Lufthansa CityLine — Engineering Order

Doc.-Number: B-36-3-001 **Rev. No.:** 0 Date: 17.09.13 **CLH Issue:** 1 Date: 04.03.14

Title: Bleed Leak Detection, repair of FENWAL connectors by using assembled Connector Kits

Type: Repair ☐ **Mandated by AD:**

Reason for Alteration:

Description: Note for double shielded wires added

Effectivity:

Aircraft Type: CRJ 700/900 No. of affected A/C:

Component P/N: Refer to CAS:

☐ Customer A/C affected Refer to CRAL:

Planning Data:

☐ Abs.: End-date: FH: FC:

☐ Rel.: Start Date: Days: FH: FC:

☐ Repetitive Insp. at: Days: FH: FC:

Suggested Qualification: *CAT-B2* ☐ Special Quali.:

Estimated A/C Downtime: Labor-Hours:

Component Mod.: ☐ temp. removal from LHT Pool ☐ shop visit ☐ on wing ☐ on attrition

Special action required by:

☐ **TO/L-D** **TK:** ☒ Material required ☐ Tools required ☐ Warranty / Casco

Costs per unit or A/C: 770,- **Total Costs:** 8.700,- ☐ Refer to WiRe / GF-Vorlage

Attached Documents:

Type	Doc. Number	Rev.	Date	Pages

prepared by: Name/Signature:	**directed by:** Name/Signature:	**verified by:** Name/Signature:	**granted BT/GF:** Name/Signature:
Ina Steven Date: 17.09.13	F. – U. Stang Date:	M. Krause Date:	Date:

1. Reason / Engineering Judgement:

There are several complaints on bleed leak detection system.

T/S shows that the FENWAL connectors have open circuits which causes the DUCT MON FAULT Status MSG on EICAS.

Further investigation has shown that the connectors are not assembled correctly. It seems that excessive heat was provided which causes the insulation to be deformed.

The FENWAL connectors are very complicated to assemble and excessive heat to the connectors is definitely not recommended.

They require precise tooling and crimping to assemble and a special cement to secure the connector shell, because it is not self-locking.

Bombardier has changed the connectors from P/N: 35303-114, 115, 116 and -117 to -131 (Socket) and -132 (Pin).

The difference between the old and the latest connector is mainly the strain relief (back-end cable support). The latest connector has a longer back-end which provides better support and a better shield termination.

Bombardier also provides kit connectors P/N: KBA670-51561-1 (Socket) and -3 (Pin) which consists of a pre-assembled connector -131 or -132 and a 36 inch cable, to be spliced with the A/C wire.

It is strongly recommend NOT assembling these connectors on wing. If it is necessary to replace a FENWAL connector, use the KIT connectors for all cases.

Refer to ESPM 20-33-00 Item 17 for splicing procedure on Bleed Leak detection wiring.

2. Planning:

Effectivity CLH:

Tailsign / Unit	P/N	S/N	No. of A/C or parts
All CRJ700/900			

Manpower:

The repair in acc. to this EO is performed if a FENWAL connector must be replaced.

There is no additional workload to perform a repair.

2.1. TK:

☒ Material necessary to accomplish the Mod.:

P/N or Spec. 3500	Name	QTY	Costs in €	
			per ea	For stockage
KBA670-51561-1	Cable Assy (Socket)	5	700,00	3.500,-
KBA670-51561-3	Cable Assy (Pin)	5	700,00	3.500,-
D-150-0318-NF	Splice for nickel plated conductors	20	50,00	1.000,-
D-150-0168	Splice for tin plated conductors	20	20,00	400,-
B-023-07-55-22-9	Solder Band	20	15,00	300,-
M39029-58-360	Contact	4		
Total Costs				**8.700,-**

This EO is only applicable if a repair on the bleed air leak detection wiring is required. Therefore the mentioned QTY shows the minimum of quantity which should be on stock.

☒ Consumables necessary to accomplish the Mod.:

Ref.	P/N or Spec.	Name	QTY per A/C
	TMS-SCE-1K-1-8-2-0-9	Ident Sleeve	TBD
	RNF-100-3-4-4YE	Shrinkable sleeve	TBD
	TBD	Permanent marker	TBD

Both sleeve P/Ns can be used to identify the added wires.

☒ Tools necessary to accomplish the Mod.:

P/N	Name	Alternate	Costs per ea
TBD	Heat Gun		
TBD	Refelector Heat gun		
GMT232	Crimping Tool	AD-1319	
M22520-2-01	Crimping Tool		
M22520-2-09	Positioner		
TBD	Permanent marker		
TBD	Digital Multimeter		
Total Costs (fleet)			

3. Cost Calculation

Cost Calculation

Type	Cost in € per repair	Total Cost in € for stocking	Remarks
Manpower	N/A		
Material	770,-	8.700,-	
Total	**770,-**	**8.700,-**	

The mentioned costs per repair are calculated for a single repair on one connector installed on one Aircraft.

The mentioned costs for stocking are calculated for the above mentioned QTY of parts which should be ordered.

4. Accomplishment:

This procedure provides means to repair the wiring for the connections of the Bleed Air Leak Detection wiring.

It gives the procedure to replace the Connectors as follows by using a connector harness assy P/N: KBA670-51561-1 (Socket connector) or P/N: KBA670-51561-3 (Pin Connector)

MT155P2, MT156P1, MT165P2, MT166P1, MT167P1, MT167P2, MT168P1, MT168P2, MT169P1, MT169P2, MT170P1, MT170P2, MT171P1, MT171P2, MT172P1, MT172P2, MT173P1, MT173P2, MT174P1, MT174P2, MT175P1, MT175P2, MT176P1, MT176P2, MT177P1, MT177P2, MT178P1, MT178P2, MT179P1, MT179P2, MT180P1, MT180P2, MT181P1, MT181P2, MT182P1, MT182P2

Reference Information

MANUAL	REFERENCE	DESIGNATION
N/A	EO B-36-3-001	Hook-Up Chart Bleed Leak Connectors
WDM	36-21-01	Bleed Air Leak Detection Aft Fusel L/H
WDM	36-21-02	Bleed Air Leak Detection Aft Fuse R/H
WDM	36-21-03	Bleed Air Leak Detection Wing L/E and Slats L/H
WDM	36-21-04	Bleed Air Leak Detection Wing L/E and Slats R/H
ESPM	20-33-00 Item 17	Repair on Bleed Leak Detection Wiring

NOTE: Refer to effectivity POST SB 670BA-36-012 (for R/H) and POST SB670BA-36-013 (for L/H)

(2) Remove the affected electrical connector as follows:

(a) Remove and discard the safety cable or lockwire from the connector.

(b) Disconnect the electrical connector of the loop.

(3) Install the connector-cable assemblies as follows:

(a) Select the appropriate cable/wire and cable splice from the table below:

LOCATION	CABLE/WIRE SPECIFICATION	CABLE SPLICE	CRIMP TOOL
Fwd and Aft Fuselage	B0801175−22	D−150−0168	GMT232
Wing	831−4877619	D−150−0318−NF	GMT232

NOTE: The Hook-Up Chart attached to this EO shows the materials needed to do the repair on each affected connector.

NOTE: Where possible, it is permitted to not install the splices and install the cable assemblies directly to the related electrical connectors.

(b) Temporarily, put in position the cable assembly.

(c) Cut the wires at the applicable length for the splice installation.

(d) Refer to Hook-Up Chart attached to this EO to figure out the correct wire identification. The column “Wire provided by connector” incorporates the necessary wire identification.

(e) Use sleeve P/N: TMS-SCE-1K-1-8-2-0-9 or P/N: RNF-100-3-4-4YE and a permanent marker to identify the cable assemblies.

(f) Refer to ESPM 20-33-00 Item 17 for splicing procedure on Bleed Air Leak Detection Wiring.

NOTE: For the double-shielded cables, the inner and outer shields are soldered together.

(4) Perform the Operational Test of the Bleed Leak Detection System in acc. to AMM TASK 36-21-00-710-801.