L 23 SUPER-BLANIK

SAILPLANE FLIGHT MANUAL

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THIS FLIGHT MANUAL MUST BE CARRIED ABOARD THE SAILPLANE AT ALL TIMES WHEN IN OPERATION

THE TECHNICAL CONTENT OF THIS DOCUMENT IS APPROVED UNDER THE AUTHORITY OF DOA REF. EASA.21J.609

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0.1 RECORD OF REVISIONS

Any revision or amendment of the present Manual will be issued in the form of Bulletins, approved by the Czechoslovak State Aviation Inspection, a supplement of which will contain new (revised) pages. It is the operator's duty to make a note indicating each revision in the Record of revisions and to replace the effected page(s) with the revised one(s). Revised or amended parts of the text will be indicated by a vertical line in the left hand margin and the revision No. and the effective date will be shown on the bottom left hand of the page.

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No.	Affected Section	Affected pages	Date	Bulletin No.	Date of Bulletin approval	Date inserted and signature
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No.	Affected Section	Affected pages	Date	Bulletin No.	Date of Bulletin approval	Date inserted and signature

0.2 LIST OF EFFECTIVE PAGES

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0.3 TABLE OF CONTENTS

SECTION 1

GENERAL

CONTENTS

1.1 INTRODUCTION

This Sailplane Flight Manual has been prepared to provide pilots and instructors of the L 23 SUPER-BLANIK sailplane with information for training and for performing soaring flight. The Manual is intended to be used by qualified sailplane pilots and so it contains directions, in which the L 23 SUPER - BLANÍK sailplane is different from other sailplanes.
This manual includes the material required to be furnished to the pilot by JAR 22. It also contains supplemental data supplied by the manufacturer.

1.2 CERTIFICATION BASIS

The L 23 SUPER-BLANIK has been approved by the State Aviation Inspection of the Czech Republic in accordance with the JAR-22 (JOINT AIRWORTHINESS REQUIREMENTS) issued in April 1980 including Change 4 dated 7 May 1987, Category U (UTILITY) and in compliance with OSTIV (ORGANISATION SCIENTIFIQUE ET TECHNIQUE INTERNATIONALE DU VOL A VOILE) AIRWORTHINESS STANDARDS issued in October 1986, Category U (UTILITY).
FAA Type Certificate No. G60EU (Utility Category) was issued on February 22, 1993.

1.3 WARNINGS, CAUTIONS AND NOTES

The following definitions apply to warnings, cautions and notes used in the Flight Manual.

WARNING:

MEANS THAT THE NON-OBSERVATION OF THECORRESPONDING PROCEDURE LEADS TO AN IMMEDIATE OR IMPORTANT DEGRADATION OF THE FLIGHT SAFETY.

CAUTION: MEANS THAT THE NON-OBSERVATION OF THE CORRESPONDING PROCEDURE LEADS TO A MINOR OR TO A MORE OR LESS LONG TERM DEGRADATION OF THE FLIGHT SAFETY.

NOTE: Draws the attention on any-special item not directly related to safety but which is important or unusual.

1.4 DESCRIPTIVE DATA

1.4.1 BRIEF DESCRIPTION

The L 23 SUPER-BLANIK sailplane is a cantilever, high-wing, two-seat sailplane of all-metal structure. The rudder, elevator and ailerons are fabric covered. In the forward section part of the fuselage there are front and rear cockpits. Both cockpits are covered with a two-part canopy which can be jettisoned in flight. Both cockpits are equipped with all sailplane flight control including flight and navigation instrument panels. The sailplane is equipped with tow hooks either for winch or aero-tow take-off.
Wings including ailerons and air brakes are attached to the fuselage at six suspension points (three on each side). The vertical stabilizer is permanently fixed to the rear fuselage section. The horizontal stabilizer is fastened by hinges on the top of the vertical stabilizer.
Elevator and aileron controls are actuated by control push rods and control cables, the rudder control is pedal- operated also by control push rods and control cables. Air brakes are controlled by control levers. The elevator trim tab is controlled by the control lever.
The sailplane is equipped with the main landing gear and the tail landing gear. The main landing gear is mechanically semi-retractable with an oleo- pneumatic shock-absorber and a mechanical brake. The tail landing gear is equipped with a wheel and shock-absorber. Cockpits are ventilated by cold air tapped from the nose part of the fuselage. The baggage compartment is behind the rear cockpit. Both cockpits are upholstered.

1.4.2 BASIC DIMENSIONS

1. Main dimensions

Wing span ..... 53.15 ft (16.2 m)

Length ..... 27.89 ft (8.5 m)

Height..... 6.23 ft (1.9 m)

2. Wing

Area ..... 206.13 sq ft (19.15 m^2)

Aspect ratio 13.7

Dihedral ..... 3°

(Cont.)

Sweep angle ..... -5°
Mean aerodynamic chord..... 4.11 ft (1.253 m)
Geometric twist ..... -3°

Ailerons

Area ..... 24.86 sq.ft (2.31 sq.m)
Span ..... 11.18 ft (3.408 m)
Deflections: up ..... 34° +2°
down ..... 13° +2°

Air brakes

Area ..... 6.98 sq.ft (0.648 sq.m)
Span ..... 4.43 ft (1.35 m)

3. Horizontal tail surfaces

Area (total) ..... 26.51 sq.ft (2.463 sq.m)
Span ..... 10.99 ft (3.35 m)
Aspect ratio 4.4
Dihedral ..... 0°

Elevator

Area ..... 10.98 sq.ft (1.02 sq.m)
Deflections: up ..... 32° +2°
down ..... 25° +2°

Elevator trim tab

Area ..... 0.75 sq.ft (0.07 sq.m)
Deflections: up ..... 15° ±1°

(Cont.)

down ..... 35° ±1°

4. Vertical tail surfaces

Area (total) ..... 20.17 sq.ft (1.874 sq.m)

Height ..... 5.1 ft (1.55 m)

Aspect ratio 1.29

Rudder

Area ..... 10.98 sq.ft (1.02 sq.m)

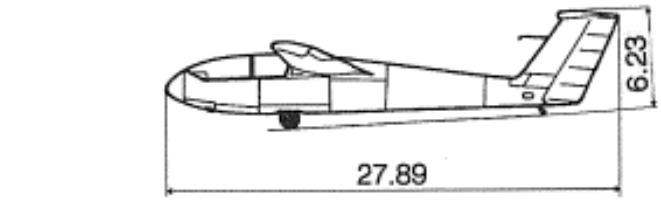
Deflections both sides (normally to axis of rotation) ..... 30° +1°

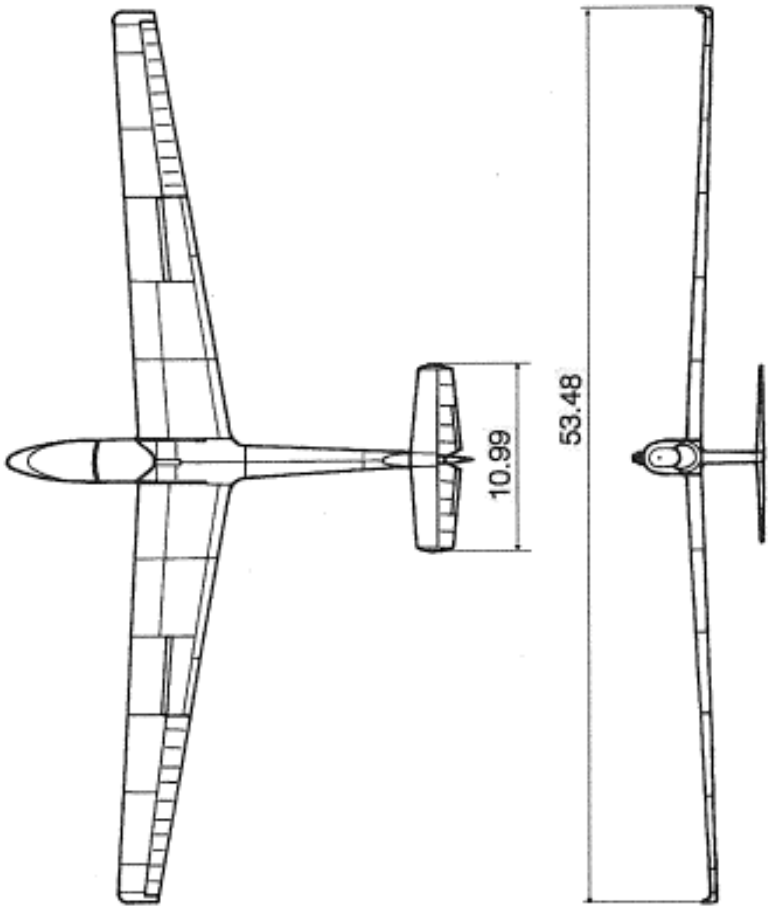
5. Fuselage

Width ..... 2.16 ft (0.66 m)

Height ..... 3.61 ft (+.10 m)

1.5 THREE-VIEW DRAWING (DIMENSIONS IN ft)





SECTIONS 2

LIMITATIONS

CONTENTS

2.1 INTRODUCTION

Section 2 includes operating limitations and basic placards necessary for safe operation of the sailplane, its standard systems and standard equipment. Compliance with the limitation in this section is required by regulation.

2.2 AIRSPEED

SPEED		KIAS	REMARKS
$\mathbf{V}_{NE}$	Never exceed speed up to a pressure altitude of 11,000 ft	133	Do not exceed this speed in any operation and do not use more than 1/3 of control deflection
$\mathbf{V}_{RA}$	Rough air speed	86	Do not exceed this speed except in smooth air, and then only with caution. Examples of rough air are lee-wave rotor thunderclouds etc.
$\mathbf{V}_{A}$	Manoeuvring speed	81	Do not make full or abrupt control movement above this speed, because under certain conditions the sailplane may be overstressed by full control movement
$\mathbf{V}_{W}$	Maximum winch-launching speed	65	Do not exceed this speed during winch- or autotow-launching
$\mathbf{V}_{T}$	Maximum aerotowing speed	81	Do not exceed this speed during aerotowing
$\mathbf{V}_{LO}$	Maximum landing gear operating speed	133	Do not extend or retract the landing gear above this speed

NOTE: $\mathbf{V}_{NE}$ airspeed limits above 11,000 ft Pressure Altitude are reduced as follows:

15,000 - 123 KIAS
20,000 - 111 KIAS
25,000 - 100 KIAS
30,000 - 89 KIAS
35,000 - 79 KIAS

2.3 AIRSPEED INDICATOR MARKINGS

Marking	KIAS km/h IAS	Significance
Green arc	36 - 86	Normal Operating Range (Lower limit is maximum weight 1.1 vsi at most forward e. g. Upper limit is rough air speed.)
Yellow arc	86 - 133	Manoeuvres must be conducted with caution and only in smooth air
Red line	133	Maximum speed for all operations
Yellow triangle	41	Approach speed at maximum weight

Weight & Balance Superceeded
W & B updated 13 May, 2020.
See W&B Addendum at back of Section 6.

2.4 WEIGHT LIMITS

Maximum take-off and landing weight:

- with two occupants - 1124 lb
- with one pilot - - - - - - - - - - - - - - ~~925 lb~~ 974 lb

Basic empty weight with standard equipment ~~683 lb ± 2 %~~ 710 lb ± 2 %

And the corresponding center of gravity position - - - - - - - - - - - - ~~67.30 ± 1 % MAC~~ 68.23 ± 1 % MAC

NOTE: Refer to weight and Balance (Section 6.0) to determine actual empty weight/c.g. as established by the installed equipment and manufacturing tolerances.

Pilot´s weight (including parachute):

- minimum pilot´s weight (solo) - - - - - - ~~154 lb~~ 161 lb

WARNING:

IT IS NECESSARY TO USE FRONT SEAT REMOVABLE BALLAST OF 33 lb WHEN FLOWN SOLO BY A PILOT (INCLUDING PARACHUTE) WEIGHING LESS THAN 154 lb IN THE FRONT COCKPIT.

(Cont.)

NOTE: Installation of the front seat ballast is described in Section 7, & 7.2 of this Manual.

- maximum pilot´s weight (solo) - - - - - - - - - - - - - - 242 lb

Maximum useful load
(occupants, baggage, optional equipment) - - - ~~440 lb~~ 414 lb

Maximum baggage compartment load - - - - - - - - - - - 22 lb

Weight & Balance Superceeded
W & B updated 13 May, 2020.
See W&B Addendum at back of Section 6.

2.5 CENTER OF GRAVITY

Centre of gravity range:

- front limit - - - - - - - - - - - - - - 23 % MAC i.e. 4.397 in (112 mm) aft of reference datum

- rear limit - - - - - - - - - - - - - - 40 % MAC i.e. 12.783 in (325 mm) aft of reference datum

The reference datum is located 93.6 in. aft of the sailplane nose 2.6

2.6 APPROVED MANOEUVRES (UTILITY CATEGORY)

Manoeuvre	Airspeeds - KIAS				Procedures
	SOLO	DUAL	ENTRY	RECOVERY	
Loop	86	97	X		Section 4.3.6 item 1
Stall turn	92	97	X		Section 4.3.6 item 2
Lazy Eight	97	97	X		Section 4.3.6 item 3
Spin	32 86	32 86	X	X	Section 4.3.6 item 4
Chandelle (climbing)	97	97	X		Section 4.3.6 item 5
Steep turn	92	97	X		Section 4.3.6 item 6

2.7 MANOEUVRING LOAD FACTORS

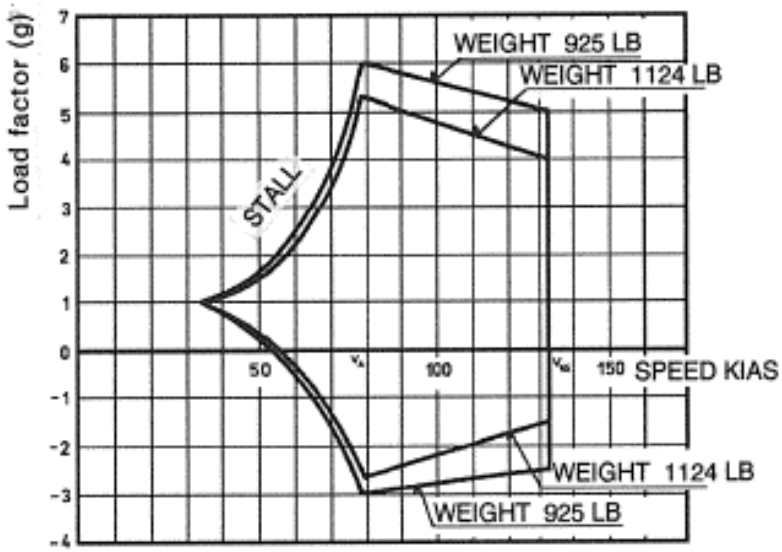


FIG. 2-1

2.8 FLIGHT CREW

Maximum number of occupants is two. If the sailplane is to be flown solo, the pilot must be sitting in the front seat and his weight (including parachute) must be 154 lb at least. If the pilot´s weight is less than 154 lb, it is necessary to use the cushion with 33 lb ballast.

WARNING:

THE REAR SEAT MUST BE SECURED AGAINST FOLDING ANDSAFETY HARNESSES ON THE REAR SEAT MUST BE CONNECTED, DRAWN TOGETHER AND SECURED.

2.9 KINDS OF OPERATION

The sailplane is certified in the Utility Category with a limited selection of approved aerobatic manoeuvres (see paragraph 2.6). The sailplane is approved for Day VFR operations. Cloud- flying is permitted where operational regulations permit.

WARNING:

1. OPERATIONS IN ICING CONDITIONS ARE PROHIBITED. OPERATIONS ARE LIMITED BY THE INSTALLED EQUIPMENT AS LISTED IN SECTION 6.

2. IT IS NECESSSARY TO RECORD THE AEROBATIC MANOEUVRESINTO THE SAILPLANE LOG BOOK SO AS TO BE POSSIBLE TO FIND OUT WHENEVER TOTAL FLIGHT TIME OF ACROBATICS FROM DATA OF SAILPLANE MANUFACTURE.

2.10 AEROTOW AND WINCH LAUNCHING

Aerotow

- the maximum cable strength or cable safety device (weak link) strength is 1,460 lb.

- the minimum cable length for aerotowing is 50 ft, recommended length is 100 – 130 ft.

Winch-launching

- the maximum cable strength or cable safety device (weak link) is 1460 lb.

2.11 OTHER LIMITATIONS

A. Maximum crosswind component

- maximum demonstrated crosswind component for safe approach, landing and aerotow launching is 16 kt for angle 90°.

Maximum demonstrate crosswind component for winch-launching:

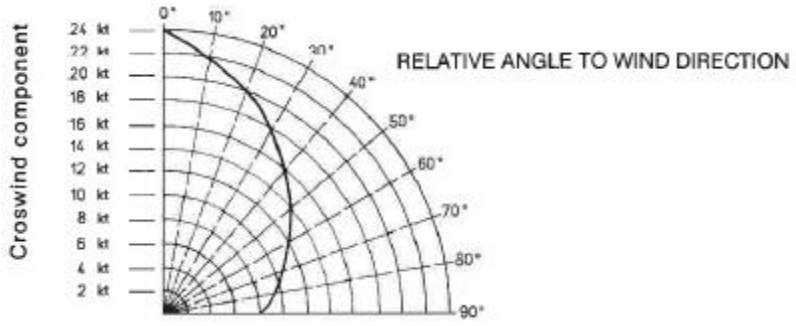


FIG. 2-2

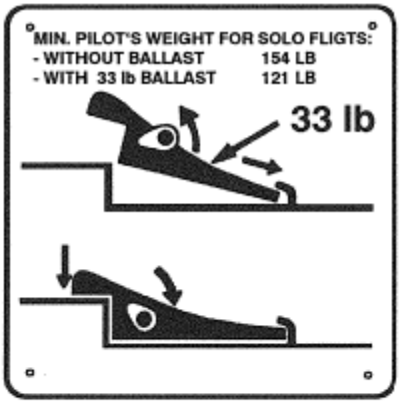
B. Maximum demonstrated operating altitude – 13,780 ft.

C. Maximum Tire Pressure 37 psi.

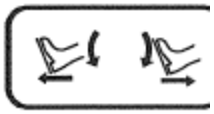
2.13 LIMITATION PLACARDS

The following operating limitations are emphasized on the limitation placards in both cockpits:

a) front cockpit




SEAT BACK


PEDAL ADJUSTMENT


AIR VENT


CANOPY - JETTISON s
para 3.2

CENTRE OF GRAVITY RANGE
FRONT LIMIT . 23 % MAC
REAR LIMIT . . 40 % MAC

b) both front and rear cockpits

MAX. WINCH - LAUNCHING SPEED 65 KIAS
MAX. AERO - TOWING SPEED 81 KIAS
MAX. MANOEUVRING SPEED 81 KIAS

See para 2.2

OPERATING LIMITATIONS

THE MARKING AND PLACARDS INSTALLED IN THIS SAILPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING IN UTILITY CATEGORY. OTHER LIMITATIONS ARE CONTAINED IN SAILPLANE FLIGHT MANUAL.

MAX. GROSS WEIGHT 1124 LB
PERMITTED AEROBATIC MANOEUVRES:

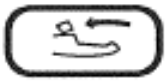
LOOP	**SPIN**
STALL TURN	**CHANDELLE(CLIMBING)**
LAZY EIGHT	**STEEP TURN**

SOLO FLIGHT FROM FRONT SEAT ONLY

VNE . . . 133 KIAS
VRA . . . 86 KIAS

MAX. ALLOWABLE SPEED VS ALTITUDE						
PRESSURE ALTITUDE (FT) UP TO	11 000	15 000	20 000	25 000	30 000	35 000
SPEED KIAS, MAX.	133	123	111	100	89	79

AIR BRAKES



JETTISON/LIFT OFF
(REAR SEAT ONLY)
see para 3.2

WHEEL BRAKE

LANDING GEAR

FRONT LIFT OFF
see para 3.2

BAGAGGE
(REAR SEAT ONLY)

TRIMMER

RELEASE

THIS GLIDER MUST BE OPERATED IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS

SECTION 3

EMERGENCY PROCEDURES

CONTENTS

3.1 INTRODUCTION

Section 3 provides check-lists and amplified procedures for handling emergency situations.

3.2 CANOPY JETTISON (see Fig. 3.1)

WARNING:

THE FRONT CANOPY MUST BE JETTISONED FIRST.

Front pilot	ROTATE fully anticlockwise and (FIG. HOLD
Red Canopy Jettison Lever 3-1, pos. 1)	FORCE UPWARDS
Canopy	
Rear pilot	ROTATE canopy jettison levers (FIG. 3-1, pos. 2) in the direction of arrows. FIFT rear canopy UP.
Front canopy jettisoned	RELEASE safety belts
Front canopy not jettisoned	ROTATE fully counterclockwise and HOLD. FORCE Front Canopy UPWARDS. ROTATE Rear Canopy Jettison Levers in the Direction of Arrows. LIFT rear canopy UP
Red Front Canopy Jettison Lever	

3.3 BAILING OUT

Safety Belts	RELEASE and REMOVE from lap and shoulders
Hand Holds	GRASP. STOOP legs below you BAIL OUT over the side cockpit rail

3.4 STALL RECOVER

Low Speed Stall (One g)	PUSH control stick slightly CHECK airspeed within normal operation range

(Cont.)

Stall at Speed (Accelerated) subcritical	PUSH control stick to reach angle of attack ELIMINATE bank by rudder

3.5 SPIN RECOVERY

Rudder	APPLY full deflection opposite to sense of rotation RETURN to neutral when rotation stopped
Control Stick	PUSH forward slightly simultaneously as rudder is neutralized after rotation has stopped

3.6 SPIRAL DIVE RECOVERY

Rudder and Ailerons	USE to establish at nose – low wings level condition
Control stick raise	INCREASE gently back pressure to the nose to a level flight attitude. Use caution not to obtain excessive accelerations (g) with back pressure during the pull-up.

CANOPY JETTISON DURING FLIGHT

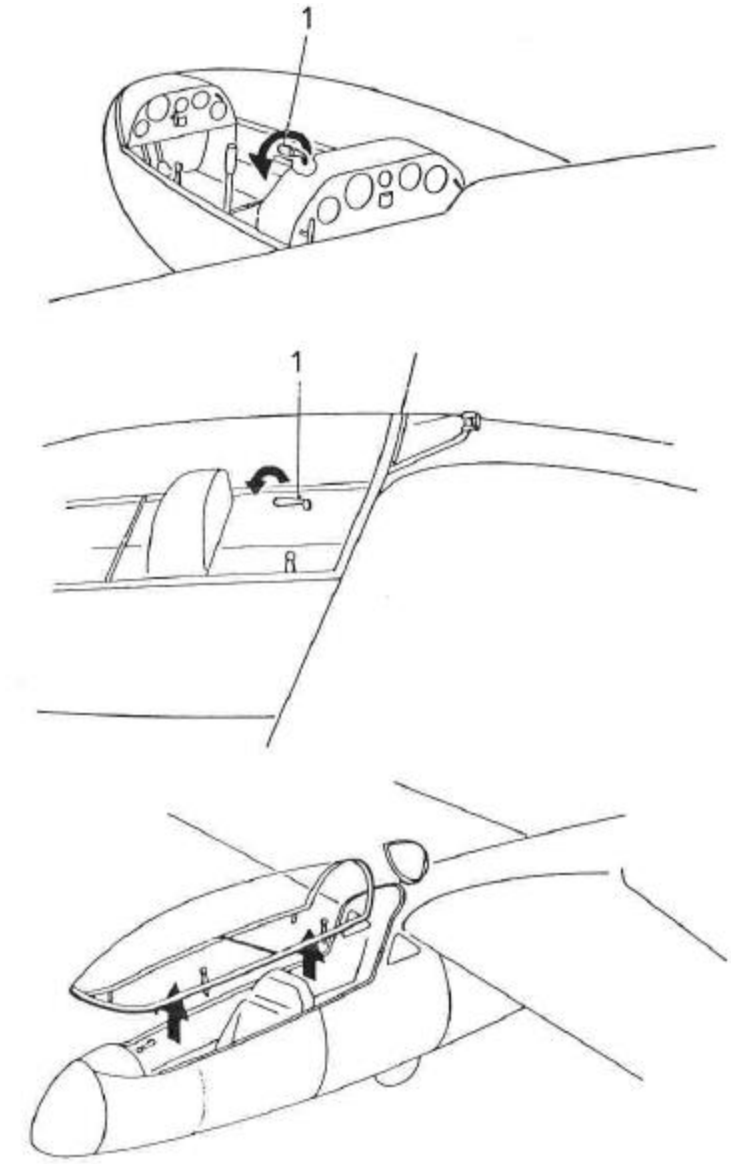


FIG. 3-1

SECTION 4

NORMAL PROCEDURES

CONTENTS

4.1 INTRODUCTION

Section 4 provides checklists and information on recommended procedures for normal operations.

4.2 PREFLIGHT INSPECTION

The pilot must check the sailplane for proper condition in accordance with the checklist walk around inspection (before getting into the sailplane). It is recommended to perform the inspection as shown in Fig. 4.1.

Sequence of the walk around inspection

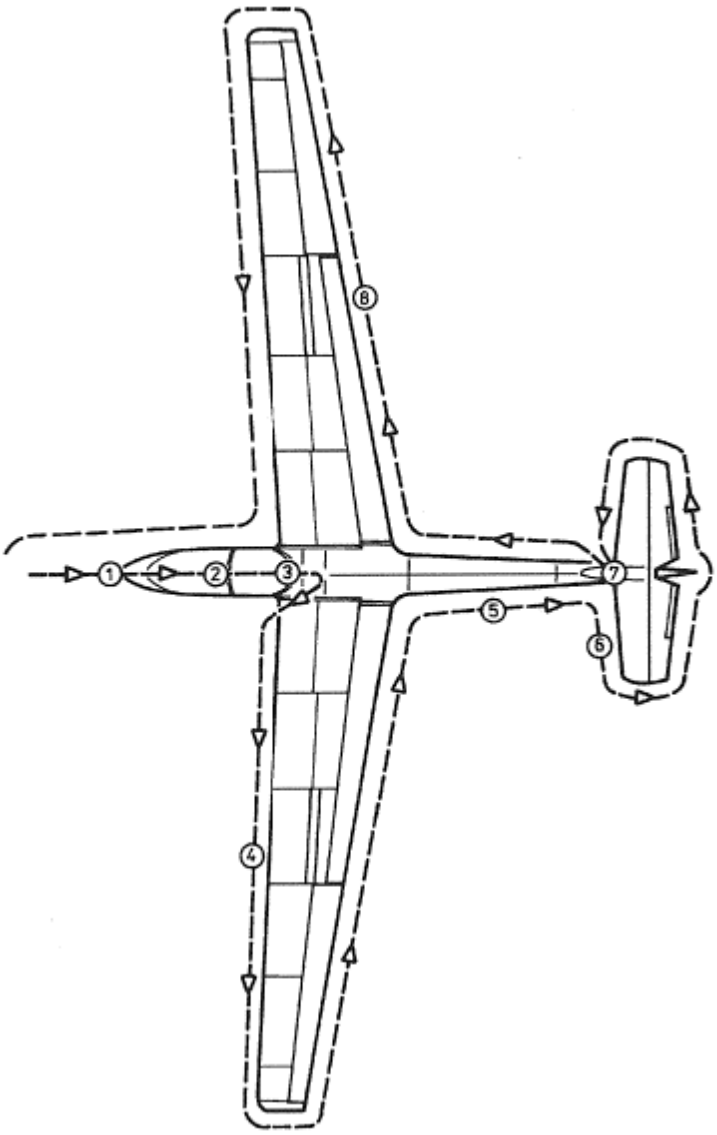


FIG. 4-1

(Cont.)

4.2.1 WALK AROUND INSPECTION CHECKLIST

Item No.	Subject	Chech/Activity
1	**Front fuselage section**	
	Fuselage skin	no damage
	Cockpit canopy surface	no damage or dirt
	Nose pitot tube	no damage or clogging
2	**Cockpit**	
	Instruments	no damage
	Altimeters	correct setting QFE (QNH)
	Radio station (if installed)	proper operation
	Safety belts	no damage
3	**Landing gear**	
	Tire	no damage, correct inflation
4	**Left wing**	
	Wing skin including leading edge	no damage
	Wing-tip fairing	no damage
	Aileron skin	no damage to fabric cover or trailing edge
	Ailerons	free movement
	Airbrake locking hinges	locking no damage of hinges of control tie rods

(Cont.)

Item No.	Subject	Chech/Activity
5	**Rear fuselage section**	
	Fuselage skin	no damage
6	**Empennage**	
	Vertical stabilizer	no damage
	Elevator	free movement
	Horizontal stabilizers	condition of locking wire on the front pin of the horizontal stabilizer (in front of the leading edge of the top part of the vertical stabilizer)
	Rudder	free movement
7	**Tail landing gear**	
	Landing gear attachment	no damage of attachment
8	**Right wing**	see Item 4 – Left wing

4.2.2 BEFORE TAKE-OFF CHECKLIST

Front seat

Before entering the front cockpit, adjust the front seat back-rest to a position allowing control of the sailplane when fully strapped in.

Rudder control

The position of the rudder pedals should be adjusted with the pilot fully strapped in so that both left and right pedals can be moved comfortably to the full extent of their travel. The position of the rudder pedals in the front cockpit can be adjusted by means of the crank. In the rear cockpit, adjustment to one of three possible positions may be obtained by removing the locking pin.

NOTE: This can be done only before the flight.

Control column

Check for full and free movement of the control column in all directions; move it to the left, to the right, forwards and backwards.

Instruments

Set the altimeters to zero or as desired by the baro-set knob. Check the other instruments and see that vertical speed indicators and airspeed indicators read zero.

Cockpit canopy

Close and lock.

Safety belts

Fasten the safety belts.

Trim

Set the elevator trim tab to the neutral position marked “0”.

Air brakes

Check for easy movement of air brake control. Confirm air brakes retracted for take-off.

Tow rope release

Check the tow rope release mechanism for proper functioning.

4.3 NORMAL OPERATIONS AND RECOMMENDED SPEEDS

4.3.1 TAKE-OFF AND CLIMB

1. Aerotow launching

The take-off technique by aerotow is entirely conventional. The elevator and rudder efficiency is high enough during the initial stages of the take-off run, that it is easy to prevent directional or roll oscillations by use of rudder or ailerons. Set the elevator trim tab control to a position between “zero” and “nose heavy” and hold the control stick in the neutral position – on the landing gear and at liftoff speed pull the control stick gently to unstick the sailplane. Hold the sailplane in horizontal flight at a height of 3 ft (1 m) until the towing airplane starts to climb. The take-off with cross wind is different from the normal take-off. It is necessary to bank the wing into the wind (in proportion to the wind speed) and to unstick the sailplane at a higher speed.

NOTE: The tow rope should be attached to the front hook only for crosswind take-off operations.

NOTE: Before take-off close the ventilation in order that dust and impurities do not get into the cockpit. The ventilation can be opened during at climb.

2. Winch-launching

WARNING:

USE EITHER SIDE HOOKS OR LOWER HOOK (DEPENDING ON WHICH HOOK IS INSTALLED).

The winch launching is entirely conventional. Set the elevator trim tab control to the neutral position. The recommended speed for winch launching is 43 – 54 KIAS. Do not retract the landing gear when performing the traffic pattern.

3. Aerotow

a) Climb

Retract and lock the landing gear (by pulling the handle in your direction) when above a minimum safe height of 66 ft and the minimum speed of 54 KIAS is reached. Trim the sailplane for the climb speed. The sailplane angle of attack is fairly high when the climb speed is low and the view from cockpit is reduced considerably. Therefore it is recommended that the towing aircraft to keep a climbing speed of 54 – 70 KIAS.

(Cont.)

The pilot should avoid over controlling.

Principles of aerotow are the same as for other sailplanes.

b) Level flight

The maximum speed for aerotow is 81 KIAS. It is necessary to trim the sailplane to reduce control forces and to decrease pilot fatigue during longer flights on tow. It is necessary to realize that control sensitivity increases with flight speed.

c) Descending

A satisfactory rate of descent 390 – 590 ft/min can be obtained when the towing aircraft maintains an airspeed at least of 54 KIAS.

4.3.2 FLIGHT

1. Turns and circling

The sailplane is very manoeuvreable and controllable and its behavior is very good in turns with bank angles up to 60°.

2. Slide slipping

The piloting technique of the side slipping is entirely conventional. The angle of bank of the sailplane should be between 10° and 20°. The side slip is not very effective mean of loosing height in this sailplane. As, the rate of descent may be effectively increased by the use of the air brakes. If a constant airspeed is to be maintained during a side slip, the angle of pitch must be constant. The air speed indicator is unreliable during slip manoeuvres.

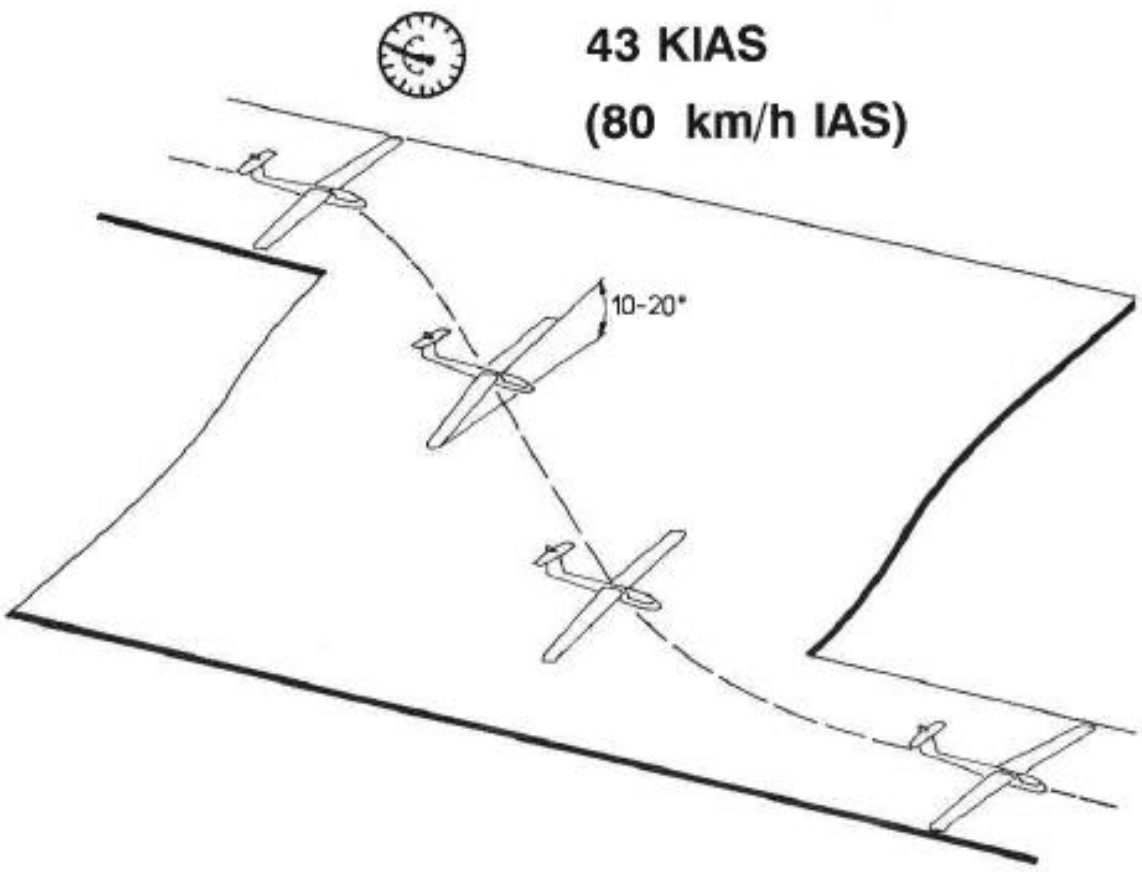


FIG. 4-2

3. Stalls

Slow and continuous pulling aft on the control stick causes the sailplane to stall. Ailerons and rudder should be used to control bank, if any. Pre-stall warning starts (at the speed of about 5 % higher than the stalling speed), in the form of buffeting of the rudder pedals and of all front fuselage section. When stalled, the sailplane settles with a gentle pitching. Move the control stick forward and start the stall recovery.

CAUTION: BEFORE STALLING AND SPINNING THE FOLLOWING PROCEDURES MUST BE DONE

TRIM	**neutral**
AIR BRAKES	**retracted and secured**
COCKPIT CANOPY	**locked and secured**
VENTILATION	**shut**
RUDDER PEDALS	**properly adjusted to allow full deflections**
SAFETY BELTS	**fastened and tight**
LOOSE OBJECTS	**removed or secured**

4. High Altitude Flight

Operation above 13,780 ft has not been demonstrated by the manufacturer. A sailplane placard provides calculated maximum (V_{NE}) airspeeds above a pressure altitude of 11,000 ft for information only. High altitude flight should be conducted in accordance with any applicable operating rules.

4.3.3 APPROACH

The following approach speeds are recommended.

Descent	Air brakes	Approach speeds
Normal	retracted	41 - 46 KIAS
	extended	43 - 51 KIAS
Steeper	extended	51 - 60 KIAS

Anticipate mild sailplane ballooning when using higher approach speeds.

4.3.4 LANDING

Landing on the airport

The landing manoeuvre is entirely conventional. Use small elevator inputs at the flare. The sailplane should touch down with the landing gear first and then with the tail wheel if landed correctly (to reduce shock to the tail wheel on ground contact). Do not flare prematurely in order to prevent the sailplane from dropping from a higher height.

Off-field landing

It is recommended to land with the landing gear retracted if landing on a soft ground.

NOTE: In this case extend the wheel before the next flight.

4.3.5 USE OF AIR BRAKES

It is recommended to use the air brakes in following cases:

1. To reduce landing especially roll on rough ground.

2. To increase accuracy of the landing manoeuvre.

   NOTE: In case of using air brakes during landing, it is necessary to maintain an approach speed of about 5 kts higher, because the stall speed with fully opened air brakes is about 3 – 4 kts higher.

3. To avoid exceeding the never exceed speed (V_{NE}) during unusual attitude recoveries (for example during aerobatics).

   It is recommended to use the air brakes in any case when the sailplane starts to increase the speed and the pilot is uncertain of his orientation or how to manage the situation. Configuration with air brakes extended will ensure that V_{NE} is not exceeded. Use of air brakes will enhance the safety and makes handling easier because the extended air brakes tend to stabilize the sailplane. The control lever should be held firmly when operating the air brakes to ensure smooth deployment and retraction.

4.3.6 BASIC AEROBATIC

The L 23 SUPER-BLANIK sailplane is able to perform the listed approved aerobatic manoeuvres. The rate of acceleration of this sailplane is high, so great care must be taken not to exceed limitations given in Sections 2.2, 2.6 and 2.7. Instruction guidelines for performing approved aerobatic manoeuvres are given on pages 13 - 19 of this Section.

WARNING:

ONLY MANOEUVRES WITH POSITIVE "G" LOAD FACTORS ARE APPROVED.

1. Loop

Enter a moderate dive with slight forward movement of the control stick to gain a speed of 86 KIAS when flying solo or 97 KIAS when flying dual. Raise the nose of the sailplane by slight backward movement of the control stick, taking care not to apply excessive “g” forces, and maintain this rate of backward stick movement throughout the first half of the loop, but do not use more than about 60 % of the control stick full deflection. The load factor must drop in the inverted position. After passing the inverted position the speed will increase and the control stick must be eased forward gradually until the sailplane is flying level again. Before and during this manoeuvre rudder should be used to prevent yaw and ailerons used to keep the wings level. Maintain precise directional control for proper completion.

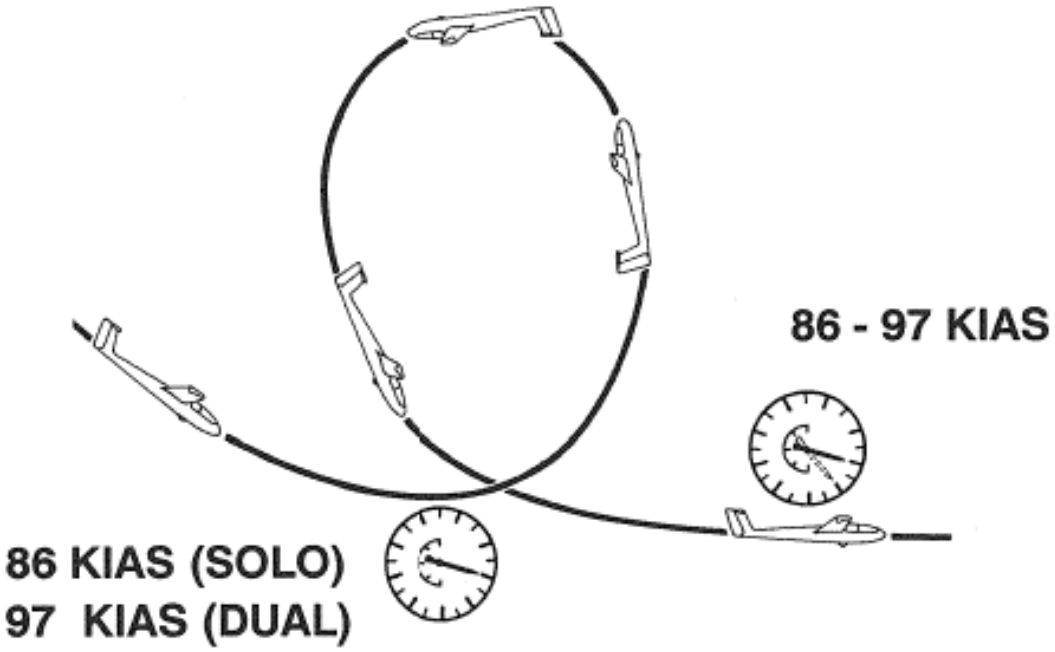


FIG. 4-3

(Cont.)

2. Stall turn

This manoeuvre should be begun at the speed of 92 KIAS (170 km/h IAS) when flying solo or 97 KIAS when flying dual. Pull the control stick gently backward to bring the nose to a position of about 60° to 70° above the horizon. Ease the control stick forward slightly to maintain this attitude. As the speed falls to 70 – 76 KIAS, start to apply rudder slowly in the required direction of turn. As the force on the rudder decreases, gradually apply full rudder.
Full deflection of the rudder should be reached when the sailplane heads about 45° in the direction of turn. The ailerons should be used against the direction of turn as necessary to prevent the sailplane rolling to the inverted position. As the nose approaches the reciprocal heading, neutralize the rudder, keep the wings level by use of the ailerons, and ease out of the resulting dive, taking care not to apply excessive “g”.

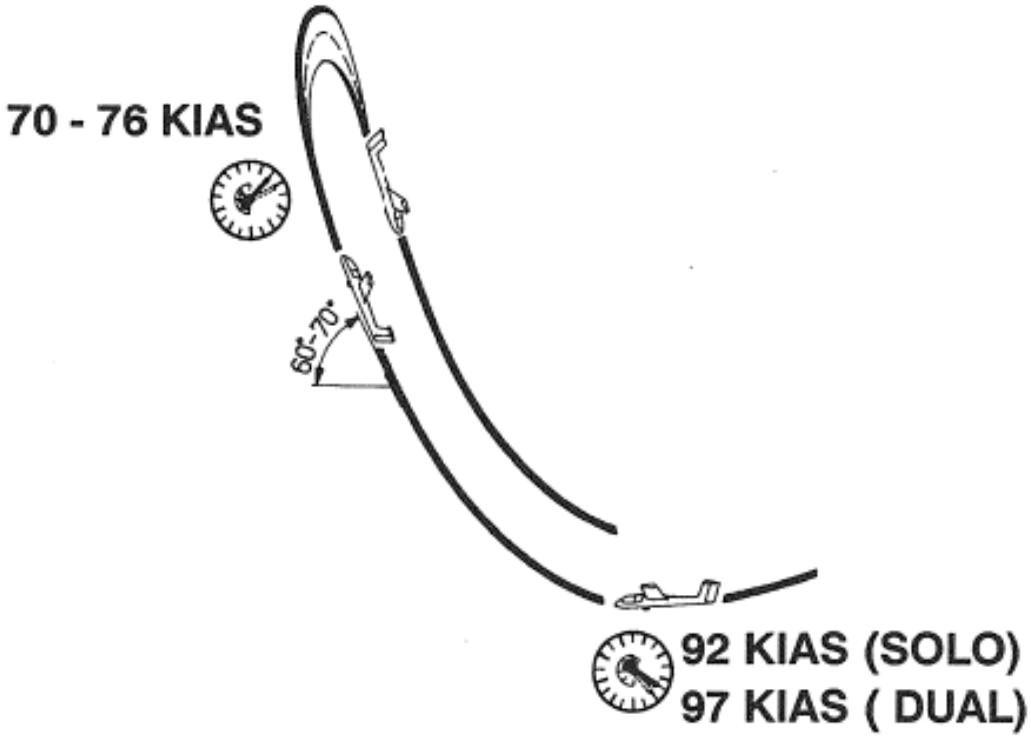


FIG. 4-4

(Cont.)

3. Lazy eight

Move the control stick slowly forward to attain the entry speed of 97 KIAS solo or dual. Perform the steep turn to the selected side, smoothly pulling the control stick with simultaneous coordinated use to ailerons and rudder.
At a speed of 54 KIAS transition the sailplane to a descent and after reaching a speed of 97 KIAS perform the steep turn to the opposite side, smoothly pulling the control stick with simultaneous coordinated use f ailerons and rudder.
The flight path intersects at the lowest point of the manoeuvre.

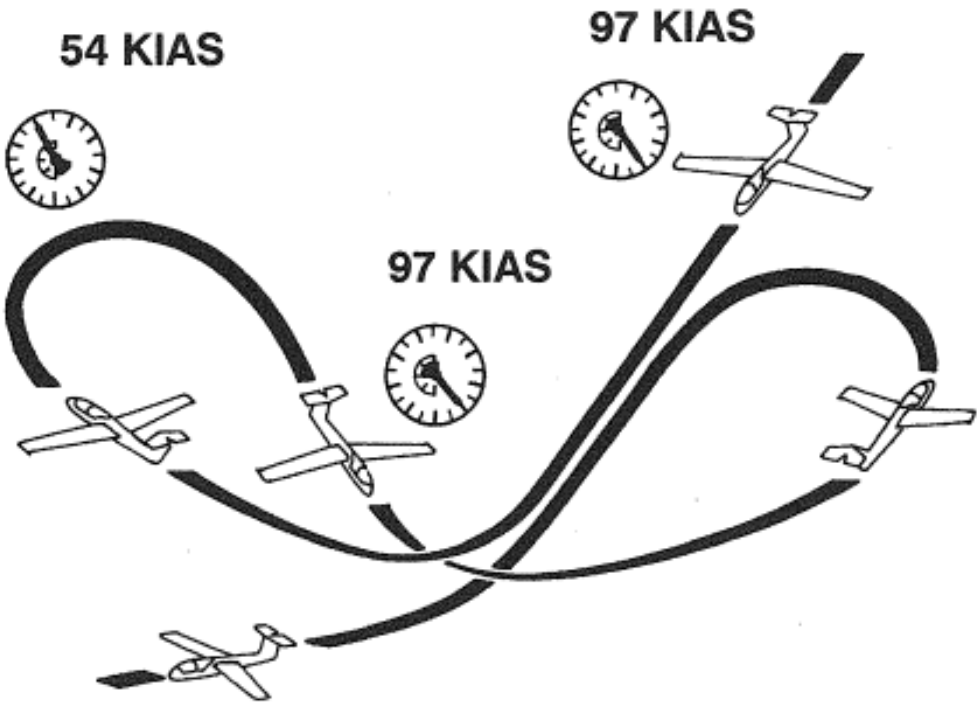


FIG. 4-5

(Cont.)

4. Spin

The sailplane performs the spin without any tendency to enter a flat spin at all operating center of gravity positions. The sailplane has the tendency to recover from the spin by itself, when at the maximum flight weight and the forward center of gravity. Entering the spin is entirely conventional. Pull the controls tick slowly back to approach the stall, use the full deflection of the rudder at the stall speed of approximately 32 KIAS – see Fig. 4.3 –, and maintain full aft deflection of the control stick. Initiate recovery from the spin by applying full opposite deflection of the rudder. When the sailplane stops the rotation, neutralize the rudder and simultaneously ease the control stick forward. Recover the sailplane from the dive in the usual way. The attitude during the spin is 60° to 70° nose down and the loss of height in one turn is approximately 260 ft when flying solo and 390 ft when flying dual. The time of one revolution of the spin is approximately 3.5 secs.

CAUTION:

1. BEFORE SPINNING ACCOMPLISH THE PROCEDURES GIVEN IN THE FLIGHT MANUAL, SECTION 4, § 3.

2. IAS ERROR.
   THE AIRSPEED INDICATIONS BECOME ERRONEOUS AT LARGE YAW ANGLES, BECAUSE THE STATIC VENTS ON TEH SIDES OF THE FUSELAGE ARE BY-PASSED ASYMETRICALLY.

3. WHEN THE SPIN IS PERFORMED AS AN AEROBATIC MANOEUVRE, IT IS POSSIBLE TO MAINTAIN THE SPIN BY APPLYING AILERON IN THE DIRECTION OF THE ROTATION.
   STOP THE SPIN ROTATION BY APPLYING FULL OPPOSITE RUDDER AND NEUTRALIZE THE AILERONS. WHEN THE SAILPLANE STOPS THE ROTATION, NEUTRALIZE THE RUDDER AND EASE THE CONTROL STICK FIRWRD. PULL-OUT FROM THE DIVE USING STANDARD PROCEDURE.

NOTE: Airspeed indications well above the stall speed during a spin may indicate a spiral dive rather than a spin.

(Cont.)

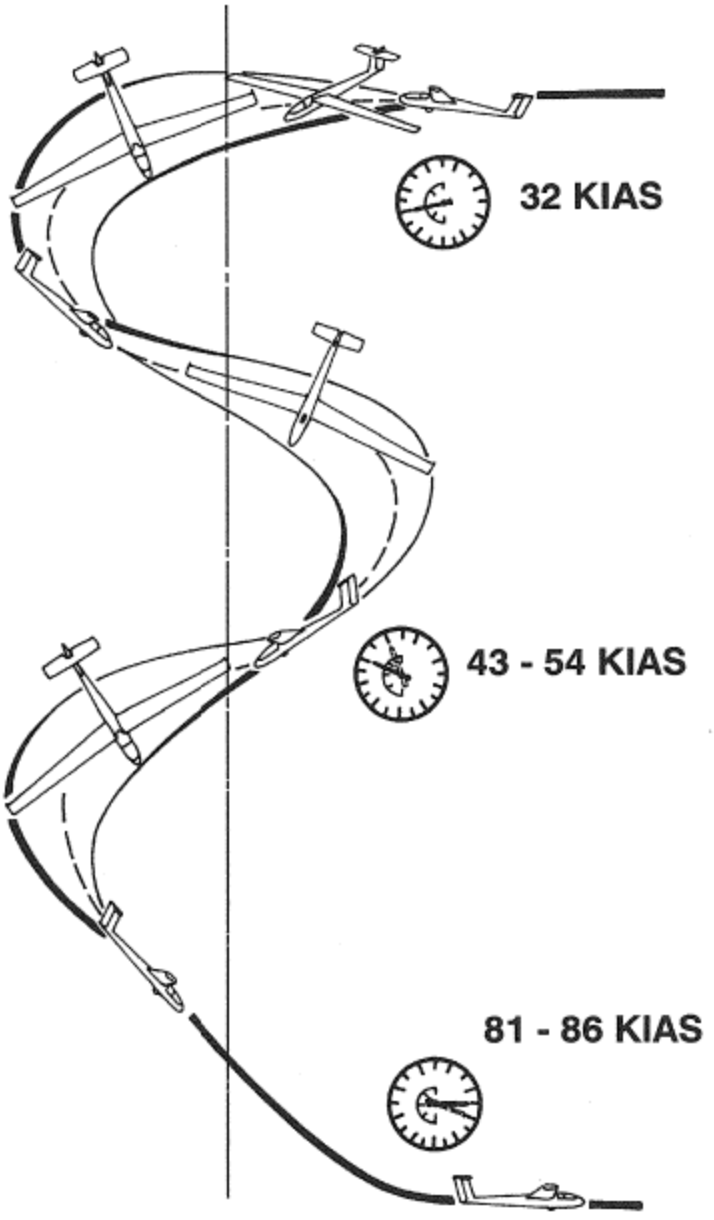


FIG. 4-6

5. Chandelle (climbing)

Move the control stick slowly forward to attain the entry speed of 97 to 103 KIAS solo or dual.
Transition the sailplane to a steep climb at an angle of approximately 45° above the horizon (do not increase the angle).
At a speed of 76 KIAS, apply the rudder to the selected side of the turn and by coordinated positive use of the ailerons make a transition to gliding flight in the opposite direction at a minimum speed of 43 KIAS.

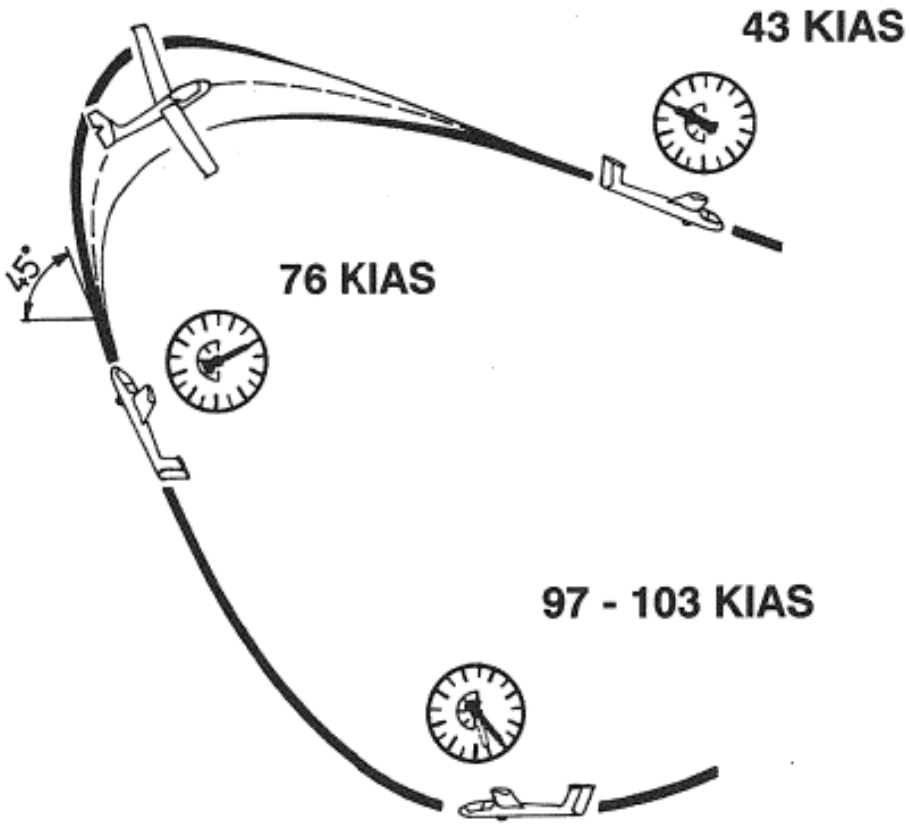


FIG. 4-7

(Cont.)

6. Steep turn

To perform this manoeuvre keep the entry speed of 92 KIAS when flying solo or 97 KIAS when flying dual. Enter the climb simultaneously with a bank of approx. 45°. After turning 150° start a transition to a glide angle such that the manoeuvre will be finished in the opposite direction with the speed not decreasing below 43 KIAS.

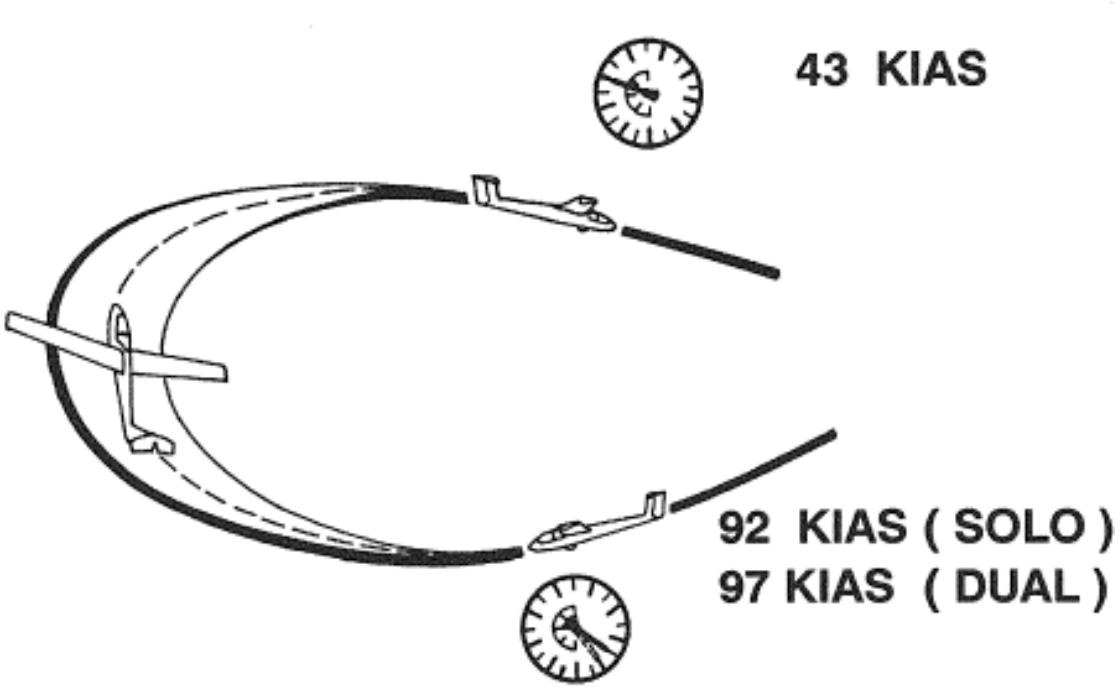


FIG. 4-8

SECTION 5

PERFORMANCE

CONTENTS

5.1 INTRODUCTION

Section 5 provides approved data for airspeed calibration and stall speeds. Other non-approved information is provided.

5.2 APPROVED DATA

5.2.1 AIRSPEED INDICATOR SYSTEM CALIBRATION
(Assumes zero instrument error)

The diagram is effective for maximum flight weight of 1124 lb.

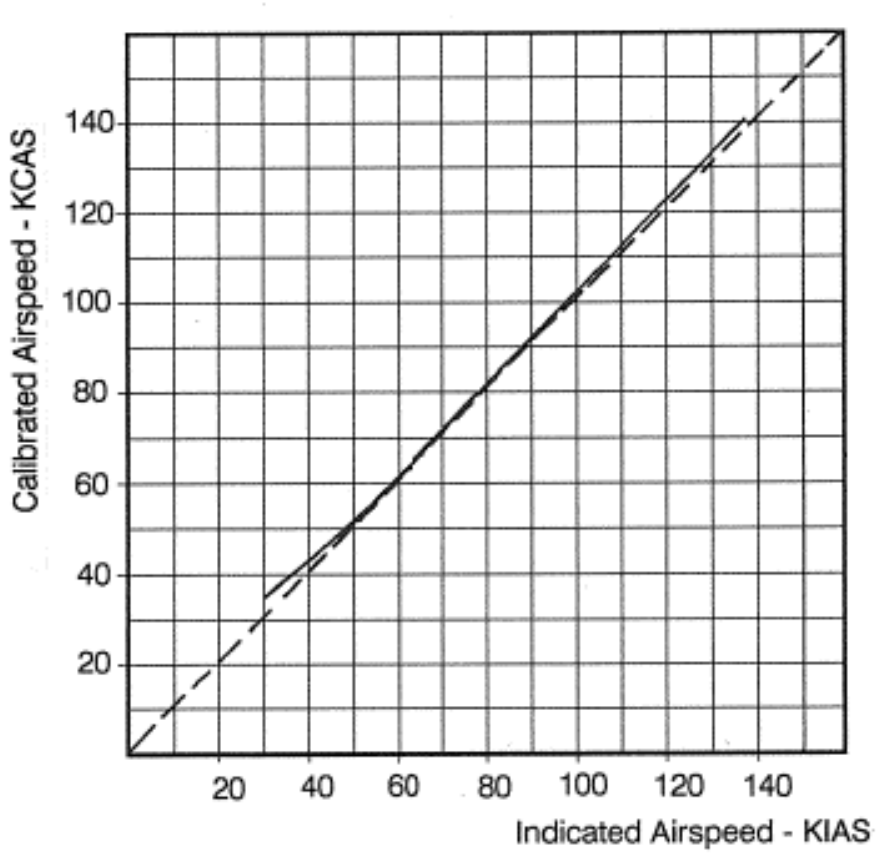


FIG. 5-1

5.2.2 STALL SPEEDS (unaccelerated)

The effect of gross weight on stall speed is given in Fig. 5-2.

NOTE: The stall warning speed is about 5 % higher than stall speed for all configurations.

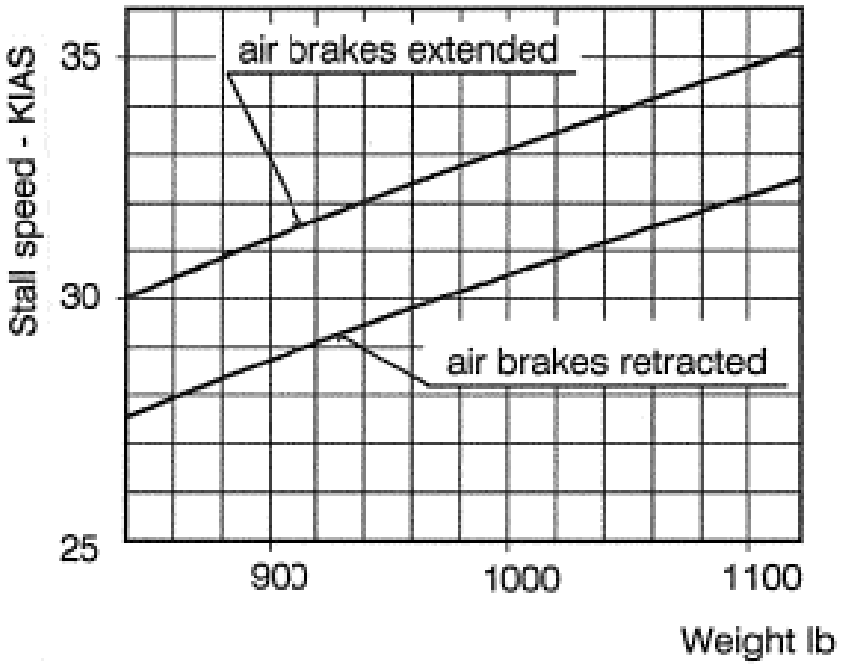


FIG. 5-2

5.3 ADDITIONAL INFORMATION

5.3.1 FLIGHT POLAR

5.3.1.1 Flight Speed Polar

Maximum gross weight of 1124 lb.

Airspeed with the angle of descent of 45° ..... 124 KIAS.

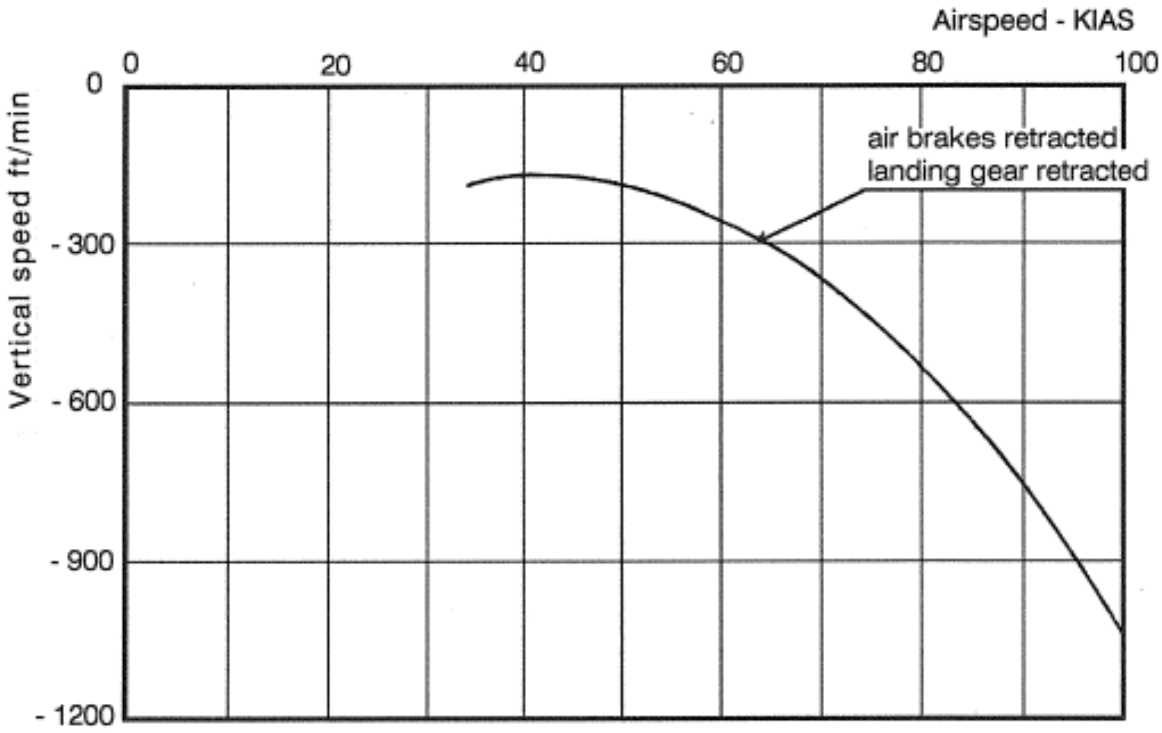


FIG. 5-3

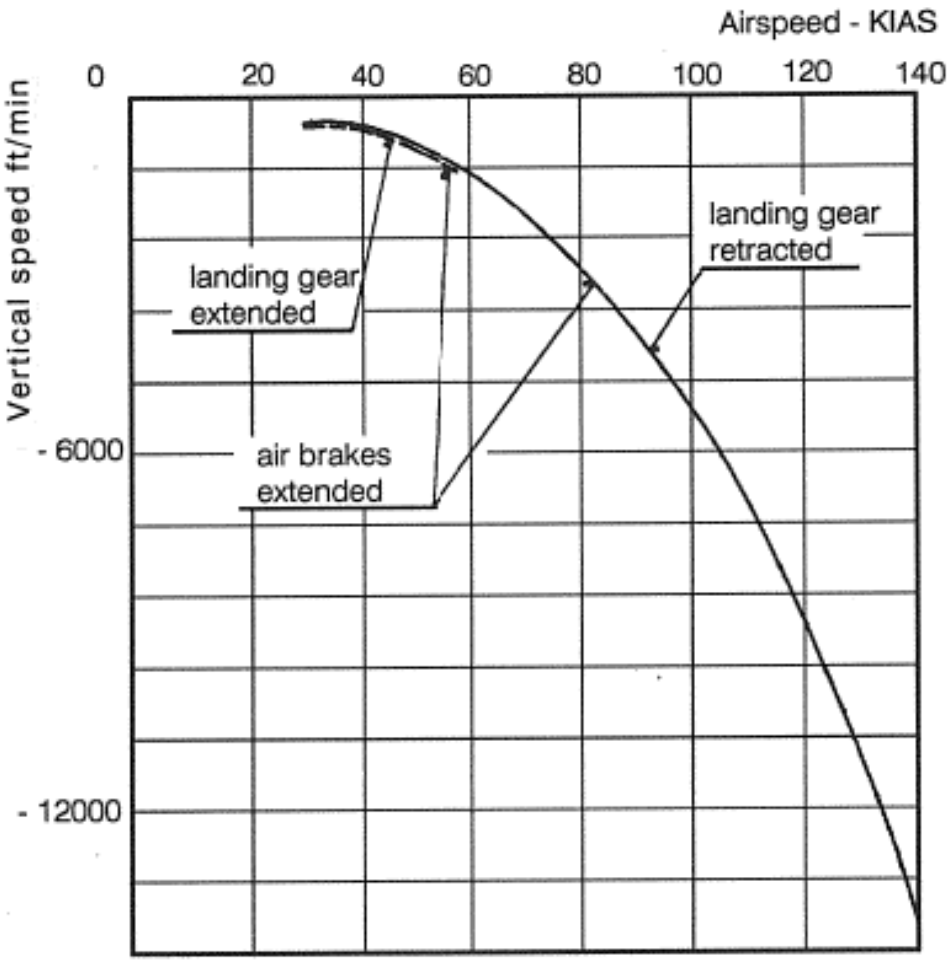

Airspeed - KIAS
0
20
40
60
80
100
120
140
Vertical speed ft/min
- 6000
- 12000
landing gear extended
landing gear retracted
air brakes extended

FIG. 5-4

5.3.1.2 Aerodynamic Polar

Maximum flight weight of 1124 lb

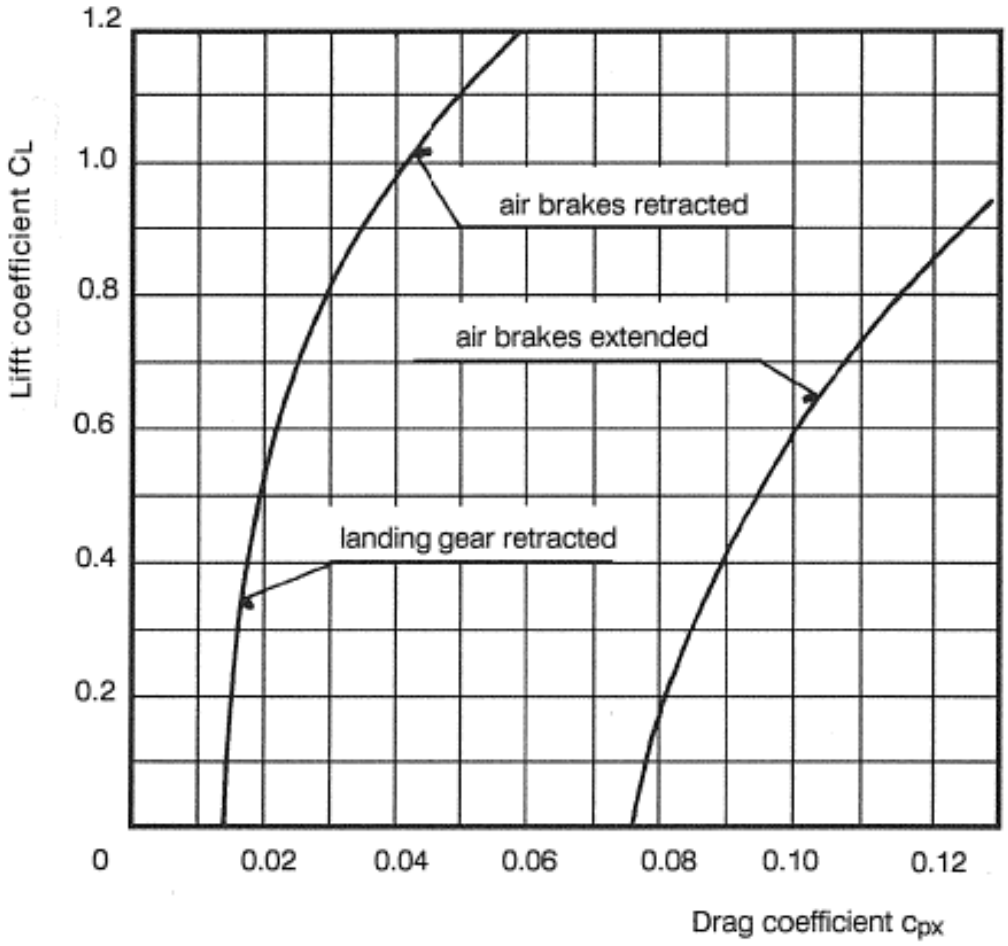


FIG. 5-5

SECTION 6

WEIGHT AND BALANCE

CONTENTS

6.1 INTRODUCTION

Section 6 includes basic empty weight and moment of the sailplane with standard equipment and the equipment list (standard and optional equipment). Procedures for determining the weight and center of gravity position are explained by an example calculation.

Weight & Balance Superceeded
W & B updated 13 May, 2020.
See W&B Addendum at back of Section 6.

6.2 WEIGHT AND BALANCE RECORD

Weight and balance record providing information for calculating center of gravity position is given in the Maintenance Manual of the L 23 SUPER-BLANIK Sailplane, Chapter 8, and in the Addendum included in the Sailplane Flight Manual.

6.3 BASIC EMPTY WEIGHT AND MOMENT

Basic empty weight	~~683 lb ± 2 %~~	710 lb ± 2 %
Moment to the reference plane	~~17,923.1 in-lb~~	18,981.2 in-lb

(see weight and balance record).

The reference datum is located 93.6 in aft of the sailplane nose.

6.4 BALANCE CHART (FIG. 6-1)

1. Balance chart description

The varying load scales are in the upper part of the page. The separate scales are plotted in the middle part of the page. The chart of the center-of-gravity position vs. sailplane weight is given in the bottom part of the page. The region of the allowable center of gravity range is the slanted shape in the chart and it refers to all flight conditions.

2. Directions for the balance chart use

See Fig. 6.1 on page 6.4, Line 0

- Make a dot on the Empty Sailplane Center of Gravity Range corresponding with the value shown on the Balance Record on page 6-5. Draw a vertical down to Line 1. The intersection of the vertical and Line 1 is Point A.

- Next, use Scale 1 at the top of the chart. Measure the distance from 0 on that scale to a number corresponding with the weight of the front pilot + parachute + ballast seat (if used). Transfer this distance from Point A to the left, draw a vertical, and mark the intersection with Line 2 as Point B.

- Next, use Scale 2. Measure the distance from 0 on that scale to a number corresponding with the weight of the rear pilot + parachute. Transfer this distance from Point B to the left, draw a vertical, and mark the intersection with Line 3 as Point C.

- Next, use Scale 3 for any changes in the front instrument panel. Measure the distance from 0 on that scale to a number corresponding with the weight of any instrument added or removed. Transfer this distance from Point C to the left (if an instrument is added), to the right (if removed). Draw a vertical, and mark the intersection with Line 4 as Point D.

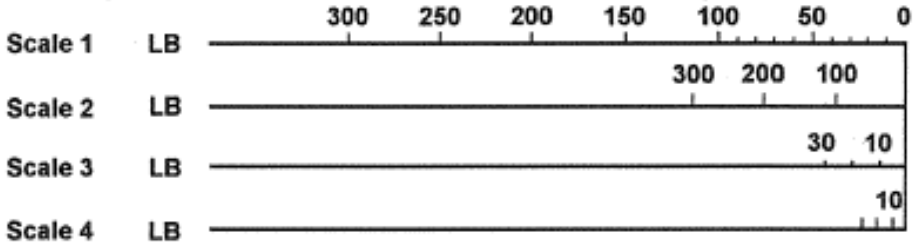
- Next, use Scale 4 for any changes in the rear instrument panel in the same fashion as in the previous paragraph. That is how you arrive at point E. Draw a vertical on down to the lower part of the chart.

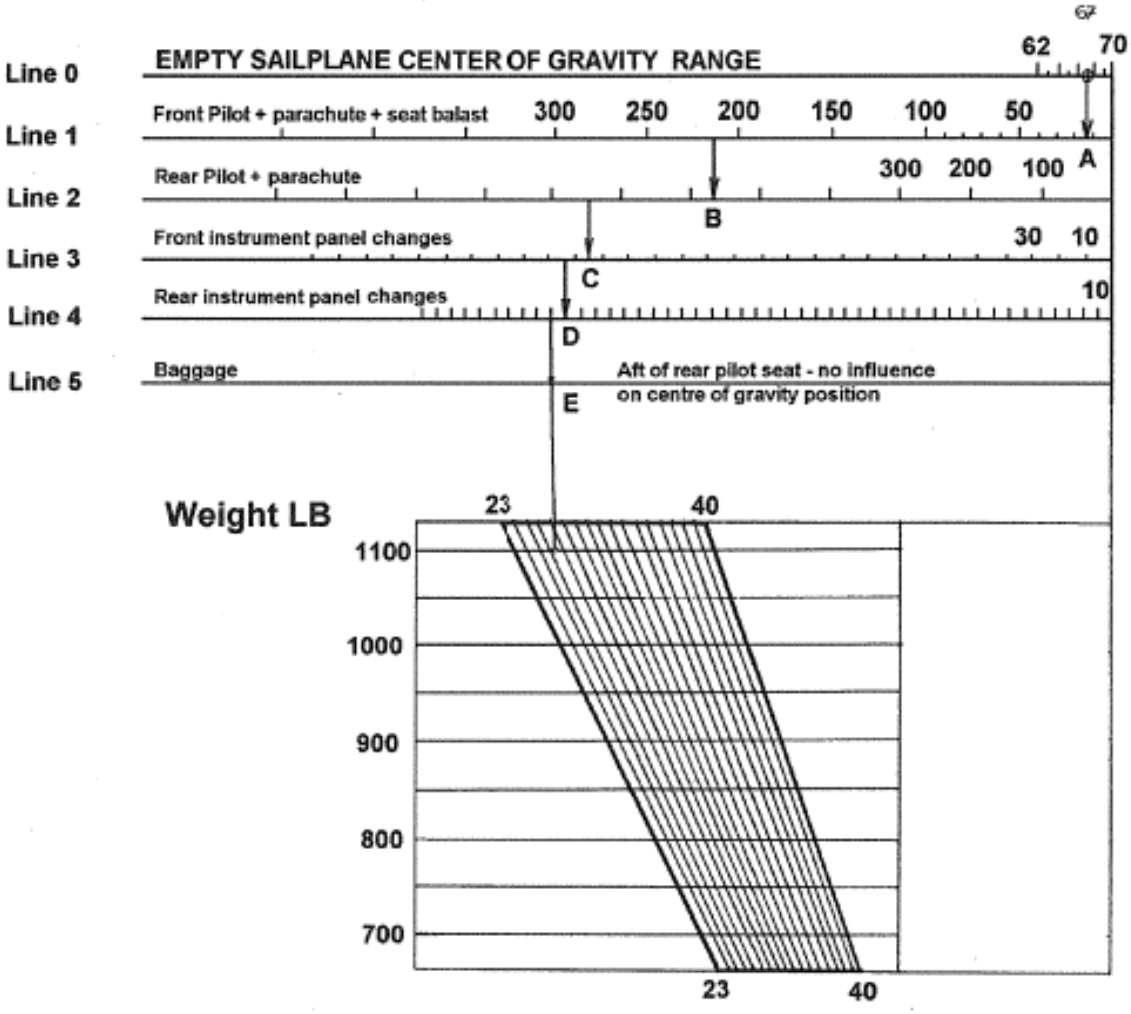
- Now, use the weight scale on the lower part of the balance chart. Mark the sum of all weights: Empty sailplane + front pilot + parachute + ballast seat + rear pilot + parachute + instrument changes + baggage.

- Draw a horizontal line from the mark to the right. The center-of-gravity position is at the intersection of this horizontal line with the vertical from Point E.

- If this intersection is inside the slanted shape, the sailplane is loaded correctly. If the intersection is outside, the sailplane has to be reloaded.

NOTE: The baggage weight is to include any battery, oxygen bottle, water bottle etc. Items in the baggage compartment have no influence on the center-of-gravity position, but they must be included to the sum of all the weights.


300 250 200 150 100 50 0
Scale 1 LB
300 200 100
Scale 2 LB
30 10
Scale 3 LB
10
Scale 4 LB


EMPTY SAILPLANE CENTER OF GRAVITY RANGE
62 70
Line 0
Front Pilot + parachute + seat balast
300 250 200 150 100 50
Line 1
Rear Pilot + parachute
300 200 100
A
Line 2
B
Front instrument panel changes
30 10
Line 3
C
Rear instrument panel changes
10
Line 4
D
Baggage
Aft of rear pilot seat - no influence on centre of gravity position
Line 5
E
Weight LB
23 40
1100
1000
900
800
700
23 40

6.5 BALANCE RECORD

Date	Empty weight lb	c/g pos. % MAC	Permitted crew + passenger weight with :												Approved	
			Max. baggage (22 lb)				Half baggage (11 lb)				No baggage (0 lb)				Date	Signed
			Front seat		Rear seat		Front seat		Rear seat		Front seat		Rear seat			
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.		

Weight & Balance Superceeded
W & B updated 13 May, 2020.
See W&B Addendum at back of Section 6.

6.6 EQUIPMENT LIST

Standard (S) items must be installed for all operations. Optional (O) items are available for installation. Installed items for each sailplane equipment list will be marked with an "X" and included in the Empty Weight/c.g. po of the Balance Record.

	S	O	Subject	Type	Mass lb	Arm from the reference plane (rib No. 1) ft	Date of installation
1	X		Altimeter	IFR 46-20 front instrument panel rear instrument panel	1.75	-5.82 -1.81	
2	X		Airspeed indicator	LUN 1106-8 front instrument panel rear instrument panel	0.88	-5.83 -1.82	
3		X	Electric turn-and-bank / side indicator	LUN 1211.1 front instrument panel rear instrument panel	0.79	-5.83 -1.82	
4		X	Rate of climb indicator ± 100 ft/min **or**	LUN 1141.02 front instrument panel rear instrument panel	1.06	-5.87 -1.87	
			Rate of climb indicator ± 10 ft/min	LUN 1141.04 front instrument panel rear instrument panel	1.06	-5.87 -1.87	
5		X	Rate of climb indicator ± 6000 ft/min **or**	LUN 1147.12-8 front instrument panel	1.1	-5.802	
			Rate of climb indicator ± 60 knots	LUN 1147.23-8 front instrument panel rear instrument panel	1.1	-5.802 -1.79	
6		X	Magnetic compass	LUN 1221.1-8 front instrument panel rear instrument panel	0.23	-5.79 -1.79	

(Cont.)

7		X	Accelerometer	AM-10 front instrument panel	0.55	-5.51	

Optional (O) Items 3, 4, 5, 6, 7 as applicable is required for pilot´s station for cloud flying operations.

	S	O	Subject	Type	Mass lb	Arm from the reference plane (rib No. 1) ft	Date of installation
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							

Addendum to Sailplane Flight Manual

L-23 Super Blanik
Serial No. 917914
US Registration N914B
Date of Addendum: 3 June 2020 Ver. 1.0

This addendum is created because the most recently completed Weight and Balance determination yields data which differs from that found in the originally issued factory manual. The purpose here is to provide pilots with the most accurate information for safe operation of the aircraft.

Paragraph 2.4 Weight Limits (page 2-3)

Original Maximum Takeoff Weight with a single pilot .... 925 lbs. This was based upon an empty weight of 683 lbs.

Corrected Maximum Takeoff Weight with a single pilot .... 974 lbs. This results from adding the maximum pilot weight (242 lbs.), maximum baggage weight (22 lbs.), and aircraft empty weight (710 lbs.).

Paragraph 2.4 Weight Limits (page 2-3)

Original Minimum Pilot Weight (solo) .... 154 lbs.

Corrected Minimum Pilot Weight (solo) .... 161 lbs.

Paragraph 2.4 Weight Limits (page 2-4)

Original Maximum Useful Load .... 441 lbs. This was based upon subtracting the factory Empty Weight of 683 lbs. from the Maximum Gross Weight of 1124 lbs.

Corrected Maximum Useful Load .... 414 lbs. This is derived by subtracting the new empty weight of 710 lbs. from the Maximum Gross Weight of 1124 lbs.

Paragraph 6.3 Basic Empty Weight and Moment (page 6-2)

Original Empty Weight .... 683 lbs.

Corrected Empty Weight .... 710 lbs. Established by weighing aircraft per maintenance manual.

Paragraph 6.5 Balance Record (page 6-5)

Original Data - Multiple entries regarding Date, CG % MAC, and maximum and minimum seat weights.

Corrected Data .... Reflect latest Weight and Balance and corrects administrative errors. See next page.

Section 6

W&B Addendum

L-23 Weight and Balance Calculations **N914B** Version 1.0

Conducted 13 May 2020, Evergreen Sky Ranch, Washington

		Gross	Tare	Net	
R1 =		530	0	530	lbs
R2 =		180	0	180	lbs
GL =		x	x	710	lbs
X1 =	Forward moment arm		22.34		inches
X2 =	Aft moment arm		171.23		inches

XL = CG location in inches

XT = a percent of Mean Aerodynamic Chord

$$XL = \frac{R2*X2 - R1*X1}{GL} = \frac{(83 \times 171.23) - (600 \times 22.34)}{710} = \frac{18981.2}{710}$$

26.73408451
C.G. location in inches

$$XT = \frac{(XL+6.95) * 100\%}{49.37} = \frac{3368.408451}{49.37}$$

68.2278398
% Mean
Aerodynamic Chord
Limit is 66.30 to 68.30% MAC

Blue is a measured item
Green is arithmetically derived
Red is the important part

Evergreen Weigh Scale Utilized
Model # 3-0057-BA-3C
Serial # 890-3C

DA 3032938

ORIGINAL

Pg. 2 of 3

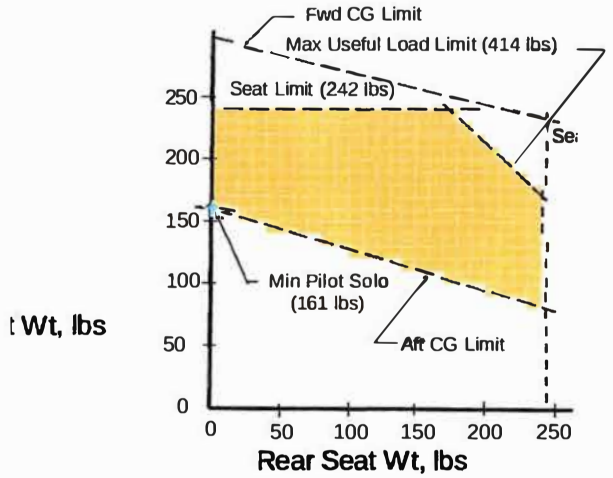
Addendum Ver. 1.0

Date	Empty weight lb	c/g pos. % MAC	Permitted crew + passenger weight with :												Approved	
			Max. baggage (22 lb)				Half baggage (11 lb)				No baggage (0 lb)					
			Front seat		Rear seat		Front seat		Rear seat		Front seat		Rear seat			
			Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Date	Signed
Jun 12/92	635.2	67.3	198	154	198	154	220	154	220	154	243	154	198	154		
13 May 2020	710	68.22	242	161	*	–	242	161	*	–	242	161	*	–	03 June 2020	

NOTES: * Consult the Weight and Balance Graph to determine seat weights under specific circumstances (attached).

Baggage Compartment Weight should be considered in Maximum Gross Weight determination, but has no effect upon CG computation.

Weight & Balance N914B



Max Takeoff Wt = 1124 lbs
Max Pilot = 242 lbs
Min Pilot (solo) = 161 lbs
Max Baggage Compartment = 22 lbs
Max Useful Load = 414 lbs

Caution: Solo flight from front seat only

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SECTION 7

SAILPLANE AND SYSTEM DESCRIPTION

CONTENTS

7.1 INTRODUCTION

The description and operation of the sailplane and its systems are given in the Maintenance Manual L 23 SUPER-BLANIK Sailplane.

7.2 FRONT SEAT BALLAST

A. Seat installation – Fig. 7.1

1. Disassemble and remove the seat from the front cockpit.

2. Put the seat with ballast into the free space and insert stirrups (pos. 2) in the rear part of the seat into the chamber on the rest suspender.

3. Move the levers on the seat sides upwards (pawls will shift in the seat face) and fold the seat (pos. 1) to the floor.

4. Move the levers downwards, the pawls will shift out and they must shift in the hole on the floor frame (if the pawls do not shift in the holes, move the seat to both sides to enable shifting the pawls in the holes).

B. Seat removal

Removal is carried out in a reverse order to installation.

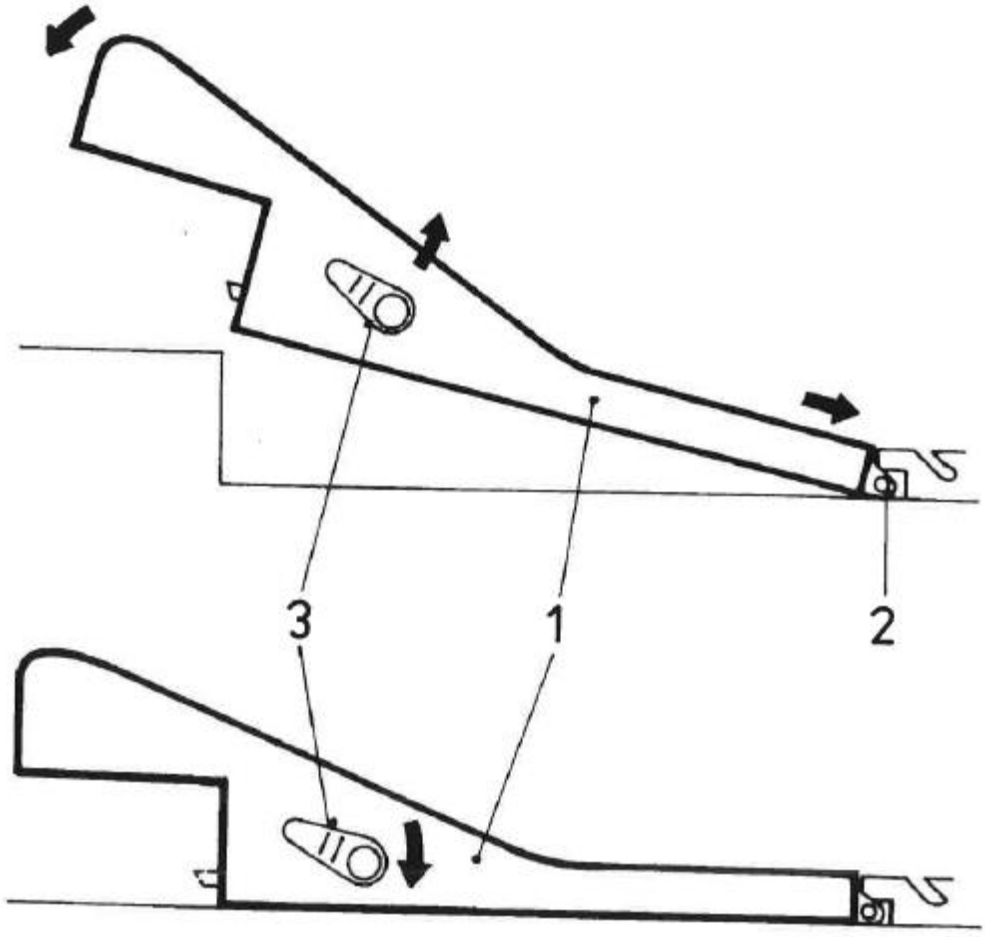

FIG. 7-1

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SECTION 8

SAILPLANE HANDLING, CARE AND MAINTENANCE

CONTENTS

8.1 INTRODUCTION

Procedures recommended by the manufacturer for proper ground handling, servicing and maintenance, which must be followed if the sailplane is to retain new-plane performance and dependability, are given in the Maintenance Manual of the L 23 SUPER-BLANIK Sailplane.

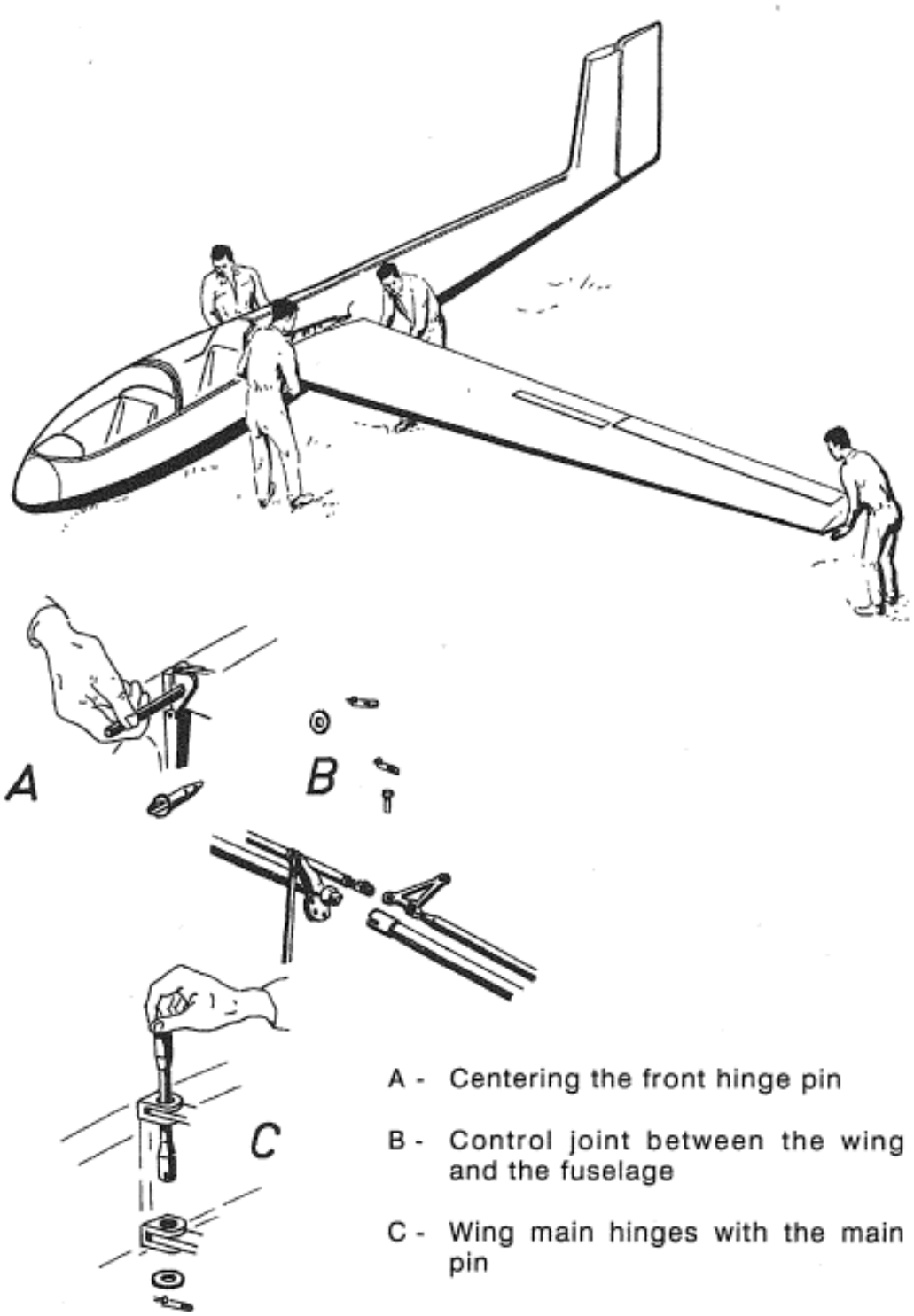
8.2 SAILPLANE GROUND HANDLING

8.2.1 WING REMOVAL

Four people are needed for the wing removal. The first holds the fuselage, the second holds the wing tip, the third and the fourth one hold the wing root (see Fig. 4.0). Level the sailplane to the horizontal position.
Take off the fairings between the fuselage and the wing. Uncouple the aileron control tie rods by unlocking safety pins and removing pins on rocker levers, pivoted in consoles on the rib No. 1 (from the fuselage side). Remove lock pins out of both front hinge pins and wing main pins and knock out the front pin. Remove electrical ground strap.
Move the wing gently up and down when installing or removing the pins. Pull the wing from the fuselage by slow careful movement and sit the wing vertically with the leading edge down on the special handling equipment.

8.2.2 WING INSTALLATION

The process of wing installation is the opposite. For easier installation of the center hinge pins use the centering pin (or installation drift pin) before inserting the main pins (see Fig. 4.0, Detail A). When slipping wing hinges on fuselage hinges make sure that the globular joint of the air brakes control (see Fig. 4.0, Detail B) will be positioned to fit into the control drivers in the wing.
When assembling first slide in the wing main hinge pin and then the wing front hinge pin.



A - Centering the front hinge pin

B - Control joint between the wing and the fuselage

C - Wing main hinges with the main pin

8.2.3 HORIZONTAL STABILIZER REMOVAL

Remove the safety wire from the front pin of the horizontal stabilizers (in front of the leading edge of the vertical stabilizer on its top). Rotate the pin handle 180° and pull out the pin. Elevate the horizontal stabilizer leading edge about 30° up, slip out the horizontal stabilizers from pins by pulling forward. It is recommended that the elevator to be in the neutral position during removal. Put the horizontal stabilizers on the special handling equipment support.

8.2.4 HORIZONTAL STABILIZER INSTALLATION

The process of horizontal stabilizer installation is the opposite. It is recommended that the horizontal stabilizer and the automatic connection rocker levers of the elevator trim tab control on the vertical stabilizer, and on the horizontal stabilizer, are approximately parallel.

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