Note: If refuelling is done out of a can and it is not sure that there is no dirt nor water residues in the can, the fuel must be filtered by placing a piece of leather into the funnel.

7.9 Electrical System

Refer also to Fig.7.9-1 and 7.9-2 at the end of this Section.

(1) On-board Electric Circuit

One or more 12-volt batteries in the wing nose behind the root rib supply power to the on-board circuit. The avionics electrical circuit is separate from the power-plant electric circuit because lithium iron phosphate batteries used as engine batteries only have a capacity of around 9.2 Ah. See also Fig.7.9-1.

Every electric consumer is protected with an own fuse. A fuse is also fitted closely to the batteries, which are mounted in the wing leading edge.

(2) Power-Plant Electric Circuit

An own independent electrical circuit supplies the power-plant. This is fused through the Power-Plant Main Switch. Refer also to Fig. 7.9-2.

The screw jack motor for extending and retracting the propeller is supplied from the engine batteries. These are fitted below the front pilot seat. During powered flight these batteries are charged.

It is depending on the state of charge of these batteries whether the propeller can be extended or retracted.

7.10 Pitot and Static Pressure Systems

Refer also to Fig.7.10-1 at the end of this Section.

The Pitot pressure for the ASI system is obtained from the Pitot tube in the fuselage nose, static pressure from the static ports at either side of the fuselage tail boom.

The aircraft comes as standard with a TE-probe in the fin (and the respective adaptor). During powered flight the pressure signals from this probe are unusable.

Ensure that the fin probe is fully pushed home in its seating. The inner end of the probe should from time to time be lightly lubricated with Vaseline or a similar lubricant, in order to save the O-ring gaskets from wear.

7.11 Miscellaneous Equipment

(1) Removable Trim Ballast as Compensation for Reduced Pilot Weight

As an optional extra the ASK 21 Mi can be equipped with trim ballast whereby the single lead trim plates are fixed about below the knees of the front pilot. In this location, for example a 3 kg (6.6 lb) lead trim plate has the effect of a pilot mass (weight) of 3.75 kg (8.27 lb) in the front seat.

Fig. 7.9-1 On-Board Circuit

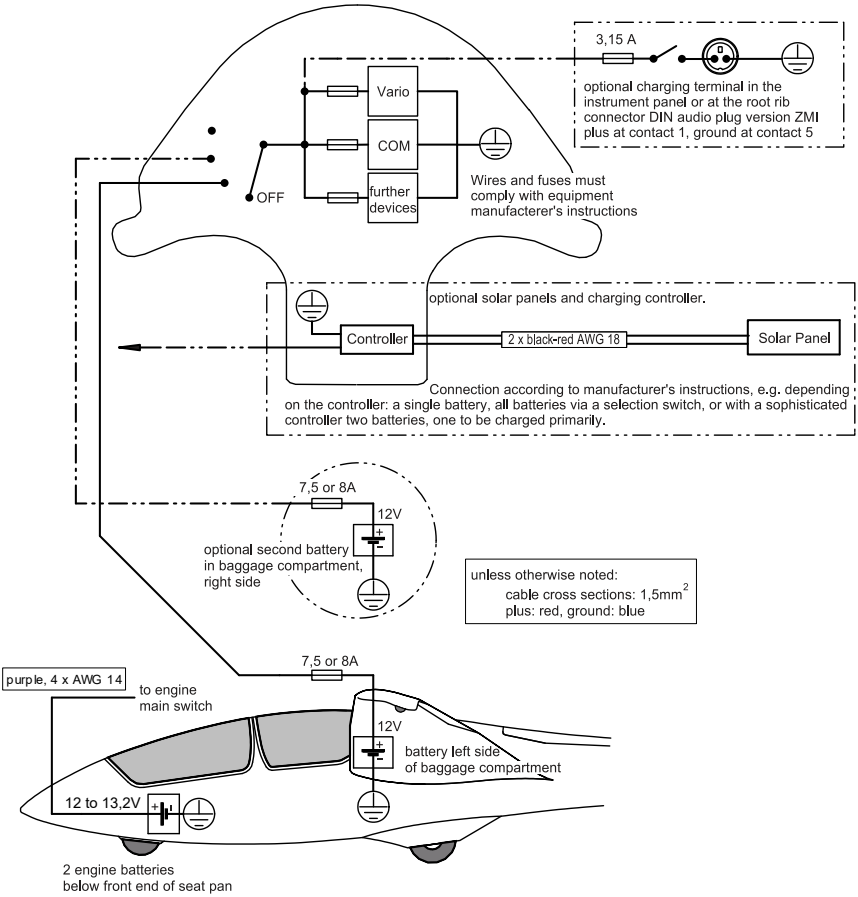
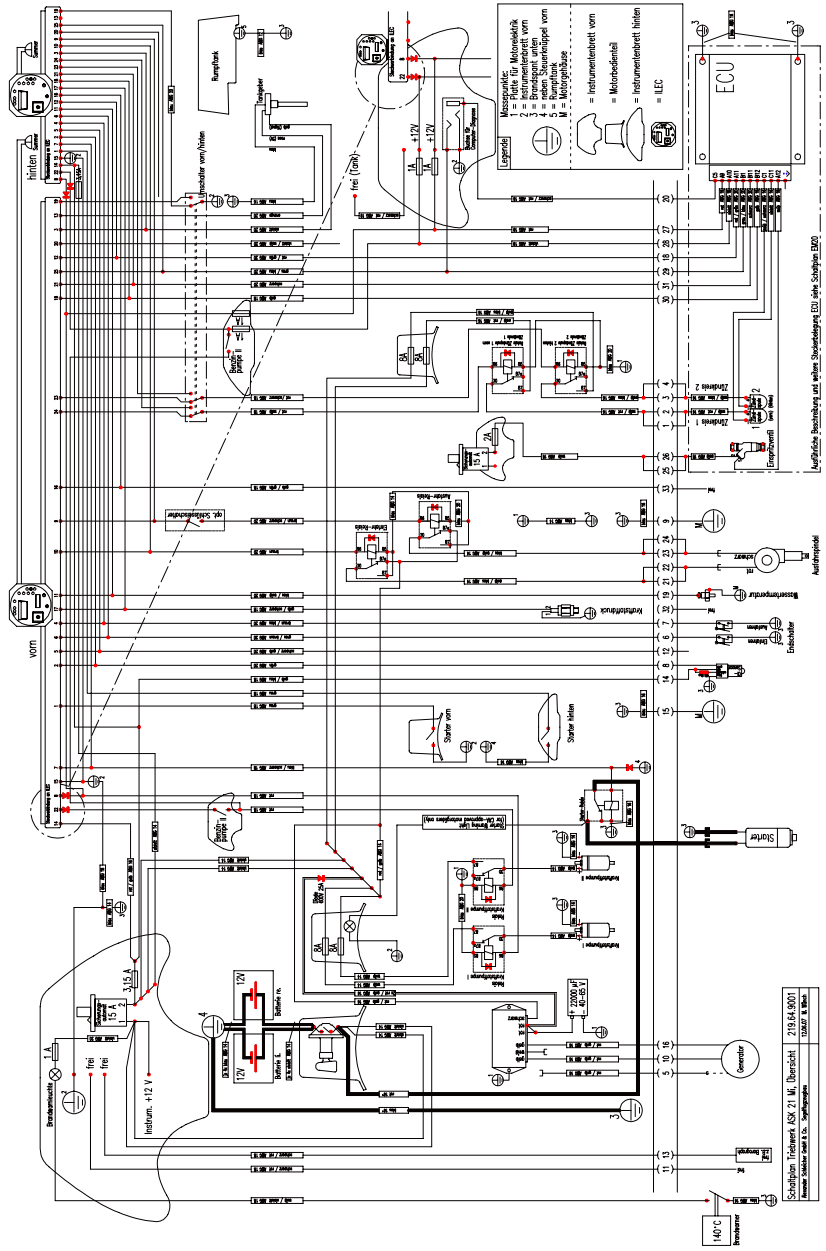


Fig. 7.9-2 Engine Electric Circuit



Changing Brake Linings

Remove the wheel fairing. You will find the wheel brake cylinder at the left-hand side of the wheel fork. At the rear end of the cylinder there are two 1/4” screws secured with locking wire. Remove the locking wire and fully undo both screws.

You can now remove the inner brake shoe with its back plate, and the wheel brake cylinder can be pulled off the brake torque plate.

The brake hose line must be left attached throughout, as otherwise the system will have to be bled.

You can now remove the outer brake shoe with its back plate.

While the brake is dismantled, the brake lever (air brakes) must NOT be operated!

The linings must be renewed before they have been worn down as far as the rivets (minimum residual lining thickness 2.54 mm = 0.10 in!) as otherwise, the brake disc will be damaged and the braking effectiveness unacceptably reduced. To rivet the new linings in place it is best to use a riveting tool designed for the purpose. Alternatively, however, a hammer, center punch, and round punch of not less than 6 mm (0.24 in) at the tip may be used.

Now replace brake shoes, tighten the two 1/4" screws and secure them again with locking wire. Re-assemble the wheel fairing.

Brake linings and rivets to suit can be obtained from Messrs. Schleicher. Orders must specify brake linings suitable for the Cleveland 30-9 brake assy.

2.4 Radio Installation

There is space provided in the front instrument panel for fitting a radio. The fitting components and cable harness supplied by the radio manufacturer should be used.

When planning its location in the instrument panel, remember that the radio must be plainly visible and within easy reach.

However, priority must be given to the flight control instruments concerning clear visibility

The loudspeaker is fitted below the rear instrument panel cover, on the left side. The boom microphone is fitted on the right cockpit wall. The VHF antenna is located at the rear web in the fin.

2.5 Electrical System

Details of the electrical installation for the avionics are shown in the circuit diagram (Fig. 2.5-1). The electrical system for the power-plant is shown in Fig. 2.11-10 (at the end of Section 2 where the other illustrations relative to the power-plant are given).

Note: *Overload protection must be provided for each electrical equipment. No protective device may protect more than one circuit essential to flight safety.*

Types of Batteries

Power must be provided by maintenance-free lead batteries, dry-gel system. Batteries which are strongly degassing or which are not tilt resistant (e.g. acid batteries) are **not** permissible!

For the engine two batteries of the following type are used (or similar):

Panasonic PBL12/12 12V and 12Ah

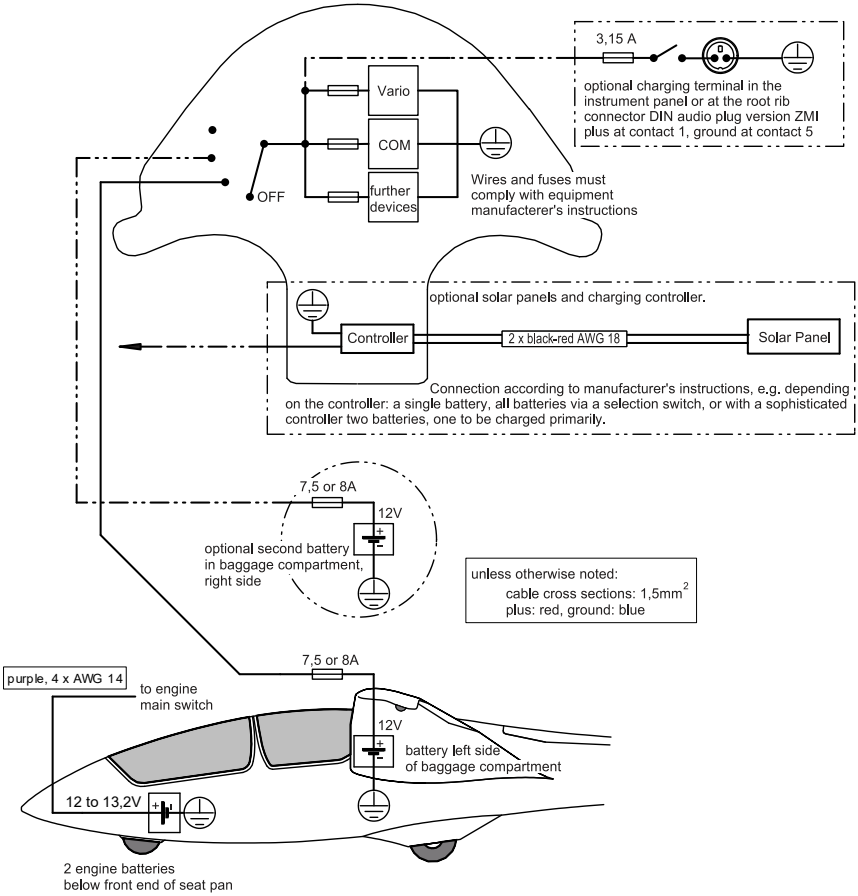
Optionally lithium iron phosphate batteries can be used as engine batteries. See section 13.E for details.

For the battery locations in the wing roots one of the following battery types may be used (or similar):

Panasonic LC-R127R2PG 12V and 7.2 Ah
Hagen dry-safe Type HDS-1270 S 12V and 7 Ah

A suitable battery housing made by Walter Dittel GmbH must be used.

Fig. 2.5-1 Electrical Circuit Avionics



2.6 Oxygen Installation

Suitable fixing brackets for oxygen bottles are available as an optional extra. Pay attention to a correct and tight seating of the bottles after their installation.

Note: *Fitting of oxygen equipment changes the empty mass C.G. position only slightly. However, it is necessary to re-weigh the aircraft and re-determine the empty mass C.G.*

The type of oxygen system must be approved. It must not pose a safety hazard neither in itself, nor in its mode of operation, nor in its effect on any other equipment (be cautious with fuel, oil and grease!).

Devices must be provided by which the crew can immediately observe at any time the available amount of oxygen in each bottle as well as whether oxygen is delivered to the masks.

When flying at greater heights while using the oxygen system, it should be borne in mind that any particular system may only be suitable for a limited altitude range. The makers' instructions must be followed exactly.

2.7 Pressure ports and Instrument Connections

Details of the pneumatic system are shown in Fig. 2.7-1.

Caution: *In view of the validity of the ASI calibration the **air speed indicator** must be connected only to the static ports at the tail boom and to the Pitot port in the fuselage nose!*

Section 13

13. Supplements

13.1 Introduction

13.2 List of inserted Supplements

Supplements inserted

13.3 List of Maintenance Documents for fitted Equipment

13.4 Maintenance Instructions

13.5 REPAIR MANUAL

13.1 Introduction

This Section contains appropriate supplements necessary to safely and efficiently operate the aircraft when equipped with various optional systems and equipment, which do not come as standard.

The following optional equipment has already been described in the Flight Manual Section 7.11:

- Removable Trim Ballast as Compensation for Reduced Pilot Weight
- Oxygen System
- Emergency Location Transmitter

13.2 List of Inserted Supplements

Date of Insertion	Document No.	Number Pages	Title of the inserted supplement
1. Dec. 07	A	4	Spin ballast
1. Dec. 07	B	6	Operation with removed engine
1. July 09	E	2	LiFe-PO_4 starter battery

E LiFe-PO_4 starter battery

1. General

To achieve a higher payload, the standard lead-acid engine batteries located under the front pilot's seat can be replaced with encapsulated batteries with lithium iron phosphate cathodes (LiFe-PO4).

When deciding on installation, it should be noted that although the batteries are sufficiently current-resistant, but their capacity is reduced by about one third. For this reason, the avionics must not be connected to the engine batteries.

2. Installation

A permissible battery type is: Accu-24 4A2P

or comparable batteries, which can be installed in the designated battery holders. (Voltage 13.2V, capacity at least 4.6Ah, permissible discharge current at least 44A).

Installation takes place in the same battery compartments as the previous standard lead batteries. If the battery is smaller, the empty space must not be filled with padding material (heat dissipation, elastic deformation, fire hazard) but must be secured in accordance with general TN 02-2008 (EASA appr. 19.03.08).

Both engine batteries must be of the same type.

A new weighing procedure must be performed. The mass (weight) and balance form in section 6 of the flight manual must be updated, noting that the information applies to LiFe-PO4 engine batteries. The information on loading limits in the cockpit must be corrected.

3. Removal

The standard dry-gel lead batteries are reinstalled in reverse order. A new weighing procedure must then be performed. The mass (weight) and balance form in section 6 of the flight manual must be updated, noting that the information applies to lead-acid engine batteries. The information on loading limits in the cockpit must be corrected.

13.E.2 LiFe-PO4 starter battery