Burkhart Grob Flugzeugbau GmbH & Co. KG
8939 Mattsies
Flugplatz Mindelheim-Mattsies
Telefon 0 82 68 / 4 11
Telex 539623

FLIGHT HANDBOOK

CLUB-ASTIR II

STANDARD-ASTIR II

This handbook is to be kept on board the aircraft at all times.

Registration: F-CFIL Factory Serial Number: 50375

Owner: PPBS, Aérodrome de la foret

71600, PARAY LE MONIAM

German edition of operating instructions are approved under
§ 12 (1) 2. of LuftGerPO.

Published February 1980

Approval of translation has been done to our best knowledge and judgement. In any case the original text in German language is authoritative.

I. 1 **Updates:**

Current number	Page	Reference	Date	Signature
1	23	Control of tailplane	1.10.80	
2	1, 14a	Inspection of the airbrake locking levers	25.03.85	
3	1	MSB 306-37	13.06.03	03. JUL 2003
	11, 12, 13	Canopy jettison and exit	13.06.03	

I. 2 **Contents** Page

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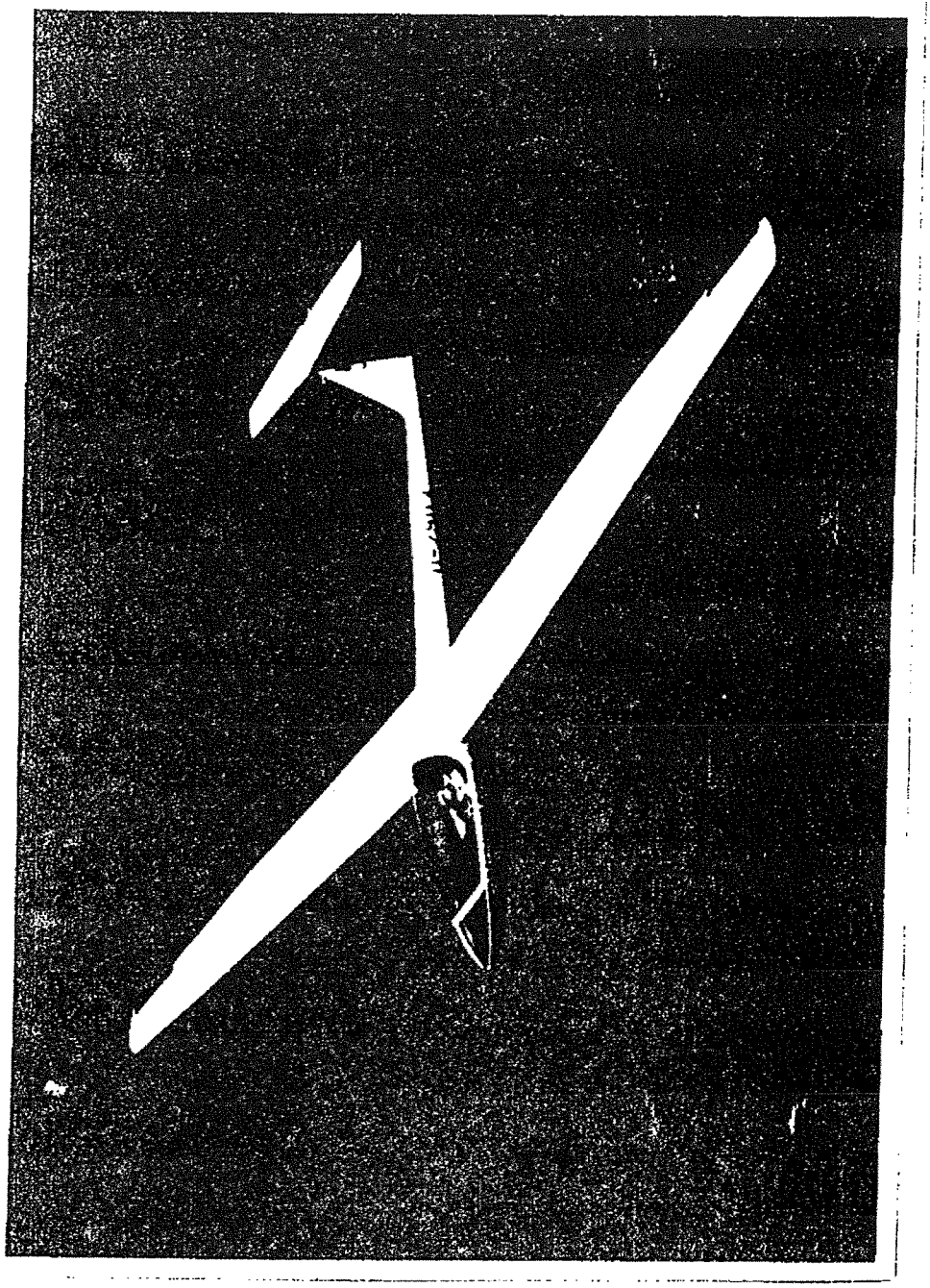

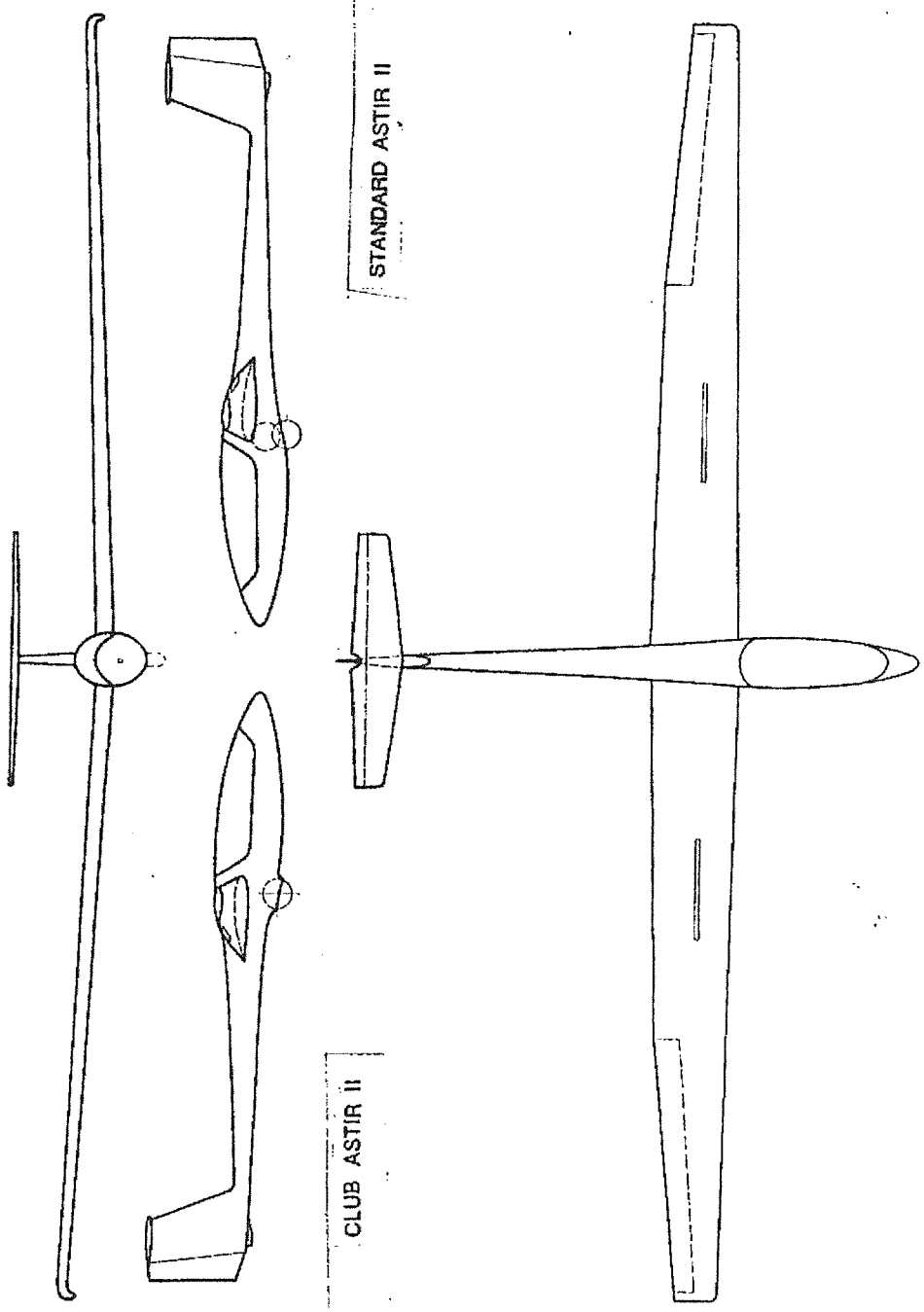
STANDARD ASTIR II
CLUB ASTIR II

I. 5 Description

The CLUB ASTIR II is a single seat performance glider for the club class, with a T-tail and air-brakes on the upper wing surface.
The STANDARD ASTIR II is the equivalent high performance glider for the standard class, with retracting undercarriage and ballast tanks in the wings.
The glider incorporates the most modern fibre reinforced plastic technology. The fuselage belts are fabricated from Carbon fibre; all other surfaces and shells are glassfibre.

Technical Data

Wingspan	15,0 m
Length	6,8 m
Height	1,3 m
Aspect ratio	18,2
Wing area	12,4 m sq.
Maximum flying weight with waterballast 450 kg without waterballast (380 kg)	
Maximum wing loading	36,3 kg / sq. m (30,6 kg / sq. m)

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II. Operating limits

II. 1 Airworthiness group

(U, Utility, LFS)
The edition of the "Airworthiness requirements for gliders" (LFS) which was published in February 1966 is the basis for the certification of this model

II. 2 Operational restrictions

This aircraft is cleared for:

1. Flights under VFR (daytime)
2. Simple aerobatics (loop, stall turn, lazy eight, chandelle, spin)
3. Cloud flying (with suitable instruments - see II. 3)

III. 3 Minimum equipment

1. Air speed indicator reading to 300 km/h (162 knots, 187 mph)
2. Altimeter
3. Four part safety harness
4. Back cushion of at least 3" depth when compressed, or parachute
5. Loading limit placard
6. Flight limits placard
7. Flight Handbook

Cloud flying equipment

For cloud flying the following must also be installed:

1. Variometer
2. Turn and slip indicator
3. Magnetic compass (compensated for the aircraft)
4. Radio ready for use

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II. 4 Airspeeds

Never exceed	VNE	250 km/h(135 kts, 155 mph)
Maximum Rough Air	VB	250 km/h(135 kts, 155 mph)
Manoeuvring speed	VM	170 km/h(92 kts, 105 mph)
Maximum on winch launch	VW	120 km/h(65 kts, 74 mph)
Maximum on aerotow	VT	170 km/h(92 kts, 105 mph)

"Rough air" includes the turbulence likely to be encountered in wave rotors, clouds, whirlwinds, and while flying over mountain ridges.

The manoeuvring speed is the maximum speed at which full control deflections are permissable. At VNE only one third of the available movements may be used. True airspeed is higher than indicated airspeed at altitude. VNE decreases according to following table.

Altitude (ft)	0-6500	10000	13000	16500	19000
VNE (indicated knots)	135	128	121	115	109
(indicated km/h)	250	237	225	213	202

Air speed indicator markings

72-170 km/h	39-92 kts	45-106mph	Green bow
170-250 km/h	92-135 kts	106-155mph	Yellow bow
At 250 km/h	135 kts	155 mph	Red line
At 90 km/h	49 kts	56 mph	Yellow triangle (minimum approach speed at max. flying weight)

II. 5 Flight envelope

The following g-loads must not be exceeded.

At VM + 5.3 – 2.65 At VNE + 4.0 – 1.5
(Airbrakes closed)

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II. 6 Weights

Empty weight	appr. 270 kg(595 lbs)
Max. permissible without waterballast	380 kg(838 lbs)
Max. permissible with waterballast St. Astir II	450 kg(992 lbs)
Maximum permissible weight of non lifting parts	240 kg(529 lbs)

II. 7 Center of gravity position

Permitted center of gravity positions in flight lie in the range

from 310 mm (12,20 inches) to

460 mm (18,11 inches)

behind the datum line, equivalent to 29% to 46% of the M.A.C. of the wing.

A/c attitude: incidence board of 600:26 angle horizontal on the back of the fuselage.

The datum line is the wing root leading edge.

The permitted center of gravity range will not be exceeded if the loading is carried out according to the loading plan in section II. 8.

II. 8 Loading limitations

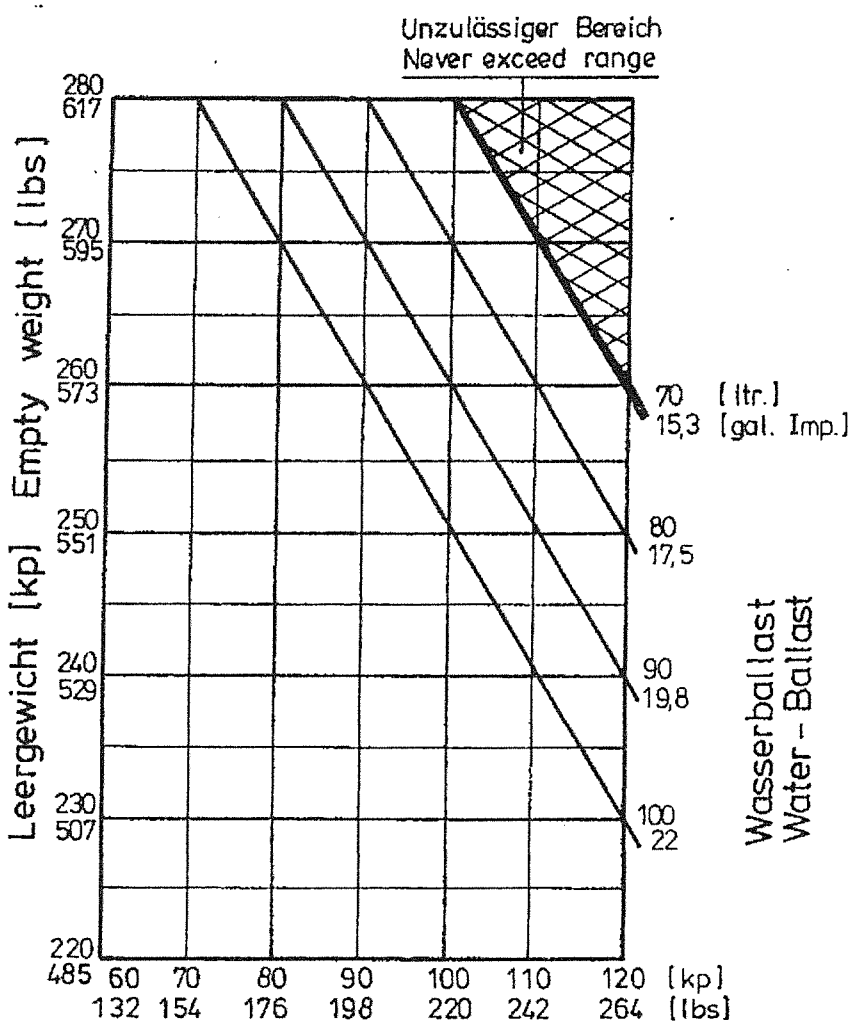
Minimum weight in the seat	70 kg	(154 lbs)
Maximum weight in the luggage space	10 kg	(22 lbs)
Maximum weight in the seat	110 kg	(242 lbs)

Pilot weights lower than 70 kg (153 lbs) must be compensated by ballast carried in the seat. A ballast bag which can be attached using the lap straps can be obtained from the manufacturer or his agents. If a ballast box is built in according to TM 102-11it can be used to carry ballast weights.

The maximum flying weight of380 (838 lbs)must not be exceeded. Water ballast can only be loaded until this maximum weight is reached (see diagram on side 9a).

Water ballast can not be used to compensate lacking weight in the seat.

Waterballast chart (only Standard Astir II)



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Modifications of loading plan

Registration: Serial Number:

Date of weighing carried out by:	Record of fitting-out. Date:	Empty weight kg (lbs)	Empty C of G (mm behind datum)	Max. Payload

II. 9 Tow hooks

For Aerotow: Optional nose hook E 75 with modification 1-79.
For Aerotow and winch launch: Europa G 73 safety hook.

II. 10 Weak link in launching cable

Aerotow and winch launch.....500 kg(1100 lbs) ± 10%
(e. g. Weak link no 5, colour code white)

II. 11 Tire

Tire size Club Astir II: 5.00-5 / Tire pressure 2,5 bar
Tire size Standard Astir II: 4.00-4 / Tire pressure 3,5 bar

II. 12 Crosswinds

According to the specifications for the type, the maximum crosswind component for take off and landing has been established at 20 km/h (11 knots, 12 mph).

III. Emergency procedures

III. 1 Spin recovery

Exit from spin can be accomplished by the standard recovery procedure:

- Full opposite Rudder
- Neutralise stick
- Ailerons should be central
- when rotation stops centralise rudder and pull out gently.

III. 2 Canopy jettison and exit

In the event of having to bail out, follow the procedure:
(The point to fix the parachute is the red ring on the central tube behind the seatback)

a) Open the canopy,
pull red canopy handles and turn 90° inwards !

b) release the Canopy,
lift up the canopy with red handles to release canopy!

c) unbuckle seat harness

d) EXIT over left or right side

e) Wait 1-3 seconds before pulling the rip cord
(with manual parachute only)

Note: The canopy can be removed for maintenance purposes by operating the red ball knob at the canopy joint.
For readjusting set the two lining-up bolts in position and press the canopy against the springs, until the fixing bolt may be inserted.

Caution: The canopy hinge is springloaded and will, with jettisoned canopy, turn up very quickly after a slight touch. Danger of injury.

III. 3 Landing with the undercarriage retracted

It is possible to land on soft and hard surface without risk of nosing over. Approach normally and align in 2 point attitude. Avoid a high round out.

III. 4 Miscellaneous

Flying in rain

No noticeable deterioration of flying characteristics is caused by wet or lightly iced wings.
A heavy deposit on the wing raises the speed at which breakaway occurs by about 3 knots: Raise approach speed by 6 knots.
The characteristic during lift-off and touch down remains the same.

Wing dropping

If the wing drops in a turn or straight flight, leave the stick central and apply rudder against the direction of rotation.

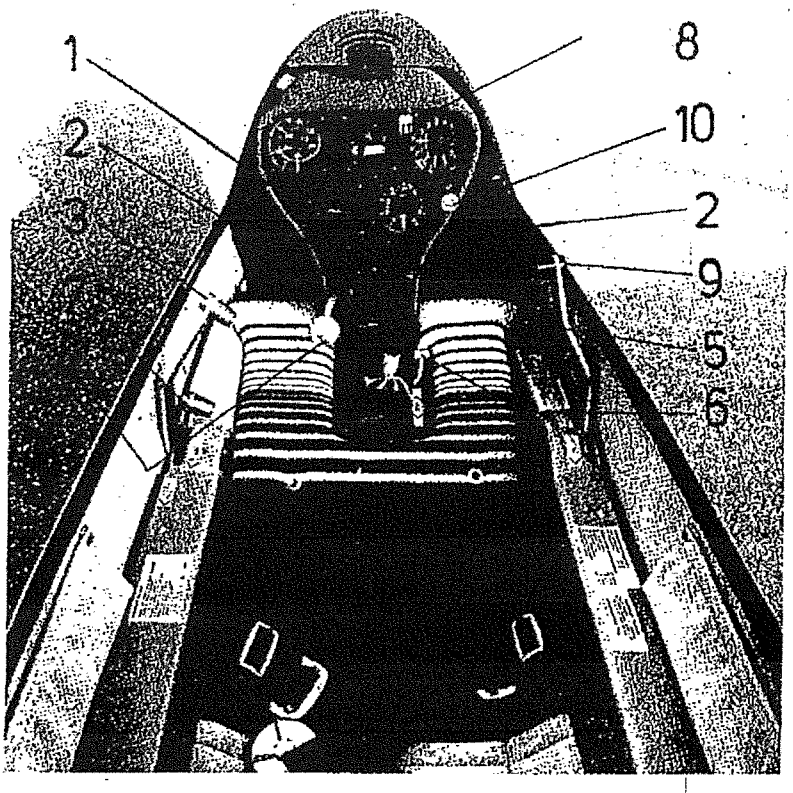
Ground looping

The aircraft is not prone to ground loop on take off. If one wing touches the ground or the aircraft changes direction by more than 15 degrees, release immediately.

IV. Normal operating procedures

IV. 1 Cockpit and cockpit layout

The seatback is adjustable.



1 Controlstick with wheelbrake
2 Rudder pedals
3 Airbrakes
4 Cable release knob
5 dropped with MSB 306-37
(Canopy jettison)
6 Rudder pedal adjustment
7 Trim control
8 Ventilation
9 Undercarriage retract
10 Waterballast jettison

(Item 9 and 10 are not applicable to CLUB ASTIR II)

IV. 2 Daily Inspection

Complete check round aircraft

1. a) Open canopy
   b) Check the 4 wing to fuselage quick locks are secure
   c) Visual check of all control mountings and linkages in cockpit area
   d) Check for loose objects (also throught the access door for the main control linkages)
   e) Check full and free movement of all controls
   f) Check tire pressure (2, 5 respectively 3, 5 bar)
   g) Check condition of towhooks
   h) Check operation of towhooks and wheelbrake

2. a) Check upper and lower wing surfaces for damage
   b) Aileron (Check condition, free movement, play)

   c) Airbrakes (Check condition, fit and lock)

NB: The elastic flap hinges will give a slight play at upward and downward deflection of aileron.

3. Check fuselage for damage, particularly on underside
4. Check tailplane for correct mounting and security
5. Check tailskid, pitot and venturi
6. Check static holes are free of obstructions
7. See "2"
8. Check static holes

The aircraft should be checked particularly thoroughly after heavy landings or excessive demands have been placed on it in flight. Remove the wings and tailplane. If damage is discovered an inspector should be called in. The aircraft should not under any circumstances be flown until the damage has been repaired.

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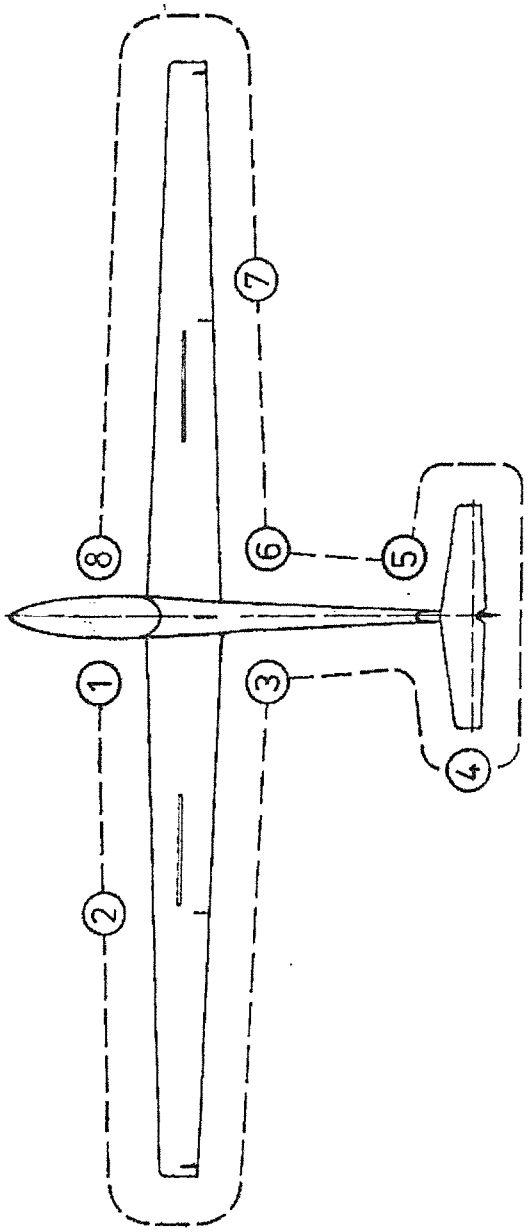
LUFTFAHRT-BUNDESAMT BRAUNSCHWEIG

24. Juni 1981

Inspection of the airbrake locking lever

At the daily check the right- and lefthand airbrake locking levers have to be checked through the inspection openings in the wing underside.
The lever are made of aluminium casting and have a facilitating hole. The following instruction has to be carried out: Inspection of the airbrake locking levers for cracks in one of the 3 legs. For a better inspection the plexiglass-pane can be removed for easier access. The use of a magnifying glass is recommended.
If cracks are found, the exchange of the locking levers left- and righthand no. 102-4123/4124 of aluminium casting for such of aluminium sheet (see TM 306-26) is required.
If the aluminium sheet's are installed, the daily check ist not longer applicable.

Complete check round the aircraft (cf IV. 2)



IV. 3 **Pre flight check**

1. Wing and T-tail attachments secured?
2. Parachute and safety straps secured?
3. Pedals adjusted?
4. Undercarriage lever locked in fully forward position?
5. Brakes closed and locked?
6. ~~Flaps set for take off?~~
7. Full and free controll movement?
8. Trim set to neutral
9. Altimeter set to zero or to field elevation?
10. Radio switched on an set to the correct base frequency?
11. Canopy locked?
12. Cable on correct hook?

Beware: - Crosswind - Cable break!

If you close the canopy pull the fasteners forward for stretching the canopy down.

If the canopy shrinks in result of very low temperature pull the canopy fasteners once more forward.

IV. 4 TAKE OFF

TRIM

The trimmer is on the left-hand side of the cockpit and can be progressively adjusted.

Winch launch

Trimmer central or nose heavy if the pilot is light.

~~Flaps to + 5 degrees.~~

Maximum winch launch speed is 120 km/h (65 knots, 74 mph).

The glider has a release hook in front of the wheel.

Winch launches cause no difficulties at all allowed centre of gravity positions and wing loadings.

The plane has no tendency to balloon up or to swing on the ground.

One should push forward slightly on the stick below about 100 metres (330 ft.) in the case of fast launches from a powerful winch. When the cable slackens pull the release firmly to its limit.

Aerotow launch

Recommended line length is 40 – 60 m (140 – 200 ft).

Trimmer neutral

~~Flaps 0 degrees.~~

Max aerotow speed 170 km/h (92 knots, 105 mph).

Use the nose hook for aerotow if it is installed.

Aerotow from the belly hook presents no problems to experienced pilots. In this case the undercarriage of the Standard Astir II can not be retracted during the aerotow.. The aircraft can be controlled during the whole ground run by means of aileron and rudder, using full deflections if required. There is no inclination to ground loop, even in a strong cross wind. The aircraft can be lifted off at an IAS of 35 kts;it takes off on its own, with the stick held neutral at an IAS of 38-40 kts.

The yellow release knob is mounted on the instrument panel and must be pulled right back to release.

IV. 5 **Normal flight**

The aircraft can be flown in all configurations throughout the permitted speed range. Full aileron and rudder movements ~~and positive flap settings~~ are only permitted up to the manoeuvring speed of 102 knots (190 km/h). At higher speeds the controls are to be used with corresponding care.For the elevator movements only the ~~Note: see G-loads II. 5.~~ g-loads II. 5 are appropriate.

IV. 6 **Slow flying and stalling**

The stall warning is given by a noticeable buffeting of the tailplane. The stalling speed depends on the configuration and weight of the aircraft. The following standard values are appropriated to:

	Weight	Without brakes	With brakes
Without water ballast	380 kg	60 km/h	65 km/h
	838 lbs	32 kts	35 kts
With water ballast	450 kg	70 km/h	75 km/h
	992 lbs	38 kts	40 kts

Regard the increasing stalling speed in relation to the bank angle

On further rearward movement of the stick the aircraft goes into a controllable "mush", which can be controlled with ailerons and rudder. On forward movement of the stick the aircraft at once returns to its normal flying attitude. A swift backward movement of the stick will produce a nose drop; the ailerons will provide lateral control.

IV. 7 **High speed flight**

The aircraft has no flutter problems in the permitted speed range. Above 170 km/h (92 kts) the controls must be moved no more than one third of the available movement. VNE is not exceeded in a 45 degrees dive with the airbrakes fully extended even at maximum all up weight.

IV. 8 **Cloud flying**

The minimum equipment for cloud flying is an Air speed indicator, Altimeter, Variometer, Compass, Turn and slip and Radio. Flight test to date have shown that the ASI system built in is not sensitive to icing. If G forces over 2 g are encountered or if the speed rises above 170 km/h (92 kts), extend the airbrakes to avoid overstressing. Spinning should not be contemplated as a recovery manoeuvre. In emergency extend the airbrakes and leave the cloud at 170 km/h (92 kts).

Cloud flying should only be carried out by pilots who have the necessary permission. The legal demands of airspace and instrumentation should be observed.

IV. 9 Simple aerobatics

Aerobatics should only be carried out by pilots who have the necessary permission.

Aerobatics may only be carried out without water ballast.

The following aerobatics are permitted:

1. Inside loop

Entry speed	180 km/h (97 kts)
G load	ca. 2 g
Exit speed	180 km/h (97 kts)

2. Stall turn

Entry speed 180 km/h (97 kts)

At 70 knots (130 km/h) slowly apply rudder. Shortly before the stall assist with aileron. In the case of an unintentional hammerhead stall hold the controls firmly central.

3. Spins

Reduce speed slowly to70 km/h(38 kts): pull the stick back and give full rudder. The aircraft spins slowly at one turn every 5 seconds. The height loss is 220 ft. per turn.

Recovery: opposite rudder, pause, stick forward till rotation stops, recover gently.at about 160 km/h (86 kts).

4. Chandelle

Entry speed 150 km/h (81 kts)

Pull up to fly turn with 90 degrees bank. During turn decrease speed and exit from turn with rudder and aileron. The chandelle should be complete heading in the opposite direction at minimum speed.

5. Lazy eight 120 km/h (65 kts)

Manoeuvres that involve negative g loads are prohibited. Unorthodox manoeuvres are likewise prohibited.

IV. 10 Approach and landing

The approach may be carried out at 90 km/h (49 kts).
: The brakes are powerful enough to carry out steep approaches. They cause a slight nose down trim change, so that the aircraft maintains the chosen airspeed automatically. Fully extending the airbrakes increases the stalling speed: do not extend the brakes fully during the roundout, to avoid heavy landings.

The side-slip is quite controllable and, if needed, this manoeuvre can be used to help land the glider. But the side-slip is only effective by using a large angle of side-slip and should be finished in a safe hight.

IV. 11 Flight with water ballast

A flight with maximum disposable load additional full amount of water ballast is comparable with a standard two-seat-glider. Therefore the flight characteristics of slow flying and stalling are different with water ballasted flights to flights without water ballast. The stalling speed increases to about 70 km/h(38 kts). Greater control defflections are needed to correct the attitude. The entry to the spin is more abrupt than without, water ballast, but it will be recovered by the standard procedure immediately. Slow flying and stalling with maximum gross weight should be practised at a safe height.

The water ballast tanks are situated in the wing leading edge and contain approximately 50 litres per wing. They are filled through the plugs on the top surface of the wings, which can be removed with a rod.

Built in baffles ensure that no noticeable movement of the water occurs in flight, when the tanks are partially filled.

The water has to be poured in and not filled in under the pressure of the water-pipe.

Equal amounts of water must be put in each tank to make up the required amount, so that lateral stability is not impaired.

Water ballast is dumped through an opening under the fuselage behind the wheel-box. The valve is opened by pulling the black knob at the right side of the instrument panel. Dumping of full water ballast takes about 3 minutes.

Air from the tanks escapes through an overflow pipe that runs down to a point at the underside of the wing near the root. The apertures are not allowed to be covered by adhesive tape. When flying with water ballast the connecting adhesive tape that covers the gap between fuselage and wings, should be folded back on the underside in the region of the spar, so that any excess water which may appear runs out rather than down into the fuselage.

Before longer flights at temperatures around 0° C (32° F) the water must be jettisoned because of the danger of freezing.

It is strongly recommended that water ballast is jettison before landing.

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The glider has to be parked over -night without water ballast due to the danger of freezing.
When de-rigging the water ballast tanks will empty themselves through the wing root connecting pipes.
If the glider has to be towed for a long way on a bumpy ground, the water tanks should be emptied to take care of the wing suspensions.

V. Rigging and derigging

V. 1 Rigging

The fuselage must be held firmly in an upright position when rigging. It is recommended that a fuselage stand or the trailer fittings are used. The glider can be rigged by 3 people.

1. Wings

Unlock the 4 main wing fittings in the fuselage (a). Unlock the airbrakes on the wings. . Guide the right wing into the fuselage. The safety catches on the fuselage fittings should now be released ,and on gently moving the wing to and fro will be heard to snap into place (b). Next guide the left wing into the fuselage. Move the wings tips up or down so that the pin on the end of the spar stub is lined up with the appropriate hole in the opposite wing root and slide into place. Next release the safety catches on the left hand fuselage fittings and by gently moving the wing tip forwards and backwards they too can be made to snap into place (b).

To lock the fuselage fittings turn so that the pins are engaged in the slots. A slow but firm fore and aft movement of the wing tip will allow the collar to be turned sufficiently. They should not however reach the end of the slot (c).

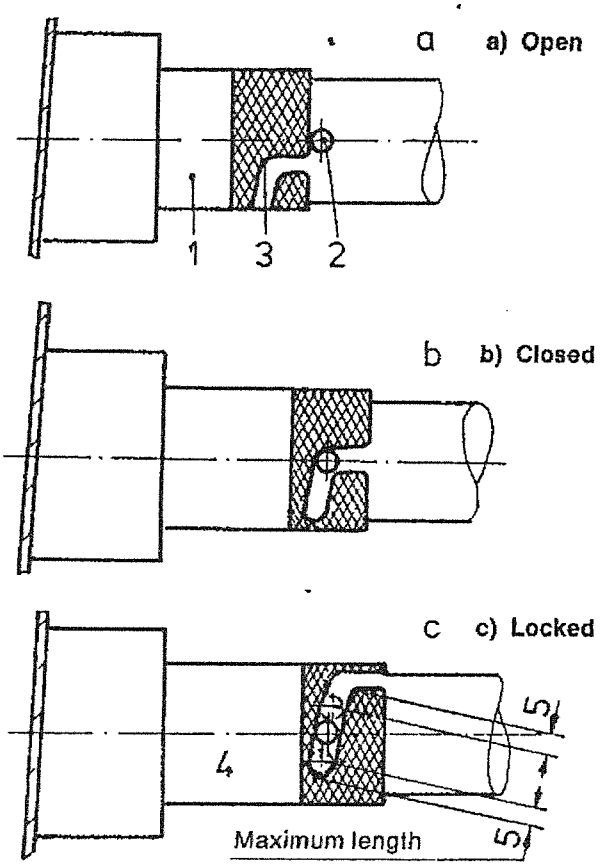
Check – The red rings on the fuselage sides must be covered by the rotating collars. The collars should be finger tight.

In the closed but not secured position (b) the wings cannot be withdrawn.

2. The aileron and airbrake connections are behind the spar

The connecting rods can be connected by means of the quick lock fasteners through the inspection cover. If necessary the aileron has to be moved up and down to get the linkages into the right position.

After rigging the following check must be carried out to check the connections are secure:



After connecting the quick lock couplings make a visual check that the collar is extended forward over the bearing far enough for the safety pin to engage.

Having engaged the quick locks check that the safety pin cannot be moved without pressing it down. If it cannot be slid without pressing down the controls are properly connected.

3. **Tailplane**

Before assembly is commenced the front cover must be opened and the rotating wing bolt pulled out to the limit. **It is important to ensure, that the larger opening of the conical drillings in the inner rings of the horizontal stabilizer spar bearings fall to the rear.** The tailplane can best be positioned by standing behind the rudder. The tailplane can be rested on top of the fin with the elevator angled upwards so that the quick lock on the elevator push rod can be attached to the bearing on the elevator horn. The front of the tailplane can then be pushed back on to the three pins. It is then necessary to tighten the wing bolt clockwise to secure the tailplane. The assembly is complete when the wing bolt is sufficiently tight for there to be no play in any direction. The cover provides a safety measure as it can only be attached with the wing bolt horizontal. If necessary the wing bolt has to be turned a quarter turn to suit. Derigging is carried out in the opposite order and the wing bolt is unscrewed anticlockwise and pulled fully out.

To control the correct mounting of the horizontal stabilizer it is important to ensure that the peaks of the mark-arrows at fin and elevator tabs face each other.

Checks to be made after rigging.

1. Check that the four collars in the fuselage are engaged and secure.
2. Check that the aileron, airbrake and flap connections are engaged.
3. Check the towhooks for correct function and operating forces.
4. Test the operation of the wheel brake and the tire pressure.
5. Check that the tailplane is securely seated, control the 4 markings.
6. Check the elevator is coupled correctly through the clear panel.
7. Check sense and full and free movement of controls with an observer.

Derigging

Derigging is carried out in the reverse order and in this case it does not matter which wing is removed first. Excessive fore and aft rocking of the wing tips should be avoided.

V. 2 **Parking**

When the glider is stored the canopy should be locked. Use the canopy cover to protect the instrumentation against overheating. Pickets may be attached to the wing tip skids. The rotating tail dolly wheel should be used for ground handling.

Caution: The canopy in opened position may beam the sunlight and cause burns on head rest or luggage space.

V. 3 Transport

We recommend the use of a closed trailer for transporting the glider. The parts must be carefully supported and secured so they cannot slide.

1. Fuselage

   A fuselage trolley moulded to the shape of the fuselage and positioned in front of the main wheel. The minimum length of the trolley should be 400 mm and it can be attached to the wing fittings if required. The tail skid should be secured so that it cannot slide sideways.

2. Wings

   The minimum length for the spar support should be 200 mm and should start at the face of the root rib. The mounting must be padded well with foam rubber or felt.

   The mounting under the aileron inboard end should be a shaped mounting block with a minimum length of 300 mm and height of 400 mm. The mounting must be padded with felt.

3. Tailplane

   Either horizontal on padded supports with the upper surface downwards and secured with straps or vertical supported on the leading edge in shaped mounting blocks.

   Profile drawings are available for the manufacture of fuselage, wing and tailplane fittings.

V. 4 Maintenance of the glider

The entire surface of the glider is coated with weather resistant white polyester gelcoat.

The greatest care should be taken in maintaining the fibre glass surface of the glider. Luke warm water should be used to wash off dust, grease, dead flies and other dirty marks. More resistant dirt should be removed by using a mild cleaning agent. Only special silicon-free preparations should be used in maintaining the painted surfaces. (1 Z-Spezialreiniger – D 2, Fa. W. Sauer and Co., 5060 Bensberg or Reinigungspolish Fa. Lesonal).

Although very resistant the glider should be protected as much as possible against rain and dampness. Water that has seeped in should be dealt with by storing the glider in a dry place, frequently turning over the dismantled parts.

The most effective way to clean the canopy is to use a special perspex cleaner but if necessary luke warm water can be used. A soft, clean cloth or chamois-leather should be employed to wipe the canopy down. Never rub perspex with anything dry.

The Safety harness should be regularly checked for damage and general wear. The metal parts of the harness should be frequently checked for corrosion.

Because of its position, the winch launch hook is susceptible to getting very grimy and muddy. It must therefore be frequently inspected for damage, cleaned and greased. When the seat-well is removed the hook can easily be taken out. Remove the connecting wire from the lever and take out the retaining screws. For reconditioning, the tow hook should be sent with the record card to the tow hook manufacturer, Tost. For further details the manufacturers manuals should be consulted.

The cables and pulley for the nose and belly hooks should be checked for wear during the yearly inspection.

The main wheel tyre pressure should be kept at 3,5 atmospheres (49.8 psi) for Stand. A. /2,5atm. (36psi) for Club Astir II.

The wheelbrake is of the drum type. If required the point at which the brake begins to drag can be adjusted. The adjustment is carried out by moving the Bowden cable at the drum end.

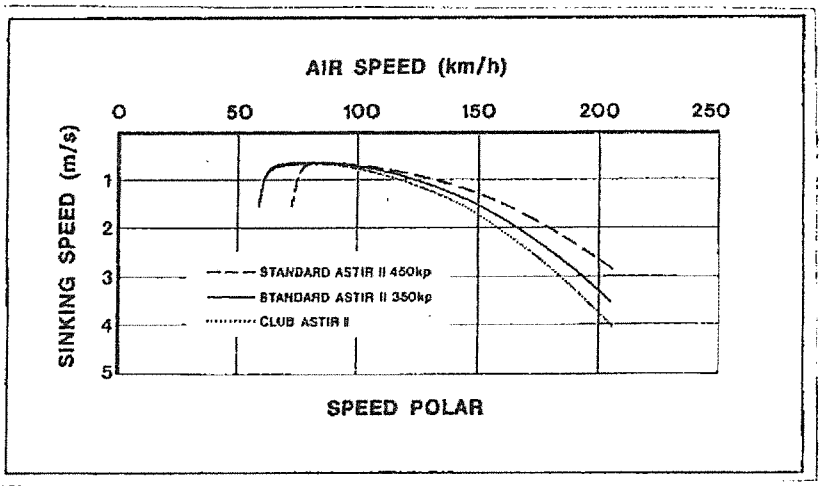
When the main wheel is being taken off for the purpose of cleaning, greasing or changing the tire, the Bowden cable should be disconnected from the brake-lever. Remove the screw cover on one side of the axle and take out the screws and the spindle. Remove the screws that hold the brake-lever in place. Take the wheel out by pulling it downwards. Clean all the parts and before reassembly smear all of them with grease.

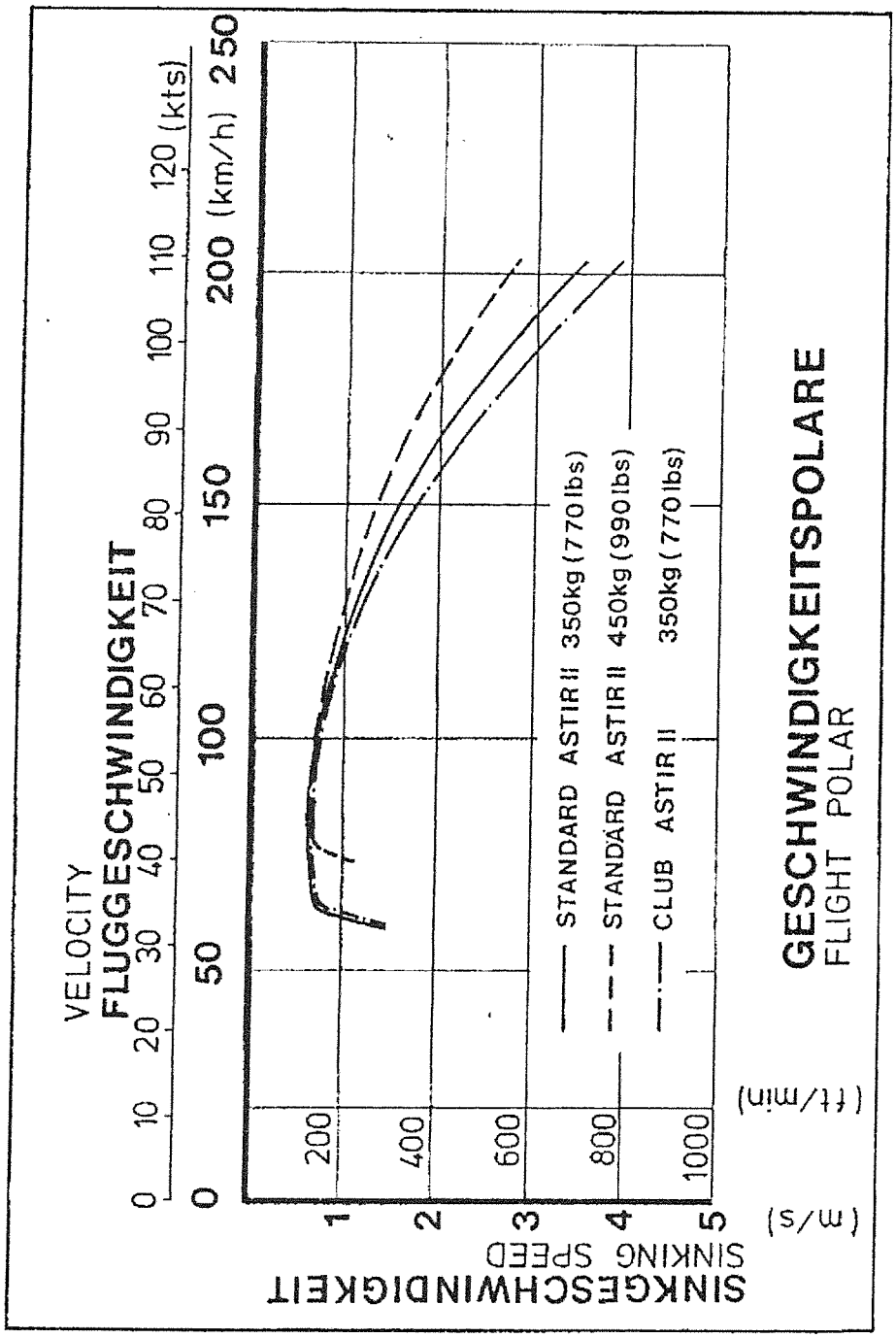
Before assembling the glider the pins and sockets at the joints between wings and fuselage, and tailplane and fuselage, should be cleaned and greased.

VI. Appendices

VI. 1 Performance

All up weight	350	450	kg
Wing loading	28,0	36,3	kg/sq. m.
Best glide angle	37,3	38,0	
at flying speed	95	105	km/h
Minimum sink	0, 6	0, 7	m/sec
at flying speed	75	85	km/h




GESCHWINDIGKEITSPOLARE
FLIGHT POLAR
STANDARD ASTIR II 350kg (770 lbs)
STANDARD ASTIR II 450kg (990 lbs)
CLUB ASTIR II 350kg (770 lbs)
SINKGESCHWINDIGKEIT
SINKING SPEED
(m/s)
(ft/min)
VELOCITY
FLUGGESCHWINDIGKEIT
(km/h)
(kts)

VI. 2 **Service and Maintenance Instructions**

Regular service.

The following schedule of service should be carried out every 100 hours or at the annual inspection, which occurs first.

1. The entire glider should be checked for cracks, holes and bumps.
2. All fittings should be inspected for satisfactory condition (play, scores and corrosion).
3. All metal parts should be examined for corrosion, cracks, deformation and if necessary reconditioned and freshly protected.
4. Check that there is no play in the wing and tailplane to fuselage fittings.
5. The control linkages (Bearings, stops, fittings, hinges and control cables) should be inspected and replaced if there is evidence of bending or corrosion.
6. The controls including the brakes should be submitted to a functional test and the control deflections checked.
7. If the controls do not move freely throughout their range, search for the cause and correct.
8. The undercarriage should be inspected and the wheel and brake checked to be in good condition.
9. The tow hooks should be treated in accordance with their appropriate maintenance manual.
10. Check the pitot for the ASI is clear and that the tubing to all instruments is in good condition and free of leaks or kinks.
11. The condition and calibration of all instruments should be checked and any other equipment inspected.
12. Equipment and instruments should be checked against the equipment list.
13. Check markings and placards.
14. After repair or change of equipment, the weight table should be updated with the new empty weight and Center of Gravity by weighing or calculation.

After extended storage check accordingly to regular service pos. 1 to 11 and inspect for evidence of rodents and birds.

VI. 3 Reference to Repairs

The attached repair instructions give information for the execution of minor repairs.

Major repairs, in accordance with the glider information sheet are only permitted to be carried out by an authorised aircraft works. Grob will name a company with the appropriate qualifications in any individual case.

VI. 4 Installation, maintenance and examination of the release hooks

One is bound by the Maintenance Manuals for the nose hooks 'E 72' and 'E 75' published in May 1975 and the Maintenance Manual for the belly hooks 'Europa G 72' and 'Europa G 73' published in May 1975.

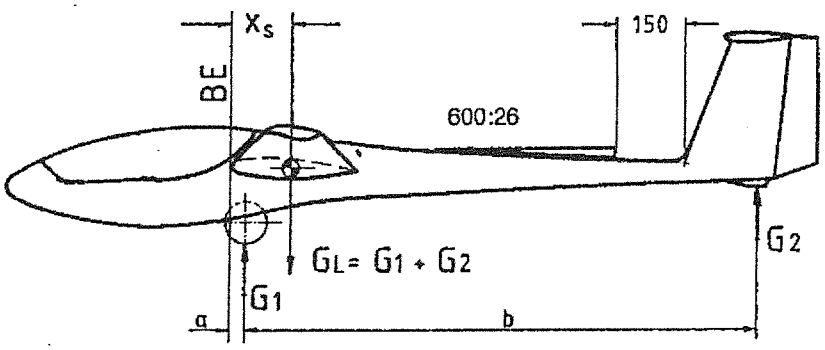
VI. 5 Determination of the Center of Gravity

The determination of the center of gravity is made with the undercarriage lowered and the glider supported on two scales at heights such that an incidence board of 600 : 26 angle is set horizontal on the back of the fuselage.

The reference plane lies at the front of the wing at the root. The distances a and b are measured with the help of a plumb line. The empty weight is the sum of the two weights G_1 and G_2.

The Center of Gravity of the pilot is located
633 mm in front of the datum line.

Measurement of Center of Gravity position



Datum Line: Front edge of the wing at the root rib

Level Means: With a 600 : 26 Incidence Board set up horizontal on top of the rear fuselage.

Weight on main-wheel	G_1 =		kg/lbs
Weight on tail-skid	G_2 =		kg/lbs
Empty Weight	$G_L = G_1 + G_2$ =		kg/lbs
Distance to main-wheel	a =		mm/inches
Distance to tail-skid	b =		mm/inches

Empty weight C. of G.

$$X = \frac{G_2 \times b}{G_L} + a = \frac{\qquad}{\qquad} + =$$ mm/inches behind Datum Line

The measurements to determine the empty weight, the empty weight C. of G., and the loading limitations should always be taken with the glider empty of waterballast and without removable trimming weights.

	from	to	multiply by
Conversion:	kg	lbs	2,2
	mm	inches	0,0394

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If the limits of the empty weight C. of G. positions and the loading limitations chart are adhered to the C. of G. of the loaded cylinder will be within permitted range.

Empty Weight kg	Range of C. of G. behind Datum (mm)	
	Forward	Aft
250	723	766
255	715	760
260	707	754
265	700	749
270	693	743
275	669	738
280	646	733
285	623	728
290	601	724

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It should be noted that to make use of the maximum load the maximum admissable load for non-lifting parts must not be exceeded.

The weight of the non-lifting parts is the sum of the fuselage, tailplane and maximum load in the fuselage and must not exceed 240 kg (529 lbs) or the maximum load permitted in the fuselage must be correspondingly decreased.
This refers to the load of the fuselage.
The Center of Gravity should be rechecked after repair, repainting, the installation of additional equipment or when a period of 4 years has elapsed after the last weighing.

The empty weight, empty weight C. of G. position and maximum load, should be recorded after each weighing on page 10 of the Flight Handbook.

To find out the Center of Gravity of the loaded sailplane:
-C. of G. of the pilot is located 633 mm in front of the datum line
-C. of G. of the water ballast is located 315 mm behind the datum line