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2.4 Power-Plant

Engine Manufacturer:	Bombardier-Rotax GmbH	
Engine Model:	Rotax Type 275	
Max.take-off power:	17.6 KW/24 hp	7000 rpm
Max.continuous power:	17.6 KW/24 hp	7000 rpm
Max. take-off revs:		7000 rpm
Max. continuous revs:		7000 rpm
Max. short-time revs:		7200 rpm

Max. cylinder head temp.: 250 °C (480 °F)

Lubricant: fuel/oil mixture lubrication at ratio 1:50 with Super 2-stroke oil

Transmission: Gear wheel transmission with 1 : 3 reduction ratio.

The installation of the following propellers from the manufacturer mt-Propeller has been type-approved:

MT 130 L 95 - 1B
MT 130 L108 - 1B.

2.5 Power-Plant Instrument Markings

The following table shows the markings of the engine instruments and the meaning of the colours employed.

1. Conventional VDO analogue display instruments:

Instrument	Red Line: minimum limit	Green Arc: normal operating	Yellow Arc: caution range	Red Line: maximum limit
Tachometer RPM	---	3000-7000	7000-7200	7200
Cyl.Head Temp.Gauge	---	---	---	250 °C (480 °F)

Fuel Gauge	unusable*			

* Also valid if an ILEC TAZ-25 display instrument is installed.

2. Digital ILEC TAZ-25 (power-plant display instrument)

Permanent Display:

Tachometer (4 digits) [rpm]	Green Diode Normal Operating 0 to 7000	Yellow Diode Caution Range 7000 to 7200	Red Diode Max.Limit blinking at 7200 plus
Fuel quantity (three digits)	0/0,1/4,2/4,3/4 and 4/4		

Optional Display, pressing the right Button:

Engine Battery Voltage (4 digits)	XX,X [Volts]

CAUTION:
If the usable fuel quantity in the fuselage tank gets down to 1.5 l, the ILEC unit produces a shrill acoustic alarm. By pushing the left button the alarm tone is "extinguished" but is activated again after two minutes.

2.6 Masses (Weights)

Max. Take-Off Mass:		
-with water ballast	750 kg	(1654 lb)
-without water ballast but with fuel in the wing tank	735 kg	(1620 lb)
Max. Landing Mass:	750 kg	(1654 lb)
Max. mass of all non-lifting parts	425 kg	(937 lb)
Max. mass in baggage compartment:	15 kg	(33 lb)

Max. fuel quantity usable in flight:		
with plastic fuselage tank	38.1	10.06
with aluminium fuselage tank	35.1	9.27
Non-usable fuel:	0.4	0.11

Approved Octane Rating: not less than 95 ROZ (research o.r.)

Approved grades of fuel: Super (motor spirit) AVGAS 100LL

Fuel grades like Euro-Super and Super-plus are permissible.

Two-Stroke oil: Super 2-Stroke Oil as per TSC 3. A wholly synthetic, self-mixing 2-stroke engine oil as per TSC 3 is recommended.

2.13 Minimum Equipment

Minimum Equipment consists of:

1 x ASI in dicating up to 300 km/h = 162 kts in the front instrument panel
1 x Altimeter in the front instrument panel
2 x sets 4-part seat harness (symmetrical)
1 x Magnetic Compass in the front instrument panel
* 1 x Tachometer indicating up to 8000 rpm at the side of the front seat
* 1 x Cylind er Head Temp. Gauge indicating up to 300 °C at the side of the front seat
1 x Fuel Gauge (within pilot's field of view)

* Instead of these instruments the digital ILEC-TAZ-25 display instrument may be installed.

Additionally required for instruction:

1 x ASI indicating up to 300 km/h = 162 kts in the rear instrument panel

1 x Altimeter in the rear instrument panel

For cloud flying the following additional equipment must be fitted:

1 x Turn-and-Slip indicator

1 x Variometer.

For flights beyond the environs of the airfield at which the flight originates an aircraft radio is mandatory (for Germany). In addition, headphones must be worn when the engine is running.

Approved equipment is listed in the Maintenance Manual in Section 12.1.

2.14 Aerotow, Winch and Autotow Launching

The maximum launch speeds are:

for Aerotow 160 km/h (86 kts)
for Winch Launch 130 km/h (70 kts)
for Autotow Launch 130 km/h (70 kts)

For all the above launching methods, a weak link of 750 to 900 daN must be used in the launch cable or tow rope.

For Aerotow, the tow rope must be not less than 40 m (135 feet) in length.

3.5 Spin Recovery

(1) Apply opposite rudder (i.e: in the direction opposite to the rotation of the spin), and at the same time
(2) move stick gently forward until rotation stops;
(3) centralise rudder and gently pull out of the dive.

CAUTION: If the power-plant is extended, the engine may only be at 'idle' power setting in order to obviate the danger of over-revving in the course of spin recovery.

CAUTION: Furthermore, spin recovery will be achieved more quickly if flap deflection is reduced. It is advisable to reduce circling flap setting to neutral flap setting (Flap 3).
Spinning is not noticeably affected by extending the airbrake paddles, but it will increase the height loss when pulling-out, and is therefore inadvisable.

WARNING: For structural reasons, spinning in landing flap setting is strictly prohibited. If a spin should inadvertently develop with this flap setting engaged, the flaps should immediately be reduced to neutral setting (Flap 3), and only then should recovery action be initiated.

3.6 Spiral Dive Recovery

Depending on the aileron position during spinning with forward C.G. positions, that is in this range when the ASH 25 E will not sustain a steady spin, it will immediately or after a few turns develop a spiral dive, or a slipping turn similar to a spiral dive.
These conditions will both be terminated by:

(1) applying opposite rudder
(2) applying aileron opposite to bank.

3.7 Engine Failure

(1) Failure at a safe height

- Choke: OPEN? (Outer R/Hand lever fully forward?)
- Fuel Shut-off Valve: OPEN? (Fully forward?)
- Ignition: ON? (Switch lever in correct position?)
- Main Switch: ON? (Red Light on?)
- Fuel: ??? (Supply in fuselage tank?)

If the above points check out correctly, the fault cannot be rectified in flight, the power-plant should be retracted and the ASH 25 E should from then on be operated as a pure sailplane.
Retract power-plant in the normal manner in accordance with the check list. If appropriate, carry out a normal sailplane outlanding. If the stoppage was caused by lack of fuel in the fuselage tank, open the valve serving the wing fuel tanks, if fitted (see Section 7).

(4) Cruising Flight

This can be carried out in a saw-tooth pattern (climb followed by straight glide with engine retracted), or in horizontal flight at 7000 rpm and an air speed of 120 to 125 km/h (65 to 68 kts).
Monitor fuel reserves and open wing tank valve if appropriate.

CAUTION: Only if the ILEC-TAZ-25 control unit is installed, the refueling of the fuselage tank from the wing tanks may be set on automatic switch control.

When the ILEC switch is set on "manual" or without ILEC fitted, the wing tank valve does not close automatically when the fuselage tank is full, and fuel will be lost through the overflow! For this reason, the fuel gauge must be monitored and the wing tank valve closed in good time. See also explication given under Sect.7.10!

(5) Shutting Down the Power-Plant

Proceed in accordance with the check list.

(6) Approach and Landing

Preferably carried out with power-plant retracted. If the electric power supply fails, it is possible to land with the power-plant extended. Ignition and main switch should be off, the fuel shut-off valve closed and the propeller brake applied.
In principle, it is also possible to land with the engine idling, but this is not recommended. In both cases the increased sink speed should be borne in mind. As a general guideline, a basic sink speed of about 1.2 m/sec, with propeller stationary and at flap setting 5, may be assumed. It may be possible to do without use of the air brakes, and a firmer

round-out and hold-off will be needed.

4.5.2 Winch Launch

The C.G. tow release coupling in front of the wheel must be used for winch launching.
Flap settings recommended for winch launching are:

Flap 3 (0°) in gusty conditions and crosswind,
Flap 4 (+6°) in zero wind or steady headwind.

Trim should be set nose-heavy at any C.G. position and both the recommended flap settings. At this trim setting the ASH 25 E will assume a gentle climb attitude. Above a minimum safe height the climb should be steepened by applying back pressure on the stick.

A weak link of 750 to 900 daN must be incorporated in the launch cable.
Maximum acceptable crosswind component is 20 km/h = 10.8 kts.

NOTE: The wheel should not be retracted during the launch.

CAUTION: Winch launching with water ballast is not recommended at less than 20 km/h = 10.8 kts headwind component. The winch driver must be informed of the total Take-Off Mass.

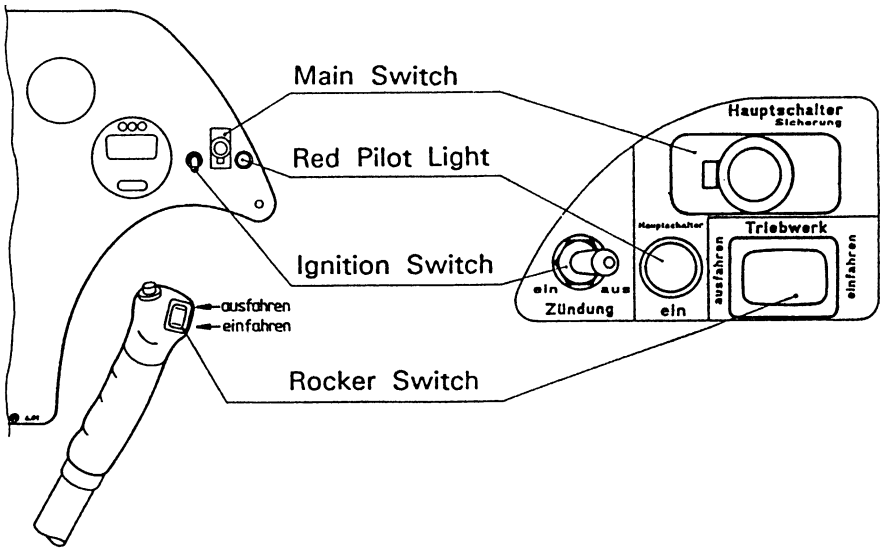
CAUTION: Before Take-Off, check seating position and that controls are within

In addition, the electric switch circuit will allow the opening of the outboard tank valves only after the inboard tank valves are open.
The LEDs (top green = valves open; or bottom red = valves closed) are confirmation signals monitoring the state of the valve via limit switch actuators. If the cockpit switch for the outboard tanks is inadvertently set to 'open' first, the diodes will show red as the valves will not open. If then the inboard tank switch is set to the 'up' position, all the valves will open simultaneusly and all upper LEDs will show green.

In order to save current, the switches should be re-set to their center position after operating the valves. This will switch off the LEDs.

7.9 Power-Plant

The single cylinder engine with transmission and propeller is housed, when retracted, in a box mounted in the fuselage tail boom behind the wing. It is extended and retracted by means of an electric screw jack.
For the ASH 25 E supplied with the conventional **VDO analogue display instruments:** the control unit, the tachometer and the cylinder head temperature gauge for the power-plant are located in a console by the side of the front seat pan.
For the ASH 25 E supplied with the **ILEC digital display instrument:** the display unit is located in the instrument panel. The rocker switch (to extend/ retract the power-plant) is mounted to the control stick.



Version with ILEC display unit fitted

Version with VDO analogue display instruments fitted

The Main Switch for the Power-Plant electric system is also an automatic circuit breaker. Pressing the black button switches on the power-plant circuit, the red Pilot Light is illuminated. At the side of the black push button of the main switch there is a red lever, which if pressed towards the push button will unlatch it and interrupt the circuit; red Pilot Light goes out. If the electrical circuit of the power-plant is overloaded, the black push button will be automatically released. The circuit breaker is reset by pressing the black button.

By pressing the front or rear of Rocker Switch the power-plant is extended or retracted. Pressure on the rocker switch must be maintained throughout the process of extension or retraction.

CAUTION: The power-plant is fully extended only when the audible signal sounds.

If the power-plant is started while not fully extended, damage may be caused to the propeller.

The power-plant is fully retracted only when the engine well doors slam audibly and the signal sounds.

NOTE: When the power-plant is in either end position, pressure on the switch should be maintained for another second or so. But keeping the switch pressed for a longer period would only waste electricity, put extra load on the jack motor and may trigger the main switch circuit breaker.

The **Ignition Switch** in its rear position (OFF) connects the ignition circuit to ground and stops the plug from generating sparks. The power-plant can be retracted only when the Ignition Switch is OFF.

7.10 Fuel System

The fuel system consists of a fuselage tank, mounted in the wheel well, with a capacity for about a half-hour's duration. The ASH 25 E can also be optionally delivered with one or two fuel bags fitted in the inboard wings.
The fuel drainer is located at the left-hand underside of the fuselage near the wing trailing edge. The fuel tank vent is situated either beside the drainer, or at the right-hand side of the fin,

above the tail wheel. The venting of the wing tanks takes place through the vent hole in the lower wing surface, near the wing-to-wing junction.

WARNING: The 2-stroke engine is lubricated by means of a fuel/oil mixture. Before filling-up, a two-stroke oil must always be mixed with the fuel (see Sect. 2.12). Non-compliance destroys the power-plant.

(1) Fuel Filling System

Filling of the fuel tanks in fuselage and wings may be carried out only by means of the fuel filling equipment supplied. This mainly comprises the fuel hose connectors, a fuel pump with electrical plug, a fuel filter and a hose which is inserted into a fuel container when filling-up. The electrical plug fits the socket mounted in the instrument panel for this purpose. (The aircraft battery must be fitted, and the aircraft Main Switch must be ON). This socket is activated by the same switch which opens - depending on the equipment ordered - both wing tank magnetic valves in order to ensure that these tanks are emptied as symmetrically as possible. Combining the switching of the socket with that of the wing tank valves prevents inadvertent attempts to fill up with the valves closed. A yellow pilot light by the switch indicates that the wing tank valves are open and that the socket is supplying current for the fuel filling system.

(2) Filling of Fuselage and Wing Fuel Tanks

The fuel tanks are connected to each other by their filling hose couplings in the baggage compartment in front of the main spar. These couplings are fuel tight, even if they are disconnected one from the other with the tanks full. To fill up, both couplings **must** be disconnected, as otherwise fuel from the second wing tank will inadvertently flow into

the fuselage tank. Then the adaptor of the tank to be filled is connected with the appropriate adaptor of the filling system outside the fuselage - the fuel hoses are long enough - and the electrical plug is inserted into the socket in the front instrument panel. When all connections have been coupled up, the filling equipment is switched on by means of the wing tank magnetic valve switch (yellow pilot light is illuminated).

CAUTION: Filling of fuel may only be carried out by means of the fuel pump supplied, as more powerful pumps could burst the wing shell in the course of filling the wing tanks. The fuel filter in the filling hose must not be removed.
The fuel hoses of the fuel tanks may be connected with the fuel filling system only outside the fuselage. This will prevent fuel dripping into the fuselage.

When filling the fuselage tank, monitor the fuel gauge and switch off the pump in time. As the wing tanks are not equipped with a fuel gauge, it is advisable to fill from a container of a capacity approximately matching that of a wing tank, or on which the amount filled can be read off. As in the case of filling water ballast tanks, the respective wings are lowered in turn. Fuselage and wing tanks may not be filled simultaneously.
When fuelling has been completed, the filling equipment is disconnected and the wing tanks are re-connected with the fuselage tank.

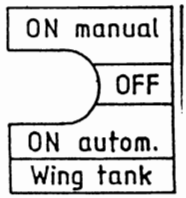
(3) Topping-Up of the Fuselage Tank in Flight

The engine is fed with fuel exclusively by the fuselage tank. The wing tanks merely serve to top up the fuselage tank. If, therefore, the fuselage tank is to be topped-up with fuel from the wing tanks in flight, the magnetic valves of the wing tanks must be

opened by means of the switch in the instrument panel (yellow pilot light is illuminated).

WARNING: Care should be taken to close the wing tanks again in good time in order to prevent the fuselage tank being overfilled, causing fuel to be lost by overflowing through the tank vent. Monitor fuel gauge!

If the ILEC-TAZ-25 is fitted, the magnetic valves are controlled via a 3-position switch:



Center position: OFF

Valve closed. The automatic refuelling of the fuselage tank is NOT done by the ILEC. If the usable fuel quantity in the fuselage tank gets down to 1.5 l, the ILEC unit produces a shrill acoustic alarm. By pushing the left button the alarm tone is "extinguished" but is activated again after two minutes if the fuel quantity in the fuselage tank has not been increased meanwhile.

Upper position: ON (manual)

The fuselage tank is topped with fuel by the wing tank(s). When the fuselage tank is full the magnetic valves are not closed automatically. Please watch the above WARNING. Yellow pilot light is illuminated.

Lower position: ON (autom.)

The ILEC automtaically opens the wing tank(s) to top up the fuselage tank. The main switch for the power-plant must be ON. The magnetic valves of the wing fuel tank(s) are automatically opened when the fuel level in the fuselage tank gets lower than 4.0 l (1.06 US Gal) and are automatically closed when 6.0 l (1.59 US Gal) are gained.

(4) Draining Wing Tanks on the Ground

In order to the drain the wing tanks on the ground,

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	4.6	31.10.89		7.5	28.02.91
5	5.1	31.10.89		7.6	31.10.89
	5.2	31.10.89		7.7	31.10.89
	5.3	31.10.89		7.8	31.10.89
	5.4	31.10.89		7.9	28.02.91
			8	8.1	31.10.89
				8.2.	31.10.89

arm rest of the front cockpit.

If the ASH 25 E is fittted with an ILEC-TAZ-25 engine control unit, the main switch, ignition switch, and control light are mounted in the instrument panel, while the rocker switch for extending and retracting the power-plant is mounted at the control stick.

A propeller reduction gear is flange-mounted to the front of the engine, which reduces the rate of engine revolutions by a factor of 1:3. The advantages of this reduction gearing consist of the increased propeller effectiveness and reduced noise emission.
The gearbox is connected with the propeller flange by a shaft/hub mounting.
The engine is supplied with fuel by an electric fuel pump accommodated in the fuselage.

2.3.2 Propeller Type and Mounting

The following propellers may be used in the ASH 25 E:

made by Messrs.'MT Propeller'
MT 130 L 95 - 1B or
MT 130 L 108 - 1B.

Both are rigid 2-bladed wooden propellers.
Its flange hub is assembled on the conical propeller shaft of the gearbox to which it is secured by an axial center bolt with left-hand thread.

Dismantling the Propeller

Unscrew propeller bolt (2) by means of socket spanner A/F 19 - **Left-hand thread** - and remove propeller with extractor tool M36 * 1.5.
Before extracting propeller, please note: the vertical positioning of the propeller, required for retracting the power-plant, will be made easier if the compression in the stopped engine is made to help in maintaining the vertical prop position (propeller blade with red dot pointing down). This makes it necessary to find the correct propeller attitude when re-fitting. The following opportunities for position markings are provided:

a) on the magneto visible through the window (A) (on the right or the underside of the engine housing) there are red marker points (P). If the propeller is in its vertical position, (blade with red dot pointing down) one of the marker dots should be positioned against the mark (M) (the ignition timing mark). Should there not be any markings provided on the magneto, red dots must be marked on it (see Fig.2.3-2).

b) if no window has been provided, marking lines will have to be applied on the propeller hub (3) and on the gearbox propeller shaft (4) after bolt (2) and its washer have been removed (see Fig.2.3-3).

and re-tighten if necessary (observe tightening torque moments listed in Sect.5.3!) Check locking wires securing the bolts of the upper engine suspension and of the power-plant mountings in the fuselage.

- Inspect the extending drive spindle gas strut. If extending takes significantly more time than retracting, replace the gas strut.
- Examine the rubber elements of the power-plant suspension for cracks or other changes.
- Check the steel cable and Nylon cord of the manual starter for condition and abrasions.
- Check the engine well door hinges for secure seating and cracks.
- Check propeller brake for correct functioning and renew brake lining if necessary.
- Examine power-plant stays for kinks and abrasions. Are all deflector shields still in good condition to prevent any possibility of stays catching?

Every 100 hours:

- Replace Nylon cord of the manual starter.

Every 300 hours, but at the latest after 6 years:

- Complete overhaul of the power-plant by the makers or by a licensed aircraft repair establishment authorised by the makers and the appropriate aviation authority.

Once annually:

- The transparent hose of the fuel gauge must be renewed every twelve months.

- Clean any dirt caused by oil, exhaust gases or fuel from power-plant and engine well.
- Renew fuel filter in fuselage (e.g: with Type Pierburg PE 1569; on no account use paper filters!).
- Examine fuel hoses for condition, leaks and abrasions.

2.3.4 Dismantling and Re-Assembling the Power-Plant

The following two Sections describe how to dismantle and re-fit the power-plant. This may become necessary for maintenance, repair or weight reduction or compliance with competition rules. The only component groups left in the fuselage are the fuel system, swivel mounting arms, extending spindle and all cockpit engine controls.

Dismantling the Power Unit

1. Before starting to remove the power-plant, check on the Notes on Engine Preservation and Storage (see Engine Manual).

2. Pull off spark plug connector (1).

3. Unplug connector (5) of the pyrometer ring at the spark plug (only applicable if no ILEC is fitted).

4. Disconnect connection for AC supply and ignition coil at the terminal block (6) (triple plug-and-socket connection). If this connection is still done by three single plug&socket con-

nectors, these must be colour marked to prevent confounding them.

Double Connector Strip (AC):
both blue (interchangeable).

Single Connector Strip (ignition coil): red.

5. Detach Bowden cable from propeller brake lever and strip off spring. Unfasten guide tube (8) (locknut M8) and threadle out, together with Bowden cable (9), through the 8 mm dia. hole.

6. Detach Bowden cables for throttle and choke (10) and (11) from the carburettor (two hexagonal socket head screws M4) and unscrew the Bowden cable guides (12) (two hexagonal socket head screws M6) from the cylinder head. This will also disconnect the Earth connection (7) of the engine.

7. Undo the knot of the manual starter cord (13) at the thimble of the pull-start cable (14). To do this the cable tie (19) must be cut.

   NOTE: After removing the steel cable, tie a fresh knot in the starter cord to stop it from slipping back into the starter housing!

8. Detach fuel hoses from the carburettor:

   a) Disconnect supply hose (15) (top) complete with hose connector (16) (hexagon-head

screw A/F 10 and 2 aluminium seals).

b) Disconnect return hose (17) (bottom) at the hose clip (18).

CAUTION: The supply hose (15) and the carburettor must be protected by means of clean plastic bags in order to prevent contamination of the carburettor and fuel hoses. The return hose (17) must be closed off with a 6 mm cotter pin.

9. Unscrew support strut (20) from left-hand swivelling mounting arm (22). (One locknut M8 and hexagonal socket head screw A/F 5).

10. Unscrew transverse tube (21) from swivelling mounting arms (22)(four locknuts M8, hexagonal socket head screws A/F 5).

11. Remove locking wire (23) and release hexagonal socket head screws M10 (A/F 6) (24) of rubber suspension buffers at the top of the swivel arm.

12. Carefully lift out engine, re-checking in the process that all connections have been undone. Pay special attention to cable connections.

The safety wiring can fulfil its proper function only if the locking wire meets the screw head at the shallowest possible angle in order to prevent the screw from undoing itself (see direction of arrow in Fig.2.3-9). In the illustrated case, a locking wire connected to holes 1 or 2 would be ineffective! Always use fresh locking wire.

3. Fit support strut (20) to the left-hand swivel mounting arm (22) (one locknut M 8, hexagonal socket head screw A/F 5).

4. Connect fuel hoses to carburettor:
   a) Attach return hose (17) (bottom) and tighten hose clip (18).
   b) Assemble fuel supply hose (15) (top) with hose connector (16) and the two aluminium seals to the carburettor (hexagon head screw A/F 10). At the same time, inspect the two aluminium seals.

5 Tie the starter cord (13) to the thimble of the starter cable (14) and secure the knot with a cable tie (19)

6. Screw the Bowden cables (10) and (11) of the throttle and choke controls with their connector nipples to their levers at the carburettor. Fit the Bowden cable guides (12) to the cylinder head by means of two socket head screws M 6 (A/F 6). One of these screws also fixes the Earth connection (7) of the engine in place.

7. Screw the cable guide tube for the propeller

Bowden cable (8) to the engine mounting support, threadle the spring on to the cable and clip the nipple of the Bowden cable (9) into the propeller brake lever.

8. Connect plug connectors (6) for AC and ignition coil. In case of single plug&socket connectors, take care to match colour coding (reversal also prevented by differing cable lead lengths).

9. Plug-in pyrometer ring connector (5) at spark plug (only applicable if no ILEC is fitted).

10. Plug-in spark plug connector (1).

11. Before starting the engine, carry out a thorough inspection of all leads, control cables and hoses, to ensure they are properly connected, positioned and secured to prevent their getting hooked up or tangled and ensure trouble free functioning! The gearbox oil level must also be checked.

12. After re-fitting the power-plant, the maintenance intervals shown under 2.3.3 "Once-Only Maintenance Tasks" must be observed.

13. **WARNING:** In order to re-establish the correct C.G. position after re-fitting the engine, the compensating trim weight must be removed from the battery compartment in the fin. (See also Section 2.3.5)!

time, the engine should be adjusted to obtain the maximum rate of revolutions and then, to provide internal cooling, the main jet should be opened by a further 1/8th turn.

WARNING: Do not adjust the main jet while the engine is running, as it is too close to the propeller for safety. It is better to proceed one step at a time and switch the engine off when adjusting the main jet.

2.4 Fuel Tank Installation

2.4.1 Description of the Fuel Tank Installation

The ASH 25 E is fitted with a **Fuselage Tank** as standard equipment. This is situated in the area of the landing gear at the left-hand fuselage wall. The fuel supply hose for the power-plant leads first of all from the underside of the tank to the fuel valve (Fire Cock). This valve is operated via a rod linkage by a sliding knob in the left-hand arm rest of the front seat. From this valve the fuel hose continues via the fuel pump mounted on the fuselage floor to the **Fuel Filter** (when replacing the filter it is imperative to ensure that no paper filter is used). From here the fuel is taken to the carburettor.

The **Return Hose** leads directly from the carburettor back to the fuselage tank. A further fuel hose leads from the underside of the tank to the drain valve in the left lower fuselage wall. This allows any condensation which may have accumulated in the bottom of the tank to be drained off.

The tank is **vented** by a fuel hose fitted at the upper front of the tank, which is in turn connected to a Tecalan tube. This Tecalan tube ends in a fitting mounted either at the right-hand side of the fin above the tail wheel, or by the side of the drainer. From there, a small hole gives access to the outside.

The **Fuel Gauge** consists of a transparent instrument hose of 6 mm dia. which is guided from the upper front of the tank through the main bulkhead at the left to the side of the rear seat backrest. From here the hose is taken along the backrest and so back into the tank. This hose is only conditionally fuel resistant and therefore needs to be replaced every year!
Also if the ILEC-TAZ-25 is fitted, this fuel gauge is still required as a control for filling.

The **Filler Hose** is likewise fitted to the front of the tank. It leads through the baggage compartment floor into the baggage compartment. A sealing connector is fitted to the end of this hose, to which the external fuel filling system can be coupled-up.

The **external Fuel Filling Equipment** is used for filling the tanks. It consists mainly of a fuel pump, a fuel filter and a sealing hose connector (if wing tanks are fitted, there will be two opposing sealing hose connectors). The hose from the filter of the filling equipment is inserted into a fuel canister, and the sealing hose connector coupled up to the filler hose of the fuel tank. The electrical socket for the fuel pump is located in the front instrument panel. After every filling operation, the suction tube must be sealed so that the membrane of

Fig.2.8-2 Circuit Diagram - Water Ballast

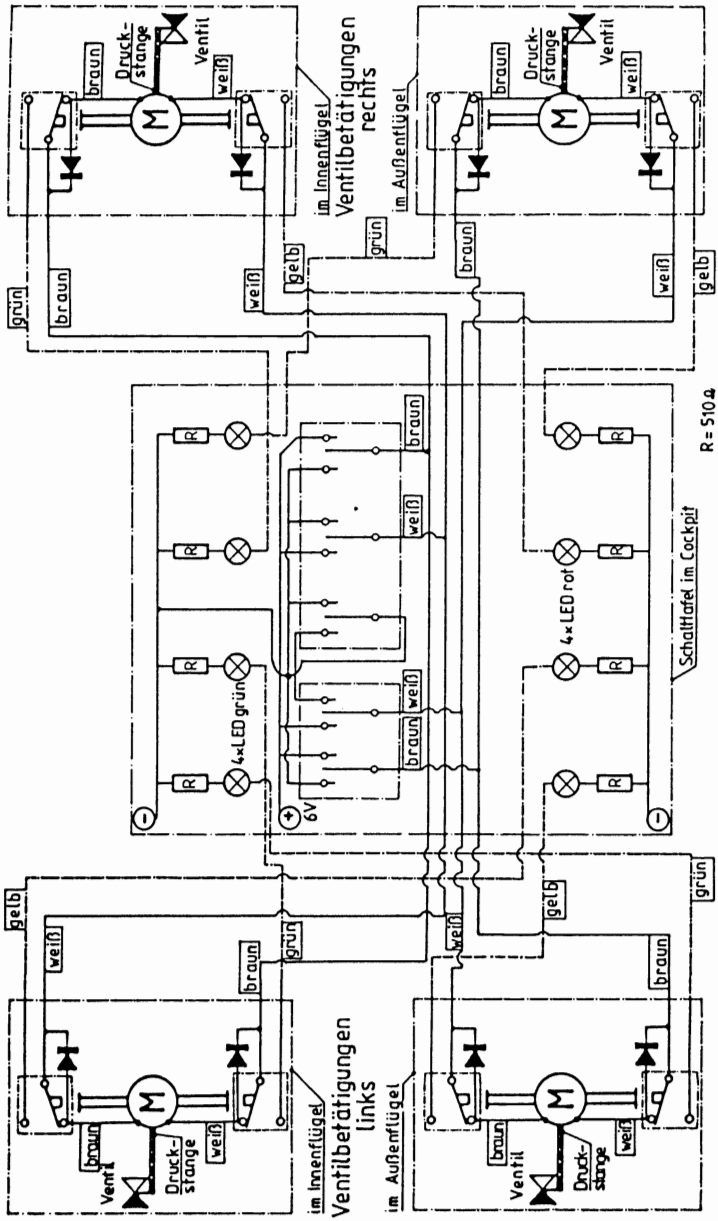
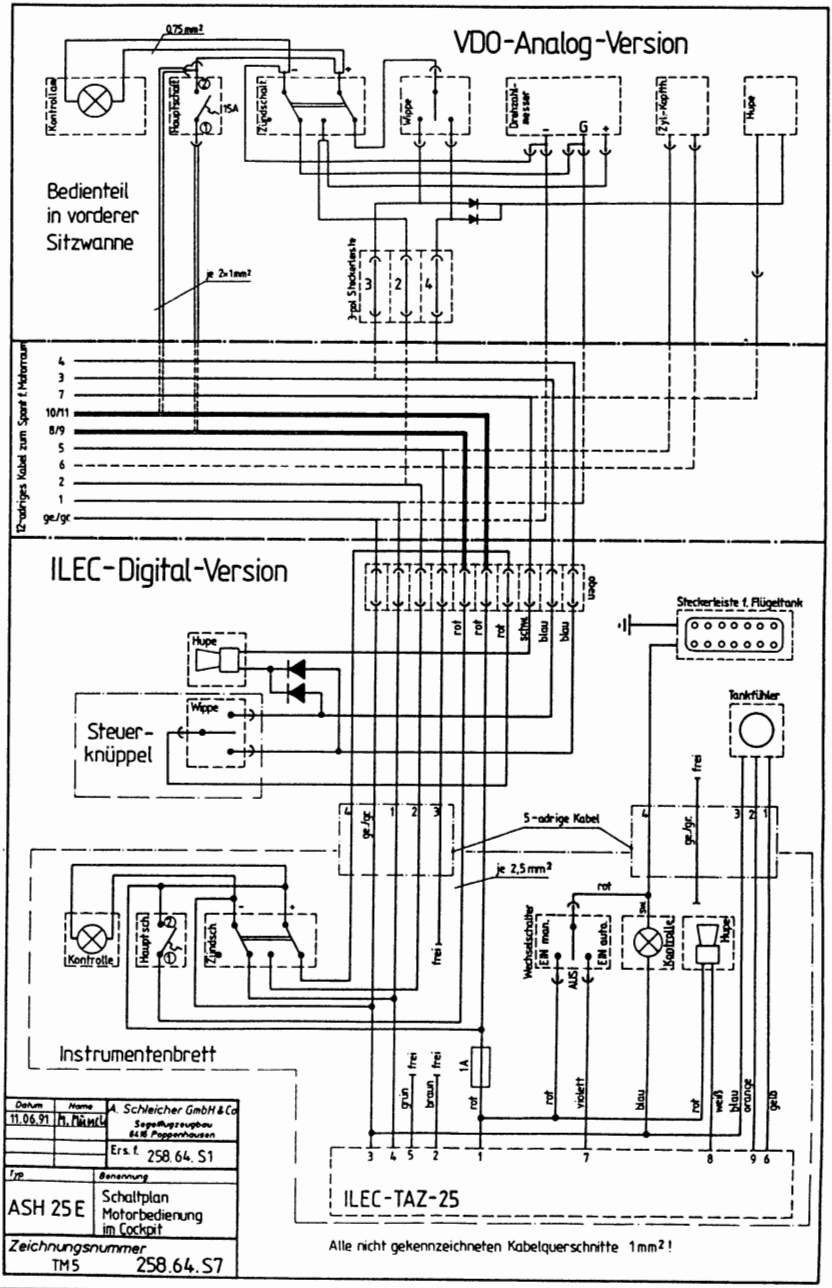


Fig.2.8-3 Circuit Diagram Cockpit Engine Controls



Datum	Name	A. Schleicher GmbH & Co
11.06.91	H. Mikulla	Segelflugzeugbau 6418 Poppenhausen
		Ers. f. 258.64.S1
Typ	Benennung	
ASH 25E	Schaltplan Motorbedienung im Cockpit	
Zeichnungsnummer TM5	258.64.S7	

Fig.2.8-4 Circuit Diagram Engine Compartment Electrics

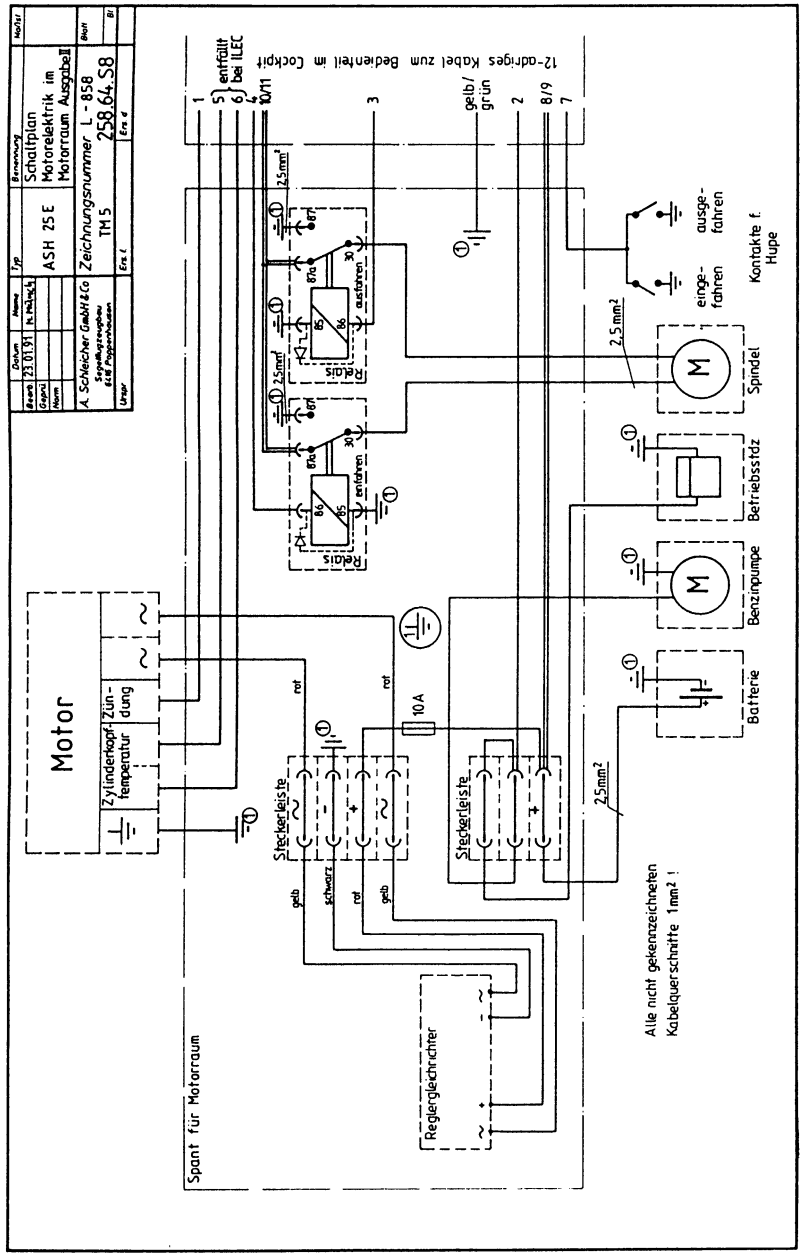
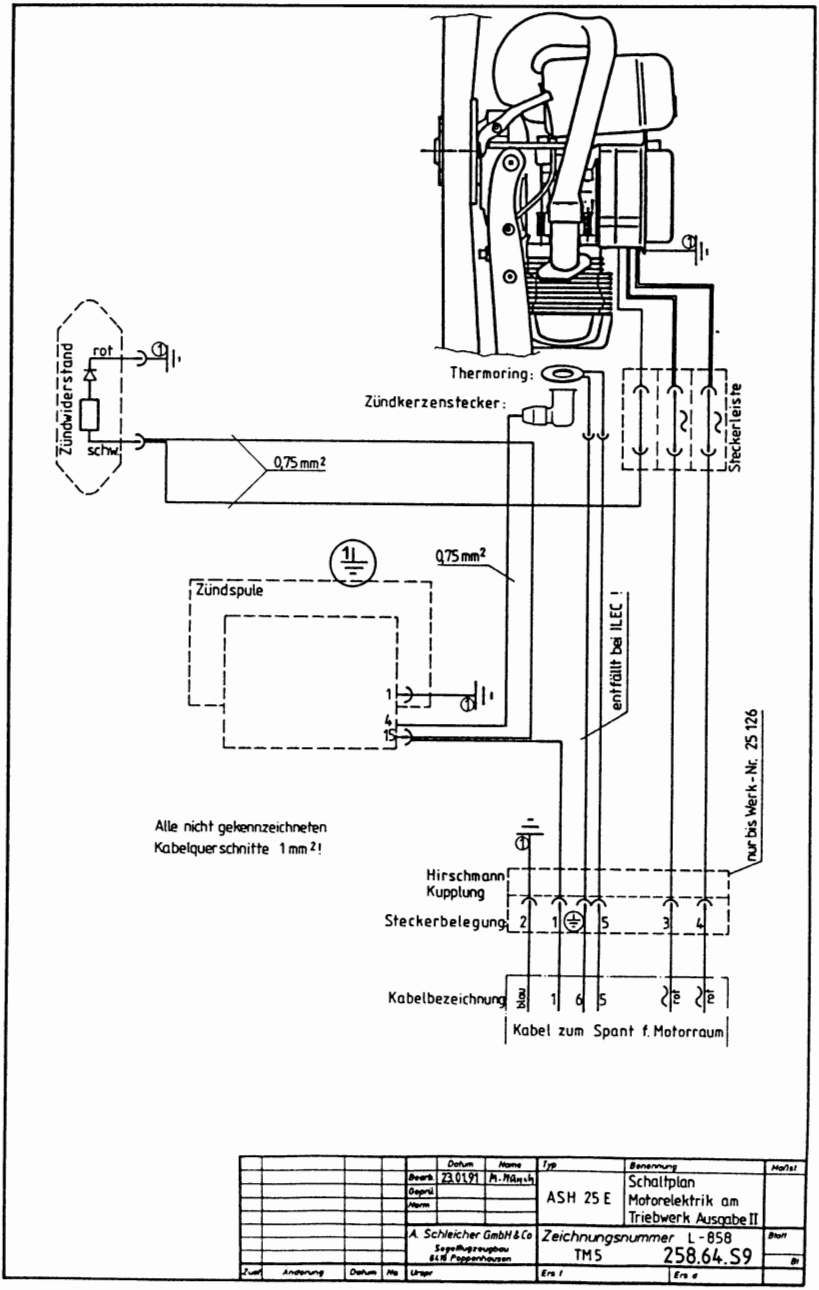


Fig.2.8-5 Circuit Diagram Engine Unit Electrics



(29) shut Fuel shut-off valve open

(30) Prior to take-off check the weight of the trim plates and their secure fixing !

One trim plate equals a pilot mass of 1,3 kg = 2,8 lbs

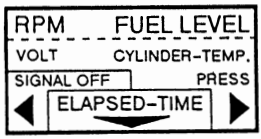
(32) Car Super or Avgas 100 LL
in the mixture ratio 1 : 50
with Super two stroke oil

Fuel tankage: Fuselage = Liter
if installed:
Wing tank right = 15 Liter
Wing tank left = 15 Liter
Non-usable = 0,4 Liter

(33)

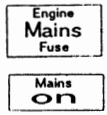
only if ILEC-TAZ-25 fitted

(36)



Location on instrument-panel may vary

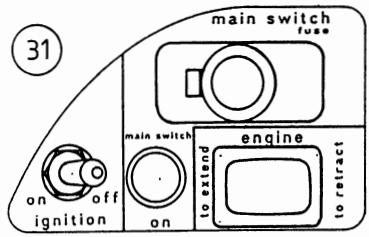
(34)



only if VDO-instrument fitted

(34)

(31)



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Checklist to extend the power plant and to start the engine

- Fuel cock: OPEN
- Main switch: ON (red control lamp)
- Rocker switch: press "extension" and keep pressed for 1 sec. when you hear the audio signal
- Ignition: ON
  Propeller brake off?

Cold start on the ground

- Throttle: open 2/3 travel
- Choke: SHUT (full back)
- Pull the manual starter strongly 3 - 4 times (when the engine runs OPEN choke at once FULL)
- Choke: OPEN
- Pull the manual starter strongly until the engine runs.

Warm start on the ground

- Throttle: open 2/3 travel
- Choke: 1/3 to 1/2 SHUT
- Pull the manual starter strongly 3-4 times (when the engine runs OPEN choke at once FULL)
- Choke: OPEN
- Pull the starter strongly until the engine runs.

Cold and Warm start in flight

- Maintain a speed of 110 to 120 km/h (59,5 to 64,5 kts)
- Throttle: open 1/3 travel
- Choke: OPEN
- Pull the starter strongly until the engine runs.
- Reduce speed and go to full throttle (watch RPM !)

Checklist to stopp the engine and retract the power plant

- Run the engine for a short period at idle speed.
- Flight speed: 80 km/h (43 kts).
- Throttle: IDLING (full shut).
- Ignition: OFF.
- Let the engine run down.
- Apply the propeller brake.
- Set the propeller vertical using the manual starter and the mirror RED POINT on the lower propeller blade.
- Press rocker switch: "Retraction" until the propeller is no more visible in the mirror.
- Release the propeller brake.
- Continue to retract the power plant until the engine bay doors shut or until you hear the audio signal for 1 second.
- Fuel cock: SHUT.
- Cut off the main switch by means of the red toggle!

RPM and Speed

Best climb at V_y = 90 km/h or 48,5 kts (blue line)
Cruise 120 - 125 km/h or 65 to 67,5 kts with 7000 RPM
Max. continous power 17,6 kW/ 24 PS with 7000 RPM
Max. power for climb 17,6 kW/ 24 PS with 7000 RPM

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Fig.9.0-1 Front Cockpit View

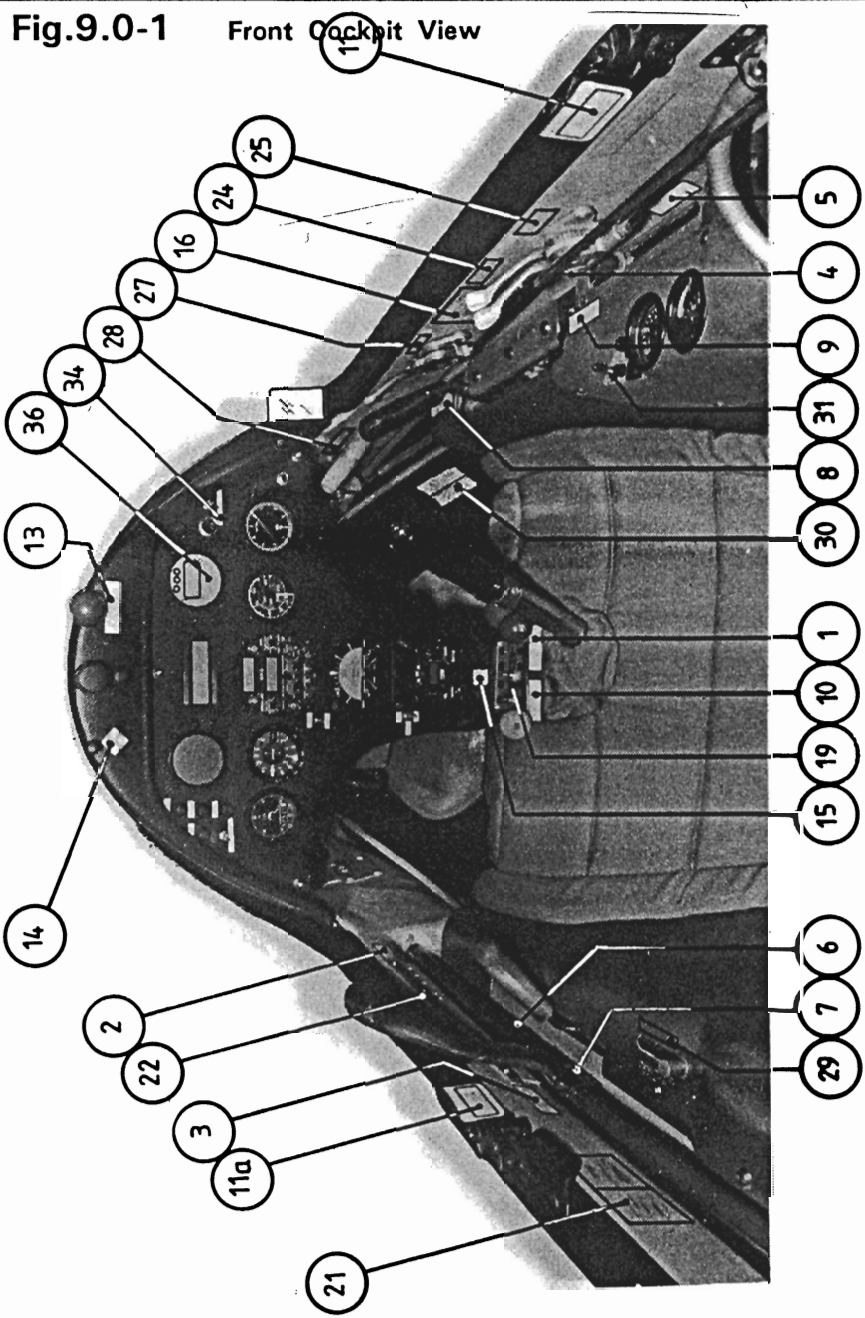
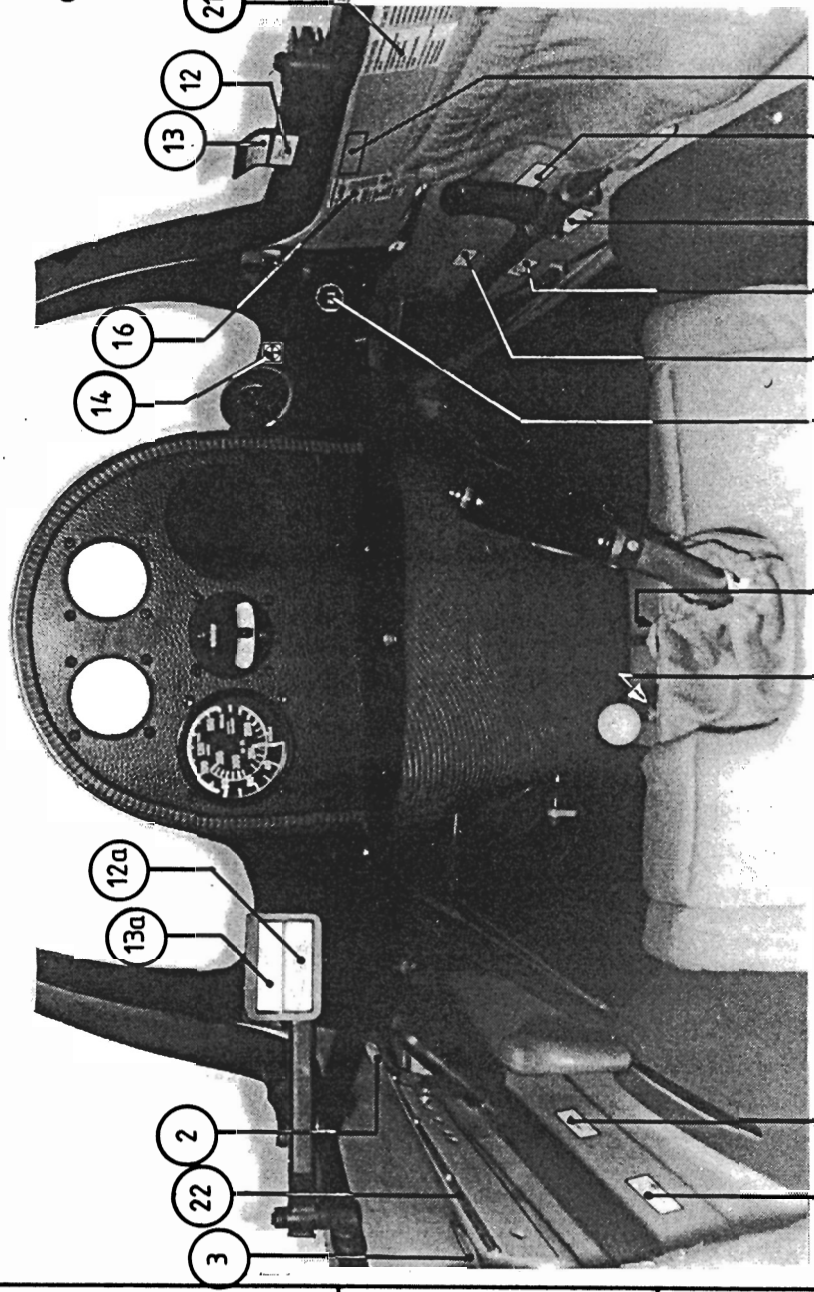


Fig.9.0-2 Rear Cockpit View



Power-Plant Monitoring Instruments

Rev. Counter 8000 rpm (modified VDO rev. counter 333.230/105/102 7000 rpm)
VDO Cylinder Head Temperature Gauge 300 °C No.397.064/014/002
VDO Engine Hour Counter 60 min/hr No.331.811/010/002

or optionally:
ILEC-TAZ-25 engine control unit which controls at the same time all the functions of the above analoguous instruments - with the only exception of the cylinder head temperature.

Additional Minimum Equipment for Cloud Flight:

Maker	Model	Data Sheet / Spec.no.	Measuring Range	Ref.No.
Turn and Slip Indicator				
Apparate-bau Gauting	WZ-402/31	10.241/8	-	-
Compass				
Airpath	C 2300	-	-	-
Ludolph	FK 5	10.410/1	-	-
Ludolph	FK 16	10.410/3	-	-
PZL	BS 1	-	-	-
PZL	B 13/KJ	-	-	-

Maker	Model	Data Sheet / Spec.no.	Measuring Range	Ref.No.
Variometer				
Winter	5 StV	TS 10.230/13	± 5 m/s	5251
Winter	5 StVM	TS 10.230/14	± 5 m/s	5451
Winter	5 StVLM	TS 10.230/12	±10 m/s	5551
VHF Transceiver				
Dittel	FSG 15/25	10.911/44	-	-
Dittel	FSG 16/25	10.911/44	-	-
Dittel	FSG 40 A			
	FSG 40 S	10.911/45	-	-
Dittel	FSG 50	10.911/71	-	-
Dittel	FSG 60			
	FSG 60 M	10.911/72	-	-
Dittel	FSG 70	10.911/81	-	-
Dittel	FSG 71 M	10.911/81	-	-
Becker	AR 2008/25	10.911/48	-	-
Becker	AR 2009/25	10.911/48	-	-
Becker	AR 3201			
	AR 3201-1			
	AR 3201-3	10.911/76	-	-
	NAV 3301	10.922/78	-	-
Avionic				
Dittel	ATR 720 A			
	ATR 720 B			
	ATR 720 C	10.911/70	-	-
Combined Headphone/Microphone Headsets				
Dittel	-	-	-	W 0029
Becker	1 PH 008	-	-	0267.236-951