RECOMMENDED SERVICE BULLETIN

NO. RSB-42-066

I TECHNICAL DETAILS

I.1 Category

Recommended

I.2 Airplanes affected

Type:	DA 42, DA 42 M
Serial Numbers:	42.004 and subsequent 42.AC001 and subsequent 42.M001 and subsequent with auxiliary tank installations **prior** to Rev **" i "** of OÄM 42-056 (OÄM 42-056/i) installed.

I.3 Time of Compliance

At owner's discretion

I.4 Subject

Replacement of the check valve at the auxiliary tank (LH & RH) with a solenoid valve

ATA-Code: 28

I.5 Reason

It has been reported that on some occasions fuel transfer from the auxiliary tanks to the main tanks was not possible because of air trapped in the fuel lines after fully depleting the auxiliary tanks prior to refueling. This constitutes no safety hazard when the airplane is operated in accordance with the procedures published in the AFM, but nevertheless, Diamond Aircraft Ind. GmbH highly recommends carrying out this modification to ensure that the fuel from the auxiliary tanks can be transferred whenever required.

I.6 Concurrent Documents

None

I.7 Approval

The technical information or instructions contained in this document relate to the Design Change Advisory No. OÄM 42-056/i, which has been approved under the authority of DOA No. EASA.21J.052.

The technical content of this document has been approved under the authority of DOA No. EASA.21J.052.

I.8 Accomplishment / Instructions

WI-RSB-42-066, latest effective issue must be complied with.

I.9 Mass (Weight) and CG

Negligible

II PLANNING INFORMATION

II.1 Material & Availability

The Work Instruction WI-RSB-42-066 is attached to this Service Bulletin.
Appropriate necessary materials are available through Diamond Aircraft Industries.

II.2 Special Tools

None

II.3 Credit

None

II.4 Labor effort:

Approx. 4.5 hours

II.5 Reference Documents

DA 42 Series Airplane Maintenance Manual Doc. No. 7.02.01, latest effective issue
WI-RSB-42-066, latest effective issue.

III REMARKS

1. All measures must be carried out by a certified aircraft service station or a certified maintenance aircraft mechanic.

2. Accomplishment of the measures must be confirmed in the log book.

3. In case of any doubt, contact Diamond Aircraft Industries.

WORK INSTRUCTION

WI-RSB-42-066

„Auxiliary tank check valve replacement“

I GENERAL INFORMATION

I.1 Subject:

Replacement of the check valve at the auxiliary tank (LH & RH) with a solenoid valve

I.2 Reference Documents:

Diamond Aircraft DA 42 Series Airplane Maintenance Manual, Doc. No. 7.02.01, latest effective issue

I.3 Remarks:

a) All measures must be carried out by a certified aircraft service station or a certified aircraft maintenance mechanic.

b) All works, particularly those that are not especially described in this work instruction, have to be carried out in accordance with the referenced maintenance manual.

c) Accomplishment of the measures must be confirmed in the log book.

d) In case of doubt, contact Diamond Aircraft Industries.

II DRAWINGS, SPECIAL TOOLS & MATERIALS

II.1 Drawings:

D60-9228-10-01; Rev. “e”; Schematic, LH Aux Fuel Wiring
D60-9228-11-01; Rev. “d”; Schematic, RH Aux Fuel Wiring

II.2 Special Tools:

None

II.3 Material

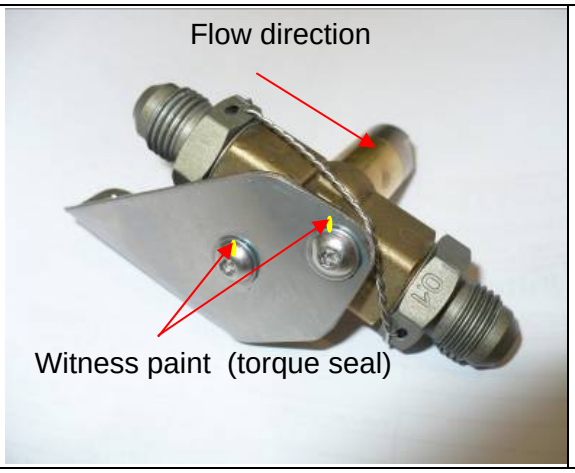
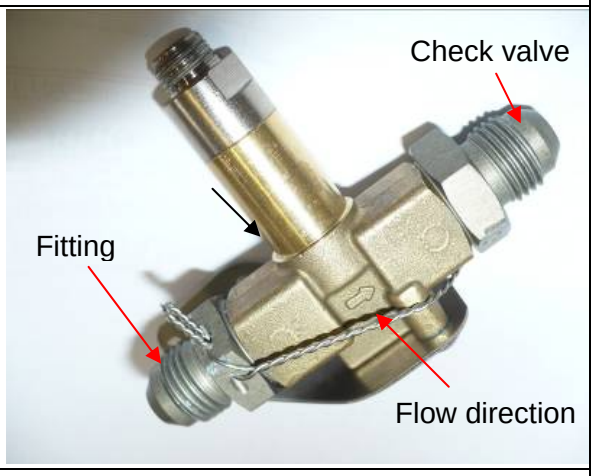
Replacement of the check valve LH & RH		
Qty [Stk.]	**Description**	**Part Number**
2	Bracket	D60-2814-00-01
4	Rivet	DIN 7337 B-2,4 x 8,5
2	Anchor nut	LN 29985 M5
2	Solenoid valve including plug	VE 131,4 GV
2	Fitting	D60-9028-14-02
2	Check valve	D60-9028-14-01
4	Screw	ISO 7380-M4 x 10 A2
18	Tie wrap	PLT 2SM 30
2	Tie wrap	PLT 1MM 30
2	Electric wire (length: 1 m) 20 AWG	M 22759-16-20-9
2	Spiral protector (length: 0,6 m)	T25N-C
2	Ring Terminal	130005
2	Pin	163307-2

III INSTRUCTIONS

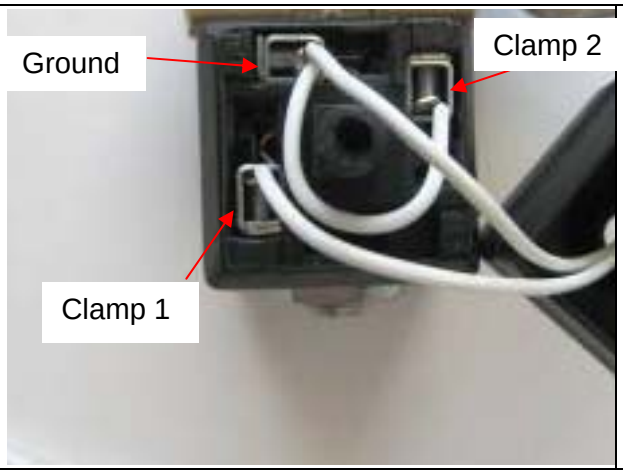
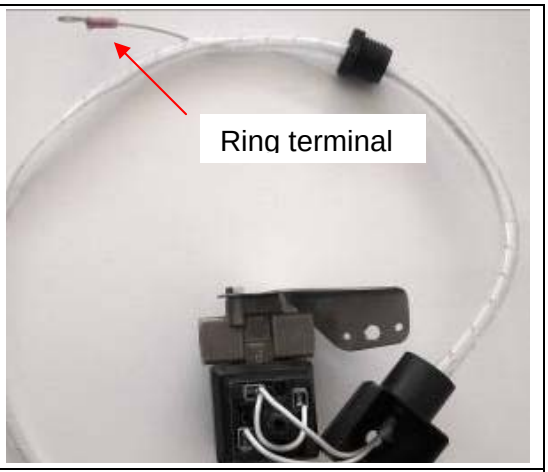
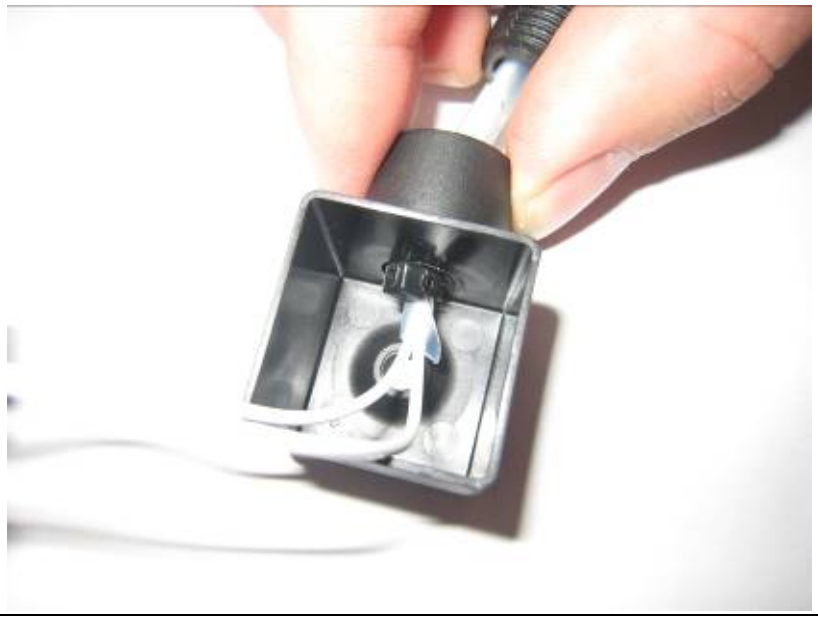
GENERAL:

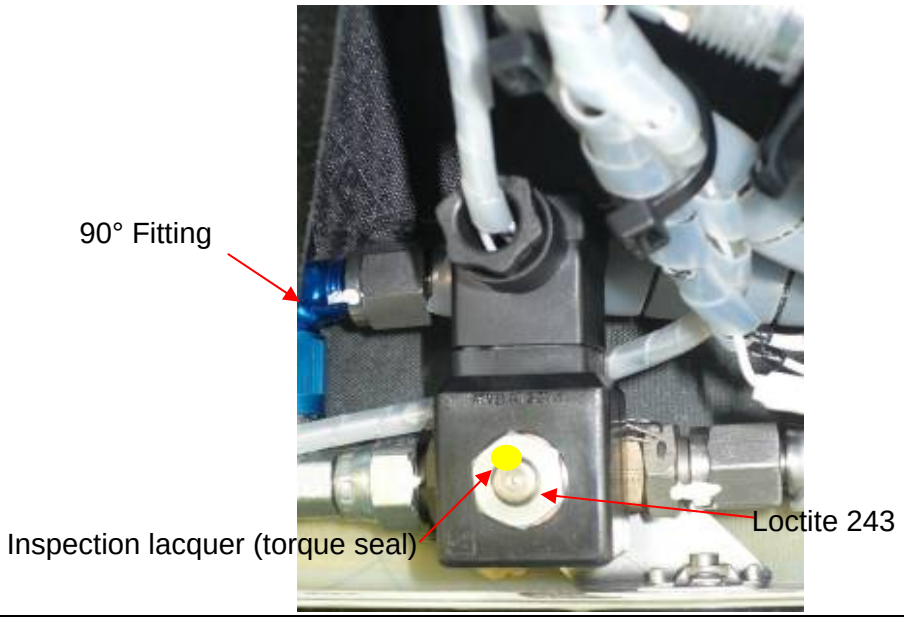
Tighten all screws according to the values given in the AMM, Section.

1	Drain the auxiliary tank (LH and RH) including the not useable fuel (0.5 US gal). **Note: An auxiliary tank to main tank fuel transfer is possible if the main tanks are empty.**
2	Make sure that both engine fuel selector levers are set to SHUT–OFF.
3	Open the fuel cooler access panel **LH** according to AMM (Chapter 28-10-00)
4	Remove all tie wraps to get access for removing the check valve. 
5	Remove the anchor nut under the check valve by drilling out the rivets. (2,4mm drill).
6	Remove the check valve from the fuel line (metric wrench size: 19 and 20mm).

7	Assemble all parts of the new solenoid valve in the following order: - Remove the solenoid from the valve by loosening the screw (metric wrench size: 16 mm). - Position the O-Ring (POR; 12.00x1.50; N7T40) in the fittings. - Apply Loctite Nr. 243 on both fitting threads. - Assemble the fitting which has a check valve at the RH side with a fastening torque of max. 18 Nm in acc. with AMM (Chapter 28-10-00). **Note:** - **The flow direction is signed on one side of the valve. Place the valve with the sign for the flow direction on top.** - **Check if the arrow on the solenoid valve points to the correct side (where the check valve is installed). Compare your assembly with the following picture.** - Secure both fittings with a lock wire (Ø 0,25mm). - Fasten the bracket and the solenoid valve with two screws. Secure the screws with Loctite Nr. 243. - Mark the screw positions with witness paint (torque seal). **Note: The bracket flange for mounting the assembly on the airplane is on the opposite side of the flow direction sign.**
	 
8	Assemble the prepared solenoid valve at the same position the check valve has been before (metric wrench size: 19 and 20mm). **Caution:** - **The flow direction, shown in the picture above, has to be in flight direction.**

9	Install the solenoid valve assembly at the same position the removed anchor nut has been before by using two rivets (DIN 7337B-2,4x8,5) and a new anchor nut (LN29985 M5). 
10	Check the correct valve position before mounting. Install the solenoid including the plug on the valve and secure it with the screw in a vertical position. **Caution:** - **Make sure to mount the solenoid with the check valve pointing in flight direction.** - **Check the clearance between the bottom of the solenoid and the access door.** - **Ensure that the plug does not touch a tie wrap or a fuel pipe. If it touches the fuel pipe turn the 90°- fitting (refer to picture in step 19).**
11	Remove the plug from the solenoid and open it.
12	Cut the electric wire (20 AWG) into three pieces, 30 mm, 370 mm and 600 mm.
13	- Remove the wire insulation at the ends and install the 600 mm wire into position 1 of the connector (clamp1) acc. to drawing D60-9228-10-01 and the following picture. - Remove the wire insulation at the ends and install the 30mm wire into position 2 of the connector (clamp 2) acc. to drawing D60-9228-10-01 and the following picture. - Remove the wire insulation at the ends and install the 370mm and the 30 mm wire into the ground position of the connector acc. with drawing D60-9228-10-01 and the following picture. Install a ring terminal P/N 130005 on the other end of the 370 mm wire.

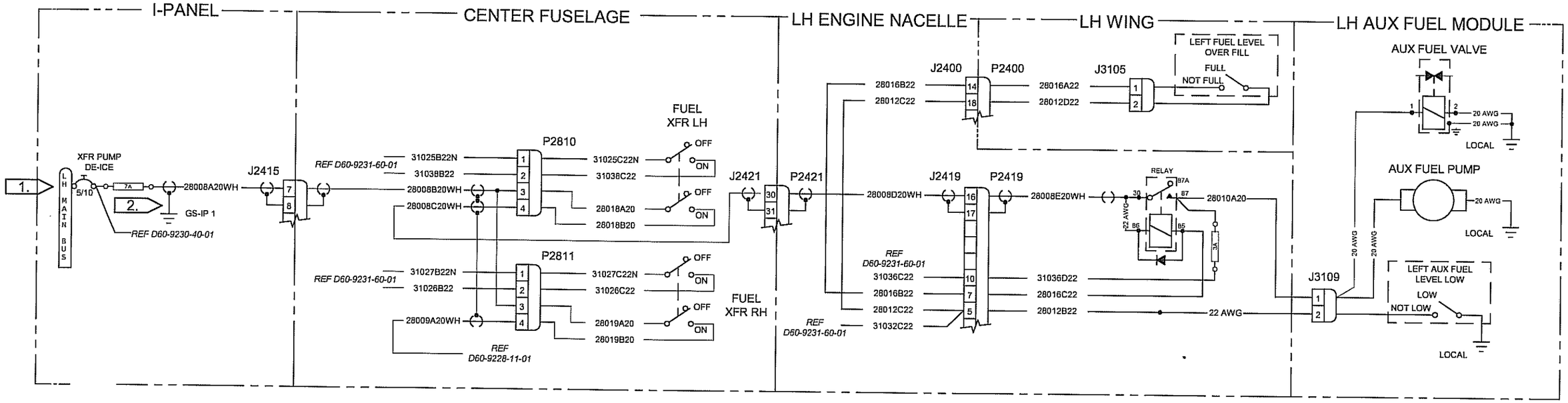
	 
14	Route the two wires through the cover and install a spiral protector.
15	Fix the spiral protector with a small tie wrap in the plug cap according to the picture. 
16	Assemble the plug and install it on the solenoid.
17	Position the solenoid on the valve. **Note: Turn the magnet and the plug if necessary to get it in the right position.**

18	Apply Loctite 243 on the valve's thread and install the screw (metric wrench size: 16mm) and mark the screw with inspection lacquer. **Note: Take care that the solenoid and the plug are in a vertical direction.** 

19	Disconnect the electrical connector. Extract pin1 (positive wire of fuel pump). Cut-off the pin and remove the wire insulation. Crimp the pin P/N 163307-2 onto the wires coming from clamp 1 and the positive wire of the fuel pump. Insert the pin into position 1 of the electrical connector and connect it. Refer also to drawing D60-9228-10-01. Connect the ring terminal coming from clamp 2 to ground according drawing D60-9228-10-01 (refer to picture). Remove surface protection around mounting area. Remove area equivalent to 1.5 times of the hole diameter. Clean surface with alcohol and assemble immediately. Seal with Nycote 7-11. Put inspection lacquer on the screw after fastening. Install tie wraps on the solenoid's wires. **Note:** - **Move the wires in place before connecting and securing them with tie wraps shown in the following picture.** Witness paint (torque seal)  Ground Electrical connector
20	Clean working area and check for foreign objects.

21	Repeat this procedure from step 3 to 22 for the **RH** auxiliary tank check valve. **Note:** - **Install the wiring for the RH side according to drawing D60-9228-11-01** - **Expect that the electrical connector and the ground have a different position.**
22	Perform functional check of altered, repaired and new parts in accordance to AMM (Chapter 28-20-00; “Test the auxiliary fuel transfer system”)
23	Re-install the fuel cooler access doors. (acc. to AMM chapter 28-10-00).
24	Make necessary entries into the aircraft log book.

REVISIONS		
Rev.	Zone	Description
"a" to "d"	-	See ÄM
"e"	-	Changed wiring for solenoid valve, connectors P2811 and P2810 added.



NOTE:

1. 10 A CB IS REQUIRED IF DE ICE SYSTEM AND THE FUEL TRANSFER SYSTEM ARE INSTALLED
2. THE 7A SLOW BLOW FUSE IS ONLY REQUIRED IF BOTH SYSTEMS, THE FUEL XFER SYSTEM AND THE DE-ICE SYSTEM ARE INSTALLED.

Weight:	N/A		
Calculated Weight:	N/A		

Approved : C. Bütte	Date 29 JAN 2008	Checked : W. Kowarsch	Date 18. JAN. 2008	General Tolerance : ISO 2768 medium	Scale: NTS

Rev.	Change	Date	Name
"e"	OAM 42-056i	11.01.08	Kowarsch
"d"	MAM 42-202	05.07.06	Kowarsch
"c"	MAM 42-196	11.05.06	Kowarsch
"b"	OAM 42-056	09.05.05	Mandl
"a"		14.03.05	Kowarsch
"-"		05.12.03	C. Wood

Next Higher Assembly : **D60-9200-00-00**

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DA 42 Twin Star

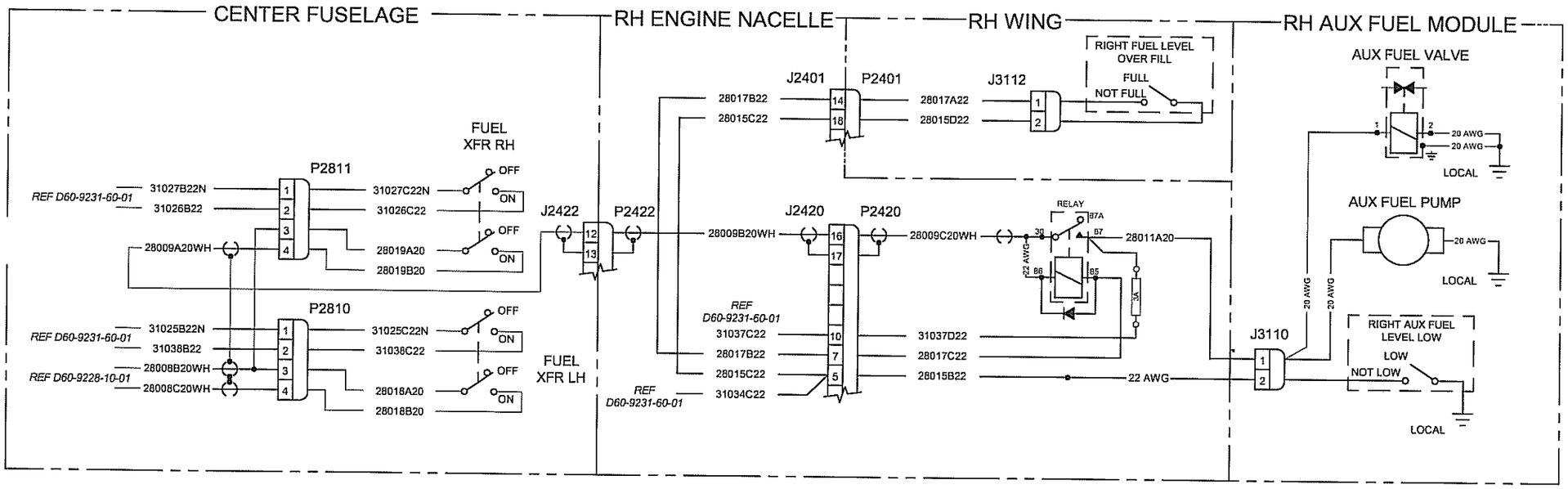
Title : **Schematic, LH Aux Fuel Wiring**

Drawing Number: **D60-9228-10-01**

Sheet **1** from **1**

Saved under : **D60-9228-10-01e.dft**

REVISIONS		
Rev.	Zone	Description
"a" to "c"	-	See ÄM
"d"	-	Changed wiring for solenoid valve, connectors P2811 and P2810 added.



"d"	OAM 42-056i	11.01.08	Kowarsch
"c"	MAM 42-202	05.07.06	Kowarsch
"b"	OAM 42-056	09.05.05	Mandl
"a"		14.03.05	Kowarsch
"-"		05.12.03	C.Wood
Rev.	Change	Date	Name

Approved : Date 29. JAN. 2008 Name

Checked : M. Kowarsch Date 18. JAN. 2008 Name

General Tolerance : ISO 2768 medium

Scale: NTS

Next Higher Assembly : **D60-9200-00-00**

Title : **Schematic, RH Aux Fuel Wiring**

Diamond AIRCRAFT Industries GmbH

DA 42 Twin Star

Drawing Number: **D60-9228-11-01**

Sheet **1** from **1**

Saved under : **D60-9228-11-01d.dft**

Weight: N/A
Calculated Weight: N/A