FLIGHT MANUAL

HK 36 R

SUPER DIMONA

Engine: Rotax 912 A

Model: HK 36 R Super Dimona

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

Approval of translation has been done by best knowledge and judgement. In any case the original text in German language is authoritative.

PREFACE

Congratulations on your choice of the SUPER DIMONA motorglider. Skilful operation of an aeroplane will ensure your safety and provide you with hours of enjoyment. Therefore, you should take the time to get familiar with your new SUPER DIMONA.
We ask you to read this manual thoroughly and to pay attention to the recommendations given in it. If you do, you can expect many hours of incident-free flight operation from your motorglider.

0.1 Record of revisions

Any revision of the present manual, except actual weighing data, must be recorded in the following table and in case of approved Sections endorsed by the responsible airworthiness authority.
The new or amended text in the revised page will be indicated by a black 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.
If you have purchased a second hand Super Dimona, please let us know your address so that we can supply you with the publications you need for safe operation of the motorglider.

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2	0	II, III	Sept. 14, 1992 (SB 30)		15. DEZ. 1992		
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6	0	II, III	Feb. 27, 1995 (SB 45)		17. März 1995	March 30, 1995	M. Chamitzer
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1.1 INTRODUCTION

The motorglider flight manual has been prepared to provide pilots and instructors with information for the safe and efficient operation of the Super Dimona motorglider.
This manual includes the material required to be furnished to the pilot by JAR-22. It also contains supplemental data supplied by the motorglider manufacturer.
This flight manual conforms to the actual version of the customer's aeroplane. However, any optional equipment (COM, NAV, etc.) is not considered. For their operation, the operation manual of the respective manufacturer must be noticed.

1.2 CERTIFICATION BASIS

This type of motorglider has been approved by the Bundesamt für Zivilluftfahrt in accordance with JAR-22 including Amendment 22/86, and the Type Certificate No. _____, edition _, has been issued on ___ __, 1990.
Category of Airworthiness: Utility
Noise Certification Basis: BGBl. No. 700/1986

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 ABBREVIATIONS / EXPLANATIONS

BAZ	Bundesamt für Zivilluftfahrt	
HOAC	Hoffmann Aircraft	
IAS	Indicated Airspeed	
TAS	True Airspeed	IAS corrected by errors due to instrument, system, altitude and temperature
OAT	Outside Air Temperature	
hPa	Hektopascal	SI-unit of pressure, 1 hPa = 100 N/m^2 = 1 mbar
in Hg	inches mercury column	US-unit of pressure, 1 in Hg = 33.86 hPa
kts	knots	1 kts = 1.852 km/h
mph	miles per hour	1 mph = 1.609 km/h
rpm	revolutions per minute	equal to min^{-1}
GFRP	glass fibre reinforced plastic	
CFRP	carbon fibre reinforced plastic	

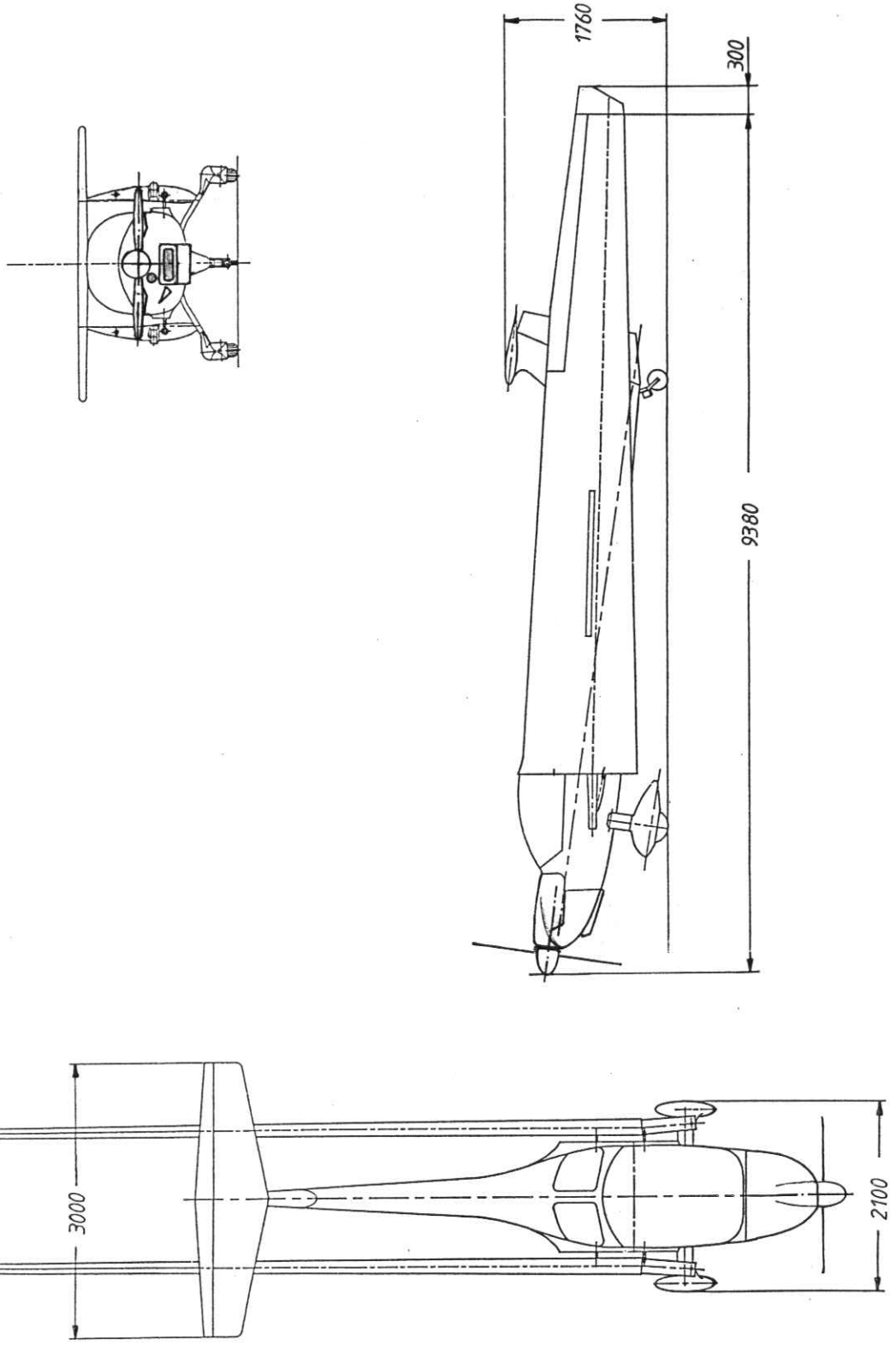
pressure altitude	altitude indicated by the altimeter when the subscale is adjusted to 1013.25 hPa
service ceiling	maximum altitude that can be reached with a climb rate of at least 0.5 m/s (98 ft/min)
take-off roll	distance between the start of the take-off run and the lift-off point
take-off distance	distance between the start of the take-off run and the point above which the aeroplane is able to clear a 15 m (49 ft) obstacle
non-lifting parts	fuselage, rudder, horizontal tail surfaces and useful load
useful load	crew, baggage and fuel

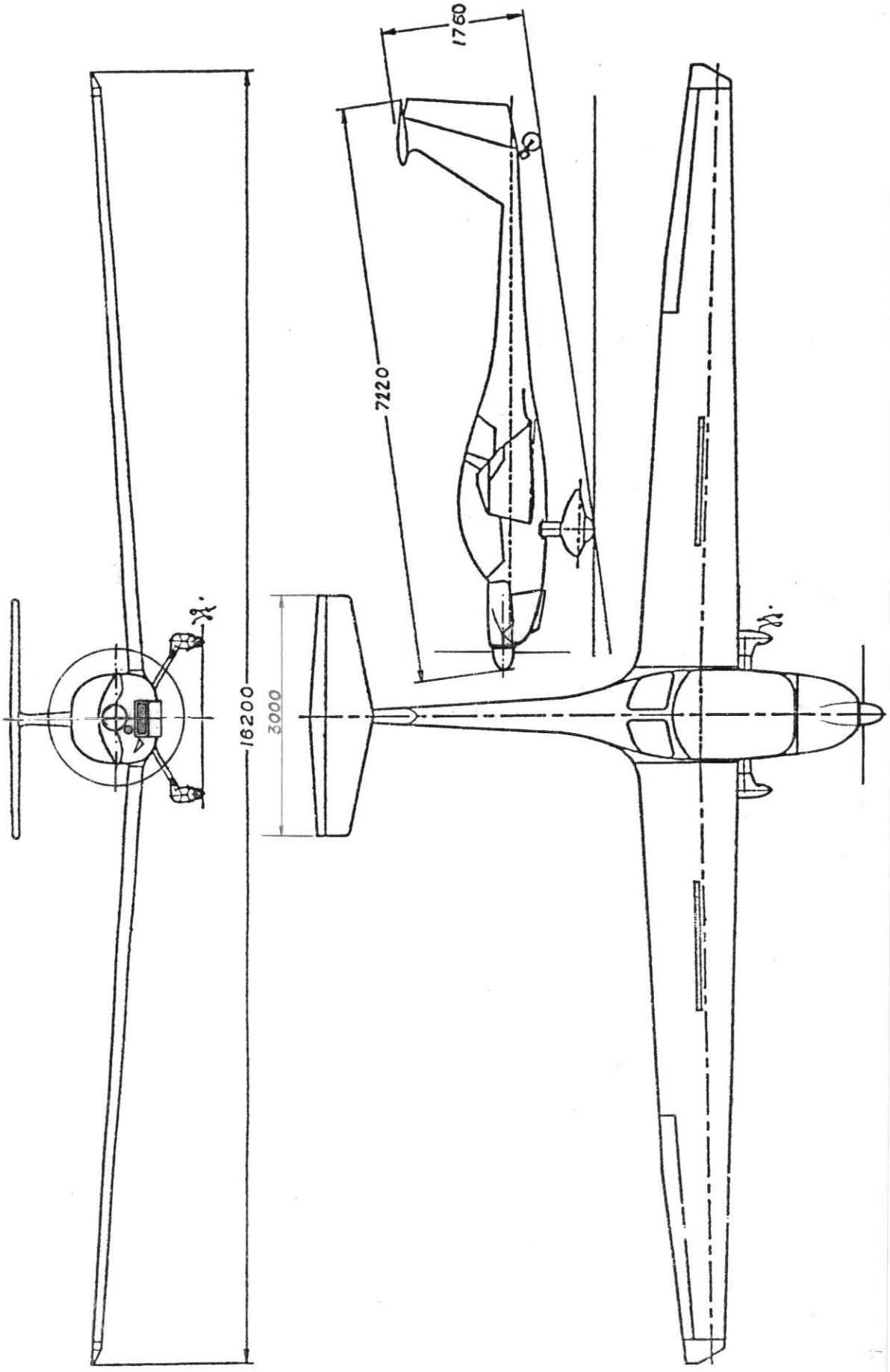
1.5 DESCRIPTIVE DATA

The HK 36 Super Dimona is a two-seated motorglider in fibre-composit structure, designed in compliance with JAR-22; Category of Airworthiness: Utility.
It is a low wing aeroplane with T-tail, side-by-side seating configuration, tail wheel landing gear and Schempp-Hirth air brakes in the wings' upper surface.
In order to enable a fast disassembly and a space-saving hangaring the aeroplane can be furnished with a wing folding mechanism.
The power unit is a Rotax R 912 engine with an MTV-1-A/170-08 variable pitch propeller.

Span:	16.20 m	(53 ft)
Length:	7.22 m	(24 ft)
Height:	1.76 m	(5 ft 9 in)
MAC:	1.004	
Wing area:	15.30 m²	(165 sq.ft.)
max. wing loading:	50.30 kg/m²	(10.30 lbs/sq.ft.)
aspect ratio:	17.11	
aerofoil:	Wortmann FX 63-137	

1.6 THREE-VIEW DRAWINGS

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2.1 INTRODUCTION

Section 2 includes operating limitations, instrument markings, and basic placards necessary for safe operation of the motor-glider, its engine, standard systems and standard equipment.
The limitations included in this section and in Section 9 have been approved by the BAZ.

WARNING

All operation values must be kept within the limits stated herein during flight.

2.2 AIRSPEED

NOTE

The airspeeds shown below must be understood as IAS.

Airspeed limitations

Airspeed limitations and their operational significance are shown below:

	Speed	IAS km/h (mph/kts)	Remarks
v_{NE}	Never exceed speed	261 (162/141)	Do not exceed this speed in any operation and do not use more than 1/3 of control deflection.
v_{RA}	Rough air speed	210 (130/113)	Do not exceed this speed except in smooth air, and then only with caution. Examples of rough air are lee-wave rotor, thunder-clouds, etc.
v_A	Manoeuvring speed	176 (109/95)	Do not make full or abrupt control movement above this speed, because under certain conditions the motorglider may be overstressed by full control movement.

In any case, pay attention to the warnings on the following pages!

WARNING

For the sake of flutter safety, the maximum speed (IAS) is limited at altitudes above 2000 m / 6560 ft (see chapter 4.5.7).

WARNING

At speeds beyond the rough air speed the aeroplane may be overstressed by heavy gusts (lee-wave rotors, thunderclouds, whirlwinds, turbulence at close range to mountain ridges).

WARNING

The manoeuvring speed stated on the previous page applies to the maximum gross weight. At lower gross weights, the following limits must be applied:

gross weight [kg]	v_A [km/h] ([mph]/[kts])
700	168 (104/91)
650	162 (101/87)
600	155 (96/84)

WARNING

These speeds are not marked on the airspeed indicator. Full deflection of elevator and rudder at the same time can overstress the aeroplane even at speeds below v_A.

Best rate-of-climb speed

v_y = 105 km/h (65 mph / 57 kts)

At this speed the climb performance reaches its maximum.

Best gradient-of-climb speed

v_x = 95 km/h (59 mph / 51 kts)

This speed is not marked on the airspeed indicator.
At v_x the gradient of climb reaches its maximum.

Suggested minimum approach speed

105 km/h (65 mph / 57 kts)

NOTE

Conditions like strong headwind, danger of wind shears, turbulence, or wet wings require a higher approach speed.

Stalling speeds: see chapter 5.2.2

2.3 AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their colour-code significance are shown below:

Marking	(IAS) value or range km/h (mph/kts)	Significance
Green arc	86-210 (53-130/46-113)	Normal Operating Range (Lower limit is maximum mass 1.1 v_{S1} at most forward c.g. with air brakes retracted. Upper limit is rough air speed.)
Yellow arc	210-261 (130-162/113-141)	Manoeuvres must be conducted with caution and only in smooth air.
Red line	261 (162/141)	Maximum speed for all operations
Blue line	105 (65/57)	Best rate-of-climb speed v_y
Yellow triangle	105 (65/57)	Approach speed at maximum mass

2.4. POWER-PLANT

Engine Manufacturer: Bombardier Rotax

Engine Model: Rotax 912 A

NOTE

The engine drives the propeller through a speed-reducing gear with a gear ratio of 2.273:1.
The built-in tachometer indicates the propeller speed. Consequently, all speeds given in this manual are propeller speeds (in contrast to the engine manual).

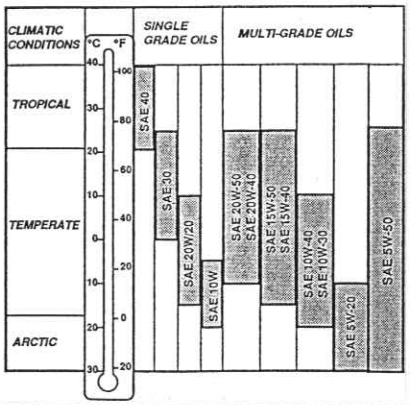
Maximum Power, Take-Off:	59 kW / 80 hp at 2420 rpm
Continuous:	59 kW / 80 hp at 2420 rpm
Max. Engine rpm, Short-term:	2550 (max. 3 minutes)
Take-off:	2420
Limit to continous operation:	avoid continous operation longer than 3 minutes between 2420 and 2550 rpm
Idle rpm:	650
Power check rpm:	2420 ± 100
Maximum Cylinder Head Temperature:	150 °C (302 °F)
Maximum Oil Temperature:	140 °C (284 °F)
Minimum Oil Temperature:	50 °C (122 °F)

NOTE

If the engine temperatures are kept at favourable values, the engine load will be decreased.
Most favourable oil temperature: 80 °C (176 °F)
Most favourable cylinder head temp.: 100 °C (212 °F)

Oil Pressure, Minimum:	1.5 bar (16 psi) at 1250 rpm
Maximum:	5 bar (54 psi)

Oil grade: Automotive lubricants for Otto-engines with SAE ratings compatible with the seasonal temperatures (see chart below). The lubricant quality according to the API system must be "SF" or "SG".



CAUTION

Under no circumstances should Aviation Grade oil be used!

Oil amount, Minimum: 2.0 l
Maximum: 3.0 l

CAUTION

When reducing the propeller speed by means of the propeller control unit, ensure the manifold pressure does not exceed the following limits during continuous operation (engine speed in parentheses):

at 2500 rpm	no manifold pressure limit
at 2400 rpm	no manifold pressure limit
at 2300 rpm	no manifold pressure limit
at 2200 rpm	24 in Hg
at 2100 rpm	23 in Hg
at 2000 rpm	22 in Hg
at 1900 rpm	21 in Hg
at 1800 rpm	20 in Hg
at 1700 rpm	19 in Hg
at 1600 rpm	18 in Hg
at 1500 rpm	17 in Hg

Generally, the inequation $p \leq \frac{n+200}{100}$ must be fulfilled.

p = manifold pressure [in Hg], n = engine speed [rpm]

Propeller manufacturer: Mt-Propeller, Straubing, Germany
Propeller model: Electric variable pitch propeller MTV-1-A/170-08

2.5 POWER-PLANT INSTRUMENT MARKINGS

Power-plant instrument markings and their colour-code signification are shown below:

Instrument	Red Line Minimum Limit	Green Arc Normal Operating	Yellow Arc Caution Range	Red Line Maximum Limit
Tachometer	-	650-2420 rpm	2420-2550 rpm	2550 rpm
Oil temperature	50 °C	50-140 °C	-	140 °C
Cylinder head temperature	-	-	-	150 °C
Oil pressure	1.5 bar	1.5 - 5 bar	-	5 bar
Fuel quantity	-	-	-	-

2.6 MASS (WEIGHT)

Maximum take-off mass:	770 kg	1698 lbs
Maximum landing mass:	770 kg	1698 lbs
Maximum mass of all non-lifting parts:	590 kg	1301 lbs
Maximum mass in baggage compartment:	12 kg	26 lbs
Maximum useful load (including fuel):	see pages 6-5, 6-6	
Maximum useful load on one seat:	110 kg	243 lbs

WARNING

Any exceeding of the mass limits can lead to an overstress of the aeroplane and to a deterioration of flying characteristics and flight performance.

2.7 CENTRE OF GRAVITY

The reference line for the c.g. specifications is tangent to the leading edge of the wing at the root rib. It is vertical when the fuselage tube lies horizontal. Procedures for a horizontal alignment and empty weight c.g. specifications can be found in the Maintenance Manual, Section 4.
The permissible take-off c.g. range is:
Maximum forward c.g.: 318 mm behind reference line
Maximum rearward c.g.: 430 mm behind reference line

WARNING

A take-off c.g. which lies outside the permissible range deteriorates the controllability and stability of the aeroplane.

The procedure of checking the c.g. position is included in Section 6.

2.8 APPROVED MANOEUVRES

This motorglider is certified in the Utility category.

NOTE

Aerobatics are forbidden!

2.9 MANOEUVRING LOAD FACTORS

Table of maximum permissible load factors:

	$v \leq v_A$	$v_A < v \leq v_{NE}$
Positive:	5.30	4.00
Negative:	2.65	1.50

WARNING

Any exceeding of the maximum permissible load factors may overstress the aeroplane.

2.10 FLIGHT CREW

Solo flights may be conducted from the left seat only.

2.11 KINDS OF OPERATION

The Super Dimona is certified for VFR flights by day. Flights by night require additional equipment in accordance with the legislative regulations.
IFR, flights in clouds and aerobatics are forbidden.

2.12 FUEL

Total fuel

Standard tank: 55 l 42 kg 12.1 UK gal. 14.5 US gal. 92.5 lbs.
Long range tank: 80 l 60 kg 17.6 UK gal. 21.1 US gal. 132 lbs.

Usable fuel

Standard tank: 54 l
Long range tank: 79 l

Approved fuel grades

The approved fuels are:
- Aviation Grade 100 LL
- MOGAS, min. octane rating: 96 according to öNORM C1103 or DIN 51600
- Unleaded Automotive Super, min. octane rating: 95

2.13 AEROTOW AND WINCH- AND AUTOTOW-LAUNCHING

The motorglider is designed for self-takeoff only.

2.14 OTHER LIMITATIONS

Limitations for gliding when using an 18 Ah - battery:
The capacity of the lead-accumulator is very much dependent on the temperature. Therefore, the length of a continous glide at low temperatures is restricted to:

4 hours at 0 °C (32 °F)
2 hours at -10 °C (14 °F),

good condition and charge of the battery provided. Average intensity of current: 0.3 A.

2.15 LIMITATION PLACARDS

On the left hand side below the canopy frame there is a placard referring to:

- the manoeuvring speed at maximum gross weight
- the minimum seat payload with full tank and no baggage
- the minimum seat payload with full tank and maximum mass in the baggage compartment
- the maximum useful load

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3.1 INTRODUCTION

Section 3 provides checklist and recommended procedures for coping with emergencies that may occur.
Since it is impossible to foresee all kinds of emergencies and consider them in the flight manual, it is absolutely necessary for the pilot to know the aeroplane and to have knowledge and experience in solving problems that may occur.

3.2 CANOPY JETTISON

1. Strongly swing red canopy locks (left and right) 180° rearward
2. Place both hands above your head against canopy, push up and rearward

3.3 BAILING OUT

1. Jettison canopy
2. Release seat harness
3. Evacuate the aeroplane

NOTE

When using a manual parachute release, wait two seconds before activating parachute.

3.4 STALL RECOVERY

Behaviour with power off

Under all loading conditions, air brakes applied or retracted, straight flight or banked flight, the Super Dimona goes through a poststall phase in which the rate of descent is increasing. The ailerons keep their effectiveness even with maximum elevator deflection.

A partial loss of positive control in the stick and pedals, buffeting, and pitch angle of 20° to 30° occur during this condition.

NOTE

During the poststall period, IAS rises to approximately 85 km/h.

Behaviour with power on

See behaviour with power off.

Only at 50 % to 100 % power, straight flight, and maximum rearward centre of gravity, the aeroplane may perform a stall dive over the left or right wing after getting into the poststall phase if the pilot pulls the control stick even further.

Recovery

The poststall flight behaviour can be terminated immediately by relaxing the back pressure on the elevator control.

NOTE

If the aeroplane performs a stall dive, immediately relax the back pressure on the elevator control and pull out the aeroplane smoothly.

If you pull the stick further, the aeroplane may start to spin.

Altitude loss resulting from stationary poststall phase described above: approximately 10-20 m (33-65 ft).

Altitude loss resulting from stall dive over a wing: approximately 40 m (130 ft).

3.5 SPIN RECOVERY

1. Apply full rudder opposite to spin rotation, and simultaneously
2. Relax the back pressure on the stick until spinning stops
3. Move the rudder into centre position and pull out the aeroplane smoothly

3.6 SPIRAL DIVE RECOVERY

There is no tendency to a spiral dive.
The standard procedure for terminating a spiral dive is:

1. Apply full rudder opposite to spiral dive rotation
2. Apply full aileron opposite to spiral dive rotation
3. Pull out the aeroplane smoothly

3.7 ENGINE FAILURE (carburettor icing)

Engine failure during take-off

1. Fuel valve - check if OPEN
2. Electric fuel pump - check if ON
3. Choke - check if OFF
4. Propeller speed control - maximum speed
5. Ignition switch - BOTH

WARNING

If the troubles cannot be eliminated immediately, and the engine refuses to deliver enough power, a straight-in landing must be performed under 80 m (260 ft) of altitude.

Before touchdown: - Fuel valve - shut off
- Ignition - OFF
- Master switch - OFF

Engine failure during cruise

1. Fuel valve - check if OPEN
2. Electric fuel pump - ON
3. Choke - check if OFF
4. At outside temperatures below 10 °C (50 °F): carburettor heat ON
5. Ignition - check if switch is in BOTH position
6. Fuel quantity - check

NOTE

If you cannot eliminate the troubles and the engine refuses to deliver enough power, proceed as follows:

1. Throttle control - IDLE
2. Cowl flap - close
3. Propeller - feather
4. Ignition - OFF
5. Fuel valve - shut off
6. Master switch - OFF
7. Adjust airspeed to speed of best glide ratio (105 km/h)
8. Look for a suitable landing field

Carburettor icing

NOTE

Carburettor icing can be recognized by a drop in the engine speed and/or irregular running of the engine without a change in the throttle control position, the choke position, the propeller setting, the airspeed, or the altitude.

1. Turn on carburettor heat

NOTE

The engine output will slightly drop due to the intake air heating, and fuel consumption will slightly increase. Closing the cowl flap enhances the impact of the carburettor heat. At low outside temperatures, a suitable setting of the cowl flap prohibits carburettor icing.

2. Turn off carburettor heat as required

3.8 FIRE

Carburettor fire

1. Fuel valve - shut off
2. Throttle control - FULL
3. Cabin air - OFF
4. Cabin heat - OFF

Electrical fire

1. Master switch - OFF

3.9 OTHER EMERGENCIES

Malfunction of the propeller pitch control

1. Immediately turn propeller pitch control into START position
2. If engine speed keeps dropping: trigger propeller control unit breaker
3. If engine runs roughly: decrease manifold pressure with throttle control

Breakdown of the propeller pitch control

1. Check if propeller control unit breaker is triggered; if it is, reactivate it after approximately 30 to 60 seconds.

NOTE

If the propeller control unit breaker disengages again, the flight must be continued with the given pitch.
If the propeller is in cruise position, bear in mind that in case of a balked landing the climb performance is reduced.
If the propeller is in start position, choose a power setting that avoids engine overspeed.
If the propeller is feathered, proceed as follows:

1. Propeller pitch control - START
2. Race the engine with the starter to clean the slip rings which might be covered with ice; check if the propeller moves into the start position

If the propeller remains feathered, proceed as follows:

3. Fuel valve - shut off
4. Master switch - OFF
5. Adjust airspeed to the speed of best glide ratio
6. Look for a suitable landing field

Icing

1. Leave icing area
2. Continue to move controls to prohibit lockage from ice
3. If the canopy is iced over: open weather window, open cabin heating fully

Emergency landing on water

Emergency landings on water should be performed only in extreme emergency situations. Due to trials with sailplanes it is assumed that the aeroplane will submerge immediately after touching the water and then surface again.

1. Open parachute harness
2. Tighten seat harness
3. Adjust airspeed to normal approach speed
4. Touchdown with minimum speed and air brakes retracted

NOTE

Conditions like strong headwind, danger of wind shears, turbulence, or wet wings require a higher approach speed.

WARNING

On touchdown protect your face with one arm!

5. Release seat harness
6. Swing red canopy locks 180° rearward, push canopy away
7. Evacuate aeroplane as fast as possible

4. NORMAL PROCEDURES

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4.1 INTRODUCTION

Section 4 provides checklist and amplified procedures for the conduct of normal operation. Normal procedures associated with optional systems can be found in Section 9.

4.2 RIGGING AND DE-RIGGING

General

The wings are connected to the fuselage with three bolts each. The two main bolts are placed in the middle of the spar tunnel. They are accessible between the backrests and can be inserted from the front side. A long locking pin is inserted through both bolt handles, thereby securing them.
The A- and B-bolts are fixed to the fuselage at the wing root. The A-bolt is placed in front of the spar tunnel, the B-bolts lies near the trailing edge. Fastening units are screwed onto the B-bolts, which are accessible through handholes on the wings' upper surface. Locking rings are integrated in the B-bolt fastening units which therefore do not require any further safety device.
The horizontal tail surfaces are connected by means of three bolts. The two bolts in the rear are fixed to the mount in the tail unit. The screw bolt placed in front is provided with a hexagon socket. When screwed in, it is automatically secured by means of a locking ring integrated in the elevator unit.

Wing attachment (wing folding mechanism not provided)

1. Clean all bolts and bushings and the B-bolt fastening unit and apply a light coat of grease.

2. Lift one wing (two persons at the root rib, one at the wing tip) and insert spar stump into spar tunnel. Ensure the smooth insertion of the A- and B-bolts.

3. Insert main bolt while moving the wing tip in small circles. The aileron and air brake drive units are automatically connected. The wide spread of the landing gear allows the mounted wing to support itself, and it requires no outside support.

4. Screw the B-bolt fastening unit onto the B-bolt and tighten it by hand.

5. Lift the other wing (two persons at the root rib, one at the wing tip) and insert spar stump into spar tunnel. Ensure the smooth insertion of the A- and B-bolts.

6. Insert the main bolt. The aileron and air brake drive units are automatically connected. Do not stress the wing before the main bolt has been completely inserted.

7. Screw the B-bolt fastening unit onto the B-bolt and tighten it by hand.

8. Tighten both B-bolt fastening units with wrench (size 17 mm) applying moderate hand force (approximately 6 Nm/4.5 lbs.ft.)

9. Secure main bolts with locking pin.

10. Apply water resistant adhesive tape to the gap between fuselage and wing and to the lids covering the handholes.

Wing attachment (wing folding mechanism provided)

1. Clean all bolts and bushings and the B-bolt fastening unit and apply a light coat of grease, remove lid over B-bolt handhole.

2. Prepare main bolts.

3. Unhook one wing from its hanging mount, pull it rearward to the limit. A second person should stand between wing and fuselage and relieve tension on the telescopic tube by lifting the wing at the spar stump.

4. Walk forward until the wing is 90° from line of flight; rotate the wing until the root ribs are parallel; keep wing in its correct position.

5. Introduce spar stump into spar tunnel while ensuring the smooth insertion of A- and B-bolt.

6. Insert main bolt. The aileron and air brake drive units are automatically connected. Do not stress the wing before the main bolt has been completely inserted. The wide spread of the landing gear allows the mounted wing to support itself and it requires no outside support.

7. Screw the B-bolt fastening unit onto the B-bolt and tighten it by hand.

8. Install the other wing in a similar manner.

9. Tighten both B-bolt fastening units with wrench (size 17 mm) applying moderate hand force (approximately 6 Nm/4.5 lbs.ft.)

10. Secure main bolts with locking pin.

11. Apply water resistant adhesive tape to the gap between fuselage and wing and to the lids covering the handholes.

Wing detachment

Detachment is performed by reversing the process of attachment.

Wing tip attachment

1. Clean spar tubes and bolts if necessary.

CAUTION

Do not apply grease to spar tubes or bolts!

2. Slip on wing tip.
3. Introduce safety bolt from above.
4. Fix safety bolt with split pin on the bottom side.
5. Apply water resistant adhesive tape to the gap.

Wing tip detachment

Detachment is performed by reversing the process of attachment.

Elevator unit attachment

1. Clean all bushings and bolts and apply a slight coat of grease.
2. Move the trim lever to full NOSE DOWN position.
3. Remove the Pitot tube.
4. Position the elevator unit over the elevator unit mount; the elevator control rod must be connected by a second person.

WARNING

The elevator control rod is not connected automatically!

5. Slip elevator unit onto the rearward bolts.

6. Screw in the fastening bolt to the stop with an 8 mm hexagon key applying moderate force (approximately 6 Nm / 4.5 lbs.ft.).

7. Check elevator unit ensuring a tight fit, and inspect load transmission of elevator control.

8. Attach the Pitot tube.

9. Apply water resistant adhesive tape to the gap between elevator unit and rudder assembly.

Elevator unit detachment

Detachment is performed by reversing the process of attachment.

4.3 DAILY INSPECTION

WARNING

Master switch OFF, ignition OFF!

1. Fuel tank drain check: drain off about 1/8 l (1/4 pint) of fuel, let it flow into a transparent vessel (outlet see chapter 7.10). Inspect for dirt or water.

NOTE

In order to prevent the water deposited in the tank from dispersing, the aeroplane must not be agitated prior to the drain check.

2. Check if the operation time that is left before the next 100, 200, or 600 hour inspection allows for the intended flight.

3. Inspect left fuselage skin for damage or cracks.

4. Inspection of rudder assembly:
   - Check skin for damage or cracks.
   - Check if rudder is mounted correctly.
   - Check for excessive play in mounting lugs.
   - Check if rudder control is connected correctly and operating smoothly
   - Check if Pitot tube is mounted correctly, if covering is removed, and if openings are free.

5. Inspection of elevator unit:
   - Check horizontal stabilizer for correct mounting, tight fit, and inspect skin for damage and cracks.
   - Check if elevator has freedom of movement and is mounted correctly, and inspect skin for damage and cracks.
   - Check rudder control for correct connection, load transmission, and freedom of movement.

6. Inspection of tail wheel assembly:
   - Check for damage.
   - Check tyre pressure (3.1 bar / 45 psi).

7. Check right fuselage skin for damage and cracks.

8. Inspection of right wing:
   - Check if wing, aileron and wing tip are mounted correctly, free from excessive play and from damage and cracks.
   - Check aileron drive unit for correct connection, load transmission and freedom of movement.
   - Check air brakes for complete retraction and flushness with the wing surface.

9. Inspection of right main landing gear:
   - Check landing gear strut for damage and cracks.
   - Check wheel fairings for damage and excessive play.
   - Check tyre pressure (2.1 bar / 30 psi).

10. Inspection of propeller:
   - Check propeller blades for damage, cracks and excessive play.
   - Check spinner for damage and excessive play.

11. Oil and coolant check:
   - Check oil level.
   - Coolant equalizing reservoir must be filled over one third.

NOTE

Fill up oil to the maximum prior to long flights.
Required oil grade: see page 2-7.

   - Check engine compartment for visual defects.
   - Check cooler for free air passage

12. Inspection of left main landing gear:
   - Check landing gear strut for damage and cracks.
   - Check wheel fairings for damage and excessive play.
   - Check tyre pressure (2.1 bar / 30 psi).

13. Inspection of left wing:
   - Check if wing, aileron and wing tip are mounted correctly, free from excessive play and free from damage and cracks.
   - Check aileron drive unit for correct connection, load transmission and freedom of movement.
   - Check air brakes for complete retraction and flushness with the wing surface.

14. Check in the cabin:
    - Check if loading is admissible (refer to Section 6).

NOTE

Ensure adherence of loading restrictions by changing and/or rearranging the useful load.

- Master switch - ON
- Mode select switch - POWER FLIGHT
- All overload releases - ON
- Fuel quantity - check; refuel if necessary

NOTE

Usable fuel and appoved fuel grades see page 2-12.

- Feather propeller with pitch control and then return to START position until the green light illuminates. Set pitch control to AUTOMATIC.
- Master switch - OFF
- Check cabin for foreign bodies and loose objects
- Check canopy for cleanliness and damage
- Check cowl flap for proper opening and closing
- Check that main bolts are secured

4.4 PREFLIGHT INSPECTION

The following checklist with the most important items is placed where it is well visible for either pilot:

START CHECK

1. Mass & Balance checked
2. Main bolts secured
3. Fuel valve open
4. Fuel quantity checked
5. Canopy locked
6. Seat harness on and secure
7. Propeller check
8. Magneto check
9. Controls free
10. Trim checked
11. Parking brake released
12. Air brakes locked

4.5 NORMAL PROCEDURES AND RECOMMENDED SPEEDS

4.5.1 Launch/engine starting, run up, taxying procedures

1. Rudder pedals - adjust
2. Seat harnesses - fasten
3. Canopy - lock
4. Fuel valve - OPEN
5. Controls - check for freedom of movement
6. Air brakes - check function; set parking brake; lock air brakes
7. Current consumers - OFF
8. Master switch - ON
9. Mode select switch - POWER FLIGHT
10. Propeller pitch control - set to SAIL for a short time, back to AUTO; check if green light illuminates
11. Fuel quantity - check
12. Cowl flap - OPEN
13. Electric fuel pump - ON; check if red light fades after fuel pressure has increased
14. Throttle control - IDLE

15. Choke - pull in case of cold-start

WARNING

People must stay clear of the propeller danger zone!

16. Ignition switch - press and turn clockwise to start engine
17. Engine speed - adjust to approx. 1500 rpm
18. Oil pressure - has to reach green range within 10 seconds

CAUTION

If oil pressure is too low, turn off engine immediately!

19. Choke - push forward as required

WARNING

If the engine is warm, the pulled choke will considerably cut the engine output!

20. Current consumers - switch on as required
21. Altimeter - adjust
22. Oil temperature - check

CAUTION

Before stressing the engine, allow the oil temperature to rise to 50 °C (122 °F) with the cowl flap open at 1100 to 1600 rpm (taxying is allowable).

23. Choke - OFF
24. Propeller check:
    Adjust the propeller speed to 1500 rpm with the throttle control. Set propeller pitch control to SAIL/CRUISE position until the engine speed drops to about 1350 rpm. Reset propeller pitch control to START position and check if the green light illuminates.
    Set propeller pitch control to AUTOMATIC. Set propeller speed control to minimum. Set engine speed to approx. 1500 rpm using the throttle control. Green light must fade, engine speed must drop. Turn engine speed control knob to start rpm (full right position), check increase of speed and illumination of green light.
25. Check ignition circuits at 1300 rpm, engine speed drop 50 to 150 rpm.
26. Check carburettor heat at 1500 rpm, engine drop 20 rpm
27. Check speed at full throttle (ignition switch - BOTH):
    2420 ± 100 rpm

4.5.2 Take-off and climb

1. Cowl flap - open
2. Electric fuel pump - ON
3. Propeller pitch control - AUTOMATIC; rpm preset knob to maximum propeller speed
4. Throttle - full (engine speed must not be below 2420 rpm)
5. Start take-off run with control stick slightly pressed forward, keep direction with rudder:
6. Lift tail wheel; aeroplane will lift off by itself at approximately 90 km/h (56 mph / 49 kts).

7. Perform climb with at least 95 km/h (51 kts / 59 mph); observe oil pressure, oil temperature, cylinder head temperature which all have to stay in the green range.

8. At altitude 100 m (330 ft): fuel pump OFF. If the fuel system is intact, the red light must not illuminate, since the engine-driven pump maintains the fuel pressure.

For best angle of climb adjust airspeed to 95 km/h (51 kts / 59 mph), for best rate of climb performance to 105 km/h (57 kts / 65 mph). Figures apply to maximum gross weight.
For reasons of noise emission, reduce speed to 2420 rpm as soon as possible (not later than after 3 minutes).

NOTE

Check manifold pressure when reducing engine speed!
See table in chapter 2.4.

4.5.3 Flight (including inflight engine stop/start procedures)

NOTE

Economic settings during cruise will result if the manifold pressure [in Hg] is set equal to the propeller speed [rpm/100], e.g. at 2200 rpm approximately 22 in Hg. A propeller speed below 1900 rpm is not sensible.

Inflight engine stop

1. Throttle control - IDLE
2. Cowl flap - close
3. Current consumers - OFF

WARNING

Engine start and unfeathering the propeller can become impossible:

- After long glides with several current consumers switched on (misoperation of mode select switch)
- In extreme cold (see page 2-13)
- If the battery is in poor condition or barely charged

4. Ignition - OFF
5. Propeller - feather
6. Mode select switch - SOARING

Inflight engine start

NOTE

It takes about 60 seconds to move the propeller from SAIL to START position. Therefore the decision must be made keeping this in mind.

1. Current consumers - OFF
2. Master switch - ON

3. Mode select switch - POWER FLIGHT
4. Propeller pitch control - AUTOMATIC
5. Cowl flap - OPEN
6. Choke - pull in case of cold-start
7. Electric fuel pump - ON
8. Throttle control - IDLE
9. Ignition switch - BOTH, start engine

NOTE

The engine can be cranked with the electric starter after the propeller has moved at least through half the pitch angle from SAIL to START position. The engine output cannot be increased before the green light has illuminated.

NOTE

A long glide can lead to the icing of the slip rings. In this case, race the engine with the starter so that the carbon brushes regain contact.

10. Oil pressure - check
11. Choke - OFF

WARNING

If the engine is warm, the pulled choke will considerably cut the engine output!

12. Current consumers - switch on as required

13. Oil temperature - check

14. Propeller pitch control - AUTOMATIC; preset engine speed as required.

4.5.4 Approach

1. Throttle - reduce as required
2. Carburettor heat - turn on if required
3. Trim - adjust as required
4. Air brakes - apply as required

WARNING

An abrupt change from cruise or climb to fast descent can lead to an overspeeding of the engine, since it takes a certain time to adjust the propeller blade pitch.

WARNING

Sudden opening of the throttle during descent can lead to an overspeeding of the engine, since it takes a certain time to adjust the propeller blade pitch. Therefore you should watch the engine tachometer when opening the throttle.

4.5.5 Landing

Power-on landing

1. Propeller speed control - maximum speed
2. Electric fuel pump - ON
3. Throttle - reduce
4. Carburettor heat - ON
5. Cowl flap - open
6. Trim - adjust as required
7. Air brakes - apply as required
8. Sideslip - possible but not necessary
9. Approach speed - 105 km/h (57 kts / 65 mph) during final approach

NOTE

Conditions like strong headwind, danger of wind shears, turbulence, or wet wings require a higher approach speed.

10. Touchdown - in three point position

CAUTION

Avoid touch-down with the air brake lever pulled to the limit, since the wheel brakes are coupled with the air brake system and a lock-up of the wheels may result.

11. Wheel brakes - apply as required by pulling the air brake lever
12. Electric fuel pump - OFF

Power-off landing

NOTE

If the propeller is feathered, the approach must have enough altitude to ensure the landing field is reached, since moving the propeller to the START position and starting the engine take too much time during final approach!

1. Trim - adjust as required
2. Air brakes - apply as required
3. Approach speed - 105 km/h (57 kts / 65 mph) during final approach

NOTE

Conditions like strong headwind, danger of wind shears, turbulence, or wet wings require a higher approach speed.

4. Touchdown - in three point position

CAUTION

Avoid touch-down with the air brake lever pulled to the limit, since the wheel brakes are coupled with the air brake system and a lock-up of the wheels may result.

5. Wheel brakes - apply as required by pulling the air brake lever

4.5.6 (omitted)

4.5.7 High altitude flight

The following limitations to the never exceed speed above 2000 m (6500 ft) must be observed:

Pressure altitude m (ft)	v_{NE} km/h (mph/kts)
{ 0 - 2000 (6500)	261 (162/141) }
- 3000 (9800)	246 (153/133)
- 4000 (13100)	233 (145/126)
- 5000 (16400)	221 (137/119)
- 6000 (19600)	210 (130/113)

4.5.8 Flight in rain

NOTE

Flight performance, especially the take-off distance, change for the worse in rain. The impact on the flying characteristics is minor. Flight in rain should be avoided due to the reduced visibility.

4.5.9 Aerobatics

NOTE

Aerobatics are forbidden.

4.5.10 Engine shut-down

1. Propeller pitch control - START
2. Throttle - IDLE
3. Parking brake - set
4. Electric fuel pump - OFF
5. Current consumers - OFF
6. Ignition - OFF

NOTE

In case of post-ignition in hot weather conditions and when using MOGAS fuel, switch on ignition again, pull choke, cut off ignition after 3 seconds.

7. Master switch - OFF
8. Mode select switch - SOARING
9. Air brakes - lock

4.5.11 Parking

When parking for a short time, the aeroplane should be oriented in headwind direction with the parking brake set and the air brakes fixed in extended position with the belly-harness.
In case of longer unattended parking or in unpredictable wind conditions, the aircraft should be tied down or stored in a hangar in addition the above procedure.

CAUTION

Avoid outdoor parking for longer periods of time!

5. PERFORMANCE

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5.1 INTRODUCTION

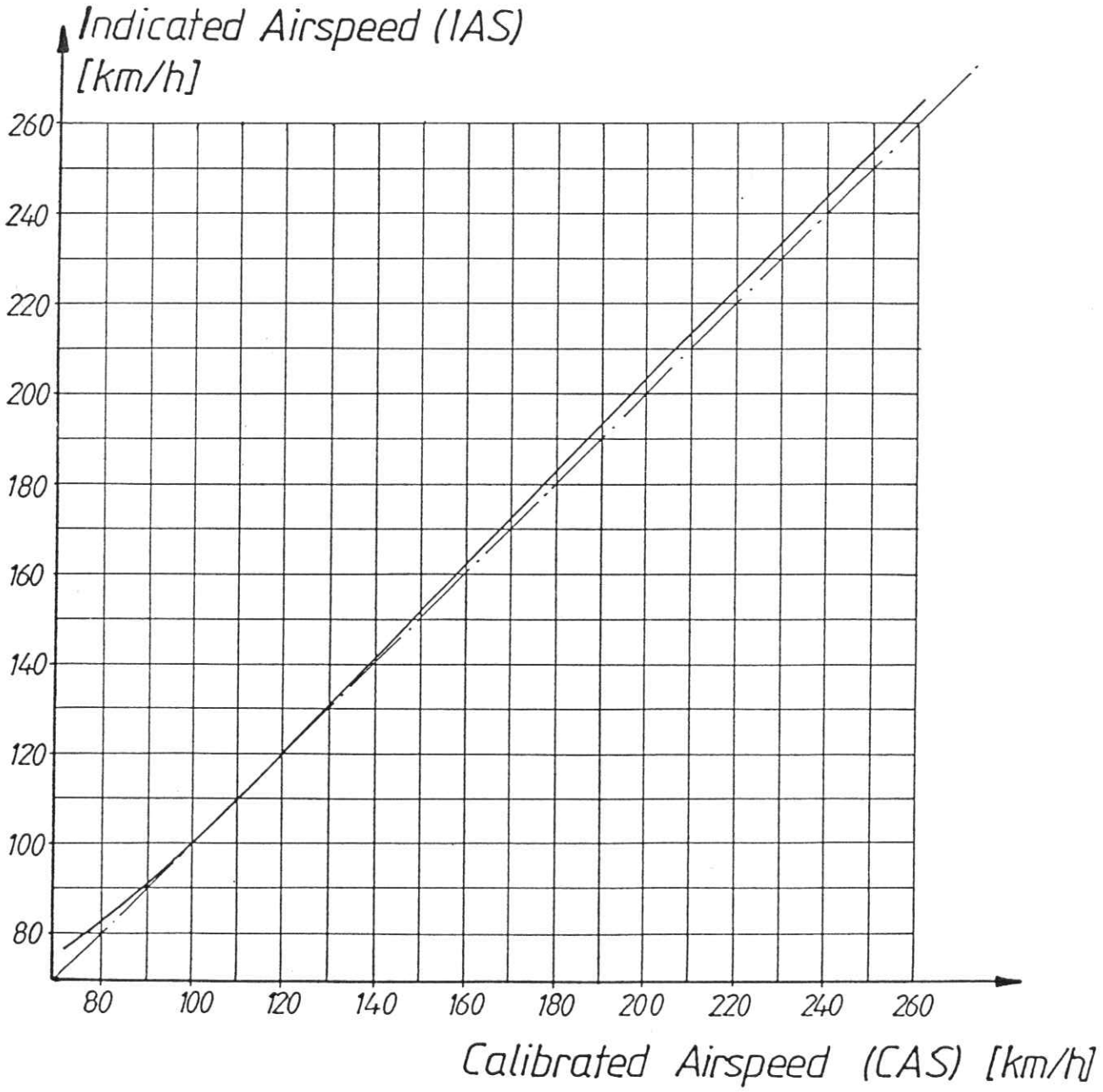
Section 5 provides approved data for airspeed calibration, stall speeds and take-off performance and non-approved additional information.
The data in the charts has been computed from actual flight tests with the motorglider and engine in good condition and using average piloting techniques.
The specified airspeeds must be understood as IAS. The performance data has been evaluated applying the normal procedures described in Section 4.

NOTE

A poor condition of the aeroplane and unfavourable external circumstances (high temperature, rain) can considerably deteriorate the specified performance values.

5.2 APPROVED DATA

5.2.1 Airspeed indicator system calibration



5.2.2 Stall speeds

With air brakes retracted:

v_{S0} = 74 km/h (46 mph / 40 kts)

With air brakes extended:

v_{S1} = 78 km/h (48 mph / 42 kts)

NOTE

Conditions like turbulence, wet wings, banked flight, or high load factors increase the stall speeds.

5.2.3 Take-off performance

Conditions:
- Outside air temperature: 15 °C (59 °F)
- Atmospheric pressure: 1013 hPa
- Calm
- Full load
- Maximum gross weight
- Propeller setting: AUTOMATIC, speed 2500 rpm
- Lift-off speed ≈ 90 km/h (56 mph / 49 kts)
- Speed during climb ≈ 95 km/h (59 mph / 51 kts)
- Level runway, asphalt surface

Take-off roll:
198 m (650 ft)

Take-off distance to clear a 15 m (49 ft) obstacle:
289 m (948 ft)

NOTE

For take-off distances under circumstances different from those described above refer to the chart in chapter 5.3.3.

NOTE

Poor condition of the aeroplane, deviation from the procedures prescribed in this manual and unfavourable outward circumstances (high temperature, rain, unfavourable wind influence, and in particular high grass) can considerably extend the take-off distance.

5.3 ADDITIONAL INFORMATION

5.3.1 Demonstrated crosswind performance

Take-off: 30 km/h (19 mph / 16 kts)

Landing: 30 km/h (19 mph / 16 kts)

5.3.2 Glide performance and flight polar

Condition: maximum gross weight

Minimum rate of descent:

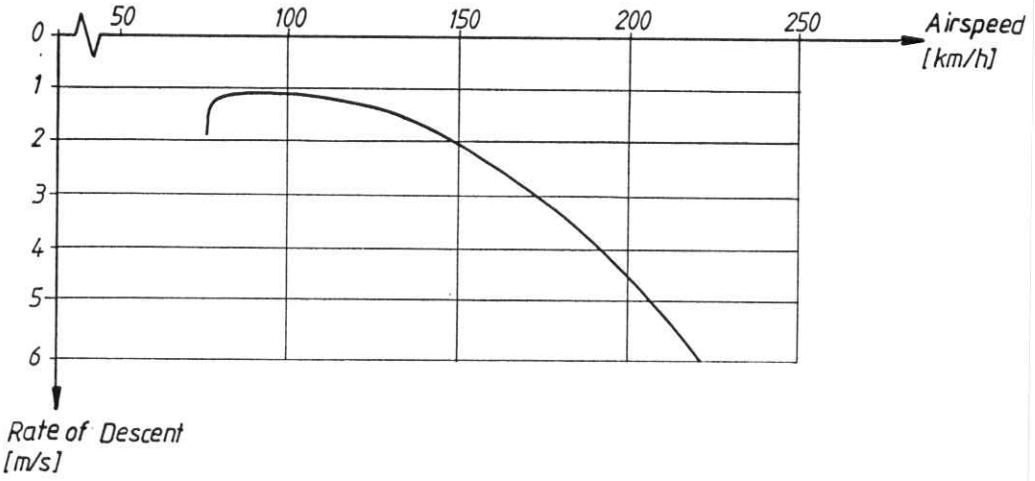
1.14 m/s (224 ft/min) at 95 km/h (59 mph / 51 kts)

Maximum lift drag ratio:

28 at 105 km/h (65 mph / 57 kts)

Flight polar:

Condition: propeller feathered



5.3.3 Take-off charts

Conditions:
- Full load
- Maximum gross weight
- Propeller setting: AUTOMATIC, speed 2500 rpm
- Lift-off speed ≈ 90 km/h (56 mph / 49 kts)
- Speed during climb ≈ 95 km/h (59 mph / 51 kts)
- Level runway, asphalt surface

5.3.4 Noise data

The evaluation of noise emission was carried out according to the Austrian "Zivilluftfahrzeug-Lärmzulassungsverordnung" (Civil aircraft noise certification regulation) ZLZV 700/1986.

The following requirements were met:

According to § 14 (1) (universal application):
56.2 dB(A); maximum permissible value: 70.3 dB(A)

According to § 14 (4) (elementary training application):
59.9 dB(A); maximum permissible value: 70.0 dB(A)

5.3.5 Climb performance

Conditions:
- Sea level
- Full load
- Maximum gross weight
- $v=v_y$=105 km/h (65 mph / 57 kts)
- Propeller speed: 2420 rpm

Climb performance: 4.1 m/s (807 ft/min)

5.3.6 Service ceiling

Above 5000 m (16400 ft)

s_1 ... Take-off roll

s_2 ... Take-off distance to clear a 15 m (49 ft) obstacle

Headwind-component [kts]	OAT [°C]	Pressure altitude above mean sea level [m] / Atmospheric pressure [hPa]							
		0/1013		400/966		800/921		1200/877	
		s_1 [m]	s_2 [m]	s_1 [m]	s_2 [m]	s_1 [m]	s_2 [m]	s_1 [m]	s_2 [m]
0	0	170	248	187	273	210	305	228	333
	15	198	289	220	321	246	359	267	390
	30	233	340	261	380	291	425	317	463
5	0	137	207	151	228	170	257	187	282
	15	160	242	179	270	201	302	219	331
	30	190	287	214	322	240	361	262	395
10	0	107	169	120	189	135	212	149	234
	15	127	200	142	223	161	252	177	277
	30	151	237	171	277	193	302	212	332
15	0	81	135	91	151	105	173	116	191
	15	97	161	110	182	125	205	139	228
	30	117	193	133	218	151	248	168	264

Unit conversions

Temperature: 0 °C ≙ 32 °F
15 °C ≙ 59 °F
30 °C ≙ 86 °F

Length: 0.3048 m ≙ 1 ft
To obtain a distance or an altitude in feet, divide the value shown above by 0.3048.

WARNING

A grass surface will extend the take-off distances by at least 20 %, depending on the characteristics of the ground (softness, grass height).

5.3.7 Fuel consumption, cruise speed, maximum flight duration, range

NOTE

The specifications for maximum flight duration and range apply to a full tank and do not include any reserve. The range specifications apply to flight in still air with a well-maintained and correctly adjusted aeroplane.

Conditions: - Propeller speed: 2200 rpm
- Pressure altitude: 1500 m

Manifold pressure [in Hg]	Fuel consumption [l/h]	Cruise speed [km/h (mph/kts)]	Maximum duration [h:min]	range [km]/[mi]	Tank
23	15	175 (109/94)	3:35	630/390	55 l
			5:15	920/570	80 l
22	13	165 (103/89)	4:10	685/425	55 l
			6:05	1000/620	80 l

6. MASS (WEIGHT) AND BALANCE / EQUIPMENT LIST

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6.1 INTRODUCTION

This section describes the range of loading in which the HK 36 can be operated safely.
Descriptions of the weighing procedure, the calculation of the permitted c.g. range, and a list of the equipment that must be present in the aeroplane during the weighing process are included in the Maintenance Manual, Section 4.

WARNING

Exceeding the maximum mass can overstress the aeroplane!
Falling short of the minimum seat payload leads to a deterioration of controllability and stability.

6.2 WEIGHING PROCEDURES

The weighing procedures are described in the Maintenance Manual. The purpose of weighing the aeroplane is to evaluate the empty mass and the c.g. lever arm (i.e. c.g. position). It may be carried out by authorized persons only.

6.3 WEIGHING RECORD

The weighing record shows the actual empty mass and the accompanying c.g. position. The weighing record is preserved in the aircraft maintenance log.

NOTE

After equipment changes, repairs, repainting, etc. the aeroplane must be reweighed in compliance with the Maintenance Manual by an authorized person, and the new empty mass c.g. position must be calculated. The results must be entered in the Mass and Balance Form, and the new limits must be drawn on a new Mass and Balance Diagram.

6.4 BASIC EMPTY MASS AND MOMENT

The empty mass c.g. limitations are defined in the Maintenance Manual.
These limitations guarantee that solo-pilots with a minimum mass of 70 kg (154 lbs) will not overstep the maximum rearward c.g. when flying with a full tank and no baggage.
The c.g. will not exceed the maximum forward position if 220 kg (485 lbs) seat payload and 10 kg (22 lbs) of fuel for a half hour flight are aboard.

6.5 MASS OF ALL NON-LIFTING PARTS

The maximum mass of all non-lifting parts is 590 kg (1301 lbs). A list of all non-lifting parts is included in the Maintenance Manual.

NOTE

Due to the Super Dimona's design, the mass of all non-lifting parts will not be exceeded unless the maximum gross weight (770 kg / 1698 lbs) is overstepped.

6.6 MASS (WEIGHT) AND BALANCE FORM

The Mass and Balance Form on page 6-6 shows the following values:

- actual empty mass
- actual empty mass c.g. position
- actual maximum useful load including parachute, fuel, baggage
- minimum seat payload for solo flights with full tank and no baggage
- minimum seat payload for solo flights with full tank and maximum baggage mass

Furthermore, the Mass and Balance Form is a record of all weighings carried through.

The Mass and Balance Form has to be updated by an authorized person in compliance with the currently effective Weighing Report. The corresponding instructions can be found in the Maintenance Manual.

In addition to the Mass and Balance Form, a new Mass and Balance Diagram is filled in upon each weighing. Again, the corresponding instructions are in the Maintenance Manual.

NOTE

Pilots with a mass (a weight) between 55 kg (121 lbs) and the minimum seat payload shown on the placard in the cockpit must install a trim weight in case of solo flights.

MASS AND BALANCE FORM

SERIAL NO.: _____ CALL SIGN: _____

Date	Empty mass [kg]	Empty mass c.g. [mm]	Maximum useful load [kg]	Min. seat payload with full tank [kg]		Signature
				Baggage 0 kg	Baggage 12 kg	

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6.7 USEFUL LOADS

Minimum seat payload

The minimum seat payload for solo flights with full tank and no baggage is shown in the Mass and Balance Form and on the placard in the cabin (left hand side, under the canopy).
Furthermore, the Form and the placard show the minimum seat payload with full tank and maximum baggage mass (12 kg / 26 lbs).
The minimum seat payload is never less than 55 kg (121 lbs).

NOTE

Pilots with a mass (a weight) between 55 kg (121 lbs) and the minimum seat payload shown on the placard in the cockpit must install a trim weight in case of solo flights.

Trim weights

If the minimum seat payload exceeds 55 kg, a trim weight fixture must be installed on the middle console 400 mm ($15^{3}/_{4}$") behind the firewall. A seat payload deficit should be equalized using the following chart:

seat payload deficit [kg (lbs)]	5 (11)	10 (22)	15 (33)
mass of trim weight [kg (lbs)]	1.7 ($3^{3}/_{4}$)	3.4 ($7^{1}/_{2}$)	5.1 ($11^{1}/_{4}$)

Maximum useful load

The useful load includes the masses of crew, baggage and fuel.
The maximum permissible useful load is shown in the Mass and Balance Form, in the Mass and Balance Diagram, and on the placard under the canopy.

NOTE

The crew mass includes the mass of the crew and parachutes.

Maximum seat payload

The useful load on one seat must not exceed 110 kg (243 lbs).

Lever arm of seat payload

A lever arm of 143 mm behind the reference line is assumed for all c.g. calculations.

Maximum useful load in baggage compartment

The maximum useful load in the baggage compartment is 12 kg (26 lbs). For the preparation of the Mass and Balance Diagram, the lever arm of the baggage was assumed to be equal to the lever arm of the fuel tank (i.e. 727 mm for the standard tank, 824 mm for the long range tank).

NOTE

When taking baggage aboard, observe the maximum permissible useful load.

Fuel load

The fuel capacity is given in chapter 2.12.

NOTE

When refueling, make sure not to exceed the maximum permissible useful load.

Lever arm of fuel tank

A lever arm of 727 mm (standard tank) or 824 mm (long range tank) behind the reference line is assumed for all c.g. calculations.

6.8 MASS / C.G. ENVELOPES

The Mass and Balance Diagram is a supplement to the Mass and Balance Form. It gives the pilot the information whether a loading is permissible, taking maximum permissible useful load and minimum seat payload into account. It shows the permissible mass of fuel and baggage for a given seat payload.
The diagram applies to one specific aeroplane. It is based on the data provided by the Mass and Balance Form and has to be redrawn by an authorized person upon each weighing, using the this broken subsidiary lines.
The corresponding instructions are laid down in the Maintenance Manual.

Use of the diagram

The forbidden combinations of seat payload and total mass of fuel and baggage are represented by the hatching.
Beside the diagram there is a scale for the conversion of the fuel quantity in litres to the fuel mass in kilograms.
The following sample problems show how to use the Mass and Balance Diagram.

Example A:
- Pilot: 70 kg, copilot: 82 kg; total: 152 kg
- Long range tank: full (60 kg), no baggage

The corresponding point in the diagram does not touch any boundary, hence the loading is permissible.

Example B:
- Pilot: 65 kg, solo-flight
- Long range tank: full (60 kg), baggage: 12 kg; total: 72 kg

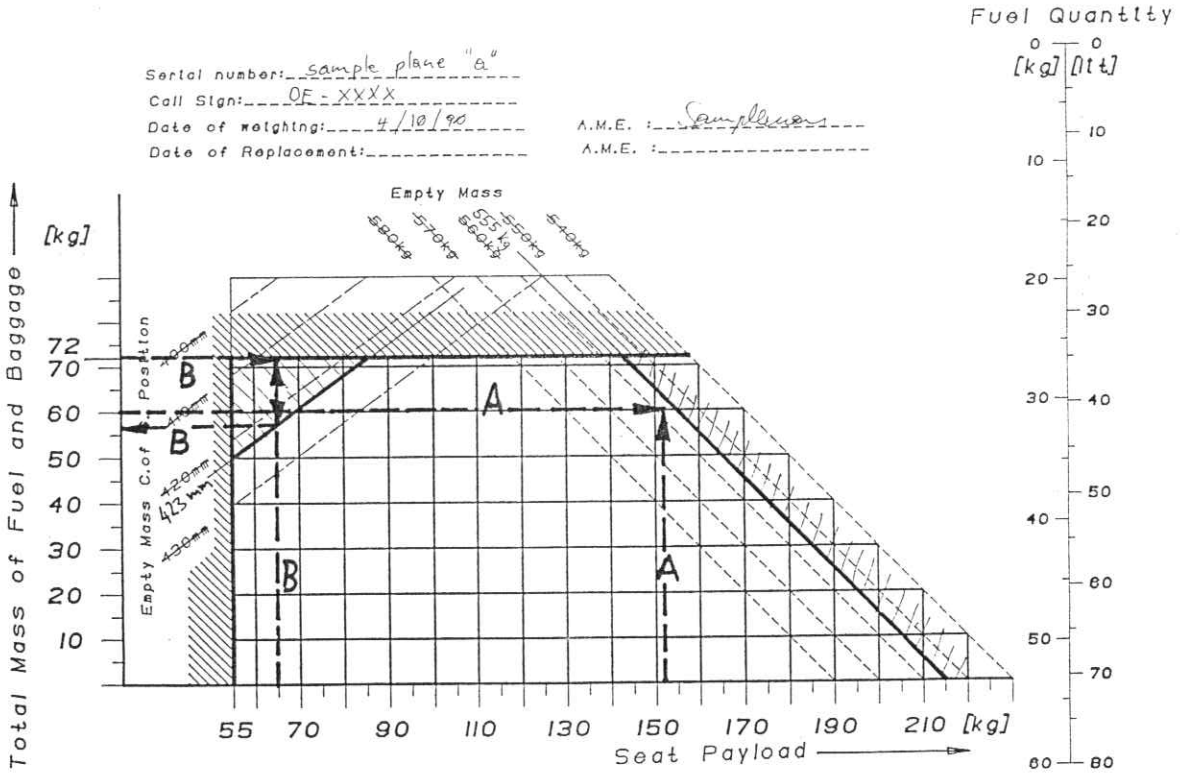
The loading oversteps the maximum rearward c.g. position. The pilot must remove 15 kg (20 litres) of fuel.

Example C:
- Pilot, 92 kg, copilot: 105 kg; total: 197 kg
- Standard tank

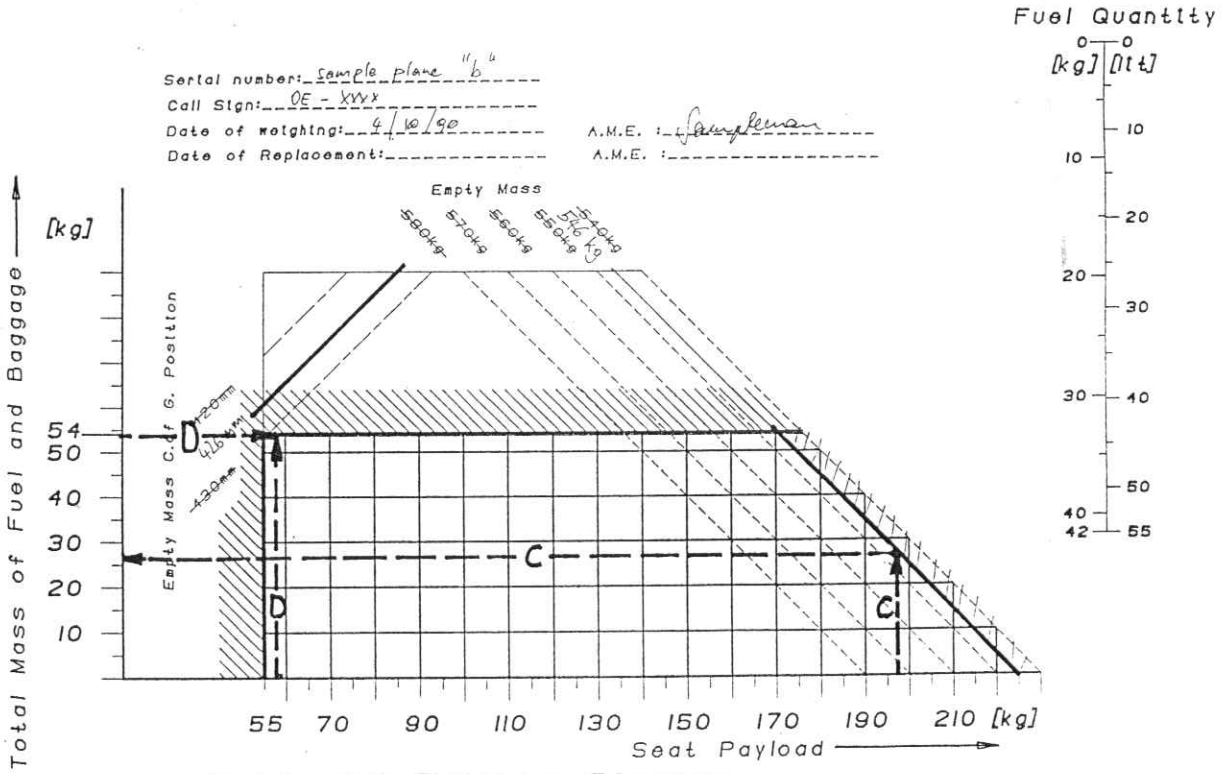
In case they do not take any baggage aboard, they may take off with 27 kg (35 l) of fuel.

Example D:
- Pilot: 57 kg, no copilot
- Standard tank: full (42 kg), baggage: 12 kg; total: 54 kg

Since the maximum rearward c.g. position is not relevant in sample aeroplane "b", the pilot may exploit the maximum mass of fuel plus baggage, which amounts to 54 kg.



Mass and Balance Diagram
Long Range Tank (80l)



Mass and Balance Diagram
Standard Tank (55l)

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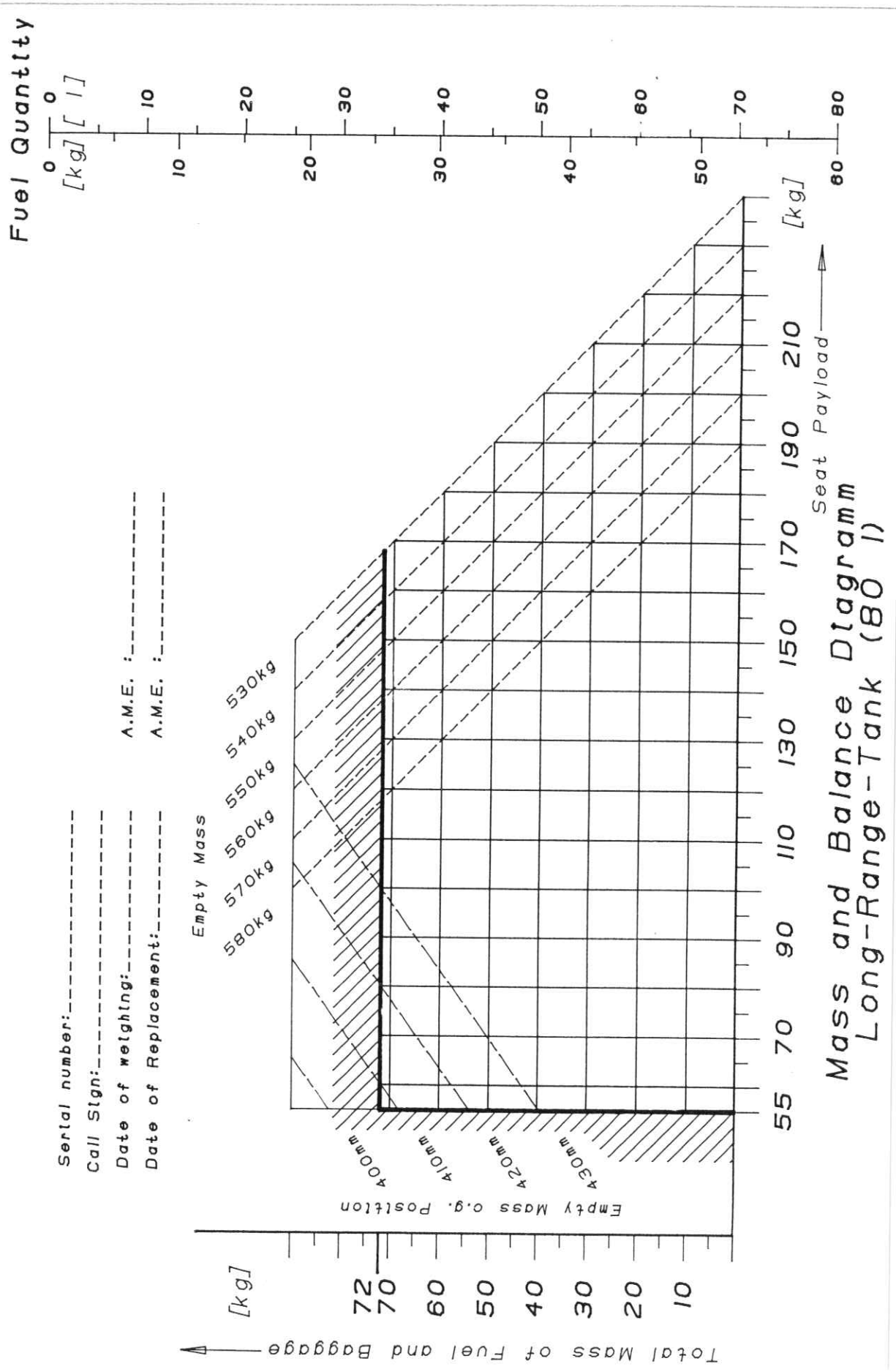
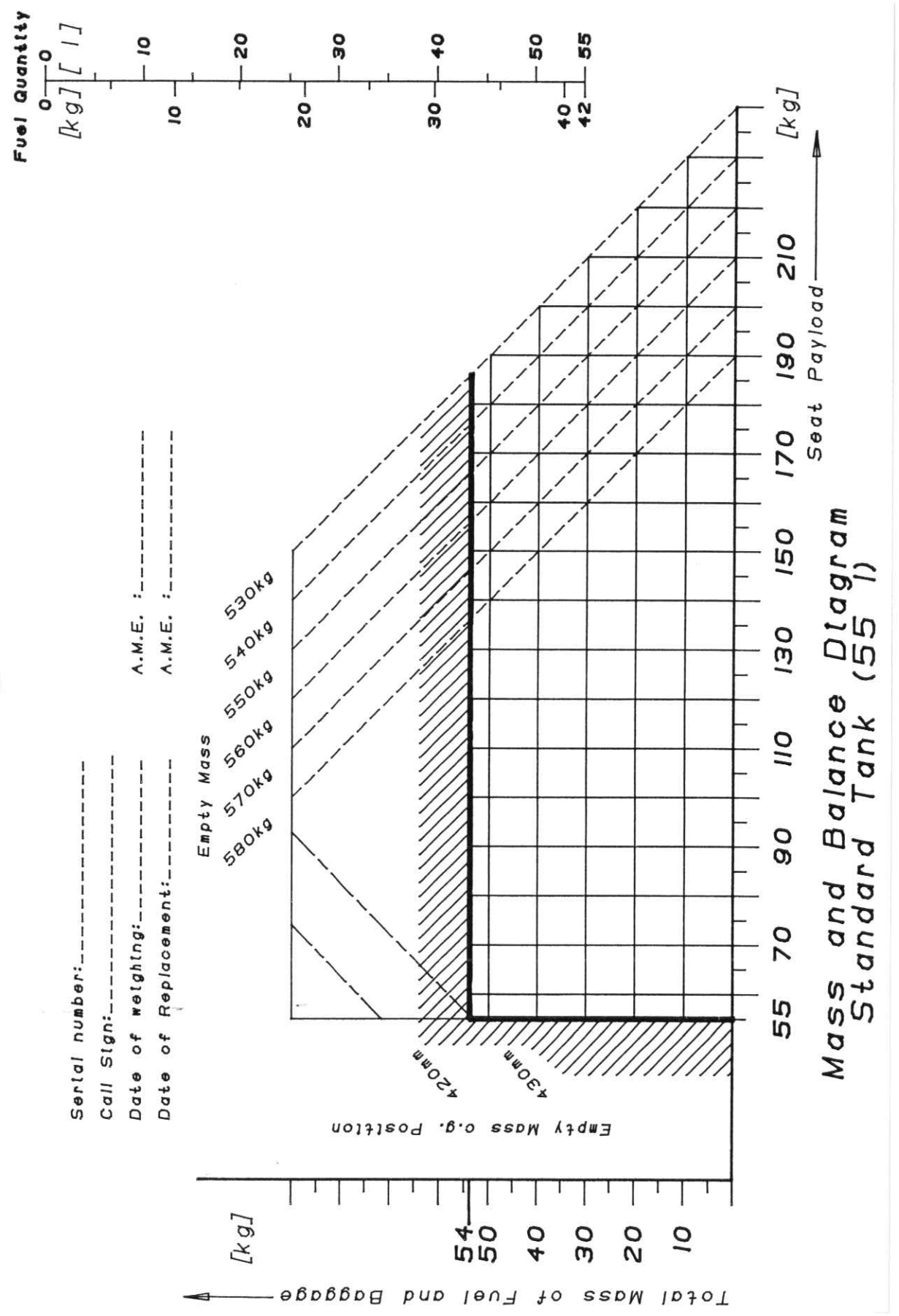

Mass and Balance Diagramm
Long-Range-Tank (80 l)
Seat Payload [kg]
55 70 90 110 130 150 170 190 210
Total Mass of Fuel and Baggage [kg]
72 70 60 50 40 30 20 10
Empty Mass o.g. Position
430mm
420mm
410mm
400mm
Empty Mass
530kg
540kg
550kg
560kg
570kg
580kg
Fuel Quantity [kg] [l]
0 10 20 30 40 50 60 70 80
Serial number:
Call Sign:
Date of weighing:
Date of Replacement:
A.M.E. :
A.M.E. :



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6.9 EQUIPMENT LIST

Minimum equipment (visual flight)

1 Altimeter
1 Airspeed indicator
1 Magnetic compass
1 Tachometer
1 Running time meter
1 Manifold pressure gauge
1 Oil pressure gauge
1 Oil temperature gauge
1 Cylinder head temperature gauge
1 Fuel gauge
1 Ammeter
1 Deviation table
1 Fuel pressure warning lamp

Additional equipment

A list of the actual equipment is provided in the equipment inventory which is preserved in the aircraft maintenance log.

7. MOTORGLIDER AND SYSTEMS DESCRIPTION

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7.1 INTRODUCTION

This section provides description and operation of the motor-glider and its systems. Refer to Section 9, Supplements, for details of optional systems and equipment.

7.2 AIRFRAME

Wings

The GFRP wings are manufactured in halfshell-sandwich construction. The ailerons are made of CFRP and are attached to the wing by means of five mounts, also made of CFRP. Schempp-Hirth air brakes are provided in the wings' upper surface. They may be extended at all speeds up to v_{NE}. The air brakes have oil dampers but must be locked. This is performed by pushing the lever to the forward limit overcoming the resistance occurring after the air brake is retracted.
The wings are connected to the fuselage with three bolts each.

Fuselage

The GFRP fuselage is manufactured in halfshell-sandwich construction. A fire-resistant fabric is sandwiched between a stainless steel barrier and the firewall. The main bulkhead is made of CFRP/GFRP.
Instruments with a maximum total mass of 17 kg (37.5 lbs) can be installed in the GFRP instrument panel.

Tail unit

Rudder, elevator and horizontal stabilizer are manufactured in halfshell-sandwich construction. The folded-top antenna for the radio and the Pitot tube mount are placed in the vertical stabilizer. The horizontal tail surfaces are attached with two bolts and a fastening screw.

7.3 FLIGHT CONTROLS

Ailerons and elevator are driven by push-rods, the rudder is driven through control cables. Elevator control forces can be compensated by means of a spring trim system.
The aileron and air brake drive units are automatically connected when the wing is attached. The elevator control must be hooked up by hand.

Trim

The green coloured trim lever is located in the middle console behind the power-plant control unit. To trim the aeroplane unlock the lever by pulling up, then move it to the desired position. Since the lever is spring-loaded, it catches when it is released.

Lever forward = NOSE DOWN

Rudder pedal adjust

NOTE

The rudder pedals must be adjusted on the ground!

The pedals are unlocked by pulling the black T-grip in front of the control column.

Move forward: Push pedals forward with your heels while pulling the grip. Release the grip, let the pedals catch perceptibly.

Move rearward: Pull pedals rearward with the grip. Release the grip, use your feet to push the pedals forward until they catch.

7.4 AIR BRAKES

There is a blue air brake lever on either side panel.
By pulling the lever rearward the air brakes are unlocked and extended.
By pushing the lever forward the air brakes are retracted. To lock the air brakes the lever must be pushed to the forward limit overcoming the resistance occuring after the air brake is retracted.

7.5 LANDING GEAR SYSTEM

The landing gear consists of a resilient main landing gear with disk brakes and a tail wheel which is steerable and also resilient. The two 15-inch wheels of the main landing gear are mounted to a GFRP strut with steel mounts. Optional fairings reduce drag. The 9-inch tail wheel can be deflected 45° to either side with the rudder pedals. For ground handling, a deflection of 60° can be acquired by shoving sideward.

Wheel brake

The wheel brake is coupled to the air brake lever. It is activated in the last quarter of the lever travel.

Parking brake

The draw-button is located on the middle console behind the trim lever. The parking brake is released when the button is in the inserted position.
To set the parking brake, draw the button to the stop and pull through the air brake lever once or twice.
To release the parking brake pull the air brake lever again in order to relieve the shut-off valve and push the button in.

CAUTION

Pushing the button in without pulling the air brake lever leads to an overstress of the operating circuit. Excessive wear may result.

7.6 SEATS AND SAFETY HARNESS

The seat shells are detachable in order to permit maintenance and inspection of the controls beneath. Jackets on the control sticks and on the air brake levers prevent foreign bodies from falling into the area of the control gear.
The seats are furnished with detachable cushions. Parachutes with manual release can be used instead of the cushions. There is no fixture for the release cord of parachutes with automatic release. Therefore, these parachutes cannot be used.
Each seat is provided with a four-part harness. To fasten the harness, the end pieces must be inserted into the lock. To open the harness, turn the twist handle on the lock.

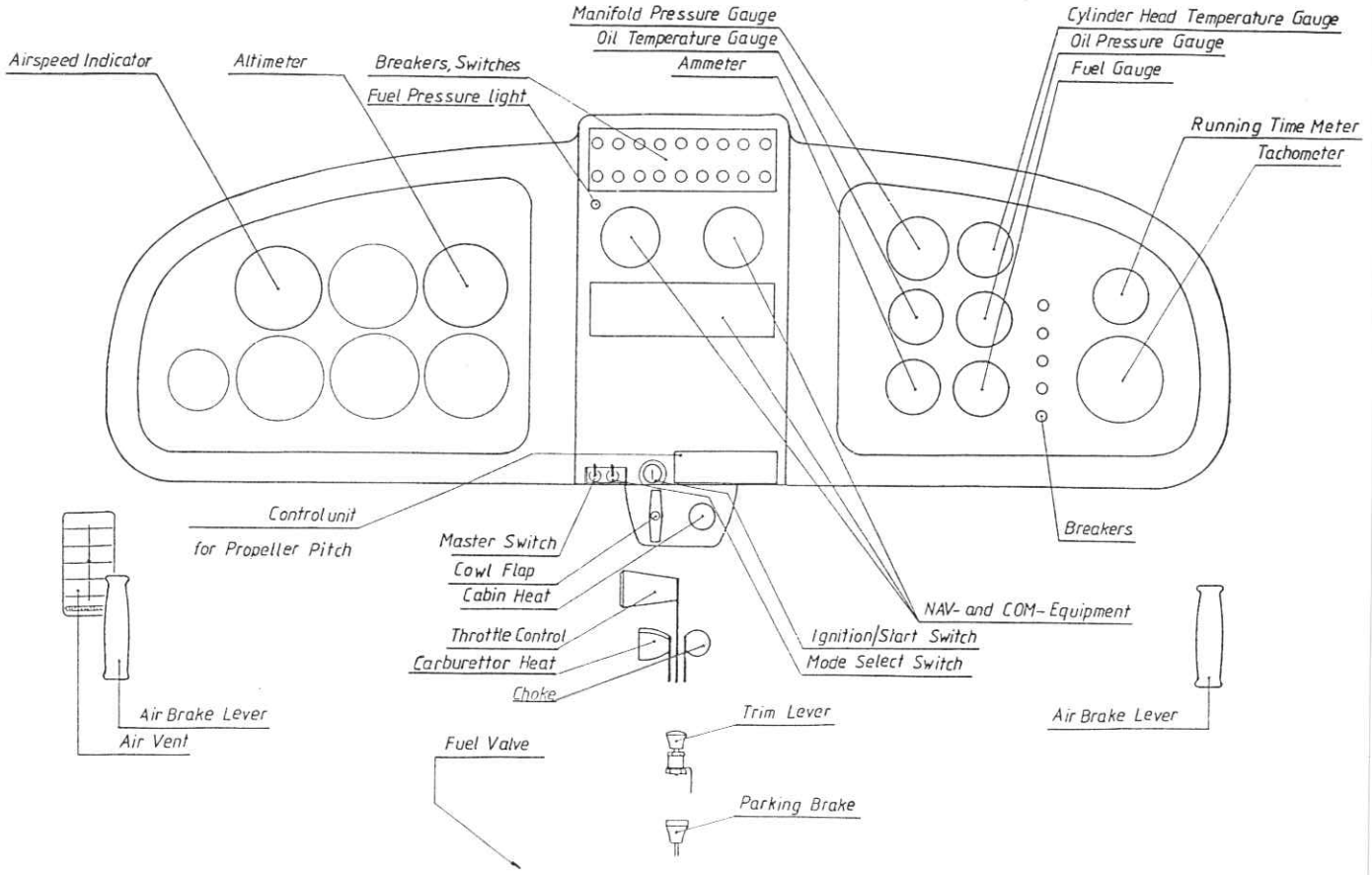
7.7 BAGGAGE COMPARTMENT

The baggage compartment is located behind the backrest above the fuel tank. Baggage pieces should be distributed evenly over the compartment. For safety reasons, the baggage pieces must be tied down.

CAUTION

Before loading the baggage compartment, pay attention to the maximum useful load or, in case of solo flights, the minimum seat payload. Refer to the Mass and Balance Form and/or the Mass and Balance Diagram.

7.8 COCKPIT



Flight instruments

The flight instruments are installed in the instrument panel on the pilot's side.

Cabin heat

The draw-button for the cabin heat is located on the middle console under the instrument panel. Pull the button to turn the cabin heat on.

Cabin air

The cabin can be aerated through the swivelling nozzle on the left hand side panel. The two sliding/knockout windows in the canopy can be opened for additional aerating.

Canopy lock

To close the canopy, pull shut with the black grips located on the front of the canopy frame. The canopy is locked by pushing forward the two red levers attached to the frame on either side. To open the canopy reverse the sequence.

CAUTION

Before cranking the engine, close and lock the canopy!

Canopy jettison

By strongly swinging the red levers 180° rearward, the canopy is disconnected from the brackets. Then the pilot must place both hands above his head against the canopy and push it away in an upward direction.

7.9 POWER-PLANT

Engine

Liquid-cooled 4 cylinder four stroke engine Rotax 912 A. Crankshaft speeds in parentheses.

Displacement:	1.211 l
Max. output power (3 min):	62 kW (84 hp) at 2550 rpm (5800 rpm)
Continuous output power:	59 kW (80 hp) at 2420 rpm (5500 rpm)

For further specifications refer to the engine operation manual.

The power plant instruments are located on the instrument panel on the copilot's side.
The ignition switch is operated with a key. To switch on the ignition turn the key clockwise until it catches. The starter is engaged by simultaneously pushing the button and turning the key clockwise to the stop.

Throttle control, choke, carburettor heat

These three controls are combined in a unit on the middle console.

Throttle control:	Large lever Lever full forward = full throttle
Choke:	Small black ball-shaped lever Lever rearward = choke activated It helps starting the engine at low temperatures.
Carburettor heat:	Small rectangular lever Lever full rearward = carburettor heat ON It prohibits engine trouble due to carburettor icing in unfavourable weather conditions.

Cowl flap

For the operation of the manual cowl flap there is a T-grip on the middle console beside the cabin heat button. To arrest the T-grip turn it 90° clockwise.
T-grip pulled = cowl flap closed
When the cowl flap is closed, the drag is reduced, and the engine will not cool off to fast during descent or glide.
By partly closing the cowl flap during climb or cruise at low outside temperatures, the engine temperature can be kept from falling under the normal operating temperature.

CAUTION

If the cowl flap is closed or partly closed, pay attention to the engine temperature to avoid overheating.

Propeller

Electric constant speed propeller with feathered pitch, Mühlbauer MTV-1-A/170-08, control unit P-120-A.

Propeller pitch control

The propeller blades are infinitely variable. Moving the blades from START position to SAIL position takes about 60 seconds. The control unit, which is placed in the middle part of the instrument panel, automatically adjusts the propeller speed to the preselected value. The engine output is varied with the aid of the manifold pressure gauge.

Beside the preselector for the engine speed, the control unit comprises of a green light and a locking turn switch with three positions: START, AUTOMATIC and SAIL. The light illuminates when the propeller blades are adjusted to START pitch.

The overload release is built in beside the propeller control unit. It can be triggered manually to turn off the control unit in case of troubles or, in conjunction with the locking turn switch, to adjust the blades to a certain pitch.

For further details refer to the propeller operation manual.

7.10 FUEL SYSTEM

The aluminium tank is located behind the backrest beneath the baggage compartment. The standard version holds 54 litres, the long range version 79 litres of usable fuel. At its lowest spot, the tank is connected to the outlet on the bottom side of the fuselage.
The fuel passes through a finger filter before it reaches the electric fuel pump with integrated filter, from there it goes to the fuel valve, the engine-driven fuel pump and finally to the float chambers of the two carburettors.

Fuel shut-off valve

The fuel shut-off valve is located on the left side of the middle console near the pilot's feet.
Tap in flight direction = valve OPEN.

Fuel drain

The outlet is accessible through the inspection hole under the fuselage, on the right hand side behind the main landing gear.
To drain off a fuel sample, insert the thorn of the specially designed cup in the outlet.

7.11 ELECTRICAL SYSTEM

The master switch is a toggle type. The mode select switch is situated to the right of the master switch.

CAUTION

Cranking the engine is only possible if the mode select switch is in POWER FLIGHT position.
In SOARING position, all current consumers except the radio and the electric vertical speed indicator (optional) are currentless.

Radio equipment and navigational instruments are located in the centre section of the instrument panel. The transmit button for the radio is placed on top of the control stick. A backrest-mounted connection set for two headsets is optional.

7.12 PITOT AND STATIC SYSTEM

Static pressure, total head and the pressure for the compensation of the vertical speed indicator are measured by means of a nozzle unit which is mounted to the vertical stabilizer. The nozzle is detachable. A safe connection of the lines is established automatically when the nozzle is inserted to the limit stop in the mount.
If moisture has oozed into the system, refer to the Maintenance Manual for dewatering procedures.

7.13 MISCELLANEOUS EQUIPMENT

For the operation of additional avionics, refer to the manuals of the respective manufacturers.

7.14 PLACARDS / INSCRIPTIONS

A list of all placards and inscriptions is included in the Maintenance Manual.

8. MOTORGLIDER HANDLING, CARE AND MAINTENANCE

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8.1 INTRODUCTION

This section contains manufacturer's recommended procedures for proper ground handling and servicing of the motorglider. It also identifies certain inspection and maintenance requirements which must be followed if the motorglider is to retain that new-plane performance and dependability. It is wise to follow a planned schedule of lubrication and preventive maintenance based on climatic and flying conditions encountered.

8.2 MOTORGLIDER INSPECTION PERIOD

Inspections are due every 100 hours, every 200 hours and every 600 hours of operation. The respective inspection measures are prescribed in the Maintenance Manual.

8.3 MOTORGLIDER ALTERATIONS OR REPAIRS

Motorglider alterations or repairs may only be carried out as prescribed in the Maintenance Manual and only by authorized persons.

8.4 GROUND HANDLING / ROAD TRANSPORT

For ground handling you should use a draw tongue which is hooked to the tail wheel. Road transport using a trailer is described in the Maintenance Manual.

8.5 CLEANING AND CARE

It is recommendable to remove insects with water and sponge after the day's flying is ended.

CAUTION

Extreme dirt accumulation deteriorates flight performance!

Refer to the Maintenance Manual for further care measures.

9. SUPPLEMENTS

Section 9 of this Flight Manual contains information concerning additional equipment of the HK 36 and HK 36 R Super Dimona. Each supplement covers one optional system.

The table below lists all approved supplements. The manual however contains only the supplements for equipment that is actually installed. It must be ensured that all supplements referring to equipment actually installed are included in the Flight Manual.

APPROVED SUPPLEMENTS

Supplement No.	Title	No. of pages	Issue	Rev.	ACG approved
1	Use as Tow-Plane (only available for HK 36 R with constant speed propeller)	16	1		11-07-1994
2	Individual Wheel Brake System	8	1		16-11-1994

change no.	date	source	date	page no.
	1994-08-29	SB 42	1990-06-02	9-1