0 General

0.1 Manual amendments

No.	Page	Description	Date
1	0.3, 0.6, 0.10, 1.11, 8.2, diagrams 5a, 11d, 8EP210	ÄM 800-17-07 Fin tank valve and operating handle, Refuelling pump	April 2007
2	0.3, 0.4, 0.6, 0.7, 0.10, 0.12, 1.28, 1.29, 2.7, 3.3, 3.5, 3.11, 4.2, 4.8, 4.11, encl. 2 page 1, TN 4600-2-2 Solo	TN800/34 Manual revision	September 2007
3	0.6, 8.1, diagram 10	TN800/35 Extension-retraction unit, rear fork of spindle-drive	April 2009
4	0.3 ÷ 0.12, 1.3, 1.5, 1.6, 1.8, 1.10, 1.11, 1.14 ÷ 1.16, 1.24, 1.27, 1.29, 1.30, 2.1, 2.2, 2.6, 2.7, 3.1, 3.3 ÷ 3.11, 4.1 ÷ 4.3, 4.6 ÷ 4.11, 4.13, 4.15, 4.16, 4.18 ÷ 4.23, 4.25 ÷ 4.31, 5.1, 5.2, 6.1 ÷ 6.3, 7.2, 8.1 ÷ 8.4, 9.2, diagrams 1 ÷ 5, 5a, 8, 9, 10, 11, 11d, 12, 13, 13b, 14, 17, 14a removed, 8M110, 8E250, SI 69-10	TN800/41 Manual revision, Coolant pump Pierburg	May 2012

0.2 List of effective pages

Section	page	issued	replaced/	replaced/	replaced/
0	0.0	June 2005			
	0.1	see manual amendments			
	0.2	"			
	0.3	"			
	0.4	"			
	0.5	"			
	0.6	"			
	0.7	June 2005	Sept. 2007	May 2012	
	0.8	"	May 2012		
	0.9	"	May 2012		
	0.10	"	Sept. 2007	May 2012	
	0.11	"	May 2012		
	0.12	"	Sept. 2007	May 2012	
1	1.1	June 2005			
	1.2	"	May 2012		
	1.3	"	May 2012		
	1.4	"			
	1.5	"			
	1.6	"	May 2012		
	1.7	"			
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	1.10	"	May 2012		
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	1.26	June 2005			
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2	2.1	June 2005	May 2012		
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	4.17	June 2005			
	4.18	"	May 2012		
	4.19	"	May 2012		
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5	5.1	June 2005	May 2012		
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6	6.1	June 2005	May 2012		
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7	7.1	June 2005			
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8	8.1	June 2005	May 2012		
	" 8.2	"	May 2012		
	8.3	"	May 2012		
	8.4	"	May 2012		
9	9.1	June 2005			
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diagram	issued	replaced/	replaced/	replaced/
1	June 2005	May 2012		
2	June 2005	May 2012		
3	Nov. 2004	May 2012		
4	Nov. 1993	May 2012		
5	Nov. 2004	May 2012	valid up to ser. No. 8-372	
5a	April 07	May 2012	valid from ser. No. 8-373 on	
6	May 2005			
7a	August 2005			
7b	August 2005			
8	August 2005	May 2012		
9	August 2005	May 2012		
10	August 2005	April 2009	May 2012	
11	Juni 2005	May 2012	valid up to ser. No. 8-372	
11c	June 1999			
11d	April 07	May 2012	valid from ser. No. 8-373 on	
12	June 2005	May 2012		
13	Febr. 1999	May 2012		
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14	Nov. 2004	May 2012		
14a	June 2005	May 2012	no more effective	
15	Nov. 2004			
16	Nov. 2004			
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6EP27M	28.08.90			
8EP38	17.02.99			
8EP210	12.02.07			
8M110	23.10.02	5.07.11		
8M234	25.08.05			
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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-800B repair manual for repairs of the airframe.
Repairs exceeding those as defined as minor damage in the DG-800B repair manual section 2 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 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 the variant DG-808C 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 400 engine hours.
   1. All nuts and bolts on the engine
   2. The bearings of the upper drive belt pulley

b) The **gasket for the drainer valve and the full tank sensor** have to be exchanged after 6 years.

c) The **hoses of the cooling system** have to be ex-changed after 6 years.

d) **Drive belt:**
   Without optional BBSA friction/centrifugal clutch: The drive belt has to be exchanged after 50 engine hours.
   With optional BBSA friction/centrifugal clutch: The drive belt has to be exchanged after 100 engine hours

e) Limitation for drive belt rollers no more applicable.

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

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.

h) **Other components**
   All other components like 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.

i) **Flexible fuel bags in the wings (option)**
   Type Uniroyal (rubber): these will have to be exchanged after 10 years.

0.4.4 Service time, maintenance documents of equipment and components

Follow the instructions of the respective manufacturer:

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

And if installed:
Operating Manual for Tow Releases
Series: E 85 Nose Tow Release
latest approved version.

b) Safety harness: instructions of the manufacturer latest approved version.

c) Minimum instrumentation: instructions of the manufacturer.

d) Engine: Manual of the engine manufacturer latest approved version.

e) Propeller: Technoflug Operation and maintenance manual No. P3 latest approved version.

0.4.5 Power plant trouble shooting

Please find a checklist in the DG-808C flight manual section 8.8.

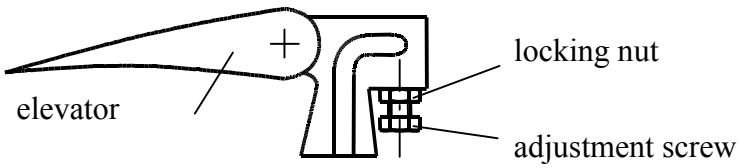
Note: The Airworthiness Limitations section is FAA approved and specifies maintenance required under Secs. 43.16 and 91.403 of the Federal Aviation Regulation unless an alternative program has been FAA approved.

1.2.3 Elevator stops

The elevator stops are located at the base of the control column and can be adjusted with a 10 mm open ended spanner.

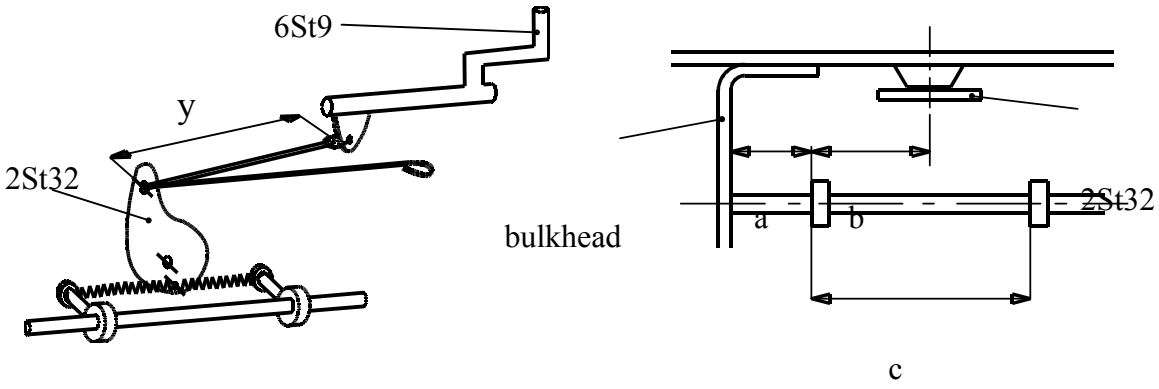
1.2.4 Elevator control circuit free play

With the elevator held fixed at the 0 point, the free play at the top of the control column can be ±1.5 mm (±0.06 in.). Within the automatic elevator connection there should be no free play noticeable when the elevator is moved at its trailing edge.
Any free play can be reduced by screwing in the adjustment screw on the automatic connector funnel.



1.2.5 Trim

The automatic trim mechanism should be adjusted according to the sketch below. The measurements a and b are with the control stick in forward position: a = 30 mm (1.18 in.), b = 187 mm (7.36 in.), c = 357 mm (14.1 in.).



The bungee interconnection between wing flap lever 6St9 and trim lever 2St32 is to be replaced, when worn or when elongated. The length in unstretched condition y must be 110 mm (4.3 in.). The interconnection consists of 2 mm diameter. bungee wound around 3 times.

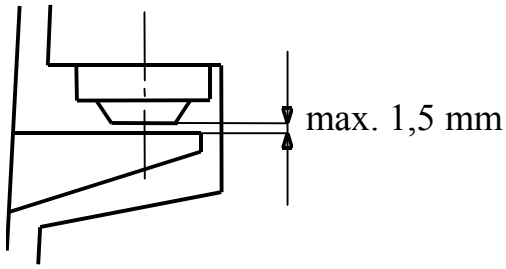
1.3 Rudder control

1.3.1 Rudder control circuit
see diagram 2

1.3.2 Rudder deflections and tolerances
155mm (6.5 inch) (28°) +0, -5mm (-.2 inch) measured at 318 mm (12.52 inch) from the hinge axis.

1.3.3 Rudder stops
The rudder stops are located at the lower hinge pedestal and can be adjusted with an Allen key wrench.

1.3.4 Axial free Play
The maximum allowable free play at the upper hinge point is 1.5 mm (0.06 inch)



1.3.5 Sealing the rudder
The rudder is sealed on both sides. On the outside with Mylar combi-tape and inside the fin with V-sealing tapes
These sealings are not to be removed.
If damaged it should be replaced, see section 4.7.6

1.3.6 Retaining spring for the pedal adjustment handle
A spring which pulls the pedal adjustment cable tight is installed in the console below the instrument panel. If this spring is defective or not connected the handle of the pedal adjustment cable won't be pulled to the front so that it may hook into the trim release lever at the control stick with pedals in a rear position.

1.4 Aileron and wing flap control

1.4.1 Control circuit

see diagrams 3 and 4

A spring at the mixer shaft 8St70 provides additional aileron return force at positive wing flap settings.

Note: The bearing of 6St9 on 6St15 see diagram 3 must not be greased (Teflon bearing).

1.4.2 Deflections and tolerances

Aileron deflections:	up	42 ± 3 mm	1.65 ± 0.12 in.
	down	21 ± 3 mm	0.83 ± 0.12 in.

measured at 122 mm (4.8 in.) from hinge axis (at inboard end), wing flap setting -5°.

Wing flap deflections:	up -14°	19 ± 3 mm	(-0.75 ± 0.12 in.)
	down L	38 ± 3 mm	+1.50 ± 0.12 in.)

measured at 122 mm (4.8 in.) from hinge axis against the fixed part at the wing root.

At flap setting -5° the flaperons have to be adjusted against the fixed part at the wing root with 0 ± 1 mm (0 ± 0.04 in.).

1.4.3 Stops

The aileron stops are located behind the removable left-hand side panel. The stops can be adjusted at the nuts on the pushrod with two 4 mm (5/32 in.) diameter rods or drills.

The wing flap stops are located at the pushrod 6St8.

The stop for the positive setting (welded washer at pushrod 6St8 with Nylonbush) is at the seatback bulkhead. Adjustment by displacing pushrod 6St8 against the rear pushrod 6St7.

The stop in negative setting is a hose clamp which stops at the leaf-spring 8St4.

1.4.4 Free play

The max. free play measured at the trailing edge of the flaperons measured at 122 mm (4.8 in.) from hinge axis should not exceed ±1 mm (±0.04 in.) The control stick and the wingflap should be in neutral position.

For the measurement fix the flaperon of the opposite wing. With both flaperons fixed, a maximum free play of ±1.5 mm (±0.06 in.) at the top of the control stick is allowed.

1.5 Airbrake control, wheelbrake

1.5.1 Control circuit

see diagrams 3 and 4)
The wheelbrake cable is connected to the airbrake torsion shaft (part 8St12).

1.5.2 Adjustment

a) Airbrake overcentre locking force:
Adjust the airbrake rod in the airbrake box so that both airbrakes retract evenly and that the overcentre locking force on the airbrake operating handle is between 15 - 20 daN (33-44 lbs.). Adjustment can be done with a 13mm open end spanner.

b) Airbrake extension height.:
When adjusting the wheel brake check that the airbrake levers in the wings 6F11 are at an angle of 5°÷ 10° from the vertical with wheel brake fully actuated.

c) Wheel braking force:
Drum brake: With insufficient braking effect, the wheel- brake can be adjusted by a screw on the end of the Bowden cable housing, located on the forward undercarriage fork above the brake actuating lever.
Hydraulic disc brake: Adjustment is at the turnbuckle between main brake cylinder and airbrake control shaft.

d) Adjustment interconnection with wing flap control:
The airbrake control has to be adjusted, so that with the airbrakes fully extended (rear stop at the seat back bulkhead) the wing flap handle will be moved to a position approx. 10 mm (.4 in.) aft of the +5° notch. Adjustment at the rod ends of the pushrods 6St13 and 6St14/1.
Check the total travel. (See 1.5.3)

1.5.3 Airbrake stops

The rear airbrake control circuit stop is located at the seat back bulkhead. The total travel must be min. 215 mm (8.46 in.). For adjustment, see above. The stop, in locked direction is situated at the wing root ribs. The corresponding stop at the guide rod 8St11 in the cockpit should be placed to allow a free play of approx. 3 mm (0.12 in.) between the airbrake handle and the stop at the guide rod with the airbrakes locked over centre.

1.5.4 Free play

Free play in the airbrake control system is of no effect.
The airbrakes themselves at their hinges should not have so much free play that they hit the wing surface instead of entering into their boxes during retraction under airloads.

1.6.4 Hydraulic brake system (Option)

a) Brake fluid approved specification DOT 3, DOT 4, SAEJ 1703.
The brake fluid must be exchanged at least every 4 years.

Warning: brake fluid is poisonous.

b) Adjustment: see section 1.5.2c)
If adjustment does not increase the braking effect as desired, the brake system is leaking or there is air in the brake system. Bleeding of the brake system see section 4.4.4.

c) The brake linings must be replaced if they are worn down to a thickness of 2.5 mm (0.1 in.).
Replacement set (2 linings, 6 rivets) Tost Nr. 075860.

d) The brake disc must be replaced if it is worn down to a thickness of 4.3 mm (0.17 in.).

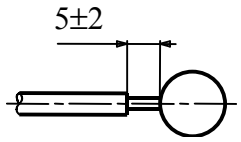
1.7 Tow hooks

1.7.1 Tow release circuit

see diagram 5

1.7.2 Adjustment

There should be 5 $\pm$ 2 mm (.2 in. $\pm$ 0.08 in.) space between the tow release knob and the nylon cable guide.



1.7.3 Damages

The ring muzzle of the C.G. hook should not be bent or ground down and should move easily. If the muzzle is damaged, the tow release has to be exchanged and repaired by the manufacturer (Tost).

1.7.4 Removing the tow hooks

The tow hooks are to be removed in upward direction (use a piece of hard wood and a hammer). Be careful not to break loose the seat shell with the C.G. tow hook.

1.7.5 Operating and maintenance instructions

For further information refer to the operating and maintenance instructions for the release mechanism. (See sect. 0.4 of this maintenance manual)

1.8 Water ballast system

1.8.1 Water ballast release circuit

see diagram 5

1.8.2 Wing tanks

Version DG-808C Classic: double wall bags with a capacity of 50l per wing.
Version DG-808C Competition: double wall bags with a capacity of 60l (15.85 U.S. gal) or 75l (19.8 U.S. gal) per wing. The 75l waterbags are separated in 2 chambers. A check-valve is located between the 2 chambers. Operating the waterballast system without the check-valves is prohibited.
Both variants:

a) Adjustment
   For the dump valve in the closed position, there should be 1 mm (.04 in.) space between the 8 mm (.315 in.) diameter PVC rod from the dump valve, and the plate lever on the fuselage. Adjust at the adjustment screw located at the fuselage wall. If this is insufficient, the 8 mm PVC rod can be shortened. If a valve still leaks, then the rubber gasket and the associated spring at the end of the 8mm PVC rod should be loosened, pressed further in and secured again. If this is not successful, the valve ball seat should be greased. (see sect. 4.1)
b) Servicing
   see section 4.1.

1.8.3 Fin tank (only version DG-808C Competition)

The fin ballast tank is constructed as integral tank.

a) Adjustment
   The release cable must be adjusted so that the cable just becomes loose when the handle is parallel to the fuselage wall.
b) Inspection
   According to sect. 2.2 a special inspection is to be carried out on the fin ballast tank system at each annual inspection.

1. The dump time of the full fin tank should be timed and should not exceed 120 seconds.
2. Check for correct indication of the outside air temperature gauge (in the DEI-NT).
3. **Up to ser.no. 8-372:** Remove the tailwheel and the cover plate in the tailwheel box. Check the control cable and the lever of the valve carefully for wear. Check the control cable at the operating handle too. If the cable or the lever is worn, further use of the fin tank is prohibited. Please contact the manufacturer for a detailed repair instruction.
   From ser. no. 8-373 on: Check the control cable at the operating handle and at the dump valve (installed in the lower rudder mounting bracket). If the cable is worn, further use of the fin tank is prohibited.

1.11 Power Plant

1.11.1 Arrangement:

see diagrams 8 and 9.
You will find a part list with the designations and the reference numbers for the powerplant parts at the end of this manual.

1.11.2 Engine type, coolant

The **engine** is a SOLO 2625 01 with electronic dual ignition and liquid cooling. For further engine specifications refer to the engine manual, see sect. 0.4 of this manual.
The cooling circuit is equipped with an electric waterpump. The pump operates with ignition on. If the glider electrics are switched off (master switch) with running engine, the pump will still receive electric power from the generator.
Coolant: Commercially available anti-freeze for car engines (recommended: BASF Glysantin G48 Protect Plus concentrate) and distilled water.

With coolant pump type Webasto: mixing ratio 1:1 (up to approx. –40°C, -40°F)

With coolant pump type Pierburtg (TN800/41):
Normal operation: mixing ratio 1:2 (up to approx. –20°C, -4°F).
Mixture may be changed for high altitude flying to mixing ratio 1:1 (up to approx. –40°C, -40°F).
Instructions see section 4.16

Caution: If you don't operate the engine for periods longer than 2 months you must preserve your engine according to the instructions in the engine manual. The same applies for any overseas transportation.

1.11.3 Exhaust Muffler:

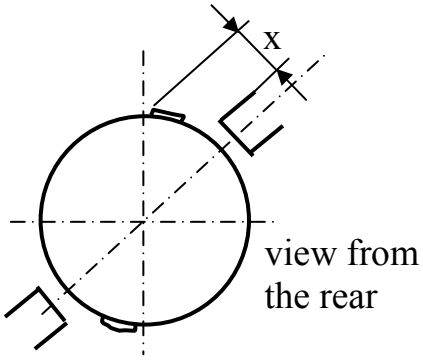
The muffler has been specially designed for the DG-800B and is attached by four spring couplings in a movable frame, secured with Loctite 243.

1.11.4 Propeller:

KS-1G-152-R-122-( )-B, attachment bolts: six M 8 x 65 DIN 931 - 8.8, head with a 2 mm (0.08 in.) dia. hole for lockwiring. Tightening torque of the bolts - 2-2.5 daNm (15-18 ft lb).

Propeller positioning (not with optional BBSA friction-centrifugal clutch)**:** To assist in having the propeller stop in a vertical position during flight, the propeller should be positioned accordingly to the compression point of the engine. With the propeller in the position for retraction the magneto flywheel must be in the following position:

x= approx. 20mm (.79in.) with the actuator directly above the centre of the proximity switch



Adjustment is made slipping the drive belt into the required position, see Service Info 69-10 (attached to this manual).

1.11.5 Drive Belt:

Type of drive belt see section 8.1.

Tolerances for drive belt tension and measuring technique: see section 4.12g.

Drive Belt Tensioning:. Tensioning adjustment can be made by turning the eccentric propeller shaft, see sect. 4.12a.

As an Option a BBSA friction-centrifugal clutch may be installed to reduce the drive belt loads when starting the engine. The clutch is maintenance free and constructed as one unit together with the lower pulley and the starter ring gear. With the clutch the propeller position to the compression point of the engine will change every engine start, so for aligning the propeller for retraction a stopper according to drawing 8M234 (enclosed to the MM) is necessary.

1.11.6 Starter:

Electric starter motor, type see section 8.1.

1.11.7 Ignition system:

a) Spark plugs; Electrode gap 0.5 mm (o.02 in.). Type see section 8.1.
b) The electronic boxes (incl. ignition coils) are mounted at the propeller mount (carbonfibre tower).

1.11.8 Throttle cable connections

The cable can be finely adjusted at the connection point just below the carburettor. With fully open throttle (butterfly valve vertical) the cable should be loose. The cable is 1.5 mm diameter Bowden-cable

Friction device for throttle control: This device is located at the control bellcrank in the instrument panel.

The brake force must be adjusted for a control force of 15-50 N (3-11 lbs.).

1.11.9 Propeller brake

see diagram 13

a) manual activation: The brake cable can be adjusted at the adjustment screw at the rear end of the engine or directly at the screw nipple at the brake lever at the engine.

b) electrical activation (Option): The electric brake-motor acts on the same brake lever. Adjustment is similar to the manual brake and via a second adjustment screw located directly at the brake motor which is mounted to the lower left side of the engine bay or directly at the screw nipple at the brake lever at the engine.
With the brake off, there should be a clearance of at least 0.5 mm (.02in) between the brake pad and the magneto flywheel. The brake pad should be replaced when there is only 3 mm (.1 in) of pad left. The pad has to be glued on with UHU Plus 300. The glue must be cured for min. 5 minutes at 180°C (356°F). Replacement pads: part no. 8M275/3.
Or screw on brake pad with mounting bracket: part no. 8M287/3. The mounting bolts have to be secured with Loctite 243.
Modified mounting of the propeller-brake retaining rubber cord (Option according to TN 800/41 item 9), see Diagram 13b:
A modified mounting of the propeller-brake retaining rubber cord may reduce the wear of the levers and the connecting rod.

1.11.10 Tightening torques and locking:

a) All bolts on the engine which are not secured by selflocking nuts should be tightened according to the following:

M 10	-	40 N m (29 ft lb)
M 8	-	20 N m (15 ft lb)
M 6	-	12 N m (9 ft lb)

They should also be secured with Loctite 243. All locked and secured bolts are marked with red paint which also marks the respective component at that particular point. Whenever a bolt has to be tightened or taken off, the red paint should also be removed and only renewed after the bolt is once again securely attached with Loctite.

b)

Cylinder head nuts	20 N m (15 ft lb)
CHT probe	15 N m (11 ft lb)
spark plugs	20 N m (15 ft lb)
propeller	20 N m (15 ft lb)
magneto flywheel	80 N m (58 ft lb)
lower drive belt pulley	100 N m (73 ft lb)

1.11.11 Fire warning light

The probe is located at the engine bay side wall opposite to the carburettor.
A 0.5 A fuse is plugged into the positive wire at the connector plug of the light.
Check of the control light (self-test- function): When switching on the main switch the fire warning light must flash once.
Check of the probe: You may heat the probe up to 160° C (320 °F). Use a fan heater with a thin nozzle to heat the probe only. The DEI-NT must display a warning message „Fire“.

Warning: Don’t execute this test without measuring the temperature close to the probe. 160° C (320 °F) must not be exceeded.

1.14.3 Control unit

This aluminium box is located in the relay compartment. The control unit incorporates the following functions:

1. Master switch relays.
2. Control of the extension-retraction procedure. The extension-retraction relays are also mounted inside the unit.
3. Regulator/generator, also supplies power to the fuel- and coolant-pumps with the masterswitch off.
4. Startermotor control: The starter motor is actuated by a power electronic, no relays. This applies to the normal engine start (ignition on) and also the slow turning of the propeller into retraction position (ignition off). Activation is via the starter button.
5. Control of the primer valve.
6. Control of the refuelling pump.
7. Fuses for several circuits are installed in the control unit see section 1.14.13.

Caution: To avoid damage disconnect the power plug first when removing the control unit. Plug in the power plug after the other plugs when installing the unit,

Caution: When you plug in the connector plugs, carefully fix the plugs with their screws. Secure the screws with Loctite 221 or 222 (low strength thread securing).

1.14.4 Generator – Regulator:

The generator is located in the ring gear housing and is incorporated with the ignition/ timing sensors. It is connected to a voltage regulator and can provide a maximum charging current of 10 Amp. The regulator is located in the control unit see sect. 1.14.3. The generator supplies electrical power to the fuel and water pumps, even with the master switch off.

1.14.5 Master Switch:

The aircraft is supplied with a master switch (no separate engine master switch). The master switch supplies in **on** position electrical power to all systems.

The master switch is a key operated switch located in the console below the instrument panel. The key switch controls a relay in the control unit which cuts off the electric power.

1.14.13 Circuit breakers and fuses

1. In the console of the instrument panel:
   a) Circuit breaker 2 A for electric variometers etc.
   b) Circuit breaker 3 A for the radio
   c) 3A for turn and bank or artificial horizon
   d) Circuit breaker 3 A spare eg. for the transponder
2. The battery main fuses are located in the seat shell at the right hand side of the instrument panel: 2 pieces 60 A.
3. Fuse 250V 0.5A 5x20 m for the fire warning light plugged into the positive wire at the connector plug of the lamp.
4. Resettable fuses are installed in the DEI-NT unit for the following circuits:
   Tankoscillator 0,2A
   Alarm outlet 2 fuses 0,2A
   Change over switch when extending the powerplant 0,2A e.g. for a Headset.
5. In the control unit:
   Resettable fuses are protecting the following circuits:
   a) DEI-NT 0.4A
   b) Proximity switch 0.2A,
   c) Engine extension-retraction motor 10 A
   d) Full tank sensor 0,05A
   e) 12 V socket 4 A
   f) bug wipers 7A
   and a safety fuse for the Generator 15A
   The following circuits are protected by their semiconductor switches:
   a) Fuel pump 1
   b) Fuel pump 2
   c) Coolant pump
   d) Refuelling pump
   e) Propeller brake motor

1.14.14 Position switches for the powerplant

see sect. 1.12.5 and 1.12.6.

1.14.18 DEI NT= (Digital Engine Indicator)

For a description of the readouts and the various functions and the set up menu see flight manual sect. 7.4. The DEI-NT controls all functions together with the control unit see section 1.14.3.

- The RPM measurement is fully digital and counts the impulses of the proximity switch.
- The coolant temperature (CHT) is measured by a temperature probe which is screwed into the coolant circuit in the rear cylinderhead.
- Fuel level measurement see sect. 1.13.6.

Functions

The following functions are controlled by the DEI-NT:

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 and propellerbrake will be activated.
- with the ignition switched on the electric fuel pump, coolant 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 sect. 1.12.5 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 sect. 1.14.10 not operated).

Note: If a new DEI-NT or a replacement DEI-NT should be installed, you have to report your actual elapsed engine time to DG Flugzeugbau to enable them to ajust the new DEI-NT to that value.

Warning: With the connector plug disconnected from the DEI-NT, the ignition is not short-circuit. This means the ignition is on. Don't turn the propeller!

Caution: When you plug in the connector plugs, carefully fix the plugs with their screws. Secure the screws with Loctite 221 or 222 (low strength thread securing).

1.15 Pitot and static system

1.15.1 Layout

See diagram 6

1.15.2 Maintenance

No special maintenance needed.

1.16 Ventilation and drain holes

1.16.1 Layout

See diagram 171.

1.16.2 Maintenance

No special maintenance needed.

2 Inspections

2.1 Daily inspection

see flight manual section 4.3

2.2 Regular inspections

A After 200 flight hours and during the annual inspection

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 sealing of the rudder (see section 1.3.5.

B Annual inspection

- Execute all items of the daily inspection see flight manual section 4.3.
- 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 1.4).
- Check the free play in all control circuits (see section 1.2up to 1.6)
- Check the fore and aft play of the wings (see section 1.10).
- Check the canopy emergency releases according to section 7.14 of the flight manual.
- Landing gear: Check if the bolted connection between actuating lever and rear upper fork is tightened?
- Check all accessible drain and ventilation holes if clogged, especially on the lower fuselage side (see diagram 17).
- Check the fin ballast tank system according to section 1.8.3
- Check the powerplant.
- Check the friction brake of the throttle control (see sect. 1.11.8).
  Check the torque of the propeller bolts see sect. 3.5.1 item 26 of this manual.
- **Tow hooks:** The operating and maintenance instructions for the release mechanisms, see sect. 0.4 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.

2.2 cont.

C Every 3 months

Check the emergency canopy release according to flight manual sect. 7.12.
Only version Classic: Check the tension of the lines of the waterbag attachment (see section 4.1).

D Special inspections

Tow hook:

After a wheel up landing, the tow hook mechanism is to be carefully checked for any damage.
After a landing where the fuselage nose has touched the ground, the nose tow hook (Option) is to be cleaned and to be checked for correct functioning.

Hole of the PC port:

After a landing where the fuselage nose has touched the ground 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., but at least every 4 years with the annual inspection.

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. Ask the DG Flugzeugbau for the necessary inspection document.
   When you request the inspection document, 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 document.

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.

2.5 Inspection procedure for the controls

Check of flaperon and airbrake controls at the wing roots:
Remove the plastic cap in the rear wing root rib. Insert a mirror with approx. 30 mm (1.2 in.) diameter in this access hole.

3 Maintenance

3.1 General maintenance

See also flight manual section 8.

Exterior surfaces of the fibre reinforced plastic parts

The surfaces are coated by a UP-gelcoat or by PU paint (Option). This gelcoat is protected by a hard wax coating which has been applied during production with a rotating disc ("Schwabbel" procedure). Do not remove the wax, because this would lead to shading, swelling and cracking of the surface. In general, the wax coat is very resistant. As soon as the wax coat is damaged or worn, a new coat has to be applied. If you store your aircraft often outside, this may be necessary every half year!

"Schwabbel" procedure: The best method is with an electric power buffer as we do in the factory. Also an electric drill may be used. Speed approximately 2000 RPM. Two packages of special cloth discs (Schwabbelscheiben) have to be installed. A block of hard wax has to be pressed against the rotating discs. By doing so, the wax becomes hot and is taken up by the cloth. The hard wax and the cloth discs should be purchased from the DG Flugzeugbau factory.

Wax	Part-No. 70000121
Cloth disc	Part-No. 70000600
Adapter W67 (for mounting the cloth discs to a power buffer with thread M14)	Part-No. 80010026

You get the best effect when polishing 90° to the microscratches of the sanding process.

Caution: Make sure that the surface does not get too hot, otherwise the finish will be damaged. Therefore move the polishing machine all the time, and do not stay on one spot!

3.3 Greasing and oiling

Once a year your glider should be carefully checked and all bearings, including control surface hinges, should be cleaned and greased if necessary.

The various greasing points are as follows:

- Flaperon drive connections at the flaperon.
- Airbrake drive connection - in airbrake box, also grease the brake paddle pivots.
- Remove the access panel on the left hand cockpit wall and grease all the pushrod guides.
- Remove the baggage compartment floors and open the baggage compartment rear cover to grease all bearings.
- Remove the control column cover and grease all the bearings associated with the control column.
- Grease the rudder pedal adjustment slide.
- Oil all hinge points on the undercarriage in the undercarriage box.
- Clean and grease all control surfaces hinges.
- Clean and grease the control hook-ups for flaperon, airbrake and elevator control.
- Clean and grease all pins and bushes of the wing and tailplane attachment.
- Take off the canopy and clean and grease the locking mechanism. After reinstalling the canopy, check the force needed for emergency release with the red handle, using a spring balance. The force should not exceed 200 N (44 lbs.).
- Clean and grease the power plant see sect. 3.5.

Note: The greases we recommend are lithium based pressure-resistant anti-corrosion greases or lithium-soap greases (multi-purpose greases for rolling element bearings).
Use thin engine oil e.g. SAE 5W30 for oiling.

Caution: The sliding guides of the following parts are made from Teflon and should not be greased:
Airbrake control handle 6St9 on 6St15 see diagram 3
If these parts have been greased inadvertently you have to disassemble the parts and to clean them completely with Acetone.

3.4 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 areas on any skin surfaces, as these signal that something may be wrong.
With major damage, contact the DG Flugzeugbau factory and send photographs and a damage report from a licensed inspector or from an appropriately rated mechanic.
With this information, the correct repair procedures can then be determined.

Minor damage such as small cracks and holes in the skin surfaces, as specified in the repair manual, may be self-repaired or by a certified repair station.

Additional information, such as a listing of all materials used in your aircraft can be found in the repair manual.

Home repairs should not be attempted when:

- the main spars or the spar ends are damaged or major fittings on the wings, fuselage or tailplane 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!

3.5 Servicing the Engine

Caution: If you don't operate the engine for periods longer than 2 months you must preserve your engine according to the instructions in the engine manual. The same applies for any overseas transportation.

Caution: With an optional BBSA slipping-centrifugal clutch installed to the engine refer to Solo technical note No. 4600-2-2 attached to this manual for servicing the clutch.

3.5.1 25 hour inspection

Note: The engine time until the next maintenance is displayed on the DEI-NT operating time screen. After completion of the 25 hour inspection reset this time to zero, see section 4.23.

The following checks and maintenance work should be done every 25 hours engine time.
Items 1, 7, 8, 10, 13 and 26 should be executed at least 1 year after the last 25 hour inspection, preferably with the annual inspection.
Checklists for this maintenance work are in the enclosures of this manual. Please complete the checklist when executing the inspection and file it in the aircraft log.

1. Remove the engine bay doors, general visual inspection.
2. Change spark plugs. Check if the spark plug connectors have a tight fit on the spark plugs after you have exchanged the spark plugs. If not, the connector must be replaced.
3. Exchange the fuel filter. Use only a transparent filters, type see section 8.1. Assembly see diagram 11c.
4. Measure fuel flow (see sect. 1.13.3). Disconnect the hose at the T-junction behind the rear carburettor. Hold the hose into a measuring container. Switch on the electric fuel pump with the ignition switch. Determine the time for supplying 1 litre of fuel. For the measurement a minimum of 10 l of fuel should be in the fuselage tank. Note down the value, max. time is 90 seconds for 1 litre.

5. Remove the carburettor cover and membrane, remove the needle valve, flush the carburettor by switching on the fuel pump. The fuel must spout out as a powerful stream. If a large amount of fuel leaks out of the carburettor when you remove the membrane this is a sign that:
   a) a dirt particle prevents the needle valve from closing completely or
   b) the main nozzle is clogged (dirty), so that the engine can't receive the full amount of fuel. In this case you have to disassemble the main nozzle and to clean its chamber, see sect. 1.13.7.2 item 2.
   c) Check the connection of the throttle cable for damage and wear.
   d) Reinstallaton of the carburettor membrane:
   Insert the lower half of the O-ring which is incorporated in the membrane into the groove in the carburettor. Press the cover plate with light force onto the membrane and move the cover plate in all directions until the plate slips into the recess at the carburettor (metal of cover plate on metal of carburettor). This method ensures that the O-ring which is incorporated in the membrane slips correctly into the groove.

Note: If you let the membrane dry out it will regain its original size and can be installed without the above mentioned trick.

6. Primer
   a) Check the filter of the primer valve. The filter is installed in the fuel distributor in which the primer valve is inserted. Loosen the hose clamps and the mounting bolt of the distributor and pull out the primer. Flow fuel through the filter in reverse direction and check that as the fuel comes out of the filter any dirt is removed. In addition flow fuel in reverse direction through that outlet of the multiple-connector where the excess fuel line restriction is installed. Reinstall the connector.
   b) Check the function of the primer valve and nozzle (engine must be cold). Switch the primer switch in auto position. Remove the air intake filter. Enter the DEI-NT set up menu and set primer test Y, then switch on the ignition and press the starter button. Now the DEI-NT must display a syringe on the centre display and fuel must be injected via the nozzle into the intake manifold of the carburettor without the starter motor operating.

Caution: Test only for 2-3 seconds, otherwise you may flood the engine. Enter the DEI-NT set up menu and set to primer test N, otherwise the starter motor will not function.

   c) Check the hose which connects the primer valve to the carburettor for any damage.
   d) Leak test of the primer valve: with the ignition on (fuel pump running) fuel must not be injected.

7. Check all fuel lines for any wear, kinks, tight fit and leaks. Check especially the fuel lines in the engine compartment, switch on the ignition to run the fuel pump.

8. Check the intake airfilter of the carburettor for excessive dirt and wear, wash with pure petroleum spirit and blow compressed air in reverse direction through the filter. Spray the outside with oil for filters with cotton fabric, reinstall the filter.
   We recommend exchange of the filter every 25 hours. Also new filters must be sprayed with filter oil.

9. Check all cables and associated levers and the propellerbrake (see sect. 1.11.8 and 1.11.9). Replace levers and pins of the brake in case of excessive free play. Replace cables when worn.

10. Clean engine and radiator

11. Check cooling system for leaks, refill coolant if necessary, check antifreeze (data see section 1.11.2). Check the radiator and its mounting. To check the water pump, switch on the ignition. You should hear a buzz.

12. Cylinder and pistons
    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 or by a certified mechanic rated for such engine work.

13. Check the muffler for cracks and ensure mounting is secure. Check especially the cable which lifts the muffler during engine extension.
    Check the retaining cable for the muffler lifting cable incl. the rubber cord.
    Check the movable part at the front end of the muffler for cracks. Check the exhaust manifold (already removed) for cracks. Reinstall the exhaust manifold, therefore remove any remains of the gaskets, install new gaskets.
    Check the function of the gas-spring at the muffler frame. Therefore retract the engine until the muffler pops downwards. The gas-spring must press the muffler-frame securely to its lower stop.
    Check the length of the cable which lifts the muffler. To accomplish this extend the engine and press the muffler body in a downward direction at its front end with a force of approx. 5 daN (11 lbs.). If the cable is too long or if the spring in the cable has been permanently stretched, the muffler will interfere with the exhaust manifold.
    Check the spring pressure at the coupling of exhaust manifold to muffler. To accomplish this, measure the distance between the brackets for the spring couplings at the muffler pipe and at the movable part of the muffler in disengaged and in operating position.
    Extend the engine via the manual switch to the fully extended position.
    In operating position the distance should be approx. 1 mm (0.04 in.) smaller than when disengaged.
    If the difference should be less than 0.5 mm (0.02 in.) you have to adjust to 1mm using the nut on the eyebolt. By this procedure you will pull the muffler forwards in its frame.

Note: With new manifold and/or new movable part the difference should be adjusted to 2 – 3 mm (0.04 – 0.12 in.) to allow breaking in of the parts.

14. Check all engine nuts and bolts with a torque wrench (see sect. 1.11.10).

15. Cylinder base: Check the torque of the nuts of the cylinder base bolts with an open end spanner and re-torque if necessary.
    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 or by a certified mechanic rated for such engine work.

16. Check the rubber engine mounts, especially for cracks. Therefore apply strong pressure to the propeller mount in forward, backward and sideways direction.

17. 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 must be exchanged.

18. Clean the starter ring gear and check for damage. Check if the starter ring gear was bent forwards by the starter motor. There should be approx. 1mm (.04 in.) clearance between starter ring gear and drive belt.

19. Remove the fairings which protect the drive belt. Check the drive belt for wear and tension (see sect. 4.12.g). If the drive belt shows signs of wear or if there are cracks/tears at the base of the belt teeth, the drive belt must be replaced.
    Check the operating time of the drive belt, see section 0.4.3.
    Check the drive belt tension according to section.. 4.12 item g.
    Check the 6 rollers 8M171 which guide the drive belt for tight fit to their mounting brackets and for easy turning. If there is any significant friction in their bearings, the rollers have to be replaced.

20. Clean the spindle drive, function check. Check the connection of spindle drive and gas strut to engine and fuselage. To accomplish this extend the engine only so far, that you still can see the connection to the engine mount. Check especially for cracks in the spindle drive fork.

21. **Option BBSA slipping-centrifugal clutch:** Check the propeller stopper for wear and function, check especially the actuating spring.

22. Oil all hinge points of the powerplant

23. Check the time taken to extend the power plant. If it takes longer than described under sect.1.12.3 the gas strut has to be replaced.

24. Check the engine retaining cable for wear and kinks.
    Check thimble and bolt of the upper cable connection for wear.
    Check the adjustment of the retaining cable according to sect. 1.12.4. If necessary adjust the cable at the adjustment screw in the rear end of the engine bay.

25. Check the main bearings of the upper pulley for any free play.

26. Check the tension of the propeller bolts: remove the lockwire, loosen the propeller bolts and retorque them with a torque wrench, torque value see sect. 1.11.10.
    Secure again with lockwire according to section 4.19.

27. Check the propeller blades for any damage.

28. Check all electric cables and connectors. Check the terminals especially of the starter positive and earth wire for cracks.

Note: The critical spots may be covered by heat shrink tubing.

29. Check the whole electrical system wiring, ensure all equipment is secure and all connections are OK. Check proper functioning of all systems and fuses/circuit breakers.

30. Reinstall the engine bay doors.
    Check all the hinges on the engine compartment doors for proper fit and any cracks, tears etc. Check if hinge pins are secured properly.

Ground test run:

Warning: Never run the engine without the wings assembled.

31. If needed adjust the idle RPM (see sect. 1.13.7).

32. Check the magnetos - at 3000 RPM, drop should not be more than 300 RPM.

33. Check max. engine RPM - 5800 RPM minimum.

34. Check EGT's (only with optional EGT probes) EGT should be adjusted according to the instructions see sect. 1.13.7, item 5.

35. With engine running at full power press the test button for 10 seconds to switch off the first fuel pump. The engine must run with the same speed with the fuel supplied by the second pump.

Note: After completion of the 25 hour inspection reset the time until the next maintenance to zero in the DEI-NT set up menu, see section 4.23.

3.5.2 Every 3 years

Section not effective (Exchange the coolant only every 6 years together with the coolant hoses, see sect. 3.5.5).

3.5.3 After 50 resp. 100 engine hours

Without optional BBSA friction/centrifugal clutch: The drive belt has to be exchanged after 50 engine hours.
With optional BBSA friction/centrifugal clutch: The drive belt has to be exchanged after 100 engine hours

3.5.4 After 400 engine hours

After 400 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 and remove the engine from the powerplant. Ship the engine to the manufacturer or an aircraft engine maintenance workshop approved by the manufacturer and by the authorities.
2. Replace all the nuts and bolts on the engine
3. Replace the drive belt
4. Replace the bearings of the upper drive belt pulley.

3.5.5 After 6 years

1. Replace the gasket of the drainer valve.
2. Replace all coolant hoses and the coolant, see section 4.16.

3.5.6 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 sections 1.13.2 and 1.13.6).
2. If the engine should run rough between idle and full throttle even after all the points in sect. 3.5.1. 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. 3.5.1 item 12.
4. The fuel hoses have no life time restrictions but must be exchanged on condition.

4 Detailed instructions for assembly and servicing work

4.1 Water-ballast system

see diagram 5 or 5a from ser.no. 8-373 on

Replacement of the water ballast bags:
Unscrew the bolt attaching the Perlon line to the root rib and attach an additional 6 m (20 ft) long Perlon line dia. 3 mm (.12 in.) to it. Also attach a line to the line which is fixed at the front of the root rib.
Unscrew the water ballast dump valve cap nut which is near the wing root. Remove the dump valve with attached water ballast bag out of its wing stand by pushing the valve towards the wingtip. Remove the valve and ballast tank through the hole in the wing root. Remove the Perlon line and loosen the hose clamp. Replace the ballast tank and reverse the above procedures to install the new tank.

Only Version DG-808C Competition: With the large wing tank 8F71 (75 l) the check valve at the parting of the tank has to be taken out and to be installed in the new tank.
Clean and test the check valve for proper function prior to reinstallation: When you turn the valve so that the spring loaded pin points downwards, the pin must be moved by the ball of the valve. Check both pins. For installation mount the check valve on a rod dia. 10 mm, 3 m (10 ft.) long. The side without the turned cut-out for the hose clamp is to be installed inboard.

All Versions: The lines holding the tank are to be fixed so that the key ring will remain 5 cm (2 in.) inside of the wing when the lines are just tensioned. By this method the tension of the lines will be satisfactory even if the lines strain.

Every 3 months, you should check that the lines are still tensioned. If not, undo the knot and tie it again to the key ring (see above).
The front line should not be tensioned.

Each time you unscrew the valve, grease its thread, otherwise you won't be able to open it again.

The seat of the valve ball (see diagram 5) should be greased.
Fill the new water ballast tank(s) and check for water-tightness and test the dump time.

4.2 Replacement of control circuit cables

The following cable connections are approved:
3.2 mm dia. control cable construction 7x19 with Nicopress-sleeves 28-3-M Copper and tool No. 51-M850 or 63-V-XPM or 64-CGMP where the M groove is to be used.
The above applies to the rudder cables, the tow release cable and the engine retaining cable.

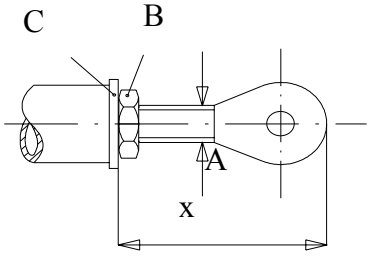
The cable for the rudder pedal adjustment and the fin tank valve are 1.6 mm dia. control cable construction 7x7 with Nicopress-sleeves 28-1C Copper and the C groove for tool 64-CGMP should be used.
The same type of cable is used for the control cables of throttle and manual propeller brake in Bowden outers with 2.6 mm inside diameter

Attachment of the Nicopress sleeves should only be done using the respective tool. All the procedures and checks noted by the tool manufacturers should be followed.
Please refer to aircraft inspection and repair FAA AC 43.13-1 B or later issues.

Caution: Control cables according to MIL-W-83420 I/A (was MIL-W-1511A) or ISO 2020 (was LN 9374) should be used.
Note: For the electric propellerbrake a Bowdencable 1.5 mm 19 x 0.31 with Bowden outer with Teflon liner 2.5 mm inside diameter should be used instead of the material mentioned above.

4.3 Adjustment and servicing of the control circuit

a) In all cases, new self locking nuts DIN 985-8.8 zn or LN 9348 should be used.
b) Bolts which are not secured with self-locking locking nuts have to be secured with Loctite 243. Before installing the bolt clean the thread and the inside thread. Apply only 1 drop of Loctite on the bolt thread. Too much Loctite may cause damage when you try to loosen the bolt again.
c) With all adjustment work, it should be ensured that the rod ends are not screwed out too far from the pushrod - see sketch below for allowable max. distances for the two sizes used.



A	max. of x	
	mm	inch
M 6	36	1.4
M 8	60	2.36

Caution: All lock nuts (B) are secured by a spring washer (C) DIN 6798 I. Be careful not to loose that washer!

4.4 Removal and installation of the undercarriage (main wheel)

4.4.1 General

Warning: A gas strut is installed outside the landing gear box to compensate the mass of the landing gear. The landing gear may retract by itself when unlocked by the force of the gas strut, especially when the glider is not in the normal position. So when working at the landing gear, make sure that inadvertent retraction of the landing gear is prevented.

Removal of the gas strut in the landing gear control system: Use a screw clamp to pre-stress the gas strut sufficiently so that the bolts can be removed.

4.4.2 Removal

see diagram 15 and 16

1. Disassemble and remove the wheel axle.
2. Remove the wheel brake cable at the brake lever by loosening the attachment nipple.
3. Remove the wheel insuring that the hub locking pin comes free out of the left hand front fork.
4. Rear fork: From inside the undercarriage box remove the three bolts M6 (SW 10) that secure parts 6FW3 and 8FW42. After removing the baggage compartment floors disassemble pushrod 8FW47 from bellcrank 8FW42. Disassemble the gas strut from bellcrank 8FW42.
5. Front fork: After removing the baggage compartment floors, the axle can be unscrewed and the whole thing removed through a 20 mm (.79 in.) dia. hole already drilled through the left hand fuselage side.

4.4.3 Installation

Reverse the above procedures - a new brake cable should be provided - see sect. 1.5.2 for brake adjustment procedures.

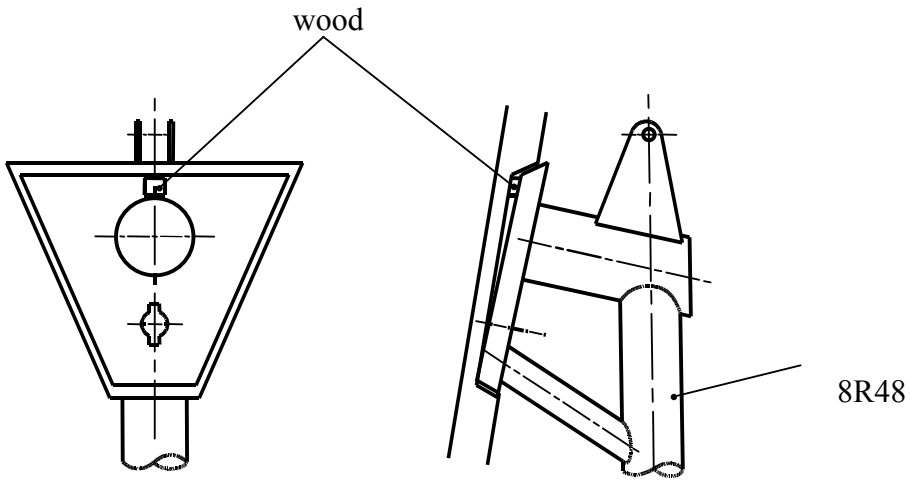
Note: The holes for disassembling des landing gear axles should be closed with a sticker.

4.5 Fixing excessive free play of the canopy

Shrinking of the fibre reinforced plastic material may result in free play between the canopy hinge 8R48 and the canopy.

You can fix the free play as follows:

a) Take off the canopy and remove the emergency release spring.
b) Tape the hinge completely and coat it with demoulding agent.
c) Roughen the depression for the hinge at the canopy carefully with abrasive paper.
d) Fix a piece of wood 10 by 10 mm (3/8 in.), 2 mm (1/12 in.) thick with double-sided tape at the rear end of the hinge (see sketch).
Put on the canopy and try to lock the canopy to the hinge. If this is not possible remove a small amount of the wood thickness.
If there is still free play, use a thicker piece of wood.



e) Mix epoxy resin with cottonflocks and apply it in the depression see c).
f) Reinstall, close and lock the canopy.
g) After the resin has cured, take off the canopy again.
h) Trim the depression, remove the tape, reinstall the spring and the canopy.
i) Finally check the canopy emergency release according to flight manual section 7.16. The opening force for the emergency release should in no case exceed 20 daN (44 lbs.)!

4.6 Removal and installation of the flaperons

4.6.1 Removal of the flaperons

1. To remove the flaperons with unparted wings or to remove the flaperons from the 18 m wingtips you have to remove the tip parts (approx. 20 mm wide) from the flaperons.
   Therefore you have to remove the white tape and the screw (Allen key tool 2.5 mm, 0.1 in.). Pull off the tip part to the rear.
   Now, you can slide the flaperon towards the wingtip for removal.
2. Carefully break away the fairings from the control surface horns at the flaperons. Then screw away the horns (Allen key wrench 4 mm, 0.16 in.)
3. Remove the selflocking nut and the washer at the inboard flaperon hinge (Socket key wrench 8 mm, 0.32 in.) move the flaperon from the wing by sliding in outboard sense.
4. Remove the internal sealing, see section 4.7.3.

4.6.2 Reinstallation of the flaperons

1. Reinstall the flaperons. Use new self locking nuts (M5 DIN 985-8 zn). Screw the drives to the flaperons again. Secure the bolts with a drop of Loctite 243.
2. Glue the fairings again to the control surface horns with polyester resin. Apply pressure when gluing to prevent the fairings interfering.
3. Push on the tip part to the flaperon, secure with screw and white tape (e.g. Tesafilm).
4. Reinstall the internal sealing, see section 4.7.3.

4.7 Control surface seals and turbulators

Note: To minimise the friction of the seals, the trailing edge of the seals should be chamfered. Apply a fine grinding paper (e.g. 400 grit) between sealing and control surface and move it up and down in spanwise direction to sand the trailing edge of the sealing.

Caution: Use only original materials see section 0. Otherwise the function of the sealings is not guaranteed. Sealings which are too loose may cause control surface flutter.

4.7.1 Wing upper surface

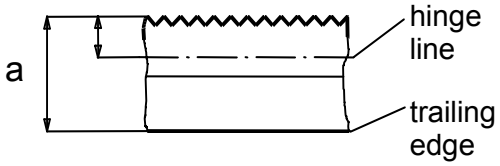
The sealing is installed in a groove at the trailing edge of the wing.
Mylar seal is glued into the groove with film tape at the leading edge of the sealing. PVC tape is glued over the sealing to cover the gap between wing and sealing. The leading edge of the PVC tape shall be 5 mm (1/5 in.) in front of this gap.
Use seals not curved from root up to the outboard flaperon drive and curved seals from the outboard flaperon drive up to the outboard end.

4.7.2 Wing lower surface turbulators

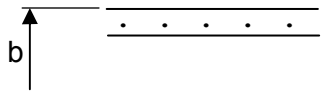
a) Version with combi tape:
Sealing and turbulator are combined (combi sealing). The combi sealing is already equipped with selfadhesive film tape. Prior to removing the old combi sealing mark the position of the turbulator leading edge with a pencil on the wing surface, otherwise see sketch distances a. The inboard combi sealing is 7.0 m (22.97 ft.) long and 43 mm (1.7 in.) wide. The outboard part is 1.45 m (4.76 ft.) long and 38 mm (1.5 in.) wide.

b) Version with dimple tape:
Instead of combi tape a dimple tape may be installed as turbulator. The sealing of the flaperon gap is done with the internal sealing according to sect. 4.7.3. Operation without this sealing is not permitted. The leading edge of the tape is located at distances b in front of the flaperon trailing edge.

y measured from fuselage centre line 1 in.=25.4 mm

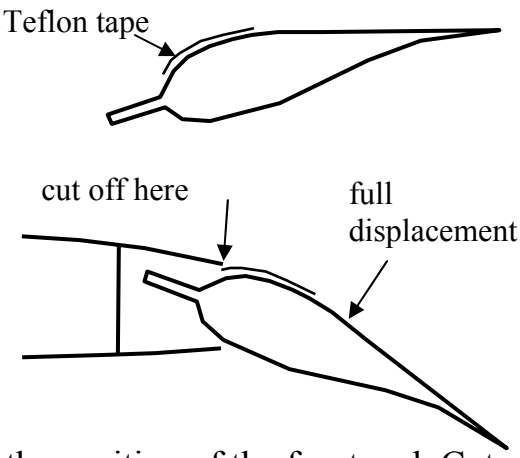


Position	y mm	a mm	b mm
flaperon root	380	155	158
contour brake	4500	130	133
parting	7250	95	98
flaperon tip	8650	78	81



4.7.3 Flaperons

To reduce the friction as far as possible a 38 mm (1.7 in.) wide selfadhesive Teflon coated glass fabric is glued on the upper side of the flaperon see sketch.
Prior to removing the old fabric, mark its trailing edge with pencil on the flaperon surface. The fabric must be installed so that the sealing slides always on the fabric. Cutting the front of the fabric is easiest if the sealings are not installed.
Insert the flaperon and use full displacement.
Cut the front end of the fabric with a sharp knife along the wing trailing edge see sketch



With the sealing installed, you have to measure the position of the front end. Cut it off by hand with the flaperon removed from the wing..

Internal sealing of the lower wing surface

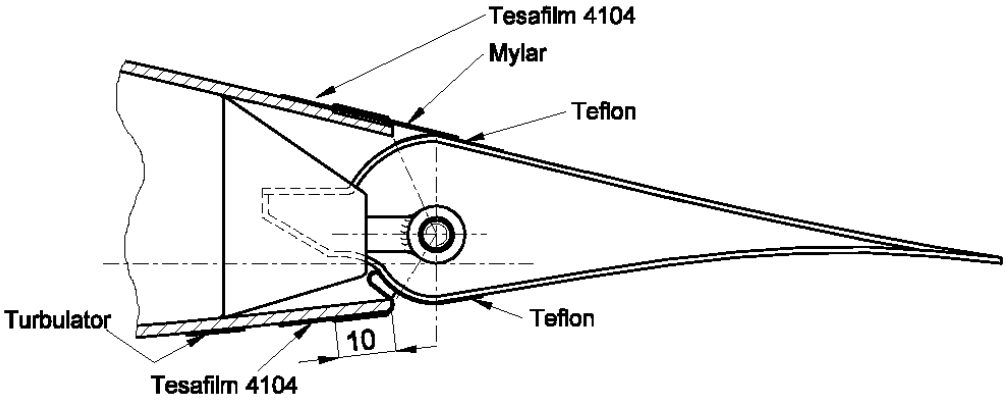
Warning: Operation of the glider without this sealing is prohibited.
The flaperons are sealed at the lower surface with 38 mm Teflon-glass-fabric tape.

a) Removing the flaperons:
To remove the flaperons you have to remove the internal sealing first. Peel off carefully so that the tape does not tear and no remains of the glue remain on the wing surface.
In case combi tape is installed together with the internal sealing the combi tape has to be removed too, as otherwise the internal sealing can't be installed again.
Execute the work described in section 4.6.1.
Reinstalling the flaperons:
Remove carefully any remains of the glue. Install the flaperon in the wing but don't screw on the control surface horn. Use new self locking nuts (M5 DIN985-8 zn)
Rotate the wing upper surface up and deflect the flaperon to its max. negative displacement. Use a small brush and apply talcum powder onto the flaperon leading edge. Then deflect the flaperon to its max. positive displacement and remove the talcum powder from wing and flaperon surface.. Clean the gluing areas with Acetone.
Deflect the flaperon to its max. negative displacement again and fix in this position e.g. with tape.

Version with combi tape: Glue the Teflon glass fabric tape to the wing with 5mm overlap..
Version with dimple tape: Glue the Teflon glass fabric tape to the wing with 10mm overlap.
Press the Teflon-glass fabric tape with a wooden stick into the gap between aileron and wing and glue the Teflon-glass fabric tape to the aileron surface. We recommend to remove only approx. 1m (3 feet) of the cover tape from the Teflon-glass fabric tape and to glue this section. Continue accordingly with the next sections.
Then deflect the aileron several times in both directions.

If there is still a noise which sounds like the fabric sticking to the aileron and getting loose again, you should blow compressed air into the fairings of the control linkage pushrod to distribute the talcum powder.
Glue a PVC tape (19mm wide) over the leading edge of the sealing.

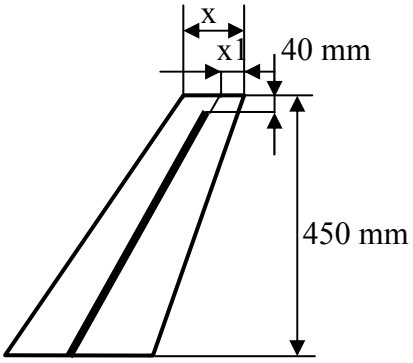
Execute the work described in section 4.6.2.
Reinstall the combi tape according to section 4.7.2 a).



Sealings shown for version with dimple tape

4.7.4 Winglets 18 m

Zig-zag turbulator (60°, 0,4mm thick) on winglet upper (inner) surface



tip x= 100 mm
x1= 40 mm

x1= rear end of turbulator up to winglet trailing edge

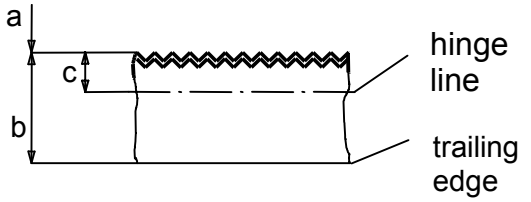
base x= 180 mm
x1= 90 mm

4.7.5 Horizontal tailplane

a) Turbulator: 60° zig-zag turbulators are installed on upper and lower surface. Prior to removing the turbulators mark the position of the turbulator leading edge with a pencil on the stabilizer surface, otherwise see sketch:

y measured from fuselage centre line 1 in.=25.4 mm

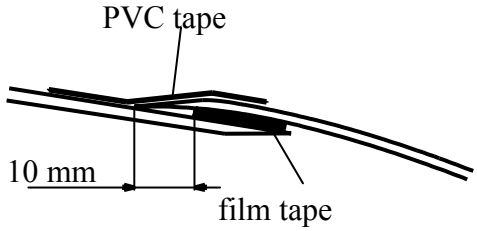
a = up to leading edge



Position	Y mm	a=b mm	c mm
centre	0	275	137,5
	72	267,5	134
turbulator tip	1160	155	77,5

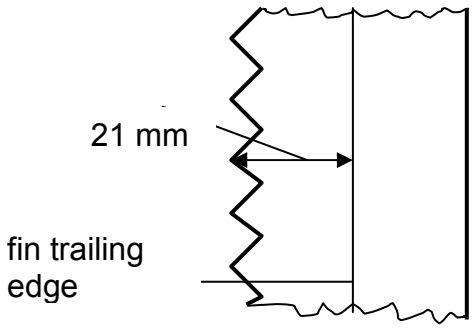
b) Sealing: As sealing 30 mm (1.2 in.) wide Mylar seals with scarfed leading edge are used, so that no step occurs.

Note: Don't glue the film tape to the leading edge of the seal.
The scarfed leading edge of the seals must be pressed to the stabilizer surface by a PVC tape.
Prior to removing the sealing mark the leading edge with a pencil to the stabilizer surface.

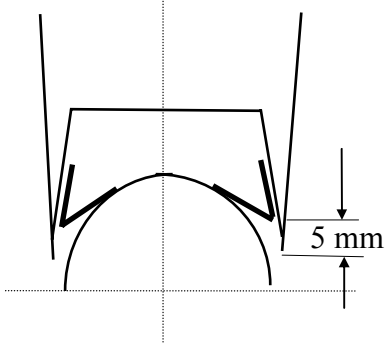


4.7.6 Vertical tailplane

a) Sealing analogous to the horizontal tailplane with Combitape 43/19/06, 1.1 m long. The upper end of the tape should match the top of the fin.



b) Internal sealing
Additional internal sealing with V-sealing strips.
Install the V strips according to the sketch.



4.9 Working instructions for heat-shrink tubing

To insulate various parts of the electrical system heat-shrink tubing is used. For repair and maintenance the heat-shrink tubing often has to be removed. For removal use a sharp knife. To insulate again slip a new piece of heat-shrink tubing over the part which is to be insulated.
Use a hot air gun (min. 200°C, 390°F) to heat the tubing until it shrinks and gives a tight fit.

4.10 Securing with Loctite

All bolts on the engine except for the propeller mounting bolts (lockwire) which are not secured with self-locking nuts have to be secured with Loctite 243.

If a bolt can't be unscrewed you must heat this section with a hot air gun to reduce the locking force of the Loctite.

Before reinstallation you have to clean the thread of the bolt and the inside thread from any remains of Loctite. For this procedure use Acetone.
If necessary re-cut the inside thread. Before you apply the Loctite bolt and inside thread have to be degreased with spray cleaner Loctite 7063.
Wipe off the bolt and clean the inside thread with compressed air. Repeat two times for inside threads.

Apply only a small amount of Loctite on the thread. Too much Loctite may cause damage when you try to loosen the bolt again.

With blind holes the Loctite must be applied to the thread in the hole and not to the bolt.

All locked and secured bolts have to be marked with red securing paint which also marks the respective component at that particular point.
Remove the old red securing paint before reinstallation of the bolt.

Caution: Loctite must be used within 2 years of production date. The production date is printed on the bottom of the bottle. 96A means January 1996, 96B means February 1996 and so on.

4.12 Mounting and tensioning of the drive belt

please refer to drawing 8M110 (enclosed in MM)

a) **Tensioning of the drive belt**

1. Tensioning and loosening of the drive belt is accomplished by turning the eccentric axis 8M115, which carries the upper drive belt pulley, against the propeller mount (carbonfibre tower).
2. Remove the engine retaining cable from fork 8M119.

Caution: Let cable retract slowly, otherwise the retraction bungee may jump from its pulley located inside the rear end of the fuselage.

3. Mark the actual position of axis 8M115 by marking the position of fork 8M119 at the propeller mount.

Caution: Turn the pulley into such a position that there is no risk that the actuators touch and damage the proximity switch when loosening the pulley.

4. Remove the 6 mounting bolts which fix the flange of axis 8M115 to the propeller mount (5 x bolt with hexagonal head, 1 x countersunk screw).
5. Turn the assembly applying a 22 mm open end spanner at the fork 8M119 until the next mounting hole in the flange of axis 8M115 appears. Therefore press the pulley in upward direction at its front end. Rotation in clockwise direction increases the belt tension (view from the back, in flight direction).
6. Continue with item f).

b) **Indication for drive belt tension**

If the belt with axis 8M115 screwed into place is not quite tensioned, the flange of the axis must be rotated up to the next but one mounting hole (see a) 5.) to tension the belt.

After assembling of the flange measure the drive belt tension according to section g) and adjust if necessary.

c) **Exchanging the drive belt**

In addition to a):

1. Remove the propeller
2. Remove the front retaining rings of upper and lower drive belt pulleys.
3. Remove the carbonfibre fairings (drive belt covers) from the propeller mount.
4. Disassemble gas-strut and spindle drive from the propeller mount.

Caution: Regard the instructions in section 4.14 and 4.21.

5. When reassembling mount the axis 8M115 2 mounting holes prior to the marked position. Fix the axis with min. 2 mounting bolts.
6. Check and if necessary correct the drive belt tensioning see b).

d) **Initial setting of eccentric axis 8M115**

If the marking was lost or if a new axis is to be installed, the eccentric must be positioned as follows:
Remove the sealing cap 8M118/1.
The groove in the front end of the axis shall point downwards. This is the lowest position of the eccentric. From this position rotate the axis in a clockwise direction (see a) 5.) from 1 mounting hole to the next and fix the axis min. 2 bolts in each position to check the drive belt tensioning. Proceed until the correct tensioning is reached.
During this the axis should not be rotated more than 180° (groove in upper position). However it should be impossible to reach this position.

e) **Reassembly**

1. Reassembly is the reverse of disassembly. Use Loctite 243 to secure all screws and bolts except for the propeller mounting bolts.
   Caution: When reassembling the drive belt covers be careful to use the correct screws. Screws which are too long will damage the belt!
2. If the position of the axis has been changed the fork 8M119 must be brought to vertical position again. Screw out the fork (axis already assembled with all 6 bolts). Loosen the distance washer 23 x 32 x 1 from the axis 8M115. Apply a suitable 2 component metal adhesive (e.g. UHU Plus 300) between 8M115 and the washer. Screw in the fork 8M119 again using Loctite 243 for securing until the fork is in vertical position. The glue should be pressed together to less than 1 mm thickness. Let the glue cure before operating the engine.
3. Adjust and secure the proximity switch according to sect. 1.14.15.

f) **Changing the relation of propeller to engine**

see section 1.11.4
Adjustment is made slipping the drive belt into the required position, see also Service Info 69-10 (attached to this manual).

4.13 Replacing the bearings of the upper drive belt pulley

see drawing 8M110 (enclosed to this manual)

a) **Removing the bearings**

1. Remove the propeller.
2. Remove the proximity switch. Its best to remove the switch together with its mounting plate 8M138. Mark the position prior to removal.
3. Remove the drive belt see section 4.12.
4. Remove the sealing cap 8M118/1.
5. Bend up the securing washer 20 DIN462.
6. Screw off the nuts KM4 one after the other.
   Attention: left hand thread.
   Use one of the 2 specially bent hook spanners according to drawing W51 (encl. with this manual). Remove the antirotation securing washer.
7. Now you can pull off the complete pulley 8M111 from the shaft 8M115.
8 Take the inner ring and the rollers of the front bearing out of the pulley.
9. To remove the outer rings of both bearings from the pulley you have to produce 2 pieces of round material each 100 mm (4 in.) long and with 47 mm (1.85 in.) and with 53 mm (2.09 in.) diameter.
10. Press out the outer rings together with the Nilos rings carefully using a press or a hammer.
11. Pull off the inner ring of the rear bearing together with part 8M117/1 from shaft 8M115. Use a suitable puller assy..

b) **Installation of the new bearings**

1. To press the outer rings of both bearings into the pulley you have to produce 2 pieces of round material each 30 mm (1.6 in.) long and with 51 mm (2 in.) and with 57 mm (2.24 in.) diameter.
2. Press in new outer ring together with new Nilos rings.
3. To press the inner ring of the rear bearing to the shaft you have to produce a piece of tube with 32 mm (1.26 in.) inside diameter and 90 mm (3.54 in.) long.
4. Press the inner ring together with part 8M117/1 to the shaft.
5. Fill the space in the pulley for both bearings with grease.
6. Apply grease to the inner ring of the rear bearing and place the rollers onto the ring. Apply enough grease to completely fill the bearing.

7. Place the pulley onto the shaft with care. It´s best if the powerplant is retracted so that the shaft is in vertical direction.
8. Put the rollers and the inner ring of the front bearing into place. Put on the antirotation securing washer and the first one of the KM4 nuts. Tighten the nut with the other hook spanner see a) 6. until the pulley starts to rotate a little stiffer than with a loose nut. Put on a new securing washer 20 DIN462. Screw on the second nut. Secure this nut with Loctite 243. Fix the first nut with a hook spanner so that the adjustment doesn't change and tighten the second nut as far as possible. Check again the rotation of the pulley. No free play is allowable.
9. Press the sheet metal securing washer into the grooves of the rear nut.
10. Fill the sealing cap with grease and put it into place.
11. Install the drive belt and adjust it according to section 4.12.
12. Reinstall the proximity switch and check its adjustment, see also section 4.12.
13. Reinstall the propeller and secure with lockwire according to sect. 4.19.

Necessary material

1. roller bearing	32205B
2. "	320/32X
3. Nilos ring	32205 JV
4. " "	320/32 JV
5. securing washer	20 DIN 462
6. grease for bearings	SKF LGMT3

Caution: Don't use another type of grease

4.14 Removal and installation of the tension gas-strut

(engine extension mechanism)

a) **Removal**:

1. Take a piece of tube with 12mm (.47 in.) inside diameter and 80 mm (3.15 in.) length and cut it to receive two halfshells.
2. Retract the powerplant until the gas-strut is extended a little further than 80mm.
3. Place both halfshells onto the piston rod of the gas-strut. Extend the engine a little further, so that the two halfshells block the gas-strut.
4. Remove the gas-strut.

b) **Installation** is the reverse of removal

c) Installation of a new gas-strut

1. Extend the new gas-strut with a pulley block to place the halfshells or
2. Install the gas-strut to the front mounting point in the aircraft and produce a metal plate with two holes diameter 8 mm (.32 in.) 80 mm (3.15 in.) apart. Bolt this plate to gas-strut and propellermount and retract the engine to extend the gas-strut far enough to place the halfshells. Remove the plate.

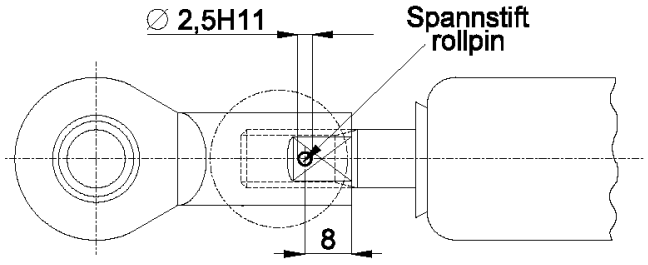
d) **Securing the rod end to the piston rod**

The rod end of the gas-strut must be glued onto the thread of the piston rod with Loctite 638. The correct securing is marked by a red dot of marking paint on piston rod and rod end. After removal of the gas-strut check if the marking is existing and not damaged. If not the rod end must be screwed off and glued on again.

The same applies with installation of a new gas-strut.

Remove any remains of Loctite and any dirt according to the instructions in section 4.10. To tighten the screwed connection, hold the piston rod against rotation using a small pipe wrench, wrap a piece of fine emery cloth around the end of the piston rod to protect the rod.

In addition the rod end is secured with a roll pin 2.5x14 DIN7346 St, see sketch.



4.15 Replacement of the engine retaining cable

Please refer to diagram 14.

1. Extend the powerplant.
2. Remove the access panel from the rear engine bay floor.
3. Remove the engine retaining cable from the propeller mount. Let the cable retract slowly, otherwise the retraction bungee may jump from its pulley located inside the rear end of the fuselage. The bungee pulley is accessible via the access hole inside the tailwheel box.
4. Pull out the bungee via the access hole in the rear engine bay floor until you reach the terminal of the retaining cable.
5. Fix the bungee to the floor to prevent it from disappearing into the fuselage boom.
6. Cut off the retaining cable and pull it out. Don't damage the bungee! Don't loose the steel washer.
7. Loosen the counter nut and turn out the adjustment screw at the rear bulkhead as far as possible (anti-clockwise direction). Then turn in the screw for 5 mm (0.2in.).
8. Push the retaining cable from the front via the adjustment screw through the rear engine bay bulkhead and pull it out of the access hole.
   An absorber element is installed on the adjustment screw. Check if the washer at the rear end of the absorber is in place and fixed and if the absorber element is still glued firmly to the adjustment screw, see diagram 14 Detail X.
9. Install the steel washer 5R28/3 on the new cable. Attach the cable with thimble and 2 Nicopress sleeves to the bungee. Press the Nicopress sleeve, the end of the cable must be inside the second Nicopress sleeve. and wrap Tesaband 651 twice around washer and Nicopress sleeves.
10. Let the bungee retract slowly into the aft fuselage.
11. Install the retaining cable together with thimble and Nicopress sleeve to the propeller mount. Don't press the sleeve. Adjust the position of the powerplant and the cable length according to section 1.12.4. Press the Nicopress sleeve. Cut off the excess cable.
12. Check again the length of the retaining cable according to 1.12.4. Adjustment is possible at the adjustment screw at the rear bulkhead. Fasten the counter nut.
13. Reinstall the access cover to the rear engine bay floor.

Material:

Steel cable diameter 3.2 mm (1/8 in.) appr. 2.3 m (91 in.) long, type see section 4.2.
2 thimbles 3mm DIN6899A
3 Nicopress sleeves 28-3-M
Tesaband 651 (selfadhesive textile tape)

4.16 Filling and bleeding the cooling system, checking the coolant pump

Please refer to diagram 9

Coolant: Commercially available anti-freeze for car engines (recommended: BASF Glysantin G48 Protect Plus concentrate) and distilled water. You will need approx. 1.8 liter , 0.475 US.gal..

With coolant pump type Webasto: mixing ratio 1:1 (up to approx. –40°C, -40°F)

With coolant pump type Pierburtg:
Normal operation: mixing ratio 1:2 (up to approx. –20°C, -4°F).
The mixing ration may be changed for high altitude flying to mixing ratio 1:1 (up to approx. –40°C, -40°F). If you exchange the coolant to change the mixing ration store the coolant for the next change.

4.16.1 Inspection of the coolant pump

1. Extend the engine
2. Remove the coolant hose from the radiator (upper end). Insert the test adapter W59 (drawing see enclosure to this MM) into the hose and secure with a hose clamp. Install a PVC hose (instrument line) on the other end of the adapter and put its end in a calibrated container.
3. Switch on the ignition and measure the time needed to fill 0.2 liters into the container, then switch off the ignition immediately. Otherwise the pump will suck in air and bleeding may be difficult.
   Normal time is between 15 and 20 seconds.
4. If the time needed exceeds 25 seconds the pump is worn and should be exchanged. Repeat the test after installation of the new pump.
5. Remove the adapter and connect the coolant hose to the radiator again.
6. Remove the screw cap of the radiator. Press down on cap for easier handling and fill in the coolant from the test, if necessary refill coolant.
7. Switch on the ignition to run the coolant pump. Run for approx. 1 minute. Switch off the ignition. If necessary top up the radiator.
8. Close the radiator cap.

4.16.2 Removal of the coolant

1. Prior to removal of the coolant check the coolant pump see above,
2. Retract the engine until the engine doors just stay open.
3. Remove the straight hose connector GS 16 from the coolant hose on top of the coolant pump and replace it by a T-connector TS 16 (supplied with the glider service set).
4. Install a hose with 16 mm (0.6 in.) inside diameter to the T-connector. Hold the hose into a container placed below the lowest point of the cooling system.
5. Extend the engine. After all liquid has run out of the system, switch on the ignition to run the coolant pump for a short time.
6. Replace the T-connector by the straight connector again.

4.16.3 Filling and bleeding

1. The engine must be cold. Extend the powerplant.
2. Remove the screw cap of the radiator. Press down on cap for easier handling. Fill in coolant until the radiator is completely filled.
3. Switch on the ignition to run the coolant pump. Look into the radiator, you must see the coolant bubbling. If this is not the case there may be air bubbles in the hoses. Squeeze the hoses 1 and 5 (see diagram 9) several time until the coolant starts bubbling. Run the coolant pump for approx. 1 minute. Switch off the ignition. If necessary top up the radiator. Close the radiator cap
4. If the procedure according to item 3 wasn't successful retract the engine nearly completely, switch on the ignition and squeeze the hoses 2 and 6 (see diagram 9) several time. Extend the engine again and remove the radiator cap, switch on the ignition and check the coolant for bubbling. If OK, close the radiator cap.
5. Run the engine to warm up, then run approx. ½ minute at full throttle. Stop the engine.
6. Allow the engine to cool down. Remove the radiator cap and check the coolant level. The coolant level should be approx. 2 cm (0.8 in.) below the top of the radiator. If necessary top up to this level.
7. Close the radiator cap again.

I) Fully extend the powerplant
(via the manual extension switch)

1. Remove the lockwire from the propeller mounting bolts and remove the six bolts with a 13mm socket wrench. Then pull off the propeller.
2. Removal of the engine bay doors, s. section 4.18.
3. Unscrew the cable which lifts the muffler when the engine is travelling with a 10mm open end spanner.
4. Disassemble the fuel lines: Loosen the hose clamps at the fuel distributor below the Primer and remove the supply and return hose.
5. Separate the throttle cable from the carburettor.
6. Loosen both screw clamps of the Bowden wires for the propeller brake at the brake lever on the engine rear side using a small screwdriver and an 8 mm open end spanner.
7. Remove hose clamp which fixes the electric wiring of the starter at the engine block. Remove the pole insulating cap from the positive terminal, then remove the electric wiring from the starter motor with a 10mm open end spanner (wire with red marking). Insulate the wire terminals with tape. Then remove the earth wire (wire with blue marking) from the starter motor.
8. Unscrew the powerplant's retaining cable from the propeller mount with a 13mm socket wrench and a 13mm open end spanner. Let the prestressed cable retract slowly into the fuselage, otherwise the retaining rubber cord might jump off from the pulley in the fuselage.
9. Disconnect the two electrical connections of the waterpump. Remove the waterpump from the firewall by opening the two hose clamps which fix the pump with a 6 mm socket wrench (To open the upper hose clamp it helps to retract the engine a little). Pull the pump out of the hose clamps in an upward direction. If necessary remove further Ty-raps.

II) Retract powerplant almost completely

10. Disconnect the electrical connections at the firewall:
    a) Disconnect the multiple plug of the wiring set (from serial no. 8-103 on installed in the firewall behind a cover plate).
    b) Only with EGT-option: Cut off the Ty-raps which secure the-2 plugs for the EGT probes and unplug the probes.
    c) Now arrange all wires in a way to enable easy removal of the powerplant from the engine bay. For this purpose it might be necessary to remove some further Ty-raps.

11. Separation of the extension/retraction unit from the propeller mount:
    a) Disconnection of gas-strut from the powerplant s. section 4.14.
    b) Spindle drive: Retract powerplant until the propeller mount is approx. in horizontal position. Unscrew the bolt which fixes the fork to the spindle drive. Then lift the powerplant a little by hand to pull out the bolt and let down the powerplant into the engine bay.

12. Bend up the securing washers at the two bolts at the hinge axis of the propeller mount. Unscrew the bolts with a 19mm socket wrench, lift the powerplant to minimize the load on the bolts and remove them including the brass bushes. Finally lift the powerplant out of the fuselage with two persons.

4.17.2 Removal of the engine from the propeller mount

General notes:

Before removing the engine from the propeller mount screw four long bolts M10 resp. M12 into the 4 threads at the lower end of the engine block. This facilitates handling on the workbench because the powerplant can be placed on the bolts.

Necessary tools

Socket wrenches: 6, 7, 17, 19 mm
Open end spanner 12, 30 mm
Wrench for spark plugs 21 mm (13/16 in.)
Allen key wrenches: 3, 4, 5, 6 mm
1 wire cutter
1 hot-air gun
1 small screwdriver
1 flange bolt (incl. in SOLO tool kit)
1 puller assembly W40 (drawing encl. to this manual) with
1 bolt M 12 x 90 DIN 933-8.8 and
4 bolts M5 x 20 DIN 912-10.9
1 sharp knife
1 roll insulating tape
1 bucket

1 . Remove the drive belt fairings from the propeller mount by unscrewing the 16 bolts with a 3 mm Allen key wrench.

2. Remove the drive belt according to section 4.11a) and c).

3. Pull off the lower drive belt pulley including starter ring gear from the crankshaft:
   a) Remove the front retaining ring from the pulley.
   b) First heat the screw at the crankshaft with the hot-air gun, then remove it with a 19mm socket wrench.
   c) Put the factory supplied flange bolt in the crankshaft thread.
   d) Install the puller assy W40 with 4 bolts M5x20 DIN912-10.9 to the drive belt pulley. Then screw the bolt M12x90 DIN933-8.8 into the puller and pull off the pulley from the crankshaft. Secure the puller with a 30 mm open end spanner against rotation. If the pulley resists coming off you should hit the head of the bolt M12x90 with a hammer to loosen the pulley.

4. Disconnect the electric wiring coming from the magneto housing near the propeller brake. First remove the heat shrink tubing carefully with a sharp knife.

5. Remove the mounting bolts and detach the starter motor.

6. Disassemble the fuel lines from the primer to the carburettor at the carburettor using a small screwdriver to open the hose clamp. Plug the line with a 6mm bolt.

7. Remove the EGT probes from the exhaust manifold with a 12 mm open end spanner (Option).

8. Unplug the electrical wiring of the coolant temperature probe on the cylinder head near the probe.

9. Empty the coolant system: Remove the coolant see section 4.16.2. Use a bucket to catch the coolant (approx. 2 litres).

10. Remove the spark plug connectors from all spark plugs.

11. Remove coolant outlet (on top of the engine) from the cylinder heads using a 4mm Allen key wrench. Seal openings at the cylinder heads with tape. Remove the hose of the coolant inlet (near the starter ring gear) and seal the inlet with tape.

12. Remove the four fixing bolts of the cylinder heads to the CRFP plate with a 6mm Allen key wrench. Fasten together the group of ground wires which are fixed by the front right bolt with a wire or similar. If necessary remove the front right hand side cap nut (cylinder head bolt).

13. Heat the final four engine mounting bolts at the front side of the crankcase with the hot-air gun and unscrew them with a 5mm Allen key wrench.

14. Now rotate the propeller mount a little forward and pull it from the crankshaft.

15. Removal of the propeller brake: Unscrew the propeller brake fixing plate from the engine‘s rear side by removing three bolts with a 6 mm Allen key wrench.

16. Close the opening of the exhaust manifold with tape and seal the airfilter with a plastic bag or similar.

Removal of further attachments (don’t execute for shipping the engine for repair or overhaul)**:**

17. Spark plugs: Unscrew spark plugs with an 21 mm (13/16’’) socket wrench. Seal the cylinder holes with tape.

18. Exhaust manifold: The exhaust manifold can be removed by unscrewing the four bolts at the cylinder outlet with a 6mm Allen key wrench. For the lower bolts a shortened wrench is needed see section 7 item U. Seal the cylinder outlets with tape.

19. Air intake filter: To remove the air intake filter from the carburettor loosen the clamp at the carburettor with a small screwdriver. Seal the carburettor intake with tape.

20. Remove both coolant inlets using a 3 mm Allen key wrench. Seal openings with tape.

4.17.3 Reinstallation of the powerplant

Reverse the procedures for removal mentioned above. Note sections 4.12, 4.14, 4.16, 4.19 and 4.21!
Use only new selflocking nuts for reinstallation. Use Loctite 243 to secure all threads and bolts without selflocking nuts.
Use new gaskets for the coolant outlet.

Reinstallation of the starter ring gear

1. When reinstalling the starter ring gear adjust the propeller position versus the engine compression point according to sect. 1.11.4 via the drive belt.
2. Install the screw at the crankshaft without using Loctite and tighten with a torque of 100 Nm (73 ft lb). Hold the Propeller to counteract the moment.
3. Tighten the drive belt according to section 4.12e).
4. Reinstall the proximity switch and check its adjustment according to sect. 1.14.15 and correct if necessary.
5. Reconnect spindle drive and gas strut.
6. Rig the wings to the fuselage and secure the glider. Start the engine, apply full throttle for a short while (max. 30 seconds) and stop the engine again.
7. Retorque the screw at the crankshaft with 100 Nm, to accomplish this the spindle drive must be disconnected again.
8. Start the engine, apply full throttle for a short while (max. 30 seconds) and stop the engine again, retorque again. Repeat this procedure until the screw can’t be turned any more with the same torque. Normally it is necessary to repeat the procedure 4 times. After the last retorque remove the screw, apply Loctite 243 and torque again with 100 Nm.
9. Install a new selflocking nut M10DIN985-8zn to the spindle drive bolt.
10. Check if the propeller position versus the engine compression point is still in the limits. If necessary correct according to sect. 4.12 f).

4.18 Removal and assembly of the engine doors

It is not necessary to cut the rubber cords for removal and assembly of the engine doors.

a) Removal of the left engine door, e.g. for working at the carburettor: Extend the engine. Remove the helical spring from the left engine door by stretching the spring using small pliers. Unhook the spring. Pull the spring pins out of the hinge pins. Remove the hinge pins. Retract the engine until just before the engine doors close. Move the left engine door far enough backwards, so that you can lift the rear rubber cord on top of the propeller. Lift the engine door and lay it down on the right engine door.

b) Removal of both engine doors: Disassemble springs and hinge pins of both engine doors. Retract the engine ¾ of it´s travel and lift both doors away.

c) Assembly is the reverse of disassembly. Use new selflocking nuts.

5 Weight and balance

1. Assemble the glider completely with gear down.
2. Empty fin ballast box and water ballast tanks, retract the engine, close the canopy.
3. Place scales under the tailwheel and if suitable scales are available under the main wheel.
4. The fuselage must be levelled so that the top of the aft fuselage boom has a tail-down slope of 1000 : 37.
5. Read weight of tail wheel: W2, be certain the wings are level and hold so that no load is applied. Read W1 if suitable scales are available, otherwise see note below.
6. Measure the distance between perpendiculars through points a and b. (See figure, next page).

Caution: The distances a and b may change with different masses due to deflection of the landing gear.

Note: The total mass M may be determined by weighing and adding W1 and W2 or by weighing and adding the masses of all components.

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

C.G. empty X_{SL}: $X_{SL} = W_{2L} \bullet b/M_L + a$

M_L = empty mass = $W_{1L}+W_{2L}$
W_{2L} = load on tailwheel (empty)

The empty weight includes all accessories but excludes pilots and parachutes. Remove loose objects and any removable trim ballast from the cockpit.

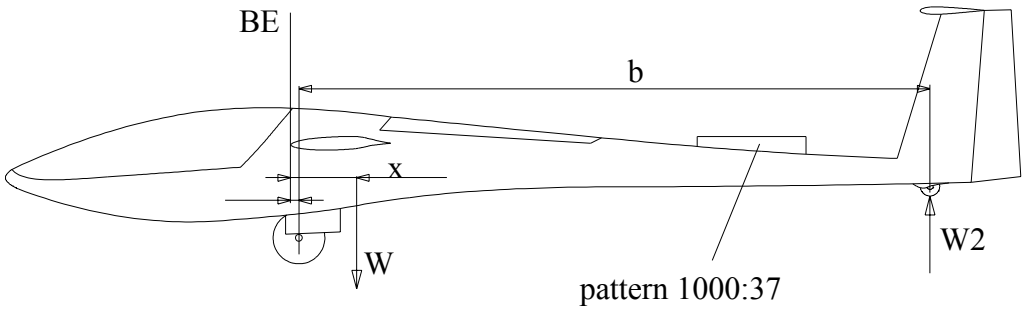
C.G. in flight X_{SF}: $X_{SF} = W_{2F} \bullet b/M_F + a$

M_F = flight mass = $W_{1F}+W_{2F}$
W_{2F} = load on tailwheel (flight mass)

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

Datum (BE): Wing leading edge at root rib

Levelling line: Aft fuselage boom slope 1000:37 (tail down)



Moment arms of pilots and equipment see flight manual sect. 6.9

Empty weight C.G. c
After the addition or deletion of equipment or accessories, repairs, painting, or any change in the aircraft that could influence the weight and balance; a new weight and balance must be carried out. Aircraft certified as Standard Category must have the weight and balance carried out by a licensed Airframe Mechanic. Empty weight C.G. range is determined by reference to the diagram in sect. 6.8.7 of the flight manual.
If the C.G. is out of limits, adjustments may be made by ballasting or by relocating equipment or accessories.

The result has to be entered in the flight manual section 6.8.6 and in the aircraft logs. If the min. cockpit load has changed, the new value is to be entered in the cockpit placard.

Weight and balance must be carried out at least every four years.

C.G. shift due to extension of the engine
see flight manual section 6.9

6 Instrumentation and accessories list

Air speed indicator (0 - 300 km/h, 165 kts)

Manufacturer	Type	**Certification No.**
Winter	6 FMS 4(diam. 80mm)	TS 10.210/15
	0-300 km/h Ident.No. 6421369	
	0-160 kts Ident.No. 6423369	
Winter	7 FMS 4(diam. 58mm)	TS 10.210/19
	0-300 km/h Ident.No. 7421369	
	0-160 kts Ident.No. 7423369	

The airspeed indictor must have colour coded speed ranges marked as indicated in the flight manual section 2.3.

Altimeter

Manufacturer	Type	**Certification No.**
Winter	4 FGH 10 (diam. 80mm)	TS 10.220/46
	1.000-10.000m Ident.No.4110	
	1.000-20.000ft Ident.No.4320	
Winter	4 FGH 20 (diam.58mm)	TS 10.220/47
	1.000-10.000m Ident.No.4220	
Winter	4 FGH 40 (diam.58mm)	TS 10.220/48
	1.000-20.000ft Ident.No.4550	

Or any other TSO C 10b specified and approved altimeter with fine range pointer 1 turn max. 1000 m, 3000 ft.

Harness (seat)

Manufacturer	Type	**Certification No.**
Gadringer	BAGU 5202 G	40.070/32
	SCHUGU 2700 G	40.071/05
	rubber coated adjuster bars	
Schroth	4-01-0.104	40.073/11
Schroth	4-01-0108 bei Option NOAH	40.073/11

Compass

Manufacturer	Type	Certification No.
PZL	B - 13	FD 19/77
Ludolph	FK 16	10.410/3
Airpath	C 2300	
Airpath	C 2400 P	
Hamilton	H I 400	TSO C 7c Type1
Bohli	46 MFK 1	(only as additional equipment.)

The compass should be compensated in the A/C. A deviation table must be installed if deviation is more than 5°.

VHF transceiver

Manufacturer	Type	Certification No.
Dittel	FSG-40 S	10.911/45
	FSG-50	10.911/71
	FSG-60 M	10.911/72
	FSG-70,71 M	10.911/81
	FSG-90	10.911/98JTSO
	FSG 2T	LBA.0.10.911/103JTSO
Becker	AR 3201-(1)	10.911/76
	AR 2008/25 (A)	10.911/48
	AR 4201	JTSO-2C37 D, ED-23A
	AR 6201	EASA.210.1249
Filser/Funkwerk	ATR 720 A	10.911/74
	ATR 720 C	10.911/83
	ATR 600	LBA.0.10.911/106JTSO
	ATR 500	LBA.0.10.911/113JTSO
	ATR 833	EASA.210.0193

or other instruments certified for aircraft use according to TSO or JTSO or ETSO standards may be installed.

Note: Only radios with diameter 58mm (2 ¼ in.) can be installed at the assigned place in the console below the instrument panel.

Variometer

Manufacturer	Type	Certification No.
Winter	5 StVM5 (Diameter 58mm)	TS 10.230/14
	± 5 m/s Ident.No. 5451	
	±1000 ft/min Ident.No. 5452	
	± 10 kts Ident.No. 5453	
Winter	5 STV 5 (Diameter 80mm)	TS 10.230/13
	± 5 m/s Ident.No. 5251	
	±1000 ft/min Ident.No. 5252	
	± 10 kts Ident.No. 5253	

Turn and bank indicator

Manufacturer	Type	**Certification No.**
Apparatebau Gauting	WZ-402/31 12 V	10.241/8

Outside air temperature gauge
incorporated in the DEI-NT see below

Engine instrumentation
(RPM, fuel, CHT, voltmeter, engine elapsed time, outside air temperature, EGT as an Option)

Manufacturer	Type
DG Flugzeugbau	DEI-NT-DG808C

Instruments which are not part of the minimum equipment:
Transponders: Transponders certified for aircraft use according to TSO or JTSO or ETSO standards may be installed.
The antenna installation must be performed according to TN DG-G-02.

406 MHZ ELTs:
The installation must be performed according to TN DG-G-08. Only the ELT types given in the TN may be installed.

Other instruments and equipment (eg. variometers, gliding computers or flight data recorders):
Instruments and other equipment may be installed if they do not in themselves, or by their effect upon the sailplane, constitute a hazard to safe operation.
TN DG-G-07 must be regarded.

Caution: If additional instruments or equipment are to be installed after production of the glider, it must be assured that they will be installed in the places provided by the design. If installed in other places it must be assured that they are secured safely.
Electrical instruments and equipment must be connected via appropriately rated fuses, the power consumption of each single part should not exceed 3A.

Warning: If equipment is mounted on the canopy special care must be taken that canopy jettison is not impaired. To accomplish this any wire must be equipped with a plug in the vertical part. All plugs must be able to disconnect with low force, max. 10 N (2 lbs.).
Equipment shall only be mounted at the fastening threads in the canopy frame provided by the design.
Max. mass of the equipment: 1 kg (2 lbs.).

Caution: After installation raise a new weight and balance report.

M Wrench for spark plugs 21 mm (13/16 in.)

N **Without Option BBSA Slipping/centrifugal clutch:** Puller assembly for lower drive belt pulley according to drawing W40
Option BBSA Slipping/centrifugal clutch: Puller assembly for lower drive belt pulley according to drawing W60

O To fill the wing tanks: Hose with outside diameter 25 mm (1 in.) appr. 2 m (6.56 ft.) long.

P To fill the fintank: Z27 (Funnel with clear PVC hose inner diameter 12 mm (.47 in.) 1,7 m (5 ft.) long and hose connector GS12)

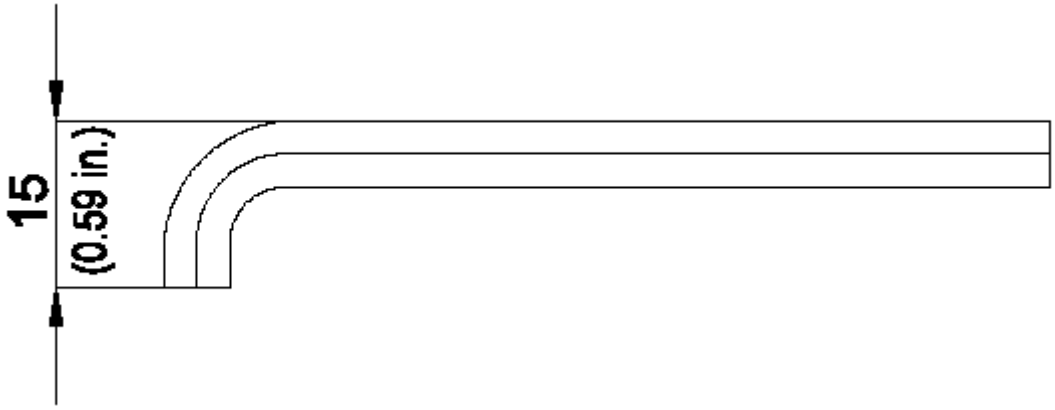
Q Test adapter W59 with 0.5m PVC hose 5mm inside diameter to test the coolant pump

R Refuelling hose for fuselage fuel tank Z155/1

S Crimp tool for clamps XO for 6mm bungee (bungee for retaining cable)

T Tool for measuring the drive belt tension W57

U Shortened Allen key wrench for removing the lower bolts of the exhaust manifold, see sketch:



8 Partlist

In this list you will find only parts of the powerplant, the electrical system and control surface sealings and turbulators.
Please find the part no's of the control-system parts and of the metal fittings of the powerplant in the following diagrams.

8.1 Parts for the powerplant

a) **necessary for the 25 hours inspection**

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
60507569 Fuel filter elbow or
60507571 MANN-fuel- filter 500009180 WK 31/2(10)
60500150 Gaskets for exhaust manifold (2 pieces needed)
60500142 Air intake filter
70002200 Oil for airfilters with cottonfabric K&N 99-05046

b) **Spare parts**

60510821 Spark plug connector Bosch 0356351032 1kΩ (no longer available)
45002085 Spark plug connector PVL 5kΩ (replacement for Bosch)
60500127 Nut for spring coupling M 8 for exhaust muffler
60500128 Spring for spring coupling M 8
60502500 Starter motor: DENSO 128 000-1671 12 V
60500155 Gasket for coolant outlet
60504012 Drive belt Poly Chain PC 8MGT 2400-36 with smoothed back
59332050 Front bearing for upper pulley 32205B
59320320 Rear bearing for upper pulley 320/32X
52200054 Securing washer 20 DIN462 for upper pulley front bearing
30002028 Special grease for upper pulley bearings SKF LGMT3
39001026 Exchange kit nuts and bolts for 400 h overhaul
60000157 Gas spring for ext.-retr. drive S47/2 with Ultra-bush
60000182 Gas strut for muffler frame E1 E1-76-040-130/150N
60505007 Ext.-retr. spindledrive type Stross ATL10 modified with forks 8M230 and 8M333
60000330 Rubber mount at engine hinge axis Ultrabuchse 0118288
40872873 Brake pad for propellerbrake (glued to mounting bracket)
60001115 Clamps XO for 6mm bungee (bungee for retaining cable)
52130011 Securing washer DIN 432 zn 13 for main powerplant mounts

Cooling system

60001201 Electric water pump Webasto U4810 modified (no longer available)
40863140 Replacement kit coolant pump Pierburg according to drawing 8R314, see TN 800/41 instruction 1.

Caution: Respect the changed coolant mixing ratio, see section 1.11.2!

60001209 Coolant pump Pierburg 02058.50.0 (spare part for 4086314, not for first exchange against type Webasto!)
60510565 Probe for coolant temperature TG 150/2
60504051 Radiator KTM VW 0095

Rubber mounts for radiator
60000275 2 pieces Rundlager Type B (upper mount)
60000262 1 piece Rundlager Type A (lower mount)

39001018 Service kit cooling system hoses

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)

60507561 Electric fuel pump Facet 40106
60507558 Refuelling pump KAVAN 12 V up to ser. no. 8-372
60507562 Refuelling pump Facet 60106 from ser. no. 8-373 on
60507571 MANN-fuel- filter 500009180 WK 31/2(10) for refuelling pump
40873071 Fuel distributor 8M307 with filter for primer valve and restriction for excess fuel line
60000527 Fuel cock KH 1072 T
60507607 Coupling for refuelling hose KL-006-0-SL007
60503070 Primer-valve IWP069
45001605 Full tank sensor
60000103 Fuel hose PU hydrolyse and microbe-resistant 6x1,5x9
60000102 Fuel hose PU hydrolyse and microbe-resistant 8x2x12
20092051 Metal shield for fuel hoses

Option wing fuel tanks with electro-magnetic valves

60507600 Coupling for fuel wing tanks (at fuselage) KL-006-0-SL009
60507601 Coupling for fuel wing tanks (at wing) KL-006-2-WR513
40872591 Electro-magnetic valve MA242-004V27SAH12/00SW

8.2 Parts for the electrical system

60510891 Battery 4E15 6V, 10 or 12Ah equipped with screw - terminals
40876200 DEI-NT-8E620
40876210 Control unit-NT 8E621

60510464 Limit-switch engine retracted and engine extended 164-574
60510506 Manual extension-retraction switch MTG 106 G
60510854 Key switch 3 Pos, 2 Pol KL09-1908KA (Master switch)
60510370 Press-button SECME 07 17801 21 for starter up to ser. no. 8-344
60510372 Press-button DJET 07.17502.21 for starter from ser. no. 8-345, also used as push to talk switch
60510375 Press-button 12G2904 for test of second fuel pump and for refuelling pump

60510385 Circuit breaker ETA 2A
60510386 Circuit breaker ETA 3A
60510436 Fuse 535257 60 A for batteries
60510440 Fuse 250V 0.2A 5x20 m for fire warning light

60510550 Proximity switch Insor INCT 1212
40871350 Proximity switch ready assembled with wiring and plug

60510796 Socket BSB 12 (in main bulkhead)
60510797 plug BSK12 for socket BSB 12

8.3 Control surface sealings and turbulators

1. Wings - upper surface
   30003124 Mylar sealing 0.19 x 22 mm without glue, not curved, 2 x 5.64 m long
   30003125 Mylar sealing 0.19 x 22 mm without glue, curved, 2 x 2.7 m long
   70000253 Tesafix No. 4965, 9 mm wide, 50 m roll glue film
   70000229 Tesafilm 4104 white, 19 mm wide, 66 m roll PVC tape

2. Wings - lower surface
   30003132 Combi sealing 43/19/06, 2 x 7 m (23 ft.)
   30003131 Combi sealing 38/19/06, 2 x 1.45 m (4.76 ft.)
   or
   30003300 Noppenband 10m roll (dimple turbulator tape)
   70000229 Tesafilm 4104 white, 19 mm wide, 66 m roll PVC tape

3. Flaperons (sliding surface and internal sealing)
   30003136 Teflon-glass fabric 0.08 x 38 mm, 33 m roll selfadhesive

4. Horizontal tailplane
   30003129 Zig-zag turbulator tape 60 degree 0.4 mm thick
   30003128 Mylar sealing 0.19 x 30 mm without glue, curved, leading edge scarfed, 2 x 2,5 m (9.2 ft.)
   70000253 Tesafix No. 4965, 9 mm wide, 50 m roll glue film
   70000237 Tesafilm 4104 white, 30 mm wide, 66 m roll PVC tape

5. Vertical tailplane
   30003132 Combitape 43/19/06, 2 x 1,1 m long
   70000295 Internal sealing: 3M Scotch V-seal weatherstrip Cat.Nr.2101 white, 22mm, 5.2m roll (V-tape)

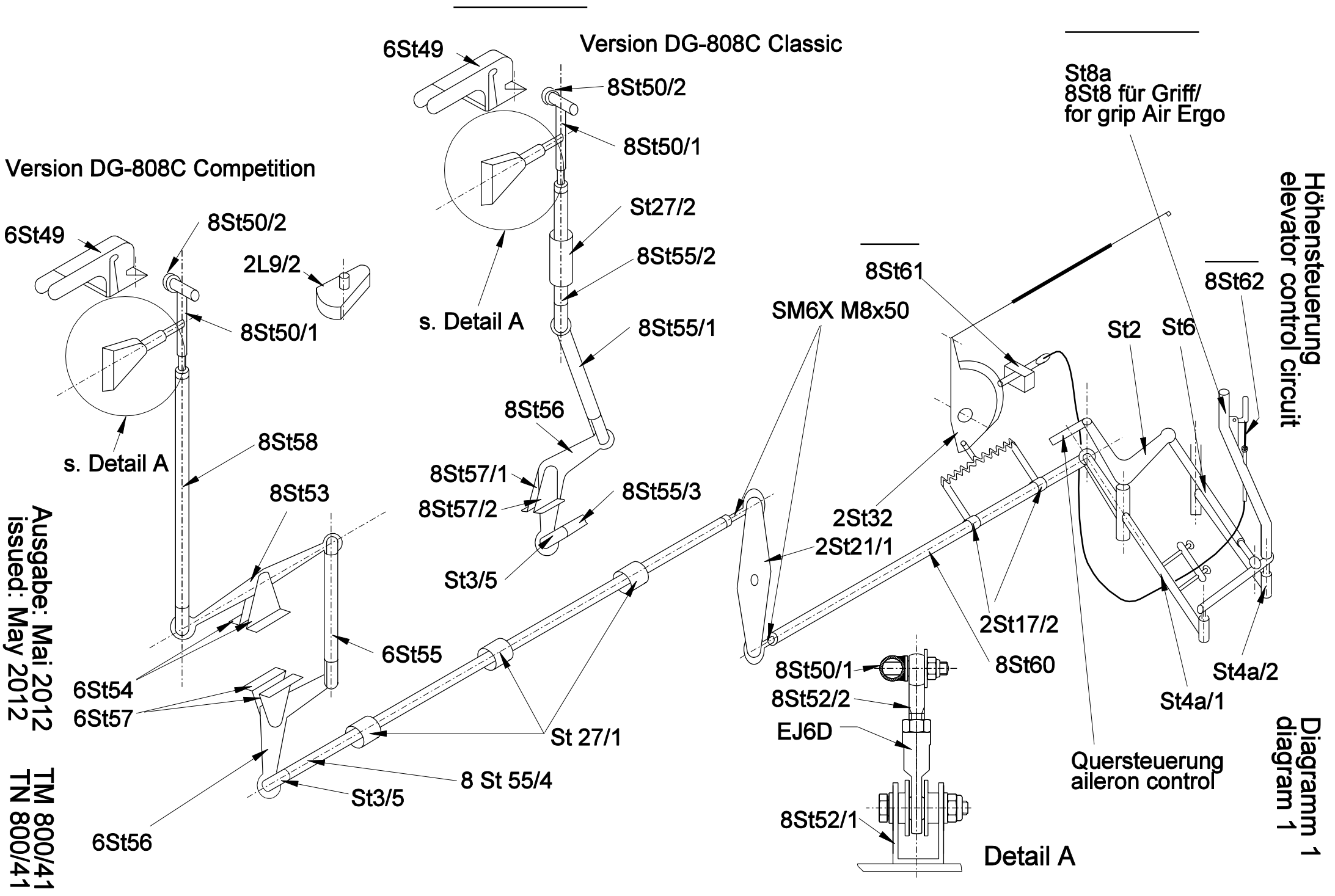
6. Winglets 18 m
   30003129 Zig-zag turbulator tape 60 degree 0.4 mm thick

9.2 Checklist for checks and maintenance work

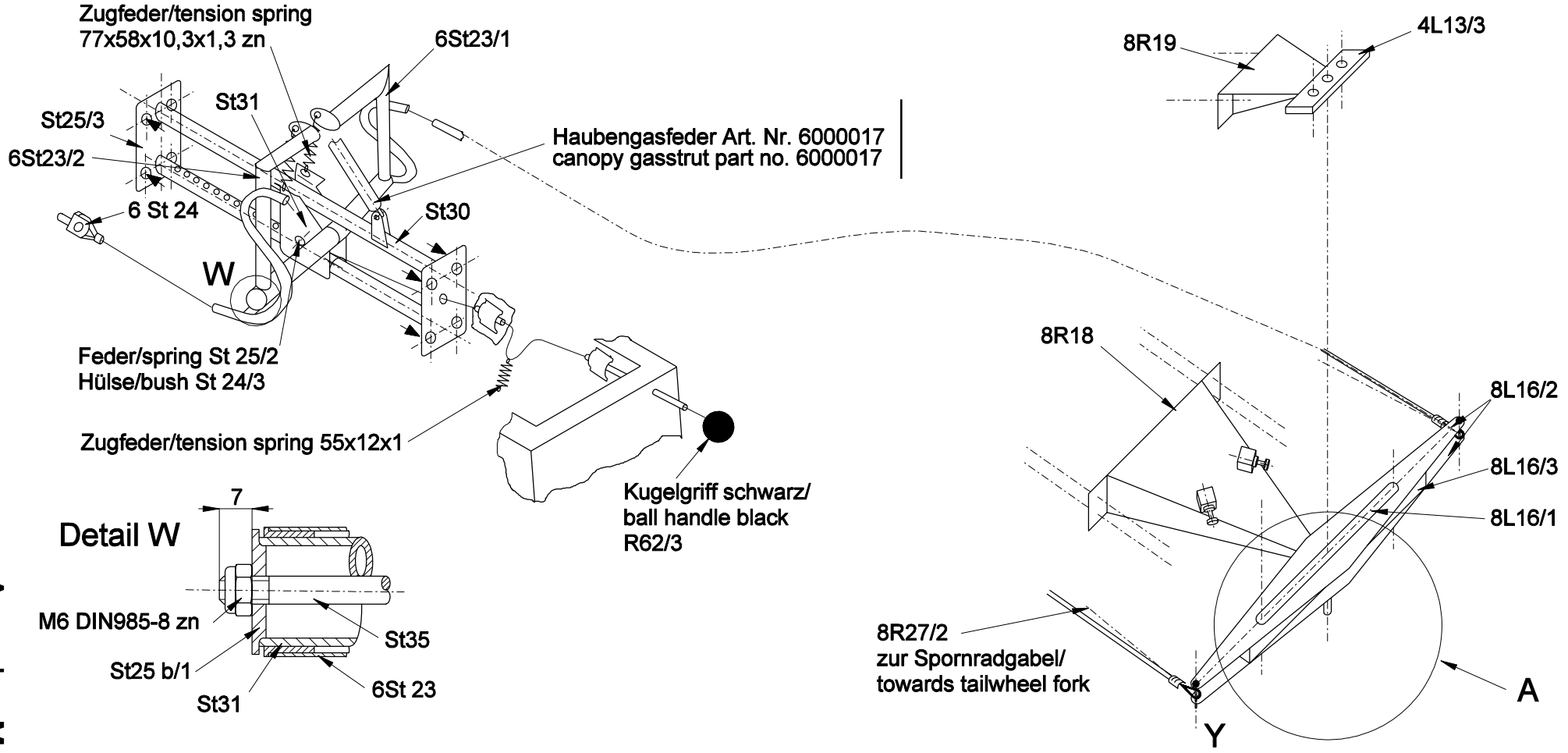
according to sect. 3.5.1 of the maintenance manual

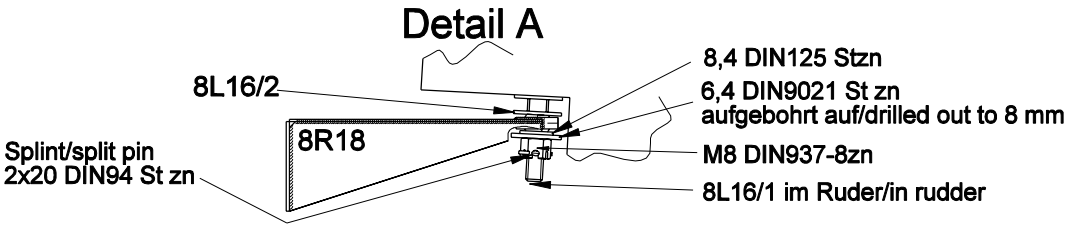
h	25	50	75	100	125	150	175	200	225	250	275	300
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
32												
33												
34												
35												
executed by												
place												
date												
engine hrs												
signature												

Each item shall be signed off or the data which was determined shall be entered.
The list is valid for the engine hour range:.....h - .....h
DG-808C Ser.no. 8-.....B.....


Version DG-808C Competition
6St49
8St50/2
2L9/2
8St50/1
s. Detail A
8St58
8St53
6St55
6St54
6St57
6St56
Version DG-808C Classic
6St49
8St50/2
8St50/1
St27/2
8St55/2
s. Detail A
8St55/1
8St56
8St57/1
8St57/2
8St55/3
St3/5
St 27/1
8 St 55/4
St3/5
St8a
8St8 für Griff/
for grip Air Ergo
8St61
8St62
SM6X M8x50
St2
St6
2St32
2St21/1
2St17/2
8St60
St4a/2
St4a/1
8St50/1
8St52/2
EJ6D
8St52/1
Detail A
Quersteuerung
aileron control
Höhensteuerung
elevator control circuit
Diagramm 1
diagram 1
Ausgabe: Mai 2012
issued: May 2012
TM 800/41
TN 800/41

Seitensteuerung
rudder control





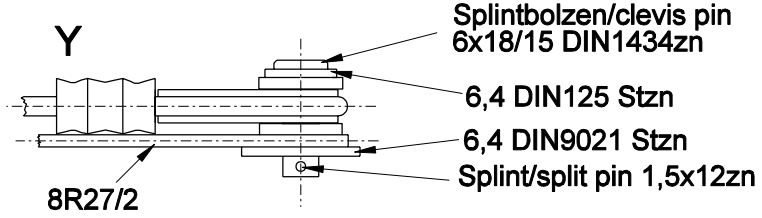
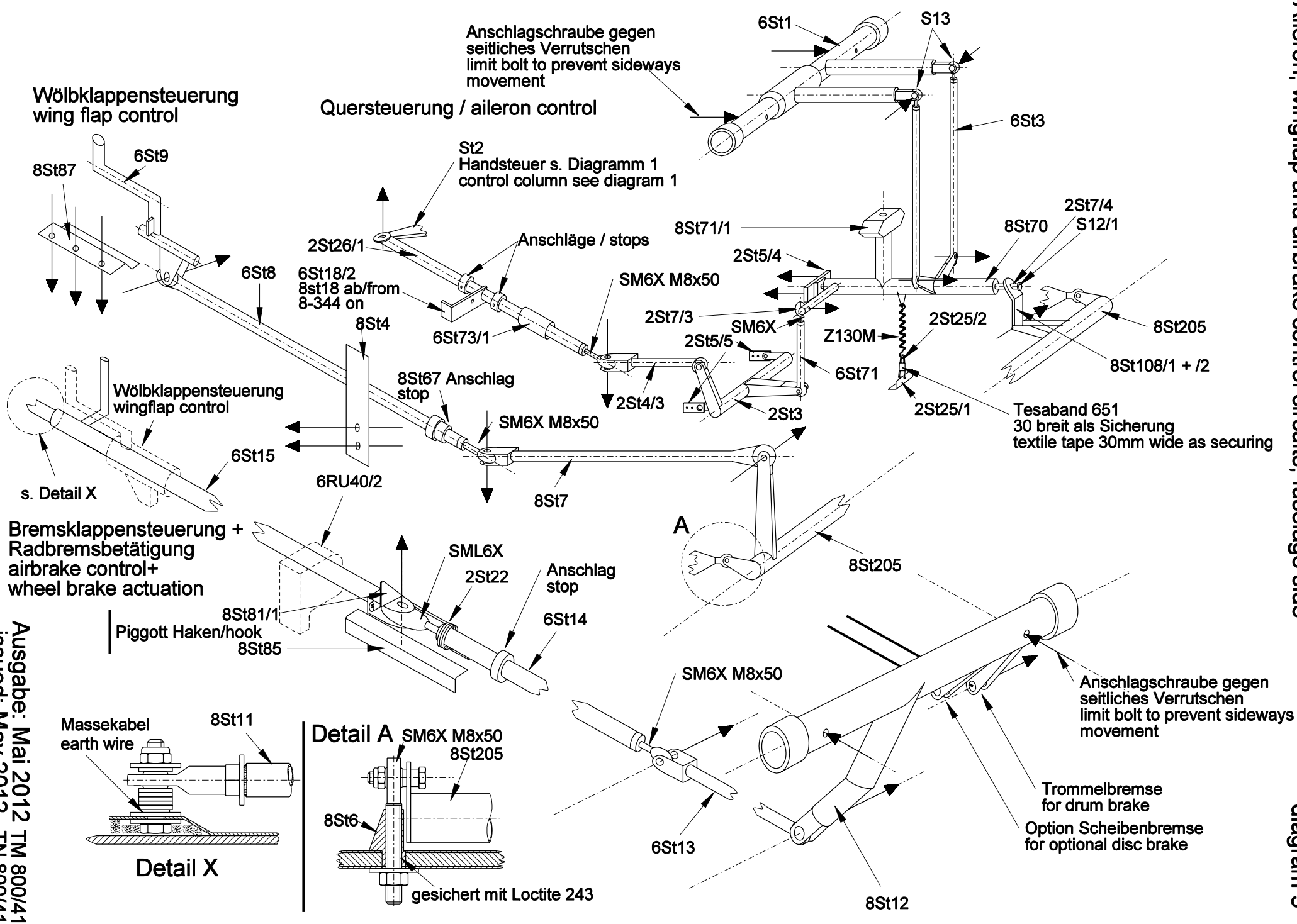


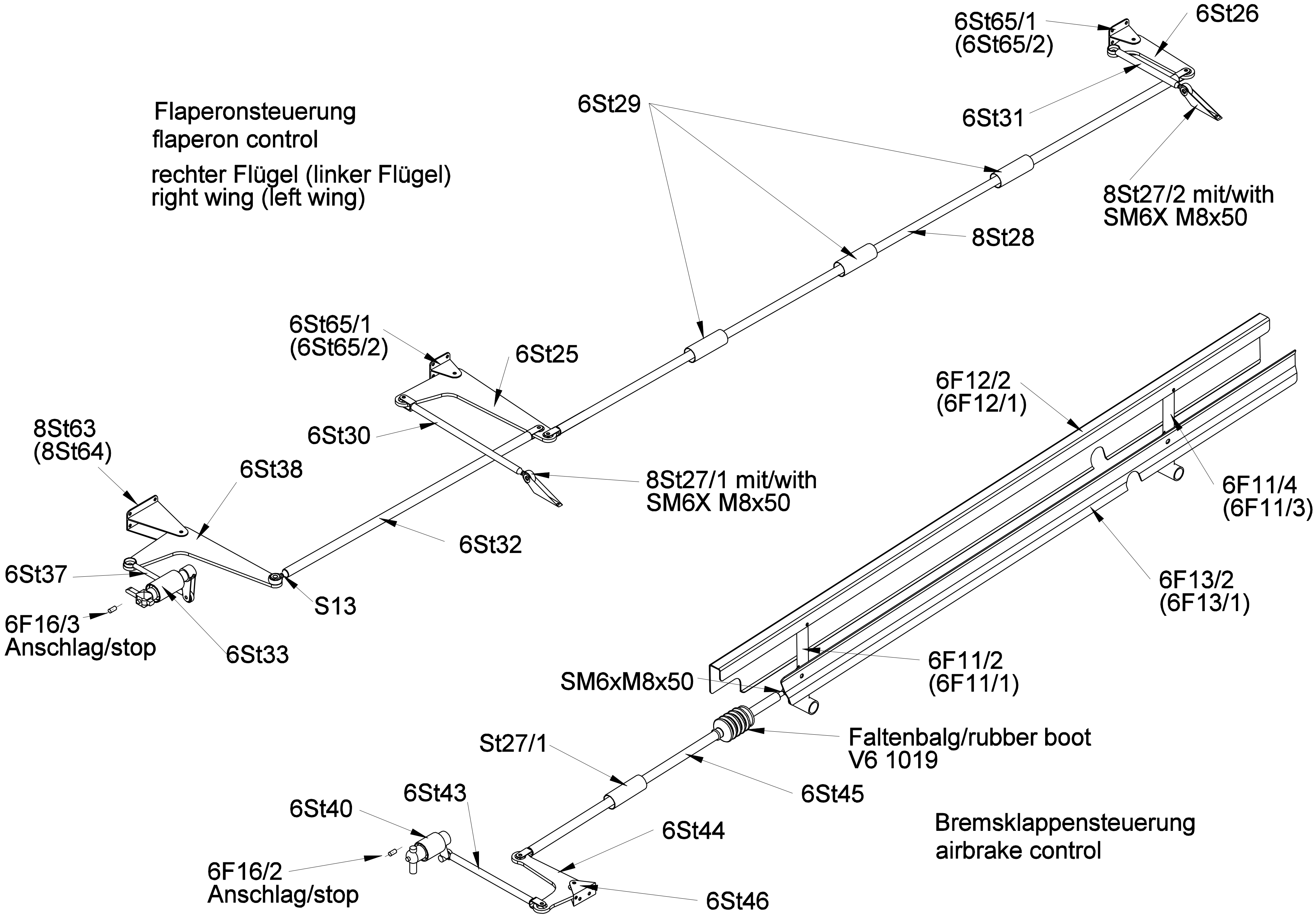
Diagramm 2
diagram 2

Ausgabe: Mai 2012 TM 800/41
issued: May 2012 TN 800/41

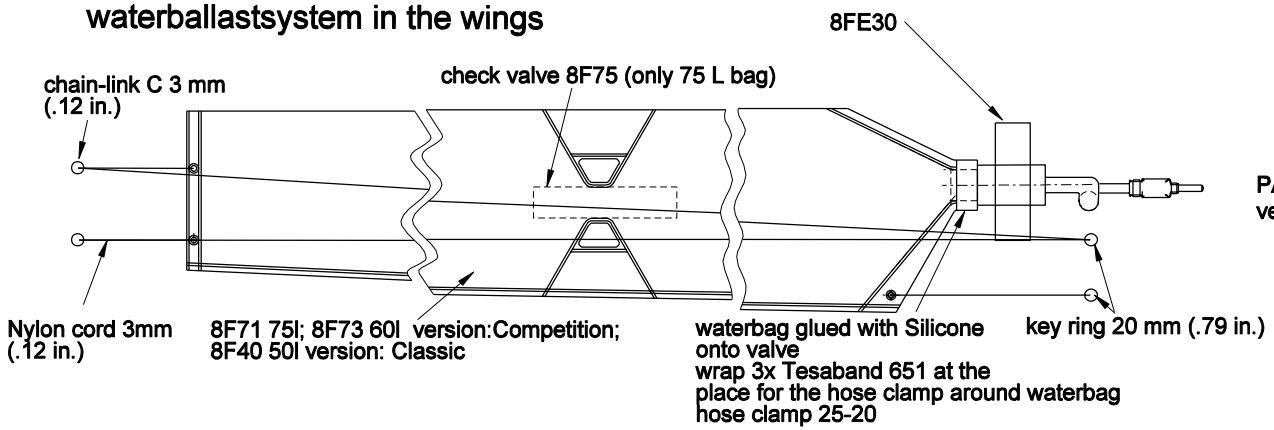


Quer-, Wölbklappen- und Bremsklappensteuerung im Rumpf DG-808C Diagramm 3
Aileron, wingflap and airbrake control circuits, fuselage side diagram 3

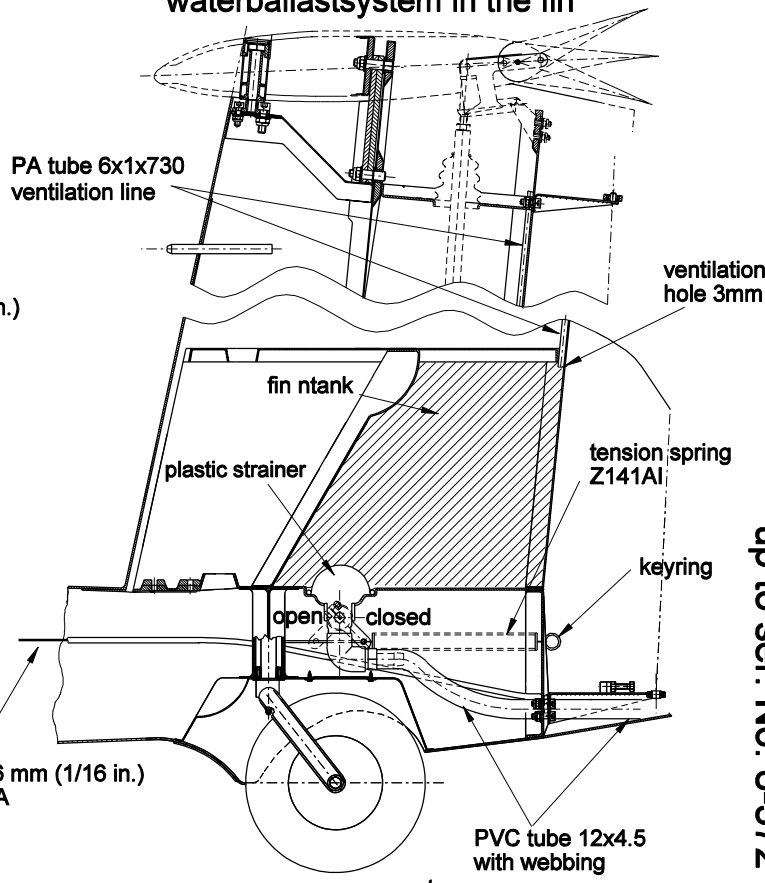
Ausgabe: Mai 2012 TM 800/41
issued: May 2012 TN 800/41


Flaperonsteuerung
flaperon control
rechter Flügel (linker Flügel)
right wing (left wing)
6St65/1
(6St65/2)
6St26
6St29
6St31
8St27/2 mit/with
SM6X M8x50
8St28
6St65/1
(6St65/2)
6St25
6St30
8St63
(8St64)
6St38
8St27/1 mit/with
SM6X M8x50
6St32
6St37
S13
6F16/3
Anschlag/stop
6St33
6F12/2
(6F12/1)
6F11/4
(6F11/3)
6F13/2
(6F13/1)
6F11/2
(6F11/1)
SM6xM8x50
Faltenbalg/rubber boot
V6 1019
St27/1
6St45
6St43
6St40
6St44
6F16/2
Anschlag/stop
6St46
Bremsklappensteuerung
airbrake control

waterballastsystem in the wings



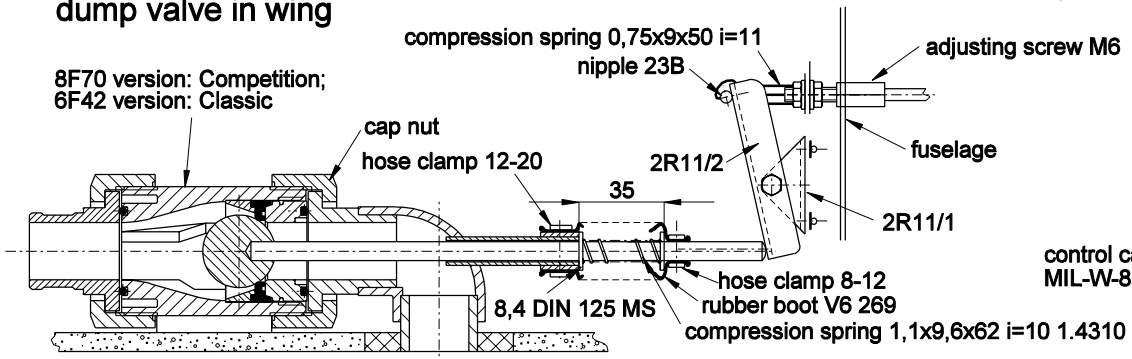
waterballastsystem in the fin



note:
tube dimensions
(inner diameter x thickness)

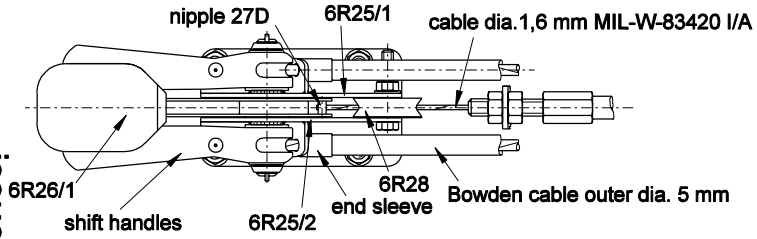
dump valve drive at fuselage

dump valve in wing

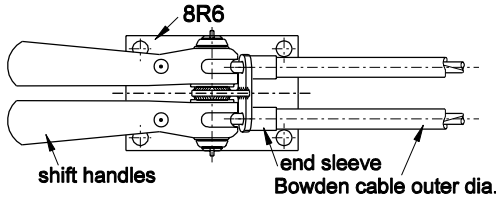


waterballast control handles in the cockpit

Version Competition



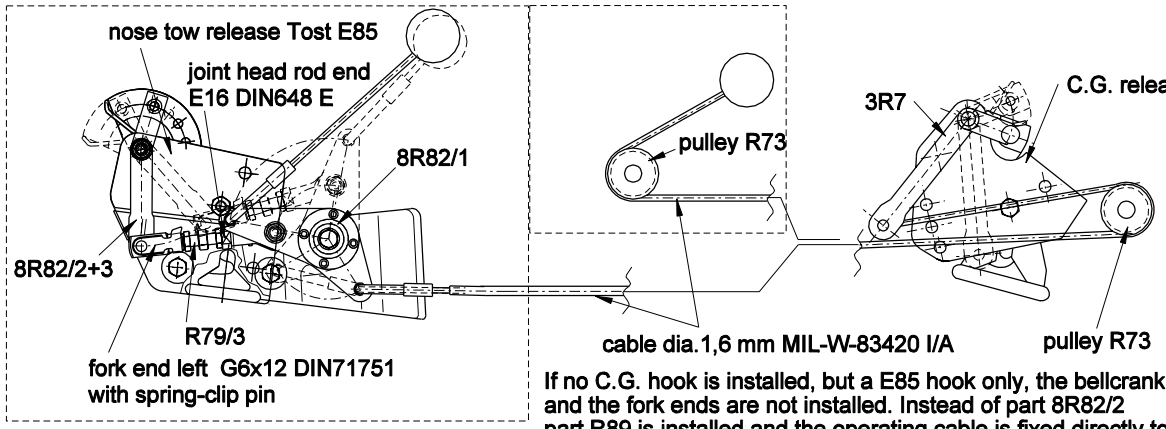
Version Classic



tow releases

with optional nose tow release

without nose tow release



all dimensions in mm; 25,4mm= 1in.

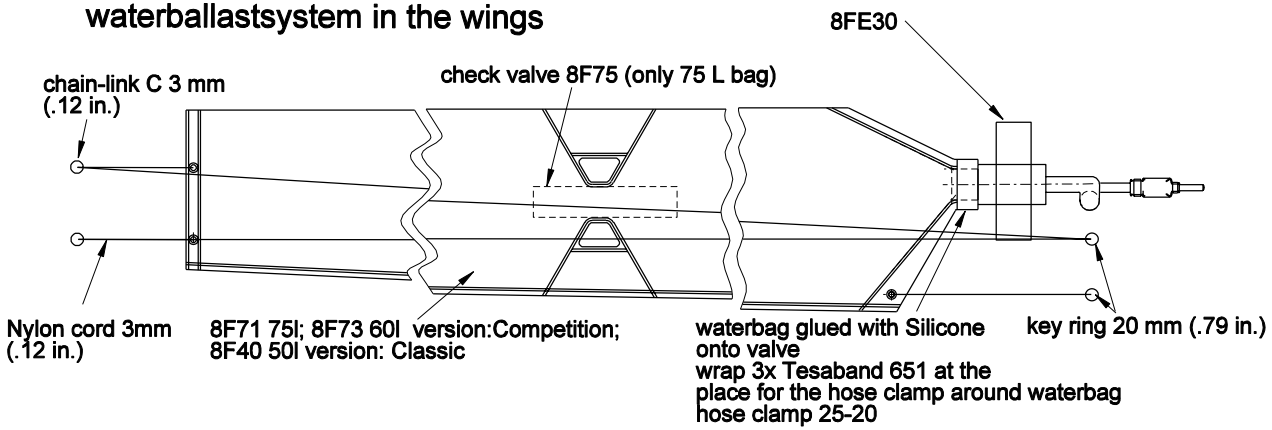
If no C.G. hook is installed, but a E85 hook only, the bellcrank 8R82/1 and the fork ends are not installed. Instead of part 8R82/2 part R89 is installed and the operating cable is fixed directly to R89.

waterballast system tow releases
up to ser. No. 8-372

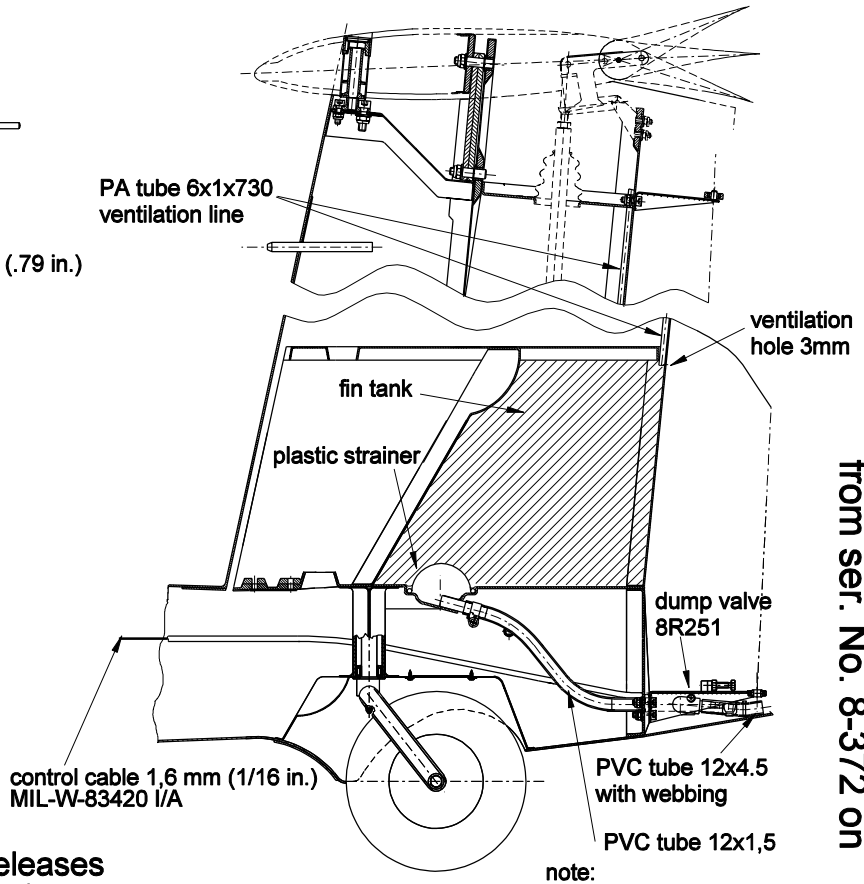
diagram 5

issued May 2012
TN 800/41

waterballastsystem in the wings



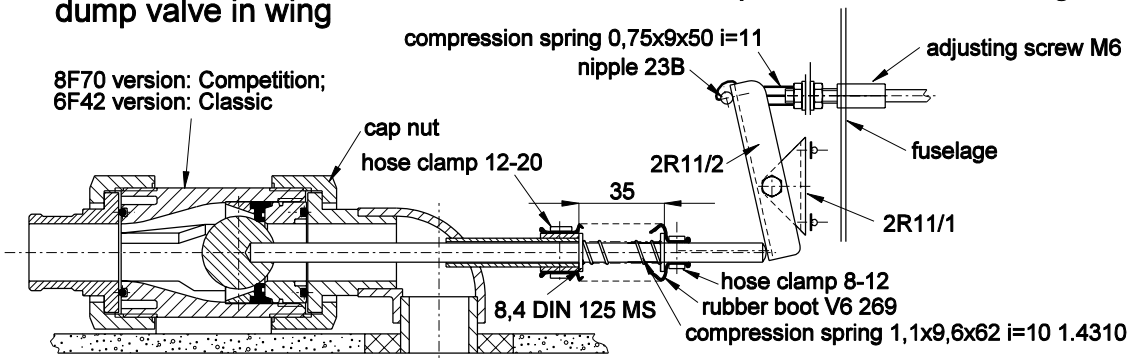
waterballastsystem in the fin



note:
tube dimensions
(inner diameter x thickness)

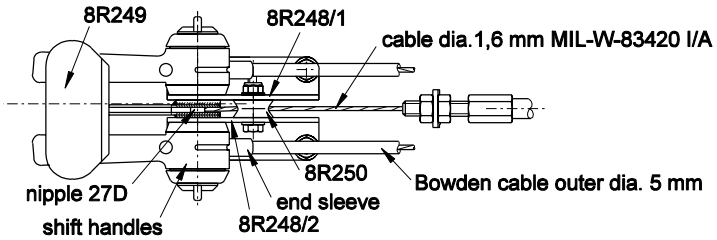
dump valve drive at fuselage

dump valve in wing

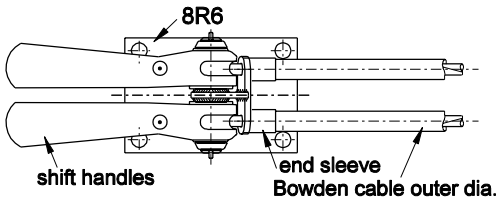


waterballast control handles in the cockpit

Version Competition



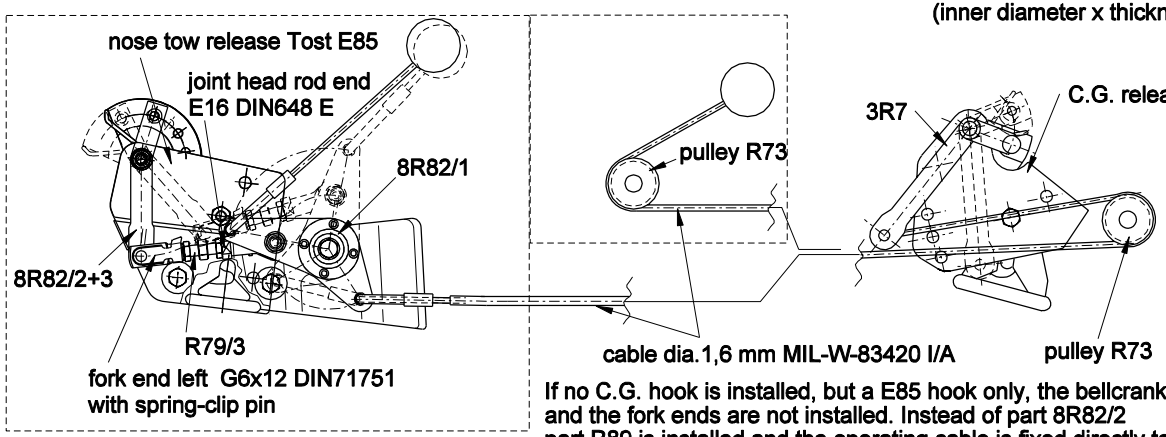
Version Classic



tow releases

with optional nose tow release

without nose tow release



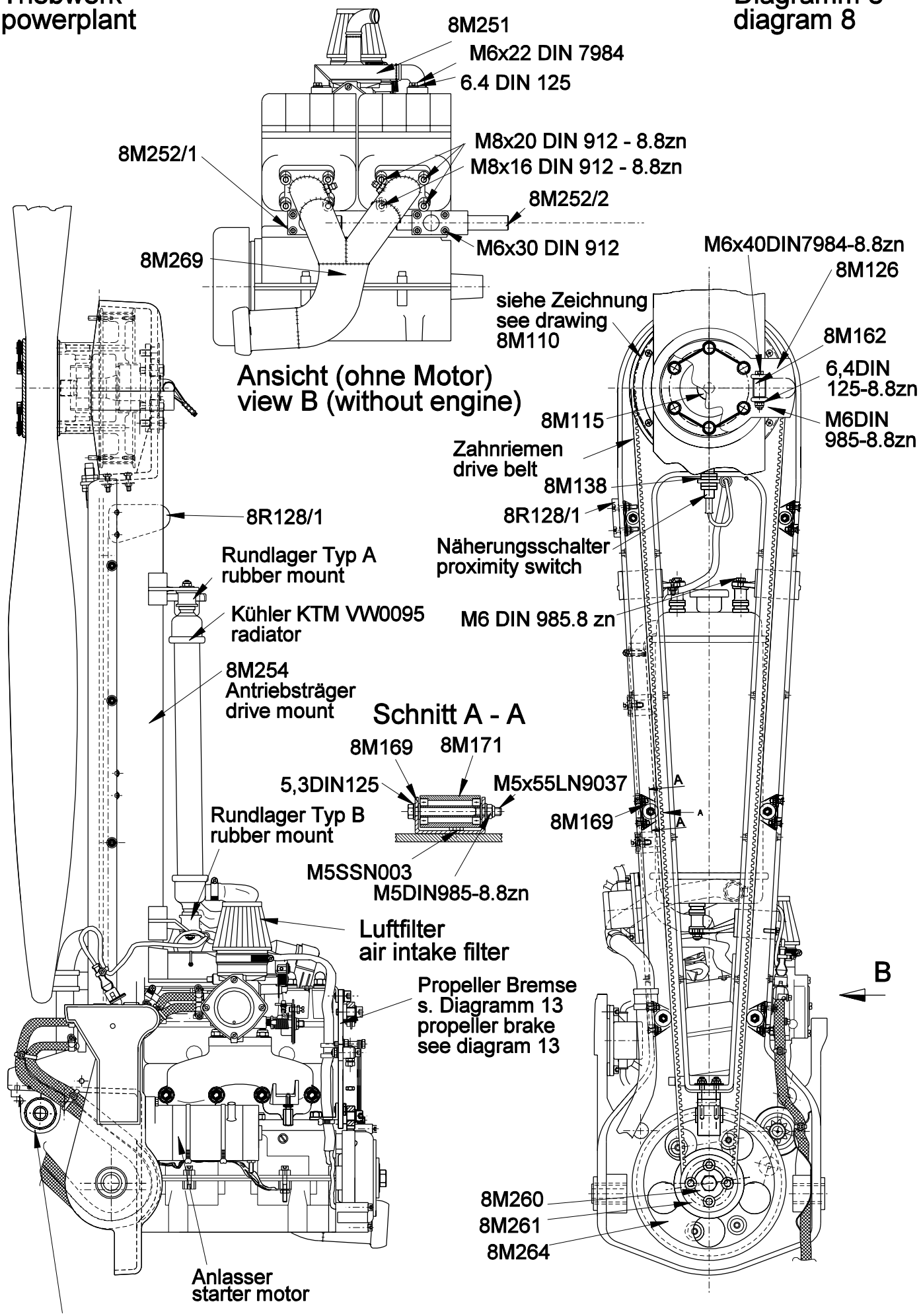
all dimensions in mm; 25,4mm= 1in.

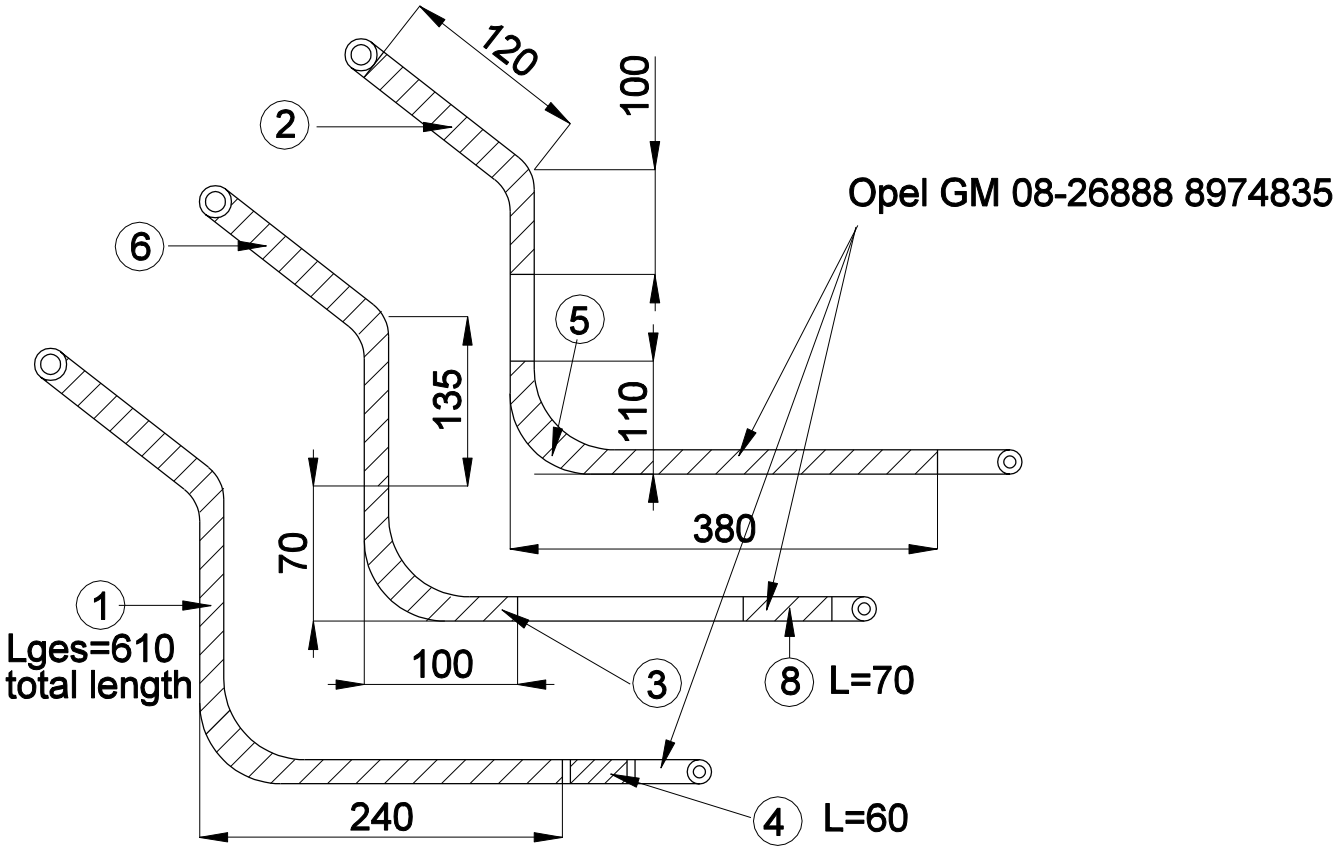
If no C.G. hook is installed, but a E85 hook only, the bellcrank 8R82/1 and the fork ends are not installed. Instead of part 8R82/2 part R89 is installed and the operating cable is fixed directly to R89.

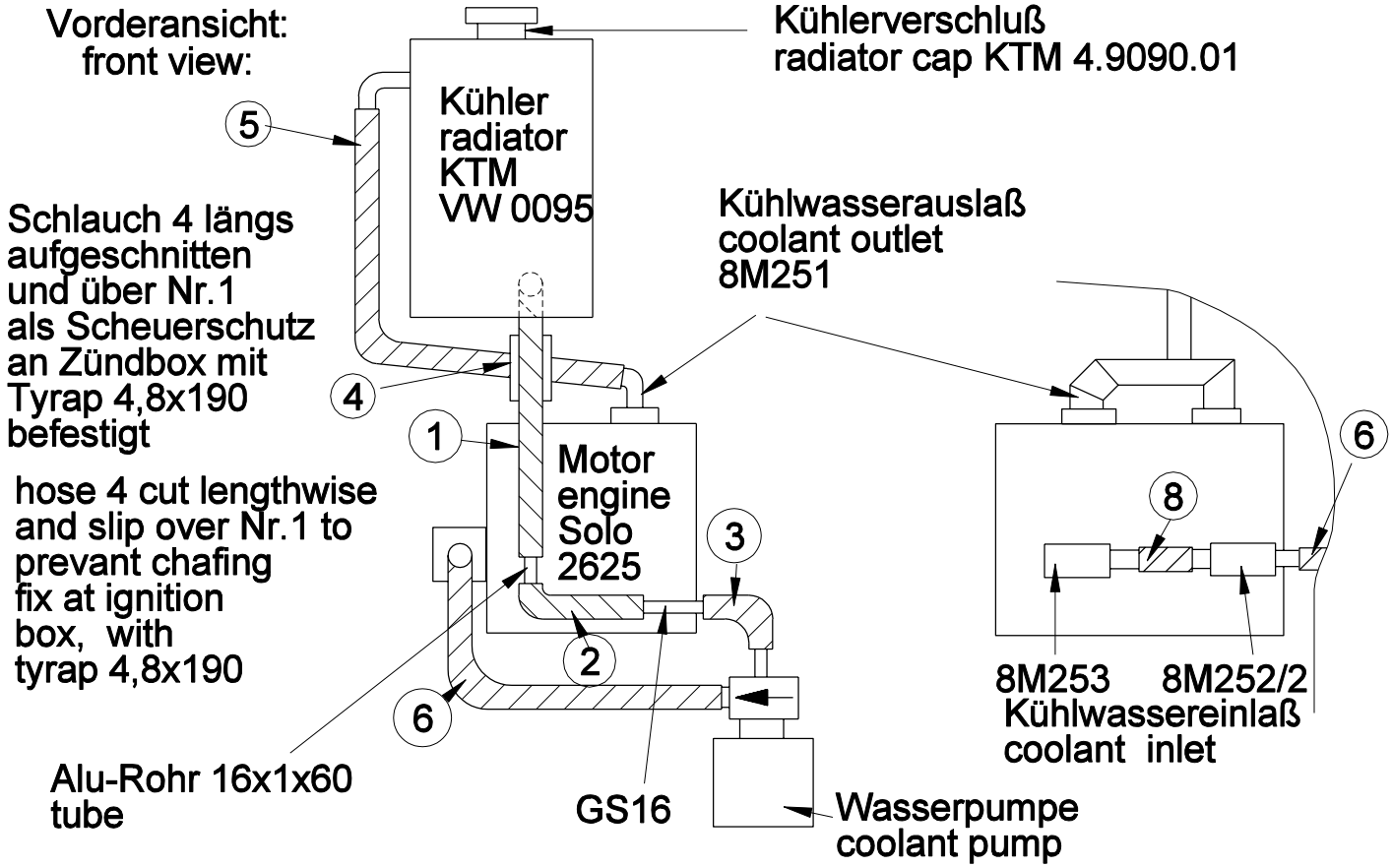
waterballast system tow releases
from ser. No. 8-372 on

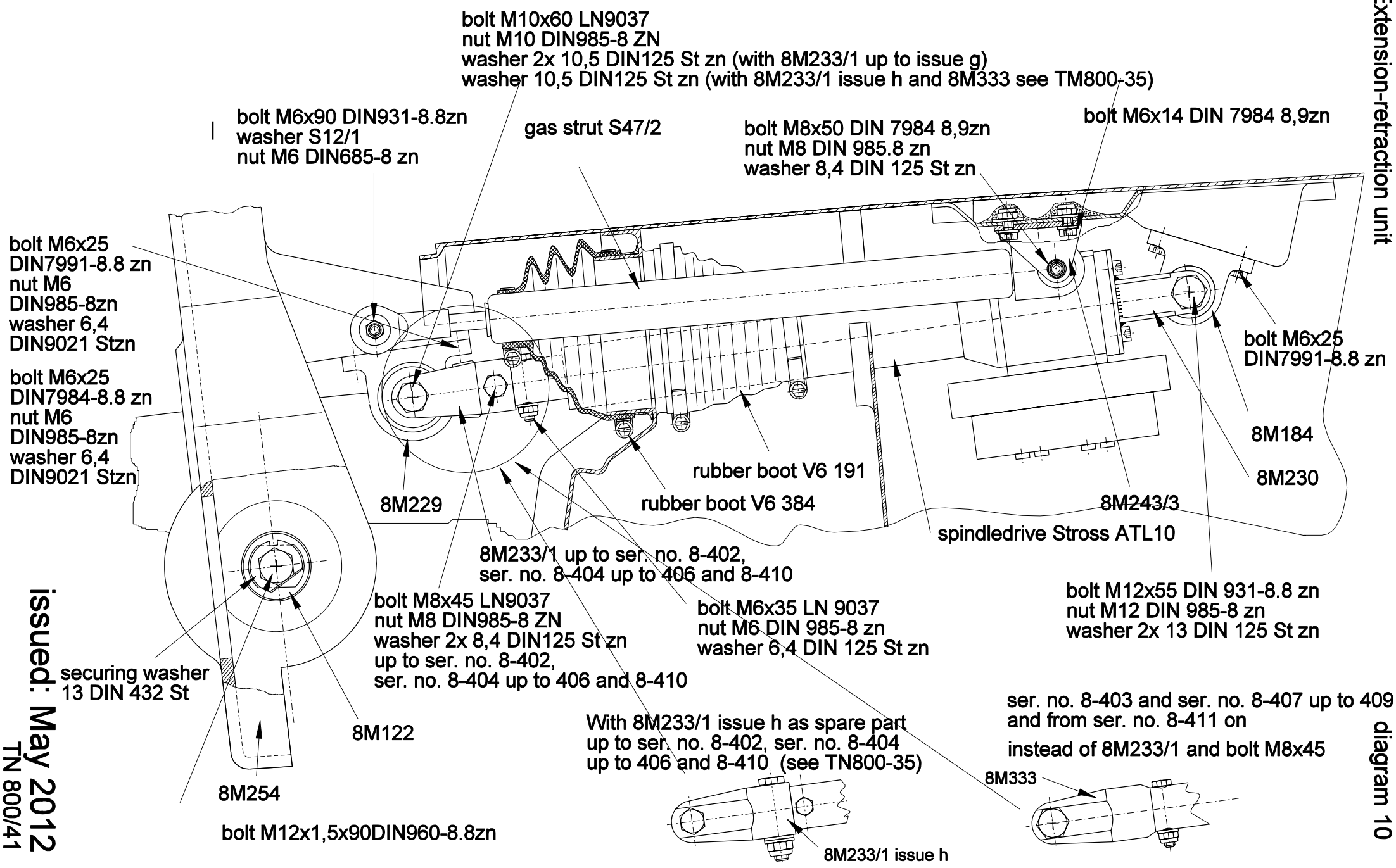
diagram 5a

issued May 2012
TN 800/41


8M251
M6x22 DIN 7984
6.4 DIN 125
M8x20 DIN 912 - 8.8zn
M8x16 DIN 912 - 8.8zn
8M252/1
8M252/2
M6x30 DIN 912
8M269
M6x40DIN7984-8.8zn
8M126
siehe Zeichnung
see drawing
8M110
8M162
6,4DIN
125-8.8zn
M6DIN
985-8.8zn
8M115
Zahnriemen
drive belt
8M138
8R128/1
8R128/1
Näherungsschalter
proximity switch
M6 DIN 985.8 zn
Rundlager Typ A
rubber mount
Kühler KTM VW0095
radiator
8M254
Antriebsträger
drive mount
Schnitt A - A
8M169
8M171
5,3DIN125
M5x55LN9037
8M169
Rundlager Typ B
rubber mount
M5SSN003
M5DIN985-8.8zn
Luftfilter
air intake filter
Propeller Bremse
s. Diagramm 13
propeller brake
see diagram 13
B
8M260
8M261
8M264
Anlasser
starter motor
8M229/1 ohne BBSA Kupplung
with BBSA clutch
8M229/2 mit BBSA Kupplung
without BBSA clutch

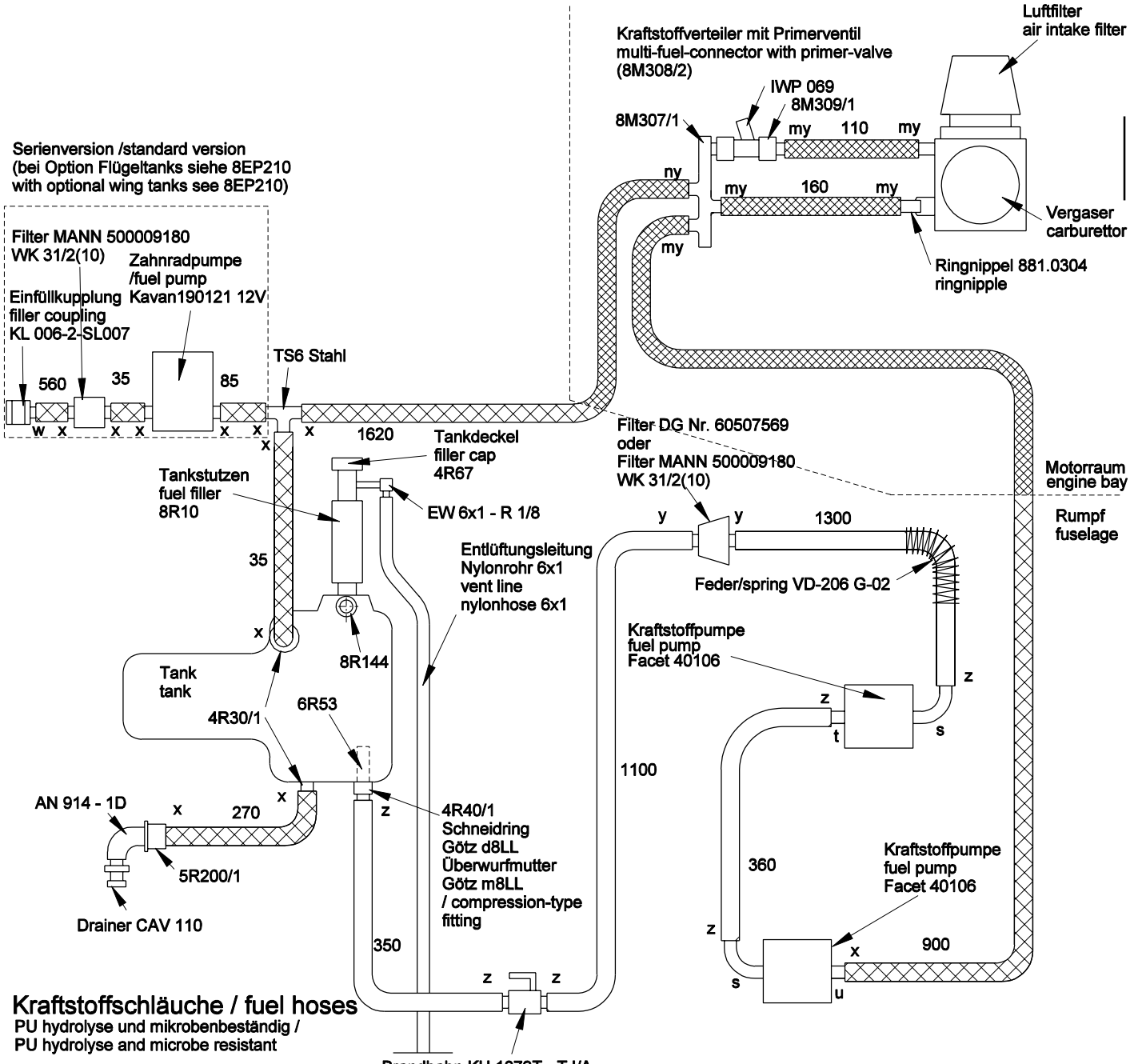

120
100
2
6
5
135
110
Opel GM 08-26888 8974835
380
70
1
Lges=610
total length
100
3
8
L=70
240
4
L=60


Vorderansicht:
front view:
Kühlerverschluß
radiator cap KTM 4.9090.01
5
Kühler
radiator
KTM
VW 0095
Schlauch 4 längs
aufgeschnitten
und über Nr.1
als Scheuerschutz
an Zündbox mit
Tyrap 4,8x190
befestigt
hose 4 cut lengthwise
and slip over Nr.1 to
prevant chafing
fix at ignition
box, with
tyrap 4,8x190
Kühlwasserauslaß
coolant outlet
8M251
4
1
Motor
engine
Solo
2625
3
2
6
8
6
8M253
8M252/2
Kühlwassereinlaß
coolant inlet
Alu-Rohr 16x1x60
tube
GS16
Wasserpumpe
coolant pump


bolt M10x60 LN9037
nut M10 DIN985-8 ZN
washer 2x 10,5 DIN125 St zn (with 8M233/1 up to issue g)
washer 10,5 DIN125 St zn (with 8M233/1 issue h and 8M333 see TM800-35)
bolt M6x90 DIN931-8.8zn
washer S12/1
nut M6 DIN685-8 zn
gas strut S47/2
bolt M8x50 DIN 7984 8,9zn
nut M8 DIN 985.8 zn
washer 8,4 DIN 125 St zn
bolt M6x14 DIN 7984 8,9zn
bolt M6x25
DIN7991-8.8 zn
nut M6
DIN985-8zn
washer 6,4
DIN9021 Stzn
bolt M6x25
DIN7984-8.8 zn
nut M6
DIN985-8zn
washer 6,4
DIN9021 Stzn
bolt M6x25
DIN7991-8.8 zn
8M184
8M230
8M229
rubber boot V6 191
rubber boot V6 384
8M243/3
spindledrive Stross ATL10
8M233/1 up to ser. no. 8-402,
ser. no. 8-404 up to 406 and 8-410
bolt M8x45 LN9037
nut M8 DIN985-8 ZN
washer 2x 8,4 DIN125 St zn
up to ser. no. 8-402,
ser. no. 8-404 up to 406 and 8-410
bolt M6x35 LN 9037
nut M6 DIN 985-8 zn
washer 6,4 DIN 125 St zn
bolt M12x55 DIN 931-8.8 zn
nut M12 DIN 985-8 zn
washer 2x 13 DIN 125 St zn
securing washer
13 DIN 432 St
8M122
8M254
bolt M12x1,5x90DIN960-8.8zn
With 8M233/1 issue h as spare part
up to ser. no. 8-402, ser. no. 8-404
up to 406 and 8-410 (see TN800-35)
8M233/1 issue h
ser. no. 8-403 and ser. no. 8-407 up to 409
and from ser. no. 8-411 on
instead of 8M233/1 and bolt M8x45
8M333

Kraftstoffanlage / fuel system

diagram 11



Kraftstoffschläuche / fuel hoses

PU hydrolyse und mikrobenbeständig /
PU hydrolyse and microbe resistant

6x1,5x9 — wie geliefert / as delivered

6x1,5x9 — mit Metallgeflecht überzogen / with metal shield

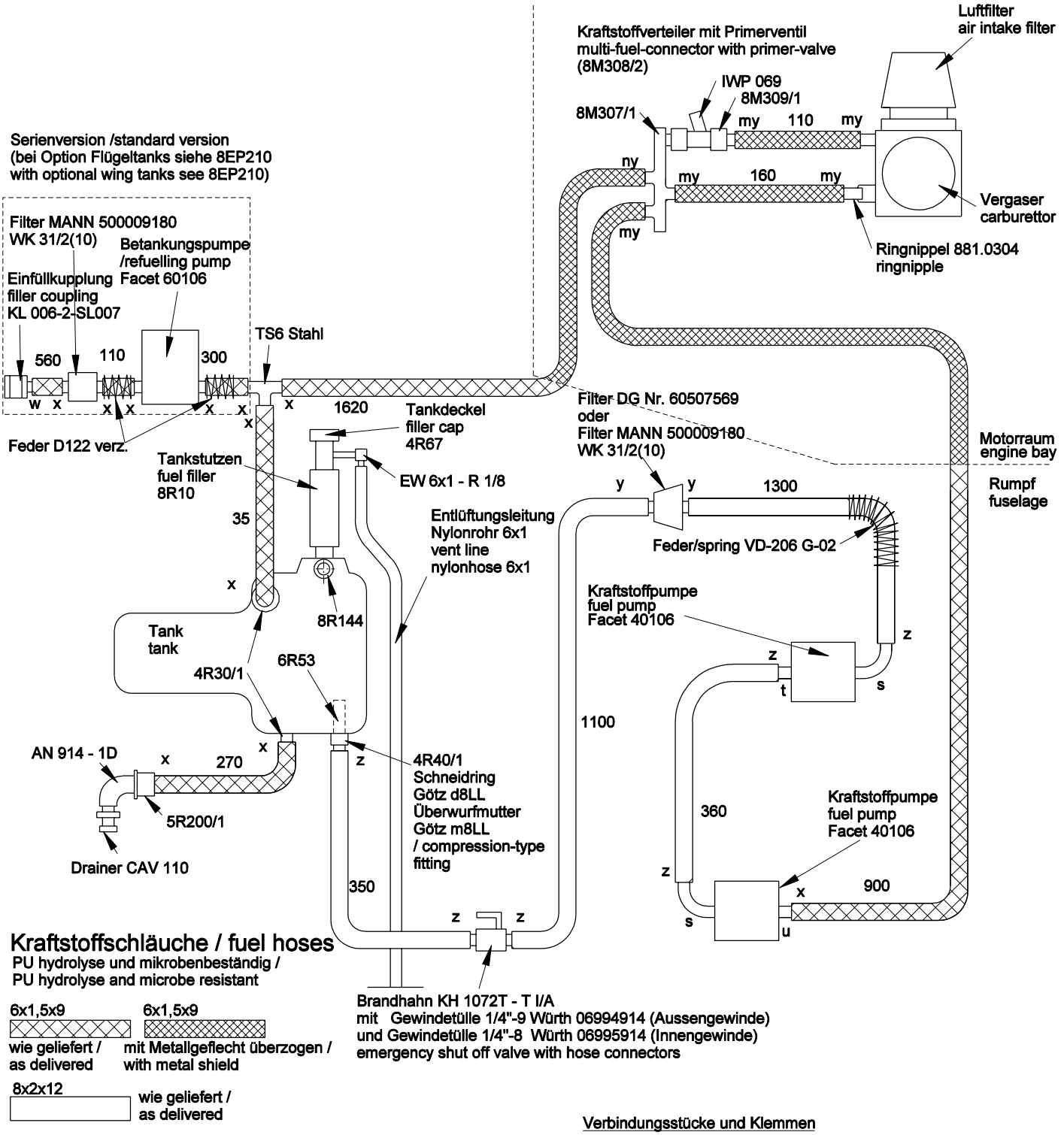
8x2x12 — wie geliefert / as delivered

Verbindungsstücke und Klemmen
Fittings and clamps

- s Winkelstück WSAG 08 1/8" Messing /elbow, brass
- t Facet Einschraubstutzen 41199 / nipple
- u Nipppel SAG 06/R1/8" / nipple
- m roter Schrumpfschlauch, 30mm lang / red heat shrink tubing
- n blauer Schrumpfschlauch, 30mm lang / blue heat shrink tubing
- w Ohrklemme 113 / ear-clamp
- x Schlauchschelle S70/1/ hose clamp
- y Schlauchschelle S70/2 / hose clamp
- z Schlauchschelle S70/3 / hose clamp

DG-808C
Kraftstoffanlage mit FACET Betankungspumpe / fuel system with FACET refuelling pump
ab W.Nr. 8-373/from ser. no. 8-373 on

Diagramm 11d
diagram 11d



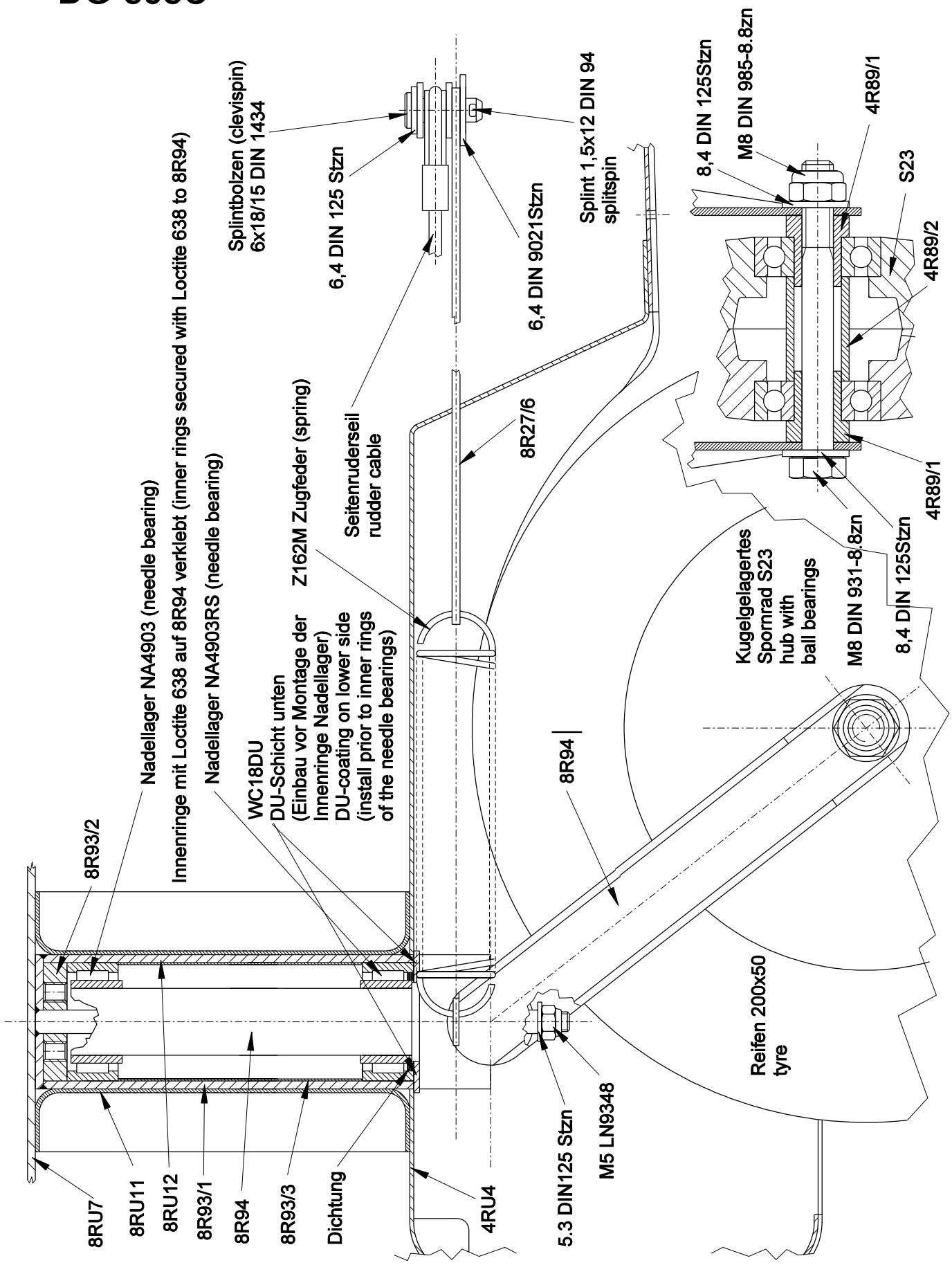
Verbindungsstücke und Klemmen
Fittings and clamps

- s Winkelstück WSAG 08 1/8" Messing /elbow, brass
- t Facet Einschraubstutzen 41199 / nipple
- u Nipppel SAG 06/R1/8" / nipple
- m roter Schrumpfschlauch, 30mm lang / red heat shrink tubing
- n blauer Schrumpfschlauch, 30mm lang / blue heat shrink tubing
- w Ohrklemme 113 / ear-clamp
- x Schlauchschelle S70/1 (9/9) / hose clamp
- y Schlauchschelle S70/2 (11/9) / hose clamp
- z Schlauchschelle S70/3 (12/9) / hose clamp

Ausgabe Mai 2012 TM 800/41
issued Mai 2012 TN 800/41

Lenkbares Spornrad mit Nadellagern
steerable tail wheel with needle bearings
DG-808C

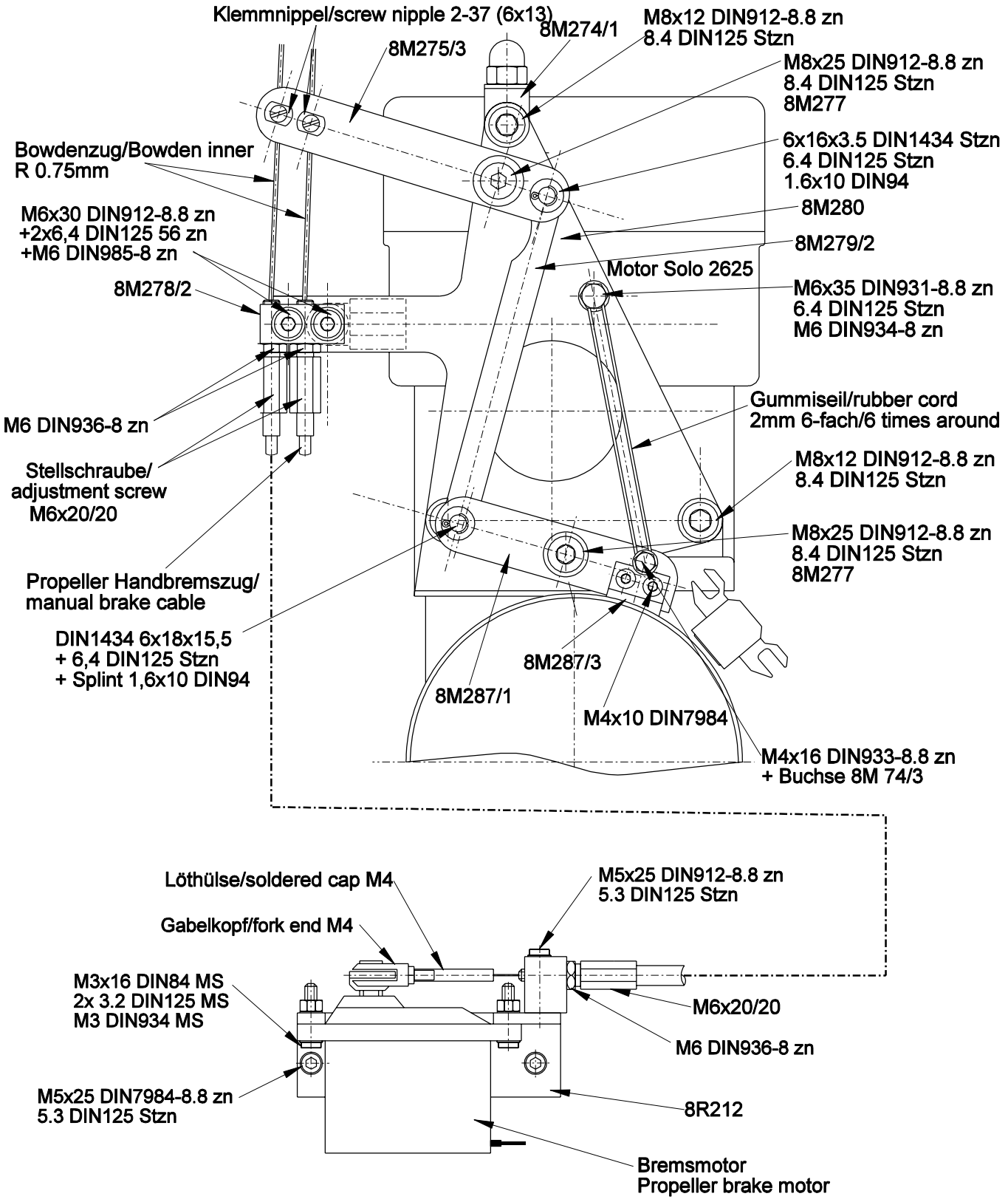
Diagramm 12
diagram 12



Ausgabe: Mai 2012 TM 800/41
issued: May 2012 TN 800/41

Propellerbremse
propeller brake

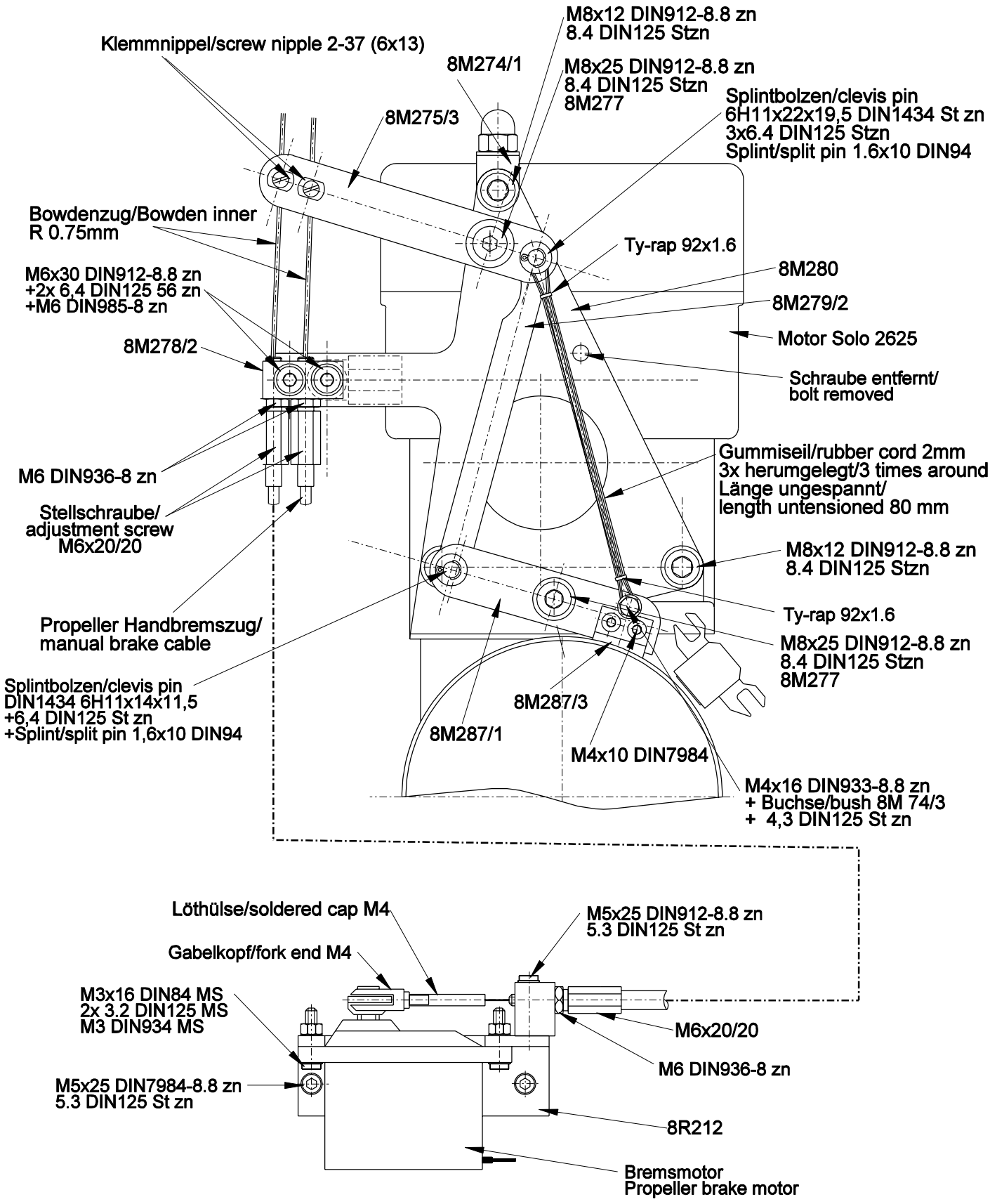
Diagramm 13
diagram 13



Alle Schrauben gesichert mit/all bolts secured with Loctite 243

Propellerbremse
propeller brake

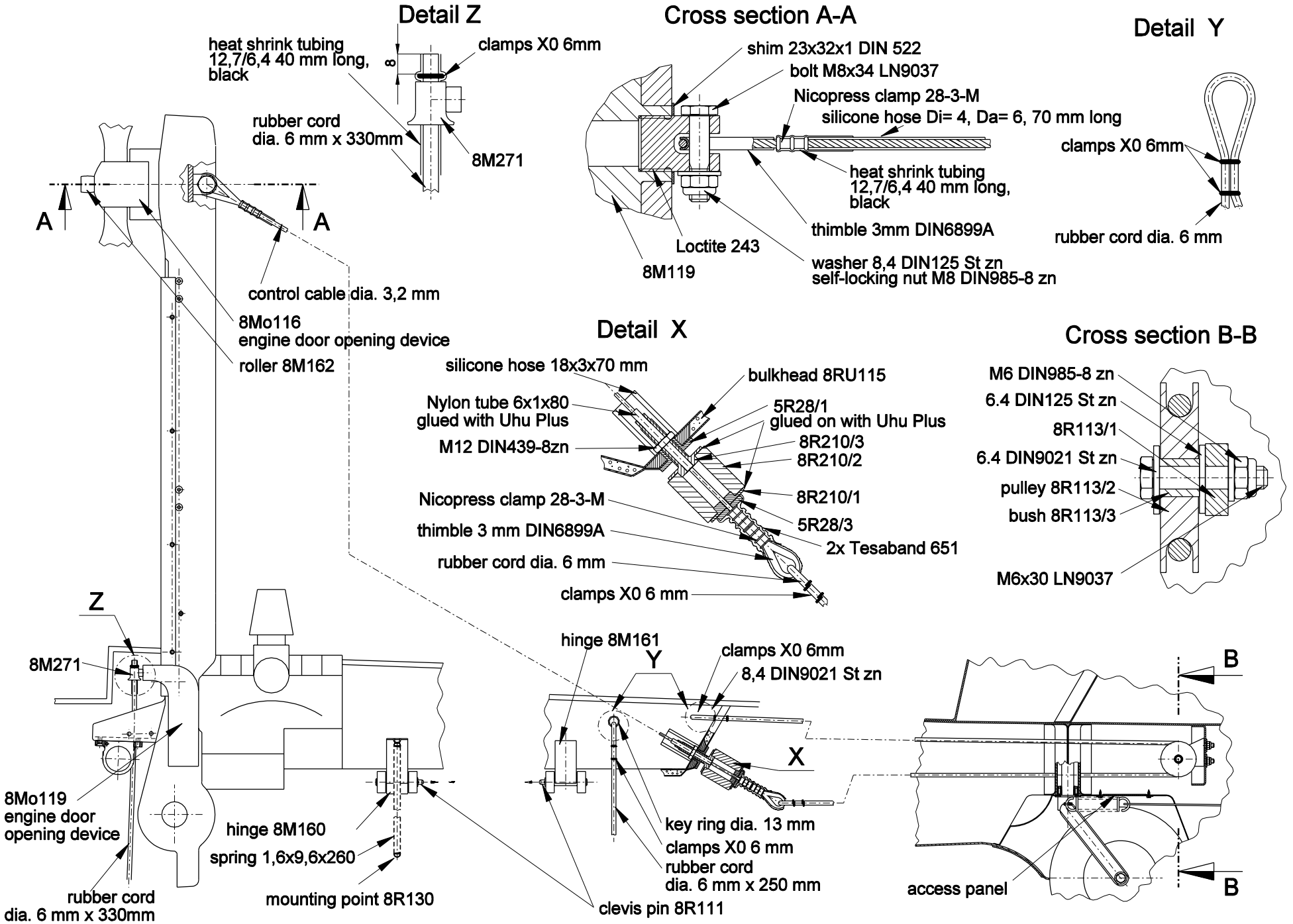
Diagramm 13b
diagram 13b



Alle Schrauben gesichert mit/all bolts secured with Loctite 243

Ausgabe: Mai 2012 TM 800/41
issued: May 2012 TN 800/41

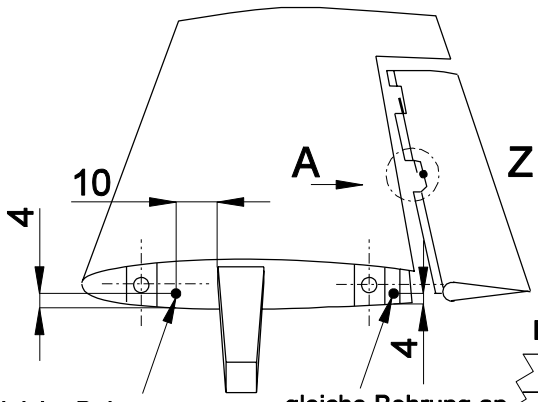
Engine doors and retaining cable



Entwässerungs- und Entlüftungsbohrungen
drain and ventilation holes
DG-808C

Diagramm 17
diagram 17

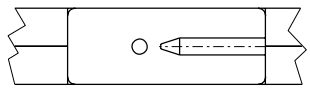
Außenflügel/wing tip extension



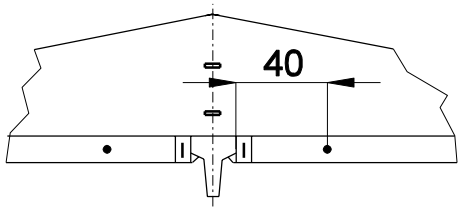
Gleiche Bohrung in 15m Flügelenden und im Innenflügel/ same hole in 15 m wing tip and in inboard wing

gleiche Bohrung an 15m Flügelenden (nicht in Innenflügel)/ same hole in 15 m wing tip (not in inboard wing)

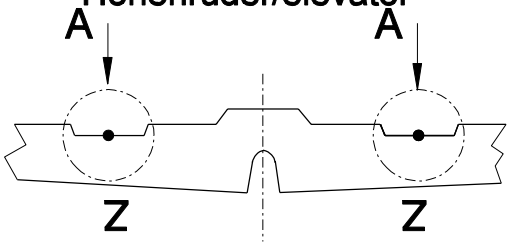
Detail Z, Ansicht/view A



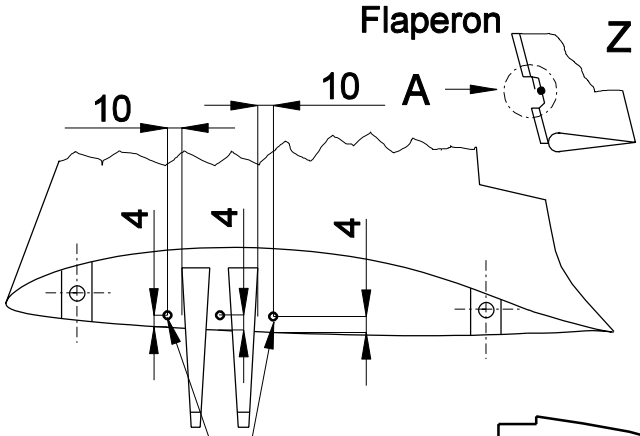
Höhenflosse/horizontal stabilizer



Höhenruder/elevator

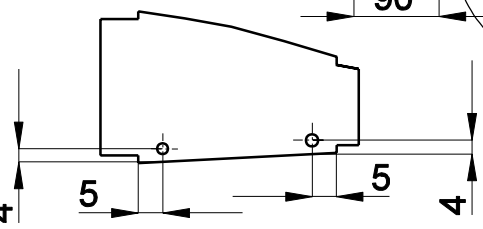


Flaperon



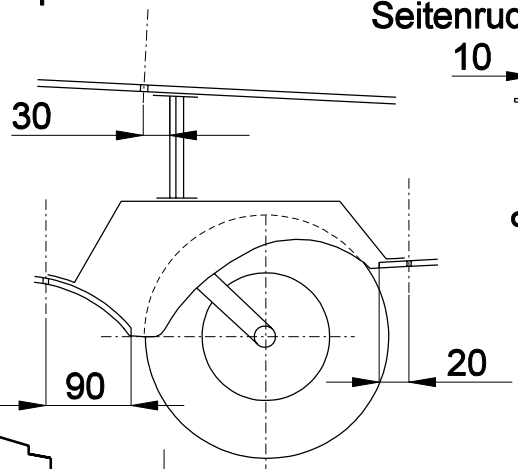
Wurzelrippen/ root ribs

Bohrung entsprechend am linken Flügel/ same holes at left wing

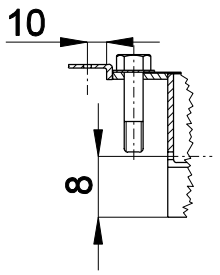


Rippen im Innenflügel bei den Antrieben/ ribs in inboard wings at the flaperon drives

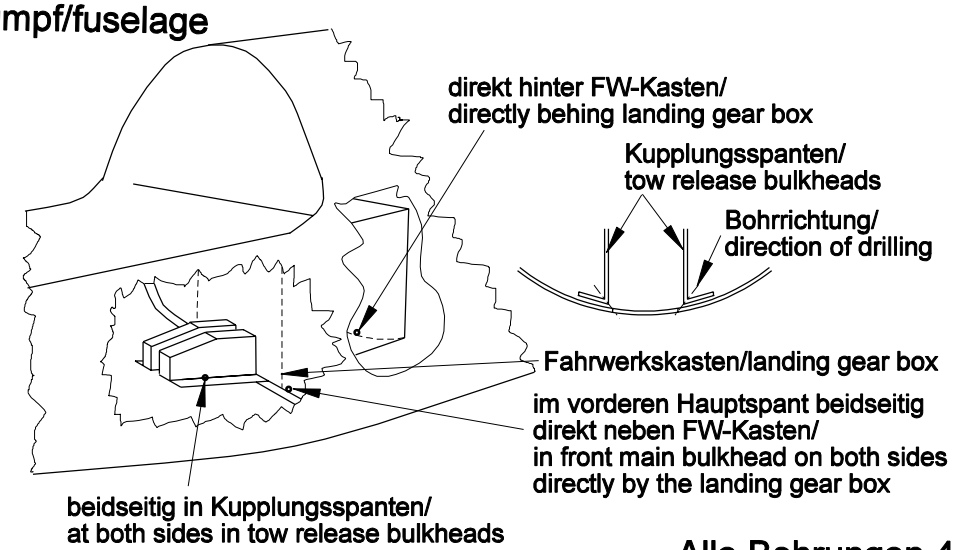
Spornrad/tail wheel



Seitenruder/rudder



Rumpf/fuselage



direkt hinter FW-Kasten/ directly behing landing gear box

Kupplungsspanten/ tow release bulkheads

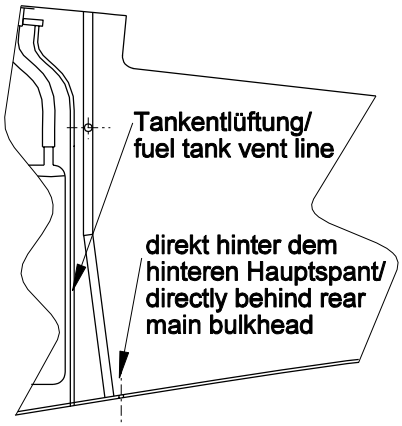
Bohrrichtung/ direction of drilling

Fahrwerkskasten/landing gear box

im vorderen Hauptspant beidseitig direkt neben FW-Kasten/ in front main bulkhead on both sides directly by the landing gear box

beidseitig in Kupplungsspanten/ at both sides in tow release bulkheads

Motorraum/engine bay

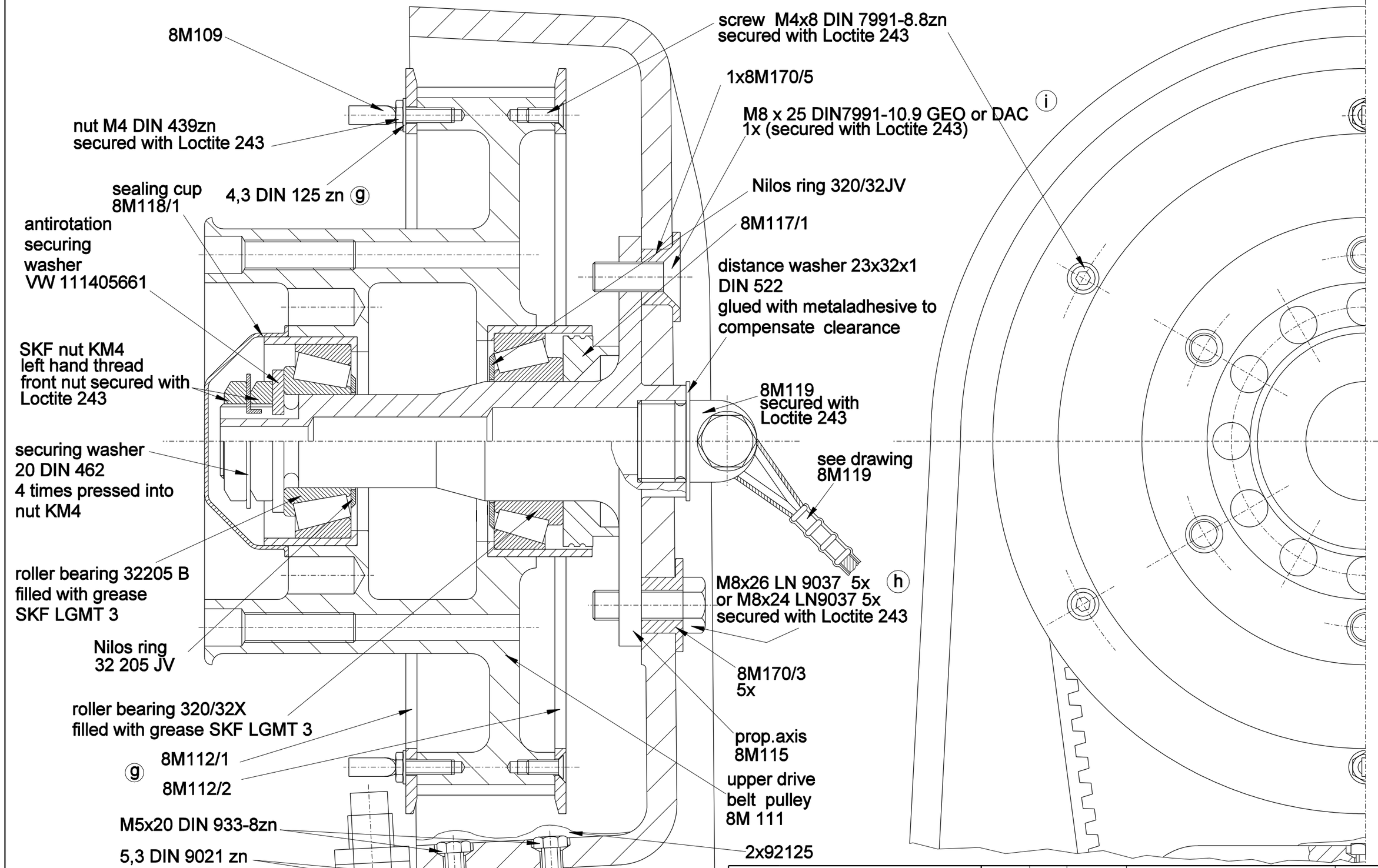


Tankentlüftung/ fuel tank vent line

direkt hinter dem hinteren Hauptspant/ directly behind rear main bulkhead

Alle Bohrungen 4mm/all holes 4 mm

Ausgabe: Mai 2012 TM 800/41
issued: May 2012 TN 800/41



Toleranzen nach Arbeitsanweisung BA 1				
Schweißen nach Arbeitsanweisung SA 1				
i	Bolt M8x25 10.9		5.07.11	W.Dirks
h	Bolt M8x24 introduced	8-285	23.10.02	Lehner
g	8M112/1 and 8M112/2 introduced		21.06.99	Lehner
f	new drawing		4.2.98	Boock
Ausg.	Änderung	ÄM	Tag	Name

	Tag	Name
Gez.	4.2.98	Boock
Gepr.		
Norm.		

Maßstab 1:1 :

Maße ohne Toleranz-ang. nach:

Assembly upper drive belt pulley

DG Flugzeugbau GmbH
76646 Bruchsal 4
Im Schollengarten 20

8M110

ser. Daten
D-Sub-9-pol. männlich
RXD
TXD
0
serial data
WE
BL
CU
100/2xAWG22

TE/Statik-Umschalt-ventil
TE/static valve

vorn
Knüppelvibrator
stick vibrator

Außentemperatur-sensor
OAT sensor

BK-Schalter
airbrake switch
Stellung: Bk.verriegelt

Fw-Schalter
taxiing gear switch
Stellung: Fw. aus

Wk-Schalter
flap switch
(optional)

12V Bord-Steckdose
12V power socket
Anschlüsse für weitere Optionen
connectors for options

Solarregler (optional)

Tankoszillator
tank oscillator

Tank
fuselage tank

Tankvollgeber
tank full gauge
8E257

Betankungs-pumpe
refuelling pump

Benzin-pumpe (Reserve)
backup fuel pump

Benzin-pumpe
fuel pump

zur Steuerung
to control system

12V Lade-Steckdose
12V charger socket
in Wurzelrippe (optional)

Brandwarnschalter
fire alarm switch
Stellung: kein Brandalarm
position: no alarm

Ausfahrendschalter
extended position switch
Stellung: ausgefahren
position: extended

Einfahrenschalter
retracted position switch
Stellung: nicht eingefahren
position: not retracted

Hinterer Masseverteiler
rear ground rail

Wasserpumpe
water pump

Propellerbremse
electric propeller brake

Spindelmotor
spindle drive

EGT Zyl. 1

EGT Zyl. 2

Zylinderkopf-temperatur geber
CHT probe
TG150/2

induktiver Näherungs-schalter
proximity switch
8E135

Primerventil
primer valve

Benzinpumpen-Testschalter
fuel pump test switch

Brandwarnlampe
fire alarm lamp
0,5A

DEI-NT
1

Primerventil
primer valve switch
Stellung: aus
position: off

Startertaste
starter pushbutton

Hauptschalter
main switch
Stellung: aus
position: off

Triebwerk manuell ein/aus
manual ext./retr. switch
Stellung: neutral
position: neutral

Transponder 3A
transponder

Funk 3A
radio

Vario 2A
electr. variometer

Gyros 3A

Sicherungen
fuses

Batteriewahlschalter
battery selector
Stellung: aus
position: off
(optional)

Transponder
transponder

künstlicher Horizont
gyro

E-Vario
electrical variometer

Funkgerät
radio

Batterie 1
battery 1
6V/min.10 Ah

Batterie 2
battery 2
6V/min.10Ah

Batterie 3
battery 3
6V/min.10Ah

Batterie 4
battery 4
6V/min.10Ah

60A
60A Batteriesicherungen
battery fuses

Fremdstart-Anschluss
aux power socket
(optional)

vorderer Masseverteiler
front GND rail

Zusatzbatterie
auxiliary battery
12V / 10Ah
(optional)

Hochstromstecker
2

Hauptstecker
3

Steuergerät (E-box) NT
control unit NT

Motorstecker
4

Motorstecker
engine main connector

Tankpumpen-taster
refuelling pump pushbutton

Muckenputzerschalter
bug remover switch
Stellung: aus
position: off
(optional)

Muckenputzer (optional)

Zündbox II rechts
right CDI unit
(ab 8-103 unten)
from 8-103 on lower

Zündbox I links
left CDI unit
(ab 8-103 oben)
from 8-103 on upper

Zyl. 1
cyl. 1
(vorn)
(front)

Zyl. 2
cyl. 2
(hinten)
(rear)

Triggerspule
trigger coil

Generator

Anlasser
starter motor

Zeichenerklärung (signs):
= Steckkontakt (male)
= Buchsenkontakt (female)
= Steckverteiler (male+female)
= Ringkabelschuh (ring terminal)
= Lötanschluss (soldering)
= abgeschirmtes Kabel (shielded) mit Schirmanschluss (shield connected)
= Sicherung (fuse)
= Motormasse (engine ground)

Farbabkürzungen (color codes):
RT = rot (red)
BL = blau (blue)
GN = grün (green)
OG = orange
BR = braun (brown)
WE = weiss (white)
SW = schwarz (black)
RS = rosa (pink)
GR = grau (grey)
GE = gelb (yellow)
CU = Schirm (Shield)

Kabelnummerierungssystem:
0XX = Massekabel
0_9 = Hochstromkabel
ab 10 = Steuer- und Versorgungskabel

Änderungen zur letzten Ausgabe	Datum	Name	Utz Schicke Kanalstr. 32 D-76356 Weingarten
- Sicherung Brandwarnung ergänzt	24.05.12	Utz Schicke	Schicke electronic

Verkabelungsplan
DG 808C mit Solo 2650

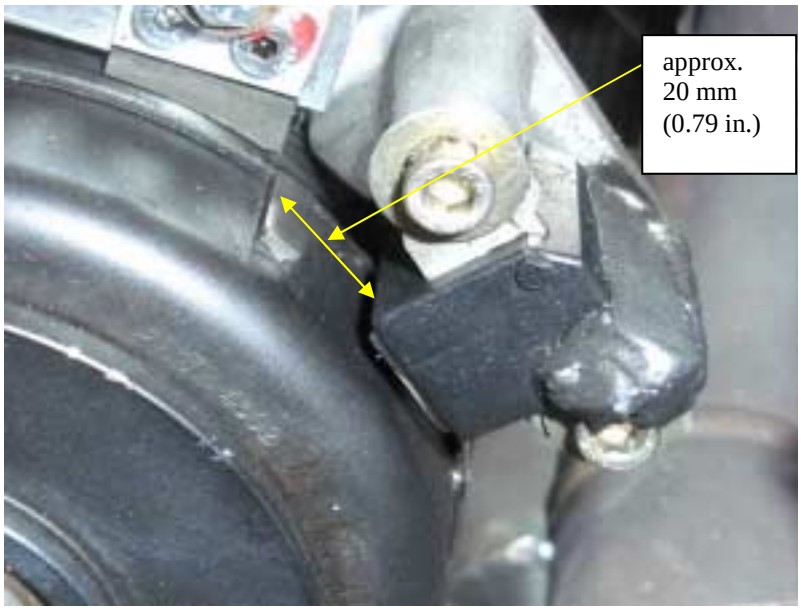
Zeichnungsnr. 8E250

Ausgabe	Blatt-Nr.	Datei
G	1 v. 1	DG808BC_7.SCH

DG Flugzeugbau GmbH **Service Info 69-10**

DG-800B, DG-808C, DG-500MB Adjustment of propeller after jump of drive belt

If during engine retraction the propeller can't be stopped in the vertical position, the relation between propeller and motor must be checked. With the propeller vertical, there should be an approx. 20mm distance (as in the picture to the right).
See also: Maintenance Manual DG-800B, DG-808C and DG-500MB section 1.11.4



If the drive belt jumped, the problem may be easily corrected with an approx. 30mm wide by 100mm long piece of Mylar tape.
If the distance is less than 20mm, for instance 0mm, the piece of Mylar tape must be inserted as shown in the photo below and run between the bottom pulley and drive belt by turning the propeller. The propeller must be turned until the tape fully emerges from the other side.
If the distance is much larger than 20mm, the piece of Mylar tape should be placed on the other side.
Repeat the procedure as necessary until the correct distance is reached.

Issued: 14. May 2010
Author: Wilhelm Dirks