24

ELECTRICAL POWER

LIST OF EFFECTIVE PAGES

CHAPTER	PAGE	DATE
24-LEP (BA)	1	NOV 09
	2	OCT 02
24-TC (BA)	1	OCT 02
	2	OCT 02
	3	OCT 02
	4	OCT 02
	5	OCT 02
	6	DEC 98
24-00-00 (EA)	1	DEC 98
	2	DEC 98
	3	DEC 98
	4	DEC 98
	5	DEC 98
	6	DEC 98
24-00-00 (AM)	101	DEC 98
	102	DEC 98
	103	NOV 09
	104	OCT 02
	105	NOV 09
	106	DEC 98
24-00-00 (AQ)	101	DEC 98
	102	NOV 09
	103	NOV 09
	104	DEC 98
24-00-00 (BA)	301	OCT 02
	302	OCT 02
24-30-00 (BA)	1	OCT 02
	2	OCT 02
	3	OCT 02
	4	OCT 02
	5	OCT 02
	6	OCT 02
24-30-00 (DG)	1	OCT 02
	2	OCT 02
	3	OCT 02
	4	OCT 02
24-30-00 (BA)	601	OCT 02
	602	OCT 02
	603	OCT 02
	604	OCT 02
	605	OCT 02
	606	OCT 02
	607	OCT 02
	608	OCT 02
24-30-00 (BG)	601	SEP 04
	602	SEP 04
	603	OCT 02
	604	OCT 02
	605	OCT 02
	606	OCT 02
24-30-01 (BA)	401	OCT 02
	402	OCT 02
	403	OCT 02
	404	OCT 02
	405	OCT 02
	406	OCT 02
24-30-01 (BG)	401	OCT 02
	402	OCT 02
	403	OCT 02
	404	OCT 02
	405	OCT 02
	406	OCT 02
24-30-01 (BA)	501	OCT 02
	502	OCT 02
	503	OCT 02
	504	OCT 02
24-30-02 (BA)	301	OCT 02
	302	OCT 02
24-30-02 (BA)	401	OCT 02
	402	OCT 02
	403	OCT 02
	404	OCT 02

CHAPTER	PAGE	DATE	CHAPTER	PAGE	DATE
24-30-02 (BA)	601	OCT 02			
	602	OCT 02			
24-30-03 (BA)	401	OCT 02			
	402	OCT 02			
24-30-03 (BG)	401	OCT 02			
	402	OCT 02			
24-40-00 (BA)	1	OCT 02			
	2	OCT 02			
	3	OCT 02			
	4	OCT 02			
	5	OCT 02			
	6	OCT 02			
24-40-00 (BM)	1	OCT 02			
	2	OCT 02			
24-50-00 (BA)	1	OCT 02			
	2	OCT 02			
	3	OCT 02			
	4	OCT 02			
	5	OCT 02			
	6	OCT 02			
24-50-00 (CM)	1	OCT 02			
	2	OCT 02			
	3	OCT 02			
	4	OCT 02			
	5	OCT 02			
	6	OCT 02			
24-70-00 (BA)	1	DEC 98			
	2	OCT 02			

TABLE OF CONTENTS

PAGE INTENTIONALLY LEFT BLANK

ELECTRICAL POWER

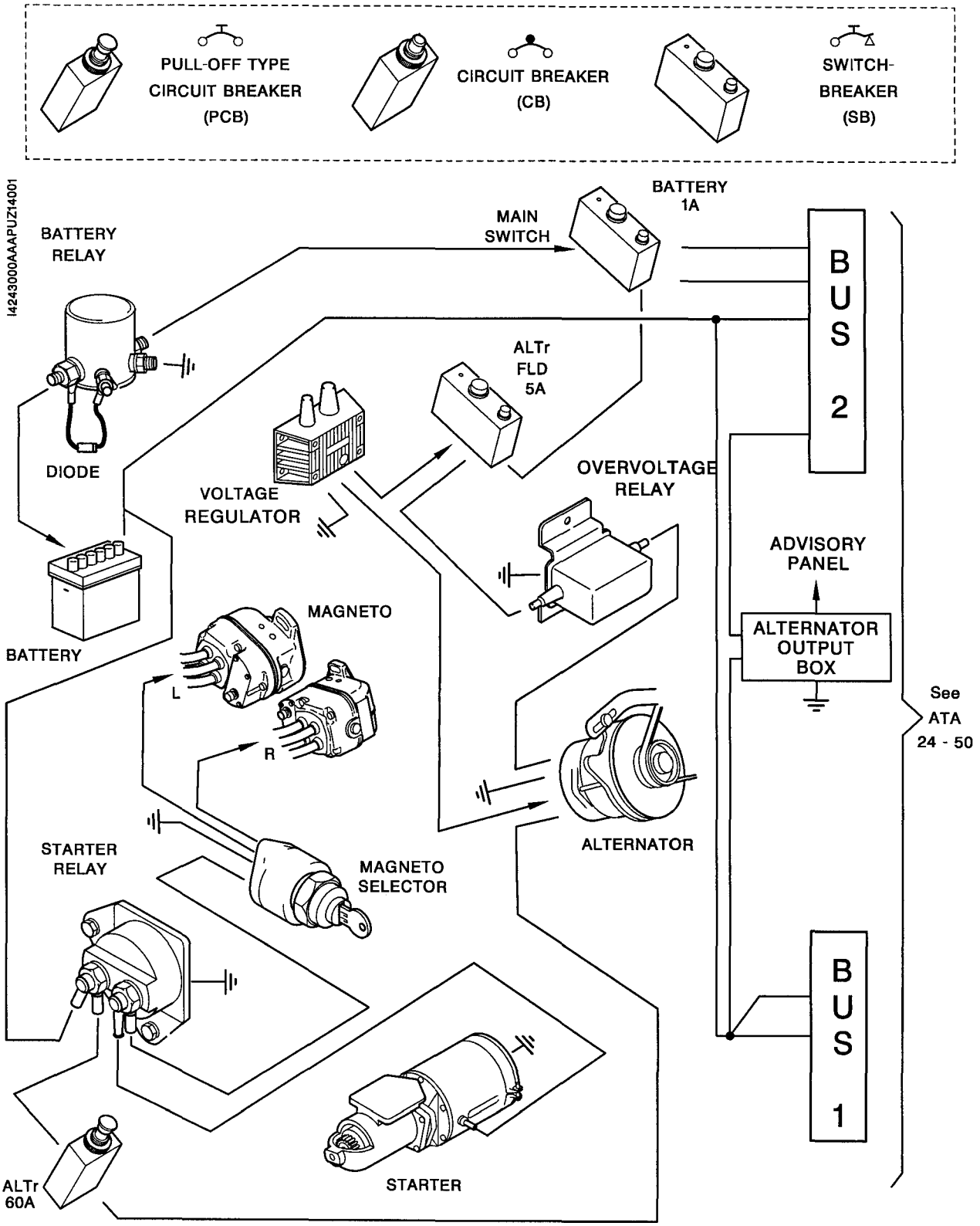
DESCRIPTION AND OPERATION

1. GENERAL

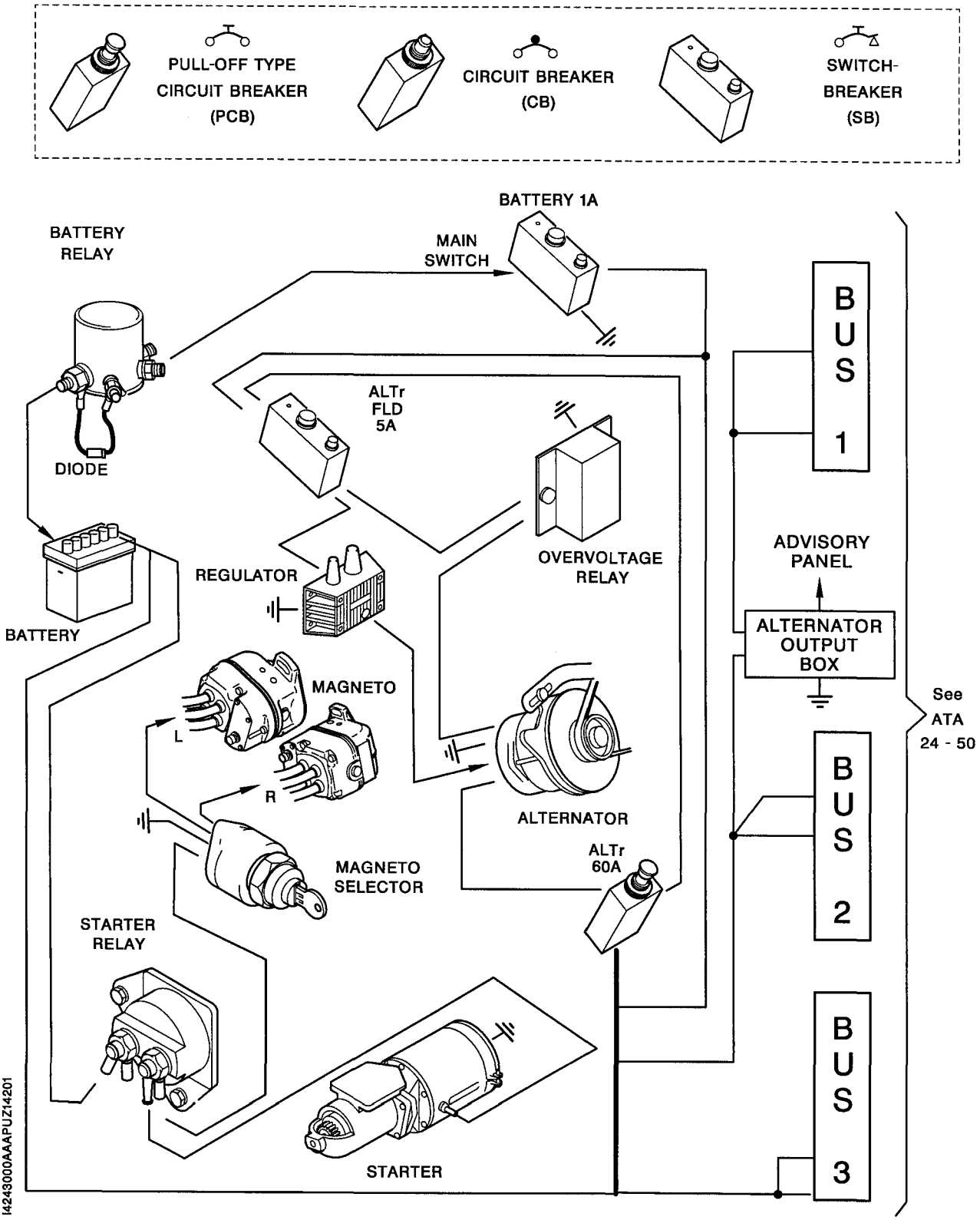
The electrical power system includes all electric equipment and components which produce, control and supply direct current to other circuits.

The electrical power system consists of the following sub–systems :

- DC generation – refer to 24–30–00,
- external power – refer to 24–40–00,
- distribution – refer to 24–50–00,
- electrical bonding – refer to 24–70–00 (option).

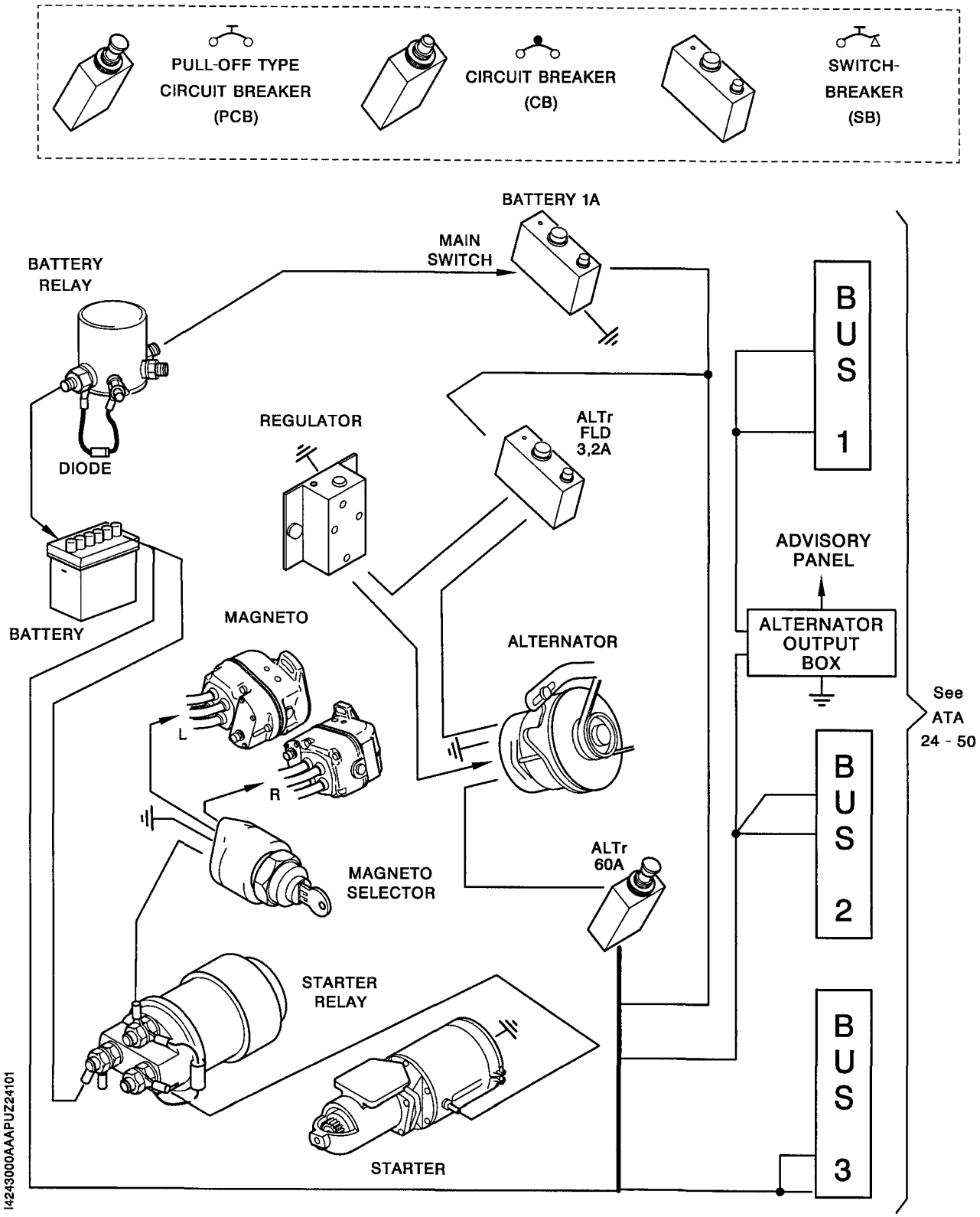


Standard electrical diagram
Figure 1 – S / N 1 – 180, if alternator circuit–breaker on firewall



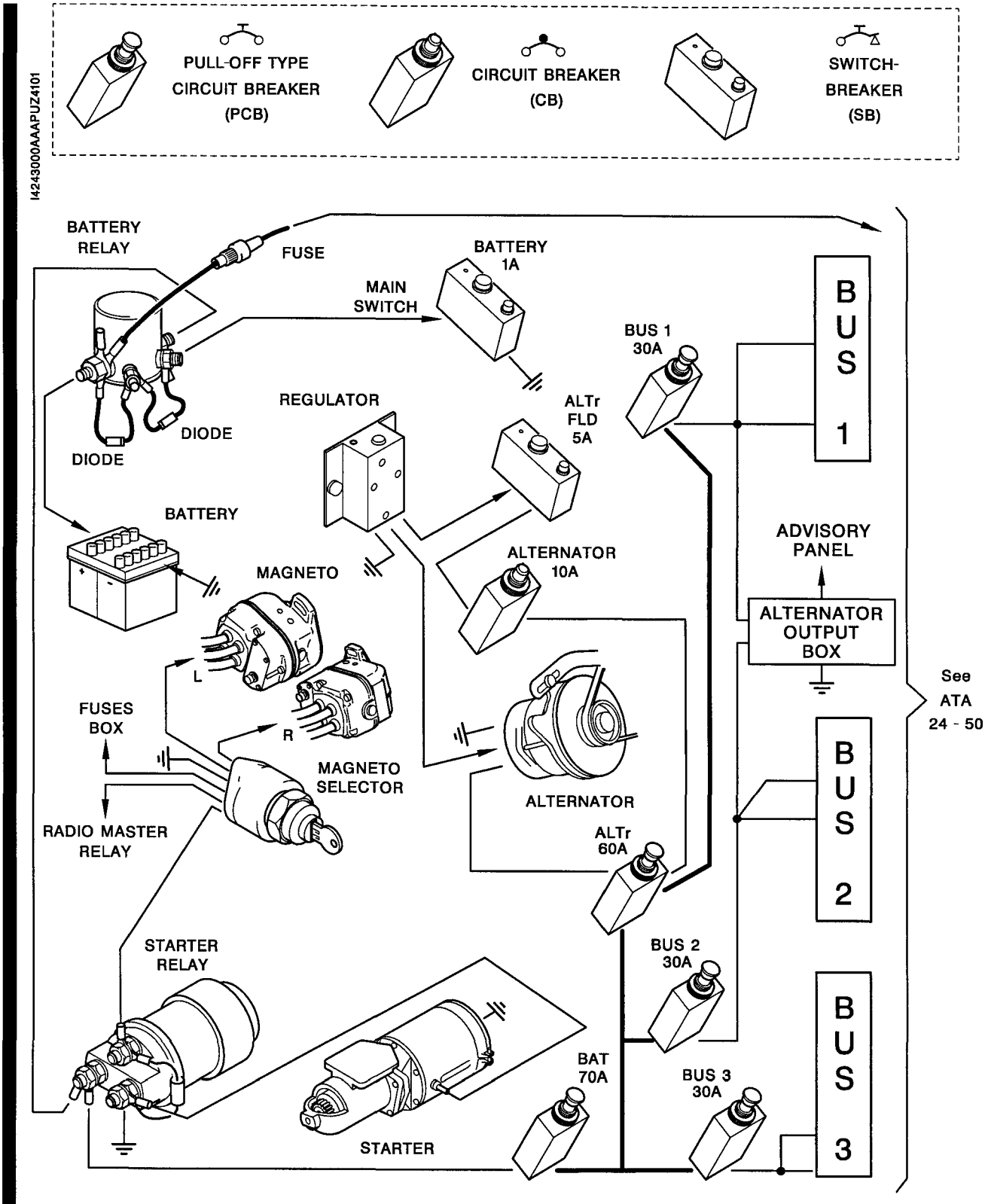
Standard electrical diagram
Figure 1A – S / N 181 – 369
S / N 1 – 180, if alternator circuit–breaker in cockpit

AEAA
Validity : S / N 1 – 9999



Standard electrical diagram
Figure 1B – S / N 370 – 822, 850 – 887, 889 – 947

AEAA
Validity : S / N 1 – 9999



Standard electrical diagram
Figure 1C – S / N 823 – 849, 888, 948 – 9999

PAGE INTENTIONALLY LEFT BLANK

ELECTRICAL POWER

TROUBLE–SHOOTING

1. GENERAL

Two cases of failure may be detected by lighting–up of generation warning light.

- Figure 101 : Voltmeter indication in upper red (or green) sector then drops in lower red sector.
- Figure 102 : Generation warning light on with voltmeter indication in green sector.

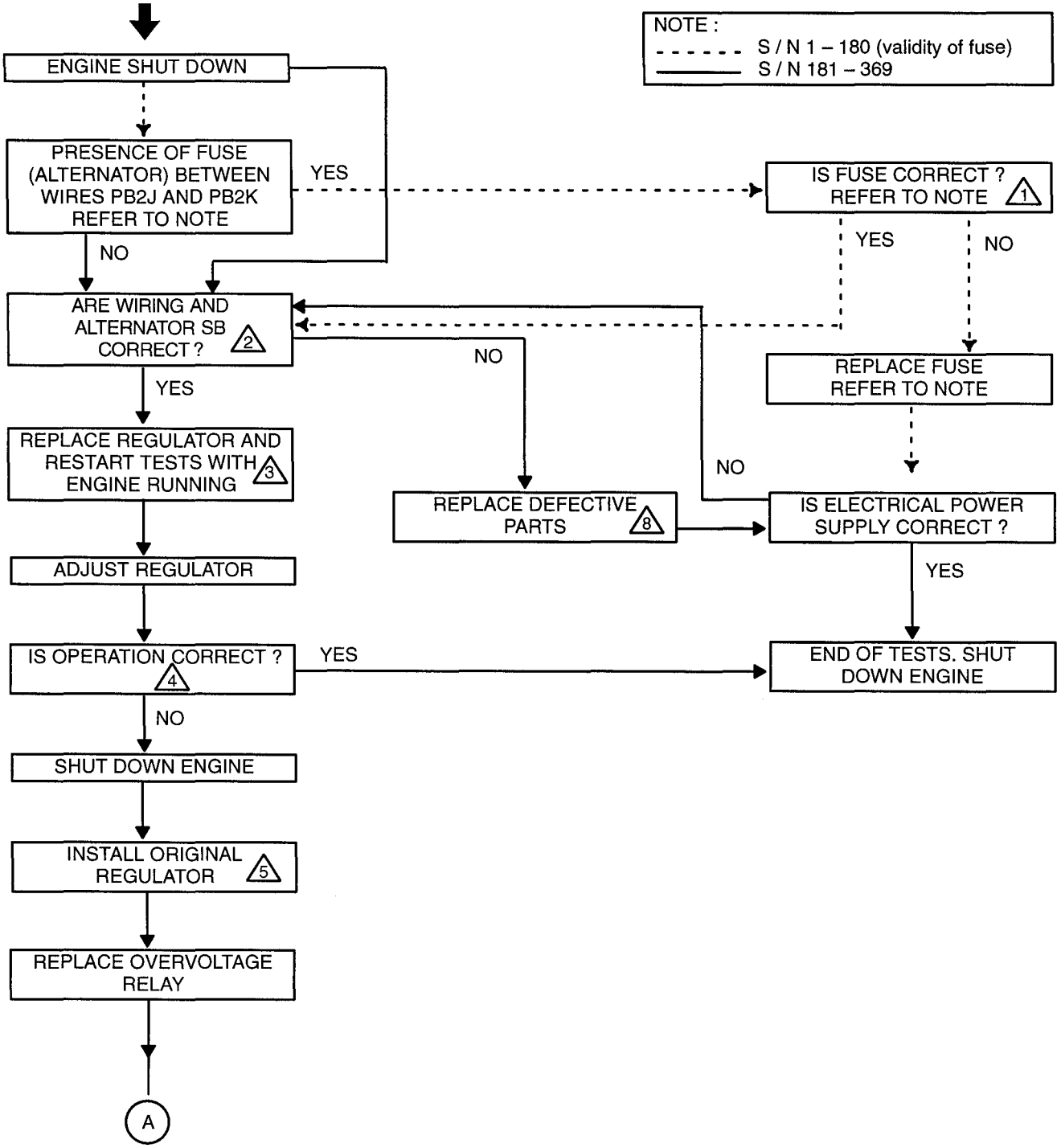
Follow trouble–shooting procedures listed hereafter.

If the latter are insufficient, contact SOCATA customer support, please do not forget to specify number of figure and the order followed for trouble–shooting (for example : 1 – 7 – 2 – 3 – 4 – 5 – 6 – 9 or 11 – 15 – 12 – 13 – 16).

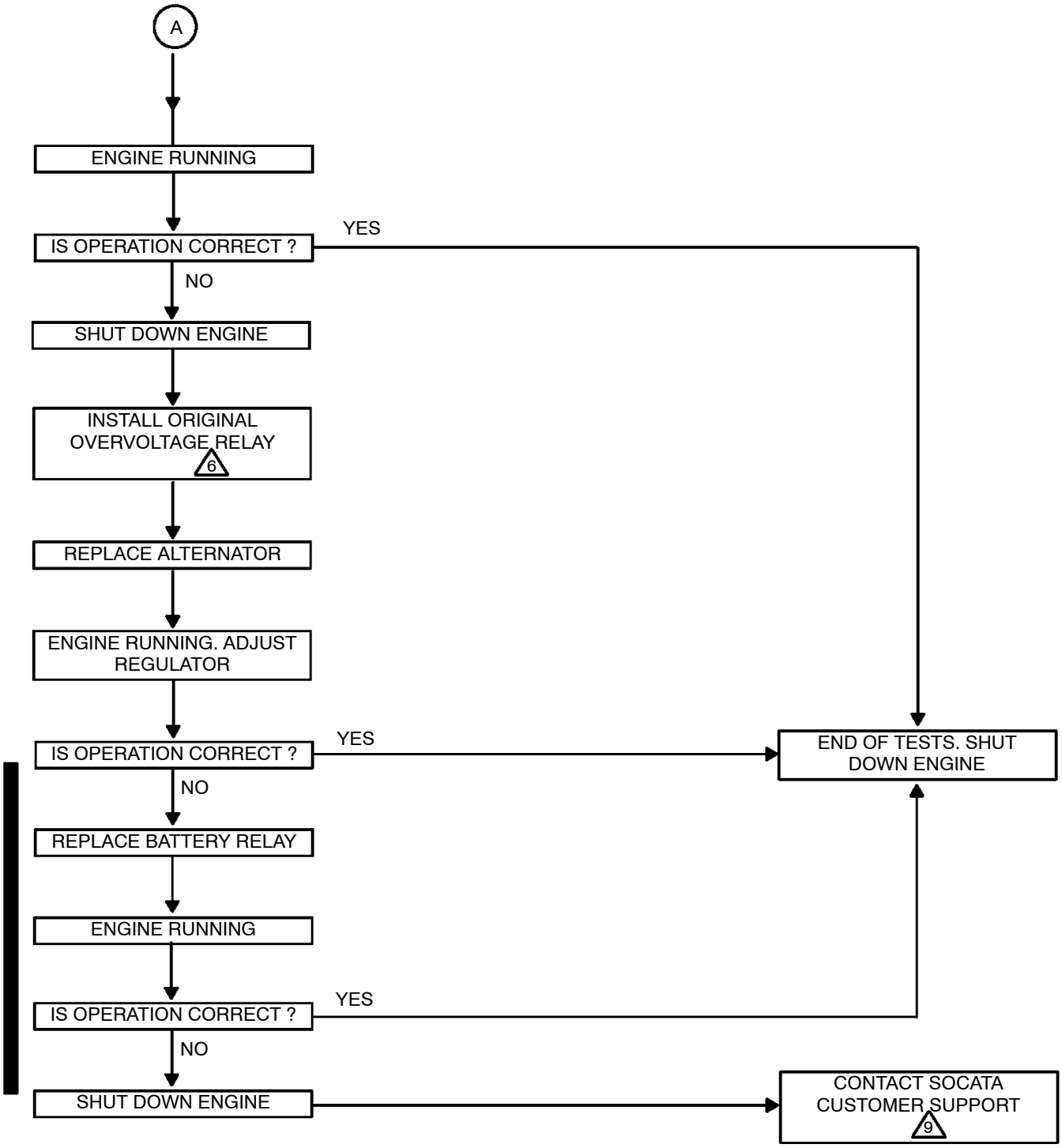
NOTE : SB : Switch–breaker.

VOLTMETER INDICATION IN UPPER RED (OR GREEN) SECTOR THEN DROPS IN LOWER RED SECTOR

PREREQUISITES
ENGINE RUNNING
GENERATION WARNING LIGHT ON



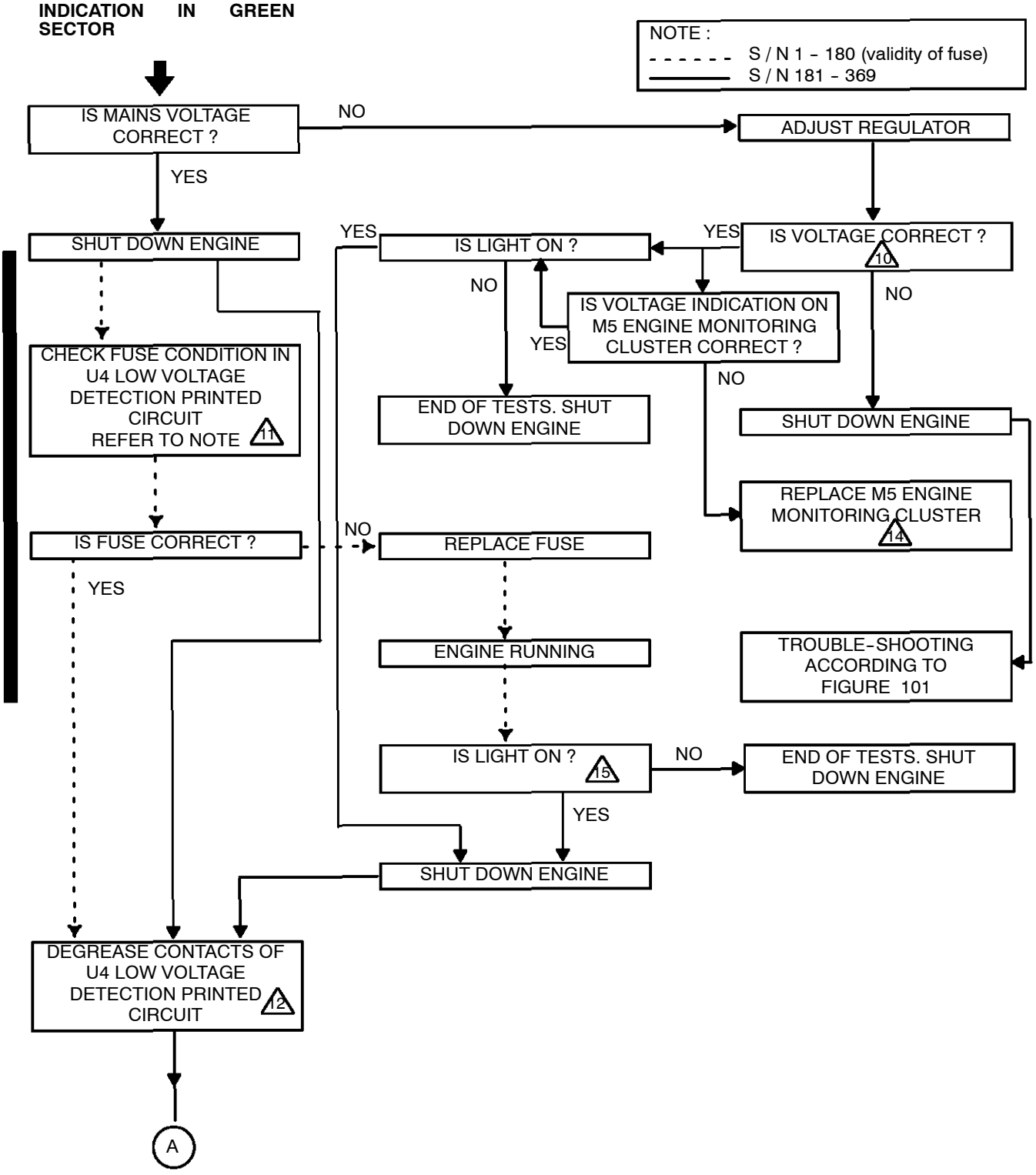
Voltmeter indication in upper red (or green) sector then drops in lower red sector
Figure 101 (1/2)



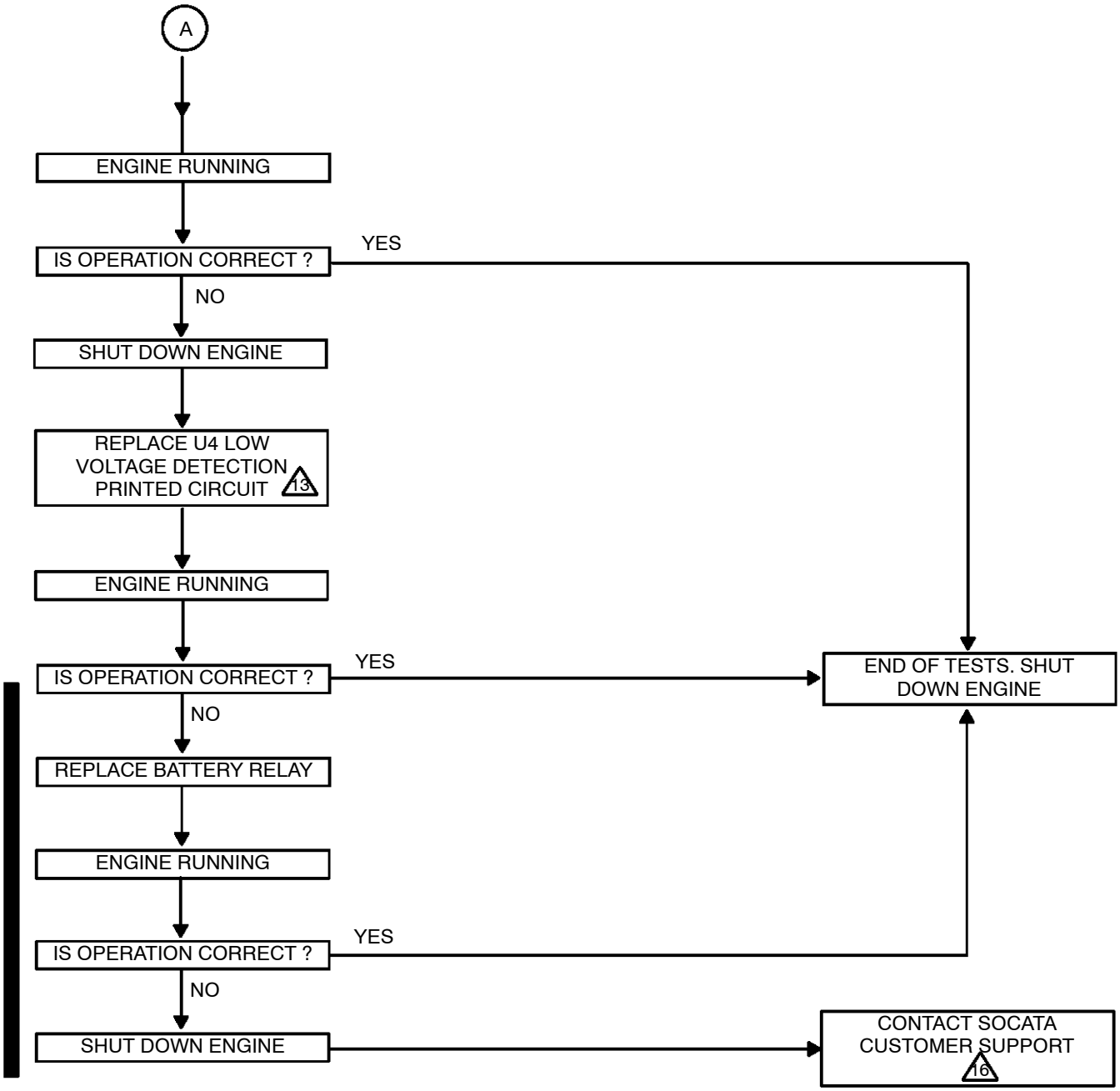
Voltmeter indication in upper red (or green) sector then drops in lower red sector
Figure 101 (2/2)

GENERATION WARNING LIGHT ON WITH VOLTMETER INDICATION IN GREEN SECTOR

PREREQUISITES
ENGINE RUNNING



Generation warning light on with voltmeter indication in green sector
Figure 102 (1/2)



Generation warning light on with voltmeter indication in green sector
Figure 102 (2/2)

PAGE INTENTIONALLY LEFT BLANK

ELECTRICAL POWER

TROUBLE-SHOOTING

1. GENERAL

Two cases of failure may be detected by lighting-up of generation warning light.

- Figure 101 : Voltmeter indication in upper red (or green) sector then drops in lower red sector.
- Figure 102 : Generation warning light on with voltmeter indication in green sector.

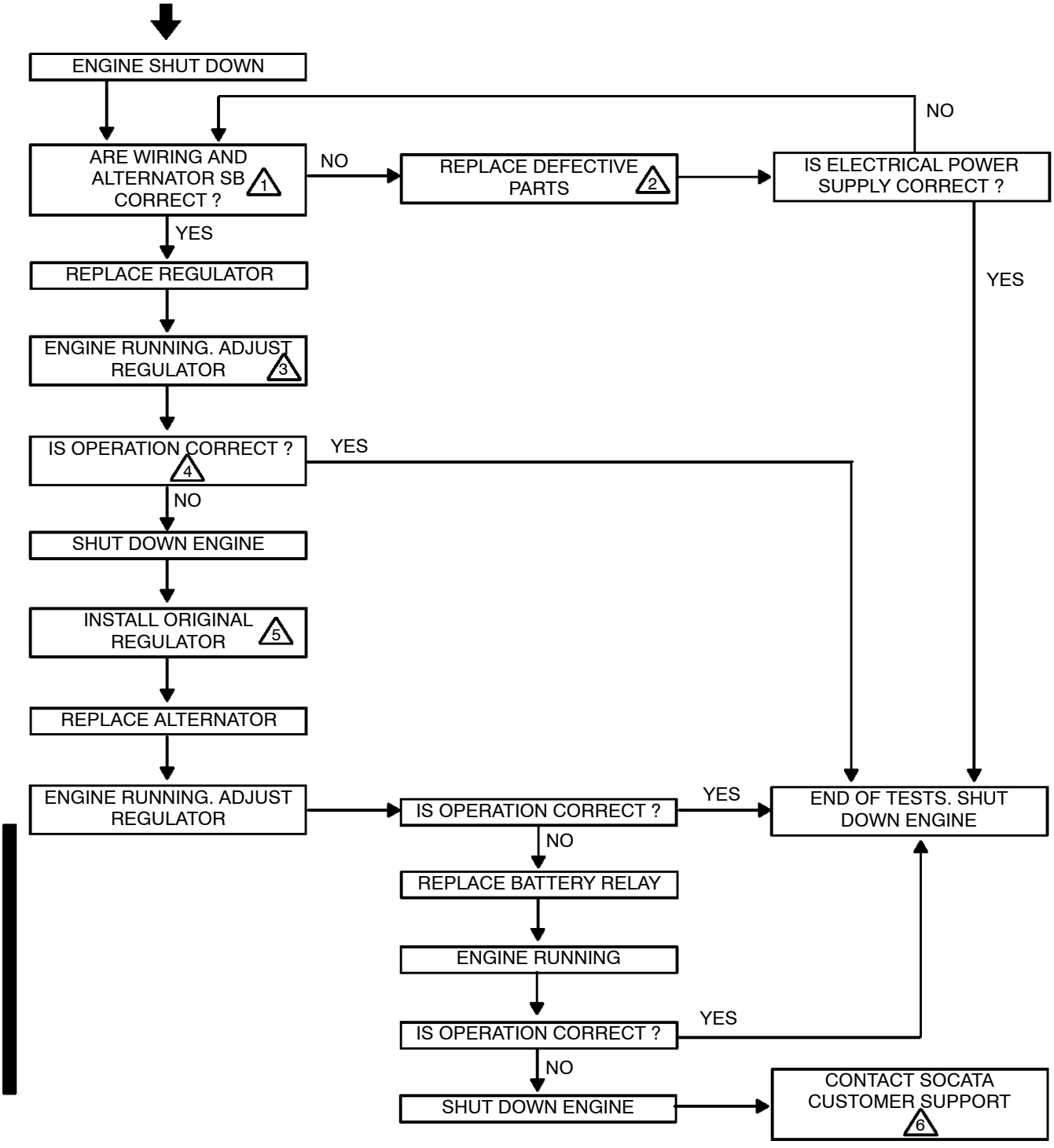
Follow trouble-shooting procedures listed hereafter.

If the latter are insufficient, contact SOCATA customer support, please do not forget to specify number of figure and the order followed for trouble-shooting (for example : 1 - 7 - 2 - 3 - 4 - 5 - 6 - 9 or 11 - 15 - 12 - 13 - 16).

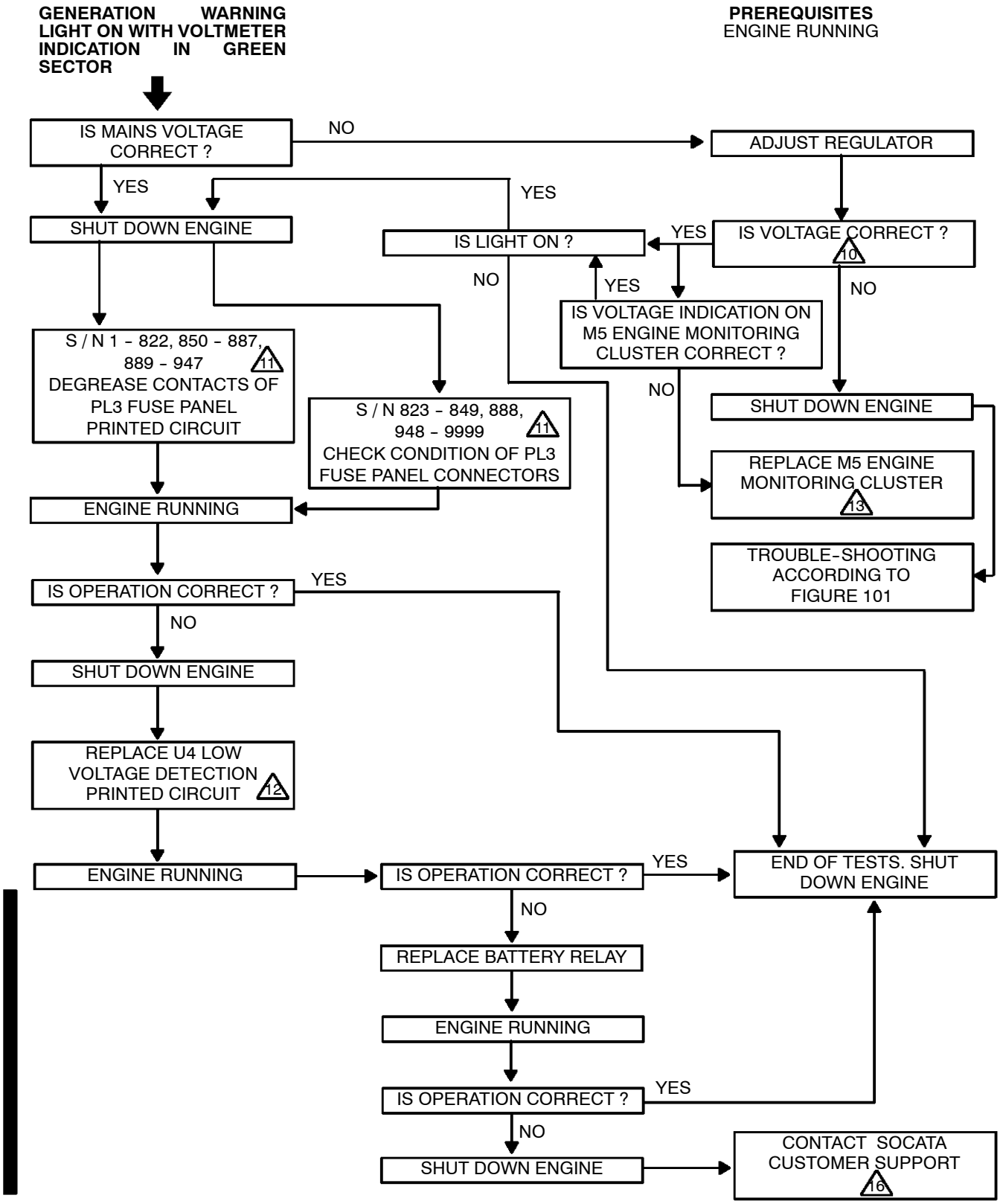
NOTE : SB : Switch-breaker.

VOLTMETER INDICATION IN UPPER RED (OR GREEN) SECTOR THEN DROPS IN LOWER RED SECTOR

PREREQUISITES
ENGINE RUNNING
GENERATION WARNING LIGHT ON



Voltmeter indication in upper red (or green) sector then drops in lower red sector
Figure 101



Generation warning light on with voltmeter indication in green sector
Figure 102

PAGE INTENTIONALLY LEFT BLANK

ELECTRICAL POWER

SERVICING

1. GENERAL INSTRUCTIONS

A. Tools and consumable materials

None

B. Procedure

Prior to any operation on electrical, electronic or radionavigation equipment,

- either cut off "battery" main switch-breaker,
- or disconnect battery and any auxiliary power supply (if installed) on battery or ground power receptacle.

This last condition is imperative when working on the following systems :

- electric watch,
- hourmeter,
- fuel flow totalizer,
- rear overhead light(s) lighting.

NOTE : Should any doubt appear about a system power supply, disconnect battery from any auxiliary power supply.

WARNING : WHEN TURNING ON THE BATTERY SWITCH, USING AN AUXILIARY POWER SOURCE, OR SWINGING THE PROPELLER, BEWARE OF THE PROPELLER AS IF THE MAGNETO SWITCHES WERE ON. DO NOT STAND, NOR ALLOW ANYONE ELSE TO STAND, WITHIN THE ARC OF THE PROPELLER, SINCE A LOOSE OR BROKEN WIRE, OR A COMPONENT MALFUNCTION, COULD CAUSE THE ENGINE TO START.

Install the following placard on battery and ground power receptacle (if installed) :

WARNING
DO NOT OPERATE.
MAINTENANCE IN PROGRESS

PAGE INTENTIONALLY LEFT BLANK

DC GENERATION

DESCRIPTION AND OPERATION

1. GENERAL (Figure 2)

The DC generation system ensures the generation, regulation, control and indication of the direct current generation. The aircraft is equipped with a 14-Volt DC generation system.

This sub-system consists of the following elements :

- regulator - overvoltage relay,
- alternator,
- battery,
- voltmeter integrated into the engine monitoring cluster - refer to 31-10-00,
- alternator control,
- battery relay,
- amber (red on U.K. aircraft) warning light labeled "ALT" on the advisory panel - refer to 31-50-00.

2. LOCATION (Figures 1 and 1A)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Regulator - overvoltage relay (on firewall)	1	100	121	24-30-00
Regulator - overvoltage relay (in cockpit)	1	210	121 and 212R or 211R	24-30-00
Alternator	1	100	131	24-30-01
Battery	1	100	121	24-30-02
Alternator control	1	252	/	24-50-00
Battery relay	1	210	121	24-30-03
Engine monitoring cluster	1	251C	/	31-10-00
Advisory panel	1	251L	/	31-50-00

3. DESCRIPTION

A. Regulator - overvoltage relay

The regulator and the overvoltage relay (integrated or not in the regulator) are the elements which regulate voltage and detect generation system overvoltages. When an overvoltage occurs in the system, they cut off the alternator energization and the amber (red on U.K. aircraft) warning light labeled "ALT" illuminates.

S / N 1 - 63

They are located on the firewall, at the level of the battery.

S / N 64 - 822, 850 - 887, 889 - 947

They are located above and to the right of the front table and are fixed on the firewall on cabin side.

B. Alternator

The 60A alternator is located on the front section of the engine and is driven by the latter with a belt. It provides the energy necessary for operation to the various systems.

C. Battery

The lead-acid battery stores the energy provided by the alternator in order to ensure operation of the various systems when the alternator cannot supply energy (engine shut-down or failure).

It is located in the engine compartment at the firewall R.H. side.

D. Voltmeter

A voltmeter is incorporated in the engine monitoring cluster to monitor electric generation system efficiency.

When the alternator operates, the indication must stabilize in the green sector.

When the alternator is disconnected, the indication may go down to the yellow sector.

If the indication is positioned in the lower red sector, the battery must be removed and charged.

If the indication is positioned in the upper red sector while the alternator is on, the regulator must be adjusted.

E. Alternator control

Located on the R.H. side of the main switch, the alternator switch-breaker is labeled "ALTr.FLD". It controls and protects the energizing circuit of the alternator through the regulator. The alternator circuit-breaker allows the protection between the alternator and the battery.

S / N 1 - 180, without alternator circuit-breaker in cockpit or without kit OPT10 907400

The disconnection of the alternator in flight will cut out all the electrical sources at the same time. This circuit-breaker is located on the firewall. Then, only the battery powers the aircraft mains.

S / N 181 - 822, 850 - 887, 889 - 947 and S / N 1 - 180 with alternator circuit-breaker in cockpit or with Kit OPT10 907400

The disconnection of the alternator in flight will cut out all the electrical sources at the same time. This circuit-breaker is located on the circuit-breaker panel. Then, only the battery powers the aircraft mains.

F. Battery relay

The battery relay is the element which allows bus bar supplying, when the main switch is ON. The relay is located on firewall at the battery L.H. side.

4. OPERATION

A. Alternator regulator

PRESTOLITE

A regulator and an overvoltage relay provide the alternator voltage regulation and overvoltage protection.

In the event of overvoltage, the overvoltage relay disconnects the alternator and the amber (red on U.K. aircraft) warning light labeled "ALTr" illuminates. Then, only the battery powers the aircraft mains.

LAMAR

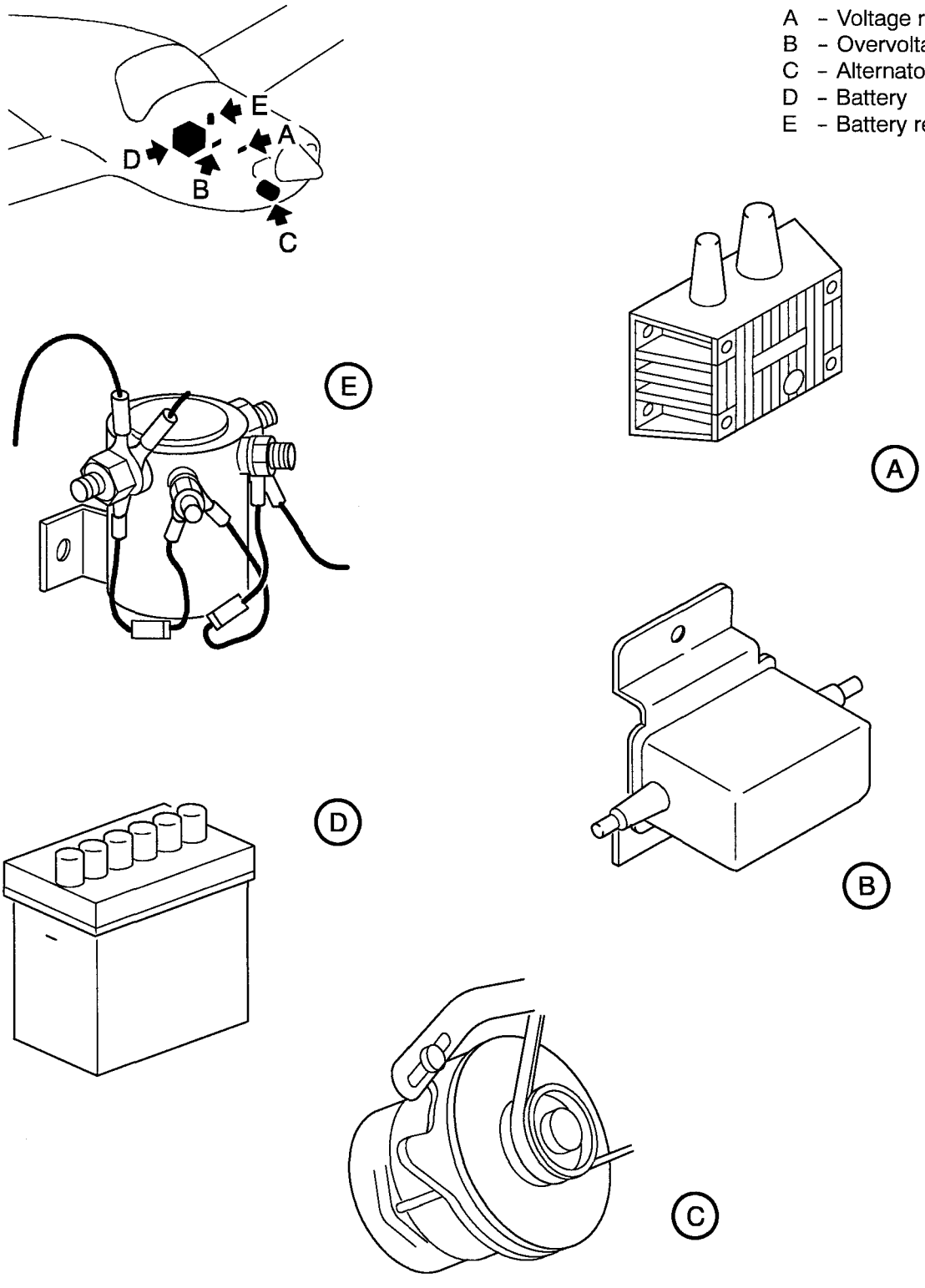
A regulator with an integrated overvoltage relay provides the alternator voltage regulation and overvoltage protection.

In the event of overvoltage, the regulator disconnects the alternator and the amber (red on U.K. aircraft) warning light labeled "ALTr" illuminates. Then, only the battery powers the aircraft mains.

All

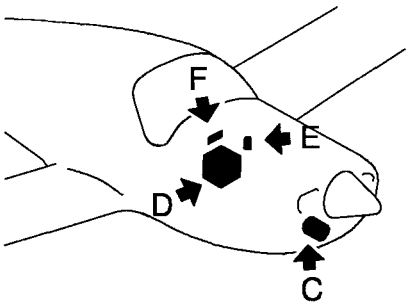
Open and close the switch-breaker labeled "ALTr.FLD" to rearm the regulator.

A - Voltage regulator
B - Overvoltage relay
C - Alternator
D - Battery
E - Battery relay

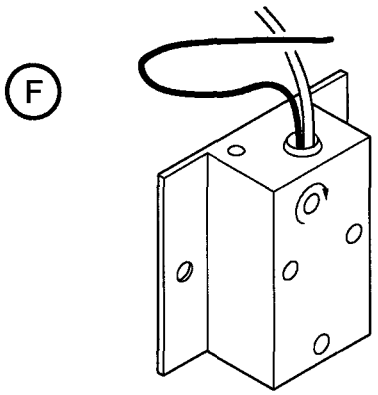


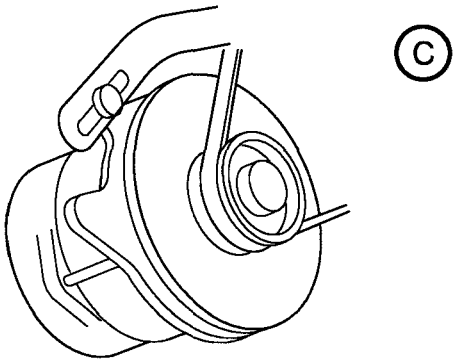
I4243000AAAUWZ14100

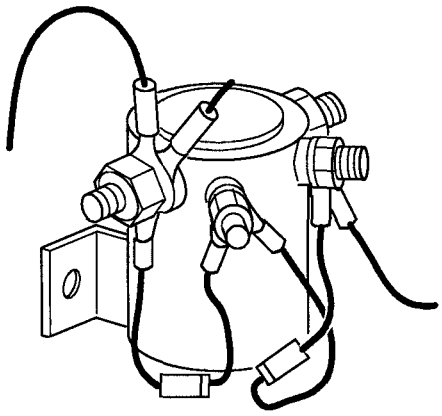
PRESTOLITE DC generation - Identification and location of components
Figure 1

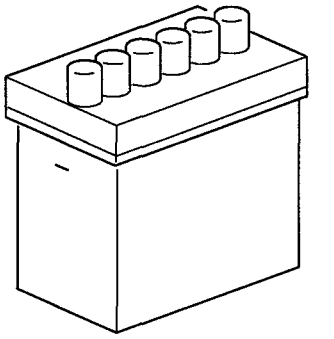


C - Alternator
D - Battery
E - Battery relay
F - Regulator - overvoltage relay





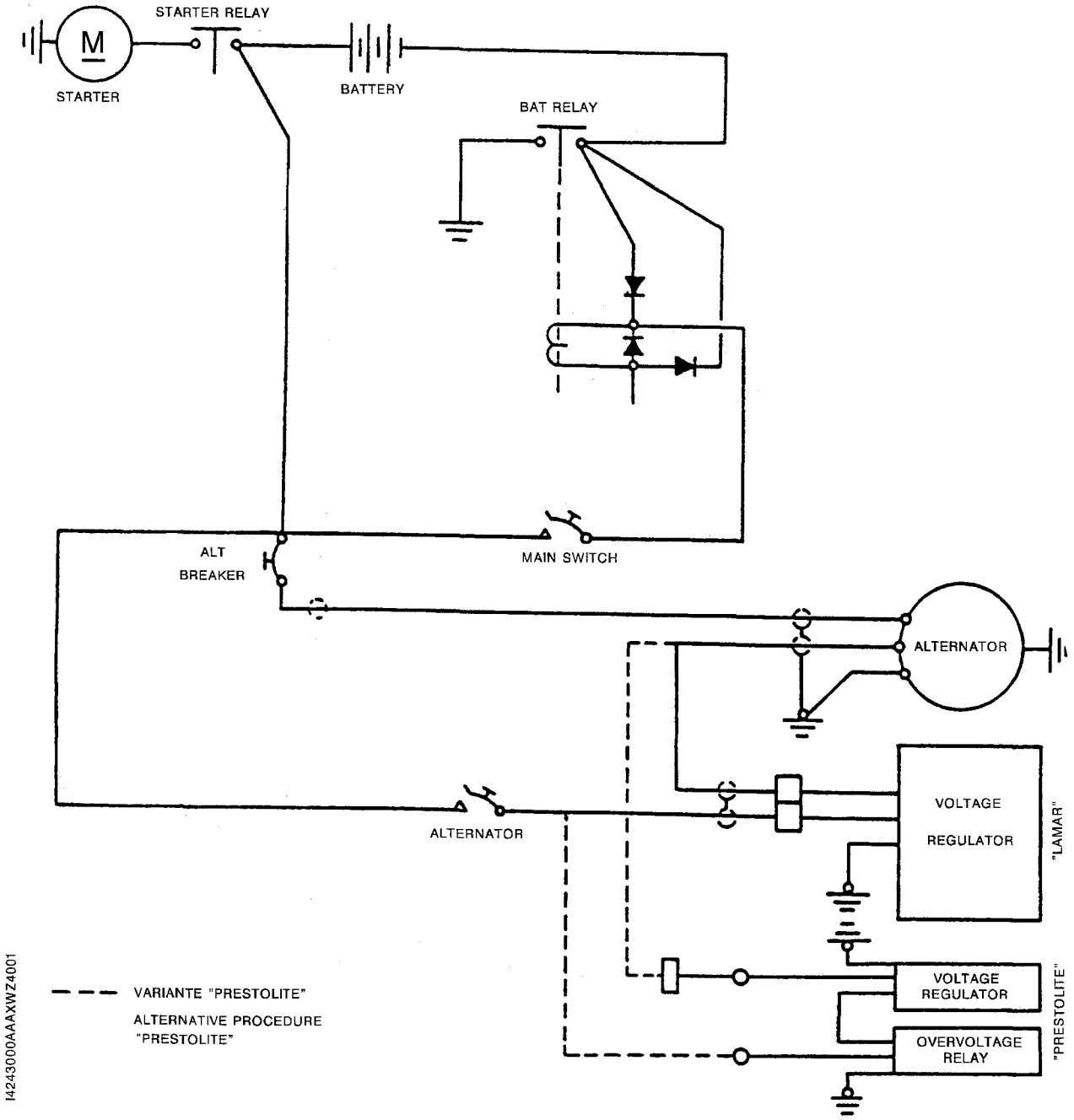




I4243000AAAUWZ4100

LAMAR DC generation - Identification and location of components
Figure 1A

AAAA
Validity : S / N 1 - 822, 850 - 887, 889 - 947



DC generation - Electrical schematic
Figure 2

DC GENERATION

DESCRIPTION AND OPERATION

1. GENERAL (Figure 2)

The DC generation system ensures the generation, regulation, control and indication of the direct current generation. The aircraft is equipped with a 28-Volt DC generation system.

This sub-system consists of the following elements :

- regulator - overvoltage relay,
- alternator,
- battery,
- voltmeter integrated into the engine monitoring cluster - refer to 31-10-00,
- alternator control,
- battery relay,
- keep alive fuse,
- amber (red on U.K. aircraft) warning light labeled "ALT" on the advisory panel - refer to 31-50-00.

2. LOCATION (Figure 1)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Regulator - overvoltage relay	1	210	211R	24-30-00
Alternator	1	100	131	24-30-01
Battery	1	100	121	24-30-02
Alternator control	1	252	/	24-50-00
Battery relay	1	100	121 / 131	24-30-03
Keep alive fuse	1	100	121 / 131	24-30-00
Engine monitoring cluster	1	251C	/	31-10-00
Advisory panel	1	251L	/	31-50-00

3. DESCRIPTION

A. Regulator - overvoltage relay

The regulator and its integrated overvoltage relay are the elements which regulate voltage and detect generation system overvoltages. When an overvoltage occurs in the system, they cut off the alternator energization and the amber (red on U.K. aircraft) warning light labeled "ALT" illuminates.

They are located above and to the right of the front table and fixed on the firewall on cabin side.

B. Alternator

The 70A alternator is located on the front section of the engine and is driven by the latter with a belt. It provides the energy necessary for operation to the various systems.

C. Battery

The lead-acid battery stores the energy provided by the alternator in order to ensure operation of the various systems when the alternator cannot supply energy (engine shut-down or failure).

It is located in the engine compartment at the firewall R.H. side.

D. Voltmeter

A voltmeter is incorporated in the engine monitoring cluster to monitor electric generation system efficiency.

When the alternator operates, the indication must stabilize in the green sector.

When the alternator is disconnected, the indication may go down to the yellow sector.

If the indication is positioned in the lower red sector, the battery must be removed and charged.

If the indication is positioned in the upper red sector while the alternator is on, the regulator must be adjusted.

E. Alternator control

Located on the R.H. side of the main switch, the alternator switch-breaker labeled "ALT^{r}.FLD" controls and protects the energizing circuit of the alternator through the regulator.

F. Battery relay

The battery relay is the element which allows bus bar supplying, when the main switch is ON. The relay is located on firewall at the battery L.H. side.

G. Keep alive fuse

The keep alive fuse is located near the battery relay on the firewall. It protects the electric system between the battery relay and the fuse panel located at the left of the firewall. It supplies optional equipment or non-optional equipment such as the watch using the battery.

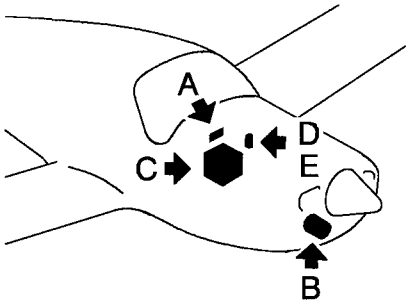
4. OPERATION

A. Alternator regulator

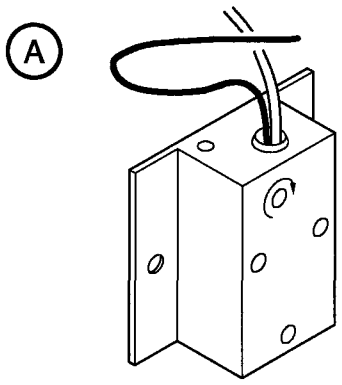
A regulator, with integrated overvoltage relay, provides the alternator voltage regulation and overvoltage protection.

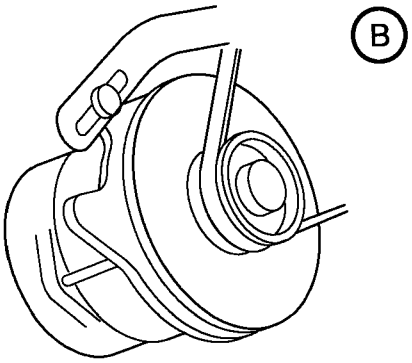
In the event of overvoltage, the regulator disconnects the alternator and the amber (red on U.K. aircraft) warning light labeled "ALT^{r}" illuminates. Then, only the battery powers the aircraft mains.

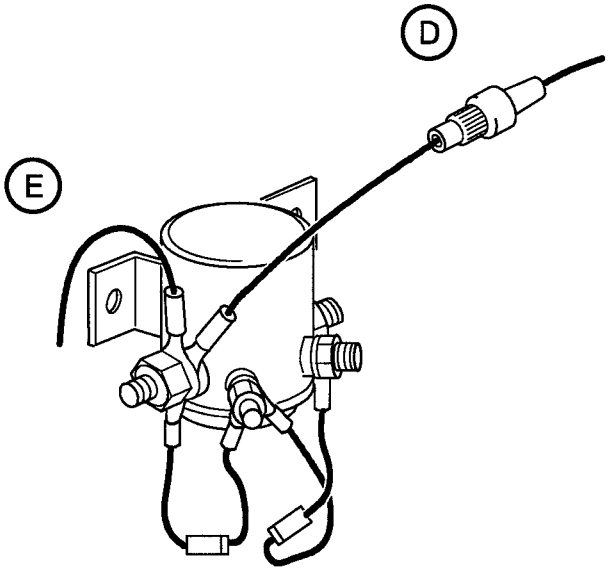
Open and close the switch-breaker labeled "ALT^{r}.FLD" to rearm the regulator.

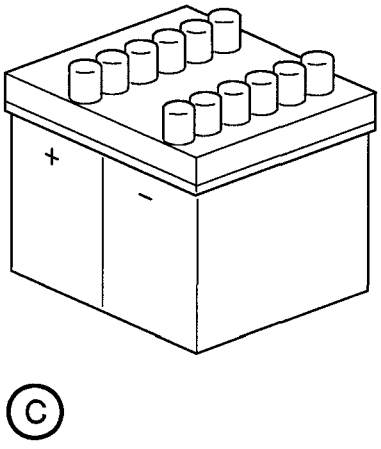


A - Regulator - overvoltage relay
B - Alternator
C - Battery
D - Keep alive fuse
E - Battery relay



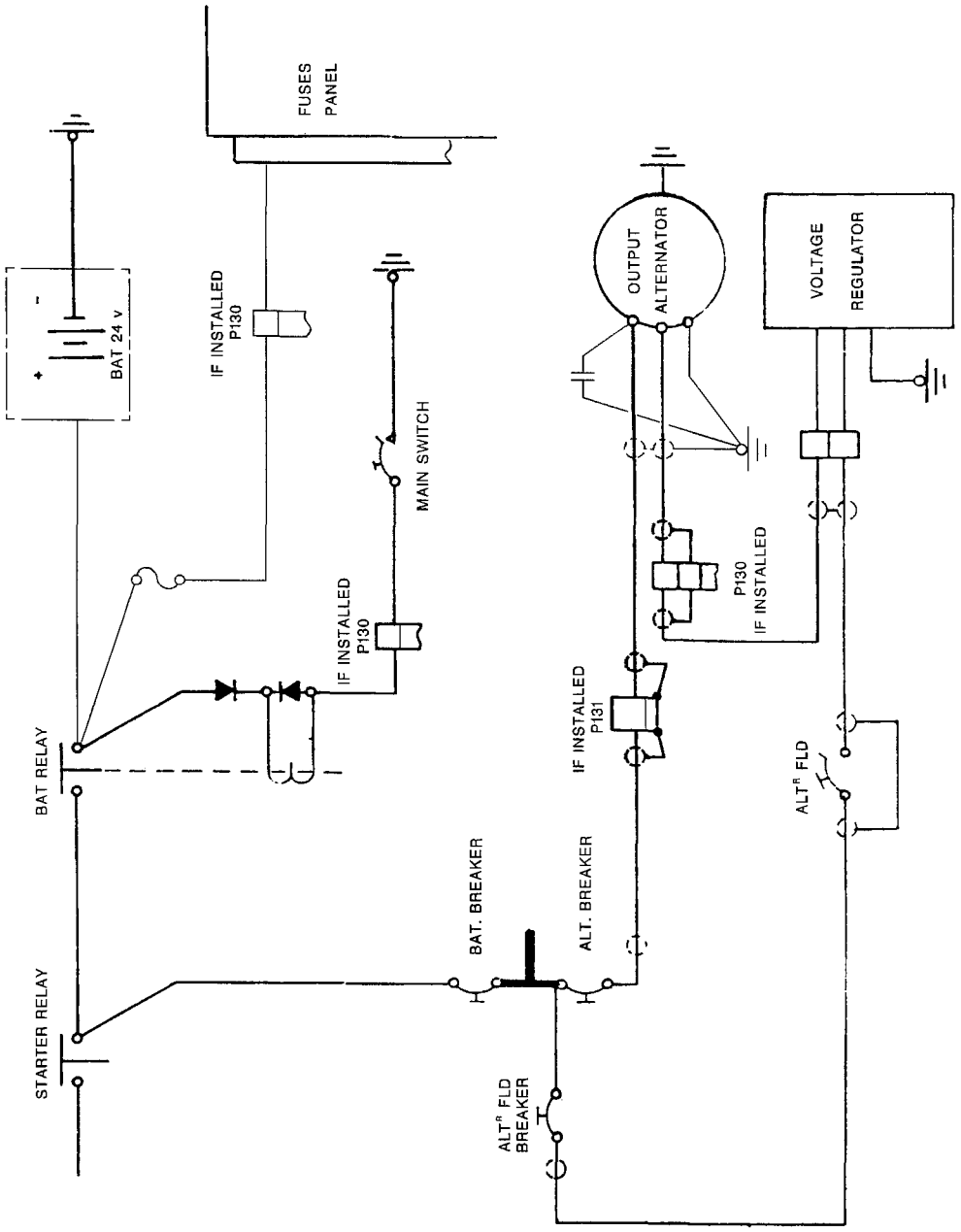






I4243000AAAUWZ4000

DC generation - Identification and location of components
Figure 1



I4243000AAAYWZ4000

DC generation - Electrical schematic
Figure 2

DC GENERATION

INSPECTION / CHECK

1. CHECK OF PRESTOLITE REGULATION SYSTEM (Figure 601)

A. Tools and consumable materials

NOTE : The voltmeter included in the engine monitoring cluster must not be used as a calibration reference for maintenance, use a precision voltmeter.

- Voltmeter

B. Procedure

1) Remove engine cowling 121 - refer to 71-10-01 and tilt inspection door 212R - refer to 06-30-00 or remove inspection door 211R if installed - refer to 06-30-00.

2) Make sure the bonding of the voltage regulator grounding wire is correct - refer to 20-00-12.

3) Connect a voltmeter to the mains (if necessary, use the cigar lighter).

WARNING : TO REACH THE VOLTAGE REGULATOR WHEN THE ENGINE IS RUNNING, MOVE ALONG THE WINGS AND THE FUSELAGE WHILE REMAINING CONSTANTLY AND PHYSICALLY IN CONTACT WITH THE WINGS AND THE FUSELAGE.

4) Perform a test run-up - refer to 05-30-02.

5) Once the different engine parameters have stabilized, with the alternator switch-breaker closed, switch on the following equipment items to reach a load charge of approximately 20 A :

   - landing and taxiing lights,
   - navigation lights and anti-collision lights.

6) Check that the on-load mains voltage at 2000 rpm is greater than 13.5 VDC and that the indication of the engine monitoring cluster voltmeter stabilizes inside the green sector. If necessary, adjust the voltage with the voltage regulator adjustment screw.

7) Check the on-load regulation range between 1200 and 2500 rpm, the indication of the engine monitoring cluster voltmeter remains inside the green sector.

8) Switch off the equipment items.

9) Check that the off-load voltage at 2000 rpm is within 13.7 and 14.1 VDC.

10) Check the amber (red on U.K. aircraft) warning light labeled "ALT" for operation :

    a) With the equipment items switched off, open the alternator switch-breaker and switch on the same equipment items. The warning light must come on.

    b) With the engine rating within the regulation range (1200 to 2500 rpm), close the alternator switch-breaker. The warning light must go off.

11) Shut down the engine - refer to 05-30-02.

12) Make sure all the tools and materials are removed and the work area is clean and free from debris.

13) Close inspection door 212R and install engine cowling 121 - refer to 71-10-01 or install inspection door 211R if removed.

14) Disconnect the voltmeter from the mains.

2. CHECK OF LAMAR REGULATION SYSTEM (Figure 602)

A. Tools and consumable materials

NOTE : The voltmeter included in the engine monitoring cluster must not be used as a calibration reference for maintenance, use a precision voltmeter.

- Voltmeter

B. Procedure

1) Remove engine cowling 121 - refer to 71-10-01 and tilt inspection door 212R - refer to 06-30-00 or remove inspection door 211R if installed - refer to 06-30-00.

2) Make sure the bonding of the voltage regulator grounding wire is coorect - refer to 20-00-12.

3) Connect a voltmeter to the mains (if necessary, use the cigar lighter).

WARNING : TO REACH THE VOLTAGE REGULATOR WHEN THE ENGINE IS RUNNING, MOVE ALONG THE WINGS AND THE FUSELAGE WHILE REMAINING CONSTANTLY AND PHYSICALLY IN CONTACT WITH THE WINGS AND THE FUSELAGE.

4) Perform a test run-up - refer to 05-30-02.

5) Once the different engine parameters have stabilized, with the alternator switch-breaker closed, switch on the following equipment items to reach a load charge of approximately 20 A :

   - landing and taxiing lights,
   - navigation lights and anti-collision lights.

6) Check that the on-load mains voltage at 2000 rpm is greater than 13.5 VDC and that the indication of the engine monitoring cluster voltmeter stabilizes inside the green sector. If necessary, adjust the voltage with the voltage regulator adjustment screw.

7) Check the on-load regulation range between 1200 and 2500 rpm, the indication of the engine monitoring cluster voltmeter remains inside the green sector.

8) Switch off the equipment items.

9) Check that the off-load voltage at 2000 rpm is within 13.9 and 14.1 VDC.

10) Check the amber (red on U.K. aircraft) warning light labeled "ALT" for operation :

    a) With the equipment items switched off, open the alternator switch-breaker and switch on the same equipment items. The warning light must come on.

    b) With the engine rating within the regulation range (1200 to 2500 rpm), close the alternator switch-breaker. The warning light must go off.

11) Shut down the engine - refer to 05-30-02.

12) Make sure all the tools and materials are removed and the work area is clean and free from debris.

13) Close inspection door 212R and install engine cowling 121 - refer to 71-10-01 or install inspection door 211R if removed.

14) Disconnect the voltmeter from the mains.

3. CHECK OF PRESTOLITE VOLTAGE REGULATOR OVERVOLTAGE SYSTEM (Figure 601)

A. Tools and consumable materials

- 1 stabilized power supply source adjustable within 12 and 18 V

B. Procedure

1) Disconnect the overvoltage relay.
2) Supply the overvoltage relay between the ground and the "BAT" terminal with a stabilized power supply source adjustable within 12 and 18 V.
3) Vary the supply voltage, check that the overvoltage relay triggers between 15.5 and 16.5 VDC.

   NOTE : In case of incorrect operation, replace the regulator (no setting is possible).

4) Connect the overvoltage relay.

4. CHECK OF LAMAR VOLTAGE REGULATOR OVERVOLTAGE SYSTEM (Figure 603)

A. Tools and consumable materials

- 1 stabilized power supply source adjustable within 12 and 18 V

B. Procedure

1) Beforehand, perform a check of the regulation system - refer to Paragraph 2.
2) Disconnect and, if necessary, remove the voltage regulator.

   CAUTION : IF THIS CHECK IS NOT CARRIED OUT IN A LABORATORY, MAKE SURE THE TEST WIRING IS PERFECTLY INSULATED FROM THE AIRCRAFT CIRCUIT.

3) Fabricate the test wiring according to Figure 603.
4) Supply the voltage regulator with a stabilized power supply source adjustable within 12 and 18 V.
5) Vary the supply voltage, check that the voltage regulator triggers at 16 (+ 0.5 ; - 0) VDC and that the test wiring indicator light goes off.

   NOTE : In case of incorrect operation, replace the regulator (no setting is possible).

6) Remove the test wiring and install the regulator if removed.
7) Connect the regulator.

5. CHECK OF LOW VOLTAGE DETECTION SYSTEM (Figure 604)

A. Tools and consumable materials

- 1 stabilized power supply source adjustable within 12 and 18 V
- Varnish (TB 07-901)

B. Procedure

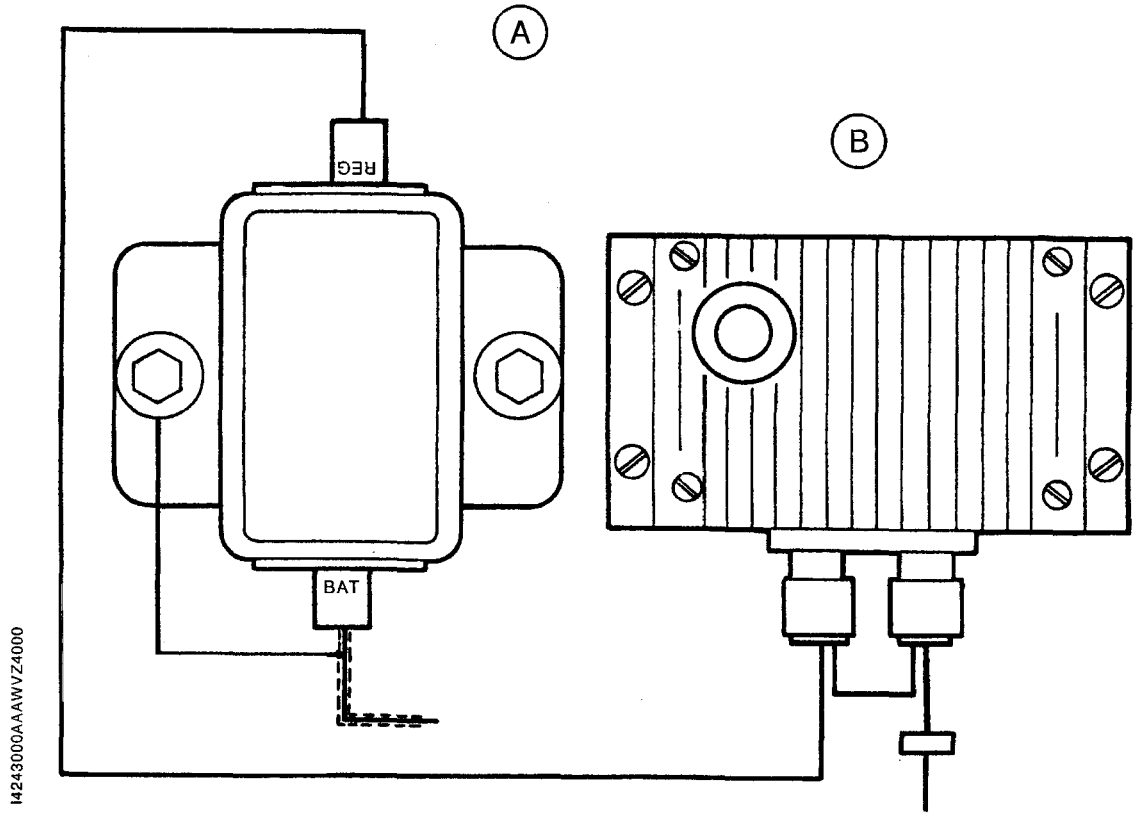
1) Disconnect the battery - refer to 24-30-02.
2) Supply the aircraft mains with a stabilized power supply source adjustable within 12 and 18 V.
3) At a 12 V supply voltage, the generation warning light located on advisory panel (1) is on.
4) Vary the supply voltage and check that the generation warning light goes off between 12.6 and 12.8 VDC.

5) If necessary, adjust adjustable resistor (3) of low voltage detection printed circuit (2) to set the triggering threshold. Once the setting completed, lock adjustable resistor (3) with varnish (TB 07-901).

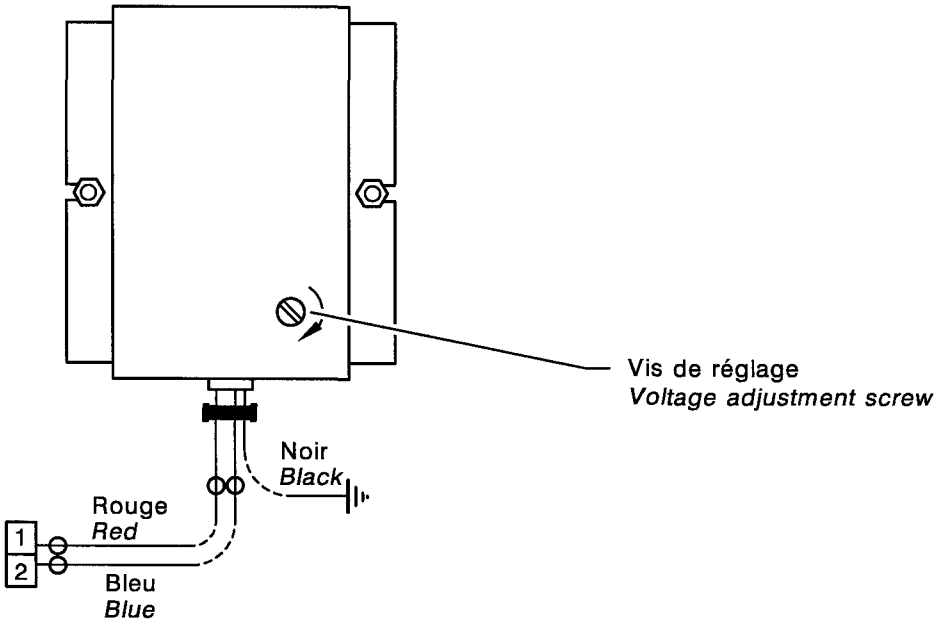
   NOTE : Low voltage detection printed circuit (2) is located on fuse panel assembly (4), inspection door 212L - refer to 06-30-00.

6) Connect the battery - refer to 24-30-02.

A - Overvoltage relay
B - Voltage regulator

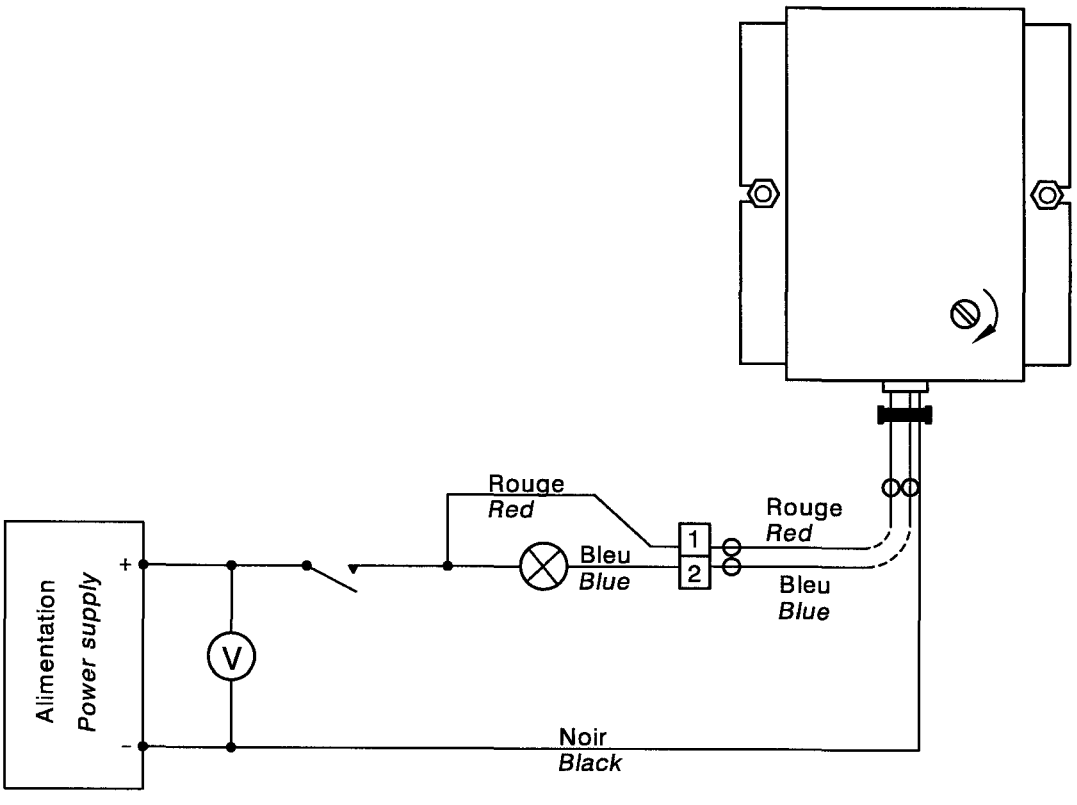


PRESTOLITE overvoltage relay and voltage regulator
Figure 601



I4243000AAAIWZ4000

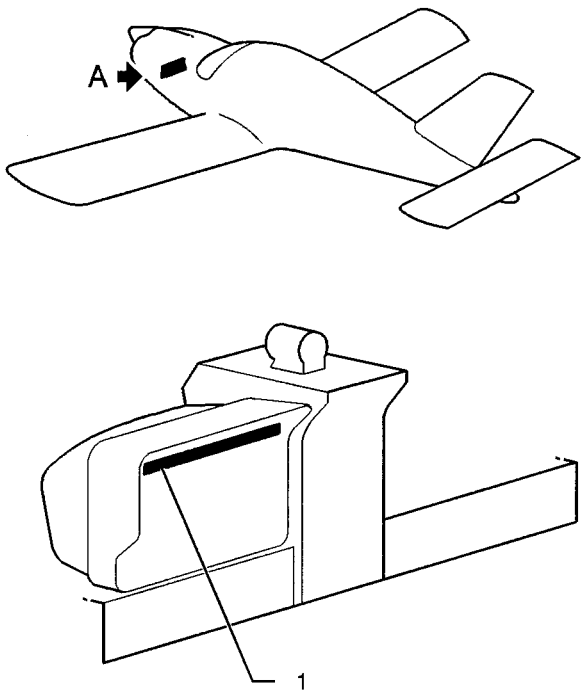
Check of LAMAR regulation system
Figure 602



I4243000AAAIWZ4100

Check of LAMAR overvoltage system
Figure 603

1 - Advisory panel
2 - Low voltage detection printed circuit
3 - Adjustable resistor
4 - Fuse panel assembly



Check of low voltage detection system
Figure 604

PAGE INTENTIONALLY LEFT BLANK

DC GENERATION

INSPECTION / CHECK

1. CHECK OF REGULATION SYSTEM (Figure 601)

A. Tools and consumable materials

NOTE 1 : The voltmeter included in the engine monitoring cluster must not be used as a calibration reference for maintenance, use a precision voltmeter.

NOTE 2 : This procedure describes a check performed with a voltmeter of an engine monitoring cluster composed of sectors of different colors. Post-MOD. 182, the digital indicator displays an accurate value. To know the equivalence with the sectors - refer to 24-30-00.

- Voltmeter

B. Procedure

Pre-MOD. 151

1) Remove engine cowling 121 - refer to 71-10-01 and tilt inspection door 212R - refer to 06-30-00 or remove inspection door 211R if installed - refer to 06-30-00.

Post-MOD. 151

1) Remove inspection door 211R - refer to 06-30-00.

All

2) Make sure the bonding of the voltage regulator grounding wire is correct - refer to 20-00-12.

Check without a test set

3) Connect a voltmeter to the mains (if necessary, use the cigar lighter).

Check with a test set

3) Remove the engine monitoring cluster without disconnecting it.

4) Connect the test set connector to the engine monitoring cluster test connector. Set the test set selector to "Alim.1 (Power supply 1) : 28 V" or "Alim.2 (Power supply 2) : 28 V".

5) Turn on the test set.

All

WARNING : TO REACH THE VOLTAGE REGULATOR WHEN THE ENGINE IS RUNNING, MOVE ALONG THE WINGS AND THE FUSELAGE WHILE REMAINING CONSTANTLY AND PHYSICALLY IN CONTACT WITH THE WINGS AND THE FUSELAGE.

6) Perform a test run-up - refer to 05-30-02.

7) Once the different engine parameters have stabilized, with the alternator switch-breaker closed, switch on the following equipment items to reach a load charge of approximately 20 A :

- landing and taxiing lights,
- navigation lights and anti-collision lights,
- radionavigation and A/P systems.

With GILL battery

8) Check that the on-load mains voltage at 2000 rpm is 27.5 VDC ± 0.1 and that the indication of the engine monitoring cluster voltmeter stabilizes inside the green sector. If necessary, adjust the voltage with the voltage regulator adjustment screw.

With CONCORDE battery

8) Check that the on-load mains voltage at 2000 rpm is 28.4 VDC ± 0.1 and that the indication of the engine monitoring cluster voltmeter stabilizes inside the green sector. If necessary, adjust the voltage with the voltage regulator adjustment screw.

All

9) Check the on-load regulation range between 1200 and 2500 rpm, the indication of the engine monitoring cluster voltmeter remains inside the green sector.

10) Switch off the equipment items.

With GILL battery

11) Check that the off-load voltage at 2000 rpm is within 27.8 and 28.2 VDC.

With CONCORDE battery

11) Check that the off-load voltage at 2000 rpm is within 28.7 and 30.1 VDC.

All

12) Check the amber (red on U.K. aircraft) warning light labeled "ALTr" for operation :

a) With the equipment items switched off, open the alternator switch-breaker and switch on the same equipment items. The warning light must come on.

b) With the engine rating within the regulation range (1200 to 2500 rpm), close the alternator switch-breaker. The warning light must go off.

13) Shut down the engine - refer to 05-30-02.

Check without a test set

14) Disconnect the voltmeter from the mains.

Check with a test set

14) Switch off the test set and disconnect the test set connector from the engine monitoring cluster.

15) Install the engine monitoring cluster.

All

16) Make sure all the tools and materials are removed and the work area is clean and free from debris.

Pre-MOD. 151

17) Close inspection door 212R and install engine cowling 121 - refer to 71-10-01 or install inspection door 211R if removed.

Post-MOD. 151

17) Install inspection door 211R.

2. CHECK OF VOLTAGE REGULATOR OVERVOLTAGE SYSTEM (Figure 602)

A. Tools and consumable materials

- 1 stabilized power supply source adjustable within 24 and 36 V

B. Procedure

1) Beforehand, perform a check of the regulation system - refer to Paragraph 1.

2) Disconnect and, if necessary, remove the voltage regulator.

CAUTION : IF THIS CHECK IS NOT CARRIED OUT IN A LABORATORY, MAKE SURE THE TEST WIRING IS PERFECTLY INSULATED FROM THE AIRCRAFT CIRCUIT.

3) Fabricate the test wiring according to Figure 602.

4) Supply the voltage regulator with a stabilized power supply source adjustable within 24 and 36 V.

5) Vary the supply voltage, check that the voltage regulator triggers at 32 (+ 0.5 ; - 0) VDC and that the test wiring indicator light goes off.

NOTE : In case of incorrect operation, replace the regulator (no setting is possible).

6) Remove the test wiring and install the regulator if removed.

7) Connect the regulator.

3. CHECK OF LOW VOLTAGE DETECTION SYSTEM (Figure 603)

A. Tools and consumable materials

- 1 stabilized power supply source adjustable within 24 and 36 V
- Varnish (TB 07-901)

B. Procedure

1) Disconnect the battery - refer to 24-30-02.

2) Supply the aircraft mains with a stabilized power supply source adjustable within 24 and 36 V.

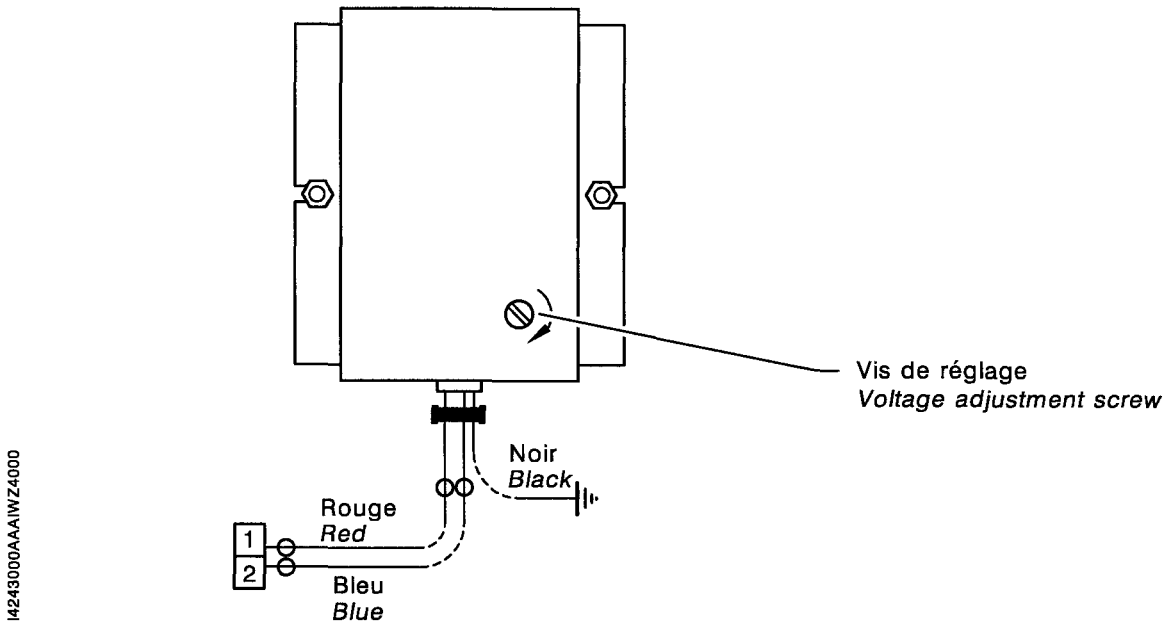
3) At a 24 V supply voltage, the generation warning light located on advisory panel (1) is on.

4) Vary the supply voltage and check that the generation warning light goes off between 25.8 and 26.2 VDC.

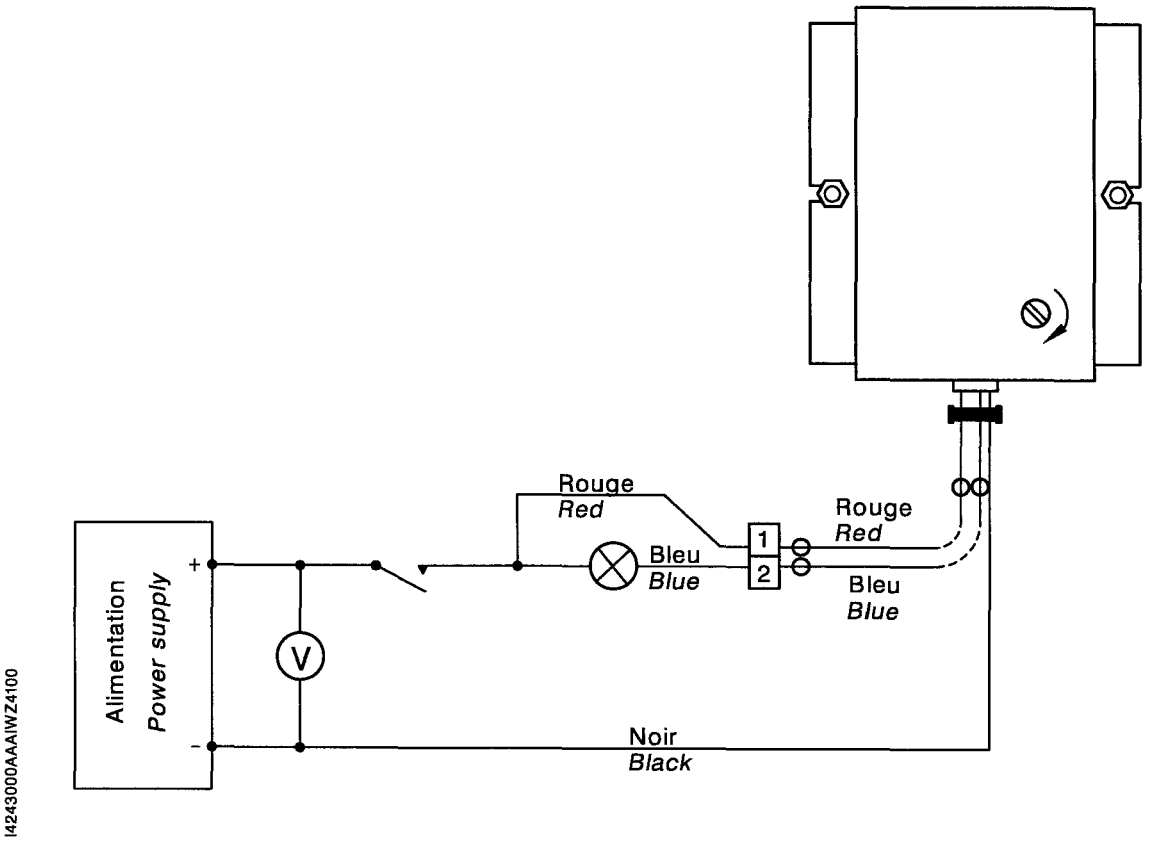
5) If necessary, adjust adjustable resistor (3) of low voltage detection printed circuit (2) to set the triggering threshold. Once the setting completed, lock adjustable resistor (3) with varnish (TB 07-901).

NOTE : Low voltage detection printed circuit (2) is located on fuse panel assembly (4), inspection door 212L - refer to 06-30-00.

6) Connect the battery - refer to 24-30-02.

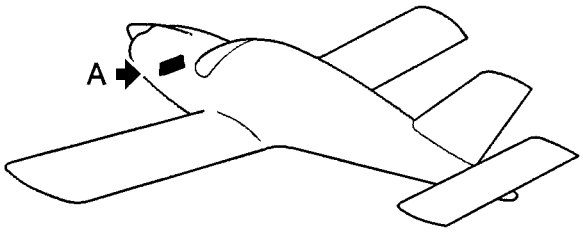


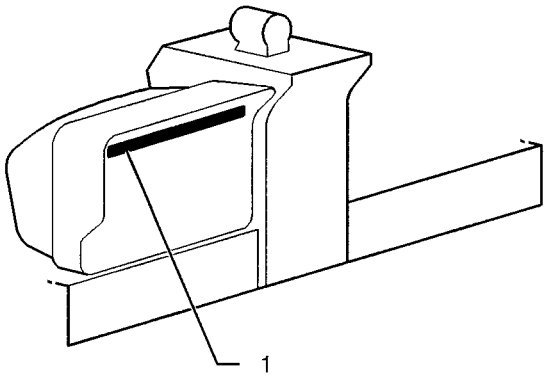
Check of regulation system
Figure 601

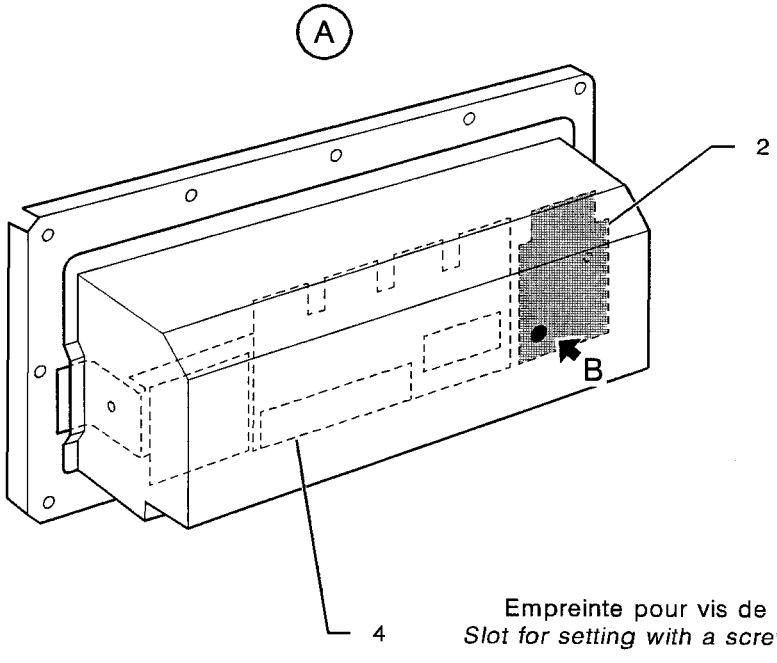


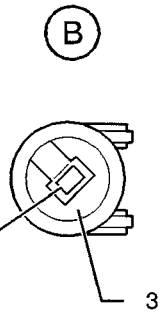
Check of overvoltage system
Figure 602

1 - Advisory panel
2 - Low voltage detection printed circuit
3 - Adjustable resistor
4 - Fuse panel assembly









I4245001AACAVZ4000

Check of low voltage detection system
Figure 603

PAGE INTENTIONALLY LEFT BLANK

ALTERNATOR

REMOVAL / INSTALLATION

1. REMOVAL OF THE ALTERNATOR (Figure 401)

A. Tools and consumable materials

None

B. Procedure

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.

1) Remove the engine cowlings - refer to 71-10-01.
2) Remove the R.H. front engine bulkhead - refer to 71-10-02.
3) Cut off and discard tie-wrap (11). Remove nut (13), washer (14), bolt (15) and noise filter (12).
4) Mark and disconnect the wires from alternator (10) and noise filter (12), retain the nuts.
5) Cut off and discard the lockwire, remove bolt (2) and washer (1).
6) Remove and discard cotter pins (8) and loosen both nuts (7). Lift alternator (10) and clear belt (4).
7) Hold alternator (10) and remove nuts (7), washers (6) and bolts (5).
8) Remove alternator (10).
9) If necessary, remove the pulley - refer to Paragraph 3.

2. INSTALLATION OF THE ALTERNATOR (Figure 401)

A. Tools and consumable materials

- Torque wrench 0 to 550 lbf.in (0 to 60 N.m)
- Varnish (TB 07-901)
- Stainless steel lockwire dia. 0.032 in (0.8 mm)
- Tie-wrap

B. Procedure

NOTE 1 : If a new alternator is installed, it is recommended to apply the installation procedure S / N 401 - 9999 to ease alternator air cooling.

In that case, suitable engine bulkheads must be installed - refer to Illustrated Parts Catalog.

NOTE 2 : If NOTE 1 is ignored when installing a new alternator, remove fan (17) and plate (18) if it is still equipped with, replace them with the two washers (16).

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.

1) If removed, install the pulley - refer to Paragraph 4.
2) Inspect and, if necessary, replace belt (4) and the boots protecting electrical attachments.
3) Position alternator (10), install both bolts (5), washers (6) and nuts (7). Do not tighten.
4) Position belt (4).
5) Position washer (1) and bolt (2), push on alternator (10) to tension belt (4) and tighten bolt (2).
6) Check and, if necessary, adjust the tension of belt (4) - refer to Page 501.
7) Lockwire bolt (2).
8) Tighten nuts (7) and install new cotter pins (8).

CAUTION : WHEN CONNECTING THE ELECTRICAL WIRINGS, MAKE SURE THEY ARE CORRECTLY DIRECTED TO AVOID TIGHT BENDS AT THE LEVEL OF THE LUGS.

9) Connect the wires of alternator (10) and noise filter (12), apply varnish (TB 07-901) on electrical connections.
10) Secure noise filter (12) with bolt (15), washer (14) and nut (13). Attach the wire to alternator (10) using a new tie-wrap (11).
11) Make sure all the tools and materials are removed and the work area is clean and free from debris.
12) Install the R.H. front engine bulkhead - refer to 71-10-02.
13) Install the engine cowlings - refer to 71-10-01.
14) Perform a test run-up - refer to 05-30-02 and check the alternator for correct operation.

3. DISASSEMBLY OF THE PULLEY (Figure 402)

A. Tools and consumable materials

None

B. Procedure

1) Remove alternator (5) - refer to Paragraph 1.
2) Immobilize pulley (3).
3) Remove nut (2) and lockwasher (1). Discard lockwasher (1).
4) Remove pulley (3), spacer (4) and woodruff key (8).

4. ASSEMBLY OF THE PULLEY (Figure 402)

A. Tools and consumable materials

- Torque wrench 0 to 550 lbf.in (0 to 60 N.m)

B. Procedure

1) Check for cracks on pulley (3).
2) Position spacer (4) on alternator (5) shaft.
3) Install woodruff key (8).

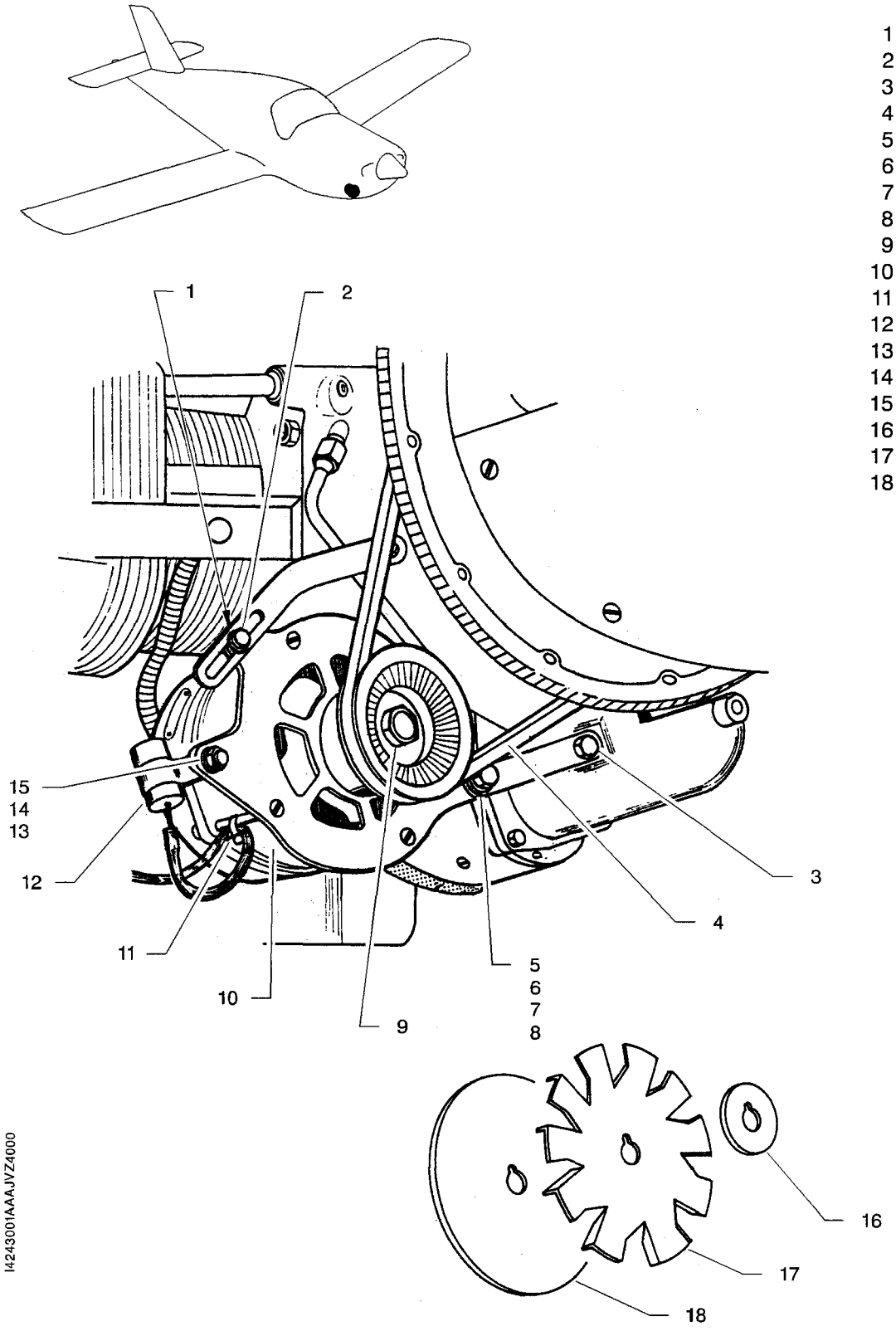
4) Install pulley (3).

5) Secure pulley (3) with a new lockwasher (1) and nut (2).

6) Immobilize pulley (3).

7) Torque - refer to 20-00-01.

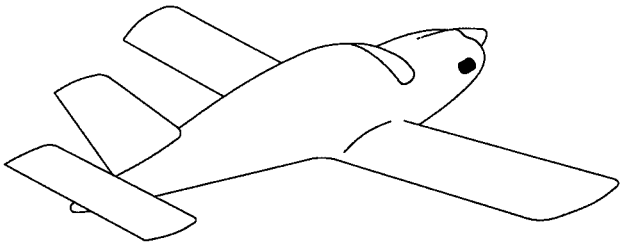
8) Install alternator (5) - refer to Paragraph 2.



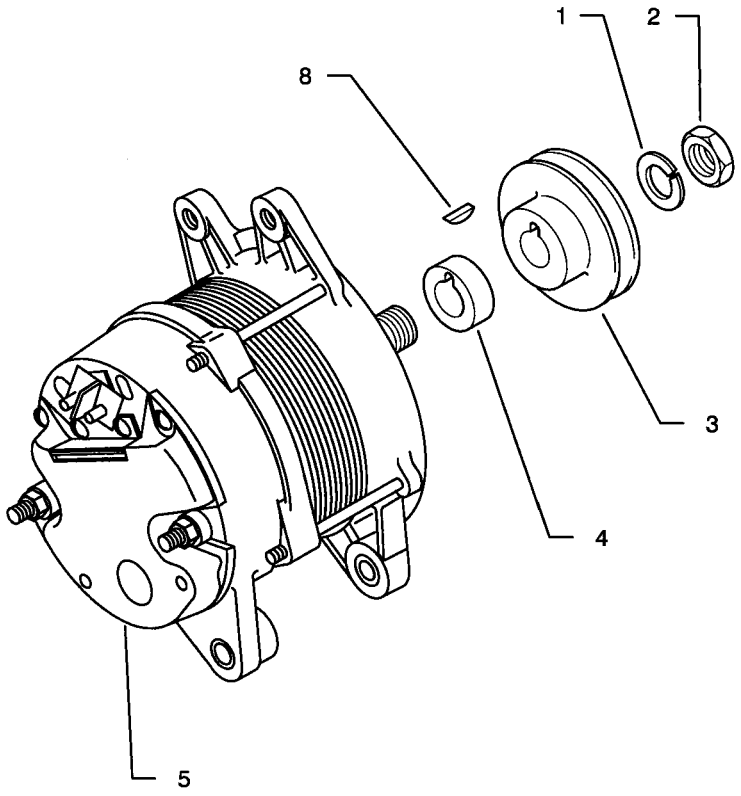
1 - Washer
2 - Bolt
3 - Bolt
4 - Belt
5 - Bolt
6 - Washer
7 - Nut
8 - Cotter pin
9 - Nut
10 - Alternator
11 - Tie-wrap
12 - Noise filter
13 - Nut
14 - Washer
15 - Bolt
16 - Washer
17 - Fan
18 - Plate

Alternator - Removal / Installation
Figure 401

AAAA
Validity : S / N 1 - 400



1 - Lockwasher
2 - Nut
3 - Pulley
4 - Spacer
5 - Alternator
8 - Woodruff key



I4243001AAALWZ4100

Alternator - Disassembly / Assembly
Figure 402

AAAA
Validity : S / N 1 - 400

PAGE INTENTIONALLY LEFT BLANK

ALTERNATOR

REMOVAL / INSTALLATION

1. REMOVAL OF THE ALTERNATOR (Figure 401)

A. Tools and consumable materials

None

B. Procedure

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.

1) Remove the engine cowlings - refer to 71-10-01.
2) Remove the R.H. front engine bulkhead - refer to 71-10-02.
3) Remove clamp (12) and disconnect cooling air hose (11) from alternator (10).
4) Mark and disconnect the wires from alternator (10) and noise filter (3), retain the nuts.
5) Cut off and discard the lockwire, remove bolt (2) and washer (1).
6) Remove and discard cotter pins (8) and loosen both nuts (7). Lift alternator (10) and clear belt (4).
7) Hold alternator (10) and remove nuts (7), washers (6) and bolts (5).
8) Remove alternator (10).
9) If necessary, remove the pulley and the fan - refer to Paragraph 3.

2. INSTALLATION OF THE ALTERNATOR (Figure 401)

A. Tools and consumable materials

- Torque wrench 0 to 550 lbf.in (0 to 60 N.m)
- Varnish (TB 07-901)
- Stainless steel lockwire dia. 0.032 in (0.8 mm)

B. Procedure

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.

1) If removed, install the pulley and the fan - refer to Paragraph 4.
2) Inspect and, if necessary, replace cooling air hose (11) and its clamp (12), belt (4) and the boots protecting electrical attachments.

NOTE : If a new cooling air hose (11) is to be installed, no traces of release grease (silicone) must remain inside the hose. Any traces must be removed with a dry cloth.

3) Position alternator (10), install both bolts (5), washers (6) and nuts (7). Do not tighten.

4) Position belt (4).

5) Position washer (1) and bolt (2), push on alternator (10) to tension belt (4) and tighten bolt (2).

6) Check and, if necessary, adjust the tension of belt (4) - refer to Page 501.

7) Lockwire bolt (2).

8) Tighten nuts (7) and install new cotter pins (8).

CAUTION : WHEN CONNECTING THE ELECTRICAL WIRINGS, MAKE SURE THEY ARE CORRECTLY DIRECTED TO AVOID TIGHT BENDS AT THE LEVEL OF THE LUGS.

9) Connect the wires of alternator (10) and noise filter (3), apply varnish (TB 07-901) on electrical connections.

10) Connect cooling air hose (11) to alternator (10) with clamp (12).

11) Make sure all the tools and materials are removed and the work area is clean and free from debris.

12) Install the R.H. front engine bulkhead - refer to 71-10-02.

13) Install the engine cowlings - refer to 71-10-01.

14) Perform a test run-up - refer to 05-30-02 and check the alternator for correct operation.

3. DISASSEMBLY OF THE PULLEY (Figure 402)

A. Tools and consumable materials

None

B. Procedure

1) Remove alternator (5) - refer to Paragraph 1.

2) Immobilize pulley (3).

3) Remove nut (2) and lockwasher (1). Discard lockwasher (1).

4) Remove pulley (3), plate (7), fan (6), spacer (4) and woodruff key (8).

4. ASSEMBLY OF THE PULLEY (Figure 402)

A. Tools and consumable materials

- Torque wrench 0 to 550 lbf.in (0 to 60 N.m)

B. Procedure

1) Check for cracks on fan (6), plate (7) and pulley (3).

2) Position spacer (4) on alternator (5) shaft.

CAUTION : MAKE SURE FAN (6) IS CORRECTLY POSITIONED.

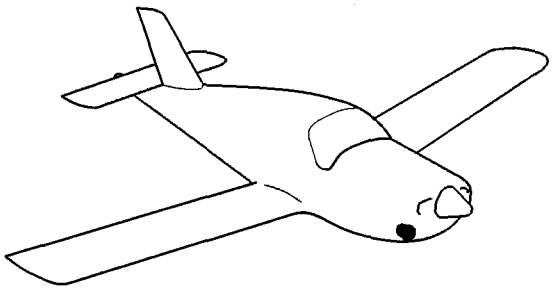
3) Position fan (6) on alternator (5) shaft, the blades directed towards the alternator.

4) Install plate (7).

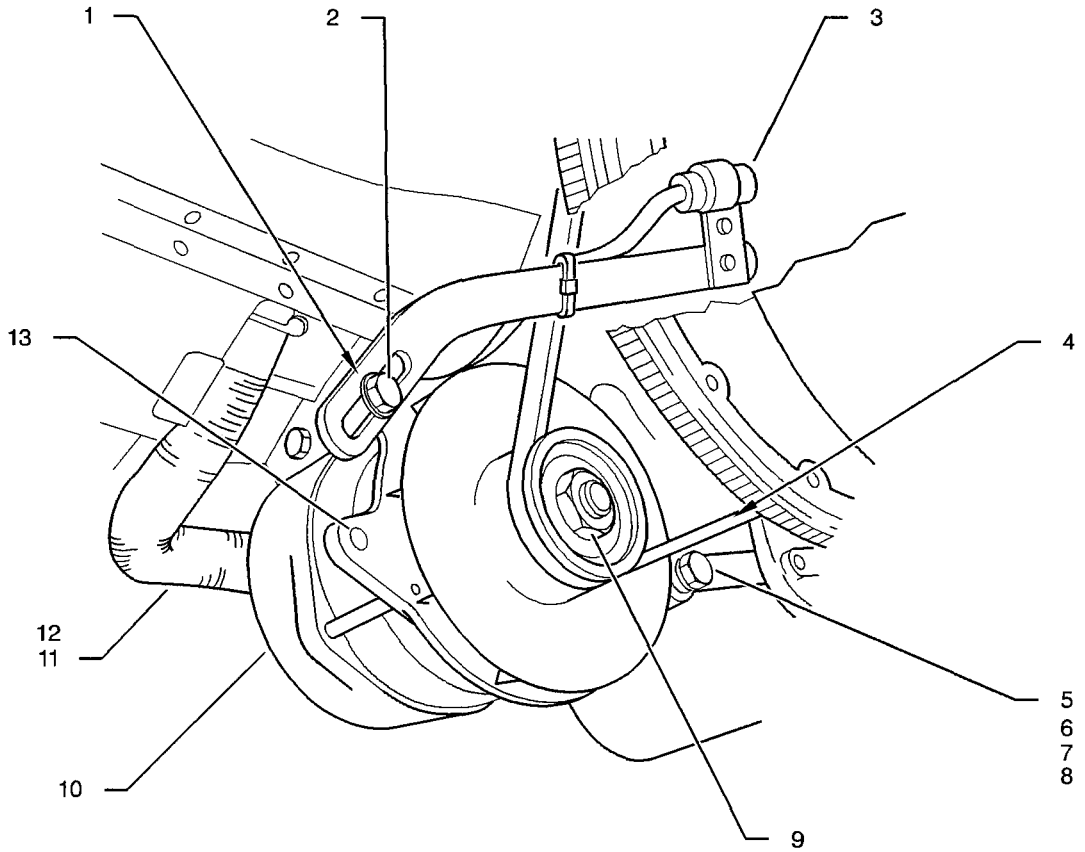
5) Install woodruff key (8).

6) Install pulley (3).

7) Secure the assembly with a new lockwasher (1) and nut (2).
8) Immobilize pulley (3).
9) Torque - refer to 20-00-01.
10) Install alternator (5) - refer to Paragraph 2.

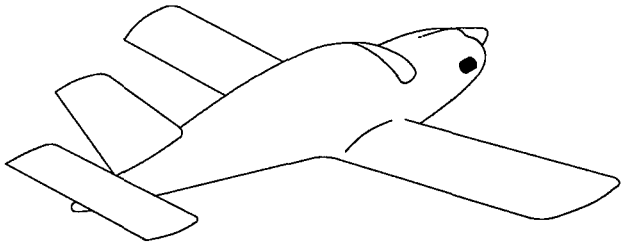


1 - Washer
2 - Bolt
3 - Noise filter
4 - Belt
5 - Bolt
6 - Washer
7 - Nut
8 - Cotter pin
9 - Nut
10 - Alternator
11 - Cooling air hose
12 - Clamp
13 - Screw

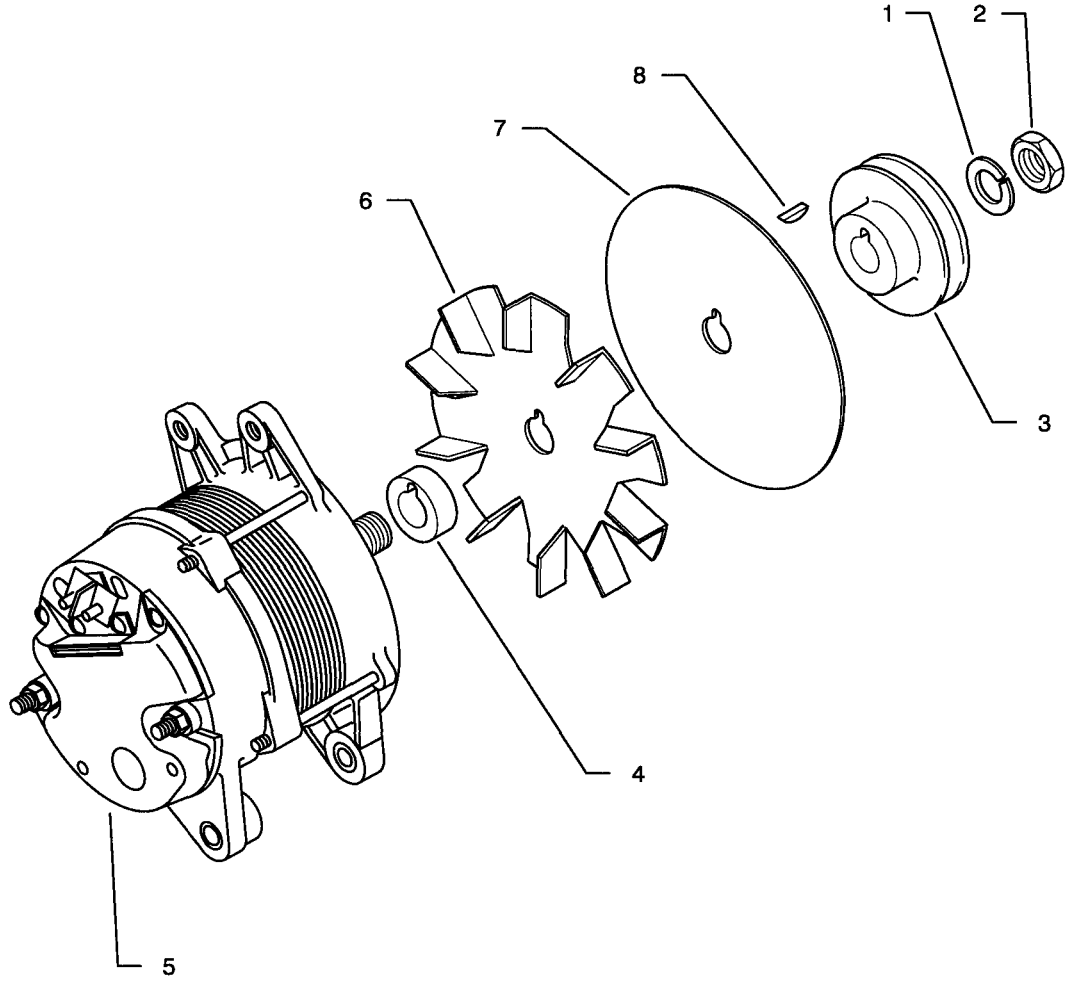


I4243001AAABYZ4200

Alternator - Removal / Installation
Figure 401



1 - Lockwasher
2 - Nut
3 - Pulley
4 - Spacer
5 - Alternator
6 - Fan
7 - Plate
8 - Woodruff key



I4243001AAALWZ4000

Alternator - Disassembly / Assembly
Figure 402

PAGE INTENTIONALLY LEFT BLANK

ALTERNATOR

ADJUSTMENT / TEST

1. ADJUSTMENT OF THE BELT TENSION (Figure 501)

A. Tools and consumable materials

- Torque wrench 0 to 180 lbf.in (0 to 20 N.m)
- Socket, dia. 15/16"
- Stainless steel lockwire dia. 0.032 in (0.8 mm)

B. Procedure

CAUTION : AN INCORRECT ADJUSTMENT OF THE ALTERNATOR BELT TENSION MAY GENERATE THE DAMAGE OF THE DRIVE SHAFT BEARING AND MAY CAUSE THE ALTERNATOR DAMAGE.

1) Make sure that the main switch-breaker is open.

2) Install the warning sign prohibiting main switch-breaker operation.

WARNING

DO NOT OPERATE
MAINTENANCE WORK IN PROGRESS

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE KEY IS REMOVED FROM MAGNETO SELECTOR AND THAT "MAIN SWITCH" IS OFF.
IF AIRCRAFT IS EQUIPPED WITH DISCONNECT PLUG ON FIREWALL, DISCONNECT "MAGNETO DISCONNECT" PLUG AND CONNECT IT TO "GROUND MAGNETO FOR SERVICING" PLUG.

WARNING : PRIOR TO ANY OPERATION, ENSURE THAT THE ENGINE, EXHAUST PIPE AND MANIFOLDS ARE COLD. IF NOT, TAKE NECESSARY PRECAUTIONS TO AVOID SEVERE BURNS.

3) Remove the engine cowlings - refer to 71-10-01.

4) Position a torque wrench fitted with a socket, dia. 15/16", on nut (2) securing alternator pulley.

5) Hold propeller firmly and turn torque wrench clockwise ; record the value when the pulley slides.

6) Adjustment is correct if the value lies within :

- 11 and 13 ft.lbs (14.9 and 17.6 N.m) for a new belt.
- 7 and 9 ft.lbs (9.5 and 12.2 N.m) for an in-service belt.

7) If adjustment is not correct, perform the following operations :

a) Cut off the lockwire and and loosen bolt (4).

b) Pivot alternator (3) to tension belt (1), then tighten bolt (4).

c) Perform two or three propeller rotations to evenly distribute the stresses.

d) Repeat steps 4), 5) and 7) until you obtain the recommended value.

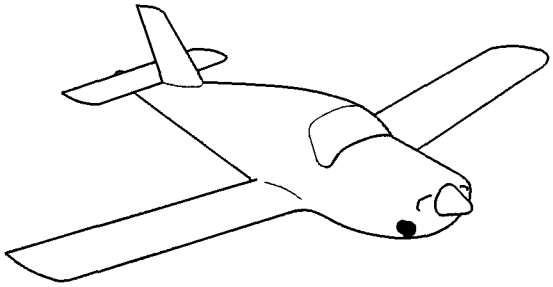
e) Lockwire bolt (4).

8) Make sure all the tools and materials are removed and the work area is clean and free from debris.

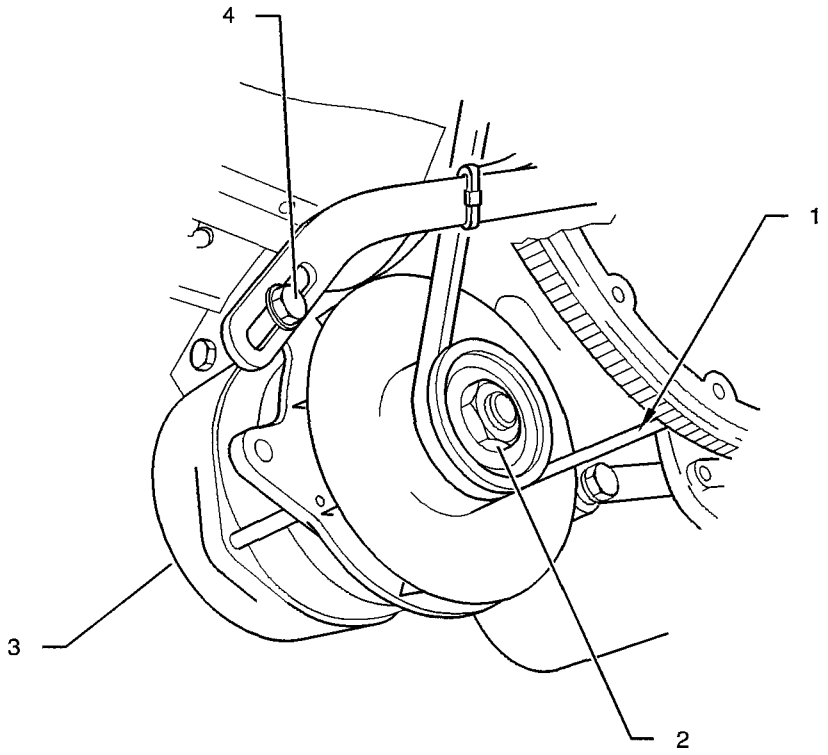
9) Remove the warning sign prohibiting main switch-breaker operation.

10) Install the engine cowlings - refer to 71-10-01.

11) Perform an operational test of the alternator.



1 - Belt
2 - Nut
3 - Alternator
4 - Bolt



I4243001AAABYZ14000

Alternator - Adjustment / Test
Figure 501

PAGE INTENTIONALLY LEFT BLANK

BATTERY

SERVICING

1. BATTERY MAINTENANCE

A. Tools and consumable materials

- Protection product (TB 05-918)
- Petrolatum (TB 04-012)

B. Procedure

1) Apart from periodical maintenance, the only precaution required for proper battery operation is the regular checking of its charge.

   a) Check the electrolyte level. Under all circumstances, the level should never fall below the plates, if, however, this occurs, restore it by adding distilled water only.

   b) Periodically check the electrolyte density :

   - battery REBAT R.35 or EXIDE AC.35 - 30°B
   - battery SONNENSCHEIN - 32°B
   - battery BOSCH - 28°B

   c) If these values are not reached, proceed to a regular charging according to the type of battery :

   - battery REBAT R.35 or EXIDE AC.35 : charge to 4 AH.
   - battery SONNENSCHEIN and BOSCH : charge to 1.6 AH for 32 AH batteries.

   d) For any information about "GILL" batteries, refer to GILL "Service Manual".

PAGE INTENTIONALLY LEFT BLANK

BATTERY

REMOVAL / INSTALLATION

1. REMOVAL OF THE BATTERY (Figures 401 and 401A)

A. Tools and consumable materials

- Battery strap

B. Procedure

WARNING : DISCONNECT ANY AUXILIARY POWER SUPPLY BEFORE DISCONNECTING THE BATTERY.

1) Remove engine cowling 121 - refer to 71-10-01.
2) Remove cover (1).
3) Remove nuts (2) and clear lugs (4) and (6) from battery (16).
4) With a battery strap, remove the battery from its tray (5).

WARNING : IF AN AUXILIARY POWER SUPPLY IS USED, INSULATE BATTERY LUGS WITH RUBBER OR PLASTIC MATERIAL.

5) Remove, if required, tray (5) to check box condition against firewall.

2. INSTALLATION OF THE BATTERY (Figures 401 and 401A)

A. Tools and consumable materials

- Protection product (TB 05-918)
- Petrolatum (TB 04-012)
- Battery strap

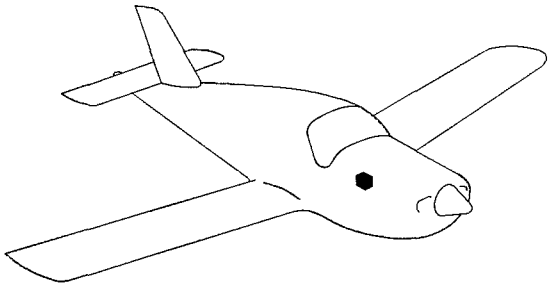
B. Procedure

1) Before installation, check for condition :
   - shims (7), (10) and (11),
   - tray (5) coatings,
   - drainage pipe (9) and its attachment clamps (8),
   - tray (5) attachments on firewall, bolts (12) and (20), washers (13), (14), (18) and (19),
   - grommets (3), replace them if necessary.
2) If removed, install tray (5).
3) Replace nuts (15) and (17).
4) Protect, if necessary, tray (5) interior with protection product (TB 05-918).
5) Using the battery strap, install the battery into its tray (5).
6) Position lugs (4) and (6) and tighten nuts (2).

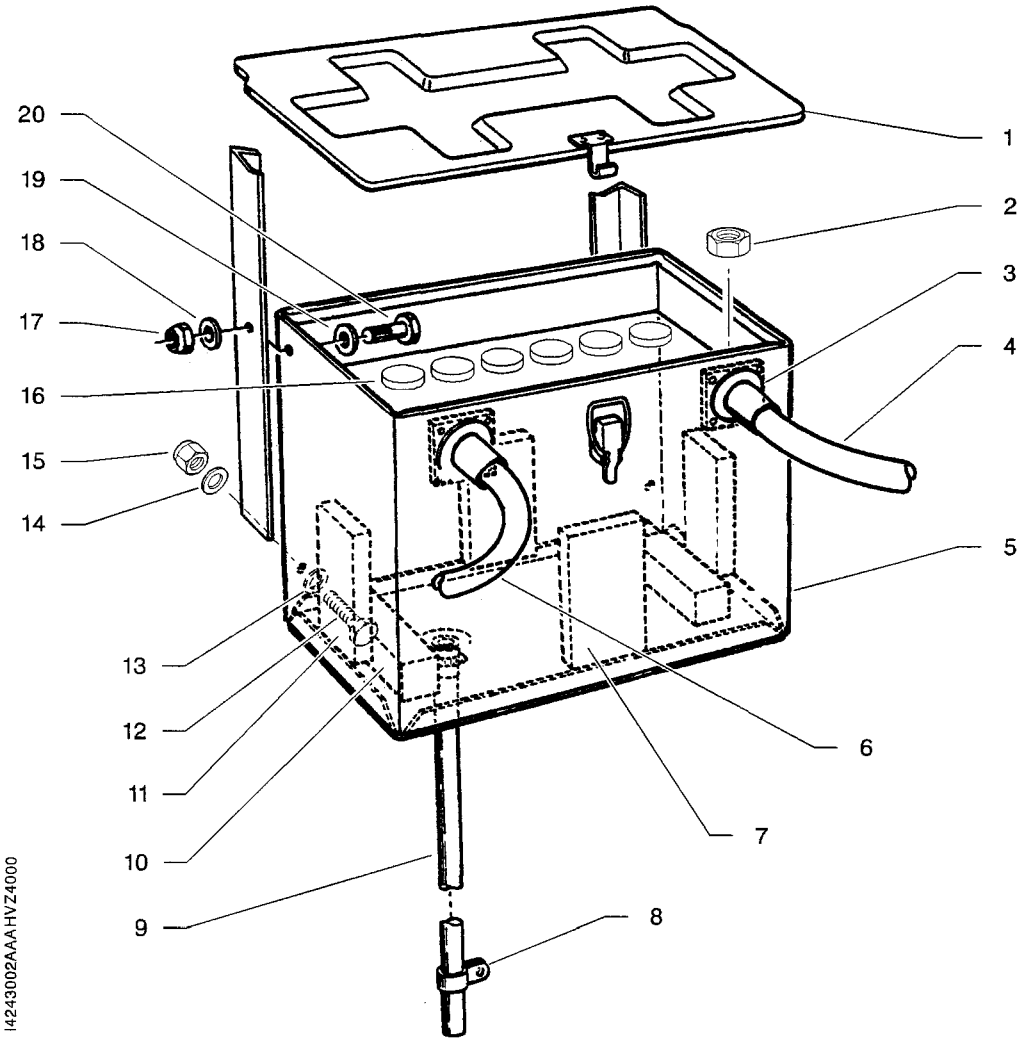
7) Lubricate lugs with petrolatum (TB 04-012).

8) Install cover (1) and lock it.

9) Install engine cowling 121 - refer to 71-10-01.

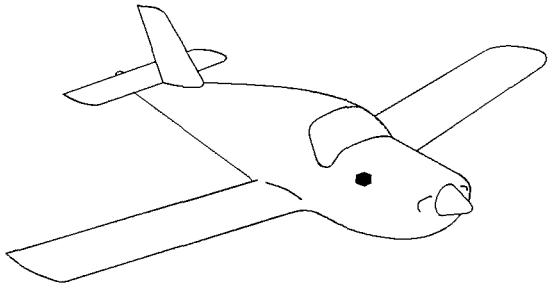


1 - Cover
2 - Nut
3 - Grommet
4 - Lug
5 - Tray
6 - Lug
7 - Shim
8 - Clamp
9 - Drainage pipe
10 - Shim
11 - Shim
12 - Bolt
13 - Washer
14 - Washer
15 - Nut
16 - Battery
17 - Nut
18 - Washer
19 - Washer
20 - Bolt

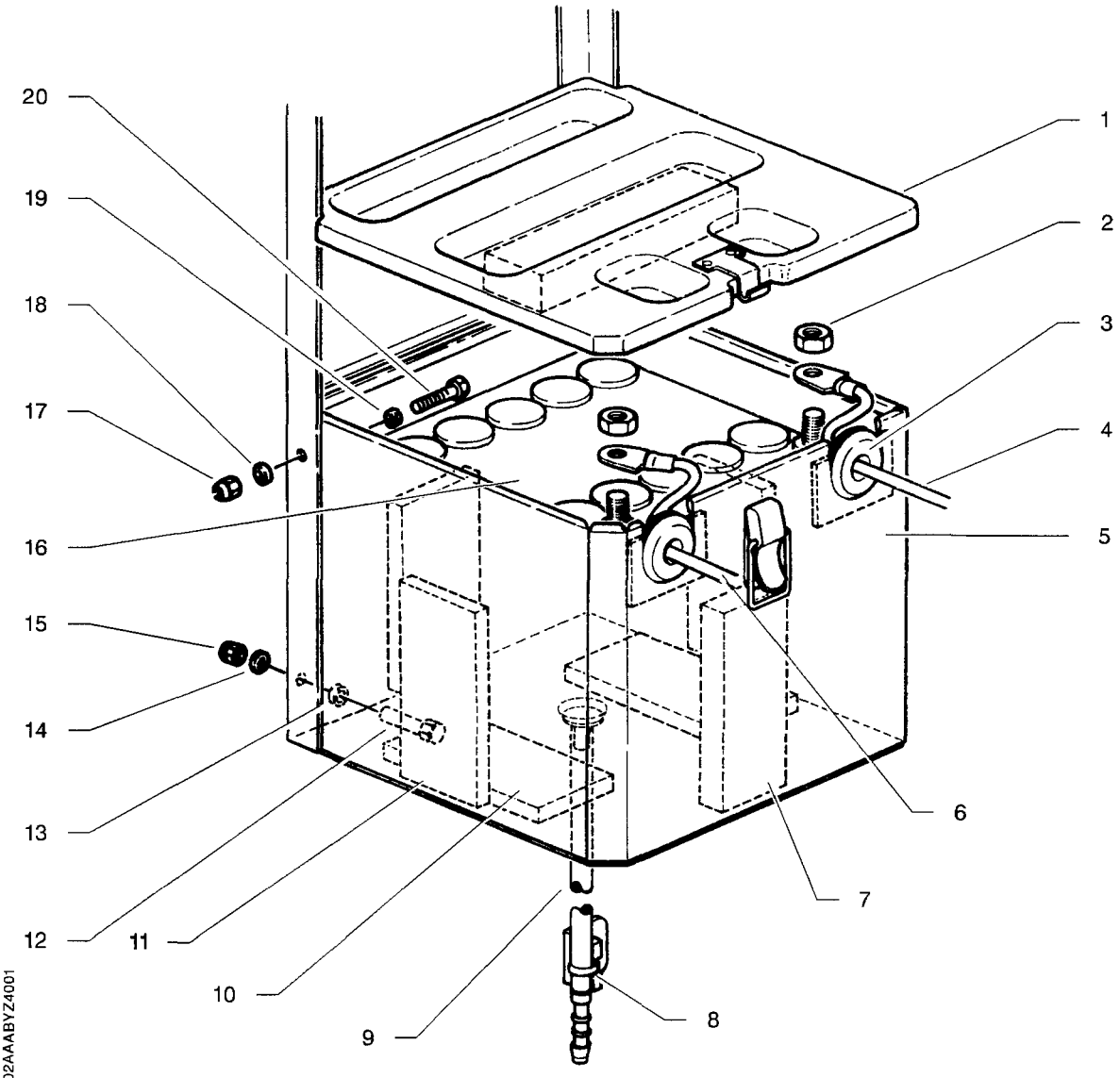


Battery - Removal / Installation
Figure 401 - S / N 1 - 822, 850 - 887, 889 - 947

AAAA
Validity : S / N 1 - 9999



1 - Cover
2 - Nut
3 - Grommet
4 - Lug
5 - Tray
6 - Lug
7 - Shim
8 - Clamp
9 - Drainage pipe
10 - Shim
11 - Shim
12 - Bolt
13 - Washer
14 - Washer
15 - Nut
16 - Battery
17 - Nut
18 - Washer
19 - Washer
20 - Bolt



Battery - Removal / Installation
Figure 401A - S / N 823 - 849, 888, 948 - 9999

AAAA
Validity : S / N 1 - 9999

BATTERY

INSPECTION / CHECK

1. CHECK OF THE BATTERY

A. Tools and consumable materials

None

B. Procedure

1) Perform a test run-up - refer to 05-30-02.
2) If connected, disconnect the ground power unit - refer to 24-40-00.
3) Once the different engine parameters have stabilized, open the battery switch-breaker.
4) Close the switch-breakers of taxi and landing lights.
5) Reduce the engine rating to idle.
6) Close the battery switch-breaker.
7) Increase the engine rating to 1500 rpm approximately.
8) Check that the indication of the engine monitoring cluster voltmeter stabilizes inside the green sector.

   NOTE : If the voltmeter is in lower red sector, remove and charge the battery.
9) Open the switch-breakers of taxi and landing lights.
10) Shut down the engine - refer to 05-30-02.

PAGE INTENTIONALLY LEFT BLANK

BATTERY RELAY

REMOVAL / INSTALLATION

1. REMOVAL OF THE BATTERY RELAY (Figure 401)

A. Tools and consumable materials

None

B. Procedure

CAUTION : BEFORE ANY OPERATION, MAKE SURE THAT THE BATTERY AND ANY GROUND POWER SUPPLY ARE DISCONNECTED.

1) Disconnect the battery - refer to 24-30-02.
2) Remove engine cowling 121 - refer to 71-10-01.

CAUTION : BEFORE DISCONNECTING THE BATTERY RELAY, MARK THE CONNECTIONS, ESPECIALLY THOSE OF DIODE (1).

3) Disconnect battery relay (2).
4) Remove battery relay (2). Retain bolts (5) and washers (4).

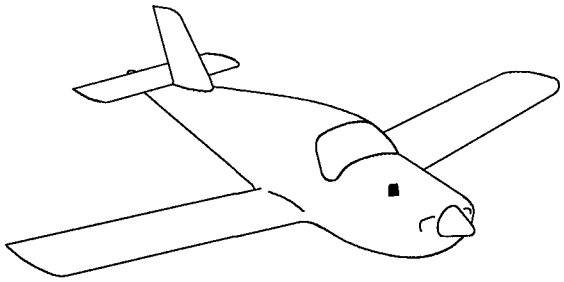
2. INSTALLATION OF THE BATTERY RELAY (Figure 401)

A. Tools and consumable materials

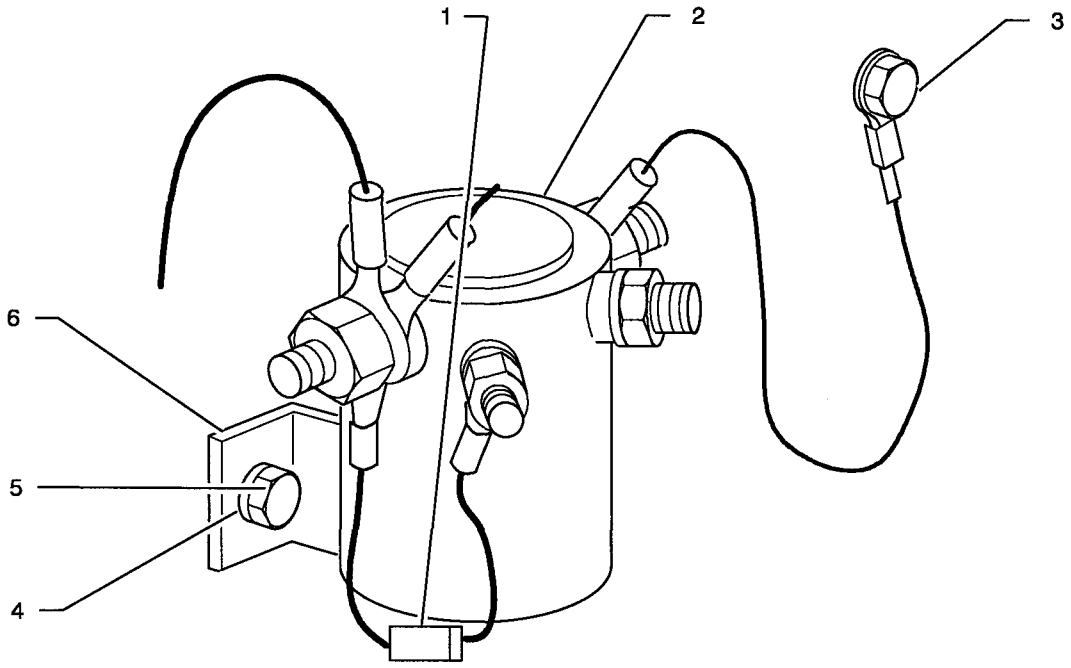
- Varnish (TB 07-901)
- Petrolatum (TB 04-012)

B. Procedure

1) Check and replace, if necessary, the protection boots installed at the level of the connections.
2) Check skin condition under battery relay attachments. In order to provide a correct electrical grounding, apply a thin layer of petrolatum (TB 04-012) under mounting pads (6) and under ground (3).
3) Attach battery relay (2) with bolts (5) and washers (4).
4) Connect battery relay (2).
5) Apply a layer of varnish (TB 07-901) on the electric connections.
6) Connect the battery - refer to 24-30-02.
7) Install engine cowling 121 - refer to 71-10-01.
8) Perform a test run-up - refer to 05-30-02.



1 - Diode
2 - Battery relay
3 - Ground
4 - Washer
5 - Bolt
6 - Mounting pad



I4243003AAAAVZ4100

Battery relay - Removal / Installation
Figure 401

BATTERY RELAY

REMOVAL / INSTALLATION

1. REMOVAL OF THE BATTERY RELAY (Figure 401)

A. Tools and consumable materials

None

B. Procedure

CAUTION : BEFORE ANY OPERATION, MAKE SURE THAT THE BATTERY AND ANY GROUND POWER SUPPLY ARE DISCONNECTED.

1) Disconnect the battery - refer to 24-30-02.

2) Remove engine cowling 121 - refer to 71-10-01.

CAUTION : BEFORE DISCONNECTING THE BATTERY RELAY, MARK THE CONNECTIONS, ESPECIALLY THOSE OF DIODES (2) AND (3).

3) Disconnect battery relay (1).

4) Remove battery relay (1). Retain bolts (5) and washers (6).

2. INSTALLATION OF THE BATTERY RELAY (Figure 401)

A. Tools and consumable materials

- Varnish (TB 07-901)
- Petrolatum (TB 04-012)

B. Procedure

1) Check and replace, if necessary, the protection boots installed at the level of the connections.

2) Check skin condition under battery relay attachments. In order to provide a correct electrical grounding, apply a thin layer of petrolatum (TB 04-012) under mounting pads (7).

3) Attach battery relay (1) with bolts (5) and washers (6).

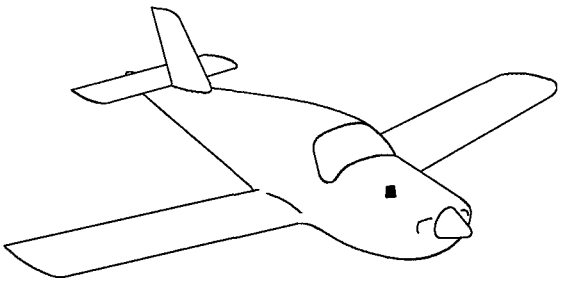
4) Connect battery relay (1).

5) Apply a layer of varnish (TB 07-901) on the electric connections.

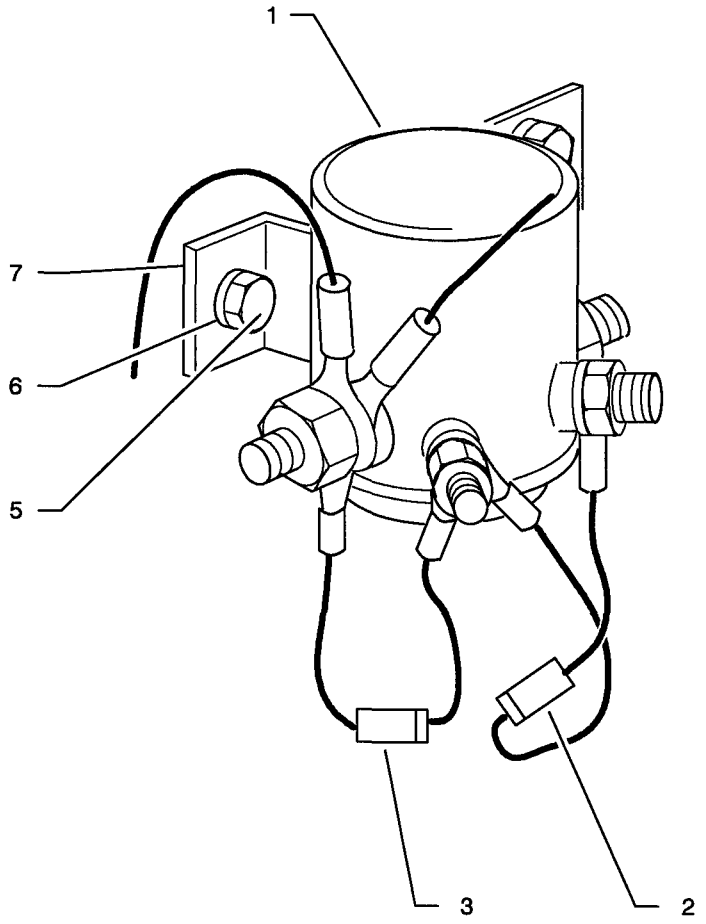
6) Connect the battery - refer to 24-30-02.

7) Install engine cowling 121 - refer to 71-10-01.

8) Perform a test run-up - refer to 05-30-02.



1 - Battery relay
2 - Diode
3 - Diode
5 - Bolt
6 - Washer
7 - Mounting pad



I4243003AAAAVZ4000

Battery relay - Removal / Installation
Figure 401

EXTERNAL POWER

DESCRIPTION AND OPERATION

1. GENERAL

The external power is the part of the system within the aircraft which links external electrical power to airplane electrical system.

This sub-system consists of the following elements :

- ground power receptacle,
- ground power receptacle relay.

2. LOCATION (Figures 1, 1A and 1B)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Ground power receptacle	1	210	216	24-40-00
Ground power receptacle relay	1	100	121	24-40-00

3. DESCRIPTION

A. Ground power receptacle

For startings by cold weather and for long time maintenance practices on the electrical and avionics equipment, the ground power receptacle permits the use of an external power supply source. The receptacle is located under the baggage compartment access door, near the anti-spin edge.

NOTE : If no avionics equipment is to be used or worked on, turn off the avionics power switches or open the circuit-breakers. If maintenance practices are required, use better a ground power source energized through a battery holder cart to prevent damage to the avionics equipment by transient voltage.

B. Ground power receptacle relay

Located on firewall at the level of starter and battery relays, the ground power receptacle relay ensures continuity between the external energy source, the battery and the various utilization circuits.

S / N 1 - 822, 850 - 887, 889 - 947

When the ground power receptacle is supplied, the battery and ground power supply are connected in parallel.

NOTE : Use of the ground power receptacle for starting the engine with a run-down battery or charging a run-down battery on board is not recommended. Remove the battery from the aircraft and charge it. The non-observance of these precautionary measures could result in loss of electrical power during flight.

S / N 823 - 849, 888, 948 - 9999

The ground power receptacle relay automatically disconnects the battery when the ground power receptacle is supplied. Therefore the battery cannot be charged without removing it from the aircraft.

4. OPERATION

Starting the engine with an auxiliary power source does not modify basic procedures - refer to Pilot's Operating Handbook, however :

Aircraft not equipped with "Radio Master" option

Avionics equipment switches shall be turned off.

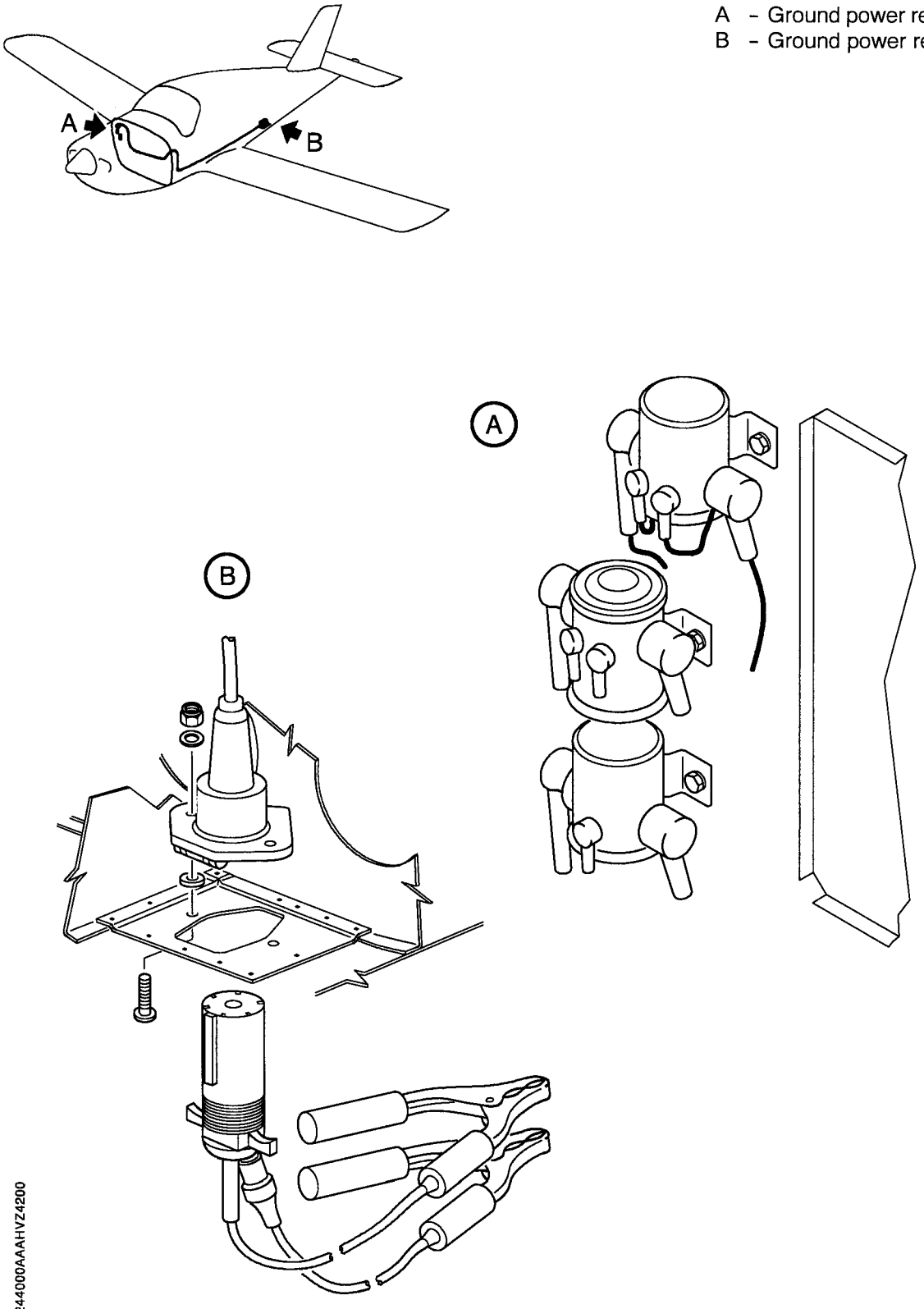
Aircraft equipped with "Radio Master" option

Electrical power supply to radio COM and radio NAV systems is automatically interrupted during the engine start-up phase.

All

The ground power receptacle system consists of a protection device against polarity switching. The aircraft shall be energized by the ground power source only if the ground power receptacle is correctly connected ; if not, the mains shall not be energized, thereby preventing any damage of electrical equipment.

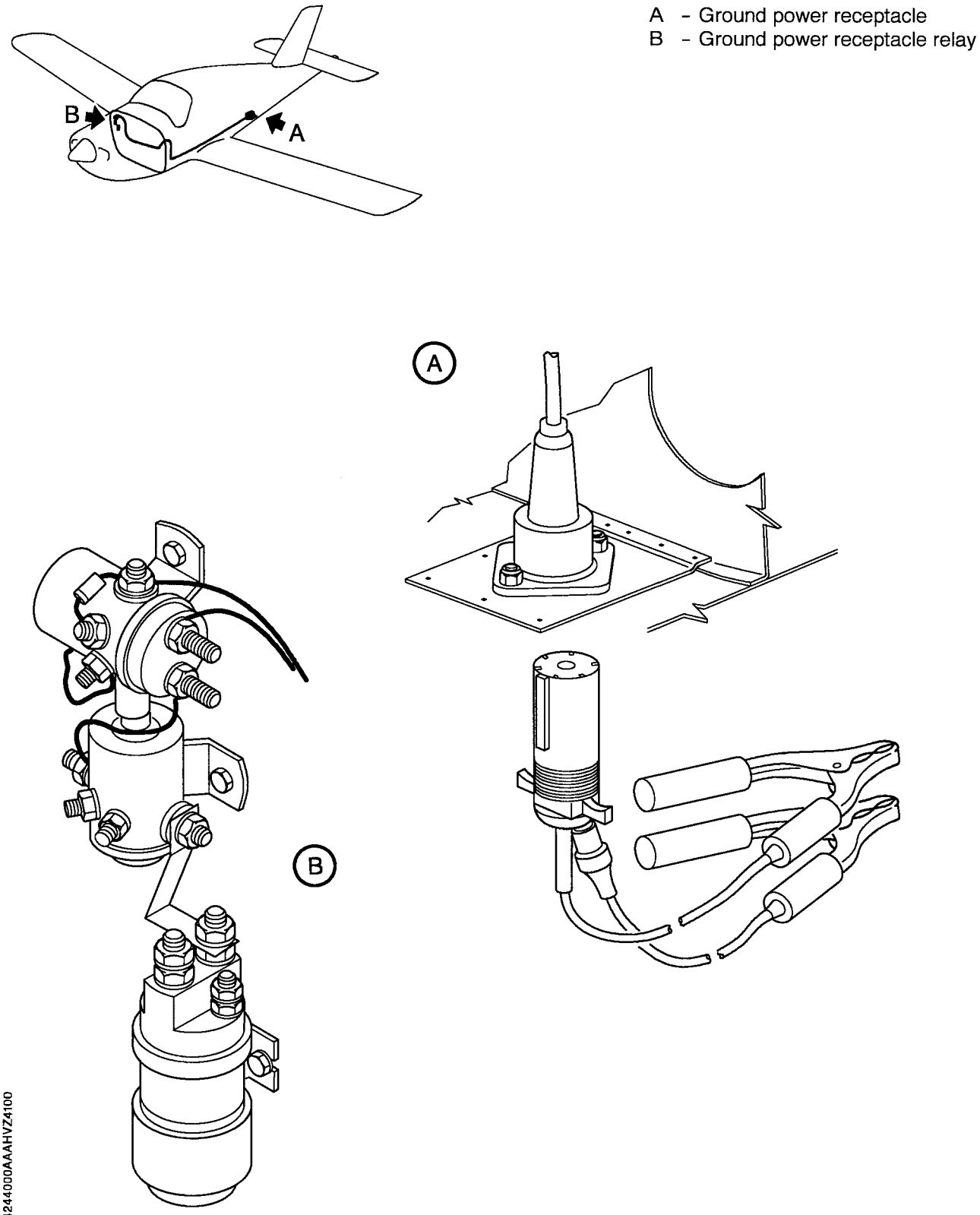
A - Ground power receptacle relay
B - Ground power receptacle



External power - Identification and location of components
Figure 1 - OPTION 0519

AAAA
Validity : Option Pre-MOD. 151

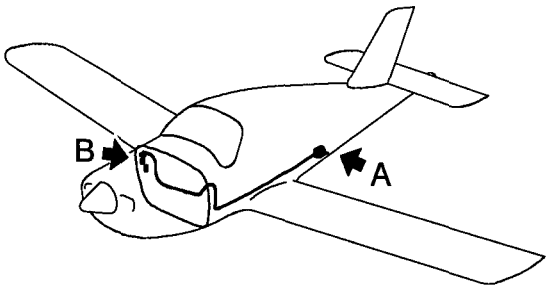
A - Ground power receptacle
B - Ground power receptacle relay

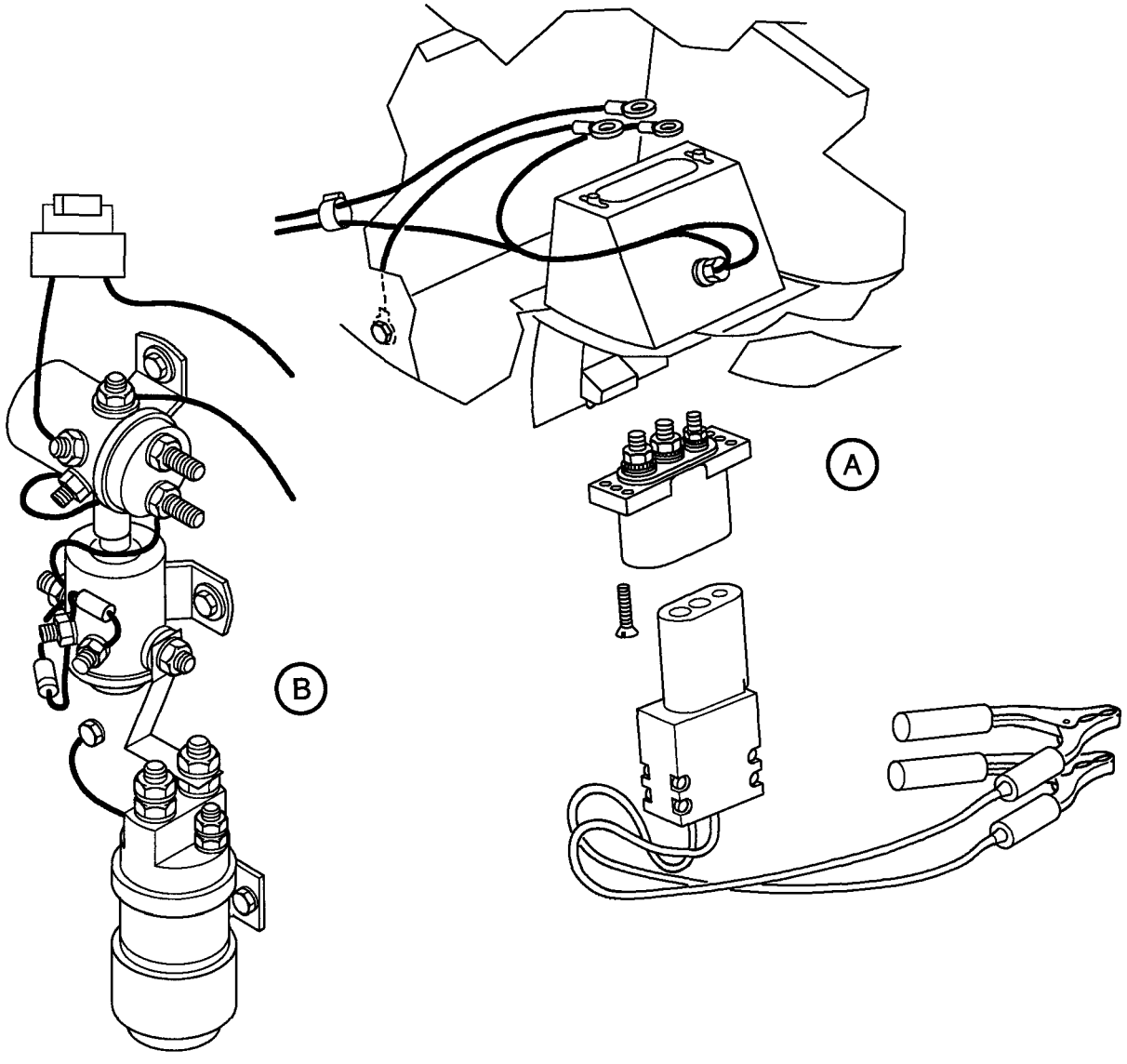


External power - Identification and location of components
Figure 1A - OPTION C825

AAAA
Validity : Option Pre-MOD. 151

A - Ground power receptacle
B - Ground power receptacle relay





I4244000AAAHVZ4000

External power - Identification and location of components
Figure 1B - OPTION C835

AAAA
Validity : Option Pre-MOD. 151

PAGE INTENTIONALLY LEFT BLANK

EXTERNAL POWER

DESCRIPTION AND OPERATION

1. GENERAL

The external power is the part of the system within the aircraft which links external electrical power to airplane electrical system.

This sub-system consists of the following elements :

- ground power receptacle,
- ground power receptacle relay.

2. LOCATION (Figure 1)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Ground power receptacle	1	210	216	24-40-00
Ground power receptacle relay	1	100	121	24-40-00

3. DESCRIPTION

A. Ground power receptacle

For startings by cold weather and for long time maintenance practices on the electrical and avionics equipment, the ground power receptacle permits the use of an external power supply source. The receptacle is located under the baggage compartment access door, near the anti-spin edge.

NOTE : If no avionics equipment is to be used or worked on, turn off the avionics power switches or open the circuit-breakers. If maintenance practices are required, use better a ground power source energized through a battery holder cart to prevent damage to the avionics equipment by transient voltage.

B. Ground power receptacle relay

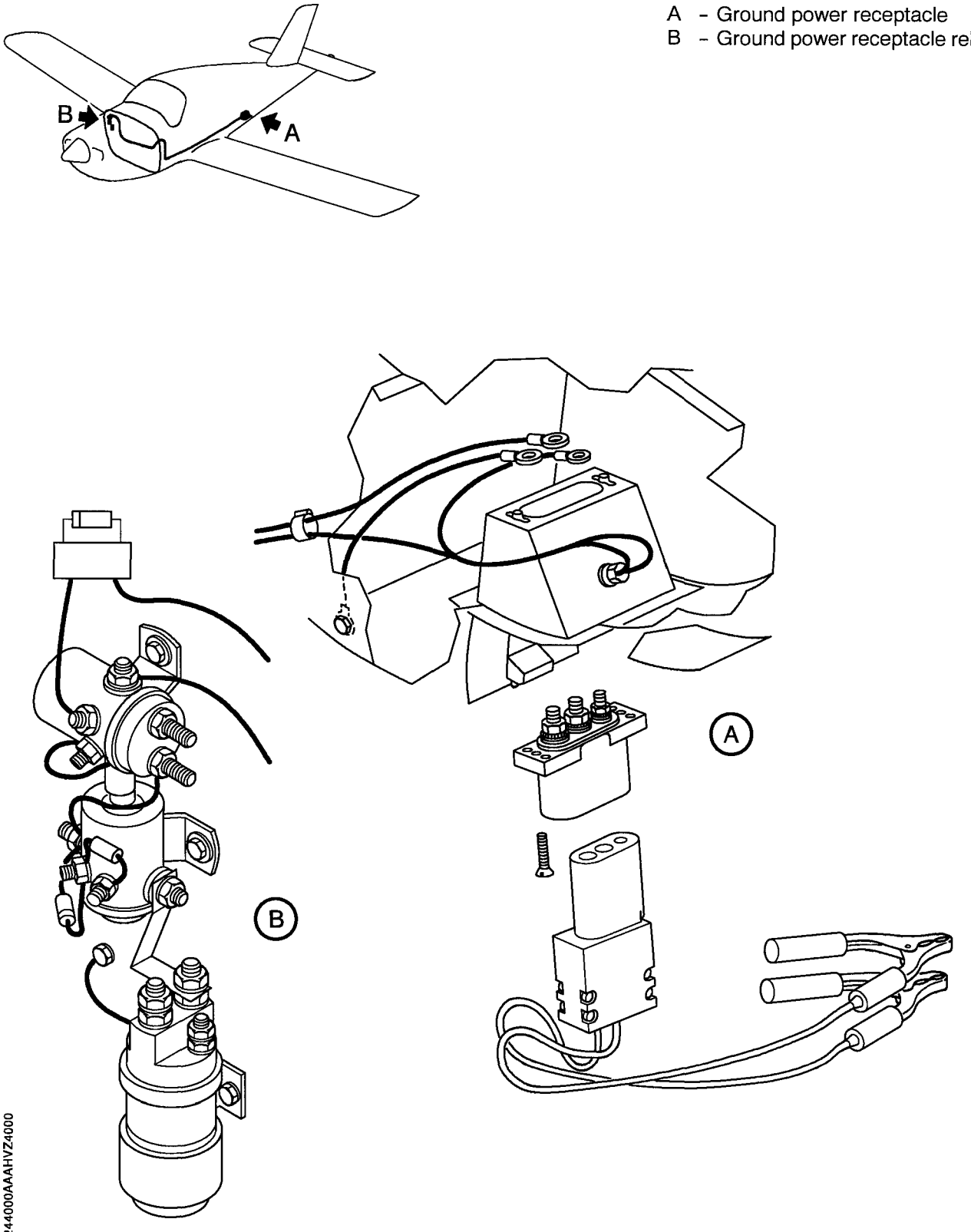
Located on firewall at the level of starter and battery relays, the ground power receptacle relay ensures continuity between the external energy source, the battery and the various utilization circuits.

The ground power receptacle relay automatically disconnects the battery when the ground power receptacle is supplied. Therefore the battery cannot be charged without removing it from the aircraft.

4. OPERATION

Starting the engine with an auxiliary power source does not modify basic procedures - refer to Pilot's Operating Handbook, however electrical power supply to radio COM and radio NAV systems is automatically interrupted during the engine start-up phase.

The ground power receptacle system consists of a protection device against polarity switching. The aircraft shall be energized by the ground power source only if the ground power receptacle is correctly connected ; if not, the mains shall not be energized, thereby preventing any damage of electrical equipment.



External power - Identification and location of components
Figure 1

DISTRIBUTION

DESCRIPTION AND OPERATION

1. GENERAL

The distribution is the part of the system which connects the DC current source to the utilization circuits.

This sub-system consists of the following main elements :

- fuses of PL3 fuse panel,
- bus bars,
- "pull-off" type circuit-breakers of PL1 circuit-breaker panel,
- circuit-breakers of PL1 circuit-breaker panel,
- switch-breakers of PL2 central pedestal.

2. LOCATION (Figure 1)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Fuses	/	200	211L 212L	24-50-00
Bus bars	3 (Std) 1 (Opt.)	200	232L	24-50-00
"Pull-off" type circuit-breakers	/	200	232L	24-50-00
Circuit-breakers	/	200	232L	24-50-00
Switch-breakers	/	200	252	24-50-00

3. DESCRIPTION (Figures 2 and 3)

A. Fuses

Fuses inserted in the PL3 panel located on firewall door 212L protect the systems which are not protected by circuit-breakers.

NOTE : The diagram located on PL3 fuse panel allows localization of fuses.

Spare fuses are located on the cover fixed on door 212L.

B. Bus bars

Bus bars are elements which dispatch DC to the various circuits. They are located behind the PL1 circuit-breaker panel.

C. "Pull-off" type circuit-breakers

In addition to protection of the alternator supply with a 60-amp "pull-off" type circuit-breaker labeled "ALT", the following "pull-off" type circuit-breakers have been installed :

- 70 A labeled "BAT" between battery and network,
- 40 A labeled "BUS 1" on bus bar 1 supply,

- 40 A labeled "BUS 2" on bus bar 2 supply,
- 40 A labeled "BUS 3" on bus bar 3 supply.

These five "pull-off" type circuit-breakers are manually-operated and can selectively isolate the various sources or bus bars.

NOTE : "MAIN SWITCH" and "ALT" disconnection in flight simultaneously disconnects all electrical power supplies.

D. Circuit-breakers

Most of aircraft electrical circuits are protected by circuit-breakers installed on PL1 panel located on the L.H. side of the pilot. Should an overload occur in a circuit, the circuit-breaker trips and will switch off the circuit. Allow it to cool for approximately three minutes, then the circuit-breaker may be reengaged (pressed down).

Avionics systems are protected by circuit-breakers grouped in the lower part of PL1 panel.

E. Switch-breakers

All switch-breakers are located on PL2 central pedestal.

Each switch-breaker is identified (see symbolization).

Whenever an electrical incident occurs on the circuit of a switch-breaker, its setting button appears protruding.

Check the circuit and reset the switch-breaker.

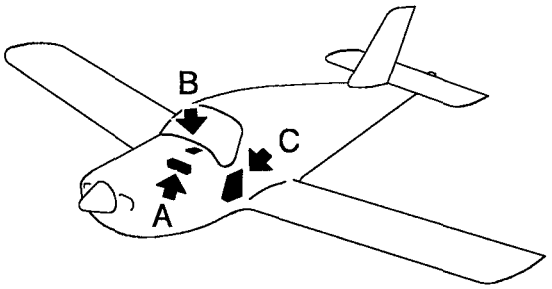
Battery connection to the electrical network is made through the switch-breaker labeled "MAIN SWITCH".

A switch labeled "RADIO MASTER" can be installed on R.H. side of the L.H. strip to control the supply of avionics and to allow automatic disconnection of avionics systems when the engine starts, or manual disconnection during abnormal conditions.

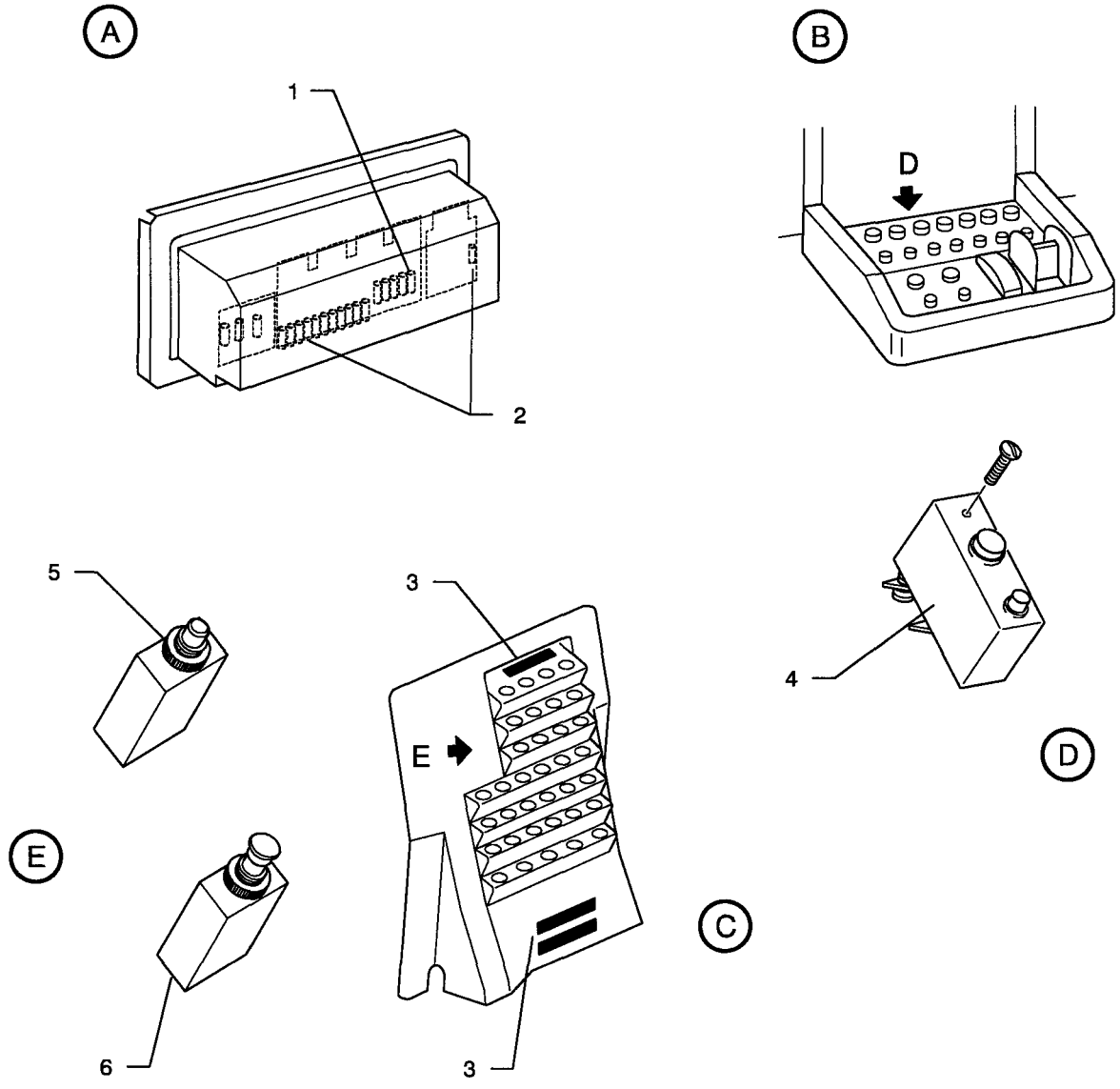
4. OPERATION

When the switch is in OFF position, no electrical power will be applied to the avionics. The avionics power switch "RADIO MASTER" should be placed in the OFF position prior to turning main switch ON or OFF, or connecting an external power source and may be used instead of the individual avionics switches.

"RADIO MASTER" function does not concern some optional equipment such as electric trim, autopilot, HF transceiver...

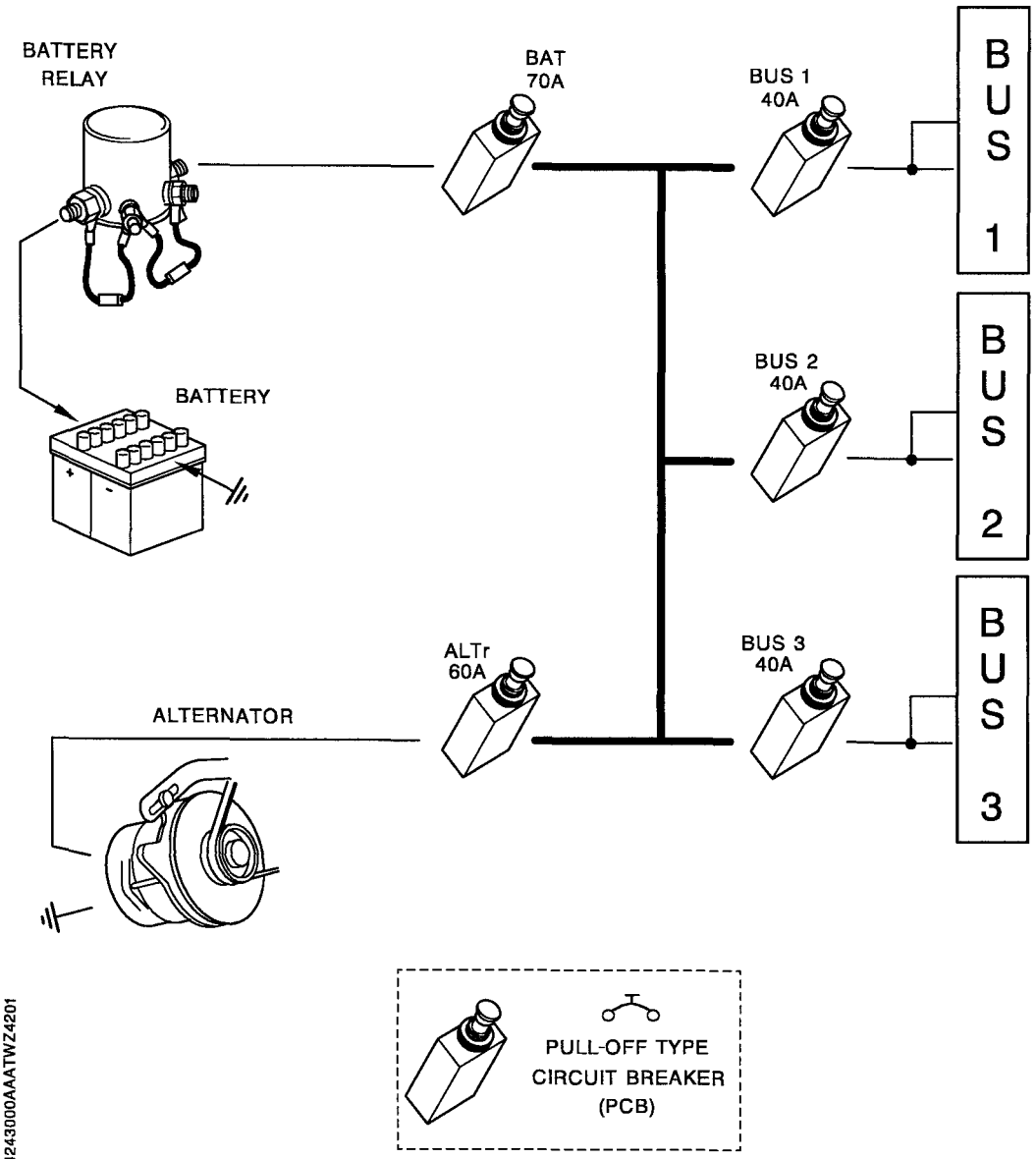


1 - Spare fuse
2 - Fuse
3 - Bus bar
4 - Switch-breaker
5 - Circuit-breaker
6 - "Pull-off" type circuit-breaker

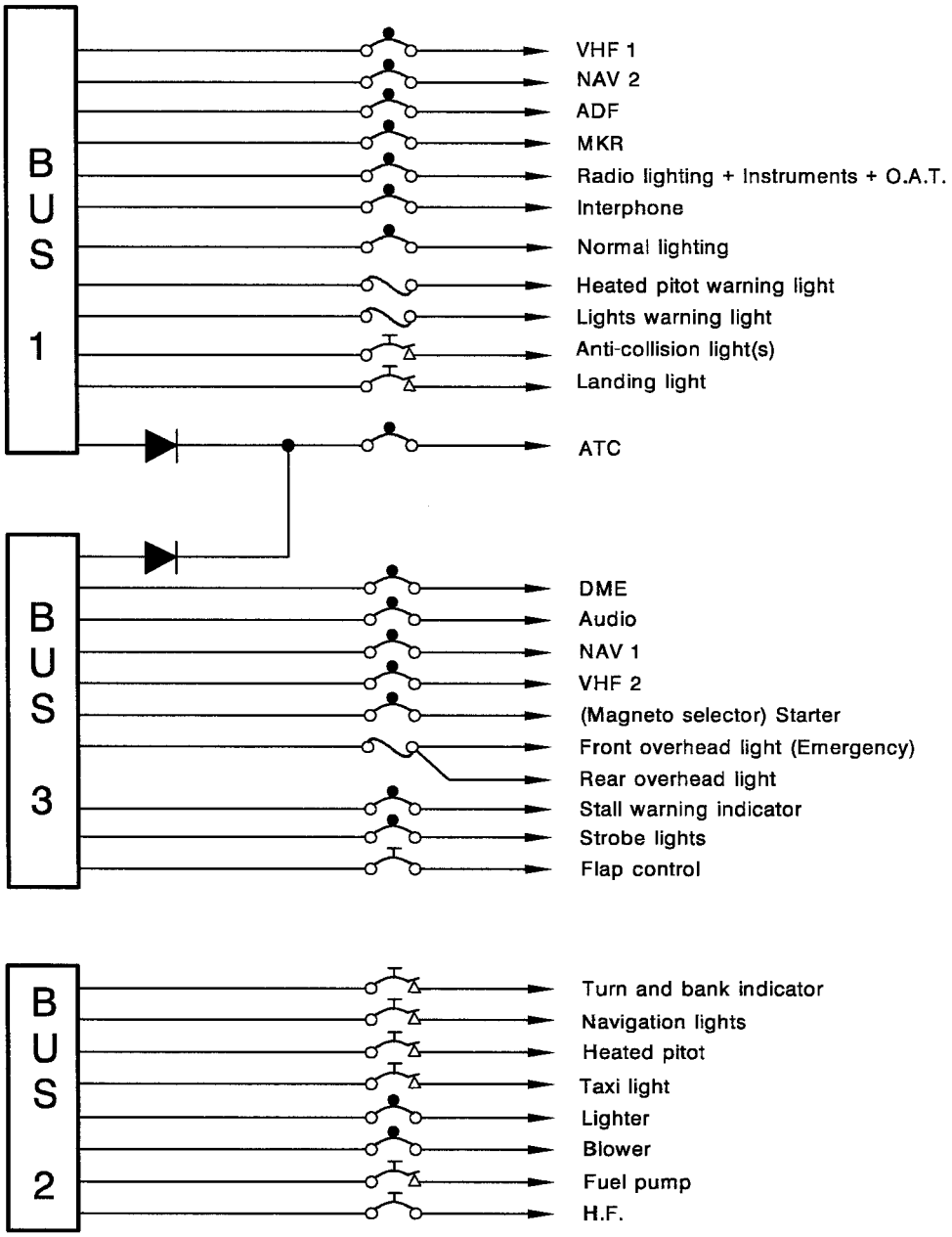


I4245000AAACYZ4101

Distribution - Identification and location of components
Figure 1



Distribution - BUS bar supply
Figure 2



I4243000AABDWZ24100

Distribution - Electrical distribution
Figure 3

AAAA
Validity : S / N 1 - 822, 850 - 887, 889 - 947

PAGE INTENTIONALLY LEFT BLANK

DISTRIBUTION

DESCRIPTION AND OPERATION

1. GENERAL

The distribution is the part of the system which connects the DC current source to the utilization circuits.

This sub-system consists of the following main elements :

- fuses of PL3 fuse panel,
- bus bars,
- "pull-off" type circuit-breakers of PL1 circuit-breaker panel,
- circuit-breakers of PL1 circuit-breaker panel,
- switch-breakers of PL2 central pedestal.

2. LOCATION (Figure 1)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Fuses	/	200	211L 212L	24-50-00
Bus bars	3 (Std) 1 (Opt.)	200	232L	24-50-00
"Pull-off" type circuit-breakers	/	200	232L	24-50-00
Circuit-breakers	/	200	232L	24-50-00
Switch-breakers	/	200	252	24-50-00

3. DESCRIPTION (Figures 2 and 3)

A. Fuses

Fuses inserted in the PL3 panel located on firewall door 212L protect the systems which are not protected by circuit-breakers.

NOTE : The diagram located on PL3 fuse panel allows localization of fuses.

Spare fuses are located on the cover fixed on door 212L.

The advisory panel, tachometer, carburetor temperature indicator (except for TB 200) and engine monitoring cluster are supplied by the "BUS 1" bar. If this bus is lost or manually shed, the "BUS 3" bar automatically supplies these instruments through a relay located in PL3 fuse panel.

B. Bus bars

Bus bars are the elements which dispatch DC to the various circuits. They are located behind PL1 circuit-breaker panel.

C. "Pull-off" type circuit-breakers

In addition to protection of the alternator supply with a 60-amp "pull-off" type circuit-breaker labeled "ALT", the following "pull-off" type circuit-breakers have been installed :

- 70 A labeled "BAT" between battery and network,
- 30 A labeled "BUS 1" on bus bar 1 supply,
- 30 A labeled "BUS 2" on bus bar 2 supply,
- 30 A labeled "BUS 3" on bus bar 3 supply.

These five "pull-off" type circuit-breakers are manually-operated and can selectively isolate the various sources or bus bars.

NOTE : "MAIN SWITCH" and "ALT" disconnection in flight disconnects simultaneously all electrical power supplies.

D. Circuit-breakers

Most of electrical circuits are protected by circuit-breakers installed on PL1 panel located at the L.H. side of the pilot. Should an overload occur in a circuit, the circuit-breaker trips and will switch off the circuit. Allow it to cool for approximately three minutes, then the circuit-breaker may be reengaged (pressed down).

Avionics systems are protected by circuit-breakers grouped in the lower part of PL1 panel.

E. Switch-breakers

All switch-breakers are located on PL2 central pedestal.

Each switch-breaker is identified (see symbolization).

Whenever an electrical incident occurs on the circuit of a switch-breaker, its setting button appears protruding.

Check the circuit and reset the switch-breaker.

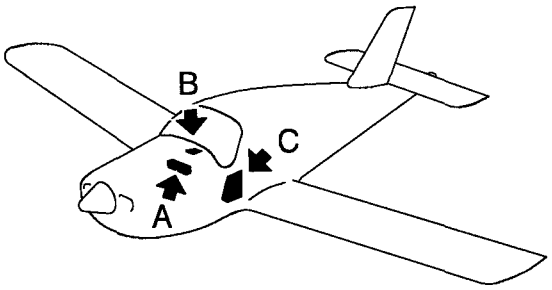
Battery connection to the electrical network is made through the switch-breaker labeled "MAIN SWITCH".

A switch labeled "RADIO MASTER" can be installed on R.H. side of the L.H. strip to control the supply of avionics and enables automatic disconnection of avionics systems when the engine starts, or manual disconnection during abnormal conditions.

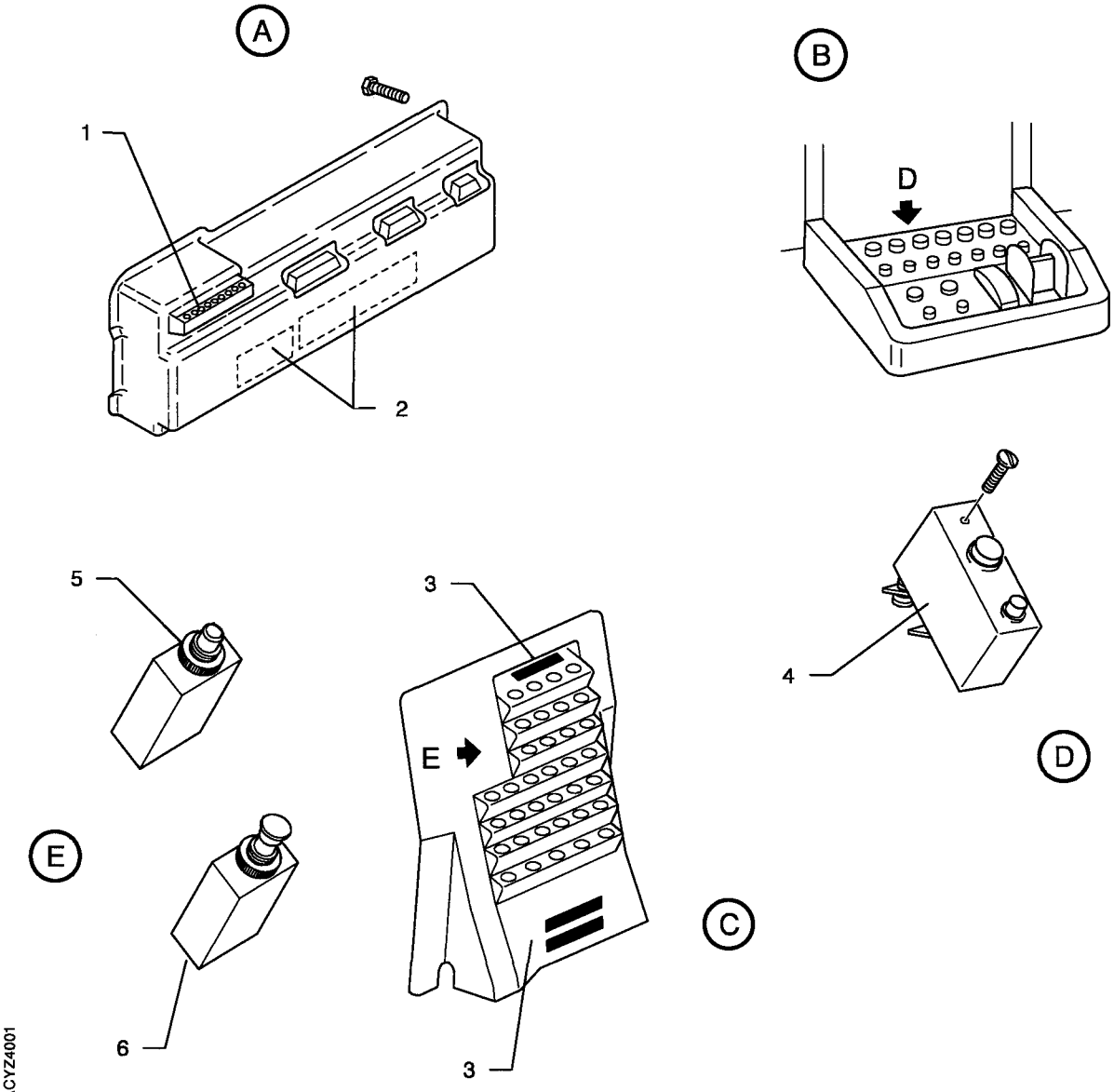
4. OPERATION

When the switch is in OFF position, no electrical power will be applied to the avionics. The avionics power switch "RADIO MASTER" should be placed in the OFF position prior to turning main switch ON or OFF, or connecting an external power source and may be used instead of the individual avionics switches.

"RADIO MASTER" function does not concern some optional equipment such as electric trim, autopilot, HF transceiver...

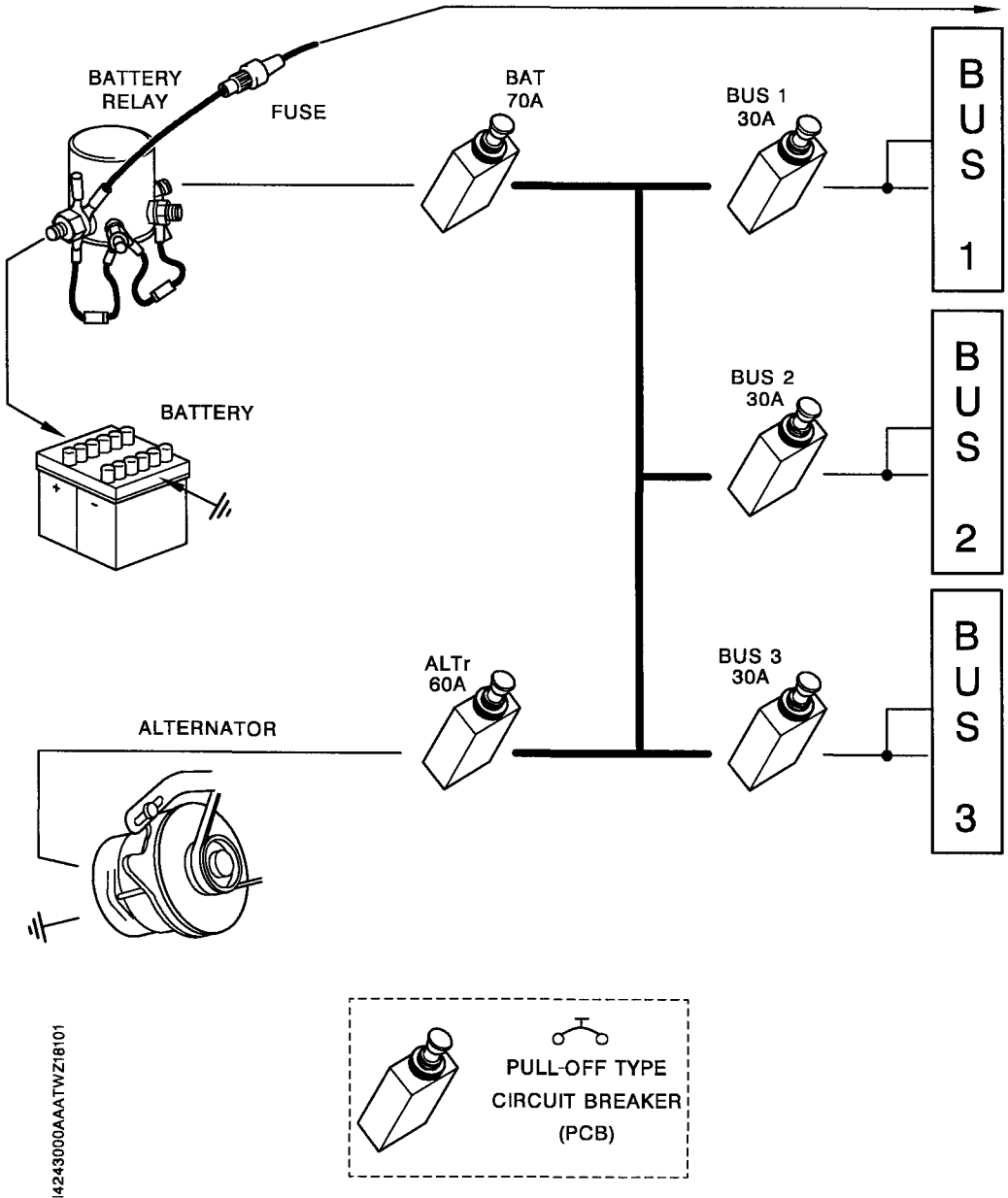


1 - Spare fuse
2 - Fuse
3 - Bus bar
4 - Switch-breaker
5 - Circuit-breaker
6 - "Pull-off" type circuit-breaker

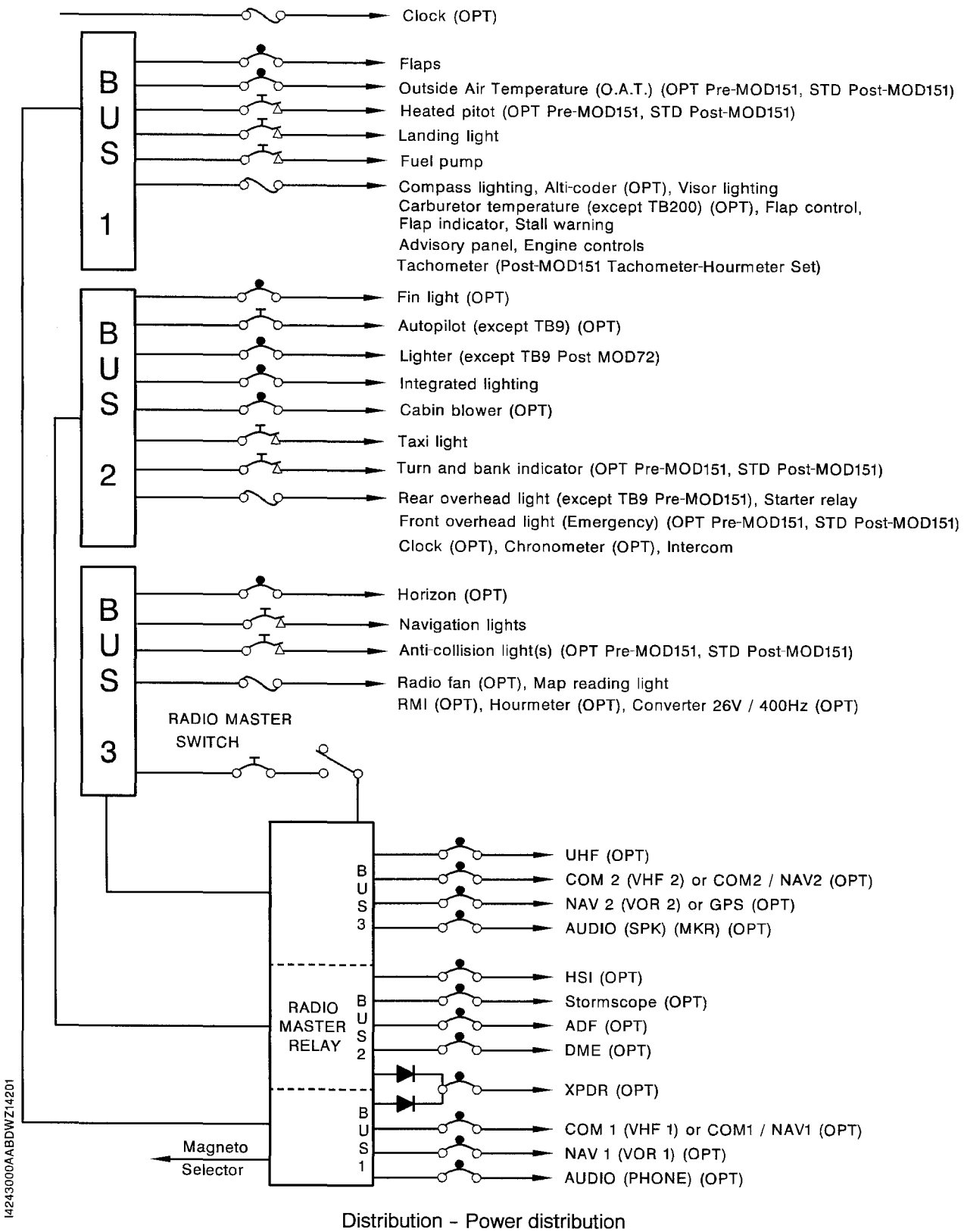


I4245000AAACYZ4001

Distribution - Identification and location of components
Figure 1



Distribution - BUS bar supply
Figure 2



Distribution - Power distribution
Figure 3

AEAC
Validity : S / N 823 - 849, 888, 948 - 9999

PAGE INTENTIONALLY LEFT BLANK

ELECTRICAL BONDING

DESCRIPTION AND OPERATION

1. GENERAL

Electrical bonding ensures perfect conductivity between the different sections of the aircraft.

There are two categories of electrical bonding :

- primary electrical bonding,
- secondary electrical bonding.

The conductivity between the moving components and the aircraft structure is ensured by bonding straps.

2. LOCATION (Figure 1)

COMPONENT	QTY	AREA	ACCESS DOOR	REFERENCE
Aileron bonding strap	2	500 / 600	/	24-70-00
Elevator bonding strap	1	330	/	24-70-00
Elevator trim tab bonding strap	2	330	/	24-70-00

3. DESCRIPTION

A. Primary electrical bonding

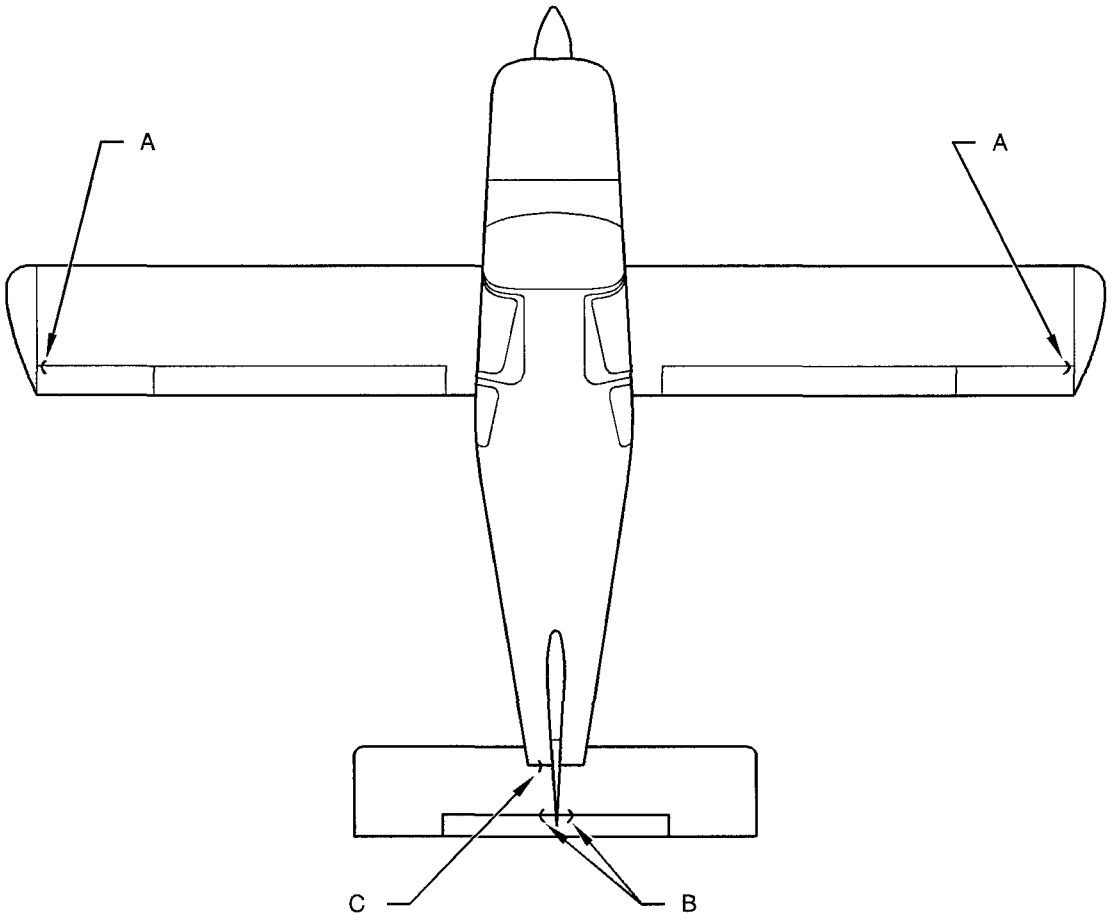
Primary electrical bonding encompasses all the conductive portions of the structure, the parts and bonding conductors likely to be submitted to high lightning-induced energies.

B. Secondary electrical bonding

Secondary electrical bonding encompasses all the other cases such as :

- reverse current via the aircraft ground,
- grounding of all the metallic parts, necessary for correct operation of the electrical circuit protections,
- the flow of all electrostatic currents,
- grounding of electrical shielding,
- the electrostatic dischargers,
- the grounding of the aircraft on the ground,
- the grounding of electrically-operated equipment in order to preclude interference.

A - Aileron bonding strap
B - Elevator trim tab bonding strap
C - Elevator bonding strap



I4247000AAAOWZ4001

Electrical bonding - Identification and location of components
Figure 1