

LET, 686 04 KUNOVICE, CZECH REPUBLIC

SAILPLANE FLIGHT MANUAL

Serial Nos. eligible : 938101, and subsequent

Model : **L 23 SUPER - BLANÍK**

Serial No. : **948114**


Registration : **N275BA**

Document No.: Do - L 23. 1012.5

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This Sailplane Flight Manual is FAA Approved for U.S.-registered sailplanes in accordance with provision of 14 CFR Part 21.29, and as required by FAA Type Certificate Data Sheet No. GACEU.

Approved by The Civil Aviation Inspectorate of The Czech Republic in Prague.

Signature: 

Authority: CAI Prague

Stamp:



Original date of approval: December 6, 1993

This Sailplane Flight Manual must be carried in the sailplane at all times

This sailplane is to be operated in compliance with information and limitations contained herein.



0.1. RECORD OF REVISIONS

Any revision or amendment of the present Manual will be issued in the form of Bulletins, approved by the Civil Aviation Inspectorate of the Czech Republic, supplement of which will contain new (revised) pages. User's duty is to make a note about revisions in the Record of revisions and to replace existing pages with revised and effective ones. 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 date will be shown on the bottom left hand of the page.

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



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0.2. LIST OF EFFECTIVE PAGES

Pages identified as "Appr." provide information required to be furnished by the Federal Aviation Regulations.

Section	Page	Date	Section	Page	Date	
0	1	Dec 1/93	4	Appr. 20	Dec 1/93	
	2	Dec 1/93		Appr. 21	Dec 1/93	
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	4	Dec 1/93				
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0.3. TABLE OF CONTENTS

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SECTION 1

General

CONTENTS

- 1.1 Introduction
- 1.2 Certification basis
- 1.3 Warnings, cautions and notes
- 1.4 Descriptive data
- 1.5 Three-view drawing



1.1 INTRODUCTION

The sailplane flight manual has been prepared to provide pilots with information for the safe and efficient operation of the L 23 SUPER-BLANIK sailplane. This manual includes the material required to be furnished to the pilot by JAR - 22. It also contains supplemental data supplied by the sailplane manufacturer.

1.2 CERTIFICATION BASIS

This type of sailplane has been approved by the Civil Aviation Inspectorate of the Czech Republic in accordance with JAR-22, Change 4 issued April 1, 1980 including Amendment 22/86/1 Eff. Oct. 22, 1986 and AC 21.17-2.

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 THE CORRESPONDING 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**

The L 23 SUPER - BLANÍK sailplane is a cantilever, high-wing, two-seat glider of all-metal structure. Wing tip extensions are optional.

Basic dimensions

Wing span	53.15 ft (16.2 m)
(with the installed wing tip extensions)	59.71 ft (18.2 m)
Length	27.89 ft(8.5 m)
Height	6.23 ft(1.9 m)
Wing area	206.13 sq ft(19.15 sq.m)
(with the installed wing tip extensions)	215.27 sq ft(20.00sq.m)
Aspect ratio	13.7
(with the installed wing tip extensions)	16.6
Mean aerodynamic chord	4.11 ft(1.253 m)



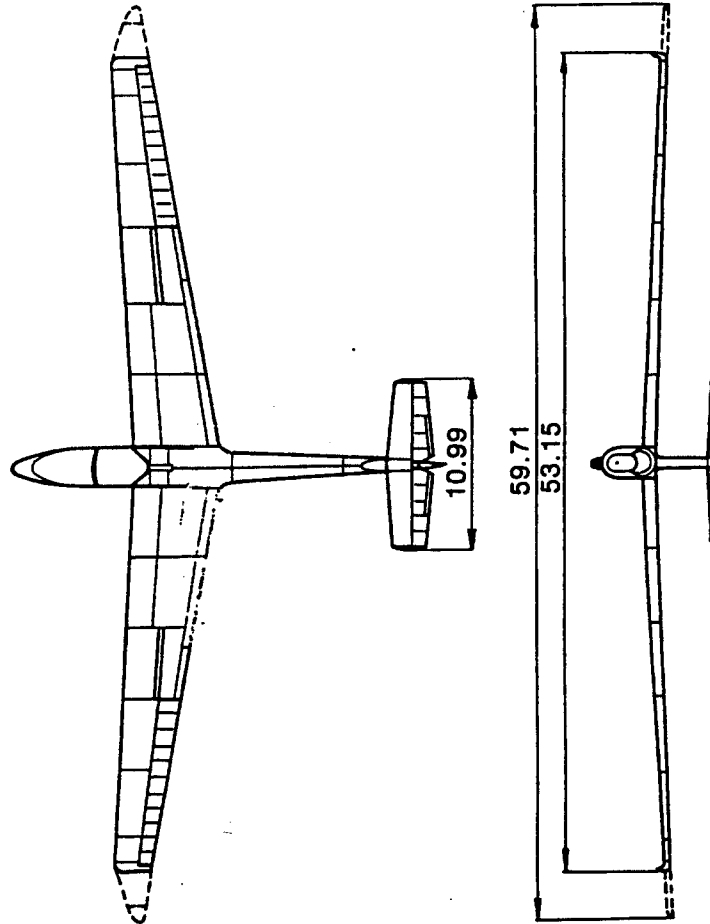
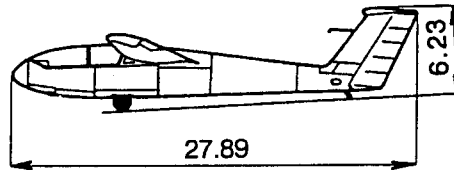
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1.5 THREE - VIEW DRAWING (Dimensions in ft)





SECTION 2

Limitations

CONTENTS

- 2.1 Introduction
- 2.2 Airspeed
- 2.3 Airspeed indicator markings
- 2.4 Weight
- 2.5 Centre of gravity
- 2.6 Approved manoeuvres
- 2.7 Manoeuvring load factors
- 2.8 Flight crew
- 2.9 Kinds of operation
- 2.10 Minimum equipment
- 2.11 Aerotow and winch-launching
- 2.12 Other limitations
- 2.13 Limitation placards



2.1 INTRODUCTION

Section 2 includes operating limitations and basic placards necessary for safe operation of the sailplane, its standard systems and standard equipment. The limitations in this section are FAA approved by the CAI, Czech Republic. The values in parentheses are valid only when using wing tip extensions.

2.2 AIRSPEED

Speed		(KIAS)	Remarks
VNE	Never exceed speed up to a pressure altitude of 13,780 ft	124	Do not exceed this speed in any operation and do not use more than 1/3 of control deflection
VRA	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.
VA	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
VW	Maximum winch-launching speed	65	Do not exceed this speed during winch- or autotow-launching
VT	Maximum aerotowing speed	81	Do not exceed this speed during aerotowing
VLO	Maximum landing gear operating speed	124	Do not extend or retract the landing gear above this speed

Note: VNE airspeed limits above 13,780 ft Pressure Altitude are reduced as follows:

Pressure Altitude ft *	13,780	20,000	25,000	30,000	35,000
VNE KIAS	124	124 (114)	116 (105)	108 (97)	100 (89)

*- Altimeter Setting at 29.92 in.Hg.



2.3 AIRSPEED INDICATOR MARKINGS

Marking	KIAS (value - range)	Significance
Green arc	36 - 86	Normal Operating Range. (Lower limit is maximum weight 1.1 vs ₁ at most forward c.g. Upper limit is rough air speed)
Yellow arc	86 - 124	Manoeuvres must be conducted with caution and only in smooth air.
Red line	124	Maximum speed for all operations
Yellow triangle	41	Approach speed at maximum weight.

2.4 WEIGHT LIMITS

Maximum take - off and landing weight:

- with two occupants 1124 lb

- with one pilot 925 lb

Empty weight

with standard equipment 683 lb ± 2 % (695 lb ± 2%)

and the corresponding centre

of gravity position 67.30 ± 1% MAC (68.30 ± 2% MAC)

Maximum weight of all non lifting parts 778 lb (767 lb)

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.

(Cont.)



Pilot's weight (including parachute):

- minimum pilot's weight (solo) 154 lb

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.

Note: Installation of the front seat ballast is described in Section 7, paragraph 7.2 of this Flight Manual.

- maximum pilot's weight (solo) 242 lb

Maximum useful load (occupants,
baggage, optional equipment) 440 lb (430 lb)

Maximum baggage compartment load . . . 22 lb



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2.5 CENTRE 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

Wing tip extensions installation moves the center of gravity of the empty sailplane 1% MAC (0.493 in = 12.53 mm) to the back.

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

2.6 APPROVED MANOEUVRES (UTILITY CATEGORY)

Sailplane is certified in the Utility Category.

With the installed wing tip extensions all aerobatic manoeuvres are prohibited.

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

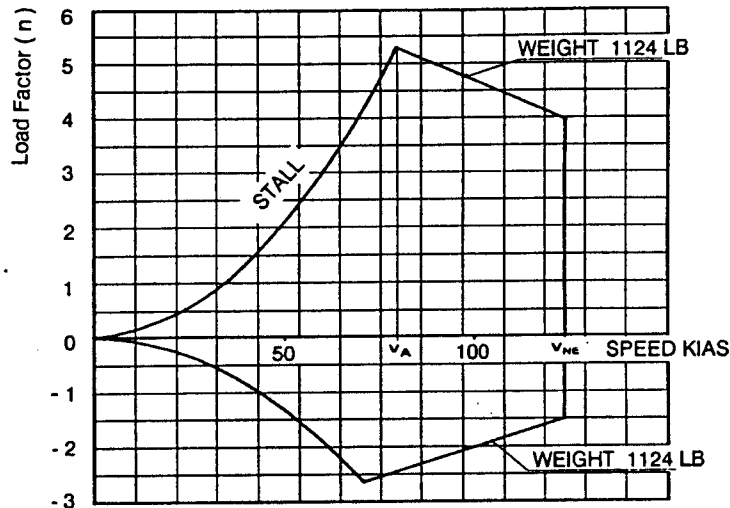


FIG. 2 - 1

2.8 FLIGHT CREW

Minimum - one pilot. 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 AND SAFETY HARNESSSES ON THE REAR SEAT MUST BE CONNECTED, DRAWN TOGETHER AND SECURED.

2.9 KINDS OF OPERATION

The sailplane is approved for Day VFR operations. Cloud- flying is permitted where operational regulations permit, and the minimum required equipment is installed and operable.

(Cont.)



- WARNING: 1. OPERATIONS IN ICING CONDITIONS ARE PROHIBITED. OPERATIONS ARE LIMITED BY THE INSTALLED EQUIPMENT AS LISTED IN SECTION 6.**
- 2. AEROBATIC FLIGHT TIME MUST BE RECORDED IN THE SAILPLANE LOG BOOK TO COMPLY WITH CONTINUED AIRWORTHINESS REQUIREMENTS.**
- 3. ALL AEROBATIC MANOEUVRES ARE PROHIBITED WITH INSTALLED WING TIP EXTENSION.**
- 4. WITH INSTALLED WING EXTENSIONS:
ALL FLIGHT TIME WITH WING EXTENSIONS MUST BE RECORDED IN THE SAILPLANE LOG BOOK TO COMPLY WITH CONTINUED AIRWORTHINESS REQUIREMENTS.**
- 5. THE NUMBER OF WINCH AND AEROTOW LAUNCHES MUST BE RECORDED IN THE SAILPLANE LOG BOOK TO COMPLY WITH CONTINUED AIRWORTHINESS REQUIREMENTS.**

2.10 MINIMUM EQUIPMENT

Instruments and minimum equipment must be approved types.

A. Instruments All Operations:

- Airspeed indicator
- Altimeter
- Lap and shoulder straps

B. Additional Instruments required for Cloud flying:

- Magnetic compass
- Turn and bank indicator
- Variometer (Vertical Speed Indicator)



2.11 AEROTOW AND WINCH LAUNCHING

Aerotow

- the maximum cable strength or cable safety device (weak link) strength is 1460 lb .
- maximum permissible speed $V_T = 81$ KIAS
- 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 .
- maximum permissible speed $V_w = 65$ KIAS

2.12 OTHER LIMITATIONS

A. Maximum crosswind component

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

Maximum demonstrated crosswind component for winch-launching:

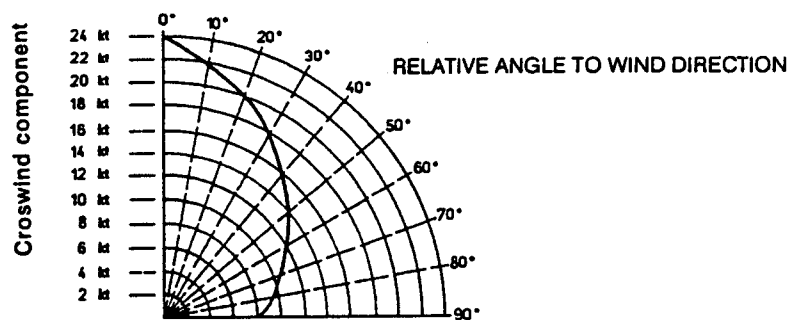


FIG. 2 - 2

B. Maximum demonstrated operating altitude - 13, 780 ft

(Cont.)



C. Maximum Tire Pressure 37 psi.

D. Continued Airworthiness Life Limits:

The initial sailplane service life is specified to 6000 flight hours and 30000 landings under the following operating conditions:

- Max. 4.83 take-offs per 1 flight hour;
- The winch launching - aerotow take-off ratio is 5 : 1;
- Crew: 35% double, 65% single;
- Elementary training-to-advanced training and to performance soaring ratio is 40% : 60%, whereby the aerobatics share is 2% of the total operation.

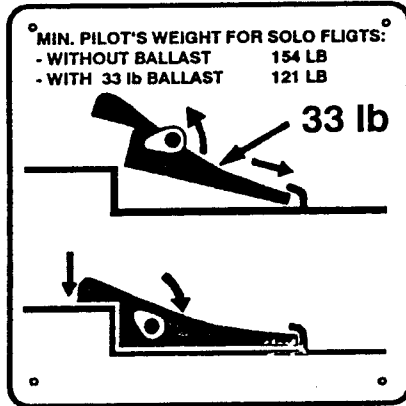
Sailplane life L_B versus operation with wing tip extensions is
 $L_B = 6000 - 25.x$ (where x is operation with wing tip extensions in percents of the total operation time)



2.13 LIMITATIONS PLACARDS

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

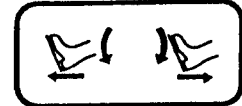
a) front cockpit



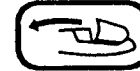
SEAT BACK



PEDAL ADJUSTMENT



AIR VENT



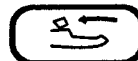
CANOPY - JETTISON see para 3.2

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

b) both front and rear cockpits



AIR BRAKES



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



AIR BRAKE



LANDING GEAR



FRONT LIFE OFF
see para 3.2



BAGGAGE
(REAR SEAT ONLY)



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MAX. ALLOWABLE SPEED VS ALTITUDE					
PRESSURE ALTITUDE (FT) UP TO	13 780	20 000	25 000	30 000	35 000
WITHOUT EXTENSIONS	124	124	116	108	100
WITH EXTENSIONS	124	114	105	97	89

ALL AEROBATIC MANOEUVRES
ARE PROHIBITED WITH
INSTALLED WING TIP EXTENSIONS

V_{NE} . . . 124 KIAS
 V_{RA} . . . 86 KIAS

OPERATING LIMITATIONS

THE MARKINGS 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

APPROVED MANOEUVRES:

LOOP SPIN

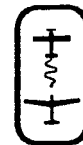
STALL TURN CHANDELLE(CLIMBING)

LAZY EIGHT STEEP TURN

SOLO FLIGHT FROM FRONT SEAT ONLY



TRIMMER



RELEASE

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

See para 2.2



SECTION 3

Emergency procedures

CONTENTS

- 3.1 Introduction
- 3.2 Canopy jettison
- 3.3 Bailing Out
- 3.4 Stall recovery
- 3.5 Spin recovery
- 3.6 Spiral Dive Recovery



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

Red Canopy Jettison Lever
(FIG. 3-1, pos. 1)

ROTATE fully anticlockwise and HOLD.

Canopy

FORCE UPWARDS.

Rear pilot

Front canopy jettisoned

ROTATE canopy jettison levers (FIG. 3-1, pos 2) in the direction of arrows. LIFT rear canopy UP.

Front canopy not jettisoned

RELEASE safety belts

Red Front Canopy Jettison Lever

ROTATE fully counterclockwise and HOLD. FORCE Front Canopy UPWARDS. ROTATE Rear Canopy Jettison Levers in the Direction of Arrows. LIFT rear canopy UP.

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)

PUSH control stick to reach subcritical 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

INCREASE gently back pressure to raise 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

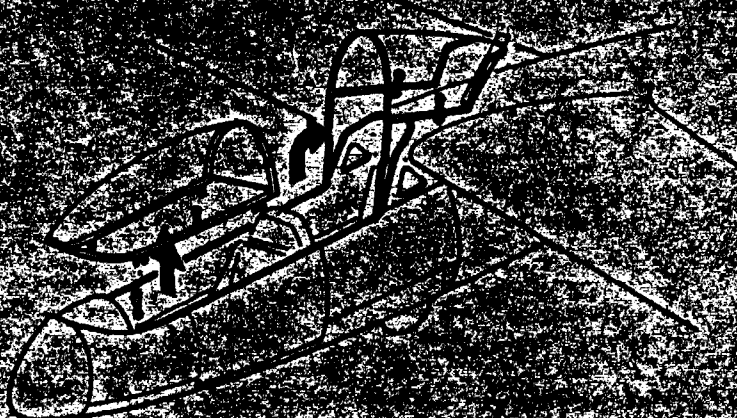
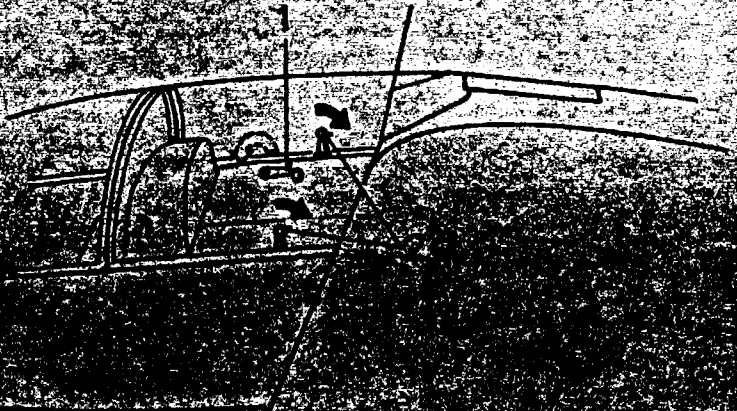
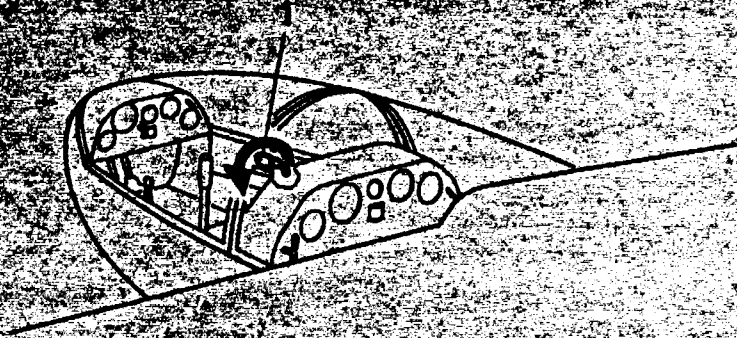


FIG. 3-1



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PLST

SECTION 4

Normal procedures

CONTENTS

- 4.1 Introduction
- 4.2 Rigging and de-rigging
- 4.3 Preflight Inspection
- 4.4 Normal operations and recommended speeds
 - 4.4.1 Take-off and climb
 - 4.4.2 Flight
 - 4.4.3 Approach
 - 4.4.4 Landing
 - 4.4.5 Use of air brakes
 - 4.4.6 Basic aerobatics



4.1 INTRODUCTION

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

4.2 RIGGING AND DE-RIGGING

A. 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 hold the wing root (see Fig. 8-1). 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 ribs 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.

B Wing installation

The process of wing installation is the opposite. For easier installation of the centre hinge pins use the centering pin (or installation drift pin) before inserting the main pins (see Fig. 8-1, Detail A). When slipping wing hinges on fuselage hinges make sure that the globular joint of the air brakes control (see Fig. 8-1, 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.

C Removal and installation of the wing tip extensions

Remove 12 bolts at the last wing rib fixing the wing tip and remove the wing tip and/or wing tip extension. Perform the installation in the reverse order. Insert the extension and/or by its guiding into the guiding tube at the last wing rib, adjust it in the proper position and fix with original bolts (10 pieces of M4 sunk bolt and 2 pieces of M5 fitted bolt with cylinder head) at both the wing ends. Tighten all the screws and bolts.

(Cont.)

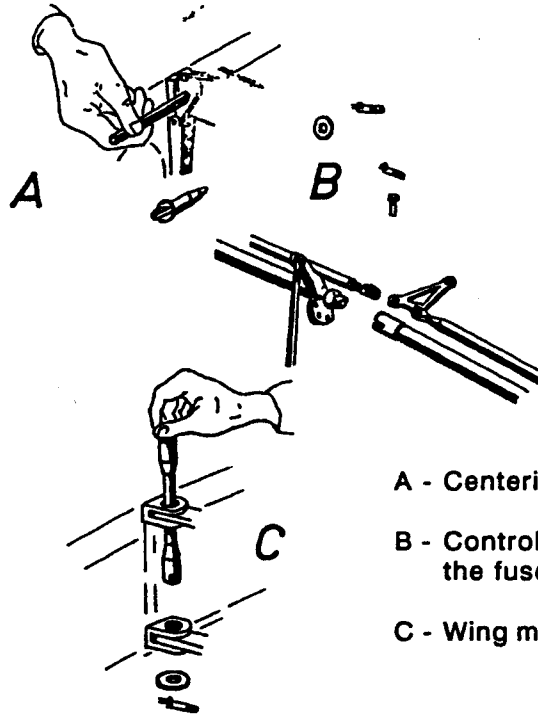
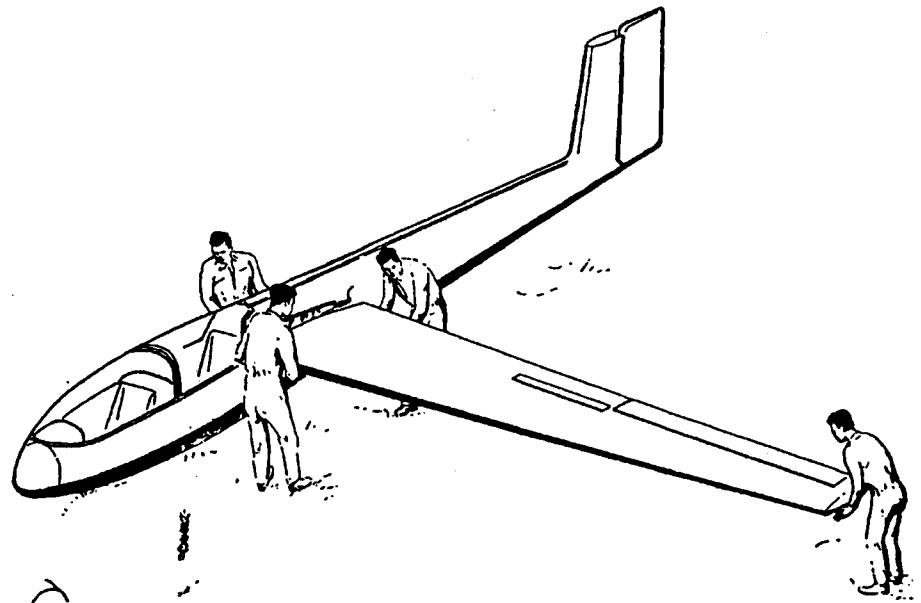


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A - Centering the front hinge pin

B - Control joint between the wing and the fuselage

C - Wing main hinges with the main pin



D. 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.

E. 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.

4.3 PREFLIGHT INSPECTION

The pilot must check the sailplane for proper condition in accordance with the checklist walkaround inspection (before getting into the sailplane). It is recommended to perform the inspection as show in Fig.4-1.



Sequence of the walkaround inspection

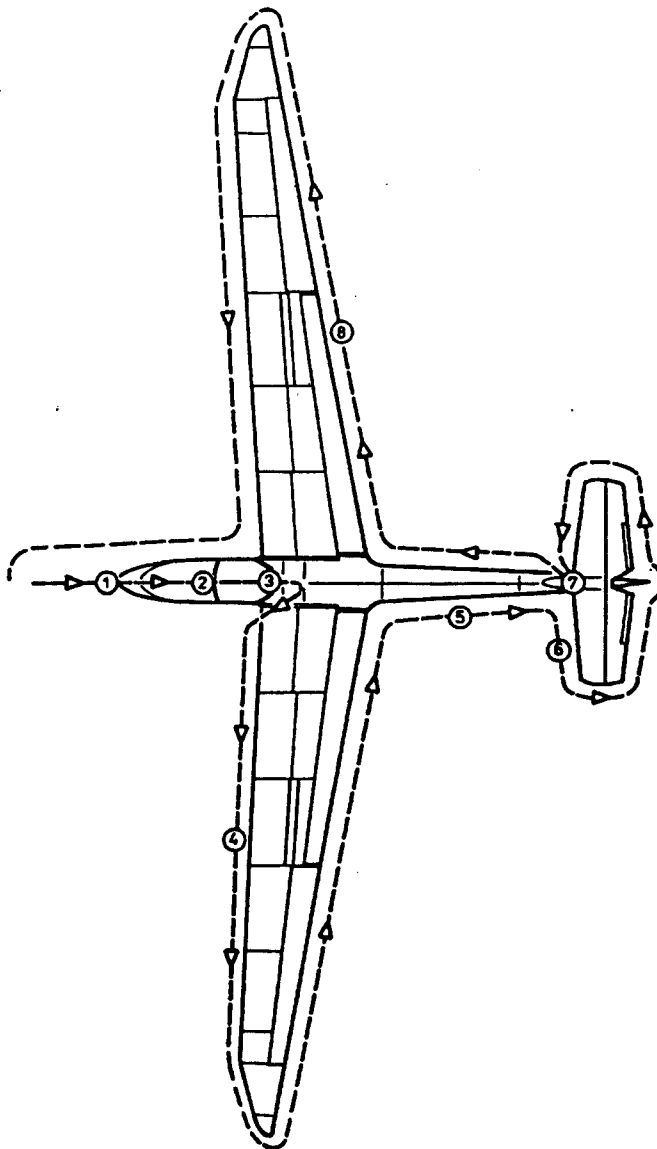


FIG. 4 - 1

(Cont.)



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4.3.1 WALKAROUND INSPECTION CHECKLIST

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



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Item No.	Subject	Check/ activity
5	<u>Rear fuselage section</u>	
	Fuselage skin	no damage
6	<u>Empennage</u>	
	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	<u>Tail landing gear</u>	
	Landing gear attachment	no damage of attachment
8	<u>Right wing</u>	see Item 4 - left wing



4.3.2 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.



4.4 NORMAL OPERATIONS AND RECOMMENDED SPEEDS

4.4.1 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. The tow rope should be attached to the front hook only.

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.)



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The pilot should avoid overcontrolling.

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 .



4.4.2 FLIGHT

1. Turns and circling

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

2. Side 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 losing 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 maneuvers.

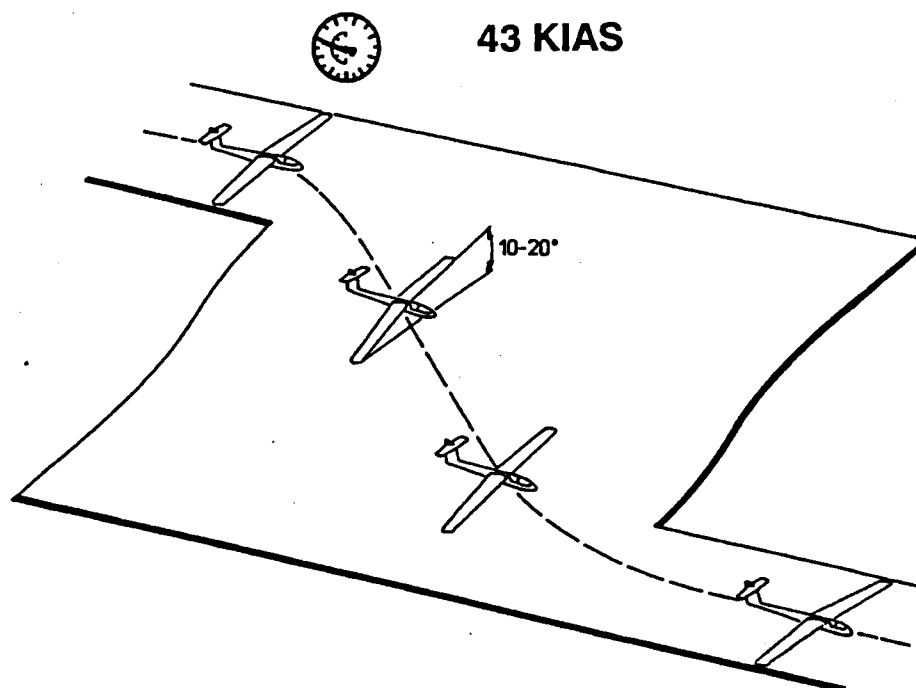


FIG. 4 - 2



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



4.4.3 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.

4.4.4 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.

Post flight

The following operations must be recorded in the sailplane log book as they occur:

- (1) Flight time with wing tip extensions installed.
- (2) Number of winch and aerotow launches by type.
- (3) Flight time during acrobatic maneuvers.



4.4.5 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.



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4.4.6 BASIC AEROBATICS

The L 23 SUPER-BLANÍK 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 to 19 of this Section.

WARNING: ONLY MANOEUVRES WITH POSITIVE G LOAD FACTORS ARE APPROVED.

(Cont.)



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.

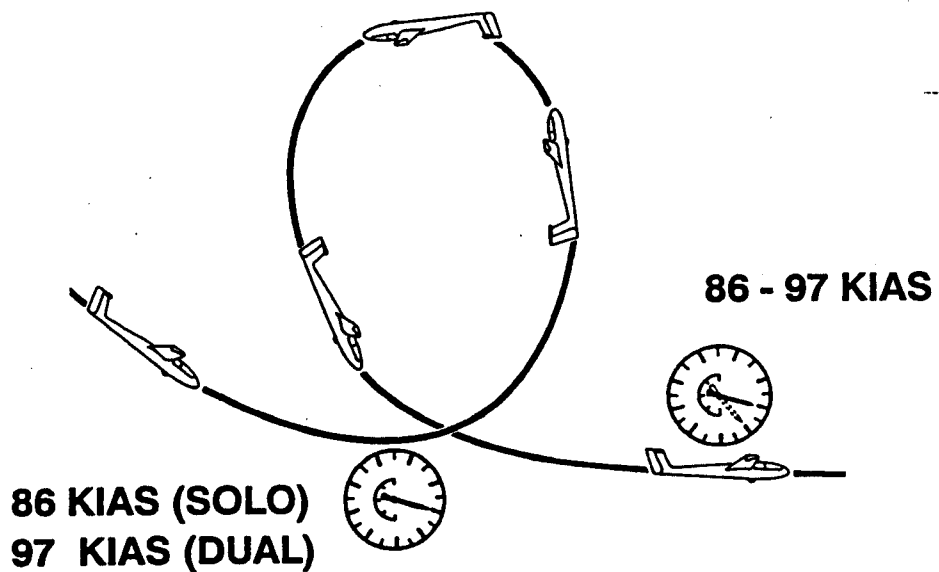


FIG. 4 - 3

(Cont.)



2. Stall turn

This manoeuvre should be begun at the speed of 92 KIAS 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".

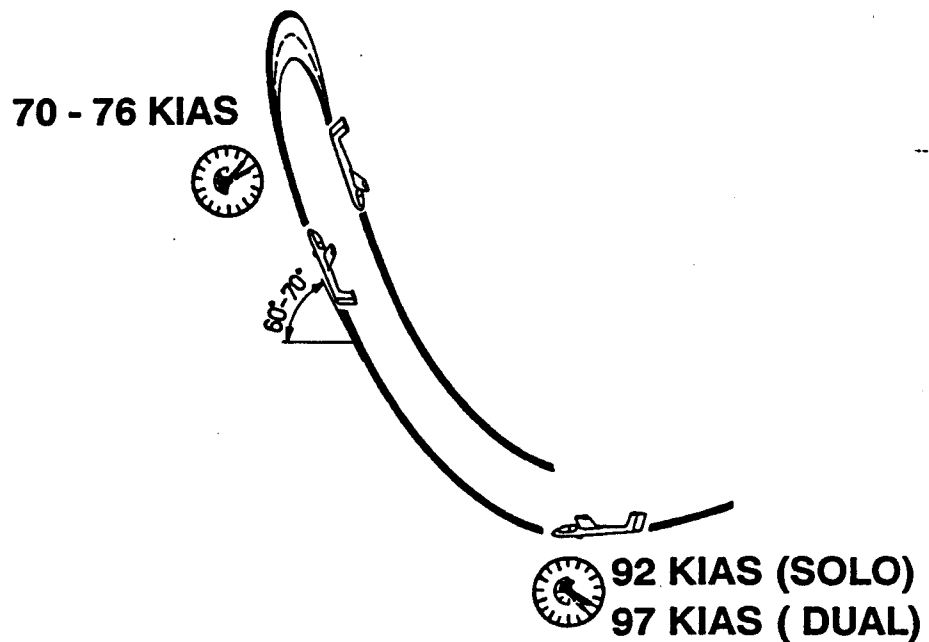


FIG. 4 - 4

(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 of 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 of ailerons and rudder.

The flight path intersects at the lowest point of the manoeuvre.

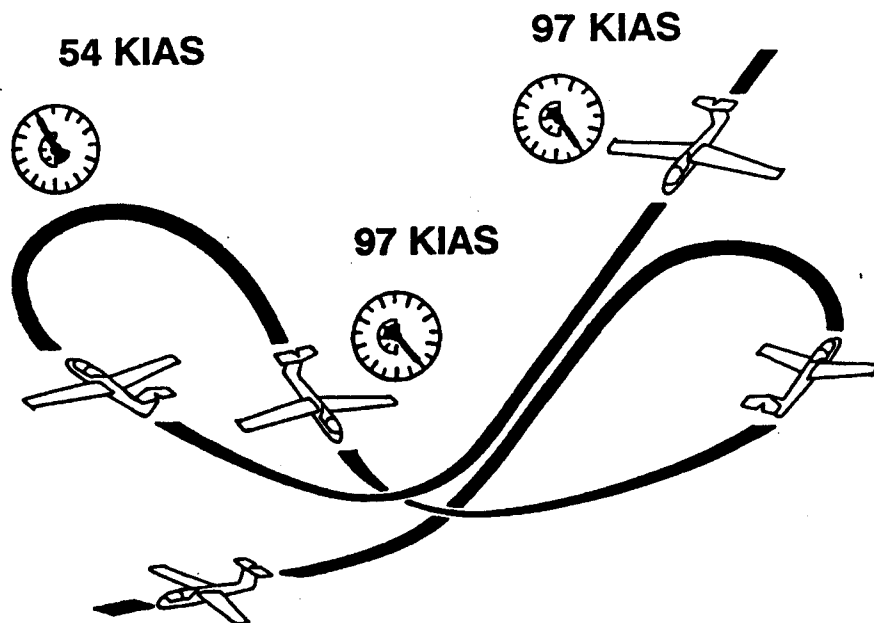


FIG. 4 - 5



4. Spin

The sailplane performs the spin without any tendency to enter a flat spin at all operating centre of gravity positions. The sailplane has the tendency to recover from the spin by itself, when at the maximum flight weight and the forward centre of gravity. Entering the spin is entirely conventional. Pull the control stick slowly back to approach the stall, use the full deflection of the rudder at the stall speed of approximately 32 KIAS (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, paragraph 3.**

2. **IAS error.**

The airspeed indications become erroneous at large yaw angles, because the static vents on the sides of the fuselage are by-passed asymmetrically.

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 forward. 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.)



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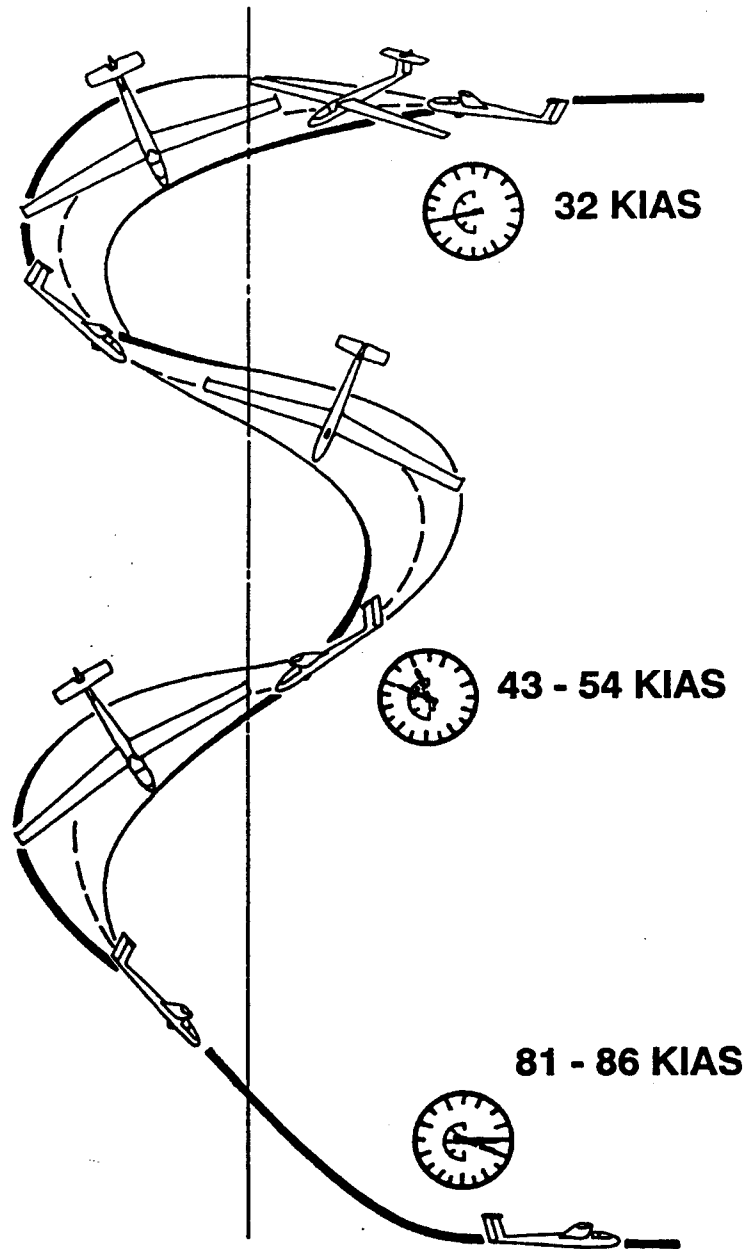


FIG. 4 - 6



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.

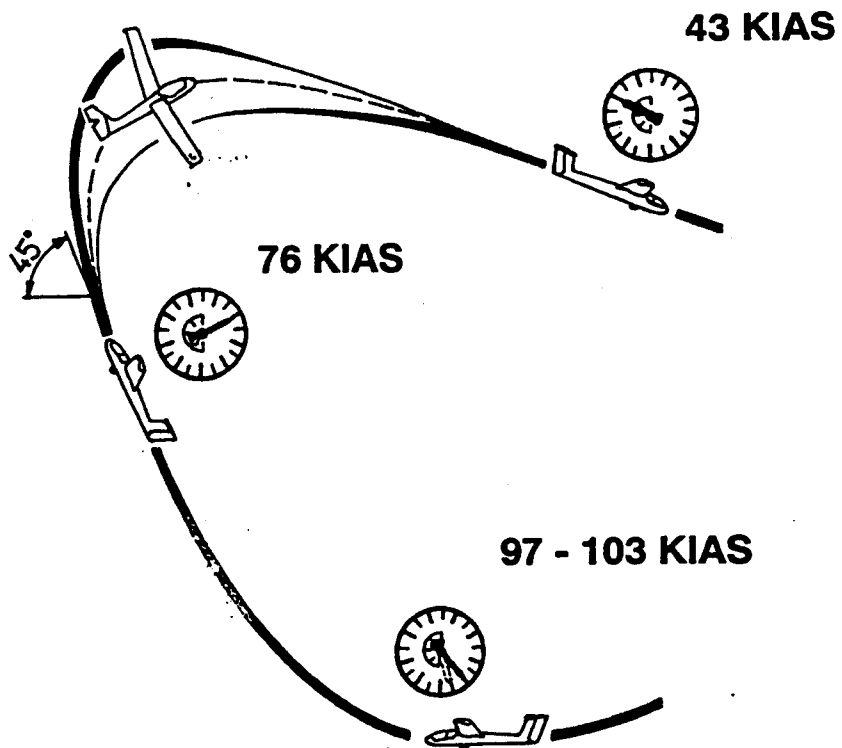


FIG. 4 - 7

(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.

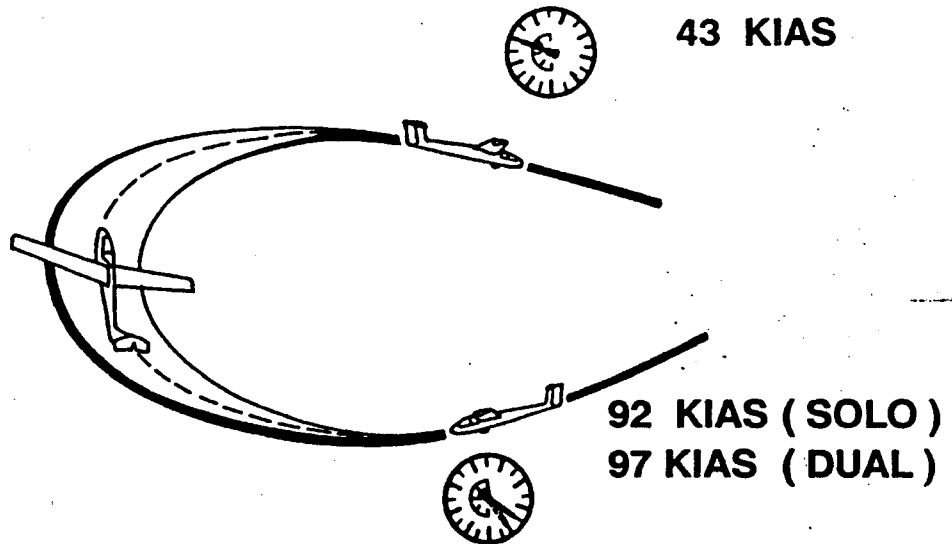


FIG. 4 - 8



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SECTION 5

Performance

CONTENTS

- 5.1 Introduction
- 5.2 Approved data
 - 5.2.1 Airspeed system calibration
 - 5.2.2 Stall speeds
- 5.3 Additional information
 - 5.3.1 Flight polar

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.

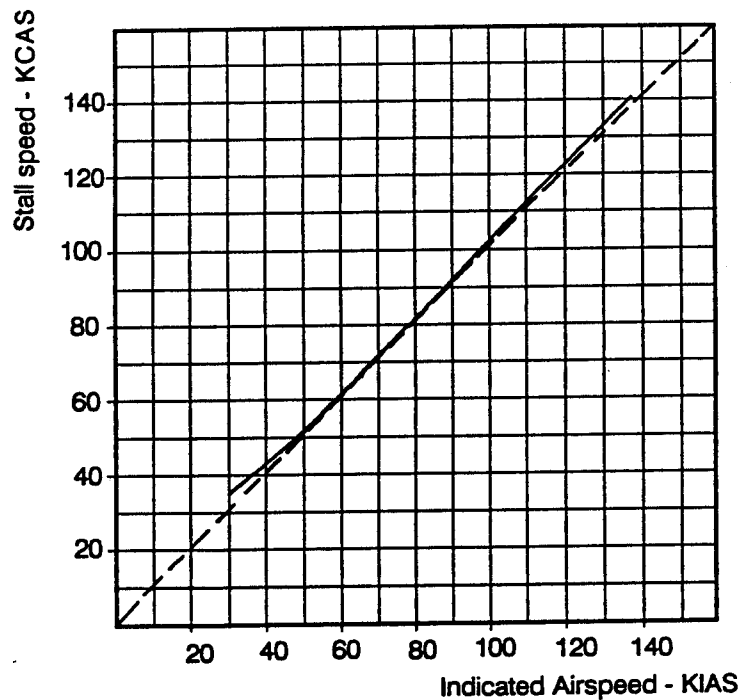


FIG. 5 - 1



5.2.2 **STALL SPEEDS (unaccelerated)**

The broken line is valid only when using the wing tip extensions.

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

Stall speed for forward c.g. position

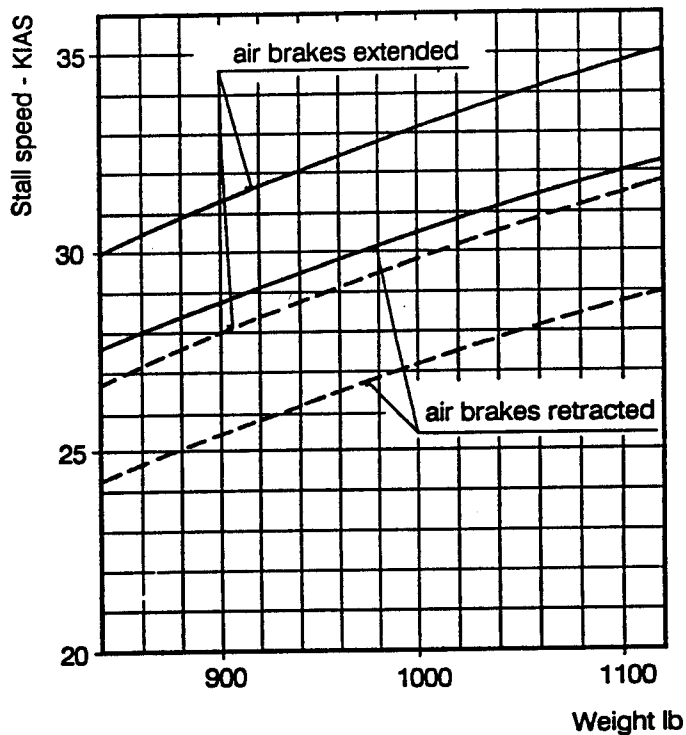


FIG. 5 - 2



5.3 **ADDITIONAL INFORMATION**

5.3.1 **FLIGHT POLAR**

5.3.1.1 **FLIGHT SPEED POLAR**

Maximum flight weight of 1124 lb
The broken line is valid only when using the wing tip extension.

Airspeed with the angle
of descent of 45° 124 KIAS

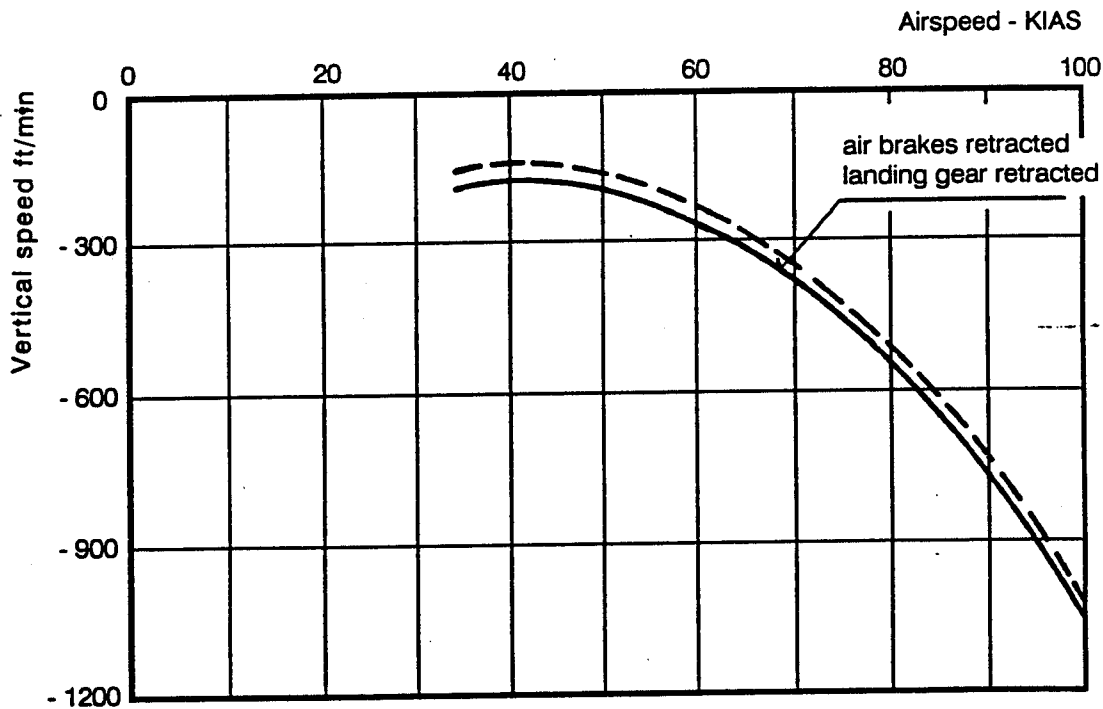


FIG. 5 - 3



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SECTION 6

Weight and balance

CONTENTS

- 6.1 Introduction
- 6.2 Weight and balance record
- 6.3 Basic empty weight and moment
- 6.4 Balance chart
- 6.5 Balance record
- 6.6 Equipment list



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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 centre of gravity position are explained by an example calculation.

6.2 WEIGHT AND BALANCE RECORD

Weight and balance record providing information for calculating centre of gravity position is given in the Maintenance Manual of the L 23 SUPER - BLANIK Sailplane, chapter 8.

6.3 BASIC EMPTY WEIGHT AND MOMENT

Basic empty weight	683 lb ± 2%
(with the installed wing tip extensions)	695 lb ± 2%
Moment to the reference plane	17,923.1 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 centre-of-gravity position vs. sailplane weight is given in the bottom part of the page. The region of the allowable centre of gravity range is the slanted shape in the chart and it refers to all flight conditions.

(Cont.)



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. When the wing tip extensions are used, move the center of gravity of the empty sailplane 1% MAC in aft direction. 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 left 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 glider is loaded correctly. If the intersection is outside, the glider 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 centre of gravity position, but they must be included to the sum of all the weights.

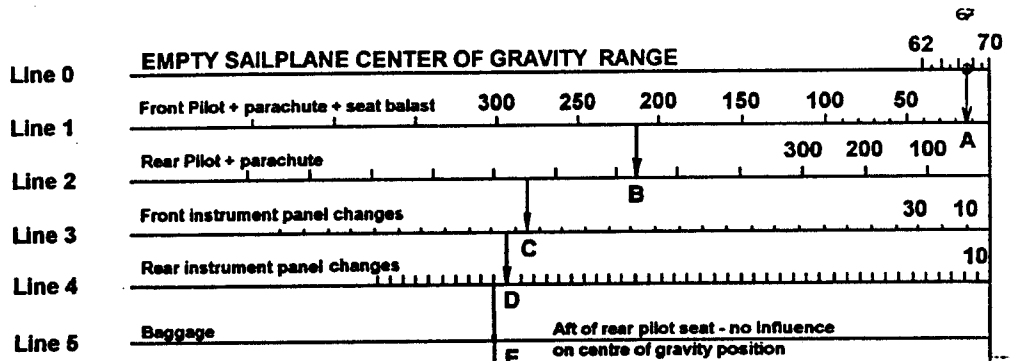
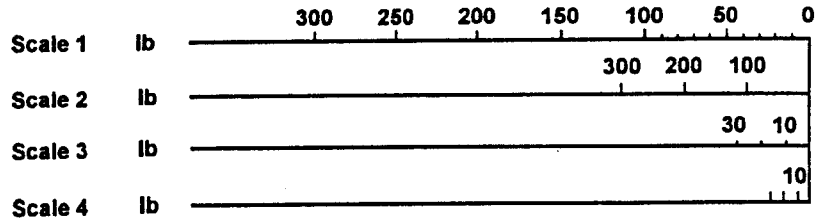


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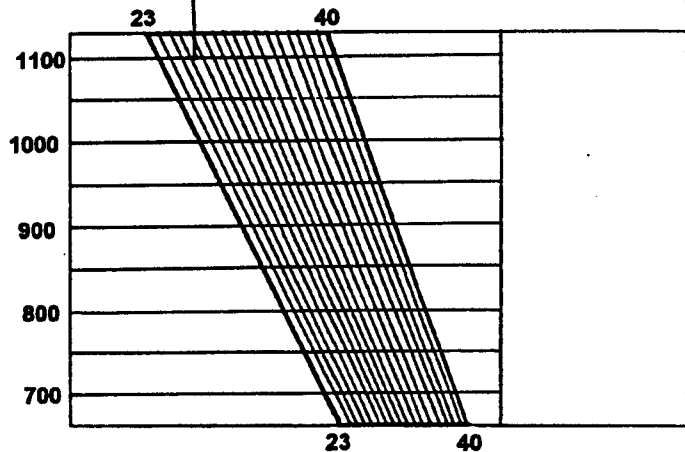
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Weight lb





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.		
Dec 1/93	635.2	67.3	198	154	198	154	230	154	249	154	196	154	154	4/10/93		
1.)	407.7	68.1	160	-	206	157	-	214	155	-	-	-	-	21.3.93		
2.)	707.7	68.1	154	154	243	154	162	243	154	173	173	154	154			
3.)	707.7	68.1	154	154	162	154	243	173	173	154	243	154	154			

- 1.) Single seater
- 2.) tandem seater - max front pilot
- 3.) tandem seater - max rear pilot



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. pos 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 instr.panel rear instr.panel	1.75	- 5.82 - 1.81	
2	X		Airspeed indicator	LUN 1106.14-8 front instr.panel rear instr.panel	0.88	- 5.83 - 1.82	
3		X	Electric turn-and-bank/side indicator	LUN 1211.1 front instr.panel rear instr.panel	0.79	- 5.83 - 1.82	
4		X	Vertical speed indicator \pm 1000 ft/min	LUN 1141.02 front instr.panel rear instr.panel	1.06	- 5.87 - 1.87	
			or Vertical speed indicator \pm 10 knots	LUN 1141.04 front instr.panel rear instr.pane	1.06	- 5.87 - 1.87	
5		X	Vertical speed indicator \pm 6000 ft/min	LUN 1147.12-8 front instr.panel	1.1	- 5.802	
			or Vertical speed indicator \pm 60 knots	LUN 1147.23-8 front instr.panel rear instr.pane	1.1	- 5.802 - 1.79	
6		X	Magnetic compass	LUN 1221.1-8 front instr.panel rear instr.panel	0.23	- 5.79 - 1.79	

(Cont.)



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	S	O	Subject	Type	Mass lb	Arm from the reference plane (rib No. 1) ft	Date of instalation
7		X	Accelerometer	AM-10 front instr. panel	0.55	- 5.51	

Optional (O) Items 3, 4, 5, 6, 7, 8 as applicable are 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 instalation
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							



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SECTION 7

Sailplane and systems description

CONTENTS

- 7.1 Introduction
- 7.2 Sailplane description
- 7.3 Front Seat Ballast

**7.1 INTRODUCTION**

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

7.2 SAILPLANE DESCRIPTION

The L 23 SUPER - BLANÍK sailplane is a cantilever, high-wing, two-seat glider 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). There is a possibility of using the wing tip extensions which enlarge the wing span from the 81st series. They may be connected to the standard wing instead of the laminated wing tips. 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.

7.3 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.

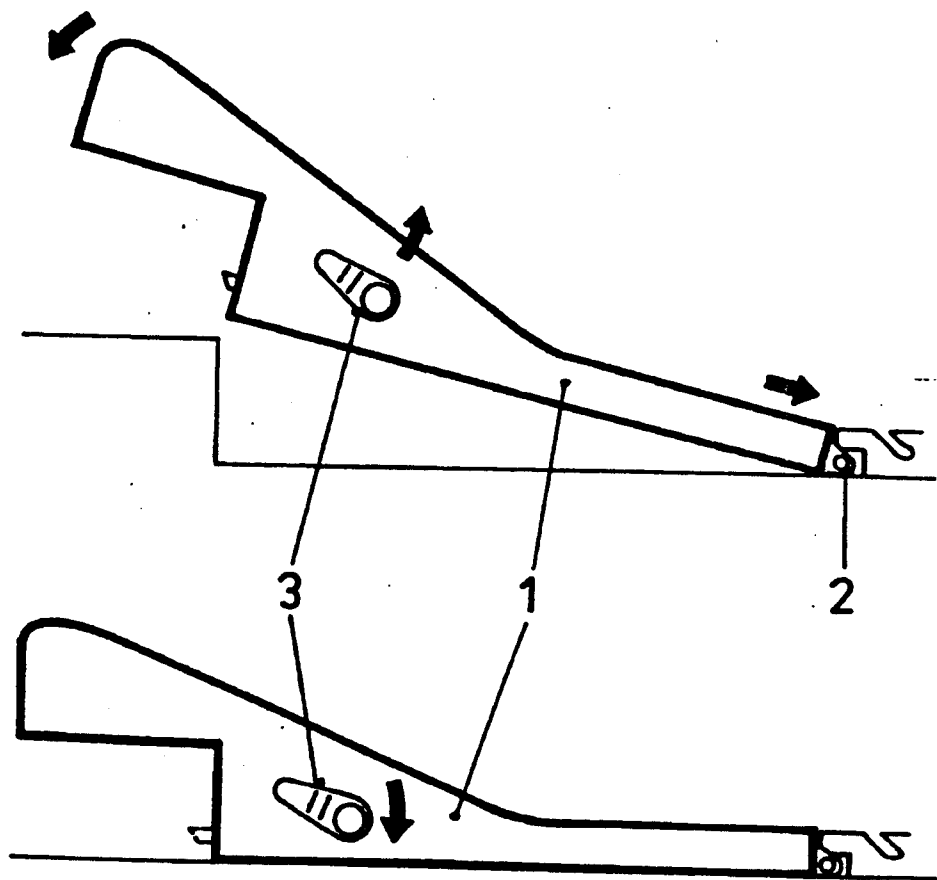


FIG. 7 - 1



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SECTION 8

Sailplane handling, care and maintenance

CONTENTS

- 8.1 Introduction
- 8.2 Sailplane inspection period



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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 - BLANÍK Sailplane.

8.2 SAILPLANE INSPECTION PERIOD

Maintenance and servicing of the sailplane are provided in the L 23 SUPER-BLANÍK sailplane Maintenance Manual Do - L 23 1031.3 (see Section 5).