

1. Approving Competent Authority/Country LUFTFAHRT-BUNDESAMT GERMANY	2. AUTHORISED RELEASE CERTIFICATE EASA FORM 1	3. Form Tracking Number Z92588-01
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4. Organisation Name and Address Liebherr-Electronics and Drives GmbH Peter-Dornier-Straße 11, D-88131 Lindau, Germany	5. Work Order/Contract/Invoice 260001988 / R418903
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Liebherr-Electronics and Drives GmbH
Peter-Dornier-Straße 11, D-88131 Lindau, Germany

6. Item	7. Description	8. Part No.	9. Qty.	10. Serial No.	11. Status / Work
1	PACK CONTROLLER	759D0000-02	1	1409	Repaired

TCCA Approval No.: 820-19

13a. Certifies that the items identified above were manufactured in conformity to: ☐ approved design data and are in condition for safe operation ☐ non-approved design data specified in block 12		14a. ☒ Part 145.A.50 Release to Service ☒ Other regulation specified in block 12	
13b. Authorised Signature		Certifies that unless otherwise specified in block 12 the work identified in block 11 and described in block 12 was accomplished in accordance with Part 145 and in respect that work the items are considered ready for release to service.	
13c. Approval / Authorisation Number		14b. Authorised Signature	
13d. Name		14c. Certificate / Approval Ref. No.	
13e. Date (dd mmm yyyy)		14d. Name	
		14e. Date (dd mmm yyyy)	
		10 NOV 2023	

Statements 13a and 14a do not constitute installation certification. In all cases aircraft maintenance record must contain an installation certification issued in accordance with the national regulation by the user / installer before the aircraft may be flown.

1. Approving Competent Authority/Country CAA UK		2. AUTHORISED RELEASE CERTIFICATE CAA Form1				3. Form Tracking Number Z92589-01	
4. Organisation Name and Address Liebherr-Electronics and Drives GmbH Peter-Dornier-Straße 11, D-88131 Lindau, Germany						5. Work Order/Contract/Invoice 260001988 / R418903	
6. Item	7. Description	8. Part No.	9. Qty.	10. Serial No.	11. Status / Work		
1	PACK CONTROLLER	759D0000-02	1	1409	Repaired		
12. Remarks Shop Finding Report No: RD 54593 (R028816) Approved data: CMM 21-61-11 Rev. 06							
13a. Certifies that the items identified above were manufactured in conformity to: ☐ approved design data and are in condition for safe operation ☐ non-approved design data specified in block 12							
13b. Authorised Signature		13c. Approval / Authorisation Number		14a. ☒ Part 145.A.50 Release to Service ☐ Other regulation specified in block 12 Certifies that unless otherwise specified in block 12 the work identified in block 11 and described in block 12 was accomplished in accordance with Part 145 and in respect that work the items are considered ready for release to service.		14c. Certificate / Approval Ref. No. UK.145.01792	
13d. Name		13e. Date (dd mmm yyyy)		14b. Authorised Signature 		14e. Date (dd mmm yyyy) 10 NOV 2023	
USER / INSTALLER RESPONSIBILITIES This certificate does not automatically constitute authority to install the item(s). Where the user / installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user / installer ensures that his / her airworthiness authority accepts items from the airworthiness authority specified in block 1. Statements 13a and 14a do not constitute installation certification. In all cases aircraft maintenance record must contain an installation certification issued in accordance with the national regulation by the user / installer before the aircraft may be flown.							

SHOP FINDING REPORT

LIEBHERR REPAIR DOSSIER:	54593	CONTACT:	AirlinerCS LLI
RECEPTION DATE:	30 OCT 2023	EMAIL:	AirlinerCS.LLI@liebherr.com
CUSTOMER PURCHASE ORDER:	R418903	DATE:	10 NOV 2023
OPERATOR:	N/A		
AIRCRAFT TYPE:	AIRBUS-AC		
AIRCRAFT REG. NUMBER:	N/A		
AIRCRAFT SERIAL NUMBER:	N/A		
ADD. CUSTOMER DOCUMENTS:	N/A		

RECEIVED UNIT

CUSTOMER REFERENCE:	759D0000-02
PART NUMBER:	759D0000-02
AMENDMENT:	-
SERIAL NUMBER:	1409
DESCRIPTION:	PACK CONTROLLER
MANUFACTURING CODE:	F1958
MANUFACTURING DATE:	11-00

DELIVERED UNIT

CUSTOMER REFERENCE:	759D0000-02
PART NUMBER:	759D0000-02
AMENDMENT:	-
SERIAL NUMBER:	1409
DESCRIPTION:	PACK CONTROLLER

TIMES & CYCLES

TSN	TSO	TSI	CSN	CSO	CSI
N/A	N/A	N/A	N/A	N/A	N/A

INSTALLATION DATE:	N/A
LIFE LIMITED PARTS EXISTING:	No
LOG CARD EXISTING:	No

REMOVAL DATE:	N/A
NON INCIDENT STATEM.:	No

MAINTENANCE DOSSIER:	759D0000* / VERSION 6 (12 OCT 2021)
APPROVED DATA & MAINTENANCE DOCUMENTS:	CMM 21-61-11 / REVISION 06 / 30 JUNE 2021

TYPE OF CERTIFICATE	CAA UK PART 145, TCCA PART 145, FAA PART 145, EASA PART 145
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WORK REQUESTED:	Rep
WORK PERFORMED:	Repaired

REF.-NO.: PR-759-08-CMM

ISSUE: 05

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A C C E P T A N C E T E S T - R E P O R T

(Abnahme- und Montage-Protokoll)

Titel / TITLE : A320 / A321 Pack-Controller

Teilekennzeichen : 759D0000-02
PART-NUMBERSerialnummer : 1409
SERIAL-NUMBERReferenz : Component Maintenance Manual:
REFERENCE CMM 21-61-11 Revision No. 06
Service Bulletin/Service Information Letter: --Anmerkung :
NOTE

759D0000-02_1409_20231106-095118_LRU08_PASS_R.prt

erstellt:

genehmigt:

PREPARED: gez. 19.07.21 Nenzeko/FI

APPROVED : gez. 19.07.21 Hahne/QK

Unterschriften / SIGNATURES

erstellt
PREPAREDgeprueft
CHECKED

Abt./DEP.

OLPDAE

OLPDAE

Datum/DATE

06. NOV. 2023

07. NOV. 2023

Unterschr/SIGNATURE



Name/NAME

Seifert Patric LEG
5226 25Seifert Patric LEG
5226 25

REF.-NO.: PR-759-08-CMM

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PARA	MEASUREMENT	MIN / MAX	ACTUAL VALUE
	Hardware Configuration - Testsystem - Adapter Software Configuration - System-Driver - Instrument-Driver	LRU_SYS LRU08	60250E0000-05 60250A9090-02 a40 b05
	- Test-Program	y_PC_02	a01
	P A C K - CONTROLLER		PASSED
F	Acceptance Test Procedure		
F/2	Bonding Test - refer to appendix A		
F/3	Pack Controller Consumption - main - secd	passed passed	passed passed
F/4 F/4/b	ATP Main Section Software Identification - main byte 51-56 byte 57-58 - secd byte 51-56 byte 57-58	passed L92161 MH passed L92161 SL	passed L92161 MH passed L92161 SL ASC ASC ASC ASC
F/4/c	RAM and EPROM Test - main - secd	passed passed	passed passed
F/4/d	Watchdog Test - main - secd	passed passed	passed passed
F/4/e	ARINC Bus Test - main - emission - period - A : low level - high level - B : low level - high level - receipt on RX1 - receipt on RX2	passed passed 69.00 / 83.30 -5.50 / -4.50 4.50 / 5.50 -5.50 / -4.50 4.50 / 5.50 passed passed	passed passed 80.05 usec -4.92 V 4.97 V -4.86 V 4.96 V passed passed

SN: 1409

PN: 759D0000-02

Name: Seifert P.

L I E B H E R R - E L E C T R O N I C S A N D D R I V E S G m b H

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	- sec d	passed	passed	
	- emission	passed	passed	
	- period	69.00 / 83.30	79.96	usec
	- A : low level	-5.50 / -4.50	-4.88	V
	- high level	4.50 / 5.50	4.93	V
	- B : low level	-5.50 / -4.50	-4.85	V
	- high level	4.50 / 5.50	4.92	V
	- receipt on RX1	passed	passed	
	- receipt on RX2	passed	passed	
F/4/f	Inputs Test			
F/4/f/1	External Discrete Inputs			
F/4/f/1/a	Inputs: GND/HI			
	- main	passed	passed	
	- sec d	passed	passed	
F/4/f/1/b	Inputs: 115V/HI			
	- main	passed	passed	
	- sec d	passed	passed	
F/4/f/1/c	Inputs: Forcing Test			
	- main	passed	passed	
	- sec d	passed	passed	
F/4/f/2	Internal Discrete Inputs			
	- main	passed	passed	
	- sec d	passed	passed	
F/4/f/3	Analog Inputs Test			
	- main	passed	passed	
	- potentiometer inputs	passed	passed	
	RAI POSITION	passed	passed	
	reference voltage	8.60 / 9.60	9.08	V
	position 1	226 / 296	262	
	2	1903 / 1973	1938	
	3	3572 / 3642	3606	
	RAO POSITION	passed	passed	
	reference voltage	8.60 / 9.60	9.08	V
	position 1	226 / 296	262	
	2	1903 / 1973	1939	
	3	3572 / 3642	3606	
	BPV POSITION	passed	passed	
	reference voltage	8.60 / 9.60	9.08	V
	position 1	497 / 521	510	
	2	1749 / 1773	1761	
	3	2967 / 2991	2978	
	FCV POSITION	passed	passed	
	reference voltage	8.60 / 9.60	9.08	V
	position 1	477 / 501	490	
	2	1687 / 1711	1698	
	3	2802 / 2826	2812	

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PN: 759D0000-02

Name: Seifert P.

L I E B H E R R - E L E C T R O N I C S A N D D R I V E S G m b H

- platinum sensor inputs		passed	passed	
CDS		passed	passed	
reference input +	4.50 /	5.50	5.01	V
input -	4.50 /	5.50	4.93	V
position 1	374 /	406	391	
2	2262 /	2300	2275	
3	3569 /	3635	3592	
BTS		passed	passed	
reference input +	4.50 /	5.50	5.01	V
input -	4.50 /	5.50	4.93	V
position 1	374 /	406	390	
2	2262 /	2300	2276	
3	3569 /	3635	3595	
- thermistor sensor inputs		passed	passed	
PTS		passed	passed	
position 1	215 /	231	222	
2	1116 /	1198	1156	
3	3401 /	3477	3437	
SPARE NB1		passed	passed	
position 1	215 /	231	224	
2	1116 /	1198	1159	
3	3401 /	3477	3439	
SPARE NB2		passed	passed	
position 1	215 /	231	226	
2	1116 /	1198	1163	
3	3401 /	3477	3442	
- pressure sensor inputs		passed	passed	
PIPS		passed	passed	
position HI	0 /	20	0	
1	768 /	838	799	
2	1972 /	2042	2002	
3	3177 /	3247	3204	
FA		passed	passed	
position HI	0 /	20	0	
1	768 /	838	803	
2	1972 /	2042	2005	
3	3177 /	3247	3207	
- 28V supply voltage inp.		passed	passed	
+28V DC		passed	passed	
position 1	1426 /	1506	1463	
2	2525 /	2605	2559	
- secd		passed	passed	
- potentiometer inputs		passed	passed	
RAI POSITION		passed	passed	
reference voltage	8.60 /	9.60	9.08	V
position 1	226 /	296	261	
2	1903 /	1973	1938	
3	3572 /	3642	3605	

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RAO POSITION		passed	passed	
reference voltage	8.60 /	9.60	9.07	V
position 1	226 /	296	261	
2	1903 /	1973	1937	
3	3572 /	3642	3605	
BPV POSITION		passed	passed	
reference voltage	8.60 /	9.60	9.07	V
position 1	497 /	521	509	
2	1749 /	1773	1760	
3	2967 /	2991	2978	
- platinum sensor inputs		passed	passed	
COH		passed	passed	
reference input +	4.50 /	5.50	5.01	V
input -	4.50 /	5.50	4.93	V
position 1	374 /	406	392	
2	2262 /	2300	2276	
3	3569 /	3635	3594	
PDS		passed	passed	
reference input +	4.50 /	5.50	5.01	V
input -	4.50 /	5.50	4.93	V
position 1	374 /	406	391	
2	2262 /	2300	2277	
3	3569 /	3635	3596	
- thermistor sensor inputs		passed	passed	
PTS		passed	passed	
position 1	215 /	231	222	
2	1116 /	1198	1151	
3	3401 /	3477	3434	
SPARE NB2		passed	passed	
position 1	215 /	231	220	
2	1116 /	1198	1151	
3	3401 /	3477	3433	
- pressure sensor inputs		passed	passed	
SPARE NB1		passed	passed	
position HI	0 /	20	0	
1	768 /	838	798	
2	1972 /	2042	2003	
3	3177 /	3247	3205	
FA		passed	passed	
position HI	0 /	20	0	
1	768 /	838	803	
2	1972 /	2042	2005	
3	3177 /	3247	3207	
- 28V supply voltage inp.		passed	passed	
+28V DC		passed	passed	
position 1	1426 /	1506	1466	
2	2525 /	2605	2565	

SN: 1409

PN: 759D0000-02

Name: Seifert P.

L I E B H E R R - E L E C T R O N I C S A N D D R I V E S G m b H

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F/4/g	Outputs Test			
F/4/g/1	Discrete Outputs Test			
F/4/g/1/a	Outputs: GND/HI - main / secd	passed	passed	
F/4/g/1/b	Outputs: 28V/HI - main - secd	passed passed	passed passed	
F/4/g/1/c	Outputs: Sensor Supply's - main / secd	passed	passed	
F/4/g/2	115V Outputs Test - main - secd	passed passed	passed passed	
F/4/g/3	Stepper Motor and Torque			
F/4/g/3/a	BPV Stepper Motor (Main)	passed	passed	
F/4/g/3/b	FCV Stepper Motor (Main)	passed	passed	
F/4/g/3/c	FCV Torque Motor (Main) - test no.1 byte 19-20 current - test no.2 byte 19-20 current - test no.3 byte 19-20 current - test no.4 byte 19-20 current - secd	passed passed 2870 / 3298 268.00 / 308.00 passed 1500 / 1928 140.00 / 180.00 passed 0 / 428 -.10 / 40.00 passed 750 / 1178 70.00 / 110.00	passed passed 3051 DEC 280.34 mA passed 1810 DEC 164.54 mA passed 0 DEC -0.00 mA passed 937 DEC 85.67 mA	
F/4/g/3/d	BPV Stepper Motor (Secd)	passed	passed	
F/4/h	EEPROM Erasing - main - secd	passed passed	passed passed	

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PN: 759D0000-02

Name: Seifert P.

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TESTING AND FAULT ISOLATION

D/2	Visual Check		OK.
E	EEPROM Failure Data Retrieval and Analysis		OK.
F/2	Bonding Test ≤ 20 mOhm		8,1 mOhm

APPENDIX A

	Transzorb Diode Test		not done / okay
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SN: 1409

PN: 759D0000-02

Name: Seifert P.

REASON FOR RETURN:

Test fail

FINDINGS AND ANALYSIS:

Findings from Analysis:

- Unit shows traces of use.
- Unit recieved in dirty condition.
- Unit recieved without OEM seals.
- Unit tested in accordance with relevant maintenance manual and following was noted: - Dis. Output 115V Output test failed
- Unit found significantly polluted with dust inside.

WORK PERFORMED:

- AC drive board repaired. - Resistor R71 (X599025) replaced
- Unit disassembled and cleaned in accordance with relevant maintenance manual.
- Unit disassembled and internal inspected in accordance with relevant maintenance manual.
- Unit repaired and tested in accordance with referenced approved data.

LIFE LIMITED PARTS RECEIVED:

N/A

LIFE LIMITED PARTS DELIVERED:

N/A

SHOP FINDING REPORT APPROVED:

VALIDATION DATE:

10 NOV 2023

VALIDATED BY:

Sabrina Wellhaeuser (electronic signature)