

ASK 13 Pilot Operation Handbook



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POPPELHAUSEN / RHÖN

Flight - and Maintenance - Manual

for the Glider

AS - K 13

This Handbook has to be carried
on board of the aircraft.

It belongs to the glider

AS - K 13 N 1749

Serial No. 13046

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1. Operating Limitations

Air speeds:

Max. speed	125 m/h
rough air	87 m/h
aero tow	87 m/h
auto and winch tow	62 m/h

Weights:

Empty weight	650 kg
Max. weight	1060 kg
Max. weight of non lifting parts	710 kg

Category:

2 BVS

Limit load factor	
up	4.0
down	-2.0
Safety factor	2.0

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Stalling speed with an all up weight

of 840 lbs is 35 mph

1040 lbs is 38 mph

Speed at min sink 40 mph
optim. glide 50 mph

Landing:

The glide angle can be adjusted in a wide range with the airbrakes. Touch down is best with partly extended airbrakes only. The wheel brake is actuated by the air-brake lever when fully pulled back.

Stalling and Spinning Behaviour:

With stick full back the aircraft can be controlled by the rudder. Applying a large amount of rudder will cause a spin. There has to be considered the influence of the center of gravity position to the spinning characteristics.

With the C. of Gr. pos. forward the aircraft will tend to go into a spiral dive and build up speed very rapidly. In this case the airbrakes have to be opened first before pulling out.

With C. of Gr. well in the middle spinning is normal and the aircraft will recover by giving free the controls alone.

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Center of gravity position in flight:

Leveling means Tangent to rib No. 3 horizontal.

Datum wing leading edge rib 3

Max. forward 2.75 behind datum point

Max. rearward 9.7 " " "

Weak link in the tow cable:

Winch tow max. 2350 lbs

min. 1850 lbs

Aero tow max. 1580 lbs

min. 1060 lbs

2. Operating Directions:

Winch tow:

Max. tow speed is 62 mph.

Attention. In winch tow pulling the stick back means increase of speed. When lifting off ease the stick somewhat to overcome a light tendency to pitch up. Best attitude in climb is

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Aero tow

Max. towing speed is 87 mph.
For aero tow the nose hook is preferable.
Pull release till the stop.

Before every take off check canopy and
airbrakes for complete locking.

Adjustment of the front rudder pedals.

Pull back the pedals with the heels and
lock the adjusting link to the desired
position. Adjusting is possible during
flight, too.

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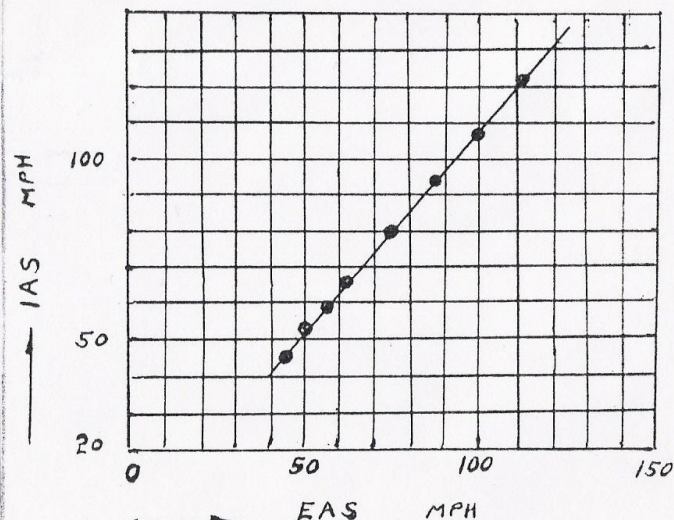
In flight:

The presented values are calculated.
They are related to EAS. There has
to be considered the position error,
see Fig. 1.

The indicated air speed reading may
drop to zero when the glider is slip-
ping or skidding due to movement of
the total pressure peak from the nose
to the side.

FIG. 1

NOSE PITOT



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With C. of Gr. near the most rearward position spin recovery has to be managed by the following standard methods:

- a) apply opposite rudder (i.e. against the direction of rotation of the spin);
- b) pause;
- c) ease the control column forward until the rotation ceases
- d) centralize rudder and allow aircraft to dive out.

At high speed there has to be watched the speed limits. When a speed of 87 mph is surpassed involuntary the airbrakes should be opened slowly.

Remember: At higher speeds the airbrake lever force is actuating in opening sense.

Rain drops, hoar frost and ice will disturb the wing surface, so quite adverse flying characteristics may result. Therefore caution is advised in such cases during approach, give enough speed margin.

Emergency Jettisoning of Canopy: To bail out, the canopy has to be opened at the release knob at the left side and pushed forward out of the hinge. The hinges have to be watched for easy moveability.

Cloud flying: The glider has sufficient strength for cloud flying. Nevertheless some principal rules should be con-

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- 1) Overspeed in cloud flying should be prevented in any case. There should be the rule to open the airbrakes early at speeds of 65 to 75 mph.
- 2) Minimum equipment for cloud flying:
Air speed indicator with pitot tube protected against icing.
Sensitive altimeter
Variometer
Compass
Turn and bank (power source insensitive against icing).
Chronometer
An artificial horizon and accelerometer is recommended.
- 3) The ATC rules are to be observed.
- 4) Minimum Equipment:
Airspeed indicator ranging from 30 to 125 mph.
Altimeter
Safety belt and shoulder harness
Back cushion if no parachute is carried (min. thickness 4 inch).
Balance - and data plate
Flight Manual.
- 5) Adjusting Data:
The adjusting and washout - angles as well as the control surface deflections are shown in the outline drawing. At repairs care should be taken to observe the tolerances. By the particular kinematics of the control mechanism the aileron deflection will be influenced by the elevator. With normal stick position the ailerons have to be normal.

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If the empty weight center of gravity is within the given limits it is verified that the inflight center of gravity is correct provided the glider is properly loaded after the balance plate.

The center of gravity has an important effect to the gliders handling characteristics. Therefore one should pay attention to not exceed the given limits.

Too much backward position may become dangerous: Stalling and especially the spinning characteristics (flat spin) can be badly influenced. The elevator becomes more sensitive.

Too much forward position may deteriorate the performance and does not allow flying at maximum lift. (flare out when landing!).

The following ranges of flight position of C. of Gr. are tested:

- a) Max. forward position:
2.76 inches behind datum point.
- b) Max. aft position:
9.7 inches behind datum point.

6) Balancing instructions:

Cockpit load (Pilot + parachute).
single occup. front seat 143 - 220 lbs.
two occup. front seat 143 - 220 lbs.

Less load has to be completed with ballast on the seat (lead - or sand cushion).

Notice: If no parachute is carried a back cushion has to be used which has a

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With pushed and pulled stick the ailerons are somewhat zoomed.

The controls have stops:

Rudder control: Fixed stop at the lower hinge.

Aileron control: Fixed stop at two hard wood pieces down the front seat.

Elevator control: Backward - fixed stop at the front edge of the seat, forward - fixed stop at the ground board.

Airbrakes:

Backward: Adjustable stop at the horizontal pushrod, stops against the main bulkhead frame.

Forward: Fixed stop, cross shaft lever stops at a tube piece.

6) Weights and Center of Gravity Positions

After repairs, after installing of additional equipment, after new painting, etc. there should be watched that the empty weight center of gravity is within the limits. If necessary balance weights are to be installed.

Empty weight	616	638	660	682	705	lbs
center of gravity position	max. 21.45	21.06	20.68	20.3	20.0	
	min. 19.3	18.7	18.2	17.7	17.2	

behind datum point.

Leveling means: Tangent to rib 3 horizontal.

Datum: wing leading edge rib 3.

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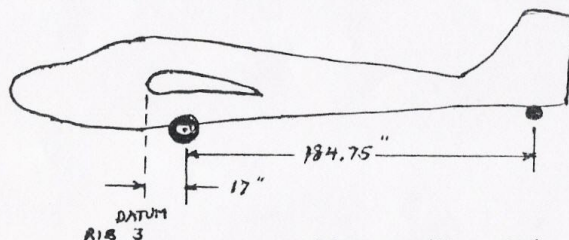
1 FEB 1978 ACFT WEIGHED EMPTY WITH
FOLLOWING EQUIPMENT INSTALLED.

4 SEAT CUSHIONS
BELTS & HARNESSSES
TIP WHEELS
T.W.

(EWD) ALTIMETER
A/S
PZL VARIO / T.E.
COMPASS

GENAVE 100 TRANSCEIVER
WITH MIKE

(REAR) ALTIMETER
WINTER VARIO
A/S
9 A.H. BATT. & BOX



GROSS WGT	1060 LBS.
EMPTY WGT	694
USEFUL	366 LBS.

EWCG = 18.287" AFT DATUM

(EWCG RANGE FOR 694 LBS IS 17.5" TO 20.2" AFT)

FRONT PILOT SOLO	143-220 LBS	CHUTE INCLUDED
FRONT PILOT DUAL	143-220 LBS	

L Eugene Wapay

AT-1135718

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1) Rigging (improved):

- 1) Set tail of fuselage up on a 30 gal. drum, or such.
- 2) Insert L/H wing.
- 3) Use chain boomer tool to lock onto fwd. guide stud.
- 4) Pin rear drag fitting. Support wing tip.
- 5) Insert R/H wing.
- 6) Start main taper pins and tap in with mallet.
- 7) Insert rear drag pin.
- 8) Hook up controls and install nuts and safties, incl. main pins.
- 9) Carefully insert horizontal stab., tighten front mount bolt, connect trim tab, safety all.
(Stab. must engage two aft mount pins and elev. guide assy.)

2) Preflight Check

After rigging resp. daily before the first flight:

Check all rigging connections for proper securing. Look for foreign bodies. Check the controls, airbrakes and the release hook for free movement.

It is recommended to check frequently the whole glider thoroughly. There have been found quite a lot of unsecured bolts and damage at such occasions. Use a flashlight to look into every spot.

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3) Derigging

Point 1 - 8 (Rigging) in reverse sequence.
Grease all joints, danger of rust!

4) Road Transport

The design of a trailer is a special task and can not be covered here in all details. The firm of Schleicher will supply suitable drawings for trailers. The wing is best supported at the spar root. The second support should have enough distance, best about 8 feet from wing tip. A sufficient wide area at the supports is important.

The same considerations concerns to the fuselage. Fix points are the wheel, the fixing hole at the rear fuselage and the two welded in screw nuts on the side of the forward part of the fuselage.

Careful attention should be paid to prevent water coming into the interior of the wing and fuselage. The aileron and airbrake push rods in the fuselage should be fastened, best with a rubber strap.

5) Maintenance

Humidity is the worst enemy of a wooden glider. Be careful to prevent water remaining in corners. On suspicion that water came into wings and fuselage, bring same into a dry room and turn every day. The glider is endangered especially on open trailers. In any case it must be taken care for that by covering the front part no splash water will touch the wing root.

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Also by condensing water considerable quantities of humidity can enter the interior of the glider.

Strong sun radiation will affect the finish by time, therefore the glider should not be exposed to the sun more than necessary. The treatment of the finish with good waxes and polishing material will increase the durability and improve the surface, an important fact for performance. The advantages of the laminar profile can only be achieved by a smooth surface.

Sealing of gaps with adhesive tape will also cause some gain of performance. However at the cockpit caution is necessary, when parachute bail out shall be possible.

Cleaning of the plexiglass canopy only with suitable cleaners. If not available use pure water. Soft cloth (gloves cloth). In no case rub with hard cloth dry on plexiglass.

Lubrication of bearings:

So far as possible, the ball bearings are covered and therefore need no special maintenance. Only the bearings at the wing root, where the rigging connections do not allow a suitable protection, must be cleaned with gasoline when dirty and greased again.

The control surface bearings are to be dismantled and greased at the annual overhauls.

Wheel: Tire pressure 35 psi.

The c.g. hook especially is exposed to dirt and needs often cleaning and oiling.

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The tail skid shoe has to be so led from time to time by welding on a new steel plate. But it should be removed for this work to prevent burning the rubber block.

The pressure openings for the instruments at the fuselage are to be sealed with adhesive tape on transport or extended parking. During longer non-flying periods it is advisable to put the instruments completely out and store it in a dry room. When installing again watch correct connecting of the tubes.

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

6) Overhauls

The tow hook has to be removed every 2000 launches or 2 years and sent back to the manufacturer for overhaul. The rudder cables are to be replaced if there are any signs of worth mentioning wear.

7) Repairs

All major repairs should be made in the manufacturing firm. In cases of doubt please ask the Schleicher firm.

8) Appendix

3 - View drawing
Balancing sheet.

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TAKEOFF CHECKLIST

Controls--Free and Normal

Ballast--Pilot & Parachute in proper wt. range

Straps--Secure and Snug

Instruments--Adjusted, alt. set, radio on 122.8

Trim--Set for Takeoff

Canopy--Closed and Locked, Pins in full front and back

Brakes--Dive Brakes Closed and Locked

Emergency--Options if a premature tow release

Towline--Hooked up and Checked

Front Seat: 143-220 lbs. Empty Weight: 650 lbs.

Max. Gross Weight: 1060 lbs.

Max. Useful Load: 410 lbs.

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LANDING CHECKLIST

Speed--L/D Max + 1/2 Wind + Full Gust

Trim--Set

Air Brakes--Hands On

Radio--122.8 call 45 to Downwind or Downwind

Vs: 35s -38d

Min Sink: 40s - 44d

L/D: 27:1 at 50s-56d

NM/1000 ft at L/D:4.6

NM/1000 ft at .75

L/D:3.3