



A Textron Company

TECHNICAL BULLETIN

412-21-245

30 August 2021

MODEL AFFECTED: 412EP

SUBJECT: AIR DATA COMMAND DISPLAY AL-300 CABLE ASSEMBLY, MODIFICATION OF

HELICOPTERS AFFECTED: Serial numbers 37002 through 37018, 37021 through 37038, 37041 through 37043 and 37045.

[Serial number 37019, 37020, 37039, 37040, 37044, 37046 through 37054 and subsequent will have the intent of this bulletin accomplished prior to delivery.]

COMPLIANCE: At customer's option.

DESCRIPTION:

Bell has received reports of Air Data Command Display (ADCD) AL-300 flickering due to variations of ambient temperature. It has been established that changes in ambient temperature may affect the signal quality from the Flight Control Computers (FCC) and cause flickering of the ADCD AL-300. This Technical Bulletin provides the instructions for the installation of isolation diodes with pull up resistors in order to maintain the signal quality during ambient temperature changes and prevent the AL-300 display from flickering.

APPROVAL:

The engineering design aspects of this bulletin are FAA approved.

CONTACT INFO:

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering
Tel: 1-450-437-2862 / 1-800-363-8023 / productsupport@bellflight.com

MANPOWER:

Approximately 6 man-hours are required to complete this bulletin. This estimate is based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

There is no warranty credit applicable for parts or labor associated with this bulletin.

MATERIAL:

Required Material:

The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty</u>
412-704-120-101	ADCD AL-300 Retrofit Kit	1 (1)

Note 1: Retrofit kit 412-704-120-101 consists of:

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty</u>
412-079-828-103	Cable assembly	1 (1)
412-079-828-105	Cable assembly	1 (2)
412-475-828-101	Wiring Diagram	ref

Note 1: Cable Assembly 412-079-828-103 is made of the following parts:

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty</u>
M39029/22-191	Contact	3

Note 2: Cable Assembly 412-079-828-105 is made of the following parts:

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty</u>
M22759/41-22-9	Wire	1
110-182H2201XBR	Resistor Assy	2
130-061-02W4	Ident Tubing	7
130-065-22-2	Term Junction	3
30-251-74BC	Diodes Assy	2 (1)
M39029/22-191	Contact	5
M39029/63-368	Contact	3

Note 1: For spare part replacement replace contact M39029/22-191 by contact M39029/63-368 on the anode side of Diodes Assy 30-251-74BC.

Consumable Material:

The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Supply Center.

<u>Part Number</u>	<u>Nomenclature</u>	<u>Qty (Note)</u>	<u>Reference *</u>
MS3367-1-9	Tie wraps	A/R	C-592
MS3367-5-9	Tie wraps	A/R	C-592
MIL-I-46852C,type 1	Insulation tape	A/R	

SPECIAL TOOLS:

M81969/14-01 insertion/extraction tool
M22520/7-01 crimping tool (or equivalent)
M22520/7-11 positioner

WEIGHT AND BALANCE:

Not affected.

ELECTRICAL LOAD DATA:

Not affected.

REFERENCES:

BHT-412-MMS-EPI, Maintenance Manual Supplement
BHT-ELEC-SPM, Electrical Standard Practices Manual

PUBLICATIONS AFFECTED:

BHT-412-IPBS-EPI, Illustrated Parts Breakdown Supplements
BHT-412-MMS-EPI, Maintenance Manual Supplement

ACCOMPLISHMENT INSTRUCTIONS:

1. Prepare the helicopter for maintenance.
2. Make sure all external electrical power is removed from the helicopter.
3. Disconnect the helicopter battery.

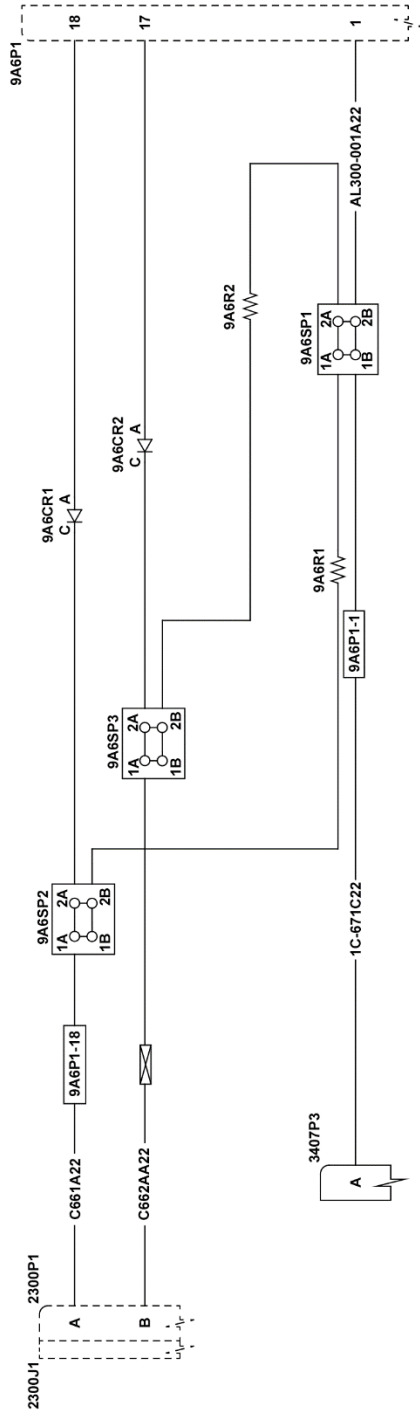
4. Access and disconnect the ADCD AL-300 connector 9A6P1 located on the right side of the helicopter behind the instrument panel.
5. Cut the tie wraps and lower the harness to the side of the instrument panel.
6. Cut the tie wraps and remove the identification tags from the harness. Retain the identification tags for future use.
7. Remove the strain relief screws (qty. 2) to access the backshell. Retain the screws and hardware for future use.
8. Remove the backshell screws (qty. 2), gently remove the backshell to access the connector. Retain the screws and hardware for future use.
9. Remove the insulation tape from the wires.
10. Using extraction tool M81969/14-01, remove wire 1C-671C22 from pin 1, wire C662E22 from pin 3, wire C662A22 from pin 17 and wire C661A22 from pin 18 of connector 9A6P1.
11. Using wire cutters, remove the splice from wire C662A22, C662E22 and C662AA22.
12. Remove and discard wires C662A22 and C662E22.

-NOTE-

Before crimping, adjust the wire lengths so each resistor, diode and splice are staggered to the wire bundle. Do not bend the resistor and the diode leads.

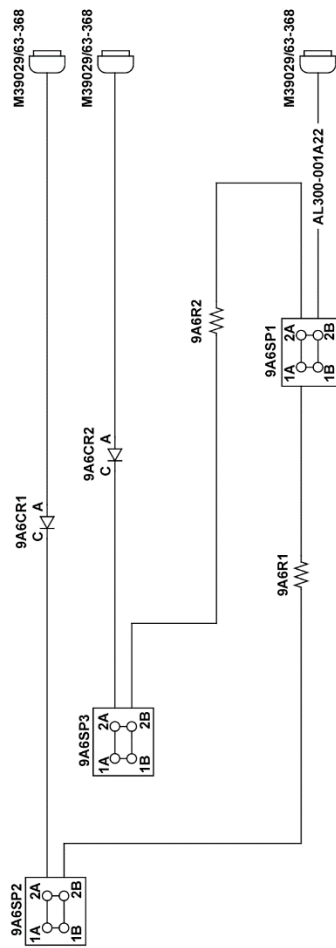
13. Use crimping tool M22520/7-01 and positioner M22520/7-11 to install new contacts M39029/22-191 on wires C661A22, C662AA22 and 1C-671C22.
14. Position cable assembly 412-079-828-105 over the AL 300 harness.
15. Insert wire C661A22 into position 1A of splice 9A6SP2 using insertion tool M81969/14-01. Refer to wiring diagram figure 1.
16. Insert wire C662AA22 into position 1A of splice 9A6SP3 using insertion tool M81969/14-01. Refer to wiring diagram figure 1.
17. Insert wire 1C-671C22 into position 1B of splice 9A6SP1 using insertion tool M81969/14-01. Refer to wiring diagram figure 1.
18. Insert wire AL300-001A22 into pin 1 of connector 9A6P1 using insertion tool M81969/14-01. Refer to wiring diagram figure 1.

19. Insert lead wire of 9A6CR1 into pin 18 of connector 9A6P1 using insertion tool M81969/14-01. Refer to wiring diagram figure 1.
20. Insert lead wire of 9A6CR2 into pin 17 of connector 9A6P1 using insertion tool M81969/14-01. Refer to wiring diagram figure 1.
21. Install insulation tape MIL-I-46852C Type 1 over the wires.
22. Assemble the backshell with the previously removed screws.
23. Remove both flight control computers (FCC) from their respective mounting rack.
24. Use a multimeter to perform a continuity check of the affected wires for the AL 300. Refer to wiring diagram figure 1.
25. Measure the resistance between pin 1 of connector 9A6P1 and the Air Data Dis circuit breaker 3410CB3. The resistance value should be 0 to 2 ohms.
26. Measure the resistance between pin 1 of connector 9A6P1 and pin 23 of connector 9A2J1B of FCC number 2. The resistance value should be approximately 2.2K ohms.
27. Measure the resistance between pin 1 of connector 9A6P1 and pin 24 of connector 9A2J1B of FCC number 2. The resistance value should be approximately 2.2K ohms.
28. Select the diode mode on the multimeter, place the red lead in pin 18 of connector 9A6P1 and place the black lead to pin 23 of connector 9A2J1B of FCC number 2. Measure the voltage across diode 9A6CR1, the reading should be 0.3 to 0.7 VDC.
29. Select the diode mode on the multimeter, place the red lead in pin 17 of connector 9A6P1 and place the black lead to pin 24 of connector 9A2J1B of FCC number 2. Measure the voltage across diode 9A6CR2, the reading should be 0.3 to 0.7 VDC.
30. Reinstall the connector 9A6P1 to the AL 300, and all other removed components.
31. Connect the battery.
32. Perform an AFCS preflight test as per the BHT-412-MM, Chapter 96.
33. Return the helicopter to flight status.
34. Make an entry in the helicopter logbook and historical service records indicating compliance with this Technical Bulletin.



20947_001

Figure 1 - Wiring Diagram 412-475-828-101



20947_002

Figure 2 - Cable Assembly 412-079-828-105