

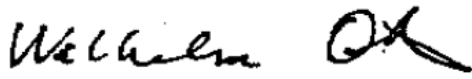
Maintenance Manual DG-300

Recommendations to order spare parts

Please try to determine the exact designations of the spare parts for your order using the maintenance manual. This is to guarantee a fast and correct delivery of the parts.

The designations are to find in the sections system description, instructions for assembly and servicing work and especially in the diagrams of the maintenance manual.

Yours sincerely
GLASER-DIRKS FLUGZEUGBAU GMBH

A handwritten signature in black ink, appearing to read 'W. Dirks', followed by a stylized flourish or initial.

Dipl, Ing. W. Dirks

Maintenance Manual DG-300

0 General

0.1 Amendments

No.	Page	Description	Date
0.1	all	Combination of the initial Maintenance Manuals of the Variants DG-300, DG-300 ELAN, DG-300 ELAN ACRO, DG-300 Club ELAN and DG-300 Club ELAN ACRO, new standardized format	December 2009
0.2	0.7, 1.10, 1.12, 2.1, 2.4, 3.2, 4.1, 4.2, 5.1, 5.2, 6.1, 6.2	Miscellaneous changes to the contents of the latest amendments of the initial maintenance manuals	December 2009
1	0.1, 0.3 – 0.8, 1.4, 2.1, 6.3, 8.8 – 8.12, 9.9 – 9.12	TN DG-SS-05 Manual revision Inclusion of TN359/4 and TN359/24	August 2020

Page intentionally left blank

Maintenance Manual DG-300

0.2 List of effective pages

Section	page	issued	replaced	replaced	replaced
0	0.0	December 09			
	0.1	"			
	0.2	"			
	0.3	"			
	0.4	"	August 20		
	0.5	"	August 20		
	0.6	"	August 20		
	0.7	"	August 20		
	0.8	August 20			
1	1.1	December 09			
	1.2	"			
	1.3	"			
	1.4	"	August 20		
	1.5	"			
	1.6	"			
	1.7	"			
	1.8	"			
	1.9	"			
	1.10.	"			
	1.11	"			
	1.12	"			
2	2.1	December 09	August 20		
	2.2	"			
	2.3	"			
	2.4	"			
	2.5	"			
	2.6	"			
3	3.1	December 09			
	3.2	"			
	3.3	"			

Maintenance Manual DG-300

List of effective pages (cont.)

Section	page	issued	replaced	replaced	replaced
4	4.1	December 09			
	4.2	"			
	4.3	"			
	4.4	"			
	4.5	"			
	4.6	"			
	4.7	"			
	4.8	"			
5	5.1	December 09			
	5.2	"			
6	6.1	December 09			
	6.2	"			
	6.3	"	August 20		
7	7.1	December 09			
Diagrams					
8	8.1	December 09			
	8.2	"			
	8.3	"			
	8.4	"			
	8.5	"			
	8.6	"			
	8.7	"			
	8.8	"	August 20		
	8.9	"	August 20		
	8.10	"	August 20		
	8.11	"	August 20		
	8.12	August 20			
Enclosures					
9	9.1	31.01.84			
	9.2	19.08.87			
	9.3	December 09			
	9.4	"			
	9.5	"			
	9.6	"			
	9.7	Dec. 84			
	9.8	Oct. 87			
	9.9	August 20			
	-9.12				

0.3 Table of contents

Section content	page
0 General	0.1
0.1 Amendments.....	0.1
0.2 List of effective pages	0.3
0.3 Table of contents	0.5
0.4 Airworthiness limitations	0.8
0.4.1 Repairs.....	0.8
0.4.2 Life time of the airframe	0.8
0.4.3 Life time of equipment and components.....	0.8
0.4.4 Service time, maintenance documents of equipment and components	0.8
1 System description and adjustment data	1.1
1.1 Wing and tailplane setting data	1.1
1.2 Elevator deflections and adjustment	1.2
1.3 Rudder	1.4
1.4 Aileron control	1.5
1.5 Airbrake control circuit, wheelbrake	1.6
1.6 Landing gear.....	1.7
1.7 Tow hooks	1.9
1.8 Water ballast system	1.9
1.9 Massbalance and weights of control surfaces	1.11
1.10 Fore and aft play of the wings.....	1.12
2 Inspections.....	2.1
2.1 Daily inspection.....	2.1
2.2 Regularly inspections	2.1
2.3 Inspection after a heavy landing	2.2
2.4 Inspection procedure for increase of service time	2.4
3 Maintenance	3.1
3.1 General maintenance.....	3.1
3.2 Maintenance of the airframe	3.2
3.3 Greasing and oiling	3.2
3.4 Damage of the airframe.....	3.3

Maintenance Manual DG-300

Section content	page
4 Detailed instructions for assembly and servicing work	4.1
4.1 Replacement of the water ballast bags	4.1
4.2 Replacement of control circuit cables	4.1
4.3 Adjustment work on the control circuit	4.2
4.4 Removal and installation of the retractable landing gear.....	4.2
4.5 Removal and installation of the fix landing gear	4.3
4.6 Removal and reinstallation of the ailerons.....	4.4
4.7 Increasing the aileron massbalancing	4.7
4.8 Fixing excessive free play of the canopy	4.8
5 Centre of Gravity measurements-weighing	5.1
6 Instrument- und equipment list	6.1
6.1 Air speed indicator (0 - 300 km/h, 165 kts)	6.1
6.2 Altimeter.....	6.1
6.3 Harness (seat)	6.1
6.4 Compass (as min. equipment only necessary for cloud flying).....	6.2
6.5 VHF transceiver	6.2
6.6 Variometer (as min. equipment only necessary for cloud flying)	6.2
6.7 Turn and bank indicator (as min. equipment only necessary for cloud flying)	6.2
6.8 Outside air temperature gauge	6.3
6.9 Beschleunigungsmesser	6.3
6.10 Instruments which are not part of the minimum equipment:.....	6.3
7 Liste der Spezialwerkzeuge.....	7.1
8 Diagrams	8.1
Diagram 1 Elevator control circuit, adjustment	8.1
Diagram 2 Rudder control circuit, retractable landing gear	8.2
Diagram 3 Fix landing gear.....	8.3
Diagram 4 Aileron and spoilers control circuits, wheel brake.....	8.4
Diagram 5 Tow hook, water ballast release systems DG-300, DG-300 ELAN, DG-300 ELAN ACRO	8.5
Diagram 6 Tow hook, water ballast release systems DG-300 Club ELAN, DG-300 Club ELAN ACRO	8.6
Diagram 7 Empty weight centre of gravity range.....	8.7
Diagram 8 Placards DG-300 & DG-300 ELAN	8.8
Diagram 9 Placards DG-300 ELAN ACRO	8.9
Diagram 10 Placards DG-300 Club ELAN.....	8.10
Diagram 11 Placards DG-300 Club ELAN ACRO	8.11
Diagram 12 Placards if TN359/24 instruction A is applicable	8.11

9. Enclosures

Installation sketch EFK	9.1
Installation sketch 3 ED	9.2
instruction: conversion from fix to retractable landing gear	9.3
instruction: conversion from retractable to fix landing gear	9.5
drawing FW 25: front landing gear lock.....	9.7
Installation sketch EFWK	9.8
L'Hotellier maintenance instructions IMA 10.01	9.9

0.4 Airworthiness limitations

0.4.1 Repairs

Repair or replace damaged parts prior to next flight. Follow the instructions of the DG-300 repair manual for repairs of the airframe. Repairs outside the scope of the DG-300 repair manual and major repairs must be accomplished at an approved repair station or by an approved mechanic rated for composite aircraft structure work in accordance with DG repair methods.

Use only genuine spare parts.

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

0.4.2 Life time of the airframe

The maximum allowable operating time for the Variants DG-300, DG-300 ELAN, DG-300 ELAN ACRO, DG-300 Club ELAN and DG-300 Club ELAN ACRO 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 **fabric straps of the safety harness** have to be exchanged according to the instructions of the respective manufacturer. If no limitations are given, exchange after 12 years.
- b) other components:
All other components such as tow hook, wheels, gas struts, control system parts, bolts, pins etc. have no life time limitation, but should be replaced when worn, damaged or disqualified by excessive corrosion.

0.4.4 Service time, maintenance documents of equipment and components

Follow the instructions of the respective manufacturer:

- a) tow release: Operating manual latest approved version for
Only DG-300 ser.No. 1-6: Safety release “SH72” and S72”
all other ser.No.s:
release mechanism safety release G 72 and G 73
or tow release Series: Europa G 88 Safety Tow Release
and if installed,
nose release E 72 and E 75
or tow releases Series: E 85 Nose Tow Release
- b) safety harness: instructions of the manufacturer.
- c) minimum instrumentation: instructions of the manufacturer.

1 System description and adjustment data

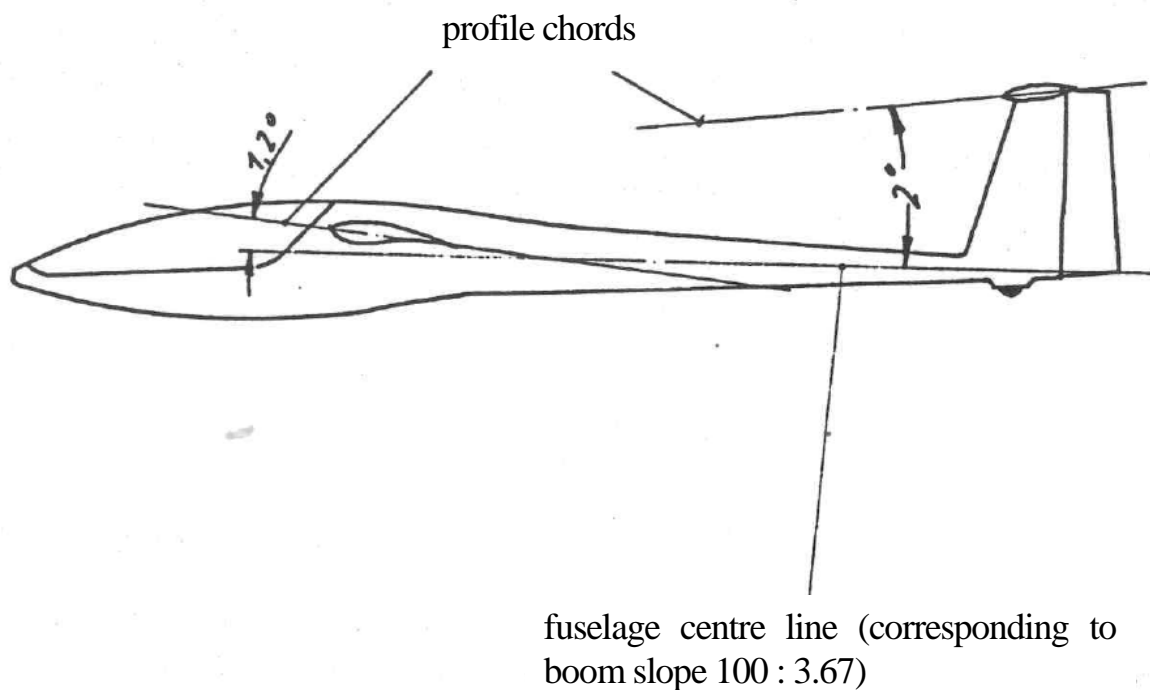
1.1 Wing and tailplane setting data

Wing

Sweep Back (leading edge): 0 at wing tip (tolerance ± 5 mm, $\pm 0,2$ inch)

Dihedral (leading edge line): $3^\circ = 377$ mm at the tip (14,84 inch)

Angles of incidence



Wing oscillation frequency: 136 up to 140 /min.

Aircraft should rest on both wheels during frequency measurements.

1.2 Elevator deflections and adjustment

1.2.1 Control circuit

see diagram 1

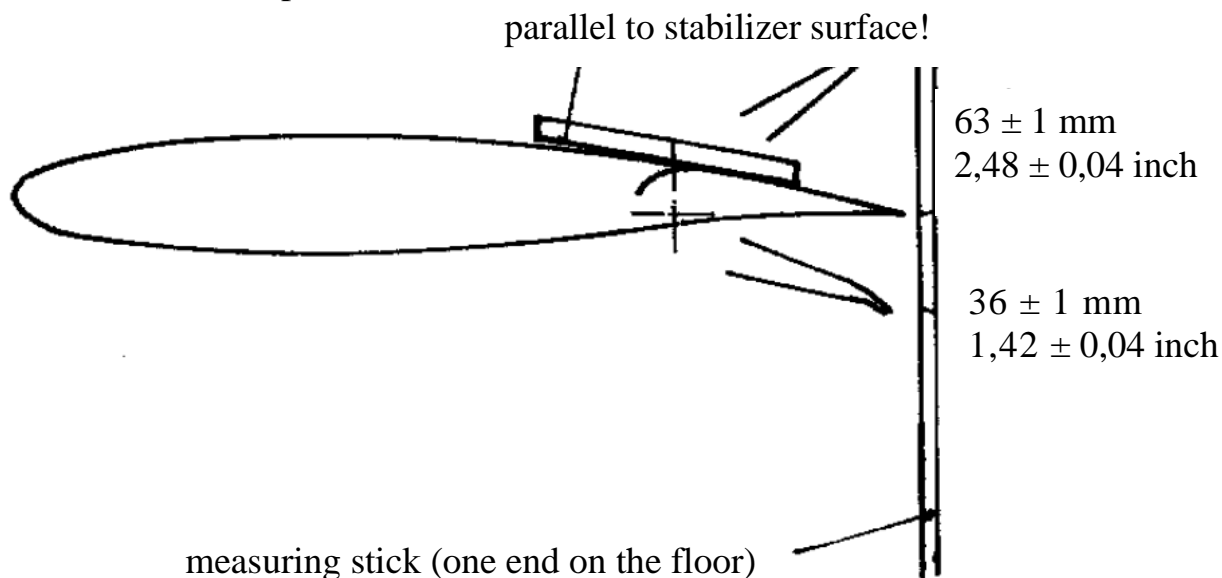
1.2.2 Elevator deflections and tolerance:

Up $63 \pm 1 \text{ mm}$ $2,48 \pm 0,04 \text{ inch}$

Down $36 \pm 1 \text{ mm}$ $1,42 \pm 0,04 \text{ inch}$

measured 150 mm (5,9 inch) from hinge axis.

The adjustment is made at the base of the control column. To measure the displacement lay a straight edge over the elevator and trailing surface of the stabilizer (which is flat in this area). The straight edge must lie parallel to the stabilizer surface. Holding a measuring stick with one end on the floor mark the 0 point on the stick. Then measure the up and down displacements from this zero point.



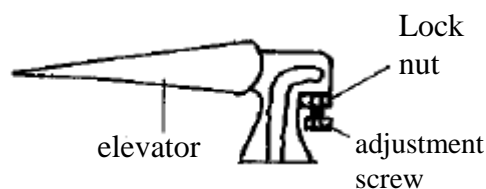
1.2.3 Elevator stops:

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:

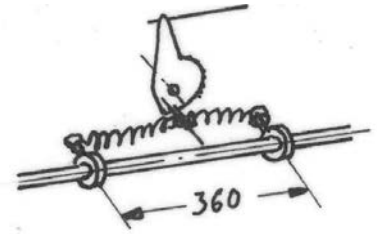
With the elevator held fixed at the 0 point, the free play at the top of the control column can be 3 mm (0,12 inch).

Within the automatic elevator connection, there should be no free play, noticeable when the elevator is moved at its trailing edge. And free play can be reduced by screwing in the adjustment screw on the automatic connector funnel.



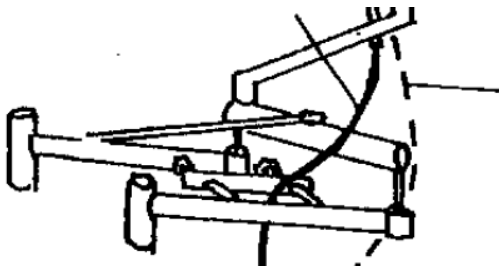
1.2.5 Trim:

The automatic trim mechanism should be adjusted so that with full forward (nose down) trim, the control column is from 1 to 1,5 cm (0,4 – 0,6 inch) away from its maximum forward position. The tensioning of the trim mechanism springs is to adjust as shown on the sketch. (360 mm; 14,2 inch)



1.2.6 Repair of the automatic trim mechanism bowden cable:

In the event of a replacement bowden cable being installed, it should be ensured that the cable passes between the two parallel arms of the control column mechanism as shown in the sketch.



If the cable passes outside the mechanism control column movement could be blocked.

1.3 Rudder

1.3.1 Rudder Control circuit

see diagram 2

1.3.2 Rudder deflections and tolerance:

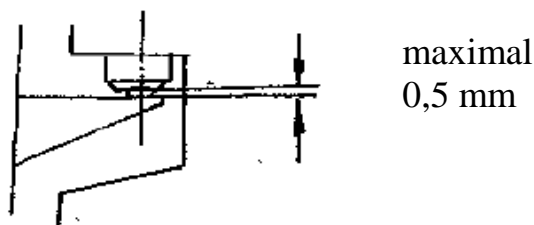
$\pm 215 \pm 5 \text{ mm}$ $(\pm 30^\circ)$ $(8,46 \pm 0,2 \text{ inch})$
measured at 414 mm (16,3 inch) from the hinge axis.

1.3.3 Rudder stops

The rudder Stops are located at the lower hinge point and can be adjusted with a 10 mm open end spanner.

1.3.4 Axial free play

The maximum allowable free play at the upper hinge point is 0,5 mm (0,02 inch).



1.3.5 Sealing the rudder

The rudder is sealed on both sides with a V sealing band (3M Scotch Flexodicht Band 2743 white) which is attached within the fin spar space. This seal is not to be removed. If damaged it should be replaced and sprayed with Teflon.

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 control

1.4.1 Control circuit

see diagram 3

1.4.2 Aileron deflections and tolerances

up	$62 \pm 3 \text{ mm}$	$(2,44 \pm 0,12 \text{ in.})$
down	$31 \pm 3 \text{ mm}$	$(1,22 \pm 0,12 \text{ in.})$
measured at 120 mm (4.72 in.) from hinge axis (at inboard end)		

1.4.3 Aileron stops

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

1.4.4 Free play

The max. free play measured at the trailing edge of the ailerons measured at 120 mm (4.72 in.) from hinge axis should not exceed 2 mm (0.08 in.) The control stick and should be in neutral position. For the measurement fix the aileron of the opposite wing.

With larger free play the hinge axis (Part No. 2F7/3) should be replaced.

With both ailerons fixed, a maximum free play of 3 mm (0.12 in.) at the top of the control stick is allowed.

1.5 Airbrake control circuit, wheelbrake

1.5.1 Control circuit

see diagram 3

The wheelbrake cable is connected to the airbrake torsion shaft (part 3 St 3).

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 13 mm open ended spanner.

b) Airbrake extension height

The height the airbrakes extend depends on the wheelbrake adjustment.

c) Wheel braking force

With insufficient braking effect, the wheelbrake can be adjusted by a screw on the end of the bowden cable housing, located on the forward landing gear fork above the brake actuating lever.

The wheelbrake should not be adjusted any further than that which would allow a minimum airbrake extension above the top of the wing of 38 mm (1,5 in.).

1.5.3 Airbrake stops

The rear airbrake control circuit stop at the cockpit bulkhead is not adjustable. The forward control stop is in the wings and not adjustable.

1.5.4 Free Play

Free play in the airbrake control system is of no effect. The airbrakes itself 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 Landing gear

A retractable landing gear (for all Models)

1.6.1 Landing gear Control circuit

see dDiagram 2

1.6.2 Adjustment

- a) Should the landing gear not retract fully, an adjustment can be made by screwing out the universal pushrod joint on pushrod No. FW 9a/3 with a 10 mm open end spanner.
- b) The lock in extended position is by means of the gas strut in the landing gear box and additionally by a rubber buffer in the cockpit. The clearance between the locking latch at the handle and the front end of the rubber buffer should be 0,5 to max. 1 mm (.02 to max. .04 in.) with the spring suspension of the landing gear fully extended.

Adjustment can be made at the mounting of the rubber buffer.

Without TN 359/22: The friction of the handle in sense of rotation should be adjusted so, that you can just rotate the handle.

With TN 359/22: A torsion spring is installed to keep the handle in the locked position.

1.6.3 Free Play

Free play between lever FW 8b and the pivot bar FW 21/3 is not allowed. If there is any free play, then the two securing bolts M 6 x 40 should be tightened with a 10 mm open end spanner. If there is still some free play, the bolts should be removed and the holes drilled out and reamed to diameter 8 H 7. M8 x 40 LN 9037 bolts should then be installed.

1.6.4 Main wheel tyre pressure:

retractable landing gear	3,5 bar	(49 psi)
fix landing gear	3,0 bar	(42 psi)

1.6.5 Tail wheel tyre pressure:

2 bar	(28 psi)
-------	----------

B Fix landing gear

(only DG-300 Club ELAN and DG-300 Club ELAN ACRO))

1.6.6 System

see diagram 3

1.6.7 Conversion to retractable landing gear

The conversion is possible, as the mounting bushes in the landing gear box are the same and the stands for the control circuit are already installed.

Further details see enclosure to this manual.

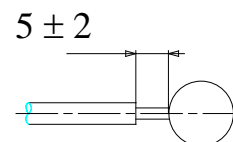
1.7 Tow hooks

1.7.1 Tow release circuit

see diagram 5 and installation sketch EFK in case an optional hook for aerotow is installed.

1.7.2 Adjustment

There should be 5 ± 2 mm (0.2 in. \pm 0.08 in.) space between the tow release knob and the nylon cable guide.



1.7.3 Check

The ring muzzle of the C.G. hook should not be bent or ground down and 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 an 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 page 3 of this maintenance manual.

1.8 Water ballast system

DG-300, DG-300 ELAN and DG-300 ELAN ACRO see diagram 5

DG-300 Club ELAN and DG-300 Club ELAN ACRO see diagram 6

a) Wing tanks

1.8.1 Water ballast release circuit

see diagram 5

1.8.2 Adjustment

For the dump valve in the closed position, there should be 1 mm (.039 in.) space between the 8 mm (.315 in.) diameter PVC rod from the dump valve, and the lever plate 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).

1.8.3 Servicing

see sect. 4.1

b) Fin tank DG-300, DG-300 ELAN und DG-300 ELAN ACRO

1.8.4 Fin tank adjustment

The release cable must be adjusted so, that the wing tank handles only can be opened, when the fin tank has been opened fully.

1.8.5 Fin tank inspection

- a) According to sect. 2.2.1 a special inspection is to be carried out on the fin ballast tank system. Therefor the tailwheel is to be dissassembled and the cover plate in the tailwheel box to be unscrewed.

Check the control cable and the lever of the valve carefully for wear.

The control cable has to be checked at the operating lever in the cockpit too. If the cable or the lever is worn, it is prohibited to use the fin tank any more. Please contact DG Flugzeugbau for a detailed repair instruction.

The dump time of the full fin tank is to measure. 120 sec. should not be exceeded.

Check the calibration of the outside airtemperature gauge.

- b) in addition for fin tank with measuring stick

If the dump time increases 120 seconds, the tank may be flushed through the dump hole with the valve in open position and the fuselage in inverted position for some minutes. Therefor the strainer at the filling hole is to be taken out.

Check the water quantity indicator measuring stick for frictionless movement and proper calibration.

- c) Outside air temperature gauge: Check for correct indication.

1.9 Massbalance and weights of control surfaces

After repairs or repainting the control surfaces weights and moments should not exceed the following limits:

Control surface	Weight		Moment		Spring balance reading when attached to the points described	
	kg (lbs)		kg · cm (lbs · inch)		kg (lbs)	
	max.	min.	max.	min.	max.	min.
Rudder (with massbal.)	4 (8,82)	2,5 (5,51)	6 (5,21)	4 (3,47)	0,3 (0,661)	0,2 (0,441)
Elevator (pushrod disconnected)	2,2 (4,85)	1,6 (3,53)	8,7 (7,55)	6,7 (5,82)	0,58 (1,279)	0,447 (0,985)
Aileron (with massbal.)	5,7 (12,57)	3 (6,62)	9,9 (8,55)	8 (6,94)	0,66 (1,45)	0,533 (1,175)

Caution:

Before any changes to the massbalance weights are made, contact the Glaser-Dirks factory. For changes at the ailerons see also sect. 4.5.

Method for determining control surface moments

Rudder:

Disconnect rudder cables, lay the fuselage on its side so that the fin is horizontal. Attach (by tape) a spring balance to the lower end of the rudder 200 mm (7.87 inch) behind the hinge axis.

Elevator:

Hang the elevator friction free on its hinge points (pushrod disconnected) and attach the spring balance 150 mm (5.9 inch) behind the hinge axis.

Aileron:

Hang the aileron friction free on its hinge points(pushrod disconnected) and attach the spring balance 150 mm (5.9 inch) (countour brake) behind the hinge axis.

1.10 Fore and aft play of the wings

With the aircraft fully rigged move the wings fore and aft to determine at which shear pin the most play exists.

Adjustment:

Derig the gilder roughen the area around the shear pin and glue a washer inside Ø 16,5 mm (0,65 in.), 0,25 mm (0,01 in.) thick onto the fuselage using a recognized metal glue (ie Stabilit Express). Note on the fuselage with a waterproof marker the thickness of the washer (s). Rig the aircraft and check the free play again.

Tolerances

Free play should be adjusted if you hear a rattling sound when moving the wings backwards and forwards. The max. amount of free play can also be determined as follows: Measure the free play at each lift pin with a feeler gauge. Sum up the free play.

The free play of all 4 pins together should not exceed 1 mm (0.04 in.)..

2 Inspections

2.1 Daily inspection

see flight manual sect. 4.1.

2.2 Regularly inspections

A) After 200 flighthours and during the yearly inspection:

Check rudder cables for wear especially around the S tubes on the rudder pedals. Worn rudder cables should be replaced - see sect. 4.2.

Check the sealing of the rudder - see 1.3.5.

B) Annual Inspection:

All control circuits:

Inspect all bolted connections and locking devices ie. locknuts, split pins etc.

Check all control circuits for adequate greasing and rust prevention (see 3.3.).

Check the control surfaces deflections (see 1.2 - 1.4).

Check the free play in all control circuits (see 1.2 – 1.6.)

Check the fore and aft play (1.10.).

Check the fin ballast tank system (see 1.8.5).

Tow hook:

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 yearly inspection.

C) Every 3 months:

Check the tension of the lines of the waterbag attachment (see sect. 4.1).

Check the emergency canopy release according to flight manual sect. 1.3 item 16.

D) Special inspections:

Tow hook: After a wheel up landing, the tow hook mechanism is to be carefully checked for any damage.

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

L'Hotellier control quick connects are mounted directly at the ailerons. They must not be checked every year but should be checked when removing the ailerons and during the inspections for increase of service time.

Inspection according to L'Hotellier IMA 10.1 (enclosed to the MM)

2.3 Inspection after a heavy landing

The whole Aircraft:

Check that the tailplane is still properly aligned in the vertical and horizontal axis.

Check the wing oscillating frequency with respect to previous checks.

Wings: Check the wing pins and bushes for any deformation – are there any white areas around the bushes?

Root rib: Are there any cracks at the rib/wing skin joint or rib/spar joint? If so, remove any paint or filler to see if the crack continues into the structure.

Any white areas around the bushes?

Other skins: Crushing, cracks, delaminations?
Note: hairline cracks on the wing leading edge running along the span and from the edges of the air-brake housing, are harmless.

Ailerons: Crushing, cracks, delaminations?
Hinge mounts checked? - Control circuit mountings checked?

Fuselage:

Fuselage to wing connections: White areas, increased free play, bent push rods-difficult assembly?

Torsion check: Hold the fuselage fixed, try to turn the fin around the fuselage – does it move easier than usual?
By applying this torsion are any cracks made visible?

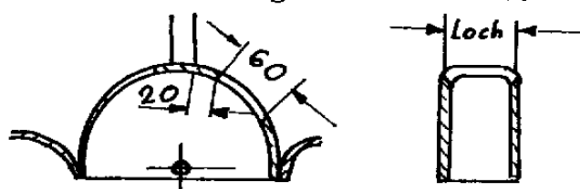
Fuselage - Fin fairing: Cracks?

Remove gelcoat and any filler along the cracks, move the fin (push the fin towards the nose as well as applying torsion). Do the cracks penetrate the glass fibre structure?

To check the elevator control circuit and the bulkhead attachments in the fin area, the tailwheel should be removed and a hole cut into the tailwheel housing as shown in the sketch. After completing the checks, the hole should be glassed over using 3 layers of 92 125 glass cloth. Overlapping length should be 2 cm. Before applying the glass cloth, roughen an area at least 3 cm around the hole with sandpaper 80 grit.

For any repairs that need to be done see the repair manual. (20 mm = 0,8 in.; 60 mm = 2,4 in.; 3 cm = 1,2 in.)

Note: If a fin ballast tank is installed, there is a screwed in coverplate in the wheel box. For reinstallation seal again with silicone.



Tailplane attachment Increased free play? Cracks in the fin top rib, fin spar and with tailplane attachment, especially around the bushes?

Rudder mounts: Increased free play? White areas in the glass fibre, bent rudder stands?

Fuselage skin: outside: dracks, nicks, folds?
inside: white spots, zig zag white lines, cracks?
Has any bulkhead become loose?

Tow release: Especially after a wheel up landing check for dirt etc., check for proper functioning, has the tow release housing become detached from the fuselage?

Backrest bulkhead: Cracks? Shoulder strap attachment point?

Belly harness attachment points: Check for cracking around the mountings in the seat mould, excess free play?

Controls: Proper functioning and condition of all controls and adjustment mechanisms (rudder pedal adjustment, tow release, air brake, control column and trim etc.).

Instruments: Proper functioning? Dirt in the pressure sensing intakes?

Landing gear: Check to insure if properly aligned? No bent frames? Proper extension and retraction? Any dirt in the forward fork pivot?
Any white areas or cracks in the wheel box? Remove the baggage area floor panels and inspect the wheel box from above.

Landing gear control circuit condition?

Tail wheel: Any cracks or white patches around the attachment in the rear wheel box?

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.

3 Maintenance

3.1 General maintenance

(see flight manual section 5.7)

Exterior surfaces of the fibrereinforced plastic parts

The surfaces are coated by a UP-gelcoat. 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, 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 this 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. 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, do not stay on one spot.

Plexiglas canopy:

"Schwabbel" procedure see above. Therefore lock the canopy to the fuselage!

Metal parts:

The pins and bushes for rigging the aircraft are not surface protected and to be covered with grease all the time.

The other metal parts, especially the control stick and all handles should be preserved with metal polishes occasionally.

3.2 Maintenance of the airframe

Apart from the care of the surfaces see above and greasing and oiling (see maintenance manual 3.3) the aircraft is service free.

After a landing in a soft field, the landing gear box and tow hook should be thoroughly cleaned.

3.3 Greasing and oiling

Every year your DG-300 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:

- Aileron drive connection at the aileron.
- 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 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 landing gear in the landing gear box.
- Clean and grease all control surfaces hinges.
- Clean and grease the control hook ups for aileron, 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 pilot force needed for emergency release with the red ball handle, using a spring balance. The force should not exceed 200 N (44 lbs.)
- Clean and grease the guide of the fin ballast tank handle in the cockpit.

Note: The greases we recommend are lithium-based pressure-resistant anti-corrosion greases or lithium-soap greases (multi-purpose greases for rolling element bearings).

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 patches on any skin surfaces, these signal that something can be wrong.

With Major Damage contact the Glaser-Dirks factory immediately and send photographs and a damage report from a licensed inspector. With this information, the correct repair procedures can then be determined.

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

Additional information like a listing of all materials used in the DG-300 can be found in the repair manual.

Home repairs should not be attempted when:

- the main spars is damaged,
- 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.

4 Detailed instructions for assembly and servicing work

4.1 Replacement of the water ballast bags

Unscrew the attaching bolt attaching the lines to the root rib and attach an additional 5 m (16.5 ft.) long line dia. 3 mm (.12 in.) to each Nylon cord. Unscrew the water ballast dump valve connector. Remove the dump valve with attached water ballast bag out of its wing stand by pulling the valve towards the end of the wing. Remove the valve and ballast tank through the hole in the wing root. Remove the line and loosen the hose clamp. Replace the ballast tank and reverse the above procedures to install the new tank.

DG- 300 (ELAN) (ACRO): If you install the 95 l waterbag please make sure, that the nylon hose is inserted 40 mm (1.6 in.) into the valve, see diagr. 4.

The lines 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 the tension of the lines will be satisfactory even if the lines will strain.

But min. every 3 month you should check, if the lines are still tensioned. If not undo the knot and tie it again to the key ring (see above). 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 diagr. 4) should be greased too.

Fill the new water ballast tank(s) and check for water tightness.

Note: From serial no. 3 E 446 on there are two sets of lines holding the bag. The white lines are for the outboard end of the bag, the black lines hold the bag at its center, see diagram 4.

Separate lines must be attached to the white lines as well as to the black lines to remove the bag.

4.2 Replacement of control circuit cables

The following cable connections are approved:

3.2 mm (dia. 1/8 in.) 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 and the tow release cable.

The cable for the rudder pedal adjustment is 1.6 mm dia. LN 9374 or 1/16" MIL-W-1511 A with nicopress-sleeves 28-1-C Copper and the C groove of tool 64-CGMP should be used.

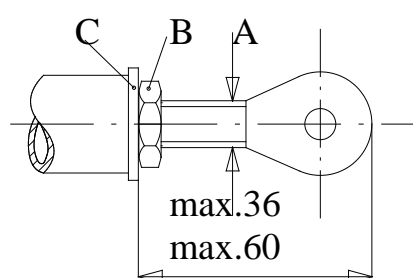
Attachment of the nicopress sleeves should only be done using the respective tool. All the procedures and checks noted by the tool manufacturers should be followed.

Please refer to Aircraft Inspection and Repair FAAAC 43.13-1 A too.

Caution: Control cables according to MIL-W383420 I/A (was MIL-W-1511 A) or ISO 2020 (was LN9374) should be used.

4.3 Adjustment work on the control circuit

- In all cases, new self locking nuts DIN 985.8 should be used.
- Bolts which are not secured with locking nuts have to be secured with Loctite 243. Before installing the bolt clean the thread and the inside thread with Acetone. Apply only 1 drop of Loctite on the bolt thread. Too much Loctite may cause damage when you try to loosen the bolt again.
- With all adjustment work, it should be ensured that the rod ends are not screwed out too far from the pushrod - see scetch 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 retractable landing gear

A. Removal

- Disassemble and remove the wheel axle (see diagr. 2).
- Remove the wheel brake cable at the brake lever by loosening the attachment screw.
- Remove the wheel ensuring that the hub locking pin comes free out of the left hand front fork.
- Rear fork: From inside the landing gear box remove the three bolts M 6 (SW 1) that secure parts FW 7 and FW 8 b. Remove the split pin at the gas strut attachment, retract the landing gear. Remove the clevis pin on the gas strut attachment, the gas strut can now be removed. After removing the baggage compartment floors, disconnect the pushrod FW 9a/3 from FW 8 b (SW 10). Remove part FW 8 b and FW 7. SW 10 = 10 mm open end spanner.
- Front fork: After removing the baggage compartment floors, the axle can be unscrewed and the whole thing removed through a 14 mm (0.55 in.) dia. hole drilled through the left hand fuselage side.

B. Installation

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

C. Replacement of the rubber shock absorbing pads

1. Disattach the rear fork – see sect. A.
2. Remove the adjustment screw M 5 (SW 8) = 8 mm open end spanner.
3. Replace the shock absorbing pads.
4. Place the rear fork in a vice or clamp together that the absorbing pads are compressed. Tighten the adjusting bolts for 30 mm (1,2 in.) clearance – see Diagram 2.
5. Reverse the above procedures to reinstall.

4.5 Removal and installation of the fix landing gear

Only DG-300 Club ELAN and DG-300 Club ELAN ACRO

A. Removal

1. Remove the wheel axis see diagram 3.
2. Remove the wheel brake cable at the brake lever by loosening the attachment screw.
3. Remove the wheel ensuring that the hub locking pin comes free out of the left hand front fork.
4. Remove the baggage compartment floors and rear cover.
5. Rear fork: From inside the landing gear box remove the 2 bolts M 6 (SW 10) that secure the parts FW 7.
6. Front fork: From inside the landing gear box remove the 2 bolts M 5 (SW 8) that secure the parts FW 17.
Remove the parts FW 17 with a rod diameter 5 mm(0.2 in.)..

B. Reinstallation

Reverse the above procedures.

Use a new brake cable.

Adjust wheel brake see sect. 1.5.2.

4.6 Removal and reinstallation of the ailerons

Only DG-300, DG-300 ELAN and DG-300 ELAN ACRO

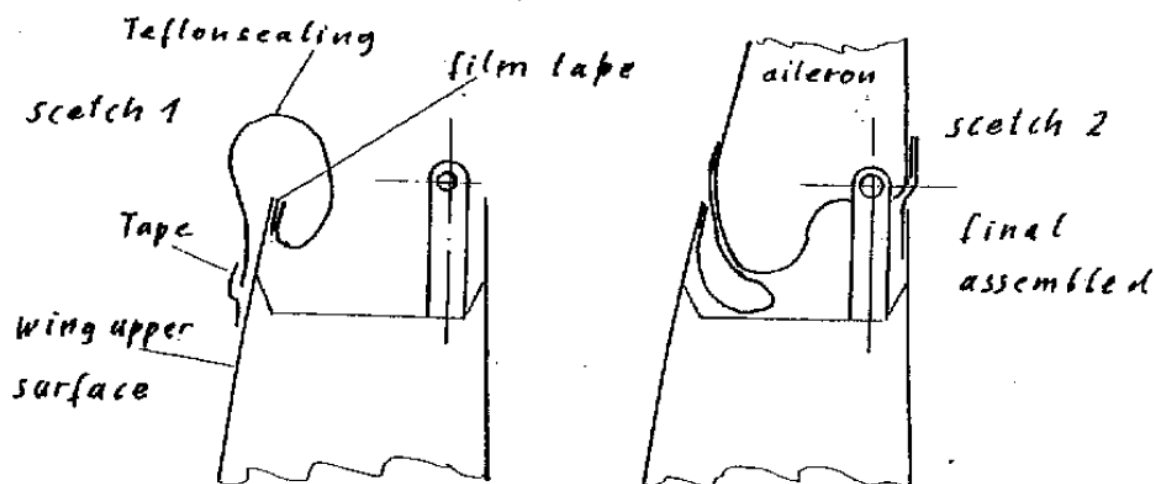
A. Removal

0. Remove the glasfibre cover plate from the wing-shell at the outboard end of the aileron cutout using a knife or a chisel.
1. Loosen the teflonsealing at one edge on the upper aileronsurface and tear it out.
2. Remove the selflocking nut and the washer at the outboard aileron hinge.
3. Remove the stop-bolt at the wing root.
4. Remove the spring pin from the sliding latch of the Hotellier connector at the aileron drive push rod. Disconnect the push rod.
5. Displace the aileron fully down and remove it from the wing by sliding in outboard sence.

B. Reinstallation of the ailerons and the teflonsealing

1. Prior to reinstallation remove the teflonsealing pieces from the lower aileronsurface at the hinges. Then clean off all remains of adhesive from the aileronsurface and from the wing side. Use petroleum ether (pure petroleum spirit).
2. Make a pencil mark 3 mm aft of the cutout for the aileron drive at the upper aileronsurface.
3. Reinstall the ailerons reversing A 6.
4. Displace the aileron so far that the pencil mark corresponds to the trailing edge of the wing. Hold the aileron in this position and enlongate the pencil mark along the trailing edge over the whole aileron span.
5. Remove the aileron again.
6. Install new film tape (e.g. 3M No. 465, 9 mm wide) at the innerside of the wing (see scetch) over the whole aileron span. Remove the cover paper.
7. Install the new teflonsealing (tefloncoated glasfibrefabric 50 x 0,08 mm etched on 1 side) see scetch. The etched (darker) side is to be glued. Fold the teflonsealing onto the upper wing surface and fix it there with tape.
8. Install a new film tape (see 6.) just in front of the pencil mark on the upper aileron surface. Do not remove the cover paper.
9. Reinstall the aileron by reversing A 3. to 6.). Use a new selflocking nut (M5 DIN 985 - 8 zn)

10. Displace the aileron fully downward and fix it in this position. Remove the tape which fixes the teflonsealing to the wing surface and push the teflonsealing into the gap inbetween wing and aileron until its end corresponds with the film tape on the upper aileron surface. Be careful to avoid wrinkles.
11. Now remove the cover paper from the film tape and press simultaneously the teflonsealing to the film tape.
12. Clean off surplus film tape (if there is any) with petroleum ether.
13. The cutouts for the hinges at the lower aileron surface are to be sealed again with new pieces of teflonsealing. Use the old pieces as patterns.
14. Push this pieces into the gap between wing and lower aileron surface as far as possible. Displace the aileron fully downward and mark the position of the teflonsealing pieces.
15. Displace aileron upwards. Glue film tape onto the marked area. Remove cover paper and press teflon pieces onto the film tape.
16. Clean off surplus film tape (if there is any) with petroleum ether.
17. Reinstall the coverplate see A 1. with contact adhesive (e.g. Pattex).
18. Finally check that you can reach the max. Upward aileron displacement (min. 65 mm, 2 18/32 in. measured at the inboard aileron trailing edge). In addition the teflonsealing pieces at the lower surface should not come out of the gap.



Only DG-300 Club ELAN and DG-300 Club ELAN ACRO:

A. Removal

1. Remove the glasfibre cover plate from the wingshell at the outboard end of the aileron cutout using a knife or a chisel.
2. Tear off the tape from the wing lower surface.
3. Remove the selflocking nut and the washer at the outboard aileron hinge.
4. Remove the stop-bolt at the wing root.
5. Remove the spring pin from the sliding latch of the Hotellier connector at the aileron drive push rod. Disconnect the push rod.
6. Displace the aileron fully down and remove it from the wing by sliding in outboard sence.

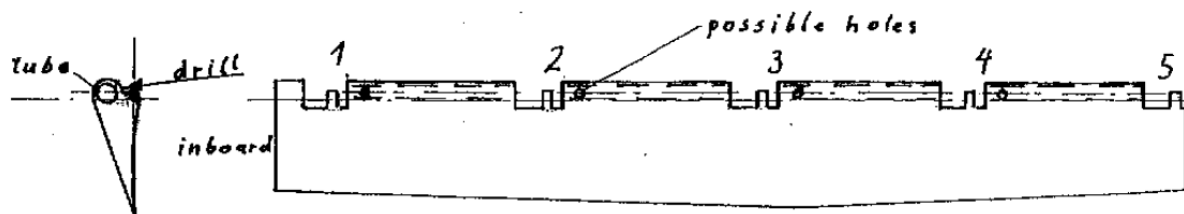
B. Reinstallation of the ailerons

1. Reinstall the aileron. Use a new selflocking nut(M 5 DIN 985-8 zn). Connect the push rod again and secure with the spring pin. Reinstall the stop-bolt at the wing root.
2. Clean off surplus film tape (if there is any) with petroleum ether (pure petroleum spirit).
3. Reinstall the coverplate see A 1. with contact adhesive (e.g. Pattex).
4. Seal the gap between aileron and wing on the lower surface with tape (Tesaband 651 white, 30 mm(1.2 in.) wide). Therefor displace the aileron fully upward.
5. Finally check that you can reach the max. upward aileron displacement (min. 65 mm, 2 18/32 in. measured at the inboard aileron trailing edge).

4.7 Increasing the aileron massbalancing

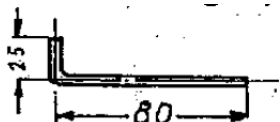
If the massbalance is out of limits after a repair the massbalancing may be increased as follows:

1. Place the disassembled aileron lower surface up.



2. There are tubes installed in the aileron nose inbetween the aileron hinges. You can fill the tubes with lead balls diameter ca. 2 mm (3/32 in.) by drilling 8 mm (5/16 in.) holes see sketch.
3. First fill the tubes inbetween hinge 2 and 3 and inbetween hinge 3 and 4. It is possible that these tubes may be already filled in some extent during manufacturing. If filling these tubes does not change the massbalancing as necessary you may fill the tube in-between hinge 4 and 5. Only in the case that this is still not enough, you can fill the tube inbetween hinge 1 and 2 too.

Note: To measure the massbalance prepare two 5 mm (3/16 in.) steel rods to suspend the aileron at hinge 2 and 4. In addition refer to sect. 1.9.



Each tube can accommodate approximately 300 g (0.66 lb) of lead balls. 100 g (0.22 lb) lead reduces the massmoment by 10 g (0.022 lb).

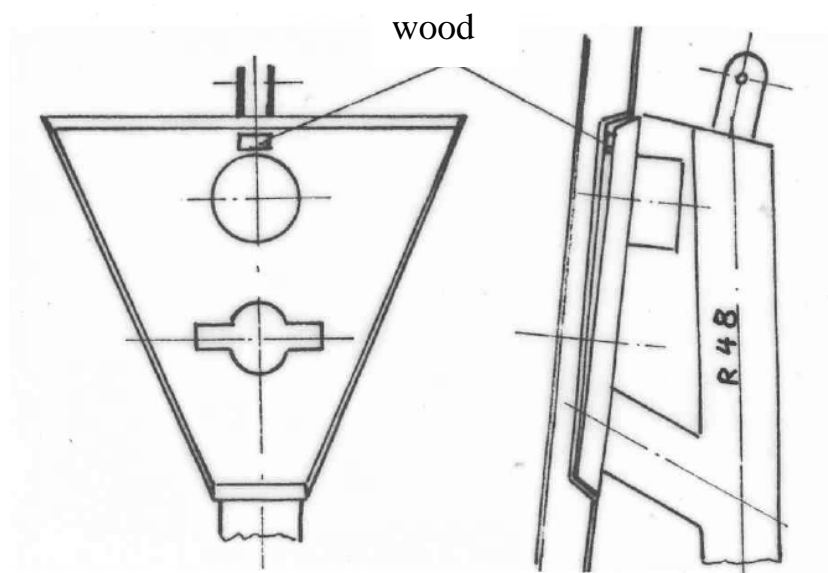
4. When the massbalancing is in limits you have to fill the tubes with thin Epoxy- or Polyester resin-hardener mixture to hold the lead balls in place.
5. Weigh the ailerons. The upper limit (see sect.1.9) should not be exceeded.
6. Record the new data for weight and massbalance in the aircraft logs.

4.8 Fixing excessive free play of the canopy

Shrinkage of the fibre reinforced plastic material may result in free play between the canopy hinge R 48 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 scetch). Put on the canopy and try to lock the canopy to the hinge. If this is not possible take off accordingly of the wood. If there is still free play, use a thicker piece of wood.



- e) Mix epoxyresin 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 and reinstall the canopy.
- i) Finally check the canopy emergency release according to flight manual page 8. The opening force for the emergency release should in no case exceed 20 daN (44 lbs)!

5 Centre of Gravity measurements-weighing

Method of weighing your DG-300:

1. Assemble the glider completely with gear down.
2. Place a scale under the tailwheel.
3. The fuselage must be leveled so that the top of the aft fuselage boom has a tail-down slope of 100 : 3.67.
4. Water ballast tanks should be empty.
5. Read weight of tail wheel: W₂
Read W₁ if suitable scales are available, otherwise see note below.
Be certain the wings are level so, that no load is applied.
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.

C.G. Empty:

$$X_{S \text{ empty}} = \frac{W_{2 \text{ empty}} \times b}{\text{Gross Weight}_{\text{empty}}} + a$$

Weight includes all accessories but excludes pilot and parachute. Remove loose objects from cockpit.

C.G. In Flight:

$$X_{S \text{ gross}} = \frac{W_{2 \text{ flight}} \times b}{\text{Gross Weight}_{\text{flight}}} + a$$

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

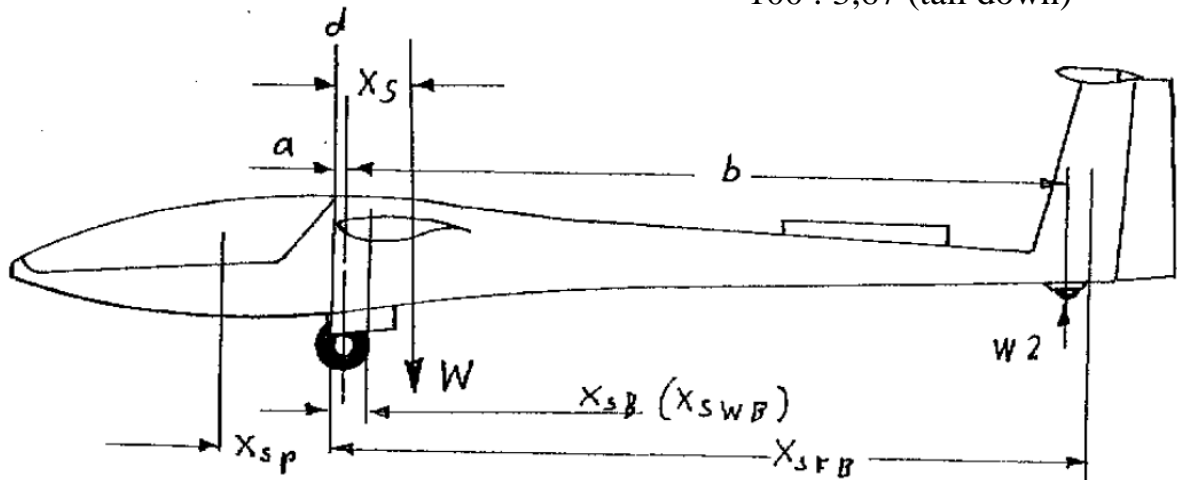
Datum (d):

Wing leading edge near root

Leveling line:

Aft fuselage boom slope

100 : 3,67 (tail down)



X_{SP}	\geq	549 mm	(21.6 inches)	Pilot
C.G. at WP = 70 kg				
X_{SG}	=	140 mm	(5.5 inches)	baggage
C.G.				
X_{SWB}	=	160 mm	(6.3 inches)	water
ballast tank				
X_{SSFL}	=	4180 mm	(164.6 inches)	fin
water ballast tank				

Empty weight C.G. measurements

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 certificated as Standard Catagory must have the weight and balance certified by a licensed Airframe Mechanic. Empty weight C.G. range is determined by reference to diagram 5. If the C.G. is out of limits, adjustments may be made by ballasting or by relocating equipment or accessories.

The result of the weight and balance has to be entered in the table AFM section 2.8 and in the aircraft logs.

If the min. cockpit load has changed, the new value must be entered in the cockpit data placard.

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

6 Instrument- und equipment list

6.1 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. 6421177	
	0-160 kts Ident.No. 6423177	
Winter	7 FMS 4(diam. 58mm)	TS 10.210/19
	0-300 km/h Ident.No. 7421177	
	0-160 kts Ident.No. 7423177	

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

Caution: As long as the DG-300 is operated with the reduced operation limitations according to TN 359/24 the colour marking must be modified. The last 3 digits of the ASI Ident No. are then 527 instead of 177.

6.2 Altimeter

Manufacturer	Type	Certification No.
Winter	4 FGH 10 (diam. 80mm)	TS 10.220/46
	1.000-10.000m Ident.No.4110	
	3.000-30.000ft Ident.No.4330	
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.

6.3 Harness (seat)

Manufacturer	Type	Certification No.
Gadringer	BAGU 5202	40.070/32
	SCHUGU 2700	40.071/05
Gadringer	BAGU 5202 G	40.070/32
	SCHUGU 2700 G	40.071/05
Autoflug	rubber coated adjuster bars	
	BAGU FAG-7 H-O	40.070/30
	SCHUGU FAG-7 D-O	40.071/21
	BAGU FAG-12 H-O	40.070/47
Schroth	SCHUGU FAG-12 D-O	40.071/25
	4-01-0104	40.073/11
Schroth	4-01-0108 with Option NOAH	40.073/11

6.4 Compass (as min. equipment only necessary for cloud flying)

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 Type 1
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°.

6.5 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
Filser /	ATR 720 A	10.911/74
Funkwerk	ATR 720 C	10.911/83
	ATR 600	O.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.

6.6 Variometer (as min. equipment only necessary for cloud flying)

Manufacturer	Type	Certification No.
Winter	5 StVM5 (Durchm.58)	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 (Durchm.80)	TS 10.230/13
	± 5 m/s Ident.No. 5251	
	±1000 ft/min Ident.No. 5252	
	± 10 kts Ident.No. 5253	

6.7 Turn and bank indicator (as min. equipment only necessary for cloud flying)

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

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

6.8 Outside air temperature gauge

only DG-300, DG-300 ELAN and DG-300 ELAN ACRO

Manufacturer	Type	Certification No.
Störk	TF 00-059 K (-20 - + 40 °C)	/

6.9 Beschleunigungsmesser

As min. equipment only for DG-300 ELAN ACRO and DG-300Club ELAN ACRO for Category A Aerobatics

Accelerometer capable of retaining max. and min. g-values with markings red radial lines at +7g and -5g.

Manufacturer	Type	Certification No.
AOA	BM 470-RL/L	MIL-A-5885 A
Bendix	2" 5V LITE	MS 28025-1
Bendix	3419-5A-A1	MS 28025-1
Burton Manufacturing Co.	B-6	MS 280025-1
INSCO	6610	MS 33638
Kelvin&HughesLtd.	KAE 0504K	MS 23009-1
Milhard Engineering Co.	ABU-4/A	MS 23009-1
QED/Inc.	ABU-4/A	MIL-A-25949(ASG)
Smiths	KAE 0504/K	MS 23009-1
Falcon Gauge	GM5 10-2	MIL-A-5885 C

6.10 Instruments which are not part of the minimum equipment:

Transponders: Transponders certified for aircraft use according to TSO or JTSC or ETSO standards 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.

After installation raise a new weight and balance report.

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 a appropriately rated fuses, the power consumption of each single part should not exceed 3A.

7 Liste der Spezialwerkzeuge

A. Special 8 mm wrench for front tailplane mounting screw (supplied with the glider)

B. Open end spanners

mm	mm
7	10
8	13
9	14

C. Allen key wrench 5 mm, 6 mm

D. Mounting tool for spring washer installation A (outside) and I (inside) size 8 to 14 mm (3 to 0.55 in.)

E. Steel rods: two dia. 4 mm (5/32 in.) - ca. 70 mm (3 in.) long

F. Spring balance: max. reading 50 N, 11 lbs.

G. Nicopress tool 64 - CGMP

H. **only DG-300 with fin ballast tank** (version with measuring stick):
1/4 inch extension piece 150 mm (6 inch) long with handle for the tank filler cap (supplied with the glider).

I. *only DG-300, DG-300 ELAN and DG-300 ELAN ACRO* (new version with out measuring stick):

Funnel with clear PVC hose inner diameter 12 mm (0.47 in.) 1,9 m (6 ft.) long and hose connector GRS 10-12 to fill the fintank (Z 28).

J. Hose outsside diameter 25 mm (1 in.) ca. 2 m (6.5 ft.) long to fill the wingtanks.

8 Diagrams

Diagram 1 Elevator control circuit, adjustment

Höhensteuerung
elevator control

DG-300, DG-300 ELAN, DG-300 ELAN ACRO,
DG-300 Club ELAN, DG-300 Club ELAN ACRO

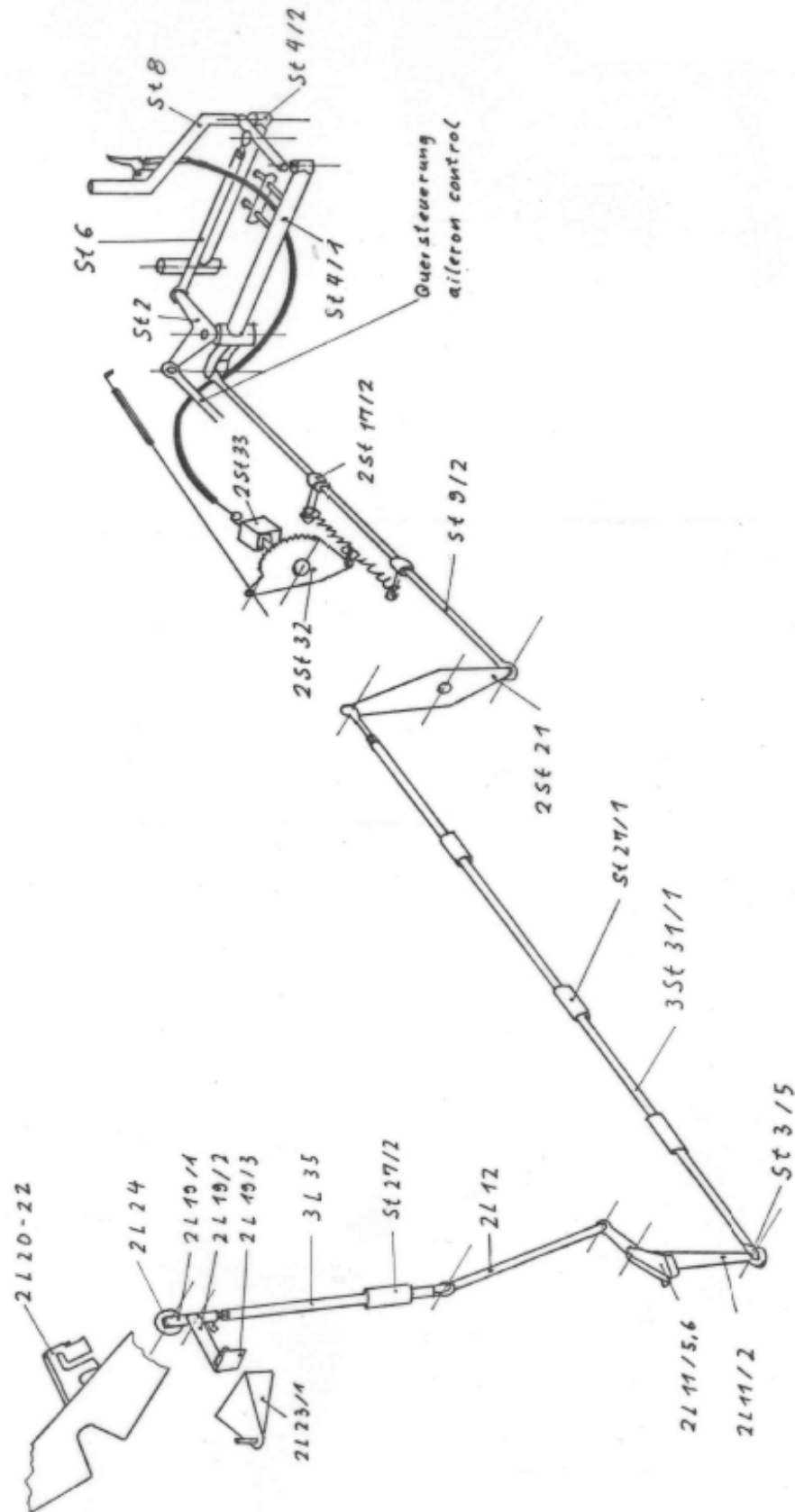


Diagram 2 Rudder control circuit, retractable landing gear

Seitensteuerung, Fahrwerk
rudder control, landing gear
DG-300, DG-300 ELAN, DG-300 ELAN ACRO,
DG-300 Club ELAN, DG-300 Club ELAN ACRO

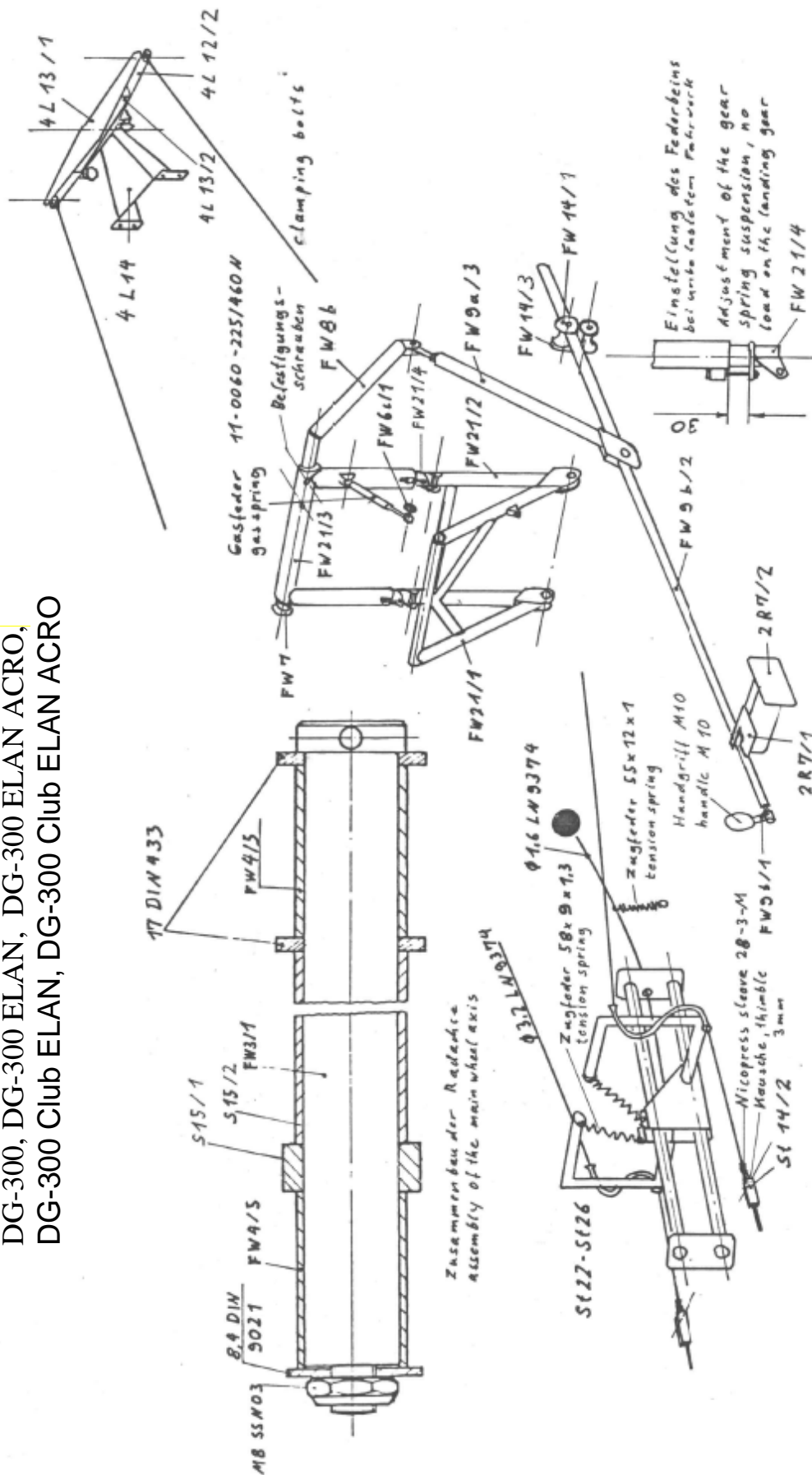
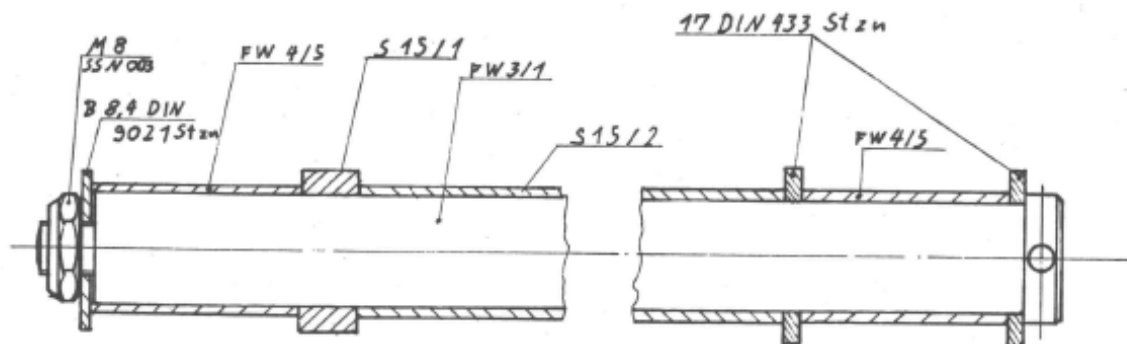
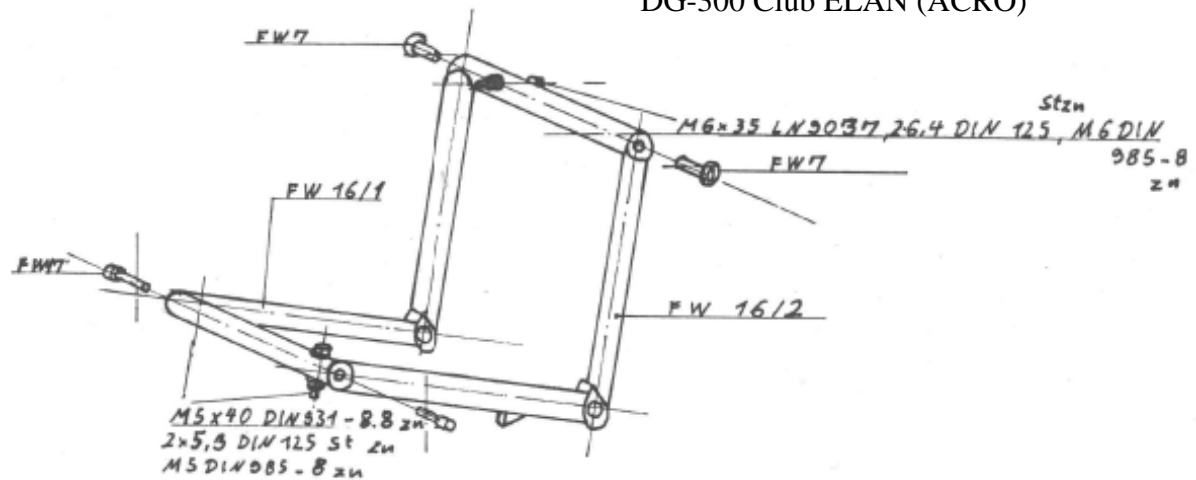
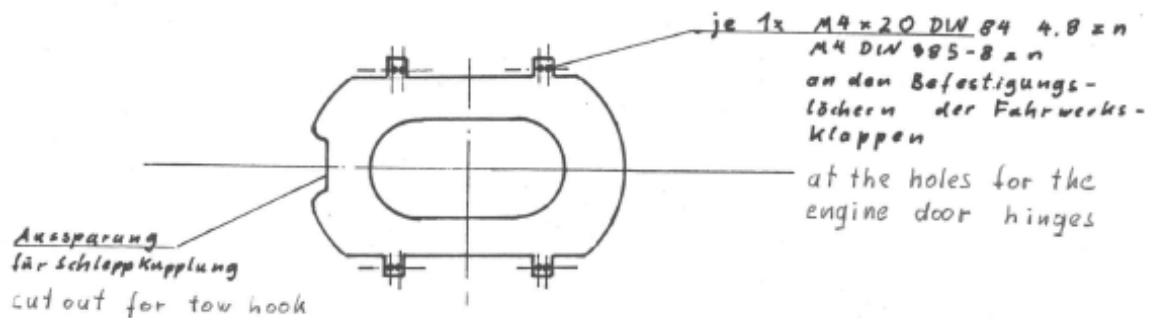


Diagram 3 Fix landing gear

DG-300 Club ELAN (ACRO)



Montage der Radachse
Assembly of the wheel axis

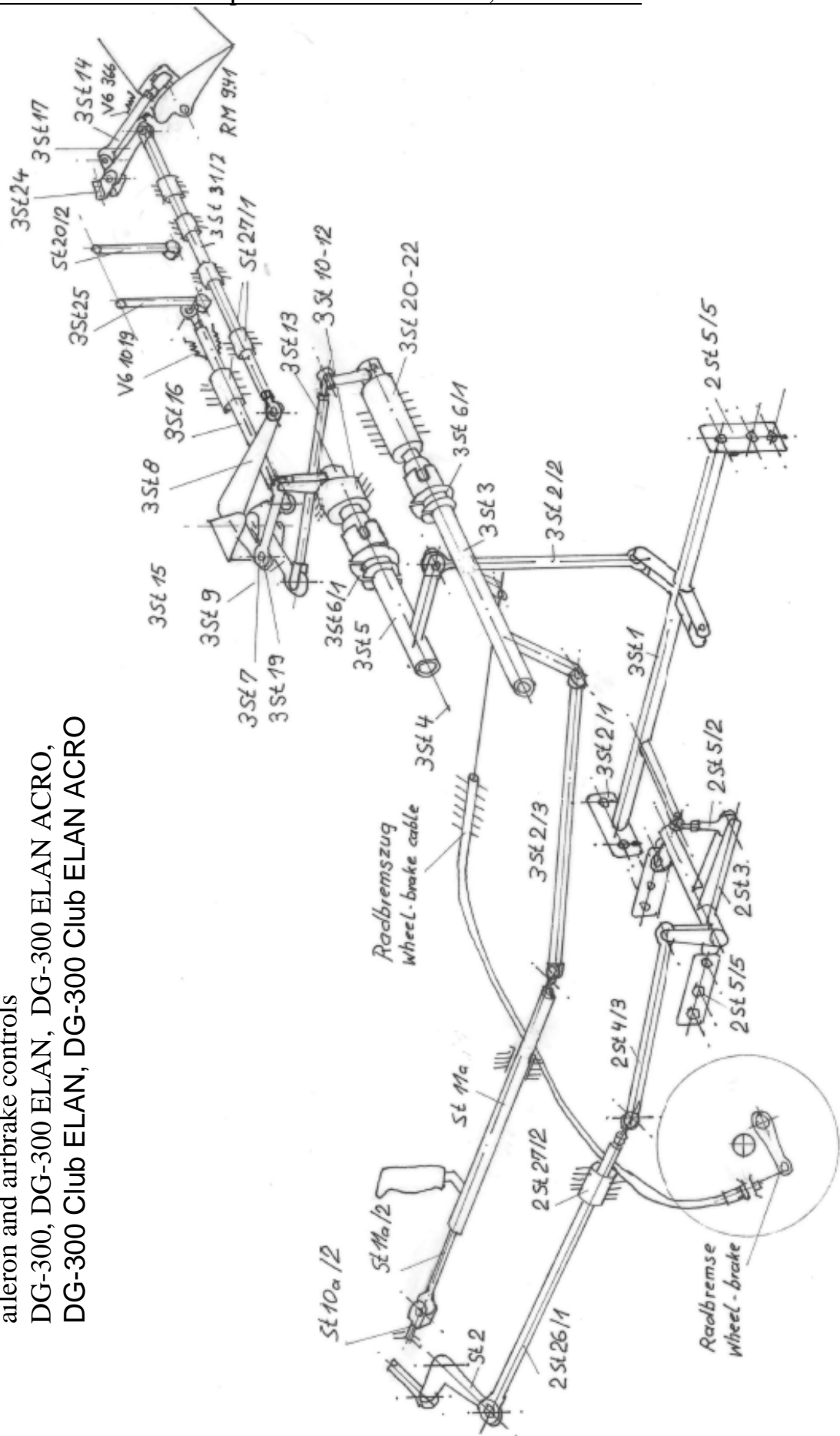


Montage der Radverkleidung
Assembly of the wheel fairing

Diagram 4 Aileron and spoilers control circuits, wheel brake

Querruder- und Bremsklappensteuerung
aileron and airbrake controls

DG-300, DG-300 ELAN, DG-300 ELAN ACRO,
DG-300 Club ELAN, DG-300 Club ELAN ACRO



Maintenance Manual DG-300

Diagram 5 Tow hook, water ballast release systems DG-300, DG-300 ELAN, DG-300 ELAN ACRO

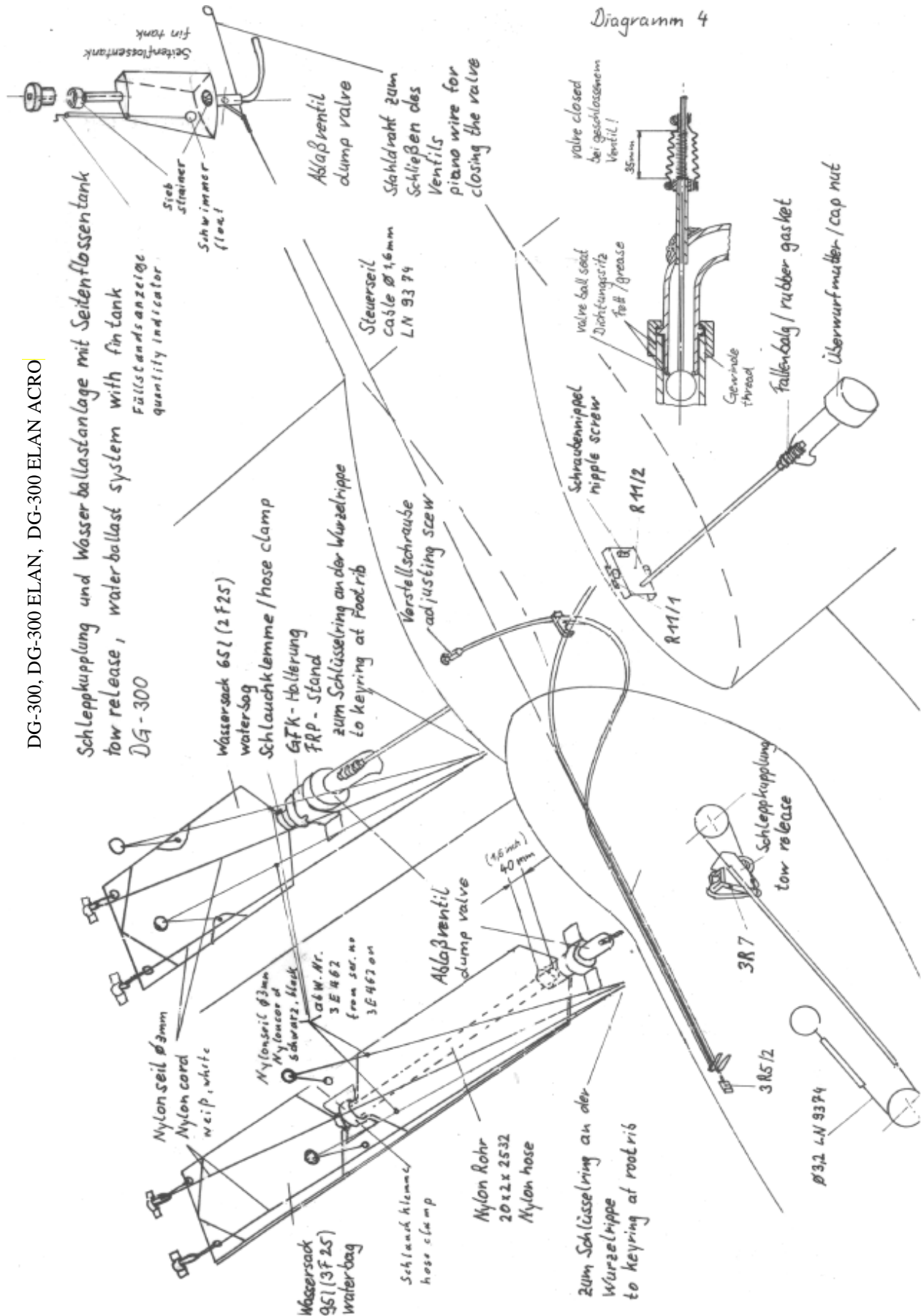
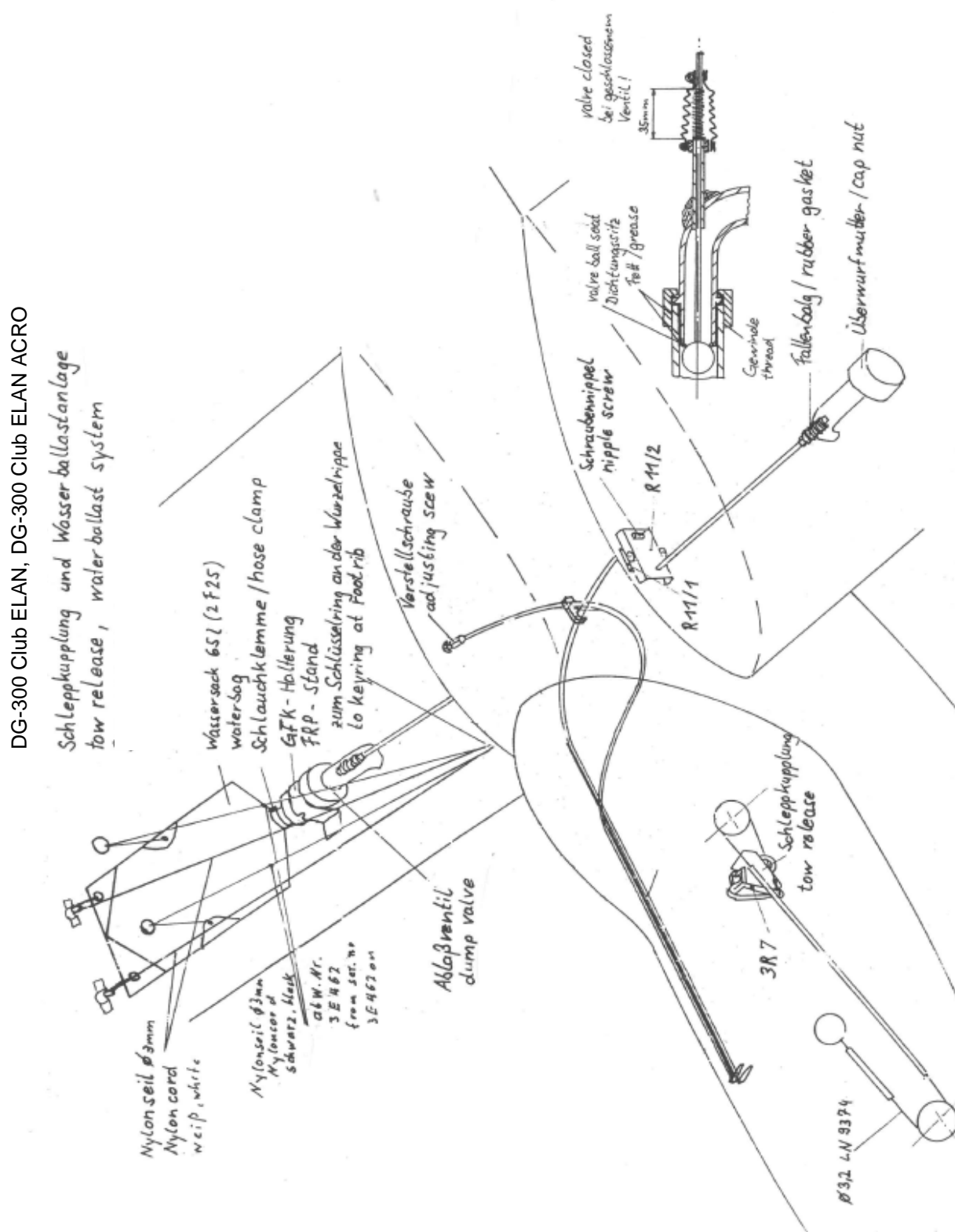


Diagram 6 Tow hook, water ballast release systems DG-300 Club ELAN, DG-300 Club ELAN ACRO



Maintenance Manual DG-300

Diagram 7 Empty weight centre of gravity range

Approved empty weight C.G. range

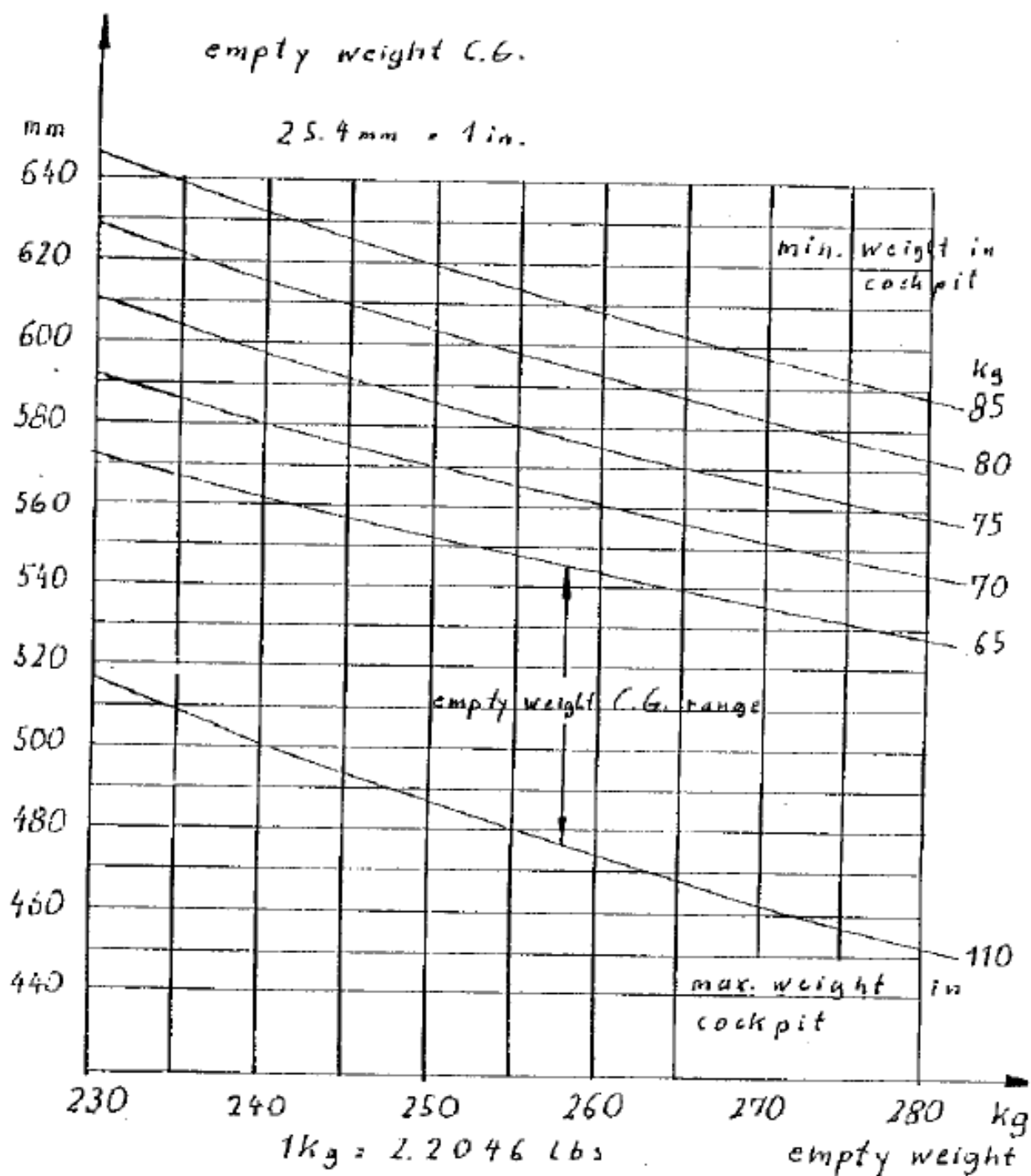


Diagram 8 Placards DG-300 & DG-300 ELAN

Caution: Placards 12 and 15 are only applicable if TN359/24 instruction B is applicable. otherwise see diagram 12.

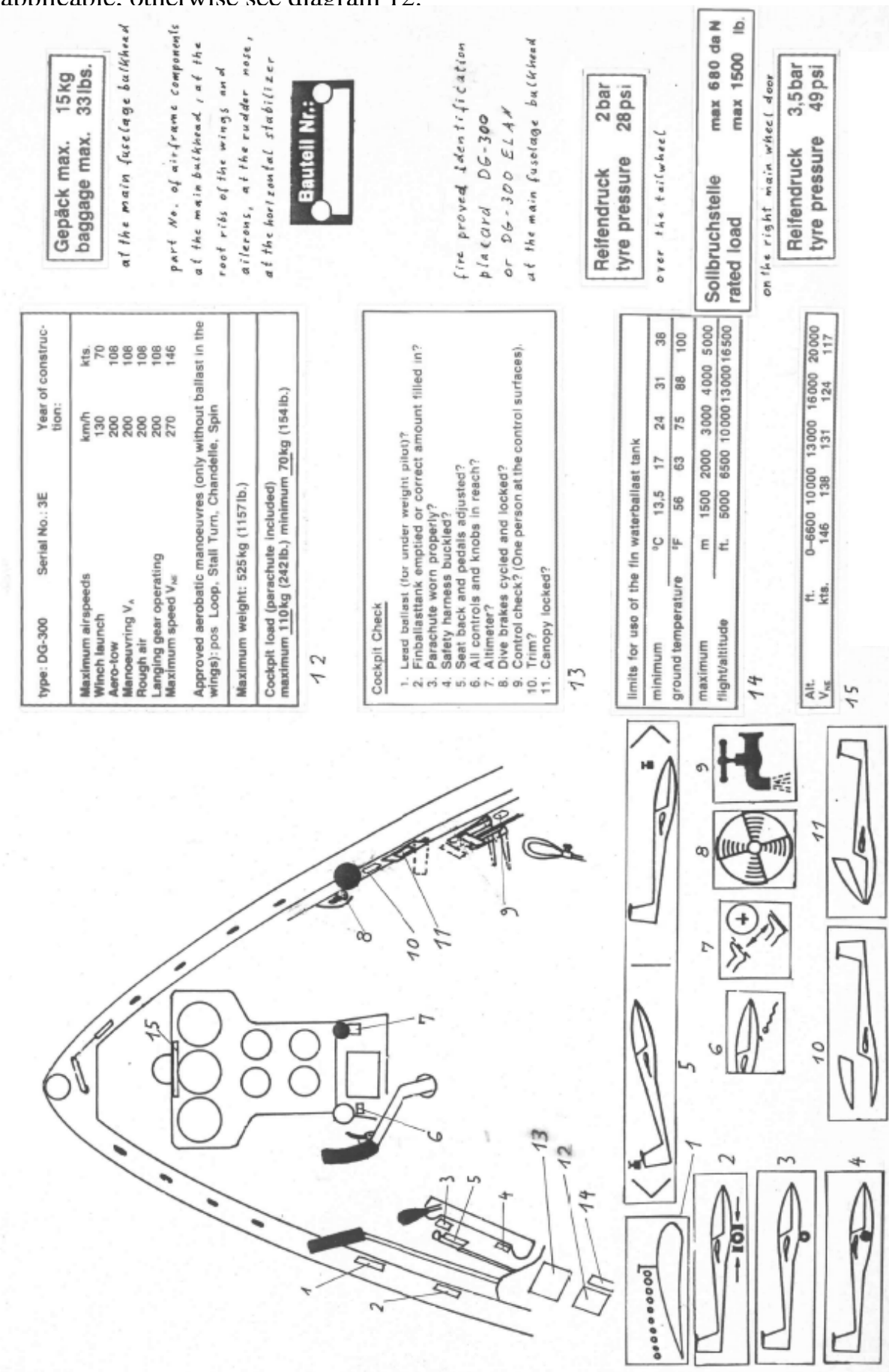
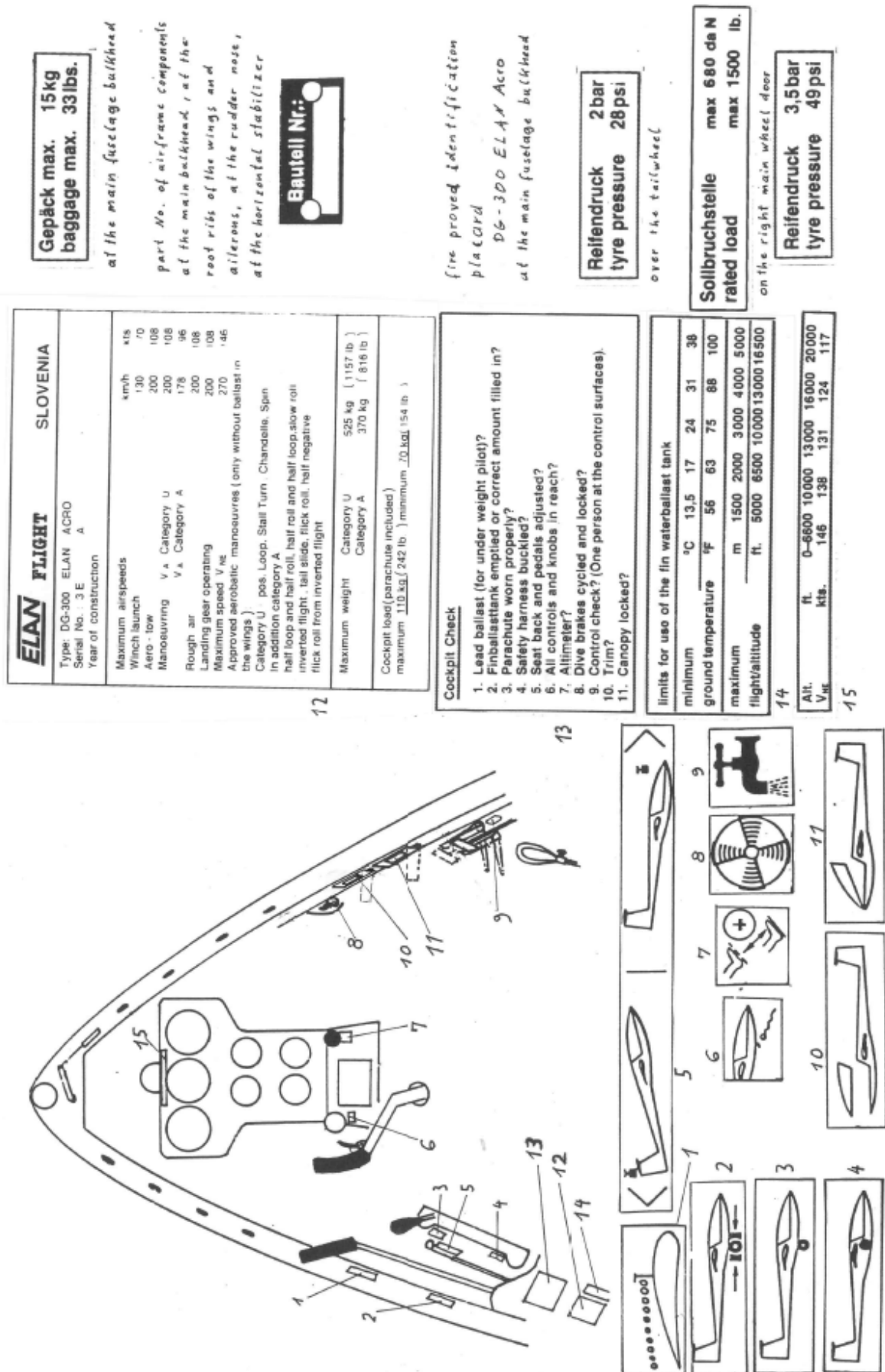


Diagram 9 Placards DG-300 ELAN ACRO

Caution: Placards 12 and 15 are only applicable if TN359/24 instruction B is applicable, otherwise see diagram 12.



Maintenance Manual DG-300

Diagram 10 Placards DG-300 Club ELAN

Caution: Placards 12 and 15 are only applicable if TN359/24 instruction B is applicable, otherwise see diagram 12.

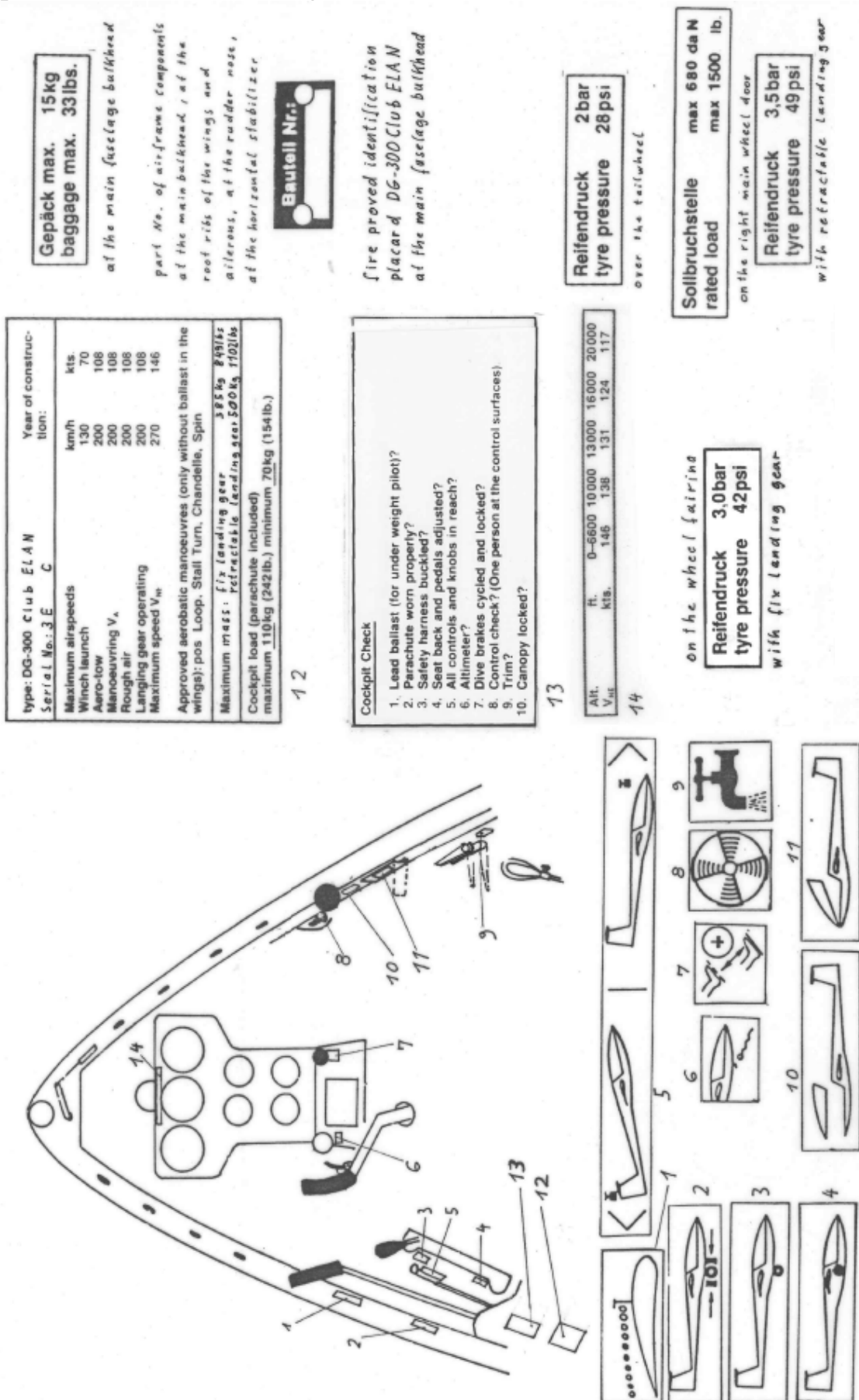
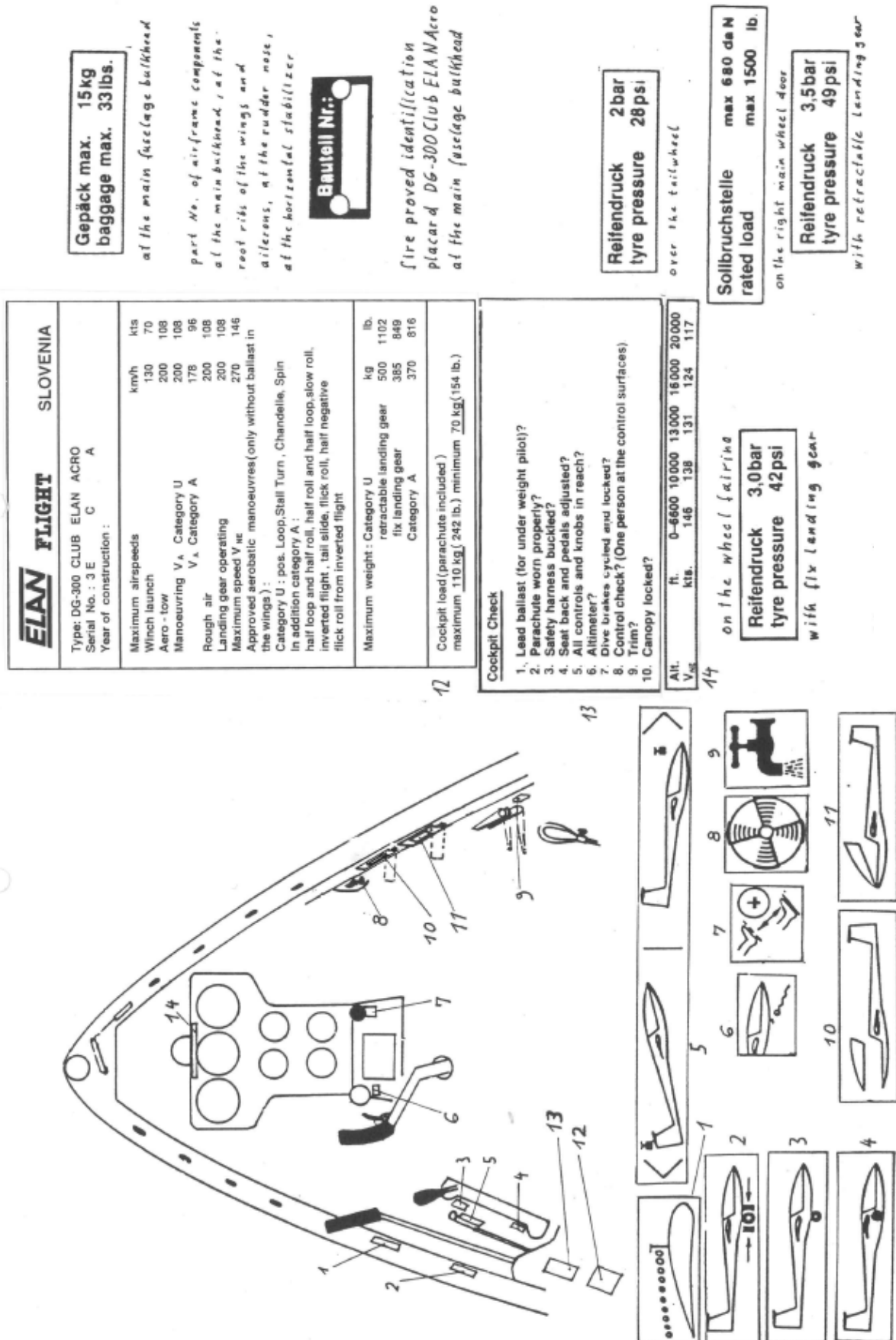


Diagram 11 Placards DG-300 Club ELAN ACRO

Caution: Placards 12 and 15 are only applicable if TN359/24 instruction B is applicable, otherwise see diagram 12



Maintenance Manual DG-300

Diagram 12 Placards 12 and 15 for DG-300 all variants if TN359/4 instruction A (reduction of operating limitations) is applicable.

Type: DG – 300 Serial No.: 3E		
Year of construction:		
Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring V _A	175	95
Rough air	175	95
Maximum speed V _{NE}	250	135
Aerobatics are not permitted		
Maximum weights:		
Category U	450 kg	992 lbs.
Cockpit load (parachute included)		
Maximum:	110 kg	(242 lbs.)
Minimum	70 kg	(154 lbs.)

Type: DG – 300 ELAN ACRO Serial No.: 3E A		
Year of construction:		
Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring V _A	175	95
Rough air	175	95
Maximum speed V _{NE}	250	135
Aerobatics are not permitted		
Maximum weights:		
Category U	450 kg	992 lbs.
Cockpit load (parachute included)		
Maximum:	110 kg	(242 lbs.)
Minimum	70 kg	(154 lbs.)

Type: DG – 300 CLUB ELAN ACRO		
Serial No.: 3E C A		
Year of construction:		
Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring V _A	175	95
Rough air	175	95
Maximum speed V _{NE}	250	135
Aerobatics are not permitted		
Maximum weights:		
Category U retractable landing gear	450 kg	992 lbs.
Category U fixed landing gear	385 kg	849 lbs.
Cockpit load (parachute included)		
Maximum:	110 kg	(242 lbs.)
Minimum	70 kg	(154 lbs.)

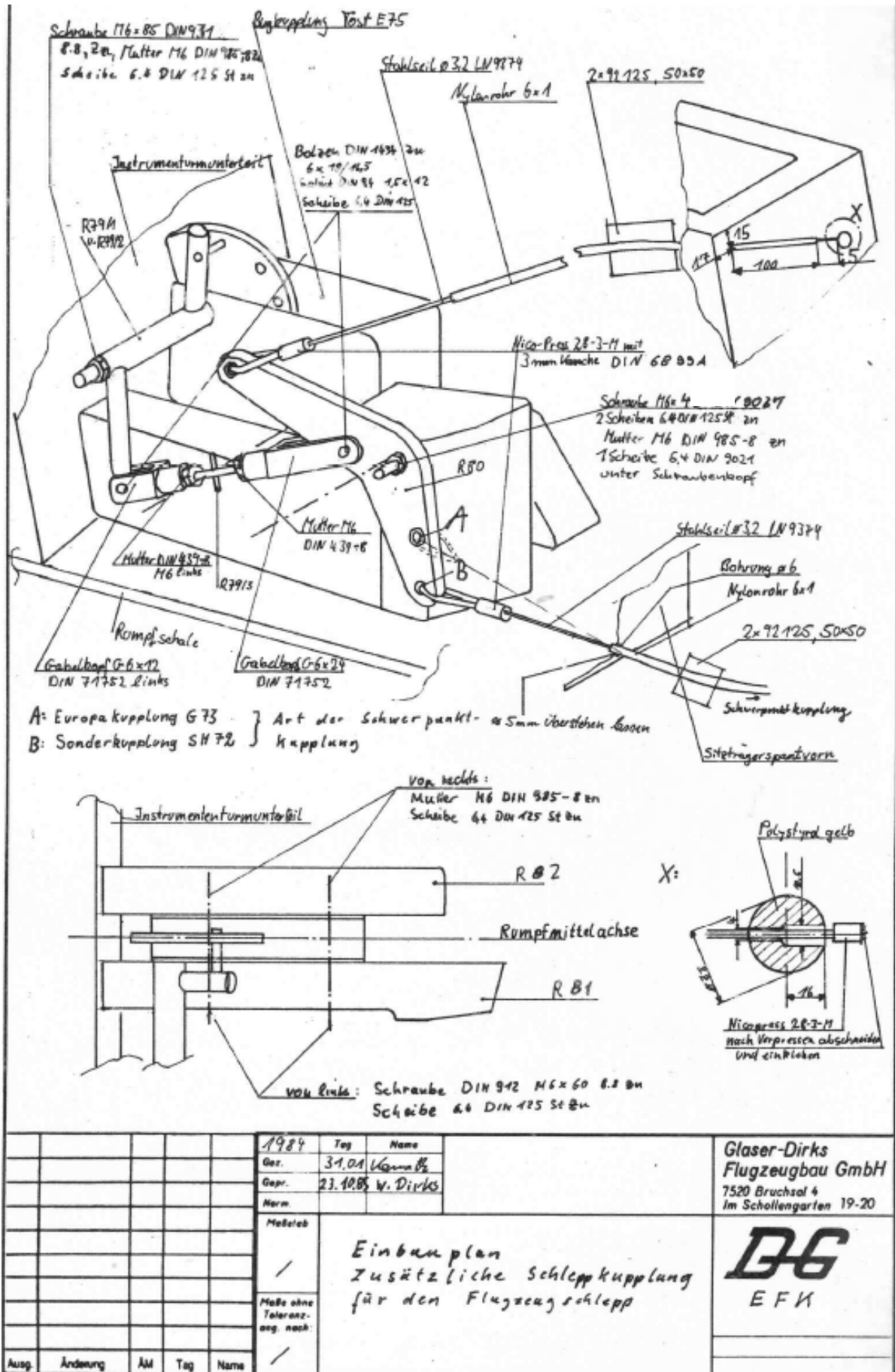
Type: DG – 300 CLUB ELAN		
Serial No.: 3E C		
Year of construction:		
Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring V _A	175	95
Rough air	175	95
Maximum speed V _{NE}	250	135
Aerobatics are not permitted		
Maximum weights:		
Category U retractable landing gear	450 kg	992 lbs.
Category U fixed landing gear	385 kg	849 lbs.
Cockpit load (parachute included)		
Maximum:	110 kg	(242 lbs.)
Minimum	70 kg	(154 lbs.)

Altitude	m	0-3000	4000	5000	6000
VNE indicated	km/h	250	243	230	218

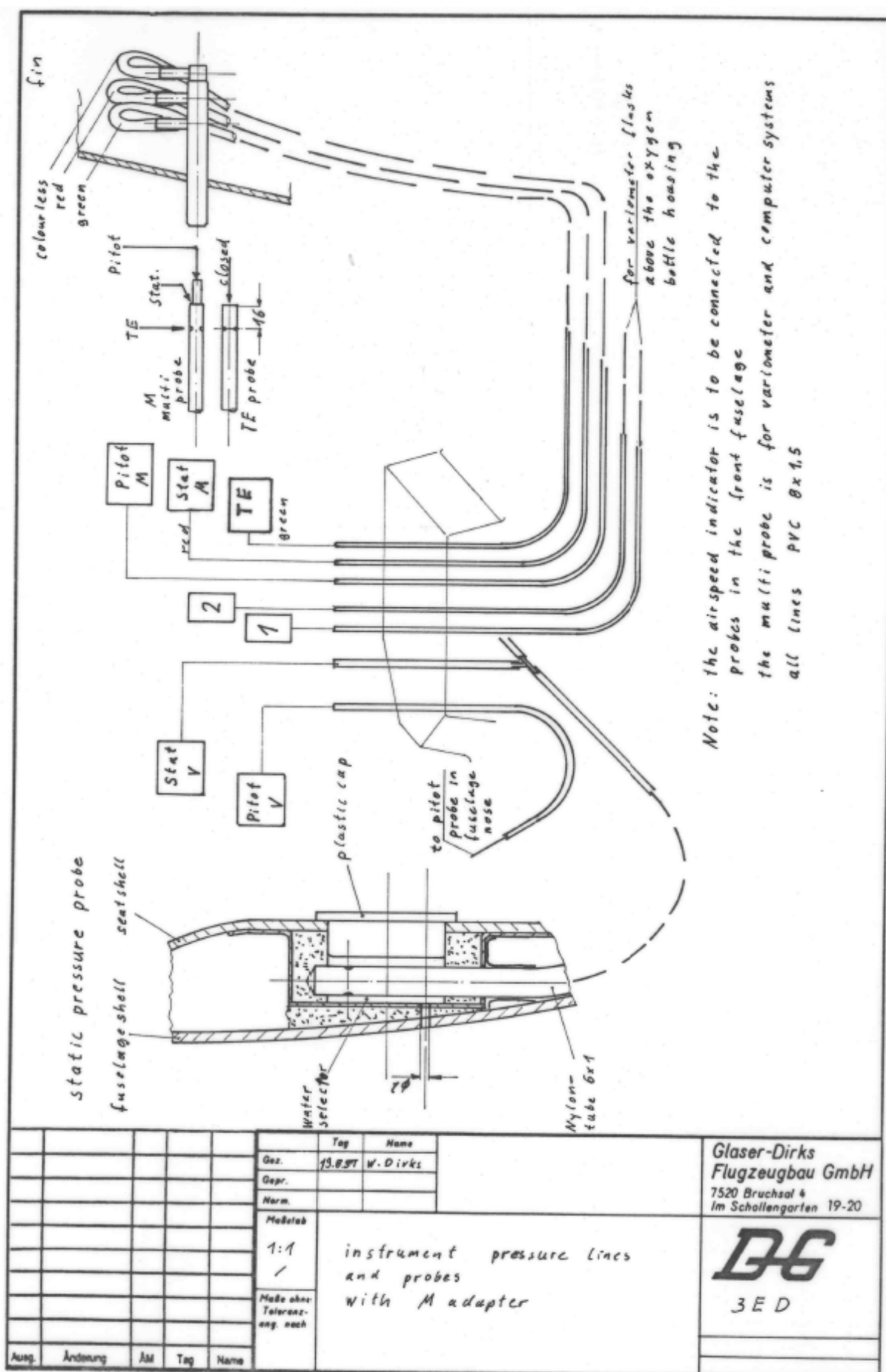
Altitude	ft	0-10000	13000	16000	20000
VNE indicated	kts.	135	131	124	117

9 Enclosures

Installation sketch EFK



Installation sketch 3 ED



Maintenance Manual DG-300

Instruction: conversion from fix to retractable landing gear

You need a conversion kit "retractable landing gear" containing the following parts:

1	FW 21/1	front fork
1	FW 21/2	rear lower fork
1	FW 21/3	rear upper fork
1	FW 7	rear upper half axis
1	FW 8 b	controll bellcrank
1	FW 3/2	front axis
1	FW 6 c/1	sleeve for gasstrut mounting
1	gas strut 11-0060-225/460 N	
1	FW 9b 1,2	control handle, pushrod
1	FW 9a/3	short pushrod
2	FW 14/1	nylon roller
2	FW 14/2	bush for nylon roller
1	FW 14/3	plate
1	teflon plate 2 R 7/3	
1	locking plate 2 R 7/1	
1	sleeve FW 24/2	
1	rubber buffer 21239/V	
2	wheel doors	
4	wheel door hinges	
0,8 m	bungee dia. 6 mm (.24 in.)	
2	rods see installation sketch EFWK	
5	keyrings dia. 20 mm	
200 mm	welding wire dia. 2 mm	
8	M 4 x 20 DIN 84-4.8 zn	bolts
3	M 6 x 20 DIN 912-8.8 zn	"
1	M 6 x 24 LN 9037	"
2	M 6 x 35 LN 9037	"
3	M 6 x 40 LN 9037	"
1	M 6 x 45 DIN 931-8.8 zn	"
8	M 4 DIN 985-8 zn	nuts
2	M 6 DIN 439 D -8 zn	"
1	M 6 DIN 934 -8 zn	"
11	M 6 DIN 985 -8 zn	"
1	M 8 SSN003	"
1	M 8 DIN 985 -8 zn	"
1	fibre washer 10 x 20 x 1.5	
15	6,4 DIN 125 St zn	washer
1	clevis pin 6 x 17 DIN 1434	
1	split pin dia. 1.5 mm x 12 mm DIN 94	

Instruction

Execution: see also diagram 2 and section 4.4

- 1 . Remove the wheel fairing
- 2 . Remove the mainwheel and the wheel brake cable
- 3 . Remove the fix landing gear
- 4 . Install the retractable landing gear inside the wheel box
- 5 . Connect the wheel brake and adjust the wheel brake
- 6 . Trim and install the wheel doors
- 7 . Install the bungees which close the wheel doors according to scetch EFWK
- 8 . Remove the left cockpit side cover
- 9 . Install the landing gear control pushrod FW 9b/2 with handle FW 9b11, the rollers FW 14 and the rear locking plate 2 R 7/1. Install the teflonplate 2 R 7/3 inbetween the stand 2 R 712 and plate 2 R 7/1.
- 10 . Install the front control lock according to drawing FW 25.
- 11 . Make the out out for the control handle in the cockpit side cover
- 12 . Install the side cover again
- 13 . Function check, does the landing gear lock over centre when extended?

Maintenance Manual DG-300

Instruction: conversion from retractable to fix landing gear

You need a conversion kit "fix landing gear" containing the following parts:

- 2 FW 7 rear half axis
- 1 FW 16/1 front strut
- 1 FW 16/2 rear strut
- 2 FW 17 front half axis
- 2 M 6 x 35 LN 9037
- 4 6,4 DIN 125 St zn
- 2 M 6 DIN 985-8 zn
- 2 M 5 x 40 DIN 931-8.8 zn
- 4 5,3 DIN 125 St zn
- 2 M 5 DIN 985-8 zn
- 1 M 8 SSNOO3
- 8 M 4 x 20 DIN 84-4.8 zn
- 8 M 4 DIN 985-8 zn
- 1 wheel fairing

Maintenance Manual DG-300

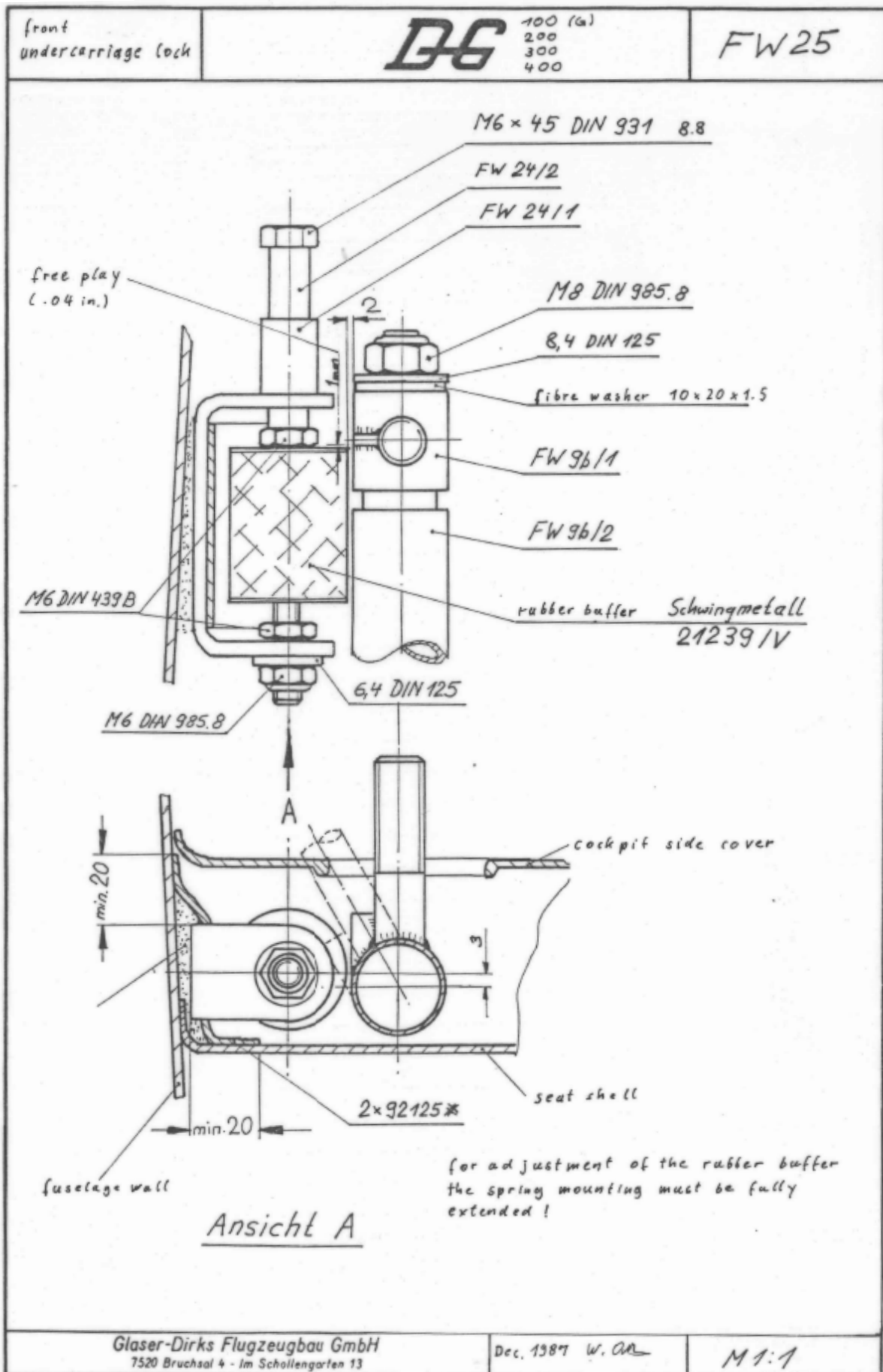
Instruction

Conversion from retractable to fix landing gear

1. Remove the landing gear doors see installation sketch EFWK.
2. Remove the main wheel see diagram 2 and disconnect the wheel brake cable at the front strut and at the main wheel.
3. Remove the retractable landing gear, see maintenance manual sect. 4.4 page 22.
4. Remove the landing gear control pushrod and handle see diagram 2.
5. Install the fix landing gear in the gear box see maintenance manual page 23 and diagram 2a.
6. Connect the brake cable to the front strut and the main wheel. Adjust the wheel brake see maintenance manual sect. 1.5.2c).
7. Inspection.
8. Assemble the wheel fairing see diagr. 2a.

Maintenance Manual DG-300

drawing FW 25: front landing gear lock



Installation sketch EFWK

**Befestigung der Gummizüge
(mounting of the bungees)**

gepresster Schweißdraht Ø2mm
ca. 30mm lang mit Tasse (weiß)
20mm breit umwickelt

FW 21/3

Gummizug Ø8mm, 350mm lang
(bungee dia. 8mm)

Stangen (rods)

Stahdraht Ø 2mm
(plane wire dia. 2mm)

12

185

FW 21/1

FW 21/2

Blindniet Ø4x8 AlMg5 klappenseitig (at wheel door)

Messing Scharniere 30mm (brass hinge)

M4x13 DIN 7981 St.zn rumpffestig (fuselage side)

Toleranzen nach Arbeitsanweisung BA 1				Tag	Name	DG Flugzeugbau GmbH 79846 Bruchsal Otto-Lilienthal-Str. 2	
Schweißen nach Arbeitsanweisung SA 1				Gez.	okt. 87		W. Ditts
				Gepr.			
				Norm.			
				Maßstab			
						Einbauplan Fahrwerksklappen (landing gear doors)	
						DG EPFWK	
22.12.11 / Hgpl Ausg. Änderung AM Tag Name							

Maintenance Manual DG-300

DOCUMENT IMA N° : 10.01 Rev : E		E08-A
---------------------------------------	--	-------

INSTRUCTIONS FOR THE MAINTENANCE L'HOTELLIER BALL AND SWIVEL JOINTS

HISTORIQUE DU DOCUMENT

REV.	DATE	OBJET DE LA MISE A JOUR	RED.	QUAL.	RESP.
A	11/85	Creation of document	BE	MJD	JMB
B	02/86	Representation of 1 swivel	BE	MJD	JMB
C	01/89	Adjunction of Fig.1 and Fig.2	BE	MJD	JMB
D	07/92	Updating of function of CR147	BE	MJD	JMB
E	03/94	Updating following DEI229-EM	BE <i>FD</i>	MJD <i>FD</i>	JMB <i>FD</i>

LISTE DES DESTINATAIRES

B.E. B.C.	OR. +1 EX.	PRODUCTION	1 EX.
Q.C. B.C.	1 EX.		
Q.C. C.B.	1 EX.		

Louis L'HOTELLIER S.A. 93, avenue Charles De Gaulle - 92270 BOIS COLOMBES Tél.(1)42.42.13.94 Télex 611153F LHOTAIR Télécopie (1)47.60.07.07	RED.: BE PAGE : TIT	DATE : 03/94 IND. : E
---	------------------------	--------------------------

Maintenance Manual DG-300

DOCUMENT IMA N° : 10.01	INSTRUCTIONS FOR THE MAINTENANCE L'HOTELLIER BALL AND SWIVEL JOINTS	E08-A
----------------------------	--	-------

COMPOSITION DU DOCUMENT

PAGE	IND.	PAGE	IND.	PAGE	IND.	PAGE	IND.	PAGE	IND.
TIT	E	SOM	E	1	E	2	E		

SUMMARY

1 - PREVENTIVE AND SAFETY MAINTENANCE INSTRUCTIONS

2 - PERIODICAL CHECK

- 2.1. FREE MOVEMENT OF THE BALL INTO THE HOUSING
- 2.2. BALL SPHERICITY MEASUREMENT (See fig. 2)
- 2.3. BALL THREAD CHECK
- 2.4. SWIVEL VISUAL CHECK
- 2.5. MEASUREMENT OF THE LOCKER LOWER PART PROJECTION AFTER
ASSEMBLY OF THE SWIVEL ON THE BALL (See fig. 1)
- 2.6. CHECK THE LINK BETWEEN DRIVE ROD AND SWIVEL
- 2.7. SWIVEL ASSY OPERATION CHECK

Fichier : WORD\FICIERS.DOC\FICHETEC\IMA10.01.DOC

Louis L'HOTELLIER S.A. 93, avenue Charles De Gaulle - 92270 BOIS COLOMBES Tél.(1)42.42.13.94 Télex 611153F LHOTAIR Télécopie (1)47.60.07.07	RED. : BE PAGE : SOM	DATE : 03/94 IND. : E
---	-------------------------	--------------------------

PROPRIETE L'H

FORME E11- REV B du 06.02.92

REPRODUCTION INTERDITE 12/73

Maintenance Manual DG-300

DOCUMENT IMA N° : 10.01	INSTRUCTIONS FOR THE MAINTENANCE L'HOTELLIER BALL AND SWIVEL JOINTS	E08-A
----------------------------	--	-------

1 - PREVENTIVE AND SAFETY MAINTENANCE INSTRUCTIONS

The rotation of the swivel around the ball must be done with resisting strength, due to minimum frictions. Consequently it is mandatory to lubricate the swivel/ball assy. This lubrication must be done after cleaning and before assembly, with a non cold coagulating grease.

Eg : ESSO purpose (general use) :

Spray containing oils enriched with silicone (recommended for assemblies exposed to sand or other abrasive materials).

It is mandatory to verify, after each assembly, the correct location of the ball in the swivel. To do so, a location hole is drilled in the locker. When the assembly is good, the hole must be visible and must enable to insert the pin "B" réf. L'H 140-31, or other devices, linked to the locker only.

2 - PERIODICAL CHECK

During the annual visit or no later than every 500 flight hours, it is necessary to verify balls and swivels as follows :

2.1. FREE MOVEMENT OF THE BALL INTO THE HOUSING

- Check that the ball move free of friction point.
- Check the angular displacement.
- Check that there is no crack at the base of the ball

2.2. BALL SPHERICITY MEASUREMENT (See fig. 2)

The variation between several measures of the ball diameter must not exceed 0,1 mm.

This check aim is to detect an abnormal ball wear.

2.3. BALL THREAD CHECK

No thread damage is acceptable. During reassembly the collar must be perfectly set on its base. It is mandatory to fix the ball in position with an adequate locking device.

2.4. SWIVEL VISUAL CHECK

No deformation or penning in ball location or in the locking device seat is acceptable.

2.5. MEASUREMENT OF THE LOCKER LOWER PART PROJECTION AFTER ASSEMBLY OF THE SWIVEL ON THE BALL (see fig. 1)

This projection must be higher than 2 mm.

The aim of this requirement is to verify the efficiency of the automatic take up clearance

Louis L'HOTELLIER S.A. 93, avenue Charles De Gaulle - 92270 BOIS COLOMBES Tél.(1)42.42.13.94 Télex 611153F LHOTAIR Télécopie (1)47.60.07.07	RED. : BE PAGE : 1	DATE : 03/94 IND. : E
---	-----------------------	--------------------------

Maintenance Manual DG-300

DOCUMENT IMA N° : 10.01	INSTRUCTIONS FOR THE MAINTENANCE L'HOTELLIER BALL AND SWIVEL JOINTS	E08-A
----------------------------	--	-------

2.6. CHECK OF THE LINK BETWEEN DRIVE ROD AND SWIVEL

In the case of an adjustable swivel, verify that the link between swivel and drive rod is tight and properly secured by an adequate locking device.

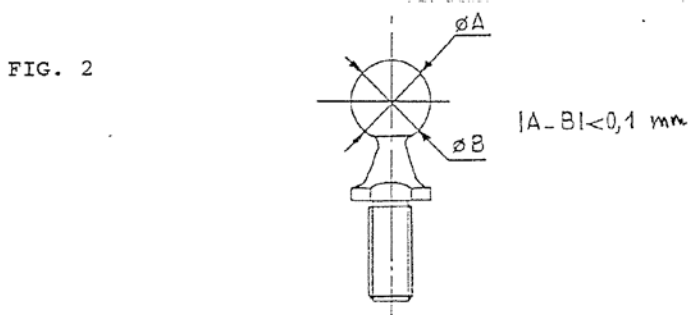
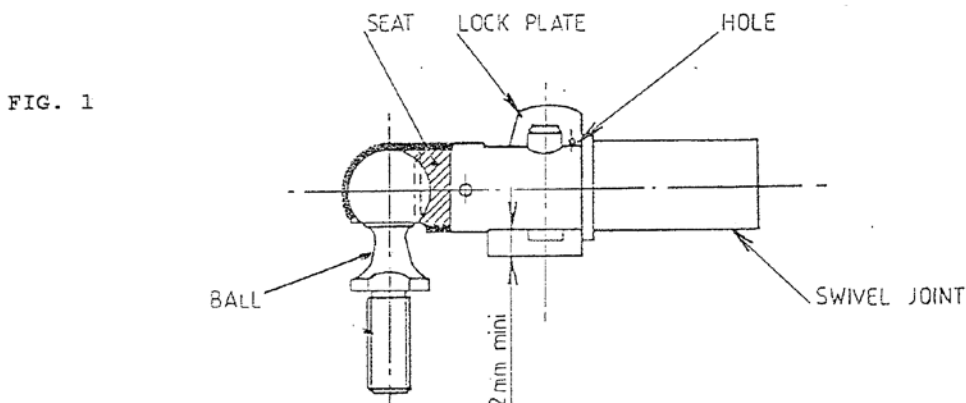
2.7. SWIVEL ASSY OPERATION CHECK

Seat or locker : no clamping, due to oxydation or other reason, is acceptable.

If after these verifications, one of the above check is out of tolerance, it is mandatory to replace both ball and swivel.
nevertheless it is recommended to replace this assembly every 10 years or every 3000 flight hours.

IMPORTANT NOTE

Any defection parts may be returned to Ets Louis L'HOTELLIER for technical investigation.



Louis L'HOTELLIER S.A.
93, avenue Charles De Gaulle - 92270 BOIS COLOMBES
Tél.(1)42.42.13.94 Télex 611153F LHOTAIR Télécopie (1)47.60.07.07

RED. : BE DATE : 03/94
PAGE : 2 IND. : E