SUPPLEMENT No. 5

CONCORDE RG 24-20 BATTERY

This supplement must be included in the Z 143 L - Z 143 LSi Airplane Maintenance Manual (Doc: No. 005.022.2), Chapter 95 in case of airplane accumulatory battery CONCORDE RG 24-20 acc. to the Drwg. No. L 143.8555 is installed.

The information contained herein supplements or supersedes the information described in Z 143 L - Z 143 LSi Airplane Maintenance Manual (Doc. No. 005.022.2).

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CONCORDE BATTERY

TECHNICAL DESCRIPTION

The airplane is equipped with airplane accumulatory battery CONCORDE RG 24-20. The battery is controlled by **BATTERY** switch.

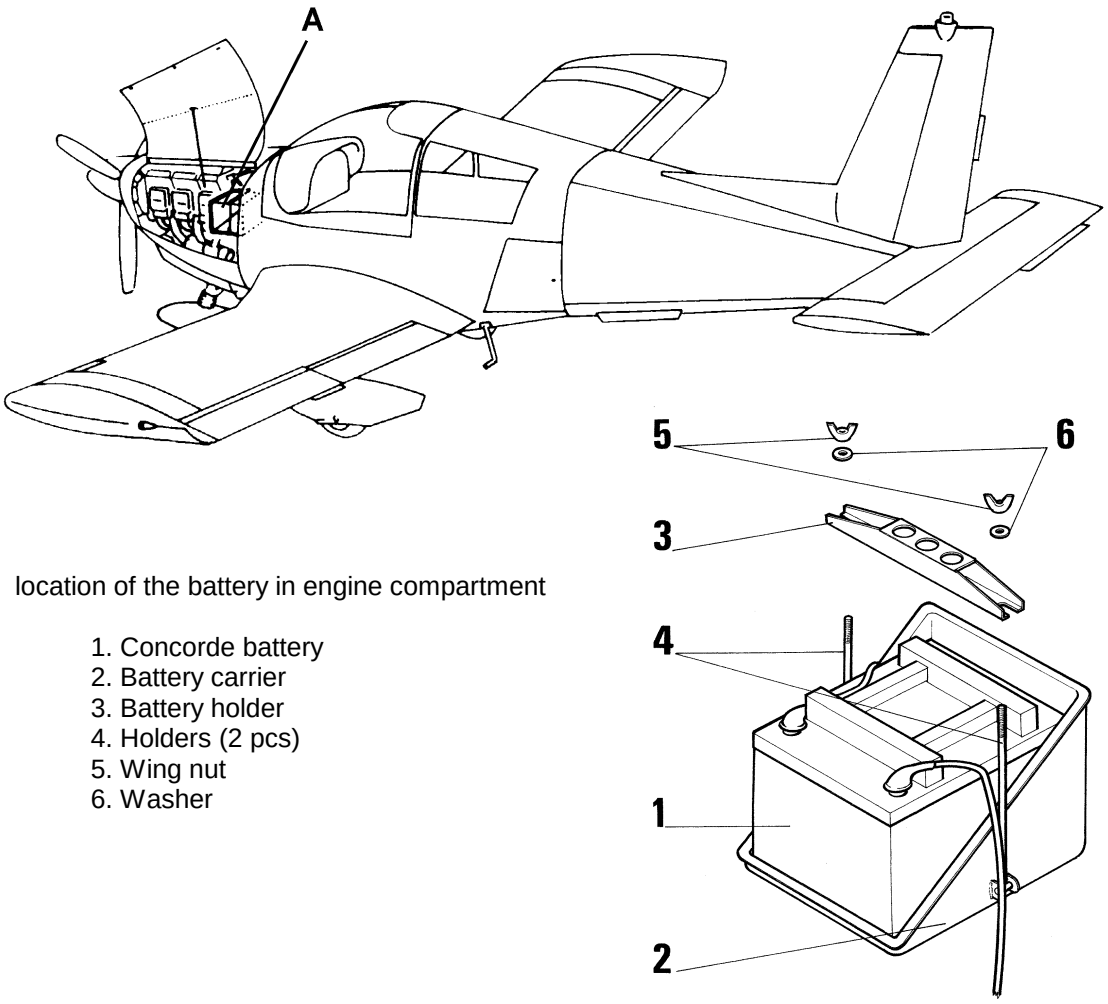
The airplane accumulatory battery CONCORDE RG 24-20 serves as auxilliary electric source and consists from 12 lead - acid cells connected in series. The open circuit voltage of the 12-cell battery is aproximatelly 24 V. Open circuit voltage is the voltage of the battery, when it is not connected to a load.
Each cell of accumulatory battery has positive and negative plates arranged alternatelly and insulated from each other by separators. Each plate consists of a framework, called the plate grid and the active material fixed in the plate grid. The plate grid is cast from lead alloy.

The airplane accumulatory battery CONCORDE RG 24-20 is located in the carrier in engine compartment before firewall. To entrance to battery is necessary open left engine cover.

The wiring diagram of board battery connection to board network is described in Section 91-10-00.

BASIC TECHNICAL DATA

Battery voltage rating	24 V
Battery rated capacity	19 Ah
Battery total weight	19.0 kg
Voltage check of unloaded battery:	
Battery charging condition 100%:	25.8 V
Battery charging condition 75%:	25.4 V
Battery charging condition 50%:	24.8 V
Battery charging condition 25%:	24.0 V
Battery charging condition 0%:	23.4 V



A location of the battery in engine compartment

1. Concorde battery
2. Battery carrier
3. Battery holder
4. Holders (2 pcs)
5. Wing nut
6. Washer

Fig. No. 1 Installation of battery on airplane

NOTE:

Installation of Sonnenschein emergency batteries is illustrated in Fig. No. 24-4 of Z 143 L – Z 143 LSi Airplane Maintenance Manual, Section 24-33-00.

OPERATION AND MAINTENANCE

DISASSEMBLY / ASSEMBLY

DISASSEMBLY OF BATTERY FROM AIRPLANE

Preparatory Works

a) Switch-off Master Switch and BATTERY switch to the “OFF“ position.

b) Open left side engine cover (Fig. No. 71-1, item 4).

Disassembly of Board Battery

a) Disconnect any external power source.

b) Remove the screws of terminal clip and disconnect battery cables from battery clip. Allways disconnect the groung cable first and install the groung cables last.

c) Release the clip, which battery fixing.

d) Carrefully remove battery.

CAUTION:

THE BATTERY IS HEAVY. USE APPROPRIATE LIFTING DEVICE OR EQUIPMENT. USE BATTERY HANDLES WHERE PROVIDED.

ASSEMBLY OF BATTERY IN AIRPLANE

a) Check the battery for damaged. Cracks in metal or plastic containers are not permitted. Properly degrease the contact areas on battery clip and supply clip.

b) Switch-off Master Switch and BATTERY switch to the “OFF“.

c) Disconnect any external power source.

d) Fixed the charged battery on clean and dry battery carrier.

CAUTION:

THE BATTERY IS HEAVY. USE APPROPRIATE LIFTING DEVICE OR EQUIPMENT. USE BATTERY HANDLES WHERE PROVIDED.

e) Connect battery to electric power source. Verify the consistent polarity of battery clip with support clip.

f) Subsequently connect the battery supply clip by screws and locking washers , which are delivered with battery. Tighten the screws of terminal clip of moment 7.9 Nm. Allways disconnect the groung cable first and install the groung cables last.

g) Protected grease after the tighten of battery terminal clip grease accesible parts of clip.

h) Fixed the holders on battery and tighten the nuts. The nuts locked after tightening by binding wire.

CHECKS

BATTERY CHARGING

a) Measure the voltage of unloaded battery to check charging status of the battery. Charging status information is stated in page 3 of this Supplement.

b) If necessary, charge the battery at constant voltage of 28.2 V. Charging is finished, when the charging current remains constant for the period of one hour (i.e. after 3 measurements performed every 20 minutes). Recommended charging current is 1.9 A, max. charging current is 3 A.

c) Charged battery should not be moved at least one hour before checking its voltage.

d) Check voltage of unloaded battery according to step a) of this subtitle.

BATTERY CAPACITY CHECK

a) Charged batteries should be stabilized for at least 24 hours at ambient temperature (from +15°C to +27°C).

b) Batteries should be discharged at 19 A current to the final voltage of 20.0 V. During discharging, measure battery voltage and time. In case of voltage drop to 20.0 V, duration of discharge must exceed 51 minutes. Battery capacity must exceed 85% of its nominal value (i.e. 16.15 Ah).

c) Batteries that satisfy conditions of this check can be charged according to subtitle “BATTERY CHARGING” of this Supplement. Charged batteries may be used for airplane operation.

d) Batteries with duration of discharge shorter than 51 minutes should be charged according to subtitle “BATTERY CHARGING” of this Supplement and after charging perform again battery capacity check acc. to the step b), c) of this subtitle.

e) Batteries that satisfy conditions of repeated check should be charged according to subtitle “BATTERY CHARGING” of this Supplement and can be used for airplane operation.

f) Batteries that do not satisfy conditions of repeated check should undergo formatting procedure described in following subtitle of this Supplement.

BATTERY FORMATTING PROCEDURE

a) Batteries that do not satisfy conditions of capacity check acc. to previous subtitle of this Supplement or batteries that have not been treated properly during storage should be discharged at 19 A current to the final voltage of 18.0 V.

b) Charge the battery at constant current 1.9 A for 16 hours.
WARNING: This procedure could destroy the battery, if performed repeatedly

c) Allow the battery to cool down for 8 hours.

d) Check battery-charging status and if necessary, charge the battery according to subtitle “BATTERY CHARGING” of this Supplement.

e) Perform the battery capacity check according to previous subtitle of this Supplement.

TROUBLESHOOTING

Trouble	Possible cause	Correction
Low or no voltage	Battery partially or fully discharged	Battery discharged acc. to subtitle “BATTERY CHARGING” of this Supplement
Battery does not remain charged	Battery life time has expired	Use a new battery
Battery warms up during charging	Battery life time has expired	Use a new battery

REPAIR AND REPLACEMENT

a) Only authorized repair shops approved by CONCORDE Company and appropriate national aviation authority can repair batteries.

b) Battery replacement means removing the old battery and installing new one according to instructions described in subtitles DISASSEMBLY / ASSEMBLY OF BATTERY FROM / IN AIRPLANE of this supplement.

c) Batteries should be replaced after 3 years of operation or after 1800 operating hours.

STORAGE

a) Each battery is treated and charged by manufacturer before dispatching. If it is to be stored, it must be storage in cold and dry ambiance at maximum temperature of +27°C.

b) Maximum life time of battery is ensured by regular charging it every 90 days. Also, it must be charged up whenever its voltage measured on unloaded battery drops below 25.0 V.

c) Battery guarantee is not valid, if the battery is not put into operation within one year after its production date.

d) Batteries that have not been charged up every 90 days during storage period should undergo formatting procedure and capacity check.

INSPECTION

SCHEDULED PERIODIC INSPECTIONS

Batteries used to start piston engines must have undergone periodic capacity checks. Before its initial inspection, battery may be in operation for 24 months or 1200 operating hours (it depends on what comes earlier). Subsequent capacity checks should be performed after every 12 months or every 200 operating hours (it depends on what comes earlier).

Procedure:

a) Turn off Master Switch and remove battery from the aircraft according to subtitles DISASSEMBLY / ASSEMBLY OF BATTERY FROM / IN AIRPLANE of this supplement.

b) Check visually whether the battery is damaged or not. Check its mechanical integrity and integrity of battery body. Damaged batteries must be put out of service immediately.

c) Check battery-charging status and if necessary, charge it up according to subtitle “BATTERY CHARGING” of this Supplement.

d) Perform battery capacity check according to subtitle “BATTERY CAPACITY CHECK” of this Supplement.

NON-SCHEDULED INSPECTION (special maintenance)

Special maintenance in the range of periodic maintenance is performed in the following instances:

a) When the battery is damaged mechanically or when mechanical damage is suspected, e.g. when it falls to the ground (even from the height of several centimeters); when the battery is hit by a heavy blow; when permissible operating multiples are exceeded or when the airplane is damaged.

b) After increased electrical load of the battery, e.g.:
   1) The engine is being started by battery current for more than 90 seconds in total (measured from the moment the engine was stopped).
   2) There is an electrical short-circuit in the conductive route from battery contacts to the circuit breaker including short-circuits on breakers.
   3) Other problems - current consumption from the battery is more than 40 A or the amount of consumed current cannot be identified.
   4) Abnormally high charging current is necessary for battery to hold its voltage.

c) Prohibited battery discharging which can result from:
   1) generator failure
   2) failure of airborne electrical network
   3) battery failure - in case the battery is used to supply any electrical appliance outside of the airplane

d) Other similar cases