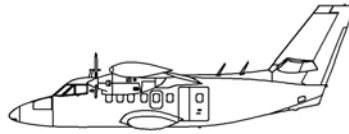




Aircraft Industries



MANDATORY BULLETIN

MB No.: L410UVP-E/137a Revision 1

Concerns: L 410 UVP-E20 airplanes S/N 2904 to 3010 inclusive and S/N 3012, 3013.

Subject: Extension of registered parameters of the FA 2200 Flight Data Recorder.

Revision 1 adds removal of wires of the IELU and water injection systems.

Reason: Replacement of unused parameters with Engine Left ITT MAX, Engine Right ITT MAX, Engine Over Limit parameters.

**To be carried out
at the latest:**

During next periodic maintenance check 3.

To be carried out by:

Organization certified for periodic maintenance of L-410 airplanes.

**Material costs
to be covered by:**

Aircraft Industries, a.s., 686 04 Kunovice, Czech Republic.

**Work costs
to be covered by:**

Operator.

**Necessary material
to be delivered by:**

Aircraft Industries, a.s., 686 04 Kunovice, Czech Republic against an order.

Bull. becomes effective: On the day of release.

Total No. of pages: 16

Bulletin L410UVP-E/137a Revision 1 supersedes previous bulletin L410UVP-E/137a.

Released: Pavel Jurák
Head of airworthiness dept.

The technical content of this document is approved under the authority of DOA ref. EASA. 21J.119.

Date of release: March 4, 2021

PERFORMANCE: mandatory

1. INSTRUCTIONS FOR PLANNING

A. CONCERNS

1. Airplane Model

L 410 UVP-E20

2. Model / S/N

S/N 2904 to 3010 inclusive and S/N 3012, 3013

3. Qualification for Implementation

There are no any special requirements.

4. New Equipment

Not required.

B. REASON

Replacement of unused parameters with Engine Left ITT MAX, Engine Right ITT MAX, Engine Over Limit parameters.

C. DESCRIPTION

Removal of wires of the IELU and water injection systems (if installed).
Installation of the FA 2200 Flight Data Recorder electric equipment.
Software modification of the FA 2200 Flight Data Recorder.

D. APPROVAL

This Bulletin has been elaborated based on data of Design Change No. ZKB 057 748.

E. MAN-HOURS

Supposed Man-hours: 16 M-hours

F. MATERIAL - AVAILABILITY

1. New Equipment

Not required.

2. Installation Parts

To be delivered by the Aircraft Industries, a.s., 686 04 Kunovice, Czech Republic against an order.

3. Costs

Material: To be covered by the Aircraft Industries, a.s., 686 04 Kunovice, Czech Republic.

Work: To be covered by the operator.

G. SPECIAL EQUIPMENT

- ROSE Analysis Unit (RAU), P/N 17TES0055 (or equivalent laptop computer) with ROSE/RI software, version 3.9 or higher, P/N 17TES0321 (CD ROM).
- Computer Interface Communication Cable CICC/2, P/N 17TES0070 with Cable Adapter, P/N 17TES0072 or Computer Interface Communication Cable CICC/3, P/N 17TES0075 with CAT5 Crossover Ethernet Cable, P/N 024-98-00368.
- Read out Support Equipment/Recorder Interface (ROSE/RI) software system operator's manual, P/N 165E1696-02.

H. WEIGHT AND BALANCE

The empty weight is increased by 1.03 kg (2.27 lb).

The moment at empty weight is increased by 3.81 kgm (3.30 lbin/100).

The centre of gravity position at empty weight is shifted by 0.014 % MAC rearward.

I. USED DOCUMENTATION

1. Maintenance Manual, Chap.:

020.01.01	020.01.02	020.01.03	020.01.05	020.20.00	024.30.04
024.40.00	025.11.00	025.23.00	027.00.00	031.11.00	031.12.00
031.35.00	076.14.01				

2. Drawings:

B573 949X sheet 3	FDR FA 2200 wiring diagram
B574 830N sheet 1	FA 2200 installation
B574 832X	FA 2200 FDR wiring diagram

J. AMENDED DOCUMENTATION

AFM Not affected.

MS Not affected.

MM Supplement No. 210, Revision No. 3.

WM Supplement for the airplane serial number.

2. INSTRUCTIONS FOR IMPLEMENTATION

A. PREPARATORY WORK

- According to the Maintenance Manual (MM) work procedure, chap. 024.40.00.B, disconnect the external power supply plug.
- According to the MM work procedure, chap. 024.30.04.A, remove the accumulators from the airplane.
- According to the MM work procedure, chap. 025.11.00, page 401, remove the RH pilot seat.
- According to the MM work procedure, chap. 031.12.00, page 401, unscrew the covers on the right side of the control panel and front cover.

- According to the MM work procedure, chap. 031.11.00, page 403, tilt the central and RH instrument panels.
- Remove the M193 and M194 signal cells (MAX ITT) on the right hand control panel. Keep the connecting material.
- Disconnect the connectors from the E281 (LH Engine) and E284 (RH Engine) central warning displays on the glare shield. Blind the disconnected connectors.
- According to the MM work procedure, chap. 027.00.00, item 4.E.(2), remove the detachable cover from the vertical channel.
- According to the MM work procedure, chap. 027.00.00, item 4.E.(3), open the panels of the ceiling bay in the passenger cabin.
- Remove the RH tilting ceiling panels by pulling out the clips – see the MM, chap. 025.23.00, Fig. 1, pos. 7.
- Remove the end ceiling panel.
- Remove the RH light panels – see the MM, chap. 025.23.00, Fig. 1, pos. 10.
- Remove the RH cover panel – see the MM, chap. 025.23.00, Fig. 1, pos. 13.
- Remove the ceiling panel from the toilet and/or rear baggage compartment.
- According to the MM work procedure, chap. 027.00.00, items 4.E.(4), (5) remove the cover from the bulkhead No. 21 and install the B596 331N assembling floor into the bay behind the bulkhead No. 21.
- According to the MM work procedure, chap. 031.35.00, page 401, remove FA 2200 Flight Data Recorder and blind the disconnected connectors.

B. DISMOUNTING

- Disconnect and blind the 382K wire from position 61 of the FA 2200 FDR J1B connector, and next the 385K wire from pos. 68 and 394K wire from pos. 80 (if installed) according to the B573 949X sheet 3 wiring diagram. Disconnect wires by means of white half of tool pos. 1 from material of point 3.B. of this bulletin.
- Disconnect and blind the 382K and 385K wires from the K111 terminal block on the bulkhead 21. Disconnect and blind the 394K wire from the M372 relay (frame 10 – if installed).
- Disconnect and blind the 380K wire (between K111 and V248 – frame 14 to 15, if installed), 381K wire (between K111 and K100), 383K wire (between K111 and K100), 384K wire (between K111 and V248) if installed.

C. MOUNTING

- According to the MM work procedure, chap. 020.01.03 and B574 832X sheet 1 wiring diagram install diodes and resistors to the K109 and K111 terminal blocks on the bulkhead 21. Use material pos. 2, 3, 4, 5 of point 3.A. of this bulletin.

Diodes - K109 terminal block between lug terminals No. 15 and 13, 15 and 14
 - K111 terminal block between lug terminals No. 8 and 10, 21 and 27

Resistors - K109 terminal block between lug terminals No. 15 and 16
 - K111 terminal block between lug terminals No. 10 and 12, 19 and 21

Fasten both, the diode assembly with wire, pos. 3 and the resistor assembly with

wire, pos. 5, of point 3.A. of this bulletin, to the existing cable harness. Use material pos. 7 of point 3.A. of this bulletin.

- According to the Dwg. No. B574 830N sheet 1 and B574 832X sheet 1 wiring diagram install new wires. Fasten the wires to the existing cable harness. Use material pos. 1, 6, 7 of point 3.A. of this bulletin. Carry out the installation according to the MM work procedure, chap. 020.01.01, 020.01.02, 020.01.03 and 020.01.05.
- According to the B574 832X sheet 1 wiring diagram and MM work procedure, chap. 020.01.01, 020.01.02, 020.01.03, 020.01.05 solder on the individual wires to the existing wires:
 - The CWD connectors
 - E281 (606K solder to 9010M (pin 24))
 - E284 (607K solder to 9123M (pin 24))
 - The signal cells (MAX ITT)
 - M193 (600K solder to 9015M (pin K))
 - M194 (603K solder to 9128M (pin K))
- According to the B574 832X sheet 1 wiring diagram connect the wires to the appropriate positions of the FA 2200 FDR J1B connector by means of green half of tool pos. 1 from material of point 3.B. of this bulletin as follows:
 - 601K to the position 61
 - 604K to the position 68
 - 608K to the position 80.
- According to the B574 832X sheet 1 wiring diagram and the MM work procedure, chap. 020.01.01, 020.01.02, 020.01.03 and 020.01.05, connect the individual wires to the K100, K109 and K111 terminal blocks. Carry out the installation as follows:
 - K100 terminal block
 - 602K to the lug terminal No. 14
 - 609K to the lug terminal No. 14
 - 615K to the lug terminal No. 13
 - K109 terminal block
 - 606K to the lug terminal No. 14
 - 607K to the lug terminal No. 13
 - 608K to the lug terminal No. 15
 - 609K to the lug terminal No. 16
 - K111 terminal block
 - 600K to the lug terminal No. 8
 - 601K to the lug terminal No. 10
 - 602K to the lug terminal No. 12
 - 603K to the lug terminal No. 27
 - 604K to the lug terminal No. 21
 - 615K to the lug terminal No. 19
- According to the MM work procedure chap. 020.01.01, 020.01.02, properly seal the wires of the E281 and E284 CWD, J1B connector, M193 and M194 signal cells on the top of connectors. Fasten newly installed wires to the existing cable harness.
- Remove the blinds of connectors and perform connectivity check of newly installed connection places according to the point 2.E.1. of this bulletin.
- Plug the connectors to the E281 and E284 CWDs. Lock the connectors properly.
- Install the M193 and M194 signal cells to the RH control panel.
- Remove the blinds from connectors of the FA 2200 FDR and install it according to the MM work procedure, chap. 031.35.00, page 401.

D. FA 2200 FDR DATA MODIFICATION

- According to the MM work procedure, chap. 031.35.00, modify the FA 2200 FDR data. The procedure shall be provided by the authorized person with full administrator's level access to all ROSE/RI software functions only. Any operation with software according this procedure by the untrained person is strictly prohibited!
- On ROSE Analysis Unit (RAU), P/N 17TES0055 (or equivalent laptop computer) with ROSE/RI software, version 3.9 or higher, run ROSE/RI software under the administrator permission. Select the existing database for appropriate airplane on main menu item „Select Aircraft Configuration“. The database file name is typically saved as LET 410 Aircraft_XXXXXX where XXXXXX means full serial number of the aircraft.
- Select the “Update Database Parameters”. Options not available during a nonprivileged user Login will be displayed in grey and will not be selectable. A level of expertise with the Flight Data Recorder system, a clear understanding of flight data parameters, and access to the Airplane Flight Data Parameter Source List is required prior to performing the steps of the database parameter updating procedure.
- Perform updating of the *Water Injection* parameter as follows:
 1. In the window „Select a Parameter Name“ select the item *Water Injection*.
 2. Overwrite *Water Injection* to *Engine Over Limit* according to the Fig. 1. Click “OK” to confirm.

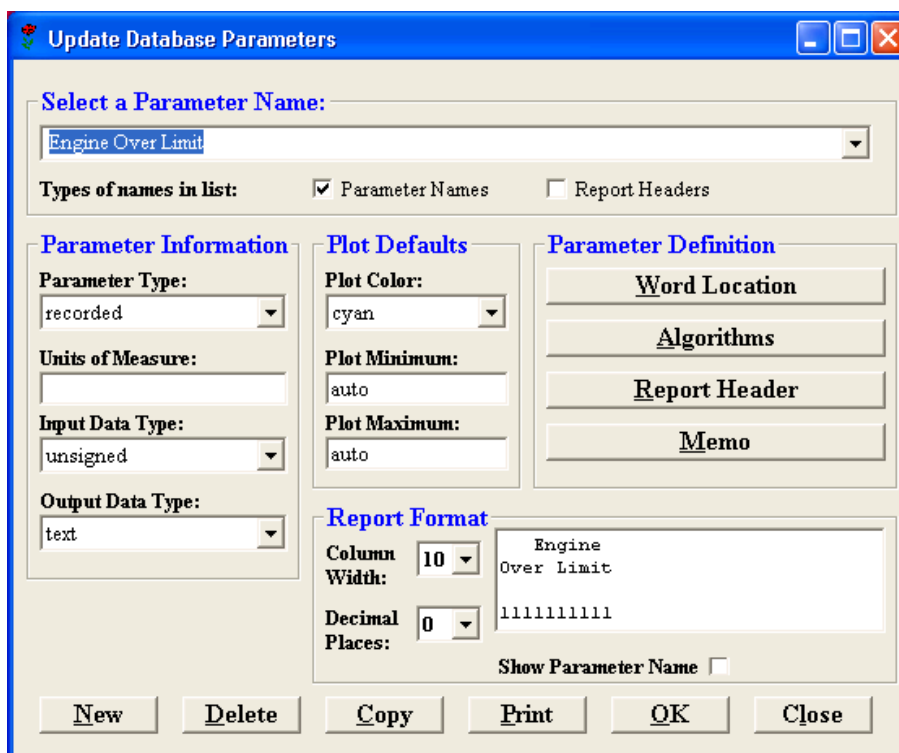


Fig. 1

3. Click “Report Header”. Overwrite item “Current Report Header” according to the Fig. 2. Click “OK” to confirm.

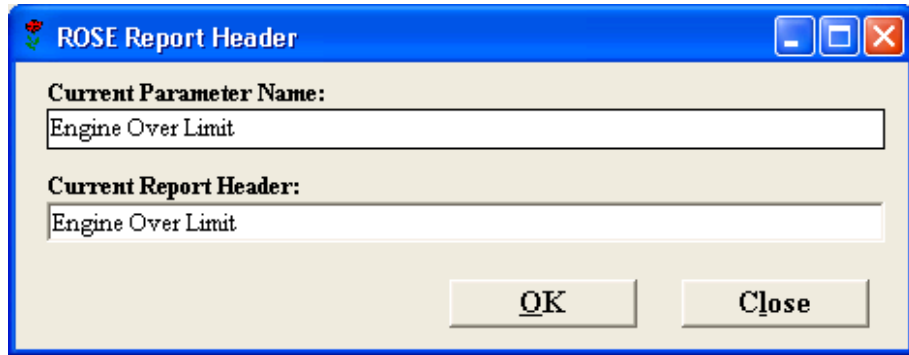


Fig. 2

4. Click "Algorithms". On page "1", item "Value" 0, overwrite item "Text" to *Eng Over Limit* according to the Fig. 3. Click "OK" to confirm.

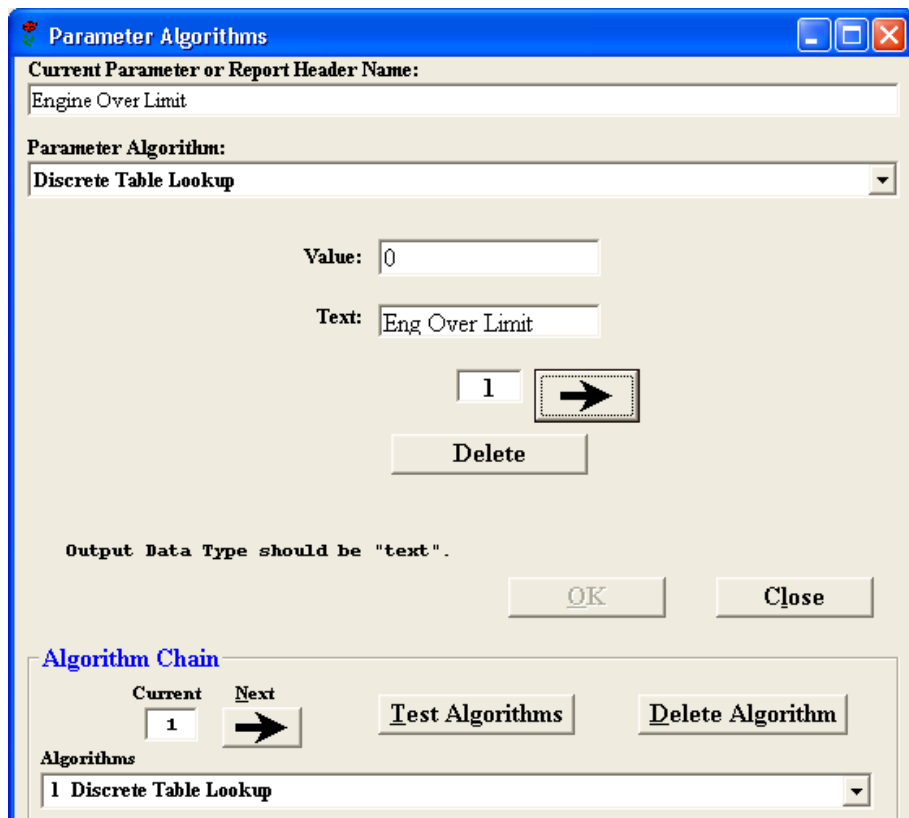


Fig. 3

5. On page "1" select „→“. On page „2“, item „Value“ 1, check item "Text". It have to respond Fig. 4. Return back to the window "Update Database Parameters".

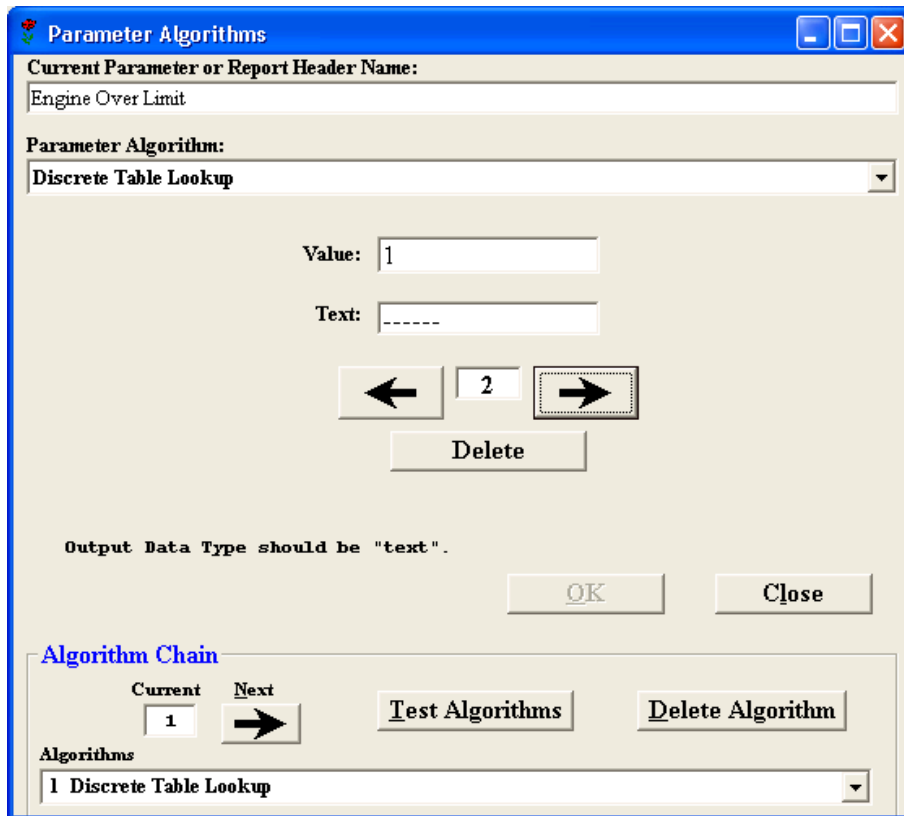


Fig. 4

- Click "Word Location". Check all window items according to the Fig. 5, correct any discrepancies. Return back to the window "Update Database Parameters".

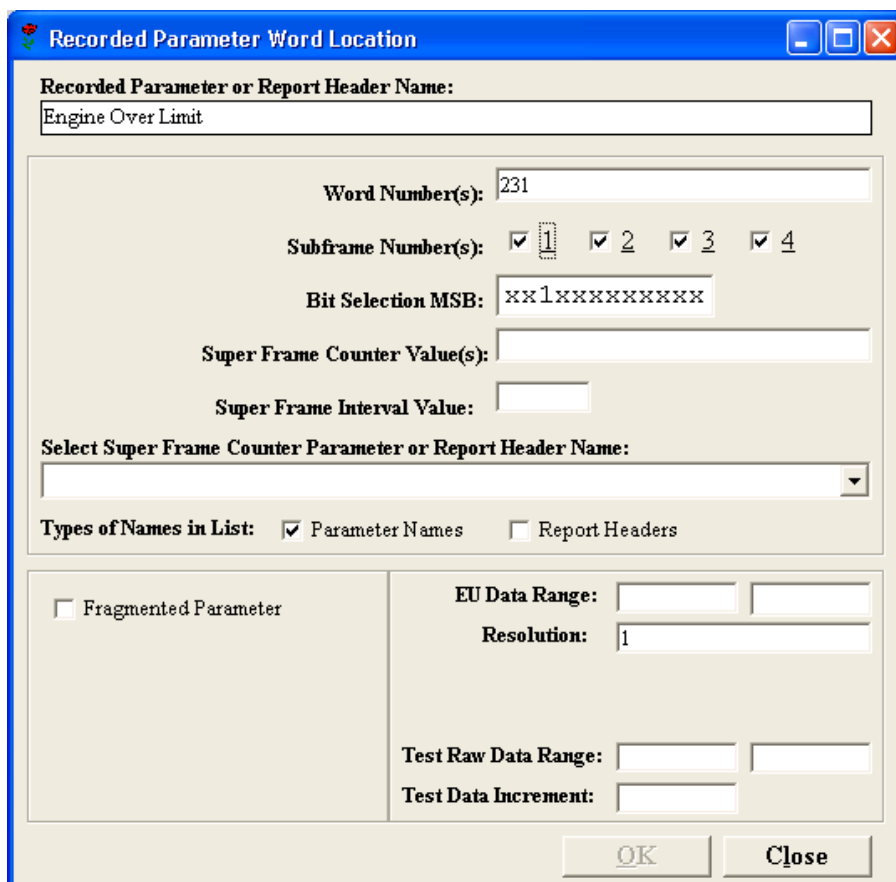


Fig. 5

7. Check window "Update Database Parameters" according to the Fig. 1. Click "OK" to confirm.
- Perform updating of the *Engine Left IELU Intervention* parameter as follows:
 1. In the window „Select a Parameter Name“ select the item *Engine Left IELU Intervention*.
 2. Overwrite *Engine Left IELU Intervention* to *Engine Left ITT MAX*. Perform the update according to the *Water Injection* parameter modification, points 2 to 7. Particular items update according to the Fig. 7 to 11.

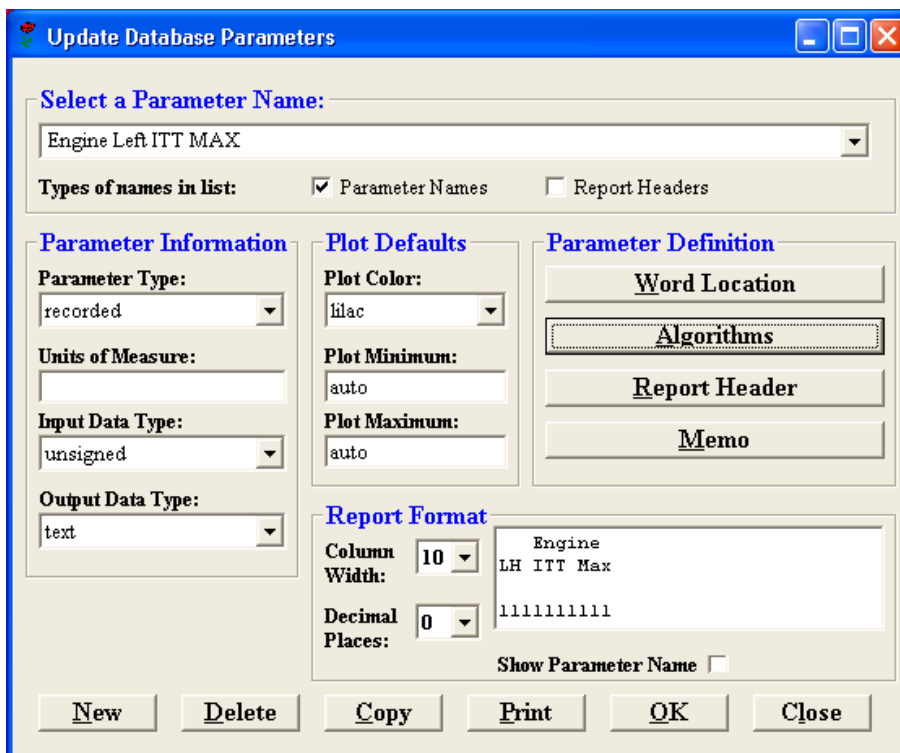


Fig. 7

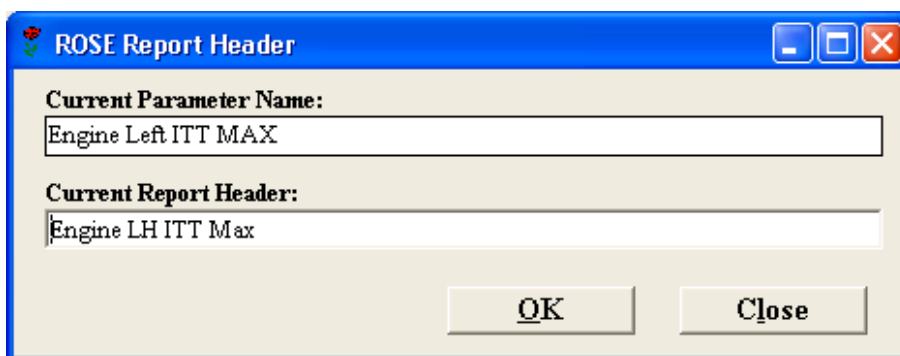


Fig. 8

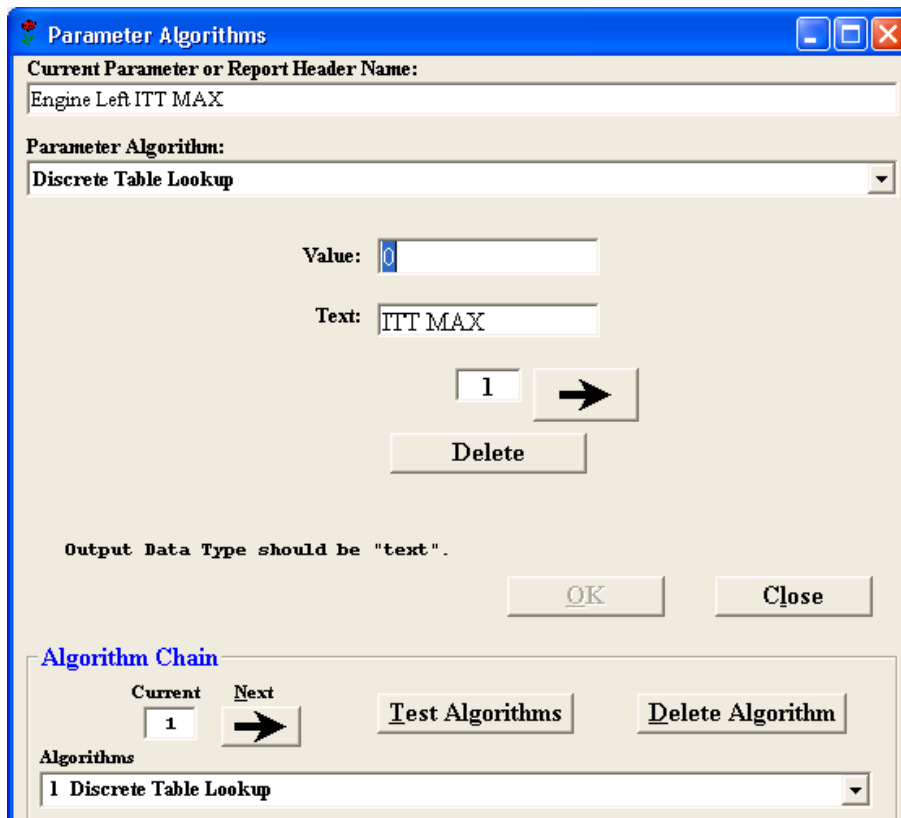


Fig. 9

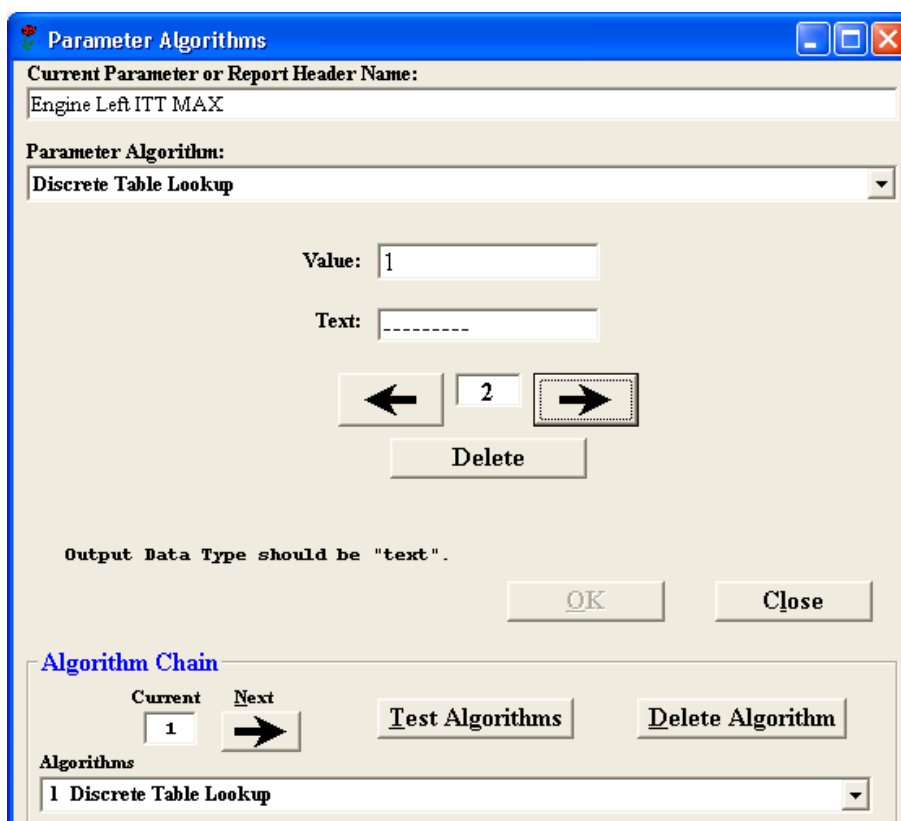


Fig. 10

Recorded Parameter Word Location

Recorded Parameter or Report Header Name:

Word Number(s):

Subframe Number(s): 1 2 3 4

Bit Selection MSB:

Super Frame Counter Value(s):

Super Frame Interval Value:

Select Super Frame Counter Parameter or Report Header Name:

Types of Names in List: Parameter Names Report Headers

Fragmented Parameter

EU Data Range:

Resolution:

Test Raw Data Range:

Test Data Increment:

Close

Fig. 11

- Perform updating of the *Engine Right IELU Intervention* parameter as follows:
 1. In the window „Select a Parameter Name“ select the item *Engine Right IELU Intervention*.
 2. Overwrite *Engine Right IELU Intervention* to *Engine Right ITT MAX*. Perform the update according to the *Water Injection* parameter modification, points 2 to 7. Particular items update according to the Fig. 12 to 16.

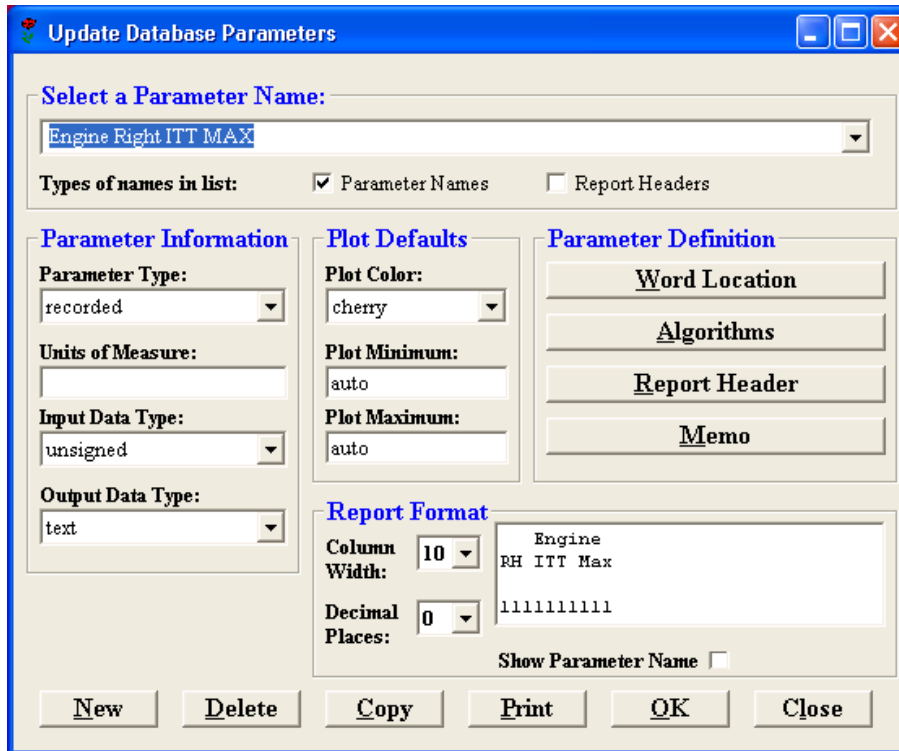


Fig. 12

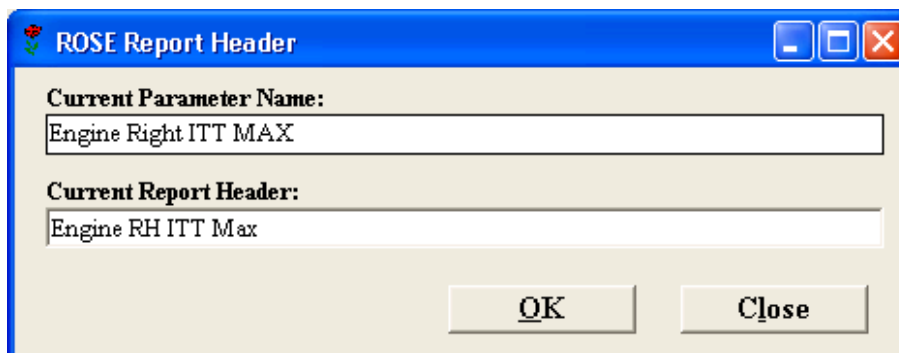


Fig. 13

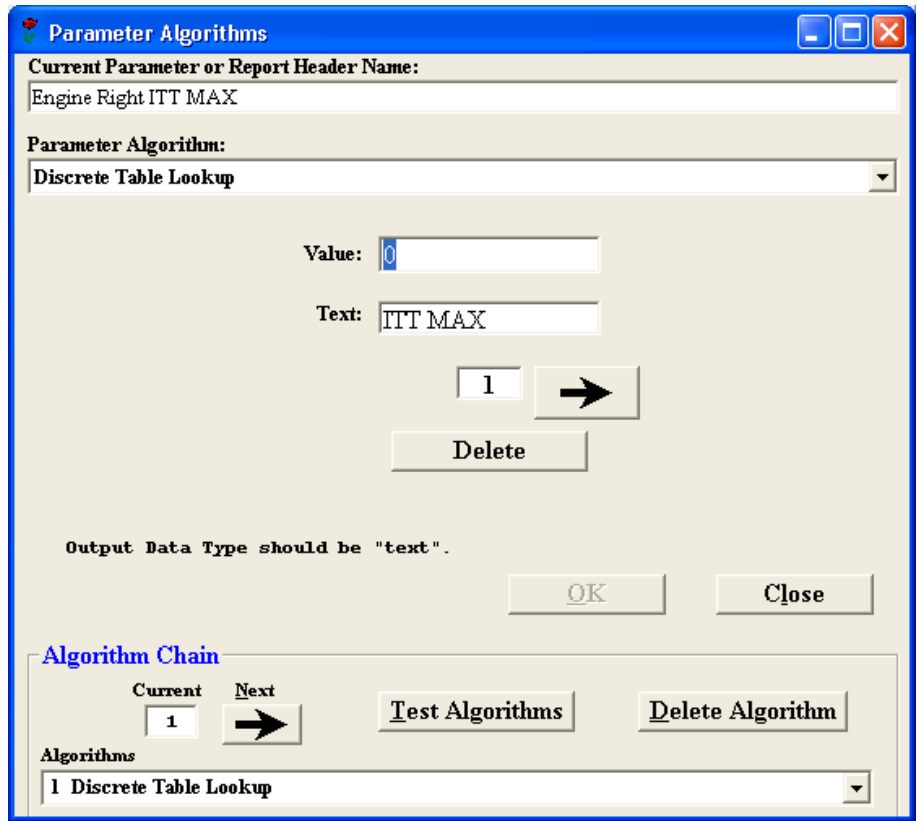


Fig. 14

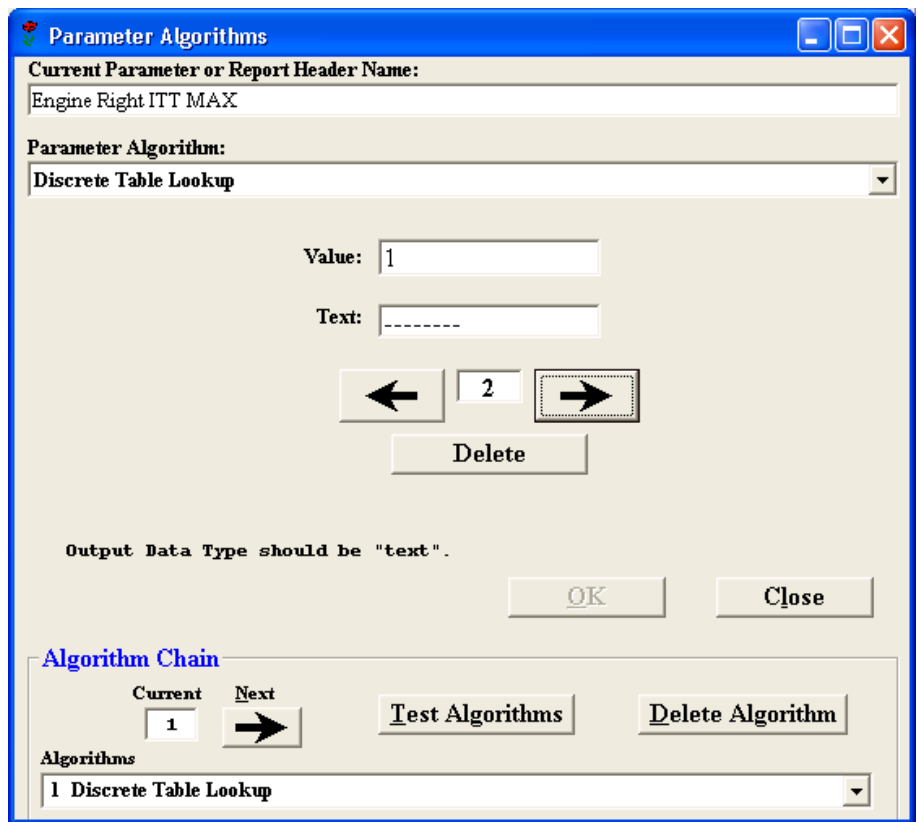


Fig. 15

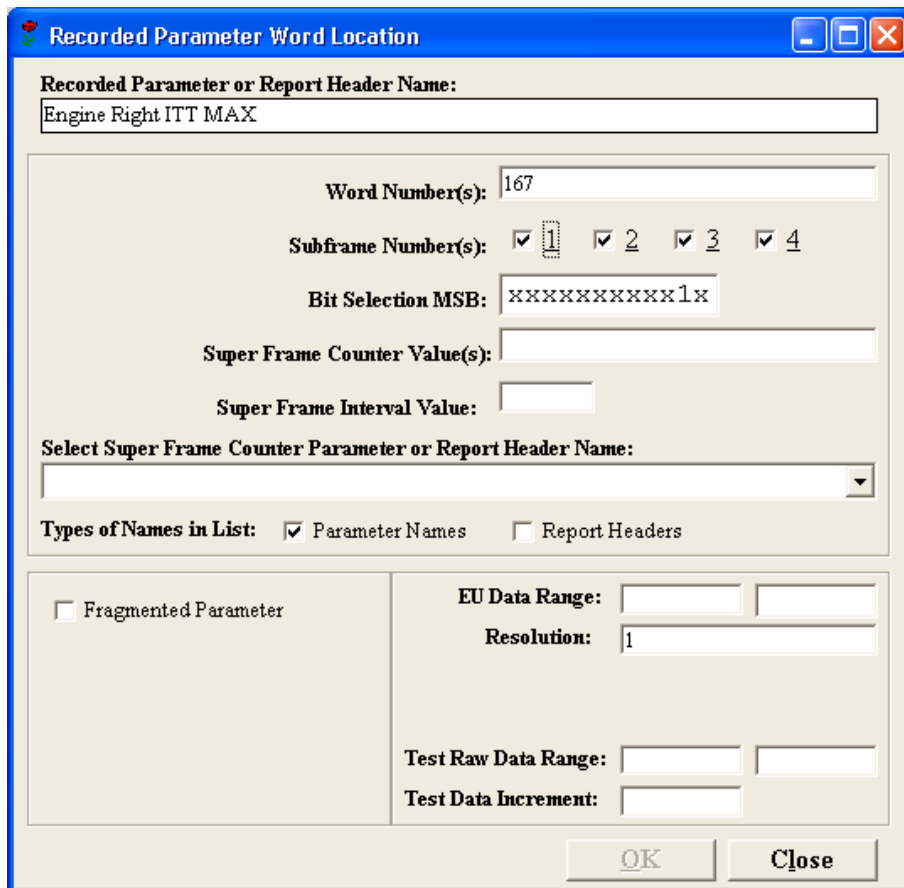


Fig. 16

- Connect ROSE Analysis Unit (RAU), P/N 17TES0055 (or equivalent laptop computer) with ROSE/RI software, version 3.9 or higher, to the FDR. Perform FDR function test according to the point 2.E.1. of this bulletin. After passing the test disconnect RAU and install back cover of the FDR connector. Proceed according to the MM work procedure, chap. 031.35.00.

E. TESTS

1. Ground Tests

- According to the B574 832X sheet 1 wiring diagram carry out connectivity check of all newly installed connection places. Pay special attention to the diodes correct orientation check.
- Perform the FA 2200 FDR function test:
 - According to the MM work procedure, chap. 024.30.04.A, install the accumulators in the airplane.
 - Check the FLIGHT RECORDER circuit breaker located between bulkheads No. 1 and 2 is switched on.
 - According to the MM work procedure, chap. 031.35.00, connect RAU to the airplane. Set RAU for monitoring of the LH / RH MAX ITT and ENGINE OVER LIMIT parameters in real time.

- In accordance with the MM Supplement No. 210 Revision No. 3, chapter 076.14.01 perform ELU built in test. Beside circuit breakers and switches according to the point 1.E.(1) of this procedure switch on the RECORDER switch. Perform point 1.E.(2) of this procedure as follows:
 1. Press ELU LH push button on the LH control panel and wait approximately 25 seconds to complete the test.
 2. Press ELU RH push button on the LH control panel and wait approximately 25 seconds to complete the test.

Monitor the test process on RAU and on the ENG. OVER LIMITS signal cells on the LH / RH ENGINE CWDs on the glare shield and the MAX ITT signal cells on the RH control panel. Compare values with Fig. 076.14.01-301 of the MM Supplement No. 210 Revision No. 3.

2. Flight Tests

Not required.

F. FINISHING WORK

- Carefully clear all areas where the installation works have been carried out from scraps of material and from impurities.
- According to the MM work procedure, chap. 020.20.00, repair damaged painting.
- According to the MM work procedure, chap. 027.00.00, item 4.E.(18) remove the B596 331N assembling floor from the bay behind the bulkhead No. 21.
- According to the MM work procedure, chap. 027.00.00, item 4.E.(19) install the cover on the bulkhead No. 21. Close the small door (FDR) on this bulkhead.
- Install the ceiling panel in the toilet and/or rear baggage compartment.
- Install the RH cover panel – see the MM, chap. 025.23.00, Fig. 1, pos. 13.
- Install the RH light panels – see the MM, chap. 025.23.00, Fig. 1, pos. 10.
- Install the end ceiling panel.
- Install the RH tilting ceiling panels – see the MM, chap. 025.23.00, Fig. 1, pos. 7. According to the MM work procedure, chap. 024.00.00, page 307, check the locking of the ceiling panels clips.
- According to the MM work procedure, chap. 027.00.00, item 4.E.(20), close the ceiling panels in the passenger cabin.
- According to the MM work procedure, chap. 027.00.00, item 4.E.(21), install the detachable cover on the vertical control channel at the frame No. 7.
- According to the MM work procedure, chap. 031.11.00, page 402, install the central and RH instrument panels.
- According to the MM work procedure, chap. 031.12.00, page 402, install the covers on the right side of the control panel and front cover.
- According to the MM work procedure, chap. 025.11.00, page 401, install the RH pilot seat.
- Insert the supplements into the respective airplane manuals.

- Record the weight and moment changes in the “Weight and Balance Record” in chapter VI of the Airplane Flight Manual and update the empty weight and moment.

3. NECESSARY MATERIAL

A. INSTALLATION PARTS DELIVERED BY THE AIRPLANE MANUFACTURER

Pos.	AI Identifier	Name	Pcs/acft
1	B049 277N	Set of wires for IB 137a	1
2	B049 178N	1N4007 Diode assembly	3
3	B049 275N	1N4007 Diode assembly with wire	1
4	B049 195N	RR 10kΩ 0.6W Resistor assembly	2
5	B049 276N	RR 10kΩ 0.6W Resistor assembly with wire	1
6	8305 2069	Pyroplast fabric	100x1000
7	8322 4115	A-A-52081-C-5 binding tape	8 m

B. SPECIAL TOOLS DELIVERED BY THE AIRPLANE MANUFACTURER

Pos.	AI Identifier	Name	Pcs/acft
1	9516 0600	M81969/14-01 insert/removal tool for 22D contact	1

4. RECORD IN THE AIRPLANE LOGBOOK

Installation of the FA 2200 Flight Data Recorder electric equipment and software modification have been performed according to the MB L410UVP-E/137a Revision 1. |

Date:

Performed by:

(name and signature of authorised staff)

Elaborated by: Ing. Vlastimil Lapčák

Checked by: Ing. Pavel Ulrich