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### 7.1 Introduction

This section provides a description of the motorglider and its systems and supplies operating notes for the user.

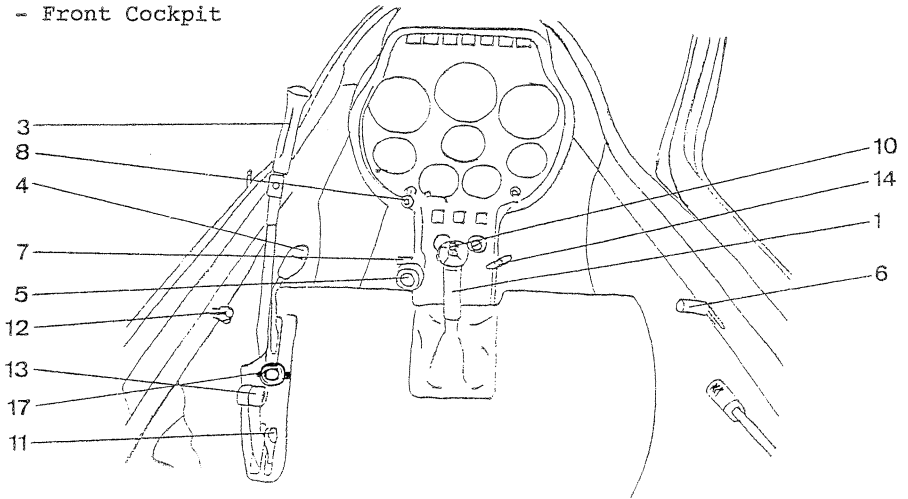
A detailed description with general drawings is included in the Maintenance Manual.

This section primarily describes the cockpit controls and their arrangement.

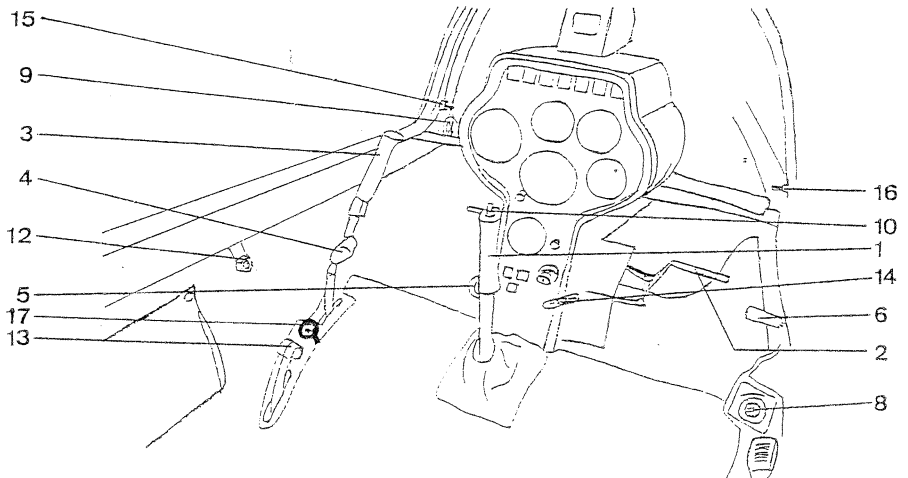
Refer to section 9, Supplements, for details of optional systems and equipment (if applicable).

7.2 Cockpit Controls

- Front Cockpit



- Rear Cockpit



All instruments and controls are within easy reach of the occupants. After removing the instrument panel fairings (4 quick-locks each) the instruments are easily accessible. The front instrument panel is mounted to the control stick frame by two screws and to the fuselage frame by two brackets. The rear instrument panel is mounted to the control stick frame by two screws and to the center console panels by two screws.

#### 1 Control Stick

The rear control stick is fixed by a butterfly nut. Ensure that this nut is fully tightened.

**Note:** Remove the rear stick for passenger flights.

#### 2 Rudder Pedals

#### 3 Airbrake and Wheel Brake Levers

The levers with blue handles which are installed on the LH cockpit wall have the following positions:

- forward: airbrakes locked
- pulled (approx. 4 cm/1.58 in.): airbrakes unlocked
- fully pulled: airbrakes fully extended and wheel brake activated

#### 4 Trim Levers

The levers with green handles are the trim levers (LH cockpit wall). They are infinitely variable and have the following positions:

- forward: nose down
- rear: nose up
- green mark: normal position

#### 5 Cable Release Device for Towing Hook

The yellow ball handles are installed on the bottom of the instrument panels to the left of the control sticks.

Pull the handle to release the cable.

## 6 Canopy Jettison

Actuated by red levers located on the RH wall of each cockpit.

- forward position:           locked
- rear position:               hinge shaft released

**Caution:** To jettison the canopy, the canopy lock lever (LH canopy frame) must also be operated.

### Canopy Locks (no illustration)

Red and white levers each on the LH wall of each cockpit.

- Forward position:           locked
- Rear position:               unlocked

**Caution:** Both canopy locks must be checked for correct locking before each flight.

See Sec. 3.2 for emergency procedure for canopy jettison.

### Canopies (no illustration)

Both canopies hinge to the right.

The canopies are supported in the open position by gas struts.

**Note:** Ensure that the gas struts are mounted correctly to keep the hinged canopies open.

## 7 Rudder Pedal Adjustment

### - Front pedals

The front pedals can be adjusted by a crank on the LH cockpit side wall.

- forward adjustment:       crank to the left (counter-clockwise)
- rearward adjustment:      crank to the right (clockwise)
- spindle travel:            approx. 180 mm (7.1 in.)

The pedals can be adjusted on the ground and during flight.

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- Rear Pedals

The rear pedals can be individually adjusted through approx. 180 mm (7.1 in.) by unlocking and moving them on the track in the rear footwell. The position of the pedals can be determined visually and should be the same left and right.

8 Ventilation

- Front cockpit ventilation

Small black button on the upper LH part of the front instrument panel.

- pull: open
- push: closed

The front ventilation also prevents the pilot's canopy from misting up.

- Rear cockpit ventilation

A ventilation nozzle is provided on the RH cockpit wall. Open and close the ventilation system by turning the nozzle insert.

For additional ventilation, open the sliding windows or the flaps incorporated in the sliding windows.

Wheel Brake (no illustration)

The wheel brake is activated when the airbrakes are fully extended.

Nose Wheel Steering (no illustration)

The nose wheel steering is linked to the rudder controls by a control cable and two tension springs.

9 Parachute Static Line Attachment

An orange-red eyebolt on the upper end of each seat pan serves for attaching the static line.

10 Push-to-Talk Keys

Standard equipment in each control stick. As an option the rear push-to-talk key can be installed in the rear instrument panel.

11 Choke

The choke lever has a black handle and is located on the LH cockpit wall. The lever has the following positions:

- forward: off
- rear: on

12 Fuel Cocks

Each fire cock has an orange handle and is located on the LH side wall. The levers have the following positions:

- forward: on
- rear: off

13 Throttles

Each throttle has a silver colored handle and is located on the LH cockpit wall and has the following positions:

- forward: full power
- rear: idle

14 Powerplant Extension

The black T-grips are installed on the bottom of the instrument panels RH.

15 Priority

The priority switch (normally set for the front seat and guarded by a cover) is located on the LH side of the canopy frame. The switch has the following positions:

- forward: front seat
- rear: rear seat

16 Auxiliary Battery

The auxiliary battery switch is located on RH side of the canopy frame. The switch has the following positions:

- forward: off
- rear: on

17 Propeller Brake (as standard for variable pitch propeller,  
optional for fixed pitch propeller)

The black colored ball handles for the propeller brake are located at the LH cockpit wall.

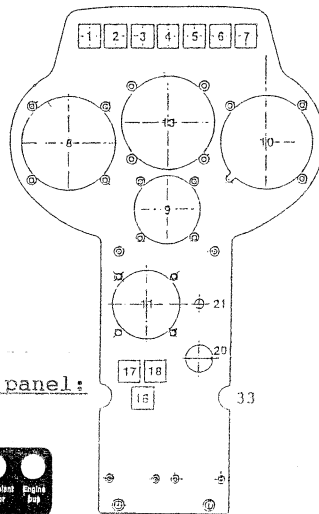
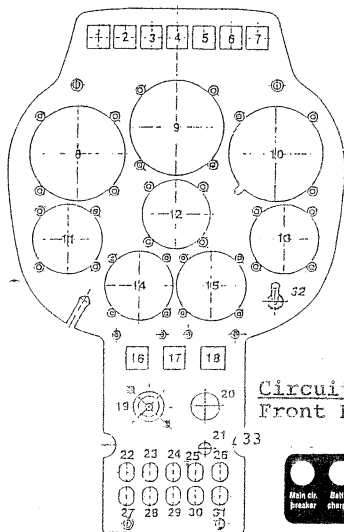
Charging Connector (no illustration)

The charging connector for the main battery is located in the front footwell on the RH side wall of the instrument panel fairing.

7.3 Instrument Panels

Front instrument panel

Rear instrument panel



Circuit breaker (CB) panel:  
Front RH side wall



- |                                 |                                    |
|---------------------------------|------------------------------------|
| 1 Master switch                 | 18 Display select                  |
| 2 Engine electrics              | 19 Timer switch for tank *)        |
| 3 Avionic switch                | 20 Ignition lock                   |
| 4 Intercom                      | 21 "Ignition active" light         |
| 5 "Powerplant extended" light   | 22 CB - Main bus control           |
| 6 Propeller TAKE-OFF *)         | 23 CB - Avionics bus control       |
| 7 Propeller CRUISING *)         | 24 CB - COM + electrical VSI       |
| 8 Airspeed indicator            | 25 CB - ATC                        |
| 9 Electrical VSI                | 26 CB - Generator                  |
| 10 Altimeter                    | 27 CB - Engine monitoring inst.    |
| 11 Engine monitoring instrument | 28 CB - Fuel pump                  |
| 12 Turn/horizon/slip indicator  | 29 CB - Engine ext/retr control    |
| 13 Mechanical VSI               | 30 CB - Var. pitch prop. motor*)   |
| 14 COM                          | 31 CB - Var. pitch prop. control*) |
| 15 Transponder                  | 32 Static pressure change-over     |
| 16 Powerplant retraction        | 33 T-grip for powerplant extension |
| 17 Fuel pump transfer *)        |                                    |

\*) only for variable pitch propeller

Optional equipment and LBA approved instruments are contained in the List of Available Equipment in Section 8 of the Maintenance Manual.

#### 7.4 Landing Gear System

The landing gear consists of a fixed tandem landing gear (nose wheel and main wheel) and a tail wheel. The main wheel is equipped with a hydraulic disk brake.

A nose wheel steering facility is provided to improve directional control during taxiing and take-off. This is particularly useful in strong crosswind conditions. The nose wheel steering is linked to the rudder controls by a cable and two tension springs. Take-off directional control accuracy can be maintained to  $\pm 2^\circ$ .

#### 7.5 Seats and Safety Harnesses

The padded seat pans are fabricated of GRP and are shaped to conform to the human body. Crew members can thus sit comfortably wearing their parachutes or using cushions (max. thickness 7 cm when compressed). Both seat-type and back-type parachutes may be used.

Suitable parachute models:

Security 150 / 350 / 850

Slimpack

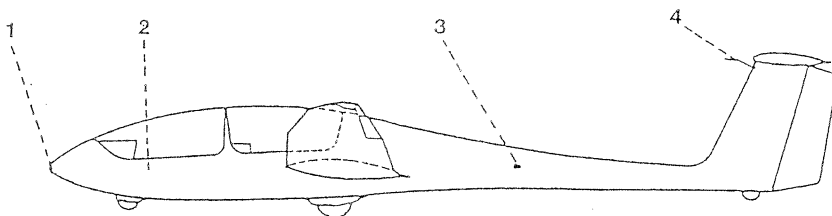
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4-point safety harnesses are installed (see List of Available Equipment in Section 8 of the Maintenance Manual). The safety harnesses must always be used and properly tightened.

## 7.6 Pitot and Static System

The pitot and the static pressure as well as the pressure for the compensated vertical speed indicator (VSI) are measured at three different positions:

- the pitot pressure by a pitot tube situated next to the nose hook
- the static pressure by ports on the rear fuselage
- the compensated static pressure by a TEK probe on the vertical stabilizer



The pressure lines are color-coded as follows:

Green pressure line:	pitot pressure	(1)
Blue pressure line:	compensating tank for VSI	(2)
Transparent pressure line:	normal static pressure	(3)
Red pressure line:	compensated static pressure	(4)

A static pressure change-over switch is installed in the RH side of the front cockpit instrument panel. When the switch is changed over from powered flight to gliding, the static pressure supply is switched from normal to compensated static pressure.

### 7.7 Airbrake System

The motorglider is equipped with a GROB-type airbrake system. The airbrakes are mounted on the upper surface of the LH and RH wing. Operation is by airbrake levers in the front and rear cockpit. The levers are located on the LH cockpit wall and have blue handles.

When the airbrakes are fully extended the wheel brake is activated.

### 7.8 Baggage Compartment

The baggage compartment is located behind the rear seat in front of the cover for the fuselage tank.

A ring for securing baggage (baggage net) is installed on each side of the baggage compartment floor.

Max. load in the baggage compartment is 10 kg (22 lbs). Only stow smooth, light objects.

### 7.10 Powerplant

The motorglider is powered by a twin cylinder, two-cycle spark ignition engine. The cylinder arrangement is in-line. The engine used is the Bombardier-Rotax type 505A with the following features: ram air cooled; oil/fuel mixture lubrication; AC generator; contactless capacitor dual ignition system. The ROTAX engine is installed in the fuselage tube immediately aft of the cockpit. It is secured with three rubber mounts between two swivel bearings. The engine can be electromechanically retracted and extended by means of a spindle drive. Two gas struts mounted parallel to the spindle assist the retraction and extension operation. The engine drives a two-blade propeller through a belt drive arrangement. A belt drive pulley wheel is flange-mounted on a conical shaft at the front of the engine. A toothed belt is used to drive the propeller. The propeller drive pulley arrangement provides a reduction factor of 3 : 1 between engine and propeller speed. Flush-fitting aerodynamic doors close off the engine compartment when the engine is retracted.

### 7.11 Fuel System

A fuselage tank with a capacity of 33 liters (8.7 US gal/7.26 imp. gal) is installed in the vicinity of the main landing gear. The fuel supply line runs from the underside of the tank to an electrical fuel pump and then to a fuel shut-off cock. A fuel line runs from the fuel cock through a fuel filter to a diaphragm pump on the engine. The pump supplies fuel directly to the two carburetors. Because of the diaphragm pump, a return line is not necessary. A fuel drain valve is installed on the RH underside of the fuselage near the main landing gear. The fuselage tank is vented through a hose to a point near the fuel drain valve. The tank contents are indicated on the engine monitoring instrument on the front and rear cockpit instrument panels. The amount of non-useable fuel is approximately 2 liters (0.53 US gal/0.44 imp. gal).

As standard only for variable pitch propeller:

In addition to the fuselage fuel tank, a wing tank with a capacity of 47 l (12.4 US gal/10.3 imp. gal) is installed in the LH wing. The tank is vented and drained through a line in the wing which connects to a tube outlet on the underside of the wing. Fuel is transferred from the wing to the fuselage tank by an electrical fuel pump. The pump is controlled either by a timer switch or manually by an illuminated pushbutton. If the fuselage tank is completely full, the fuel transfer is interrupted until the fuel quantity in the fuselage tank decreases to 28 l (7.40 US gal/ 6.16 imp.gal). Then the rest of the selected quantity will be transferred.

Note: Fuel pump operation without fuel transfer may damage the pump.

### 7.12 Electrical System

The battery installed in the front instrument panel supplies the aircraft bus system with 12 V DC through a fuse. A two-wire cable loom leads to a distribution bus below the front instrument panel cover. From the distribution bus, the wiring leads to the various equipments and to the distribution bus in the rear instrument panel. The standard battery has a capacity of 26 Ah. An optional auxiliary battery can be installed behind the spar on the shear force floor. The purpose of the auxiliary battery is to ensure that enough electrical power is available to extend the engine after a long gliding session (more than 8 hours) with extensive use of the avionic systems. This is necessary because when the engine is not in use the generator cannot charge the main battery. To extend the engine the auxiliary battery switch on the RH side of the canopy frame must be switched on. This disconnects the main battery from the engine bus and switches the auxiliary battery on to the bus. The engine can now be extended and the auxiliary battery is switched off again. After the ignition has been switched on the engine can be started using the windmilling effect.

**Caution:** The auxiliary battery is not recharged by the generator. The serviceability of the auxiliary battery can be tested by the following procedure:

- AUXILIARY BATTERY switch: ON
- Check auxiliary battery voltage on the multifunction indicator reads at least 11.9 V

For a better understanding of the electrical system, several wiring diagrams are contained in Section 2.9 of the Maintenance Manual. Should any serious electrical problems arise, contact the manufacturer.

### 7.13 Miscellaneous Equipment

#### 7.13.1 Removable Ballast

The front control stick frame (left footwell) is equipped with a mounting bracket for two removable trim weights. The cast trim weights (colored yellow) are screwed on to two studs and secured by safety pins. For information on the number of trim weights to be used see Section 6.2.

#### 7.13.2 Oxygen System

Stud plates for mounting an oxygen system are installed on the RH fuselage sidewall between the pilot's seats. Suitable supports can be obtained from GROB. Additionally, drawings for the installation of oxygen equipment can be requested.

**Caution:** After installation of oxygen equipment, the empty weight center of gravity position must be determined. This is to ensure that the c.g. is still within the permissible range.

#### 7.13.3 Emergency Locator Transmitter

An Emergency Locator Transmitter (ELT) can be installed on the rear instrument console LH. The ELT must be installed in accordance with the equipment manufacturer's instructions. Additionally, drawings for the installation of emergency locator transmitters can be requested from GROB.

#### 7.13.4 Radio Communications System

The radio communications system is only installed in the front cockpit instrument panel.

Suitable units (LBA approved) can be found in the List of Available Equipment in Section 8 of the Maintenance Manual.

A transponder and a navigation system can be installed optional.