFM section 6.8.7.



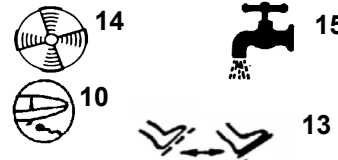
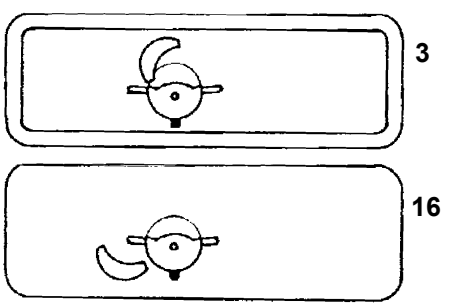
Altitude in [m]	0-3000	4000	5000	6000	7000	8000
V _{NE} IAS km/h	270	256	243	230	217	205
Altitude in [ft]	0-10000	13000	16000	20000	23000	26000
V _{NE} IAS kts.	146	138	131	124	117	111

- 0.1.1 Pre-flight Check**
1. Lead ballast (for under weight pilot)?
 2. Parachute worn properly?
 3. Safety harness buckled?
 4. Front seat: pedals adjusted?
Rear seat: seating height adjusted?
 5. All controls and knobs in reach?
 6. Altimeter?
 7. Dive brakes cycled and locked?
 8. Positive control check ? (One person at the control surfaces).
 9. Trim ballast box in the fin, correct amount filled in? Locking device completely engaged?
 10. Battery in the fin? Loading chart regarded?
 11. Trim?
 12. In addition for self launching
 12. Fuel level?
 13. Fuel cock open?
 14. Canopy open, propeller circle clear?
 15. After engine start close and lock both canopies.
 16. Check max. engine RPM, min. 5900RPM.
 17. Check both ignition circuits (4000 RPM)
 18. Check emergency system (4000 RPM)

Senden transmit 22

**Ballastkasten Seitenflosse
Mindestzuladung im vorderen Sitz 24**

kg	kg
Kasten leer	Kasten befüllt



Benzin min. 95 Okt. 50:1 Zweitaktöl two stroke oil 40 l
 petrol min. 95 ROZ.

on top of main bulkhead left hand side and at fuel filler (Option)

Bauteil Nr.:

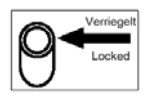
part No. of components at all components

Typ:	DG-1000M
W.Nr.	

Fire proof placard at main bulkhead

Gepäck max. 15 kg
baggage max. 33 lbs.

at main bulkhead



at cover plate of fin ballast box

Reifendruck 3 bar
Tyre pressure 43.5 psi

at right wheel door front

Sollbruchstelle 10000 N
rated load 2200 lbs.

Drainer ↑

at right wheel door rear

Reifendruck 4 bar
Tyre pressure 58 psi

above tailwheel right

Bremsschmierung
brake fluid
min. DOT 3 / DOT 4

on break fluid reservoir

Warning:
Rigging of the horizontal tailplane is only permitted with nose down trim-setting

fin upper left hand side

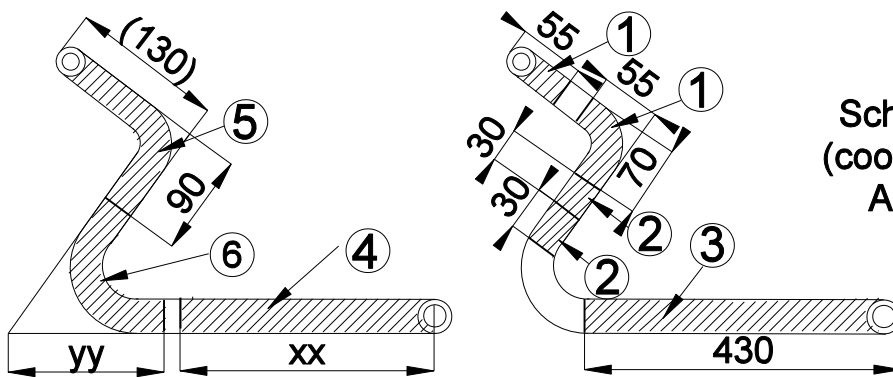
Tankpumpe Refueling pump

on top of main bulkhead left hand side

diagram 12
issued July
2017 TN1000/32

Kühlsystem Coolant system

Diagramm 14 diagram 14



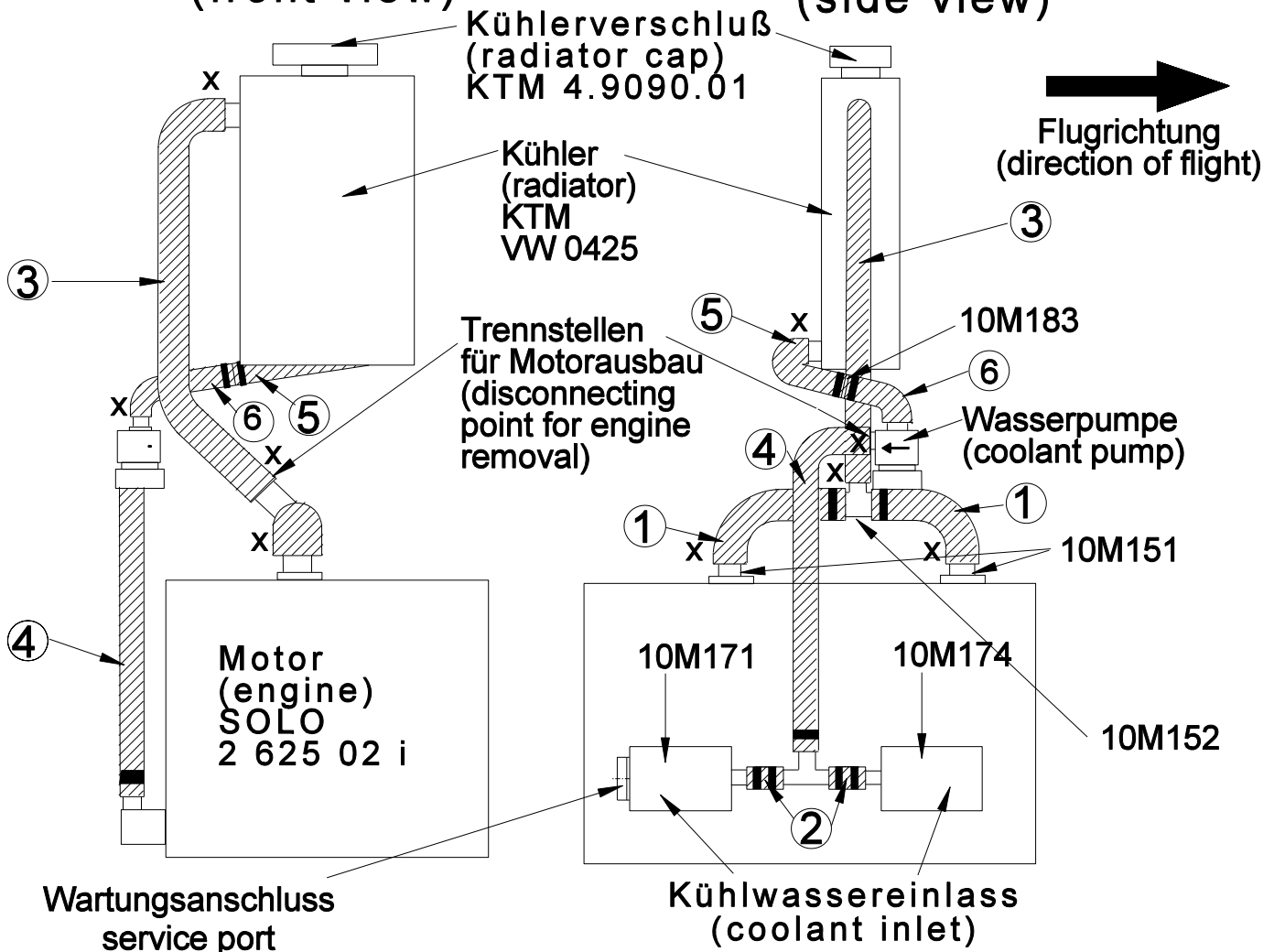
Schläuche hergestellt aus 2 Stück:
(coolant hoses made from 2 pieces):
Artikel Nr. (part No.) 60504053

xx	yy	
410	50	Webasto Pumpe
310	80	Pierburg Pumpe

Wichtiger Hinweis: zum Messen die Schläuche auf 90° biegen
Caution: to measure bend hoses to 90°

Ansicht von vorn
(front view)

Seitenansicht
(side view)



Verschlussstopfen (screw plug) DIN908-M10x1-zn
mit Kupferdichtscheibe (with copper ring) DIN7603A-10x14x0,8

x...Schlauchschnelle (hose clamp) 16-25

■...1-Ohr-Klemme mit Einlagerung (clamp) 24.5RER

