SUPPLEMENT S05

TO THE AIRPLANE FLIGHT MANUAL DA 42

MISSION POWER SUPPLY SYSTEM

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0.1 RECORD OF REVISIONS

Rev. No.	Reason	Chap-ter	Page(s)	Date of Revision	Approval No.	Verification	Date Inserted	Signature
1	Improve-ments	all	all	18-Jul-2007				

0.2 LIST OF EFFECTIVE PAGES

Chapter	Page	Date
0	9-S05-0	18-Jul-2007
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1. GENERAL

The DA 42 can be equipped with optional modifications which serve as a preparation for a camera-, scanner- and/or sensor equipment installation. For these types of equipment individual equipment compartments may be installed.

NOTE

This supplement contains all necessary information to operate the DA 42 with mission power supply system installed. The installation and operation of such equipment must be certified separately.

This supplement to the AFM must be used in conjunction with the individual AFM supplement of the mission equipment. Information contained in the AFM supplement for the mission equipment supersedes the information contained herein.

2. OPERATING LIMITATIONS

2.15 LIMITATION PLACARDS

On the Control panel MPP:

CONFIRM EACH ALTERNATOR LOAD IS LESS THAN 40A ALL THE TIME.

SWITCH OFF MISSION MASTER IMMEDIATELY WHEN ONE OF THE FOLLOWING CONDITIONS APPLY:

- ABNORMAL CONDITION
- EMERGENCY CONDTION
- LH. OR RH. ALT. LOAD MORE THAN 40 A
- ICING CONDITION

In the Baggage tube:

2.16 OTHER LIMITATIONS

2.16.2 BATTERY CHARGE

Taking off with an empty battery is not permitted. Therefore the use of an external power supply for engine starting with an empty airplane battery is also not permitted.

In this case the airplane battery must first be charged or replaced.

2.16.9 MISSION EQUIPMENT

The operation of mission equipment is only possible if the design change advisory VÄM 42-002 was carried out.

Max. load of each alternator:……..40 A indicated on the G1000

3. EMERGENCY PROCEDURES

WARNING

Mission system power supply must be switched off in any emergency, abnormal, icing condition or if a single alternator load of more than 40 A is indicated on the G1000 system.

1. MISSION MASTER ..... OFF

END OF CHECKLIST

3.8 SMOKE AND FIRE

3.8.6 CABIN SMOKE

1. MISSION MASTER ..... OFF

Initiate an emergency descent:

2. FLAPS ..... UP
3. LANDING GEAR ..... DOWN
4. POWER lever ..... IDLE
5. Airspeed ..... as required

WARNING

Max. structural cruising speed . . . . . v_{NO} = 155 KIAS
Never exceed speed in smooth air . . . . .v_{NE} = 194 KIAS

6. Land at the nearest suitable airfield.

END OF CHECKLIST

4A. NORMAL OPERATING PROCEDURES

4A.6 CHECKLISTS FOR NORMAL OPERATING PROCEDURES

NOTE

This supplement contains all necessary information to operate the DA 42 with mission power supply system installed. The installation and operation of such equipment must be certified separately.

4A.6.1 PRE-FLIGHT INSPECTION

I. Cabin check

Mission power supply system:

a) ELECT. MASTER .....ON
b) ALTERNATOR LH/RH .....OFF
c) MISSION MASTER .....ON
d) AMPERE/VOLTMETER.....check operation
e) MISSION MASTER .....OFF
f) ALTERNATOR LH/RH .....ON
g) ELECT. MASTER .....OFF

END OF CHECKLIST

4A.6.22 USING MISSION EQUIPMENT

Starting mission:

1. Operation of both alternators ..... checked
2. Single Alternator load ..... each checked, less than 40A
3. MISSION MASTER ..... ON
4. Single Alternator load ..... each checked, less than 40A

WARNING

Mission system power supply must be switched off in any emergency, abnormal, icing condition or if a single alternator load of more than 40 A is indicated on the G1000 system.

5. BUS 1-6..... ON, if required
6. Continuously check alternator load ..... each checked, less than 40A

NOTE

Detailed information concerning operation of the individual mission equipment e.g.: laserscanners, cameras, datalink systems are outlined in the individual AFM supplements for that equipment.

After mission:

1. BUS 1-6..... OFF
2. MISSION MASTER ..... OFF

END OF CHECKLIST

4B. ABNORMAL OPERATING PROCEDURES

WARNING

Mission system power supply must be switched off in any emergency, abnormal, icing condition or if a single alternator load of more than 40 A is indicated on the G1000 system.

1. MISSION MASTER .....OFF

4B.7.2 STARTING ENGINE

The existing checklist is amended to read:

1. Strobe lights (ACL).....ON
2. ELECT. MASTER .....ON
3. ENGINE MASTER .....ON (LH side)
4. Annunciations .....check „L ENGINE GLOW" ON
5. Annunciations / Engine / System Page .....check OK / normal range

WARNING

Before starting the engine the pilot must ensure that the propeller area is free, and no persons can be endangered.

After the L ENGINE GLOW indication is extinguished:

6. START KEY.....START L as required / release when engine has started

CONTINUED

CAUTION

Do not overheat the starter motor. Do not operate the starter motor for more than 10 seconds. After operating the starter motor, let it cool off for 20 seconds. After 6 attempts to start the engine, let the starter cool off for half an hour.

If the „L/R STARTER" annunciation does not extinguish after the engine has started and the START KEY has been released, set the ENGINE MASTER to OFF and investigate the problem.

7. Annunciations / Engine / System Page ..... check OK / normal range
8. Annunciations / Starter ..... check OFF
9. Annunciations / Oil pressure..... check OK

WARNING

If the oil pressure has not moved from the red range within 3 seconds after starting, set the ENGINE MASTER switch to OFF and investigate problem. When starting the cold engine, the oil pressure can be as high as 6.5 bar for a maximum of 20 seconds.

10. Circuit breakers ..... check all in / as required
11. Idle RPM..... check, 900 ±20 RPM
12. External Power ..... disconnect
13. Opposite engine ..... Start with normal procedure
14. Warm up..... IDLE for 2 minutes /
    ..... thereafter 1400 RPM

END OF CHECKLIST

5. PERFORMANCE

NOTE

Detailed information concerning performance of the DA 42 with individual mission equipment e.g.: laserscanners, cameras, datalink systems is outlined in the individual AFM supplements for that equipment.

6. MASS AND BALANCE

6.4 FLIGHT MASS AND CENTER OF GRAVITY

6.4.1 MOMENT ARMS

The most important lever arms aft of the Datum Plane:

Item	Lever Arm	
	[m]	[in]
Connector Box [3.~~,~~3 kg / 7.3 lb]	3.45	135.8

NOTE

The maximum allowed load in the cockpit baggage compartment is reduced by the weight of the connector box .

6.5 EQUIPMENT LIST AND EQUIPMENT INVENTORY

6.5.1 ADDITIONAL EQUIPMENT LIST

Each item of additional equipment must be filed in this table:

Airplane Serial No.:		Registration:		Date:	Page: /
No.	Description Manufacturer	Serial Number	Mass [kg]	Lever arm [m]	Moment [kgm]

7. DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

7.10 ELECTRICAL SYSTEM

7.10.1 GENERAL

The following paragraphs are amended to read:

Both generator power output lines also run through a current sensor for each alternator, which provides an indication of the power being supplied to the electrical system by an alternator including the current for battery charging on the G1000. In the event of a main battery failure the field of each alternator is energized by two 12V, 1.3 Ah sealed-lead-acid batteries ('excitation'-battery) connected in series, which are installed in the nose baggage compartment. The 'ENGINE MASTER LH (RH)'- switches connect the 'excitation'-battery to the alternator field via a 15 A fuse.

ECU bus:

The 'LH (RH) ECU bus' is connected to the 'LH (RH) main bus' via a diode and connected to the power output line of the alternator via a diode and a 30 Ampère circuit breaker and provides power for the ECU A and ECU B via the 'LH (RH) ECU A (B)'-Relays which are controlled by the 'LH (RH) ENGINE MASTER'-switch. The 'LH (RH) ENGINE MASTER'-switch must be set to 'ON' to connect the ECU A and ECU B to the 'ECU bus'.

The following paragraph is added:

To support the alternator electrical power supply to the ECU's in case of a malfunction of the main battery, additional sealed-lead-acid batteries (ECU backup batteries) are connected to the RH and LH ECU bus.

7.15 MISSION SYSTEM POWER SUPPLY

7.15.1 GENERAL

The DA 42 can be equipped with an optional power supply system which serves as the electrical power source for additional measurement-, datalink-, camera-, scanner-, sensor- and radar- equipment.

NOTE

Detailed information concerning the individual mission equipment e.g.: laserscanners, cameras, datalink systems is outlined in the individual AFM supplements for that equipment. This supplement describes all necessary information to operate the mission power supply system.

As shown in Fig.1 and Fig. 2, the mission power supply system consists of the following components:

- Connecter box – installed in the front RH side of the rear baggage compartment
- Cable duct – installed on the RH side of cabin
- Mission power relay – installed on the LH side of the battery compartment
- Control panel – installed on the RH side pocket recess

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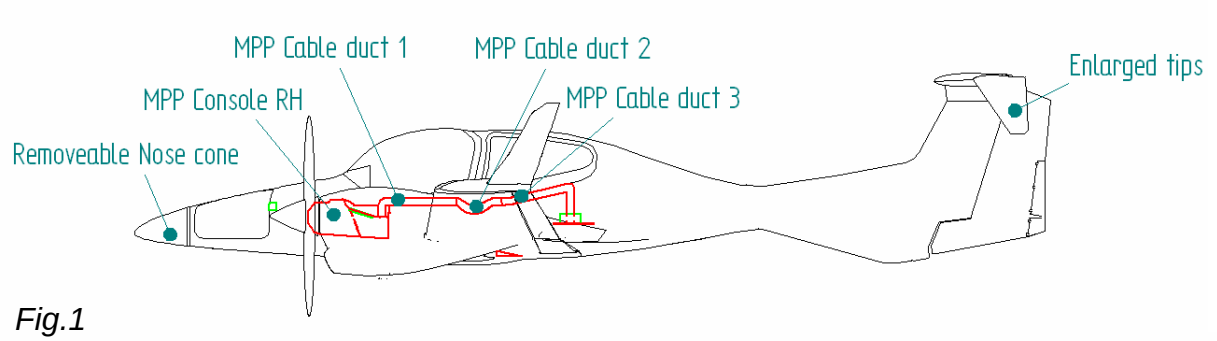

Fig.1

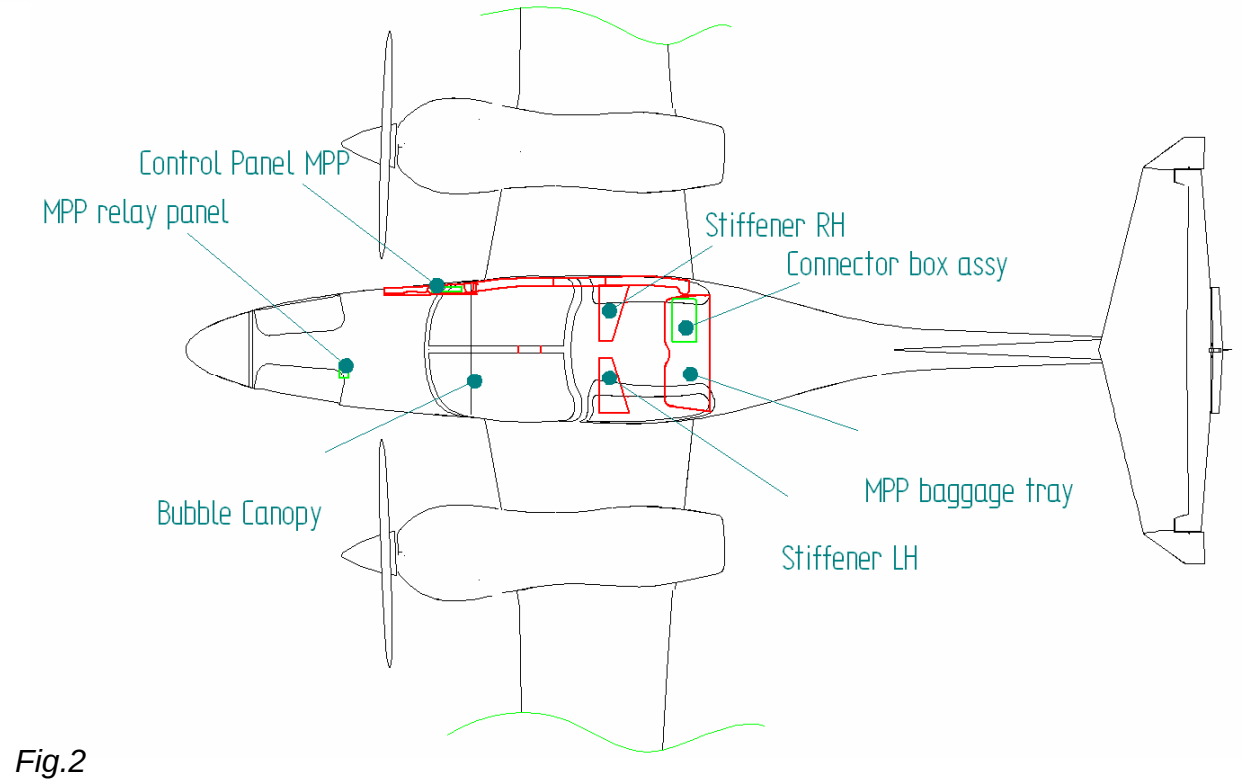

Fig.2

Connector box

The connector box, installed behind the RH rear seat, can be seen as the central power source for additional equipment. The connector box is fully controllable with the control panel installed in the MPP console RH.

The connector box provides the following features:

- Amperemeter / Voltmeter indication
- 6 electrical buses (controlled by the control panel)

Bus No.	Max. supplied Power [A]	Supplied Voltage [V]	PIN PWR / GND	
BUS 1	30	28	A	B
BUS 2	15	28	A	B
BUS 3	15	28	A	B
BUS 4	15	28	A	B
BUS 5 & 6	Total 9	14	4	1

WARNING

Mission system power supply must be switched off in any emergency, abnormal, icing condition or when a single alternator load of more than 40 A is indicated on the G1000 system.

Each power cable of the additional equipment must be connected to the bottom side of the connector. The bottom side is accessible by unlocking the camlocks on the LH and RH side of the MPP baggage tray cover and turns the whole assembly upwards. Cable excess length of mission equipment can also be stored in this compartment. The connection to the additional equipment can be done by putting the cable through the opening on the rear LH and RH side of the MPP baggage tray cover.

Cable duct

The cable duct, installed on the RH side of the cabin, serves as the cable guide for the mission equipment cables. Detailed information concerning removing and installation of the cable duct are outlined in the AMM of the DA 42.

Mission power relay

The Mission power relay is installed on the LH side of the battery compartment and connected to the battery bus of the DA 42. The whole mission bus can be disconnected from the aircraft power supply by turning the “Mission Master” switch to the “OFF” position.

Control panel

The control panel is installed in the MPP console oh the RH side. Power supply to the whole additional equipment can be controlled via this panel. By turning the “Mission Master” switch to the “ON” position the whole additional equipment can be switched on by turning the switches BUS 1 to BUS 6. Refer to the AFM supplement for the individual mission equipment for more details. The whole system can be switched off by turning the “MISSION MASTER” switch back into the “OFF” position.

7.15.2 ELECTRICAL POWER CONSUMPTION

WARNING

Mission system power supply must be switched off in any emergency, abnormal, icing condition or when a single alternator load of more than 40 A is indicated on the G1000 system.

According the Electrical Load Analysis following values for orientation concerning the maximum allowed power consumption of the whole additional (Mission-) equipment are shown below.

Available Power A [Ampere]	Configuration
40*	Normal IFR configuration (DE-ICE OFF)
60*	Minimum VFR configuration (AV-MASTER OFF)

*) These values are resultant from the Electrical Load Analysis performed during basic certification of the DA 42 and should be used for orientation only. The real maximum allowed power consumption depends on the amount of electrical power consumers connected to the DA 42 electrical power distribution system. Nevertheless the Mission power supply system must be switched off immediately if a single alternator load of more than 40 A is indicated on the G1000 system.

All necessary data to perform an electrical load analysis are outlined in the DA 42 Airplane Maintenance Manual.

8. AIRPLANE HANDLING, CARE AND MAINTENANCE

No change.