

Do-L23.1011.3

FLIGHT MANUAL

Model : **L 23 SUPER-BLANÍK**

Serial No. : **917 929**

Registration : *304ML*

Date of Issue: 26.2.1991

Approved by The State Aviation Inspection of the Czech and Slovak Federal Republic in Prague, on August 28, 1989 Approval No. 4694/1034/89/OL, sections 2, 3, 4 and 5 in English were approved on 14th August 1990 under ref. No. 3685/1025/90/OL.

Sections 2, 3, 4 and 5 comprise the approved flight manual. Sections 1, 6, 7 and 8 contain manufacturers data.

The L 23 SUPER - BLANÍK sailplane is to be operated in compliance with limitations contained in section 2.

SAI approved.



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 Authority 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
1.	0, 2, 6, 7	0-1, 0-3, 2-5, 2-10, 2-11, 6-5, 6-6, 6-7, 7-1, 7-4, 7-5	Dec 20/95	L23/026a	Jan 26/96	
2.	0, 7	0-1, 0-3, 7-1, 7-4, 7-5, 7-6	Sep 20/96	L23/029a	Sep 23/96	
3.	0, 1, 2, 3, 4, 7	0-1, 0-3, 1-1, 1-3, 1-4, 1-5, 2-10, 2-11, 3-1, 3-2, 3-3, 3-4, 3-5, 4-5, 4-6, 4-7, 7-4, 7-5, 7-6	Oct 30/96	L23/030a	Dec 2/96	
4.	Not affected					
5.	0, 9	0-1, 0-3, 0-4, 9-1, 9-2, 9-3	Jan 13/99	L23/035a	Jan 28/99	

**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	Jan 13/99	4	Appr. 15	Dec 1/93	
	2	Dec 1/93		Appr. 16	Dec 1/93	
	3	Jan 13/99		Appr. 17	Dec 1/93	
	4	Jan 13/99		Appr. 18	Dec 1/93	
				Appr. 19	Dec 1/93	
				Appr. 20	Dec 1/93	
				Appr. 21	Dec 1/93	
				Appr. 22	Dec 1/93	
1	1	Oct 30/96		5	Appr. 1	Dec 1/93
	2	Dec 1/93			Appr. 2	Dec 1/93
	3	Oct 30/96	Appr. 3		Dec 1/93	
	4	Oct 30/96	Appr. 4		Dec 1/93	
	5	Oct 30/96				
2	Appr. 1	Dec 1/93	6	1	Dec 1/93	
	Appr. 2	Dec 1/93		2	Dec 1/93	
	Appr. 3	Dec 1/93		3	Dec 1/93	
	Appr. 4	Dec 1/93		4	Dec 1/93	
	Appr. 5	Dec 20/95		5	Dec 20/95	
	Appr. 6	Dec 1/93		6	Dec 20/95	
	Appr. 7	Dec 1/93		7.	Dec 20/95	
	Appr. 8	Dec 1/93				
	Appr. 9	Dec 1/93				
	Appr. 10	Oct 30/96				
	Appr. 11	Oct 30/96				
3	Appr. 1	Oct 30/96	7	1	Sep 20/96	
	Appr. 2	Oct 30/96		2	Dec 1/93	
	Appr. 3	Oct 30/96		3	Dec 1/93	
	Appr. 4	Oct 30/96		4	Oct 30/96	
	Appr. 5	Oct 30/96		5	Oct 30/96	
		6		Oct 30/96		
4	Appr. 1	Dec 1/93	8	1	Dec 1/93	
	Appr. 2	Dec 1/93		2	Dec 1/93	
	Appr. 3	Dec 1/93	9			
	Appr. 4	Dec 1/93		1	Jan 13/99	
	Appr. 5	Oct 30/96		2	Jan 13/99	
	Appr. 6	Oct 30/96		3	Jan 13/99	
	Appr. 7	Oct 30/96				
	Appr. 8	Dec 1/93				
	Appr. 9	Dec 1/93				
	Appr. 10	Dec 1/93				
	Appr. 11	Dec 1/93				
	Appr. 12	Dec 1/93				
	Appr. 13	Dec 1/93				
	Appr. 14	Dec 1/93				



0.3. TABLE OF CONTENTS

		Section
General	(a non-approved section)	1
Limitations	(an approved section)	2
Emergency procedures	(an approved section)	3
Normal procedures	(an approved section)	4
Performance	(a partly approved section)	5
Weight and balance	(a non-approved section)	6
Sailplane and systems description	(a non-approved section)	7
Sailplane handling, care and maintenance	(a non-approved section)	8
Supplements	(a partly approved section)	9

FLIGHT MANUAL

SECTION 1

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

FLIGHT MANUAL

1.1. INTRODUCTION

This Flight Manual has been prepared to provide pilots and instructors of the L 23 SUPER - BLANÍK 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.

1.2. CERTIFICATION BASIS

The L 23 SUPER - BLANÍK has been approved by the State Aviation Inspection of the Czechoslovak Socialist 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).

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.

(Cont.)

FLIGHT MANUAL

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 - BLANÍK sailplane is a cantilever high-wing two-seater of all-metal structure, the rudder, the elevator and ailerons are fabric covered. In the front part of the fuselage there are the front cockpit and the rear cockpit. Both cockpits are covered with two-part canopy which can be jettisoned in flight. Both cockpits are equipped with all sailplane control elements including the instrument panels with flight and navigation instruments. The sailplane is equipped with hooks either for winch or aero-tow take-off.

Wing including ailerons and air brakes is attached to the fuselage in six suspension points (three on each side). The vertical stabilizer is 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 hand-operated by control tie rods and control cables, the rudder control is pedal-operated also by control tie 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 retractable with oleo-pneumatic shock-absorber and mechanical brake. The tail landing gear is equipped with the wheel and the 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.

(Cont.)

FLIGHT MANUAL

1.4.2 Basic dimensions

1. Main dimensions

Wing span	16.2 m
Length	8.5 m
Height	1.9 m

2. Wing

Area	19.15 sq.m
Aspect ratio	13.7
Dihedral	3 ⁰
Sweep angle	-5 ⁰
Mean aerodynamic chord	1.253 m
Geometric twist	-3 ⁰

Ailerons

Area	2.31 sq.m
Span	3.408 m
Deflections: up	34 ⁰ + 2 ⁰
down	13 ⁰ + 2 ⁰

Air brakes

Area	0.648 sq.m
Span	1.35 m

(Cont.)

FLIGHT MANUAL

3. Horizontal tail surfaces	
Area (total)	2.463 sq.m
Span	3.35 m
Aspect ratio	4.4
Dihedral	0°
Elevator	
Area	1.02 sq.m
Deflections: up	32° + 2°
down	25° + 2°
Elevator trim tab	
Area	0.07 sq.m
Deflections: up	15° ± 1°
down	35° ± 1°
4. Vertical tail surfaces	
Area (total)	1.874 sq.m
Height	1.55 m
Aspect ratio	1.29
Rudder	
Area	1.02 sq.m
Deflections both sides (normally to axis of rotation)	30° + 1°
5. Fuselage	
Width	0.66 m
Height	1.10 m

FLIGHT MANUAL

1.5 Three-view drawing

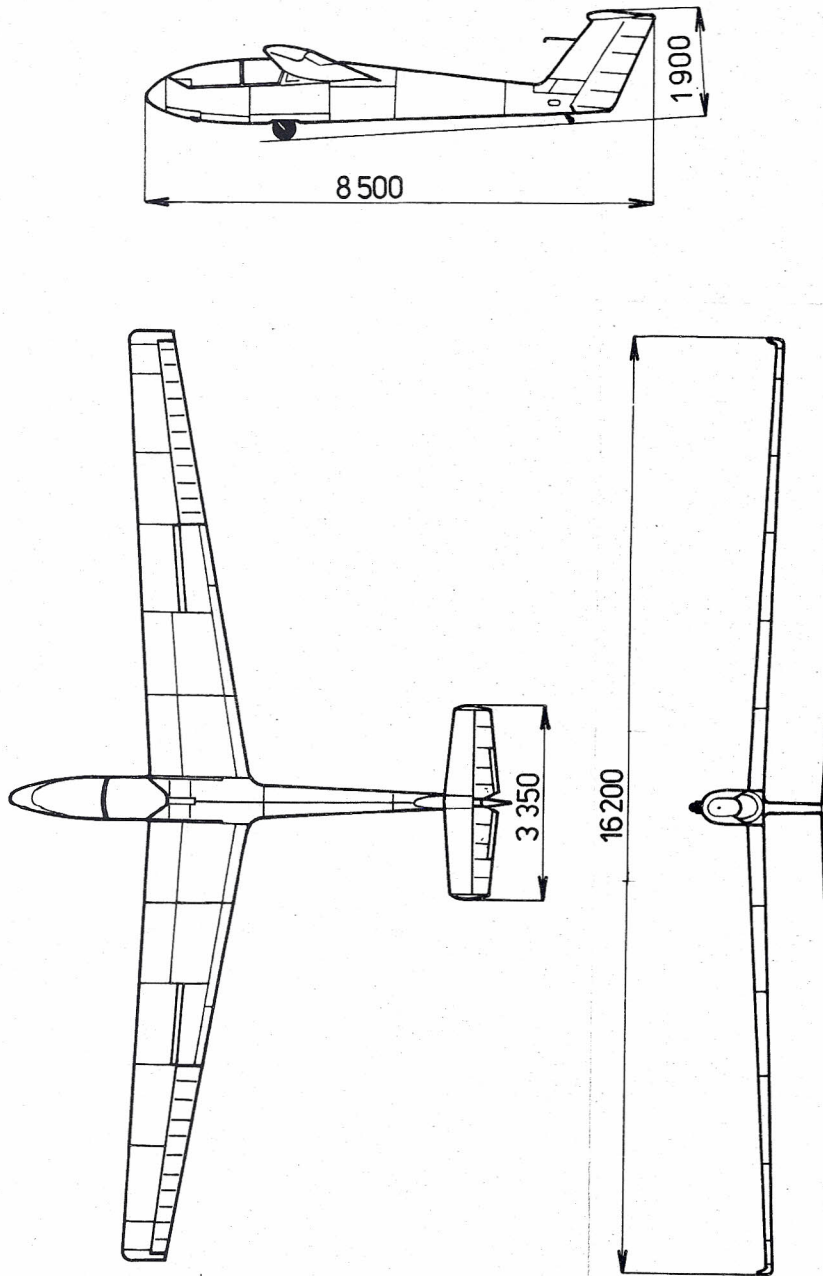


FIG . 1-1

Section 2

- 2. Limitations
 - 2.1 Introduction
 - 2.2 Airspeed
 - 2.3 Airspeed indicator markings
 - 2.4 Mass and centre of gravity
 - 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 Aerotow and winch-launching
 - 2.11 Other limitations
 - 2.12 Limitations placards

FLIGHT MANUAL**2.1 INTRODUCTION**

Section 2 includes operating limitations and basic placards necessary for safe operation of the sailplane, its standard systems and standard equipment.

2.2 AIRSPEED

	Speed	IAS	
V_{NE}	Never-exceed speed	250 km/h	135 knots
V_{RA}	Rough air speed	160 km/h	86 knots
V_A	Manoeuvring speed	150 km/h	81 knots
V_W	Maximum winch-launching speed	120 km/h	65 knots
V_T	Maximum aerotowing speed	150 km/h	81 knots
V_{LO}	Maximum landing gear operating speed	without limitations	
V_{SI}	Stalling speed in flight configuration, mass = 510 kg (1124 lb)	60 km/h	32 knots

Airspeed variation with altitude above 4.200 m (13780 feet) the V_{NE} reduces in accordance with $V_{NE} \cdot \left(\frac{P_H}{P_{H=4200\text{ m}}} \right)^{0,4}$. (see paragraph 2.12, item b), page 8).

(Cont.)

FLIGHT MANUAL**2.3 AIRSPEED INDICATOR MARKINGS**

Marking	IAS (value - range)	Significance
Green arc	66 km/h - 160 km/h (36 knots - 86 knots)	Rough air speed range
Yellow arc	160 km/h - 250 km/h (86 knots - 135 knots)	Smooth air speed range
Red line	250 km/h (135 knots)	Maximum speed at sea level
Yellow triangle	75 km/h (41 knots)	Minimum approach speed

2.4 MASS AND CENTRE OF GRAVITY

Maximum flight mass:

- with two pilots 510 kg (1124 lb)
- with one pilot 420 kg (925 lb)

Empty mass with standard equipment 310 kg \pm 2% (683 lb)

and the corresponding centre of gravity position 67.30 \pm 1% MAC

(Cont.)

FLIGHT MANUAL

Pilot's mass (including parachute):

- minimal pilot's mass (solo flight) 55 kg (121 lb)

WARNING: IT IS NECESSARY TO USE THE SEAT WITH BALLAST OF 15 KG (33 LB) FOR THE PILOT WEIGHING LESS THAN 70 KG (154 LB) IN THE FRONT COCKPIT.

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

- maximum pilot's mass 110 kg (242 lb)

Maximum useful load 200 kg (440 lb)

2.5 CENTRE OF GRAVITY

Centre of gravity range

- front limit 23 % MAC

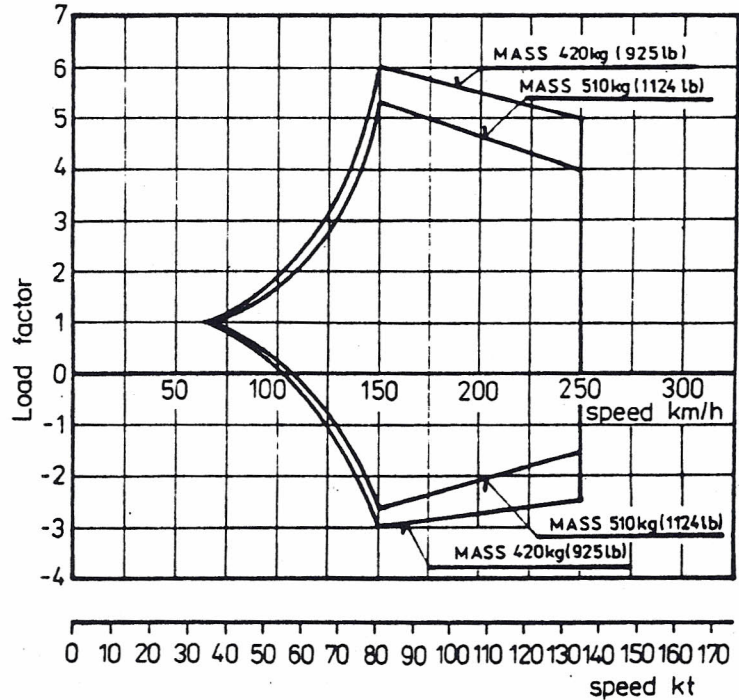
- rear limit 40 % MAC

2.6 APPROVED MANOEUVRES

Manoeuvre	Dual flight	Solo flight	Entry speed IAS
Loop	yes	yes	Section 4.3.6 item 1.
Stall turn	yes	yes	Section 4.3.6 item 2.
Half loop and half roll	NO	yes	Section 4.3.6 item 3.
Half roll and half loop	NO	yes	Section 4.3.6 item 4.
Lazy eight	yes	yes	Section 4.3.6 item 5.
Inverted flight	NO	yes	Section 4.3.6 item 6.
Slow roll	NO	yes	Section 4.3.6 item 7.
Spin	yes	yes	Section 4.3.2 item 4.
Chandelle (climbing)	yes	yes	Section 4.3.6 item 8
Steep turn	yes	yes	Section 4.3.6 item 9.

FLIGHT MANUAL

2.7. MANOEUVRING LOAD FACTORS



2.8 FLIGHT CREW

Maximum number of occupants is two. If the sailplane is to be flown solo, the pilot must be sitting on the front seat and his mass (including parachute) must be 70 kg (154 lb) at least. If the pilot's mass is less than 70 kg (154 lb), it is necessary to use the cushion with 15 kg (33 lb) ballast. The rear seat must be secured against folding and safety harnesses on the rear seat must be connected, drawn together and secured.

2.9. KINDS OF OPERATION

The sailplane is classified in the Utility Category with the possibility of performing limited selection of aerobatic manoeuvres (see paragraph 2.6). The sailplane is approved for seven daylight flights under VFR conditions. Cloud flights are permitted where National operational regulations permit. Flights under ice accretion conditions are prohibited.

WARNING: It is necessary to record the aerobatic manoeuvres into the sailplane log book so as to be possible to find out whenever total flight time of acrobatics from data of sailplane manufacture.

FLIGHT MANUAL

2.10. AEROTOW AND WINCH LAUNCHING

Aerotow

- the maximum cable strength or aerotow cable safety device (weak link) strength is 6500 N (1460 lb).
- the minimum cable length for aerotowing is 15 m (50 ft), recommended length is 30 - 40 m (100-130 ft).

Winch-launching

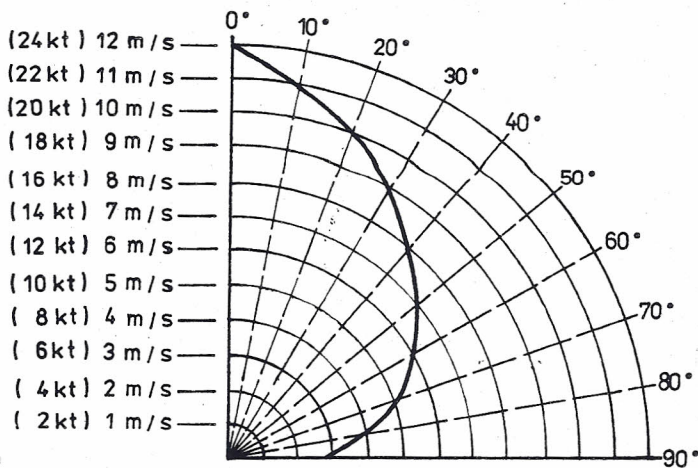
- the maximum cable strength for winch-launching is 6500 N (1460 lb).

2.11 OTHER LIMITATIONS

Maximum crosswind component

- maximum crosswind component for safe approach, landing and aerotow launching is 8 m/s (16 kt)

Maximum wind speed for winch-launching.



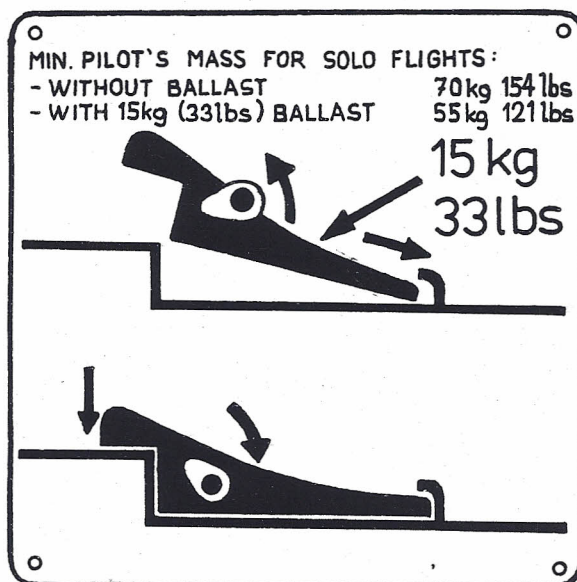
WING ANGLE RELATIVE TO CONNECTING LINE: START - WINCH

FIG. 2.11-1

FLIGHT MANUAL**2.12 LIMITATIONS PLACARDS**

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

a) front cockpit



b) both front and rear cockpits

MAX. WINCH-LAUNCHING SPEED	120 km/h	66 kt
MAX. AERO-TOWING SPEED	150 km/h	81 kt
MAX. MANOEUVRING SPEED	150 km/h	81 kt

See para 2.2

(Cont.)

SAI approved.

FLIGHT MANUAL

MAX. GROSS MASS	510 kg	1124 lbs
EMPTY MASS, STANDARD	310 kg	683 lbs

PERMITTED AEROBATIC MANOEUVRES:

CHANDELLE (CLIMBING)	STALL TURN
STEEP TURN	HALF LOOP AND HALF ROLL
LAZY EIGHT	HALF ROLL AND HALF LOOP
SPIN	SLOW ROLL
LOOP	INVERTED FLIGHT

See para 2.6

SOLO FLIGHTS FROM FRONT SEAT ONLY

MAX. ALLOWABLE SPEED RELATED TO ALTITUDE:

ALTITUDE (ft) UP TO	13 780	20 000	25 000	30 000	35 000
SPEED (kt), MAX.	135	124	116	108	100

See para 2.2

FLIGHT MANUAL

SECTION 3

- 3. Emergency procedures
 - 3.1 Introduction
 - 3.2 Canopy jettison
 - 3.3 Stall recovery
 - 3.4 Spin recovery

FLIGHT MANUAL

3.1 INTRODUCTION

Emergency procedures are given in Section 3.

3.2 CANOPY JETTISON

WARNING: The front canopy must be jettisoned first.

Front pilot

1. Front canopy emergency jettison: rotate the lever through lever (red lever on the right 120° in the direction upper frame of the cockpit, marked by the arrow Fig. 3-1, pos. 1) under the lever

NOTE: When the emergency jettison lever rotates through 120° the lever locking wire and the canopy king pin locking wire will be cut first and then the king pins will retract.

2. In case the front canopy does not release hold the canopy emergency jettison lever at the end of its travel with the right hand, force the front canopy upwards with the left hand. The front canopy will raise and fall off by the air flow.
3. Release the safety belts and remove them to the sides and behind you. Grasp the hand holds, stoop your legs as much as possible below you, preferably on the seat. Turn over the side cockpit rail, if possible below the sailplane wing.

(Cont.)

FLIGHT MANUAL

Rear pilot

1. The rear canopy jettison levers (levers with the red handle on both sides of the rear cockpit border, Fig. 3-1, pos. 2) : rotate the levers in the direction marked by the arrow and lift the canopy up

WARNING: THE REAR CANOPY EMERGENCY JETTISON MUST BE PERFORMED AFTER THE FRONT CANOPY EMERGENCY JETTISON: THE REAR CANOPY WILL MOVE UP AND BACK BY THE AIRFLOW EFFECT, OR IT WILL TEAR OFF THE HINGES.

2. If the front pilot is not able to jettison the front canopy the rear pilot will perform the following:

- a) Front canopy emergency jettison lever (red lever on the right upper frame of the cockpit, Fig. 3-1, pos. 1) : rotate the lever through 120° in the direction marked by the arrow under the lever

NOTE: When the emergency jettison lever rotates through 120° the lever locking wire and the canopy king locking wire will be cut first and then the king pins will retract.

- b) In case the front canopy does not release, release the safety belts and holding the canopy emergency jettison lever at the end of its travel with the right hand, force the front canopy upwards with the left hand. The front canopy will raise and fall off by the air flow.

- c) Procedure No. 1 prescribed for the rear pilot.

3. Release the safety belts and remove them to sides and behind you. Grasp the hand holds, stoop your legs as much as possible below you, preferably on the seat. Turn over the side cockpit rail, if possible below the sailplane wing.

(Cont.)

FLIGHT MANUAL

CANOPY JETTISON DURING FLIGHT

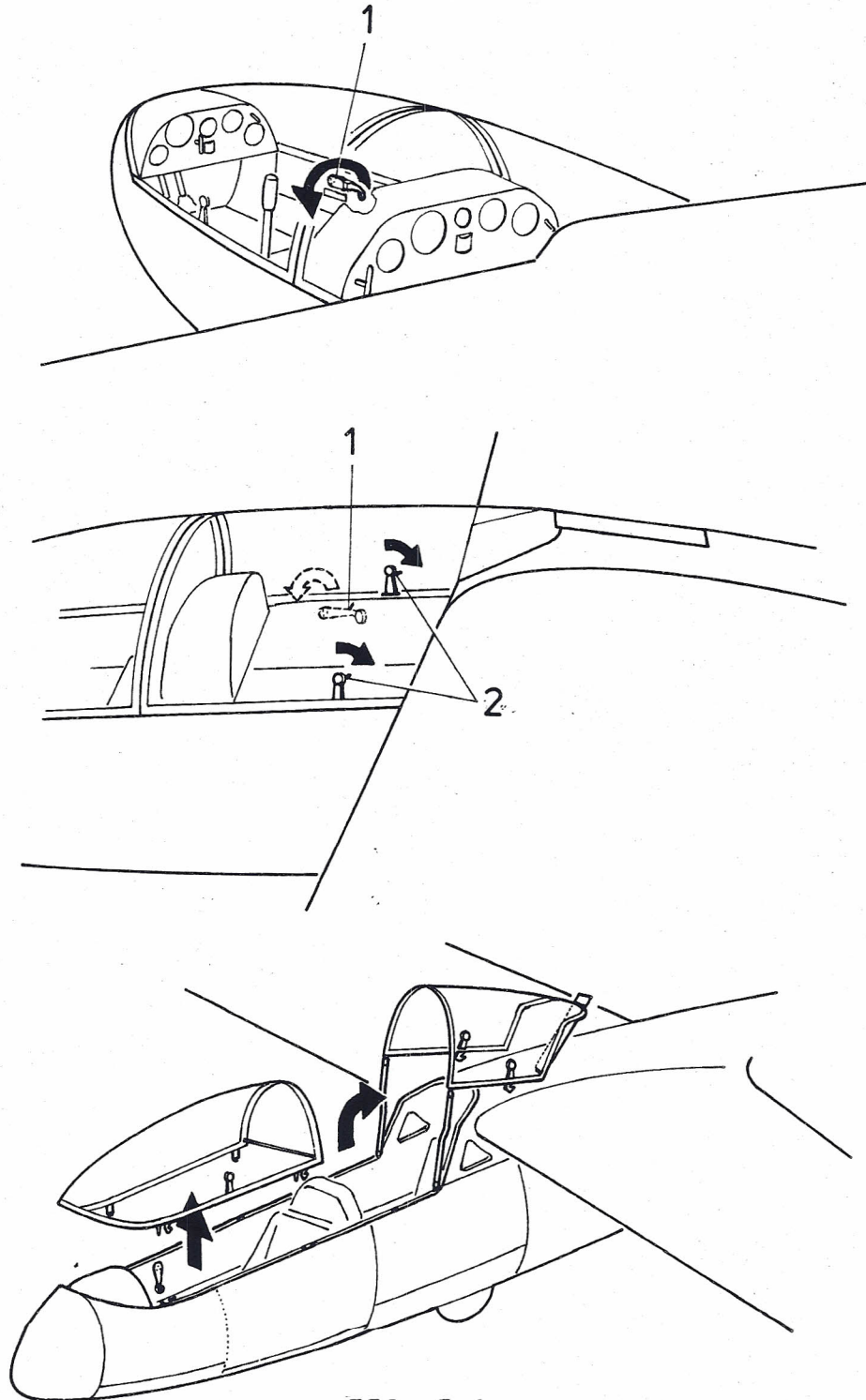


FIG. 3-1

FLIGHT MANUAL

3.3 STALL RECOVERY

Stall occurs when the sailplane exceeds the critical angle of attack. This case may occur at low or somewhat higher speeds, in level flight, in a turn, or in some other flight regime.

The stall proceeds initially as a slight settling down of the sailplane, followed by slow dropping of the front part of the fuselage. Speed remains nearby the stall speed.

Stall recovery of the high speed stall consists in pushing forward the control stick to reach subcritical angles of attack. If the sailplane banks, rudder deflection in opposite sense and elevator control to neutral or a more forward position are necessary.

The "in turn-stall recovery" is carried out in the same way as described above. If the controls have been used in time with sufficient deflections, the sailplane stops with the nose slightly under horizon. Adjust the speed and the sailplane will continue the controlled gliding flight. In the opposite case the sailplane falls in the spin.

3.4 SPIN RECOVERY

The excessive using of the rudder at speeds near the stalling speed in various flight conditions can be cause of the spinning. Spin recovery is carried out by applying full rudder deflection in opposite direction to the sailplane rotation, until the rotation stops. At this moment centralize the rudder (zero deflection), simultaneously put the control stick in neutral or more forward position. Pull the sailplane out of the dive in the usual way.

FLIGHT MANUAL

SECTION 4

- 4. Normal procedure
 - 4.1 Introduction
 - 4.2 Preflight inspection
 - 4.3 Normal procedures and recommended speeds
 - 4.3.1 Take-off and climb
 - 4.3.2 Flight
 - 4.3.3 Approach
 - 4.3.4 Landing
 - 4.3.5 Use of air brakes
 - 4.3.6 Basic aerobatics

FLIGHT MANUAL

4.1 INTRODUCTION

Normal procedures are given in section 4.

4.2 PREFLIGHT INSPECTION

The pilot has to check the sailplane for proper condition according to the checklist of walkaround inspection (before getting into the sailplane).

Perform the inspection systematically not to forget anything. It is recommended to perform the inspection in the way given in Fig. 4-1.

FLIGHT MANUAL

Sequence of the walkaround inspection

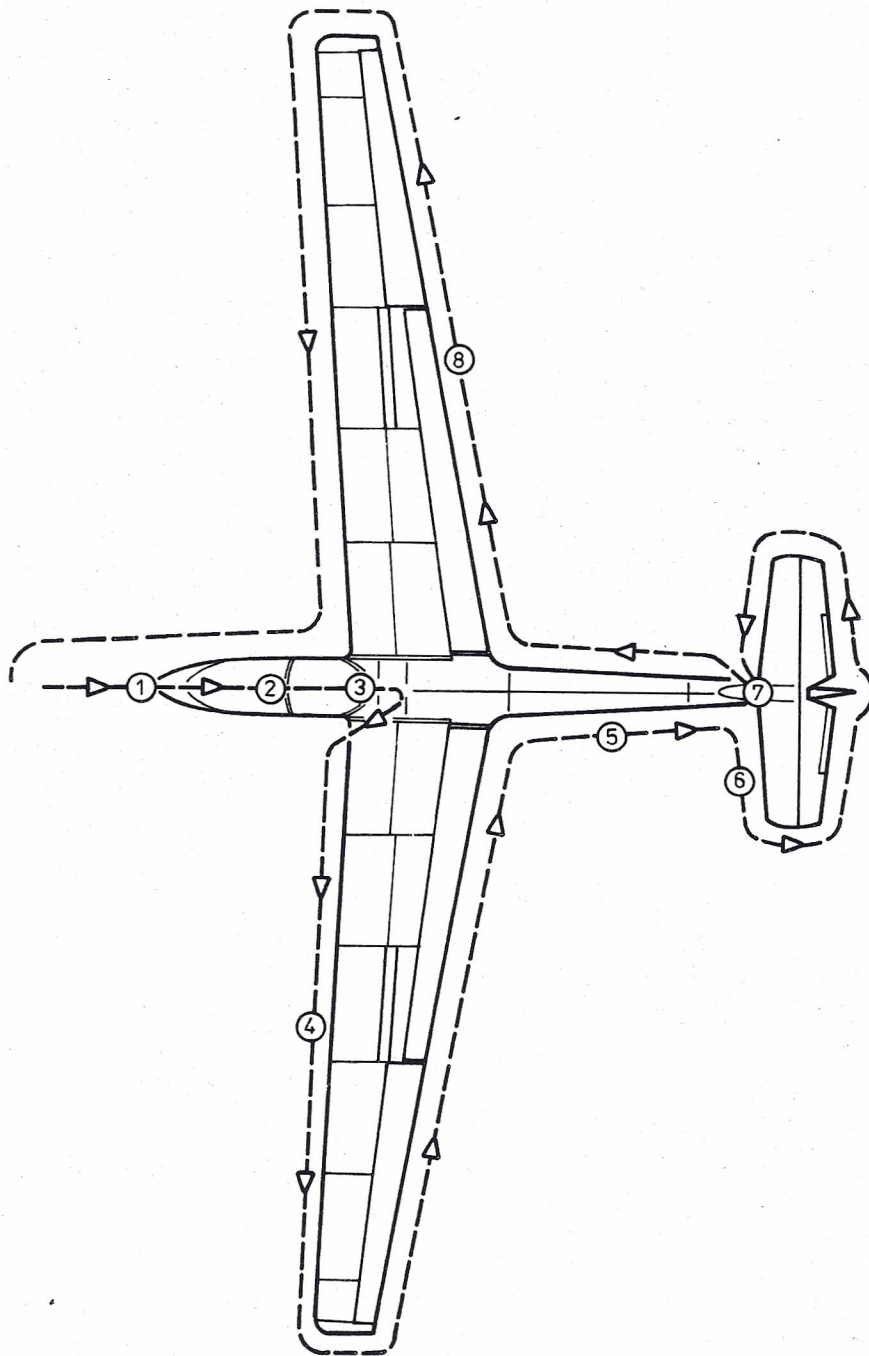


FIG. 4-1
(cont.)

FLIGHT MANUAL

4.2.1 Checklist of walkaround inspection

Item No.	Subject	Check/activity
1	<u>Front fuselage section</u>	
	Fuselage skin	no damage
	Cockpit canopy surface	no damage and dirt
	Nose pitot tube	no damage and clogging
2	<u>Cockpit</u>	
	Instruments	no damage
	Altimeters	correct setting QFE (QNH)
	Radio station (if it is built in)	operation
	Safety belts	no damage
3	<u>Landing gear</u>	
	Tyre	no damage, correct inflation
4	<u>Port wing</u>	
	Wing skin including leading edge	no damage

(Cont.)

FLIGHT MANUAL

Item No.	Subject	Check/activity
4	Wing-tip fairing	no damage
	Aileron skin	no damage of fabric cover and trailing edge
	Ailerons	free movement
	Airbrake locking in hinges	no damage of hinges locking and control tie rods
5	<u>Rear fuselage section</u>	
	Fuselage skin	no damage
6	<u>Stabilizers</u>	
	Stabilizer skin	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>Starboard wing</u>	see Item 4 - port wing

FLIGHT MANUAL

4.2.2. Important checks before take-off

Front seat

Before entering the front cockpit adjust the front seat back-rest to position to control safely the sailplane when fully strapped.

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, 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 by the knob. Check the other instruments and see that vertical speed 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".

(Cont.)

FLIGHT MANUAL

Air brakes

Check for easy movement of air brake control.

Confirm air brakes retracted for take off.

Tow rope release

Check the rope release mechanism for proper functioning.

4.3 NORMAL PROCEDURES 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 also during the initial stages of the take-off run, so it is easy to prevent directional or roll oscillations by use of aileron and rudder. 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 later pull the control stick gently to unstick the sailplane. Hold the sailplane in horizontal flight at the height of 1 m until the towing aeroplane starts to climb.

The take-off with cross wind is different from the normal take-off. It is necessary to bank the wing across the wind (proportionally 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 open at climb.

2. Winch-launching

WARNING: USE EITHER SIDE HOOKS OR BOTTOM HOOK
(Depending which hook is installed)

(Cont.)

FLIGHT MANUAL

The winch launching is entirely conventional. Set the elevator trim tab control to the neutral position. The recommended speed for winch launching is 80 - 100 km/h (43 - 54 kt) IAS. 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 the height of 20 m (66 ft) and the minimum speed of 100 km/h (54 kt) IAS is reached. Trim the sailplane for the climbing speed. The sailplane angle of attack is fairly big when climbing speed is low and the view from cockpit will worsen considerably, therefore it is recommended for the towing aircraft to keep the climbing speed of 100-130 km/h (54 - 70 kt) IAS.

The pilot should avoid overcontrolling

Principles of aerotow are the same as for other sailplanes.

b) Level flight

The maximum speed for aerotow is 150 km/h (81 kt) IAS. It is necessary to trim the sailplane to reduce control forces and to decrease pilot's fatigue during longer flight. It is necessary to realize that the control sensitivity grows with the flight speed.

c) Descending

A satisfactory rate of descent 2 - 3 m/s (390 - 590 ft/min) can be obtained when the towing aircraft keeps the speed of 100 km/h (54 kt) IAS at least.

FLIGHT MANUAL

4.3.2 FLIGHT

1. Turns and circling

The sailplane is well manoeuvrable and controllable and its behaviour is very good in turns with the angle of 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 means of losing height in this sailplane. However, the rate of descent may be increased by the application of 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 confused during slip maneuvers.

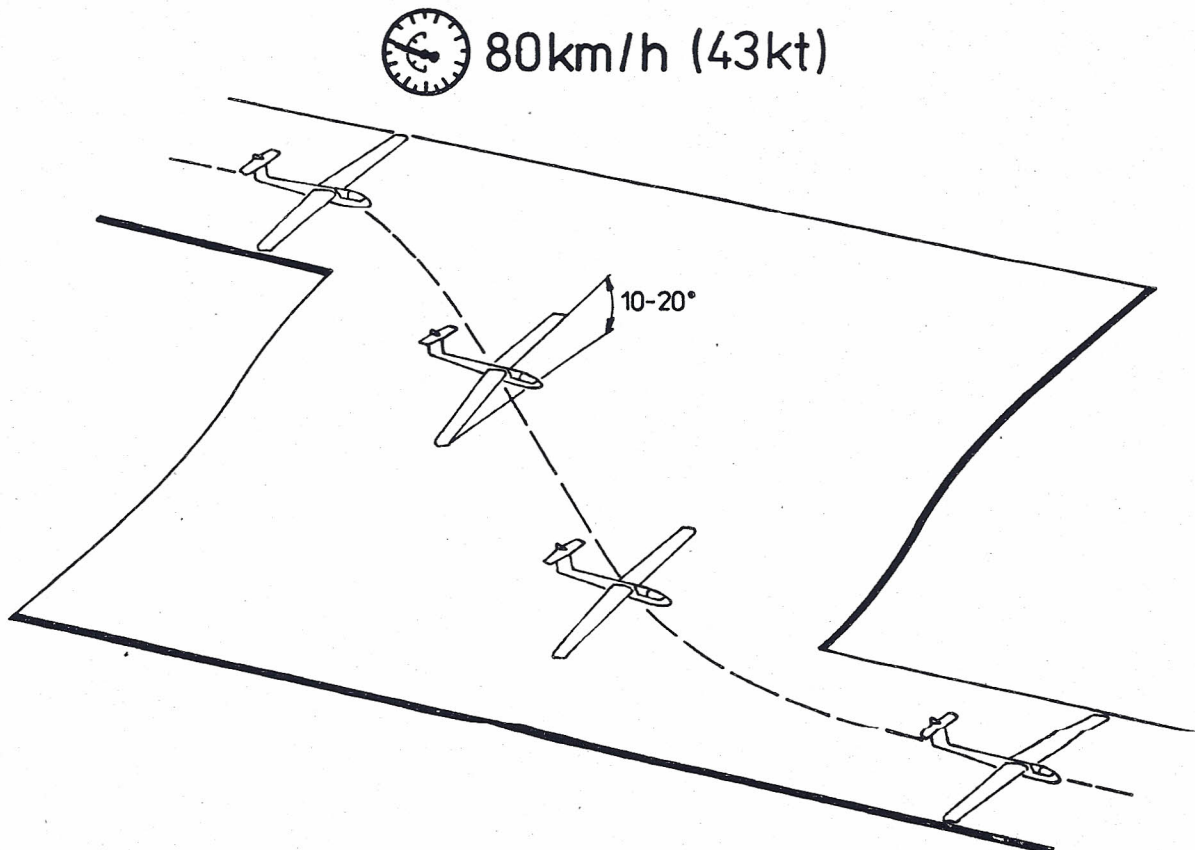


FIG.4-2

SAI approved.

FLIGHT MANUAL

3. Stalling

Slow and continuous pulling of the control stick - causes stalling of the sailplane. 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 OPERATIONS HAVE TO 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

FLIGHT MANUAL

4. Spinning

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 itself, at the maximum flight weight and the front 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 speed of 60 km/h (32 kt) IAS (Fig. 4-3) and use the full backward deflection of the control stick. Initiate recovery from the spin by applying full opposite deflection of the rudder. When the sailplane stops the rotation, centralise the rudder and simultaneously ease the control stick forward. Pull the sailplane from the dive in the usual way. The attitude during the spinning is 60° to 70° nose down and the loss of height in one turn is 80 m (260 ft) when flying solo and 120 m (390 ft) when flying dual. The time of one revolution of the spin is approximately 3.5 secs.

- CAUTION:
1. MAKE THE IMPORTANT OPERATIONS GIVEN IN THE FLIGHT MANUAL, SECTION 4, PARAGRAPH 3.
 2. IAS ERROR.
THE ERROR OF AIRSPEED INDICATOR GROWS LARGER 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.

(Cont.)

FLIGHT MANUAL

STOP THE SPIN ROTATION BY APPLYING FULL OPPOSITE
RUDDER AND CENTRALIZE THE AILERONS. WHEN THE
SAILPLANE STOPS THE ROTATION, CENTRALIZÉ THE
RUDDER AND EASE THE CONTROL STICK FORWARD.
PULL-OUT FROM THE DIVE USING STANDARD PROCEDURE.

FLIGHT MANUAL

Spin

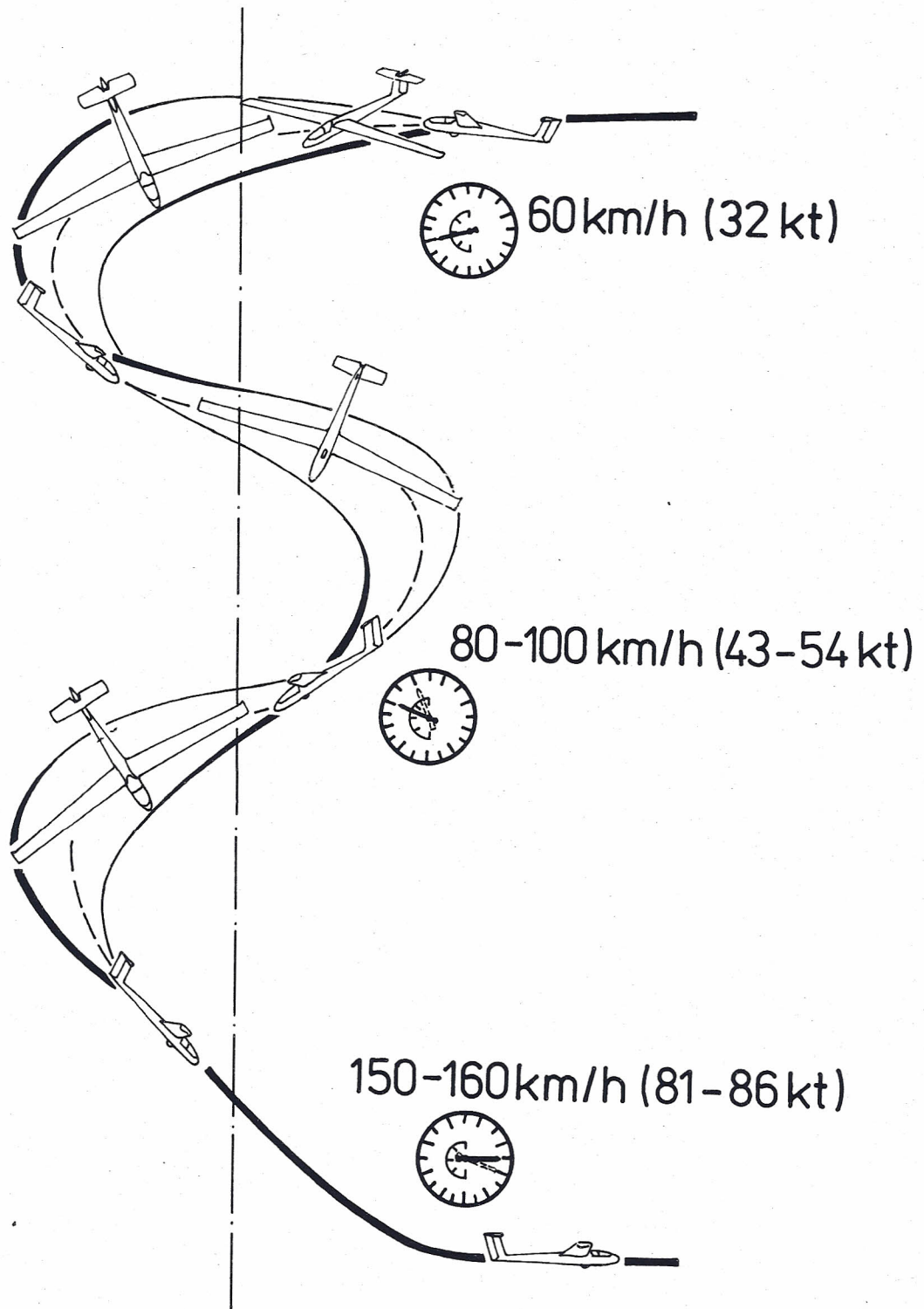


FIG. 4-3

FLIGHT MANUAL**4.3.3 APPROACH**

It is suitable to use the following approach speeds for approach.

Descent	Air brakes	Approach speeds
Normal	retracted	75 - 85 km/h (41 - 46 kt) IAS
	extended	80 - 95 km/h (43 - 51 kt) IAS
Steeper	extended	95 - 110 km/h (51 - 60 kt) IAS

Reckon with the mild sailplane ballooning in the case of higher approach speeds.

4.3.4 LANDING

Landing on the airport

The landing manoeuvre is entirely conventional.

Use fine elevator inputs at the flare. The sailplane should touch down with the landing gear first and then with the tail wheel, if landed correctly (for the shock reduction to the tail wheel from the bumped ground).

Do not flare prematurely in order that the sailplane does not drop from the higher height.

Off-field landing

It is recommended to land with the retracted landing gear if landing on a soft ground. In this case extend the wheel before the next flight.

FLIGHT MANUAL

4.3.5. USE OF AIR BRAKES

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

1. For easy landing, mainly on the rough ground.
2. To increase accuracy of the landing manoeuvre.

NOTE: In case of using air brakes at landing, it is necessary to maintain the approach speed of about 10 km/h (5.0 kt) higher, because the stalling speed with fully opened air brakes is about 5 - 7 km/h (3.0 - 4.0 kt) higher.

3. To avoid exceed ins the never exceed speed during unusuale altitude 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 "air brakes extended" will ensure that the never exceed speed is not exceedet. Use of air brakes will ensure the safety and makes handling easier because the extended air brakes stabilize the sailplane. It is necessary to hold the control lever firmly when extending air brakes at high speeds as the air brake tend to "pop out" and many cause damage.

FLIGHT MANUAL

4.3.6 BASIC AEROBATICS

The L-23 SUPER-BLANÍK sailplane is able to perform the listed 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.

Instructions for performing approved aerobatic manoeuvres are given on pages 17 to 25 of this Section.

(Cont.)

FLIGHT MANUAL

1. Loop

Put the sailplane into a moderate dive with the mild forward moving of the control stick to gain a speed of 160 km/h (86 kt) IAS when flying solo or 180 km/h (97 kt) IAS 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 to keep the wings level laterally. Starting the loop take care of precise direction holding, to complete it without deviation.

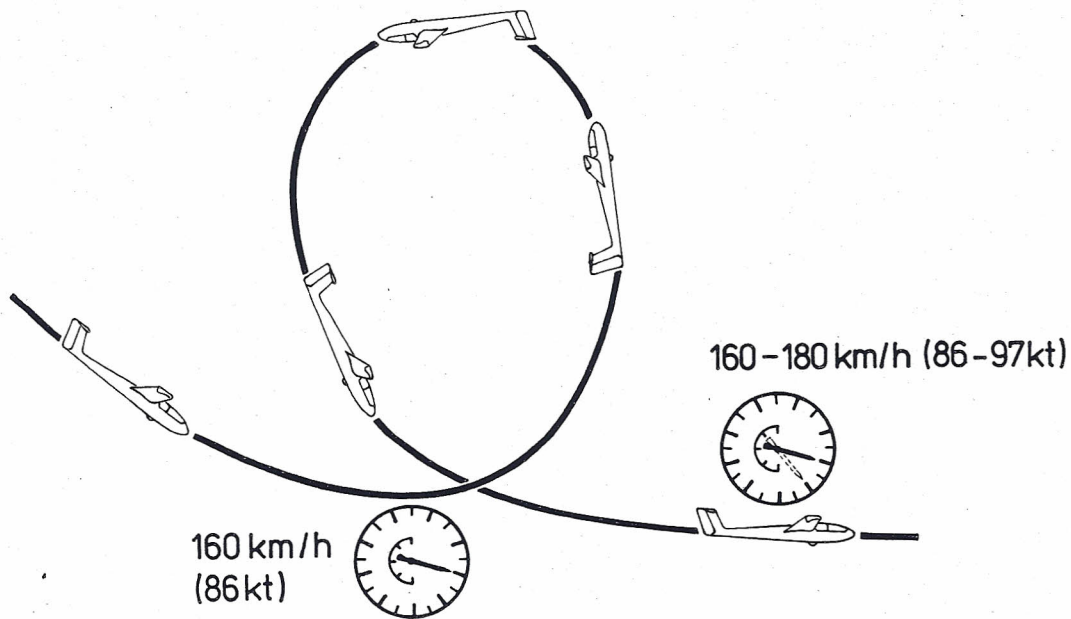


FIG. 4-4
(Cont.)

FLIGHT MANUAL

2. Stall turn

This manoeuvre should be begun at the speed of 170 km/h (92 kt) IAS when flying solo or 180 km/h (97 kt) IAS when flying dual. Pull gently the control stick 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 130 - 140 km/h (70 - 76 kt) IAS start to apply slowly rudder in the required direction of turn. As the force on the rudder decreases apply gradually 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, centralize the rudder and, keeping the wings level laterally by use of ailerons, ease out of the resulting dive, taking care not to apply excessive "g".

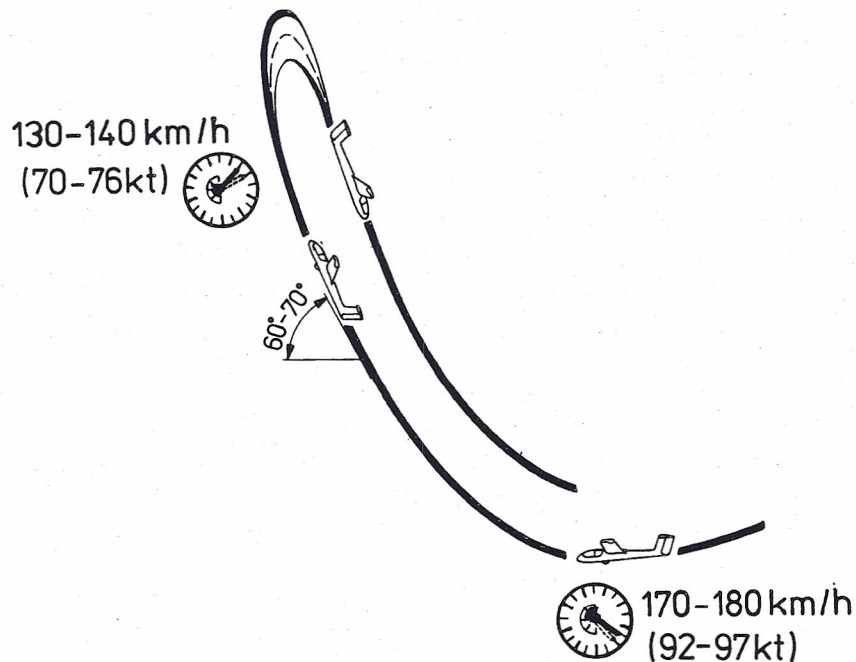


FIG. 4-5
(Cont.)

SAI approved.

FLIGHT MANUAL

3. Half loop and half roll

Half loop and half roll may be performed at the sailplane solo flight only. Begin this manoeuvre as in the first half of a loop but at the higher initial speed of between 180 - 190 km/h (97-103 kt) IAS. Raising the nose of the sailplane must be more energetical than at the loop. Too violent backward movement of the control stick may cause the unnecessary braking and loosing the speed needed for the manoeuvre. As the inverted position is reached, check the loop by moving the control stick gently forward and then apply full aileron so as to roll the sailplane into the normal position. When the vertically banked position is reached, a full rudder deflection upwards is necessary to prevent the nose falling below the horizon. Continue rolling, pushing gently stick forward, so that the direction may remain constant.

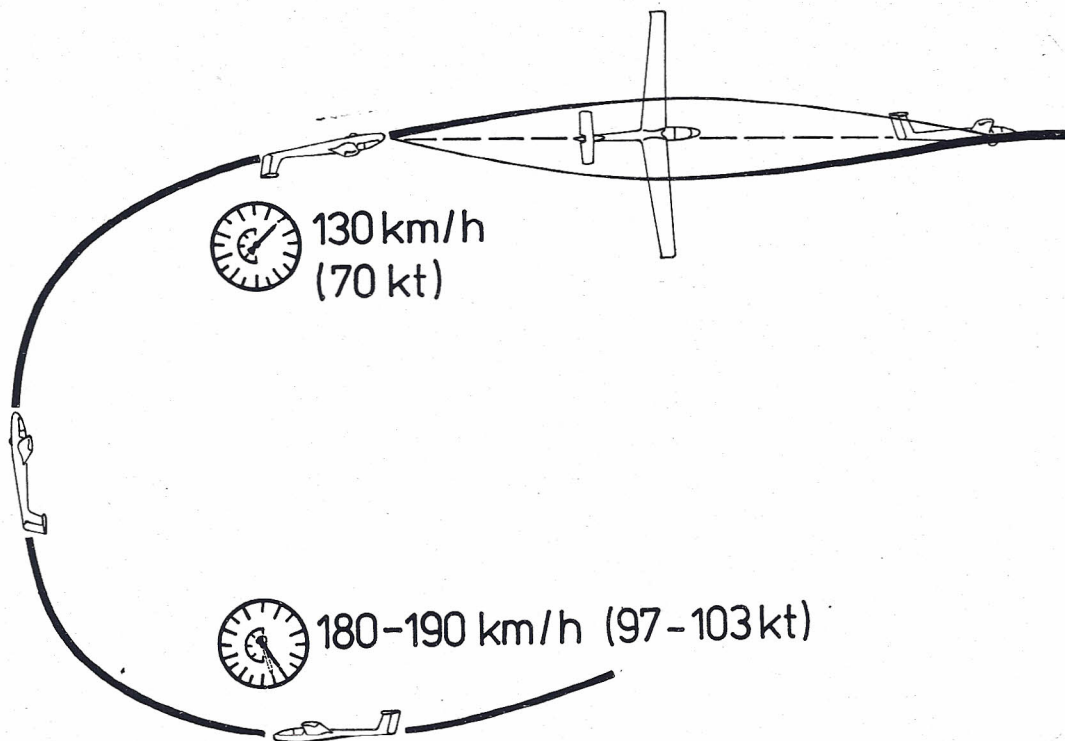


FIG. 4-6

(Cont.)

FLIGHT MANUAL

4. Half roll and half loop

Half roll and half loop may be performed at the sailplane solo flight only. This manoeuvre should be begun at the speed of 130 km/h (70 kt) IAS. Raise the sailplane nose to a position of about 25° above the horizon and hold it there. Apply full aileron in the required direction of roll. As the angle of bank increases beyond 45° top rudder should be applied progressively (usually up to about 25 - 30% deflection is sufficient) to keep the nose above the horizon. As bank increases beyond 90° , the rudder should be centralized gradually and, at the same time, the control stick eased forward so as to maintain the position of the nose above the horizon. When the sailplane is inverted, the ailerons should be centralized and the control stick eased back so as to complete the second half of a loop. It is important to ensure that the initial air speed limitation is strictly observed or the maximum permissible speed may be exceeded during the dive from the inverted position.

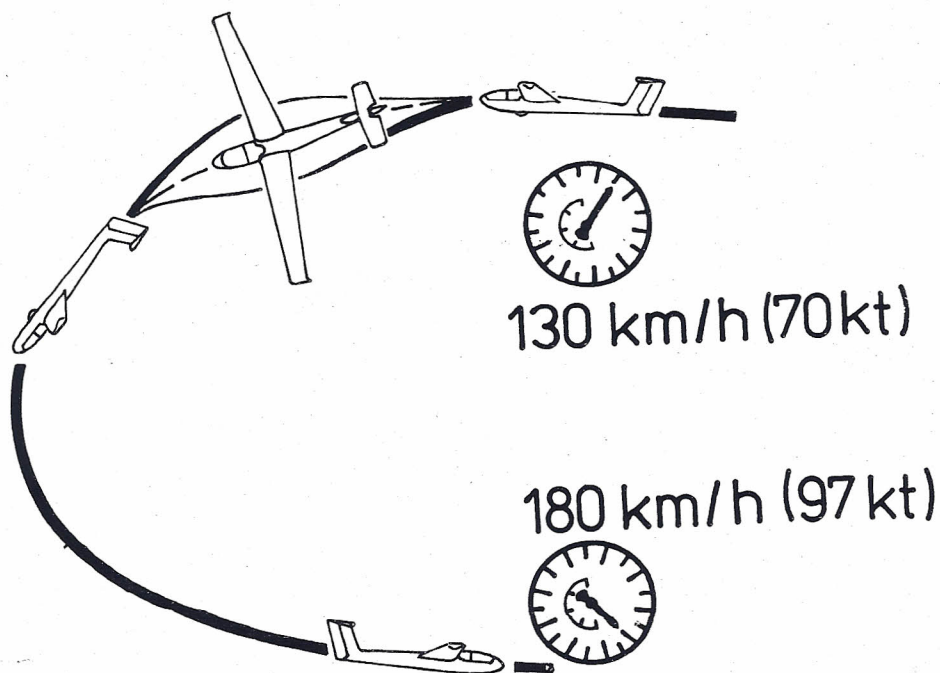


FIG. 4-7
(Cont.)
SAI approved.

FLIGHT MANUAL

5. Lazy eight

(manoeuvre consisting of two successive steep turns).

Move slowly the control stick forward to attain the entry speed of 180 km/h (97 kt) IAS (flown both solo and dual).

Perform the steep turn to the selected side, pulling smoothly the control stick at simultaneous coordinated use of ailerons and rudder.

At the speed of 100 km/h (54 kt) IAS transfer the sailplane to descent and having attained the speed of 180 km/h (97 kt) IAS perform the steep turn to the opposite side, pulling smoothly the control stick at simultaneous coordinated use of ailerons and rudder.

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

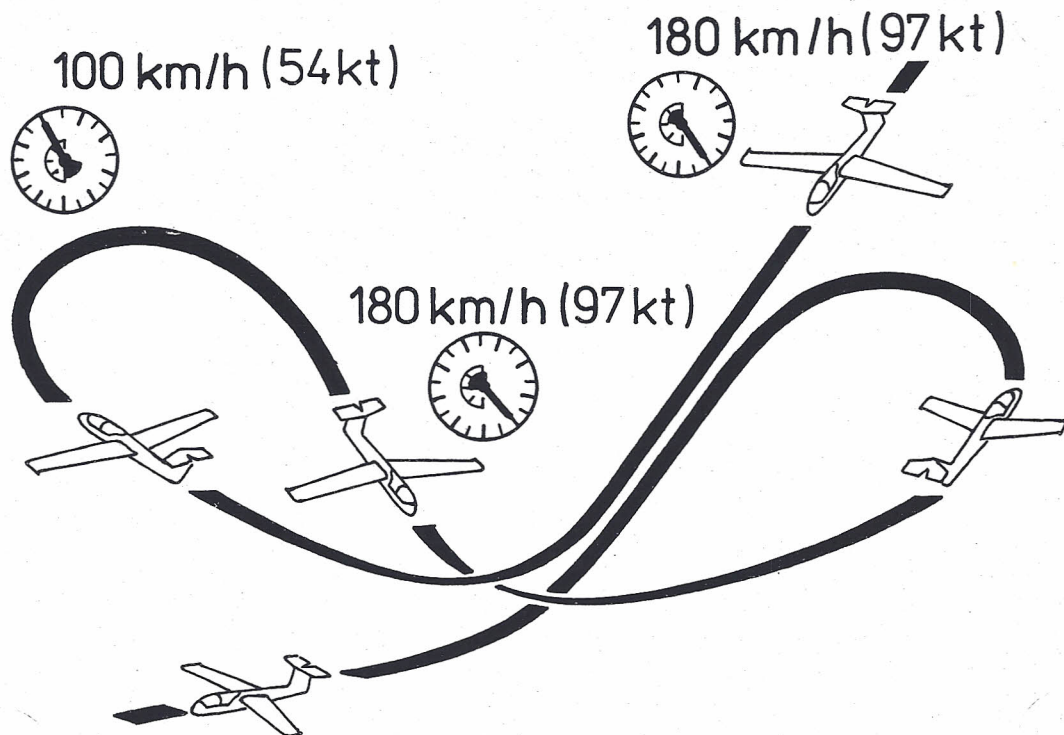


FIG. 4-8

(Cont.)

FLIGHT MANUAL

6. Inverted flight

Inverted flight may be performed at the sailplane solo flight only. The manoeuvre should begin at the speed of 130 km/h (70 kt) IAS in the same manner as a half roll and half loop, the speed of 130 km/h (70 kt) IAS being maintained when inverted. It is recommended that the inexperienced pilot should recover from the inverted position by pushing the control stick forward first until the speed has dropped to 100 km/h (54 kt) IAS, and then pull back so as to complete the second half of a loop. When recovering by means of a half roll, the speed should be increased first to 140 - 150 km/h (76 - 81 kt) IAS, and then stick pushed forward until the nose is about 25° above the horizon and kept there. Then full aileron deflection should be applied in the required direction. When banked vertically, it will be necessary to apply full top rudder and, as soon as the sailplane rolls into the level flight position, the tendency to turn should be overridden with the rudder and elevator deflections.

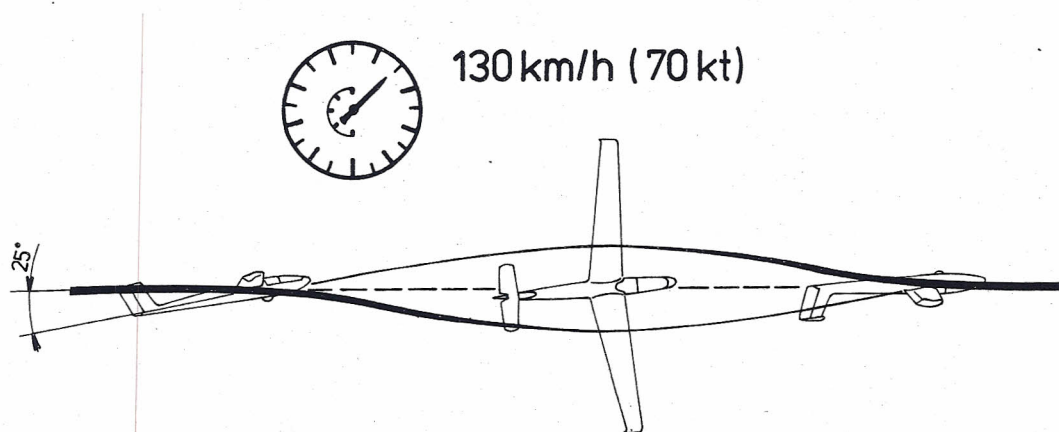


FIG. 4-9

(Cont.)

FLIGHT MANUAL

7. Slow roll

The slow roll may be performed at the sailplane solo flight only and, as it is one of the most difficult aerobatic manoeuvres, it should not be attempted until the pilot is fully proficient in the half roll and half loop, half loop and half roll and inverted flight. Choose a point on the horizon to keep straight and, having attained a speed of 150 km/h (81 kt) IAS, raise the nose to a position about 25° above the horizon and keep it there. Apply the full aileron deflection in the required direction. As the vertical bank position approaches, it will be necessary to apply top rudder deflection (generally not more than 25 % of its full range) so as to prevent the nose down dropping.

As the inverted position is reached, the control stick should be pushed forward to maintain the pitch. Keep the full aileron deflection. Top rudder deflection will be again required as the sailplane rolls once more into the vertical bank position and tendency to turn should be overridden with the elevator down deflection. Usually the nose will be about 15° below the horizon when this manoeuvre is completed.

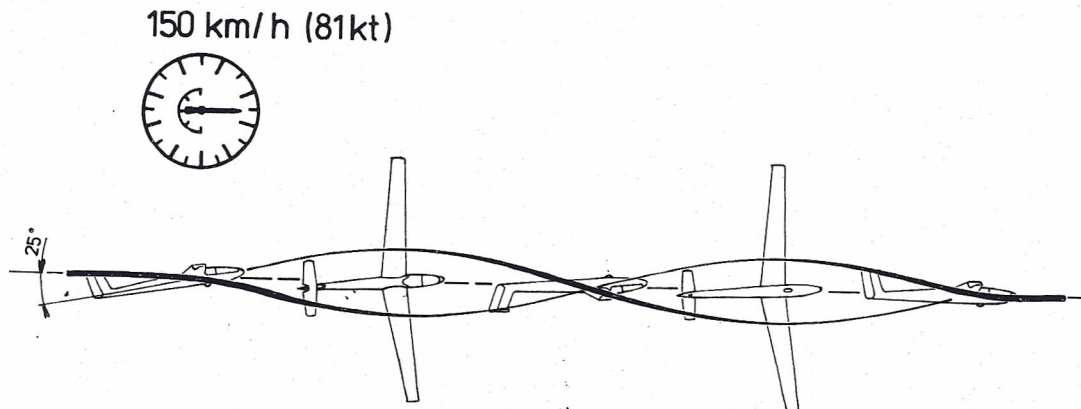


FIG. 4-10
(Cont.)

FLIGHT MANUAL

8. Chandelle (climbing)

Move slowly the control stick forward to attain the entry speed of 180 to 190 km/h (97 to 103 kt) IAS (flown both solo and dual).

Transfer the sailplane to a steep climb at an angle of approx. 45° above horizon (do not increase the angle).

At the speed of 140 km/h (76 kt) IAS, apply the rudder to the selected side of the turn and by coordinated positive use of ailerons make transition to the gliding flight of opposite direction at a minimum speed of 80 km/h (43 kt) IAS.

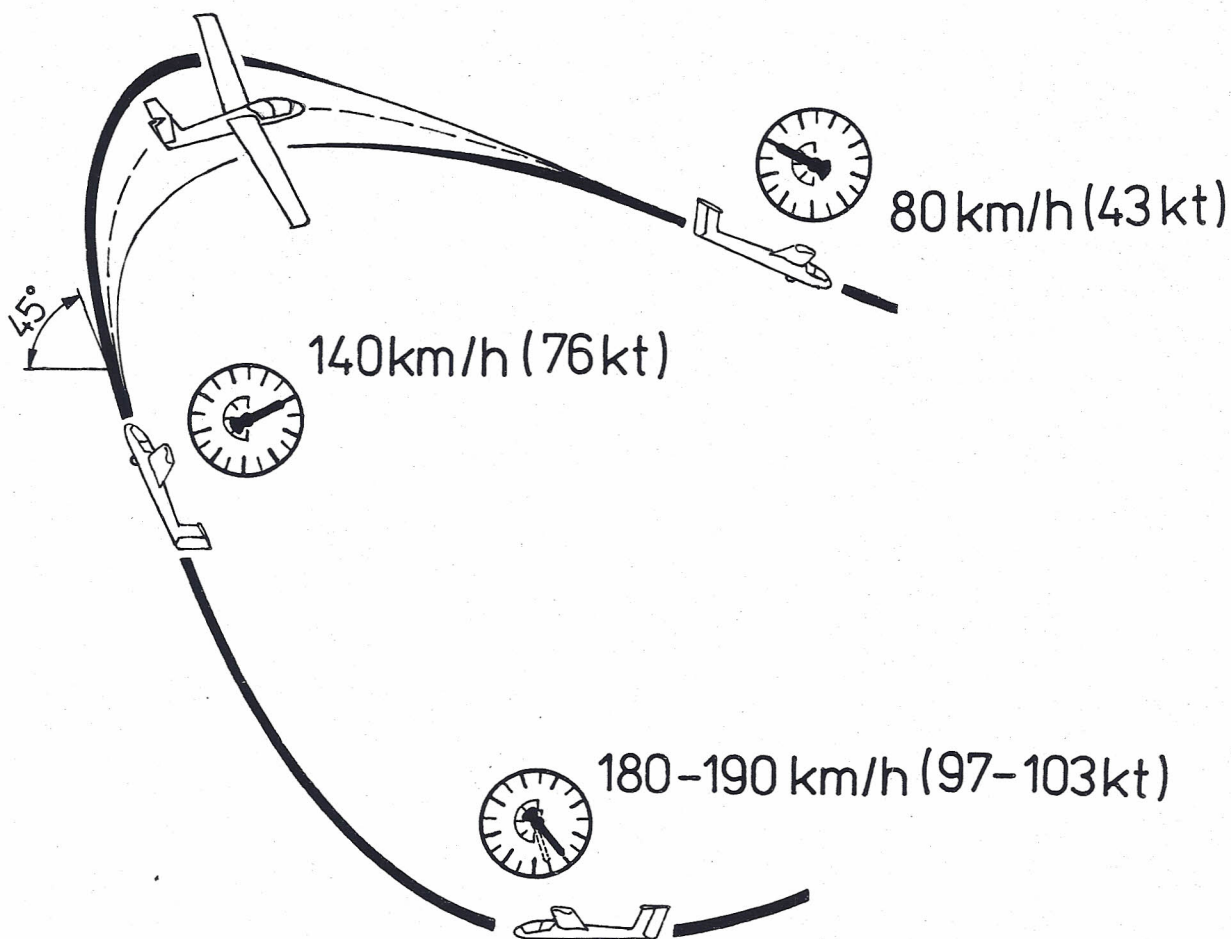


FIG. 4-11
(Cont.)

SAI approved.

FLIGHT MANUAL

9. Steep turn

To perform this manoeuvre keep the entry speed of 170 km/h (92 kt) IAS when flying solo and 180 km/h (97 kt) IAS when flying dual. Set the sailplane into the climb simultaneously with bank of approx. 45° . After having turned by 150° start the transition into glide mode of flight in such a way that the manoeuvre would be finished in the opposite direction and speed would not drop below 80 km/h (43 kt) IAS.

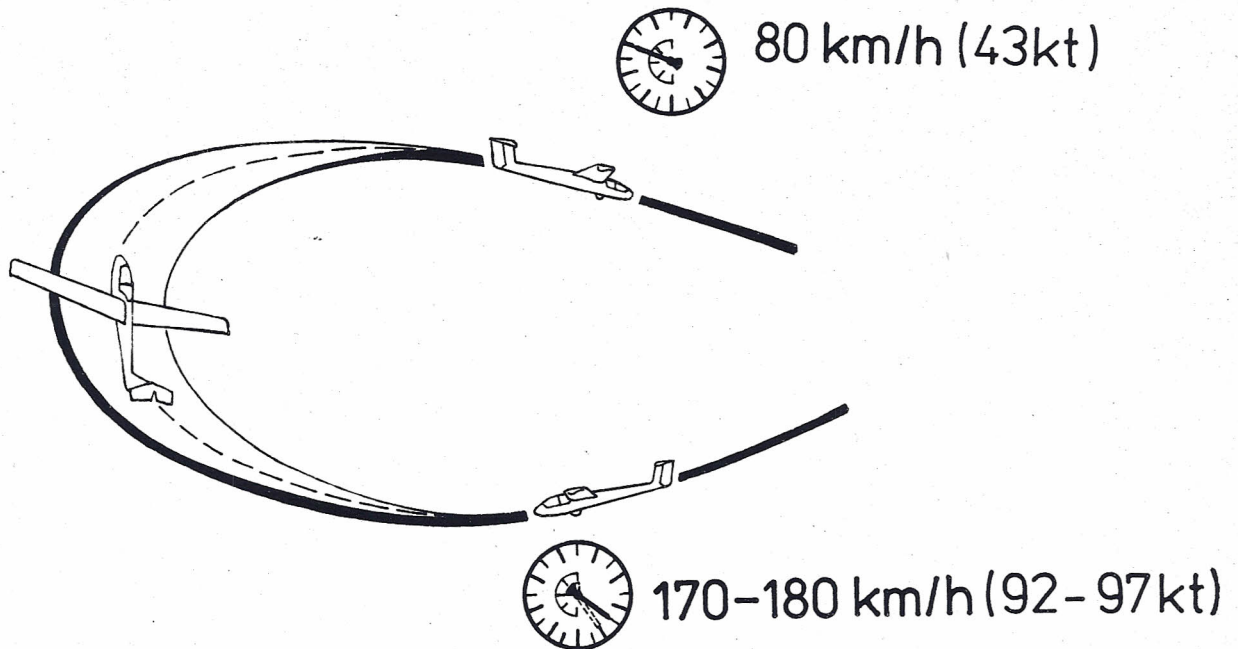


FIG. 4-12

FLIGHT MANUAL

SECTION 5

- 5. Performance
 - 5.1 Introduction
 - 5.2 Approved data
 - 5.2.1 Airspeed indicator system calibration
 - 5.2.2 Stall speeds
 - 5.3 Additional information
 - 5.3.1 Flight polar
 - 5.4 Conversion Charts
 - knots - km/h - mph.
 - feet - meters.
 - lb - kg.

FLIGHT MANUAL

5.1 INTRODUCTION

Section 5 provides approved data for airspeed indicator calibration, stall speeds.

5.2 APPROVED DATA

5.2.1 Airspeed indicator system calibration

The diagram is effective for maximum flight mass of 510 kg (1124 lb).

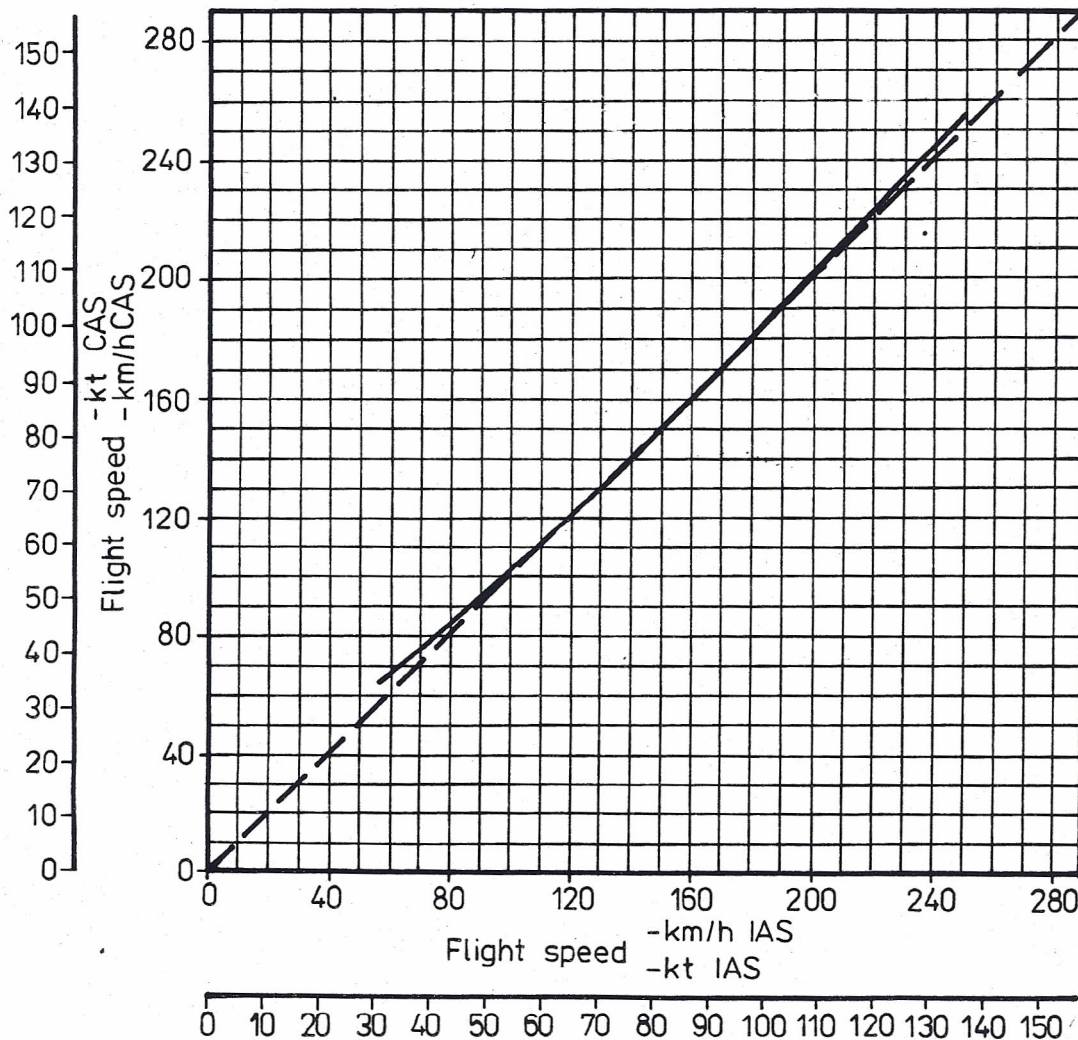


FIG. 5-1

FLIGHT MANUAL

5.2.2 Stall speeds

The dependence of the stall speed on the flight mass is given in Fig. 5-2.

CAUTION: THE STALL WARNING SPEED IS ABOUT 4 - 6 km/h (2 - 3.2 kt) IAS HIGHER THAN STALL SPEED FOR ALL CONFIGURATIONS (SEE FIG. 5-2).

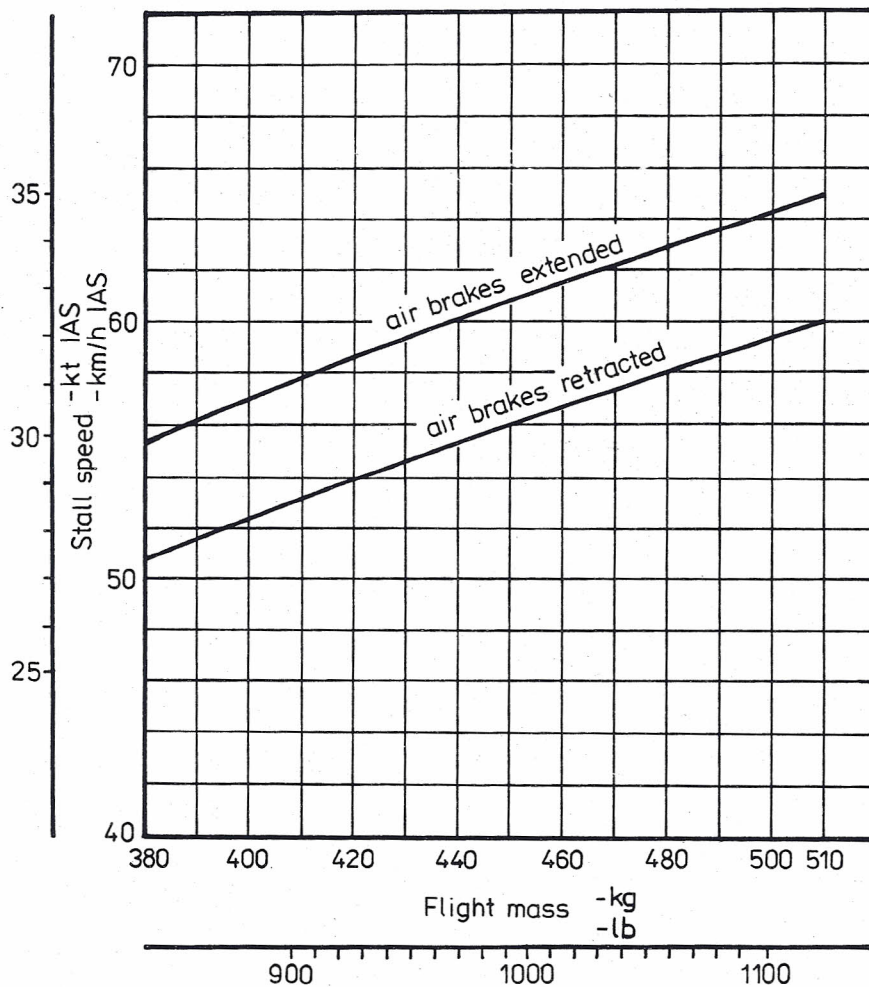


FIG. 5-2

FLIGHT MANUAL

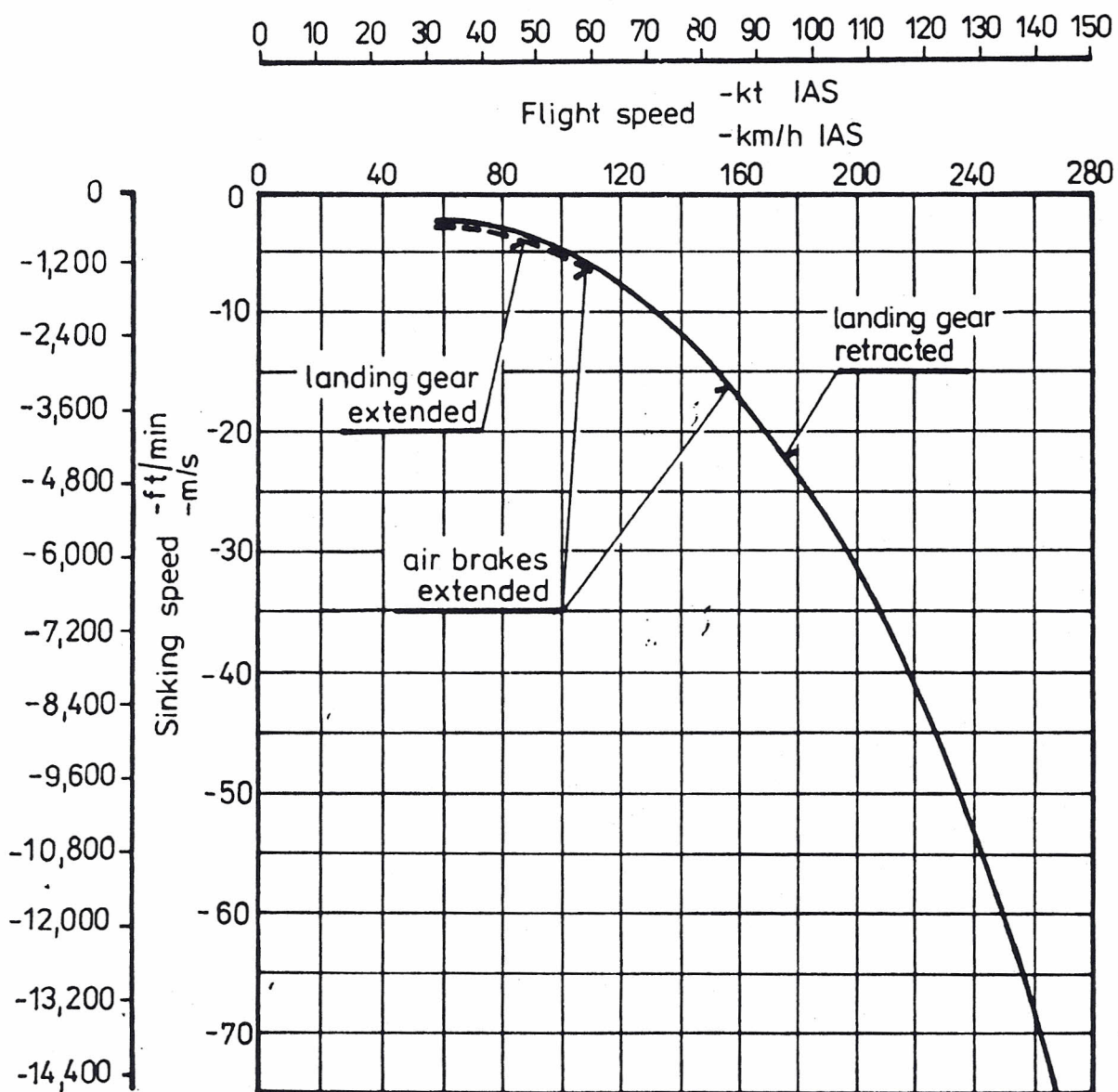
5.3 ADDITIONAL INFORMATION

5.3.1 Flight polar

5.3.1.1 Flight speed polar

Maximum flight mass of 510 kg (1124 lb)

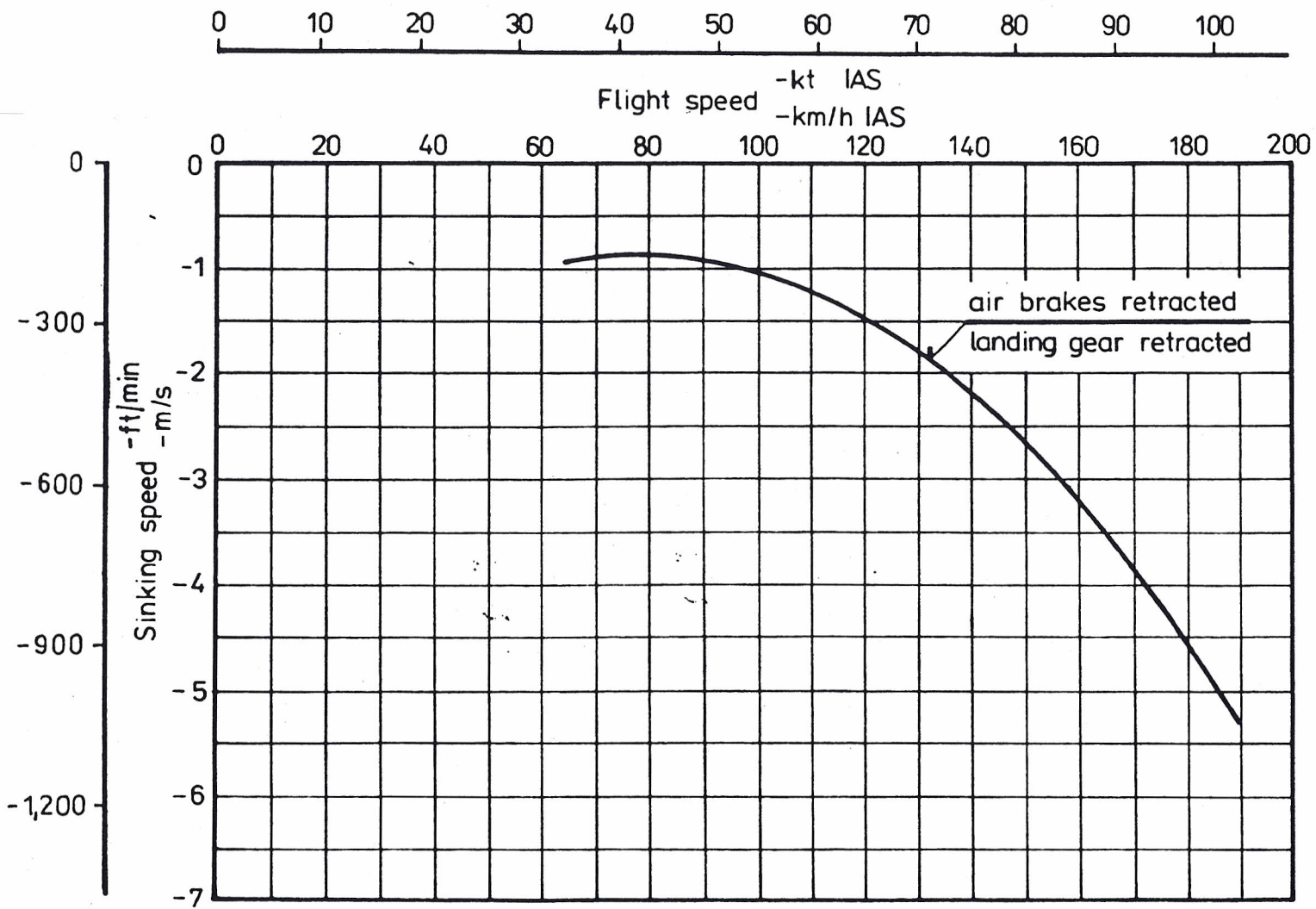
Flight speed with the angle of descent of 45° 229 km/h (124 kt) IAS



Speed Polar (air brakes extended)

FIG. 5-3

(Cont.)



Speed Polar (air brakes retracted)

FIG. 5-4

SAI approved .

14.12.1992

②

FLIGHT MANUAL

5.3.1.2 Aerodynamic polar

Max. flight mass of 510 kg (1124 lb)

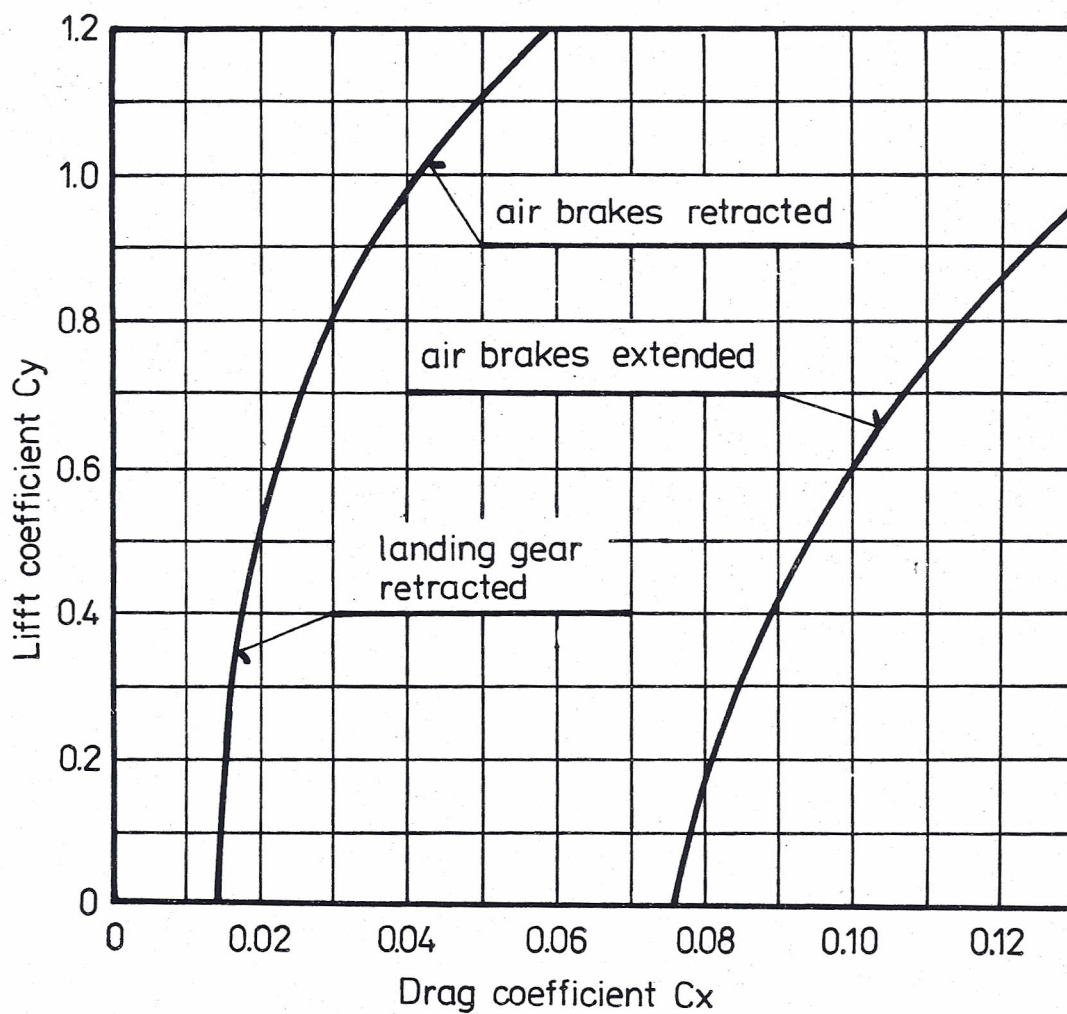


FIG. 5-5

SAI approved.

FLIGHT MANUAL

5.4. CONVERSION CHARTS

knots - 1.85319 km/hr - 0.5399568 mph
feet - 0.30479666 meters
lb - 0.4536 kg

FLIGHT MANUAL

SECTION 6

- 6. Mass and balance
 - 6.1 Introduction
 - 6.2 Mass and balance record
 - 6.3 Basic empty mass and moment
 - 6.4 Balance chart
 - 6.5 Equipment list

FLIGHT MANUAL6.1 INTRODUCTION

Section 6 includes basic empty mass and moment of the sailplane with standard equipment and the equipment list (standard and optional equipment). Procedures for calculating the mass and centre of gravity position are given in the Maintenance Manual of the L 23 SUPER - BLANÍK Sailplane.

6.2 MASS AND BALANCE RECORD

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

6.3 BASIC EMPTY MASS AND MOMENT

Basic empty mass 310 kg \pm 2 % (683 lb)

Moment to the reference plane 206.5 kgm

(see mass and balance record).

The reference plane is located 2.3765 m 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 chart. The one division value of each scale is given in the column on the left side and it is marked by the arrow, which gives the course direction in the chart.

The chart of the centre-of-gravity position - sailplane mass dependence is given in the bottom part of the chart. The region of the inadmissible centre of gravity positions is hatched horizontally and it refers to all flight conditions.

(Cont.)

FLIGHT MANUAL

2. Directions for the balance chart use

Mark the empty sailplane centre of gravity position, given in the mass and balance record on the scale of the empty sailplane centre of gravity positions. Plot gradually individual loads from this mark position in the direction marked by the arrow. Drop a vertical line from the upper part of the chart. The real centre of gravity position is given by the point of intersection of the vertical line and the horizontal flight mass line (empty mass + all individual loads). This centre of gravity position must be at the skew hatched region of the bottom part of the chart.

(Cont.)

FLIGHT MANUAL

Balance chart

Load item	Division		Centre of gravity position of empty sailplane
	lb	kg	
1 Front pilot + + parachute	121	55	
2 Rear pilot + + parachute	121	55	
3 Baggage	44	20	No influence on centre of gravity position
4 Front instrument panel	4.4	2	
5 Rear instrument panel	4.4	2	
6 Battery hold	4.4	2	
7 Radio station hold	4.4	2	

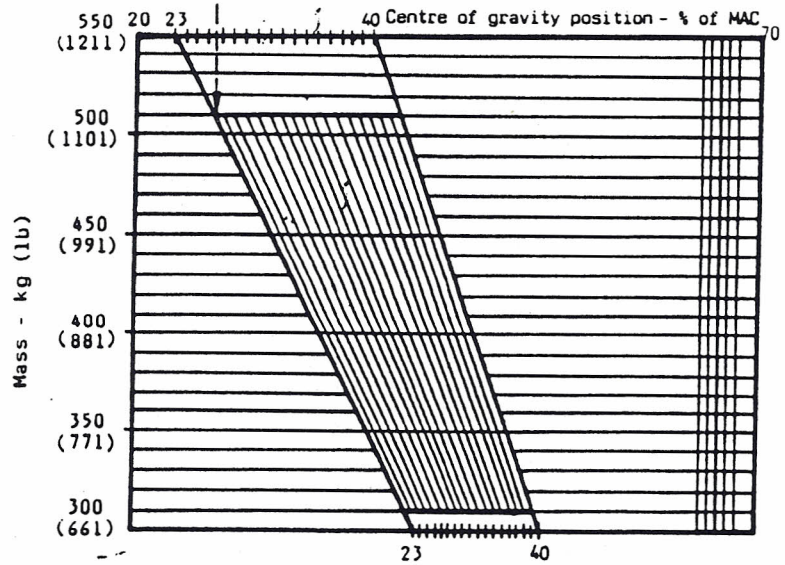


FIG. 6-1

FLIGHT MANUAL6.5. EQUIPMENT LIST

Items marked with "X" are included in the basic empty mass of the sailplane (see para. 6.4.), items marked with "0" are not included in the basic empty sailplane mass, but they are delivered with the sailplane on customer's request.

No.	Standard	Optional	Subject	Type	Mass kg lb	Arm from the reference plane (rib No. 1) mm	Date of instal- lation
1	X		Altimeter	LUN 1124.03-8 front instr. rear instr. panel	0.85 1.87	-1773.5 - 553.5	Dates are given in the certificate of quality and completeness of individual instruments and units
2	X		Airspeed indicator	LUN 1106-8 front instr. panel rear instr. panel	0.40 0.88	-1775.5 - 555.5	
3	X		Electirical turn-and-bank indicator	LUN 1211.1 front instr. panel rear instr. panel	0.36 0.79	-1775.5 - 555.5	
4	X		Rate-of-climb indicator ± 100 ft/min	LUN 1141.02 front instr. panel rear instr. panel	0.48 1.06	-1788.5 - 568.5	
			Rate-of-climb indicator ± 10 knots	LUN 1141.04 front instr. panel rear instr. panel	0.48 1.06	-1788.5 - 568.5	
5	X		Pilot compass	LUN 1221.1-8 front instr. panel	0.105 0.23	-1766.5 - 546.5	
6	X		Accelerometer	AM-10 front instr. panel	0.25 0.55	-1680	

(cont.)

14.12.1992

Section 6

Page 5

FLIGHT MANUAL

No.	Standard	Optional	Subject	Type	Mass kg lb	Arm from the reference plane (rib. No. 1) mm	Date of instal- lation
7		0	Rate-of-climb indicator ± 6000 ft/min or Rate-of-climb indicator ± 60 knots	LUN 1147.12-8 rear front instr. panel LUN 1147.23-8 front instr. panel rear instr. panel	0.50 1.1 0.50 1.1	- 548.5 - 548.5	Dates are given in the certificate of quality and completeness of individual instruments and units
8		0	Radio station LS-5 including control box and frame	5 QP 726 00 5 QP 770 57 5 QK 121 29	2.5 5.50	-1686.5	
9		0	Cockpit microphone	5 QN 618 06 front cockpit rear cockpit	0.2 0.2 0.44	-1136.5 + 63.5	
10		0	Loudspeaker box	5 QN 638 05 front cockpit	0.5 1.1	- 866.5	
11		0	Aerial	5 QK 404 11	0.2 0.44	- 1338.5	
12		0	Airborne battery	NKDU 10 or NKDU 10 R, 10 pcs	0.42 0.92	-1744.5	
13		0	Radiostation and battery bracket	-	0.8 1.76	-1681.5	

FLIGHT MANUAL

SECTION 7

7. Sailplane and systems description

7.1 Introduction

7.2 Seat with ballast

FLIGHT MANUAL

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 SEAT WITH BALLAST

A. Seat installation, Fig. 7-1

1. Dissamble 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 pawl do not shift in the holes, move the seat to both sides to enable shifting the pawls in the holes).

(Cont.)

FLIGHT MANUAL

B. Seat removal

Removal is carried out in a reverse order to installation.

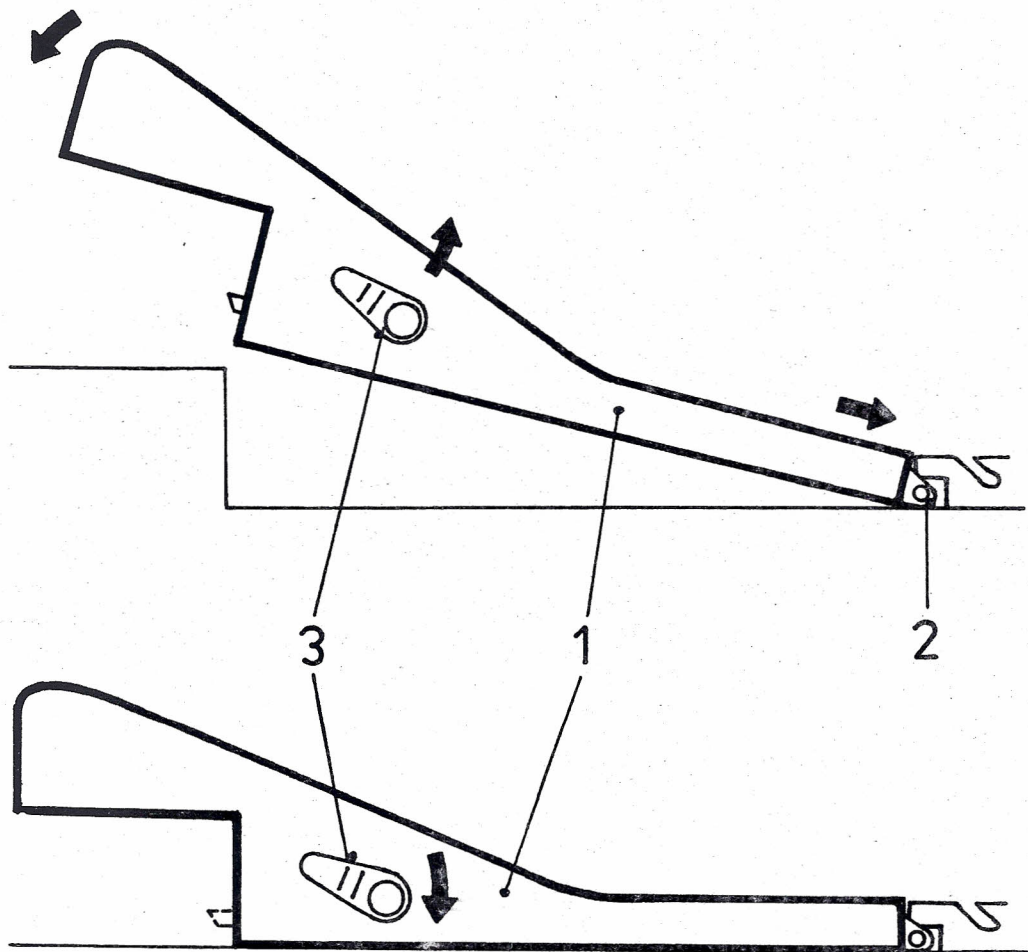


FIG. 7-1

FLIGHT MANUAL

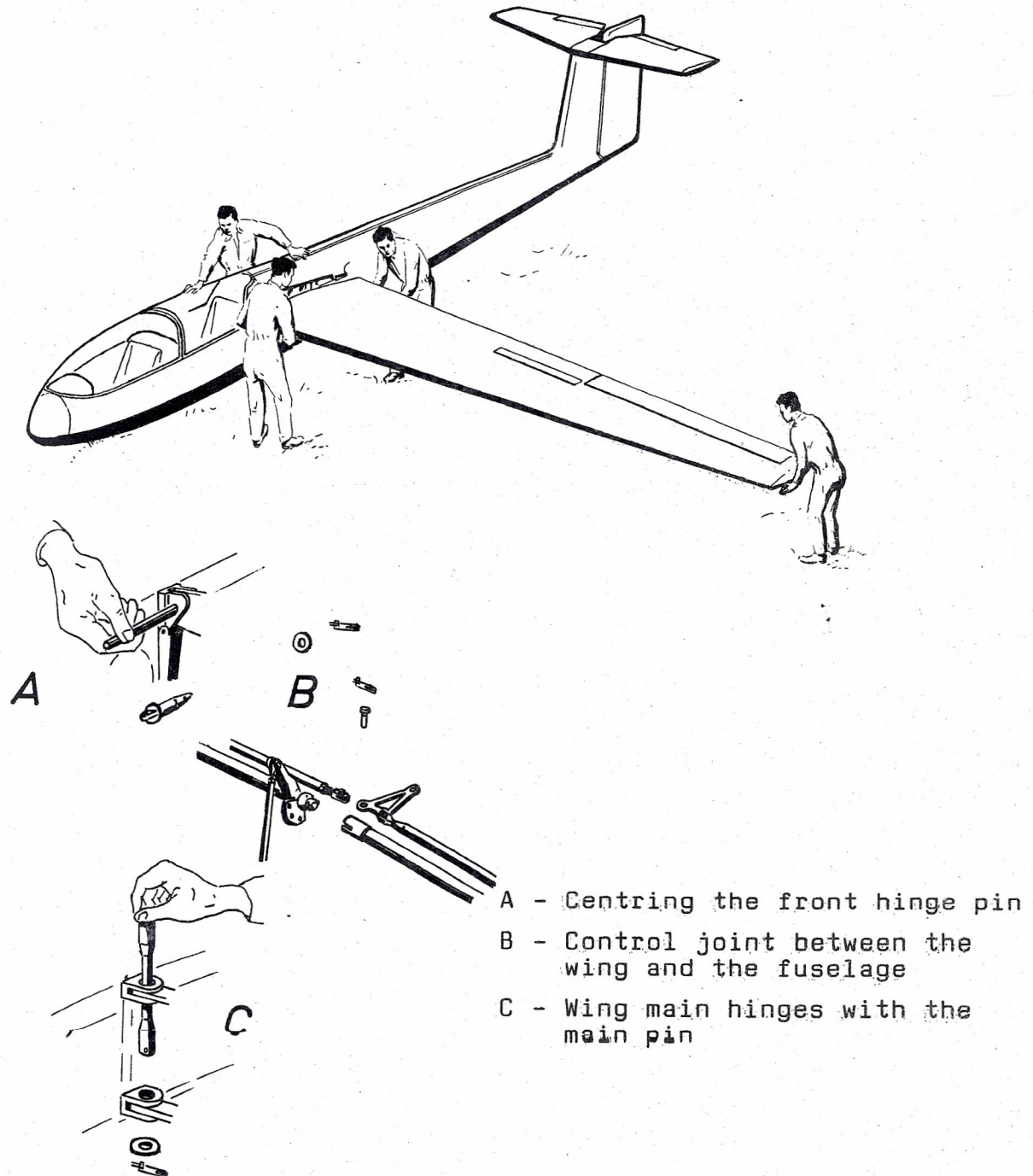
SECTION 8

- 8. Sailplane handling, care and maintenance
 - 8.1 Introduction
 - 8.2 Sailplane ground handling
 - 8.3 LS-5 radio station operation

FLIGHT MANUAL

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.



FLIGHT MANUAL

microphones after depressing the respective pushbuttons available on the control column in the front cockpit and on the control column in the rear cockpit. The airborne microphones are connected to the connector box.

NOTE: Operator of the glider can has made installation of another radio station suitable for L 23 SUPER - BLANÍK glider or can install the radio station himself, and the installation must meet the regulations of appropriate Aviation authority. For servicing of installed radio station follow manufacturer s operation manual instructions.



SECTION 9

Supplements

CONTENTS

- 9.1 Introduction
- 9.2 List of inserted Supplements
- 9.3 Supplements inserted

