P U B L I C A T I O N  T R A N S M I T T A L

RR-DERBY

V2500 International Aero Engines

400 MAIN STREET, MAIL STOP 121-10
EAST HARTFORD, CT 06108, USA.
TELEPHONE: 860 565 5515
FAX: 860 565 0600

P.O. BOX 31, DERBY
TELEGRAMS - 'ROYCAR' DERBY
TELEX - 37645
TELEPHONE - DERBY 242424

DATER Apr.25/02

# V2500-A5 PROPULSION SYSTEMS NON-MODIFICATION SERVICE BULLETIN



This document transmits Revision 1 to Service Bulletin EV2500-73-0177

Document History

| Service Bulletin Revision Status | Supplement Revision Status |
|---|---|
| Initial Issue Apr.18/02 | |

Bulletin Revision 1

| Remove | Incorporate | Reason for change |
|---|---|---|
| All pages of the Service Bulletin | Pages 1 to 6 of the Service Bulletin | To revise inspection proforma (Appx.2) |
| All pages of Appendix 1 | Pages 1 to 5 of Appendix 1 | To revise inspection proforma (Appx.2) |
| All pages of Appendix 2 | Page 1 and 2 of Appendix 2 | To revise inspection proforma (Appx.2) |



CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise Publication Services, Rolls-Royce plc, Derby, England

LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 1 are as follows:

| | Page | Revision Number | Revision Date |
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| | Bulletin | | |
| R | 1 | 1 | Apr.25/02 |
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| | Appendix 2 | | |
| R | 1 | 1 | Apr.25/02 |
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ENGINE - FUEL AND CONTROL - LP AND HP FUEL PUMP - INSPECTION OF TEIJIN SEIKI HOUSINGS FOR HP INLET FLANGE CRACKS - NON-MODIFICATION SERVICE BULLETIN



1. Planning Information

A. Effectivity

(1) Aircraft

(a) Airbus A319

(b) Airbus A320

(c) Airbus A321

(2) Engines

(a) V2522-A5

(b) V2524-A5

(c) V2527M-A5

(d) V2527-A5

(e) V2527E-A5

(f) V2530-A5

(g) V2533-A5

(3) Teijin Seiki LP and HP Fuel Pump

(a) Serial Numbers:

3038, 3039, 3042, 3043, 3044, 3045, 3046, 3050, 3052, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 3060, 3061, 3062, 3063, 3064, 3208, 3210, 3275, 3277, 3278, 3279, 3329, 3331, 3332, 3333, 3334, 3339, 3373, 3374, 3386, 3390, 3402, 3403, 3404, 3408, 3421, 3422, 3425, 3435, 3436, 3438, 3450, 3455.

(b) Engines:

V10040, V10047, V10052, V10168, V10241, V10298, V10342, V10351, V10365, V10398.

NOTE: Pumps on the Engine Serial Numbers quoted are also to be examined.

(4) ATA Location

73-12-41.

B. Concurrent Requirements

Not applicable.

C. Reason

Since 1994 there have been eleven HP/LP fuel pump removals due to low-key fuel leaks, of which four have occurred in 2001. The leaks originated from the flange of the HP inlet port and were discovered during ground walk-around. None of the leaks resulted in an Operational event.

D. Description

The purpose of this Non-Modification Service Bulletin is to identify a list of fuel pumps that have a risk of cracking in the HP inlet flange region and to introduce an on-wing eddy current inspection.

The affected fuel pump serial numbers are listed below:

GROUP 1 Pump Serial Nos.

3038, 3039, 3042, 3043, 3044, 3045, 3046, 3050, 3052, 3053, 3054, 3055, 3056, 3057, 3058, 3059, 3060, 3061, 3062, 3063, 3064, 3208, 3210, 3275, 3277, 3278, 3279, 3329, 3331, 3332, 3333, 3334, 3339, 3373, 3374, 3386, 3390, 3402, 3403, 3404, 3408, 3421, 3422, 3425, 3435, 3436, 3438, 3450 and 3455.

In addition to the above pump groups, IAE consider it prudent to check those engines that have previously experienced a pump rejection even if the serial numbers of the currently installed pumps do not appear in the above group. These engines are shown in Group 2.

GROUP 2 Engine Serial Nos.

V10040, V10047, V10052, V10168, V10241, V10298, V10342, V10351, V10365 and V10398.

NOTE 1. Following confirmation of the location of the pumps, it is recommended that as a precauition, no two pumps listed above are installed on the same aircraft until the checks and modifications have been made.

NOTE 2. All pumps returned to Hamilton Sundstrand, or their authorised overhaul agencies, will receive a detailed inspection in the flange area and therefore will fulfill the requirements of NMSB 73-0177.

NOTE 3. When one of the highlighted pumps is removed and installed on another engine it must be subject to a one time inspection at next aircraft C Check.

NOTE 4. The results from the inspection of housings to this NMSB will be assessed by IAE and any further inspections deemed necessary will be specified in further issues.

E. Compliance

Category 4

The pumps listed in Group 1 and Group 2 are to be inspected at the next aircraft C Check.

F. Approval

The compliance of statement 1.E. and the procedures detailed in 3 of this Non-Modification Service Bulletin, comply with the applicable Federal Aviation Regulations and are FAA approved for the engine model listed.

G. Manpower

(1) In service

30 minutes.

(2) At overhaul

Not affected.

NOTE: The parts affected by this Service Bulletin are accessible at overhaul.

H. Weight and Balance

(1) Weight Change

None

(2) Moment Arm

No effect

(3) Datum

Engine front mount centreline (Power Plant Station PPS 100).

I. Electrical Load Data

This Service Bulletin has no effect on the aircraft electrical load.

J. Software Accomplishment Instructions

Not affected.

K. References

None.

L. Other Publications Affected

VCMM 73-18-41.

2. Material Information

None.

3. Accomplishment Instructions

A. Equipment

(1) Hocking Phasec 2200 Eddy Current Phase Analysis Instrument (or similar).

(2) IAE2R19575 Kit (comprises items (3), (4) and (5).

(3) IAE2R19576 2MHz NFe Shielded Spade Probe (Hocking Pt No 314P14F).

(4) IAE2R19577 NFe A1 Test block (Hocking Pt No 29A047).

(5) IAE2R19578 Probe connecting lead (Hocking Pt No 29A001).

(6) CoMat 02-007 PTFE tape.

NOTE: Probe kits will be allocated free of charge from a rotable pool held by IAE via your local IAE representative.

B. Basic Instrument Settings for Phasec 2200.

| | |
|---|---|
| Mode | Abs Ch 1 |
| Display | X/Y |
| Frequency | 2.0 MHz |
| Phase | See text |
| Ch 1 Gain | 45 dB (nominal) |
| Ch 1 X: Y | X-12.0 dB |
| Hi Pass Filter | DC |
| Lo Pass Filter | 50 Hz |
| Input Gain | plus 20 dB |
| Bal | 8.2 micro H |
| X: Y dot Position | 0:0 |

C. Calibration

(1) Ensure basic instrument settings have been initially configured as in section B above and connect probe to instrument.

(2) With probe held in air select auto balance. This will set up the instrument's internal impedance.

(3) Apply PTFE tape to the probe tip.

NOTE: When using other Phase Analysis instruments an external Balance impedance coil may be required and instrument parameters may have to be adjusted to achieve results shown in Appendix 1, Fig.1.

(4) Place probe, normal to surface, on test block clear of any slots and balance the instrument.

(5) To set lift off, lift the probe on and off the test block and adjust the phase angle ensuring that the spot/trace moves horizontally right to left (see Appendix 1, Fig.1).

(6) Move the probe over the 0,5 mm slot at 90 degrees to the slot and adjust the Channel 1 gain to ensure the spot/trace moves upward 3 mainscale divisions in the vertical plane at approximately 45 degrees (see Appendix 1, Fig.1).

(7) The instrument is now calibrated.

D. Inspection

NOTE: If an Operator finds two affected pumps are on the same aircraft it is recommended that one of the pumps be removed at the Operator's earliest convenience to prevent the very small risk of a fuel leak from both pump housings. The removed pump should be inspected as below:

(1) Position the probe on the fuel pump HP inlet boss radius, clear of the inspection area and balance the instrument.

(2) Carry out a scan of the radius using a zig-zag pattern ensuring the lower 180 degrees of the circumference of the boss radius is inspected (see Appendix 1, Fig.2).

NOTE: Because of the casting rough surface it may be necessary to lightly dress the radius surface with scotchbrite. This will further protect the probe tip and avoid any excessive lift off due to high spots. The probe tip must be protected after each scan.

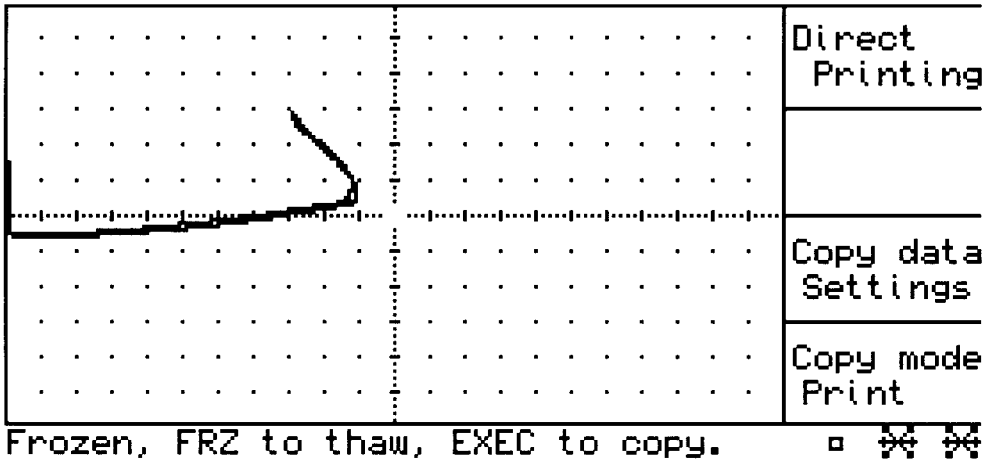
E. Acceptance

(1) Any rapid spot/trace movement in the vertical or near vertical direction is to be considered a crack indication (see Appendix 1, Fig.3).

(2) An uncracked radius will display a lift off trace similar to Appendix 1, Fig.4.

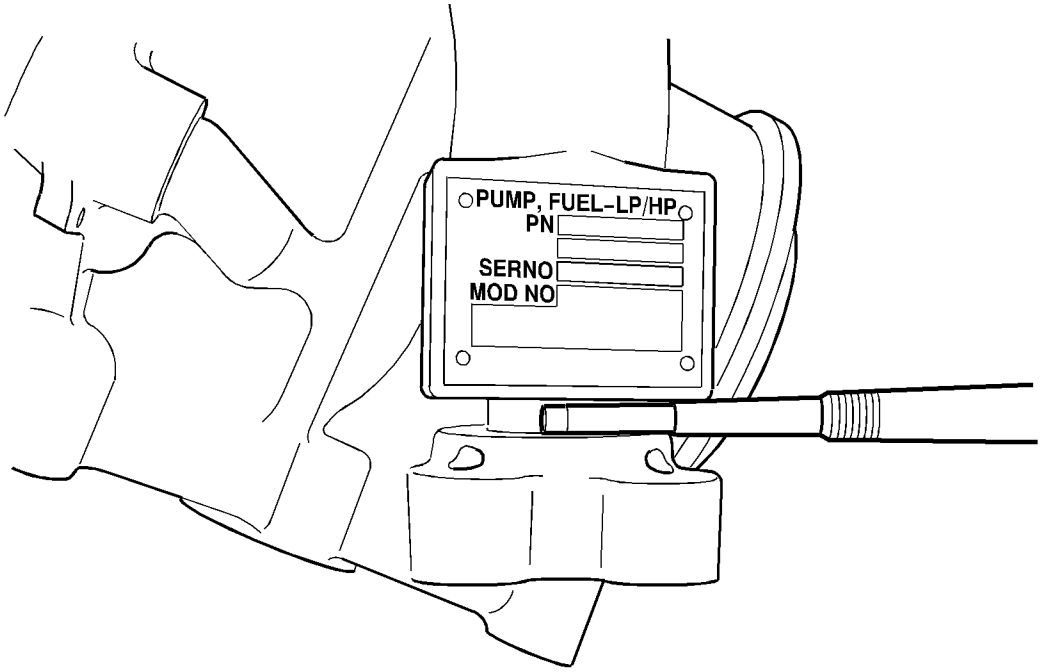
(3) Cracked pumps should be returned to the vendor for replacement of the housing, clearly stating NMSB 73-0177 on the paperwork.

APPENDIX 1



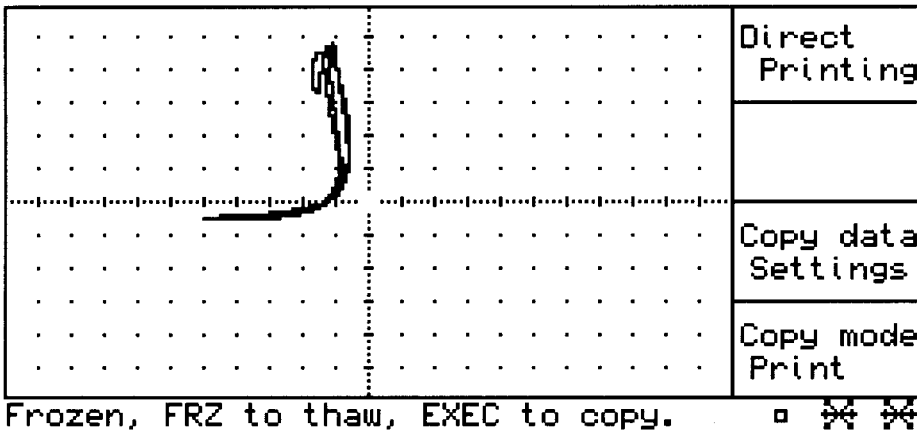

ded0004356

Calibration trace obtained from test block showing horizontal lift off and indication from 0,50 mm. slot
Appendix 1, Fig.1




ded0004357

View of pump showing eddy current probe positioned in radius
Appendix 1, Fig.2

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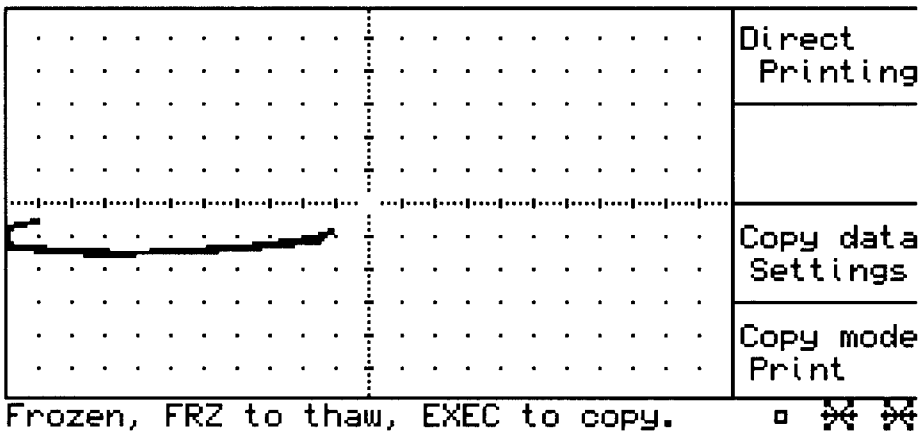
Trace obtained from actual crack in radius
Appendix 1, Fig.3

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Trace obtained from uncracked radius
Appendix 1, Fig.4

APPENDIX 2

IAE International Aero Engines

Fuel Pump Eddy-Current Inspection Result

After Completion fax this information to: 44 1332 244067
Attention: John Turrill, V2500 Accessory & Troubleshooting, IAE Technical Services

| | | |
|---|---|---|
| Operator: | | |
| Date of Inspection: | | |
| Engine S/N: | | |
| Engine TSN | | |
| Engine CSN: | | |
| Rating: | 22 | |
| | 24 | |
| | 27 | |
| | 27E | |
| | 27M | |
| | 30 | |
| | 33 | |
| (Tick applicable box) | | |
| Pump SN: | | |
| Pump TSN: | | |
| Pump CSN: | | |

Inspection Results:

Cracked ☐
Not Cracked ☐
(Tick applicable box)

ded0004373

Inspection results proforma
Appendix 2, Fig.1