MENDIP GLIDING CLUB

Ka8b FLIGHT MANUAL

CONVERSION SHEET

The purpose of this sheet is to convert the gliders Limitations and Weights detailed in the Flight Manual in k.p.h. and Kgs to knots and lbs for easy reference. The original figures are taken from the Manufacturers Flight Manual as attached and the Certificate of Airworthiness.

1.OPERATING DATA AND LIMITS (Ka8b BGA No 2307)

Speeds

Max Speed	- VNE - 100 knots
Rough Air Speed	- VB - 76 knots
Max Aero Tow Speed	- VT - 76 knots
Max Auto/Winch Tow Speed	- VW - 55 knots
Stall Speed (Max Weight, Wings Level)	- VS - 28 knots
Best Glide Angle	1:27 at 41 knots
Min Sink Speed	1.2 kts at 33 knots
Approach Speed	50 Knots plus 1/2 Wind Speed

Weights

Empty Weight	468 lbs
Max Weight	685 lbs
Min Solo Weight	163 lbs
Max Solo Weight	217 lbs

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2. BGA WINCH/AUTO TOW WEAK LINK

Blue

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3. AIRWORTHINESS CATEGORY

BGA Certificate of Airworthiness in the semi-aerobatic category approved for loops, spins, stalls, chandelles and tight turns up to 3.5g.

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4. TYRE PRESSURE

35 p.s.i.

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Operating Instructions for the Sailplane Schleicher K8 and K8 B

Attachments:

1. Three-sides view
2. Weight and balance
3. Elevator unit assembly

A) M a i n d a t a

Weights

Empty weight:	420 lbs.
Max. useful load:	265 lbs.
Gross weight:	685 lbs.
Max. weight of non-supporting structure:	440 lbs.

Approved for:

Shockcord start:	yes
Auto-winch tow:	up to 6o mph
Aero-tow:	up to 8o mph
Glide, gusty conditions:	up to 8o mph
calm conditions:	up to 12o mph
Acrobatics:	none

Suited for:

Primary training:	none
Training of emergencies:	yes

Stess classification:

Class II, according to the German Glider Stress Specification (BVS).

B) Minimum equipment

Four parts safety belt,
airspeed indicator with a range up to 125 mph,
altimeter,
back-pad with solid filling about 4 in. thick (compressed) if no parachute will be used,
trimming plan,
data-plate.

C) Wing- and tail setting

(See three-sides view)

The angles of setting and wing wash-out as well as the deflections of the control surfaces are to be gathered from the three-sides view.
Pay attention to the tolerances if repair is necessary.
The position of the ailerons is influenced by the elevator control on account of a special kinematic of the control system.
The ailerons have a normal setting if the stick has a normal or pushed position.
A pulled stick means lifting the ailerons somewhat.

The deflections of control surfaces and the extension of dive brakes are limited:

Rudder: The rudder is non-adjustable stopped in the rear on the lower rudder hinge fitting.

Ailerons: The control stick is stopped by hardwood blocks on the seat supporting tubes.

Elevator

To the rear: Non-adjustable stop. The control stick strikes against the seat edge.

To the front: Adjustable stopper on the lower side of the elevator push-pull tube striking against the control stick.

Dive brakes

To the rear: Adjustable stopper on the horizontal push rod striking against a frame tube.

To the front: Non-adjustable stop.
The shift lever strikes against a stopper on the frame.
The angle range of the lever will be regulated by this stop device.
The lever movement to the front may not exceed the top center point about 0.4 in. measured from the ball bearing of the forked vertical push rod.

D) Assembly and disassembly

Assembly

Clean and lubricate bolts and holes.

Connect left wing sideways to the fuselage, put in the nose bolt.
Caution! Do not tilt the fuselage.

Do the very same with the right wing.

Connect the main spar fittings with bevelled bolts (put in the lower bolt first). Tighten the bolts. Moving the wings a little will faciliate this procedure. Safety the main bolts with cowling safety pins.

Connect attachment fittings of ailerons and dive brakes. Safety with cowling pins.

Set up the elevator unit by suspending the rear eyebolts on the fuselage pins and tighten the front bolt. Safety with cowling pin. Pay attention to the correct position of the control lever (see the sketch of elevator unit assembly).

Connect the Flettner push rod to the elevator control lever by means of a split pin.

Check clearance and correct operation of controls, dive brakes, and automatic release of the tow coupling.
Make general inspection.
Check pressure of the landing wheel.
(35 lb/sq. in.)

Attach fairings.

Disassembly is essentially the reverse of assembly. Lubricate all attachments to prevent corrosion.
It is advisable to tie the Flettner push rod.

E) Flying operations

Trimming

The sailplane may be flown with pilot weights of 132 lbs. up to 220 lbs.
With weights of this range trimming is not required.
Pilots of less weight have to use lead-cushions.

A spring balance on the control stick adjusts the desired manual force of elevator control.

The Flettner balance acts equivalently:
movement to the front means nose-heaviness,
movement to the rear means tail-heaviness,

Adjustment of rudder pedal control

Draw back the pedals with heels and lock the side click-stop devices of the control cables into the desired position. This procedure will be possible even during the flight.

Auto-winch tow

Preset breaking point No. II
Max. tow speed : 60 mph.

Notice: During winch tow pulling the stick means increase of speed.
After take off push the stick a little forward.

Best climbing attitude will be given with control stick in normal position.

Do winch high lauching only with C.G. coupling.

Trim by weight

Fixing the 17 lbs standard trim weight at the foot board will compensate for 26 lbs pilot weight.

Aero-Tow

Preset breaking point No. I
(min. 661 lbs. - max. 992 lbs.)
Max. speed: 80 mph.

The nose coupling is normal for aero-tow. Using the C.G. coupling is permissible if textile cable is applied, max. length 328 ft.

Pull coupling fully through.

Notice: Check the attachments of the cockpit canopy and of the dive brakes always before taking off!

Free flight

The values specified as follows are design values. They relate to the equivalent airspeed (EAS) - (dynamic pressure).

Pay attention to the deviation of the indicated airspeed (IAS) which depends on the location of the venturi tube.

The diagram Fig 1 shows the deviation of IAS versus EAS provided that a normal venturi tube 3,5 on the nose of fuselage is installed. (= 0,125).

Stalling speed (V_{SO}) (at a gross weight of 595 lbs.)	- 32 mph.
Minimum sinking speed (horizontal flight)	- at 38 mph.
Best gliding angle	- at 47 mph.

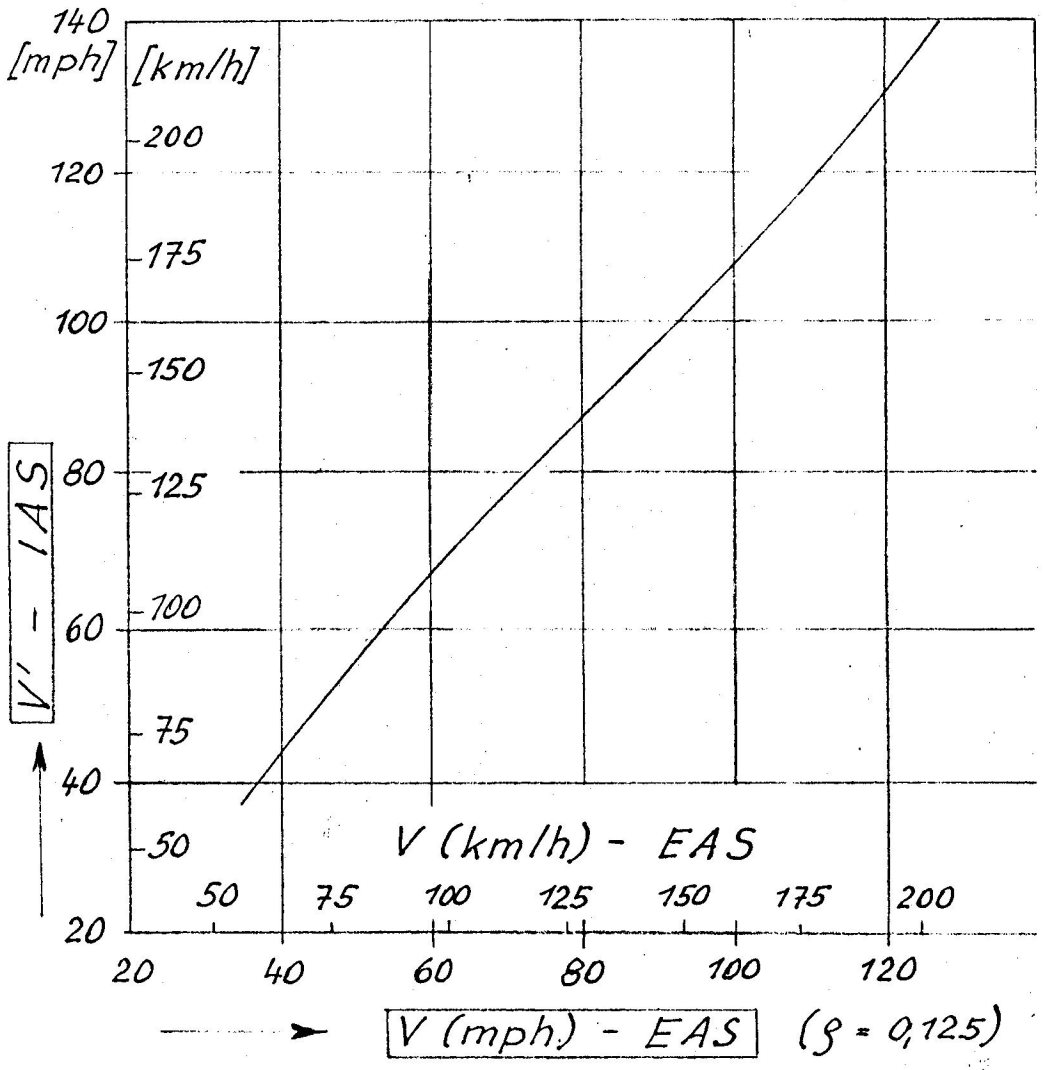


Fig. 1

Landing

Approach with a speed of approx. 44 - 5o mph.
The gliding angle will be controlled widely by application of dive brakes.
Touch down with dive brakes not fully extended and do not pull too much trough.
The plane will be slowed down by pushing the nose down and sliding on skid.

Emergency

The sailplane can be held in a stalling position with fully pulled stick and necessary rudder control. Applying harder rudder brings the plane into a spin. Taking back all controls into normal positions will stop the spin.

When flying with high speeds the speed limits are to be observed.
As soon as the speed exceeds 80 mph extend slowly the dive brakes.

Notice: At high speeds the lever force of the dive brakes acts in the extending direction.

Raindrops, rime, and icing will deteriorate the wing surface so much as to change the flight performances.
Therefore be cautious when approaching in rain, keep sufficient speed in advance.

F) Maintenance

Moisture is the most serious trouble with wooden planes. Even a steel tube fuselage will be kept dry. Take always care that no water seeps into inner wing compartments. If penetration is suspected keep the wing in a dry room and turn it over daily. The sailplane is especially affected on an open trailer. Cover the wing roots in any case that no water will be splashed in. Moisture in the plane also will be caused by sweat water,

Strong sun irrigation affects the finish. The plane shall not be exposed to the sun more than necessary. The care of the surface finish by means of good provisions increases the durability of the finish, improves the surface, and consequently the flight performance. It is not important to get the surface superfinely polished but to remove dust, dirt splash, and similar contaminations.

Sealing up slots by means of adhesive tapes will also be of use for improving the performance.
But do not seal the canopy when bailing out shall be possible.

Clean the plexiglas canopy by means of appropriate provisions, or in the case of need by water. Use a soft and clean cloth. Do not rub with a dry and hard one.

Lubrication of bearings:

The ball bearings are sealed as far as possible and they normally do not require lubrication for a long period. The wing root bearings only which are not sufficiently protected are to be cleaned, using gasoline and lubricated.

The grease fittings on the swing bearings and on the swing lever of the fin which is connected to the push-pull tube of elevator control must be lubricated respectively after 25 flying hours.

The attachments of the control surfaces and OTHER hinge bearings are to be disassembled, cleaned, and lubricated when carrying out the annual overhaul.

The C.G. tow coupling on the bottom of the fuselage will be especially exposed to soiling and requires a frequent cleaning and lubrication. If the sailplane will be often flown on stony and sandy fields it is advisable to secure the lower side of the skid by fastening a steel covering of about 0,04 in. thickness.

The tailskid plate must be reinforced if abrasion will be observed. Take off the skid and weld on a.0,08 in. steel plate.

Check currently the safety belts. They must not show tears, damp stains, and rusty spots.

Tire pressure: 35.5 lb./sq.in.

Repairs of the main spar must be done by experts repairs of the steel tube fuselage by approved welders. Inform the manufacturer if extensive repair work is necessary and ask his advice.

G) Locations of C.G.

The locations of C.G. have an important influence on the flight performance. Observe exactly the admissible limits..

A displacement of the C.G. too far back will cause emergency conditions. Thereby stalling conditions and especially spinning properties (flat spin!) change for the worse. The sensitivity of the elevator increases.

A location of the C.G. too far back will result in deteriorating the flight performance and flying with max. lift is no longer possible.

Following limits of gross weight C.G. locations are tested:

a) Foremost location: 9.7 in.

b) Aftmost location: 15.4 in.

aft of the wing leading edge at the station of rib 1.

Check the locations of the C.G. if additional equipment will be installed or if repair work and a new finish have been done. One may take as a rule that planes get weightier in course of time and thereby tail-heavier. It is advisable to carry out a new weight and balance determination in connection with the annual overhaul.

Cleaning of Plexiglass-canopy only with Plexipol and Plexiklar. If necessary water. Soft cloth (gloves-cloth). In no case rub with hard cloth dry on Plexiglass.

Lubrication of bearings:

The ball-bearing are, so far as possible, normally covered and therefore will need no special maintenance. Only the bearings at the wing-root, where the rigging-connections do not allow an unobjectionable protection, must be cleaned with petrol when fouled, and greased again.

The Grease-Nipples of the pedal-bearings and of the elevator-pushrod-oscillator at the fin are to be greased about every 25 flying hours.

The rudder- and other plain-bearings are to be dismantled, clean ed and greased at the yearly overhault.

Tyre press 35 psi.

The c.g. hook especially is exposed to dirt and needs often cleaning and oiling.
If the flying takes place on very stony or sandy grounds it is advisable to protect the skid by screwing on a steel plate of 1 mm thickness.

The tail-skid-plate must be renewed by welding on a 2 mm steel plate from time to time. The tail-skid-plate is to be removed for this purpose. Do not anneal the spring.

The pressuretake-openings for the instruments at the fuselage are to be sealed with adhesive tape on transport or longer parking.
During out of use it will be the best to dismount the instruments and store them in a dry room. When mounting connect right.

The safety-belts are to be checked currentl; for fractures, damp-stain and corrosion.

Repairs: All larger repairs and overhaults must be effected by the manufactures. In case of need Mr. Schleicher will inform.

G) Centre of Gravity:
Great influences to the flying characteristics has the center of gravity. Therefore, the prescribed limits must be kept and not exeeded. Far aft postion is particulary dangerous. The stalling and spinning characteristics will change then very badly. The sensibility of the elevator will increase. Too much front location of c.g. diminish the performence, and the glider cannot be flown at its maximum lift coefficient.

The following ranges of flight position of c.g. are tested:

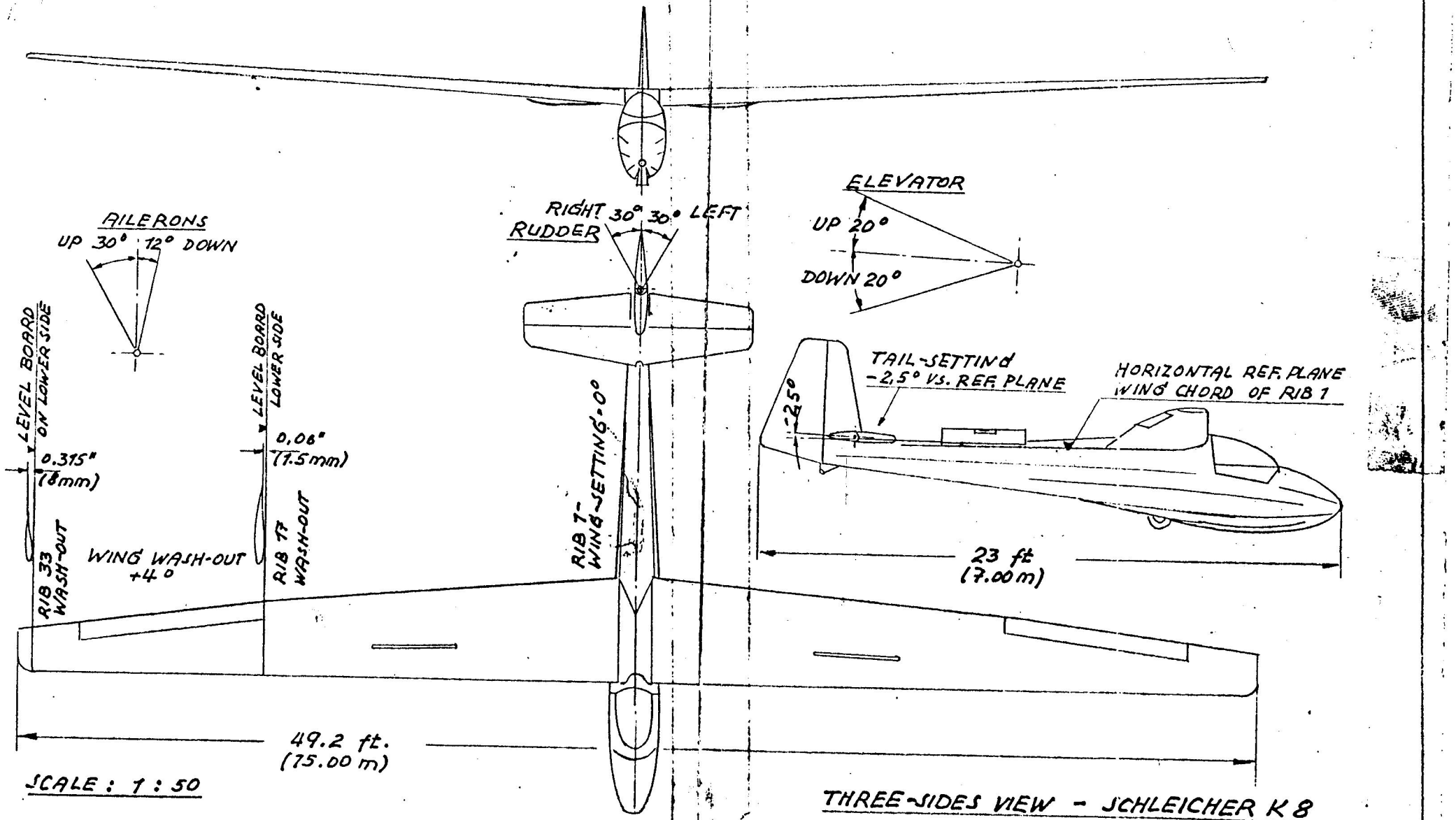
a) <u>max. forward position:</u>

7 inches behing leading-edge of wing at rib No. 1

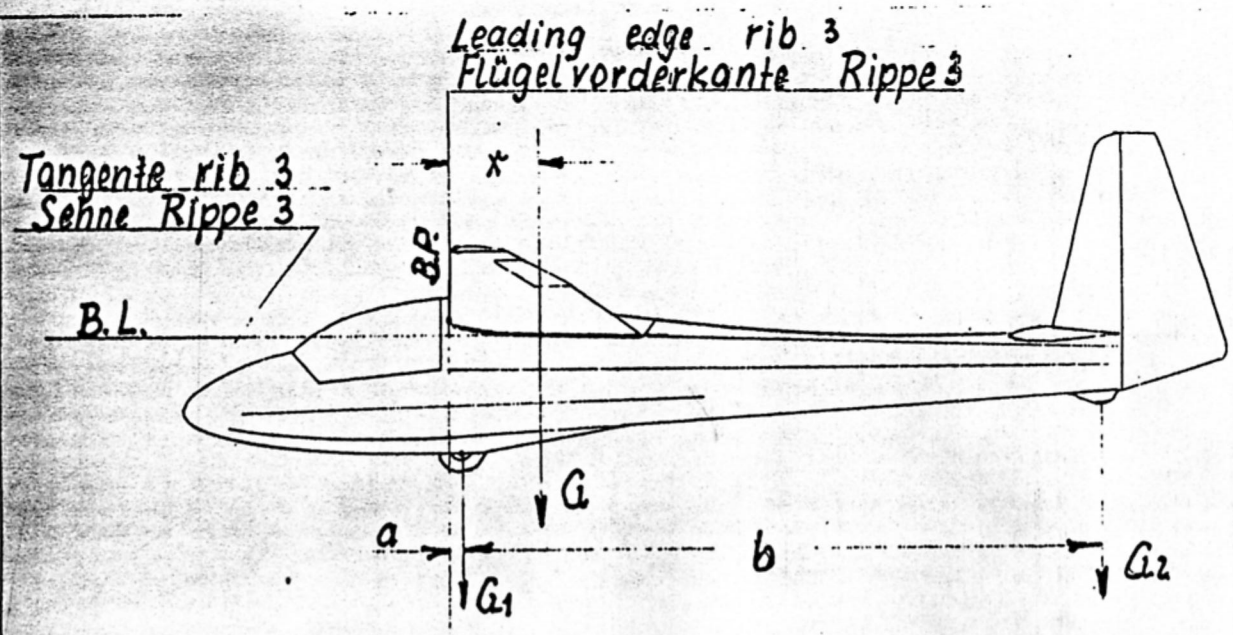
b.)<u>max. aft position:</u>

14 inches behind wing-leading-edge at rib No. 1

Pay attention to c.g. when additional equipment is installed, at repairs and renewing of finish. One can take it as a rule, that gliders become heavier during their life and become tail heavy. Therefore it is advisable to have a new weightregulation of the parts and c.g. balance at each yearly overhault.


AILERONS
UP 30° 12° DOWN
LEVEL BOARD ON LOWER SIDE
0.315" (8mm)
RIB 33 WASH-OUT
WING WASH-OUT +4°
LEVEL BOARD LOWER SIDE
0,06" (1.5mm)
RIB 17 WASH-OUT
RIGHT 30° 30° LEFT
RUDDER
RIB 7 - WING-SETTING 0°
ELEVATOR
UP 20°
DOWN 20°
TAIL-SETTING -2,5° VS. REF. PLANE
HORIZONTAL REF. PLANE WING CHORD OF RIB 1
-2,5°
23 ft (7.00 m)
49.2 ft. (15.00 m)
SCALE : 1 : 50
THREE-SIDES VIEW - SCHLEICHER K 8

ASK 18 Wägeblatt
Balancing sheet.

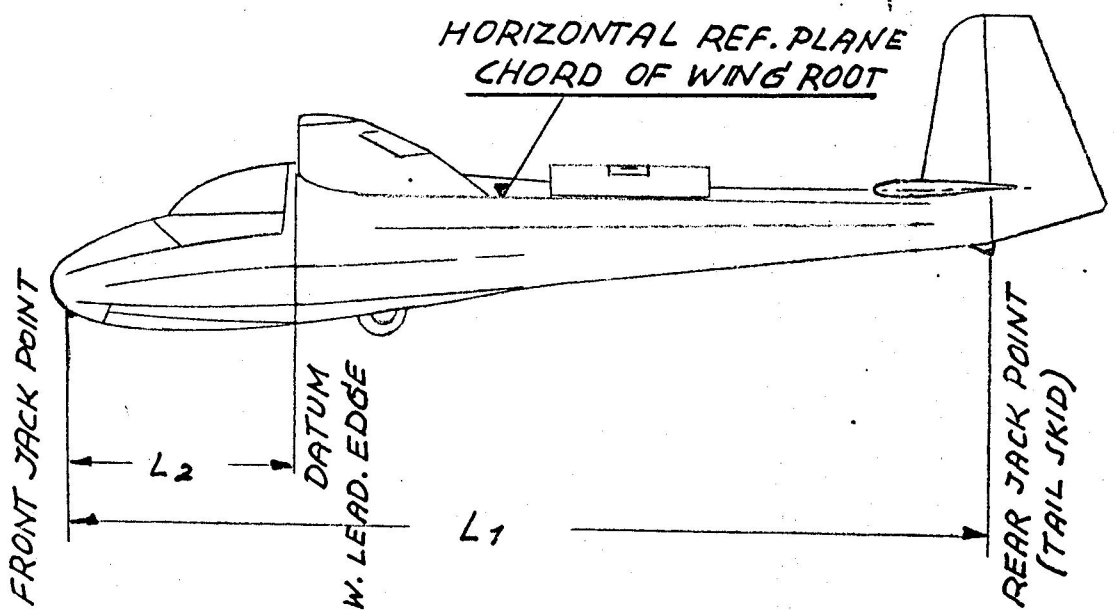


$$x = a + \frac{G_2 \cdot b}{G} \qquad G = G_1 + G_2$$

Empty weight	Leergewicht	kp	200	210	220	230	240		
For Pilot	Für Führer	= 60 kp	638	626	615	604	595	} Max. Rücklage	Max. rear ward C. of G.
+	+	= 65 kp	660	646	634	623	613		
Parachute	Fallschirm	= 110 kp	577	559	543	528	514	Max Vorlage	Max forward C. of G.

WEIGHT AND BALLANCE

LEVEL THE FUSELAGE AND WING TIPS
(WING TIPS WITHOUT ANY LOAD)



DETERMINATION OF EMPTY WEIGHT C.G.:

W_E. = EMPTY WEIGHT
$W_{T.S.}$ = TAIL SKID WEIGHT

$$\frac{W_{T.S.} \cdot L_1}{W_E} - L_2 = \text{CENTER OF GRAVITY (AFT OF DATUM)}$$

TRIMMING

WITH PILOT WEIGHTS OF MORE THAN 132 lbs. TRIMMING IS NOT REQUIRED.
PILOTS OF LESS WEIGHT HAVE TO USE LEAD-CUSHIONS.

APPROVED EMPTY WEIGHT C.G. LOCATIONS:

EMPTY WEIGHT:	397	419	441	463	lbs.
EMPTY WEIGHT C.G.:	25,7	25.1	24.6	23.9	inches $\pm 1.2''$

(AFT OF DATUM (W. LEADING EDGE)

SCHLEICHER K 8

Schleicher K 8 B
Schmierplan

(M) Bei jeder Montage sauber machen u. fetten.

(N) Fettschmiernippel, alle 25 Std fetten.

(Ü) Bei jährl. Überholung auseinandernehmen u. fetten.

Alle übrigen Gelenke u. die Kupplungen bei Bedarf oelen.

Kugellager werden bei Grundüberholungen mit Benzin ausgewaschen u. neu gefettet.