ENGINE - LP COMPRESSOR - FAN EXIT GUIDE VANE A/O - INCORPORATION OF A REVISED BONDING PROCESS - CATEGORY CODE 6 - MOD.ENG-72-0020



1. Planning Information

A. Effectivity

(1) Aircraft: Airbus A320

(2) Engine: V2500-A1 Engines, Serial No.'s V0026 through V0030, Part 1 of SB, and prior to Serial No. V0023, part 2 of SB.

B. Reason

(1) Condition

Lifting of the Fan Exit Guide Vane A/O (FEGV) inner platforms may occur because of unbonding of polyurethane resin used to bond each FEGV to its inner platform.

The cause for the problem is premature deterioration of bonding strength due to unsatisfactory bonding quality.

(2) Background

This condition has been noted in the development program. Until this time, the maximum lifting quantity of 0.157 in. (4,00 mm) has been experienced on a development engine. However, the platform lifting will progress and ultimately result in failure.

The detail investigation has revealed that the Type I bonding process used on the Type I FEGV's may be insufficient, which is the cause of the problem.

(3) Objective

To incorporate the improved FEGV's with a revised bonding process to maintain engine reliability.

(4) Substantiation

The changes recommended in the Service Bulletin have been subjected to rig testing to ensure that the revised bonding process to be used, has satisfactory bonding quality.

Laboratory examination of the new parts after the rig testing (pull test) substantiates that the problem has been solved.

(5) Effects of Bulletin on Workshop Procedures:

| | |
|---|---|
| Removal/Installation | Not affected |
| Disassembly/Assembly | Not affected |
| Cleaning | Not affected |
| Inspection/Check | Not affected |
| Repair | Not affected |
| Testing | Not affected |

(6) Supplemental Information

None

C. Description

(1) The changes introduced by this Service Bulletin are as follows:

(a) The revised bonding processes, Type II and Type III are introduced to fabricate the FEGV's. These bonding processes are incorporated to the production engines respectively as follows:

1 The FEGV's with casting inner and outer platforms which are used the Type II bonding process are incorporated to the engines Serial Number V0026 through V0030.

2 The FEGV's with casting inner and outer platforms which are used the Type III bonding process are incorporated to the engines Serial Number V0031, V0032, and V0118 through V0129.

3 The FEGV's with forging inner and outer platforms which are used the Type III bonding process are incorporated to the engines Serial Number V0023 through V0025, and V0033 onward except V0118 through V0129.

(b) The manufacturing method to form the inner and outer platform is changed from casting to precision forging to reduce weight. This change is not directly related to the bonding problem, but is concurrently incorported due to depletion of the cast inner and outer platforms in production (See paragraph C.(1)(a) for production incorporation).

(2) The existing 5A0037, FEGV's which are used the Type II bonding process must be reidentified to the new 5A0283, FEGV's which are the equal part number to that of used the Type III bonding process, to discriminate them from the FEGV's used the Type I bonding process (See Figure 1).

(3) The existing 5A0037, FEGV's which are used the Type I bonding process must be replaced with the improved FEGV's which use Type III bonding process (See Figure 2). The existing FEGV's removed from service can be reworked by engine manufacturer.

(4) New 5A0041, FEGV's will be available for replacement purposes.

(5) This Service Bulletin is in two parts covering the following:

Part 1 Reidentification of the FEGV's which are used the Type II bonding process from the existing 5A0037 to the new 5A0283.

Part 2 Replacement of the FEGV's which are used the Type I bonding process with the improved FEGV's with forging inner and outer platforms which are used the Type III bonding process.

D. Approval

The Part Number changes and/or part modifications described in Sections 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the Engine Model listed.

E. Compliance

Category 6

Accomplish when the subassembly (i.e. Module, Accessories, Components, Build groups) is disassembled sufficiently to afford access to the affected part and to all affected spare parts.

F. Manpower

Estimated Manhours to incorporate the full intent of this Bulletin:

(1) Part 1 of SB

| Venue | Estimated Manhours |
|---|---|
| (a) In service .. .. .. | Not applicable |
| (b) At overhaul | |

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

| | |
|---|---|
| 1 To renumber the Part Number of the FEGV's .. .. | 10 Minutes |
| Total: | 10 Minutes |

(2) Part 2 of SB

| Venue | Estimated Manhours |
|---|---|
| (a) In service | |
| 1 To gain access .. .. | 1 Hour 20 Minutes |

| | | |
|---|---|---|
| 2 | To embody .. .. .. | 4 Hours 40 Minutes |
| 3 | To return engine to flyable status .. .. .. .. | 1 Hour 43 Minutes |
| | Total: | 7 Hours 43 Minutes |

(b) At Overhaul .. .. .. Not applicable

G. Material - Price and Availability

(1) Modification Kit is not required.

(2) See 'Material Information' section for prices and availability of future spares.

H. Tooling - Price and Availability

Special tools are not required.

I. Weight and Balance

| | | |
|---|---|---|
| (1) | Weight change .. .. .. | Minus 3.0 lb (1,36 kg) |
| (2) | Moment arm .. .. .. .. | Negligible |
| (3) | Datum .. .. .. .. .. | Engine front mount centreline (Power Plant Station (P.P.S.) 100) |

J. Electrical Load Data

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

K. Reference

(1) Internal Reference No.

EC88VJ685A

EC88VJ020

EC88VJ231D

EC88VJ685

(2) Other References

Part 1 of SB

V2500 Engine Illustrated Parts Catalog, Chapter/Section 72-32-88.

V2500 Engine Manual, 72-32-00 Disassembly and Assembly.

V2500 Standard Practice/Processes Manual, 70-09-00 Marking of Parts.

Part 2 of SB

A320 Aircraft Maintenance Manual, 72-32-88 Removal/Installation.

L. Other Publications Affected

None

2. Accomplishment Instructions

A. Part 1 of SB

(1) Rework Instructions

(a) Reidentify the existing part number of FEGV's which is made a mark on each segment with the Vibro-peen (Refer to Figure 1 and 1.K.(1)(c)).

| Existing | Renumber |
|---|---|
| 5A0037 | 5A0283 |

(2) Assembly Instructions

(a) Assemble the 20 segments of reidentified 5A0283, FEGV's by the approved procedures in the Engine Manual, 72-32-00 Assembly TASK 72-32-00-430-012 (Refer to 1.K.(1)(b)).

(3) Recording Instructions

(a) A record of accomplishment is required.

B. Part 2 of SB

(1) Rework Instructions

There are no rework instructions necessary to accomplish this Service Bulletin.

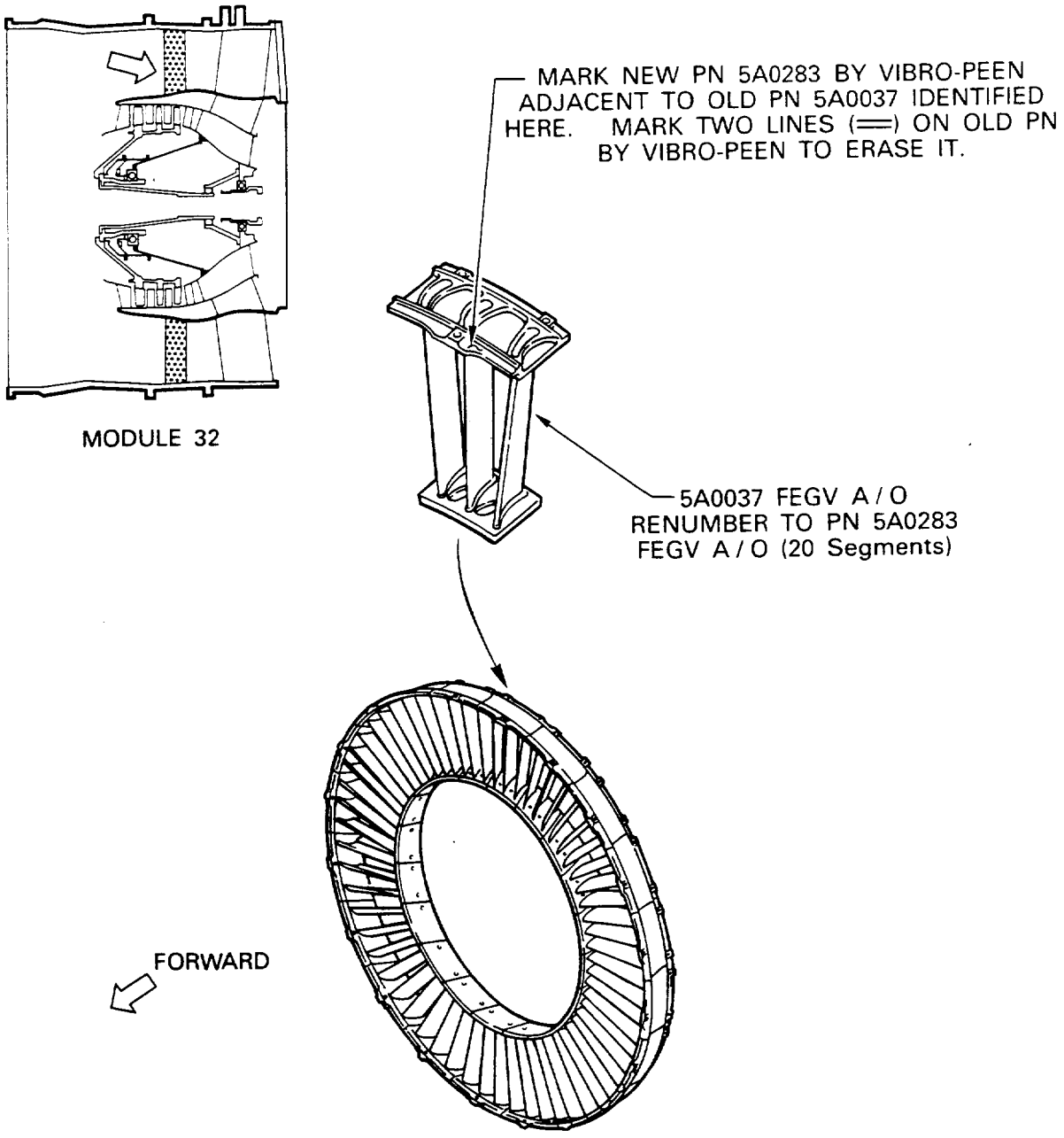
(2) Assembly Instructions

(a) Remove the 20 segments of 5A0037, FEGV's by the approved procedures in the Aircraft Maintenance Manual 72-32-88, TASK 72-32-88-000-010. (Refer to 1.K.(2)(a)).

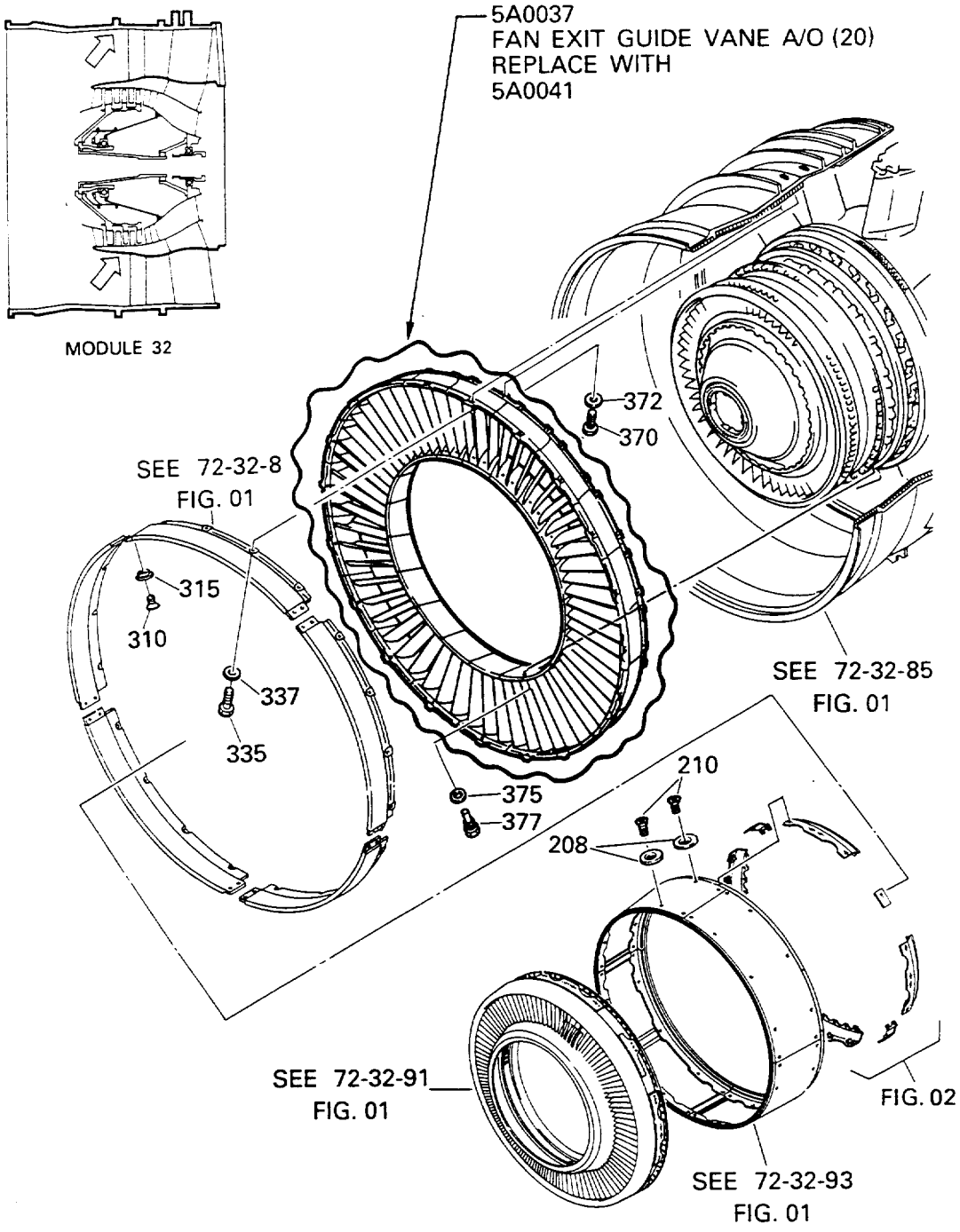
(b) Install the 20 segments of 5A0041, FEGV's by the approved procedures in the Aircraft Maintenance Manual, 72-32-88, TASK 72-32-88-400-010. (Refer to 1.K.(2)(a)).

(3) Recording Instructions

(a) A record of accomplishment is required.




Reidentification of the Fan Exit Guide Vane A/O (FEGV) - Part 1 of SB
Fig.1




ded0000486

Location of the Fan Exit Guide Vane A/O (FEGV) - Part 2 of SB
Fig.2

3. Material Information

Applicability: For each V2500-A1 Engine to incorporate this Bulletin.

A. Kits associated with this Bulletin:

None

B. Parts affected by this Bulletin:

| New Part No. (ATA No.) | Qty | Est'd Unit Price ($) | Keyword | Old Part No. (IPC No.) | Dispositions Instruction |
|---|---|---|---|---|---|
| (1) Part 1 of SB | | | | | |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (06-100) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (06-300) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (06-500) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (06-700) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (07-100) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (07-300) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (07-500) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (07-700) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (08-100) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (08-300) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (08-500) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (08-700) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (09-100) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (09-300) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (09-500) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (09-700) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (10-100) | (B)(C)(S1)(1D) |

| | | | | | |
|---|---|---|---|---|---|
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (10-300) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (10-500) | (B)(C)(S1)(1D) |
| 5A0283 (72-32-88) | 1 | | Vane, A/O Fan Exit | 5A0037 (10-700) | (B)(C)(S1)(1D) |

(2) Part 2 of SB

| | | | | | |
|---|---|---|---|---|---|
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (06-100) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (06-300) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (06-500) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (06-700) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (07-100) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (07-300) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (07-500) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (07-700) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (08-100) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (08-300) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (08-500) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (08-700) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (09-100) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (09-300) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (09-500) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (09-700) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (10-100) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (10-300) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (10-500) | (A)(C)(S1)(2D) |
| 5A0041 (72-32-88) | 1 | 3,725 | Vane, A/O Fan Exit | 5A0037 (10-700) | (A)(C)(S1)(2D) |

C. Instruction/Disposition Code Statements:

(A) New part is currently available for sale.
(B) New part is obtained by reworking (renumber).
(C) Old part will no longer be available for sale.
(S1) New Parts Coded (S1) must replace old parts coded (S1) as a COMPLETE SET per Engine.
(1D) Old part number can be reidentified to new part number.
(2D) Old Part to be returned, for reworking, to:

Ishikawajima-Harima Heavy Industries Co., Ltd.
229, Tonogaya, Mizuho-Machi,
Nishitama-Gun, Tokyo, Japan

Attention: Mr. K. Obara, Mgr, Material Control

NOTE: The estimated 1993 unit prices shown are provided for planning purposes only and do not constitute a firm quotation. Contact IAE's Spare Parts Sales Department for information concerning firm prices.