

CHAPTER

24

**ELECTRICAL
POWER**

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EFFECTIVITY: All

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GENERAL

The airframe electric network is of single wire design (+ pole) with negative ground created by airplane airplane.

The DC electric network with rated voltage of 28 V is fed from 60 A alternator. The board battery creates stand-by electric source. The emergency electric source feeds in case of complete electric network failure turn-and-bank indicator(s) and auxiliary cockpit lamp.

The board electric network is arranged in individual electric circuit. The A, B, C, D, E, L and M wiring diagram of standard airplane modification are issued in Chapter 91 (WIRING DIAGRAMS).

The wiring diagram of circuit F (Communication) as well as the other optional circuits and adaptations are issued in Chapter 95 (SUPPLEMENTS).

DC POWER

DESCRIPTION AND OPERATION

The alternator being installed upon the engine feeds DC board electric network with 28 V.

The board battery (approved model) is located in front of firewall in the left side of engine compartment represent stand-by source of board electric network.

The emergency source of electric energy located under the lower cargo bay consists of two SONNENSCHN batteries.

NOTE

The board network voltage and current during engine run is measure by voltampermeter. The left pointer of instrument indicated voltage from 0 to 40 V. Right pointer indicates electric current.:

- When charging the batteries in the sector below 0 from 0 to 20 A
- When it flows from the board battery in the sector above 0 from 0 to 60 A

ALTERNATOR

DESCRIPTION AND OPERATION

The airplane is equipped with 24 V Prestolite alternator. The alternator wiring diagram is issued in section 91-10-00.

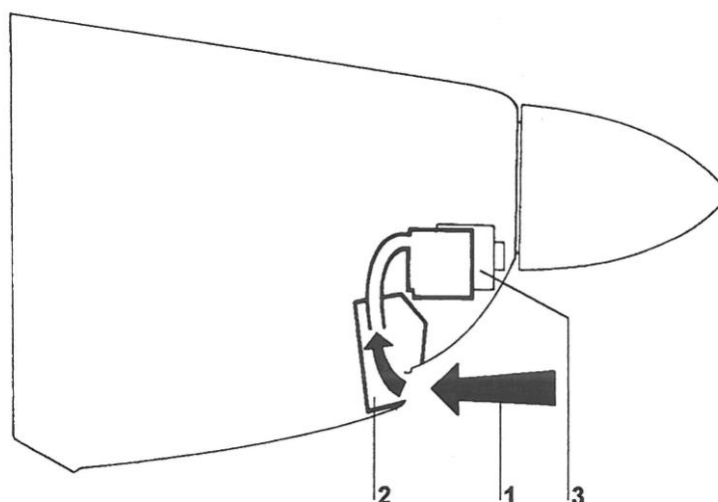
The alternator when engine runs, charges board and emergency batteries. The alternator is switches to electric network by **GENERATOR** switch.

In case the voltage of board electric network drops below 26,2 V the amber **GENERATOR** annunciator light is lit (board battery is not charged).

The alternator is cooled by air. The external air (Fig. 24-1, item 1) enters the port in the bottom covers cowling, passes into the air filter casing (2) and from there it comes through hose to alternator (3).

Prestolite or Lamar voltage regulators control the output voltage of alternators. The output voltage may be adjust by trimming potenciometer that is a part of each voltage regulator. The diagram of regulator wiring is issued in section 91-10-00.

The voltage regulator in use is cooled by air. The external air enters through fwd engine cowling ports and from there it is led by hoses to voltage regulator (Fig. 75-3, item 14).



- 1 ... external air entry
- 2 ... air filter casing
- 3 ... alternator

Fig. 24-1 Alternator cooling

EFFECTIVITY: All

24-31-00

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REPAIRS

Fault	Possible reason	Remedy
<p>Above 1500 RPM of engine speed the amber GENERATOR annunciator is lit. The board battery is not being charged. The voltage of board electric network is equal to battery voltage.</p>	<p>The voltage regulator is faulty (Fig. 91-1, item. A 2). The voltage regulator is out of operation.</p>	<p>Replace voltage regulator.</p>
	<p>Faulty voltage relay (Fig. 91-1, item A 8) (up to S/N 0045 including).</p>	<p>Control transistor is short-circuited, overvoltage relay (Fig. 91-1, item A8) is turned on, voltage at REG terminal. Replace voltage regulator.</p>
	<p>Interrupted exciting circuit of alternator (Fig. 91-1, item A 1 - terminals F1; F2).</p>	<p>Check overvoltage relay: – Remove overvoltage relay from the airplane connect it to adjustable source of electric voltage: + pole connect to BAT terminal; – pole connect to relay frame. Increase gradually voltage. The voltage measured at BAT terminal increases together with source voltage until it reaches $33\text{ V} \pm 0.5\text{ V}$ and at this voltage source it drops to zero. The overvoltage relay that is not meeting the above features should be replaced.</p>
	<p>Incorrect setting of comparator in control unit (Fig. 91-1, item A 21).</p>	<p>Check alternator brushes and replace faulty ones. Check circuit by Ohmmeter and repair or replace defective parts.</p>
		<p>Adjust comparator: – Connect adjustable source of electric voltage to GPU connector; – Increase voltage gradually; the GENERATOR annunciator should extinguish when voltage reaches $26,2\text{ V} \pm 0.1\text{ V}$; – The comparator may be adjusted to above value by trimming resistor that accessible through hole in right side of control unit.</p>

MAINTENANCE

ADJUSTMENTS / TESTS

ADJUSTMENT OF ALTERNATOR VOLTAGE

General

The alternator voltage is adjusted on ground during engine run. The alternator voltage should be measured by digital voltmeter with accuracy 0.1 V between board battery (**BATTERY 3,15 A** up to S/N 0045; **BATTERY** from S/N 0046) and one of two grounding terminals below instrument panel.

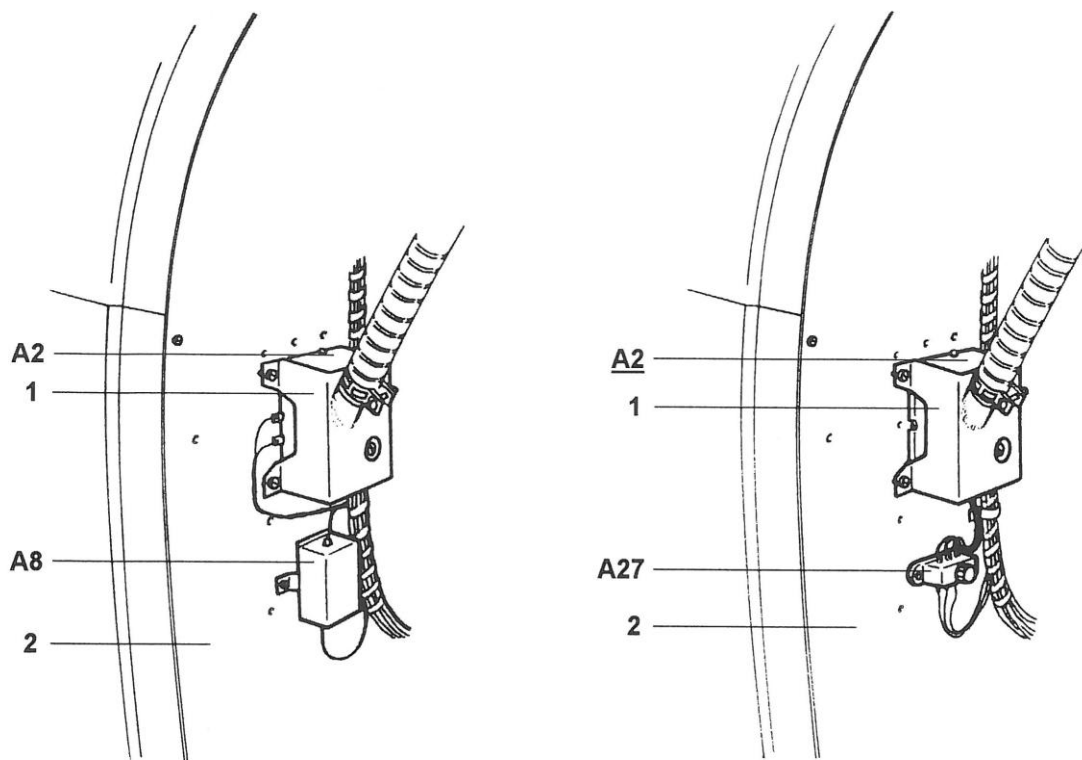
Adjustment procedure

- a) Check battery charging level and recharge the battery if necessary (section 24-32-00).
- b) Check voltage:
 - Set engine speed to 2 000 RPM
 - Turn **GENERATOR** and **ENG. INSTR.** switches on (the other switches should be off). The measured voltage should not exceed 31 V.
 - Turn **GENERATOR**, **BATTERY** and **ENG. INSTR.** switches on (the other switches should be off). The measured voltage should be within $27,5 \pm 0,1$ V.
- c) Adjust if needed the alternator voltage to exhibit the output voltage as near as possible to that described above by screwdriver. The adjusting screw is accessible through the hole voltage regulator jacket - see Fig. 24-2, item 1). No measured data should exceed limit voltage.

CHECK AND ADJUSTMENT OF ALTERNATOR DRIVE BELT TENSION

Check the alternator drive belt tension after alternator installation and after the periods issued in section 05-22-00.

The instructions for alternator drive belt tension check and adjustment are issued in service Instruction No. 1129 of engine manufacturer).



A2 ... Prestolite voltage regulator
A2 ... Lamar voltage regulator
 A8 ... overvoltage relay
 A 27 .. terminal board
 1 ... voltage regulator jacket
 2 ... firewall

NOTE

Items A2; A2; A8; A27 correspond to marking used in A Circuit wiring diagram (section 91-10-00).

Fig. 24-2 Voltage regulator

BOARD BATTERY G-246

DESCRIPTION AND OPERATION

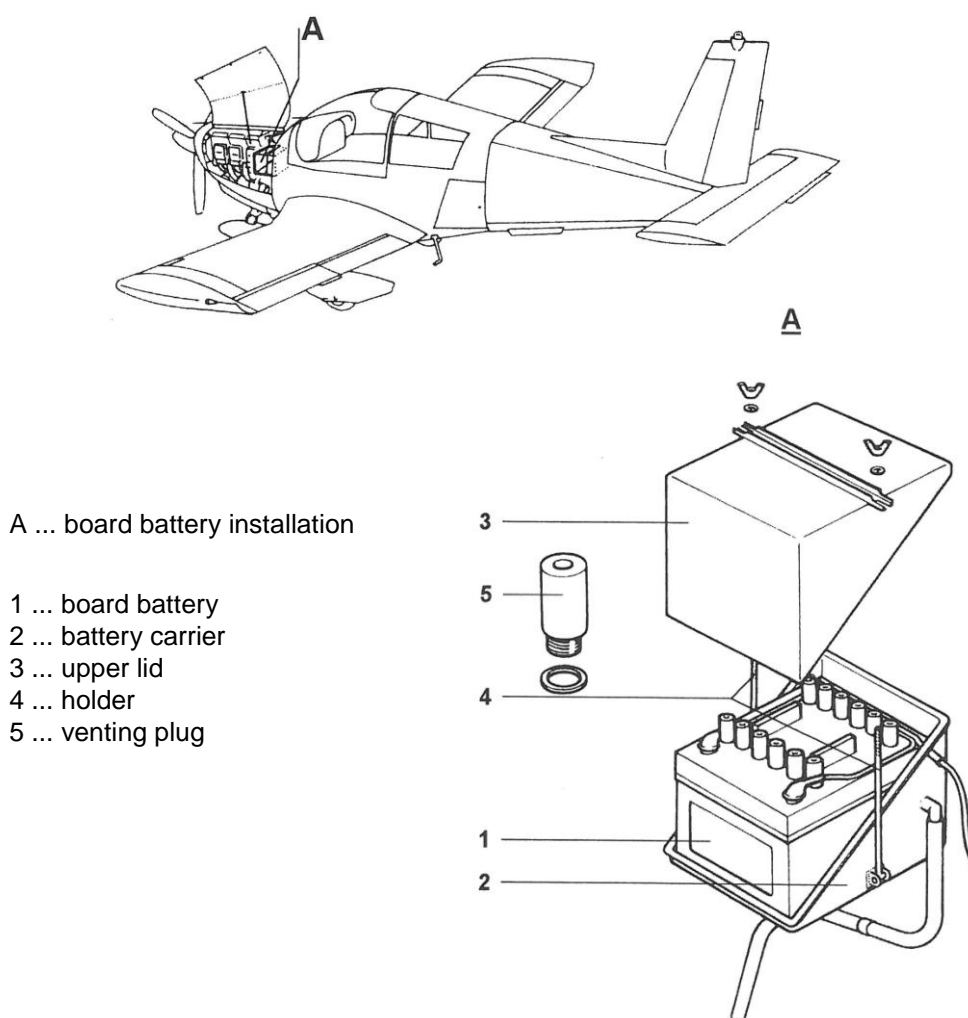
The airplane is equipped with a board battery. The wiring diagram of board battery connection to board network is issued in section 91-10-00. The battery is controlled by **BATTERY** switch.

Specification:

- rated voltage	24V
- voltage of charged unloaded battery	25,5 to 25,8 V
- overall capacity	19 Ah
- overall weight (incl. electrolyte)	19 kg (47,895 lb)
- electrolyte	1,285 to 1,295 g/cm ³

The board battery is fit to battery carrier (Fig. 24-3, item 2) and covered from above with lid (3).

The battery is cooled by air. The external air enters the fwd engine cowlings and proceeds through hose to board battery (Fig. 75-3, item 12).



A ... board battery installation

- 1 ... board battery
- 2 ... battery carrier
- 3 ... upper lid
- 4 ... holder
- 5 ... venting plug

Fig. 24-3 Board battery

EFFECTIVITY: All

24-32-00

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REPAIRS

Fault	Possible reason	Remedy
The board battery is unable to crank the engine.	Board battery is discharged.	Check and maintain the board battery according to BOARD BATTERY CHECK AND SERVICING.
The board battery does not supply electric energy to board network.	Master switch does not turn the board electric network ON.	Remove fault according to section 24-32-00, REPAIRS.

MAINTENANCE

SERVICING

BOARD BATTERY STORAGE

- a) The storage of new board battery without electrolyte is unlimited. It is to be stored in dry place at temperature below 27°C).
- b) Store the battery filled with electrolyte only properly charged. This battery (charged) should be checked once per three months according to INSPECTION / CHECK section. In case the ambient air does not exceed +25 °C it is possible to prolong period of battery check to six month.

BOARD BATTERY FILLING AND CHARGING

- a) Remove venting plugs from all cells of board battery (Fig. 24-3, item 5).
- b) Prepare new board battery without electrolyte for charging:
 - Puncture the pressed in hermetic diaphragm in each cell port by artificial piercer supplied with battery.
 - Fill each cell with sulfuric acid diluted to 1,285 g/cm³ up to the horizontal line that is in cell port.
 - Let the battery at rest for about 1 hour and refill the sulfuric acid if needed to maintain acid level.Charge filled in battery according to point c) at last within 10 hours since the time of battery filling.
- c) Charge battery for about 12 hours with 3A. Check during charging the electrolyte temperature. Reduce charging current in case the electrolyte temperature reaches during charging 43 °C. The battery charging is finished if the voltage during four measurements 10 minutes one after the other remains the same and electrolyte density is 1,285 g/cm³.

NOTE

Check the board battery, being installed to airplane after more than a week since the last charging and recharge it if necessary according to section INSPECTION / CHECK.

REMOVAL / INSTALLATION

REMOVAL OF BOARD BATTERY

Preparatory works

- a) Turn off Master and **BATTERY** switches.
- b) Open left engine cowling (Fig. 71-1, item 4).

Removal of board battery

- a) Unlock and unscrew the butterfly nuts of holders (fig. 24-3, item 4).
- b) Tilt the holders (4) of upper lid (3) and remove upper lid from battery carrier (2).
- c) Disconnect the cables from battery terminals (1).
- d) Remove board battery (1) from battery carrier (2).

INSTALLATION OF BOARD BATTERY

- a) Remove dirt from the battery terminals (1) and battery connecting cables contact. Clean and thoroughly degrease the contact surfaces of terminals (1) and cable contact.
- b) Make sure, before battery installation, the Master and **BATTERY** switches are off.
- c) Fit the board battery to battery carrier (2) and connect cable contacts to battery terminals. Make sure the polarity (+, -) of cables and battery (1) terminals are correct.

CAUTION:

BE SURE IF THE BATTERY IS CORRECT CONNECT (CORRECT POLARITY). OTHERWISE IMPEDENCE OF THE BATTERY DAMAGE.

- d) Apply thin layer of preservation grease upon contacts and terminals after tightening the cable clips.
- e) Fit upper lid (3) upon battery carrier (2), insert holders (4) into the cut-outs of upper lid reinforcement (3), provide holders (4) with washers, and screw the butterfly nut upon holders.
- f) Lock butterfly nuts with safety wire after their tightening.

Final works

- a) Shut left engine cowling (Fig. 71-1, item 4).

INSPECTION / CHECK

BOARD BATTERY CHECK AND SERVICING

Procedure:

- a) Remove board battery from the airplane.
- b) Check intactness of battery casing.
- c) Neutralize spilled electrolyte with solution of cooking soda (1 part of soda to 20 parts of water); wash battery with water, dry it and refill the battery cells with sulfuric acid of the same density as that in the refilled cell.
- d) Clean if needed the battery terminals and cable contacts.
- e) Unscrew venting plugs (Fig. 24-3, item 5) and check electrolyte level in individual cells according to horizontal line in vent plug port.

Refill the electrolyte:

- Use only distilled water for refilling the electrolyte (never use reboiled water or sulfuric acid) if the drop of quantity has not been caused by electrolyte pouring out.
 - Refill the battery cells with sulfuric acid of the same density as that in the refilled cell only in case the drop of quantity of electrolyte was caused by electrolyte pouring out – see points c) of this article.
- f) Check level of battery charging:
 - Measure the voltage of unloaded battery that should be 25,5 V and the electrolyte density that should be 1,285 g/cm³.
 - Measure the battery voltage by voltmeter with suppressed zero scale.
 - Remove peak voltage of freshly charged battery by light discharging, e.g. 2 A for two minutes or let the freshly charged battery at rest for about 1 hour before voltage measurement.
 - g) Recharge the battery if necessary:
 - Charge the battery with 3 A current until the acid density is 1,285 to 1,295 g/cm³ in all battery cells. In case the above acid density cannot be reached even in one it is necessary to discard the battery.
 - Having charged the battery measure the voltage in board electric network according to point f). In case the voltage during this measurement is less than 25,5 V discard the battery.
 - h) Screw venting plugs into the cell ports and install the board battery to the airplane.

BOARD BATTERY CAPACITANCE CHECK

Procedure:

- a) Carry out maintenance according to previous subsection.
- b) Discharge the battery with 18 A current until it exhibits 20 V. Measure during discharging battery voltage and time of discharging. At the moment of reaching 20 V the minimum time of discharging should be at least 47 minutes.
- c) Charge the battery meeting above requirements according to SERVICING subsection and install charged battery to the airplane.
- d) The board battery exhibiting discharging time less than 47 minutes should be recharged again (see SERVICING) and discharged according to point b). The test may be carried out twice. In case the battery had not meet requirements even after repeated capacitance check should be discarded.

EFFECTIVITY: All

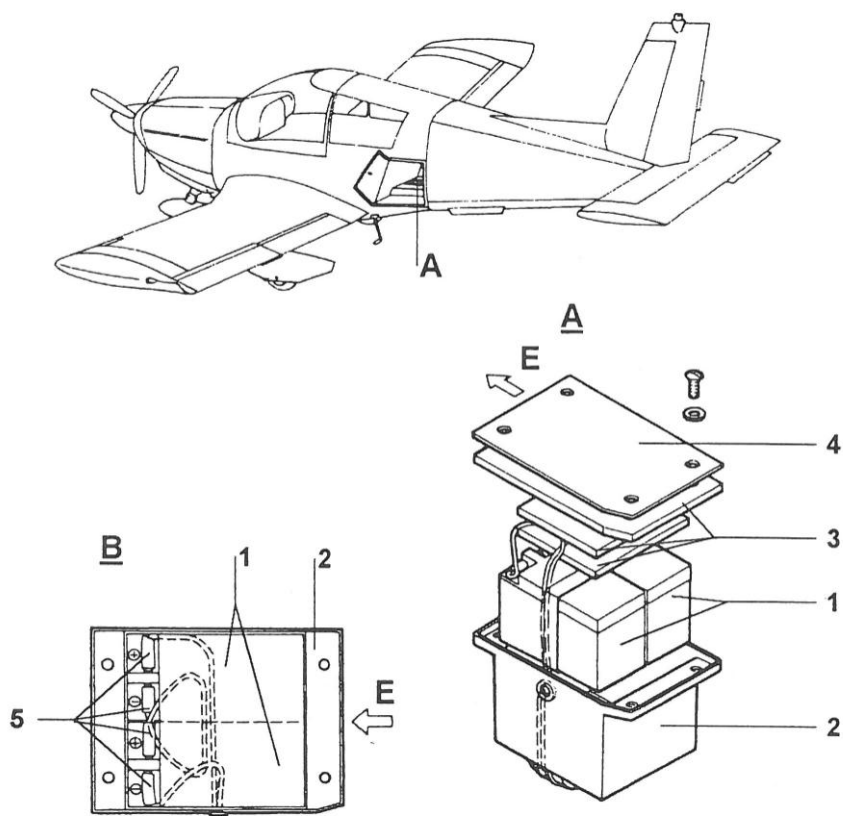
EMERGENCY ELECTRIC NETWORK SOURCE

DESCRIPTION AND OPERATION

The emergency source of electric energy consists of two SONNENSCHNEIN (2x12 V) batteries. The wiring in board electric network is issued in section 91-70-00.

The emergency source of electric energy turns on automatically if both alternator and board battery fail, or if **FLIGHT INSTRUMENTS** switch is turned off. The emergency source feeds the turn-and-bank indicator and auxiliary light and it is annunciated by green **EMERG. SOURCE** annunciator beside turn-and-bank indicator in left (port) instrument panel.

The emergency source batteries (Fig. 24-4, item 1) are joined together by belt and inserted into the casing (2). The casing is fixed to floor of lower cargo bay together with cover (4) by four screws.



A ... installation arrangement of emergency source of electric energy

B ... battery connection to series

E ... direction of flight

1 ... batteries of emergency source of electric energy

2 ... casing of emergency source

3 ... rubber insertion pieces

4 ... cover

5 ... connector

Fig. 24-4 Emergency source of electric energy

MAINTENANCE

REMOVAL / INSTALLATION

REMOVAL OF EMERGENCY BATTERY OF BOARD ELECTRIC NETWORK

Preparatory works

- a) Turn Master switch off.
- b) Unlock and open the lower cargo bay access door (Fig. 52-5, item 8).
- c) Remove four screws of cover (Fig. 24-4, item 4) upon the floor of lower cargo bay.

Removal of batteries of emergency source of electric energy

- a) Remove cover (4) and rubber insertion pieces (3) from the batteries (1).
- b) Disconnect cables from the connectors (5).
- c) Remove batteries (1) from the casing (2).

INSTALLATION OF EMERGENCY BATTERY OF BOARD ELECTRIC NETWORK

- a) Clean and degrease contact services of batteries (1) and cable contacts.
- b) Check correct polarity of internal contacts (+; -) of batteries.
- c) Join batteries with belt and insert into the casing (2) such a way the battery contacts (1) are directed fwd in the direction of flight (see detail B).
- d) Provide batteries with rubber insertion pieces (3) and insert one small insertion under the connecting cables.
- e) Fit the cover (4) upon rubber insertion pieces.

Final works

- a) Screw four screws with washers of cover (4) upon the lower cargo bay floor.
- b) Shut the access door of lower cargo bay (Fig. 52-5, item 8).

EFFECTIVITY: All

INSPECTION / CHECK

CHECK OF EMERGENCY BATTERY OF BOARD ELECTRIC NETWORK

Check of serviceability of emergency source of electric energy:

- a) Condition of check:
 - Engine should not run, all the appliance, board battery and alternator should be turned off
 - Sliding cockpit canopy should be shut, auxiliary lamp turned on and set to full intensity.
- b) Turn Master switch on.
- c) Check if green **EMERG. SOURCE** annunciator at turn-and-bank indicator is lit for at least 3 minutes, turn-and-bank warning flag is out of view and auxiliary lamp is lit at full intensity.
- d) Turn Master switch off.

Capacitance test of emergency source of electric energy:

- a) Remove battery of emergency source from the airplane and charge them with 0,1 A for 13 hours. The charging voltage should not exceed 27,5 V at ambient air + 20°C and 27,0 V at ambient air + 30°C.
- b) Discharge the battery at standard temperature with 0,5 A current. Measure the voltage and time during discharging. When the voltage of battery drops for 1,5 V the time of discharging should be at least 60 minutes.
- c) The batteries not meeting the above conditions should be discarded. The batteries meeting the above conditions should be charged according to point a) and then installed to the airplane.

BOARD BATTERY CONCORDE RG 24-20

DESCRIPTION AND OPERATION

All information about board battery are issued in Supplement No. 5 of Z 143L - Z 143LSi airplane Maintenance Manual.

EFFECTIVITY: All

24-34-00

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EXTERNAL POWER SOURCE

DESCRIPTION AND OPERATION

CAUTION

USE ONLY EXTERNAL POWER SOURCE WITH 28 V / 150 A SPECIFICATION.

TURN OFF **COMM/NAV1**, **COMM/NAV 2** AND **FLIGHT INSTRUMENT** SWITCHES BEFORE SWITCHING THE EXTERNAL POWER SOURCE ON.

The external power source receptacle is in the fuselage port side in front of cargo bay door. Wiring of the external power source connector is issued in section 91-10-00. The external power source receptacle design disables unintentional change of polarity.

The external power source switching to board electric network is controlled by **EXT. POW. SOURCE** switch. As soon as the external power source is connected to external power source receptacle and **EXT. POW. SOURCE** switch is turned on the amber **EXT. POW. SOURCE** annunciator is lit.

EFFECTIVITY: All

REPAIRS

Fault	Possible reason	Remedy
The external power socket can't be switched on.	Incorrect polarity of external power socket.	Cange polarity of external power socket.
	Interrupted electric circuit (Fig. 91-1, item A 6).	Check the circuit by ohmetr and repair faulty circuits or replace interrupted conductors.
	The connector solenoid is cut off (Fig. 91-1, item A 5).	Turn the Master switch on and measure the voltage upon the connector solenoid and in case it is the same as the voltage of external power socket and replace the connector doesn't turn on.

BOARD ELECTRIC NETWORK

DESCRIPTION AND OPERATION

The board electric network consists of individual electric circuit connected to main bus bar via pertinent switches - circuit breakers.

Marking of individual circuits:

- A - Alternator, external power socket receptacle, board battery, and VA meter
- B - Engine starting
- C - Illumination
- D - Annunciation
- E - Anti-collision beacon
- F - Radio communication and radio navigation equipment
- L - Turn-and-bank indicator, artificial horizon (attitude indicator), directional gyro
- M - Engine instruments, fuel quantity gauges

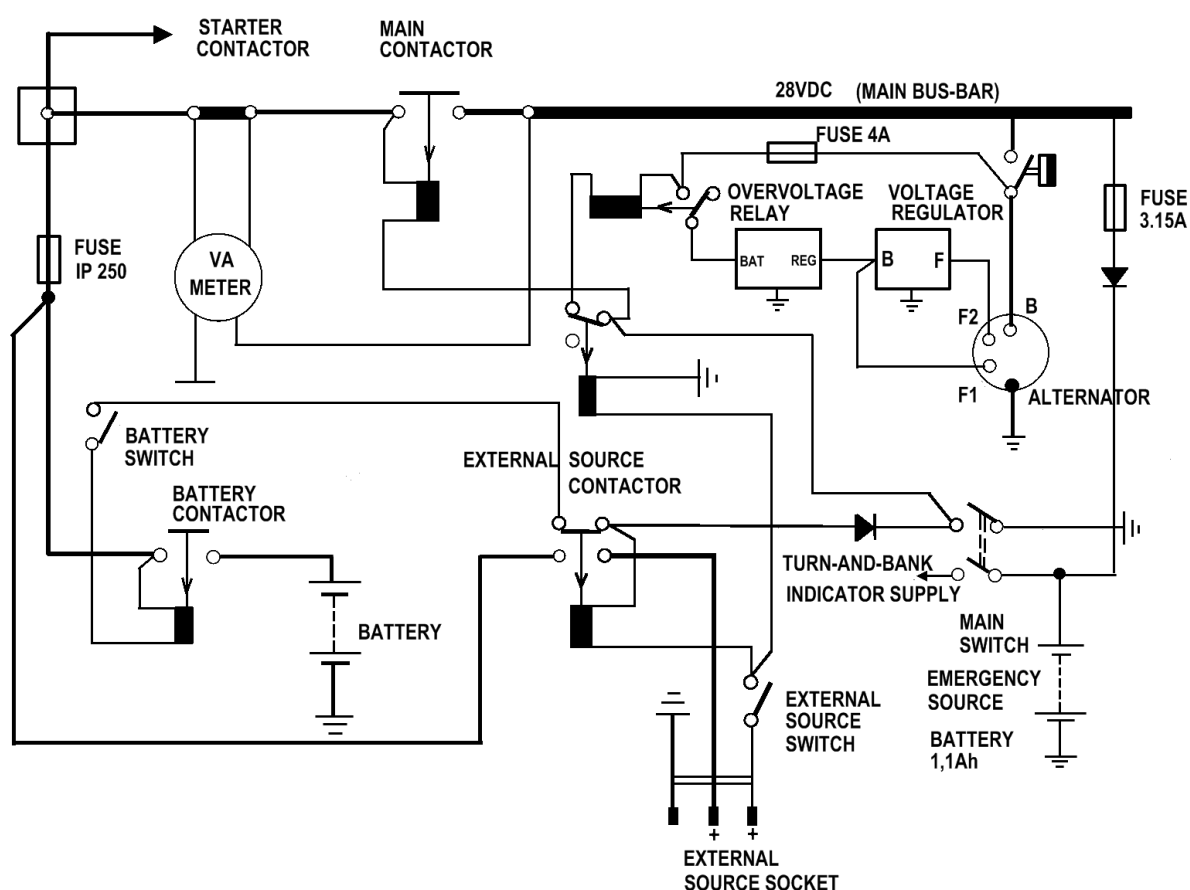


Fig. 24-5 Simplified Diagram of Airplane Power Sources

EFFECTIVITY: up to S/N 0045 including

24-50-00

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BOARD ELECTRIC NETWORK

DESCRIPTION AND OPERATION

The board electric network consists of individual electric circuit connected to main bus bar via pertinent switches - circuit breakers.

Marking of individual circuits:

- A - Alternator, external power socket receptacle, board battery, and VA meter
- B - Engine starting
- C - Illumination
- D - Annunciation
- E - Anti-collision beacon
- F - Radio communication and radio navigation equipment
- L - Turn-and-bank indicator, artificial horizon (attitude indicator), directional gyro
- M - Engine instruments, fuel quantity gauges

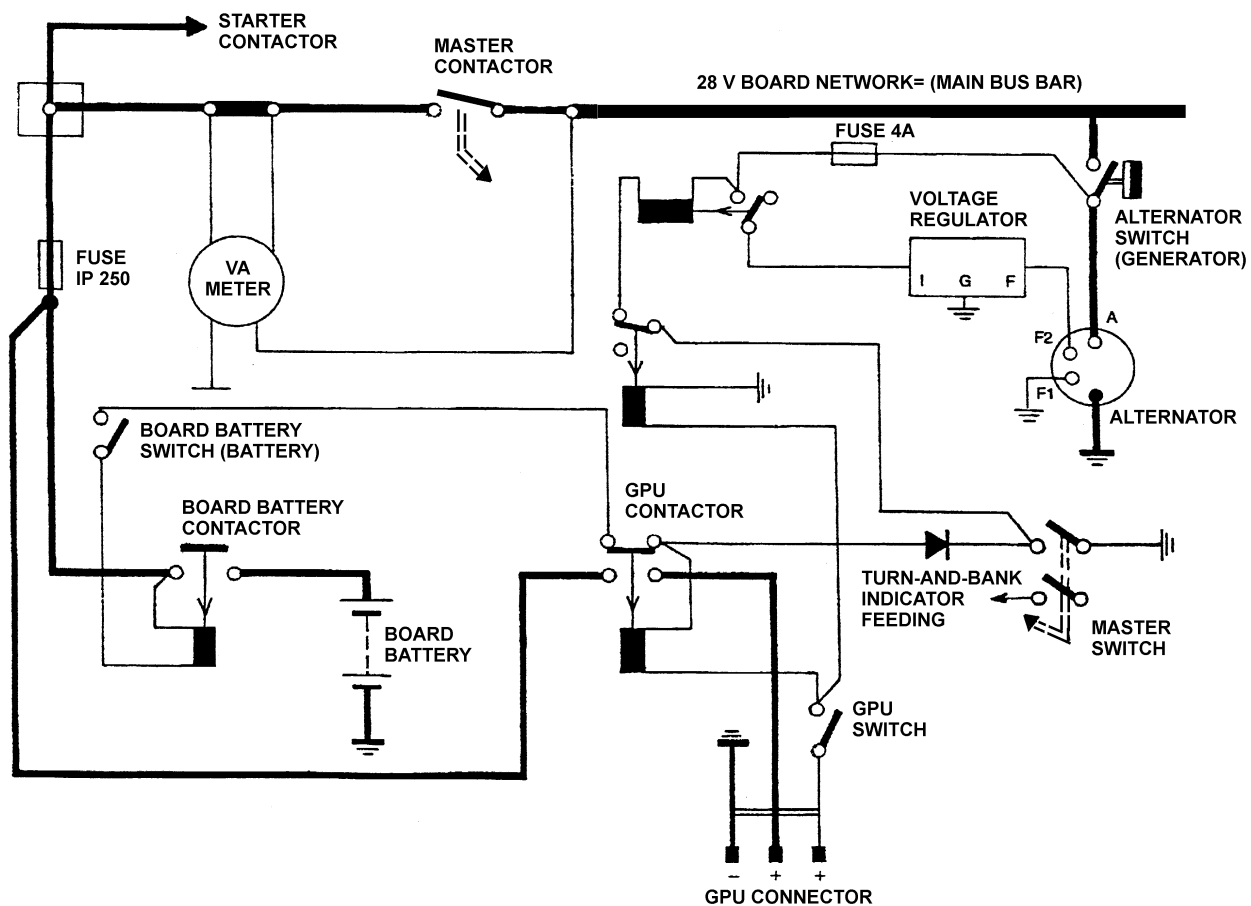


Fig. 24-5A Simplified Diagram of Airplane Power Sources

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EFFECTIVITY: All

24-40-00

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MASTER SWITCH

The Master Switch turns on and off all the electric circuits including emergency source of electric energy and excluding the engine ignition (the magnetos are turned over by magneto change-over switch) and cockpit illumination. The Master Switch is located upon panel under the instrument panel. Wiring of Master Switch is illustrated in diagram is sections 91-10-00 and 91-70-00.

SWITCHES

CAUTION

THE **LIGHTING**, **COMM/NAV 1** AND **COMM/NAV 2** SWITCHES SHOULD BE **OFF** BEFORE ENGINE START-UP OR CUT-OFF AND BEFORE AND DURING CONNECTION AND SWITCHING OF GPU TO BOARD ELECTRIC NETWORK TO PROTECT THE INSTRUMENT EQUIPMENT AGAINST PEAK VOLTAGE THREAT.

The switches serve for protection and manual control of electric circuits or its parts. Each switch is provided with pertinent label containing name of circuit it protects and switches.

The switches are located in the panel between fwd seats. Wiring of switches is issued in Chapters 91 and 95 (Strobe Lights).

The **COMM/NAV 1** and **COMM/NAV 2** switches, if installed, serve for protection and switching of radio communication and radio navigation equipment: The **COMM/NAV 1** and **COMM/NAV 2** switches are located in the panel under the instrument panel. The wiring of the **COMM/NAV 1** and **COMM/NAV 2** switches is issued in Chapter 95 (Circuit F diagram).

The **COMM 1** and **ADF/NAV** stand-by switches enable to turn the communication transceiver.I and NAV 1 and ADF audio signal reading on.

The stand-by switches are located in right (starboard) instrument panel. The switch wiring is issued in Chapter 95 (Circuit F diagram).

The stand-by switches are locked with 0.3 mm (0.01 in) copper wire provided with seal.

EFFECTIVITY: All

Survey of switches

Item	Switch label:	Purpose of switch:
A3	BATTERY	Switches board battery to board electric network
A7	GENER.	Switches alternator to board electric network
A22	EXT POW. SOURCE	Switches board electric network to GPU
B1	FUEL PUMP	Switches electric fuel booster pump
C1	LIGHTING.	Switches illumination of instruments and placards
C5	LANDING LIGHT	Switches landing light
C6	TAXI LIGHT	Switches taxi light
C69	POSITION LIGHTS	Switches position (navigation) lights
C200	STROBE LIGHTS	Switches strobe lights - if installed
D1	PITOT HEATING	Switches pitot head and stall warning sensor heating
D19	STATIC HEATING	Switches static vent heating
E1	BEACON	Switches anti-collision beacon and auxiliary lamp
L1	FLIGHT INSTR.	Switches artificial horizon(s) (attitude indicator), turn-and-bank indicator(s), directional gyro, check of light annunciation panel, stall warning annunciation, warning on disconnection of stall warning circuit, warning of low fuel level, and warning of low oil pressure.
M30	ENGINE INSTR.	Switches quadruple fuel quantity gauge, quadruple engine indicator, and engine run counter - if installed.

NOTE

The characters in **Item** column mark the electric circuit the switches belong to.

CONTROL UNIT

The Control Unit serves for light dimming of three independent circuits of instrument lighting. It also contains test circuit of stall warning locking micro-switch and board network voltage comparator set to 26.2 V annunciating the moment the board battery is not charged and from and including S/N 0053 it is possible to adjust the indication of remaining fuel quantity in left hand and right hand main fuel tanks.

The wiring diagram of The Control Unit is issued in sections 91-10-00, 91-30-00, 91-40-00 and from and including S/N 0053 91-80-00 in section 91-11-00.

FUSES

The fuses serve for protection of electric circuits or instruments. The fuses are located in the panel under the instrument panel. The IP 250 fuse is located on the left side of firewall in front of instrument panel. The wiring diagram of fuses is issued in chapters 91 and 95 (Diagram of circuit F). Up to and including S/N 0045, each fuse is provided with a label marking current load and protected circuit (instrument). Spare fuses are stored in a pocket on cockpit side. The fuse cap is provided with a thread to screw into holder, or with a bayonet closure.

From and including S/N 0046 are fuses replaced by ETA 1110 circuit breakers. Each circuit breaker is provided with a label marking protected circuit (instrument). Current load is marked on the circuit breaker.

CAUTION

MAKE SURE THE REPLACED FUSE IS OF CORRECT CURRENT VALUE.

EFFECTIVITY: All

Survey of fuses

Item	Fuse label		Protected circuit or instrument
	Up to S/N 0045 incl.	From S/N 0046 incl.	
A13	EXCIT 4 A	EXCIT	Alternator exciting
A17	ANN. PAN. 2 A	ANN. PAN.	Light annunciation panel
A18	SIGNALLIG CHECK 1 A	SIGNALLIG CHECK	Control unit
A19, A20	VA METER 1 A, 1 A	VA METER	VA-METER
A23	-	-	Board battery
B7	STARTER 2 A	STARTER	Engine starter
C58	INT. LIGHT 1 A	INT. LIGHT	Cockpit illumination
C68	PLACARDS 1 A	PLACARDS	Placard illumination
C70	INST. LGT 3,15 A	INST. LGT	Instrument illumination
C72	C. U. LIGHT 1 A	C. U. LIGHT	Auxiliary lamp
D18	STALL. W. 2 A	STALL. W.	Stall warning
F115	COMM 1 6,3 A	COMM 1	Communication transceiver 1
F116	COMM 2 6,3 A	COMM 2	Communication transceiver 2
F117	MKR 1 A	-	MKR beacon receiver
F117	-	HSI	HSI
F123	AUDIO 2 A	AUDIO	Audio control unit
F201	ADF 1 A	ADF	Automatic direction finder
F401	NAV 3,15 A	-	Navigation equipment
	NAV 1 3,15 A	-	Doubled navigation equipment
	NAV 2 3,15 A	-	
F502	XPDR 3,15 A	XPDR	Transponder
F601	DME 6,15 A	DME	Distance measuring equipment
F701	GPS 3,15 A	GPS1	Global position system 1
F702	GIC 4 A	GIC	Flux gate gyro compass
F801	-	NO CON.	
F802	-	EXT. GPS	
F803	-	NO CON.	
F805	RAD. ALT. 2 A	-	Radar altimeter
F901	ELT 1 A	ELT	Emergency locator transmitter
F902		GPS2	Global position system 2
L7	ATT. GYR. 1 A	ATT. GYR.	Attitude indicator (Artificial horizon)
L8	DIR. GYR. 1 A	DIR. GYR.	Directional gyro
L9	TURN C. 1 A	TURN C.	Turn-and-bank indicator
L11	BATTERY 3,15 A	BATTERY	Charging of battery of em source of electric energy
M19	FUEL IND. R 1 A	FUEL IND. R	Fuel quantity indicator of wing tanks (R)
M20	ENG. IND. 2 A	ENG. IND.	Engine instruments
M21	FUEL IND. L 1 A	FUEL IND. L	Fuel quantity indicator of wing tanks (L)
M25	VERG. TEMP. 1 A	VERG. TEMP.	Quadruple engine indicator
M26	KRAFTST. DR. 1 A	KRAFTST. DR.	
M27	ÖLDRUCK 1 A	ÖLDRUCK	
M28	ÖLTEMP. 1 A	ÖLTEMP.	

NOTE

The characters in ITEM column mark electric circuit the fuses are used in.
 The fuses M25 through M28 are used in airplanes registered in GFR.

EFFECTIVITY: All

REPAIRS

Fault	Possible reason	Remedy
The board network can't be turned on by Master Switch	Electric circuit is cut (Fig. 91-1, item A 10).	Check the circuit by ohmmeter and repair or replace faulty parts and cut cables
	Contactor solenoid is cut (Fig. 91-1, item A 24) up to S/N 0045 including.	Turn Master Switch on and measure the voltage upon solenoid. Replace contactor in the voltage is equal to that of board battery and contactor does not turn on.

EFFECTIVITY: All

MAINTENANCE

INSPECTION / CHECK

CHECK OF SERVICEABILITY OF STAND-BY SWITCHES

- 1) Turn **BATTERY** and **COMM / NAV 1** switches on.
- 2) Check serviceability of COMM 1 switch:
 - a) Turn the control unit to COMM 2 position.
 - b) Turn COMM 2 transceiver by volume control upon transceiver control unit off.
 - c) Turn COMM 1 transceiver on.
 - d) Turn **EMERGENCY SWITCH COMM 1** – and establish communication.
 - e) **EMERGENCY SWITCH COMM 1** switch over ten times and make sure by listening to COMM 1 receiver the instrument serviceability.
- 3) Check serviceability of NAV 1 and ADF stand-by :
 - a) Turn off the audio signals on Audio control Console.
 - b) Turn **EMERGENCY SWITCH ADF / NAV** on.
 - c) Check serviceability of NAV 1 stand-by switch of navigation receiver:
 - Turn NAV 1 receiver on by volume control upon NAV control panel
 - **EMERGENCY SWITCH ADF / NAV** switch over ten times making sure the identification signal of NAV 1 receiver is heard properly.

NOTE

In case there is no identification signal it is possible to check NAV receiver operation by listening to receiver noise.

- d) Check serviceability of ADF stand-by switch:
 - Turn ADF on by volume control upon ADF control panel and tune accessssible NDB.
 - Turn **EMERGENCY SWITCH ADF / NAV** switch over ten times and make sure by listening the ADF operates well.
- 4) Lock the stand-by switches with 0,3 mm locking wire and provide it with seal.

APPROVED REPAIRS

REPAIR OF ELECTRIC SYSTEM

Fault	Remedy
1) Short circuit in network.	Check all the electric circuit and remove the defect that caused the short circuit.
2) Improperly joined connectors or cables	Join the correctors by hand and lock with safety wire (up to S/N 0045 including). Fix improperly joined cables and clips.
3) Interrupted cable.	Detect interrupted cable either visually or by instrument or bulb tester and replace faulty cable.
4) Defective cable insulation	Replace faulty cable and provide new cable with label according to electric diagram.
5) Detected leakage of electric current through insulation. This effect is characterized by drop of voltage measured at individual instruments while the terminal voltage of board battery remains correct and the same.	Check insulation strength of cables when the battery is disconnected from board network. Replace cables with defective insulation.
6) Faulty shielding of shielded cables (up to S/N 0045 including).	<ul style="list-style-type: none">• Repair light defect (about 1/4 of periphery) without patch-bend individual strands outward and band with threads. Paint repaired spot with lacquer.• Repair larger defects by patch. Cover the defective place with patch made from pleated strap all along the periphery, band the place with thread, and paint by lacquer.• Replace corrosive shielded cable.
7) Corrosive bindings.	Clean the corrosive spots and paint with lacquer after bonding or grounding connection.

EFFECTIVITY: All

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